

**TABLE OF CONTENTS**  
 USERS MANUAL P/N 34847  
 LA6K EX-11 SP PENDANT CONTROL  
 INCLINOMETER, TRANSDUCER

**SECTION I**

**CRANE INSTALLATION INSTRUCTIONS**

|                                       |                   |     |
|---------------------------------------|-------------------|-----|
| CRANE INSTALLATION INSTRUCTIONS ..... | F1084-H .....     | 1-1 |
| MOUNTING PATTERN.....                 | DWG.50495-C ..... | 1-4 |
| ELECTRICAL INSTALLATION .....         | DWG.50377-G.....  | 1-5 |
| STABILITY PROCEDURE.....              | F691-I.....       | 1-6 |
| STABILITY TEST RESULTS .....          | F691-I.....       | 1-7 |

**SECTION II**

**GENERAL OPERATION, INSPECTION, AND MAINTENANCE**

|  |               |      |
|--|---------------|------|
| CRANE SAFETY RULES .....                     | F1122-C.....  | 2-1  |
| INTRODUCTION .....                           | F1111-D.....  | 2-3  |
| OPERATING RESTRICTIONS .....                 | F1112-G ..... | 2-4  |
| OPERATING PRACTICES.....                     | F1112-G ..... | 2-5  |
| INSPECTION AND MAINTENANCE.....              | F1113-E.....  | 2-7  |
| MONTHLY INSPECTION REPORT .....              | F1123-B.....  | 2-9  |
| ANNUAL INSPECTION REPORT.....                | F1507-0 ..... | 2-10 |
| STANDARD HAND SIGNALS FOR CRANE OPERATIONS . | F2409-0 ..... | 2-13 |

**SECTION III**

**CRANE SYSTEMS AND TROUBLESHOOTING**

|  |               |      |
|--|---------------|------|
| KTFM CONTROL SYSTEM(OPTIONAL).....           | F1327-C ..... | 3-1  |
| SAFETY SYSTEM.....                           | F1923-0 ..... | 3-2  |
| HYDRAULIC SYSTEM FOR ELECTRIC CRANE .....    | F1145-E.....  | 3-4  |
| TROUBLESHOOTING KHFM CONTROL SYSTEM.....     | F1328-A ..... | 3-6  |
| TROUBLESHOOTING HYRAULIC PUMP .....          | F1255-C ..... | 3-9  |
| LIMITING SYSTEM OPERATIONS .....             | F2202-0 ..... | 3-10 |
| LIMITING SYSTEM CONNECTION INFORMATION ..... | F2203-0 ..... | 3-12 |
| LIMITING SYSTEM ROUTINE MAINTENANCE .....    | F2204-0 ..... | 3-13 |
| LIMITING SYSTEM TROUBLESHOOTING CHART .....  | F2205-A ..... | 3-14 |
| LIMITING SYSTEM ERROR CODE CHART .....       | F2206-A ..... | 3-15 |
| LIMITING SYSTEM PARTS LIST .....             | F2207-0 ..... | 3-16 |
| LIMITING SYSTEM SPECIFICATIONS .....         | F2208-A ..... | 3-17 |
| LIMITING SYSTEM ANGLE SENSOR SETUP .....     | F2209-0 ..... | 3-18 |
| LIMITING WIRING DIAGRAM.....                 | F2210-0 ..... | 3-20 |
| OVERLOAD PRESSURE READINGS.....              | F2345-0 ..... | 3-21 |
| DEUTSCH CONNECTORS AND PINS.....             | F2435-A ..... | 3-22 |



**TABLE OF CONTENTS**  
 USERS MANUAL P/N 34847  
 LA6K EX-11 SP PENDANT CONTROL  
 INCLINOMETER, TRANSDUCER

**SECTION IV  
 CRANE SPECIFICATIONS**

LIFTING CAPACITIES .....F2344-D ..... 4-1  
 POWER FUNCTIONS AND SPEEDS .....F2344-D ..... 4-1  
 BOLT AND LUBRICATION SPECS .....F2344-D ..... 4-2

**SECTION V  
 PARTS**

BOX PARTS LIST .....F2789-0 ..... 5-1  
 CRANE ASSY 1st & ELECTRICAL SCHEMATIC .....DWG.34845-A ..... 5-2  
 CRANE ASSY 2nd .....DWG.34838-A ..... 5-9  
 PENDANT CONTROL .....DWG.25181-B ..... 5-12  
 KTFM MEGA WIRELESS CONTROLS (OPTIONAL) .....DWG.28490-B ..... 5-13  
 RELAY BOX ASSEMBLY .....DWG.25863-0 ..... 5-14  
 BOOM-BODY ASSEMBLY .....DWG.34837-A ..... 5-15  
 ELEVATION CYLINDER .....DWG.24842-A ..... 5-16  
 BODY ASSEMBLY .....DWG.27484-J ..... 5-17  
 MANIFOLD ASSEMBLY .....DWG.27501-D ..... 5-18  
 HYDRAULIC PUMP .....DWG.27662-A ..... 5-19  
 BASE-HOUSING ASSEMBLY .....DWG.27483-G ..... 5-20  
 ELECTRIC SWIVEL .....DWG.26589-A ..... 5-22  
 BOOM ASSEMBLY – 11FT .....DWG.34836-A ..... 5-23  
 BOOM INNER ASSEMBLY – 11FT .....DWG.27543-A ..... 5-24  
 BOOM OUTER ASSEMBLY – 11FT .....DWG.34824-0 ..... 5-25  
 WINCH .....DWG.27528-0 ..... 5-26  
 WINCH PARTS LIST .....DWG.27528-0 ..... 5-27  
 ELECTRIC WIRING HARNESS .....DWG.34846-0 ..... 5-28  
 INCLINOMETER DIAGRAM .....DWG.24457-A ..... 5-29  
 TRANSDUCER DIAGRAM .....DWG.24456-A ..... 5-30  
 HYDRAULIC SCHEMATIC .....DWG.50961-0 ..... 5-31

WARRANTY .....F1442-A



## MODEL 206 & LA6K INSTALLATION INSTRUCTIONS

Read this complete section before starting the crane installation.

Before installing make sure you have all necessary parts. Please refer to the Owner's manual Box parts list in parts section for the list of parts required for installation. Report any shortages to Liftmoore, Inc. immediately.

1. The mounting must be adequate to support the load and moment rating for the crane as listed:

206 - 2,000 Lbs. Maximum Load; 6,500 Ft.- Lbs. Moment Rating  
 LA6K - 2,000 Lbs. Maximum Load; 6,500 Ft.- Lbs. Moment Rating

For truck mounting the crane must be mounted on a structure that will carry the loads to both sides of the truck frame. Sample mounting instructions are available from Liftmoore upon request.

**WARNING:** For crane model LA6K, use the lifting accessories (bracket, hex screw, hex nut, and warning tag) for shipping and handling purposes. These accessories must be removed before operating the crane. (See Crane Assembly Drawing in parts section)

2. Layout the mounting holes for the crane as shown in the drawing No. 50495 in this manual. The base plate for this crane is 12" square and 5/8" thick with holes for four 1/2" bolts on a 9.5" square pattern. Drill four 9/16" mounting holes to match the 9.5" square pattern. Cut a minimum 1.5" hole in the center of the mounting to clear the power supply wire that projects through the base plate. Bolt the crane onto the truck using the 1/2" x 2-3/4" Grade 8 bolts supplied. If longer bolts are required, at least Grade 8 quality is needed. Tighten the 1/2" Grade 8 bolts to 110 Ft.-Lbs. Other bolts can be used if they are at least Grade 8 strength and no less than 1/2" diameter.

**NOTE:** For crane model 206RELS (without pedestal), four additional 0.75" holes are required (see Drawing No. 50495)

3. A manual disconnect switch with mounting bracket and terminals is provided with the crane. This switch will act as the main power disconnect for the crane. Removing power from the crane during periods of non-use will help to increase the life of the crane's electrical components. The switch should be mounted as near as possible to the crane and in a position which will facilitate its use. Determine the appropriate mounting position for the switch and use the supplied terminals to splice into the crane's main power cable. We recommend that this be below the welding connector supplied with the crane. Drawing No. 50377 illustrates where we recommend installing the disconnect switch, welding connector and circuit breaker(s). Always leave this switch turned to the off position to take the crane out of the electrical circuit when it is not in use.
4. The vehicle's battery should have a capacity of at least 90 Amp Hr. A second battery located near the crane is **STRONGLY** advised. This will keep the voltage as near 12 Volts as possible while the crane is running. The life of the crane's electrical components will be longer if the voltage is as near 12 volts as possible. A deep cycle battery provides the best battery life. Connect the second battery in parallel with the truck's original equipment battery using at least No. 1 battery wire.



**MODEL 206 & LA6K INSTALLATION INSTRUCTIONS, Cont.**

5. Install the 150 Amp circuit breaker near the battery supplying the crane and on the battery's positive line. This breaker is to protect the battery in event of an accidental grounding of the positive wire anywhere along its length. Use a section of the wire and the terminals supplied to connect between the battery and the circuit breaker. See drawing No. 50377.
6. Run the No. 1 battery cable along the inside of the chassis frame to the circuit breaker(s). Make sure that the cable is protected avoiding sharp edges and heat sources such as the muffler or catalytic converter. Use loom for protection whenever the cable passes through the body, frame, or other metal objects. The quick disconnect under the crane must be accessible. Always leave this disconnected to take the crane out of the electrical circuit when it is not in use.
7. Install the extra ground wire, supplied in the crane parts box, from the negative battery terminal to the truck's main frame. Grounding the battery to the frame protects the chassis wiring. Leave the regular ground to the engine as is. The battery end of both wires can be clamped together using a universal type of battery connector. This ground must be in place to protect the truck's wiring and for efficient operation of the crane. A good ground must exist for the crane to work. Leaving this ground wire off can damage the truck chassis wiring as it may then carry some of the crane circuit's current. This wire must be as large as the battery lead wire for the system to operate efficiently.
8. A boom support must be installed to secure the boom when the truck is moved. Mount an eye on the boom rest for the hook as shown in Liftmoore's Accessories bulletin. The wire rope can then be used to secure the boom in the rest.
9. An Outrigger or Jackstands must be installed to keep the truck and the crane as level as possible under all expected working conditions. Keeping the crane level reduces the loads on the rotation gear. This will also protect the truck's springs, axle, and wheels when heavy loads are suspended from the crane.
10. Additional truck springs may be necessary depending upon the size of the truck and location of the crane on the truck. Add springs to bring the truck level after all equipment is mounted.
11. The crane is now ready to use. Read the Operating Instructions Section of the Owner's Manual before operating the crane. When operating the crane for the first time, run the cylinders through their full extension cycle to purge any air from the cylinder. Operate the crane to assure complete operation of all functions.





## MODEL 206 & LA6K INSTALLATION INSTRUCTIONS, Cont.

12. If installing the crane:

- A) **With an auxiliary battery**, the installer will need to provide the battery, two additional 150 Amp circuit breakers, and the necessary terminals. See drawing No. 50377 for instructions on where to install the circuit breakers. These breakers are to protect the crane and batteries in event of an accidental grounding of the positive wire anywhere along its length.
- B) **Without an auxiliary battery**, install the one 150 Amp circuit breaker that is provided in the crane parts box. The circuit breaker should be installed near the battery supplying the crane and on the battery's positive line. This breaker is to protect the crane and battery in event of an accidental grounding of the positive wire anywhere along its length. Use a section of the wire and the terminals supplied to connect between the battery and the circuit breaker.  
See drawing No. 50377 for instructions on where to install the circuit breaker(s).

13. If installing the crane:

- A) **With an auxiliary battery**, install the ground wire from the crane's base to the negative terminal on the auxiliary battery. The negative terminal of the auxiliary battery should be grounded to the truck's main frame.
- B) **Without an auxiliary battery**, install the ground wire from the crane's base to the truck's main frame.

14. Verify that the anti-two-block will stop extension out, boom down and winch up when the pickle weight or bail arms on the device are lifted by either function. Make sure that:

- A) If equipped with a **pickle weight**: it is on the live or running wire rope.
- B) If equipped with **bail arms**: the wire rope is in between the bail arms.

The Crane Assembly drawing in the owner's manual **Parts Section** illustrates how the pickle weight or bail arms should be installed on the line.

**NOTE:** Anti two-block will not disable boom down if winch is mounted on boom.

15. Place these Installation Instructions and the Owner's Manual with Operating Instructions in a convenient place for the user to find and use before operating the crane.

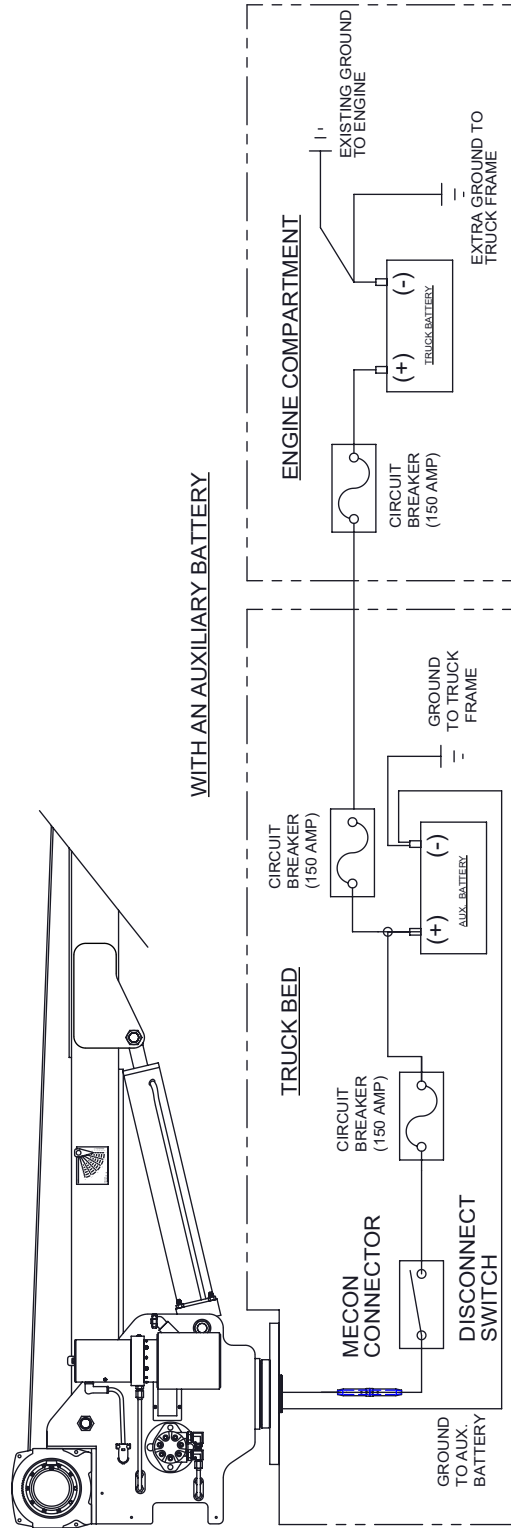
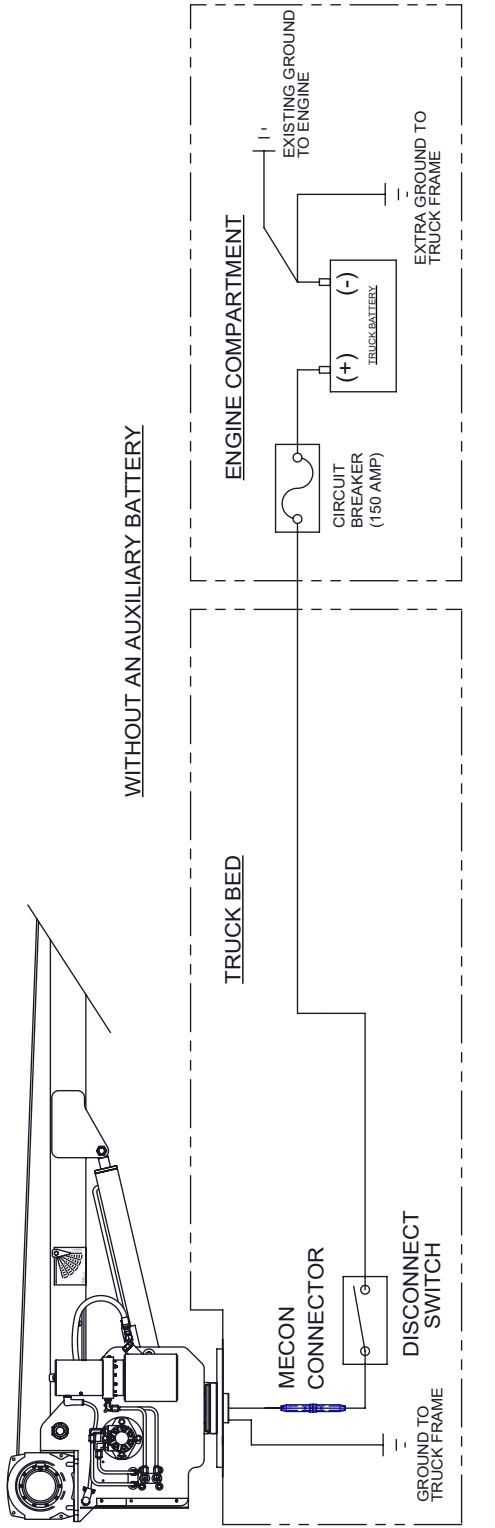
16. When complete, turn off the crane power switch.

17. Load Chart Decal is to be placed on the truck body for easy visibility by the user.





RECOMMENDED WIRING SCHEMATIC FOR 4000 MODEL AND SMALLER CRANES:



Houston TX  
(713)-688-5533  
www.liftmoore.com

DRWN BY: JC  
DATE: 06/03/08

SCHEM, CRANE ELEC. INSTAL-ELEC  
FOR 4000 & SMALLER ELECTRIC CRANES

DRAWING NO.

50377-G



**VEHICLE STABILITY TEST**

OSHA (29CFR 1910.180c) requires a stability test be completed by the installer. A qualified person shall perform this test. Please call Liftmoore for any assistance required in completing this test.

**TEST PREPARATIONS:**

- Use as level of a test site as possible.
- Engage parking brake on vehicle.
- Set outriggers, jackstands, or other stability device in place.
  - Vehicle tires should remain in contact with the ground.
  - The vehicle should be level.

**FILL OUT TEST FORM:**

- Complete the Vehicle Information and Crane Information data at the top of Page 2 of this form.
- Use a known weight to determine the *Initial Testing Load Radius*. Write this number on all 3 locations on Page 2 of this form.

**TEST PROCEDURE:****Determine Area Y Angle**

1. With the crane extended to the *Initial Testing Load Radius* over the rear of the truck, lift the load. Keep the load less than 4" off of the ground.
2. Rotate the load counterclockwise. Monitor all vehicle tires to ensure they remain in contact with the test surface.
3. When one of the vehicle's tires breaks contact with the ground, stop the rotation.
4. Use a protractor to determine this angle. Write this angle on the **Stability Test Results** as *Area Y*.

**Determine Area W1 Length**

5. Keeping the load off of the ground, retract or elevate the boom until all tires are in contact with the test surface.
6. Continue rotating the load counterclockwise while monitoring all vehicle tires.
7. When one of the vehicle's tires breaks contact with the ground, stop the rotation.
8. Keeping the load off of the ground, retract or elevate the boom until all tires are in contact with the test surface.
9. Repeat this procedure until either the vehicle prevents further rotation or a 180 degree rotation of the load is reached.
10. Record the load radius in feet at this point on page 2 of this form as *Area W1 Length*.
11. Calculate the *W1 % Rated Capacity*.
12. Write the *W1 % Rated Capacity* in the **Stability Test Results** on Page 2 of this form.

**Determine Area Z Angle**

13. Return the load to the rear of the vehicle and extend the load to the *Initial Testing Load Radius*. Keep the load less than 4" off of the ground.
14. Rotate the load clockwise. Monitor all vehicle tires to ensure they remain in contact with the test surface.
15. When one of the vehicle's tires breaks contact with the ground, stop the rotation.
16. Use a protractor to determine this angle and write this angle on the **Stability Test Results** as *Area Z*.

**Determine Area W2 Length**

17. Keeping the load off of the ground, retract or elevate the boom until all tires are in contact with the test surface.
18. Continue rotating the load clockwise while monitoring all vehicle tires.
19. When one of the vehicle's tires breaks contact with the ground, stop the rotation.
20. Keeping the load off of the ground, retract or elevate the boom until all tires are in contact with the test surface.
21. Repeat this procedure until either the vehicle prevents further rotation or a 180 degree rotation of the load is reached.
22. Record the load radius in feet at this point on page 2 of this form as *Area W2 Length*.
23. Calculate the *W2 % Rated Capacity*.
24. Write the *W2 % Rated Capacity* in the **Stability Test Results** on Page 2 of this form.

**Record Stability Test Results on Placard**

25. Record the information from the **Stability Test Results** on the **CRANE TRUCK STABILITY** plate (P.N. 18600) and install the plate in a visible position on the vehicle, preferably near the crane.

**THIS TEST IS NOW COMPLETE**

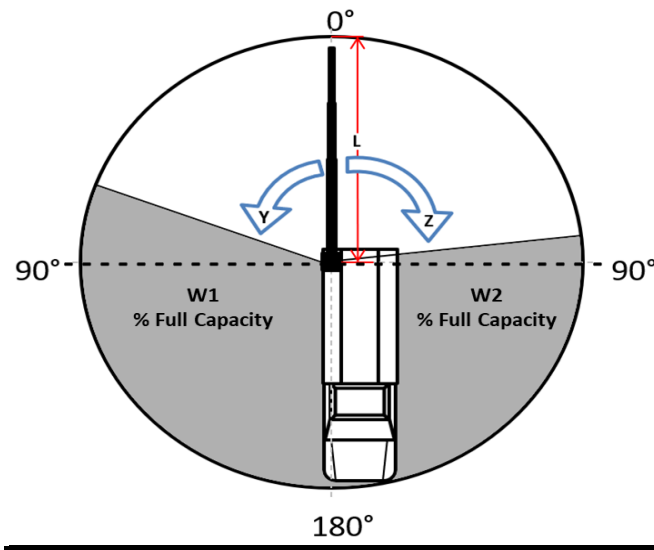
## STABILITY TEST FORM

Operational limits of this vehicle

| VEHICLE INFORMATION | CRANE INFORMATION             |
|---------------------|-------------------------------|
| Year _____          | Model _____                   |
| Make _____          | Serial Number _____           |
| Model _____         | Moment Rating (ft-lbs.) _____ |
| VIN _____           |                               |

Determine the **Testing Load Radius** by using the following:

Moment Rating (ft-lbs.) \_\_\_\_\_  
 Multiply by 1.18 x \_\_\_\_\_  
 Divide by known weight \_\_\_\_\_  
**Testing Load Radius (ft.)** = \_\_\_\_\_



**Area W1 Length** \_\_\_\_\_  
**Testing Load Radius (ft.)** \_\_\_\_\_  
 Multiply by 100 \_\_\_\_\_  
 W1 % Rated Capacity \_\_\_\_\_

**Area W2 Length** \_\_\_\_\_  
**Testing Load Radius (ft.)** \_\_\_\_\_  
 Multiply by 100 \_\_\_\_\_  
 W2 % Rated Capacity \_\_\_\_\_

### STABILITY TEST RESULTS

Area Y: \_\_\_\_\_ Degrees  
 Area Z: \_\_\_\_\_ Degrees  
 Area W1 Rated Capacity: \_\_\_\_\_ %  
 Area W2 Rated Capacity: \_\_\_\_\_ %

Test Performed By: \_\_\_\_\_

Date: \_\_\_\_\_

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## CRANE SAFETY RULES

### CAUTION!

1. READ AND UNDERSTAND OPERATOR'S MANUAL.
2. INSPECT VEHICLE AND CRANE INCLUDING ITS OPERATION BEFORE DAILY USE.
3. USE THIS EQUIPMENT ONLY ON SOLID LEVEL GROUND WITH OUTRIGGERS OR JACKSTANDS PROPERLY SET.
4. BEFORE OPERATING THE CRANE REFER TO MAXIMUM LOAD CHART ON CRANE FOR OPERATING LOAD LIMITS.
5. BE SURE LOAD BEING LIFTED IS WITHIN SAFE WINCH CAPACITY AS WELL AS SAFE CRANE CAPACITY. MULTI-PART LINE OPERATION IS REQUIRED WHEN SINGLE LINE LOAD CAPACITY OF WINCH IS EXCEEDED.
6. DO NOT OPERATE, WALK, OR STAND UNDER THE BOOM OR ANY SUSPENDED LOAD.
7. ALWAYS PAY OUT LOAD LINE BEFORE EXTENDING BOOM. WIRE ROPE DAMAGE AND / OR BREAKAGE MAY OCCUR.
8. BOOM TIP MUST BE DIRECTLY OVER THE LOAD BEFORE ANY LIFTING IS STARTED. DO NOT DRAG LOADS WITH THIS CRANE.
9. BOOM MUST BE IN ITS BOOM REST BEFORE MOVING THE VEHICLE.
10. MAINTAIN THIS CRANE AS REQUIRED IN THE OWNER'S MANUAL.
11. DO NOT ALLOW PERSONNEL TO RIDE ON THE LOAD LINE, LOAD, OR BOOM OF THIS CRANE.
12. IT IS UNLAWFUL TO OPERATE THIS EQUIPMENT WITHIN TEN FEET OF HIGH VOLTAGE LINES.



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02/01/22

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## INTRODUCTION

This crane is a powerful machine designed to lift and move heavy loads. There are many hazards associated with these operations. Liftmoore has designed this crane to be as safe as possible but -

**IT IS THE OPERATOR'S RESPONSIBILITY TO PREVENT ACCIDENTS!**

This takes pre-planning, attention, and knowledge of basic principles and rules. Even if you have used similar cranes, reading this manual in its entirety will help prevent damage, injury, or even loss of life; benefits well worth the short amount of time it takes to read these pages.

### REGULATORY AUTHORITY

Use of this crane is governed by OSHA 29 CFR 1910.180 and may be governed by other federal, state, or local regulations.

**IT IS THE OPERATOR'S RESPONSIBILITY TO UNDERSTAND AND COMPLY WITH ALL APPLICABLE REGULATIONS GOVERNING THE OPERATION, INSPECTION, AND MAINTENANCE OF THIS CRANE.**

Personnel should be trained, tested, and certified, as recommended by OSHA and ANSI standards, before operating this crane.

### USING THIS MANUAL

This manual assumes that the crane is mounted on a typical service body type or similar truck, which is powered by the vehicle electrical or hydraulic system, and is controlled by either the standard pendant control or FM radio control sold by Liftmoore, Inc.

This manual is supplied to provide basic guidelines for the safe use, routine maintenance, and general inspections of this crane.

This manual is supplied to provide basic guidelines for the safe use, routine maintenance, and general inspections of this crane.

Laws, regulations, standards, or policies may be more restrictive than this manual. If a conflict exists for any limit or condition, the safest or most prohibitive shall be used. Under no circumstances shall the load, moment, or stability ratings be exceeded.

Pay particular attention to the following:

**WARNING!** – Draws attention to hazards, conditions, or procedures that if not observed could result in injury or death.

**CAUTION!** – Draws attention to hazards, conditions, or procedures that if not observed could result in damage to the crane, load, or other equipment. Equipment failure could in turn lead to injury or death.

**NOTE!** – Draws attention to conditions or procedures that are essential to emphasize.

For questions, interpretations, or to report errors, please contact Liftmoore, Inc, Engineering Dept.



## OPERATING RESTRICTIONS

### DUTY CYCLE

For Electric Cranes the duty cycle time should be limited to 5 minutes of continuous use every 30 minutes. This is recommended to increase lifespan of motors. This is limited by heat buildup in the motors and declining charge in the batteries. (Installing extra batteries near the crane helps keep the voltage at maximum.)

### PERSONNEL

LIFTING OR MOVING OF PERSONNEL IS STRICTLY PROHIBITED! This crane was neither designed nor intended to lift personnel. Under no circumstances should anyone be allowed to ride on the crane, line, or load. All non-essential personnel must be kept away when using the crane. The load must never be moved over people, nor must anyone be allowed to pass or stand under a suspended load.

### ELECTRICAL LINES

Consult ASME B30.5 for operating procedures, minimum safe distances, and prohibited zones when working around electrical lines or poles.

When operating near electrical power lines, the crane must be positioned so that the distance from the crane to the lines or poles is equal to or greater than the length of the fully extended boom plus the minimum safe distance required.

All parts of the crane, line, and load must be kept a minimum safe distance from electrical power lines and poles. This distance is 10 feet for electrical lines carrying 50kV or less.

**UNDER NO CIRCUMSTANCES SHOULD A CRANE BE OPERATED UNDER ELECTRICAL POWER LINES.**

## OPERATING PRACTICES

### SETUP

**POSITION** The vehicle must be positioned so that the load is kept as close to the crane base as possible to reduce the moment on the crane. Consideration must be given to starting and ending position as well as firmness and slope of the ground and any obstructions.

**OUTRIGGERS** The outriggers or jackstands must be firmly set and the vehicle as level as possible. This will reduce the stresses on the rotation drive and keep the load off the vehicle's suspension. Keep in mind that the weight on the vehicle will shift as the crane and load is rotated.

**MANUAL BOOM EXTENSION** If the manual extension part of the boom is needed, it must be extended and the boom pin placed in the required position. Insert the pin and replace the pin's hairpin keeper before attempting to lift any load.

**LOAD LIMIT** The operator must understand the crane load chart. The operator must ensure that the load is within the load limits over the entire range which it will be moved. Be sure to include the weight of any lifting devices including the travel block.

The load limit chart is attached to the side of the crane to aid the operator.

The boom angle indicator and chart aids the operator in determining the load capacity at various boom angles and extensions. It also gives the load limit at that configuration.

**STABILITY** A stability chart must be posted near the crane. The operator must understand the stability chart. The crane may be de-rated over some areas of its operating radius.



**TRAVEL BLOCK** The operator must determine if the load is within the single line compatibility of the winch or if a multi-part line configuration is needed.

**REEVING** Ensure the proper routing of the rope through the sheaves and travel block. The rope must lie in the sheave groove and must not rub against any metal objects.

Ensure the rope is correctly wound on the winch drum. The crane assembly drawing will indicate if the rope must be wound over the top or bottom of the drum. The rope must never contact any part of the winch mounting.

### WARNING!

If the winch winding direction is reversed the brake will not work and the load will fall.

### ATTACHING THE LOAD

**POSITION** The boom tip must be moved over the load before lifting so that it will be lifted straight up.

### CAUTION!

Never drag a load with the crane. Dragging a load puts very high stresses on the crane for which it was not designed.

**ROPE** Check the rope condition to ensure it is not frayed or damaged. Ensure that the rope is not kinked and that it does not contact any sharp edges or make any sharp bends.

If using double line configuration, ensure that the lines are not twisted.

### CAUTION!

Never wrap the hoist rope around the load! Serious damage to the rope WILL occur.

**HOOK** Always make sure the load is applied to the throat of the hook. Never use a bent hook.

### CAUTION!

Always lift with the throat of the hook. Never lift with the load applied to the tip of the hook. Doing so will bend the hook.

**SLINGS** If the load does not have a lifting eye, use a nylon, chain, or other type of sling designed for lifting and rated for loads greater than that being lifted.

**BALANCE** Ensure the load will be secure and balanced when lifted. Ensure that the load cannot shift in the sling and that the sling cannot slide across the hook should the load become unbalanced.

### LIFTING THE LOAD

Before lifting, ensure that the load is free from all mountings and is no way attached or stuck to anything.

Ensure that at least five full wraps remain on the winch drum at all times.

Test the winch brake by lifting the load a few inches and ensuring that it does not slip.



## **HOLDING THE LOAD**

The operator must keep the load in sight at all times once it is lifted.

The operator must never leave the controls once the load is lifted.

The operator must ensure that no one is allowed to pass or stand under a suspended load.

## **CAUTION!**

Never move the vehicle with a suspended load. Doing so will put dynamic loads on the crane for which it was not designed.

## **MOVING THE LOAD**

Before moving the load, make sure the path is free of any obstructions or people.

Avoid sudden accelerations or stops. Speeds must be kept to a minimum, especially rotation, to keep the load from swinging.

Avoid sudden reversing of direction. Do not reverse direction while the load is still moving.

Make sure that no part of the crane, boom, or load makes contact with any obstruction or comes within a minimum of ten feet from any electrical line.

## **TRANSIT**

While in transit, the crane must be stowed, preferably in a boom rest. The crane must be prevented from rotating and the hook prevented from swinging.



## INSPECTION AND MAINTENANCE

OSHA and ASME require frequent and periodic inspections. Records of these inspections must be kept readily available. Liftmoore requires periodic maintenance to ensure proper operation and prolonged life of the crane.

### INSPECTION

#### DAILY INSPECTION

OSHA 29CFR 1910.180 (d)(2)(i) requires the following be checked daily prior to use:

- All control mechanisms for maladjustment interfering with proper operation as well as for excessive wear of components and contamination by lubricants or other foreign matter.
- All safety devices for malfunction. This should include the anti-two block and pressure switch.
- Deterioration or leakage in air or hydraulic systems.
- Crane hooks with deformations or cracks. For hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10 deg. twist from the plane of the unbent hook.
- Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation. This should include the battery terminals, master disconnect switch, electrical swivel
- The wire rope shall be replaced if any of the following conditions are noted:
  - Kinking, crushing, bird-caging, or other damage
  - Reductions from nominal diameter of more than one-sixty-fourth inch for diameters up to and including five-sixteenths inch, one-thirty-second inch for diameters three-eighths inch to and including one-half inch.
  - Thimble is not in place or is damaged
  - Any evidence of heat damage
  - Six or more randomly distributed broken wires in 1 lay
  - Three or more broken wires in 1 strand in 1 lay

### MONTHLY INSPECTION

A thorough inspection of all ropes in use shall be made at least once a month and a certification record which includes the date of inspection, the signature of the person who performed the inspection and an identifier for the ropes shall be prepared and kept on file where readily available. All inspections shall be performed by an appointed or authorized person. Any deterioration, resulting in appreciable loss of original strength shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard. Some of the conditions that could result in an appreciable loss of strength are the following:

- Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
- A number of broken outside wires and the degree of distribution of concentration of such broken wires.
- Worn outside wires.



- Corroded or broken wires at end connections.
- Corroded, cracked, bent, worn, or improperly applied end connections.
- Severe kinking, crushing, cutting, or unstranding.

#### PERIODIC INSPECTION

An Annual Inspection Form is included in this manual. OSHA 29CFR 1910.180 (d)(2)ii requires periodic inspections of this crane. Liftmoore recommends an annual inspection using the included form.

#### MAINTENANCE PRECAUTIONS

The crane should be maintained monthly for safety reasons and to reduce stress on the crane.

#### WARNING!

Never perform any maintenance while the crane has any type of load on it. Use the manual operation procedure to lower the load if necessary.

#### WARNING!

Hydraulic cylinders may have high pressure stored in them even after hydraulic power is removed.

The counterbalance and pilot operated check valve in the cylinder will always hold some pressure in the cylinder. Slightly extending the cylinder then retracting a small amount will relieve most of the pressure in the cylinder. **DO NOT DEADHEAD THE CYLINDER!** This will store the maximum amount of pressure in the cylinder. Care should be taken when either valve is removed from the cylinder as some pressure will still remain.

After any maintenance has been performed the crane shall not be operated until all guards have been reinstalled, all safety devices reactivated, and maintenance equipment removed.

**LUBRICATION** Refer to the crane specification section for the periodic maintenance schedule and type of lubrication required.

**BOLTS** Bolts may loosen over time due to vibration; therefore they should be checked periodically. If bolts need to be replaced, make sure they are replaced with bolts of equal or greater strength. Check the periodic maintenance schedule (Crane Specification Section) for bolt specification and torque.

#### NOTE!

Sheave and boom and cylinder pivot bolts are not standard bolts. The shank and thread length of these bolts have been modified so that they do not pivot on the threads. Consult the parts section of this manual for part numbers of these bolts.

#### OTHER MAINTENANCE

Refer to parts drawings for any specific maintenance or adjustment procedures such as hydraulic winch brake, rotation drive gear set adjustment, Etc..



## MONTHLY INSPECTION REPORT

Crane Model No. \_\_\_\_\_ Serial Number \_\_\_\_\_

|  |           |          |
|--|-----------|----------|
| Are Boom Hitch Pins and Keepers in place?                              | Yes _____ | No _____ |
| Wire Line Hook with Safety Latch Working?                              | Yes _____ | No _____ |
| Is Hook OK, (Not bent)?  | Yes _____ | No _____ |
| Is Thimble on Wire Rope OK?  | Yes _____ | No _____ |
| Is Traveling Block in use?   | Yes _____ | No _____ |
| Is Wire Rope OK, not kinked or frayed?                                 | Yes _____ | No _____ |
| Are all Boom Sections straight?  | Yes _____ | No _____ |
| Are Sheave Bolts in place and tight?                                   | Yes _____ | No _____ |
| Do all Sheaves rotate easily?  | Yes _____ | No _____ |
| Are Mounting Bolts tight?  | Yes _____ | No _____ |
| Is Anti Two-Block functioning properly?                                | Yes _____ | No _____ |
| Is Boom Angle Indicator in place and functioning and is Chart legible? | Yes _____ | No _____ |
| Are Cylinder Mounting Bolts secure?                                    | Yes _____ | No _____ |
| Are Winch Mounting Bolts tight?  | Yes _____ | No _____ |
| When stopped does winch drift less than 1.0 Inches?                    | Yes _____ | No _____ |
| Is Load Chart in place and easily read?                                | Yes _____ | No _____ |
| Are functions on Pendant operating correctly?                          | Yes _____ | No _____ |
| Is Hydraulic Reservoir full?   | Yes _____ | No _____ |
| Is Outrigger straight and functioning?                                 | Yes _____ | No _____ |

Any items checked 'No' must be repaired before using this crane.



ANNUAL CRANE CERTIFICATION (29CFR1910.180)

OWNER \_\_\_\_\_

MODEL NUMBER \_\_\_\_\_ SERIAL NUMBER \_\_\_\_\_

DATE \_\_\_\_\_

Check the following:

\_\_\_ Crane Mounting Bolts (Torque)

\_\_\_ Winch mounting Bolts (Torque)

\_\_\_ Boom mounting bolts

\_\_\_ Cylinder mounting bolts

\_\_\_ Cracks on boom (Check when extended)

\_\_\_ Extension Pads not worn excessively

\_\_\_ Cracks on housing

\_\_\_ Weld cracks on boom

\_\_\_ Weld cracks on housing

\_\_\_ Boom swing approximately one inch or less at boom tip when retracted

\_\_\_ Hydraulic leaks

\_\_\_ Hoses not chafed or cracked

Sheaves not cracked

\_\_\_ Boom Tip

\_\_\_ Traveling Block

\_\_\_ Sheaves not worn excessively

\_\_\_ Boom Tip

\_\_\_ Traveling Block

\_\_\_ Sheaves rotate freely

\_\_\_ Boom Tip

\_\_\_ Traveling Block



\_\_\_ *Load Chart in place and legible*

\_\_\_ *Boom angle chart in place and legible*

\_\_\_ *Labels in place (See manufacturer's chart)*

\_\_\_ *Crane Hook Throat Opening within 15% of standard*

\_\_\_ *Crane Hook not bent more than 10 degrees from plane*

\_\_\_ *Hook safety latch operating properly*

\_\_\_ *Booms pin(s) and Keeper(s) in place (Manual Extension Section)*

\_\_\_ *Wire Rope removed if the following occurs:*

*Six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.*

*Wear of one-third the original diameter of outside individual wires.*

*Kinking, crushing, bird-caging or any other damage.*

*Evidence of heat damage.*

*Reduction from nominal diameter of more than one sixty-fourth inch for diameters to five-sixteenths diameter and one-thirty-second inch for diameters three-eighths to one-half inch.*

\_\_\_ *Wire Line installed as manufacturer requires.*

\_\_\_ *Protective covers in place*

\_\_\_ *Grease crane as required*

*Check fluid level*

\_\_\_ *Winch*

\_\_\_ *Gearbox*

\_\_\_ *Reservoir*

**2-12**

*Control system for proper operation*

\_\_\_ *Winch Up and Down*

\_\_\_ *Boom Up and Down*

\_\_\_ *Boom In and Out*

\_\_\_ *Rotation CW and CCW*

*Anti Two-Block (Required on Power Extendible Cranes) interrupts:*

\_\_\_ *Boom Down*

\_\_\_ *Boom Out*

\_\_\_ *Winch Up*

\_\_\_ *Boom Up stopped by Up Limit Switch*

\_\_\_ *Outrigger or jackstand operable*

\_\_\_ *Outrigger crushing decal in place*

\_\_\_ *Outrigger and Jackstand operates properly*

\_\_\_ *Boom rest in place and used*

\_\_\_ *Load Sensor trips when overloaded*

\_\_\_ *Winch Down does not overrun when stopped*

\_\_\_ *Crane stability chart in place and visible.*

*I certify that I have performed the above tests and that any deficiencies were corrected and now comply as above.*

*Signed* \_\_\_\_\_

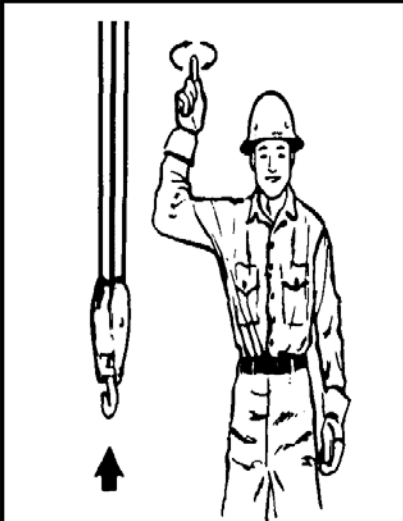
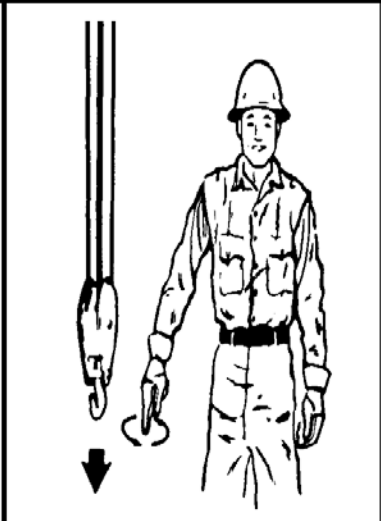
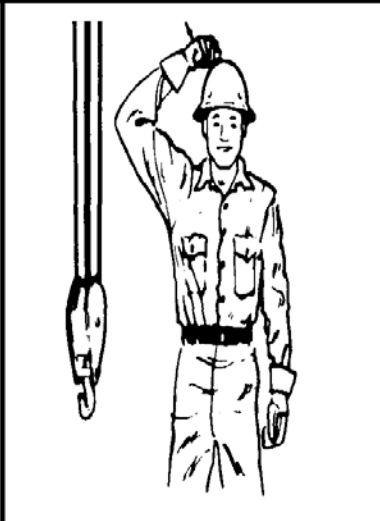
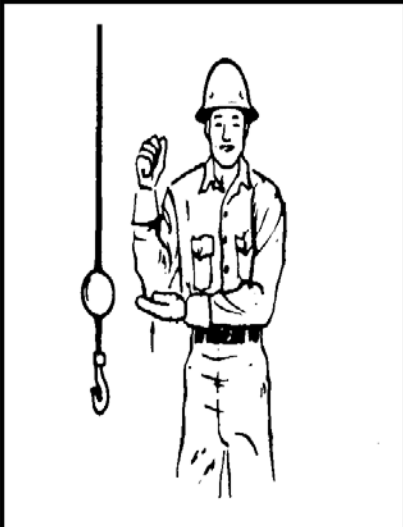
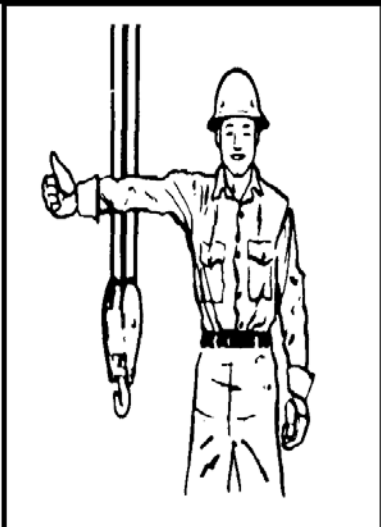
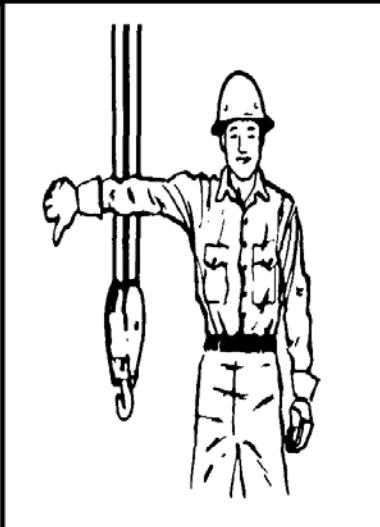
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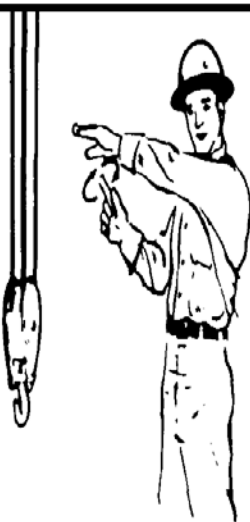
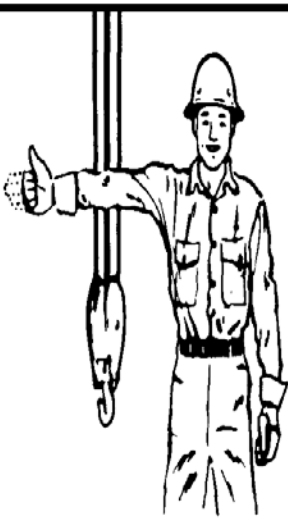
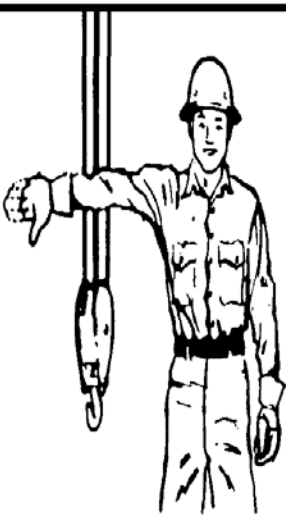
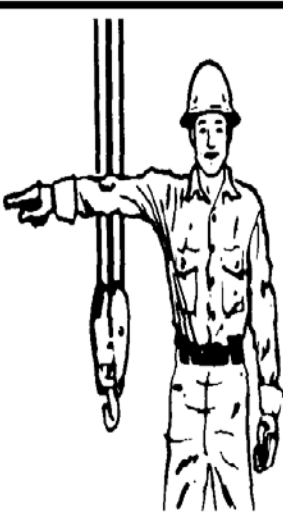
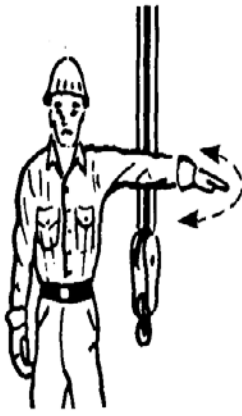
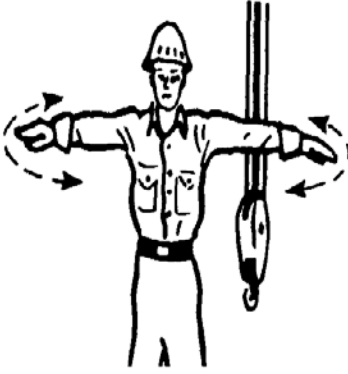
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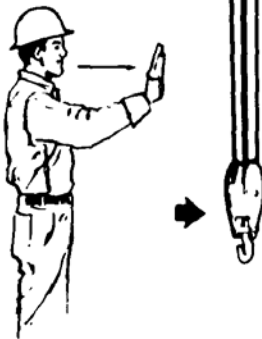

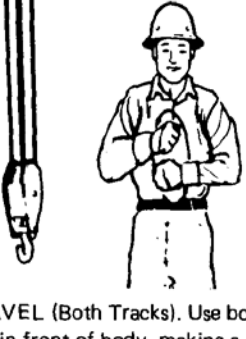





*Address* \_\_\_\_\_

*City* \_\_\_\_\_ *State* \_\_\_\_\_

**STANDARD HAND SIGNALS FOR CONTROLLING CRANE OPERATIONS**

|   |   |   |
|---|---|---|
|  <p><b>HOIST.</b> With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p> |  <p><b>LOWER.</b> With arm extended downward, forefinger pointing down, move hand in small horizontal circle.</p> |  <p><b>USE MAIN HOIST.</b> Tap fist on head; then use regular signals.</p>         |
|  <p><b>USE WHIPLINE (Auxiliary Hoist).</b> Tap elbow with one hand; then use regular signals.</p>         |  <p><b>RAISE BOOM.</b> Arm extended, fingers closed, thumb pointing upward.</p>                                  |  <p><b>LOWER BOOM.</b> Arm extended, fingers closed, thumb pointing downward.</p> |

|   |   |   |
|---|---|---|
|  <p data-bbox="256 751 594 930"> <b>MOVE SLOWLY.</b> Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)         </p> |  <p data-bbox="630 751 964 898"> <b>RAISE THE BOOM AND LOWER THE LOAD.</b> With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.         </p> |  <p data-bbox="1003 751 1338 930"> <b>LOWER THE BOOM AND RAISE THE LOAD.</b> With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.         </p> |
|  <p data-bbox="266 1497 597 1570"> <b>SWING.</b> Arm extended, point with finger in direction of swing of boom.         </p>  |  <p data-bbox="639 1497 954 1602"> <b>STOP.</b> Arm extended, palm down, move arm back and forth horizontally.         </p>  |  <p data-bbox="997 1497 1328 1602"> <b>EMERGENCY STOP.</b> Both arms extended, palms down, move arms back and forth horizontally.         </p>  |

|  |   |  |
|--|---|--|
|  <p><b>TRAVEL.</b> Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.</p>   |  <p><b>DOG EVERYTHING.</b> Clasp hands in front of body.</p>   |  <p><b>TRAVEL (Both Tracks).</b> Use both fists in front of body, making a circular motion about each other, indicating direction of travel, forward or backward. (For land cranes only.)</p> |
|  <p><b>TRAVEL (One Track)</b> Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body. (For land cranes only.)</p> |  <p><b>EXTEND BOOM (Telescoping Booms).</b> Both fists in front of body with thumbs pointing outward.</p> |  <p><b>RETRACT BOOM (Telescoping Booms).</b> Both fists in front of body with thumbs pointing toward each other.</p>   |
|  <p><b>EXTEND BOOM (Telescoping Boom).</b> One Hand Signal. One fist in front of chest with thumb tapping chest.</p>  |   |  <p><b>RETRACT BOOM (Telescoping Boom).</b> One Hand Signal. One fist in front of chest, thumb pointing outward and heel of fist tapping chest.</p>  |

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## KMFM CONTROL SYSTEM

KMFM – KAR-TECH MINI FM

The Liftmoore FM control system Model KMFM is a microprocessor-based radio remote control system, which allows wireless crane control. The receiver connects to the standard crane control socket, just like the wired pendant, so it is easily retrofitted and does not prevent use of the standard wired pendant.

### RECEIVER

The receiver features encapsulated electronics for weather resistance and LEDs for user diagnostics. It is mounted to the crane and connects to the crane control socket. Upon user input, the receiver energizes the applicable function valves and/or solenoids, just as the wired pendant does.

### TRANSMITTER

The transmitter is a pocket sized, hand held unit featuring an on/off power switch, push button switches for each function, and two diagnostics LEDs. It is powered by 2 AA Alkaline batteries and includes a power saving feature, which turns itself off if idle for 2 minutes

### DIAGNOSTIC LEDs

There is a green and a red LED located inside the receiver and on the transmitter.

The green LED will blink every ½ second if there is communication between the transmitter and the receiver. It will blink every second if there is no communication.

The transmitter's red LED will blink once every second if the batteries are low and need to be replaced.

Error codes are indicated by a number of flashes of the red LED. For example, 4 blinks and a pause means output number 3 has a problem. See the trouble shooting section for more information.

## MOUNTING

The FM receiver should be mounted so that it is protected from physical damage. It should be as high as possible with the antenna pointing upwards. A temporary mounting method, such as magnets or Velcro, is recommended so that it may be removed when not in use.

## OPERATION

POWER ON- PRESS AND HOLD POWER BUTTON UNTIL GREEN LIGHT BEGINS FLASHING.

POWER OFF- PRESS AND HOLD POWER BUTTON UNTIL GREEN & RED LIGHTS STOP FLASHING.

## REPLACEMENT OF COMPONENTS

Each transmitter is encoded with a digital ID that is programmed to its specific receiver. The receiver then only accepts signals from that transmitter so multiple cranes may be operated in the same vicinity without interference. If either component needs to be replaced, the receiver must be programmed to accept the new transmitter ID. Contact Liftmoore, Inc. for more information.

## RETROFIT

The system design allows for easy retrofit. The only crane modification required is the simple addition of a ground wire to the control socket. This does not prevent the use of the wired pendant.



## SAFETY SYSTEM

The safety system is designed to help prevent damage to the crane that would be caused by overload or two-blocking. The system consists of a load sensor, anti-two block device (optional on smaller, electric cranes), and limiting system control board.

When the applicable switch detects an overload or two-block condition, the limiting system will prevent activation of winch up, boom down, and extend out since these directions would cause damage. Winch down, boom up, extend in, and power rotation will still function so that the crane can be moved to a safe configuration.

### CAUTION!

Never de-activate or override safety functions. Doing so can result in serious damage to the crane and possibly injury or death.

## LOAD SENSOR

A pressure activated switch in the elevation cylinder acts as a load sensor. This switch is normally closed and opens at the preset pressure corresponding to the load rating of the crane.

### CAUTION!

The load sensor will not function when the elevation cylinder is fully retracted and is inaccurate when the boom is below horizontal.

### CAUTION!

The operator must never rely strictly on the load sensor to determine overload conditions. The load and load limits must always be known and adhered to.

## MISCELLANEOUS

### UP LIMIT SWITCH

The up limit switch prevents the elevation cylinder from reaching full extension. If the elevation cylinder were to "dead-head", the resulting pressure would activate the load sensor, preventing boom down. The boom would then have to be lowered using the manual operation buttons on the solenoid valves.

### CIRCUIT BREAKER, FUSE

For electric cranes a 150 Amp circuit breaker is supplied with the crane. It should be installed as close to the battery as possible. For hydraulic cranes a 10 Amp blade type fuse is supplied.

### DISCONNECT SWITCH

A power disconnect switch is supplied with the crane. Power to the crane should be turned off whenever not in use. This is to prevent inadvertent or unauthorized use and will help prevent corrosion at electrical connections.





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## HYDRAULIC SYSTEM FOR ELECTRIC CRANES

The hydraulic system consists of the hydraulic pump, manifold, solenoid valves, cylinders, motors, and tubing and hoses. Hydraulic power is generated by the electrically driven hydraulic pump on the outside of the housing. The hydraulic system is plumbed in series so that more than one function can be operated simultaneously.

### PUMP

The hydraulic pump assembly consists of a DC permanent magnet electric motor, pump, and reservoir.

The motor is activated by the pump solenoid. The solenoid is energized by the pendant control whenever a hydraulic function is activated.

The pump provides fluid pressure to power hydraulic functions. The system incorporates an adjustable relief valve to prevent damage that can be caused by over pressurizing the system.

Fluid is drawn from and returned to the reservoir. Servicing the hydraulic pump consist of maintaining the oil level. The reservoir should be kept as full as possible to prevent condensation from forming inside the tank. Also ensure the oil is not contaminated by water, dirt, rust, etc. See crane specification sheet for hydraulic oil type.

### SOLENOID VALVES

Each hydraulically operated function is controlled by a 4-way, 3-position (open and close) center solenoid valve. It is electrically operated and spring biased to center. A manual operation button is incorporated in the coil-retaining nut. Valves are mounted to the series manifold.

## CYLINDERS

Most hydraulic cylinders are double acting cylinders with integrally mounted counterbalance valve and pilot operated check valves. Refer to the cylinder drawings for specific information.

All cylinders use a counter-balance load holding cartridge valve on the extend port.

This valve performs 3 functions:

- Controls the rate of decent when lowering the load
- Keeps load from falling in the event of sudden loss of system pressure, such as when a hose bursts.
- Acts as a relief valve to prevent damage from induced load or thermal expansion.

It allows free flow to extend then blocks flow until opened by pilot pressure to the retract port or when the relief pressure is reached.

Some cylinders utilize a pilot operated check valve on the retract port to prevent the cylinder from creeping out under no load conditions. This valve allows flow into, but prevents flow from the retract port, thus hydraulically locking the cylinder until opened by pilot pressure to the extend port.

## MOTORS

The hydraulic motor used by the rotation drive is a high-torque, low-speed constant displacement motor.

## MANUAL OPERATION

If electrical problems occur the solenoid valves may be operated manually by depressing the manual operation button incorporated in the coil-retaining nut. Using a blunt object such as a bolt or screwdriver handle may be required to assist operation if high pressures are needed. Refer to the manifold drawing for function valves and directions.

If possible, activate the pump by activating a hydraulic function on the pendant. If this does not work, then energize the pump solenoid using a jumper from the hot side of



the solenoid to the coil post where the WHT/BLK wire is connected. If this fails also then battery voltage can be applied directly to the pump motor.

If hydraulic power is lost while a load is suspended, the load can be lowered by decreasing the setting on the counter-balance valve. This should only be done in extreme cases. The valve must be reset before the crane is returned to use.

### **WARNING!**

The boom may fall if the adjustment is made too fast. Do not stand where the boom may hit you if it falls. Serious injury or death may result

### **WARNING!**

The area between the boom and the cylinder, the boom and the housing, and the cylinder and the housing will change as the boom position changes and could form pinch points. Do not position any part of your body in these areas as it may be pinched or crushed as the boom lowers.

To decrease the setting, loosen the locknut on the valve, then slowly turn the adjustment stem **CLOCKWISE** until the load begins to lower. Count the number of turns so that the valve can be returned to its original setting.

Alternately, a pressure gage must be put on the retract port to adjust the setting so that approx. 1800 PSI is required to lower the boom with no load.

Test the setting by lifting a known load near the moment rating.



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## TROUBLESHOOTING KMFM CONTROL SYSTEM

If the crane does not operate, ensure that both the transmitter and receiver are on. Try disconnecting power to the crane receiver then reconnecting.

Run the crane using the wire pendant to confirm that the problem is the wireless unit.

Check that the green transmit light on the transmitter and the green receive light on the receiver light up when a function is selected.

Check for error codes and correct as necessary.

### NOTE!

The green transmit light is located inside the transmitter.

Check that all connectors are secure.

Check for bent pins on the receiver connectors.

If the transmit and receive LEDs are both lit when a function is selected and no error codes are given contact Liftmoore, Inc. for further information.

### Receiver Error Code Chart

|    | PROBLEM                         |
|----|---------------------------------|
| 1  | RADIO SIGNAL PROBLEM            |
| 2  | FAULTY CIRCUIT TO HOIST UP      |
| 3  | FAULTY CIRCUIT TO HOIST DOWN    |
| 4  | FAULTY CIRCUIT TO BOOM UP       |
| 5  | FAULTY CIRCUIT TO BOOM DOWN     |
| 6  | FAULTY CIRCUIT TO ROTATION CW   |
| 7  | FAULTY CIRCUIT TO ROTATION CCW  |
| 8  | FAULTY CIRCUIT TO EXTENSION OUT |
| 9  | FAULTY CIRCUIT TO EXTENSION IN  |
| 10 | FAULTY CIRCUIT TO PUMP RELAY    |

ERROR CODE NUMBER IS THE NUMBER OF RED LIGHT BLINKS BETWEEN EVERY PAUSE

### Transmitter Error Code Chart

|    | PROBLEM                         |
|----|---------------------------------|
| 1  | LOW BATTERY                     |
| 2  | FAULTY CIRCUIT TO HOIST UP      |
| 3  | FAULTY CIRCUIT TO HOIST DOWN    |
| 4  | FAULTY CIRCUIT TO BOOM UP       |
| 5  | FAULTY CIRCUIT TO BOOM DOWN     |
| 6  | FAULTY CIRCUIT TO ROTATION CW   |
| 7  | FAULTY CIRCUIT TO ROTATION CCW  |
| 8  | FAULTY CIRCUIT TO EXTENSION OUT |
| 9  | FAULTY CIRCUIT TO EXTENSION IN  |
| 10 | FAULTY CIRCUIT TO PUMP RELAY    |

ERROR CODE NUMBER IS THE NUMBER OF RED LIGHT BLINKS BETWEEN EVERY PAUSE.



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## TROUBLESHOOTING HYDRAULIC PUMP

Electric Pump, 14P Socket

### IMPORTANT NOTE!

The importance of first physically checking every connection between the battery and the crane cannot be overstressed!

Poor connections or poor grounding account for a large percentage of electrical problems. Time is often wasted chasing other probable causes only to eventually find a loose or corroded connection. **Measuring the voltage is not sufficient.** Often a poor connection will allow enough amperage to operate a meter or test light, but not enough to operate the motor, which requires very high amperage.

If the problem is random and intermittent then it is almost assuredly a loose or bad connection.

Another common problem is low battery voltage. Even if the battery is good when troubleshooting begins, running the motor can quickly drain a battery. If it can be done safely, it is best to have the vehicle running.

Also check the control socket and plug for bent, corroded, or dirty pins.

### CAUTION!

As the motor approaches stall, due to low voltage or excessive load, a very rapid heat build up occurs which will

quickly damage the motor. If the motor is not turning, do not operate the switch for more than a second. Allow the motor to cool between attempts to make it run.

### FOAMY FLUID

If the fluid foams then the problem is the pump seal – have it replaced.

### PUMP DOES NOT RUN

If both the pump and winch are not working, the problem is power related or control wiring related. Troubleshoot those areas first. Check voltage and amperage at pump motor while activating hydraulic function.

If the solenoid is actuating it will make a clicking noise. If the solenoid is not clicking, check for power at the coil input (small screw terminal) on solenoid when the Boom Up switch is activated. If there is no power then the problem is the electrical wiring harness or pendant control wiring.(refer. to CONTROL TROUBLESHOOTING CHART).

If the coil is getting power when the switch is activated, but not clicking then the problem is most likely the solenoid.

If the solenoid is clicking check for full power input to the solenoid. Trace the wiring back to the crane input, checking for power at each connection until the problem is found. If full electrical power to the motor is confirmed then the motor is faulty and should be replaced.



## LIMITING SYSTEM

### DESCRIPTION:

Liftmoore Limiting system (LS) is a micro processor-based control system designed to aid the machine operator by providing an overload shutoff mechanism. This system monitors the BOOM ANGLE and PRESSURE SENSOR inputs. By comparing these values to a built in Load Chart, The LS determines if the boom is in a safe operating position where all the functions are safe to operate, or if the boom in an unsafe position where some functions are disabled.

The LS controller operates the WINCH UP, EXTENSION OUT, ELEVATION UP, and ELEVATION DOWN valves.

When operating in a safe position, all four functions follow their dedicated inputs. For example, when the ELEVATION UP INPUT is connected to BATTERY+, the ELEVATION UP OUTPUT turns ON, and when the ELEVATION UP INPUT is disconnected, the ELEVATION UP OUTPUT turns OFF.

When operating in an unsafe position, determined from the BOOM ANGLE and PRESSURE SENSOR, the WINCH UP, EXTENSION OUT, ELEVATION DOWN and ELEVATION UP outputs are deactivated and will remain OFF as long as the LS detects the unsafe condition. When ATB switch input is 0 volt, switch open, WINCH UP and EXTENSION OUT, outputs are deactivated.

The overload system is just a feature to aid the operator. The machine operator is still required to follow the load chart, OSHA and other applicable standards when operating the equipment in which this product is installed.

The control system consists of a controller board inside an enclosure. All external connections are made by the 12-pin sealed Deutsch connector.

### ON/OFF OUTPUTS:

The LS Controller is designed with four on/off outputs with three ampere capacity and LED Status light. Each on/off is designed with short circuit and overload protection. In case of a short circuit or over load, the output is turned off and the status is displayed on the Error Code LED.

These outputs are designed to turn on and off corresponding to four switch inputs. Please refer to connection information and Error Code chart section of this manual.

F2202-0  
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**ON/OFF INPUTS:**

The LS controller is designed with 5 digital (switched to 12 VDC) inputs. Each input is protected from transient voltages up to 60 VDC. Refer to connection information in this manual for additional information.

**ANALOG INPUTS:**

The analog (proportional) inputs are provided to get signals from the Angle Sensor and the Pressure Sensor. The input range is 0.3 to 4.5 VDC (60 V transient). If any of the wires to the sensors are disconnected, the system will consider the situation is unsafe and will disable the outputs. An error code will be flashed on the Error Code LED. For additional information refer to Error Code chart and connection information in this manual.

**WATCH DOG TIMERS:**

The LS controller is designed with a “watch dog timer” for monitoring the regulated supply voltage and software execution. If the software program halts for any reason, or the voltage drops below specified value, the controller is returned to the reset state (all outputs off).

**STATUS INDICATORS:**

The control unit is equipped with two status indicator LEDs, one red and one green. If there is an error, the red LED flashes a certain number of times to indicate which error has occurred. Count the number of times the red LED flashes and refer to the error code chart on page 12 of this manual to determine the specific error. When there is no error, the green LED flashes to signify that the system is operating normally.



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10/1/14

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**LIMITING SYSTEM**  
**CONNECTION INFORMATION**

**Connector: DTM13-12PA**

| <u><b>PIN#</b></u> | <u><b>DESCRIPTION</b></u>   |
|--------------------|-----------------------------|
| A                  | GROUND                      |
| B                  | ANGLE SENSOR INPUT          |
| C                  | ELEVATION UP OUTPUT         |
| D                  | ELEVATION UP SWITCH INPUT   |
| E                  | PRESSURE SENSOR INPUT       |
| F                  | WINCH UP SWITCH INPUT       |
| G                  | ELEVATION DOWN SWITCH INPUT |
| H                  | EXTENSION OUT SWITCH INPUT  |
| J                  | EXTENSION OUT OUTPUT        |
| K                  | ELEVATION DOWN OUTPUT       |
| L                  | WINCH UP OUTPUT             |
| M                  | ATB SWITCH INPUT            |
| N                  | SUPPLY (9 TO 30 VDC)        |

F2203-0  
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## LIMITING SYSTEM

### ROUTINE MAINTENANCE:

1. Inspect electrical wiring for wear points or other damage. Repair as required.
2. Inspect all connections (especially those on the valves) for looseness or corrosion. Tighten and/or seal as necessary.

### MAINTENANCE PRECAUTIONS:

When performing any inspection or maintenance work on the system, always exercise care to prevent injury to yourself and others or damage to the equipment. The following are general precautions which should be closely followed in carrying out any maintenance work:

1. Do not have hydraulic pressure available to the valves when performing electrical tests.
2. Never operate or test any function if a person is in close proximity of the equipment, and could be injured if that function operated.
3. Take care to prevent metal tools from coming in contact with sensitive electronic components.
4. Turn power off before connecting or disconnecting valve coils or other electrical loads.

F2204-0  
10/1/14



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### LIMITING SYSTEM TROUBLE SHOOTING CHART

| PROBLEM  | PROBABLE CAUSE   | SOLUTION   |
|--|--|--|
| 1. Control will not operate when any switches are activated. No LEDs ON or Flashing. | <i>MISSING POWER TO THE SYSTEM.</i>  | <ol style="list-style-type: none"> <li>1. Check that power switch is on.</li> <li>2. Check fuse supplying power to the control unit</li> <li>3. Check vehicle wiring for power into the control.</li> <li>4. Check for proper grounding of vehicle's electrical circuit.</li> <li>5. Check vehicle's hydraulic system.</li> <li>6. Check crimped connections. Make sure connectors are in proper alignment and seated correctly</li> </ol> |
| 2. Control will not operate when any switches are activated.                         | <i>ANGLE SENSOR OR PRESSURE SENSOR NOT WIRED CORRECTLY OR NOT FUNCTIONING PROPERLY</i> | <ol style="list-style-type: none"> <li>1. Check vehicle wiring for power into the control.</li> <li>2. Check that the Angle and/or Pressure sensors are on and supplying power to controller connector pin 2 and 5.</li> <li>3. Check Error Code LED.</li> <li>4. Check vehicle's hydraulic system.</li> </ol>   |
| 3. Control will not operate when any switches are activated.                         | BOOM IN "UNSAFE" REGION<br>ATB CONDITION   | <ol style="list-style-type: none"> <li>1. RETRACT BOOM AND/OR LOWER WINCH TO REDUCE PRESSURE.</li> <li>2. Check ATB switch input for 12 volts.</li> <li>3. Check wiring connections to the valve coil.</li> <li>4. Check Error Code LED for system status.</li> <li>5. Check vehicle's hydraulic circuit.</li> </ol>   |
| 4. Function operates intermittently.   | <i>FAULTY CONNECTIONS</i>  | <ol style="list-style-type: none"> <li>1. Loose connection at the sensors and/or switches.</li> <li>2. Loose connector at the valve coils.</li> <li>3. Check Error code LED for system status.</li> <li>4. Check vehicle electrical circuit for loose connection.</li> <li>5. Check vehicle hydraulic circuit.</li> </ol>  |

F2205-A  
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**LIMITING SYSTEM**  
**ERROR CODE CHART**

To display an error code, the controller turns on and off the error code LED (RED LED) a certain number of times with a pause at the end. It repeats the code until the problem is resolved. The following error code chart is provided to assist the service personnel in troubleshooting the system. If more than one error condition is present, the error code with the lower number will be displayed.

| ERROR CODE<br>COUNT | PROBABLE CAUSE                              |
|---------------------|---|
| 1                   | PRESSURE SENSOR INPUT OUT OF RANGE          |
| 2                   | ANGLE SENSOR INPUT OUT OF RANGE             |
| 3                   | OVERLOAD CONDITION                          |
| 4                   | SHORT OR OVER LOAD ON ELEVATION UP OUTPUT   |
| 5                   | SHORT OR OVER LOAD ON ELEVATION DOWN OUTPUT |
| 6                   | SHORT OR OVER LOAD ON EXTENSION OUT OUTPUT  |
| 7                   | SHORT OR OVER LOAD ON WINCH UP OUTPUT       |
| 8                   | ATB CONDITION                               |

F2206-A  
10/1/14



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LIMITING SYSTEM  
PARTS LIST

| PART NUMBER | DESCRIPTION                     |
|-------------|---------------------------------|
| 25863       | LIMITING SYSTEM (CIRCUIT BOARD) |
| 24866       | BOOM ANGLE SENSOR               |
| 24456       | 5000 PSI PRESSURE SENSOR        |
| 24867       | PRESSURE SENSOR HARNESS         |

F2207-0  
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LIMITING SYSTEM  
SPECIFICATIONS

Power supply voltage ..... 12V nominal, 9V to 35V transient  
Operating temperature ..... -40C to +85C  
Storage temperature ..... -40C to +100C  
Digital Inputs ..... 12VDC, 60V transient  
Analog Inputs ..... 0.3 to 2.5VDC, 60V transient  
Outputs ..... 3 Amps



F2208-A  
10/1/14

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### Appendix A: ANGLE SENSOR SETUP

THE JUMPERS ON THE CONTROL BOARD ARE USED TO CALIBRATE THE ANGLE SENSOR (SEE FIG. 1.0). THIS PROCEDURE SHOULD BE DONE DURING INITIAL INSTALLATION AND ANY TIME THE ANGLE SENSOR IS MOVED OR REPLACED.

- 1) INSTALL THE ANGLE SENSOR AT +15 DEGREES ON THE RIGHT SIDE OF THE BOOM (PIVOT TO SENSOR'S LEFT).
- 2) PLACE THE JUMPER TO THE "-45 DEGREE" POSITION.
- 3) THE RED LED SHOULD BE ON SOLID AND THE GREEN LED OFF.
- 4) MOVE THE BOOM DOWN TO -45 DEGREES.
- 5) BOTH THE LEDS SHOULD BE BLINKING. IF NOT, THE SENSOR IS EITHER MISWIRED OR NOT MOUNTED CORRECTLY (CHECK SENSOR OUTPUT VOLTAGE FOR .5 TO .6 VOLTS).
- 6) REMOVE THE JUMPER. BOTH LEDS WILL STAY ON SOLID FOR 3 SECONDS.
- 7) PLACE THE JUMPER TO THE "+70 DEGREE" POSITION.
- 8) THE GREEN LED SHOULD GO ON SOLID AND THE RED LED OFF.
- 9) MOVE THE BOOM UP TO 70 DEGREES.
- 10) BOTH LEDS SHOULD BE BLINKING. IF NOT, THE SENSOR IS EITHER MISWIRED OR NOT MOUNTED CORRECTLY (CHECK SENSOR OUTPUT VOLTAGE FOR 4.3 TO 4.5 VOLTS).
- 11) REMOVE THE JUMPER. BOTH LEDS SHOULD STAY ON SOLID FOR 3 SECONDS.
- 12) PUT THE JUMPER BACK IN THE STORAGE POSITION (SEE FIG. 1.0).

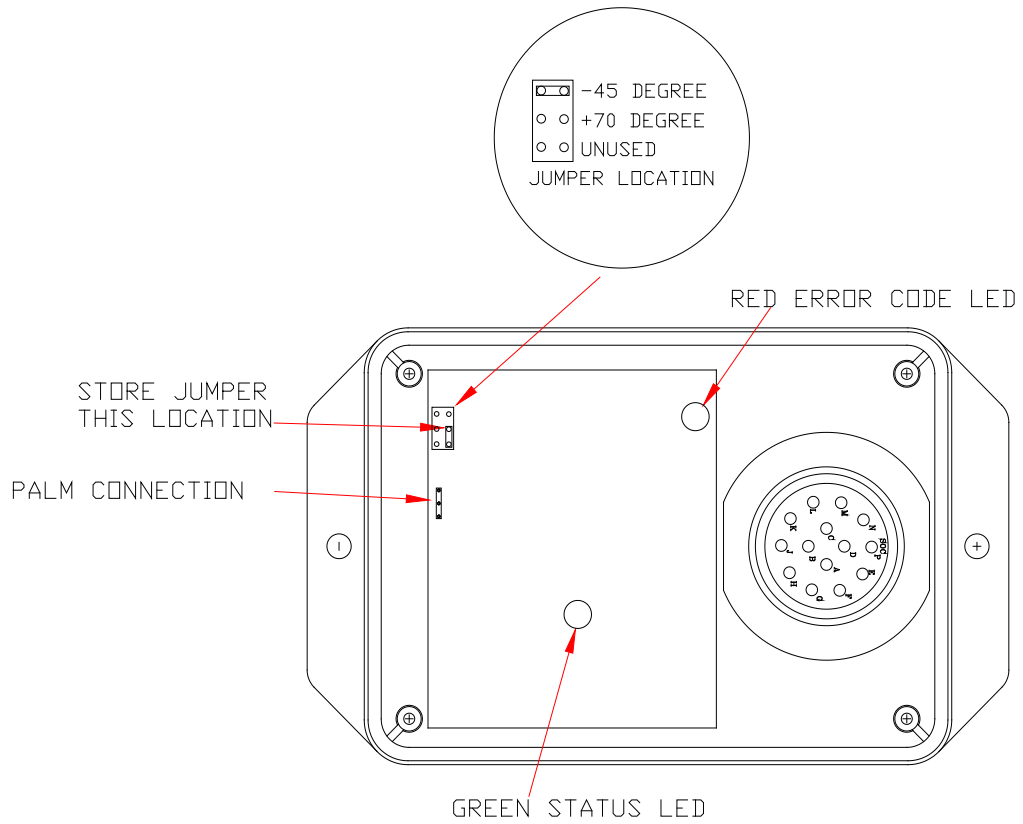
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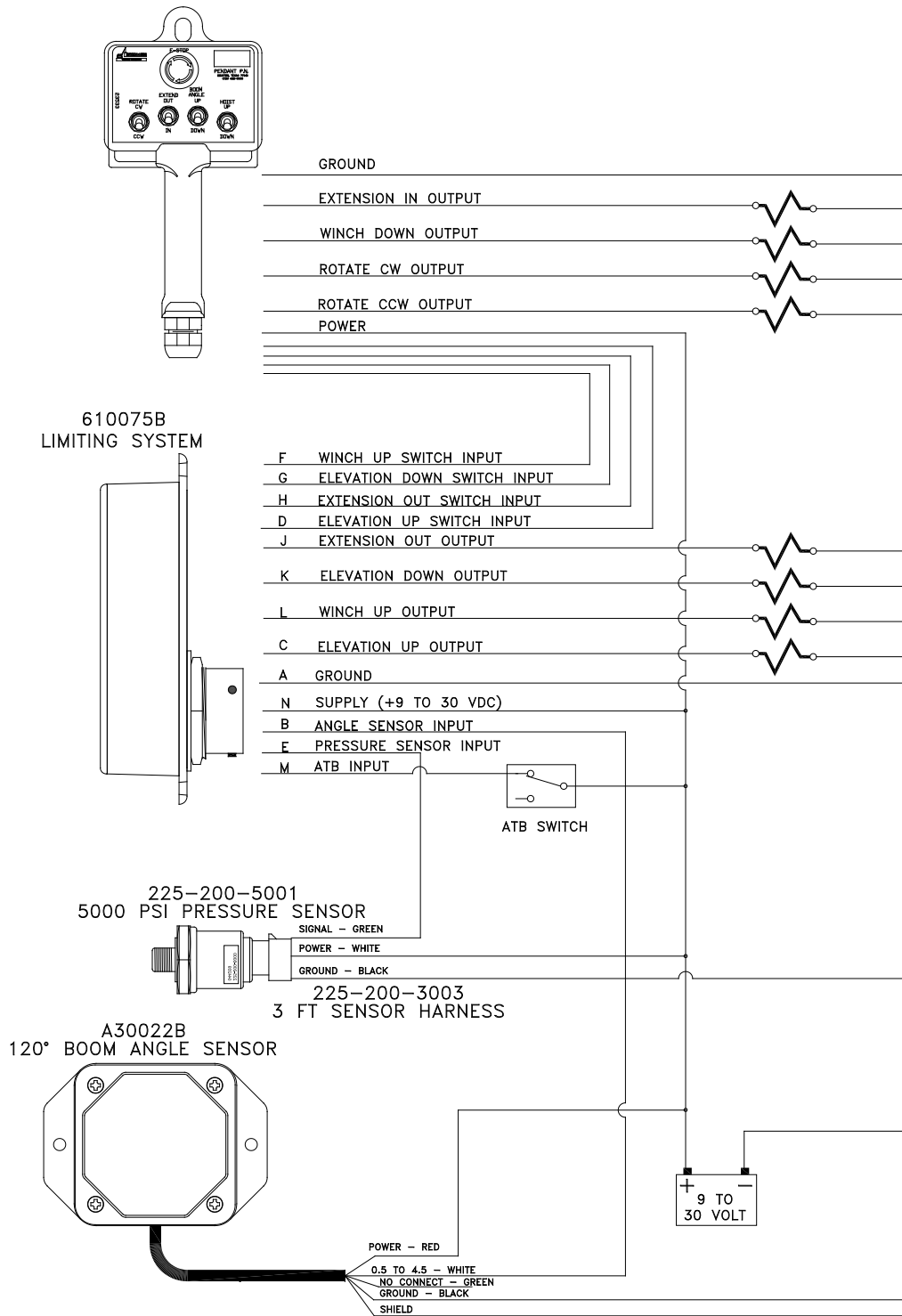
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(FIG. 1.0)



Appendix B: WIRING DIAGRAM



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## OVERLOAD PRESSURE – BOOM ANGLE CHART

| ANGLE DEGREES | OVERLOAD PRESSURE | BOOM DOWN OVERLOAD PRESSURE |
|---------------|-------------------|-----------------------------|
| 70            | 2,700.0           | 2,700.0                     |
| 69            | 2,700.0           | 2,700.0                     |
| 68            | 2,700.0           | 2,700.0                     |
| 67            | 2,700.0           | 2,700.0                     |
| 66            | 2,700.0           | 2,700.0                     |
| 65            | 2,700.0           | 2,700.0                     |
| 64            | 2,700.0           | 2,700.0                     |
| 63            | 2,700.0           | 2,700.0                     |
| 62            | 2,700.0           | 2,700.0                     |
| 61            | 2,700.0           | 2,700.0                     |
| 60            | 2,649.2           | 2,649.2                     |
| 59            | 2,545.7           | 2,545.7                     |
| 58            | 2,450.5           | 2,450.5                     |
| 57            | 2,362.5           | 2,362.5                     |
| 56            | 2,281.1           | 2,281.1                     |
| 55            | 2,205.6           | 2,205.6                     |
| 54            | 2,135.3           | 2,135.3                     |
| 53            | 2,069.7           | 2,069.7                     |
| 52            | 2,008.4           | 2,008.4                     |
| 51            | 1,951.1           | 1,951.1                     |
| 50            | 1,897.2           | 1,897.2                     |
| 49            | 1,846.6           | 1,846.6                     |
| 48            | 1,799.0           | 1,799.0                     |
| 47            | 1,754.1           | 1,754.1                     |
| 46            | 1,711.7           | 1,711.7                     |
| 45            | 1,671.6           | 1,721.6                     |
| 44            | 1,633.7           | 1,683.7                     |
| 43            | 1,597.7           | 1,647.7                     |
| 42            | 1,563.6           | 1,613.6                     |
| 41            | 1,531.2           | 1,581.2                     |
| 40            | 1,500.4           | 1,550.4                     |
| 39            | 1,471.0           | 1,546.0                     |
| 38            | 1,443.1           | 1,518.1                     |
| 37            | 1,416.4           | 1,491.4                     |
| 36            | 1,391.0           | 1,466.0                     |
| 35            | 1,366.7           | 1,441.7                     |
| 34            | 1,343.5           | 1,443.5                     |
| 33            | 1,321.2           | 1,421.2                     |
| 32            | 1,300.0           | 1,400.0                     |
| 31            | 1,279.6           | 1,379.6                     |
| 30            | 1,260.1           | 1,360.1                     |
| 29            | 1,241.5           | 1,391.5                     |
| 28            | 1,223.5           | 1,373.5                     |
| 27            | 1,206.3           | 1,356.3                     |
| 26            | 1,189.8           | 1,339.8                     |
| 25            | 1,174.0           | 1,324.0                     |
| 24            | 1,158.8           | 1,308.8                     |
| 23            | 1,144.1           | 1,294.1                     |
| 22            | 1,130.1           | 1,280.1                     |
| 21            | 1,116.6           | 1,266.6                     |
| 20            | 1,103.6           | 1,253.6                     |
| 19            | 1,091.1           | 1,291.1                     |
| 18            | 1,079.0           | 1,279.0                     |
| 17            | 1,067.5           | 1,267.5                     |
| 16            | 1,056.4           | 1,256.4                     |
| 15            | 1,045.7           | 1,245.7                     |
| 14            | 1,035.4           | 1,285.4                     |
| 13            | 1,025.5           | 1,275.5                     |

| ANGLE DEGREES | OVERLOAD PRESSURE | BOOM DOWN OVERLOAD PRESSURE |
|---------------|-------------------|-----------------------------|
| 12            | 1,016.0           | 1,266.0                     |
| 11            | 1,006.8           | 1,256.8                     |
| 10            | 998.0             | 1,248.0                     |
| 9             | 989.6             | 1,239.6                     |
| 8             | 981.5             | 1,231.5                     |
| 7             | 973.7             | 1,223.7                     |
| 6             | 966.2             | 1,216.2                     |
| 5             | 959.0             | 1,209.0                     |
| 4             | 952.1             | 1,202.1                     |
| 3             | 945.5             | 1,195.5                     |
| 2             | 939.2             | 1,189.2                     |
| 1             | 933.2             | 1,183.2                     |
| 0             | 927.4             | 1,177.4                     |
| -1            | 921.9             | 1,171.9                     |
| -2            | 916.7             | 1,166.7                     |
| -3            | 911.7             | 1,161.7                     |
| -4            | 907.0             | 1,157.0                     |
| -5            | 902.5             | 1,152.5                     |
| -6            | 898.3             | 1,148.3                     |
| -7            | 894.3             | 1,144.3                     |
| -8            | 890.8             | 1,140.8                     |
| -9            | 887.0             | 1,137.0                     |
| -10           | 883.7             | 1,133.7                     |
| -11           | 880.7             | 1,130.7                     |
| -12           | 877.9             | 1,127.9                     |
| -13           | 875.3             | 1,125.3                     |
| -14           | 872.9             | 1,122.9                     |
| -15           | 870.8             | 1,120.8                     |
| -16           | 868.9             | 1,118.9                     |
| -17           | 867.2             | 1,117.2                     |
| -18           | 865.8             | 1,115.8                     |
| -19           | 864.6             | 1,114.6                     |
| -20           | 863.7             | 1,113.7                     |
| -21           | 863.0             | 1,113.0                     |
| -22           | 862.5             | 1,112.5                     |
| -23           | 862.3             | 1,112.3                     |
| -24           | 862.3             | 1,112.3                     |
| -25           | 862.6             | 1,112.6                     |
| -26           | 863.1             | 1,113.1                     |
| -27           | 863.9             | 1,113.9                     |
| -28           | 864.9             | 1,114.9                     |
| -29           | 866.3             | 1,116.3                     |
| -30           | 867.9             | 1,117.9                     |
| -31           | 869.8             | 1,119.8                     |
| -32           | 872.0             | 1,122.0                     |
| -33           | 874.5             | 1,124.5                     |
| -34           | 877.3             | 1,127.3                     |
| -35           | 880.5             | 1,130.5                     |
| -36           | 884.0             | 1,134.0                     |
| -37           | 887.8             | 1,137.8                     |
| -38           | 892.0             | 1,142.0                     |
| -39           | 896.5             | 1,146.5                     |
| -40           | 901.5             | 1,151.5                     |
| -41           | 906.9             | 1,156.9                     |
| -42           | 912.6             | 1,162.6                     |
| -43           | 918.9             | 1,168.9                     |
| -44           | 925.6             | 1,175.6                     |
| -45           | 932.7             | 1,182.7                     |



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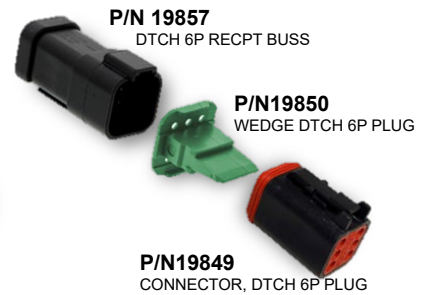
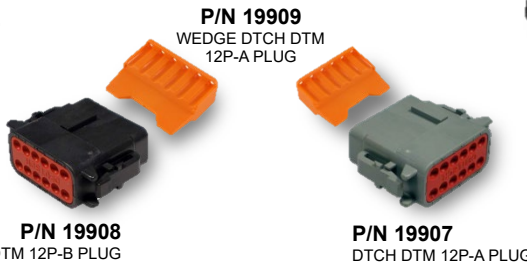
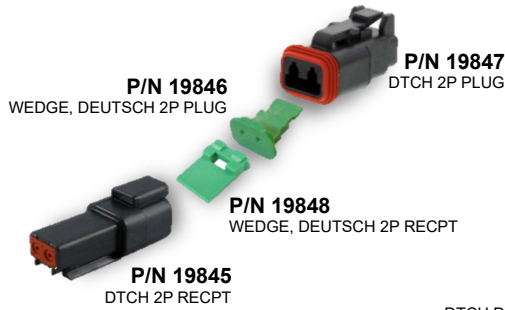
**DEUTSCH CONNECTIONS & PINS**



**FEMALE'S**



**MALE'S**



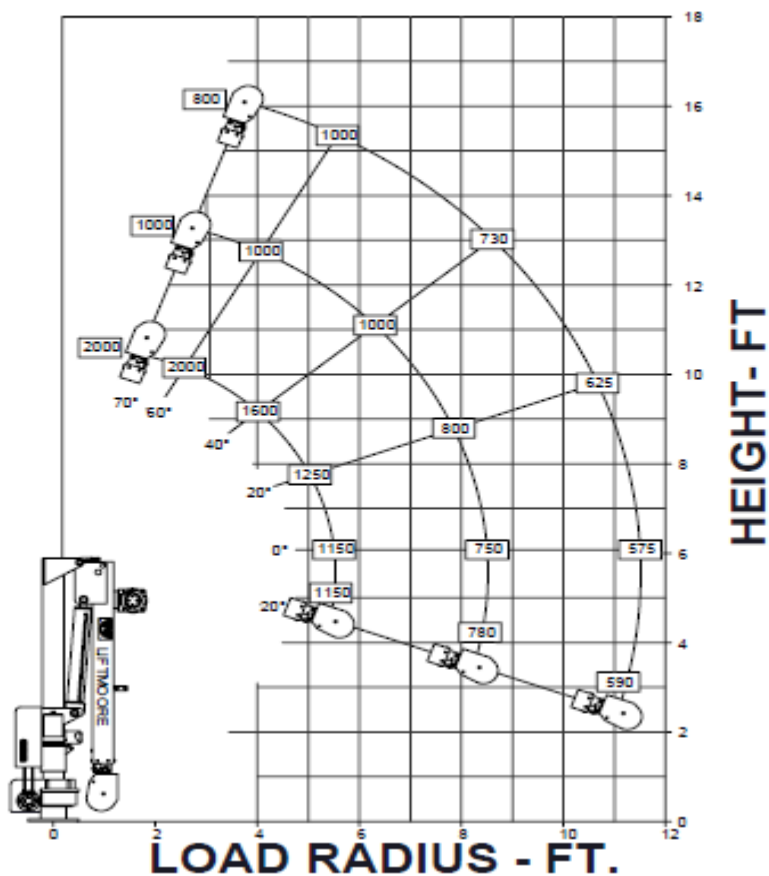
## SECTION IV

# CRANE SPECIFICATIONS **MODEL LA6K EX-11 CRANES**

MOMENT RATING                      6,500 FT-LBS

MAX SINGLE LINE LOAD            2,000 LBS

LIFTING CAPACITIES AT VARIOUS LOAD RADII:



POWERED FUNCTIONS AND EXPECTED TIMES:

|                |           |            |              |
|----------------|-----------|------------|--------------|
| WINCH          | UP: 15 s  | DOWN: 15 s | 3 REVOLUTION |
| BOOM ELEVATION | UP: 31 s  | DOWN: 34 s |              |
| BOOM EXTENSION | OUT: 20 s | IN: 12 s   |              |
| ROTATION       | 360°      | 64 s       |              |

ELECTRICAL:

|                 |         |
|-----------------|---------|
| VOLTAGE         | 12 VDC  |
| FUSE            | 15 AMP  |
| CIRCUIT BREAKER | 150 AMP |

NOTE: FUNCTION TIMES ARE BASED ON THESE INPUT VALUES



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| <b>PERIODIC MAINTENANCE SCHEDULE</b><br>MODEL LA6K CRANES |  |                                |
|---|--|--------------------------------|
| <b>BOLTS</b>  |  |                                |
| <b>MOUNTING BOLTS</b>                                     | 1/2-13 GRADE 8<br>TORQUE 110 FT-LBS DRY  | EVERY 4 MONTHS                 |
| <b>LUBRICATION</b>  |  |                                |
| <b>GREASE FITTINGS</b>                                    | SEE DRAWING  | EVERY OTHER WEEK               |
| <b>HYDRAULIC FLUID</b>                                    | STANDARD<br>Chevron AW Hydraulic Oil 46 or<br>equivalent SAE 15 weight oil<br><br>COLD WEATHER<br>AW 32 or equivalent SAE 10<br>weight oil | CHECK DAILY, FILL AS<br>NEEDED |
| <b>BEARINGS</b>   | Oil Center Research PM 600<br>Military grease or equivalent<br>Benton Based Grease<br>NLGI Grade 2   | EVERY 6 HOURS OF<br>OPERATION  |

**OTHER MAINTENANCE****ROTATION GEAR SETTING**

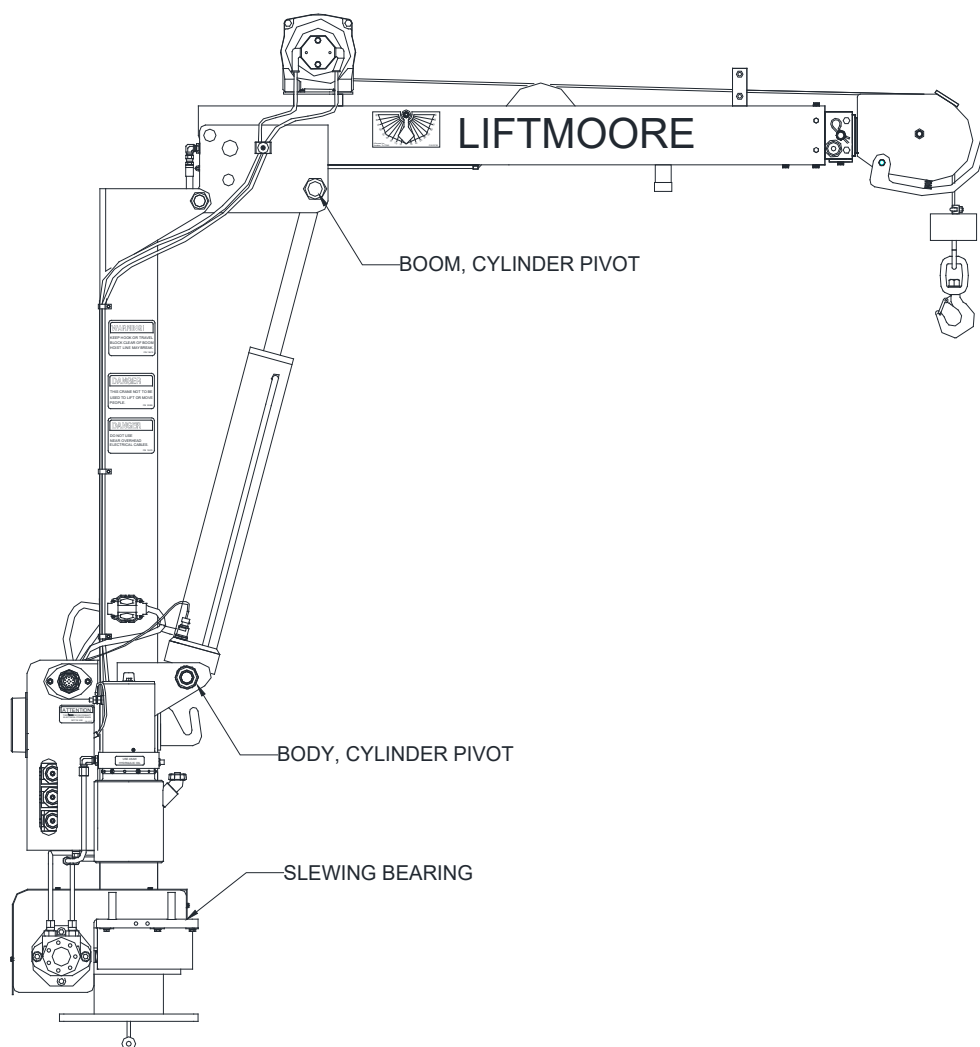
See the Rotation Components drawing for adjustment procedure if backlash becomes so great that excessive boom movement occurs. Factory setting is such that the displacement of the retracted boom tip is less than 1 inch.

**WINCH**

The winch is factory lubricated and should not require further lubrication in its lifetime. The winch brake cannot be adjusted. If brake drift is more than 1 inch under full load then it must be replaced.



## CRANE LUBRICATION POINTS



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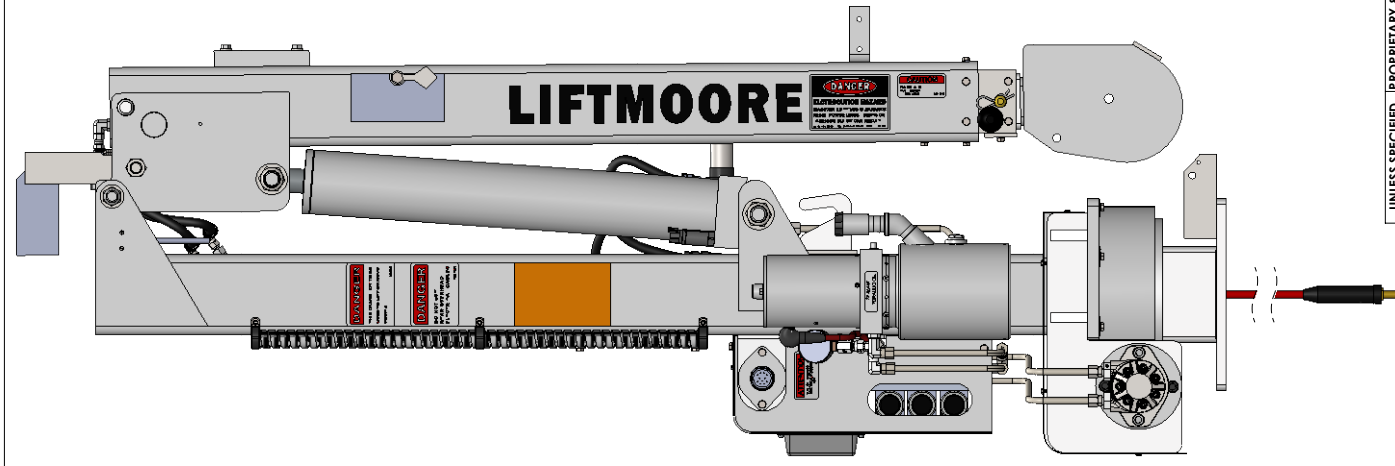
**LIST FOR BOX, CRANE PARTS LA6K EX-11**

P/N 34848 - BOX, CRANE PARTS LA6K EX-11 SP

- |     |   |      |
|-----|---|------|
| 1)  | P/N 34847 - MANUAL, CRANE LA6K EX-11 SP.....    | 1pc  |
| 2)  | P/N 33021 - WIRE, BATTERY #1 X 25' W\MECON..... | 1pc  |
| 3)  | P/N 30728 - WIRE, GROUND #4 X 3' LONG.....      | 1pc  |
| 4)  | P/N 27490 - SWITCH, DISCONNECT COVER PLATE..... | 1pc  |
| 5)  | P/N 30815 - SCREW, HHC 0.50-13 X 2.50 GR8.....  | 4pcs |
| 6)  | P/N 30474 - WASHER, LOCK 0.50 GR5 PLATED.....   | 4pcs |
| 7)  | P/N 31957 - NUT, HEX 0.50-13 GR8 PLATED.....    | 4pcs |
| 8)  | P/N 16878 - BREAKER, CIRCUIT 150 AMP.....       | 1pc  |
| 9)  | P/N 16915 - TERMINAL, LUG #1 GA 0.25 DIA.....   | 2pcs |
| 10) | P/N 30766 - SWITCH, DISCONNECT.....             | 1pc  |
| 11) | P/N 17010 - BRACKET, SWITCH MNT. ELE. CRN.....  | 1pc  |
| 12) | P/N 17063 - TERMINAL, LUG #1 GA 0.37 DIA.....   | 2pcs |
| 13) | P/N 23144 - LEVEL AND TAPE ASSEMBLY .....       | 1pc  |
| 14) | P/N 27715 - DECAL, LOAD CAPACITY LA6K.....      | 1pc  |



| ITEM | PART NUMBER | DESCRIPTION   | QTY |
|------|-------------|---|-----|
| 1    | 34838       | CRANE ASSY LA6K EX-11 1ST SP                        | 1   |
| 2    | 34846       | EWH, DTCH ELEC LA6K KMFM                            | 1   |
| 3    | 28705       | SCREW, HHC 0.25-20 X 1.00 SS                        | 1   |
| 4    | 34069       | SCREW, HHC 0.25-20 X 0.50 SS                        | 11  |
| 5    | 28690       | WASHER, LOCK 0.25 316 SS                            | 8   |
| 6    | 28703       | NUT, HEX NYLOC 0.25-20 SS                           | 1   |
| 7    | 29299       | WASHER, LOCK 0.25 STAR SS                           | 1   |
| 8    | MH01 143    | CAP, BREATHER 3/4 NPT-MONARCH                       | 1   |
| 9    | 17882       | WASHER, LOCK #8 GR2 PLATED                          | 5   |
| 10   | 28963       | SCREW, SOC HD 8-32 X 0.37 SS                        | 5   |
| 11   | 33003       | SOLENOID, SINGLE POLE 12V E/G                       | 1   |
| 12   | 29405       | WASHER, FLAT 0.25 SS 316                            | 2   |
| 13   | 25863       | BOARD, CIRCUIT LA6K ATB                             | 1   |
| 14   | 29414       | SCREW, SOC HD 10-24 X 0.50 SS                       | 2   |
| 15   | 33409       | NUT, HEX NYLOC 10-24 GR2                            | 2   |
| 16   | 24866       | INCLINOMETER WIRE ASSEMBLY                          | 1   |
| 17   | 25612       | CLAMP, HOSE SUPPORT 1.00" ID                        | 3   |
| 18   | 17164       | SCREW, SOC HD 10-24 X 0.62 SS                       | 3   |
| 19   | 33145       | WASHER, FLAT #10 GR2 PLATED                         | 3   |
| 20   | 32639       | WASHER, LOCK #10 GR2 PLATED                         | 3   |
| 21   | 20922       | BUMPER, RUBBER RECESSED 1.5"                        | 1   |
| 22   | 28699       | SCREW, HHC 0.25-20 X 0.75 SS                        | 1   |
| 23   | 30760       | PIN, HITCH 0.75 X 4.50 W/H-PIN                      | 1   |
| 24   | 24435       | STOP, BOOM INNER ASSY.                              | 1   |
| 25   | 17347       | WIRE, BATTERY #4 X 17" W/TRM                        | 1   |
| 26   | 30674       | BOOT, RUBBER 1 & 1/0                                | 2   |
| 27   | 19642       | EWH, PUMP SOL. / CONTACTOR GND                      | 1   |
| 28   | 33176       | WIRE, BATTERY #6 X 7" W/TRML                        | 1   |
| 29   | 31408       | WRAP, 3/4" BLACK SPIRAL CUT                         | 1   |
| 30   | 30989       | SCREW, HWHSMS #8 X 0.50                             | 1   |
| 31   | 28425       | SENSOR, 5000 W/ 3 PIN DEUTSCH                       | 1   |
| 32   | 23684       | DECAL, LA6K   | 1   |
| 33   | 15582       | DECAL, LOGO 5.00" X 2.75"                           | 1   |
| 34   | 15618       | DECAL, DANGER ELECTRIC INJURY                       | 1   |
| 35   | 15577       | DECAL, ATTENTION BATTERY                            | 1   |
| 36   | 16102       | DECAL, CAUTION READ MANUAL                          | 1   |
| 37   | 32085       | DECAL, LIFTING PERSONNEL                            | 1   |
| 38   | 15579       | DECAL, DANGER CABLES                                | 1   |
| 39   | 16103       | DECAL, USE 46AW HYD. OIL                            | 1   |
| 40   | 33165       | DECAL, LIFTMOORE - 2.50" HORIZONTAL BLACK LETTERING | 2   |
| 41   | 23700       | DECAL, ANGLE PENDULUM LA6K                          | 2   |
| 42   | 15612       | DECAL, CAUTION PIN MUST BE IN                       | 1   |
| 43   | 27715       | DECAL, LOAD CAPACITY LA6K                           | 1   |
| 44   | 27721       | PLATE, SERIAL LA6K EX-11                            | 1   |
| 45   | 25174       | LIFTING LUG LA6K WELDMENT                           | 1   |
| 46   | 31921       | SCREW, HHC 0.75-10 X 8.00 GR2                       | 1   |
| 47   | 30470       | NUT, HEX 0.75-10 GR5 PLATED                         | 1   |
| 48   | 25173       | DECAL, WARNING-BEFORE OPERATING                     | 1   |



ASSEMBLED VIEW

- NOTES
- 1 ADD VIBRA-TITE TO THREADS.
  - 2 TORQUE TO 5 FT-LBS.
  - 3 ADD TEFLON TAPE TO THREADS.

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 INC. IS PROHIBITED.

1/4" MIN. WELDS  
 USE E70 ROD.

DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 .X ± .116  
 FRAC. ± .116  
 XX° ± .5°

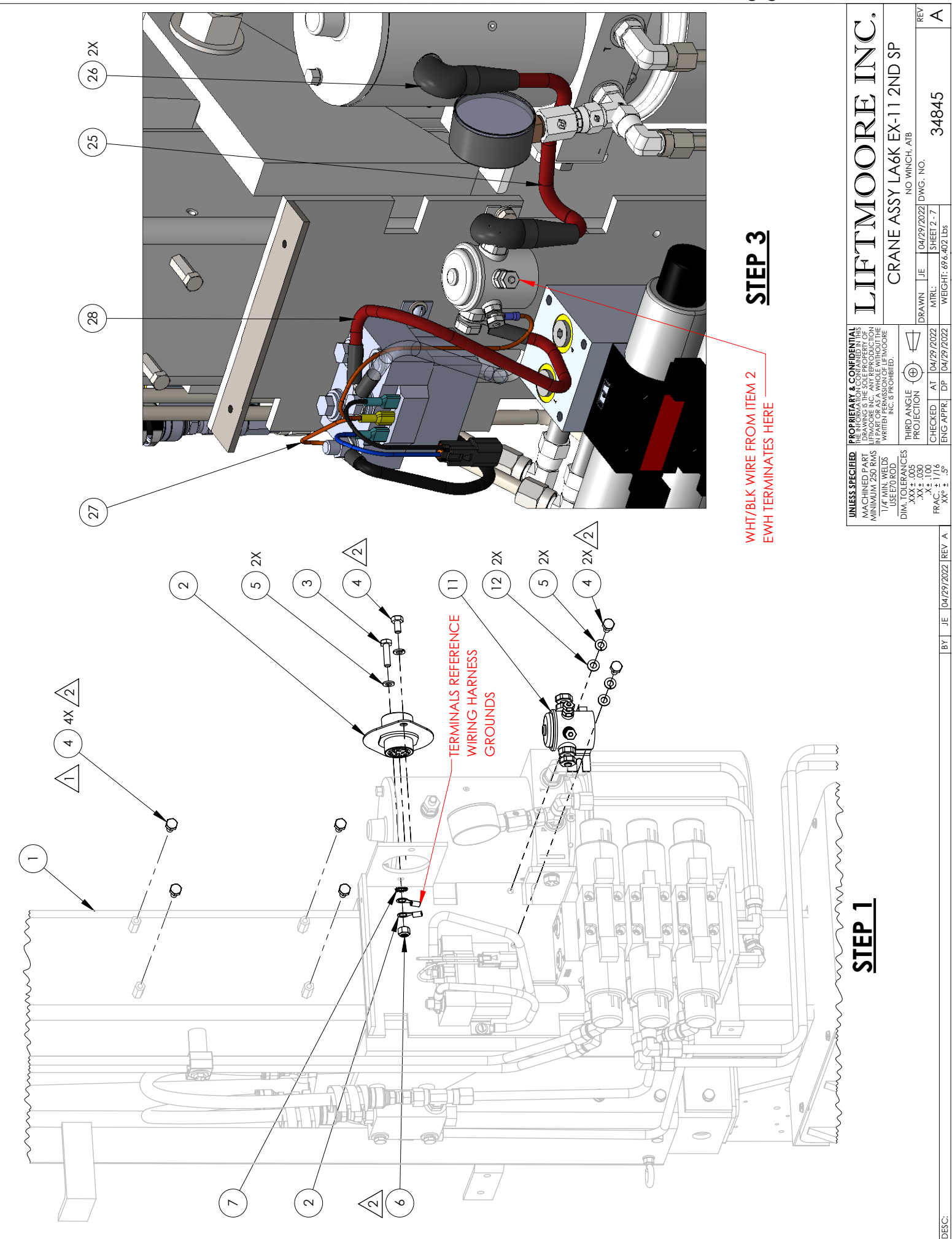
THIRD ANGLE PROJECTION

CHECKED AT DF 04/29/2022  
 ENG APPR: JE 04/29/2022

**LIFTMOORE INC.**  
 CRANE ASSY LA6K EX-11 2ND SP  
 NO. WINCH, ATB

DRAWN: JE 04/29/2022 DWG. NO.  
 MTRL: SHEET 1 - 7  
 WEIGHT: 696.402 Lbs

REV A 34845



**STEP 3**

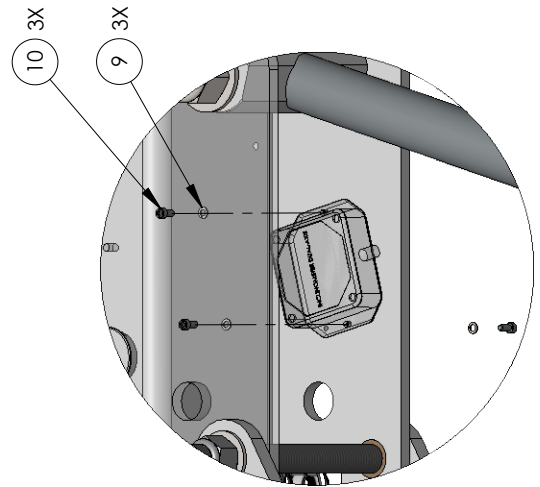
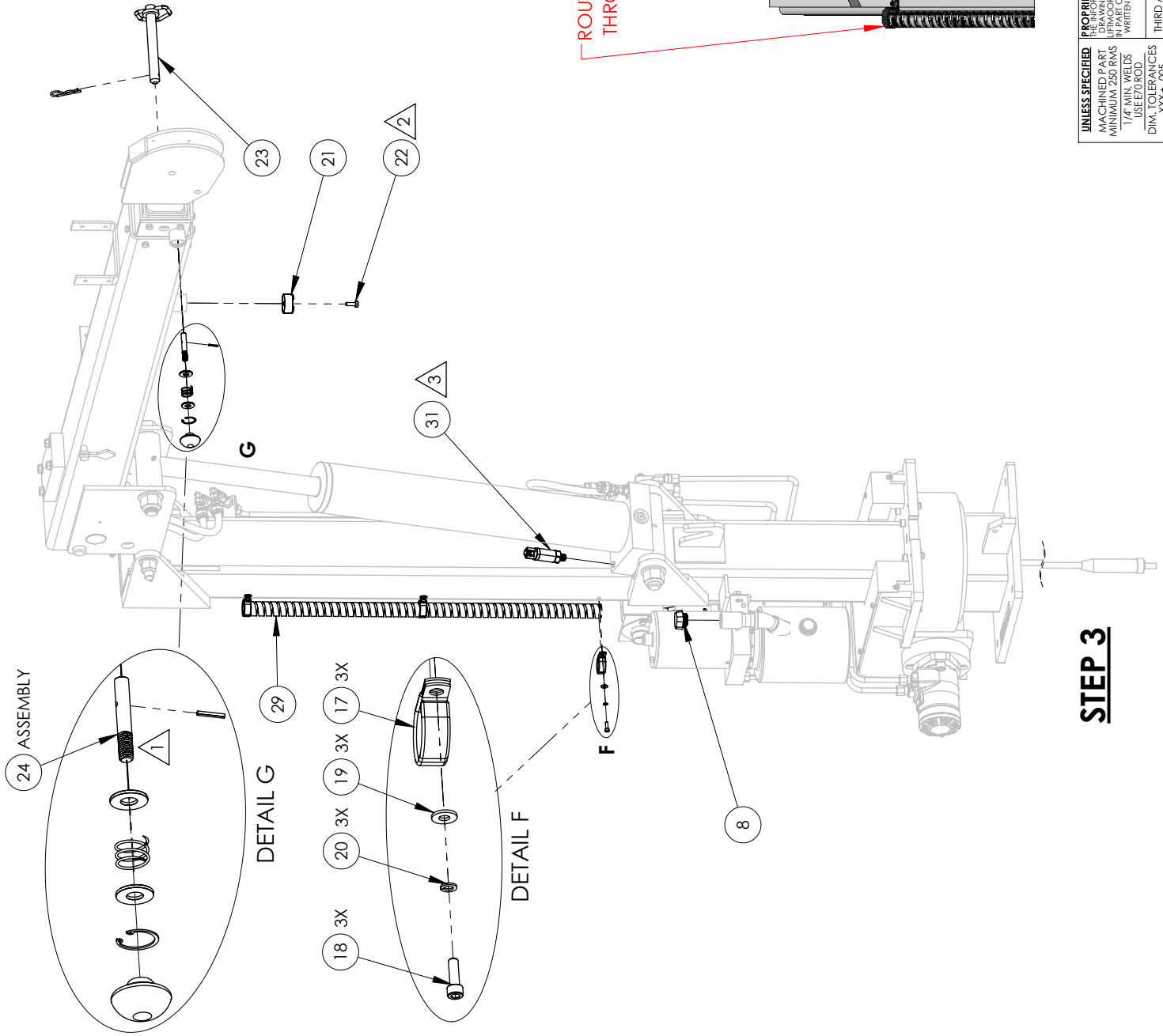
WHT/BLK WIRE FROM ITEM 2  
EWH TERMINATES HERE

**STEP 1**

TERMINALS REFERENCE  
WIRING HARNESS  
GROUNDS

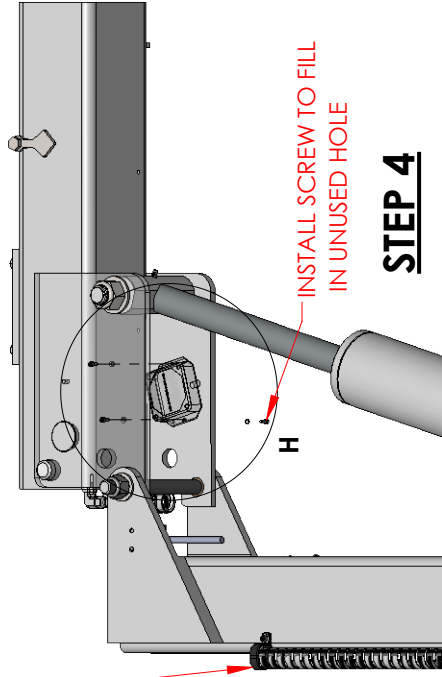
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|-------------------|--|---|--|
| UNLESS SPECIFIED: |  | PROPERTY & CONFIDENTIAL                 |  |
| MACHINED PART     |  | DRAWING IS THE SOLE PROPERTY OF         |  |
| MINIMUM .250 RMS  |  | LIFTMOORE INC. AND REPRODUCTION         |  |
| 1/4" MIN. WELDS   |  | WITHOUT WRITTEN PERMISSION OF LIFTMOORE |  |
| USE E70 ROD       |  | INC. IS PROHIBITED.                     |  |
| DIM. TOLERANCES   |  | THIRD ANGLE                             |  |
| .XXX ± .005       |  | PROJECTION                              |  |
| .XX ± .030        |  | CHECKED AT 04/29/2022                   |  |
| FRAC. ± 1/16      |  | ENG APPR. DF 04/29/2022                 |  |
| XX° ± .5°         |  | DRAWN JE 04/29/2022                     |  |

|                              |  |                      |  |
|------------------------------|--|----------------------|--|
| LIFTMOORE INC.               |  | NO WINCH, ATB        |  |
| CRANE ASSY LA6K EX-11 2ND SP |  | DWG. NO.             |  |
| REV A                        |  | 34845                |  |
| SHEET 2 - 7                  |  | WEIGHT: 696.402 Lbs. |  |
| DRAWN JE                     |  | 04/29/2022           |  |
| MIRL:                        |  | SHEET 2 - 7          |  |
| ENG APPR. DF                 |  | 04/29/2022           |  |



DETAIL H

ROUTE INCLINOMETER & UP LIMIT SWITCH WIRES THROUGH CLAMPS AND SPIRAL WRAP



INSTALL SCREW TO FILL IN UNUSED HOLE

**STEP 4**

**STEP 3**

**UNLESS SPECIFIED:**  
 MACHINED PART  
 MINIMUM .250 RIMS  
 1/4" MIN. WELDS  
 USE E70 ROD  
 DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 .X ± .116  
 FRAC. ± .1/16  
 XX° ± .5°

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 INC. IS PROHIBITED.

THIRD ANGLE  
 PROJECTION

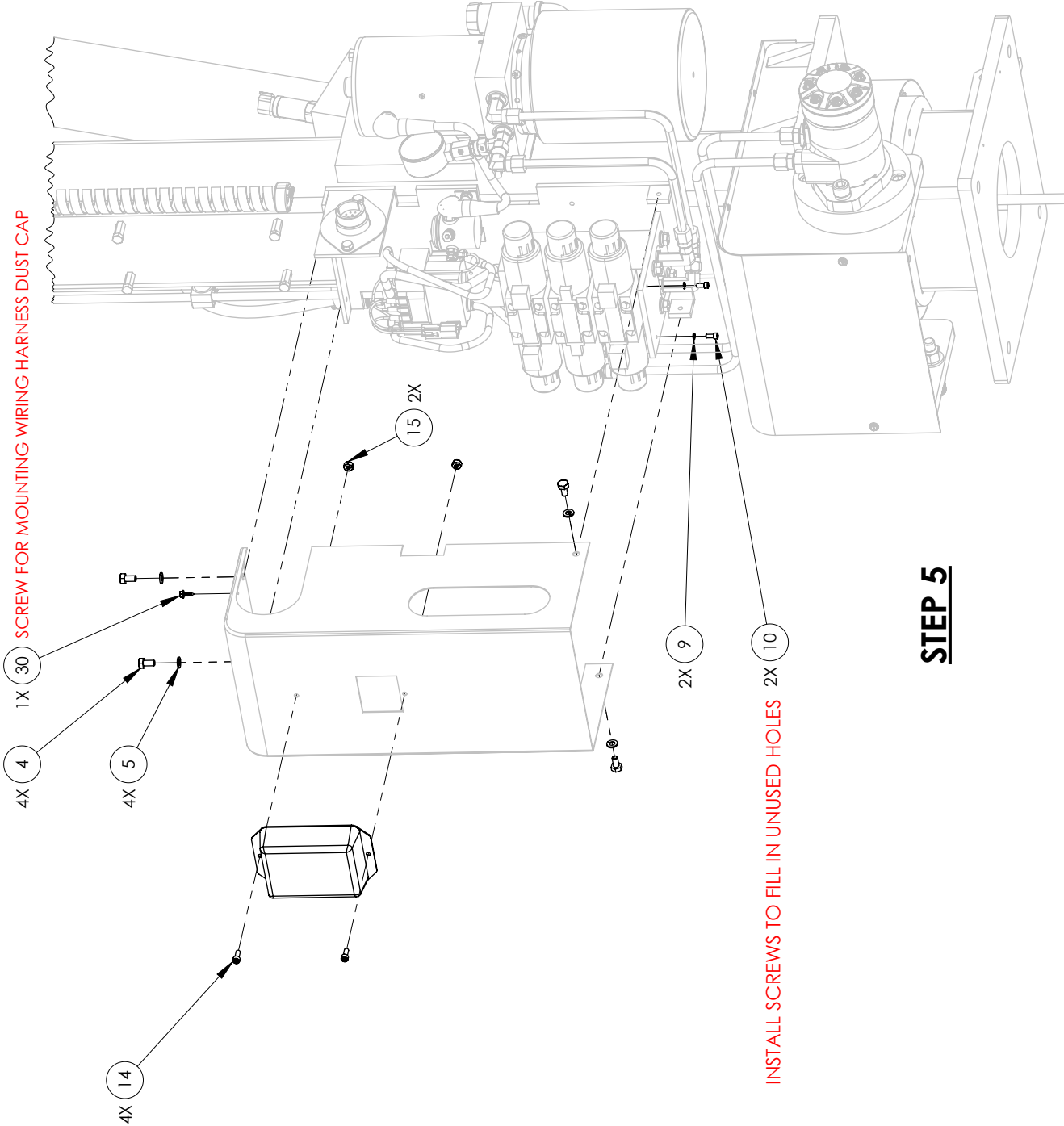
CHECKED: AT 04/29/2022  
 ENG APPR: DF 04/29/2022

**LIFTMOORE INC.**  
 CRANE ASSY LA6K EX-11 2ND SP

NO. WINCH, ATB

DRAWN: JE 04/29/2022 DWG. NO. 34845  
 MRL: SHEET 3 - 7  
 WEIGHT: 696.402 Lbs.

REV A



4X 4    1X 30 SCREW FOR MOUNTING WIRING HARNESS DUST CAP    4X 5    4X 14    2X 15    2X 9    2X 10

INSTALL SCREWS TO FILL IN UNUSED HOLES

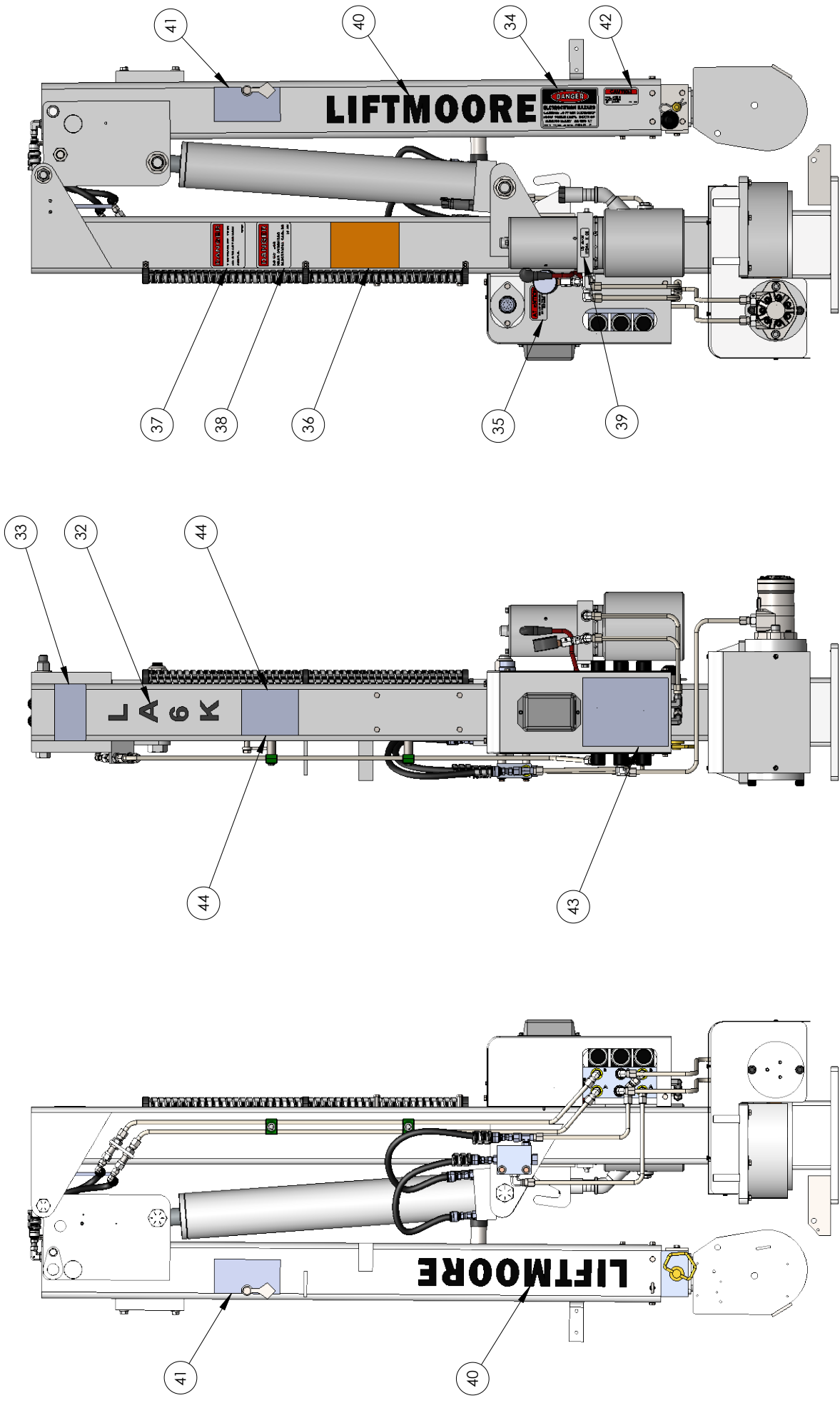
**STEP 5**

**UNLESS SPECIFIED**  
 MACHINED PART  
 MINIMUM .250 RMS  
 1/4" MIN. WELDS  
 USE E70 ROD  
 DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 .X ± .116  
 FRAC. ± .116  
 XX° ± .5°

**THIRD ANGLE PROJECTION**  
 CHECKED AT 04/29/2022  
 ENG APPR. DF 04/29/2022

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|  |  |  |                         |          |
|--|--|--|-------------------------|----------|
| <b>LIFTMOORE INC.</b><br>CRANE ASSY LA6K EX-11 2ND SP<br>NO WINCH, ATB |  | DRAWN: JE<br>MTRL: A<br>WEIGHT: 696.402 Lbs. | 04/29/2022<br>SHEET 4-7 | REV<br>A |
|  |  | 34845  | DWG. NO.                | A        |



**DECALS**

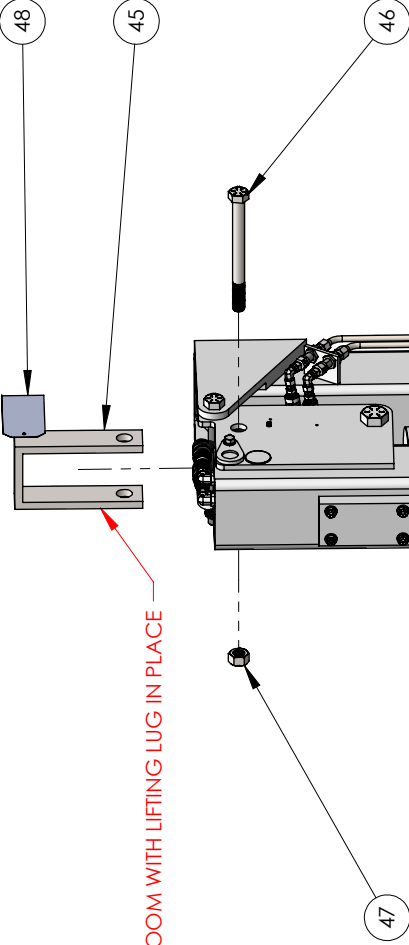
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|--------------------------|--|---|--|
| <b>UNLESS SPECIFIED:</b> |  | <b>PROPRIETARY &amp; CONFIDENTIAL</b>   |  |
| MACHINED PART            |  | DRAWING IS THE SOLE PROPERTY OF         |  |
| MINIMUM .250 RMS         |  | LIFTMOORE INC. AND REPRODUCTION         |  |
| 1/4" MIN. WELDS          |  | WITHOUT WRITTEN PERMISSION OF LIFTMOORE |  |
| USE E70 ROD              |  | INC. IS PROHIBITED.                     |  |
| DIM. TOLERANCES          |  | THIRD ANGLE                             |  |
| .XXX ± .005              |  | PROJECTION                              |  |
| .XX ± .030               |  | CHECKED AT 04/29/2022                   |  |
| FRAC. ± 1/16             |  | ENG APPR: DF 04/29/2022                 |  |
| XX° ± .5°                |  | DRAWN: JE 04/29/2022                    |  |
|                          |  | NO WINCH, ATB                           |  |
|                          |  | DWG. NO.                                |  |
|                          |  | SHEET 5 - 7                             |  |
|                          |  | WEIGHT: 696.402 Lbs.                    |  |
|                          |  | 34845                                   |  |
|                          |  | REV A                                   |  |

**LIFTMOORE INC.**

**CRANE ASSY LA6K EX-11 2ND SP**

|          |              |
|----------|--------------|
| REV      | A            |
| DRAWN    | JE           |
| MIRL     | 04/29/2022   |
| WEIGHT   | 696.402 Lbs. |
| DWG. NO. | 34845        |
| SHEET    | 5 - 7        |
| DATE     | 04/29/2022   |

ZIP TIE TAG TO LIFTING LUG



WARNING: DO NOT ELEVATE BOOM WITH LIFTING LUG IN PLACE

**STEP 7**

**UNLESS SPECIFIED**  
 MACHINED PART  
 MINIMUM 250 RMS  
 1/4" MIN. WELDS  
 USE E70 ROD  
 DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 .X ± .116  
 FRACTION ± 1/16  
 XX° ± .5°

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THIRD ANGLE  
 PROJECTION  
 CHECKED AT 04/29/2022  
 ENG APPR: DF DP

BY JE 04/29/2022 REV A

DRAWN: JE 04/29/2022 DWG. NO.  
 MTRL: SHEET 6-7  
 WEIGHT: 696.402 Lbs

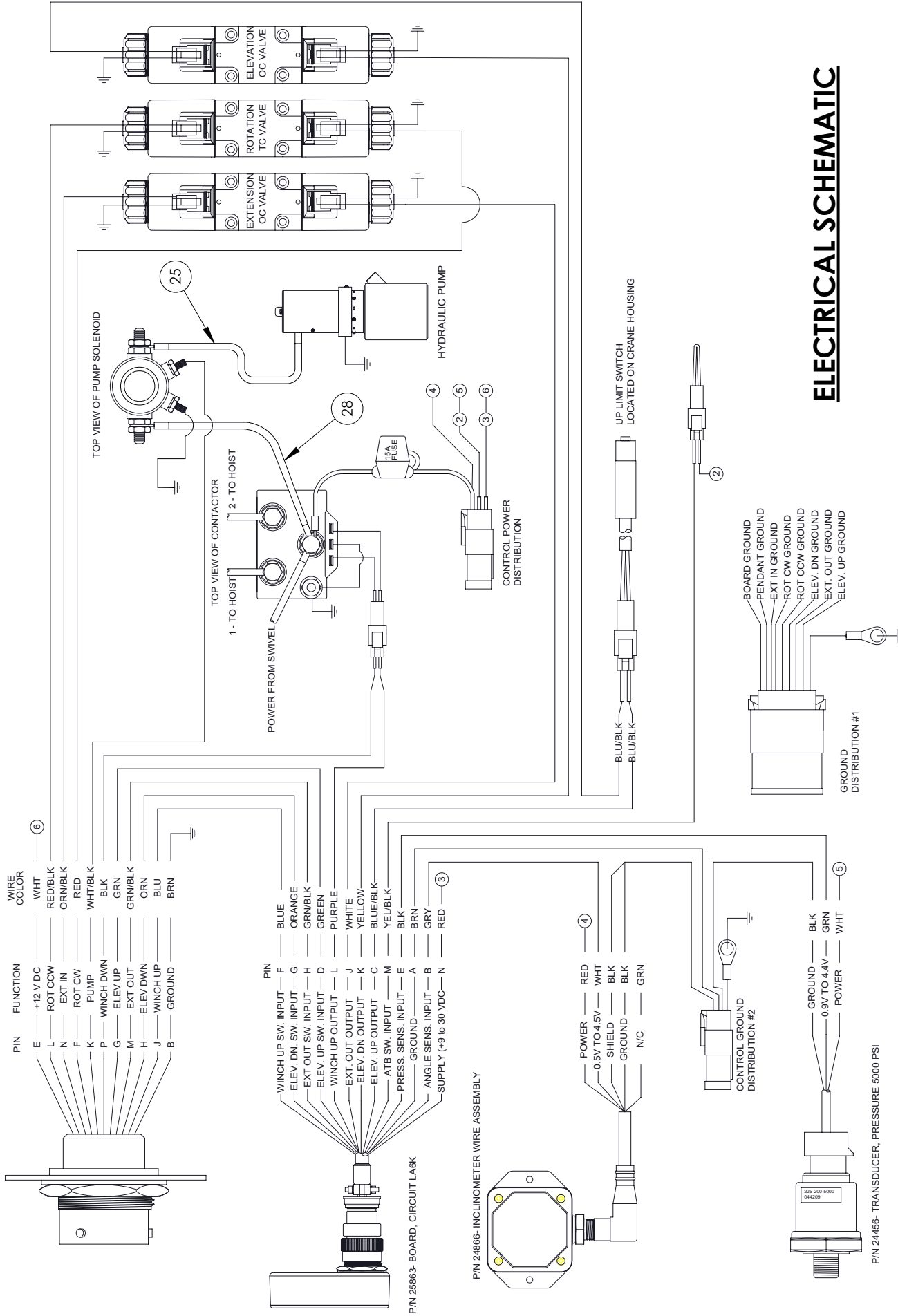
REV A

34845

NO WINCH, ATB

CRANE ASSY LA6K EX-11 2ND SP

LIFTMOORE INC.



# ELECTRICAL SCHEMATIC

**UNLESS SPECIFIED:**  
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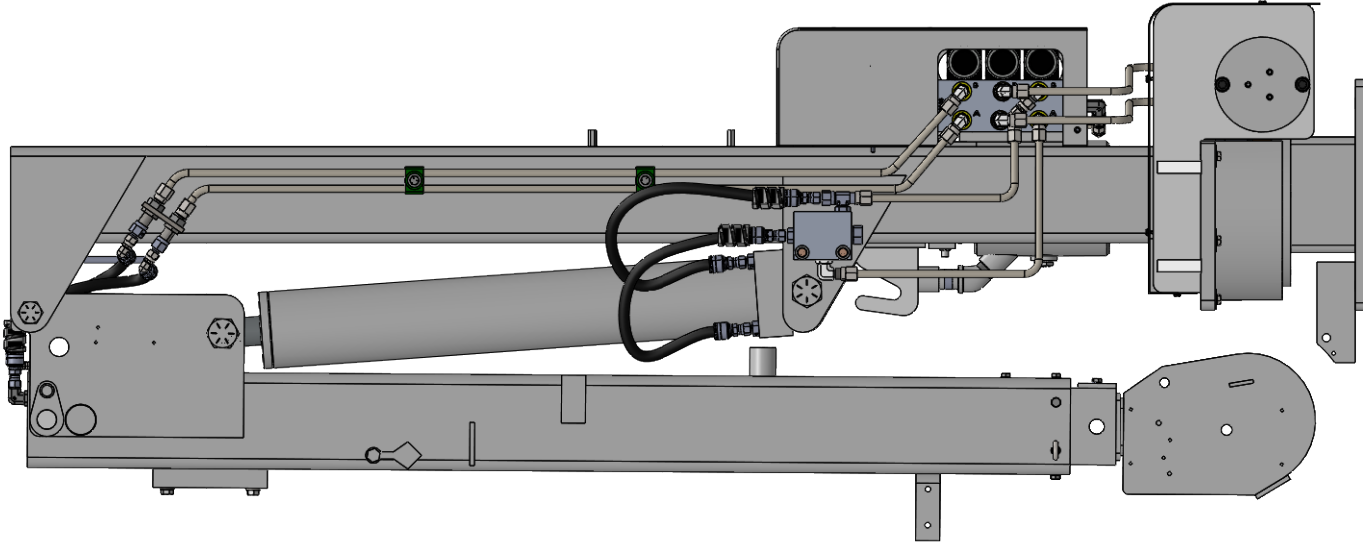
MINIMUM 250 RMS  
 1/4" MIN. WELDS  
 USE E70 ROD

DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 .X ± .110  
 FRACTIONS ± 1/16  
 XX° ± .5°

|              |  |            |  |             |  |
|--------------|--|------------|--|-------------|--|
| DRAWN: JE    |  | 04/29/2022 |  | DWG. NO.    |  |
| MIRL: AT     |  | 04/29/2022 |  | SHEET 7 - 7 |  |
| ENG APPR: DP |  | DP         |  | REV         |  |
|              |  |            |  | A           |  |

**LIFTMOORE INC.**  
 CRANE ASSY LA6K EX-11 2ND SP  
 NO WINCH, ATB  
 34845





**ASSEMBLED VIEW**

NOTES  
 1 COMPLETELY WRAP HOSES WITH SPIRAL WRAP.

CRANE ASSY

| ITEM | PART NUMBER | DESCRIPTION                    | QTY |
|------|-------------|--------------------------------|-----|
| 1    | 34837       | BOOM-BODY ASSY LA6K REE-11     | 1   |
| 2    | 34528       | KIT, VALVE OC 4W/3P/12V DTCH   | 2   |
| 3    | 34599       | KIT, VALVE TC 4W/3P/12V DTCH   | 1   |
| 4    | 22394       | PENDULUM, LOAD RADIUS DIA. HD  | 2   |
| 5    | 31017       | SCREW, SHOULDER 0.31-18 X 0.75 | 2   |
| 6    | 23123       | PRESSURE GAUGE, 0-3000 PSI     | 1   |
| 7    | 23135       | ADAPTER, 4FP-6FJ SWIVEL        | 1   |
| 8    | 31576       | NUT, HEX 10-24 GR2 PLATED      | 4   |
| 9    | 17252       | SCREW, MH RD 10-24 X 0.75      | 3   |
| 10   | 32649       | ADAPTER, 90° 4MJ-4FJX          | 2   |
| 11   | WI 34038    | CONTACTOR, DP SEALED           | 1   |
| 12   | 17196       | WIRE, BATTERY #4 X 5" W/TERMS  | 1   |
| 13   | 23968       | SWITCH, LIMIT UP LA6K DTCH     | 1   |
| 14   | 33606       | WASHER, FLAT #6 GR2 PLATED     | 2   |
| 15   | 31124       | WASHER, LOCK #6 GR2 PLATED     | 2   |
| 16   | 31123       | NUT, HEX 6-32 GR2 PLATED       | 2   |
| 17   | 33126       | SCREW, MH RD 6-32 X 1.25 STL   | 2   |
| 18   | 26514       | EWI, CONTACTOR DTCH            | 1   |
| 19   | 33145       | WASHER, FLAT #10 GR2 PLATED    | 2   |
| 20   | 32639       | WASHER, LOCK #10 GR2 PLATED    | 2   |
| 21   | 32400       | ADAPTER, 4MJ-6MO               | 2   |
| 22   | 32967       | HOSE, HYD #4 17.25"            | 4   |
| 23   | 31408       | WRAP, 3/4" BLACK SPIRAL CUT    | 4   |

UNLESS SPECIFIED:  
 MACHINED PART  
 MINIMUM 250 RMS  
 1/4" MIN. WELDS  
 USE E70 ROD.  
 DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 .X ± .116  
 XX° ± .5°

THIRD ANGLE PROJECTION

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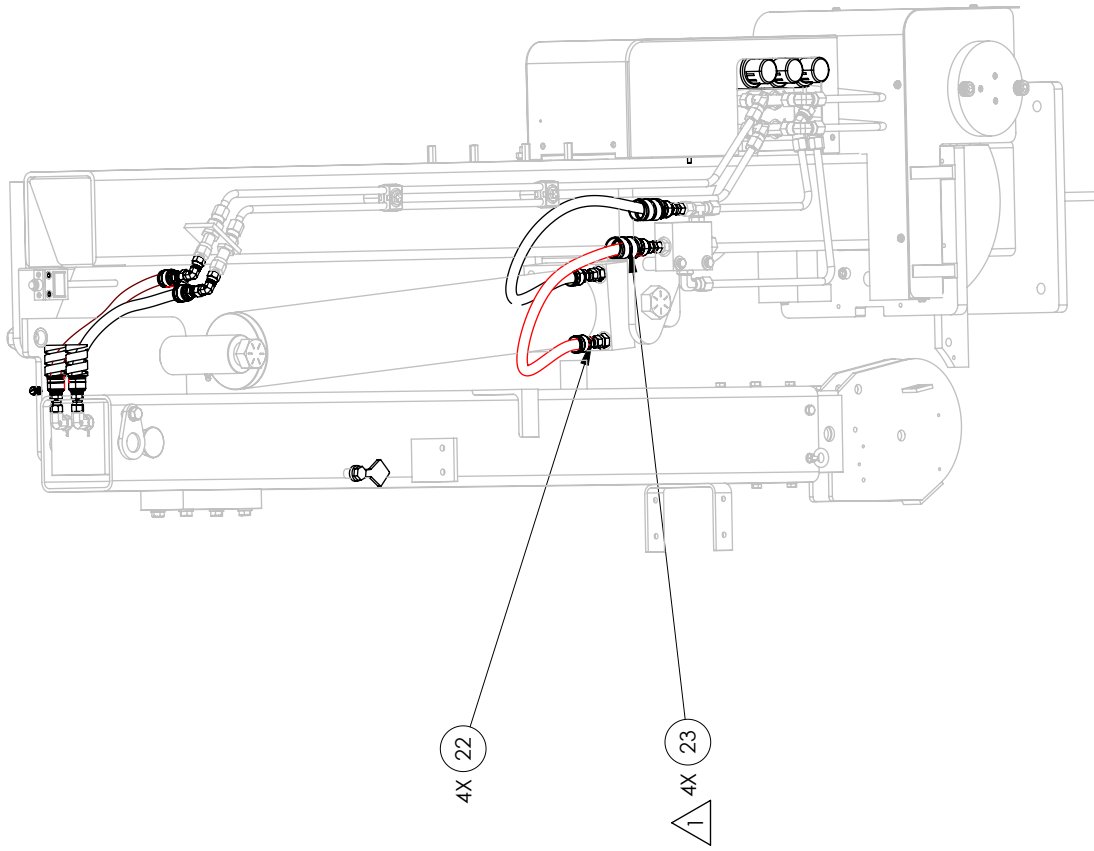
CHECKED: JE 04/29/2022  
 ENG APPR: DP 04/29/2022

**LIFTMOORE INC.**

CRANE ASSY LA6K EX-11 TST SP  
 NO. WINCH, ATB

|                      |             |          |     |
|----------------------|-------------|----------|-----|
| DRAWN: DP            | 04/29/2022  | DWG. NO. | REV |
| MIRL:                | SHEET 1 - 3 |          | A   |
| WEIGHT: 686.346 Lbs. |             | 34838    |     |





**STEP 3**

**UNLESS SPECIFIED**  
 MACHINED PART  
 MINIMUM .250 RMS  
 1/4" MIN. WELDS  
 USE E70 ROD  
 DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 .X ± .116  
 XX° ± .5°

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THIRD ANGLE  
 PROJECTION

CHECKED JE 04/29/2022  
 ENG APPR DP 04/29/2022

DRAWN DP 04/29/2022  
 MTRL: SHEET 3 - 3  
 NO WINCH, ATB  
 DWG. NO. 34838

WEIGHT: 686.346 LBS

REV A

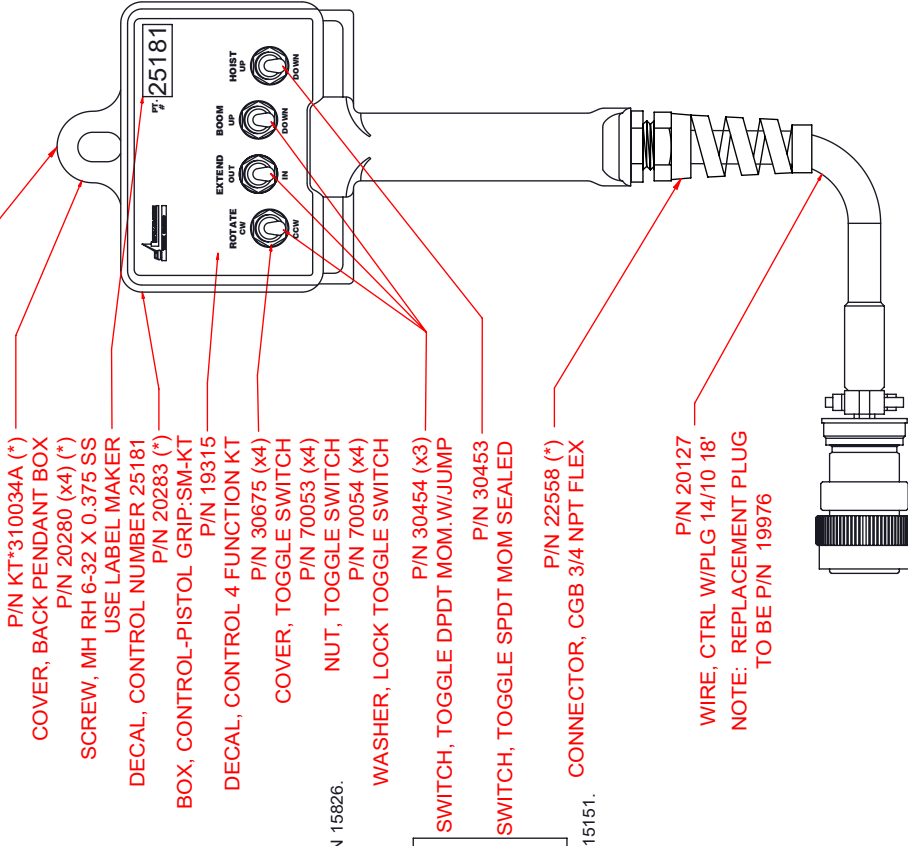
**LIFTMOORE INC.**

**CRANE ASSY LA6K EX-11 1ST SP**

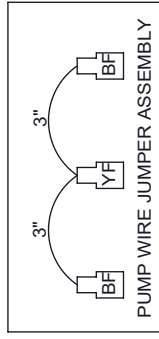
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| BY | DP | 04/29/2022 | REV | A |
|----|----|------------|-----|---|

DESC:

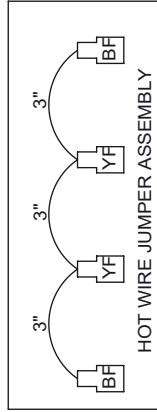
ATTACH THE FOLLOWING TAG TO THE PENDANT HERE  
 P/N 25173  
 WARNING-BEFORE OPERATING REMOVE PIN & LIFTING LUG



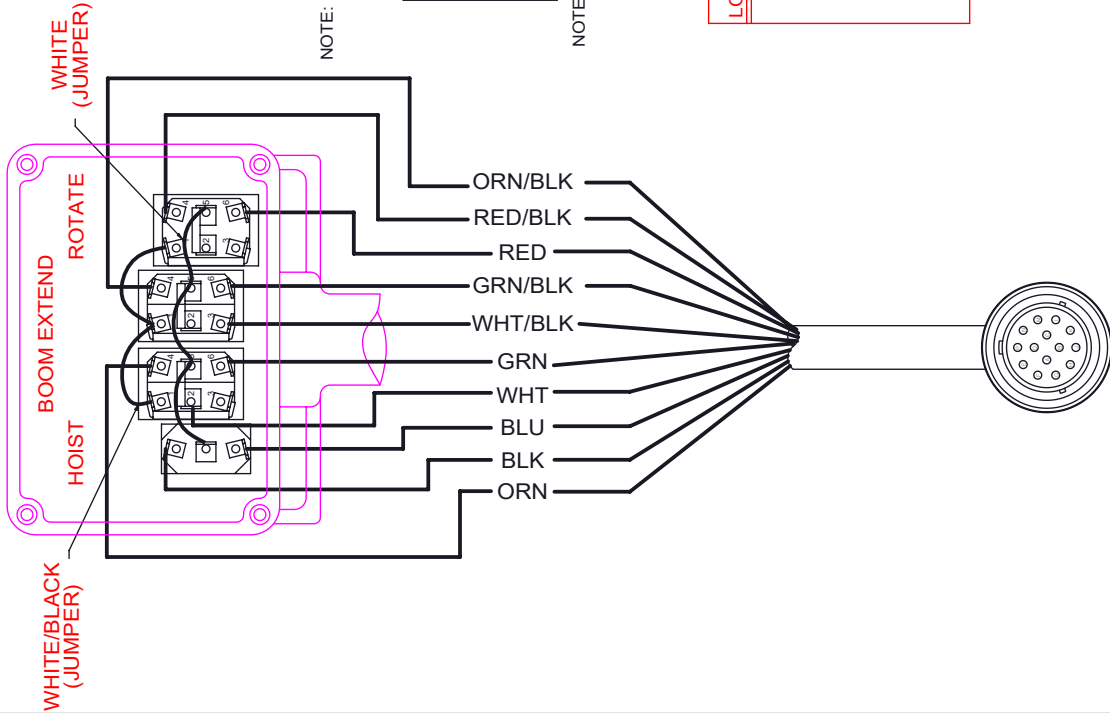
P/N 20127  
 WIRE, CTRL W/PLG 14/10 18'  
 NOTE: REPLACEMENT PLUG  
 TO BE P/N 19976



NOTE: JUMPER WIRES ARE 16 GA BLK/WHT WIRE P/N 15826.

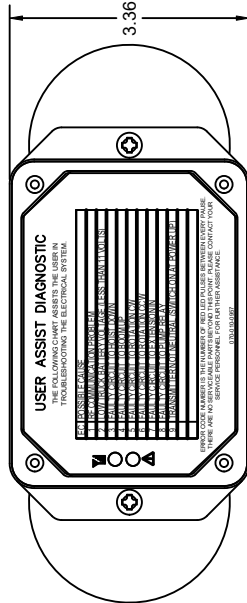


NOTE: JUMPER WIRES ARE 16 GA WHITE WIRE P/N 15151.

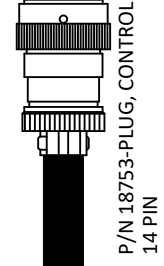


| PIN LOCATION | WIRE FUNCTION | WIRE COLOR |
|--------------|---------------|------------|
| E            | POWER         | WHT        |
| F            | ROTATION CW   | RED        |
| G            | ELEV UP       | GRN        |
| H            | ELEV DWN      | ORN        |
| J            | HOIST UP      | BLU        |
| K            | PUMP SOLN.    | WHT/BLK    |
| L            | ROTATION CCW  | RED/BLK    |
| M            | EXTEND OUT    | GRN/BLK    |
| N            | EXTEND IN     | ORG/BLK    |
| P            | HOIST DOWN    | BLK        |

LIFTMOORE P/N: 28470-RECEIVER

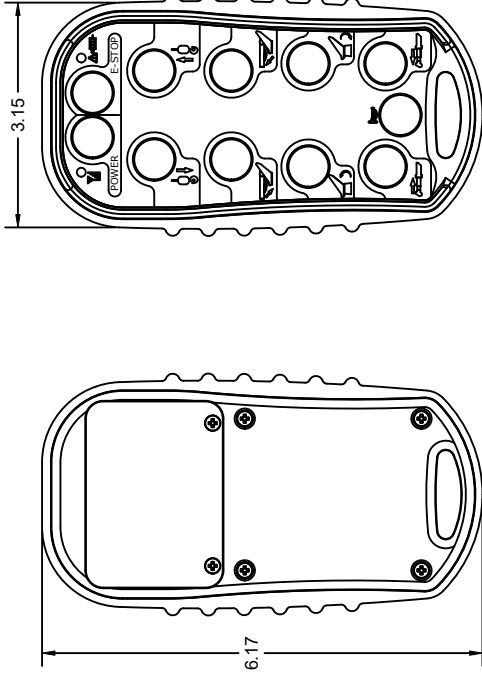


INCLUDES TWO 65 LB MOUNTING MAGNETS FOR SIMPLE INSTALLATION OF THE RECEIVER AND ELIMINATION OF DRILLING TO THE CRANE



P/N 18753-PLUG, CONTROL 14 PIN

| WIRE COLOR CODE |              |
|-----------------|--------------|
| PIN             | DESCRIPTION  |
| A               | HORN         |
| B               | GROUND       |
| C               | E-STOP       |
| D               | N/C          |
| E               | POWER        |
| F               | ROTATION CW  |
| G               | BOOM UP      |
| H               | BOOM DOWN    |
| J               | WINCH UP     |
| K               | PUMP         |
| L               | ROTATION CCW |
| M               | BOOM OUT     |
| N               | BOOM IN      |
| P               | WINCH DOWN   |



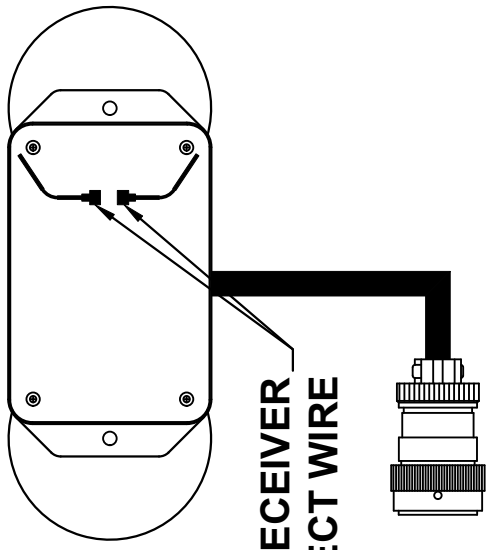
USES TWO (2) AA ALKALINE BATTERIES

LIFTMOORE P/N:28469-TRANSMITTER

ERROR CODE NUMBER IS THE NUMBER OF RED LIGHT BLINKS BETWEEN EVERY PAUSE.

TRANSMITTER ERROR CODE CHART

| ERROR CODE | PROBABLE CAUSE                                  |
|------------|---|
| 1          | RF COMMUNICATION PROBLEM                        |
| 2          | LOW TRUCK BATTERY VOLTAGE (LESS THAN 11 VOLTS)  |
| 3          | FAULTY CIRCUIT TO HOIST DOWN                    |
| 4          | FAULTY CIRCUIT TO BOOM UP                       |
| 5          | FAULTY CIRCUIT TO ROTATION CW                   |
| 6          | FAULTY CIRCUIT TO ROTATION CCW                  |
| 7          | FAULTY CIRCUIT TO EXTENSION IN                  |
| 8          | FAULTY CIRCUIT TO PUMP RELAY                    |
| 9          | TRANSMITTER NOT NEUTRAL (SWITCH ON AT POWER UP) |

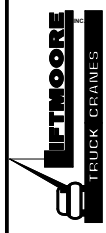


**NOTE: OPEN RECEIVER AND DISCONNECT WIRE**

**TEACH ID CODE:**  
To synchronize a new transmitter and receiver together, use the following procedure:

1. Turn both transmitter and receiver off
2. To get the transmitter into TEACH ID mode, press and hold the POWER button for 10 seconds. Both LEDs start blinking.
3. Turn on the receiver.
4. Teach complete
5. **SEE NOTE**

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CONTROL, FM ASSY KT MEGA ELE.HORN  
TRANS./RECIEVER PRO. SET

DRAWING NO.

28490-B

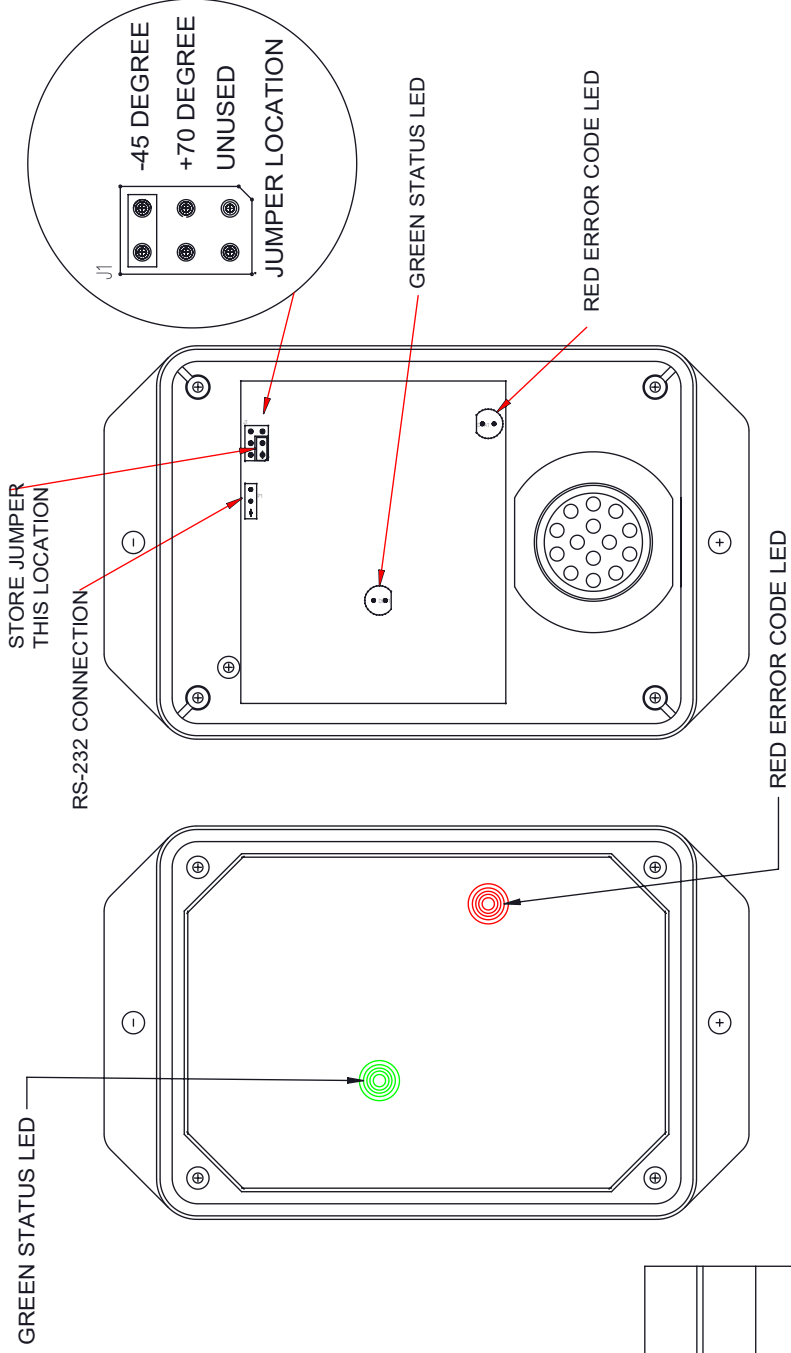
DRWN BY: JE

DATE: 4/18/17

| RELAY BOARD |                             |
|-------------|-----------------------------|
| Pin No.     | Description                 |
| A           | Ground                      |
| B           | Angle Sensor Input          |
| C           | Elevation Up Output         |
| D           | Elevation Up Switch Input   |
| E           | ATB Switch Input            |
| F           | Winch Up Switch Input       |
| G           | Elevation Down Switch Input |
| H           | Extension Out Switch Input  |
| I           | N/A                         |
| J           | Extension Out Output        |
| K           | Elevation Down Output       |
| L           | Winch Up Output             |
| M           | ATB Input                   |
| N           | Supply (9 To 30 VDC)        |

### ERROR CODE CHART

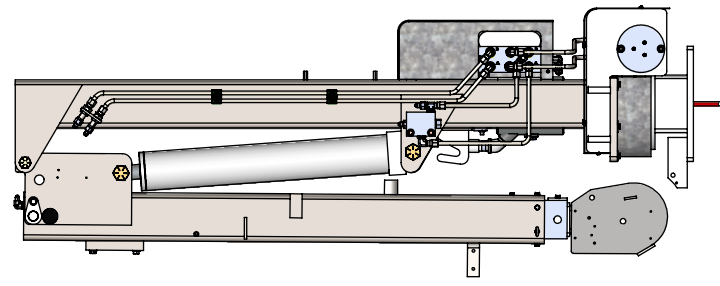
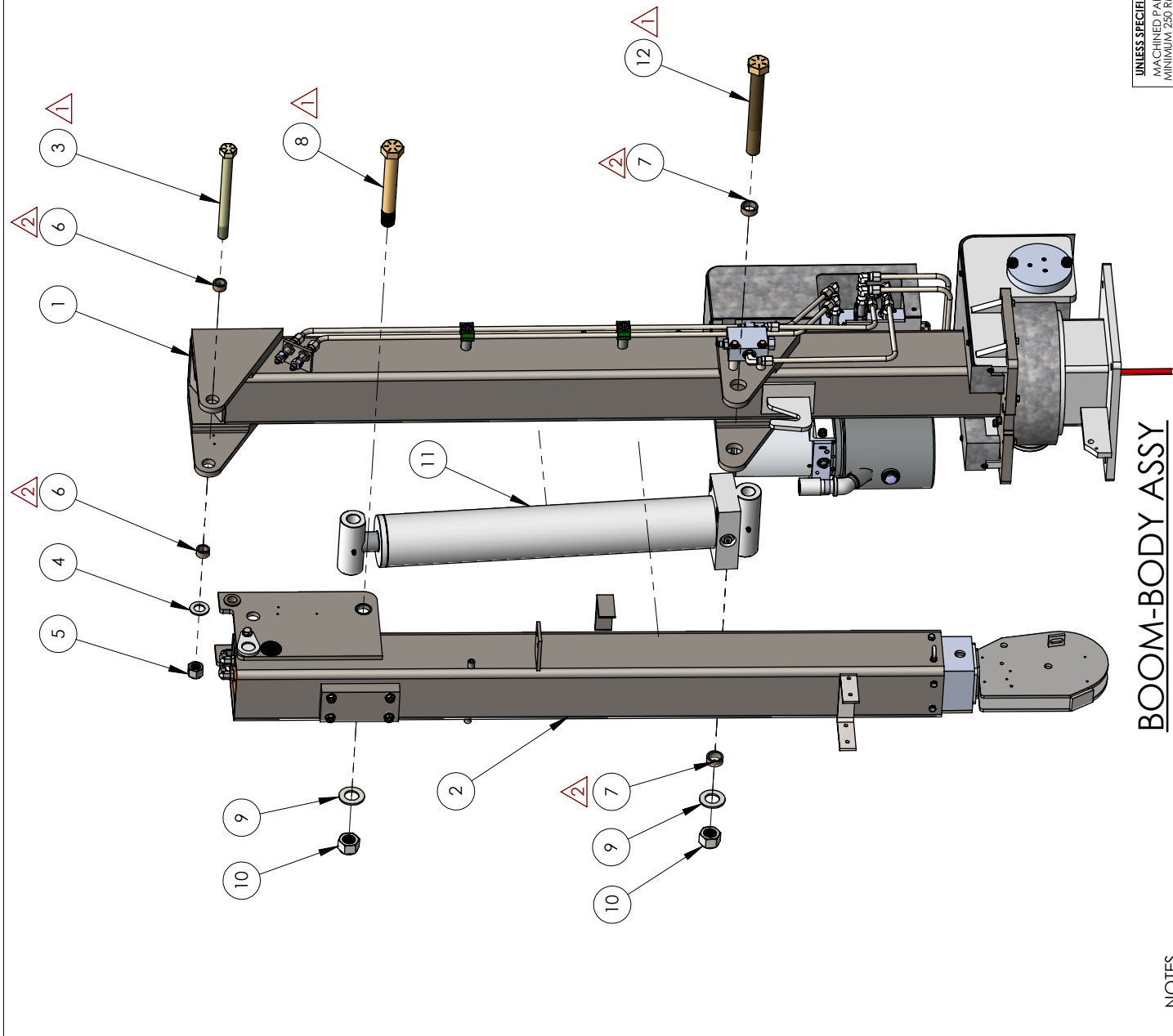
| ERROR CODE COUNT | PROBABLE CAUSE                              |
|------------------|---|
| 1                | Pressure Sensor Input Out of Range          |
| 2                | Angle Sensor Input Out of Range             |
| 3                | Over Load Condition                         |
| 4                | Short Or Over Load On Elevation Up Output   |
| 5                | Short Or Over Load On Elevation Down Output |
| 6                | Short Or Over Load On Extension Out Output  |
| 7                | Short Or Over Load On Winch Up Output       |
| 8                | ATB Condition                               |



To Display an error code, the controller turns on and off the error code LED a certain number of times with a pause at the end. It repeats the code until the problem is resolved. The **Error Code Chart** is provided to assist the service personnel in troubleshooting the system.



| ITEM | PART NUMBER | DESCRIPTION                    | QTY |
|------|-------------|--------------------------------|-----|
| 1    | 27484       | BODY ASSEMBLY LA6K             | 1   |
| 2    | 34836       | BOOM ASSEMBLY LA6K ATB         | 1   |
| 3    | 19639       | SCREW, HHC 0.75-10 X 8.50 GR8  | 1   |
| 4    | 30477       | WASHER, FLAT 0.75 GR5 SAE PL.  | 1   |
| 5    | 30836       | NUT, HEX NYLOC 0.75-10 GRADE 5 | 1   |
| 6    | 24110       | BUSHING, 0.75 X 1.00 X 0.50L   | 2   |
| 7    | 24920       | BUSHING, 1.00 X 1.250 X 0.50   | 2   |
| 8    | 34170       | SCREW, HHC 1.00-8 X 7.25 GR8   | 1   |
| 9    | 31258       | WASHER, FLAT 1.00 SAE GRADE 8  | 2   |
| 10   | 20972       | NUT, HEX NYLOC 1.00-8 GRADE 8  | 2   |
| 11   | 24842       | CYLINDER, 3.5 X 20.0 X 1.5     | 1   |
| 12   | 30828       | SCREW, HHC 1.00-8 X 8.50 GR8   | 1   |



ASSEMBLED VIEW

**BOOM-BODY ASSY**

- NOTES**
- 1 CHECK PIVOT BOLTS, SPIN FREELY AFTER TIGHTENING.
  - 2 PRESS FIT COMPOSITE BEARINGS, USING APPROPRIATE TOOLS.

**UNLESS SPECIFIED:**  
 MACHINED PART  
 MINIMUM 250 RMS  
 1/4" MIN. WELDS  
 USE E70 ROD  
 DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 FRACTIONS ± 1/16  
 XX° ± .5°

**THIRD ANGLE PROJECTION**

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**LIFTMOORE INC.**  
 NO. WINCH, ATB  
**BOOM-BODY ASSY LA6K REE-11**

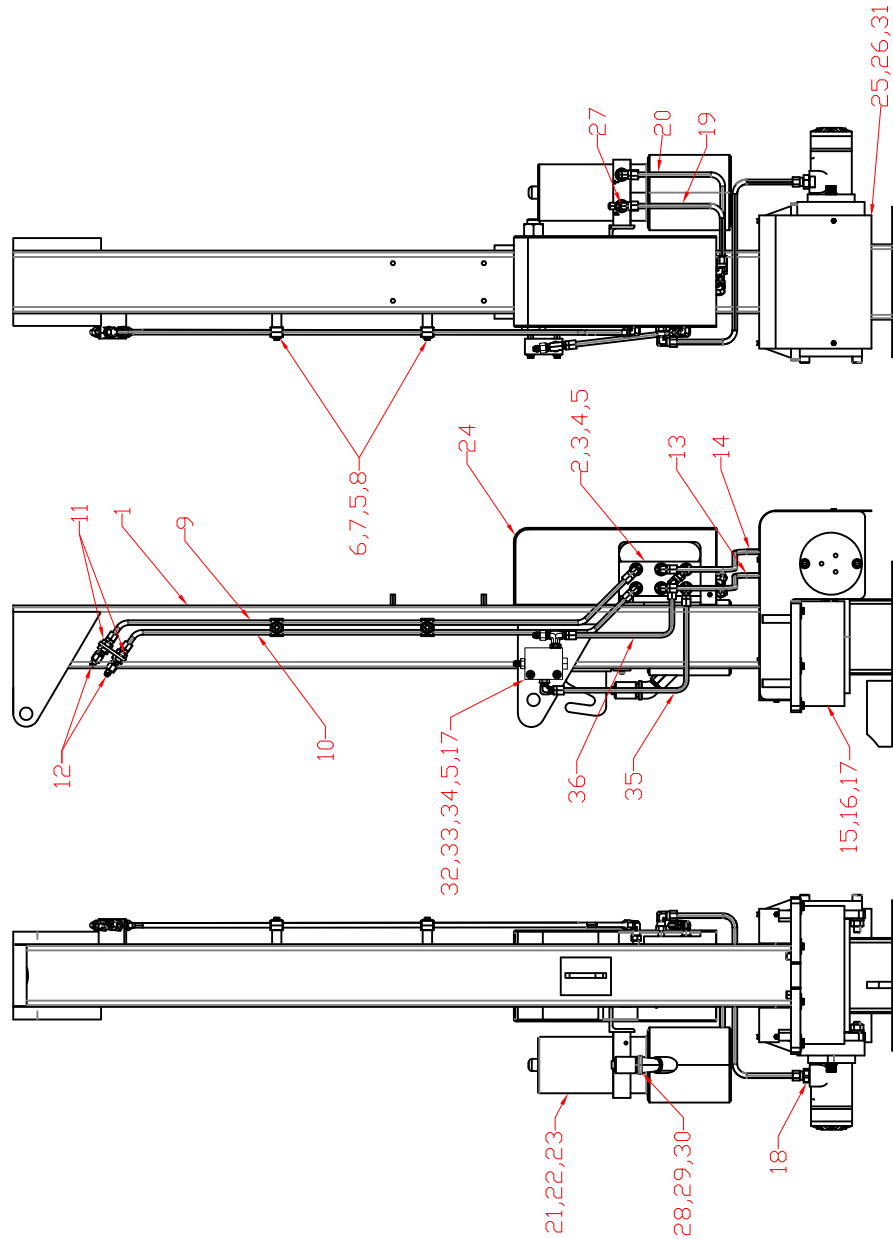
DRAWN: DP 04/28/2022 DWG. NO.  
 MRL: SHEET 1-1  
 CHECKED: JE 04/28/2022  
 ENG APPR: DP

REV A  
 SHEET 1-1  
 34837  
 WEIGHT: 668.298 Lbs.





| PARTS LIST |       |                                   |     |
|------------|-------|-----------------------------------|-----|
| ITEM#      | PART# | DESCRIPTION                       | QTY |
| 1          | 27483 | BASE HOUSING LA6K                 | 1   |
| 2          | 27501 | MANIFOLD ASSY LA6K #6#6 BO        | 1   |
| 3          | 30859 | SCREW, HHC 0.31-18 X 1.00 GR5     | 4   |
| 4          | 30890 | WASHER, LOCK 0.31 GR5 PLT         | 4   |
| 5          | 31110 | WASHER, FLAT 0.25 GR5 PLT         | 6   |
| 6          | 15789 | CLAMP, HALVES 2 STL HYD TUBE      | 4   |
| 7          | 31465 | SCREW, HHC 0.25-20 X 2.50 GR5     | 2   |
| 8          | 26878 | CS, 0.75 X 0.18 X 1.188           | 2   |
| 9          | 24871 | TUBE, HYD EXTENSION LA6K OUT      | 1   |
| 10         | 24870 | TUBE, HYD EXTENSION LA6K IN       | 1   |
| 11         | 20849 | ADAPTER, 6MJ-6MJ BH W/ NUT        | 2   |
| 12         | 33166 | ADAPTER, 6FJ-4MJ                  | 2   |
| 13         | 27503 | TUBE, HYD ROT LA6/10K PORT B      | 1   |
| 14         | 27502 | TUBE, HYD ROT LA6/10K PORT A      | 1   |
| 15         | 26553 | COVER, GEAR GUARD LA10K           | 1   |
| 16         | 25613 | SCREW, HHC 0.25-20 X 0.375 GR5    | 6   |
| 17         | 30889 | WASHER, LOCK 0.25 GR5 PLATED      | 8   |
| 18         | 31527 | ADAPTER, 6MJ-10MO                 | 2   |
| 19         | 24868 | TUBE, HYD PUMP LA6K SUPPLY        | 1   |
| 20         | 24869 | TUBE, HYD PUMP LA6K RETURN        | 1   |
| 21         | 27662 | PUMP ASSEMBLY LA6K MONARCH        | 1   |
| 22         | 30813 | SCREW, HHC 0.37-16 X 1.00 GR8     | 2   |
| 23         | 25904 | WASHER, SERRATED 0.37 ZINC PLATED | 2   |
| 24         | 24834 | COVER, BACK LA6K/LA10K            | 1   |
| 25         | 27471 | COVER, WORMGEAR GUARD LA6K        | 1   |
| 26         | 33144 | SCREW, MH HX 10-24 X 0.50         | 8   |
| 27         | 31513 | ADAPTER, 90° 6MJ-6FJX             | 1   |
| 28         | 22034 | ADAPTER, STREET ELBOW 3/4" 45D    | 1   |
| 29         | 18392 | ADAPTER, NIPPLE 2.00" LG 12-12    | 1   |
| 30         | 32866 | ADAPTER, 12FP-12FP X 3/4"         | 1   |
| 31         | 33145 | WASHER, FLAT #10 GR2 PLATED       | 8   |
| 32         | 29920 | P.O. CHECK VALVE BLOCK ASSY       | 1   |
| 33         | 22539 | SPACER, TRAV BLK .68X.41X1.MC     | 2   |
| 34         | 29043 | SCREW, HHC 0.25-20 X 3.00 GR8     | 2   |
| 35         | 29919 | TUBE, HYD LA6K ELE. PORT A        | 1   |
| 36         | 29918 | TUBE, HYD LA6K ELE. PORT B        | 1   |



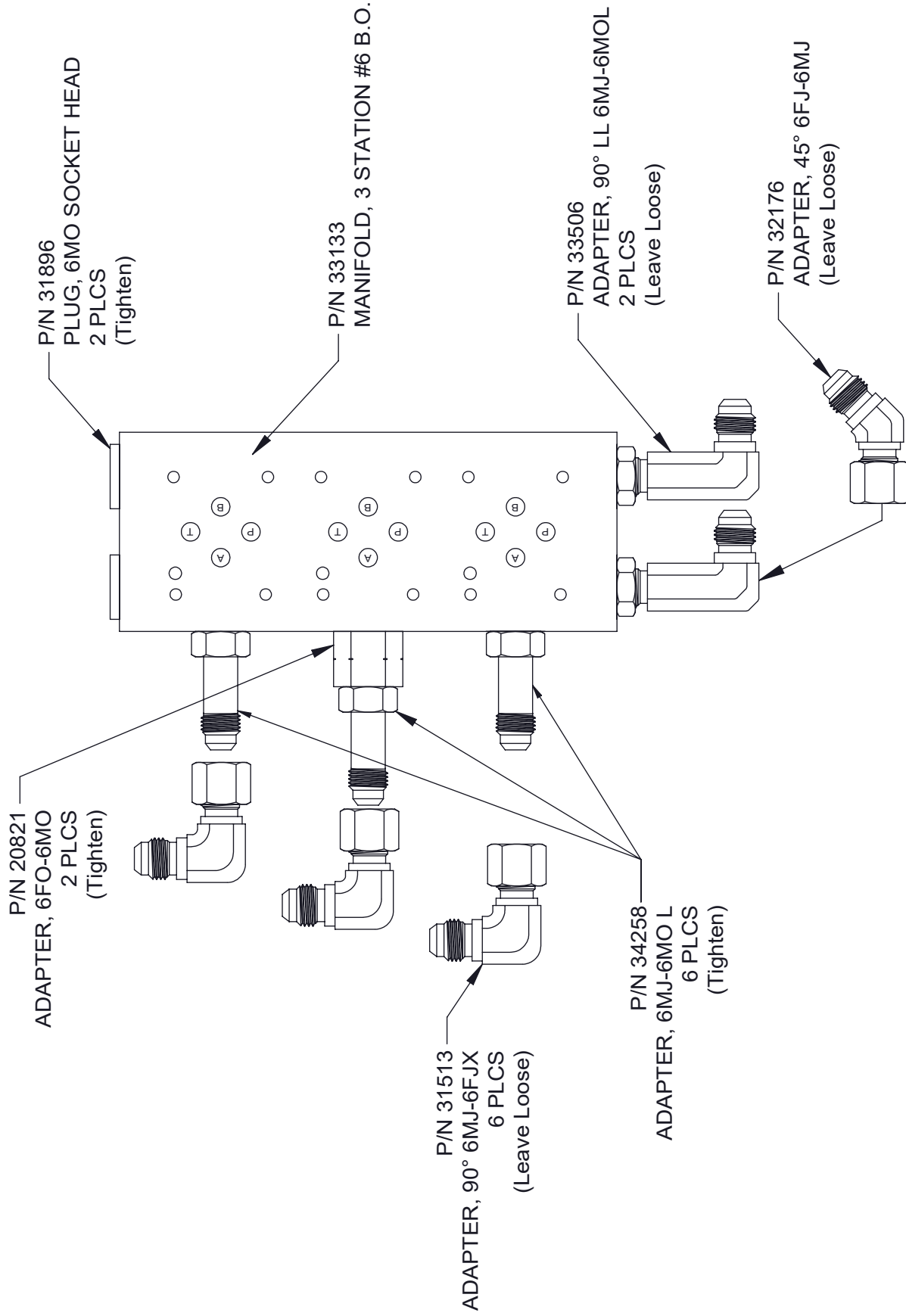
DRAWING NO.  
**27484-J**

**BODY ASSEMBLY LA6K**  
NEW ROTATION

DRAWN BY: JE  
DATE: 8/27/21

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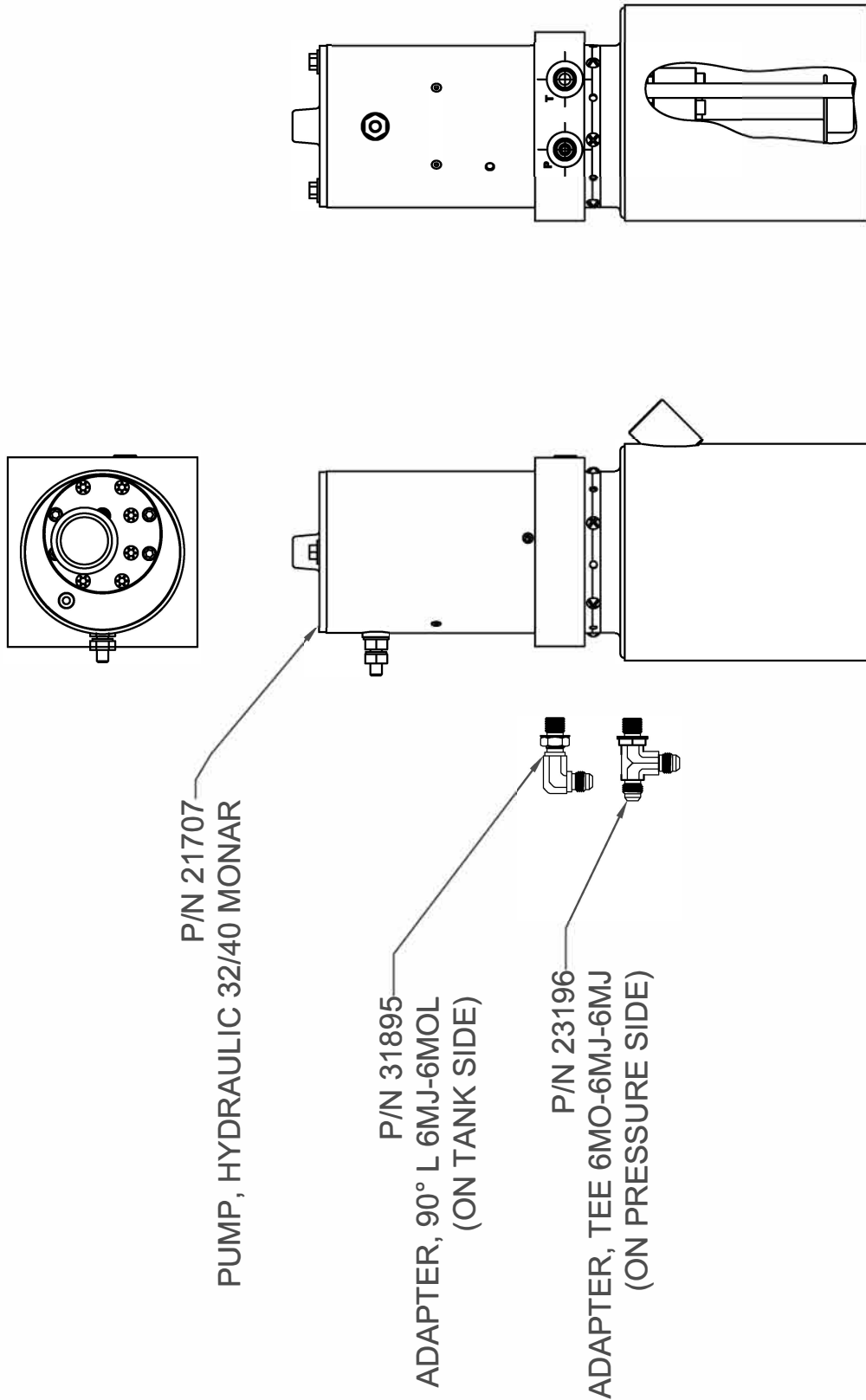
DRAWING NO.  
**27501-D**

**MANIFOLD ASSY LA6K #6/#6 BO**  
LA6K / NEW ROTATION

DRWN BY: AA  
DATE: 08/28/15

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DRAWING NO. 27662-A

PUMP ASSY LA6K MONARCK  
45 DEG BAIL ATB , LA6K

DRWN BY: AA  
DATE: 11/20/15

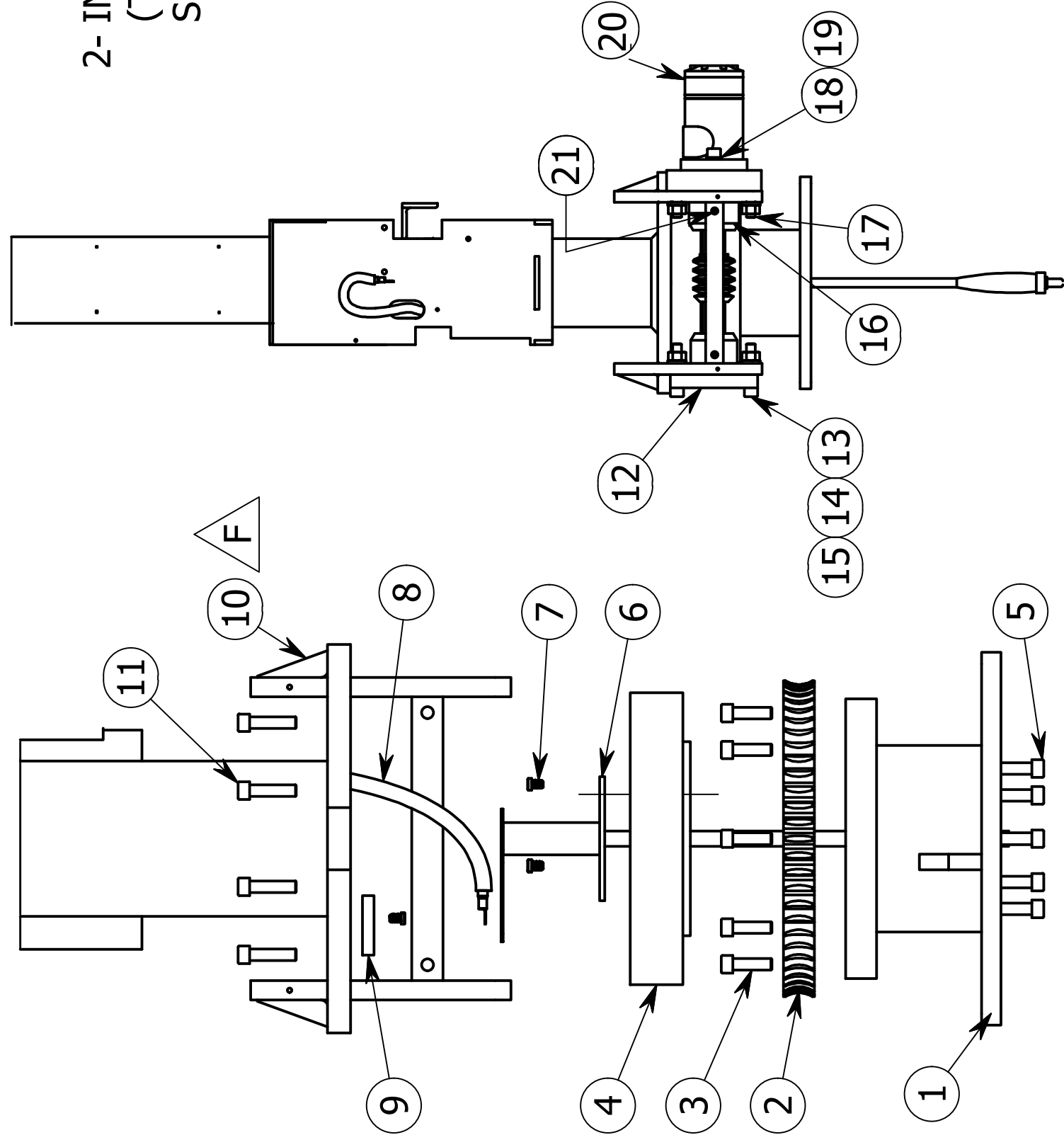
Houston TX  
(713)-688-5533  
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**INSTALLATION & TORQUE SEQUENCE:**

1- INSTALL ITEM (2), USE ITEM (3), TORQUE 45 ft-Ib, SEE TIGHTENING SEQUENCE BELOW (NO.1).

2- INSTALL ITEM (4), USE ITEM (5), TORQUE 45 ft-Ib, (TIGHTENING FROM THE BOTTOM) SEE TIGHTENING SEQUENCE BELOW (NO.2).



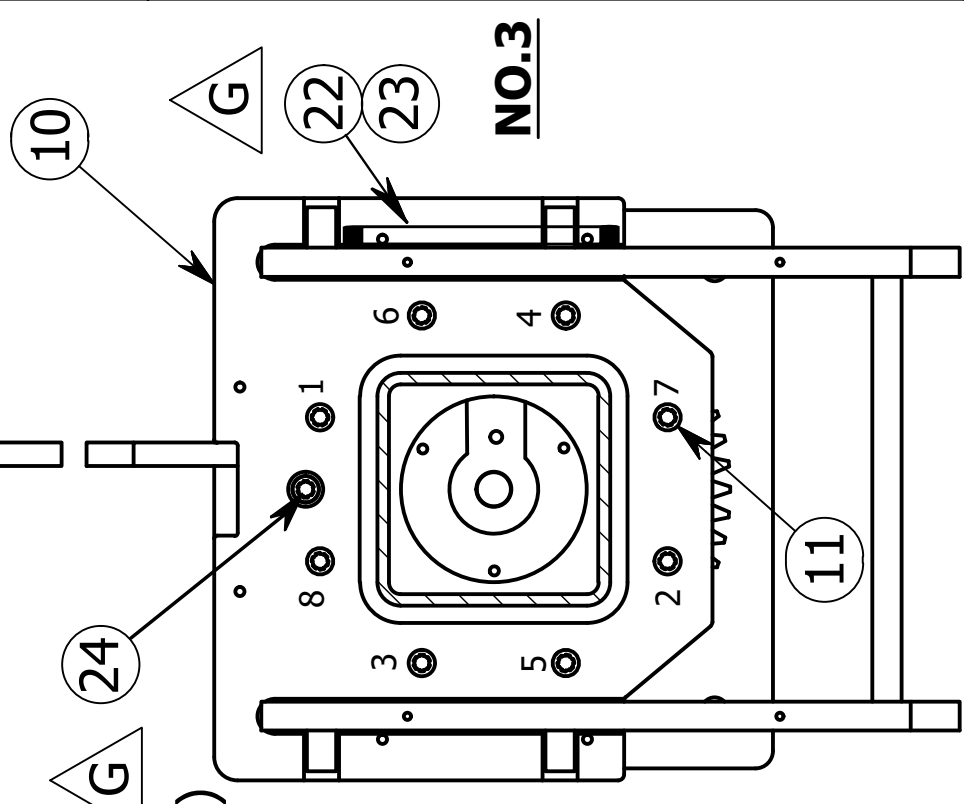
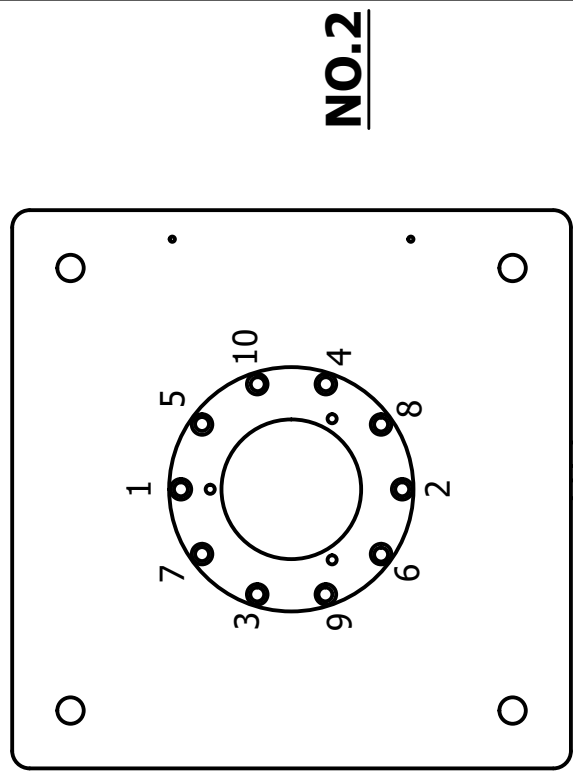
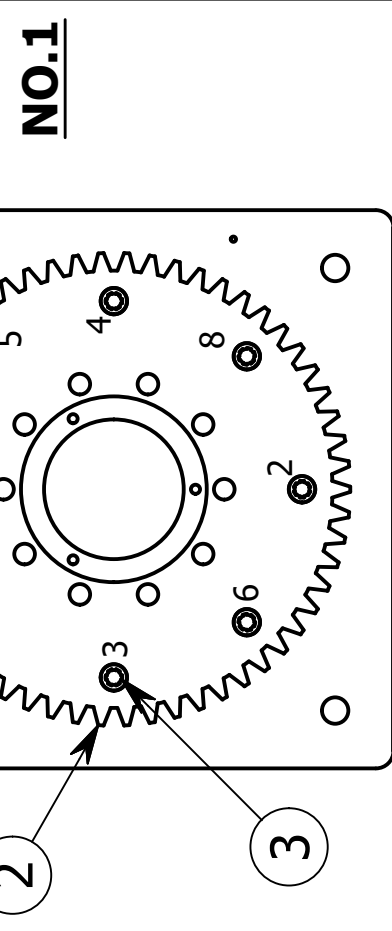
**NOTES:**

- 1- SEE PAGE 2 FOR BILL OF MATERIAL (BOM.)
- 2- INSTALL ITEM (24) ON TOP OF ITEM (4)
- 3- INSTALL ITEMS (22) & (23) ON TOP OF ITEM (10)

- 3- INSTALL ITEM (6), USE ITEM (7).
- 4- INSTALL ITEM (9) ON ITEM (10), USE ITEM (7).
- 5- INSTALL ITEM (8) ON SIDE OF PEDESTAL, USE ITEM (22) THEN RUN THE LONGEST WIRE THRU THE TOP SLOT OF PEDESTAL AND BOLT IT TO SWIVEL.

- 6- INSTALL PEDESTAL ON THE BASE BY USING ITEM (11), TORQUE 45 ft. Ib, SEE TIGHTENING SEQUENCE (NO.3), MAKE SURE SWIVEL PLATE IS PLACED IN THE PAD UNDERNEATH THE PEDESTAL.

**ASSEMBLY**



|  |  |    |          |     |
|--|--|----|----------|-----|
| ADDED 2ND PAGE, ADDED NOTES AND REVISED BOM. |  | NA | 06/30/21 | G   |
| P/N 27482 & P/N 27489 HAVE BEEN REVISED      |  | AA | 11/15/16 | F   |
| DESCRIPTION                                  |  | BY | DATE     | REV |
|  |  |    |          |     |

|   |  |
|---|--|
| TYPICAL TOLERANCE                           | <b>LIFTMOORE, INC</b><br>HOUSTON TX (713)-688-5533 |
| MACHINE ±.005<br>PLASMA ±1/32<br>WELD ±1/16 | <b>BASE-HOUSING ASSY LA6K</b><br>NEW ROTATION      |
| CAD DRAWING<br>DO NOT SCALE                 | DRWN BY: AA<br>DATE: 08/20/15<br>SHEET: 1 OF 1     |
|   | DWG NO. <b>27483-G</b>                             |



| ITEM | QTY | P/N            | DESCRIPTION                    |
|------|-----|----------------|--------------------------------|
| 1    | 1   | 27489          | BASE, PEDESTAL LA6K WELDMENT   |
| 2    | 1   | 26531          | WORMGEAR, LA6K & LA10K         |
| 3    | 8   | 20331          | SCREW, SOC HD 0.37-16 X 1.25   |
| 4    | 1   | 26532          | BEARING, SLEWING 9.4 IN O.D.   |
| 5    | 10  | 31095          | SCREW, HHC 0.37-16 X 2.50 GR8  |
| 6    | 1   | 26589          | SWIVEL, ELEC ASSY LA6K & LA10K |
| 7    | 4   | 27500          | SCREW, SOC HD 0.25-20 X 0.375  |
| 8    | 1   | 27756          | WIRE, BATTERY #4 X 34"         |
| 9    | 1   | 26576          | PAD, SWIVEL ELECT LA10K        |
| 10   | 1   | 27482          | PEDESTAL, WELDMENT LA6K        |
| 11   | 8   | 20332          | SCREW, SOC HD 0.37-16 X 1.50   |
| 12   | 1   | 19871          | BEARING HOLDER ADJUST 3.2 ASSY |
| 13   | 2   | 20431          | SCREW, SOC HD 0.50-13 X 2.50   |
| 14   | 4   | 19323          | WASHER, FLAT 0.50 SAE GR8      |
| 15   | 4   | 30835          | NUT, HEX NYLOC 0.50-13 GRADE 8 |
| 16   | 1   | 26595          | BEARING HOLDER MOTR/WORM LA10K |
| 17   | 2   | 30875          | SCREW, SOC HD 0.50-13 X 2.00   |
| 18   | 2   | 30983          | WASHER, LOCK 0.50 HICOLLAR GR5 |
| 19   | 2   | 33545          | SCREW, SOC HD 0.50-13 X 1.50   |
| 20   | 1   | 33995          | MOTOR, HYD 7.60 CID CHAR-LYNN  |
| 21   | 2   | 33107          | SCREW, SET 0.37-24 X 1.50      |
| 22   | 1   | 23389          | PLATE, SERIAL NO. MACH         |
| 23   | 2   | 22406          | SCREW, DRIVE, 0.094 DIA X 0.31 |
| 24   | 1   | GP*535-10117-1 | ZERK, 0.12 NPT STRAIGHT        |

|    |          |     |
|----|----------|-----|
| NA | 06/30/21 | G   |
| AA | 11/15/16 | F   |
| BY | DATE     | REV |

ADDED 2ND PAGE, ADDED NOTES AND REVISED BOM.  
P/N 27482 & P/N 27489 HAVE BEEN REVISED

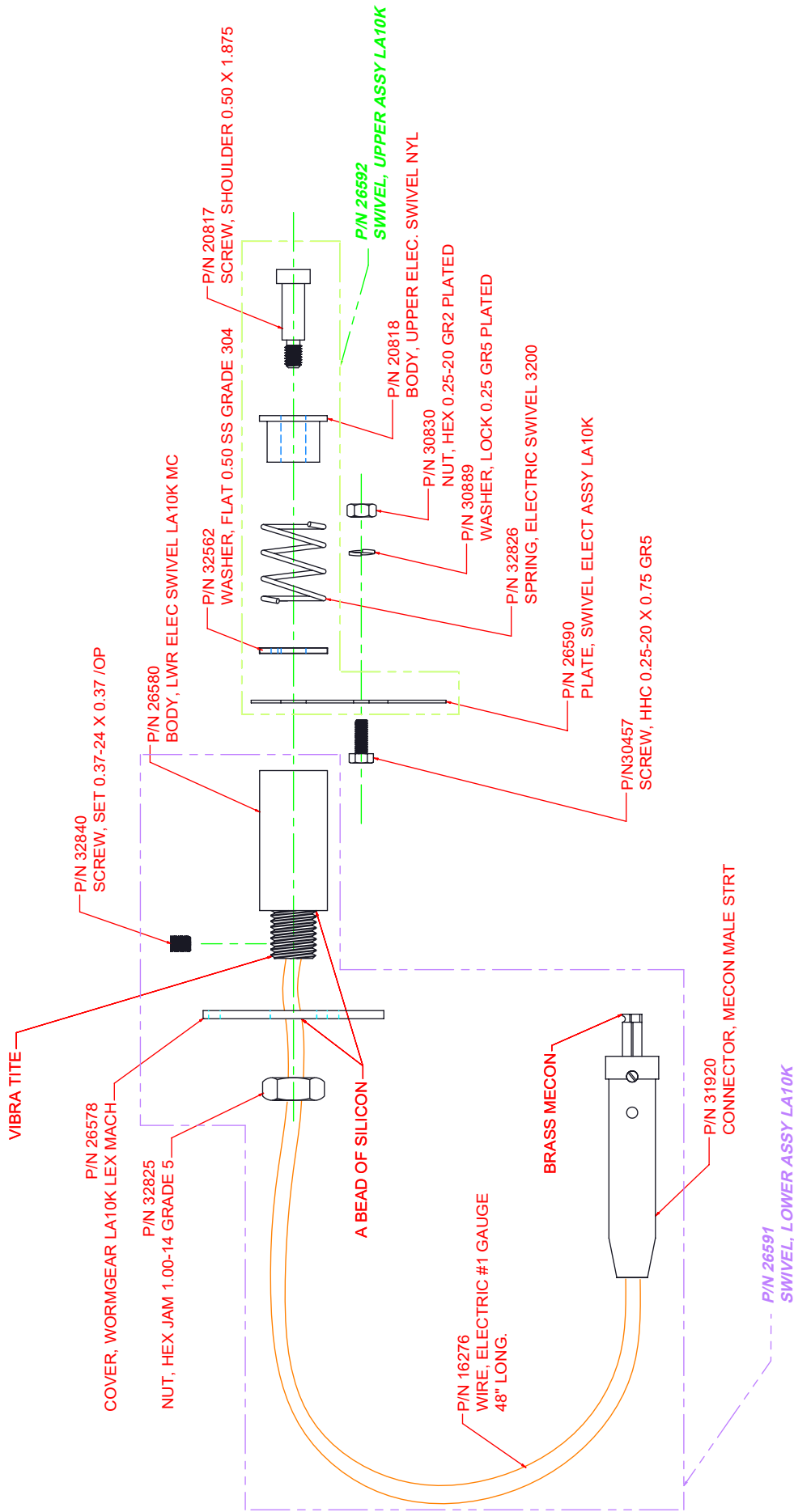
DESCRIPTION

|                   |                |
|-------------------|----------------|
| TYPICAL TOLERANCE | MACHINE ±.005  |
|                   | PLASMA ±1/32   |
|                   | WELD ±1/16     |
| DO NOT SCALE      | DRWN BY: AA    |
|                   | DATE: 08/20/15 |
|                   | SHEET: 1 OF 1  |

**LIFTMOORE, INC**  
HOUSTON TX (713)-688-5533

**BASE-HOUSING ASSY LA6K**  
NEW ROTATION

DWG NO. **27483-G**



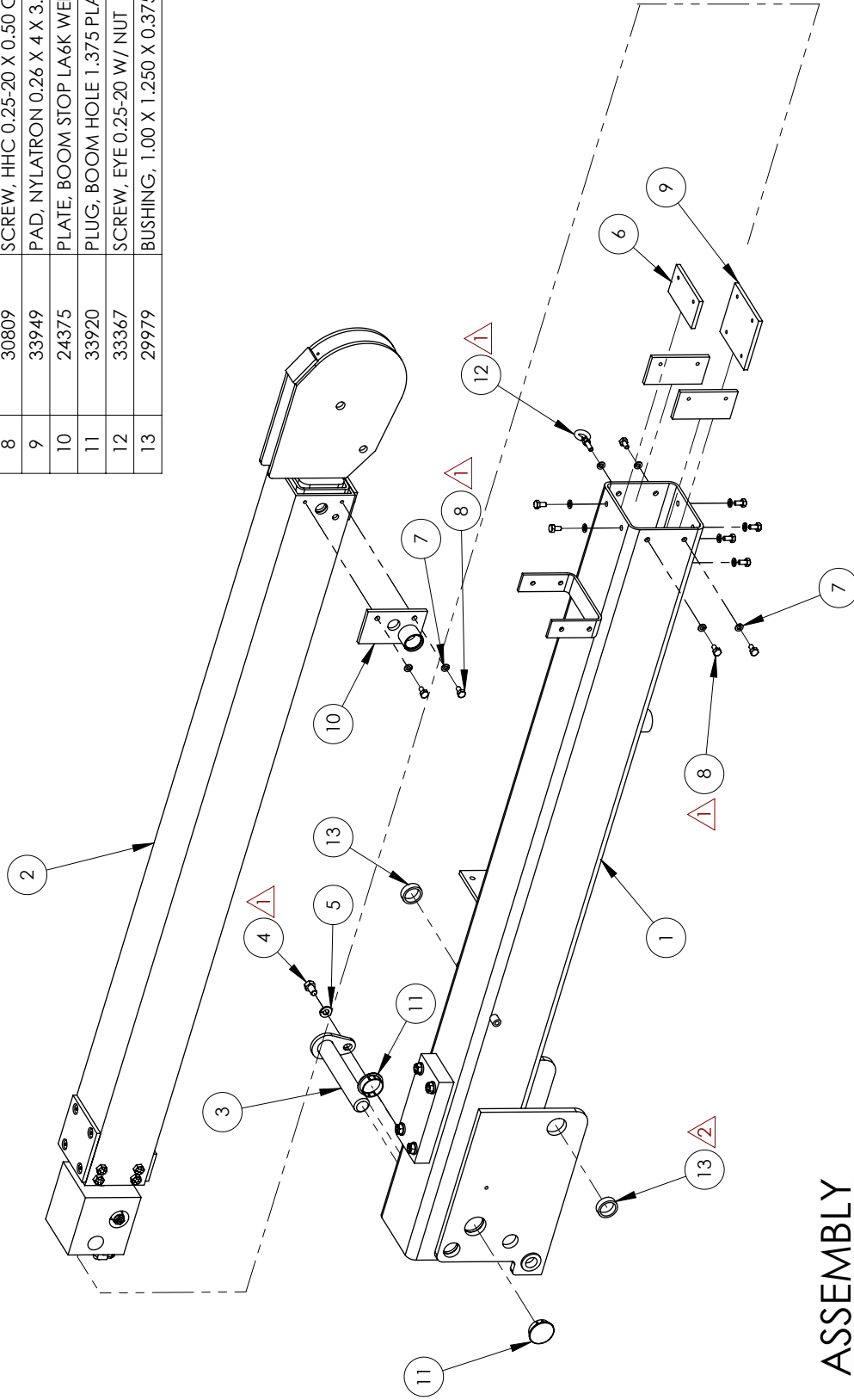
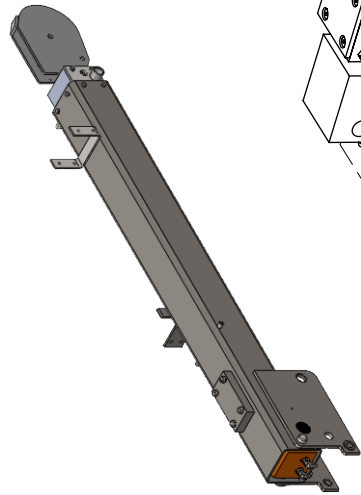
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DRWN BY: AA  
 DATE: 06/05/14

**SWIVEL, ELEC ASSY LA6K & LA10K**  
 NEW ROTATION

DRAWING NO.  
**26589-A**

| ITEM | PART NUMBER | DESCRIPTION                   | QTY |
|------|-------------|-------------------------------|-----|
| 1    | 34824       | BOOM, OUTER ASSY LA6K         | 1   |
| 2    | 27543       | BOOM, INNER ASSY LA6&10K ATB  | 1   |
| 3    | 33501       | PIN, TEARDROP 1.00 X 6.18     | 1   |
| 4    | 33169       | SCREW, HHC 0.37-16 X 0.62 GR8 | 1   |
| 5    | 30473       | WASHER, LOCK 0.37 GR5 PLATED  | 1   |
| 6    | 33951       | PAD, NYLATRON 0.25 X 3.87 X 2 | 3   |
| 7    | 30889       | WASHER, LOCK 0.25 GR5 PLATED  | 12  |
| 8    | 30809       | SCREW, HHC 0.25-20 X 0.50 GR5 | 11  |
| 9    | 33949       | PAD, NYLATRON 0.26 X 4 X 3.62 | 1   |
| 10   | 24375       | PLATE, BOOM STOP LA6K WELD    | 1   |
| 11   | 33920       | PLUG, BOOM HOLE 1.375 PLASTIC | 2   |
| 12   | 33367       | SCREW, EYE 0.25-20 W/ NUT     | 1   |
| 13   | 29979       | BUSHING, 1.00 X 1.250 X 0.375 | 2   |



# ASSEMBLY

**NOTES:**

- 1 -HAND TIGHT USING APPROPRIATE TOOL.
- 2 -PRESS FIT COMPOSITE BEARINGS, USING APPROPRIATE TOOLS.

**UNLESS SPECIFIED:**  
 MACHINED PART  
 MINIMUM 250 RMS  
 1/4" MIN. WELDS  
 USE E70 ROD.  
 DIM. TOLERANCES  
 .XXX ± .005  
 .XX ± .030  
 .X ± .116  
 FRAC. ± 1/16  
 XX° ± .5°

**THIRD ANGLE PROJECTION**

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THIRD ANGLE PROJECTION

CHECKED JE 04/28/2022  
 ENG APPR: DP 04/28/2022

**LIFTMOORE INC.**  
 BOOM ASSEMBLY LA6K ATB  
 NO. WINCH, ATB

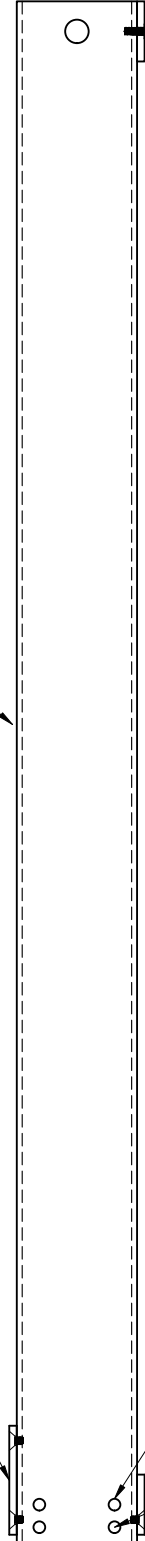
DRAWN: DP 04/28/2022 DWG. NO.  
 MTRL: SHEET 1-1  
 WEIGHT: 212.094 Lbs.

REV A  
 34836

P/N 33950  
PAD, NYLON 0.25 X 4 X 3.62 CSK

P/N 33614  
SCREW, SOC FH 0.25-20 X 0.50  
6 PLCS

P/N 26114  
BOOM, INNER 1ST LA6K MACH - ATB



P/N 30459  
SCREW, HHC 0.37-16 X 0.75 GR8  
8 PLCS

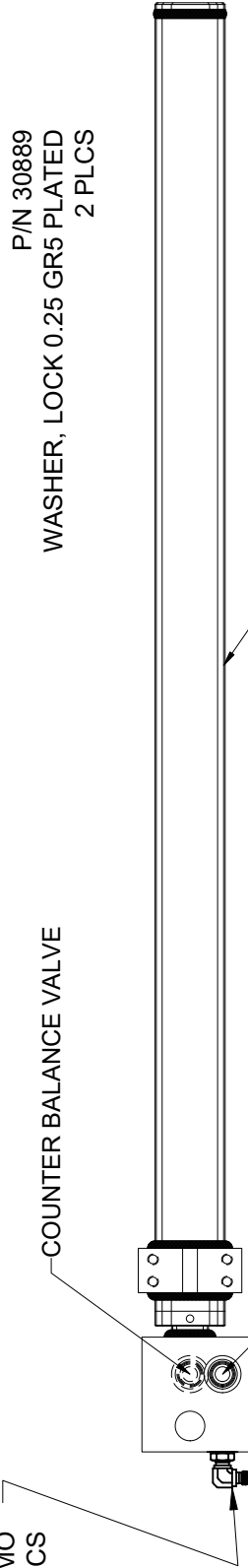
P/N 23663  
PLATE, BOOM END SUPPORT LA6K

P/N 33952  
PAD, NYLON 0.25 X 3.87 X 2 CSK

P/N 30809  
SCREW, HHC 0.25-20 X 0.50 GR5  
2 PLCS

P/N 32401  
ADAPTER, 90° 4MJ-6MO  
2 PLCS

COUNTER BALANCE VALVE

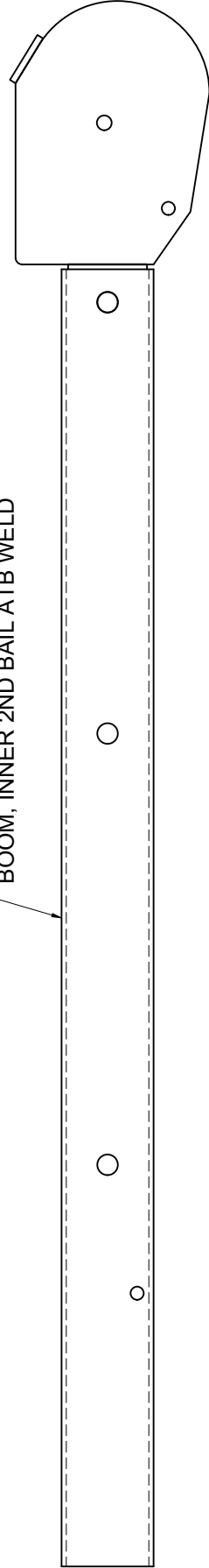


CHECK P.O. VALVE

P/N 30889  
WASHER, LOCK 0.25 GR5 PLATED  
2 PLCS

P/N 24847  
CYLINDER, 2.0 X 36.0 X 1.25

P/N 27542  
BOOM, INNER 2ND BAIL ATB WELD



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DRWN BY: AA

DATE: 10/15/15

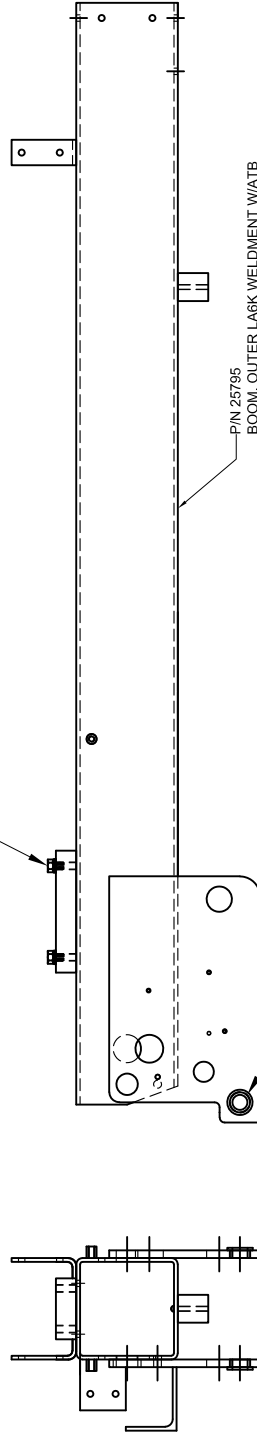
**BOOM, INNER ASSY LA6K W/ ATB**  
45 DEG BAIL ATB , LA6K, LA10K

DRAWING NO.

**27543-A**







FRONT VIEW

BACK VIEW

DRAWING NO.

34824-0

BOOM, OUTER ASSY LA6K  
NO WINCH, ATB

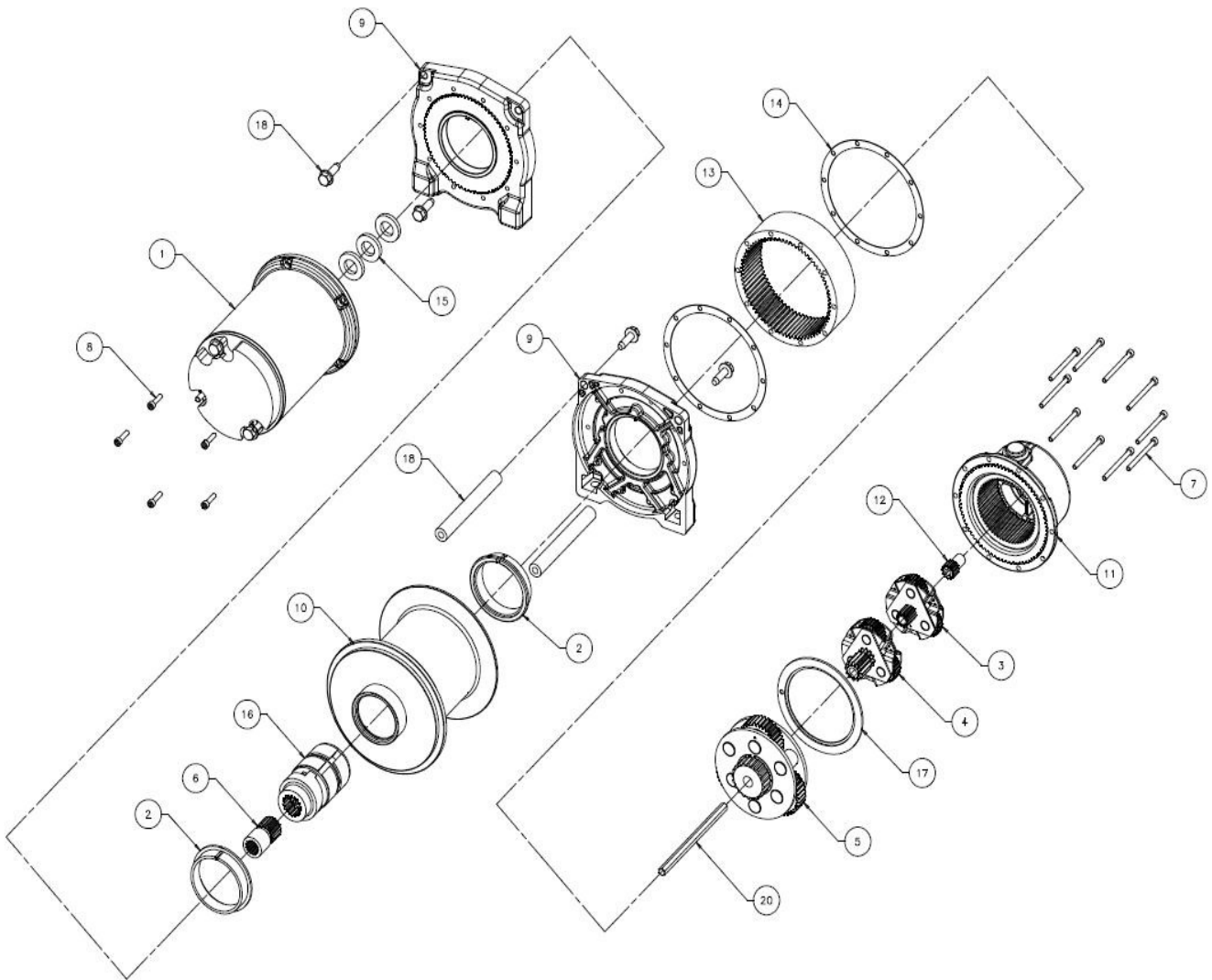
DRWN BY: JE

DATE: 5/2/22

Houston TX  
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**WINCH DC2000 (MF) 12VDC P/N 27528**



## SERVICE PARTS LIST: DC2000 (MF) HOIST-12V P/N 27528

| <u>ITEM REFERENCE.</u> |  | <u>ITEM / KIT No.</u> |
|------------------------|--|-----------------------|
| 1                      | SVC KIT-MOTOR SPLINED-12V DC-4.8 PM      | WI*84210              |
| 2                      | BUSHING DRUM NYLON                       | WI*13831              |
| 3                      | CARRIER ASSY, STAGE 1                    | WI*28430              |
| 4                      | CARRIER ASSY, STAGE 2                    | WI*28433              |
| 5                      | CARRIER ASSY, STAGE 3                    | WI*28115              |
| 6                      | COUPLER, MOTOR/BRAKE                     | WI*32149              |
| 7                      | CPSCR, 10-24 X 2-1/4-HEX SOCKET HEAD-PI  | WI*13850              |
| 8                      | CPSCR, SOC, 10-24 X 3/4, GR9 (KB)        | WI*5553               |
| 9                      | (MTO) S/P DRUM SUPPORT, GEAR END         | WI*25986              |
| 10                     | DRUM, (KB) 2000-LF, 4.25 DIA             | WI*31618              |
| 11                     | SVC KIT END HOUSING SUBASSY, CLUTCH PLUG | WI*85583              |
| 12                     | GEAR, SUN, 12 TOOTH, STAGE 1             | WI*13874              |
| 13                     | RING GEAR, ARG, 75 TOOTH                 | WI*25308              |
| 14                     | HOUSING, GASKET                          | WI*13848              |
| 15                     | SPACER, MOTOR                            | WI*15271              |
| 16                     | (MTO)S/P BRAKE,2.13 ELECTRIC,BIASED      | WI*63548              |
| 17                     | WASHER, THRUST, NYLON, MIDRANGE          | WI*13826              |
| 18                     | SVC KIT TIE ROD, ALUMN, .625 X 4.92      | WI*85579              |
| 19                     | PARTS PACK, DC2000 HOIST                 | WI*60049              |
| 21                     | SHAFT-DRIVE-HEX 5/16 X 5.63              | WI*84415              |





**SPECIFICATIONS:**

**GENERAL**

DESCRIPTION: SOLID STATE INCLINOMETER FOR MEASUREMENT OF THE INCLINATION OR ANGLE OF A SLOPE WITH RESPECT TO GRAVITY.

RANGE: -30° TO +90°

OUTPUT: 0.5 TO 4.5VDC

RESOLUTION: .25°

ACCURACY: ±0.3°

MINIMUM INPUT IMPEDANCE: 10K OHM

**ELECTRICAL**

SUPPLY VOLTAGE: 9 TO 35 VDC

SUPPLY CURRENT: 29mA

REVERSE POLARITY PROTECTION: PROTECTED

OVER-VOLTAGE PROTECTION: PROTECTED

**ENVIRONMENTAL**

OPERATING TEMPERATURE: -40 TO +85 DEG. C

STORAGE TEMPERATURE: -50 TO +100 DEG. C

PROTECTION: IP67

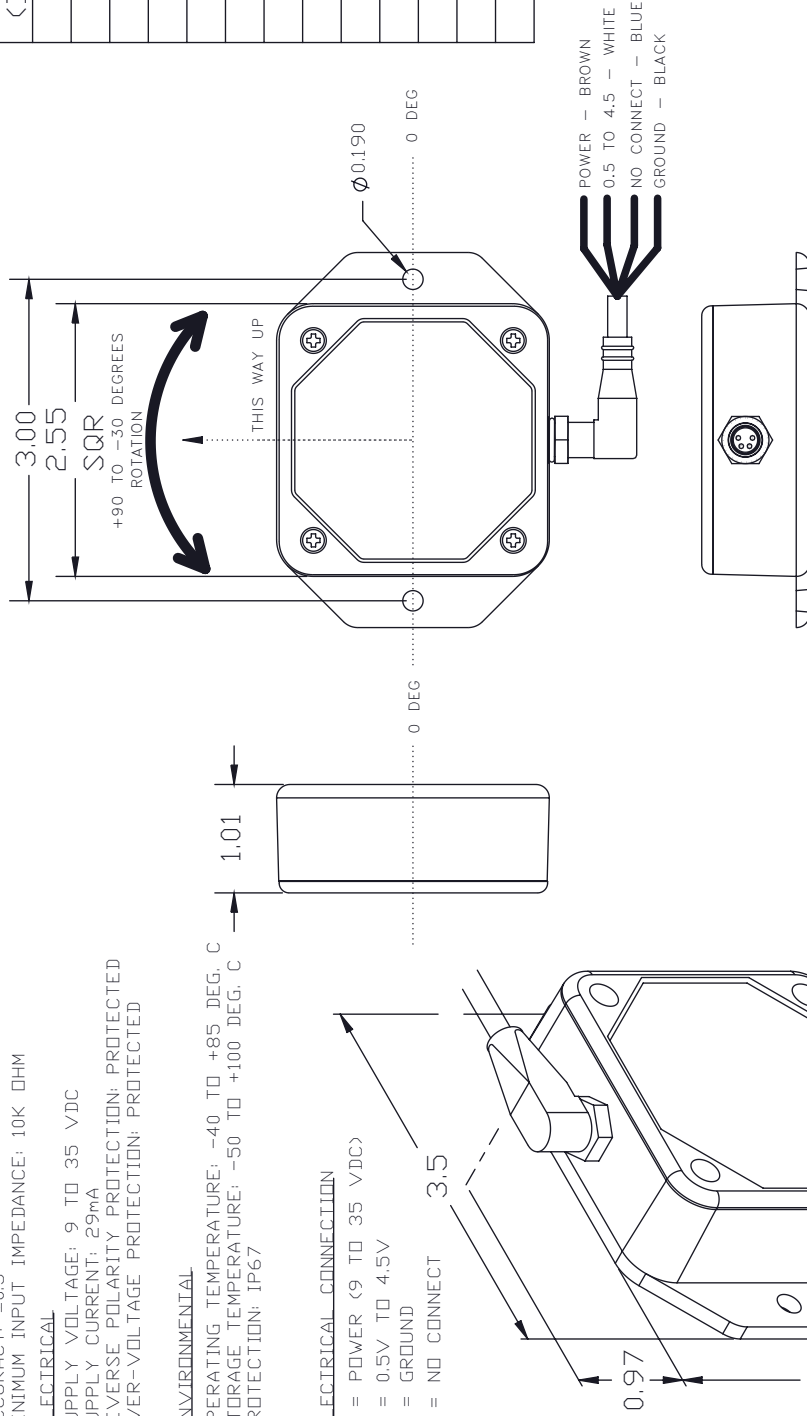
**ELECTRICAL CONNECTION**

A = POWER (9 TO 35 VDC)

B = 0.5V TO 4.5V

C = GROUND

D = NO CONNECT



| OUTPUT CHARACTERISTICS |                |
|------------------------|----------------|
| MAX ROTATION           | 90.00          |
| MIN ROTATION           | -30.00         |
| ROTATION (DEGREES)     | OUTPUT (VOLTS) |
| -30                    | 0.50           |
| -20                    | 0.83           |
| -10                    | 1.17           |
| 0                      | 1.50           |
| 10                     | 1.83           |
| 20                     | 2.17           |
| 30                     | 2.50           |
| 40                     | 2.83           |
| 50                     | 3.17           |
| 60                     | 3.50           |
| 70                     | 3.83           |
| 80                     | 4.17           |
| 90                     | 4.50           |

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DRAWN BY: JE  
DATE: 8/6/15

**INCLINOMETER, 120 DEGREE**

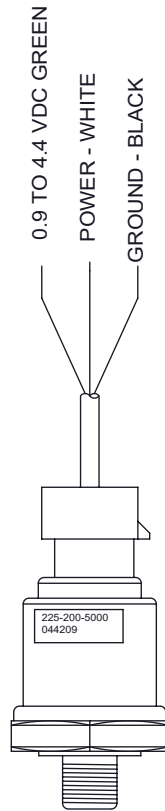
DRAWING NO.

**24457-A**

# OUTPUT CHARACTERISTICS

(FULL RANGE:5000) (LOAD RESISTER 220)

| PRESSURE | OUTPUT (mA) | OUTPUT (V) |
|----------|-------------|------------|
| 0        | 4           | 0.88       |
| 312.50   | 5           | 1.10       |
| 625.00   | 6           | 1.32       |
| 937.50   | 7           | 1.54       |
| 1250.00  | 8           | 1.76       |
| 1562.50  | 9           | 1.98       |
| 1875.00  | 10          | 2.20       |
| 2187.50  | 11          | 2.42       |
| 2500.00  | 12          | 2.64       |
| 2812.50  | 13          | 2.86       |
| 3125.00  | 14          | 3.08       |
| 3437.50  | 15          | 3.30       |
| 3750.00  | 16          | 3.52       |
| 4062.50  | 17          | 3.74       |
| 4375.00  | 18          | 3.96       |
| 4687.50  | 19          | 4.18       |
| 5000.00  | 20          | 4.40       |



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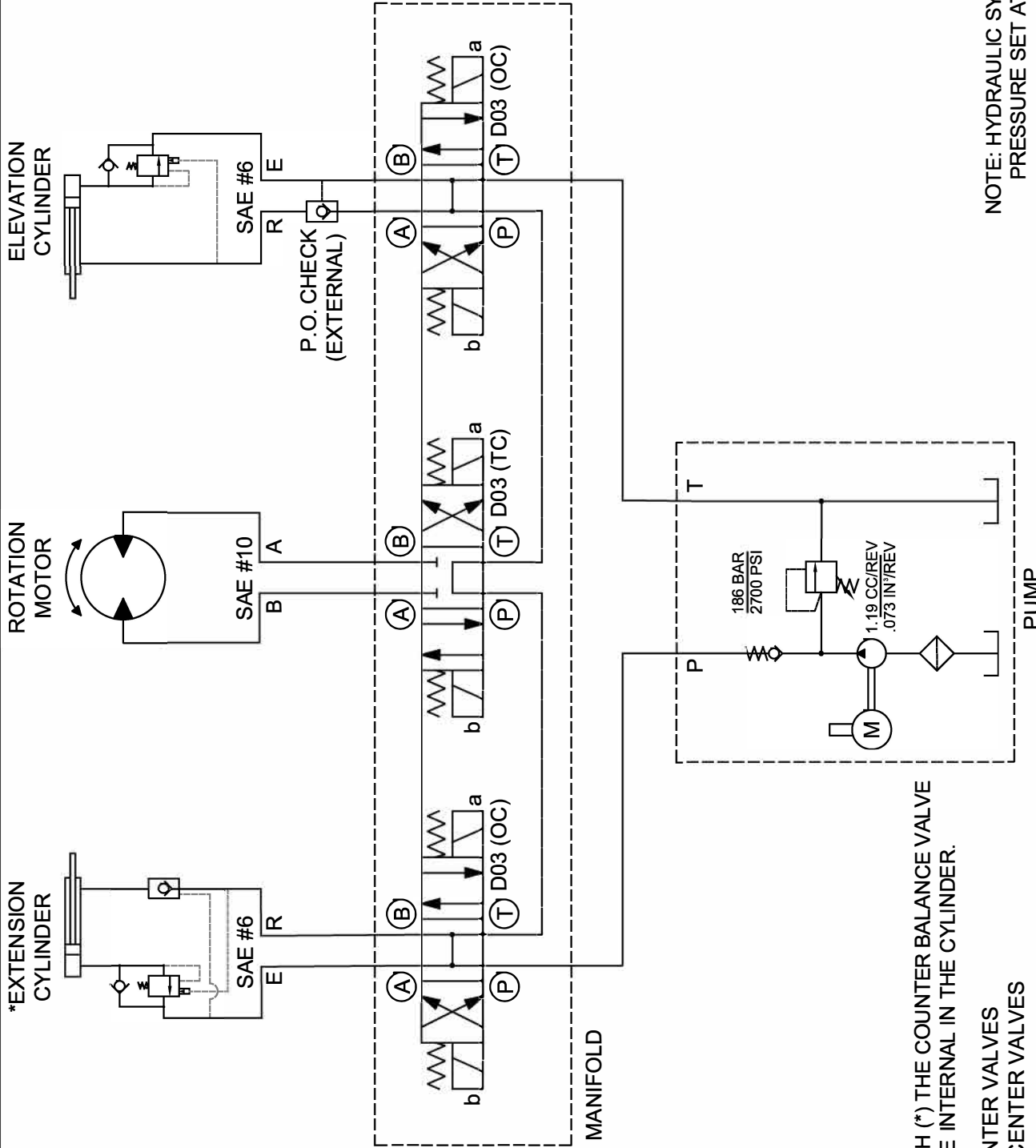


DRWN BY: AA  
DATE: 2/10/12

TRANSDUCER, PRESSURE 5000 PSI  
TRANSDUCER

DRAWING NO.

24456-A



NOTE: CYLINDERS WITH (\*) THE COUNTER BALANCE VALVE & PO CHECK VALVE ARE INTERNAL IN THE CYLINDER.

DO3 (OC) = OPEN CENTER VALVES  
 DO3 (TC) = TANDEM CENTER VALVES

NOTE: HYDRAULIC SYSTEM RELIEF PRESSURE SET AT 2700 PSI.



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DRWN BY: JE  
 DATE: 5/4/22

**SCHEM, HYD ELEC LA6K**

DRAWING NO.

**50961-0**

THIS DRAWING INTENTIONALLY LEFT BLANK

FOR FUTURE ADDITIONS  
OR

A PART OR FEATURE IS NOT APPLICABLE TO THIS CRANE



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[www.liftmoore.com](http://www.liftmoore.com)

DRWN BY:

DATE:

DRAWING NO.



## **LIFTMOORE LIMITED WARRANTY**

### Parts and Structural

Liftmoore, Inc. warrants each LIFTMOORE crane to be free from defects in materials and workmanship for twelve (12) months from the date of delivery to the original customer. Under the terms of this warranty the crane structural components manufactured by LIFTMOORE, Inc. are warranted for thirty-six (36) months from the date of delivery to the original customer. LIFTMOORE, Inc. will repair or replace, as its sole discretion, any equipment or part that is returned f.o.b. to LIFTMOORE, Inc.'s plant at 7810 Pinemont Drive, Houston, Texas 77040, or to one of its authorized dealers, and is found by LIFTMOORE, Inc. or its authorized dealer to have been defective at the time of original delivery.

The foregoing warranty is the exclusive warranty made by LIFTMOORE, Inc. with respect to its cranes and is in lieu of all other warranties. ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS OF ANY CRANE FOR A PARTICULAR PURPOSE OR OPERATION, ARE HERBY EXPRESSLY DISCLAIMED.

The foregoing warranty applies only to LIFTMOORE cranes under normal use and service and does not apply in the event of damage caused by repair or alteration or damage during shipment, accident, negligence, overloading, or misuse, including operator's failure to follow any of the instructions issued with the crane.

This warranty is limited to the original purchaser and is not assignable. In order to submit a claim, the original purchaser must provide a copy of the original invoice for the crane in question within twelve (12) months following the delivery date and within 30 days from the date of repair.

The warranty applies only when the LIFTMOORE crane is used for commercial purposes and does not cover any purchase for use for personal, family or household purposes.

**LIMITATION OF LIABILITY:** LIFTMOORE, Inc.'s liability for any losses or damages resulting from any cause whatsoever, including LIFTMOORE, Inc.'s NEGLIGENCE or from a defective crane irrespective of whether such defects are discoverable or latent, shall in no event exceed the purchase price of the crane to which losses or damages are claimed, or at the election of LIFTMOORE, Inc., the repair or replacement of the defective crane.

In no event shall LIFTMOORE, Inc. be liable for any special, incidental, or consequential damages, including commercial losses or costs of any kind sustained by purchaser or any other person or for any damages for which purchaser may be liable to other persons by reason of any defect in any LIFTMOORE crane or any part thereof.

LIFTMOORE, Inc. reserves the right to make changes in design or construction of its cranes at any time without obligating itself to make such changes on cranes previously manufactured.

No agent, employee, or representative of LIFTMOORE, Inc. has authority to amend or modify the foregoing warranty or to bind LIFTMOORE, Inc. by any other warranty, guaranty, or assumption of liability.

In the event any provision of this warranty is for any reason held ineffective, the remaining provisions shall remain in full force and effect.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other legal rights that vary from state to state.

