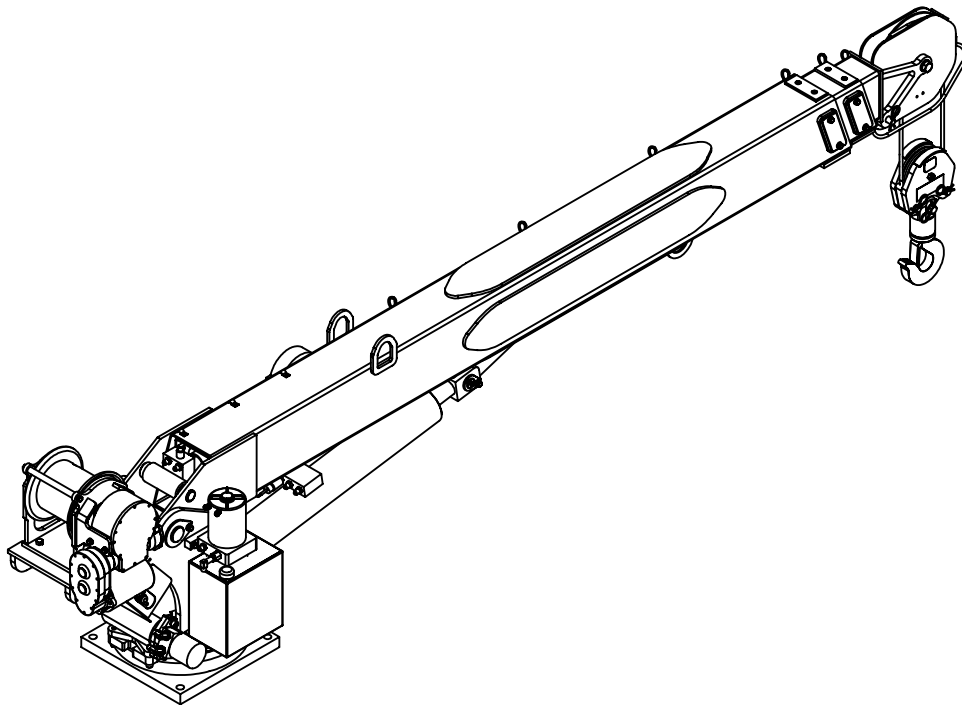




# 6006EH OWNERS MANUAL

Manual No. 366904000  
Rev. 09/12/05



Serial No. \_\_\_\_\_

Mailing Address:  
P.O. Box 580697  
Tulsa, OK 74158-0697  
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# Auto Crane Warranty Registration

Fax Transmission

To: Warranty Department Fax: (918) 834-5979  
 From: \_\_\_\_\_ Date: \_\_\_\_\_  
 Re: Product Registration Pages: \_\_\_\_\_

**End User Information:** (Required for Warranty Activation)

Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Contact: \_\_\_\_\_ E-mail Address: \_\_\_\_\_

**Distributor Information:** (Required for Warranty Activation)

Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Contact: \_\_\_\_\_ E-mail Address: \_\_\_\_\_

**Product Information:** (Required for Warranty Activation)

Model No.: \_\_\_\_\_ Serial No.: \_\_\_\_\_  
 Date Product Delivered: \_\_\_\_\_ Date Processed:\* \_\_\_\_\_  
 VIN # \_\_\_\_\_ \* For Auto Crane use only

## ONE REGISTRATION FORM PER UNIT (CRANE OR BODY)

Registration form must be mailed or faxed within 15 days of customer installation.

Mail to:  
 Warranty Department  
 Auto Crane Company  
 P.O. Box 581510  
 Tulsa, OK 74158-0697



# 6006EH

## OWNER'S MANUAL REVISION RECORD

Revision Date	Section(s) Or Page(s)	Description of Change
07/30/04	All	New Design
02/03/05	2-4.1, 5-1.1, 6-2,1 & Sect 8	Added FM Crane
09/12/05	All	General revision: added FM/Hardwire Less Slip Ring

**Notes:**

1. The information contained in this manual is in effect at the time of this printing. It does not cover all instructions, configurations, accessories, etc. If you require additional information, please contact **Auto Crane Company** at **(918) 836-0463**.
2. **Auto Crane Company** reserves the right to update this material without notice or obligation.



# WARNINGS

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

**WARNING!** It is the further responsibility of the installer to comply with the OSHA Truck Crane Stability Requirements as specified by 29 CFR part 1910.180 (C) (1).

**WARNING! NEVER OPERATE THE CRANE NEAR ELECTRICAL POWER LINES!**

**Death** or serious injury will result from boom, line, or load contacting electric lines. Do not use crane within 10 feet (3.05m) of electric power lines carrying up to 50,000 volts. One-foot additional clearance is required for every additional 30,000 volts or less. **SEE DANGER DECAL (P/N 040529)** in this Owner's Manual.

**WARNING! NEVER.....**

- ◆ **EXCEED** load chart capacities (centerline of rotation to hoist hook).
- ◆ Un-reel last 5 wraps of cable from drum!
- ◆ Wrap cable around load!
- ◆ Attempt to lift or drag a load from the side! The boom can fail far below its rated capacity.
- ◆ Weld, modify, or use unauthorized components on any Auto Crane unit! This will void any warranty or liability. Also failure of the crane may result.
- ◆ Place a chain link on the tip of the hook and try to lift a load!
- ◆ Use a sling bar or anything larger than the hook throat that could prevent the hook latch from closing, thus negating the safety feature!
- ◆ Hold on any pendant Select Switch that will cause unsafe operating conditions!

**WARNING!** In using a hook with latch, **ALWAYS** make sure that the hook throat is closed before lifting a load! Proper attention and common sense applied to the use of the hoist hook and various slings will prevent possible damage to material being hoisted and may prevent injury to personnel.

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

**WARNING!** Auto Crane Company remote controlled cranes are not designed or intended for use for any applications involving the lifting or moving of personnel.

**WARNING! ALWAYS** operate the crane in compliance with the load capacity chart. **DO NOT USE** the overload shutdown device to determine maximum rated loads, if the crane is equipped with this type of device.

**READ THIS PAGE**





# **6006EH**

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# 6006EH INTRODUCTION

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

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

Auto Crane has incorporated several safety features in the 6006EH crane for your protection.

For your convenience the overall dimensions of the 6006EH crane are included on the General Dimension Drawing. Rotation and turning radius are also listed on that drawing.

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

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

The 6006EH cranes are attached to your truck electrical system through the Voltage Switching Unit provided. The 6006EH is another highly efficient Auto Crane product. The use of a maintenance-free battery is not recommended on any Auto Crane product. The recommended alternator and battery that will give the longest life with the most useful duty cycle is a 75-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. The customer service department also has the ability to bring a local distributor, a regional sales manager, or a factory serviceman into the solution of an equipment problem.

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

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

***Note: This manual should remain with the crane at all times.***

# **6006EH**

## **INTRODUCTION**

### **DISTRIBUTOR ASSISTANCE:**

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: (918) 836-0463.** The information contained in the manual is in effect at the time of this printing. Auto Crane Company reserves the right to update this material without notice or obligation.

# 6006EH

## GENERAL SPECIFICATIONS

### DIMENSIONS

**Width:** 21.75 in (0.55 m)

**Height:** 35.88 in (0.91 m)

**Length:** 13 ft 1 in (3.99 m)  
[boom(s) stored]

**Weight:**  
1,670 lbs (758 kg)

### CAPACITY

36,000 ft-lbs (4.98 ton-m)  
[ft-lbs = horizontal distance from centerline of rotation to free hanging weight (feet) x amount of weight (pounds)]

<b>LIFTING CAPACITIES</b>			
ft	lbs	ft	lbs
3	6,000	12	3,000
4	6,000	13	2,769
5	6,000	14	2,571
6	6,000	15	2,400
7	5,143	16	2,250
8	4,500	17	2,118
9	4,000	18	2,000
10	3,600	19	1,895
11	3,273	20	1,800

### REACH

Second boom will reach from 10 feet 4 inches to 16 feet 4 inches.  
Third boom will reach from 16 feet 4 inches to 20 feet 4 inches.

### CABLE

95 ft (28.9 m) of 3/8 in (9.5 mm) diameter aircraft quality cable. This cable has a single line breaking strength of 14,400 lbs (6,531 kg).

### CHASSIS REQUIREMENTS

14,500 lbs (6,577 kg) GVWR minimum  
360,000 in-lbs RBM

### ELECTRICAL SYSTEM REQUIREMENTS

**Voltage:** 12 VDC

**Alternator:** 75 amp (minimum)

**Battery:** 130 minute reserve capacity (minimum)  
Maintenance type

### ROTATION

370° Rotation With Electrical Stop  
Continuous Rotation With Slip Ring

## **--- IMPORTANT ---**

# **SAFETY TIPS AND PRECAUTIONS**

1. No unqualified or unauthorized person shall be allowed to operate the crane.
2. **WARNING:** Never weld, modify, or use unauthorized components / parts on any Auto Crane unit. This will void any warranty or liability. Also, failure of the crane may result.
3. Make certain the vehicle meets minimum chassis requirements. (These requirements do not guarantee unit stability.)
4. Make certain the crane is installed per factory specifications. Contact your local distributor or the Auto Crane factory if any questions arise.
5. Visual inspections and tests should be conducted at the beginning of each shift each day to insure that the crane and all its operating systems are in good condition and working order before it is used.
6. Inspect hydraulic hoses frequently for signs of deterioration, and replace them as required.
7. If a hydraulic break occurs, leave the area of the break and do not attempt to stop the break by hand as the hydraulic oil may be hot and under high pressure which can cause serious injury. Shut the system down as soon as possible.
8. Check the hook at least every thirty days for distortions or cracks and replace it as required.
9. Oil gears as required.
10. Stop all operations when cleaning, adjusting or lubricating the machine.
11. Keep dirt and grit out of moving parts by keeping crane clean. Make sure machine is free of excess oil, grease, mud and rubbish, thus reducing accidents and fire hazards.
12. When a new cable is installed, operate first with a light load to let the cable adjust itself.
13. Locate the vehicle at the work site for the best stability possible.
14. Keep the vehicle in a level position while loading or unloading.
15. Observe operating area for obstructions and/or power lines that might be a hazard.
16. **WARNING: NEVER OPERATE THE CRANE NEAR ELECTRICAL POWER LINES.** Auto Crane Company recommends that the crane never be any closer to a power line (including telephone lines) than 10 feet at any point.
17. Allow the vehicle engine to warm up before operating crane.
18. Know the weight of your rigging and load to avoid overloading the crane.
19. Deduct the weight of the load handling equipment from the load rating to determine how much weight can be lifted.
20. All load ratings are based on crane capacity, NOT the vehicle stability. Remember in lifting a heavy load, the weight can create enough tipping moment to overturn the vehicle
21. Always comply with load chart capacities, (centerline of rotation to hook).
22. Secure all loads before lifting.
23. Always set the emergency brake before beginning operation.
24. Keep objects and personnel clear of crane path during operation.
25. Operate control levers slowly and smoothly in order to meter oil flow for safe operation.
26. Always extend the outriggers from vehicle to the ground before crane operation. Insure that they are firmly positioned on solid footings. Stand clear of outriggers while they are being extended.
27. If any outrigger, when extended, rests on a curb or other object that prevents it from extending to its maximum distance, shorten bearing or fulcrum point and reduce the maximum load accordingly.
28. When an outrigger will not reach the ground due to holes or grades, it shall be blocked up to provide level and firm support for the truck.
29. When working in soft earth, use wide pads under outrigger feet to prevent sinking.
30. Always store outriggers before transportation.

## **WARNING!**

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

## **--- IMPORTANT ---**

# **SAFETY TIPS AND PRECAUTIONS**

31. Always store the crane in its stowed position for transportation.
32. Remember the overall height of the entire unit for garage door clearance or when moving under objects with low overhead clearance
33. Disengage power takeoff (PTO) before moving the vehicle.
34. Always walk around the vehicle before moving.
35. Never drive with a load suspended from crane.
36. Do not take your eyes off a moving load. Look in the direction you are moving.
37. Never swing a load over people.
38. Do not stop the load sharply in midair so that it swings like a pendulum. Meter the control levers to avoid this situation.
39. Crane boom length should be kept as short as possible for maximum lifting capacity and greater safety. Longer booms require additional care in accelerating and decelerating the swing motion, and thus slow down the working cycle and reduce productivity.
40. Keep the load directly and vertically under the boom point at all times. Crane booms are designed to handle vertical loads, not side lifts.  
**WARNING:** Never attempt to lift, drag, tow or pull a load from the side. The boom can fail far below its rated capacity.
41. Do not push down on anything with boom extensions; similarly do not lift anything with boom extensions.
42. Do not lift personnel with any wire rope attachment or hook. There is no implied warranty or responsibility for such purposes.
43. **WARNING:** In using a safety hook, ALWAYS close the hook throat before lifting a load. Proper attention and common sense applied to the use of the hook and various slings will prevent possible damage to material being hoisted and may prevent injury to personnel.
44. **WARNING:** Never place a chain link on the tip of the hook and try to lift a load with the hoist.
45. **WARNING:** Never use a sling bar or anything larger than the hook throat which could prevent the safety latch from closing, thus negating the safety feature.
46. Do not wrap the wire rope around sharp objects when using winch.
47. **WARNING:** Never unreel last 5 wraps of cable from drum.

# --- IMPORTANT ---

## OPERATING PRACTICES AND WARNINGS

1. Make certain the vehicle meets minimum chassis requirements. (These requirements do not guarantee unit stability)
2. Make certain the crane is installed per factory specifications. Contact your local Distributor or the Auto Crane factory if any questions arise.
3. Keep the vehicle in as level a position as possible while loading or unloading.
4. **ALWAYS** set the vehicle emergency brake before beginning crane operations.
5. **ALWAYS** use outriggers from vehicle to the ground during crane operation. Make sure they are firmly positioned on solid footings.
6. All load ratings are based on crane capacity, **NOT** truck/crane stability.
7. Keep objects and personnel clear of crane path during operation.
8. Keep hoist cable pulled tight at all times.
9. **REMEMBER**, in lifting a heavy load, the weight can create enough tipping momentum to overturn the vehicle.
10. **ALWAYS** keep load as close to ground as possible.
11. Hydraulic hoses need to be inspected frequently for signs of deterioration, and be replaced as required.
12. The hoist hook is an important item that an operator should consider and use properly. It should be checked on a daily basis for distortion or cracks.
13. **ALWAYS** store outriggers before road travel.
14. **WARNING! NEVER OPERATE THE CRANE NEAR ELECTRICAL POWER LINES!** Death or serious injury will result from boom, line, or load contacting electric lines. Do not use crane within 10 feet (3.05m) of electric power lines carrying up to 50,000 volts. One foot additional clearance is required for every additional 30,000 volts or less.
15. **WARNING! NEVER EXCEED** load chart capacities (centerline of rotation to hoist hook).
16. **WARNING! NEVER** un-reel last 5 wraps of cable from drum!
17. **WARNING! NEVER** wrap cable around load!
18. **WARNING! NEVER** attempt to lift or drag a load from the side! The boom can fail far below its rated capacity.
19. **WARNING! NEVER** weld, modify, or use unauthorized components on any Auto Crane unit! This will void any warranty or liability. Also failure of the crane may result.
20. **WARNING! NEVER** place a chain link on the tip of the hook and try to lift a load!
21. **WARNING! NEVER** use a sling bar or anything larger than the hook throat that could prevent the hook latch from closing, thus negating the safety feature!
22. **WARNING!** In using a hook with latch, **ALWAYS** insure that the hook throat is closed before lifting a load! Proper attention and common sense applied to the use of the hoist hook and various slings will prevent possible damage to material being hoisted and may prevent injury to personnel.  
**WARNING! NEVER** hold any Control Select Switch on that will cause unsafe operating conditions!

## **WARNING!**

**Auto Crane Company remote controlled, stiff boom cranes are not designed or intended for use on any applications involving the lifting or moving of personnel.**



# **QUALIFICATIONS FOR AND CONDUCT OF OPERATORS AND OPERATING PRACTICES**

## **REFERENCE ASME B30.5a 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. Qualifications shall be limited to the specific type of equipment for which examined.
2. 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.
3. 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.
4. 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.

5. Operators and operator trainees should have normal depth perception, coordination, and no tendencies to dizziness or similar undesirable characteristics.
6. In addition to the above listed requirements, the operator shall:
  - A. Demonstrate the ability to comprehend and interpret all labels, operator's manuals, safety codes, and other information pertinent to correct crane operations.
  - B. Posses the knowledge of emergency procedures and implement it.
  - C. Demonstrate to the employer the ability to operate the specific type of equipment.
  - D. Be familiar with the applicable safety regulations.
  - E. Understand the operating procedures as outlined by the manufacturer.
  - F. Be thoroughly familiar with the crane and its control functions.
  - G. Understand the operating procedures as outlined by the manufacturer.

### **CONDUCT OF OPERATORS**

1. The operator shall not engage in any practice, which will divert his attention while actually operating the crane.
2. Each operator shall be responsible for those operations under the operator's direct control. Whenever there is any doubt as to safety, the operator shall consult with the supervisor before handling the loads.
3. The operator should not leave a suspended load unattended unless specific precautions have been instituted and are in place.
4. If there is a warning sign on the switch or engine starting controls, the operator shall not close the switch or start the engine until the warning sign has been removed by the appointed person.
5. Before closing the switch or starting the engine, the operator shall see that all controls are in the "OFF"

# **QUALIFICATIONS FOR AND CONDUCT OF OPERATORS AND OPERATING PRACTICES**

- or neutral position and all personnel are in the clear.
6. If power fails during operation, the operator shall:
    - A. Move power controls to the "OFF" or neutral position.
    - B. Land the suspended load and boom, if practical.
  7. The operator shall be familiar with the equipment and its proper care. If adjustments or repairs are necessary, the operator shall report the same promptly to the appointed person, and shall also notify the next operator.
  8. The operator at the start of each shift shall test all controls. If any controls do not operate properly, they shall be adjusted or repaired before operations are begun.
  9. Stabilizers shall be visible to the operator while extending or setting unless a signal person assists operator.
- C. Means are provided to hold the vehicle stationary while operating the crane.
  - D. Before starting to lift, the hook shall be positioned over the load in such a manner as to minimize swinging.
  - E. During lifting care shall be taken that:
    1. There is no sudden acceleration or deceleration of the moving load.
    2. Load, boom or other parts of the crane do not contact any obstruction.
  - F. Cranes shall not be used for dragging loads sideways.
  - G. This standard recognizes that telescopic boom cranes are designed and intended for handling materials. They do not meet personnel lift or elevator requirements. Therefore, no lifting, lowering, swinging or traveling shall be done while a person is on the hook or load. Hook attached suspended work platforms (baskets) shall not be used with cranes covered by this standard. Crane manufacturer must approve work platforms attached to the boom.
  - H. The operator should avoid carrying loads over people.
  - I. When the crane is so equipped, the stabilizers shall be fully extended and set. Blocking under stabilizers shall meet the requirements as follows:
    1. Strong enough to prevent crushing.
    2. Of such thickness, width and length as to completely support the stabilizer pad.
  - J. 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.
  - K. In transit, the boom shall be carried in stowed position.
  - L. 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.
  - M. The crane shall not be transported with a load on the hook unless recommended by the manufacturer.

## **OPERATING PRACTICES/HANDLING THE LOAD**

1. Size of load.
  - A. No crane shall be loaded beyond the rated load except for test purposes.
  - B. The load to be lifted is to be within the rated load of the crane and its existing configuration.
  - C. When loads that are not accurately known are to be lifted, the person responsible for the job shall ascertain that the weight of the load does not exceed the crane rated load at the radius at which the load is to be lifted.
2. Attaching the load.
  - A. The load shall be attached to the hook by means of slings or other devices of sufficient capacity.
  - B. Hoist rope shall not be wrapped around the load.
3. Moving the load.

The operator shall determine that:

  - A. The crane is level and, where necessary, the vehicle/carrier is blocked properly.
  - B. The load is well secured and balanced in the sling or lifting device before it is lifted more than a few inches.

# QUALIFICATIONS FOR AND CONDUCT OF OPERATORS AND OPERATING PRACTICES

N. No person should be permitted to stand or pass under a suspended load.

4. Stowing procedure.

Follow the manufacturer's procedure and sequence when stowing and un-stowing the crane.

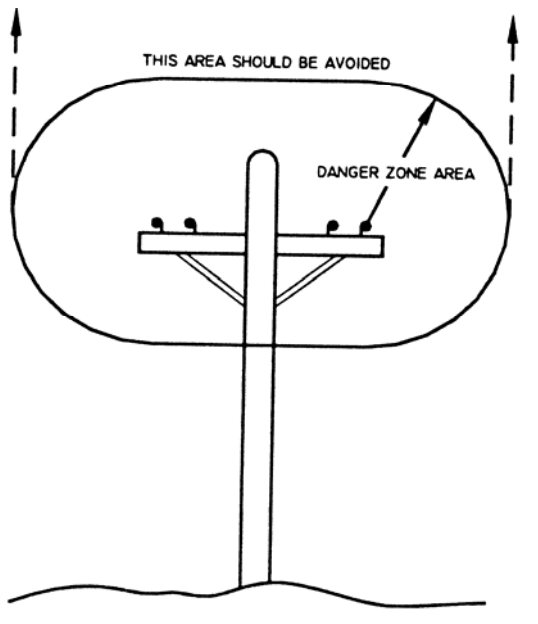
3. Caution shall be exercised when working near overhead lines, because they can move horizontally or vertically due to wind, moving the danger zone to new positions.

4. In transit with no load and boom lowered the clearance shall be specified in Table 1.

5. A qualified signalperson shall be assigned to observe the clearance and give warning before approaching the above limits.

## MISCELLANEOUS

### OPERATING NEAR ELECTRICAL POWER LINES



1. Cranes shall be operated so that no part of the crane or load enters into the danger zone shown above.

#### EXCEPTIONS

A. The danger zone may be entered after confirmation by an appointed person that the electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work; or

B. The danger zone may be entered if insulating barriers (not a part of nor an attachment to the crane) have been erected to prevent physical contact with the lines.

2. For lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load (including handling appendages) shall be 10-ft. (3m). For higher voltages, see Table 1.

A. Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities verify that it is not an energized line.

B. Exceptions to this procedure are allowed, if approved by the administrative or regulatory authority provided the alternate procedure insures equivalent protection and is set forth in writing.

C. Durable signs shall be installed at the operator's station and on the outside of the crane, warning that electrocution or serious bodily injury may occur unless a minimum clearance of 10 ft. (3.0m) between the crane or the load being handled and energized power lines. Greater clearances are required because of higher voltage as stated above. These signs shall be revised but not removed when local jurisdiction requires greater clearances.

**TABLE 1**

		minimum required clearance	
normal voltage, kV (phase to phase)		ft	(m)
<u>when operating near high voltage power lines</u>			
over	to 50	10	(3.50)
over	50 to 200	15	(4.6)
over	200 to 350	20	(6.1)
over	350 to 500	25	(7.62)
over	500 to 750	35	(10.67)
over	750 to 1000	45	(13.72)
<u>while in transit with no load and boom lowered</u>			
over	to 0.75	4	(1.22)
over	0.75 to 50	6	(1.83)
over	50 to 345	10	(3.83)
over	345 to 750	16	(4.87)
over	750 to 1000	20	(6.1)

## **--- IMPORTANT --- OPERATION OF UNIT**

1. Make sure this manual has been thoroughly read by all crane operating personnel and supervisors.
2. A routine inspection of the crane should be mandatory before each operating day. Any defects should be corrected immediately.
3. At a job site the vehicle should be positioned so that the crane can adequately reach the load within the rated capacity (centerline of rotation to hoist hook).
4. Keep the vehicle as level as possible during operation.
5. For electric cranes, **engage emergency brake** and leave ignition on with transmission in neutral (or in park for automatic transmissions). Activate any crane power switches. For Auto Crane units requiring battery and hydraulic operation, **engage emergency brake**, place gear selector in neutral, press clutch, activate PTO, release clutch and after hydraulic fluid is warm, set throttle control to proper engine speed.
6. Always use outriggers from the truck to the ground. Be sure these are firm and adequately positioned. When rotating, **keep load as low to the ground as possible**.
7. Remove the transmitter from cab or storage area. Power transmitter on. Detach hook from dead man. Crane is now ready for operation.
8. Always boom up before rotating so the boom will clear the required boom support.
9. When extending the boom, always maintain clearance between the boom crown and the traveling block or hoist hook.
10. Always observe safe and practical operation to avoid possible accidents. Refer to Safety Tips and Precautions.
11. After completing lifting operations, return the boom to stowed position on the boom support. Avoid unneeded pressure on the boom support.
12. Store transmitter in proper location (in cab or storage area).
13. Return outriggers to stowed position. Make sure they are pinned in place or jacklegs are returned to compartment.
14. Check work area for any tools or equipment not stored.
15. Release throttle control, depress clutch and disengage PTO. Deactivate any crane power switches.
16. Report any unusual occurrence during crane operation that may indicate required maintenance or repair.
17. **NEVER** use two cranes to support a load too large for either crane.

## **OPERATION OF OUTRIGGERS**

### **HYDRAULIC OUTRIGGERS**

1. Shift crane/outrigger control valve to "outrigger" position.
2. Operate the outrigger control valves to position the outriggers.
3. After outriggers are positioned, return crane/outrigger selector to "crane" position.
4. Crane is now ready to operate.

### **MANUAL OUTRIGGERS**

1. Pull lock pins to release jackleg or drop down outrigger and move to outermost lock position.
2. Make sure lock pins are reinstalled properly.
3. Lower outrigger pad to firm ground and adjust foot to take out slack.
4. Crane is now ready to operate.

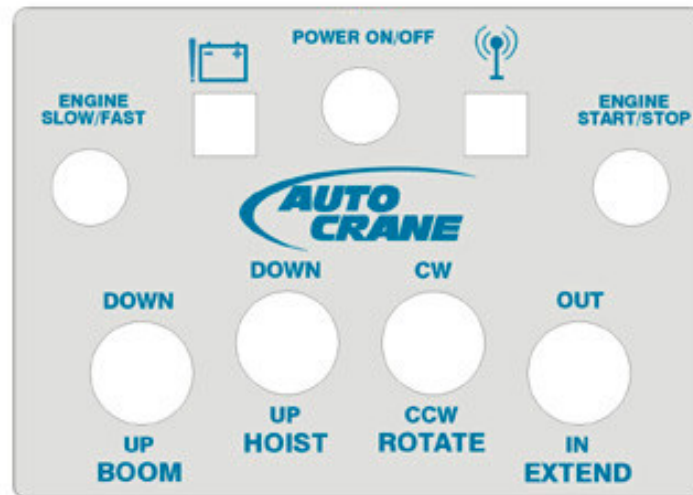
# FM CONTROL SYSTEM OPERATION

## TRANSMITTER LAYOUT

The red light to the left of the *Power On/Off* button indicates low transmitter battery. As the battery runs down, the light will begin to flash. It will flash increasingly faster as the battery power decreases (see "Charging the Transmitter").

The green light to the right of the *Power On/Off* button indicates that the unit is transmitting. This light will flash when a function is activated. The rate at which it flashes depends on the mode of transmission. When transmitting using the pendant cable, the green light will flash noticeably faster than when unplugged.

In addition to the two lights mentioned above there is four function toggle switches. These functions from left to right are to be used to raise and lower the boom, raise and lower the hoist cable, rotate the crane and extend and retract the boom. There are also buttons for auxiliary functions such as *Engine Start/Stop* and *Engine Fast Idle*.



## POWER ON/OFF BUTTON

To turn the transmitter on, press and hold the *Power On/Off* button, release once the transmit light becomes solid. To turn the unit off, press and hold the power button, release once the transmit light stops flashing. When this button is pressed both the red battery low and the green transmit light will flash alternately and stop flashing once the unit is either on or off.

## FUNCTION SWITCHES

To operate a function, toggle one of the function switches with either the thumb of the hand holding the unit or the thumb or fingers of the opposite hand. Using the forefinger of the hand holding the unit, slowly pull the trigger back to start the function. The speed of the function increases as the trigger is pulled. More than one function can be activated at one time.

**NOTE: A FUNCTION SWITCH MUST BE ACTIVATED BEFORE THE TRIGGER IS PULLED OR THE CRANE WILL NOT OPERATE.**

# ***FM CONTROL SYSTEM OPERATION***

## **AUXILLARY BUTTONS**

Functions described in this paragraph will not worked if not properly connected to the vehicle at the time of installation. Press the *Engine Slow/Fast* button to provide a maintained voltage to a throttle control. To stop the engine, press the *Engine Start/Stop* button. To start the engine, press the *Engine Start/Stop* button a second time within five (5) seconds of releasing it. To activate the auxiliary function, press the *Engine Slow/Fast* and the *Engine Start/Stop* buttons simultaneously.

## **SAFETY FEATURES**

For safety reasons the speed of the rotation function is reduced when the lift cylinder pressure exceeds a set pressure. This will occur under load or under boom down operation. To limit slow operation of an unloaded crane, activate boom up momentarily after booming down to relieve cylinder pressure created by the counterbalance valve.

The crane is also equipped with an anti-bridging feature. The logic in the receiver will not allow the operator to rest the boom of the crane on a load supporting structure and lift a load. Doing so is dangerous and could damage the crane. When the crane is bridged, the receiver will display '*RSBM*' which requires the boom to be raised. This feature is disabled when the crane is in the '*HOME*' position to allow for stowing.

## **OPERATION FAILURE**

If the crane does not operate as expected, observe the readout through the window on the receiver and refer to the front panel for explanation. The codes are further explained in the Diagnostics section of this manual. Please note that '*NRML*' is displayed when the crane is operating normally, '*HOME*' is displayed when the crane is forward and in a position to be stowed and '*SLOW*' is displayed when functions are slowed due to load. '*EC01*' will be displayed if no function is activated on the transmitter.

## **CHARGING THE TRANSMITTER**

The transmitter can be charged using one of three methods. It can be charged with the cigarette lighter charger, the pendant cable or the optional *AC adapter (P/N 366505000)*. To charge the transmitter with the pendant cable, the crane must have electrical power. The crane can be operated by pendant or by FM remote, therefore the battery can be charged without suspending operation of the crane.

The transmitter should be fully charged after approximately 6 to 8 hours of charging. It is not recommended to leave the transmitter charging for extended periods of time (3 or 4 days). Doing so will eventually degrade the battery and it will not keep a good charge.

# INSPECTION REQUIREMENTS

## REFERENCE ASME B30.5a AND OSHA 1910.180 FOR COMPLETE INSPECTION REQUIREMENTS

### INSPECTION CLASSIFICATION

#### 1. Initial inspection.

Prior to initial use, all new, altered, modified or extensively repaired cranes shall be inspected by a designated person to insure compliance with provisions of this standard.

#### 2. Regular inspection.

Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which 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 classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below.

- A. Frequent inspection - daily or before each use
- B. Periodic inspection - one to twelve-month intervals or as specifically recommended by the manufacturer or qualified person.

**DESIGNATED PERSONNEL SHALL  
PERFORM INSPECTIONS ONLY.**

### 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. Refer to ANSI/ASME B30.10.
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, unstranding, 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. Reference Rope Maintenance section in the owner's manual.

***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.***

# INSPECTION REQUIREMENTS

## 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 brake and clutch system parts and lining.
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 junction with 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 the fluid.
  - G. Loss of pressure.
11. Inspect hydraulic valves for the following problems:
  - A. Cracks in valve housing.
  - B. Improper return of spool to neutral position.
  - C. Leaks at spools or joints.
  - D. Sticking spools.
  - E. Failure of relief valves to attain or maintain correct pressure setting.
  - F. Relief valve pressure shall be checked as specified by the manufacturers.
12. Inspect hydraulic cylinders for the following problems:
  - A. Drifting 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 decal 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.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:



# **INSPECTION REQUIREMENTS**

- A. Reduction of rope diameter below nominal diameter due to loss of core support.
- B. Internal or external corrosion.
- C. Wear of outside wires.
- D. Severely corroded, cracked, bent, worn, or improperly applied connections.

## **CRANES NOT IN REGULAR USE**

A crane, which has been idle for a period of over one month or more, shall be given an inspection conforming to the "initial" and "regular" 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 B30.5a AND OSHA 1910.180 FOR COMPLETE TESTING REQUIREMENTS**

**TESTING SHALL BE PERFORMED BY DESIGNATED PERSONNEL ONLY.**

Prior to initial use, all new, altered, modified, or extensively repaired cranes shall be tested for compliance with the operational requirements of this crane.

Test requirements:

1. Test all functions to verify speed and operation.
2. Check that 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 B30.5a AND OSHA 1910.180 FOR COMPLETE MAINTENANCE AND REPAIR REQUIREMENTS**

A preventative maintenance program should be established based on this section and all replacement parts should be obtained from AutoCrane Company.

**For replacement parts contact 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 requirements shall be corrected before operation of crane is resumed. Only designated personnel shall do adjustments and repairs.
2. Adjustments shall be maintained to assure correct functioning of components, the following are examples:
  - A. Functional 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, broken, or excessively corroded.
  - C. Crane hooks showing cracks, damage, or corrosion shall be taken out of service. Repairs by welding are not recommended.
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. **Reference Lubrication and Maintenance Schedule in this manual.**

### **ROPE REPLACEMENT**

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

1. Conditions such as the following shall be reason for questioning continued use of the rope or increasing the frequency of inspection:
  - A. In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.
  - B. 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.
  - C. Wear of one third of the original diameter of the outside individual wire.
  - D. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
  - E. Evidence of any heat damage from any cause.
  - F. Reduction from nominal diameter of more than 1/64 in. (0.4mm) for diameters up to and including 5/16 in. (8 mm), 1/32 in. (0.8 mm) for diameter 3/8 in. (9.5 mm) to and including 1/2 in. (13 mm), 3/64 in. (1.2 mm) for diameter 9/16 in. (14.5 mm) to and including 3/4 in. (19 mm), 1/16 in. (1.6 mm) for diameter 7/8 in. (22 mm) to and including 1 1/8 in. (29 mm), 3/32 in.

# **GENERAL REPAIRS AND MAINTENANCE**

(2.4 mm) for diameters 1 1/4 in. (32 mm) to and including 1 1/2 in. (38 mm).

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

## **ROPE MAINTENANCE**

- 1. Rope should be stored to prevent damage or 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 side of the place where the rope is to be cut to prevent unlaying of the strands. On pre-formed rope, one seizing on each side of the cut is required. On non-preformed ropes of 7/8 in. (22 mm) diameter or smaller, two seizings on each side of the cut are required, and for non-preformed rope 1 in. (25 mm) 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 a 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.

# MAINTENANCE OF BATTERIES

Maintenance of Auto Crane unit batteries differs very little from the generally prescribed maintenance of any lead acid battery. All batteries must be kept properly charged, properly filled with water, and relatively clean.

## Keep Properly Charged

Many things affect the proper charge to a battery, such as:

1. Regulator settings.
2. Proper tightness of belts on the alternator or generator.
3. Good, clean connections of all cables and wires at the following places:
  - a. Battery.
  - b. Regulator.
  - c. Starting motor.
  - d. Alternator or generator.
  - e. Ground connections (most important).

It is of extreme importance to keep the battery as fully charged as possible without overcharging, especially when vehicles are left outside for extended periods in extremely cold climates. A battery can freeze. Freezing points for various specific gravities of acid are as follows:

Specific Gravity (Corrected to 80°F)	Freezing Temp. Degrees F.
1.280	-90°F
1.250	-62°F
1.200	-16°F
1.150	5°F
1.100	19°F

As shown, a half-charged battery (about 1.100 specific gravity) cannot stand for any length of time at 20°F or it will freeze.

The main reason for keeping the battery as fully charged as possible without over-charging is to insure that power is available even though the vehicle has been standing for some time.

## Keep Properly Filled with Water

The battery should *always* be properly filled with water. If the electrolyte level is allowed to fall below the top of the plates, the results become threefold:

1. The exposed portion of the plate will become sulfated.
2. The portion of the plate exposed is not usable.
3. That portion of the acid remaining becomes more concentrated and may cause more rapid

deterioration of the remaining parts of the battery.

## Keep A Relatively Clean Battery

The battery should be kept clean. Batteries filled with acid and which are not in use self-discharge to a limited degree because of the nature of the materials within the battery. If dirt is allowed to collect on the top of the battery (and this dirt absorbs moisture) and electrical path can be set up between the various terminals of the battery and the ground. Once such a path has been established, the self-discharge of the battery is accelerated. This also accelerates corrosion of the battery cables at the terminals.

## Periodic Maintenance is Needed

A definite program of periodic maintenance of all batteries should be conducted on a regular basis. Periodic maintenance includes:

1. Checking belts for tightness on the charging equipment.
2. Checking battery electrolyte levels.
3. Checking cables for good connections.
4. Cleaning where corrosion is apparent.

When corrosion is cleaned off, the cable terminals and battery terminals should be coated with a light coating of petroleum jelly before they are replaced. When terminals are cleaned, the top of the battery should be cleaned with a mild solution of soda water.

## Low Maintenance Batteries (Maintenance Free)

**Low maintenance batteries should not be used on AutoCrane Cranes or trucks equipped with AutoCrane Cranes. The batteries are not designed for "deep" discharge.**

## Testing Your Battery

If the condition of the battery is in question, it should be removed from the vehicle, taken to the shop, and allowed to reach room temperature. It should then be recharged until specific gravity readings taken at one-half hour intervals. If the specific gravity readings are fairly uniform, the battery should be checked with a high rate tester. Use the tester in accordance with the manufacturer's instructions. The high rate tester is the best method to test a questionable battery.

# ***MAINTENANCE OF BATTERIES***

If, after charging, it is noted that the specific gravity reading of one cell is 30 points less than any of the other cells, it may be assumed that the cell is bad and that the battery should be replaced. If all cells are uniform but not up to full charge, a low rate of charge should be attempted for an extended time. This usually will recover a badly sulfated battery.

## **Replacing a Battery**

If it is necessary to replace a battery, and a dry charge battery is used, the following procedure applies:

1. Fill the battery with electrolyte of the proper specific gravity.

2. Place the battery on charge according to the manufacturer's instructions.

It is essential that the second step above be followed to ensure that the battery going on the vehicle is fully charged.

It is also very important that the battery hold-downs be checked periodically to insure that the batteries are properly positioned to avoid vibration problems, breakage of cables or terminals. Care must be taken to avoid cracking or breaking containers or covers by tightening hold-down fixtures excessively. They also must not be so loose that breakage results from a hold-down that is too loose.

# 6006EH

## LUBRICATION & MAINTENANCE SCHEDULE

SERVICE PERFORMED	DAY	WKLY	3 MOS	6 MOS	YEAR	NOTES
LOAD HOOK	X					INSPECT HOOK & LATCH FOR DEFORMATION, CRACKS, & CORROSION
CABLE DRUM	X					MAKE SURE CABLE IS WOUND EVENLY ON DRUM
HOIST / BOOM CABLE	X					CHECK FOR FLATTENING, KINKS, & BROKEN STRANDS, SEE MANUAL
HYD. HOSES	X					VISUAL INSPECTION
HYD. FLUID	X					CHECK FLUID LEVEL
PIN RETAINING BOLTS	X					CHECK TORQUE TO 23 FT-LBS (GRADE 5), 35 FT-LBS (GRADE 8) AS REQUIRED
MOUNTING BOLTS		X				CHECK TORQUE TO 501 FT-LBS AS REQUIRED
ROTATION RING GEAR		X				LUBE WITH MOBILETAC LL, OR LUBRIPLATE P/N 15263, OR EQUAL
SHEAVE BEARINGS		X				SEALED BEARING, REPLACE IF ROUGH OR LOOSE
ALL OTHER BOLTS		X				CHECK TIGHTEN AS REQUIRED
LIFT CYLINDER BEARINGS			X			GREASE WITH MOBILEPLEX EP-2 OR EQUIVALENT @ ZERKS
ROTATION BEARING			X			GREASE WITH MOBILEPLEX EP-2 OR EQUIVALENT @ ZERKS
ROTATION BEARING BOLTS			X			CHECK TORQUE TO 170 FT-LBS (HEX HEAD) 180 FT-LBS (SOCKET HEAD) AS REQUIRED
ROTATION GEAR BOX			X			CHECK TORQUE TO 90 FT-LBS (SOCKET HEAD) AND 55 FT-LBS (HEX HEAD) AS REQUIRED
ROTATION GEAR BOX				X		EP GEAR LUBE SAE 80-90
HYDRAULIC FLUID					X	DRAIN, FLUSH, AND REFILL WITH MOBILE DTE 13 HYD. OIL
BOOM SLIDE PADS	PADS GREASED WHEN REPLACED					
FOR ADDITIONAL INFORMATION SEE:	1) OWNER'S MANUAL 2) OSHA SECTION 1910.180 3) ANSI B30.5-1989					

**CAUTION:** Routine maintenance insures trouble-free operation and protects your investment. All warranties are void if maintenance is neglected.

# **6006EH**

## **LUBRICATION & MAINTENANCE SCHEDULE**

### **NOTES:**

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



# 6006EH

## SAFETY DECAL SECTION

PART NO.: 040579000  
 DECAL: OPERATING INSTRUCTIONS  
 FUNCTION: To inform the operator of the proper procedure to follow for safe operation of the crane.  
 USED ON: All Cranes  
 QUANTITY: 1  
 PLACEMENT: Right side plate

**⚠ CAUTION**

1. INSPECT VEHICLE AND CRANE INCLUDING OPERATION, PRIOR TO USE DAILY.
2. DO NOT USE THIS EQUIPMENT EXCEPT ON SOLID, LEVEL SURFACE WITH OUTRIGGERS PROPERLY EXTENDED AND CRANE MOUNTED ON FACTORY-RECOMMENDED TRUCK.
3. BEFORE OPERATING THE CRANE, REFER TO MAXIMUM LOAD (CAPACITY) CHART ON CRANE FOR OPERATING (LOAD) LIMITATIONS.
4. OPERATE ALL CONTROLS SLOWLY AND SMOOTHLY.
5. KEEP LOAD UNDER BOOM TIP. DO NOT SIDE LOAD BOOM OR DRAG LOADS. AVOID FREE SWINGING LOADS.
6. DO NOT OPERATE, WALK OR STAND BENEATH BOOM OR A SUSPENDED LOAD.
7. KEEP AT LEAST 5 WRAPS OF LOADLINE ON HOIST DRUM.
8. FOR TRAVELING, BOOM AND OUTRIGGERS MUST BE IN THE STOWED POSITION.
9. ALL REMOVABLE PENDANTS MUST BE STORED IN CAB OR TOOL COMPARTMENT WHEN CRANE IS NOT IN USE.

P/N 040579

PART NO.: 040580000  
 DECAL: OPERATING TRAINING  
 FUNCTION: To inform the operator of the need to receive proper training before using the crane.  
 USED ON: All Cranes  
 QUANTITY: 1  
 PLACEMENT: Right side plate

**⚠ DANGER**

AN UNTRAINED OPERATOR  
SUBJECTS HIMSELF AND  
OTHERS TO

**DEATH OR SERIOUS INJURY**

- 1.) YOU MUST HAVE BEEN TRAINED IN THE OPERATION OF THIS CRANE, AND
- 2.) YOU MUST KNOW AND FOLLOW THE SAFETY AND OPERATING RECOMMENDATIONS CONTAINED IN THE MANUFACTURER'S MANUAL, YOUR EMPLOYER'S WORK RULES AND APPLICABLE GOVERNMENT REGULATIONS.

P/N 040580

PART NO.: 040632000  
 DECAL: TAMPERING WITH OVERLOAD DEVICE  
 FUNCTION: To inform the operator that tampering with the overload device may cause a unit failure or possible personal injury.  
 USED ON: All Cranes equipped with a load sensor  
 QUANTITY: 1  
 PLACEMENT: Right side of valve sensor.

**⚠ WARNING**

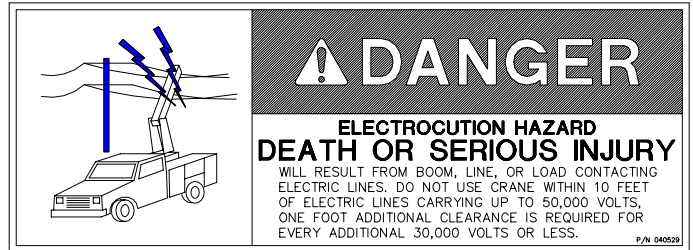
TAMPERING WITH OVERLOAD DEVICE VOIDS WARRANTY. OVERLOADED CRANE MAY HYDRAULICALLY RELEASE AND LET LOAD DOWN TO GROUND. OVERLOAD PROTECTION DEVICE CANNOT FUNCTION WITH BOOM BELOW HORIZONTAL (0°). HOIST UP, BOOM DOWN, AND EXTEND OUT WILL BE INOPERATIVE WHEN CRANE IS IN OVERLOAD CONDITION.

P/N 040632

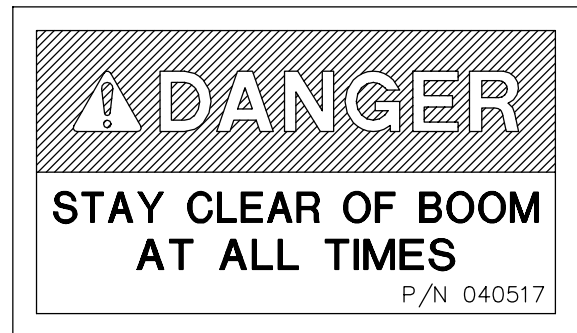
# 6006EH

## SAFETY DECAL SECTION

PART NO.: 040529000  
 DECAL: ELECTROCUTION HAZARD  
 FUNCTION: To inform the operator of the hazard involved with contacting electrical power lines with crane boom.  
 USED ON: All Cranes  
 QUANTITY: 2  
 PLACEMENT: Both sides of end of lower boom



PART NO.: 040517000  
 DECAL: STAY CLEAR OF BOOM  
 FUNCTION: To inform the operator of the hazard of proximity or contact with the crane boom during operation.  
 USED ON: All Cranes  
 QUANTITY: 2  
 PLACEMENT: Both sides of crown



PART NO.: 040518000  
 DECAL: STAY CLEAR OF LOAD  
 FUNCTION: To inform the operator of the hazard of proximity or contact with the crane load during operation.  
 USED ON: All Cranes  
 QUANTITY: 2  
 PLACEMENT: Both sides of traveling block



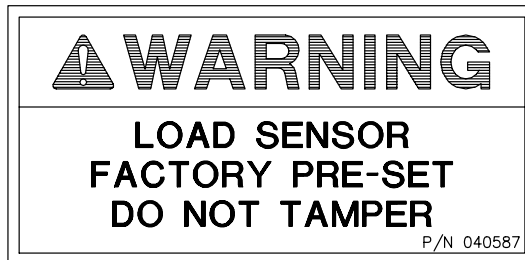
# 6006EH

## SAFETY DECAL SECTION

PART NO.: 040587000                      USED ON: All cranes equipped with a load sensor.

DECAL: LOAD SENSOR, DON'T TAMPER                      QUANTITY: 2

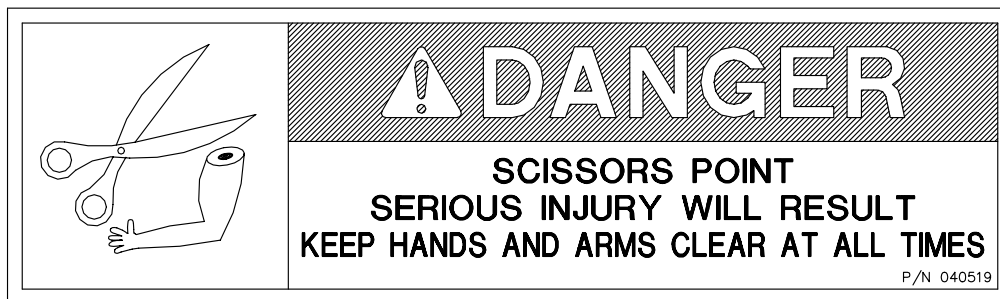
FUNCTION: To inform the operator that the load sensor is pre-set and that tampering with the sensor may cause potentially hazardous situation.                      PLACEMENT: Both sides of the lift cylinder near the load sensor



PART NO.: 040519000                      USED ON: All cranes.

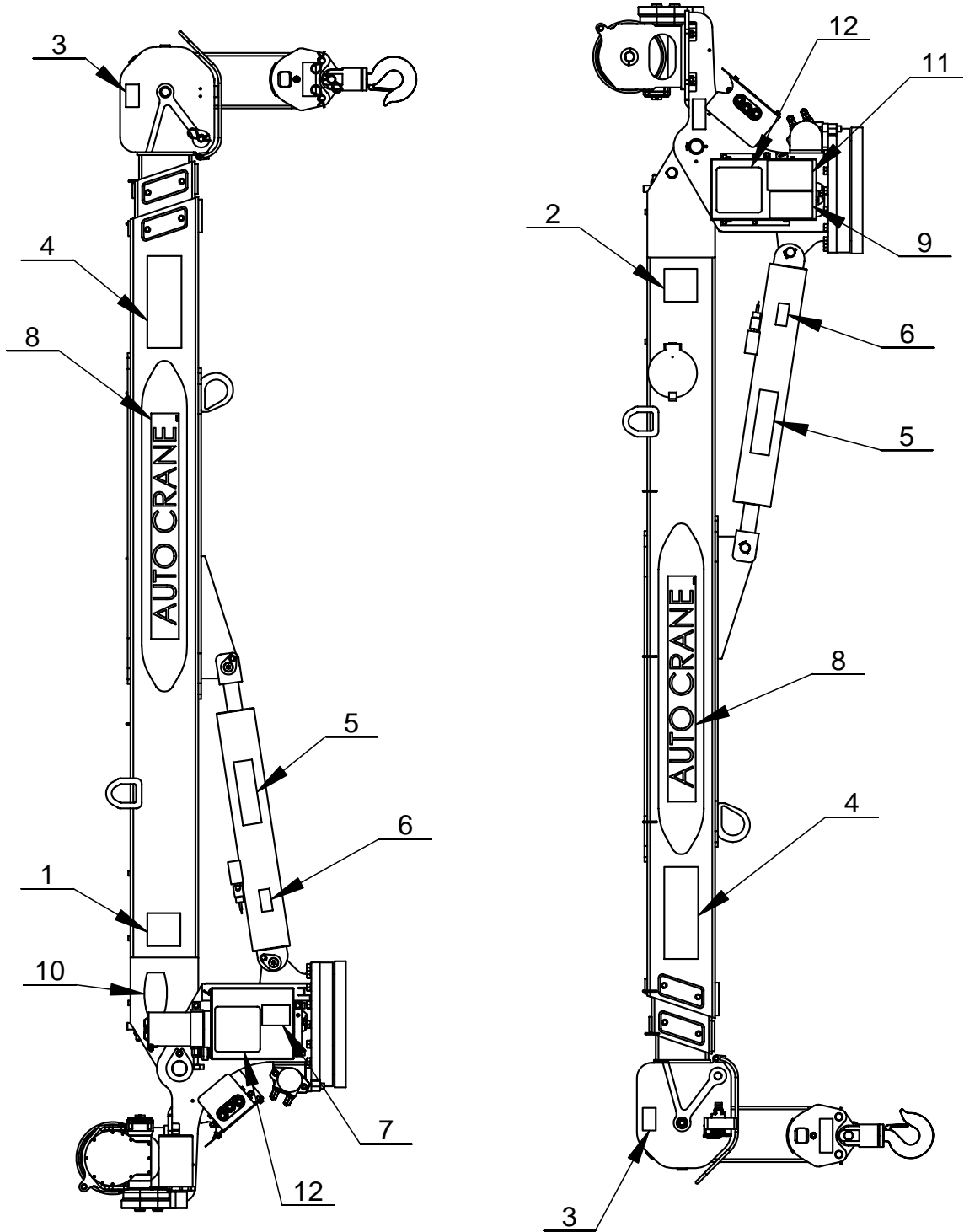
DECAL: SCISSORS POINT                      QUANTITY: 2

FUNCTION: To inform the operator of possible danger at scissors point on crane.                      PLACEMENT: Both sides of the lift cylinder



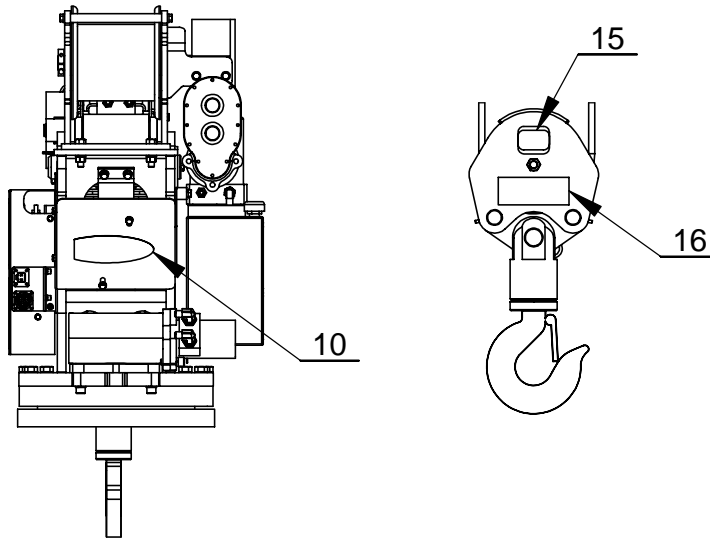
# 6006EH DECAL LAYOUT

P/N: 366704000



# 6006EH DECAL LAYOUT

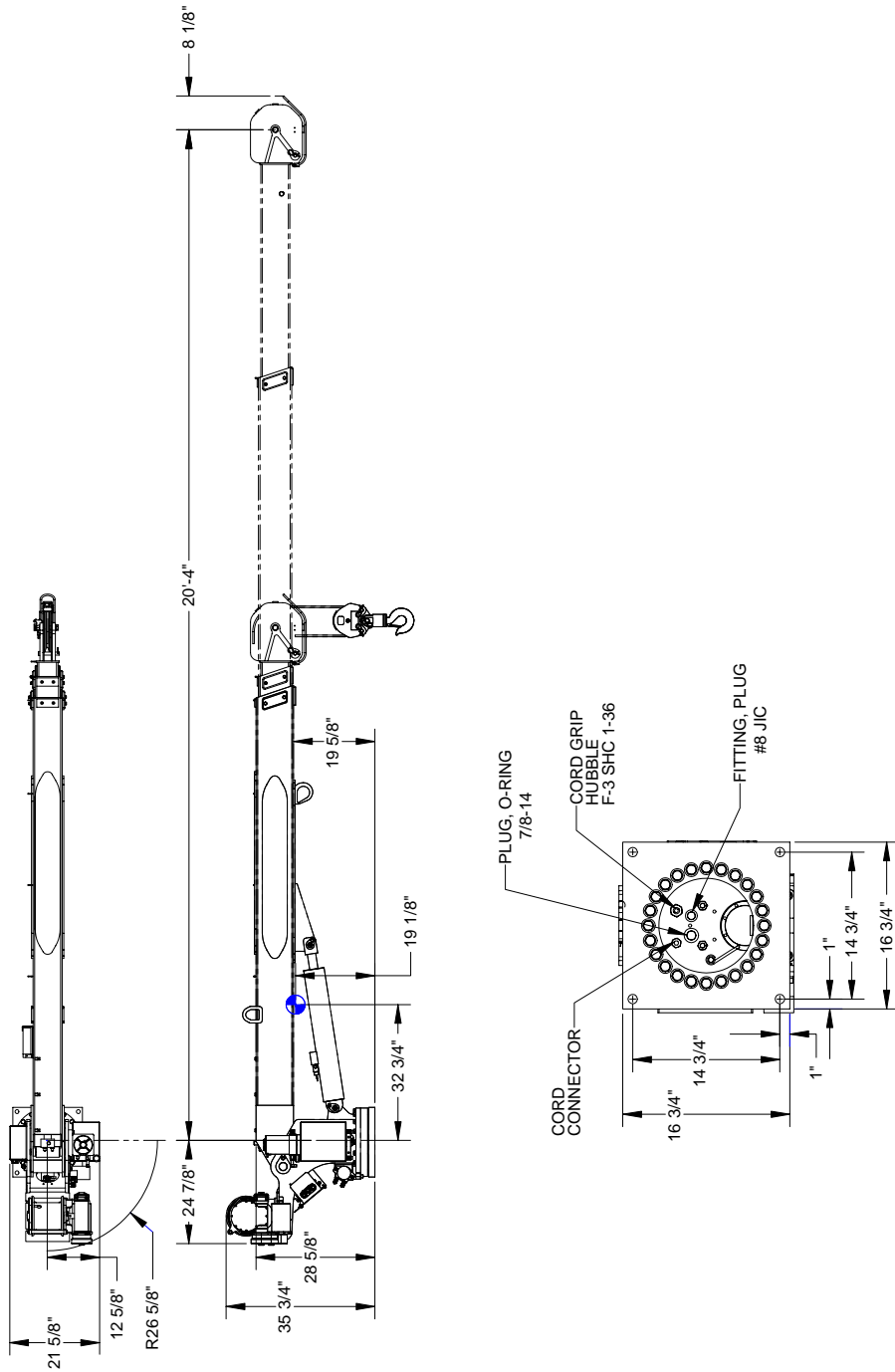
## P/N: 366704000



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	320318000	DECAL ANGLE IND RIGHT
2	1	320318001	DECAL ANGLE IND RIGHT
3	2	040517000	DECAL STAY CLEAR OF BOOM
4	2	040529000	DECAL POWER LINE HAZARD
5	2	040519000	DECAL DANGER SCISSOR POINT
6	2	040587000	DECAL WARNING LOAD SENSOR
7	1	040632000	DECAL WARNING - OVERLOAD
8	2	366389000	DECAL AUTO CRANE
9	1	040579000	DECAL OPERATION INSTRUCTIONS
10	2	360034000	DECAL AUTO CRANE LOGO
11	1	040580000	DECAL TRAINED OPERATOR
12	2	366710000	DECAL, LOAD CHART 6006EH
13	1	330622000	DECAL SERIAL NO
14	1	366804000	DECAL 6006 EH
15	2	366036100	DECAL, TRAVELING BLOCK 6006H (SHORT)
16	2	040518000	DECAL STAY CLEAR OF LOAD

# ***NOTES***

# 6006EH GENERAL DIMENSIONS



NOTE: CG IS APPROXIMATE

# 6006EH

## MOUNTING AND INSTALLATION

1. Check to make sure the following items are with your crane.

ITEM	QTY	PART NO.	DESCRIPTION
1	4	015104000	SCREW, HX. HD, 7/8-14NF X 5" LG. GRADE 8
2	4	022200000	WASHER, SP. LK. 7/8
3	4	018900000	NUT, HEX 7/8-14NF
4	6	083800000	CLIP, CABLE #838 (FRAME)
5	1	366904000	OWNER'S MANUAL (6006EH)
6	1	366692000	VSU ASSEMBLY
7	1	366709001	PENDANT
8	1	366699000	SLIP RING INSTALLATION (SLIP RING VERSION ONLY)
9	1	366710000	LOAD CHART 6006EH

2. Vehicle should meet minimum GVW rating of 14,500 pounds. (does not include bodies or accessories)
3. Make sure mounting surface is properly reinforced to withstand 36,000 ft-lb capacity loading of crane and that outriggers are used to provide total stability for the truck.
4. A 12" dia. hole should be cut out of mounting location (centered with mounting bolts) for access. Reference general dimensions for bolt pattern.
5. Make sure the mounting bolts are 7/8" dia, grade 8UNF. Torque bolts to 501 ft-lbs (dry).
6. When crane is not in operation, a boom support should always be used. Traveling block should be connected to hook loop.
7. Install Voltage switching unit inside compartment safe from weather and contamination. See following page for installation.
8. See the following pages for additional electrical installation.
9. Load test the crane to ensure proper functioning and truck stability
10. Make certain the owner's manual is delivered to the customer.
11. For additional help: call the service department at the Auto Crane Company. (918) 836-0463 (Tulsa, Oklahoma)

### WARNING

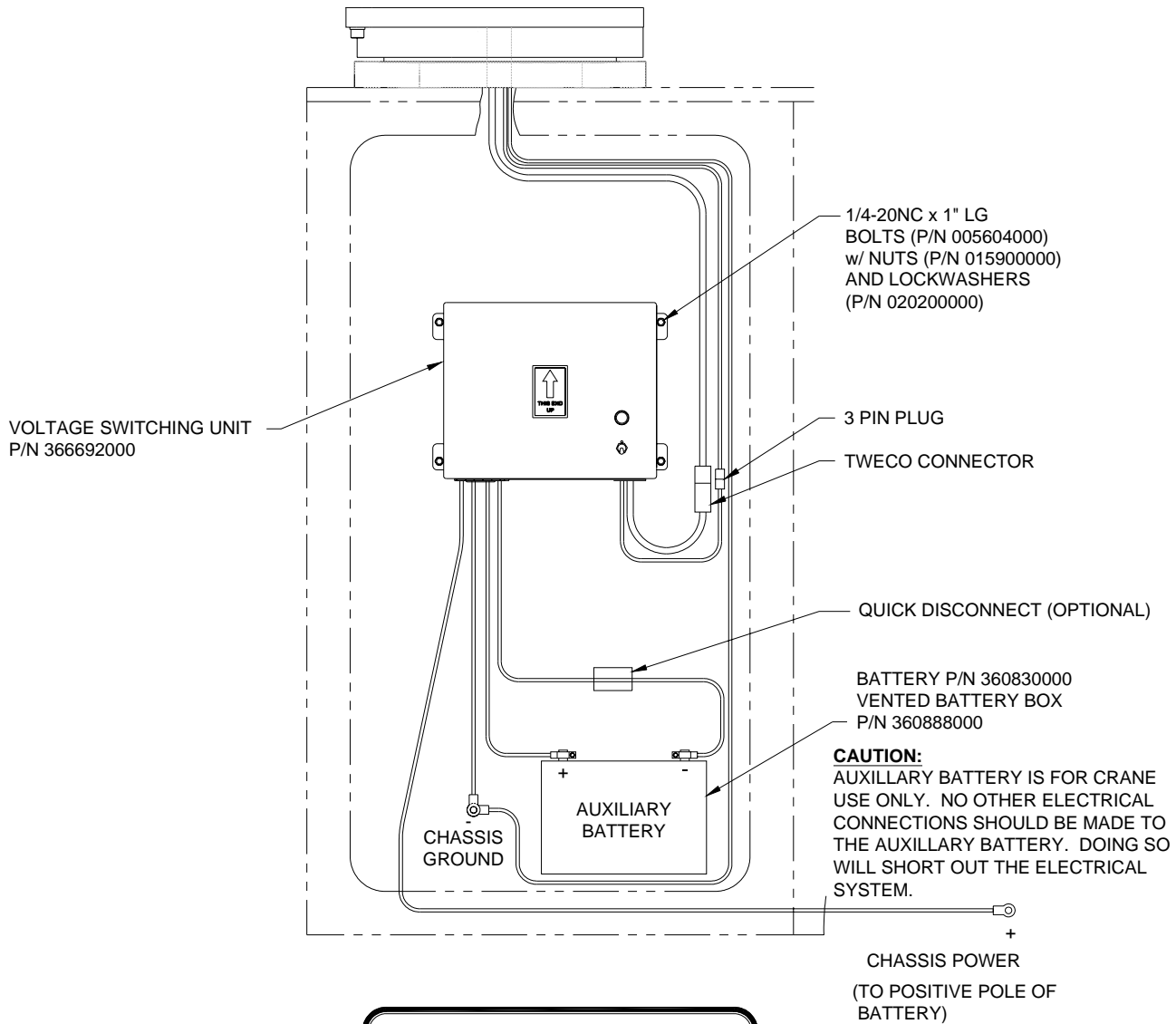
**FEDERAL LAW** (49 CFR PART 571) REQUIRES THAT THE FINAL STAGE MANUFACTURER OF A VEHICLE CERTIFY THAT HE VEHICLE COMPLIES WITH ALL APPLICABLE FEDERAL REGULATIONS. ANY MODIFICATIONS PERFORMED ON THE VEHICLE PRIOR TO THE FINAL STAGE ARE ALSO CONSIDERED INTERMEDIATE STAGE MANUFACTURING AND MUST BE CERTIFIED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

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



# 6006EH MOUNTING AND INSTALLATION

## W/O SLIP RING



**NOTICE:**

WE RECOMMEND REPLACING ANY  
NO-MAINTENANCE TRUCK BATTERY  
WITH A MAINTENANCE TYPE  
TRUCK BATTERY

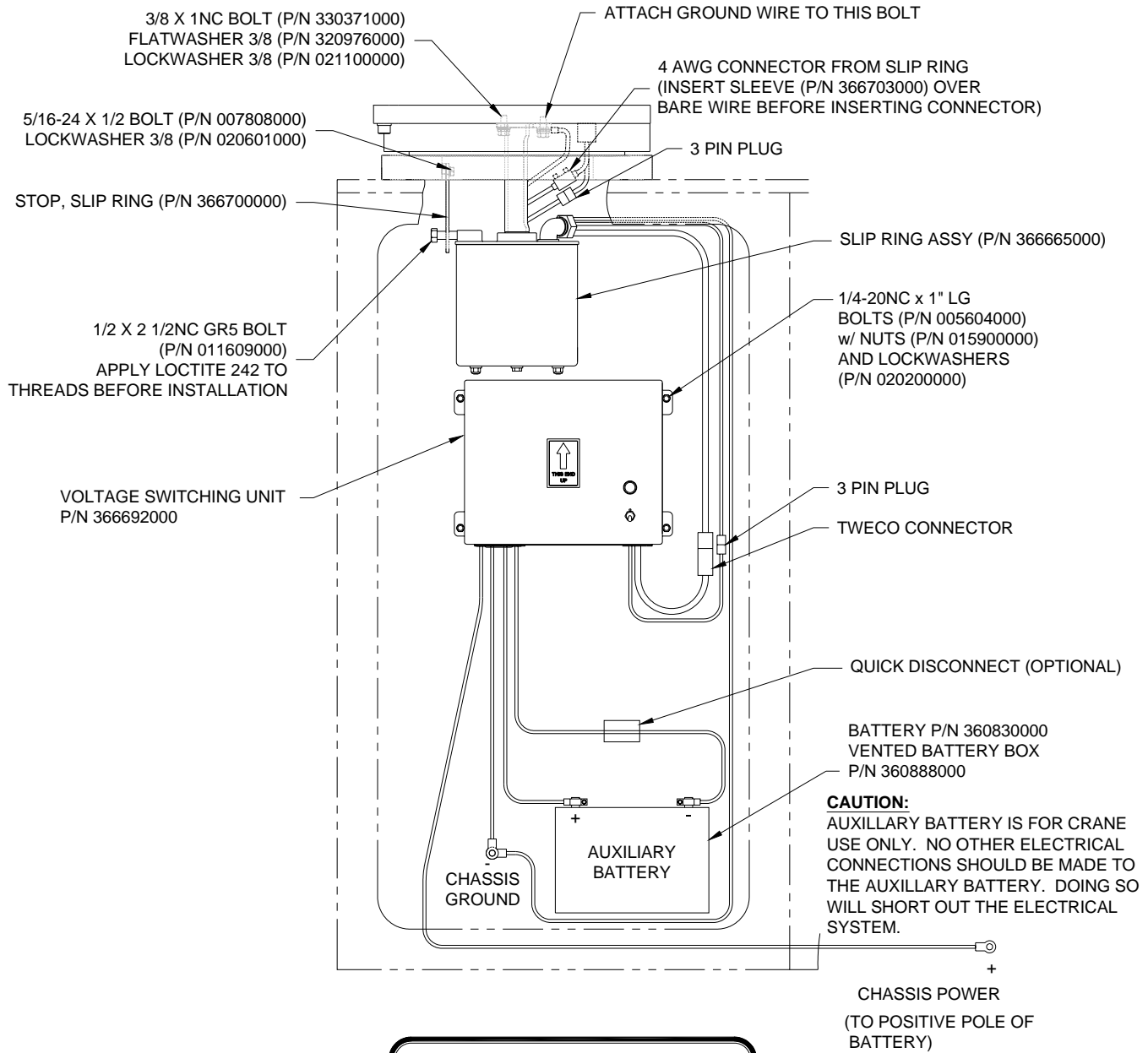
**NOTE:**

SEE ELECTRICAL SECTION  
FOR WIRING DIAGRAMS

# ***NOTES***

# 6006EH MOUNTING AND INSTALLATION

## WITH SLIP RING



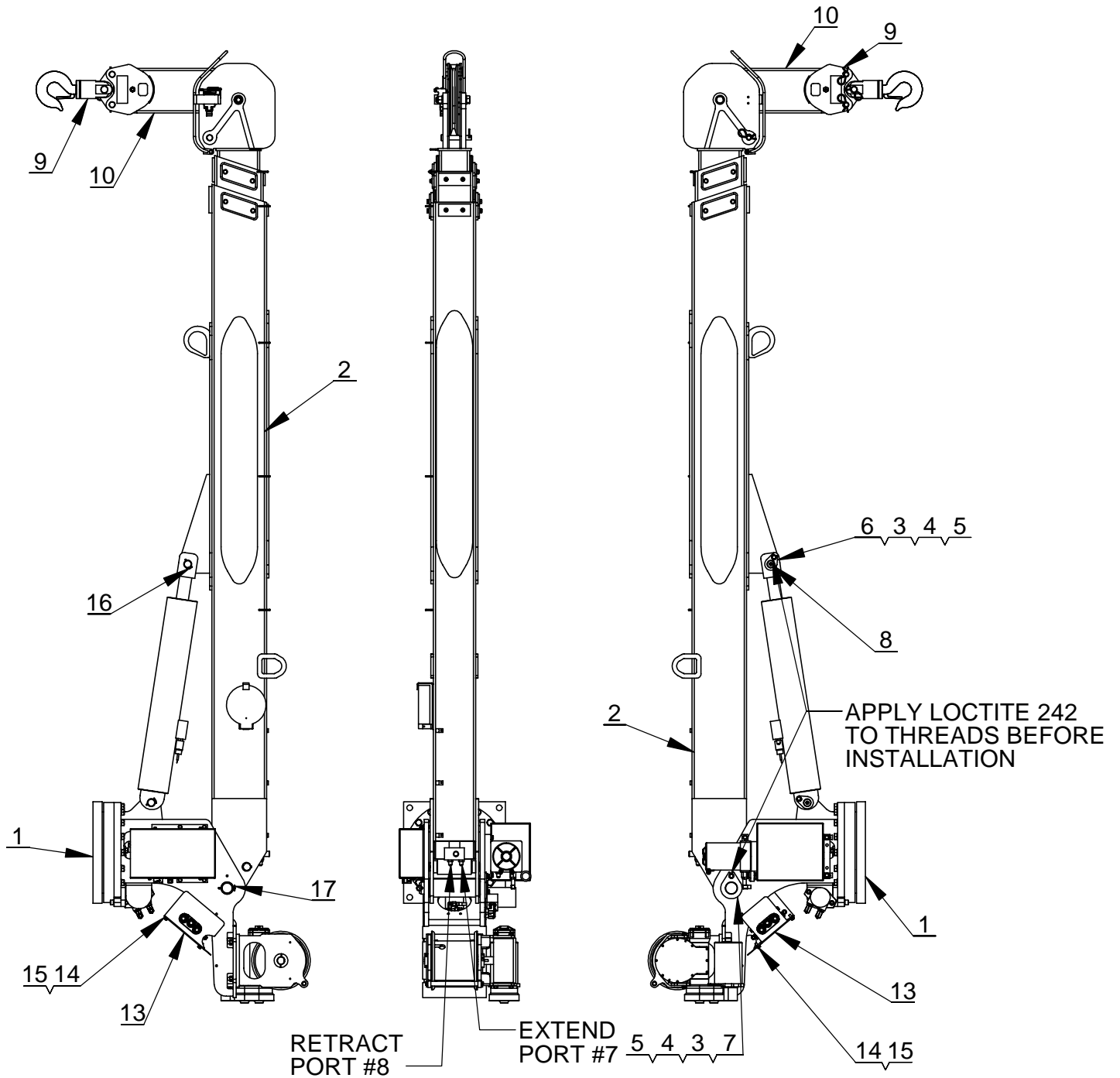
**NOTICE:**

WE RECOMMEND REPLACING ANY  
NO-MAINTENANCE TRUCK BATTERY  
WITH A MAINTENANCE TYPE  
TRUCK BATTERY

**NOTE:**

SEE ELECTRICAL SECTION  
FOR WIRING DIAGRAMS

# 6006EH GENERAL ASSEMBLY HARDWIRED W/SLIP RING – P/N: 366600000

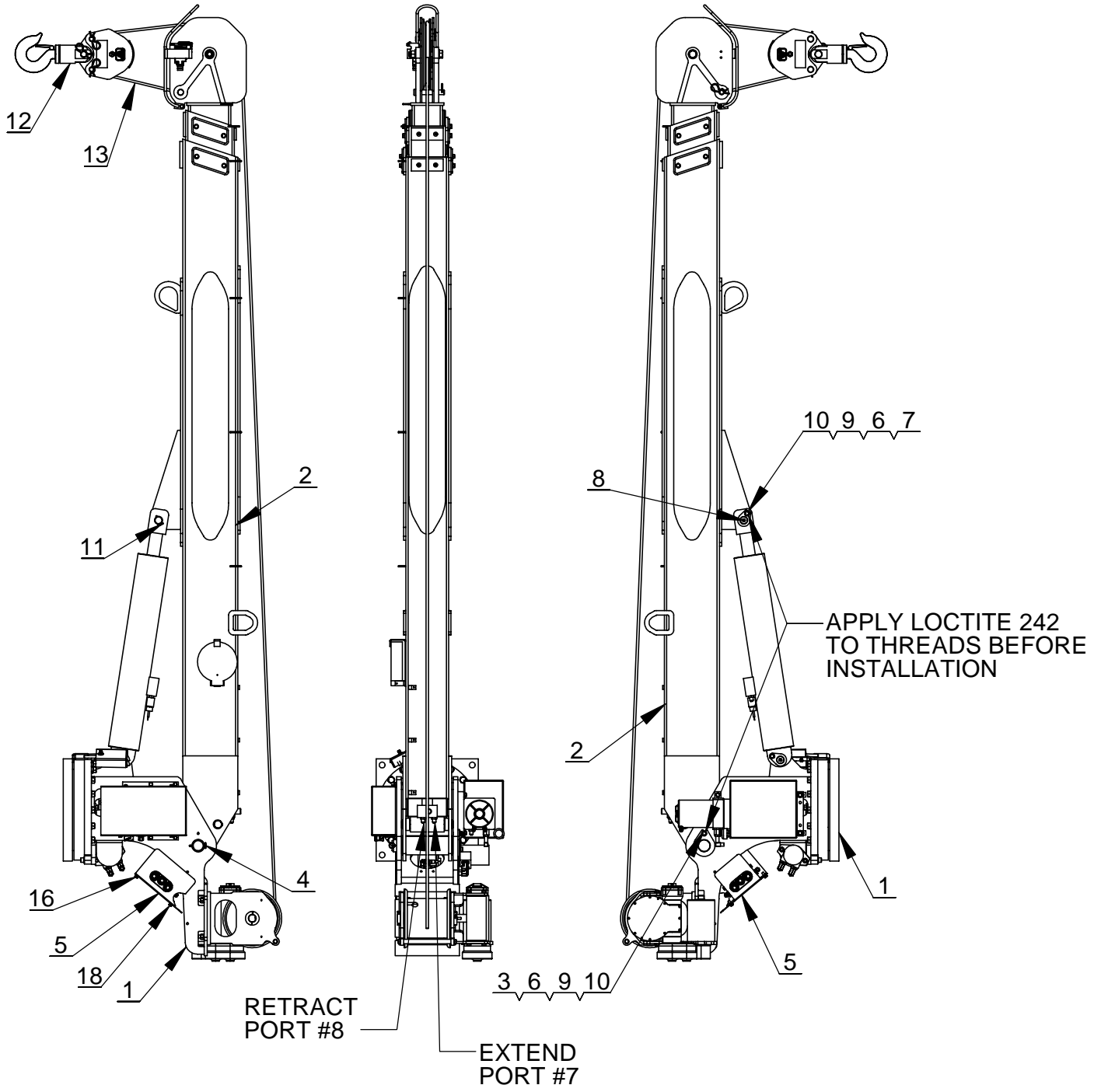


ELECTRICAL SCHEMATIC P/N: 366684000  
 HYDRAULIC SCHEMATIC P/N: 366785000

**6006EH GENERAL ASSEMBLY  
HARDWIRED W/SLIP RING – P/N: 366600000**

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	366640000	PEDESTAL ASSEMBLY
2	1	366630000	BOOM ASSEMBLY
3	2	320976000	WASHER, FLAT, 3/8 SAE HARDENED
4	2	021100000	WASHER SP LK 3/8
5	2	008702000	SCW HX 3/8-16 X 1 1/4 GR5
6	1	360676000	PIN, CYLINDER
7	1	360675000	PIN, BOOM PIVOT
8	1	239300000	ZERK, GREASE
9	1	366063000	TRAVELING BLOCK
10	1	480031000	WIRE ROPE ASSEMBLY 3/8"
11	1	366697000	SHIP KIT 6006EH CRANE
12	1	366704000	DECAL LAYOUT 6006EH
13	1	366688000	COVER, REAR
14	2	020601000	WASHER 5/16 LOCK
15	2	007807000	SCW HEX 5/16-18 3/4LG GR5
16	1	360678000	PIN, 3/16 COTTERLESS RING
17	1	360677000	PIN, 1/4 COTTERLESS RING
18	6	366718000	TRIM-LOK 75B3X1/8

# 6006EH GENERAL ASSEMBLY HARDWIRED W/O SLIP RING – P/N: 366780000

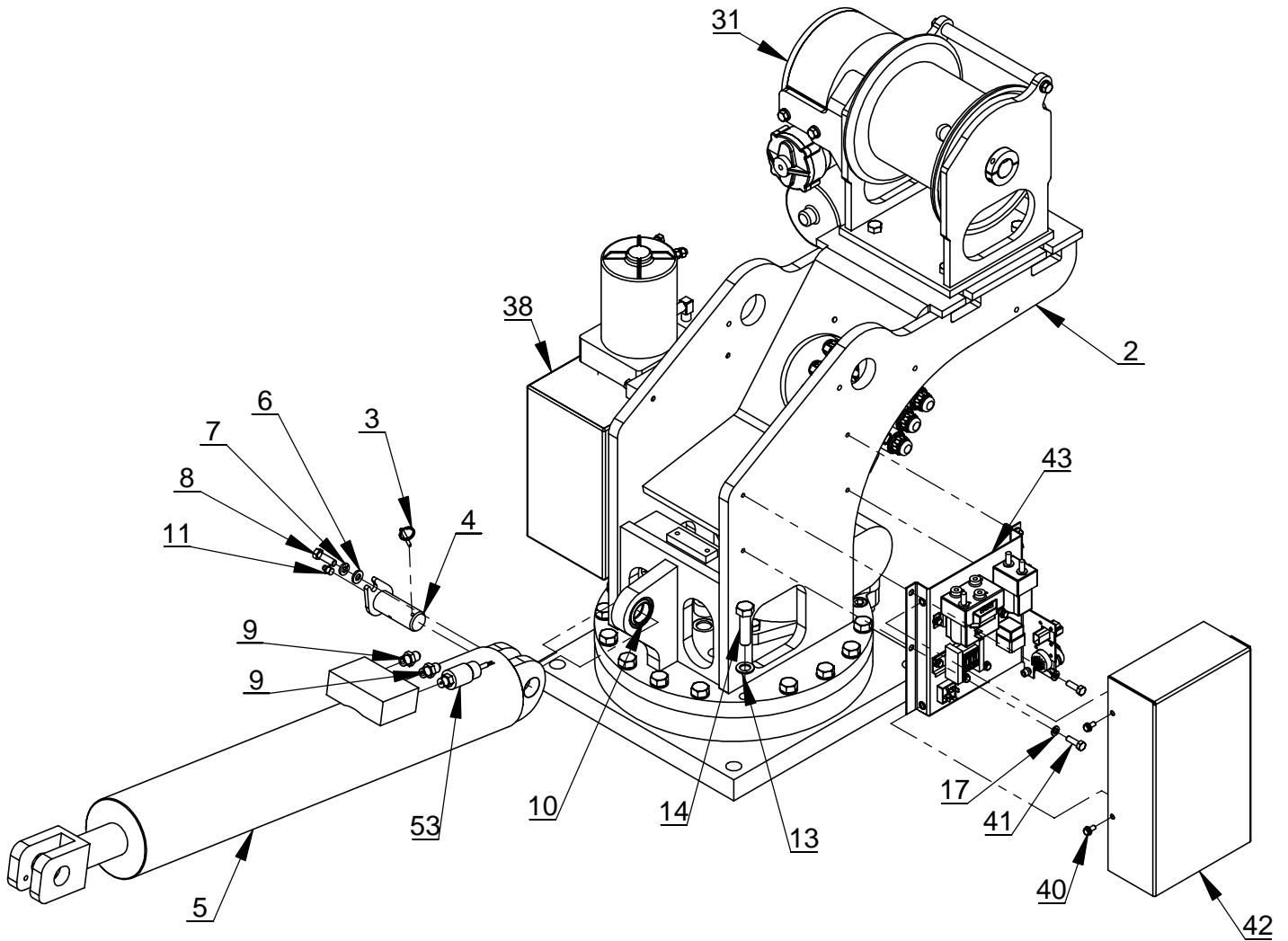


ELECTRICAL SCHEMATIC P/N: 366783000  
 HYDRAULIC SCHEMATIC P/N: 366785000

**6006EH GENERAL ASSEMBLY HARDWIRED  
W/O SLIP RING – P/N: 366780000**

TEM NO	QTY.	PART NO.	DESCRIPTION
1	1	366781000	PEDESTAL ASSEMBLY, 6006EH
2	1	366630000	BOOM ASSEMBLY
3	1	360675000	PIN, BOOM PIVOT
4	1	360677000	PIN, 1/4 COTTERLESS RING
5	1	366688000	COVER, REAR
6	2	008702000	SCREW HX HD 3/8-16UNC X 1 1/4 LG GR5
7	1	360676000	PIN, CYLINDER
8	1	239300000	ZERK, GREASE
9	2	021100000	WASHER SP LK 3/8
10	2	320976000	WASHER, FLAT, 3/8 SAE HARDENED
11	1	360678000	PIN, 3/16 COTTERLESS RING
12	1	366063000	TRAVELING BLOCK
13	1	480031000	WIRE ROPE ASSEMBLY 3/8"
14	1	366784000	SHIP KIT 6006EH CRANE
15	1	366704000	DECAL LAYOUT 6006EH
16	6	366718000	TRIM-LOK 75B3X1/8
17	2	020601000	WASHER SP LK 5/16
18	2	007807000	SCREW HX HD 5/16-18UNC X 3/4 LG GR5

# 6006EH PEDESTAL ASSEMBLY W/SLIP RING - P/N: 366640000

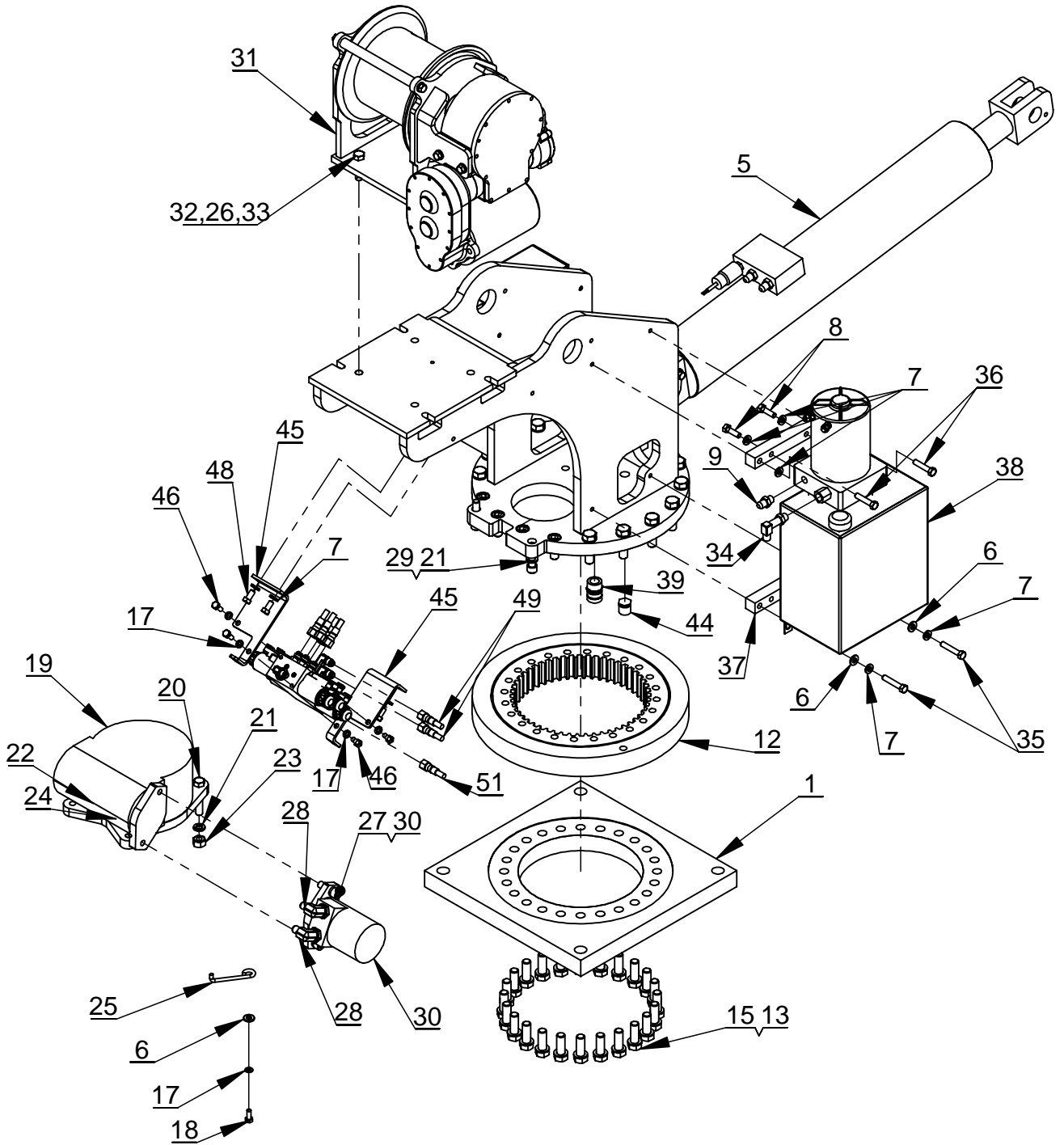


HYDRAULICS:  
 PORT B-1 RETRACT  
 PORT B-2 BOOM UP  
 PORT B-3 CCW REAR MOTOR  
 PORT A-1 EXTEND  
 PORT A-2 BOOM DOWN  
 PORT A-3 CC FRONT MOTOR

CYLINDER SEAL KIT: 366342001  
 C'BAL CARTRIDGE: 480188000



# 6006EH PEDESTAL ASSEMBLY W/SLIP RING - P/N: 366640000



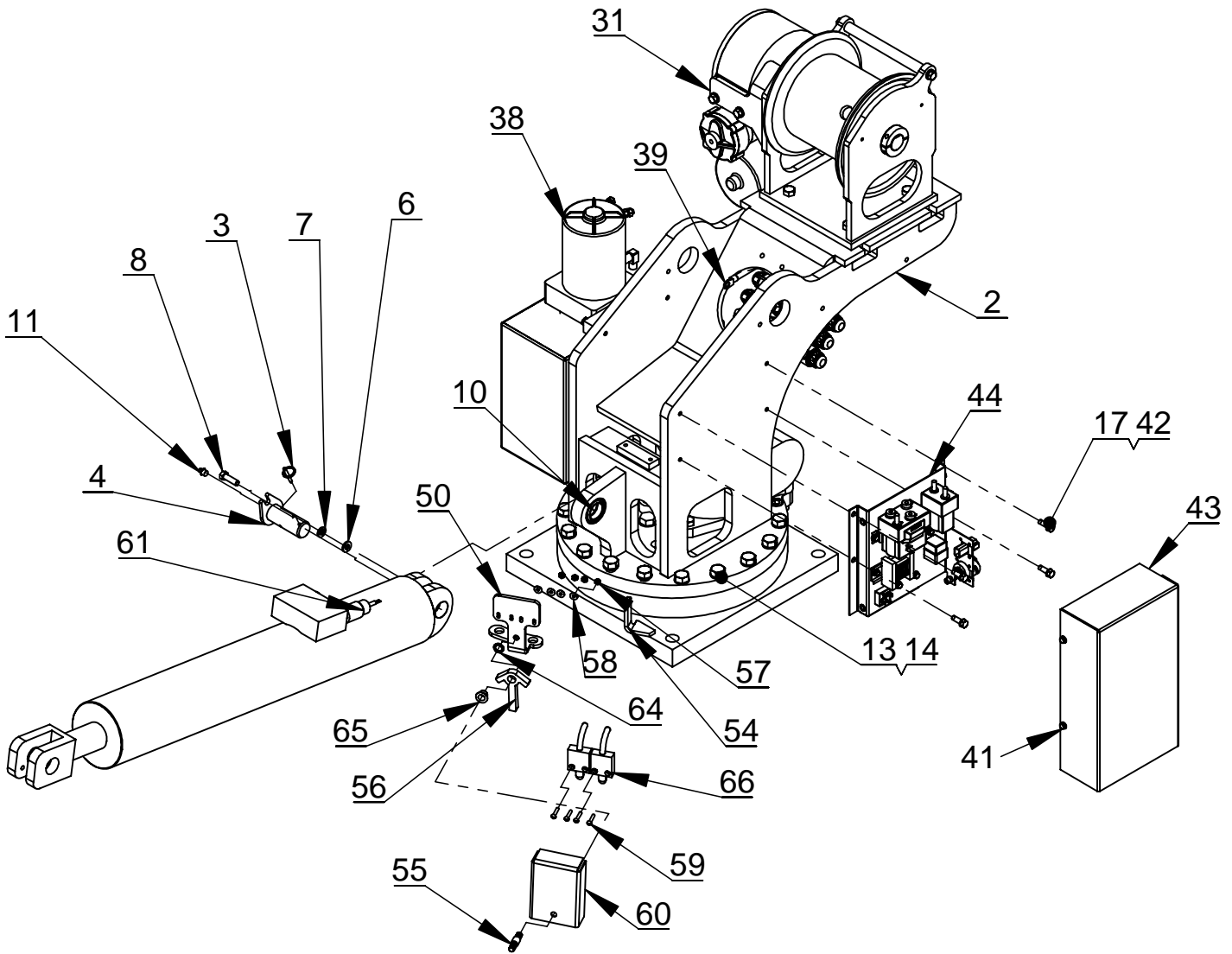
## **6006EH PEDESTAL ASSEMBLY W/SLIP RING - P/N: 366640000**

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	366641000	BASE PLATE WELDMENT
2	1	366642000	PEDESTAL WELDMENT
3	1	360678000	PIN, 3/16 COTTERLESS RING
4	1	360676000	PIN, CYLINDER
5	1	366652000	CYLINDER, LIFT
6	4	320976000	WASHER, FLAT, 3/8 SAE HARDENED
7	11	021100000	WASHER SP LK 3/8
8	3	008702000	SCW HX 3/8-16 X 1 1/4 GR5
9	3	200876000	FITTING 6 SAE/6 JIC STRAIGHT
10	1	366333000	BEARING, SPHERICAL 1.25 ID
11	1	239300000	ZERK, GREASE
12	1	480023002	BEARING, ROTATION
13	38	023902000	WASHER, 5/8 FLAT HARDENED
14	14	490171000	CAPSCREW 5/8-11 X 2.25 GR8
15	24	012198000	CAPSCREW 5/8-11 X 1.75 GR8
*16	4	006205000	SOC HD 5/8 X 1 1/4
17	9	020601000	WASHER 5/16 LOCK
18	1	007807000	SCW HEX 5/16-18 3/4LG GR5
19	1	160407000	GEAR BOX, ROTATION
20	2	011202000	SCW HX HD 1/2-20 X 2 3/4 GR5
21	8	021500000	WASHER SP LK 1/2
22	1	480011000	SEAL ROTATION BOX
23	2	017704000	NUT HX HVY 1/2 NF
24	1	360162000	RING, ECCENTRIC
25	1	360207000	RETAINER ECCENTRIC RING
26	2	021502000	WASHER SP/LK 1/2 HI COLLAR
27	2	012197000	SOC HD 1/2-13 X 1-1/2
28	2	490198000	FITTING 10SAE(M)/6JIC ELBOW 90
29	2	009118000	SOC HD 1/2 UNC X 2
30	1	366440000	ROTATION MOTOR
31	1	113001000	HOIST ASSEMBLY
32	4	011608000	SCW, 1/2-13 X 2 ZP GR5
33	4	017701000	NUT 1/2 NC
34	1	330645000	FITTING 90 6-SAE/6-JIC LONG
35	2	009116000	SCW HX 3/8 NC X 2 GR5
36	2	460113000	SCW, HEX 3/8-16 X 1-3/4 GR8
37	2	366651000	BAR, POWER UNIT MOUNT
38	1	366650000	HYDRAULIC POWER UNIT

## **6006EH PEDESTAL ASSEMBLY W/SLIP RING - P/N: 366640000**

ITEM NO.	QTY.	PART NO.	DESCRIPTION
39	1	366698000	CORD GRIP .375-.500 3/4" HUB
40	4	360493000	SCW WHIZ-LK 1/4NCX 1/2
41	4	007400000	SCW HEX 5/16-18 X 1 GR5
42	1	366687000	COVER, RELAY PANEL
43	1	366682000	RELAY PANEL ASSY
44	1	642908000	CORD CONNECTOR
45	2	366653000	BRACKET, VALVE MOUNT
46	4	330252000	SCW HX 5/16 NC X 3/4 GR5
47	1	320826000	VALVE ASSEMBLY PRX
48	4	008400000	SCW HX HD 3/8-16 UNC X 3/4 GR 5
*49	2	812026018	HOSE ASSY
*50	3	812026016	HOSE ASSY -4 HOSE -6 FEMALE JIC
*51	1	812026014	HOSE ASSY
*52	2	812026031	HOSE ASSY -4 HOSE -6 FEMALE JIC
53	1	480880000	LOAD SENSOR SWITCH, 2500 PSI
*	ITEM NOT SHOWN		

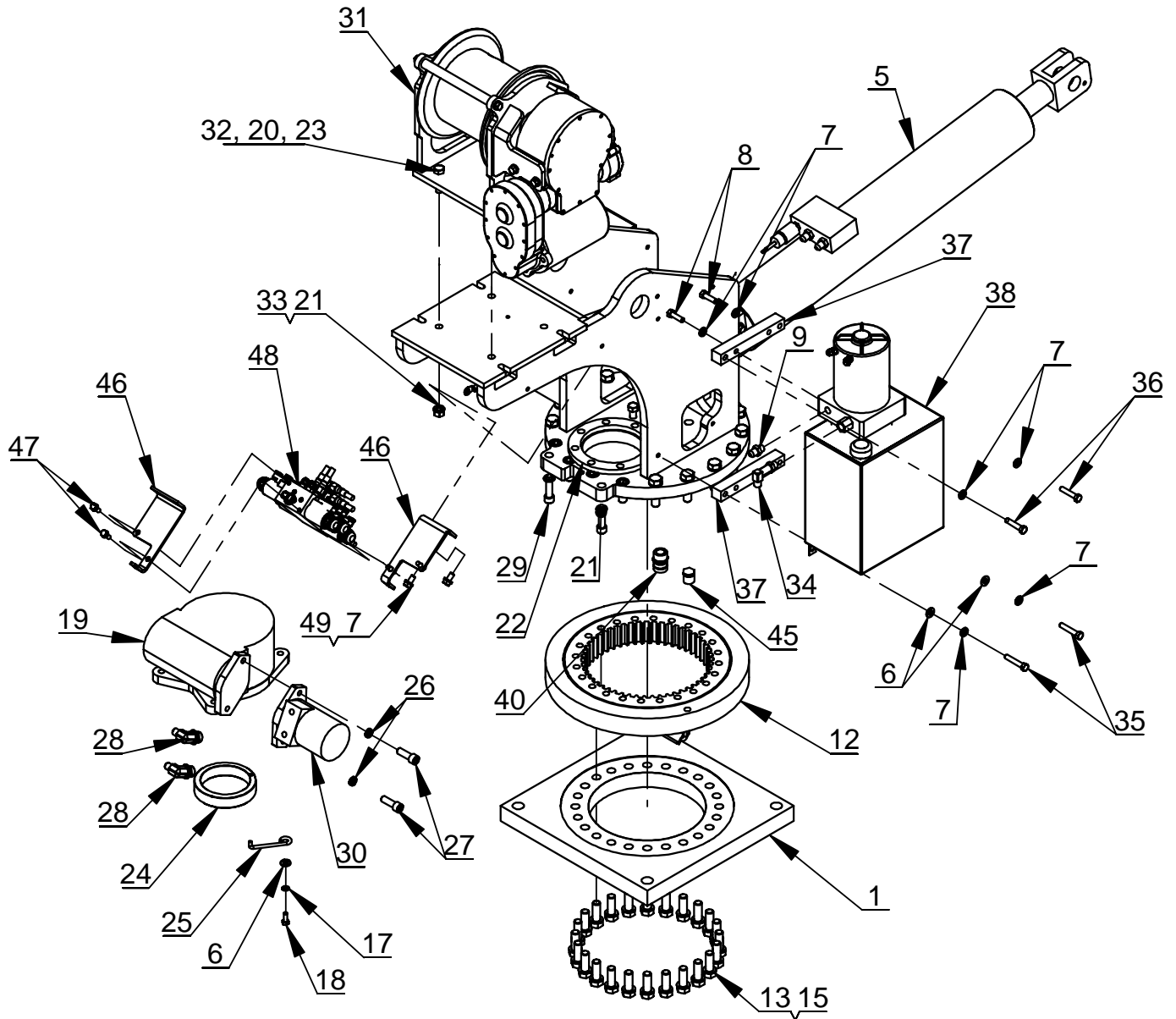
# 6006EH PEDESTAL ASSEMBLY W/O SLIP RING – P/N: 366781000



HYDRAULICS:  
 PORT B-1 RETRACT  
 PORT B-2 BOOM UP  
 PORT B-3 CCW REAR MOTOR  
 PORT A-1 EXTEND  
 PORT A-2 BOOM DOWN  
 PORT A-3 CC FRONT MOTOR

CYLINDER SEAL KIT: 366342001  
 C'BAL CARTRIDGE: 480188000

# 6006EH PEDESTAL ASSEMBLY W/O SLIP RING – P/N: 366781000



## **6006EH PEDESTAL ASSEMBLY W/O SLIP RING – P/N: 366781000**

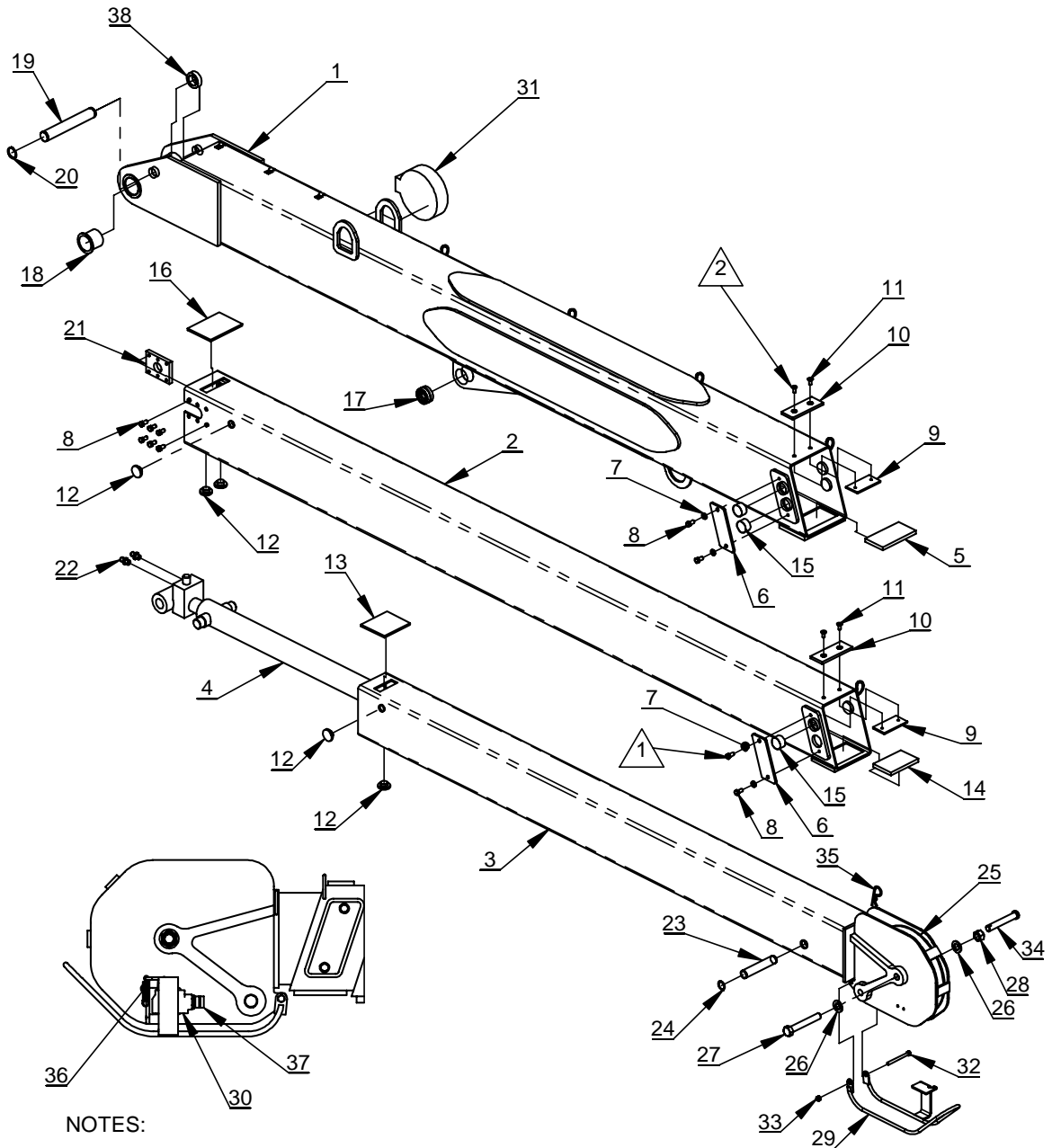
<b>TEM NO</b>	<b>QTY.</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1	1	366721000	BASE PLATE WELDMENT
2	1	366642000	PEDESTAL WELDMENT
3	1	360678000	PIN, 3/16 COTTERLESS RING
4	1	360676000	PIN, CYLINDER
5	1	366652000	CYLINDER, LIFT
6	4	320976000	WASHER, FLAT, 3/8 SAE HARDENED
7	11	021100000	WASHER SP LK 3/8
8	3	008702000	SCW HX 3/8-16 X 1 1/4 GR5
9	3	200876000	FITTING 6 SAE/6 JIC STRAIGHT
10	1	366333000	BEARING, SPHERICAL 1.25 ID
11	1	239300000	ZERK, GREASE
12	1	480023002	BEARING, ROTATION
13	38	023902000	WASHER, 5/8 FLAT HARDENED
14	14	490171000	CAPSCREW 5/8-11 X 2.25 GR8
15	24	012198000	CAPSCREW 5/8-11 X 1.75 GR8
16	4	006205000	SOC HD 5/8 X 1 1/4
17	9	020601000	WASHER 5/16 LOCK
18	1	007807000	SCW HEX 5/16-18 3/4LG GR5
19	1	160407000	GEAR BOX, ROTATION
20	2	011202000	SCW HX HD 1/2-20 X 2 3/4 GR5
21	8	021500000	WASHER SP LK 1/2
22	1	480011000	SEAL ROTATION BOX
23	2	017704000	NUT HX HVY 1/2 NF
24	1	360162000	RING, ECCENTRIC
25	1	360207000	RETAINER ECCENTRIC RING
26	2	021502000	WASHER SP/LK 1/2 HI COLLAR
27	2	012197000	SOC HD 1/2-13 X 1-1/2
28	2	490198000	FITTING 10SAE(M)/6JIC ELBOW 90
29	2	009118000	SOC HD 1/2 UNC X 2
30	1	366440000	ROTATION MOTOR
31	1	113001000	HOIST ASSEMBLY
32	4	011608000	SCW, 1/2-13 X 2 ZP GR5
33	4	017701000	NUT 1/2 NC
34	1	330645000	FITTING 90 6-SAE/6-JIC LONG
35	2	009116000	SCW HX 3/8 NC X 2 GR5
36	2	460113000	SCW, HEX 3/8-16 X 1-3/4 GR8
37	2	366651000	BAR, POWER UNIT MOUNT
38	1	366650000	HYDRAULIC POWER UNIT

**6006EH PEDESTAL ASSEMBLY  
W/O SLIP RING – P/N: 366781000**

ITEM NO	QTY.	PART NO.	DESCRIPTION
39	1	366509000	GROUND WIRE ASSY
40	1	366698000	CORD GRIP .375-.500 3/4" HUB
41	4	360493000	SCW WHIZ-LK 1/4NCX 1/2
42	4	007400000	SCW HEX 5/16-18 X 1 GR5
43	1	366687000	COVER, RELAY PANEL
44	1	366782000	MAIN WIRING HARNESS, 6006EH
45	1	642908000	CORD CONNECTOR
46	2	366653000	BRACKET, VALVE MOUNT
47	4	330252000	SCW HX 5/16 NC X 3/4 GR5
48	1	320826000	VALVE ASSEMBLY PRX
49	4	008400000	SCW HX HD 3/8-16 UNC X 3/4 GR 5
50	1	366672000	BRACKET, ROTATION STOP
*51	2	812026018	HOSE ASSY
*52	1	812026014	HOSE ASSY
*53	2	812026031	HOSE ASSY -4 HOSE -6 FEMALE JIC
54	1	366677000	STOP, ROTATION
55	1	366673000	PIN, ROTATION STOP
56	1	366671000	ARM, ROTATION STOP
57	4	015801000	NUT, #10-24 NYLON LOCK ZP
58	4	020000000	10 SAE FLAT WASHER
59	4	460093000	SCW #10-24 X 1 ZP
60	1	366676000	COVER, ROTATION STOP
61	1	480880000	LOAD SENSOR SWITCH, 2500 PSI
*62	1	330072000	FTG HYD 10MB-10MJ
63	1	367162000	FTG HYD 8MB-8MJ
64	1	366675000	WASHER, NYLON
65	1	460079000	BEARING, ROTATION STOP
66	1	460110000	ROTATION STOP SWITCH ASSEMBLY
*	NOT SHOWN		

# 6006EH BOOM ASSEMBLY

## P/N: 366630000



**NOTES:**

- 1 APPLY LOCTITE 609 TO BOLT THREADS, 12 PLCS BEFORE INSTALLING.
- 2 APPLY LOCTITE 242 TO BOLT THREADS, 4 PLCS BEFORE INSTALLING.

CYL SEAL KIT P/N: 366331001  
 C'BAL P/N: 360153001



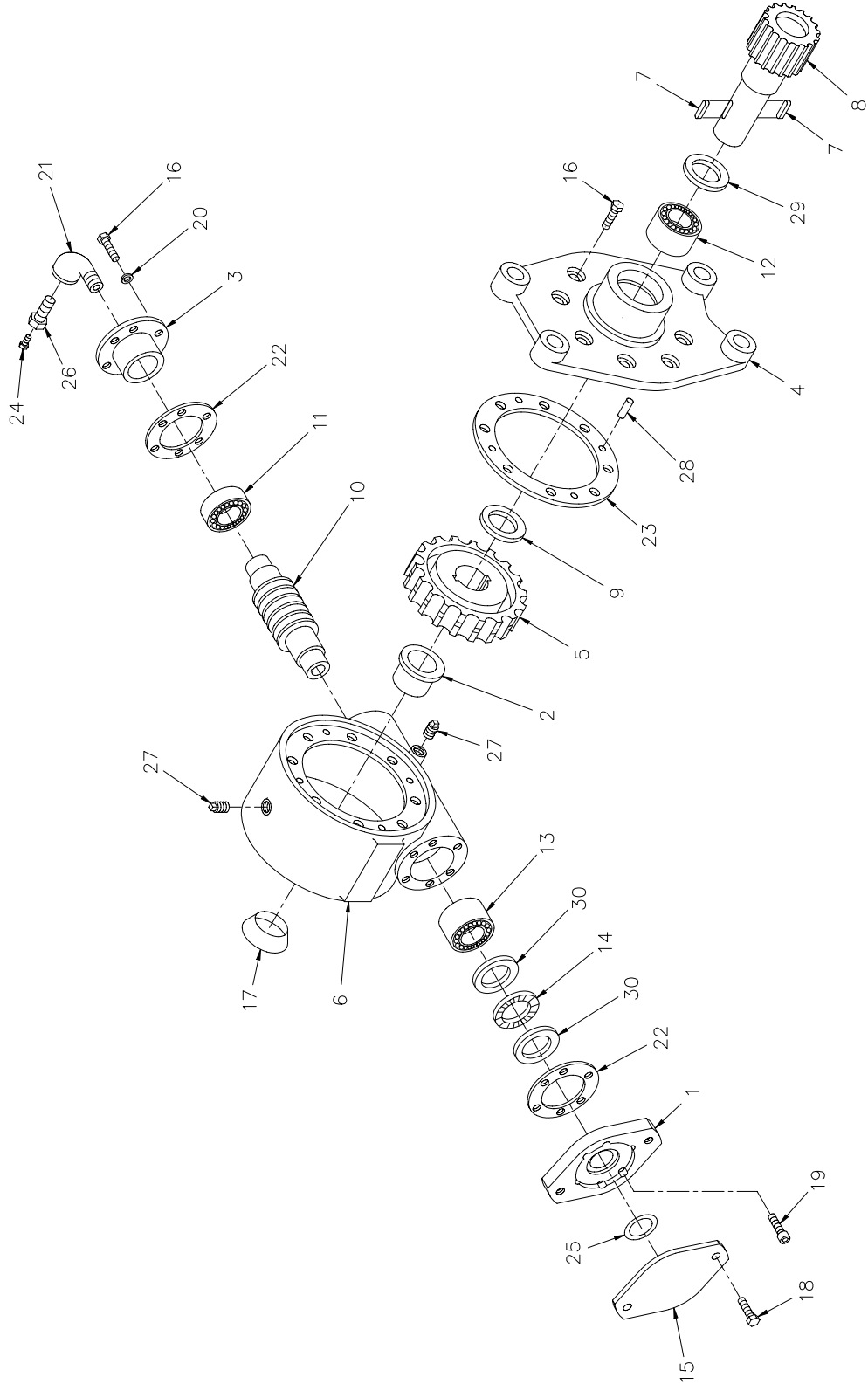
# 6006EH BOOM ASSEMBLY

## P/N: 366630000

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	366631000	LOWER BOOM WELDMENT
2	1	366632000	MID BOOM WELDMENT
3	1	366633000	UPPER BOOM WELDMENT
4	1	366331000	CYLINDER EXTENSION
5	1	366669000	WEAR PAD, BOTTOM MID
6	4	366696000	COVER, SIDE WEAR PAD
7	8	021100000	WASHER SP LK 3/8
8	20	008400000	SCREW HX HD 3/8-16UNC X 3/4 LG GR 5
9	2	460082000	PLATE, WEAR PAD RETAINER
10	2	460081000	WEAR PAD, CABLE
11	4	460083000	SCREW SOC HD CTRS NK 5/16-24UNF X 3/4 LG
12	7	360767000	PAD BOOM 1.5 O.D.
13	1	366647000	WEAR PAD, TOP UPPER
14	1	366648000	WEAR PAD, BOTTOM UPPER
15	6	366666000	WEAR PAD, SIDE
16	1	366667000	WEAR PAD, TOP MID
17	1	366333000	BEARING, SPHERICAL 1.25 ID
18	2	366394000	BEARING, PIVOT
19	1	366400000	PIN 1.25<MOD-DIAM> X 8.063
20	2	480029000	RING RETAINING
21	2	366184000	RETAINER EXTENSION CYLINDER
22	2	200876000	FITTING 6 SAE/6 JIC STRAIGHT
23	1	366493000	PIN 1<MOD-DIAM> X 5.03 LG
24	2	738734000	RING RETAINING 5100-100
25	1	366198000	SHEAVE ASSY 3/8
26	2	022102000	WASHER FL 3/4
27	1	014400000	SCREW HX HD 3/4-16UNF X 5 LG GR5
28	1	018600000	NUT HX NYLK 3/4-16UNF CP
29	1	360718000	BAIL WELDMENT
30	1	646900000	SWITCH, LIMIT ANTI-TWO BLOCK
31	1	360759000	CORD REEL ASSY
32	1	007803000	SCREW HX HD 5/16-18UNC X 3-1/2 LG GR5
33	1	016801000	NUT HX NYLK 5/16-18UNC CP
34	1	360125000	PIN, BLOCK
35	1	360124000	PIN HITCH
36	1	366678000	SPRING, EXTENSION
37	1	366694000	CORD GRIP .1875-.25 1/2 HUB
38	2	366706000	SPACER, EXTENSION CYLINDER

# 6006EH ROTATION GEARBOX

## P/N: 160407



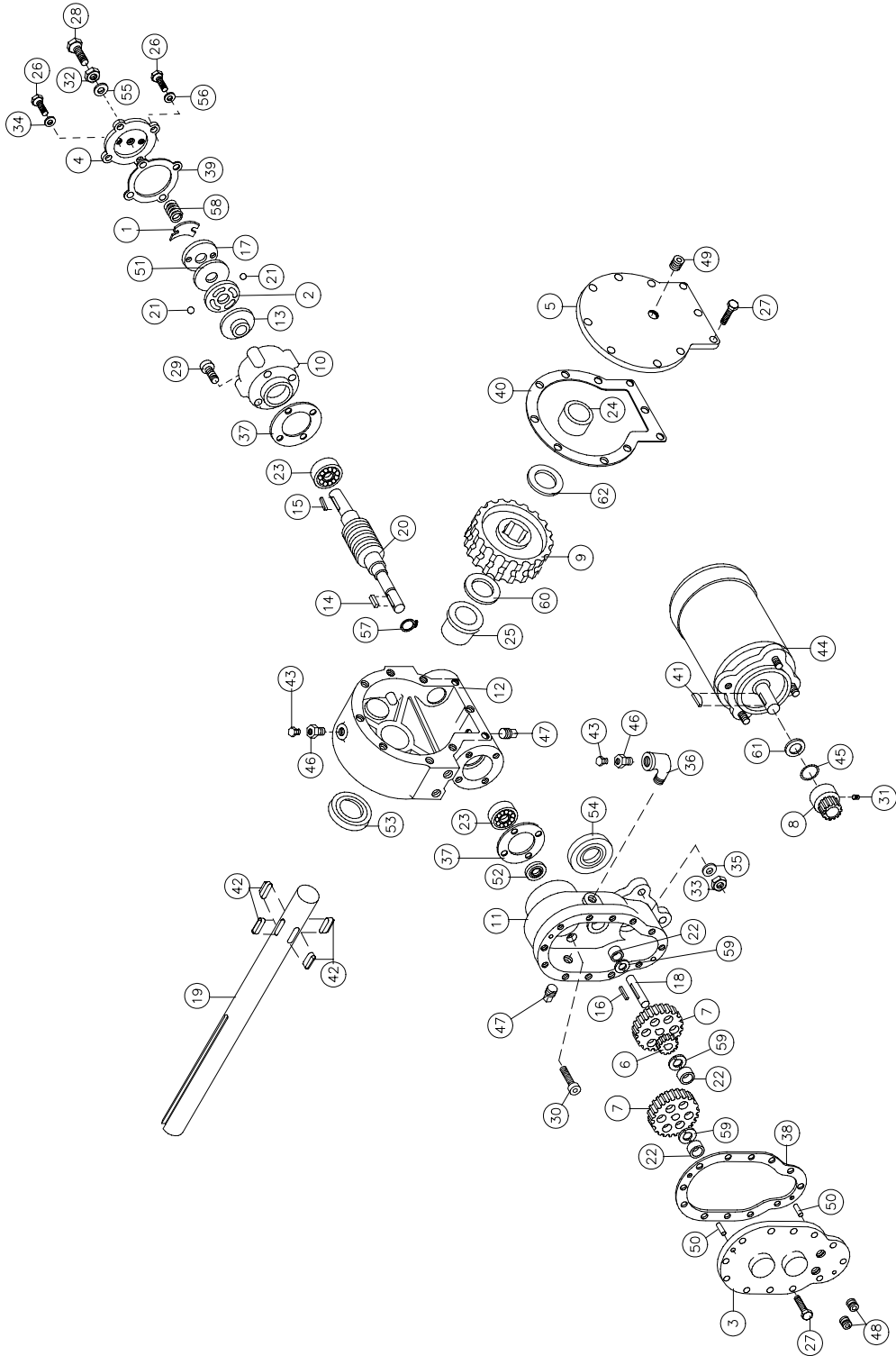
# 6006EH ROTATION GEARBOX

## P/N: 160407

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	300058	ADAPTER
2	1	308085	BUSHING
3	1	316092	CAP BEARING
4	1	328126	COVER
5	1	334016	GEAR R.H.
6	1	338261	HOUSING GEAR
7	2	342120	KEY
8	1	357139	SHAFT OUTPUT
9	1	366019	WASHER THRUST
10	1	368183	WORM R.H.
11	1	402044	BEARING BALL
12	1	402105	BEARING NEEDLE
13	1	402106	BEARING NEEDLE
14	1	402107	BEARING THRUST
15	1	413013	COVER
16	14	414146	SCREW HX HD 5/16 NC X 1 1/4 GR5 (NYLON HEAVY PATCH)
17	1	530101	PLUG - EXPANSION
18	2	414581	SCREW HX HD 1/2 NC X 3/4 GR5
19	6	414869	SCREW SOC HD 5/16 NC X 1
20	6	418163	WASHER LK 5/16 MED SECT
21	1	432011	ELL 90 DEG
22	2	442182	GASKET
23	1	442187	GASKET
24	1	456008	FITTING RELIEF
25	1	462029	O-RING
26	1	468002	REDUCER
27	2	468018	PLUG PIPE
28	4	470062	PIN DOWEL
29	1	486071	SEAL OIL
30	2	518026	WASHER THRUST

# 6006EH ACTUATOR ASSEMBLY

## P/N: 297025



# 6006EH ACTUATOR ASSEMBLY

## P/N: 297025

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	306034	SPRING - FLAT
2	1	314008	PLATE - CAM
3	1	328106	COVER - SPUR GEAR HSG.
4	1	328128	COVER - BRAKE
5	1	328134	COVER - WORM GEAR HSG.
6	1	334001	IDLER GEAR
7	2	334003	SPUR GEAR
8	1	334129	PINION GEAR
9	1	334163	GEAR - WORM., R.H.
10	1	338007	HOUSING - BRAKE
11	1	338203	SPUR GEAR HOUSING
12	1	338273	GEAR HOUSING
13	1	340002	HUB - BRAKE
14	1	342023	KEY - SQ. END
15	1	342027	KEY - RD. END
16	1	342033	KEY - SQ. END
17	1	352022	PLATE - RETAINER
18	1	356901	SHAFT - SPUR
19	1	357145	SHAFT - OUTPUT
20	1	368022	WORM - R.H. 46:1
21	2	400003	BALL
22	3	402001	BEARING - NEEDLE
23	2	402002	BEARING - BALL
24	1	412044	BUSHING - COVER
25	1	412045	BUSHING - HOUSING
26	6	414021	SCW HH 1/4-20 X 1 GR 5 NYLOK HVY PATCH
27	22	414038	SCW HH 1/4-20 X 3/4 GR 5
28	1	414224	SCW HH 3/8-16 X 1-1/2 GR 5 FULL THD
29	4	414821	SCW BTN HD SOC 1/4-20 X 7/8
30	4	414845	SCW 1/4-20 X 1 SOC HD LOC-WEL
31	1	416029	SETSCREW
32	1	418036	NUT JAM 3/8-16
33	3	418040	NUT 3/8-24
34	2	418154	WASHER 1/4 FLAT ALUM.
35	3	418177	LOCKWASHER
36	1	432011	ELBOW 90 DEGREE

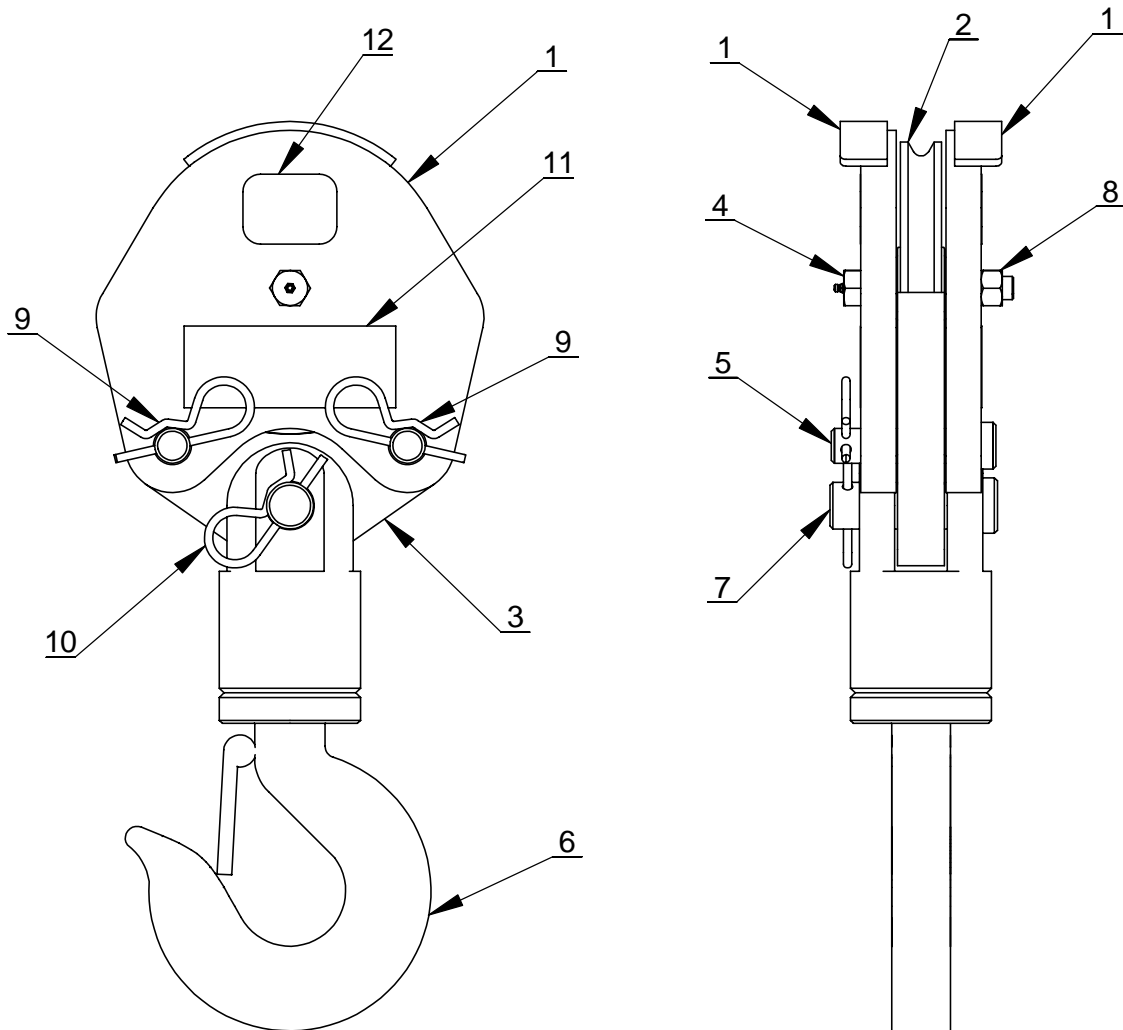
# 6006EH ACTUATOR ASSEMBLY

## P/N: 297025

ITEM NO.	QTY.	PART NO.	DESCRIPTION
37	2	442184	GASKET
38	1	442185	GASKET
39	1	442189	GASKET
40	1	442205	GASKET
41	1	450001	KEY - WOODRUFF
42	4	450016	KEY - BARTH
43	2	456008	RELIEF FITTING
44	1	458005	MOTOR - 24V
45	1	462015	O-RING
46	2	468002	REDUCER
47	2	468011	PIPE PLUG SQ HD
48	2	468017	PIPE PLUG SOC HD
49	1	468018	PIPE PLUG SOC HD
50	2	470001	PIN
51	1	474001	PLATE - THRUST
52	1	486009	OIL SEAL
53	1	486017	OIL SEAL
54	1	486023	OIL SEAL
55	1	486069	THREAD SEAL
56	4	486070	THREAD SEAL
57	1	490003	SNAP RING
58	1	494007	SPRING
59	3	518002	THRUST WASHER
60	1	518015	THRUST WASHER
61	1	518018	FIBER WASHER
62	1	518040	WASHER - THRUST

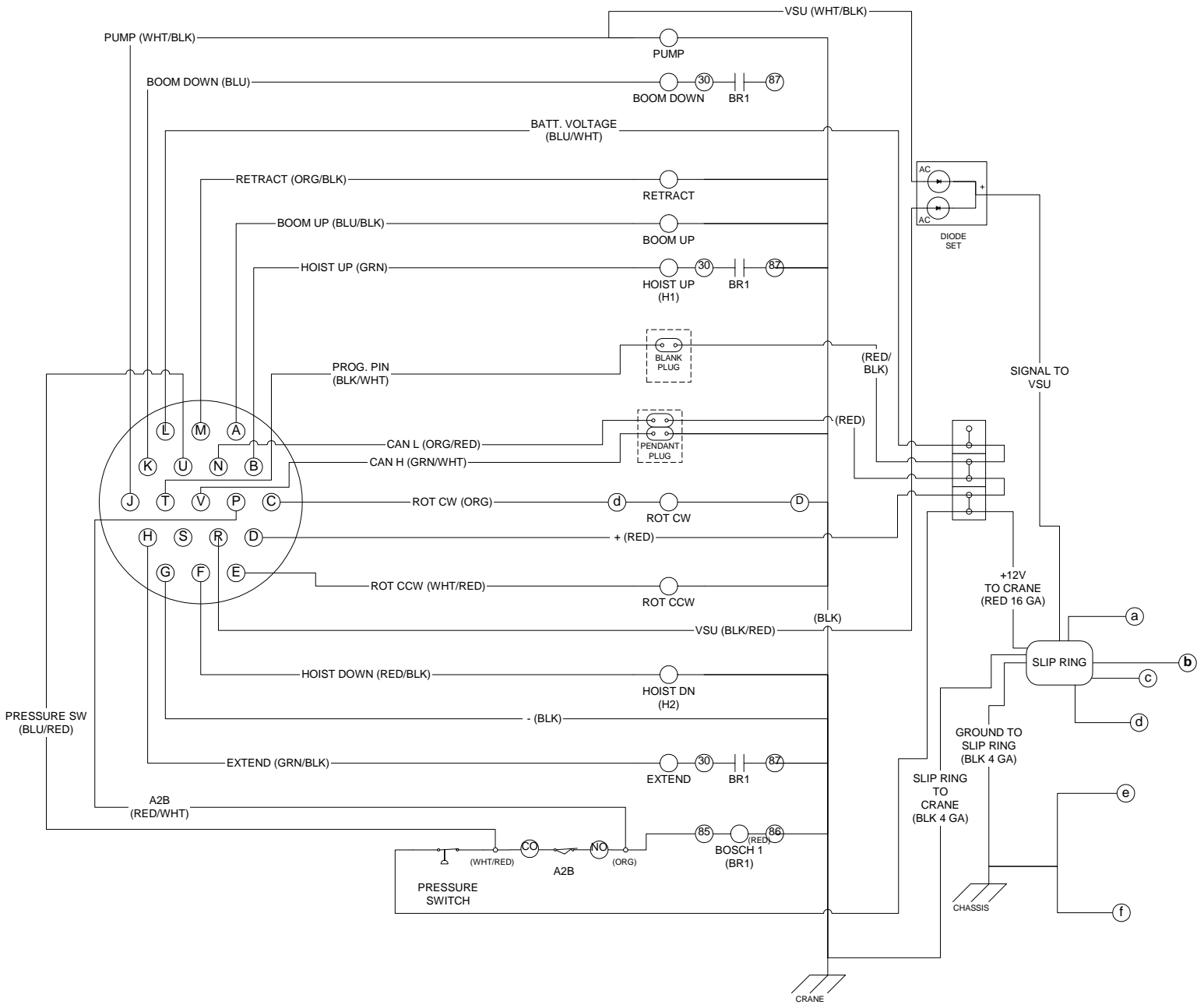
# 6006EH TRAVELING BLOCK ASSEMBLY

## P/N: 366063000



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	480362000	SHORT BLOCK SIDE PL WDMT
2	1	480130000	SHEAVE ASSY
3	1	480364000	TACKLE LOWER
4	1	480372000	BOLT, SHEAVE W/ ZERK FITTING
5	2	480367000	PIN BLOCK
6	1	480371000	HOOK SWIVEL 3 METRIC TON
7	1	480368000	PIN SWIVEL HOOK
8	1	017800000	NUT, HEX-LOCK 1/2-20 NF
9	2	366813000	PIN HITCH
10	1	360124000	PIN HITCH
11	2	040518000	DECAL STAY CLEAR OF LOAD
12	2	366036100	DECAL, TRAVELING BLOCK 6006H (SHORT)

# 6006EH ELECTRICAL SCHEMATIC, W/SLIP RING – P/N:366684000

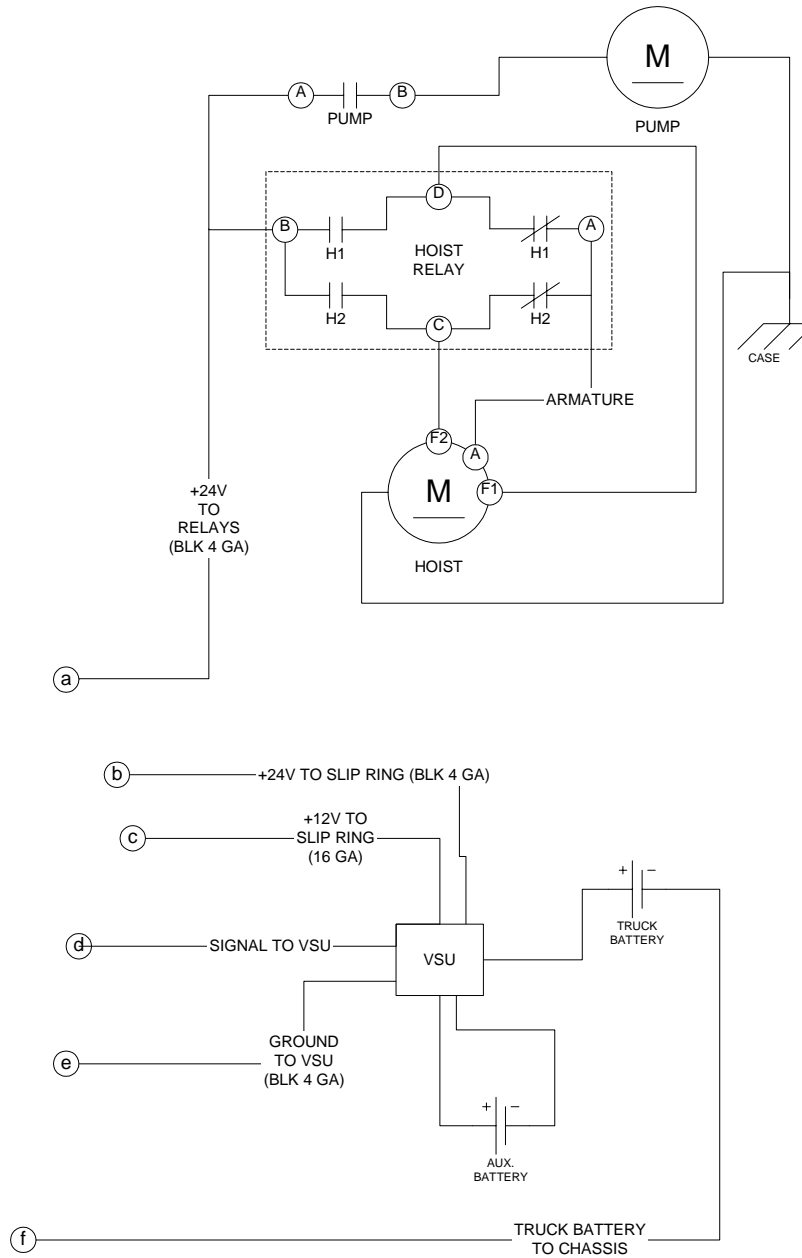


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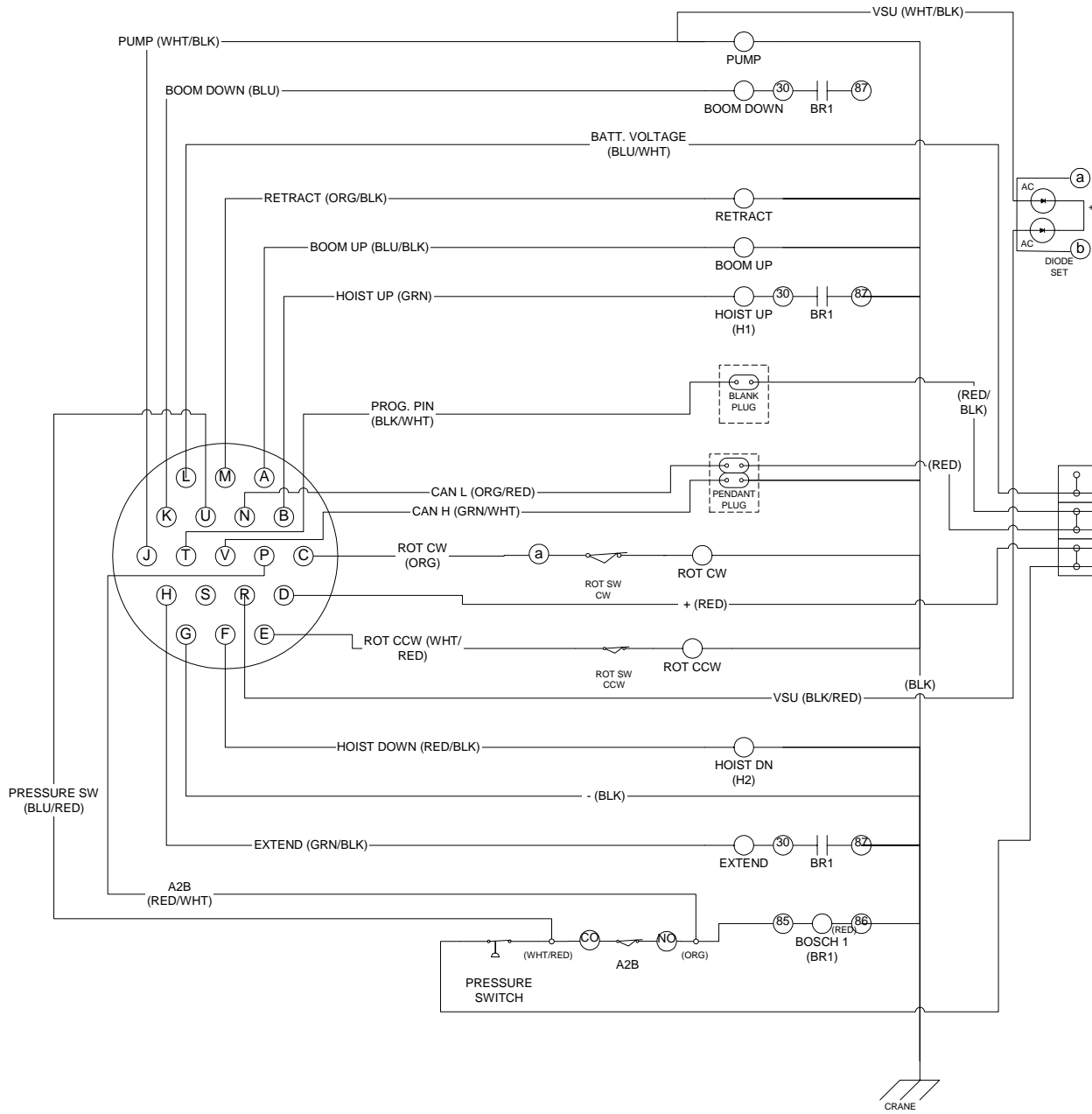


# 6006EH ELECTRICAL SCHEMATIC, W/SLIP RING – P/N:366684000

LEFT SIDE OF SCHEMATIC ON PREVIOUS PAGE



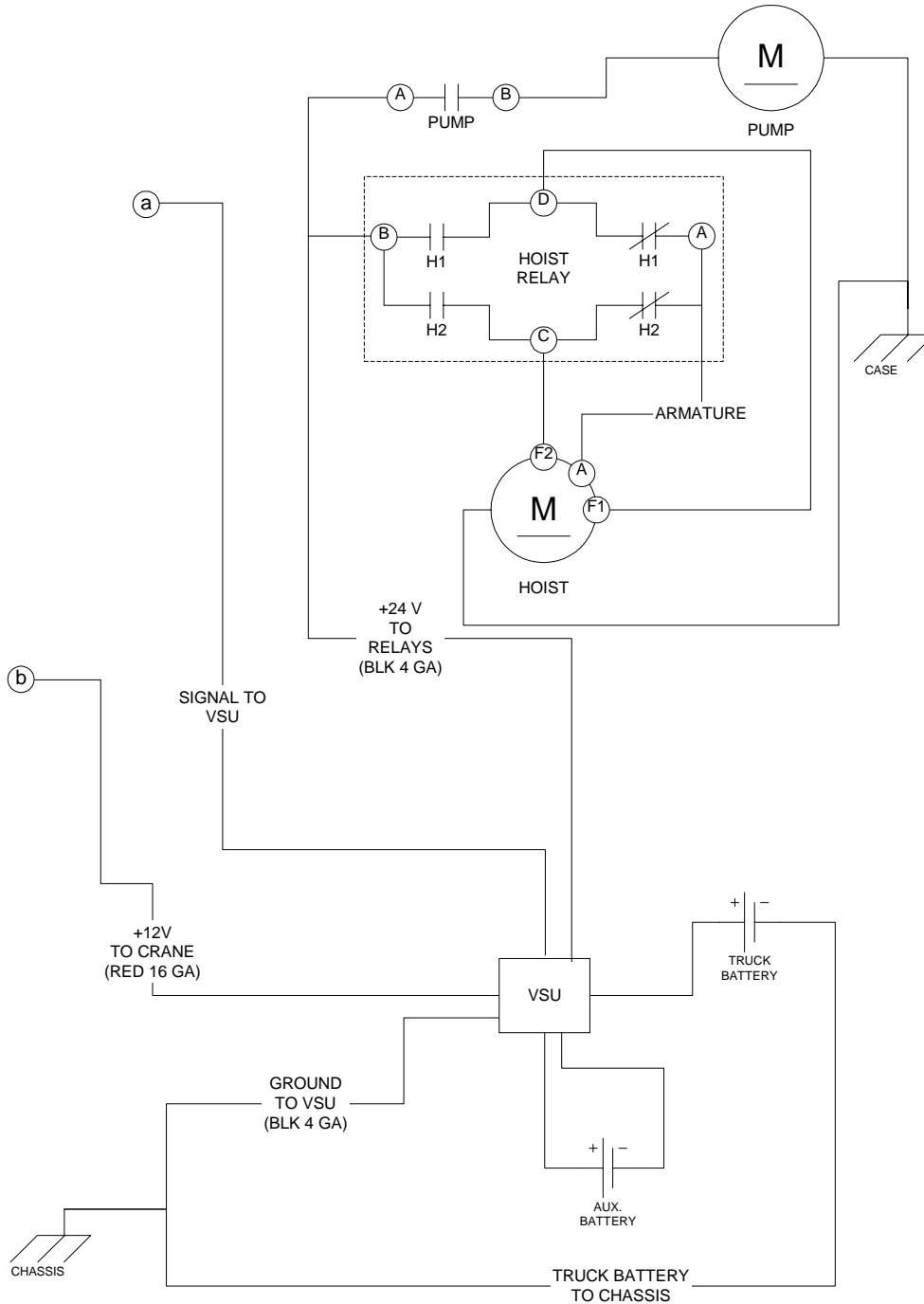
# 6006EH ELECTRICAL SCHEMATIC W/O SLIP RING - P/N: 366783000



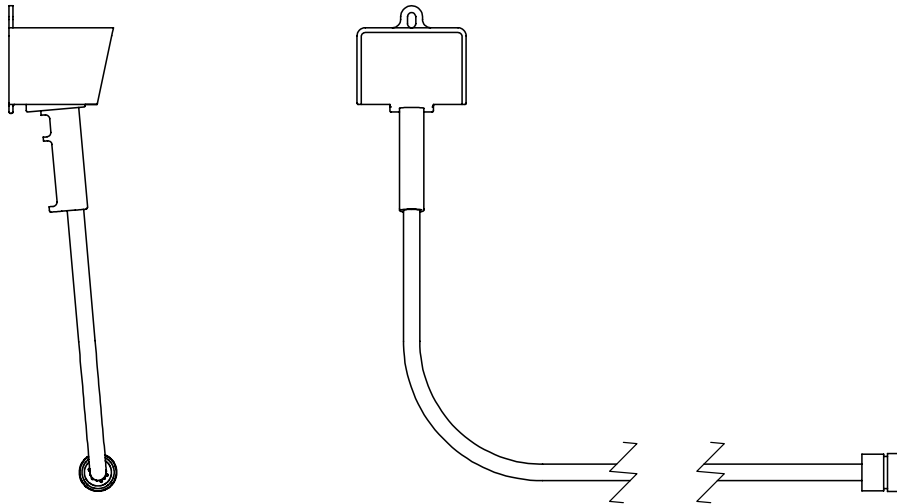
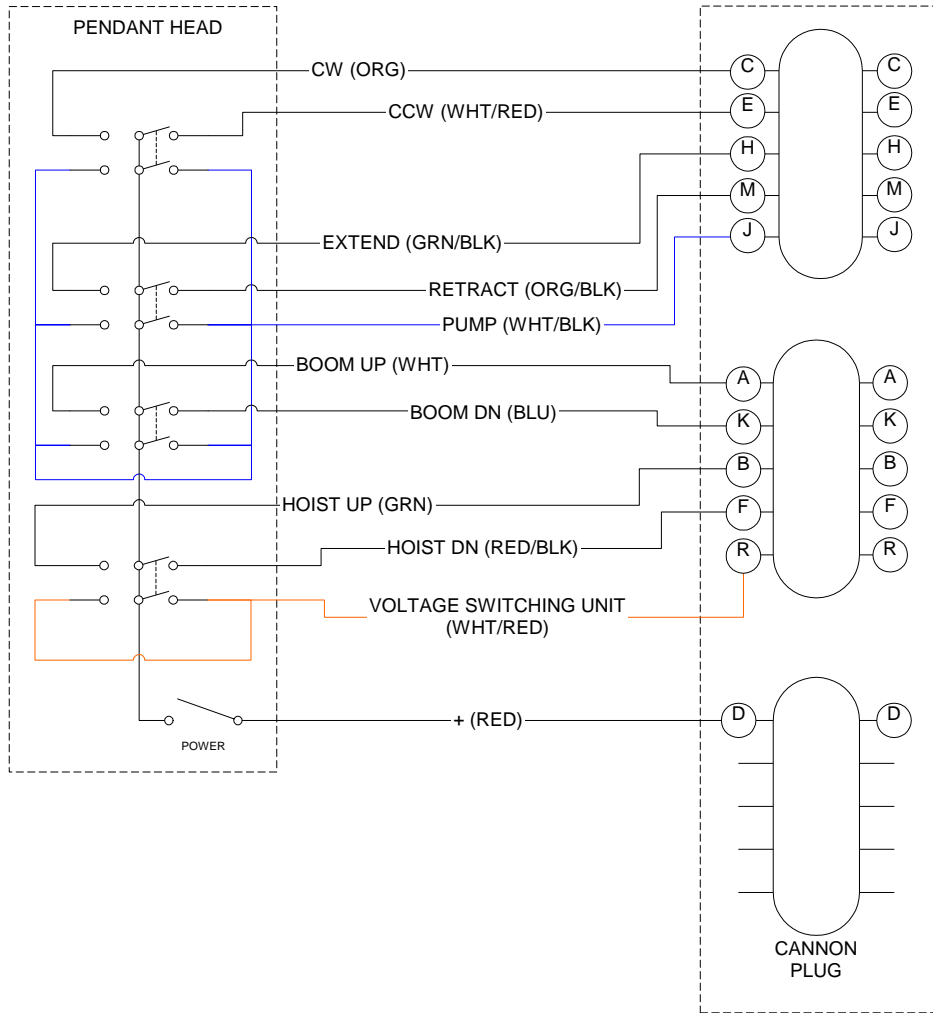
**RIGHT SIDE OF SCHEMATIC CONTINUED ON NEXT PAGE**

# 6006EH ELECTRICAL SCHEMATIC W/O SLIP RING - P/N: 366783000

LEFT SIDE OF SCHEMATIC CONTINUED ON PREVIOUS PAGE

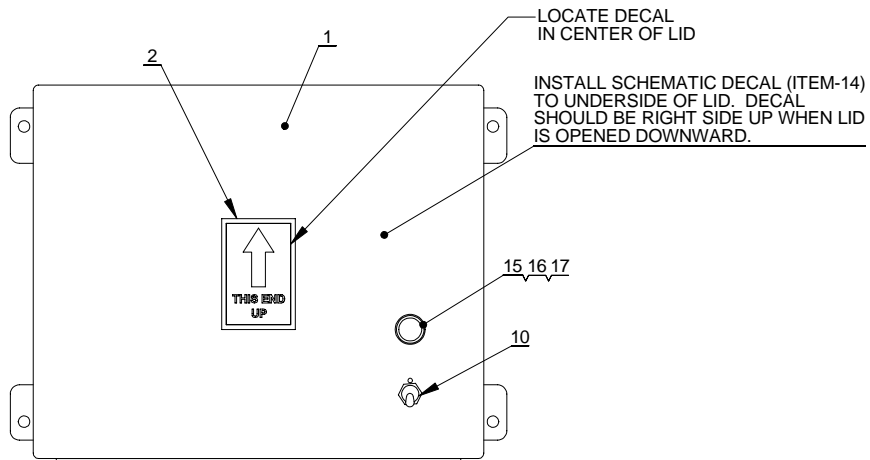
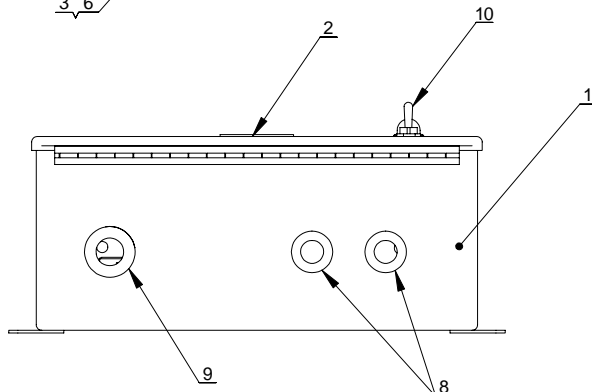
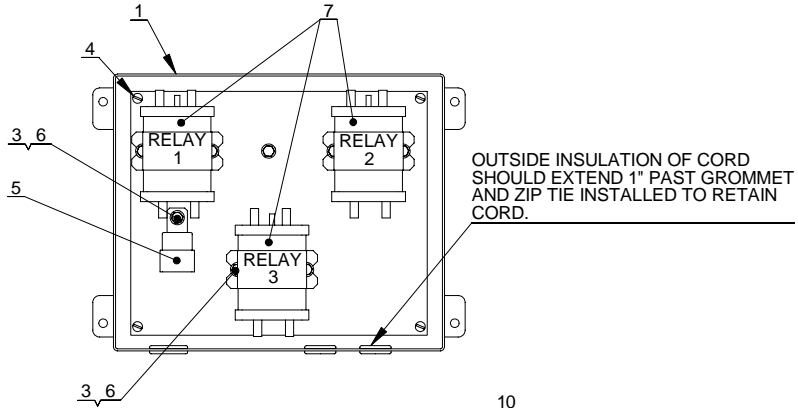


# 6006EH PENDANT 8 FUNCTION W/ ON/OFF SWITCH - P/N: 366709000



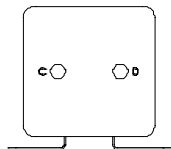
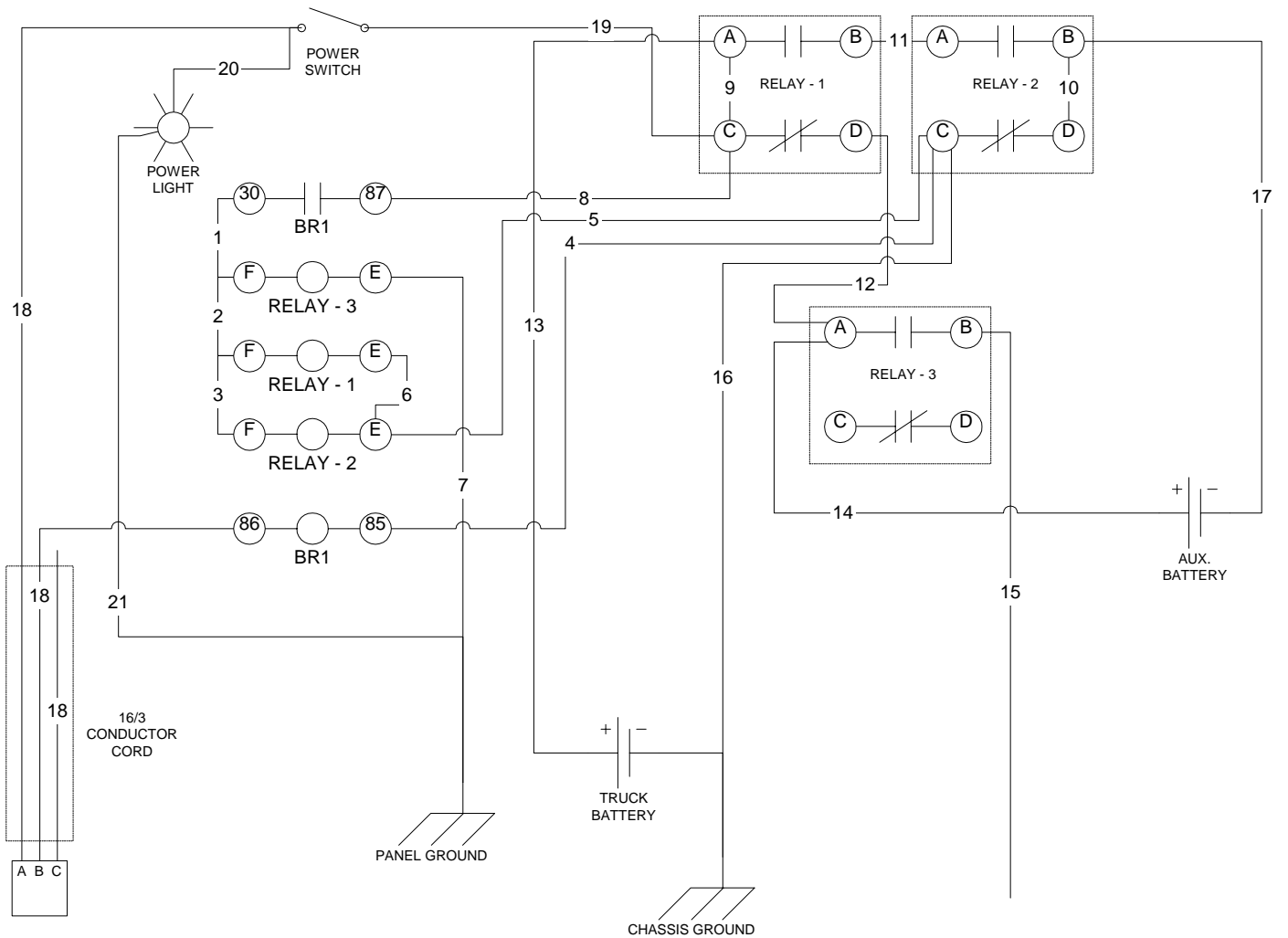
# 6006EH VOLTAGE SWITCHING UNIT

## P/N: 366692000

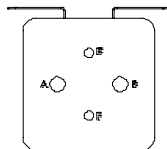


# 6006EH VOLTAGE SWITCHING UNIT

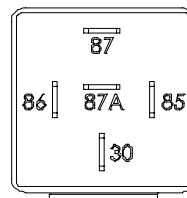
## P/N: 366692000



LARGE RELAY  
BOTTOM VIEW



LARGE RELAY  
TOP VIEW



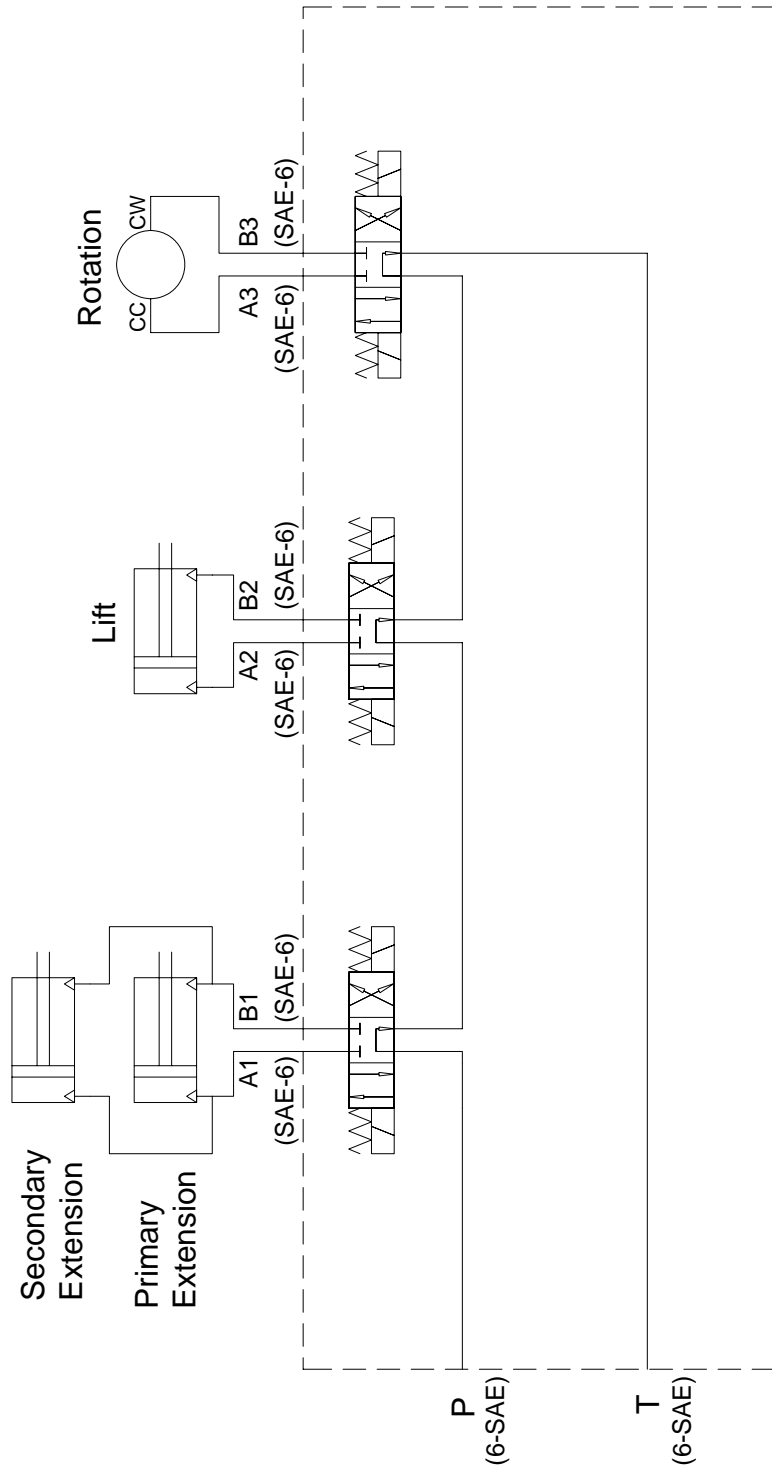
BOSCH RELAY  
BOTTOM VIEW

**6006EH VOLTAGE SWITCHING UNIT**  
**P/N: 366692000**

TEM NO	QTY.	PART NO.	DESCRIPTION
1	1	366693000	ENCLOSURE, VOLTAGE SWITCHING UNIT
2	1	367242001	DECAL, THIS END UP
3	8	736272000	NUTSERT .25UNC X .027-.165 GRIP
4	4	001900000	SCREW RD HD #10 x 3/8NF
5	1	320355000	RELAY, BOSCH
6	8	360493000	SCW WHIZ-LK 1/4NCX 1/2
7	3	404167000	SOLENOID, SEALED
8	2	750169000	GROMMET, RUBBER
9	1	750282000	GROMMET, RUBBER
10	1	750090000	TOGGLE SWITCH (ON-ON)
*11	1	360763001	HOUSING DEUTSCH 3-PIN
*12	1	360763002	WEDGE, DEUTSCH 3-PIN
*13	3	366367003	CONTACT, DEUTSCH SOCKET
14	1	366705000	DECAL, VSU SCHEMATIC
15	1	750171000	LAMP SOCKET, INDICATOR
16	1	750173000	BULB, 12V TYPE T-2
17	1	366707000	LENS, GREEN FLUTED
*	NOT SHOWN		

# 6006EH HYDRAULIC SCHEMATIC

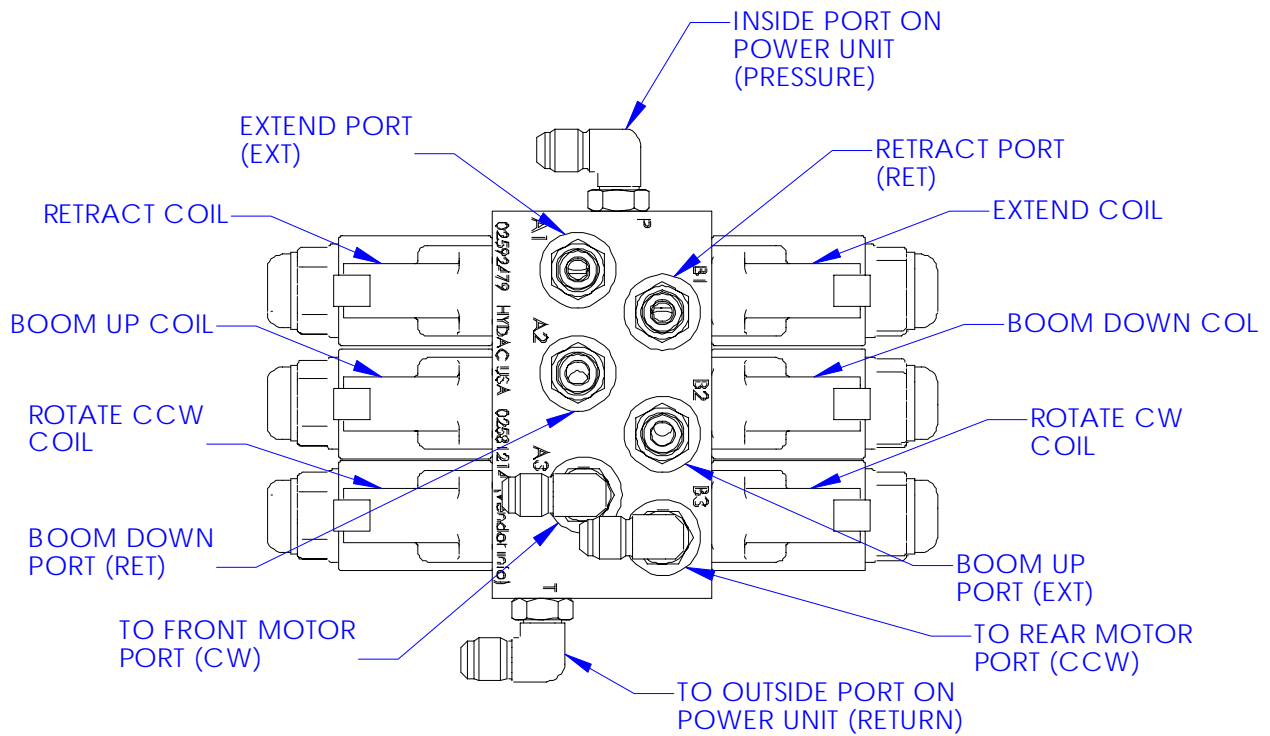
## P/N: 366785000





# 6006EH HYDRAULIC CONTROL VALVE

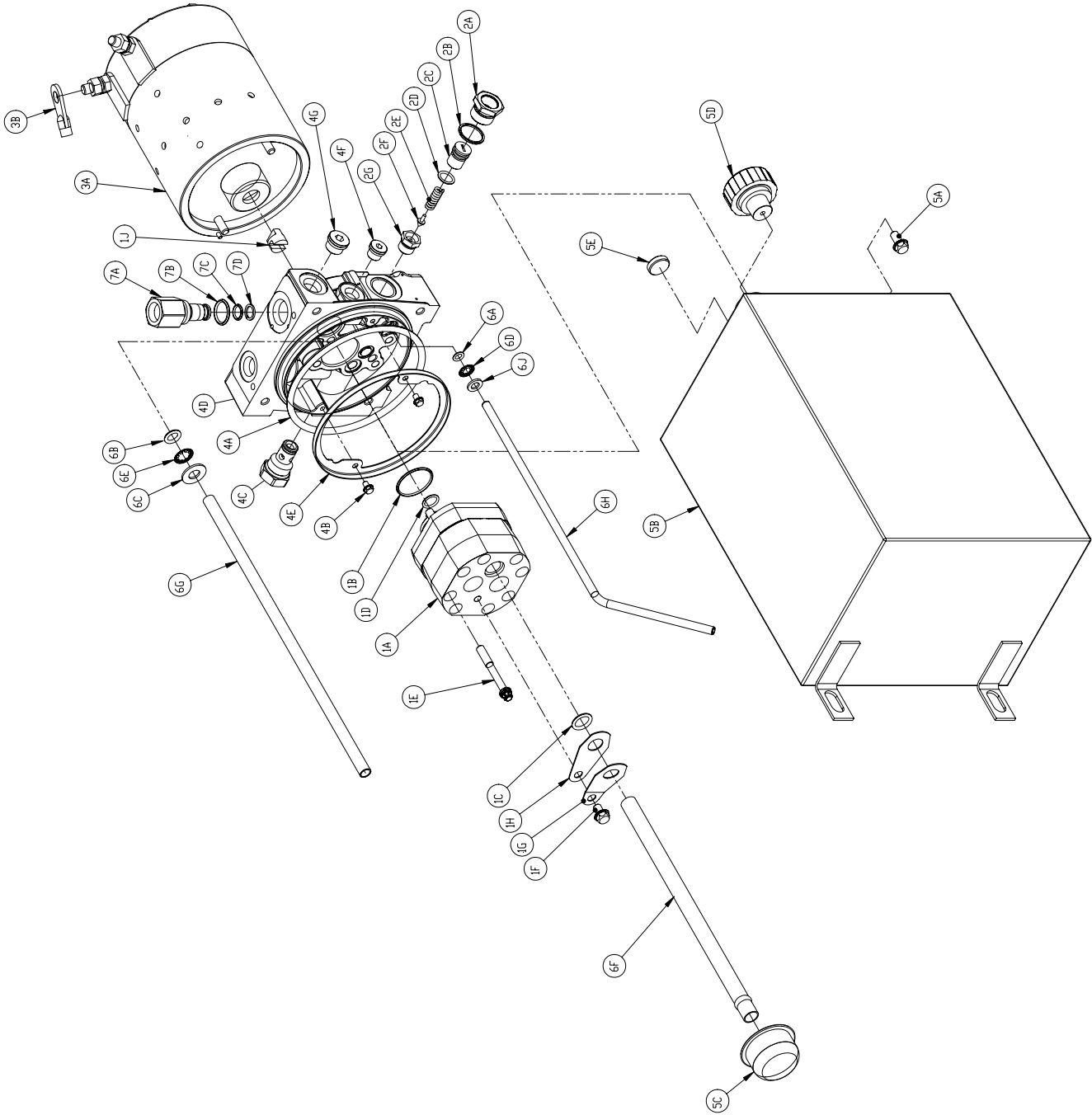
## P/N: 320826000



QTY	DESCRIPTION	A/C P/N	HYDAC P/N
3	SPOOL VALVE, 4WK06G-12X-0-0-N	320826001	
6	SOLENOID COIL, 12DN-50-1836	320826002	03091665

# 6006EH HYDRAULIC POWER UNIT

P/N: 366650000



# 6006EH HYDRAULIC POWER UNIT

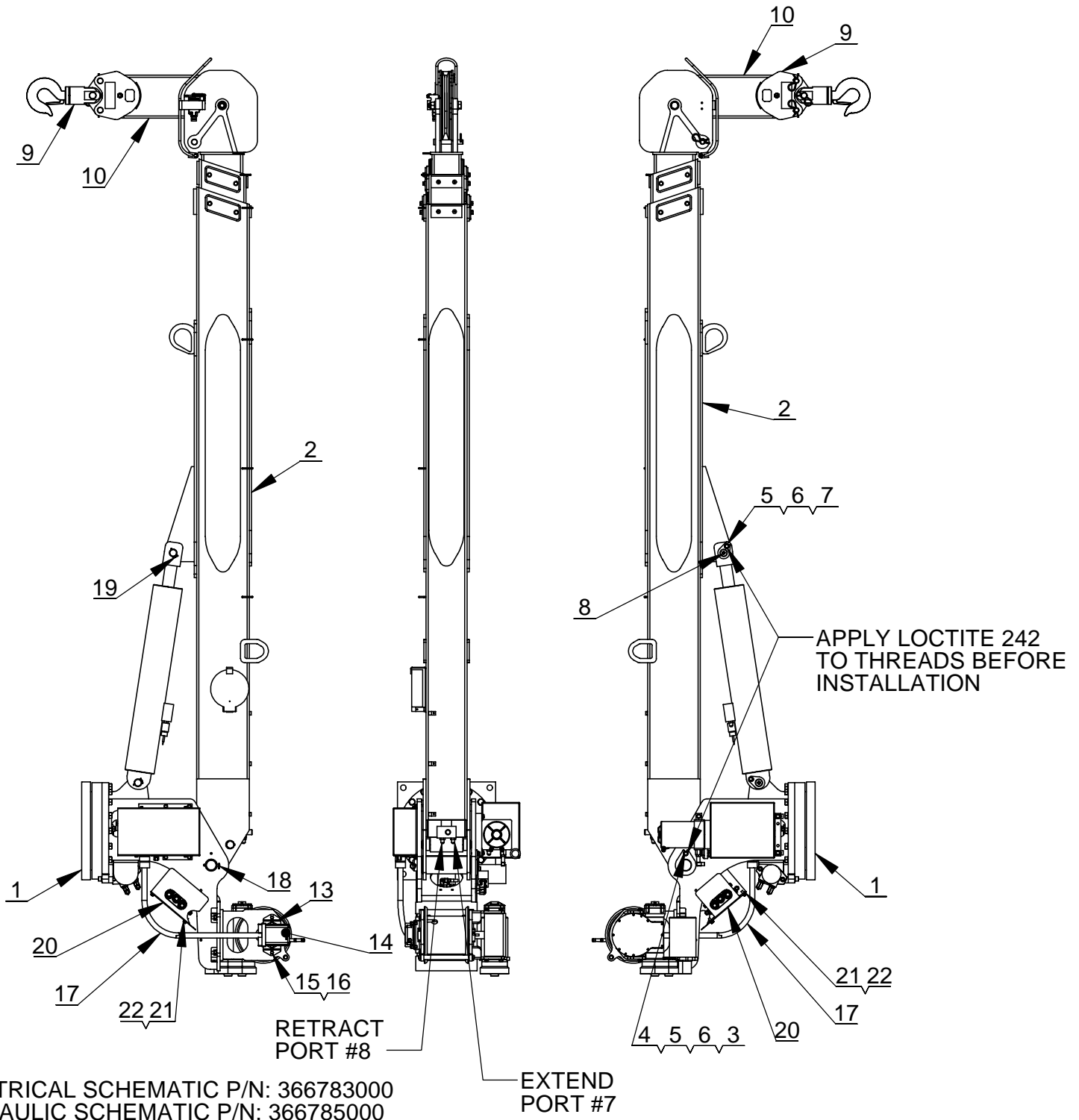
## P/N: 366650000

**NOTE: SOME PARTS AVAILABLE ONLY IN THEIR RESPECTIVE KITS.**

ITEM	PART NO.	DESCRIPTION	QTY.
1	360808001	PUMP AND PARTS	-
1A		PUMP ASSEMBLY	1
1B		O-RING	1
1C		O-RING	1
1D		O-RING	1
1E		SCREW	4
1F		SCREW	1
1G		LOCKING SPRING	1
1H		RETAINER	1
1J		COUPLING	1
2	366650001	RELIEF VALVE KIT	-
2A		CAP	1
2B		GASKET	1
2C		ADJ SCREW	1
2D		O-RING	1
2E		SPRING	1
2F		PLUNGER	1
2G		SEAT ASSEMBLY	1
3	366650002	MOTOR KIT	-
3A		MOTOR 24V DC	1
3B		GROUND STRAP	1
4	366650004	ADAPTER KIT	-
4A		SEAL	1
4B		SCREW	2
4C		CHECK VALVE ASSEMBLY	1
4D		ADAPTER	1
4E		RETAINER	1
4F		PLUG	1
4G		PLUG	1
5	366650003	RESERVOIR KIT	-
5A		SCREW	4
5B		RESERVOIR	1
5C		STRAINER	1
5D	200545000	BREATHER	1
5E		MAGNET	1
6	366650004	TUBE KIT	-
6A		O-RING	1
6B		O-RING	1
6C		WASHER	1
6D		RETAINING RING	1
6E		RETAINING RING	1
6F		TUBE	1
6G		TUBE	1
6H		TUBE	1
6J		SPACER	1
7	320336002	RETURN PORT ASSEMBLY	-
7A		RETURN PORT BODY	1
7B		O-RING	1
7C		O-RING	1
7D		BACK-UP RING	1

# 6006EH GENERAL ASSEMBLY

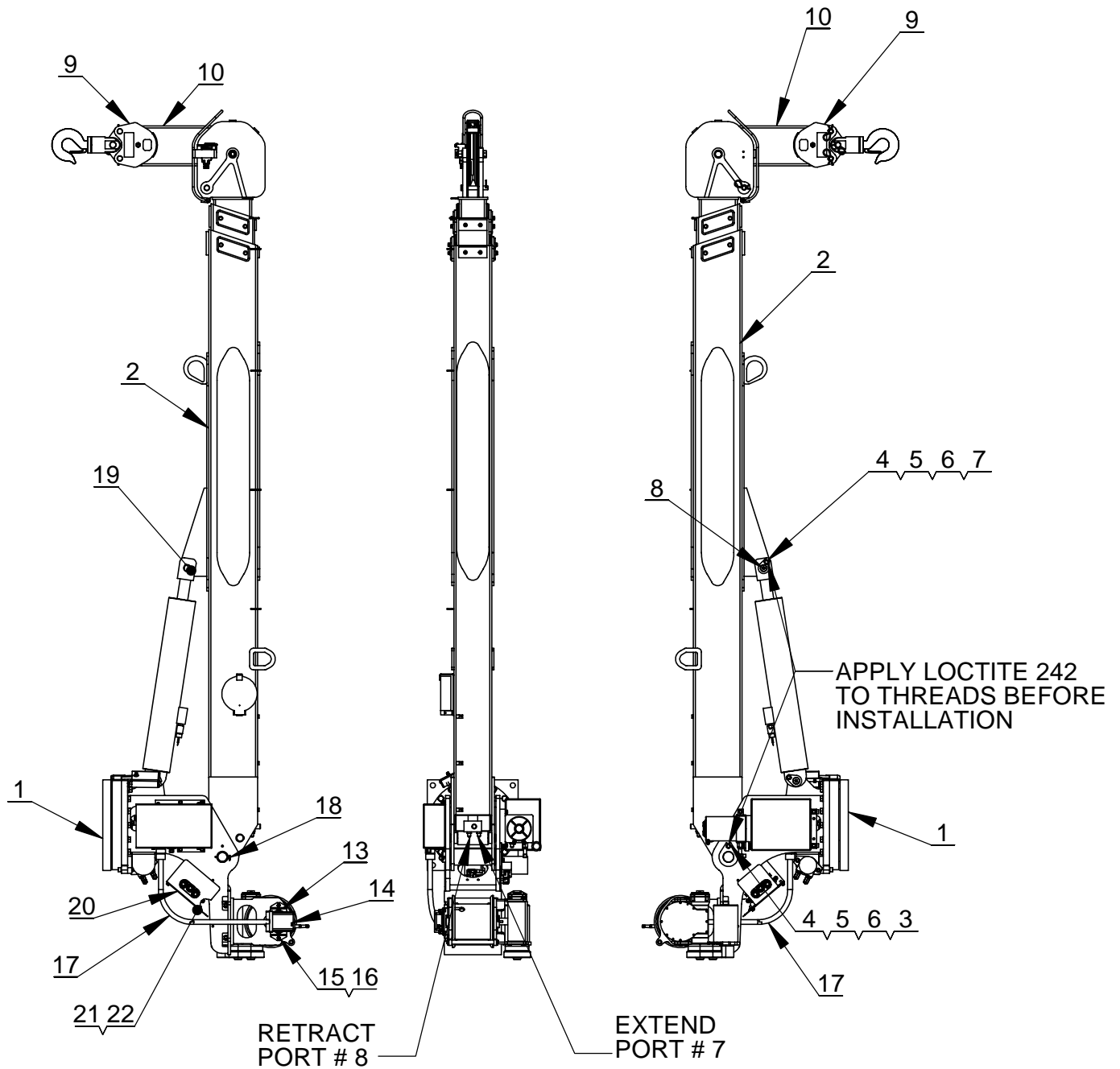
## FM - W/SLIP RING - P/N: 366600001



**6006EH GENERAL ASSEMBLY**  
**FM - W/SLIP RING - P/N: 366600001**

TEM NO	QTY.	PART NO.	DESCRIPTION
1	1	366640000	PEDESTAL ASSEMBLY
2	1	366630000	BOOM ASSEMBLY
3	1	360675000	PIN, BOOM PIVOT
4	2	320976000	WASHER, FLAT, 3/8 SAE HARDENED
5	2	021100000	WASHER SP LK 3/8
6	2	008702000	SCW HX 3/8-16 X 1 1/4 GR5
7	1	360676000	PIN, CYLINDER
8	1	239300000	ZERK, GREASE
9	1	366063000	TRAVELING BLOCK
10	1	480031000	WIRE ROPE ASSEMBLY 3/8"
11	1	366697001	SHIP KIT 6006EH FM CRANE
12	1	366704000	DECAL LAYOUT 6006EH
13	1	366715000	BRACKET ASSEMBLY, RECEIVER MOUNT
14	1	366711000	RECEIVER, KAR-TECH
15	4	020200000	WASHER SP LK 1/4
16	4	005500000	SCREW HX HD 1/4-20UNC X 3/4 LG
17	1	366712000	WIRE HARNESS, KAR-TECH RECEIVER
18	1	360677000	PIN, 1/4 COTTERLESS RING
19	1	360678000	PIN, 3/16 COTTERLESS RING
20	1	366688000	COVER, REAR
21	2	020601000	WASHER 5/16 LOCK
22	2	007807000	SCW HEX 5/16-18 3/4LG GR5

# 6006EH GENERAL ASSEMBLY FM W/O SLIP RING - P/N: 366790000



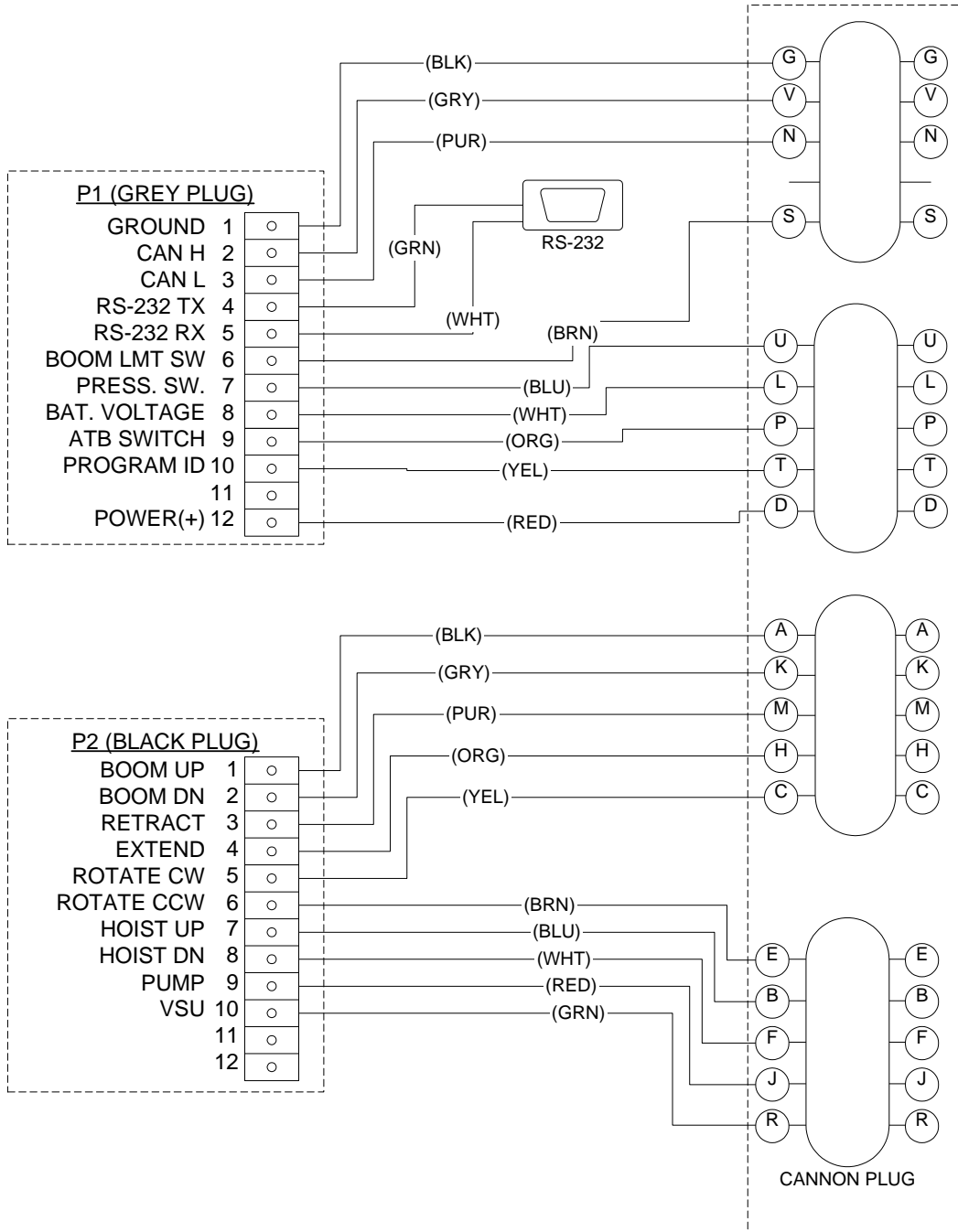
ELECTRICAL SCHEMATIC P/N: 366783000  
HYDRAULIC SCHEMATIC P/N: 366785000

**6006EH GENERAL ASSEMBLY  
FM W/O SLIP RING - P/N: 366790000**

TEM NO	QTY.	PART NO.	DESCRIPTION
1	1	366781000	PEDESTAL ASSEMBLY, 6006EH
2	1	366630000	BOOM ASSEMBLY
3	1	360675000	PIN, BOOM PIVOT
4	2	320976000	WASHER, FLAT, 3/8 SAE HARDENED
5	2	021100000	WASHER SP LK 3/8
6	2	008702000	SCREW HX HD 3/8-16UNC X 1 1/4 LG GR5
7	1	360676000	PIN, CYLINDER
8	1	239300000	ZERK, GREASE
9	1	366063000	TRAVELING BLOCK
10	1	480031000	WIRE ROPE ASSEMBLY 3/8"
11	1	366697002	KIT-SHIP 6006EH FM CRANE
12	1	366704000	DECAL LAYOUT 6006EH
13	1	366715000	BRACKET ASSEMBLY, RECEIVER MOUNT
14	1	366711000	RECEIVER, KAR-TECH
15	4	020200000	WASHER SP LK 1/4
16	4	005500000	SCREW HX HD 1/4-20UNC X 3/4 LG
17	1	366712000	WIRE HARNESS, KAR-TECH RECEIVER
18	1	360677000	PIN, 1/4 COTTERLESS RING
19	1	360678000	PIN, 3/16 COTTERLESS RING
20	1	366688000	COVER, REAR
21	2	020601000	WASHER SP LK 5/16
22	2	007807000	SCREW HX HD 5/16-18UNC X 3/4 LG GR5

# 6006EH ELECTRICAL SCHEMATIC

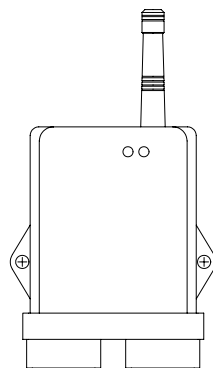
## FM - P/N: 366712000



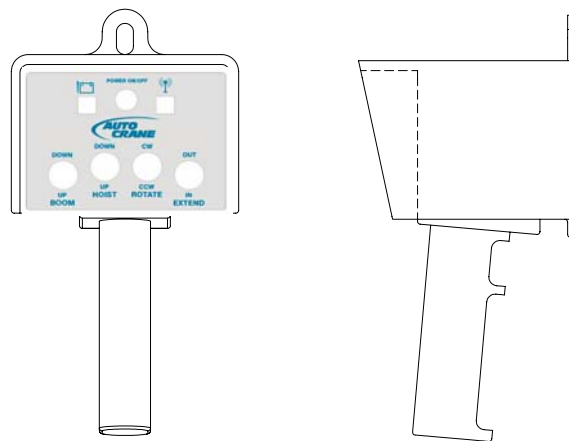


# **REMOTE / PENDANT PARTS AND ACCESSORIES**

<u>Component</u>	<u>Part Number</u>
Receiver	366711000
Transmitter	320920002
Pendant Cable	366500008
Antenna	366500005
Cigarette Lighter Charger	366504000
A/C Charger	366505000
Palm Diagnostic Unit	366510000
Receiver Harness	366712000
Hard Wired Pendant	366709000



**Receiver**



**Transmitter**

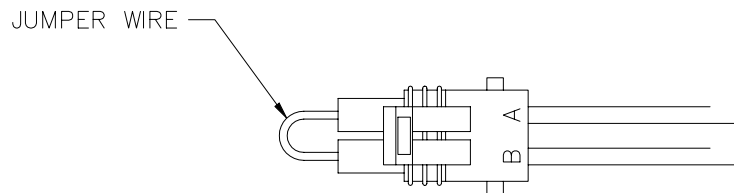
# TRANSMITTER / RECEIVER SYNCHRONIZATION

1. Power on the transmitter and receiver.
2. Locate the program plug on the crane. This will be the unused plug near where the cord reel plugs into the wire harness.
3. Using a jumper wire, as shown below, connect the two contacts in the plug.
4. With the jumper installed and the transmitter unplugged from the pendant cable, activate a function on the transmitter.

**Note:** The crane must be electrically powered but it is not necessary to supply hydraulic power to complete synchronization.

5. Remove the jumper wire.

**Important:** The jumper wire should not be left installed. Doing so could cause the crane to be operated by another transmitter.



# **6006EH**

## **CONTROLLER DIAGNOSTICS**

On the receiver the green light indicates that a signal is being received, the red indicates the status of error. Below is a list of the error codes both as they would be displayed on a Palm handheld and on a receiver.

**CODE:** 1 Flash/EC01  
**DESCRIPTION:** Signal problem  
**POSSIBLE CAUSE(S):** No signal from transmitter/pendant or transmitter power off.  
**POSSIBLE SOLUTION(S):** Check transmit light on transmitter, light should flash when function is activated. If light does not flash, make sure transmitter is on. If light flashes and red low battery light flashes, charge unit. If transmitter is plugged in as a pendant and transmit light comes on but code remains, check cable connections and cable.

**CODE:** 2 Flashes/OVL  
**DESCRIPTION:** Overload  
**POSSIBLE CAUSE(S):** Pressure overload.  
**POSSIBLE SOLUTION(S):** Retract boom, hoist down or otherwise alleviate overload condition. Refer to load chart for rated load. If the error persists with seemingly light loads, install pressure gage in plugged port of lift cylinder counterbalance valve to confirm pressures in excess of 1,000 psi. Pressure sensor can give false readings if not properly grounded.

**CODE:** 3 Flashes/A2B  
**DESCRIPTION:** Anti-two block  
**POSSIBLE CAUSE(S):** Anti-two block switch tripped.  
**POSSIBLE SOLUTION(S):** Check switch, if not mechanically tripped, check continuity cross switch at plug. If switch has continuity check voltage across transmitter side of A2B plug. If low voltage is read, power to the A2B switch, the rotation switches or the pressure sensor may have a short.

**CODE:** 4 Flashes/LBV  
**DESCRIPTION:** Low battery  
**POSSIBLE CAUSE(S):** Low battery power to receiver.  
**POSSIBLE SOLUTION(S):** Check connections to the battery. Charge battery. NOTE: It is recommended that the crane be powered off if battery is charged with battery charger.

**CODE:** 5 Flashes/BLMT  
**DESCRIPTION:** Boom limit  
**POSSIBLE CAUSE(S):** Boom has reached maximum elevation.  
**POSSIBLE SOLUTION(S):** This is not an error. It only indicates boom position. Lower the boom to deactivate the switch.

# **6006EH**

## **CONTROLLER DIAGNOSTICS**

**CODE:** 6 Flashes/EC10  
**DESCRIPTION:** Incorrect ID  
**POSSIBLE CAUSE(S):** Signal received from transmitter with incorrect ID code.  
**POSSIBLE SOLUTION(S):** Confirm that transmitter being used is for use with this unit. Follow 'New Transmitter' procedure in the transmitter operation section of this manual.

**CODE:** 7 Flashes/EC02  
**DESCRIPTION:** Boom up  
**POSSIBLE CAUSE(S):** Short or open connection on boom up output.  
**POSSIBLE SOLUTION(S):** Check plug in boom up solenoid on hydraulic control valve. Check wires for damage that could cause break or short.

**CODE:** 8 Flashes/EC03  
**DESCRIPTION:** Boom down  
**POSSIBLE CAUSE(S):** Short or open connection on boom down output.  
**POSSIBLE SOLUTION(S):** Check plug in boom down solenoid on hydraulic control valve. Check wires for damage that could cause break or short.

**CODE:** 9 Flashes/EC04  
**DESCRIPTION:** Boom in (retract)  
**POSSIBLE CAUSE(S):** Short or open connection on boom in output.  
**POSSIBLE SOLUTION(S):** Check plug in boom in solenoid on hydraulic control valve. Check wires for damage that could cause break or short.

**CODE:** 10 Flashes/EC05  
**DESCRIPTION:** Boom out (extend)  
**POSSIBLE CAUSE(S):** Short or open connection on boom out output.  
**POSSIBLE SOLUTION(S):** Check plug in boom out solenoid on hydraulic control valve. Check wires for damage that could cause break or short.

**CODE:** 11 Flashes/EC06  
**DESCRIPTION:** Rotate CW  
**POSSIBLE CAUSE(S):** Short or open connection on rotate CW output.  
**POSSIBLE SOLUTION(S):** Check plug in rotate CW solenoid on hydraulic control valve. Check wire for damage that could cause break or short.

**CODE:** 12 Flashes/EC07  
**DESCRIPTION:** Rotate CCW  
**POSSIBLE CAUSE(S):** Short or open connection on rotate CCW output.  
**POSSIBLE SOLUTION(S):** Check plug in rotate CCW solenoid on hydraulic control valve. Check wire for damage that could cause break or short.

# **6006EH**

## **CONTROLLER DIAGNOSTICS**

**CODE:** 13 Flashes/EC08  
**DESCRIPTION:** Hoist up  
**POSSIBLE CAUSE(S):** Short or open connection on hoist up output.  
**POSSIBLE SOLUTION(S):** Check plug in hoist up solenoid on hydraulic control valve.  
Check wire for damage that could cause break or short.

**CODE:** 14 Flashes/EC09  
**DESCRIPTION:** Hoist down  
**POSSIBLE CAUSE(S):** Short or open connection on hoist down output.  
**POSSIBLE SOLUTION(S):** Check plug in hoist down solenoid on hydraulic control valve. Check wire for damage that could cause break or short.

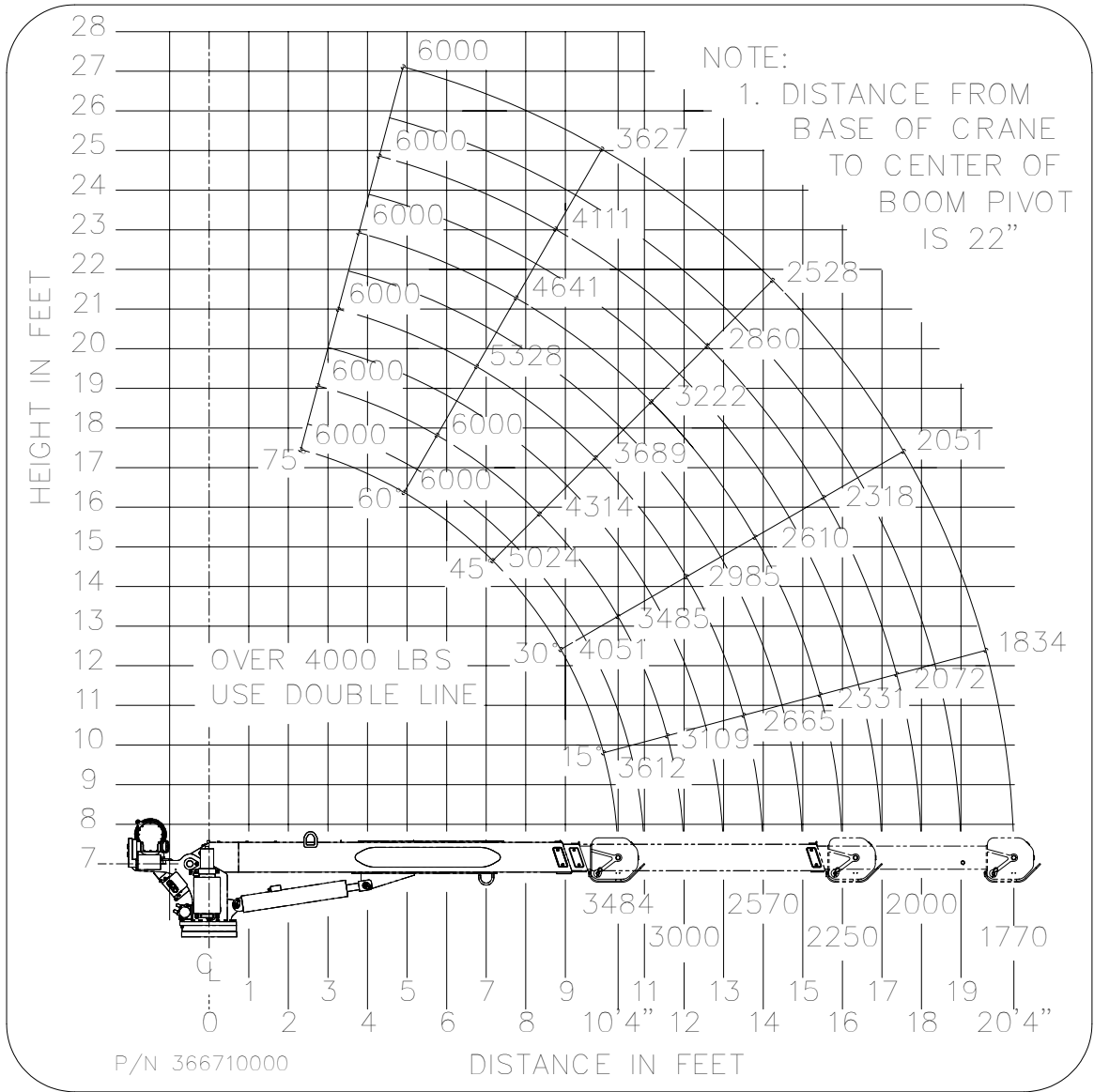
**CODE:** 15 Flashes  
**DESCRIPTION:** Pump  
**POSSIBLE CAUSE(S):** Short or open connection on the Pump output.  
**POSSIBLE SOLUTION(S):** Check wire for damage that could cause break or short.

**CODE:** 16 Flashes  
**DESCRIPTION:** Voltage Switching Unit  
**POSSIBLE CAUSE(S):** Short or open connection to the Voltage Switching Unit output.  
**POSSIBLE SOLUTION(S):** Check wire for damage that could cause break or short.



# 6006EH LOAD CHART

## P/N: 366710000



# ***NOTES***





P.O. Box 580697 \* Tulsa, OK 74158-0697  
4707 N. Mingo Rd. \* Phone (918) 836-0463

## 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 OLIGATION 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**





