

OWNERS MANUAL

9006

REVISION 1/2000

PART NO. 999990

SERIAL NO. _____

AUTO CRANE COMPANY

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<http://www.autocrane.com>

!! 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.

9006 SERIES - OWNER'S MANUAL
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INTRODUCTION

9006 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 9006 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 9006 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 9006 series cranes.**

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

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

9006 SERIES

DIMENSIONS

Width: 1 ft 10 in (.55 m)
Height: 3 ft 6 in (1.06 m)
Length: 13 ft 10 in (4.52 m)
Weight: 2000 lb (907 kg)
Base Plate Dimensions:
1 ft 9 in (.53m) x 1 ft 9 in (.53 m)

CAPACITY

Capacity: 60,000 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 reach: 11 ft
Power boom extends to: 17 ft
Manual boom extends to: 22 ft

CABLE

Standard Cable Supplied: 120 ft (28.9 m) of 7/16 in diameter

CHASSIS REQUIREMENTS

Chassis: 30,000 lb (9,299 kg) GVWR minimum

HYDRAULIC SYSTEM

Pressure: 2100 psi relief setting
Flow: 10 gpm
Oil Type: Mobile DTE 13, Sun 2015

MOVEMENT SPEEDS

Proportional Maximum

Hoist: 25 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.

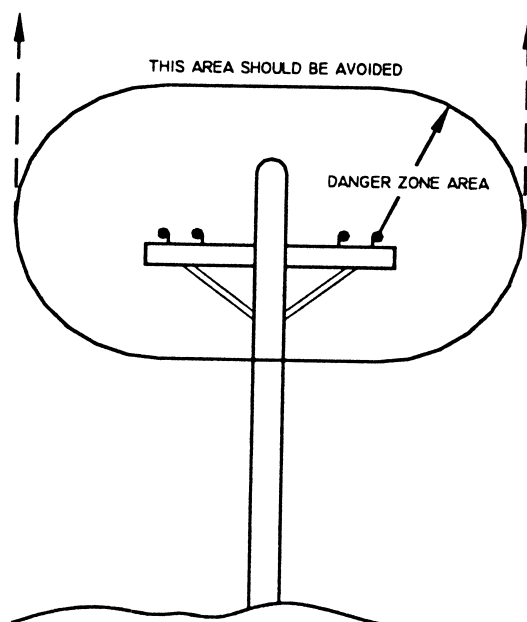
O. No person should be permitted to stand or pass under a suspended load.

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)

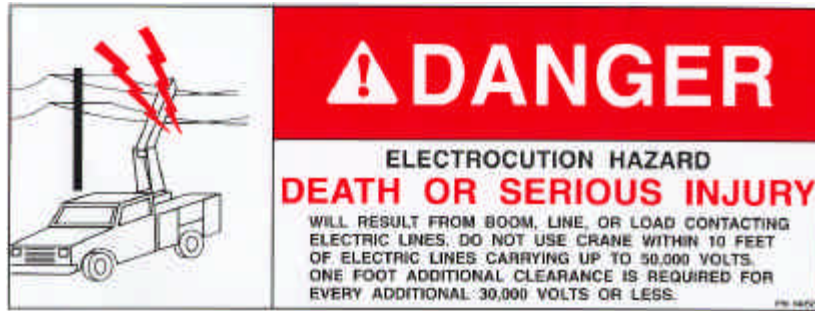


FIG. SD-4.

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)

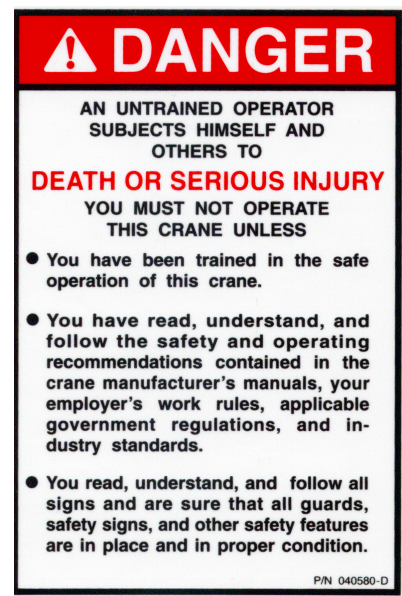


FIG. SD-5.

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)

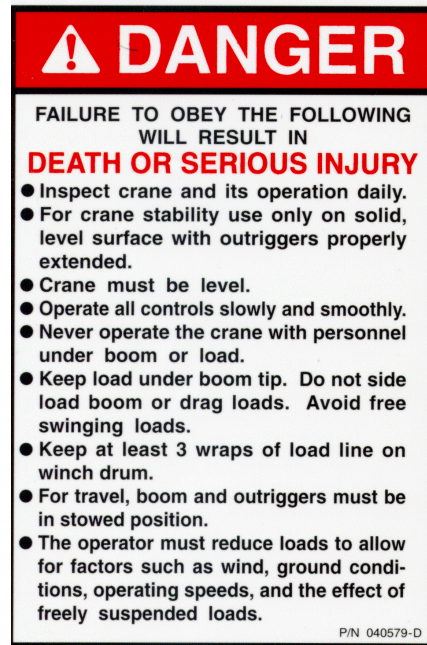


FIG. SD-6.

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

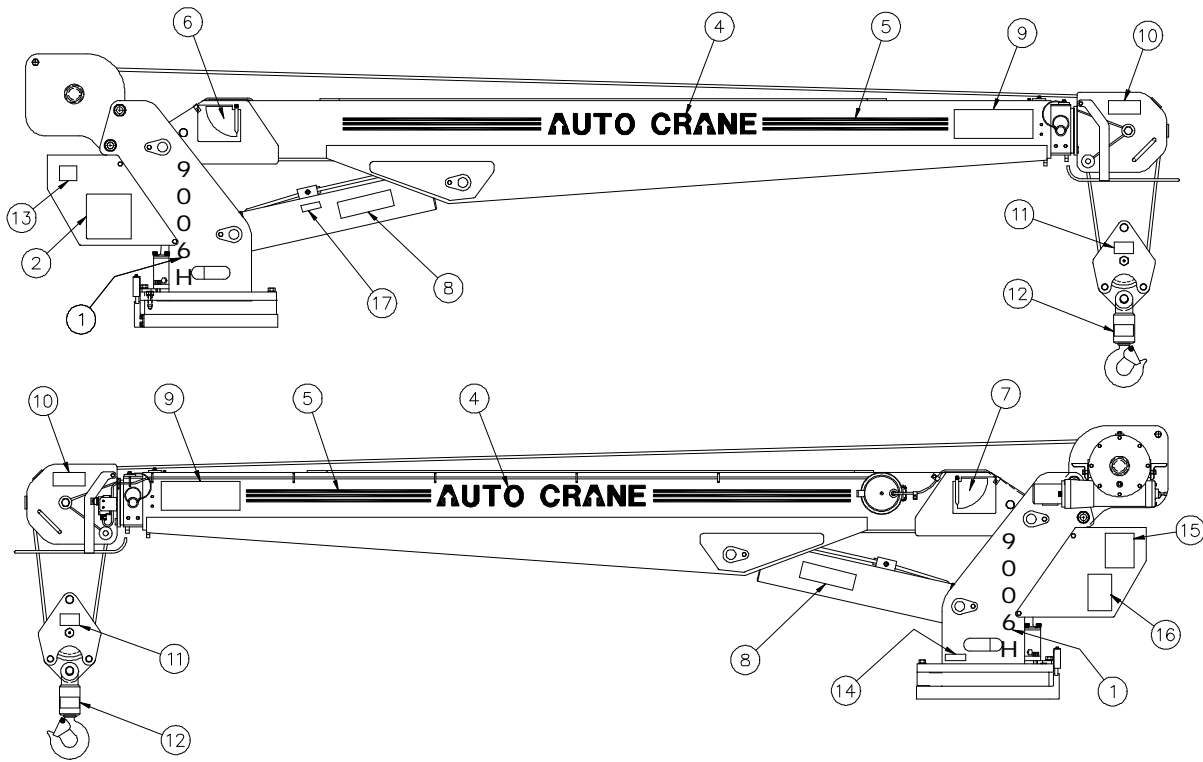
PART NO.: 367246
DECAL: OPERATION INSTRUCTIONS
FUNCTION: To inform the operator of the dangers associated with personnel riding on hook.
QUANTITY: 1
PLACEMENT: Left Sideplate
(see page 1-5.0.0, Item 12)



FIG. SD-9.

DECAL LAYOUT

P/N 454125



| ITEM | QUANTITY | PART NUMBER | DESCRIPTION |
|------|----------|-------------|----------------------------------|
| 1 | 2 | 454126 | 9006 DECAL |
| 2 | 1 | 454128 | LOAD CHART DECAL |
| 3 | 1 | 360034 | MEDIUM "A" LOGO DECAL |
| 4 | 2 | 040624 | AUTO CRANE DECAL |
| 5 | 7.9 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 9006

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

| ITEM | PART NO. | DESCRIPTION |
|------|----------|---|
| 1. | 466230 | 5 TON SWIVEL BLOCK |
| 2. | 367215 | PUMP ASSEMBLY (OPTIONAL) |
| 3. | 999990 | 9006 OWNERS MANUAL |
| 4. | 015104 | CAPSCREW, 7/8 UNF x 5 in, Grade 8 (4 REQ'D) |

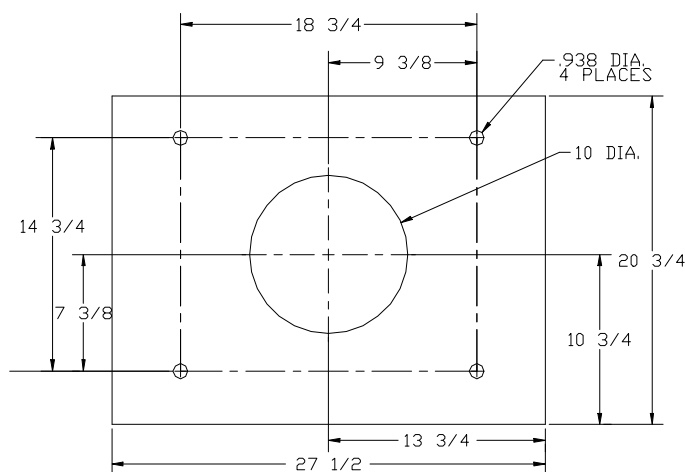
2. PRESSURE AND RETURN HOSES ARE NOT FURNISHED WITH THIS CRANE. THE HOSES MUST BE PROVIDED BY THE INSTALLER AND THE LENGTHS DETERMINED AT INSTALLATION. EQUIVALENT HOSES AND FITTINGS ARE ACCEPTABLE. (REFERENCE DWG AW-017 & AW-480150)

| LOCATION ITEM HOSE | RETURN LINE HOSE CRANE TO RESERVOIR | SUCTION HOSE PUMP TO RESERVOIR | PRESSURE LINE HOSE PUMP TO CRANE BASE |
|--------------------------|---|---|---|
| | -12 SAE 100R2 2 WIRE BRAID | -20 SAE 100R4 HYDRAULIC SUCTION | -12 SAE 100R2 2 WIRE BRAID |
| FITTING | -12 JIC 37° JIC FEMALE SWIVEL (CRANE END) | -20 37° JIC FEMALE SWIVEL PUSHON WITH CLAMP | -10 JIC 37° JIC FEMALE SWIVEL (CRANE END) |

NOTE:

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

- CRANE MUST BE PROVIDED WITH A FLOW OF 10 gpm @ 1100 PUMP rpm. EXCESSIVE FLOW WILL CAUSE OVER HEATING & ERRATIC OPERATION, AND TOO LITTLE FLOW WILL CAUSE POOR CRANE OPERATION.
- 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.
- MAKE SURE THE MOUNTING CAPSCREWS ARE 7/8 UNF x 5 in, Grade 8. TORQUE BOLTS TO 440 ft-lb (DRY).
- WHEN CRANE IS NOT IN OPERATION, A BOOM SUPPORT SHOULD ALWAYS BE USED. TRAVELING BLOCK SHOULD BE CONNECTED TO HOOK LOOP.
- THE VEHICLE **MUST** BE EQUIPPED WITH AN ENGINE SPEED CONTROL AND TACHOMETER.
- 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 9006

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 1100 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 2100 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)**

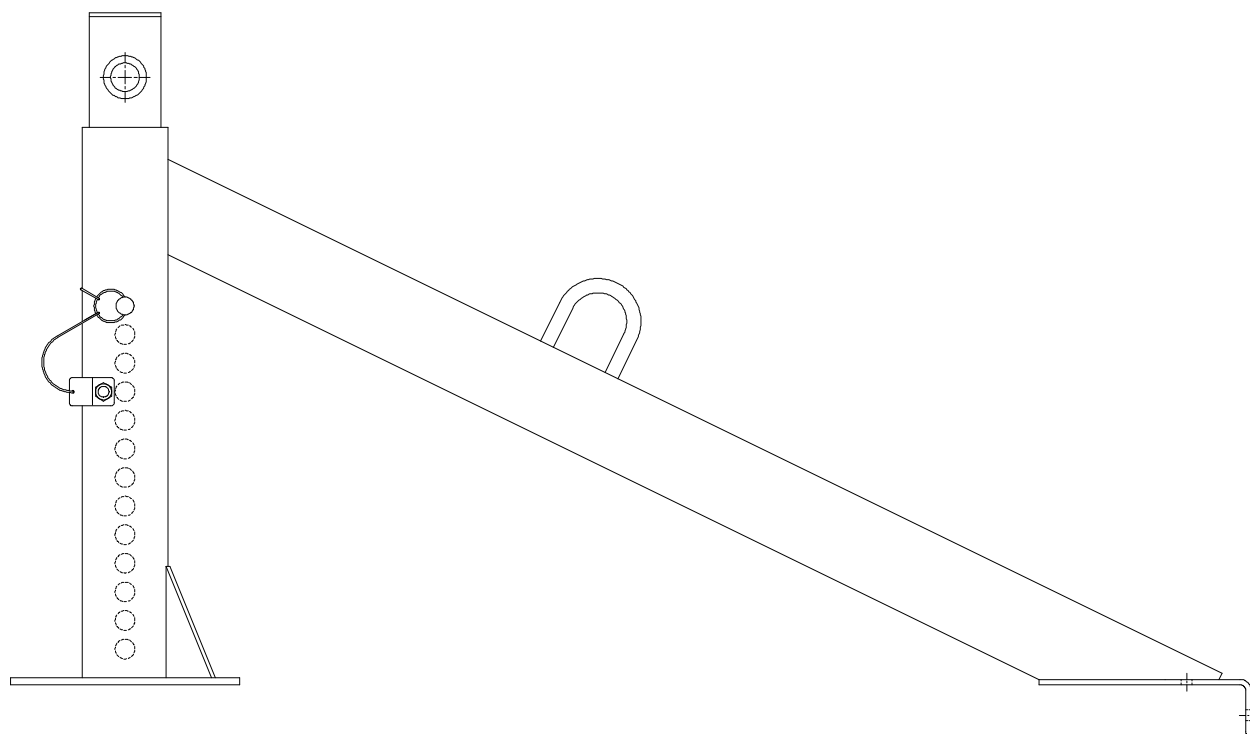
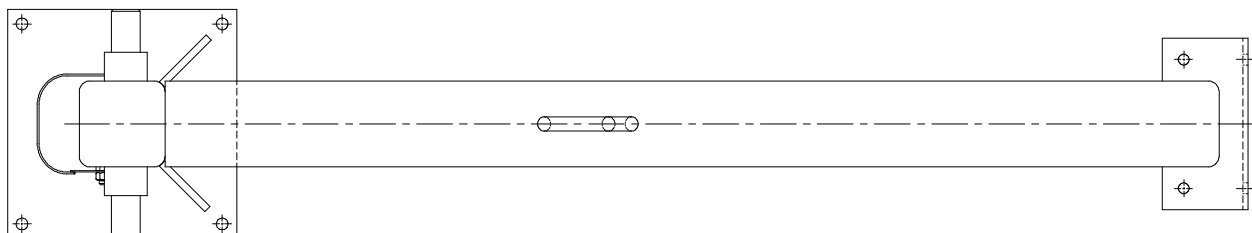
WARNING

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).

RECOMMENDED BOOM SUPPORT

P/N 766144



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 to right side of terminal strip as shown by decal.
Harness for In Compartment: P/N 466254
Harness for Crane Mounted: P/N 466255
4. Plug pendant or FM receiver into bayonet connector.
5. **The amplifier is 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 (refer to Figure 1, marked with “L” on the 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. (refer to Figure 1, marked with “H” on the 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, COUNTER CLOCKWISE DIRECTION FOR INCREASED FLOW**. This operation adjusts the trigger “Dead Band” at the fully pulled position.
5. Replace cover and install screws.

INSTALLATION & SETUP PROCEDURE DIGITAL PULSE WITH AMPLIFIER

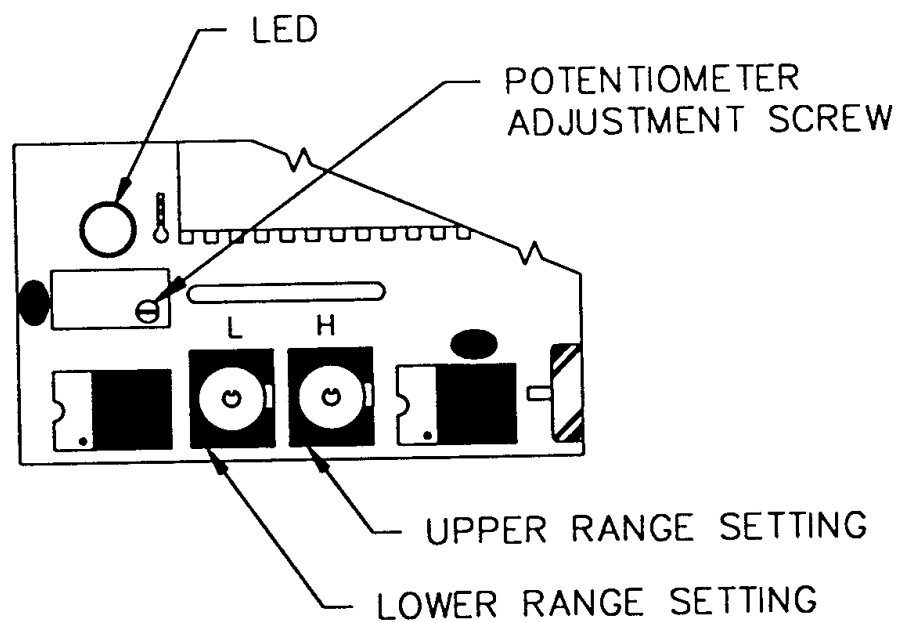


Figure 1

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.

OVERLOAD SYSTEM / ANTI-2-BLOCK

TROUBLE SHOOTING GUIDE

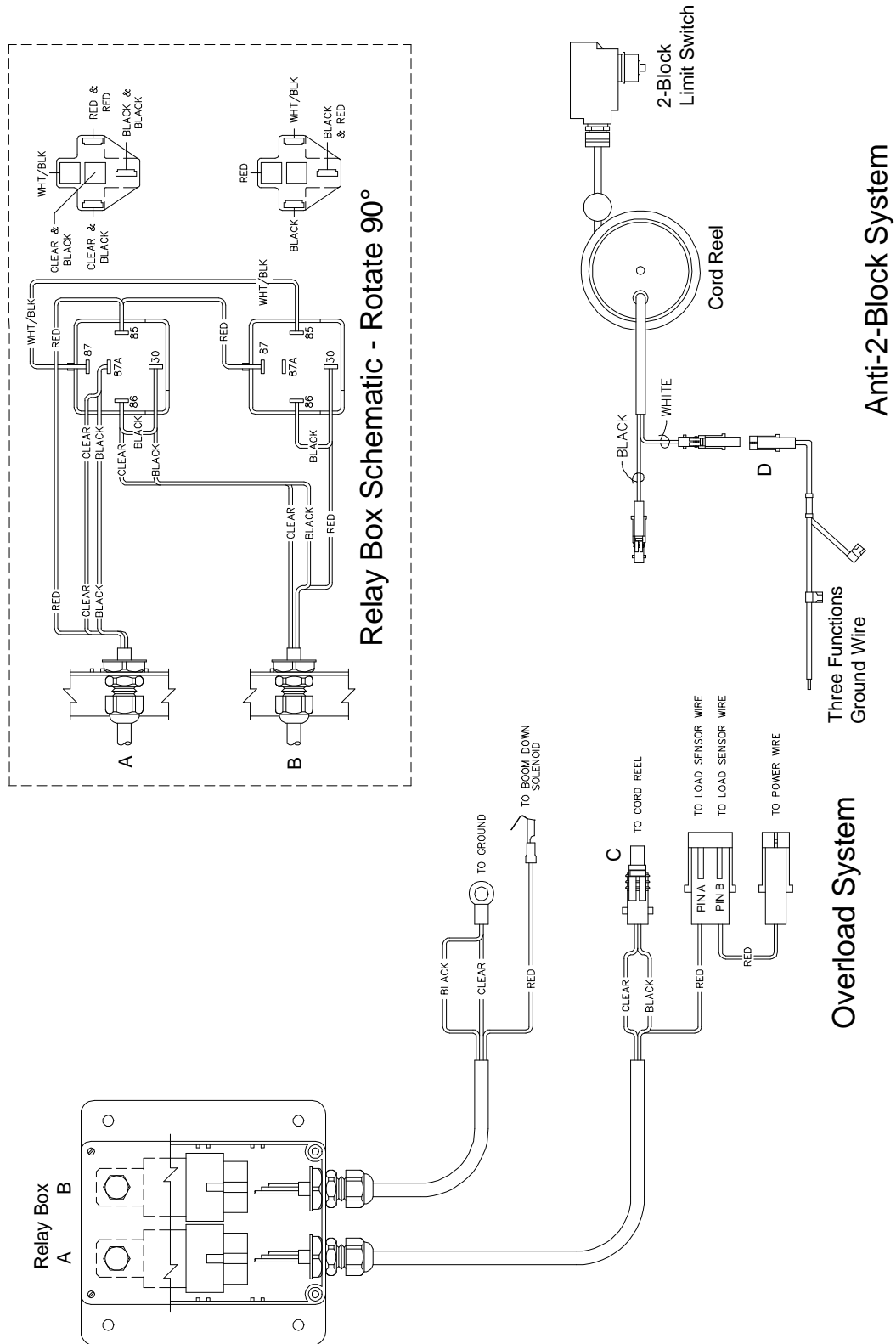


Figure 1

2-6.0.1

OPTIMETER TROUBLESHOOTING

GUIDE for 9006

FOLLOW THE TROUBLESHOOTING 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** Depress the manual operator pin on top of the valve with an allen wrench till valve closes completely.
 - 6** Check for proper crane operation.
 - A.** If crane operates properly, proceed.
 - B.** If not, check coil resistance from pin to pin (should be 5.0 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** Pull trigger and check for red light inside amplifier then perform the following adjustments with the trigger pulled to the maximum position:
 - A.** Light off
 - y** Turn small trim pot screw ccw (left) till light just gets bright, then stop. (if 10 turns do not turn light on, look for more than 9 volts at term "m")
 - B.** Light on
 - y** Turn small trim pot screw cw (right) till light just turns off, then turn ccw (left) till light just gets bright, then stop. (If 10 turns do not turn light off, look for less than 1 volt at term "m")
 - 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.

OPTIMETER TROUBLESHOOTING

GUIDE for 9006

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

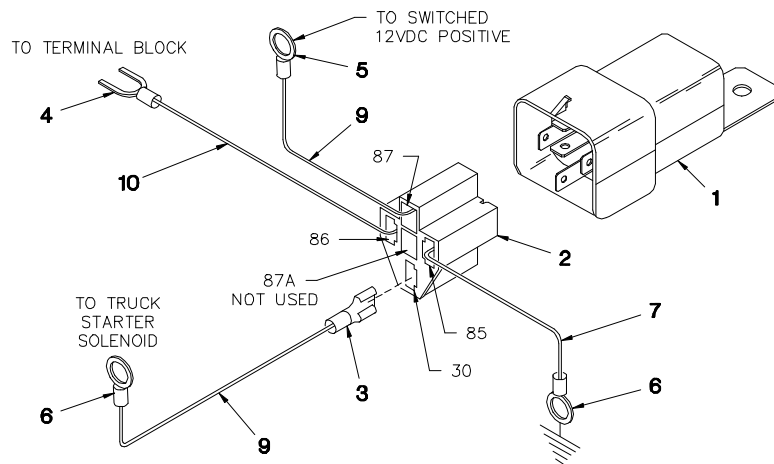
crane with the trigger in the fully pulled position.

12 A good starting position would be to have both switches on the number "4".

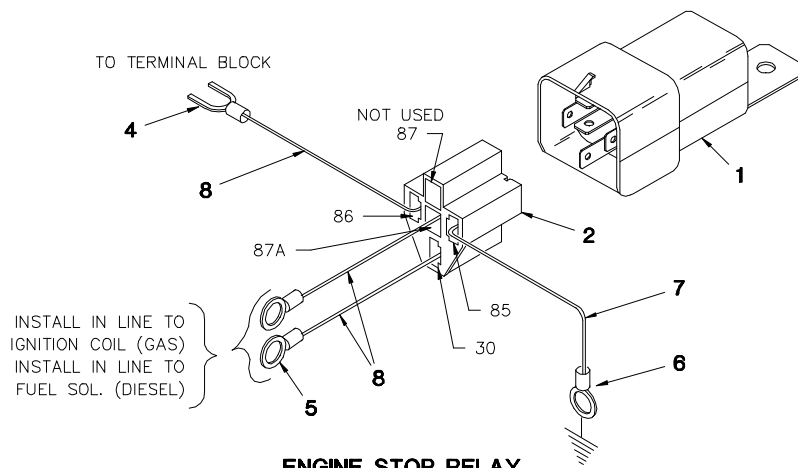
NOTE: Both switches on "F" will limit flow to a median value and not allow any change.

ENGINE START/STOP RELAY KIT

P/N 480533



ENGINE START RELAY

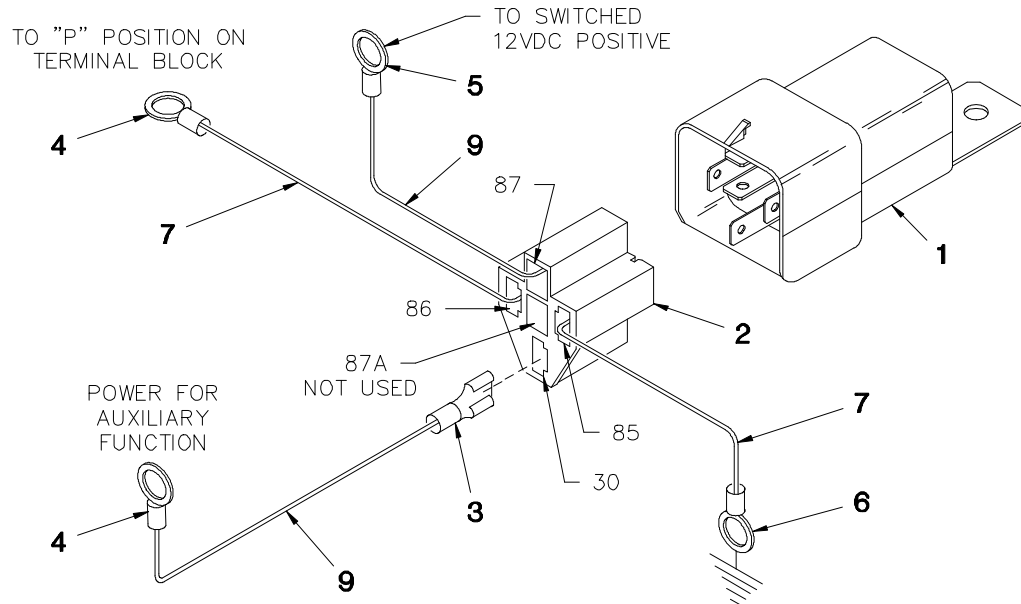


ENGINE STOP RELAY

| ITEM | QUANTITY | PART NUMBER | 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

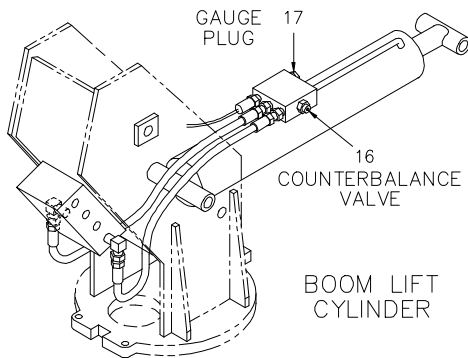
| ITEM | QUANTITTY | PART NUMBER | DESCRIPTION |
|------|-----------|-------------|-----------------------------|
| 1 | 2 | 320355 | 12V RELAY |
| 2 | 2 | 320363 | RELAY PLUG |
| 3 | 5 | 320357 | FEMALE SPADE LOCK CONNECTOR |
| 4 | 2 | 000101 | #6 TERMINAL RING |
| 5 | 1 | 000402 | 1/4 TERMINAL RING |
| 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

9006

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 2100 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

9006

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 9006 power version is electrically operated and requires a minimum of 12V DC for satisfactory performance. The hydraulic pump is bi-rotational with a pressure relief setting of 2100 psi (Ref.). Standard pump speed is 1100 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 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 wire, low voltage or 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 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 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 trouble shooting procedure for the proportional valve. If 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 4 gpm or greater from 0 psi to 2000 psi is cause for pump investigation

HYDRAULIC TROUBLESHOOTING

9006

NO PRESSURE OR TOO LOW PRESSURE

Check to maintain adequate oil in reservoir (approximately 18 gallons), 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 9006 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 9006

| 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 9006

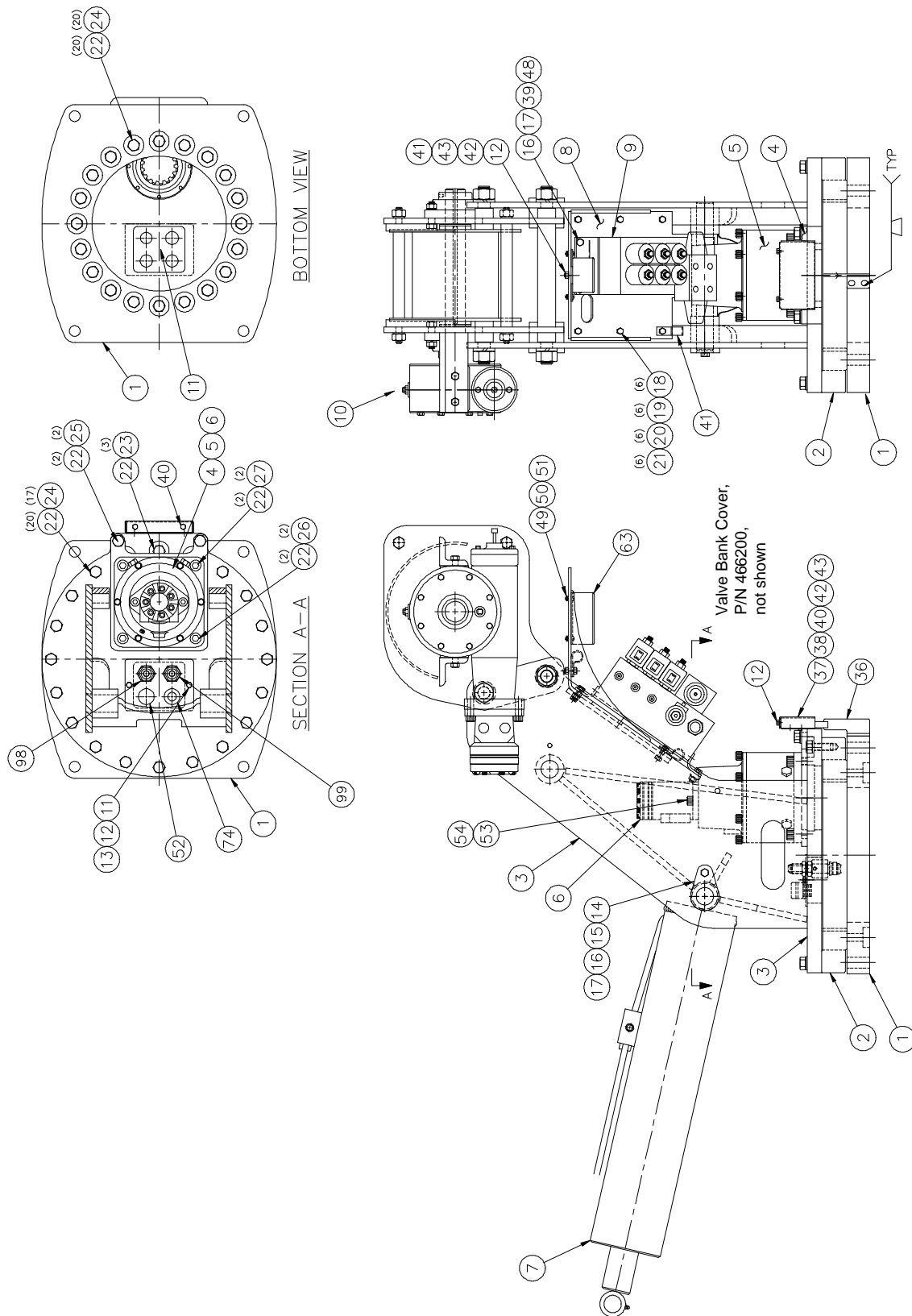
| SERVICE | DAILY | WEEKLY | MONTHLY | YEARLY | NOTES |
|---------------------------------|---|--------|---------|--------|--|
| ROTATION GEAR BOX | | | X | | EP GEAR LUBE GL-5, 85W-140 |
| HOIST GEARBOX | | | X | | WORM GEAR-EP GEAR LUBE SAE 80-90 |
| HYDRAULIC FLUID | | | | X | DRAIN, FLUSH, & REFILL 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 | | | | |
| CAUTION | { Routine maintenance insures trouble-free operation and protects your investment. All warranties are void if maintenance is neglected. | | | | |

NOTES:

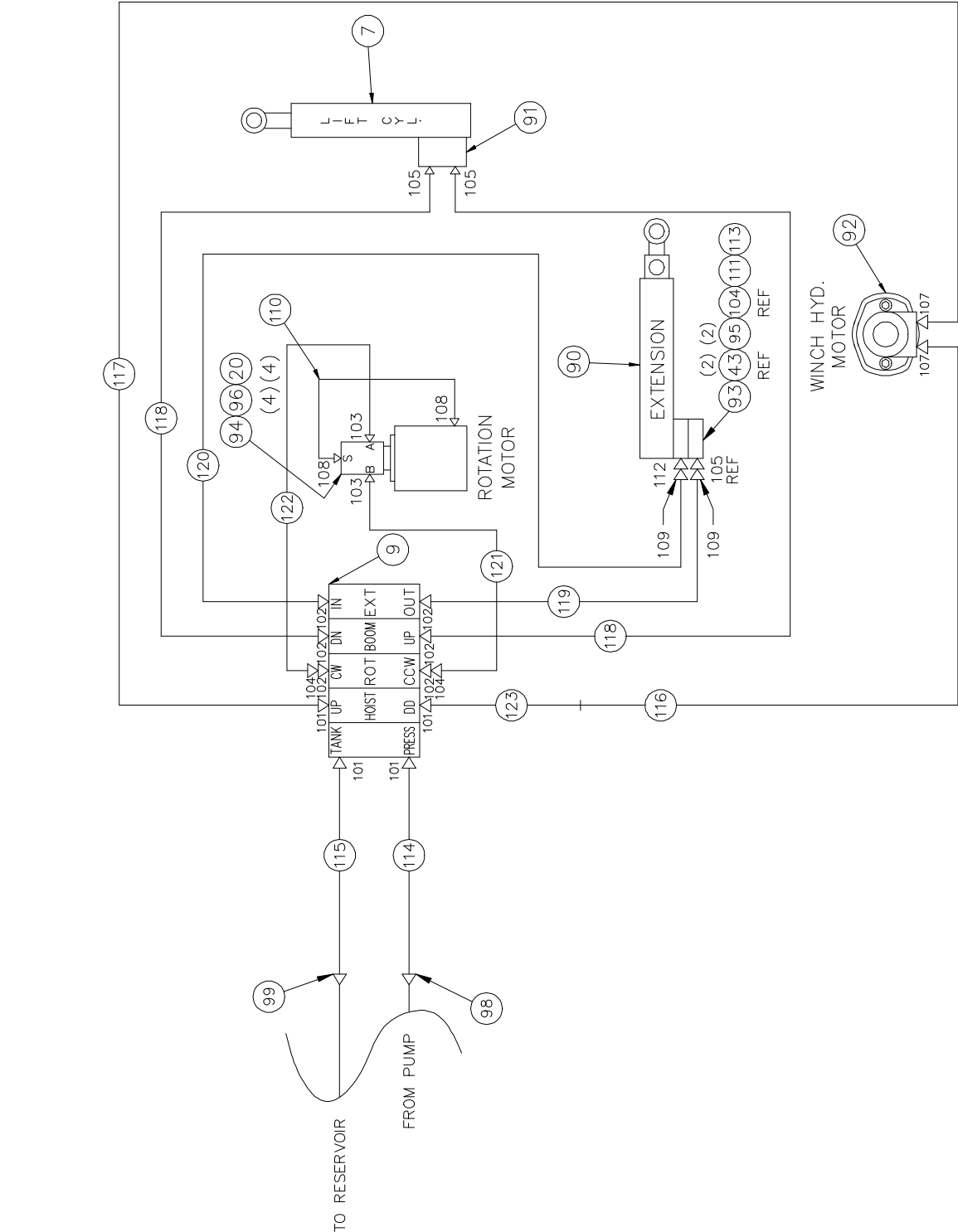
1. Use only authorized parts. Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.
2. Once a bolt has been torqued to its rated capacity and then removed; the bolt should be replaced with a new one.
3. Auto Crane Company recommends that this 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 454140 for 9006 SERIES

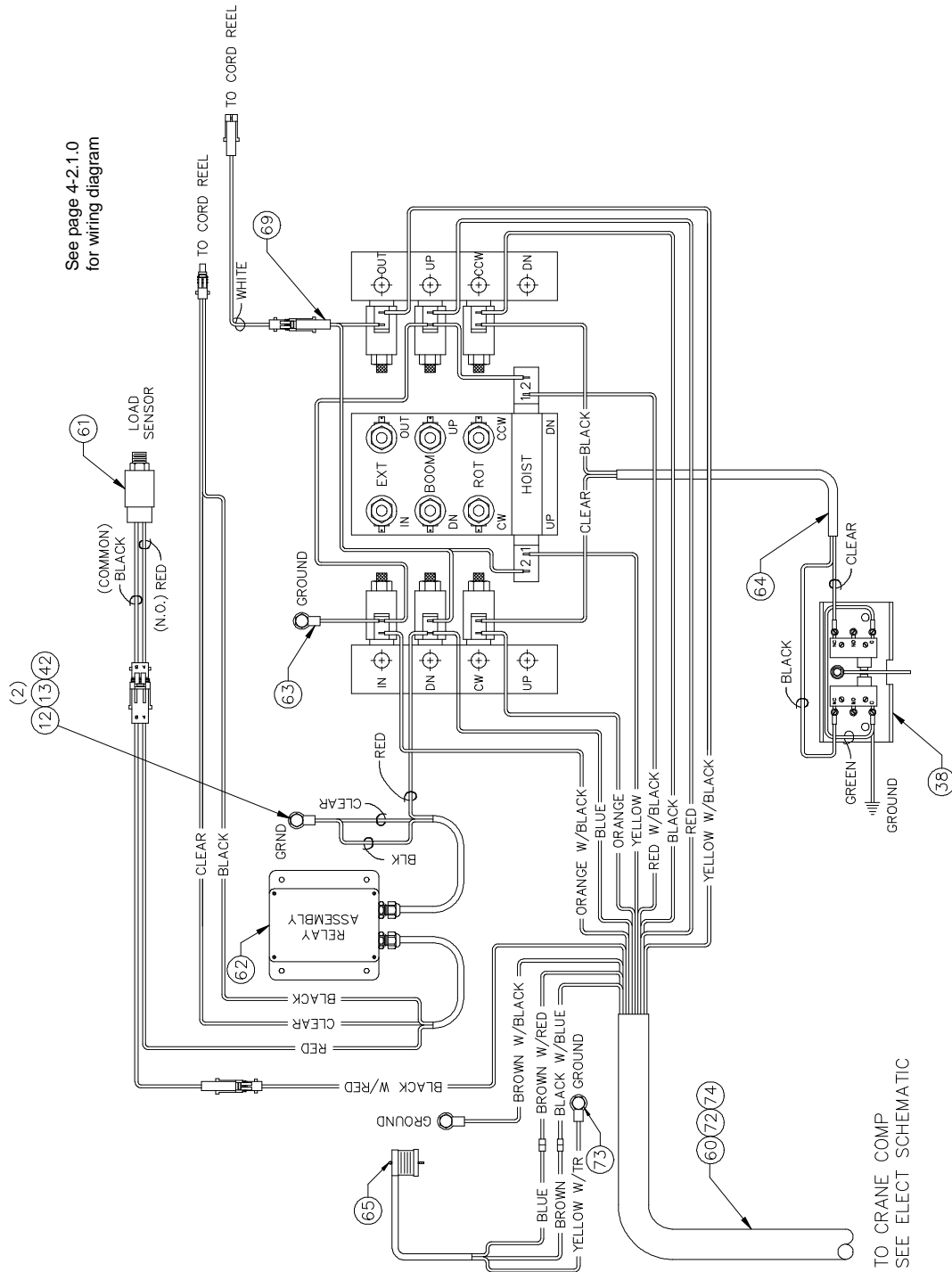


PEDESTAL ASSEMBLY
P/N 454140 for 9006 SERIES



PEDESTAL ASSEMBLY

P/N 454140 for 9006 SERIES



PEDESTAL ASSEMBLY

P/N 454140 for 9006 SERIES

| <u>ITEM</u> | <u>QUANTITY</u> | <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|-------------|-----------------|--------------------|---|
| 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. ³ /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 454140 for 9006 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

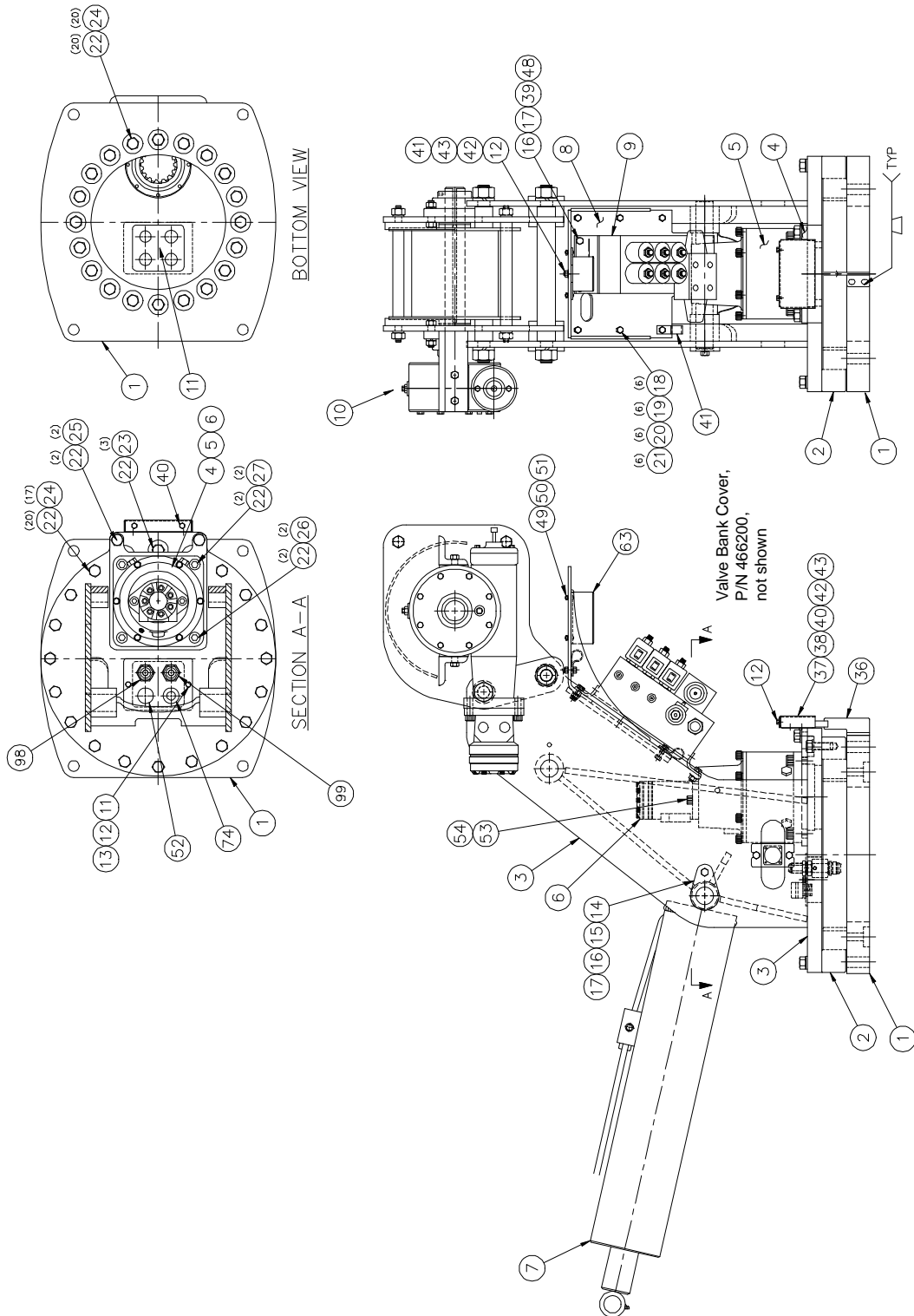
P/N 454140 for 9006 SERIES

| <u>ITEM</u> | <u>QUANTITY</u> | <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|--------------------|------------------------|---------------------------|---|
| 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 |

Note: 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.

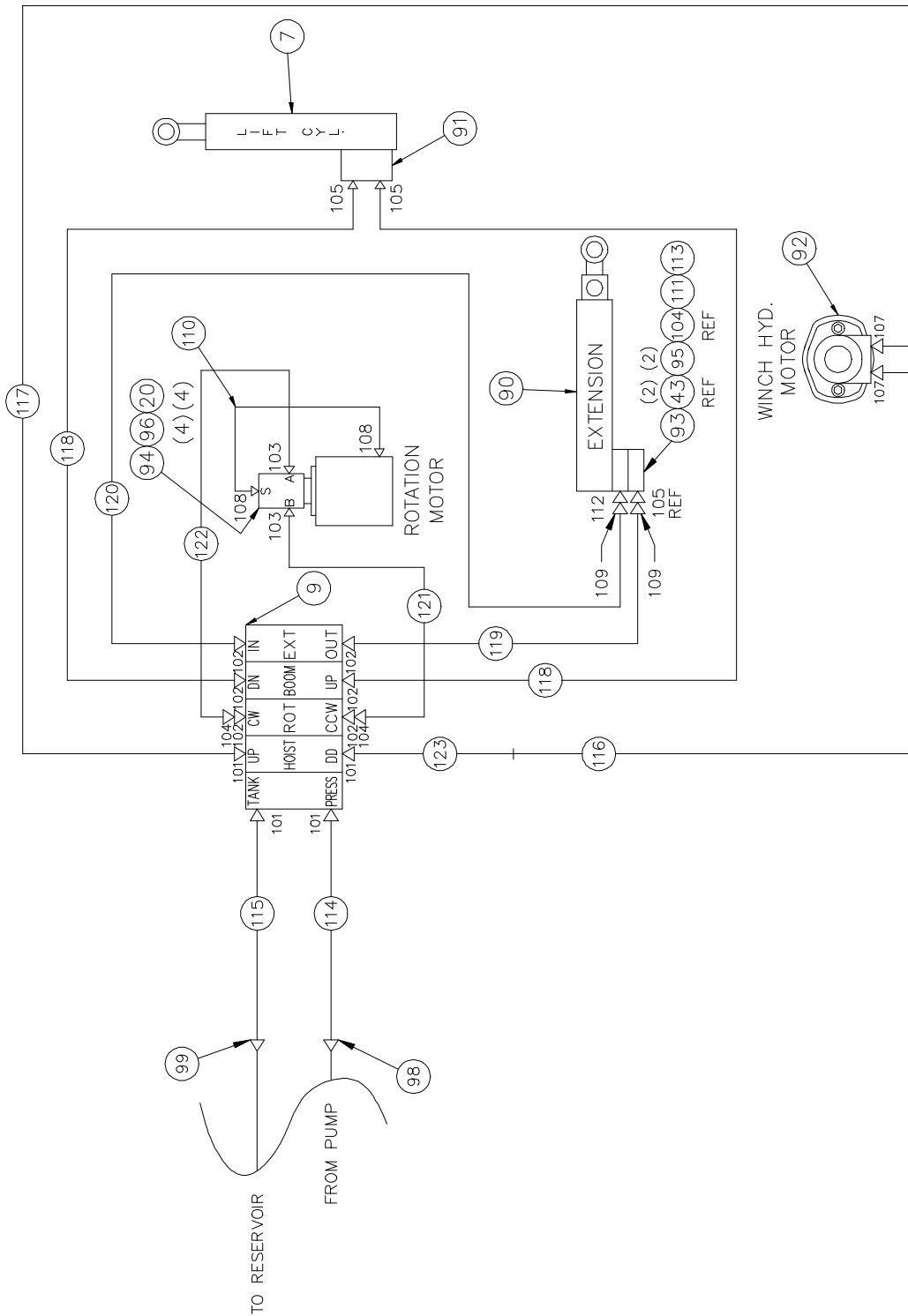
PEDESTAL ASSEMBLY

P/N 454150 for 9006 SERIES



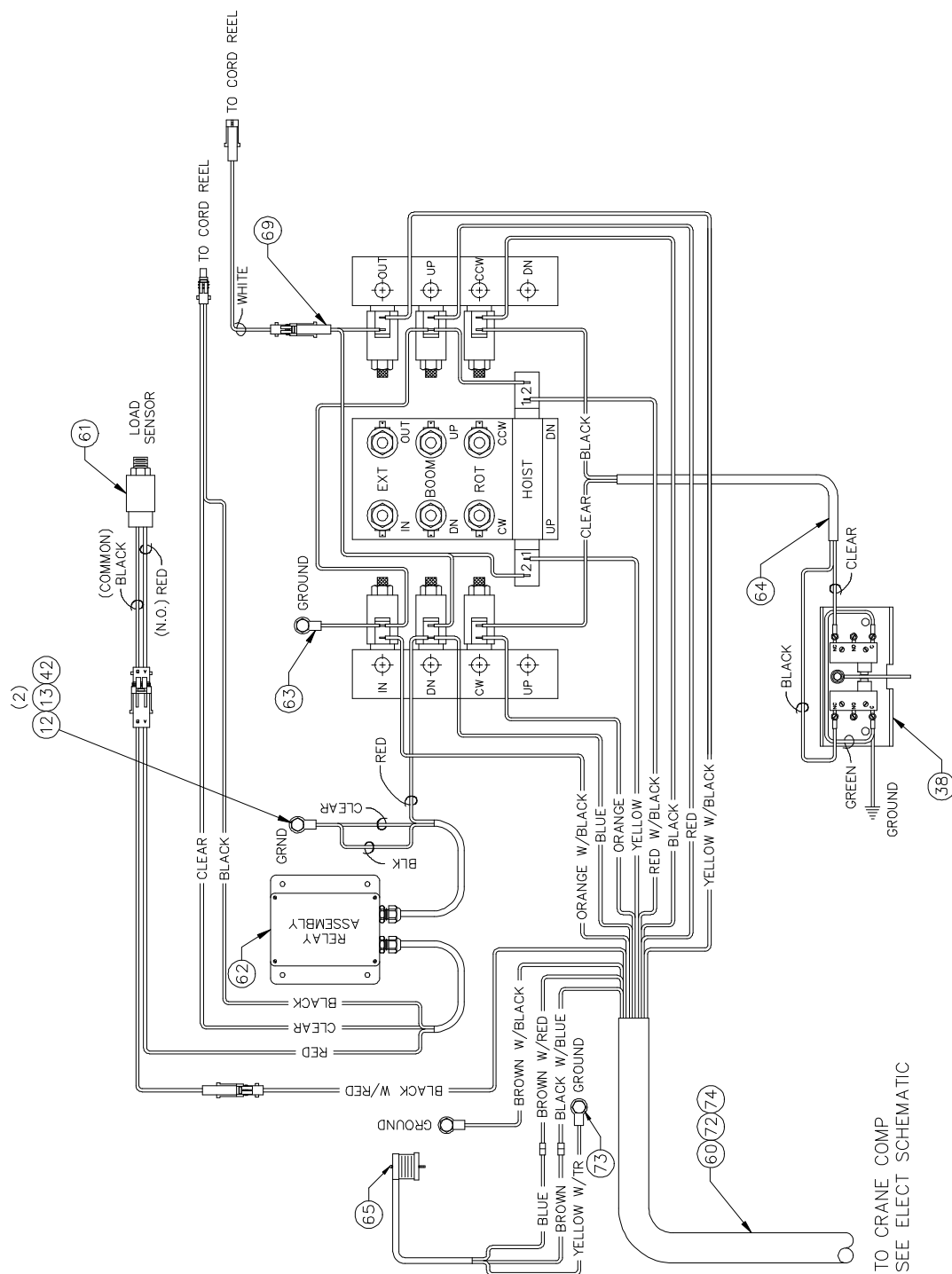
PEDESTAL ASSEMBLY

P/N 454150 for 9006 SERIES



PEDESTAL ASSEMBLY

P/N 454150 for 9006 SERIES



PEDESTAL ASSEMBLY

P/N 454150 for 9006 SERIES

| <u>ITEM</u> | <u>QUANTITY</u> | <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|--------------------|------------------------|---------------------------|---|
| 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. ³ /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 454150 for 9006 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

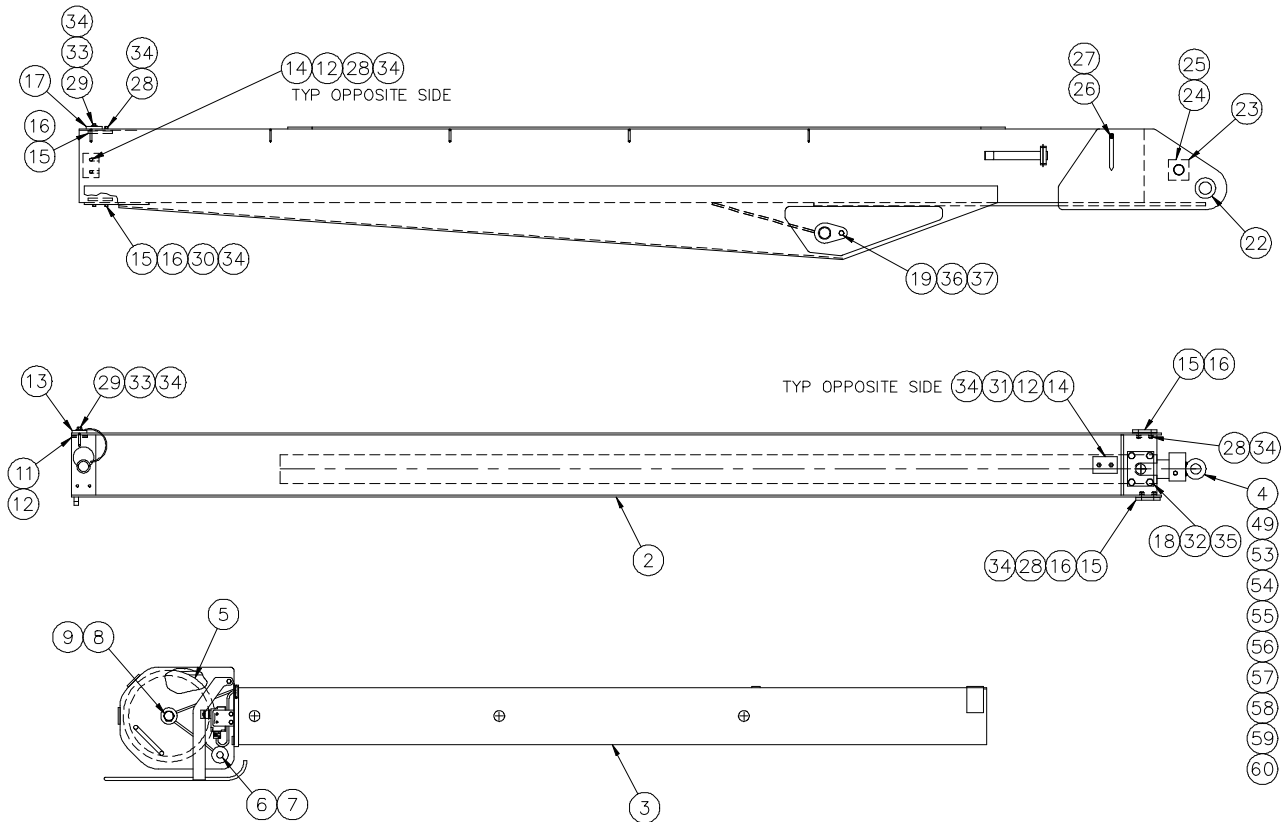
P/N 454150 for 9006 SERIES

| <u>ITEM</u> | <u>QUANTITY</u> | <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|--------------------|------------------------|---------------------------|---|
| 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 |

Note: 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.

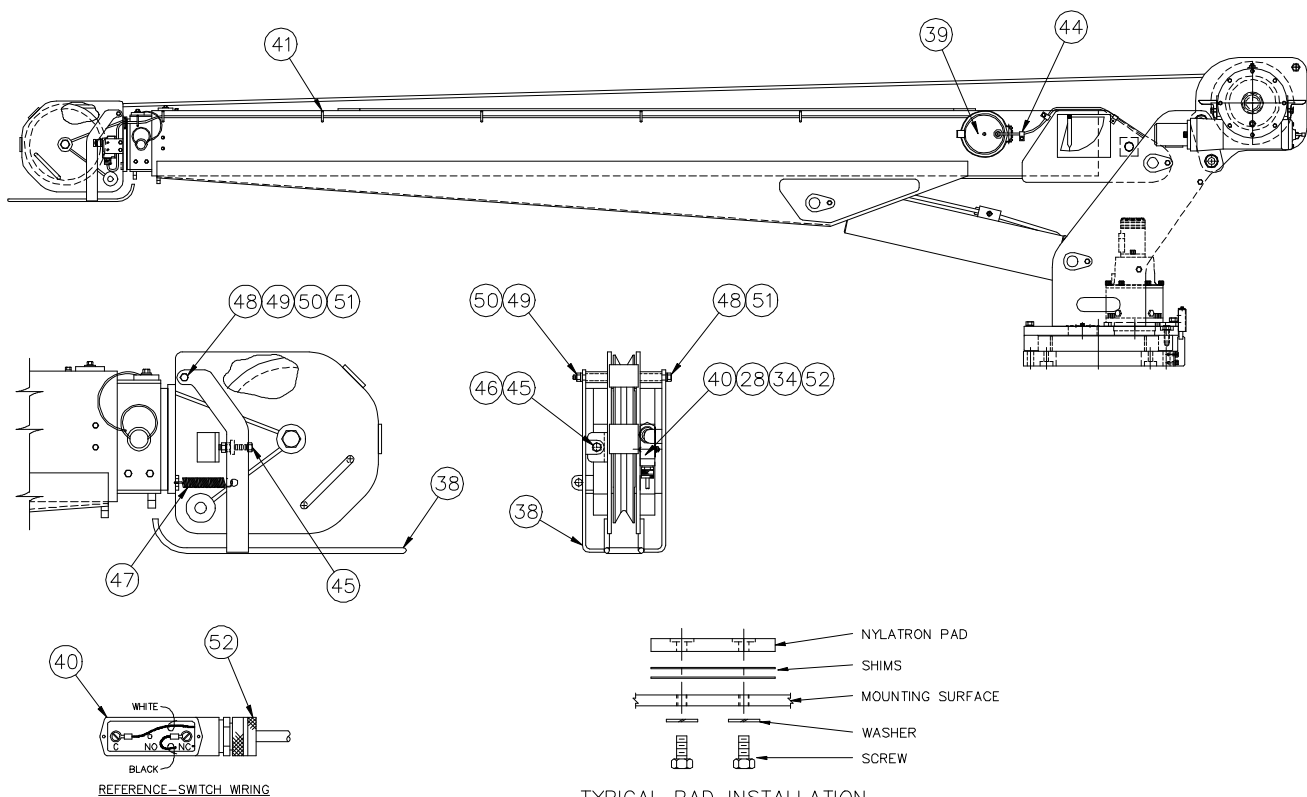
BOOM ASSEMBLY

P/N 454120 - 9006 SERIES



BOOM ASSEMBLY

P/N 454120 - 9006 SERIES



BOOM ASSEMBLY

P/N 454120 - 9006 SERIES

| ITEM | QTY | P/N | DESCRIPTION |
|------|-----|------------|---|
| 1 | 1 | 454100 | LOWER BOOM |
| 2 | 1 | 454110 | POWER BOOM |
| 3 | 1 | 466116 | MANUAL BOOM |
| 4 | 1 | 480015 | 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 |
| 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 ¼ 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 | REEL CORD ASSEMBLY |
| 40 | 1 | 466243 | 2-BLOCK SWITCH ASSEMBLY |

BOOM ASSEMBLY

P/N 454120 - 9006 SERIES

| ITEM | QTY | P/N | DESCRIPTION |
|------|-----|--------|---|
| 41 | 7 | REF | D-RING |
| 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 5/16UNC |
| 51 | 2 | 020901 | FLAT WASHER 5/16 |
| 52 | 1 | 642918 | CORD CONNECTOR |
| 53 | 1 | 330412 | EXTENSION CYLINDER COUNTERBALANCE VALVE |
| 54 | 2 | 020200 | LOCK WASHER 1/4 |
| 55 | 2 | 005810 | CAPSCREW 1/4 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

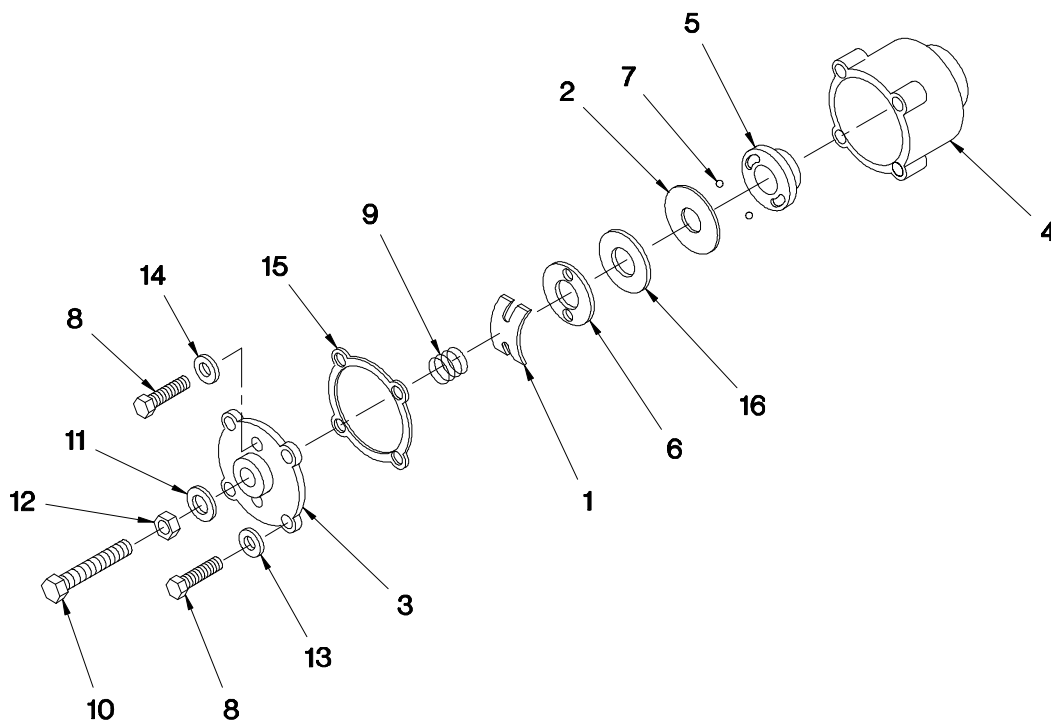
(OIL COOLED) HOIST

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

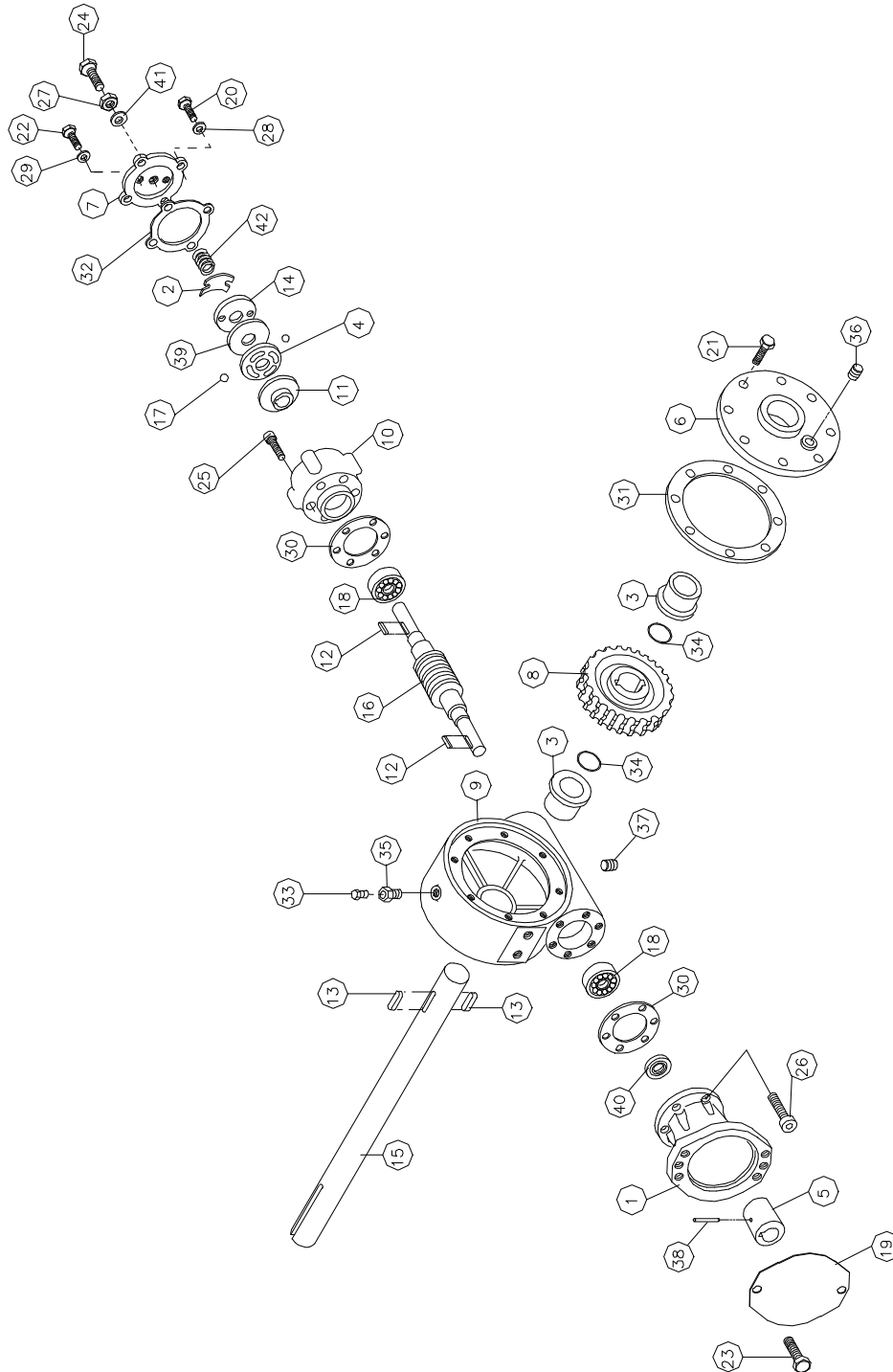
(OIL COOLED) HOIST



| <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 UNC x 1 |
| 9 | 1 | 360368 | COIL SPRING |
| 10 | 1 | 360456 | CAPSCREW 3/8 UNC x 1 1/2 |
| 11 | 1 | 360371 | THREAD SEAL |
| 12 | 1 | 360353 | JAM NUT 3/8 UNC |
| 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 454135 - MODEL 9006



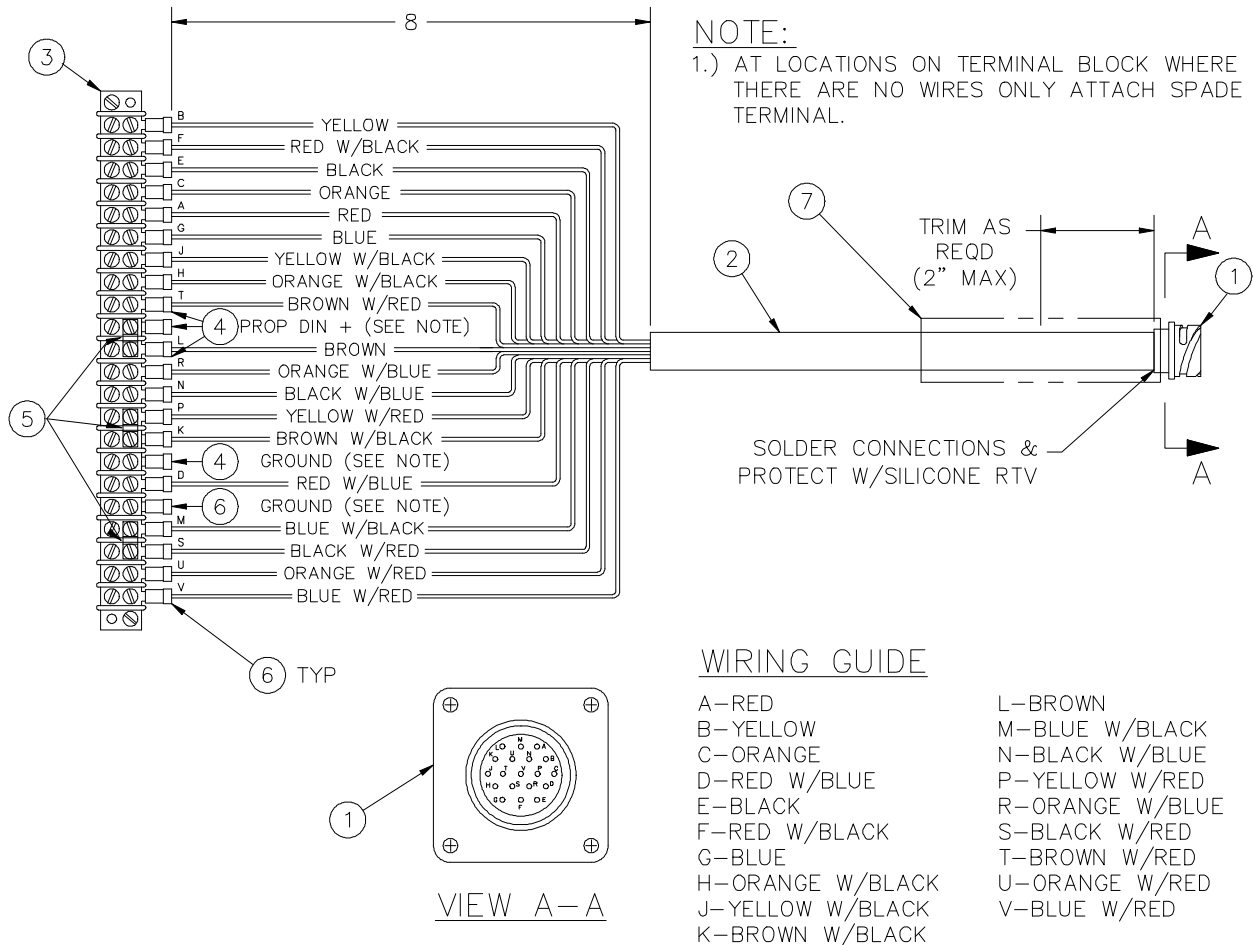
HOIST ACTUATOR

P/N 454135 - MODEL 9006

| <u>ITEM</u> | <u>QUANTITY</u> | <u>PART NUMBER</u> | <u>DESCRIPTION</u> |
|--------------------|------------------------|---------------------------|---|
| 1 | 1 | 466175001 | MOTOR ADAPTER |
| 2 | 1 | 466175002 | FLAT SPRING |
| 3 | 2 | 466175003 | BUSHING |
| 4 | 1 | 466175004 | WORM BRAKE CAM PLATE |
| 5 | 1 | 466175005 | COUPLING |
| 6 | 1 | 466175006 | GEAR HOUSING COVER |
| 7 | 1 | 466175007 | BRAKE COVER |
| 8 | 1 | 466175008 | RIGHT HAND GEAR |
| 9 | 1 | 466175009 | GEAR HOUSING |
| 10 | 1 | 466175010 | BRAKE HOUSING |
| 11 | 1 | 466175011 | BRAKE HUB |
| 12 | 2 | 466175012 | WORM ROUND END KEY |
| 13 | 2 | 466175013 | PRIMARY ROUND END KEY |
| 14 | 1 | 466175014 | BRAKE RETAINER PLATE |
| 15 | 1 | 466175015 | OUTPUT SHAFT |
| 16 | 1 | 466175016 | RIGHT HAND WORM |
| 17 | 2 | 466175017 | BALL |
| 18 | 2 | 466175018 | BALL BEARING |
| 19 | 1 | 466175019 | HYDRAULIC ADAPTER COVER |
| 20 | 4 | 466175020 | CAPSCREW 5/16-18 UNC X 1 |
| 21 | 8 | 466175021 | CAPSCREW 5/16-18 UNC X ¾ HEAVY/ PATCH NYLON |
| 22 | 2 | 466175022 | CAPSCREW 3/8-24 UNF X 1 ALL THREAD |
| 23 | 2 | 466175023 | CAPSCREW 1/2-13 UNC X 1 ¾ LOW CARBON |
| 24 | 1 | 466175024 | CAPSCREW 1/2-20 UNF X ¾ ALL THREAD |
| 25 | 6 | 466175025 | SOCKET HEAD SCREW 5/16-18 UNC X 1 HEAD |
| 26 | 6 | 466175026 | SOCKET HEAD SCREW 5/16-18 UNC X 1 ¼ LOK-WELL |
| 27 | 1 | 466175027 | JAM NUT 1/2-20 UNF |
| 28 | 4 | 466175028 | MEDIUM SECTION ZINC PLATED LOCK WASHER 5/16 |
| 29 | 2 | 466175029 | ALUMINUM FLAT WASHER 3/8 I.D. X 5/8 O.D. X 1/16 |
| 30 | 2 | 466175030 | BRAKE HOUSING GASKET |
| 31 | 1 | 466175031 | GEAR COVER GASKET |
| 32 | 1 | 466175032 | BRAKE HOUSING COVER GASKET |
| 33 | 1 | 466175033 | RELIEF FITTING |
| 34 | 2 | 466175034 | QUAD RING |
| 35 | 1 | 466175035 | REDUCER |
| 36 | 1 | 466175036 | GEAR HOUSING FILL SQUARE HEAD PIPE PLUG |
| 37 | 1 | 466175037 | GEAR HOUSING DRAW SQUARE HEAD PIPE PLUG |
| 38 | 1 | 466175038 | ROLL PIN |
| 39 | 1 | 466175039 | THRUST PLATE |
| 40 | 1 | 466175040 | OIL SEAL |
| 41 | 1 | 466175041 | THREAD SEAL |
| 42 | 1 | 466175042 | SPRING |
| 43 | 1 | 466175043 | VENT PLUG COVER |

PENDANT RECEPTACLE ASSEMBLY IC

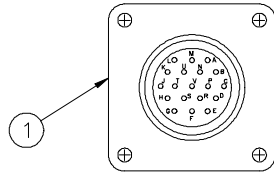
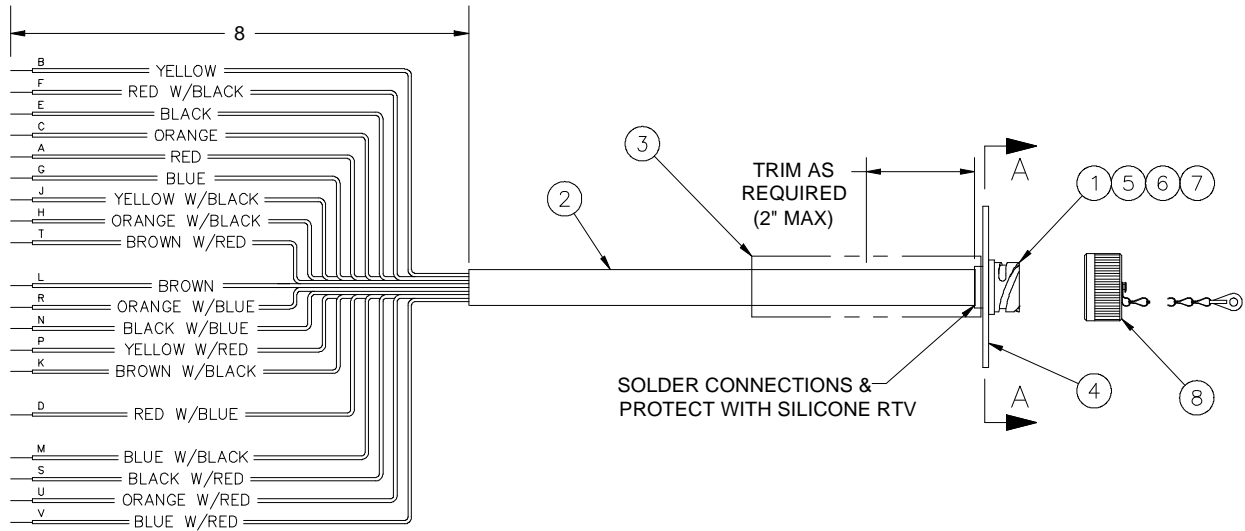
P/N 466254 - MODEL 9006



| 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 |

PENDANT RECEPTACLE ASSEMBLY IC

P/N 466255 - MODEL 9006



VIEW A-A

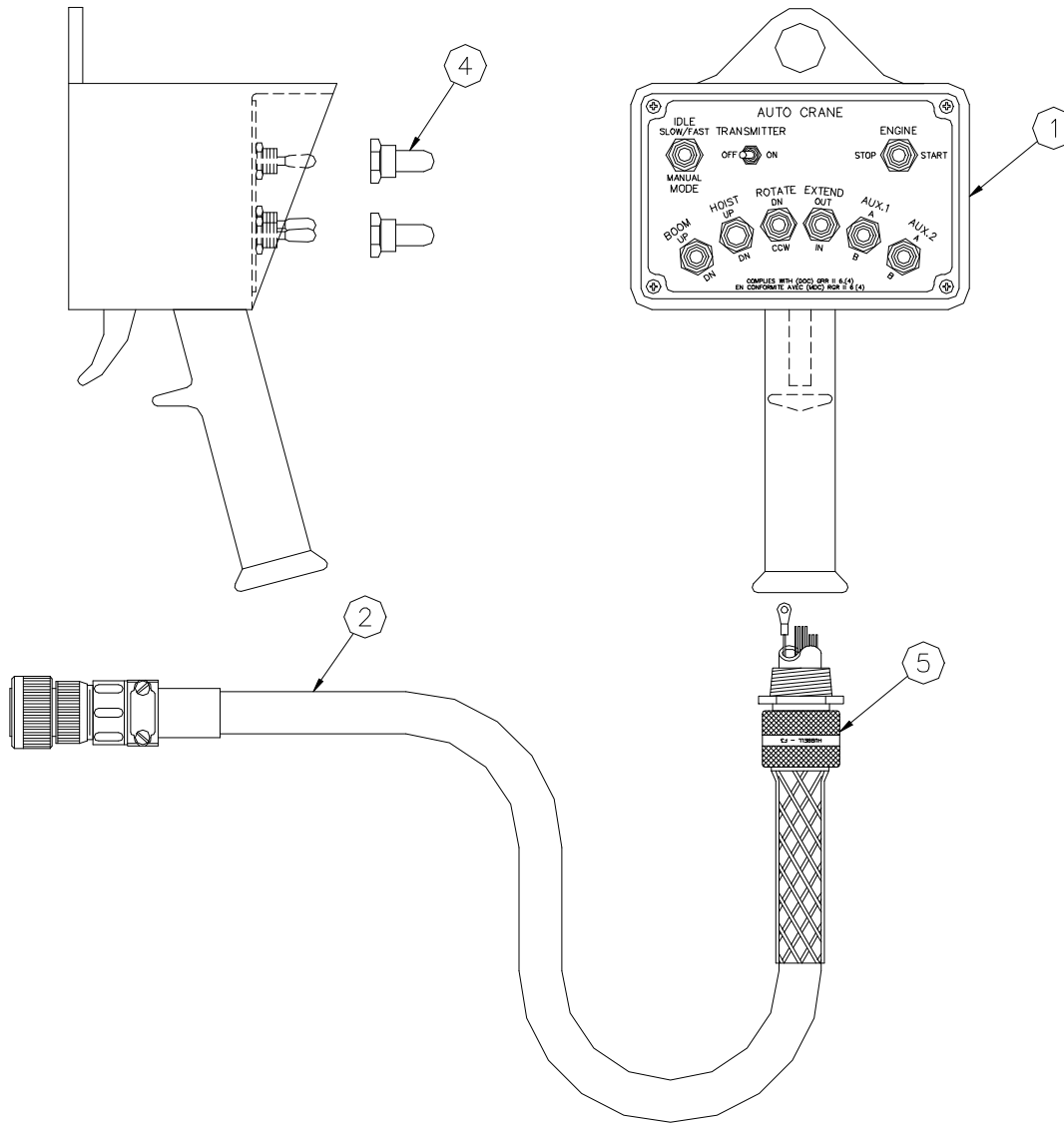
WIRING GUIDE

| | |
|------------------|-----------------|
| 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 | |

| ITEM | QUANTITY | PART NUMBER | DESCRIPTION |
|------|----------|-------------|--|
| 1 | 1 | 366095 | 22 STATION/19 PIN FEMALE RECEPTACLE (BAYONET |
| 2 | 4.5 ft | 480459 | 16/19 COLD WEATHER CABLE PENDANT |
| 3 | .3 ft | 490243 | HEAT SHRINK TUBING |
| 4 | 1 | 466252 | PENDANT RECEPTACLE BRACKET |
| 5 | 4 | 000404 | ROUND HEAD SCREW #6-32 X 5/8 |
| 6 | 4 | 019600 | LOCK WASHER #6 |
| 7 | 4 | 015400 | NUT #6-32 |
| 8 | 1 | 366097 | BAYONET CAP |

PROPORTIONAL PENDANT CABLE ASSEMBLY

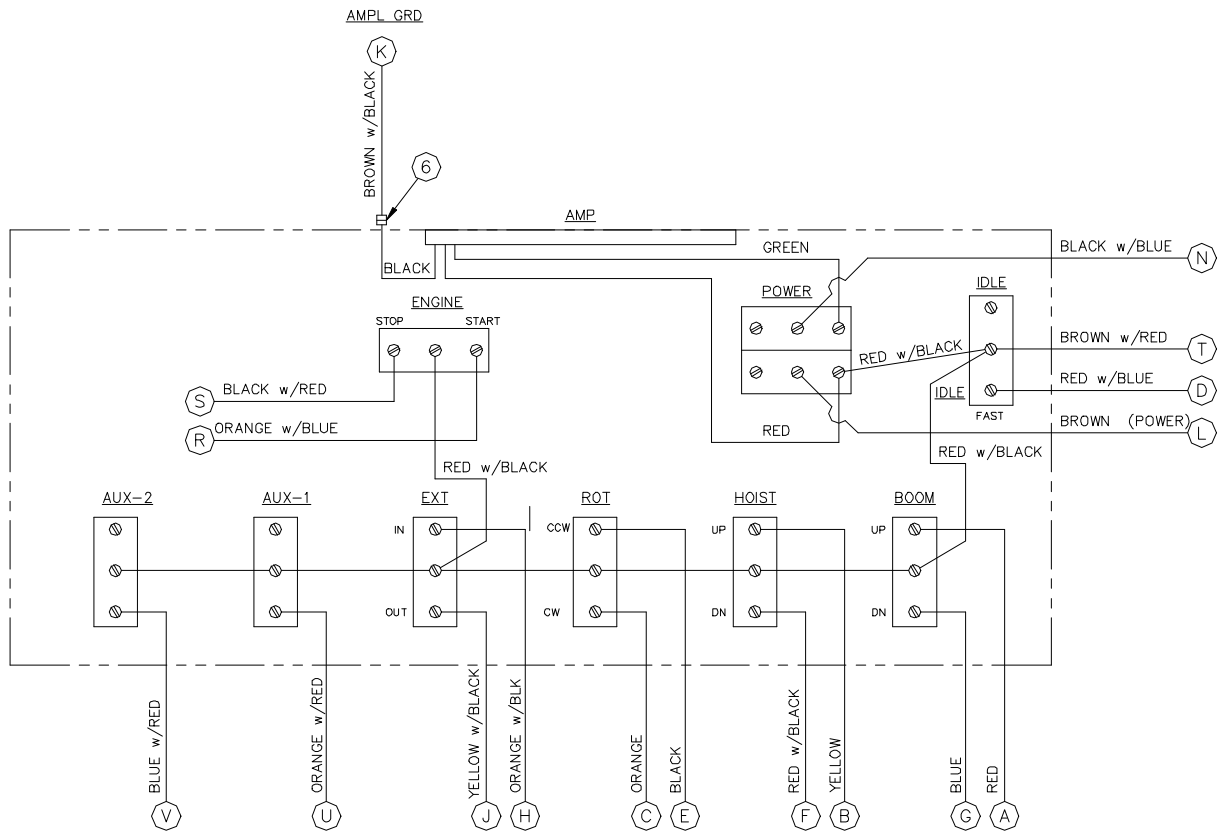
P/N 680128 - MODEL 9006



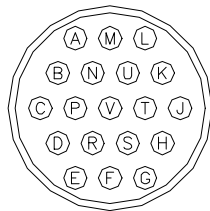
| ITEM | QUANTITY | PART NUMBER | DESCRIPTION |
|------|----------|-------------|--|
| 1 | 1 | 466192 | 22 STATION 16 FUNCTION PENDANT HEAD WITH AMP |
| 2 | 1 | 680129 | BAYONET CABLE ASSEMBLY (COLD WEATHER) |
| 3 | 2 | 750737 | CABLE TIE |
| 4 | 7 | 640300 | TOGGLE BOOT |
| 5 | 1 | 480567 | HUBBEL CONNECTOR CORD GRIP |
| 6 | 1 | 001104 | BUTT CONNECTOR |

PROPORTIONAL PENDANT CABLE ASSEMBLY

P/N 680128 - MODEL 9006



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:

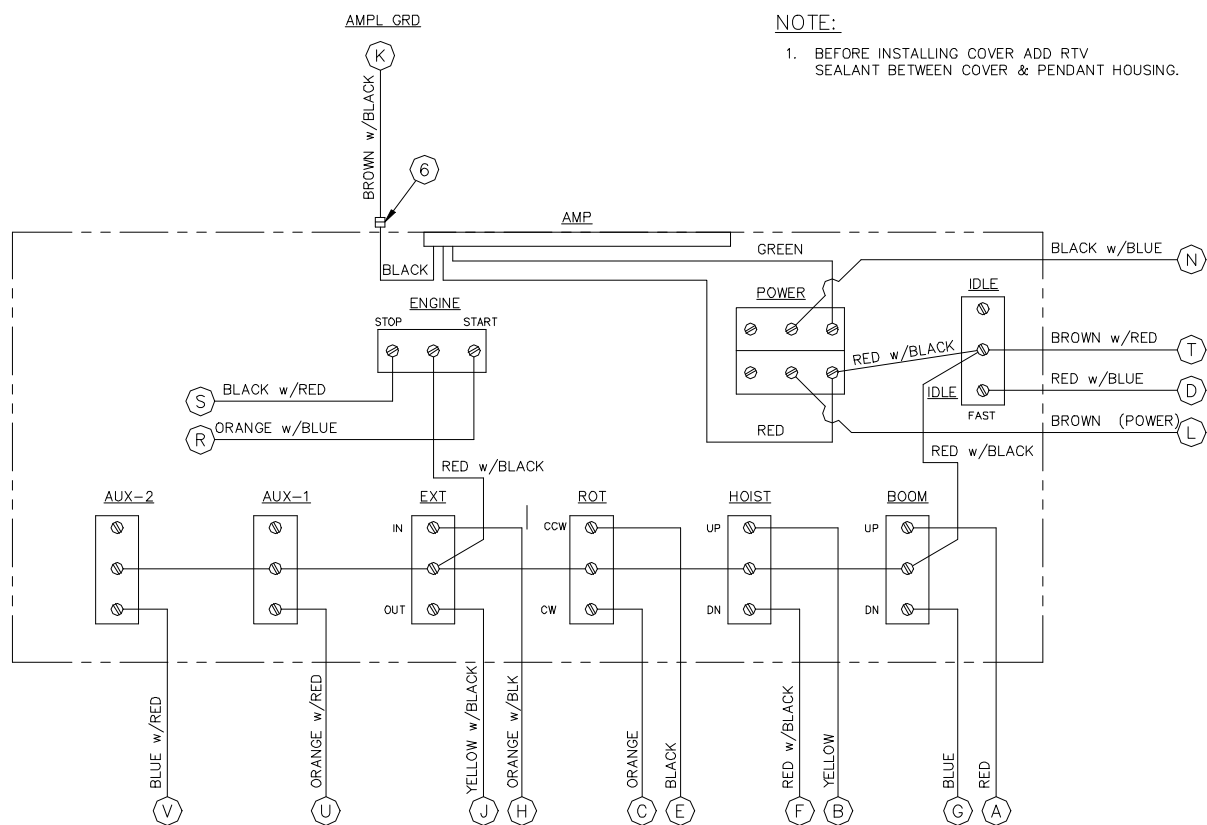
1. TIE OFF THE FOLLOWING UNUSED CONDUCTORS WITH THE CABLE TIE (ITEM #3) INSIDE THE PENDANT:

M - BLUE WITH BLACK

P - YELLOW WITH RED

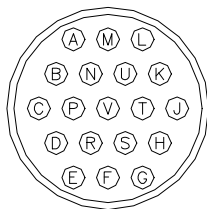
2. BEFORE INSTALLING THE COVER, ADD RTV SEALANT BETWEEN THE COVER AND THE PENDANT HOUSING.

P/N 680128 - MODEL 9006



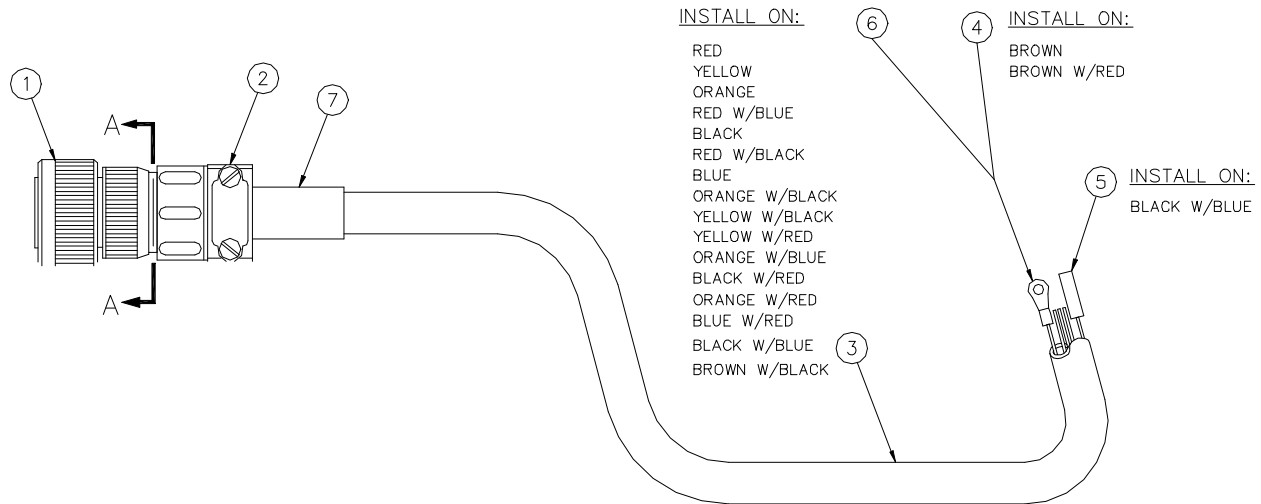
WIRING GUIDE

| | |
|------------------|-----------------|
| 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 | |

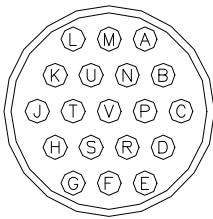


COLD WEATHER PENDANT CABLE ASSEMBLY

P/N 680129 - MODEL 9006



WIRING GUIDE



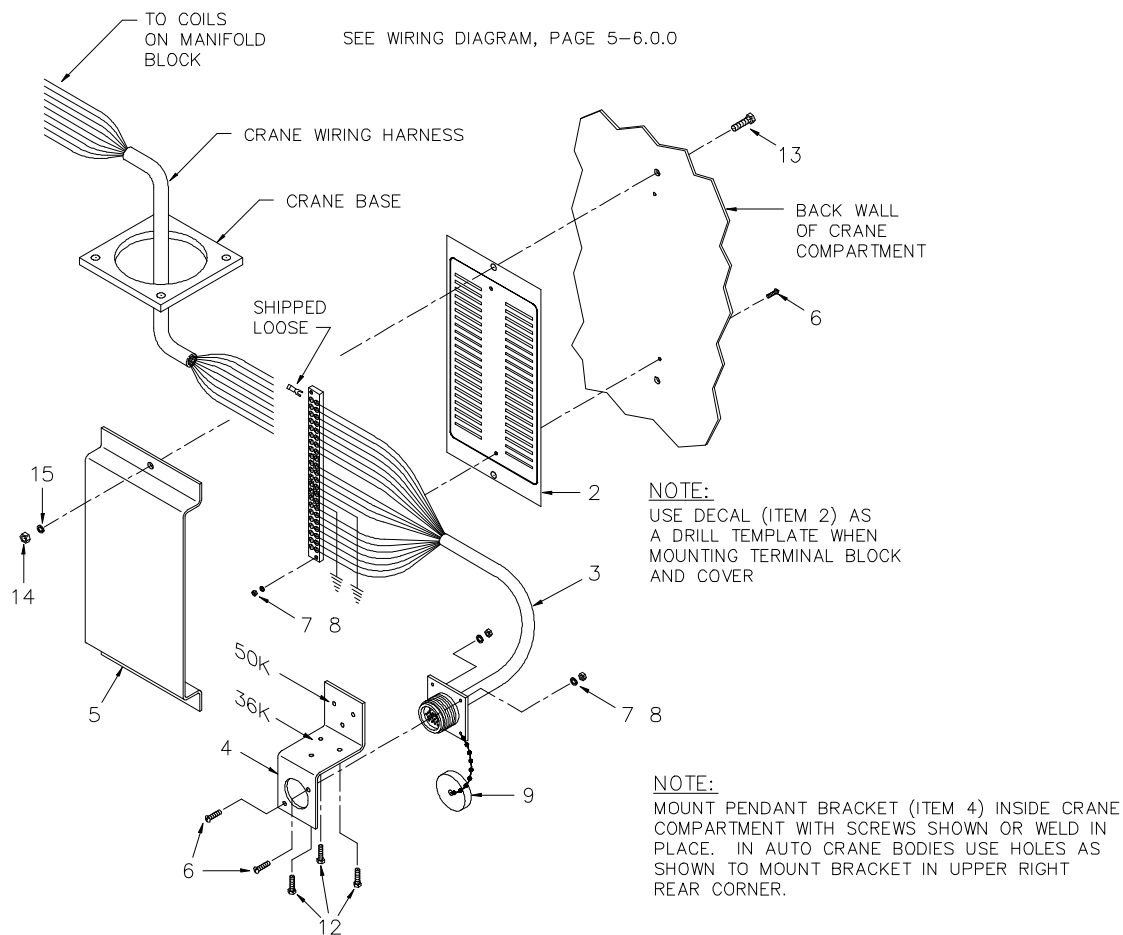
| | |
|------------|------------------|
| BOOM UP | A-RED |
| HOIST UP | B-YELLOW |
| ROT CW | C-ORANGE |
| FAST IDLE | D-RED W/BLUE |
| ROT CCW | E-BLACK |
| HOIST DOWN | F-RED W/BLACK |
| BM DOWN | G-BLUE |
| EXT IN | H-ORANGE W/BLACK |
| EXT OUT | J-YELLOW W/BLACK |
| AMPL GRD | K-BROWN W/BLACK |

| | |
|------------|-----------------|
| 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 | QUANTITY | PART NUMBER | 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 PENDANT INSTALLATION

9006 SERIES



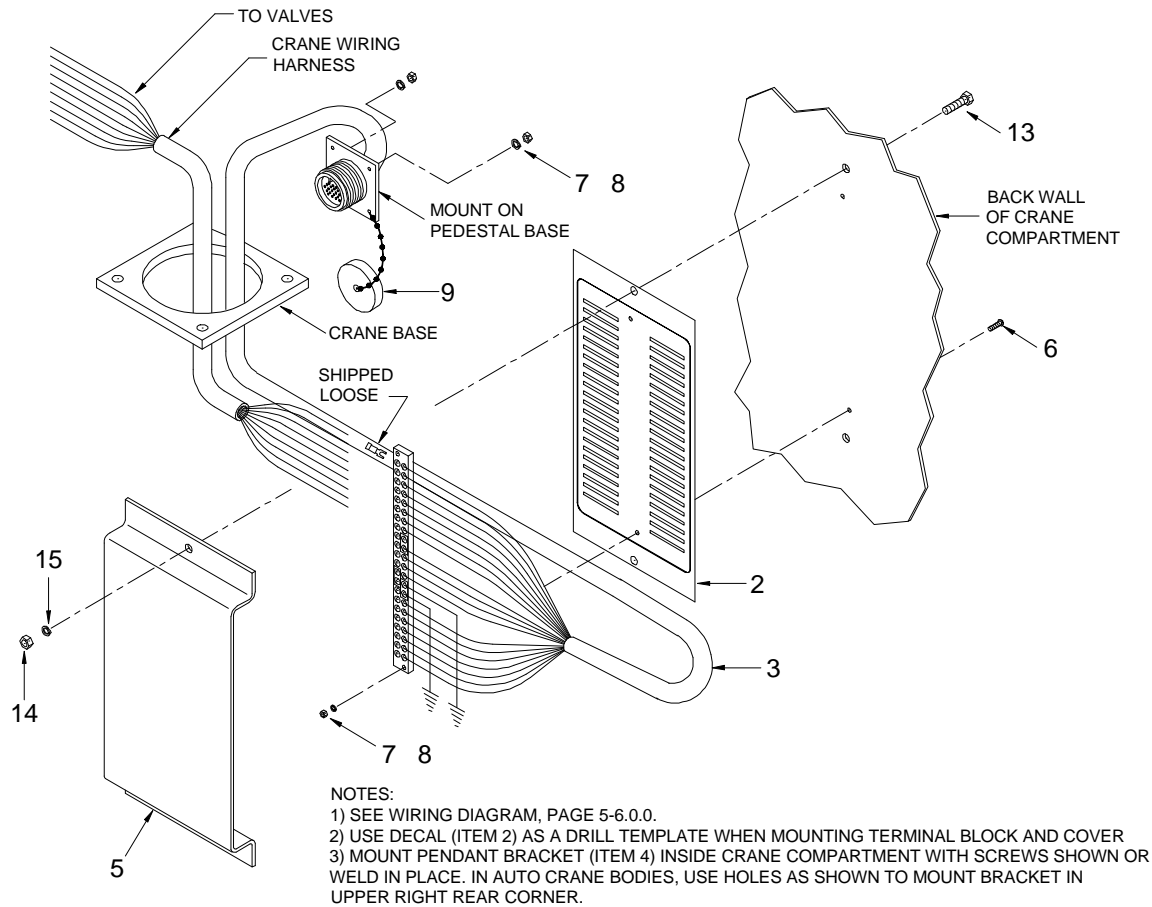
| ITEM | QUANTITY | PART NUMBER | DESCRIPTION |
|------|----------|-------------|--|
| 2 | 1 | 466253 | 22 STATION TERMINAL BLOCK DECAL |
| 3 | 1 | 466254 | PENDANT RECEPTACLE ASSEMBLY |
| 4 | 1 | 480626 | PENDANT BRACKET |
| 5 | 1 | 480493 | 22 STATION TERMINAL BLOCK COVER |
| 6 | 4 | 000404 | ROUND HEAD SCREW #6-32 UNC x 5/8 |
| 7 | 4 | 015400 | HEX NUT #6-32 UNC |
| 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 7in. |
| 12 | 3 | 330038 | SELF TAPPING CAPSCREW #10-24 UNC x 3/4 |
| 13 | 2 | 005500 | CAPSCREW 1/4-20 UNC x 3/4 Gr 5 |
| 14 | 2 | 015900 | HEX NUT 1/4-20 UNC |
| 15 | 2 | 020200 | LOCK WASHER 1/4 |

Note: Item Number not used: 1.

IN-COMPARTMENT PENDANT INSTALLATION
9006 SERIES

CRANE MOUNTED PENDANT INSTALLATION

9006 SERIES



| ITEM | QUANTITY | PART NUMBER | DESCRIPTION |
|------|----------|-------------|-------------------------------------|
| 2 | 1 | 466253 | 22 STATION TERMINAL BLOCK DECAL |
| 3 | 1 | 466255 | PENDANT RECEPTACLE ASSEMBLY |
| 5 | 1 | 480493 | 22 STATION TERMINAL BLOCK COVER |
| 6 | 2 | 000404 | ROUND HEAD SCREW #6-32 UNC x 5/8 |
| 7 | 2 | 015400 | HEX NUT #6-32 UNC |
| 8 | 2 | 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 7in. |
| 12 | 3 | 330038 | SELF TAPPING CAPSCREW #10 UNC x 3/4 |
| 13 | 2 | 005500 | CAPSCREW 1/4 UNC x 3/4 Gr 5 |
| 14 | 2 | 015900 | HEX NUT 1/4 UNC |
| 15 | 2 | 020200 | LOCK WASHER 1/4 |

Note: Item Numbers not used: 1, 4.

[illegible]

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.

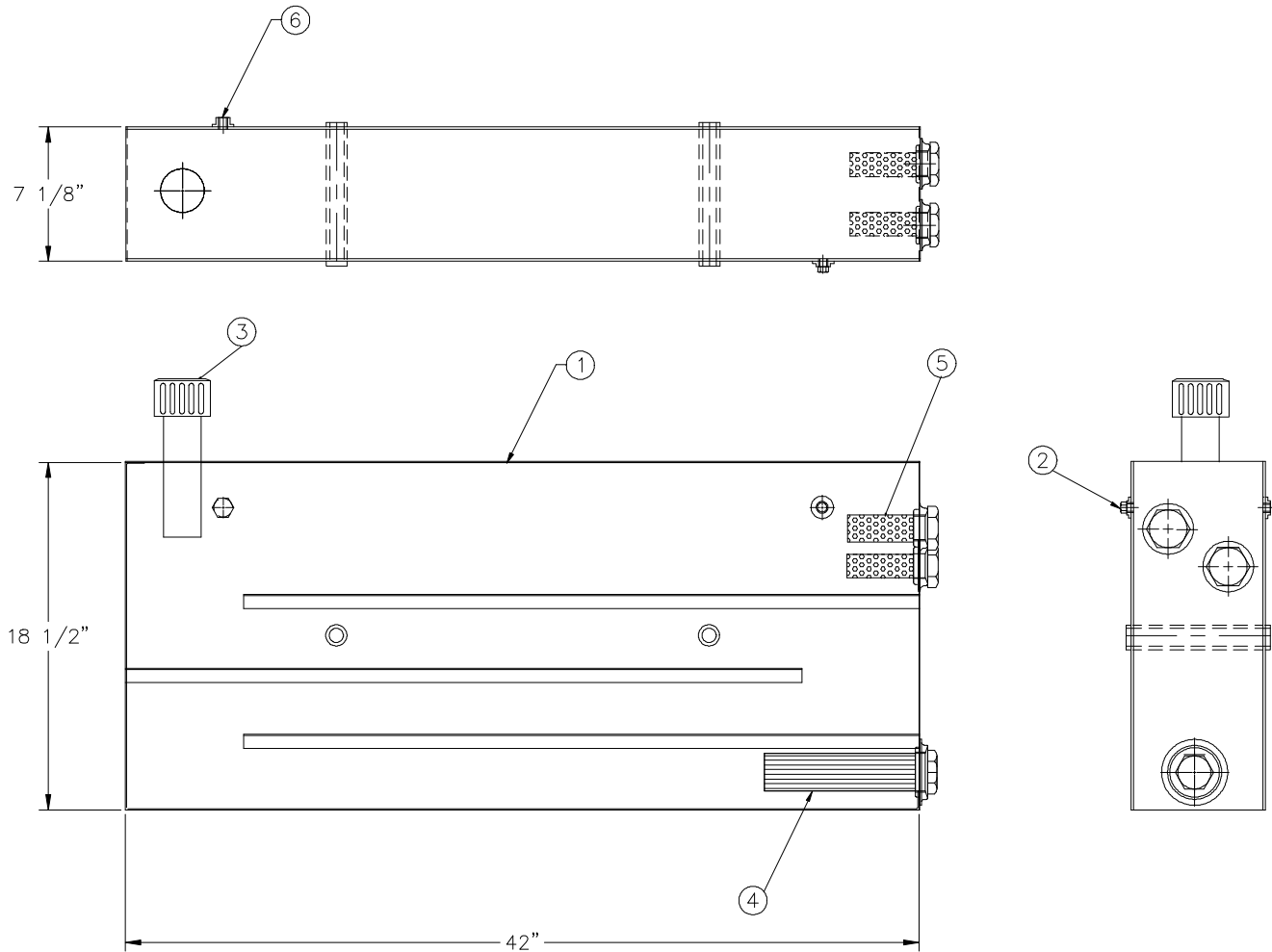
| 9006H & 11006H MASTER WIRING SCHEDULE | | | | | | | | | |
|---------------------------------------|-----------------|---------------|----------|-----------------------------|-----------|---------------------------------|-----------------|---|-------------------------|
| CRANE P/N 468004 & HARNESS P/N 466106 | FUNCTION | COLOR CODE | TERMINAL | HARNESS P/N 466255 & 466254 | CHCTR P/N | PENDANT (P/N 460129) P/N 466125 | NOTES | FM RECEIVER HARNESS (P/N 610048) P/N 610048 | RECEIVER TERMINAL NOTES |
| | HOIST UP | YELLOW | 1 | YELLOW | B | YELLOW | HOIST UP | YELLOW | 14 |
| | HOIST DOWN | RED W/BLK | 2 | RED W/BLK | F | RED W/BLK | HOIST DOWN | RED W/BLK | 13 |
| | ROT CCW | BLACK | 3 | BLACK | E | BLACK | ROT CCW | BLACK | 8 |
| | ROT CW | ORANGE | 4 | ORANGE | C | ORANGE | ROT CW | ORANGE | 7 |
| | BOOM UP | RED | 5 | RED | A | RED | BOOM UP | RED | 16 |
| | BOOM DOWN | BLUE | 6 | BLUE | G | BLUE | BOOM DOWN | BLUE | 15 |
| | EXT IN | YEL W/BLK | 7 | YEL W/BLK | J | YEL W/BLK | EXT IN | YEL W/BLK | 6 |
| | EXT OUT | ORG W/BLK | 8 | ORG W/BLK | H | ORG W/BLK | EXT OUT | ORG W/BLK | 5 |
| | PROP VALVE | BROWN W/RED | 9 | BROWN W/RED | T | BROWN W/RED | PROP VALVE | BROWN W/RED | 4 |
| | LOAD SENSOR | BLACK W/RED | 10 | BLACK W/RED | T | BROWN W/RED | LOAD SENSOR | BROWN W/RED | 4 |
| | POWER RELAY | BLACK (TRUCK) | 11 | BROWN | L | BROWN | POWER RELAY | BROWN | 4 |
| | START RELAY | ORG W/BLUE | 12 | ORG W/BLUE | R | ORG W/BLUE | START RELAY | ORG W/BLUE | 11 |
| | PROP VALVE | BLK W/BLUE | 13 | BLK W/BLUE | N | BLK W/BLUE | PROP VALVE | BLK W/BLUE | 11 |
| | GRND | YELLOW W/RED | 14 | YELLOW W/RED | P | NOT USED | GRND | YELLOW W/RED | GRND |
| | GRND | BROWN W/BLK | 15 | BROWN W/BLK | K | NOT USED | GRND | BROWN W/BLK | GRND |
| | IDLE FAST BLQ | ON TRUCK | 16 | RED W/BLUE | D | RED W/BLUE | IDLE FAST BLQ | RED W/BLUE | 1 |
| | EMERG STOP | (2) | 17 | BLUE W/BLACK | M | BLUE W/BLACK | EMERG STOP | BLUE W/BLACK | 12 |
| | STOP RELAY | ON TRUCK | 18 | BLK W/RED | S | BLK W/RED | STOP RELAY | BLK W/RED | 12 |
| | AUX 1A (ON/OFF) | ON TRUCK | 21 | ORG W/RED | U | ORG W/RED | AUX 1A (ON/OFF) | ORG W/RED | 3 |
| | AUX 2A (ON/OFF) | ON TRUCK | 22 | BLUE W/RED | V | BLUE W/RED | AUX 2A (ON/OFF) | BLUE W/RED | 9 |

USE V. U FOR AUXILIARY FUNCTIONS - A & 2A. USE SPST MAIN TAIN SWITCHES IN WIRED PENDANT.

989 WARS 5A54 REVISION D, 9/23/98

20 GALLON BULKHEAD RESERVOIR TANK

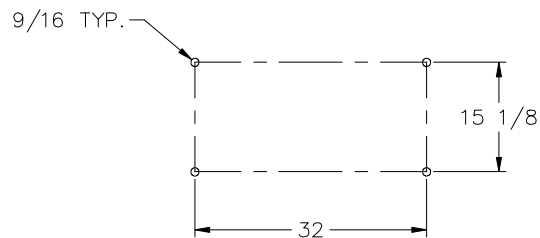
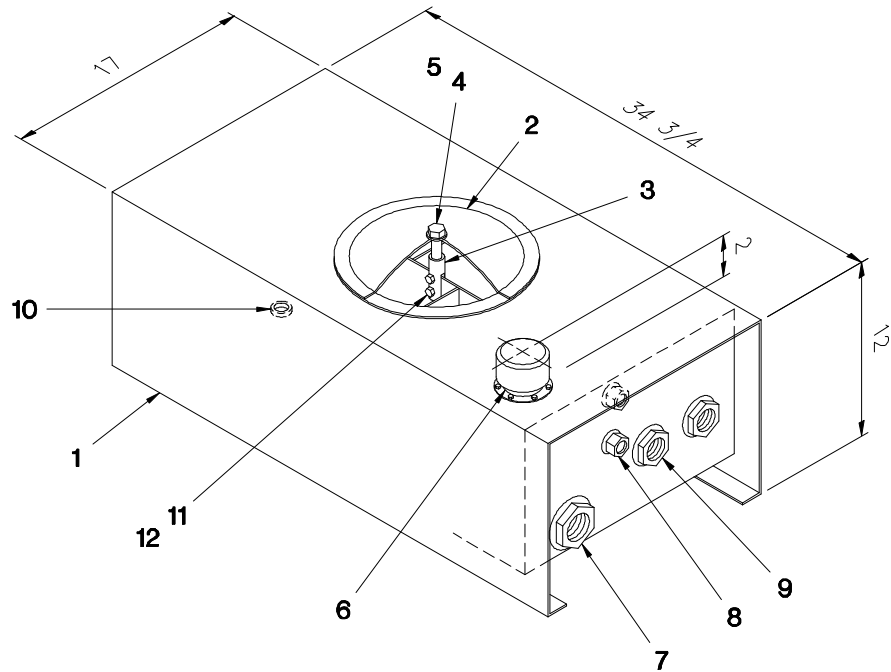
P/N 725550



| <u>ITEM</u> | <u>P/N</u> | <u>DESCRIPTION</u> |
|--------------------|-------------------|---------------------------|
| 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

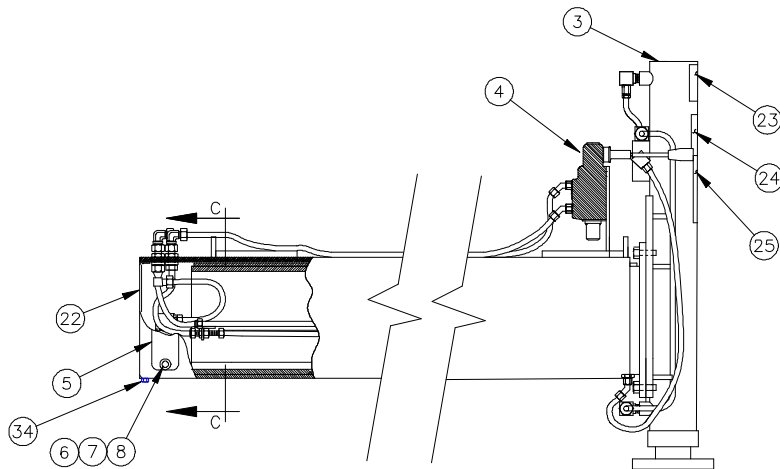
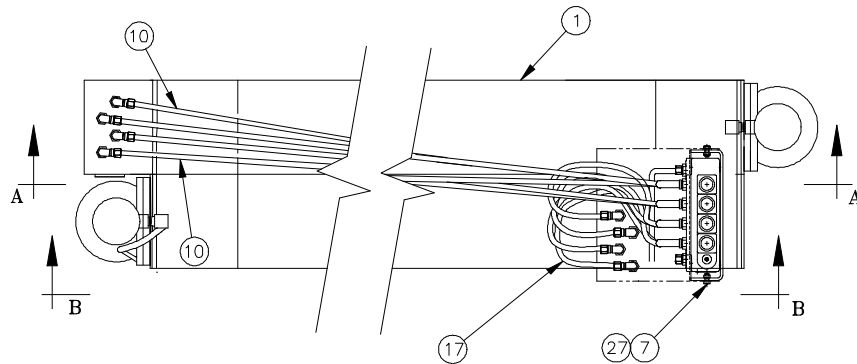


MOUNTING PATTERN

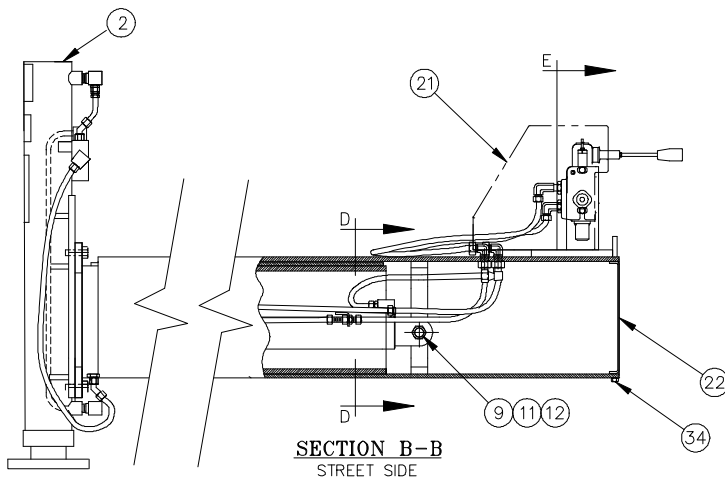
| ITEM | QTY | P/N | DESCRIPTION |
|------|-----|--------|-------------------------|
| 1 | 1 | 750691 | RESERVOIR WELDMENT |
| 2 | 1 | 750712 | COVER |
| 3 | 1 | 750709 | BAFFLE ADAPTER |
| 4 | 1 | 750716 | CRUSH WASHER |
| 5 | 1 | 750711 | END COVER BOLT |
| 6 | 1 | 360151 | FILLER ASSEMBLY |
| 7 | 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

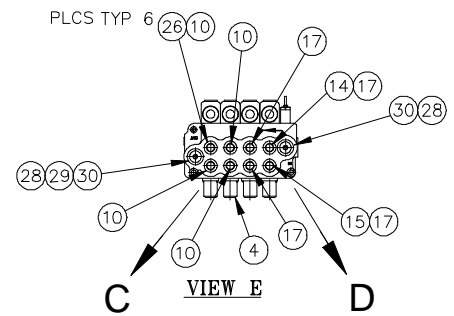
CURBSIDE CRANE - P/N 766081



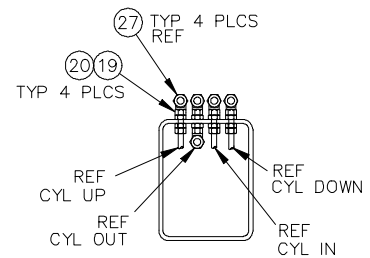
SECTION A-A
CURB SIDE



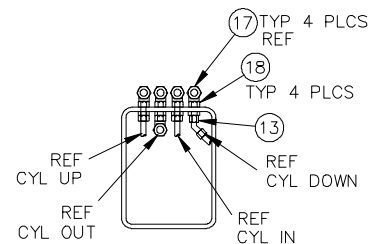
SECTION B-B
STREET SIDE



VIEW E



VIEW C
CURB SIDE



VIEW D
STREET SIDE

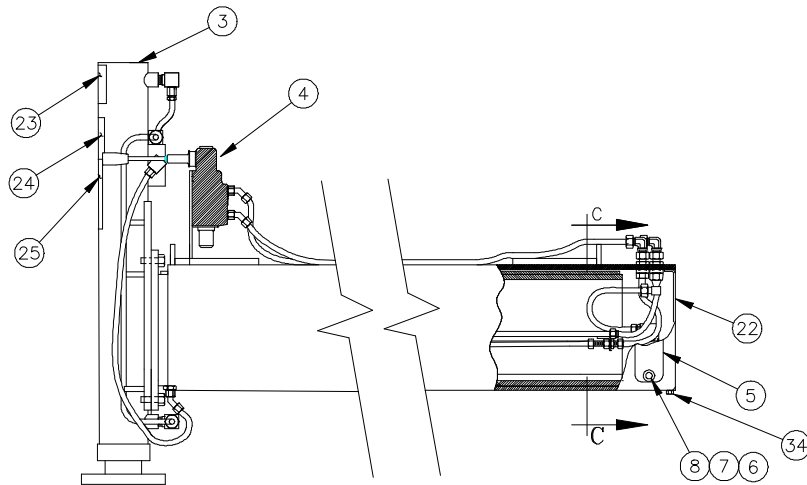
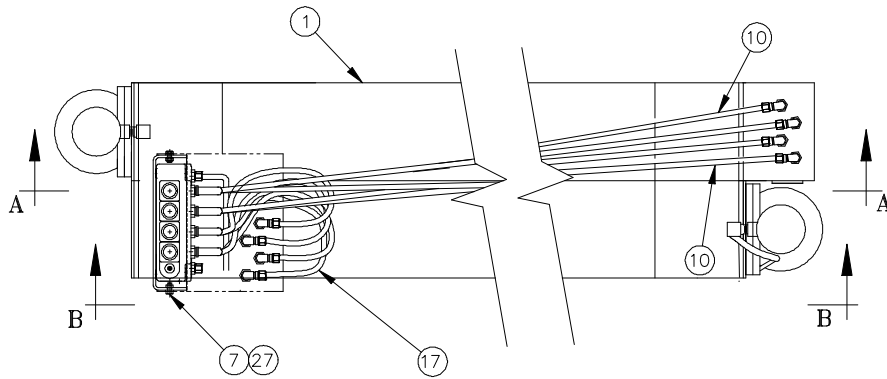
HYDRAULIC OUTRIGGERS

CURBSIDE CRANE - P/N 766081

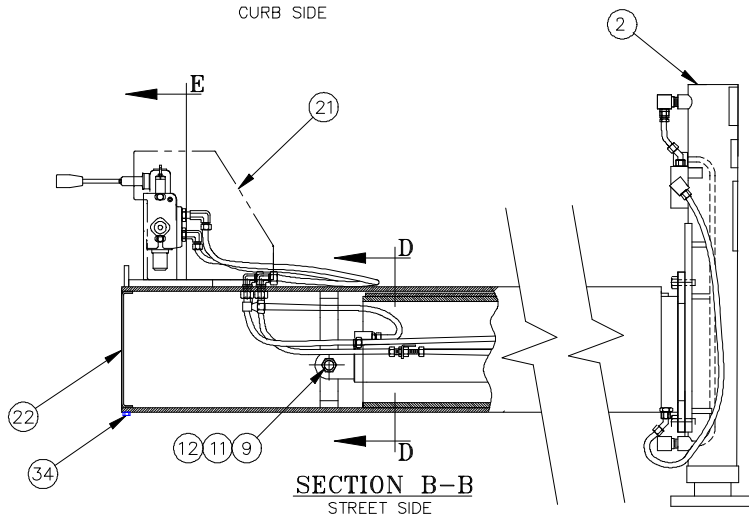
| <u>ITEM</u> | <u>QTY</u> | <u>P/N</u> | <u>DESCRIPTION</u> |
|--------------------|-------------------|-------------------|--|
| 1 | 1 | REF | BODY WELDMENT (766016) |
| 2 | 1 | 766174 | STREET SIDE SLIDE ASSEMBLY |
| 3 | 1 | 766173 | CURB SIDE SLIDE ASSEMBLY |
| 4 | 1 | 766172 | VALVE BANK |
| 5 | 1 | 766109 | TRUNNION MOUNT |
| 6 | 2 | 008300 | FLAT HEAD SCREW 3/8 x 1 |
| 7 | 4 | 021100 | LOCK WASHER 3/8 |
| 8 | 2 | 330372 | NUT 3/8 |
| 9 | 1 | 490171 | CAPSCREW 5/8UNC x 2 1/4 |
| 10 | 4 | 812026-081 | HOSE ASSEMBLY -6 (F)/-6 (F) |
| 11 | 3 | 021802 | FLAT WASHER 5/8 x 1 3/4 |
| 12 | 1 | 023800 | 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 (M) |
| 15 | 1 | 241175 | 90° ELBOW ADAPTER -6 ORM/-6 JIC (M) |
| 16 | 1 | REF | 90° ELBOW HOSE ASSEMBLY -6 (F)/-6 (F) (812209-018) |
| 17 | 4 | 812026-016 | HOSE ASSEMBLY -6 (F)/-6 (F) |
| 18 | 4 | 367136 | 90° BULK HEAD ADAPTER -6 (M)/-6 (M) |
| 19 | 4 | 320734 | BULK HEAD STRAIGHT ADAPTER -6 (M)/-6 (M) |
| 20 | 4 | 480194 | 90° ADAPTER -6 JIC (M)/-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 | CAPSCREW 3/8UNC x 1/2 |
| 28 | 2 | 360445 | CAP -8 |
| 29 | 1 | 369394 | 45° ADAPTER -8 SWIVEL /-8 JIC (M) |
| 30 | 2 | 362020 | 90° ADAPTER -8 JIC(M)/-8 OR(M) |
| 31 | 3 | 811029 | CAPSCREW 5/16 |
| 32 | 3 | 020601 | WASHER 5/16 |
| 33 | 3 | 016500 | NUT 5/16 |
| 34 | 4 | 320371 | SELF TAPPING SCREW #10-24 x 3/4 |

HYDRAULIC OUTRIGGERS

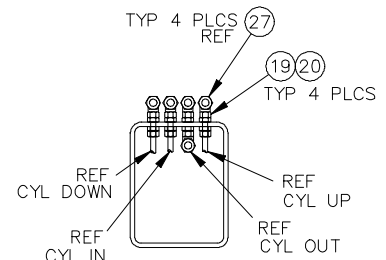
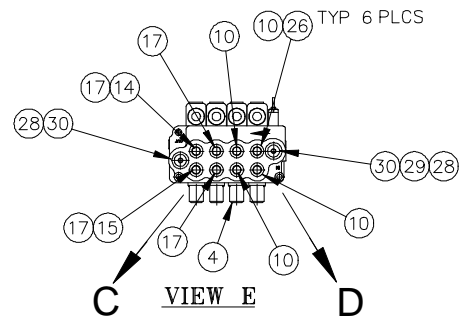
STREETSIDE CRANE - P/N 766202



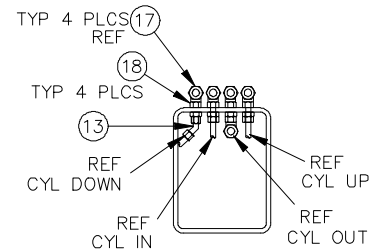
SECTION A-A
CURB SIDE



SECTION B-B
STREET SIDE



VIEW C
CURB SIDE



VIEW D
STREET SIDE

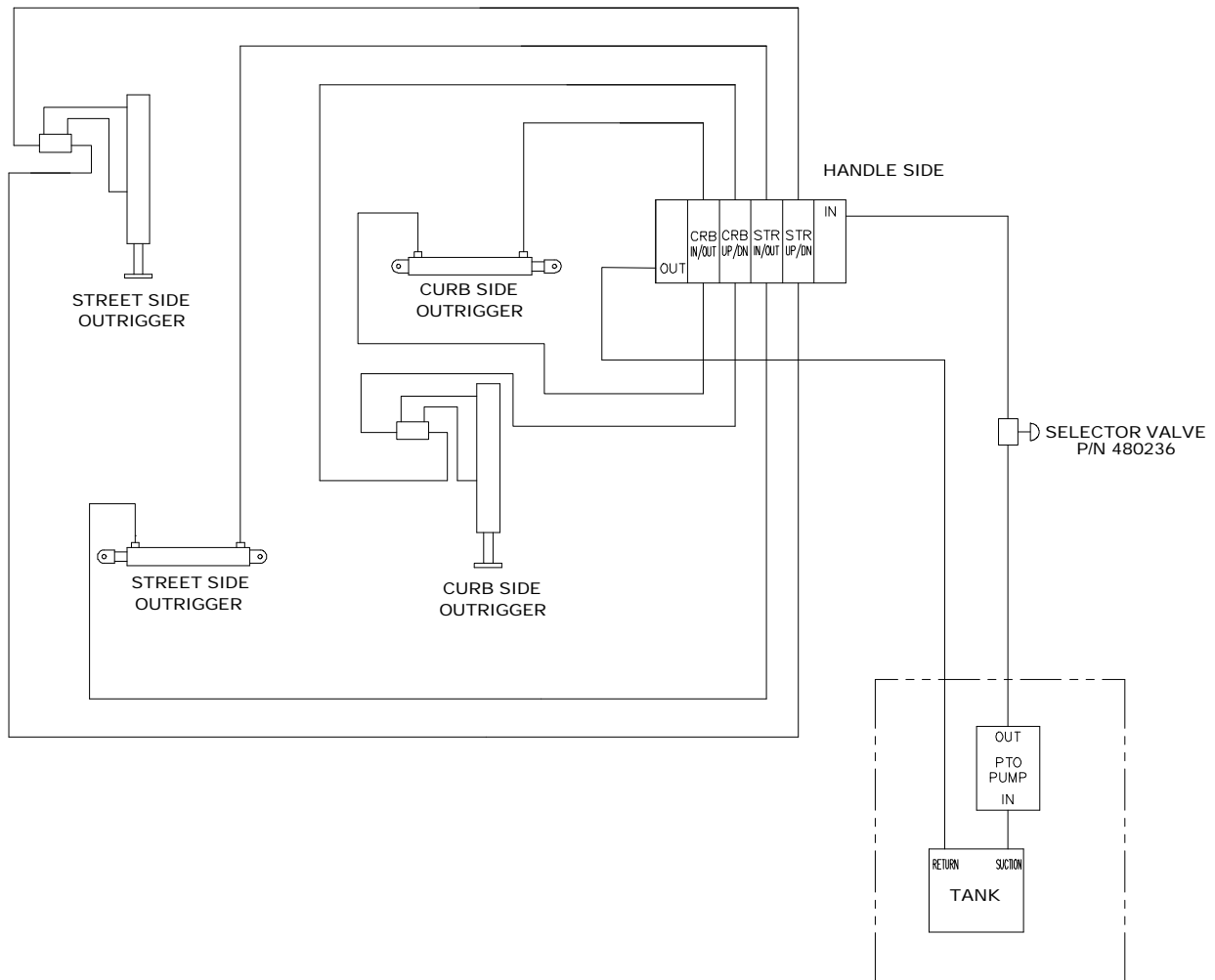
HYDRAULIC OUTRIGGERS

STREETSIDE CRANE - P/N 766202

| <u>ITEM</u> | <u>QTY</u> | <u>P/N</u> | <u>DESCRIPTION</u> |
|--------------------|-------------------|-------------------|--|
| 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 | LOCK WASHER 3/8 |
| 8 | 2 | 330372 | NUT 3/8 |
| 9 | 1 | 490171 | CAPSCREW 5/8UNC x 2 1/4 |
| 10 | 4 | 812026-081 | HOSE ASSEMBLY -6 (F)/-6 (F) |
| 11 | 3 | 021802 | WASHER 5/8 x 1 3/4 |
| 12 | 1 | 023800 | 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 (M) |
| 15 | 1 | 241175 | 90° ELBOW ADAPTER -6 ORM/-6 JIC (M) |
| 16 | 1 | REF | 90° ELBOW HOSE ASSEMBLY -6 (F)/-6 (F) (812209-018) |
| 17 | 4 | 812026-016 | HOSE ASSEMBLY -6 (F)/-6 (F) |
| 18 | 4 | 367136 | 90° BULK HEAD ADAPTER -6 (M)/-6 (M) |
| 19 | 4 | 320734 | BULK HEAD STRAIGHT ADAPTER -6 (M)/-6 (M) |
| 20 | 4 | 480194 | 90° ADAPTER -6 JIC (M)/-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 | CAPSCREW 3/8UNC x 1/2 |
| 28 | 2 | 360445 | CAP -8 |
| 29 | 1 | 369394 | 45° ADAPTER -8 SWIVEL /-8 JIC (M) |
| 30 | 2 | 362020 | 90° ADAPTER -8 JICM/-8 OR(M) |
| 31 | 3 | 811029 | CAPSCREW 5/16 |
| 32 | 3 | 020601 | LOCK WASHER 5/16 |
| 33 | 3 | 016500 | NUT 5/16 |
| 34 | 4 | 320371 | SELF TAPPING SCREW #10-24 x 3/4 |

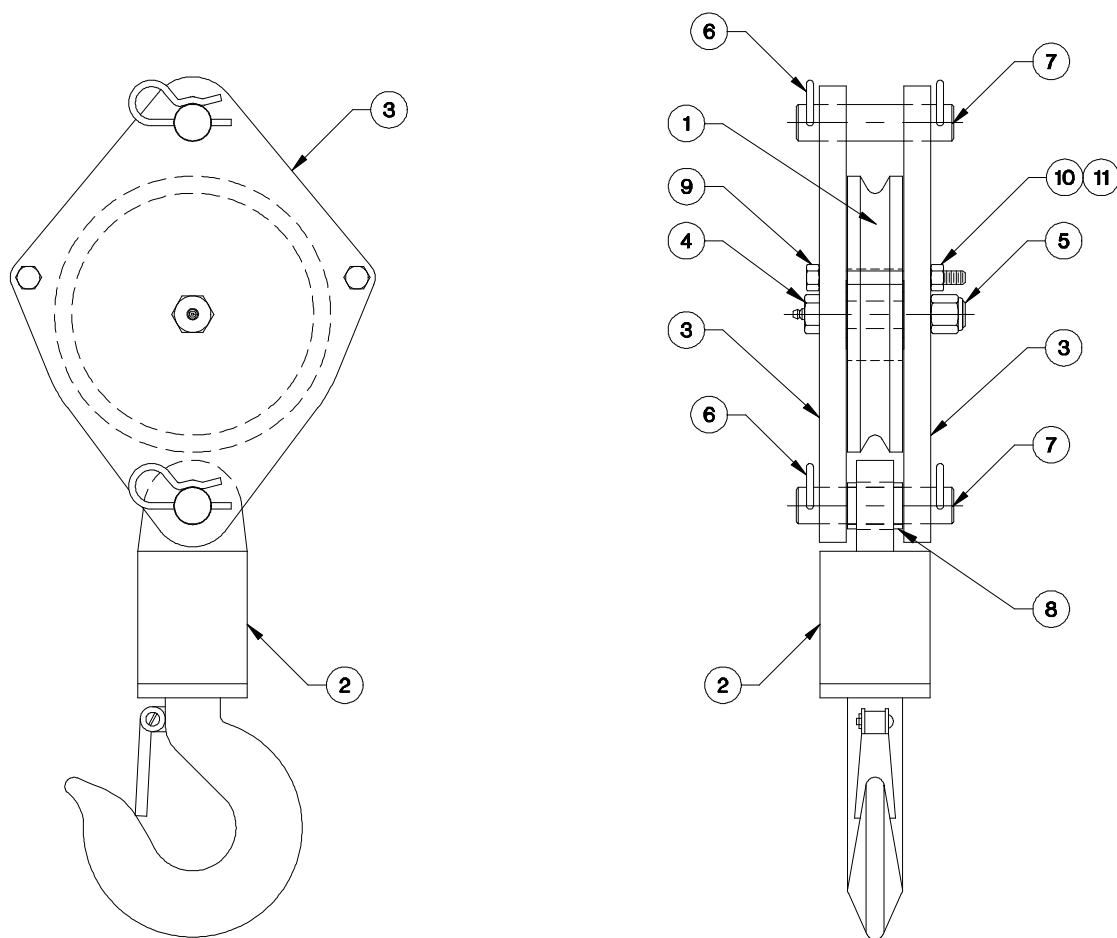
HYDRAULIC OUTRIGGERS FLOW DIAGRAM

9006 SERIES



TRAVELING BLOCK ASSEMBLY

P/N 466230 - MODEL 9006



| ITEM | QUANTITY | PART NUMBER | DESCRIPTION |
|------|----------|-------------|---|
| 1 | 1 | 490256 | SHEAVE BLOCK ASSEMBLY |
| 2 | 1 | 480026 | 5.5 TON SWIVEL HOOK |
| 3 | 2 | 466231 | SIDE PLATE TRAVELING BLOCK |
| 4 | 1 | 490313 | SHEAVE BOLT WITH ZERK FITTING 3/4 UNF x 4 |
| 5 | 1 | 018600 | HEX LOCK NUT 3/4 UNF |
| 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 UNC x 4 |
| 10 | 2 | 017301 | LOCK NUT 3/8 UNC |

LOAD CHART

P/N 454128 - 9006 SERIES

