



2703 M-MR-PR OWNERS MANUAL

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Auto Crane Warranty Registration

Fax Transmission

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

End User Information: (Required for Warranty Activation)

Name: _____ Phone: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Contact: _____ E-mail Address: _____

Distributor Information: (Required for Warranty Activation)

Name: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Contact: _____ E-mail Address: _____

Product Information: (Required for Warranty Activation)

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

ONE REGISTRATION FORM PER UNIT (CRANE OR BODY)

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

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

2703 M MR PR SERIES
OWNER'S MANUAL – REVISION RECORD

Revision Date	Section(s) Or Page(s)	Description of Change
09/02/03	Last page	New 2-year warranty policy to replace 1-year warranty policy
08/16/04	Sec 3-3	Decal Layout Sec Updated

WARNINGS

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

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

WARNING! NEVER OPERATE THE CRANE NEAR ELECTRICAL POWER LINES!

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

WARNING! NEVER.....

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

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

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

WARNING! Auto Crane Company remote controlled cranes are not designed or intended 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 the crane is equipped with this type of device.

READ THIS PAGE

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INTRODUCTION

2703 SERIES

Auto Crane products have been engineered to provide safe, trouble-free, dependable service for many years when these products are properly used and maintained.

To assist you in obtaining the best service from your crane and to avoid untimely failure of the unit and / or the vehicle on which it is mounted, the following operating and service instructions are herein published, and 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.

For your convenience the overall dimensions of the 2703 series crane are on the General Dimension Drawing. Maximum turning radius is shown at the outside point of the hoist actuator (M model) and the outside edge of the rotation gear motor (MR & PR model).

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 8,000 lbs. with two rear jacklegs (or outriggers) is recommended for mounting the 2703 series cranes. Crane side jackleg should extend 45" from centerline of truck chassis.**

The 2703 series cranes are attached directly to your 12 volt truck electrical system. The power cable and retaining clips are included with the crane.

A typical power cable mounting and hookup is shown on page 2-1.0.0. The performance of your new crane depends on the truck electrical system. The use of the low maintenance battery is not recommended for use on any Auto Crane product. The recommended alternator and battery that will give the longest life with the most useful duty cycle is a 75 amp. alternator with a 575 cold cranking rated battery. These specifications should be considered minimum

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

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.

INTRODUCTION

2703 SERIES

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

GENERAL SPECIFICATIONS

2703 SERIES

DIMENSIONS

Width: M = 18.5 in (.46 m)
 MR = 20.75 in (.52m)
 PR = 27.0 in (.68m)

Height: 31.56 in (.80 m)

Length: 7 ft 8.5 in (2.34 m)
 [boom(s) stored]

Weight:
 M 6-10-14 430 lbs (195 kg)
 MR 6-10-14 460 lbs (209 kg)
 PR 6-10-14 520 lbs (236 kg)
 [Add 5 lbs (2.25 kg) for cable length
 of 75 feet (23 m)]

CAPACITY

8,100 ft lbs (1.12 ton/m)
 [ft lbs = horizontal distance from centerline
 of rotation to free hanging weight (feet) x
 amount of weight (pounds)]

LIFTING CAPACITIES			
ft	lbs	ft	lbs
3	2,700	9	900
4	2,025	10	810
5	1,620	11	735
6	1,350	12	675
7	1,150	13	620
8	1,010	14	575

REACH

Second boom will reach from 6 ft to 10 ft
 Third boom will reach from 10 ft to 14 ft

CABLE

62 ft (18.9 m) of 7/32 in diameter aircraft
 quality cable is standard [75 ft (22.86 m)
 optional]. This cable has a single line
 breaking strength of 5600 lbs (2540 kg).

CHASSIS REQUIREMENTS

8,000 lbs (3,628 kg) GVWR minimum
 201,601 in-lbs RBM

ELECTRICAL SYSTEM

Hoist Motor: 12 volt DC series wound

Rotation Gearmotor: 12 volt DC, PM
 type

ELECTRICAL SYSTEM REQUIREMENTS

Alternator: 60 amp (minimum)

Battery: 100 minute reserve
 capacity (minimum)
 Maintenance type

ROTATION

M model: 360° Continuous manual
 rotation

MR model: 360° Continuous power
 rotation

PR model: 360° Continuous power
 rotation

--- IMPORTANT ---

SAFETY TIPS AND PRECAUTIONS

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

WARNING!

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

--- IMPORTANT ---

SAFETY TIPS AND PRECAUTIONS

31. Always store the crane in its stowed position for transportation.
32. Remember the overall height of the entire unit for garage door clearance or when moving under objects with low overhead clearance
33. Disengage power takeoff (PTO) before moving the vehicle.
34. Always walk around the vehicle before moving.
35. Never drive with a load suspended from crane.
36. Do not take your eyes off a moving load. Look in the direction you are moving.
37. Never swing a load over people.
38. Do not stop the load sharply in midair so that it swings like a pendulum. Meter the control levers to avoid this situation.
39. Crane boom length should be kept as short as possible for maximum lifting capacity and greater safety. Longer booms require additional care in accelerating and decelerating the swing motion, and thus slow down the working cycle and reduce productivity.
40. Keep the load directly and vertically under the boom point at all times. Crane booms are designed primarily to handle vertical loads, not side lifts.
WARNING: Never attempt to lift, drag, tow or pull a load from the side. The boom can fail far below its rated capacity.
41. Do not push down on anything with boom extensions, lift or outer boom function.
42. Do not lift personnel with any wire rope attachment or hook. There is no implied warranty or responsibility for such purposes.
43. WARNING: In using a safety hook, ALWAYS close the hook throat before lifting a load. Proper attention and common sense applied to the use of the hook and various slings will prevent possible damage to material being hoisted and may prevent injury to personnel.
44. WARNING: Never place a chain link on the tip of the hook and try to lift a load with the hoist.
45. WARNING: Never use a sling bar or anything larger than the hook throat which could prevent the safety latch from closing, thus negating the safety feature.
46. If the crane is equipped with an optional winch:
 - do NOT allow personnel to ride on loadline, hook, load, or any other device attached to winch line.
 - do NOT extend boom without reeling off line at the same time when using winch.
 - do pull load-block up against the boom tip.
47. Do not wrap the wire rope around sharp objects when using winch.
48. WARNING: Never unreel last 5 wraps of cable from drum.

--- IMPORTANT ---

OPERATING PRACTICES AND WARNINGS

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

WARNING!

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

--- IMPORTANT --- OPERATION OF UNIT

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

OPERATION OF OUTRIGGERS

For hydraulic outriggers:

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

For manual outriggers:

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

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

QUALIFICATIONS FOR AND CONDUCT OF OPERATORS AND OPERATING PRACTICES

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.

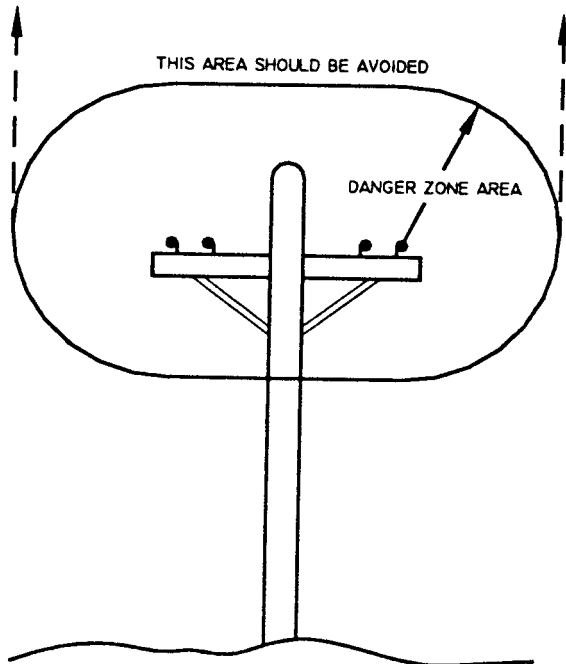
O. No person should be permitted to stand or pass under a suspended load.

21. Stowing procedure. Follow the manufacturer's procedure and sequence when stowing and unstowing 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	(3.50)
over	50 to 200	15	(4.6)
over	200 to 350	20	(6.1)
over	350 to 500	25	(7.62)
over	500 to 750	35	(10.67)
over	750 to 1000	45	(13.72)
<u>while in transit with no load and boom lowered</u>			
over	to 0.75	4	(1.22)
over	0.75 to 50	6	(1.83)
over	50 to 345	10	(3.83)
over	345 to 750	16	(4.87)
over	750 to 1000	20	(6.1)

NOTES

INSPECTION, TESTING AND MAINTENANCE GENERAL

INSPECTION CLASSIFICATION

1. **Initial inspection. Prior to initial use, all new, altered, modified or extensively repaired cranes shall be inspected by a designated person to insure compliance with provisions of this standard.**
2. **Regular inspection. Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below.**
 - A. frequent inspection - daily to monthly intervals
 - B. periodic inspection - one to twelve intervals or as specifically recommended by the manufacturer

FREQUENT INSPECTION

3. **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

4. **Deformed, cracked or corroded members in the crane structure and carrier**
5. **Loose bolts, particularly mounting bolts.**
6. **Cracked or worn sheaves and drums.**
7. **Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers and devices.**
8. **Excessive wear on brake and clutch system parts and lining.**
9. **Crane hooks inspected for cracks.**
10. **Travel steering, braking, and locking devices, for malfunction.**
11. **Excessively worn or damaged tires.**
12. **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. A. blistering, or abnormal deformation to the outer covering of the hydraulic or pneumatic hose
 - C. A. leakage at threaded or clamped joints that cannot be eliminated by normal tightening or recommended procedures
 - D. A. 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 elements in contact or otherwise protect the components

INSPECTION, TESTING AND MAINTENANCE GENERAL

13. 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

14. 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

15. 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

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

17. Labels are to be in place and legible.

CRANES NOT IN REGULAR USE

18. 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

19. 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

20. 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

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

INSPECTION, TESTING AND MAINTENANCE GENERAL

22. Test loads shall not exceed 110% of the manufacturer's load ratings.
23. Written reports shall be maintained showing test procedures and confirming the adequacy of repairs.

MAINTENANCE

PREVENTIVE MAINTENANCE

24. Before adjustment and repairs are started on a crane, the following precautions shall be taken as applicable:
- crane placed where it will cause the least interference with other equipment or operations
 - all controls at the "off" position
 - starting means rendered inoperative
 - boom lowered to the ground if possible or otherwise secured against dropping
 - relieve hydraulic oil pressure from all hydraulic circuits before loosening or removing hydraulic components
25. Warning or "OUT OF ORDER" signs shall be placed on the crane controls.
26. 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

27. 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.
28. Adjustments shall be maintained to assure correct functioning of components, The following are examples:
- functional operating mechanism
 - safety devices
 - control systems

29. Repairs or replacements shall be provided as needed for operation.

The following are examples:

- critical parts of functional operating mechanisms which are cracked, broken, corroded, bent, or excessively worn
 - critical parts of the crane structure which are cracked, bent, broken, or excessively corroded
 - crane hooks showing cracks, damage, or corrosion shall be taken out of service. Repairs by welding are not recommended
30. 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

31. Frequent Inspection
- 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.
 - 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
 - general corrosion
 - broken or cut strands;
 - 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.

INSPECTION, TESTING AND MAINTENANCE GENERAL

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

32. 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 it's 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

- 33. 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.

- 34. 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)
- 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.

INSPECTION, TESTING AND MAINTENANCE GENERAL

- 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.
35. **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 an 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.
36. **Inspection records**
- A. A. frequent inspection- no records required
 - B. A. 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**
37. Rope should be stored to prevent damage or deterioration.
38. Unreeling or uncoiling of rope shall be done as recommended by the rope manufacturer and with care to avoid kinking or inducing twist.
39. 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.
40. 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.
41. 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.
42. 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.

MAINTENANCE OF BATTERIES

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

Keep Properly Charged

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

- 1 Regulator settings
- 2 Proper tightness of belts on the alternator or generator
- 3 Good, clean connections of all cables and wires at the following places:
 - A. Battery
 - B. Regulator
 - C. Starting motor
 - D. Alternator or generator
 - E. Ground connections (most important)

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

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

As shown, a half-charged battery (about 1.200 specific gravity) cannot stand for any length of time at 20°F or it will freeze.

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

Keep Properly Filled with Water

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

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

Keep A Relatively Clean Battery

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

Periodic Maintenance is Needed

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

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

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

MAINTENANCE OF BATTERIES

Low Maintenance Batteries (Maintenance Free)

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

Testing Your Battery

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

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

Replacing a Battery

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

- 1 Fill the battery with electrolyte of the proper specific gravity.
- 2 Place the battery on charge according to the manufacturer's instructions.

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

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

SAFETY DECAL SECTION

2703 SERIES

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

⚠ CAUTION

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

P/N 040579

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

⚠ DANGER

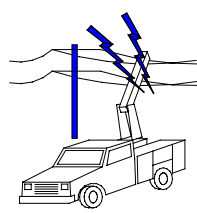
AN UNTRAINED OPERATOR
SUBJECTS HIMSELF AND
OTHERS TO

DEATH OR SERIOUS INJURY

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

P/N 040580

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



⚠ DANGER

**ELECTROCUTION HAZARD
DEATH OR SERIOUS INJURY**

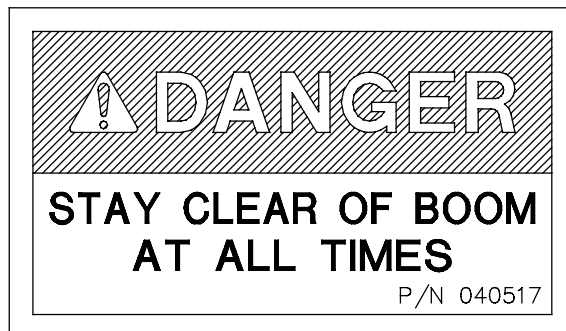
WILL RESULT FROM BOOM, LINE, OR LOAD CONTACTING ELECTRIC LINES. DO NOT USE CRANE WITHIN 10 FEET OF ELECTRIC LINES CARRYING UP TO 50,000 VOLTS; ONE FOOT ADDITIONAL CLEARANCE IS REQUIRED FOR EVERY ADDITIONAL 30,000 VOLTS OR LESS.

P/N 040529

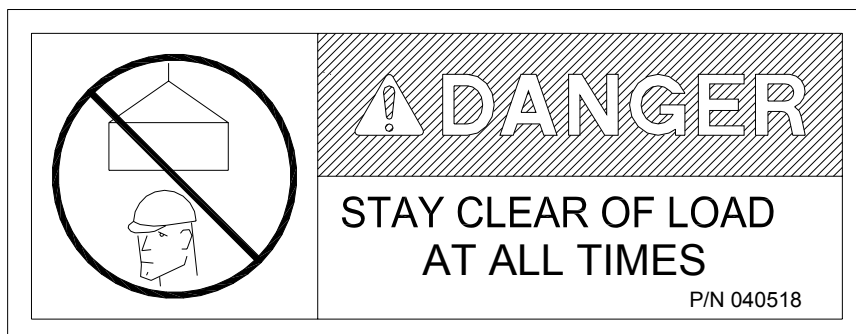
SAFETY DECAL SECTION

2703 SERIES

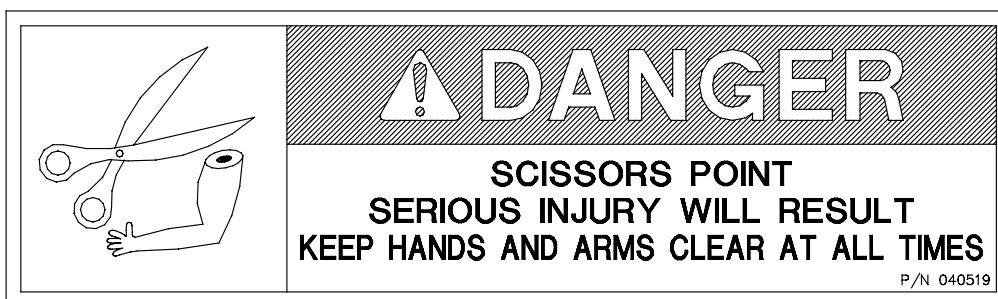
PART NO.: 040517000
 DECAL: STAY CLEAR OF BOOM
 FUNCTION: To inform the operator of the hazard of proximity or contact with the crane boom during operation.
 USED ON: All Cranes
 QUANTITY: 2
 PLACEMENT: Both sides of crown



PART NO.: 040518000
 DECAL: STAY SLEAR OF LOAD
 FUNCTION: To inform the operator of the hazard of proximity or contact with the crane load during operation.
 USED ON: All cranes.
 QUANTITY: 2
 PLACEMENT: Both sides of the down haul weight

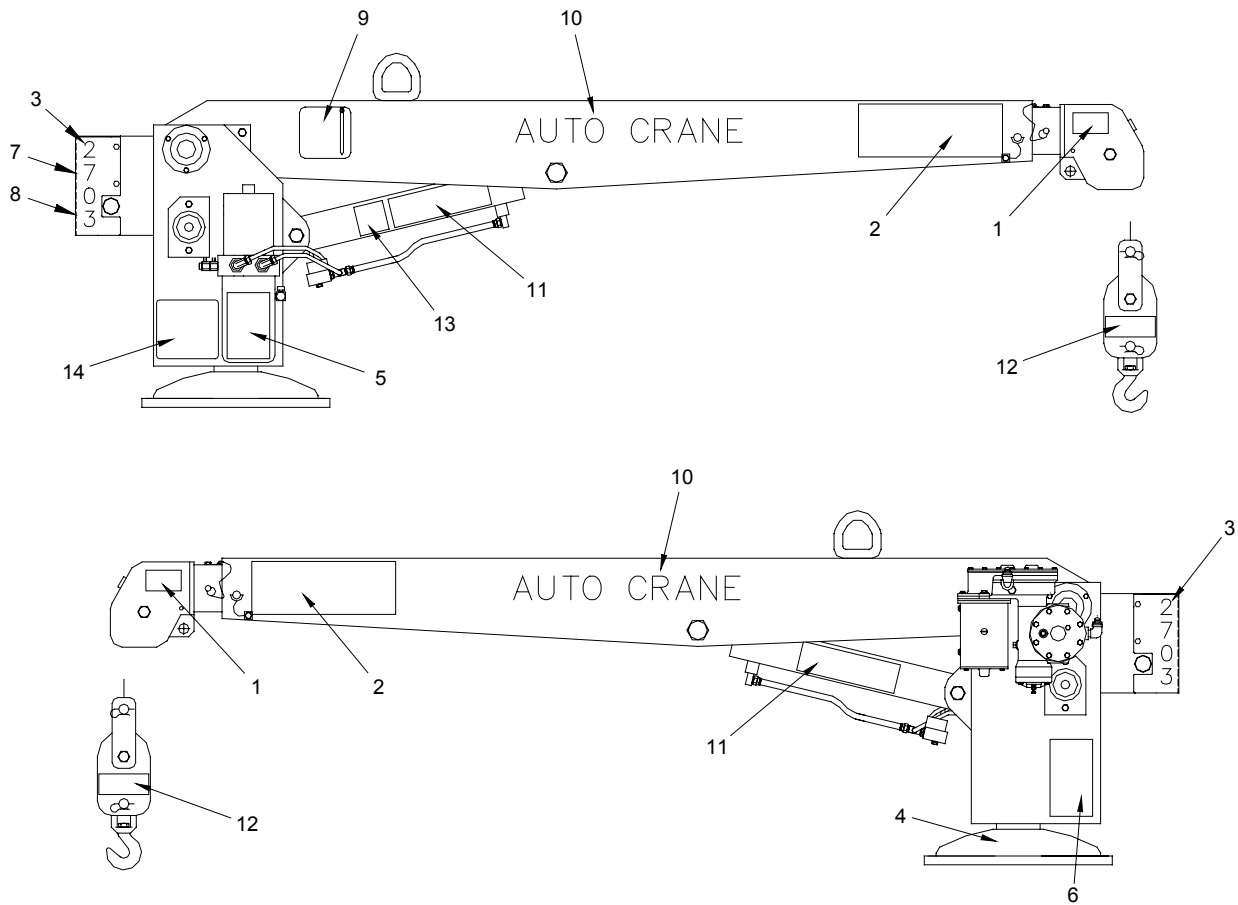


PART NO.: 040519000
 DECAL: SCISSORS POINT
 FUNCTION: To inform the operator of possible danger at scissors point on crane.
 USED ON: All cranes.
 QUANTITY: 1
 PLACEMENT: Both sides of the lift cylinder



DECAL LAYOUT

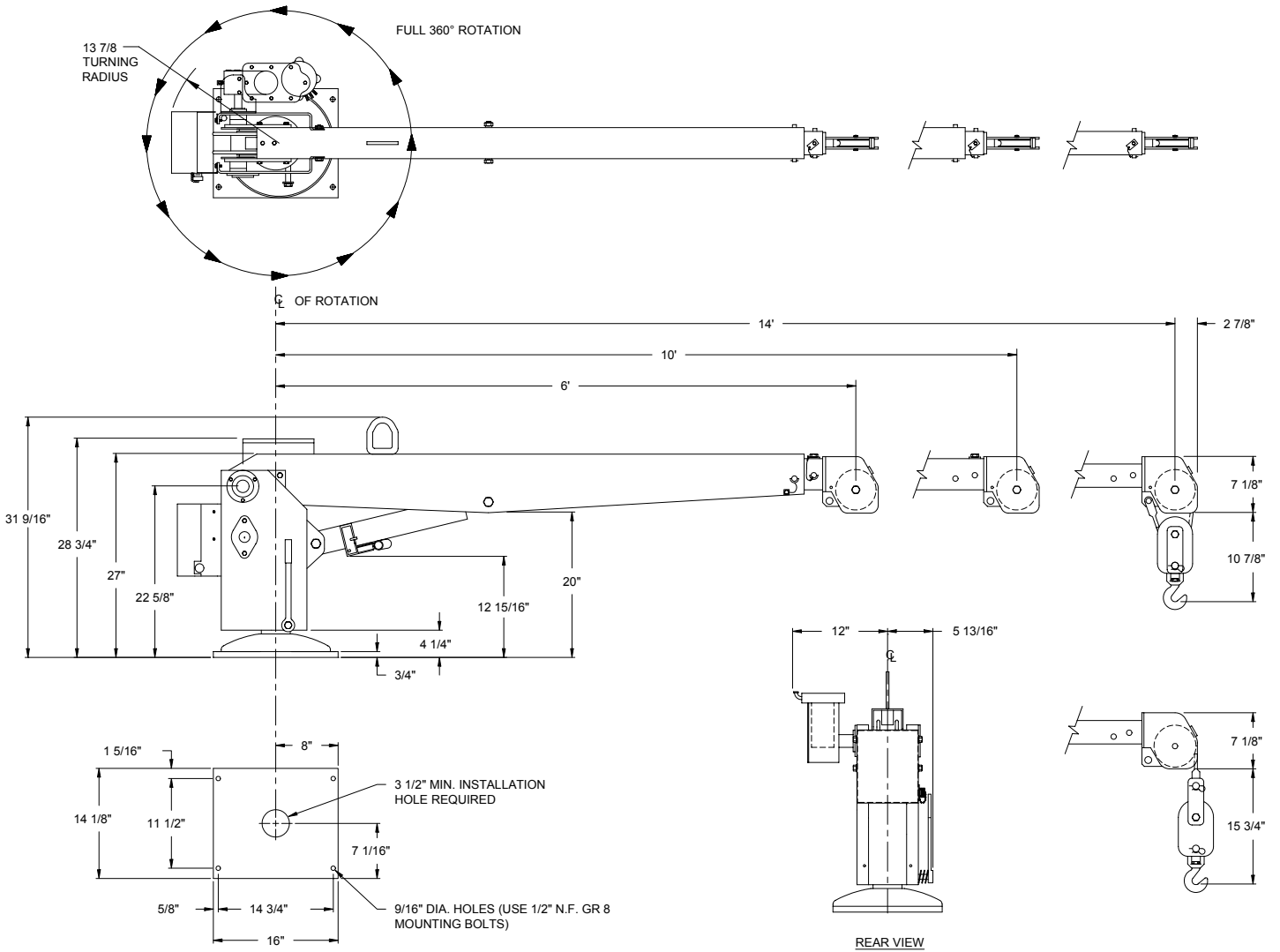
P/N: 270395



ITEM	QTY	PART NO.	DESCRIPTION
1	2	040517	DECAL, STAY CLEAR
2	2	040529	DECAL, DANGED ELECTRIC
3	2	270321	DECAL, 2703
4	1	330622	DECAL, SERIAL NO.
5	1	040579	DECAL, WORK RULES
6	1	040580	DECAL, DANGER MUST...
7	1	040622	DECAL, A/C LOGO
8	1	-----	DECAL, MADE IN AMERICA
9	1	320318	DECAL, ANGLE IND
10	2	040624	DECAL, A/C LOGO
11	2	040519	DECAL, DANGER SCISSORS POINT
12	2	040518	DECAL, DANGER STAY CLEAR
13	1	330624	DECAL, LOWER BOOM
14	1	270322	DECAL, LOAD CHART

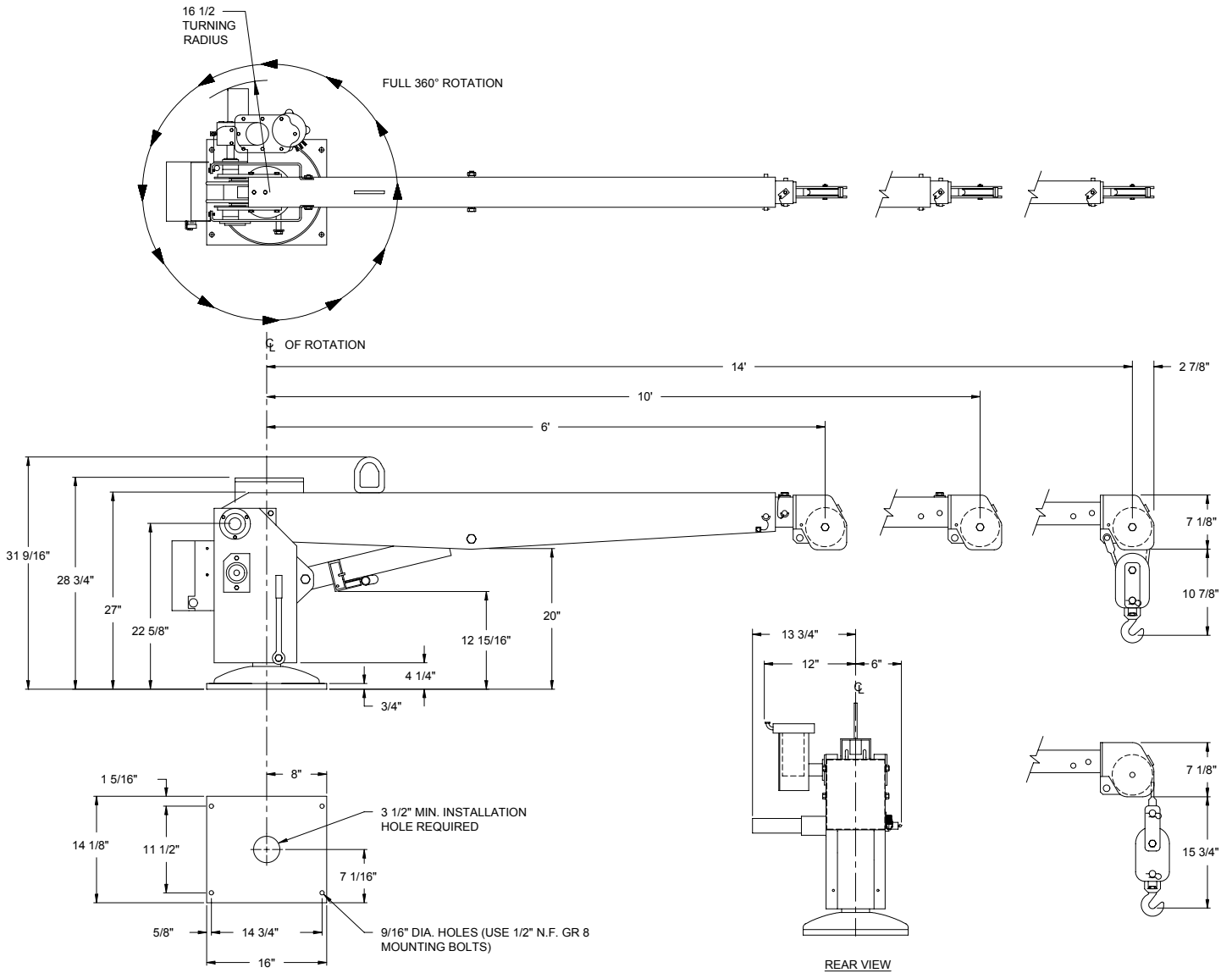
GENERAL DIMENSIONS

2703 M 6-10-14



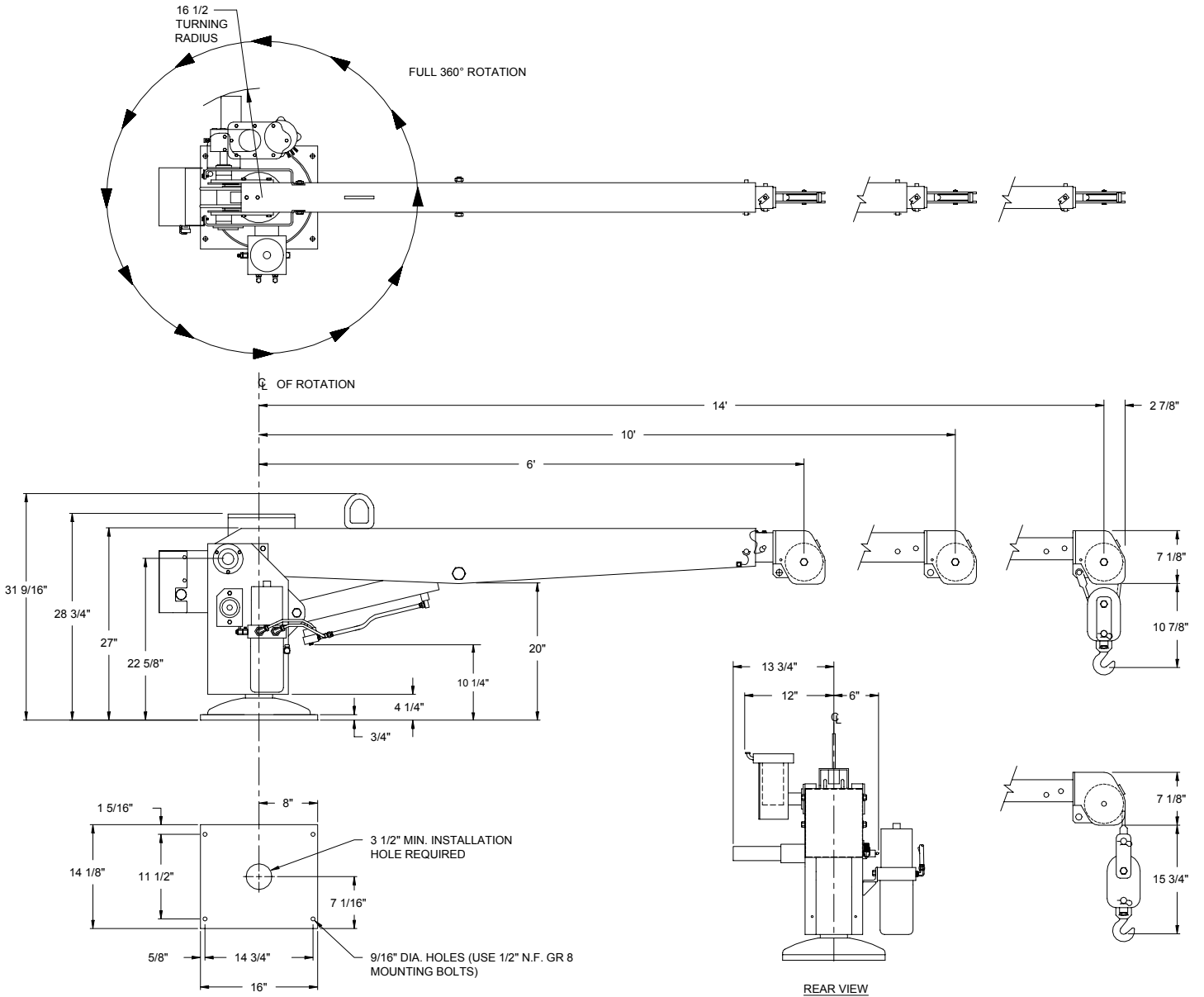
GENERAL DIMENSIONS

2703 MR 6-10-14



GENERAL DIMENSIONS

2703 PR 6-10-14



LUBRICATION & MAINTENANCE SCHEDULE

2703 SERIES

SERVICE PERFORMED	DAY	WEEKLY	MONTH	6 MOS	YEAR	NOTES
LOAD HOOK	X					INSPECT HOOK & LATCH FOR DEFORMATION, CRACKS, & CORROSION
CABLE DRUM	X					MAKE SHURE CABLE IS WOUND EVENLY ON DRUM
HOIST CABLE	X					CHECK FOR FLATTENING, KINKS, & BROKEN STRANDS, SEE MANUAL
MOUNTING BOLTS		X				CHECK-TORQUE TO85 FT-LBS (DRY) AS REQUIRED
MOTOR CONNECTION		X				CHECK TERMINALS FOR TIGHT CONNECTIONS
SHEAVE BEARINGS		X				SEALED BEARING, REPLACE IF ROUGH OR LOOSE
ALL OTHER BOLTS		X				CHECK-TIGHTEN AS REQUIRED
BOOM CYLINDER		X				CHECK AROUND CYLINDER ROD FOR EXCESS FLUID LEAK
BOOM CYLINDER PINS		X				GREASE WITH MOBILPLEX EP-2 OR EQUIVALENT @ ZERKS
ROTATION BRAKE (M)		X				CHECK ADJUSTMENT
SAFETY DECALS			X			INSPECT AND REPLACE AS NEEDED
POWER CABLE			X			CHECK INSULATION FOR DAMAGE OR DETERIORATION
ROTATION GEAR (MR) (PR)			X			WATER PROOF BEARING GREASE OR DRY MOLYLUBE IF DUSTY CONDITIONS
ROTATION WORM BEARINGS (MR) (PR)				X		GREASE WITH MOBILPLEX EP-2 OR EQUIVALENT @ ZERKS
HOIST GEARBOX				X		WORM GEAR-EP GEAR LUB SAE 80-90 SPUR GEAR SAE 30 OIL
HYDRAULIC FLUID			X		X	DRAIN, FLUSH, AND REFILL WITH SUN 2105 HYD. OIL, SAE 5W-20
ROTATION BEARINGS	SEALED BEARING-NO MAINTENANCE REQUIRED					
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					

LUBRICATION & MAINTENANCE SCHEDULE

2703 SERIES

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

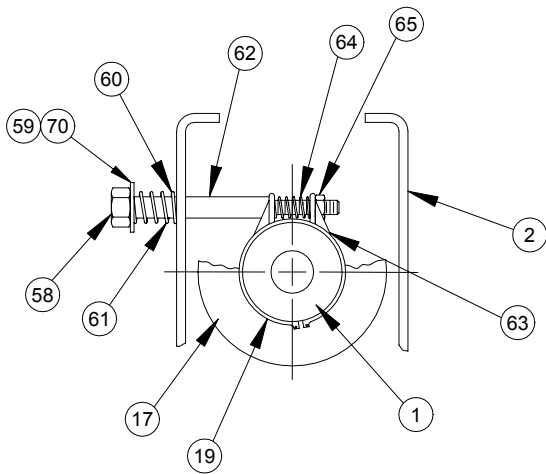
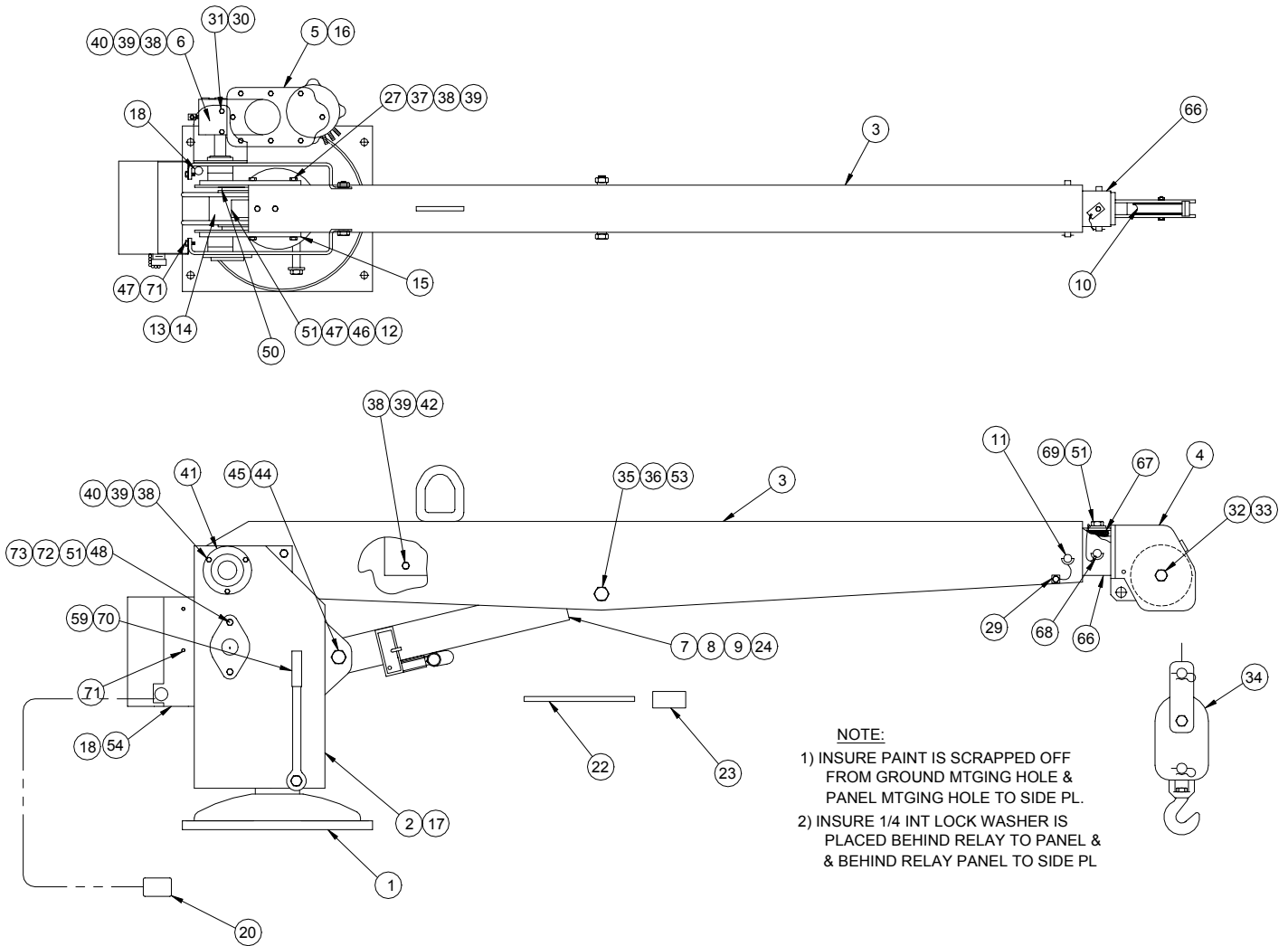
NOTES:

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.

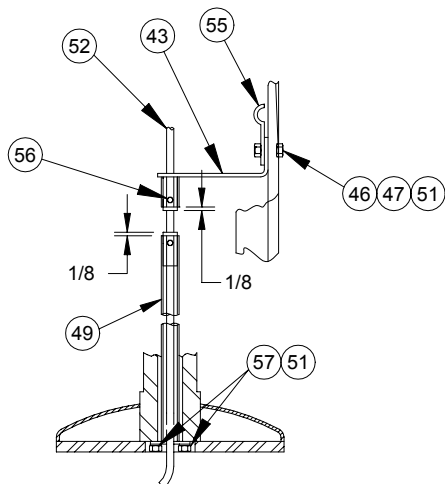
Auto Crane Company recommends that this crane be serviced per "Crane Inspection Log" P/N 999978. These logs should be filled in at the intervals noted and kept as a permanent record. Additional copies are available from your local distributor.

GENERAL ASSEMBLY

P/N: 270300 - 2703 M (6-10-14 BOOM)



BRAKE ASS'Y DETAIL



TWECO ASS'Y DETAIL

GENERAL ASSEMBLY
P/N: 270300 - 2703 M (6-10-14 BOOM)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	270432	SIDE PLATES HOUSING WELDMENT
2	1	270398	QUILL BASE WELDMENT
3	1	270380	BOOM LOWER WELDMENT
4	1	320423	BOOM MANUAL W/CROWN
5	1	160269	ACTUATOR ASSY
6	1	270403	ACTUATOR BRACKET
7	1	270325	CYLINDER HYDRAULIC
8	1	330346	HYDRAULIC OIL
9	2 QT	270325-001	SEAL KIT
10	1	227401	SHEAVE ASSEMBLY
11	1	320328	POSITION PIN LONG
12	1	270389	GUARD CABLE
13	1	320338	CABLE ASSEMBLY 62'
14	1	320379	DRUM HOIST
15	1	330471	BOOM PIVOT RH
16	1	340523	KEY 1/4 X 1/4 X 2 3/4
17	2	330192	BEARING BALL SEALED
18	1	270311	RELAY ASSEMBLY
19	1	330182	SNAP RING
20	1	330519	PENDANT CONTROL
21		N/A	
22	1	340318	HANDLE PUMP
23	1	202800	GRIP HANDLE
24	1	270325-002	REPAIR KIT CYL
25	1	270405	SHIP KIT
26		N/A	
27	1	330471-001	BOOM PIVOT LH
28	1	270395	DECAL LOCATION
29	1	002614	SCW HX HD 5/16 NC X 5/8 SELF TAP
30	4	020600	WASHER SP LK 5/16
31	4	007807	SCW HX HD 5/16 NC X 3/4
32	1	012200	SCW HX HD 5/8 NF X 1 3/4
33	1	018100	NUT HX HLF LK 5/8 NF
34	1	320433	TRAVELING BLOCK
35	1	330185	SCW HX HD 1 NF X 5 1/2
36	1	019106	NUT HX 1 NF
37	12	330370	SCW HX HD 3/8 NC X 7/8
38	19	330372	NUT HX 3/8 NC
39	19	021100	WASHER SP LK 3/8
40	6	330371	SCW HX HD 3/8 NC X 1

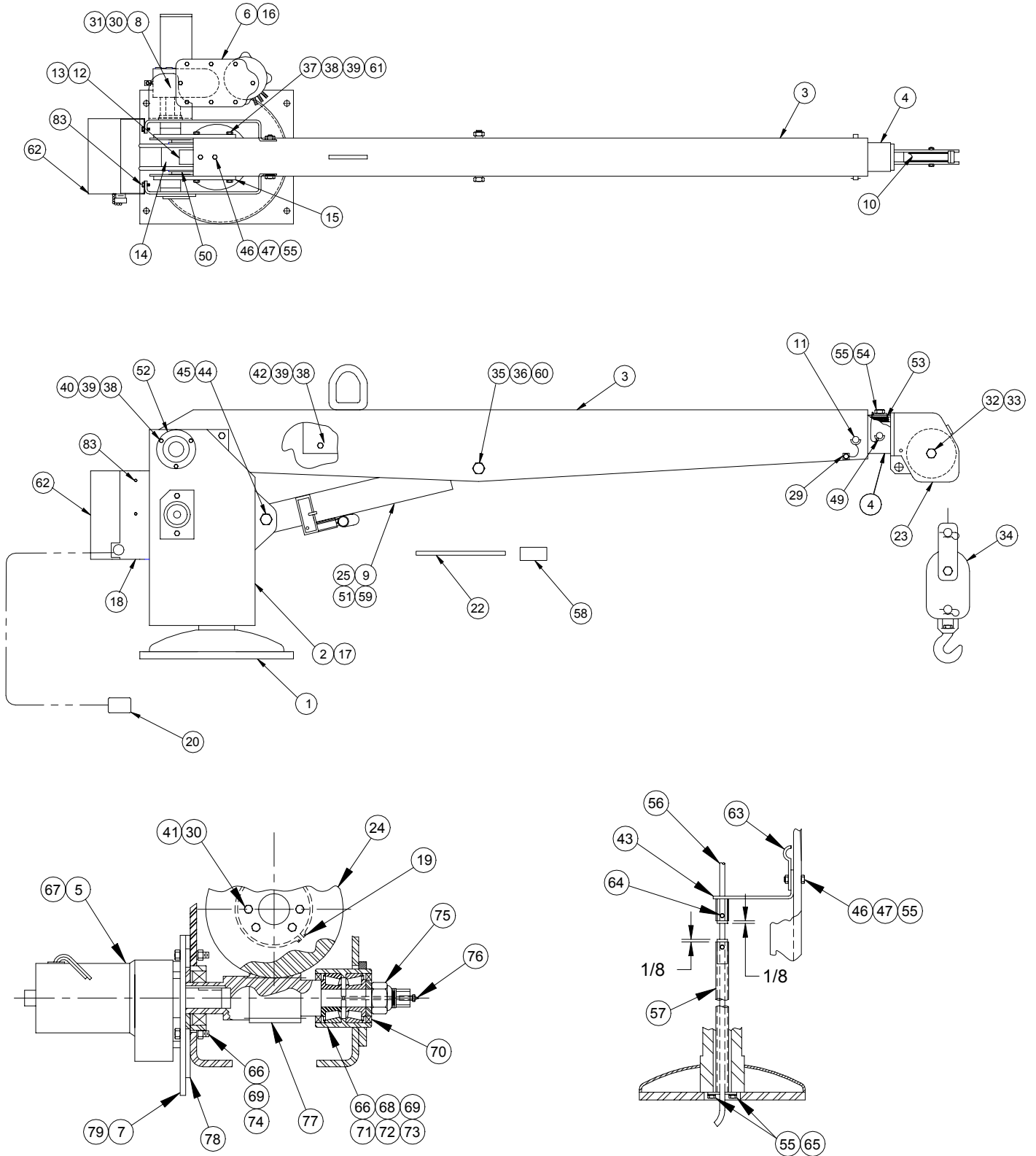
NOTES

GENERAL ASSEMBLY
P/N: 270300 - 2703 M (6-10-14 BOOM)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
41	1	330470	FLANGE BEARING
42	1	008401	SCW HX HD 3/8 NC X 1/2
43	1	330212	BRACKET TWECO UPPER
44	1	014400	SCW HX HD 3/4 NF X 5
45	1	018600	NUT HX LK 3/4 NF
46	1	005500	SCW HX 1/4 NC X 3/4
47	2	020201	WASHER INT LOCK 1/4
48	2	320369	COVER PLATE
49	1	320488	POWER CABLE ASSEMBLY
50	2	330468	COLLAR SP LK
51	4	021600	WASHER FL 1/2
52	1	330258	CONNECTOR TWECO MALE
53	2	340303	SPACER
54	1	320431-200	COVER PANEL RELAY
55	1	000115	CLAMP CABLE
56	1	002900	SCW SET 1/4 NC X 3/8
57	2	005401	SCW HX HD 1/4 NC X 5/8
58	1	013503	SCW HX HD 5/8 NC X 7
59	1	600057	HANDLE BRAKE WELDMENT
60	1	330489	SPACER
61	1	330488	SPRING COMPRESSION
62	1	330490	SPACER
63	1	270376-001	BRAKE BAND ASSEMBLY
64	1	330184	SPRING COMPRESSION
65	1	018301	NUT HX 5/8 NC
66	1	270408	BOOM MID MANUAL
67	1	320415	BOOM RETAINER MANUAL
68	1	370002	PIN ASSEMBLY W/LANYARD
69	1	005501	SCW HX 1/4 NF X 3/4
70	1	330303	GRIP HANDLE
71	8	005510	SCW HX WHZ LK 1/4 NC X 3/4
72	4	010202	SCW HX HD 1/2NC X 1
73	4	017699	NUT HX LK 1/2

GENERAL ASSEMBLY

P/N: 270302 - 2703 MR (6-10-14 BOOM)



GENERAL ASSEMBLY
P/N: 270302 - 2703 MR (6-10-14 BOOM)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	270432	SIDE PLATES HOUSING WELDMENT
2	1	270398	QUILL BASE WELDMENT
3	1	270380	BOOM LOWER WELDMENT
4	1	270408	BOOM MANUAL
5	1	330313	GEAR MOTOR
6	1	160269	ACTUATOR ASSY
7	1	330504	MOUNT MOTOR
8	1	270403	ACTUATOR BRACKET
9	1	270325	CYLINDER HYDRAULIC
10	1	227401	SHEAVE ASSEMBLY
11	1	320328	POSITION PIN LONG
12	1	270389	GUARD CABLE
13	1	320338	CABLE ASSEMBLY 62'
14	1	320379	DRUM HOIST
15	1	330471	BOOM PIVOT RH
16	1	340523	KEY 1/4 X 1/4 X 2 3/4
17	2	330192	BEARING BALL SEALED
18	1	270312	RELAY ASSEMBLY
19	1	330182	SNAP RING
20	1	680068	PENDANT CONTROL
21		N/A	
22	1	340318	HANDLE PUMP
23		N/A	
24	1	270385	GEAR WORM
25	1	270325-002	REPAIR KIT CYL
26		N/A	
27	1	680051	SHIP KIT
28	1	270395	DECAL LOCATION
29	1	002614	SCW HX HD 5/16 NC X 5/8 SELF TAP
30	10	020600	WASHER SP LK 5/16
31	4	007807	SCW HX HD 5/16 NC X 3/4
32	1	012200	SCW HX HD 5/8 NF X 1 3/4
33	1	018100	NUT HX HLF LK 5/8 NF
34	1	320433	TRAVELING BLOCK
35	1	330185	SCW HX HD 1 NF X 5 1/2
36	1	019106	NUT HX 1 NF
37	12	330370	SCW HX HD 3/8 NC X 7/8
38	19	330372	NUT HX 3/8 NC
39	19	021100	WASHER SP LK 3/8
40	6	330371	SCW HX HD 3/8 NC X 1

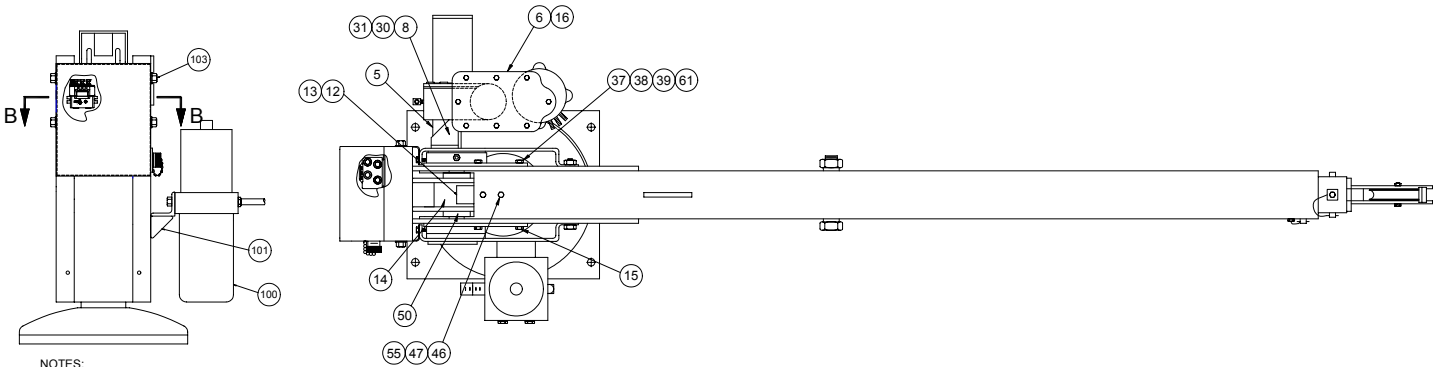
NOTES

GENERAL ASSEMBLY
P/N: 270302 - 2703 MR (6-10-14 BOOM)

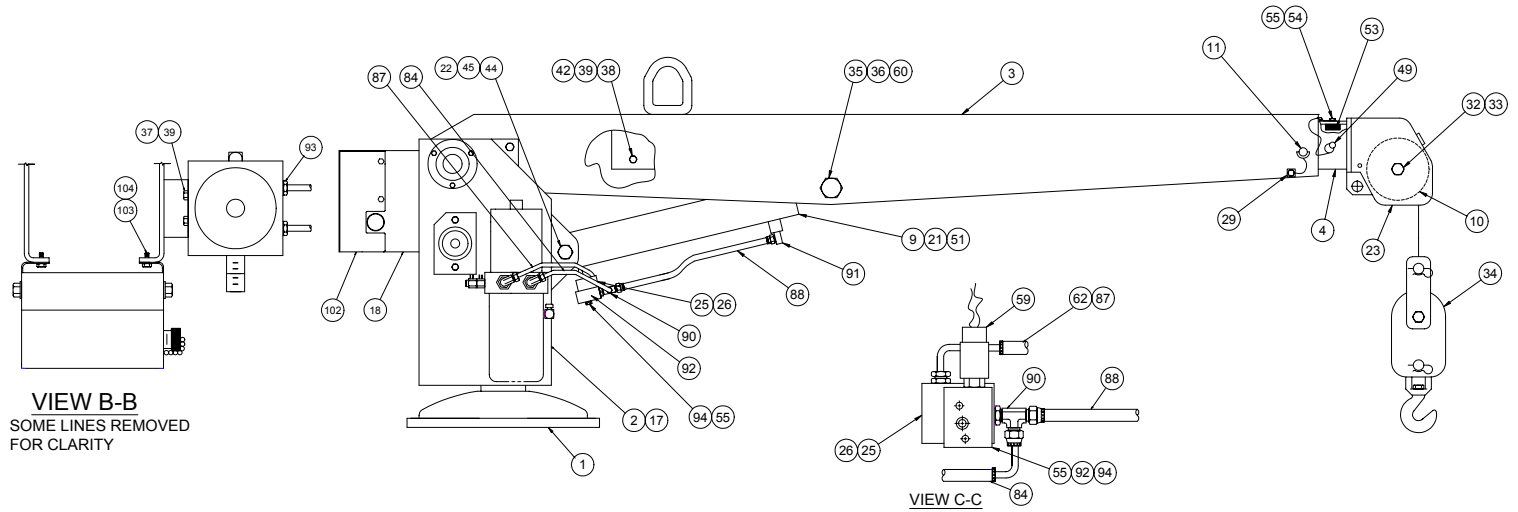
ITEM NO.	QTY.	PART NO.	DESCRIPTION
41	6	007805	SCW HX HD 5/16 NC X 1 1/2
42	1	008401	SCW HX HD 3/8 NC X 1/2
43	1	330212	BRACKET TWECO UPPER
44	1	014400	SCW HX HD 3/4 NF X 5
45	1	018600	NUT HX LK 3/4 NF
46	1	005500	SCW HX 1/4 NC X 3/4
47	3	015900	NUT HX 1/4 NC
48		N/A	
49	1	370002	PIN ASSEMBLY W/LANYARD
50	2	330468	COLLAR SP LK
51	2 QT	330346	HYDRAULIC OIL
52	1	330470	FLANGE BEARING
53	1	320415	BOOM RETAINER MANUAL
54	1	005501	SCW HX HD 1/4 NF X 3/4
55	3	020200	WASHER 1/4 SP LK
56	1	330258	CONNECTOR TWECO MALE
57	1	320488	POWER CABLE ASSEMBLY
58	1	202800	GRIP HANDLE
59	1	270325-001	SEAL KIT HYD CYL
60	2	340303	SPACER
61	1	330471-001	BOOM PIVOT
62	1	320431-200	COVER PANEL RELAY
63	1	000115	CLAMP CABLE
64	1	002900	SCW SET 1/4 NC X 3/8
65	2	005401	SCW HX HD 1/4 NC X 5/8
66	4	021500	WASHER 1/2 SP LK
67	1	330243-002	KEY 3/16 X 3 /16 X 1 1/2
68	2	011603	SCW HX HD 1/2 NC X 1 3/4
69	4	017701	NUT HX 1/2 NC
70	2	330486	SEAL OIL
71	1	330483	SPACER
72	1	330472	HOUSING W/CUPS
73	2	330485	CONE BEARING
74	2	010201	SCW HX HD 1/2 NC X 1 1/2
75	1	019000	NUT HX 7/8-14
76	1	230300	ZERK GREASE
77	1	330421	SHAFT TURNER
78	1	330489	MOTOR MOUNT ASSEMBLY
79	3	330389	SCW FL HD 1/4 NC 3/4
80		N/A	
81		N/A	
82		N/A	
83	4	005510	SCW HX WHZ LK 1/4 NC Z 3/4

GENERAL ASSEMBLY

P/N: 270304 - 2703 PR (6-10-14 BOOM)

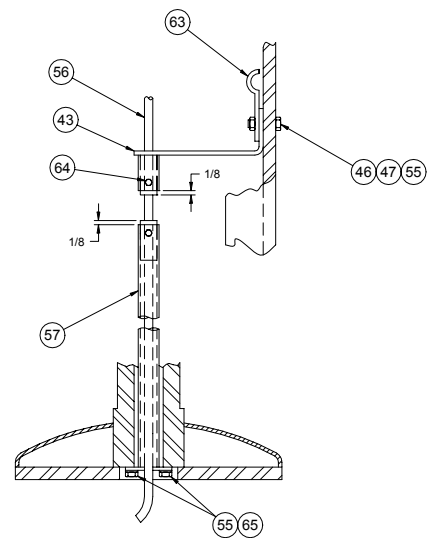
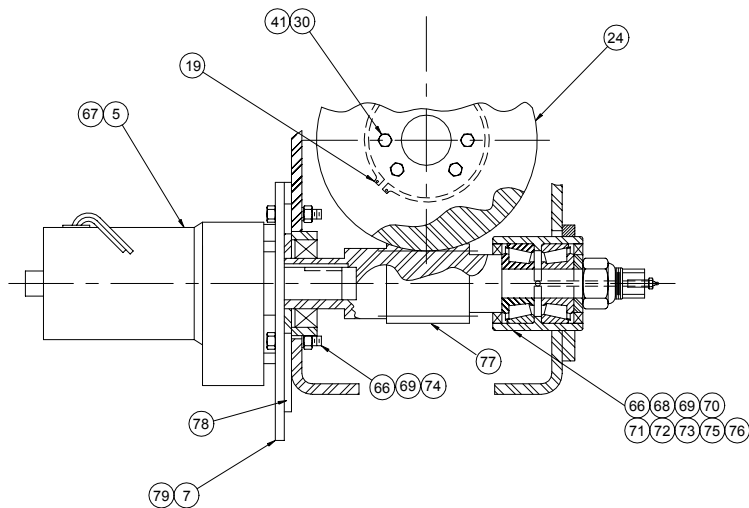


NOTES:
1. SOME LINES REMOVED FOR CLARITY



VIEW B-B
SOME LINES REMOVED FOR CLARITY

VIEW C-C



GENERAL ASSEMBLY
P/N: 270304 - 2703 PR (6-10-14 BOOM)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	270432	SIDE PLATES HOUSING WELDMENT
2	1	270442	QUILL BASE WELDMENT
3	1	270380	BOOM LOWER WELDMENT
4	1	270408	BOOM MANUAL
5	1	330313	GEAR MOTOR
6	1	160269	ACTUATOR ASSY
7	1	330504	MOUNT MOTOR
8	1	270403	ACTUATOR BRACKET
9	1	330250	CYLINDER HYDRAULIC
10	1	227401	SHEAVE ASSEMBLY
11	1	320328	POSITION PIN LONG
12	1	270389	GUARD CABLE
13	1	320338	CABLE ASSEMBLY 62'
14	1	320379	DRUM HOIST
15	1	330471	BOOM PIVOT RH
16	1	340523	KEY 1/4 X 1/4 X 2 3/4
17	2	330192	BEARING BALL SEALED
18	1	270313	RELAY ASSEMBLY
19	1	330182	SNAP RING
20	1	270410	PENDANT CONTROL
21	1	320250-100	SEAL KIT
22	1	340303	TBG RD STL 1 5/16 OD X 1/4 LG
23	1	320423	BOOM MAN W/CROWN
24	1	270385	GEAR WORM
25	1	368985	VALVE MANIFOLD SENSE
26	1	241169	O-RING 3/8 ID
27	1	270433	SHIP KIT
28	1	270395	DECAL LOCATION
29	5	002614	SCW HX HD 5/16 NC X 5/8 SELF TAP
30	10	020600	WASHER SP LK 5/16
31	4	007807	SCW HX HD 5/16 NC X 3/4
32	1	012200	SCW HX HD 5/8 NF X 1 3/4
33	1	018100	NUT HX HLF LK 5/8 NF
34	1	320433	TRAVELING BLOCK
35	1	330185	SCW HX HD 1 NF X 5 1/2
36	1	019106	NUT HX 1 NF
37	15	330370	SCW HX HD 3/8 NC X 7/8
38	13	330372	NUT HX 3/8 NC
39	23	021100	WASHER SP LK 3/8
40	7	330371	SCW HX HD 3/8 NC X 1

GENERAL ASSEMBLY
P/N: 270304 - 2703 PR (6-10-14 BOOM)

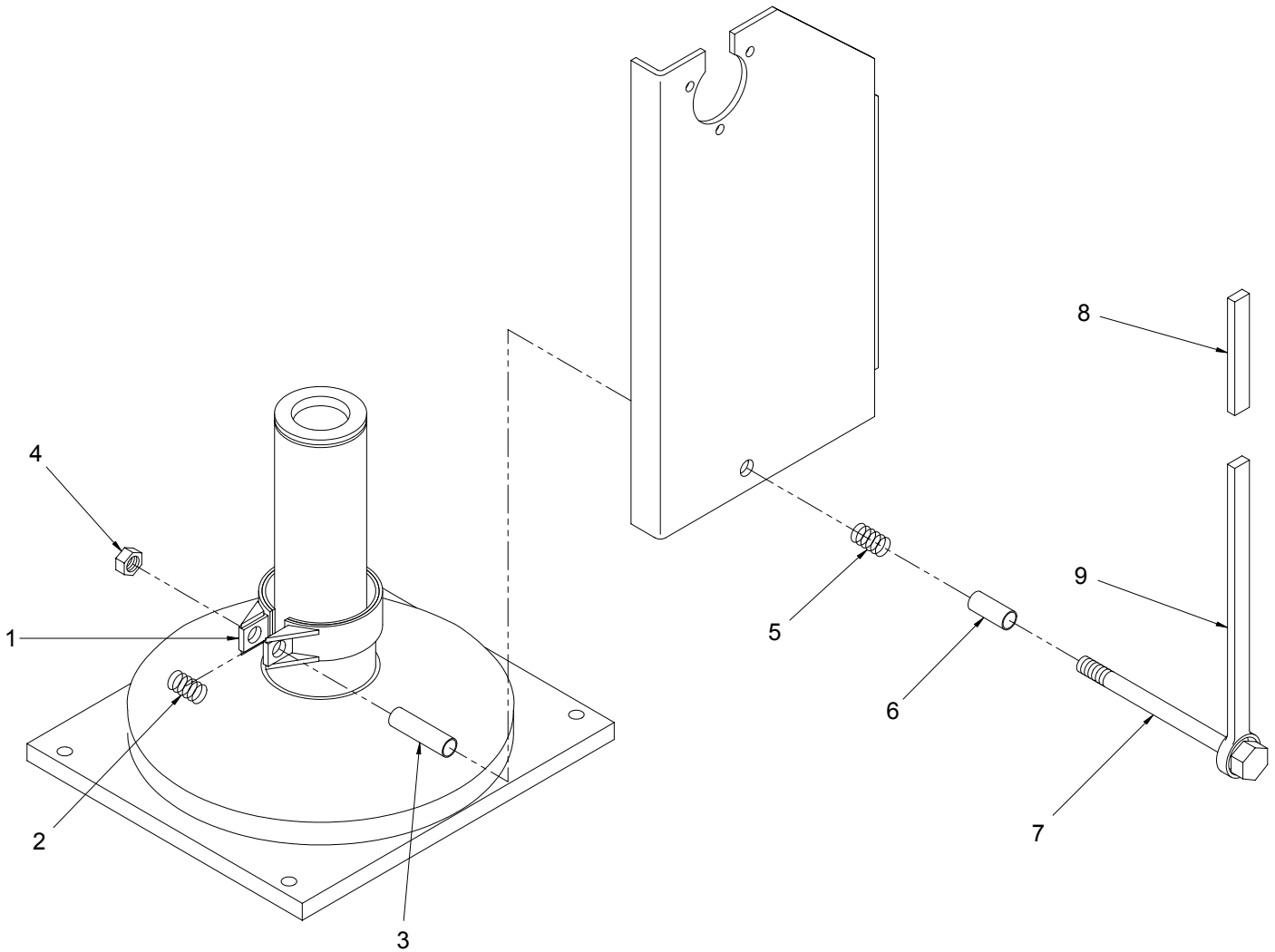
ITEM NO.	QTY.	PART NO.	DESCRIPTION
41	6	007805	SCW HX HD 5/16 NC X 1 1/2
42	1	008401	SCW HX HD 3/8 NC X 1/2
43	1	330212	BRACKET TWECO UPPER
44	1	014400	SCW HX HD 3/4 NF X 5
45	1	018600	NUT HX LK 3/4 NF
46	4	005500	SCW HX 1/4 NC X 3/4
47	4	015900	NUT HX 1/4 NC
48		N/A	
49	1	370002	PIN ASSEMBLY W/LANYARD
50	2	330468	COLLAR SP LK
51	2 QT	330346	HYDRAULIC OIL
52	1	330470	FLANGE BEARING
53	1	320415	BOOM RETAINER MANUAL
54	1	005501	SCW HX HD 1/4 NF X 3/4
55	7	020200	WASHER 1/4 SP LK
56	1	330258	CONNECTOR TWECO MALE
57	1	320488	POWER CABLE ASSEMBLY
58	1	330645	ELL EXTRA LG -6 ORB/-6 JIC
59	1	320543	LOAD SENSOR SWITCH
60	2	340303	SPACER
61	1	330471-001	BOOM PIVOT
62	1	200876	ADAPTOR ST -6 O-RING
63	1	000115	CLAMP CABLE
64	1	002900	SCW SET 1/4 NC X 3/8
65	2	005401	SCW HX HD 1/4 NC X 5/8
66	4	021500	WASHER 1/2 SP LK
67	1	330243-002	KEY 3/16 X 3 /16 X 1 1/2
68	2	011603	SCW HX HD 1/2 NC X 1 3/4
69	4	017701	NUT HX 1/2 NC
70	2	330486	SEAL OIL
71	1	330483	SPACER
72	1	330472	HOUSING W/CUPS
73	2	330485	CONE BEARING
74	2	010201	SCW HX HD 1/2 NC X 1 1/2
75	1	019000	NUT HX 7/8-14
76	1	230300	ZERK GREASE
77	1	330421	SHAFT TURNER
78	1	330489	MOTOR MOUNT ASSEMBLY
79	3	330389	SCW FL HD 1/4 NC 3/4
80		N/A	
81		N/A	
82		N/A	
83		N/A	

GENERAL ASSEMBLY
P/N: 270304 - 2703 PR (6-10-14 BOOM)

ITEM NO.	QTY.	PART NO.	DESCRIPTION
84	1	812209-022	HOSE ASSY X 22
85		N/A	
86		N/A	
87	1	812209-036	HOSE ASSY X 36
88	1	812203-013	HOSE ASSY X 13
89		N/A	
90	1	200877	TEE SHORT THD RUN
91	1	200892	ELL 90 DEG 3/8 NPT/-6 JIC
92	1	330412	HOLDING VALVE
93	2	200876	ADAPTER STRAIGHT -6/-6 JIC
94	2	005810	SCW HX HD 1/4 NC X 1 3/4
95	1	320472	LOAD SENSOR ASSY PR PRX
96		N/A	
97		N/A	
98		N/A	
99		N/A	
100	1	270324	PUMP HYDRAULIC 2703 PR
101	1	404043	BRACKET MOUNTING PUMP
102	1	320431-200	COVER RELAY PANEL
103	8	005510	SCW HX WHZ LK 1/4 NC Z 3/4

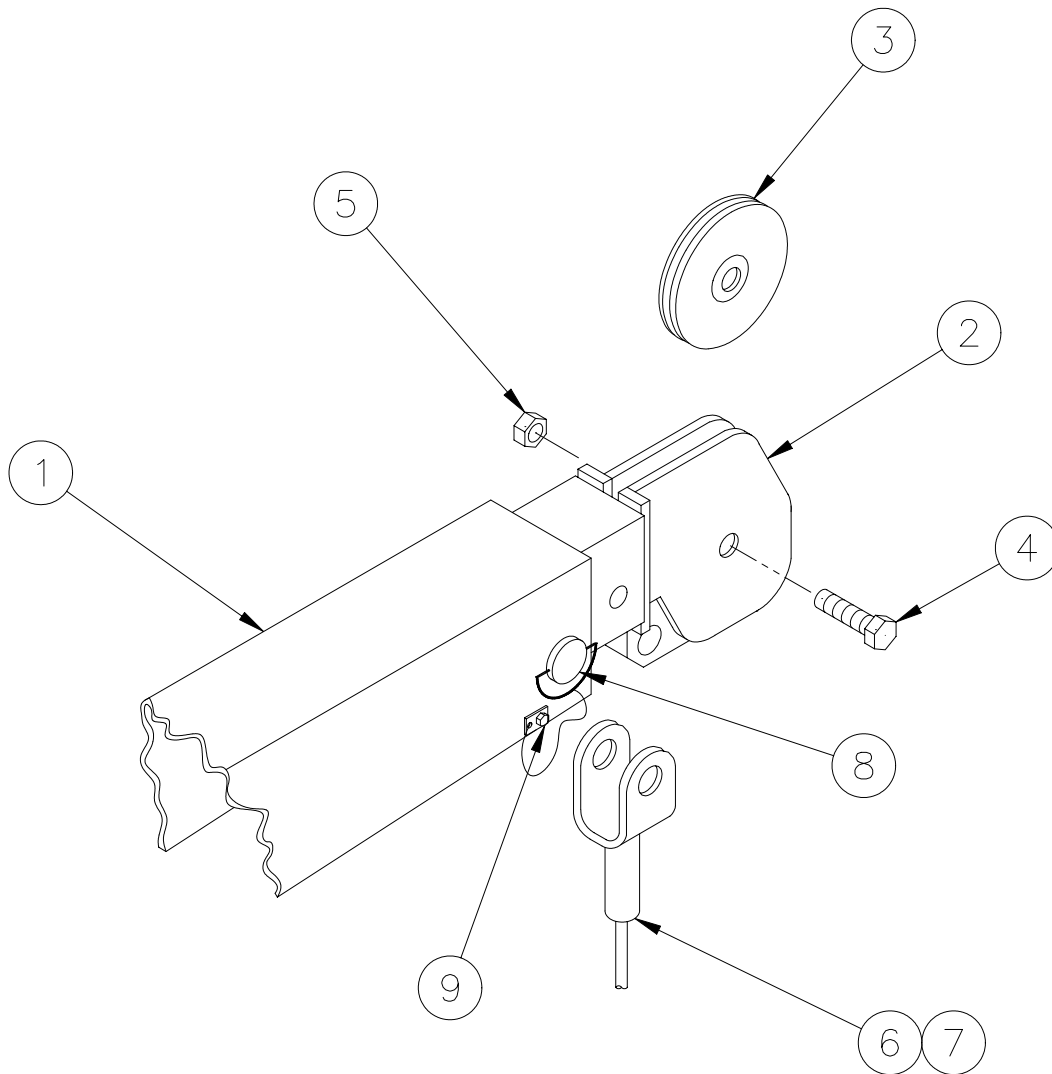
NOTES

BRAKE ASSEMBLY 2703M



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	270376	BRAKE BAND ASSEMBLY
2	1	330184	COMPRESSION SPRING
3	1	330490	SPACER
4	1	018301	NUT HX 5/8 NC
5	1	330488	COMPRESSION SPRING
6	1	330489	SPACER
7	1	013503	SCW HX HD 5/8 NC X 7 GR5
8	1	330303	HANDLE GRIP
9	1	330136	BRAKE HANDLE

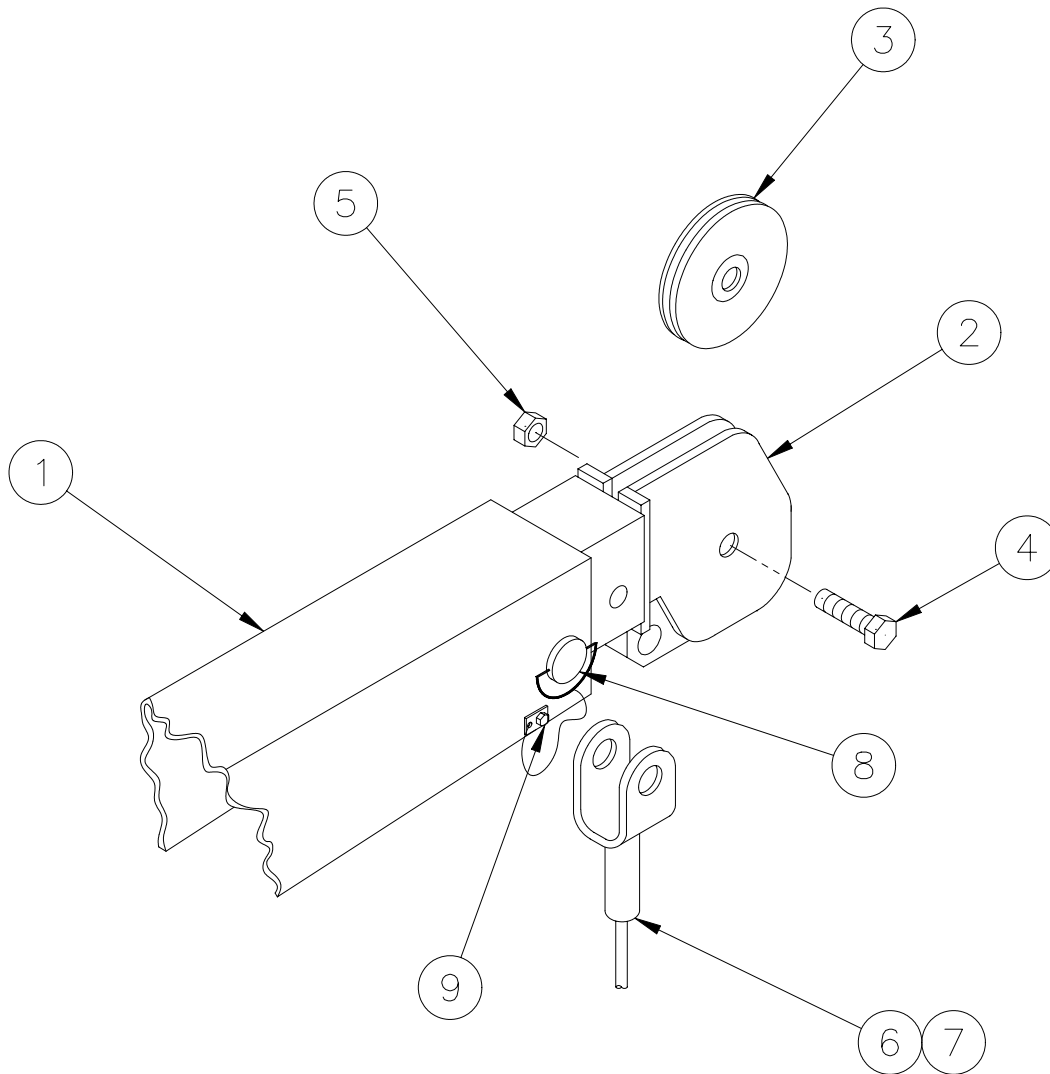
BOOM ASSEMBLY
2703 MR, 6-10-14 BOOM
2703 PR, 6-10-14 BOOM



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	270380	LOWER BOOM WELDMENT
2	1	270408	MANUAL BOOM
3	1	277401	SHEAVE ASSEMBLY (BEARING ONLY 200100)
4	1	012200	SCW HX HD 5/8 NF X 1 3/4 GR5
5	1	018100	NUT LK 5/8 NF
6	1	320338	62' STANDARD CABLE ASSEMBLY
7	1	320339	75' STANDARD CABLE ASSEMBLY
8	1	320328	POSITION PIN
9	1	002614	SCW HX HD 5/16 SELF TAP

BOOM ASSEMBLY

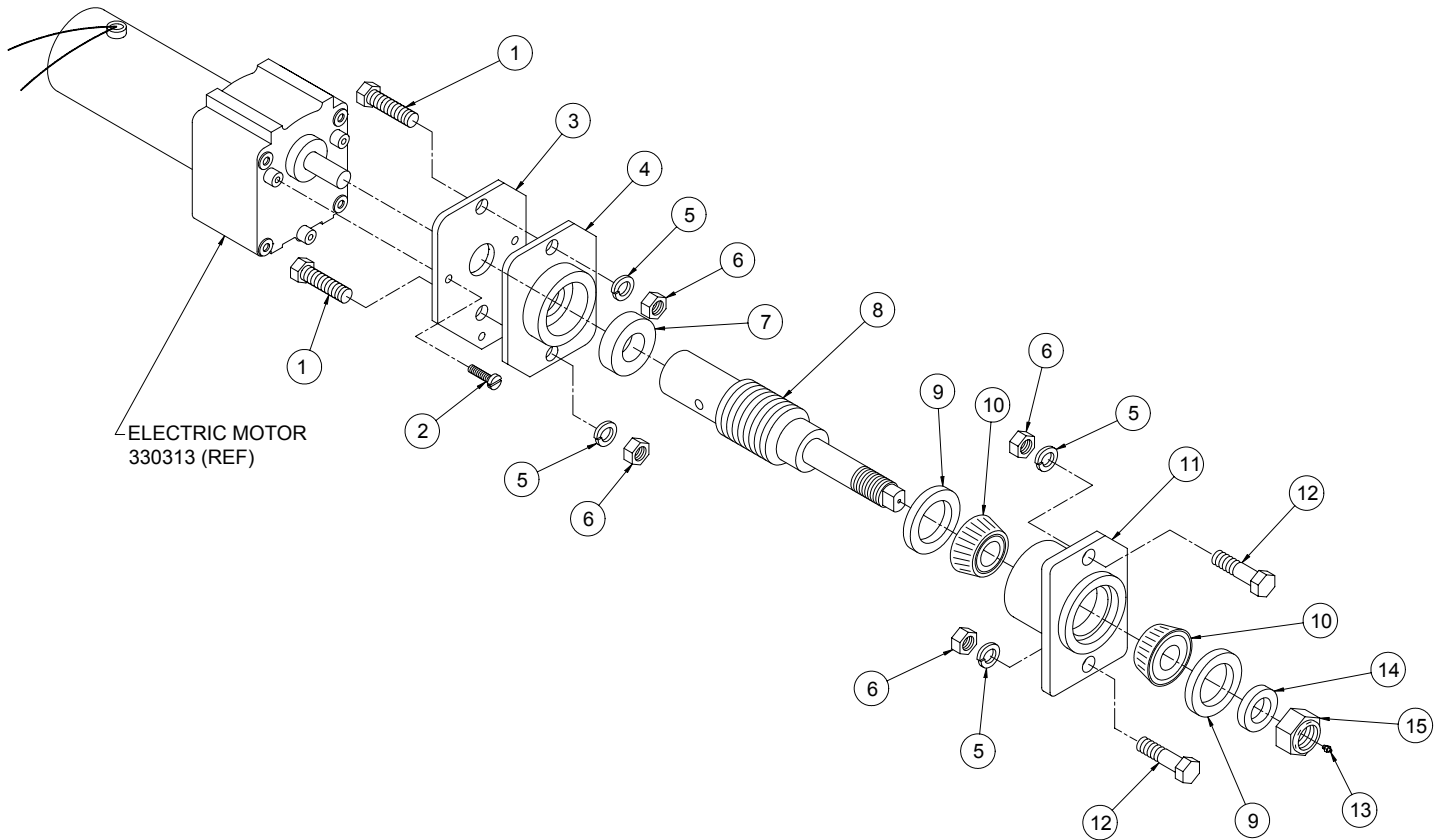
2703 M, 6-10-14 BOOM



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	270380	LOWER BOOM WELDMENT
2	1	320423	MANUAL BOOM
3	1	277401	SHEAVE ASSEMBLY (BEARING ONLY 200100)
4	1	012200	SCW HX HD 5/8 NF X 1 3/4 GR5
5	1	018100	NUT LK 5/8 NF
6	1	320338	62' STANDARD CABLE ASSEMBLY
7	1	320339	75' STANDARD CABLE ASSEMBLY
8	1	320328	POSITION PIN
9	1	002614	SCW HX HD 5/16 SELF TAP

NOTES

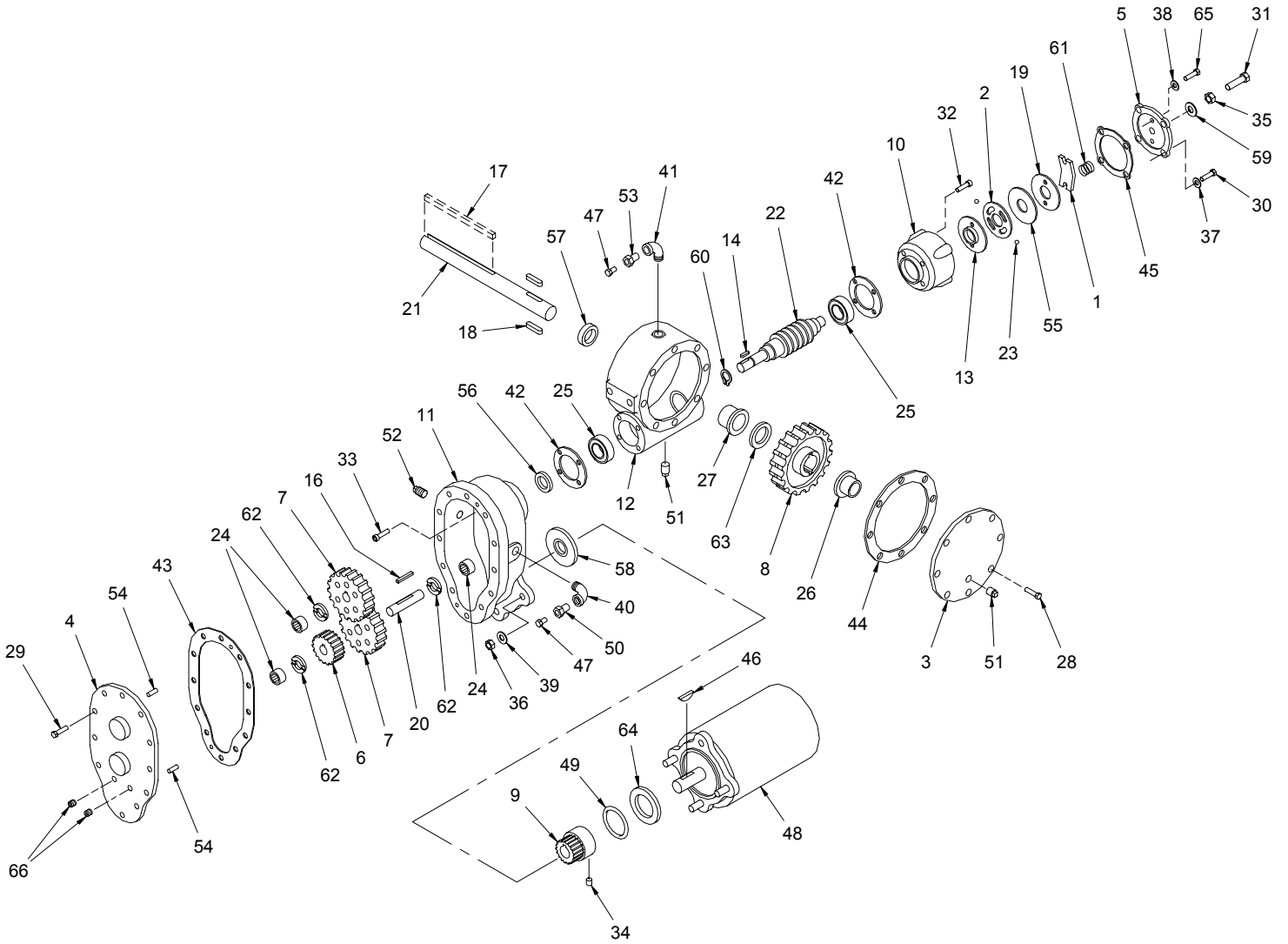
TURNER ASSEMBLY (ELECTRIC) 2703 SERIES



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	010201	SCW HX HD 1/2 NC X 1 1/2 GR5
2	3	330389	SCW FL HD 1/4 NC X 1/2
3	1	330504	MOTOR MOUNT
4	1	330498	MOTOR MOUNT ASSEMBLY
5	4	021500	WASHER SP LK 1/2
6	4	017701	NUT HX 1/2 NC
7	REF	330500	BEARING
8	1	330421	WORM
9	2	330486	OIL SEAL
10	2	330485	CONE BEARING
11	1	330472	BEARING HOUSING
12	2	011603	SCW HX HD 1/2 NC X 1 3/4 GR5
13	1	239300	GREASE ZERK
14	1	330483	SPACER
15	1	019000	NUT HX 7/8 NF

HOIST ACTUATOR ASSEMBLY

P/N: 160269 - 2703 SERIES



HOIST ACTUATOR ASSEMBLY

P/N: 160269 - 2703 SERIES

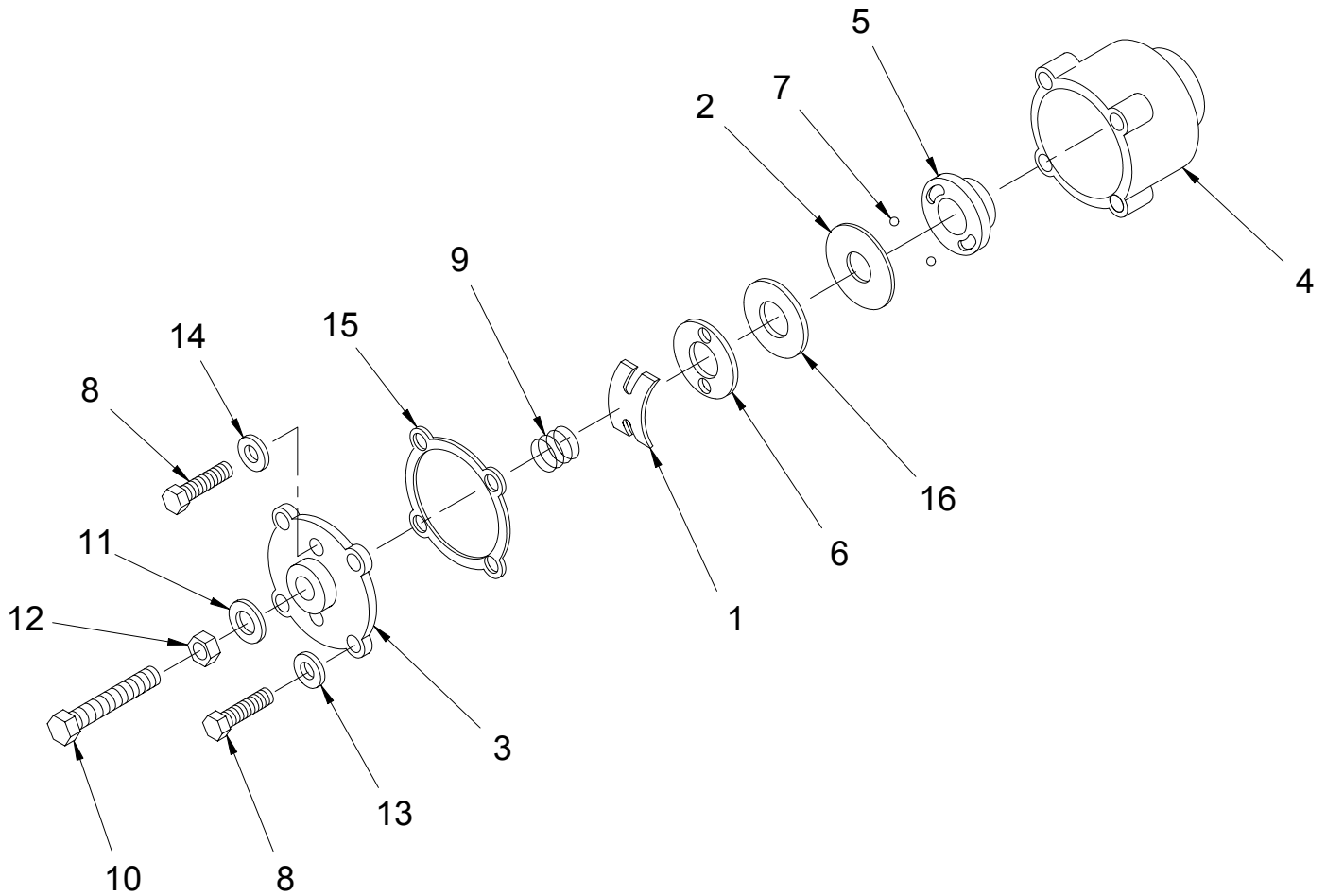
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	360637	FLAT SPRING
2	1	360331	CAM PLATE
3	1	300041	GEAR HOUSING COVER
4	1	300042	SPUR GEAR HOUSING COVER
5	1	360450	BRAKE COVER
6	1	300043	IDLER GEAR
7	2	300044	SPUR GEAR
8	1	300045	WORM R.H. GEAR
9	1	300046	PINION GEAR
10	1	360336	BRAKE HOUSING
11	1	300047	SPUR GEAR HOUSING
12	1	300048	GEAR HOUSING COVER
13	1	360339	BRAKE HUB
14	1	300049	KEY 3/16 SQ X 1/2 LG
15		N/A	
16	1	300050	KEY 3/16 SQ X 1 9/16 LG
17	1	341561	KEY 1/4 SQ X 2 3/4 LG
18	2	300052	KEY RD 5/16 X 5/16 X 15/16 LG
19	1	360342	RETAINER PLATE
20	1	300053	SPUR GEAR SHAFT
21	1	320323	OUTPUT SHAFT
22	1	320312	RIGHT HAND WORM GEAR
23	2	360345	BALL
24	3	300056	NEEDLE BEARING
25	2	300057	BALL BEARING
26	1	300058	BUSHING
27	1	300059	BUSHING
28	10	320313	SCW HX HD 1/4 NC X 3/4 LG NYLOCK
29	12	005500	SCW HX HD 1/4 NC X 3/4 LG
30	4	005604	SCW HX HD 1/4 NC X 1 LG
31	1	320311	SCW HX HD 3/8 NC X 1 1/2 LG ALL THD
32	4	320310	SCW HX HD 1/4 NC X 1 LG
33	4	300060	SCW HX HD 1/4 NC X 3/4 LG LOC-WEL
34	1	300061	SCW HX HD 1/4 NC X 5/16 LG LOC-WEL
35	1	360353	NUT HX JAM 3/8 NC
36	3	071012	NUT HX 3/8 NF
37	4	360354	WASHER SP LK 1/4 MED SECT
38	2	360455	WASHER FL 1/4 ALUM
39	3	021100	WASHER SP LK 3/8
40	1	320314	ELL 90 DEG 3/8-18 NPT BOTH ENDS

NOTES

HOIST ACTUATOR ASSEMBLY
P/N: 160269 - 2703 SERIES

ITEM NO.	QTY.	PART NO.	DESCRIPTION
41	1	320315	ELL 90 DEG 1/4-18 NOT BOTHE ENDS
42	2	300062	GASKET BEARING
43	1	300063	SPUR GEAR HOUSING GASKET
44	1	300064	GEAR HOUSING COVER GASKET
45	1	360359	BRAKE COVER GASKET
46	1	300065	WOODRUFF KEY
47	2	300066	RELIEF FITTING
48	1	300067	12V MOTOR
49	1	300068	O-RING 1 OD X 1/8 THK
50	1	300069	REDUCER -6 NPT/-2 NPT
51	2	300070	PLUG PIPE -4 NPT SQ HD
52	1	300073	PLUG PIPE -6 NPT HX SOC HEADLESS
53	1	300074	REDUCER -4 NPT/-2 NPT
54	2	300075	DOWEL PIN
55	2	360364	THRUST PLATE
56	1	300076	OIL SEAL 3/4 ID X 1 1/4 OD X 1/4 THK
57	1	300077	OIL SEAL 1 1/4 ID X 1 3/4 OD X 1/4 THK
58	1	300078	OIL SEAL 1 1/2 ID X 2 1/4 OD X 5/16 THK
59	1	360371	THREAD SEAL
60	1	300079	SNAP RING
61	1	360368	SPRING
62	3	300080	THRUST WASHER
63	1	300081	THRUST WASHER
64	1	300082	FIBER WASHER
65	2	360456	SCW 1/4 NC X 1 LG ALL THD
66	2	320382	PIPE PLUG

AUTOMATIC SAFETY BRAKE ASSEMBLY (OIL COOLED) HOIST - 2703 SERIES



ITEM NO.	QTY.	PART NO.	DESCRIPTION
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	SCW 1/4 NC X 1 LG GR5
9	1	360368	COIL SPRING
10	1	360456	SCW 3/8 NC X 1 1/2 LG GR5
11	1	360371	THREAD SEAL
12	1	360353	NUT HX JAM 3/8 NC
13	4	360465	THREAD SEAL
14	2	360455	WASHER FL 1/4 ALUM
15	1	360359	GASKET
16	1	360364	THRUST PLATE

AUTOMATIC SAFETY BRAKE ASSEMBLY (OIL COOLED) HOIST - 2703 SERIES

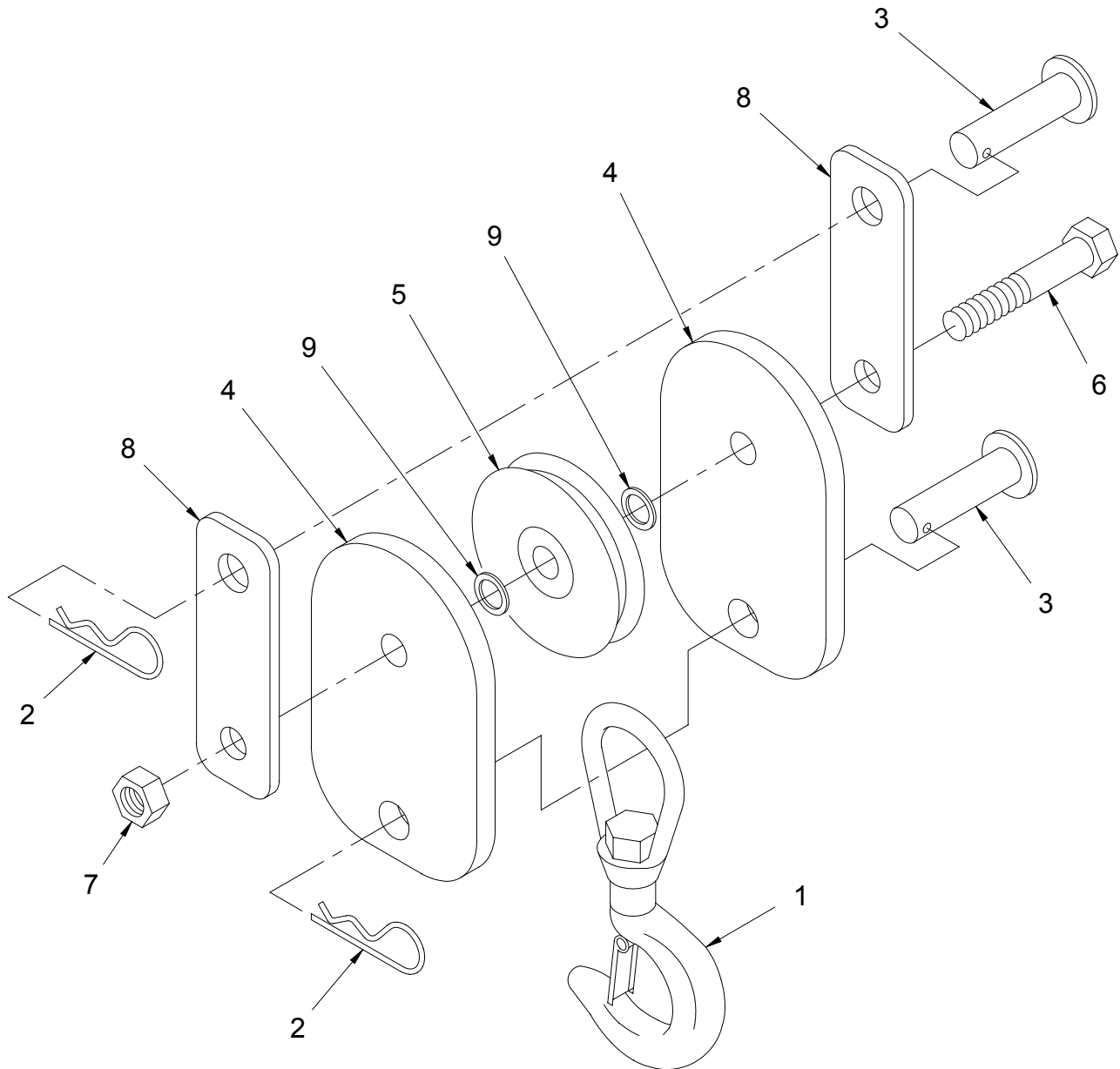
ASSEMBLY INSTRUCTIONS:

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).

NOTES

TRAVELING BLOCK ASSEMBLY

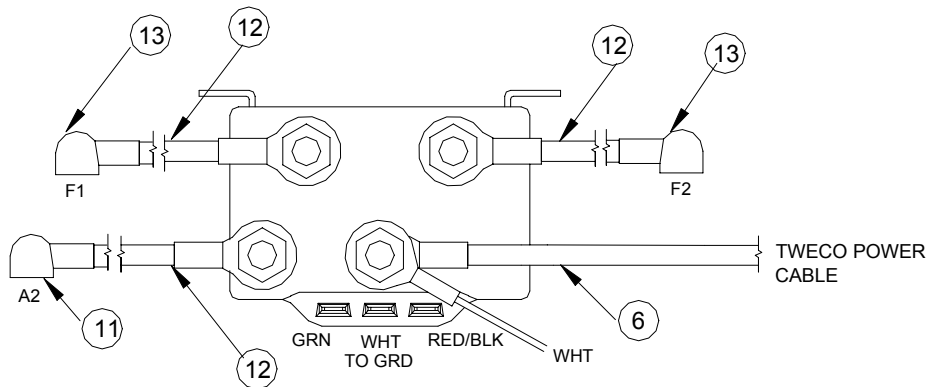
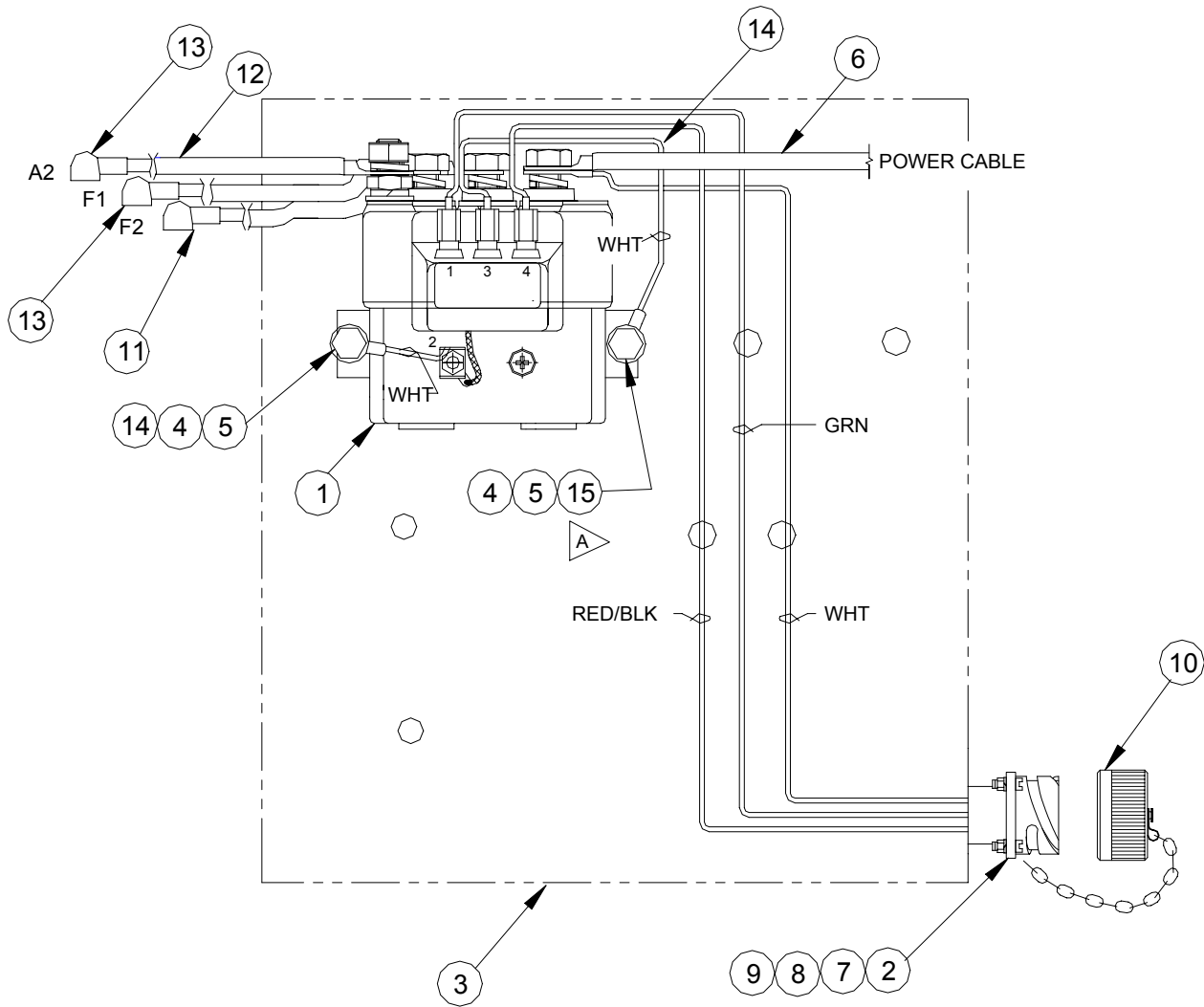
P/N 320433 - 2703 SERIES



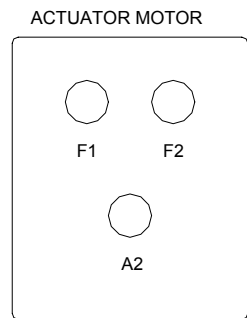
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	100309	SWIVEL HOOK
2	2	360124	HITCH PIN
3	2	320434	BLOCK PIN
4	2	320403	TRAVELING BLOCK
5	1	200909	SHEAVE ASSEMBLY
6	1	013512	SCW HX HD 5/8 NC X 3 1/2
7	1	018200	NUT HX HALF LK 5/8 NC
8	2	320404	BLOCK
9	2	330100	WASHER FLAT

RELAY ASSEMBLY

P/N 270311 – 2703 M



WIRING OF MAIN TERMINALS

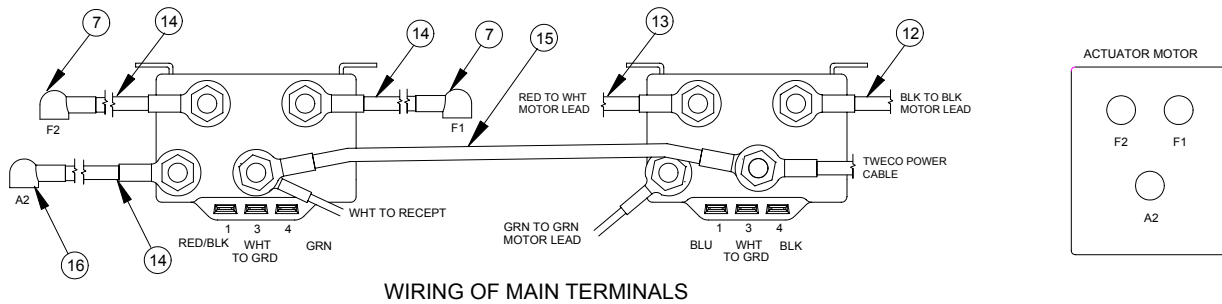
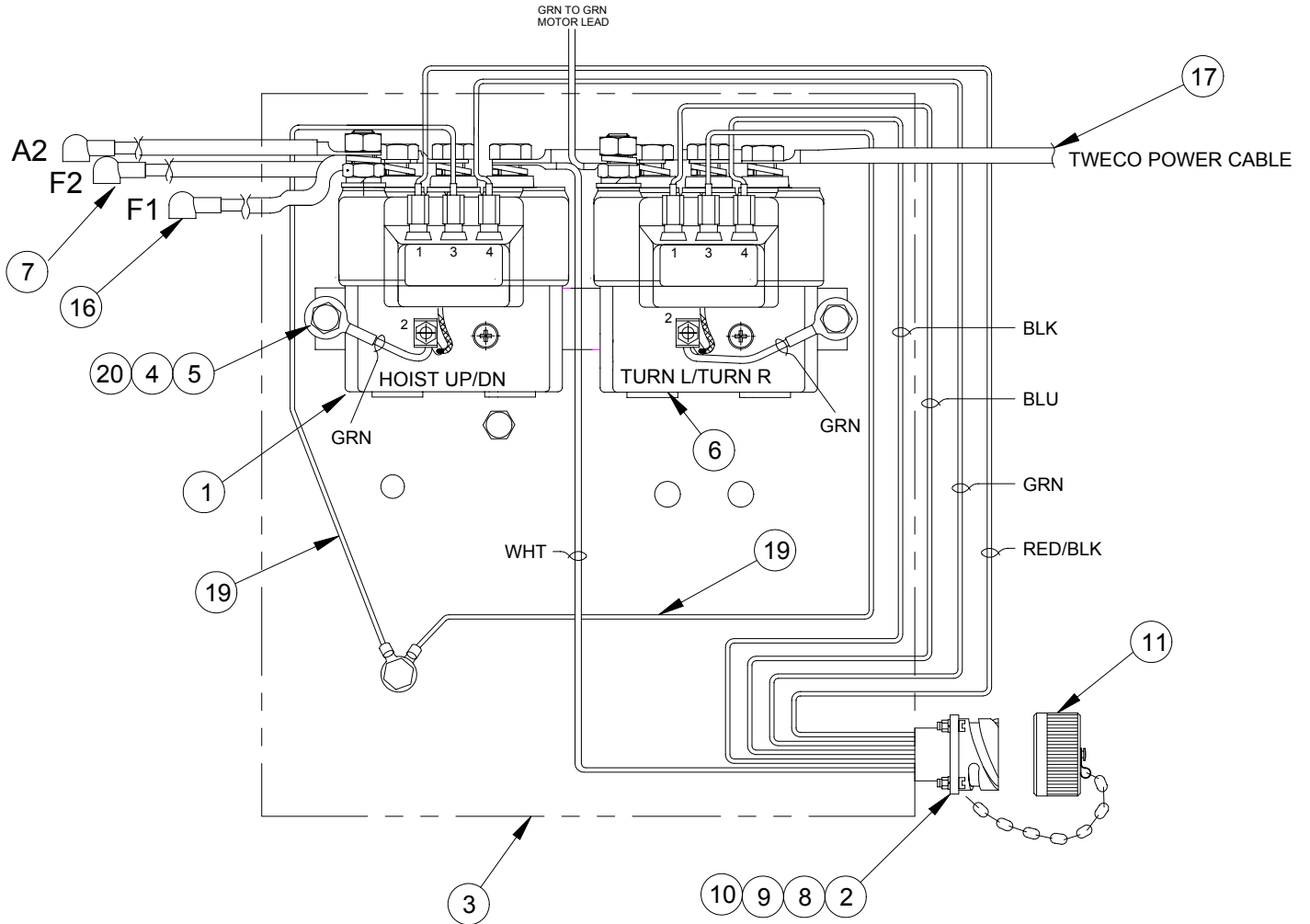


RELAY ASSEMBLY
P/N 270311 – 2703 M

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	320589	RELAY DOUBLE SEALED
2	1	270306	RECEPT ASSEMBLT BAYONET
3	1	320805	RELAY PANEL
4	6	736272	NUT INSERT 1/4 NC .027-.165 GRIP
5	2	005500	SCW HX 1/4 NC X 3/4 GR5
6	1	330258	TWECO ASSEMBLY
7	2	019600	WASHER SP LK #6
8	2	015400	NUT HX #6 NC
9	2	000404	SCW HX #6 NC X 5/8
10	1	320564	CAP REPECT
11	1	270326	INSULATOR BOOT BLACK
12	3	622259	CABLE 6 GA BLACK X 38
13	2	270326-001	INSULATOR BOOT RED
14	2	622260	CONDUCTOR 16 GA WHITE X 3
15	2	020201	WASHER INT LK 1/4

RELAY ASSEMBLY

P/N 270312 – 2703 MR

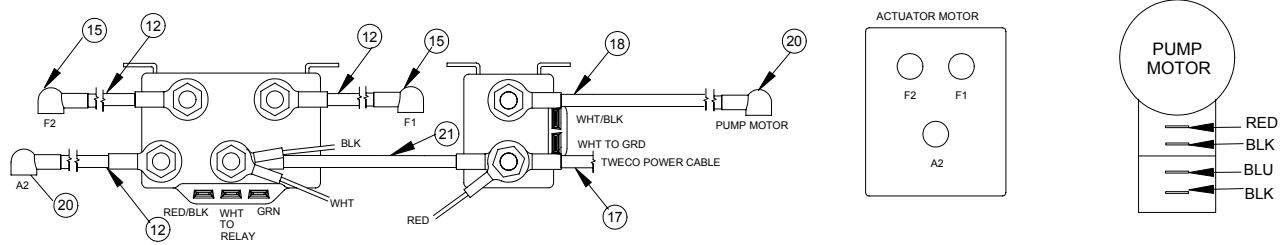
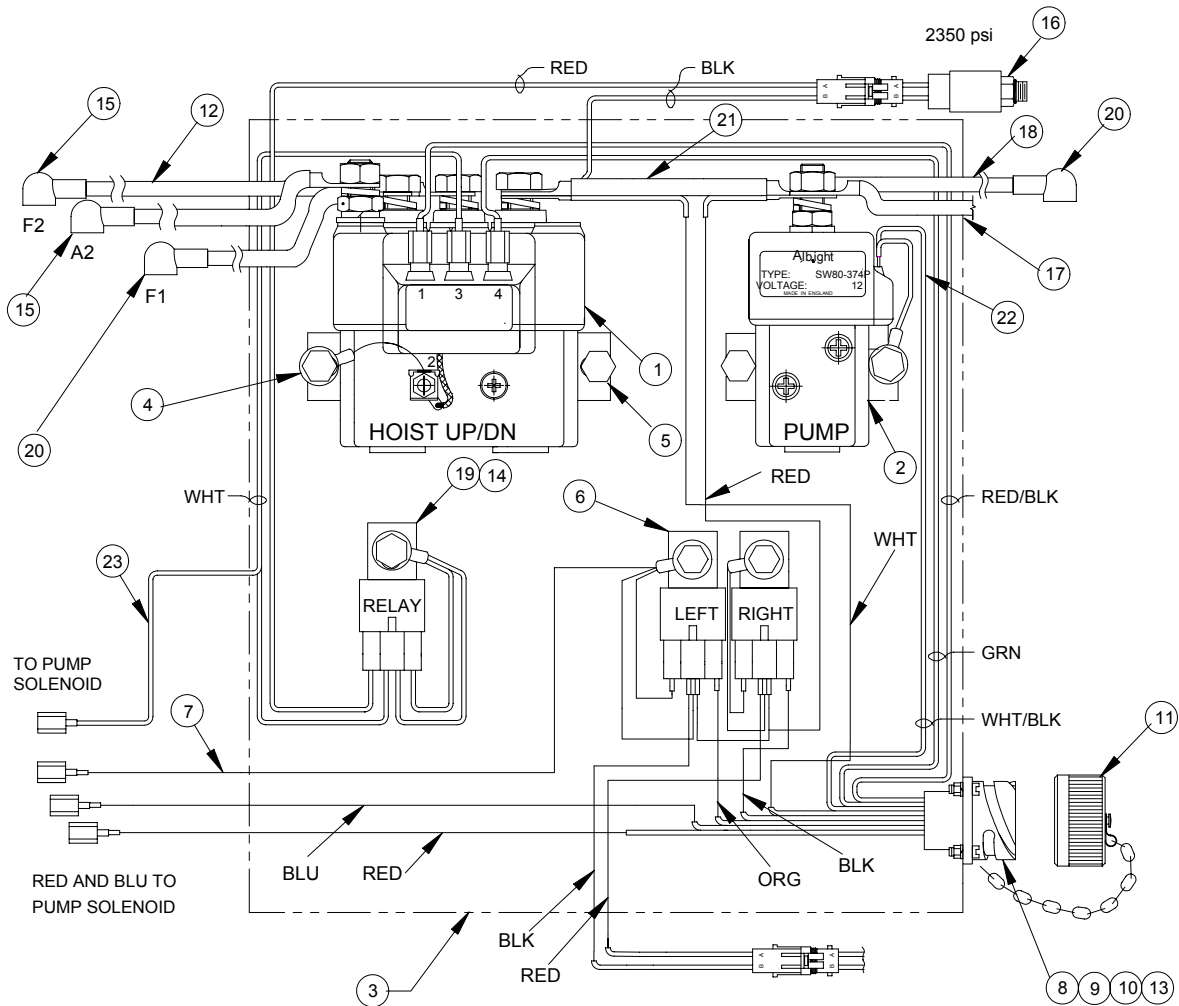


RELAY ASSEMBLY
P/N 270312 – 2703 MR

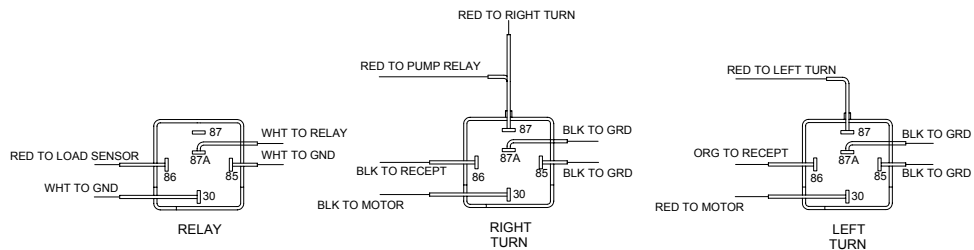
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	320589	RELAY DOUBLE SEALED
2	1	320576	RECEPT ASSEMBLT BAYONET
3	1	320805	RELAY PANEL
4	7	736272	NUT INSERT 1/4 NC .027-.165 GRIP
5	2	005500	SCW HX 1/4 NC X 3/4 GR5
6	1	270314	BRACKET RELAY MOUNTING
7	2	270326-001	INSULATOR BOOT RED
8	2	019600	WASHER SP LK #6
9	2	015400	NUT HX #6 NC
10	2	000404	SCW HX #6 NC X 5/8
11	1	320564	CAP REPECT
12	1	330387	CABLE 12 GA BLACK X 15
13	1	330388	CABLE 12 GA RED X 15
14	3	622259	CABLE 6 GA BLACK X 38
15	1	622320	CABLE 6 GA BLACK X 4
16	1	270326	INSULATOR BOOT BLACK
17	1	330258	TWECO ASSEMBLY
18	1	622275	CABLE 12 GA GREEN X 15
19	2	622276	CONDUCTOR 16 GA WHITE X 11
20	2	622260	CONDUCTOR 16 GA WHITE X 3

RELAY ASSEMBLY

P/N 270313 – 2703 PR



WIRING OF MAIN TERMINALS

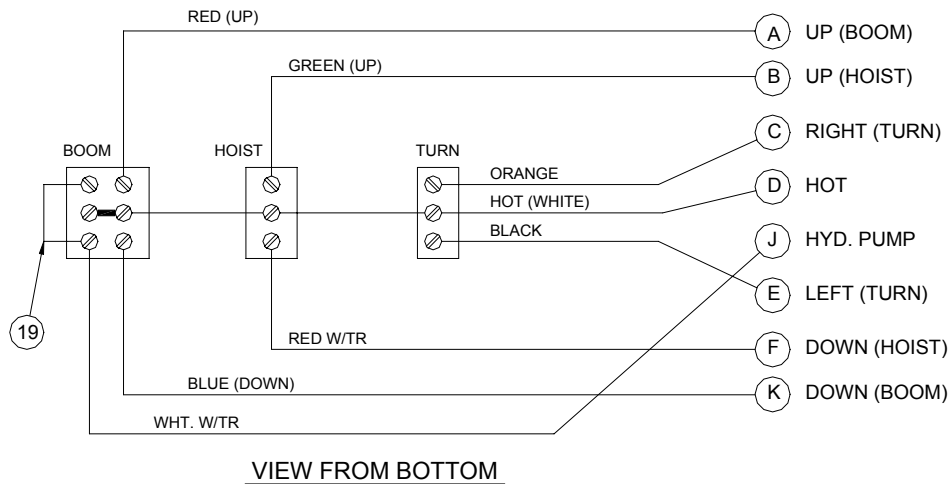
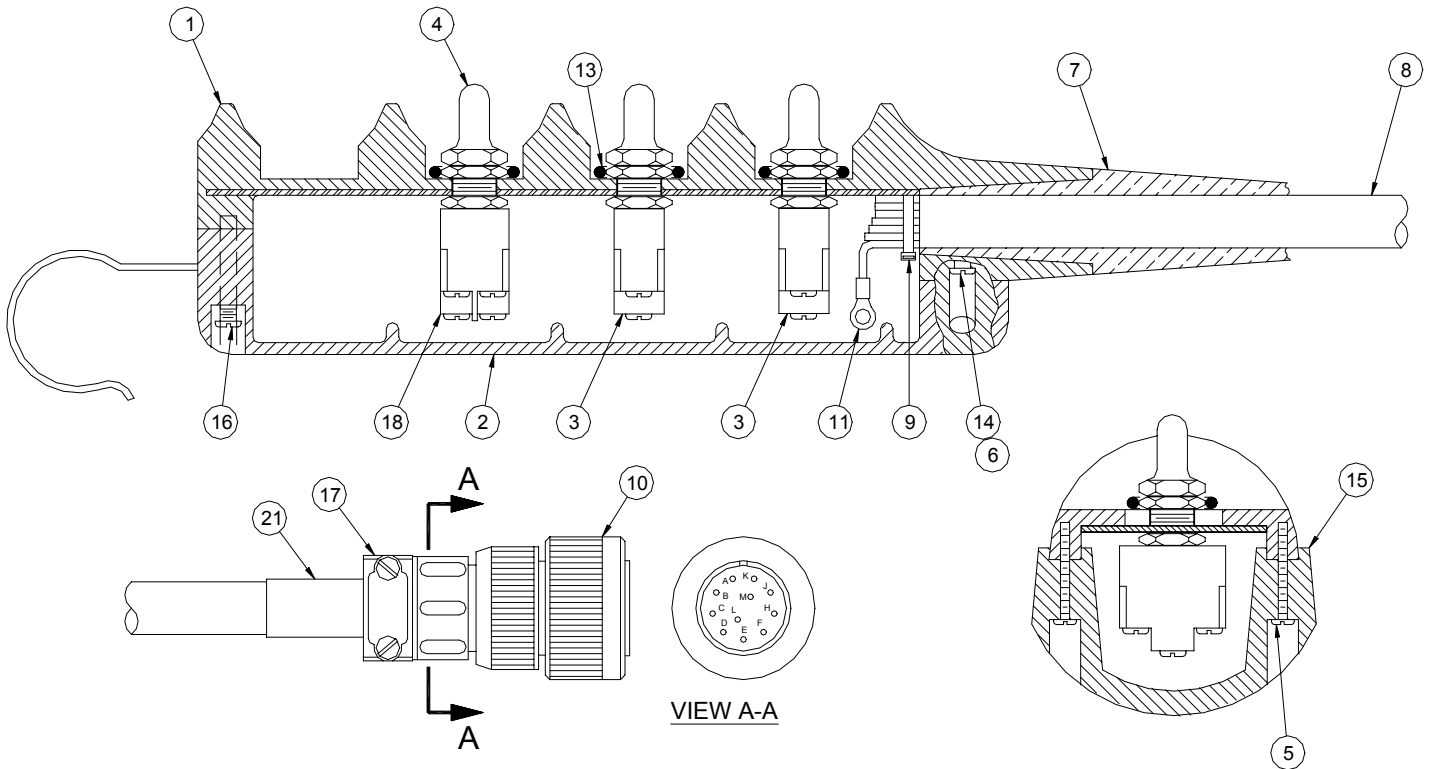


RELAY ASSEMBLY
P/N 270313 – 2703 PR

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	320589	RELAY DOUBLE SEALED
2	1	320584	RELAY SINGLE SEALED
3	1	320805	RELAY PANEL
4	11	736272	NUT INSERT 1/4 NC .027-.165 GRIP
5	7	005500	SCW HX 1/4 NC X 3/4 GR5
6	1	270308	HARNESS RELAY DROP OUT
7	1	270435	WIRE ASSY 16 GA BLACK X 11
8	2	019600	WASHER SP LK #6
9	2	015400	NUT HX #6 NC
10	2	000404	SCW HX #6 NC X 5/8
11	1	320564	CAP REPECT
12	3	622259	CABLE 6 GA BLACK X 38
13	1	270307	RECEPT ASSEMBLT 11 PIN BAYONET
14	1	270309	HARNESS RELAY DROP OUT
15	2	270326-001	INSULATOR BOOT RED
16	1	320543	LOAD SENSOR ASSEMBLY 2350 psi
17	1	330258	TWECO ASSEMBLY
18	1	622323	CABLE 4 GA BLACK X 26
19	3	320355	RELAY DROP OUT BOSCH
20	2	270326	INSULATOR BOOT BLACK
21	1	622258	CABLE 6 GA BLACK X 38
22	2	622260	CONDUCTOR 16 GA WHITE X 3
23	2	622267-001	CONDUCTOR 16 GA WHITE X 14

PENDANT ASSEMBLY BAYONET w/18' LG CABLE

P/N: 270410 – 2703 PR

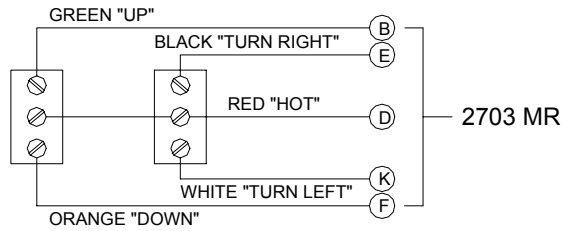
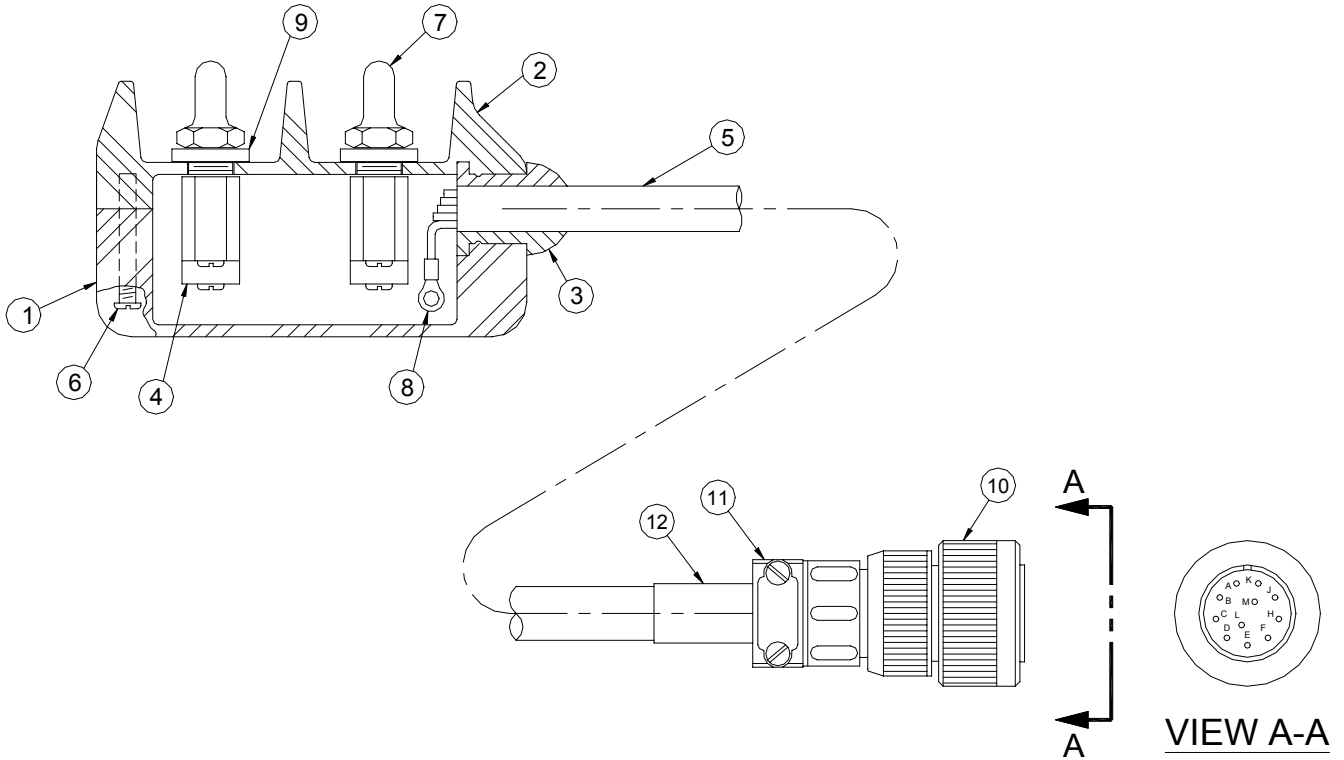


PENDANT ASSEMBLY BAYONET w/18' LG CABLE
P/N: 270410 – 2703 PR

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	631602	PENDANT HOUSING
2	1	631700	BOTTOM COVER
3	2	622000	TOGGLE SWITCH
4	3	640300	BOOT - TOGGLE SWITCH
5	10	001004	SCW ST SLT PAN HD #6 X 3/4
6	2	005101	SCW ST SLT PAN HD #8 X 1 1/4
7	1	633801	CABLE ADAPTER
8	18'	800630	CONDUCTOR CABLE
9	2	634401	TY-RAP CABLE TIE
10	1	320563	PLUG 11 PIN BAYONET
11	15	000101	TERMINALS T & B
12		N/A	
13	3	642100	O-RING
14	4	019700	WASHER SP LK #8 PLATED
15	21"	800580	3/4" WIDE OKONITE RUBBER TAPE
16	1	004700	SCW ST SLT PAN HD #8 X 1 1/2
17	1	480515	CLAMP CABLE
18	1	634200	TOGGLE SWITCH
19	2	636600	BAR JUMPER
20	3"	800592	WIRE WHITE 16 GA X 3" LG
21	6"	490243	TUBING HEAT SHRINK

PENDANT ASSEMBLY

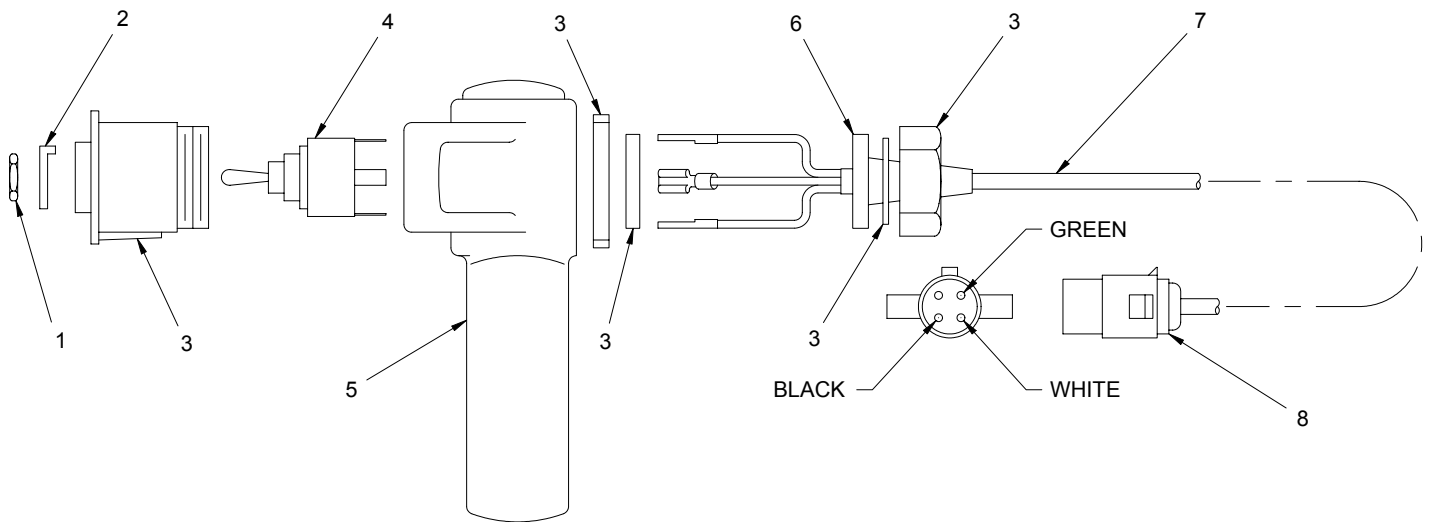
P/N: 680068 - 2703 MR



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	370130	PENDANT BOX
2	1	370131	PENDANT COVER
3	1	370132	PENDANT HOUSING GASKET
4	2	622000	TOGGLE SWITCH
5	17'	800629	CONDUCTOR CABLE
6	4	001207	RECESSED CROSS PAN HD SCW #8 X 1
7	2	640300	BOOT
8	7	000101	TERMINAL RING
9	2	370135	PINION GEAR
10	1	320563	11 PIN BAYONET PLUG
11	1	480515	CABLE CLAMP
12	6"	490243	HEAT SHRINK TUBING

PENDANT ASSEMBLY

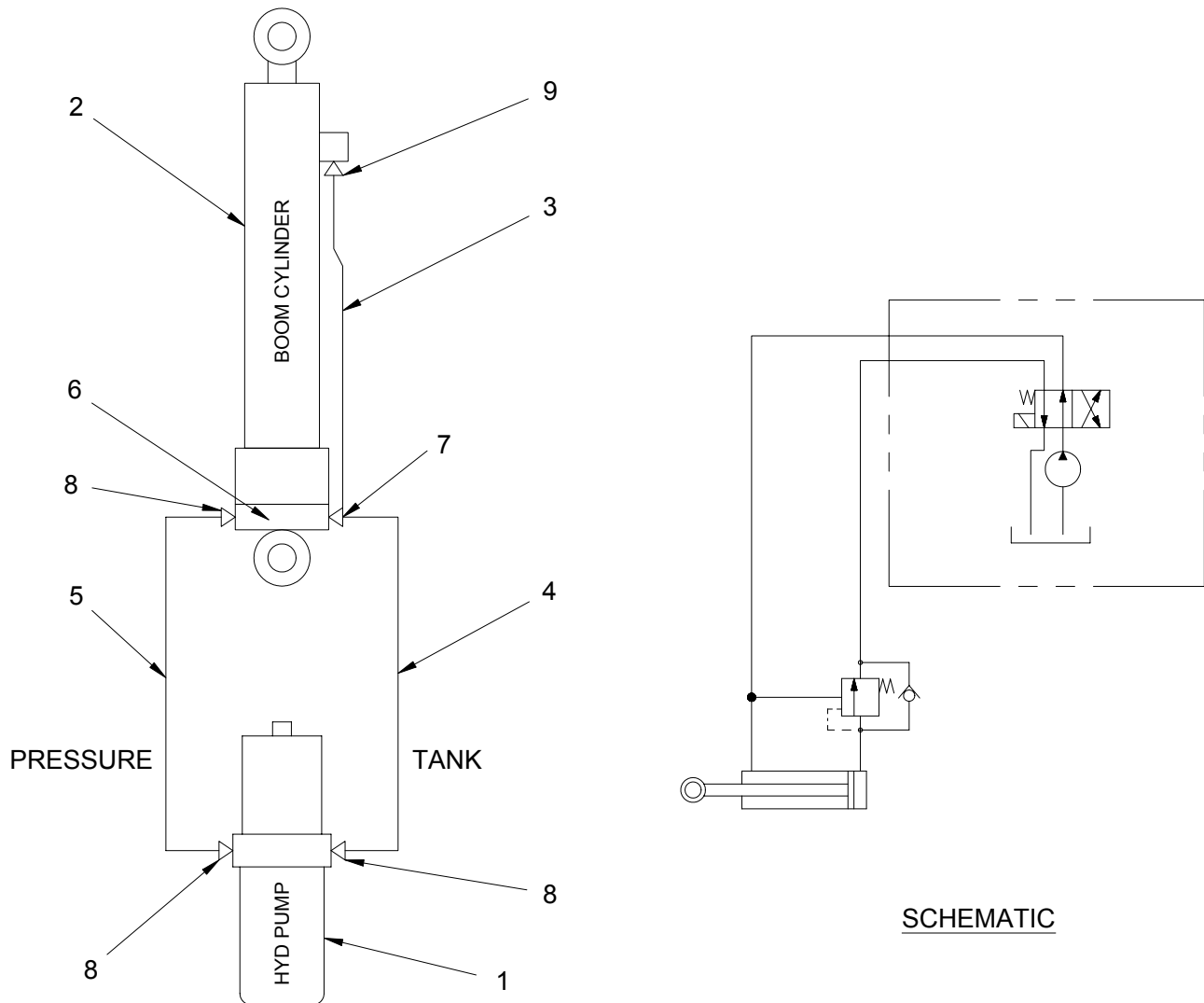
P/N: 330519 - 2703 M



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	675271	NUT HX
2	1	675281	WASHER TANG
3	1	675206	HOUSING KIT
4	1	675202	SWITCH W/SEAL NUT
5	1	675201	HOUSING
6	1	675261	SEAL
7	1	675291	CABLE PENDANT
8	1	330518	FEMALE PLUG

NOTES

HYDRAULIC ASSEMBLY 2703 PR



ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	REF	HYDRAULIC PUMP
2	1	REF	HYDRAULIC CYLINDER
3	1	812203-013	HOSE ASSEMBLY X 13
4	1	812209-036	HOSE ASSEMBLY X 36
5	1	812209-022	HOSE ASSEMBLY X 22
6	1	330412	HOLDING VALVE
7	1	200877	TEE STRAIGHT THREAD RUN
8	3	241175	ELBOW 90 DEG -6 ORB/-6 JIC
9	1	200892	ELBOW 90 DEG 3/8 NPT/-6 JIC

TROUBLESHOOTING

2703 SERIES

PROBLEM

CRANE WILL NOT HOIST UP OR DOWN.

CAUSE/SOLUTION

CAUSE:

Bad relay, crane not grounded properly, or power cable not connected to 12V power source. Bad switch in pendant, broken wire in pendant connector, pendant not plugged together properly, wire on relay not in proper place or lead wires to motor not connected properly.

SOLUTION:

Problems can be solved by replacing bad relay, grounding the crane properly to the truck chassis, connecting the power cable properly to 12V+ power source, switch in pendant can be replaced, cord in remote control can be replaced, check connector on cord to make sure of contact of all the prongs on it are plugged together correctly, make sure wires on relays are according to the wiring print supplied with each new crane in the owner book and also wires going to motor are connected properly. **NOTE: 12V must pass through opposite relay to complete circuit.**

WITH LOAD SENSOR (OPT.) CRANE WILL NOT HOIST UP OR BOOM UP OR DOWN

CAUSE:

Crane is overloaded.
Sensor switch is bad.
Bad connection to relays.

SOLUTION:

Hoist down. Do not overload crane. Replace sensor switch. Check for loose or damaged wiring.

CRANE RUNS UP OR DOWN ANY TIME POWER SOURCE IS CONNECTED.

CAUSE:

Relay stuck in run position which will let crane run up or down any time 12V power is connected. Wires shorted together in remote control. Lead or cable can also cause this problem. Wires jumped across relay in wrong place can cause crane to run all the time.

SOLUTION:

Problem can be solved by checking the relay and replacing the relay or removing jumper wires from the relay or replacing the remote control cord or switch.

TROUBLESHOOTING

2703 SERIES

PROBLEM

**CRANE WILL NOT BOOM UP
OR DOWN.**

CAUSE/SOLUTION

CAUSE:

Bad pump, crane not grounded properly, or power cable not connected to 12V power source. Bad switch in pendant, broken wire in pendant connector, pendant not plugged together properly, wire on relay not in proper place or lead wires to motor not connected properly.

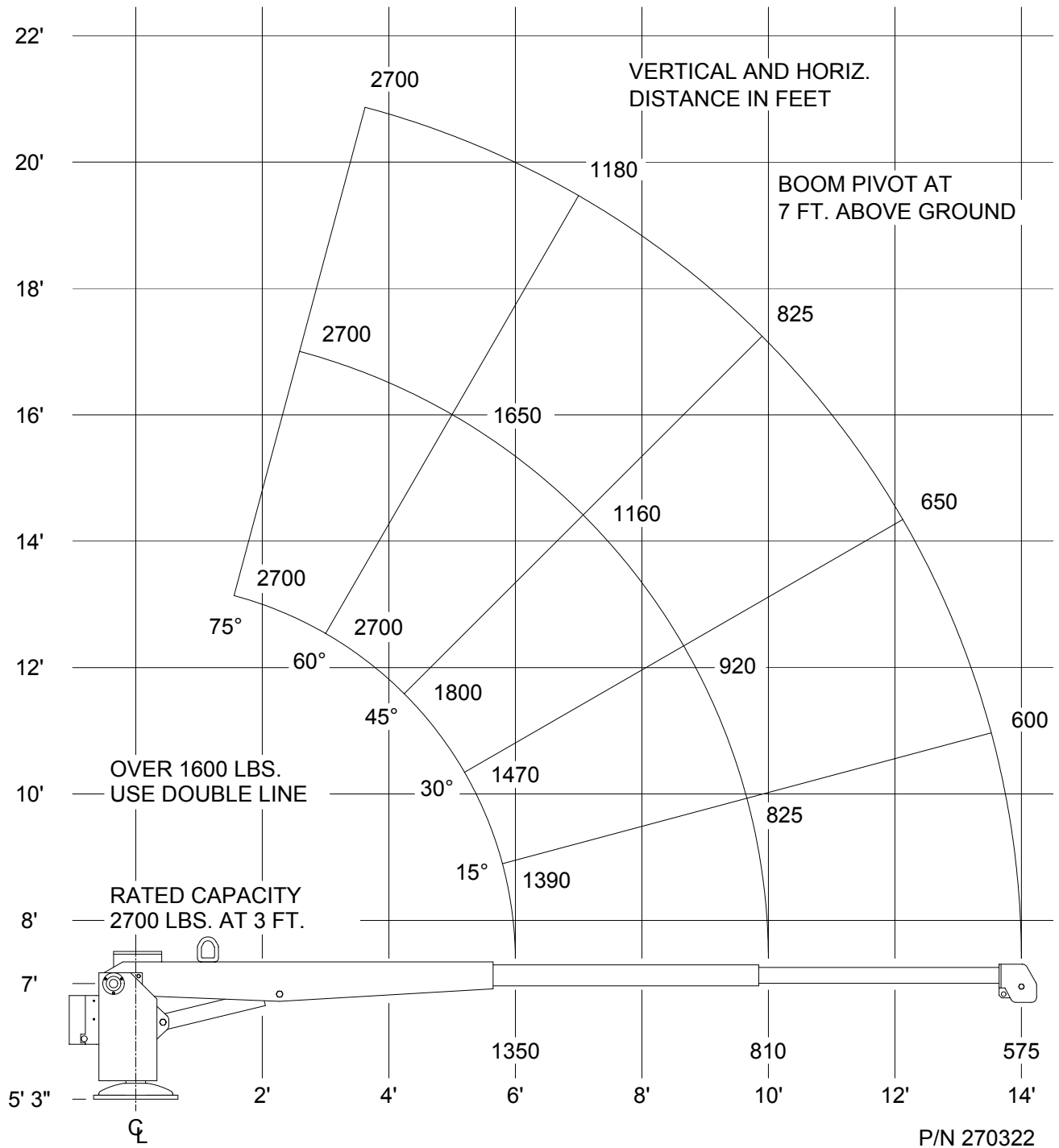
SOLUTION:

Problems can be solved by replacing bad pump, grounding the crane properly to the truck chassis, connecting the power cable properly to 12V+ power source, switch in pendant can be replaced, cord in remote control can be replaced, check connector on cord to make sure of contact of all the prongs on it are plugged together correctly, make sure wires on relays are according to the wiring print supplied with each new crane in the owner book and also wires going to motor are connected properly.

NOTES

LOAD CHART

P/N: 270322





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

LIMITED WARRANTY 2 YEAR PARTS AND LABOR

Auto Crane will warranty to the consumer for a period of (2) years parts and labor from the date of purchase. Each new Auto Crane unit they sell will be free under normal use and service from defects in material and workmanship. Date of purchase will be honored as the date indicated on the Bill of Sale, which must accompany the Warranty Registration and be on file with Auto Crane. Absent a valid Warranty Registration and appropriate documentation, the original date of manufacture, as indicated by the serial number on the product, will be used to determine the effective date of the 2 year warranty.

The obligation of Auto Crane under this warranty is limited to the replacement or repair of parts that appear to the manufacturer after review and/or inspection to be defective and paid flat rate labor for replacing defective parts. This warranty does not obligate Auto Crane to bear the travel time charges in connection with the replacement or repair of defective parts. Responsibility for customer's claims arising from misapplication, abuse, misuse or alteration of equipment or parts lies with the distributor or user and no warranty obligation is assumed in these circumstances by Auto Crane.

Auto Crane will in no event be liable for any consequential damages or contingent liabilities arising out of the failure of any Auto Crane Product or parts to operate properly.

Auto Crane makes no warranty in respect to component accessories, it being subject to the warranties of their respective manufacturers.

If field service, at the request of the distributor, is rendered and fault is found not to be with Auto Crane's product, the distributor shall pay the time and expense of the field representative.

Claims for service labor or other expenses that have incurred by the buyer without approval or authorization or Auto Crane will not be accepted.

When applying for warranty, claims may be handled by contacting your nearest authorized Auto Crane Distributor. All claims are to be filed in writing on an Auto Crane Warranty Claim Form.

AUTO CRANE COMPANY IS UNDER NO OLIGATION TO EXTEND THIS WARRANTY TO ANY CUSTOMER FOR WHICH AN AUTO CRANE DELIVERY REPORT FORM HAS NOT BEEN COMPLETED AND ON FILE WITH AUTO CRANE COMPANY