

OWNERS MANUAL

RAM-LIFT CRANE

REVISION 2/2000

PART NO. 999958

SERIAL NO. _____



RAMSEY WINCH COMPANY

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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.

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GENERAL SPECIFICATIONS

RAM-LIFT CRANE SERIES

Dimensions

Width: 9.5 in. (.24 m)
Height: 4 ft 2.5 in. (1.28 m)
Length: 4 ft 3 in. (1.30 m)
Weight: 150 lb (68 kg)

Capacity

4,250 ft-lb (.59 tm)

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

Lifting Capacity	
Distance	Load
4 ft 3in.	1,000 lb

Cable

25 ft (15.2 m) of 3/16 in. diameter 7 x 19 galvanized cable is standard.
This cable has a single line breaking strength of 4200 lb.

Chassis Requirements

5,200 GVWR minimum

Electrical System

Hoist Motor: 12 volt DC series wound

Electrical System Requirements

Alternator: 50 amp (minimum)

Battery: 100 minute reserve capacity (minimum)
Maintenance type

Rotation

360° Continuous manual rotation

--- 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 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. While operating the outrigger control valves (located on the outrigger cylinders) simultaneously operate the boom-up control switch. This will allow the hydraulic system to build pressure.
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.

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.

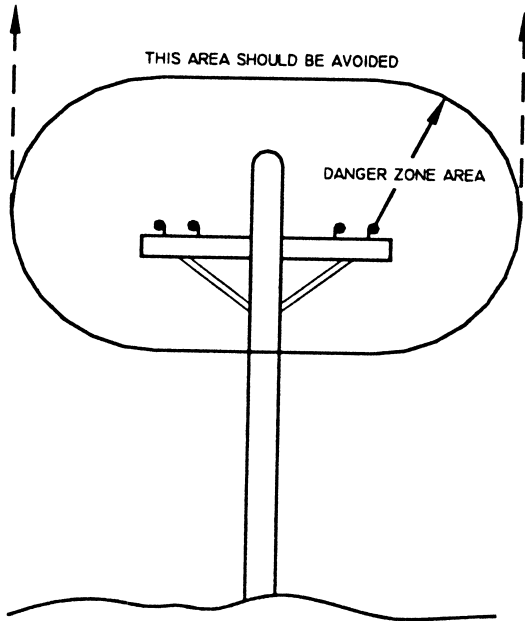
O. No person should be permitted to stand or pass under a suspended load.

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

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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

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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

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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 11/8 in. (29 mm), 3/32 in. (2.4 mm) for diameters 11/4 in. (32 mm) to and including 11/2 in. (38 mm)

INSPECTION, TESTING AND MAINTENANCE

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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.

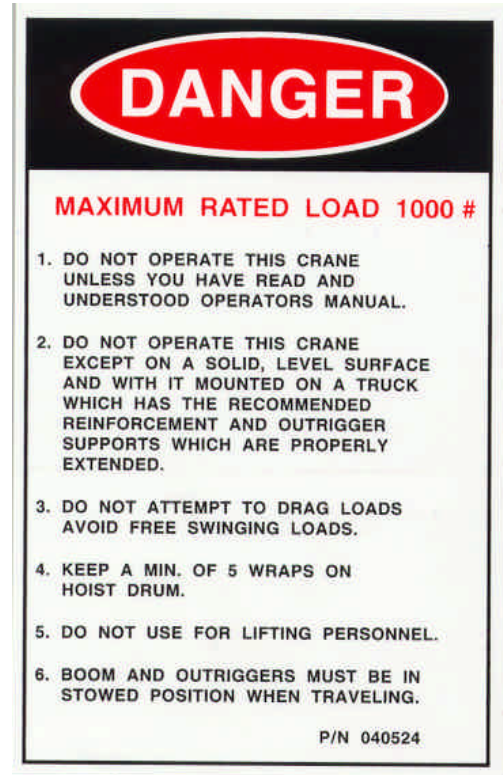
67 Rope should be maintained in a well-lubricated condition. It is important that lubricant applied as a part of a maintenance program shall be compatible with the original lubricant and to this end the rope manufacturer should be consulted. Lubricant applied shall be the type which does not hinder visual 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

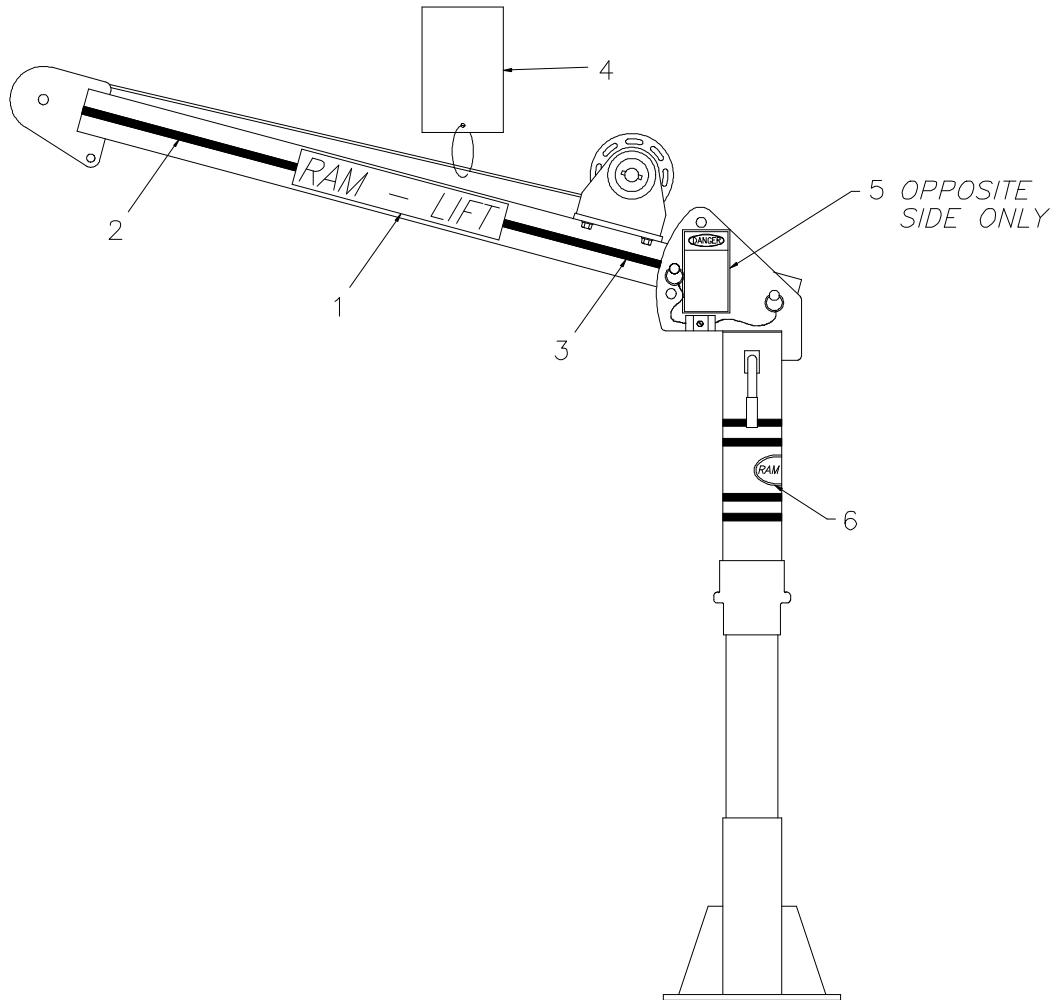
RAM-LIFT CRANE

PART NO.: 040524
DECAL: DANGER
FUNCTION: To inform the operator of the proper procedure to follow for safe operation of this crane.
QUANTITY: 1
PLACEMENT: Quill weldment sideplate



SAFETY DECAL SECTION

RAM-LIFT CRANE

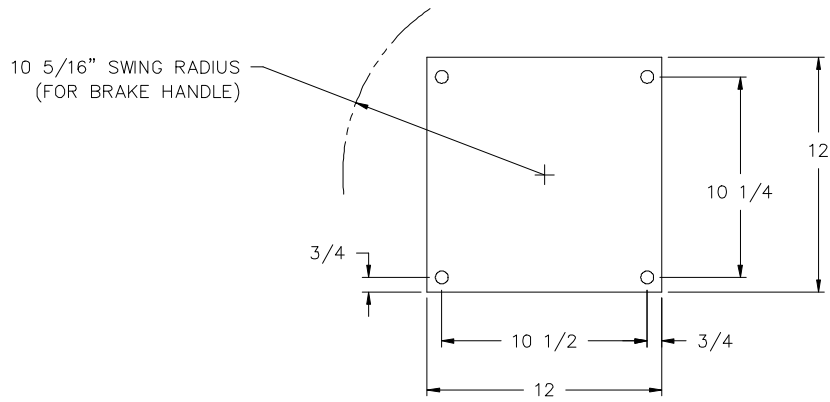
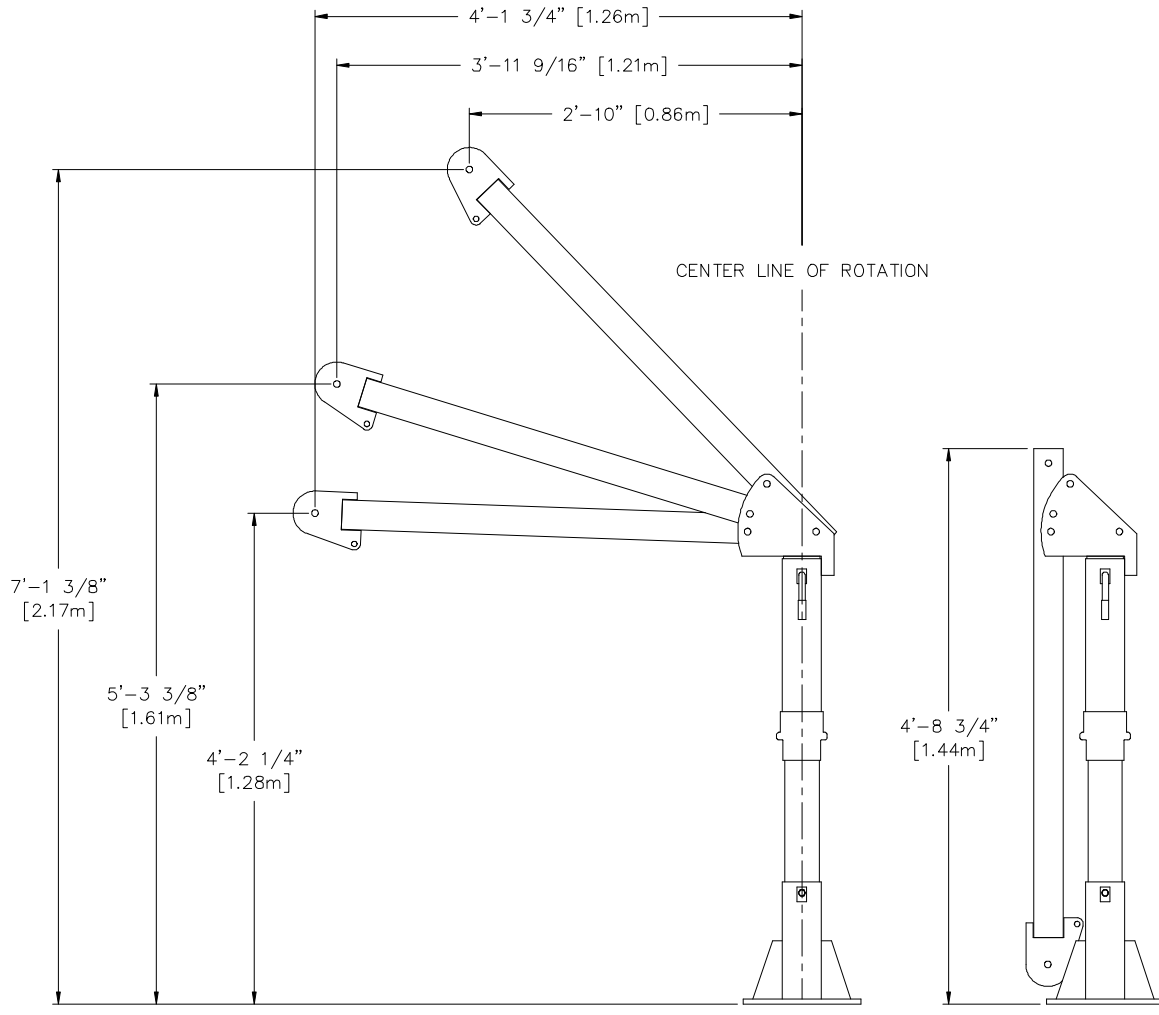


Decal Kit P/N 370543 includes:

<u>Item</u>	<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>
1	2	040522	RAM LIFT DECAL
2	2	040527	STRIPING DECAL (15 in. LONG)
3	2	040527	STRIPING DECAL (9 in. LONG)
4	1	999958	INSTALLATION CHECKLIST
5	1	040524	DANGER DECAL
6	1	040637	RAMSEY DECAL with STRIPING

GENERAL DIMENSIONS

RAM-LIFT CRANE SERIES



Crane MountingBase

ASSEMBLY & INSTALLATION INSTRUCTIONS

RAM-LIFT

The Ram-Lift crane is shipped in three major assemblies: the pedestal assembly, the boom assembly and the winch assembly. The pedestal assembly consists of the base, pedestal, and quill sub-assemblies. It is recommended that the base be removed from the pedestal assembly and be installed on the truck first.

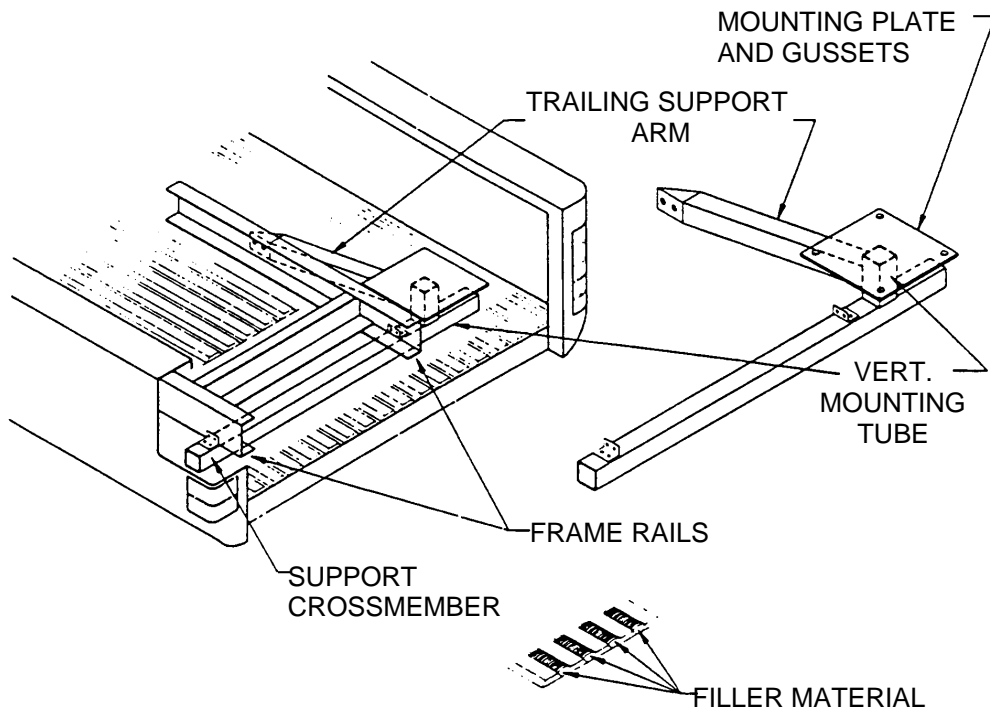


Figure 1 - Installation & Typical Mounting

1. Remove the base assembly from the shipping carton and locate in the truck bed in the desired location and check for proper clearance. A right rear corner mount is typical.
2. If the floor is made of wood, install a 3/8 in. thick plate approximately six to eight inches larger than the base plate on top of the wooded deck. If the floor is heavy metal and ribbed no metal plate is required under the crane base plate. Install fillers to level the ribbed floor if required. Place the base assembly in position and locate the mounting holes through the truck bed and the backup plate. See Figure 1 for a typical mounting arrangement.
3. Each truck has its own unique mounting difficulties. Construct the mount and additional bracing so the combined crane load of 5,000 ft-lb and a vertical load of 1,000 lb is directed over the largest area possible. Install a brace which crosses both sides of the truck and which may be used as pocket for an outrigger, stabilizer, or jackleg holder. Add other structural members as necessary depending on the strength of the truck structure.

**An inadequate crane mounting structure
can cause damage to the truck frame and body.**

ASSEMBLY & INSTALLATION INSTRUCTIONS

RAM-LIFT

Bolt crane base to truck bed and mounting structure.

For models with an electric winch: Drill a hole for power wires in the floor of the bed. Put a rubber grommet in the floor or seal the wires with silicone rubber compound (RTV) to protect wires from chafing.

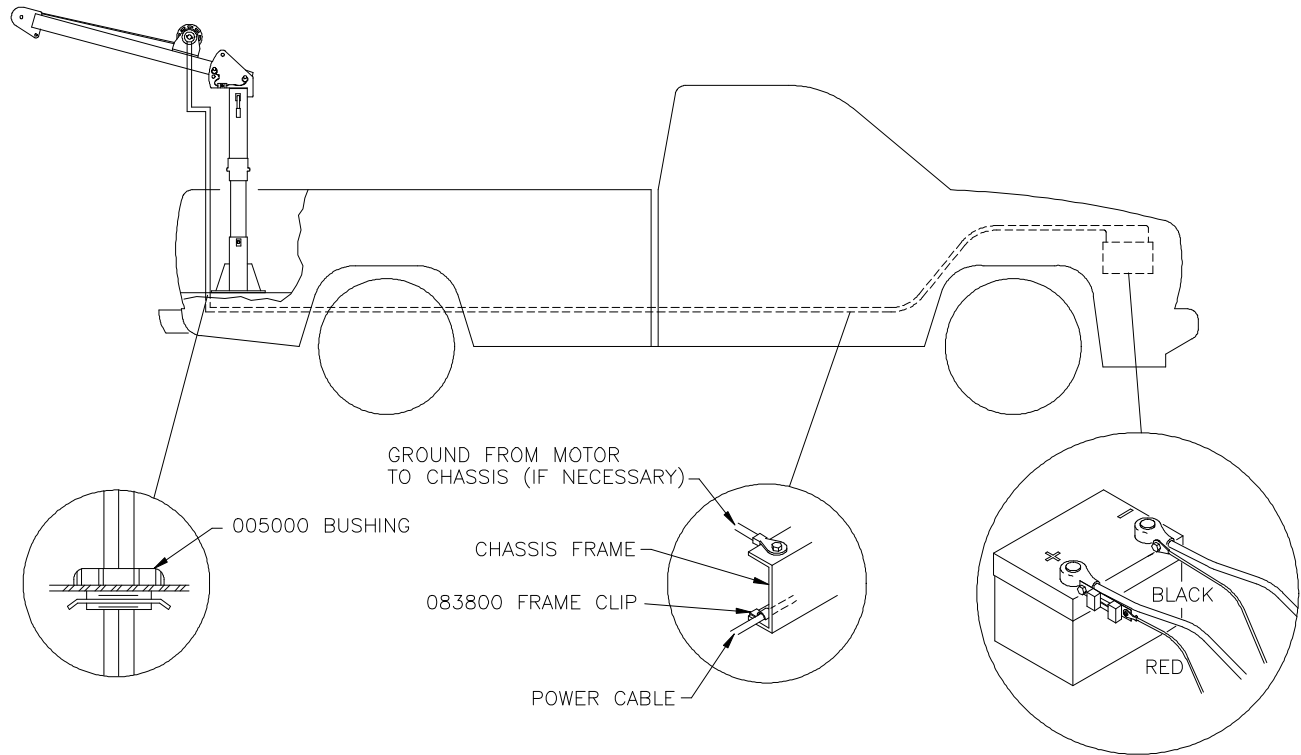


Figure 2 - Installation of Battery Cable

4. Install the pedestal and quill assembly in the base and secure with a 5/8 in. bolt.

For models with an electric winch: See Figure 2.

1) Drill 13/16 in. hole through structure. Install cable and bushing furnished with crane, as shown. Wrap electrical tape around cable so it will be snug in the bushing.

2) Run red power cable to positive battery terminal. Connect black cable to negative battery terminal or suitable chassis ground point. Locate cables so that they will be protected. Avoid sharp edges. Use the No. 083800 frame clips provided to hold cables securely in place.

3) If the battery is grounded to the engine it may be necessary to add an additional ground cable from the engine to the chassis frame to obtain maximum power at crane.

5. Assemble winch to boom assembly.

For models with a manual winch: Attach manual winches with two hex head 3/8 in. bolts. Locate the winch handle on the right side of the boom so the line coming off of the winch comes off of the top of the drum.

For models with an electric winch: Remove the cover of the electric winch. Bolt electric

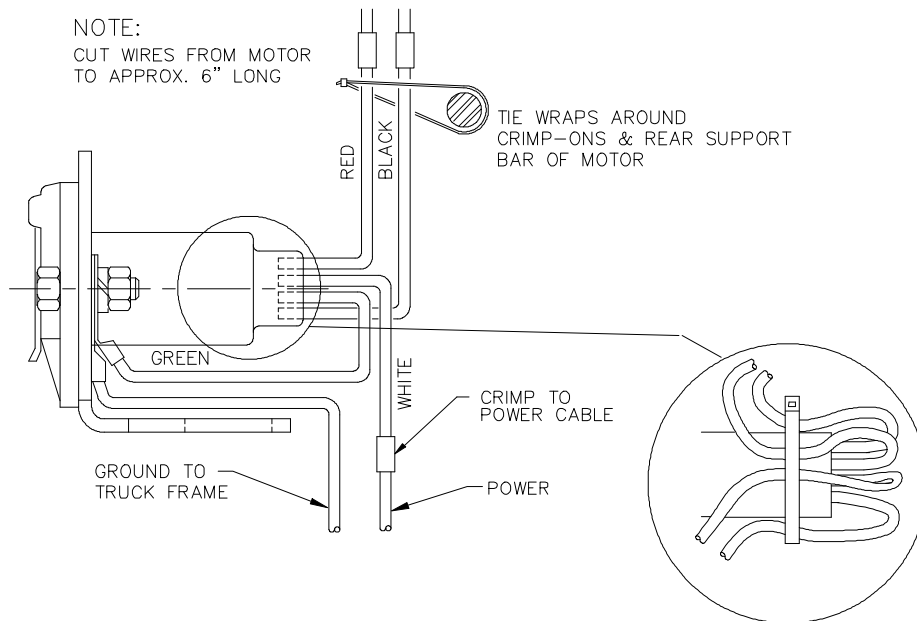
ASSEMBLY & INSTALLATION INSTRUCTIONS

RAM-LIFT

winches to the mounting plate on the boom with the hardware provided. When properly assembled, the winch drum is centered on the boom and the cable plays off of the bottom of the drum as it goes out to the crown sheave. Replace the electric winch cover.

6. Attach the boom and winch assembly to the pedestal assembly with the pins provided.

Figure 3 - Wiring Diagram



7. **For electric models with a pendant:** Attach wires from receptacle assembly to winch assembly. Plug in pendant and check for proper direction of winch operation. (Wires may be reversed at the winch to change the direction of rotation.)

Testing Crane Stability

With jackleg or outriggers installed and extended and boom set at the horizontal position, load test the crane to verify that the mounting is structurally sound. Test with a 500-lb load and observe any permanent deflections. If there is no bending of the mounting, test with a 1000-lb load and rotate load approximately 180 degrees.

While testing, keep the load as close to the ground as possible.

LUBRICATION & MAINTENANCE SCHEDULE RAM-LIFT CRANE

SERVICE PERFORMED	DAILY	WEEKLY	MONTHLY	1 YEAR	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
MOUNTING BOLTS		X			CHECK-TORQUE AS REQUIRED FOR 5/8 in. BOLT
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
BATTERY CONNECTIONS		X			CHECK FOR CORROSION & TIGHT CONNECTIONS. CLEAN & COAT AS REQUIRED
POWER CABLE			X		CHECK INSULATION FOR DAMAGE OR DETERIORATION
HUMP REDUCER HOSE				X	WATER PROOF BEARING GREASE
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.**

LIFE OF WIRE LINE

So many variable factors can cause the deterioration of wire line cable that it is not possible to determine a definite life expectancy. Some of these factors are:

- **Load being handled.**
- **Corrosive conditions.**
- **Maintenance of the unit:**
 - Keep the sheaves turning freely.
 - Maintain tension on cable to insure proper spooling.
 - Avoid kinks in cable.
 - Avoid abrasive action and contact with sharp corner.
- **Frequency of use.**

Auto Crane units, up to 2,400 pound ratings use 3/16 inch diameter galvanized pre-formed 7 x 19 aircraft cable. This cable has a working strength, when new, of 4,200 pounds. It is recommended when 1,200 pound loads are exceeded to use a two part line with a traveling block. This will ensure a 3.5 to 1 safety factor when the cable is new.

Keeping the above factor of safety in mind and knowing the kind of loads that will be handled, the user can determine by inspection of the cable as to when it should be replaced.

Items to look for while inspecting the cables are:

- Broken strands.
- Kinks and flattened sections.
- Corrosion and abrasion.

WIRE LINE LUBRICATION

Lubrication of the wire line serves two important purposes:

- Prevent corrosion.
- Reduce wear due to flexing and abrasion caused by contact with the sheaves, rollers, and cable on the drum.

Preparation

Remove rust and foreign matter with a wire brush and wipe clean. Be sure cable is dry.

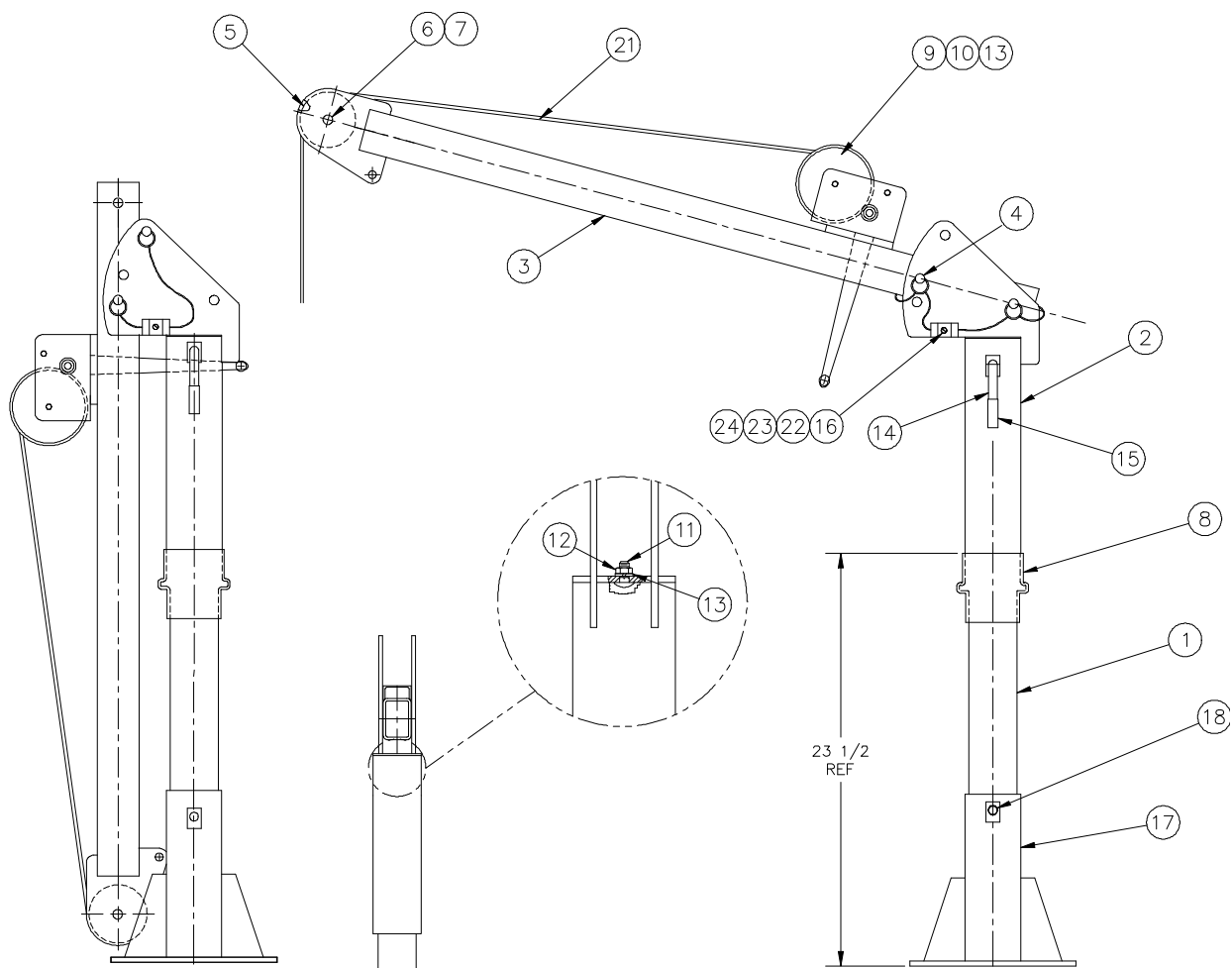
Application

Method 1: Dip a brush into a light weight motor oil and apply. In some cases, dip a rag or a piece of sheepskin into the lubricant and swab the lubricant on to the rope.

Method 2: Apply a heavier lubricant such as a grease gun lubricant with hands while wearing leather gloves. (Leather gloves give greater protection and less penetration of the grease than canvas gloves.)

GENERAL ASSEMBLY - P/N 370530-300

RAM-LIFT CRANE SERIES



Ram-Lift with Manual Winch

GENERAL ASSEMBLY - P/N 370530-300

RAM-LIFT CRANE SERIES

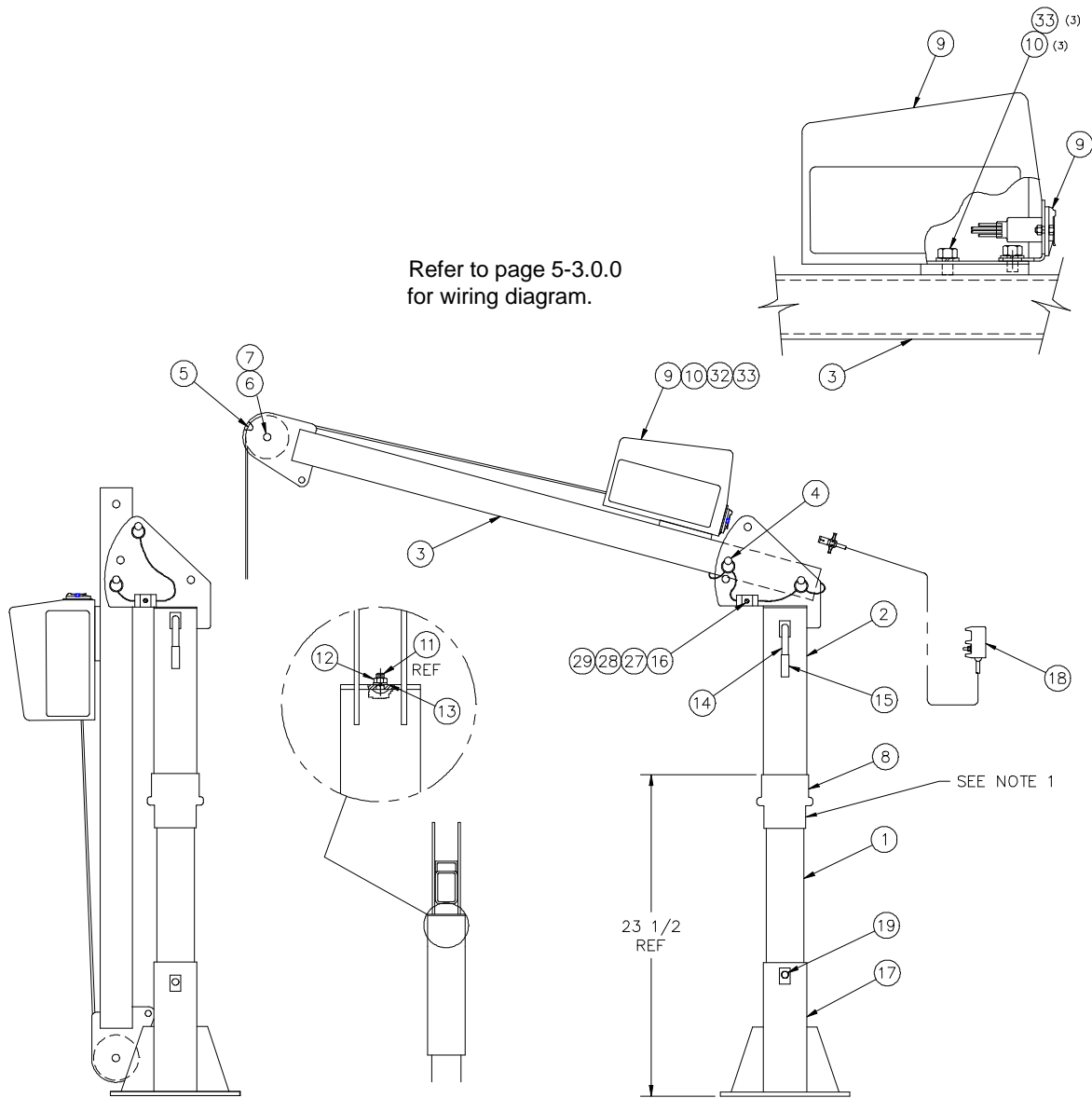
<u>Item</u>	<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>
1	1	370545	PEDESTAL WELDMENT
2	1	370547	QUILL WELDMENT
3	1	370536-002	BOOM WELDMENT
4	2	370002	PIN ASSEMBLY w/ LANYARD
5	1	370539	SHEAVE ASSEMBLY
6	1	012200	CAPSCREW 5/8 UNF x 1 3/4
7	1	018300	LOCK NUT 5/8 UNF
8	1	370542	HUMP REDUCER HOSE
9	1	370532	MANUAL WINCH
10	2	REF	CAPSCREW 3/8 UNC x 3/4 (008400)
11	1	REF	CARRIAGE BOLT 3/8 UNC x 3/4 (370544)
12	1	REF	NUT 3/8 UNC (330372)
13	3	REF	LOCK WASHER 3/8 (021100)
14	1	272052	BRAKE HANDLE
15	1	272055	HAND GRIP
16	1	005500	CAPSCREW 1/4 UNC x 3/4
17	1	370535	REMOVABLE BASE ASSEMBLY
18	1	370543	RAM-LIFT DECAL KIT (<i>not shown</i>)
19	1	012202	CAPSCREW 5/8 UNC x 1 1/4
21	1	330028	CABLE WITH HOOK 25 ft
22	1	015900	NUT 1/4 UNC
23	1	020200	LOCK WASHER 1/4
24	1	020300	FLAT WASHER 1/4
25	1	999958	INSTALLATION CHECKLIST

Note:

Item number not used: 20

GENERAL ASSEMBLY - P/N 370530-500

RAM-LIFT



Ram-Lift with electric winch and pendant

GENERAL ASSEMBLY - P/N 370530-500

RAM-LIFT

<u>Item</u>	<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>
1	1	370545	PEDESTAL WELDMENT
2	1	370547	QUILL WELDMENT
3	1	370536-002	BOOM WELDMENT
4	2	370002	PIN ASSEMBLY with LANYARD
5	1	370539	SHEAVE ASSEMBLY
6	1	012200	CAPSCREW 5/8 UNF x 1 3/4
7	1	018100	LOCK NUT 5/8 UNF
8	1	370542	HUMP REDUCER HOSE
9	1	272419	ELECTRIC WINCH
10	3	REF	CAPSCREW 3/8 UNC x 1/2 (010000)
11	1	REF	CARRIAGE BOLT 3/8 UNC x 3/4 (370544)
12	1	REF	NUT 3/8 UNC (330372)
13	1	REF	LOCK WASHER 3/8 (021100)
14	1	272052	BRAKE HANDLE
15	1	272055	HAND GRIP
16	1	005500	CAPSCREW 1/4 UNC x 3/4
17	1	370535	REMOVABLE BASE ASSEMBLY
18	1	REF	* PENDANT ASSEMBLY (10 ft) (370129)
19	1	012202	CAPSCREW 5/8 UNC x 1 1/4
20	1	370552	RAM-LIFT DECAL KIT (<i>not shown</i>)
23	1	REF	POWER CABLE (602005) (<i>not shown</i>)
24	1	REF	GROUND CABLE (602006) (<i>not shown</i>)
25	1	370625	STANDARD SHIP KIT (<i>not shown</i>)
26	3	REF	* TIE WRAP (750737) (<i>not shown</i>)
27	1	015900	NUT 1/4 UNC
28	1	020200	LOCK WASHER 1/4
29	1	020300	FLAT WASHER 1/4
30	1	999958	RAM-LIFT INSTALLATION CHECKLIST (<i>not shown</i>)
31	1	370624	* SHIP KIT with PENDANT (<i>not shown</i>)
32	1	370022-001	* RECEPTACLE ASSEMBLY
33	3	REF	LOCK WASHER 1/2 (021500)

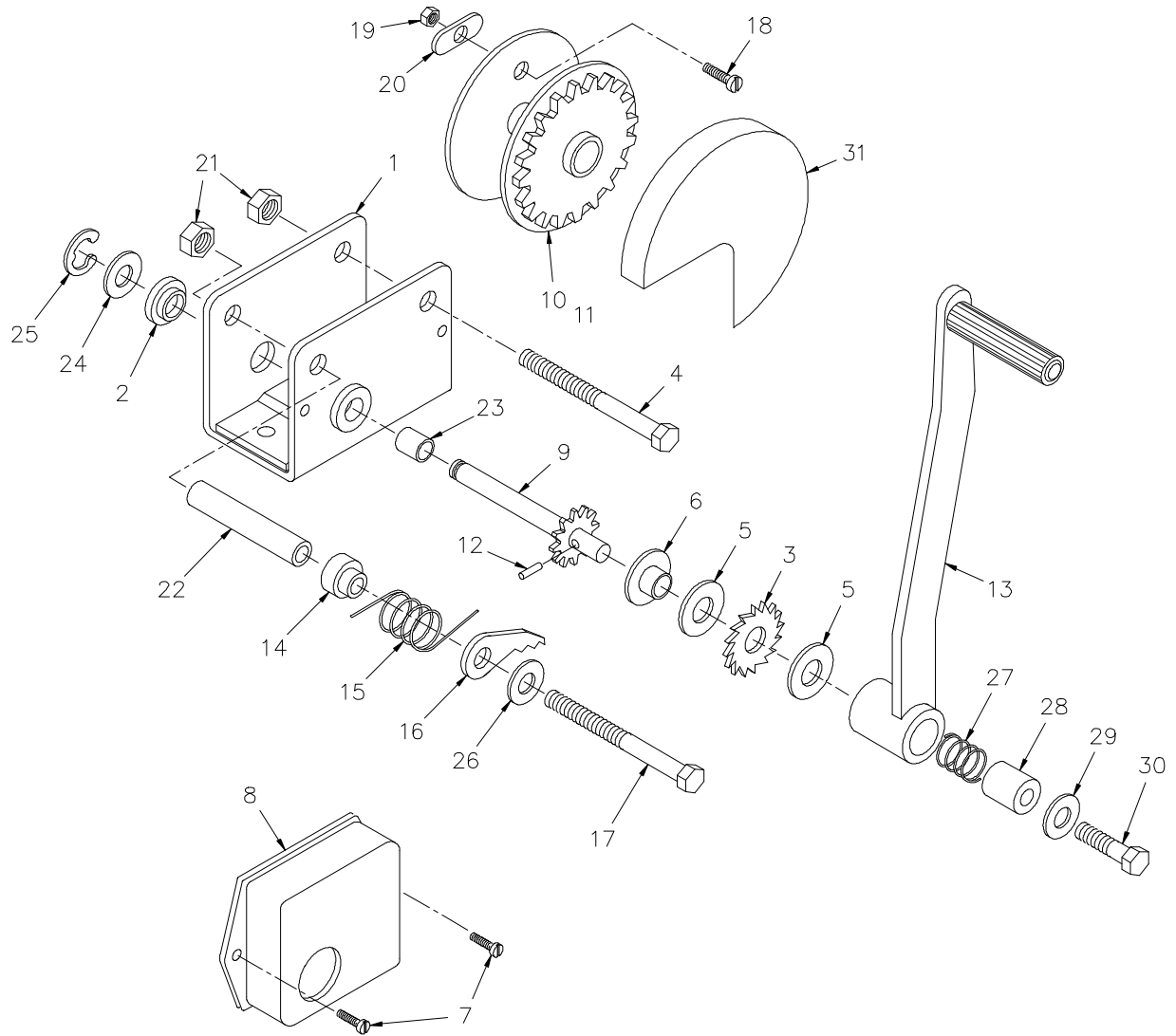
Notes:

Item numbers not used: 21, 22.

* These items and drawing 370626 are in the ship kit.

MANUAL WINCH - P/N 370532

RAM-LIFT



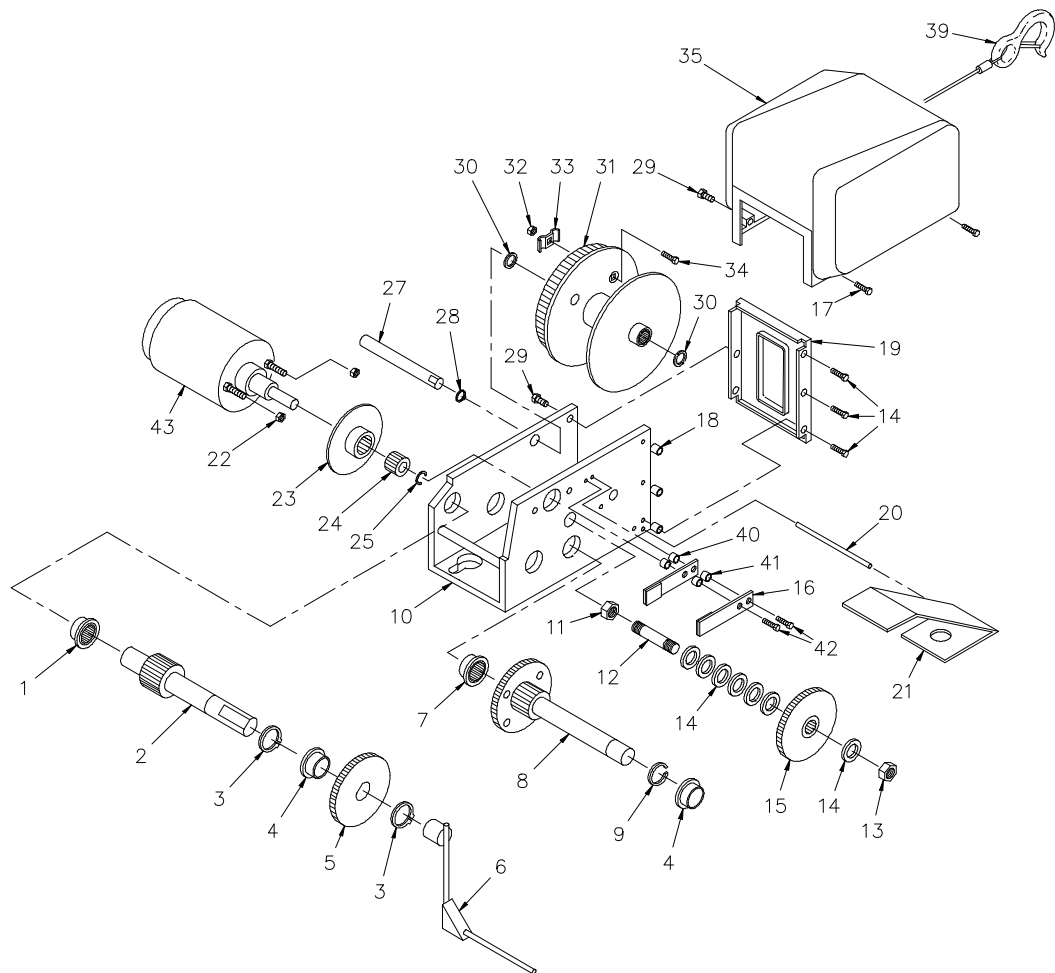
MANUAL WINCH - P/N 370532

RAM-LIFT

<u>ITEM</u>	<u>QTY</u>	<u>P/N</u>	<u>DESCRIPTION</u>
1	1	370555	WINCH BRAKE ASSEMBLY
2	1	370556	BEARING
3	1	370557	RATCHET WHEEL
4	1	370558	REEL BOLT
5	2	370559	BRAKE LINING PRESSURE PLATE
6	1	370560	BRAKE WINCH HUB ASSEMBLY
7	2	370561	SELF TAPPING SCREW
8	1	370562	GEAR COVER
9	1	370563	DRIVE SHAFT ASSEMBLY
10	1	370564	REEL ASSEMBLY 1 1/8 HUB
11	1	370565	REEL ASSEMBLY 2 1/8 HUB
12	1	370566	ROLL PIN
13	1	370567	WINCH HANDLE ASSEMBLY
14	1	370568	RATCHET PAWL SPACER BUSHING
15	1	370569	BRAKE RATCHET SPRING
16	1	570570	RATCHET PAWL
17	1	370571	RATCHET PAWL BOLT
18	1	370464	CARRIAGE BOLT
19	1	272179	HEX NUT ¼
20	1	272180	ROPE CLAMP
21	2	370572	LOCK NUT 3/8
22	1	370573	SPACER SLEEVE
23	1	370574	NEEDLE BEARING
24	1	370575	SPACER WASHER
25	1	370460	RETAINING RING
26	1	370577	WASHER
27	1	370578	SPRING
28	1	370579	SHAFT EXTENSION
29	1	370580	RETAINER WASHER
30	1	370581	HEX BOLT
31	1	370582	OPTIONAL GEAR COVER

ELECTRIC WINCH ASSEMBLY P/N 272419

RAM-LIFT CRANE SERIES



<u>Item</u>	<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>
1	1	272500	BEARING HOUSING ASSEMBLY
2	1	272151	PRIMARY DRIVE SHAFT ASSEMBLY
3	2	272152	RETAINING RING
4	2	272153	BUSHING
5	1	272154	GEAR 56 T
6	1	272155	HANDLE ASSEMBLY
7	1	272501	DRIVE SHAFT BEARING HOUSING ASSEMBLY
8	1	272158	INTERMEDIATE DRIVE SHAFT ASSEMBLY
9	1	272159	"E" RING
10	1	272160	BASE

ELECTRIC WINCH ASSEMBLY P/N 272419

RAM-LIFT CRANE SERIES

<u>Item</u>	<u>Quantity</u>	<u>Part Number</u>	<u>Description</u>
11	1	330011	LOCK NUT 7/16 UNF
12	1	330012	CLUTCH STUD
13	1	330018	LOCK NUT 1/2
14	7	272502	WASHER
15	1	330015	GEAR ASSEMBLY
16	2	272434	BRAKE SPRING ASSEMBLY
17	5	272162	CAPSCREW ¼ UNC X 1 1/16
18	3	272163	SPACER
19	1	272164	FRONT PLATE
20	1	272165	LEVEL WIND PIN
21	1	330019	LEVEL WIND
22	2	330022	LOCK NUT 10 UNF
23	1	272433	BRAKE DISK ASSEMBLY
24	1	272170	12 T PINION GEAR
25	1	272171	"E" RING
26	1	272172	BASE SPACER
27	1	272173	REEL SHAFT
28	1	272174	RETAINING RING
29	4	272175	CAPSCREW ¼ UNC X ¾
30	2	272176	WASHER
31	1	272503	REEL ASSEMBLY
32	1	272179	NUT ¼ UNC X ¾
33	1	272180	ROPE CLAMP
34	1	272504	CARRIAGE BOLT ¼ UNC X ¾
35	1	272505	COVER
39	1	330028	CABLE & HOOK 3/16 X 25 FT)
40	2	272435	SPACER
41	2	272436	BRAKE SPRING SPACER
42	2	272437	CAPSCREW 10 UNF X 1
43	1	272184	MOTOR ASSEMBLY

Note:

Item numbers not used: 36, 37 & 38.



LIMITED WARRANTY

RAMSEY WINCH WILL WARRANTY TO CONSUMER FOR A PERIOD OF TWELVE MONTHS FROM DATE OF PURCHASE THAT EACH NEW "RAM-LIFT" IT SELLS WILL BE FREE UNDER NORMAL USE AND SERVICE, FROM DEFECTS IN MATERIAL AND WORKMANSHIP. DATE OF PURCHASE WILL BE HONORED AS EITHER DATE OF PURCHASE BY DISTRIBUTOR OR HIS DATE OF SALE OF THE PRODUCT AS SUBSTANTIATED BY DISTRIBUTOR DELIVERY REPORT.

OBLIGATION OF RAMSEY WINCH UNDER THIS WARRANTY IS LIMITED TO REPLACEMENT OR REPAIR OF PARTS THAT APPEAR TO MANUFACTURER AFTER REVIEW AND/OR INSPECTION TO BE DEFECTIVE. THIS WARRANTY DOES NOT OBLIGATE RAMSEY WINCH TO BEAR THE COST OF LABOR OR TRANSPORTATION 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 THE CIRCUMSTANCES BY RAMSEY.

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TO THE EXTENT SUCH WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY ARE DEEMED TO APPLY TO THIS PRODUCT, THEY EXIST FOR ONLY SO LONG AS THE EXPRESS LIMITED WARRANTY ELSEWHERE SET FORTH IS IN EXISTENCE.

RAMSEY MAKES NO WARRANTY IN RESPECT TO COMPONENT ACCESSORIES, SAME BEING SUBJECT TO THE WARRANTIES OF THEIR RESPECTIVE MANUFACTURERS.

IF FIELD SERVICE, AT THE REQUEST OF THE BUYER IS RENDERED AND FAULT IS FOUND NOT TO BE RAMSEY'S PRODUCT THE BUYER SHALL PAY THE TIME AND EXPENSE OF THE FIELD REPRESENTATIVE. CLAIMS FOR SERVICE LABOR OR OTHER EXPENSES THAT HAVE BEEN INCURRED BY THE BUYER WITHOUT APPROVAL OR AUTHORIZATION OF RAMSEY WINCH WILL NOT BE ACCEPTED.