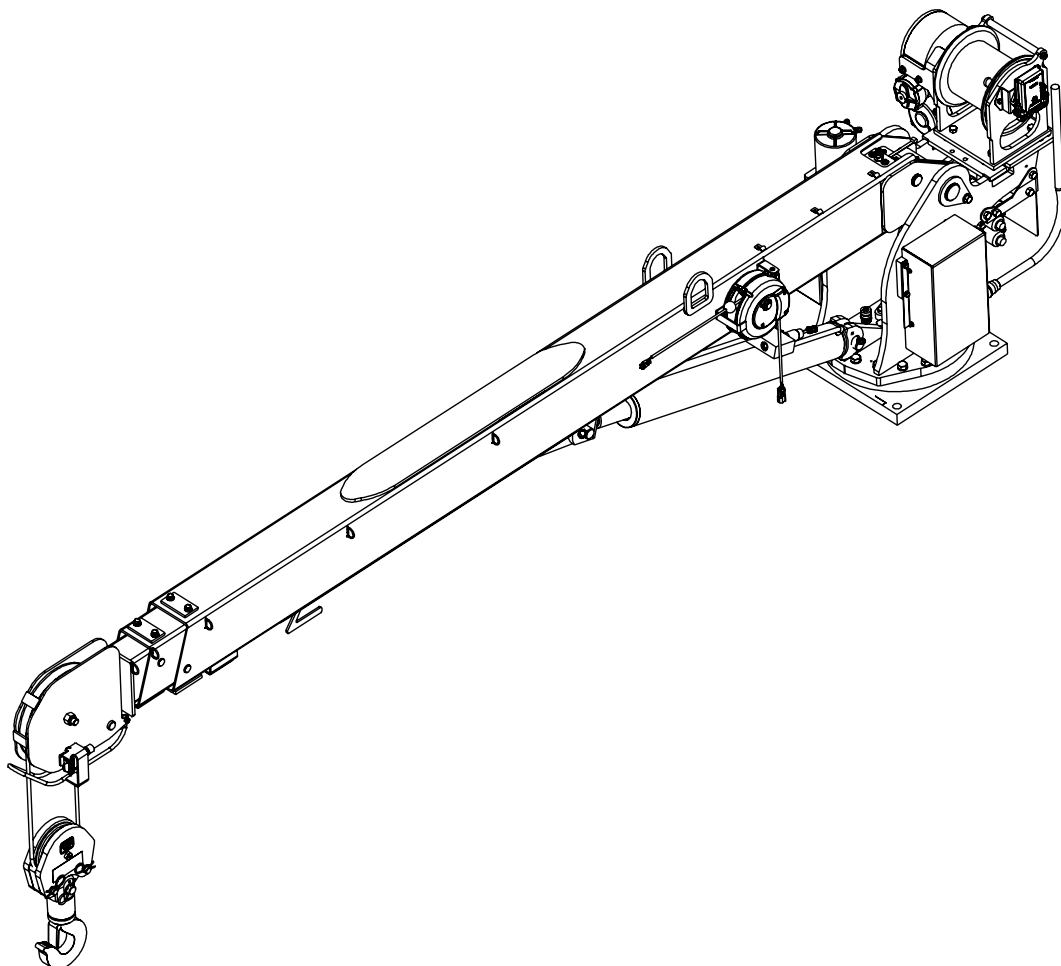




OWNER'S MANUAL EHC-5 WIRELESS



361106584-0523-A

Phone: 1-800-777-2760
Fax: (918) 269-6688

<http://www.autocrane.com>
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4707 N. Mingo Rd.
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Product Registration

Thank you for purchasing an Auto Crane® product and taking a few moments to register it online at <https://www.autocrane.com/product-registration/>. Your registration helps us keep you up to date on product information and gives you one of the strongest manufacturer’s limited warranties available.

By completing the product registration, you may be eligible for valuable supplemental coverage under Auto Crane’s Limited Warranty. For more information and a list of eligible products, visit our Warranty page found at <https://www.autocrane.com/warranty/>.

Before You Register

What do I need to get started?

- We’ll ask for:
- The product model and serial number for each product you purchased
 - Your contact information so we can send confirmation of your registration and communicate product bulletins
 - The date you purchased the product, date of installation or in-service (e.g. copy of bill of sale)
 - Truck VIN (if applicable)
 - The name, address and phone number for the dealer who sold and installed your equipment

NOTE: Much of this information will be on the invoice provided by your dealer. If you need help, please contact your installing dealer.

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



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



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



Indicates information considered important, but not hazard-related.



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 compliant.



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.



This crane is designed for vertical lifts only. Do not attempt to lift or drag a load from the side! The boom can fail far below its rated capacity.



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



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



Auto Crane Company remote controlled cranes are not designed or intended for use for any applications involving the lifting or moving of personnel when not using authorized Auto Crane Company personnel attachments. Any such unauthorized use is considered to be improper and the seller shall not be responsible for any claims arising from such use. There is no implied warranty or responsibility for such uses.



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 proper 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 that crane owners, equipment managers, and supervisors also read this manual.

In addition, the overall dimensions, rotation, and turning radius of the crane are included on the General Dimension Drawing.

Remember, the crane adds weight to the vehicle which may change the driving and riding characteristics of the vehicle unless the appropriate overload spring(s) are installed. 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.

The cranes are electrically powered by a 12-volt DC electrical system. 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.

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. This department also has the ability to bring in a local distributor, regional sales manager, or factory serviceman to help determine the solution to an equipment problem.

Auto Crane Company’s extensive Research and Development Program allow our customers to use the best equipment on the market. Our engineering staff and knowledgeable salespeople are always available to our customers in solving crane and service body 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

General Specifications

Dimensions

- Width: 22 3/8 in. (0.57 m)
- Height: 34 1/4 in. (0.87 m)
- Length: 12 ft 11 in. (3.94 m), stored length.
- Weight: 1402 lb (636 kg)

Rating

- Crane Capacity: 5,000 lb
 - Double Line: 5,000 lb maximum
 - Single Line: 2,500 lbs maximum
- 25,000 ft-lb (3.81 ton-m)
- Ft-lb = horizontal distance from center line of rotation to free hanging weight (feet) x amount of weight (pounds).

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.

Cable

- 80 ft. (24.4 m) of 5/16 in. (8 mm) diameter aircraft quality cable. This cable has a single line breaking strength of 9,800 lb (4,445 kg).

Line Speed

- 36 ft. per minute (no load, single line)

Chassis and Mounting Requirements

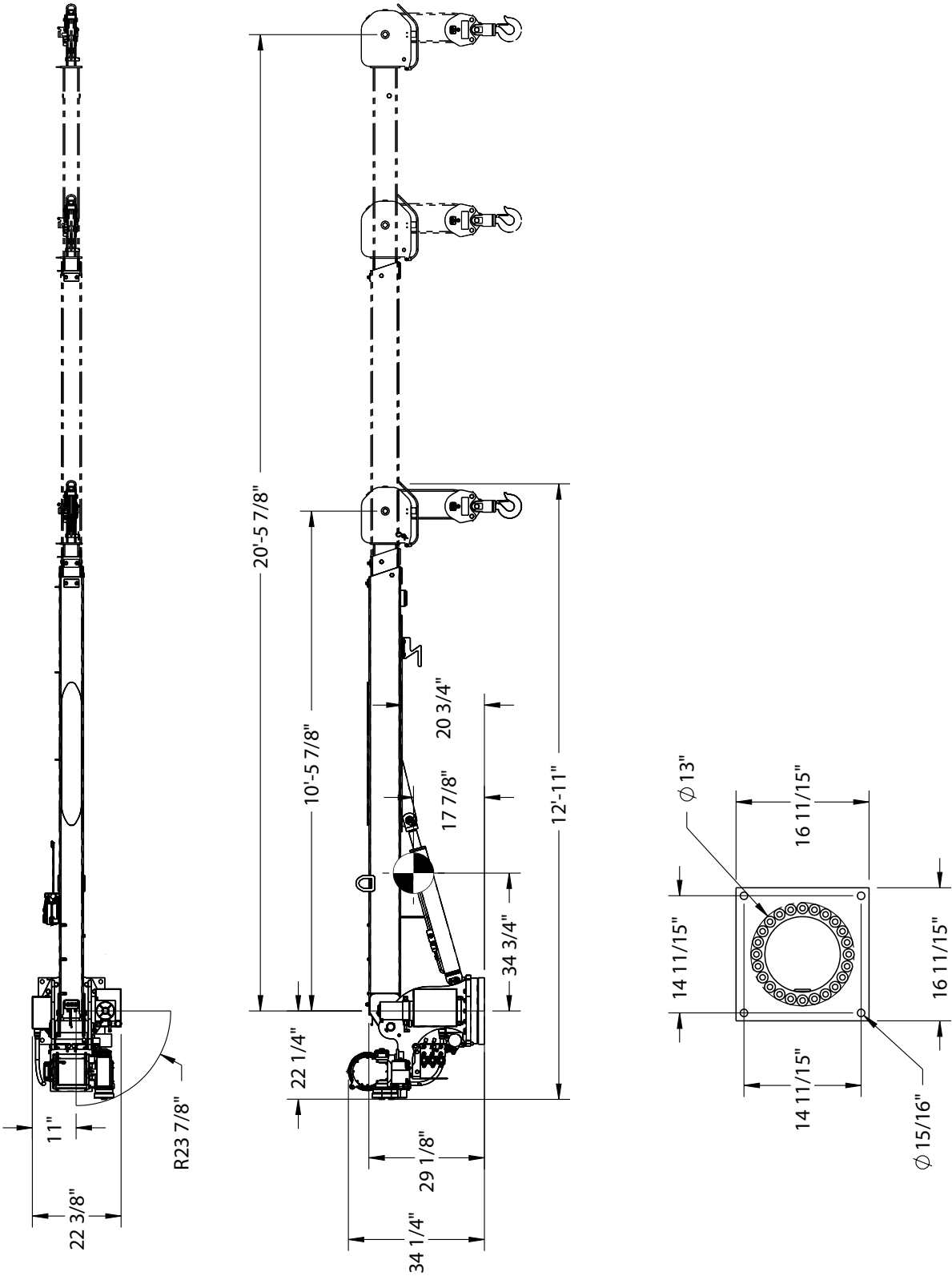
- 14,500 lb (6,577 kg) GVWR minimum
- 360,000 in-lb Resistive Bending Moment (RBM)
- 7/8", Grade 8-UNF Bolts. Tightened to 501 ft-lb
- 9" Mounting hole to run electrical lines to the crane from the body

Electrical System Requirements

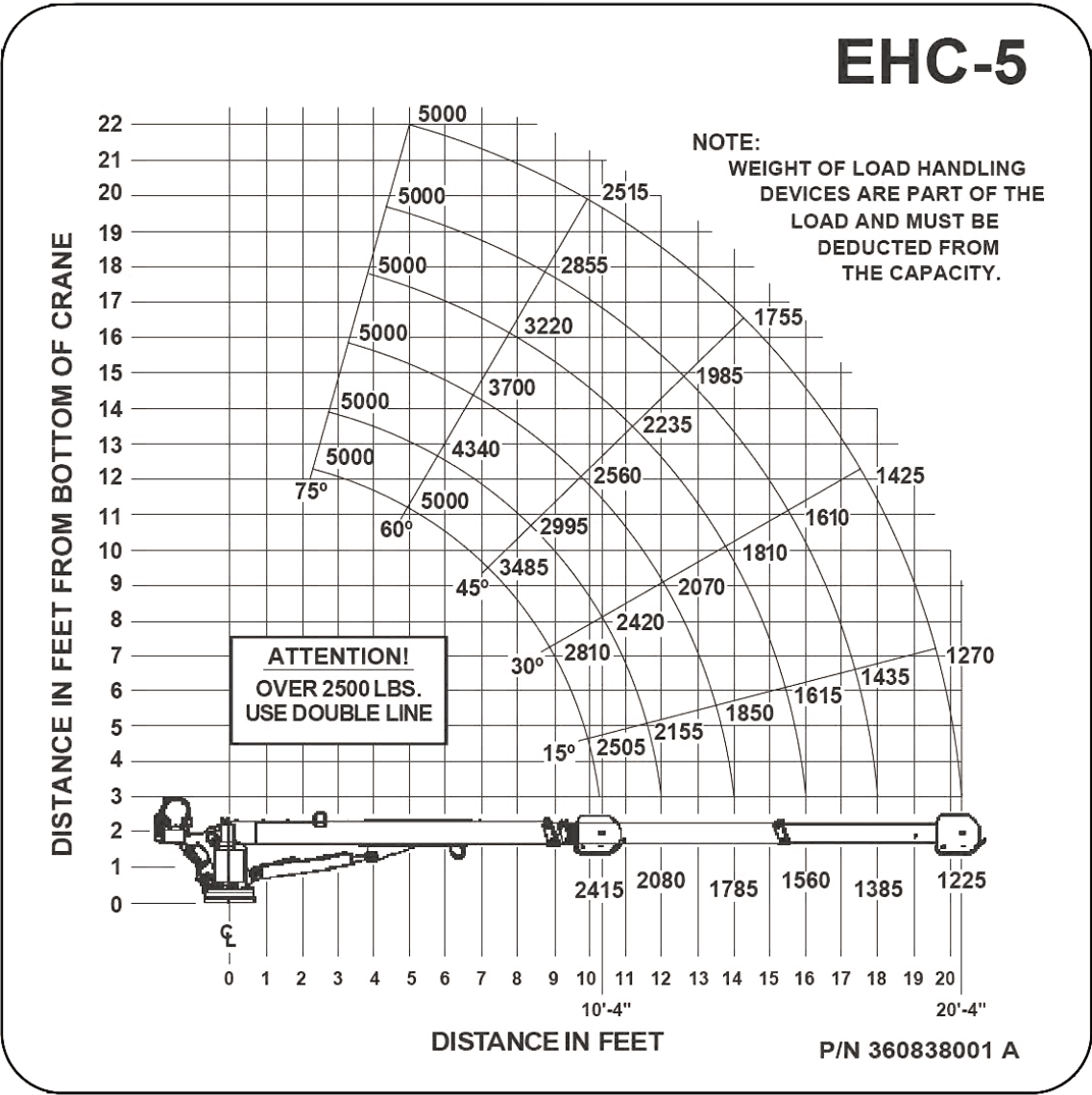
- Voltage: 12 VDC
- Alternator: 165 amps minimum
- Battery: 100 minute reserve capacity minimum. Maintenance Type battery

Rotation

- 370° non-continuous
- 360° continuous



General Dimensions



WARNING All load ratings are based on crane capacity, not 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.



WARNING Always comply with load chart capacities. Weight of load handling devices (i.e. traveling block, hook, clevis, etc.) are part of the load and must be deducted from the crane capacity.

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

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.

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 operation.
 - B. Possess the knowledge of emergency procedures and be able to implement them.
 - 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.

Conduct Of Operators

1. The operator shall not engage in any practice which will divert his attention while 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.
- 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.
 - If power fails during operation, the operator shall:
 - Move power controls to the "OFF" or neutral position.
 - Land the suspended load and boom, if practical.
 - 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.
 - At the start of each shift, the operator shall test all controls. If any controls do not operate properly, they shall be adjusted or repaired before operations are begun.
 - Stabilizers shall be visible to the operator while extending or setting unless a signal person assists operator.

Operating Practices/Handling The Load



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

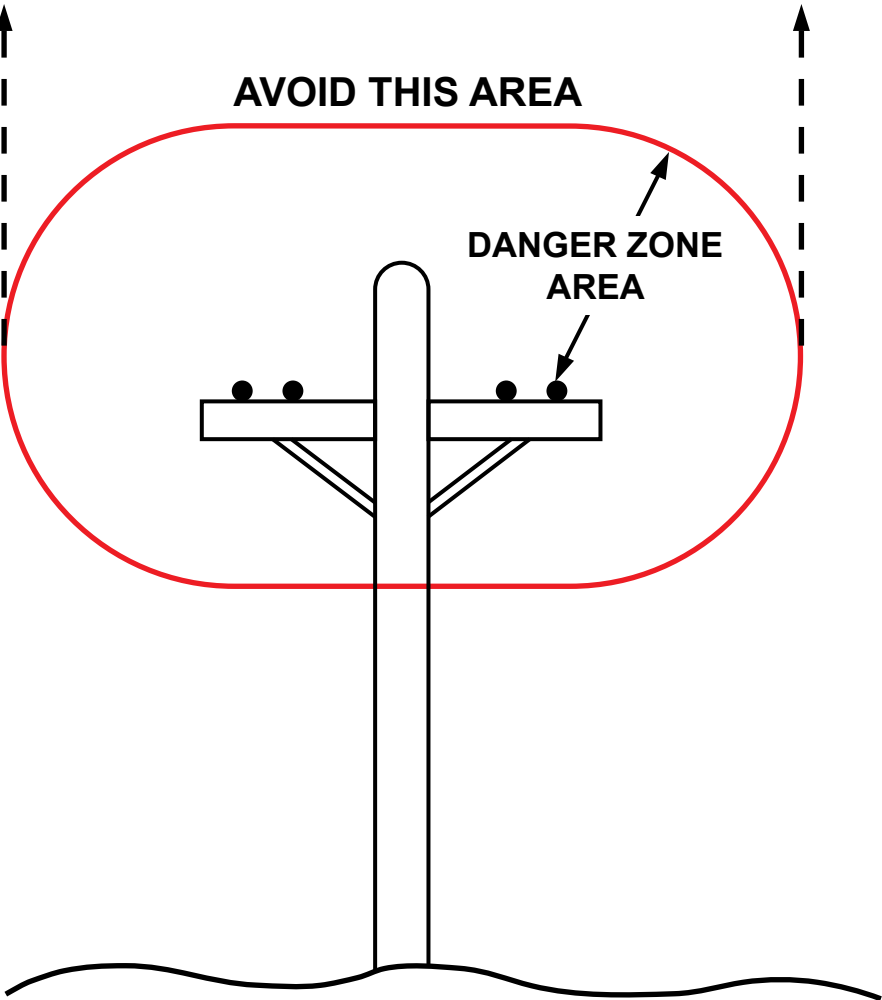
- Size of load.
 - No crane shall be loaded beyond the rated load except for test purposes.
 - The load to be lifted is to be within the rated load of the crane and its existing configuration.
 - Know the weight of the rigging and deduct from the load rating to prevent the crane.
 - When loads that are 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.
- Attaching the load.
 - Ensure the load is properly attached to the hook by means of slings or other devices of sufficient capacity.
 - Ensure the vehicle is in a level position when loading or unloading.
 - Hoist rope shall not be wrapped around the load.
- The operator shall determine that:
 - The crane is level and, where necessary, the vehicle/carrier is blocked properly.
 - The load is well secured and balanced in the sling or lifting device before it is lifted more than a few inches.
 - Means are provided to hold the vehicle stationary while operating the crane.
 - Before starting to lift, the hook shall be positioned over the load in such a manner as to minimize swinging.
- During lifting care shall be taken that:
 - There is no sudden acceleration or deceleration of the moving load.
 - 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.
 - Load, boom or other parts of the crane do not contact any obstruction.
 - Cranes shall not be used for dragging loads sideways.
 - ASME B30.5 recognizes that mobile and locomotive cranes are designed and intended for handling materials and not generally personnel. However, personnel are permitted to ride in an Auto Crane authorized, boom-mounted, personnel platform when used in accordance with the requirements of ASME B30.23 and Auto Crane's instructions. The crane shall not be used for other purposes while

- handling personnel (Refer to ASME B30.23). Hook attached suspended work platforms (baskets) shall not be used with Auto Crane cranes.
- The operator should avoid carrying loads over people.
 - When the crane is so equipped, the stabilizers shall be fully extended and set. Blocking under stabilizers shall meet the requirements as follows:
 - Sufficient strength to prevent crushing, bending, or shear failure.
 - Of such thickness, width and length as to completely support the stabilizer pad.
 - 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.
 - In transit, the boom shall be carried in stowed position.
 - The crane shall not be transported with a load on the hook.

Operating Near Electrical Power Lines



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



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 Safe Operating Distance Table below.
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 to 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 Safe Operating Distance Table limits are not adhered to.

Preparing The Crane For Operation

Safe Operating Distance for Cranes Near Electrical Lines	
Normal Voltage, kv (Phase to Phase)	Specified Clearance, ft (m)
During Operation	
Up to 50	10 (3)
Over 50 to 200	15 (4.6)
Over 200 to 350	20 (6.1)
Over 350 to 500	25 (7.6)
Over 500 to 750	35 (10.7)
Over 750 to 1,000	45 (13.7)
Over 1,000	Determine specific clearance after consultation with utility owner/operator
During Transit or Travel With No Load and Boom or Mast Lowered	
Up to 0.75	4 (1.2)
Over 0.75 to 50	6 (1.8)
Over 50 to 345	10 (3.1)
Over 345 to 750	16 (4.9)

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, correcting 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.
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 park (or neutral for manual 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 park (automatic trans.) or neutral (manual trans.).

C. Activate PTO (Power Take Off).

D. Allow sufficient time for the hydraulic fluid to warm up.

E. 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.

B. Ensure they are firmly positioned on solid ground.

C. Stand clear of outriggers while being extended.

D. If a curb or other object prevents the outrigger from begin fully extended, shorten the bearing or fulcrum point and reduce the maximum load accordingly.

E. 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.

F. If working in soft ground, use wide pads under the outrigger feet to prevent sinking.

G. 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 and the truck is approximately level side-to-side.

9. With the Outriggers properly positioned, return the diverter valve to the "Crane" position.

10. Remove the remote control from the cab or storage area. Power the remote control on. Detach the hook from the hook stow.

11. The crane is now ready for operation.
- EHC-5 WIRELESS 15

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.
- 3. Always observe all relevant safety 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.
- 6. Press the clutch in (manual trans.).
- 7. Disengage the PTO.
- 8. Deactivate any crane power switches.
- 9. Check vehicle surroundings before moving.
- 10. Record any unusual occurrence(s) during crane operation which may indicate required maintenance or repair.

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



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.



Never drive with a load suspended from the crane.



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

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.

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.

Remote Control Initialization

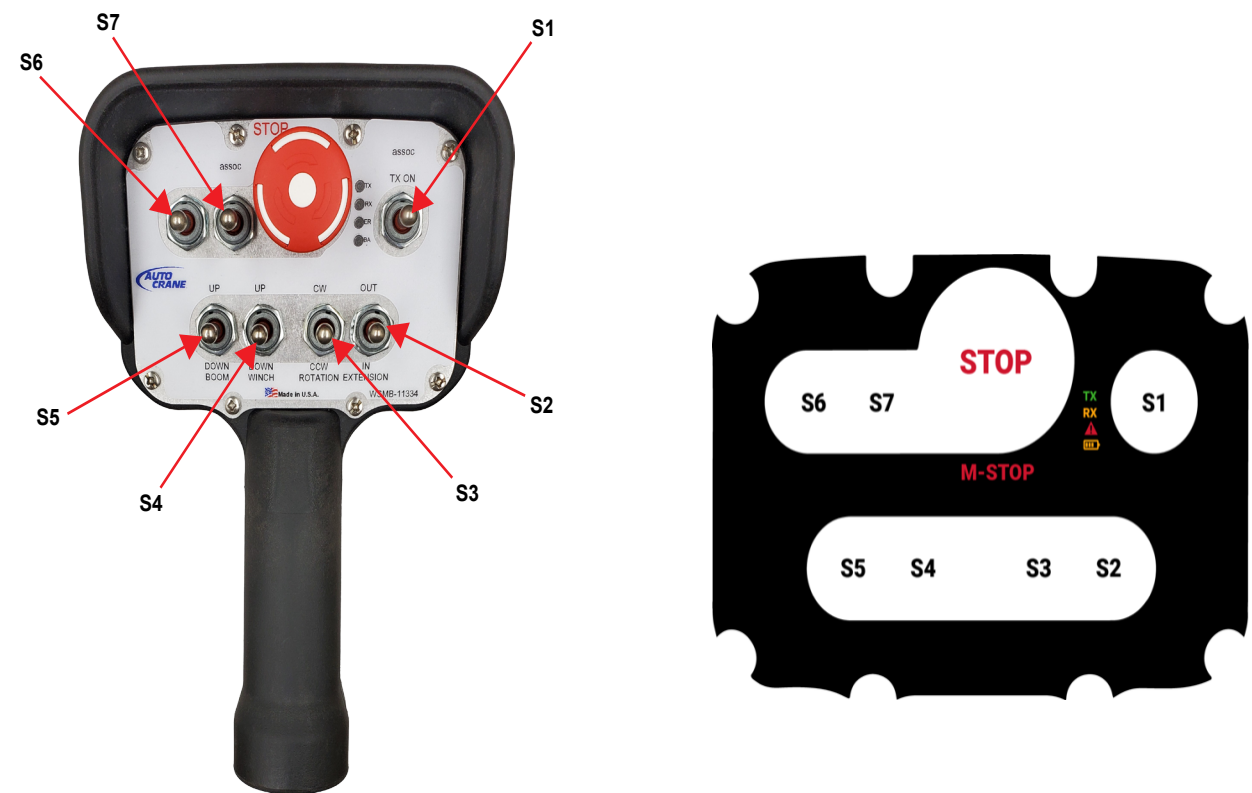
After powering on the remote control, the LCD display screen turns on and will perform a self-test. During the self-test, the Wireless remote control scans for any switches, buttons, triggers that are in the OFF position. If any switches, buttons, or triggers are on, the "E002 ACTIVITY" failure displays on the display screen and the remote control powers down. After a successful self-test, the Wireless remote control will enter the Normal Operating Mode.

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:

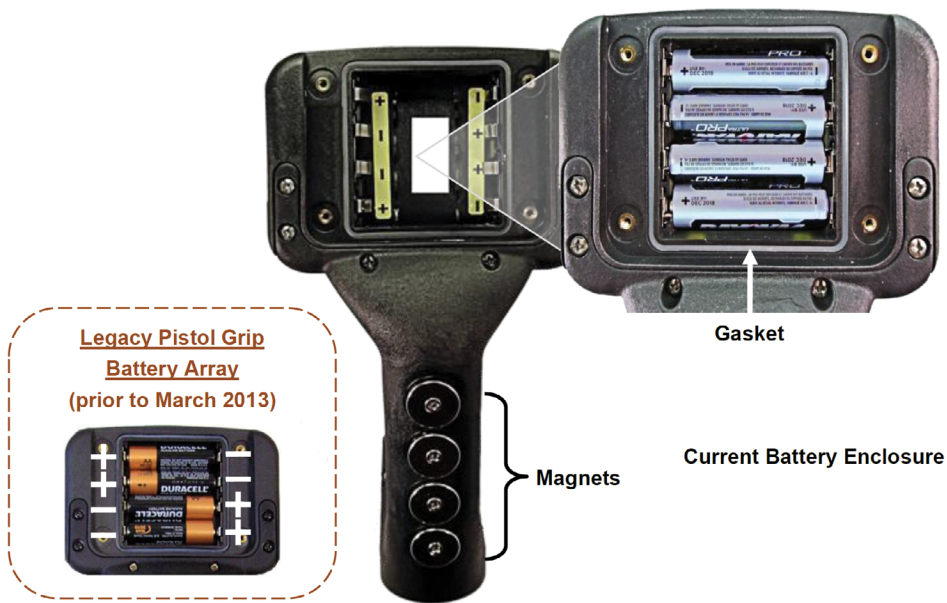
- Test all warning devices.
- Test all functions.
- Test the remote control E-Stop function.

Remote Control Layout



- STOP – Machine Stop, push button IN to power down (OFF). Pull button OUT to power up (ON). When activated, E-Stop terminates all outputs from receiver.
- S1 – TX ON, hold switch UP to activate the handheld remote.
- S2 – Extension IN/OUT, hold this switch UP or DOWN to activate the extension or retraction of the middle or upper booms. This will extend the overall reach of the crane.
- S3 – Rotation CCW/CW, hold this switch UP or DOWN to activate the rotation or slewing mechanism for the crane. This will rotate the crane clockwise or counterclockwise.
- S4 – Winch DOWN/UP, hold this switch UP or DOWN to activate the winch UP/DOWN functions of the crane. This will raise and lower the crane rope.
- S5 – Boom DOWN/UP, hold this switch UP or DOWN to activate the boom UP/DOWN functions of the crane. This will raise and lower the boom angle.
- S6 – ASSOCIATE 1, alternate associate switch. Not used.
- S7 – ASSOCIATE 2, hold switch UP to associate the remote with the receiver in conjunction with S1 up. Hold S7 DOWN to dissociate remote from crane with S1 up.

Remote Battery Installation



- Four size AA cell batteries power the remote. When installing batteries, be sure to observe proper polarity – as marked on the inside of the compartment – to avoid damaging the unit. To replace or install batteries:
1. Loosen the four Phillips battery compartment cover screws on the rear of the remote and lift the cover from the handheld.
 2. Install (or replace with) four AA cell batteries. Observe proper polarity by positioning the batteries as shown.
 3. Replace the compartment cover and tighten the four Phillips screws. Do not over-tighten these screws, but make sure they are tight enough to ensure the gasket provides a proper watertight seal.
 4. The remote will shut down at 1.6 VDC when batteries are low. The “BA” battery amber LED on the remote will indicate low voltage.
 5. There is a four-minute Auto-Shutdown due to inactivity to preserve battery life.

EHC-5 Counter Balance Valve Adjustment



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 to 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 counter clockwise.
 - 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.



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.

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.



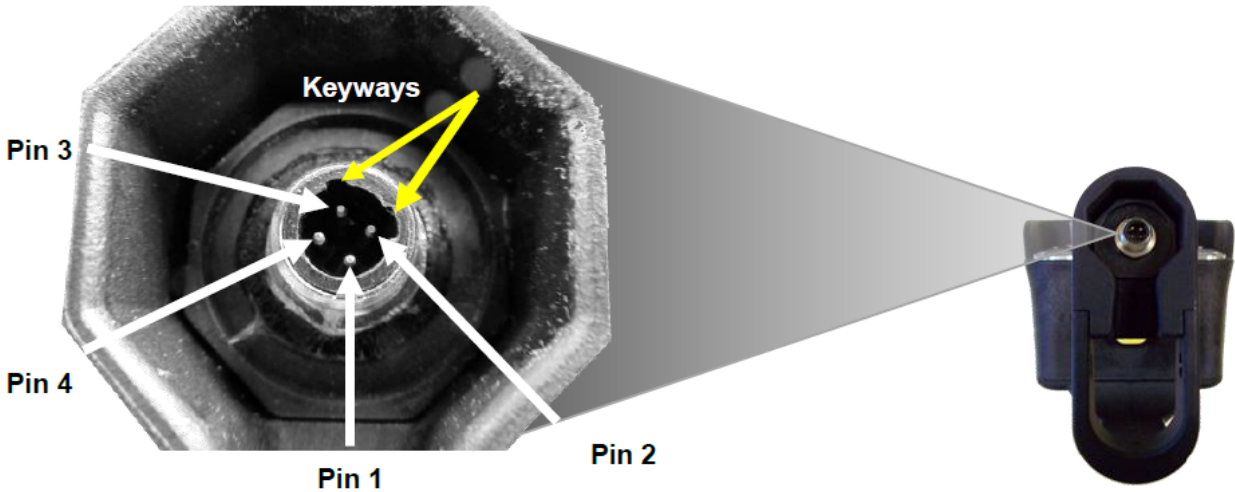
Remove any personnel from near the crane as the load is lowering.

- 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.

Tether Connection

If a tether connection is wanted (or necessary), connect one end of the cable that is supplied (Part Number: 366823427) to the crane tether connection (located in either the crane box, or on the crane itself), and the other to the tether connection located on the bottom of the remote.

A cap is attached to the handheld remote with a chain which can be unscrewed to allow access to tether connection on the remote. When not in use, the tether cap should be attached to prevent damage. The RF is disabled whenever the tether is attached to the handheld remote and the receiver. When the tether is attached, all controls signals are transmitted via the tether.



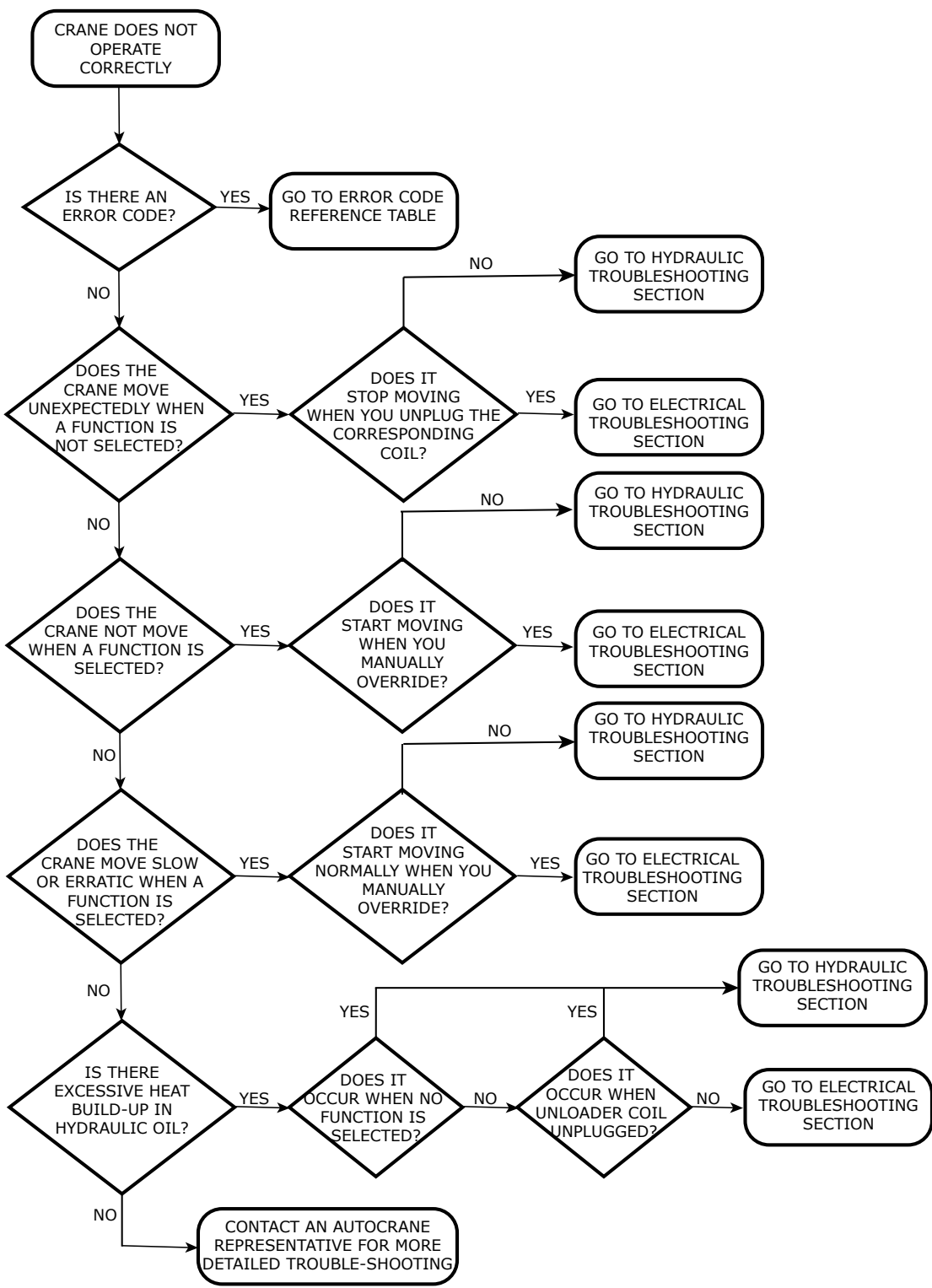
FM radio transmission/reception is disabled when remote is tethered to crane.

Remote Switch Descriptions

SWITCH DIRECTION	FUNCTION	DESCRIPTION
UP	BOOM UP	Moving toggle switch up increases angle of boom relative to ground
DOWN	BOOM DOWN	Moving toggle switch down decreases angle of boom relative to ground
UP	BOOM EXTENSION	Moving toggle switch up increases the overall length of the boom
DOWN	BOOM RETRACTION	Moving toggle switch down decreases the overall length of the boom
UP	WINCH UP	Moving toggle switch up raises the load
DOWN	WINCH DOWN	Moving toggle switch down lowers the load
UP	ROTATE CW	Moving toggle switch up rotates crane clockwise
DOWN	ROTATE CCW	Moving toggle switch down rotates crane counterclockwise
IN	E-STOP ACTIVATED	Pressing red E-Stop in turns the remote off
OUT	E-STOP DEACTIVATED	Twisting clockwise releases the E-Stop
UP	TX ON	Turns remote on, associates with crane (used with S7)
DOWN	TX ON	No function
UP	S7	Associates remote with crane (used with TX ON)
DOWN	S7	Dissociates remote from crane (used with TX ON)
UP	S6	No function
DOWN	S6	No function
TRIGGER COMPRESSED	PROPORTIONALITY INCREASED	Increase speed of crane functions. Not used for non-proportional cranes
TRIGGER DECOMPRESSED	PROPORTIONALITY DECREASED	Decrease speed of crane functions. Not used for non-proportional cranes

Each remote comes with a yellow trigger on the backside of the handle. This yellow trigger is not used for non-proportional cranes. The yellow trigger is only for commonality between models.

Wireless Remote Troubleshooting Table



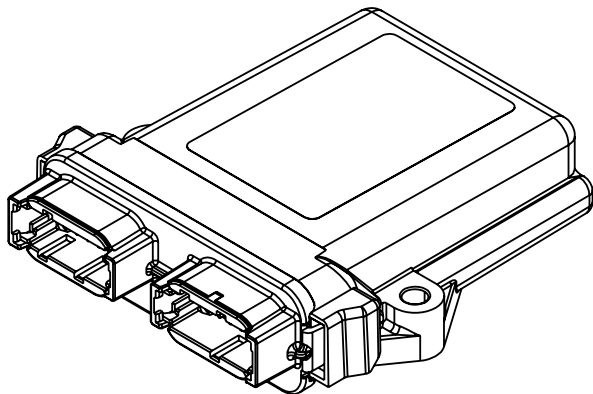
Wireless Remote Troubleshooting Table

PROBLEM	POSSIBLE REASON	ACTION
Remote control will not turn on	Remote control E-Stop and TX ON haven't been used and the remote is off	Turn the remote on by twisting the E-Stop clockwise then moving the TX ON toggle switch UP.
	Dead batteries	Replace batteries.
Remote control will not communicate with the receiver/crane	Remote is not associated to crane	Follow association steps to properly link crane and remote.
	Remote is out of range	Ensure the startup procedure is initiated within 100 ft of the receiver.
Remote will not respond when tethered to crane	Tether is not connected properly or is damaged	Check all pin terminals in the tether and crane wire harness. Remove any debris is present. Replace tether if damaged.
	Crane power if off or low	Ensure crane has power going to the receiver. Receiver needs at least +7VDC.
Crane experiences uncontrolled movement	Toggle switch is broken	Visually inspect remote. Contact Auto Crane
	Crane is "browning out" with input voltage	The inrush, initial amperage draw, when running the crane dips below the minimum operating voltage. Check voltage to receiver. Contact Auto Crane.

Electrical Troubleshooting Table

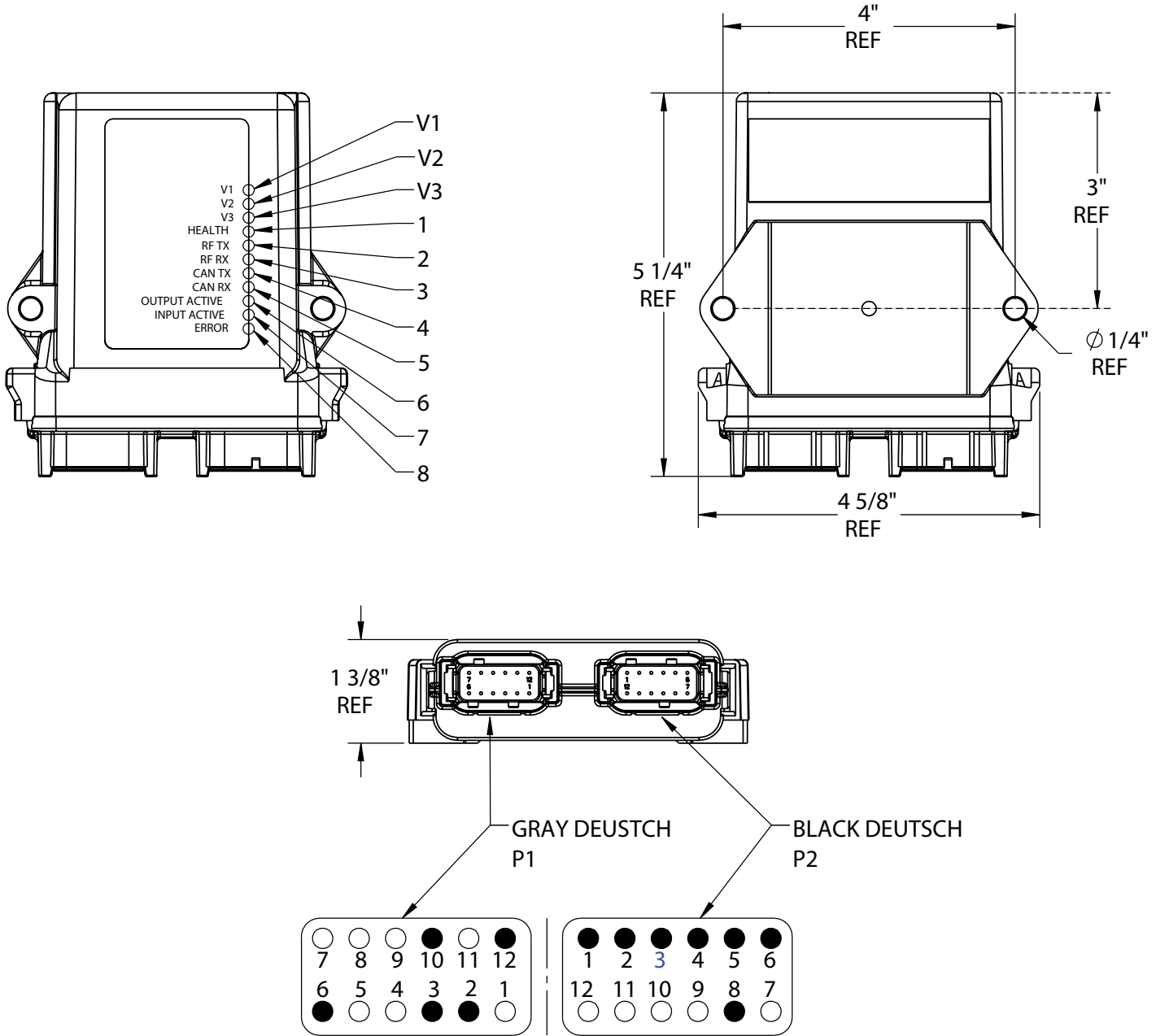
PROBLEM	POSSIBLE REASON	ACTION
Crane moves unexpectedly	Jammed remote button	Activate E-Stop and see if movement stops. Verify that nothing had depressed the button at the time of movement. If it was not depressed, then replace remote.
	Short in harness	Unplug coil. Trace wire back to receiver. Check connectors.
No function operates on the crane.	Remote turned off/not linked	Verify the power switch is in the on position. Turn remote on. Refer to the associate/dissociate section.
	Crane power turned off/ remote battery low	Most cranes have a toggle switch to turn on crane. This is usually located in the cab or crane box. Check remote batteries.
The following functions are inoperable extend, boom down, hoist up.	Anti-2 Block activated	Visually inspect bail weldment and microswitch at the crown if possible. Inspect cord reel wires and connectors.
	Crane overloaded	Reduce load by either retracting, booming up, or hoisting down to return functions.
Any one function is not operable	Cut in wire or bad coil	Switch coil with another coil and check if broken function moves to a different function. Inspect wires to coil. Replace coil or repair wires.
	Toggle switch is bad on remote	Inspect remote switches for damage. Contact Auto Crane.

LED Diagnostic Troubleshooting Table



Indication	Cause	Solution†
Unmarked LED active	Input power polarity is reversed.	Adjust wiring connections to achieve correct polarity.
+V1, +V2, +V3 Power LED not active	Electrical signals not activating the LEDs.	- Is +VDC input power present? - Check input power polarity.
RTX/RRX not active		- Check for obstructions preventing line-of-sight transmission. - Check that the remote unit is active. - Re-associate the remote unit with the base unit.
CTX/CRX not active		- Check CAN wiring. - Check that the remote unit is active. - Re-associate the remote unit to the base unit.
Out LED not active		- Check that the remote unit LEDs are active when the appropriate buttons are pushed. - Check that startup sequence was followed.
ERR LED active	Over-temperature or over- current channel indication.	- Check the outputs for loose wiring, etc. - Active channel current consumption less than 1 A typical. (This is not a problem in cases where less than 1 A draw is a normal condition.)
Health LED blinking rapidly	Indicates an internal problem.	Contact Auto Crane service department.

† – If the recommended solutions do not resolve the issue, contact the Auto Crane service department.



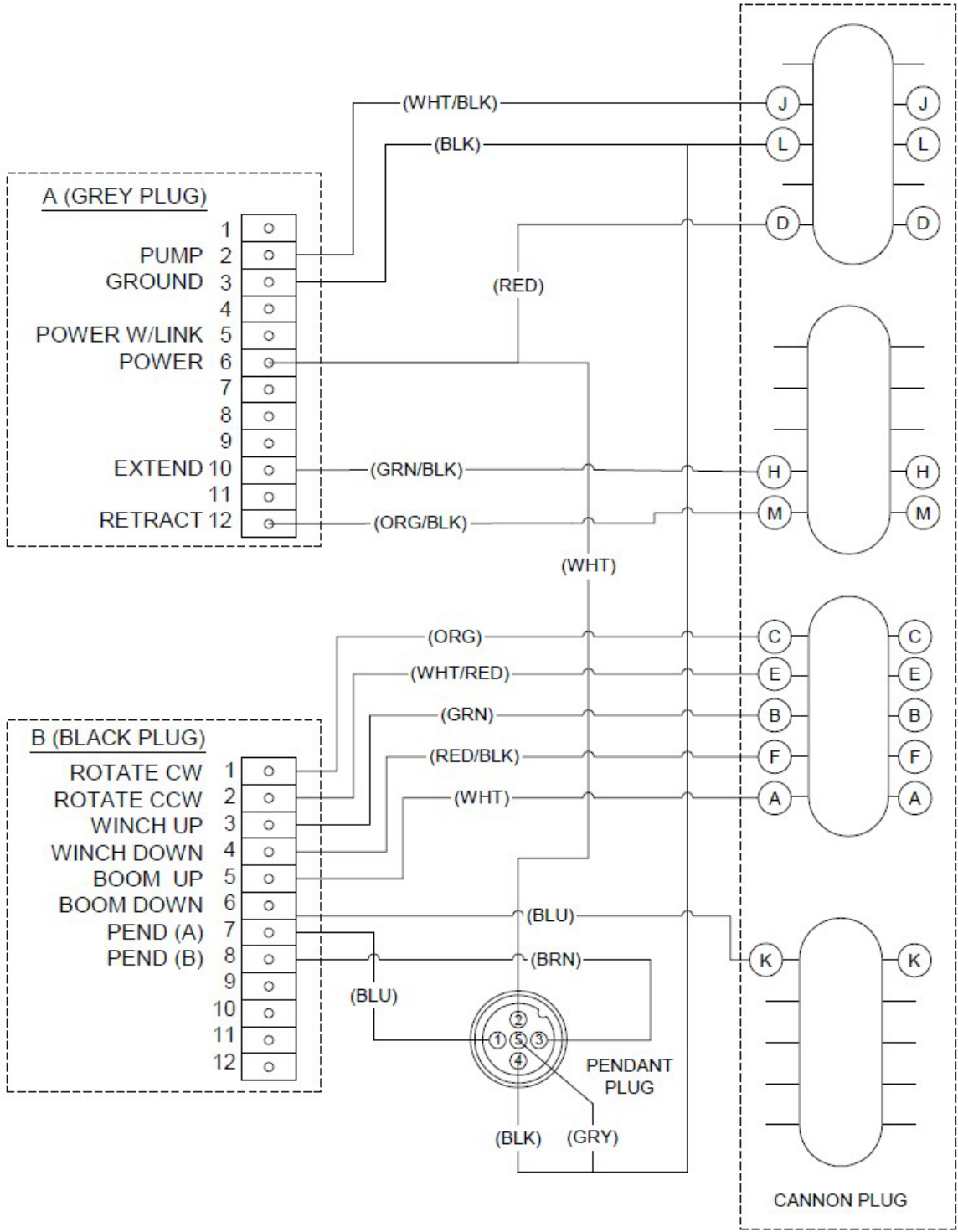
LED	ACTION	INDICATION
V1	VOLTAGES	VOLTAGES OK WHEN LIT
V2	VOLTAGES	VOLTAGES OK WHEN LIT
V3	VOLTAGES	VOLTAGES OK WHEN LIT
1	HEALTH	BLINKS 1X/SEC WHEN ACTIVE
2	RF TX	FLASHES WHEN ACTIVE
3	RF RX	FLASHES WHEN ACTIVE
4	CAN TX	FLASHES WHEN ACTIVE
5	CAN RX	FLASHES WHEN ACTIVE
6	OUTPUT	BLINKS 1X/SEC WHEN ACTIVE
7	INPUT	BLINKS 1X/SEC WHEN ACTIVE
8	ERROR	SOLID - CHANNELL OUTPUT LOW OR HIGH CURRENT

GRAY DEUTSCH CONNECTOR			
P1 PIN	ASSIGNED	P1 PIN	ASSIGNED
P1:1	UNUSED	P1:7	CANH
P1:2	PUMP	P1:8	CANL
P1:3	-VDC UMB COM	P1:9	UNUSED
P1:4	UNUSED	P1:10	EXTEND
P1:5	UNUSED	P1:11	UNUSED
P1:6	+VDC	P1:12	RETRACT

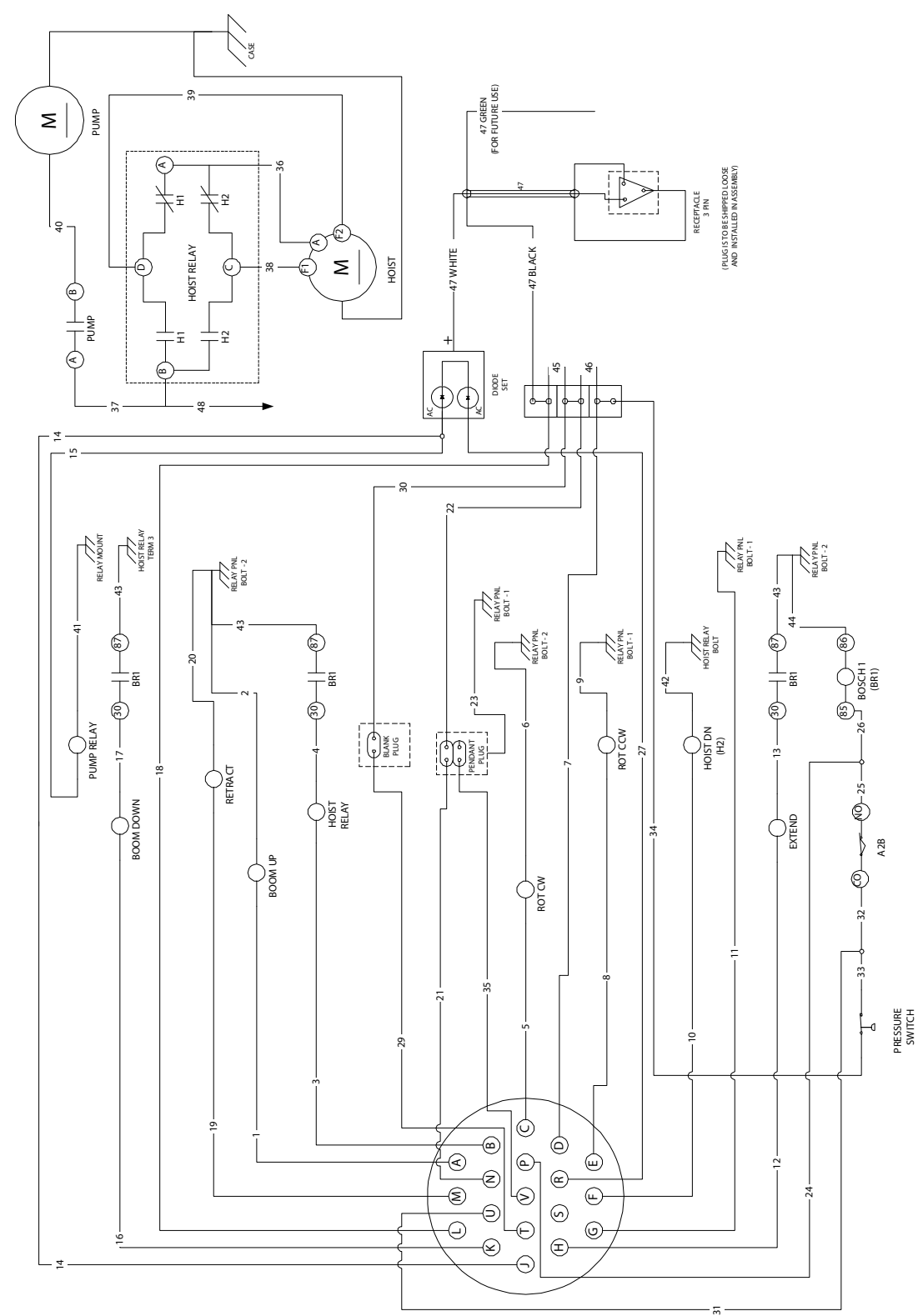
BLACK DEUTSCH CONNECTOR			
P2 PIN	ASSIGNED	P2 PIN	ASSIGNED
P2:1	ROTATION CW	P2:7	CANH
P2:2	ROTATION CCW	P2:8	CANL
P2:3	HOIST UP	P2:9	UNUSED
P2:4	HOIST DOWN	P2:10	UNUSED
P2:5	BOOM UP	P2:11	UNUSED
P2:6	BOOM DOWN	P2:12	UNUSED

Electrical Harness Schematic

FM CONTROL TRANSMITTER WIRING SCHEMATIC
P/N: 680180000



Voltage Switching Unit Schematic



Hydraulic Troubleshooting Table

ERROR	CAUSE	DIAGNOSTIC	SOLUTION
Crane moves unexpectedly	Jammed valve cartridge	Try to manually override valve. If unable to move stem, cartridge is jammed.	Replace valve cartridge.
	Counterbalance valve set too low (boom up and boom down)	Adjust the counterbalance out to see if movement stops.	Contact Auto Crane for proper adjustment and setting of counterbalance valve. Valve may need to be replaced.
	Contaminant in cartridge	Valve sticks in certain positions.	Clean valve to remove debris. Reference Maintenance section for valve 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.
	PTO is not engaged	Verify PTO is engaged.	Engage PTO.
All functions operate slowly	Contamination in cartridges	Visually inspect the cartridges for clogged ports.	Clean valves to remove debris. Reference Maintenance section for valve cleaning procedure.
	Relief valve set too low	Install pressure gauge in control valve block. Fully extend boom to induce full pressure. Verify relief pressure.	Adjust relief valve to proper pressure.
Excessive heat during operation	Crane operated too long	Crane operation is generally designed for intermittent duty (15 minutes loaded / 30 minutes cooldown)	Reduce use of crane to allow oil to cool. If problem persists, add hydraulic oil cooler to system.

Inspection Requirements



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



All inspections shall be performed by designated personnel only.

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.

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.
 - 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.



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.

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 manufacturer.
- 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.

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.

Inspection Records

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

Testing Requirements



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



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.

General Repairs and Maintenance



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



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.

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.

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.
- 4. If bleeding the hydraulic system is required, run each crane function until smooth operation of that particular function is noticeable.

Lubrication

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

Rope Replacement

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

NOTICE

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 use of 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.

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 preformed 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.
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.

Paint Finish Maintenance

The paint finish on Auto Crane products can become damaged during normal use when chipped, scratched, 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:

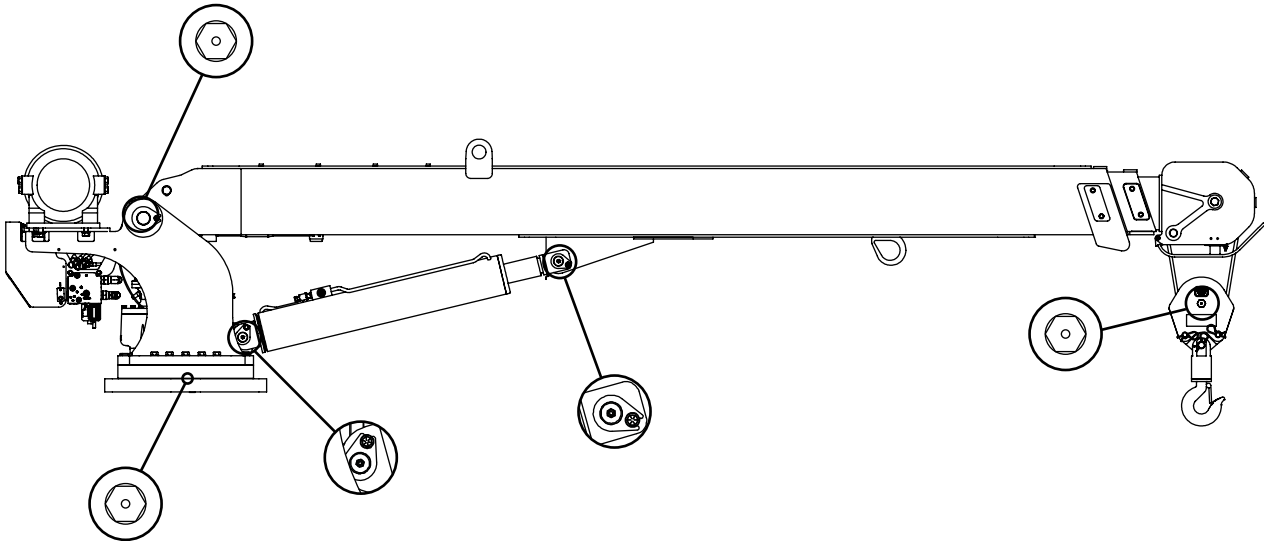
1. Sand the damaged area to bare metal.
2. Use a solvent to clean the sanded area to remove sanding debris and residue.
3. Wipe dry with a clean cloth to remove any remaining debris and residue.
4. Use a primer compatible with PPG Spectracron 573.
5. Prime the sanded areas to a minimum 2 mil dry film thickness per the primer manufacturer's instructions.
6. Use a paint compatible with PPG Spectracron 573 epoxy primer and PPG Spectracron QT360HW topcoat paint.
7. Apply the topcoat paint to a minimum 2 mil dry film thickness within 24 hours of applying the primer.
8. The final primer and topcoat should have approximately a 4 mil dry film thickness.

Lubrication and Maintenance Schedule

Service Performed	Instructions	Daily	Weekly	3 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 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-lb (Grade 5), 35 ft-lb (Grade 8) as required	X			
Mounting Bolts	Check torque to 501 ft-lb (Gr 8 hex head), 475 ft-lb (socket head)		X		
Rotating Ring Gear	Lube with MobileTac LL, Lubriplate or equivalent		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 225 ft-lb			X	
Hoist Mounting Bolts (HC-10, 12S, 12, 14)	Check torque to 173 ft-lb			X	
Hoist Mounting Bolts (All others)	Check torque to 85 ft-lb			X	
Slewing Drive (HC-7x/8x)	Grease with MobilePlex EP-2 or equivalent at zerk fittings			X	
Hydraulic Fluid	Drain, flush, and refill with Superfilm 5W-20 or equivalent				X
Rotation Gearbox (HC-12/14)	Drain, flush, and refill with 52 oz of GL-5 EP-80/90 gear oil				X
Rotation Gearbox (All Others)	Drain, flush, and refill with 58 oz of EP-140 gear oil				X
Boom Slide Pads	Pads greased when replaced				
Filter, Valve Block	Replace annually, every 200 hours of operation, or as directed by the dirty filter sensor				
For additional information, see OSHA 1910.180 and ASME B30.5					

Lubrication Points

Use only authorized parts/lubrication. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.



Rotation Bearing Replacement

All bearings wear over time, including the main rotation bearing of the crane. There are no precise rules for replacing the main rotation bearing because of many variable factors. There are common symptoms during crane operation that may indicate rotation bearing wear. These include:

- 1. Excessive noise.
- 2. Rough rotation.
- 3. Increase drive power required to rotate.
- 4. Metal particles in grease.

Replace the Bearing If:

- 1. Any noticeable cracking in the bearing housing.
- 2. Damage to internal teeth.
- 3. Excessive axial play is present. See Axial Play Allowance Check Procedure.

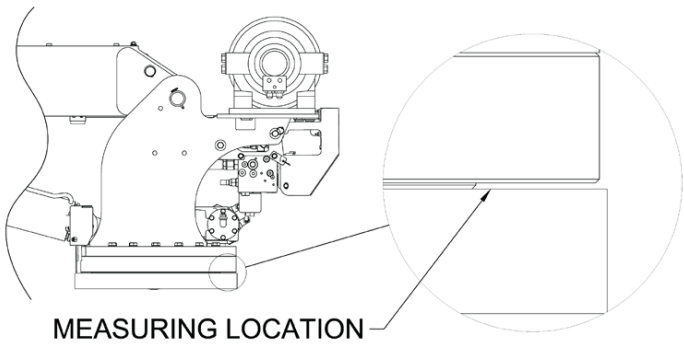


Never try to repair a rotation bearing. For a replacement bearing contact your local authorized distributor.

Axial Play Allowance Procedure

- 1. Raise the boom to the maximum angle and measure the clearance between base plate and the rotation bearing with a dial or filler gauge.
- 2. Lower the boom to the horizontal position and measure the clearance between the base plate and the rotation bearing with a dial indicator or feeler gauge.
- 3. If the difference between the two measurements exceeds the specification, replace the bearing.
- 4. Rotate crane 45°, then repeat steps 1 and 2 until you reach 360° of rotation.

Crane Model	Axial Play Allowance	Rotation Bearing Replacement Kit
EC-2X, EHC-3.2, HC-3.2, EHC-4	1.5 mm	320878010
EHC-5, EHC-6, HC-5, HC-6, HC-7, HC-8, 8406H, HC-9	1.6 mm	480023010
HC-7x, HC-8x	0.1 mm	479200220
HC-10, HC-12S	1.8 mm	372064010
HC-12, HC-14	2.3 mm	470001010



Electric Hoist Maintenance and Operation

Weekly

- 1. Check the oil level and maintain it to the oil level plug. If oil is leaking out, determine location and repair.
- 2. Check the pressure relief plug in top of the gear housing. Be sure that it is in good operating condition so that hot oil gasses may escape.
- 3. Lubricate cable with light oil.

Monthly

- 1. Lubricate the various grease fittings located in the cable drum, end bearing, clutch housing or clutch operating linkage. Any good grade of moly-disulfide containing grease is acceptable.
- 2. Check the hoist mounting bolts. If any are missing, replace them and securely tighten any that are loose. Make sure to use only grade 5 bolts or better.
- 3. Check the torque setting of the oil cooled worm brake. Reference brake adjustment.
- 4. Inspect the cable. If the cable has become frayed with broken strands, replace immediately.

Annually

- 1. Drain the oil from the hoist annually or more often if winch is used frequently.
- 2. Refill the hoist to the oil level plug with all-purpose EP 140 gear oil.
- 3. Inspect frame and surrounding structure for cracks or deformation.
- 4. Gear wear can be estimated by rocking the drum back and forth and if necessary, drain oil and remove cover for closer inspection.

The uneven spooling of cable, while pulling a load, is not a problem unless there is a cable pileup on one end of drum. If this happens, reverse the winch to relieve the load and move your anchor point further to the center of the vehicle. After the job is done you can unspool and rewind for a neat lay of the cable.

Check oil level of hoist every six months. Replace oil annually or more often if hoist is used frequently. Use 12 ounces of all-purpose EP 140 gear oil in the worm gear housing and 8 ounces of SAE 20 oil in the spur gearbox. If the oil is contaminated with metallic particles, inspect winch for cause of abnormal wear. Periodically check all electrical connections and mounting bolts.

Rotation Gearbox/Slewing Drive Maintenance

For HC-5, HC-6, HC-7, HC-8, 8406H, HC-9, HC-10, and HC-12S models:

Check the gearbox oil level to ensure gearbox is well lubricated and stays in good operating condition. In order to extend gearbox operating life, it is recommended that the gearbox oil is drained annually and refilled with 28 ounces of EP 140 gear oil.

For HC-7x, HC-8x models:

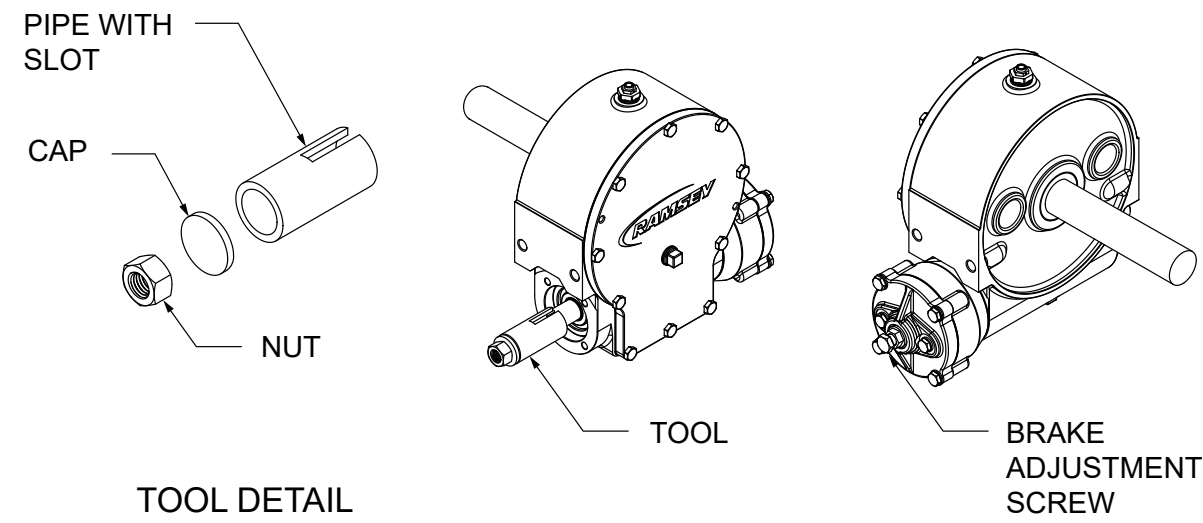
Grease with MobilePlex EP-2 or equivalent at all zerk fittings.

For HC-12, HC-14 models:

Check the gearbox oil level to ensure gearbox is well lubricated and stays in good operating condition. In order to extend gearbox operating life, it is recommended that the gearbox oil is drained annually and refilled with 52 ounces of GL-5 EP-80/90 gear oil.

Brake Adjustment

The oil-cooled, fully adjustable, automatic safety brake operates in the work housing lubricant, with all parts being submerged in oil. When the brake wears to the point that the load begins to drift, the brake can be adjusted using an adapter can be made with a slotted piece of pipe or tubing having an inside diameter of 0.75", an endcap, and a nut as depicted below:



After welding the cap and nut to the pipe or tubing, slot the pipe or tubing as show to allow the adapter to slide around the key in the shaft. This will allow the adapter to act as a large socket that can be used with a **beam-style** torque wrench to determine the rolling torque of the shaft.

Turn the torque wrench so that the drum turns in the direction that lowers the cable. The rolling torque value should be between 8 and 13 ft-lb.

If the torque wrench indicates that the torque is **less** than 8 ft-lb.:

- 1. Loosen the lock nut on the adjusting screw.
- 2. Turn the adjustment screw ¼ turn **clockwise**.
- 3. Tighten the lock nut on the adjusting screw.
- 4. Re-measure torque.

If the torque wrench indicates that the torque is **more** than 13 ft-lb.:

- 1. Loosen the lock nut on the adjusting screw.
- 2. Turn the adjustment screw ¼ turn **counterclockwise**.
- 3. Tighten the lock nut on the adjusting screw.
- 4. Re-measure torque.



Only ¼ turn is usually required to adjust the brake. Over-tightening can cause overheating and damage to the brake parts.

If the brake does not respond to adjustment, a new leaf spring and brake disc may be required.

Eccentric Ring Adjustment

- 1. Remove retaining clip from bottom of crane.
- 2. Rotate eccentric ring to tighten or loosen backlash.

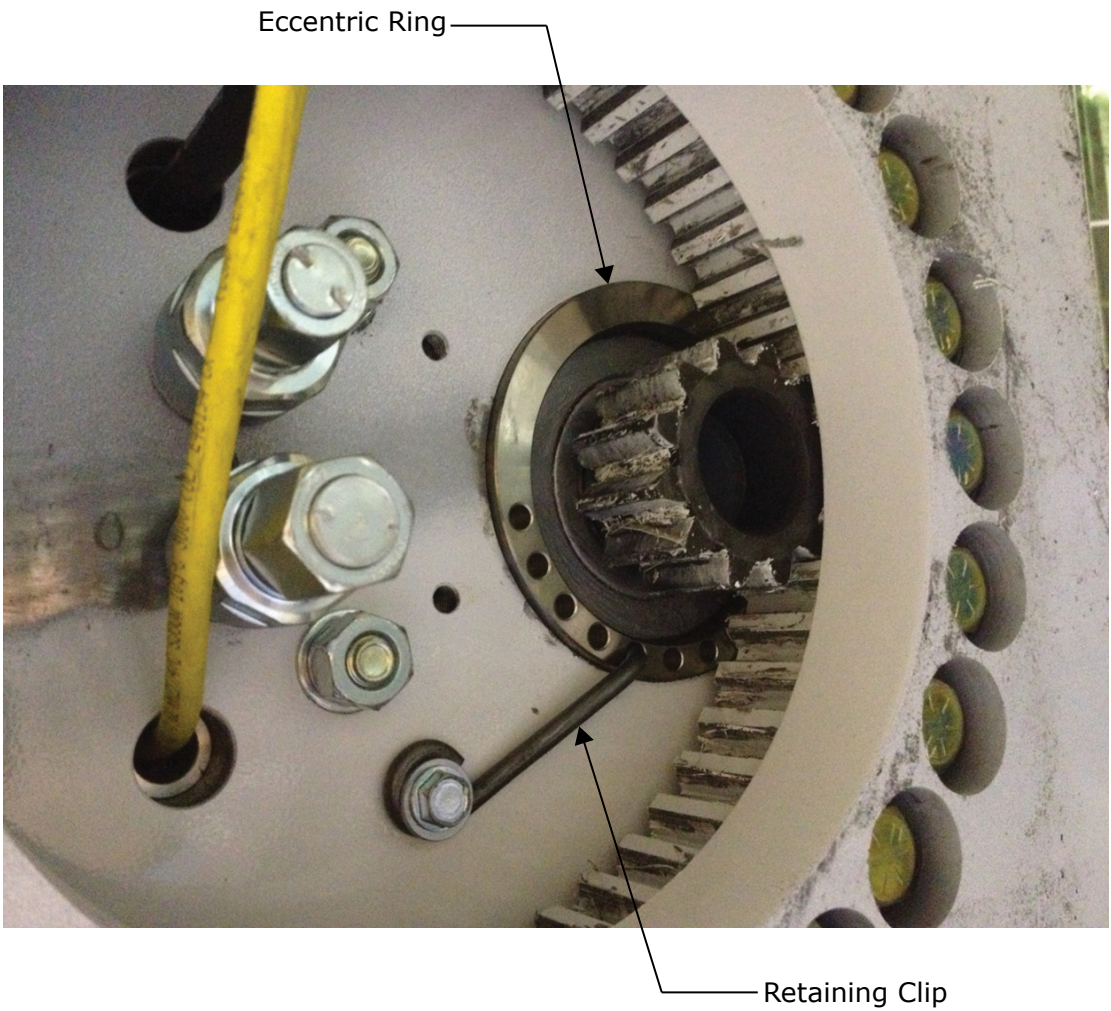


Important: The tooth gap should be between 0.005" and 0.007" at the blue/green mark on the rotation bearing. This can be checked using Plastigauge®.

- 3. Once adjusted, reattach eccentric ring retaining clip by inserting into one of the holes on the eccentric ring and tightening the mounting bolt.



On new units, slight metal and/or paint shavings may develop during initial operation. This is considered normal gear wear-in.



General Installation

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

- 1. Reference General Dimensions for minimum chassis GVWR needed for crane.
- 2. The vehicle must be equipped with an engine speed control and tachometer.
- 3. 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.
- 4. If not using an Auto Crane body, cut the proper sized hole in the mounting location (centered with mounting bolts) for access to hydraulic connections.
- 5. Ensure the mounting bolts are the proper size and grade and torque to 501 ft-lb.
- 6. Pressure and return hoses are not furnished with the crane and must be supplied by the installer with lengths determined at installation. Reference General Specifications for pressure and flow requirements.



Maintain ISO 18/16/13 fluid cleanliness levels. Failure to use clean hydraulic hoses and components may contaminate the crane and hydraulic system and void warranty.



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

IMPORTANT: The recommended hydraulic reservoir size for the average industry application CRANE ONLY installation is two times the crane hydraulic flow rate. For crane applications requiring more than 25% crane operation time while the PTO is engaged and/or additional equipment is operated by the same hydraulic system, it is recommended that an appropriately sized, larger hydraulic reservoir and/or a forced air hydraulic oil cooler be installed. The addition of other auxiliary hydraulic equipment will require additional capacity.

Each EHC-5 continuous rotation crane arrives with a shipping tote that contains the following items:

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	4	151000000	SCREW, HX HD, 7/8-14NF X 4" LG GRADE 8
2	4	189000000	NUT, HEX 7/8-14NF
3	4	222000000	WASHER, LOCK 7/8
4	6	838000000	CLIP, CABLE #838
5	1	320988009	KIT, ALIGNMENT DECAL LOCATION
6	1	360649000	TRAVELING BLOCK ASSY, LESS 2-BLOCK BAR, 5005H/EH
7	1	360838001	LOAD CHART, EHC-5
8	1	361106580	REMOTE, NON-PROPORTIONAL, CERVIS
9	1	361106584	OWNER'S MANUAL, EHC-5, FM, CERVIS
10	1	366699000	SLIP RING INSTALLATION
11	1	460159000	TETHER CABLE, TRANSMITTER
12	1	479824002	DECAL, STABILITY CHART
13	1	479824003	DECAL, STABILITY CHART, CUSTOM ZONE PERCENTAGES
14	1	715064001	DECAL, BOOM STOW, CALIFORNIA
15	1	715321032	SHIPPING TOTE, 15 GAL, BLACK / RACER RED

Please check to make sure the above items have been supplied with your crane. If any items are missing, please notify your dealer, or contact Auto Crane.

Installation

Shipping Kit - P/N 360683010

Each EHC-5 continuous rotation crane arrives with a shipping tote that contains the following items:

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	4	015100000	SCREW, HX HD, 7/8-14NF X 4" LG GRADE 8
2	4	018900000	NUT, HEX 7/8-14NF
3	4	022200000	WASHER, LOCK 7/8
4	6	083800000	CLIP, CABLE #838
5	1	320988009	KIT, ALIGNMENT DECAL LOCATION
6	1	360649000	TRAVELING BLOCK ASSY, LESS 2-BLOCK BAR, 5005H/EH
7	1	360838001	LOAD CHART, EHC-5
8	1	361106580	REMOTE, NON-PROPORTIONAL, CERVIS
9	1	361106584	OWNER'S MANUAL, EHC-5, FM, CERVIS
10	1	460159000	TETHER CABLE, TRANSMITTER
11	1	479824002	DECAL, STABILITY CHART
12	1	479824003	DECAL, STABILITY CHART, CUSTOM ZONE PERCENTAGES
13	1	715064001	DECAL, BOOM STOW, CALIFORNIA
14	1	715321032	SHIPPING TOTE, 15 GAL, BLACK / RACER RED

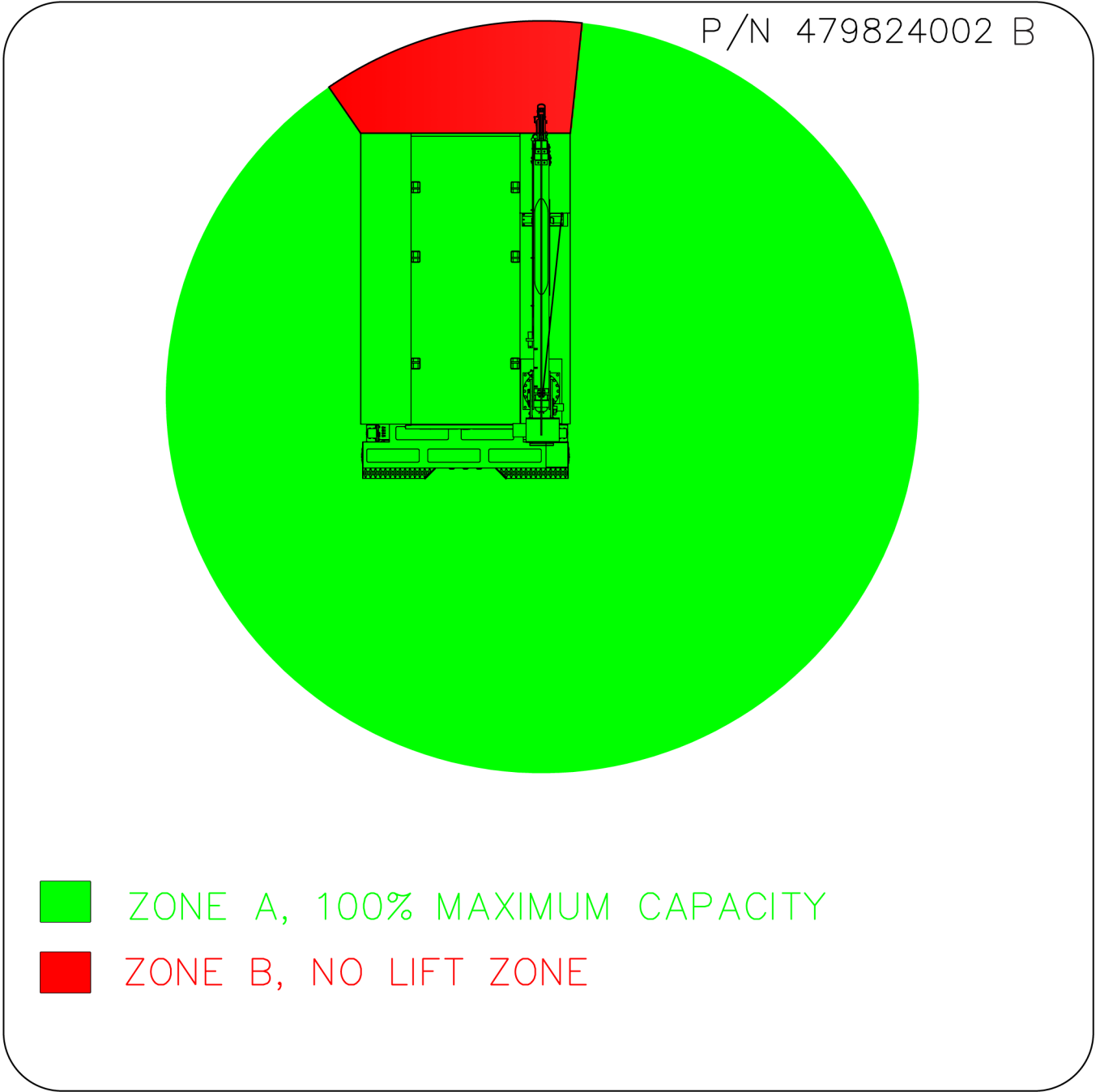
Please check to make sure the above items have been supplied with your crane. If any items are missing, please notify your dealer, or contact Auto Crane.

Installation

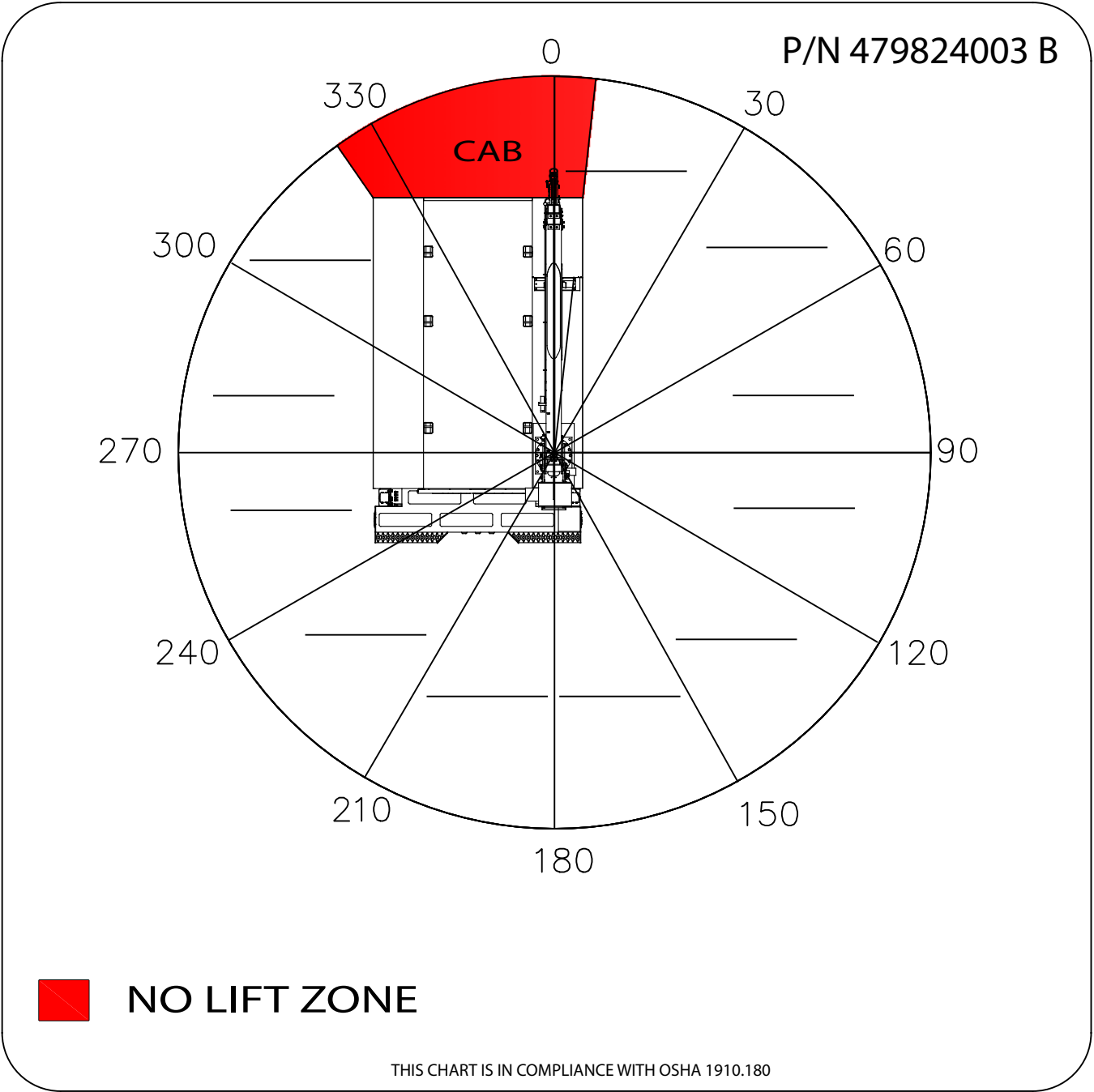
Stability Chart Installation

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:

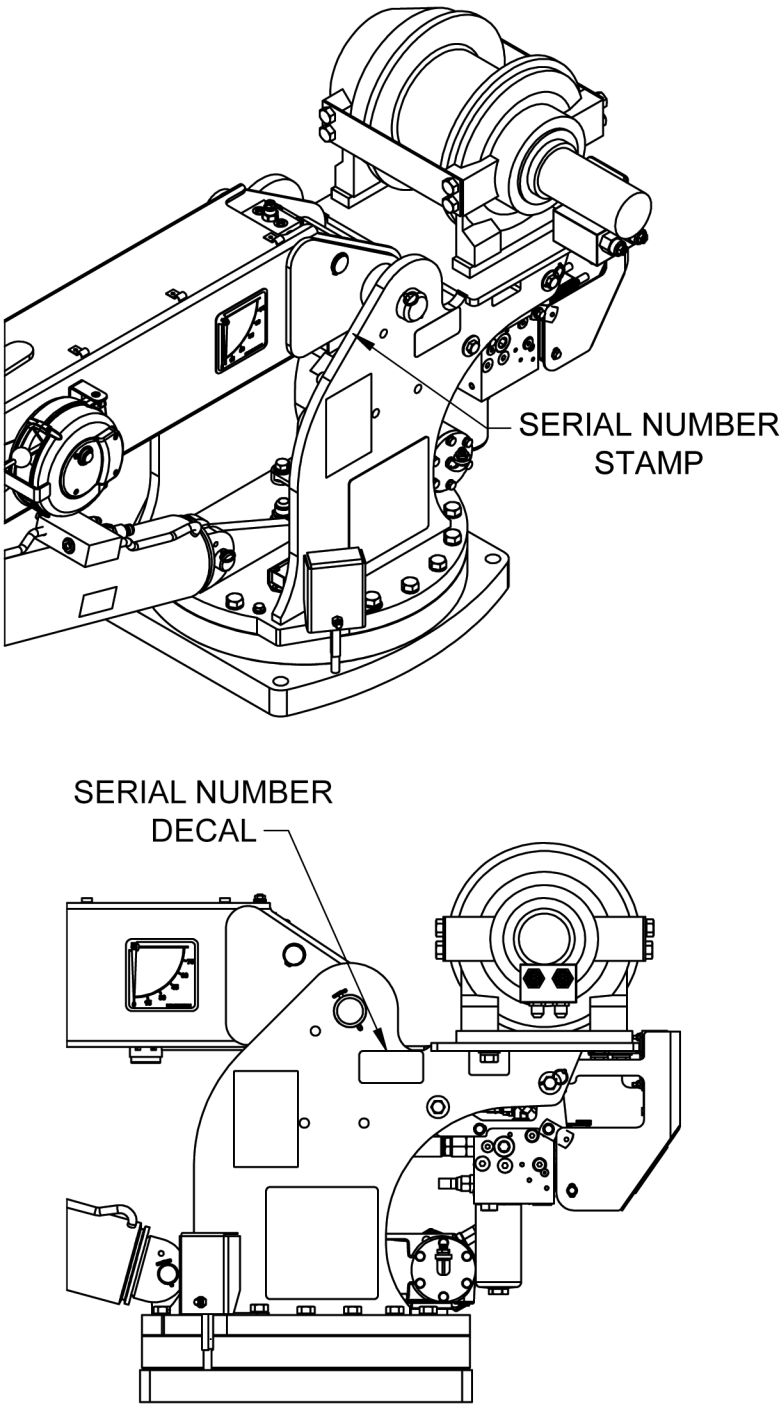


479824003 decal will be installed on an Auto Crane body that was not outfitted with an Auto Crane crane and Auto Crane outriggers. The stability chart provides lines to write in the tested stability percentage at each section below:



Large Crane Serial Number Location

The serial number is stamped into the left top side plate of the pedestal as well as the decal on left side plate as shown below.



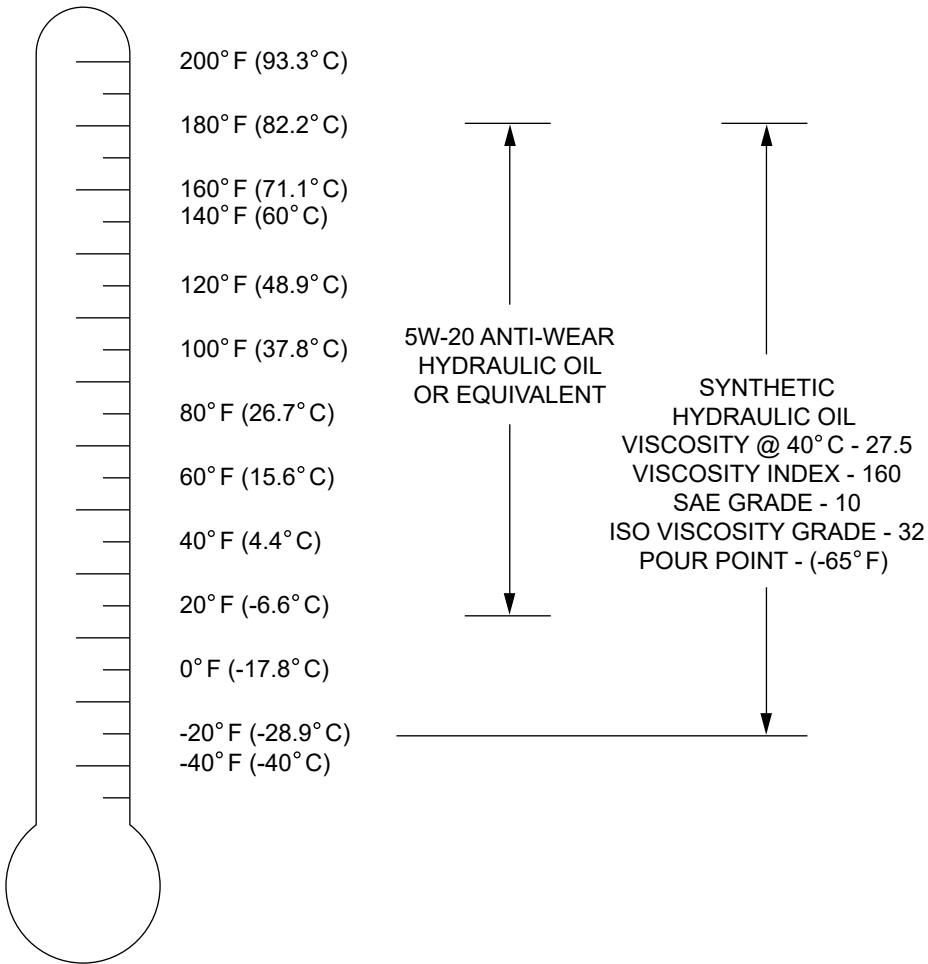
Recommended Operating Temperature

- 1. In applications where low oil temperatures may exist (below -20° F), an external heating system may be required.
- 2. A symptom of excessively low oil temperatures is hydraulic pump/PTO operation but no fluid flow from tank.

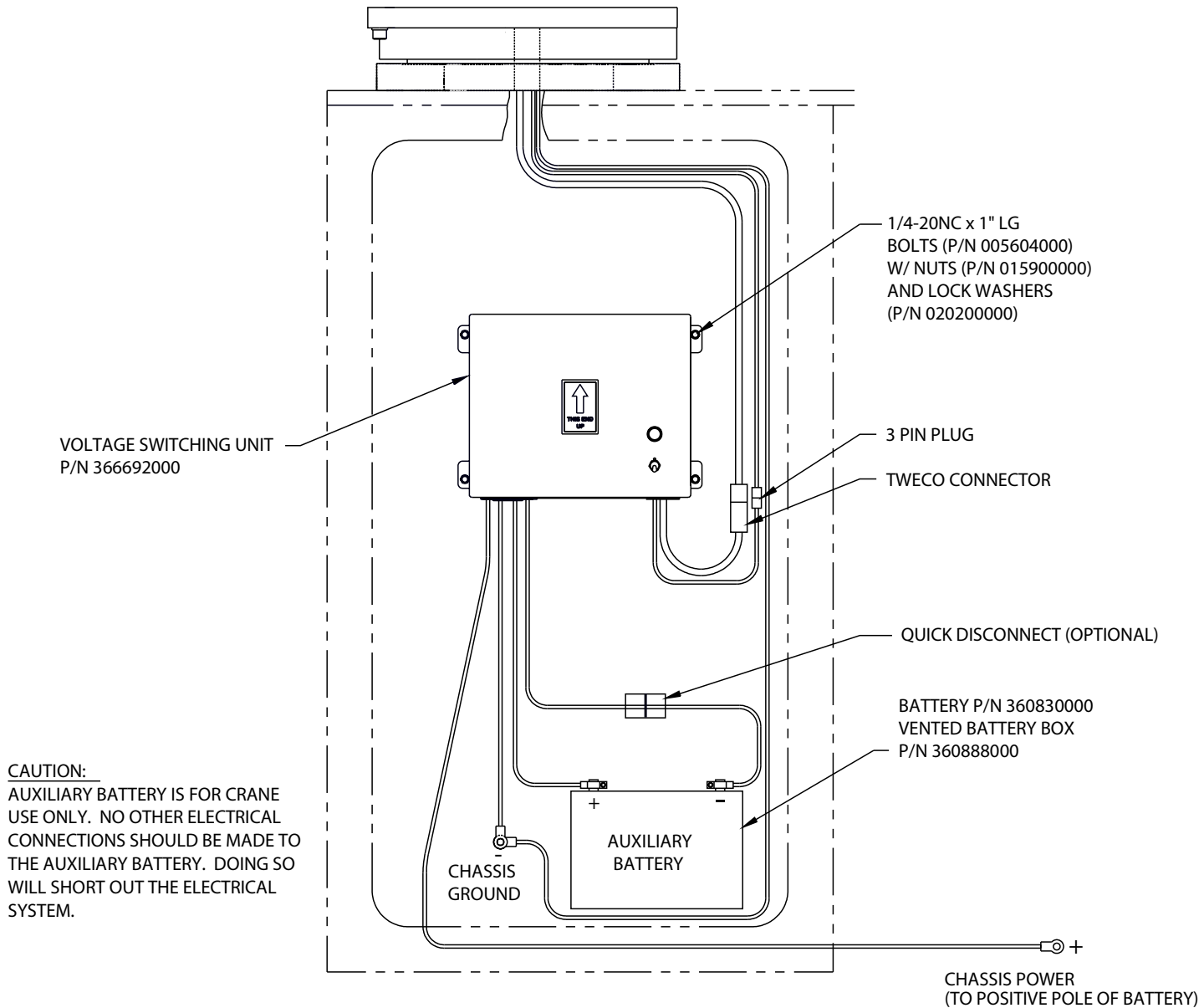


Hydraulic reservoir oil temperatures must not exceed 180° F or damage to crane may occur. This may affect crane warranty.

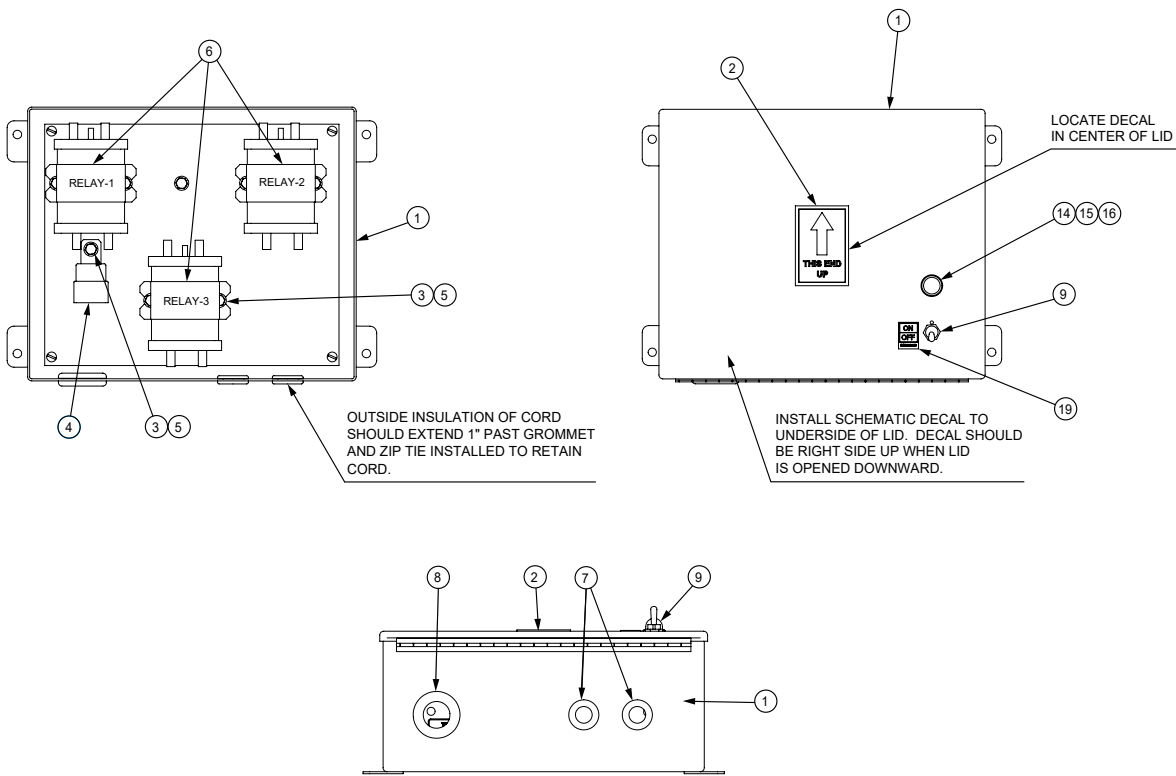
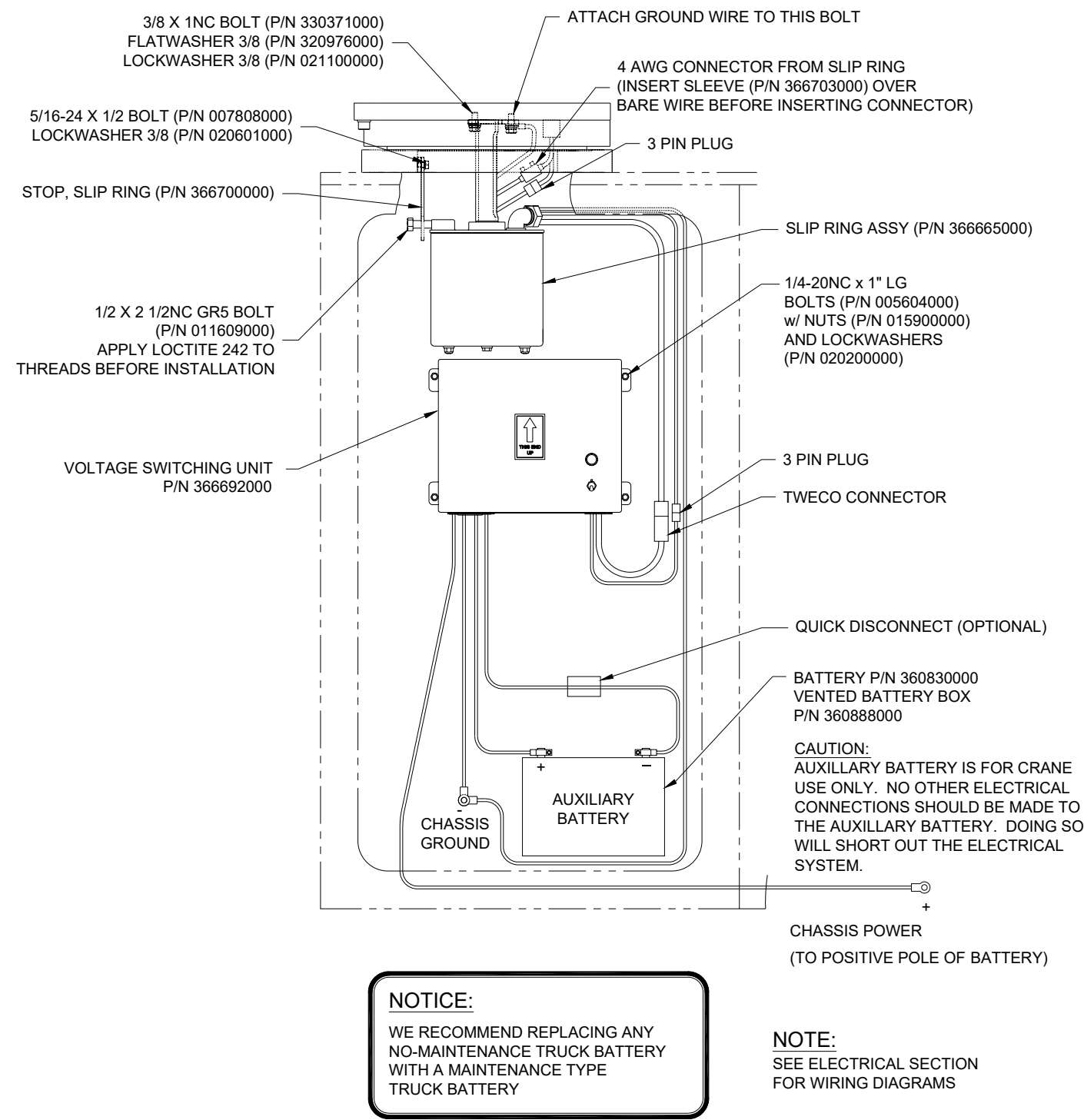
OIL TEMPERATURE



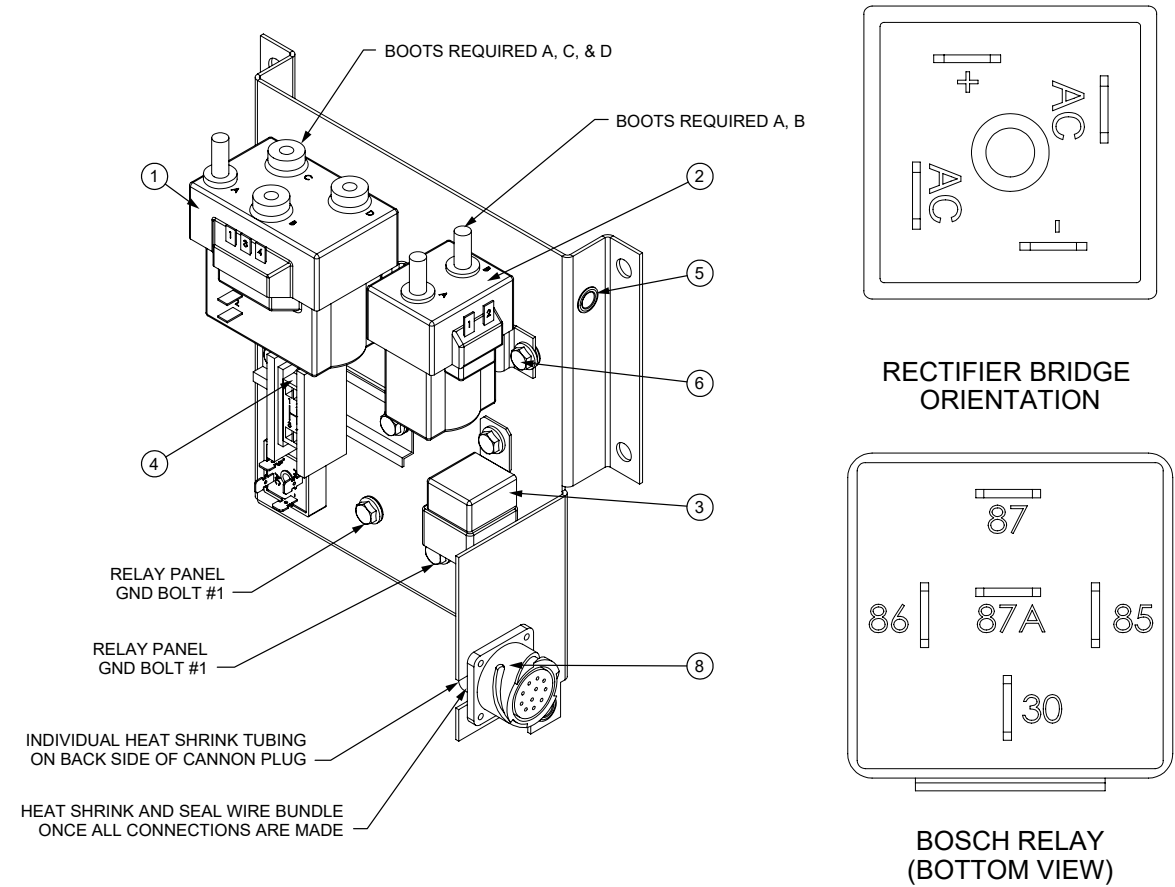
Voltage Switching Unit Installation



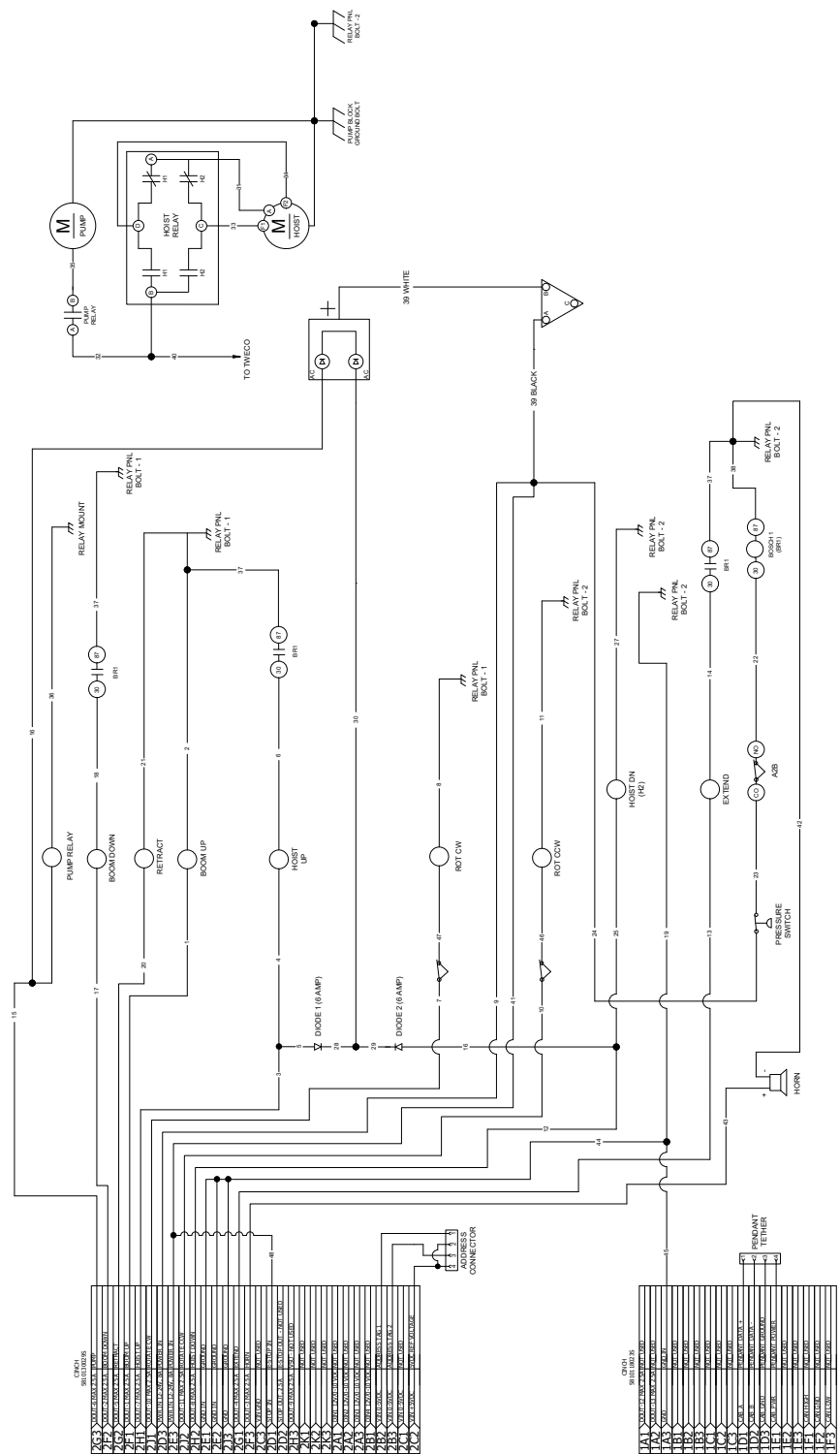
Crane Mount Shown With SlipRing



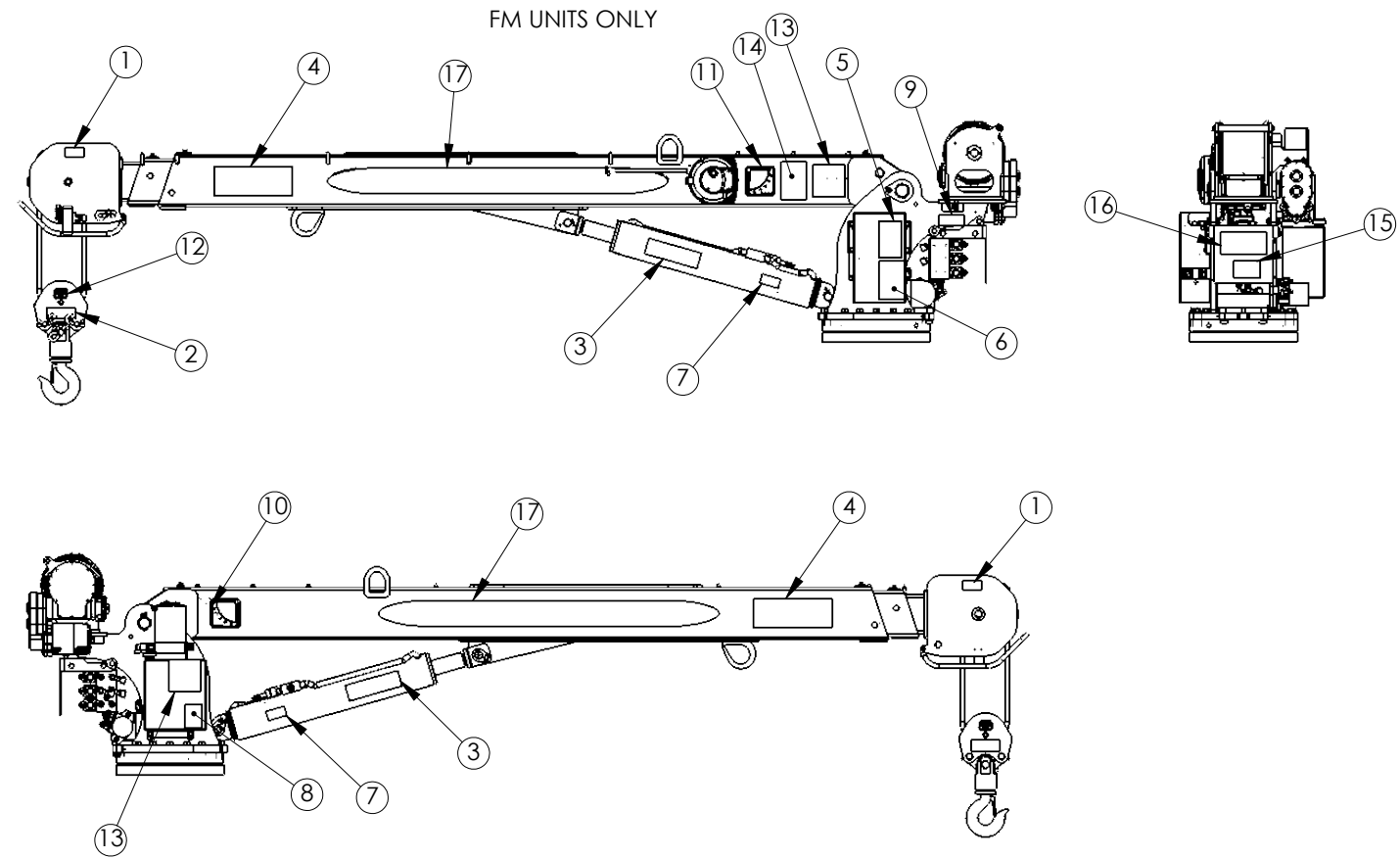
ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	366693000	ENCLOSURE, VOLTAGE SWITCHING UNIT
2	1	367242001	DECAL, THIS END UP
3	8	736272000	NUTSERT 1/4-20UNC X .027-.165 GRIP
4	1	320355000	RELAY, BOSCH
5	8	360493000	SCREW HX WHIZ-LK 1/4-20UNC X 1/2 LG
6	3	404167000	SOLENOID, SEALED
7	2	750169000	GROMMET, RUBBER
8	1	750282000	GROMMET, RUBBER, 1.375 OD, 1.00 ID
9	1	750090000	TOGGLE SWITCH, 1 POLE, 2 POSITION
10	1	360763001	HOUSING DEUTSCH 3-PIN
11	1	360763002	WEDGE, DEUTSCH 3-PIN
12	3	366367003	CONTACT, DEUTSCH CONNECTOR 0462-201-16141
13	1	366705000	DECAL, VSU SCHEMATIC
14	1	750171000	LAMP SOCKET, INDICATOR
15	1	750173000	BULB, 12V TYPE T-2
16	1	366707000	LENS, GREEN FLUTED
17	1	366717000	TWECO CONNECTOR, FEMALE 1MPC2
18	1	366516000	DECAL, ON/OFF



ITEM NO.	QTY	PART NO.	DESCRIPTION
1	1	320589000	RELAY, HOIST
2	1	320584000	RELAY, POWER UNIT
3	1	320355000	RELAY, BOSCH
4	1	366708001	TERMINAL BLOCK ASSEMBLY
5	13	736272000	NUTSERT 1/4-20UNC X .027-.165 GRIP
6	9	360493000	SCREW HX WHIZ-LK 1/4-20UNC X 1/2 LG
7	1	751138000	RECTIFIER, BRIDGE 25 AMP
8	1	320562000	RECEPTACLE, 11 PIN, 1/4 TURN, BAYONET
9	2	320988397	DIODE, 6AMP
10	1	366683002	BACK PANEL, RELAY PANEL



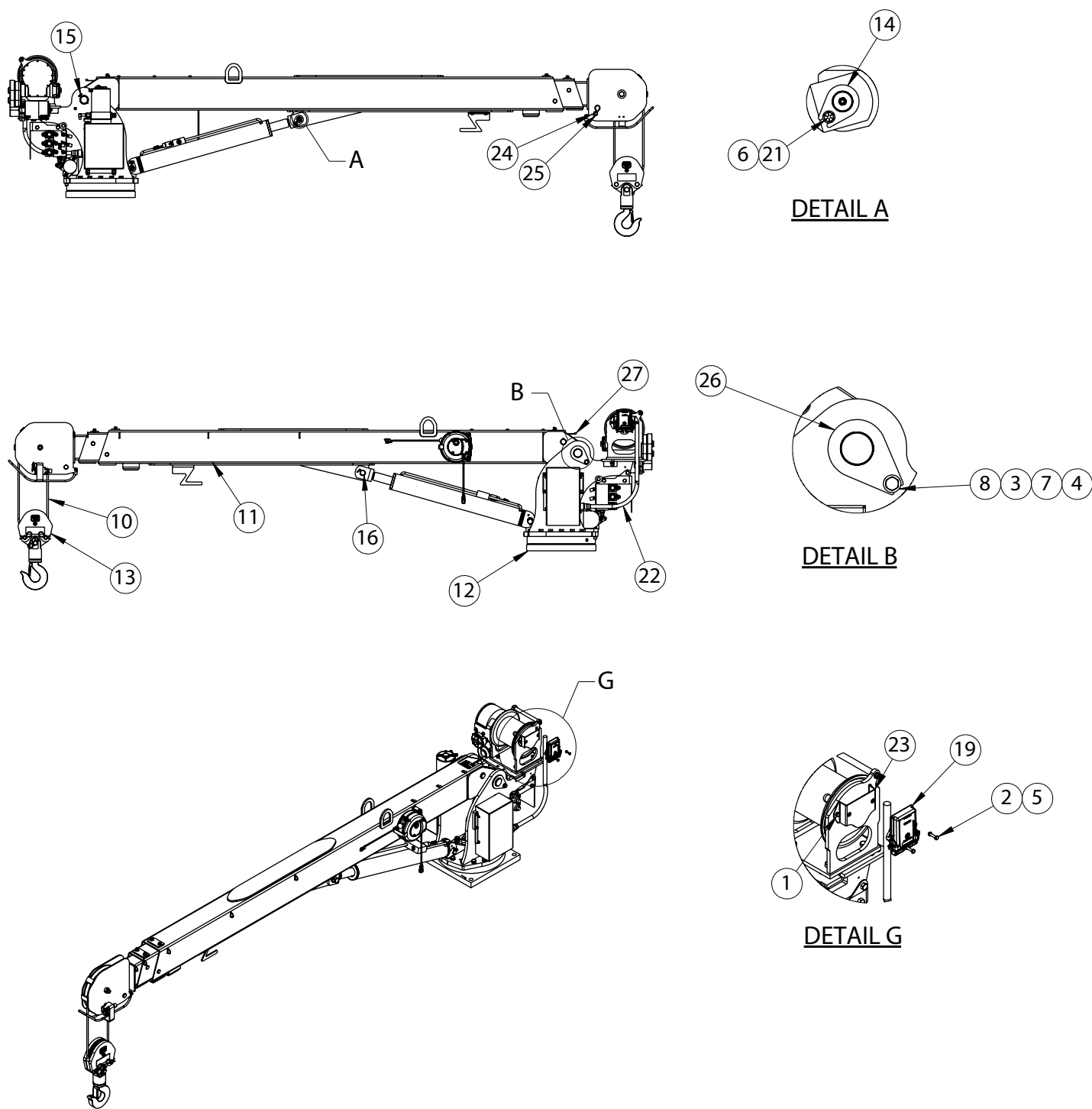
Decal Layout - P/N 360682000



Decal Layout - P/N 360682000

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	2	405170000	DECAL STAY CLEAR OF BOOM
2	2	405180000	DECAL STAY CLEAR OF LOAD
3	2	405190000	DECAL DANGER SCISSOR POINT
4	2	405290000	DECAL DANGER "ELECTROCUTION HAZARD" POWER LINE
5	1	405790000	DECAL OPERATION INSTRUCTIONS
6	1	405800000	DECAL TRAINED OPERATOR
7	2	405870000	DECAL WARNING LOAD SENSOR
8	1	406320000	DECAL WARNING - OVERLOAD
9	1	330622000	DECAL SERIAL NO
10	1	320318000	DECAL ANGLE INDICATOR CS
11	1	320318001	DECAL ANGLE INDICATOR SS
12	2	360480100	DECAL, MAX LOAD BLOCK 5005H/EH
13	2	360838001	LOAD CHART, EHC-5
14	1	460169000	DECAL WARNING, REMOTE CONTROL
15	1	040824000	DECAL, AMERICAN FLAG, MADE IN THE U.S.A.
16	1	360034000	DECAL AUTO CRANE LOGO
17	2	361106525	DECAL, AUTO CRANE EHC-5 LOGO, FLATTENED OVAL, 53 IN LONG

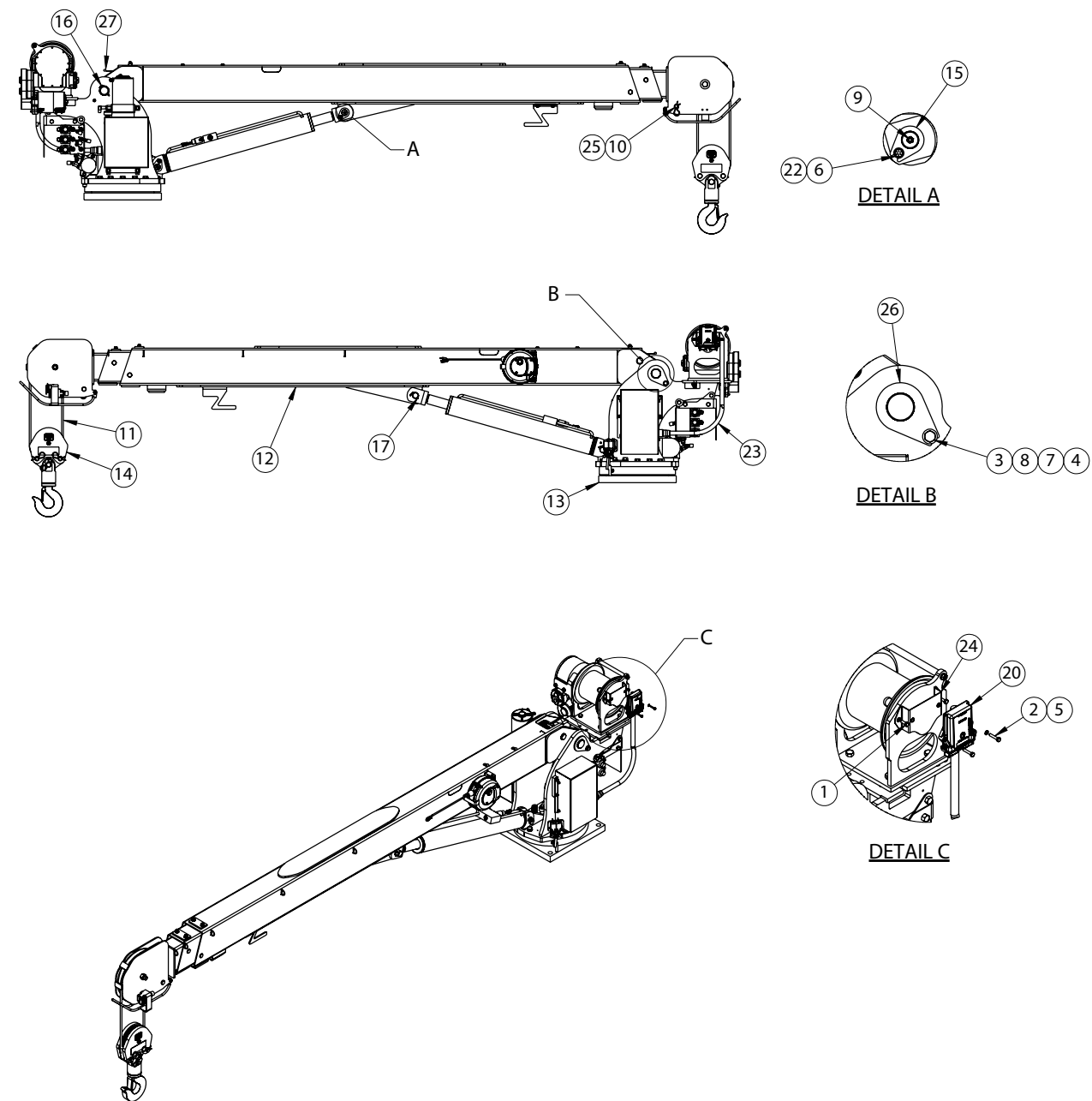
General Assembly w/o Slip Ring - P/N 360645010



General Assembly w/o Slip Ring - P/N 360645010

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	2	550000000	SCREW HX HD 1/4-20UNC X 3/4 LG
2	2	620000000	SCREW HX HD 1/4-20UNC X 1 1/4 LG
3	1	116080000	SCREW HX HD 1/2-13UNC X 2 LG
4	1	177010000	NUT HX 1/2-13UNC
5	4	202000000	WASHER SP LK 1/4
6	1	211000000	WASHER SP LK 3/8
7	1	215000000	WASHER, SP LK 1/2
8	2	216000000	WASHER FL 1/2 CP
9	1	239300000	ZERK, GREASE
10	1	360155000	CABLE, GALV 5/16"X7X19X80'-3"
11	1	360647010	BOOM ASSEMBLY, EHC-5, HC-5, HC-6
12	1	360648005	PEDESTAL ASSEMBLY 5005EH
13	1	360649000	TRAVELING BLOCK ASSY, LESS 2-BLOCK BAR, 5005H/EH
14	1	360676000	PIN, CYLINDER
15	1	360677000	PIN, 1/4 COTTERLESS RING
16	1	360678000	PIN, 3/16 COTTERLESS RING
17	1	360682000	DECAL LAYOUT 5005EH
18	1	360683009	SHIP KIT, EHC-5 CONTINUOUS, FM, CERVIS
19	1	361106581	RECEIVER, NON-PROPORTIONAL, CERVIS
20	1	361106582	KIT, NON-PROPORTIONAL EHC WIRELESS, CERVIS
21	1	366158000	SCW HX 3/8 NC X 3/4 GR8
22	1	366602001	HARNESS, FM, 5005EH, 6006 EH 11-PIN PLUG
23	1	366715000	BRACKET ASSEMBLY, RECEIVER MOUNT
24	1	366813000	PIN HITCH
25	1	480367000	PIN BLOCK
26	1	480988020	PIN, PIVOT, 8406H
27	1	663300001	CABLE TIE, 18"
28	1	680150000	KIT-ELECTRICAL, 6006EH

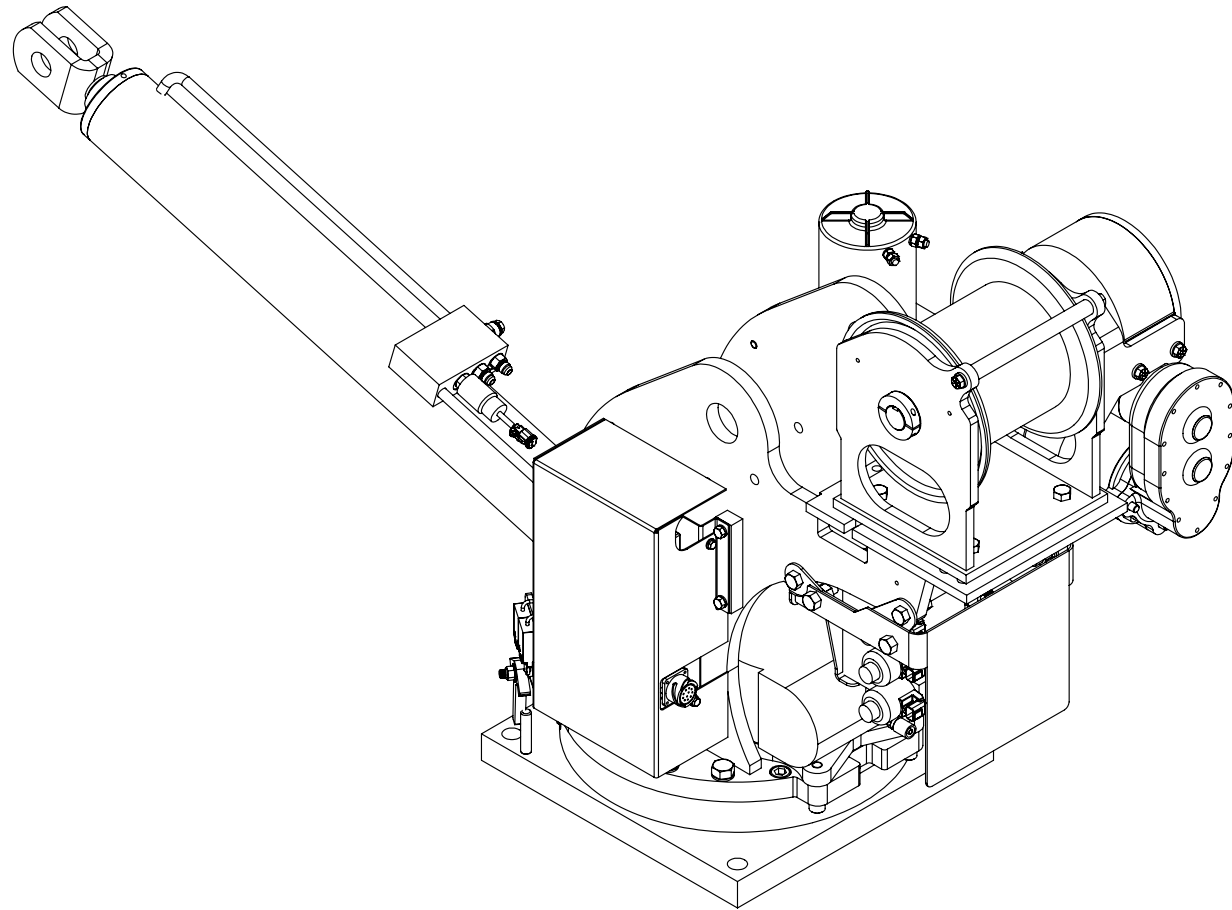
General Assembly w/ Slip Ring - P/N 360645011



General Assembly w/ Slip Ring - P/N 360645011

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	2	550000000	SCREW HX HD 1/4-20UNC X 3/4 LG
2	2	620000000	SCREW HX HD 1/4-20UNC X 1 1/4 LG
3	1	116080000	SCREW HX HD 1/2-13UNC X 2 LG
4	1	177010000	NUT HX 1/2-13UNC
5	4	202000000	WASHER SP LK 1/4
6	1	211000000	WASHER SP LK 3/8
7	1	215000000	WASHER, SP LK 1/2
8	2	216000000	WASHER FL 1/2 CP
9	1	239300000	ZERK, GREASE
10	1	320434001	PIN, 3/4 X 2-3/4LG
11	1	360155000	CABLE, GALV 5/16"X7X19X80'-3"
12	1	360647010	BOOM ASSEMBLY, EHC-5, HC-5, HC-6
13	1	360648006	PEDESTAL ASSEMBLY 5005EHW/ ROTATION STOP
14	1	360649000	TRAVELING BLOCK ASSY, LESS 2-BLOCK BAR, 5005H/EH
15	1	360676000	PIN, CYLINDER
16	1	360677000	PIN, 1/4 COTTERLESS RING
17	1	360678000	PIN, 3/16 COTTERLESS RING
18	1	360682000	DECAL LAYOUT 5005EH
19	1	360683010	SHIP KIT, EHC-5 NONCONTINUOUS, FM, CERVIS
20	1	361106581	RECEIVER, NON-PROPORTIONAL, CERVIS
21	1	361106582	KIT, NON-PROPORTIONAL EHC WIRELESS, CERVIS
22	1	366159000	SCREW HX HD 3/8-16UNC X 1 1/2 LG GR8
23	1	366602001	HARNESS, FM, 5005EH, 6006 EH 11-PIN PLUG
24	1	366715000	BRACKET ASSEMBLY, RECEIVER MOUNT
25	1	366813000	PIN HITCH
26	1	480988020	PIN, PIVOT, 8406H
27	1	663300001	CABLE TIE, 18"
28	1	680150001	KIT, ELEC, 6006EH W/ROTATION STOP

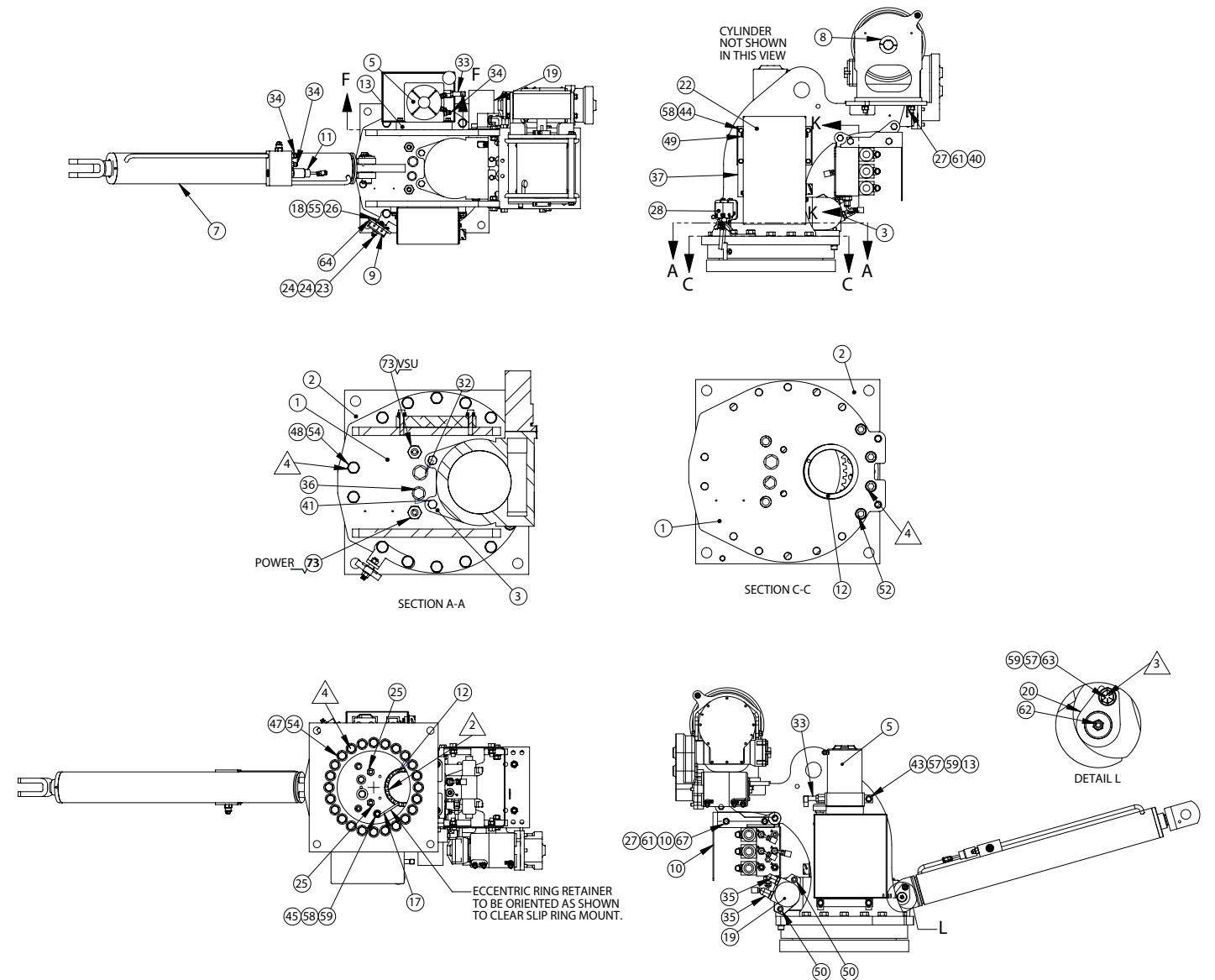
Pedestal Assembly w/o Slip Ring - P/N 360648006



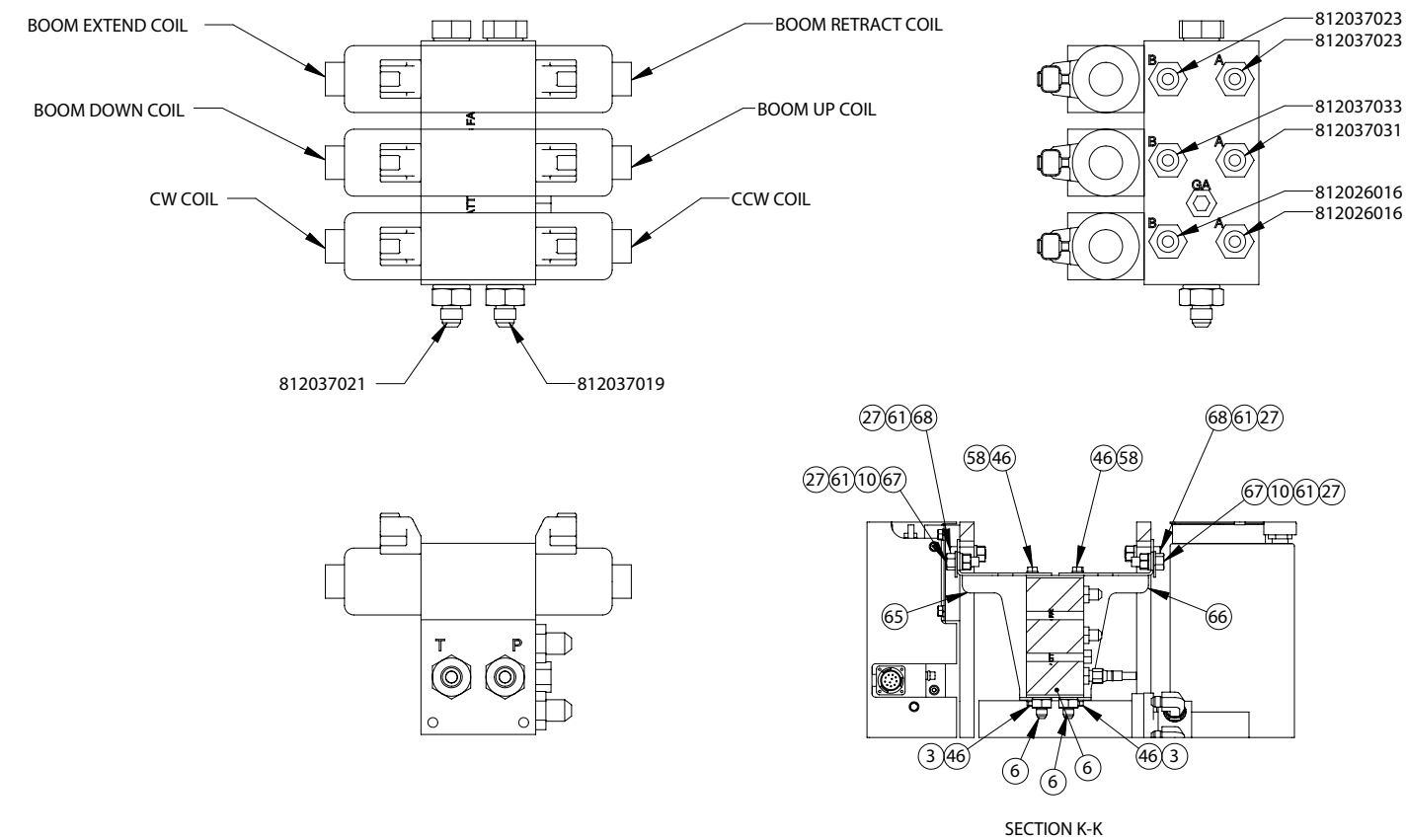
NOTES:

-  1 USE 22" LONG HOSE SLEEVE TO SLEEVE BOOM UP HOSE, BOOM DOWN HOSE, AND LOAD SENSOR TOGETHER.
-  2 ADJUST ECCENTRIC RING UNTIL BACKLASH IN ROTATION GEAR IS MINIMAL.
-  3 APPLY LOCTITE 242 TO THREADS BEFORE INSTALLATION.
-  4 TORQUE HEX HEAD ROTATION BEARING BOLTS TO 170 FT-LBS AND SOCKET HEAD ROTATION BEARING BOLTS TO 180 FT-LBS.
-  5 AFTER INSTALLING THE RELAY PANEL, THE PINS ON THE 3-PIN PLUG MUST BE INSERTED INTO THE HOUSING. BLACK IN A, WHITE IN B & GREEN IN C.
-  6 ELECTRICAL SCHEMATIC DRAWING NUMBER: 366684000
-  7 THESE COMPONENTS ARE SHOWN FOR REFERENCE AND ARE PART OF HOSE KIT 813001105.
-  8 THESE COMPONENTS ARE SHOWN FOR REFERENCE AND ARE PART OF ELECTRICAL KIT 680150001.
-  9 USE 7" LONG HOSE SLEEVE TO SLEEVE BOOM EXTEND HOSE AND BOOM RETRACT HOSE TOGETHER.

Pedestal Assembly w/o Slip Ring - P/N 360648006



Pedestal Assembly w/o Slip Ring - P/N 360648006



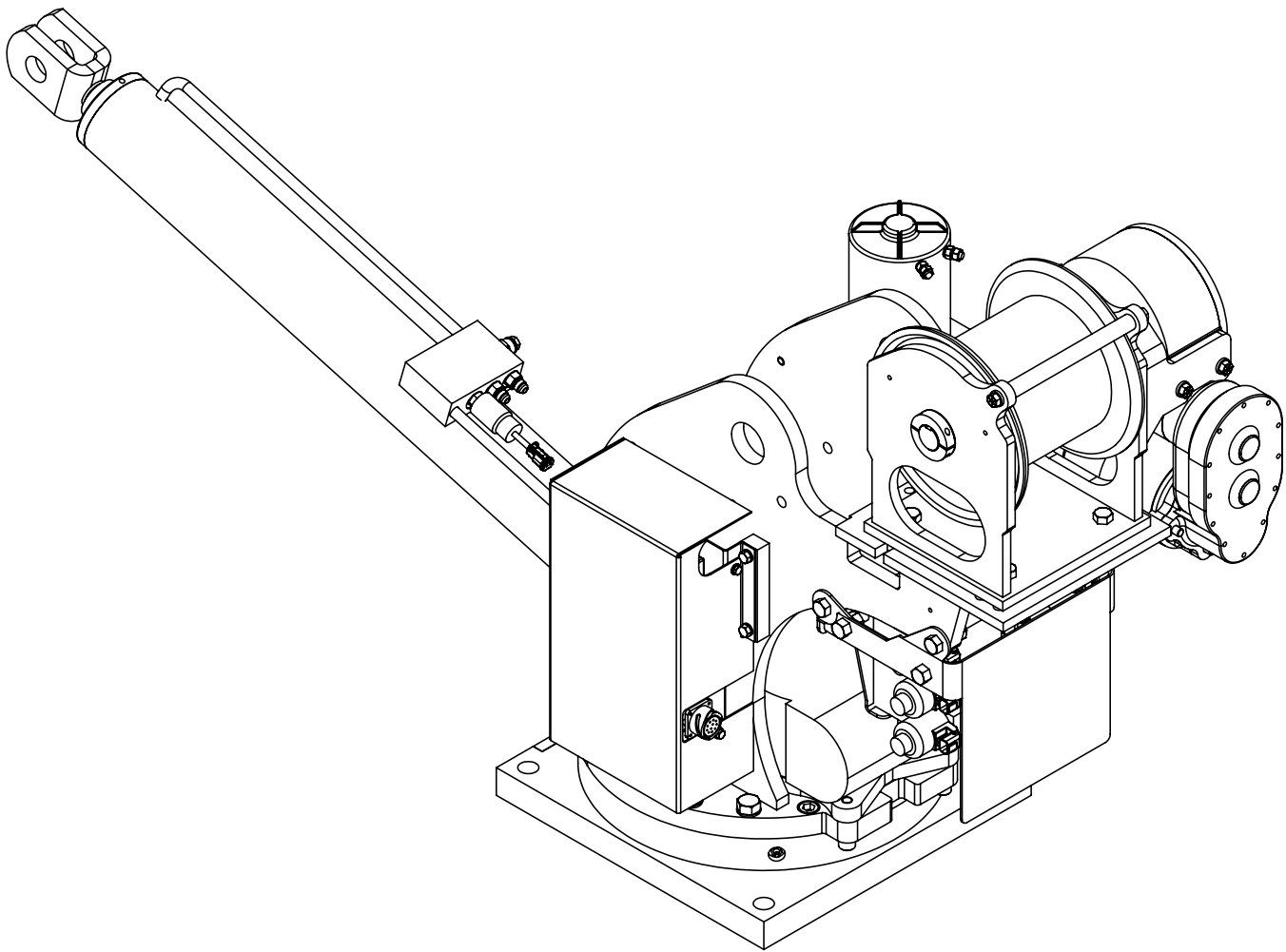
Pedestal Assembly w/o Slip Ring - P/N 360648006

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	360648300	PEDESTAL WELD, EH LARGE CRANE
2	1	366832100	BASE PLATE WELDMENT
3	1	160407000	GEAR BOX, ROTATION
4	1	366671000	ARM, ROTATION STOP
5	1	366650000	HYDRAULIC POWER UNIT
6	1	320989420	VALVE ASSY, 3 SPOOL, NON-PROP., 12 VOLT
7	1	366822255	CYLINDER, LIFT, 5005EH, STROKE - 27.81, BORE - 3.50, ROD - 2.00
8	1	113001000	HOIST, DCG24-246R W/ FRAME
9	1	460110100	ROTATION STOP SWITCH ASSEMBLY, 24"
10	1	366832300	COVER, VALVE, REAR
11	1	480824010	LOAD SENSOR SWITCH, 2100 PSI
12	1	360162000	RING, ECCENTRIC, 5 IN DIA
13	1	366651000	BAR, POWER UNIT MOUNT
14	1	480023002	BEARING ROTATION 5005-8005
15	1	460079000	BEARING, ROTATION STOP
16	1	366333000	BEARING, SPHERICAL 1.25 ID
17	1	360207000	RETAINER ECCENTRIC RING
18	4	621000000	CAPSCREW-#8-32 X 7/8 LG SOC HD Z/P
19	1	366440000	ROTATION MOTOR
20	1	360676000	PIN, CYLINDER
21	1	360678000	PIN, 3/16 COTTERLESS RING
22	1	360648220	COVER, RELAY PANEL
23	1	366673000	PIN, ROTATION STOP
24	2	173010000	NUT HX NYLK 3/8-16UNC CP
25	2	177040000	NUT HX HVY 1/2-20UNF
26	4	725321000	NUT HX NYLK #8-32UNC
27	12	177010000	NUT HX 1/2-13UNC
28	1	366676000	COVER, ROTATION STOP
29	1	812037031	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 SHORT, 31" LONG
30	1	812037033	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 SHORT, 33" LONG
31	2	812026016	HOSE ASSY -4 HOSE -6 FEMALE JIC
32	1	330072000	PLUG, #10 SAE
33	1	330645000	FITTING 90 6-SAE/6-JIC LONG
34	3	200876000	FITTING STR 6 SAE/6 JIC
35	2	490198000	FITTING 90 10 SAE/6 JIC
36	1	367162000	PLUG, #8 SAE
37	1	366782002	RELAY PANEL ASSY[\n]W/ ROTATION STOPS

Pedestal Assembly w/o Slip Ring - P/N 360648006

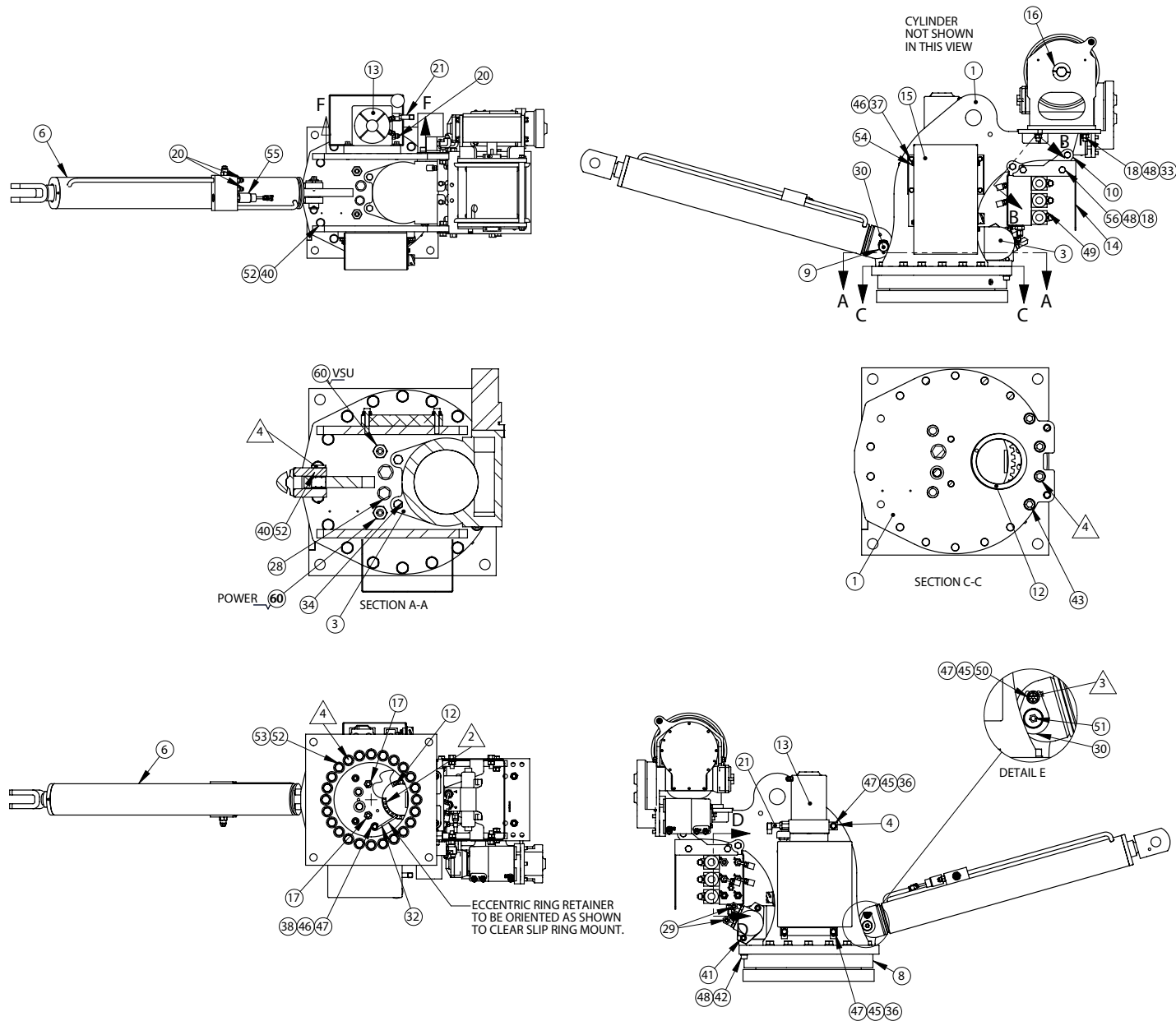
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
38	1	680160000	CABLE ASSY, 4 GA, GROUND 72in LG
39	1	366509000	GROUND WIRE ASSY
40	4	116080000	SCREW HX HD 1/2-13UNC X 2 LG
41	2	112020000	SCREW HX HD 1/2-20UNF X 2 3/4 LG GR5
42	2	870200000	SCREW HX HD 3/8-16UNC X 1 1/4 LG GR5
43	4	911600000	SCREW HX HD 3/8-16UNC X 2 GR5
44	4	740000000	SCREW HX HD 5/16-18UNC X 1 LG GR5
45	1	780700000	SCREW HX HD 5/16-18UNC X 3/4 LG GR5
46	4	330252000	SCREW HX HD 5/16-18UNC X 3/4 LG GR5
47	24	121980000	SCREW HX HD 5/8-11UNC X 1 3/4 LG GR8
48	12	490171000	SCREW HX HD 5/8-11UNC X 2 1/4 LG GR8
49	4	360493000	SCREW HX WHIZ-LK 1/4-20UNC X 1/2 LG
50	2	121970000	SCREW SOC HD 1/2-13UNC X 1/2 LG
51	2	911800000	SCREW SOC HD 1/2-13UNC X 2 LG
52	4	620500000	SCREW SOC HD 5/8-11UNC X 1 1/4 LG
53	1	480011000	SEAL ROTATION BOX
54	36	239020000	WASHER FL 5/8 HARDENED
55	4	197000000	WASHER SP LK #8
56	2	215020000	WASHER SP LK 1/2 HI COLLAR
57	7	211000000	WASHER SP LK 3/8
58	9	206010000	WASHER SP LK 5/16
59	6	320976000	WASHER, FLAT, 3/8 SAE HARDENED
60	1	366675000	WASHER, NYLON
61	16	215000000	WASHER, SP LK 1/2
62	1	239300000	ZERK, GREASE
63	1	366159000	SCREW HX HD 3/8-16UNC X 1 1/2 LG GR8
64	1	366832200	BRACKET, ROTATION STOP
65	1	360648200	BRACKET, VALVE MTG LS
66	1	360648210	BRACKET, VALVE MTG LS
67	4	115100000	SCW HX 1/2 NC X 1 1/4
68	4	102010000	SCREW HX HD 1/2-13UNC x 1 1/2 LG
69	2	812037023	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 SHORT, 23" LONG
70	1	812037021	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 SHORT, 21" LONG
71	1	813001105	KIT, HOSE, 5005EH OPEN PEDESTAL
72	29	374085000	NYLON HOSE SLEEVE .90 ID
73	2	366698010	CORD GRIP .25-.38 3/4" HUB
74	1	812037019	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 SHORT, 19" LONG

Pedestal Assembly w/ Slip Ring - P/N 360648005

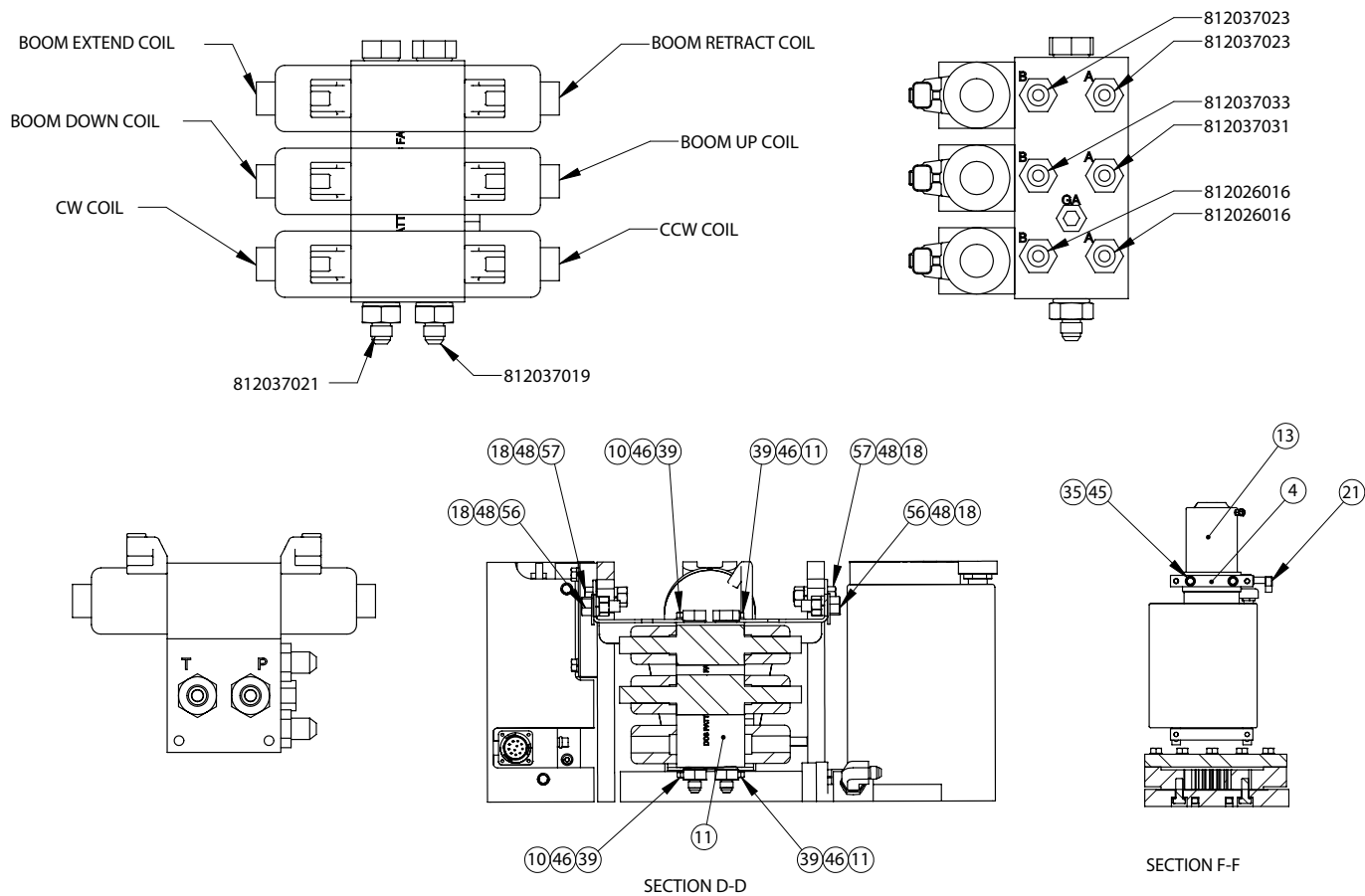


- NOTES:
- 1 USE 22" LONG HOSE SLEEVE TO SLEEVE BOOM UP HOSE, BOOM DOWN HOSE, AND LOAD SENSOR TOGETHER.
 - 2 ADJUST ECCENTRIC RING UNTIL BACKLASH IN ROTATION GEAR IS MINIMAL.
 - 3 APPLY LOCTITE 242 TO THREADS BEFORE INSTALLATION.
 - 4 TORQUE HEX HEAD ROTATION BEARING BOLTS TO 170 FT-LBS AND SOCKET HEAD ROTATION BEARING BOLTS TO 180 FT-LBS.
 - 5 AFTER INSTALLING THE RELAY PANEL, THE PINS ON THE 3-PIN PLUG MUST BE INSERTED INTO THE HOUSING. BLACK IN A, WHITE IN B & GREEN IN C.
 - 6 ELECTRICAL SCHEMATIC DRAWING NUMBER: 366684000
 - 7 THESE COMPONENTS ARE SHOWN FOR REFERENCE ONLY AND ARE PART OF HOSE KIT 813001105
 - 8 THESE COMPONENTS ARE SHOWN FOR REFERENCE ONLY AND ARE PART OF ELECTRICAL KIT 680150000.
 - 9 USE 7" LONG HOSE SLEEVE TO SLEEVE EXTEND HOSE AND RETRACT HOSE TOGETHER.

Pedestal Assembly w/ Slip Ring - P/N 360648005



Pedestal Assembly w/ Slip Ring - P/N 360648005



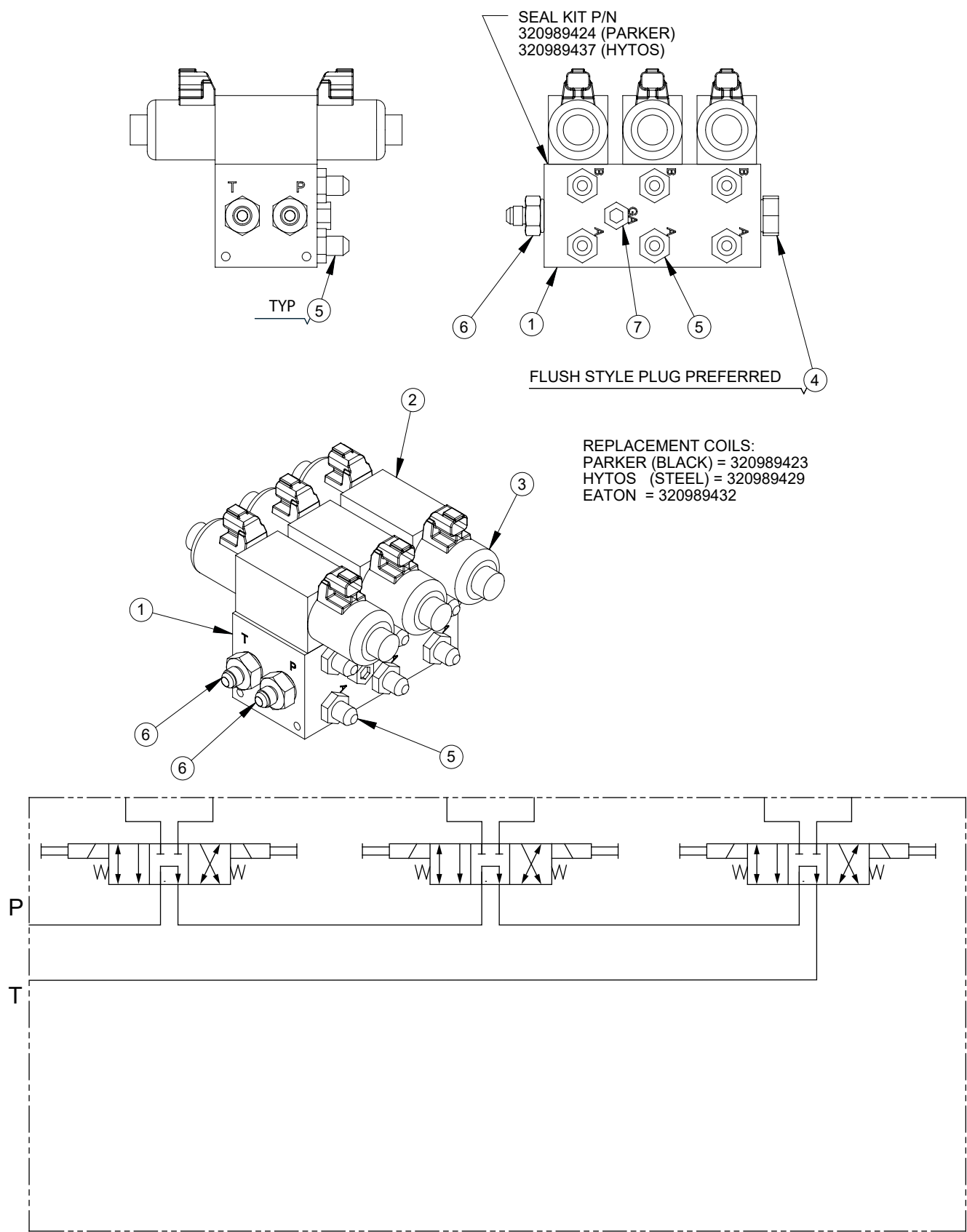
Pedestal Assembly w/ Slip Ring - P/N 360648005

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	360648300	PEDESTAL WELD, EH LARGE CRANE
2	1	366440000	ROTATION MOTOR
3	1	160407000	GEAR BOX, ROTATION
4	1	366651000	BAR, POWER UNIT MOUNT
5	1	366641000	BASE PLATE WELDMENT
6	1	366822255	CYLINDER, LIFT, 5005EH, STROKE - 27.81, BORE - 3.50, ROD - 2.00
7	1	366682003	RELAY PANEL ASSY[n]CONTINUOUS ROTATION
8	1	480023002	BEARING ROTATION 5005-8005
9	1	366333000	BEARING, SPHERICAL 1.25 ID
10	1	360648200	BRACKET, VALVE MTG LS
11	1	360648210	BRACKET, VALVE MTG LS
12	1	360162000	RING, ECCENTRIC, 5 IN DIA
13	1	366650000	HYDRAULIC POWER UNIT
14	1	366832300	COVER, VALVE, REAR
15	1	360648220	COVER, RELAY PANEL
16	1	113001000	HOIST, DCG24-246R W/ FRAME
17	2	177040000	NUT HX HVY 1/2-20UNF
18	12	177010000	NUT HX 1/2-13UNC
19	1	480011000	SEAL ROTATION BOX
20	3	200876000	FITTING STR 6 SAE/6 JIC
21	1	330645000	FITTING 90 6-SAE/6-JIC LONG
22	1	366509000	GROUND WIRE ASSY
23	2	812037019	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 SHORT, 19" LONG SHORT, 31"
24	1	812037031	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 LONG SHORT, 33"
25	1	812037033	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 LONG
26	2	812026016	HOSE ASSY -4 HOSE -6 FEMALE JIC
27	1	330072000	PLUG, #10 SAE
28	1	367162000	PLUG, #8 SAE
29	2	490198000	FITTING 90 10 SAE/6 JIC
30	1	360676000	PIN, CYLINDER

Pedestal Assembly w/ Slip Ring - P/N 360648005

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
31	1	360678000	PIN, 3/16 COTTERLESS RING
32	1	360207000	RETAINER ECCENTRIC RING
33	4	116080000	SCREW HX HD 1/2-13UNC X 2 LG
34	2	112020000	SCREW HX HD 1/2-20UNF X 2 3/4 LG GR5
35	2	870200000	SCREW HX HD 3/8-16UNC X 1 1/4 LG GR5
36	4	911600000	SCREW HX HD 3/8-16UNC X 2 GR5
37	4	740000000	SCREW HX HD 5/16-18UNC X 1 LG GR5
38	1	780700000	SCREW HX HD 5/16-18UNC X 3/4 LG GR5
39	4	330252000	SCREW HX HD 5/16-18UNC X 3/4 LG GR5
40	14	490171000	SCREW HX HD 5/8-11UNC X 2 1/4 LG GR8
41	2	121970000	SCREW SOC HD 1/2-13UNC X 1/2 LG
42	2	911800000	SCREW SOC HD 1/2-13UNC X 2 LG
43	4	620500000	SCREW SOC HD 5/8-11UNC X 1 1/4 LG
44	2	215020000	WASHER SP LK 1/2 HI COLLAR
45	7	211000000	WASHER SP LK 3/8
46	9	206010000	WASHER SP LK 5/16
47	6	320976000	WASHER, FLAT, 3/8 SAE HARDENED
48	16	215000000	WASHER, SP LK 1/2
49	1	320989420	VALVE ASSY, 3 SPOOL, NON-PROP., 12 VOLT
50	1	366159000	SCREW HX HD 3/8-16UNC X 1 1/2 LG GR8
51	1	239300000	ZERK, GREASE
52	38	239020000	WASHER FL 5/8 HARDENED
53	24	121980000	SCREW HX HD 5/8-11UNC X 1 3/4 LG GR8
54	4	360493000	SCREW HX WHIZ-LK 1/4-20UNC X 1/2 LG
55	1	480824010	LOAD SENSOR SWITCH, 2100 PSI
56	4	115100000	SCW HX 1/2 NC X 1 1/4
57	4	102010000	SCREW HX HD 1/2-13UNC x 1 1/2 LG
58	1	812037021	HOSE, -4 HOSE, -6 JICF / -6 JICF 90 SHORT, 21" LONG
59	2	374085000	NYLON HOSE SLEEVE .90 ID
60	2	366698010	CORD GRIP .25-.38 3/4" HUB
61	1	813001105	KIT, HOSE, 5005EH OPEN PEDESTAL

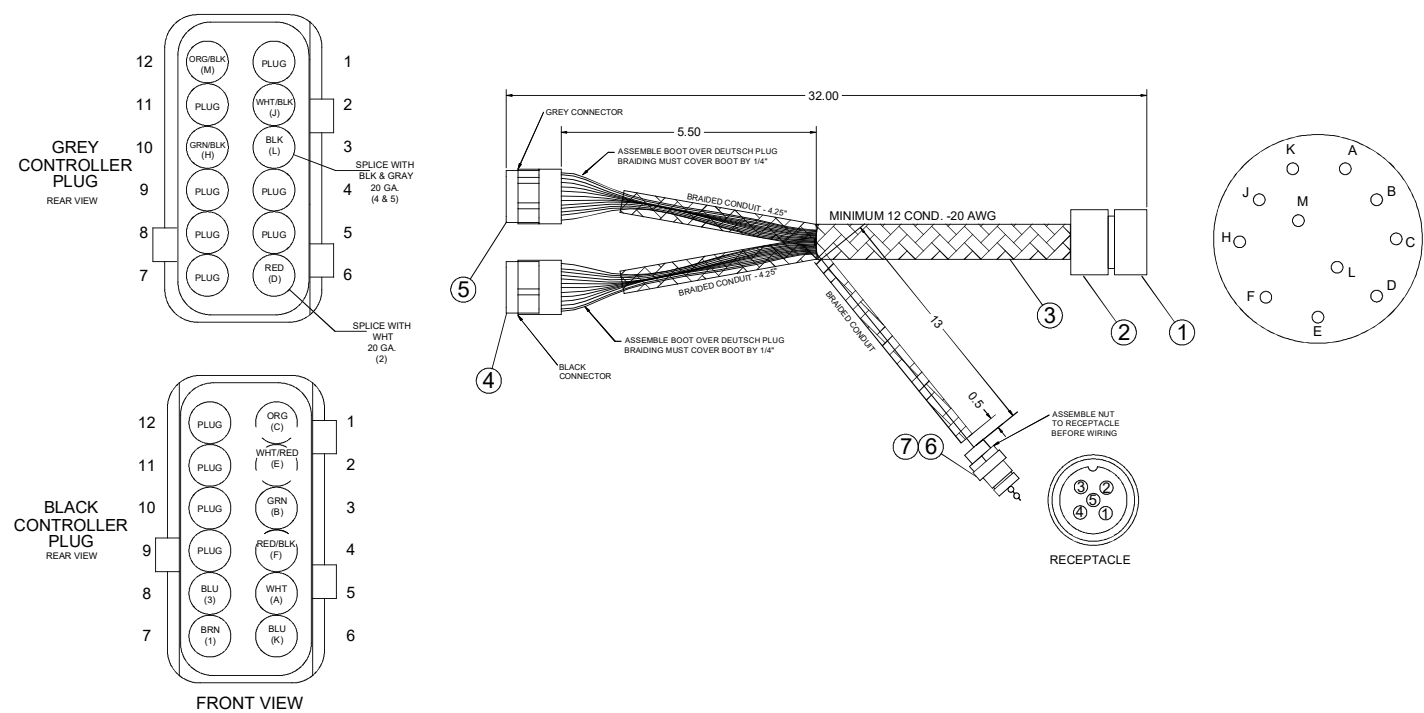
Hydraulic Valve Bank - P/N 320989420



Hydraulic Valve Bank - P/N 320989420

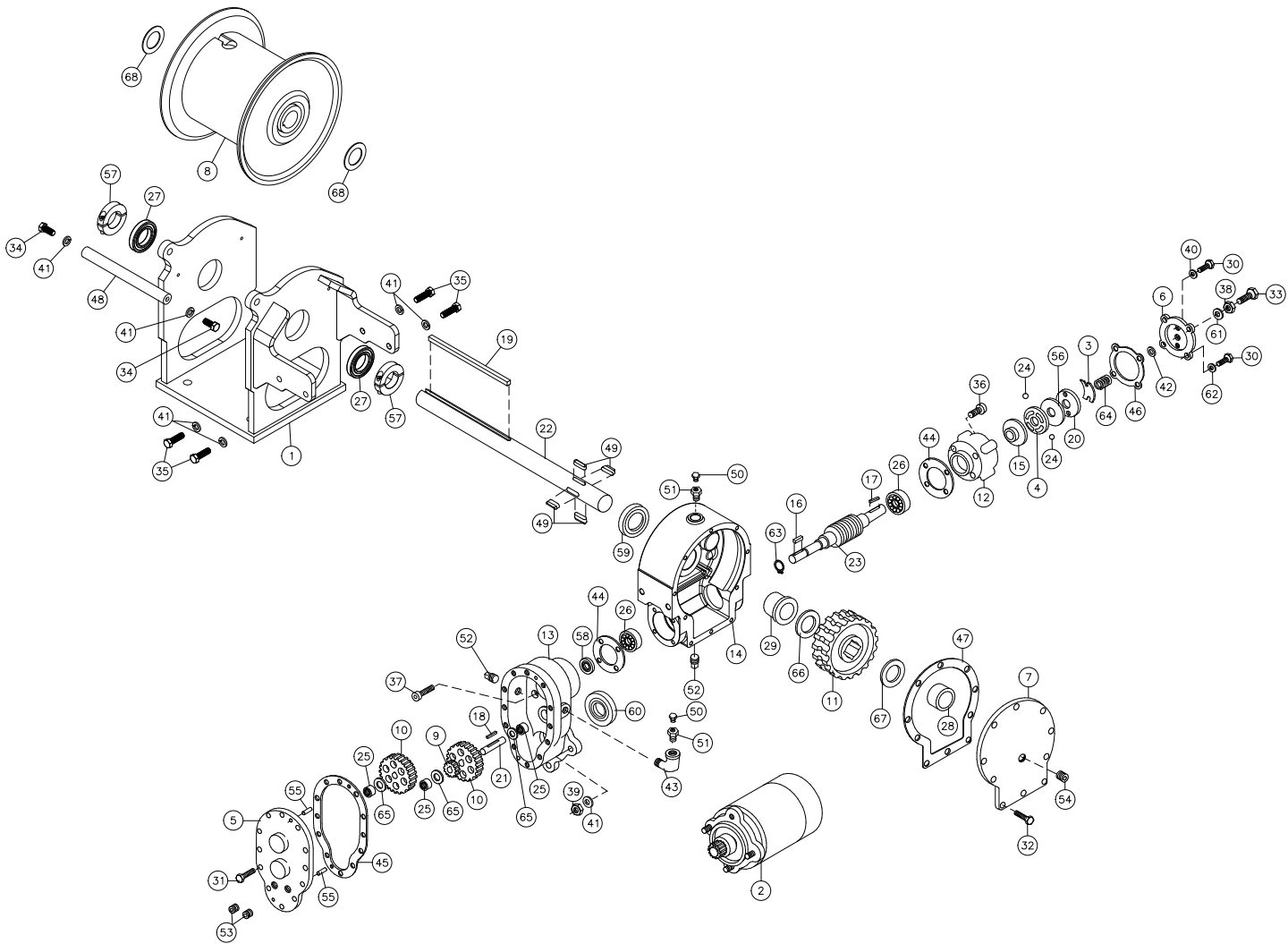
ITEM NO.	EATON	HYTOS	PARKER	CONTINENTAL	NINGBO	AUTOCRANE PART NUMBER	DESCRIPTION
1	1	-	-	-	1	320989430	MANIFOLD BLOCK
		1	1	1		320989430	MANIFOLD BLOCK, DO3
2	-	-	3	-		320989422	VALVE, DO3 STACK TYPE, PARKER
		3		-		320989428	VALVE, DO3 STACK TYPE, HYTOS
		-	-	3		320989434	VALVE, DO3 STACK TYPE, CONTINENTAL
	3	-	-	-		320989431	VALVE, DO3 STACK TYPE, EATON
					3	320989440	VALVE, DO3 STACK TYPE, NINGBO
3	-	-	6	-		320989423	COIL, 12V-2.5A PARKER, FOR 320989420
		6		-		320989429	COIL, 12V-2.7A HYTOS, FOR 320989420
	6	-	-	-		320989432	COIL, 12V-2.5A EATON, FOR 320989420
		-	-	6		320989433	COIL, 12V CONTINENTAL FOR 320989420
					6	320989441	COIL, 12V NINGBO DAUN FOR 320989420
4	2	2	2	2	2	330072000	PLUG, #10 SAE
5	6	6	6	6	6	202756000	FITTING 6-8 STRAIGHT
6	2	2	2	2	2	202755000	FITTING, -10 SAE/-6 JIC, STR
7	1	1	1	1	1	751034000	PLUG, -6ORB

Wiring Harness - P/N 366602001



ITEM	QTY	D/S	PART NUMBER	DESCRIPTION
1	1	D/S	320563000	PLUG, 11 PIN BAYONET
2	1	D/S	480515000	CLAMP, CABLE
3	REF	D/S	480594000	CABLE PENDANT
4	1	D/S	680163002	CONNECTOR, PLUG 12 PIN DEUTSCH (BLACK)
5	1	D/S	680163000	CONNECTOR, PLUG 12 PIN DUTSCH (GRAY)
6	1	D/S	680164000	RECEPTACLE, MICRO-CHANGE 5 PIN
7	1	D/S	680164001	COVER, PENDANT PLUG RECEPTACLE

Hoist Assembly - P/N 113001



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	242177000	WELDMENT-FRAME
2	1	262036000	24V, ELECTRIC MOTOR ASSEMBLY
3	1	306034000	SPRING-FLAT
4	1	314008000	CAM PLATE
5	1	328106000	COVER-SPUR GEAR HOUSING
6	1	328128000	COVER-WORM BRAKE
7	1	328134000	GEAR HOUSING COVER
8	1	332210000	DRUM
9	1	334001000	IDLER GEAR
10	2	334003000	GEAR-INTERMEDIATE

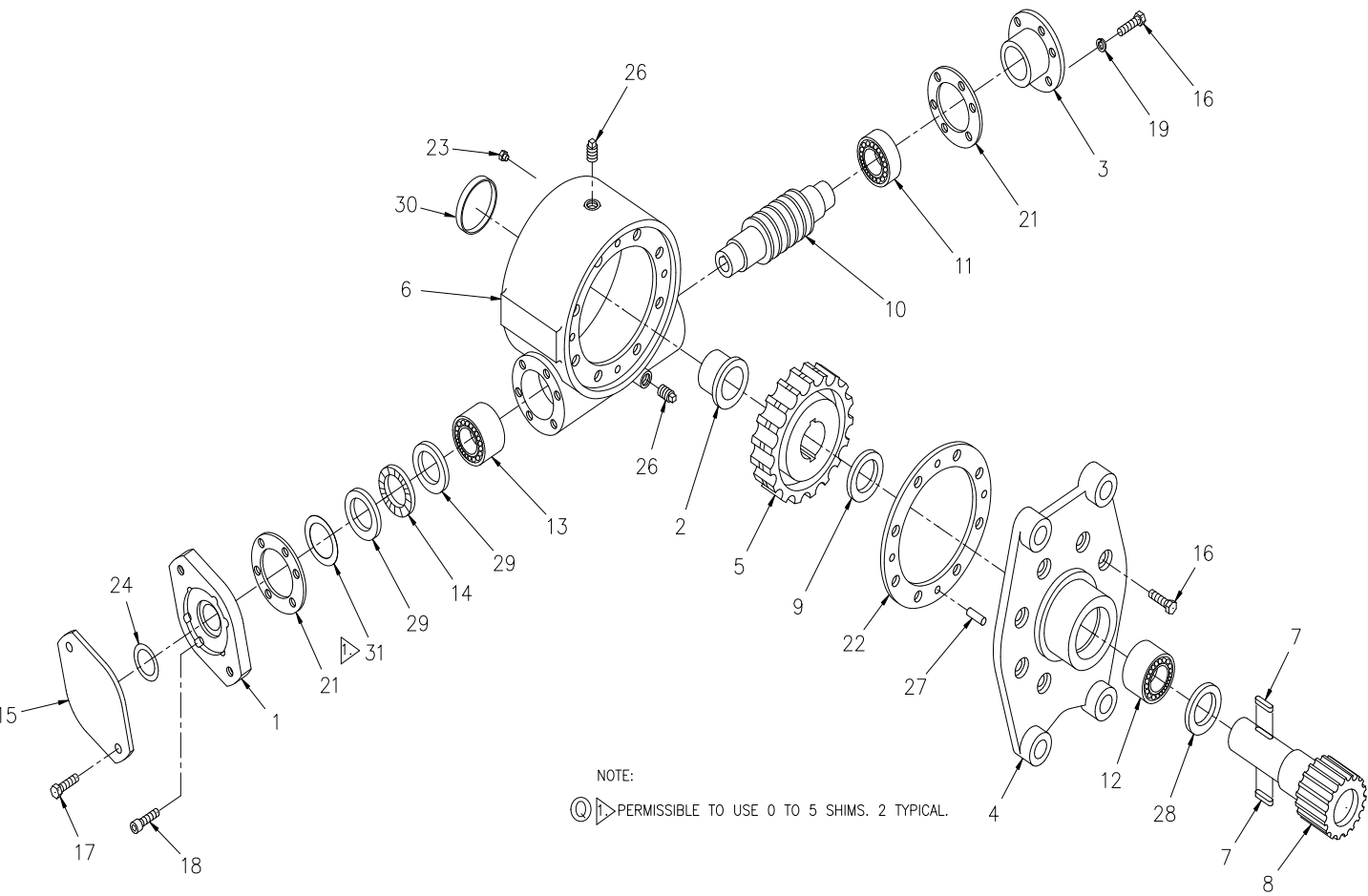
Hoist Assembly - P/N 113001

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
11	1	334163000	GEAR
12	1	338007000	BRAKE HOUSING
13	1	338203000	SPUR GEAR HOUSING
14	1	338273000	GEAR HOUSING
15	1	340002000	BRAKE HUB
16	1	342023000	KEY-SQ ENDS, 3/16 X 3/16 X 1/2 LG
17	1	342027000	KEY-RD ENDS, 3/16 X 3/16 X 1LG
18	1	342033000	KEY-SQ ENDS, 3/16 X 3/16 X 1-7/16LG
19	1	342199000	KEY-SQUARE, 5/16 X 7-1/2 LONG
20	1	352022000	RETAINER PLATE
21	1	356901000	SHAFT-3/4 X 2-13/16LG
22	1	357145000	OUTPUT SHAFT
23	1	368022000	WORM
24	2	400003000	BALL-POPPET 3/8 O.D.
25	3	402001000	NEEDLE BEARING
26	2	402002000	BALL BEARING
27	2	402128000	BEARING-BALL, 1-1/4 I.D.
28	1	412044000	BUSHING
29	1	412045000	BUSHING
30	6	414021000	BOLT-1/4NCX1,HXD,G8,ALLTHD,HV/P,Z/P
31	12	414038000	CAPSCREW-1/4-20NCX3/4,HXHD,GR-5,Z/P
32	10	414045000	CAPSCREW-1/4-20NCX7/8 LG. HEX HD, GR 5, Z/P
33	1	414224000	BOLT-3/8-16NCX1 1/2,HX,G5,AL-TH,Z/P
34	2	414294000	CAPSCREW-3/8-16NC X 7/8 LG, HX HD, GR5, Z/P
35	4	414316000	CAPSCREW-3/8-16NCX1 1/4,HXHD,Z/P,G5
36	4	414821000	CAPSCREW-1/4-20NC X7/8,HXSOCBUTTHD
37	4	414845000	CAPSCREW-1/4-20NC X1,HXSOCHD,NYLOK
38	1	418036000	NUT-3/8-16 NC,HEX JAM,Z/P
39	3	418040000	NUT-3/8-24NF HEX REG Z/P
40	2	418154000	WASHER-1/4 FLAT ALUM.
41	9	418177000	LOCKWASHER-3/8 MED SECT,Z/P
42	1	418181000	WASHER-3/8 ID SAE FLAT,Z/P
43	1	432011000	ELBOW-90DEG,STREET,3/8NPT,Z/P
44	2	442184000	GASKET-BEARING CAP
45	1	442185000	GASKET-SPUR GEAR BOX
46	1	442189000	GASKET-BRAKE HOUSING COVER
47	1	442205000	GASKET-GEAR HOUSING COVER
48	1	448100000	TIE BAR
49	4	450016000	KEY-BARTH, 5/16 X 15/16LONG

Hoist Assembly - P/N 113001

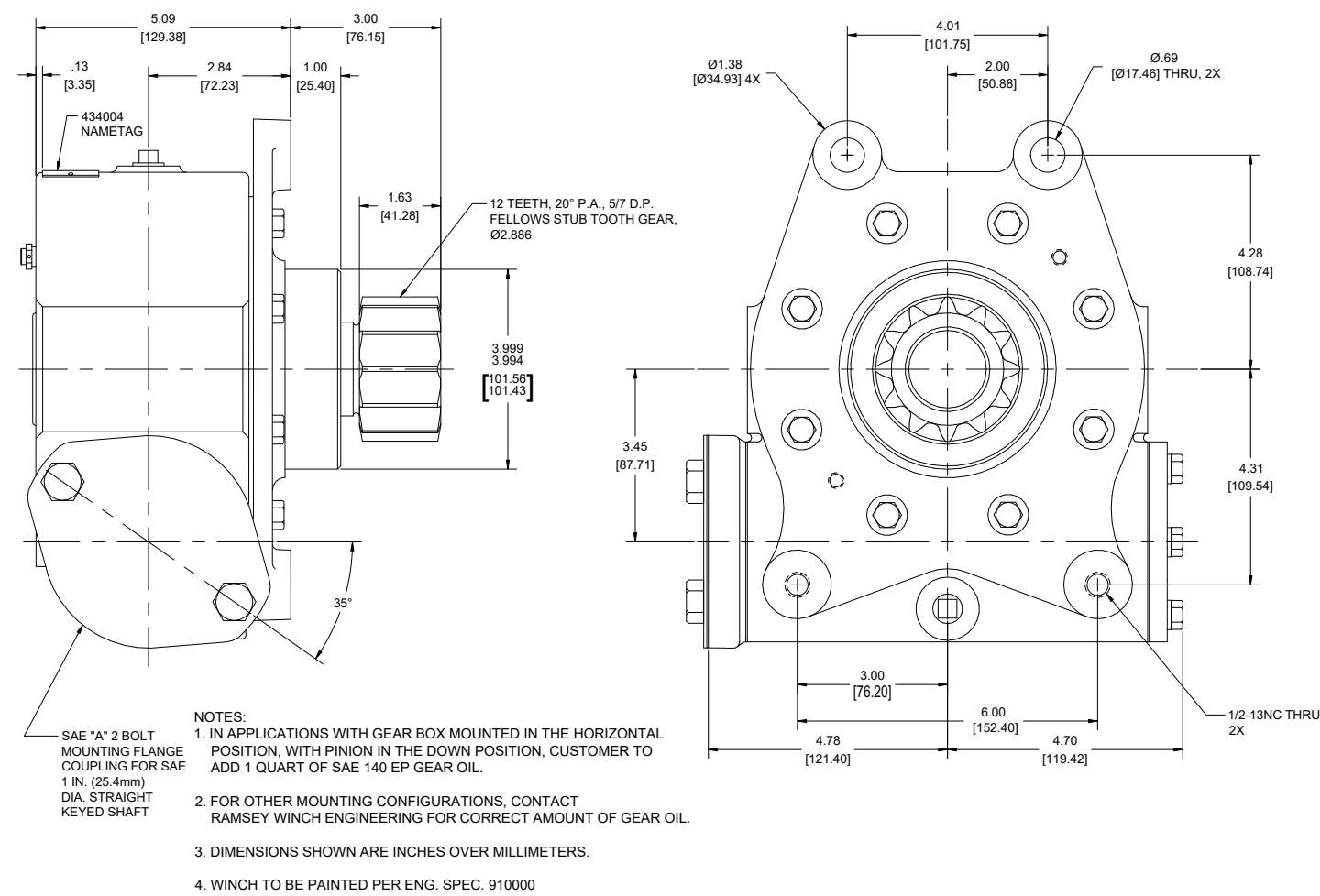
ITEM NO.	QTY	PART NUMBER	DESCRIPTION
50	2	456008000	RELIEF FIT-1/8-27PFT
51	2	468002000	RED-3/8-1/8NPTF
52	2	468011000	PIPE PLUG-3/8-18NPTF,7/16 SQ HD,Z/P
53	2	468017000	PIPE PLUG-1/4-18NPTF,HEX SOC HD,Z/P
54	1	468018000	PIPE PLUG-3/8-18NPTF HXSOCHD-LES,Z/P
55	2	470001000	DOWEL PIN-3/16 DIA X 3/4 LG
56	1	474001000	PLATE-THRUST
57	2	479016000	COLLAR-SPLIT, 1-1/4 I.D.
58	1	486009000	OIL SEAL
59	1	486017000	OIL SEAL
60	1	486023000	SHAFT, SEAL
61	1	486069000	SEAL-3/8
62	4	486070000	SEAL
63	1	490003000	SNAP RING
64	1	494007000	SPRING
65	3	518002000	THRUST WASHER
66	1	518015000	THRUST WASH
67	1	518040000	THRUST WASHER-1/8 THICK
68	2	518063000	BEARING-BRONZE

Rotation Gear Box - P/N 160407



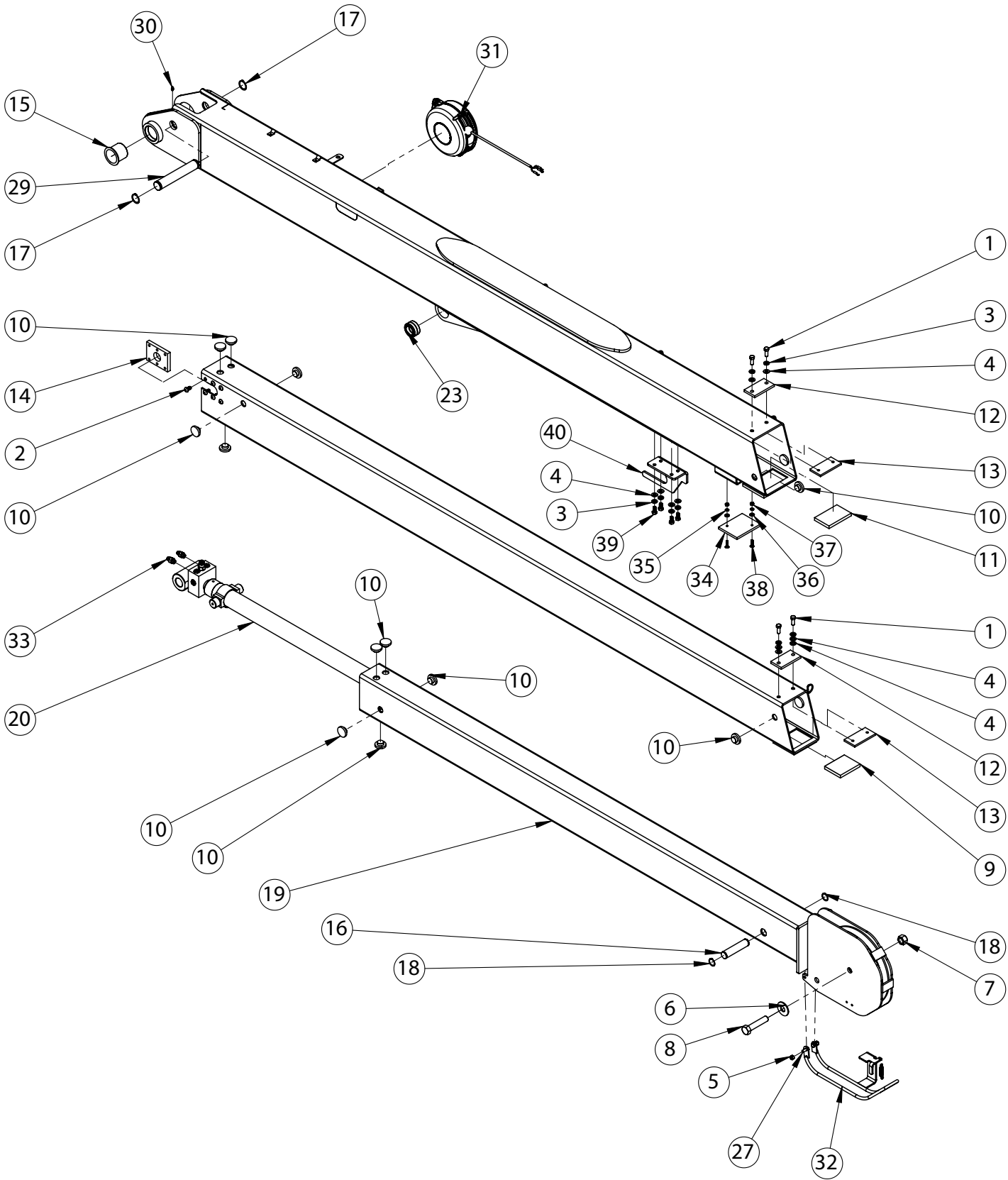
Rotation Gear Box - P/N 160407

ITEM	QTY.	PART NUMBER	DESCRIPTION
1	1	300058000	ADAPTER
2	1	308085000	BUSHING
3	1	316004000	CAP-BEARING
4	1	328126000	COVER
5	1	334016000	GEAR-R.H.
6	1	338261000	HOUSING-GEAR
7	2	342120000	KEY
8	1	357139000	SHAFT-OUTPUT
9	1	366019000	WASHER-THRUST
10	1	368183000	WORM-R.H.
11	1	402044000	BEARING-BALL
12	1	402105000	BEARING-NEEDLE
13	1	402106000	BEARING-NEEDLE
14	1	402107000	BEARING-THRUST
15	1	413013000	COVER
16	14	414143000	CAPSCREW
17	2	414581000	CAPSCREW
18	6	414869000	CAPSCREW
19	6	418163000	LOCKWASHER
20			
21	2	442182000	GASKET
22	1	442187000	GASKET
23	1	456008000	FITTING-RELIEF
24	1	462029000	O-RING
25			
26	2	468018000	PLUG-PIPE
27	4	470062000	PIN-DOWEL
28	1	486071000	SEAL-OIL
29	2	518104000	WASHER-THRUST
30	1	472088000	PLUG
31	A/R	470166000	SHIM



THIS PRINT IS PROVIDED ON A RESTRICTED BASIS AND IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO THE INTERESTS OF THE RAMSEY WINCH COMPANY.				
REVISIONS				
SYM	DESCRIPTION	ECN	DATE	DR.
D	REDRAWN TO D SIZE	8135	8-1-85	TES
E	UPDATE SHEET 1 OF 2	81 61	8-28-85	TES
F	UPDATE SHEET 1 OF 2	8187	10-11-85	TES
G	(2) 414581 WAS 414521	8263	1 -14-86	RR
H	REVISE TO UPDATE	8895	1 0-1-87	RR
J	414139 CAPSCREW WAS 414071	9020	2-3-88	TES
K	REVISED TO UPDATE	9537	4-17-90	RR
L	PICTORIALY UPDATED; 316004 WAS 316092 472088 WAS 530101 REMOVED 432011, 468002	14837	2-11-10	HLW
M	SEE SHEET 1	15220	1-20-12	MCM
N	SEE SHEET 1	33041	3-27-12	AR
P	SEE SHEET 1	33186	3-2-18	MCM
Q	ADDED ITEM #31; ITEM #29: 518104 WAS 518026; ADDED FLAG NOTE 1	200103	10-30-19	MCM

Boom Assembly - P/N 360647010



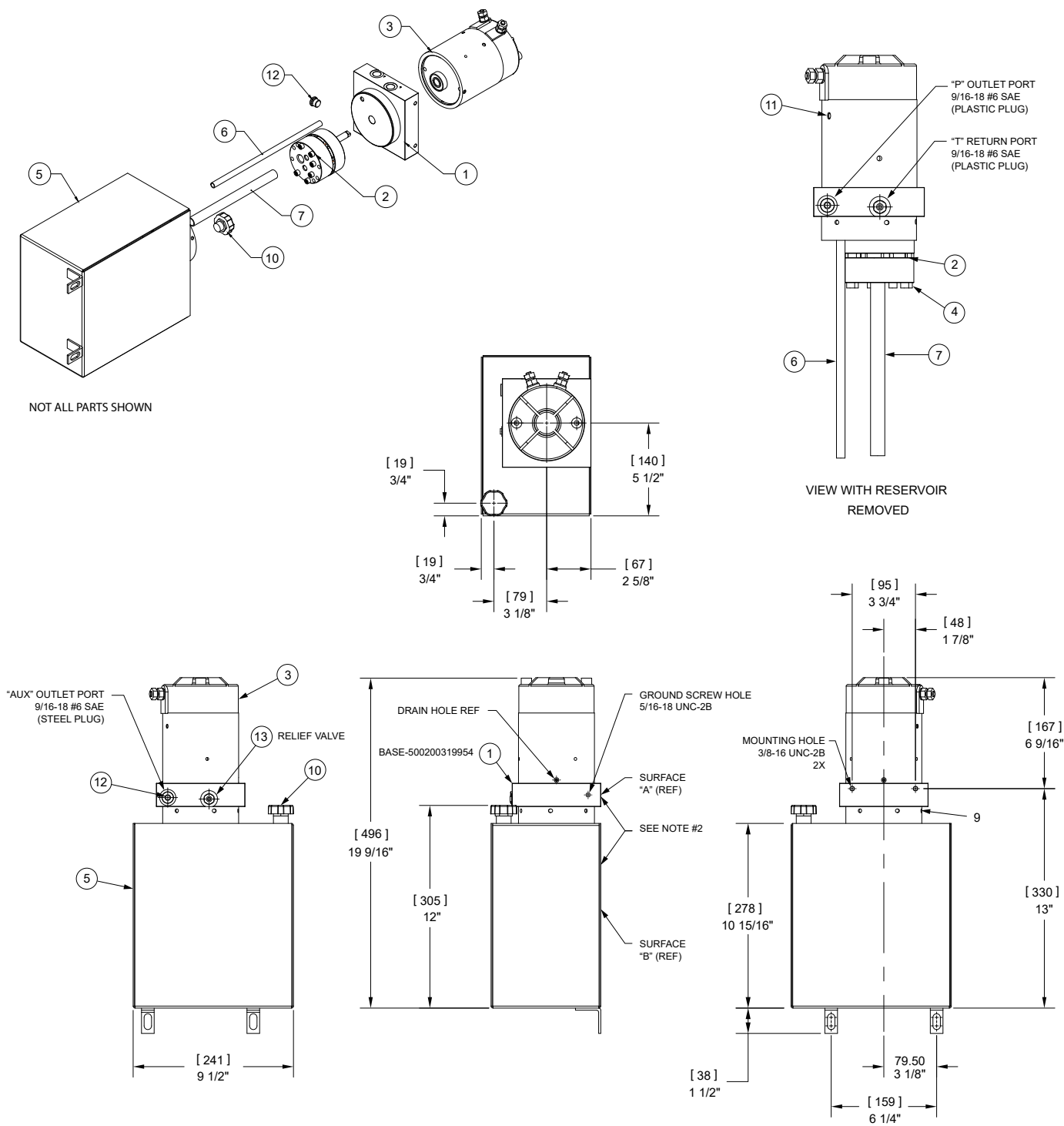
Boom Assembly - P/N 360647010

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	4	008800000	SCREW HX HD 3/8-24UNF X 1 LG
2	12	470079000	3/8"-16UNC BUTTON HEAD 3/4"LG
3	8	211000000	WASHER SP LK 3/8
4	10	212000000	WASHER FL 3/8
5	2	168010000	NUT HX NYLK 5/16-18UNC CP
6	1	221020000	WASHER FL 3/4
7	1	360756000	NUT, HX NYLK 3/4-10UNC
8	1	367366000	SCREW HX HD 3/4-10UNC X 3-1/2 LG
9	1	360674000	WEAR PAD, BOTTOM UPPER
10	14	360767000	PAD BOOM 1.5 O.D.
11	1	460053000	WEAR PAD, BOTTOM UPPER
12	2	366201000	WEAR PAD 3.75 X 2.00 X .313
13	2	366483000	PLATE, WEAR PAD .25 X 2 X 4
14	2	366184000	RETAINER, EXTENSION CYLINDER
15	2	366394000	BEARING, PIVOT
16	1	738732000	PIN 1 X 4.063 LG
17	2	480029000	RING RETAINING
18	2	360122000	RING RETAINING 5100-98
19	1	360666010	UPPER BOOM WELDMENT, 5005EH, 5005H
20	1	360789000	CYL EXTENSION DUAL
21	1	366198000	SHEAVE ASSY 3/8
22	1	646900000	SWITCH, LIMIT ANTI-TWO BLOCK
23	1	366333000	BEARING, SPHERICAL 1.25 ID
24	1	642918000	CORD CONNECTOR
25	1	360665010	MID BOOM WELMENT, 5005EH, 5005H
26	1	361106115	LOWER BOOM WELDMENT, EHC-5, HC-5, HC-6
27	2	780700000	SCREW HX HD 5/16-18UNC X 3/4 LG GR5
28	1	366678000	SPRING, EXTENSION

Boom Assembly - P/N 360647010

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
29	1	361106113	PIN, 1.25 DIA X 6-7/8 LG
30	1	239000000	ZERK DRIVE GR
31	1	360759004	CORD REEL ASSEMBLY
32	1	470110168	LONG TAB BAIL WELDMENT W/ 2 IN TRIP BAR STAINLESS STEEL
33	2	200876000	FITTING STR 6 SAE/6 JIC
34	1	479200152	WEAR PAD, TRAVELING BLOCK
35	2	202000000	WASHER SP LK 1/4
36	2	203000000	WASHER FL 1/4
37	2	161000000	NUT, 1/4-28, ZINC PLATED
38	2	016100001	SCREW, FLAT HEAD, 1/4-28 X 1, ZINC PLATED, GR 5
39	4	479200169	3/8-24 HHCS, 3/4 LG, ZINC PLATED, GR 5
40	1	479200154	OPEN LOAD HOOK, BOLT-ON

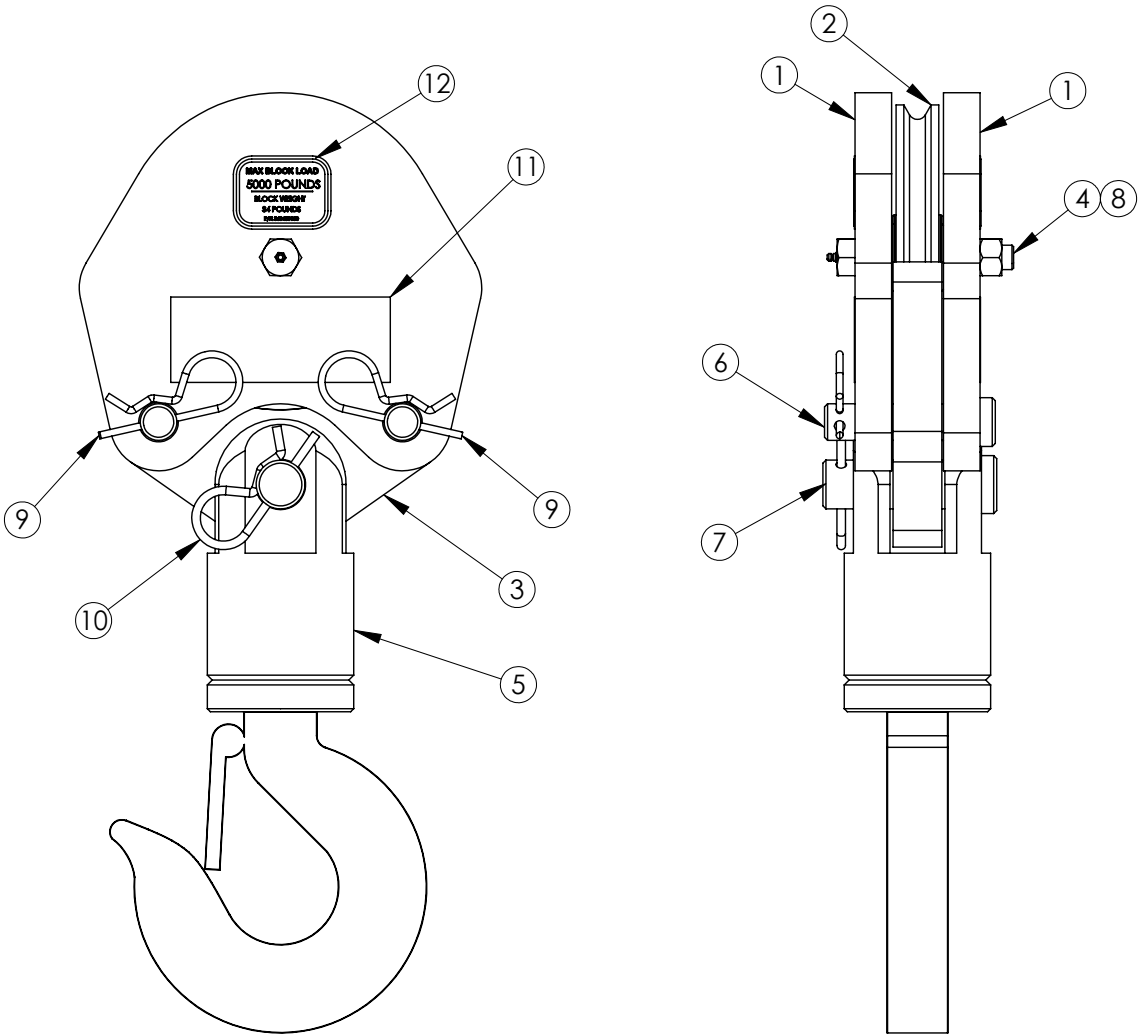
Hydraulic Power Unit - P/N 366650000



Hydraulic Power Unit - P/N 366650000

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	320991284	BASE ASSY,M3504,MOD,W/MT,AUXP
2	1	366650011	P ASSY,QM,MDLR,DC,BRGS BLD RSV
3	1	366650006	MOTOR,DC, 24 VOLT 2 TERM
4	4	366650021	SCREW,SHC,1/4-20 X 3.0,BLK OX
5	1	366650013	RESV,10.94X6.5X9.5,V/MT,2-TAB,
6	1	366650014	TUBE,RTN,STR,1/8 NPT,NYLON
7	1	366650015	TUBE,SUCT,STR,3/8 NPT,NYLON
8	1	366650016	FILTER,SCREEN M-SERIES SUCT.
9	6	366650017	SCREW,SELF TAPPING,10-24 3/8
10	1	366650018	PLUG,RESV BREATHER FILL,3/8-18
11	2	366650019	PLUG,CAP,NYLON,PUSH-IN,MOTOR
12	1	760289000	PLUG, -6 ORB HOLLOW HEX
13	1	366650012	VALVE ASSY,R/V,1001 PSI AND UP

Traveling Block Assembly - P/N 360649000



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	2	480363000	SHORT BLOCK SIDE PLATE
2	1	480130000	SHEAVE ASSY
3	1	480364000	TACKLE LOWER
4	1	480372000	BOLT, SHEAVE W/ ZERK FITTING
5	1	480371000	HOOK SWIVEL 3 METRIC TON
6	2	480367000	PIN BLOCK
7	1	480368000	PIN SWIVEL HOOK
8	1	017800000	NUT, HX LK 1/2-20UNF
9	2	366813000	PIN HITCH
10	1	360124000	PIN HITCH
11	2	040518000	DECAL STAY CLEAR OF LOAD
12	2	360480100	DECAL, MAX LOAD BLOCK 5005 H & EH



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.**

Limited Parts Warranty 1 Year

Effective June 15, 2010



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

Limited Warranty 2 Years

Effective September 2, 2003

