

**Volume 2**  
**Parts and Specifications**  
**Model 4830 Crane**  
**C.F.E.** CONT NO:91-2-50794-A10

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MANUAL PART NO. 99900656

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# INTRODUCTION

This volume deals with information applicable to your particular crane. For operating, maintenance and repair instructions, refer to Volume 1, OPERATION, MAINTENANCE AND REPAIR. Volume 1 contains the following information:

- SECTION 1. OPERATION
- SECTION 2. MAINTENANCE
- SECTION 3. REPAIR
- SECTION 4. INSPECTION & TEST REPORT
- SECTION 5. INSTALLATION - CHASSIS PREPARATION
- SECTION 6. APPENDIX

We recommend that Volume 2, PARTS AND SPECIFICATIONS be kept in a safe place in the office.

This manual is provided to assist you with ordering parts for your IMT truck-mounted articulating 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. Listed below is a publication that the user should thoroughly read and understand.

ANSI/ASME B30.22  
ARTICULATING BOOM CRANES  
The American Society of Mechanical Engineers  
United Engineering Center  
345 East 47th Street  
New York, NY 10017

Three means are used throughout this manual to gain 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.

Treat this equipment with respect and service it regularly. These two things can add up to a safer working environment.

**Read and familiarize yourself with the IMT OPERATOR'S CRANE SAFETY MANUAL before operating or performing any maintenance on your crane.**

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# Section 1. SPECIFICATIONS

## 1-1. GENERAL

|                                     | OPTIONAL<br>4819                      | STANDARD<br>4825                      | OPTIONAL<br>4830                      |
|-------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| CRANE RATING                        | 48,000 ft-lbs<br>6.65 ton-m           | 48,000 ft-lbs<br>6.65 ton-m           | 48,000 ft-lbs<br>6.65 ton-m           |
| REACH - FROM CENTERLINE OF ROTATION | 19'-4"<br>5.89m                       | 25'-1"<br>7.65m                       | 30'-5"<br>9.27m                       |
| HYDRAULIC EXTENSION                 | 64"<br>162.6cm                        | 64" & 64"<br>162.6cm & 162.6cm        | 64" & 64"<br>162.6cm & 162.6cm        |
| MANUAL EXTENSION                    | ---                                   | ---                                   | 64"<br>162.6cm                        |
| * LIFTING HEIGHT                    | 27'-4"<br>8.33m                       | 32'-2"<br>9.80m                       | 37'-1"<br>11.30m                      |
| CRANE WEIGHT                        | 3200 lbs<br>1451 kg                   | 3400 lbs<br>1565 kg                   | 3450 lbs<br>1545 kg                   |
| OUTRIGGER SPAN                      | 11'-10"<br>3.61m                      | 11'-10"<br>3.61m                      | 11'-10"<br>3.61m                      |
| * STORAGE HEIGHT                    | 10'-0"<br>3.05m                       | 10'-0"<br>3.05m                       | 10'-0"<br>3.05m                       |
| MINIMUM CRATING DIMENSIONS          | 90" X 28" X 84"<br>228.6X71.1X213.4cm | 90" X 28" X 84"<br>228.6X71.1X213.4cm | 90" X 28" X 84"<br>228.6X71.1X213.4cm |
| ** MOUNTING SPACE REQUIRED          | 28"<br>71.1cm                         | 28"<br>71.1cm                         | 28"<br>71.1cm                         |
| OPTIMUM PUMP CAPACITY               | 9 U.S. GPM<br>34.1 liters/min         | 9 U.S. GPM<br>34.1 liters/min         | 9 U.S. GPM<br>34.1 liters/min         |
| OIL RESERVOIR CAPACITY              | 17 U.S. GAL.<br>64.35 liters          | 17 U.S. GAL.<br>64.35 liters          | 17 U.S. GAL.<br>64.35 liters          |
| DESIGN FACTORS (PINS & HYDRAULICS)  | 4/1                                   | 4/1                                   | 4/1                                   |

\* Based on 36" (91.4 cm) truck frame height.

\*\* Add approximately 3" (7.62 cm) for truck cab clearance.

## 1-2. LIFTING CAPACITY (from centerline of rotation)

|                     |                     |                     |                     |
|---------------------|---------------------|---------------------|---------------------|
| 7'-6"<br>2.29m      | 6400 lbs<br>2903 kg | 6400 lbs<br>2903 kg | 6400 lbs<br>2903 kg |
| 14'-5"<br>4.39m     | 3330 lbs<br>1513 kg | 3330 lbs<br>1513 kg | 3330 lbs<br>1513 kg |
| 19'-9" *<br>6.02m * | 2430 lbs<br>1104 kg | 2430 lbs<br>1104 kg | 2430 lbs<br>1104 kg |
| 25'-1"<br>7.65m     |                     | 1920 lbs<br>872 kg  | 1920 lbs<br>872 kg  |
| 30'-5"<br>9.27m     |                     |                     | 1450 lbs<br>658 kg  |

\* Actual reach with optional 4819 is 19'-4".

## 1-3. PERFORMANCE CHARACTERISTICS

|  |                 |
|--|-----------------|
| ROTATION - 370 <sup>0</sup> (6.46 Rad.)  | 30 seconds      |
| INNER BOOM ELEVATION - -52 <sup>0</sup> TO +71 <sup>0</sup> (-0.91 Rad. to +1.24 Rad.) | 20 seconds      |
| OUTER BOOM ARTICULATION - 139 <sup>0</sup> (2.43 Rad.)                                 | 21 seconds      |
| TELESCOPING EXTENSION - 64" & 64" (162.6cm & 162.6cm)                                  | 24 & 14 seconds |
| SINGLE-STAGE EXTENSION - 64" (162.6cm)   | 14 seconds      |
| POWER DOWN OUTRIGGER EXTENSION - 21" (53.3cm)  | 6 seconds       |

## 1-4. POWER SOURCE

Integral-mounted hydraulic pump and PTO application. Other standard power sources may be utilized - minimum power required is 15 horsepower.

## 1-5. CYLINDER HOLDING VALVES

The holding sides of all cylinders are equipped with integral-mounted holding and/or counter-balance valves to prevent sudden cylinder collapse in case of hose or other hydraulic failure. The outrigger cylinders have positive, pilot-operated holding valves that open only upon command.

The inner, outer and extension cylinders have pilot operated counter-balance valves. The counter-balance valve serves several functions. First, it is a holding valve. Secondly, it is so constructed that it will control the lowering function and allow that motion to be feathered while under load. Finally, if a hose breaks, the only oil loss will be that in the hose.

## 1-6. ROTATION SYSTEM

Turntable bearing powered with a high-torque hydraulic motor through a ring-and-pinion type spur gear train (total gear reduction is 51.8 to 1).

## 1-7. HYDRAULIC SYSTEM

Open-centered, full-pressure system that requires 9 GPM (34.1 liters/min.) optimum oil flow at 2,500 PSI (175.7 kg/cm<sup>2</sup>). Eight-spool, stack-type control valve, six of which are plugged but are easily adaptable for additional optional features. Dual operational control handles for six functions are located at both sides of the crane for convenient operation. System includes hydraulic oil reservoir, suction-line filter, pump, 8-section valve bank, return-line filter and all hoses and fittings.

## 1-8. CYLINDERS

|  | BORE            | STROKE            |
|--|-----------------|-------------------|
| INNER CYLINDER                             | 3-1/2" (8.9cm)  | 35" (88.9cm)      |
| OUTER CYLINDER                             | 4-1/2" (11.4cm) | 44-3/8" (112.7cm) |
| TELESCOPING EXTENSION CYLINDER - 1st STAGE | 4" (10.2cm)     | 64" (162.6cm)     |
| TELESCOPING EXTENSION CYLINDER - 2nd STAGE | 3" (7.6cm)      | 64" (162.6cm)     |
| SINGLE STAGE EXTENSION CYLINDER            | 3" (7.6cm)      | 64" (162.6cm)     |
| OUTRIGGER CYLINDER                         | 2-1/2" (6.4cm)  | 21" (53.3cm)      |

## 1-9. MINIMUM CHASSIS SPECIFICATIONS

|                       | CONVENTIONAL CAB                   | TILT CAB                      |
|-----------------------|------------------------------------|-------------------------------|
| WHEEL BASE            | 165" - 174"<br>(419.1cm - 444.4cm) | 135"<br>342.9cm)              |
| CAB-TO-AXLE           | 102" (259.1cm)                     | 108" (274.3cm)                |
| FRAME SECTION MODULUS | 14.5"³ (237.6cm³)                  | 14.5"³ (237.6cm³)             |
| R B M                 | 720,000 in-lbs<br>(8298 kg-m)      | 720,000 in-lbs<br>(8298 kg-m) |
| FRONT AXLE RATING     | 7000 lbs (3180 kg)                 | 7000 lbs (3180 kg)            |
| REAR AXLE RATING      | 14,000 lbs (6360 kg)               | 14,000 (6360 kg)              |
| TRANSMISSION          | 4-speed                            | 4-speed                       |

In addition to these specifications, heavy-duty electrical and cooling systems and dual rear wheels are required. It is recommended that the vehicle be equipped with an electric tachometer, auxiliary brake lock, power steering and 5-speed transmission in lieu of a 4-speed transmission.

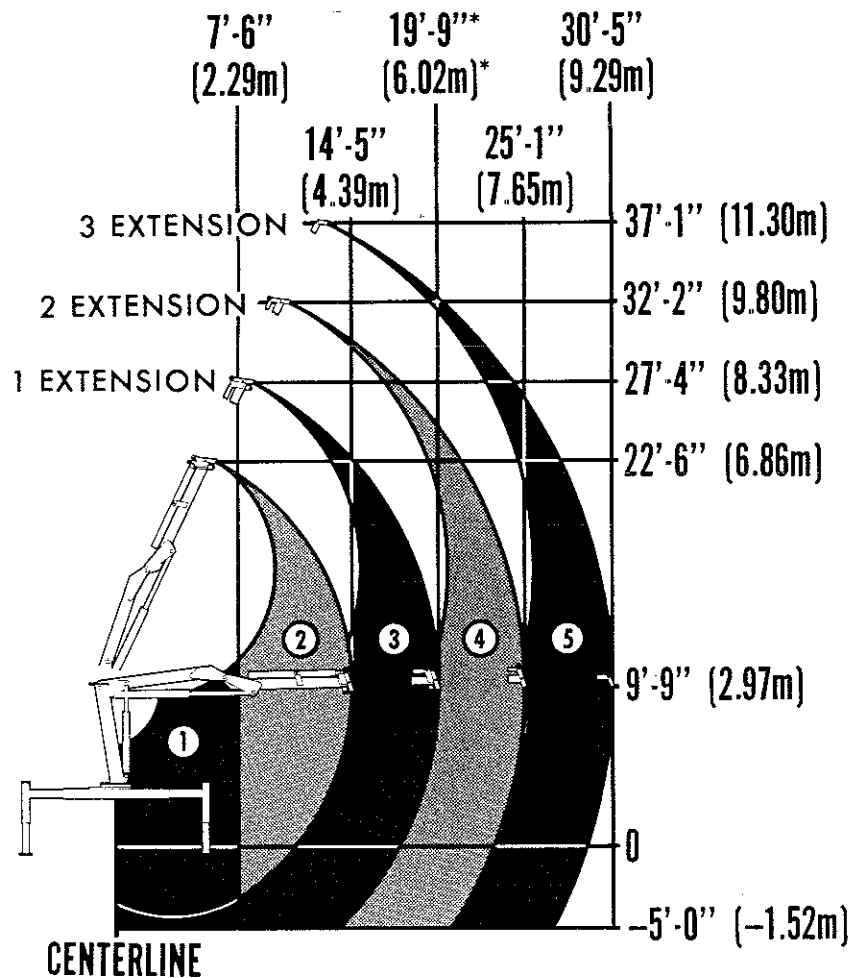
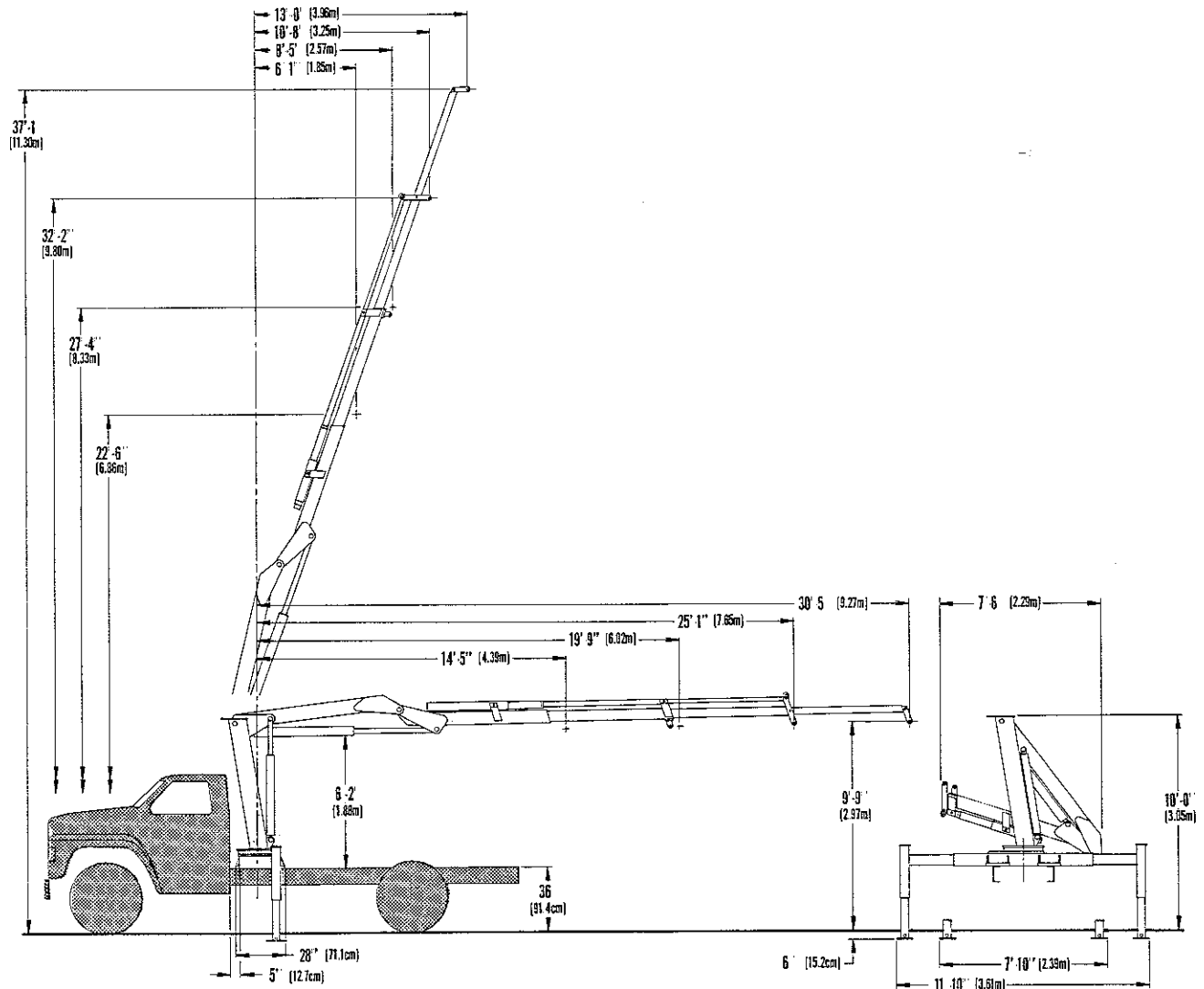


Figure A-1. CAPACITY CHART



**Figure A-2. GEOMETRIC CONFIGURATION**



## Section 2. CRANE DESCRIPTION

### 2-1. GENERAL

This section describes the major assemblies that are available with this crane. Figure B-1 illustrates the locations of the assemblies.

There are three different models covered in this manual. They are the 4819, 4825, and 4830 cranes. The 4825 is considered to be the standard crane model with the other models offered as optional cranes. The differences are discussed in paragraph 2-6.

### 2-2. BASE

The base provides a platform for mounting the crane to a truck. It incorporates the 370 degrees (6.46 Rad.) rotation mechanism. With modification (Figure D-6) the base is used to anchor the base end of the optional power-out outrigger cylinders.

### 2-3. MAST

The mast provides the necessary elevation for crane operation as well as a hinge point for the inner boom.

### 2-4. INNER BOOM

The inner boom will swing through a full 123 degrees (2.15 Rad.) from -52 degrees to +71 degrees (0.91 to +1.24 Rad.). It is raised and lowered through the use of twin double-acting hydraulic cylinders.

### 2-5. OUTER BOOM

The outer boom will swing through a full 139 degrees (2.43 Rad.). It provides an additional mounting point for attachment of the crane hook. It provides a mounting point for the optional winch. The boom is raised and lowered with a single double-acting hydraulic cylinder.

### 2-6. EXTENSION BOOMS

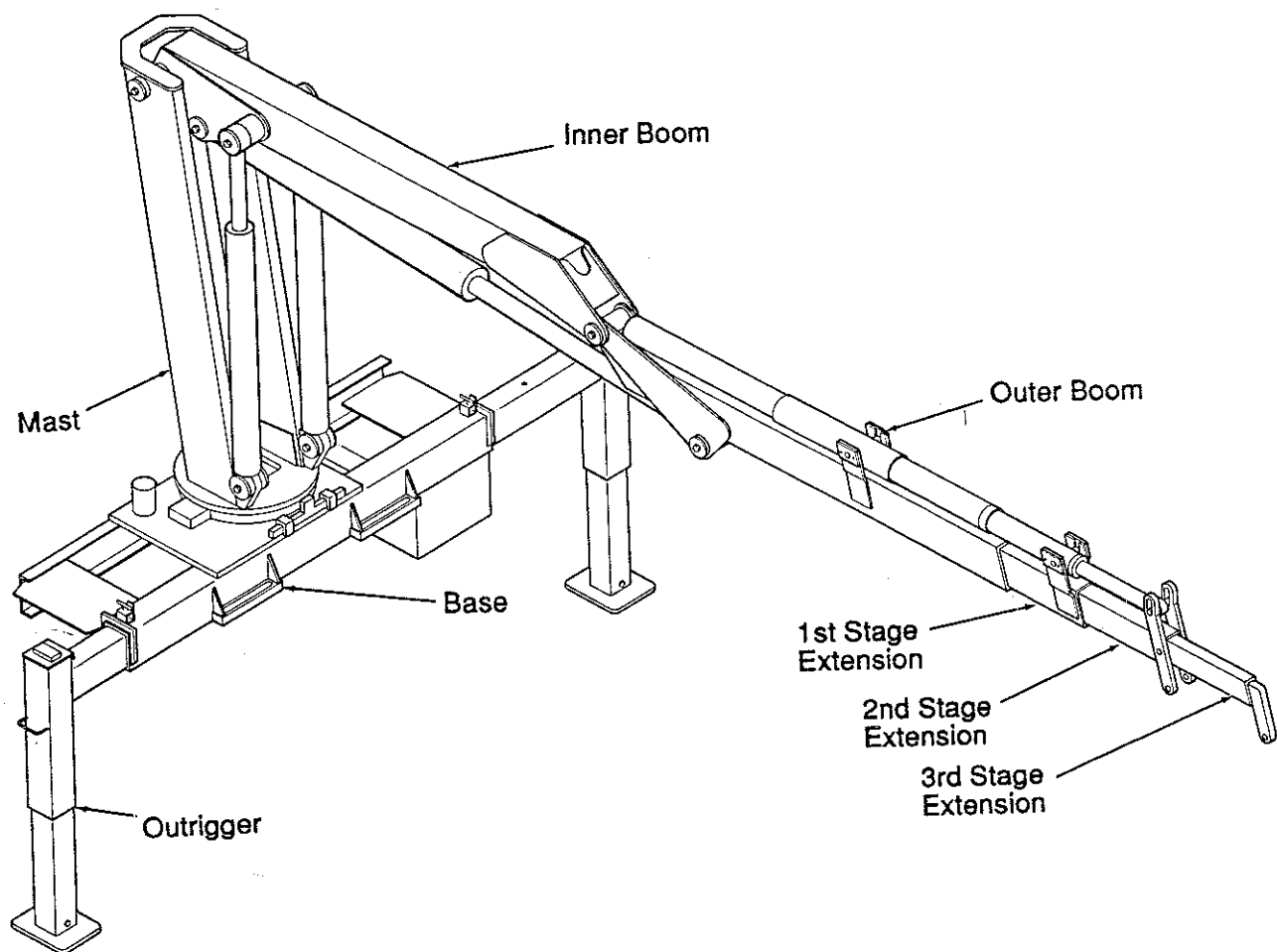
The differences between the 4819, 4825, and 4830 cranes are in the extension booms. The 4819 crane uses a one-stage hydraulic extension for an additional 64" of reach. The 4825 uses a 2-stage hydraulic extension for an additional 64" of reach for each stage for a total of 128". The 4830 uses a 2-stage telescoping hydraulic extension cylinder for an additional 128" of reach, plus a 1-stage manual extension for another 64" of reach.

### 2-7. CONTROLS

The crane may be operated from the driver's side or the curb side of the base.

### 2-8. HYDRAULIC KITS

The crane hydraulics consist of double-braided pressure and return hoses, hydraulic filters, control valve bank and all necessary hydraulic fittings.



**Figure B-1. CRANE GROUP**

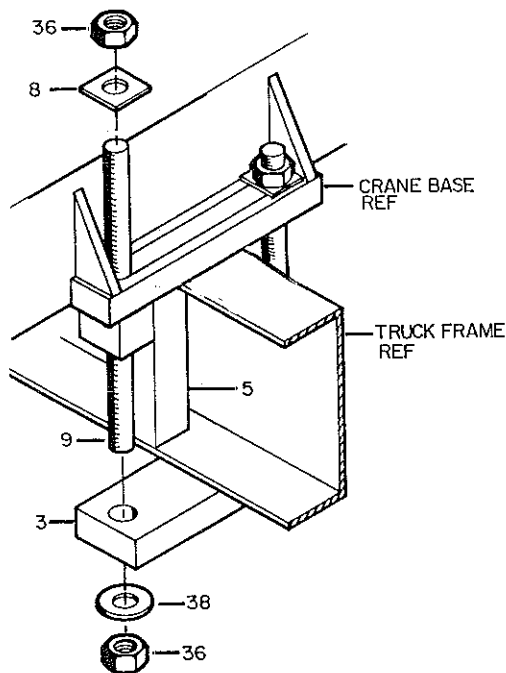
## Section 3. INSTALLATION

### 3-1. GENERAL

This section contains specific instructions for the installation of your crane. Prior to installing the crane and hydraulic components, make sure the chassis is ready to receive the crane (refer to VOLUME 1, Installation).

### 3-2. CRANE MOUNTING

1. See SPECIFICATIONS in Section 1 for crane weight. Using an overhead hoist and fabric slings of adequate capacity, lift the crane about a foot to see if the crane is adequately balanced. If not, lower hoist and adjust slings. Re-check balance and re-position crane until mounting surface is level.
2. Install the truck frame support so that the tie-down studs pass through the supports (Figure C-1). Cut the support to the inside dimensions of the truck frame. Allow about 1/16" extra. Grind the end of the support to fit inside the frame channel. Use a hammer to drive it into position if necessary.



| ITEM | DESCRIPTION   | QTY |
|------|---------------|-----|
| 3.   | CLAMP PLATE   | 4   |
| 5.   | FRAME SUPPORT | 4   |
| 8.   | SQUARE WASHER | 8   |
| 9.   | TIE DOWN STUD | 8   |
| 36.  | LOCK NUT      | 16  |
| 38.  | WASHER        | 8   |

3. Allow sufficient clearance between the cab and crane base, at least 5" (12.7cm). Position the crane on the chassis per the applicable installation drawing, centering the mounting slots over the truck frame rails. While holding crane with hoist, start mounting hardware per Figure C-1. Note position of support weldments on truck frame. Hand tighten nuts. Observe underside of crane base. No clearance between base and frame is allowed.
4. Torque the 1"-8 UNC Grade 5 mounting hardware to 442 ft-lbs (62 kg-m). When torquing the mounting hardware the following precautions must be followed:

A. Never use lock washers.

B. Hardened washers must be used, and under the turning element, whether the turning element is the nut or the head of the bolt.

C. Torque values specified are with residual oils or without special lubricants applied to the threads. If special lubricants are used, such as Never-Seize compound graphite and oil, molybdenum disulphite colloidal copper or white lead, reduce torque values 10%. Torque values for threaded fasteners are not affected with the use of Loctite.

D. Do not use rusty fasteners, the rust will alter torque values significantly.

E. Touch-up paint around mounting anchor plates.

#### CAUTION

Do not attempt to apply the same torque to the tie rod and self-locking nuts as shown in the Torque Data Chart. Do not exceed 442 ft. lbs. (62 kg-m). Exceeding this torque value could damage either the chassis or crane base.

Power wrenching is not recommended until the lead thread of the nut insert is engaged by hand turning.

Figure C-1. CRANE INSTALLATION

### 3-3. HYDRAULIC INSTALLATION

To install the hydraulic hoses, fittings, etc.:

1. Install the hydraulic reservoir on the crane base.
2. Plumb the suction-line filter as shown in Figure C-2.
3. Install the 1-1/4" suction hose between the suction-line filter and the pump inlet. Tighten the hose clamps.
4. Install the 1/2" pressure hoses between the pump outlet and the inlet port on the valve bank.
5. Install the return filter and gate valve on the reservoir. Install the hose between the valve bank and return filter.

6. Fill the hydraulic reservoir to the "FULL" mark.

7. Open the gate valve at the suction-line filter.

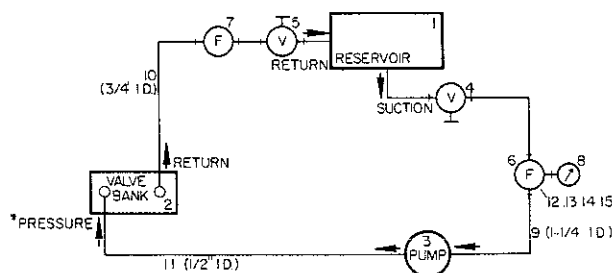
#### CAUTION

Failure to open the gate valve will result in a dry running pump which may damage the pump.

8. Open the return gate valve.

9. Start the vehicle's engine and engage the PTO. Allow the system to run for about five minutes and then check the vacuum gauge on the suction-line filter (it should read 8" mercury or less). If the vacuum reading is too high, check to make certain that the gate valve is opened completely. If the valve is fully opened, check for a collapsed or restricted suction line.

10. Cycle all hydraulic functions. Check for leaks, and refill the reservoir if necessary.



\*PRESSURE SIDE OF VALVE BANK HAS RELIEF VALVE  
RETURN DOES NOT

| ITEM | DESCRIPTION        | QTY |
|------|--------------------|-----|
| 1.   | OIL RESERVOIR      | 1   |
| 2.   | VALVE BANK         | 1   |
| 3.   | PUMP               | 1   |
| 4.   | GATE VALVE         | 1   |
| 5.   | BALL VALVE         | 1   |
| 6.   | SUCTION FILTER     | 1   |
| 7.   | RETURN FILTER      | 1   |
| 8.   | VACUUM GAUGE       | 1   |
| 9.   | SUCTION HOSE       | 1   |
| 10.  | RETURN HOSE        | 1   |
| 11.  | PRESSURE HOSE      | 1   |
| 12.  | OIL FILTER BRACKET | 1   |
| 13.  | SCREW              | 4   |
| 14.  | NUT                | 2   |
| 15.  | LOCK WASHER        | 4   |

Figure C-2. HYDRAULIC INSTALLATION

## Section 4. PARTS LIST

### 4-1. GENERAL

This section contains the exploded parts drawings with the accompanying parts list 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 THE WARNING'S, CAUTION'S AND NOTE'S CONTAINED IN THAT SECTION. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE EQUIPMENT, AN INJURY OR EVEN DEATH.

### 4-2. CRANE IDENTIFICATION

Every crane has an identification placard (Figure D-1) attached to the mast. When ordering parts, communicating warranty information or referring to the unit in correspondence, always include the assigned serial and model numbers. All inquiries should be addressed to:

Iowa Mold Tooling Co., Inc.  
Box 189, Garner, IA 50438-0189  
Telephone: 515-923-3711  
Product Support Fax: 515-923-3674

or

IMT Cranes Canada, Ltd.  
385 West Street South  
Orillia, Ontario, L3V 5H2, Canada  
Telephone: 705-325-7458  
Fax: 705-325-7625


|   |   |
|---|---|
| MODEL<br>MODELO<br>MODELE   | SERIAL NUMBER<br>NUMERO DE SERIE<br>NUMERO DE SERIE |
| DRAWING NUMBER<br>NUMERO DE PLANO<br>NUMERO DE PLAN                                 | DATE<br>FECHA DE FABRICACION<br>DATE                |
|  |   |
| Iowa Mold Tooling Co., Inc.<br>Garner, Iowa U.S.A.                                  | IMT Cranes Canada, Ltd.<br>Orillia, Ontario, Canada |

Figure D-1. SERIAL NUMBER PLACARD

### 4-3. CYLINDER IDENTIFICATION

To ensure proper replacement parts are received, it is necessary to specify a complete number/letter sequence for any part request. Part numbers may be cross checked by comparing the stamped identification of the cylinder case (Figure D-2) against the information contained in this manual. You must use the part number stamped on the cylinder case when ordering parts.

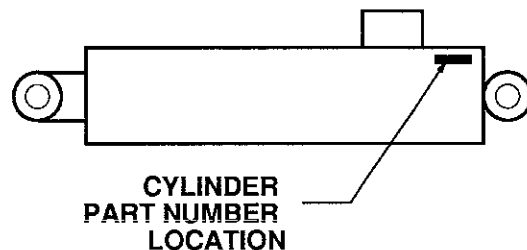


Figure D-2. CYLINDER IDENTIFICATION

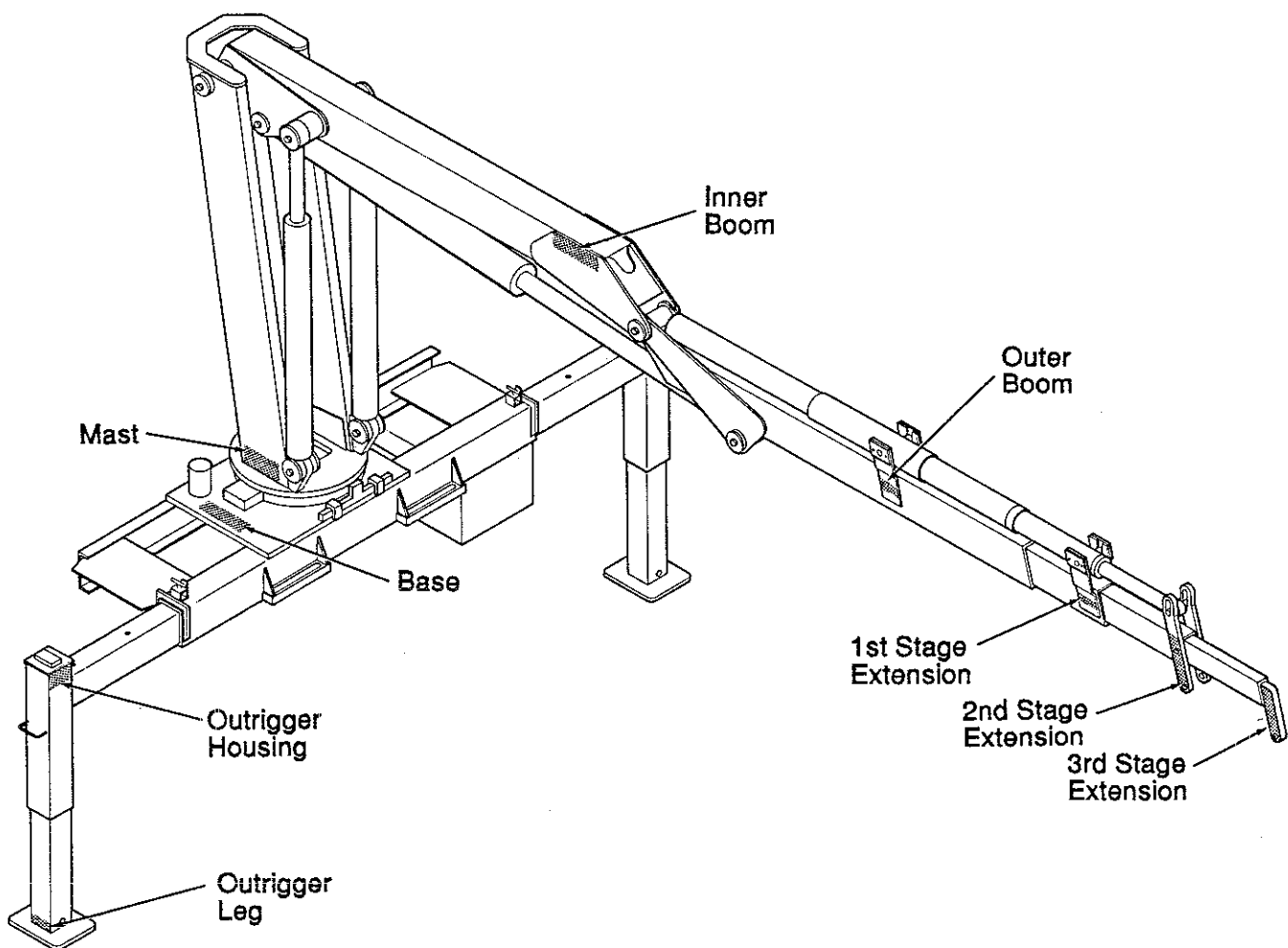
#### 4-4. WELDMENT IDENTIFICATION

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 Figure D-3.

#### 4-5. ORDERING REPAIR PARTS

When ordering replacement parts:

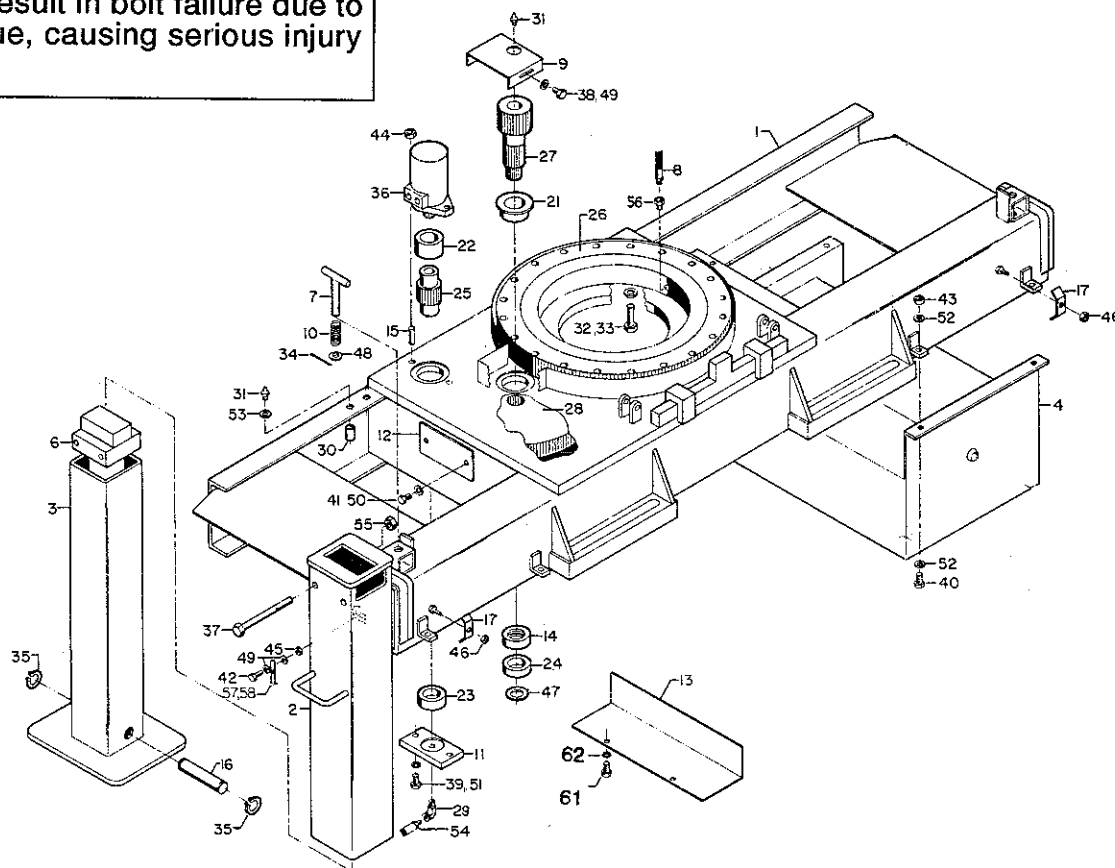
1. Give the model number of the unit.
2. Give the serial number of the unit.
3. Specify the complete part number. When ordering cylinder parts or one of the main weldments, always give the stamped part number.
4. Give a complete description of the part.
5. Specify the quantity required.



**Figure D-3. WELDMENT PART NUMBER LOCATION**

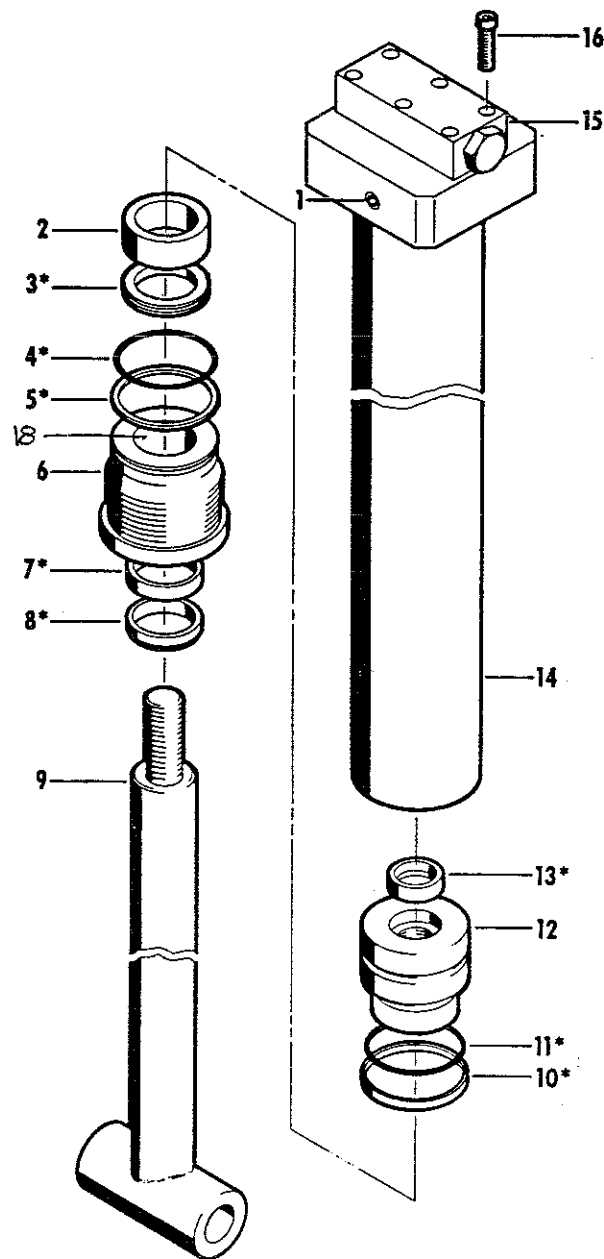
**WARNING**

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue, causing serious injury or death.



| ITEM | PART NO  | DESCRIPTION             | QTY  | ITEM | PART NO  | DESCRIPTION                  | QTY |
|------|----------|-------------------------|------|------|----------|------------------------------|-----|
| 1.   | 52704391 | BASE (INCL:21-25)       | 1    | 33.  | 72063119 | WASHER 5/8 FLAT HARD         | 20  |
| 2.   | 52704387 | OUTRIGGER HOUSING       | 2    | 34.  | 72066185 | COTTER PIN 5/32X1            | 2   |
| 3.   | 52704388 | OUTRIGGER LEG           | 2    | 35.  | 72066125 | RETAINER RING 1              | 4   |
| 4.   | 70732573 | RESERVOIR ASM           | 1    | 36.  | 73051384 | HYDRAULIC MOTOR              | 1   |
| 6.   | 3B166820 | POWER DOWN CYLINDER     | 2    | 37.  | 72060102 | CAP SCR 1/2-13X5-1/2 HH GR5  | 4   |
| 7.   | 52070138 | T-PIN                   | 2    | 38.  | 72060833 | CAP SCR 5/16-18X3/4 HH GR5   | 2   |
| 8.   | 53000717 | GREASE EXTENSION        | 1    | 39.  | 72060092 | CAP SCR 1/2-13X1-1/4 HH GR5  | 2   |
| 9.   | 60010235 | PINION COVER            | 1    | 40.  | 72060046 | CAP SCR 3/8-16X1 HH GR5      | 4   |
| 10.  | 60010351 | SPRING                  | 2    | 41.  | 72060002 | CAP SCR 1/4-20X3/4 HH GR5    | 2   |
| 11.  | 60010844 | GREASE PLATE            | 1    | 42.  | 72060026 | CAP SCR 5/16-18X1-1/4 HH GR5 | 2   |
| 12.  | 60102767 | COVER                   | 1    | 43.  | 72062103 | NUT 3/8-16 LOCK              | 4   |
| 13.  | 60102769 | GUARD                   | 1    | 44.  | 72062080 | NUT 1/2-13 LOCK              | 2   |
| 14.  | 60104694 | SPACER                  | 1    | 45.  | 72062109 | NUT 5/16-18 LOCK             | 2   |
| 15.  | 60106032 | STUD 1/2-13X2           | 2    | 46.  | 72062103 | NUT 3/8-16 LOCK              | 2   |
| 16.  | 60106968 | PIN                     | 2    | 47.  | 72066084 | RETAINING RING 1-1/4"        | 1   |
| 17.  | 60107648 | HOSE CLAMP              | 2    | 48.  | 72063027 | BUSHING 5/8                  | 2   |
| 21.  | 60020114 | BUSHING (PART OF 1)     | 1REF | 49.  | 72063002 | WASHER 5/16 WRT              | 6   |
| 22.  | 60020115 | BUSHING (PART OF 1)     | 1REF | 50.  | 72063049 | WASHER 1/4 LOCK              | 2   |
| 23.  | 60020116 | BUSHING (PART OF 1)     | 1REF | 51.  | 72063053 | WASHER 1/2 LOCK              | 2   |
| 24.  | 60020154 | BUSHING (PART OF 1)     | 1REF | 52.  | 72063003 | WASHER 3/8 WRT               | 10  |
| 25.  | 71056011 | DRIVE GEAR (PART OF 1)  | 1REF | 54.  | 53000714 | GREASE EXTENSION             | 1   |
| 26.  | 71056001 | GEAR BEARING            | 1    | 55.  | 72062107 | NUT 1/2-13 CTR LOCK          | 4   |
| 27.  | 71056010 | PINION GEAR             | 1    | 56.  | 72531826 | REDUCER BUSHING 1/4-1/2NPT   | 1   |
| 28.  | 71056012 | INTERMEDIATE GEAR       | 1    | 57.  | 60108883 | CHAIN                        | 2   |
| 29.  | 72053281 | STREET ELBOW 1/8NPT 90° | 1    | 58.  | 70058060 | COLD SHUT LINK               | 2   |
| 30.  | 72053301 | COUPLING 1/8 NPT        | 2    | 61.  | 72060023 | CAP SCR 5/16-18 X 3/4 HH     | 2   |
| 31.  | 72053508 | ZERK 1/8NPT             | 3    | 62.  | 72063050 | WASHER 5/16 WRT              | 2   |
| 32.  | 72060151 | CAP SCR 5/8-11X2 HH GR8 | 20   |      |          |                              |     |

**Figure D-4. BASE AND OUTRIGGER (41704349)**



## DIMENSIONS

|              |         |
|--------------|---------|
| Bore         | 2 1/2   |
| Stroke       | 21      |
| C-C Closed   | 29 9/16 |
| Rod Diameter | 1 1/2   |
| Pin Diameter | 1       |

## NOTE

IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

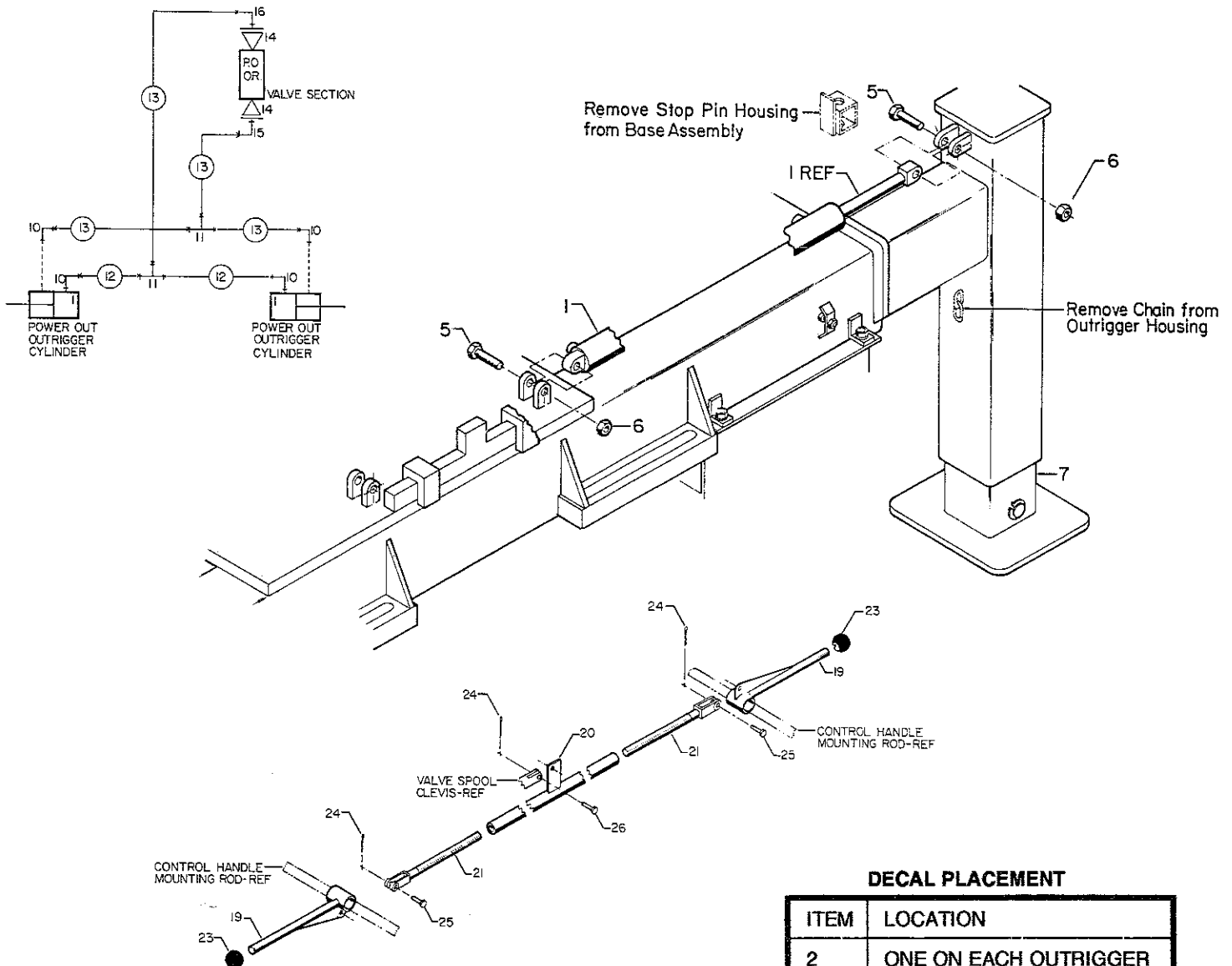
APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

| ITEM | PART NO. | DESCRIPTION                         | QTY  |
|------|----------|-------------------------------------|------|
| 1.   | 7PNPXT02 | PLUG 1/8NPT (PART OF 14)            | 3REF |
| 2.   | 6C075015 | STOP TUBE                           | 1    |
| 3.   | 6A025015 | WAFER LOCK (PART OF 17)             | 1REF |
| 4.   | 7Q072228 | O-RING (PART OF 17)                 | 1REF |
| 5.   | 7Q10P228 | BACK-UP RING (PART OF 17)           | 1REF |
| 6.   | 6H025015 | HEAD                                | 1    |
| 7.   | 7R546015 | ROD SEAL (PART OF 17)               | 1REF |
| 8.   | 7R14P015 | ROD WIPER (PART OF 17)              | 1REF |
| 9.   | 4G166820 | ROD                                 | 1    |
| 10.  | 7T66P025 | PISTON SEAL (PART OF 17)            | 1REF |
| 11.  | 7Q072137 | O-RING (PART OF 17)                 | 1REF |
| 12.  | 6I025087 | PISTON                              | 1    |
| 13.  | 7T61N087 | LOCK RING SEAL (PART OF 17)         | 1REF |
| 14.  | 4B166820 | CASE (INCL:1)                       | 1    |
| 15.  | 73054004 | VALVE                               | 1    |
| 16.  | 72060708 | CAP SCR 1/4-20X1-1/4 SH             | 6    |
| 17.  | 9B101214 | SEAL KIT (INCL:3-5,7,8,10,11,13,18) | 1    |
| 18.  | 7T2N8015 | WEAR RING (PART OF 17)              | 1REF |

Figure D-5. OUTRIGGER CYLINDER (3B166820)

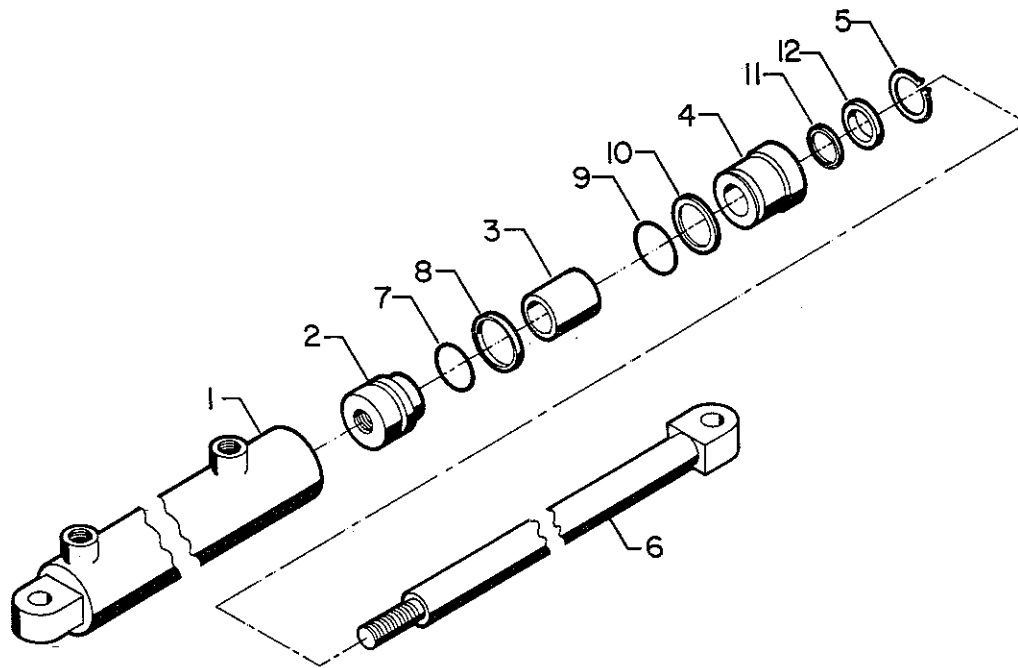


**DECAL PLACEMENT**

| ITEM | LOCATION                                |
|------|---|
| 2    | ONE ON EACH OUTRIGGER                   |
| 3    | AT OR NEAR THE NORMAL OPERATING STATION |
| 22   | AT POWER OUT CONTROLS                   |

| ITEM | PART     | DESCRIPTION                 | QTY | ITEM | PART     | DESCRIPTION                 | QTY |
|------|----------|-----------------------------|-----|------|----------|-----------------------------|-----|
| 1.   | 3B115830 | POWER-OUT CYLINDER          | 2   | 15.  | 72532700 | ELBOW 9/16MSTR 9/16MJIC XLG | 1   |
| 2.   | 70392864 | DECAL-OUTRG STAND CLEAR     | 2   | 16.  | 72053760 | ELBOW 9/16MSTR 9/16MJIC 90° | 1   |
| 3.   | 70392867 | DECAL-OUTRG MOVING          | 1   | 19.  | 70029451 | CONTROL HANDLE              | 2   |
| 5.   | 72060928 | CAP SCR 1/2X21/4            | 4   | 20.  | 52704744 | CONTROL ROD-FEMALE          | 1   |
| 6.   | 72062080 | NUT 1/2-13 LOCK             | 4   | 21.  | 52704745 | CONTROL ROD-MALE            | 2   |
| 7.   | 52704388 | OUTRIGGER LEG               | REF | 22.  | 71392277 | CONTROL DECAL               | 2   |
| 10.  | 72053758 | ELBOW 7/16MSTR 7/16MJIC 90° | 4   | 23.  | 71039096 | CONTROL KNOB                | 2   |
| 11.  | 72532768 | TEE 7/16MJIC                | 2   | 24.  | 72066168 | COTTER PIN                  | 3   |
| 12.  | 51704620 | HOSE 1/4 ID X 20            | 2   | 25.  | 72066338 | CLEVIS PIN                  | 2   |
| 13.  | 51705970 | HOSE 1/4 ID X 33            | 4   | 26.  | 72661169 | CLEVIS PIN                  | 1   |
| 14.  | 72532707 | ADAPTER 7/16MJIC 9/16FJIC   | 2   |      |          |                             |     |

**Figure D-6. POWER-OUT OUTRIGGER (31704357)**

**NOTE**

IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

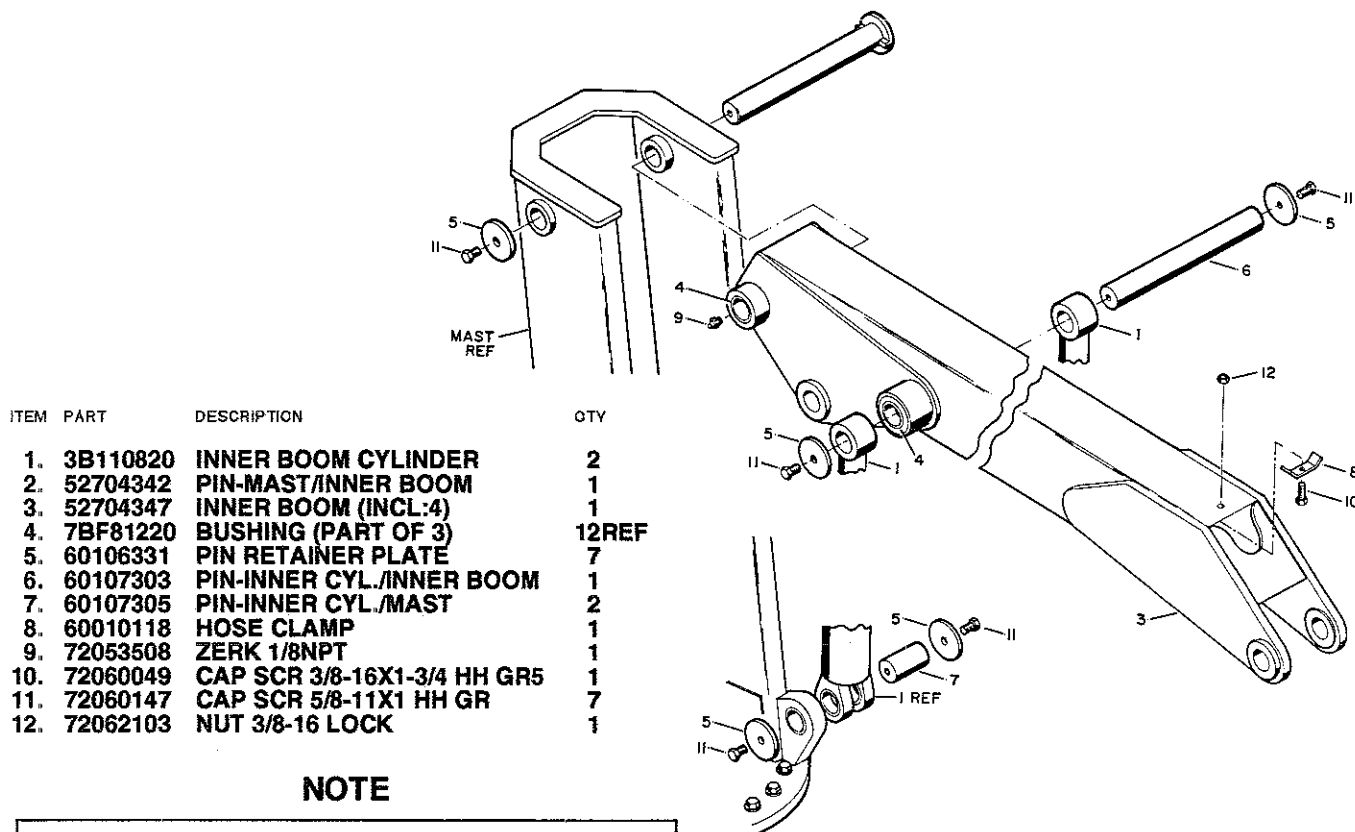
USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

**DIMENSIONS**

|              |         |
|--------------|---------|
| Bore         | 1 1/4   |
| Stroke       | 24      |
| Rod Diameter | 3/4     |
| Pin Diameter | 1/2     |
| C-C Closed   | 30 7/16 |

| ITEM | PART     | DESCRIPTION          | QTY  |
|------|----------|----------------------|------|
| 1.   | 4B115830 | CASE                 | 1    |
| 2.   | 6I012050 | PISTON               | 1    |
| 3.   | 6C125007 | STOP TUBE            | 1    |
| 4.   | 6H012007 | HEAD                 | 1    |
| 5.   | 72066029 | RETAINING RING       | 1    |
| 6.   | 4G115830 | ROD                  | 1    |
| 7.   | 7Q072021 | O-RING (PART OF 13)  | 1REF |
| 8.   | 7T66P012 | PISTON (PART OF 13)  | 1REF |
| 9.   | 7Q072214 | O-RING (PART OF 13)  | 1REF |
| 10.  | 7Q10P214 | BACK-UP (PART OF 13) | 1REF |
| 11.  | 7R66P075 | SEAL (PART OF 13)    | 1REF |
| 12.  | 7R13P007 | ROD (PART OF 13)     | 1REF |
| 13.  | 9B050608 | SEAL KIT (INCL:7-12) | 1    |

**Figure D-7. POWER-OUT OUTRIGGER CYLINDER (3B115830)**

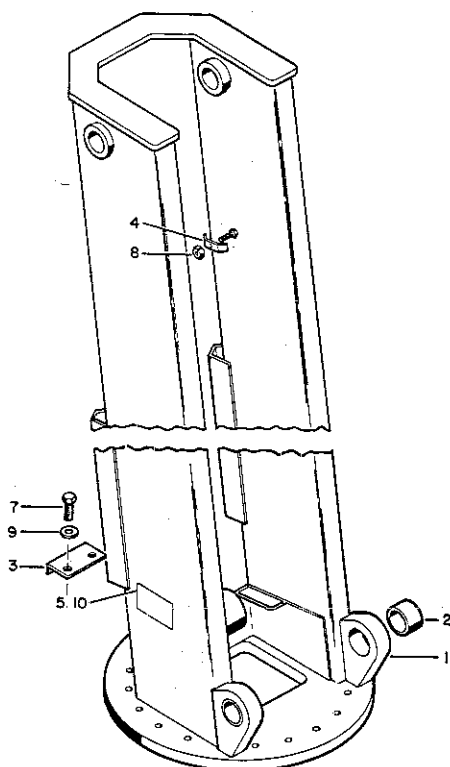


| ITEM | PART     | DESCRIPTION                 | QTY   |
|------|----------|-----------------------------|-------|
| 1.   | 3B110820 | INNER BOOM CYLINDER         | 2     |
| 2.   | 52704342 | PIN-MAST/INNER BOOM         | 1     |
| 3.   | 52704347 | INNER BOOM (INCL:4)         | 1     |
| 4.   | 7BF81220 | BUSHING (PART OF 3)         | 12REF |
| 5.   | 60106331 | PIN RETAINER PLATE          | 7     |
| 6.   | 60107303 | PIN-INNER CYL./INNER BOOM   | 1     |
| 7.   | 60107305 | PIN-INNER CYL./MAST         | 2     |
| 8.   | 60010118 | HOSE CLAMP                  | 1     |
| 9.   | 72053508 | ZERK 1/8NPT                 | 1     |
| 10.  | 72060049 | CAP SCR 3/8-16X1-3/4 HH GR5 | 1     |
| 11.  | 72060147 | CAP SCR 5/8-11X1 HH GR      | 7     |
| 12.  | 72062103 | NUT 3/8-16 LOCK             | 1     |

### NOTE

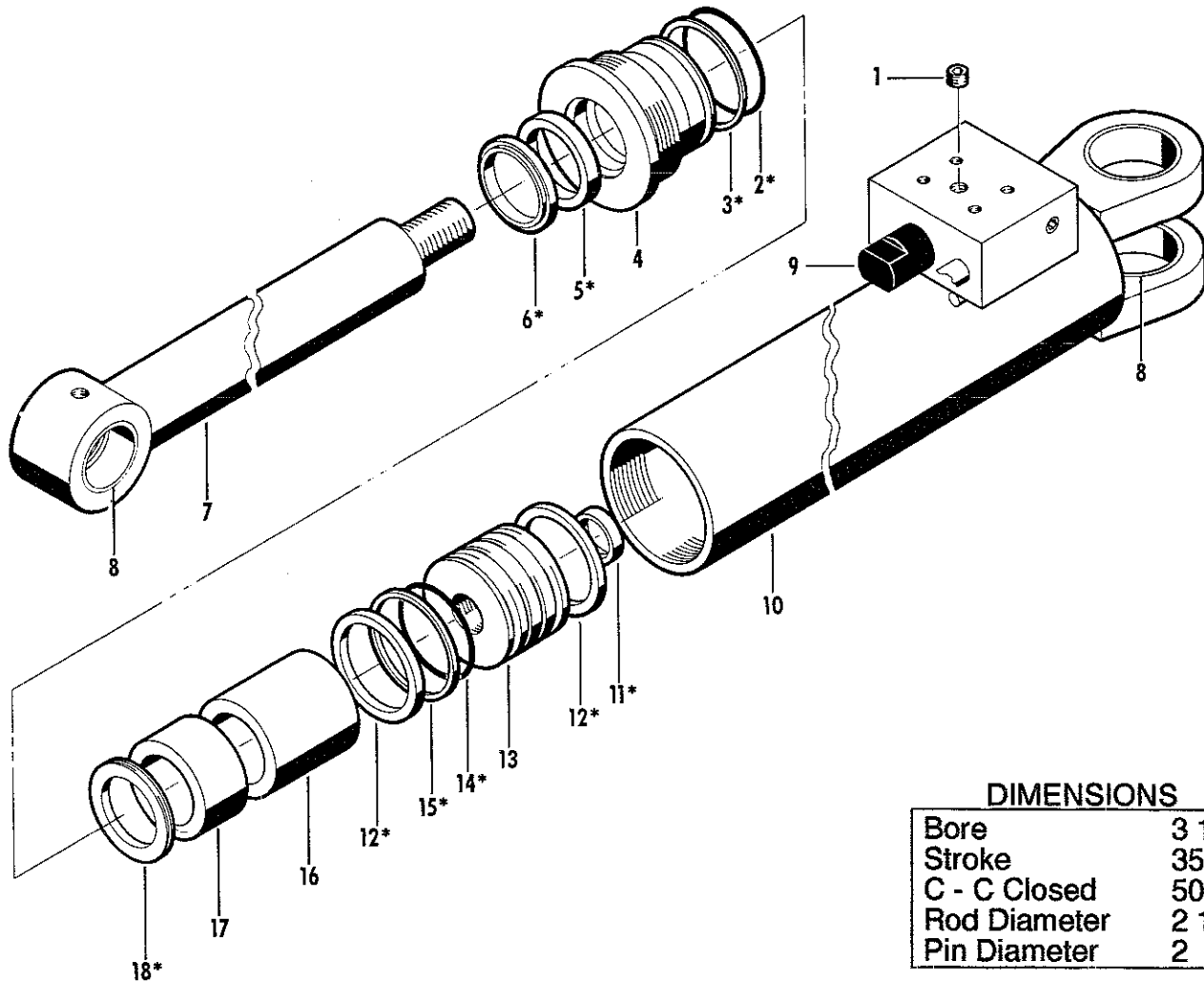
Anytime the pin retainer plate bolts (Item 11) have been removed, apply Loctite 262 to the threads before re-assembly.

Figure D-8. INNER BOOM (41704351)



| ITEM | PART     | DESCRIPTION          | QTY |
|------|----------|----------------------|-----|
| 1.   | 52704348 | MAST (INCL:2)        | 1   |
| 2.   | 7BF81520 | BUSHING (PART OF 1)  | 2   |
| 3.   | 60104539 | PINION GEAR COVER    | 1   |
| 4.   | 60010118 | HOSE CLAMP           | 2   |
| 5.   | 70029119 | SERIAL NO. PLACARD   | 1   |
| 7.   | 72060151 | CAP SCR 5/8 X 2 GR8  | 18  |
| 8.   | 72062103 | NUT 3/8-16 LOCK      | 2   |
| 9.   | 72063119 | WASHER 5/8 FLAT HARD | 18  |
| 10.  | 72066340 | RIVET 1/8            |     |

Figure D-9. MAST (41704350)



### DIMENSIONS

|              |       |
|--------------|-------|
| Bore         | 3 1/2 |
| Stroke       | 35    |
| C - C Closed | 50    |
| Rod Diameter | 2 1/4 |
| Pin Diameter | 2     |

### NOTE

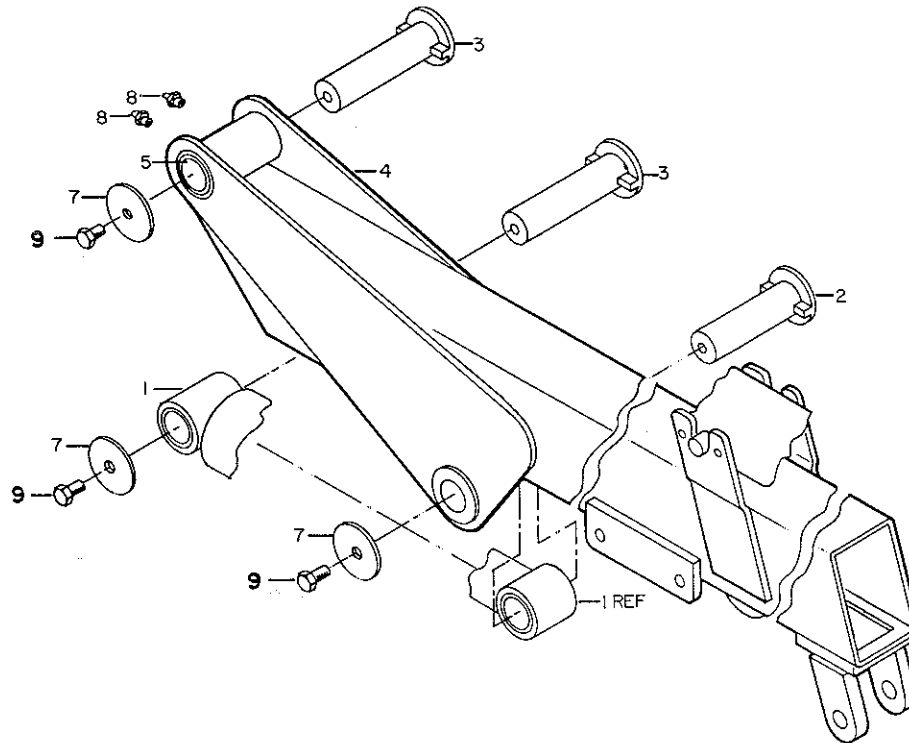
IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

| ITEM | PART     | DESCRIPTION  | QTY  |
|------|----------|--|------|
| 1.   | 7PNPXT02 | PLUG 1/8NPT (PART OF 10)                           | 3REF |
| 2.   | 7Q072338 | O-RING (PART OF 19)                                | 1REF |
| 3.   | 7Q10P338 | BACK-UP (PART OF 19)                               | 1REF |
| 4.   | 6H035022 | HEAD   | 1    |
| 5.   | 7R546022 | ROD SEAL (PART OF 19)                              | 1REF |
| 6.   | 7R14P022 | ROD WIPER (PART OF 19)                             | 1REF |
| 7.   | 4G110820 | ROD  | 1    |
| 8.   | 7BF81020 | BUSHING (PART OF 7 & 10)                           | 4REF |
| 9.   | 73054242 | COUNTERBALANCE VALVE                               | 1    |
| 10.  | 4B110820 | CASE   | 1    |
| 11.  | 7T61N125 | LOCK RING SEAL (PART OF 19)                        | 1REF |
| 12.  | 7T65I035 | PISTON RING (PART OF 19)                           | 2REF |
| 13.  | 6I035125 | PISTON   | 1    |
| 14.  | 7Q072151 | O-RING (PART OF 19)                                | 1REF |
| 15.  | 7T66P035 | PISTON SEAL (PART OF 19)                           | 1REF |
| 16.  | 6C075022 | STOP TUBE  | 1    |
| 17.  | 6C300022 | STOP TUBE  | 1    |
| 18.  | 6A025022 | WAFFER LOCK (PART OF 19)                           | 1REF |
| 19.  | 9C141820 | SEAL KIT<br>(INCL: 2, 3, 5, 6, 11, 12, 14, 15, 18) | 1    |

Figure D-10. INNER CYLINDER (3B110820)

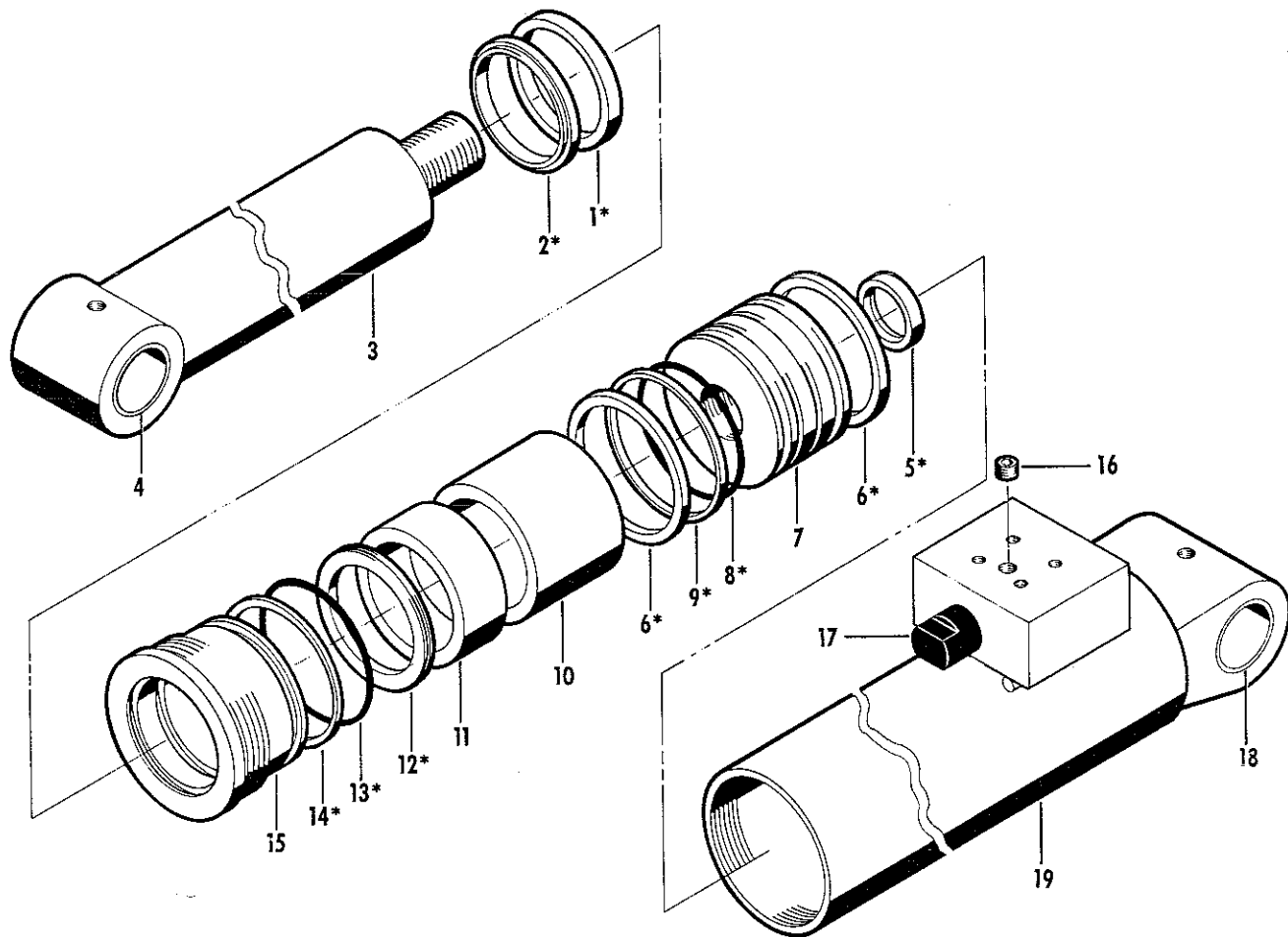


| ITEM | PART     | DESCRIPTION             | QTY  |
|------|----------|-------------------------|------|
| 1.   | 3C132820 | OUTER CYLINDER          | 1    |
| 2.   | 52704340 | PIN                     | 1    |
| 3.   | 52704341 | PIN                     | 2    |
| 4.   | 52704343 | OUTER BOOM (INCL. 5)    | 1    |
| 5.   | 7BF81220 | BUSHING (PART OF 4)     | 4REF |
| 7.   | 60106331 | PIN RETAINER PLATE      | 3    |
| 8.   | 72053508 | ZERK 1/8NPT             | 2    |
| 9.   | 72060147 | CAP SCR 5/8-11X1 HH GR5 | 3    |

#### NOTE

Anytime the pin retainer plate bolts (item 9) have been removed, apply Loctite 262 to the threads before re-assembly.

**Figure D-11. OUTER BOOM (41704359)**



### DIMENSIONS

|              |        |
|--------------|--------|
| Bore         | 4 1/2  |
| Stroke       | 44 3/8 |
| C-C Closed   | 60     |
| Rod Diameter | 3      |
| Pin Diameter | 2      |

### NOTE

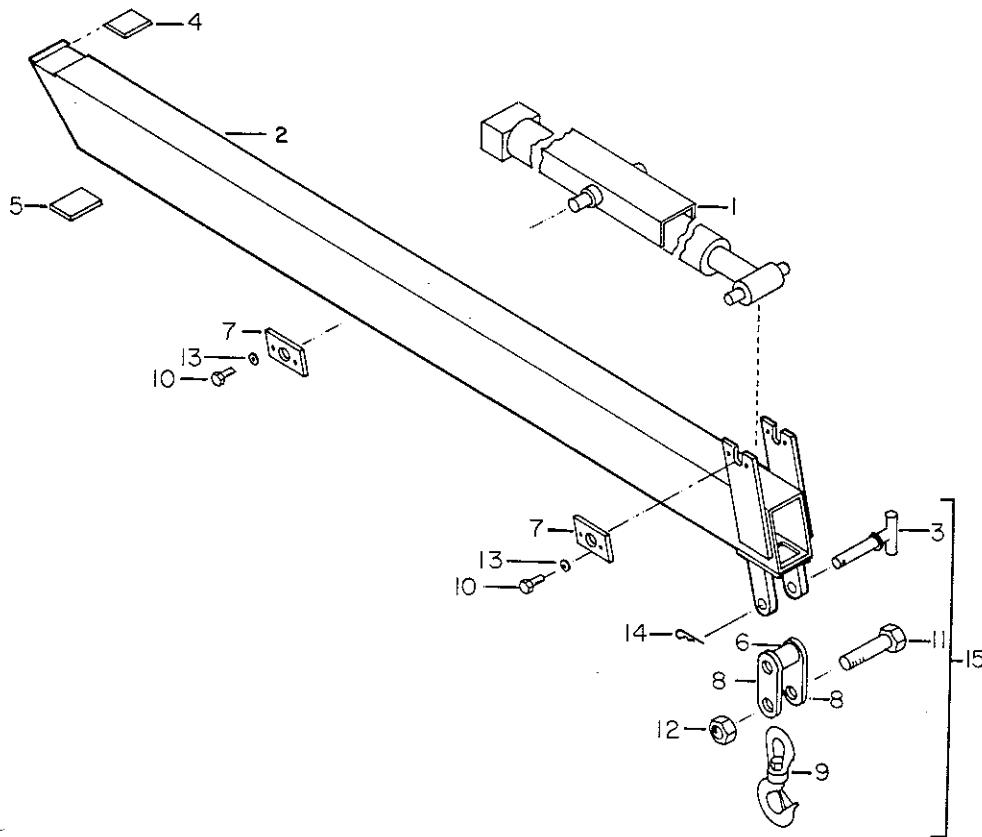
IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

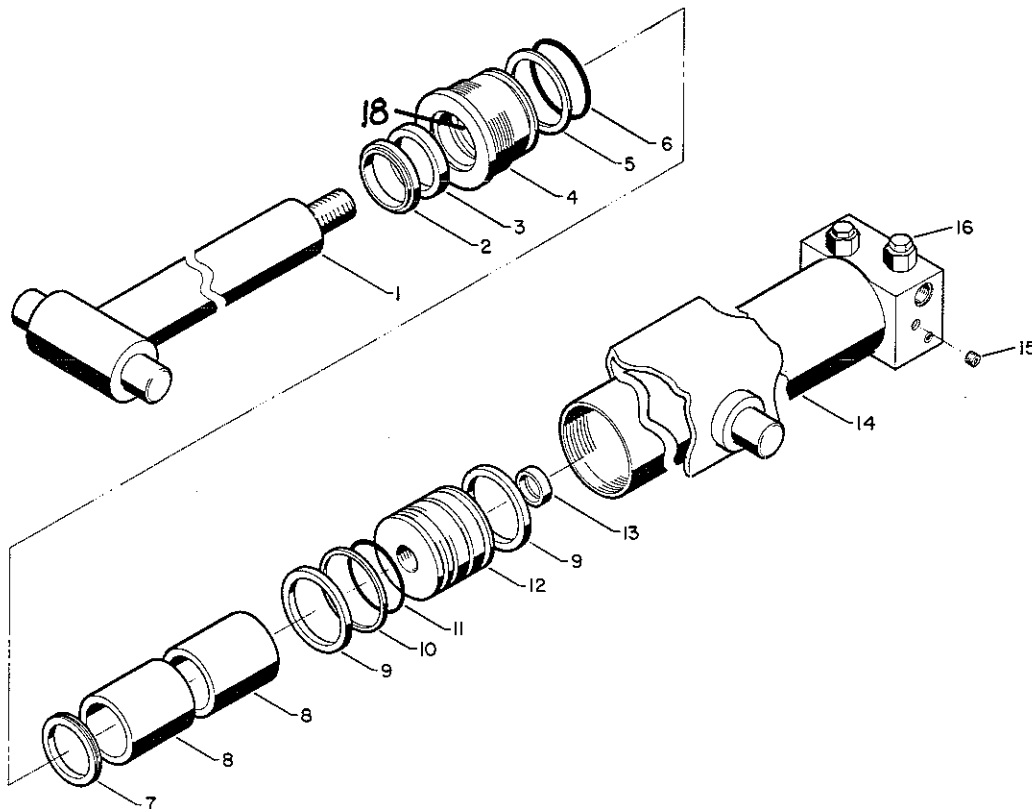
| ITEM | PART     | DESCRIPTION                       | QTY  |
|------|----------|-----------------------------------|------|
| 1.   | 7R546030 | ROD SEAL (PART OF 20)             | 1REF |
| 2.   | 7R14P030 | ROD WIPER (PART OF 20)            | 1REF |
| 3.   | 4G132820 | ROD (INCL:4)                      | 1    |
| 4.   | 7BF81220 | BUSHING (PART OF 3)               | 2REF |
| 5.   | 7T61N143 | LOCK RING SEAL (PART OF 20)       | 1REF |
| 6.   | 7T65I045 | PISTON RING (PART OF 20)          | 2REF |
| 7.   | 6I045143 | PISTON                            | 1    |
| 8.   | 7Q072155 | O-RING (PART OF 20)               | 1REF |
| 9.   | 7T66P045 | PISTON SEAL (PART OF 20)          | 1REF |
| 10.  | 6C300030 | STOP TUBE                         | 1    |
| 11.  | 6C150030 | STOP TUBE                         | 1    |
| 12.  | 6A025030 | WAFER LOCK (PART OF 20)           | 1REF |
| 13.  | 7Q072345 | O-RING                            | 1REF |
| 14.  | 7Q10P346 | BACK-UP (PART OF 20)              | 1REF |
| 15.  | 6H045030 | HEAD                              | 1    |
| 16.  | 7PNPXT02 | PLUG 1/8NPT (PART OF 19)          | 3REF |
| 17.  | 73054242 | COUNTERBALANCE VALVE              | 1    |
| 18.  | 7BF81520 | BUSHING (PART OF 19)              | 2REF |
| 19.  | 4C132820 | CASE (INCL:16,18)                 | 1    |
| 20.  | 9C182423 | SEAL KIT (INCL:1,2,5,6,8,9,12-14) | 1    |

Figure D-12. OUTER CYLINDER (3C132820)



| ITEM | PART     | DESCRIPTION                      | QTY  |
|------|----------|----------------------------------|------|
| 1.   | 3B059840 | EXTENSION CYLINDER               | 1    |
| 2.   | 52704344 | EXTENSION BOOM                   | 1    |
| 3.   | 52070151 | PIN (PART OF 15)                 | 1REF |
| 4.   | 60030064 | WEAR PAD                         | 1    |
| 5.   | 60030067 | WEAR PAD                         | 1    |
| 6.   | 60108857 | SPACER (PART OF 15)              | 1REF |
| 7.   | 60107292 | LOCKPLATE                        | 4    |
| 8.   | 60107324 | HOOK LINK (PART OF 15)           | 2REF |
| 9.   | 71073035 | SWIVEL HOOK (PART OF 15)         | 1REF |
| 10.  | 72060091 | CAP SCR 1/2-13X1 HH GR5          | 8    |
| 11.  | 72601666 | CAP SCR 1 1/4-7X4 (PART OF 15)   | 1REF |
| 12.  | 72062073 | NUT 1 1/4-7 LOCK (PART OF 15)    | 1REF |
| 13.  | 72063053 | WASHER 1/2 LOCK                  | 8    |
| 14.  | 72066145 | HAIR PIN (PART OF 15)            | 1REF |
| 15.  | 51706199 | HOOK ASM (INCL:3,6,8,9,11,12,14) | 1    |

Figure D-13. 4819 EXTENSION BOOM (41704360)

**DIMENSIONS**

|              |        |
|--------------|--------|
| Bore         | 3      |
| Stroke       | 64     |
| C-C Closed   | 31 1/2 |
| Rod Diameter | 2      |
| Pin Diameter | 1 1/4  |

| ITEM | PART NO. | DESCRIPTION                           | QTY  |
|------|----------|---------------------------------------|------|
| 1.   | 4G059840 | ROD                                   | 1    |
| 2.   | 7R14P020 | ROD WIPER (PART OF 17)                | 1REF |
| 3.   | 7R546020 | ROD SEAL (PART OF 17)                 | 1REF |
| 4.   | 6H030020 | HEAD                                  | 1    |
| 5.   | 7Q10P334 | BACK-UP RING (PART OF 17)             | 1REF |
| 6.   | 7Q072334 | O-RING (PART OF 17)                   | 1REF |
| 7.   | 6A025020 | WAFER LOCK (PART OF 17)               | 1REF |
| 8.   | 6C300020 | STOP TUBE                             | 2    |
| 9.   | 7T65I030 | PISTON RING (PART OF 17)              | 2REF |
| 10.  | 7T66P030 | PISTON SEAL (PART OF 17)              | 1REF |
| 11.  | 7Q072145 | O-RING (PART OF 17)                   | 1REF |
| 12.  | 6I030106 | PISTON                                | 1    |
| 13.  | 7T61N106 | LOCK RING SEAL (PART OF 17)           | 1REF |
| 14.  | 4B059840 | CASE                                  | 1    |
| 15.  | 7PNPXT02 | PLUG 1/8NPT (PART OF 14)              | 6REF |
| 16.  | 73054304 | COUNTERBALANCE VALVE                  | 2    |
| 17.  | 9C121617 | SEAL KIT<br>(INCL:2,3,5-7,9-11,13,18) | 1    |
| 18.  | 7T2N4022 | WEAR RING-ROD (PART OF 17)            | 1REF |

**NOTE**

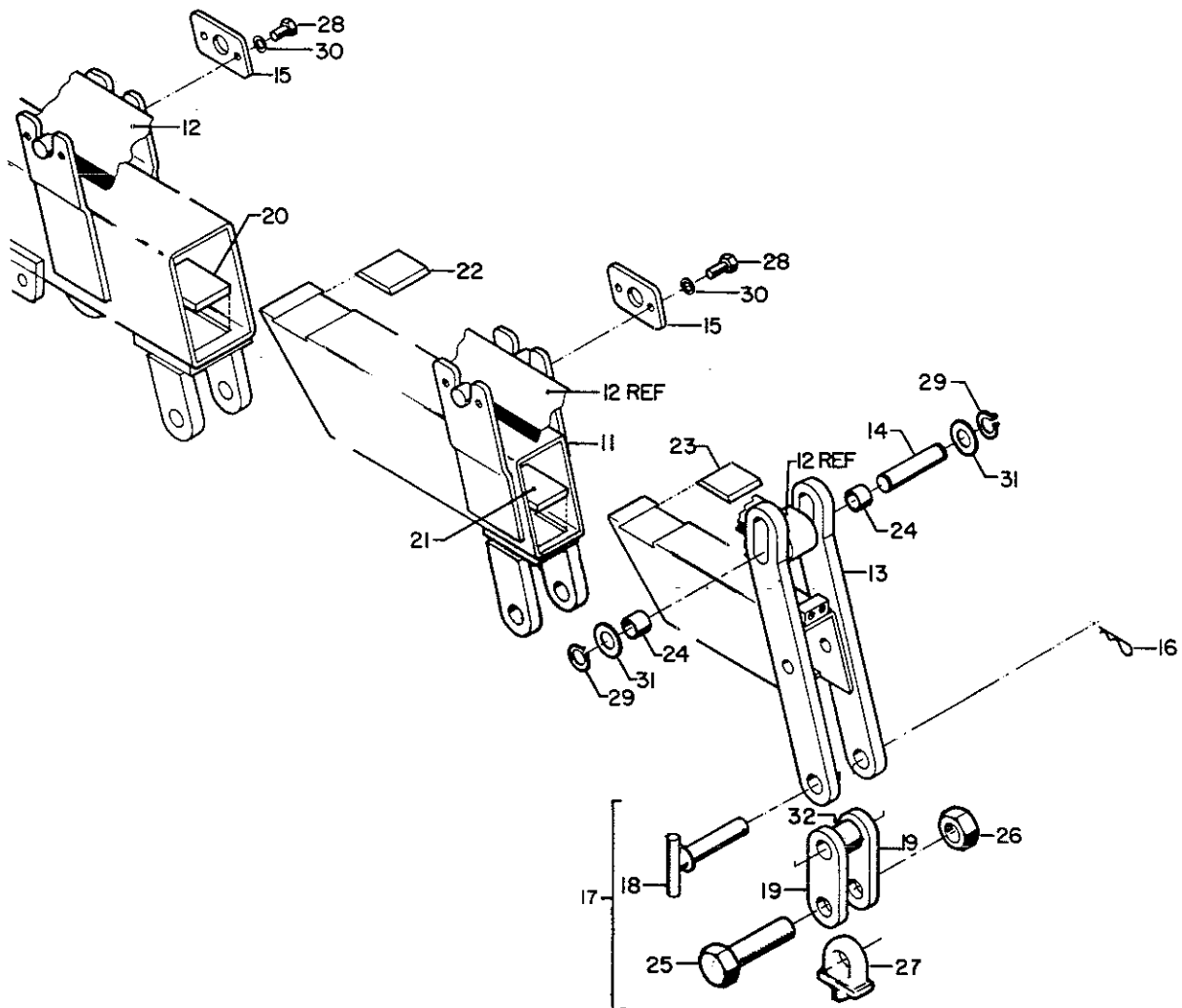
IT IS RECOMMENDED THAT ALL COMPONENTS OF THE SEAL KIT BE REPLACED WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

APPLY "LUBRIPLATE #630-2" MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

USE "NEVER-SEEZ" OR EQUIVALENT BETWEEN THE HEAD AND THE CASE WHEN ASSEMBLING THE CYLINDER.

**Figure D-14. 4819 EXTENSION CYLINDER (3B059840)**

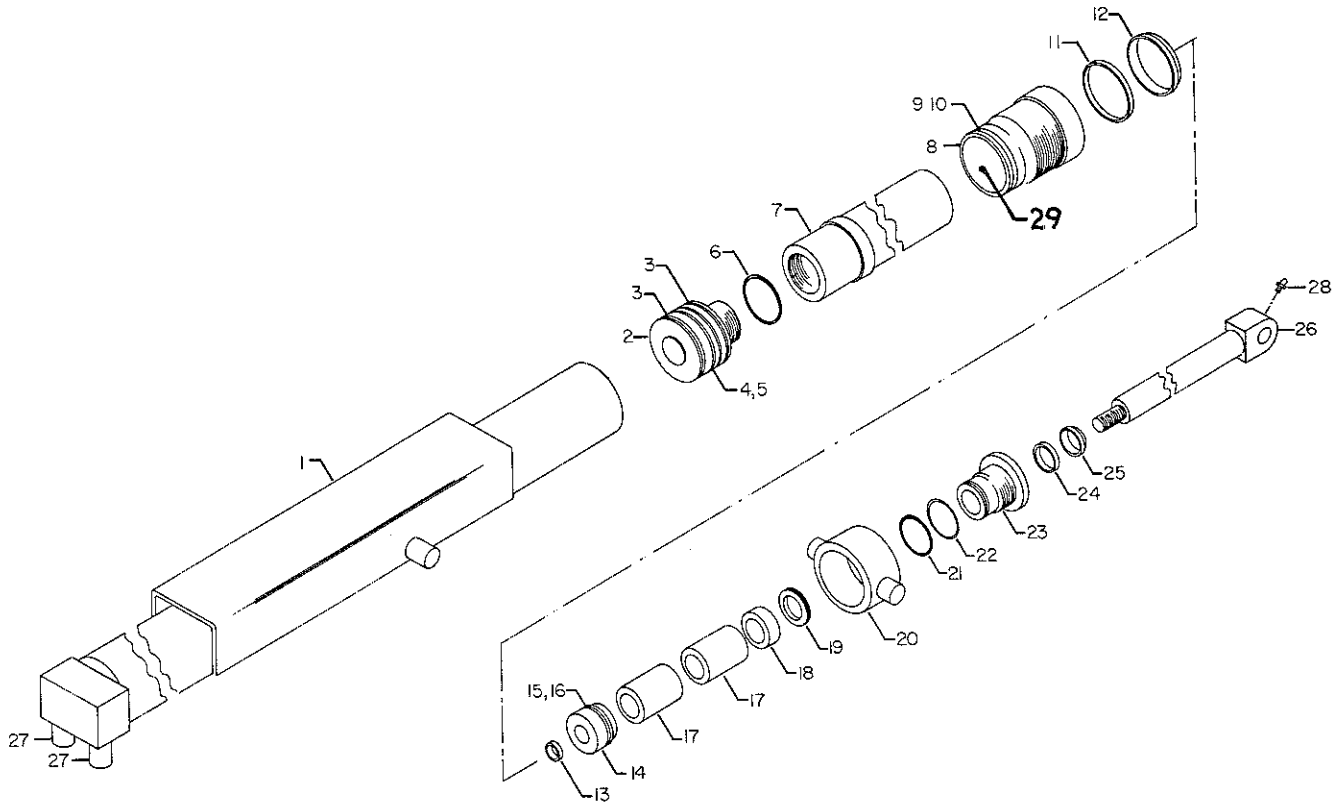




| ITEM | PART     | DESCRIPTION              | QTY  | ITEM | PART     | DESCRIPTION                      | QTY  |
|------|----------|--------------------------|------|------|----------|----------------------------------|------|
| 11.  | 52704344 | 1ST STAGE EXTENSION BOOM | 1    | 22.  | 60030064 | WEAR PAD                         | 1    |
| 12.  | 3K120850 | TELESCOPIC CYLINDER      | 1    | 23.  | 60030066 | WEAR PAD                         | 1    |
| 13.  | 52704345 | 2ND STAGE EXTENSION BOOM | 1    | 24.  | 60020197 | ROLLER                           | 2    |
| 14.  | 60101906 | PIN                      | 1    | 25.  | 72601666 | CAP SCR 1 1/4X4 GR5 (PART OF 17) | 1REF |
| 15.  | 60107292 | LOCKPLATE                | 4    | 26.  | 72062073 | NUT 1 1/4 LOCK (PART OF 17)      | 1REF |
| 16.  | 72066145 | HAIR PIN (PART OF 17)    | 1REF | 27.  | 71073035 | SWIVEL HOOK (PART OF 17)         | 1REF |
| 17.  | 51706199 | HOOK ASM                 | 1    | 28.  | 72060091 | CAP SCR 1/2-13X1 HHGR5           | 8    |
| 18.  | 52070151 | PIN (PART OF 17)         | 1REF | 29.  | 72066125 | RETAINING RING 1"                | 2    |
| 19.  | 60107324 | LINK (PART OF 17)        | 2REF | 30.  | 72063053 | WASHER 1/2 LOCK                  | 8    |
| 20.  | 60030067 | WEAR PAD                 | 1    | 31.  | 72063010 | WASHER 1"                        | 2    |
| 21.  | 60030065 | WEAR PAD                 | 1    | 32.  | 60108857 | SPACER (PART OF 17)              | 1REF |

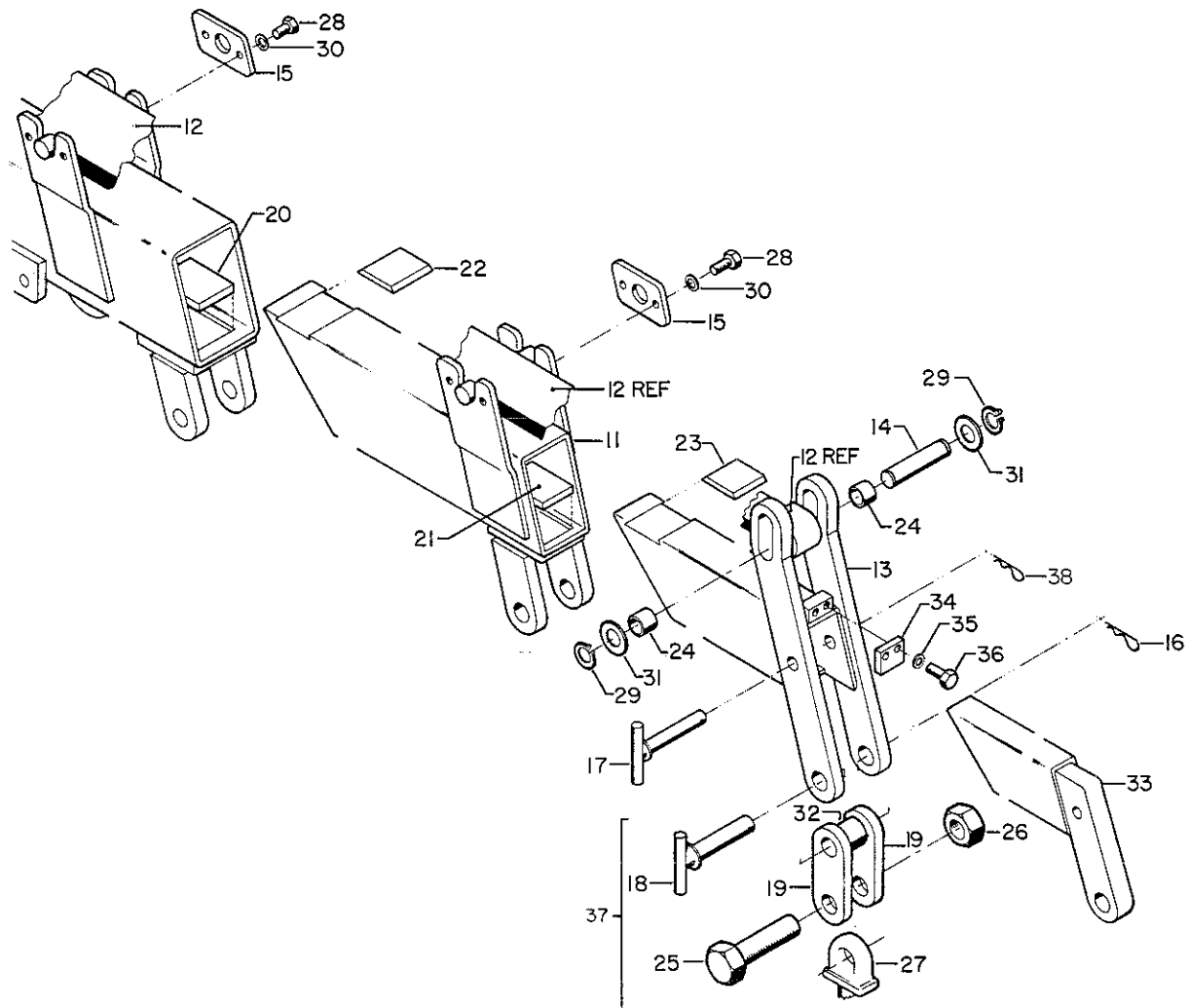
Figure D-15. 4825 EXTENSION BOOM (41704638)

|                          |         |
|--------------------------|---------|
| Bore - 1st Stage         | 4       |
| Bore - 2nd Stage         | 2 1/2   |
| Stroke - 1st Stage       | 64      |
| Stroke - 2nd Stage       | 64      |
| C - C Closed - 1st Stage | 3 1 1/2 |
| C - C Closed - Wnd Stage | 4 1/2   |
| Rod Diameter - 1st Stage | 3 1/2   |
| Rod Diameter - 2nd Stage | 1 1/2   |
| Pin Diameter             | 1       |



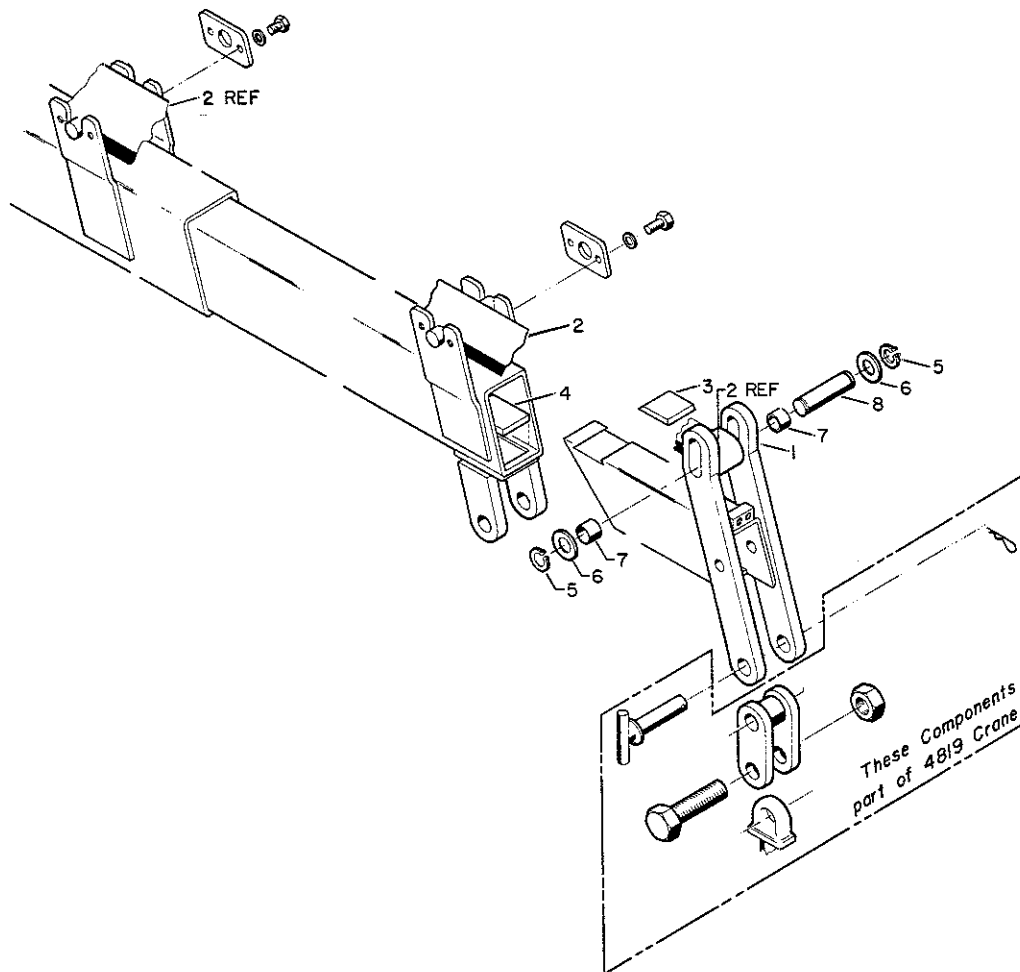
| ITEM | PART     | DESCRIPTION              | QTY  | ITEM | PART     | DESCRIPTION                          | QTY  |
|------|----------|--------------------------|------|------|----------|--------------------------------------|------|
| 1.   | 4K120850 | CASE                     | 1    | 17.  | 6C300015 | STOP TUBE                            | 2    |
| 2.   | 6I095850 | PISTON                   | 1    | 18.  | 6C075015 | STOP TUBE                            | 1    |
| 3.   | 7T65I040 | PISTON RING (PART OF 31) | 2REF | 19.  | 6A025015 | WAFFER LOCK (PART OF 31)             | 1REF |
| 4.   | 7Q072153 | O-RING (PART OF 31)      | 1REF | 20.  | 4FG12085 | MOUNTING RING                        | 1    |
| 5.   | 7T66P040 | PISTON SEAL (PART OF 31) | 1REF | 21.  | 7Q072228 | O-RING (PART OF 31)                  | 1REF |
| 6.   | 7Q072151 | O-RING (PART OF 31)      | 1REF | 22.  | 7Q10P228 | BACK-UP (PART OF 31)                 | 1REF |
| 7.   | 4H120850 | INNER CASE               | 1    | 23.  | 6H271511 | HEAD                                 | 1    |
| 8.   | 6H112820 | HEAD                     | 1    | 24.  | 7R546015 | ROD SEAL (PART OF 31)                | 1REF |
| 9.   | 7Q072342 | O-RING (PART OF 31)      | 1REF | 25.  | 7R14P015 | ROD WIPER (PART OF 31)               | 1REF |
| 10.  | 7Q10P342 | BACK-UP (PART OF 31)     | 1REF | 26.  | 4G120850 | ROD (INCL:28)                        | 1    |
| 11.  | 7R546035 | ROD SEAL (PART OF 31)    | 1REF | 27.  | 73054242 | COUNTERBALANCE VALVE                 | 2    |
| 12.  | 7R14P035 | ROD WIPER (PART OF 31)   | 1REF | 28.  | 72053507 | ZERK 1/4-28 (PART OF 26)             | 1REF |
| 13.  | 7T61N087 | LOCK RING (PART OF 31)   | 1REF | 29.  | 7T2N4037 | WEAR RING (PART OF 31)               | 1REF |
| 14.  | 6I025087 | PISTON                   | 1    | 30.  | 7PNPXT02 | PLUG 1/8NPT                          | 8    |
| 15.  | 7Q072137 | O-RING (PART OF 31)      | 1REF | 31.  | 9X095850 | SEAL KIT                             | 1    |
| 16.  | 7T66P025 | PISTON RING (PART OF 31) | 1REF |      |          | (INCL:3-6,9-13,15,16,19,21,22,24,25) |      |

Figure D-16. 2 STAGE EXTENSION CYLINDER (3K120850)



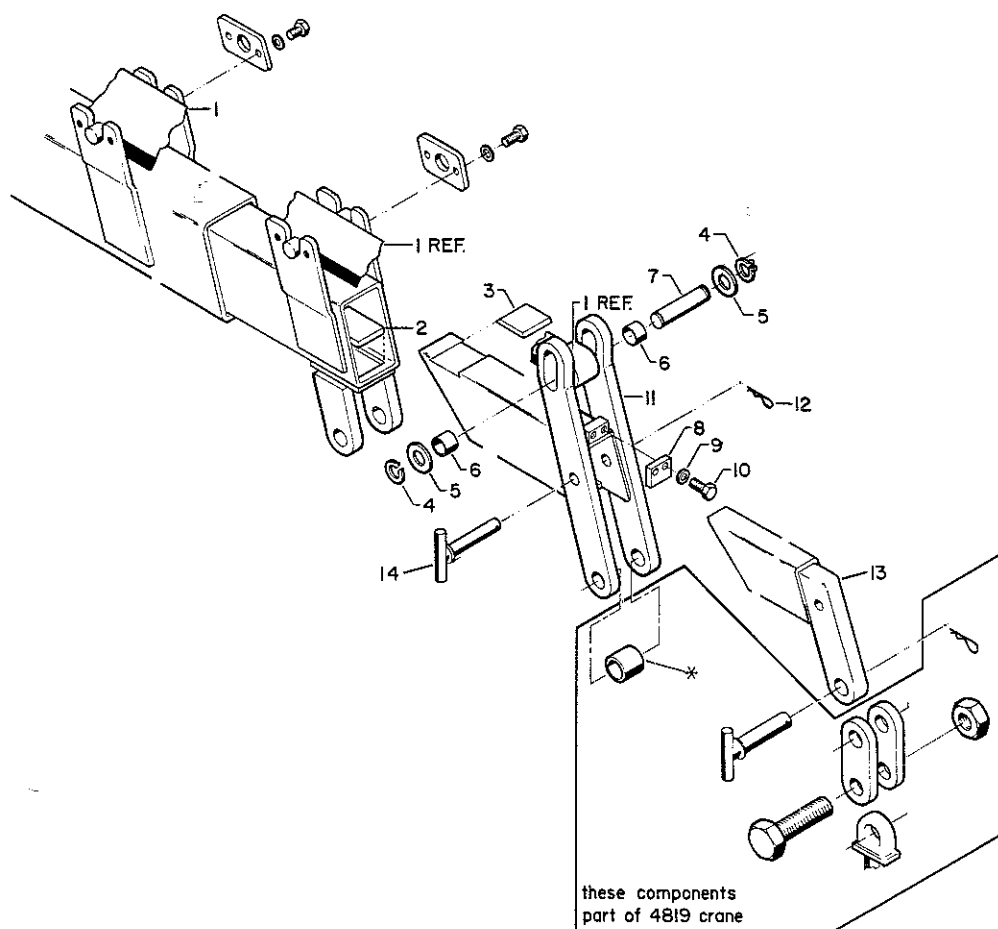
| ITEM | PART     | DESCRIPTION              | QTY  | ITEM | PART     | DESCRIPTION                     | QTY  |
|------|----------|--------------------------|------|------|----------|---------------------------------|------|
| 11.  | 52704344 | 1ST STAGE EXTENSION BOOM | 1    | 24.  | 60020197 | ROLLER                          | 2    |
| 12.  | 3K120850 | EXTENSION CYLINDER       | 1    | 25.  | 72601666 | CAP SCR 1 1/4X4(PART OF 37)     | 1REF |
| 13.  | 52704345 | 2ND STAGE EXTENSION BOOM | 1    | 26.  | 72062073 | NUT 1 1/4 LOCK (PART OF 37)     | 1REF |
| 14.  | 60101906 | PIN                      | 1    | 27.  | 71073035 | SWIVEL HOOK (PART OF 37)        | 1REF |
| 15.  | 60107292 | CYLINDER LOCKPLATE       | 4    | 28.  | 72060091 | SCREW 1/2X1                     | 8    |
| 16.  | 72066145 | HAIR PIN (PART OF 37)    | 1REF | 29.  | 72066125 | RETAINING RING 1                | 2    |
| 17.  | 52704383 | PIN                      | 1    | 30.  | 72063053 | WASHER 1/2 LOCK                 | 8    |
| 18.  | 52070151 | PIN (PART OF 37)         | 1REF | 31.  | 72063010 | WASHER 1                        | 2    |
| 19.  | 60107324 | LINK (PART OF 37)        | 2REF | 32.  | 60108857 | SPACER (PART OF 37)             | 1REF |
| 20.  | 60030067 | WEAR PAD                 | 1    | 33.  | 52704346 | 3RD STAGE EXTENSION BOOM        | 1    |
| 21.  | 60030065 | WEAR PAD                 | 1    | 34.  | 60107294 | STOP                            | 1    |
| 22.  | 60030064 | WEAR PAD                 | 1    | 35.  | 72063053 | WASHER 1/2 LOCK                 | 2    |
| 23.  | 60030066 | WEAR PAD                 | 1    | 36.  | 72060094 | CAP SCR 1/2X1 3/4               | 2    |
|      |          |                          |      | 37.  | 51706199 | HOOK(INCL:16,18,19,25,26,27,32) | 1    |
|      |          |                          |      | 38.  | 72066145 | HAIR PIN .19                    | 1    |

Figure D-17. 4830 EXTENSION BOOM (41704362)



| ITEM | PART     | DESCRIPTION              | QTY |
|------|----------|--------------------------|-----|
| 1.   | 52704345 | 2ND STAGE EXTENSION BOOM | 1   |
| 2.   | 3K120850 | TELESCOPING CYLINDER     | 1   |
| 3.   | 50030066 | WEAR PAD                 | 1   |
| 4.   | 60030065 | WEAR PAD                 | 1   |
| 5.   | 72066125 | RETAINING RING 1"        | 2   |
| 6.   | 72063010 | WASHER 1"                | 2   |
| 7.   | 60020197 | ROLLER                   | 2   |
| 8.   | 60101906 | PIN                      | 1   |

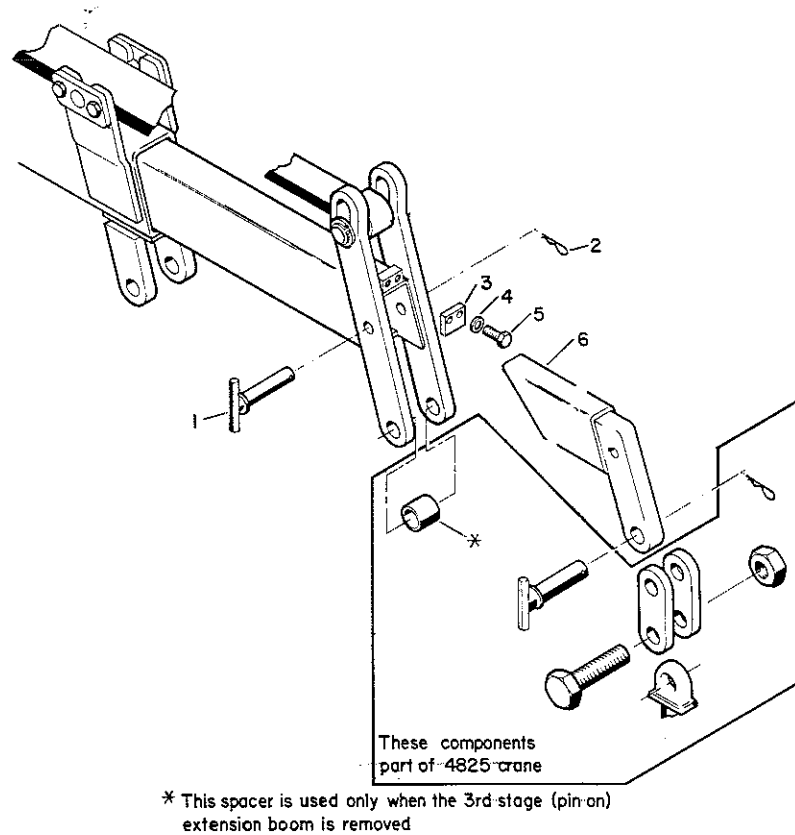
**Figure D-18. 4819 TO 4825 CONVERSION KIT (95705066)**



\* This spacer is used only when the 3rd-stage (pin-on) extension boom is removed.

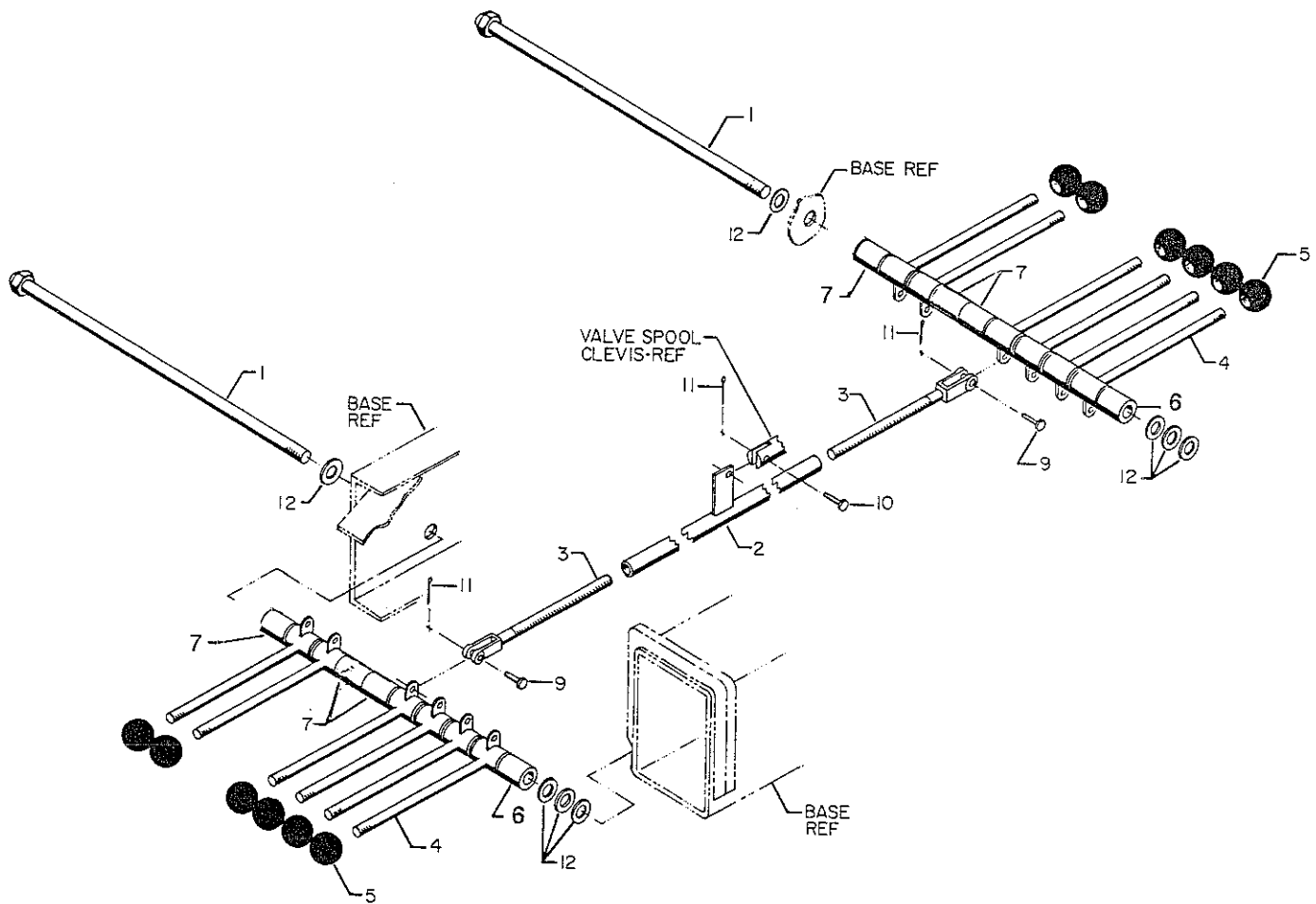
| ITEM | PART     | DESCRIPTION                 | QTY |
|------|----------|-----------------------------|-----|
| 1.   | 3K120850 | TELESCOPING CYLINDER        | 1   |
| 2.   | 60030065 | WEAR PAD                    | 1   |
| 3.   | 60030066 | WEAR PAD                    | 1   |
| 4.   | 72066125 | RETAINING RING 1"           | 2   |
| 5.   | 72063010 | WASHER 1"                   | 2   |
| 6.   | 60020197 | ROLLER                      | 2   |
| 7.   | 60101906 | PIN                         | 1   |
| 8.   | 60107294 | STOP                        | 1   |
| 9.   | 72063053 | WASHER 1/2 LOCK             | 2   |
| 10.  | 72060094 | CAP SCR 1/2-13X1-3/4 HH GR5 | 2   |
| 11.  | 52704345 | 2ND STAGE EXTENSION BOOM    | 1   |
| 12.  | 72066145 | HAIR PIN                    | 1   |
| 13.  | 52704346 | 3RD STAGE EXTENSION BOOM    | 1   |
| 14.  | 52704383 | PIN                         | 1   |

Figure D-19. 4819 TO 4830 CONVERSION KIT (95705082)



| ITEM | PART     | DESCRIPTION                 | QTY |
|------|----------|-----------------------------|-----|
| 1.   | 52704383 | PIN                         | 1   |
| 2.   | 72066145 | HAIR PIN                    | 1   |
| 3.   | 60107294 | STOP                        | 1   |
| 4.   | 72063053 | WASHER 1/2 LOCK             | 2   |
| 5.   | 72060094 | CAP SCR 1/2-1X 1-3/4 HH GR5 | 2   |
| 6.   | 52704346 | 3RD STAGE EXTENSION BOOM    | 1   |

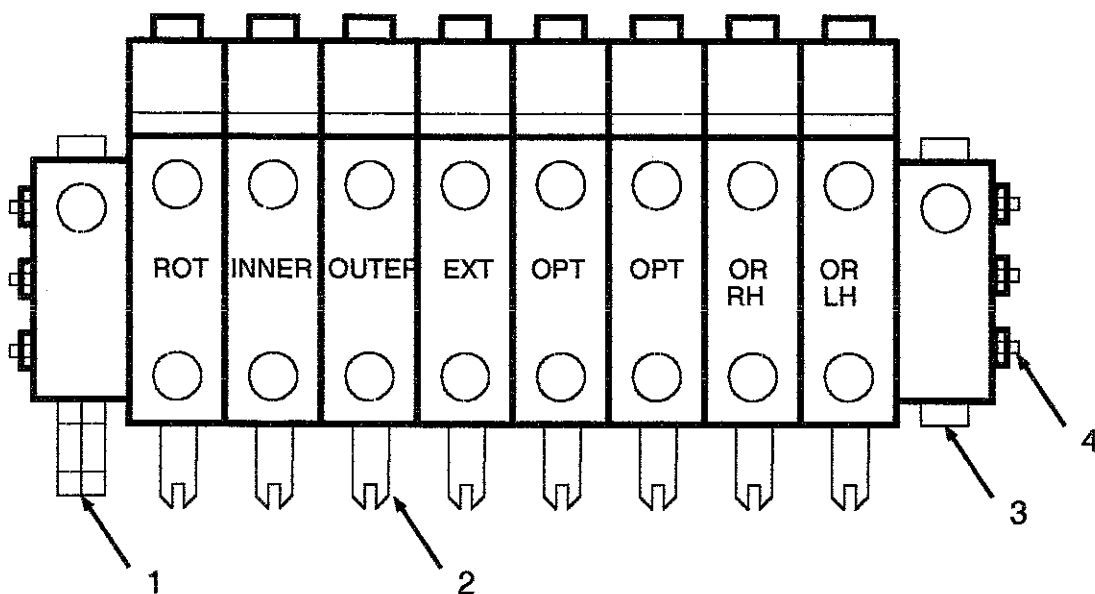
**Figure D-20. 4825 TO 4830 CONVERSION KIT (95705083)**



| ITEM | PART     | DESCRIPTION         | QTY |
|------|----------|---------------------|-----|
| 1.   | 52704397 | CONTROL HANDLE ROD  | 2   |
| 2.   | 52704744 | CONTROL ROD F       | 6   |
| 3.   | 52704745 | CONTROL ROD M       | 12  |
| 4.   | 70029451 | CONTROL HANDLE      | 12  |
| 5.   | 71039096 | CONTROL KNOB        | 12  |
| 6.   | 60030068 | SPACER 1-3/8        | 2   |
| 7.   | 60030069 | SPACER 1-3/4        | 6   |
| 9.   | 72066338 | CLEVIS PIN 5/16X1   | 12  |
| 10.  | 72661169 | CLEVIS PIN 5/16X3/4 | 6   |
| 11.  | 72066168 | COTTER PIN 3/32X3/4 | 18  |
| 12.  | 72063119 | WASHER 5/8          | 8   |

**Figure D-21. CONTROL KIT (90704417)**

**NOTE: ORIGINAL VALVEBANK WAS MANUFACTURED WITH SAE #8 STRAIGHT THREAD PORTS. IF ITEM 2 BELOW IS ORDERED FOR REPLACEMENT PARTS, TWO (2) ADAPTERS (72532722) MUST BE ORDERED BECAUSE THIS VALVE SECTION (73054490) WILL HAVE SAE #10 STRAIGHT THREAD TO SAE #6 FEMALE STRAIGHT THREAD.**



| ITEM | PART     | DESCRIPTION                              | QTY |
|------|----------|--|-----|
| 1.   | 73054488 | LEFT END COVER                           | 1   |
| 2.   | 73054490 | TANDEM VALVE SECTION<br>(SEE NOTE ABOVE) | 8   |
| 3.   | 73731576 | RIGHT END COVER                          | 1   |
| 4.   | 94731681 | TIE ROD KIT                              | 1   |
| 5.   | 7Q072019 | O-RING (NOT SHOWN)                       | 18  |
| 6.   | 7Q072021 | O-RING (NOT SHOWN)                       | 18  |

**Figure D-22. VALVEBANK (70731499)**



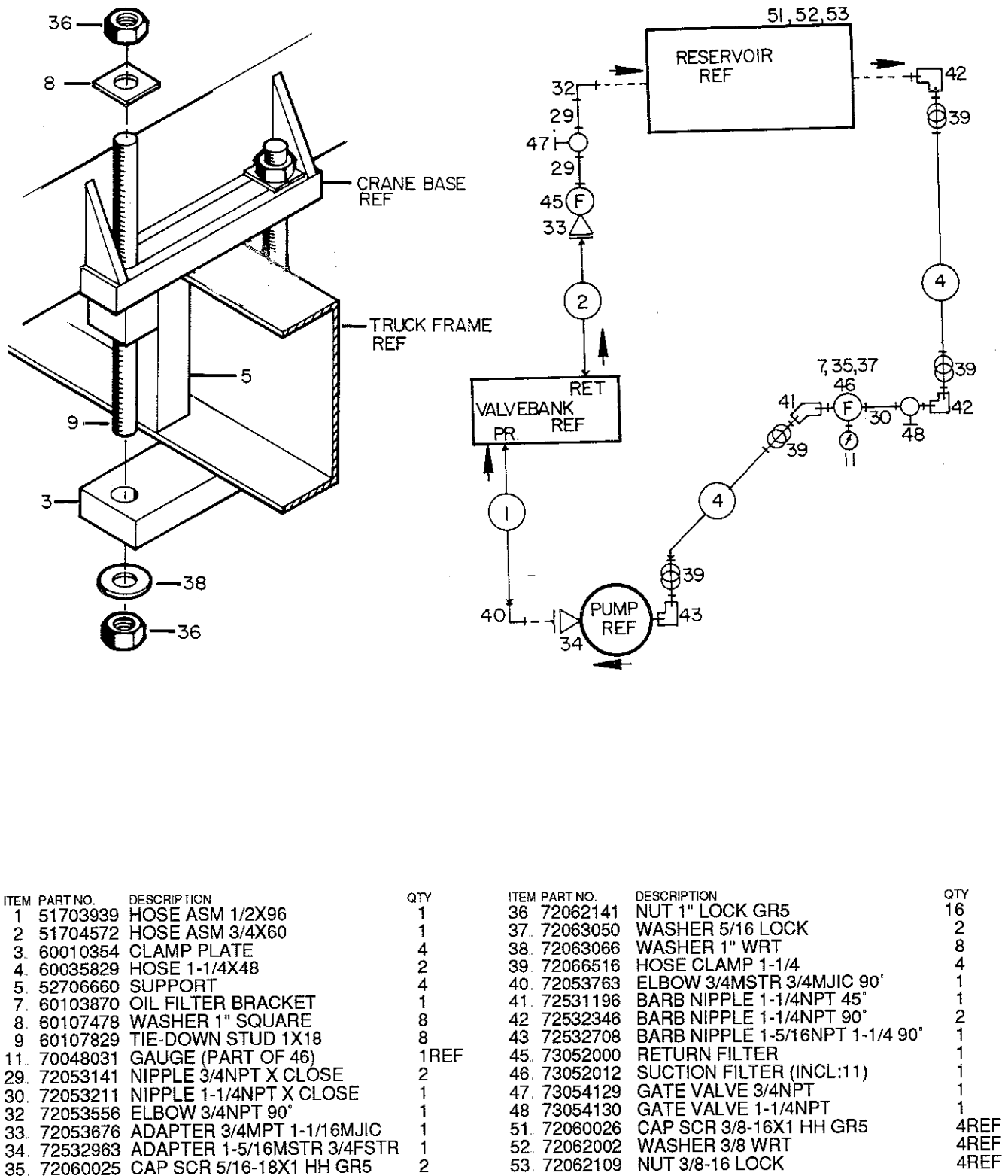
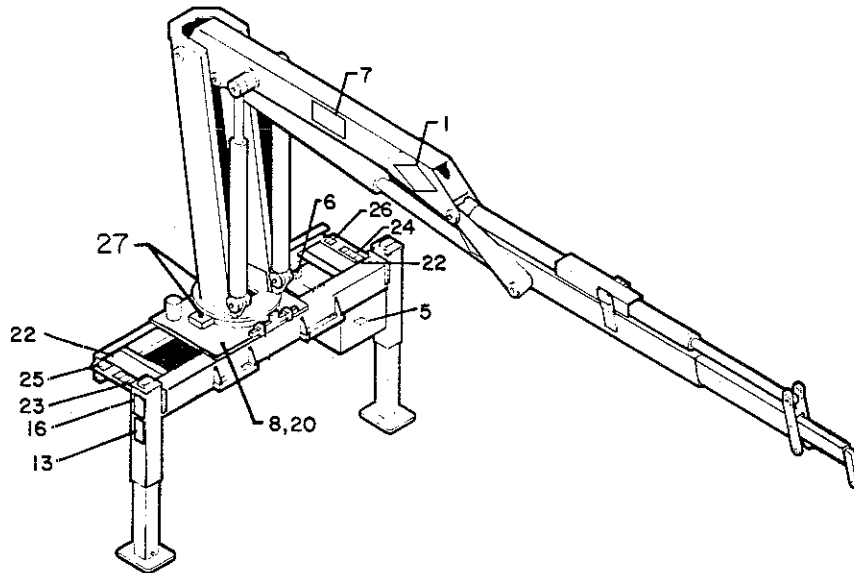


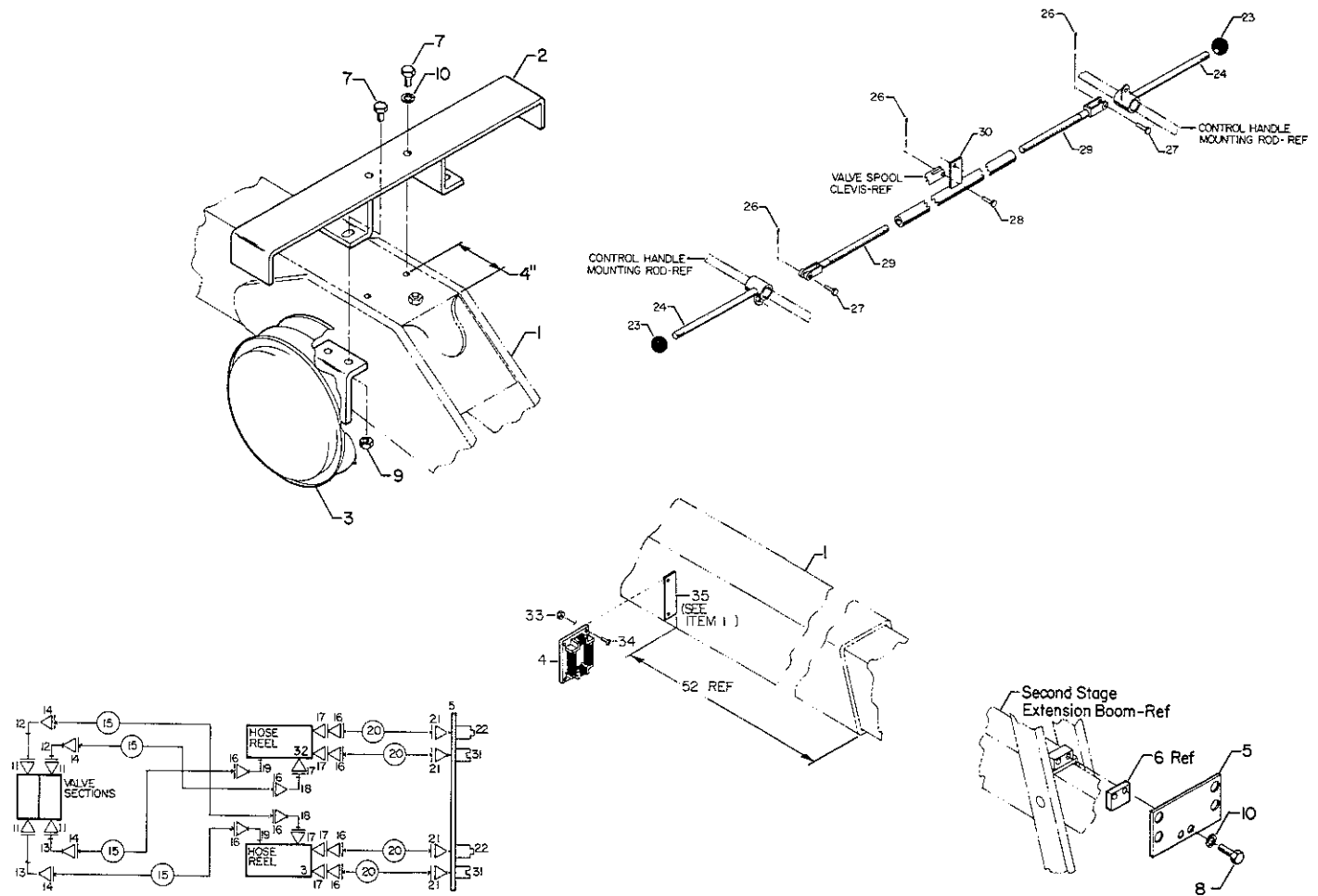
Figure D-23. INSTALLATION KIT (93704355)



| DECAL PLACEMENT               |  |
|-------------------------------|--|
| ITEM NO.                      | LOCATION                                     |
| 2,10,11,12,15,<br>17,18,19,21 | At or near the normal<br>operating stations. |
| 13,16                         | One on each outrigger.                       |
| 14                            | One on each side of<br>the carrier vehicle.  |
| 9                             | At the turntable grease<br>zerk.             |
| 3,4                           | At all grease zerks.                         |
| 6                             | On the reservoir, at the<br>return line.     |
| 5                             | On the reservoir, at the<br>suction line.    |

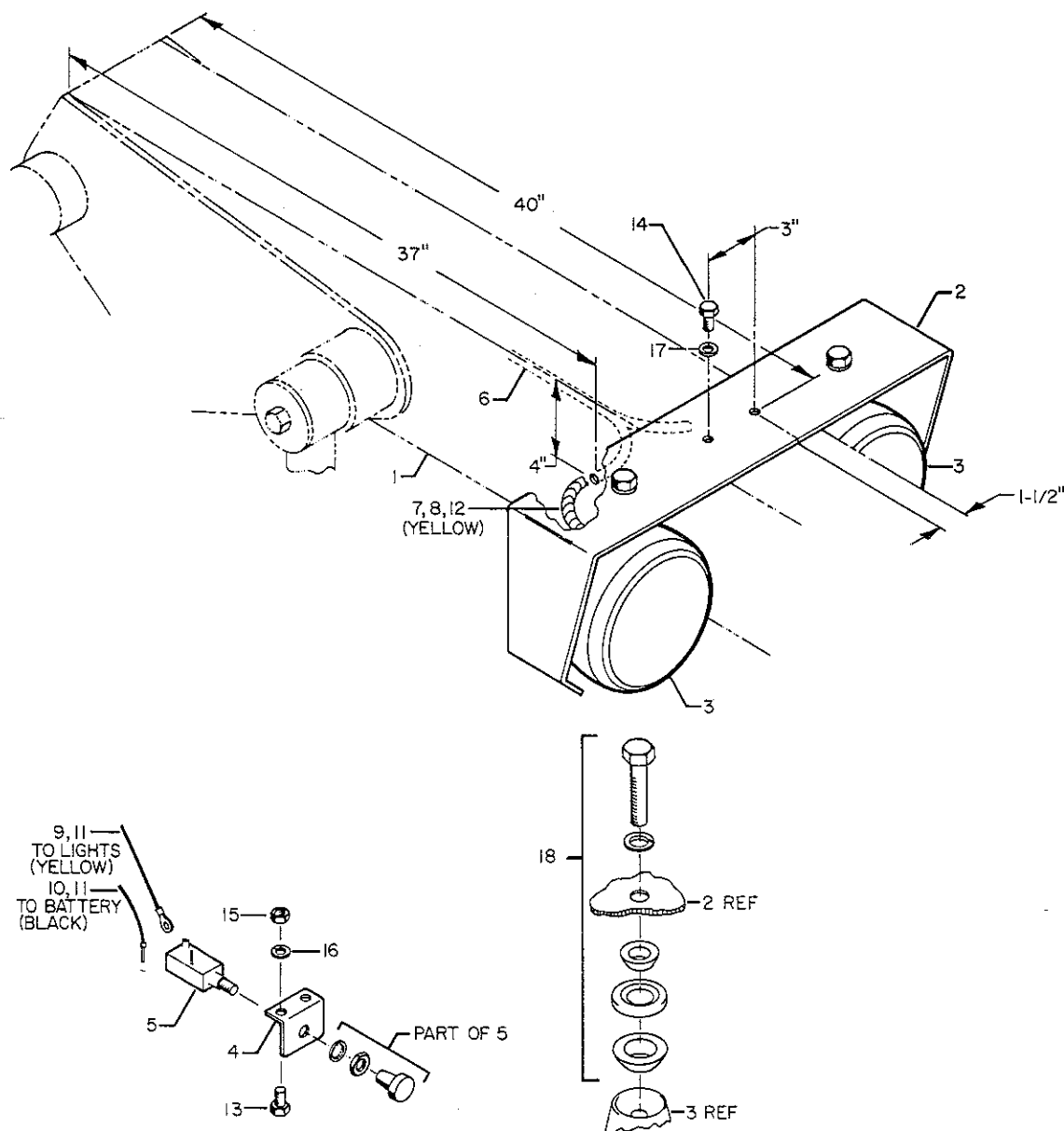
| ITEM | PART     | DESCRIPTION               | QTY | ITEM | PART     | DESCRIPTION                | QTY |
|------|----------|---------------------------|-----|------|----------|----------------------------|-----|
| 1.   | 70029251 | IMT DIAMOND               | 1   | 14.  | 70393512 | DECAL-DANGER ELECTROCUTION | 4   |
| 2.   | 76393552 | DECAL-SETUP/STOW INSTR    | 2   | 15.  | 70393511 | DECAL-DANGER OPER COND     | 2   |
| 3.   | 76393550 | DECAL-GREASE WKLY L       | 6   | 16.  | 70393510 | DECAL-DANGER OR MOVING     | 2   |
| 4.   | 76393551 | DECAL-GREASE WKLY R       | 6   | 17.  | 70393509 | DECAL-DANGER OPER RESTRICT | 2   |
| 5.   | 76393548 | DECAL-SUCTION LINE        | 1   | 18.  | 70393507 | DECAL-DANGER STOW/UNFOLD   | 2   |
| 6.   | 76393549 | DECAL-RETURN LINE         | 1   | 19.  | 70393508 | DECAL-DANGER DRIVELINE     | 2   |
| 7.   | 70392209 | DECAL-4825 IDENTIFICATION | 2   | 20.  | 70392982 | DECAL-CONTACT IMT          | 1   |
| 8.   | 70392213 | DECAL-CAUTION WASH/WAX    | 1   | 21.  | 71039134 | DECAL-CAUTION OIL LEVEL    | 2   |
| 9.   | 76393547 | DECAL-ROTATE CRANE/GREASE | 1   | 22.  | 71392254 | PLACARD-CAPACITY           | 2   |
| 10.  | 70393516 | DECAL-DANGER ELECTRO      | 2   | 23.  | 71392255 | DECAL-CONTROL SS           | 1   |
| 11.  | 70393515 | DECAL-DANGER OPERATOR     | 2   | 24.  | 71392256 | DECAL-CONTROL CS           | 1   |
| 12.  | 70393514 | DECAL-DANGER OPERATION    | 2   | 25.  | 71392257 | DECAL-OUTRGR PWR DN SS     | 1   |
| 13.  | 70393513 | DECAL-DANGER OR STD CLR   | 2   | 26.  | 71392258 | DECAL-OUTRGR PWR DN CS     | 1   |
|      |          |                           |     | 27.  | 71392365 | DECAL-ALIGN CRANE          | 1   |

Figure D-24. DECAL KIT



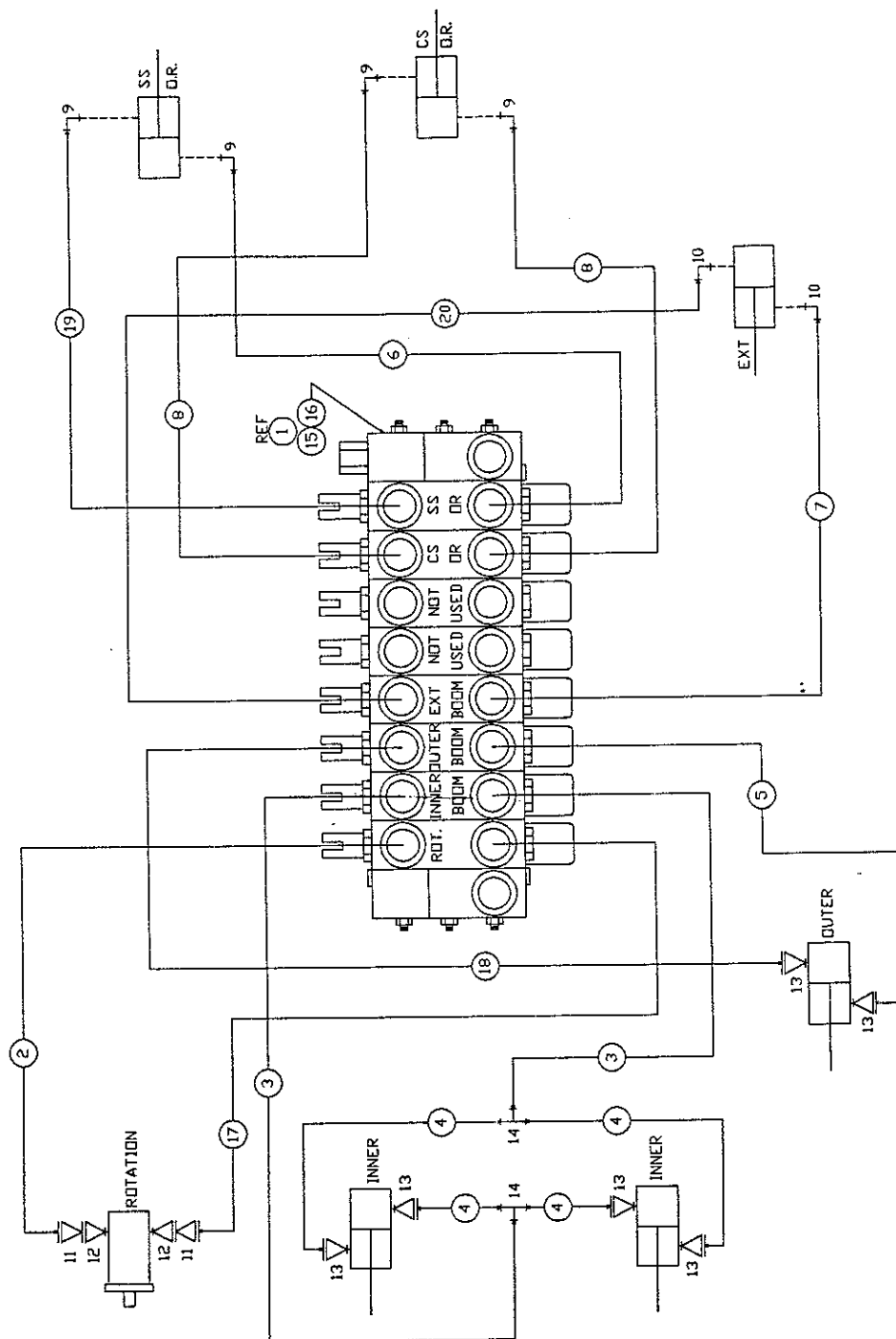
| ITEM PART    | DESCRIPTION                     | QTY | ITEM PART    | DESCRIPTION               | QTY |
|--------------|---------------------------------|-----|--------------|---------------------------|-----|
| 2. 52704578  | BRACKET                         | 1   | 19. 72053763 | ELBOW 3/4MSTR 3/4MJIC 90° | 2   |
| 3. 70731403  | HOSE REEL RH                    | 1   | 20. 51704028 | HOSE ASM 1/4X276"         | 4   |
| 4. 70731371  | GUIDE                           | 2   | 21. 72053499 | ADAPTER 1/4MPT 7/16MJIC   | 4   |
| 5. 60107590  | BULKHEAD PLATE                  | 1   | 22. 72053541 | DISCONNECT NIPPLE 1/4FPT  | 2   |
| 6. 60107294  | EXTENSION STOP                  | REF | 23. 71039096 | KNOB                      | 4   |
| 7. 72060091  | CAP SCR 1/2-13X1 HH GR5         | 6   | 24. 70029451 | CONTROL HANDLE            | 4   |
| 8. 72060093  | CAP SCR 9/16-13X1-1/2 HH GR5    | 2   | 26. 72066168 | COTTER PIN 3/32 X 3/4     | 6   |
| 9. 72062080  | NUT 1/2-13 LOCK                 | 4   | 27. 72066338 | CLEVIS PIN 5/16X1         | 4   |
| 10. 72063053 | WASHER 1/2 LOCK                 | 4   | 28. 72066337 | PIN-SPCL                  | 2   |
| 11. 72532722 | ADAPTER 7/8MSTRX 9/16FSTR       | 4   | 29. 52704745 | CONTROL ROD - M           | 4   |
| 12. 72053760 | ELBOW 9/16MSTR 9/16MJIC 90°     | 2   | 30. 52704744 | CONTROL ROD - F           | 2   |
| 13. 72532700 | ELBOW 9/16MSTR 9/16MJIC 90° XLG | 2   | 31. 72053539 | QUICK DISCONNECT COUPLER  | 2   |
| 14. 72532707 | ADAPTER 7/16MJIC 9/16FJIC       | 4   | 32. 70731515 | HOSE REEL LH              | 1   |
| 15. 51706161 | HOSE ASM 1/4 X 180"             | 4   | 33. 72062106 | NUT #10-24 LOCK           | 4   |
| 16. 72532665 | ADAPTER 7/16-20MJIC 3/4FJIC     | 8   | 34. 72060638 | SCR #10-24 X 1            | 4   |
| 17. 72532358 | ADAPTER 3/4-16MSTR 3/4MJIC      | 6   | 35. 60112973 | HOSE GUIDE MTG PLATE      | 2   |
| 18. 72532658 | ELBOW 3/4MJIC 3/4MJIC 90° SWVL  | 2   | 36. 99900011 | BOOM MODIFICATION DRAWING | 1   |

Figure D-25. HOSE REEL KIT (31704590)



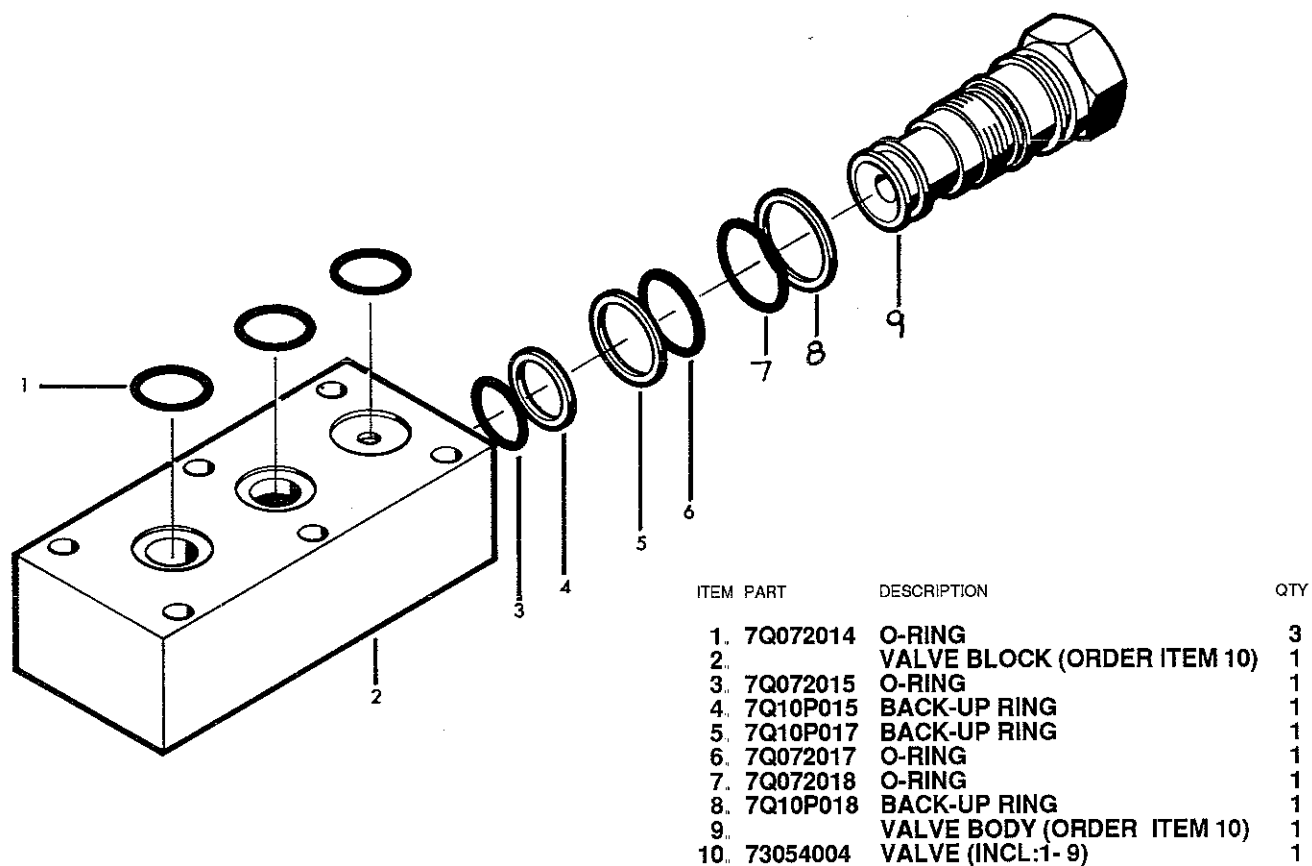
| ITEM | PART     | DESCRIPTION               | QTY |
|------|----------|---------------------------|-----|
| 1.   | 99900019 | BOOM MODIFICATION DRAWING | 1   |
| 2.   | 60107762 | LIGHT GUARD               | 1   |
| 3.   | 77040281 | FLOOD LIGHT 12VDC         | 2   |
| 4.   | 60103535 | SWITCH BRACKET            | 1   |
| 5.   | 77041014 | PUSH/PULL SWITCH          | 1   |
| 6.   | 60030048 | LOOM 5/16 X 240           | 1   |
| 7.   | 60030049 | SPIRAL WRAP 10" CLEAR     | 2   |
| 8.   | 60045055 | WIRE 14GA X 60 YELLOW     | 2   |
| 9.   | 60045054 | WIRE 14GA X 20 YELLOW     | 1   |
| 10.  | 60045056 | WIRE 14GA X 36 BLACK      | 1   |
| 11.  | 77040000 | TERMINAL RING             | 2   |
| 12.  | 77040048 | BUTT CONNECTOR            | 2   |
| 13.  | 72060000 | CAP SCR 1/4-20X1/2 HH GR5 | 2   |
| 14.  | 72060046 | CAP SCR 3/8-16X1 HH GR5   | 2   |
| 15.  | 72062000 | NUT 1/4-20                | 2   |
| 16.  | 72063049 | WASHER 1/4 LOCK           | 2   |
| 17.  | 72063051 | WASHER 3/8 LOCK           | 2   |
| 18.  | 77040280 | LIGHT MOUNTING KIT        | 2   |

Figure D-26. LIGHT KIT (31704781)

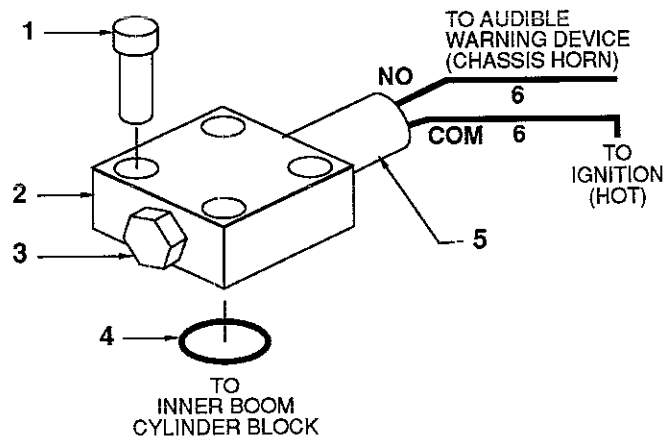


| ITEM | PART NO. | DESCRIPTION                  | QTY   | ITEM | PART NO. | DESCRIPTION                | QTY |
|------|----------|------------------------------|-------|------|----------|----------------------------|-----|
| 1.   | 51710944 | VALVEBANK ASM                | 1 REF | 11.  | 72532353 | ADAPTER 9/16MSTR 7/16MJIC  | 2   |
| 2.   | 51705893 | HOSE ASM 1/4X46 FF           | 2     | 12.  | 72532722 | ADAPTER 7/8MSTR 9/16FSTR   | 2   |
| 3.   | 51704579 | HOSE ASM 3/8X30 FF           | 2     | 13.  | 72532358 | ADAPTER 3/4MSTR 3/4MJIC    | 6   |
| 4.   | 51704580 | HOSE ASM 3/8X23 FF           | 4     | 14.  | 72531205 | TEE 3/4-16MJIC 1/2TUBE     | 2   |
| 5.   | 51704581 | HOSE ASM 3/8X108 FF          | 2     | 15.  | 72062103 | NUT 3/8-16 LOCK            | 3   |
| 6.   | 51705892 | HOSE ASM 3/8X102 FF          | 1     | 16.  | 72060048 | CAP SCR 3/8-16X1-1/2 HHGR5 | 3   |
| 7.   | 51704582 | HOSE ASM 3/8X209 FF          | 1     | 17.  | 51705894 | HOSE ASM 1/4X48 FF         | 1   |
| 8.   | 51704807 | HOSE ASM 3/8X80 FF           | 2     | 19.  | 51705895 | HOSE ASM 3/8X96 FF         | 1   |
| 9.   | 72532700 | ELBOW 9/16MSTR 9/16MJIC XLG  | 4     | 20.  | 51704583 | HOSE ASM 1/2X209 FF        | 1   |
| 10.  | 72532740 | ELBOW 3/4MSTR 3/4MJIC 90° SW | 2     |      |          |                            |     |

Figure D-26. HYDRAULIC KIT (91704356)



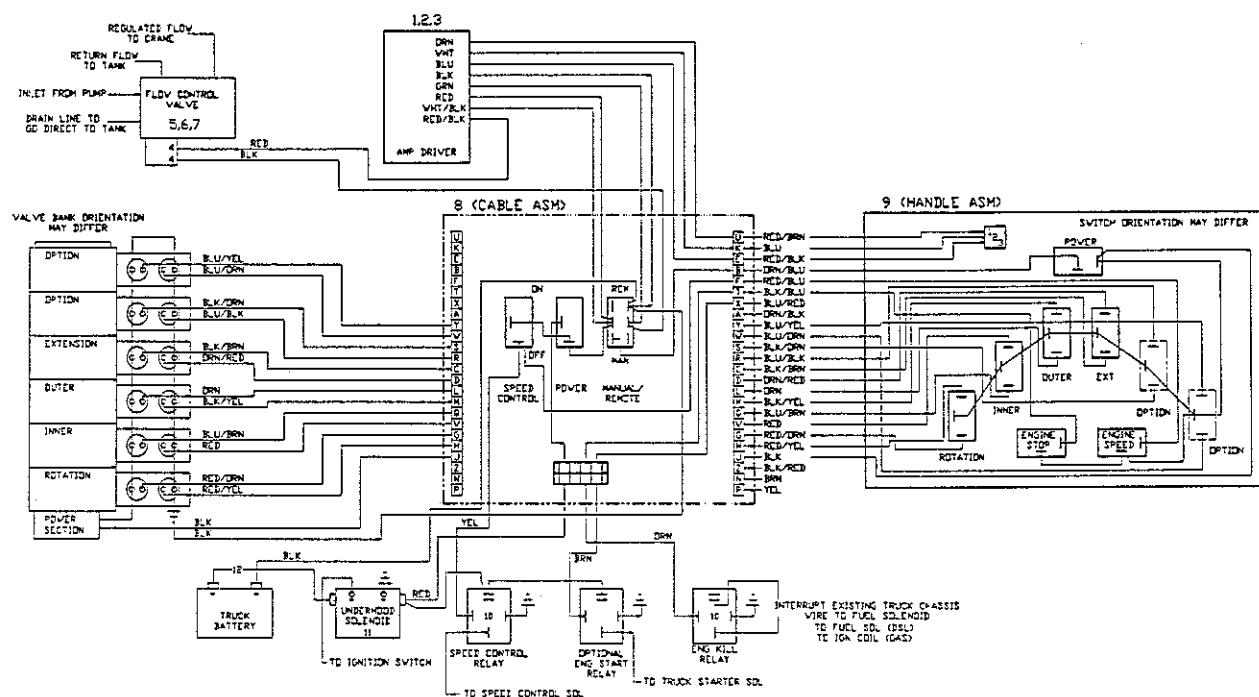
**Figure D-28. LOCKING /HOLDING VALVE (73054004)**

**NOTE**

This capacity alert system consists of a pressure switch mounted on the lift side of the inner boom lift cylinder which senses hydraulic pressure. It is to be connected electrically (by the customer) to an audible warning device such as the truck chassis horn, using 14-gauge wire.

| ITEM | PART NO  | DESCRIPTION                      | QTY |
|------|----------|----------------------------------|-----|
| 1..  | 72060731 | CAP SCR 5/16-18X3/4 SH           | 4   |
| 2..  | 60025221 | MANIFOLD                         | 1   |
| 3..  | 72532140 | PLUG 9/16-18 STR THD HH          | 1   |
| 4..  | 7Q072015 | O-RING                           | 1   |
| 5..  | 77041283 | PRESSURE SWITCH                  | 1   |
| 6..  | 89044188 | WIRE-14GA<br>(Customer Supplied) | REF |
| 7..  | 99900118 | INSTALLATION DWG                 | 1   |

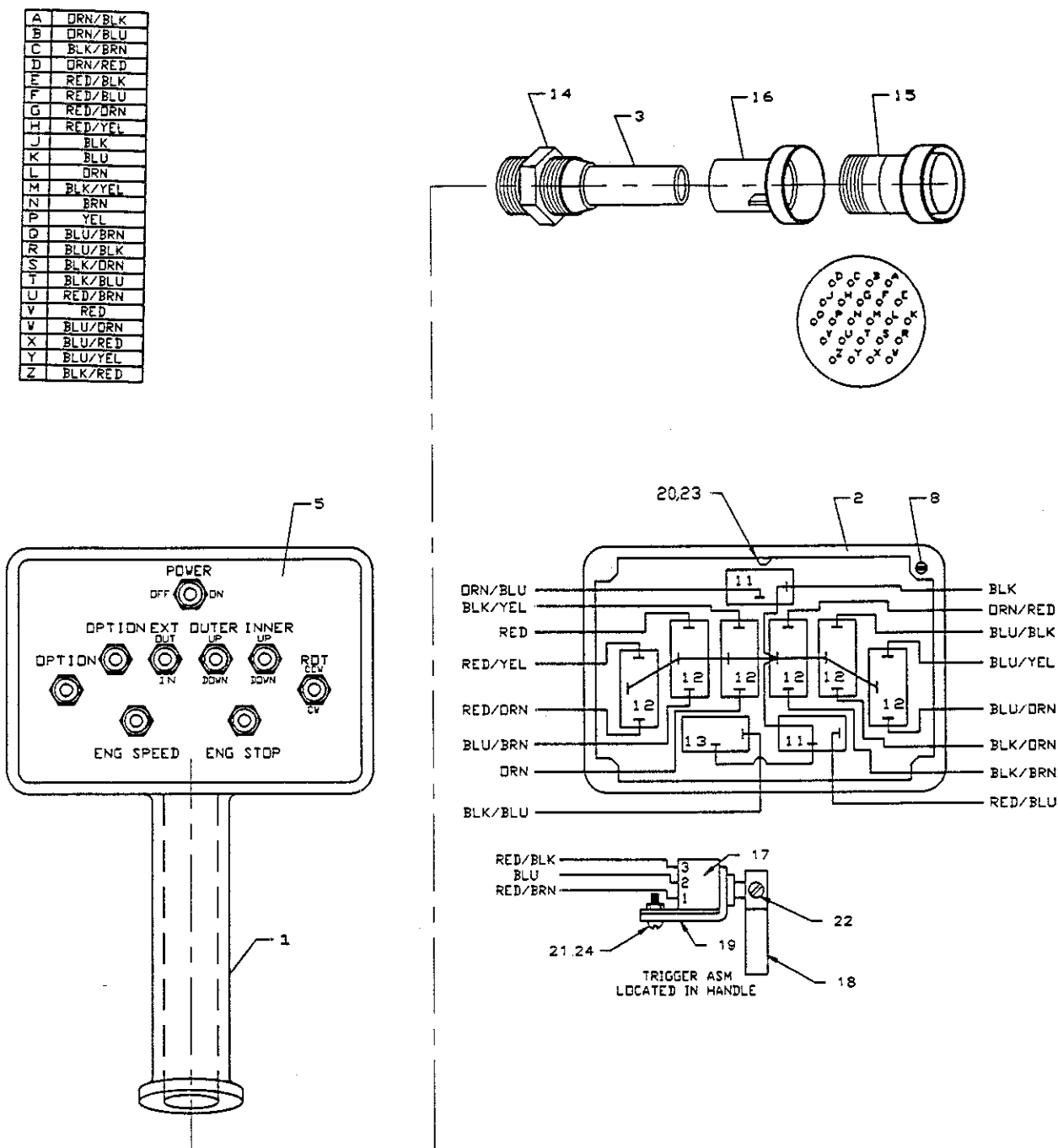
**Figure D-29A. CAPACITY ALERT KIT - AUDIBLE (31705698)**



| ITEM | PART NO  | DESCRIPTION                 | QTY |
|------|----------|-----------------------------|-----|
| 1.   | 77041390 | AMP DRIVER                  | 1   |
| 2.   | 72060004 | CAP SCR 1/4-20X1 HH GR5     | 4   |
| 3.   | 72062104 | NUT 1/4-20 LOCK             | 4   |
| 4.   | 77040186 | TERMINAL 1/4 FSLPON 16-14GA | 2   |
| 5.   | 73054584 | PROPORTIONAL VALVE 10GPM    | 1   |
| 6.   | 72060051 | CAP SCR 3/8-16X2-1/4 HH GR5 | 2   |
| 7.   | 72062103 | NUT 3/8-16 LOCK             | 2   |
| 8.   |          | CABLE ASM-JIC BOX           | 1   |
| 9.   |          | HANDLE ASM                  | 1   |
| 10.  | 77041251 | RELAY                       | 2   |
| 11.  | 77041237 | SOLENOID 12V 150A           | 1   |
| 12.  | 51704784 | CABLE ASM #1WIRE X 6"       | 1   |

Figure D-31. PROPORTIONAL REMOTE CONTROL DIAGRAM (Ref. 99900197)





| ITEM | PART NO  | DESCRIPTION                 | QTY     | ITEM | PART NO  | DESCRIPTION             | QTY |
|------|----------|-----------------------------|---------|------|----------|-------------------------|-----|
| 1.   | 60111140 | HANDLE                      | 1       | 13.  | 77041347 | TOGGLE SWITCH MOMENTARY | 1   |
| 2.   | 70034306 | BACK                        | 1       | 14.  | 77044196 | STRAIN RELIEF 3/4       | 1   |
| 3.   | 89044100 | CABLE 18GA/24WIRE           | 45 FT   | 15.  | 77044146 | CONNECTOR 16PIN         | 1   |
| 4.   | 89044214 | WIRE 18GA GRN               | 2.33 FT | 16.  | 77044147 | CABLE CLAMP             | 1   |
| 5.   | 70392703 | DECAL-REMOTE CONTROL        | 1       | 17.  | 51708800 | POTENTIOMETER ASM       | 1   |
| 6.   | 70392862 | DECAL-DANGER RC ELECTRO     | 1       | 18.  | 60111141 | TRIGGER                 | 1   |
| 7.   | 70029119 | SERIAL NUMBER PLACARD       | 1       | 19.  | 60111142 | MOUNTING BRACKET        | 1   |
| 8.   | 72061009 | SHT MTL SCR #6X3/4 PH       | 4       | 20.  | 70143223 | SPRING                  | 1   |
| 9.   | 72066340 | POP RIVET 1/8               | 2       | 21.  | 72060636 | MACH SCR #10-24X3/4     | 2   |
| 10.  | 77040186 | TERMINAL 1/4 FSLPON 16-14GA | 24      | 22.  | 72060669 | CAP SCR #10-32X5/8      | 1   |
| 11.  | 77041345 | TOGGLE SWITCH ST            | 2       | 23.  | 72061000 | SHT MTL SCR #6X1/2      | 1   |
| 12.  | 77041346 | TOGGLE SWITCH DT            | 6       | 24.  | 72062106 | NUT #10-24 HEX          | 2   |

Figure D-32. REMOTE HANDLE ASM-6F PROPORTIONAL W/SPD (51710014)

| ITEM | PART NO. | DESCRIPTION               | QTY |
|------|----------|---------------------------|-----|
| 1.   | 73054432 | VALVE SECT 4-WAY SAE#8    | 2   |
| 2.   | 73054468 | VALVE SECT 4-WAY SAE#8    | 4   |
| 3.   | 73054502 | VALVE SECT UTILITY        | 1   |
| 4.   | 73054442 | END COVER RH              | 1   |
| 5.   | 73073022 | CONVERSION PLUG           | 1   |
| 6.   | 73731424 | END COVER LH 2300PSI      | 1   |
| 7.   | 73054643 | RELIEF VALVE 2300PSI      | 1   |
| 8.   | 73054007 | RELIEF RC NON-ADJ 1800PSI | 2   |
| 9.   | 73054400 | RELIEF RC NON-ADJ 2300PSI | 1   |
| 10.  | 73054010 | LOAD CHECK PLUG ASM       | 9   |
| 11.  | 73014596 | STUD 3/8-24X15-1/4        | 3   |
| 12.  | 72062037 | NUT 3/8-24 HEX            | 6   |
| 13.  | 70142402 | ORIFICE PLATE             | 3   |
| 14.  | 70142403 | ORIFICE SPRING            | 6   |
| 15.  | 51393494 | O-RING KIT (SERVICE PART) | REF |
| 16.  | 7Q072117 | O-RING .81X1X.09          | 16  |
| 17.  | 7Q072119 | O-RING .94X1.12X.09       | 16  |
| 18.  | 51705093 | TUBE ASM "L"              | 1   |
| 19.  | 51705092 | TUBE ASM "U"              | 1   |

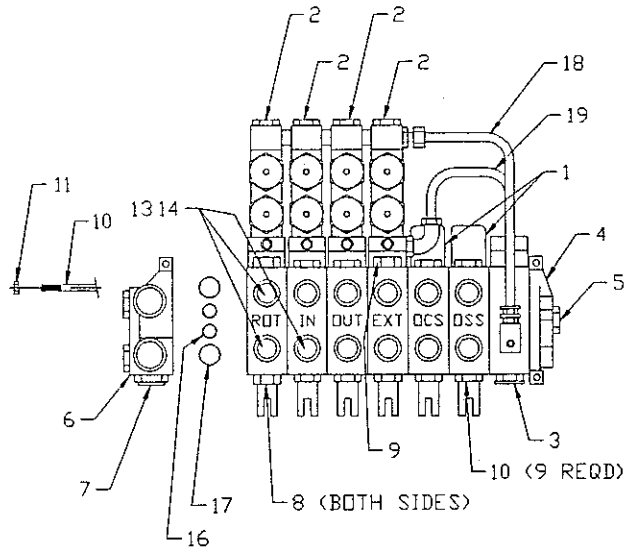


Figure D-33. VALVEBANK - 4 REMOTE/2 MANUAL (51705094)

| ITEM | PART NO. | DESCRIPTION               | QTY |
|------|----------|---------------------------|-----|
| 1.   | 73054468 | VALVE SECT 4-WAY SAE#8    | 5   |
| 2.   | 73054502 | VALVE SECT UTILITY        | 1   |
| 3.   | 73054442 | END COVER RH              | 1   |
| 4.   | 73073022 | CONVERSION PLUG           | 1   |
| 5.   | 73731424 | END COVER LH 2300PSI      | 1   |
| 6.   | 73054010 | LOAD CHECK PLUG ASM       | 6   |
| 7.   | 73054643 | RELIEF VALVE 2300PSI      | 1   |
| 8.   | 73054400 | RELIEF RC NON-ADJ 2300PSI | 2   |
| 9.   | 73054007 | RELIEF RC NON-ADJ 1800PSI | 2   |
| 10.  | 73014595 | STUD 3/8-24X13-1/2        | 3   |
| 11.  | 72062037 | NUT 3/8-24 HEX            | 6   |
| 12.  | 70142402 | ORIFICE PLATE             | 3   |
| 13.  | 70142403 | ORIFICE SPRING            | 3   |
| 14.  | 51393494 | O-RING KIT (SERVICE PART) | REF |
| 15.  | 7Q072117 | O-RING .81X1X.09          | 14  |
| 16.  | 7Q072119 | O-RING .94X1.12X.09       | 14  |

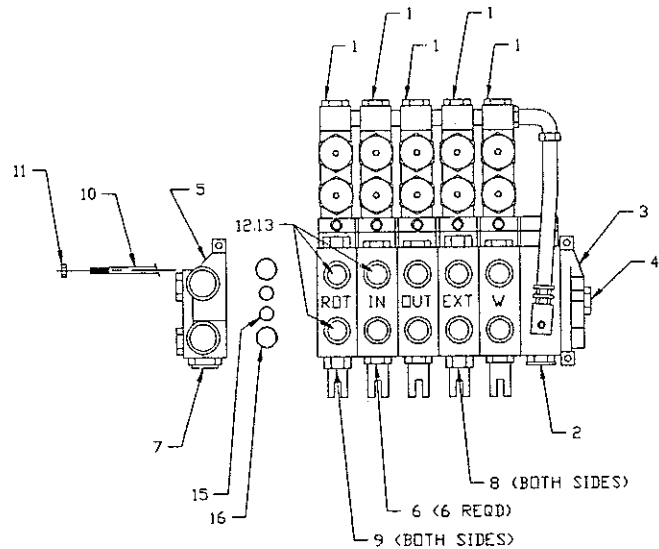
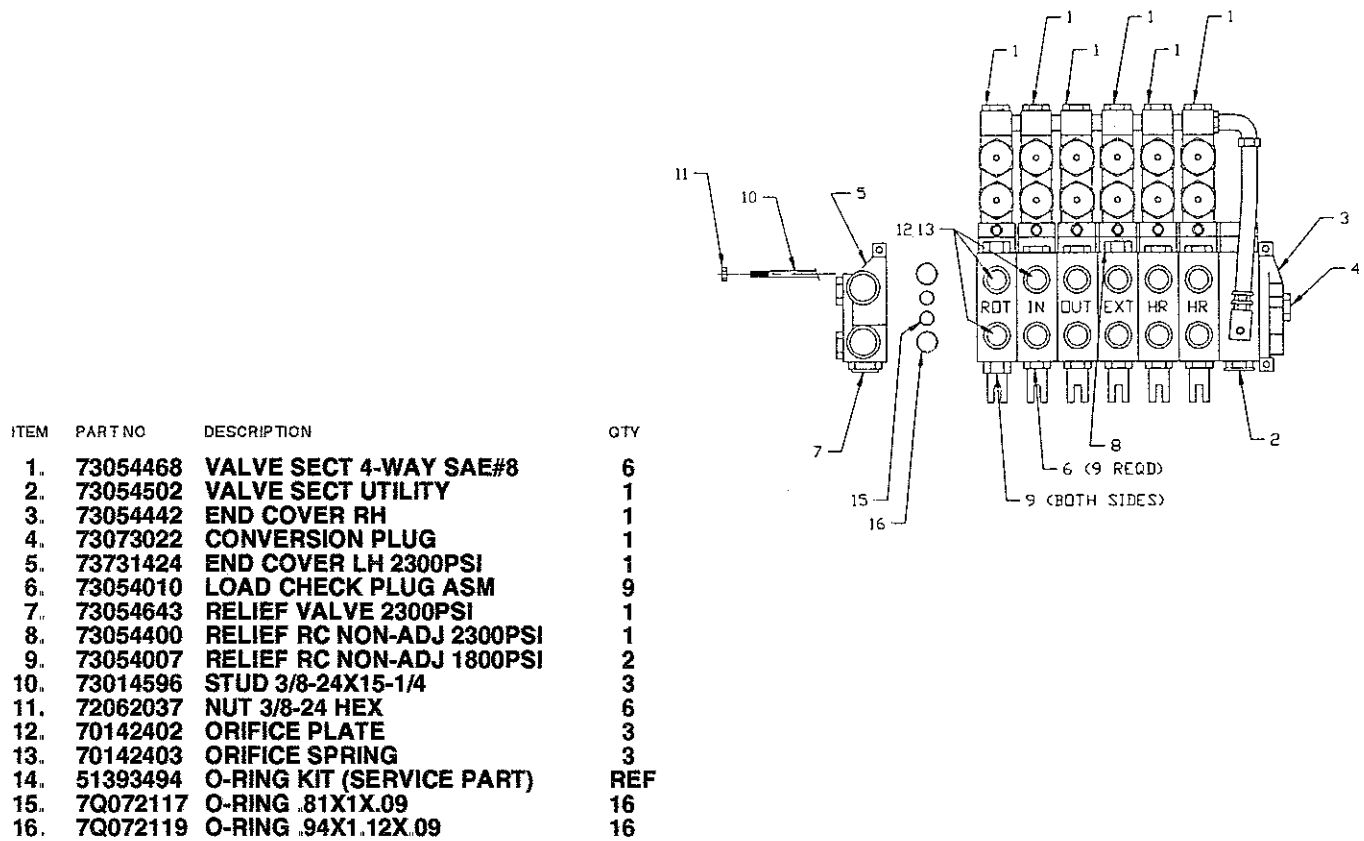


Figure D-34. VALVEBANK - 5 REMOTE (51705974)



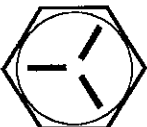

**Figure D-35. VALVEBANK - 6 REMOTE (51705972)**





## Section 5. REFERENCE

# TORQUE DATA CHART

## FINE THREAD BOLTS

| SIZE<br>(DIA-TPI) | BOLT DIA<br>(INCHES) | TIGHTENING TORQUE   |                   |   |                   |
|-------------------|----------------------|---|-------------------|---|-------------------|
|                   |                      |  |                   |  |                   |
|                   |                      | SAE J429<br>GRADE 5   |                   | SAE J429<br>GRADE 8   |                   |
|                   |                      | PLAIN<br>(LB FT)  | PLATED<br>(LB FT) | PLAIN<br>(LB FT)  | PLATED<br>(LB FT) |
| 5/16-24           | 0.3125               | 19  | 14                | 27  | 20                |
| 3/8-24            | 0.3750               | 35  | 26                | 49  | 35                |
| 7/16-20           | 0.4375               | 55  | 41                | 78  | 58                |
| 1/2-20            | 0.5000               | 90  | 64                | 120   | 90                |
| 9/16-18           | 0.5625               | 120   | 90                | 170   | 130               |
| 5/8-18            | 0.6250               | 170   | 130               | 240   | 180               |
| 3/4-16            | 0.7500               | 300   | 225               | 420   | 315               |
| 7/8-11            | 0.8750               | 445   | 325               | 670   | 500               |
| 1-12              | 1.0000               | 645   | 485               | 995   | 745               |
| 1 1/8-12          | 1.1250               | 890   | 670               | 1445  | 1085              |
| 1 1/4-12          | 1.2500               | 1240  | 930               | 2010  | 1510              |
| 1-3/8-12          | 1.3750               | 1675  | 1255              | 2710  | 2035              |
| 1 1/2-12          | 1.5000               | 2195  | 1645              | 3560  | 2670              |

## COARSE THREAD BOLTS

| SIZE<br>(DIA-TPI) | BOLT DIA<br>(INCHES) | TIGHTENING TORQUE   |                   |   |                   |
|-------------------|----------------------|---|-------------------|---|-------------------|
|                   |                      |  |                   |  |                   |
|                   |                      | SAE J429<br>GRADE 5   |                   | SAE J429<br>GRADE 8   |                   |
|                   |                      | PLAIN<br>(LB FT)  | PLATED<br>(LB FT) | PLAIN<br>(LB FT)  | PLATED<br>(LB FT) |
| 5/16-18           | 0.3125               | 17  | 13                | 25  | 18                |
| 3/8-16            | 0.3750               | 31  | 23                | 44  | 33                |
| 7/16-14           | 0.4375               | 49  | 37                | 70  | 52                |
| 1/2-13            | 0.5000               | 75  | 57                | 105   | 80                |
| 9/16-12           | 0.5625               | 110   | 82                | 155   | 115               |
| 5/8-11            | 0.6250               | 150   | 115               | 220   | 160               |
| 3/4-10            | 0.7500               | 265   | 200               | 375   | 280               |
| 7/8-9             | 0.8750               | 395   | 295               | 605   | 455               |
| 1-8               | 1.0000               | 590   | 445               | 910   | 680               |
| 1 1/8-7           | 1.1250               | 795   | 595               | 1290  | 965               |
| 1 1/4-7           | 1.2500               | 1120  | 840               | 1815  | 1360              |
| 1-3/8-6           | 1.3750               | 1470  | 1100              | 2380  | 1780              |
| 1 1/2-6           | 1.5000               | 1950  | 1460              | 3160  | 2370              |

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

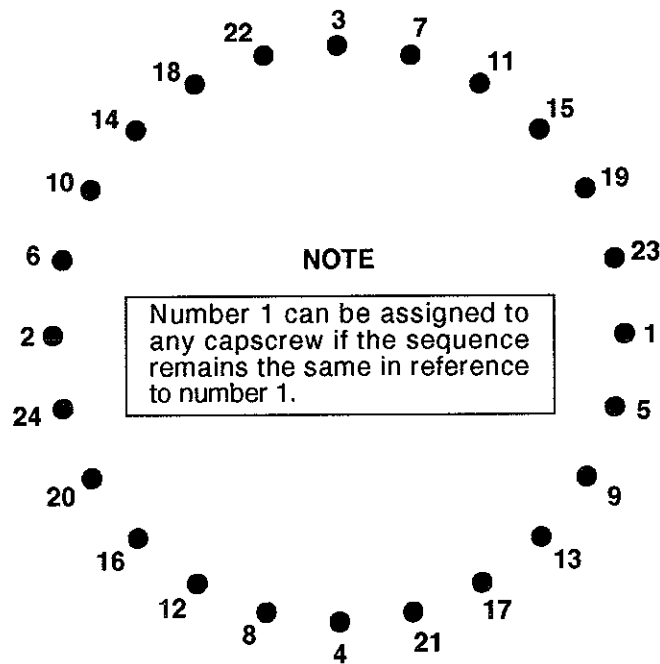
1. Bolt manufacturer's particular specifications should be consulted when provided.
2. Flat washers of equal strength must be used.
3. All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.
4. Torque values specified are for bolts with residual oils or no special 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.
5. Torque values for socket-head capscrews are the same as for Grade 8 capscrews.

### WARNING

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.

Figure E-2. TORQUE DATA CHART

Refer to the diagram below for proper tightening/torquing 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:  $.40 \times 265 \text{ FT-LBS} = 106 \text{ FT-LBS}$ )
4. Repeat Step 3, but torquing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence. (EXAMPLE:  $.75 \times 265 \text{ FT-LBS} = 199 \text{ FT-LBS}$ )
5. Using the proper sequence, torque all capscrews to the listed torque value as determined from the Torque Data Chart.

**Figure E-3. TURNTABLE BEARING FASTENER TIGHTENING SEQUENCE**

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 above 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 bearing's 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.

## TEST PROCEDURE

### STEP 1.

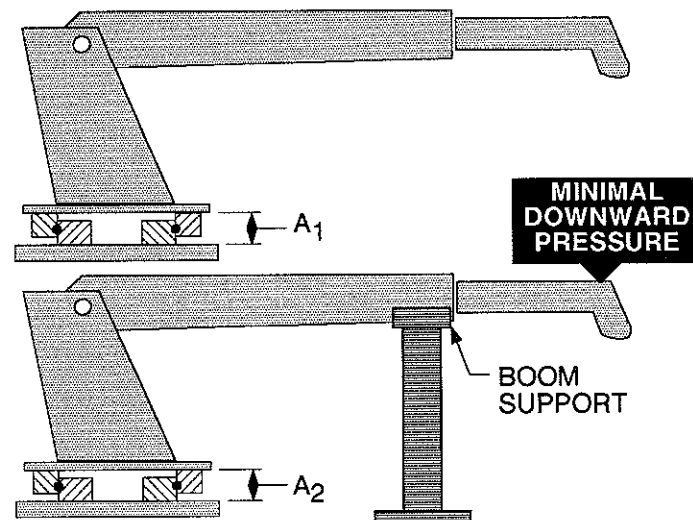
With the crane horizontal and fully extended, measure between the top and bottom mounting surfaces of the turntable bearing ( $A_1$ ), using a dial indicator for accuracy.

### STEP 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  $A_2$ .

### STEP 3.

Subtract  $A_1$  from  $A_2$  to determine tilt and compare the result with the accompanying chart.



## COMPARISON CHART - MODEL TO MEASURED TILT DIMENSION

|  |                             |   |   |  |  |
|--|-----------------------------|---|---|--|--|
| <b>NOTE</b><br><br>THE FIGURES LISTED IN THIS CHART ARE SERVICE GUIDELINES AND DO NOT, IN THEMSELVES, REQUIRE THAT THE BEARING BE INSPECTED<br><br>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 OR TIREHAND MODEL | 814<br>1007<br>1014<br>2010<br>215<br>2015<br>2109<br>2815<br>3016<br>315A<br>320H<br>3515<br>3617<br>3625<br>421<br>425<br>5016<br>TH7 BODY ROT'N<br>TH1449A BODY ROT'N<br>TH15A CLAMP<br>TH1836A CLAMP<br>TH2551 CLAMP<br>TH2557 CLAMP<br>TH2557A CLAMP | 4817<br>4825<br>516<br>525<br>5826<br>6014<br>6425<br>725<br>7020<br>7025<br>8025<br>8031<br>TH10 BODY ROT'N<br>TH12 BODY ROT'N | 32018<br>32030<br>HAWK-H1150<br>HAWK-H1150TL<br>HAWK-H4961 | 9616<br>9825<br>9831<br>10020<br>10025<br>1216<br>1325<br>1331<br>13031<br>13034<br>13426<br>14018<br>14048<br>14126<br>15033<br>1725<br>18026<br>20017<br>HAWK-H1200<br>TH1836 BODY ROT'N<br>TH1836A BODY ROT'N<br>TH2551 BODY ROT'N<br>TH2557 BODY ROT'N<br>TH2557A BODY ROT'N |
|  | BALL DIA. (REF)             | .875" (22mm)  | 1.00" (25mm)  | 1.18" - 1.25" (30 - 32mm)                                  | 1.75" (44mm)   |
|  | TILT DIM. ( $A_1 - A_2$ )   | .060" (1.524mm)   | .070" (1.778mm)   | .075" (1.905mm)  | .090" (2.286mm)  |

Figure E-4. TURNTABLE BEARING INSPECTION FOR REPLACEMENT



# SPARE PARTS LIST

## 1-Year Supply

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 no down-time waiting for parts. Obviously, there may be part failures not covered by this list.

The item numbers shown on this list correspond to the item numbers on the page listed.

| PAGE  | ITEM | PART NO  | DESCRIPTION                              | QTY |
|-------|------|----------|--|-----|
| 4-3.  | 21.  | 60020114 | BUSHING, TOP PINION GEAR                 | 1   |
| 4-3.  | 22.  | 60020115 | BUSHING, TOP DRIVE GEAR                  | 1   |
| 4-3.  | 23.  | 60020116 | BUSHING, BOTTOM DRIVE GEAR               | 1   |
| 4-3.  | 24.  | 60020154 | BUSHING, BOTTOM PINION GEAR              | 1   |
| 4-3.  | 25.  | 71056011 | DRIVE GEAR                               | 1   |
| 4-3.  | 26.  | 71056001 | TURNTABLE GEAR-BEARING                   | 1   |
| 4-3.  | 27.  | 71056010 | PINION GEAR                              | 1   |
| 4-3.  | 28.  | 71056012 | INTERMEDIATE GEAR                        | 1   |
| 4-3.  | 36.  | 73051384 | HYDRAULIC MOTOR                          | 1   |
| 4-4.  | ---  | 9B101214 | SEAL KIT, OUTRIGGER CYLINDER             | 2   |
| 4-4.  | 15.  | 73054004 | LOCKING HOLDING VALVE                    | 2   |
| 4-6.  | ---  | 9B050608 | SEAL KIT, POWER-OUT OUTRIGGER CYLINDER   | 2   |
| 4-7.  | 2.   | 7BF81520 | BUSHING, INNER CYLINDER/MAST             | 2   |
| 4-7.  | 4.   | 7BF81220 | BUSHING, INNER BOOM/MAST                 | 12  |
| 4-8.  | ---  | 9C141820 | SEAL KIT, INNER CYLINDER                 | 2   |
| 4-9.  | 5.   | 7BF81220 | BUSHING, OUTER BOOM/INNER BOOM           | 4   |
| 4-10. | ---  | 9C182423 | SEAL KIT, OUTER CYLINDER                 | 2   |
| 4-10. | 4.   | 7BF81220 | BUSHING OUTER CYLINDER ROD               | 2   |
| 4-10. | 17.  | 73054242 | VALVE 25-GPM COUNTER-BALANCE             | 1   |
| 4-10. | 18.  | 7BF81520 | BUSHING, OUTER CYLINDER ROD              | 2   |
| 4-11. | 5.   | 60030067 | WEAR PAD                                 | 1   |
| 4-11. | 4.   | 60030064 | WEAR PAD                                 | 1   |
| 4-12. | ---  | 9C121617 | SEAL KIT, 4819 EXTENSION CYLINDER        | 1   |
| 4-12. | 16.  | 73054304 | VALVE 10-GPM COUNTER-BALANCE             | 2   |
| 4-13. | 20.  | 60030067 | WEAR PAD                                 | 1   |
| 4-13. | 21.  | 60030065 | WEAR PAD                                 | 1   |
| 4-13. | 22.  | 60030064 | WEAR PAD                                 | 1   |
| 4-13. | 23.  | 60030066 | WEAR PAD                                 | 1   |
| 4-14. | ---  | 9X095850 | SEAL KIT, TELESCOPING EXTENSION CYLINDER | 1   |
| 4-14. | 27.  | 73054242 | VALVE 25-GPM COUNTER-BALANCE             | 2   |
| 4-15. | 20.  | 60030067 | WEAR PAD                                 | 1   |
| 4-15. | 21.  | 60030065 | WEAR PAD                                 | 1   |
| 4-15. | 22.  | 60030064 | WEAR PAD                                 | 1   |
| 4-15. | 23.  | 60030066 | WEAR PAD                                 | 1   |



The information within this manual has been compiled and checked but errors do occur. To provide our customers with a method of communicating those errors we have provided the Manual Change Request form below. In addition to error reporting, you are encouraged to suggest changes or additions to the manual which would be of benefit to you. We cannot guarantee that these additions will be made but we do promise to consider them. When completing the form, please write or print clearly. Submit a copy of the completed form to the address listed below.

## MANUAL CHANGE REQUEST

|                  |                   |               |                    |               |
|------------------|-------------------|---------------|--------------------|---------------|
| DATE             | PRODUCT<br>MANUAL | 4830CFE Crane | MANUAL<br>PART NO. | 99900656-3/92 |
| SUBMITTED BY     |                   |               |                    |               |
| COMPANY          |                   |               |                    |               |
| ADDRESS          |                   |               |                    |               |
| CITY, STATE, ZIP |                   |               |                    |               |
| TELEPHONE        |                   |               |                    |               |

☐ ERROR FOUND

LOCATION OF ERROR (page no.): \_\_\_\_\_

DESCRIPTION OF ERROR: \_\_\_\_\_

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☐ REQUEST FOR ADDITION TO MANUAL

DESCRIPTION OF ADDITION: \_\_\_\_\_

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REASON FOR ADDITION: \_\_\_\_\_

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MAIL TO: IOWA MOLD TOOLING Co., Inc.  
Box 189,  
Garner IA 50438  
ATTN: Technical Publications

# LIMITED WARRANTY

**WARRANTY COVERAGE** - Products manufactured by Iowa Mold Tooling Co., Inc. (IMT) are warranted to be free from defects in material and workmanship, under proper use, application and maintenance in accordance with IMT's written recommendations, instructions and specifications as follows:

1. Ninety (90) days; labor on IMT workmanship from the date of shipment to the end user.
2. One (1) year; original IMT parts from the date of shipment to the end user.

IMT's obligation under this warranty is limited to, and the sole remedy for any such defect shall be the repair or replacement (at IMT's option) of unaltered parts returned to IMT, freight prepaid, and proven to have such defect, provided such defect occurs within the above stated warranty period and is reported within fourteen (14) days of its occurrence.

**IMPLIED WARRANTY EXCLUDED** - This is the only authorized IMT warranty and is in lieu of all other express or implied warranties or representations, including any implied warranties of merchantability or fitness for any particular purpose or of any other obligations on the part of IMT.

**ITEMS EXCLUDED** - The manufacturer gives no warranty on any components purchased by the manufacturer, and such components as are covered only by the warranties of their respective manufacturers.

**WARRANTY CLAIMS** - Warranty claims must be submitted and shall be processed in accordance with IMT's established warranty claim procedure.

**WARRANTY SERVICE** - Warranty service will be performed by any IMT distributor authorized to sell new IMT products of the type involved or by any IMT Service Center authorized to service the type of product involved or by IMT in the event of direct sales made by IMT. At the time of requesting warranty service, the purchaser must present evidence of the date of delivery of the product. The purchaser shall pay any premium for overtime labor requested by the purchaser, any charge for making service calls and for transporting the equipment to the place where warranty work is performed.

**WARRANTY VOIDED** - All obligations of IMT under this warranty shall be terminated: (1) if service other than normal maintenance or normal replacement of service items is performed by someone other than an authorized IMT dealer, (2) if product is modified or altered in ways not approved by IMT.

**PURCHASER'S RESPONSIBILITY** - This warranty covers only defective material and workmanship. It does not cover depreciation or damage caused by normal wear, accident, improper protection in storage, or improper use. The purchaser has the obligation of performing the care and maintenance duties discussed in IMT's written recommendations, instructions and specifications. Any damage which results because of purchaser's failure to perform such duties shall not be covered by this warranty. The cost of normal maintenance and normal replacement of service items such as filters, belts, etc. shall be paid by the purchaser.

**CONSEQUENTIAL DAMAGES** - The only remedies the purchaser has in connection with the breach or performance of any warranty on IMT products are those set forth above. In no event will the dealer, IMT or any company affiliated with IMT, be liable for business interruptions, loss of sales and/or profits, rental or substitute equipment, costs of delay or for any other special, indirect, incidental or consequential losses, costs or damages.

**REPRESENTATIONS EXCLUDED** - IMT products are subject to no expressed, implied or statutory warranty other than herein set forth, and no agent, representative or distributor of the manufacturer has any authority to alter the terms of this warranty in any way whatsoever or to make any representations or promises, express or implied, as to the quality or performance of IMT products other than those set forth above.

**CHANGE IN DESIGN** - IMT reserves the right to make changes in design or improvements upon its products without imposing any obligation upon itself to install the same upon its products theretofore manufactured.

Effective January, 1985

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