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**Manual Part # 99900954**

# **3820 Parts & Specifications**

**Effective Through July 2004**

**20040517**



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## Revisions

| DATE     | LOCATION  | DESCRIPTION   |
|----------|---|---|
| 20040225 | New Release   | New release of 3820 manual.   |
| 20040323 | <b>Hydraulic Kit, Radio Remote (91715578)</b> (on page 64),<br><b>Hydraulic Kit - Tethered Remote (91715637)</b> (see "Hydraulic Kit, Tethered Remote (91715637)" on page 58) | ECN 9397- Update to hydraulic kits.   |
| 20040517 | 51718546  | ECN 9374 - New lower cylinder 51718546. Update to boom assemblies to show new cylinder part number. |

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## CHAPTER 1

# Introduction

This volume deals with information applicable to your particular crane. For operating, maintenance and repair instructions, refer to Telescopic Crane Volume 1: OPERATION, MAINTENANCE AND REPAIR. (IMT part number 99903514.)

We recommend that this volume be kept in a safe place in the office.

This manual is provided to assist you with ordering parts for your IMT crane. It also contains additional instructions regarding your particular installation.

It is the user's responsibility to maintain and operate this unit in a manner that will result in the safest working conditions possible.

Warranty of this unit will be void on any part of the unit subjected to misuse due to overloading, abuse, lack of maintenance and unauthorized modifications. No warranty - verbal, written or implied - other than the official, published IMT new machinery and equipment warranty will be valid with this unit. In addition, it is also the user's responsibility to be aware of existing Federal, State and Local codes and regulations governing the safe use and maintenance of this unit. This crane was designed and built to meet the standards of ANSI/ASME B30.5, Mobile & Locomotive Cranes. Contact the American Society of Mechanical Engineers ([www.asme.org](http://www.asme.org)) for more information.

Throughout this manual, three means are used to draw the attention of personnel. They are NOTE's, CAUTION's and WARNING's and are defined as follows:

### NOTE

A NOTE is used to either convey additional information or to provide further emphasis for a previous point.

### CAUTION

A CAUTION is used when there is the very strong possibility of damage to the equipment or premature equipment failure.

### WARNING

A WARNING is used when there is the potential for personal injury or death.

For a safe work environment, treat this equipment with respect and service it regularly.



## CHAPTER 2

# Specifications

## In This Chapter

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## General Specifications

| GENERAL SPECIFICATIONS  | MODEL 1H 1M  | MODEL 2H  |
|---|--|---|
| CRANE RATING *  | 38,000 ft-lb (5.26 ton-meters)                         | 38,000 ft-lb (5.26 ton-meters)  |
| REACH (from centerline of rotation)   | 20'-0" (6.10 m)  | 20'-6" (6.2 m)  |
| HYDRAULIC EXTENSIONS (2)  | 60" (152.4 cm)<br>48" (121.9 cm)                       | 60" (152.4 cm)<br>48" (121.9 cm)                                      |
| MANUAL EXTENSION  | 48" (121.9 cm)   | N/A   |
| LIFTING HEIGHT (from base of crane)   | 21'-6" (6.55 m)  | 22'-1" (6.73 m)   |
| CRANE WEIGHT  | 1400 lb (635 kg)                                       | 1545 lb (700 kg)  |
| OUTRIGGER SPAN (required option)<br>- Crane Side from Centerline of Chassis | 83" (210.8 cm)   | 83" (210.8 cm)  |
| STORAGE HEIGHT (crane only)   | 30" (76.2 cm)  | 30" (76.2 cm)   |
| MOUNTING SPACE REQUIRED (crane base)  | 20" x 21" (50.8 cm x 53.3 cm)                          | 20" x 21" (50.8 cm x 53.3 cm)   |
| OPTIMUM PUMP CAPACITY (PTO Driven)  | 10 U.S. GPM  | 10 U.S. GPM   |
| SYSTEM OPERATING PRESSURE   | 3000 psi (207 bar)                                     | 3000 psi (207 bar)  |
| LOWER BOOM CYLINDER   | 4" bore; 21-5/8" stroke (10.2 cm bore; 54.9 cm stroke) | 4" bore; 21-5/8" stroke (10.2 cm bore; 54.9 cm stroke)                |
| EXTENSION BOOM CYLINDER   | 2.5" bore; 60" stroke (6.4 cm bore; 152.4 cm stroke)   | 2.5" bore; 60" + 48" stroke (6.4 cm bore; 152.4 cm + 121.0 cm stroke) |

| GENERAL SPECIFICATIONS                                     | MODEL 1H 1M                           | MODEL 2H                              |
|--|---------------------------------------|---------------------------------------|
| HORIZONTAL CENTER OF GRAVITY (from centerline of rotation) | 36" (91.4 cm)                         | 39" (99.1 cm)                         |
| VERTICAL CENTER OF GRAVITY (from bottom of crane base)     | 19" (48.3 cm)                         | 19" (48.3 cm)                         |
| TIE-DOWN BOLT PATTERN (on center)                          | 14-3/4" x 14-3/4" (37.5 cm x 37.5 cm) | 14-3/4" x 14-3/4" (37.5 cm x 37.5 cm) |
| ROTATIONAL TORQUE  | 9000 ft-lb (1.2 ton-m)                | 9000 ft-lb (1.2 ton-m)                |

\* Crane rating (ft-lb) is the rated load (lb) multiplied by the respective distance (ft) from centerline of rotation with all extensions retracted and lower boom in horizontal position.

---

## Performance Characteristics

|                          | SPECIFICATION                   | PTO                   |
|--------------------------|---------------------------------|-----------------------|
| ROTATION                 | 400° (7.0 rad)                  | 33 seconds            |
| LOWER BOOM ELEVATION     | -5° to +80° (-0.1 to +1.4 rad)  | 8.5 seconds           |
| EXTENSION CYLINDER 1H 1M | 60" (152.4 cm)                  | 9.5 seconds           |
| EXTENSION CYLINDER 2H    | 60" & 48" (152.4 cm & 121.9 cm) | 18 seconds total      |
| WINCH                    | single part line                | 25 ft/min (7.6 m/min) |
| WINCH                    | two part line                   | 12 ft/min (3.7 m/min) |

\* All times based on 10 GPM (37.9 lpm) PTO delivery rate.

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# System Specifications

## POWER SOURCE

PTO DRIVEN - Integral mounted hydraulic pump and PTO application. Other standard power sources may be used. Minimum power required is 23.5 horsepower based on 10 GPM (37.9 liters/min) at 3,000 PSI (207 bar).

## CYLINDER HOLDING VALVES

The base ends (extend sides) of the lower boom and extension cylinders are equipped with integral-mounted counter-balance valves to prevent sudden cylinder collapse in case of hose or other hydraulic failure. The extend side of the lower boom cylinder is equipped with a 10 gpm counterbalance valve. The counter balance valve serves several functions. First, it is a holding valve. Secondly, it is designed to control the speed at which the lowering function operates, and allows that motion to be metered under load. Finally, it prevents the loss of an excess amount of oil in the event of a hose failure. Only the oil in the hose, at the time of the failure, will be lost.

## ROTATION SYSTEM

Turntable bearing with external worm gear powered with a high-torque hydraulic motor through a self-locking worm. Total gear reduction is 85 to 1.

## HYDRAULIC SYSTEM (PTO DRIVEN)

The hydraulic system is an open-centered, full-pressure system that requires 10 GPM (37.85 liters/min.) optimum oil flow at 3000 psi (207 bar). It is equipped with a four-section, stack-type, electric, remote control valve with 30-foot control cable. The system includes separate hydraulic oil reservoir, suction line filter, and return-line filter.

## EXCESSIVE LOAD LIMIT SYSTEM (ELLS)

A pressure switch which is mounted on the extend side of the lower boom cylinder and connected electrically to the lift side of the winch, the extend side of the extension boom, and the down side of the lower boom provides the capacity alert system. If the operator attempts to lift a load exceeding the rated capacity of the crane, the winch lift, extension out and lower boom down functions will not operate. To relieve the situation, the operator may set the load down (winch down) or retract the extension boom (extension in).

## WINCH

The winch is powered using a hydraulic motor driving a 38:1 worm gear. The line speed of 25.0 ft/minute (7.62 m/min), under no load, is achieved at an optimum oil flow of 10 GPM (37.9 liters/min) and one-part line. Maximum single line lifting capacity of the winch is 3900 lb (1770 kg). Maximum two-part line lifting capacity of the winch is 7500 lb (3400 kg). The winch is equipped with 85 feet (25.9 m), 3/8" (9.5 mm), 6X25 FW PRF RRL IWRC XIPS wire rope. Nylon sheaves are located at the tip of the extension boom. The ratio of winch drum and sheave pitch diameter is 18.6:1 for the drum and 18:1 for the snatch block and boom tip sheave. A compact anti-two block device is included to prevent the lower block or hook assembly from coming in contact with the boom sheave assembly.

## MINIMUM CHASSIS SPECIFICATIONS

|                              |                           |
|------------------------------|---------------------------|
|                              | 1H 1M & 2H                |
| CHASSIS STYLE                | Conventional Cab          |
| WHEELBASE                    | 154" (391 cm)             |
| CAB-TO-AXLE                  | 84" (213 cm)              |
| RESISTANCE TO BENDING MOMENT | 360,000 in-lb (4149 kg-m) |
| FRAME SECTION MODULUS        | 10 cubic inches           |
| FRONT AXLE RATING (GAWR)     | 5000 lb (2268 kg)         |
| REAR AXLE RATING (GAWR)      | 9500 lb (4309 kg)         |
| GROSS VEHICLE RATING         | 14,500 lb (6577 kg)       |
| TRANSMISSION                 | 4 speed                   |

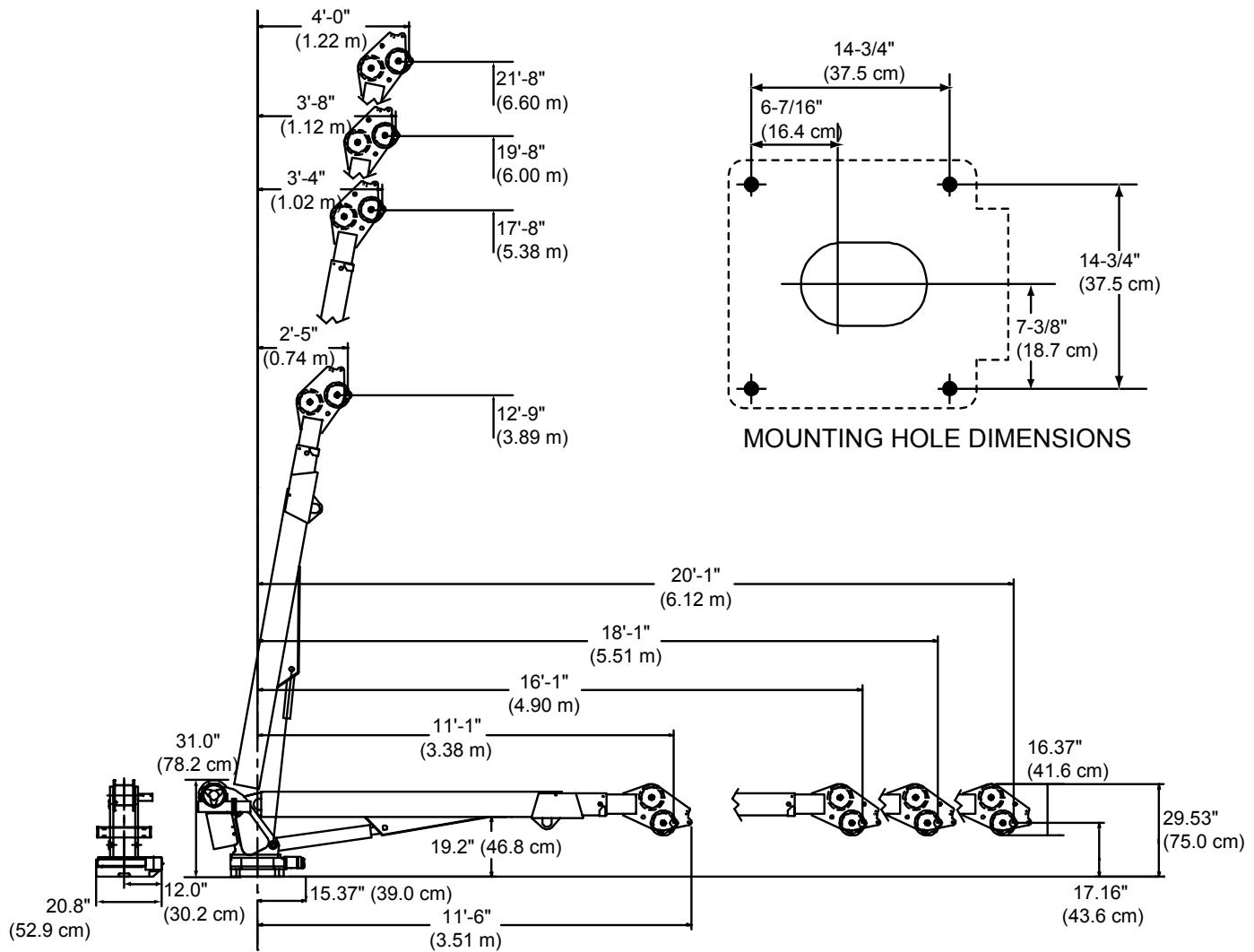
In addition to these specifications, heavy duty electrical and cooling systems are required. It is recommended that the vehicle be equipped with an engine tachometer, auxiliary brake lock, and power steering.

## NOTES:

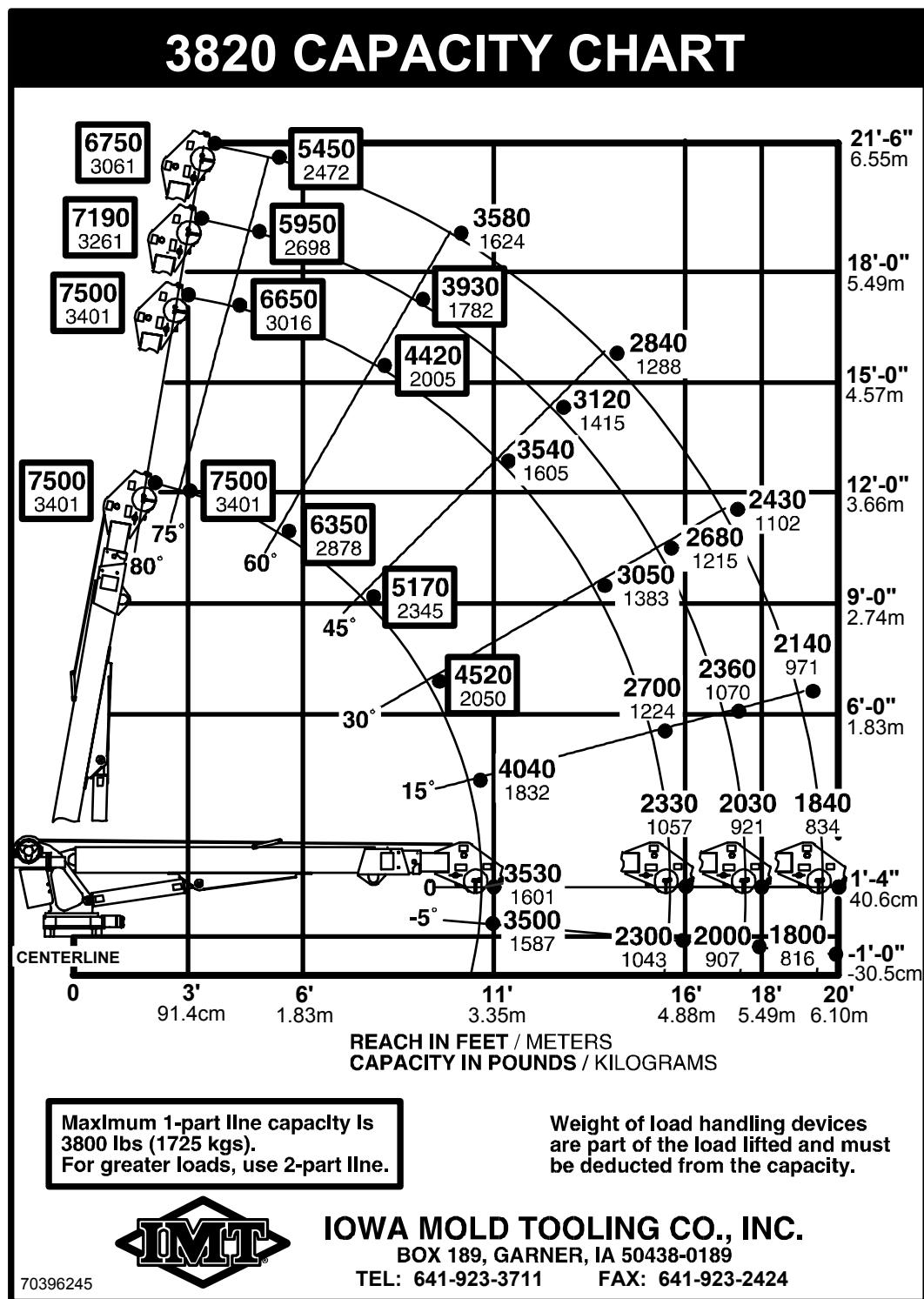
- 1 GAWR means Gross Axle Weight Rating. GAWR is dependent on all vehicle components including axles, tires, wheels, springs, brakes, steering and frame strength meeting the manufacturer's recommendations. Always specify GAWR when purchasing a truck.
- 2 Minimum axle requirements may increase with use of diesel engines, longer wheelbase or service bodies. Contact the factory for more information.
- 3 Weight distribution calculations are required to determine final axle loading.

All chassis, crane and body combinations must be stability-tested to ensure stability per ANSI B30.5

## Geometric Configuration, 3820 1H 1M

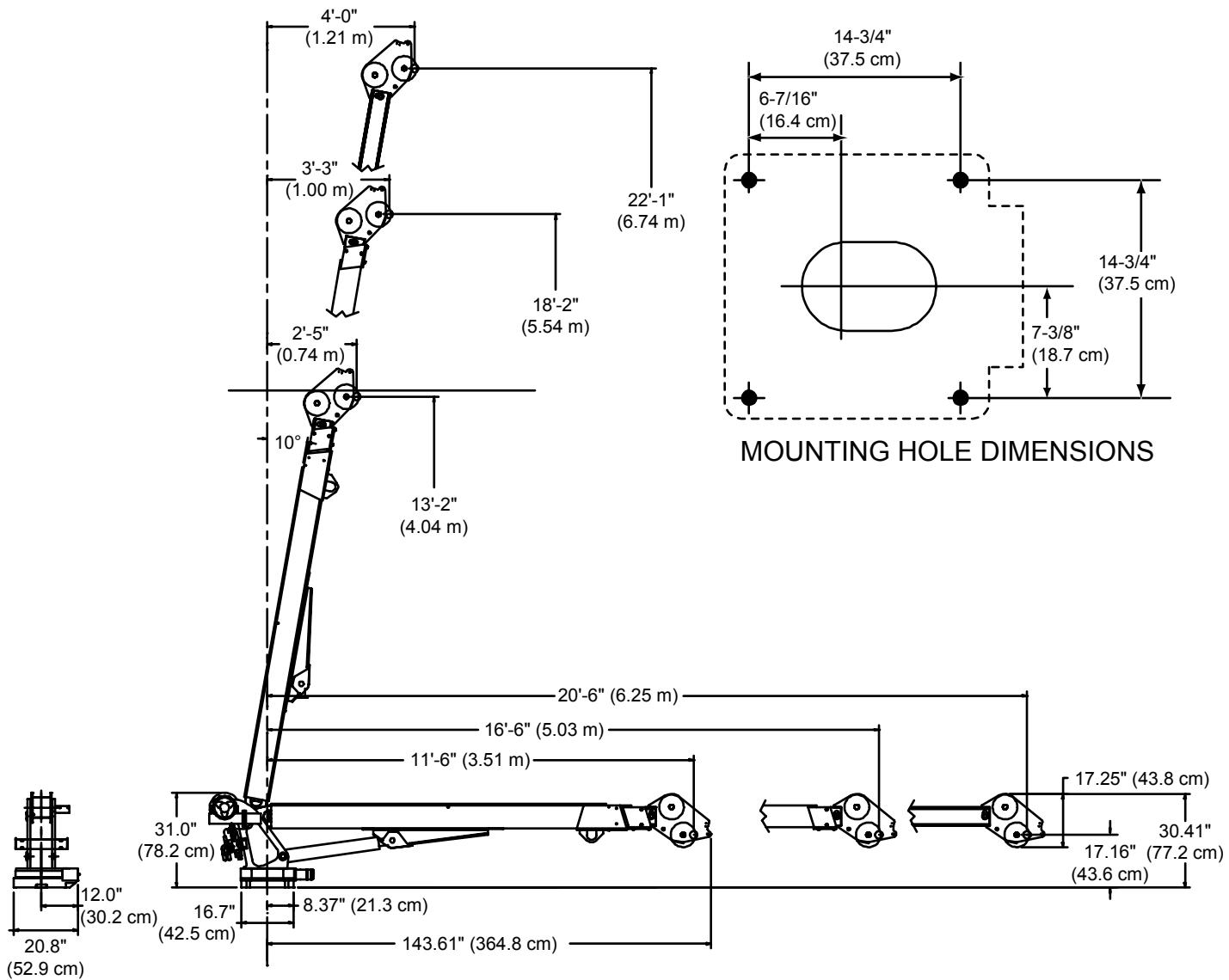


## Capacity Chart, 3820 1H 1M

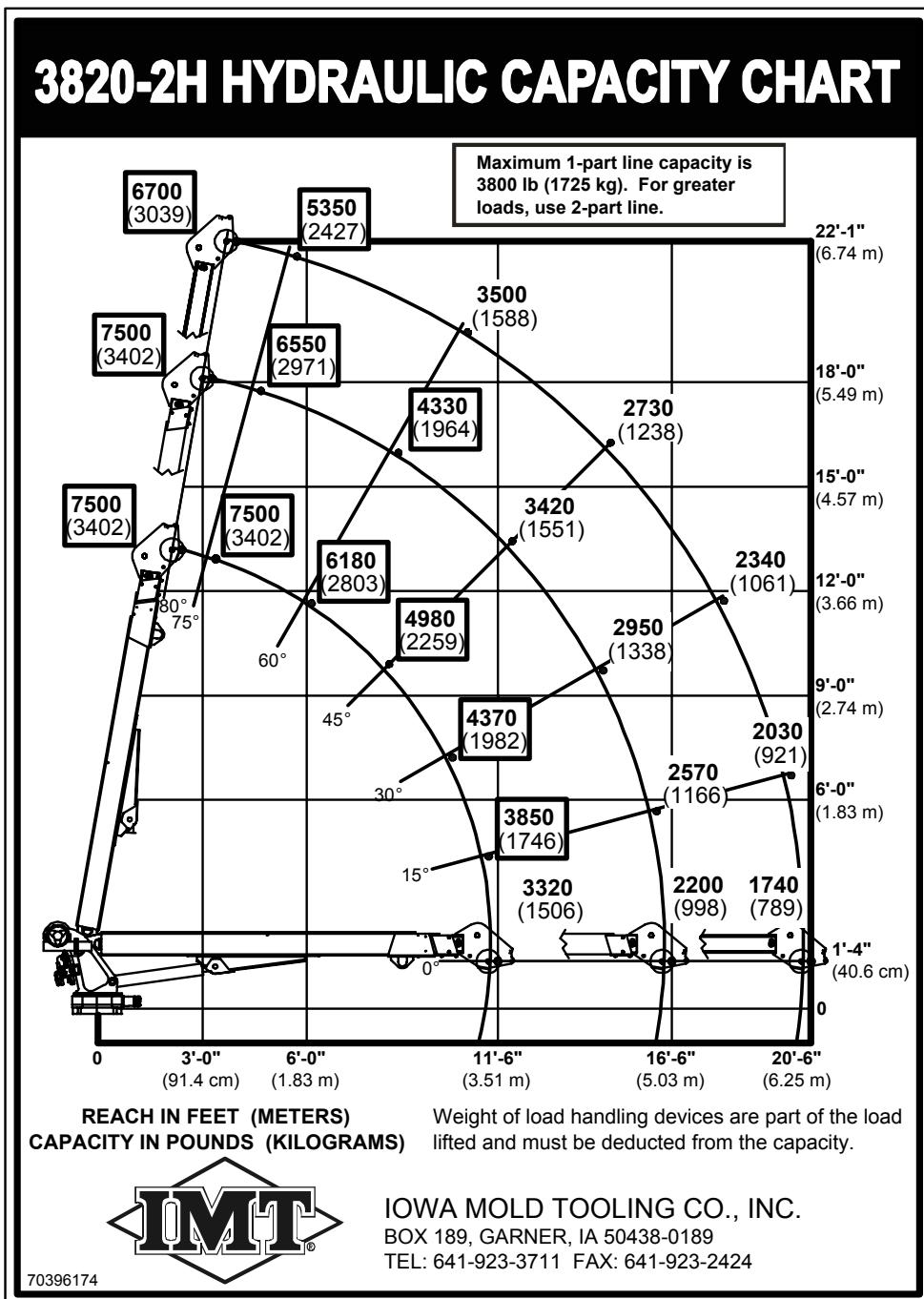


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## Geometric Configuration, 3820 2H



## Capacity Chart, 3820 2H



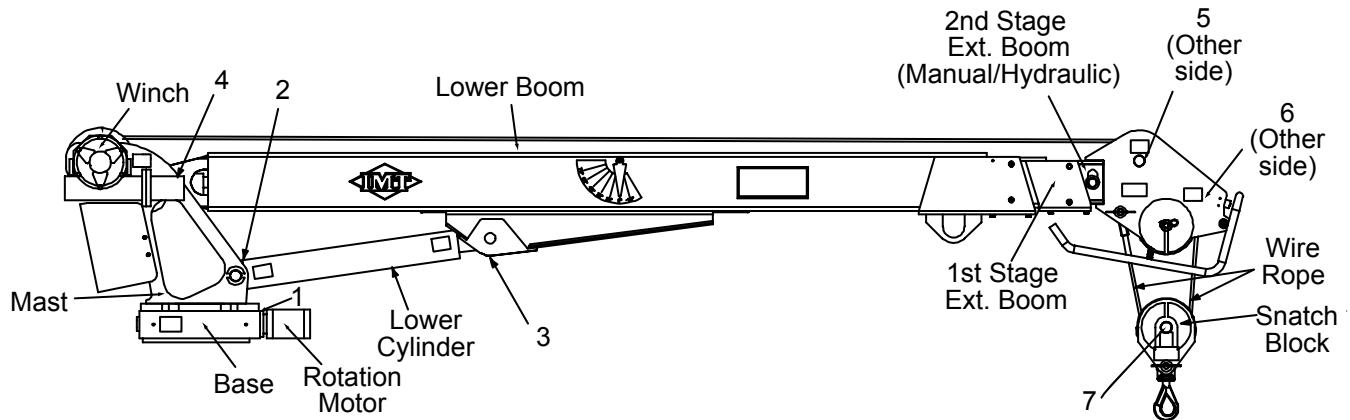
## CHAPTER 3

# Crane Reference

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## Assemblies and Grease Zerk Locations



| ITEM | LOCATION DESCRIPTION   | LUBRICANT                                    | FREQUENCY |
|------|--|--|-----------|
| 1.   | Gear Rotator Grease Extension<br>*Rotate Crane While Greasing. | Shell Alvania 2EP<br>or<br>Shell Retinax "A" | Weekly    |
| 2.   | Lower Cylinder Base  |  |           |
| 3.   | Lower Cylinder Rod   |  |           |
| 4.   | Mast/Lower Boom Hinge Pin                                      |  |           |
| 5.   | Upper Sheave Pin   |  |           |
| 6.   | Lower Sheave Pin   |  |           |
| 7.   | Snatch Block Sheave Pin  |  |           |

NOTE: All application points must be greased weekly under normal work loads and moderate weather conditions. Under severe operating conditions, lubrication should be performed more frequently. See the Volume 1: Telescopic Crane Operation & Safety (99903514) for additional lubrication requirements.

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## Recommended Spare Parts List

This spare parts list does not necessarily indicate that the items can be expected to fail in the course of a year. It is intended to provide the user with a stock of parts sufficient to keep the unit operating with the minimal down-time waiting for parts. There may be parts failures not covered by this list. Parts not listed are considered as not being Critical or Normal Wear items during the first year of operations and you need to contact the distributor or manufacturer for availability.

### ASSEMBLY DESCRIPTION

| IMT PART # | NAME | QUANTITY |
|------------|------|----------|
|------------|------|----------|

BASE ASSEMBLY

|          |      |   |
|----------|------|---|
| 51395121 | HOSE | 1 |
|----------|------|---|

GEAR ROTATOR

|          |                  |   |
|----------|------------------|---|
| 70395074 | O-RING           | 1 |
| 70395076 | SEAL             | 2 |
| 70145786 | SNAP RING        | 1 |
| 70055271 | BEARING-CONE     | 2 |
| 70055281 | BEARING-CUP      | 2 |
| 70145501 | BEARING RETAINER | 1 |
| 70056550 | WORM             | 1 |
| 73145506 | SHIM .005        | 2 |
| 73145505 | SHIM .015        | 2 |
| 73145504 | SHIM .030        | 2 |
| 76395075 | GASKET           | 1 |

LOWER BOOM ASSEMBLY - 1H 1M / 2H

|          |          |   |
|----------|----------|---|
| 60120124 | WEAR PAD | 4 |
|----------|----------|---|

LOWER CYLINDER

|          |                      |   |
|----------|----------------------|---|
| 9D161823 | SEAL KIT             | 1 |
| 77041561 | PRESSURE SWITCH      | 1 |
| 73540052 | COUNTERBALANCE VALVE | 1 |

EXTENSION BOOM ASSEMBLY - 1H 1M

|          |          |   |
|----------|----------|---|
| 60030189 | WEAR PAD | 1 |
| 60030134 | SHEAVE   | 2 |

EXTENSION BOOM ASSEMBLY - 2H

|          |          |   |
|----------|----------|---|
| 60120124 | WEAR PAD | 4 |
| 60030189 | WEAR PAD | 1 |
| 60030137 | WEAR PAD | 1 |
| 60030134 | SHEAVE   | 2 |

|          |          |   |
|----------|----------|---|
| 72533186 | ADAPTER  | 2 |
| 70146464 | TUBE ASM | 1 |

EXTENSION CYLINDER - 1H 1M

|          |                      |   |
|----------|----------------------|---|
| 73054999 | COUNTERBALANCE VALVE | 1 |
| 9D101220 | SEAL KIT             | 1 |

EXTENSION CYLINDER - 2H

|          |                      |   |
|----------|----------------------|---|
| 73054999 | COUNTERBALANCE VALVE | 1 |
| 9B101220 | SEAL KIT             | 1 |

WINCH/CABLE/HOOK KIT

|          |                    |   |
|----------|--------------------|---|
| 70580143 | CABLE ASSEMBLY     | 1 |
| 51713168 | CORD REEL          | 1 |
| 77041291 | SWITCH             | 1 |
| 52709413 | CABLE STOP         | 1 |
| 60030108 | ROLLER CABLE GUIDE | 1 |
| 60030134 | SHEAVE             | 1 |
| 71073035 | HOOK               | 1 |
| 70074004 | HOOK SAFETY LATCH  | 1 |

WINCH ASSEMBLY

|          |              |   |
|----------|--------------|---|
| 76393174 | O-RING       | 1 |
| 76393173 | OIL SEAL     |   |
| 70055202 | BALL BEARING | 2 |
| 70732542 | BRAKE KIT    | 1 |
| 76393171 | GASKET       | 2 |

VALVEBANK

|          |                          |   |
|----------|--------------------------|---|
| 73054934 | PROPORTIONAL<br>SOLENOID | 1 |
| 73054936 | SOLENOID VALVE           | 1 |

INSTALLATION KIT

|          |                        |   |
|----------|------------------------|---|
| 73052006 | FILTER ELEMENT, 10 MIC | 2 |
|----------|------------------------|---|

---

# Crane Installation

## GENERAL

This section contains instructions for the installation of your crane. Prior to installing the crane and hydraulic components, make sure that the chassis is ready to receive the crane (see the Installation Section of the IMT Telescopic Crane Operation & Safety Manual, 99903514).

Reinforce the chassis frame, as necessary, and install the PTO and pump.

Each installation may vary in components used. It is important to use hoses of proper length, pumps of correct size, and PTO's of adequate speed. Study the applicable installation kit in the parts section before attempting any installation.

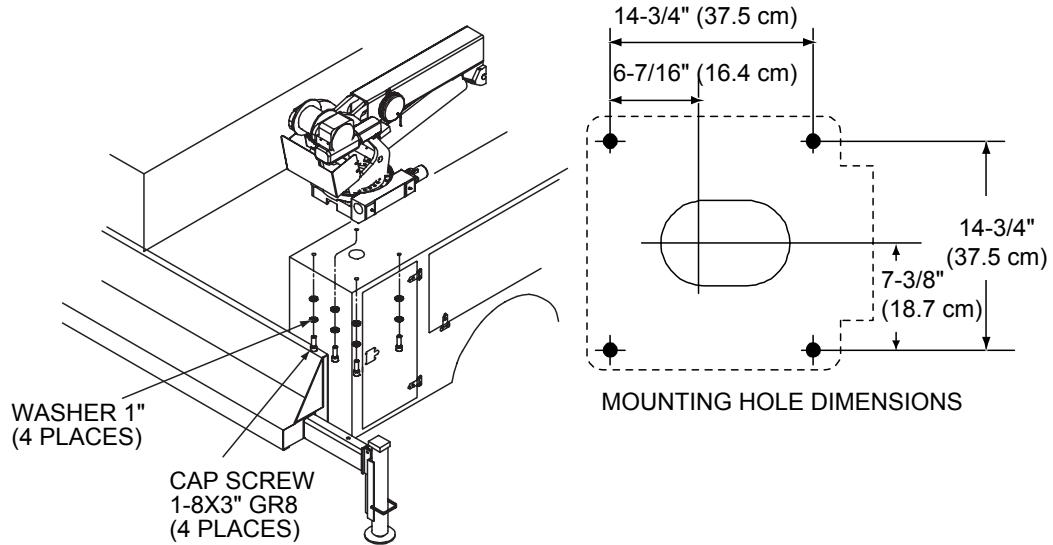
## CRANE INSTALLATION

In addition to meeting Minimum Chassis Specifications, there must be sufficient room for mounting the crane and the platform must be strong enough to support the crane and rated load. Install the 3820 crane only on an IMT designed and approved truck body. The body must be designed to sustain the forces imposed by the crane when lifting the full rated load. In addition, an IMT designed body is designed to take full advantage of the standard reservoir placement. This reservoir is installed in the cargo area of the body. Before attempting to install the crane, the body must be installed.

To install the crane:

- 1 Use a lifting device capable of lifting the weight of the crane, up to 1545 lb (700 kg). Attach fabric slings to the crane lower boom, centered approximately 18 inches from the mast hinge. Make certain the crane is well balanced on the slings by slowly lifting approximately 6" off the ground. Lift the crane, apply a bead of waterproof compound, such as silicon based caulk, to the bottom of the base. Move the chassis under the crane and lower the crane into the desired position.

- 2 Install the 1-8x3" mounting cap screws and 1" washers to secure the crane base to the truck body (see figure). Torque the cap screws to 680 ft-lb (94 kg-m).

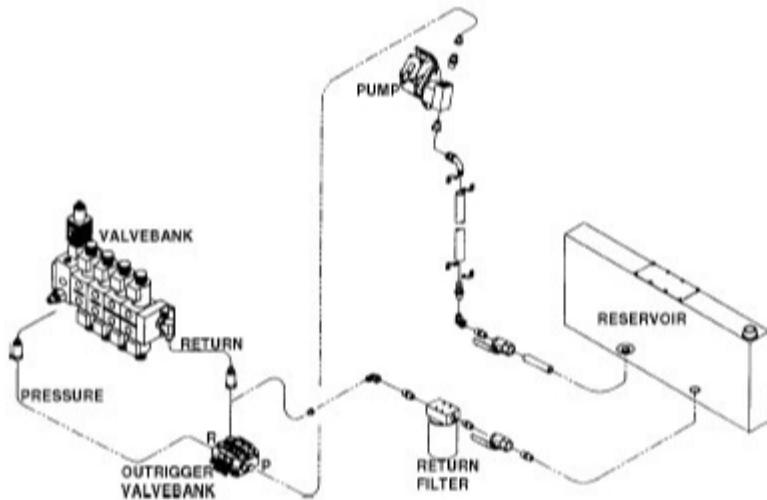


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## Hydraulic Installation

Before installation, familiarize yourself with the installation kit drawing in the parts section for specific hydraulic components used. The figure below is used to show major components and general hose routings only.

- 1 Plumb the hydraulic components as shown in the applicable installation kit in the parts section. Make certain all fittings are securely tightened and that hoses are free of possible chafing or contact with hot or sharp edges which could cause damage.
- 2 Refer to Volume 1 for hydraulic oil specifications. Fill the hydraulic reservoir.
- 3 Check all connections for leaks.
- 4 Start the vehicle engine and test each crane function individually. Conduct a visual inspection to make certain that there are no leaks and that everything is operating properly.
- 5 Check oil level in the reservoir and add oil if necessary.



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## Crane Control

IMT's telescopic cranes are controlled by radio or tethered remote controls. This telescopic crane includes a tethered remote control with a radio remote control option. For complete details on operating your telescopic crane, refer to the IMT Telescopic Crane Operation & Safety Manual (part number 99903514).



## CHAPTER 4

# Parts

## In This Chapter

|  |     |
|--|-----|
| Parts Information .....                            | 24  |
| Base and Mast Assemblies .....                     | 26  |
| Boom Assemblies & Cylinders .....                  | 38  |
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## Parts Information

### GENERAL

This section contains the exploded parts drawings and accompanying parts lists for the assemblies used on this crane. These drawings are intended to be used in conjunction with the instructions found in the REPAIR section in Volume 1. For optional equipment such as winches and remote controls, refer to the appropriate service manual.

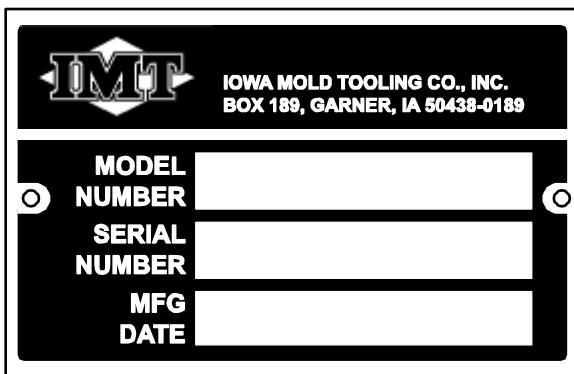
### WARNING

DO NOT ATTEMPT TO REPAIR ANY COMPONENT WITHOUT READING THE INFORMATION CONTAINED IN THE REPAIR SECTION IN VOLUME 1. PAY PARTICULAR ATTENTION TO STATEMENTS MARKED WARNING, CAUTION, OR NOTE IN THAT SECTION. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE EQUIPMENT, PERSONAL INJURY, OR DEATH.

### CRANE IDENTIFICATION

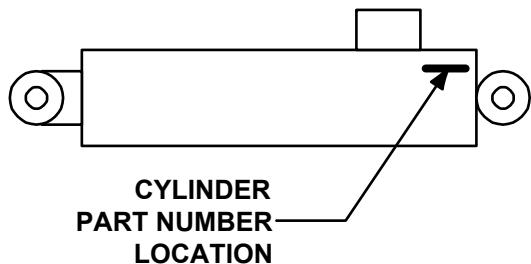
Every IMT crane has an identification placard (see figure) attached to the mast. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model numbers. All inquiries should be addressed to:

Iowa Mold Tooling Co., Inc.  
Box 189, Garner, IA 50438-0189  
Telephone: 641-923-3711  
Technical Support Fax: 641-923-2424



## CYLINDER IDENTIFICATION

To insure proper replacement parts are received, it is necessary to specify the complete number/letter sequence for any part requested. Part numbers may be cross checked by comparing the stamped identification on the cylinder case (See figure below) against the information contained in the service manual. You must include the part number stamped on the cylinder case when ordering parts.



## WELDMENT IDENTIFICATION

Each of the major weldments - base, mast, inner boom, outer boom, extension boom and outrigger weldments bear a stamped part number. Any time a major weldment is replaced, you must specify the complete part number as stamped on the weldment. The locations of the part numbers are shown in the Crane Reference Section.

## ORDERING REPAIR PARTS

When ordering replacement parts:

- 1 Give the model number of the unit.
- 2 Give the serial number of the unit.
- 3 Specify the complete part number. When ordering cylinder parts, or one of the main weldments, always give the stamped part number.
- 4 Give a complete description of the part.
- 5 Specify the quantity required.

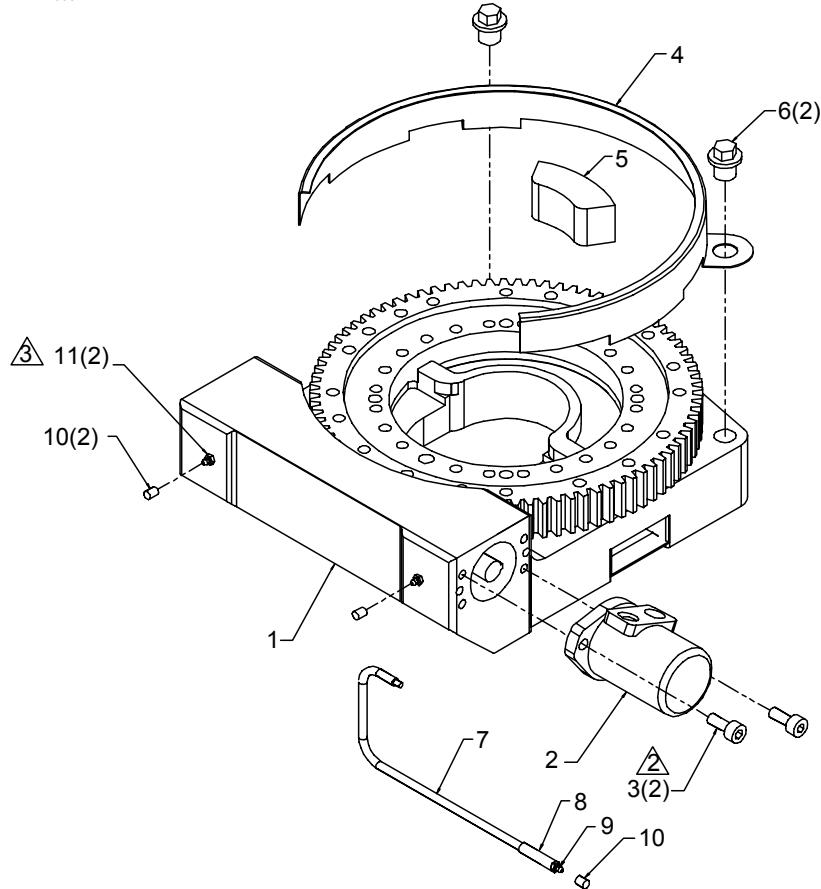
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## Base and Mast Assemblies

## Base Assembly (41714695)

|     |          |                         |      |
|-----|----------|-------------------------|------|
| 1.  | 71056543 | GEAR ROTATOR (SEE DWG)  | 1    |
| 2.  | 73051919 | HYDRAULIC MOTOR         | 1    |
| 3.  | 72060794 | CAP SCR 1/2-13X1-1/4 SH | 2    |
| 4.  | 60120192 | GEAR GUARD              | 1    |
| 5.  | 60120138 | SLIDE                   | 1    |
| 6.  | 70029595 | PLUG 1-8                | 2    |
| 7.  | 51395121 | HOSE                    | 1REF |
| 8.  | 72053301 | COUPLING 1/8NPT         | 1    |
| 9.  | 72053508 | ZERK 1/8NPT             | 1    |
| 10. | 70034382 | CAP, GREASE (RED)       | 3    |
| 11. | 72533605 | ZERK(PART OF 1)         | 2REF |

REV. B 20031124



### NOTES:

- 1 APPLY MOLUB-ALLOY 936F TO TURNTABLE BEARING AND WORM TEETH AT ASSEMBLY.
- 2 USE SERVICEABLE THREAD LOCK.
- 3 APPLY 3 PUMPS OF EXTREME PRESSURE GREASE (EP2) TO WORM BEARINGS. ROTATE CRANE FULLY AFTER APPLYING GREASE.

---

## Gear Rotator (71056543)

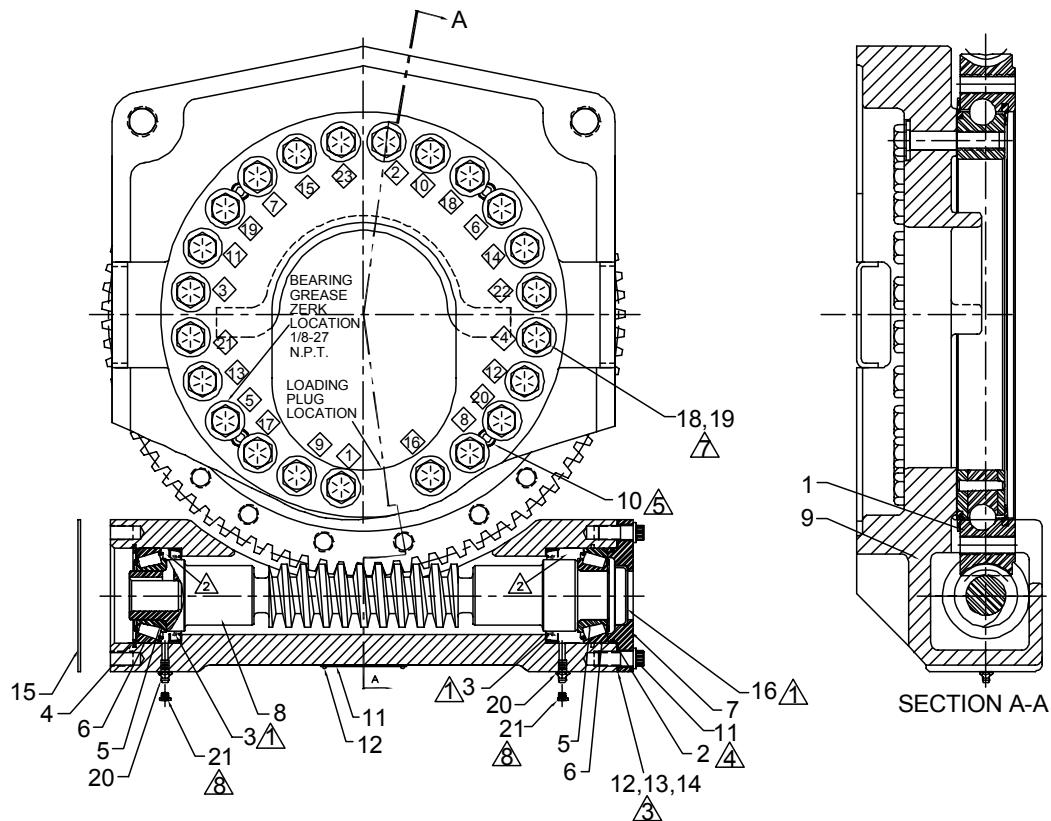
|     |          |                            |    |
|-----|----------|----------------------------|----|
| 1.  | 70056527 | ROTATION BEARING           | 1  |
| 2.  | 70395074 | O-RING                     | 1  |
| 3.  | 70395076 | SEAL                       | 2  |
| 4.  | 70145786 | SNAP RING                  | 1  |
| 5.  | 70055271 | BEARING-CONE               | 2  |
| 6.  | 70055281 | BEARING-CUP                | 2  |
| 7.  | 70145501 | BEARING RETAINER           | 1  |
| 8.  | 70056550 | WORM                       | 1  |
| 9.  | 70145787 | HOUSING                    | 1  |
| 10. | 72601734 | CAP SCR 3/8-16X1-1/4 SH    | 4  |
| 11. | 72601733 | CAP SCR 1/2-13X1-1/4 FERRY | 4  |
| 12. | 73145506 | SHIM .005THK               | 2  |
| 13. | 73145505 | SHIM .015THK               | 2  |
| 14. | 73145504 | SHIM .030THK               | 2  |
| 15. | 76395075 | GASKET                     | 1  |
| 16. | 72533604 | PLUG                       | 1  |
| 17. | 72661504 | PIN 3/8X1                  | 2  |
| 18. | 72601751 | CAP SCR 5/8-11X2-3/4 HHGR8 | 23 |
| 19. | 72063219 | WASHER 5/8 FLAT HARD       | 23 |
| 20. | 72533605 | ZERK                       | 2  |
| 21. | 72533439 | VENT PLUG                  | 2  |

REV. B 20031029

### WARNING

Any time the gear-bearing bolts have been removed, they must be replaced with new bolts of identical grade and size. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing death or serious injury.

## 71056543 Drawing



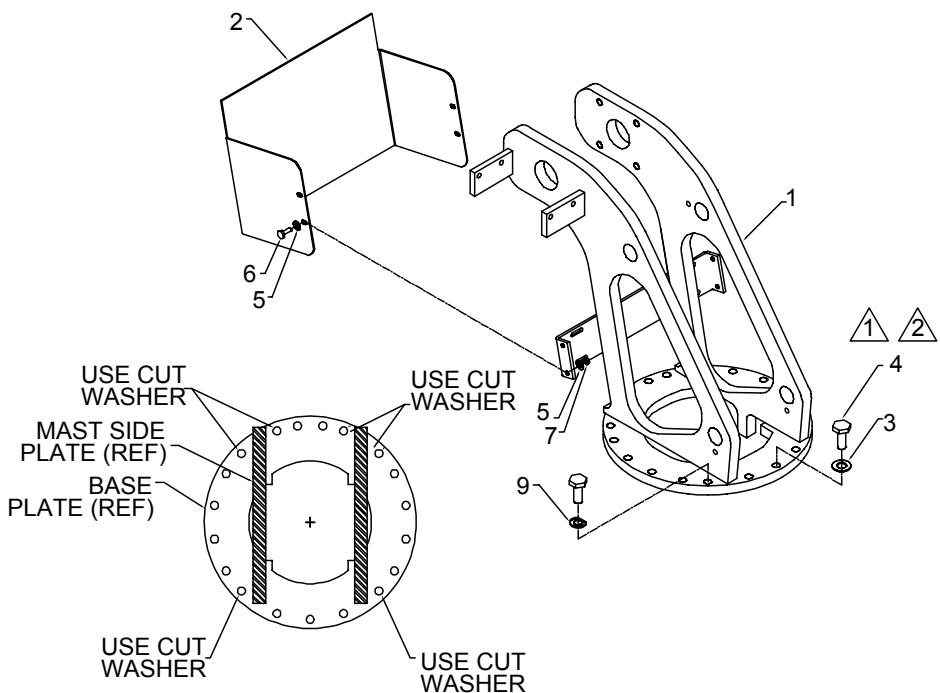
## ASSEMBLY NOTES:

- 1. INSTALL SEALS #3 AND #21 WITH LOCTITE PLASTIC GASKET ON O.D. LUBRICATE SEAL SURFACE BEFORE ASSEMBLY.
- 2. PACK CAVITIES WITH EPO GREASE.
- 3. SHIM TO OBTAIN 0.000/0.004 END PLAY ON WORM SHAFT.
- 4. LUBRICATE O-RING #2 WITH WORM GEAR OIL BEFORE INSTALLING.
- 5. INSTALL BOLTS #14 WITH LOCTITE #242.
- 6. SET BACKLASH BETWEEN WORM AND ROTATION BEARING 0.005-0.012.
- 7. TIGHTEN 5/8-11 UNC GRADE 8 MOUNTING BOLTS AS FOLLOWS:
  - A. TIGHTENING MUST BE PROGRESSIVE AND AT 180° INTERVALS  
FIRST INTERVAL IS AT 70 FT-LB.  
SECOND INTERVAL IS AT 140 FT-LB.  
THIRD INTERVAL IS AT 210 FT-LB.
  - B. TIGHTEN BOLTS IN ORDER SHOWN IN DIAMONDS ↗  
C. DO NOT USE LOCTITE ON MOUNTING BOLTS.
- 8. ITEM #33 SHIPS LOOSE - INSTALL ITEM #34 FOR SHIPPING.

## Mast Assembly (41715268)

|    |          |                             |    |
|----|----------|-----------------------------|----|
| 1. | 52714977 | MAST WLDMT                  | 1  |
| 2. | 60119128 | VALVEBANK COVER             | 1  |
| 3. | 72063119 | WASHER 5/8 GR8 FLAT         | 13 |
| 4. | 72601482 | CAP SCR 5/8-11X2-1/2 HHGR8  | 19 |
| 5. | 72063001 | WASHER 1/4WRT               | 8  |
| 6. | 72060004 | CAP SCR 1/4-20X1 HHGR5      | 4  |
| 7. | 72062104 | NUT 1/4-20 HEX SELF LOCKING | 4  |
| 8. | 72063216 | WASHER 5/8N FLAT-CUT        | 6  |

NEW 20031124



## NOTES:

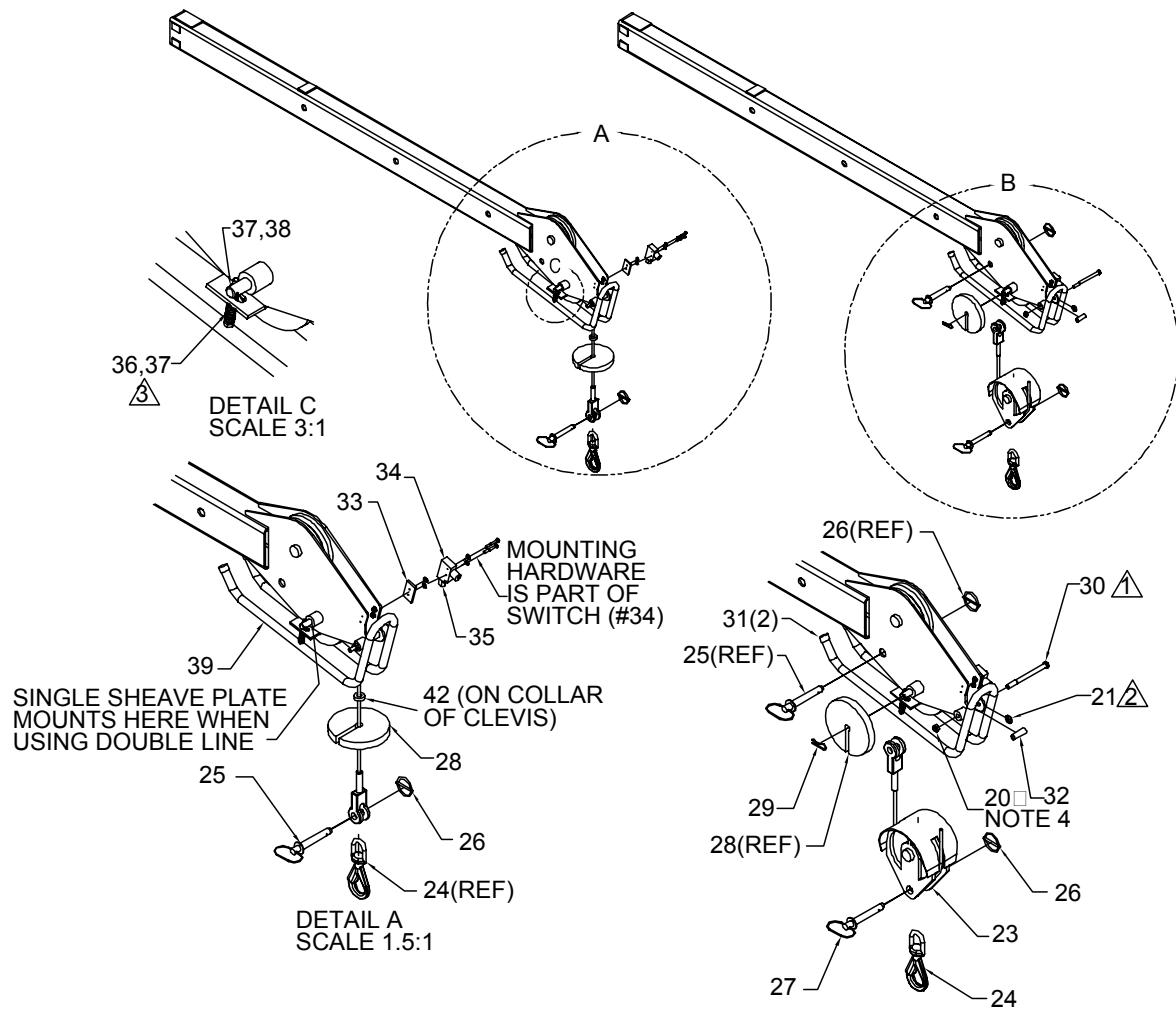
1. TORQUE ITEM #4 TO 160 FT-LB.
2. USE PERMANENT THREAD LOCK ON ITEM #4.

---

## Winch/Cable/Hook Kit (31717067)

|     |          |                               |   |
|-----|----------|-------------------------------|---|
| 1.  | 51713808 | WINCH DRUM                    | 1 |
| 2.  | 71057936 | WINCH                         | 1 |
| 3.  | 73051905 | MOTOR                         | 1 |
| 4.  | 72060774 | CAP SCR 7/16-14X1.25 SH PL    | 2 |
| 5.  | 72601499 | CAP SCR 9/16-12X1.25 HHGR5Z   | 4 |
| 6.  | 72063054 | WASHER 9/16 LOCK              | 4 |
| 7.  | 70055185 | FLANGE BEARING                | 1 |
| 8.  | 72060596 | SCR 1/2-13X.75                | 1 |
| 9.  | 70580143 | CABLE ASM 3/8 6X25            | 1 |
| 10. | 72060046 | CAP SCR 3/8-16X1.00 HHGR5Z    | 4 |
| 11. | 72063051 | WASHER 3/8 LOCK               | 4 |
| 12. | 72060000 | CAP SCR 1/4-20x1/2 HHGR5Z     | 2 |
| 13. | 72063049 | WASHER 1/4 LOCK               | 2 |
| 14. | 72063001 | WASHER 1/4 FLAT               | 2 |
| 15. | 51713168 | CORD REEL ASM                 | 1 |
| 16. | 70029119 | SERIAL NO. PLACARD            | 1 |
| 17. | 72066340 | POP RIVET 1/8X.375 GRIP       | 2 |
| 18. | 60105538 | CABLE GUIDE STUD              | 1 |
| 19. | 60030108 | CABLE GUIDE ROLLER            | 1 |
| 20. | 72062080 | NUT 1/2-13 HEX NYLOC ZINC     | 5 |
| 21. | 72063005 | WASHER 1/2 FLAT               | 5 |
| 22. | 60105540 | CABLE GUIDE SIDE BAR          | 2 |
| 23. | 52715836 | GUARD WELDMENT                | 1 |
| 24. | 71073035 | SWIVEL HOOK W/LATCH           | 1 |
| 25. | 72661514 | LOCK PIN W/HANDLE             | 1 |
| 26. | 72661543 | QUICK PIN                     | 2 |
| 27. | 73733171 | LOCK PIN 1X6 W/HAIRPIN        | 1 |
| 28. | 60122358 | PLATE-SINGLE SHEAVE           | 1 |
| 29. | 72066145 | HAIR PIN 3/16                 | 1 |
| 30. | 72060104 | CAP SCR 1/2-13 X 6.5 HH GR5 Z | 1 |
| 31. | 70396121 | CAP-PLASTIC 1.00 X .68 HT     | 2 |
| 32. | 60122329 | SPACER-1/2 BLK PIPE X 2.0     | 1 |
| 33. | 60122311 | SPACER                        | 1 |
| 34. | 77041459 | LIMIT SWITCH                  | 1 |
| 35. | 77044468 | CONNECTOR 1/2 STR RLF         | 1 |
| 36. | 70146096 | SPRING 5/8 X 2.5 X 14GA       | 2 |
| 37. | 72063003 | WASHER 3/8 FLAT               | 4 |
| 38. | 72062103 | NUT 3/8-16 HEX NYLOC ZINC     | 2 |
| 39. | 52715833 | GUARD                         | 1 |
| 40. | 72053508 | ZERK 1/8 NPT                  | 2 |
| 41. | 70034382 | GREASE CAP                    | 2 |
| 42. | 70149785 | COLLAR, LOCK (EFF 11/02)      | 1 |

## 31717067 Drawings



### NOTES:

▲ ADD NEVER SEEZ TO BOLT, SPACER, AND PIVOT POINTS.

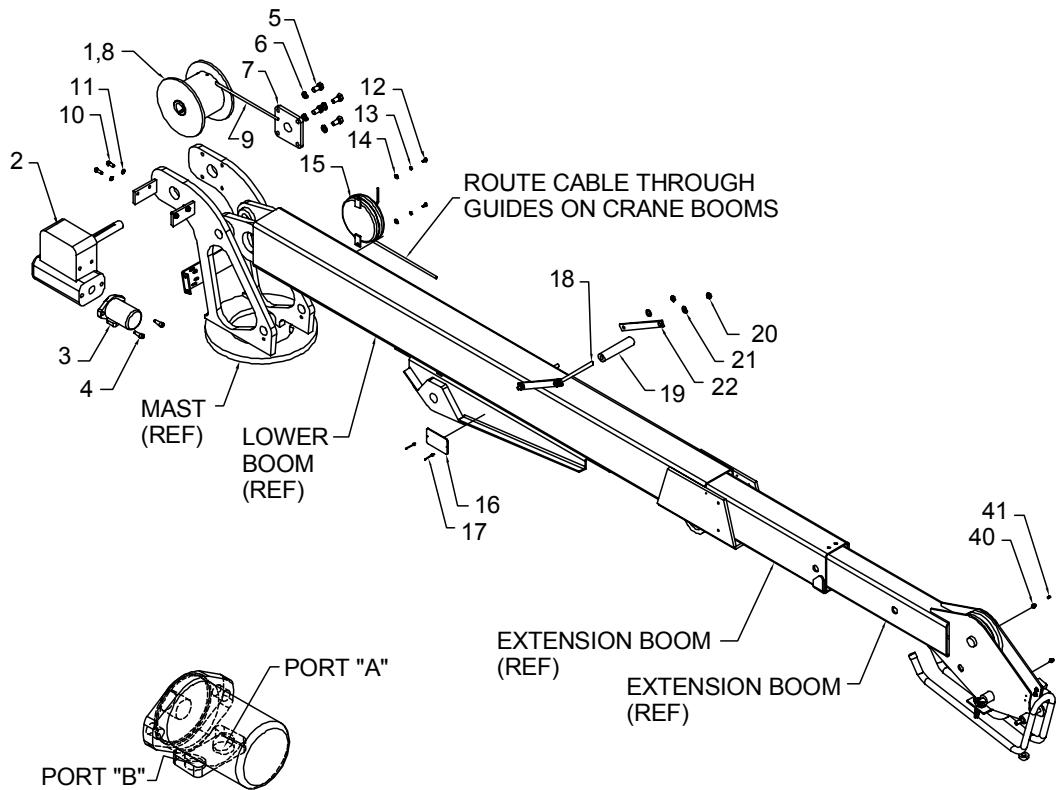
▲ LOCATE WASHER ON EITHER SIDE TO POSITION  
WELDED STUDS IN CENTER OF SLOTS.

③ ADJUST TENSION TO ALLOW 1" OF TRAVEL.

▲ DO NOT OVER-TIGHTEN, MUST BE FREE TO PIVOT.

DETAIL B  
SCALE 1.5:1

**To Parts List - Winch/Cable/Hook Kit (31717067)** (see "Winch/Cable/Hook Kit (31717067)" on page 31)

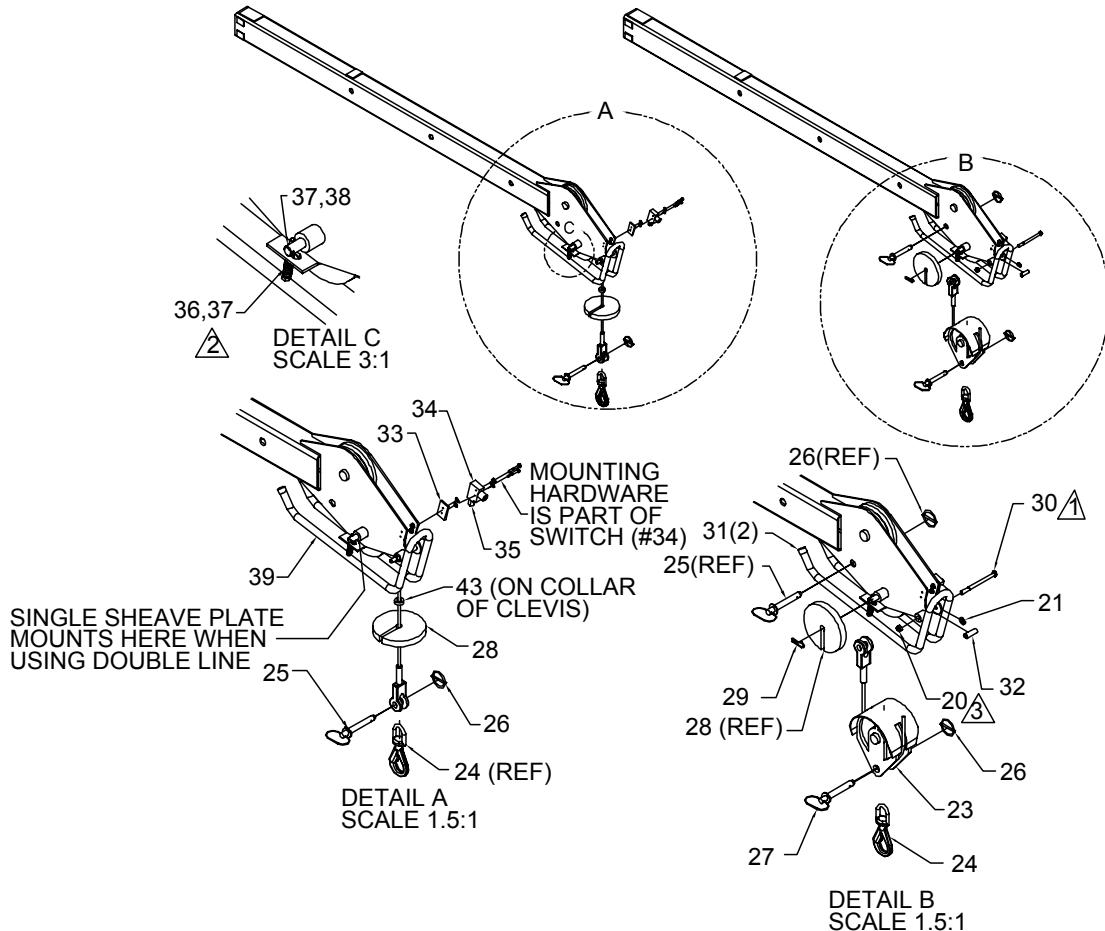


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## Winch/Cable/Hook Kit, Electric Crane (31717274)

|     |          |                              |   |
|-----|----------|------------------------------|---|
| 1.  | 51713808 | WINCH DRUM                   | 1 |
| 2.  | 71057936 | WINCH                        | 1 |
| 3.  | 73051905 | HYDRAULIC MOTOR              | 1 |
| 4.  | 72060774 | CAP SCR 7/16-14 X 1-1/4 PL   | 2 |
| 5.  | 72601499 | CAP SCR 9/16-12 X 1-1/4 HH   | 4 |
| 6.  | 72063054 | WASHER 9/16 LOCK             | 4 |
| 7.  | 70055185 | FLANGE BEARING               | 1 |
| 8.  | 72060596 | SET SCR 1/2-13 X 3/4 PL      | 1 |
| 9.  | 70580143 | CABLE ASM 3/8 6X25           | 1 |
| 10. | 72060046 | CAP SCR 3/8-16 X 1.00        | 4 |
| 11. | 72063051 | WASHER 3/8 LOCK              | 4 |
| 12. | 72060000 | CAP SCR 1/4-20 X 1/2 HH GR5Z | 2 |
| 13. | 72063049 | WASHER 1/4 LOCK              | 2 |
| 14. | 72063001 | WASHER 1/4 FLAT              | 2 |
| 15. | 51717275 | CORD REEL ASM                | 1 |
| 16. | 70029119 | PLACARD-S/N                  | 1 |
| 17. | 72066340 | POP RIVET-AL 1/8 X .375      | 2 |
| 18. | 60105538 | STUD-CABLE GUIDE             | 1 |
| 19. | 60030108 | ROLLER-CABLE GUIDE           | 1 |
| 20. | 72062080 | NUT 1/2-13 HEX NYLOC ZINC    | 5 |
| 21. | 72063005 | WASHER 1/2 FLAT              | 5 |
| 22. | 60105540 | SIDE BAR-CABLE GUIDE         | 2 |
| 23. | 52715836 | GUARD-WLDMT SNATCH BLK       | 1 |
| 24. | 71073035 | HOOK-SWIVEL W/LATCH          | 1 |
| 25. | 72661514 | PIN-LOCK W/HANDLE            | 1 |
| 26. | 72661543 | PIN-QUICK                    | 2 |
| 27. | 73733171 | PIN-LOCK 1 X 6 W/HAIRPIN     | 1 |
| 28. | 60122358 | PLATE-SINGLE SHEAVE          | 1 |
| 29. | 72066145 | HAIR PIN 3/16 ZINC           | 1 |
| 30. | 72061014 | CAP SCR 1/4-13 X 6.5         | 1 |
| 31. | 70396121 | PLASTIC CAP                  | 2 |
| 32. | 60122329 | SPACER 1/2 BLK PIPE          | 1 |
| 33. | 60122311 | SPACER                       | 1 |
| 34. | 77041459 | LIMIT SWITCH                 | 1 |
| 35. | 77044468 | CONNECTOR 1/2-STR RLF        | 1 |
| 36. | 70146096 | SPRING 5/8 x 2.5 x 14GA      | 2 |
| 37. | 72063003 | WASHER 3/8 FLAT              | 4 |
| 38. | 72062103 | NUT 3/8-16 HEX NYLOC         | 2 |
| 39. | 52715833 | GUARD - WLDMT BOOM TIP       | 1 |
| 40. | 72053508 | ZERK 1/8 NPT                 | 2 |
| 41. | 70034382 | GREASE CAP                   | 2 |
| 42. | 70145799 | RETAINER-ELEC HARNESS        | 2 |
| 43. | 70149785 | COLLAR, LOCK (EFF 11/02)     | 1 |

## 31717274 Drawings



### NOTES

- 1 ADD NEVER-SEEZ TO BOLT, SPACER AND PIVOT POINTS.
- 2 ADJUST TENSION TO ALLOW 1° OF TRAVEL.
- 3 DO NOT OVERTIGHTEN. MUST BE FREE TO PIVOT.

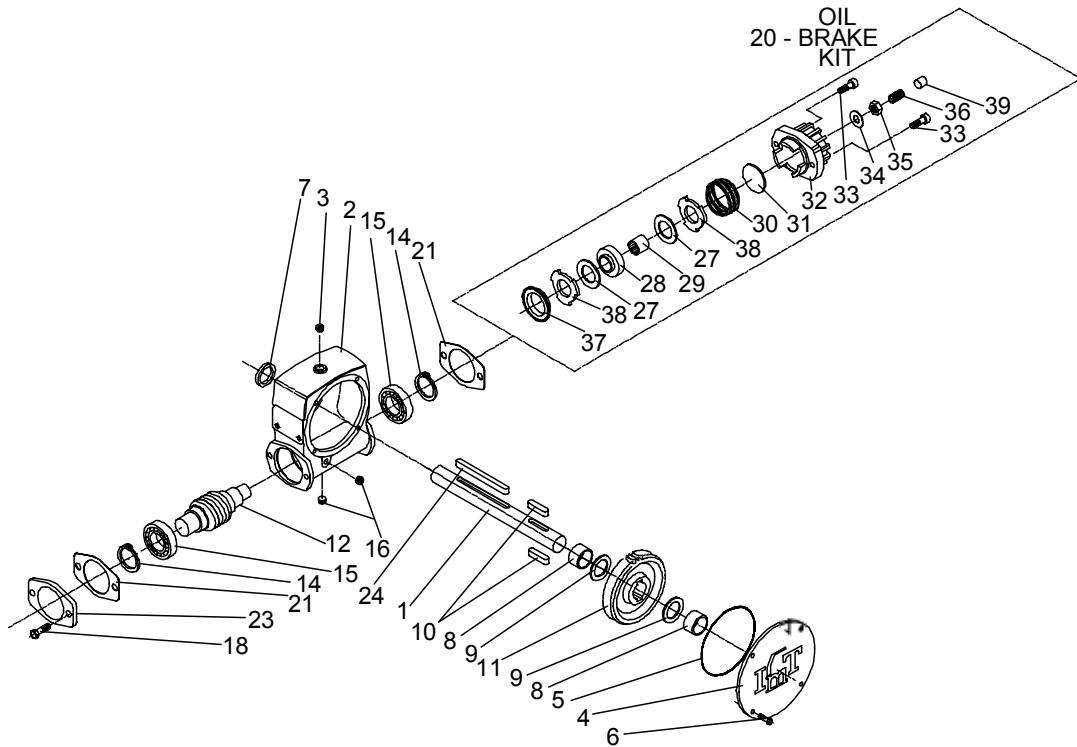
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## Winch (71057936)

|     |          |                              |      |
|-----|----------|------------------------------|------|
| 1   | 70143673 | SHAFT-OUTPUT                 | 1    |
| 2   | 70143672 | HOUSING                      | 1    |
| 3   | 70048142 | BUSHING & BRTHER KIT 3/8 NPT | 1    |
| 4   | 70145277 | COVER                        | 1    |
| 5   | 76393174 | O-RING                       | 1    |
| 6   | 72601568 | CAP SCREW                    | 4    |
| 7   | 76393173 | OIL SEAL                     | 1    |
| 8   | 70143670 | BUSHING                      | 2    |
| 9   | 70143669 | WASHER                       | 2    |
| 10  | 70143668 | KEY                          | 2    |
| 11  | 70056428 | GEAR-SR                      | 1    |
| 12  | 70056427 | WORM-SR                      | 1    |
| 14  | 72661348 | RETAINING RING               | 2    |
| 15  | 70055202 | BALL BEARING                 | 2    |
| 16  | 70143865 | PIPE PLUG                    | 2    |
| 18  | 72601567 | CAP SCREW                    | 2    |
| 20  | 70732542 | BRAKE KIT (INCL:27-38)       | 1    |
| 21  | 76393171 | GASKET                       | 2    |
| 23  | —        | PROTECTOR (DISCARD)          | 1REF |
| 24  | 70143658 | KEY                          | 1    |
| 27  | 70143664 | *FRICTION DISC               | 2REF |
| 28. | 70143665 | *BRAKE HUB                   | 1REF |
| 29. | 70143662 | *CAM CLUTCH                  | 1REF |
| 30. | 70143661 | *SPRING                      | 1REF |
| 31. | 70143660 | *THRUST WASHER               | 1REF |
| 32. | 70143666 | *BRAKE HOUSING               | 1REF |
| 33. | 72601565 | *CAP SCREW-SOC HD            | 2REF |
| 34. | 76393172 | *WASHER-SEAL                 | 1REF |
| 35. | 72601722 | *LOCKNUT-SEAL                | 1REF |
| 36. | 72601723 | *SET SCREW                   | 1REF |
| 37. | 70143659 | *BRAKE SPACER                | 1REF |
| 38. | 70143663 | *STATOR PLATE                | 2REF |
| 39. | 70034440 | *CAP-PLASTIC                 | 1REF |

\* PART OF ITEM 20.

## 71057936 Drawing



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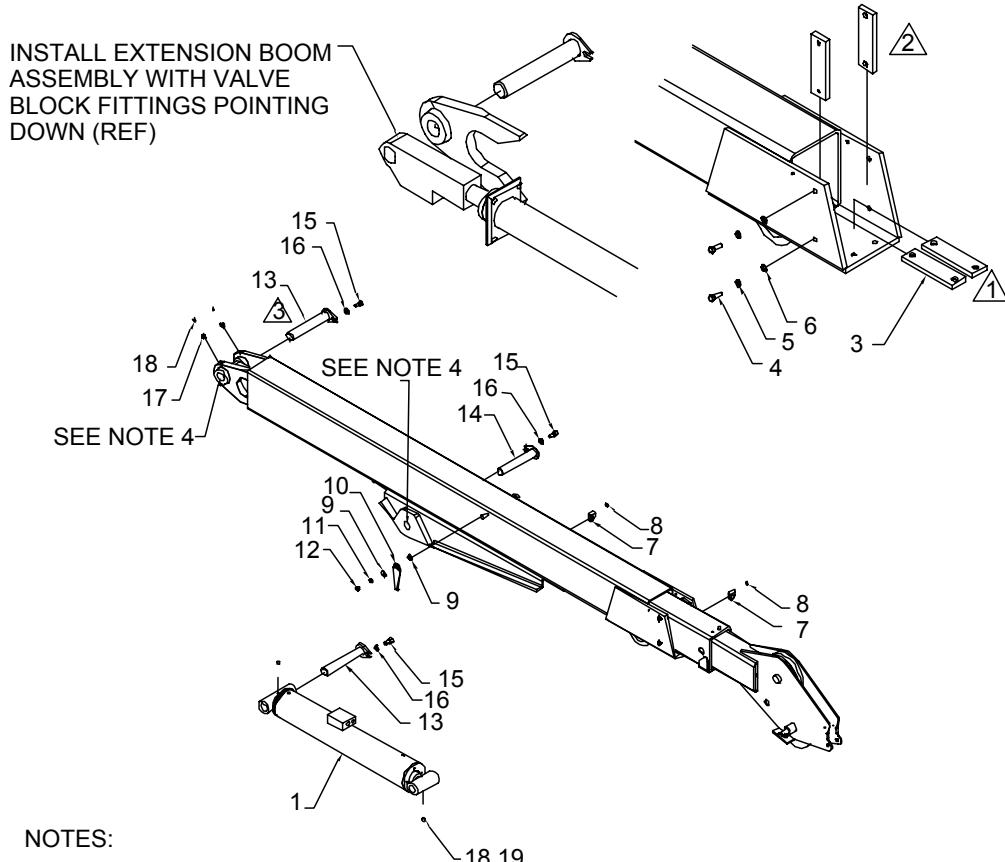
## Boom Assemblies & Cylinders

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### Boom Assembly, Lower (41717137)

|     |          |                             |      |
|-----|----------|-----------------------------|------|
| 1.  | 51718546 | CYLINDER (WAS 3B210010)     | 1    |
| 2.  | 52717135 | LOWER BOOM WELDMT.          | 1    |
| 3.  | 60120124 | WEAR PAD                    | 4    |
| 4.  | 72060293 | CAP SCR 5/16-24X1.00 HHGR5Z | 8    |
| 5.  | 72063050 | WASHER 5/16 LOCK            | 8    |
| 6.  | 72063002 | WASHER 5/16 FLAT            | 8    |
| 7.  | 70034381 | SUPPORT                     | 2    |
| 8.  | 72062104 | NUT 1/4-20 HEX NYLOC ZINC   | 2    |
| 9.  | 72063005 | WASHER 1/2 FLAT             | 4    |
| 10. | 60105544 | PLATE-ANGLE PLASTIC         | 2    |
| 11. | 72063003 | WASHER 3/8 FLAT             | 2    |
| 12. | 72062103 | NUT 3/8-16 HEX NYLOC ZINC   | 2    |
| 13. | 52714976 | PIN TYPE II 1.5X9.31        | 2    |
| 14. | 52715266 | PIN TYPE II 1.4X8.31        | 1    |
| 15. | 72060793 | CAP SCR 1/2-13X1.00         | 3    |
| 16. | 72063053 | WASHER 1/2 LOCK             | 3    |
| 17. | 72053508 | ZERK NPT 1/8                | 2    |
| 18. | 70034382 | GREASE CAP                  | 4    |
| 19. | 72053507 | ZERK STR THD .25-28         | 2REF |

REV. A 20040428

**41717137 Drawing**

MOUNT THE BOTTOM TWO WEAR PADS BEFORE INSERTING THE MANUAL EXTENSION ASSEMBLY.

THE TWO SIDE WEAR PADS WILL BE INSERTED AFTER THE MANUAL EXTENSION IS INSTALLED.

PIN (ITEM #13) MUST GO THRU THE LOWER BOOM ASSEMBLY AND THE MANUAL EXTENSION ASSEMBLY. THE VALVE BLOCK FITTINGS MUST BE POINTED DOWN.

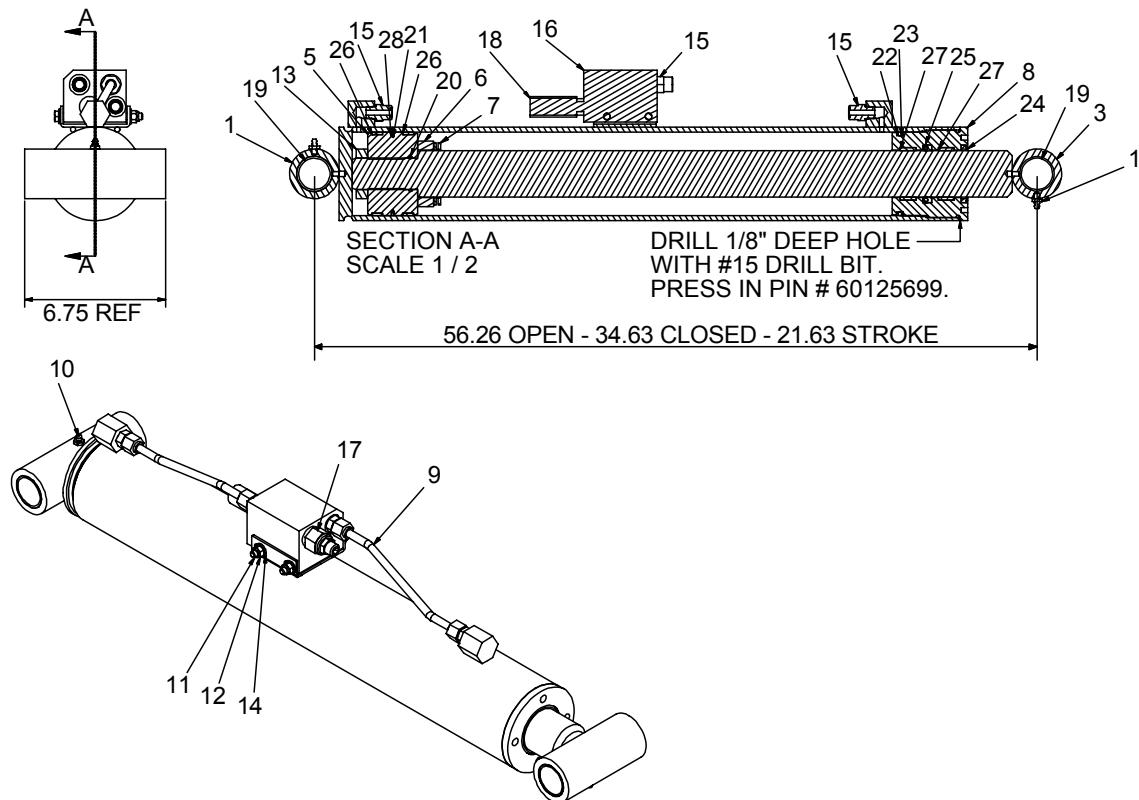
4. APPLY NEVER SEEZ TO COLLAR ID.
5. APPLY NEVER SEEZ TO PIN. DO NOT EXCEED WIDTH OF THE BOOM COLLARS.

---

## Cylinder, Lower (51718546) (Eff. 6-29-04)

|     |           |  |   |
|-----|-----------|--|---|
| 1.  | 4B210010  | CASE ASSEMBLY                          | 1 |
| 2.  | 51718546A | CYLINDER (INCL. 1,3,4,6,7,9,14)        | 1 |
| 3.  | 51744131  | SEAL KIT                               | 1 |
| 4.  | 52718385  | ROD ASM                                | 1 |
| 5.  | 60125699  | PIN                                    | 1 |
| 6.  | 60125918  | PISTON                                 | 1 |
| 7.  | 60125920  | STOP TUBE                              | 1 |
| 8.  | 6A025022  | WAFER LOCK                             | 1 |
| 9.  | 6HD40022  | HEAD                                   | 1 |
| 10. | 70145864  | TUBE ASM-LOWER BOOM CYL                | 2 |
| 11. | 72053507  | ZERK - STR THD .25-28                  | 2 |
| 12. | 72060037  | CAP SCR .31-18X 4.00 HH GR5 Z          | 2 |
| 13. | 72062109  | NUT .31-18 HEX NYLOCK                  | 2 |
| 14. | 72062305  | COLLAR-LOCK                            | 1 |
| 15. | 72063002  | WASHER .31 FLAT                        | 4 |
| 16. | 72533186  | ADPTR-#6M FACE/#6M STR                 | 4 |
| 17. | 73540035  | VALVE-CBAL                             | 1 |
| 18. | 73540052  | VALVE-CBAL                             | 1 |
| 19. | 77041561  | PRESSURE SWITCH                        | 1 |
| 20. | 7BF81215  | BUSHING - STL 1.50 PIN X 1.25 LG       | 6 |
| 21. | 7Q072128  | O RING 1.487X 1.693X 0.103 70          | 1 |
| 22. | 7Q072153  | O-RING - 3.5 X 3.69 0.09 70            | 1 |
| 23. | 7Q072342  | O-RING - 3.62 X 4 0.19 70              | 1 |
| 24. | 7Q10P342  | BACK-UP RING 3.62 BORE 4 O.D. 0.07 THK | 1 |
| 25. | 7R14P022  | ROD WIPER-TYPE D 2.25 ROD              | 1 |
| 26. | 7R546022  | U-CUP LOADED 2.25X2.75X.38 "B          | 1 |
| 27. | 7T2N4040  | WEAR RING - PISTON 4.00 O.D. X .50 W   | 2 |
| 28. | 7T2NX625  | WEAR RING-ROD 2.25 IDX0.75             | 2 |
| 29. | 7T66P040  | PISTON SEAL DYNAMIC 4.00"              | 1 |

NEW 20040517

**51718546 Drawing****NOTES:**

- 1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.
- 2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.
- 3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

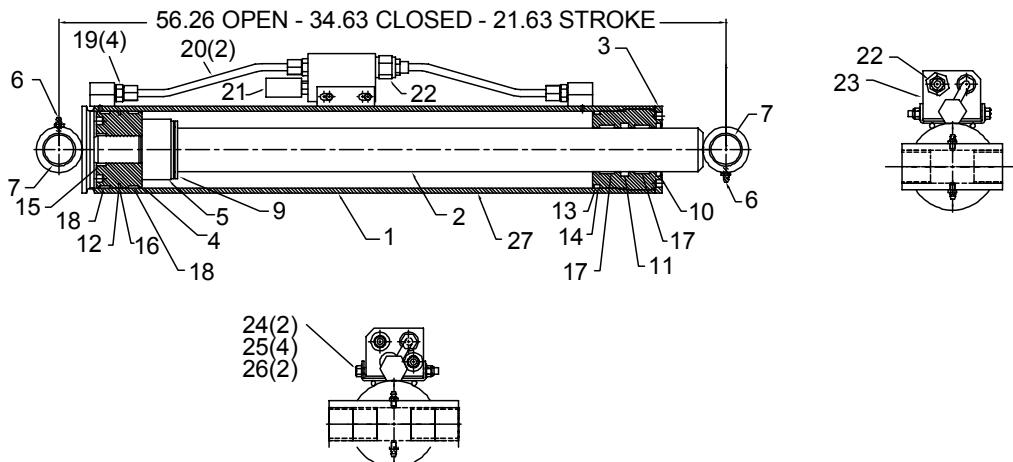
| CYLINDER DATA |                                |           |       |
|---------------|--------------------------------|-----------|-------|
| EXT.          | 12.57 in <sup>2</sup> 1.18 gal | DRY WT.   | 99 #  |
| RETR.         | 8.59 in <sup>2</sup> 0.80 gal  | BRG. SPAN | 11.1% |
| CASE          | ø4.5 x 4.0b x 29.31 lg         | TEST PSI  | 3600  |
| ROD           | ø2.25 x 32.81 lg               | OPER PSI  | 2350  |

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## Cylinder, Lower (3B210010) (Thru. 6-04)

|     |           |                                      |      |
|-----|-----------|--------------------------------------|------|
| 1.  | 4B210010  | CASE ASM (PT OF 27,INCL 6.7)         | 1REF |
| 2.  | 4G245980  | ROD ASM (INCL. 6,7)                  | 1REF |
| 3.  | 6HD40022  | HEAD (PART OF 27)                    | 1REF |
| 4.  | 6ID40143  | PISTON (PART OF 27)                  | 1REF |
| 5.  | 6C150022  | STOP TUBE (PART OF 27)               | 1REF |
| 6.  | 72053507  | ZERK STR THD .25 - .28 (PART OF 1,2) | 2REF |
| 7.  | 7BF81215  | BUSHING (PART OF 1,2)                | 6REF |
| 8.  | 9D161823  | SEAL KIT (PART OF 27,INC 9-18)1REF   |      |
| 9.  | 6A025022  | WAFER LOCK (PART OF 8)               | 1REF |
| 10. | 7R14P022  | ROD WIPER (PART OF 8)                | 1REF |
| 11. | 7R546022  | U-CUP SEAL (PART OF 8)               | 1REF |
| 12. | 7Q072153  | O-RING (PART OF 8)                   | 1REF |
| 13. | 7Q072342  | O-RING (PART OF 8)                   | 1REF |
| 14. | 7Q10P342  | BACKUP RING (PART OF 8)              | 1REF |
| 15. | 7T61N143  | LOCK RING (PART OF 8)                | 1REF |
| 16. | 7T66P040  | PISON SEAL (PART OF 8)               | 1REF |
| 17. | 7T2NX625  | WEAR RING (PART OF 8)                | 2REF |
| 18. | 7T2N4040  | WEAR RING (PART OF 8)                | 2REF |
| 19. | 72533186  | ADPTR #6MFACE #6MSTR                 | 4    |
| 20. | 70145864  | TUBE ASM                             | 2    |
| 21. | 77041561  | PRESS SWITCH (PART OF 23)            | 1REF |
| 22. | 73540052  | VALVE-C-BAL (PART OF 23)             | 1REF |
| 23. | 73540035  | VALVE-CBAL (INCL. 21,22)             | 1    |
| 24. | 72062109  | NUT 5/16-18 HEX NYLOC ZINC           | 2    |
| 25. | 72063002  | WASHER 5/16 FLAT                     | 4    |
| 26. | 72060037  | CAP SCR 5/16-18 X 4.00 HHGR5 2       |      |
| 27. | 3B210010A | CYLINDER (INCL. 1-5,8)               | 1    |

REV. A 20031124

**NOTES:**

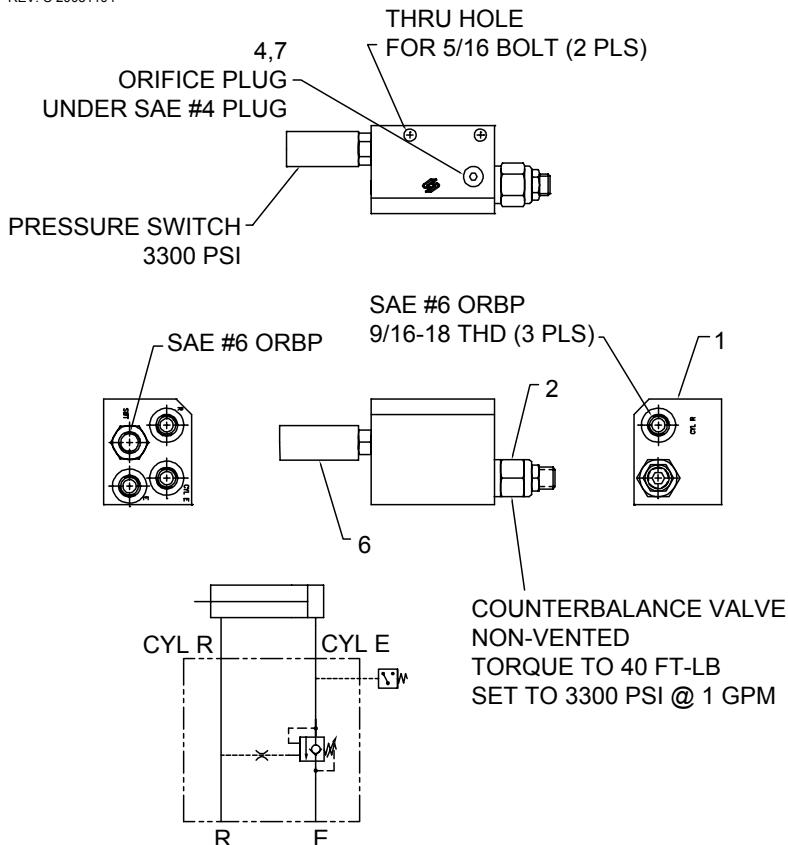
- 1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.
- 2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.
- 3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

| CYLINDER DATA |                                |           |        |
|---------------|--------------------------------|-----------|--------|
| EXT.          | 12.57 in <sup>2</sup> 1.18 gal | DRY WT.   | 99 #   |
| RETR.         | 8.59 in <sup>2</sup> 0.80 gal  | BRG. SPAN | 11.17% |
| CASE          | ø4.5 x 4.0b x 29.31 lg         | TEST PSI  | 3000   |
| ROD           | ø2.25 x 32.81 lg               | OPER PSI  | 2350   |

## Valve, Counterbalance (73540035)

|    |          |                                |   |
|----|----------|--------------------------------|---|
| 1. | 73540051 | VALVE, C-BAL                   | 1 |
| 2  | 73540052 | VALVE, C-BAL                   | 1 |
| 4. | 70145750 | ORIFICE                        | 1 |
| 6. | 77041561 | PRESSURE SWITCH                | 1 |
| 7. | 72533477 | PLUG, STR HOL HEX STL 7/16 THD | 2 |

REV. C 20031104



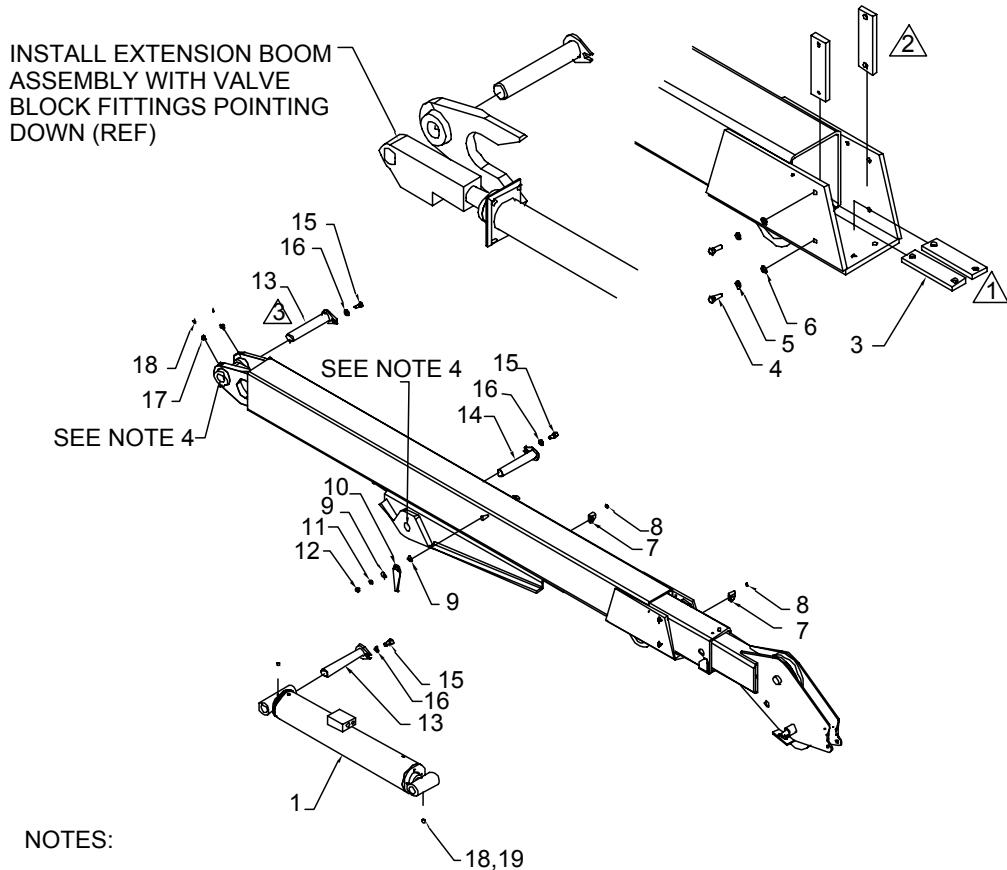
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## Boom Assembly, Lower, Electric (41717273)

|     |          |                                       |      |
|-----|----------|---------------------------------------|------|
| 1.  | 51718546 | CYL-4.0/2.2 (INCL. 19) (WAS 3B210010) | 1    |
| 2.  | 52717272 | WELDMENT                              | 1    |
| 3.  | 60120124 | WEAR PAD                              | 4    |
| 4.  | 72060293 | CAP SCR 5/16-24 X 1.00 HH GR5         | 8    |
| 5.  | 72063050 | WASHER 5/16 LOCK                      | 8    |
| 6.  | 72063002 | WASHER 5/16 FLAT                      | 8    |
| 7.  | 70034381 | SUPPORT-GP STAUFF                     | 2    |
| 8.  | 72062104 | NUT 1/4-20 HEX NYLOC                  | 2    |
| 9.  | 72063005 | WASHER 1/2-FLAT                       | 4    |
| 10. | 60105544 | PLATE-ANGLE PLASTIC                   | 2    |
| 11. | 72063003 | WASHER 3/8 FLAT                       | 2    |
| 12. | 72062103 | NUT 3/8-16 HEX NYLOC ZINC             | 2    |
| 13. | 52714976 | PIN-TYPE II 1.5 X 9.31                | 2    |
| 14. | 52715266 | PIN-TYPE II 1.5 X 8.31                | 1    |
| 15. | 72060793 | CAP SCR 1/2-13 X 1.00                 | 3    |
| 16. | 72063053 | WASHER 1/2 LOCK                       | 3    |
| 17. | 72053508 | ZERK-NPT 1/8                          | 2    |
| 18. | 70034382 | CAP-GREASE PRO20                      | 4    |
| 19. | 72053507 | ZERK-STR THD 1/4-28                   | 2REF |

REV. A 20040428

## 41717273 Drawing



**1 MOUNT THE BOTTOM TWO WEAR PADS BEFORE INSERTING THE MANUAL EXTENSION ASSEMBLY.**

**2 THE TWO SIDE WEAR PADS WILL BE INSERTED AFTER THE MANUAL EXTENSION IS INSTALLED.**

**3 PIN (ITEM #13) MUST GO THRU THE LOWER BOOM ASSEMBLY AND THE MANUAL EXTENSION ASSEMBLY. THE VALVE BLOCK FITTINGS MUST BE POINTED DOWN.**

4. APPLY NEVER SEEZ TO COLLAR ID.
5. APPLY NEVER SEEZ TO PIN. DO NOT EXCEED WIDTH OF THE BOOM COLLARS.

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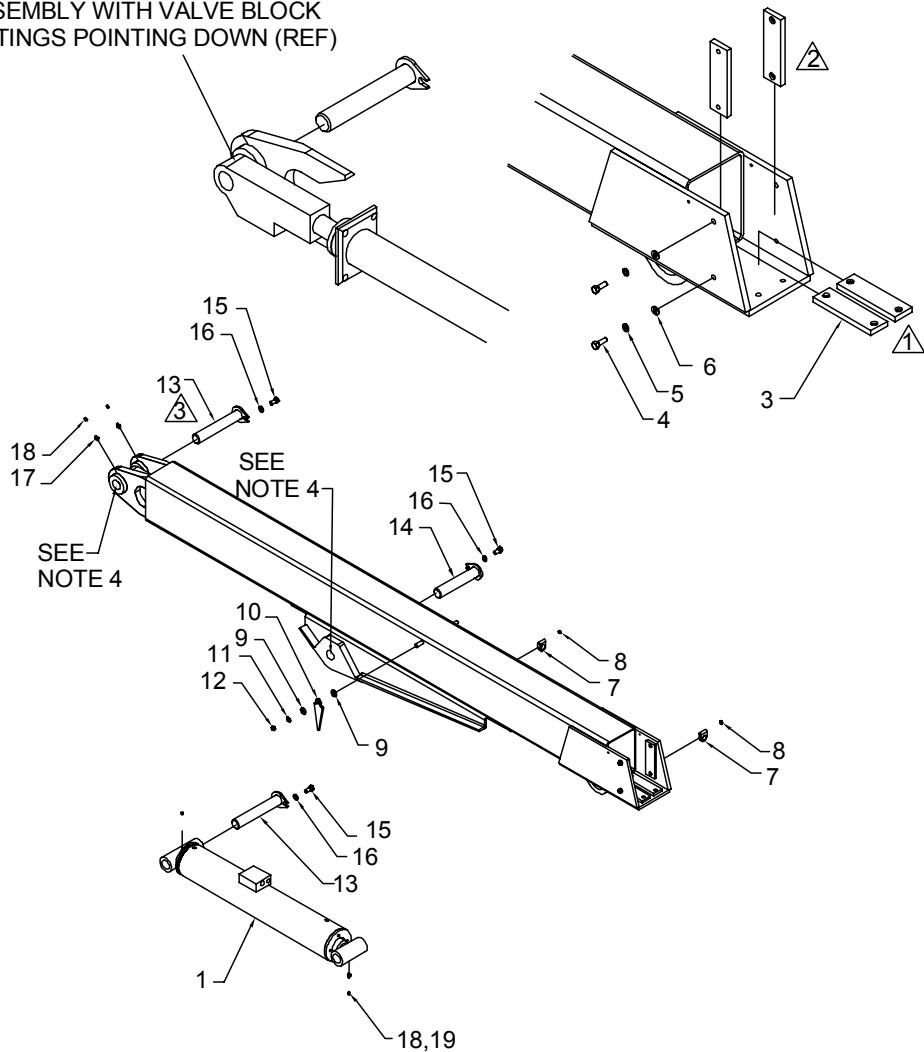
## Boom Assembly, Lower, 2H (41717507)

|     |          |                                |      |
|-----|----------|--------------------------------|------|
| 1.  | 51718546 | CYLINDER (WAS 3B210010)        | 1    |
| 2.  | 52717143 | WELDMENT                       | 1    |
| 3.  | 60120124 | WEAR PAD-NYLON                 | 4    |
| 4.  | 72060293 | CAP SCR 5/16-24X 1.00          | 8    |
| 5.  | 72063050 | WASHER 5/16 LOCK ZINC          | 8    |
| 6.  | 72063002 | WASHER 5/16 W FLAT             | 8    |
| 7.  | 70034381 | SUPPORT                        | 2    |
| 8.  | 72062104 | NUT 1/4-20 HEX NYLOC ZINC      | 2    |
| 9.  | 72063005 | WASHER 1/2 W FLAT              | 4    |
| 10. | 60105544 | PLATE-ANGLE PLASTIC            | 2    |
| 11. | 72063003 | WASHER 3/8 W FLAT              | 2    |
| 12. | 72062103 | NUT 3/8-16 HEX NYLOC ZINC      | 2    |
| 13. | 52714976 | PIN-TYPE II 1.50 X 9.31 (9.06) | 2    |
| 14. | 52715266 | PIN-TYPE II 1.50 X 8.31 (8.06) | 1    |
| 15. | 72060793 | CAP SCR 1/2-13X1.00 SH ZINC    | 3    |
| 16. | 72063053 | WASHER 1/2 LOCK ZINC           | 3    |
| 17. | 72053508 | ZERK-NPT 1/8                   | 2    |
| 18. | 70034382 | CAP-GREASE PRO20 GC-RED        | 4    |
| 19. | 72053507 | ZERK-STR THD .25-.28           | 2REF |

REV. A 20040428

## 41717507 Drawing

INSTALL EXTENSION BOOM  
ASSEMBLY WITH VALVE BLOCK  
FITTINGS POINTING DOWN (REF)



NOTES:

MOUNT BOTTOM TWO WEAR PADS BEFORE INSERTING MANUAL EXTENSION ASSEMBLY.

INSERT THE TWO SIDE WEAR PADS AFTER THE MANUAL EXTENSION IS INSTALLED.

PIN #13 MUST GO THROUGH THE LOWER BOOM ASSEMBLY AND THE MANUAL EXTENSION ASSEMBLY. POINT THE VALVE BLOCK FITTINGS DOWN.

4. APPLY NEVER-SEEZ TO COLLAR I.D.

5. APPLY NEVER-SEEZ TO PIN. DO NOT EXCEED WIDTH OF THE BOOM COLLARS.

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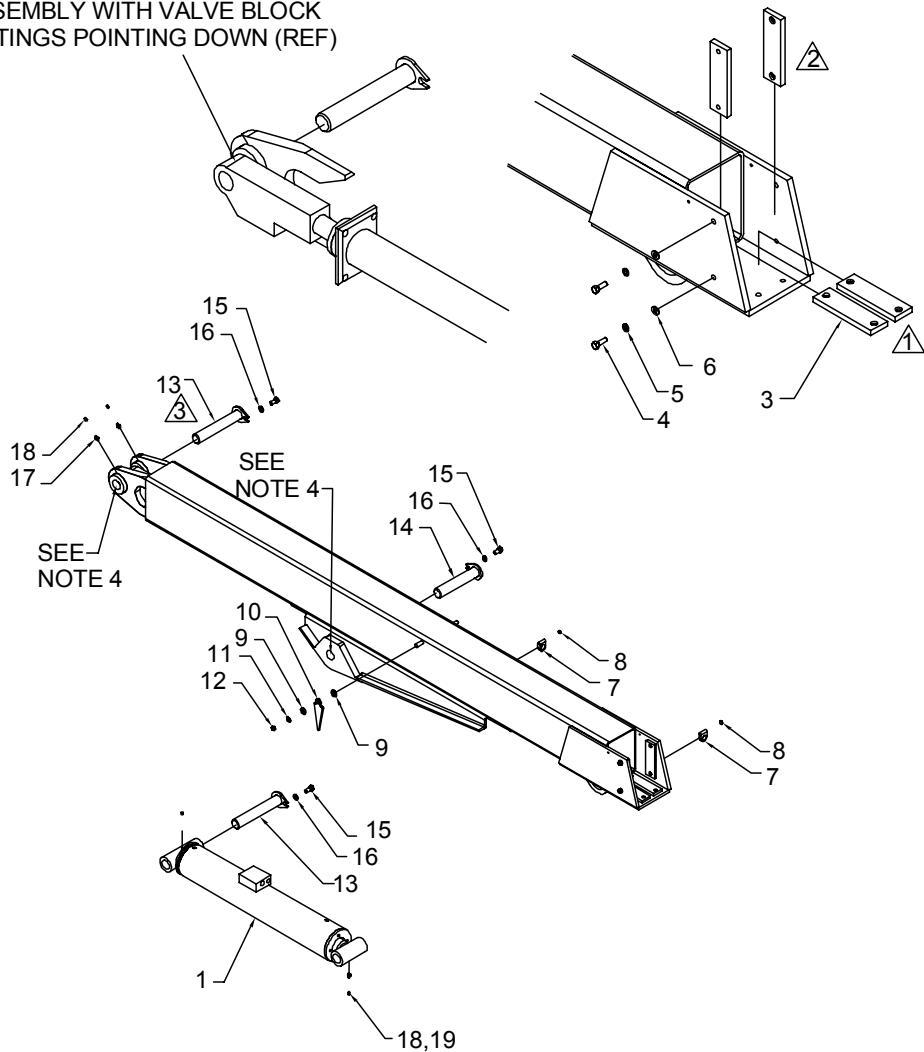
## Boom Assembly, Lower, 2H Electric (41717535)

|     |          |                                |      |
|-----|----------|--------------------------------|------|
| 1.  | 51718546 | CYLINDER (WAS 3B210010)        | 1    |
| 2.  | 52717534 | WELDMENT                       | 1    |
| 3.  | 60120124 | WEAR PAD-NYLON                 | 4    |
| 4.  | 72060293 | CAP SCR 5/16-24X 1.00          | 8    |
| 5.  | 72063050 | WASHER 5/16 LOCK ZINC          | 8    |
| 6.  | 72063002 | WASHER 5/16 W FLAT             | 8    |
| 7.  | 70034381 | SUPPORT                        | 2    |
| 8.  | 72062104 | NUT 1/4-20 HEX NYLOC ZINC      | 2    |
| 9.  | 72063005 | WASHER 1/2 W FLAT              | 4    |
| 10. | 60105544 | PLATE-ANGLE PLASTIC            | 2    |
| 11. | 72063003 | WASHER 3/8 W FLAT              | 2    |
| 12. | 72062103 | NUT 3/8-16 HEX NYLOC ZINC      | 2    |
| 13. | 52714976 | PIN-TYPE II 1.50 X 9.31 (9.06) | 2    |
| 14. | 52715266 | PIN-TYPE II 1.50 X 8.31 (8.06) | 1    |
| 15. | 72060793 | CAP SCR 1/2-13X 1.00 SH ZINC3  |      |
| 16. | 72063053 | WASHER 1/2 LOCK ZINC           | 3    |
| 17. | 72053508 | ZERK-NPT 1/8                   | 2    |
| 18. | 70034382 | CAP-GREASE PRO20 GC-RED        | 4    |
| 19. | 72053507 | ZERK-STR THD .25-.28           | 2REF |

REV. A 20040428

## 41717535 Drawing

INSTALL EXTENSION BOOM  
ASSEMBLY WITH VALVE BLOCK  
FITTINGS POINTING DOWN (REF)



NOTES:

MOUNT BOTTOM TWO WEAR PADS BEFORE INSERTING MANUAL EXTENSION ASSEMBLY.

INSERT THE TWO SIDE WEAR PADS AFTER THE MANUAL EXTENSION IS INSTALLED.

PIN #13 MUST GO THROUGH THE LOWER BOOM ASSEMBLY AND THE MANUAL EXTENSION ASSEMBLY. POINT THE VALVE BLOCK FITTINGS DOWN.

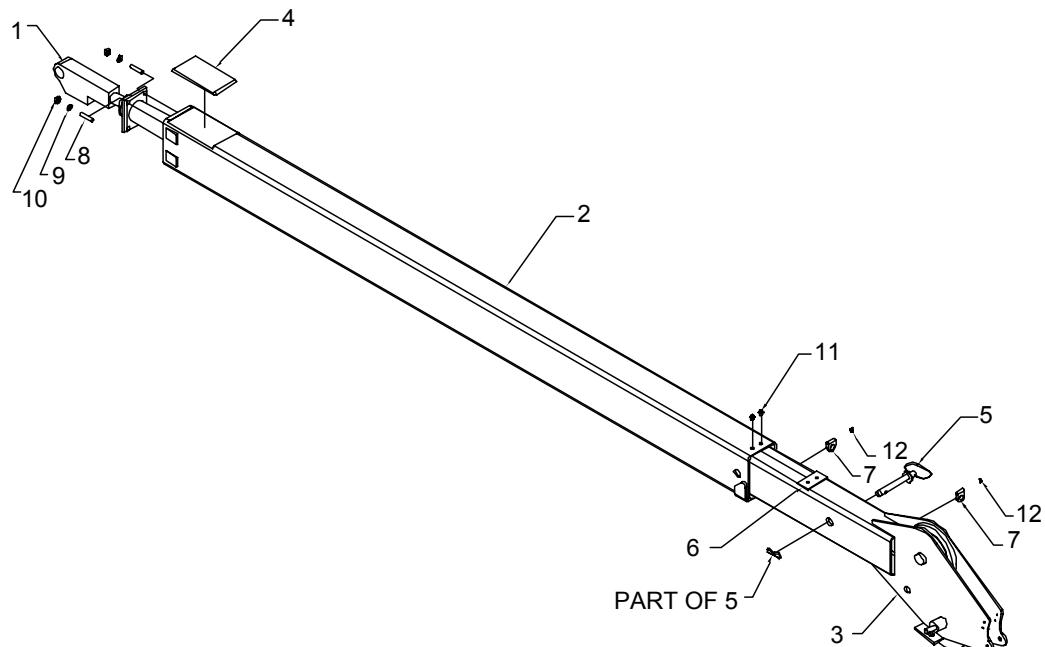
4. APPLY NEVER-SEEZ TO COLLAR I.D.

5. APPLY NEVER-SEEZ TO PIN. DO NOT EXCEED WIDTH OF THE BOOM COLLARS.

## Boom Assembly, Extension, 1H 1M (41717133)

|     |          |                              |   |
|-----|----------|------------------------------|---|
| 1.  | 3B210013 | CYLINDER                     | 1 |
| 2.  | 52717136 | BOOM EXTENSION WELDMT.       | 1 |
| 3.  | 52717062 | WELDMT. 2ND EXT. BOOM        | 1 |
| 4.  | 60030189 | WEAR PAD                     | 1 |
| 5.  | 73733171 | LOCK PIN 1X6 W/HAIRPIN       | 1 |
| 6.  | 60121174 | STROKE STOP                  | 1 |
| 7.  | 70034381 | SUPPORT                      | 2 |
| 8.  | 72601757 | STUD 1/2-13X2.00             | 4 |
| 9.  | 72063005 | WASHER 1/2 FLAT              | 4 |
| 10. | 72062080 | NUT 1/2-13 HEX NYLOC ZINC    | 4 |
| 11. | 72601750 | CAP SCR 3/8-16X1/2 SOC BTHND | 2 |
| 12. | 72062104 | NUT 1/4-20 HEX NYLOC ZINC    | 2 |

NEW 20031125

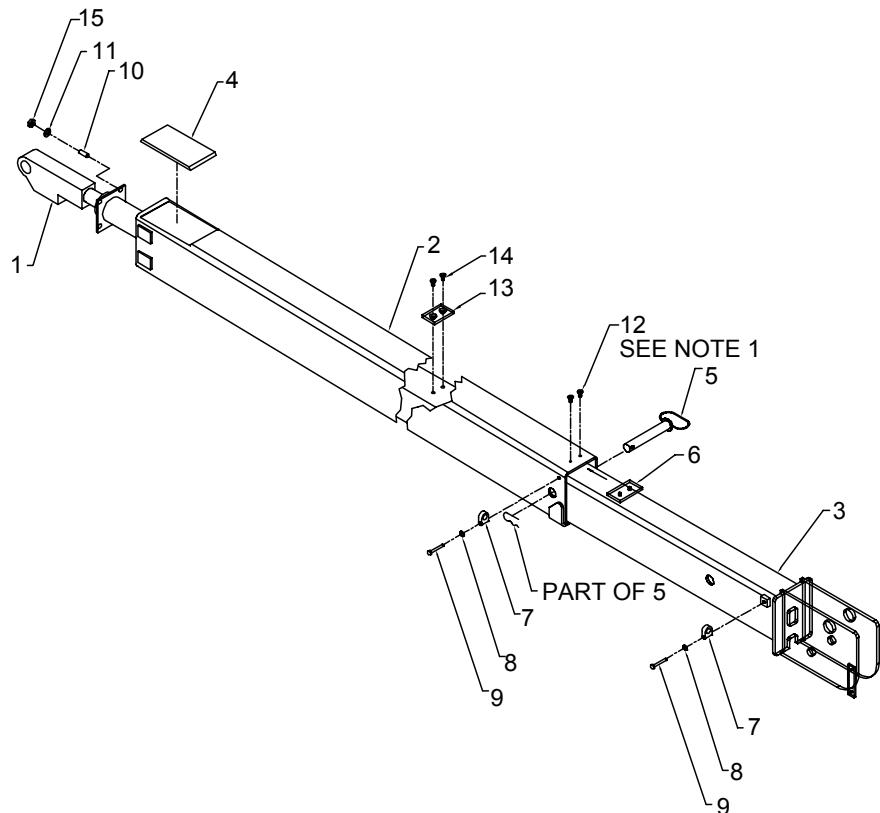


## Boom Assembly, Extension, 1H 1M Flipsheave (41714239)

|     |          |                            |   |
|-----|----------|----------------------------|---|
| 1.  | 3B210013 | EXT CYLINDER               | 1 |
| 2.  | 52713804 | EXT BOOM                   | 1 |
| 3.  | 52714260 | EXT BOOM-MANUAL            | 1 |
| 4.  | 60030189 | WEAR PAD                   | 1 |
| 5.  | 73733171 | LOCK PIN W/HAIRPIN         | 1 |
| 6.  | 60121174 | STOP BLOCK                 | 1 |
| 7.  | 70034381 | CORD GUIDE                 | 2 |
| 8.  | 72063049 | WASHER 1/4 LOCK            | 2 |
| 9.  | 72060006 | CAP SCR 1/4-20X1-1/2 HHGR5 | 2 |
| 10. | 72601757 | STUD 1/2-13X2 NC GR5 STL   | 4 |
| 11. | 72063005 | WASHER 1/2 FLAT            | 4 |
| 12. | 72601750 | CAP SCR 5/16-24X5/8 FLHSOC | 2 |
| 13. | 60121888 | STOP BLOCK                 | 1 |
| 14. | 72601043 | CAP SCR 3/8-16X3/4 FLTHDSH | 2 |
| 15. | 71062080 | NUT-13 LOCK                | 4 |

REV. F 20040323

NOTE: ADD SERVICEABLE THREAD LOCK TO ITEM #12 (2 PLACES) AND TO ITEM #10 (4 PLACES) ON BOOM SIDE ONLY.

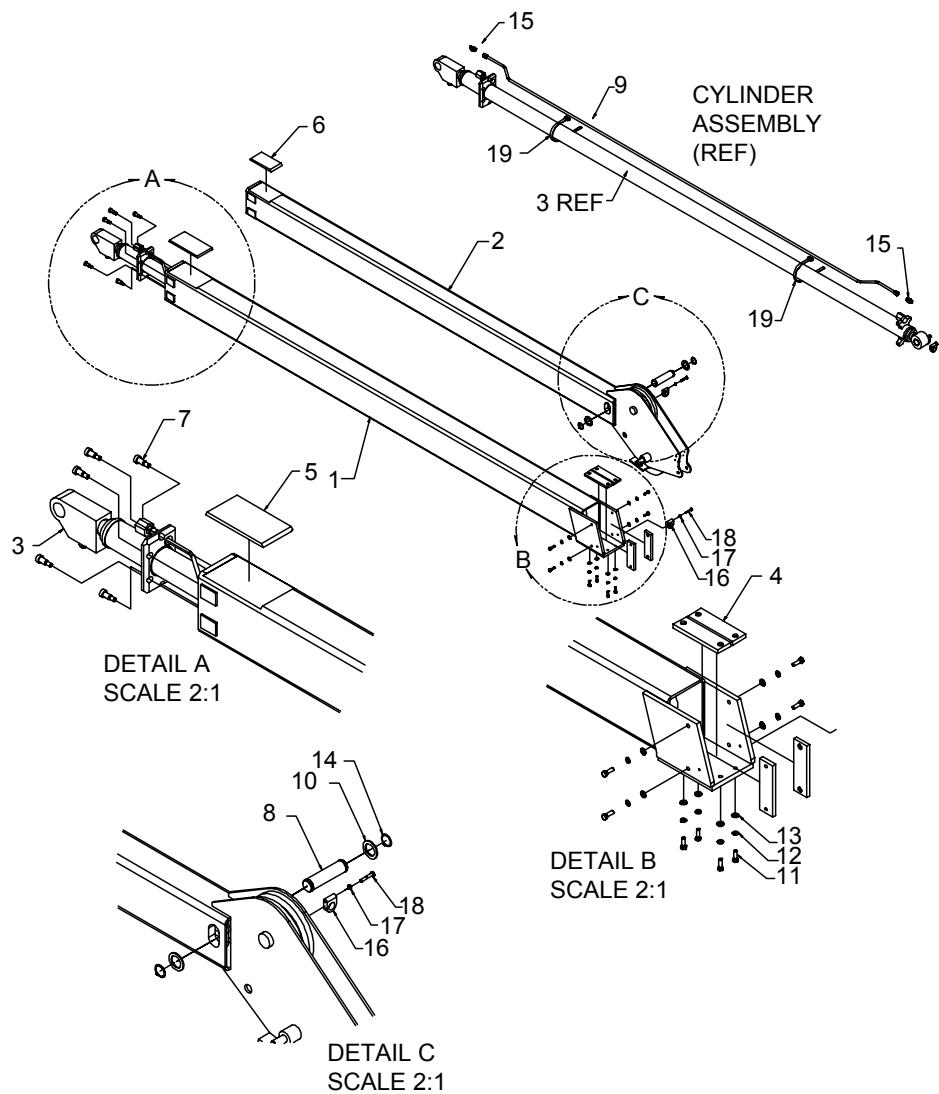


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## Boom Assembly, Extension, 2H (41717310)

|     |          |                                 |      |
|-----|----------|---------------------------------|------|
| 1.  | 52717308 | WELDMENT                        | 1    |
| 2.  | 52717309 | WELDMENT                        | 1    |
| 3.  | 3B022020 | CYLINDER - 3820 2H (INCL. 9,15) | 1    |
| 4.  | 60120124 | WEAR PAD                        | 4    |
| 5.  | 60030189 | WEAR PAD                        | 1    |
| 6.  | 60030137 | WEAR PAD                        | 1    |
| 7.  | 72601784 | BOLT-SHLDR 1/2 X 3/4            | 5    |
| 8.  | 60123971 | PIN-TYPE 1 1.25 X 4.92          | 1    |
| 9.  | 70146464 | TUBE ASM-HYD EXT CYL            | 1REF |
| 10. | 72063035 | MACHY BUSHING 1-1/4X10          | 2    |
| 11. | 72060293 | CAP SCR 5/16-24 X 1.00 HHGR5    | 8    |
| 12. | 72063050 | WASHER 5/16 LOCK                | 8    |
| 13. | 72063002 | WASHER 5/16 FLAT                | 8    |
| 14. | 72066084 | RETAINING RING - EXT 1.25       | 2    |
| 15. | 72533186 | ADPTR-#6MFACE #6MSTR            | 2REF |
| 16. | 70034381 | SUPPORT                         | 2    |
| 17. | 72063001 | WASHER 1/4 FLAT                 | 2    |
| 18. | 72060006 | CAP SCR 1/4-20 X 1.5 HHGR5      | 2    |
| 19. | 70034448 | PLASTIC TIES 1/2W 22-1/4L       | 2    |

## 41717310 Drawing



### NOTES:

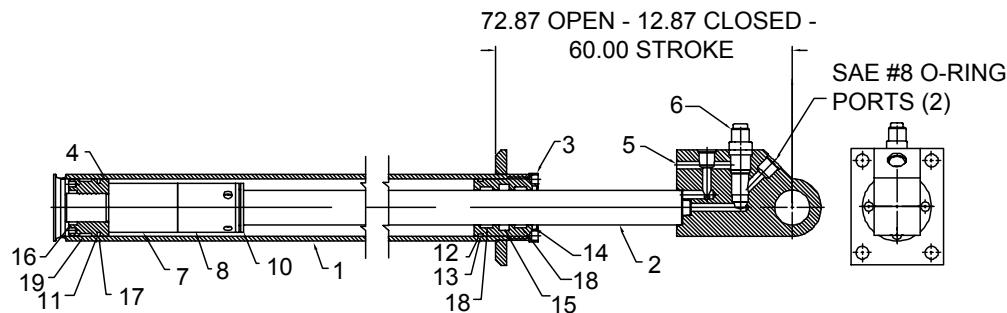
- 1 USE THREAD LOCK ON ITEM #7.
- 2 USE NEVER-SEEZ ON ITEM #8.

## Cylinder, Extension, 1H 1M (3B210013)

|     |          |                               |      |
|-----|----------|-------------------------------|------|
| 1.  | 4B210013 | CASE ASM                      | 1    |
| 2.  | 52717006 | ROD ASM (INCL. 5)             | 1    |
| 3.  | 6HD25015 | HEAD                          | 1    |
| 4.  | 6ID25125 | PISTON                        | 1    |
| 5.  | 7PNPXT02 | PIPE PLUG 1/8 NPT (PART OF 2) | 1REF |
| 6.  | 73054999 | C-BAL VALVE                   | 1    |
| 7.  | 6C300015 | STOP TUBE 3"                  | 1    |
| 8.  | 6C210013 | STOP TUBE 3"                  | 1    |
| 9.  | 9D101220 | SEAL KIT (INCL:10-19)         | 1    |
| 10. | 6A025015 | WAFER LOCK (PART OF 9)        | 1REF |
| 11. | 7Q072137 | O-RING (PART OF 9)            | 1REF |
| 12. | 7Q072228 | O-RING (PART OF 9)            | 1REF |
| 13. | 7Q10P228 | BACKUP RING (PART OF 9)       | 1REF |
| 14. | 7R14P015 | ROD WIPER (PART OF 9)         | 1REF |
| 15. | 7R546015 | U-CUP SEAL (PART OF 9)        | 1REF |
| 16. | 7T61N125 | LOCK RING, 1/8 NYLON (P/O 9)  | 1REF |
| 17. | 7T66P025 | PISTON SEAL (PART OF 9)       | 1REF |
| 18. | 7T2NX417 | WEAR RING (PART OF 9)         | 1REF |
| 19. | 7T2N4025 | WEAR RING (PART OF 9)         | 1REF |

REV. A 20031201

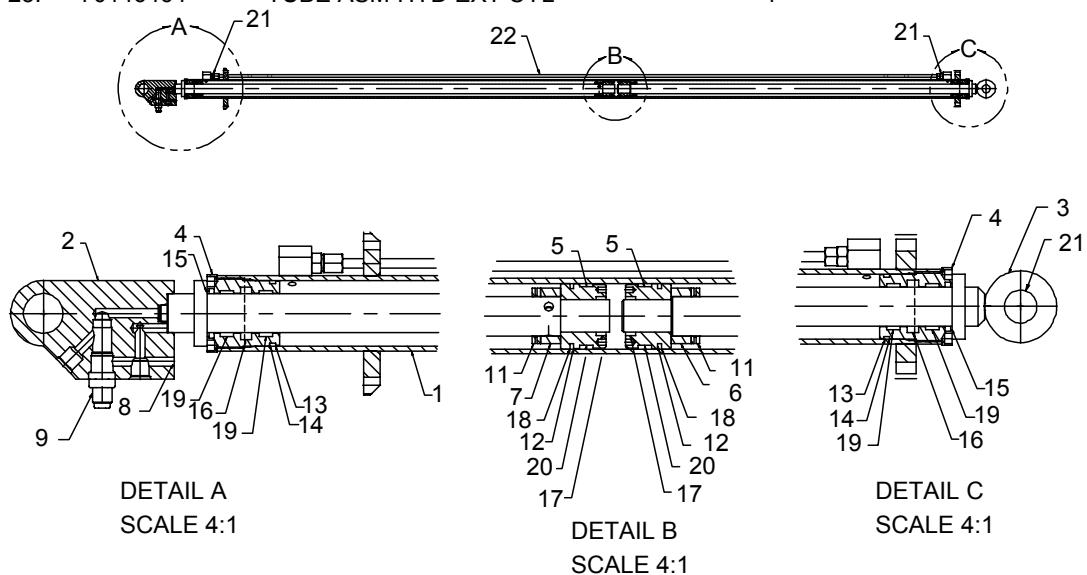
### 3B210013 Drawing



| CYLINDER DATA |                               |           |       |
|---------------|-------------------------------|-----------|-------|
| EXT.          | 4.91 in <sup>2</sup> 1.28 gal | DRY WT.   | 74 #  |
| RETR.         | 3.14 in <sup>2</sup> 0.82 gal | BRG. SPAN | 13.2% |
| CASE          | 2.5 x 2.88 x 70.31            | TEST PSI  | 3000  |
| ROD           | ø1.50 x 72.59 lg              | OPER PSI  | 2350  |

## Cylinder, Extension, 2H (3B022020)

|     |          |                             |      |
|-----|----------|-----------------------------|------|
| 1.  | 4B022020 | CASE ASM                    | 1    |
| 2.  | 52717304 | RODASSEMBLY                 | 1    |
| 3.  | 4G022020 | ROD ASM (INCL. 21)          | 1    |
| 4.  | 6HD25015 | HEAD                        | 2    |
| 5.  | 6ID25125 | PISTON                      | 2    |
| 6.  | 6C075015 | STOP TUBE                   | 1    |
| 7.  | 6C022020 | STOP TUBE                   | 1    |
| 8.  | 7PNPXT02 | PIPE PLUG (PART OF 2)       | 1    |
| 9.  | 73054999 | CBAL VALVE                  | 1    |
| 10. | 9D101220 | SEAL KIT (INCL:11-20)       | 2    |
| 11. | 6A025015 | WAFER LOCK (PART OF 10)     | 1REF |
| 12. | 7Q072137 | O-RING (PART OF 10)         | 1REF |
| 13. | 7Q072228 | O-RING (PART OF 10)         | 1REF |
| 14. | 7Q10P228 | BACKUP RING (PART OF 10)    | 2REF |
| 15. | 7R14P015 | ROD WIPER (PART OF 10)      | 2REF |
| 16. | 7R546015 | U-CUP (PART OF 10)          | 2REF |
| 17. | 7T61N125 | LOCK RING, NYLON (PT OF 10) | 2REF |
| 18. | 7T66P025 | PISTON SEAL (PART OF 10)    | 2REF |
| 19. | 7T2NX417 | WEAR RING (PART OF 10)      | 4REF |
| 20. | 7T2N4025 | WEAR RING (PART OF 10)      | 2REF |
| 21. | 70055207 | BEARING (PART OF 3)         | 2REF |
| 22. | 72533186 | ADPTR #6MFACE #6MSTR        | 2    |
| 23. | 70146464 | TUBE ASM-HYD EXT CYL        | 1    |



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## Hydraulics

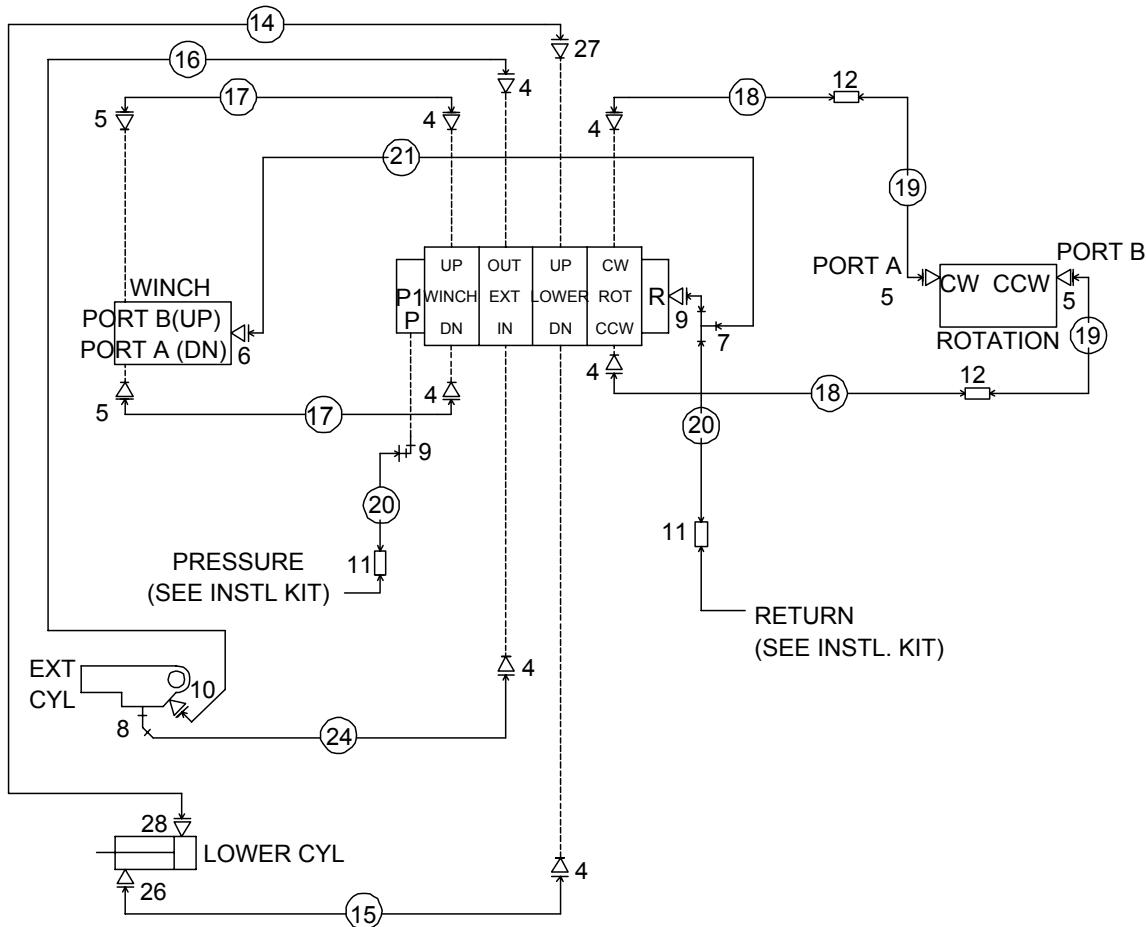
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## Hydraulic Kit, Tethered Remote (91715637)

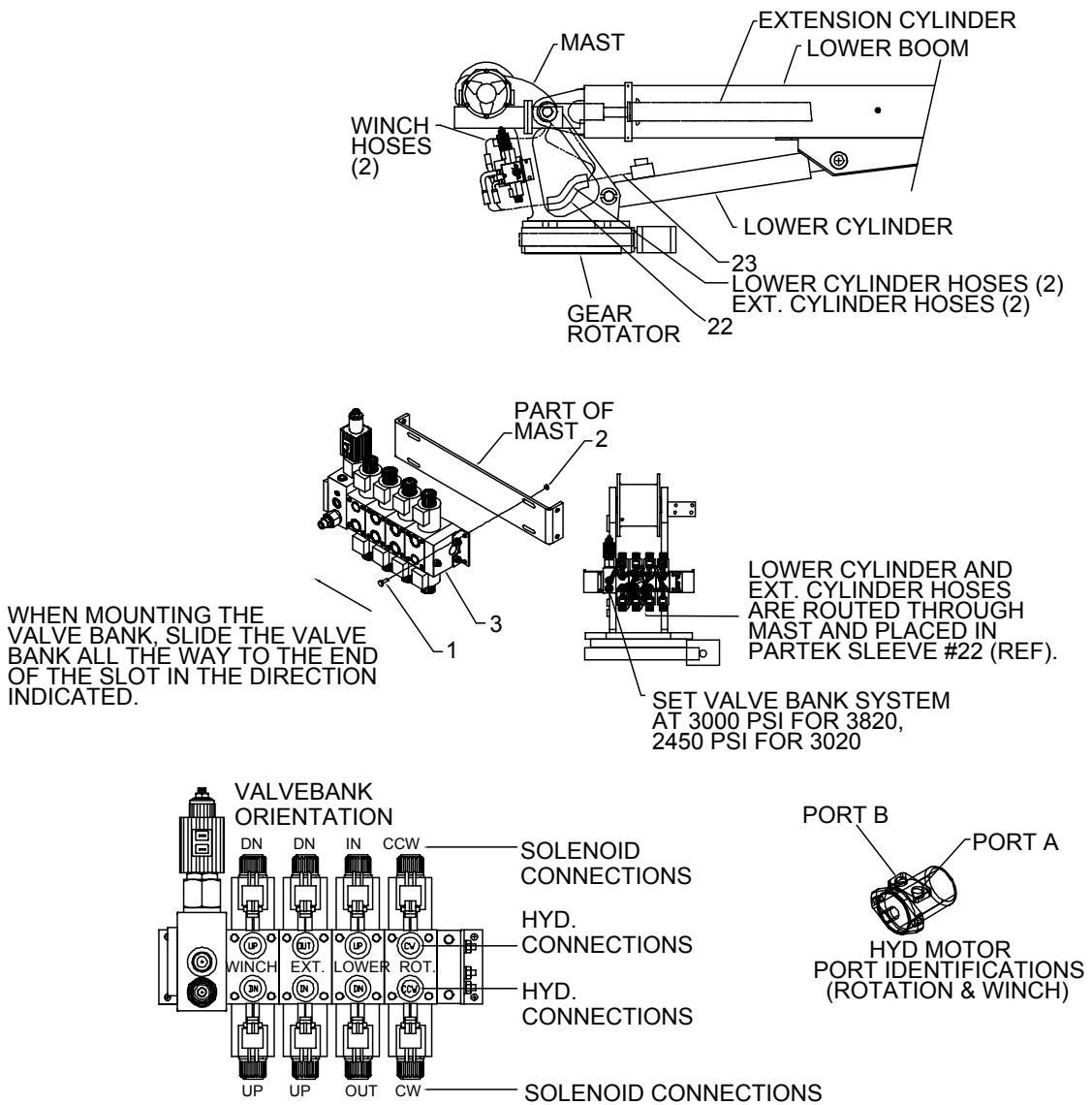
|     |          |   |      |
|-----|----------|---|------|
| 1.  | 72060005 | CAP SCR 1/4-20X1-1/4 HHGR5                  | 4    |
| 2.  | 72062104 | NUT 1/4-20 LOCK                             | 4    |
| 3.  | 73734494 | VALVEBANK (INCL:4,9,27,28) (WAS 73733395)   | 1    |
| 4.  | 72533425 | ADAPTER #4MFACE #8MSTR                      | 7REF |
| 5.  | 72533296 | ADAPTER #6MFACE #10MSTR                     | 4REF |
| 6.  | 72533376 | ADAPTER #4MFACE #4MSTR                      | 1REF |
| 7.  | 72533413 | TEE #8 SWVLNUTRUN                           | 1REF |
| 8.  | 72533417 | ELBOW #8MSTR #6MFACE 45°                    | 1REF |
| 9.  | 72533162 | ELBOW #8MSTR #8MFACE 90°                    | 2REF |
| 10. | 72533533 | ADAPTER #4MFACE #8MSTR                      | 1REF |
| 11. | 72534368 | SWIVEL #8FACE #8JIC (WAS 72533538)          | 2REF |
| 12. | 72533540 | SWIVEL #4#4 FACE                            | 2REF |
| 13. | 51714927 | HOSE/ADAPTER KIT (INCL. 5-8,10,14-21,24,25) | 1    |
| 14. | 51395181 | HOSE BBX .50X37.5 #8#8                      | 1REF |
| 15. | 51394701 | HOSE BBX .25X33.5 #4#4                      | 1REF |
| 16. | 51394702 | HOSE BBX.25X43 #4#4                         | 1REF |
| 17. | 51394703 | HOSE YX .25X18.5 #4#6                       | 2REF |
| 18. | 51394705 | HOSE BBX .25X31 #4#4                        | 2REF |
| 19. | 51395147 | HOSE BBX .25X19.5 #4#6                      | 2REF |
| 20. | 51394707 | HOSE BBX .50X24 #8#8                        | 2REF |
| 21. | 51394710 | HOSE WX .25X15 #8#4                         | 1REF |
| 22. | 60350073 | SLEEVE                                      | 1    |
| 23. | 70394558 | TIE 8"                                      | 1    |
| 24. | 51394718 | HOSE BBX .25X43 #6#4                        | 1REF |
| 26. | 72533337 | ADAPTER #4MFACE #6MSTR                      | 1REF |
| 27. | 72533166 | ADAPTER #8MFACE #8MSTR                      | 1REF |
| 28. | 72533423 | ADAPTER #8MFACE #6MSTR                      | 1REF |

REV. 20100615

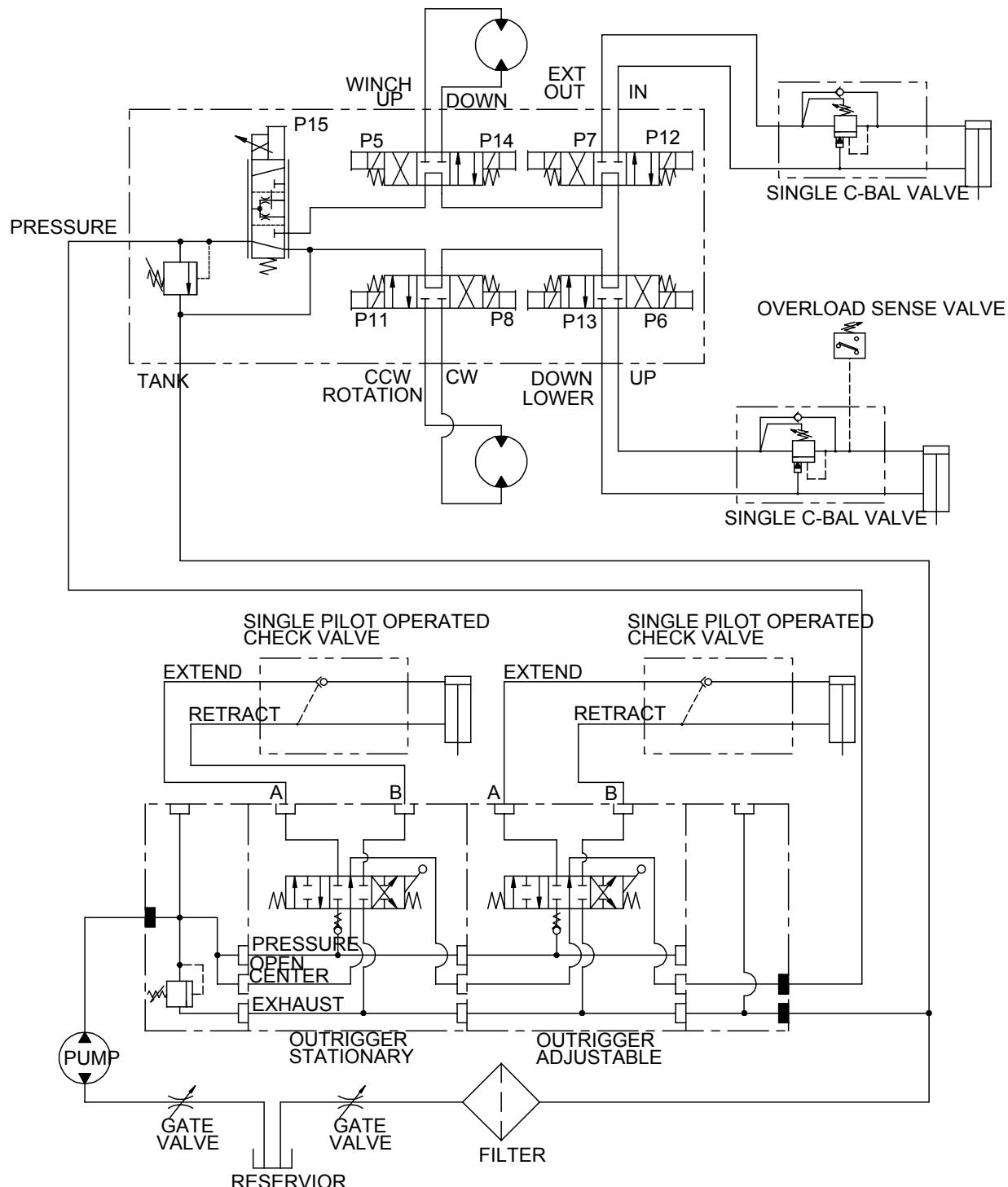
## 91715637 Drawings



**Hydraulic Kit - Tethered Remote (91715637)** (see "Hydraulic Kit, Tethered Remote (91715637)" on page 58)



**Hydraulic Kit - Tethered Remote (91715637)** (see "Hydraulic Kit, Tethered Remote (91715637)" on page 58)



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## Valvebank, Tethered Remote (73733395)

|     |          |   |      |
|-----|----------|---|------|
| 1.  | 73540028 | INLET BLOCK                                 | 1    |
| 2.  | 73540027 | END CAP                                     | 1    |
| 3.  | 73054934 | FLOW CTRL VALVE                             | 1    |
|     | 77041556 | PROPL VALVE-COIL ONLY                       | REF  |
| 4.  | 73054935 | RELIEF VALVE                                | 1    |
| 5.  | 91722649 | VALVE SECT (was 73540044)                   | 4    |
|     | 90744198 | COIL-SOLENOID                               | REF  |
| 6.  | 7Q072013 | O-RING                                      | 10   |
| 7.  | 72533477 | PLUG 7/16STR HOLHEX                         | 1    |
| 8.  | 70145829 | EXPANDER PLUG                               | 4    |
| 9.  | 60119363 | THRD'D ROD 1/4-20X12-1/2                    | 2    |
| 10. | 60119364 | THRD'D ROD 1/4-20X10-9/16                   | 1    |
| 11. | 72062000 | NUT 1/4-20 HEX                              | 5    |
| 12. | 72063047 | WASHER #10 LOCK                             | 5    |
| 13. | 77044574 | CONNECTOR 2-WAY                             | 9    |
| 14. | 77044550 | TERMINAL-F                                  | 18   |
| 15. | 70394069 | CABLE SEAL                                  | 2    |
| 16. | 70145830 | MTG BRKT                                    | 2    |
| 17. | 77044595 | VALVE DRIVER                                | 1    |
| 18. | 72601704 | MACH SCR #6-32X3/4 RDHD                     | 3    |
| 19. | 72061705 | WASHER #6 WRT                               | 3    |
| 20. | 77044594 | CABLE SEAL                                  | 16   |
| 21. | 70733394 | CABLE ASM                                   | 1    |
| 22. | 72533425 | ADAPTER #4MFACE #8MSTR                      | 7    |
| 23. | 72533162 | ELBOW #8MSTR #8MFACE 90°                    | 2    |
| 24. | 72533603 | PLUG 9/16STR HOLHEX                         | 1    |
| 25. | 72533166 | ADAPTER #8MFACE #8MSTR                      | 1    |
| 26. | 73733602 | VALVE BANK (INCL. 1-21,24)                  | 1    |
|     | 70733875 | PLASTIC NUT W/O-RING SEAL (APPLIED TO COIL) | 8REF |

REV. C 20040206

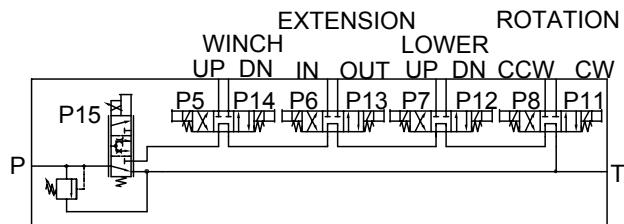
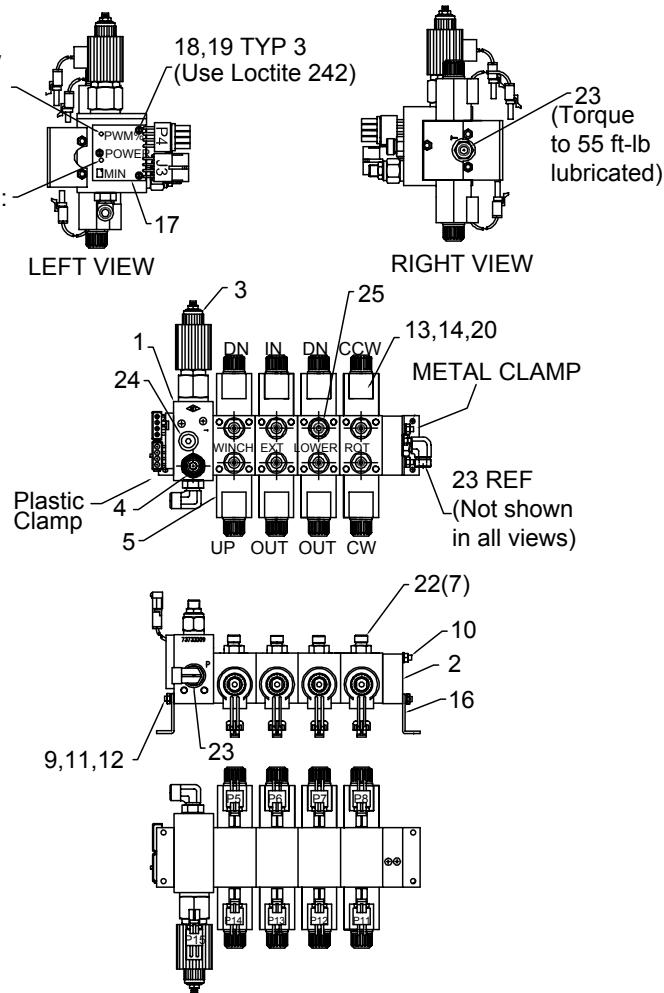
## 73733395 Drawing

### PERCENT OF SIGNAL INDICATOR COLOR-CHANGING LED:

Red = Off, zero % trigger

Green = Full on, 100% trigger

Shortened coil or other will show  
as red with 100% trigger.



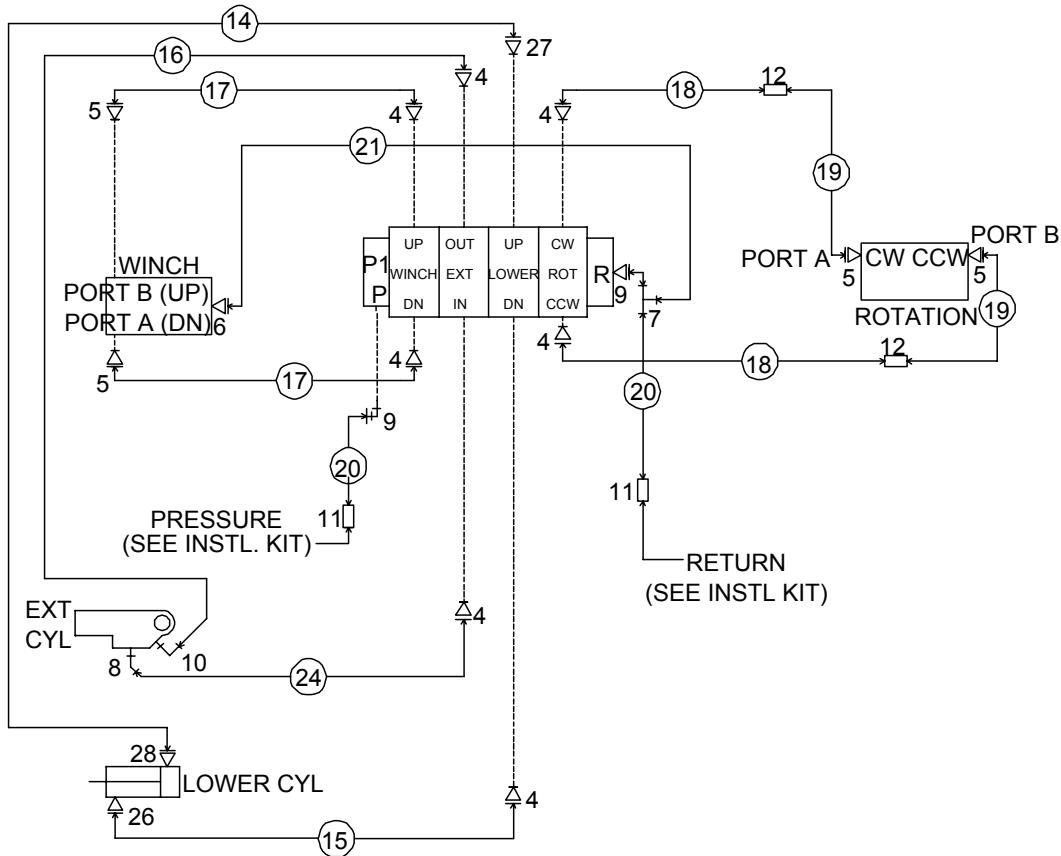
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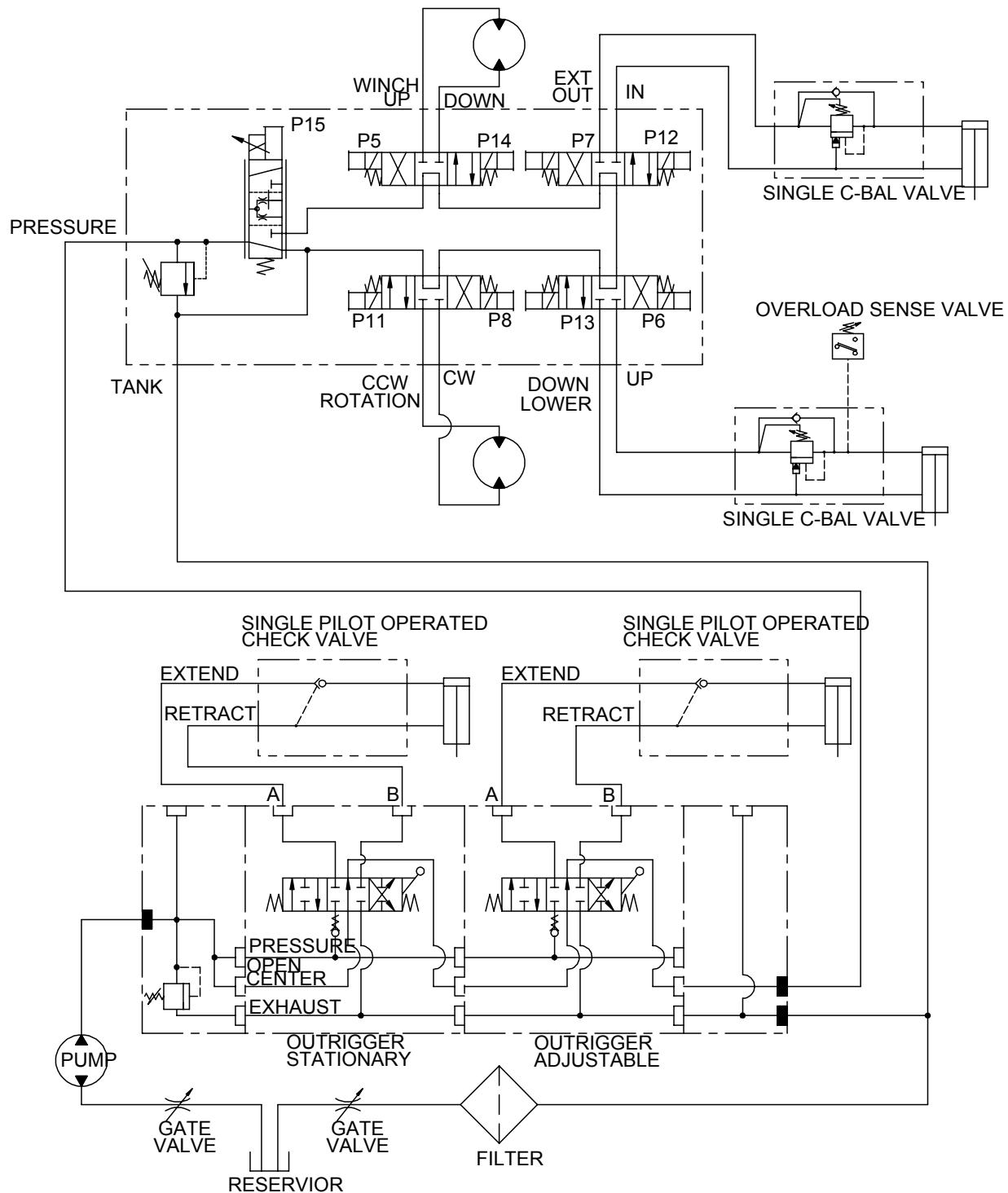
## Hydraulic Kit, Radio Remote (91715578)

|     |          |  |      |
|-----|----------|--|------|
| 1.  | 72060005 | CAP SCR 1/4-20X1-1/4 HHGR5                             | 4    |
| 2.  | 72062104 | NUT 1/4-20 LOCK  | 4    |
| 3.  | 73734530 | VALVEBANK (INCL:4,9,27) (WAS 73733941)                 | 1    |
| 4.  | 72533425 | ADAPTER #4MFACE #8MSTR                                 | 7REF |
| 5.  | 72533296 | ADAPTER #6MFACE #10MSTR                                | 4REF |
| 6.  | 72533376 | ADAPTER #4MFACE #4MSTR                                 | 1REF |
| 7.  | 72533413 | TEE #8 SWVLNUTRUN                                      | 1REF |
| 8.  | 72533417 | ELBOW #8MSTR #6MFACE 45°                               | 1REF |
| 9.  | 72533162 | ELBOW #8MSTR #8MFACE 90°                               | 2REF |
| 10. | 72533533 | ADAPTER #4MFACE #8MSTR                                 | 1REF |
| 11. | 72534368 | SWIVEL #8FACE #8 JIC                                   | 2REF |
| 12. | 72533540 | SWIVEL #4#4 FACE                                       | 2REF |
| 13. | 51714927 | HOSE/ADAPTER KIT (INCL. 5-8, 10, 14-21,<br>24, 25, 28) | 1    |
| 14. | 51395181 | HOSE BBX .50X37.5 #8#8                                 | 1REF |
| 15. | 51394701 | HOSE BBX .25X33.5 #4#4                                 | 1REF |
| 16. | 51394702 | HOSE BBX .25X43 #4#4                                   | 1REF |
| 17. | 51394703 | HOSE YX .25X18.5 #4#6                                  | 2REF |
| 18. | 51394705 | HOSE BBX .25X31 #4#4                                   | 2REF |
| 19. | 51395147 | HOSE BBX .25X19.5 #4#6                                 | 2REF |
| 20. | 51394707 | HOSE BBX .50X24 #8#8                                   | 2REF |
| 21. | 51394710 | HOSE WX .25X15 #8#4                                    | 1REF |
| 22. | 60350073 | SLEEVE   | 1    |
| 23. | 70394558 | TIE 8"   | 1    |
| 24. | 51394718 | HOSE BBX .25X43 #6#4                                   | 1REF |
| 26. | 72533337 | ADAPTER #4MFACE #6MSTR                                 | 1REF |
| 27. | 72533166 | ADAPTER #8MFACE #8MSTR                                 | 1REF |
| 28. | 72533423 | ADAPTER #8MFACE #6MSTR                                 | 1REF |

REV. C 20100615

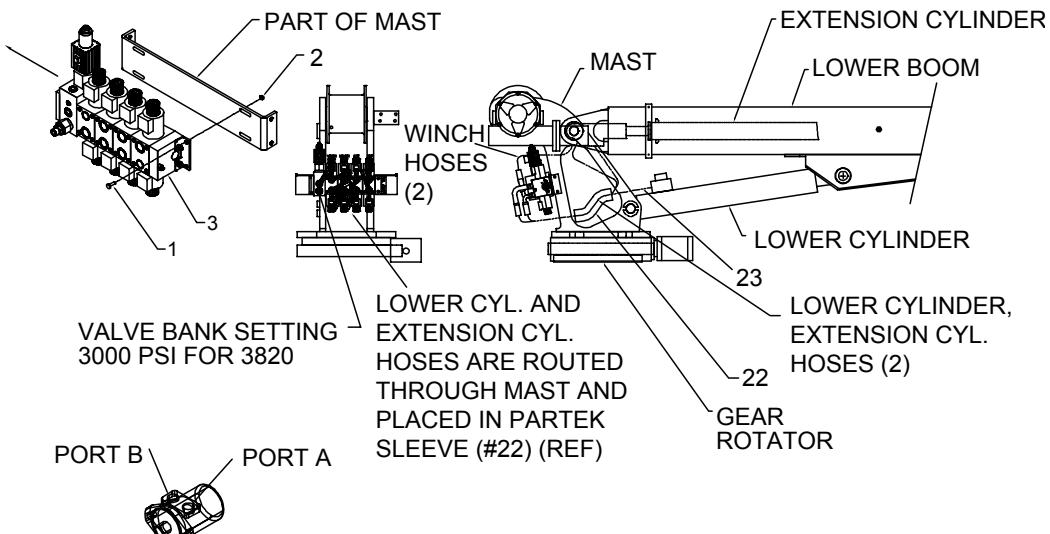
## 91715578 Drawings



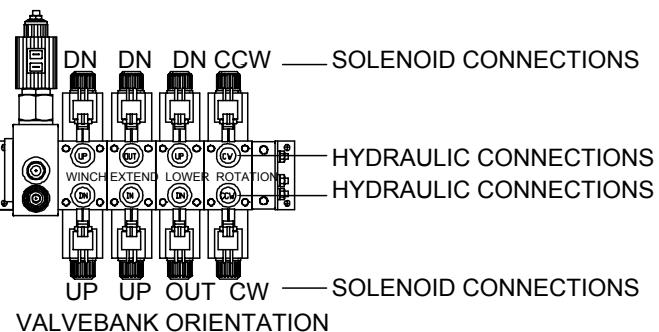
**Hydraulic Kit, Radio Remote (91715578) (on page 64)**

### Hydraulic Kit, Radio Remote (91715578) (on page 64)

WHEN MOUNTING VALVE BANK,  
SLIDE OVER ALL THE WAY TO  
THE END OF THE SLOT IN THE  
DIRECTION INDICATED.



HYDRAULIC MOTOR  
PORT IDENTIFICATIONS  
(ROTATION & WINCH)

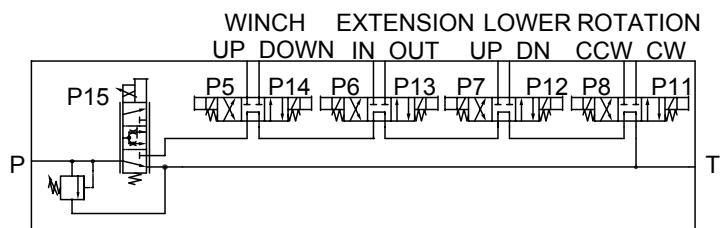
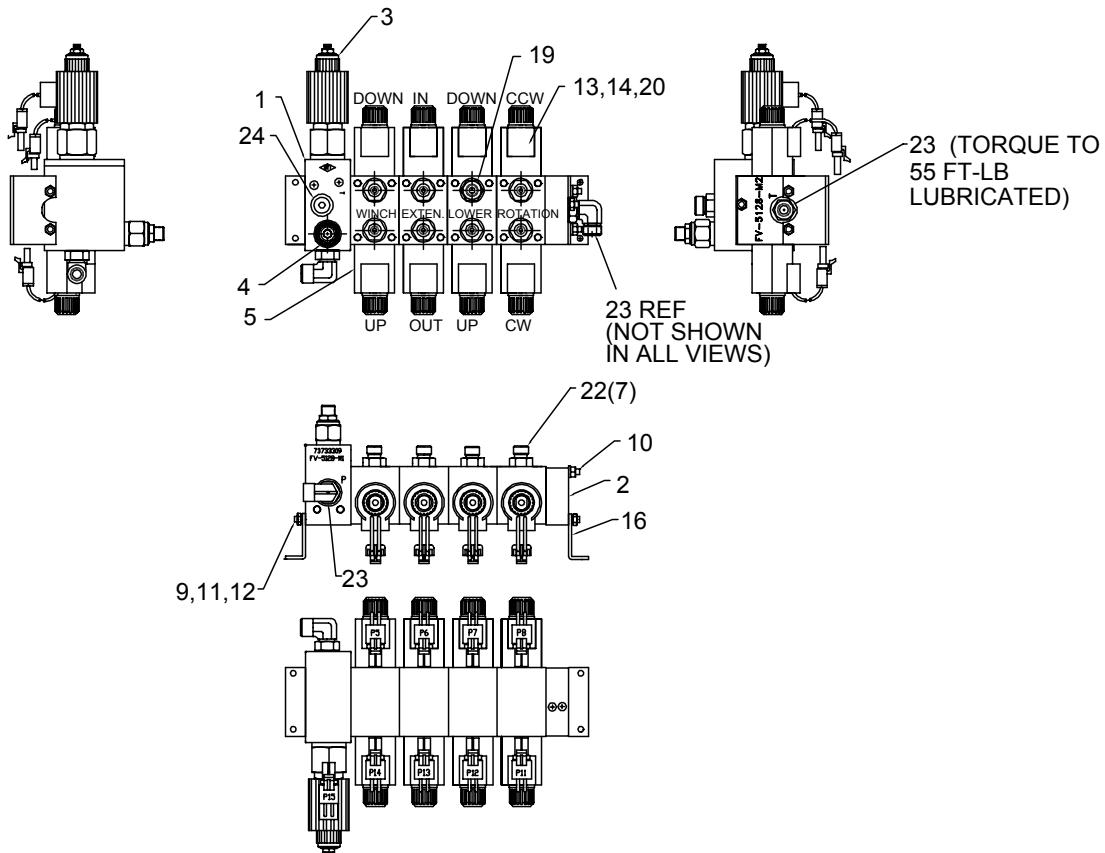


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## Valvebank, Radio Remote (73733380)

|     |                         |  |          |
|-----|-------------------------|--|----------|
| 1.  | 73540028                | BLOCK-INLET  | 1        |
| 2.  | 73540027                | END CAP  | 1        |
| 3.  | 73054934                | VALVE-PROPL FLOW CTRL  | 1        |
|     | 77041556                | PROPL VALVE-COIL ONLY  | REF      |
| 4.  | 73054935                | VALVE-RELIEF   | 1        |
| 5.  | 91722649 OR<br>91722723 | VALVE SECTION (WAS 73540044)                                     | 4        |
|     | 91722709                | COIL-SOLENOID (WAS 77041518)                                     | REF      |
| 6.  | 7Q072013                | O-RING   | 10       |
| 7.  | 72533477                | PLUG 7/16STR HOLHEX  | 1        |
| 8.  | 70145829                | EXPANDER PLUG  | 4        |
| 9.  | 60119363                | ROD 1/4-20X12-1/2  | 2        |
| 10. | 60119364                | ROD 1/4-20X10-9/16   | 1        |
| 11. | 72062000                | NUT 1/4-20 HEX   | 5        |
| 12. | 72063047                | WASHER #10 LOCK  | 5        |
| 13. | 77044574                | CONNECTOR  | 9        |
| 14. | 77044550                | TERMINAL-FEM 18-20GA   | 18       |
| 15. | 70394069                | CABLE SEAL   | 2        |
| 16. | 70145830                | MTG BRACKET  | 2        |
| 19. | 72533166                | ADAPTER #8MFACE #8MSTR   | 1        |
| 20. | 77044594                | CABLE SEAL   | 16       |
| 21. | 70733351                | CABLE ASM  | 1        |
| 22. | 72533425                | ADAPTER #4MFACE #8MSTR   | 7        |
| 23. | 72533162                | ELBOW #8MSTR #8MFACE 90°   | 2        |
| 24. | 72533603<br>70733875    | PLUG 9/16STR HOLHEX<br>NUT, PLASTIC, W/O-RING SEAL (FOR<br>COIL) | 1<br>REF |

## 73733380 Drawing



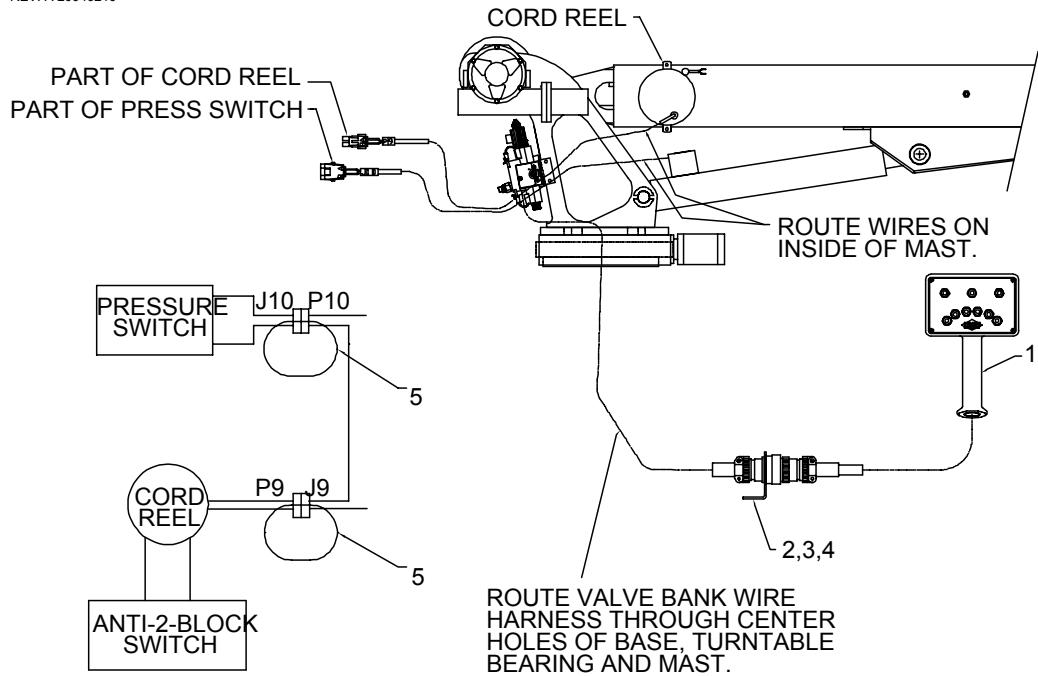
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## Controls

## Control Kit, Tethered Remote (90715437)

|    |          |                                      |   |
|----|----------|--------------------------------------|---|
| 1. | 51713182 | HANDLE ASM                           | 1 |
| 2. | 60119299 | BRACKET                              | 1 |
| 3. | 77044645 | NUT-DEUTSCH 24 SHELL                 | 1 |
| 4. | 77044646 | WASHER-LOCK DEUTSCH                  | 1 |
| 5. | 70034439 | LOCK WIRE LEAD SEAL, 8"              | 2 |
| 6. | 99903263 | ELEC. SCHEMATIC-PROP REMOTE<br>CONT. | 1 |
| 7. | 99900339 | MANUAL - PROP REMOTE CONTROL         | 1 |

REV. A 20040210

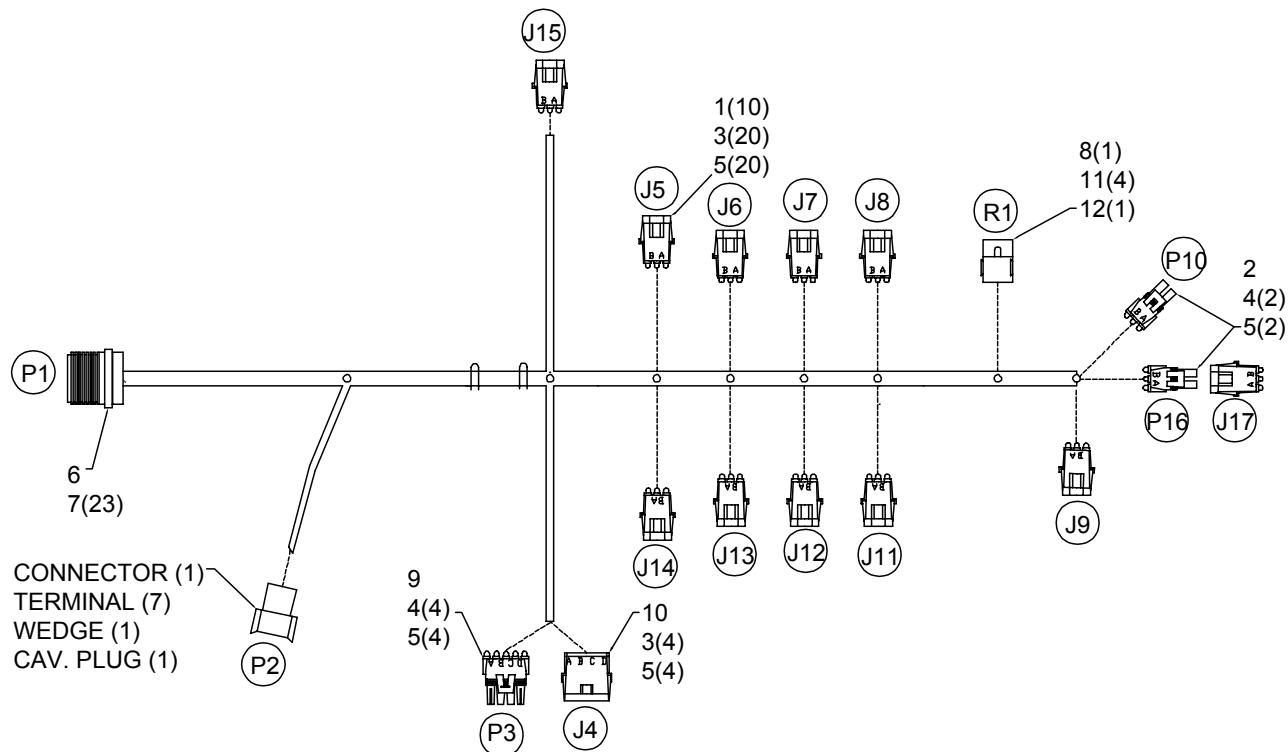


## Cable Assembly, Tethered Remote (70733394)

|     |          |                       |       |
|-----|----------|-----------------------|-------|
| 1.  | 77044573 | SHROUD CONN 2-CONTACT | 10REF |
| 2.  | 77044574 | TOWER CONN            | 2REF  |
| 3.  | 77044576 | TERMINAL-M            | 24REF |
| 4.  | 77044577 | TERMINAL-F            | 8REF  |
| 5.  | 77044578 | CABLE SEAL            | 32REF |
| 6.  | 77044620 | CONN RCPT             | 1REF  |
| 7.  | 77044580 | SOCKET                | 23REF |
| 8.  |          | SOCKET, RELAY         | 1REF  |
| 9.  | 77044623 | TOWER CONN 4-CONTACT  | 1REF  |
| 10. | 77044624 | SHROUD CONN 4-CONTACT | 1REF  |
| 11. |          | TERMINAL              | 4REF  |
| 12. |          | RELAY                 | 1REF  |

REV. F 20040205

### 70733394 Drawings



| <b>Wiring Chart (70733394)</b> |       |     |                             |    |          |        |
|--------------------------------|-------|-----|-----------------------------|----|----------|--------|
| LOCATOR CODE: P1               |       |     | DEUTSCH: HDP34-24-23SN059   |    |          |        |
| TERM: 0462-201-16141           |       |     | SEAL: - CAVITY PLUG: 114017 |    |          |        |
| CAVITY                         | COLOR | GA. | PRINT LABEL                 | TO | CON-SPLC | CAVITY |
| A                              | WHT   | 18  | ROT J11B                    | TO | J11      | B      |
| B                              | WHT   | 18  | EXT J13B                    | TO | J13      | B      |
| C                              | WHT   | 18  | WIN J5B                     | TO | J5       | B      |
| D                              | WHT   | 18  | WIN J14B                    | TO | J14      | B      |
| E                              | WHT   | 18  | J4A REF                     | TO | J4       | A      |
| F                              | WHT   | 18  | EXT J6B                     | TO | J6       | B      |
| G                              | WHT   | 16  | P2 6 ENG START              | TO | P2       | 6      |
| H                              | WHT   | 18  | P3B SIG COMM                | TO | P3       | B      |
| I                              | -     | -   | -                           | TO | -        | -      |
| J                              | WHT   | 18  | P2 4 SPD RLA                | TO | P2       | 4      |
| K                              | WHT   | 18  | ROT J8B                     | TO | J8       | B      |
| L                              | WHT   | 16  | PENDANT PWR(+)              | TO | SPL A    | -      |
| M                              | WHT   | 18  | P2 2 KILL RLA               | TO | P2       | 2      |
| N                              | WHT   | 18  | LOWER J7B                   | TO | J7       | B      |
| O                              | WHT   | 16  | P1 O SOL WPR                | TO | P2       | 1      |
| P                              | WHT   | 18  | LOWER J12B                  | TO | J12      | B      |
| Q                              | -     | -   | -                           | TO | -        | -      |
| R                              | WHT   | 18  | J4B VOLTAGE                 | TO | J4       | B      |
| S                              | WHT   | 18  | P1S ON H                    | TO | SPL D    | -      |
| T                              | WHT   | 16  | P2 5 COMPR                  | TO | P2       | 5      |
| U                              | WHT   | 16  | WNSPD P16B                  | TO | P16      | B      |
| V                              | -     | -   | -                           | -  | -        | -      |
| W                              | -     | -   | -                           | -  | -        | -      |

| LOCATOR CODE: P2   |       |            | DEUTSCH: DT04-8PA   |    |          |        |
|--------------------|-------|------------|---------------------|----|----------|--------|
| TERM: 1060-16-0122 |       | WEDGE: W8P | CAVITY PLUG: 114017 |    |          |        |
| CAVITY             | COLOR | GA.        | PRINT LABEL         | TO | CON-SPLC | CAVITY |
| 1                  | WHT   | 16         | P1 SOL PWR          | TO | P1       | -      |
| 2                  | WHT   | 18         | P2 2 KILL RLA       | TO | P1       | M      |
| 3                  | WHT   | 16         | P2 3 BAT (-)        | TO | SPL B    | -      |
| 4                  | WHT   | 18         | P2 4 SPD RLA        | TO | P1       | J      |
| 5                  | WHT   | 16         | P2 5 COMPRESSOR     | TO | P1       | T      |
| 6                  | WHT   | 16         | P2 6 ENG START      | TO | P1       | G      |
| 7                  | WHT   | 16         | P2 7 IGN SOL        | TO | SPL A    | -      |
| 8                  | -     | -          | -                   | TO | -        | -      |

|                  |  |                   |  |  |
|------------------|--|-------------------|--|--|
| LOCATOR CODE: P3 |  | PACKARD: 12015797 |  |  |
| TERM: 12089188   |  | SEAL: 12015323    |  |  |

| <b>Wiring Chart (70733394)</b> |       |     |               |    |          |        |
|--------------------------------|-------|-----|---------------|----|----------|--------|
| CAVITY                         | COLOR | GA. | PRINT LABEL   | TO | CON-SPLC | CAVITY |
| A                              | WHT   | 16  | P3A POWER (+) | TO | SPL A    | -      |
| B                              | WHT   | 18  | P3B SIG COMM  | TO | P1       | H      |
| C                              | WHT   | 16  | PRPVLV (-)    | TO | J15      | A      |
| D                              | WHT   | 16  | PRPVLV (+)    | TO | J15      | B      |

| LOCATOR CODE: J4 |       | PACKARD: 12010974 |             |    |          |        |
|------------------|-------|-------------------|-------------|----|----------|--------|
| TERM: 12089040   |       | SEAL: 12015323    |             |    |          |        |
| CAVITY           | COLOR | GA.               | PRINT LABEL | TO | CON-SPLC | CAVITY |
| A                | WHT   | 18                | J4A REF     | TO | J1       | E      |
| B                | WHT   | 18                | J4B VOLTAGE | TO | J1       | R      |
| C                | WHT   | 18                | J4C ON H    | TO | SPL D    | -      |
| D                | WHT   | 16                | J4D PWR COM | TO | SPL B    | -      |

| LOCATOR CODE: J5 |       | PACKARD: 12010973 |                |    |          |        |
|------------------|-------|-------------------|----------------|----|----------|--------|
| TERM: 12089040   |       |                   | SEAL: 12015323 |    |          |        |
| CAVITY           | COLOR | GA.               | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                | WHT   | 16                | J5A WINCH      | TO | SPL B    | -      |
| B                | WHT   | 18                | J5B WINCH      | TO | P1       | C      |

| LOCATOR CODE: J6 |       | PACKARD: 12010973 |                |    |          |        |
|------------------|-------|-------------------|----------------|----|----------|--------|
| TERM: 12089040   |       |                   | SEAL: 12015323 |    |          |        |
| CAVITY           | COLOR | GA.               | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                | WHT   | 16                | EXT J6A        | TO | SPL B    | -      |
| B                | WHT   | 18                | EXT J6B        | TO | P1       | F      |

| LOCATOR CODE: J7 |       | PACKARD: 12010973 |             |    |          |        |
|------------------|-------|-------------------|-------------|----|----------|--------|
| TERM: 12089040   |       | SEAL: 12015323    |             |    |          |        |
| CAVITY           | COLOR | GA.               | PRINT LABEL | TO | CON-SPLC | CAVITY |
| A                | WHT   | 16                | LOWER J7A   | TO | SPL C    | -      |
| B                | WHT   | 18                | LOWER J7B   | TO | P1       | N      |

| LOCATOR CODE: J8 |       | PACKARD: 12010973 |             |    |          |        |
|------------------|-------|-------------------|-------------|----|----------|--------|
| TERM: 12089040   |       | SEAL: 12015323    |             |    |          |        |
| CAVITY           | COLOR | GA.               | PRINT LABEL | TO | CON-SPLC | CAVITY |
| A                | WHT   | 16                | ROT J8A     | TO | SPL B    | -      |
| B                | WHT   | 18                | ROT J8B     | TO | P1       | K      |

| LOCATOR CODE: J9 |       | PACKARD: 12010973 |              |    |          |        |
|------------------|-------|-------------------|--------------|----|----------|--------|
| TERM: 12089040   |       | SEAL: 12015323    |              |    |          |        |
| CAVITY           | COLOR | GA.               | PRINT LABEL  | TO | CON-SPLC | CAVITY |
| A                | WHT   | 16                | J9A ANTI-TWO | TO | SPL B    | -      |
| B                | WHT   | 16                | P10B & P9B   | TO | P10      | B      |

|                   |  |                   |  |  |  |  |
|-------------------|--|-------------------|--|--|--|--|
| LOCATOR CODE: P10 |  | PACKARD: 12015792 |  |  |  |  |
|-------------------|--|-------------------|--|--|--|--|

| <b>Wiring Chart (70733394)</b> |       |     |                |    |          |        |
|--------------------------------|-------|-----|----------------|----|----------|--------|
| TERM: 12089188                 |       |     | SEAL: 12015323 |    |          |        |
| CAVITY                         | COLOR | GA. | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                              | WHT   | 16  | OPSI P10A      | TO | R1       | 85     |
| B                              | WHT   | 16  | P10B & J9B     | TO | J9       | B      |

|                   |                   |     |                |    |          |        |
|-------------------|-------------------|-----|----------------|----|----------|--------|
| LOCATOR CODE: J11 | PACKARD: 12010973 |     |                |    |          |        |
| TERM: 12089040    |                   |     | SEAL: 12015323 |    |          |        |
| CAVITY            | COLOR             | GA. | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                 | WHT               | 16  | J11A ROT       | TO | SPL B    | -      |
| B                 | WHT               | 18  | J11B ROT       | TO | P1       | -      |

|                   |                   |     |                |    |          |        |
|-------------------|-------------------|-----|----------------|----|----------|--------|
| LOCATOR CODE: J12 | PACKARD: 12010973 |     |                |    |          |        |
| TERM: 12089040    |                   |     | SEAL: 12015323 |    |          |        |
| CAVITY            | COLOR             | GA. | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                 | WHT               | 16  | J12A LOWER     | TO | SPL B    | -      |
| B                 | WHT               | 18  | J12B LOWER     | TO | P1       | P      |

|                   |                   |     |                |    |          |        |
|-------------------|-------------------|-----|----------------|----|----------|--------|
| LOCATOR CODE: J13 | PACKARD: 12010973 |     |                |    |          |        |
| TERM: 12089040    |                   |     | SEAL: 12015323 |    |          |        |
| CAVITY            | COLOR             | GA. | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                 | WHT               | 16  | J13A EXT       | TO | SPL C    | -      |
| B                 | WHT               | 18  | J13B EXT       | TO | P1       | B      |

|                   |                   |     |                |    |          |        |
|-------------------|-------------------|-----|----------------|----|----------|--------|
| LOCATOR CODE: J14 | PACKARD: 12010973 |     |                |    |          |        |
| TERM: 12089040    |                   |     | SEAL: 12015323 |    |          |        |
| CAVITY            | COLOR             | GA. | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                 | WHT               | 16  | J14A WINCH     | TO | SPL C    | -      |
| B                 | WHT               | 18  | J14B WINCH     | TO | P1       | D      |

|                   |                   |     |                |    |          |        |
|-------------------|-------------------|-----|----------------|----|----------|--------|
| LOCATOR CODE: J15 | PACKARD: 12010973 |     |                |    |          |        |
| TERM: 12089040    |                   |     | SEAL: 12015323 |    |          |        |
| CAVITY            | COLOR             | GA. | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                 | WHT               | 16  | PRPVLV (-)     | TO | P3       | C      |
| B                 | WHT               | 16  | PRPVLV (+)     | TO | P3       | D      |

|                   |                   |     |                |    |          |        |
|-------------------|-------------------|-----|----------------|----|----------|--------|
| LOCATOR CODE: P16 | PACKARD: 12015792 |     |                |    |          |        |
| TERM: 12089188    |                   |     | SEAL: 12015323 |    |          |        |
| CAVITY            | COLOR             | GA. | PRINT LABEL    | TO | CON-SPLC | CAVITY |
| A                 | WHT               | 16  | P16A WNSPD     | TO | SPL C    | -      |
| B                 | WHT               | 16  | WNSPD P16B     | TO | P1       | U      |

|                 |       |          |                 |    |          |        |
|-----------------|-------|----------|-----------------|----|----------|--------|
| LOCATOR CODE: - |       | SPLICE A |                 |    |          |        |
| CAVITY          | COLOR | GA.      | PRINT LABEL     | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16       | PENDANT PWR (+) | TO | P1       | L      |

| <b>Wiring Chart (70733394)</b> |     |    |               |    |    |   |
|--------------------------------|-----|----|---------------|----|----|---|
| -                              | WHT | 16 | P2 7 IGN SOL  | TO | P2 | 7 |
| -                              | WHT | 16 | P3A POWER (+) | TO | P3 | A |

| LOCATOR CODE: - |       | SPLIC B |              |    |          |        |
|-----------------|-------|---------|--------------|----|----------|--------|
| CAVITY          | COLOR | GA.     | PRINT LABEL  | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16      | WINCH J5A    | TO | J5       | A      |
| -               | WHT   | 16      | RELAY GND    | TO | R1       | 87     |
| -               | WHT   | 16      | P2 3 BAT (-) | TO | P2       | 3      |
| -               | WHT   | 16      | J4D PWR COM  | TO | J4       | D      |
| -               | WHT   | 16      | ROT J11A     | TO | J11      | A      |
| -               | WHT   | 16      | LOWER J12A   | TO | J12      | A      |
| -               | WHT   | 16      | EXT J6A      | TO | J6       | A      |
| -               | WHT   | 16      | ROT J8A      | TO | J8       | A      |
| -               | WHT   | 16      | ATB J9A      | TO | J9       | A      |

| LOCATOR CODE: R1                         |                             |     |                 |    |          |        |  |  |  |  |
|--|-----------------------------|-----|-----------------|----|----------|--------|--|--|--|--|
| RELAY SOCKET: PACKARD 12065685, 12052834 |                             |     |                 |    |          |        |  |  |  |  |
| TERM:<br>12066614                        | RELAY: HELLA 87411 (SEALED) |     |                 |    |          |        |  |  |  |  |
| CAVITY                                   | COLOR                       | GA. | PRINT LABEL     | TO | CON-SPLC | CAVITY |  |  |  |  |
| 30                                       | WHT                         | 16  | ATB & OPRES GRD | TO | SPL C    | -      |  |  |  |  |
| 87                                       | WHT                         | 16  | RELAY GRD       | TO | SPL B    | -      |  |  |  |  |
| 87A                                      | -                           | -   | -               | TO | -        | -      |  |  |  |  |
| 86                                       | WHT                         | 16  | RELAY PWR (+)   | TO | SPL D    | -      |  |  |  |  |
| 85                                       | WHT                         | 16  | OPSI P10A       | TO | P10      | A      |  |  |  |  |

| LOCATOR CODE: - |       | SPLIC C |                 |    |          |        |
|-----------------|-------|---------|-----------------|----|----------|--------|
| CAVITY          | COLOR | GA.     | PRINT LABEL     | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16      | J7A LOWER       | TO | J7       | A      |
| -               | WHT   | 16      | ATB & OPRES GND | TO | R1       | 30     |
| -               | WHT   | 16      | EXT J13A        | TO | J13      | A      |
| -               | WHT   | 16      | WINCH J14A      | TO | J14      | A      |
| -               | WHT   | 16      | WNSPD P16A      | TO | P16      | A      |

| LOCATOR CODE: - |       | SPLIC D |               |    |          |        |
|-----------------|-------|---------|---------------|----|----------|--------|
| CAVITY          | COLOR | GA.     | PRINT LABEL   | TO | CON-SPLC | CAVITY |
| -               | WHT   | 18      | P1S ON H      | TO | P1       | S      |
| -               | WHT   | 16      | RELAY PWR (+) | TO | R1       | 86     |
| -               | WHT   | 18      | J4C ON H      | TO | J4       | C      |

| CIRCUIT CROSS REFERENCE FOR 3000 STATIONARY MOUNT CRANE |      |             |                 |
|---|------|-------------|-----------------|
| LOCATOR   | CODE | PRINT LABEL | 3000 FUNCTION   |
| P1  | B    | EXT J13B    | INNER BOOM DOWN |
| P1  | C    | WINCH J5A   | EXT. BOOM IN    |

|     |   |            |                    |
|-----|---|------------|--------------------|
| P1  | D | WINCH J14B | EXT. BOOM OUT      |
| P1  | F | EXT J6B    | INNER BOOM UP      |
| P1  | N | LOWER J7B  | OUTER BOOM UP      |
| P1  | P | LOWER J12B | OUTER BOOM DOWN    |
| J5  | A | WINCH J5B  | EXTENSION BOOM IN  |
| J5  | B | WINCH J5B  | EXTENSION BOOM IN  |
| J6  | A | EXT J6A    | INNER BOOM UP      |
| J6  | B | EXT J6B    | INNER BOOM UP      |
| J7  | A | LOWER J7A  | OUTER BOOM UP      |
| J7  | B | LOWER J7B  | OUTER BOOM UP      |
| J12 | A | LOWER J12A | OUTER BOOM DOWN    |
| J12 | B | LOWER J12B | OUTER BOOM DOWN    |
| J13 | A | EXT J13A   | INNER BOOM DOWN    |
| J13 | B | EXT J13B   | INNER BOOM DOWN    |
| J14 | A | WINCH J14A | EXTENSION BOOM OUT |
| J14 | B | WINCH J14B | EXTENSION BOOM OUT |

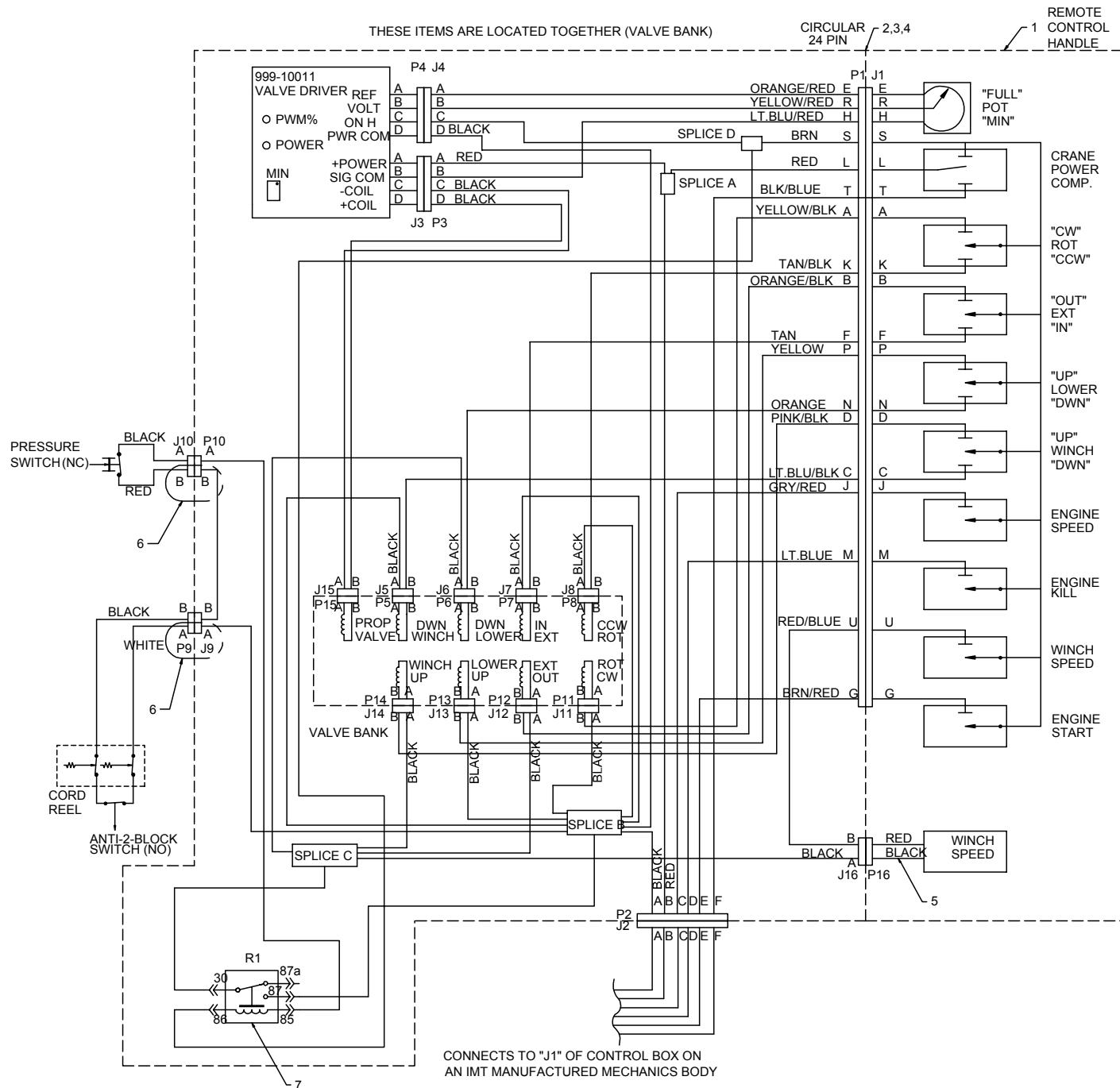
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## Electrical Schematic, Tethered Remote (99900855)

|    |          |                         |   |
|----|----------|-------------------------|---|
| 1. | 51713182 | HANDLE ASM              | 1 |
| 2. | 60119299 | BRACKET                 | 1 |
| 3. | 77044645 | NUT-DEUTSCH CONNECTOR   | 1 |
| 4. | 77044646 | LOCK WASHER -DTSCH CONN | 1 |
| 5. | 51713343 | CABLE ASM 14GA/2 WIRE   | 1 |
| 6. | 70034439 | LOCK WIRE LEAD SEAL 8"  | 2 |
| 7. | 77041597 | HARNESS, DUAL-PRESS.    | 1 |

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## 99900855 Drawing



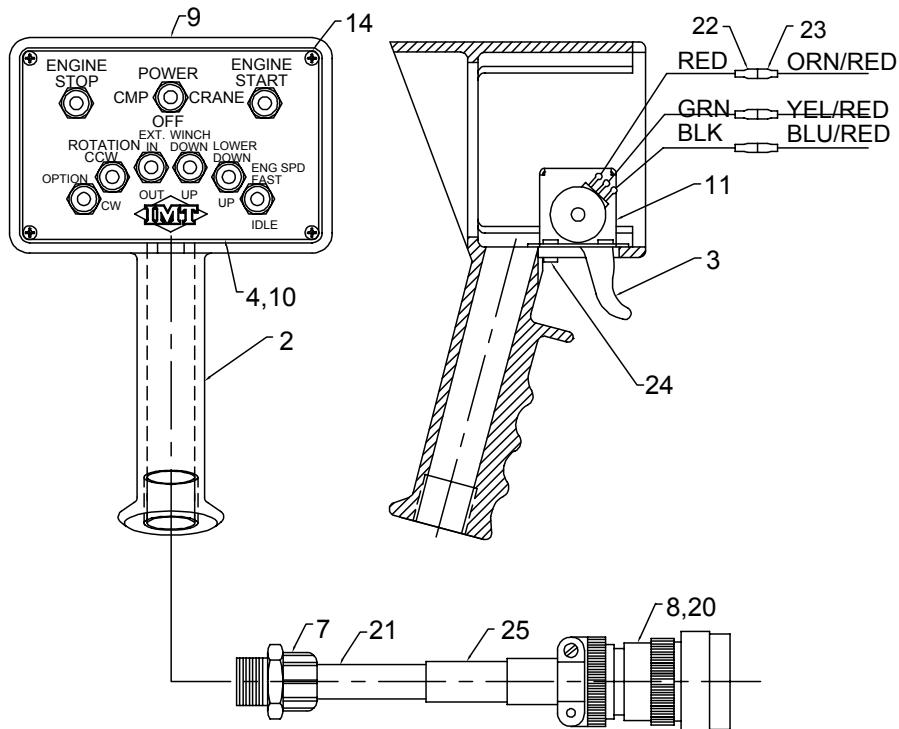
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## Handle Assembly, Tethered Remote (51713182)

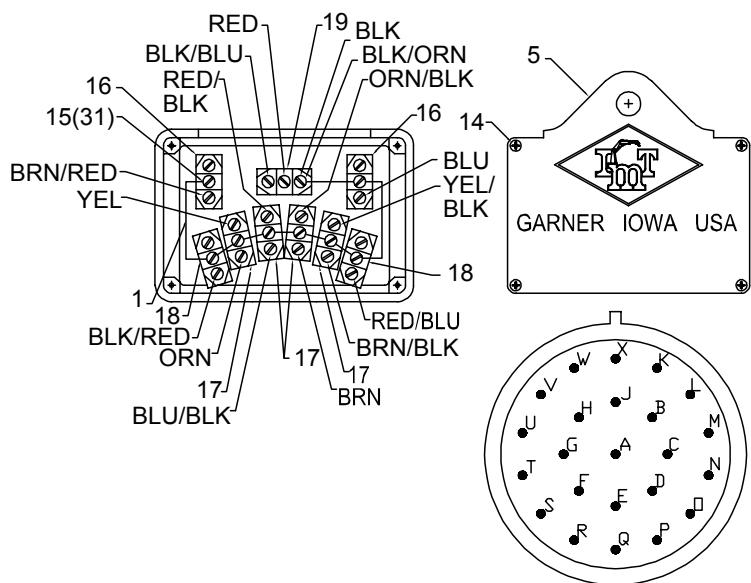
|     |          |                          |         |
|-----|----------|--------------------------|---------|
| 1.  | 89044214 | WIRE 18GA GRN            | 1.61 FT |
| 2.  | 60119335 | CONTROL HANDLE           | 1       |
| 3.  | 60111141 | TRIGGER (PART OF 11)     | 1REF    |
| 4.  | 60119277 | COVER                    | 1       |
| 5.  | 70034306 | BACK COVER               | 1       |
| 7.  | 77044196 | STRAIN RELIEF 3/4        | 1       |
| 8.  | 77044621 | PIN                      | 23      |
| 9.  | 70394447 | DECAL-DGR RC ELECTRO SM  | 1       |
| 10. | 70394142 | DECAL-CTRL               | 1       |
| 11. | 70394183 | TRIGGER ASM (INCL 3)     | 1       |
| 14. | 72061009 | SHT MTL SCR #6X3/4 PH    | 8       |
| 15. | 77040051 | TERM-SPRSPD #8 16-14GA   | 31      |
| 16. | 77040371 | TOGGLE SWITCH SPST       | 2       |
| 17. | 77040372 | TOGGLE SWITCH SPDT       | 4       |
| 18. | 77040373 | TOGGLE SWITCH SPST       | 2       |
| 19. | 77040374 | TOGGLE SWITCH SPDT       | 1       |
| 20. | 77044579 | CONNECTOR                | 1       |
| 21. | 89044100 | CABLE 18GA 24WIRE        | 30 FT   |
| 22. | 77040147 | TERM-FSLPON 1/4TAB 22-18 | 3       |
| 23. | 77040047 | TERM-MSLPON 1/4TAB 16-14 | 3       |
| 24. | 72060602 | MACH SCR #6-32X3/8 RDHD  | 4       |
| 25. | 70145495 | TUBING-HEAT SHRINK       | .5 FT   |

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## 51713182 Drawings



**Handle Assembly, Tethered Remote Kit (51713182)** (see "Handle Assembly, Tethered Remote (51713182)" on page 80)



**Handle Assembly, Tethered Remote Kit (51713182)** (see "Handle Assembly, Tethered Remote (51713182)" on page 80)

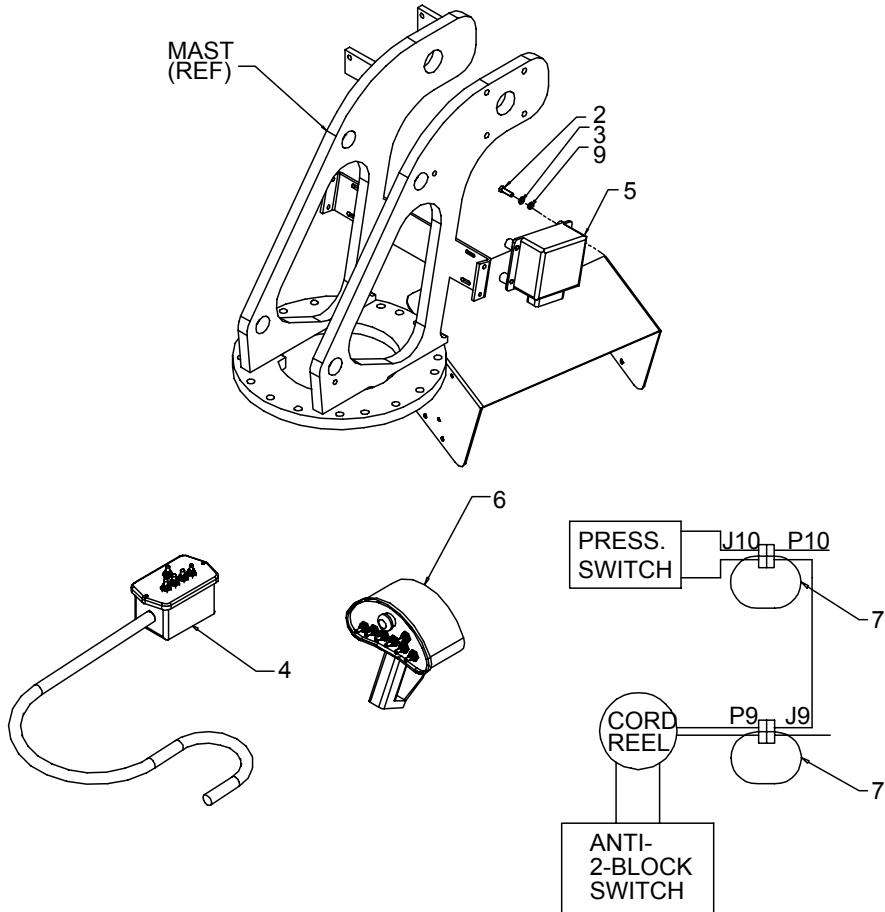
#### WIRE FUNCTIONS

| SOLID/STRIPE | FUNCTION  |
|--------------|-----------|
| A YEL/BLK    | ROT CW    |
| B ORN/BLK    | EXT OUT   |
| C BLU/BLK    | WINCH DN  |
| D RED/BLK    | WINCH UP  |
| E ORN/RED    | -         |
| F BRN        | EXT IN    |
| G BRN/RED    | ENG START |
| H BLU/RED    | -         |
| J BLK/RED    | ENG SPEED |
| K BRN/BLK    | ROT CCW   |
| L RED        | POWER     |
| M BLU        | ENG STOP  |
| N ORN        | LOWER DN  |
| O BLK/ORN    | SOL POWER |
| P YEL        | LOWER UP  |
| Q BRN/BLU    | -         |
| R YEL/RED    | -         |
| S BLK        | CRANE     |
| T BLK/BLU    | CPRSR     |
| U RED/BLU    | OPTION    |
| V BLU/ORN    | -         |
| W ORN/BLU    | -         |
| X YEL/BLU    | -         |
| - RED/RON    | -         |

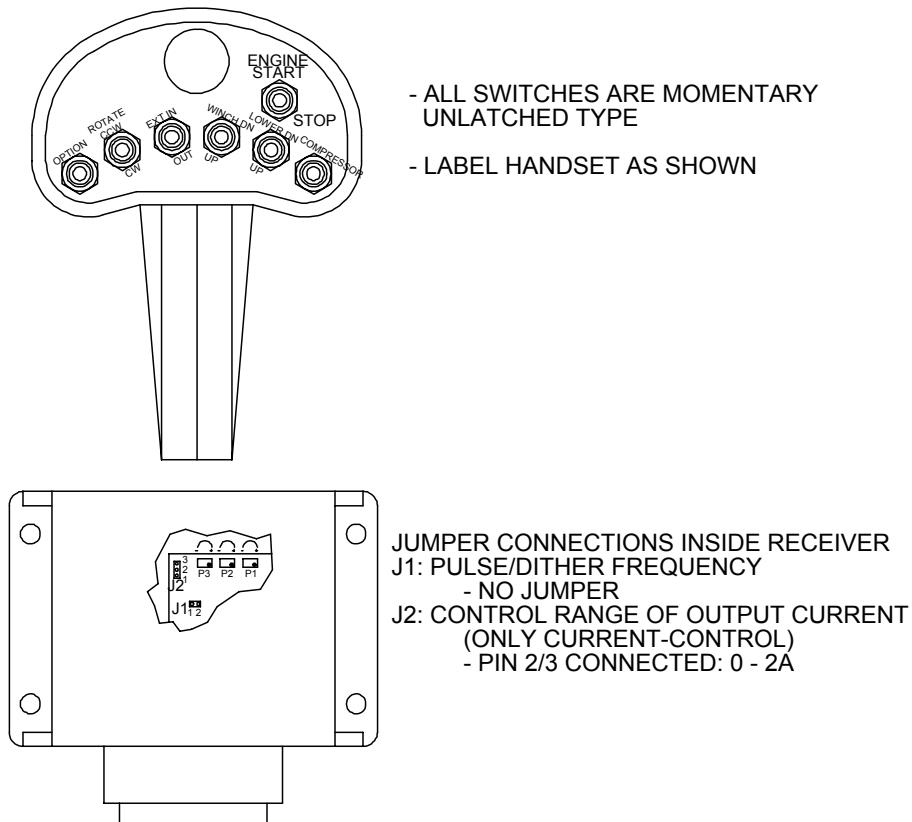
## Control Kit, Radio Remote (90715572)

|    |          |                                |      |
|----|----------|--------------------------------|------|
| 1. | 70733354 | RADIO RMT (INCL:5&6)           | 1    |
| 2. | 72061778 | CAP SCR METRIC 6-1.00 X 12 HHZ | 4    |
| 3. | 72601762 | WASHER 6MM LOCK                | 4    |
| 4. | 51716912 | HANDLE ASM-RAD RMT BACKUP      | 1    |
| 5. | 73733392 | RADIO RMT-RCVR (PART OF 1)     | 1REF |
| 6. | 73733393 | RADIO RMT-XMTR (PART OF 1)     | 1REF |
| 7. | 70034439 | LOCK WIRE LEAD SEAL 8"         | 2    |
| 8. | 99903262 | SCHEM - DWG ELEC RAD RMT TEL   | 1    |
| 9. | 72601785 | WASHER FLAT #6                 | 4    |

### 90715572 Drawings



**Control Kit - Radio Remote (90715572)** (see "Control Kit, Radio Remote (90715572)" on page 83)



**P1: TRIMMING POTENTIOMETER FOR MAXIMUM VALUES:**

On transmitter handle, engage rotation CW or CCW function switch and pull trigger fully on. Crane *may* or *may not* begin to move at this time due to P1 initial setting.

**P2: TRIMMING POTENTIOMETER FOR INITIAL VALUE ADJUSTMENT:**

On transmitter, engage rotation CW or CCW function switch without pulling trigger. Adjust P2 counterclockwise until crane begins to move. At this time, adjust P2 clockwise until no movement is detected. Slightly engage trigger and adjust P2 to fine tune.

**P3: TRIMMING POTENTIOMETER TO ADJUST DITHERAMPLITUDE:**

Adjust clockwise or counterclockwise for smoothness or operation.

|   |              |
|---|--------------|
| <b>Control Kit - Radio Remote (90715572)</b> (see "Control Kit, Radio Remote (90715572)" on page 83) A1 | ROT CW       |
| A2  | EXT OUT      |
| A3  | WINCH DN     |
| A4  | WINCH UP     |
| A5  | PROP VALVE + |
| A6  | EXT IN       |

|       |               |
|-------|---------------|
| A7    | ENGINE START  |
| A8    | RADIO GND     |
| A9    | SPEED RELAY   |
| B1    | NOT USED      |
| B2    | ROT CCW       |
| B3    | RADIO POWER   |
| B4    | KILL RELAY    |
| B5    | LOW DN        |
| B6    | NOT USED      |
| B7    | LOWER UP      |
| B8    | NOT USED      |
| B9    | NOT USED      |
| C1    | PROP VALVE -  |
| C2    | NOT USED      |
| C3    | COMPRESSOR    |
| C4    | WINCH 2 SPEED |
| C5-C9 | NOT USED      |

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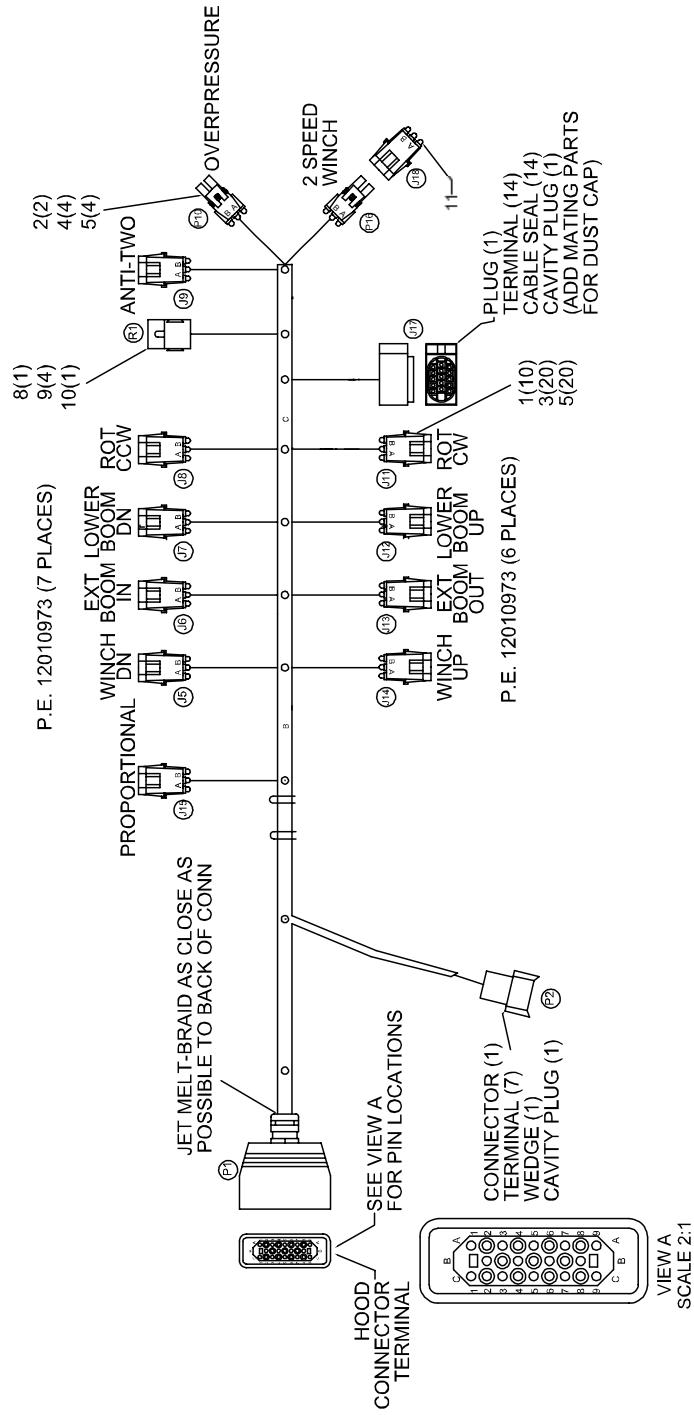
## Cable Assembly, Radio Remote (70733351)

All quantities are reference.

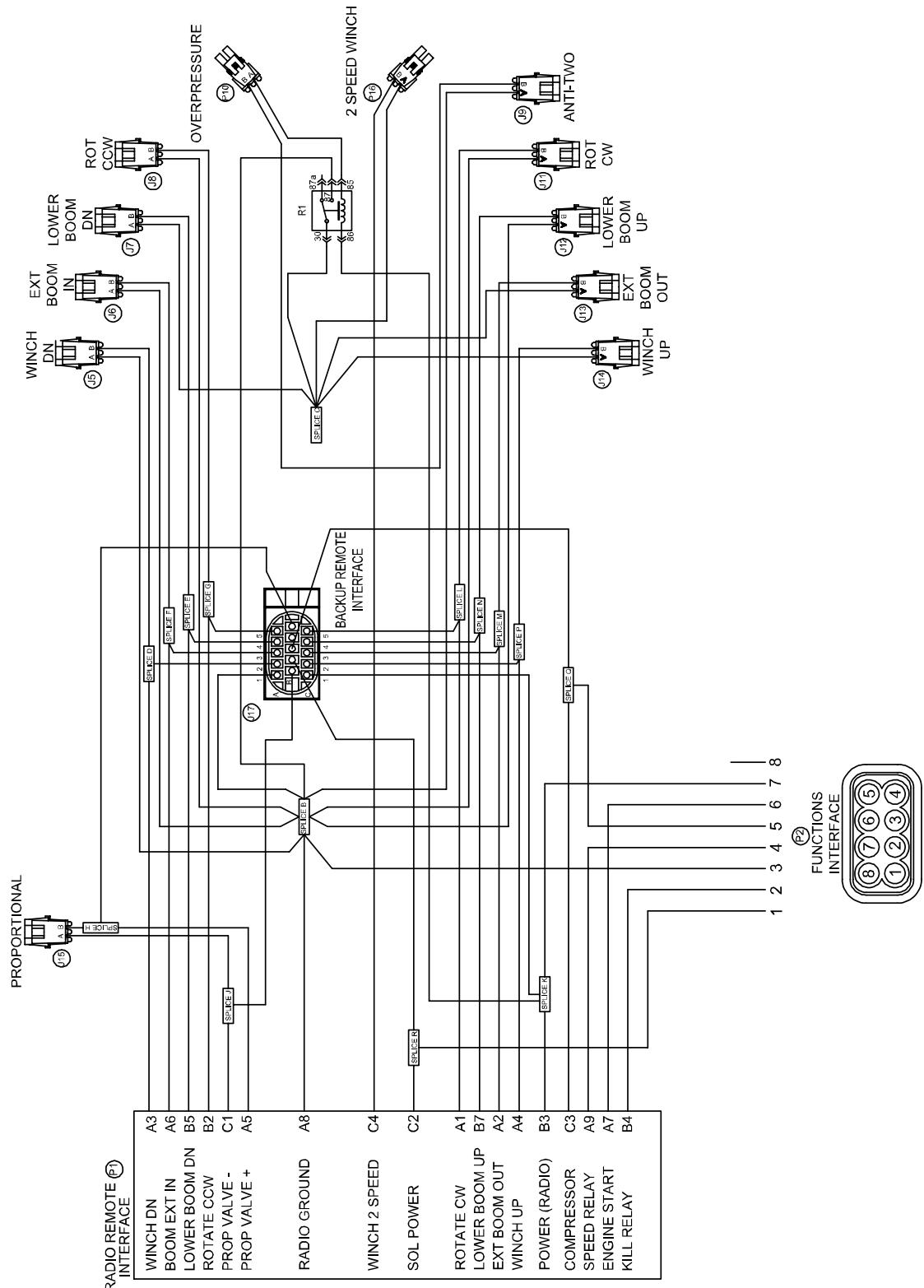
|     |          |                         |    |
|-----|----------|-------------------------|----|
| 1.  | 77044573 | SHROUD CONN 2-CONT      | 11 |
| 2.  | 77044574 | TOWER CONNECTION 2-CONT | 2  |
| 3.  | 77045887 | TERM-MALE 16GA          | 20 |
| 4.  | 77045888 | TERM-FEM 16GA           | 4  |
| 5.  | 77044927 | CABLE SEAL- GRY 16GA    | 25 |
| 6.  | 70145941 | CONN HOLD - 2 AMP       | 1  |
| 7.  | 70145942 | CONN - 2 AMP            | 1  |
| 8.  |          | SOCKET, RELAY           | 1  |
| 9.  |          | TERMINAL                | 4  |
| 10. |          | RELAY                   | 1  |
| 11. |          | PLUG                    | 2  |

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## 70733351 Drawings



To 70733351-2 Parts List (see "Cable Assembly, Radio Remote (70733351)" on page 86)



| Wiring Chart (70733351) |                   |     |               |                        |          |        |
|-------------------------|-------------------|-----|---------------|------------------------|----------|--------|
| LOCATOR CODE: P1        |                   |     |               | AMP: HOOD: 2-1102137-1 |          |        |
| TERM: 4-1105051-1       | CONN: 2-1103109-3 |     |               | CAVITY PLUG: -         |          |        |
| CAVITY                  | COLOR             | GA. | PRINT LABEL   | TO                     | CON-SPLC | CAVITY |
| A1                      | WHT               | 16  | ROT CW J11B   | TO                     | SPL L    | -      |
| A2                      | WHT               | 16  | EXT J12B      | TO                     | SPL M    | -      |
| A3                      | WHT               | 16  | WIN J5B       | TO                     | SPL D    | -      |
| A4                      | WHT               | 16  | WIN J14B      | TO                     | SPL P    | -      |
| A5                      | WHT               | 16  | PROP VLV (+)  | TO                     | SPL H    | -      |
| A6                      | WHT               | 16  | EXT J7B       | TO                     | SPL F    | -      |
| A7                      | WHT               | 16  | ENG START     | TO                     | P2       | 6      |
| A8                      | WHT               | 16  | RADIO GND     | TO                     | SPL B    | -      |
| A9                      | WHT               | 16  | ENG SPEED     | TO                     | P2       | 4      |
| B1                      | -                 | -   | -             | TO                     | -        | -      |
| B2                      | WHT               | 16  | ROT CCW J8B   | TO                     | SPL G    | -      |
| B3                      | WHT               | 16  | RADIO PWR     | TO                     | SPL K    | -      |
| B4                      | WHT               | 16  | ENG KILL      | TO                     | P2       | 2      |
| B5                      | WHT               | 16  | LOW DN P1 B5  | TO                     | SPL E    | -      |
| B6                      | -                 | -   | -             | TO                     | -        | -      |
| B7                      | WHT               | 16  | LOW P1 B7     | TO                     | SPL N    | -      |
| C1                      | WHT               | 16  | PROP (-)      | TO                     | SPL J    | -      |
| C2                      | WHT               | 16  | SOL PWR       | TO                     | SPL R    | -      |
| C3                      | WHT               | 16  | COMPRESSOR    | TO                     | SPL Q    | -      |
| C4                      | WHT               | 16  | WINSPEED J16B | TO                     | P16      | B      |
| C5                      | -                 | -   | -             | -                      | -        | -      |
| C6                      | -                 | -   | -             | -                      | -        | -      |
| C7                      | -                 | -   | -             | -                      | -        | -      |
| C8                      | -                 | -   | -             | -                      | -        | -      |
| C9                      | -                 | -   | -             | -                      | -        | -      |

| LOCATOR CODE: P2   |            |     |             | DUETSCH DT04-8PA    |          |        |
|--------------------|------------|-----|-------------|---------------------|----------|--------|
| TERM: 1060-16-0122 | WEDGE: W8P |     |             | CAVITY PLUG: 114017 |          |        |
| CAVITY             | COLOR      | GA. | PRINT LABEL | TO                  | CON-SPLC | CAVITY |
| 1                  | WHT        | 16  | SOL PWR     | TO                  | SPL R    | -      |
| 2                  | WHT        | 16  | ENG KILL    | TO                  | P1       | B4     |
| 3                  | WHT        | 16  | RADIO GND   | TO                  | SPL B    | -      |
| 4                  | WHT        | 16  | ENG SPEED   | TO                  | P1       | A9     |
| 5                  | WHT        | 16  | COMPRESSOR  | TO                  | SPL Q    | -      |
| 6                  | WHT        | 16  | ENG START   | TO                  | P1       | A7     |
| 7                  | WHT        | 16  | RADIO POWER | TO                  | SPL K    | -      |
| 8                  | -          | -   | -           | TO                  | -        | -      |

| LOCATOR CODE: J5 |       |     |              | PACKARD: 12010973 |          |        |
|------------------|-------|-----|--------------|-------------------|----------|--------|
| TERM: 12124582   |       |     |              | SEAL: 12015359    |          |        |
| CAVITY           | COLOR | GA. | PRINT LABEL  | TO                | CON-SPLC | CAVITY |
| A                | WHT   | 16  | J5A WINCH DN | TO                | SPL B    | -      |

***Wiring Chart (70733351)***

|   |     |    |              |    |       |   |
|---|-----|----|--------------|----|-------|---|
| B | WHT | 16 | J5B WINCH DN | TO | SPL D | - |
|---|-----|----|--------------|----|-------|---|

|                  |       |     |                   |                |          |        |
|------------------|-------|-----|-------------------|----------------|----------|--------|
| LOCATOR CODE: J9 |       |     | PACKARD: 12010973 |                |          |        |
| TERM: 12124582   |       |     |                   | SEAL: 12015359 |          |        |
| CAVITY           | COLOR | GA. | PRINT LABEL       | TO             | CON-SPLC | CAVITY |
| A                | WHT   | 16  | J9A ANTI-TWO      | TO             | SPL B    | -      |
| B                | WHT   | 16  | P10B TO J9B       | TO             | P10      | B      |

|                   |       |     |                   |                |          |        |
|-------------------|-------|-----|-------------------|----------------|----------|--------|
| LOCATOR CODE: P10 |       |     | PACKARD: 12015792 |                |          |        |
| TERM: 12124580    |       |     |                   | SEAL: 12015359 |          |        |
| CAVITY            | COLOR | GA. | PRINT LABEL       | TO             | CON-SPLC | CAVITY |
| A                 | WHT   | 16  | OPSI P10A         | TO             | R1       | 85     |
| B                 | WHT   | 16  | P10B TO J9B       | TO             | J9       | B      |

|                   |       |     |                   |                |          |        |
|-------------------|-------|-----|-------------------|----------------|----------|--------|
| LOCATOR CODE: J11 |       |     | PACKARD: 12010973 |                |          |        |
| TERM: 12124582    |       |     |                   | SEAL: 12015359 |          |        |
| CAVITY            | COLOR | GA. | PRINT LABEL       | TO             | CON-SPLC | CAVITY |
| A                 | WHT   | 16  | J11A ROT CW       | TO             | SPL B    | -      |
| B                 | WHT   | 16  | J11B ROT CW       | TO             | SPL L    | -      |

|                   |       |     |                   |                |          |        |
|-------------------|-------|-----|-------------------|----------------|----------|--------|
| LOCATOR CODE: J12 |       |     | PACKARD: 12010973 |                |          |        |
| TERM: 12124582    |       |     |                   | SEAL: 12015359 |          |        |
| CAVITY            | COLOR | GA. | PRINT LABEL       | TO             | CON-SPLC | CAVITY |
| A                 | WHT   | 16  | J12A LOWER UP     | TO             | SPL B    | -      |
| B                 | WHT   | 16  | J12B LOWER UP     | TO             | SPL N    | -      |

|                   |       |     |                   |                |          |        |
|-------------------|-------|-----|-------------------|----------------|----------|--------|
| LOCATOR CODE: J13 |       |     | PACKARD: 12010973 |                |          |        |
| TERM: 12124582    |       |     |                   | SEAL: 12015359 |          |        |
| CAVITY            | COLOR | GA. | PRINT LABEL       | TO             | CON-SPLC | CAVITY |
| A                 | WHT   | 16  | J13A EXT OUT      | TO             | SPL C    | -      |
| B                 | WHT   | 16  | J13B EXT OUT      | TO             | SPL M    | -      |

|                   |       |     |                   |                |          |        |
|-------------------|-------|-----|-------------------|----------------|----------|--------|
| LOCATOR CODE: J14 |       |     | PACKARD: 12010973 |                |          |        |
| TERM: 12124582    |       |     |                   | SEAL: 12015359 |          |        |
| CAVITY            | COLOR | GA. | PRINT LABEL       | TO             | CON-SPLC | CAVITY |
| A                 | WHT   | 16  | J14A WINCH UP     | TO             | SPL C    | -      |
| B                 | WHT   | 16  | J14B WINCH UP     | TO             | SPL P    | -      |

|                   |       |     |                   |                |          |        |
|-------------------|-------|-----|-------------------|----------------|----------|--------|
| LOCATOR CODE: J15 |       |     | PACKARD: 12010973 |                |          |        |
| TERM: 12124582    |       |     |                   | SEAL: 12015359 |          |        |
| CAVITY            | COLOR | GA. | PRINT LABEL       | TO             | CON-SPLC | CAVITY |
| A                 | WHT   | 16  | J15A PROP (-)     | TO             | SPL J    | -      |
| B                 | WHT   | 16  | J15B PROP (+)     | TO             | SPL H    | -      |

|                   |  |  |                   |  |  |  |
|-------------------|--|--|-------------------|--|--|--|
| LOCATOR CODE: P16 |  |  | PACKARD: 12015792 |  |  |  |
|-------------------|--|--|-------------------|--|--|--|

***Wiring Chart (70733351)***

|                |       |     |              |                |          |
|----------------|-------|-----|--------------|----------------|----------|
| TERM: 12124580 |       |     |              | SEAL: 12015359 |          |
| CAVITY         | COLOR | GA. | PRINT LABEL  | TO             | CON-SPLC |
| A              | WHT   | 16  | P16A WNSPD   | TO             | SPL C    |
| B              | WHT   | 16  | WINS PD J16B | TO             | P1       |
|                |       |     |              |                | C4       |

| LOCATOR CODE: - |       | SPLICER B |               |    |          |
|-----------------|-------|-----------|---------------|----|----------|
| CAVITY          | COLOR | GA.       | PRINT LABEL   | TO | CON-SPLC |
| -               | WHT   | 16        | RADIO GND     | TO | P1       |
| -               | WHT   | 16        | J5A WNCH DN   | TO | J5       |
| -               | WHT   | 16        | J6A EXT IN    | TO | J6       |
| -               | WHT   | 16        | J8A ROT CCW   | TO | J8       |
| -               | WHT   | 16        | J17 GND       | TO | J17      |
| -               | WHT   | 16        | RELAY GND     | TO | R1       |
| -               | WHT   | 16        | J9A ANTI-TWO  | TO | J9       |
| -               | WHT   | 16        | J11A ROT CW   | TO | J11      |
| -               | WHT   | 16        | J12A LOWER UP | TO | J12      |
| -               | WHT   | 16        | RADIO GND     | TO | P2       |
|                 |       |           |               |    | 3        |

| LOCATOR CODE: J17 |       |                |                  | METRI-PAC 12161186    |          |
|-------------------|-------|----------------|------------------|-----------------------|----------|
| TERM: 12129409    |       | SEAL: 12089679 |                  | CAVITY PLUG: 12010300 |          |
| CAVITY            | COLOR | GA.            | PRINT LABEL      | TO                    | CON-SPLC |
| A1                | WHT   | 16             | J17 GRND         | TO                    | SPL B    |
| A2                | WHT   | 16             | J17 WNCH DN      | TO                    | SPL D    |
| A3                | WHT   | 16             | J17 EXT IN       | TO                    | SPL F    |
| A4                | WHT   | 16             | J17 LOW DN       | TO                    | SPL E    |
| A5                | WHT   | 16             | J17 ROT CCW      | TO                    | SPL G    |
| B1                | WHT   | 16             | J17 PROP (-)     | TO                    | SPL J    |
| B2                | WHT   | 16             | J17 SOL PWR      | TO                    | SPL R    |
| B3                | WHT   | 16             | J17 COMP         | TO                    | SPL Q    |
| B4                | -     | -              | -                | TO                    | -        |
| B5                | WHT   | 16             | J17 PROP VLV (+) | TO                    | SPL H    |
| C1                | WHT   | 16             | J17 RAD PWR      | TO                    | SPL K    |
| C2                | WHT   | 16             | J17 WNCH UP      | TO                    | SPL P    |
| C3                | WHT   | 16             | J17 EXT OUT      | TO                    | SPL M    |
| C4                | WHT   | 16             | J17 LOW UP       | TO                    | SPL N    |
| C5                | WHT   | 16             | J17 ROT CW       | TO                    | SPL L    |

| LOCATOR CODE: R1                         |                             |     |                 |    |          |
|--|-----------------------------|-----|-----------------|----|----------|
| RELAY SOCKET: PACKARD 12065685, 12052834 |                             |     |                 |    |          |
| TERM: 12066614                           | RELAY: HELLA 87411 (SEALED) |     |                 |    |          |
| CAVITY                                   | COLOR                       | GA. | PRINT LABEL     | TO | CON-SPLC |
| 30                                       | WHT                         | 16  | ATB & OPRES GRD | TO | SPL C    |
| 87                                       | WHT                         | 16  | RELAY GRD       | TO | SPL B    |
| 87A                                      | -                           | -   | -               | TO | -        |

***Wiring Chart (70733351)***

|    |     |    |               |    |       |   |
|----|-----|----|---------------|----|-------|---|
| 86 | WHT | 16 | RELAY PWR (+) | TO | SPL K | - |
| 85 | WHT | 16 | OPSI P10A     | TO | P10   | A |

| LOCATOR CODE: - |       |     |                 | SPLICE C |          |        |
|-----------------|-------|-----|-----------------|----------|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL     | TO       | CON-SPLC | CAVITY |
| -               | WHT   | 16  | J7A LOW DN      | TO       | J7       | A      |
| -               | WHT   | 16  | ATB & OPRES GND | TO       | R1       | 30     |
| -               | WHT   | 16  | P16A WNspd      | TO       | P16      | A      |
| -               | WHT   | 16  | J13A EXT OUT    | TO       | J13      | A      |
| -               | WHT   | 16  | J14A WNCH UP    | TO       | J14      | A      |

| LOCATOR CODE: - |       |     |             | SPLICE D |          |        |
|-----------------|-------|-----|-------------|----------|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL | TO       | CON-SPLC | CAVITY |
| -               | WHT   | 16  | WIN J5B     | TO       | P1       | A3     |
| -               | WHT   | 16  | J5B WNCH DN | TO       | J5       | B      |
| -               | WHT   | 16  | J17 WNCH DN | TO       | J17      | A2     |

| LOCATOR CODE: - |       |     |              | SPLICE E |          |        |
|-----------------|-------|-----|--------------|----------|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL  | TO       | CON-SPLC | CAVITY |
| -               | WHT   | 16  | LOW DN P1 B5 | TO       | P1       | B5     |
| -               | WHT   | 16  | J7B LOW DN   | TO       | J7       | B      |
| -               | WHT   | 16  | J17 LOW DN   | TO       | J17      | A4     |

| LOCATOR CODE: - |       |     |             | SPLICE F |          |        |
|-----------------|-------|-----|-------------|----------|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL | TO       | CON-SPLC | CAVITY |
| -               | WHT   | 16  | EXT J7B     | TO       | P1       | A6     |
| -               | WHT   | 16  | J6B EXT IN  | TO       | J6       | B      |
| -               | WHT   | 16  | J17 EXT IN  | TO       | J17      | A3     |

| LOCATOR CODE: - |       |     |             | SPLICE G |          |        |
|-----------------|-------|-----|-------------|----------|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL | TO       | CON-SPLC | CAVITY |
| -               | WHT   | 16  | ROT CCW J8B | TO       | P1       | B2     |
| -               | WHT   | 16  | J8B ROT CCW | TO       | J8       | B      |
| -               | WHT   | 16  | J17 ROT CCW | TO       | J17      | A5     |

| LOCATOR CODE: - |       |     |               | SPLICE H |          |        |
|-----------------|-------|-----|---------------|----------|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL   | TO       | CON-SPLC | CAVITY |
| -               | WHT   | 16  | PROP VLV (+)  | TO       | P1       | A5     |
| -               | WHT   | 16  | J15B PROP (+) | TO       | J15      | B      |
| -               | WHT   | 16  | J17 PROP (+)  | TO       | J17      | B5     |

| LOCATOR CODE: - |       |     |               | SPLICE J |          |        |
|-----------------|-------|-----|---------------|----------|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL   | TO       | CON-SPLC | CAVITY |
| -               | WHT   | 16  | PROP (-)      | TO       | P1       | C1     |
| -               | WHT   | 16  | J15A PROP (-) | TO       | J15      | A      |

***Wiring Chart (70733351)***

|   |     |    |              |    |     |    |
|---|-----|----|--------------|----|-----|----|
| - | WHT | 16 | J17 PROP (-) | TO | J17 | B1 |
|---|-----|----|--------------|----|-----|----|

| LOCATOR CODE: - |       |     | SPLICE K      |    |          |        |
|-----------------|-------|-----|---------------|----|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL   | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16  | RADIO PWR     | TO | P1       | B3     |
| -               | WHT   | 16  | RELAY PWR (+) | TO | R1       | 86     |
| -               | WHT   | 16  | J17 RAD PWR   | TO | J17      | C1     |
| -               | WHT   | 16  | RADIO POWER   | TO | P2       | 7      |

| LOCATOR CODE: - |       |     | SPLICE L    |    |          |        |
|-----------------|-------|-----|-------------|----|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16  | ROT CW J11B | TO | P1       | A1     |
| -               | WHT   | 16  | J11B ROT CW | TO | J11      | B      |
| -               | WHT   | 16  | J17 ROT CW  | TO | J17      | C5     |

| LOCATOR CODE: - |       |     | SPLICE M     |    |          |        |
|-----------------|-------|-----|--------------|----|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL  | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16  | EXT J12B     | TO | P1       | A2     |
| -               | WHT   | 16  | J13B EXT OUT | TO | J13      | B      |
| -               | WHT   | 16  | J17 EXT OUT  | TO | J17      | C3     |

| LOCATOR CODE: - |       |     | SPLICE N      |    |          |        |
|-----------------|-------|-----|---------------|----|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL   | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16  | LOW P1 B7     | TO | P1       | B7     |
| -               | WHT   | 16  | J12B LOWER UP | TO | J12      | B      |
| -               | WHT   | 16  | J17 LOW UP    | TO | J17      | C4     |

| LOCATOR CODE:- |       |     | SPLICE P     |    |          |        |
|----------------|-------|-----|--------------|----|----------|--------|
| CAVITY         | COLOR | GA. | PRINT LABEL  | TO | CON-SPLC | CAVITY |
| -              | WHT   | 16  | WIN J14B     | TO | P1       | A4     |
| -              | WHT   | 16  | J14B WNCH UP | TO | J14      | B      |
| -              | WHT   | 16  | J17 WNCH UP  | TO | J17      | C2     |

| LOCATOR CODE: - |       |     | SPLICE Q    |    |          |        |
|-----------------|-------|-----|-------------|----|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16  | COMPRESSOR  | TO | P1       | C3     |
| -               | WHT   | 16  | COMPRESSOR  | TO | P2       | 5      |
| -               | WHT   | 16  | J17 COMP    | TO | J17      | B3     |

| LOCATOR CODE: - |       |     | SPLICE R    |    |          |        |
|-----------------|-------|-----|-------------|----|----------|--------|
| CAVITY          | COLOR | GA. | PRINT LABEL | TO | CON-SPLC | CAVITY |
| -               | WHT   | 16  | SOL PWR     | TO | P1       | C2     |
| -               | WHT   | 16  | SOL PWR     | TO | P2       | 1      |
| -               | WHT   | 16  | J17 SOL PWR | TO | J17      | B2     |

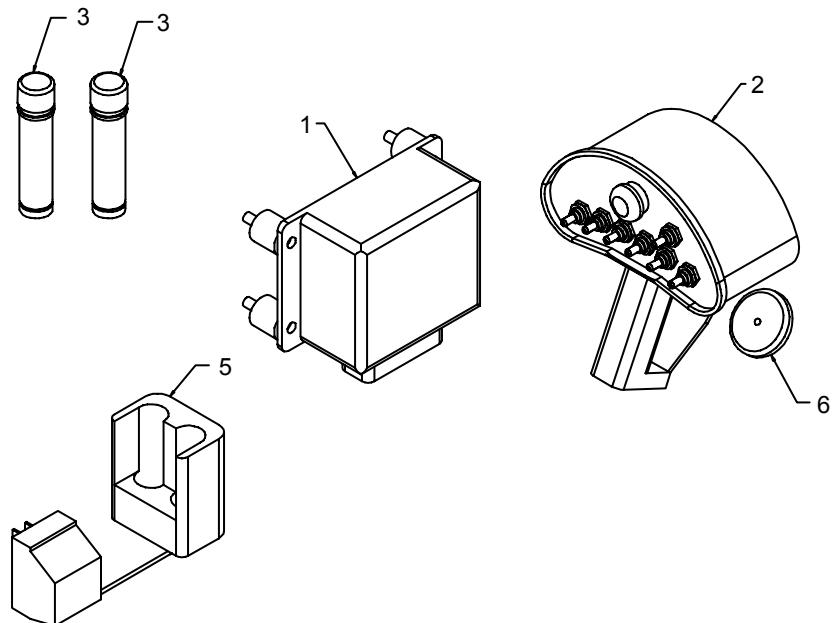
## Handle Assembly, Radio Remote (70733354)

|    |          |                       |   |
|----|----------|-----------------------|---|
| 1. | 73733392 | RADIO REMOTE RECEIVER | 1 |
| 2. | 73733393 | TRANSMITTER           | 1 |
| 3. | 70146100 | BATTERY-VERSA PACK    | 2 |
| 5. | 70146279 | BATTERY CHARGER       | 1 |
| 6. | 70146103 | MAGNET                | 1 |

NOTE: ITEM #5, 70146279, CAN BE PURCHASED AS PART OF KIT 90042094.

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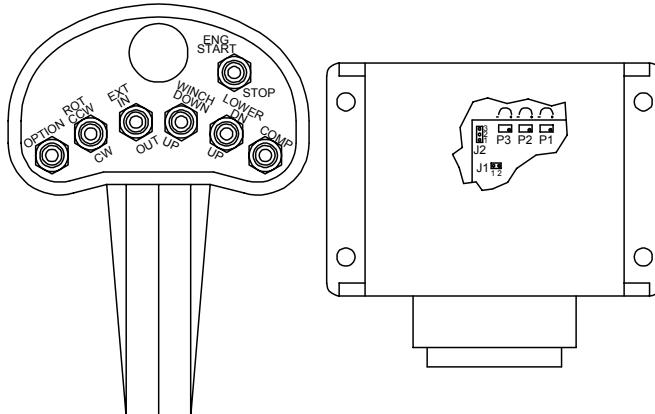
### 70733354 Drawings



**Radio Remote Kit (70733354) Parts List** (see "Handle Assembly, Radio Remote (70733354)" on page 94)

ALL SWITCHES ARE MOMENTARY, UNLATCHED TYPE.

| CONN # | IMT-ASSIGNED FUNCTION |
|--------|-----------------------|
| A1     | ROT CW                |
| A2     | EXT OUT               |
| A3     | WINCH DOWN            |
| A4     | WINCH UP              |
| A5     | PROP VALVE +          |
| A6     | EXT IN                |
| A7     | ENGINE START          |
| A8     | RADIO GROUND          |
| A9     | SPEED RELAY           |
| B2     | ROTATION CCW          |
| B3     | RADIO POWER           |
| B4     | KILL RELAY            |
| B5     | LOWER DOWN            |
| B6     | LOWER UP              |
| C1     | PROP VALVE -          |
| C3     | COMPRESSOR            |
| C4     | WINCH 2 SPEED         |



B1, B6, B9, C2, C5-C9 NOT USED.

**P1: TRIMMING POTENTIOMETER FOR MAXIMUM VALUES:**

On transmitter handle, engage rotation CW or CCW function switch and pull trigger fully on. Crane *may* or *may not* begin to move at this time due to P1 initial setting.

**P2: TRIMMING POTENTIOMETER FOR INITIAL VALUE ADJUSTMENT:**

On transmitter, engage rotation CW or CCW function switch without pulling trigger. Adjust P2 counterclockwise until crane begins to move. At this time, adjust P2 clockwise until no movement is detected. Slightly engage trigger and adjust P2 to fine tune.

**P3: TRIMMING POTENTIOMETER TO ADJUST DITHERAMPLITUDE:**

Adjust clockwise or counterclockwise for smoothness or operation.

Jumper connections inside receiver -

J1: Pulse/Dither Frequency - No Jumper

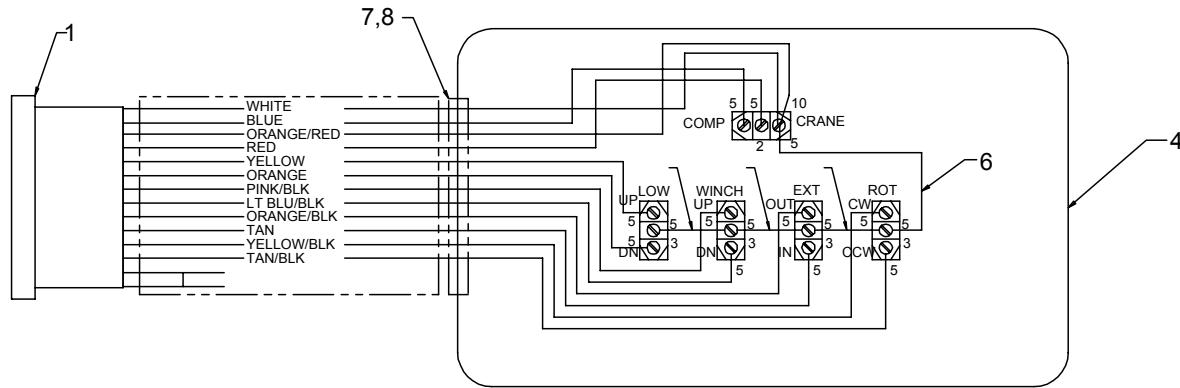
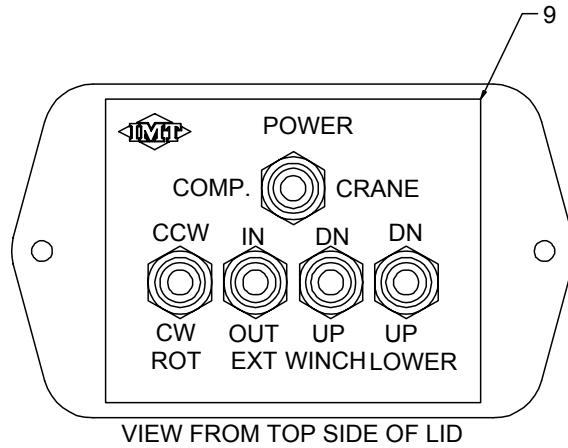
J2: Control Range of Output Current (Only Current - Control) - Pin 2/3 Connected: 0-2A

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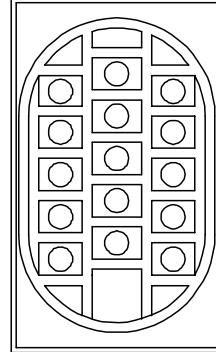
## Handle Assembly, Radio Remote Backup (51716912)

|     |          |                               |    |
|-----|----------|-------------------------------|----|
| 1.  | 73733374 | CABLE ASM                     | 1  |
| 2.  | 77041404 | TOGGLE SWITCH, ON-OFF-ON      | 1  |
| 3.  | 77041346 | TOGGLE SWITCH, (ON)-OFF-(ON)  | 4  |
| 4.  | 60121724 | JIC BOX                       | 1  |
| 5.  | 77040186 | TERMINAL-FSLPON 1/4TAB        | 15 |
| 6.  | 60045031 | WIRE-GREEN 4" LONG            | 4  |
| 7.  | 77044018 | CONNECTOR 1/2 STR RLF 3/8-1/2 | 1  |
| 8.  | 77044201 | NUT-ELEC 1/2                  | 1  |
| 9.  | 70395537 | DECAL-CONTROL                 | 1  |
| 10. | 77040282 | TEM-PIGBAK 16/14 GA 1/4TAB    | 1  |

NOTE: UNPLUG RADIO REMOTE RECEIVER BEFORE PLUGGING IN BACKUP HANDSET.



| CAV. | COLOR         | FUNCTION               |
|------|---------------|------------------------|
| A1   | BLACK         | JUMPER TO PIN B1 (GND) |
| A2   | LT.BLUE/BLACK | WINCH DOWN             |
| A3   | TAN           | EXT BOOM IN            |
| A4   | ORANGE        | LOWER BOOM DN          |
| A5   | TAN/BLACK     | ROT CCW                |
| B5   | ORANGE/RED    | PROP VALVE (+)         |
| B1   | BLACK         | JUMPER TO PIN A1 (GND) |
| C5   | YELLOW/BLACK  | ROT CW                 |
| C4   | YELLOW        | LOWER BOOM UP          |
| C3   | ORANGE/BLACK  | EXT BOOM OUT           |
| C2   | PINK/BLACK    | WINCH UP               |
| C1   | RED           | MAIN POWER             |
| B2   | WHITE         | SOLENOID POWER         |
| B3   | BLUE          | COMPRESSOR             |

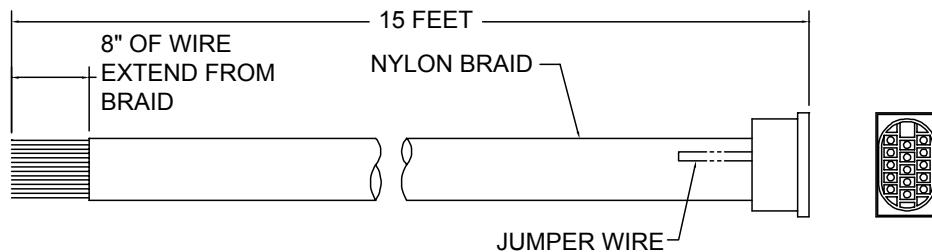


## Cable Assembly, Radio Remote Backup (73733374)

REV. B 20040206

| CAV | COLOR         | GA. | FUNCTION-TELESCOPIC | LABELING     | FUNCTION-ARTICULATING  |
|-----|---------------|-----|---------------------|--------------|------------------------|
| *A1 | Black         | 16  | Radio Ground        | Radio Gnd    | Jumper to Pin B1 (GND) |
| A2  | Lt Blue/Black | 16  | Winch Down          | Win Dn       | Inner Boom Down        |
| A4  | Orange        | 16  | Lower Down          | Low Dn       | Outer Boom Down        |
| A3  | Tan           | 16  | Extension In        | Ext In       | Rot CCW                |
| A5  | Tan/Black     | 16  | Rotate CCW          | Rot CCW      | Ext. Boom In           |
| B5  | Orange/Red    | 16  | Prop Valve +        | Prop Valve + | Prop Valve (+)         |
| *B1 | Black         | 16  | Prop Ground         | Prop Gnd     | Jumper to Pin A1 (GND) |
| C5  | Yellow/Black  | 16  | Rotate CW           | Rot CW       | Ext Boom Out           |
| C3  | Orange/Black  | 16  | Extension Out       | Ext Out      | Rot CW                 |
| C4  | Yellow        | 16  | Lower Up            | Low Up       | Outer Boom Up          |
| C2  | Pink/Black    | 16  | Winch Up            | Win Up       | Inner Boom Up          |
| C1  | Red           | 16  | Radio Power         | Rad Pwr      | Main Power             |
| B2  | White         | 16  | Solenoid Power      | Sol Pwr      | Solenoid Power         |
| B3  | Blue          | 16  | Compressor          | Comp         | Compressor On          |

\* Cavities A1 and B1 are jumpered.



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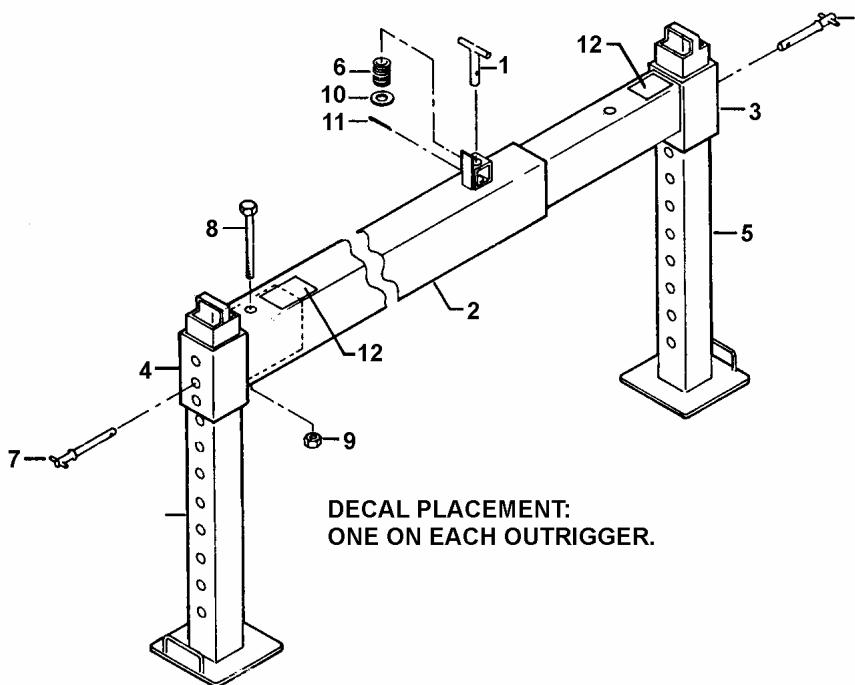
## Auxiliary Outrigger Assemblies and Valvebanks

The IMT telescopic cranes have a variety of outrigger options, depending on the body on which the crane is installed and the crane lifting application. Refer to the IMT Outrigger Manual for complete details on the applicable outriggers.

## Outrigger, Manual Out/Manual Down, 6x4 (31703350)

|     |          |                               |   |
|-----|----------|-------------------------------|---|
| 1.  | 52070138 | PIN                           | 1 |
| 2.  | 52703334 | TUBE WELDMENT                 | 1 |
| 3.  | 52703351 | ARM                           | 1 |
| 4.  | 52703352 | HOUSING, STATIONARY           | 1 |
| 5.  | 52703353 | LEG                           | 2 |
| 6.  | 60010351 | SPRING                        | 1 |
| 7.  | 71731361 | PIN, QUICK RELEASE            | 2 |
| 8.  | 72060105 | SCREW, CAP 1/2-13X7 HHGR5     | 1 |
| 9.  | 72062080 | NUT, LOCK 1/2-13              | 1 |
| 10. | 72063007 | WASHER 5/8 WRT                | 1 |
| 11. | 72066185 | COTTER PIN 1/16X1             | 1 |
| 12. | 70392864 | DECAL, DANGER O/R STAND CLEAR | 2 |

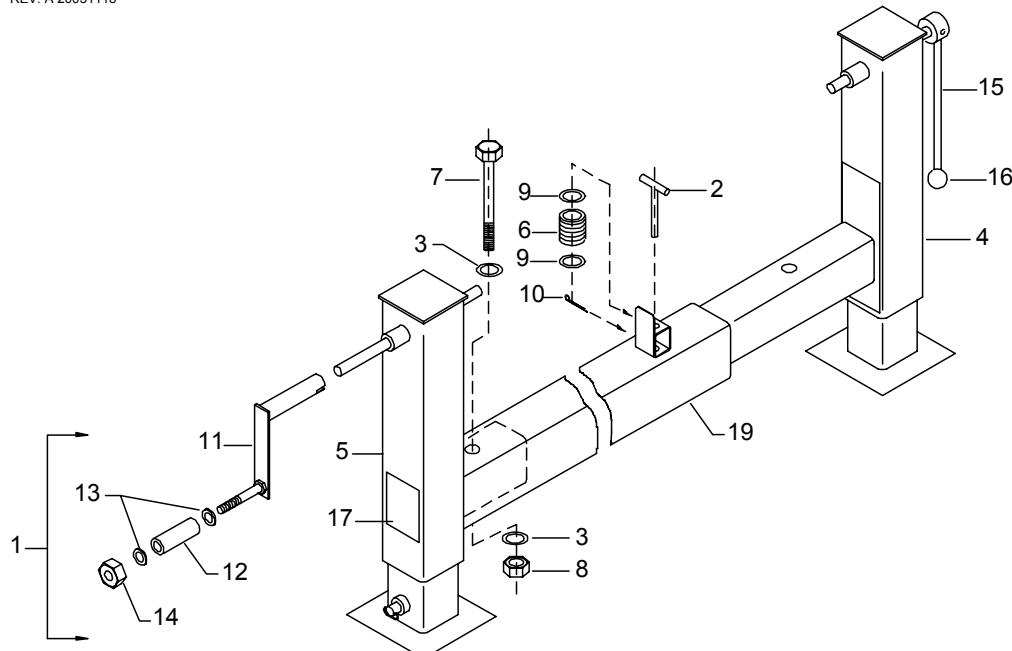
REV. 1 20041002



## Outrigger, Manual Out/Crank Down, 6x4 (31703354)

|     |          |                                       |      |
|-----|----------|---------------------------------------|------|
| 1.  | 51705040 | CRANK ASM                             | 1    |
| 2.  | 52070138 | PIN WELDMENT "T"                      | 1    |
| 3.  | 72063005 | WASHER 1/2 FLAT                       | 2    |
| 4.  | 52714179 | ARM, ADJUSTABLE 6X4 CRANK             | 1    |
| 5.  | 52714180 | ARM, STATIONARY 6X4 CRANK             | 1    |
| 6.  | 60010351 | SPRING "T" PIN                        | 1    |
| 7.  | 72060105 | CAP SCR 1/2-13X7 HHGR5                | 1    |
| 8.  | 72062080 | NUT 1/2-13 HEX NYLOC                  | 1    |
| 9.  | 72063027 | MACHY BUSHING 5/8X14 GA NR            | 2    |
| 10. | 72066185 | COTTER PIN .16 X 1                    | 1    |
| 11. | 52705039 | CRANK WELDMENT (PART OF #1)           | 1REF |
| 12. | 60030099 | ROLLER (PART OF #1)                   | 1REF |
| 13. | 72063003 | WASHER 3/8 WRT (PART OF #1)           | 2REF |
| 14. | 72062103 | NUT 3/8-16 HEX SELF-LOCK (PART OF #1) | 1REF |
| 15. | 52703319 | CRANK HANDLE                          | 1    |
| 16. | 71039096 | CONTROL KNOB                          | 1    |
| 17. | 70392864 | DECAL-DANGER O/R STAND CLEAR          | 2    |
| 18. | 99900644 | MANUAL-AUX O/R                        | 1    |
| 19. | 52703334 | OUTRIGGER HOUSING WELDMENT            | 1    |

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INSTALLATION NOTE:

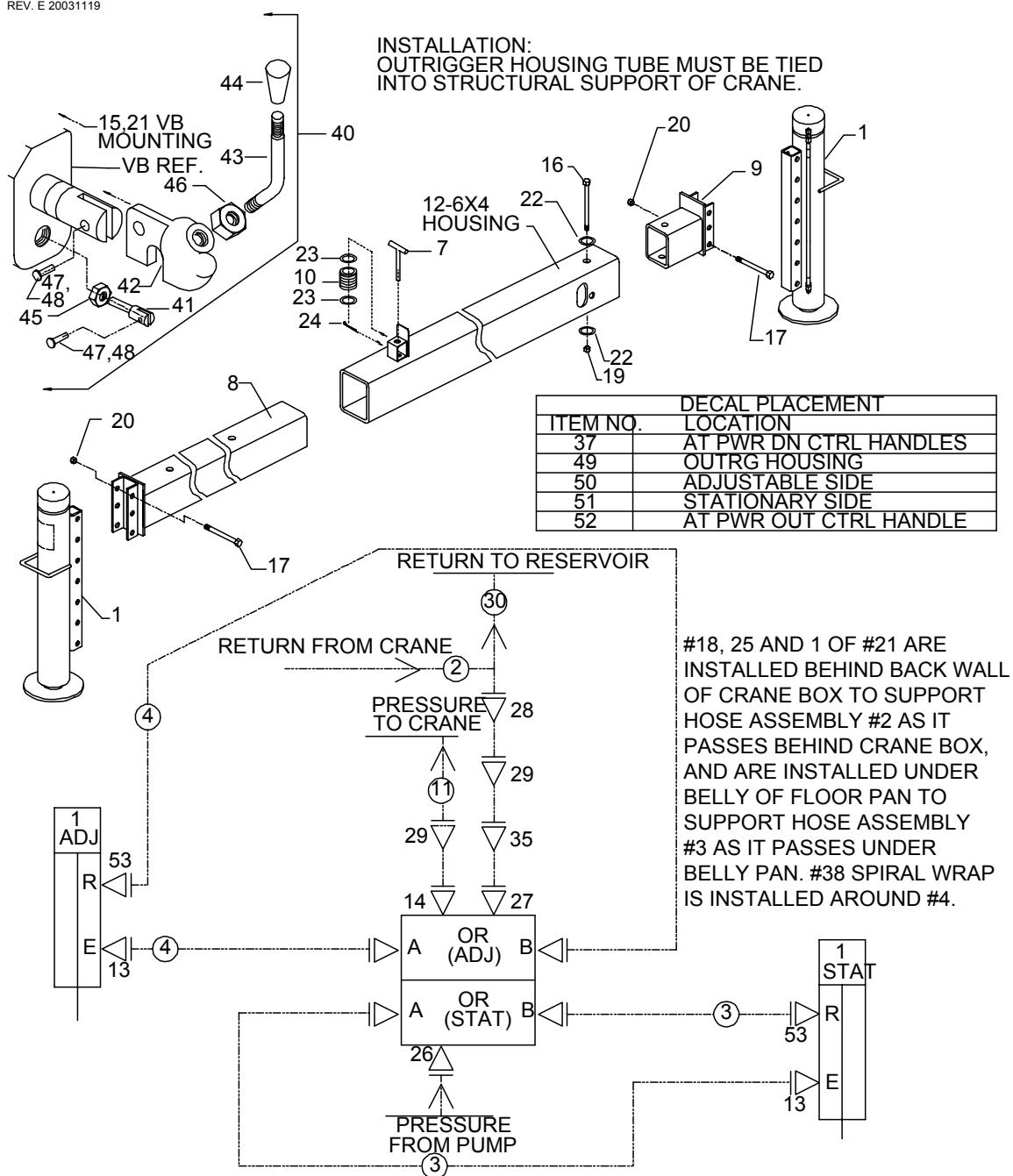
OUTRIGGER HOUSING TUBE MUST BE TIED INTO  
STRUCTURAL SUPPORT OF CRANE.

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## Outrigger, Manual Out/Power Down, 6x4 (31710966)

|     |          |  |      |
|-----|----------|--|------|
| 1.  | 3B205010 | CYLINDER                                 | 2    |
| 2.  | 51395431 | HOSE-FJ 1/2X98 OAL                       | 1    |
| 3.  | 51395552 | HOSE-FJ 1/4X135 OAL                      | 2    |
| 4.  | 51396280 | HOSE-FJ 1/4X96 OAL                       | 2    |
| 5.  | 51714813 | VALVE BANK, 2 SECT (INCLUDES #40)        | 1    |
| 7.  | 52070138 | PIN WELDMENT                             | 1    |
| 8.  | 52705725 | ARM, ADJUSTABLE                          | 1    |
| 9.  | 52705726 | ARM, STATIONARY                          | 1    |
| 10. | 60010351 | SPRING "T" PIN                           | 1    |
| 11. | 51396184 | HOSE-FF 1/2X159                          | 1    |
| 12. | 52703334 | HOUSING, OR 6X4                          | 1    |
| 13. | 72053758 | ELBOW #4MSTR #4MJIC 90°                  | 2    |
| 14. | 72053764 | ELBOW #10MSTR #8MJIC 90°                 | 1    |
| 15. | 72060025 | CAP SCR 5/16-18X1 HHGR5Z                 | 3    |
| 16. | 72601760 | CAP SCR 1/2-13X7 HHGR8                   | 1    |
| 17. | 72060155 | CAP SCR 5/8-11X3.5 HHGR5                 | 4    |
| 18. | 72060833 | SCR-THD CUT 5/16-18X3/4 HWH-1 (SEE NOTE) | 2    |
| 19. | 72062080 | NUT 1/2-13 HEX NYLOC                     | 1    |
| 20. | 72062091 | NUT 5/8-11 HEX NYLOC                     | 4    |
| 21. | 72063002 | WASHER 5/16 FLAT                         | 5    |
| 22. | 72063005 | WASHER 1/2 FLAT                          | 2    |
| 23. | 72063027 | MACHY BUSHING 5/8X14 GA NR               | 2    |
| 24. | 72066185 | COTTER PIN                               | 1    |
| 25. | 72066582 | CLAMP-UMP 20 (SEE NOTE)                  | 2    |
| 26. | 72532358 | ADPTR #8MSTR #8MJIC                      | 1    |
| 27. | 72532365 | ADPTR #10MSTR #12MJIC                    | 1    |
| 28. | 72532657 | TEE-SWIVEL NUT RUN 3/4 JIC               | 1    |
| 29. | 72532658 | ELBOW #8MJIC #8FJIC SW                   | 1    |
| 30. | 51396282 | HOSE-FF 3/4X51 OAL (12-12)               | 1    |
| 35. | 72532972 | ADPTR #8MJIC #12FJIC                     | 1    |
| 37. | 76391511 | DECAL-UP & DOWN STAB. R&L                | 1    |
| 38. | 89034049 | SPIRAL WRAP, BLK (SEE NOTE)              | 4'   |
| 39. | 99900644 | MANUAL-AUX OUTRIGGER                     | 1    |
| 40. | 51731580 | HANDLE ASM (INCL. 34-41) (PART OF 5)     | 2REF |
| 41. | 70142648 | PIVOT-LEVER (PART OF #40)                | 2REF |
| 42. | 70142650 | LEVER SUPPORT (PART OF #40)              | 2REF |
| 43. | 70142651 | LEVER-CONTROL HANDLE (PART OF #40)       | 2REF |
| 44. | 71392269 | KNOB-CONTROL HANDLE (PART OF #40)        | 2REF |
| 45. | 72062021 | NUT 5/16-18 HEX JAM (PART OF #40)        | 2REF |
| 46. | 72062024 | NUT 1/2-13 HEX JAM (PART OF #40)         | 2REF |
| 47. | 72066162 | COTTER PIN (PART OF #40)                 | 4REF |
| 48. | 72661204 | CLEVIS PIN (PART OF #40)                 | 4REF |
| 49. | 70392864 | DECAL-DANGER O/R STAND CLEAR             | 2    |
| 50. | 70392867 | DECAL-DANGER O/R MOVING                  | 1    |
| 51. | 71392257 | DECAL-O/R POWER DOWN SS                  | 1    |
| 52. | 71392277 | DECAL-O/R POWER OUT                      | 1    |
| 53. | 72533567 | ELBOW #4MSTR #4MJIC XLG                  | 2    |

REV. E 20031119

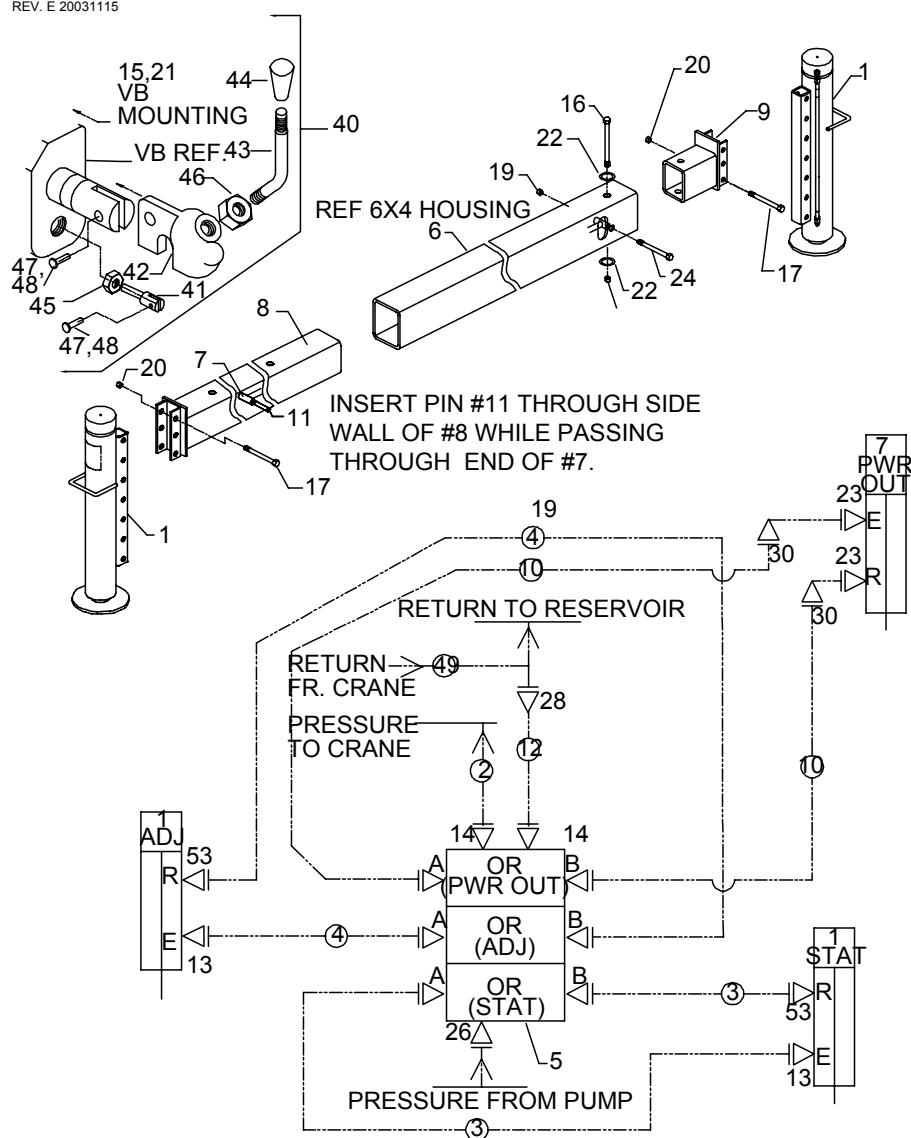


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## Outrigger, Power Out/Power Down, 6x4 (31710967)

|     |          |   |      |
|-----|----------|---|------|
| 1.  | 3B205010 | CYLINDER, POWER DOWN LEG                    | 2    |
| 2.  | 51394917 | HOSE-FF 1/2X137 OAL (8-8)                   | 1    |
| 3.  | 51395552 | HOSE-FJ 1/4X135 OAL (4-4)                   | 2    |
| 4.  | 51396280 | HOSE-FJ 1/4X96 OAL (4-4)                    | 2    |
| 5.  | 51714812 | VALVEBANK ASM - 3 SECTION                   | 1    |
| 6.  | 52703334 | TUBE - POWER OUT                            | 1    |
| 7.  | 3B142860 | CYLINDER, POWER OUT                         | 1    |
| 8.  | 52705725 | ARM, ADJUSTABLE                             | 1    |
| 9.  | 52705726 | ARM, STATIONARY                             | 1    |
| 10. | 51396281 | HOSE-FJ 1/4X107 OAL (4-4)                   | 2    |
| 11. | 72661473 | PIN, SPRING 1/2X3                           | 1    |
| 12. | 51395412 | HOSE-FJ 1/2X63 OAL (8-8)                    | 1    |
| 13. | 72053758 | ELBOW #4MSTR #4MJIC 90°                     | 2    |
| 14. | 72532358 | ADPTR #8MSTR #8MJIC                         | 1    |
| 15. | 72060025 | CAP SCR 5/16-18X1 HHGR5Z                    | 3    |
| 16. | 72601760 | CAP SCR 1/2-13X7 HHGR8                      | 1    |
| 17. | 72060155 | CAP SCR 5/8-11 X 3.50 HHGR5Z                | 4    |
| 18. | 72060833 | SCR- THD CUT 5/16-18 X 3/4 HWH-1 (SEE NOTE) | 2    |
| 19. | 72062080 | NUT 1/2-13 HEX NYLOC                        | 2    |
| 20. | 72062091 | NUT 5/8-11 HEX NYLOC                        | 4    |
| 21. | 72063002 | WASHER 5/16 FLAT                            | 5    |
| 22. | 72063005 | WASHER 1/2 FLAT                             | 2    |
| 23. | 72532351 | ADPTR #4MSTR #4MJIC                         | 4    |
| 24. | 72060101 | CAP SCR 1/2-13 X 5 HHGR5                    | 1    |
| 25. | 72066582 | CLAMP UMP 20 (SEE NOTE)                     | 2    |
| 26. | 72532358 | ADPTR #8MSTR #8MJIC                         | 1    |
| 28. | 72532657 | TEE-#8JIC SWVL NUT RUN                      | 1    |
| 30. | 72532690 | ELBOW #4MJIC #4FJIC SW                      | 2    |
| 36. | 71392277 | DECAL-OUTRIGGER POWER OUT                   | 1    |
| 37. | 76391511 | DECAL-UP & DOWN STAB. R&L                   | 1    |
| 38. | 89034049 | SPIRAL WRAP, BLK (SEE NOTE)                 | 4'   |
| 39. | 99900644 | MANUAL-AUX OUTRIGGER                        | 1    |
| 40. | 51731580 | HANDLE ASM (INCL. 34-41) (PART OF 5)        | 2REF |
| 41. | 70142648 | PIVOT-LEVER (PART OF #40)                   | 2REF |
| 42. | 70142650 | LEVER SUPPORT (PART OF #40)                 | 2REF |
| 43. | 70142651 | LEVER-CONTROL HANDLE (PART OF #40)          | 2REF |
| 44. | 71392269 | KNOB-CONTROL HANDLE (PART OF #40)           | 2REF |
| 45. | 72062021 | NUT 5/16-18 HEX JAM (PART OF #40)           | 2REF |
| 46. | 72062024 | NUT 1/2-13 HEX JAM (PART OF #40)            | 2REF |
| 47. | 72066162 | COTTER PIN (PART OF #40)                    | 4REF |
| 48. | 72661204 | CLEVIS PIN (PART OF #40)                    | 4REF |
| 49. | 51395431 | HOSE-FF 1/2X98 OAL (8-8)                    | 1    |
| 50. | 70392864 | DECAL-DANGER OR STAND CLEAR                 | 2    |
| 51. | 73092867 | DECAL-DANGER OR MOVING                      | 1    |
| 52. | 71392257 | DECAL-OR POWER DN SS                        | 1    |
| 53. | 72533567 | ELBOW #4MSTR #4MJIC XLG                     | 2    |

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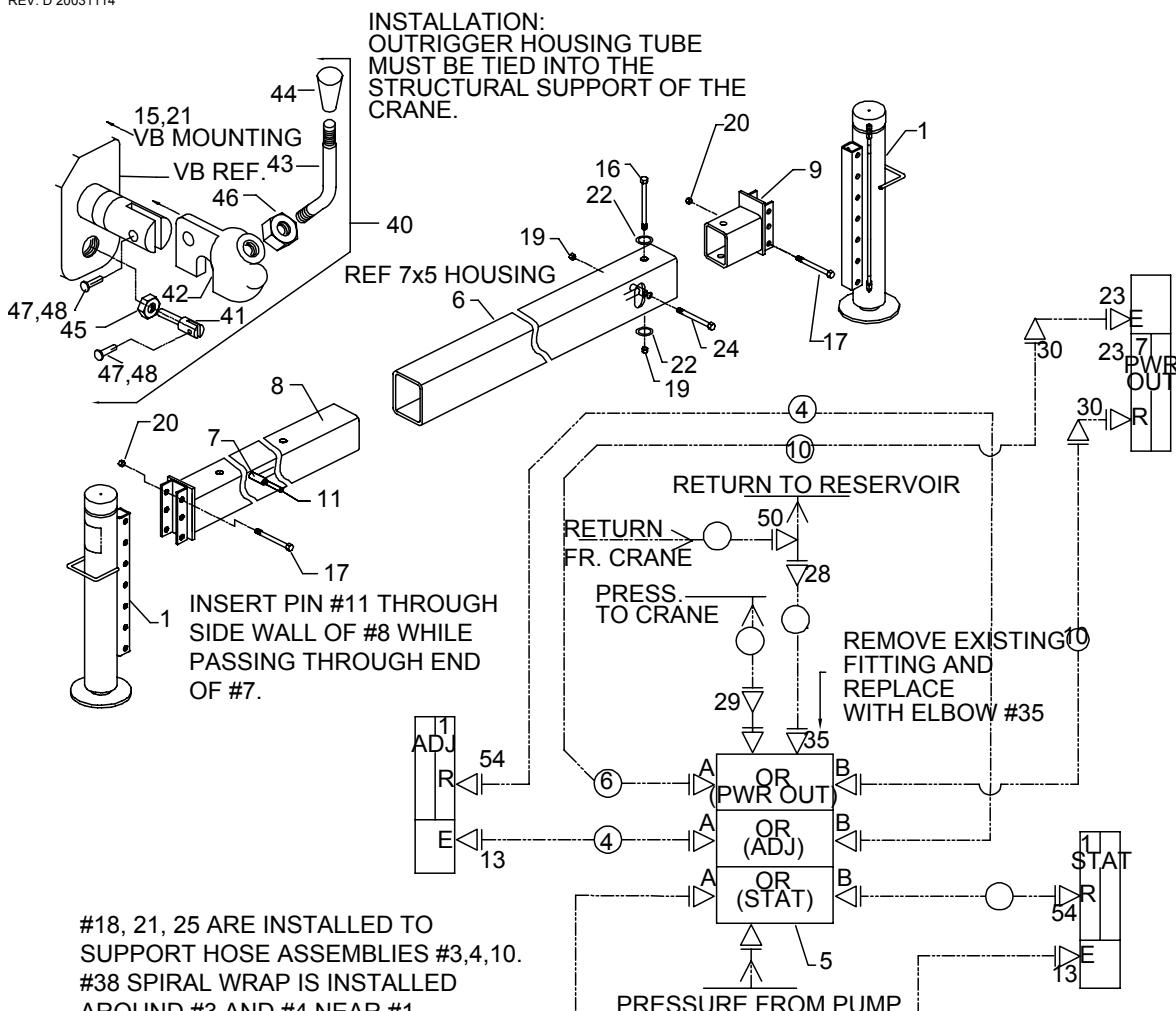
#18, 21, 25 ARE INSTALLED TO  
SUPPORT HOSE ASSEMBLIES #3,4,10.  
#38 SPIRAL WRAP IS INSTALLED AROUND #3 AND #4 NEAR #1.

| DECAL PLACEMENT |                        |
|-----------------|------------------------|
| ITEM            | LOCATION               |
| 36              | AT P/O CONTROL HANDLE  |
| 37              | AT P/D CONTROL HANDLES |
| 50              | O/R HOUSING            |
| 51              | ADJUSTABLE SIDE        |
| 52              | STATIONARY SIDE        |

## Outrigger, Power Out/Power Down, 7x5 (31712739)

|     |          |   |      |
|-----|----------|---|------|
| 1.  | 3B205010 | CYLINDER                                  | 2    |
| 2.  | 51396184 | HOSE-FF 1/2X159 OAL (8-8)                 | 1REF |
| 3.  | 51395164 | HOSE-FJ 1/4X135 OAL (4-4)                 | 2REF |
| 4.  | 51396280 | HOSE-FJ 1/4X96 OAL (4-4)                  | 2REF |
| 5.  | 51714812 | VALVEBANK ASM                             | 1    |
| 6.  | 60118680 | TUBE-OUTRIGGER HOUSING POWER OUT          | 1REF |
| 7.  | 3B142860 | CYLINDER, POWER OUT                       | 1    |
| 8.  | 52712735 | ARM, ADJUSTABLE                           | 1    |
| 9.  | 52712736 | ARM, STATIONARY                           | 1    |
| 10. | 51396281 | HOSE-FJ 1/4X107 OAL (4-4) (PART OF #55)   | 2REF |
| 11. | 72661472 | PIN-SPRING 1/2X4                          | 1    |
| 12. | 51396282 | HOSE-FF 3/4 X51 OAL (12-12) (PART OF #55) | 1REF |
| 13. | 72053758 | ELBOW #4MSTR #4MJIC 90°                   | 2    |
| 15. | 72060025 | CAP SCR 5/16-18X1 HHGR5Z                  | 3    |
| 16. | 72060107 | CAP SCR 1/2-13X8 HHGR5                    | 1    |
| 17. | 72060155 | CAP SCR 5/8-11X3.5 HHGR5                  | 4    |
| 18. | 72060833 | SCR-THD CUT 5/16-18X3/4 HWH-1 (SEE NOTE)  | 2    |
| 19. | 72062080 | NUT 1/2-13 HEX NYLOC                      | 2    |
| 20. | 72062091 | NUT 5/8-11 HEX NYLOC                      | 4    |
| 21. | 72063002 | WASHER 5/16 FLAT                          | 5    |
| 22. | 72063005 | WASHER 1/2 FLAT                           | 2    |
| 23. | 72532351 | ADPTR #4MSTR #4MJIC                       | 4    |
| 24. | 72601297 | CAP SCR 1/2-13 X 5.75 HH GR5              | 1    |
| 25. | 72066582 | CLAMP-UMP 20 (SEE NOTE)                   | 2    |
| 28. | 72531205 | TEE-MALE JIC 3/4-16 1/2 TUBE              | 1    |
| 29. | 72532658 | ELBOW #8MJIC #8FJIC SW                    | 1    |
| 30. | 72532690 | ELBOW #4MJIC #4FJIC SW                    | 2    |
| 35. | 72533623 | ELBOW #8MSTR #12MJIC 90°                  | 1    |
| 36. | 71392277 | DECAL-OUTRIGGER POWER OUT                 | 1    |
| 37. | 76391511 | DECAL-UP & DOWN STAB. R&L                 | 1    |
| 38. | 89034049 | SPIRAL WRAP, BLK (SEE NOTE)               | 4'   |
| 39. | 99900644 | MANUAL-AUX OUTRIGGER                      | 1    |
| 40. | 51731580 | HANDLE ASM (INCL. 34-41) (PART OF 5)      | 2REF |
| 41. | 70142648 | PIVOT-LEVER (PART OF #40)                 | 2REF |
| 42. | 70142650 | LEVER SUPPORT (PART OF #40)               | 2REF |
| 43. | 70142651 | LEVER-CONTROL HANDLE (PART OF #40)        | 2REF |
| 44. | 71392269 | KNOB-CONTROL HANDLE (PART OF #40)         | 2REF |
| 45. | 72062021 | NUT 5/16-18 HEX JAM (PART OF #40)         | 2REF |
| 46. | 72062024 | NUT 1/2-13 HEX JAM (PART OF #40)          | 2REF |
| 47. | 72066162 | COTTER PIN (PART OF #40)                  | 4REF |
| 48. | 72661204 | CLEVIS PIN (PART OF #40)                  | 4REF |
| 49. | 51395431 | HOSE-FF 1/2X96 OAL (8-8) (PART OF #55)    | 1REF |
| 50. | 72532972 | ADPTR #8MJIC #12FJIC                      | 1    |
| 51. | 70392864 | DECAL-DANGER O/R STAND CLEAR              | 2    |
| 52. | 70392867 | DECAL-DANGER O/R MOVING                   | 1    |
| 53. | 71392257 | DECAL-DANGER POWER DOWN SS                | 1    |
| 54. | 72533567 | ELBOW #4MSTR #4MJIC XLG                   | 2    |
| 55. | 51717834 | HOSE KIT - O/R PO/PD (7X5)                | 1    |

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| DECAL PLACEMENT |                        |
|-----------------|------------------------|
| ITEM            | LOCATION               |
| 36              | AT P/O CONTROL HANDLE  |
| 37              | AT P/D CONTROL HANDLES |
| 51              | O/R HOUSING            |
| 52              | ADJUSTABLE SIDE        |
| 53              |                        |

## Outrigger, Manual Out/Power Down, 7x5 (31712740)

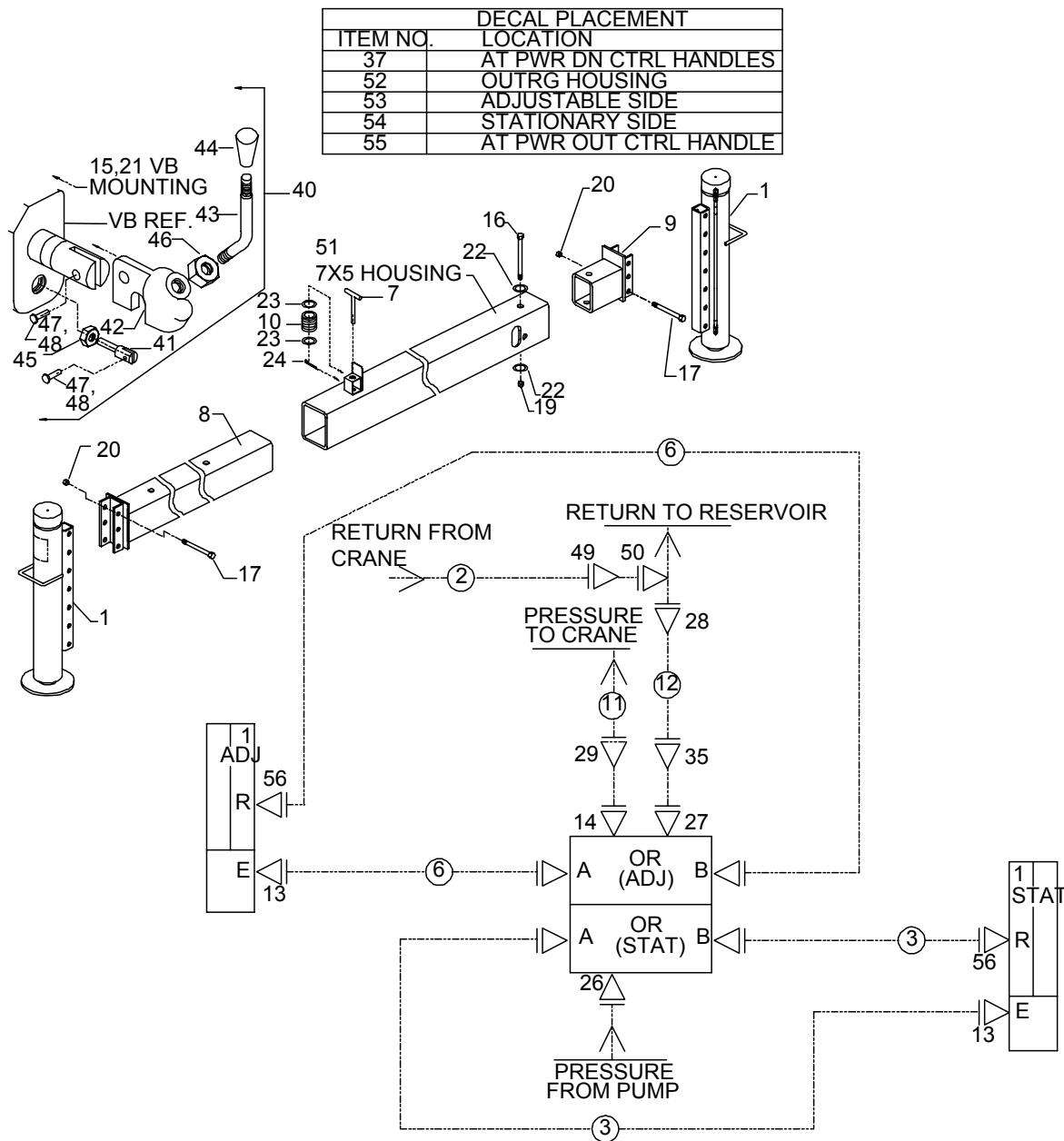
|     |          |   |      |
|-----|----------|---|------|
| 1.  | 3B205010 | CYLINDER                                  | 2    |
| 2.  | 51394931 | HOSE-FF 1/2X98 OAL                        | 1    |
| 3.  | 51395552 | HOSE-FJ 1/4X135 OAL                       | 2    |
| 5.  | 51714813 | VALVE BANK, 2 SECT (INCLUDES #40)         | 1    |
| 6.  | 51396280 | HOSE-FJ 1/4X96                            | 2    |
| 7.  | 52070138 | PIN WELDMENT                              | 1    |
| 8.  | 52712735 | ARM, ADJUSTABLE                           | 1    |
| 9.  | 52712736 | ARM, STATIONARY                           | 1    |
| 10. | 60010351 | SPRING "T" PIN                            | 1    |
| 11. | 51396184 | HOSE-FF 1/2X159 OAL (8-8) (PART OF #51)   | 1    |
| 12. | 51396282 | HOSE-FF 3/4 X51 OAL (12-12) (PART OF #51) | 1    |
| 13. | 72053758 | ELBOW #4MSTR #4MJIC 90°                   | 2    |
| 14. | 72053764 | ELBOW #10MSTR #8MJIC 90°                  | 1    |
| 15. | 72060025 | CAP SCR 5/16-18X1 HHGR5Z                  | 3    |
| 16. | 72060107 | CAP SCR 1/2-13X8 HHGR5                    | 1    |
| 17. | 72060155 | CAP SCR 5/8-11X3.5 HHGR5                  | 4    |
| 18. | 72060833 | SCR-THD CUT 5/16-18X3/4 HWH-1 (SEE NOTE)  | 2    |
| 19. | 72062080 | NUT 1/2-13 HEX NYLOC                      | 1    |
| 20. | 72062091 | NUT 5/8-11 HEX NYLOC                      | 4    |
| 21. | 72063002 | WASHER 5/16 FLAT                          | 5    |
| 22. | 72063005 | WASHER 1/2 FLAT                           | 2    |
| 23. | 72063027 | MACHY BUSHING 5/8X14 GA NR                | 2    |
| 24. | 72066185 | COTTER PIN                                | 1    |
| 25. | 72066582 | CLAMP-UMP 20 (SEE NOTE)                   | 2    |
| 26. | 72532358 | ADPTR #8MSTR #8MJIC                       | 1    |
| 27. | 72532365 | ADPTR #10MSTR #12MJIC                     | 1    |
| 28. | 72531205 | TEE-MALE JIC 3/4-16 1/2 TUBE              | 1    |
| 29. | 72532658 | ELBOW #8MJIC #8FJIC SW                    | 1    |
| 35. | 72532696 | ELBOW #12MJIC #12FJIC SW                  | 1    |
| 37. | 76391511 | DECAL-UP & DOWN STAB. R&L                 | 1    |
| 38. | 89034049 | SPIRAL WRAP, BLK (SEE NOTE)               | 4'   |
| 39. | 99900644 | MANUAL-AUX OUTRIGGER                      | 1    |
| 40. | 51731580 | HANDLE ASM (INCL. 34-41) (PART OF 5)      | 2REF |
| 41. | 70142648 | PIVOT-LEVER (PART OF #40)                 | 2REF |
| 42. | 70142650 | LEVER SUPPORT (PART OF #40)               | 2REF |
| 43. | 70142651 | LEVER-CONTROL HANDLE (PART OF #40)        | 2REF |
| 44. | 71392269 | KNOB-CONTROL HANDLE (PART OF #40)         | 2REF |
| 45. | 72062021 | NUT 5/16-18 HEX JAM (PART OF #40)         | 2REF |
| 46. | 72062024 | NUT 1/2-13 HEX JAM (PART OF #40)          | 2REF |
| 47. | 72066162 | COTTER PIN (PART OF #40)                  | 4REF |
| 48. | 72661204 | CLEVIS PIN (PART OF #40)                  | 4REF |
| 49. | 72532972 | ADPTR #8MJIC #12FJIC                      | 1    |
| 50. | 72532980 | ADTPR PR SW IN-LINE JIC 3/4               | 1    |
| 51. | 52712734 | O/R HOUSING 7X5                           | 1    |
| 52. | 70392864 | DECAL-DANGER O/R STAND CLEAR              | 2    |
| 53. | 70392867 | DECAL-DANGER O/R (MOVING)                 | 1    |
| 54. | 71392257 | DECAL-O/R POWER DOWN SS                   | 1    |
| 55. | 71392277 | DECAL-O/R POWER OUT                       | 1    |
| 56. | 72533567 | ELBOW #4MSTR #4MJIC XLG                   | 2    |

REV. E 20031117

INSTALLATION NOTE: TIE OUTRIGGER HOUSING TUBE INTO STRUCTURAL SUPPORT OF CRANE.

#18, 25, AND 1 OF #21 ARE INSTALLED BEHIND BACK WALL OF CRANE BOX TO SUPPORT HOSE ASSEMBLY #2 AS IT PASSES BEHIND CRANE BOX AND UNDER BELLY PAN OF FLOOR TO SUPPORT HOSE ASSEMBLY #3 AS IT PASSES UNDER BELLY PAN.

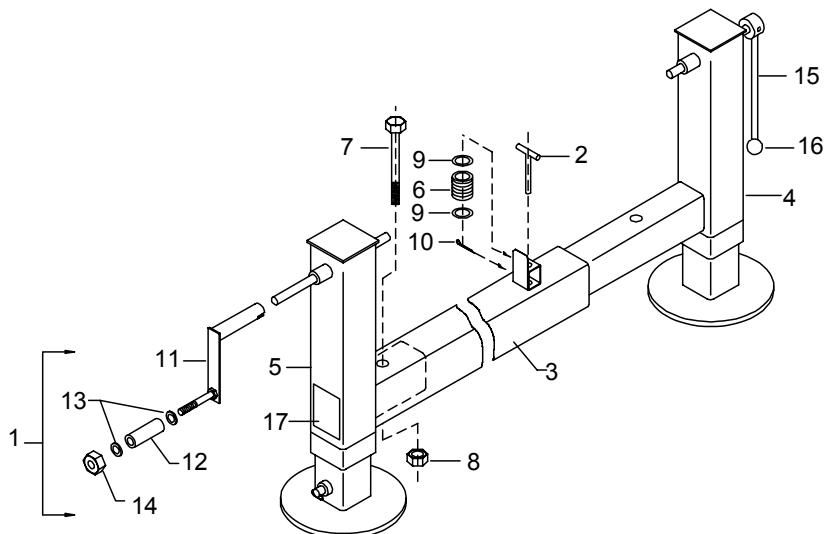
#38 SPIRAL WRAP IS INSTALLED AROUND #3 AND #4.



## Outrigger, Manual Out/Crank Down, 7x5 (31712741)

|     |          |                                       |      |
|-----|----------|---------------------------------------|------|
| 1.  | 51705040 | CRANK ASM (INCL. 11-14)               | 1    |
| 2.  | 52070138 | PIN WELDMENT - "T"                    | 1    |
| 3.  | 52712734 | O/R HOUSING 7X5                       | 1    |
| 4.  | 52712737 | ARM-O/R ADJ. MAN OUT/CRANK DOWN       | 1    |
| 5.  | 52712738 | ARM-STAT MAN OUT/CRANK DOWN           | 1    |
| 6.  | 60010351 | SPRING-"T" PIN                        | 1    |
| 7.  | 72060107 | CAP SCR 1/2-13X8 HHGR5                | 1    |
| 8.  | 72062080 | NUT 1/2-13 HEX NYLOC                  | 1    |
| 9.  | 72063007 | WASHER 5/8 FLAT                       | 2    |
| 10. | 72066185 | COTTER PIN                            | 1    |
| 11. | 52705039 | CRANK WELDMENT (PART OF #1)           | 1REF |
| 12. | 60030099 | ROLLER (PART OF #1)                   | 1REF |
| 13. | 72063003 | WASHER 3/8 WRT (PART OF #1)           | 2REF |
| 14. | 72062103 | NUT 3/8-16 HEX SELF-LOCK (PART OF #1) | 1REF |
| 15. | 52703319 | CRANK HANDLE                          | 1    |
| 16. | 71039096 | CONTROL KNOB                          | 1    |
| 17. | 70392864 | DECAL-DANGER O/R STAND CLEAR          | 2    |

NEW 20031117



## NOTE:

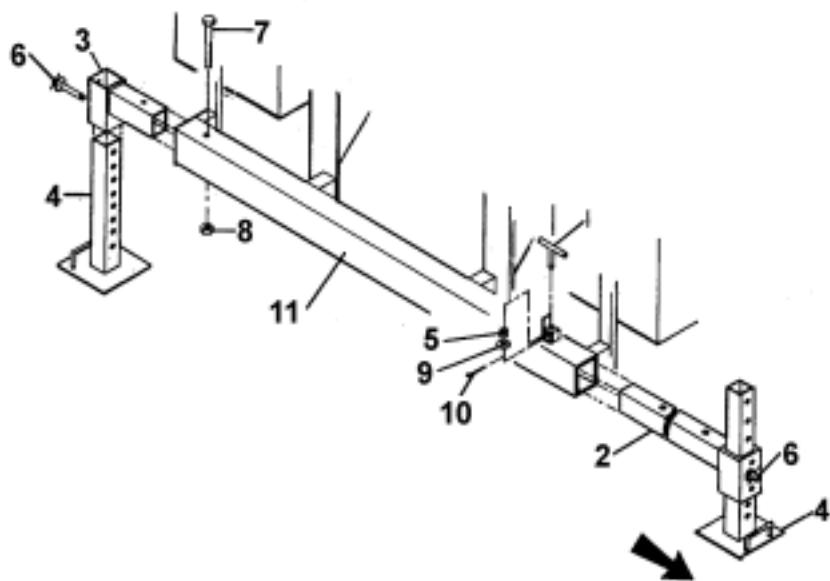
- 1 TIE OUTRIGGER HOUSING TUBE INTO STRUCTURAL SUPPORT OF CRANE.

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## Outrigger, Manual Out/Manual Down, 7x5 (31712902)

|     |          |                        |   |
|-----|----------|------------------------|---|
| 1.  | 52070138 | PIN WELDMENT "T"       | 1 |
| 2.  | 52712889 | ADJUSTABLE ARM         | 1 |
| 3.  | 52712890 | STATIONARY ARM         | 1 |
| 4.  | 52703353 | OUTRIGGER LEG          | 2 |
| 5.  | 60010351 | SPRING                 | 1 |
| 6.  | 71731361 | QUICK RELEASE "T" PIN  | 2 |
| 7.  | 72060107 | CAP SCR 1/2-13X8 HHGR5 | 1 |
| 8.  | 72062080 | NUT 1/2-13 NYLOC       | 1 |
| 9.  | 72063007 | WASHER 5/8 WRT         | 1 |
| 10. | 72066185 | COTTER PIN             | 1 |
| 11. | 52712734 | O/R HOUSING 7X5        | 1 |

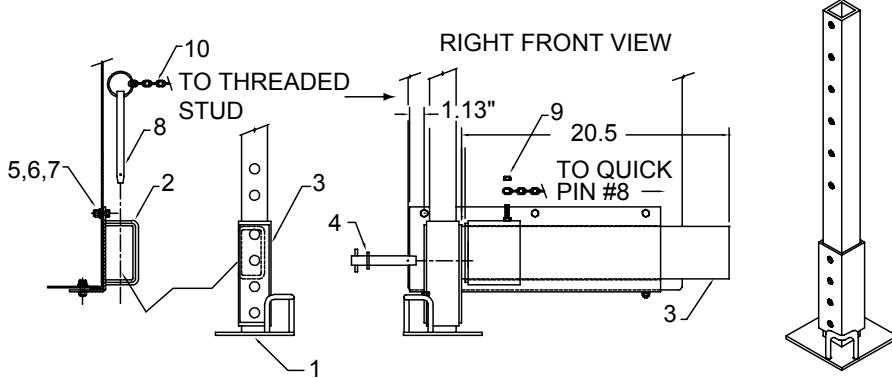
REV. A 20031117



## Outrigger, Front Right Pull-Out (51714110)

|     |          |                             |   |
|-----|----------|-----------------------------|---|
| 1.  | 52714182 | OUTRIGGER LEG               | 1 |
| 2.  | 52715282 | OUTRIGGER HOUSING, PULL-OUT | 1 |
| 3.  | 52715283 | OUTRIGGER ARM               | 1 |
| 4.  | 71731372 | PIN, QUICK RELEASE          | 1 |
| 5.  | 72060046 | CAP SCR 3/8-16X1 HHGR5      | 5 |
| 6.  | 72062103 | NUT 3/8-16 LOCK             | 5 |
| 7.  | 72063003 | WASHER 3/8 LOCK             | 5 |
| 8.  | 71733327 | PIN, QUICK-RELEASE          | 1 |
| 9.  | 72062104 | NUT 1/4-20 HEX NYLOC        | 1 |
| 10. | 60114940 | CHAIN - 1/8X9"              | 1 |

REV. E 20040114



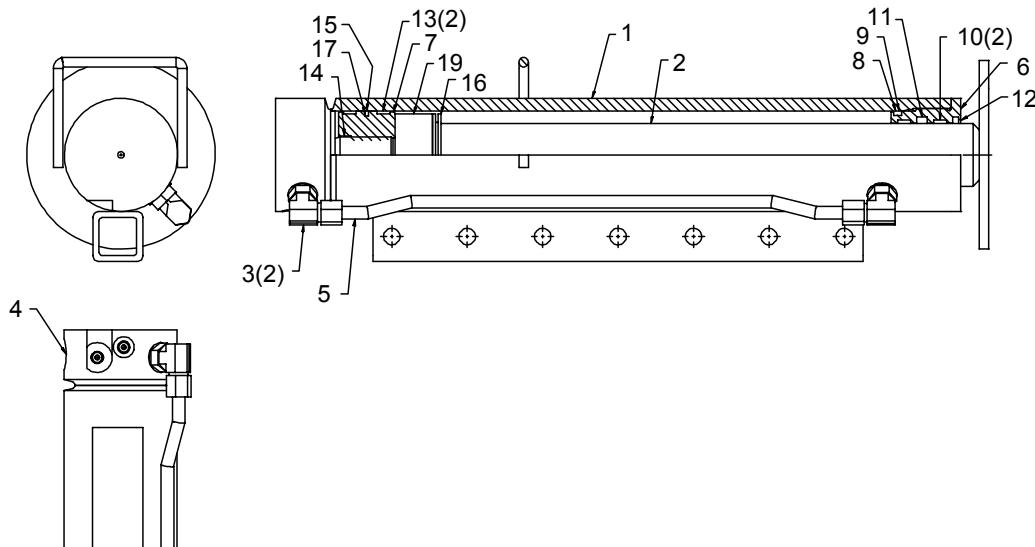
## Cylinder, Power Down (3B205010)

|     |          |                       |      |
|-----|----------|-----------------------|------|
| 1.  | 4B205010 | CASE ASY              | 1    |
| 2.  | 4G048870 | ROD ASY               | 1    |
| 3.  | 72053763 | ELL #8MSTR #8MJIC 90° | 1    |
| 4.  | 73054681 | CHECK VALVE           | 1    |
| 5.  | 5P288970 | PORT TUBE             | 1    |
| 6.  | 6HD35025 | HEAD                  | 1    |
| 7.  | 6ID35125 | PISTON                | 1    |
| 8.  | 7Q072338 | O-RING                | 1REF |
| 9.  | 7Q10P338 | BACKUP RING           | 1REF |
| 10. | 7T2NX427 | WEAR RING             | 2REF |
| 11. | 7R546025 | U-CUP SEAL            | 1REF |
| 12. | 7R14P025 | ROD WIPER             | 1REF |
| 13. | 7T2NX435 | PISTON RING           | 2REF |
| 14. | 7T61N125 | NYLON LOCK RING       | 1REF |
| 15. | 7T66P035 | PISTON SEAL           | 1REF |
| 16. | 6A025025 | WAFER LOCK            | 1REF |
| 17. | 7Q072151 | O-RING                | 1REF |
| 18. | 9D142020 | SEAL KIT (INCL. 8-17) | 1    |
| 19. | 6C015025 | STOP TUBE             | 1    |

REV. A 20040115

## NOTE:

- 1 TO REDUCE DOWNTIME, REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED.
- 2 APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.
- 3 USE ANTI-SEIZE LUBRICATING COMPOUND OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

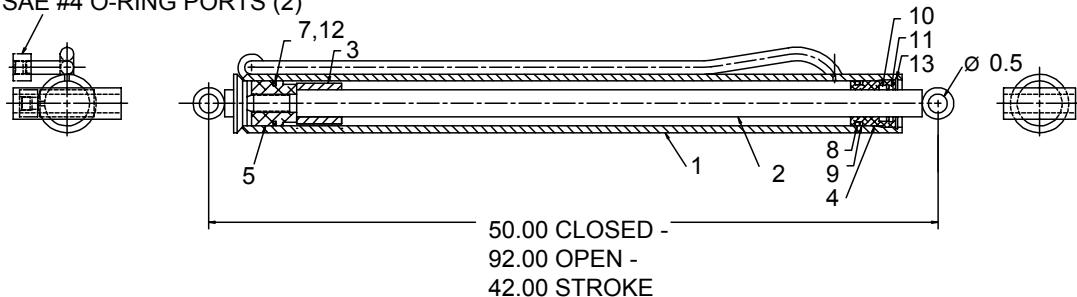


## Cylinder, Power Out (3B142860)

|     |          |                |     |
|-----|----------|----------------|-----|
| 1.  | 4B142860 | CASE ASM       | 1   |
| 2.  | 4G142860 | ROD ASM        | 1   |
| 3.  | 6C125007 | STOP TUBE      | 1   |
| 4.  | 6H012007 | HEAD           | 1   |
| 5.  | 6I012050 | PISTON         | 1   |
| 6.  | 9B050608 | SEAL KIT       | REF |
| 7.  | 7Q072021 | O-RING         | 1   |
| 8.  | 7Q072214 | O-RING         | 1   |
| 9.  | 7Q10P214 | BACKUP RING    | 1   |
| 10. | 7R100750 | U-CUP SEAL     | 1   |
| 11. | 7R13P007 | ROD WIPER      | 1   |
| 12. | 7T66P012 | PISTON SEAL    | 1   |
| 13. | 72066029 | RETAINING RING | 1   |

REV. B 20040202

SAE #4 O-RING PORTS (2)

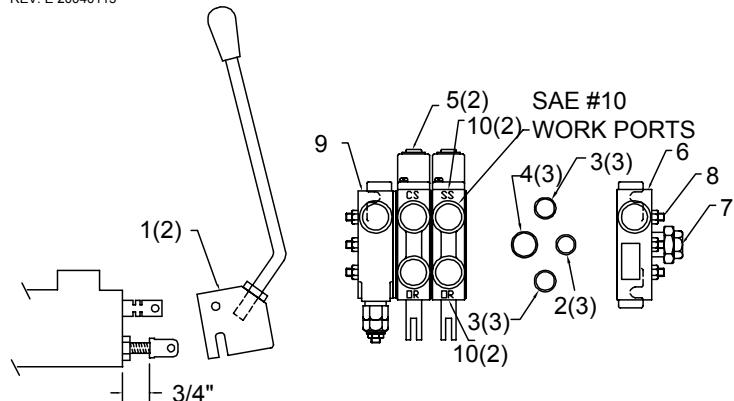
**NOTES:**

- 1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.
- 2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.
- 3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

## Valve Bank, 2-Section (51705983)

|     |          |                      |   |
|-----|----------|----------------------|---|
| 1.  | 73540073 | LEVER ASM            | 2 |
| 2.  | 7Q072017 | O-RING SM            | 3 |
| 3.  | 7Q072018 | O-RING MED           | 6 |
| 4.  | 7Q072021 | O-RING LG            | 3 |
| 5.  | 73540074 | VALVE SECTION 4-WAY  | 2 |
| 6.  | 73540075 | END COVER RH         | 1 |
| 7.  | 73540076 | POWER BEYOND ADAPTER | 1 |
| 8.  | 73540078 | TIE ROD KIT (2 SECT) | 1 |
| 9.  | 73540077 | END COVER-LH         | 1 |
| 10. | 7Q072114 | O-RING               | 4 |

REV. E 20040115

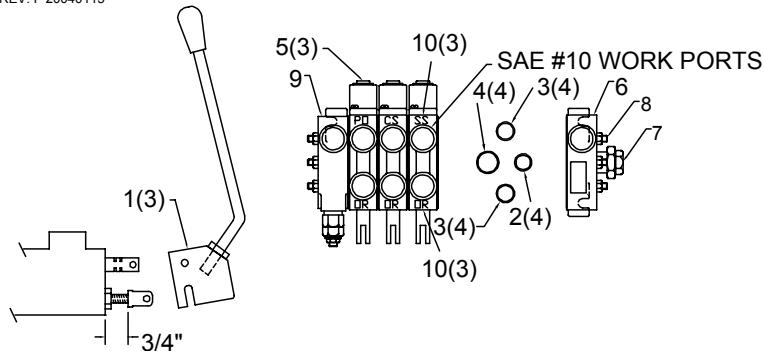


FOR OUTRIGGER VALVE BANK LEVER PIVOT BOLT MUST BE HELD OUT 3/4" SO HANDLE TIPS IN AS SHOWN.

## Valve Bank, 2-Section (51705984)

|     |          |                      |   |
|-----|----------|----------------------|---|
| 1.  | 73540073 | HANDLE ASM           | 3 |
| 2.  | 7Q072017 | O-RING SM            | 4 |
| 3.  | 7Q072018 | O-RING MED           | 8 |
| 4.  | 7Q072021 | O-RING LG            | 4 |
| 5.  | 73540074 | VALVE SECTION        | 3 |
| 6.  | 73540075 | END COVER RH         | 1 |
| 7.  | 73540076 | POWER BEYOND ADAPTER | 1 |
| 8.  | 73540079 | TIE ROD KIT          | 1 |
| 9.  | 73540077 | END COVER LH         | 1 |
| 10. | 7Q072114 | O-RING               | 6 |

REV. F 20040115



FOR OUTRIGGER VALVE BANK LEVER, PIVOT BOLT MUST BE HELD OUT 3/4" SO HANDLE TIPS IN AS SHOWN.

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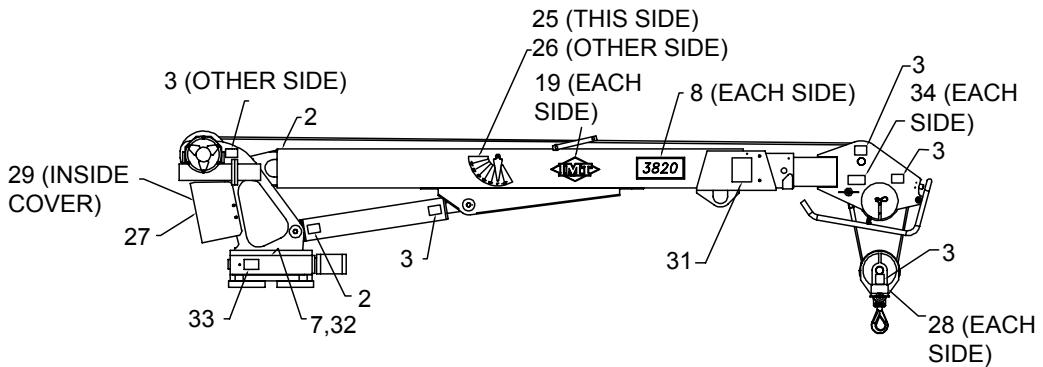
## Decal Kits

---

### Decal Kit, 1H 1M (95717149)

|     |          |                             |   |
|-----|----------|-----------------------------|---|
| 1.  | 70391598 | DECAL-WARNING OUTRIGGER     | 2 |
| 2.  | 70391612 | DECAL-GREASE WKLY LH        | 4 |
| 3.  | 70391613 | DECAL-GREASE WKLY RH        | 6 |
| 4.  | 70392108 | DECAL-SUCTION LINE          | 1 |
| 5.  | 70392109 | DECAL-RETURN LINE           | 1 |
| 6.  | 70392213 | DECAL-CAUTION WASH/WAX      | 1 |
| 7.  | 70392524 | DECAL-ROTATE/GREASE         | 1 |
| 8.  | 70394965 | DECAL-3020 IDENTIFICATION   | 2 |
| 9.  | 70394444 | DECAL-DANGER ELECTRO        | 1 |
| 10. | 70392814 | DECAL-DANGER OP TRAINING    | 1 |
| 11. | 70392815 | DECAL-DANGER OPERATION      | 1 |
| 12. | 70392861 | DECAL-DANGER 2-BLOCKING     | 1 |
| 13. | 70392863 | DECAL-DANGER HOIST PERS     | 1 |
| 14. | 70392864 | DECAL-DGR STAND CLEAR       | 2 |
| 15. | 70394445 | DECAL-DANGER ELEC HZD LG    | 4 |
| 16. | 70392866 | DECAL-DGR OPER COND         | 1 |
| 17. | 70392867 | DECAL-DANGER OR MOVING      | 1 |
| 18. | 70392868 | DECAL-DANGER LOADLINE       | 4 |
| 19. | 70022887 | DECAL-IMT DIAMOND           | 2 |
| 20. | 70392888 | DECAL-DANGER OP RESTRICT    | 1 |
| 21. | 70394446 | DECAL-DANGER RC ELECT LG    | 1 |
| 22. | 70392891 | DECAL-DANGER DRIVELINE      | 1 |
| 23. | 70392982 | DECAL-SERVICE&REPAIR        | 1 |
| 24. | 71039134 | DECAL-CAUTION OIL LEVEL     | 1 |
| 25. | 71391522 | DECAL-ANGLE INDICATOR RH    | 1 |
| 26. | 71391523 | DECAL-ANGLE INDICATOR LH    | 1 |
| 27. | 70396245 | CAPACITY PLACARD            | 2 |
| 28. | 71394081 | DECAL-LOAD BLK RTG 3.0 TONS | 2 |
| 29. | 70394166 | DECAL-INSTR MNL OP          | 1 |
| 30. | 70394189 | DECAL-OIL FILL REC          | 1 |
| 31. | 70394443 | DECAL-DGR FALLING BOOM      | 1 |
| 32. | 70392399 | DECAL-LUBE WORM             | 1 |
| 33. | 70395090 | DECAL-GREASE WORM DR        | 1 |
| 34. | 70395670 | DECAL-CAUT. DOWNHAUL WT     | 2 |
| 35. | 70395324 | DECAL-ASME/ANSI B30.5       | 1 |

## 95717149 Drawing



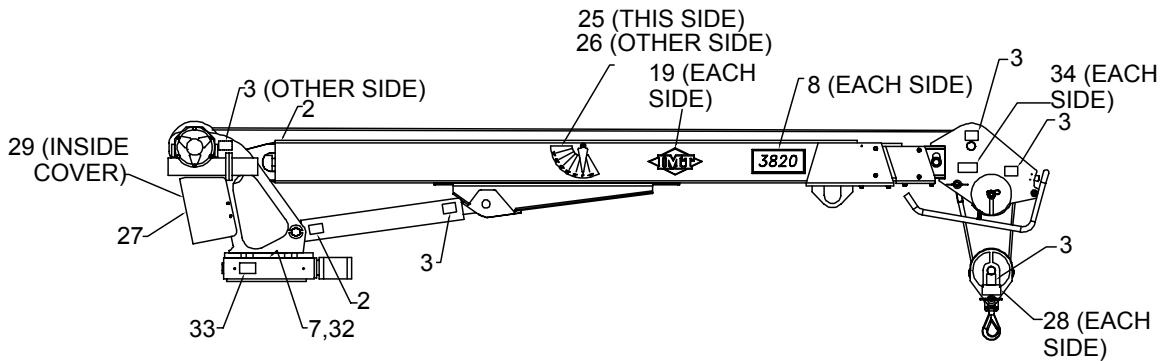
| DECAL PLACEMENT                          |  |
|--|--|
| ITEM NO.                                 | LOCATION                                 |
| 6,9,10,11,12,13,16,<br>17,20,21,23,24,27 | AT OR NEAR REMOTE CONTROL STORAGE POINT. |
| 1,14                                     | ONE ON EACH OUTRIGGER                    |
| 15,18                                    | ONE ON EACH SIDE OF CARRIER VEHICLE      |
| 5  | ON RESERVOIR AT RETURN LINE              |
| 4  | ON RESERVOIR AT SUCTION LINE             |
| 30                                       | AT OR NEAR HYDRAULIC RESERVOIR           |
| 22                                       | AT OR NEAR DRIVELINE                     |

---

## Decal Kit, 2H (95717508)

|     |          |                            |   |
|-----|----------|----------------------------|---|
| 1.  | 70391598 | DECAL-WARN 315A OUTRIG     | 2 |
| 2.  | 70391612 | DECAL-GREASE WEEKLY (LEFT) | 2 |
| 3.  | 70391613 | DECAL-GREASE WEEKLY (RT)   | 5 |
| 4.  | 70392108 | DECAL-SUCTION LINE         | 1 |
| 5.  | 70392109 | DECAL-RETURN LINE          | 1 |
| 6.  | 70392213 | DECAL-CAUT WASH/WAX        | 1 |
| 7.  | 70392524 | DECAL-ROTATE WHILE GREAS   | 1 |
| 8.  | 70395501 | DECAL-3820 IDENTIFICATION  | 2 |
| 9.  | 70394444 | DECAL-DANG ELEC TELES      | 1 |
| 10. | 70392814 | DECAL-DANGER OP TRAINING   | 1 |
| 11. | 70392815 | DECAL-DANGER OPERATION     | 1 |
| 12. | 70392861 | DECAL-DANGER 2 BLOCKING    | 1 |
| 13. | 70392863 | DECAL-DANGER HOIST PSNL    | 1 |
| 14. | 70392864 | DECAL-DANGER OUTRG ST CL   | 2 |
| 15. | 70394445 | DECAL-DANG ELEC HZD LG TEL | 4 |
| 16. | 70392866 | DECAL-DANGER OPER COND     | 1 |
| 17. | 70392867 | DECAL-DANGER OUTRG         | 1 |
| 18. | 70392868 | DECAL-DANGER CR LOADLINE   | 4 |
| 19. | 70392887 | DECAL-DIAMOND IMT 5.0X10.0 | 2 |
| 20. | 70392888 | DECAL-DANGER OPER RESTR    | 1 |
| 21. | 70394446 | DECAL-DANGER RC EL LG TEL  | 1 |
| 22. | 70392891 | DECAL-DANGER DRIVELINE     | 1 |
| 23. | 70392982 | DECAL-SERVICE & REPAIR     | 1 |
| 24. | 71039134 | DECAL-CAUTION OIL LEVEL    | 1 |
| 25. | 71391522 | DECAL-ANGLE INDICATOR RH   | 1 |
| 26. | 71391523 | DECAL-ANGLE INDICATOR LH   | 1 |
| 27. | 70396174 | DECAL-CP 3820-2H           | 2 |
| 28. | 70394453 | DECAL-4TON LD BLOCK RAT    | 2 |
| 29. | 70394166 | DECAL-INSTR FOR MNL OP     | 1 |
| 30. | 70394189 | DECAL-MOBIOL OIL RESERVOIR | 1 |
| 31. | 70395324 | DECAL-ASME/ANSI B30.5      | 1 |
| 32. | 70392399 | DECAL-LUBRICATE WORM       | 1 |
| 33. | 70395090 | DECAL-GREASE WORM BRNGS    | 1 |
| 34. | 70395670 | DECAL-CAUT DOWN HAUL WT    | 2 |

## 95717508 Drawing



| DECAL PLACEMENT                          |  |
|--|--|
| ITEM NO.                                 | LOCATION                                 |
| 6,9,10,11,12,13,16,17<br>,20,21,23,24,27 | AT OR NEAR REMOTE CONTROL STORAGE POINT. |
| 1,14                                     | ONE ON EACH OUTRIGGER                    |
| 15,18                                    | ONE ON EACH SIDE OF CARRIER VEHICLE      |
| 5  | ON RESERVOIR AT RETURN LINE              |
| 4  | ON RESERVOIR AT SUCTION LINE             |
| 30                                       | AT OR NEAR HYDRAULIC RESERVOIR           |
| 22                                       | AT OR NEAR DRIVELINE                     |

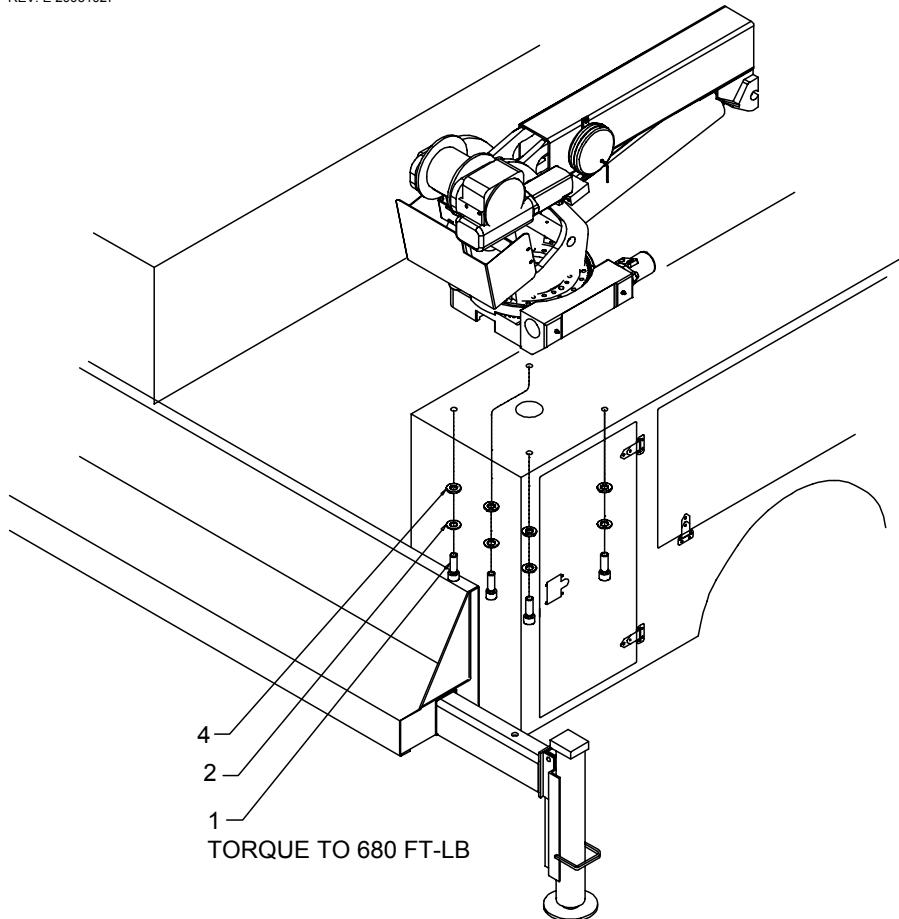
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## Installation Kits

## Installation Kit (93715267)

|    |          |                                 |     |
|----|----------|---------------------------------|-----|
| 1. | 72601748 | CAP SCR 1-8X3 SHGR8             | 4   |
| 2. | 72063066 | WASHER 1 FLAT                   | 4   |
| 3. | 73052091 | RETURN FILTER 10MIC (NOT SHOWN) | 1   |
|    | 73052006 | FILTER ELEMENT 10MIC            | REF |
| 4. | 60123848 | WASHER, SPECIAL 1X2X            | 4   |

REV. E 20031027



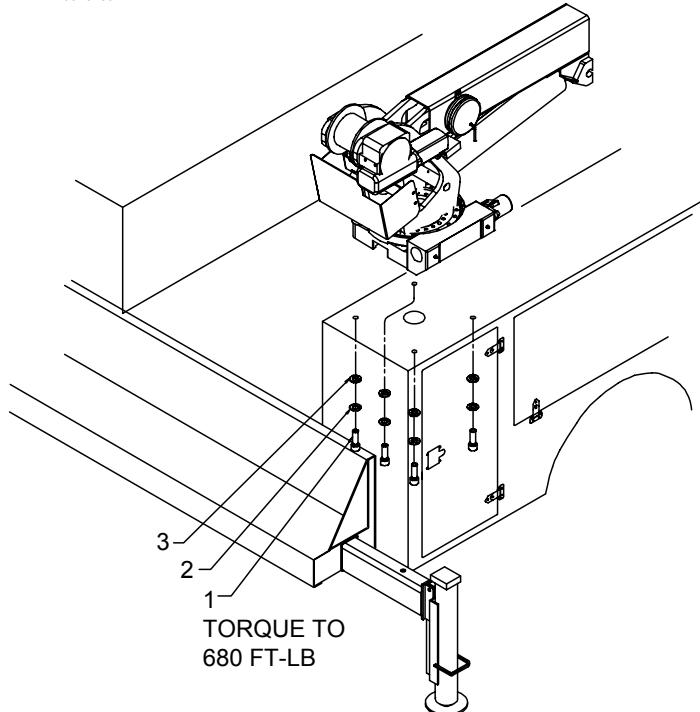
### NOTES:

- 1 THE 3" BOLTS SUPPLIED ARE FOR USE ON BODIES WITH A CRANE BOX TOP PLATE THICKNESS OF 7/8-1" ONLY! ON SHIP-OUT CRANES, DETERMINE CRANE BOX TOP PLATE THICKNESS PRIOR TO MOUNTING THE CRANE. IF BOLTS OTHER THAN THE 3" SUPPLIED BOLTS ARE REQUIRED, THEY MUST BE 1"-8 GRADE 8 AND THE APPROPRIATE LENGTH.
- 2 FAILURE TO USE PROPER LENGTH BOLTS MAY CAUSE THE CAP SCREWS UNDER THE WORM HOUSING TO BOTTOM OUT BEFORE BEING TORQUED. DURING TORQUEING, CHECK TO SEE THAT BOLTS ARE TORQUED AND THAT THEY DO NOT BOTTOM OUT ON THE WORM HOUSING. SIZE CAPSCREWS TO INSURE MINIMUM 1.5" THREAD ENGAGEMENT.

## Installation Kit - 24V Power Unit (93716197)

|    |          |                        |   |
|----|----------|------------------------|---|
| 1. | 72601748 | CAP SCREW 1-8X3 SH GR8 | 4 |
| 2. | 72063066 | WASHER 1" FLAT         | 4 |
| 3. | 60123848 | WASHER-SPECIAL 1X2X1/4 | 4 |

REV. B 20040209

**NOTES:**

- 1 THE 3" BOLTS SUPPLIED ARE FOR USE ON BODIES WITH A CRANE BOX TOP PLATE THICKNESS OF 7/8-1" ONLY! ON SHIP-OUT CRANES, DETERMINE CRANE BOX TOP PLATE THICKNESS PRIOR TO MOUNTING THE CRANE. IF BOLTS OTHER THAN THE 3" SUPPLIED BOLTS ARE REQUIRED, THEY MUST BE 1"-8 GRADE 8 AND THE APPROPRIATE LENGTH.
- 2 FAILURE TO USE PROPER LENGTH BOLTS MAY CAUSE THE CAP SCREWS UNDER THE WORM HOUSING TO BOTTOM OUT BEFORE BEING TORQUED. DURING TORQUEING, CHECK TO SEE THAT BOLTS ARE TORQUED AND THAT THEY DO NOT BOTTOM OUT ON THE WORM HOUSING. SIZE CAPSCREWS TO INSURE MINIMUM 1.5" THREAD ENGAGEMENT.

## 93716197 Drawing

ROUTE CABLES THROUGH  
CENTER OF BASE AND  
MAST UNDER VALVE BANK  
TO POWER UNIT.

MOUNT ON REAR  
COMPARTMENT  
INSIDE WALL.

1, 5(4),  
6(4), 7(4)

MOUNT BATTERY  
IN OUTSIDE FRONT  
CORNER OF  
COMPARTMENT.

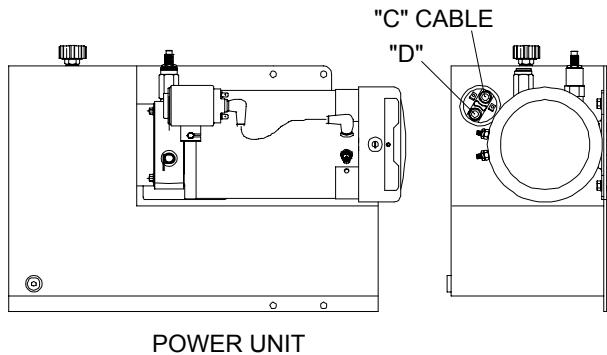
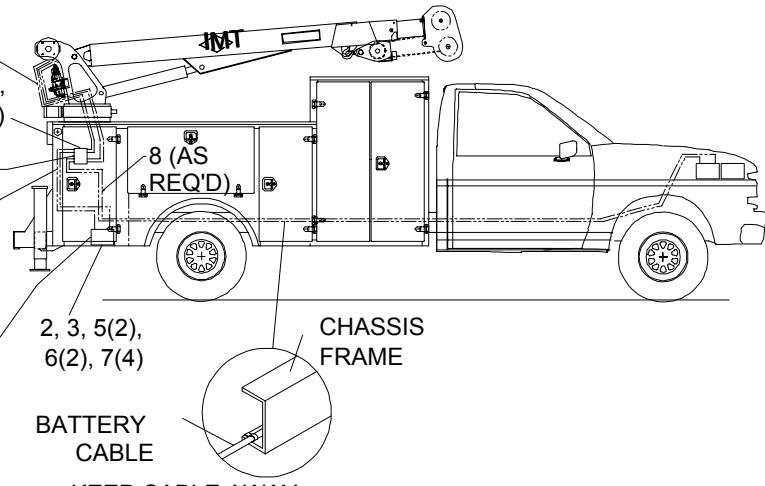
4(2), 5(2),  
6(2), 7(4)

2, 3, 5(2),  
6(2), 7(4)

BATTERY  
CABLE

CHASSIS  
FRAME

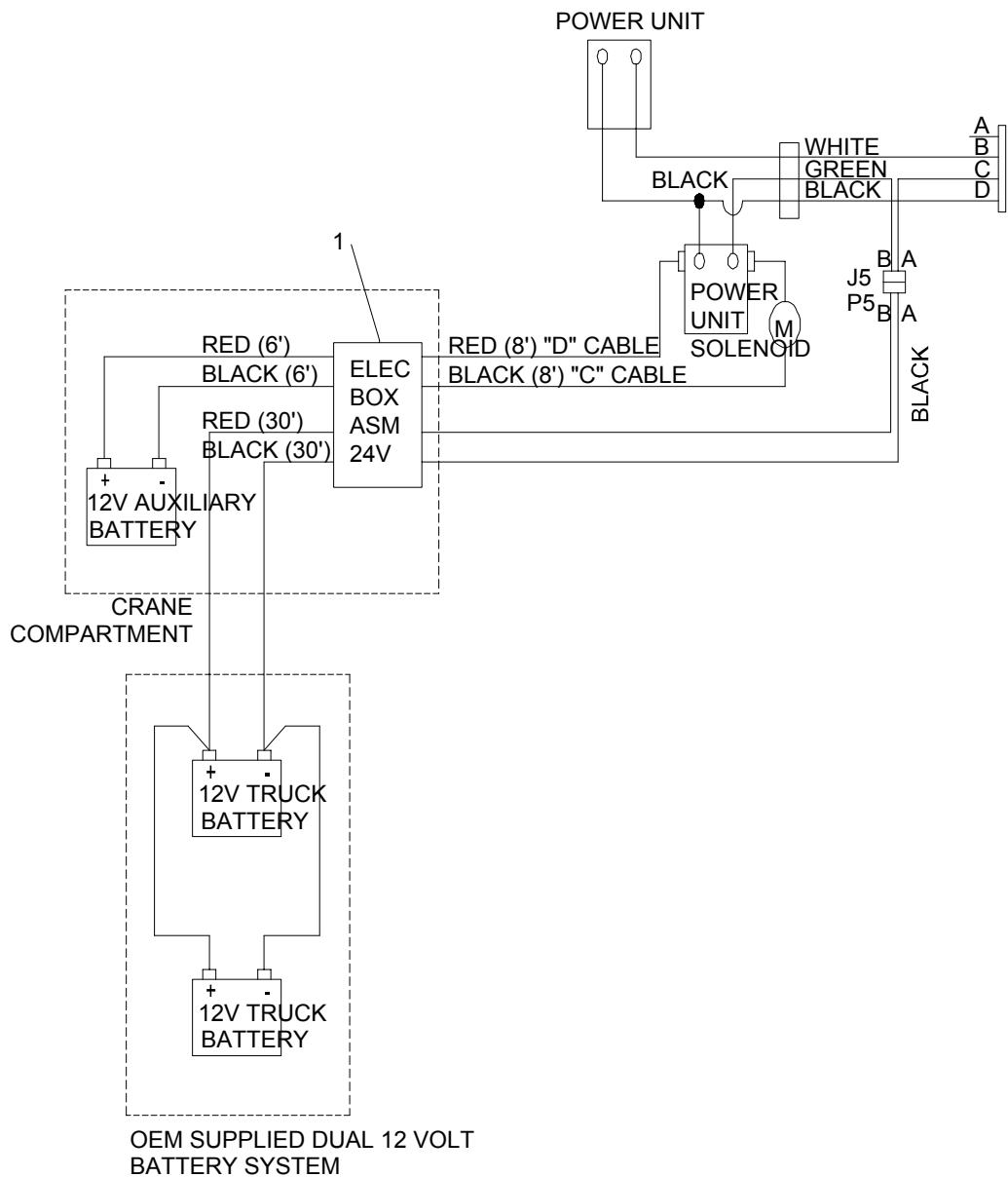
KEEP CABLE AWAY  
FROM EXHAUST SYSTEM



### NOTES:

- 1 RUN BATTERY CABLES THROUGH EXISTING HOLE IN BODY COMPARTMENT.
- 2 RUN BATTERY CABLES INSIDE THE CHASSIS FRAME TO THE TRUCK ENGINE BATTERIES. LOCATE CABLES SO THEY WILL BE PROTECTED. AVOID SHARP EDGES. INSTALL FRAME CLIPS (IMT # 72661491) TO HOLD CABLE TO TRUCK FRAME.

- 3 REMOVE THE NUT ON THE BATTERY TERMINAL CLAMP CAPSCREW. CONNECT THE BATTERY CABLES TO THE CLAMP CAPSCREW. REINSTALL THE CLAMP NUT.

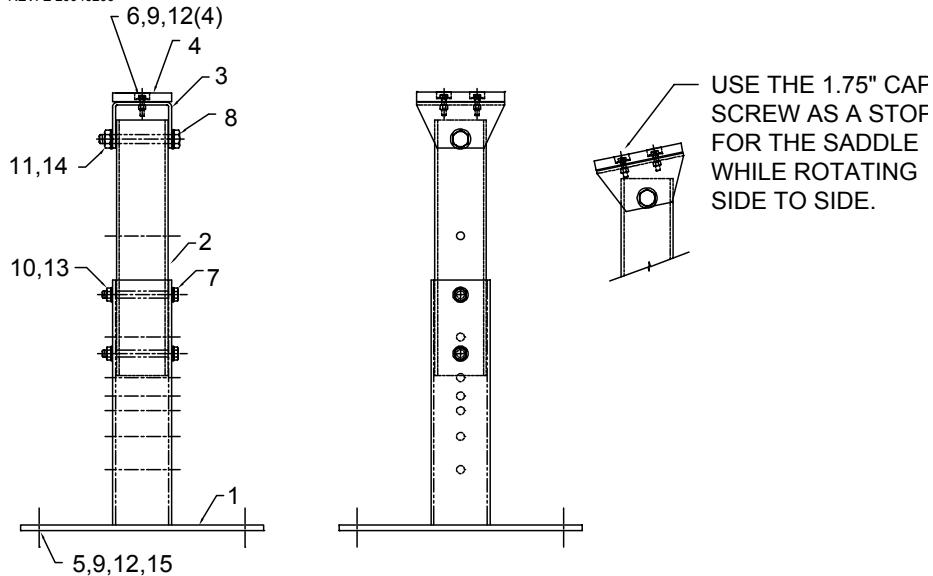


## Miscellaneous

### Boom Support Assembly (51714181)

|     |          |                            |    |
|-----|----------|----------------------------|----|
| 1.  | 52708159 | PEDESTAL                   | 1  |
| 2.  | 60121853 | TUBE                       | 1  |
| 3.  | 60120516 | SADDLE                     | 1  |
| 4.  | 60030306 | WEAR PAD                   | 1  |
| 5.  | 72060048 | CAP SCR 3/8-16X1-1/2 HHGR5 | 4  |
| 6.  | 72060049 | CAP SCR 3/8-16X1-3/4 HHGR5 | 2  |
| 7.  | 72060101 | CAP SCR 1/2-13X5 HHGR5     | 2  |
| 8.  | 72601671 | CAP SCR 3/4-10X5-1/2 HHGR5 | 1  |
| 9.  | 72062103 | NUT 3/8-16 LOCK            | 6  |
| 10. | 72062080 | NUT 1/2-13 LOCK            | 2  |
| 11. | 72062114 | NUT 3/4-10 LOCK            | 1  |
| 12. | 72063003 | WASHER 3/8 WRT             | 12 |
| 13. | 72063005 | WASHER 1/2 WRT             | 4  |
| 14. | 72063008 | WASHER 3/4 WRT             | 2  |
| 15. | 76392821 | WASHER-BONDED PLTD         | 4  |
| 16. | 51716384 | HARDWARE KIT (INCL. 5-15)  | 1  |

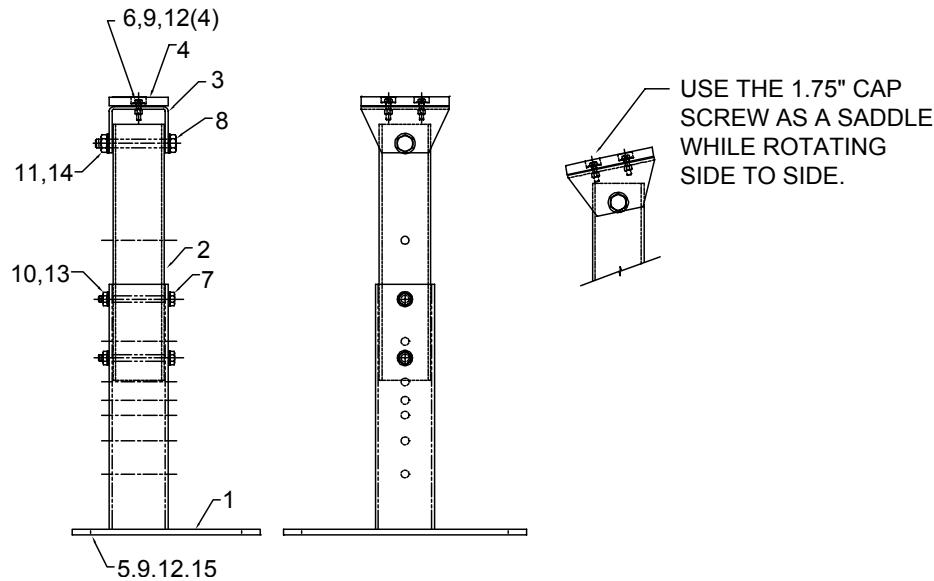
REV. E 20040206



## Boom Support Assembly (51718474)

|     |          |                             |       |
|-----|----------|-----------------------------|-------|
| 1.  | 52718455 | PEDESTAL                    | 1     |
| 2.  | 60121853 | TUBE                        | 1     |
| 3.  | 60120516 | BOOM SUPPORT SADDLE         | 1     |
| 4.  | 60030306 | WEAR PAD                    | 1     |
| 5.  | 72060048 | CAP SCREW 3/8-16X1.5 HHGR5  | 4REF  |
| 6.  | 72060049 | CAP SCREW 3/8-16X1.75 HHGR5 | 2REF  |
| 7.  | 72060101 | CAP SCREW 1/2-13X5 HHGR5Z   | 2REF  |
| 8.  | 72601671 | CAP SCREW 3/4-10X5.5 HHGR5Z | 1REF  |
| 9.  | 72062103 | NUT 3/8-16 HEX NYLOC        | 6REF  |
| 10. | 72062080 | NUT 1/2-13 HEX NYLOC        | 2REF  |
| 11. | 72062114 | NUT 3/4-10 HEX NYLOC        | 1REF  |
| 12. | 72063003 | WASHER 3/8 WRT              | 12REF |
| 13. | 72063005 | WASHER 1/2 WRT              | 4REF  |
| 14. | 72063008 | WASHER 3/4 WRT              | 2REF  |
| 15. | 76392821 | WASHER, BONDED PLT          | 4REF  |
| 16. | 51716384 | HARDWARE KIT (INCL. #5-15)  | 1     |

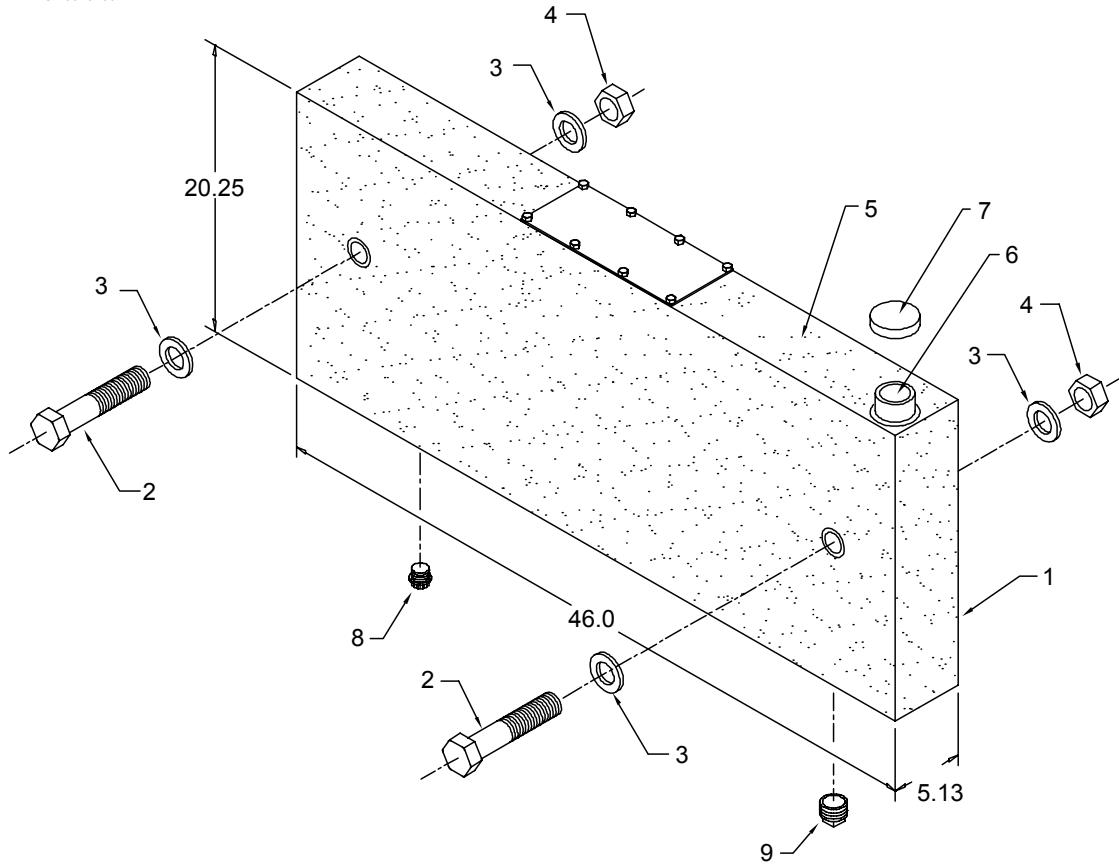
NEW 20031203



## Reservoir (51707798)

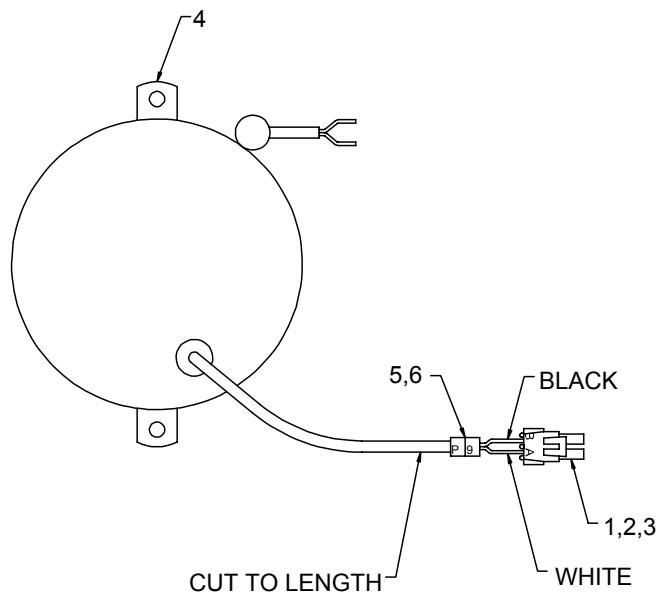
|    |          |                            |   |
|----|----------|----------------------------|---|
| 1. | 52711432 | RESERVOIR WELDMENT         | 1 |
| 2. | 72060104 | CAP SCR 1/2-13X6-1/2 HHGR5 | 2 |
| 3. | 72063005 | WASHER 1/2 WRT             | 8 |
| 4. | 72062080 | NUT 1/2-13 LOCK            | 2 |
| 5. | 70394189 | DECAL-OIL RECOMMENDED      | 1 |
| 6. | 70142482 | FILL NECK STRAINER         | 1 |
| 7. | 70142483 | FILL CAP                   | 1 |
| 8. | 70393233 | PLUG 3/4NPT                | 1 |
| 9. | 72601004 | PLUG 1-1/4NPT SQHD         | 1 |

REV. G 20040206



## Cord Reel Assembly (51713168)

|    |          |                       |   |
|----|----------|-----------------------|---|
| 1. | 77044574 | TOWER CONNECTOR       | 1 |
| 2. | 77044552 | PIN 18-20GA           | 2 |
| 3. | 70394069 | CABLE SEAL            | 2 |
| 4. | 70732193 | CORD REEL             | 1 |
| 5. | 77041493 | WIRE MARKER-PA2-P-YEL | 1 |
| 6. | 77041491 | WIRE MARKER-PA2-9-YEL | 1 |

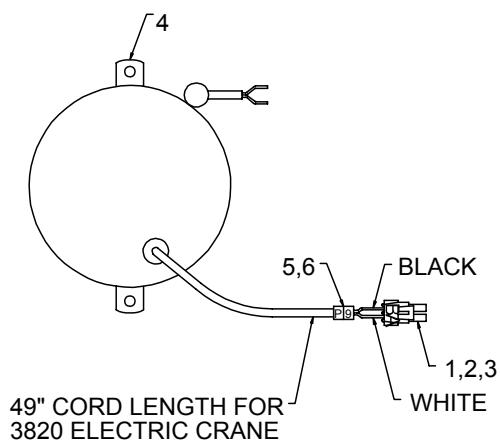


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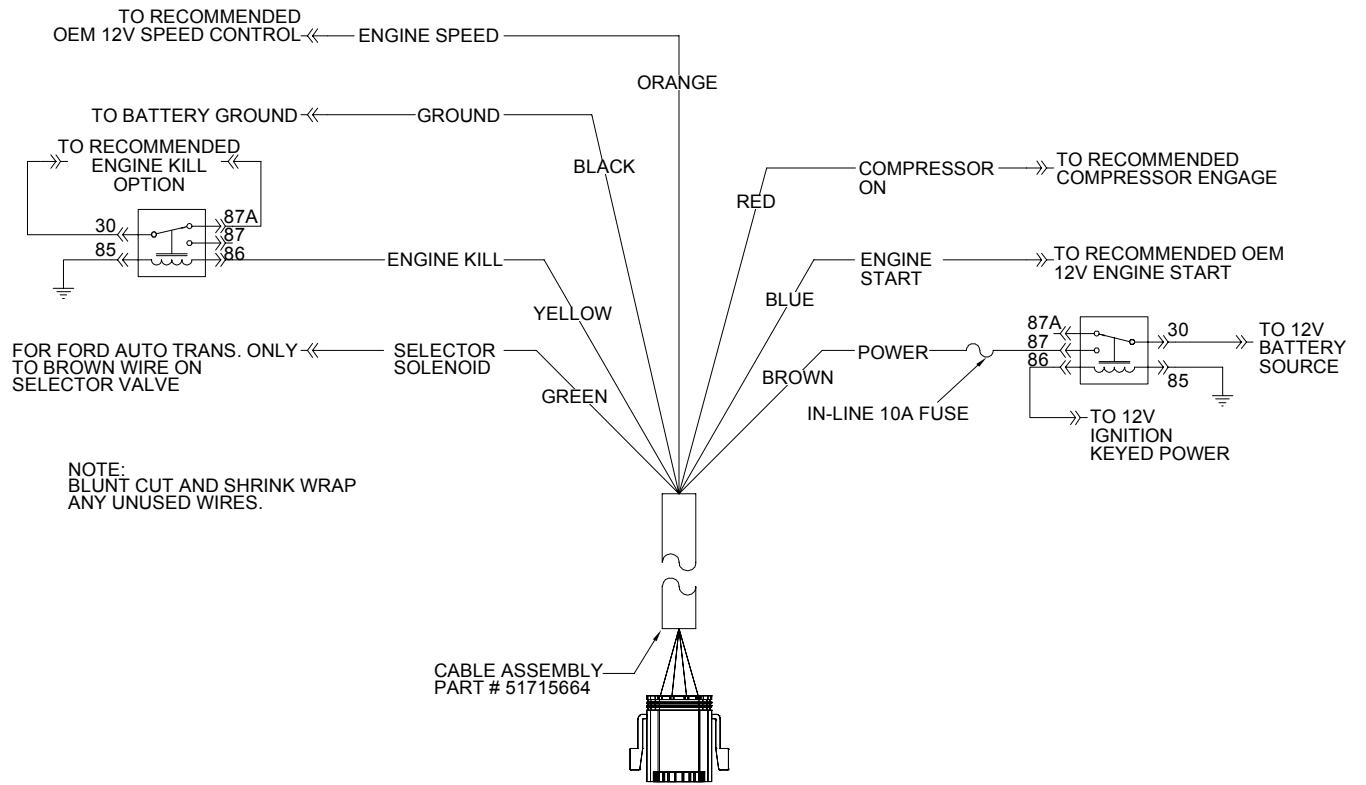
## Cord Reel Assembly - Electric Cranes (51717275)

|    |          |                          |   |
|----|----------|--------------------------|---|
| 1. | 77044574 | CONNECTOR                | 1 |
| 2. | 77044550 | TERMINAL-FEM 18-20 GA    | 2 |
| 3. | 70394069 | SEAL-CABLE GREEN         | 2 |
| 4. | 70732193 | CORD REEL-ANTI 2 BLOCK   | 1 |
| 5. | 77041493 | WIRE MARKER-PA2-P-YELLOW | 1 |
| 6. | 77041491 | WIRE MARKER-PA2-9-YELLOW | 1 |

NEW 20040210



## Chassis Wiring Harness (99903340)



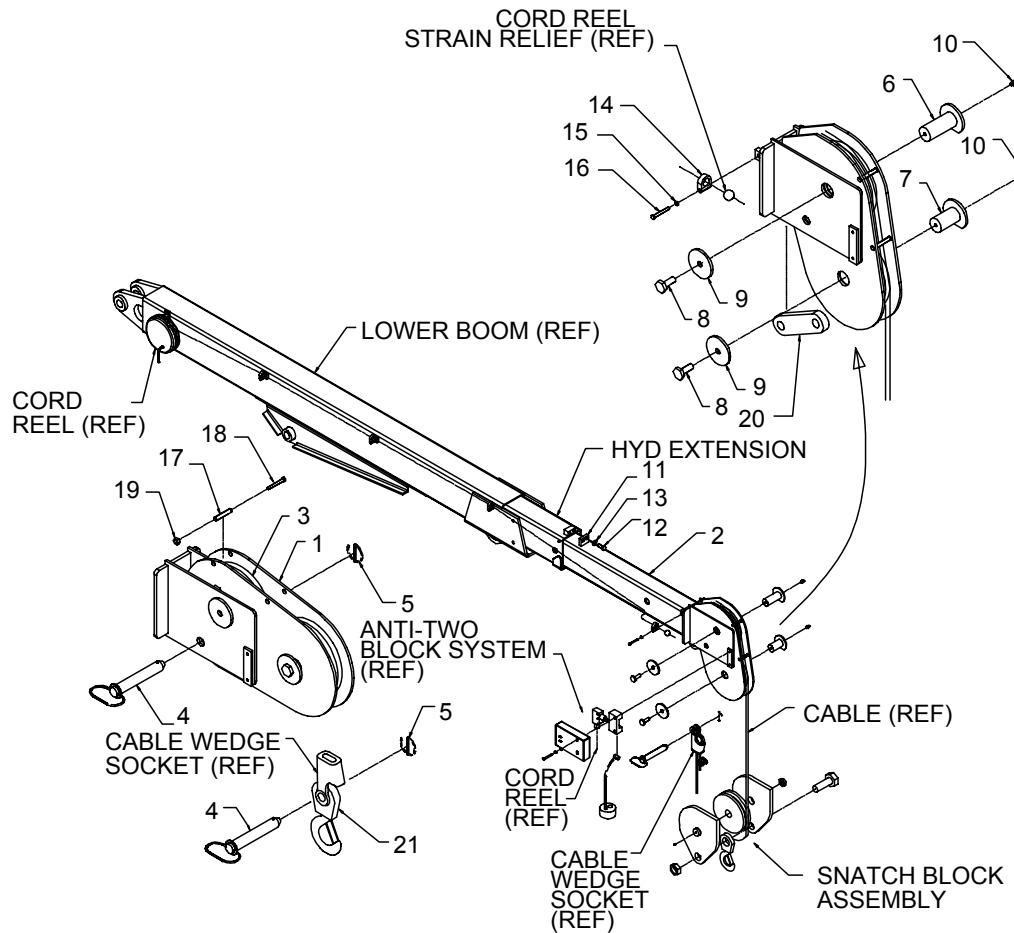
Note: Used on all ship-out IMT telescopic cranes.

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## Retrofit Kit - Flip Sheave (99901152)

|     |          |                            |   |
|-----|----------|----------------------------|---|
| 1.  | 52709455 | FLIP SHEAVE                | 1 |
| 2.  | 52714260 | EXT BOOM                   | 1 |
| 3.  | 60030134 | SHEAVE                     | 2 |
| 4.  | 72661514 | PIN-LOCK W/HNDL            | 2 |
| 5.  | 72661367 | PIN                        | 2 |
| 6.  | 52709438 | PIN-TYPE M 1-1/2X3-1/2     | 1 |
| 7.  | 52707730 | PIN-TYPE M 1-1/2X2-1/2     | 1 |
| 8.  | 72060147 | CAP SCR 5/8-11X11 HHGR5Z   | 2 |
| 9.  | 60109337 | RETAINER PLT-PIN 3"DIA     | 2 |
| 10. | 72053508 | ZERK                       | 2 |
| 11. | 60107294 | STROKE STOP-EXT            | 1 |
| 12. | 72060092 | CAP SCR 1/2-13X1-1/4 HHGR5 | 2 |
| 13. | 72063053 | LOCK WASHER 1/2            | 2 |
| 14. | 70034381 | CORD GUIDE                 | 1 |
| 15. | 72063049 | LOCK WASHER 1/4            | 1 |
| 16. | 72060006 | CAP SCR 1/4-20X1-1/2 HHGR5 | 1 |
| 17. | 60102596 | SPACER                     | 2 |
| 18. | 72060054 | CAP SCR 3/8-16X3 HHGR5     | 2 |
| 19. | 72062103 | LOCKNUT 3/8-16             | 2 |
| 20. | 60113679 | FLIP SHEAVE LINK           | 1 |
| 21. | 71073920 | SWVL HOOK                  | 1 |

REV. A 20040209

**999011152 Drawing**



## CHAPTER 5

# General Reference

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# Inspection Checklist

**NOTICE:**

The user of this form is responsible for determining that these inspections satisfy all applicable regulatory requirements.

|                      |                                    |         |           |        |
|----------------------|------------------------------------|---------|-----------|--------|
| OWNER/COMPANY:       | TYPE OF INSPECTION (circle one):   |         |           |        |
| CONTACT PERSON:      | DAILY                              | MONTHLY | QUARTERLY | ANNUAL |
| CRANE MAKE & MODEL:  | DATE INSPECTED:                    |         |           |        |
| CRANE SERIAL NUMBER: | HOURMETER READING (if applicable): |         |           |        |
| UNIT I.D. NUMBER:    | INSPECTED BY (print):              |         |           |        |
| LOCATION OF UNIT:    | SIGNATURE OF INSPECTOR:            |         |           |        |

**TYPE OF INSPECTION**

**NOTES:**

Daily and monthly inspections are to be performed by a "designated" person, who has been selected or assigned by the employer or the employer's representative as being competent to perform specific duties.

Quarterly and annual inspections are to be performed by a "qualified" person who, by possession of a recognized degree in an applicable field or certificate of professional standing, or who, by extensive knowledge, training and experience has successfully demonstrated the ability to solve or resolve problems related to the subject matter and work.

One hour of normal crane operation assumes 20 complete cycles per hour. If operation exceeds 20 cycles per hour, inspection frequency should be increased accordingly.

Consult Operator / Service Manual for additional inspection items, service bulletins and other information.

Before inspecting and operating crane, crane must be set up away from power lines and leveled with outriggers fully extended.

**DAILY (D):** Before each day of operation, those items designated with a (D) must be inspected. This inspection need not be recorded unless a deficiency (8 ) is found. If the end user chooses to record all daily inspections and those daily inspections include the monthly inspection requirements, there would be no need for a separate monthly inspection.

**MONTHLY (M):** Monthly inspections or 100 hours of normal operation (which ever comes first) includes all daily inspections plus items designated with an (M). This inspection must be recorded.

**QUARTERLY (Q):** Every three to four months or 300 hours of normal operation (which ever comes first) includes all daily and monthly inspection items plus items designated with a (Q). This inspection must be recorded.

**ANNUAL (A):** Each year or 1200 hours of normal operation (which ever comes first) includes all items on this form which encompasses daily, monthly and quarterly inspections plus those items designated by (A). This inspection must be recorded.

**INSPECTION CHECKLIST STATUS KEY:**

|  |   |
|--|---|
| S = Satisfactory                                     | R = Recommendation (should be considered for corrective action) |
| X = Deficient (must be corrected prior to operation) | NA = Not Applicable   |

| FREQUENCY | ITEM | KEY              | INSPECTION DESCRIPTION  | STATUS<br>(S,R,X,NA) |
|-----------|------|------------------|---|----------------------|
| D         | 1    | Labels           | All load charts, safety & warning labels, and control labels are present and legible.   |                      |
| D         | 2    |                  | Check all safety devices for proper operation.  |                      |
| D         | 3    | Controls         | Control mechanisms for proper operation of all functions, leaks and cracks.   |                      |
| D         | 4    | Station          | Control and operator's station for dirt, contamination by lubricants, and foreign material.   |                      |
| D         | 5    | Hydraulic System | Hydraulic system (hoses, tubes, fittings) for leakage and proper oil level.   |                      |
| D         | 6    | Hook             | Presence and proper operation of hook safety latches.   |                      |
| D         | 7    | Rope             | Proper reeving of wire rope on sheaves and winch drum.  |                      |
| D         | 8    | Pins             | Proper engagement of all connecting pins and pin retaining devices.   |                      |
| D         | 9    | General          | Overall observation of crane for damaged or missing parts, cracked welds, and presence of safety covers.  |                      |
| D         | 10   | Operation        | During operation, observe crane for abnormal performance, unusual wear (loose pins, wire rope damage, etc.). If observed, discontinue use and determine cause and severity of hazard. |                      |
| D         | 11   | Remote Ctrl      | Operate remote control devices to check for proper operation.   |                      |
| D         | 12   | Electrical       | Operate all lights, alarms, etc. to check for proper operation.   |                      |
| D         | 13   | Anti 2-Block     | Operate anti 2-block device to check for proper operation.  |                      |
| D         | 14   |                  |   |                      |
|           | 15   |                  |   |                      |
| M         | 16   | Daily            | All daily inspection items.   |                      |
| M         | 17   | Cylinders        | Visual inspection of cylinders for leakage at rod, fittings, and welds. Damage to rod and case.   |                      |
| M         | 18   | Valves           | Holding valves for proper operation.  |                      |
| M         | 19   | Valves           | Control valves for leaks at fittings and between stations.  |                      |
| M         | 20   | Valves           | Control valve linkages for wear, smoothness of operation, and tightness of fasteners.   |                      |
| M         | 21   | General          | Bent, broken, or significantly rusted/corroded parts.   |                      |
| M         | 22   | Electrical       | Electrical systems for presence of dirt, moisture, and frayed wires.  |                      |
| M         | 23   | Structure        | All structural members for damage.  |                      |
| M         | 24   | Welds            | All welds for breaks and cracks.  |                      |
| M         | 25   | Pins             | All pins for proper installation and condition.   |                      |
| M         | 26   | Hardware         | All bolts, fasteners and retaining rings for tightness, wear and corrosion.   |                      |
| M         | 27   | Wear Pads        | Presence of wear pads.  |                      |
| M         | 28   | Pump & Motor     | Hydraulic pumps and motors for leakage at fittings, seals, and between sections.  |                      |
| M         | 29   | PTO              | Transmission/PTO for leakage, abnormal vibration, and noise.  |                      |
| M         | 30   | Hyd Fluid        | Quality of hydraulic fluid and presence of water.   |                      |

| FREQUENCY | ITEM | KEY                   | INSPECTION DESCRIPTION  | STATUS<br>(S,R,X,NA) |
|-----------|------|-----------------------|---|----------------------|
| M         | 31   | Hyd Lines             | Hoses & tubes for leakage, abrasion damage, blistering, cracking, deterioration, fitting leakage, and secured properly.   |                      |
| M         | 32   | Hook                  | Load hook for abnormal throat distance, twist, wear, and cracks.  |                      |
| M         | 33   | Rope                  | Condition of load line.   |                      |
| M         | 34   | Manual                | Presence of operator's manual with unit.  |                      |
| M         | 35   |                       | Other   |                      |
| Q         | 36   | Daily                 | All daily inspection items.   |                      |
| Q         | 37   | Monthly               | All monthly inspection items.   |                      |
| Q         | 38   |                       | Condition of wear pads.   |                      |
| Q         | 39   | Rotation Sys          | Rotation bearing for proper torque of all accessible mounting bolts.  |                      |
| Q         | 40   | Hardware              | Base mounting bolts for proper torque.  |                      |
| Q         | 41   | Structure             | All structural members for deformation, cracks and corrosion.   |                      |
|           | 42   |                       | • Base  |                      |
|           | 43   |                       | • Outrigger beams and legs  |                      |
|           | 44   |                       | • Mast  |                      |
|           | 45   |                       | • Inner Boom  |                      |
|           | 46   |                       | • Outer Boom  |                      |
|           | 47   |                       | • Extension(s)  |                      |
|           | 48   |                       | • Jib boom  |                      |
|           | 49   |                       | • Jib extension(s)  |                      |
|           | 50   |                       | • Other   |                      |
| Q         | 51   | Hardware              | Pins, bearing, shafts, gears, rollers, and locking devices for wear, cracks, corrosion and distortion.                    |                      |
|           | 52   |                       | • Rotation bearing(s)   |                      |
|           | 53   |                       | • Inner boom pivot pin(s) and retainer(s)   |                      |
|           | 54   |                       | • Outer boom pivot pin(s) and retainer(s)   |                      |
|           | 55   |                       | • Inner boom cylinder pin(s) and retainer(s)  |                      |
|           | 56   |                       | • Outer boom cylinder pin(s) and retainer(s)  |                      |
|           | 57   |                       | • Extension cylinder pin(s) and retainer(s)   |                      |
|           | 58   |                       | • Jib boom pin(s) and retainer(s)   |                      |
|           | 59   |                       | • Jib cylinder pin(s) and retainer(s)   |                      |
|           | 60   |                       | • Jib extension cylinder pin(s) and retainer(s)   |                      |
|           | 61   |                       | • Boom tip attachment   |                      |
|           | 62   |                       | • Other   |                      |
| Q         | 63   | Hyd Lines             | Hoses, fittings and tubing for proper routing, leakage, blistering, deformation and excessive abrasion.                   |                      |
|           | 64   |                       | • Pressure line(s) from pump to control valve   |                      |
|           | 65   |                       | • Return line(s) from control valve to reservoir  |                      |
|           | 66   |                       | • Suction line(s) from reservoir to pump  |                      |
|           | 67   |                       | • Pressure line(s) from control valve to each function  |                      |
|           | 68   |                       | • Load holding valve pipe(s) and hose(s)  |                      |
|           | 69   |                       | • Other   |                      |
| Q         | 70   | Pumps, PTO's & Motors | Pumps, PTO's & motors for loose bolts/fasteners, leaks, noise, vibration, loss of performance, heating & excess pressure. |                      |
|           | 71   |                       | • Winch motor(s)  |                      |
|           | 72   |                       | • Rotation motor(s)   |                      |
|           | 73   |                       | • Other   |                      |
| Q         | 74   | Valves                | Hydraulic valves for cracks, spool return to neutral, sticking spools, proper relief valve setting, relief valve failure. |                      |
|           | 75   |                       | • Main control valve  |                      |

| FREQUENCY | ITEM | KEY          | INSPECTION DESCRIPTION  | STATUS<br>(S,R,X,NA) |
|-----------|------|--------------|---|----------------------|
|           | 76   |              | • Load holding valve(s)   |                      |
|           | 77   |              | • Outrigger or auxiliary control valve(s)   |                      |
|           | 78   |              | • Other   |                      |
|           | 79   |              | • Other   |                      |
| Q         | 80   | Cylinders    | Hydraulic cylinders for drifting, rod seal leakage and leakage at welds. Rods for nicks, scores and dents. Case for damage. Case and rod ends for damage and abnormal wear. |                      |
|           | 81   |              | • Outrigger cylinder(s)   |                      |
|           | 82   |              | • Inner boom cylinder(s)  |                      |
|           | 83   |              | • Outer boom cylinder(s)  |                      |
|           | 84   |              | • Extension cylinder(s)   |                      |
|           | 85   |              | • Rotation cylinder(s)  |                      |
|           | 86   |              | • Jib lift cylinder(s)  |                      |
|           | 87   |              | • Jib extension cylinder(s)   |                      |
|           | 88   |              | • Other   |                      |
| Q         | 89   | Winch        | Winch, sheaves and drums for damage, abnormal wear, abrasions and other irregularities.   |                      |
| Q         | 90   | Hyd Filters  | Hydraulic filters for replacement per maintenance schedule.   |                      |
| A         | 91   | Daily        | All daily inspection items.   |                      |
| A         | 92   | Monthly      | All monthly inspection items.   |                      |
| A         | 93   | Quarterly    | All quarterly inspection items.   |                      |
| A         | 94   | Hyd Sys      | Hydraulic fluid change per maintenance schedule.  |                      |
| A         | 95   | Controls     | Control valve calibration for correct pressure & relief valve settings.   |                      |
| A         | 96   | Valves       | Safety valve calibration for correct pressure & relief valve settings.  |                      |
| A         | 97   | Valves       | Valves for failure to maintain correct settings.  |                      |
| A         | 98   | Rotation Sys | Rotation drive system for proper backlash clearance & abnormal wear, deformation and cracks.  |                      |
| A         | 99   | Lubrication  | Gear oil change in rotation drive system per maintenance schedule.  |                      |
| A         | 100  | Hardware     | Check tightness of all fasteners and bolts.   |                      |
| A         | 101  | Wear Pads    | Wear pads for excessive wear.   |                      |
| A         | 102  | Loadline     | Loadline for proper attachment to drum.   |                      |

# Deficiency / Recommendation / Corrective Action Report

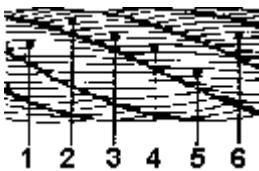
|   |        |                   |
|---|--------|-------------------|
| DATE:   | OWNER: | UNIT I.D. NUMBER: |
| <b>GUIDELINES</b>   |        |                   |
| A. A deficiency (X) may constitute a hazard. Deficiency must be corrected and/or faulty parts replaced before resuming operation.   |        |                   |
| B. Recommendations (R) should be considered for corrective actions. Corrective action for a particular recommendation depends on the facts in each situation.   |        |                   |
| C. Corrective actions (CA), repairs, adjustments, parts replacement, etc. are to be performed by a qualified person in accordance with all manufacturer's recommendations, specifications and requirements. |        |                   |
| NOTE: Deficiencies (X) listed must be followed by the corresponding corrective action taken (CA).   |        |                   |
| X = DEFICIENCY      R = RECOMMENDATION      CA = CORRECTIVE ACTION TAKEN  |        |                   |



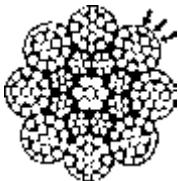
## Wire Rope Inspection

Wire rope with any of the deficiencies shown below shall be removed and replaced immediately.

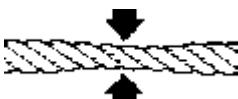
- a Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.
- b When there are either three broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



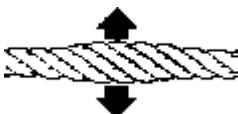
- c When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.



- d When there is a decrease of diameter indicating a core failure.



- e When kinking, crushing, birdcaging or other distortion occurs.



- f When there is noticeable heat damage (discoloration) of the rope by any means.



- g When the diameter is reduced from nominal size by 1/32" or more.



- h If a broken wire protrudes or loops out from the core of the rope.



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## Hook Inspection

Hooks having any of the listed deficiencies shall be removed from service unless a qualified person approves their continued use and initiates corrective action. Hooks approved for continued use shall be subjected to periodic inspection.

**a DISTORTION**

**Bending / Twisting**

A bend or twist exceeding 10° from the plane of the unbent hook.

**Increased Throat Opening**

**HOOK WITHOUT LATCH:** An increase in throat opening exceeding 15% (Or as recommended by the manufacturer)

**HOOK WITH LATCH:** An increase of the dimension between a fully-opened latch and the tip section of the hook exceeding 8% (Or as recommended by the manufacturer)

**b WEAR**

If wear exceeds 10% of the original sectional dimension. (Or as recommended by the manufacturer)

**c CRACKS, NICKS, GOUGES**

Repair of cracks, nicks, and gouges shall be carried out by a designated person by grinding longitudinally, following the contour of the hook, provided that no dimension is reduced more than 10% of its original value. (Or as recommended by the manufacturer) (A qualified person may authorize continued use if the reduced area is not critical.)

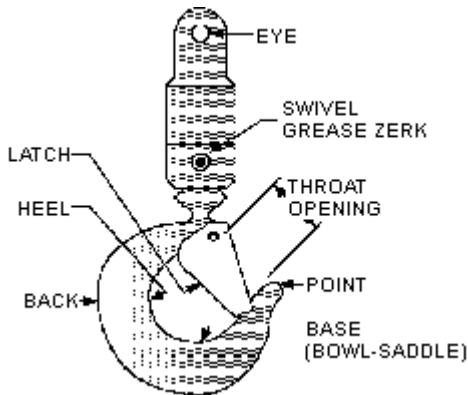
**d LATCH**

**Engagement, Damage & Malfunction**

If a latch becomes inoperative because of wear or deformation, and is required for the service involved, it shall be replaced or repaired before the hook is put back into service. If the latch fails to fully close the throat opening, the hook shall be removed from service or "moused" until repairs are made.

**a HOOK ATTACHMENTS & SECURING MEANS**

If any indication of distortion, wear, cracks, nicks or gouges are present, unless a qualified person authorizes their use. (Or as recommended by the manufacturer).



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## Holding Valve Inspection

The cylinders are equipped with holding valves that prevent sudden movement of the cylinder rods in the event of a hydraulic hose or other hydraulic component failure. The valve is checked in the following manner:

- 1 With a full rated load, extend the cylinder in question and kill the engine.
- 2 Operate the control valve to retract the cylinder. If the cylinder "creeps", replace the holding valve. If the cylinder does not "creep", the valve is serviceable.

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## Anti-Two-Block Device Inspection

(See Volume 1: Operation, Maintenance and Repair for a complete description.)

The anti two block system should be checked daily as follows:

- 1 Examine flexible rod and weight to insure free unrestricted mechanical operation
- 2 Examine cord for damage, cuts or breaks. Grasp cord and pull to check operation of cord reel. The cord should retract on reel when released.

- 3 Start vehicle, engage PTO and slowly winch loadline up until anti-two block weight comes in contact with the hook end of the loadline cable. At the moment the weight is fully supported, a marked difference in winch operation should be noted. At this point, the winch up function should become very sluggish or non-functioning and have very little pull capability. Slowly increase truck engine speed while simultaneously actuating the winch up function. The winch characteristics should remain sluggish with little or no tensioning of the cable. If operation other than as described occurs, stop immediately and investigate. Failure to do so will risk damage to the cable or the crane. If all is well at this point, actuate the boom extend function slowly, and gradually increase to full actuation. Once again the function should be sluggish or non-existent with no tightening of the winch cable. If operation other than described occurs, stop immediately and reverse the function.
- 4 The final check involves actuating both the winch up and extend functions together and checking for proper operation of the anti two blocking circuit. Once again, start slowly and stop if it appears the cable is being tensioned.
- 5 If the anti two block function appears to be functioning normally, winch the cable down until the sensing weight swings free.

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## Thread Torques

### WARNING

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Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torquing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue, causing serious injury or DEATH.

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When using the torque data in the torque above, the following rules should be observed.

- 1 Bolt manufacturer's particular specifications should be consulted when provided.
- 2 Flat washers of equal strength must be used.
- 3 All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.
- 4 Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

## FINE THREAD TORQUE CHART (ENGLISH)

## TIGHTENING TORQUE

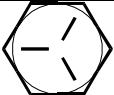
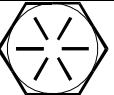
| SIZE<br>(DIA-TPI) | BOLT DIA.<br>(INCHES) |  SAE J429<br>GRADE 5 |                |  SAE J429<br>GRADE 8 |                |
|-------------------|-----------------------|---|----------------|---|----------------|
|                   |                       | PLAIN (FT-LB)   | PLATED (FT-LB) | PLAIN (FT-LB)   | PLATED (FT-LB) |
| 5/16-24           | 0.3125                | 19  | 14             | 27  | 20             |
| 3/8-24            | 0.375                 | 35  | 26             | 49  | 35             |
| 7/16-20           | 0.4375                | 55  | 41             | 78  | 58             |
| 1/2-20            | 0.5                   | 90  | 64             | 120   | 90             |
| 9/16-18           | 0.5625                | 120   | 90             | 170   | 130            |
| 5/8-18            | 0.625                 | 170   | 130            | 240   | 180            |
| 3/4-16            | 0.75                  | 300   | 225            | 420   | 315            |
| 7/8-11            | 0.875                 | 445   | 325            | 670   | 500            |
| 1-12              | 1                     | 645   | 485            | 995   | 745            |
| 1 1/8-12          | 1.125                 | 890   | 670            | 1445  | 1085           |
| 1 1/4-12          | 1.25                  | 1240  | 930            | 2010  | 1510           |
| 1 3/8-12          | 1.375                 | 1675  | 1255           | 2710  | 2035           |
| 1 1/2-12          | 1.5                   | 2195  | 1645           | 3560  | 2670           |

## COARSE THREAD TORQUE CHART (ENGLISH)

## TIGHTENING TORQUE

| SIZE<br>(DIA-TPI) | BOLT DIA.<br>(INCHES) |  SAE J429<br>GRADE 5 |                |  SAE J429<br>GRADE 8 |                |
|-------------------|-----------------------|---|----------------|---|----------------|
|                   |                       | PLAIN (FT-LB)   | PLATED (FT-LB) | PLAIN (FT-LB)   | PLATED (FT-LB) |
| 5/16-18           | 0.3125                | 17  | 13             | 25  | 18             |
| 3/8-16            | 0.375                 | 31  | 23             | 44  | 33             |
| 7/16-14           | 0.4375                | 49  | 37             | 70  | 52             |
| 1/2-13            | 0.5                   | 75  | 57             | 105   | 80             |
| 9/16-12           | 0.5625                | 110   | 82             | 155   | 115            |
| 5/8-11            | 0.625                 | 150   | 115            | 220   | 160            |
| 3/4-10            | 0.75                  | 265   | 200            | 375   | 280            |
| 7/8-9             | 0.875                 | 395   | 295            | 605   | 455            |
| 1-8               | 1                     | 590   | 445            | 910   | 680            |
| 1 1/8-7           | 1.125                 | 795   | 595            | 1290  | 965            |
| 1 1/4-7           | 1.25                  | 1120  | 840            | 1815  | 1360           |
| 1 3/8-6           | 1.375                 | 1470  | 1100           | 2380  | 1780           |
| 1 1/2-6           | 1.5                   | 1950  | 1460           | 3160  | 2370           |

**FINE THREAD TORQUE CHART (METRIC)****TIGHTENING TORQUE**

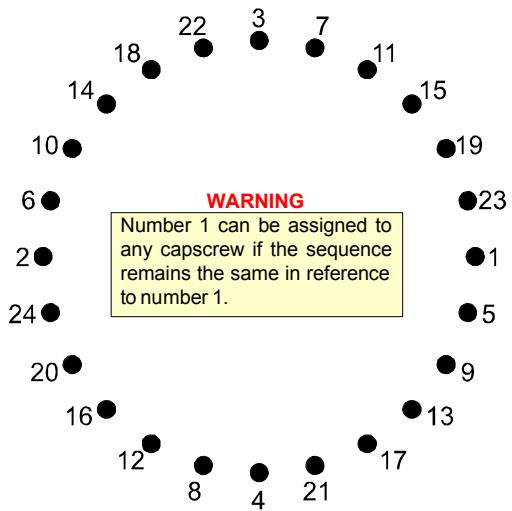
| SIZE<br>(DIA-TPI) | BOLT DIA.<br>(INCHES) |  SAE J429<br>GRADE 5 |               |  SAE J429<br>GRADE 8 |               |
|-------------------|-----------------------|---|---------------|---|---------------|
|                   |                       | PLAIN (KG-M)  | PLATED (KG-M) | PLAIN (KG-M)  | PLATED (KG-M) |
| 5/16-24           | 0.3125                | 3   | 2             | 4   | 3             |
| 3/8-24            | 0.375                 | 5   | 4             | 7   | 5             |
| 7/16-20           | 0.4375                | 8   | 6             | 11  | 8             |
| 1/2-20            | 0.5                   | 12  | 9             | 17  | 12            |
| 9/16-18           | 0.5625                | 17  | 12            | 24  | 18            |
| 5/8-18            | 0.625                 | 24  | 18            | 33  | 25            |
| 3/4-16            | 0.75                  | 41  | 31            | 58  | 44            |
| 7/8-11            | 0.875                 | 62  | 45            | 93  | 69            |
| 1-12              | 1                     | 89  | 67            | 138   | 103           |
| 1 1/8-12          | 1.125                 | 123   | 93            | 200   | 150           |
| 1 1/4-12          | 1.25                  | 171   | 129           | 278   | 209           |
| 1 3/8-12          | 1.375                 | 232   | 174           | 375   | 281           |
| 1 1/2-12          | 1.5                   | 304   | 228           | 492   | 369           |

**COARSE THREAD TORQUE CHART (METRIC)****TIGHTENING TORQUE**

| SIZE<br>(DIA-TPI) | BOLT DIA.<br>(INCHES) |  SAE J429<br>GRADE 5 |               |  SAE J429<br>GRADE 8 |               |
|-------------------|-----------------------|---|---------------|---|---------------|
|                   |                       | PLAIN (KG-M)  | PLATED (KG-M) | PLAIN (KG-M)  | PLATED (KG-M) |
| 5/16-18           | 0.3125                | 2   | 2             | 3   | 2             |
| 3/8-16            | 0.375                 | 4   | 3             | 6   | 5             |
| 7/16-14           | 0.4375                | 7   | 5             | 10  | 7             |
| 1/2-13            | 0.5                   | 10  | 8             | 15  | 11            |
| 9/16-12           | 0.5625                | 15  | 11            | 21  | 16            |
| 5/8-11            | 0.625                 | 21  | 16            | 30  | 22            |
| 3/4-10            | 0.75                  | 37  | 28            | 52  | 39            |
| 7/8-9             | 0.875                 | 55  | 41            | 84  | 63            |
| 1-8               | 1                     | 82  | 62            | 126   | 94            |
| 1 1/8-7           | 1.125                 | 110   | 82            | 178   | 133           |
| 1 1/4-7           | 1.25                  | 155   | 116           | 251   | 188           |
| 1 3/8-6           | 1.375                 | 203   | 152           | 329   | 246           |
| 1 1/2-6           | 1.5                   | 270   | 210           | 438   | 328           |

## Turntable Bearing Thread Tightening Sequence

Refer to the turntable bearing thread tightening diagram below for proper tightening/torqueing sequence of the turntable bearing to the crane base and crane mast. The total quantity of cap screws varies dependent on crane model.



### TIGHTENING PROCEDURE

- 1 Refer to the Torque Data Chart to determine the proper torque value to apply to the size of capscrew used.
- 2 Follow the tightening sequence shown in the diagram. Note that the quantity of capscrews may differ from the diagram, but the sequence must follow the criss-cross pattern as shown in the diagram.
- 3 Torque all capscrews to approximately 40% of the specified torque value, by following the sequence.  
(EXAMPLE: .40 x 265 FT-LB = 106 FT-LB)  
(EXAMPLE-METRIC: .40 x 36 KG-M = 14.4 KG-M)
- 4 Repeat Step 3, but torqueing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.  
(EXAMPLE: .75 x 265 FT-LB = 199 FT-LB)  
(EXAMPLE-METRIC: .75 x 36 KG-M = 27 KG-M)
- 5 Using the proper sequence, torque all capscrews to the listed torque value as determined from the Torque Data Chart.

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## Turntable Bearing Inspection for Replacement

Before a bearing is removed from a crane for inspection, one of the following conditions should be evident:

- 1 Metal particles present in the bearing lubricant.
- 2 Increased drive power required to rotate the crane.
- 3 Noise emitting from the bearing during crane rotation.
- 4 Rough crane rotation.
- 5 Uneven or excessive wear between the pinion gear and turntable gear.

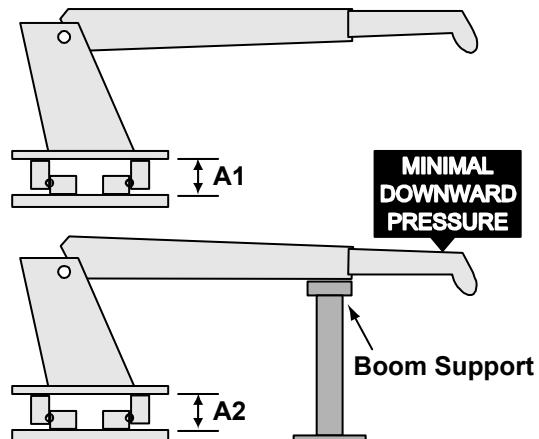
If none of the listed conditions exists, the bearing is functioning properly and need not be replaced. But, if one or more of the above conditions exists, inspection may be required. Limits are measured in "TILT" which is dependent on the internal clearances of the bearing. TILT is the most practical determination of a bearings internal clearance once mounted on a crane.

Periodic readings indicating a steady increase in TILT may be an indicator of bearing wear. Note that a bearing found to have no raceway cracks or other structural irregularities should be reassembled and returned to service.

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## Turntable Bearing Tilt Test

- 1 With the crane horizontal and fully extended, measure between the top and bottom mounting surfaces of the turntable bearing (A1), using a dial indicator for accuracy.
- 2 Reverse the load by applying minimal downward pressure on the boom while the boom is in the boom support or on a solid surface. Again measure A2.
- 3 Subtract A1 from A2 to determine tilt and compare the result with the accompanying chart.



**COMPARISON CHART - MODEL TO MEASURED TILT DIMENSION****NOTE:**

The figures listed in this chart are service guidelines and do not, in themselves, require that the bearing be inspected.

If there is reason to suspect an excess of bearing wear and the measured tilt dimension exceeds the dimension listed, remove the bearing for inspection.

|                                     |  |   |  |  |
|-------------------------------------|--|---|--|--|
| IMT Crane, Loader or Tirehand Model | 1007<br>1014<br>1014A<br>1015<br>2015/2020<br>2109<br>3000<br>3816/3820<br>3016/3020<br>421/425<br>4300<br>5016/5020<br>6016/6020<br>TH7 BODY ROT'N<br>TH1449 BODY<br>ROT'N<br>TH15B CLAMP<br>TH2551B CLAMP<br>TH2557A CLAMP | 5200<br>5200R<br>5217<br>5800<br>7020<br>7025<br>7200<br>7415<br>9000<br>TH10 BODY<br>ROT'N<br>TH14 BODY<br>ROT'N | 16000<br>32018<br>32027<br>32030<br>T30<br>T40 | 9800<br>12916<br>13031<br>13034<br>14000<br>15000<br>18000<br>20017<br>8000L<br>H1200<br>H1200RR<br>T50<br>TH2551B BODY<br>ROT'N<br>TH2557B BODY<br>ROT'N<br>TH2557A BODY<br>ROT'N |
| Ball Dia. (Ref)                     | .875" (22 mm)  | 1.00" (25 mm)   | 1.18 - 1.25" (30-32 mm)                        | 1.75" (44 mm)  |
| Tilt Dim. (A-A)                     | .060" (1.524 mm)   | .070" (1.778 mm)  | .075" (1.905 mm)                               | .090" (2.286 mm)   |