



Technical Manual
EHC-4
NEXSTAR III



Serial No. _____

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At the time of publishing this manual is accurate to the best of our knowledge. Auto Crane reserves the right to change any or all items, components and parts, necessary for any reason. This right does not obligate Auto Crane to immediately update the manual. If in doubt, please call your local Auto Crane distributor for the most up-to-date information.

Auto Crane Company issues a limited warranty with each unit sold. See warranty pages at the end of the manual.

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1 Safety Tips and Precautions

DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates information considered important, but not hazard-related.

WARNING

Federal law (49 cfr part 571) requires that the Final Stage Manufacturer of a vehicle certify that the vehicle complies with all applicable federal regulations. Any modifications performed on the vehicle prior to the final state are also considered intermediate stage manufacturing and must be certified as to compliance. The installer of this crane and body is considered one of the manufacturers of the vehicle. As such a manufacturer, the installer is responsible for compliance with all applicable federal and state regulations, and is required to certify that the vehicle is in compliance.

WARNING

It is the further responsibility of the installer to comply with the OSHA Truck Crane Stability Requirements as specified by 29 CFR part 1910.180 (C) (1). In applications, where the rotation of the load is hazardous, a tag or restraint line should be used, (ref. OSHA 1910.180(h)(3)(xvi)). To reduce the potential for the load to rotate or rope twist, operate at minimal boom angles and extension.

WARNING

Do not attempt to lift or drag a load from the side! The boom can fail far below its rated capacity.

WARNING

Do not weld, modify, or use unauthorized components on any Auto Crane unit! This will void any warranty or liability. Also failure of the crane may result.

WARNING

Failure to correctly plumb and wire crane can cause inadvertent operation and damage to crane and/or personnel!

WARNING

Auto Crane Company remote controlled cranes are not designed or intended for use for any applications involving the lifting or moving of personnel. Any such use is considered to be improper and the seller shall not be responsible for any claims arising from such use. This sale is made with the express understanding there is no warranty the goods are fit for the purpose of lifting or moving persons or other improper use. There is no implied warranty or responsibility for such uses.

NOTICE

Keep this manual with the crane at all times.

Auto Crane products are designed to provide many years of safe, trouble-free, dependable service when properly used and maintained.

To assist you in obtaining the best service from your crane and to avoid untimely crane and/or vehicle failure, this manual provides the following operating and service instructions. It is specifically recommended that all operating and service personnel consider this manual as mandatory material for reading and study before operating or servicing Auto Crane products. It is highly recommended crane owners, equipment managers, and supervisors also read this manual.

Auto Crane has incorporated several safety features in the crane for your protection.

For your convenience the overall dimensions of the crane are included on the General Dimension Drawing. Rotation and turning radius are also listed on that drawing.

Remember, the crane adds weight to the vehicle. Adding weight may change the driving and riding characteristics of the vehicle unless the appropriate overload spring(s) are installed on the truck. The payload of the vehicle is reduced by the weight of the crane. The operator should exercise care when loading the vehicle. Distributing the payload on the vehicle evenly will greatly improve the driving and riding characteristics of the vehicle.

Auto Crane Company issues a limited warranty certificate with each unit sold. See last page for warranty.

The cranes are attached to your 12-volt truck electrical system through the vsu provided. The crane is another highly efficient Auto Crane product. The use of a maintenance-free battery is not recommended on any Auto Crane product. The recommended alternator and battery that will give the longest life with the most useful duty cycle is a 60-amp alternator with a 500 cold cranking amp battery. These specifications should be considered minimum.

It has always been Auto Crane Company policy to handle all warranty claims we receive as promptly as possible. If a warranty claim involves discrepant material or workmanship, Auto Crane will take immediate corrective action. It is understandable that Auto Crane Company cannot assume responsibility of liability when it is obvious that our products have been abused, misused, overloaded or otherwise damaged by inexperienced persons trying to operate the equipment without reading the manual.

2 Introduction

NOTICE

Auto Crane will not assume responsibility or liability for any modifications or changes made to unit, or installation of component parts without authorization.

Auto Crane maintains a strong distributor network and a knowledgeable Customer Service Department. In most cases, an equipment problem is solved via phone conversation with our customer service department. The customer service department also has the ability to bring a local distributor, a regional sales manager, or a factory serviceman into the solution of an equipment problem.

If, through no fault of Auto Crane Company, it is necessary to send an experienced factory serviceman on a field service call the rates stated in the Auto Crane Distributor's Flat Rate Manual will apply.

Auto Crane Company's extensive Research and Development Program allow our customers to use the best equipment on the market. Our Engineering Staff and our knowledgeable sales people are always available to our customers in solving crane and winch-type application problems. When in doubt, call the Auto Crane factory.

Should you require any assistance not given in this manual, we recommend that you consult your nearest Auto Crane Distributor. Our distributors sell authorized parts and have service departments that can solve almost any needed repair. This manual does not cover all maintenance, operating, or repair instructions pertinent to all possible situations.

If you require additional information, please contact the Auto Crane Company at the following telephone number: **1-800-777-2760**

The information contained in the manual is in effect at the time of this printing. Auto Crane Company reserves the right to update this material without notice or obligation.

3.1 DIMENSIONS

- Width: 22 in. (0.56 m)
- Height: 25-9/16 in. (0.65 m)
- Length: 11 ft. 5-3/8 in. (3.36 m), stored length.
- Weight: 1,055 lbs. (479 kg)

3.2 CAPACITY

- 16,000 ft-lbs (2.31 ton-m)
- Ft-lbs = horizontal distance from center line of rotation to free hanging weight (feet) x amount of weight (pounds).

3.3 REACH

- Second boom reach: 10 ft. 4 in. to 16 ft. 4 in.
- Third boom reach: 16 ft. 4 in. to 20 ft. 4 in.

3.4 CABLE

- 80 ft. (24.4 m) of 5/16 in. (7.9 mm) diameter aircraft quality cable. This cable has a single line breaking strength of 9,800 lbs. (4,445 kg).

3.5 CHASSIS AND MOUNTING REQUIREMENTS

- 10,500 lbs. (4,763 kg) GVWR minimum.
- 210,600 in-lbs. Resistive Bending Moment (RBM)
- 3/4", Grade 8-UNF Bolts. Tightened to 335 ft. lbs.
- 9" Mounting hole to run electrical lines to the crane from the body.

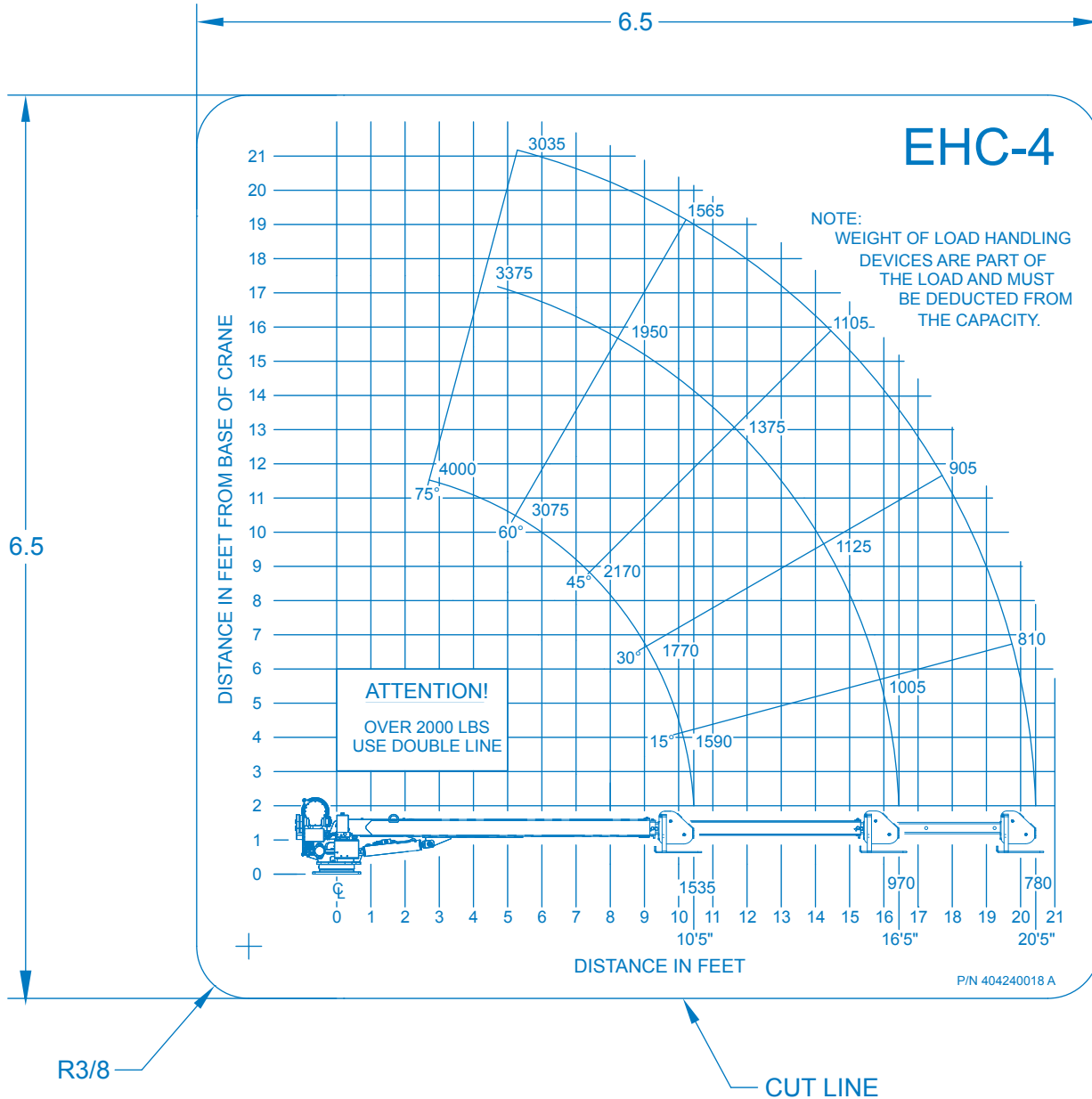
3.6 ELECTRICAL SYSTEM REQUIREMENTS

- Voltage: 12 VDC
- Alternator: 75 amps minimum
- Battery: 130 minute reserve capacity minimum. Maintenance Type battery

3.7 ROTATION

- 360° continuous rotation

4 Load Chart



⚠ WARNING

All load ratings are based on crane capacity, not the vehicle stability. When lifting a heavy load, the weight can create enough tipping moment to overturn the vehicle. **DO NOT USE** the overload shutdown device to determine maximum rated loads, if the crane is equipped with this type of device.

⚠ WARNING

Always comply with load chart capacities.

Qualifications and Operating Practices 5

THIS IS ONLY AN OVERVIEW OF ALL APPLICABLE QUALIFICATION REQUIREMENTS. REFERENCE ASME B30.5A AND OSHA 1910.180 FOR COMPLETE QUALIFICATION REQUIREMENTS.

5.1 OPERATORS

1. Crane operation shall be limited to personnel with the following minimum qualifications:
 - A. Designated persons.
 - B. Trainees under the direct supervision of a designated person.
 - C. Maintenance and test personnel (when it is necessary in the performance of their duties).
 - D. Inspectors (crane).
2. No one other than the personnel specified above shall enter the operating area of a crane with the exception of persons such as oilers, supervisors, and those specified persons authorized by supervisors whose duties require them to do so and then only in the performance of their duties and with the knowledge of the operator or other persons.

5.2 QUALIFICATIONS FOR OPERATORS

1. Operators shall be required by the employer to pass a practical operating examination.
2. Qualifications shall be limited to the specific type of equipment for which examined.
3. Operators and operator trainees shall meet the following physical qualifications:
 - A. Vision of at least 20/30 Snellen in one eye and 20/50 in the other, with or without corrective lenses.
 - B. Ability to distinguish colors, regardless of position, if color differentiation is required for operation.
 - C. Adequate hearing with or without hearing aid for the specific operation.
4. Evidence of physical defects or emotional instability, which render a hazard to operator or others, which in the opinion of the examiner could interfere with the operator's performance, may be sufficient cause for disqualification. In such cases, specialized clinical or medical judgment and tests may be required.
5. Evidence that operator is subject to seizures or loss of physical control shall be sufficient reason for disqualification. Specialized medical Tests may be required to determine these conditions.
6. Operators and operator trainees should have normal depth perception, coordination, and no tendencies to dizziness or similar undesirable characteristics.
7. In addition to the above listed requirements, the operator shall:
 - A. Demonstrate the ability to comprehend and interpret all labels, operator's manuals, safety codes, and other information pertinent to correct crane operations.
 - B. Possess the knowledge of emergency procedures and implement it.
 - C. Demonstrate to the employer the ability to operate the specific type of equipment.
 - D. Be familiar with the applicable safety regulations.
 - E. Understand the operating procedures as outlined by the Auto Crane.
 - F. Be thoroughly familiar with the crane and its control functions.

5 Qualifications and Operating Practices

5.3 CONDUCT OF OPERATORS

1. The operator shall not engage in any practice, which will divert his attention while actually operating the crane.
2. Each operator shall be responsible for those operations under the operator's direct control. Whenever there is any doubt as to safety, the operator shall consult with the supervisor before handling the loads.
3. The operator should not leave a suspended load unattended unless specific precautions have been instituted and are in place.
4. If there is a warning sign on the switch or engine starting controls, the operator shall not close the switch or start the engine until the warning sign has been removed by the appointed person.
5. Before closing the switch or starting the engine, the operator shall see that all controls are in the "OFF" or neutral position and all personnel are in the clear.
6. If power fails during operation, the operator shall:
 - A. Move power controls to the "OFF" or neutral position.
 - B. Land the suspended load and boom, if practical.
7. The operator shall be familiar with the equipment and its proper care. If adjustments or repairs are necessary, the operator shall report the same promptly to the appointed person, and shall also notify the next operator.
8. The operator at the start of each shift shall test all controls. If any controls do not operate properly, they shall be adjusted or repaired before operations are begun.
9. Stabilizers shall be visible to the operator while extending or setting unless a signal person assists operator.

5.4 OPERATING PRACTICES/HANDLING THE LOAD



CAUTION

Never use two cranes to support a load too large for either crane.

1. Size of load.
 - A. No crane shall be loaded beyond the rated load except for test purposes
 - B. The load to be lifted is to be within the rated load of the crane and its existing configuration.
 - C. Know the weight of the rigging and deduct from the load rating to prevent overloading the crane.
 - D. When loads that are not accurately known are to be lifted, the person responsible for the job shall determine the weight of the load does not exceed the crane rated load at the radius at which the load is to be lifted.
2. Attaching the load.
 - A. Ensure the load is properly attached to the hook by means of slings or other devices of sufficient capacity.
 - B. Ensure the vehicle is in a level position when loading or unloading.
 - C. Hoist rope shall not be wrapped around the load.
3. The operator shall determine that:
 - A. The crane is level and, where necessary, the vehicle/carrier is blocked properly.
 - B. The load is well secured and balanced in the sling or lifting device before it is lifted more than a few inches.
 - C. Means are provided to hold the vehicle stationary while operating the crane.
 - D. Before starting to lift, the hook shall be positioned over the load in such a manner as to minimize swinging.
4. During lifting care shall be taken that:
 - A. There is no sudden acceleration or deceleration of the moving load.

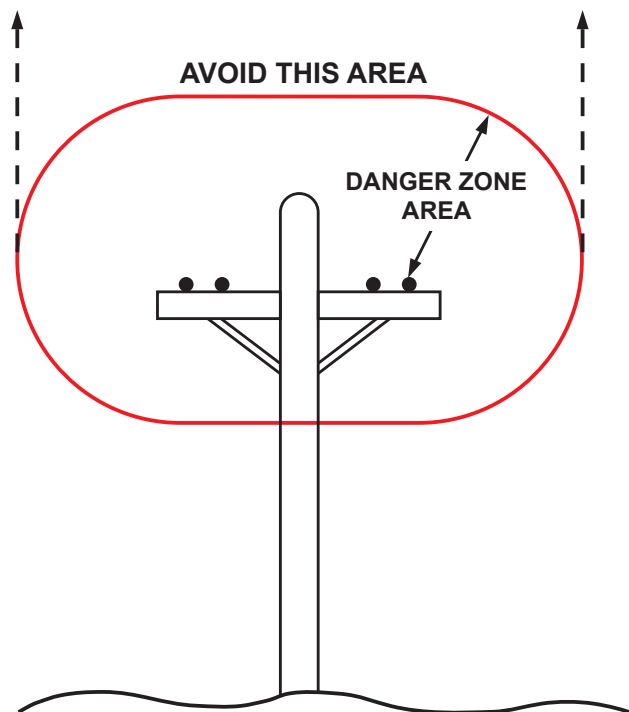
Qualifications and Operating Practices 5

- B. When rotating the crane, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radius at which it can be controlled.
- C. Load, boom or other parts of the crane do not contact any obstruction.
- D. Cranes shall not be used for dragging loads sideways.
- E. This standard recognizes that telescopic boom cranes are designed and intended for handling materials. They do not meet personnel lift or elevator requirements. Therefore, no lifting, lowering, swinging or traveling shall be done while a person is on the hook or load. Hook attached suspended work platforms (baskets) shall not be used with cranes covered by this standard.
- F. The operator should avoid carrying loads over people.
- 5. When the crane is so equipped, the stabilizers shall be fully extended and set. Blocking under stabilizers shall meet the requirements as follows:
 - A. Strong enough to prevent crushing.
 - B. Of such thickness, width and length as to completely support the stabilizer pad.
 - C. Firm footing under all tires, or individual stabilizer pads should be level. Where such a footing is not otherwise supplied, timbers, cribbing, or other structural members to distribute the load so as to not exceed allowable bearing capacity or the underlying material should provide it.
- 6. In transit, the boom shall be carried in stowed position.
- 7. The crane shall not be transported with a load on the hook.

5.5 OPERATING NEAR ELECTRICAL POWER LINES



Never operate the crane near electrical lines or in the danger zone area.



5 Qualifications and Operating Practices

1. Do not place any part of the crane or load inside the Danger Zone.

EXCEPTIONS:

- A. The Danger Zone may be entered after confirmation by an appointed person the electrical distribution and transmission lines are de-energized and visibly grounded at the point work.
 - B. The Danger Zone may be entered if insulating barriers are erected to prevent physical contact with the lines. These can't be a part of or attached to the crane.
2. For the minimum safe distance between electrical lines and any part of the crane or load (including handling appendages), or while in the transit with the boom stowed, see Table 1. Safe Operating Distance.
 3. Exercise caution when working near overhead lines. They can move horizontally and vertically due to wind, shifting the location of the Danger Zone.
 4. Assign a qualified, signal person observe the clearance and warn the crane operator before approaching the Safe Operating Distance limits.
 - A. Treat all overhead wires as energized until the person or utility owning the line verifies it is not energized.
 - B. Exceptions ensuring equivalent protection are allowed, if approved by the administrative or regulatory authority in writing.
 - C. Install durable signs at the operator's station and on the outside of the crane, warning that electrocution or serious bodily injury may occur if the Table 1. Safe Operating Distance limits aren't adhered to.

Safe Operating Distance for Cranes Near Electrical Lines		
When operating near high voltage power lines		
Normal Voltage, kV - (phase to phase)	Minimum Required Clearance	
	Ft.	(m)
0 - 50	10	(3.5)
50 - 200	15	(4.6)
200 - 350	20	(6.1)
350 - 500	25	(7.62)
500 - 750	35	(10.67)
750 - 1000	45	(13.72)
When in transit with no load and boom stowed		
0 - 0.75	4	(1.22)
0.75 - 50	6	(1.83)
50 - 345	10	(3.83)
345 - 750	16	(4.87)
750 - 1000	20	(6.1)

5.6 PREPARING THE CRANE FOR OPERATION

1. Ensure the manual has been thoroughly read by all crane operating and maintenance personnel and supervisors.
2. Perform a routine inspection of the crane before operation each day. Correct any defects immediately.
3. At the job site, position the vehicle so the crane can reach the load within the rated capacity (center line of rotation to hoist hook).
4. Keep the vehicle as level as possible during operation.

NOTICE

At a 10° slope, all crane functions are limited to 50% speed. At a 15° slope, all crane functions are disabled.

5. Allow the vehicle engine to warm up before operation.
6. For Auto Crane units using only electric operation:
 - A. Engage the emergency brake.
 - B. Leave the ignition on with the transmission in neutral (or park for automatic transmissions).
 - C. Activate any crane power switches.
7. For Auto Crane units using electric and hydraulic operation:
 - A. Engage the emergency brake.
 - B. Place the transmission in neutral.
 - C. Press the clutch in.
 - D. Activate PTO (Power Take Off).
 - E. Release the clutch.
 - F. Allow sufficient time for the hydraulic fluid to warm up.
 - G. Set the throttle control to the proper engine speed.
8. For all outrigger usage:
 - A. Always extend the outriggers from the vehicle to the ground before crane operation. Ensure they are firmly positioned on solid ground.
 - B. Stand clear of outriggers while being extended.
 - C. If a curb or other object prevents the outrigger from being fully extended, shorten the bearing or fulcrum point and reduce the maximum load accordingly.
 - D. If an outrigger will not reach the ground because of holes or grades, block up the outrigger pad to provide level and firm support to the vehicle.
 - E. If working in soft ground, use wide pads under the outrigger feet to prevent sinking.
 - F. Always store the outriggers before transportation.
 - i. For Auto Crane units with Manual Outriggers:
 1. Pull the lock pins to release the jackleg or drop down outrigger. Move to the outermost lock position.
 2. Ensure lock pins are reinstalled properly.
 3. Lower the Outrigger pad to firm ground and adjust the foot to remove slack.
 - ii. For Auto Crane units with Hydraulic Outriggers:
 1. Shift the diverter valve to the Outrigger position.
 2. Extend the Outriggers to their horizontal limit.
 3. Extend the Outriggers vertically until they make solid contact with the ground with the ground and the truck is approximately level side-to-side.
 4. With the Outriggers properly positioned, return the diverter valve to the Crane position.

5 Qualifications and Operating Practices

9. Remove the remote control from the cab or storage area. Power the remote control on. Detach the hook from the dead man.
10. The crane is now ready for operation.

DURING OPERATION

1. Always boom up before rotating so the boom will clear the boom support.
2. Always maintain clearance between the boom crown and the traveling block or hook hoist during boom extension. Always observe all relevant safe policies and procedures during crane operation.
4. Always use slow and smooth movements with the crane to avoid causing the load to swing like a pendulum.

AFTER OPERATION

1. After completing the lifting operations, return the boom to the stowed position on the boom support.
2. Replace remote control to its storage location.
3. Return the Outriggers to the stowed position. Ensure they are pinned in place or jack legs are returned to the storage compartment.
4. Always store the crane in its stowed position for transportation.
5. Release the throttle control, press the clutch in, and disengage the PTO. Deactivate any crane power switches.
6. Check vehicle surroundings before moving.
7. Record any unusual occurrence during crane operation which may indicate required maintenance or repair.

This section describes the general operation for cranes with the NEXSTAR III control system.

WARNING

Before operating the Remote Control, read and understand all safety information in this manual, any manual supplements, and any applicable local, state, or federal rules and regulations.

WARNING

Never drive with a load suspended from the crane.

WARNING

Ensure personnel and objects are clear of the crane path during operation. Do not move loads over personnel.

6.1 GENERAL

Radio controlled equipment operates in several directions. Frequently there are other pieces of equipment and personnel in close proximity. The operator must exercise extreme caution at all times.

Only properly trained operators should operate the radio controlled equipment. This includes knowing and following all applicable operating and maintenance manuals, safety procedures, regulatory requirements, and industry standards and codes.

6.2 REMOTE CONTROL UNIT

Never mechanically block the switches ON or OFF. When not in use, turn the Remote Control OFF. Always store the Remote Control in a secure space when not in use. Store spare Remote Controls in a secure space and only remove after the current Remote Control has been turned OFF, taken out of the service area, and secured. Before disposing of batteries, consult local and governmental regulatory requirements for instructions on proper disposal.

6.3 REMOTE CONTROL INITIALIZATION

After powering on the remote control, the LCD Display Screen turns on and will perform a self-test. During the self-test, the Nexstar III remote control scans for any switches, buttons, and joysticks are in the OFF position. If any switches, buttons, or joysticks are on, the failure displays on the Display Screen and the remote control powers down.

After a successful self-test, the Nexstar III remote control will enter the Normal Operating Mode.

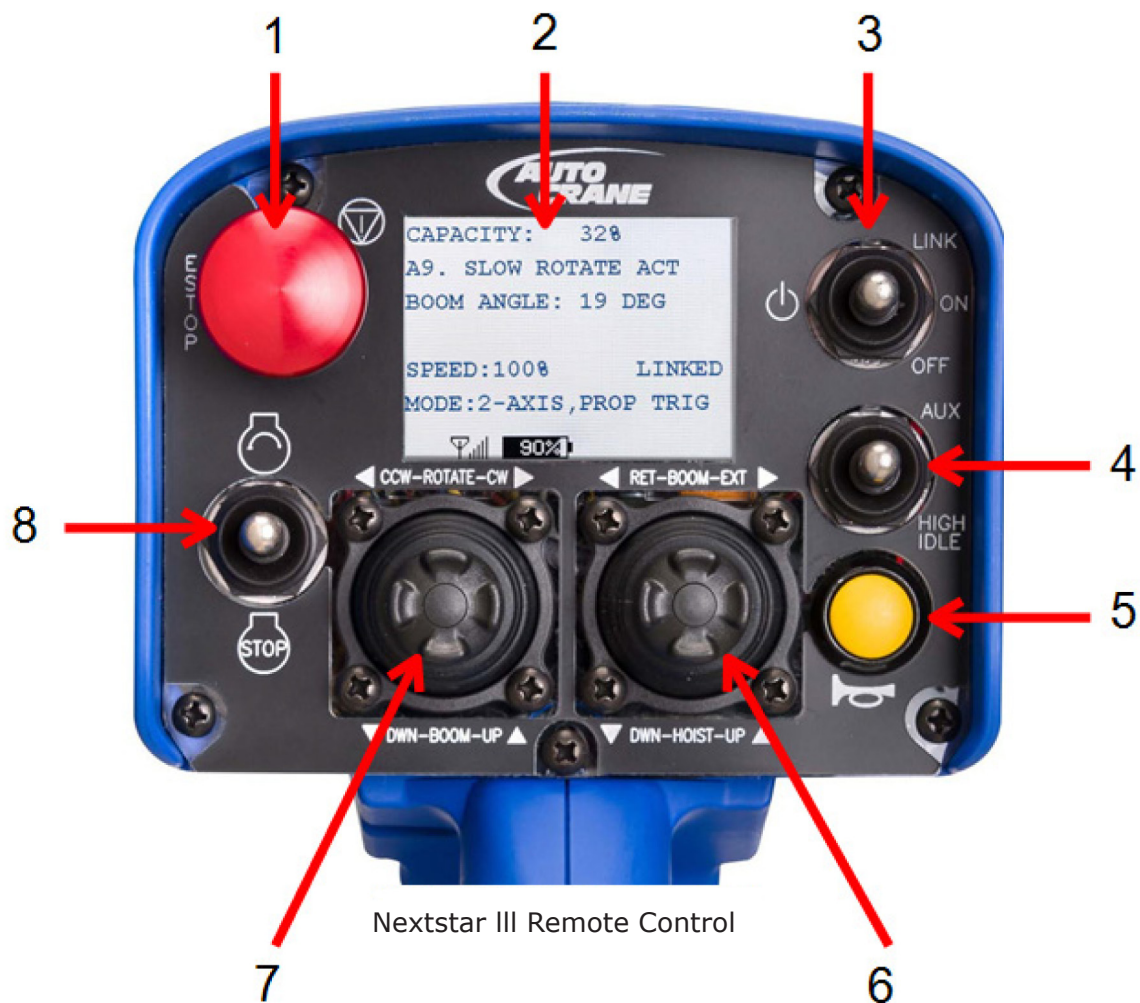
6.4 PRE-OPERATION TEST

Before operating the crane, or when a new operator takes control of the equipment, operators should perform the following checks of the equipment before making a lift:

- Test all warning devices.
- Test all functions.
- Test the Remote Control E-Stop function.

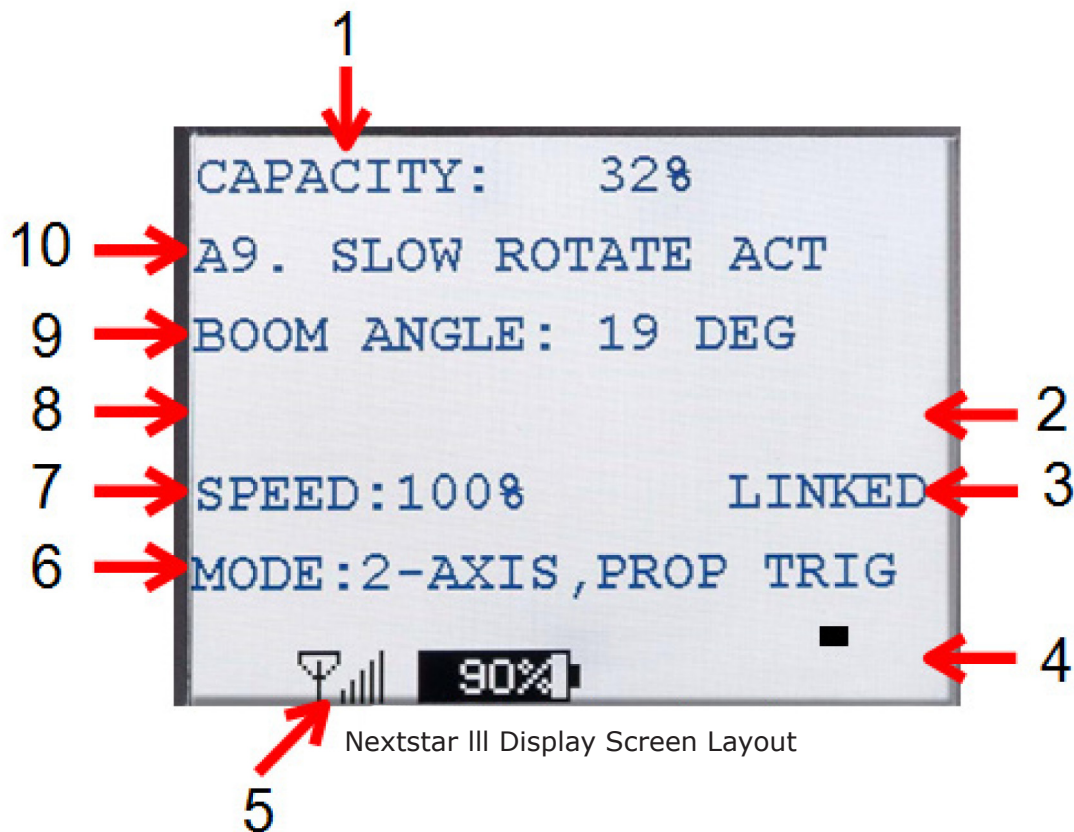
6 NexStar III Operation

6.5 REMOTE CONTROL LAYOUT



1. Emergency Stop Button – Push to activate. Pull to release. When activated the emergency stop button stops all outputs from the receiver.
2. Display Screen – LCD screen that displays many crane operating parameters. See Figure 4.
3. On/Off/Link Switch – Turns the Remote control on and off. Press and release the switch up to link the remote control to the truck. "Link" the remote control to the truck every time it is turned on. Press and hold the switch up to access the speed and mode selection screen.
4. High Idle/Aux Switch – Press the toggle down to activate the high idle on the vehicle. Aux activates an optional feature.
5. Horn Button – Activates the horn on the vehicle.
6. Right Joystick – Press the joystick up to raise the hook. Press the joystick down to lower the hook. Press the joystick right to extend the boom and left to retract the boom.
7. Left Joystick – Press the joystick up to raise the boom. Press the joystick down to lower the boom. Press the joystick right to rotate the boom clockwise. Press the joystick left to rotate the boom counterclockwise.
8. Start/Stop Switch – Press the switch up to start the engine of the vehicle. Press the switch down to turn off the engine of the vehicle.

6.6 DISPLAY SCREEN LAYOUT



1. Capacity – The current load on the boom as a percentage of total capacity. The unloaded value of the boom may be higher than 0% due to the boom weight beyond the retracted position.
2. Aux – AUX will display on the screen when active.
3. Communication Status – LINKED will display when the remote control is communicating with the crane.
4. Watchdog Timer – The black dot should always be moving in a diagonal. If the timer stops, contact your Auto Crane representative.
5. Signal Strength and Battery Life – Displays the signal strength coming from the crane. The approximate range is 300 ft. The battery displays the percent remote control battery life remaining.
6. Mode – Displays the current mode selected.
7. Max Speed Setting – Displays the current max speed setting.
8. High Idle – HIGH IDLE will display when activated.
9. Boom Angle – Displays the current boom angle in degrees.
10. Crane Status – Displays the current status of the crane. Alarms will be displayed here.

6 NexStar III Operation

SPEED AND MODE SELECTION

6.7 SPEED SELECTION

1. Press and hold the Link Switch in the up position.
2. While holding the Link Switch in the up position:
 - A. Move the Left Joystick up to increase the max speed.
 - B. Move the Left Joystick down to decrease the max speed.
3. Release the Link Switch when the desired speed is selected.

A slower speed setting decreases the maximum speed of the controls and allows more precise control of the load. The speed percentage on the screen shows the current speed setting of the remote control.

6.8 MODE SELECTION

1. Press and hold the link switch in the up position. While holding the link switch in the up position, press the right joystick up or down to place the remote control in the desired setting.
3. Release the Link Switch when the desired mode is selected.

6.9 MODE DESCRIPTION

In 1-AXIS operation, once the joystick is moved in the direction of the desired function, the other functions are locked out until the joystick returns to the center position. For example, if you are booming up, you cannot rotate at the same time. But one function of the other joystick will be available to use.

In 2-AXIS operation, each joystick can perform two functions simultaneously.

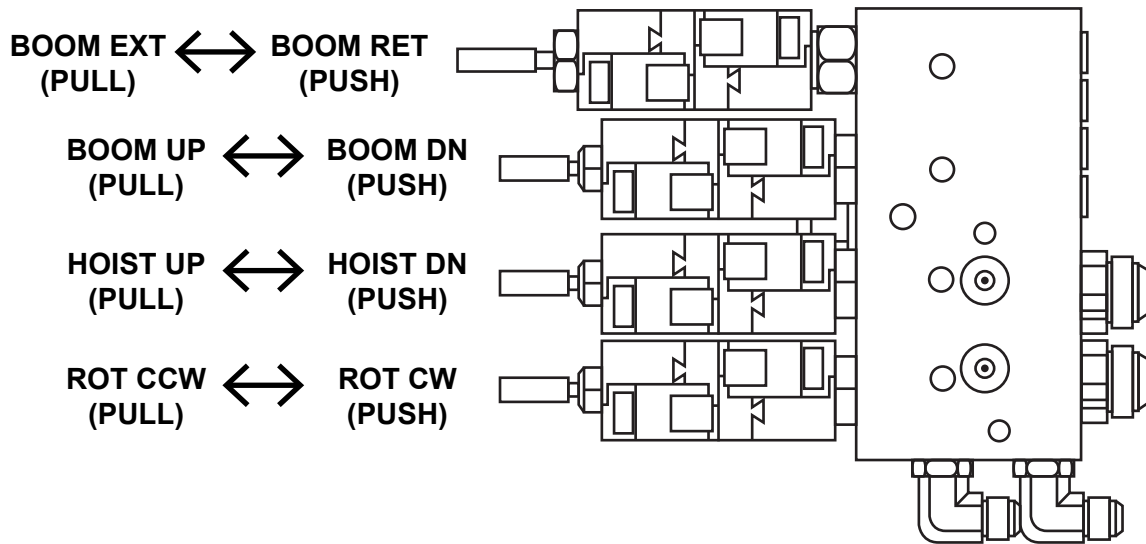
1-AXIS, TRIGGER PROP – Allows only one function to operate on each joystick. The joysticks are on-off and only need to be moved in the direction of the desired function. The speed control is located in the trigger. The more the trigger is pulled, the faster the function will operate.

2-AXIS, TRIGGER PROP – Allows two functions to operator on each joystick. The joysticks are on-off and only need to be moved in the direction of the desired function. The speed control is located in the trigger. The more the trigger is pulled, the faster the function will operate.

1-AXIS, TRIGGER EN – Allows only one function to operate on each joystick. The speed is controlled by the joystick. The more the joystick is moved in the direction of the desired function, the faster the function will operate.

2-AXIS, TRIGGER EN – Allows two functions to operate on each joystick. The speed is controlled by the joystick. The more the joystick is moved in the direction of the desired function, the faster the function will operate.














6.10 OPERATION—VALVE OVERRIDE



1. Push the unloader valve (ULV) red button. This will send hydraulic fluid to the valve block.
2. Select the desired function.
3. Close the gap between the collar and the end on the override button.
4. Push or pull the override button for the desired direction of movement. The farther the button is pressed or pulled, the faster the function will operate.
5. When the manual operation is complete, release the ULV to its original position.
6. Ensure the collar is returned to the locked position. If not, the function may move on its own.

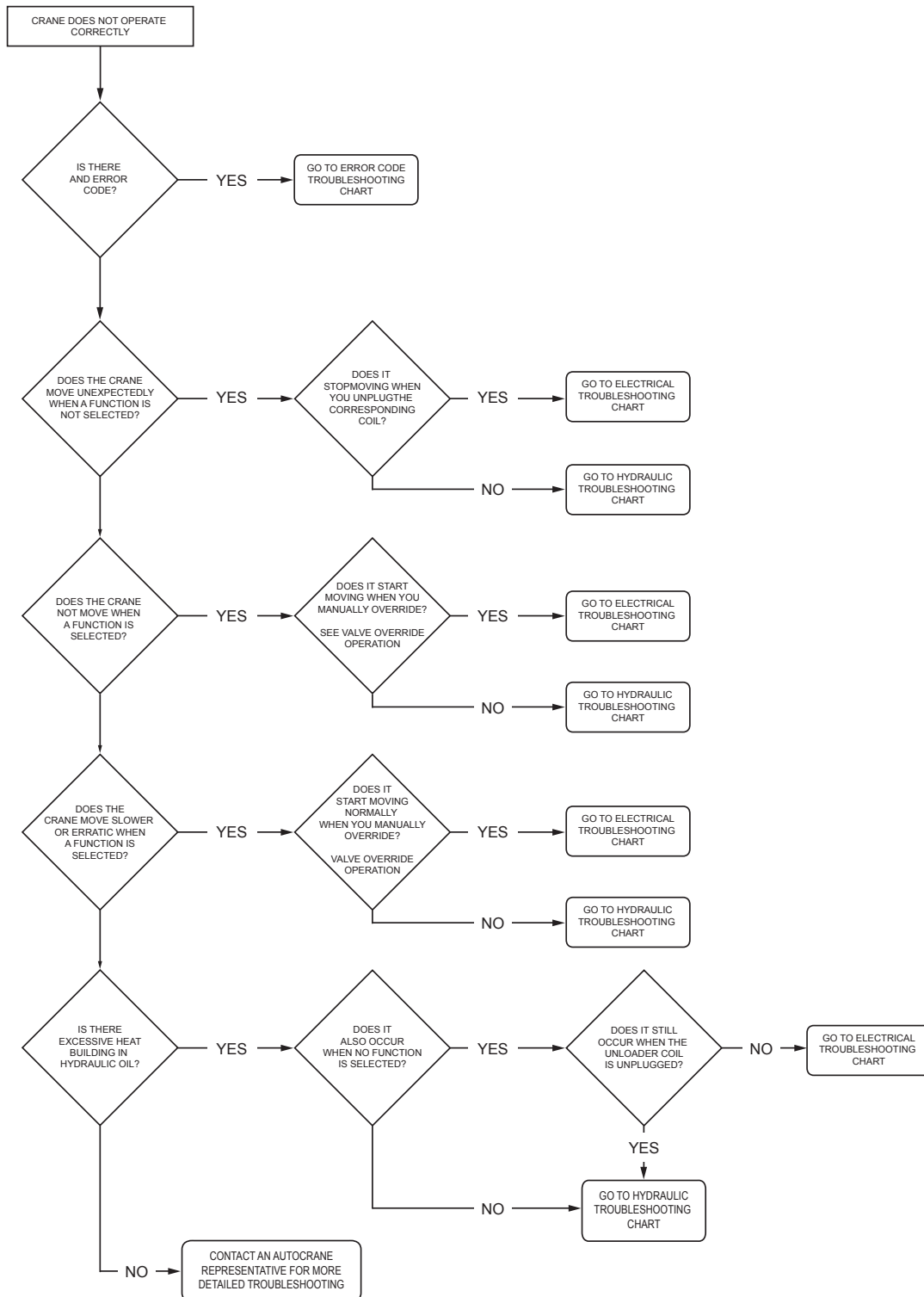
6 NexStar III Operation

6.11 Transmitter Layout

LABEL	DIRECTION	FUNCTION	GRAPHIC	DESCRIPTION
SW1	Up	Engine Start		
	Down	Engine Stop		Sends a 12VDC signal from crane to stop vehicle
SW2	Up	Boom Up		Moving the joystick up activates boom up function
	Down	Boom Down		Moving the joystick down activates boom down function
	Left	Rotate CCW		Moving the joystick to the left activates counter-clockwise rotation function
	Right	Rotate CW		Moving the joystick to the right activates clockwise rotation function
SW3	Up	Hoist Up		Moving the joystick up activates hoist up function
	Down	Hoist Down		Moving the joystick down activates hoist down function
	Left	Boom Retract		Moving the joystick to the left activates the boom retract function
	Right	Boom Extend		Moving the joystick to the right activates the boom extend function
SW4	Up	Auxiliary	AUX	Sends a Latching signal that activates an auxiliary output to operate an external component (i.e. compressor, worklights)
	Down	High Idle	HIGH IDLE	Sends a latching signal that activates High Idle on Vehicle
SW5	Up	Link, Speed & Mode Adjustment	Link	Links transmitter to crane (Press & Release) Access to the Speed & Mode Selection Screen (Press & Hold)
	Center	On		Transmitter is on*
	Down	Off	Off	Turns off Transmitter
PB1	In	E-stop Activated		Activates Estop
	Out	E-stop Deactivated		Deactivates Estop
PB2	In	Horn		Momentarily activates an audible signal device

* Although switch maybe in the "On" position, it does not necessarily mean there is communication between the transmitter and the crane. The transmitter goes to sleep after a certain amount of time. If the unit goes to sleep, the transmitter will need to be turned back on. Reference the steps under "Turning On Transmitter" if this occurs.

7.1 TROUBLESHOOTING FLOW CHART



7 NexStar III Troubleshooting

7.2 NEXSTAR III REMOTE CONTROL TROUBLESHOOTING TABLE

Problem	Possible Reason	Action
REMOTE CONTROL WILL NOT TURN ON	Remote control emergency stop switch is down or pressed.	Ensure the E-Stop switch is pulled up.
	Batteries are dead or installed backwards; battery holder is damaged.	Ensure all switches, buttons, and joysticks are in the off position.
	Remote control momentarily powers-up and displays an error code prior to turning off.	Ensure all switches, buttons, and joysticks are in the off position.
REMOTE CONTROL WILL NOT RESPOND WITH THE RECEIVER	Incorrect system RF channel.	Ensure the remote control and the receiver are set to the same RF channel.
	Incorrect system access code.	Ensure the tether cable is installed and secured correctly. Inspect the tether cable and connectors for damage.
	System out of range.	Ensure the startup procedure is initiated within 300 ft. from the receiver. Ensure the signal strength indicator level is greater than 0%.
REMOTE CONTROL WILL NOT TURN ON IN TETHER MODE	The connecting tether cable is not installed, installed improperly, or is damaged.	Ensure the tether cable is installed and secured correctly. Inspect the tether cable and connectors for damage.
	Remote control is failing switch scan.	Ensure all switches, buttons, and joysticks are in the off position.
	Remote control emergency stop switch is pressed down.	Ensure the E-Stop switch is pulled up.
REMOTE CONTROL WILL NOT RESPOND WITH RECEIVER IN TETHER MODE	System not in tether mode.	Ensure the startup procedure is initiated with the tether cable attached.
	The tether cable or connectors are damaged.	Inspect the tether cable and connectors for damage.
REMOTE CONTROL WILL NOT RESPOND WITH THE RECEIVER IN WIRELESS MODE	System not in wireless mode.	Ensure the startup procedure is initiated within 300 ft. from the receiver. Ensure the signal strength indicator level is greater 0%.

7.3 ERROR CODE TABLE

ERROR CODE	CAUSE	DIAGNOSIS	SOLUTION
S0. E-STOP ACTIVE	E-STOP ACTIVATED	ALL OUTPUTS WILL BE DISABLED	DEACTIVATE E-STOP PER OPERATION PROCEDURES.
S1. CAN RX TO	RECEPTION OF A CAN MESSAGE TIMED OUT	ALL OUTPUTS WILL BE DISABLED	DETERMINE WHY MESSAGE(S) IS (ARE) NOT BEING RECEIVED. WHEN PROBLEM IS CORRECTED THE ALARM WILL CLEAR.
S2. TEMP OUT OF RANGE	OUTSIDE OPERATING TEMPERATURE -40C TO 85C	ALL OUTPUTS WILL BE DISABLED	GET TEMPERATURE INTO ACCEPTABLE RANGE. ALARM WILL CLEAR AFTER 1 MINUTE.
S16-S31 OUT X OVERCURRENT ERR	WHEN THE OUTPUT WAS ACTIVATED, A CURRENT OF OVER 3.5 A WAS BEING DRAWN	THAT OUTPUT IS DISABLED	CYCLE POWER TO RECEIVER. IF PROBLEM CONTINUES, FIND WHAT CAUSED OVER CURRENT DRAW AND CYCLE POWER.
S32-S47 OUT X +VB SHORT	WHEN THE OUTPUT WAS SUPPOSED TO BE A GROUND IT HAD A POSITIVE VOLTAGE	THAT OUTPUT IS DISABLED	DETERMINE THE CAUSE OF THE SHORT, FIX THE CAUSE, AND CYCLE POWER TO RECEIVER.
S32-S47 OUT X -VB SHORT	WHEN THE OUTPUT WAS SUPPOSED TO BE A POSITIVE VOLTAGE IT HAD A GROUND	THAT OUTPUT IS DISABLED	DETERMINE THE CAUSE OF THE SHORT, FIX THE CAUSE, AND CYCLE POWER TO THE RECEIVER.
A1. BOOM PSI LOW	LIFT CYLINDER PRESSURE BELOW 80 PSI	DISABLES ALL FUNCTIONS EXCEPT BOOM UP AND HOIST DOWN	HOIST DOWN LOAD IF APPLICABLE, AND RAISE BOOM OFF ANY SUPPORTS. ALARM WILL CLEAR ONCE PRESSURE IN CYLINDER IS RESTORED.
A2. CW LIMIT	CRANE HAS REACHED THE LIMIT OF ROTATION IN THE CW DIRECTION	DISABLES CLOCKWISE ROTATION	ROTATE CCW TO CLEAR ERROR. ONCE SWITCH IS DEACTIVATED THE ALARM WILL CLEAR.
A3. CCW LIMIT	CRANE HAS REACHED THE LIMIT OF ROTATION IN THE CCW DIRECTION	DISABLES COUNTER-CLOCKWISE ROTATION	ROTATE CW TO CLEAR ERROR. ONCE SWITCH IS DEACTIVATED THE ALARM WILL CLEAR.
A4. TRK TILT WARN	TRUCK ANGLE EXCEEDS 5.7 DEGREES OR 10% SLOPE	ALL FUNCTIONS WILL ONLY OPERATE AT 50% OF SPEED	MOVE VEHICLE TO LEVEL GROUND
A5. TRK TILT ALARM	TRACK ANGLE EXCEEDS 8.5 DEGREES OR 15% SLOPE	ALL FUNCTIONS ARE DISABLED	MOVE VEHICLE TO LEVEL GROUND
A6. ANTI 2-BLOCK	ANTI 2-BLOCK IS ACTIVATED. TRAVELING BLOCK HAS COME INTO CONTACT WITH BOOM	DISABLES BOOM DOWN, EXTEND, AND HOIST UP	MOVE LOAD AWAY FROM BOOM BY EITHER RETRACTING, HOISTING DOWN, OR BOOMING UP. IF THERE IS NO LOAD NEAR TIP OF BOOM CHECK FUNCTION OF THE BAIL WELDMENT. IT MUST COME INTO CONTACT WITH SWITCH PLUNGER UNDER NORMAL CONDITIONS.
A7. 90% LOAD WARN	REACHED 90% OF RATED CAPACITY	REDUCES SPEED OF ALL FUNCTIONS BY 50%	REDUCE LOAD TO CLEAR ALARM.

7 NexStar III Troubleshooting

7.3 ERROR CODE TABLE

ERROR CODE	CAUSE	EFFECT	SOLUTION
A8. 100% LOAD ALARM	REACHED 100% OF RATED CAPACITY	DISABLES BOOM DOWN, EXTEND, AND HOIST UP	REDUCE LOAD BY EITHER RETRACTING, BOOMING UP, OR HOISTING DOWN.
A9. SLOW ROTATE ACT	LIFT CYLINDER HAS EXCEEDED 600 PSI	REDUCES ROTATE FUNCTIONS BY 50%	THIS IS A SAFETY FEATURE THAT PREVENTS EXCESSIVE SWINGING OF HEAVY LOADS. WILL RESET WHEN LOAD DECREASES AND FUNCTION IS DEACTIVATED.
A10. BOOM SENSOR ERR	BOOM ANGLE SENSOR FAILED	ALL FUNCTIONS ARE REDUCED BY 50%	CHECK CONNECTIONS TO BOOM ANGLE SENSOR.
A11. BOOM ANGLE RANGE	ANGLE SENSOR IS OUT OF RANGE	OPERATES NORMALLY	BOOM ANGLE SENSOR IS MOUNTED INCORRECTLY. CHECK MOUNTING. THE ARROW SHOULD BE FACING THE TIP OF THE CRANE.
A12. BOOM PT ERR	BOOM PRESSURE TRANSDUCER ERROR	ALL FUNCTIONS ARE DISABLED EXCEPT BOOM DOWN & HOIST DOWN	CHECK CONNECTIONS TO PRESSURE TRANSDUCER LOCATED ON LIFT CYLINDER.
A13 DIRTY FILTER	FILTER IS DIRTY IF TEMPERATURE OF OIL IS AT LEAST 100 DEGREES	OPERATES NORMALLY	REPLACE FILTER
A14 ADDRESS TAG ERROR	CONTROLLER NOT RECOGNIZING ADDRESS TAG	ALL OUTPUTS ARE DISABLED	CHECK CONNECTION AT ADDRESS TAG. CHECK FOR WATER IN CONNECTION. DRY OUT IF REQUIRED.

7.4 ELECTRICAL TROUBLESHOOTING TABLE

ERROR CODE	CAUSE	EFFECT	SOLUTION
CRANE MOVES UNEXPECTEDLY	JAMMED TRANSMITTER BUTTON	ACTIVATE E-STOP TO SEE IF MOVEMENT STOPS.	VERIFY THAT NOTHING WAS ACTIVATING THE FUNCTION AT THE TIME OF MOVEMENT. IF IT WAS NOT ACTIVATED THEN REPLACE TRANSMITTER.
	SHORT IN HARNESS	UNEXPECTED MOVEMENT WOULD ONLY OCCUR WHEN MULTI-FUNCTIONING. UNPLUG COIL TO SEE IF MOVEMENT STOPS. CHECK AMPERAGE TO COIL USING MULTI-METER IN LINE WITH COIL. IT SHOULD BE NO MORE THAN 100MA.	TRACE WIRE BACK TO RECEIVER. VERIFY NO DAMAGE TO THE WIRE. CHECK CONNECTORS, THEY SHOULD BE CLEAR OF DEBRIS AND WATER.
	RECEIVER LOCKED UP	BOTTOM RIGHT CORNER IS A CIRCLE WITH AN ARROW. THIS SHOULD BE ROTATING AT ALL TIMES.	IF THE ARROW STOPS ROTATING, SHUT POWER OFF TO THE CRANE. LET SET OF A COUPLE OF MINUTES AND TURN POWER BACK ON. IF THIS PROBLEM PERSISTS CONTACT TECHNICAL SUPPORT.
NO FUNCTION OPERATES ON THE CRANE.	TRANSMITTER TURNED OFF	NSII- THE STATUS LIGHT ON THE TRANSMITTER SHOULD BE FLASHING GREEN WHEN NO BUTTON IS DEPRESSED. NSIII- LCD SCREEN IS ON.	TURN ON TRANSMITTER. REFERENCE OPERATION SECTION OF MANUAL
	E-STOP ACTIVE	CHECK LCD SCREEN. YOU WOULD HAVE AN ERROR STATING E-STOP IS ACTIVE.	TURN ON TRANSMITTER. REFERENCE OPERATION SECTION OF MANUAL
	RECEIVER TURNED OFF	CHECK THE LCD SCREEN. IF IT IS BLANK, THE RECEIVER IS TURNED OFF.	CHECK MAIN POWER SWITCH LOCATED IN CRANE BOX DIRECTLY UNDER THE CRANE.
	LOW BATTERY	WHILE THE TRANSMITTER IS TURNED ON, CHECK THE LCD SCREEN ON RECEIVER. BATTERY INDICATOR SHOULD BE AT LEAST 10%.	REPLACE TRANSMITTER BATTERIES. NSII- REQUIRES (2) AA BATTERIES NSIII- REQUIRES (4) AA BATTERIES
	RECEIVER LOCKED UP	BOTTOM RIGHT CORNER IS A CIRCLE WITH AN ARROW. THIS SHOULD BE ROTATING AT ALL TIMES.	IF THE ARROW STOPS ROTATING, SHUT POWER OFF TO THE CRANE. LET SET OF A COUPLE OF MINUTES AND TURN POWER BACK ON. IF THIS PROBLEM PERSISTS CONTACT TECHNICAL SUPPORT.
	TRUCK TILT ALARM ACTIVE	CHECK SCREEN FOR ERROR CODE. IT WOULD READ TRK TILT ALARM.	THIS ERROR OCCURS WHEN THE TRUCK ANGLE EXCEEDS A 15% SLOPE (8.5 DEGREES). RELOCATE THE TRUCK TO A FLATTER SURFACE.
	POWER UNIT NOT ACTIVATING	IF RECEIVER HAS POWER BUT THE POWER UNIT DOESN'T TURN ON WHEN A FUNCTION IS SELECTED.	CHECK POWER UNIT RELAY CHECK GROUNDING WIRE FROM RELAY TO PUMP CHECK MAIN GROUNDING WIRE FROM PUMP TO GROUNDING BOLT ON PEDESTAL.

7 NexStar III Troubleshooting

7.4 ELECTRICAL TROUBLESHOOTING TABLE

ERROR CODE	CAUSE	EFFECT	SOLUTION
THE FOLLOWING FUNCTIONS ARE INOPERABLE BOOM DOWN, EXTEND, HOIST UP	ANTI-2 BLOCK	CHECK SCREEN FOR ERROR CODE. IT WOULD READ ANTI-2 BLOCK ERROR.	VERIFY THAT THE TRAVELING BLOCK IS NOT IN CONTACT WITH BAIL. IF SO, HOIST DOWN AND CHECK FUNCTIONS AGAIN. INSPECT END OF BOOM TO VERIFY BAIL IS IN CONTACT WITH ANTI-2 BLOCK SWITCH. CHECK BAIL SPRING. CHECK CORD REEL & WIRE ON SIDE OF CRANE FOR DAMAGE.
	CRANE OVERLOAD	CHECK SCREEN FOR ERROR CODE. IT WOULD READ 100% OVERLOAD.	VERIFY LOAD ON CRANE DOES NOT EXCEED MOMENT RATING. REFERENCE LOAD CHART. TAP HOIST DOWN OR RETRACT FUNCTION TO RESET OVERLOAD. CHECK OPERATION AGAIN.
ALL FUNCTIONS ARE INOPERABLE EXCEPT BOOM DOWN AND HOIST DOWN	PRESSURE TRANSDUCER IS UNPLUGGED	CHECK LCD SCREEN. IT WOULD READ "BOOM PT ERROR"	VERIFY THAT PRESSURE TRANSDUCER LOCATED ON THE LIFT CYLINDER VALVE BLOCK IS PLUGGED INTO THE HARNESS.
CRANE ROTATES SLOWLY	SLOW ROTATE ACTIVATED	CHECK LCD SCREEN. IT WOULD READ "SLOW ROTATE ACT"	THIS IS A SAFETY FEATURE TO PREVENT GETTING THE LOAD INTO AN UNSAFE CONDITION (EXCESSIVE SWINGING). SLOW ROTATE WILL REMAIN ACTIVE UNTIL THE LOAD IS REMOVED AND THE ROTATION FUNCTION IS DESELECTED.
	CLOSE TO MAX CRANE LOAD	WHEN THE TRUCK IS TILTED AND UNDER HIGH LOAD A DECREASE IN SPEED IS POSSIBLE.	BRING LOAD IN CLOSER TO DECREASE THE LOAD
	ADEQUATE OPERATING CLEARANCES BETWEEN WORM GEAR AND WORM	ROTATION WILL SLOW AT A PARTICULAR POINT ON THE WORM GEAR.	SLIGHTLY LOOSEN BOLTS ATTACHING TAPERED BEARINGS TO PEDESTAL. TAP THE BEARING HOUSING USING A HAMMER AWAY FROM THE WORM GEAR. RETIGHTEN BOLTS.

7.4 ELECTRICAL TROUBLESHOOTING TABLE

ERROR CODE	CAUSE	EFFECT	SOLUTION
ALL FUNCTIONS OPERATE SLOWLY	90% OVERLOAD ACTIVATED	CRANE IS AT OR OVER 90% OF IT'S RATED CAPACITY	THIS IS A SAFETY FEATURE TO PREVENT GETTING INTO AN UNSAFE CONDITION (SUDDEN MOVEMENT OF HEAVY LOAD). 90% OVERLOAD WILL REMAIN ACTIVATED UNTIL LOAD IS DECREASED.
	TRUCK TILT WARNING	CRANE IS BETWEEN A 10% AND 15% SLOPE. CHECK LCD SCREEN FOR ERROR CODE, IT WOULD READ "TRK TILT WARN"	MOVE VEHICLE OR RAISE OUTRIGGER TO A MORE STABLE, LEVEL POSITION.
	LOW VOLTAGE	VOLTAGE WILL BE 10 VOLTS OR LOWER	VERIFY TRUCK IS RUNNING WHILE OPERATING CRANE. CHECK VEHICLE BATTERY FLUID LEVEL. CHECK FOR ADEQUATE WIRE SIZING FOR LENGTH AND AMPERAGE REQUIREMENTS

7 NexStar III Troubleshooting

7.5 HYDRAULIC TROUBLESHOOTING TABLE

ERROR CODE	CAUSE	EFFECT	SOLUTION
CRANE MOVES UNEXPECTEDLY	JAMMED CARTRIDGE	TRY TO MANUALLY OVERRIDE VALVE IF UNABLE TO MOVE STEM. CARTRIDGE IS JAMMED.	REPLACE CARTRIDGE
	COUNTERBALANCE SET TOO LOW (BOOM-UP & BOOM-DN)	ADJUST THE COUNTER-BALANCE OUT TO SEE IF MOVEMENT STOPS.	CONTACT AUTO CRANE FOR PROPER SETTING OF COUNTERBALANCE. YOU MAY NEED TO REPLACE COUNTERBALANCE.
	CONTAMINATE IN CARTRIDGE	VALVE STICKS IN CERTAIN POSITIONS.	REFERENCE FOR CLEANING PROCEDURE.
NO FUNCTION OPERATES ON CRANE	HYDRAULIC TANK IS LOW OR EMPTY	VISUALLY INSPECT THE HYDRAULIC OIL LEVEL IN THE TANK.	FILL TANK TO PROPER LEVEL.
	VEHICLE IS NOT RUNNING	VERIFY ENGINE IS RUNNING.	START VEHICLE.
ALL FUNCTIONS OPERATE SLOWLY	CONTAMINATION IN CARTRIDGES	VISUALLY INSPECT THE CARTRIDGE FOR CLOGGED PORTS.	REFERENCE FOR CLEANING PROCEDURE.
EXCESSIVE HEAT DURING OPERATION	OPERATION TIME	CRANE OPERATION IS GENERALLY DESIGNED FOR INTERMITTENT DUTY (7 MIN. LOADED / 30 MIN. COOL DOWN).	REDUCE USE OF CRANE TO ALLOW OIL TO COOL.

8.1 INSPECTION REQUIREMENTS

NOTICE

Reference ASME B30.5a and OSHA 1910.180 for complete inspection requirements.



WARNING

All inspections shall be performed by the designated personnel only.

8.2 INSPECTION CLASSIFICATION

1. Initial Inspection
 - A. Prior to initial use, all new, altered, modified, or extensively repaired cranes shall be inspected by a designated person to ensure compliance with provisions of this standard.
2. Regular Inspection
 - A. Inspection procedures for cranes in regular service are divided into two general classifications based upon the intervals at which the inspection should be performed. The intervals in turn are dependent upon the nature of the components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classification are herein designated as "frequent" and "periodic" with respective intervals as defined below:
 - i. Frequent Inspection – daily or before each use
 - ii. Periodic Inspection – one to twelve-month intervals or as specifically recommended by the manufacturer or qualified person.

8.3 FREQUENT INSPECTION

Inspections should also occur during operation for any deficiencies that might appear between regular inspections. Any deficiencies, such as those listed below, shall be carefully examined and a determination made as to whether they constitute a hazard:

1. Inspect control mechanisms for maladjustment that interferes with proper operation.
2. Inspect control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter.
3. Inspect safety devices for malfunction.
4. Visually inspect all hydraulic hoses, particularly those that flex in normal operation of crane functions.
5. Inspect hooks and latches for deformation, chemical damage, cracks, and wear.
6. Inspect for proper rope reeving.
7. Inspect electrical wiring and components for malfunctioning, signs of excessive deterioration, dirt and moisture accumulation.
8. Inspect hydraulic system for proper oil level and leaks.
9. Inspect tires for recommended inflation pressure, cuts, and loose wheel nuts.
10. Inspect connecting pins and locking device for wear damage and loose retaining bolts.
11. Inspect rope for gross damage, such as listed below, which may be an immediate hazard.
 - A. Distortion such as kinking, crushing, un-stranding, birdcaging, main strand displacement, or core protrusion. Loss of rope diameter in a short length or unevenness of outer strands should be replaced.

8 Maintenance

- B. General corrosion.
- C. Broken or cut strands.
- D. Use care when inspecting sections of rapid deterioration around flange points crossover points, and repetitive pickup points on drums.
- E. Inspect number, distribution, and type of visible broken wires.

NOTICE

Continued use of rope depends upon good judgment by a designated person in evaluating remaining strength in a used rope after allowance for deterioration disclosed by inspection. Continued rope operation depends upon this remaining strength.

8.4 PERIODIC INSPECTION

Any deficiencies, such as those listed below, shall be carefully examined and determination made as to whether they constitute a hazard:

1. Inspect for deformed, cracked or corroded members in the crane structure and entire boom.
2. Inspect for loose bolts, particularly mounting bolts.
3. Inspect for cracked or worn sheaves and drums.
4. Inspect for worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers and devices.
5. Inspect for excessive wear on brakes and clutch system parts and linings.
6. Inspect crane hooks for cracks.
7. Inspect travel steering, braking, and locking devices for malfunction.
8. Inspect for excessively worn or damaged tires.
9. Inspect hydraulic hose, fittings, and tubing for the following problems:
 - A. Evidence of leakage at the surface of the flexible hose or its junctions with the metal and coupling.
 - B. Blistering, or abnormal deformation to the outer covering of the hydraulic or pneumatic hose.
 - C. Leakage at threaded or clamped joints that cannot be eliminated by normal tightening or recommended procedures.
 - D. Evidence of excessive abrasion or scrubbing on the outer surface of a hose, rigid tube, or fitting. Means shall be taken to eliminate the interference of elements in contact or otherwise protect the components.
10. Inspect hydraulic pumps and motors for the following problems:
 - A. Loose bolts and fasteners.
 - B. Leaks at joints between sections.
 - C. Shaft seal leaks.
 - D. Unusual noises or vibrations.
 - E. Loss of operating speed.
 - F. Excessive heating of fluid.
 - G. Loss of pressure.
11. Inspect hydraulic valves for the following:
 - A. Cracks in valve housing.
 - B. Improper return of spool to neutral position.
 - C. Leaks at spools or joints.
 - D. Sticking spools.
 - E. Failure of relief valves to attain or maintain correct pressure setting.
 - F. Relief valve pressure shall be checked as specified by the manufacturers.

12. Inspect hydraulic cylinders for the following problems:
 - A. Driving caused by fluid leaking across piston.
 - B. Rod seals leaking.
 - C. Leaks at welding joints.
 - D. Scored, nicked, or dented cylinder rods.
 - E. Damaged case (barrel).
 - F. Loose or deformed rod eyes or connecting joints.
13. Inspect hydraulic filters for evidence of rubber particles on the filter elements indicating possible hose, O-ring, or other rubber component deterioration. Metal chips or pieces on the filter may denote failure in pumps, motors, or cylinders. Further inspection will be necessary to determine the origin of the problem before corrective action can be taken.
14. Inspect labels to confirm correct location and legibility. Reference decals layout in this manual for proper location of decals.
15. Rope inspections need not be at equal calendar intervals and should be more frequent as the rope approaches the end of useful life. A qualified person shall inspect the wire rope based on such factors as:
 - A. Expected rope life as determined by experience on the particular installation or similar installations.
 - B. Severity of environment.
 - C. Percentage of capacity lifts.
 - D. Frequency rates of operation.
 - E. Exposure to shock loads.
 - i. This inspection shall cover the entire length of the rope. Only the surface wires need to be inspected and no attempt should be made to open the rope. Any deterioration resulting in appreciable loss of original strength shall be noted and determination made as to whether use of the rope would constitute a hazard. A few notable deterioration points are listed below:
 1. Reduction of rope diameter below nominal diameter due to loss of core support.
 2. Internal or external corrosion.
 3. Wear of outside wires.
 4. Severely corroded, cracked, bent, worn, or improperly applied connections.

8.5 CRANES NOT IN REGULAR USE

A crane, which has been idle for a period of more than one month or more, shall be given an inspection conforming to the "initial" and "periodic" inspection requirements of this section.

8.6 INSPECTION RECORDS

Dated records of periodic inspection should be made on critical items such as brakes, crane hooks, rope, cylinders, and relief pressure valves.

8.7 TESTING REQUIREMENTS

NOTICE

Reference ASME B30.5a and OSHA 1910.180 for complete testing requirements.

8 Maintenance



WARNING

All testing shall be performed by designated personnel only. Prior to initial use, all new, altered, modified, or extensively repaired cranes shall be inspected by a designated person to ensure compliance with provisions of this standard.

1. Test all functions to verify speed and operation.
2. Ensure all safety devices are working properly.
3. Confirm operating controls comply with appropriate function labels.
4. Test loads shall not exceed 110% of the manufacturer's load rating.
5. Written reports shall be maintained showing test procedures and confirming the adequacy of repairs.

8.8 GENERAL REPAIRS AND MAINTENANCE

NOTICE

Reference ASME B30.5a and OSHA 1910.180 for complete maintenance and repair requirements.



WARNING

All repairs and maintenance shall be performed by designated personnel only. Establish a preventative maintenance program based on this section. Obtain all replacement parts from your local authorized distributor.

8.9 MAINTENANCE PRECAUTIONS

1. Place crane where it will cause the least interference with other equipment or operations.
2. Verify all controls are in the OFF position and all operating features secured from inadvertent motion by brakes, pawls, or other means.
3. The means for starting the crane shall be rendered inoperative.
4. The boom should be secured in place before maintenance.
5. Relieve hydraulic oil pressure from all hydraulic circuits before loosening or removing hydraulic components.
6. Warning or "OUT OF ORDER" signs shall be placed on all crane controls.
7. After adjustments and repairs have been made, the crane shall not be returned to service until all guards have been reinstalled, trapped air removed from hydraulic system (if required), safety devices reactivated, and maintenance equipment removed.

8.10 ADJUSTMENTS AND REPAIRS

1. Any hazardous conditions disclosed by the inspection requirement shall be corrected before operation of crane is resumed.
2. Adjustments shall be maintained to assure correct of functioning of components, the following are examples:
 - A. Function operating mechanism.
 - B. Safety devices.
 - C. Control systems.
3. Repairs or replacements shall be provided as needed for operation, the following are examples:
 - A. Critical parts of functional operating mechanisms which are cracked, broken, corroded, bent, or excessively worn.

- B. Critical parts of the crane structure which are cracked, bent, broke, or excessively corroded.
 - C. Crane hooks showing cracks, damage, or corrosion shall be taken out of service. Repairs by welding are recommended.
4. If bleeding the hydraulic system is required, run each crane function until smooth operation of that particular function is noticeable.

8.11 LUBRICATION

All moving parts of the crane, for which lubrication is specified, should be regularly lubricated per the manufacturer's recommendations and procedures.

8.12 ROPE REPLACEMENT

No precise rules can be given for determination of the exact time for replacement of rope, since many variable factors are involved.

Replacement rope shall have a strength rating at least as great as the original rope furnished or recommended by Auto Crane. A rope manufacturer, Auto Crane, or a qualified person shall specify any deviation from the original size, grade, or construction.

Conditions such as the following shall be reason for questioning continued the rope or increasing the frequency of inspection:

1. In running ropes, six randomly distributed broken wires in one strand in one lay.
2. One outer wire broken at the contact point with the core of the rope structure and protrudes or loops out of the rope structure. Additional inspection of this section is required.
3. Wear of one third of the original diameter of the outside individual wire.
4. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
5. Evidence of any heat damage from any cause.
6. Reduction of nominal diameter of more than:
 - A. 1/64" (0.4mm) – for diameters up to and including 5/16" (8mm)
 - B. 1/32" (0.8mm) – for diameters 3/8" (9.5mm) through and including 1/2" (13mm)
 - C. 3/64" (1.2mm) – for diameters 9/16" (14.5mm) through and including 3/4" (19mm)
 - D. 1/16" (1.6mm) – for diameters 7/8" (22mm) through and including 1-1/8" (29mm)
 - E. 3/32" (2.4mm) – for diameters 1-1/4" (32mm) through and including 1-1/2" (38mm)
7. In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

8.13 ROPE INSTALLATION AND MAINTENANCE

1. Rope should be stored to prevent damage and deterioration.
2. Unreeling or uncoiling of rope shall be done as recommended by the rope manufacturer and with care to avoid kinking or inducing twist.
3. Before cutting a rope, seizing shall be placed on each of the place where the rope is to be cut to prevent unlaying of the strands. On pre-formed rope, one seizing on each side of the cut is required. On non-preformed ropes of 7/8" (22mm) or smaller, two seizings on each side of the cut are required. For non-preformed rope 1 in. (25mm) diameter or larger, three seizings on each side of the cut are required.

8 Maintenance

4. During installation care should be exercised to avoid dragging of the rope in the dirt or around objects that will scrape, nick, crush, or induce sharp bends in it.
5. Rope should be maintained in a well-lubricated condition. It is important that lubricant applied as a part of the maintenance program shall be compatible with the original lubricant and to this end the rope manufacturer should be consulted. Lubricant applied shall be the type that does not hinder visual inspection. Those sections of rope that are located over sheaves or otherwise hidden during inspection and maintenance procedures require special attention when lubricating rope. The object of rope lubrication is to reduce internal friction and to prevent corrosion.
6. When an operating rope shows greater wear or well-defined localized areas than on the remainder of the rope, rope life can be extended in some cases by shifting the wear to different areas of the rope.

8.14 PAINT FINISH MAINTENANCE

The paint finish on Auto Crane products can become damaged during normal use when chipped, scratch, exposed to harsh chemicals, cleaned with pressure washers, or similar. During periods when the truck is exposed to salt or other corrosive chemicals, wash Auto Crane products weekly. Inspect the paint finish monthly or when washed. Immediately repair any exposed bare metal or rust. Repair damaged paint on Auto Crane products with the following procedure:

1. Sand the damaged area to bare metal.
2. Use a solvent to clean the sanded area to remove sanding debris and residue.
3. Wipe dry with a clean cloth to remove any remaining debris and residue.
4. Use a primer compatible with Sherwin Williams E2W932 epoxy primer.
5. Prime the sand areas to a minimum 2 mm dry film thickness per the primer manufacturer's instructions.
6. Use a paint compatible with Sherwin Williams E2W932 epoxy primer and Sherwin Williams Genesis polyurethane top coat paint.
7. Apply the top coat paint to a minimum 2 mm dry film thickness within 24 hours of applying the primer.
8. The final primer and top coat should have approx. a 4 mm dry film thickness.

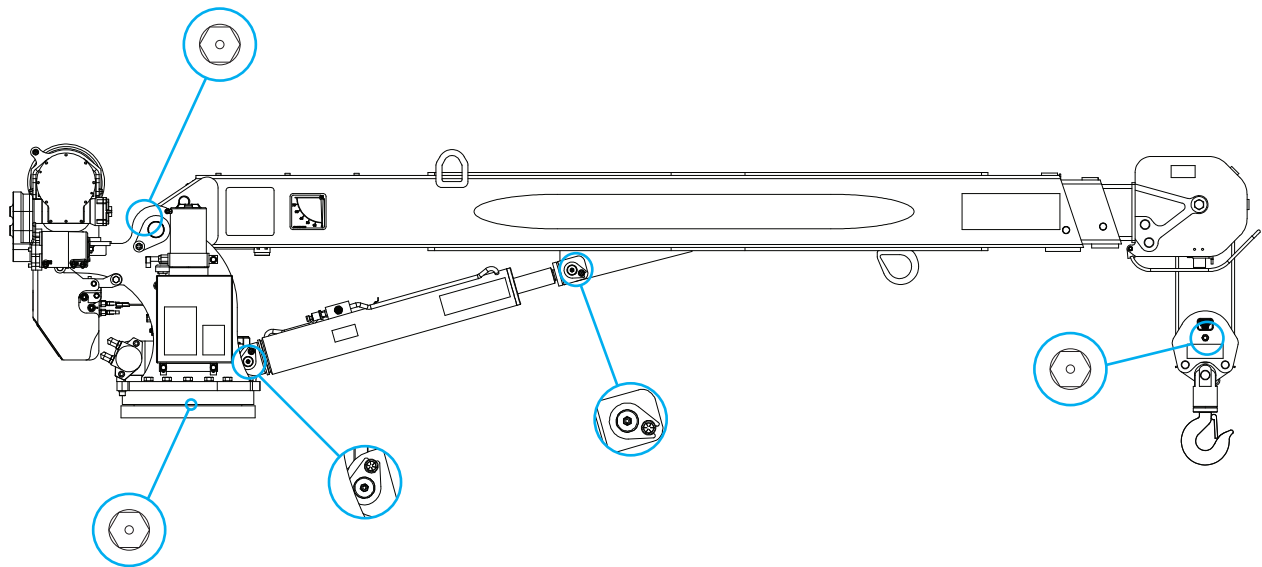
8.15 LUBRICATION AND MAINTENANCE SCHEDULE

Service Performed	Instructions	Daily	Weekly	3 Months	6 Months	Yearly
Load Hook	Inspect hook and latch for deformation, cracks, and corrosion.	X				
Cable Drum	Ensure cable is wound evenly on drum.	X				
Hoist/Boom Cable	Check for flattening, kinks, broken strands.	X				
Hyd. Hoses	Visual inspection.	X				
Hyd. Fluid	Check fluid level.	X				
Pin Retaining Bolts	Check torque to 23 ft lbs(Grade 5) 35 ft- lbs (Grade 8) as required.	X				
Mounting Bolts	Check torque to 335 ft-lbs as required.		X			
Rotating Ring Gear	Lube with MobileTac LL or Lubriplate.		X			
Sheave Bearings	Sealed bearing, replace if rough or loose.		X			
All Other Bolts	Check and tighten as required.		X			
Lift Cylinder Bearings	Grease with MobilePlex EP-2 or equivalent at zerk fittings			X		
Rotation Bearing	Grease with MobilePlex EP-2 or equivalent at zerk fittings			X		
Rotation Bearing Bolts	Check torque to 170 ft-lbs (hex head) 180 ft-lbs (socket head) as required			X		
Hydraulic Fluid	Drain, flush, and refill with Mobile DTE 13 oil					X
Boom Slide Pads	Pads greased when replaced.					
Filter, Valve Block	Replace annually or every 200 hours of operation as directed by the dirty filter sensor.					
For additional information, see OSHA 1910.180 and ASME B30.5a.						

8 Maintenance

8.16 LUBRICATION POINTS

1. Use only authorized parts. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.
2. Once a bolt has been tightened to specification then removed, the bolt should be replaced with a new one. Auto Crane Company recommends this crane be serviced per the "Crane Inspection Log" P/N 999978. Fill these logs in at the intervals noted and kept as a permanent record. Additional copies are available from your local distributor.



8.17 NEXSTAR III CARTRIDGE MAINTENANCE



Verify movement in ports while manually overriding cartridge



Use the following procedure to inspect the cartridge for proper operation.

1. Clean the area around the valve spool before it is removed from the valve bank.
2. Remove the valve spool from the valve bank. Be careful not to touch any surrounding objects.
3. Use any off-the-shelf automotive brake cleaning fluid to remove any visible debris from the valve spool. Wear skin and eye protection while spraying the valve spool clean.
4. Inspect the O-rings for damage. Replace if necessary.
5. Dip the valve spool into fresh hydraulic fluid to lubricate and fill the cavities.
6. Install the valve spool into the valve block.
7. Validate the operation of the crane related to this valve spool.

8 Maintenance

8.18 ADJUSTING OIL COOLED WORM BRAKE

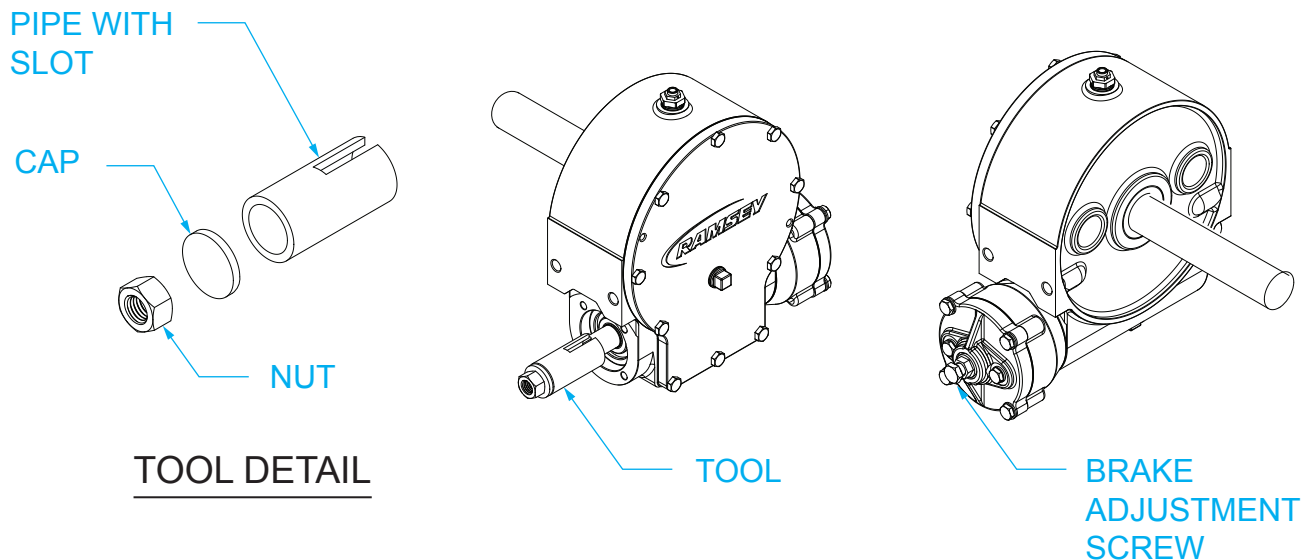
The oil-cooled, fully adjustable, automatic safety brake operates in the worm housing lubricant, all part being submerged in oil. When the brake wears to the point that the load begins to drift, the brake can be adjusted as follows:

1. Loosen the lock nut on the adjusting screw.
2. Tighten the brake by turning the adjusting screw clockwise.

CAUTION: Only ¼ turn is usually required to adjust the brake. Over-tightening can cause overheating, and damage to the brake parts. Tighten the lock nut after adjustment is completed.

If the brake does not respond to adjustment then a new leaf spring and brake disc is needed. A torque wrench can be equipped with a special adapter to fit the input shaft (worm) of the winch. The adapter can be made by welding a nut to the end of a piece of tubing as shown in the following figure.

8.19 Brake Adjustment



After welding the cap and nut to the tubing, slot the tubing as shown. This will allow the special adapter to slide over the keyway and then act as a large socket. A torque wrench can then be used to apply the proper torque. Turn the torque wrench so that the drum turns in the spool out direction or lowering direction. The torque ratings should be between 8-13 ft-lbs.

If the torque wrench does not show the proper value as it turns, then the worm brake adjusting bolt should be turned clockwise ¼ turn. Each time the adjusting bolt is turned, check the torque reading. Continue this procedure until the proper torque reading is achieved. Then tighten the lock nut.

9 Crane Mounting and Installation

For information specific to your crane, such as mounting hole diameter, bolt size and grade, and hydraulic requirements, see General Dimensions.

1. Refer to the Bill of Materials included with your ship kit. Ensure all items listed on the Bill of Materials are included with your crane.

CAUTION

Failure to use clean hydraulic hoses and components may contaminate the crane and hydraulic system and void warranty.

NOTICE

Excess flow will cause erratic operation and too little flow will cause poor crane operation.

2. Vehicle shall meet minimum GVWR dependent on crane model:
3. The vehicle must be equipped with an engine speed control and tachometer.
4. Ensure the mounting surface is properly reinforced to withstand the capacity loading of the crane. Ensure the outriggers are used to provide total stability for the truck.
5. Cut the proper sized hole in the mounting location (centered with mounting bolts) for access to hydraulic connections.
6. Ensure the mounting bolts are the proper size and grade. Tighten to the correct specification. See General Dimension.
7. Use a boom support when the crane is not in operation. Connect the traveling block to the hook loop.
8. Electrical hookup:

WARNING

Failure to correctly plumb and wire crane can cause inadvertent operation and damage to crane and/or personnel.

9. Ensure the Owner's Manual is delivered to the customer.
10. Install voltage switching unit inside compartment safe from weather and contamination.
11. See following page for additional electrical installation.
12. For additional help: Call the Service Department at the Auto Crane Company, 1-800-777-2760, located in Tulsa, OK.

IMPORTANT!

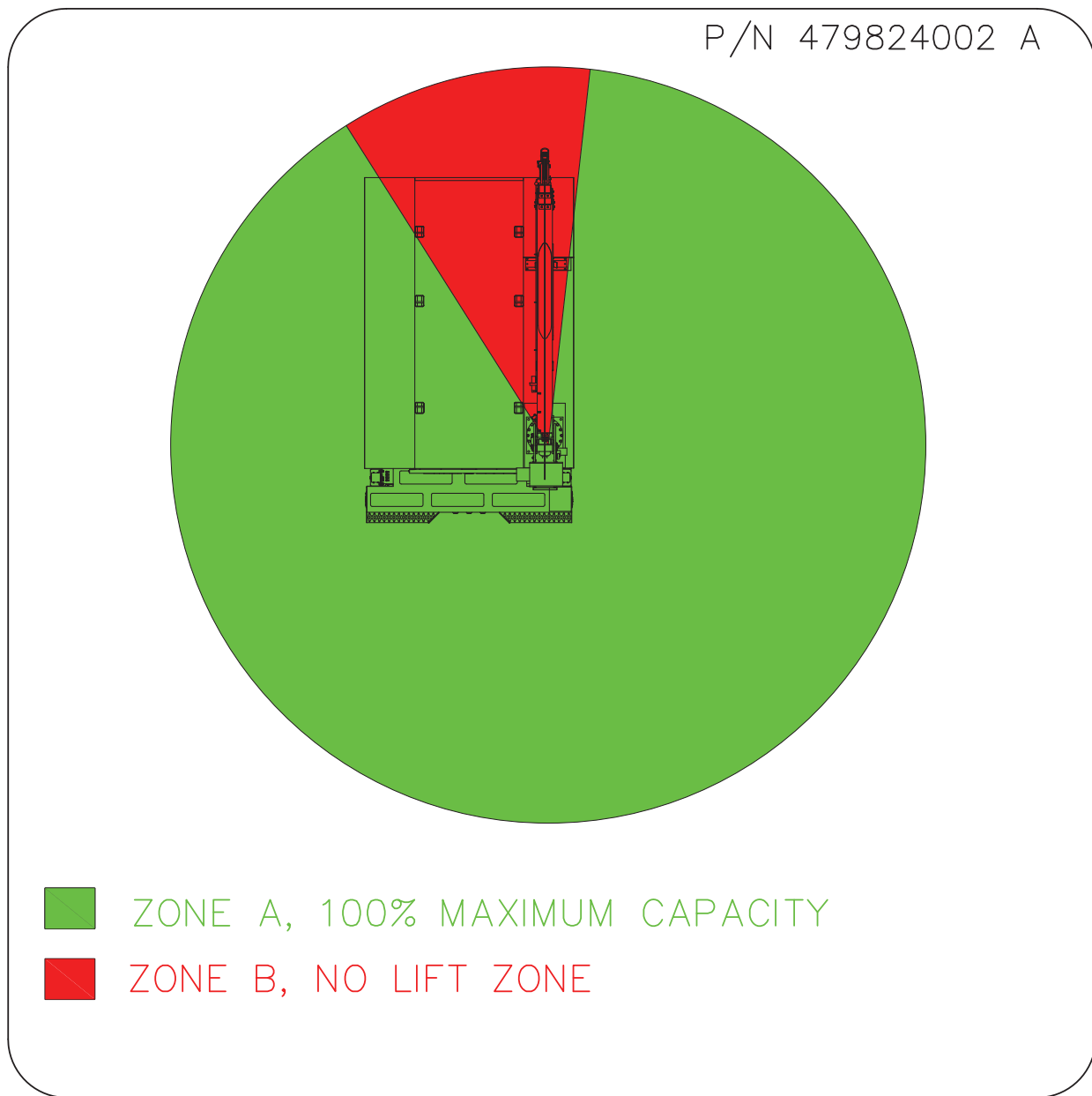
FEDERAL LAW (49 CFR PART 571) REQUIRES THAT THE FINAL STAGE MANUFACTURER OF A VEHICLE CERTIFY THAT HE VEHICLE COMPLIES WITH ALL APPLICABLE FEDERAL REGULATIONS. ANY MODIFICATIONS PERFORMED ON THE VEHICLE PRIOR TO THE FINAL STAGE ARE ALSO CONSIDERED INTERMEDIATE STAGE MANUFACTURING AND MUST BE CERTIFIED AS TO COMPLIANCE. THE INSTALLER OF THIS CRANE AND BODY IS CONSIDERED ONE OF THE MANUFACTURERS OF THE VEHICLE. AS SUCH A MANUFACTURER, THE INSTALLER IS RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE FEDERAL AND STATE REGULATIONS, AND IS REQUIRED TO CERTIFY THAT THE VEHICLE IS IN COMPLIANCE.

IT IS THE FURTHER RESPONSIBILITY OF THE INSTALLER OF THE CRANE TO COMPLY WITH THE OSHA TRUCK CRANE STABILITY REQUIREMENTS AS SPECIFIED BY 29 CFR PART 1910.180 (C) (1).

9.1 STABILITY CHART INSTALLATION

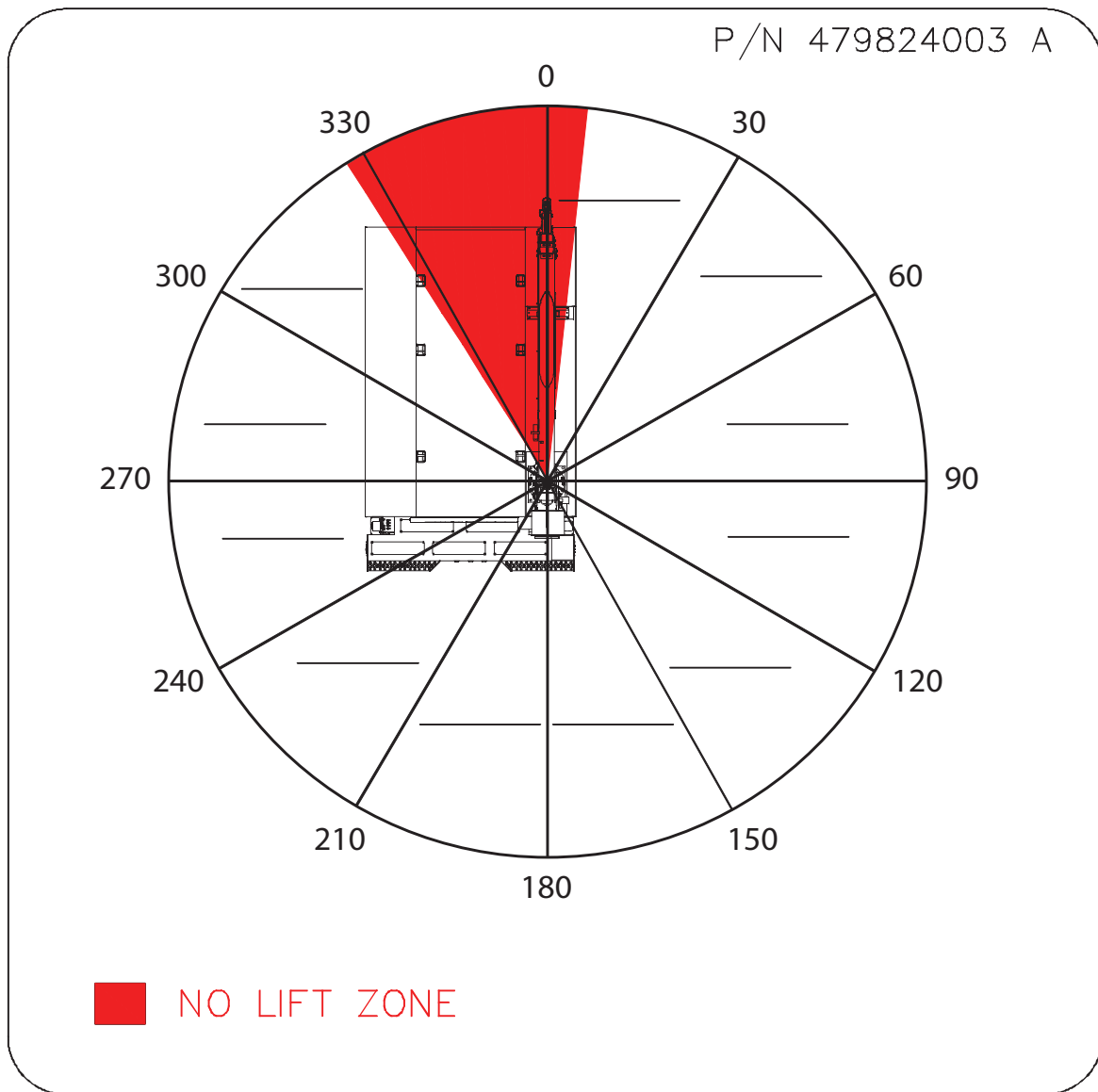
There is a stability chart included in the ship kit. This decal is typically installed on the inside of the door of the crane box. This decal is to alert the user of the available crane capacities around the vehicle.

- 479824002 decal will be installed on an Auto Crane body that was outfitted with an Auto Crane crane and Auto Crane outriggers. Auto Crane has designed the body, crane and outrigger to have stability based on the chart below:



9 Crane Mounting and Installation

- 479824003 decal will be installed on an Auto Crane body that was not outfitted with an Auto Crane crane and Auto Crane outriggers. Auto Crane has designed the body, crane, and outrigger to have stability based on the chart. The stability chart provides lines to write in the tested stability percentage at each section below:



9.2 NEXSTAR III COUNTERBALANCE VALVE ADJUSTMENT



WARNING

Do not try to adjust valves while the boom is moving

1. Ensure the PTO is disengaged and the boom is properly supported.
2. Remove the plug on the counterbalance valve.
3. Install a pressure gauge (0-3000 psi) into the port.
4. Use an in-line flow meter to ensure pump flow is eight to nine gallons per minute.
5. Engage the PTO.
6. With no load on the boom, raise the boom to an approx. 70° angle.
7. Lower the boom and read the pressure gauge. If the pressure reading is not approx. 1300 psi, the counterbalance valve requires adjustment.
 - A. To increase the pressure, loosen the nut on the adjustment screw, and turn the Allen head screw counterclockwise.
 - B. To decrease the pressure, loosen the nut on the adjustment screw, and turn the Allen head screw clockwise.
8. Tighten the nut on the adjustment screw and repeat steps 6 and 7 until the proper pressure reading is obtained.



CAUTION

If the proper pressure reading cannot be obtained, please contact your Auto Crane distributor for assistance.

9. Disengage the PTO.
10. Remove the pressure gauge and install the plug. The crane is now ready for operation.

9.3 EMERGENCY CRANE OPERATION

If for any reason hydraulic flow or pressure is lost to the crane, use the following procedure to lower the boom until the problem can be fixed.

1. In an emergency situation when it becomes necessary to lower the boom without hydraulic assistance, the counterbalance valve can be used to lower the boom.
2. Ensure the boom will be lowered onto an appropriate support.
3. Loosen the lock nut and slowly turn the Allen head screw clockwise.
4. Count the number of turns and continue to slowly turn the Allen head screw clockwise until the boom just begins to lower.

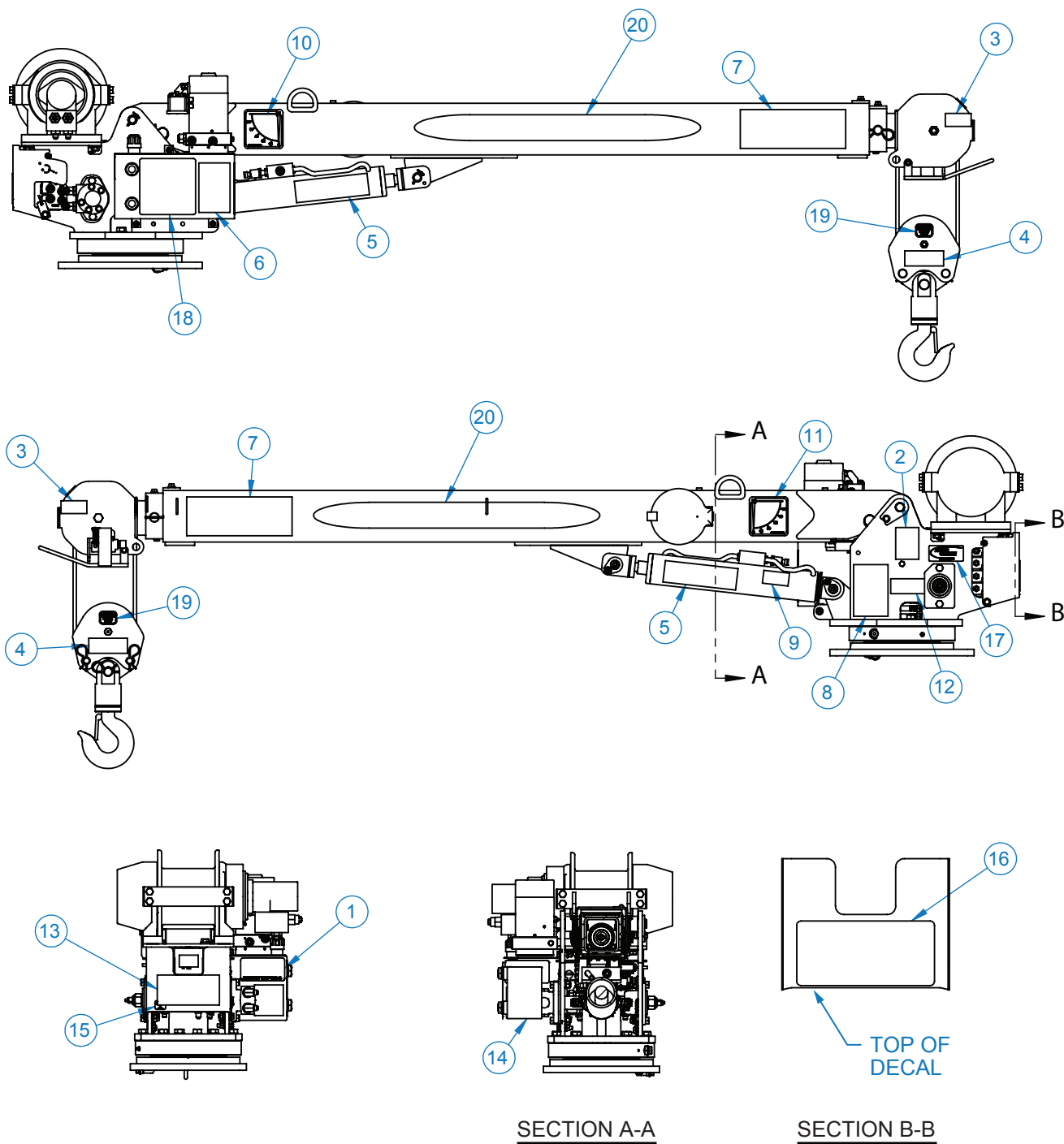


CAUTION

Remove any personnel from near the crane as the load is lowering.

5. If the Allen head screw is turned too far, the internal valve will come apart. This condition is not repairable.
6. After the boom is lowered onto the boom support, turn the Allen head screw the same number of turns counterclockwise into the counterbalance valve.
7. After the problem is corrected, readjust the counterbalance valve to ensure proper operation.

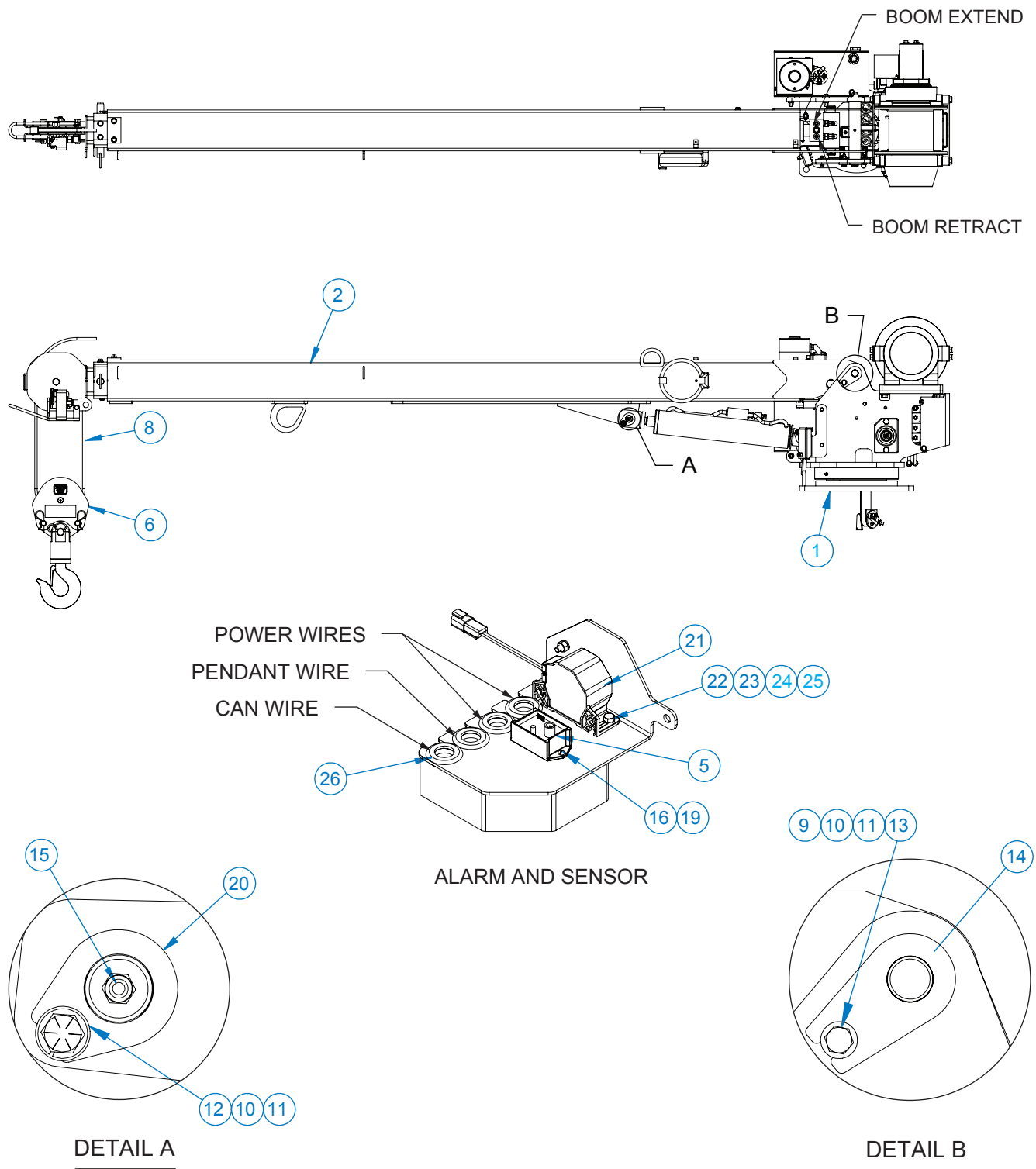
10 Decal Layout



Decal Layout 10

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	040824000	DECAL, AMERICAN FLAG, MADE IN THE U.S.A.
2	1	040632000	DECAL WARNING - OVERLOAD
3	2	040517000	DECAL STAY CLEAR OF BOOM
4	2	040518000	DECAL STAY CLEAR OF LOAD
5	2	040519000	DECAL DANGER SCISSOR POINT
6	1	040579000	DECAL OPERATION INSTRUCTIONS
7	2	040529000	DECAL DANGER "ELECTROCUTION HAZARD" POWER LINE
8	1	040580000	DECAL TRAINED OPERATOR
9	1	040587000	DECAL WARNING LOAD SENSOR
10	1	320318000	DECAL ANGLE INDICATOR CS
11	1	320318001	DECAL ANGLE INDICATOR SS
12	1	330622000	DECAL SERIAL NO
13	1	360034000	DECAL AUTO CRANE LOGO
14	1	460169000	DECAL WARNING, REMOTE CONTROL
15	1	320991302	DECAL, PENDANT CONNECTION
16	1	320991301	DECAL, MAN OVERRIDE NEXSTAR SMALL EH
17	1	040619001	DECAL AUTO CRANE LOGO
18	1	404207001	LOAD CHART, EHC-4
19	2	404212000	DECAL MAX BLOCK LOAD 4004
20	2	600047016	DECAL, AUTO CRANE EHC-4 NS LOGO, FLATTENED OVAL, 33.25 IN LONG

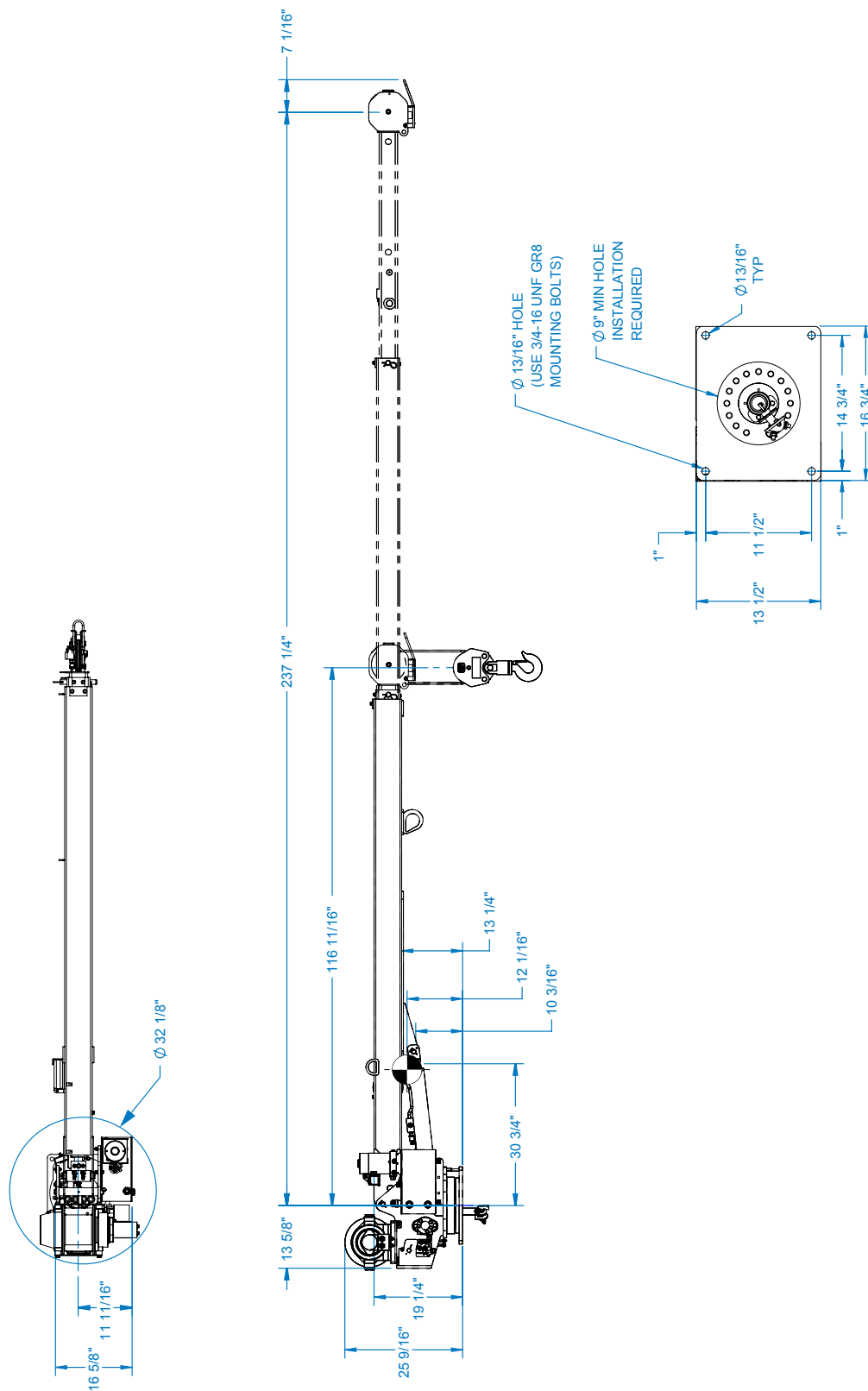
11 General Assembly P/N: 404241005



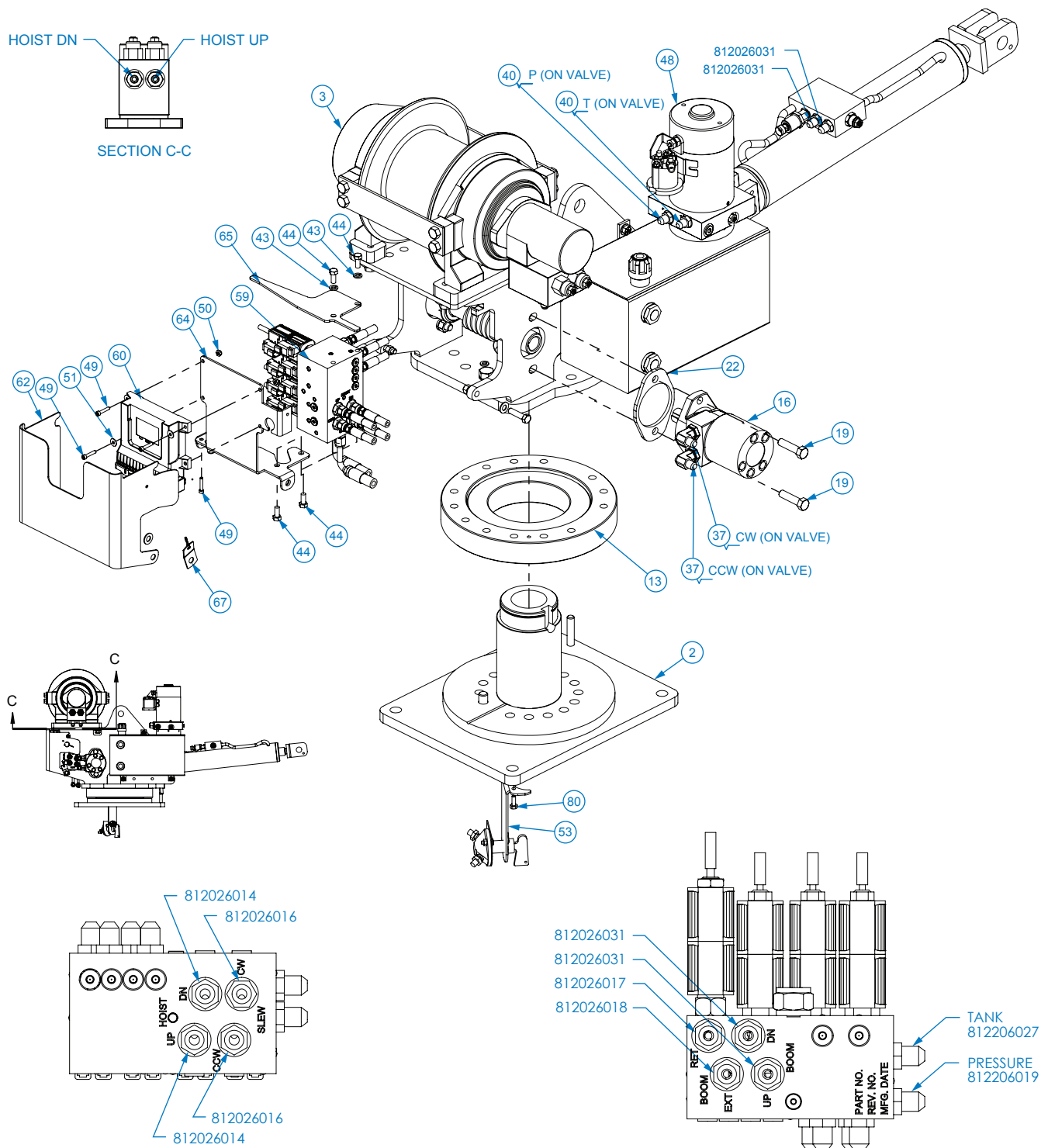
General Assembly P/N: 404241005 11

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	404241205	PEDESTAL ASS'Y, 4004EH NEXSTAR III, FM
2	1	404240100	4004EH BOOM (20FT), SINGLE SHEAVE
3	1	005901000	SCREW HX HD 1/4-20UNC X 1/2 LG
4	1	366823254	SENSOR, TRI-AXIS
5	1	404241035	KIT, SHIP 4004EH NEXSTAR 20' BOOM
6	1	404211050	TRAVELING BLOCK ASSY, 4004
7	1	366823236	LIGHT, LED (RED, GREEN, YELLOW)
8	1	360758000	ROPE ASSY
9	1	330372000	NUT HX 3/8 NC GR5
10	2	021100000	WASHER SP LK 3/8
11	2	021200000	WASHER FL 3/8
12	1	330371000	SCREW HX HD 3/8-16UNC X 1 LG GR8
13	1	009109000	SCREW HX HD 3/8-16UNC X 1 1/2 LG
14	1	404220000	PIN WDMT BOOM/PED
15	1	239300000	ZERK, GREASE
16	4	001302000	SCREW RD HD #8-32UNC X 1/2 LG
17	2	360678000	PIN, 3/16 COTTERLESS RING
18	4	019700000	WASHER SP LK #8
19	4	015500000	NUT HX #8-32UNC CP
20	1	320824000	PIN, LIFT CYLINDER
21	1	366823223	KIT, ALARM, CONSTANT TONE, W/ DEUTSCH PLUG
22	2	005500000	SCREW HX HD 1/4-20UNC X 3/4 LG
23	2	020200000	WASHER SP LK 1/4
24	2	020300000	WASHER FL 1/4
25	2	015900000	NUT HX 1/4-20UNC SS
26	4	750169010	RUBBER GROMMET, 7/8" I.D., 1 5-8" O.D. 1/8" PANEL THICKNESS
27	1	404241351	DECAL LAYOUT, 4004EH 20' BOOM NEXSTAR

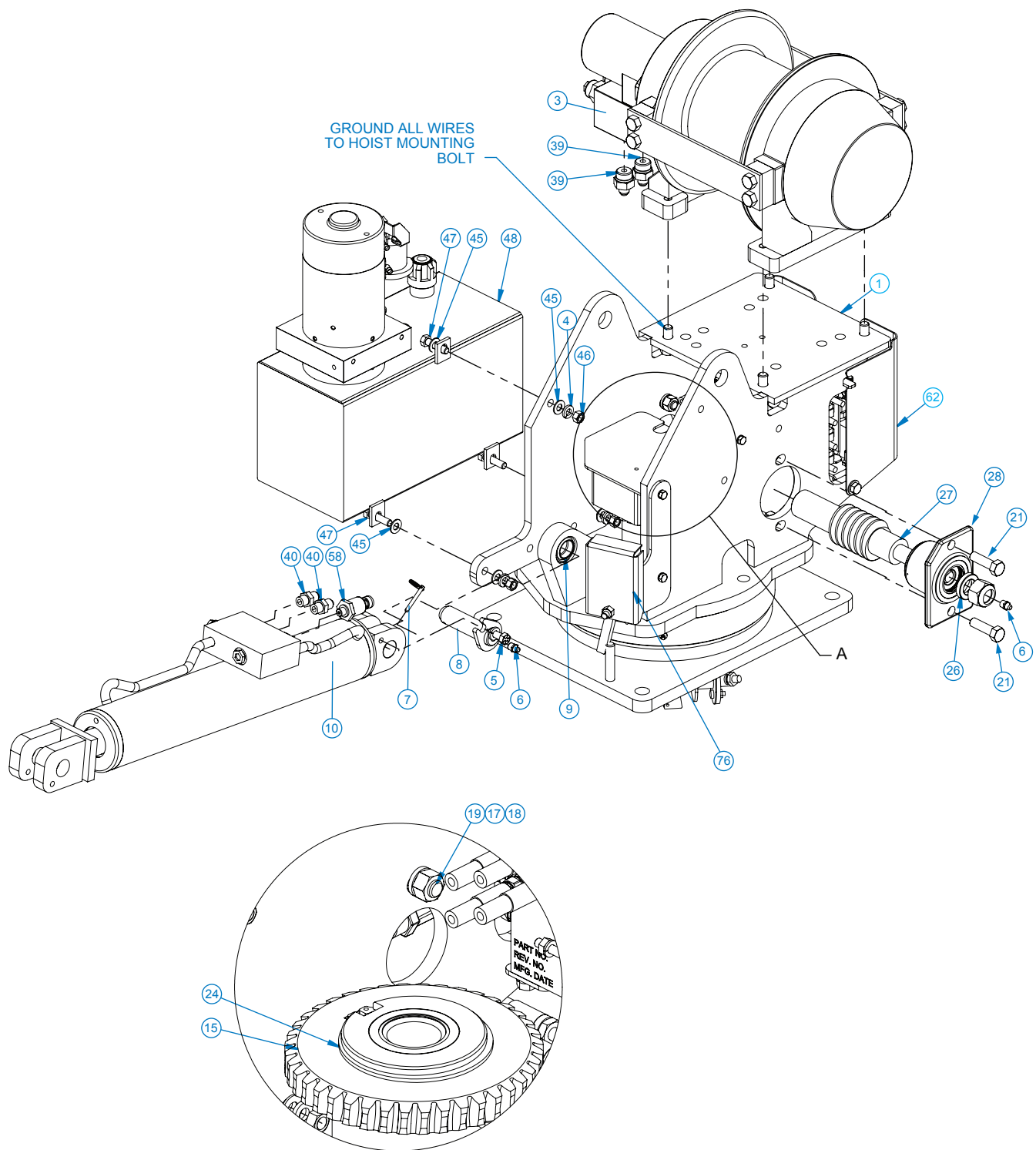
12 General Dimensions P/N: 404241005



Pedestal Assembly P/N: 404241205 13



13 Pedestal Assembly P/N: 404241205



13



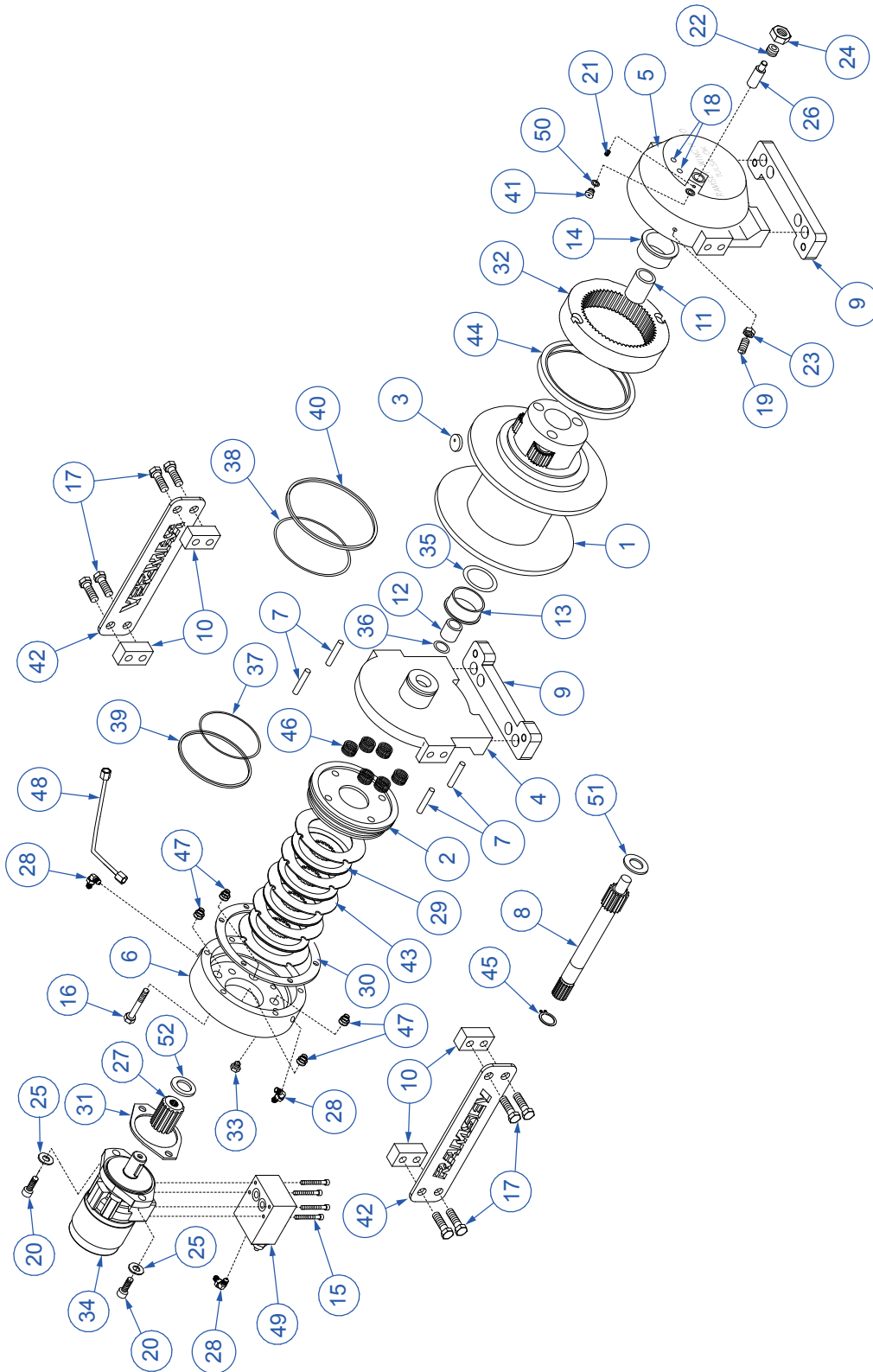
13 Pedestal Assembly P/N: 404241205

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	320991215	PEDESTAL WMT, 3203/4004 EH
2	1	404193100	BASE WMT, 3203 PR/PRX, W/ ROT. STOP
3	1	123331000	HOIST, RPH2000
4	5	021100000	WASHER SP LK 3/8
5	1	330371000	SCREW HX HD 3/8-16UNC X 1 LG GR8
6	2	239300000	ZERK, GREASE
7	1	360678000	PIN, 3/16 COTTERLESS RING
8	1	320824000	PIN, LIFT CYLINDER
9	1	320858000	BEARING, SPHERICAL 1.00 ID
10	1	320845000	CYLINDER, LIFT
11	2	023902000	WASHER FL 5/8 HARDENED
12	2	012198000	SCREW HX HD 5/8-11UNC X 1 3/4 LG GR8
13	1	320878000	ROTATION BEARING
14	1	008400000	SCREW HX HD 3/8-16UNC X 3/4 LG GR 5
15	1	320991282	GEAR, WORM, 6.667PD, 4.00 ID, w/GROUND, 3203
16	1	404241285	MOTOR, HYD 8.0 CU IN, SAE 2-BOLT 1" SHAFT
17	4	017701000	NUT HX 1/2-13UNC
18	8	021500000	WASHER, SP LK 1/2
19	2	011608000	SCREW HX HD 1/2-13UNC X 2 LG
20	1	019000000	NUT HX NYLK 7/8-14UNF
21	2	011603000	SCREW HX HD 1/2-13UNC X 1 3/4 LG
22	1	320879000	SPACER ROTATION
23	1	404213000	SEAL, 2.50 OD X 1.5 ID
24	1	404028000	RETAINING RING, SNAP RING
25	1	340602000	KEY, 3/4 SQ X 1
26	1	330483000	SPACER
27	1	404015000	WORM SHAFT
28	1	330478000	BEARING HOUSING ASSY
29	1	320991240	KIT, HOSE NEXSTAR 3203PRX/4004EH
30	1	812206027	HOSE, 3/8" x 3/8"JICF x 3/8"JICF 90° LONG x 27"
31	2	812026014	HOSE, 1/4" x 3/8"JICF x 3/8"JICF x 14"
32	2	812026016	HOSE, 1/4" x 3/8"JICF x 3/8"JICF x 16"
33	1	812026017	HOSE, 1/4" x 3/8"JICF x 3/8"JICF x 17"
34	1	812026018	HOSE, 1/4" x 3/8"JICF x 3/8"JICF x 18"
35	1	812206019	HOSE, 3/8" x 3/8"JICF x 3/8"JICF 90° LONG x 19"
36	2	812026031	HOSE, 1/4" x 3/8"JICF x 3/8"JICF x 31"
37	2	490198000	FITTING 10SAE(M)/6JIC ELBOW 90
38	1	369611000	ADAPTER, STR -6 ORM/ -4 ORF
39	2	202755000	FITTING, -10 SAE/-6 JIC, STR
40	3	200876000	FITTING 6 SAE/6 JIC STRAIGHT
41	4	738647000	SCREW HX HD 1/2-13UNC X 1 1/4 LG GR8
42	4	021600000	WASHER FL 1/2
43	5	020600000	WASHER 5/16 LOCK SS
44	5	007807000	SCREW HX HD 5/16-18UNC X 3/4 LG GR5
45	10	021200000	WASHER FL 3/8
46	3	330372000	NUT HX 3/8 NC GR5

Pedestal Assembly P/N: 404241205 13

ITEM NO.	QTY	PART NO.	DESCRIPTION
47	3	366159000	SCREW HX HD 3/8-16UNC X 1 1/2 LG GR8
48	1	320991306	POWER UNIT, NEXSTAR 3203/4004 EH
49	5	460094000	SCREW, SOC HD, #10-24 X 1"L, ZPL
50	5	015801000	NUT HX NYLK #10-24UNC ZP
51	5	020000000	WASHER FL #10 ZP
52	1	320991294	KIT, HARNESS SMALL EH FM NEXSTAR III
53	1	320991233	MASTER SWITCH ASSY
54	1	320991269	HARNESS, ELEC SMALL EH FM NEXSTAR III
55	1	320991291	CABLE, 2GA 5/16 TERM 24LG
56	1	320991293	CABLE, 2GA, 1/4-3/8 TERM, 72"LG
57	1	320991264	KIT, ELEC/HYD 3203PRX/4004EH FM NS III
58	1	366823255	TRANSDUCER, PRESSURE 0-3000 PSI
59	1	320991251	VALVE BLOCK, 3203PRX/4004EH PROPORTIONAL
60	1	366823963	TRANSCEIVER, NEXSTAR III
61	3	017301000	NUT HX NYLK 3/8-16UNC CP
62	1	320991224	COVER, VALVE/RECIEVER NEXSTAR
63	1	404241254	TAG, ID 4004EH NS III W/ROT STOPS
64	1	320991223	BRACKET, LOWER VALVE & RECEIVER, 3203/4004 EH
65	1	320991222	BRACKET, UPPER VALVE 3203/4004 EH
66	2	009109000	SCREW HX HD 3/8-16UNC X 1 1/2 LG
67	1	366823240	PIN, 3/16 W/LANYARD
68	1	320989216	BRACKET, SWITCH MNT, ROT STOP, 3203 PR/PRX
69	4	006210000	CAPSCREW-#8-32 X 7/8 LG SOC HD Z/P
70	4	019700000	WASHER SP LK #8
71	4	725321000	NUT HX NYLK #8-32UNC
72	1	366673000	PIN, ROTATION STOP
73	1	460079000	BEARING, ROTATION STOP
74	1	366671000	ARM, ROTATION STOP
75	1	320991220	WELDMENT, GEAR COVER
76	1	320989217	COVER, ROTATION STOP, 3203 PR/PRX
77	3	006200000	SCREW HX HD 1/4-20UNC X 1 1/4 LG
78	6	020200000	WASHER SP LK 1/4
79	3	015900000	NUT HX 1/4-20UNC SS
80	2	005500000	SCREW HX HD 1/4-20UNC X 3/4 LG
81	1	460110100	ROTATION STOP SWITCH ASSEMBLY, 24"

14 Hoist Assembly P/N: 123331



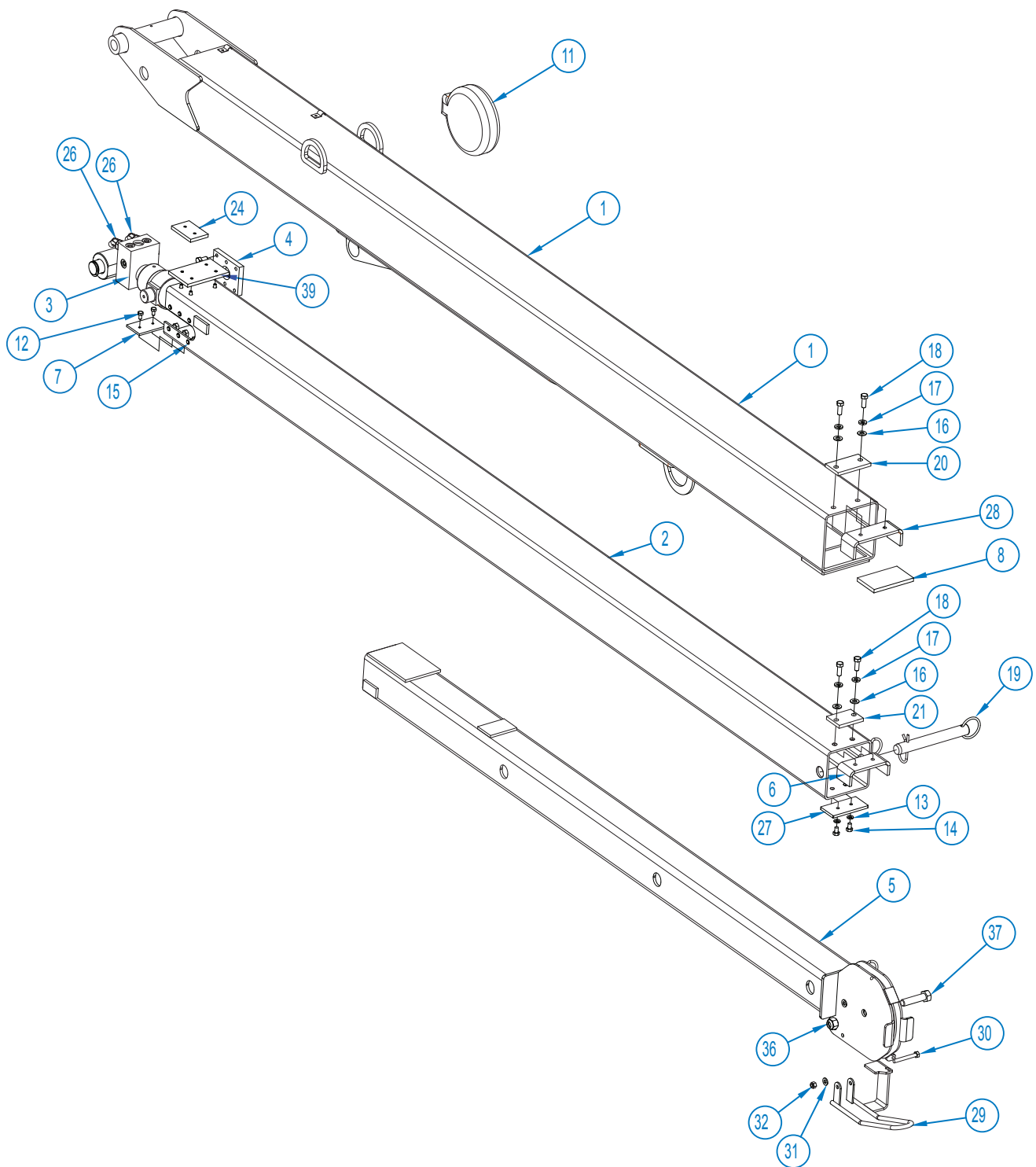
Hoist Assembly P/N: 123331 14

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	234189	DRUM ASSEMBLY
2	1	306042	PISTON-BRAKE
3	1	315004	ANCHOR- CABLE
4	1	338300	END BRG-MOTOR END
5	1	338301	END BRG-GEAR HSG.
6	1	338302	HSG-BRAKE
7	4	346045	PIN-BRAKE
8	1	357513	SHAFT- INPUT
9	2	408435	SPACER - FOOT MOUNTING
10	4	362284	SPACER - TIE PLATE
11	1	402120	BEARING
12	1	402121	BEARING
13	1	412084	BUSHING-DRUM,MOTOR END
14	1	412085	BUSHING-DRUM,GEAR END
15	4	414129	CAPSCREW 5/16-18NCX3 LG HX HD GR-5
16	6	414303	BOLT-3/8-16NC X2 1/2,HXHD,GR-5, Z/P
17	8	414548	CAPSCREW-1/2-13NCX1 1/2,HXHD,Z/P,G5
18	2	414854	SCREW-1/4-20NCX1/2LG,RDHD,SLOT,Z/PL
19	1	414926	SETSCREW-3/8-16NC X1,SOCKET,NYLON
20	2	414948	CAPSCREW-1/2-13NCX1 1/4LG,SOCKET HD
21	1	416016	SETSCREW1/4-20NCX1/4 HX SOCK HD CUP
22	1	416080	SETSCREW-5/8-18NF X1 LG,HXSOCHD,CUP
23	1	418036	NUT-3/8-16 NC,HEX JAM,Z/P
24	1	418088	NUT-JAM 5/8-18NF HEX HD,ZINC PLT
25	2	418218	LOCKWASHER-1/2 ID MED SECT,ZINC PLT
26	1	426048	PLUNGER-CLUTCH,BLOCKED
27	1	431015	COUPLING-MOTOR
28	2	432018	FITTING
29	4	438022	DISC-BRAKE
30	1	442220	GASKET-BRAKE HSG.
31	1	442223	GASKET-MOTOR FLANGE
32	1	444140	GEAR-RING,P/M
33	1	456038	FITTING-VENT,BREATHER
34	1	458222	MOTOR-HYDRAULIC (RPH-4900)
35	1	462046	O-RING
36	1	462056	O-RING
37	1	462057	O-RING
38	1	462058	O-RING
39	1	462059	O-RING-BACK-UP
40	1	462060	O-RING-BACK-UP
41	1	472052	PLUG
42	2	395426	TIE PLATE
43	5	474111	PLATE-SEPARATOR, BRAKE
44	1	486080	SEAL
45	1	490037	SNAP RING
46	6	494110	SPRING-BRAKE

14 Hoist P/N: 123331

ITEM NO.	QTY	PART NO.	DESCRIPTION
47	4	494112	SPRING
48	1	509009	TUBE ASSY
49	1	516068	VALVE-MOTOR CONTROL
50	1	518037	THRUST WASHER
51	1	518047	THRUST WASHER
52	1	518052	THRUST WASHER

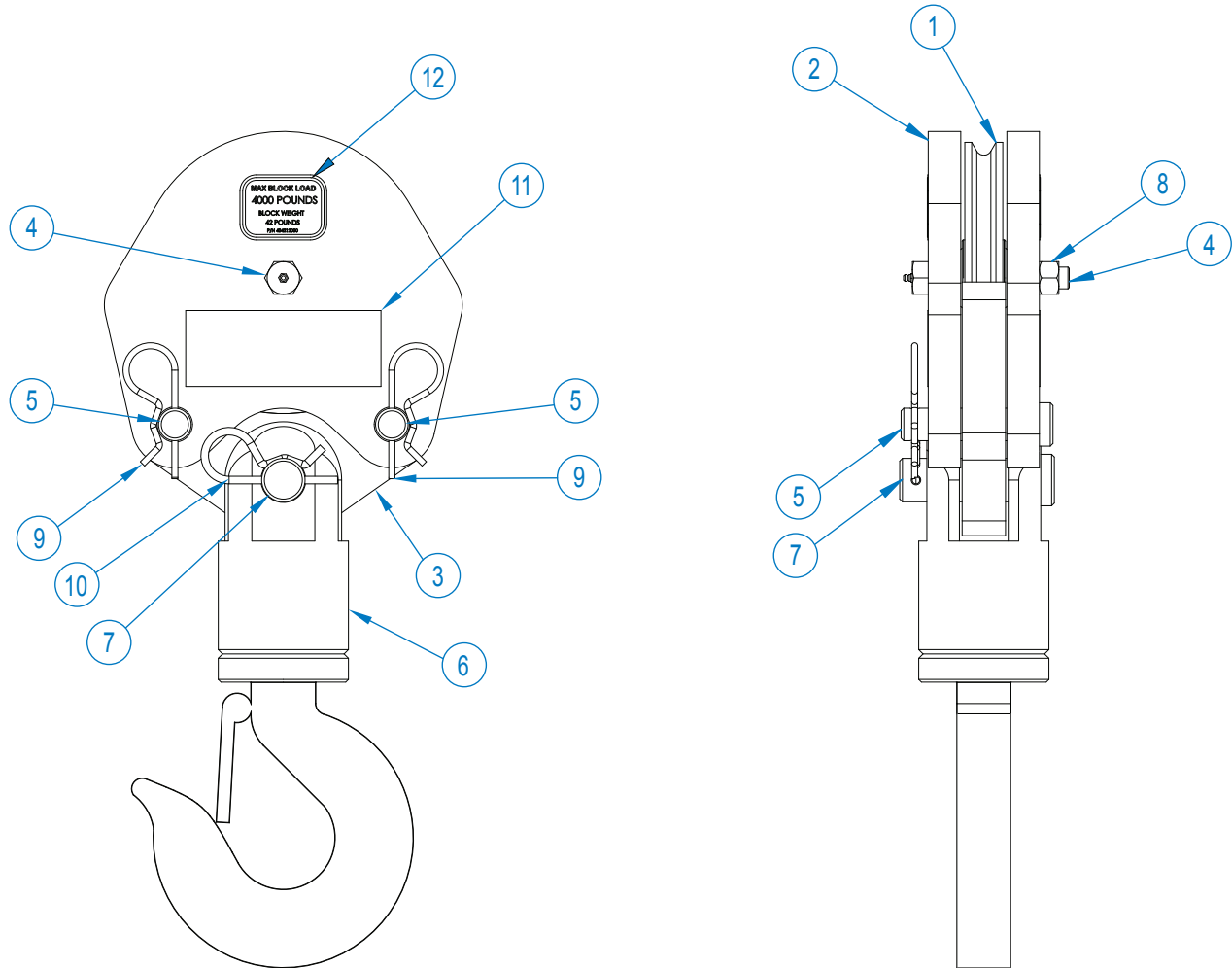
15 Boom Assembly P/N: 404240100



Boom Assembly P/N: 404240100 15

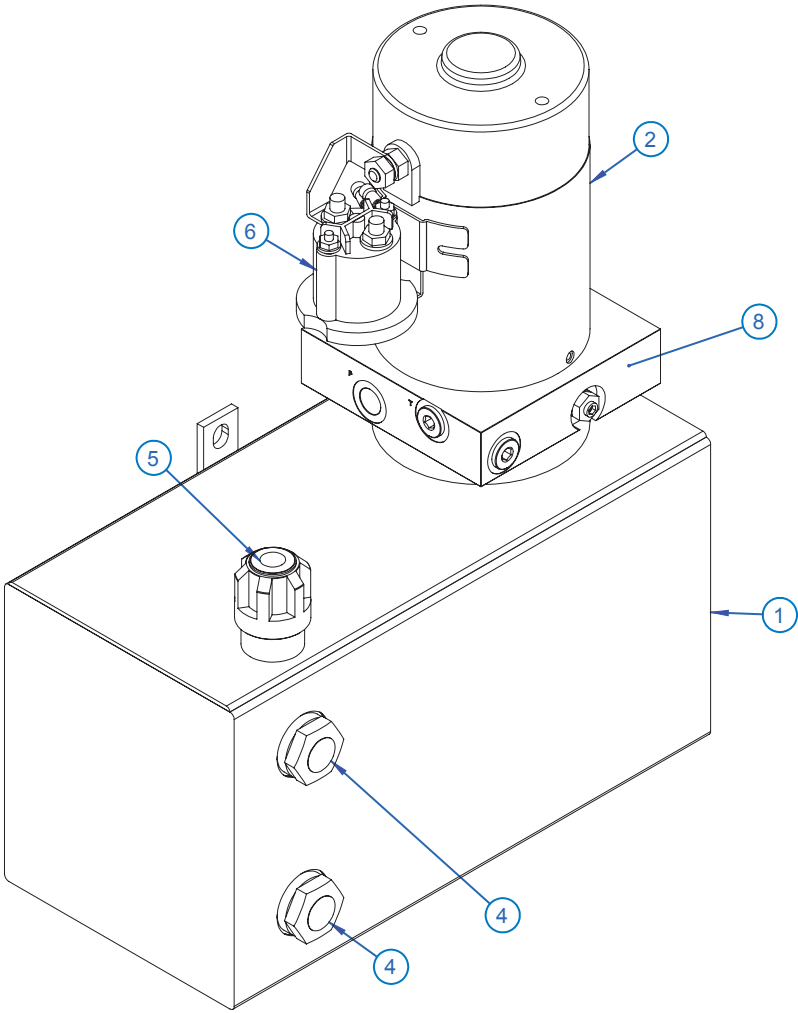
ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	404240002	LOWER BOOM WELDMENT, 4004EH (20FT)
2	1	404240004	MID BOOM WELDMENT, 4004EH (20FT)
3	1	404240010	CYLINDER, EXTENSION, 72 INCH STROKE
4	1	366184	RETAINER, EXTENSION CYLINDER
5	1	404186010	UPPER BOOM WLDMT 4004, SINGLE SHEAVE
6	1	366112	STOP UPPER BOOM
7	1	480120	KB PAD
8	1	360791000	WEAR PAD 4.5 X 2.63 X .35
9	1	404204000	PIN 1-1/4 DIA X 7.163 LG, 4004
10	2	480029	RING RETAINING
11	1	404205000	CORD REEL ASSY
12	6	005406	SCREW HX HD 1/4-28UNF X 1/2 LG
13	2	020600	WASHER 5/16 LOCK SS
14	2	007808	SCREW 5/16-24UNF X 1/2 LG
15	12	008400	SCREW HX HD 3/8-16UNC X 3/4 LG GR 5
16	4	021200	WASHER FL 3/8
17	4	021100	WASHER SP LK 3/8
18	4	008800	SCREW HX HD 3/8-24UNF X 1 LG
19	1	366190000	PIN ASSY W/LANYARD
20	1	366201	WEAR PAD 3.75 X 2.00 X .313
21	1	366202	PAD, BOOM TOP
22	1	239000	ZERK DRIVE GR
23	1	320858000	BEARING, SPHERICAL 1.00 ID
24	2	480036	PAD BOOM SIDE
25	2	200876	FITTING 6 SAE/6 JIC STRAIGHT
26	2	330647	FITTING -6JIC SWIVEL NUT 45 DEG ELBOW
27	1	366199	PAD BOOM
28	1	366183	STOP CENTER BOOM
29	1	320871000	BAIL WELDMENT
30	1	811029	SCREW HX HD 5/16-18UNC X 2 1/2 LG
31	4	020901	WASHER FL 5/16
32	1	016801	NUT HX NYLK 5/16-18UNC CP
33	1	646900	SWITCH, ANTI-TWO BLOCK
34	1	642918	CORD CONNECTOR
35	1	366678000	SPRING, EXTENSION
36	1	018200	NUT HX NY LK 5/8-11UNC
37	1	366393	SCREW HX HD 5/8-11UNC X 2 1/2 LG GR8
38	1	320883001	SHEAVE ASSEMBLY, 4004
39	1	320988156	BOOM PAD WITH NUTS, 4.75 X 3 X .313, 3203

16 Traveling Block Assembly P/N: 404211050



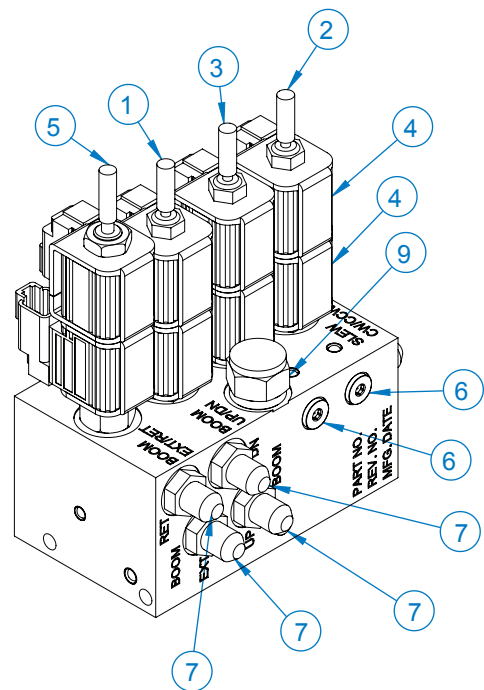
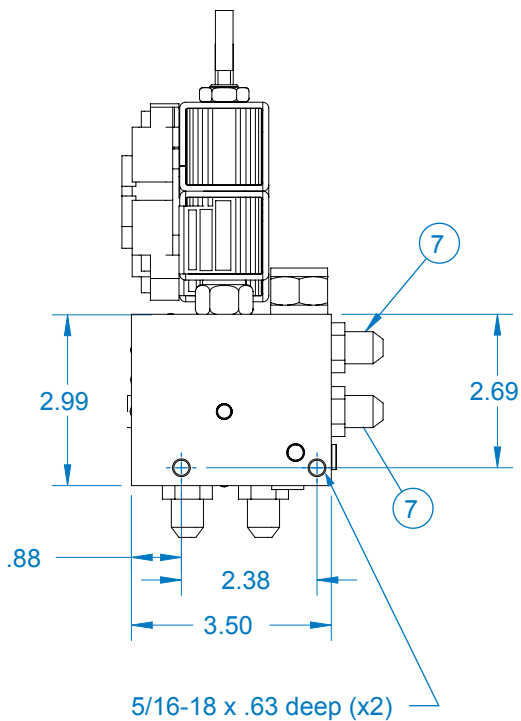
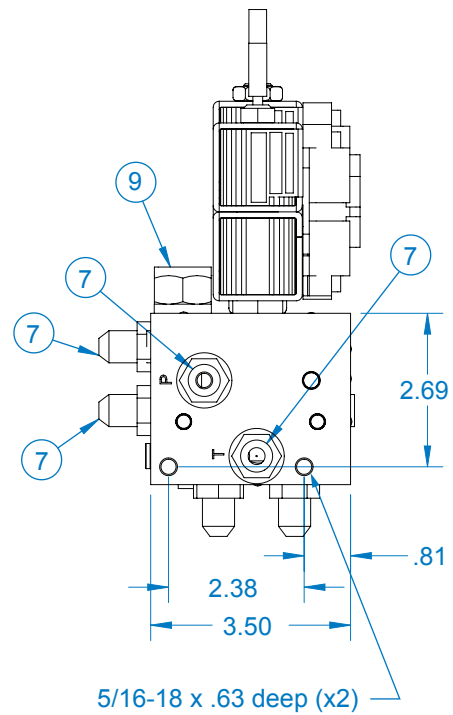
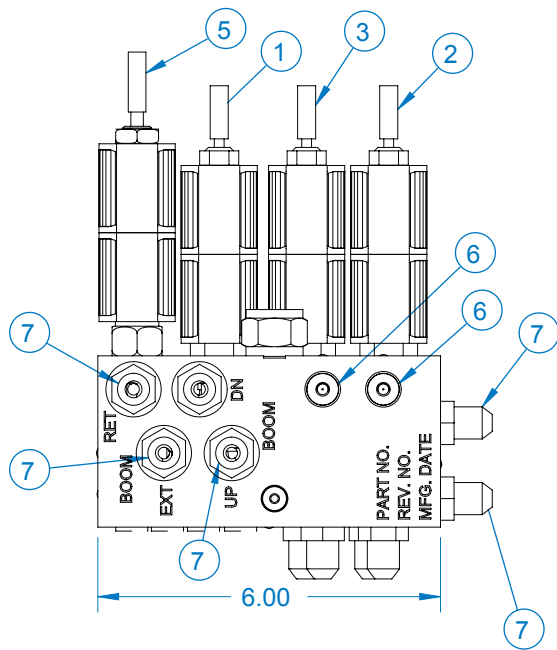
ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	480130	SHEAVE ASSY
2	2	480363	SHORT BLOCK SIDE PLATE
3	1	480364	TACKLE LOWER
4	1	480372	BOLT, SHEAVE W/ ZERK FITTING
5	2	480367	PIN BLOCK
6	1	480371	HOOK SWIVEL 3 METRIC TON
7	1	480368	PIN SWIVEL HOOK
8	1	017800	NUT, HX LK 1/2-20UNF
9	2	366813	PIN HITCH
10	1	360124	PIN HITCH
11	2	040518	DECAL STAY CLEAR OF LOAD
12	2	404212000	DECAL MAX BLOCK LOAD 4004

Hydraulic Power Unit P/N: 320991306 17

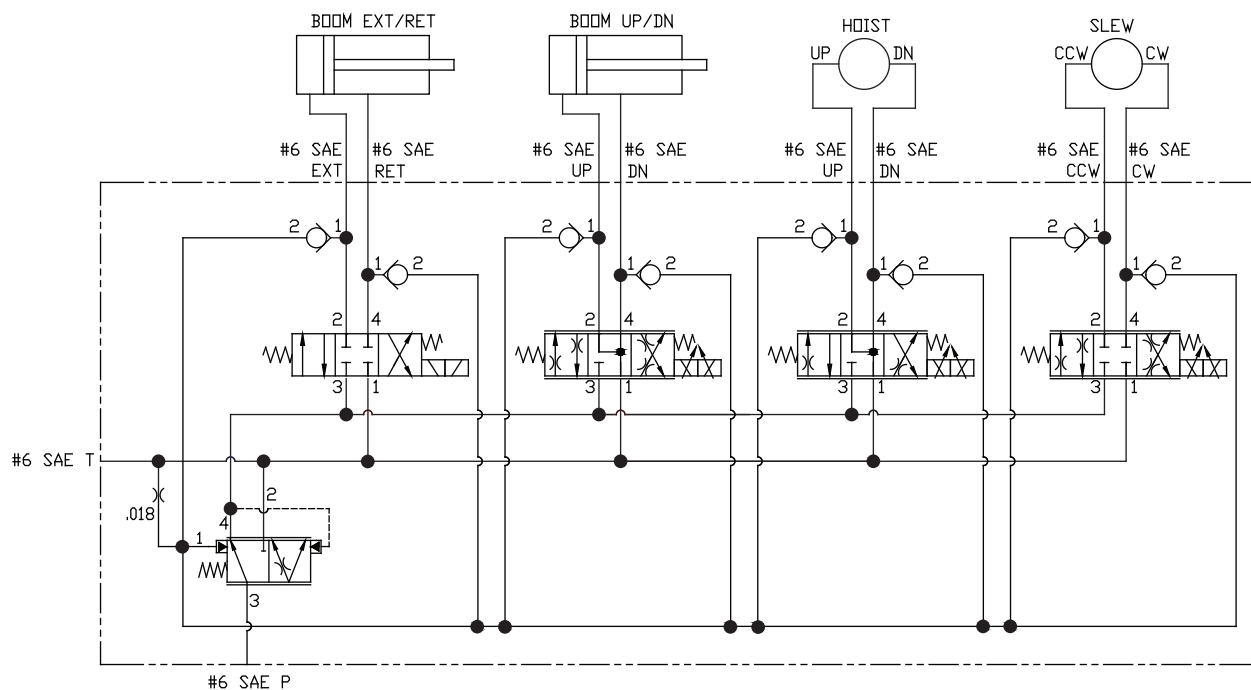


ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	320991305	TANK, NEXSTAR 3203/4004EH
2	1	320991271	MOTOR, NEXSTAR 3203/4004EH
3	1	320991286	PUMP, 3203/4004EH
4	2	320991274	GLASS, SIGHT USED W/320991270
5	1	320991275	CAP, FILLER USED W/ 320991270
6	1	320991276	STARTER, MOTOR USED W/320991270
7	1	320991277	VALVE, RELIEF USED W/320991270
8	1	320991284	BASE ASSEMBLY USED W/ 320991270
9	1	320991285	O-RING USED W/320991270

18 Hydraulic Control Valve P/N: 320991251

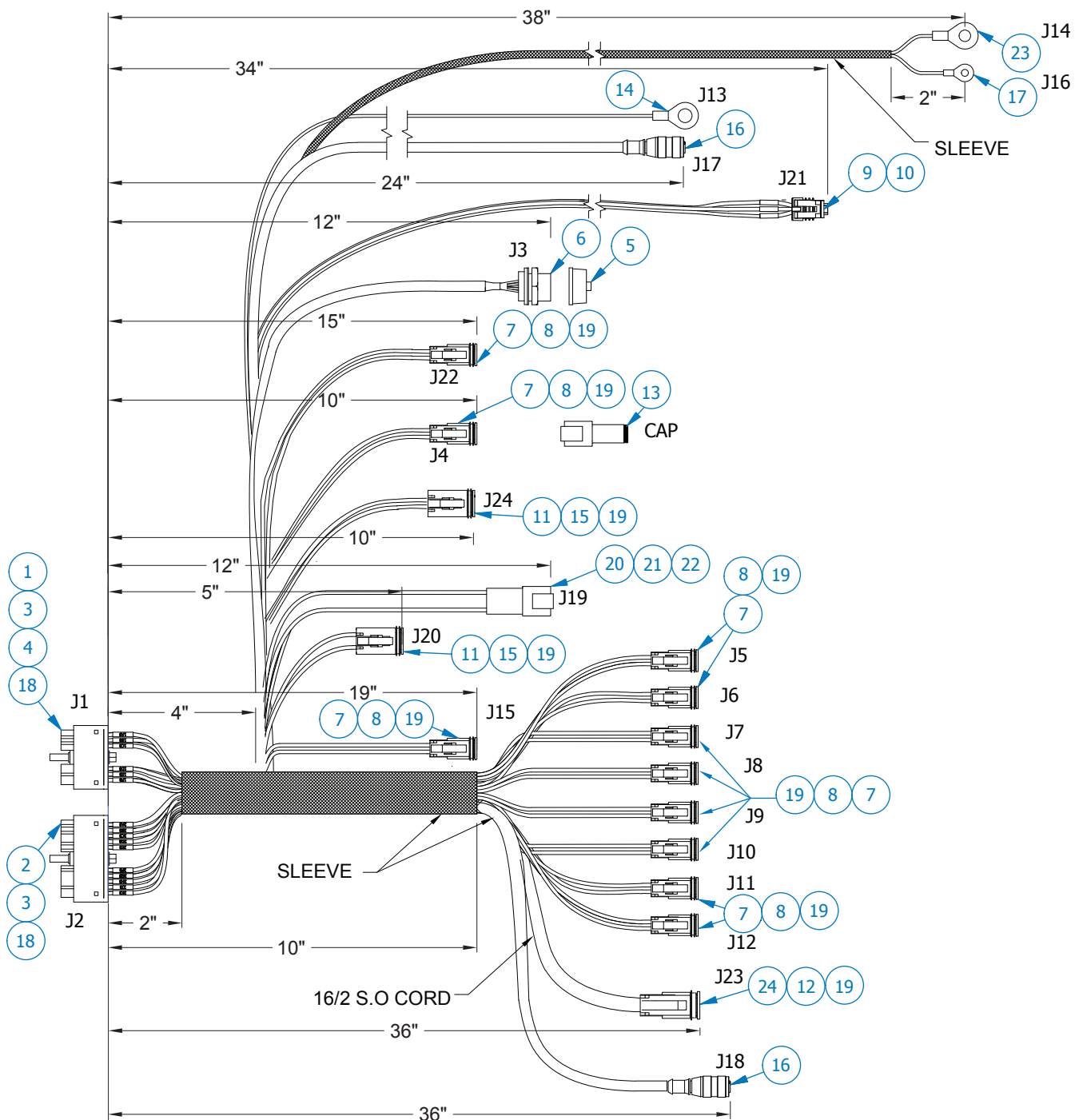


Hydraulic Control Valve P/N: 320991251 18



ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	320991914	VALVE, CARTRIDGE PROPOTIONAL 3203/4004 NEXSTAR FLOAT CENTER
2	1	320991912	VALVE, CARTRIDGE PROPOTIONAL 3203/4004 NEXSTAR CLOSED CENTER
3	1	320991913	VALVE, CARTRIDGE PROPOTIONAL 3203/4004 NEXSTAR FLOATING CENTER
4	8	320991901	COIL, SOLENOID 12VDC 1/2" DIA
5	1	320991902	VALVE, CARTRIDGE 3203/4004 NEXSTAR
6	8	320991905	VALVE, CHECK SIZE 04
7	10	200876000	FITTING 6 SAE/6 JIC STRAIGHT
8	1	320991904	ORIFICE, 1/4-20UNC 3/8LG 0.018 DIA
9	1	320991903	VALVE, LOGIC

19 Harness P/N: 320991269

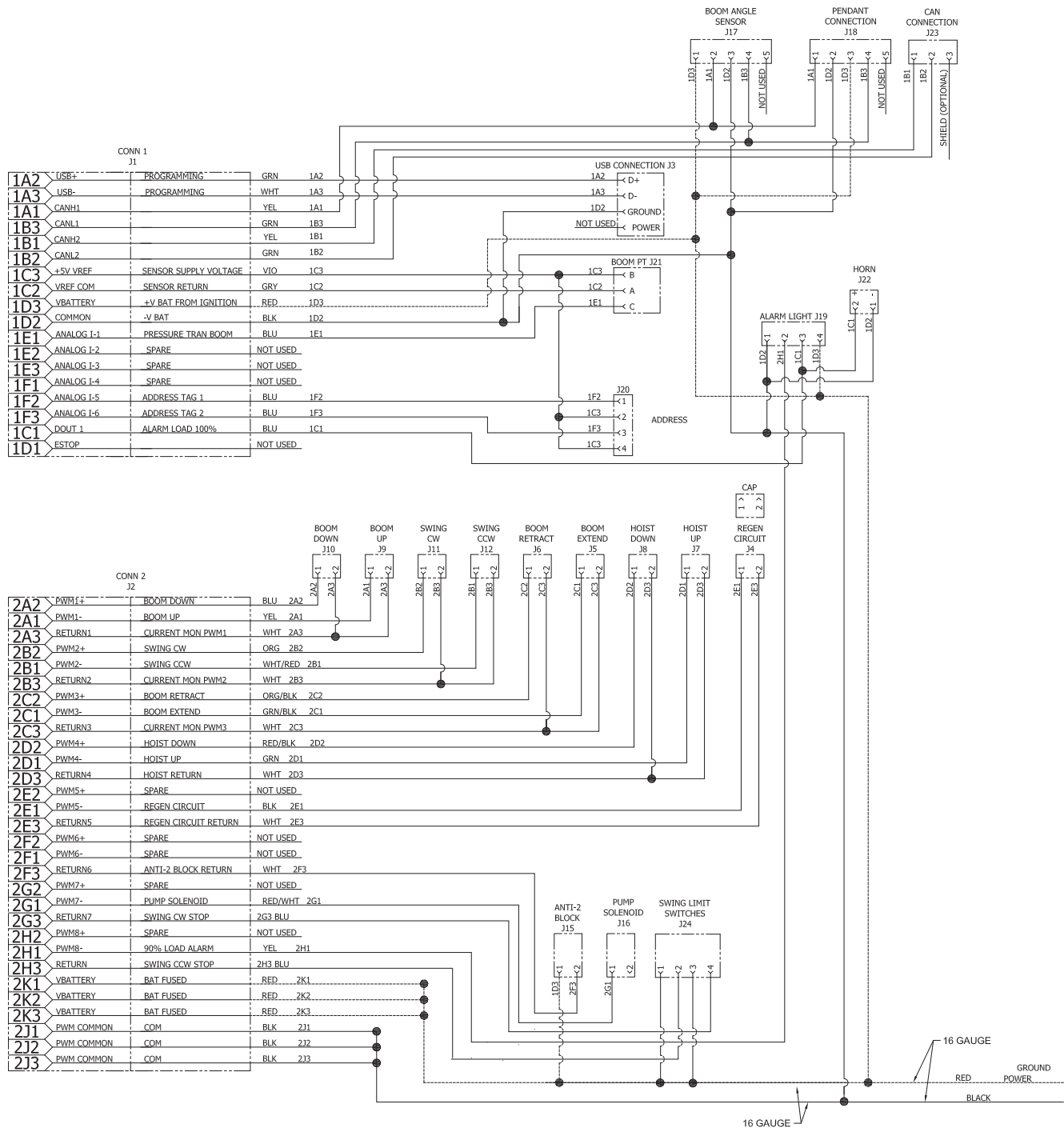


Harness P/N: 320991269 19

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	581-01-18-023	18 POSITION CONN
2	1	581-01-30-029	30 POSITION CONN
3	33	425-00-00-873/PCS	SOCKET CONTACT 16-18 AWG GXL
4	2	425-00-00-872/PCS	SOCKET CONTACT 18-20 AWG TXL
5	1	WPCVR-USB-1394	WATERPROOF COVER, USB
6	1	SP44180	CABLE, WATER PROOF, USB-B-F, 2PR X 22 AWG
7	11	DT06-2S	Deutsch DT Plug, 2-Pole "A" Key
8	11	W2S	Deutsch DT Wedgelock, 2-Pole
9	1	12065287-B	ASM CONNECTOR 3F M/P
10	3	12103881-L BIN STOCK	TERMINAL M/P 150
11	2	DT06-4S	RECEPTACLE, 4 WAY
12	1	W3P-1939	DEUTSCH WEDGE 3 WAY RECPT
13	1	DT04-2P-C017	SEALED CONNECTOR CAP
14	1		3/8" TERMINAL RING 16GA
15	2	W4S	WEDGE LOCK
16	2	RK 4.4T-1	MPS-CAN-M2 1 METER CAN CABLE
17	1		#10 TERMINAL RING 16GA
18	13	581-00-00-011	CAVITY PLUGS
19	34	0462-201-16141	SOCKET CONTACT
20	1	DT04-4P	CAP SEALED 4 POLE
21	1	W4P	DEUTSCH WEDGELOCK
22	4	0460-202-16141	DEUTSCH TERM SIZE 16 PIN 16-20 AWG NICKEL
23	1		5/16" TERMINAL RING 16GA
24	1	DT04-3P-PO06	DEUTSCH 3 WAY RECEPTACLE DT SERIES

CONNECTOR ID			
CONNECTOR	DESCRIPTION	CONNECTOR	DESCRIPTION
J1	RECIEVER 18 PIN CONNECTION	J13	GROUND
J2	RECIEVER 30 PIN CONNECTION	J14	POWER
J3	USB CONNECTION	J15	ANTI-2 BLOCK
J4	REGEN CIRCUIT	J16	PUMP SOLENOID
J5	BOOM EXTEND	J17	BOOM ANGLE SENSOR
J6	BOOM RETRACT	J18	PENDANT CONNECTION
J7	HOIST UP	J19	ALARM LIGHT
J8	HOIST DN	J20	ADDRESS
J9	BOOM UP	J21	BOOM PT
J10	BOOM DN	J22	HORN
J11	ROTATE CW	J23	CAN CONNECTOR
J12	ROTATE CCW	J24	ROTATION STOPS

20 Electrical Schematic P/N: 320991298





P.O. Box 580697 Phone: (918) 438-2760
4707 N. Mingo Rd. Tulsa, OK 74158-0697

LIMITED WARRANTY

1 YEAR PURCHASED REPLACEMENT PARTS

Auto Crane will warranty to the consumer for a period of (1) year from the date that a new Auto Crane replacement part was purchased from an authorized Auto Crane distributor. Each new Auto Crane part they sell will be free under normal use and service from defects in material and workmanship. Date of purchase will be honored as the date indicated on the Bill of Sale to the consumer.

The obligation of Auto Crane under this warranty does not apply to parts replaced under the limited warranty for a new Auto Crane product. The warranty for parts replaced under the limited warranty of a new Auto Crane product expires when the warranty for that product expires.

The obligation of Auto Crane under this warranty is limited to the replacement or repair of purchased replacement parts that appear to the manufacturer to be defective after review of documentation (Auto Crane Warranty Claim Form, photos, data etc.) provided by the Auto Crane distributor and/or inspection of parts returned to Auto Crane. This warranty does not obligate Auto Crane to bear labor costs to replace the defective parts or travel time charges in connection with the replacement or repair of defective parts. Responsibility for customer's claims arising from misapplication, abuse, misuse or alteration of equipment or parts lies with the distributor or user and no warranty obligation is assumed in these circumstances by Auto Crane.

Auto Crane will in no event be liable for any consequential damages or contingent liabilities arising out of the failure of any Auto Crane product or parts to operate properly

Auto Crane makes no warranty in respect to parts for component accessories, it being subject to the warranties of their respective manufacturers.

If field service, at the request of the distributor, is rendered and fault is found not to be with Auto Crane's product, the distributor shall pay the time and expense of the field representative.

Claims for service labor or other expenses that have incurred by the buyer without approval or authorization or Auto Crane will not be accepted

When applying for warranty claims may be handled by contacting your nearest authorized Auto Crane **Distributor. All claims are to be filed in writing on an Auto Crane Warranty Claim Form.**



P.O. Box 580697 Phone: (918) 438-2760
4707 N. Mingo Rd. Tulsa, OK 74158-0697

LIMITED WARRANTY 2 YEAR PARTS AND LABOR

Auto Crane will warranty to the consumer for a period of (2) years parts and labor from the date of purchase. Each new Auto Crane unit they sell will be free under normal use and service from defects in material and workmanship. Date of purchase will be honored as the date indicated on the Bill of Sale, which must accompany the Warranty Registration and be on file with Auto Crane. Absent a valid Warranty Registration and appropriate documentation, the original date of manufacture, as indicated by the serial number on the product, will be used to determine the effective date of the 2 year warranty.

The obligation of Auto Crane under this warranty is limited to the replacement or repair of parts that appear to the manufacturer after review and/or inspection to be defective and paid flat rate labor for replacing defective parts. This warranty does not obligate Auto Crane to bear the travel time charges in connection with the replacement or repair of defective parts. Responsibility for customer's claims arising from misapplication, abuse, misuse or alteration of equipment or parts lies with the distributor or user and no warranty obligation is assumed in these circumstances by Auto Crane.

Auto Crane will in no event be liable for any consequential damages or contingent liabilities arising out of the failure of any Auto Crane Product or parts to operate properly.

Auto Crane makes no warranty in respect to component accessories, it being subject to the warranties of their respective manufacturers.

If field service, at the request of the distributor, is rendered and fault is found not to be with Auto Crane's product, the distributor shall pay the time and expense of the field representative.

Claims for service labor or other expenses that have incurred by the buyer without approval or authorization or Auto Crane will not be accepted.

When applying for warranty, claims may be handled by contacting your nearest authorized Auto Crane Distributor. All claims are to be filed in writing on an Auto Crane Warranty Claim Form.

AUTO CRANE COMPANY IS UNDER NO OBLIGATION TO EXTEND THIS WARRANTY TO ANY CUSTOMER FOR WHICH AN AUTO CRANE DELIVERY REPORT FORM HAS NOT BEEN COMPLETED AND ON FILE WITH AUTO CRANE COMPANY

