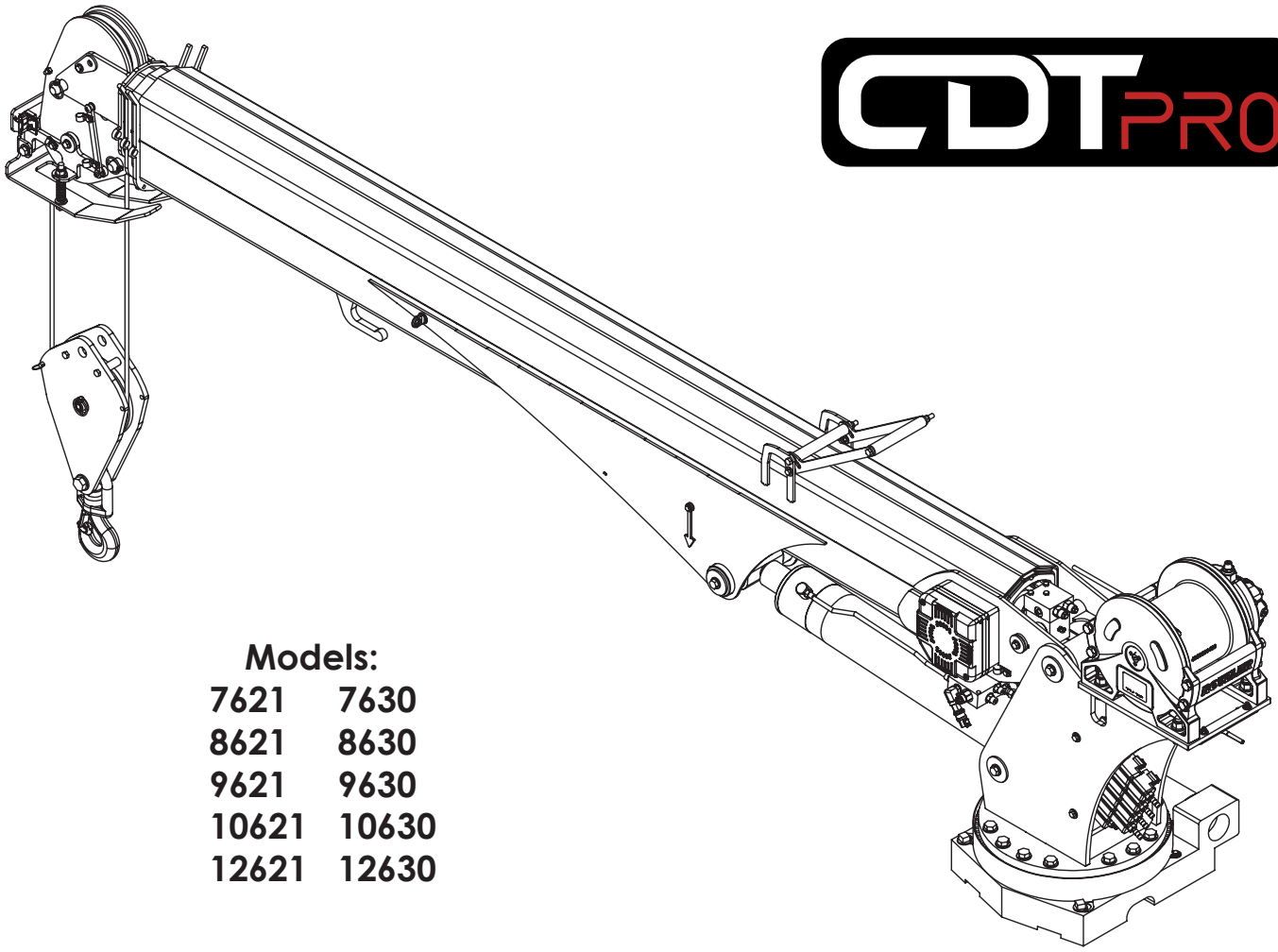
# Heavy-Duty
## Telescopic Cranes
## Owner's Manual

**Safety • Operation • Maintenance • Troubleshooting**



**Models:**

| | |
|---|---|
| 7621 | 7630 |
| 8621 | 8630 |
| 9621 | 9630 |
| 10621 | 10630 |
| 12621 | 12630 |

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

**Stellar Industries, Inc.**
**190 State Street**
**PO Box 169**
**Garner, IA 50438**
**800-321-3741**
**Fax: 641-923-2811**
**www.stellarindustries.com**



Rev 1
PN 115278

# Heavy-Duty Manual Revisions

| Date of Revision | Section Revised | Description of Revision |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**⚠ 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.

**For Technical Questions, Information, Parts, or Warranty, Call Toll-Free at**

**800-321-3741**

Hours: Monday - Friday, 8:00 a.m. - 5:00 p.m. CST

Or email at the following addresses:

| | |
|---|---|
| **Technical Questions, and Information** | service@stellarindustries.com |
| **Order Parts** | parts@stellarindustries.com |
| **Warranty Information** | warranty@stellarindustries.com |

# 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 few notes on this manual:**
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.

**In closing:**
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 - 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® manufactured EC Series Telescopic 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.

## General Operation

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.

***NOTICE*** 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 it 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.

## 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.
- Crane hook and other loose parts for damage to structures or weld.
- Anti-two block switch for proper function.
- Wire rope for broken wires, extensive wear, distortion, and heat damage.

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.
- **⚠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 and that the PTO switch is in the 'off' position.
2. Start the vehicle engine.
3. Depress the clutch on manual transmission vehicles.
4. Engage the PTO. Consult the PTO manual for specific instructions if needed.
5. Slowly release the clutch on a manual transmission vehicle.

Note: Allow the hydraulic system oil to warm before operating any of the hydraulic equipment, especially during cold weather.

## Step 3: Position the stabilizers.

Extend the stabilizers using the control levers or switches marked 'stabilizer' or 'outrigger'. These may be located in the compartment under the crane or on the rear bumper.

1. Locate the street side stabilizer control handle (labeled "SS"). Push the lever down to lower the stabilizer leg on the street side of the truck. While looking under the rear of the truck, you will see the street side stabilizer leg lowering to the ground. When the stabilizer makes solid contact with the ground, release the control lever.
2. Locate the extension stabilizer lever. Push the extension lever down to fully extend the curb side stabilizer.
3. Locate the curb side stabilizer control handle (labeled "CS"). Push the CS lever down to lower the stabilizer to the ground. Release the lever when the stabilizer has made solid contact with the ground.

**⚠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 4: Operate the crane.

Operators should have a firm understanding of *ANSI B30.5 - Section 5-3.2 Operating Practices and AEM Safety Manual (Form C-70-2)* prior to operating of the crane.

**⚠WARNING** Prevent booms from contacting hard or sharp objects which could damage the boom and lessen structural integrity of the boom.

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

1. Release the RED Stop button by twisting clockwise.
2. To turn on the transmitter, push any toggle. When the screen shows the load percentage, the transmitter is live and ready for use.
3. Link the remote to the crane receiver by pressing the Boost (BST) button.
4. Activate and hold the desired toggle switch while gently pulling the variable speed trigger until the crane begins to move. The speed of the crane will vary in direct correlation to how much or how little the trigger is engaged.
5. Once operation is complete, release the toggle and the trigger.


The radio remote allows for simultaneous functions. With practice, it is possible to use more than one toggle at the same time (Extension Out/Winch Down for example). See the Radio Remote Control Functions and Features pages later in this chapter for more information.

**Unstowing the Crane and preparing it for a lift:**

- Winch down slightly.
- Raise the boom high enough to clear the boom rest and any other obstructions from the chassis.
- Rotate the crane until it clears the side of the truck body.
- Lower the crane boom down far enough so that the snatch block is within comfortable reach.
- Winch down to create slack in the wire rope and unhook the snatch block.

**Attaching the load:**

- Position the crane with the hook centered directly over the load avoid side loading.
- Attach the load to the hook by means of slings or other approved devices.
- **⚠WARNING** Never use a sling bar or anything larger than the hook throat that could prevent the hook latch from closing. This would negate the safety feature.
- Maintain a minimum of 3 full wraps of wire rope on the winch drum at all times.
- **⚠WARNING** Do not wrap the wire rope around the load.

**Lifting the load:**
Lift the load slightly off the ground to check the safety of the cargo. Consider the following:

- Make certain that the stabilizers are positioned on flat, stable ground.

- **⚠WARNING** Never exceed manufacturer's load charts and ratings. These ratings are based on the machine's hydraulic, mechanical, and structural design rather than stability.
- Never perform a lift that can induce a dynamic force greater than the capacity of the crane.
- It is the responsibility of the operator to know the weight of both the rigging and 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 within the sling before moving. Consider the following:

- 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 or the winch 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 5: Stow the crane.

Once you have performed your lift and are ready to shut down the work site:

- Retract all extensions.
- Winch up to bring the snatch block within 3 feet of the boom tip.
- Lower the crane boom down far enough so that the snatch block is within comfortable reach.
- Hook the snatch block to the stow hook on the main boom. Maintain control to avoid personal injury or damage to any equipment.
- **⚠WARNING** Never use the stow hook for anything other than stowing the snatch block.
- Tighten the winch line so that the snatch block comes within a few inches of the main boom. Avoid activating the anti-two block switch when tightening slack.
- Raise the boom slightly above the boom rest.
- Rotate the boom until it aligns with the center of the boom rest.
- Lower the boom gently into the boom rest.
- Press the RED Stop button to deactivate the crane control.
- Store the radio remote control in the docking station.

Note: Use alignment arrows located on the crane base to properly align the boom with the boom rest.

## Step 6: Stow the stabilizers. (Only after stowing the crane.)

**Stow vertical leg(s).**

**Hydraulic applications** - Return to the stabilizer controls and pull up on the CS and SS levers and fully retract the stabilizers. Note: Both levers can be used at the same time.

**Manual applications** - Ensure the leg is returned to the stowed position by using crank/pin retainers.

**Stow horizontal extension(s).**

**Hydraulic applications** - Pull up on the extension lever to fully retract and store the CS/SS as applicable.

**Manual applications** - Ensure the extension is returned to the stowed position by using spring pin latch. Verify the latch is fully engaged and locked in position.

## Step 7: Disengage the hydraulic power source.

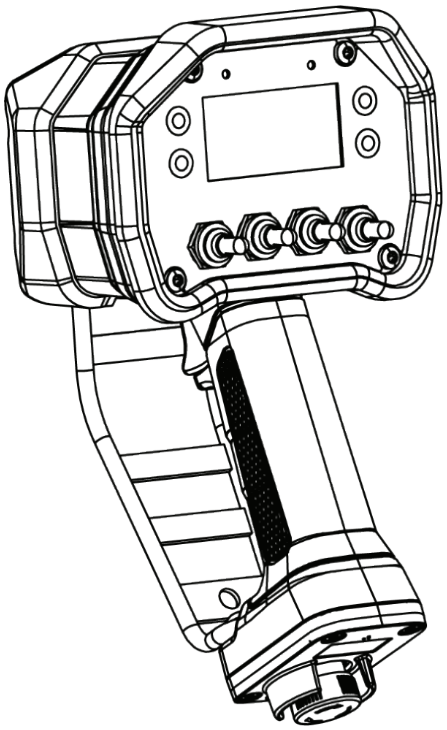
- Disengage the hydraulic power source. If using a PTO, consult the PTO manual for specific instructions if needed.
- Turn off all switches on the control panel.
- Return the radio remote to the docking/charge station.

## Step 8: Release the parking brake.

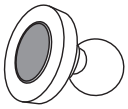
- The parking brake must be released before moving the truck.
- **⚠WARNING** Make certain that any air tanks are completely drained before moving the truck.

# Radio System Components

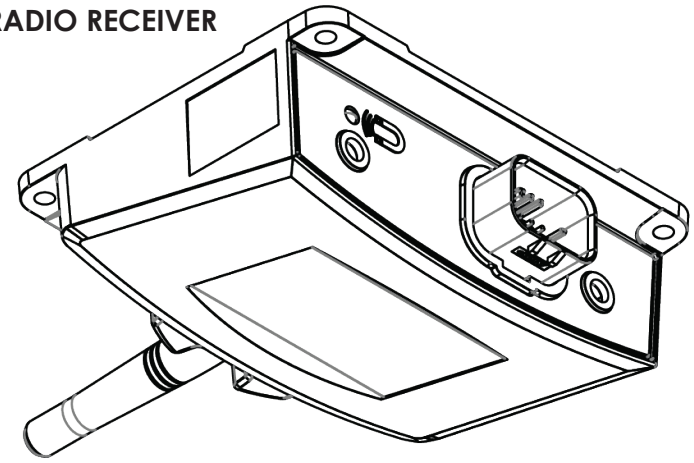
**RADIO TRANSMITTER**



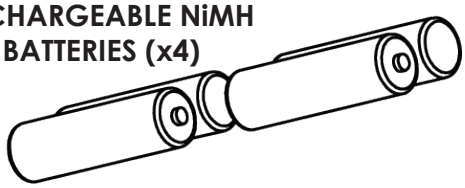
**PAIRING MAGNET**



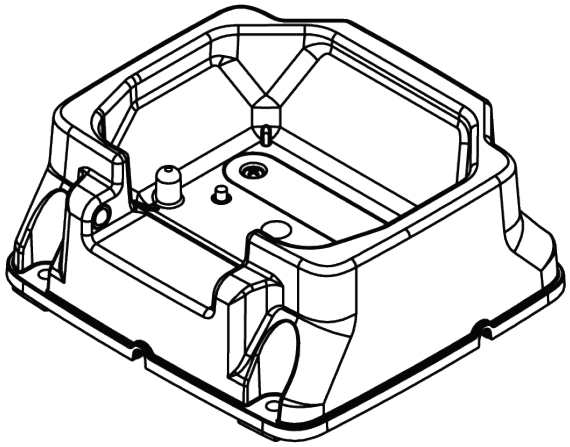
**RADIO RECEIVER**



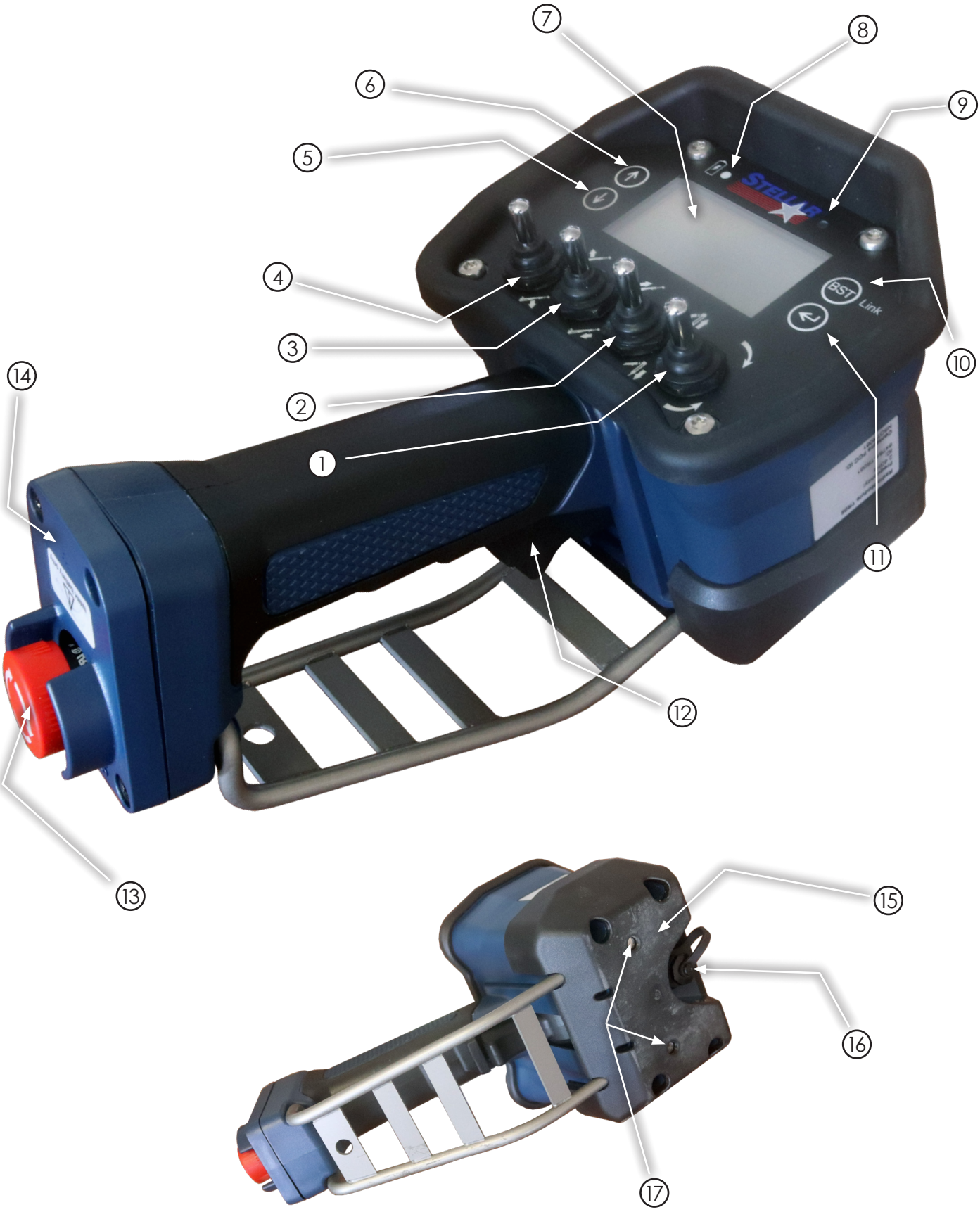
**RECHARGEABLE NiMH AA BATTERIES (x4)**



**DOCKING/CHARGING STATION**



# Radio Remote Control Functions



# Radio Remote Control Functions

1. **Rotate Clockwise/Counterclockwise**
   Push up to rotate the boom clockwise. Push down to rotate the boom counterclockwise. The screen will continue to display Load % while pressed. Must be operated in conjunction with Variable Speed Trigger to perform function.

2. **Winch Up/Down Toggle**
   Push up to raise the winch. Push down to lower the winch. Depending on system preferences, screen will display Weight of load in lbs or kg while pressed. Must be operated in conjunction with Variable Speed Trigger to perform function.

3. **Extension In/Out Toggle**
   Push up to extend the extension. Push down to retract the extension. Depending on system preferences, screen will display Radius in ft & in or m & cm while pressed. Must be operated in conjunction with Variable Speed Trigger to perform function.

4. **Boom Up/Down Toggle**
   Push up to raise the boom. Push down to lower the boom. Screen will display Boom Angle while pressed. Must be operated in conjunction with Variable Speed Trigger to perform function.

5. **Shift Function Down Button**
   Press to scroll through screens that change the function of each of the four toggle switches. New toggle function will be shown in line with the toggles with toggle up and toggle down functions as necessary. This button is also used to acknowledge any error messages that occur while in Crane Operating Mode. (See page 14 for ore information about Shift Function Screens.)

6. **Shift Function Up Button**
   Press to return to previous shift function screen while scrolling through shift function screens. NOTE: While in Crane Operating Mode, this button can be programed with a quick function operation. (See page 14 for more information.)

7. **LED Information Display**
   Back lit LED screen displays various information about crane functions and operational feedback.

8. **Battery Charging Indicator**
   Indicator will illuminate when battery is being charged in docking station or with tethered extension cable.

9. **Ambient Light Sensor**
   If activated in the preferences screen, the light sensor will turn the screen back light on or off as needed. (See page 17 for more information on back light preferences.)

10. **Boost/Re-Link Button**
    Push and hold for 2 seconds to engage boost mode (See page 18 for details on 'Boost Mode'). Also, if the transmitter and receiver become disconnected from one another, quick-press this button to re-link the two devices.

11. **Crane Info Scroll Button**
    Press to scroll through the different readouts while in Crane Operating Mode and crane is not moving.

12. **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.

13. **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. To resume operation, twist the Stop Button clockwise to release it and activate any function to awaken the transmitter. The controller will then need to be re-linked to the receiver to continue operation.

14. **Battery Access Cover**
    The four AA NiMH batteries are stored in the handle and can be accessed by removing the four screws at the bottom of the handle. (See page 25 for more information.)

15. **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.

16. **Extension Cable Data Port and Cap**
    There is an M12 data port on the back of the radio remote in the event you need to install a tethered extension cable to control the crane. (See page 25 for more information.)

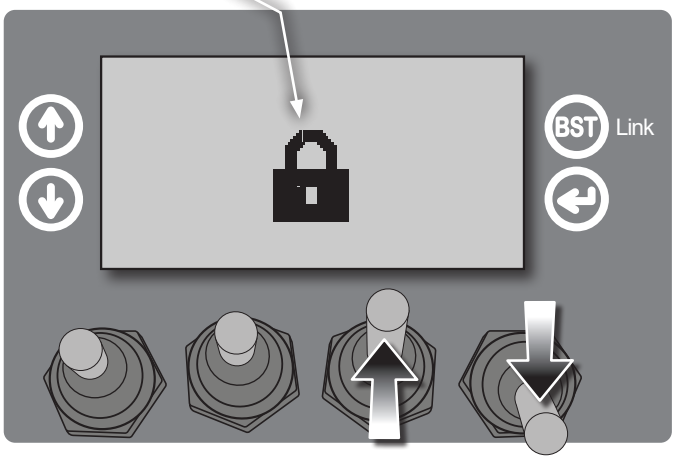
17. **Charging Contact Points**
    The two charging contact points for the radio remote are located on the back. Keep them clean from and ensure they are not covered by tape or other adhesives.

# Stop Mode

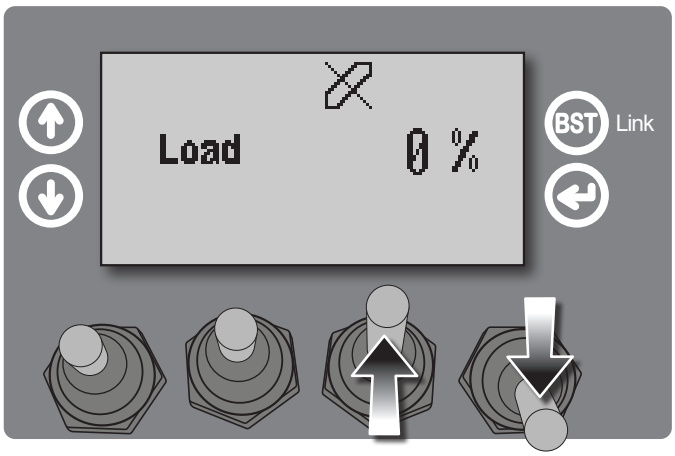
The radio remote control is equipped with an "all functions" stop button. If a situation arises that requires the immediate stoppage of crane functionality (or just to simply turn the remote off after finishing a job), push in the RED Stop Button at the bottom of the handle. To resume operation, twist the Stop Button clockwise to release it and activate any function to awaken the transmitter. The controller will then need to be re-linked to the receiver to continue operation. If you try to wake up the controller with a toggle switch while in Stop Mode, the screen will light up and inform you the Stop Button is pressed in.


# Lock Mode

LOCKED - WINCH UP + CRANE CCW

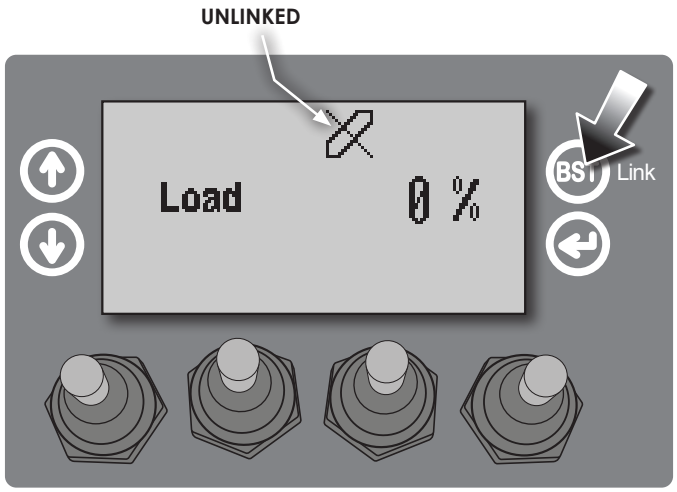


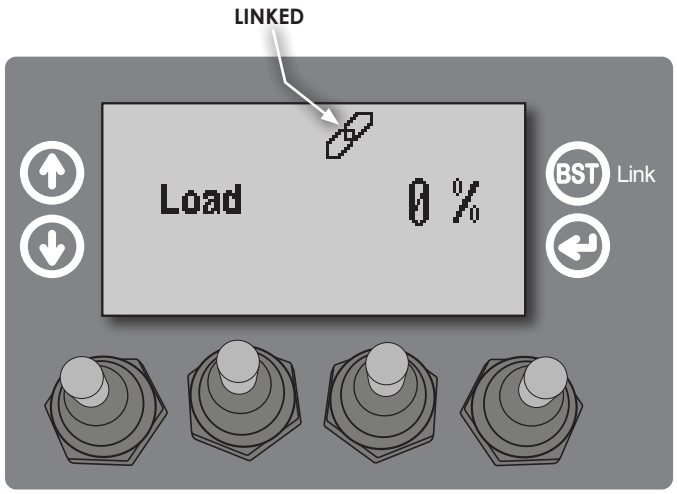

UNLOCKED - WINCH UP + CRANE CCW

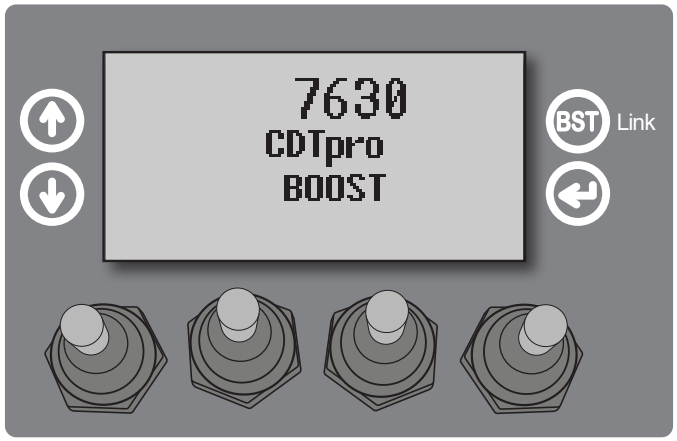



The CDTpro™ remote can be locked to prevent unauthorized use. This function is activated if **Winch Up** and **Crane CCW Rotation** are pressed for 3 seconds immediately after startup. No other toggle switches can be active during this time period. Once the unit is locked, a padlock symbol will be shown 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 shutdown the remote and restart and immediately repeat the same combination of **Winch Up** and **Crane CCW Rotation**.

# Unlinked Mode



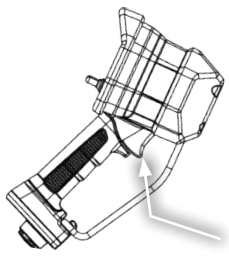




Immediately after waking up by twisting the Stop Button, the controller will go into Unlinked Mode. You cannot control the crane, but the controller can receive information from the transmitter about the crane, such as position and load weight, etc. To link the controller to the transmitter so you can control the crane PRESS the Boost Button (BST) (Link). The icon will change from unlinked to linked.

While in Unlinked Mode there are special features you can only access at this point. While unlinked, double click the variable speed trigger and the screen will show crane model and controller program information. NOTE: This screen can also be accessed later through the Shift Function Screen. (See page 17 for more information.)

Also while unlinked you can view various information screens and perform some system functions. Enter Range Finder Mode by pressing the Crane Info Scroll Button for three seconds and use your remote to predetermine the validity of a lift at your given setup. (See page 20 for more information.) Remotely activating the compressor and other option switches are also available in Unlinked Mode.



**WHILE UNLINKED, DOUBLE CLICK THE VARIABLE SPEED TRIGGER AND THE SCREEN WILL SHOW CRANE MODEL AND CONTROLLER PROGRAM INFORMATION.**

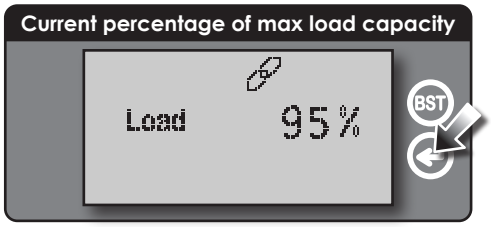
# Sleep Mode

The radio remote control enters sleep mode after 3 minutes of inactivity. Activate any toggle switch to wake up the controller.

# Crane Operating Mode - Static

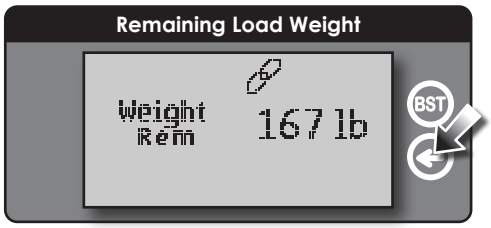
With the crane stationary during Crane Operating mode, the LED feedback screen can return a number of key statistical readouts. To cycle through the different readout screens, use the Crane Info Scroll Button ↵:


**Current percentage of max load capacity**

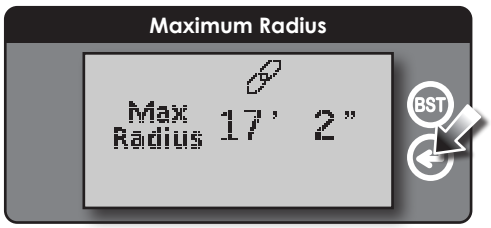



**Current Load Weight**

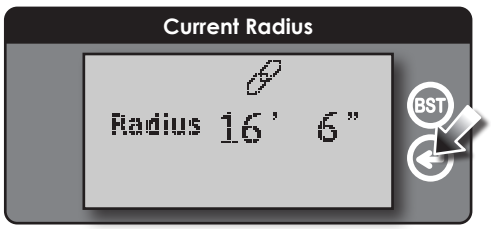

**Remaining Load Weight**



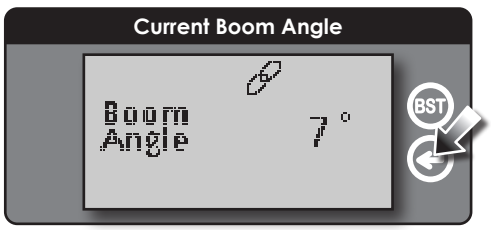

**Maximum Radius**



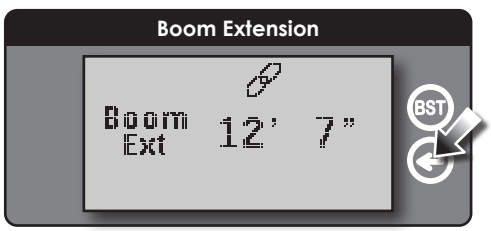

**Current Radius**




**Current Boom Angle**



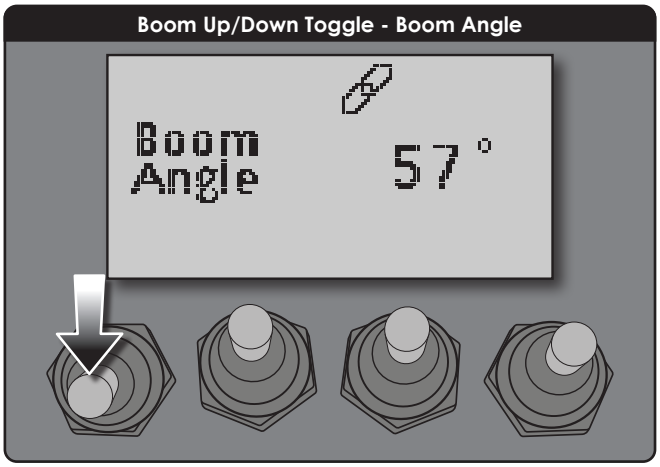

**Boom Extension**



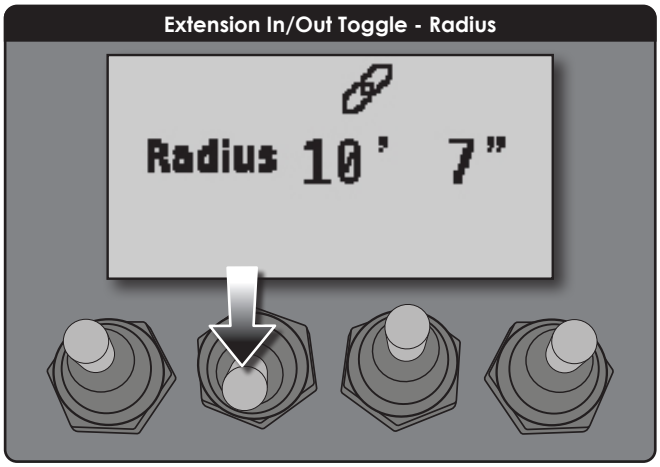
# Crane Operating Mode - Dynamic

While operating crane functions with the toggle switches, the LED screen will switch to a live and continuously-updating feedback screen relative to the function being used.

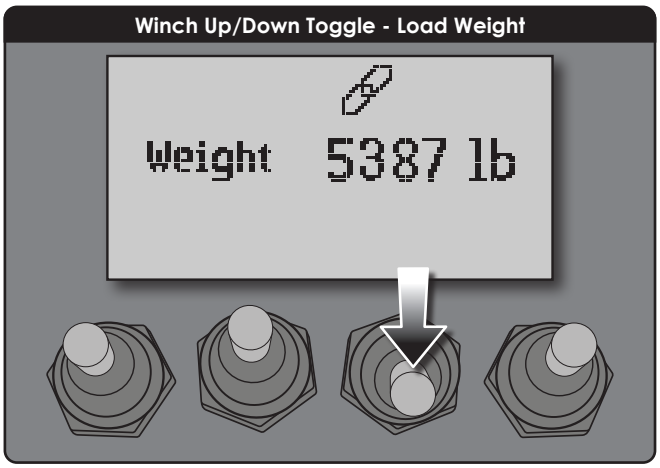

**Boom Up/Down Toggle - Boom Angle**



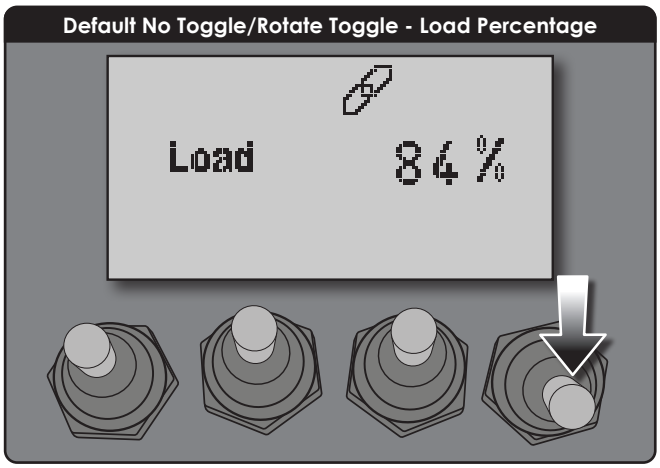

**Extension In/Out Toggle - Radius**




**Winch Up/Down Toggle - Load Weight**



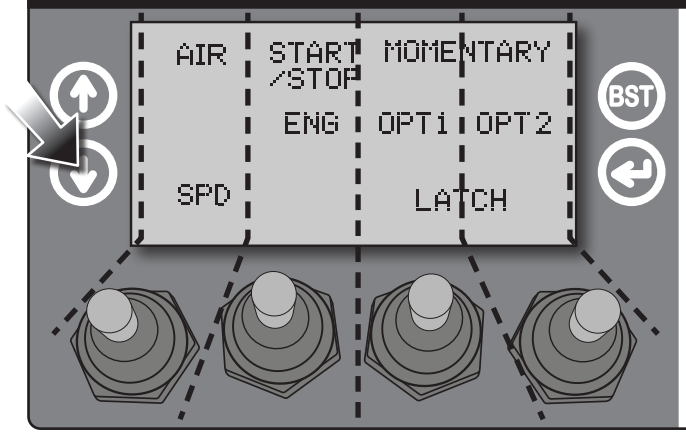

**Default No Toggle/Rotate Toggle - Load Percentage**



# Shift Function Mode

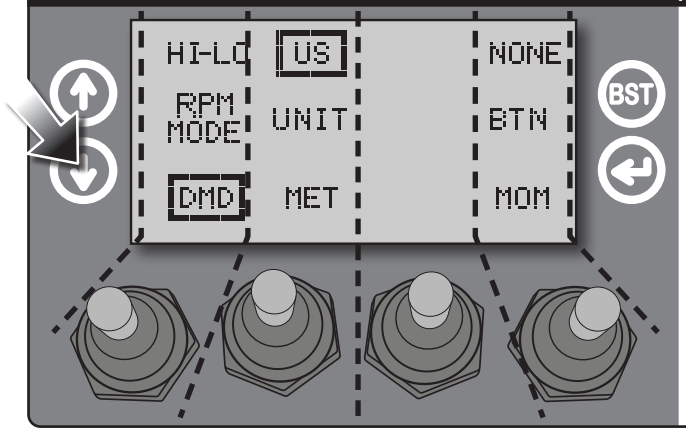
Pressing the Shift Function Screen Down Button ⓓ allows you to access additional screens with more functions tied to the four main toggle switches. The new functions of the switches will be displayed on the screen. Continue pressing the Down Button to access the next Shift Function Screen or press the Shift Function Screen Up Button ⓤ to go to the previous Shift Function Screen. To exit Shift Function Mode, press the Crane Info Scroll Button ⓔ which will act as an "escape" button in this case. Shift Function Mode will return to Crane Operating Mode after 10 seconds of inactivity.

**Shift Function Screen 1 - Optional Function Controls**



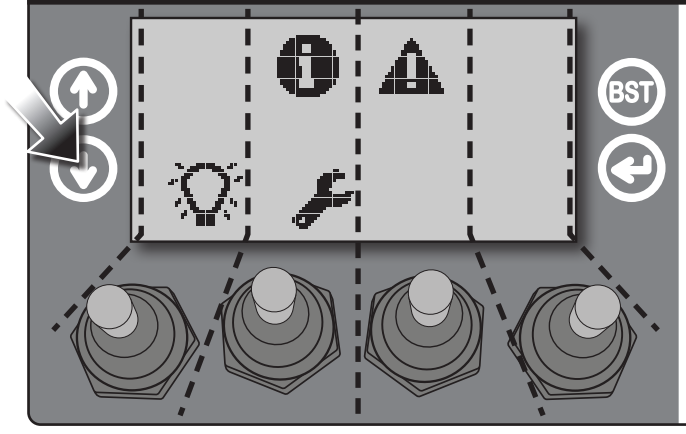

The first Shift Function Screen lets you activate several secondary functions remotely to increase productivity. Activate or deactivate optional function(s) within 10 seconds or the screen will timeout and return to Crane Operating Mode. (See page 15 for more information.)

**Shift Function Screen 2 - Operation and System Preferences**




The second Shift Function Screen is where you set preferences for the system and how certain functions operate. Make preference selections within 10 seconds or the screen will timeout and return to Crane Operating Mode. (See page 16 for more information.)

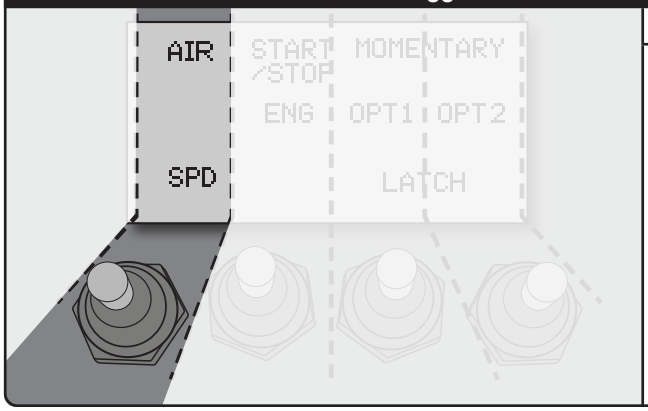
**Shift Function Screen 3 - Information and Diagnostics**




The third Shift Function Screen gives you access to diagnostic and information screens that can assist in crane trouble shooting and maintenance. Make a selection within 10 seconds or the screen will timeout and return to Crane Operating Mode. (See page 17 for more information.)

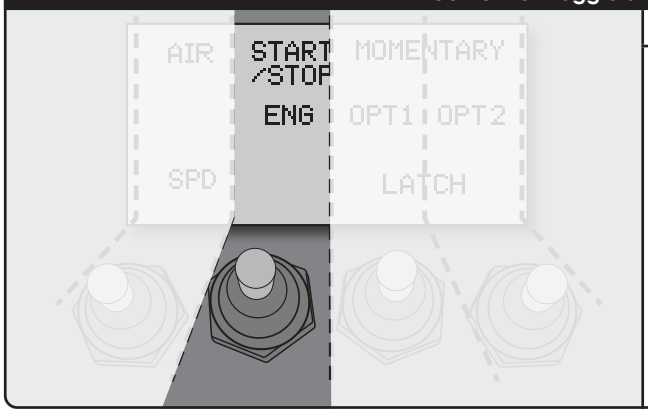
# Optional Function Controls

## Far-Left Toggle Switch - Air Compressor Start/Stop & Speed Control On/Off



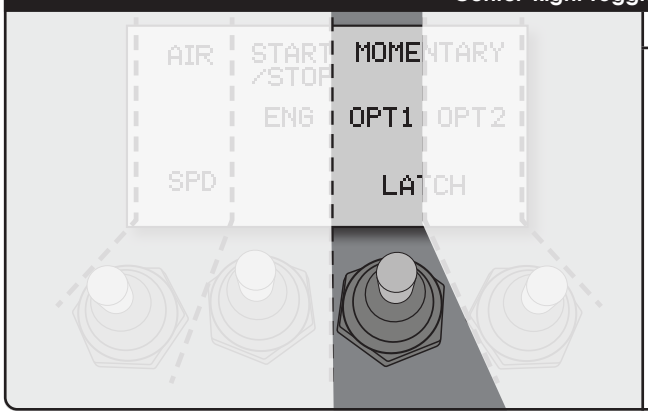

| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to activate the air compressor. AIR will appear in the lower left corner of the feedback screen while in Crane Operating Mode. Press up again to deactivate. | Press down to activate Speed Control. SPD will appear in the lower left corner of the feedback screen while in Crane Operating Mode. Press down again to deactivate. |

## Center-Left Toggle Switch - Engine Remote Start/Stop



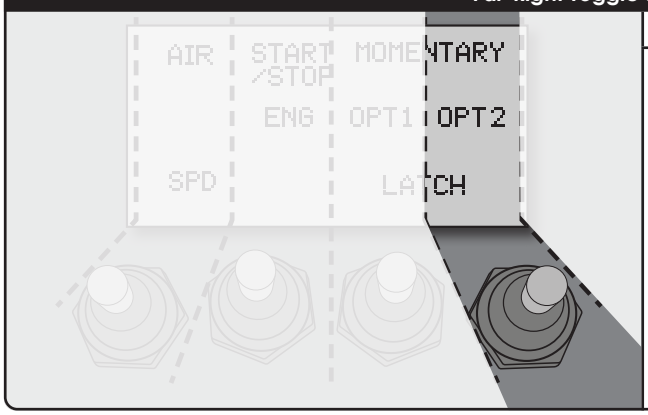

| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to remotely turn on truck engine. Press up again to stop the engine. | In this current program configuration this toggle action does not have a connected function. |

## Center-Right Toggle Switch - Option 1 Operation




| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to momentarily activate Option 1. It will stop when you release the toggle. | Press down to activate Option 1 in a continuous ON state. Press down again to turn it off. |

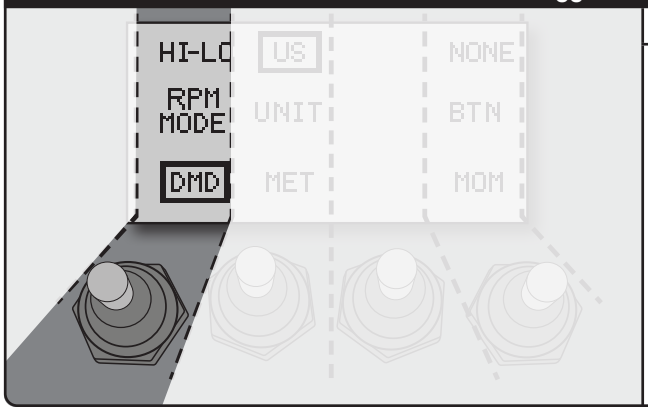
## Far-Right Toggle Switch - Option 2 Operation




| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to momentarily activate Option 2. It will stop when you release the toggle. | Press down to activate Option 2 in a continuous ON state. Press down again to turn it off. |

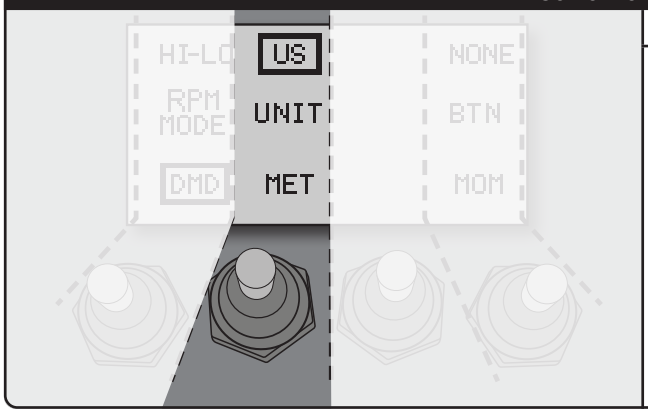
# Operation and System Preferences

## Far-Left Toggle Switch - RPM Mode Configuration



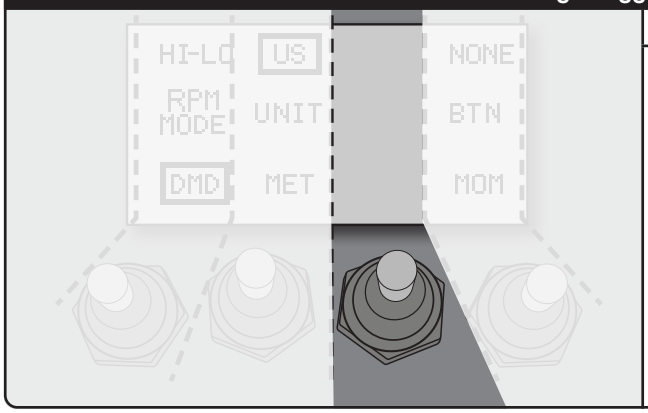

| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to select the HI-LO option of RPM Mode. (See page 19 for more information.) | Press down to select the DMD (Power on Demand) option of RPM Mode. (See page 19 for more information.) |

## Center-Left Toggle Switch - Units



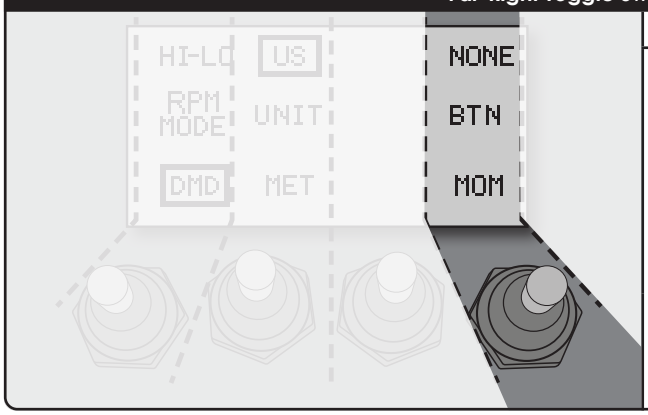

| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to select standard U.S. measurements for unit designators. | Press down to select Metric measurements for unit designators. |

## Center-Right Toggle Switch - No Current Action




| TOGGLE UP | TOGGLE DOWN |
|---|---|
| In this current program configuration this toggle action does not have a connected function. | In this current program configuration this toggle action does not have a connected function. |

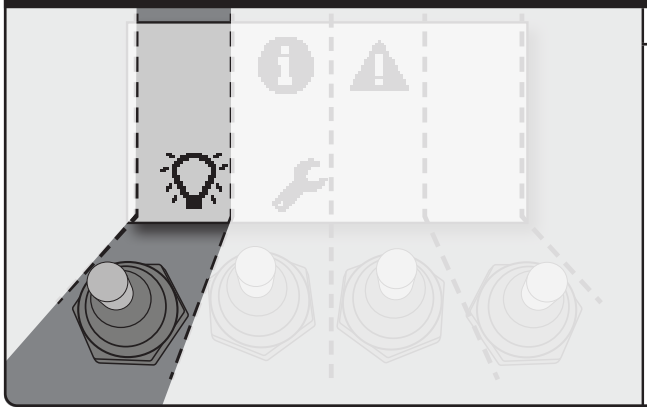
## Far-Right Toggle Switch - Shortcut Program Button




| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to program the ⓘ button as a shortcut quick select button in Crane Operating Mode. Press up to cycle through these options:<br>• OPT 1 • SPD<br>• OPT 2 • ENG<br>• AIR • NONE | After selecting the function for the quick select button, press down to determine if the button will act as a momentary or latched button.<br>• MOM<br>• LAT |

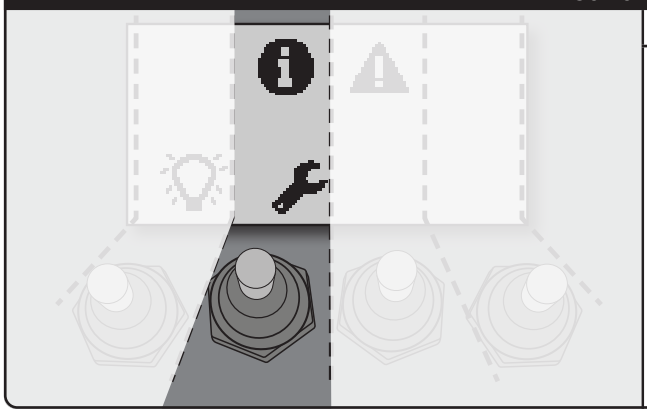
# Information and Diagnostics

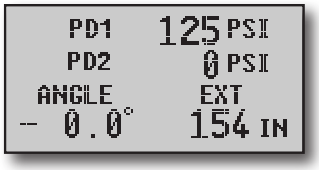
## Far-Left Toggle Switch



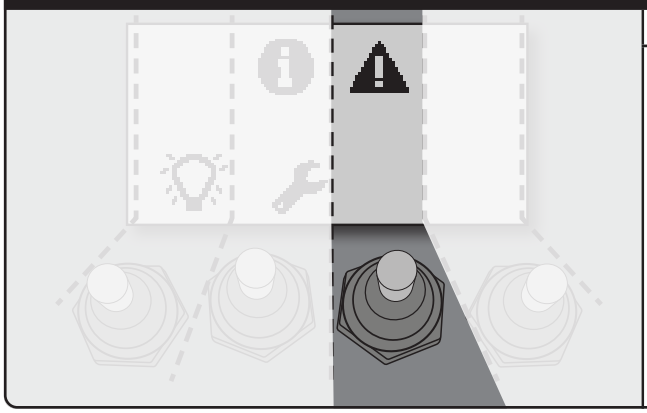
| TOGGLE UP | TOGGLE DOWN |
|---|---|
| In this current program configuration this toggle action does not have a connected function. | Press down to cycle through LED backlight settings: always on, always off, or automatic with light sensor.<br>• **ON**<br>• **OFF**<br>• **AUTO** |

## Center-Left Toggle Switch



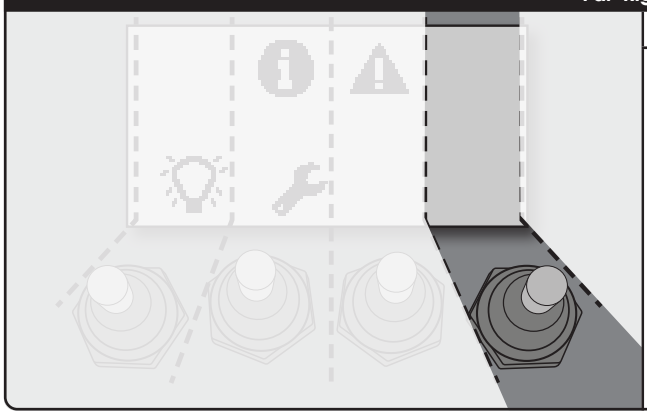
| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to display the crane model and system program information.<br>  | Press down for a diagnostic screen showing raw data from the crane sensors.<br>  |

## Center-Right Toggle Switch



| TOGGLE UP | TOGGLE DOWN |
|---|---|
| Press up to retrieve any system warnings. If none are stored, the screen below appears:<br>  | In this current program configuration this toggle action does not have a connected function. |

## Far-Right Toggle Switch

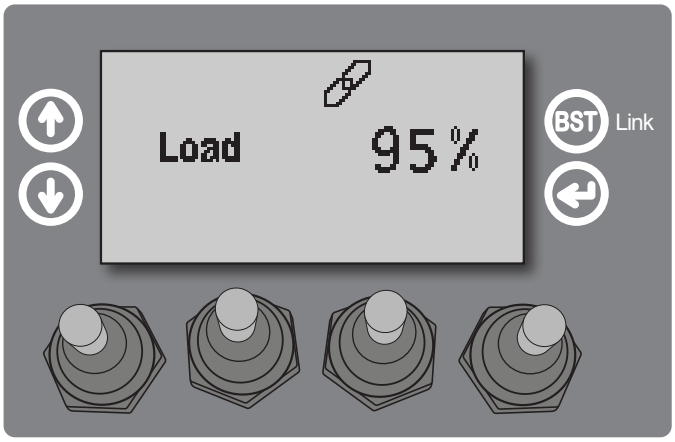


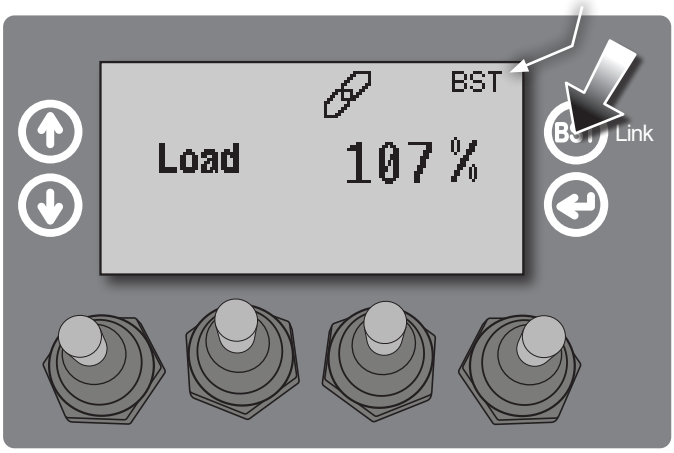
| TOGGLE UP | TOGGLE DOWN |
|---|---|
| In this current program configuration this toggle action does not have a connected function. | In this current program configuration this toggle action does not have a connected function. |

# Capacity Feedback and Boost Mode

**CDTpro Remote Feedback**
If the crane starts to approach full capacity or an overload situation, the Stellar CDTpro sensory feedback system will respond:

| | Vibration | Visual | System Function |
|---|---|---|---|
| **0-79% Load Capacity** | None | Normal | Normal |
| **80-89% Load Capacity** | Short Pulsing | Normal | Normal |
| **90-99% Load Capacity** | Long Pulsing | Normal | Normal |
| **100% Load Capacity** | Long Pulsing | Screen Flashes | Overload Shutdown |




When the crane reaches 100% capacity, an overload shutdown will be initiated. The operator will need to set the load down and reposition the truck or activate the Stellar CDTpro Boost Mode.

**Activating Boost Mode**
Boost Mode allows the crane to operate at 118% of its rated capacity for 30 seconds. This will give the operator adequate time to move the crane out of the overload condition without having to set the load down and reposition the truck.

Follow the steps below to activate boost mode:

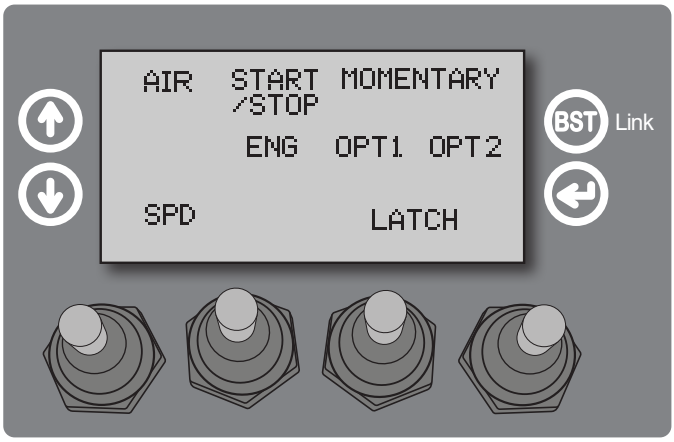
1. Press and hold the Boost Button (BST) for 2 seconds. You will know that boost mode is activated by the Boost indicator () in the upper right of the LCD screen.
2. The crane will go from the 'standard mode' to 'boost mode' for 30 seconds.
3. During this time, the capacity of the crane is increased to 118% of standard capacity.

Boost Mode can be reset multiple times after a 15 second delay.

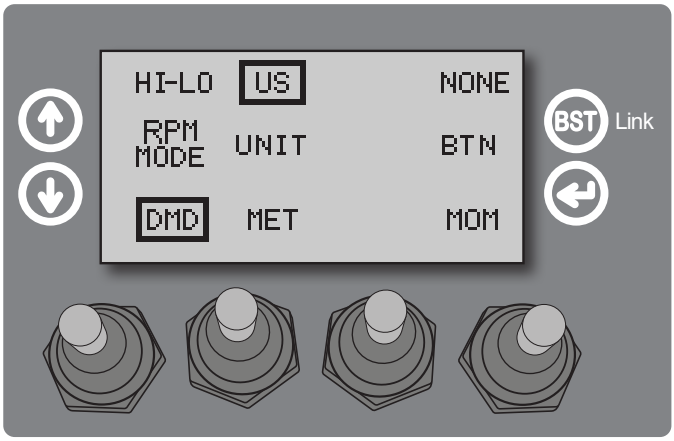
***NOTICE*** If the 118% capacity boost is not enough to temporarily suspend the overload shutdown, the operator will need to set the load down and reposition the truck.

# RPM Mode

**Shift Function Screen 1**
Turn Speed Control On or Off.




**Shift Function Screen 2**
Define how RPM Mode governs Speed Control.

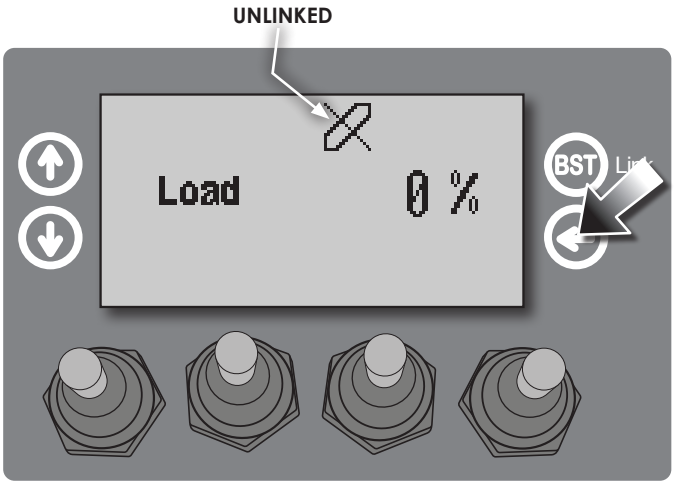


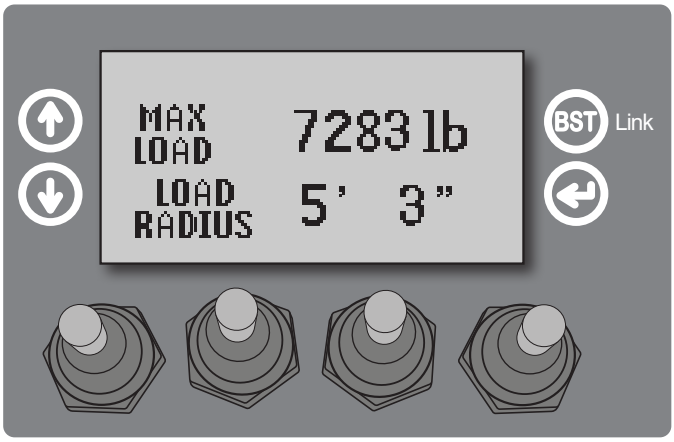

This allows your Speed Control function to act in different ways depending on your preferences. Speed control can either be activated in the Shift Function Screen or programmed as the quick function button. If the selection for RPM Mode (which governs how Speed Control will act) is set to Hi-Lo, engine speed will rise when Speed Control is activated manually and remain high until Speed Control is manually turned off. If RPM Mode is set to DMD (Power on Demand), 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. When the Speed Control option is toggled on, SPD will appear in the lower left corner of the feedback screen when in Crane Operating Mode.

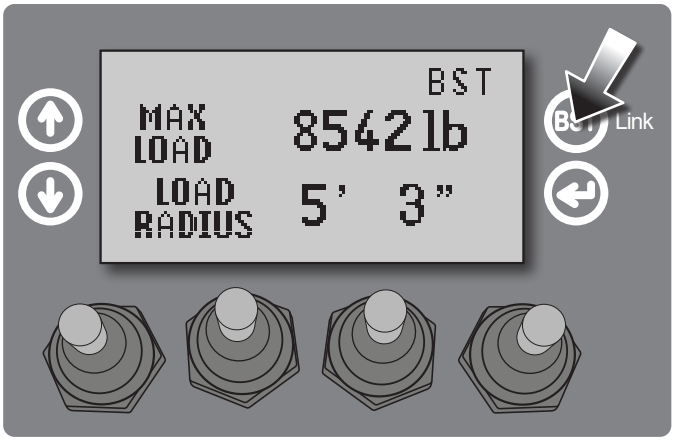
# Range Finder™ Mode

The Range Finder™ feature allows the operator to create a lift plan without ever needing to unstow the crane. This world-first technology estimates distance and calculates crane capacities where the operator is holding the radio remote.

Press the Crane Info Scroll Button ↵ for 3 seconds to enter Range Finder Mode. For the next 60 seconds you can move the remote around to various points around your current lift scenario. The feedback screen will display the distance (radius) the remote is from the crane. It will also show what the maximum load is that can be lifted at that distance. Press the Boost Button BST to determine what Boost capabilities are at that radius. After 60 seconds the screen will timeout to Crane Operating mode. You can press the Crane Info Scroll Button ↵ to escape back to Crane Operating Mode any time during Range Finder Mode.



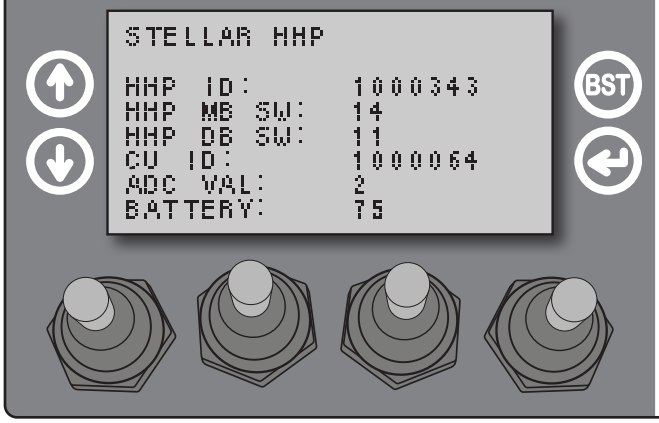



# Test Mode

The CDTpro™ 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, preventing link-up with the receiver. In all test modes below, the vibration feedback feature can be activated by pressing **Boom Out**. Once Test Mode is entered, the system must be restarted to operate normally again.

To enter Test Mode, press **Boom Up** at least 10 times within 10 seconds after startup. The display will be cleared and Test Mode 1 is entered. Once in Test Mode, the different menus can be accessed by holding the Boost Button (BST) while pressing Screen Up ⓘ or Screen Down Button ⓘ.

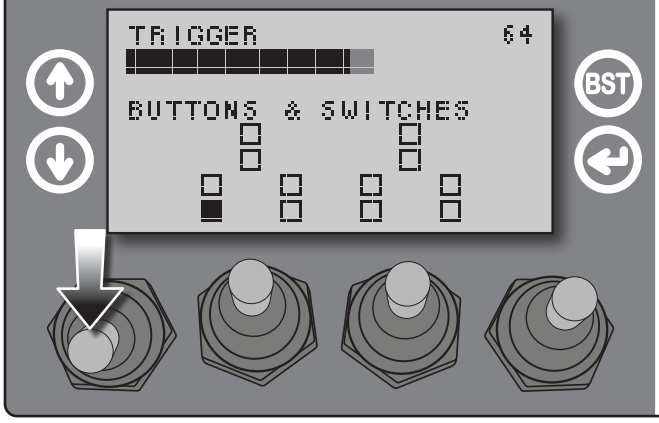
**Test Mode Screen 1 - Information about system**




Test Mode Screen 1 shows:

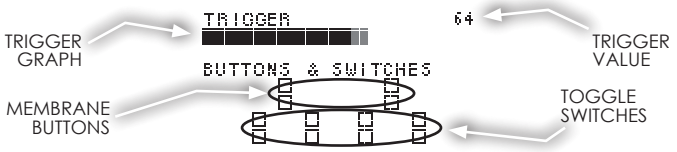
- (ID) Serial number of the CDTpro™ remote
- (MB) Software version of the CDTpro™ remote mother board
- (DB) Software version of the CDTpro™ remote display board
- (ID) Serial number of paired Receiver; (It will display "0" if not paired to a receiver)
- (ADC) Light sensor value
- Battery status

**Test Mode Screen 2 - User Input Mechanical Tests**



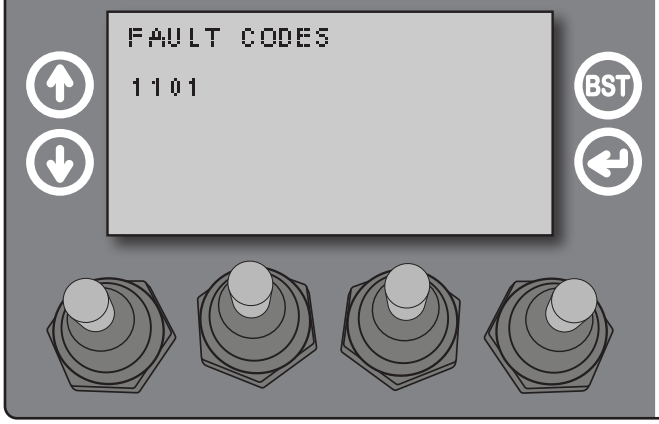

Test Mode Screen 2 tests:

Pressing the variable trigger will display an animated graph and corresponding numerical value.




Button and switches can be tested by pressing or toggling. If the corresponding box does not light, there is a button (switch) or wiring malfunction.

**Test Mode Screen 3 - Active Error Codes**




Test Mode Screen 3:

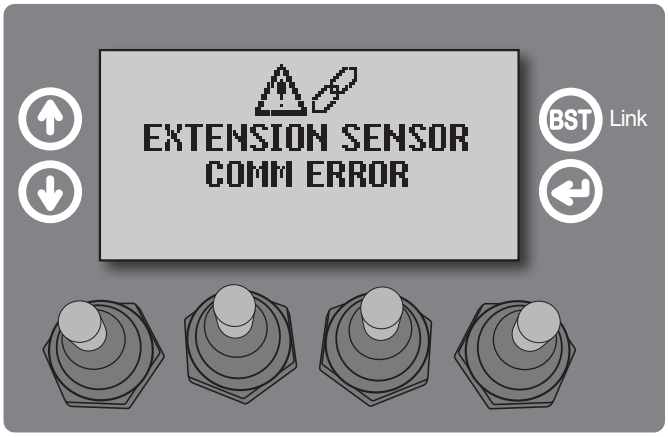
Active error codes appear on this screen, with a maximum number of 10.

You may be asked to retrieve these codes during a call to customer service. While many of these codes are not critical, their severity should be determined by your Stellar Customer Service Representative.

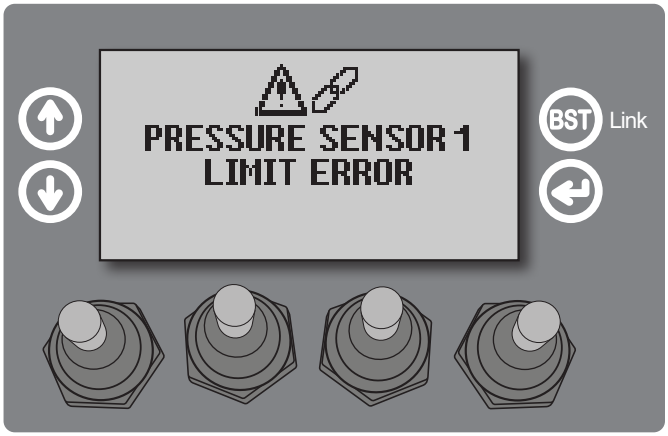
# Safe Mode

Various sensors are mounted on the crane to monitor the crane's lifting capacity. If any encounter a fault, the crane will put itself into Safe Mode. Safe Mode will allow the operator to work with the crane at a reduced speed until the current lift is complete and the crane is properly stowed. The crane should not be used again until the malfunctioning safety device is repaired. The crane will also communicate to the operator if an overload safety device fault is detected.

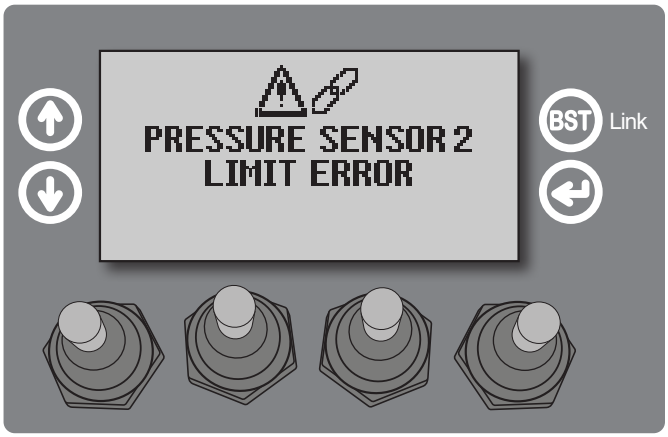
**Extension Sensor Communication Error**
This screen is relaying a loss of power to the pressure sensor on the extension cylinder mounted inside the inner boom, the loss of CAN bus communication, or sensor failure. The display readout will only show fixed value of 26 or 32 degrees. Inspect sensor connection; replace if necessary.




**Pressure Sensor 1 Limit Error**
This screen is relaying an error associated with the pressure on the base end of the cylinder. The pressure transducer with the label PD1 is reading the pressure it takes to raise the boom. An error can occur as a result of being overloaded, a loose connection/disconnected harness terminal, or transducer failure. Make sure you're not overloaded; inspect components; replace if necessary.



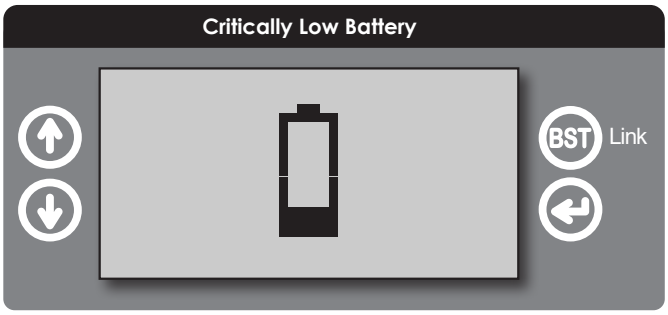

**Pressure Sensor 2 Limit Error**
This screen is relaying an error associated with the pressure on the rod end of the cylinder. The pressure transducer with the label PD2 is reading the pressure it takes to lower the boom. An error can occur as a result of downward pressure while already stowed in crane rest, a loose connection/disconnected harness terminal, or transducer failure. Boom up to relieve pressure and possibly clear error. Inspect components; replace if necessary.



# System Error Notifications

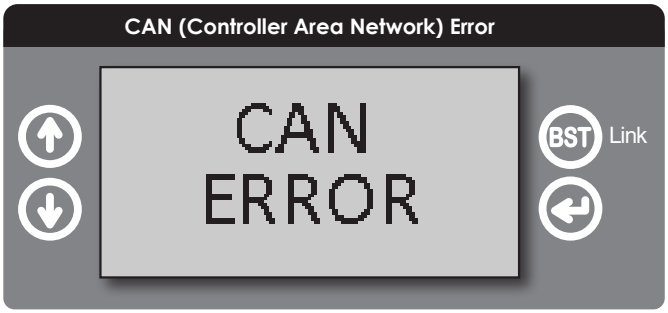
Some of the system notifications below might be displayed after startup. Others can appear during operation if the condition develops.

**Critically Low Battery**
If the state of Transmitter battery is so low it does not have enough charge to power up and operate the transmitter, an empty battery icon is shown on the display. The warning can be cleared by pressing any toggle switch. Turn the Transmitter off and return it to the docking station to charge. If you need to continue working immediately, either replace the batteries or attach the tether cable to continue operation.

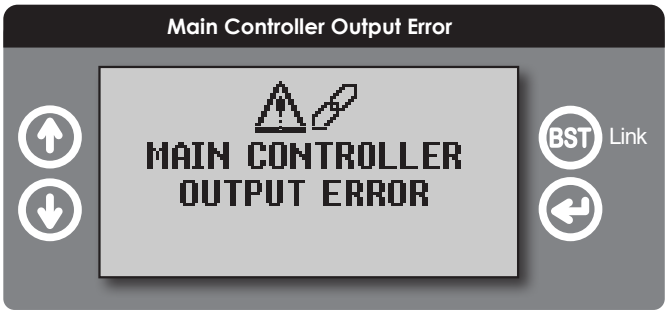



**Lost Communication**
If communication to the Receiver is lost, a "COMMUNICATION ERROR" warning is shown on the display. This warning is cleared when the communication is re-established.

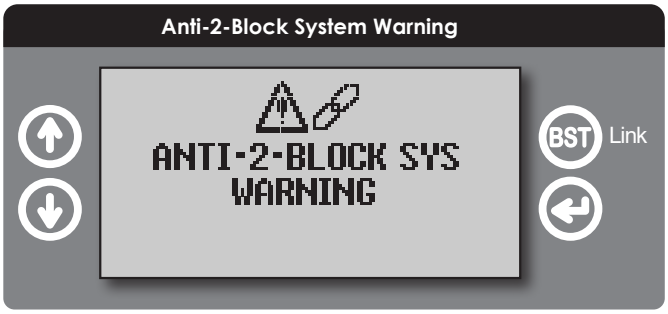

**CAN (Controller Area Network) Error**
If the Transmitter is linked to a Receiver and graphical data on CAN hasn't been received for the last 5 seconds, the text "CAN ERROR" will be shown on the display. The warning is cleared as soon as CAN data is received again.




**Main Controller Output Error**
LED light on black valve control box will be flashing. Some or all functions may be disabled. This is caused by overcurrent/short circuit on one or more of the outputs or unexpected voltage feedback on output circuit. Main controller output error reset by cycling main power (power to crane).



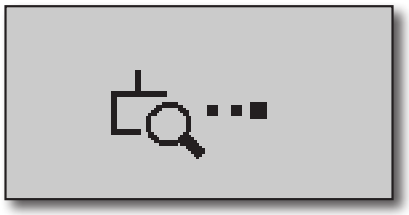

**Anti-2-Block System Warning**
This screen is relaying a warning associated with the limit switch on end of crane. It is a result of the snatch block being winched up tight against the anti-2-block bar. The functions of boom down, winch up and extend out will be disabled. Winch down to relieve the warning.



# Radio Transmitter/Receiver Pair Procedure

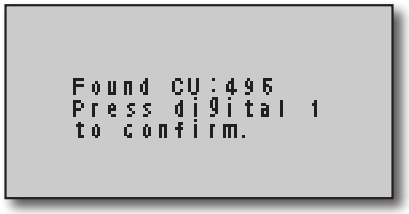
Start with both Transmitter and Receiver turned off.

To activate pairing the Transmitter, release RED Stop button, then press Boom Up and Winch Down and hold for at least 6 seconds. Do not release either during this period. The feedback screen will indicate it is searching for a Receiver to pair with.



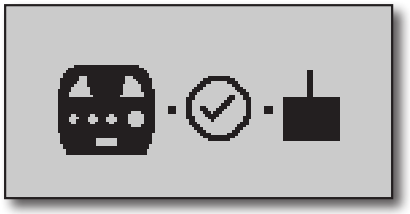
Release both toggle switches and now the Transmitter is in Pairing Mode. Follow these steps to place the Receiver into Pairing Mode.

1. Locate the magnet supplied with your unit.
2. Power up the Receiver then perform Step 3.
3. Within 60 seconds after startup, place the magnet close to the magnetic sensor between the LED indicator and the harness connector. Remove the magnet when LED changes from flashing GREEN to quickly flashing ORANGE.
4. When the magnet is removed LED should change to slowly flashing ORANGE. This means that the Receiver has entered Pairing Mode. The serial number will be shown. The screen will read:

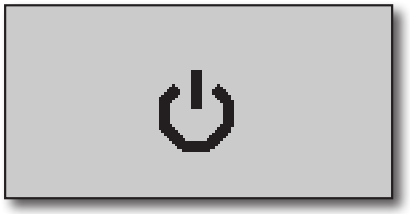


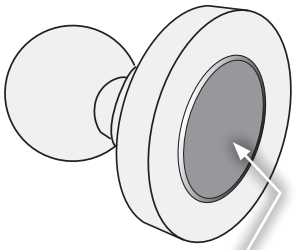

Press up the far-left toggle to confirm you are pairing with the correct Receiver. If another Receiver ID is displayed, it means that the Transmitter has found another Receiver also in Pairing Mode. To correct this situation, turn off all components in the area and restart the procedure for Transmitter and Receiver you want to pair.

The following icon will be shown for 3 seconds, indicating that pairing is completed:

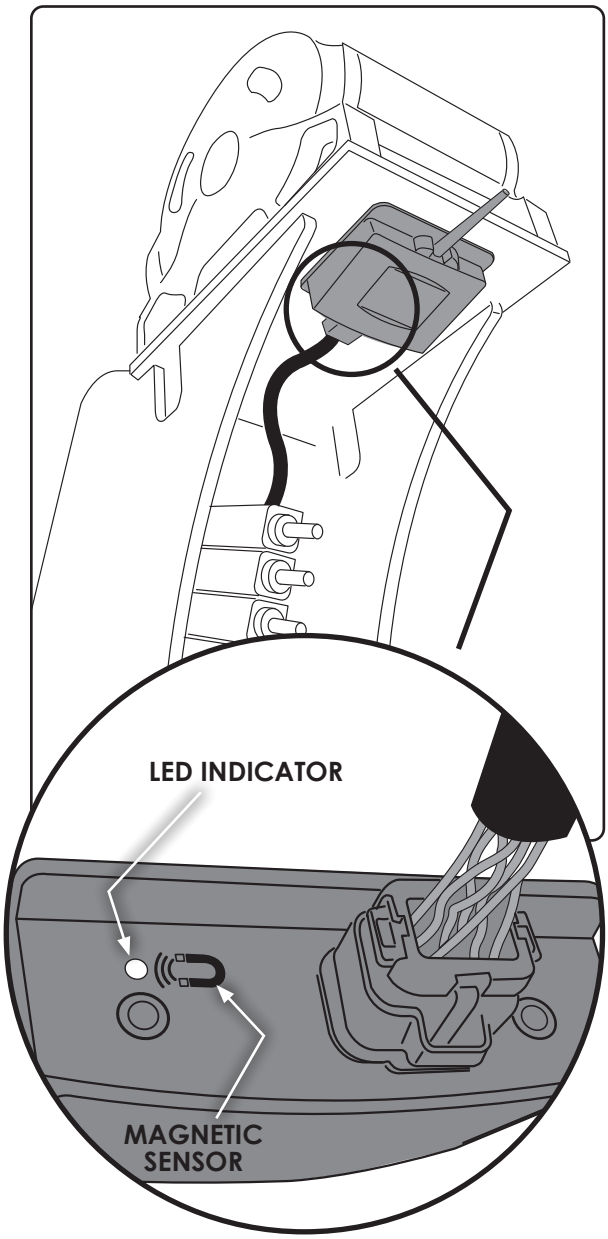


To finalize the pairing sequence, both the receiver and transmitter have to be restarted before the system can work properly. This screen will show on the display until the units are turned off:





**MAGNET**



# Charging and Battery Features

## Charging Station/Docking/Undocking

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.

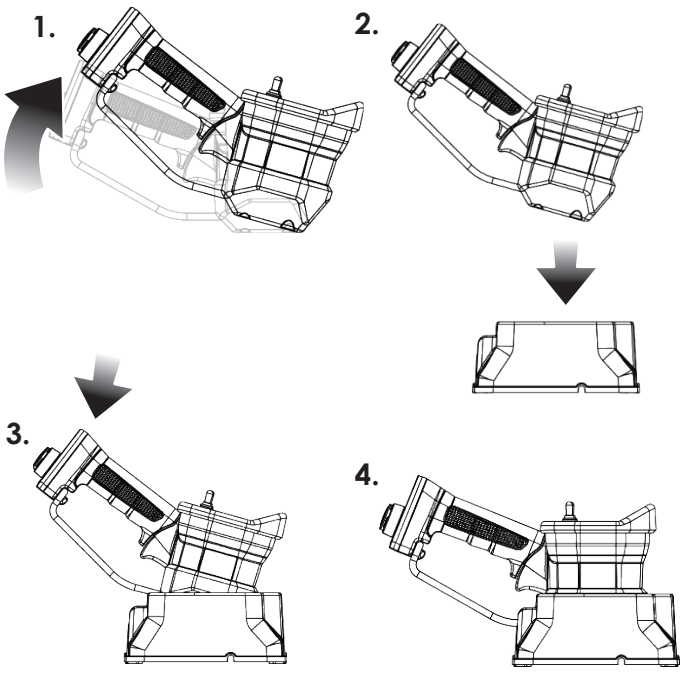
1. Tilt the transmitter slightly forward. There is a locking mechanism preventing the transmitter to be mounted in the docking station if it is on a flat angle.
2. While titled, place the transmitter in the docking station.
3. Push down on the handle slightly to engage the locking mechanism.
4. The transmitter is now mounted in the docking station.

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

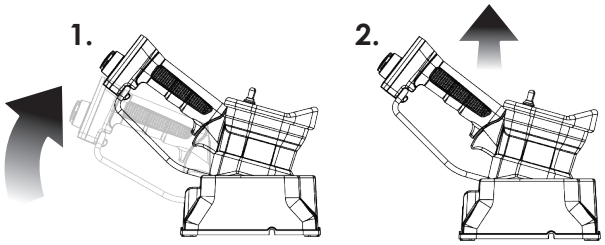
1. Tilt the transmitter upwards.
2. Lift the transmitter straight up to completely remove it from the docking station.

**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.

**Docking Transmitter**




**Undocking Transmitter**



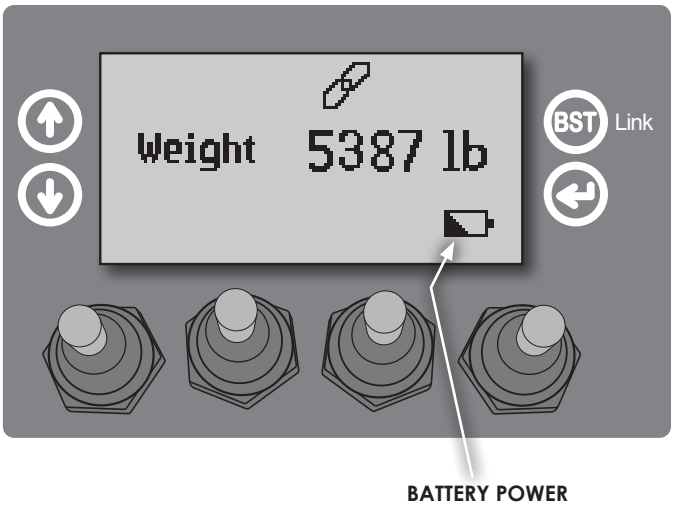

## Charging Feedback

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.

## Low Battery Indicator

A battery level indicator in the lower right corner of the feedback screen will notify you when the battery power is draining and in need of recharging. Recharge your remote or replace the batteries as soon as you can. Actual battery power level can be checked at any time in Screen 2 of Test Mode (see page 21 for more information).

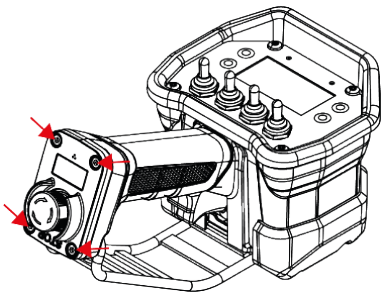


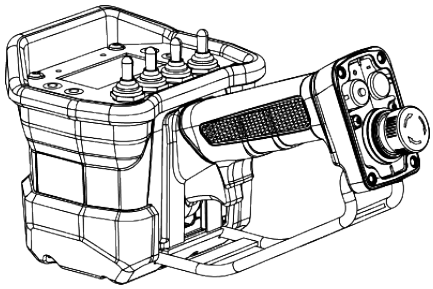

## Radio Remote NiMH Battery Replacement

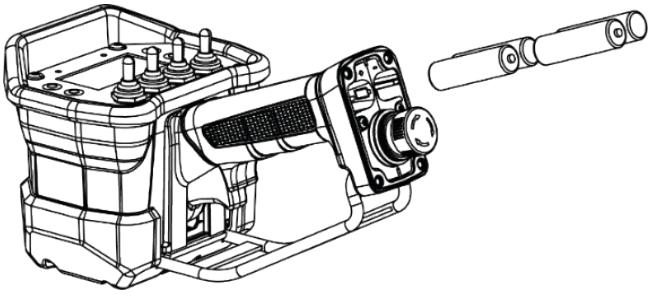
Occasionally the rechargeable battery pack in the handheld transmitter may need to be replaced. Four AA rechargeable NiMH batteries are located in the handle portion of the radio transmitter. Remove the four screws on the bottom plate to access the battery compartment.

Standard alkaline batteries can also temporarily be used to finish a job but should eventually be replaced with new rechargeable NiMH batteries. 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. Remember to only use alkaline batteries temporarily. Be sure to replace with rechargeable AA NiMH batteries as soon as available.
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 to tighten the screws.





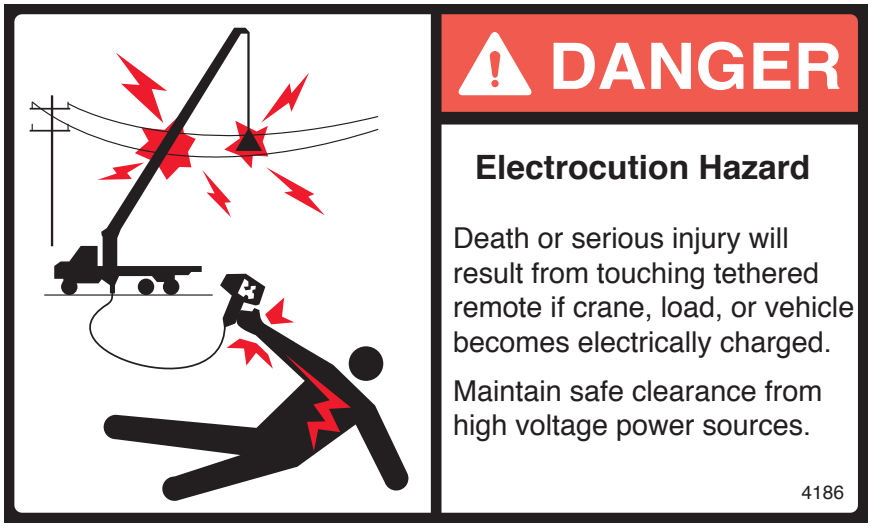


# Tethering Features

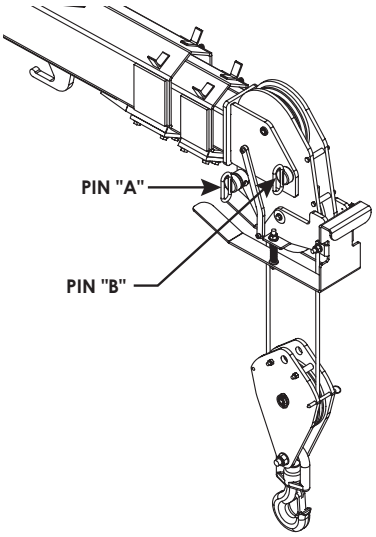
**Radio Remote Tethered Extension Cable**

If the handheld transmitter has a system problem that makes the wireless function unusable, use of a back-up tethered extension cable may be necessary. 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.

1. Locate the extension cable tether. Most likely it is in the crane compartment, or in the cab behind the seat.
2. Remove cap from tether port on back of controller.
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 to the pigtail hanging from the wiring harness inside the crane compartment.

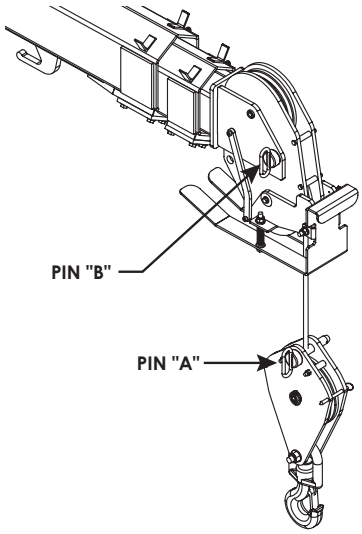


# Wire Rope/Sheave Configurations



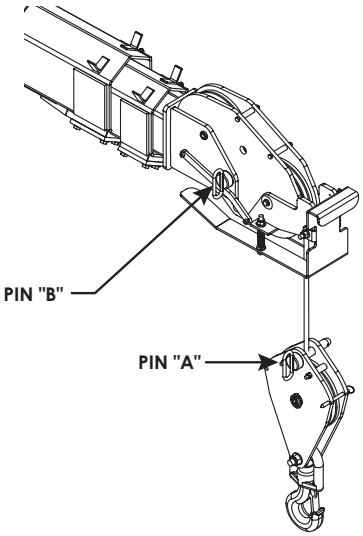

### Standard 2-Part Line
### Sheave Flipped Down

Capacities as shown on load chart.




### Single Part Line
### Sheave Flipped Down

1) Remove PIN "A" from boom tip.
2) Route wire rope through snatch block.
3) Pin wire rope to snatch block as shown with PIN "A"




### Single Part Line
### Sheave Flipped Up

1) Remove PIN "B".
2) Flip sheave.
3) Insert PIN "B" with sheave in upright position.

# Personal Fall Protection with Stellar® Equipment

**OSHA Provisions**
Before proceeding, all users must read, understand, and follow the provisions located in OSHA 29 CFR 1926.1423, specifically paragraphs (g) Anchorage criteria, (j) Anchoring to the load line, and (k) Training. Please note that OSHA sections 1926.502(d)(15) and 1926.502(e)(2) are cross-referenced in this section and need to be read, understood, and followed by each user.

**Other Provisions**
While the above OSHA provisions specifically cover requirements for personal fall protection, all users of Stellar products are required to read, understand, and follow all OSHA, industry, and employer regulations for the use of each product, which includes, but is not limited to, 29 CFR 1926.1423. All users must also follow Stellar warnings and instructions. No part of this document is to be interpreted as excusing non-compliance with all of the above requirements.

**Personal Fall Protection Instructions**
**Requirements:**

- Two-part line with installed snatch block
- Hook with original safety latch
- 5,000 pound (or above) rated crane
- Fall of less than 6-feet
- No swinging fall

Attach personal fall protection equipment to hook* on snatch block. If the safety latch on the hook is not original, or is damaged, missing, or not functioning properly, DO NOT use Stellar equipment.

Stellar requires that the crane be positioned in the correct location and powered down (electrically and hydraulically) before anyone ties to the harness point.

ONLY attach personal fall protection equipment to hook. Never attach to wire-rope or any other part of the crane or snatch block.

Failure to comply to any of the above regulations or to all applicable OSHA, industry, employer, and Stellar warnings and instructions can result in injury or death.

*Crane hook should only be used if there are no other suitable anchor points.

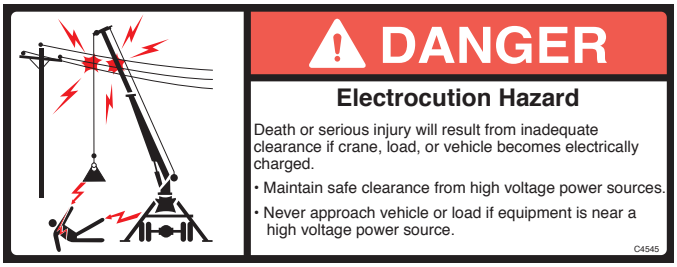
# Safety Decals of Note

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

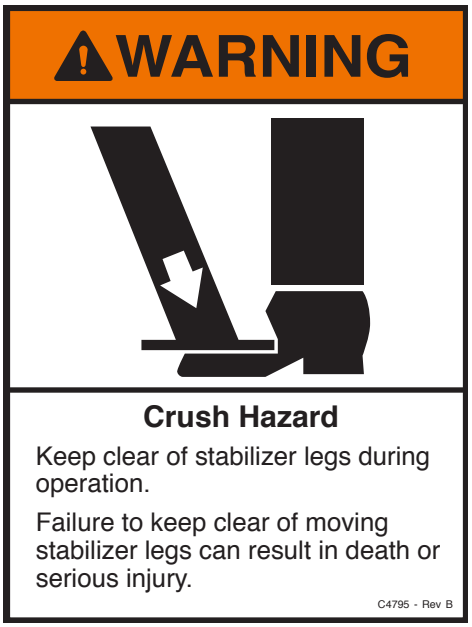
**Decal Location:** Four corners of the body/chassis

**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

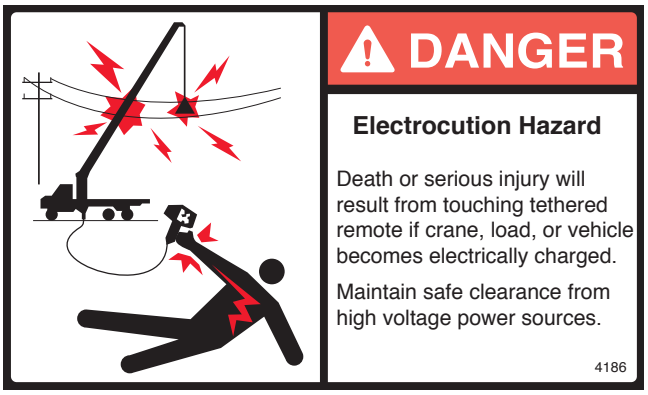
**Decal Location:** Each stabilizer leg

**Hazard Type:** Crush Hazard

**Consequences:** Can result in death or serious injury.

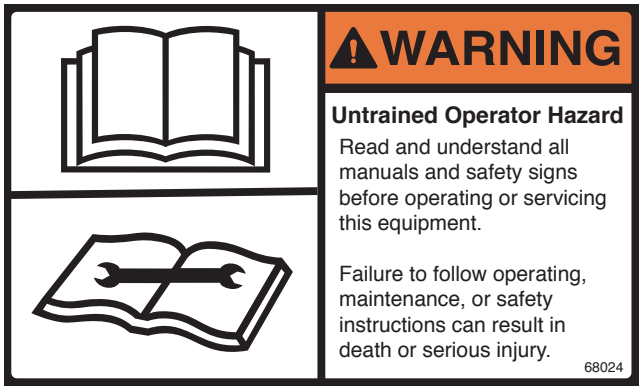
**Avoidance:** Keep clear of stabilizer legs during operation.

# Crane Compartment



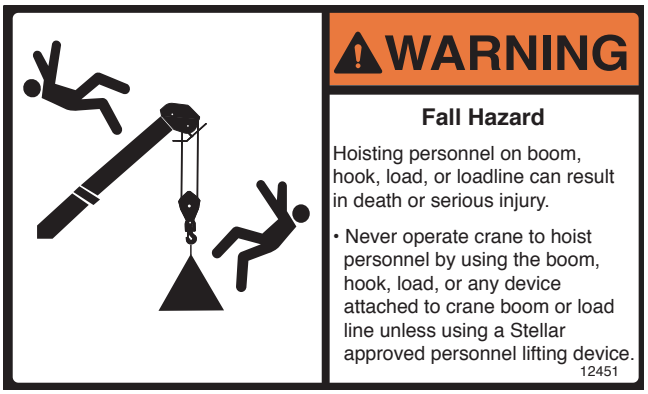

**Decal Part Number:** 4186
**Decal Location:** Crane Compartment
**Hazard Type:** Electrocution Hazard
**Consequences:** Will result in death or serious injury.
**Avoidance:** Maintain safe clearance from high voltage power sources.


**Decal Part Number:** 4189
**Decal Location:** Crane Compartment
**Hazard Type:** Movement Hazard
**Consequences:** Can result in death or serious injury.
**Avoidance:** Do not exceed equipment capacity charts and ratings.




**Decal Part Number:** 68024
**Decal Location:** Crane Compartment
**Hazard Type:** Untrained Operator Hazard
**Consequences:** Can result in death or serious injury.
**Avoidance:** Read and understand all manuals and safety signs before operating or servicing equipment.

# Main Boom



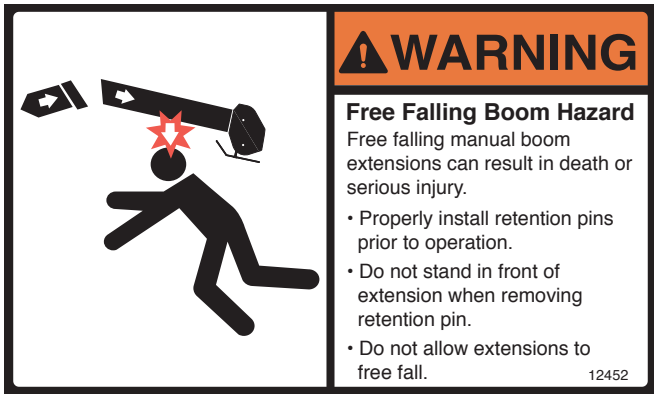

**Decal Part Number:** 12451

**Decal Location:** Main Boom

**Hazard Type:** Fall Hazard

**Consequences:** Can result in death or serious injury.

**Avoidance:** Never use the crane to hoist personnel. Never ride the boom, hook, load, or any device attached to the crane boom or load line.




**Decal Part Number:** 12452

**Decal Location:** Main Boom

**Hazard Type:** Free Falling Boom Hazard

**Consequences:** Can result in death or serious injury.

**Avoidance:** Properly install retention pins prior to operation. Do not stand in front of extension when removing retention pin. Do not allow extensions to free fall.

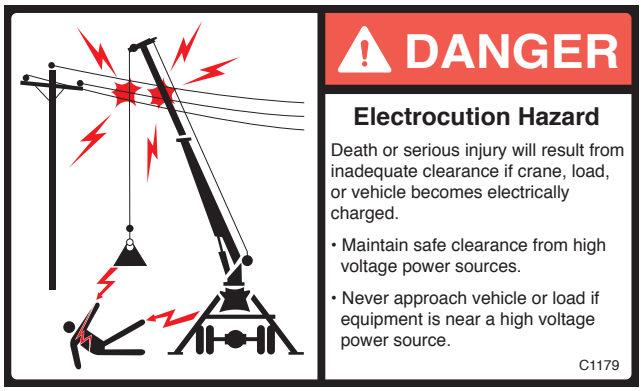

**Decal Part Number:** 24712

**Decal Location:** Main Boom

**Hazard Type:** Misuse Hazard

**Consequences:** Can result in death or serious injury.

**Avoidance:** Do not use stow hook for any lifting applications.




**Decal Part Number:** C1179

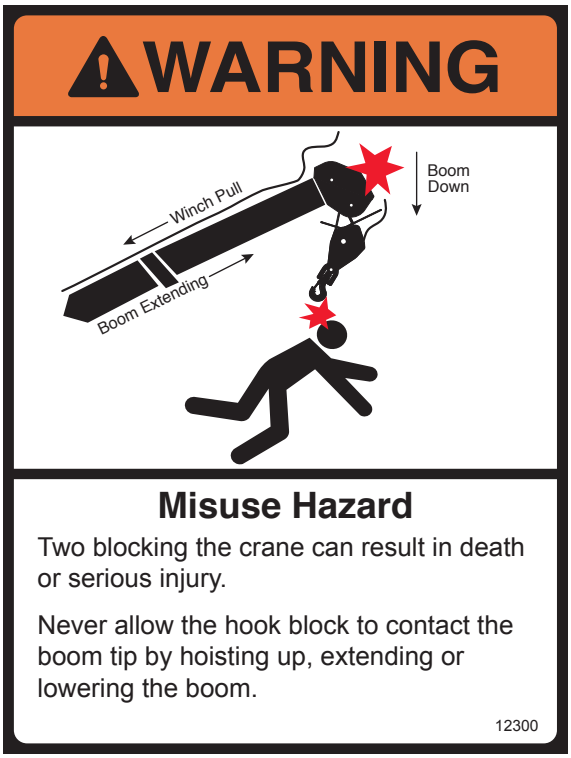
**Decal Location:** Main Boom

**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.

## Crane Horse Head




**Decal Part Number:** 12300

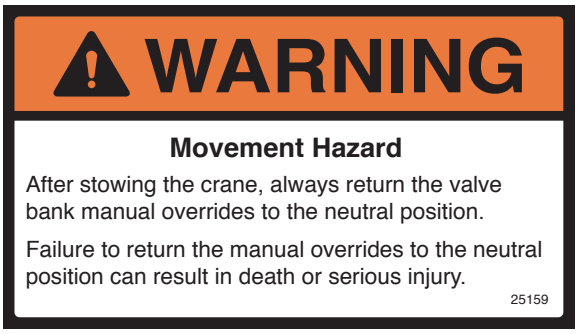
**Decal Location:** Crane Horse Head

**Hazard Type:** Misuse Hazard

**Consequences:** Can result in death or serious injury.

**Avoidance:** Never allow the hook block to contact the boom tip by hoisting up, extending or lowering the boom.

## Valve Bank




**Decal Part Number:** 25159

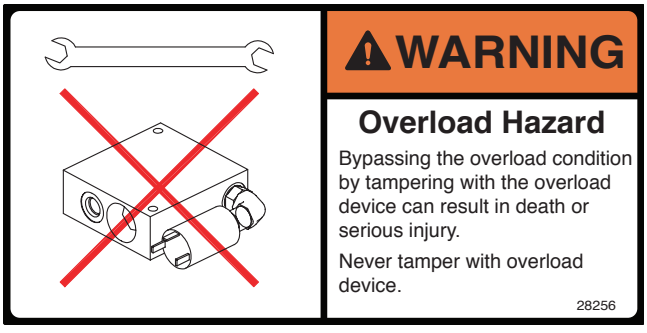
**Decal Location:** Valve Bank

**Hazard Type:** Movement Hazard

**Consequences:** Can result in death or serious injury.

**Avoidance:** After stowing the crane, always return the valve bank manual overrides to the neutral position.

## Main Cylinder




**Decal Part Number:** 28256

**Decal Location:** Main Cylinder

**Hazard Type:** Overload Hazard

**Consequences:** Can result in death or serious injury.

**Avoidance:** Never tamper with the overload device.

**This page intentionally left blank.**

# Chapter 2 - Maintenance

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

## General Maintenance Guidelines

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.
- Lower the boom fully or stow in the cradle 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.
- 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. | ✓ | | | |
| Grease rotation gear inner race bearings. | | ✓ | | |
| Grease rotation gear worm drive bearings. | | | 3 months | |
| Grease rotation gear open gear teeth. | | | ✓ | |
| Grease all cylinder pivot points. | | | ✓ | |
| Lubricate extension booms. | | | ✓ | |
| Check winch gear grease level. | | | ✓ | |
| 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.

# Maintenance Procedures

## 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.

## Wire Rope Maintenance

Proper maintenance is key in ensuring a long lasting rope. Refer to ANSI B30.5 for details on maintaining your wire rope.

## Winch Maintenance

Refer to winch manual supplied with crane.

## Extension Boom Maintenance

While operating the crane, extend and retract the extension booms If the extension weldments are noisy during operation, it is necessary to lubricate the booms. Stellar® Model Cranes feature a metal coating which will require an aerosol lubricant. Stellar Industries recommends aerosol style lubricant Stellar PN 44512.

## Load Hold Test Procedure

Fully extend a load (65-70% of crane's rated capacity) at a boom angle of approximately 60°. With the load at 3-5 inches off the ground, use a tape measure to mark the load from a specific flat/level spot on the ground (Note: Use a board/pad if necessary). Also at this time, use a grease pen to make a temporary mark on the main cylinder rod and another mark on the winch drum in reference to the housing. Finally, measure the stabilizer legs from the ground.

After waiting five minutes, measure the load from the same specific spot on the ground. If the load movement is within 1/4", the test has passed. If the load has moved more than 1/4", wait another five minutes and re-measure. If the load continues to move, check the other marks (main cylinder rod, winch drum) and re-measure the stabilizers to narrow down the potential drifting issue. Please refer to the troubleshooting section at the end of this manual for further detailed instructions.

# 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

To lubricate the inner race of the large rotation gear bearing, open the compartment door just below the crane. 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.

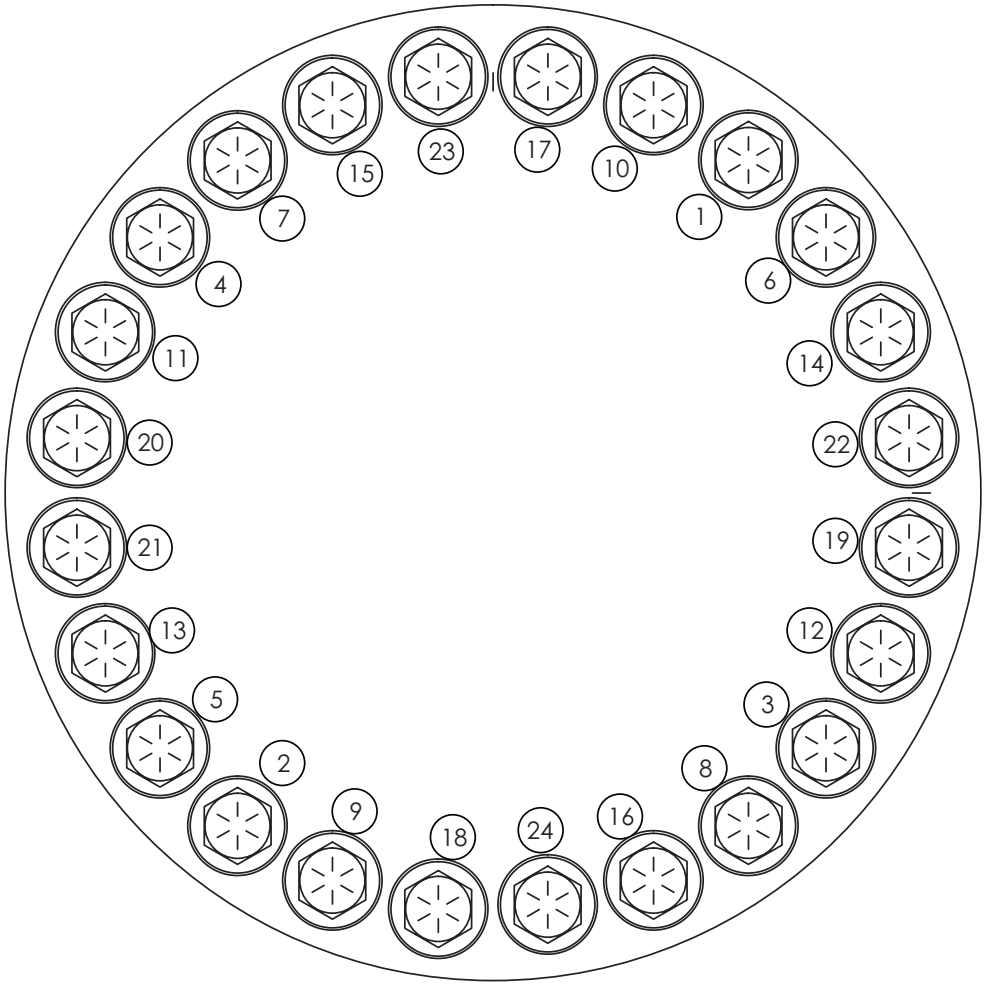
# Gear-Bearing Bolt Maintenance

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 damp loads after torquing.

**⚠WARNING** Anytime a 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



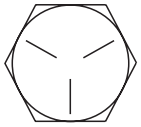
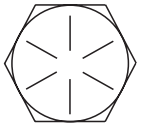
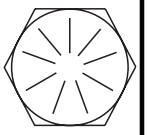

**Step 1:** Refer to the Torque Data Chart on the previous page to determine the proper torque value based on the size of bolt used.

**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.

# Rotation Gear Bearing Thread Tightening Procedure

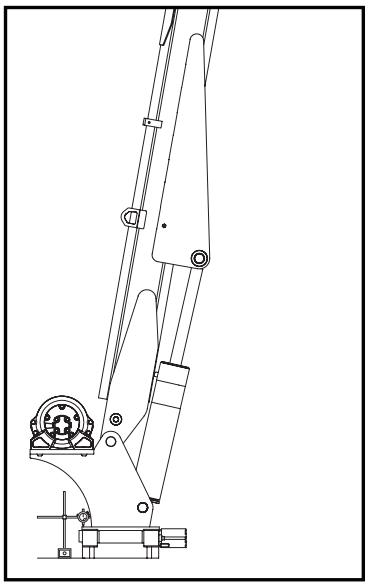
| | | GRADE 5 | | GRADE 8 | | GRADE 9 |
|---|---|---|---|---|---|---|
| | |  | |  | |  |
| **Size (DIA-TPI)** | **Bolt DIA (Inches)** | **Plain (Ft-Lb)** | **Plated (Ft-Lb)** | **Plain (Ft-Lb)** | **Plated (Ft-Lb)** | **Plated (Ft-Lb)** |
| 5/16-18 | 0.3125 | 17 | 13 | 25 | 18 | 22 |
| 3/8-16 | 0.3750 | 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 |

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. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.
- Torque values for socket-head capscrews are the same as for Grade 8 capscrews.

# Rotation Gear Bearing Tilt Test

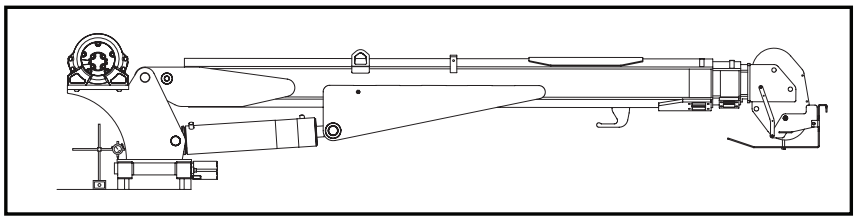
Step 1: Place crane in vertical position.



Step 2: Place a dial indicator on the pinion cover plate at the back side of the mast.

Step 3: Set the dial indicator to 0.

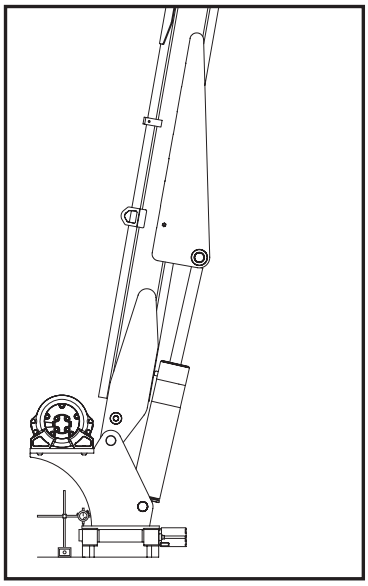
Step 4: Lower the crane to the horizontal position.



Step 5: Check and record the dial indicator change. It should not exceed the following tilt measurements:

- Stellar Models 7621 - 12630 = 0.060" (1.524 mm)
- Stellar Model 14530 = 0.070" (1.778 mm)

Step 6: Return the crane to vertical position. The dial indicator should return to calibration.



# Rotation Gear Bearing Worm End Play & Backlash

Stellar® Telescopic Cranes have an integral base and worm drive rotation system.

Backlash is the shortest distance between non-driving tooth surfaces in mating gears. Measure backlash using a feeler gauge at or near the pitch diameter and tangent to the gear.

**Locate High Tooth**

To set both Worm End Play and Backlash, first locate the high tooth on the gear. This spot is marked by the manufacturer with light blue paint. If the paint mark cannot be found, use a dial indicator with a magnetic base and a round steel pin large enough to contact the bearing near the pitch line of the bearing tooth to locate the high tooth:

**Step 1:** Set the indicator base on the face of the bearing race with no teeth.
**Step 2:** Place the pin between two of the teeth.
**Step 3:** Set the indicator probe on the pin and adjust the dial to zero.
**Step 4:** Rotate the bearing, checking every third tooth until you find the highest indicator reading.
**Step 5:** Check three teeth in both directions in this area to determine the highest tooth. The amount of run-out varies depending on the diameter of the bearing.
**Step 6:** Once you find the high tooth, mark it for future reference.

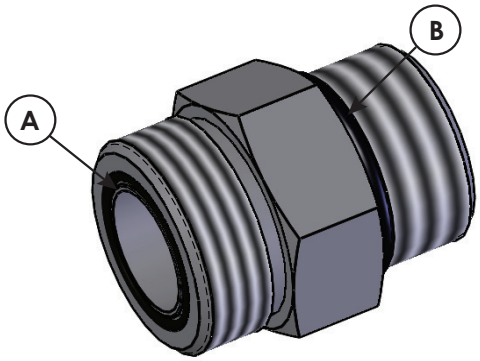
**Set Worm End Play**

**Step 1:** Locate the high tooth on the gear (See above)
**Step 2:** Screw a bolt into the threaded hole nearest the high tooth. Screw additional bolts into threaded holes at 90° from the high tooth.
**Step 3:** Mount a magnetic base dial indicator attached on top of the worm housing and at the opposite end from the motor mount.
**Step 4:** Adjust the indicator to read from the end of the worm shaft. Set the indicator to 0.
**Step 5:** Using two of the bolts as handles, rotate the outer race back and forth. Read the total indicator movement. This measurement is the end play of the worm. The specification for end play is +0.000/-0.004" (+0.000/-0.1016mm). If end play does not meet this specification, remove the bearing retainer and add or remove shims from the unit. Repeat this procedure until the end play meets specification.

**Set Gear Bearing Backlash**

**Step 1:** Locate the high tooth on the gear (See above)
**Step 2:** Rotate the bearing until the high tooth is engaged with the worm Loosen the three bearing retaining allen head bolts just enough to be able to move the bearing toward or away from the worm. Screw a bolt into the threaded hole in the bearing nearest the worm.
**Step 3:** Set the magnetic indicator base on the worm housing with the indicator probe against the bolt. Set the indicator dial to zero.
**Step 4:** Move the bearing back and forth. Watch the indicator dial and adjust the bearing in or out of the worm until the total indicator movement is 0.005" (0.127 mm). Notice: Be sure to deduct any end play in the worm from the indicator reading.
**Step 5:** Rotate the bearing 180°. Recheck the backlash. The total backlash should be 0.005" to 0.012" (0.127 to 0.3048 mm).
**Step 6:** After setting the backlash, torque the bearing retaining allen head bolts while watching the indicator dial so the correct backlash setting is maintained. Use the Torque Data Chart and Rotation Gear Bearing Thread Tightening Procedure for specifications.

# 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 |

# Lubrication Recommendations

## Crane Lubrication

| Component | Location | Recommendation |
|---|---|---|
| Hydraulic System | Reservoir | |
| | Below –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 | Extension Booms | Synthetic lubricant containing Teflon® |

## Compressor Lubrication

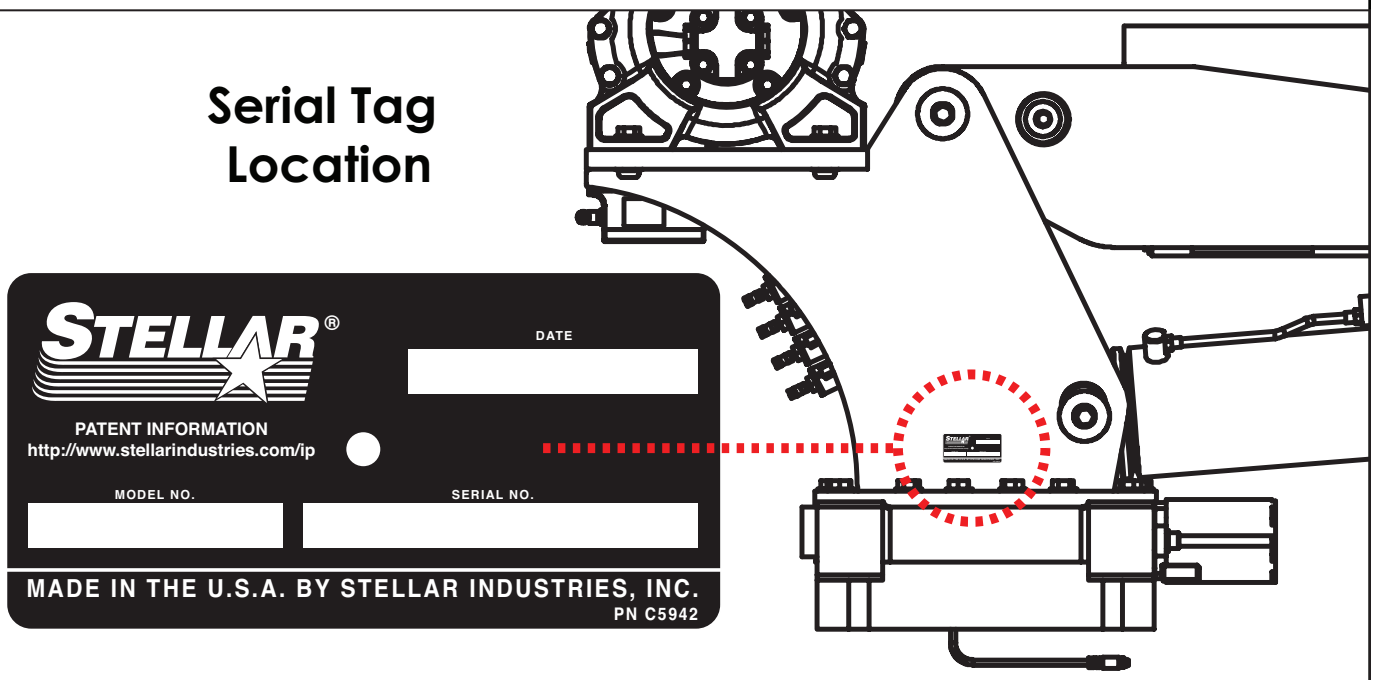
| Component | Location | Recommendation |
|---|---|---|
| Reciprocating Single Stage | Compressor Crankcase | ISO 100 compresser oil |
| Reciprocating Double Stage | Compressor Crankcase | ISO 100 compresser oil |
| Screw Compressor | Compressor Crankcase | |
| | -15˚F to 86˚F | Synthetic performing 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 |

**This page intentionally left blank.**

# Chapter 3 - Troubleshooting

**This chapter will list a number of potential problems that may occur while operating the crane. Most problems are easily solved using the solutions portion of this chapter. If problems persist, please contact Customer Service at Stellar Industries 1-800-321-3741.**

## Serial Tag Location




**Prior to troubleshooting:**
Always make sure the parking brake is engaged and the PTO is engaged (if equipped).

To determine if there is an electrical or hydraulic problem, first try to operate the crane manually. This is done by turning the manual override knob on the flow valve, then operating the individual solenoid valves located along the valve bank. If the crane operates, there will be an electrical problem to trace. If the crane does not operate using the manual overrides, there is a problem within the hydraulic circuit.

**Problem: Crane will not operate.**

**Solutions:**

- Make sure that the parking brake is engaged.
- Make sure that the PTO is engaged.
- Make sure that there is 12V power going to the radio receiver. If there is no power going to the receiver, trace back to the power source and check for a blown fuse or loose ground connection. Refer to radio remote troubleshooting guide at the end of this chapter.
- Make sure that the transmitter batteries are fully charged.
- Make sure that the hydraulic pump is operating at its rated flow or GPMs. Check the flow by using the flow meter to determine the GPMs. It is possible that the hydraulic pump is getting weak. If this is suspected, contact Stellar Customer Service.

**Problem: Crane will operate manually but will not operate by radio remote.**

**Solutions:**

- Make sure that there is 12V power going to the radio receiver. If there is no power going to the receiver, trace back to the power source and check for a blown fuse or loose ground connection. Refer to radio remote troubleshooting guide at the end of this chapter.
- Make sure that the parking brake is engaged.
- Make sure that the parking brake switch is working properly. Check the parking brake switch by performing a continuity test. If the switch is defective, simply replace it.

**Problem: Not all crane functions operate using the radio remote transmitter or crane operates intermittently.**

**Solutions:**

- Make sure that the toggle switch is working properly. If the switch is defective, simply replace it.
- Make sure that there is power going to the valve bank coil solenoid of the function that will not operate. If no power is going to the coil solenoid, check wiring connections on wire harness plug connector for broken wires, loose connection or poor crimp. If power is going to the solenoid valve, it may not be opening to allow hydraulic oil to the function that is not operating. Remove stem valve, thoroughly clean, lubricate, and reinstall valve. Do not over tighten. If the valve will not close, simply replace it.

**Problem: Two functions operate at the same time while only toggling one function.**

**Solutions:**

- Make sure that the solenoid valves are all latched in the center position to ensure that they do not move while operating the crane.
- Determine the function that is operating on its own. Check to see if there is power going to the solenoid valve from a function that should not be operating. If voltage is present at the solenoid valve without operating the function, the toggle switch has failed and is stuck in the "on" function. If no voltage is present, the solenoid valve may be partially open. Remove the stem valve, thoroughly clean, lubricate, and reinstall the valve. Do not over tighten. If valve will not close, simply replace it.

**Problem: Winch brake will not hold.**

**Solutions:**

- Check to see if the back pressure on the return line of the winch is greater than 50 psi. Try operating a function other than the winch. Operate the function both ways and then stop. Now operate the winch. If the brake still does not hold, contact Customer Service at Stellar.

**Problem: Winch will not hold load.**

**Solutions:**

- Make sure that the object being lifted does not exceed the rated capacity of the winch. Refer to the capacity chart. If the object is within the rated capacity, reposition the truck and try to lift the object without using the crane boom extensions.
- Make sure that the relief valve on the winch is set correctly. Readjust the relief valve if necessary.

**Problem: Crane only operates at full speed.**

**Solutions:**

- Check to see if there is 12V power constantly going to the proportional valve. If 12 volts are showing up at the proportional valve without pulling on the transmitter trigger, the handle/ trigger assembly may be defective. If 8 volts are showing at the proportional valve, it is possible that the valve is stuck open and will not close. Remove the valve, clean it thoroughly and reinstall. Do not over tighten. If the problem persists, replace the proportional valve.
- Check to see if the manual override on the proportional valve is turned out. Turn the manual override on the flow valve in (7621 through 12630 models only).

**Problem: Crane operates slowly.**

**Solutions:**

- Make sure that the crane is receiving the recommended hydraulic flow to operate.
- Check the level of hydraulic fluid in the reservoir. Add fluid as needed.
- Check hydraulic fluid temperature.
- Check to see if the valve bank orifice is plugged. If so, replace the orifice. Call Stellar Customer Service for instructions.
- Make sure the proportional valve is receiving 12V power when fully engaging the transmitter trigger. If there is not 12V power while pulling the trigger, check for loose connections inside the transmitter or replace the handle trigger assembly. If the proportional valve is receiving 12 volts, loosen the solenoid holding nut and check to see if the solenoid coil is magnetizing. If no polarity is present, replace the coil. If coil is magnetizing, remove the stem valve, thoroughly clean, lubricate, and reinstall the valve.

**Problem: Winch "Up", Main Cylinder "Down", and Extension Cylinder "Out" are the only functions that don't operate.**

**Solutions:**

- Make sure that the anti-two block weight and chain on the end of the boom are straight so they slide easily along the wire rope cable.
- Make sure that the limit switch is working properly. Disconnect the two wires connected to the limit switch and tie them together. If all functions operate, replace the limit switch.
- Make sure that the cord for the cord reel is undamaged. Check the continuity of the cord. Disconnect the cord reel from the crane harness and bypass the harness connection. If the crane operates properly, replace cord reel.

**Problem: Cylinder drifts outward or downward.**

**Solutions:**

- Check to see if there is air in the hydraulic system. Operate all cylinders connected to the hydraulic system. Start with the extension cylinder, then operate the main boom, winch, rotation, and ending with the hydraulic stabilizers, if installed. When operating, extend each cylinder halfway out, retract all the way in, and then extend until the cylinder rod is at the end of its stroke. Operate cylinders slowly so air is pushed through the system to the reservoir. Repeat this cycle 2-3 times.
- Make sure the holding valves are operating properly. Note: Before performing any maintenance on hydraulic components, relieve hydraulic oil pressure from all hydraulic circuits. Remove, clean, and then inspect each holding valve. When removing a holding valve, always relieve the pressure inside the cylinder by loosening jam nut of the holding valve and turning set screw inward/clockwise. Count the number of turns until the set screw is seated. When reinstalling the holding valve, make sure the valve is reset by turning the set screw the number of turns it took to relieve the pressure. Finish by tightening the jam nut.
- Check the cylinder rod for scratches. If a scratch is located on the cylinder rod, hydraulic fluid can pass through and cause a loss of pressure. Replace cylinder rod or cylinder.
- Check to see if the piston seals are damaged. If they show signs of damage, install a new cylinder seal kit.

# Manual Crane Operation

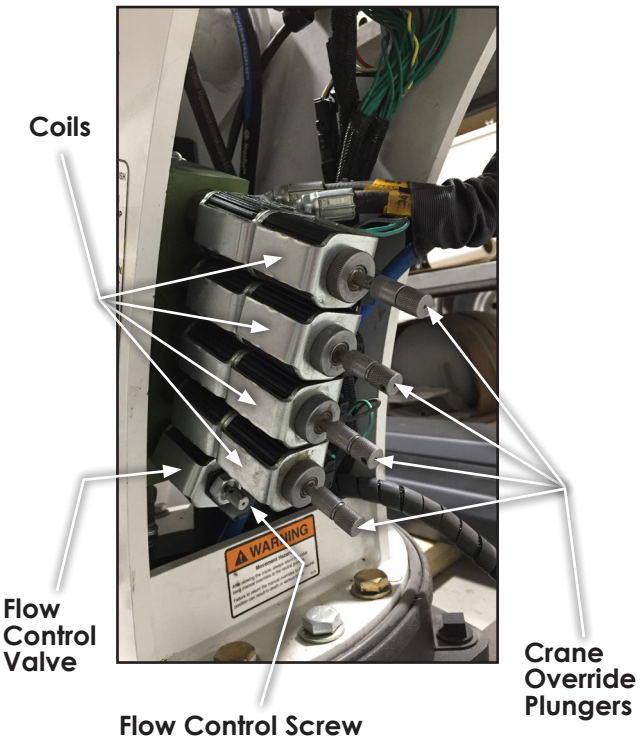
If the remote control malfunctions, follow the steps on this and the following page to operate the crane manually. Firstly, determine which type of valve bank you have and follow only the instructions on that page.

## Valve Bank Style 1 (Rectangular Coils)

1. **Activate Flow Control.** Turn the override screw on proportional flow control **CCW** (counter-clockwise) until it stops - between three and five full turns.
2. **Operate Solenoids.** Using the identification decal as a guide, slide the locking collar out to the knurled plunger knob and then push or pull to operate the desired function. Be sure the collar is in the center/locked position before returning to remote operation. See below for more detailed information.
3. **Deactivate Flow Control.** Turn the override screw **CW** (clockwise) until it stops.
4. **Return the valve bank manual overrides to the neutral position.** See below for more detailed information.

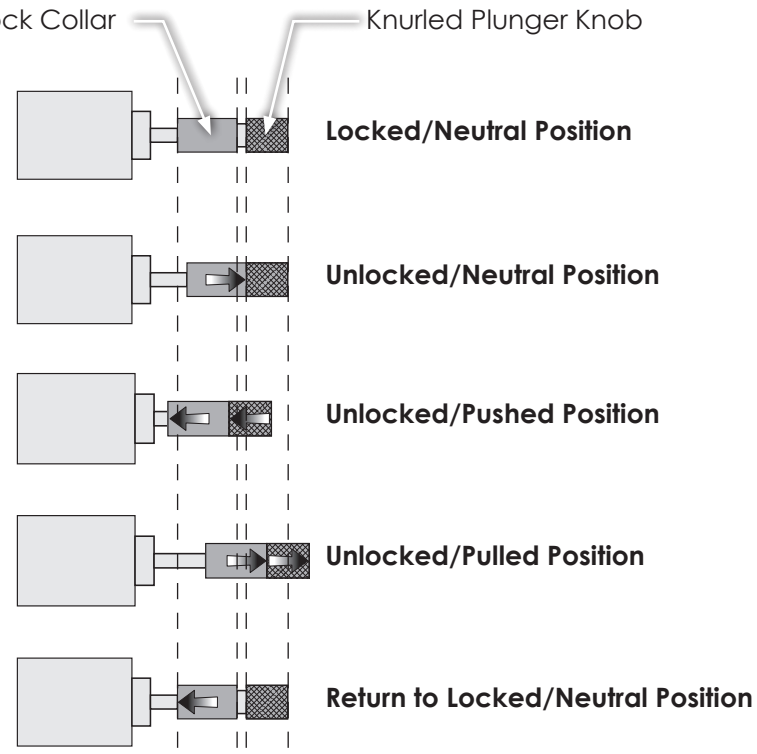
   **⚠WARNING** Failure to return the valve bank manual overrides to the neutral position can result in unexpected crane movement.

5. **Have the unit serviced immediately to restore remote control functionality.**




### Operating the Solenoid Valve Plungers

While the sliding collar is in the locked position the plunger can't be pushed or pulled. To unlock the collar so you can manually operate the valve, place your thumb on the end of the knurled plunger knob and two fingers on the sliding collar, like holding a syringe. Keeping the knob in place with your thumb, slide the collar toward the knob. When the two are together, the plunger position is unlocked. Move both together and push in or pull out based on the instructional decal. When done, return both to center (neutral) position and then slide the collar to the locked position.

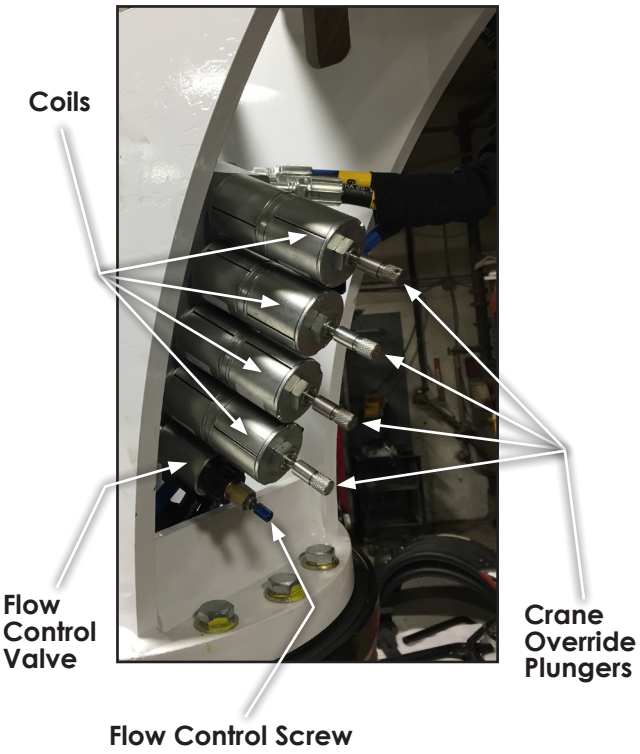


## Valve Bank Style 2 (Cylindrical Coils)

1. **Activate Flow Control.** Turn the override screw on proportional flow control **CW** (clockwise) until it stops - between three and five full turns.
2. **Operate Solenoids.** Using the identification decal as a guide, slide the locking collar out to the knurled plunger knob and then push or pull to operate the desired function. Be sure the collar is in the center/locked position before returning to remote operation. See below for more detailed information.
3. **Deactivate Flow Control.** Turn the override screw **CCW** (counter-clockwise) until it stops.
4. **Return the valve bank manual overrides to the neutral position.** See below for more detailed information.

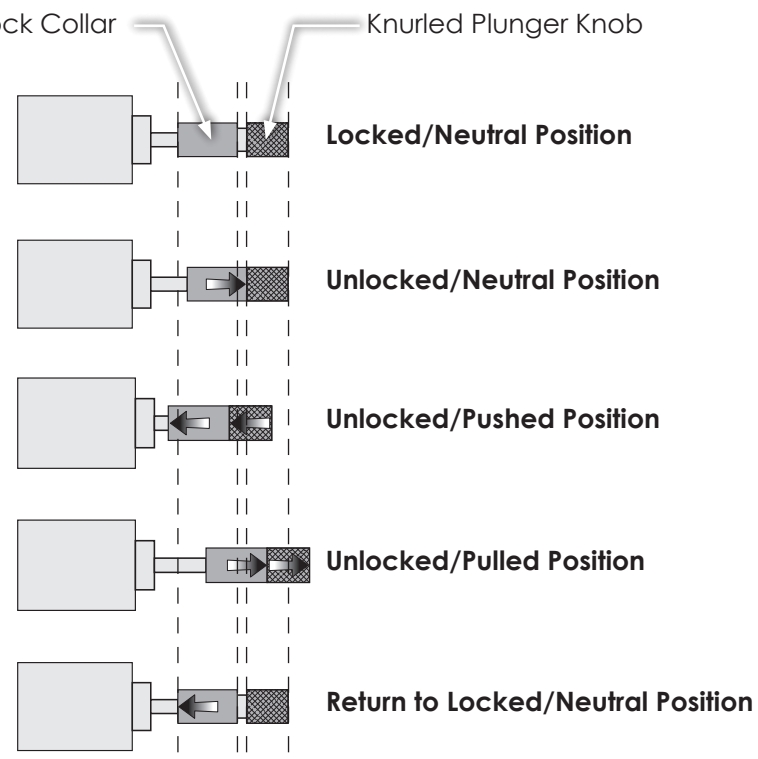
   **⚠WARNING** Failure to return the valve bank manual overrides to the neutral position can result in unexpected crane movement.

5. **Have the unit serviced immediately to restore remote control functionality.**




### Operating the Solenoid Valve Plungers

While the sliding collar is in the locked position the plunger can't be pushed or pulled. To unlock the collar so you can manually operate the valve, place your thumb on the end of the knurled plunger knob and two fingers on the sliding collar, like holding a syringe. Keeping the knob in place with your thumb, slide the collar toward the knob. When the two are together, the plunger position is unlocked. Move both together and push in or pull out based on the instructional decal. When done, return both to center (neutral) position and then slide the collar to the locked position.




Subject to Change without Notification.