

# **OWNERS MANUAL**

## **11006H**

**REVISION 1/2000**

PART NO. 999995

**SERIAL NO.** \_\_\_\_\_

## **AUTO CRANE COMPANY**

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## !! DISTRIBUTORS !!

PROTECT YOUR CUSTOMER'S WARRANTY!  
SUBMIT DELIVERY REPORT WITHIN 15 DAYS.

Mail to: Auto Crane Company  
P.O. Box 580697  
Tulsa, OK 74158-0697

Or Fax to: 918/834-5979

Protect your customers warranty - Submit within 15 days from delivery date.



**AUTO CRANE COMPANY**

**DISTRIBUTOR  
DELIVERY REPORT**

DISTRIBUTOR \_\_\_\_\_

OWNER \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY/STATE \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

BUSINESS \_\_\_\_\_

MODEL #	SERIAL #	DATE DELIVERED	UNIT DESTINATION

IMPORTANT: ATTACH SIGNED COPY OF CUSTOMER INVOICE / DELIVERY RECEIPT

AC-109

REPORT AUTHORIZED BY: \_\_\_\_\_

\* REGISTER ONE UNIT ONLY PER CARD \*

# ***WARNINGS - READ THIS PAGE!***

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

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

**WARNING! NEVER OPERATE THE CRANE NEAR ELECTRICAL POWER LINES!** Death or serious injury will result from boom, line, or load contacting electric lines. Do not use crane within 10 feet (3.05m) of electric power lines carrying up to 50,000 volts. One foot additional clearance is required for every additional 30,000 volts or less.

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

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

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

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

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

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

**11006 SERIES - OWNER'S MANUAL**  
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# ***INTRODUCTION***

## ***11006 SERIES***

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

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

Auto Crane has incorporated several safety features in the 11006 series cranes for your protection. The choice of materials and the design of the electrical system minimizes weight and lengthens durability. The hydraulic components meet or exceed a **3.5:1 safety factor**. Holding valves prevent the load from dropping if a hose should fail. A **10u filter** in the return line of the hydraulic system removes dirt and grit that may cause erratic operation. The reservoir has a **15u air filter** in the filler cap. The pump has a **40 mesh strainer** in the suction line.

For your convenience the overall dimensions of the 11006 series crane are on the General Dimension Drawing. Maximum turning radius at both the hoist motor and the rotation motor are also on that drawing.

Remember, the crane adds weight to the vehicle. Adding weight may change the driving and riding characteristics of the vehicle unless the appropriate overload spring(s) are installed on the truck. The payload of the vehicle is reduced by the weight of the crane. The operator should exercise care when loading the vehicle. Distributing the payload on the vehicle evenly will greatly improve the driving and riding characteristics of the vehicle. **A minimum G.V.W. of 30,000 lbs. is recommended for mounting the 11006 series cranes.**

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

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It has always been Auto Crane Company policy to handle all warranty claims we receive as promptly as possible. If a warranty claim involves discrepant material or workmanship, Auto Crane will take

immediate corrective action. It is understandable that Auto Crane company cannot assume responsibility of liability when it is obvious that our products have been abused, mis-used, overloaded or otherwise damaged by inexperienced persons trying to operate the equipment without reading the manual.

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

Auto Crane maintains a strong distributor network and a knowledgeable Customer Service Department. In most cases, an equipment problem is solved via phone conversation with our customer service department. The customer service department also has the ability to bring a local distributor, a regional sales manager, or a factory serviceman into the solution of an equipment problem. If, through no fault of Auto crane company, it is necessary to send an experienced factory serviceman on a field service call, the rates stated in the Auto Crane Distributor's Flat Rate Manual will apply.

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

### **DISTRIBUTOR ASSISTANCE:**

Should you require any assistance not given in this manual, we recommend that you consult your nearest Auto Crane Distributor. Our distributors sell authorized parts and have service departments that can solve almost any needed repair.

***NOTE: THIS MANUAL  
SHOULD REMAIN WITH  
THE CRANE AT ALL TIMES.***

This manual does not cover all maintenance, operating, or repair instructions pertinent to all possible situations. If you require additional information, please contact the **Auto Crane Company** at the following telephone number: **(918) 438-2760**. The information contained in the manual is in effect at the time of this printing. Auto Crane Company reserves the right to update this material without notice or obligation.

# ***GENERAL SPECIFICATIONS***

## ***11006 SERIES***

### **DIMENSIONS**

**Width:** 1 ft 10 in. (.55 m)

**Height:** 3 ft 6 in. (1.06 m)

**Length:** 14 ft 10 in. (4.52 m)

**Weight:** 2200 lb ( 997kg)

**Base Plate Dimensions:**

1 ft 9 in. (.53m) x 1 ft 9 in. (.53 m)

### **CABLE**

120 ft (28.9 m) of 7/16 in diameter cable is standard

### **CHASSIS REQUIREMENTS**

30,000 lbs (9,299 kg) GVWR minimum

### **CAPACITY**

66000 ft·lb

ft·lb = horizontal distance from centerline of rotation to free hanging weight (feet) x amount of weight (pounds)]

*(See Load Chart)*

### **REACH**

Main boom reaches 12 ft

Power boom will extend to 20 ft

Manual boom will extend to 25 ft

### **HYDRAULIC SYSTEM**

**Pressure:** 2500 psi relief setting

**Flow:** 12 gpm

**Oil Type:** Mobile DTE 13, Sun 2015

### **MOVEMENT SPEEDS**

Proportional Maximum

**Hoist:** 30 fpm single line (no load)

### **ELECTRICAL SYSTEM REQUIREMENTS**

**Control voltage:** 12 V DC

# **--- IMPORTANT --- OPERATING PRACTICES & WARNINGS**

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

## **WARNING!**

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

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

26. Make sure this manual has been thoroughly read by all crane operating personnel and supervisors.
27. A routine inspection of the crane should be mandatory before each operating day. Any defects should be corrected immediately.
28. At a job site the vehicle should be positioned so that the crane can adequately reach the load within the rated capacity (centerline of rotation to hoist hook).
29. Keep the vehicle as level as possible during operation.
30. For electric cranes, **engage emergency brake** and leave ignition on with transmission in neutral (or in park for automatic transmissions). Activate any crane power switches. For Auto Crane units requiring battery and hydraulic operation, **engage emergency brake**, place gear selector in neutral, press clutch, activate PTO, release clutch and after hydraulic fluid is warm, set throttle control to proper engine speed.
31. Always use outriggers from the truck to the ground. Be sure these are firm and adequately positioned. When rotating, **keep load as low to the ground as possible**.
32. Remove pendant control from cab or storage area. On smaller units, plug pendant into receptacle on crane. On larger units, remove pendant control from guard and unwrap cable from boom. Do not operate crane until cable is unwound completely. On all cranes, detach hook from dead man. Crane is now ready for operation.
33. Always boom up before rotating so the boom will clear the required boom support.
34. When extending the boom, always maintain clearance between the boom crown and the traveling block or hoist hook.
35. Always observe safe and practical operation to avoid possible accidents. Refer to Safety Tips and Precautions.
36. After completing lifting operations, return the boom to stowed position on the boom support. Avoid unneeded pressure on the boom support.
37. Store pendant control on proper location (in cab or on crane).
38. Return outriggers to stowed position. Make sure they are pinned in place or jacklegs are returned to compartment.
39. Check work area for any tools or equipment not stored.
40. Release throttle control, depress clutch and disengage PTO. Deactivate any crane power switches.
41. Report any unusual occurrence during crane operation that may indicate required maintenance or repair.
42. **NEVER** use two cranes to support a load too large for either crane.
43. Spray all electrical equipment with special corrosion resistant coating. This eliminates rust or corrosion due to melting and freezing action of condensation.

## ***OPERATION OF OUTRIGGERS***

For hydraulic outriggers:

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



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

## **OPERATORS**

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

## **QUALIFICATIONS FOR OPERATORS**

- 3 Operators shall be required by the employer to pass a practical operating examination. Qualifications shall be limited to the specific type of equipment for which examined.**
- 4 Operators and operator trainees shall meet the following physical qualifications:**
  - A. Vision of at least 20/30 Snellen in one eye and 20/50 in the other, with or without corrective lenses.
  - B. Ability to distinguish colors, regardless of position, if colors differentiation is required for operation.
  - C. Adequate hearing with or without hearing aid for the specific operation.
- 5 Evidence of physical defects or emotional instability which render a hazard to operator or others, which in the opinion of the examiner could interfere with the operator's performance may be sufficient cause for disqualification. In such cases, specialized clinical or medical judgment and tests may be required.**
- 6 Evidence that the operator is subject to seizures or loss of physical control shall be sufficient reason for disqualification. Specialized medical tests may be required to determine these conditions.**

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

## **CONDUCT OF OPERATORS**

- 9 The operator shall not engage in any practice which will divert his attention while actually operating the crane.**
- 10 Each operator shall be responsible for those operations under the operator's direct control. Whenever there is any doubt as to safety, the operator shall consult with the supervisor before handling the loads.**
- 11 The operator should not leave a suspended load unattended unless specific precautions have been instituted and are in place.**
- 12 If there is a warning sign on the switch or engine starting controls, the operator shall not close the switch or start the engine until the warning sign has been removed by the appointed person.**
- 13 Before closing the switch or starting the engine, the operator shall see that all controls are in the "OFF" or neutral position and all personnel are in the clear.**
- 14 If power fails during operation, the operator shall:**
  - A. move power controls to the "OFF" or neutral position.

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

B. land the suspended load and boom, if practical.

**15 The operator shall be familiar with the equipment and its proper care. If adjustments or repairs are necessary, the operator shall report the same promptly to the appointed person, and shall also notify the next operator.**

**16 All controls shall be tested by the operator at the start of each shift. If any controls do not operate properly, they shall be adjusted or repaired before operations are begun.**

**17 Stabilizers shall be visible to the operator while extending or setting unless operator is assisted by a signal person.**

## **OPERATING PRACTICES**

### **HANDLING THE LOAD**

#### **18 Size of load**

- A. No crane shall be loaded beyond the rated load except for test purposes.
- B. The load to be lifted is to be within the rated load of the crane and its existing configuration.
- C. When loads which are not accurately known are to be lifted, the person responsible for the job shall ascertain that the weight of the load does not exceed the crane rated load at the radius at which the load is to be lifted.

#### **19 Attaching the load**

- A. The load shall be attached to the hook by means of slings or other devices of sufficient capacity.
- B. Hoist rope shall not be wrapped around the load.

#### **20 Moving the load**

- A. The operator shall determine that:
- B. The crane is level and, where necessary, the vehicle/carrier is blocked properly.
- C. The load is well secured and balanced in the sling or lifting device before it is lifted more than a few inches.
- D. Means are provided to hold the vehicle stationary while operating the crane.
- E. Before starting to lift, the hook shall be brought over the load in such a manner as to minimize swinging.

F. During lifting care shall be taken that:

- 1. **there is no sudden acceleration or deceleration of the moving load.**
- 2. **load, boom or other parts of the crane do not contact any obstruction.**

G. Cranes shall not be used for dragging loads sideways.

H. This standard recognizes that articulating boom cranes are designed and intended for handling materials. They do not meet personnel lift or elevator requirements. Therefore, no lifting, lowering, swinging or traveling shall be done while a person is on the hook or load. Hook attached suspended work platforms (baskets) shall not be used with cranes covered by this standard. Work platforms attached to the boom must be approved by crane manufacturer.

I. The operator should avoid carrying loads over people.

J. When the crane is so equipped, the stabilizers shall be fully extended and set. Blocking under stabilizers shall meet the requirements as follows:

- 1. **strong enough to prevent crushing.**
- 2. **of such thickness, width and length as to completely support the stabilizer pad.**

K. Firm footing under all tires, or individual stabilizer pads should be level. Where such a footing is not otherwise supplied, it should be provided by timbers, cribbing, or other structural members to distribute the load so as to not exceed allowable bearing capacity or the underlying material.

L. In transit, the boom shall be carried in stowed position.

M. When rotating the crane, sudden starts and stops shall be avoided. rotational speed shall be such that the load does not swing out beyond the radius at which it can be controlled.

N. The crane shall not be transported with a load on the hook unless recommended by the manufacturer.

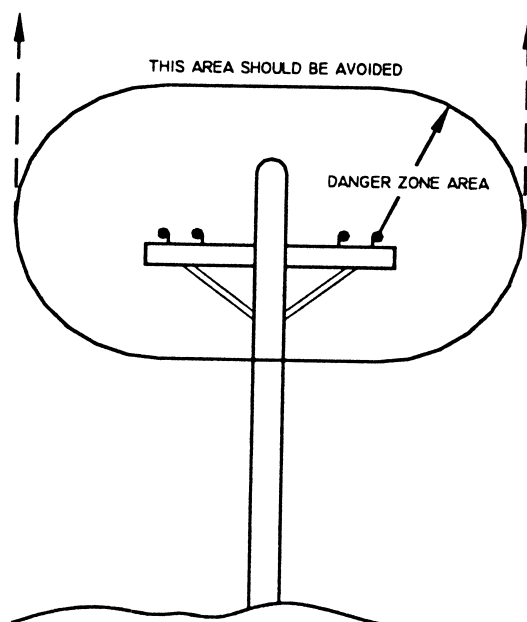
O. No person should be permitted to stand or pass under a suspended load.

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

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

## **MISCELLANEOUS**

### **OPERATING NEAR ELECTRICAL POWER LINES**



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

### **EXCEPTIONS**

- A. The danger zone may be entered after confirmation by an appointed person that the electrical distribution and transmission lines have been de-energized and visibly grounded at the point of work; or
- B. The danger zone may be entered if insulating barriers (not a part of nor an attachment to the crane) have been erected to prevent physical contact with the lines.

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

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

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

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

- A. Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities verify that it is not an energized line.
- B. Exceptions to this procedure, if approved by the administrative or regulatory authority if the alternate procedure provides equivalent protection and set forth in writing.
- C. Durable signs shall be installed at the operator's station and on the outside of the crane, warning that electrocution or serious bodily injury may occur unless a minimum clearance of 10 ft. (3.0m) between the crane or the load being handled and energized power lines. Greater clearances are required because of higher voltage as stated above. These signs shall be revised but not removed when local jurisdiction requires greater clearances.

**TABLE 1**

normal voltage, kV (phase to phase)		minimum required clearance	
		ft	(m)
<u>when operating near high voltage power lines</u>			
over	to 50	10	(3.05)
over	50 to 200	15	(4.6)
over	200 to 350	20	(6.1)
over	350 to 500	25	(7.62)
over	500 to 750	35	(10.67)
over	750 to 1000	45	(13.72)
<u>while in transit with no load and boom lowered</u>			
over	to 0.75	4	(1.22)
over	0.75 to 50	6	(1.83)
over	50 to 345	10	(3.83)
over	345 to 750	16	(4.87)
over	750 to 1000	20	(6.1)

# ***INSPECTION, TESTING AND MAINTENANCE***

## **GENERAL**

### **INSPECTION CLASSIFICATION**

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

**28 Regular inspection.** Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below.

- A. frequent inspection - daily to monthly intervals
- B. periodic inspection - one to twelve intervals, or as specifically recommended by the manufacturer

### **FREQUENT INSPECTION**

**29 Inspection shall be performed by designated personnel.**

- A. control mechanisms for maladjustment interfering with proper operation - daily, when used
- B. control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter
- C. safety devices for malfunction
- D. all hydraulic hoses, particularly those which flex in normal operation of crane functions, should be visually inspected once every working day, when used
- E. hooks and latches for deformation, chemical damage, cracks, and wear. Refer to ANSI/ASME B30.10
- F. rope reeving for compliance with crane manufacturer's specifications, if optional winch is used

G. electrical apparatus for malfunctioning, signs of excessive deterioration, dirt and moisture accumulation

H. hydraulic system for proper oil level and leaks daily

I. tires for recommended inflation pressure, cuts and loose wheel nuts

J. connecting pins and locking device for wear and damage

### **PERIODIC INSPECTION**

**30 Deformed, cracked or corroded members in the crane structure and carrier.**

**31 Loose bolts, particularly mounting bolts.**

**32 Cracked or worn sheaves and drums.**

**33 Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers and devices.**

**34 Excessive wear on brake and clutch system parts and lining.**

**35 Crane hooks inspected for cracks.**

**36 Travel steering, braking, and locking devices, for malfunction.**

**37 Excessively worn or damaged tires.**

**38 Hydraulic and pneumatic hose, fittings, and tubing inspection.**

- A. evidence of leakage at the surface of the flexible hose or its junction with metal and coupling
- B. blistering, or abnormal deformation to the outer covering of the hydraulic or pneumatic hose
- C. leakage at threaded or clamped joints that cannot be eliminated by normal tightening or recommended procedures
- D. evidence or excessive abrasion or scrubbing on the outer surface of a hose, rigid tube, or fitting. Means shall be taken to eliminate the interference of

# ***INSPECTION, TESTING AND MAINTENANCE***

## **GENERAL**

elements in contact or otherwise protect the components

necessary to determine origin of the problem before corrective action can be taken.

### **39 Hydraulic and pneumatic pumps and motors inspection.**

- A. loose bolts or fasteners
- B. leaks at joints between sections
- C. shaft seal leaks
- D. unusual noises or vibrations
- E. loss of operating speed
- F. excessive heating of the fluid
- G. loss of pressure

### **40 Hydraulic and pneumatic valves inspection.**

- A. cracks in valve housing
- B. improper return of spool to neutral position
- C. leaks at spools or joints
- D. sticking spools
- E. failure of relief valves to attain or maintain correct pressure setting
- F. relief valve pressure shall be checked as specified by the manufacturers

### **41 Hydraulic and pneumatic cylinders inspection.**

- A. drifting caused by fluid leaking across piston
- B. rod seals leaking
- C. leaks at welding joints
- D. scored, nicked, or dented cylinder rods
- E. damaged case (barrel)
- F. loose or deformed rod eyes or connecting joints

**42 Hydraulic filters.** Evidence of rubber particles on the filter elements may indicate hose, "O" ring, or other rubber component deterioration. Metal chips or pieces on the filter may denote failure in pumps, motors, or cylinders. Further checking will be

**43 Labels** are to be in place and legible.

### **CRANES NOT IN REGULAR USE**

**44 A crane which has been idle for a period of over one month or more, but not less than six months, shall be given an inspection conforming with the initial-regular-frequent inspections.**

**45 A crane which has been idle for a period of over six months shall be given a complete inspection conforming with the initial-regular-frequent inspection requirements.**

### **INSPECTION RECORDS**

**46 Dated records for periodic inspection should be made on critical items such as brakes, crane hooks, rope, hydraulic and pneumatic cylinders, and hydraulic and pneumatic relief pressure valves. Records should be kept available to an appointed person.**

### **OPERATIONAL TESTS**

**47 Prior to initial use, all new, altered, modified, or extensively repaired cranes shall be tested for compliance with the operational requirements of this section, including functions such as the following:**

- A. load lifting and lowering mechanisms
- B. boom lifting and lowering mechanisms
- C. boom extension and retraction mechanisms
- D. swing mechanisms
- E. safety devices
- F. operating controls comply with appropriate function labels

***Operational crane test results shall be made available to an appointed person.***

### **RATED TEST LOAD**

***Prior to initial use, altered, modified, or extensively repaired cranes shall be load***

# ***INSPECTION, TESTING AND MAINTENANCE***

## **GENERAL**

***tested by or under the direction of an appointed person.***

**48 Test loads shall not exceed 110% of the manufacturer's load ratings.**

**49 Written reports shall be maintained showing test procedures and confirming the adequacy of repairs.**

## **MAINTENANCE**

### **PREVENTIVE MAINTENANCE**

**50 Before adjustment and repairs are started on a crane, the following precautions shall be taken as applicable:**

- A. crane placed where it will cause the least interference with other equipment or operations
- B. all controls at the "off" position
- C. starting means rendered inoperative
- D. boom lowered to the ground if possible or otherwise secured against dropping
- E. relieve hydraulic oil pressure from all hydraulic circuits before loosening or removing hydraulic components

**51 Warning or "OUT OF ORDER" signs shall be placed on the crane controls.**

**52 After adjustments and repairs have been made, the crane shall not be returned to service until all guards have been reinstalled, trapped air removed from hydraulic system (if required), safety devices reactivated, and maintenance equipment removed.**

### **ADJUSTMENTS AND REPAIRS**

**53 Any hazardous conditions disclosed by the inspection requirements shall be corrected before operation of crane is resumed, Adjustments and repairs shall be done only by designated personnel.**

**54 Adjustments shall be maintained to assure correct functioning of components, The following are examples:**

A. functional operating mechanism

B. safety devices

C. control systems

**55 Repairs or replacements shall be provided as needed for operation.**

***The following are examples:***

A. critical parts of functional operating mechanisms which are cracked, broken, corroded, bent, or excessively worn

B. critical parts of the crane structure which are cracked, bent, broken, or excessively corroded

C. crane hooks showing cracks, damage, or corrosion shall be taken out of service. Repairs by welding are not recommended

**56 Instructions shall be provided by the manufacturer for the removal of air from hydraulic circuits.**

## **LUBRICATION**

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

## **ROPE INSPECTION**

### **57 Frequent Inspection**

A. All running ropes in service should be visually inspected once each working day. A visual inspection shall consist of observation of all rope which can be in use during the days operations. These visual observations should be considered with discovering gross damage such as listed below, which may be an immediate hazard.

- 1. distortion of the rope such as kinking, crushing, un-stranding, birdcaging, main strand displacement, or core protrusion. Loss of rope diameter in a short length or unevenness of outer strands should be replaced**

- 2. general corrosion**

# ***INSPECTION, TESTING AND MAINTENANCE***

## **GENERAL**

3. broken or cut strands;
4. number, distribution and type of visible broken wires. When such damage is discovered, the rope shall either be removed from service or given as inspection.

B. Care shall be taken when inspecting sections of rapid deterioration such as flange points, crossover points, and repetitive pickup points on drums.

### **58 Periodic inspection**

A. The inspection frequency shall be determined by a qualified person and shall be based on such factors as:

1. expected rope life as determined by experience on the particular installation or similar installations
2. severity of environment
3. percentage of capacity lifts
4. frequency rates of operation
5. exposure to shock loads

***Inspection need not be at equal calendar intervals and should be more frequent as the rope approaches the end of its service life. This inspection shall be made at least annually.***

- B. Periodic inspection shall be performed by a designated person. This inspection shall cover the entire length of the rope. Only the surface wires need be inspected. No attempt should be made to open the rope. Any deterioration results in appreciable loss of original strength, such as described below, shall be noted and determination made as to whether use of the rope would constitute a hazard: points listed above reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires; severely corroded, cracked, bent, worn or improperly applied connections;
- C. Care shall be taken when inspecting sections subject to rapid deterioration such as the following:

1. sections in contact with saddles, equalizer sheaves, or other sheaves where rope travel is limited
2. sections of the rope at or near terminal ends where corroded or broken wires may protrude

### **ROPE REPLACEMENT**

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

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

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

- A. in running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay
- B. one outer wire broken at the contact point with the core of the rope structure and protrudes or loops out of the rope structure. Additional inspection of this section is required
- C. wear of one third of the original diameter of the outside individual wire
- D. kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure
- E. evidence of any heat damage from any cause
- F. reduction from nominal diameter of more than 1/64 in. (0.4mm) for diameters up to and including 5/16 in. (8 mm), 1/32 in. (0.8 mm) for diameter 3/8 in. (9.5 mm) to and including 1/2 in. (13 mm), 3/64 in. (1.2 mm) for diameter 9/16 in. (14.5 mm) to and including 3/4 in. (19 mm), 1/16 in. (1.6 mm) for diameter 7/8 in. (22 mm) to and including 1 1/8 in. (29 mm), 3/32 in. (2.4 mm) for diameters 1 1/4 in. (32 mm) to and including 1 1/2 in. (38 mm)

# ***INSPECTION, TESTING AND MAINTENANCE***

## **GENERAL**

G. In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

H. Replacement rope shall have a strength rating at least as great as the original rope furnished or recommended by the crane manufacturer. Any deviation from the original size, grade, or construction shall be specified by a rope manufacturer, or a qualified person.

**61 Rope not in regular use:** all rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed, shall be given and inspection in accordance with above information before it is placed in service. This inspection shall be for all types of deterioration and shall be performed by a qualified person.

### **62 Inspection records**

A. frequent inspection- no records required

B. periodic inspections- in order to establish data as a basis for judging the proper time for replacement, a dated report condition at each periodic inspection should be kept on file. This report shall cover points of deterioration listed above.

## **ROPE MAINTENANCE**

**63 Rope should be stored to prevent damage or deterioration.**

**64 Unreeling or uncoiling of rope shall be done as recommended by the rope manufacturer and with care to avoid kinking or inducing twist.**

**65 Before cutting a rope, seizing shall be placed on each side of the place where the rope is to be cut to prevent unlaying of the strands. On pre-formed rope, one seizing on each side of the cut is required. On non-preformed ropes of 7/8 in. (22 mm) diameter or smaller, two seizings on each side of the cut are required, and for non-preformed rope 1 in. (25 mm) diameter or larger, three seizings on each side of the cut are required.**

**66 During installation care should be exercised to avoid dragging of the rope in the dirt or around objects which will scrape, nick crush or induce sharp bends in it.**

**67 Rope should be maintained in a well-lubricated condition. It is important that lubricant applied as a part of a maintenance program shall be compatible with the original lubricant and to this end the rope manufacturer should be consulted. Lubricant applied shall be the type which does not hinder visual inspection. Those sections of rope which are located over sheaves or otherwise hidden during inspection and maintenance procedures require special attention when lubricating rope. The object of rope lubrication is to reduce internal friction and to prevent corrosion.**

**68 When an operating rope shows greater wear or well defined localized areas than on the remainder of the rope, rope life can be extended in cases where a section at the worn end, and thus shifting the wear to different areas of the rope.**



# SAFETY DECAL SECTION

PART NO.: 040517  
DECAL: STAY CLEAR OF BOOM  
FUNCTION: To inform the operator of the hazard of proximity or contact with the crane boom during operation.  
QUANTITY: 2  
PLACEMENT: Both sides of crown  
(see page 1-5.0.0, Item 10)



FIG. SD-1.

PART NO.: 040518  
DECAL: STAY CLEAR OF LOAD  
FUNCTION: To inform the operator of the hazard of proximity or contact with the crane load during operation.  
QUANTITY: 2  
PLACEMENT: Both sides of crown plate  
(see page 1-5.0.0, Item 11)



FIG. SD-2.

PART NO.: 040519  
DECAL: SCISSORS POINT  
FUNCTION: To inform the operator of possible danger at scissors point on crane.  
QUANTITY: 1  
PLACEMENT: Both sides of lift cylinder  
(see page 1-5.0.0, Item 8)



FIG. SD-3.

# SAFETY DECAL SECTION

PART NO.: 040529 QUANTITY: 2  
 DECAL: ELECTROCUTION HAZARD PLACEMENT: Both sides of end of lower boom  
 FUNCTION: To inform the operator of the hazard involved with contacting electrical power lines with crane boom. (see page 1-5.0.0, Item 9)

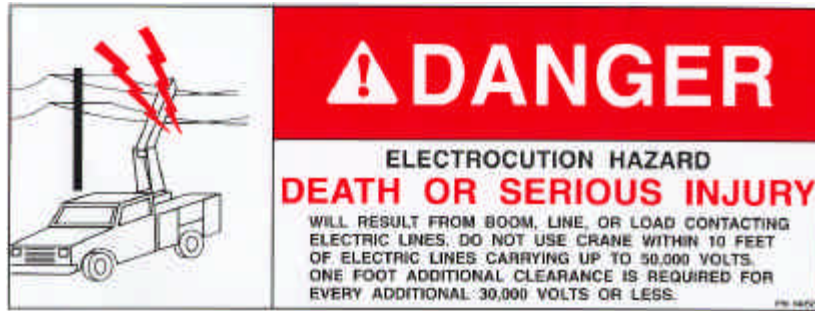


FIG. SD-4.

PART NO.: 040580  
 DECAL: OPERATOR TRAINING  
 FUNCTION: To inform the operator of the need to receive proper training before using the crane.  
 QUANTITY: 1  
 PLACEMENT: Left Sideplate (see page 1-5.0.0, Item 15)

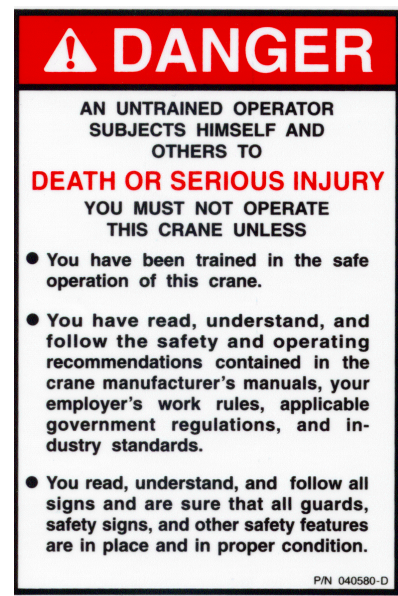


FIG. SD-5.

# SAFETY DECAL SECTION

PART NO.: 040579  
DECAL: OPERATION INSTRUCTIONS  
FUNCTION: To inform the operator of the proper procedure to follow for safe operation of the crane.  
QUANTITY: 1  
PLACEMENT: Left Side plate  
(see page 1-5.0.0, Item 16)

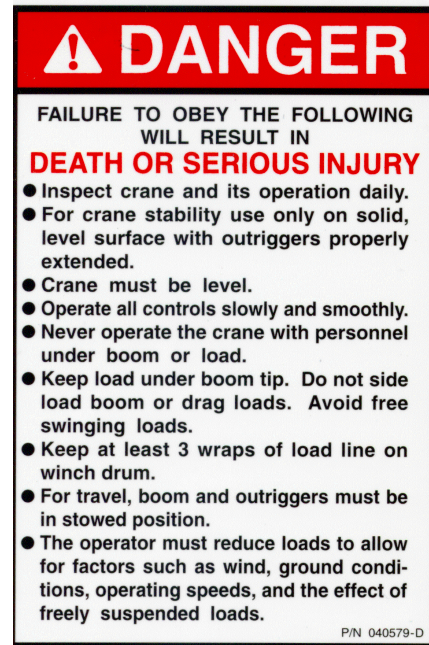


FIG. SD-6.

PART NO.: 040587  
DECAL: LOAD SENSOR  
FUNCTION: To inform the operator that the load sensor is preset and that tampering with the sensor may cause potentially hazardous situation.  
QUANTITY: 1  
PLACEMENT: On the lift cylinder near the load sensor  
(see page 1-5.0.0, Item 17)



FIG. SD-7.

PART NO.: 040632  
DECAL: TAMPERING WITH OVERLOAD DEVICE  
FUNCTION: To inform the operator that tampering with the overload device may cause a unit failure or possible personnel injury.  
QUANTITY: 1  
PLACEMENT: Right side of lift cylinder  
(see page 1-5.0.0, Item 13)



FIG. SD-8.

# ***SAFETY DECAL SECTION***

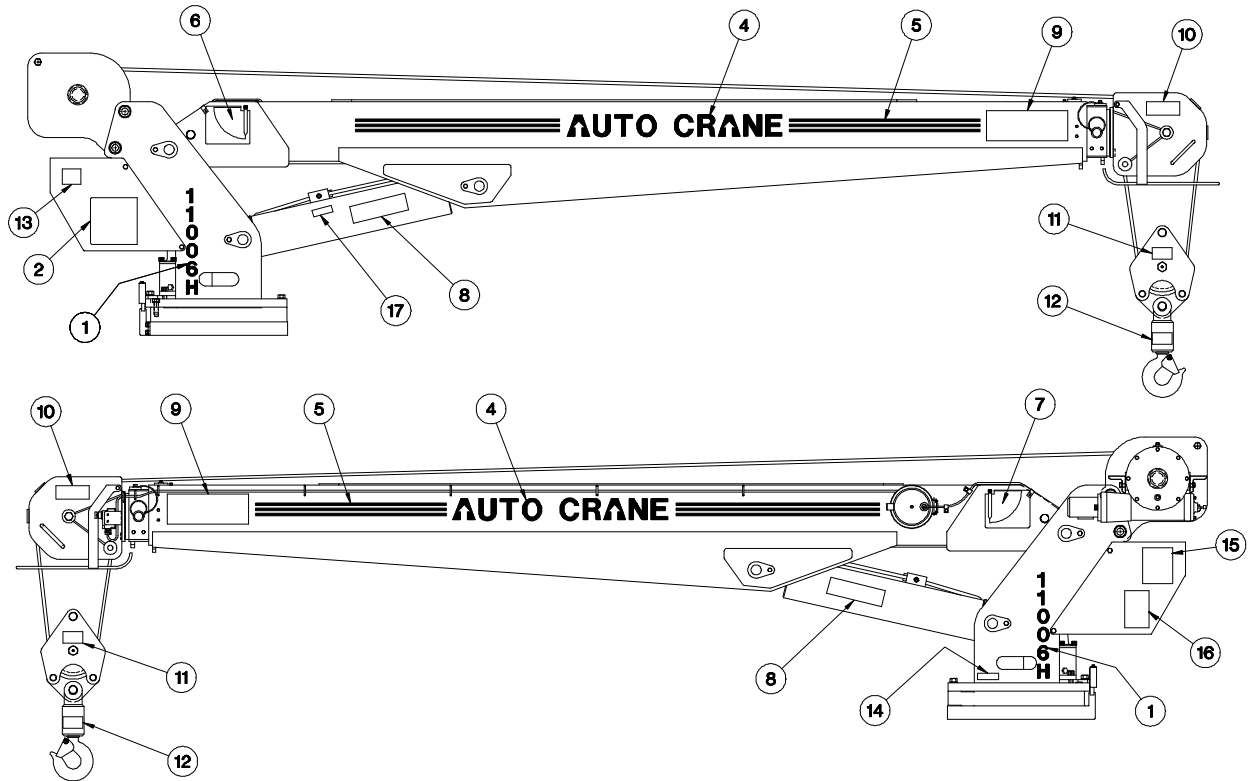
PART NO.: 367246  
DECAL: OPERATION INSTRUCTIONS  
FUNCTION: To inform the operator of the dangers associated with personnel riding on hook.  
QUANTITY: 1  
PLACEMENT: Left Sideplate  
(see page 1-5.0.0, Item 12)



FIG. SD-9.

# DECAL LAYOUT

P/N 466210



ITEM	QTY	P/N	DESCRIPTION
1	2	466211	11006 DECAL
2	1	466212	LOAD CHART DECAL
3	1	360034	MEDIUM "A" LOGO DECAL
4	2	040624	AUTO CRANE DECAL
5	9.89 FT	040620	3M STRIPING DECAL
6	1	480038	RIGHT ANGLE INDICATOR DECAL
7	1	480039	LEFT ANGLE INDICATOR DECAL
8	2	040519	SCISSORS POINT DANGER DECAL
9	2	040529	ELECTROCUTION DANGER DECAL
10	2	040517	STAY CLEAR OF BOOM DECAL
11	2	040518	STAY CLEAR OF LOAD DANGER DECAL
12	2	367246	NEVER RIDE ON HOOK DANGER DECAL
13	1	040632	OVERLOAD TAMPERING WARNING DECAL
14	1	330622	SERIAL NUMBER DECAL
15	1	040580	MUST NOT OPERATE DECAL
16	1	040579	WORK RULES DECAL
17	1	040587	LOAD SENSOR DECAL

# ***MOUNTING and INSTALLATION***

## ***for 11006***

**1. CHECK TO MAKE SURE THE FOLLOWING ITEMS ARE WITH YOUR CRANE:**

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1.	466230	5.5 TON SWIVEL BLOCK
2.	367215	PUMP ASSEMBLY (OPTIONAL)
3.	999995	11006 OWNERS MANUAL
4.	015104	CAPSCREW, 7/8 UNF x 5 in, Grade 8 (4 REQ'D)

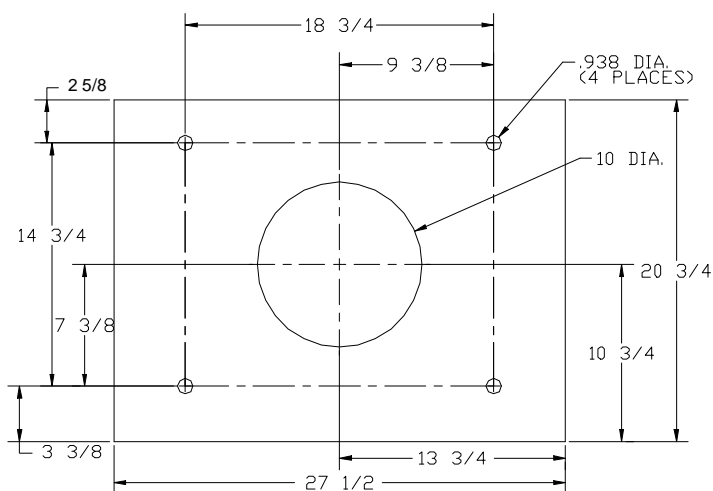
**2. PRESSURE AND RETURN HOSES ARE NOT FURNISHED WITH THIS CRANE. THE HOSES MUST BE PROVIDED BY THE INSTALLER AND THE LENGTHS DETERMINED AT INSTALLATION. EQUIVALENT HOSES AND FITTINGS ARE ACCEPTABLE. (REFERENCE DWG AW-017 & AW-480150)**

LOCATION	RETURN LINE CRANE TO RESERVOIR	SUCTION HOSE PUMP TO RESERVOIR	PRESSURE LINE PUMP TO CRANE BASE
ITEM			
HOSE	-12 SAE 100R2	-20 SAE 100 R4 HYDRAULIC	-12 SAE 100R2
FITTING	-12 JIC FEMALE SWIVEL (CRANE END)	-20 HOSE CLAMP	-10 JIC FEMALE SWIVEL (CRANE END)

**NOTE:**

REFER TO OWNERS MANUAL FOR ADDITIONAL INSTALLATION INFORMATION, AND OTHER RESERVOIR AND PUMP COMBINATIONS.

3. CRANE MUST BE PROVIDED WITH A FLOW OF 12 gpm @ 1325 PUMP rpm. EXCESSIVE FLOW WILL CAUSE OVER HEATING & ERRATIC OPERATION, AND TOO LITTLE FLOW WILL CAUSE POOR CRANE OPERATION.
4. MAKE SURE MOUNTING SURFACE IS PROPERLY REINFORCED TO WITHSTAND 66,000 ft-lb CAPACITY LOADING OF CRANE AND THAT OUTRIGGERS ARE USED TO PROVIDE TOTAL STABILITY FOR THE TRUCK.
5. MAKE SURE THE MOUNTING CAPSCREWS ARE 7/8 UNF x 5 in, Grade 8.
8. TORQUE BOLTS TO 440 ft-lb (DRY).
6. WHEN CRANE IS NOT IN OPERATION, A BOOM SUPPORT SHOULD ALWAYS BE USED. TRAVELING BLOCK SHOULD BE CONNECTED TO HOOK LOOP.
7. THE VEHICLE ***MUST*** BE EQUIPPED WITH AN ENGINE SPEED CONTROL AND TACHOMETER.
8. CHECK FOR PROPER PRESSURE AND RETURN LINE HOOK-UP TO CRANE: PRESSURE PORT IS ON THE RIGHT SIDE AS VIEWED FROM THE REAR OF THE CRANE.



# ***MOUNTING and INSTALLATION***

## ***for 11006***

### **9. ELECTRICAL HOOK-UP:**

- A. CONNECT WIRES FROM BASE ON CRANE PER IN-COMPARTMENT (IC) PENDANT INSTALLATION DRAWING.
- B. CONNECT POWER CONDUCTOR FROM STARTER SOLENOID TO TERMINAL "L" ON THE TERMINAL STRIP. USE THE IN-LINE FUSE PROVIDED.

**WARNING! FAILURE TO CORRECTLY PLUMB AND WIRE CRANE CAN CAUSE INADVERTENT OPERATION AND DAMAGE TO CRANE AND/OR PERSONNEL!**

10. ONCE CRANE AND PLUMBING ARE INSTALLED ON THE TRUCK, FILL THE RESERVOIR TO TOP OF SIGHT GLASS (MOBIL DTE 13 or EQUAL). BEFORE OPERATING CRANE CONNECT TOGETHER THE PRESSURE AND RETURN HOSES GOING TO BASE OF CRANE USING -10 TO -12 JIC UNION AND ENGAGE PTO WITH ENGINE RUNNING. ALLOW OIL TO CIRCULATE FOR 15 TO 20 MINUTES. THIS

**CAUTION - FAILURE TO USE CLEAN HYDRAULIC HOSES AND COMPONENTS MAY CONTAMINATE THE CRANE AND HYDRAULIC SYSTEM AND VOID WARRANTY.**

WILL FLUSH CONTAMINANTS FROM THE SYSTEM BACK TO THE RETURN LINE FILTER. OPERATE ALL CYLINDERS TO FULL EXTENSION AND RETRACTION A MINIMUM OF SIX TIMES, TO BLEED AIR FROM SYSTEM. RETURN ALL CYLINDERS TO THE STORED POSITION AND DISENGAGE PTO. REFILL RESERVOIR TO TOP SIGHT GLASS. TO ENSURE 10 GALLONS PER MINUTE (GPM), INSTALL AN IN-LINE FLOW METER BETWEEN THE CRANE AND THE RESERVOIR IN THE RETURN HOSE, OR CONFIRM PUMP SPEED IS CORRECT. THE PROPER SPEED FOR AUTO CRANE GEAR PUMP P/N 367215 IS 1325 RPM.

- 11. PROPER PRESSURE SETTING CAN BE ACHIEVED BY, WITH THE PTO DISENGAGED, REMOVING THE PIPE PLUG ON THE PROPORTIONAL VALVE AND INSTALLING A 3000 PSI PRESSURE GAUGE. THE TRIGGER SHOULD BE PULLED COMPLETELY BACK (ON). READ THE PRESSURE GAUGE AND ADJUST RELIEF VALVE TO READ 2500 PSI. RECHECK PRESSURE SETTING TO VERIFY ADJUSTMENT.
- 12. LOAD TEST THE CRANE TO ENSURE PROPER FUNCTIONING AND TRUCK STABILITY.
- 13. MAKE CERTAIN THE OWNER'S MANUAL IS DELIVERED TO THE CUSTOMER.
- 14. FOR ADDITIONAL HELP: CALL THE SERVICE DEPARTMENT AT THE AUTO CRANE COMPANY. (918) 836-0463 (TULSA, OKLAHOMA)

### **WARNING**

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

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

# ***INSTALLATION & SETUP PROCEDURE DIGITAL PULSE WITH AMPLIFIER***

## **INSTALLATION:**

### **ATTACH WIRES IN THIS ORDER: (numbers are on 22 station terminal strip)**

1. Install decal 466253 & 22 station terminal strip in crane compartment.
2. Connect pig tail harness from crane to terminal strip as shown by decal.
3. Connect harness 480459 to right side of terminal strip as shown by decal.
4. Either pendant or FM receiver plugs into bayonet connector.

### **AMPLIFIER FACTORY SET, ADJUST ONLY IF NECESSARY.**

- ♦ Observe all connections for proper installation before connecting power to the terminal block. Proceed to the setup procedure.

## **SETUP:**

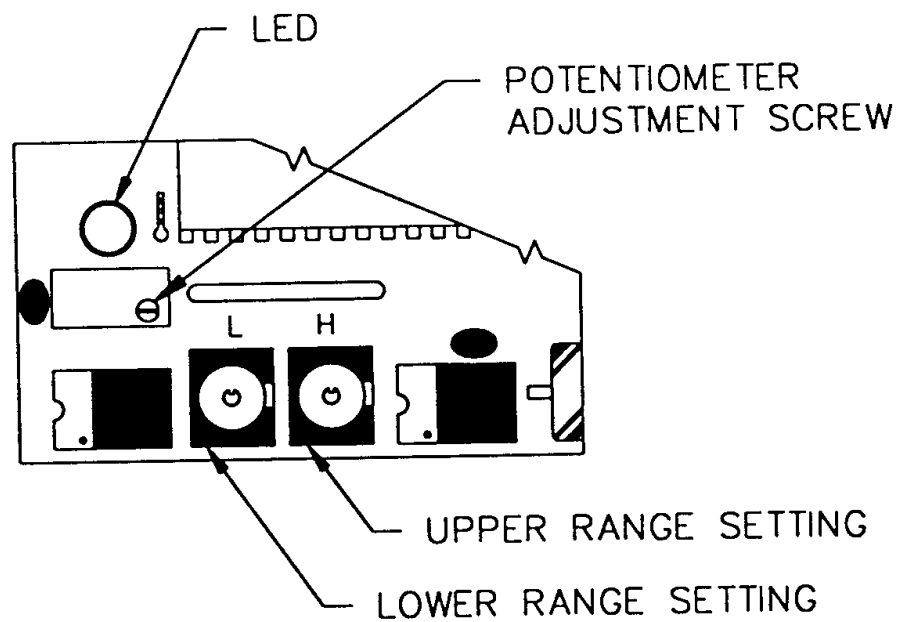
1. Remove four screws on the back of the pendant.
2. With power on, pull pendant trigger to full on position. Adjust potentiometer adjustment screw located next to the red light (see Figure 1) until light just turns off, then turn trim pot back until the light just comes on. The light should stay on during the full trigger movement. Clockwise rotation to the trim pot will turn light off. Counterclockwise rotation will turn the light on. This “tunes” the amplifier to the trigger potentiometer.
3. After warming the hydraulic system oil, determine which function should be used to set the low position switch (ROTATE USES THE LEAST AMOUNT OF PRESSURE). Activate that function with trigger released, and turn the lower range setting dial (REF. FIG 1: MARKED WITH “L” ON CIRCUIT BOARD) until the desired speed is reached. The “Zero” and the “F” on the dial are opposite ends of the switch. To adjust the low set point, **turn CLOCKWISE DIRECTION for INCREASED FLOW, COUNTER CLOCKWISE DIRECTION for DECREASED FLOW**. This adjusts the “Threshold Speed” for the trigger in the released position.
4. Operate the boom up function with trigger pulled back to the maximum position. Turn the high range setting dial (REF. FIG 1, MARKED WITH “H” ON CIRCUIT BOARD) until there is a noticeable decrease in speed, then back up one or two notches as desired. “Zero” is the maximum speed setting and “F” is the most reduced speed setting. To set the high range dial, **turn CLOCKWISE DIRECTION for DECREASED FLOW,**



## ***INSTALLATION & SETUP PROCEDURE DIGITAL PULSE WITH AMPLIFIER***

**COUNTER CLOCKWISE DIRECTION FOR INCREASED FLOW.** This operation adjusts the trigger “Dead Band” at the fully pulled position.

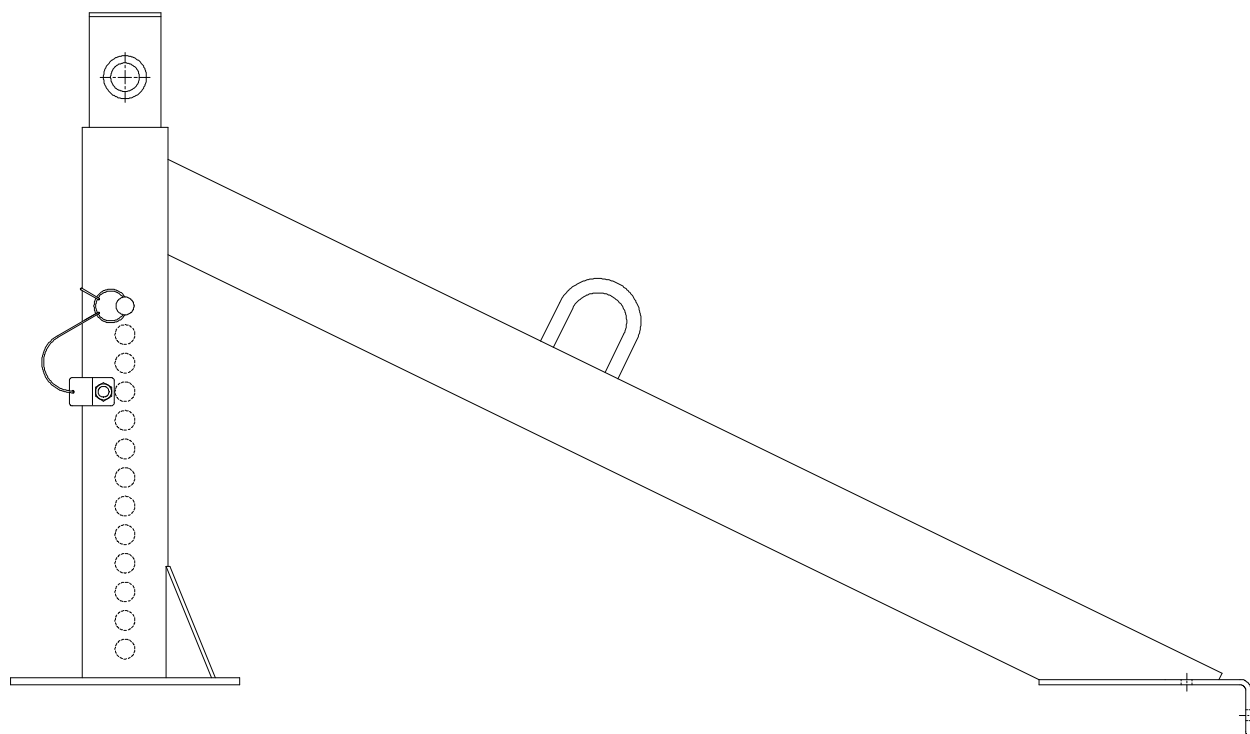
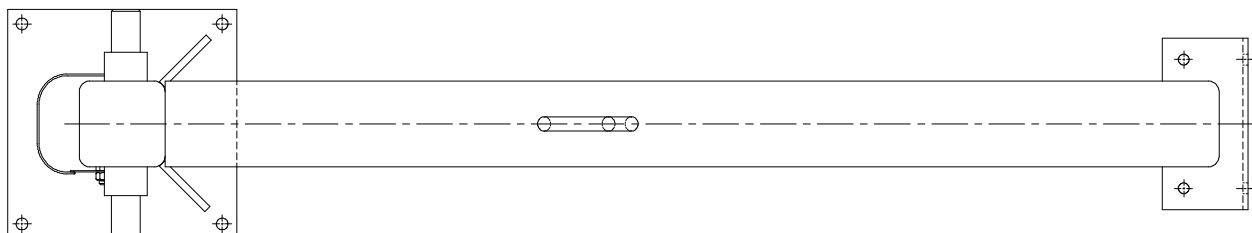
5. Replace cover and install screws.



**Figure 1**

# ***RECOMMENDED BOOM SUPPORT***

***P/N 766144***



# **OVERLOAD SYSTEM / ANTI-2-BLOCK**

## **TROUBLE SHOOTING GUIDE**

### **IF THE THREE FUNCTIONS, BOOM DOWN, HOIST UP AND EXTEND OUT, QUIT WORKING,**

the problem probably lies in either the Overload System or the Anti-2-block system or both. If these three functions are NOT WORKING and most other functions are, an investigation should be made as follows: (refer to Figure 1)

#### **1 ANTI-2-BLOCK**

- A. Unplug the anti-2-block system from the overload system and connect C and D to bypass the anti-2-block system.
  1. If the three functions work, check continuity of anti-2-block system using continuity tester at disconnected weather pack connectors, and investigate switch at end of boom, cable and cable reel.
  2. If the three functions do not work, continue on with section #2.

#### **2 LOAD SENSOR (Pressure Switch)**

- A. With crane unloaded, unplug weather pack connector on load sensor wire.
  1. If the three functions work, recheck the Pressure Switch by taking an ohm reading on the two wires coming from the Switch. The switch has normally open contacts, so the reading should be the maximum. If less than maximum ohm reading is indicated (usually a dead short), replace the Switch.
  2. If the three functions do not work, continue with section #3.

#### **3 RELAY BOX**

- A. Inside this box are two 320355 relays. Since these are inexpensive relays, the easiest way to trouble shoot this device is to replace both relays.
  1. The two relays are identical but serve different functions. RELAY A is the one with the most wires going to its connector. RELAY A breaks the circuit between the ground side of the solenoid valves on boom down, extend out, and hoist up functions. This happens whenever the overload switch on the lift cylinder senses more than normal pressure indicating an overload condition. When overload happens then 12 volts is passed through the overload switch to pull in RELAY A which then interrupts the ground circuit of the valves controlling those

functions which could cause additional overload. In addition to this, when there is also a signal from the boom down solenoid to RELAY B at the same time, RELAY B latches RELAY A so that even if the overload signal from the pressure switch to RELAY A is removed, RELAY A will continue to be on and interrupt the ground circuit until the signal from the boom down solenoid and pressure switch are removed.

2. The purpose of RELAY A is to interrupt the ground circuit and stop hoist up, boom down, and extend out functions from operating. The purpose of RELAY B is to stop boom bounce caused by the overload system cycling on and off.

#### **4 OPERATIONAL TEST AND TROUBLE SHOOTING OF RELAY BOX**

- A. After the anti-2-block test and the load sensor tests have been performed and the overload system still does not operate, check the relay box.
  1. Disconnect the weatherpak connector in the load sensor pressure switch wires going from the pressure switch to the relay box. Disconnect the weatherpak connector between the cord reel and the relay box.
  2. Check for 12 volts at pin B of load sensor connector on relay box side of harness. Short from pin A to pin B of weatherpak. When pins A & B are shorted there should NOT be continuity from the cord reel weatherpak on the relay box side of the connection to ground. When A & B are not shorted there should be continuity to ground. Replace relay A if these conditions are not met.
  3. If the boom tends to bounce when booming down due to intermittent cycling of the overload system, then RELAY B should be replaced after verifying that the sense wire from the relay box to the boom down solenoid valve control terminal is connected.

[illegible]

# **OPTIMETER TROUBLE SHOOTING**

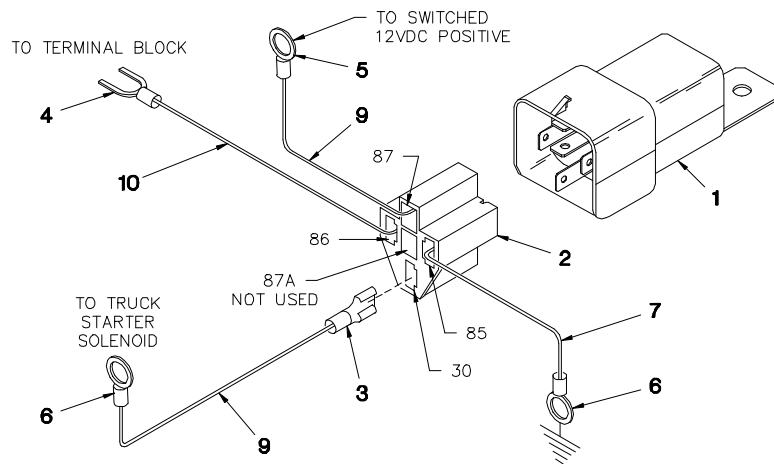
## ***GUIDE for 11006***

### **FOLLOW THE TROUBLE SHOOTING SEQUENCE**

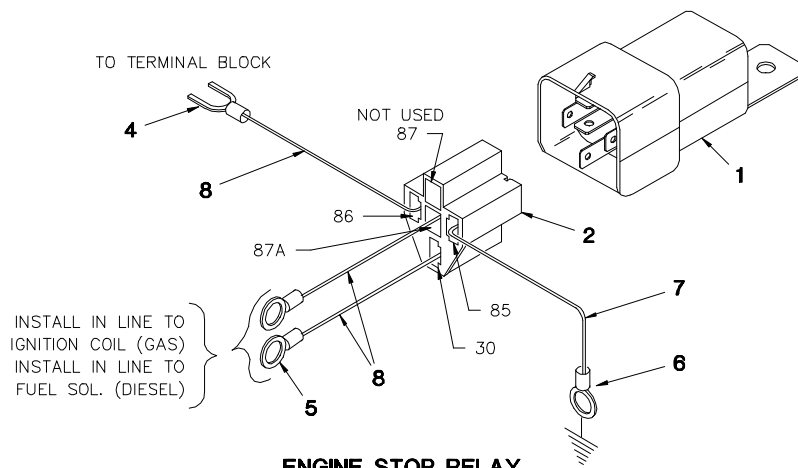
- 1** Obtain the proper wiring diagram and check wiring.
  - 2** With truck running, and master switch on, check terminal "L" voltage.
    - A.** If 12 - 13.75 volts, proceed.
    - B.** If not, check for blown fuse or broken wires.
  - 3** Install pendant, turn system power on and check voltage between "T & N" should read less than 3 volts increasing to 9 volts when trigger is pulled.
    - A.** If no voltage or low voltage (less than truck voltage), make sure the power switch on the eight switch pendant is in the "on" position.
    - B.** Then, check for loose connection in the pendant or a broken wire in the pendant cable.
  - 4** Disconnect bullet connectors on wires connecting from proportional valve din connector. Then ground brown wire to a chassis ground and connect blue wire to 12 volts. This should operate crane at maximum speed. If not, check proportional valve. This will send maximum current thru proportional valve and should close it completely.
- OR**
- 5** Manually override the proportional valve by turning knurled knob clockwise.
  - 6** Check for proper crane operation.
    - A.** If crane operates properly, proceed.
    - B.** If not, check coil resistance from pin to pin (should be 4.7 ohms) and from pin to ground ring on coil (should be infinite resistance). If resistance is much different than above, replace coil, then proceed.
    - C.** Re-connect brown and blue wire.
  - 7** The potentiometer is set by the manufacturer. If a problem occurs with this potentiometer, call the Auto Crane Service Department.
  - 8** Release trigger.
  - 9** Set two adjustment switches ( hi & lo ) to number "4". (One side of the switch knob has an indicator)
  - 10** The *LO* switch takes the "dead space" out of the beginning trigger activation, and will continue to raise the low signal to give half flow with the trigger at full released position. The higher the number or letter (0 thru f), the higher the flow to the crane with the trigger in the fully released position.
  - 11** The *HI* switch takes the "dead space" out of the full trigger position, and will continue to lower the high signal to half the flow at the maximum trigger pulled position. The higher the number or letter (0 thru f), the lower the flow to the crane with the trigger in the fully pulled position.
  - 12** A good starting position is to have both switches on the number "0".
- NOTE:** Both switches on "F" will limit flow to a median value and not allow any change.

# ENGINE START/STOP RELAY KIT

P/N 480533



**ENGINE START RELAY**

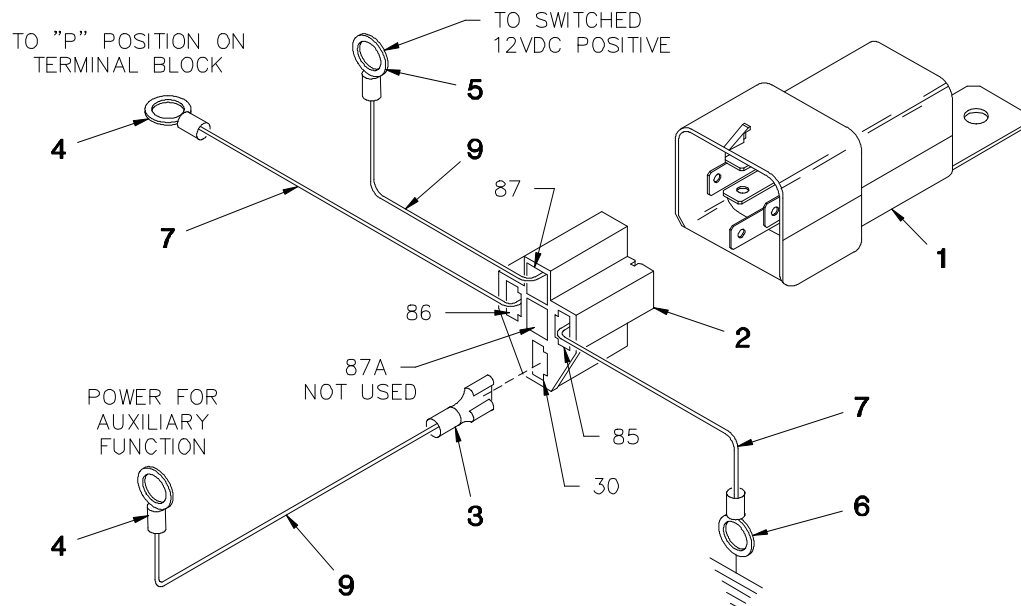


**ENGINE STOP RELAY**

ITEM	QTY	P/N	DESCRIPTION
1	2	320355	12V RELAY
2	2	320363	RELAY PLUG
3	10	320357	FEMALE SPADE LOCK CONNECTOR
4	2	480495	FLANGED SPADE TERMINAL
5	3	000402	1/4 TERMINAL RING
6	3	000501	5/16 TERMINAL RING
7	6'	800595	GREEN 16 GA WIRE
8	49'	800590	BLACK 16 GA WIRE
9	17'	800593	RED 16 GA WIRE
10	35'	800594	BLUE 16 GA WIRE

## AUXILIARY RELAY KIT

***P/N 480534***



### AUXILIARY RELAY

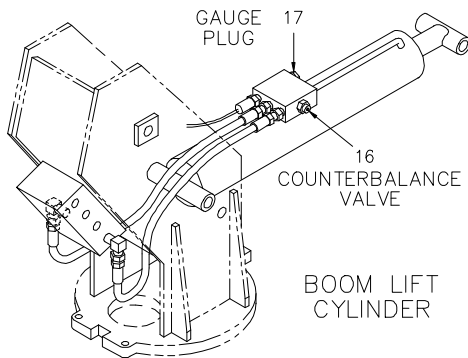
<u>ITEM</u>	<u>QTY</u>	<u>P/N</u>	<u>DESCRIPTION</u>
1	2	320355	12V RELAY
2	2	320363	RELAY PLUG
3	5	320357	FEMALE SPADE LOCK CONNECTOR
4	2	000101	#6 TERMINAL RING
5	1	000402	1/4 TERMINAL RING
6	1	000501	5/16 TERMINAL RING
7	38'	800595	GREEN 16 GA WIRE
8	10'	800593	RED 16 GA WIRE
9	25'	800592	WHITE 16 GA WIRE

# HYDRAULICS

11006

## Counterbalance Valve Adjustment

- { With PTO disengaged and boom properly supported, remove O-ring plug (item 17) shown on AW-573 marked "X" port (see CB valve diagram). Install a pressure gauge (0-2500 PSI) into the port.
- { Engage PTO and insure pump flow is 10



AW-573

GPM and main relief is set to 2500 PSI. With no load on boom, boom up to an angle of 70 degrees. Boom down and note pressure. If pressure reading is not approximately 1050 PSI, the counterbalance valve requires adjustment.

- v To increase the CB valve setting, loosen nut and turn Allen head screw counter clockwise. (Reference item 16, located on the side of the CB valve block towards the right side of the boom.)
- v To reduce the CB valve setting, loosen nut and turn Allen head screw clockwise.

- { Tighten nut on adjustment screw and repeat procedure if needed to obtain the proper pressure setting.
- { Disengage PTO, remove the pressure gauge and install -6 plug. Crane is now ready for operation.

### Notice:

- { In an EMERGENCY situation when it becomes necessary to lower the boom without flow present, the CB valve adjustment can be turned in until the boom begins to descend. Make sure the boom will lower onto a proper support. Loosen the lock nut and carefully turn adjustment screw clockwise! Count the number of turns. *Turn slowly until the boom just begins to lower, and remove hand/arm/fingers from cranes while boom is lowering.*
- { Turning adjustment screw too far will cause valve to come apart on the inside. This condition is not repairable
- { After boom is lowered, turn adjustment screw counter clockwise the approximate number of turns made during lowering procedure. After the problem is corrected, readjust the counterbalance valve using the procedure in this manual.

**WARNING:**  
**DO NOT TRY TO ADJUST VALVES WHILE BOOM IS MOVING. Failure to heed warning may result in personal injury!**



# **HYDRAULIC TROUBLESHOOTING**

## **11006**

**CAUTION: Never check for hydraulic leaks by feeling around hoses, fittings, or any other components. High pressure oil can be injected through the skin causing severe injury, or death.**

The hydraulic system of the 11006H power version is electrically operated and requires a minimum of 12V for satisfactory performance. The hydraulic pump is bi-rotational with a pressure relief setting of 2500 psi (Ref.). Standard pump speed is 1325 RPM (Ref. Pump P/N 367215). This pump is for direct flange mounting only. It is not to be shaft driven unless it has the outboard bearing installed (367215003).

### **PROBLEM**

### **SOLUTION**

#### **FLOW PRESENT BUT FUNCTION WILL NOT WORK**

Remove valve cover, P/N 466200, to gain access to the manual override on the end of the valve cartridge. If the pump is operating, operate the relief valve manual override or the proportional valve override and push and twist (CCW) the directional control valve manual override to unlock, then pull to operate the function. If the function does operate, check for loose wires, low voltage or a bad ground. If the problem is traced to no voltage at the valve cartridge, remove pendant and, with the switch engaged, check for an open circuit with an ohmmeter. If the circuit is open, check for broken wiring or a bad switch. If the function does not operate, see the "NO FLOW" paragraph in this section.

#### **HYDRAULIC "CHATTER"**

When a hydraulic function is engaged and causes the crane to "chatter", check for a loose wire, low voltage at valve cartridge, low pump pressure, or air in the system.

#### **NO FLOW OR LIMITED FLOW TO CRANE**

Check for adequate oil supply in reservoir. Check operation of bypass system by using manual override on proportional valve operator on proportional valve while operating crane. If crane functions, follow proportional troubleshooting procedure for the proportional valve. If the low flow condition continues to exist when the manual override is operated, remove relief valve cartridge and check for dirt. Other possible causes for a low flow condition are:

1. Engine speed is too slow.
2. A blocked pressure hose from pump. This condition can be identified by excessive lugging of engine and rapid overheating of oil.
3. Collapsed or blocked suction hose to pump. This condition is usually identified by pump cavitation noise.
4. Bad pumps: a bad pump will usually have some flow but the flow will drop off rapidly as pressure increases. This condition will cause overheating of the system. A drop of 4gpm or more from 0 to 2000psi is cause for pump investigation

# ***HYDRAULIC TROUBLESHOOTING***

## ***11006***

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### **NO PRESSURE OR TOO LOW PRESSURE**

Check to maintain adequate oil in reservoir (approx. 18 gal.), using the sight gauge. Make sure pressure gauge is functioning correctly. Possible relief valve stuck open. Check for excessive leakage and correct. Check to ensure that pressure limit switch is correctly set.

---

### **TOO HIGH FLOW**

Make sure pump size is correct and pump speed is not too fast (Consult manufacturer's data sheet). Check or replace flow control. Check components for flow displacements. High flow may cause erratic valve operation.

---

### **TOO HIGH PRESSURE**

---

Make sure pressure relief valve is correctly set.

### **CAUTION**

The Auto Crane 11006H series cranes are manufactured with a standard overload protection system to prevent structural damage to the crane. When the crane load rating is exceeded, main boom down, extend out, and hoist up will not function. These operations cannot be used again until the load on the crane is reduced. Also, the main boom elevation will be limited in its operation as the crane becomes overloaded. Attempting to raise the main boom with a load greatly exceeding the crane rating will open the main relief valve resulting in no boom movement. This problem can be resolved by moving the load closer to the crane pedestal, or reducing the load.

## ***LUBRICATION & MAINTENANCE SCHEDULE for 11006***

SERVICE	DAILY	WEEKLY	MONTHLY	YEARLY	NOTES
LOAD HOOK	X				INSPECT HOOK & LATCH FOR DEFORMATION, CRACKS, & CORROSION
CABLE DRUM	X				MAKE SURE CABLE IS WOUND EVENLY ON DRUM
HOIST CABLE	X				CHECK FOR FLATTENING, KINKS, & BROKEN STRANDS, SEE MANUAL
HYDRAULIC HOSES	X				VISUAL INSPECTION
HYDRAULIC FLUID	X				CHECK FLUID LEVEL
MOUNTING BOLTS		X			CHECK-TORQUE TO 440 FT-LBS (DRY) AS REQUIRED
ROTATION RING GEAR		X			LUBE WITH MOBILTAC LL, OR LUBRIPLATE P/N 15263, OR EQUIVALENT
SHEAVE BEARINGS		X			SEALED BEARING, REPLACE IF ROUGH OR LOOSE
ALL OTHER BOLTS		X			CHECK-TIGHTEN AS REQUIRED
BOOM PIVOTS		X			GREASE WITH MOBILPLEX EP-2 OR EQUIV. @ ZERKS
BOOM CYLINDER		X			CHECK AROUND CYLINDER ROD FOR EXCESS FLUID LEAKAGE
BOOM CYLINDER PINS		X			GREASE WITH MOBILPLEX EP-2 OR EQUIV. @ ZERKS
EXTENSION PIN		X			LUBE w/ WD-40
RETURN LINE FILTER			X		REPLACE ELEMENT
HIGH PRESSURE FILTER			X		CLEAN AFTER FIRST WEEK, THEN EVERY 3 MONTHS (OPTIONAL EQUIPMENT)
ROTATION BEARING			X		GREASE WITH MOBILPLEX EP-2 OR EQUIV. @ ZERKS
ROTATION BEARING BOLTS			X		CHECK-TORQUE TO 150 FT-LBS (DRY) AS REQUIRED
ROTATION GEAR BOX			X		CHECK-TORQUE TO 180 FT-LBS (DRY) AS REQUIRED

## ***LUBRICATION & MAINTENANCE SCHEDULE for 11006***

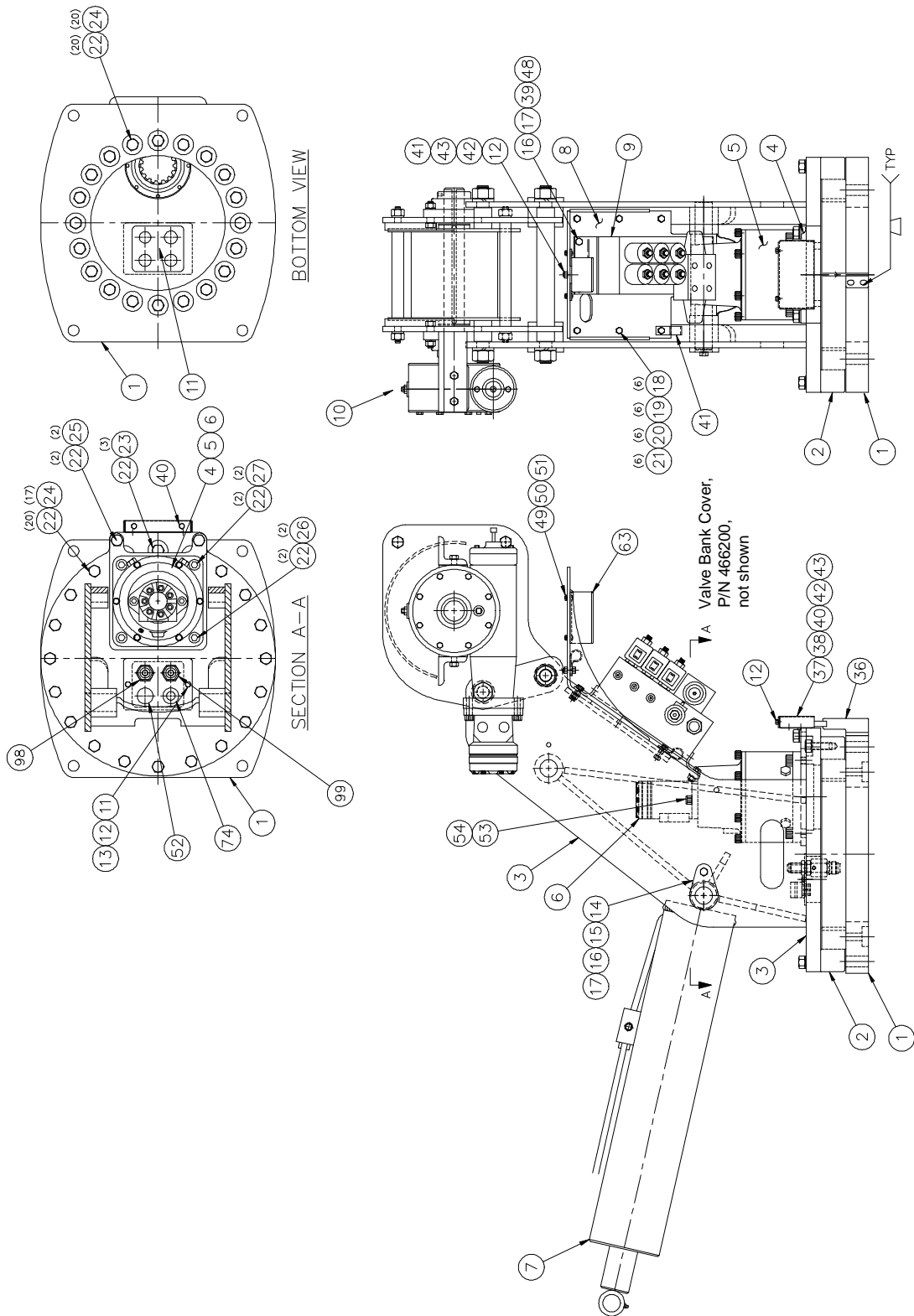
SERVICE	DAILY	WEEKLY	MONTHLY	YEARLY	NOTES
ROTATION GEAR BOX			X		EP GEAR LUBE GL-5, 85W-140
HOIST GEARBOX			X		WORM GEAR-EP GEAR LUBE SAE 80-90
HYDRAULIC FLUID				X	DRAIN, FLUSH, & REFILL WITH MOBIL DTE 13, OR EQUIVALENT (more often under extreme service)
BOOM SLIDE PADS	PADS GREASED WHEN REPLACED				
FOR ADDITIONAL INFORMATION SEE:	1) OWNER'S MANUAL 2) OSHA SECTION 1910.180 3) ANSI B30.5-1989				
<b>CAUTION</b>	{ Routine maintenance insures trouble-free operation and protects your investment. All warranties are void if maintenance is neglected.				

### **NOTES:**

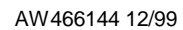
1. Use only authorized parts. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.
2. Once a bolt has been torqued to its rated capacity and then removed; the bolt should be replaced with a new one.
3. Auto Crane Company recommends that this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

# PEDESTAL ASSEMBLY

P/N 466144 for 11006 SERIES

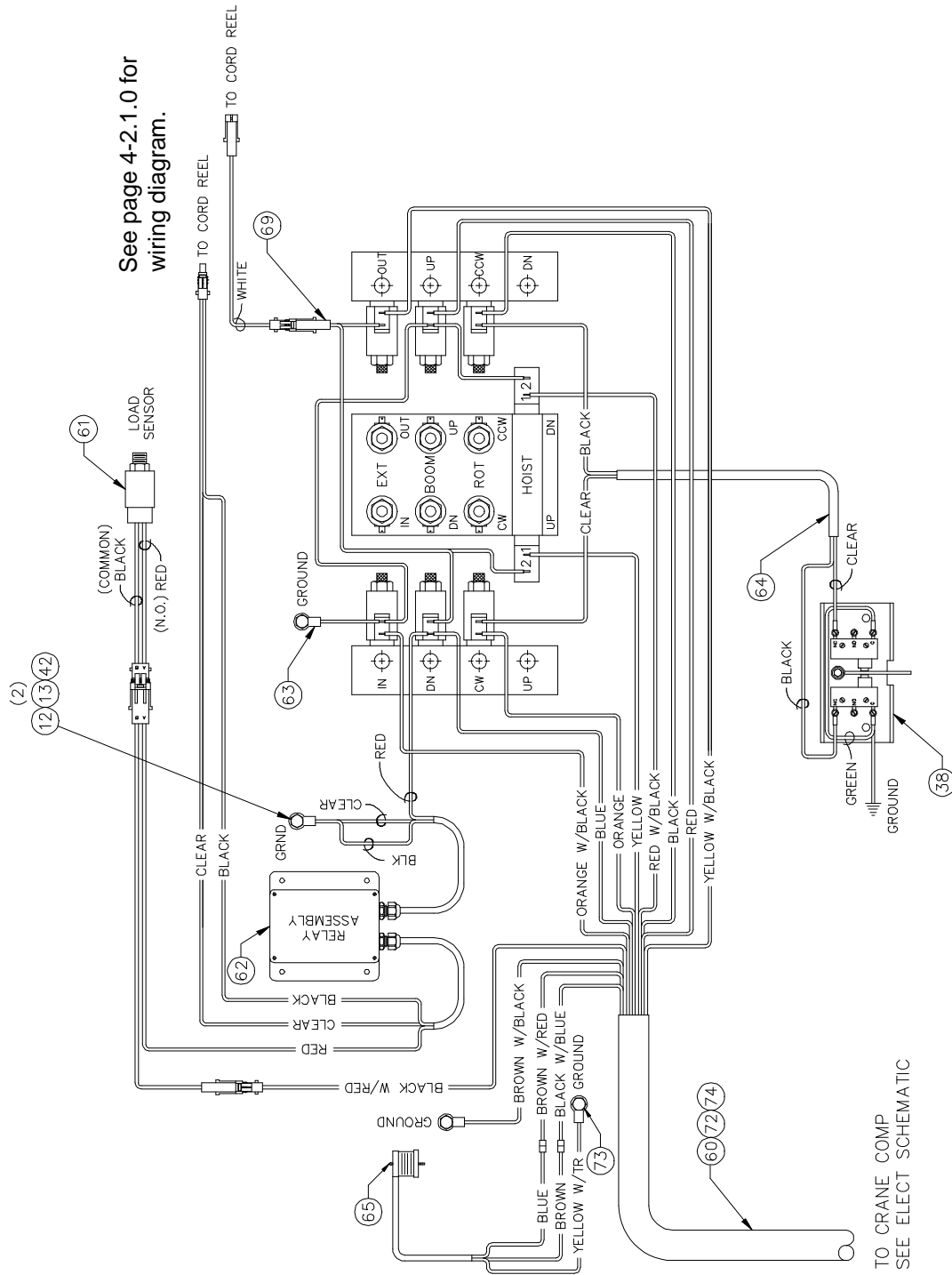


***P/N 466144 for 11006 SERIES***



# PEDESTAL ASSEMBLY

*P/N 466144 for 11006 SERIES*



# ***PEDESTAL ASSEMBLY***

## ***P/N 466144 for 11006 SERIES***

<b><u>ITEM</u></b>	<b><u>QUANTITY</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
1	1	466143	BASE PLATE
2	1	372064	ROTATION BEARING
3	1	466145	PEDESTAL WELDMENT
4	1	466185	SWING DRIVE SPACER PLATE
5	1	367005	SWING DRIVE
6	1	367158	4.5 IN. <sup>3</sup> /REV HYDRAULIC MOTOR (SWING DRIVE)
7	1	466101	BOOM UP CYLINDER
8	1	466151	VALVE BANK MOUNTING PLATE
9	1	466235	ELECTRIC DIRECTIONAL VALVE
10	1	454130	WINCH ASSEMBLY
11	1	466183	PEDESTAL COVER PLATE
12	6	005500	CAPSCREW 1/4 UNC x 3/4
13	4	020300	FLAT WASHER 1/4
14	1	466152	PEDESTAL PIN WELDMENT
15	1	366159	CAPSCREW 3/8 UNC x 1 1/2 GR 8
16	6	021100	LOCK WASHER 3/8
17	6	330372	NUT 3/8 UNC
18	6	007804	CAPSCREW 5/16 UNC x 1 1/4 GR 8
19	10	016500	NUT 5/16
20	16	020601	LOCK WASHER 5/16
21	10	020901	FLAT WASHER 5/16
22	46	023902	HARDENED FLAT WASHER 5/8
23	3	490172	CAPSCREW 5/8 UNC x 1 1/2 GR 8
24	37	490171	CAPSCREW 5/8 UNC x 2 1/4 GR 8
25	2	012198	CAPSCREW 5/8 UNC x 1 3/4 GR 8
26	2	367200	SOCKET HEAD SCREW 5/8 UNC x 2 1/4
27	2	006205	SOCKET HEAD SCREW 5/8 UNC x 1 1/4
30	1	374103	HYDRAULIC MOTOR O-RING (SWING DRIVE)
35	1	008401	CAPSCREW 3/8 UNC x 1/2
36	1	466196	ROTATION STOP
37	1	466198	SWITCH COVER
38	1	466203	SWITCH PANEL ASSEMBLY
39	6	008701	CAPSCREW 3/8 UNC x 1
40	2	002615	SELF TAPPING CAPSCREW 1/4 UNC x 3/8
41	2	480024	CABLE RETAINER
42	5	015900	NUT 1/4 UNC
43	6	020200	WASHER 1/4
47	1	REFERENCE	ELECTRICAL SCHEMATIC (466190)
48	4	021200	FLAT WASHER 3/8
49	4	002609	ROUND HEAD SCREW #10 UNF X 5/8
50	1	015600	NUT #10 UNF



# ***PEDESTAL ASSEMBLY***

## ***P/N 466144 for 11006 SERIES***

<u>ITEM</u>	<u>QUANTIT</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
	<u>Y</u>		
51	4	019800	LOCK WASHER #10
52	1	466246	HOLE PLUG 1 1/8 DIAMETER
53	2	367185	SOCKET HEAD SCREW ½ -13 UNC X 1 1/4
54	2	021500	LOCK WASHER 1/2
60	1	466195	CRANE PIGTAIL WIRING HARNESS
61	1	466209	LOAD SENSOR ASSEMBLY
62	1	466236	RELAY BOX ASSEMBLY
63	1	466194	GROUND WIRE ASSEMBLY
64	1	466193	CONDUCTOR ASSEMBLY
65	1	466237	DIN PLUG ASSEMBLY
69	1	466220	WIRE ASSEMBLY WITH WEATHER PAC
71	4	015500	NUT #8 UNC
72	1	370433	CORD CONNECTOR
73	1	000601	TERMINAL RING 14-3/8
74	1	466184	CONDUIT NUT 3/4
90	1	REFERENCE	POWER EXTENSION CYLINDER (466100)
91	1	360223	COUNTERBALANCE VALVE CARTRIDGE (LIFT CYLINDER)
92	1	REFERENCE	HYDRAULIC MOTOR WINCH
93	1	REFERENCE	COUNTERBALANCE VALVE (EXTENSION CYLINDER) (367407)
94	1	367124	COUNTERBALANCE VALVE ROTATION
95	2	REFERENCE	CAPSCREW 1/4-20 UNC X 1 ¾ (005810)
96	4	367163	SOCKET HEAD SCREW 5/16 -18 UNC X 2 1/4
98	1	466182	BULKHEAD ADAPTER -10 JIC(M)/-10 JIC(M)
99	1	374079	BULKHEAD ADAPTER -12 JIC(M)/-12 JIC(M)
101	4	362020	90° ELBOW -8 JIC (M)/-8 OR(M)
102	6	202756	ADAPTER -8 OR(M)/-6 JIC(M)
103	2	480198	90° ELBOW -10 OR(M)/-6 JIC(M)
104	2	480194	90° ELBOW -6 JIC SWIVEL/-6 JIC(M) LG
105	2	200876	STRAIGHT ADAPTER -8 OR(M)/-8 JIC(M)
107	2	372044	90° ELBOW -10 OR(M)/-8 JIC(M)
108	2	369127	90° ELBOW -4 JIC/-4 JIC(M)
109	2	REFERENCE	45° ELBOW -6 JIC(M)/-8 JIC SWIVEL (330647)
110	1	374068	SWING DRIVE HOSE ASSEMBLY
111	1	REFERENCE	90° ELBOW -6 NPT/-6 JIC(M) (200892)
112	1	REFERENCE	TEE -6 OR(M)/-6 JIC(M) RUN (241168)

# ***PEDESTAL ASSEMBLY***

## ***P/N 466144 for 11006 SERIES***

<b><u>ITEM</u></b>	<b><u>QUANTITY</u></b>	<b><u>PART NUMBER</u></b>	<b><u>DESCRIPTION</u></b>
113	1	REFERENCE	TUBE ASSEMBLY (480212)
114	1	812328-016	HOSE ASSEMBLY -10(F)/-8 JIC(F) 90° ELBOW (SHORT) X 16
115	1	812327-016	HOSE ASSEMBLY -12(F)/-8 JIC(F) 90°E LBOW X 15
116	1	812312-016	HOSE ASSEMBLY (M)JIC/(F)JIC 90° ELBOW (LONG) X 16
117	1	812309-020	HOSE ASSEMBLY (F)JIC SWIVEL/(F)JIC 90° ELBOW (SHORT) X 20
118	2	812209-036	HOSE ASSEMBLY (F)JIC SWIVEL/(F)JIC 90° ELBOW (SHORT) X 36
119	1	812209-033	HOSE ASSEMBLY (F)JIC SWIVEL/(F)JIC 90° ELBOW (SHORT) X 33
120	1	812206-033	HOSE ASSEMBLY (F)JIC/(F)JIC 90° ELBOW (LONG) X 33
121	1	812206-016	HOSE ASSEMBLY (F)JIC/(F)JIC 90° ELBOW (LONG) X 16
122	1	812206-015	HOSE ASSEMBLY (F)JIC/(F)JIC 90° ELBOW (LONG) X 15
123	1	466239	TUBE ASSEMBLY -8 HOIST

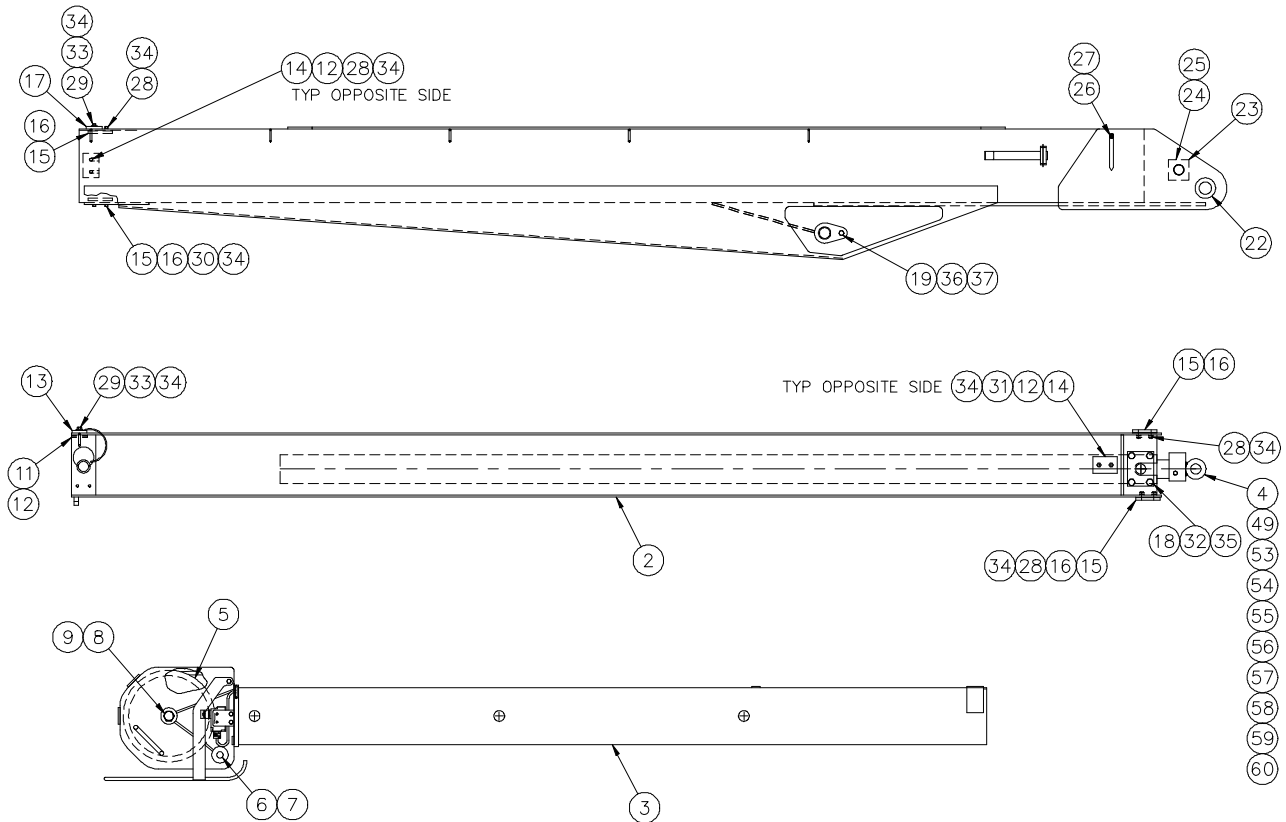
### Notes:

Item Numbers not used: 28, 29, 31, 32, 33, 34, 44, 45, 46, 55, 56, 57, 58, 59, 66, 67, 68, 70, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 97, 100, 106.

Valve Bank Cover, P/N 466200, not shown.

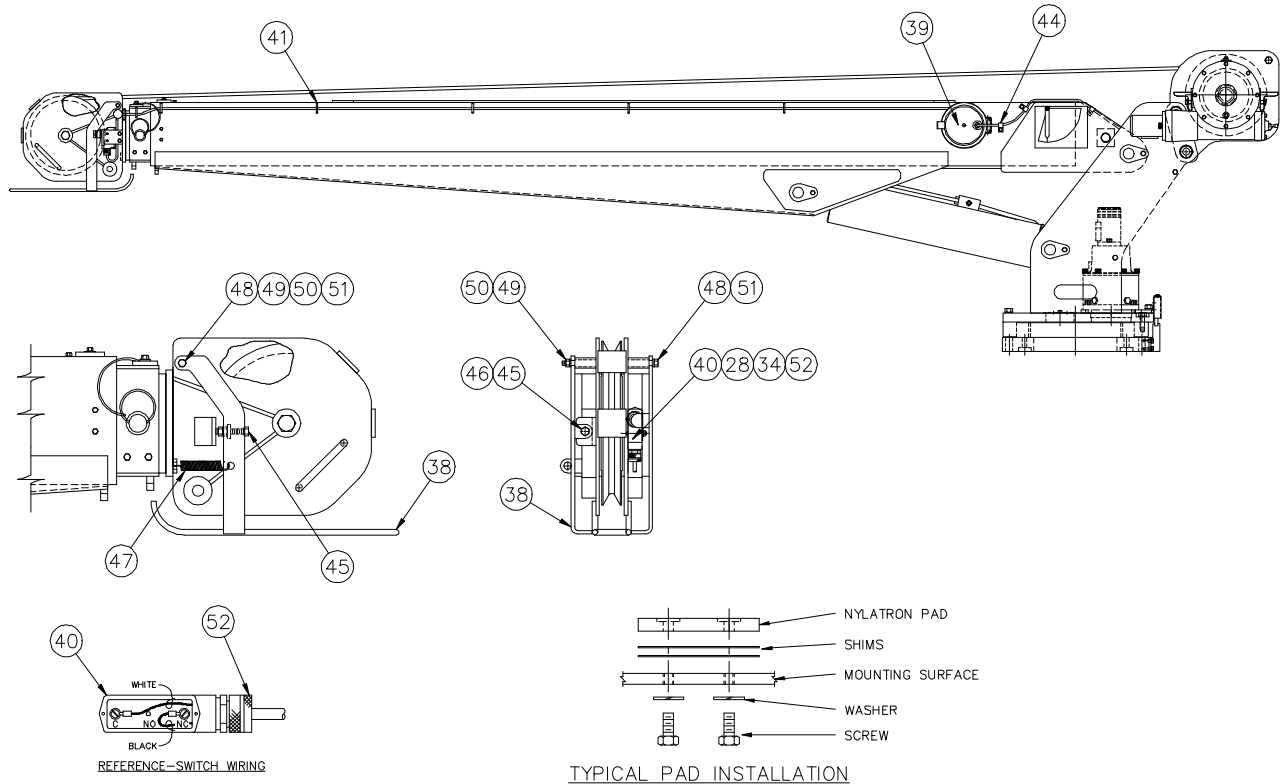
# ***BOOM ASSEMBLY***

## ***P/N 466125 - 11006 SERIES***

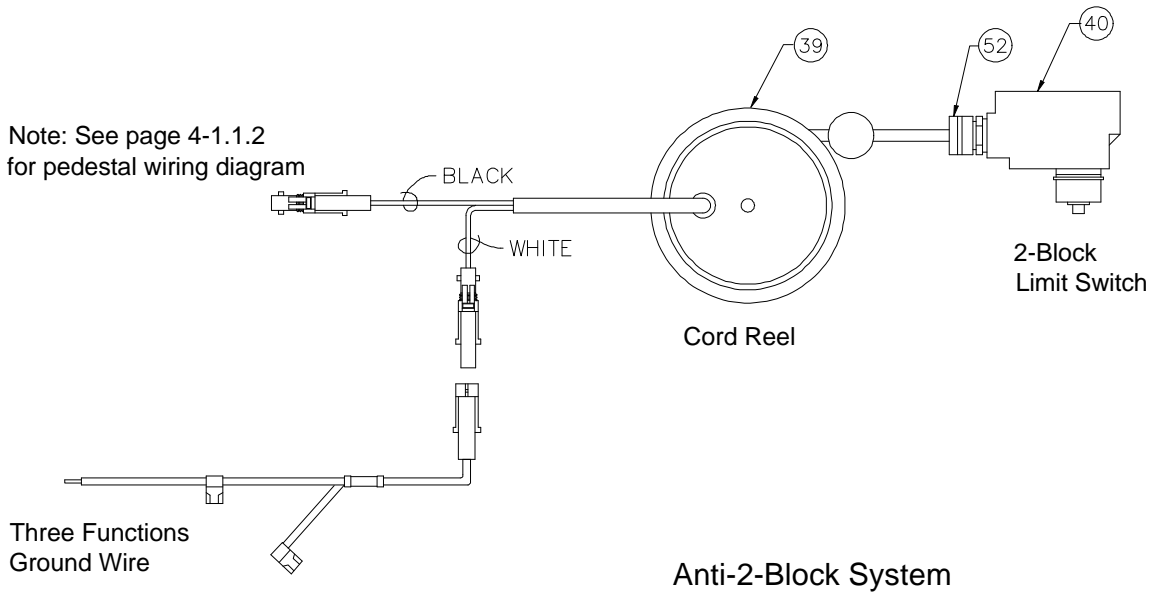


# BOOM ASSEMBLY

## P/N 466125 - 11006 SERIES



Note: See page 4-1.1.2  
for pedestal wiring diagram



## ***BOOM ASSEMBLY***

### ***P/N 466125 - 11006 SERIES***

ITEM	QTY	P/N	DESCRIPTION
1	1	466110	LOWER BOOM
2	1	466115	POWER BOOM
3	1	466116	MANUAL BOOM
4	1	466100	POWER EXTENSION CYLINDER
5	1	466130	SHEAVE ASSEMBLY 7/16 ROPE
6	1	360124	HITCH PIN
7	1	360125	BLOCK PIN
8	1	014400	CAPSCREW ¾ UNF x 5
9	1	018600	NUT ¾ UNF
10	1	480030	MANUAL BOOM PIN
11	1	466218	STEEL PAD 3 x 2 x 5/16 THICK
12	10	480037	SMALL SHIM .032 THICK (use as required)
13	1	480118	POWER BOOM PAD
14	4	480036	SMALL NYLATRON BOOM PAD
15	4	480032	LARGE NYLATRON BOOM PAD
16	6	480033	LARGE SHIM .032 THICK
17	1	366201	BOOM PAD
18	2	480105	EXTENSION CYLINDER RETAINER
19	1	REF	BOOM / CYLINDER PIN (466126)
20	2	466186	STEEL-POWER BOOM PAD
21	-	-	-
22	1	239000	GREASE ZERK
23	2	480121	SPACER
24	1	480129	EXTENSION CYLINDER PIN
25	2	480029	RETAINING RING
26	2	360038	ANGLE INDICATOR
27	2	016300	HEX LOCK NUT ¼ UNC
28	16	005102	CAPSCREW ¼ UNF x 5/8
29	4	005601	CAPSCREW ¼ UNF x 1
30	4	005501	CAPSCREW ¼ UNF x 3/4
31	4	005406	CAPSCREW ¼ UNF x 1/2
32	8	010201	CAPSCREW 124 UNF x 1 1/2
33	4	020300	FLAT WASHER 1/4
34	28	020200	LOCK WASHER 1/4
35	8	021500	LOCK WASHER 1/2
36	1	REF	CAPSCREW 3/8 UNC x 1 1/2 GR8 (366159)
37	1	REF	NYLOCK NUT 3/8 UNC (370538)
38	1	466135	2-BLOCK WELDMENT
39	1	366973-001	CORD REEL ASSEMBLY
40	1	466243	2-BLOCK SWITCH ASSEMBLY

## ***BOOM ASSEMBLY***

### ***P/N 466125 - 11006 SERIES***

ITEM	QTY	P/N	DESCRIPTION
41	7	REF	D-RING
42	-	-	-
43	-	-	-
44	3	000115	#15 CLIP
45	1	009116	CAPSCREW 3/8 UNF x 2
46	1	330372	NUT 3/8 UNC
47	1	360824	RETURN SPRING
48	1	466167	CAPSCREW 5/16 UNC x 7
49	1	480212	TUBE ASSEMBLY
50	1	016801	HEX LOCK NUT 5/16 UNC
51	2	020901	FLAT WASHER 5/16
52	1	642908	CORD CONNECTOR
53	1	330412	EXTENSION CYLINDER COUNTERBALANCE VALVE
54	2	020200	LOCK WASHER 1/4
55	2	005810	CAPSCREW 1/4-20 UNC x 1 3/4
56	1	480194	90° ELBOW -6 JIC SWIVEL/-6 JIC(M) LONG
57	1	200876	STRAIGHT ADAPTER -6 OR(M)/-6 JIC(M)
58	2	330647	45° ELBOW -6 JIC(M)/-6 JIC(M) SWIVEL
59	1	200892	90° ELBOW -6 NPT/-6 JIC(M)
60	1	241168	TEE -6 OR(M)/-6 JIC(M) RUN

# ***AUTOMATIC SAFETY BRAKE ASSEMBLY***

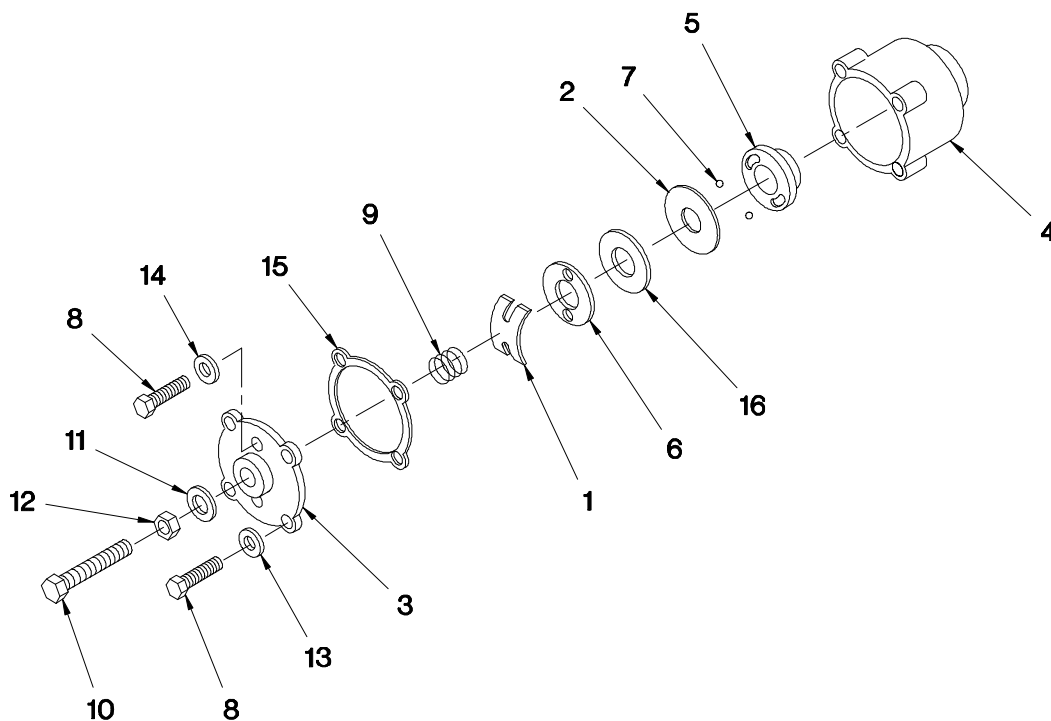
## ***(OIL COOLED) HOIST***

### **ASSEMBLY INSTRUCTIONS:**

1. Winch has right hand worm and gear. Cable spools over drum. Use number one slots for brake balls(7) in cam plate(2).
2. Install brake hub(5) through brake housing(4) on winch worm with key.
3. Assemble balls(7) in cam plate(2) using hard grease to hold balls in place.
4. Place cam plate(2) on brake hub(5), matching its holes with the balls.
5. Install thrust plate(16).
6. Thread capscrew(10) with jam nut (12) and thread seal (11) through housing cover(3).
7. Place gasket(15) on housing cover(3).
8. Install coil spring(9) on capscrew(10).
9. Install flat spring(1) on capscrew(10).
10. Secure retainer plate(6) and flat spring(1) to housing cover(3) using capscrews(8) and washers(14).
11. Using capscrews(8) and thread seals(13) attach housing cover(3) to brake housing(4).
12. Test brake by shifting winch to UP then DOWN to see if brake is working in proper rotation. If not, remove housing cover(3) and locate brake balls(7) in opposite set of slots of cam plate(2).
13. Adjust to suit by tightening or loosening capscrew(10) on outside of housing cover(3). When proper adjustment is obtained, secure capscrew(10) with jam nut(12).

# ***AUTOMATIC SAFETY BRAKE ASSEMBLY***

## ***(OIL COOLED) HOIST***

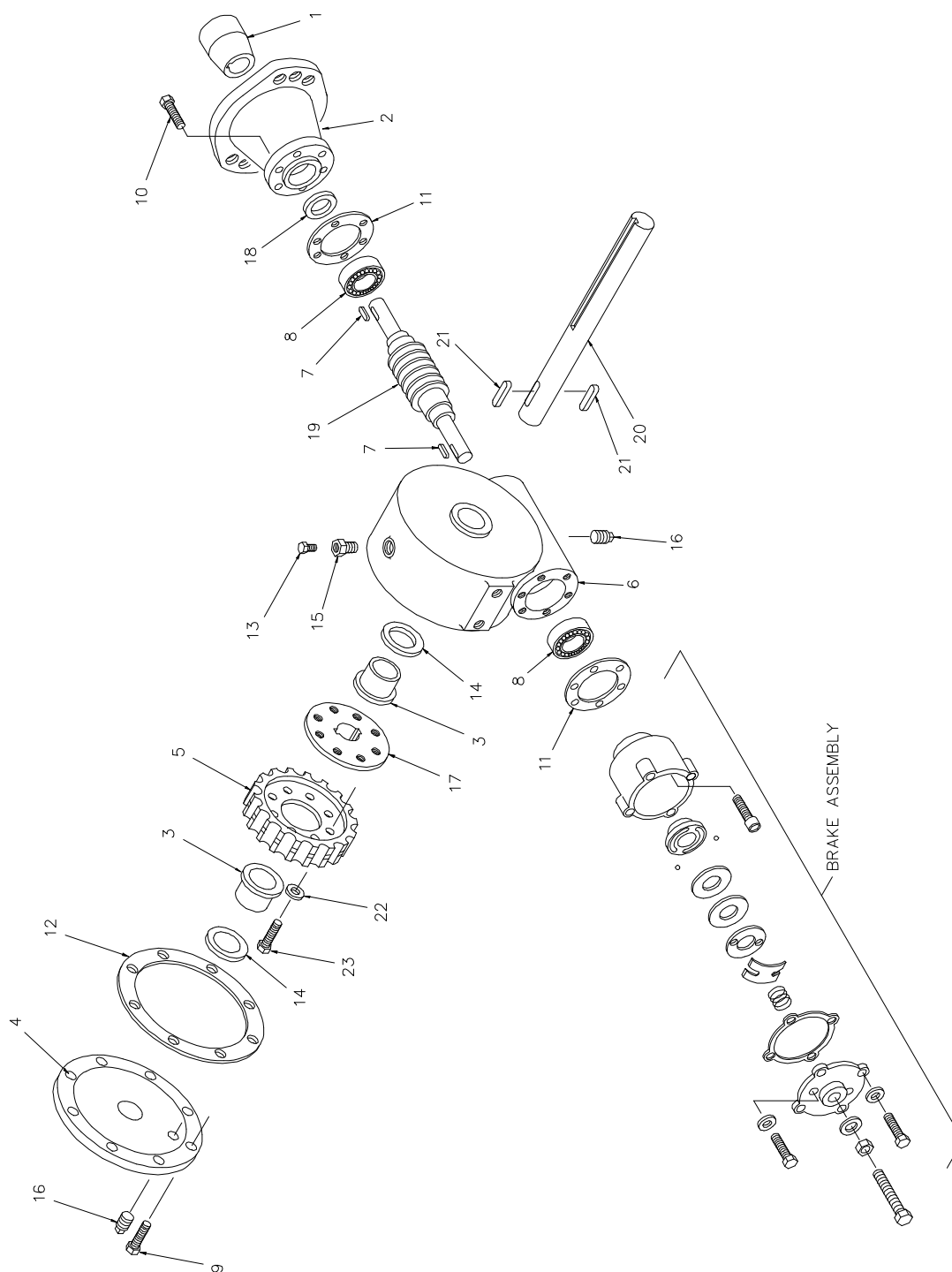


<u>ITEM</u>	<u>QTY</u>	<u>P/N</u>	<u>DESCRIPTION</u>
1	1	360367	FLAT SPRING
2	1	360331	CAM PLATE
3	1	360450	HOUSING COVER
4	1	360336	BRAKE HOUSING
5	1	360339	BRAKE HUB
6	1	360342	RETAINER PLATE
7	2	360345	BRAKE BALL
8	6	360453	CAPSCREW 1/4 NC x 1
9	1	360368	COIL SPRING
10	1	360456	CAPSCREW 3/8 NC x 1 1/2
11	1	360371	THREAD SEAL
12	1	360353	JAM NUT 3/8 NC
13	4	360465	THREAD SEAL
14	2	360455	WASHER FLAT 1/4 ALUM
15	1	360359	GASKET
16	1	360364	THRUST PLATE



# HOIST ACTUATOR

## P/N 466175 - MODEL 11006



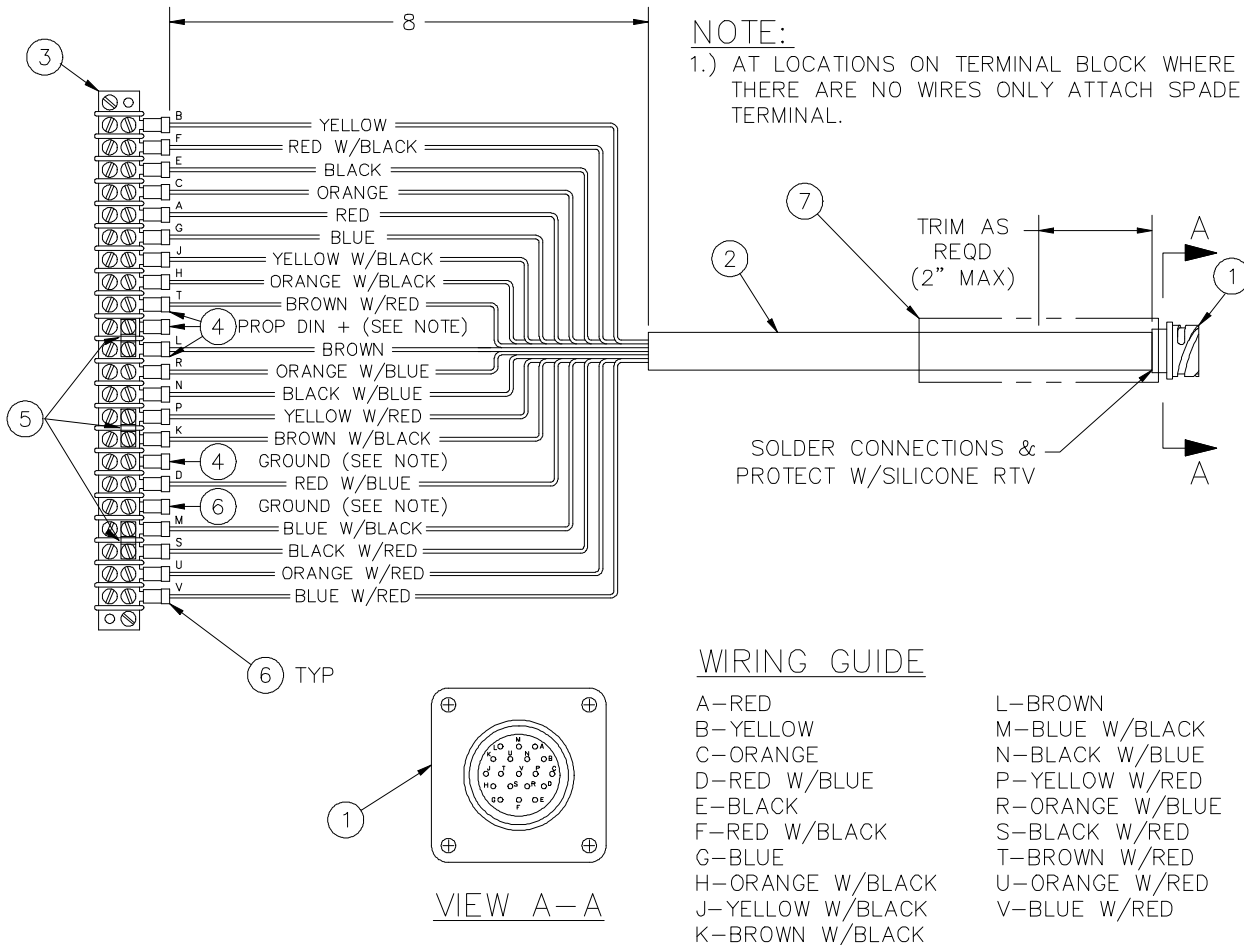
***HOIST ACTUATOR***  
***P/N 466175 - MODEL 11006***

<u>ITEM</u>	<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	1	367449	COUPLING ASSEMBLY
2	1	367450	ADAPTER
3	2	367451	BUSHING
4	1	367452	COVER
5	1	367453	RIGHT HAND GEAR
6	1	367454	GEAR HOUSING
7	2	367455	ROUND END KEY
8	2	367456	BALL BEARING
9	8	367457	CAPSCREW 5/16-18 UNC X ¾
10	6	367458	CAPSCREW 5/16-18 UNC X 1 1/4
11	2	367459	GASKET
12	1	367460	GASKET
13	1	367461	RELIEF FITTING
14	2	367462	QUAD RING
15	1	367463	REDUCER
16	1	367464	PIPE PLUG
17	1	367465	PIPE PLUG
18	1	367466	OIL SEAL
19	1	367474	RIGHT HAND WORM
20	1	367487	OUTPUT SHAFT
21	2	367488	KEY

***HOIST ACTUATOR***  
***P/N 466175 - MODEL 11006***

# PENDANT RECEPTACLE ASSEMBLY

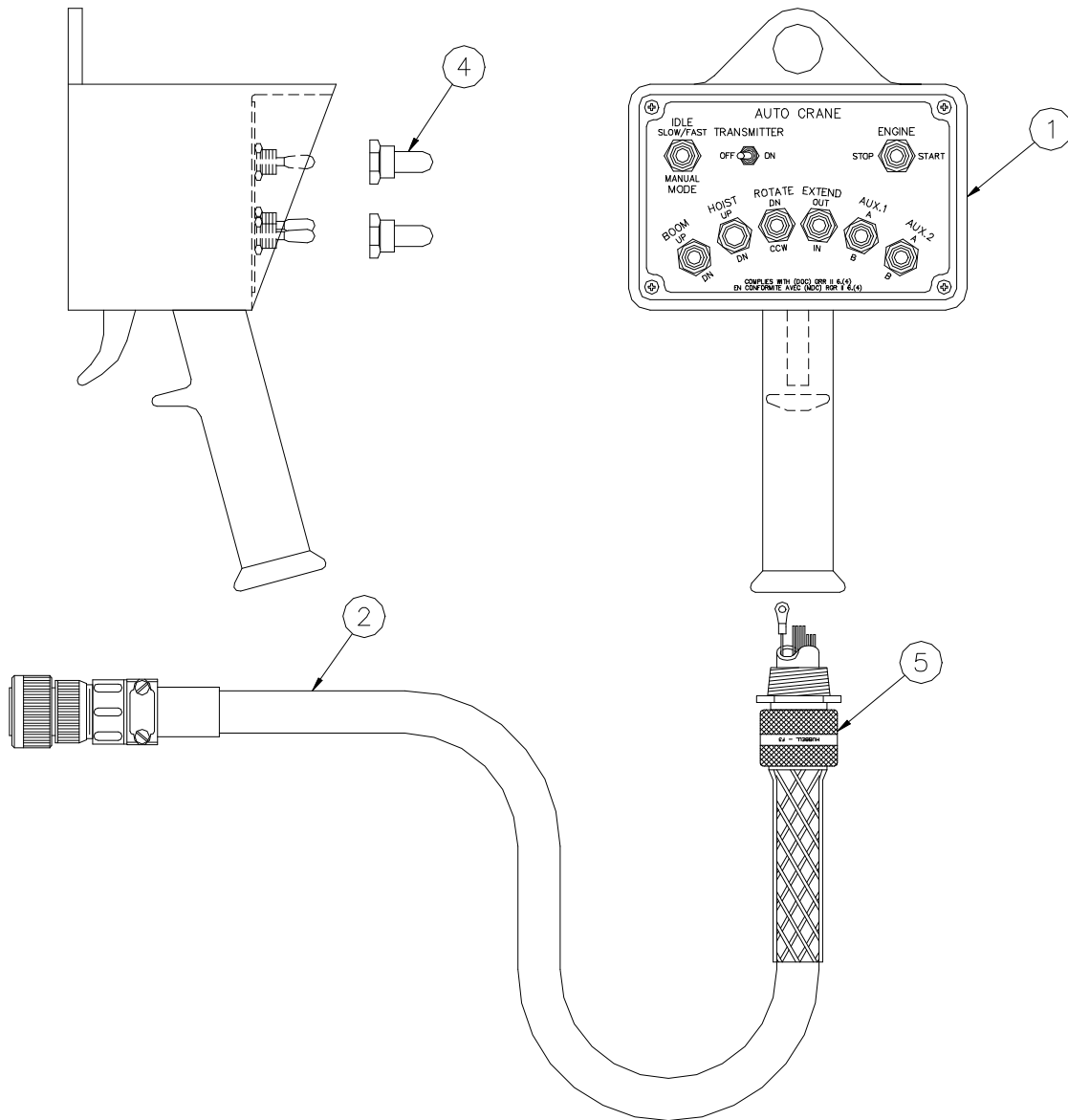
**P/N 466254 - MODEL 11006**



ITEM	QTY	P/N	DESCRIPTION
1	1	366095	19 PIN FEMALE BAYONET RECEPTACLE
2	3 FT	480459	16/19 COLD WEATHER CABLE PENDANT
3	1	480494	22 STATION TERMINAL BLOCK
4	4	002013	16-14 GA WIRE SPADE TERMINAL BLOCK
5	3	636600	JUMPER
6	18	002010	22-18 GA WIRE SPADE TERMINAL BLOCK
7	4 IN	490243	HEAT SHRINK TUBING x 4

# PROPORTIONAL PENDANT CABLE ASSEMBLY

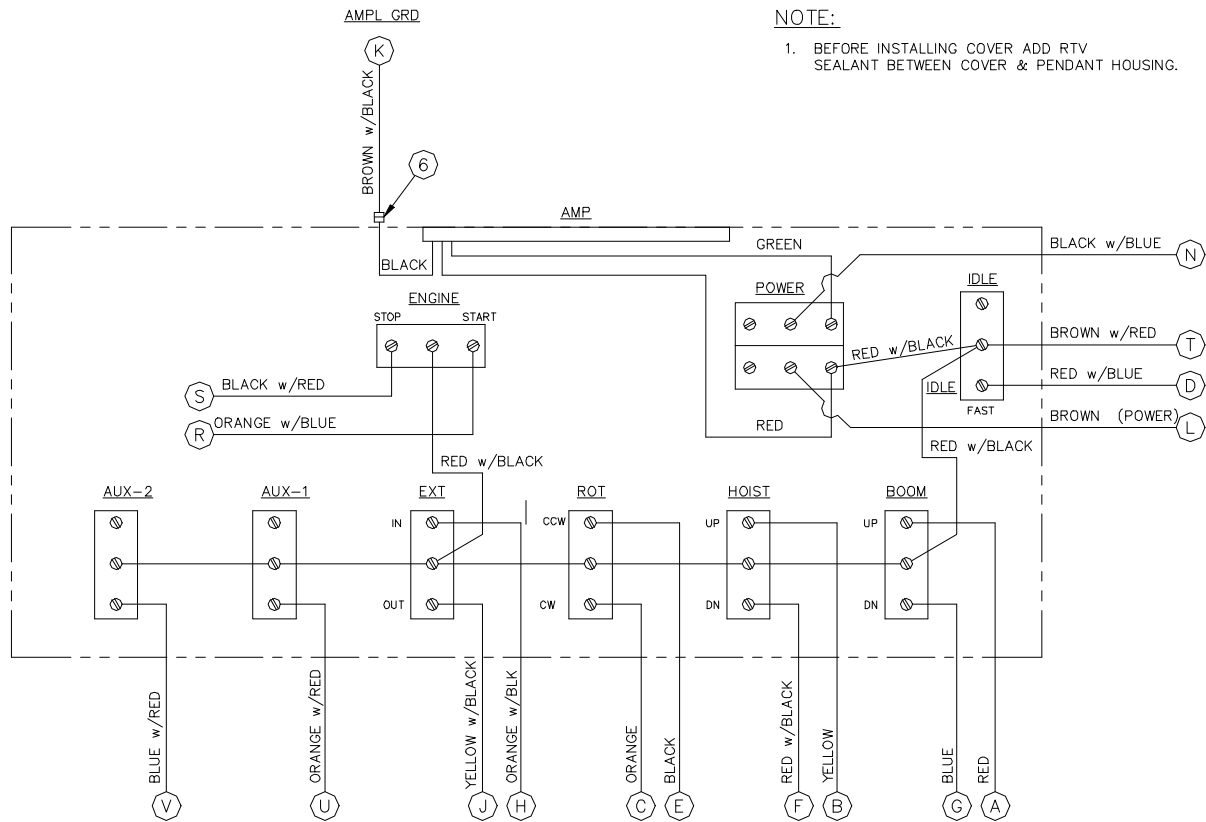
**P/N 680128 - MODEL 11006**



ITEM	QTY	P/N	DESCRIPTION
1	1	466192	16 FUNCTION PENDANT HEAD w/ AMP
2	1	680128	BAYONET CABLE ASSEMBLY (COLD WEATHER)
3	2	750737	CABLE TIE
4	7	640300	TOGGLE BOOT
5	1	480567	HUBBEL CONNECTOR CORD GRIP
6	1	001104	BUTT CONNECTOR

# PROPORTIONAL PENDANT CABLE ASSEMBLY

**P/N 680128 - MODEL 11006**

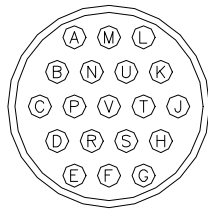


## NOTE:

- BEFORE INSTALLING COVER ADD RTV SEALANT BETWEEN COVER & PENDANT HOUSING.

## WIRING GUIDE

A-RED	L-BROWN
B-YELLOW	M-BLUE W/BLACK
C-ORANGE	N-BLACK W/BLUE
D-RED W/BLUE	P-YELLOW W/RED
E-BLACK	R-ORANGE W/BLUE
F-RED W/BLACK	S-BLACK W/RED
G-BLUE	T-BROWN W/RED
H-ORANGE W/BLACK	U-ORANGE W/RED
J-YELLOW W/BLACK	V-BLUE W/RED
K-BROWN W/BLACK	



## NOTES:

- TIE OFF THE FOLLOWING UNUSED CONDUCTORS WITH THE CABLE TIE (ITEM #3) INSIDE THE PENDANT:

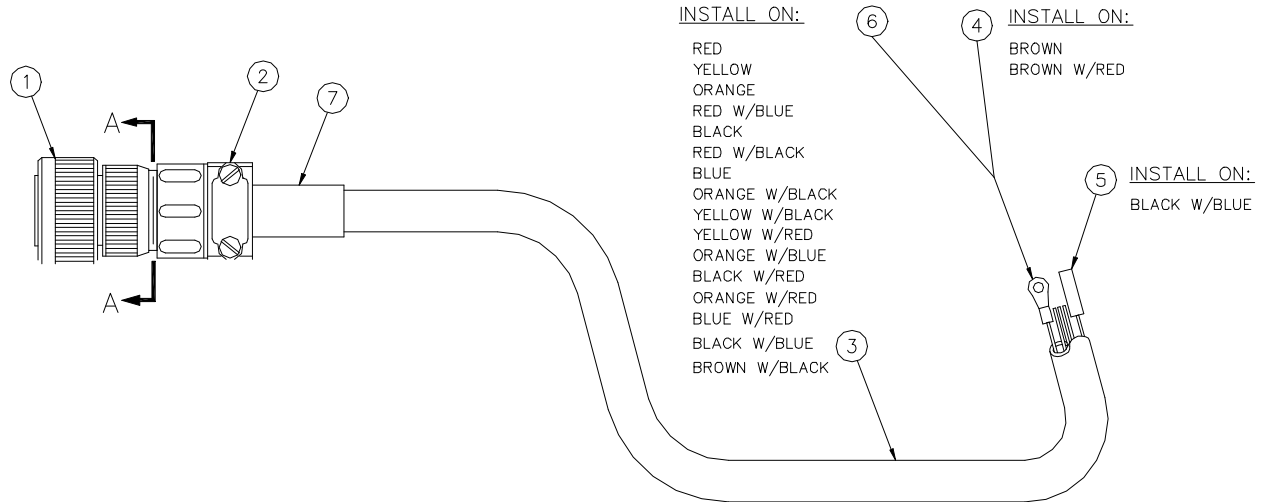
M - BLUE WITH BLACK

P - YELLOW WITH RED

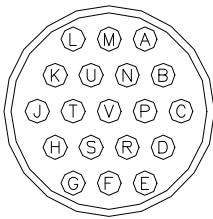
- BEFORE INSTALLING THE COVER, ADD RTV SEALANT BETWEEN THE COVER AND THE PENDANT HOUSING.

# COLD WEATHER PENDANT CABLE ASSEMBLY

**P/N 680129 - MODEL 11006**



## WIRING GUIDE



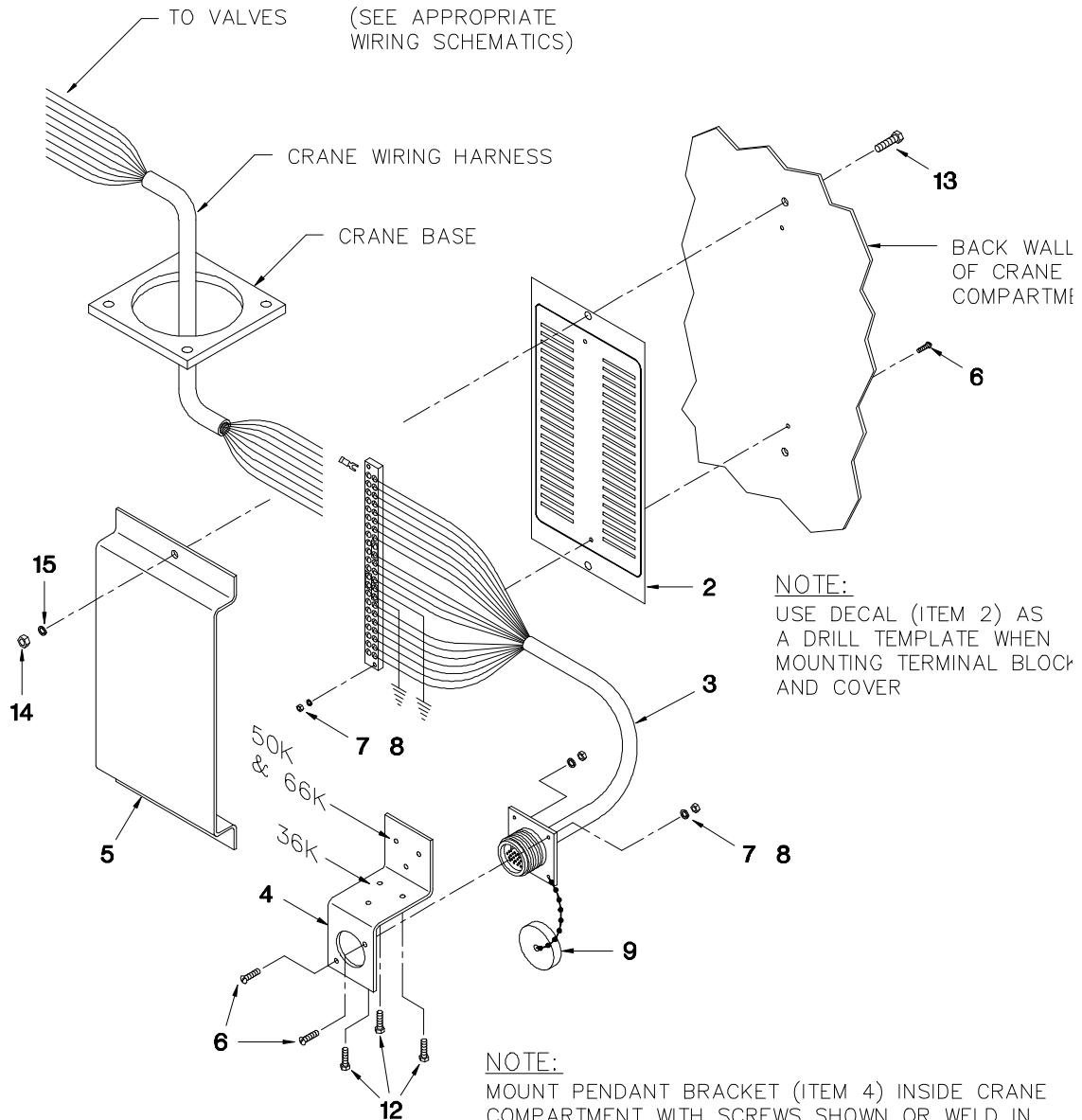
BOOM UP	A-RED
HOIST UP	B-YELLOW
ROT CW	C-ORANGE
FAST IDLE	D-RED W/BLUE
ROT CCW	E-BLACK
HOIST DOWN	F-RED W/BLACK
BM DOWN	G-BLUE
EXT IN	H-ORANGE W/BLACK
EXT OUT	J-YELLOW W/BLACK
AMPL GRD	K-BROWN W/BLACK

POWER	L-BROWN
	M-BLUE W/BLACK
PROP GRD	N-BLACK W/BLUE
	P-YELLOW W/RED
START	R-ORANGE W/BLUE
STOP	S-BLACK W/RED
PROP POWER	T-BROWN W/RED
AUX 1A	U-ORANGE W/RED
AUX 2A	V-BLUE W/RED

ITEM	QTY	P/N	DESCRIPTION
1	1	366098	CONNECTOR BAYONET PLUG
2	1	480515	CABLE CLAMP
3	30 FT	480459	19 CONDUCTOR CABLE
4	1	000101	TERMINAL RING #6 / 14-16 GA
5	1	480510	FEMALE BULLET CONNECTOR
6	17	002012	TERMINAL RING #6 / 18-22 GA
7	.500 FT	490243	HEAT SHRINK TUBING

# IN-COMPARTMENT (IC) PENDANT INSTALLATION

## 11006 SERIES





# ***IN-COMPARTMENT (IC) PENDANT INSTALLATION***

## ***11006 SERIES***

<u>ITEM</u>	<u>QTY</u>	<u>P/N</u>	<u>DESCRIPTION</u>
1	-	-	-
2	1	466253	22 STATION TERMINAL BLOCK DECAL
3	1	480459	22 STATION / 19 PIN SOCKET HARNESS
4	1	480626	PENDANT BRACKET
5	1	480493	22 STATION TERMINAL BLOCK COVER
6	4	000404	ROUND HEAD SCREW #6-32 NC x 5/8
7	4	015400	HEX NUT #6-32 NC
8	4	019600	SPLIT LOCK WASHER #6
9	1	366097	19 PIN RECEPTACLE CAP
10	6	750738	WIRE TIE STICK ON RETAINER
11	6	634401	WIRE TIE x 7"
12	3	330038	CAPSCREW #10-24 NC x 3/4 SELF TAPPING
13	2	005500	CAPSCREW 1/4-20 NC x 3/4 G5
14	2	015900	HEX NUT 1/4-20 NC
15	2	020200	SPLIT LOCK WASHER 1/4

# 11006 WIRING

THIS CHART CAN BE USED FOR TROUBLE SHOOTING THE ELECTRICAL SYSTEMS FOR THE 11006H CRANE. STARTING AT THE LEFT IS THE WIRING CORRESPONDING TO THE FUNCTIONS OF THE CRANE AND THE CODING OF THE HARNESS WHICH CONNECTS TO THE IN COMPARTMENT RECEPTACLE HARNESS WHERE EITHER THE PENDANT OR THE FM REMOTE RECEIVER MAY BE CONNECTED. EACH LINE ACROSS GIVES FUNCTION, COLOR CODE, & TERMINATIONS OF EACH HARNESS.

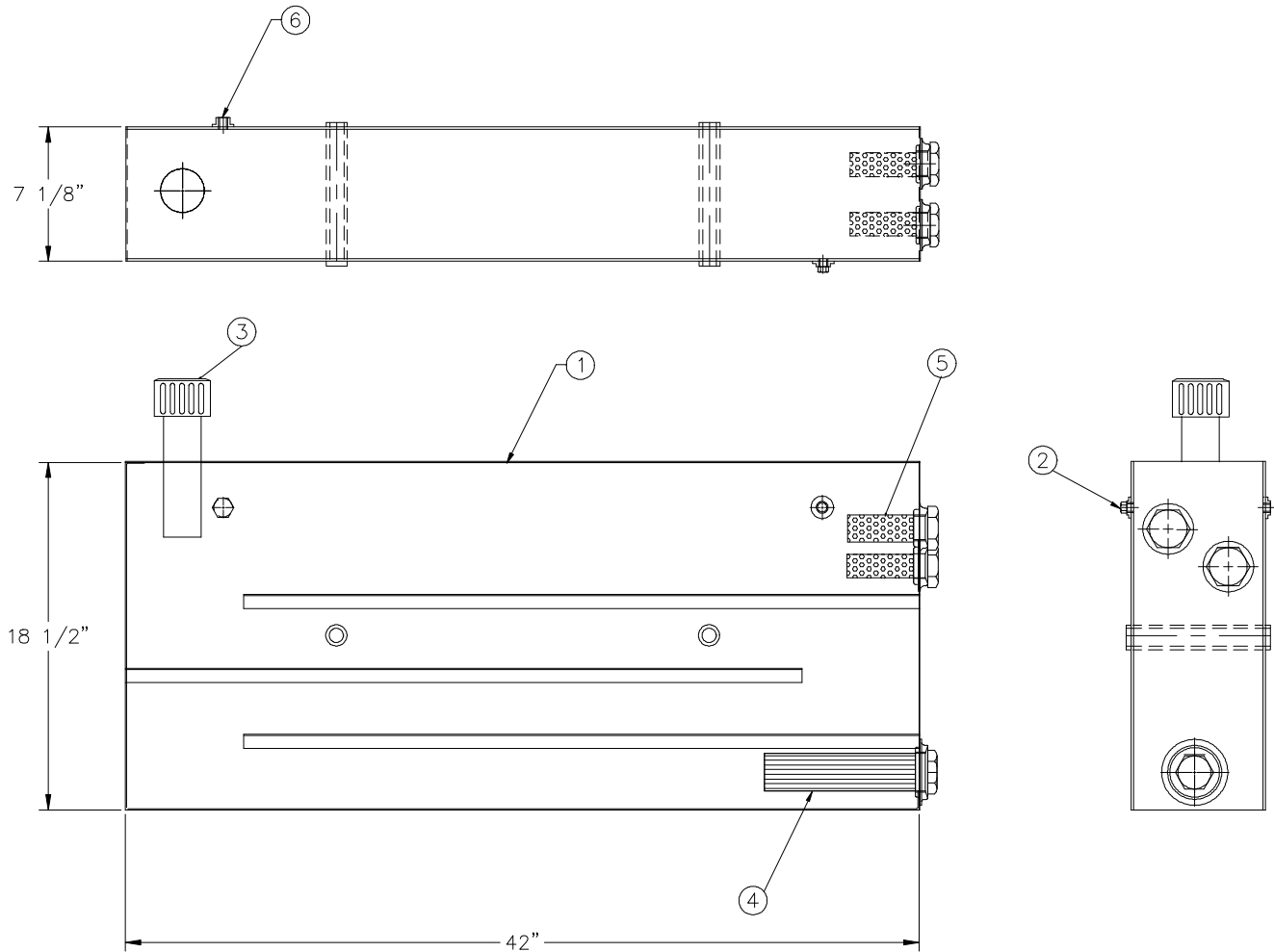
9006H & 11006H MASTER WIRING SCHEDULE			
CRANE P/N 468004 & HARNESS P/N 466106	HARNESS P/N 466235 & 466254	PENDANT (P/N 460129)	FM RECEIVER HARNESS (P/N 610048)
FUNCTION	COLOR CODE	TERMINAL	RECEIVER TERMINAL
HOIST UP	YELLOW	1	14
HOIST DOWN	RED W/BLK	2	13
ROT CCW	BLACK	3	8
ROT CW	ORANGE	4	7
BOOM UP	RED	5	16
BOOM DOWN	BLUE	6	15
EXT OUT	YELLOW	7	6
EXT IN	ORG W/BLK	8	5
PROP VALVE	BROWN W/RED	9	11
LOAD SENSOR	BLACK W/RED	10	11
POWER RELAY	BLACK (TRUCK)	11	GRND
START RELAY	ORG W/BLUE	12	GRND
PROP VALVE	BLK W/BLUE	13	GRND
GRND	YELLOW W/RED	14	GRND
GRND	BROWN W/BLK	15	GRND
IDLE FAST BLQ	ON TRUCK	16	GRND
EMERG STOP	(2)	17	GRND
STOP RELAY	ON TRUCK	18	GRND
AUX 1A (ON/OFF)	ON TRUCK	19	GRND
AUX 2A (ON/OFF)	ON TRUCK	20	GRND
AUX 1A (ON/OFF)	ON TRUCK	21	GRND
AUX 2A (ON/OFF)	ON TRUCK	22	GRND
HARNESS - HARNESS			
(1) JUMPED TO TERM 11			
(2) JUMPED TO TERM 20			

USE V. U FOR AUXILIARY FUNCTIONS - A & 2A. USE SPOT MOUNTAIN SWITCHES IN WIRED PENDANT.

989 WIRING 5/8/84 REVISION D, 9/2/89H

# 20 GALLON BULKHEAD RESERVOIR TANK

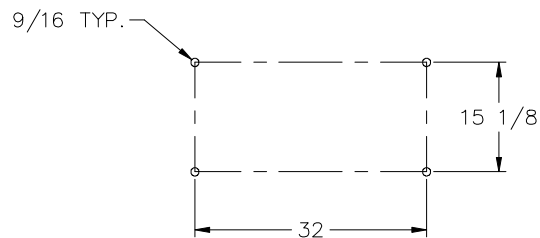
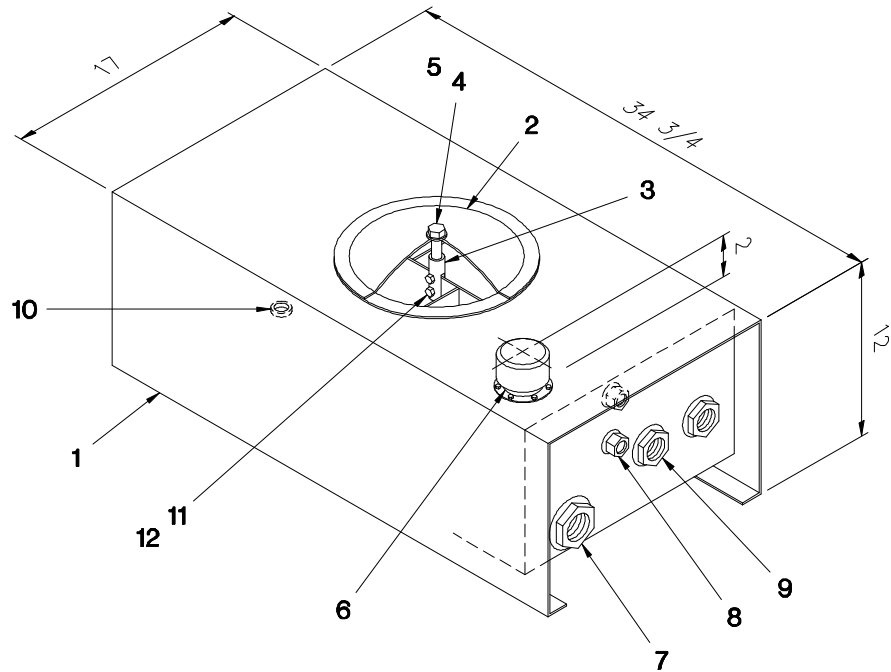
P/N 725550



ITEM	P/N	DESCRIPTION
1	725552	RESERVOIR
2	360150	RESERVOIR SIGHT PLUG
3	360285	FILLER ASSEMBLY
4	750707	SUCTION STRAINER
5	750708	DIFFUSER STRAINER
6	750477	PIPE PLUG

# 18 GALLON RESERVOIR

P/N 750690

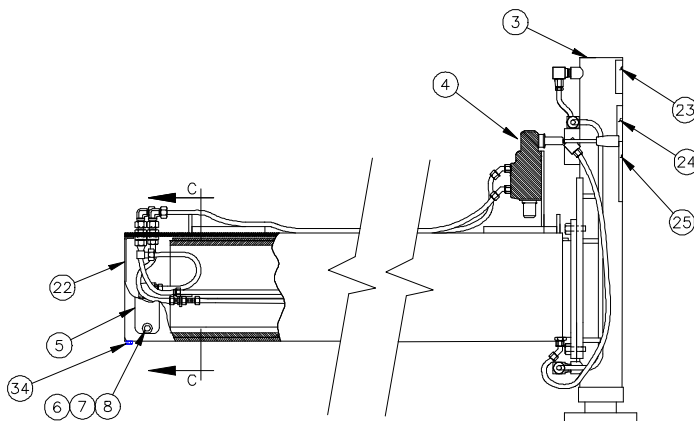
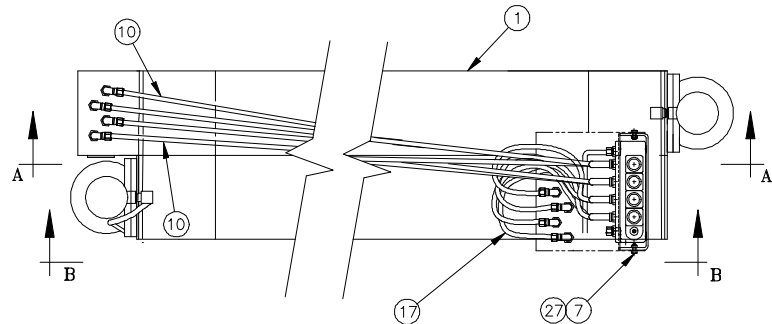


**MOUNTING PATTERN**

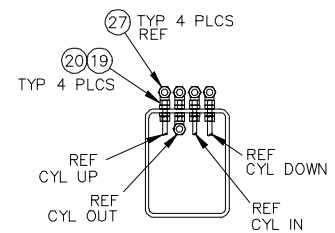
ITEM	QTY	P/N	DESCRIPTION
1	1	750691	RESERVOIR WELDMENT
2	1	750712	COVER
3	1	750709	BAFFLE ADAPTER
4	1	750716	CRUSH WASHER
5	1	750711	END COVER BOLT
6	1	360151	FILLER ASSEMBLY
7	1	750707	SUCTION STRAINER
8	2	360150	SIGHT PLUG
9	2	750708	DIFFUSER STRAINER
10	1	750477	PIPE PLUG -8
11	2	009108	CAPSCREW 3/8 NC x 1 1/4
12	2	017400	HEX LOCK NUT 3/8 NC

# HYDRAULIC OUTRIGGERS

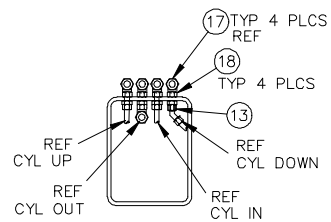
## CURBSIDE CRANE - P/N 766081



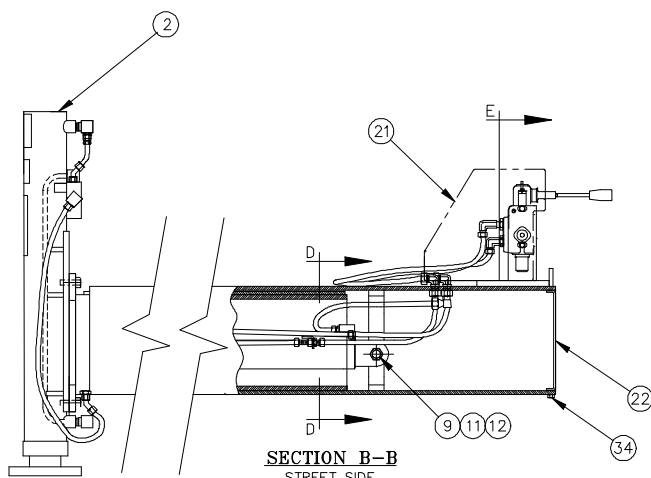
**SECTION A-A**  
CURB SIDE



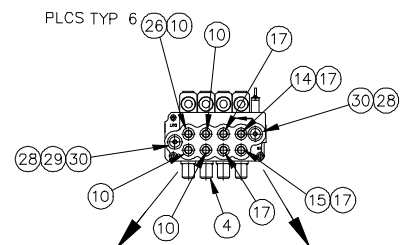
**VIEW C**  
CURB SIDE



**VIEW D**  
STREET SIDE



**SECTION B-B**  
STREET SIDE



**VIEW E**

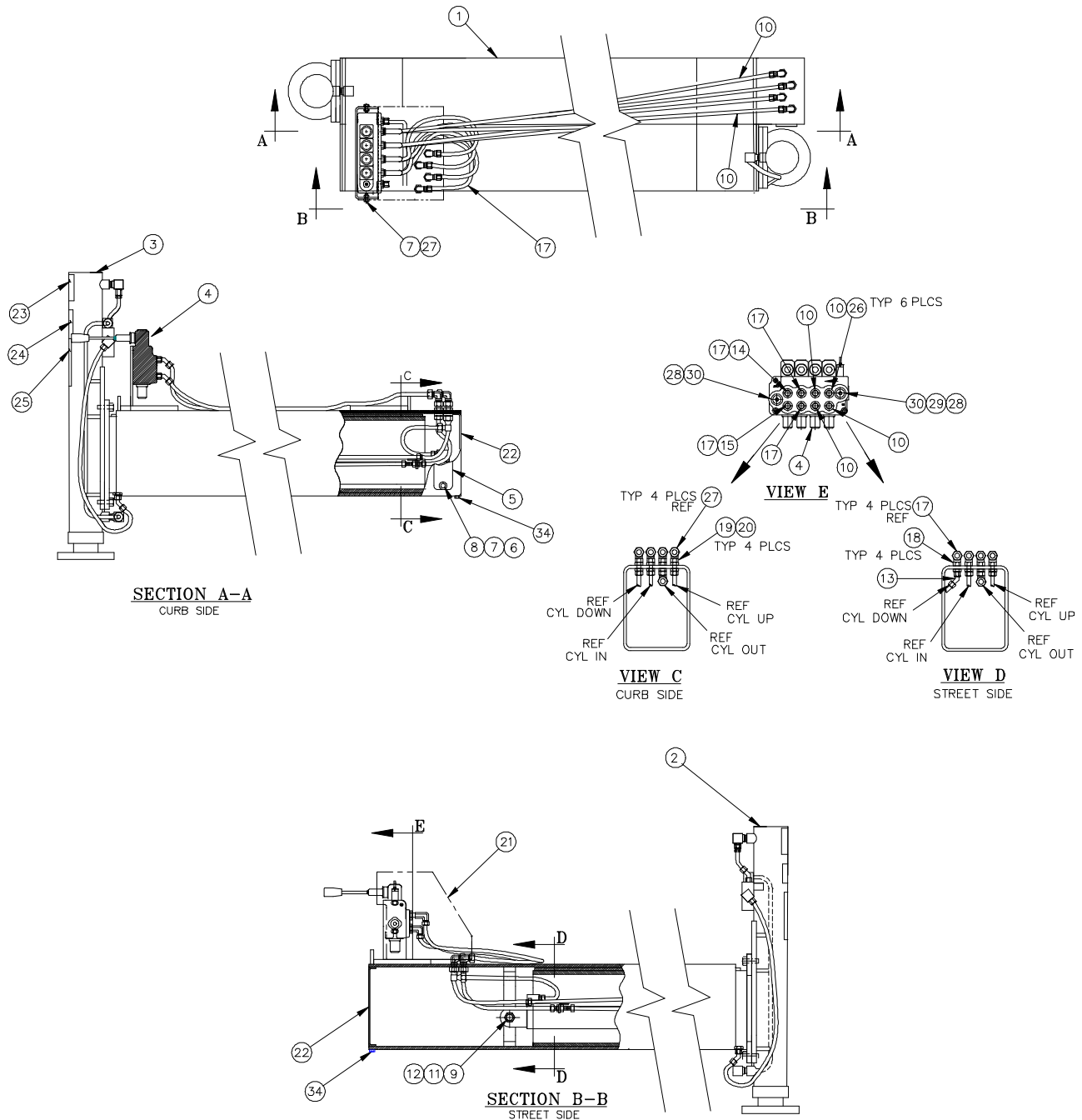
# ***HYDRAULIC OUTRIGGERS***

## ***CURBSIDE CRANE - P/N 766081***

<b><u>ITEM</u></b>	<b><u>QTY</u></b>	<b><u>P/N</u></b>	<b><u>DESCRIPTION</u></b>
1	1	REF	BODY WELDMENT 766016
2	1	766174	STREET SIDE SLIDE ASSEMBLY
3	1	766173	CURB SIDE SLIDE ASSEMBLY
4	1	766172	VALVE BANK
5	1	766109	TRUNNION MOUNT
6	2	008300	FLAT HEAD SCREW 3/8 x 1
7	4	021100	SPLIT LOCK WASHER 3/8
8	2	330372	HEX NUT 3/8
9	1	490171	SCREW 5/8 x 2 1/4
10	4	812026-081	HOSE ASSEMBLY -6 FEMALE/-6 FEMALE
11	3	021802	FLAT WASHER 5/8 x 1 3/4
12	1	023800	SPLIT LOCK WASHER 5/8
13	1	330647	45° SWIVEL ELBOW ADAPTER -6 JIC
14	1	330645	90° EXTRA LONG ELBOW ADAPTER -6 JIC/-6 JIC MALE
15	1	241175	90° ELBOW ADAPTER -6 ORM/-6 JIC MALE
16	1	REF	90° ELBOW HOSE ASSEMBLY -6 FEMALE/-6 FEMALE (812209-018)
17	4	812026-016	HOSE ASSEMBLY -6 FEMALE/-6 FEMALE
18	4	367136	90° BULK HEAD ADAPTER -6 MALE/-6 MALE
19	4	320734	BULK HEAD STRAIGHT ADAPTER -6 MALE/-6 MALE
20	4	480194	90° ADAPTER -6 JIC MALE/-6 JIC SWIVEL
21	1	766128	VALVE COVER
22	2	766046	STREET/CURB COVER
23	2	759016	DANGER DECAL
24	2	759017	CAUTION DECAL
25	2	040581	CAUTION "STAND CLEAR" DECAL
26	6	480195	45° ADAPTER -6 ORB/-6 JIC
27	2	008401	SCREW 3/8 x 1/2 UNC
28	2	360445	CAP -8
29	1	369394	45° ADAPTER -8 SWIVEL /-8 JIC MALE
30	2	362020	90° ADAPTER -8 JICM/-8 ORM
31	3	811029	HEX HEAD SCREW 5/16
32	3	020601	SPLIT LOCK WASHER 5/16
33	3	016500	HEX HEAD NUT 5/16
34	4	320371	SELF TAPPING SCREW #10-24 x 3/4

# HYDRAULIC OUTRIGGERS

## STREETSIDE CRANE - P/N 766202



# ***HYDRAULIC OUTRIGGERS***

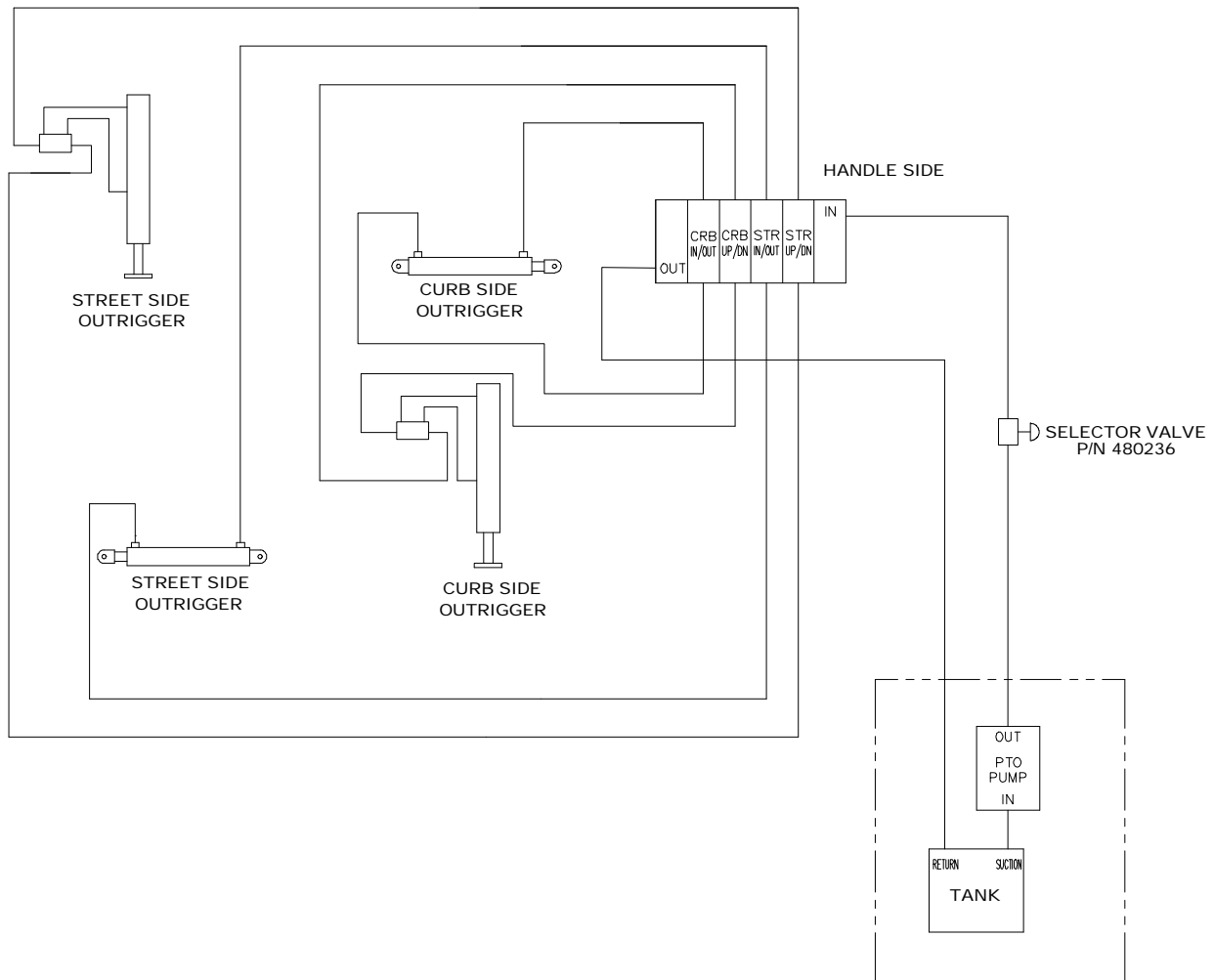
## ***STREETSIDE CRANE - P/N 766202***

<b><u>ITEM</u></b>	<b><u>QTY</u></b>	<b><u>P/N</u></b>	<b><u>DESCRIPTION</u></b>
1	1	REF	BODY WELDMENT 766400
2	1	766174	STREET SIDE SLIDE ASSEMBLY
3	1	766173	CURB SIDE SLIDE ASSEMBLY
4	1	766172	VALVE BANK
5	1	766109	TRUNNION MOUNT
6	2	008300	FLAT HEAD SCREW 3/8 x 1
7	4	021100	SPLIT LOCK WASHER 3/8
8	2	330372	HEX NUT 3/8
9	1	490171	SCREW 5/8 x 2 1/4
10	4	812026-081	HOSE ASSEMBLY -6 FEMALE/-6 FEMALE
11	3	021802	FLAT WASHER 5/8 x 1 3/4
12	1	023800	SPLIT LOCK WASHER 5/8
13	1	330647	45° SWIVEL ELBOW ADAPTER -6 JIC
14	1	330645	90° EXTRA LONG ELBOW ADAPTER -6 JIC/-6 JIC MALE
15	1	241175	90° ELBOW ADAPTER -6 ORM/-6 JIC MALE
16	1	REF	90° ELBOW HOSE ASSEMBLY -6 FEMALE/-6 FEMALE (812209-018)
17	4	812026-016	HOSE ASSEMBLY -6 FEMALE/-6 FEMALE
18	4	367136	90° BULK HEAD ADAPTER -6 MALE/-6 MALE
19	4	320734	BULK HEAD STRAIGHT ADAPTER -6 MALE/-6 MALE
20	4	480194	90° ADAPTER -6 JIC MALE/-6 JIC SWIVEL
21	1	766128	VALVE COVER
22	2	766046	STREET/CURB COVER
23	2	759016	DANGER DECAL
24	2	759017	CAUTION DECAL
25	2	040581	CAUTION "STAND CLEAR" DECAL
26	6	480195	45° ADAPTER -6 ORB/-6 JIC
27	2	008401	SCREW 3/8 x 1/2 UNC
28	2	360445	CAP -8
29	1	369394	45° ADAPTER -8 SWIVEL /-8 JIC MALE
30	2	362020	90° ADAPTER -8 JICM/-8 ORM
31	3	811029	CAPSCREW 5/16
32	3	020601	SPLIT LOCK WASHER 5/16
33	3	016500	HEX HEAD NUT 5/16
34	4	320371	SELF TAPPING SCREW #10-24 x 3/4



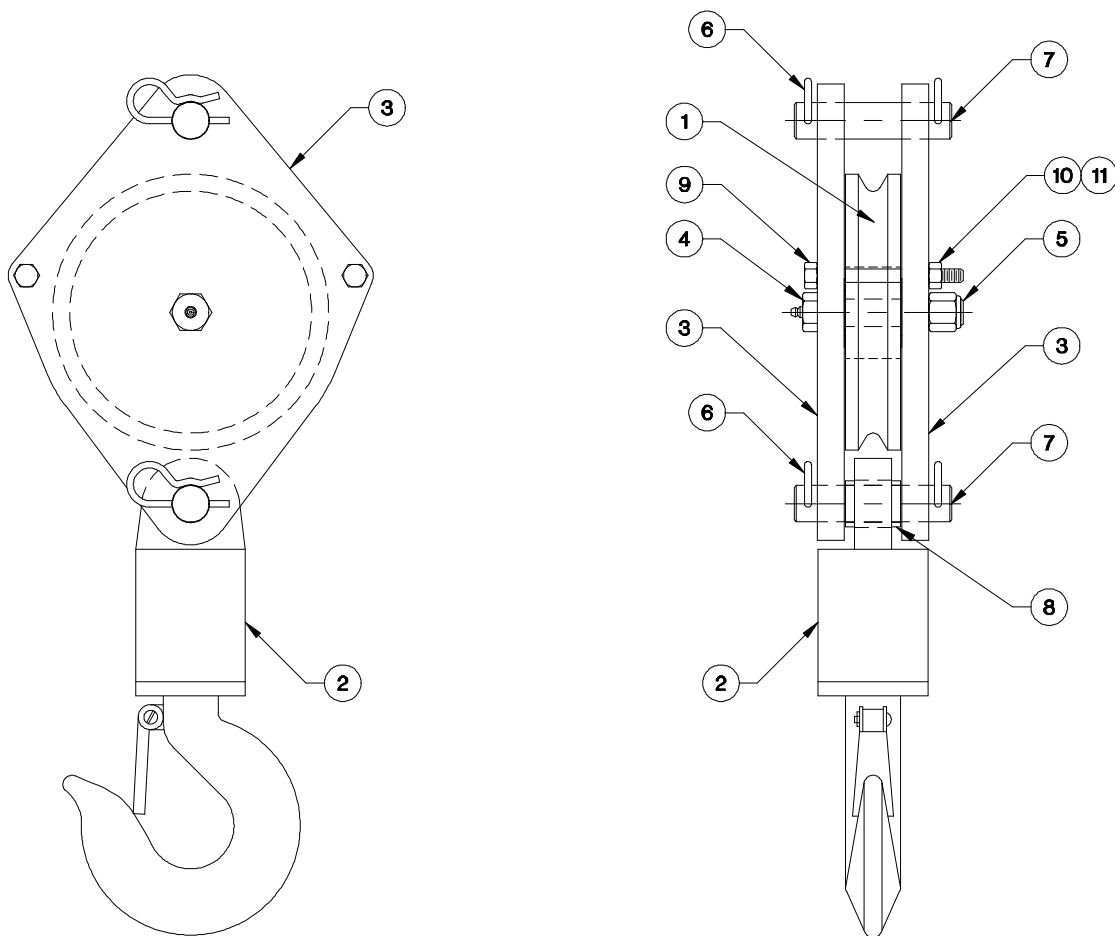
# ***HYDRAULIC OUTRIGGERS FLOW DIAGRAM***

## ***11006 SERIES***



# TRAVELING BLOCK ASSEMBLY

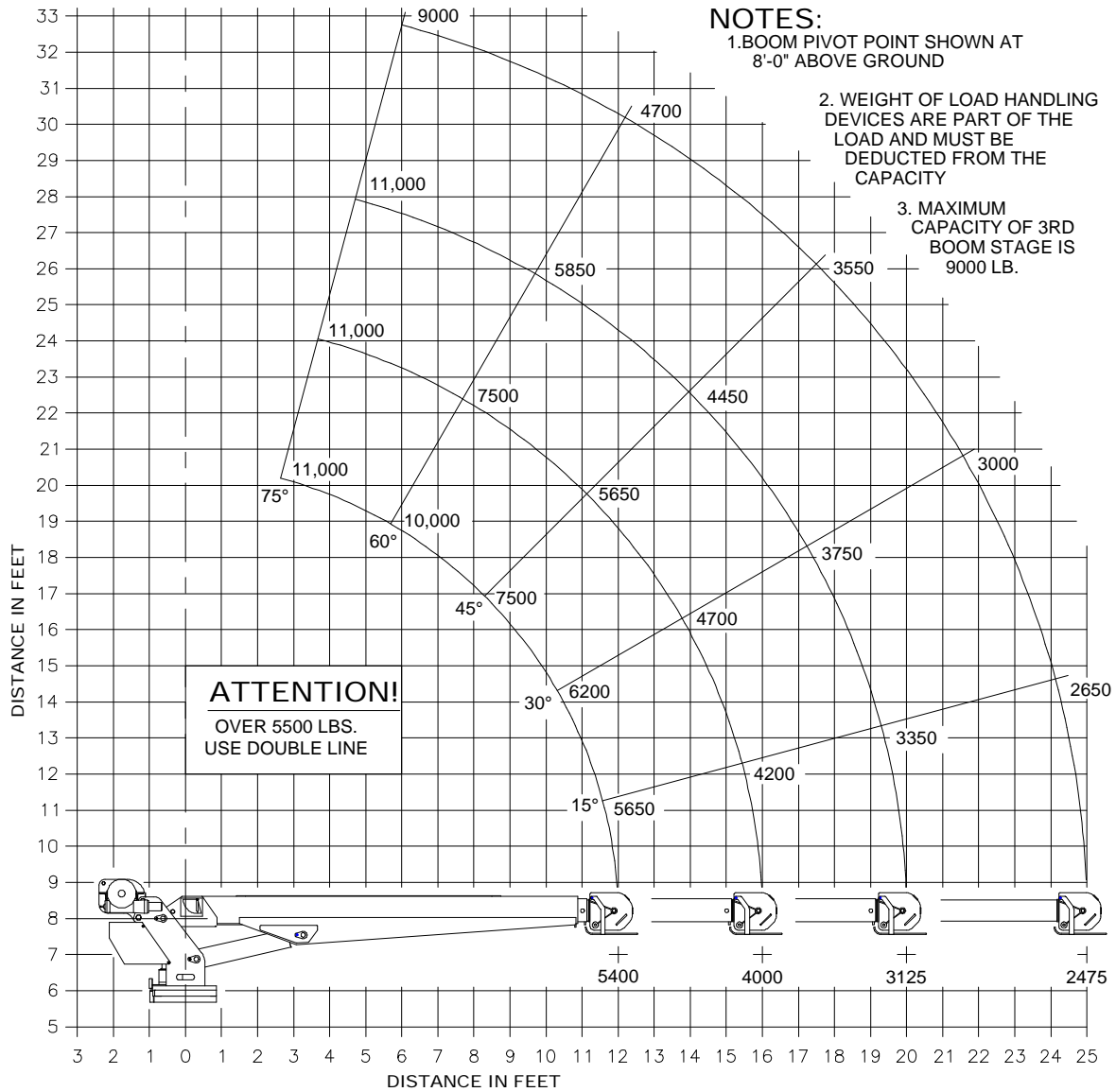
**P/N 466230 - MODEL 11006**



ITEM	QTY	P/N	DESCRIPTION
1	1	490256	SHEAVE BLOCK ASSEMBLY
2	1	480026	5 TON SWIVEL HOOK
3	2	466231	SIDE PLATE TRAVELING BLOCK
4	1	490313	SHEAVE BOLT w/ ZERK FITTING 3/4 NF x 4
5	1	018600	HEX LOCK NUT 3/4 NF
6	4	360124	HITCH PIN
7	2	466232	PIN BLOCK 1 DIA
8	1	466233	ROUND TUBING 1 1/4 x .120W x 1 1/2 L
9	2	811023	SCREW 3/8 NC x 4
10	2	017301	LOCK NUT 3/8 NC

# LOAD CHART

## P/N 466212 - 11006 SERIES



P/N 466212