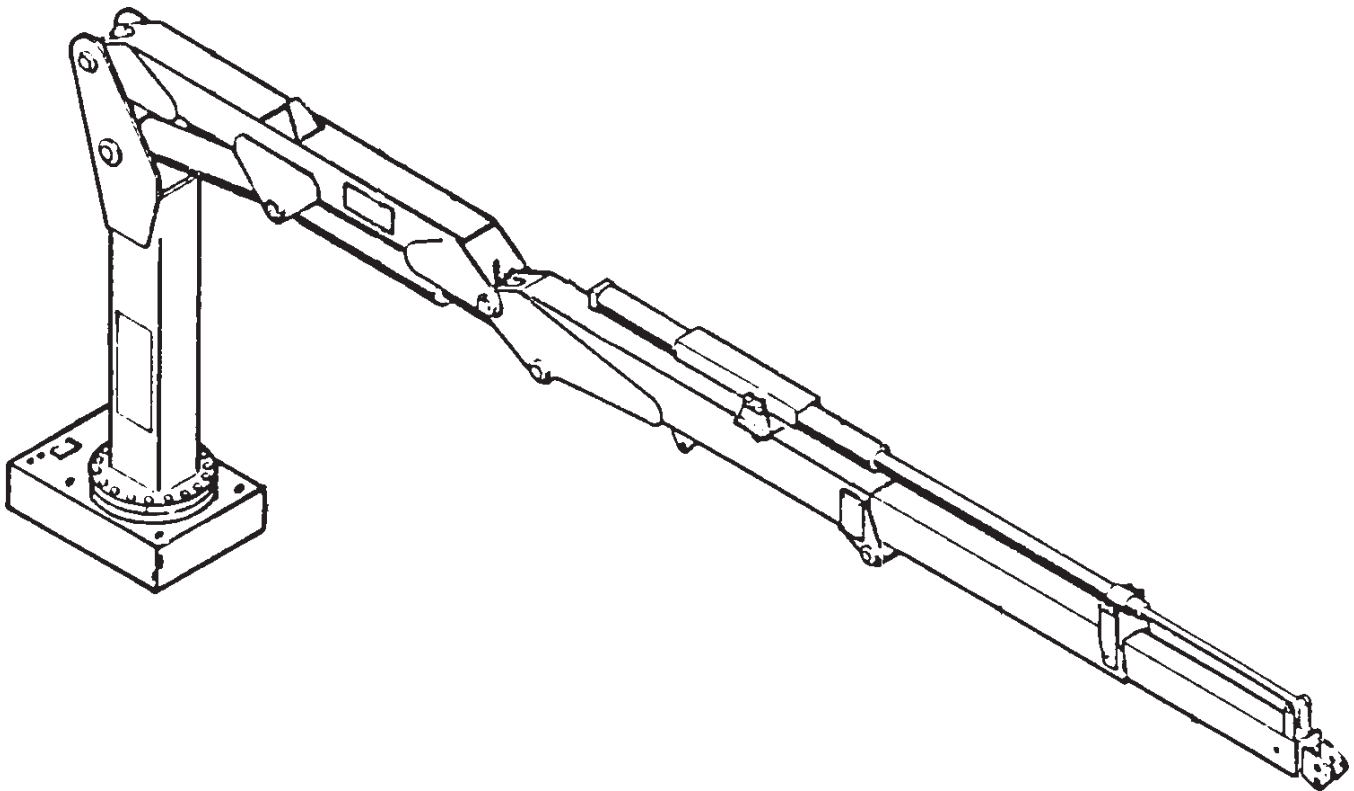




# *Model 421AT Crane*

## **Volume 2 - PARTS AND SPECIFICATIONS**

Section 1	SPECIFICATIONS
Section 2	CRANE REFERENCE
Section 3	REPLACEMENT PARTS
Section 4	GENERAL REFERENCE



**Manufactured Exclusively for  
AUTO TRUCK, INC.  
by  
IOWA MOLD TOOLING CO., INC.**

MANUAL PART NUMBER 99900841

Iowa Mold Tooling Co., Inc. is an Oshkosh Corporation company.

**REVISIONS LIST**

<b>DATE</b>	<b>LOCATION</b>	<b>DESCRIPTION OF CHANGE</b>
-	-	-
20011204	3-4	MOBILTAC LUBRICANT NOTE
	3-25	ECN 8834 - NEW LIGHT KIT
20061020	1-1	NEW OWNERSHIP STATEMENT.
20111219		ECN 11628 - UPDATED STABILIZER WORDING.
	3-14	ECN 11606 - ADDED TWO-BLOCK DAMAGE PREVENTION SYSTEM.
20120403	3-11,18	ECN 11615 - UPDATE TO 3D095850 CYLINDER, ADDED REMOTE ADJ PROCEDURE

## 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.

Before operation or performance of any maintenance on your crane, familiarize yourself with the OPERATOR'S CRANE SAFETY MANUAL, part number 99900313. It provides information critical to the safe operation and maintenance of your crane. It is the user's responsibility to maintain and operate this unit in a manner that will result in the safest working conditions possible.

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 crane. It also contains specifications, description and installation information.

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 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.

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



# SECTION 1. 421AT CRANE SPECIFICATIONS

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## 421AT CRANE SPECIFICATIONS

### GENERAL SPECIFICATIONS

CRANE RATING	39,000 ft-lbs (5.39 ton-m)
REACH - FROM CENTERLINE OF ROTATION	21'-7"(6.58m)
HYDRAULIC EXTENSIONS	45"/51" (114.3cm/129.5cm)
LIFTING HEIGHT - FROM BASE OF CRANE	26'-2" (7.98m)
CRANE WEIGHT	2000 lbs (907 kg)
STORAGE HEIGHT-FROM BASE OF CRANE	5'-6" (1.68m)
MOUNTING SPACE REQUIRED	27-1/2" x 14-3/4" (69.8 x 48.26cm)
MOUNTING HOLE PATTERN	14-3/4" x 14-3/4" (37.46 x 37.46cm)
OPTIMUM PUMP CAPACITY	7 U.S. GPM (26.5 liters/min)
OIL RESERVOIR CAPACITY	17 U.S. GAL. (64.3 liters)
DESIGN FACTORS (PINS & HYDRAULICS)	4/1

### LIFTING CAPACITY (FROM CENTERLINE OF ROTATION)

5'-7" (1.70m)	2900 lbs (1315 kg)
13'-7" (4.14m)	2900 lbs (1315 kg)
17'-4" (5.28m)	2250 lbs (1020 kg)
21'-7" (6.58m)	1800 lbs (815 kg)

Deduct the weight of load handling devices from the capacities listed above.

### PERFORMANCE CHARACTERISTICS

ROTATION:	450° (7.85 Rad.)	30 seconds
INNER BOOM ELEVATION:	-20° TO +72° (-0.35 Rad. to +1.26 Rad.)	15 seconds
OUTER BOOM ARTICULATION:	125° (2.18 Rad.)	17 seconds
TWO-STAGE EXTENSION		
1ST STAGE:	45" (114.3cm)	21 seconds
2ND STAGE:	51" (129.5cm)	10 seconds

### POWER SOURCE

Integral-mounted hydraulic pump and PTO application. Other standard power sources may be utilized - minimum power required is 12 horsepower.

### 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 stabilizer cylinders have positive, pilot-operated holding valves that open only upon command.

The inner, outer and extension cylinders have 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.

## ROTATION SYSTEM

Turntable bearing powered with a high-torque hydraulic motor through a ring-and-pinion type spur gear train (total gear reduction is 43.1 to 1).

## HYDRAULIC SYSTEM

Open-centered, full-pressure system that requires 7 GPM (26.5 liters/min.) optimum oil flow at 2,350 PSI (162 bar). Six-spool, stack-type control valve operated remotely. System includes hydraulic oil reservoir, suction-line filter, pump, 6-section valvebank, return-line filter and all hoses and fittings.

## CYLINDERS

	<b>BORE</b>	<b>STROKE</b>
INNER CYLINDER	5" (12.7cm)	19-1/4" (48.9cm)
OUTER CYLINDER	5" (12.7cm)	21-1/2" 54.6cm)
TWO-STAGE EXTENSION CYLINDER		
1ST STAGE	4" (10.2cm)	45" (114.3cm)
2ND STAGE	2-1/2" (6.4cm)	51" (129.5cm)

## MINIMUM CHASSIS SPECIFICATIONS

BODY STYLE	CONVENTIONAL CAB
WHEEL BASE	175" (444.5cm)
CAB TO AXLE	102" (259.1cm)
* FRAME SECTION MODULUS	14 cubic inches (229.5cc)
RBM	680,000 in-lbs (7837 kg-m)
FRONT AXLE RATING	7000 lbs (3175 kg)
REAR AXLE RATING	15,000 lbs (6804 kg)
TRANSMISSION	4-SPEED

\* Frame material is 50,000 PSI minimum.

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.



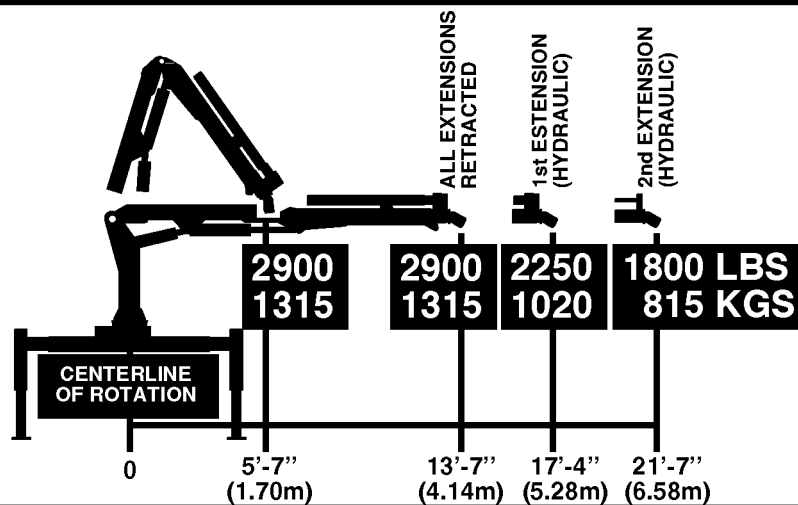
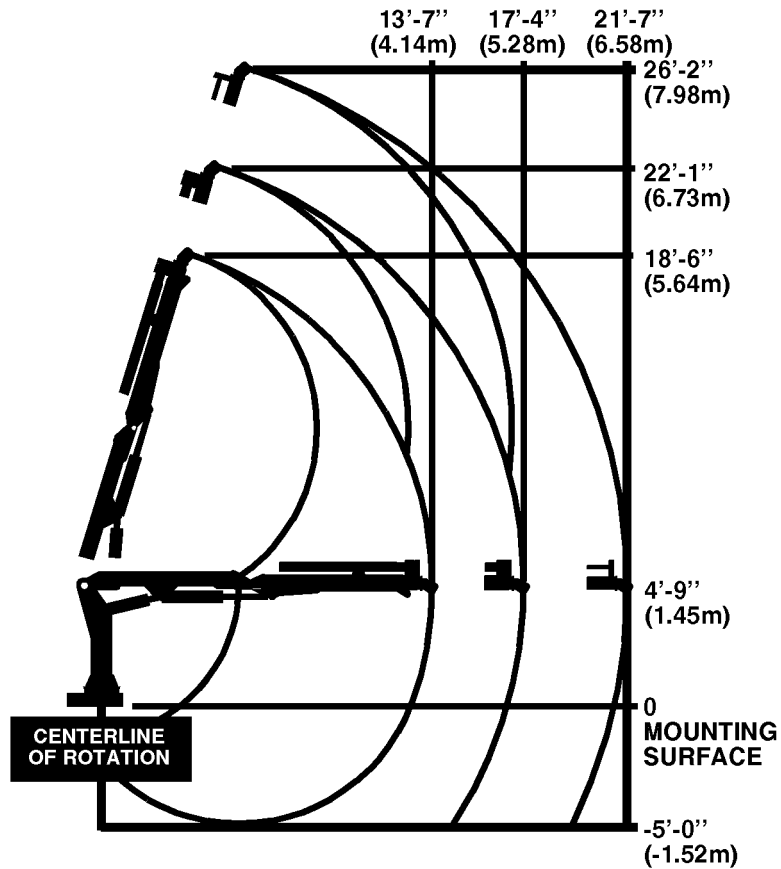
## CAPACITY CHART



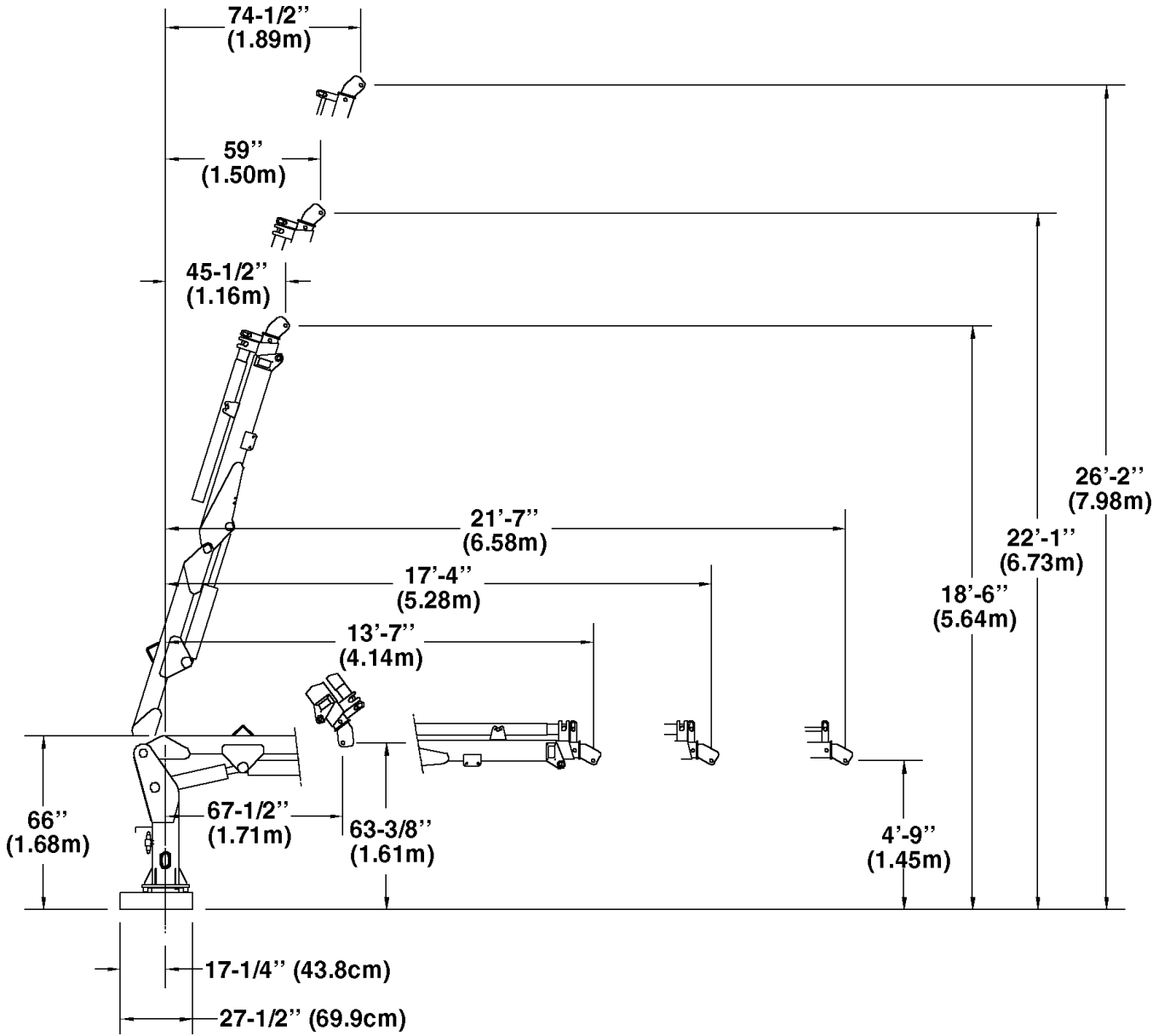
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### 421AT

- Loads shown are based on crane structural or hydraulic capability. Before lift is made, stability must be checked per SAE J765A.
- Working loads will be limited to those shown. Deduct the weight of load handling devices.
- Winch lifting capacity is limited to those shown - Maximum 4250 lbs (1926 kgs) for 1-part line.



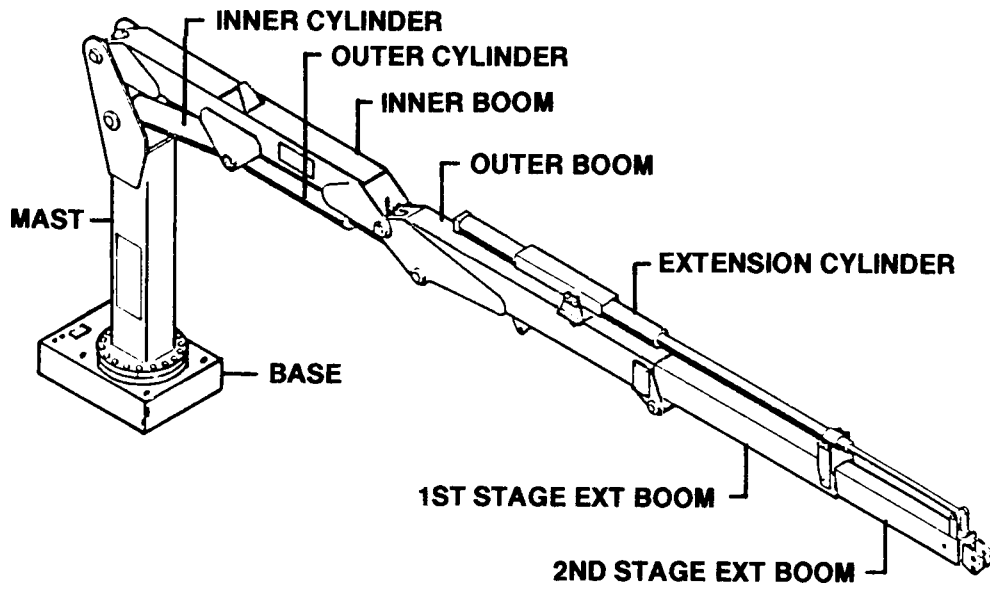
### GEOMETRIC CONFIGURATION



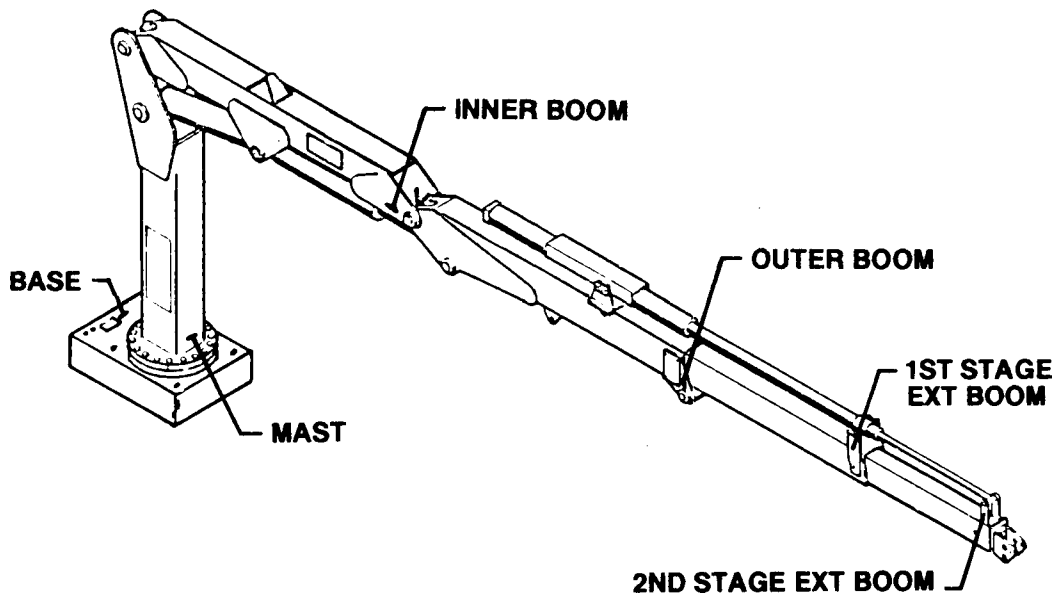
## **SECTION 2. 421AT CRANE REFERENCE**

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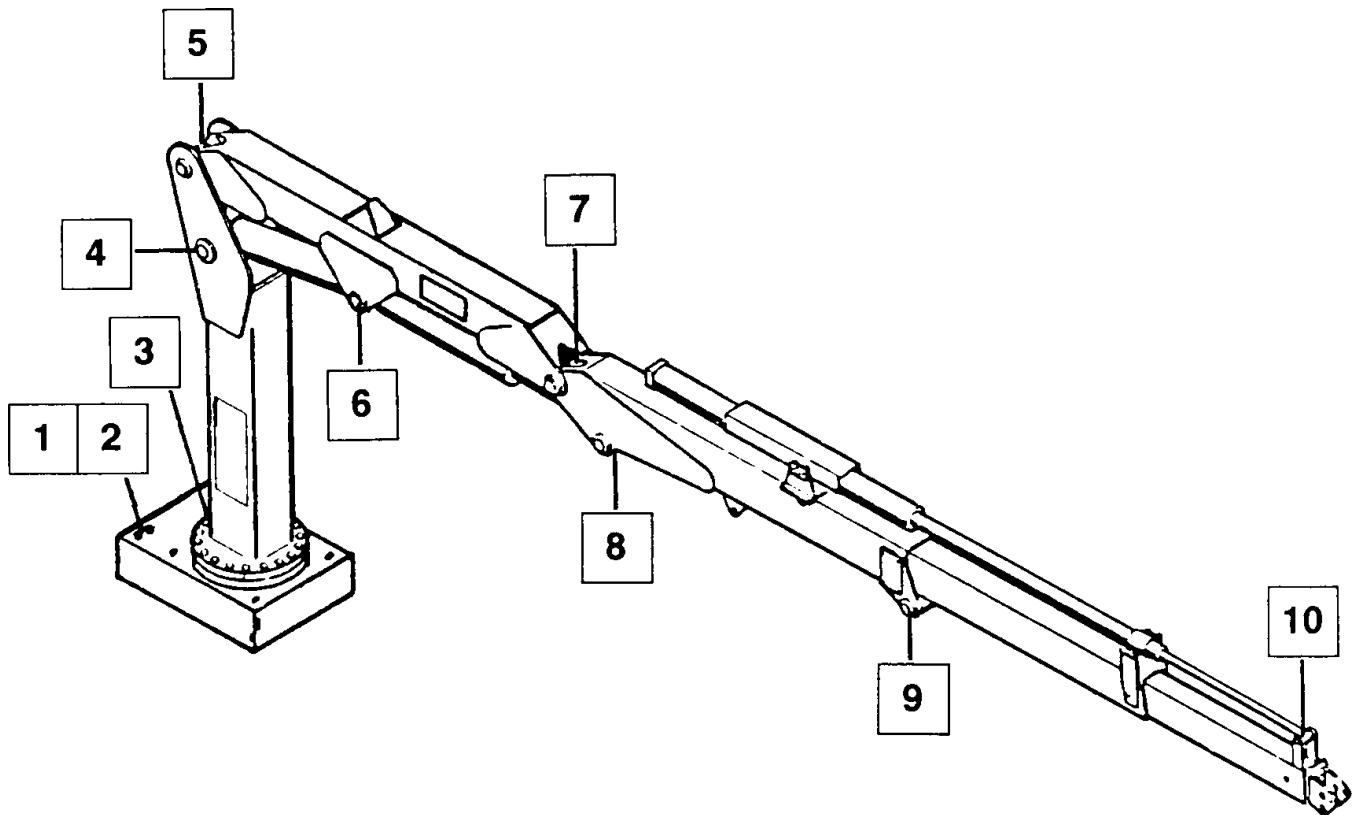


## MAJOR CRANE ASSEMBLIES



## WELDMENT PART NUMBER LOCATIONS

# GREASE ZERK LOCATIONS & LUBRICANT REQUIREMENTS



ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	DRIVE GEAR GREASE EXTENSION	SHELL ALVANIA 2EP  OR  SHELL RETINAX "A"	WEEKLY
2.	TURNTABLE/BEARING GREASE EXTENSION *ROTATE CRANE WHILE GREASING		
3.	PINION GEAR		
4.	MAST/INNER CYLINDER HINGE PIN		
5.	MAST/INNER BOOM HINGE PIN		
6.	INNER CYLINDER ROD/INNER BOOM HINGE PIN		
7.	INNER BOOM/OUTER BOOM HINGE PIN		
8.	OUTER CYLINDER ROD		
9.	OUTER BOOM TRUNNION PIN		
10.	EXTENSION CYLINDER ROD		

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 Volume 1; Operation, Maintenance and Repair for additional lubrication requirements.

**RECOMMENDED SPARE PARTS LIST****1 YEAR SUPPLY  
421AT CRANE****FOR MANUAL: 99900841**

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 DESIGNATION	ITEM NO.	PART NO.	DESCRIPTION	QTY	CODE	SHELF LIFE (MO)	ORDER QTY
<b>41707659.01.19980713</b>	<b>BASE ASSEMBLY</b>						
	3	60020114	BUSHING	1			
	4	60020115	BUSHING	1			
	5	60020116	BUSHING	1			
	6	60020154	BUSHING	1			
	7	71056011	DRIVE GEAR	1			
	14	7Q072112	O-RING	2			
	15	71056010	PINION GEAR	1			
	16	71056012	INTERMEDIATE GEAR	1			
	17	71056389	TURNTABLE GEAR BEARING	1			
	24	72060931	CAP SCR 5/8-11X2-3/4 HHGR8	24			
	30	72063119	WASHER 5/8 FLAT HARD GR8	24			
	32	73051004	HYDRAULIC MOTOR	1			
	33	73054538	COUNTERBALANCE VALVE	2			
<b>41713672.01.19960830</b>	<b>MAST ASSEMBLY</b>						
	4	72060931	CAP SCR 5/8-11X2-3/4 HHGR8	18			
	5	72063119	WASHER 5/8 FLAT HARD GR8	18			
<b>41701135.01.19970113</b>	<b>INNER BOOM ASSEMBLY</b>						
	13	60020131	BUSHING	2			
<b>3C078712.01.19990127</b>	<b>INNER CYLINDER</b>						
	6	73054242	VALVE 25GPM	1			
	7	9C202029	SEAL KIT	1			
	18	7BF81220	BUSHING	4			
	19	7BF81020	BUSHING	2			
<b>41713684.01.19960830</b>	<b>OUTER BOOM ASSEMBLY</b>						
	3	60020131	BUSHING	2			
	4	60030015	WEAR PAD	2			
	9	60020126	BUSHING	4			
<b>3C081712.01.19990127</b>	<b>OUTER CYLINDER</b>						
	6	73054242	VALVE 25GPM	1			
	7	9A202029	SEAL KIT	1			
	18	7BF81220	BUSHING	2			
	19	7BF81520	BUSHING	2			
<b>41705714.01.19960830</b>	<b>EXTENSION BOOM ASSEMBLY</b>						
	2	52701716	HOOK-5 TON SWVL	1			
	6	60030007	WEAR PAD	2			
	7	60030064	WEAR PAD	1			
	8	60030145	WEAR PAD	1			
	12	60030127	WEAR PAD	1			
<b>3K095850.01.19970718</b>	<b>EXTENSION CYLINDER</b>						
	11	73054242	VALVE 25GPM	2			
	13	9X095850	SEAL KIT	1			
<b>31705637.01.19960830</b>	<b>CABLE AND HOOK KIT</b>						
	3	60107592	CABLE 3/8X65'	1			
	5	70055024	BUSHING	1			
	6	70055025	RACE	1			
	7	70058033	CABLE CLAMP 3/8	1			
	8	70731716	SWIVEL HOOK	1			
<b>90713578.01.19960830</b>	<b>REMOTE CONTROL KIT</b>						
	6	77041251	RELAY	2			
	7	77041237	SOLENOID 12V	1			
<b>51713429.01.19980228</b>	<b>PROPORTIONAL REMOTE HANDLE ASSEMBLY</b>						
	16	77040371	TOGGLE SWITCH SPST	1			
	17	77040372	TOGGLE SWITCH SPDT	6			
	18	77040373	TOGGLE SWITCH SPST	2			

**RECOMMENDED SPARE PARTS LIST (CON'T)**

ASSEMBLY DESIGNATION	ITEM NO.	PART NO.	DESCRIPTION	QTY	CODE	SHELF LIFE (MO)	ORDER QTY
<b>73731911.01.19960830</b>			<b>VALVEBANK ASSEMBLY 4-SECTION</b>				
	5	7Q072205	O-RING	2			
	6	76392808	O-RING	6			
	10	73054624	PROPORTIONAL SOLENOID	1			
	11	73054623	RELIEF 2500PSI	1			
<b>73732632.01.19960830</b>			<b>VALVEBANK ASSEMBLY 6-SECTION</b>				
	5	7Q072205	O-RING	2			
	6	76392808	O-RING	6			
	10	73054624	PROPORTIONAL SOLENOID	1			
	11	73054623	RELIEF 2500PSI	1			
<b>93710761.01.19960830</b>			<b>INSTALLATION KIT</b>				
	4	70048149	SUCTION FILTER ELEMENT	6			
<b>31711428.01.19960830</b>			<b>CAPACITY ALERT KIT-AUDIBLE</b>				
	4	7Q072015	O-RING	1			
	5	77041222	PRESSURE SWITCH 2400PSI	1			



# INSTALLATION

## 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, MAINTENANCE AND REPAIR for chassis preparation. 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. Reinforce the chassis frame as necessary and install the PTO and pump.

## CRANE INSTALLATION

In addition to meeting Minimum Chassis Specifications in Section 1, there must be sufficient room for mounting the crane and the platform must be strong enough to support the crane and rated load.

To install the crane on the chassis:

1. Use a lifting device capable of lifting the weight of the crane - 2000 lbs. (907 kg). Attach the lifting device to the lift bracket welded to the top of the inner boom. Secure the lifting device to prevent slippage and lift the crane. Apply a bead of waterproof compound, such as silicon based caulk, to the bottom of the base. Move the carrier vehicle into position under the crane and lower the crane into position on the chassis. Allow sufficient room between the crane and cab for mast rotation.

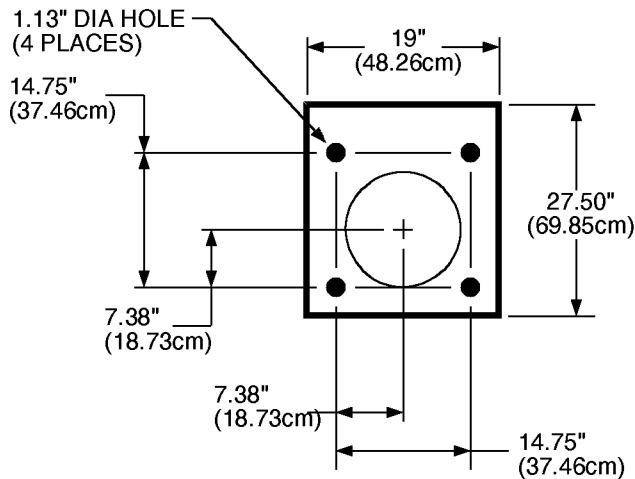
2. Install the mounting tie-rods, washers, and lock-nuts to secure the crane base to the mounting surface, as shown. Tighten and torque the mounting hardware to 200 ft-lbs (28 kg-m).

### CAUTION

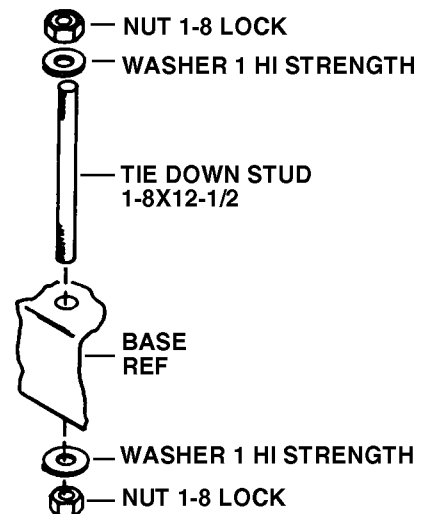
Do not attempt to apply the same torque to the tie rod and self-locking nuts as shown in the Torque Data Chart in the APPENDIX in Volume 1. Do not exceed 200 ft. lbs. (28 kg-m). Exceeding this torque value could damage either the chassis or crane base.

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

3. Touch up paint on crane and chassis as necessary.



MOUNTING HOLE PATTERN



## CRANE INSTALLATION

## HYDRAULIC INSTALLATION

Installations vary and it will be necessary for the installer to determine the best configuration for his individual installation. Following is a general guide to installation.

1. Install the suction filter to the suction port, and a return filter to the return port of the standard reservoir with 1-1/4" nipples and gate valves.
2. Install a 1-1/4" diameter hose between the pump and the suction filter, using barbed nipples and hose clamps.
3. Install a 1/2" diameter hose between the pump and the valvebank inlet section.
4. Install a 3/4" diameter hose between the valvebank outlet section and the reservoir.

5. Fill the hydraulic reservoir (refer to Volume 1 for hydraulic oil specifications).

6. Check all connections for leaks.

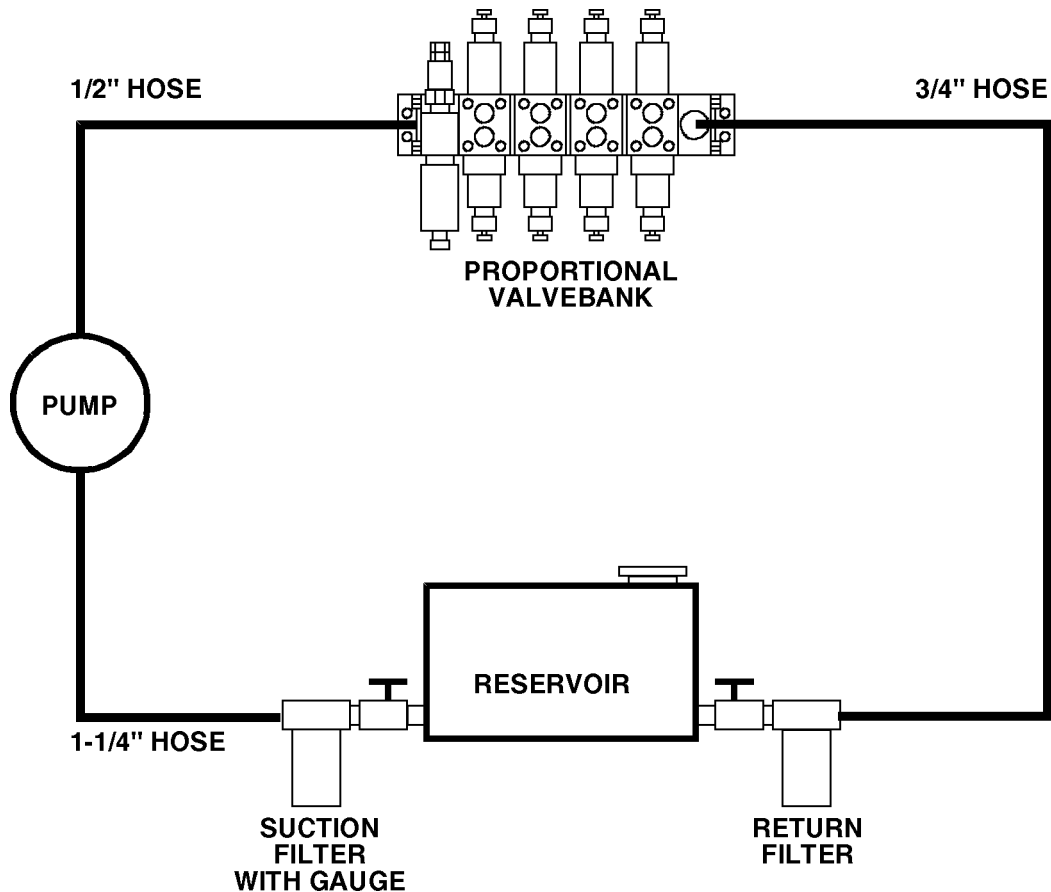
7. Open the gate valves.

### CAUTION

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

8. Start the vehicle engine and test each crane function individually. Conduct a visual inspection to make certain there are no leaks and that everything is operating properly.

9. Check the oil level in the reservoir and add oil if necessary.



## HYDRAULIC INSTALLATION

# PROPORTIONAL REMOTE CONTROLS

## GENERAL

This section is provided to help the operator and the installer become familiar with proportional remote controls. It discusses the theory of operation, installation, and troubleshooting.

## OPERATION

The speed at which a crane operates is directly related to the amount of oil supplied to its main control valve. The proportional remote control feature regulates the amount of oil that is made available to the main control valve, thereby controlling the speed of operation. This is accomplished by means of an electrically controlled hydraulic system consisting of a remote control, an amp driver, and a flow control. An increase in signal voltage to the amp driver causes it to provide higher signal voltage to the flow control solenoid. Higher signal voltage at the flow control solenoid causes it to limit the flow of oil allowed to bypass to the reservoir. Limiting the amount of oil that is bypassed forces more oil downstream, thus increasing the speed of operation.

## REMOTE CONTROL

The remote control allows the operator to control the crane remotely. It provides the housing for the switches that control which crane function, or functions, are to be activated. It also houses the potentiometer and trigger assembly that actually provide the signal voltage to the amp driver. It is connected to the main control valve and the amp driver through a 30 foot cable. The function switches in the remote control are simple on/off switches and have no effect on the speed of the function. The speed of the function selected is controlled only by the trigger, therefore, if two functions are selected at the same time, when the trigger is pulled, the speed of both functions will increase.

## AMP DRIVER

The amp driver is an electronic device used to take the signal that it receives from the trigger in the remote control, and subsequently provide a signal voltage to the flow control solenoid. It is often mounted to the mast of the crane, but may be mounted in an alternate location.

## FLOW CONTROL

The flow control may either be an integral part of the inlet on the main control valve, or a separate valve body, depending on the crane model. Its purpose is to regulate the amount of oil flow to the main control valve. In the normal state, the flow control will direct the flow of oil to the reservoir. Its operation is completely dependent on a variation in signal voltage from the amp driver. As the signal voltage from the amp driver increases, the flow control begins to limit the flow of oil being bypassed, which causes a greater flow directed upstream to the main control valve. Inversely, when the signal voltage from the amp driver begins to drop, the flow control will let more oil bypass to the reservoir, resulting in lesser flow upstream to the main control valve.

## GENERAL INSTALLATION

Refer to the parts drawings in Section 4 for your particular proportional remote control system. The installer must be familiar with the information relating to the crane that is to be installed, before attempting to make that installation. Electrical contacts must be clean and free of oil or other contaminants. Proper ground must be established. This will be accomplished by connecting a 12-gauge (minimum) wire from the ground point of the electrical system to a 5/16 inch self tapping screw installed in the truck frame.

**TROUBLESHOOTING CHART**

<b>SYMPTOM</b>	<b>POSSIBLE CAUSE</b>	<b>RECOMMENDED COURSE OF ACTION</b>
<b>CRANE WILL NOT FUNCTION</b>	<b>NO POWER TO REMOTE CONTROL</b>	<b>CHECK CONNECTIONS TO 12VDC SOURCE. CHECK FUSE IN POWER WIRE.</b>
	<b>NO POWER TO FLOW CONTROL</b>	<b>CHECK CONNECTIONS BETWEEN AMP DRIVER AND FLOW CONTROL. CHECK POLARITY OF AMP DRIVER POWER LEADS. CHECK FUSE IN AMP DRIVER.</b>
	<b>FLOW CONTROL MALFUNCTION</b>	<b>CHECK TORQUE ON FLOW CONTROL SOLENOID. REMOVE FLOW CONTROL AND TEST. REPLACE AS NEEDED.</b>
	<b>VALVE SPOOL NOT SHIFTING</b>	<b>CHECK TIE BOLT TORQUE. REPLACE IF NEEDED.</b>
	<b>PUMP FAILURE</b>	<b>CHECK FLOW/PRESSURE. REPLACE IF NEEDED.</b>
<b>CRANE NOT PROPORTIONAL</b>	<b>FLOW CONTROL MALFUNCTION</b>	<b>CHECK TORQUE ON FLOW CONTROL SOLENOID. REMOVE FLOW CONTROL AND TEST. REPLACE AS NEEDED. CHECK VOLTAGE VARIANCE TO SOLENOID.</b>
	<b>TRIGGER POTENTIOMETER ADJUSTED INCORRECTLY</b>	<b>SET ENGINE AT HIGH SPEED CONTROL SETTING. SET ON ROTATION FUNCTION. ADJUST TRIGGER POT CCW UNTIL CRANE BEGINS TO ROTATE.</b>
<b>CRANE OPERATION NOT SMOOTH</b>	<b>AIR IN THE SYSTEM</b>	<b>BLEED HYDRAULICS AS NEEDED. CRANES WITH IN-LINE FLOW CONTROLS MUST BE BLED AT VALVE.</b>
<b>TRIGGER FUNCTION REVERSED</b>	<b>WIRING AT AMP DRIVER REVERSED</b>	<b>REVERSE THE WIRING TO AMP DRIVER AT TRIGGER IN REMOTE CONTROL.</b>
<b>Q1 IS CRACKED AND/OR DISCOLORED</b>	<b>IMPROPER WIRING</b>	<b>POWER SOURCE POLARITY IS REVERSED. CORRECT WIRING, REPLACE AMP DRIVER.</b>
<b>AMP DRIVER OUTPUT IS 0</b>	<b>IMPROPER WIRING</b>	<b>CHECK CONTINUITY IN THE + SIGNAL (ORANGE) CIRCUIT.</b>
	<b>MOISTURE IN AMP DRIVER</b>	<b>OPEN THE ENCLOSURE AND BLOW DRY. CHECK BOTTOM 1/4" HOLE FOR BLOCKAGE.</b>
	<b>AMP DRIVER HAS FAILED</b>	<b>POWER SOURCE POLARITY IS REVERSED. CORRECT AS NEEDED.</b>
<b>AMP DRIVER OUTPUT IS 1VDC AND WILL NOT VARY</b>	<b>IMPROPER WIRING</b>	<b>CHECK CONTINUITY IN THE SIGNAL(WHITE) CIRCUIT.</b>
<b>AMP DRIVER OUTPUT IS 12VDC AND WILL NOT VARY</b>	<b>IMPROPER WIRING</b>	<b>CHECK CONTINUITY IN THE -SIGNAL (BLUE) CIRCUIT.</b>

# SECTION 3. REPLACEMENT PARTS 421AT CRANE

<b>PARTS INFORMATION .....</b>	<b>3</b>
<b>BASE ASM (41707659) .....</b>	<b>4</b>
<b>MAST ASM (41713672) .....</b>	<b>5</b>
<b>INNER BOOM ASM (41701135) .....</b>	<b>6</b>
<b>INNER CYLINDER (3C078712) .....</b>	<b>7</b>
<b>OUTER BOOM ASM (41713684) .....</b>	<b>8</b>
<b>OUTER CYLINDER (3C081712) .....</b>	<b>9</b>
<b>EXTENSION BOOM ASM-2H (41705714) .....</b>	<b>10</b>
<b>EXTENSION CYLINDER (3K095850) .....</b>	<b>11</b>
<b>CABLE &amp; HOOK KIT (31705637) .....</b>	<b>12</b>
<b>WINCH KIT (31713685) .....</b>	<b>13</b>
<b>TWO-BLOCK DAMAGE PREVENTION KIT (51724349 / DWG 99905322).....</b>	<b>14</b>
<b>DECAL KIT (95713584) .....</b>	<b>15</b>
<b>REMOTE CONTROL KIT (90713578) .....</b>	<b>16</b>
<b>PROP'L RMT HANDLE ASM (51713429) .....</b>	<b>17</b>
<b>CABLE ASM-JIC BOX 90" (51713573) .....</b>	<b>18</b>
<b>TETHERED PROPORTIONAL REMOTE POTENTIOMETER ADJUSTMENT .....</b>	<b>18</b>
<b>HYDRAULIC KIT-4 SECTION (91714075) .....</b>	<b>19</b>
<b>VALVEBANK ASM 4-SECTION (73731911) .....</b>	<b>20</b>
<b>HYDRAULIC KIT 6-SECTION (91714077) .....</b>	<b>21</b>
<b>VALVEBANK ASM 6-SECTION (73732632) .....</b>	<b>22</b>
<b>HYDRAULIC KIT 5-SECTION (91714076) .....</b>	<b>23</b>
<b>VALVEBANK ASM-5 SECTION (73732831) .....</b>	<b>24</b>
<b>INSTALLATION KIT (93710761) .....</b>	<b>25</b>
<b>OPTION - LIGHT KIT (31717218) .....</b>	<b>26</b>
<b>CAPACITY ALERT KIT-AUDIBLE (31711428) .....</b>	<b>27</b>
<b>DOUBLE HOSE REEL KIT (31711966) .....</b>	<b>28</b>



# 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.

### 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.

## 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.

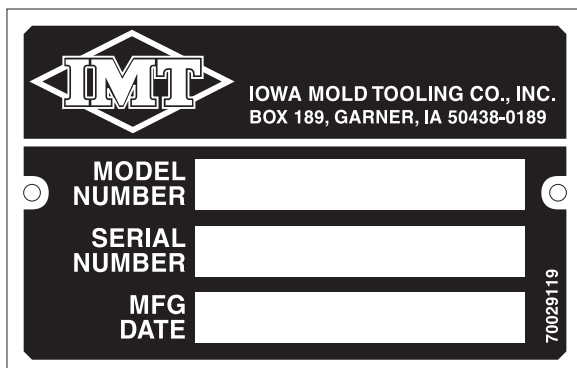
## WELDMENT IDENTIFICATION

Each of the major weldments - base, mast, inner boom, outer boom, extension boom and stabilizer 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 Section 2.

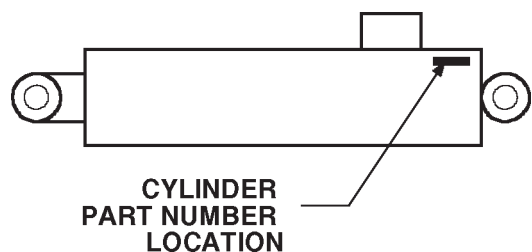
## ORDERING REPAIR PARTS

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.



**SERIAL NUMBER PLACARD**



**CYLINDER PART NUMBER LOCATION**

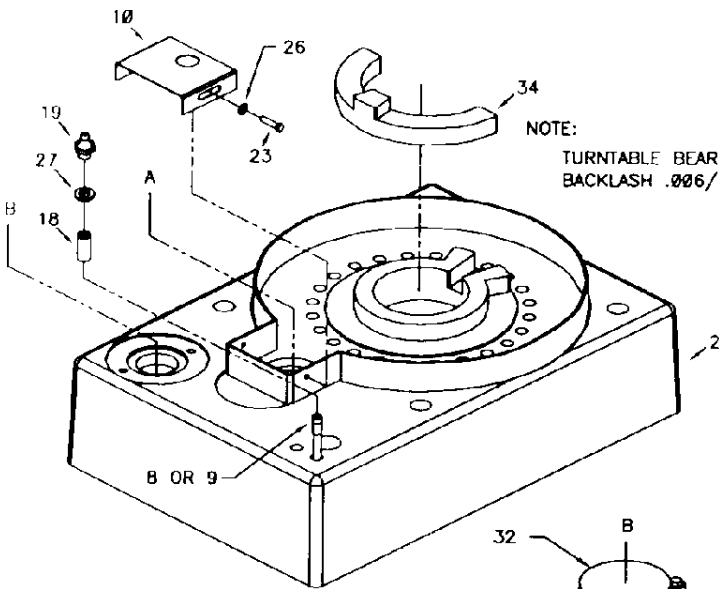
**BASE ASM (41707659)**

ITEM	PART NO.	DESCRIPTION	QTY
2.	52707658	BASE (INCL:3-7)	1
3.	60020114	BUSHING (PART OF 2)	1REF
4.	60020115	BUSHING (PART OF 2)	1REF
5.	60020116	BUSHING (PART OF 2)	1REF
6.	60020154	BUSHING (PART OF 2)	1REF
7.	71056011	DRIVE GEAR (PART OF 2)	1REF
8.	53000704	GREASE EXTENSION 34"	1
9.	53000715	GREASE EXTENSION 18"	1
10.	60010235	PINION COVER	1
11.	60121351	GREASE PLATE	1
12.	60104694	PINION SPACER	1
13.	60106032	STUD 1/2-13X2	2
15.	71056010	PINION GEAR	1
16.	71056012	INTERMEDIATE GEAR	1
17.	71056389	TURNTABLE BEARING	1
18.	72053301	COUPLING 1/8NPT	2
19.	72053508	ZERK 1/8NPT	3
20.	72053589	STREET ELBOW 1/8NPT 90°	1
21.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	2
23.	72060833	SCR 5/16-18X3/4 HH SLFTPG	2
24.	72060931	CAP SCR 5/8-11X2-3/4 HH GR8 24	24

25.	72062080	NUT 1/2-13 LOCK	2
26.	72063002	WASHER 5/16 WRT	2
27.	72063003	WASHER 3/8 WRT	2
28.	72063035	MACH BUSHING 1-1/4X10GA NR	1
29.	72063053	WASHER 1/2 LOCK	2
30.	72063119	WASHER 5/8 FLAT HARD GR8	24
31.	72066084	RETAINING RING 1-1/4 EXT STD	1
32.	73540004	HYD MOTOR (FROM 5-15-98)	1
	73051004	HYD MOTOR (TO 5-15-98)	1
	73054538	C'BALANCE VALVE (TO 5-15-98)	2
	5V151830	MOTOR BLOCK (TO 5-15-98)	1
	7Q072112	O-RING (TO 5-15-98)	2
	72060738	CAP SCR (TO 5-15-98)	4
34.	71143519	SLIDE-CAST 450° ROTATION	1

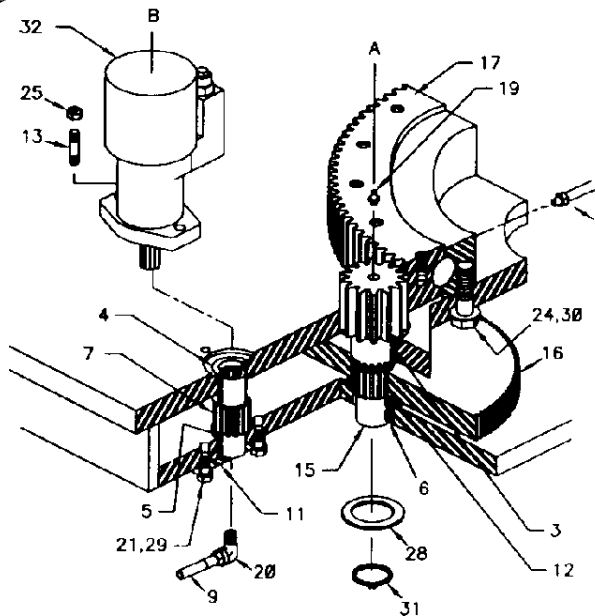
**WARNING**

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.



NOTE:  
TURNTABLE BEARING  
BACKLASH .006/.010

NOTE: APPLY MOBILTAC 375NC LUBRICANT OR EQUIVALENT TO THE EXTERNAL TEETH OF THE TURNTABLE BEARING AND PINION GEAR.



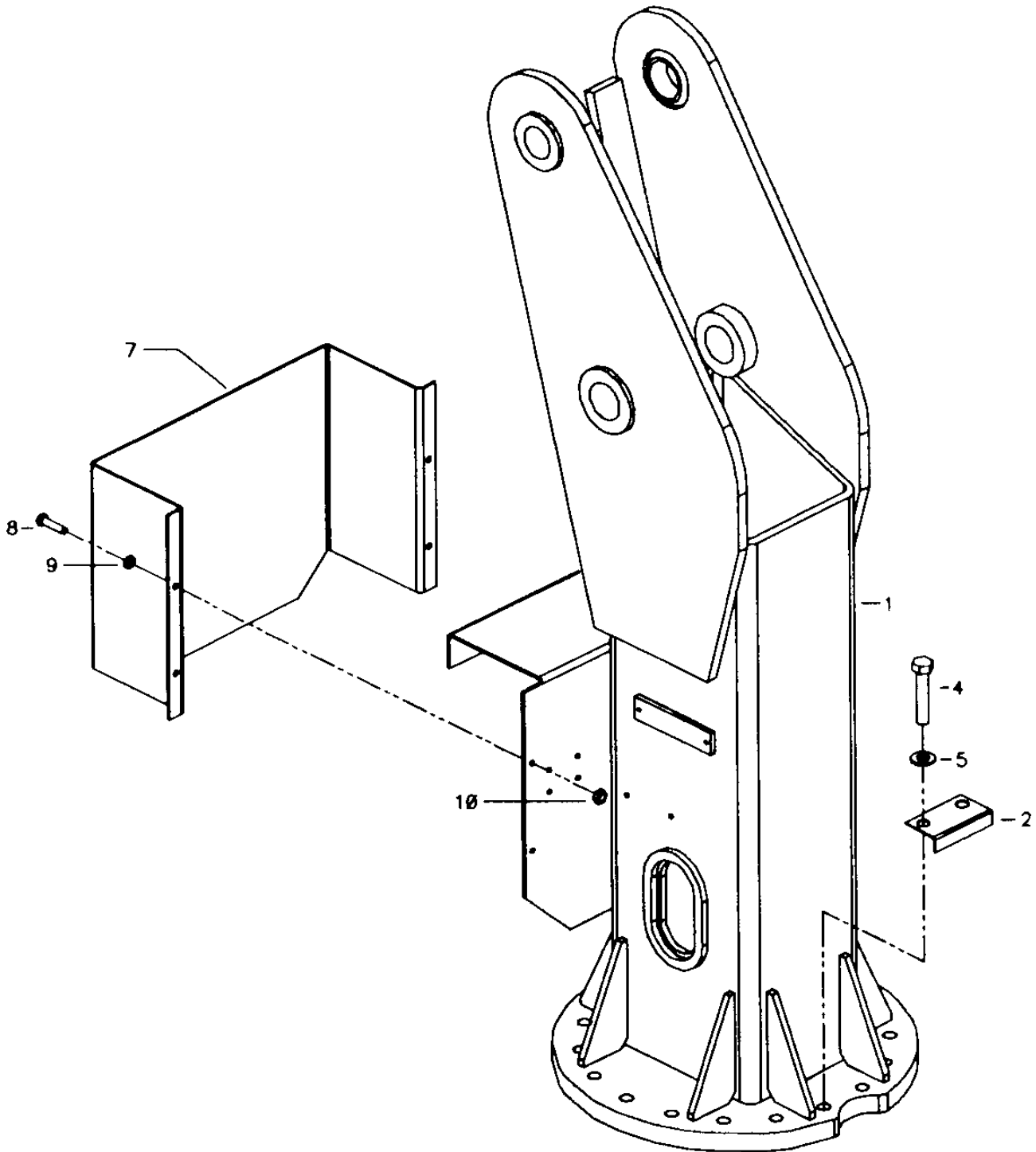


**MAST ASM (41713672)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	52713621	MAST	1
2.	60104540	PINION COVER	1
3.	70029119	SERIAL NO. PLACARD	1
4.	72060931	CAP SCR 5/8-11X2-3/4 HH GR8	18
5.	72063119	WASHER 5/8 FLAT HARD GR8	18
6.	72066340	POP RIVET 1/8	2
7.	60115956	COVER PLATE - VB	1
8.	72060002	CAP SCR 1/4-20X3/4 HH GR5	4
9.	72063001	WASHER 1/4 WRT	4
10.	72062104	NUT 1/4-20 LOCK	4

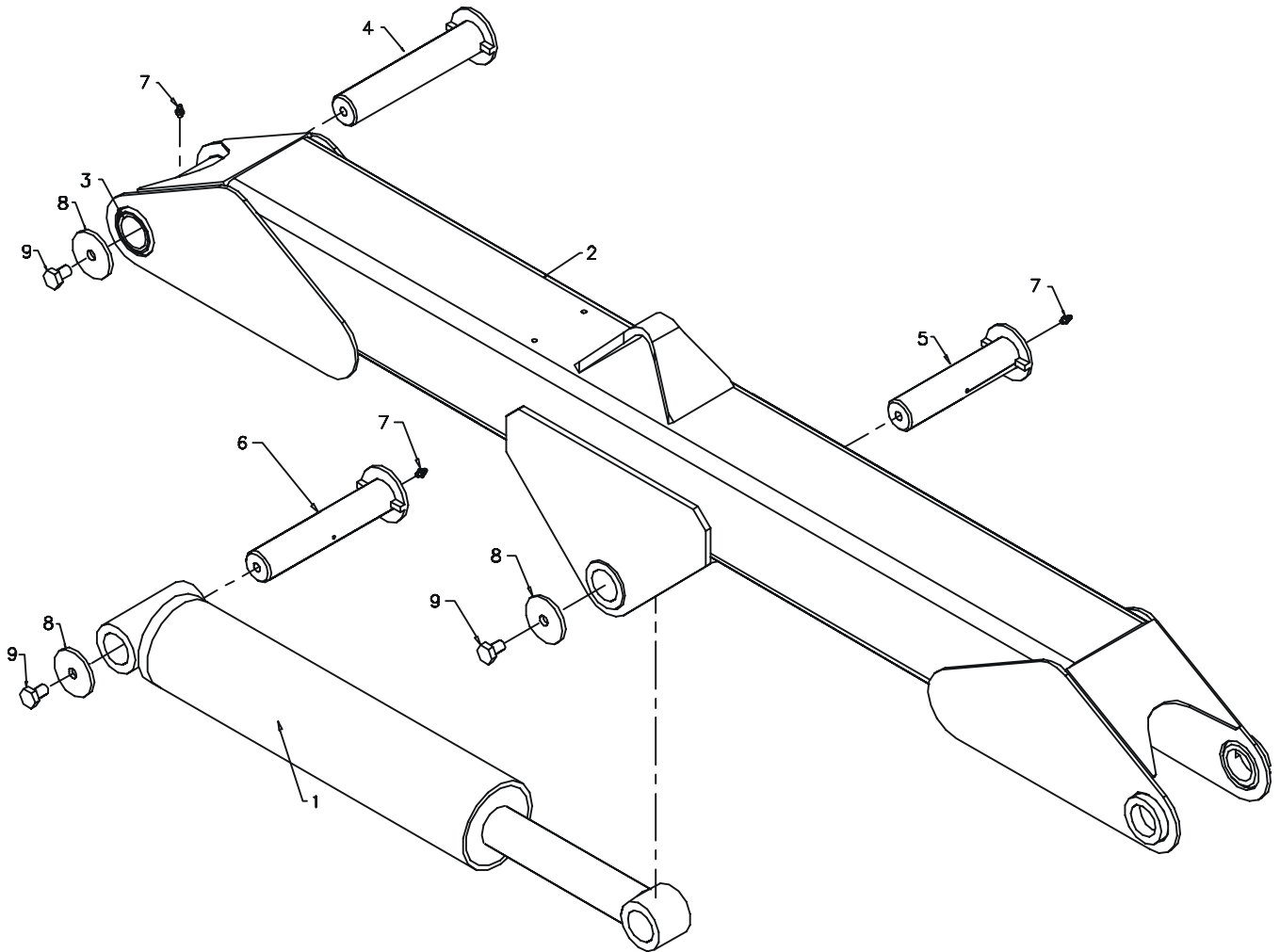
**WARNING**

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.



**INNER BOOM ASM (41701135)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	3C078712	INNER CYLINDER	1
2.	52701155	INNER BOOM (INCL:3)	1
3.	60020131	BUSHING (PART OF 2)	2REF
4.	52703711	PIN	1
5.	52703758	PIN	1
6.	52715936	PIN	1
7.	72053508	ZERK 1/8NPT	3
8.	60109337	PIN RETAINER PLT 3"	3
9.	72060147	CAP SCR 5/8-11X1 HHGR5	3



**INNER CYLINDER (3C078712)**

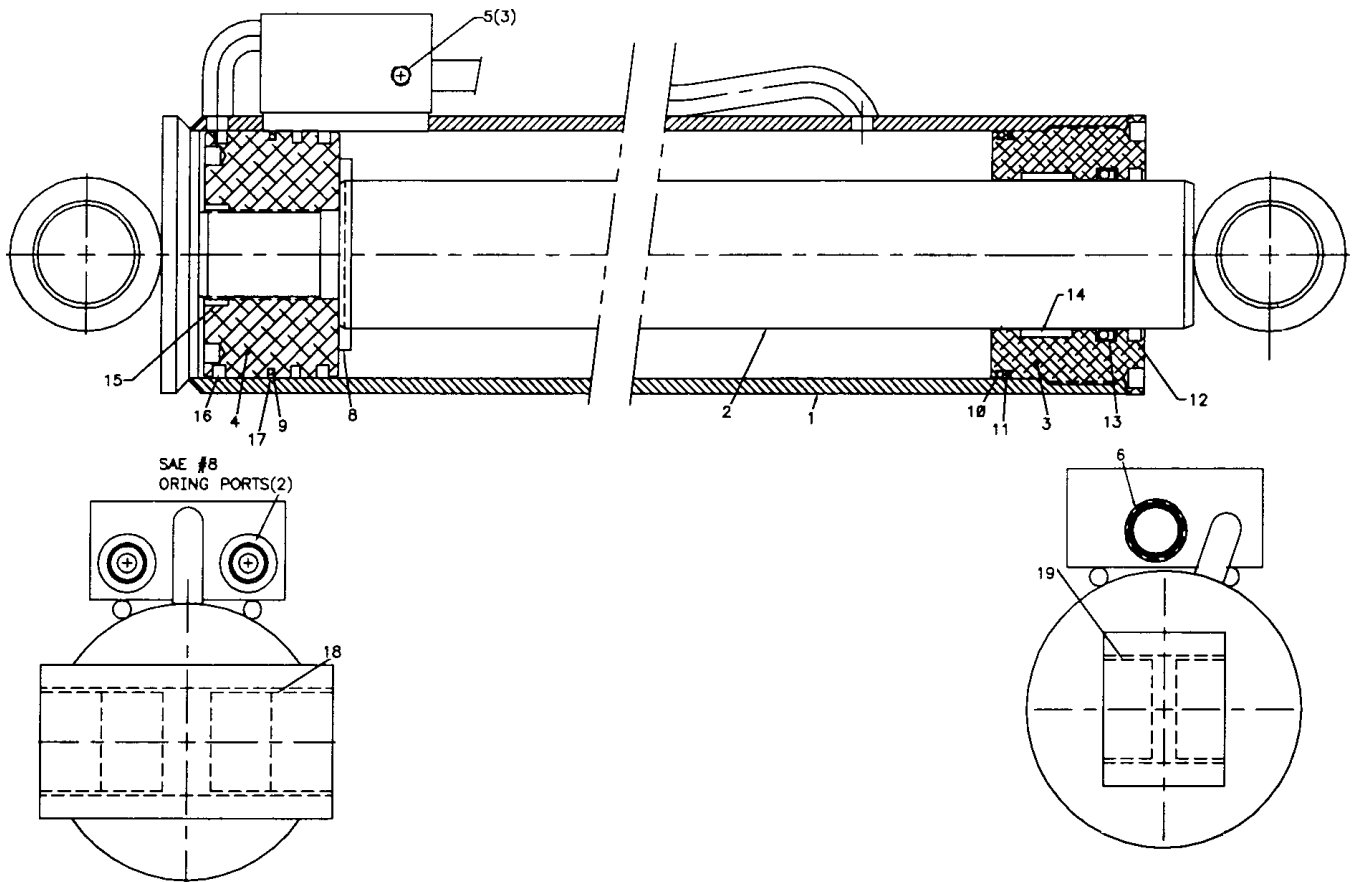
ITEM	PART	DESCRIPTION	QTY
1.	4C078711	CASE (INCL:5&18)	1
2.	4G078710	ROD (INCL:19)	1
3.	6H050025	HEAD	1
4.	6I050181	PISTON	1
5.	7PNPXT02	PIPE PLUG 1/8 (PART OF 1)	3REF
6.	73054242	VALVE - 25GPM	1
7.	9C202029	SEAL KIT (INCL:8-173)	1
8.	6A025025	WAFER LOCK (PART OF 7)	1REF
9.	7Q072157	O-RING (PART OF 7)	1REF
10.	7Q072350	O-RING (PART OF 7)	1REF
11.	7Q10P350	BACK-UP RING (PART OF 7)	1REF
12.	7R14P025	ROD WIPER (PART OF 7)	1REF
13.	7R546025	ROD SEAL (PART OF 7)	1REF
14.	7T2N8027	WEAR RING (PART OF 7)	1REF
15.	7T61N181	LOCK RING SEAL (PART OF 7)	1REF
16.	7T65I050	PISTON RING (PART OF 7)	2REF
17.	7T66P050	PISTON SEAL (PART OF 7)	1REF
18.	7BF81220	BUSHING (PART OF 1)	4REF
19.	7BF81020	BUSHING (PART OF 2)	2REF

**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. KEEP AWAY FROM ALL SEALS.

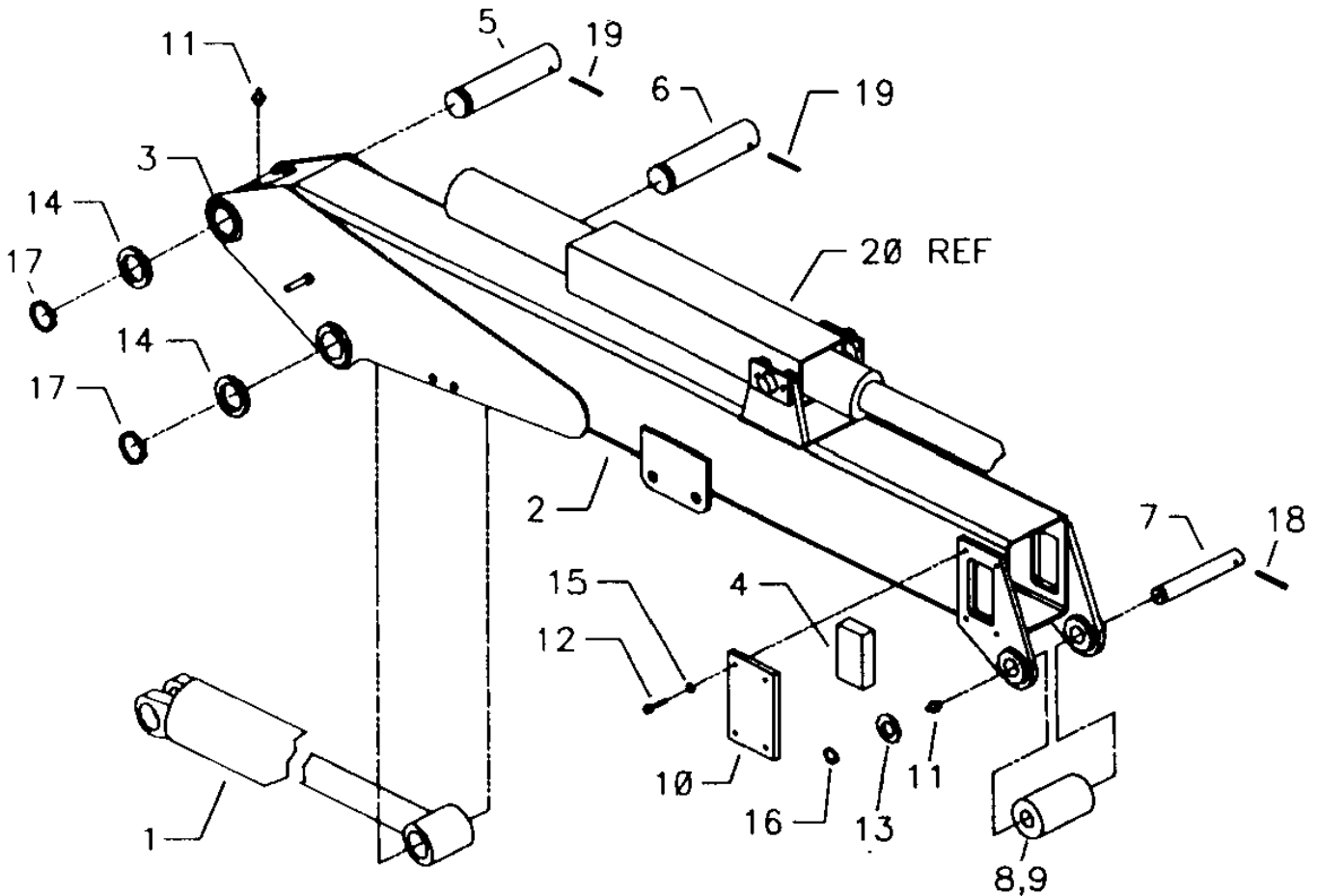


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**OUTER BOOM ASM (41713684)**

ITEM PART	DESCRIPTION	QTY				
1.	3C081712	1	10.	60103463	RETAINING PLATE	2
2.	52713683	1	11.	72053508	ZERK 1/8NPT	2
3.	60020131	2REF	12.	72060023	CAP SCR 5/16-18 X 3/4 HH GR5	8
4.	60030015	2	13.	72063035	MACH BUSHING 1-1/4 X 10GA	1
5.	60102200	2	14.	72063039	MACH BUSHING 2 X 10GA	2
6.	60102324	1	15.	72063050	WASHER 5/16 LOCK	8
7.	60102558	1	16.	72066129	RETAINING RING 1-1/4 HD	1
8.	60102559	1	17.	72066136	RETAINING RING 2" HD	2
9.	60020126	4REF	18.	72661157	GROOVE PIN 1/2 X 2-1/2	1
			19.	72661159	GROOVE PIN 1/2 X 3	2
			20.	3K095850	EXTENSION CYLINDER	REF



**OUTER CYLINDER (3C081712)**

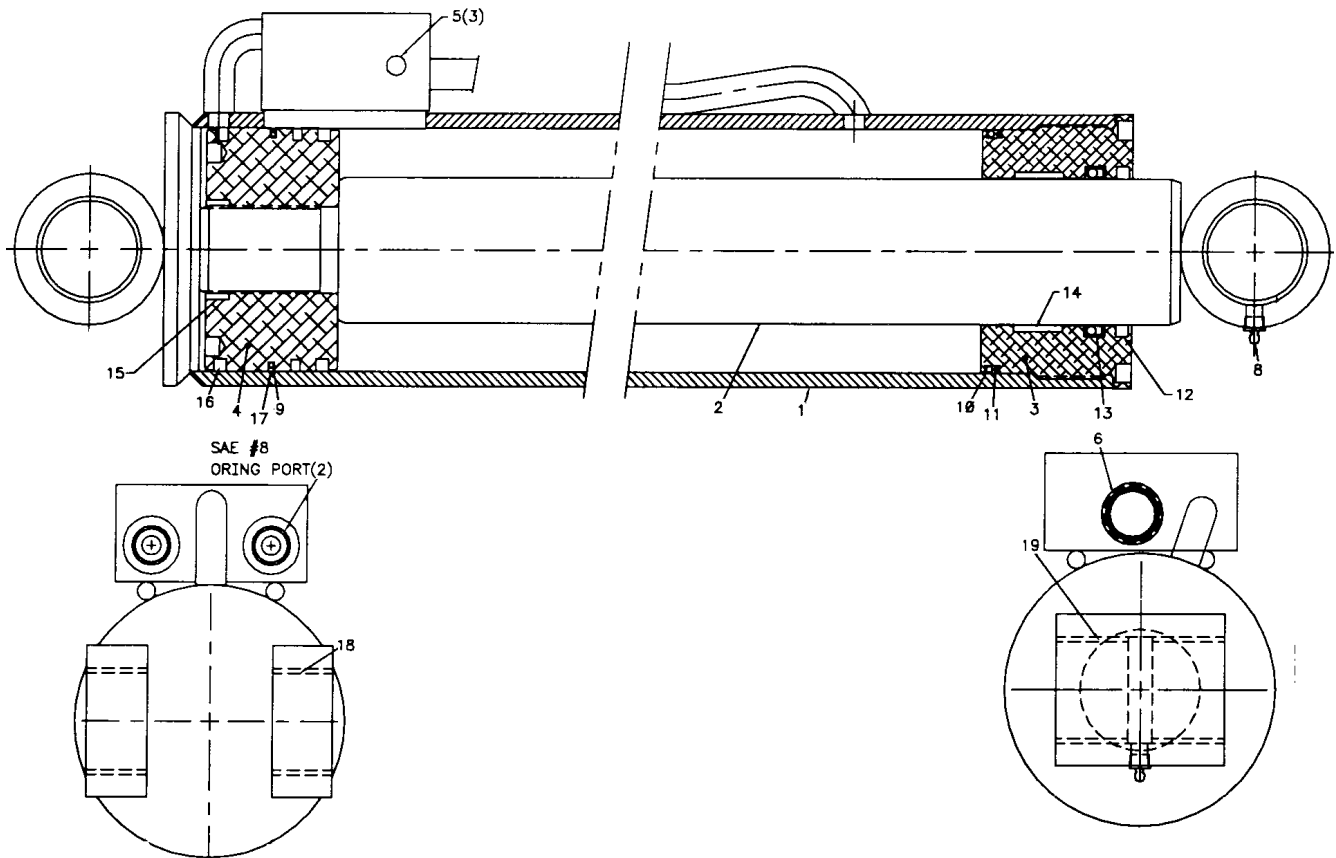
ITEM	PART	DESCRIPTION	QTY
1.	4C081711	CASE (INCL:5&18)	1
2.	4G081710	ROD (INCL:8&19)	1
3.	6H050025	HEAD	1
4.	6I050181	PISTON	1
5.	7PNPXT02	PIPE PLUG 1/8 (PART OF 1)	3REF
6.	73054242	VALVE 25GPM	1
7.	9A202029	SEAL KIT (INCL:9-17)	1
8.	72053507	ZERK 1/4-28 (PART OF 2)	1REF
9.	7Q072157	O-RING (PART OF 7)	1REF
10.	7Q072350	O-RING (PART OF 7)	1REF
11.	7Q10P350	BACK-UP RING (PART OF 7)	1REF
12.	7R14P025	ROD WIPER (PART OF 7)	1REF
13.	7R546025	ROD SEAL (PART OF 7)	1REF
14.	7T2N8027	WEAR RING (PART OF 7)	1REF
16.	7T65I050	PISTON RING (PART OF 7)	2REF
17.	7T66P050	PISTON SEAL (PART OF 7)	1REF
15.	7T61N181	LOCK RING SEAL (PART OF 7)	1REF
18.	7BF81220	BUSHING (PART OF 1)	2REF
19.	7BF81520	BUSHING (PART OF 2)	2REF

**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. KEEP AWAY FROM ALL SEALS.



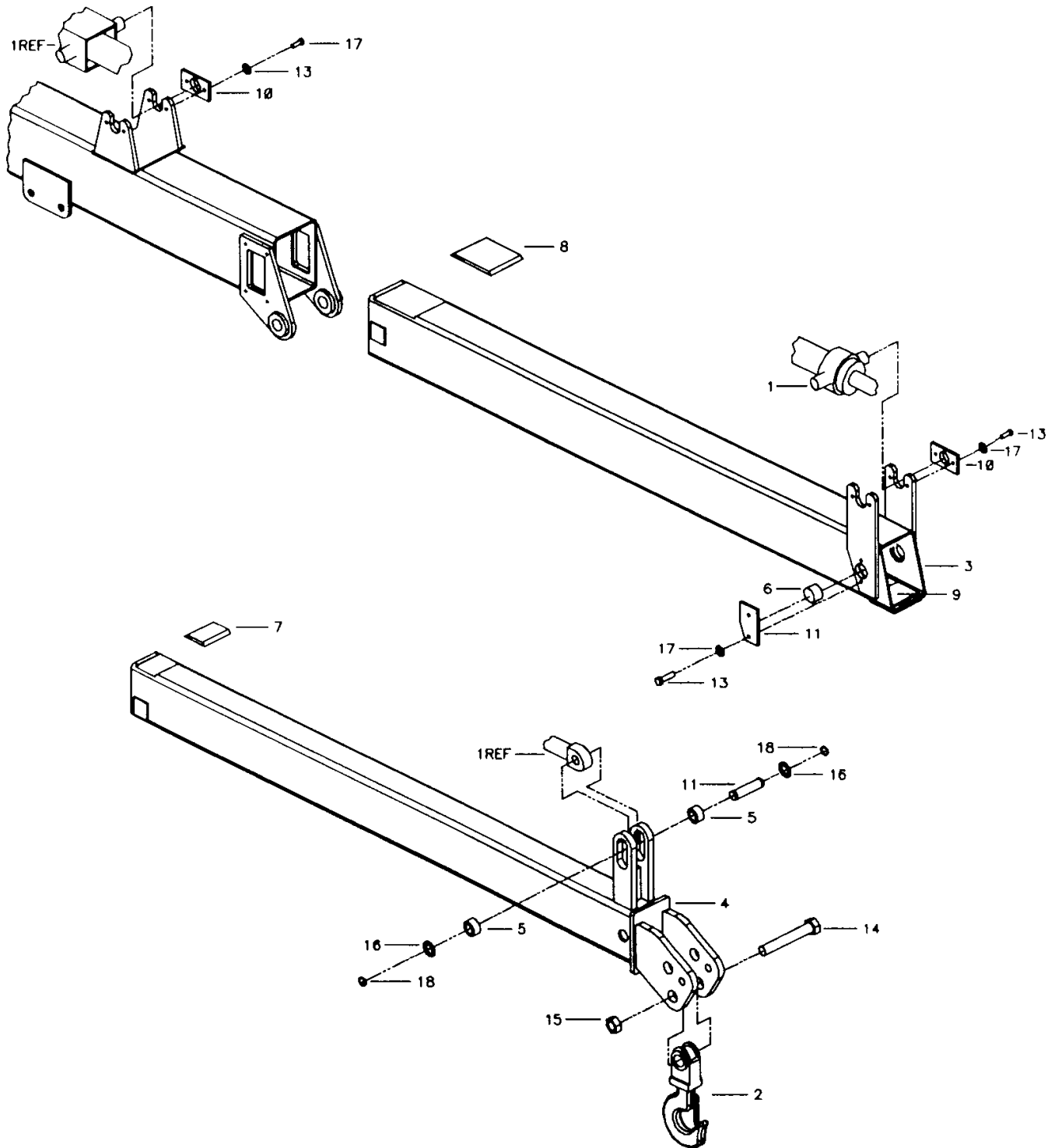
000421AT: 41705714.01.19960830

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**EXTENSION BOOM ASM-2H (41705714)**

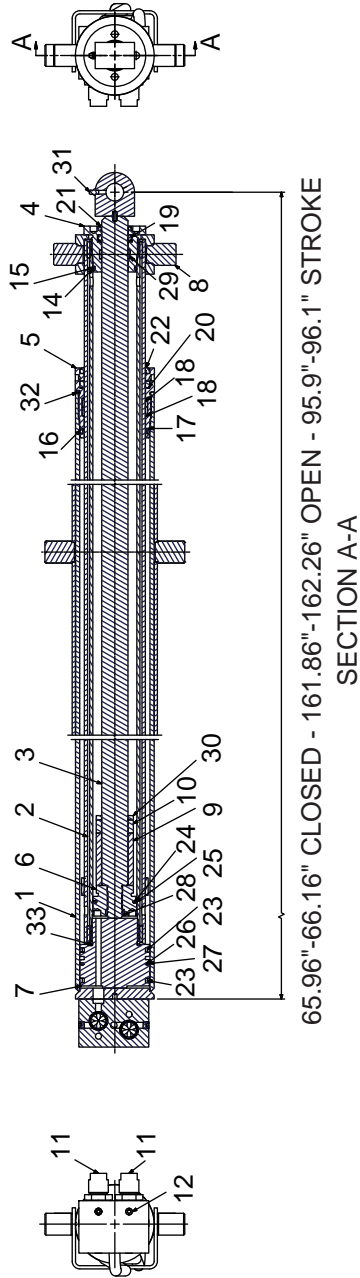
ITEM	PART	DESCRIPTION	QTY
1.	3K095850	EXTENSION CYLINDER	1
2.	52701716	HOOK - 5-TON SWVL	1
3.	52705249	EXT BOOM - 1ST STAGE	1
4.	52705712	EXT BOOM - 2ND STAGE	1
5.	60020197	ROLLER	2
6.	60030007	WEAR PAD	2
7.	60030064	WEAR PAD	1
8.	60030145	WEAR PAD	1
9.	60102341	LOCK PLATE	4

10.	60102649	RETAINING PLATE	2
11.	60104028	PIN	1
12.	60030127	WEAR PAD	1
13.	72060046	CAP SCR 3/8-16X1 HHGR5	12
14.	72060238	CAP SCR 1 1/4-7X6 HHGR5	1
15.	72062073	NUT 1 1/4-7 THIN HEX LOCK	1
16.	72063010	WASHER 1" WRT	2
17.	72063051	WASHER 3/8 LOCK	12
18.	72066125	RETAINING RING 1" EXT HD	2
19.	72060915	CAP SCR 3/8-16X1 FLTHD SOC	2



**EXTENSION CYLINDER (3K095850)**

ITEM	PART	DESCRIPTION	QTY
1.	4K095850	CASE (INCL: 12)	1
2.	4H095850	INNER CASE	1
3.	4G095850	ROD	1
4.	6H271511	HEAD	1
5.	6H112820	HEAD	1
6.	6I025087	PISTON	1
7.	6I095850	PISTON	1
8.	4FG12085	MOUNTING RING	1
9.	6C300015	STOP TUBE	1
10.	6C075015	STOP TUBE	1
11.	73054242	VALVE	2
12.	7PNPXT02	PIPE PLUG 1/8NPT (PART OF 1)	6
13.	9X095850	SEAL KIT	1
14.	7Q072228	O-RING (PART OF 13)	1REF
15.	7Q10P228	BACK-UP RING (PART OF 13)	1REF
16.	7Q072342	O-RING (PART OF 13)	1REF
17.	7Q10P342	BACK-UP RING (PART OF 13)	1REF
18.	7T2N4037	WEAR RING (PART OF 13)	2REF
19.	7R546015	U-CUP (PART OF 13)	1REF
20.	7R546035	U-CUP LOADED (PART OF 13)	1REF
21.	7R14P015	ROD WIPER (PART OF 13)	1REF
22.	7R14P035	ROD WIPER (PART OF 13)	1REF
23.	7T65I040	PISTON RING (PART OF 13)	2REF
24.	7Q072137	O-RING (PART OF 13)	1REF
25.	7T66P025	PISTON SEAL (PART OF 13)	1REF
26.	7Q072153	O-RING (PART OF 13)	1REF
27.	7T66P040	PISTON SEAL (PART OF 13)	1REF
28.	7T61N087	LOCK-RING SEAL	1REF
29.	7T2N8015	ROD WEAR RING (PART OF 13)	1
30.	60138272	STOP TUBE (WAS 6A025015)	1REF
31.	72053507	ZERK 1/4-28	1
32.	60125699	PIN-LOCK TUBE (PART OF 13)	1REF
33.	7Q072145	O-RING	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.

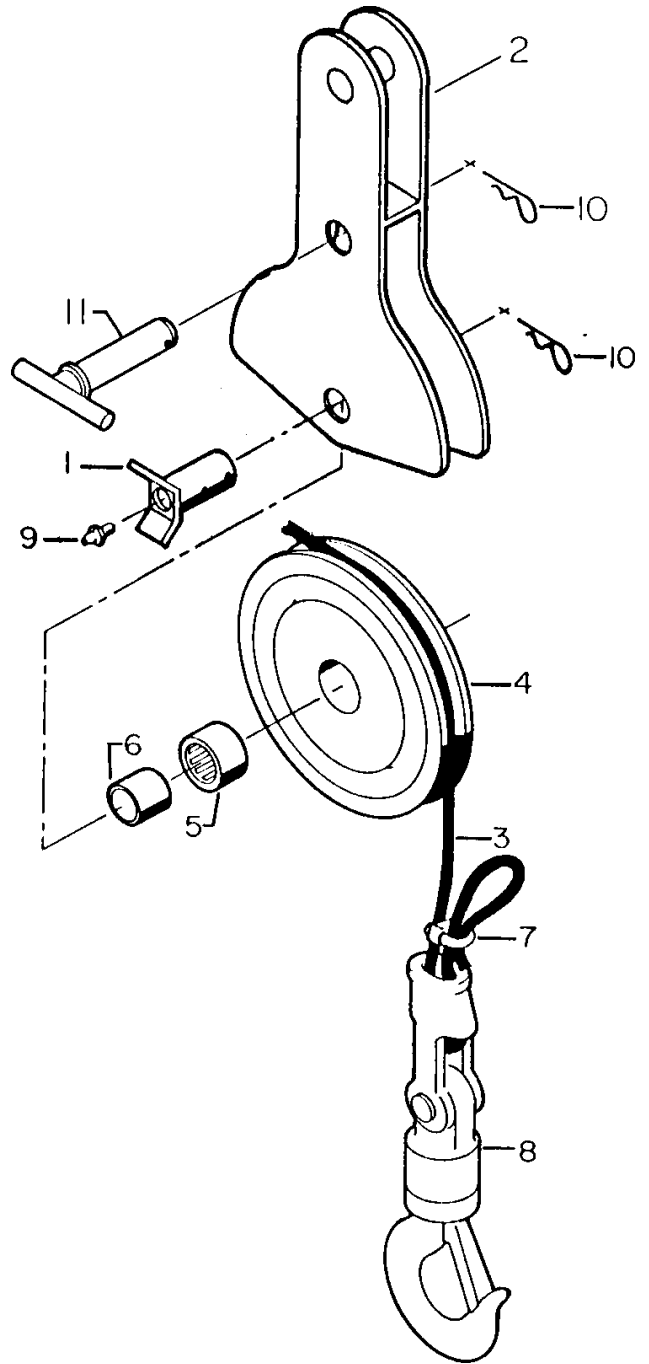
ITEM #30, STOP TUBE, REPLACES 6A025015 WAFER LOCK. USE STOP TUBE INSTEAD OF WAFER LOCK WHEN RESEALING CYLINDER.

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### CABLE & HOOK KIT (31705637)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52070705	PIN	1
2.	52704143	YOKE	1
3.	60107592	CABLE 3/8X65'	1
4.	70034204	NYLON SHEAVE 10-1/4	1
5.	70055024	BEARING	1
6.	70055025	RACE	1
7.	70058033	CABLE CLAMP 3/8	1
8.	70731716	SWIVEL HOOK/WEDGE SOCKET	1
9.	72053508	ZERK 1/8NPT	1
10.	72066145	HAIR PIN	2
11.	52070151	PIN	1



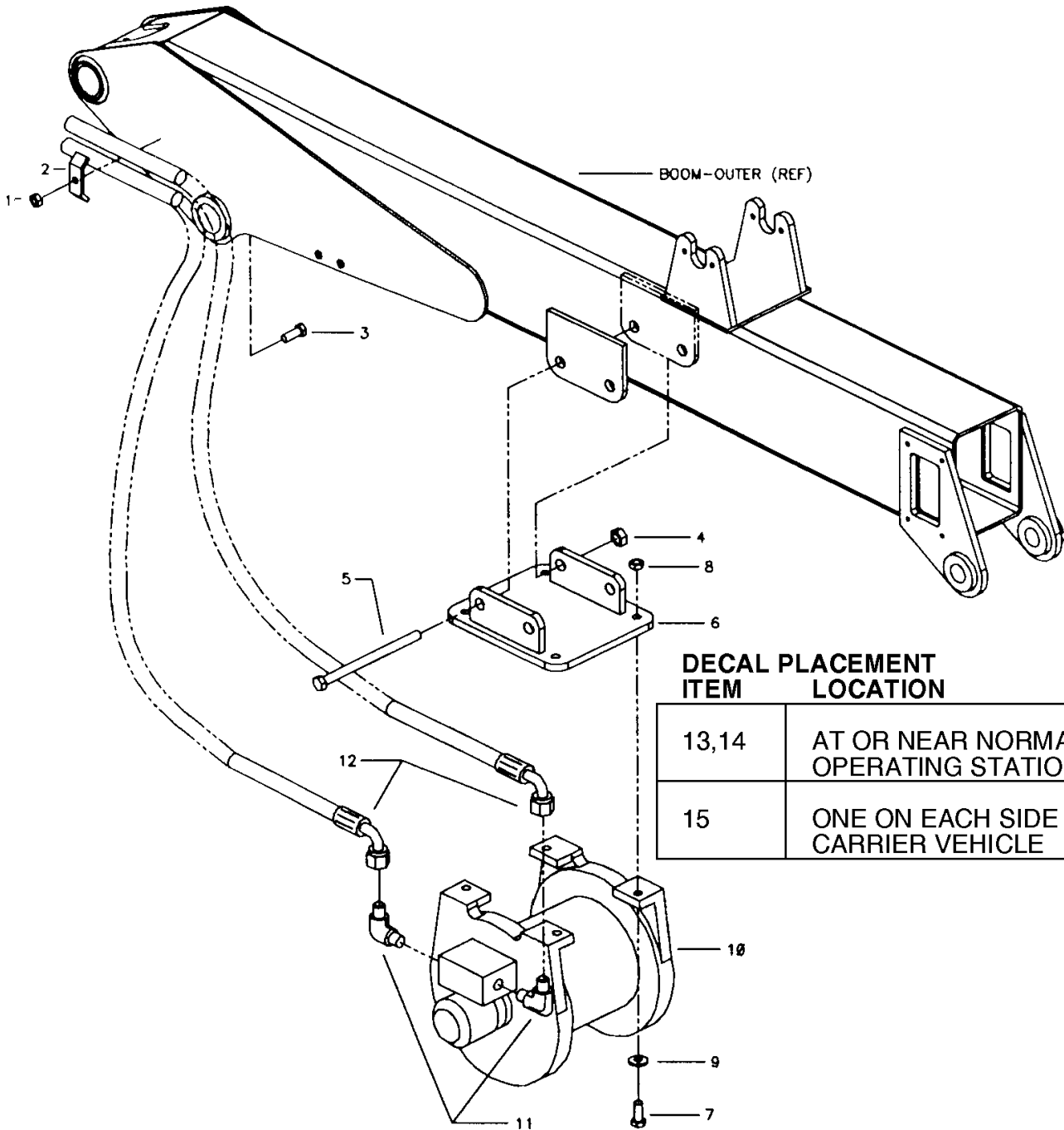


**WINCH KIT (31713685)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	72062103	NUT 3/8-16 LOCK	1
2.	60010118	HOSE CLAMP	1
3.	72060048	CAP SCR 3/8-16X1-1/2 HHGR5	1
4.	72062114	NUT 3/4-10 LOCK	2
5.	72060199	CAP SCR 3/4-10X9 HHGR5	2
6.	52713687	MTG BRACKET	1
7.	72060117	CAP SCR 1/2-13X1-1/2 HHGR5	4
8.	72062080	NUT 1/2-13 LOCK	4

9.	72063053	WASHER 1/2 LOCK	4
10.	71570412	WINCH 4250#	1
11.	72053763	ELBOW #8MSTR #8MJIC 90°	2
12.	51712981	HOSE ASM 3/8X312 #8#8	2
13.	70392861	DECAL-DGR 2-BLOCKING	1
14.	70392863	DECAL-DGR HOIST PERSON	1
15.	70392868	DECAL-DGR CRANE LOADING	4

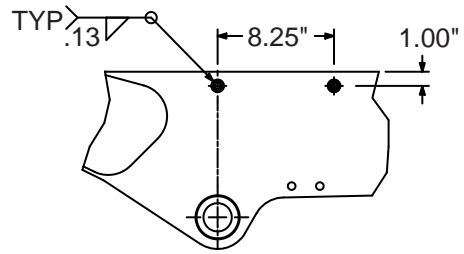
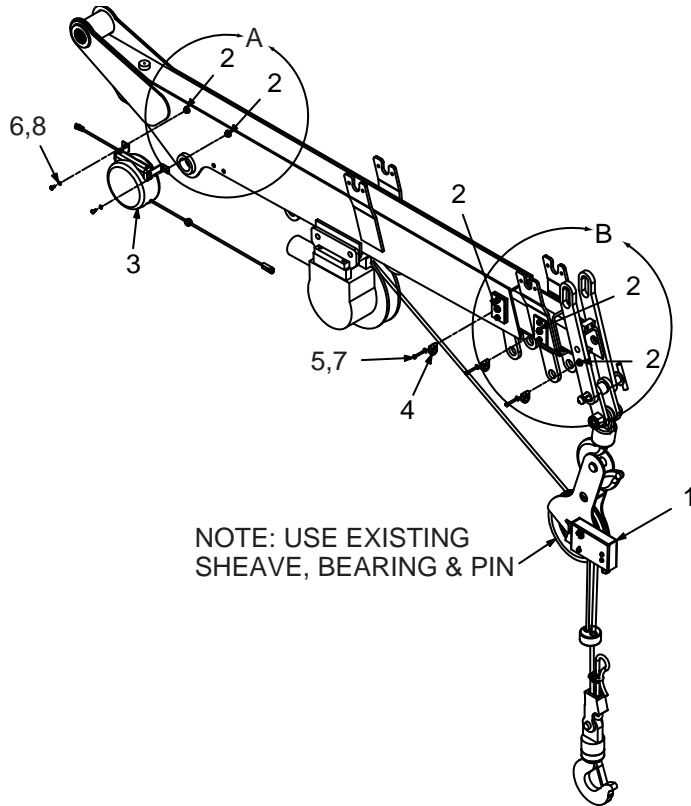
NOTE: HOSE LENGTH MAY VARY.



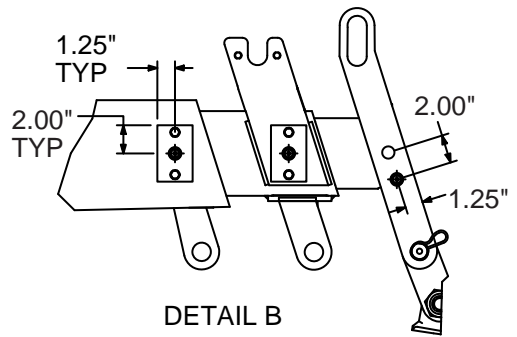
ITEM	DECAL PLACEMENT LOCATION
13,14	AT OR NEAR NORMAL OPERATING STATION
15	ONE ON EACH SIDE OF CARRIER VEHICLE

**TWO-BLOCK DAMAGE PREVENTION  
KIT (51724349 / DWG 99905322)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	51724375	YOKE-A2BASM	1
2.	72661693	BLOCK-TPD .25-20X .44X 0.91DIA	5
3.	51724374	CORD REELASM	1
4.	70034381	SUPPORT	3
5.	72060006	CAP SCR .25-20X 1.50 HH GR5 Z	3
6.	72060000	CAP SCR .25-20X .50 HH GR5 Z	2
7.	72063001	WASHER .25 FLAT	3
8.	72063049	WASHER .25 LOCK	2



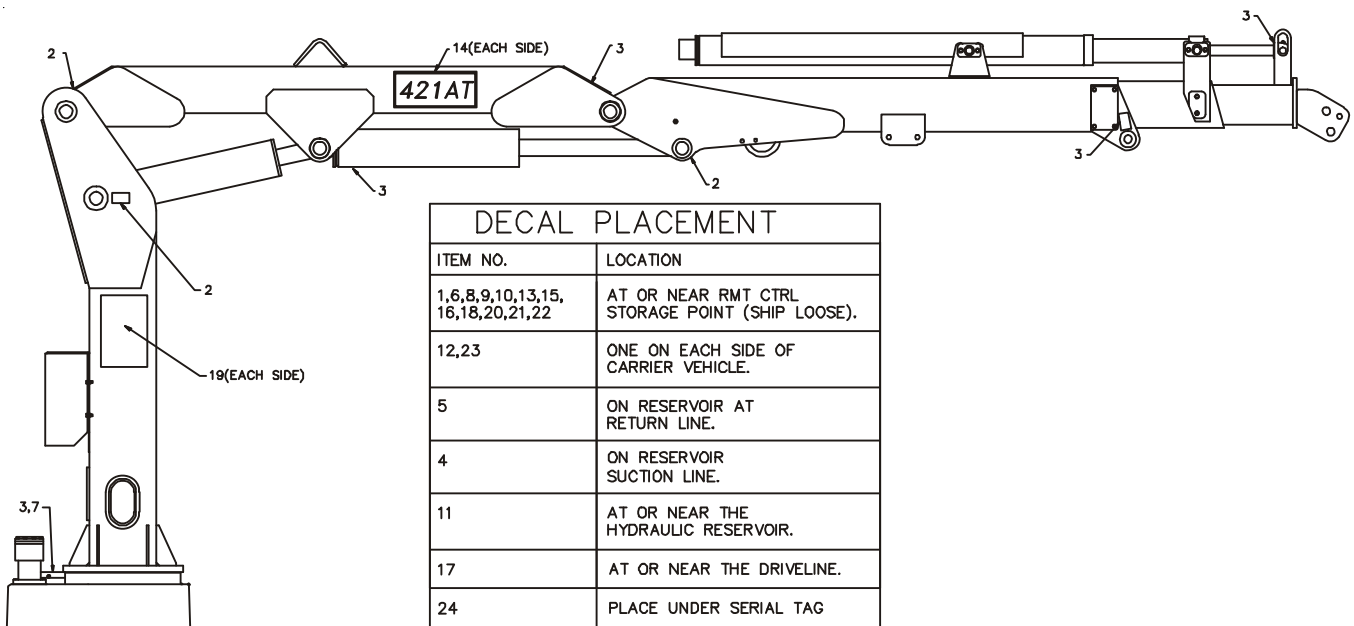
DETAIL A



DETAIL B

**DECAL KIT (95713584)**

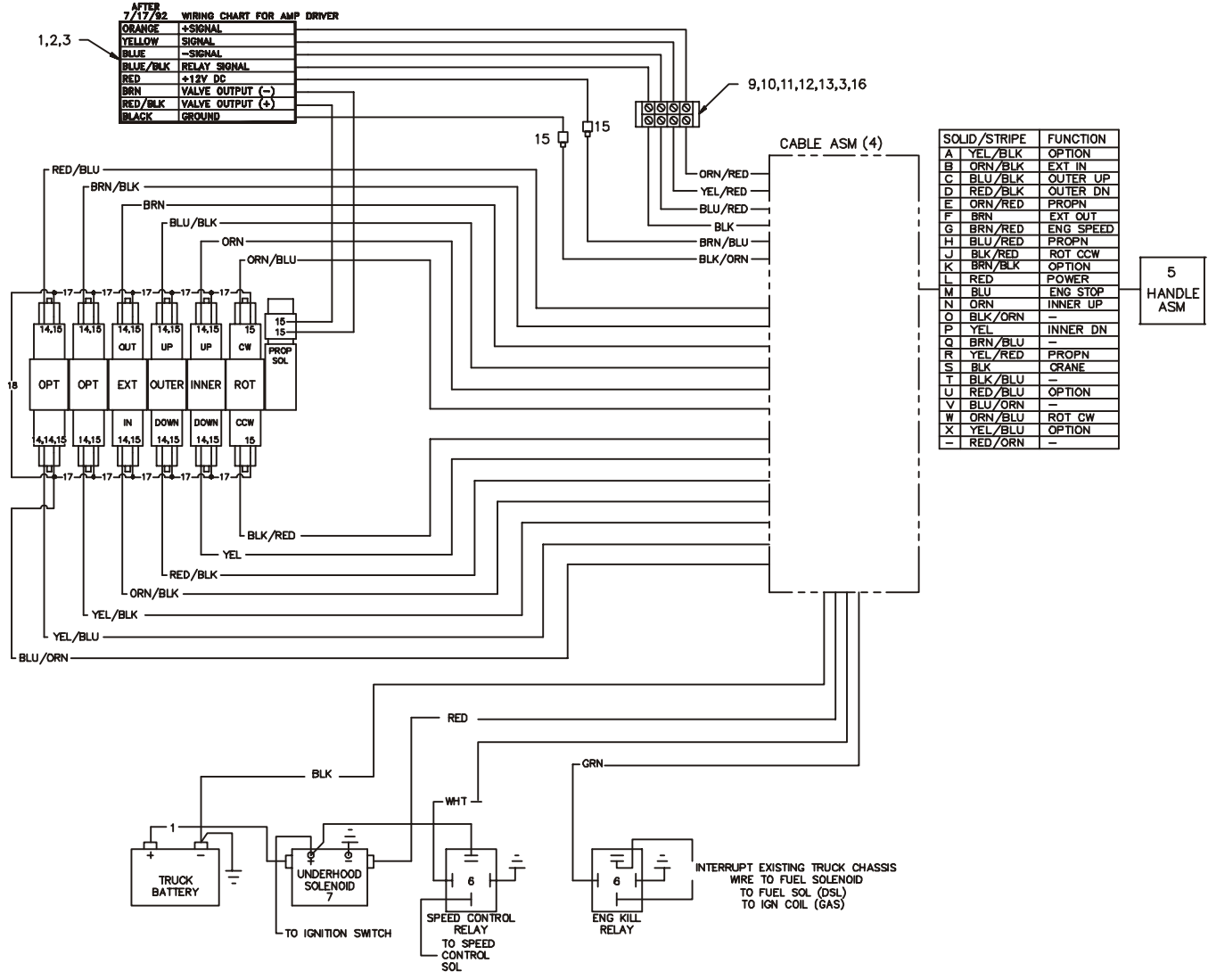
- |              |                          |   |              |                          |   |
|--------------|--------------------------|---|--------------|--------------------------|---|
| 1. 70391583  | DECAL-SETUP/STOW         | 1 | 12. 70392865 | DECAL-DANGER ELECT HZD   | 4 |
| 2. 70391612  | DECAL-GREASE WKLY LEFT   | 3 | 13. 70392866 | DECAL-WARNING OPER COND  | 2 |
| 3. 70391613  | DECAL-GREASE WKLY RIGHT  | 5 | 14. 70394314 | DECAL-IDENTIFICATION     | 2 |
| 4. 70392108  | DECAL-SUCTION LINE       | 1 | 15. 70392888 | DECAL-WARN OPER RESTRICT | 2 |
| 5. 70392109  | DECAL-RETURN LINE        | 1 | 16. 70392890 | DECAL-DANGER FOLD/STOW   | 2 |
| 6. 70392213  | DECAL-CAUTION WASH/WAX   | 1 | 17. 70392891 | DECAL-DANGER DRIVELINE   | 2 |
| 7. 70392524  | DECAL-ROTATE/GREASE      | 1 | 18. 70392982 | DECAL-CONTACT IMT        | 1 |
| 8. 70392813  | DECAL-DANGER ELECTRO     | 2 | 19. 70394274 | CAPACITY PLACARD         | 2 |
| 9. 70392814  | DECAL-WARN OPER TRAINING | 2 | 20. 71039134 | DECAL-CAUTION OIL LEVEL  | 2 |
| 10. 70392815 | DECAL-WARNING OPERATION  | 2 | 21. 70392889 | DECAL-DANGER RC ELECTRO  | 2 |
| 11. 70394189 | DECAL-RECOMMEND HYD OIL  | 1 | 22. 70392863 | DECAL-DGR HOIST PERS     | 1 |
|              |                          |   | 23. 70392868 | DECAL-DGR CR LOADLINE    | 4 |
|              |                          |   | 24. 70395323 | DECAL-ASME/ANSI B30.22   | 1 |
|              |                          |   | 25. 72042097 | LEVEL                    | 2 |



NOTE: ADD #25, LEVEL, ON FRONT AND SIDE OF CRANE BASE.

**REMOTE CONTROL KIT (90713578)**

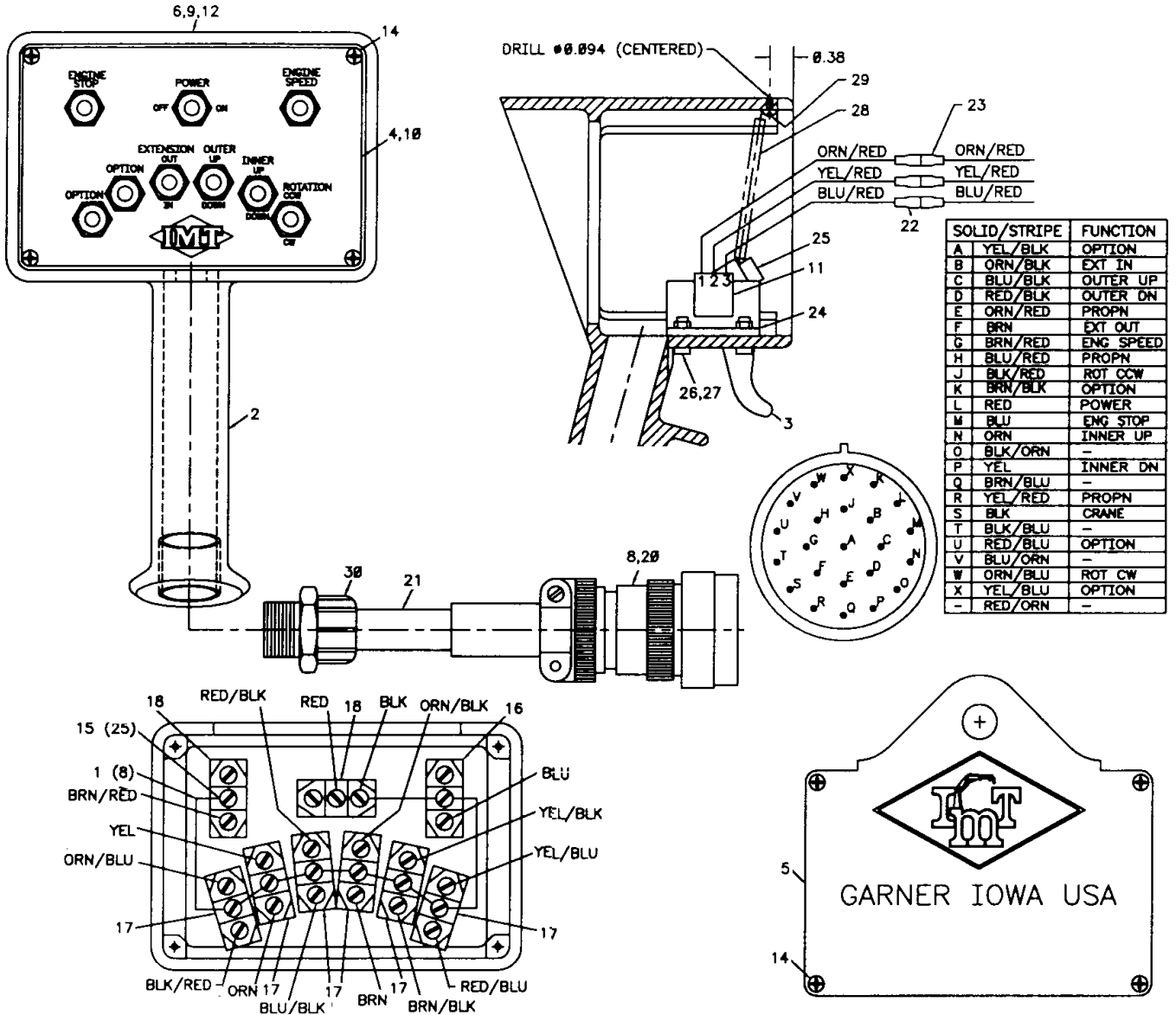
- |             |                       |   |              |                            |    |
|-------------|-----------------------|---|--------------|----------------------------|----|
| 1. 77044852 | AMP DRIVER            | 1 | 9. 77044341  | TERMINAL BLOCK-4           | 1  |
| 2. 72060703 | CAP SCR 1/4-20X1/2 SH | 2 | 10. 60111832 | MOUNTING PLATE             | 1  |
| 3. 72063049 | WASHER 1/4 LOCK       | 4 | 11. 72061009 | SHT MTL SCR #6X3/4 PH      | 2  |
| 4. 51713573 | CABLE ASM-JIC BOX 90" | 1 | 12. 60111833 | SPACER                     | 2  |
| 5. 51713429 | HANDLE ASM            | 1 | 13. 72060006 | CAP SCR 1/4-20X1-1/2 HHGR5 | 2  |
| 6. 77041251 | RELAY                 | 2 | 14. 77040282 | TERM 1/4 PIGGYBACH 16-14   | 11 |
| 7. 77041237 | SOLENOID 12V          | 1 | 15. 77040186 | TERMINAL 1/4 FSLPON        | 16 |
| 8. 51704784 | CABLE ASM #1WIRE X 6  | 1 | 16. 77040051 | TERMINAL #8 SPRSPD         | 4  |
|             |                       |   | 17. 89044231 | WIRE 14GA GRN X 3          | 10 |
|             |                       |   | 18. 89044231 | WIRE 14GA GRN X 10         | 1  |



**PROP'L RMT HANDLE ASM (51713429)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	60045031	WIRE 18GA X 4 GRN	8
2.	60119335	CONTROL HANDLE BACK	1
3.	60111141	TRIGGER	1
4.	60119277	COVER	1
5.	70034306	BACK COVER	1
6.	70029119	SERIAL NUMBER PLACARD	1
8.	77044621	PIN	23
9.	70392862	DECAL-DGR RC ELECTRO	1
10.	71394282	DECAL-RC HANDLE	1
11.	51707507	POTENTIOMETER ASM (INCL:22)	1
12.	72066340	POP RIVET	2
14.	72061009	SHT MTL SCR #6X3/4 PH	8
15.	77040051	TERM #8 SPRSPD 16-14GA	25

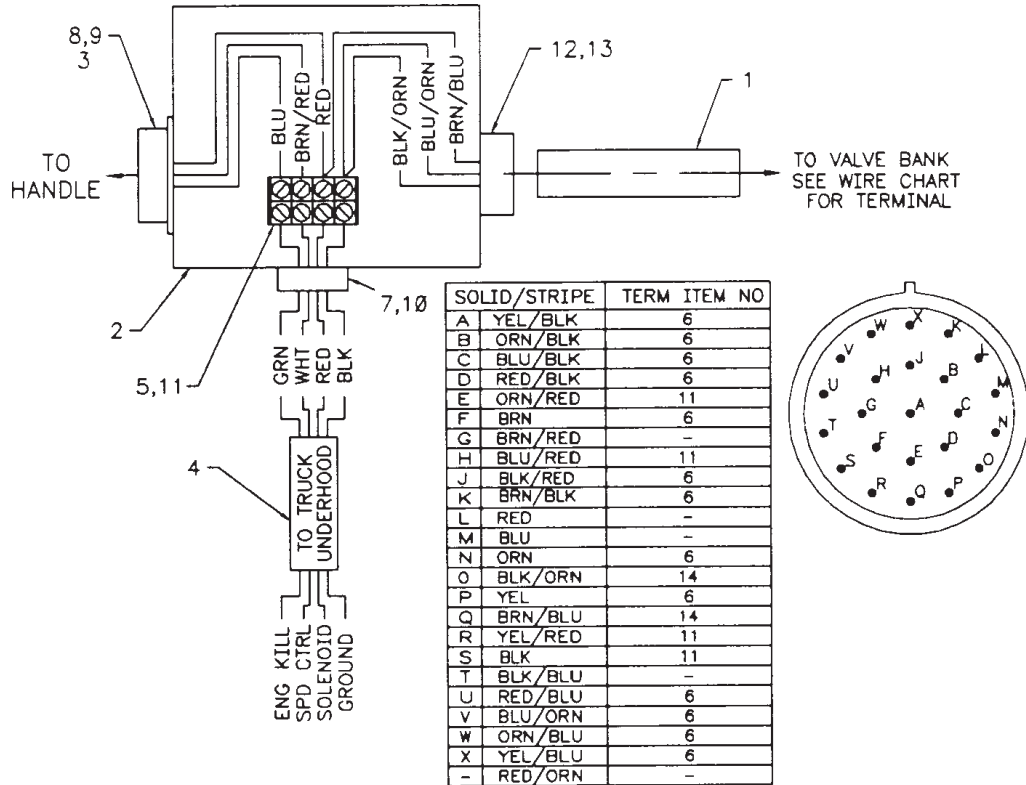
16.	77040371	TOGGLE SWITCH SPST	1
17.	77040372	TOGGLE SWITCH SPDT	6
18.	77040373	TOGGLE SWITCH SPST	2
20.	77044579	CONNECTOR	1
21.	89044100	CABLE 18GA/24WIRE X 45FT	1
22.	77040047	TERM MSLPON(PART OF 11)	3REF
23.	77040186	TERM 1/4 FSLPON 16-14GA	3
24.	60111142	MTG BRACKET	1
25.	72060669	CAP SCR #10-32X5/8 SH	1
26.	72060636	CAP SCR #10-24X3/4 SH	2
27.	72062106	NUT #10-24 LOCK	2
28.	70143223	SPRING	1
29.	72061000	SHT MTL SCR #6X1/2 PH	1
30.	77044196	CONNECTOR	1



**CABLE ASM-JIC BOX 90" (51713573)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	89044100	CABLE 18GA/24WIRE X 90	1
2.	90713577	JIC BOX ASM	1
3.	77044667	PLUG-CAP	1
4.	89044034	CABLE 16GA/4WIRE X 72	1
5.	77044341	TERMINAL BLOCK-4	1
6.	77040186	TERM 1/4 FSLPON 16-14GA	13

7.	77044018	STRAIN RELIEF 1/2	1
8.	77044620	CONNECTOR	1
9.	77044580	SOCKET	23
10.	77044201	NUT 1/2 ELEC LOCK	1
11.	77040051	TERM #8 SPRSPD 16-14GA	14
12.	77044196	STRAIN RELIEF 3/4	1
13.	77044202	NUT 3/4 ELEC LOCK	1
14.	77040047	TERM 1/4 MSLPON 16-14GA	2

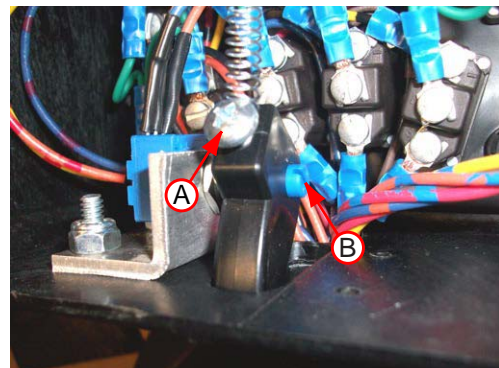


**TETHERED PROPORTIONAL REMOTE POTENTIOMETER ADJUSTMENT**

**NOTES:** ONLY use this procedure to set the low-end output on the remote handle assembly if crane functions operate without pulling the proportional trigger. You may need a second operator to help with steps 4 and 5.

1. Following proper crane and stabilizer set-up, with the PTO engaged and the truck running, move the crane from the stowed position to a position off to the side of the truck. Unstow the winch cable hook and lower the winch approx (6) six feet.
2. Remove the back cover of the remote control handle.
3. Loosen screw "A" slightly. (Note: Screw style may vary).
4. While holding "WINCH DOWN" function, very slowly, rotate screw "B" clockwise until all movement has stopped.
5. Release "WINCH DOWN" function.
6. Tighten screw "A"

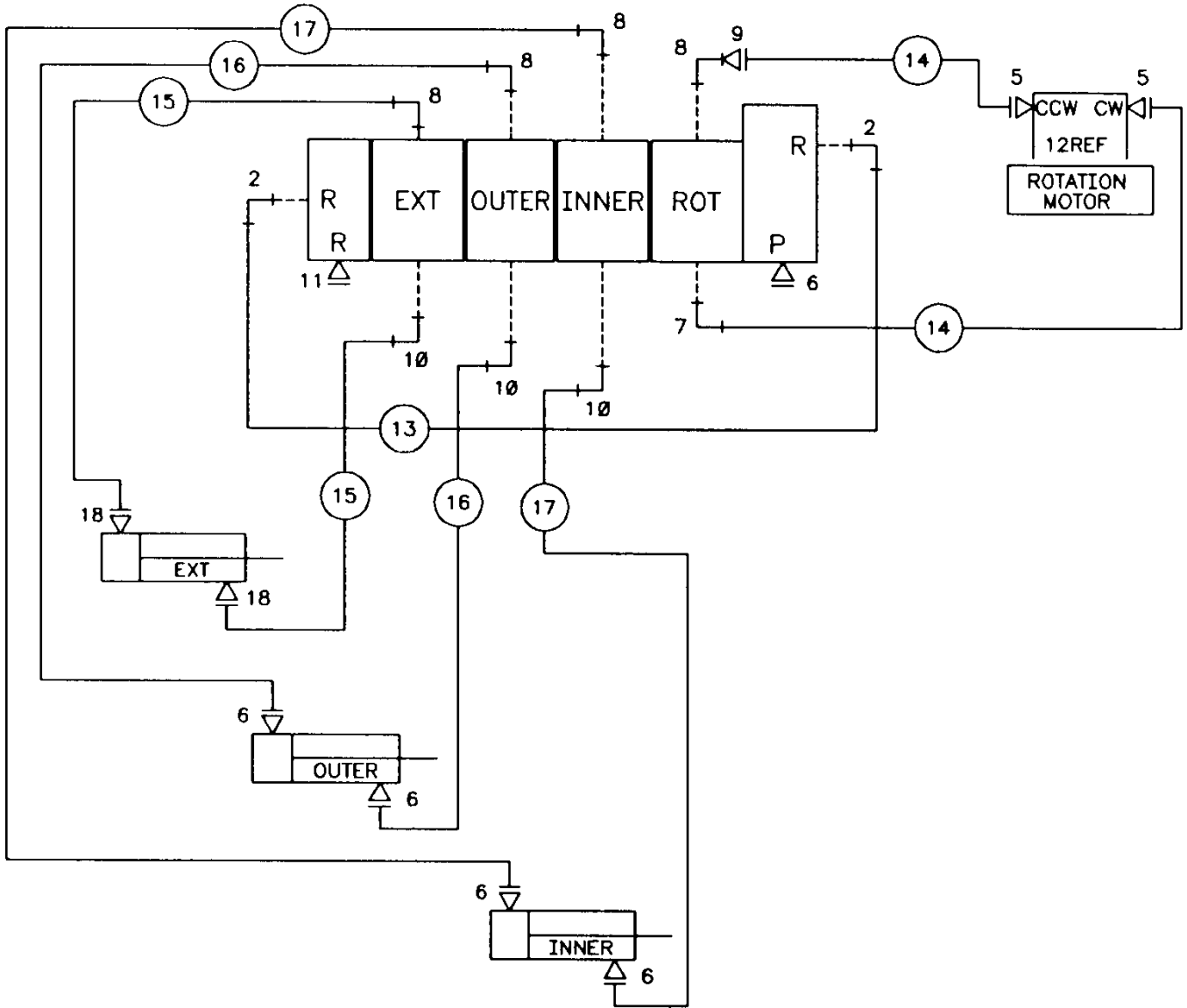
7. Test by operating "WINCH DOWN", "WINCH UP", "ROTATE CCW", and "ROTATE CW" without pulling the trigger. If any of these functions move, repeat steps 2 through 6.
8. Replace control back cover and properly stow the crane and stabilizers.



**HYDRAULIC KIT-4 SECTION (91714075)**

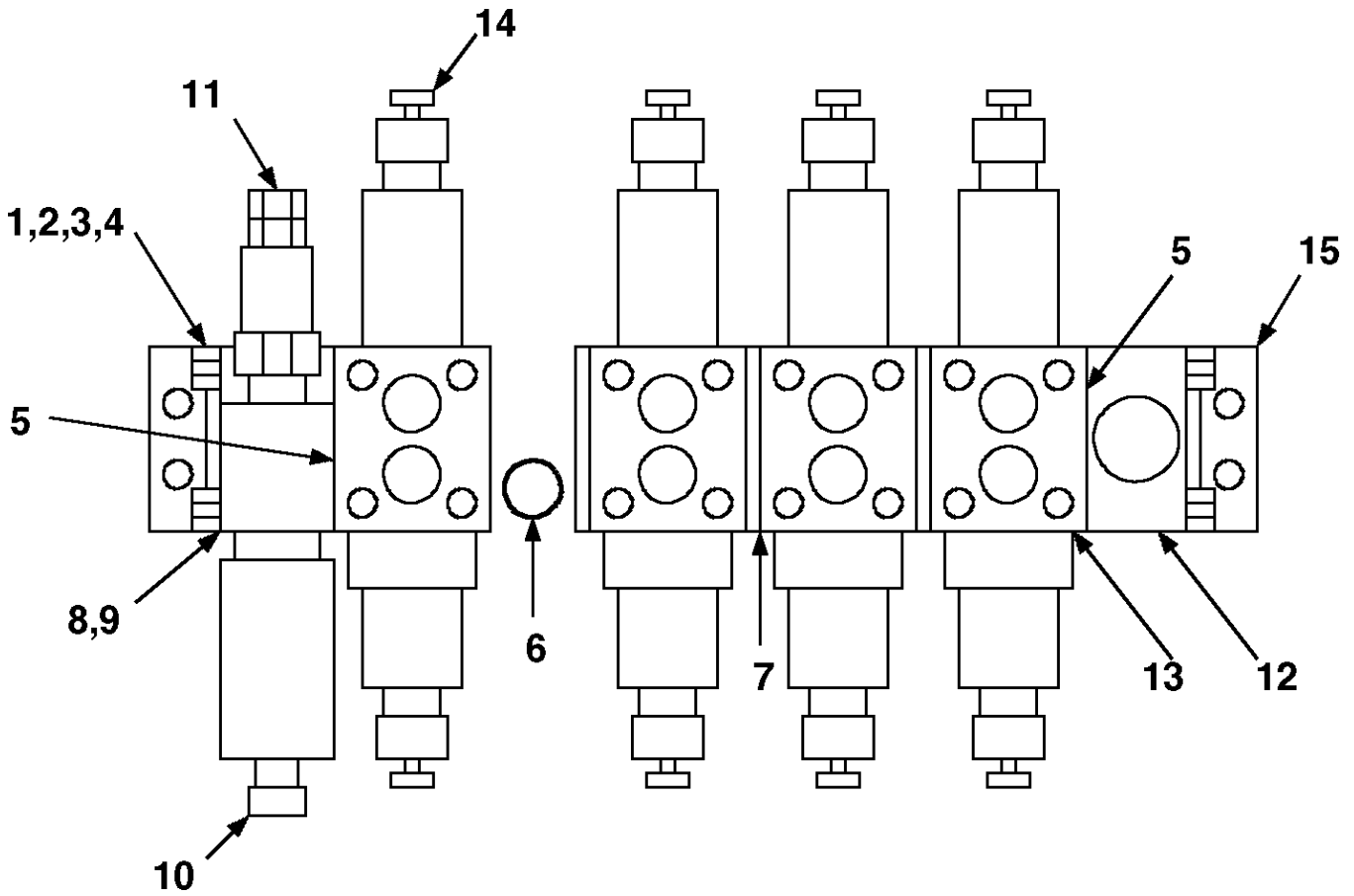
ITEM	PART NO.	DESCRIPTION	QTY
1.	73731911	VALVEBANK 4-SECT PROP RC	1
2.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	2
3.	72060002	CAP SCR 1/4-20X3/4 HH GR5	4
4.	72062104	NUT 1/4-20 LOCK	4
5.	72532351	ADAPTER 7/16MSTR 7/16MJIC	2
6.	72532358	ADAPTER 3/4MSTR 3/4MJIC	5
7.	72532699	ELBOW 9/16MSTR 7/16MJIC 90°	1
8.	72532700	ELBOW 9/16MSTR 9/16MJICXL	4

9.	72532707	ADAPTER 7/16MJIC 9/16FJIC	1
10.	72053760	ELBOW 9/16MSTR 9/16MJIC 90°	3
11.	72532364	ADAPTER 3/4MSTR 1-1/16MJIC	1
12.	5V151830	MOTOR BLOCK	1REF
13.	51707967	HOSE ASM 1/2X17	1
14.	51706054	HOSE ASM 1/4X72 FF	2
15.	51714097	HOSE ASM 3/8X170 FF	2
16.	51714096	HOSE ASM 3/8X114 FF	2
17.	51715339	HOSE ASM 3/8X60 FF	2
18.	72532740	ELBOW #8MSTR #8MJIC 90°SW	2



**VALVEBANK ASM 4-SECTION**  
**(73731911)**

ITEM	PART	DESCRIPTION	QTY
1.	94731957	TIE ROD ASM (INCL:2-3)	1
2.	70143335	TIE ROD (PART OF 1)	4REF
3.	72062000	NUT (PART OF 1)	8REF
4.	72063049	LOCKWASHER (PART OF 1)	8REF
5.	7Q072205	O-RING	2
6.	76392808	O-RING	6
7.	70143337	O-RING PLATE	3
8.	94731958	INLET ASM (INCL:9-11)	1
9.	60025664	INLET BLOCK (PART OF 8)	1REF
10.	73054624	PROPL SOLENOID (PART OF 8)	1REF
11.	73054623	RELIEF 2500PSI (PART OF 8)	1REF
12.	60025709	OUTLET BLOCK	1
13.	73054636	VALVE SECT W/COILS (INCL:14)	4
14.	77041361	COIL (PART OF 13)	4REF
15.	70143336	MOUNTING FOOT	2REF

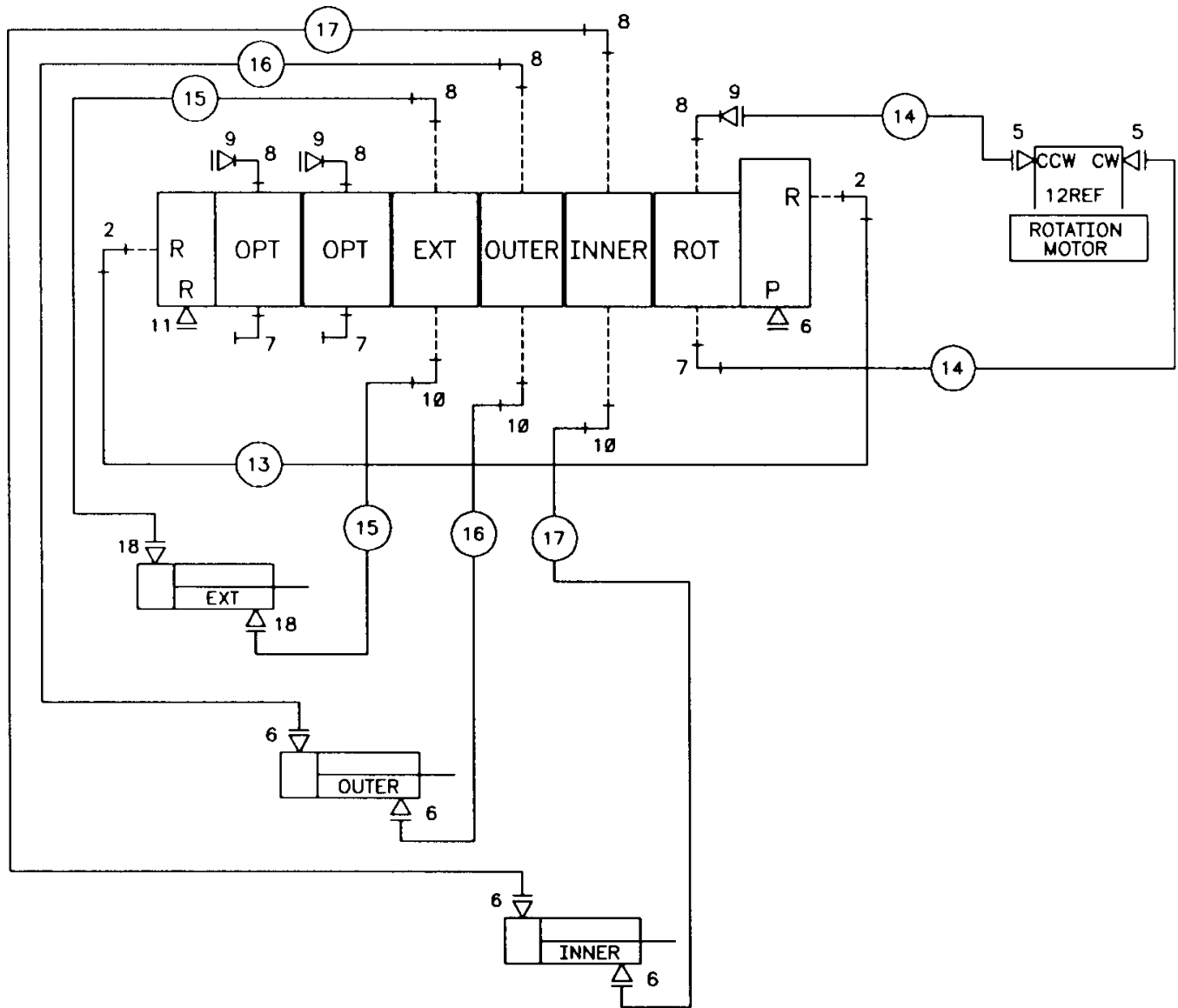




**HYDRAULIC KIT 6-SECTION (91714077)**

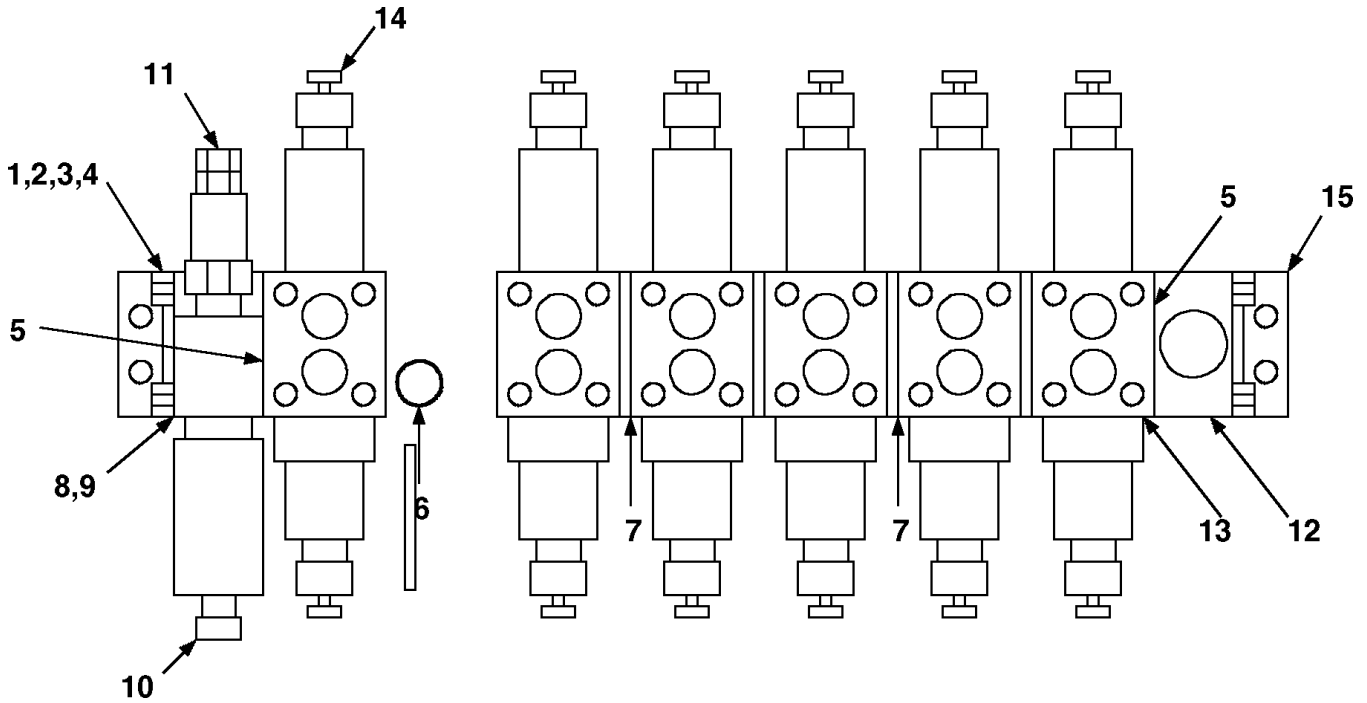
ITEM	PART NO.	DESCRIPTION	QTY
1.	73732632	VALVEBANK 6-SECT PROP RC	1
2.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	2
3.	72060002	CAP SCR 1/4-20X3/4 HH GR5	4
4.	72062104	NUT 1/4-20 LOCK	4
5.	72532351	ADAPTER 7/16MSTR 7/16MJIC	2
6.	72532358	ADAPTER 3/4MSTR 3/4MJIC	5
7.	72532699	ELBOW 9/16MSTR 7/16MJIC 90°	3
8.	72532700	ELBOW 9/16MSTR 9/16MJICXLG	6

9.	72532707	ADAPTER 7/16MJIC 9/16FJIC	3
10.	72053760	ELBOW 9/16MSTR 9/16MJIC 90°	3
11.	72532364	ADAPTER 3/4MSTR 1-1/16MJIC	1
12.	5V151830	MOTOR BLOCK	1REF
13.	51710753	HOSE ASM 1/2X24	1
14.	51706054	HOSE ASM 1/4X72 FF	2
15.	51714097	HOSE ASM 3/8X170 FF	2
16.	51714096	HOSE ASM 3/8X114 FF	2
17.	51715339	HOSE ASM 3/8X60 FF	2
18.	72532740	ELBOW #8MSTR #8MJIC 90° SW	2



**VALVEBANK ASM 6-SECTION**  
**(73732632)**

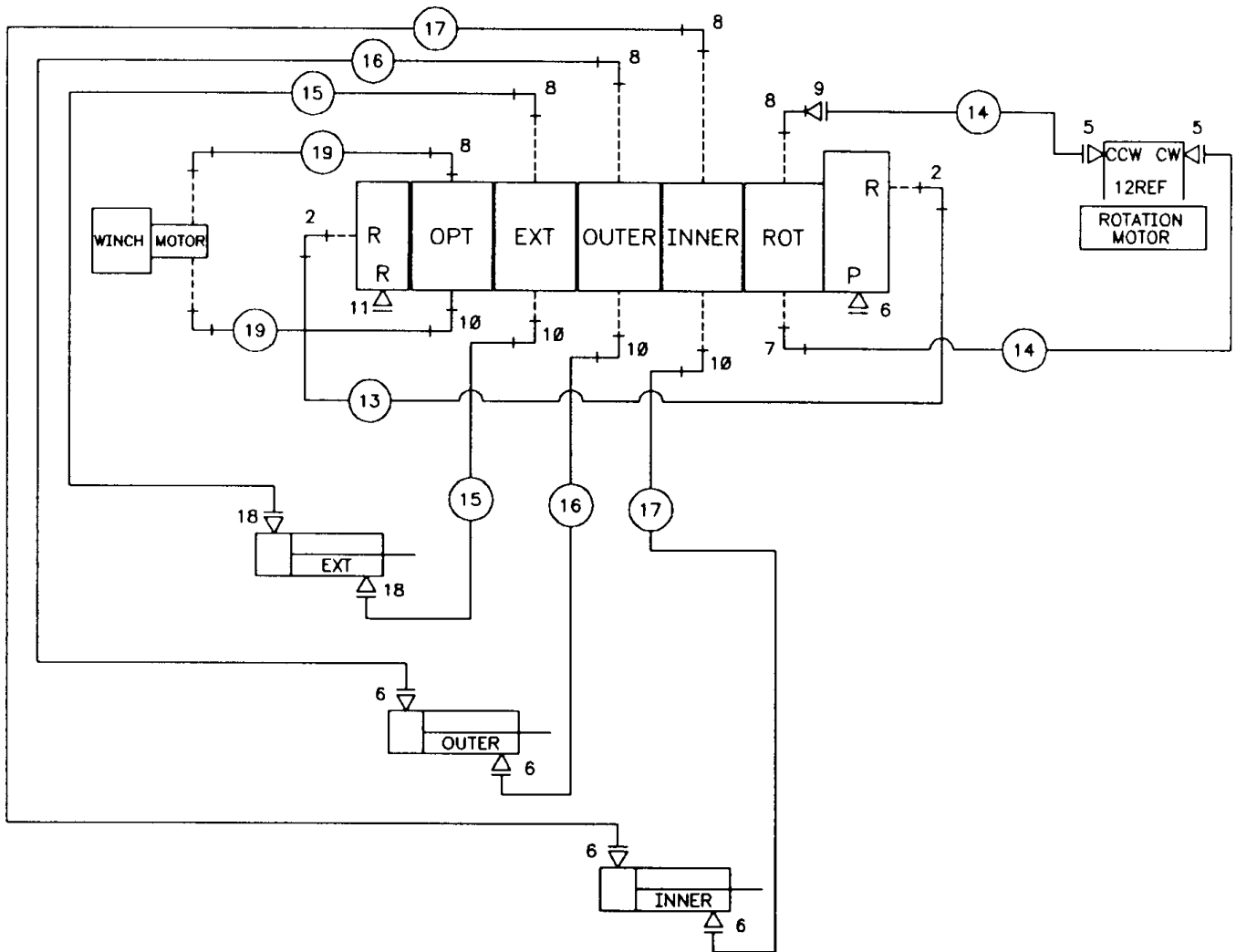
ITEM PART	DESCRIPTION	QTY				
1.	TIE ROD ASM (INCL:2-3)	1	7.	70143337	O-RING PLATE	5
2.	TIE ROD (PART OF 1)	4REF	8.	94731958	INLET ASM (INCL:9-11)	1
3.	72062000	NUT (PART OF 1)	8.	60025664	INLET BLOCK (PART OF 8)	1REF
4.	72063049	LOCKWASHER (PART OF 1)	10.	73054624	PROPL SOLENOID (PART OF 8)	1REF
5.	7Q072205	O-RING	11.	73054623	RELIEF 2500PSI (PART OF 8)	1REF
6.	76392808	O-RING	12.	60025709	OUTLET BLOCK	1
			13.	73054636	VALVE SECT W/COILS (INCL:14)	6
			14.	77041361	COIL (PART OF 13)	6REF
			15.	70143336	MOUNTING FOOT	2REF



**HYDRAULIC KIT 5-SECTION (91714076)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	73732831	VALVEBANK 5-SECT PROP RC	1
2.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	2
3.	72060002	CAP SCR 1/4-20X3/4 HHGR5	4
4.	72062104	NUT 1/4-20 LOCK	4
5.	72532351	ADAPTER #4MSTR #4MJIC	2
6.	72532358	ADAPTER #8MSTR #8MJIC	5
7.	72532699	ELBOW #6MSTR #4MJIC 90°	1
8.	72532700	ELBOW #6MSTR #6MJIC XLG	5
9.	72532707	ADAPTER #4MJIC #6FJIC	1

10.	72053760	ELBOW #6MSTR #6MJIC 90°	4
11.	72532364	ADAPTER #8MSTR #12MJIC	1
12.	5V151830	MOTOR BLOCK	1REF
13.	51394619	HOSE ASM 1/2X27 FF #8#8	*1REF
14.	51394614	HOSE ASM 1/4X73.5 FF #4#4	*2REF
15.	51394615	HOSE ASM 3/8X173 FF #6#8	*2REF
16.	51394616	HOSE ASM 3/8X117 FF #6#8	*2REF
17.	51394617	HOSE ASM 3/8X63 FF #6#8	*2REF
18.	72532740	ELBOW #8MSTR #8MJIC 90° SW	2
19.	51394618	HOSE ASM 3/8X208 FF #8#8	*2REF
20.	51714073	HOSE KIT (INCL.*)"	1



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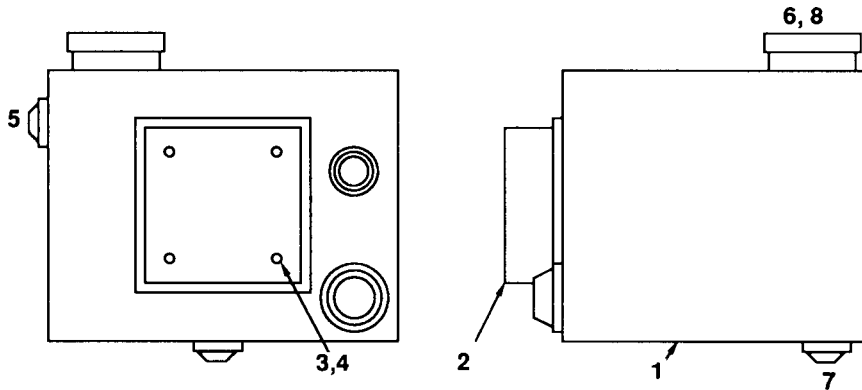
3-23

**VALVEBANK ASM-5 SECTION  
(73732831)**

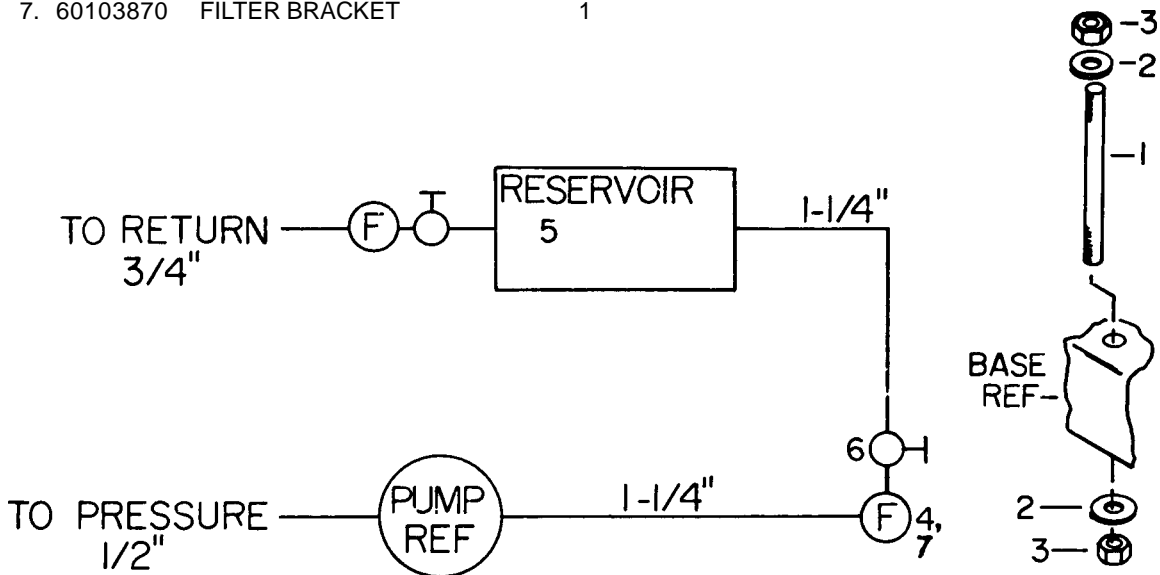
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**INSTALLATION KIT (93710761)**

ITEM	PART	DESCRIPTION	QTY
1.	52705133	RESERVOIR 17 GAL	1
2.	60108148	MTG BRKT	1
3.	72060044	CAP SCR 3/8-16X3/4 HH GR5	4
4.	72062103	NUT 3/8-16 LOCK	4
5.	72532261	SIGHT GAUGE 3/4NPT	1
6.	73014671	FILL CAP	1
7.	73052021	PLUG-MAGNETIC 3/4NPT	1
8.	73141276	FILL NECK SCREEN	1

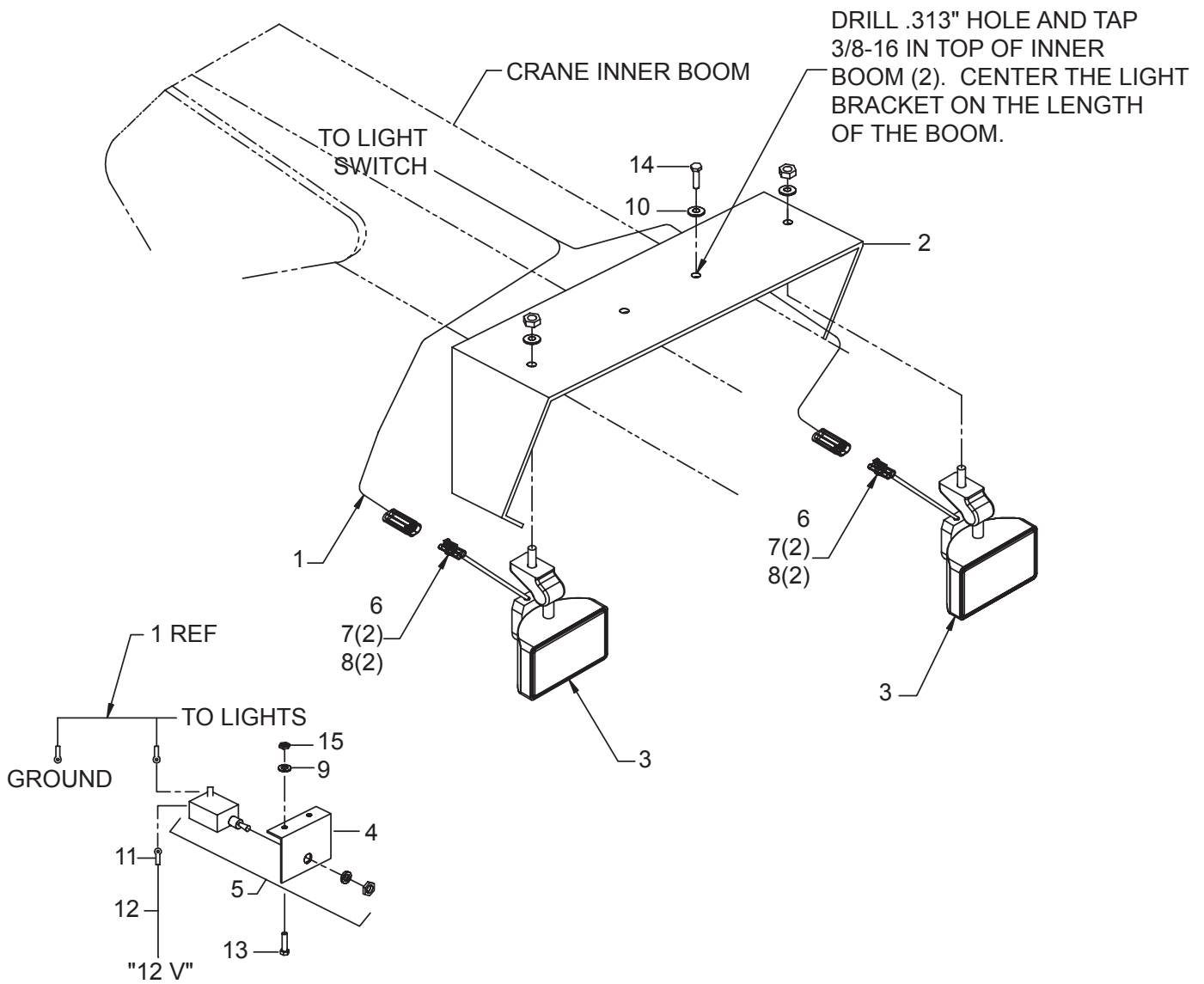


ITEM	PART	DESCRIPTION	QTY
1.	60106481	TIE-DOWN STUD 1-8X12-1/2	4
2.	72063066	WASHER 1 HI STR	8
3.	72062141	NUT 1-8 LOCK	8
4.	73052012	SUCTION FILTER	1
	70048149	FILTER ELEMENT 100MESH	REF
5.		RESERVOIR ASM	REF
6.	73054130	GATE VALVE 1-1/4	1
7.	60103870	FILTER BRACKET	1



**OPTION - LIGHT KIT (31717218)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	51717219	CABLE ASM- FLOOD LIGHTS	1
2.	60107762	GUARD	1
3.	77040424	FLOOD-LT-COMP WORK LAMP	2
4.	60103535	SWITCH BRACKET - 1 HOLE	1
5.	77041345	TOGGLE SWITCH	1
6.	77044574	CONNECTOR	2
7.	77044550	TERMINAL-F 18-20 GA	2
8.	70394069	SEAL CABLE CONNECTOR	4
9.	72063049	WASHER 1/4 LOCK	2
10.	72063051	WASHER 3/8 LOCK	2
11.	77040000	TERMINAL, RING #10 STUD 16-14	1
12.	89044274	WIRE-BLACK STRD TYPE 36"	36"
13.	72060000	CAP SCR 1/4-20 X 1/2 HH GR5	2
14.	72060044	CAP SCR 3/8-16 X 3/4 HH GR5	2
15.	72062000	NUT 1/4-20 HEX ZINC	



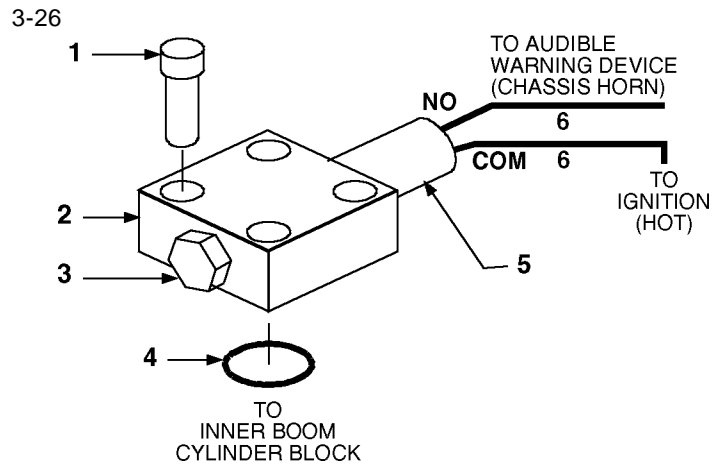
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### CAPACITY ALERT KIT-AUDIBLE (31711428)

ITEM	PART NO.	DESCRIPTION	QTY	REF
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.	77041222	PRESSURE SWITCH 2400PSI	1	
6.	89044188	WIRE-14GA (Customer Supplied)		
7.	99900118	INSTALLATION DWG	1	

#### NOTE

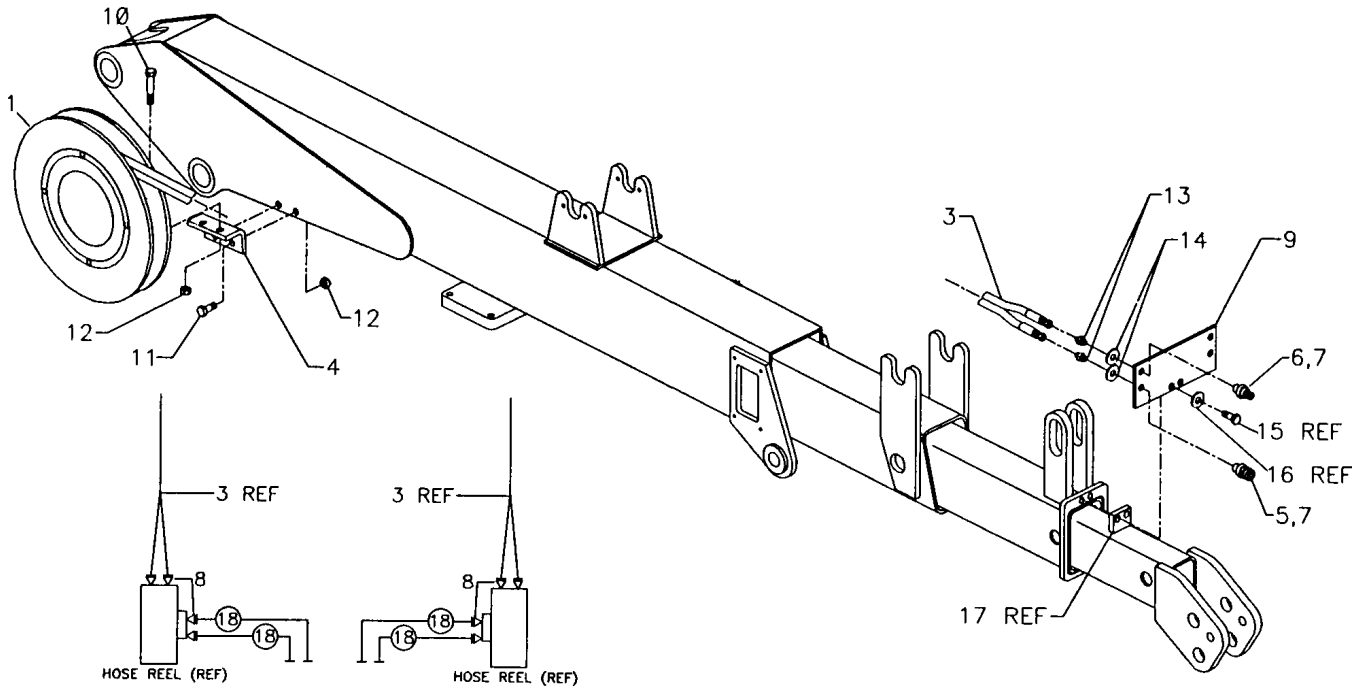
This capacity alert system consists of a pressure switch mounted on the lift side of the inner boom lift cylinder which senses hydraulic pressure. It is to be connected electrically (by the customer) to an audible warning device such as the truck chassis horn, using 14-gauge wire.



**DOUBLE HOSE REEL KIT (31711966)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	70732863	HOSE REEL LH	1
2.	70732864	HOSE REEL RH	1
3.	51393812	HOSE ASM 1/4X300 FF TWIN	2
4.	60117715	MTG BRACKET	2
5.	72533380	COUPLER DISC 1/2	2
6.	72533382	NIPPLE DISC 1/4	2
7.	72533381	CAP 1/4	4
8.	72532353	ADAPTER #6MSTR #4MJIC	8
9.	60107482	BULKHEAD PLATE	1

10.	72060097	CAP SCR 1/2-13X3 HHGR5	4
11.	72060093	CAP SCR 1/2-13X1-1/2 HHGR5	4
12.	72062080	NUT 1/2-13 LOCK	8
13.	72053499	ADAPTER 1/4MPT #4MJIC	4
14.	72063003	WASHER 3/8 WRT	4
15.	72060092	CAP SCR (PART OF EXT ASM)	2REF
16.	72063053	WASHER (PART OF EXT ASM)	2REF
17.	60107294	STROKE STOP (PART OF EXT ASM)	1REF
18.	51704968	HOSE ASM 1/4X186 FF	4





# SECTION 4. GENERAL REFERENCE

INSPECTION CHECKLIST .....	3
WIRE ROPE INSPECTION .....	7
HOOK INSPECTION .....	7
HOLDING VALVE INSPECTION .....	8
ANTI-TWO BLOCKING DEVICE INSPECTION .....	8
TORQUE DATA CHART - DOMESTIC .....	9
TORQUE DATA CHART - METRIC.....	10
TURNTABLE BEARING FASTENER TIGHTENING SEQUENCE .....	11
TURNTABLE BEARING INSPECTION FOR REPLACEMENT .....	12



<b>NOTICE</b>	
The user of this form is responsible in determining that these inspections satisfy all applicable regulatory requirements	
OWNER/COMPANY	
CONTACT PERSON	
CRANE MAKE & MODEL	
CRANE SERIAL NUMBER	
UNIT I.D. NUMBER	
LOCATION OF UNIT	

<i>Inspection Checklist</i>	
<b>CRANES</b>	
TYPE OF INSPECTION (check one) <input type="checkbox"/> DAILY (if deficiency found) <input type="checkbox"/> QUARTERLY <input type="checkbox"/> MONTHLY <input type="checkbox"/> ANNUAL	
DATE INSPECTED	
HOUR METER READING (if applicable)	
INSPECTED BY (print)	
SIGNATURE OF INSPECTOR	

1

REV: 11-22-11

**TYPE OF INSPECTION**

*NOTES:*

Daily and monthly inspections are to be performed by a “competent person”, who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Quarterly and annual inspections are to be performed by a “qualified person” who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.

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 stabilizers deployed according to the crane manufacturer’s directions.

**DAILY (D):** Before each shift of operation, those items designated with a (D) must be inspected.

**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 and retained for a minimum of 3 months.

**QUARTERLY (Q):** Every three 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 documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection.

**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 documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection.

FREQUENCY	ITEM	KEY	✓ = SATISFACTORY R = RECOMMENDATION (Should be considered for corrective action) NA = Not Applicable	X = Deficient (Note: If a deficiency is found, an immediate determination must be made as to whether the deficiency constitutes a safety hazard and must be corrected prior to operation.)	STATUS  ✓, R, X, NA
			INSPECTION DESCRIPTION		
D	1	Labels	All load charts, safety & warning labels, & control labels are present and legible.		
D	2	Crane	Check all safety devices for proper operation.		
D	3	Controls	Control mechanisms for proper operation of all functions, leaks & cracks.		
D	4	Station	Control and operator’s station for dirt, contamination by lubricants, & foreign materials.		
D	5	Hyd System	Hydraulic system (hoses, tubes & fittings) for leakage & proper oil level.		
D	6	Hook	Presence & proper operation of hook safety latches.		
D	7	Wire Rope	Inspect for apparent deficiencies per applicable requirements and manufacturer’s specifications.		
D	8	Pins	Proper engagement of all connecting pins & pin retaining devices.		
D	9	General covers.	Overall observation of crane for damaged or missing parts, cracked welds & presence of safety		
D	10	Operation	During operation, observe crane for abnormal performance, unusual wear (loose pins, wire rope damage, etc.). If observed, discontinue use & determine cause & 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 Two-Block or Two-Block Damage Prevention	Operate anti-two-blocking or two-block prevention devices to check for proper operation.		

<i>Inspection Checklist</i>	CRANES	2
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FREQUENCY	ITEM	KEY	✓ = SATISFACTORY R = RECOMMENDATION (Should be considered for corrective action) NA = Not Applicable	X = Deficient (Note: If a deficiency is found, an immediate determination must be made as to whether the deficiency constitutes a safety hazard and must be corrected prior to operation.)	STATUS
			INSPECTION DESCRIPTION	✓, R, X, NA	
D	14	Tires	Check tires (when in use) for proper inflation and condition.		
D	15	Ground or similar.	Ground conditions around the equipment for proper support, including ground settling under and around stabilizers and supporting foundations, ground water accumulation,		
D	16	Level Position	The equipment for level position within tolerances specified by the equipment manufacturer's recommendations, both before each shift and after each move and setup.		
D	17	Operator Cab Windows	Significant cracks, breaks, or other deficiencies that would hamper the operator's view.		
D	18	Rails, rail stops, clamps, supporting surfaces.	Rails, rail stops, rail clamps and supporting surfaces when the equipment has rail traveling.		
D	19	Safety Devices	Safety devices and operational aids for proper operation.		
D	20	Electrical	Electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation.		
D	21	Other			
D	22	Other			
M	23	Daily	All daily inspection items.		
M	24	Cylinders	Visual inspection of cylinders for leakage at rod, fittings & welds. Damage to rod & case.		
M	25	Valves	Holding valves for proper operation.		
M	26	Valves	Control valve for leaks at fittings & between sections.		
M	27	Valves	Control valve linkages for wear, smoothness of operation & tightness of fasteners. Relief valve for proper pressure settings.		
M	28	General	Bent, broken or significantly rusted/corroded parts.		
M	29	Electrical	Electrical apparatus for malfunctioning, signs of apparent excess deterioration, dirt or moisture accumulation. Electrical systems for presence of dirt, moisture and frayed wires.		
M	30	Structure	All structural members for damage.		
M	31	Welds	All welds for breaks & cracks.		
M	32	Pins	All pins for proper installation & condition.		
M	33	Hardware	All bolts, fasteners & retaining rings for tightness, wear & corrosion		
M	34	Wear Pads	Condition of wear pads.		
M	35	Pump & Motor	Hydraulic pumps & motors for leakage at fittings, seals & between sections. Check tightness of mounting bolts.		
M	36	PTO	Transmission/PTO for leakage, abnormal vibration & noise, alignment & mounting bolt torque.		
M	37	Hyd Fluid	Quality of hydraulic fluid and for presence of water.		
M	38	Hyd Lines	Hoses & tubes for leakage, abrasion damage, blistering, cracking, deterioration, fitting leakage & secured properly.		
M	39	Hook	Load hook for abnormal throat distance, twist, wear & cracks.		
M	40	Wire Rope	Condition of load line.		
M	41	Manual	Presence of operator's manuals with unit.		
M	42		Other		
M	43		Other		
Q	44	Daily	All daily inspection items.		
Q	45	Monthly	All monthly inspection items.		
Q	46	Rotation Sys	Rotation bearing for proper torque of all mounting bolts.		
Q	47	Hardware	Base mounting bolts for proper torque.		
Q	48	Structure	All structural members for deformation, cracks & corrosion.		
	49		● Base		
	50		● Stabilizer beams & legs		
	51		● Mast		
	52		● Inner boom		
	53		● Outer boom		
	54		● Extension(s)		
	55		● Jib boom		
	56		● Jib extension(s)		
	57		● Other		
Q	58	Hardware	Pins, bearings, shafts, gears, rollers, & locking devices for wear, cracks, corrosion & distortion.		

# Inspection Checklist

## CRANES

3

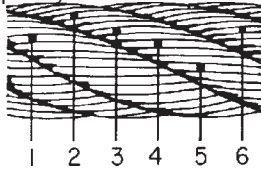
FREQUENCY	ITEM	KEY	✓ = SATISFACTORY R = RECOMMENDATION (Should be considered for corrective action) NA = Not Applicable	X = Deficient (Note: If a deficiency is found, an immediate determination must be made as to whether the deficiency constitutes a safety hazard and must be corrected prior to operation.)	STATUS ✓, R, X, NA
			INSPECTION DESCRIPTION		
	59		● Rotation bearing(s)		
	60		● Inner boom pivot pin(s) & retainer(s)		
	61		● Outer boom pivot pin(s) & retainer(s)		
	62		● Inner boom cylinder pin(s) & retainer(s)		
	63		● Outer boom cylinder pin(s) & retainer(s)		
	64		● Extension cylinder pin(s) & retainer(s)		
	65		● Jib boom pin(s) & retainer(s)		
	66		● Jib cylinder pin(s) & retainer(s)		
	67		● Jib extension cylinder pin(s) & retainer(s)		
	68		● Boom tip attachments		
	69		● Other		
Q	70	Hyd Lines	Hoses, fittings & tubing for proper routing, leakage, blistering, deformation & excessive abrasion.		
	71		● Pressure line(s) from pump to control valve		
	72		● Return line(s) from control valve to reservoir		
	73		● Suction line(s) from reservoir to pump		
	74		● Pressure line(s) from control valve to each function		
	75		● Load holding valve pipe(s) and hose(s)		
	76		● Other		
Q	77	Pumps & Motors	Pumps & motors for loose bolts/fasteners, leaks, noise, vibration, loss of performance, heating & excess pressure.		
	78		● Winch motor(s)		
	79		● Rotation motor(s)		
	80		● Other		
Q	81	Valves	Hydraulic valves for cracks, spool return to neutral, sticking spools, proper relief valve setting, relief valve failure.		
	82		● Main control valve		
	83		● Load holding valve(s)		
	84		● Stabilizer or auxiliary control valve(s)		
	85		● Other		
	86		● Other		
Q	87	Cylinders	Hydraulic cylinders for drifting, rod seal leakage & leakage at welds. Rods for nicks, scores & dents. Case for damage. Case & rod ends for damage & abnormal wear.		
	88		● Stabilizer cylinder(s)		
	89		● Inner boom cylinder(s)		
	90		● Outer boom cylinder(s)		
	91		● Extension cylinder(s)		
	92		● Rotation cylinder(s)		
	93		● Jib lift cylinder(s)		
	94		● Jib extension cylinder(s)		
	95		● Other		
Q	96	Winch	Winch, sheaves & drums for damage, abnormal wear, abrasions & other irregularities.		
Q	97	Hyd Filters	Hydraulic filters for replacement per maintenance schedule.		
A	98	Daily	All daily inspection items.		
A	99	Monthly	All monthly inspection items.		
A	100	Quarterly	All quarterly inspection items.		
A	101	Hyd Sys	Hydraulic fluid change per maintenance schedule.		
A	102	Controls	Control valve calibration for correct pressures & relief valve settings		
A	103	Valves	Safety valve calibration for correct pressures & relief valve settings.		
A	104	Valves	Valves for failure to maintain correct settings.		
A	105	Rotation Sys	Rotation drive system for proper backlash clearance & abnormal wear, deformation & cracks.		
A	106	Lubrication	Gear oil change in rotation drive system per maintenance schedule.		
A	107	Hardware	Check tightness of all fasteners and bolts.		
A	108	Wear Pads	Wear pads for excessive wear.		
A	109	Loadline	Loadline for proper attachment to drum.		



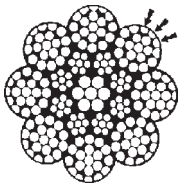
**WIRE ROPE INSPECTION**

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

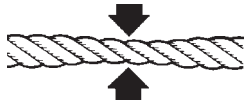
- A. Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.
- B. When there are either 3 broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



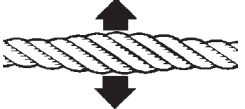
- C. When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.



- 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.



**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.)

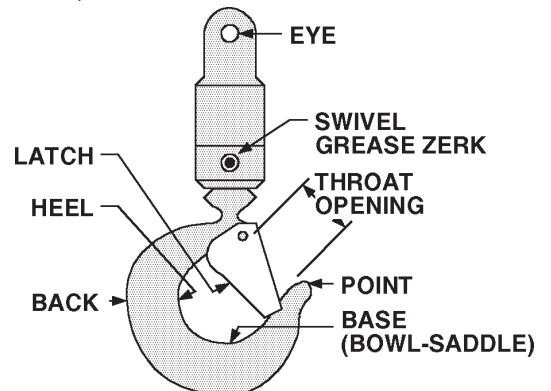
**D. LATCH**

**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.

**E. 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)



**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.

**TWO BLOCK PREVENTION DEVICE INSPECTION**

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

The two block prevention system halts the “winch-up” and “extension-out” crane functions before the block contacts the sheave. The two block prevention 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 carefully operate winch-up until the hook/down haul weight comes into contact with the two-block damage prevention switch cable weight. When the hook/down-haul weight comes into contact with the two-block prevention switch cable weight, winch-up and extension-out will stop operation. Either retract the boom in, or the winch down to resume normal operation.

If operation other than described occurs, stop immediately, reverse the function, and check the system.

If the anti two block function appears to be functioning normally, winch the cable down until the sensing weight swings free.

**COARSE THREAD BOLTS**

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		SAE J429 GRADE 5		SAE J429 GRADE 8	
		PLAIN (FT-LBS)	PLATED (FT-LBS)	PLAIN (FT-LBS)	PLATED (FT-LBS)
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.

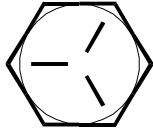

**WARNING**

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.

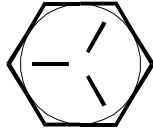
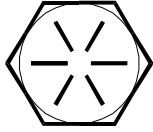


# TORQUE DATA CHART - DOMESTIC

## FINE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (FT-LBS)	PLATED (FT-LBS)	PLAIN (FT-LBS)	PLATED (FT-LBS)
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 (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (FT-LBS)	PLATED (FT-LBS)	PLAIN (FT-LBS)	PLATED (FT-LBS)
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
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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.

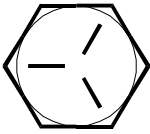
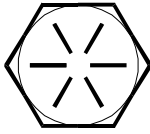
1. Bolt manufacturer's particular specifications should be consulted when provided.
2. Flat washers of equal strength must be used.
3. All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.
4. Torque values specified are for bolts with residual oils or no special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

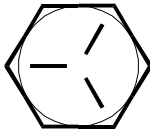
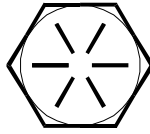
Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torquing.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

## TORQUE DATA CHART - METRIC

### FINE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		 SAE J429 GRADE 5		 SAE J429 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	0.3750	5	4	7	5
7/16-20	0.4375	8	6	11	8
1/2-20	0.5000	12	9	17	12
9/16-18	0.5625	17	12	24	18
5/8-18	0.6250	24	18	33	25
3/4-16	0.7500	41	31	58	44
7/8-11	0.8750	62	45	93	69
1-12	1.0000	89	67	138	103
1 1/8-12	1.1250	123	93	200	150
1 1/4-12	1.2500	171	129	278	209
1 3/8-12	1.3750	232	174	375	281
1 1/2-12	1.5000	304	228	492	369

### COARSE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		 SAE J429 GRADE 5		 SAE J429 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	0.3750	4	3	6	5
7/16-14	0.4375	7	5	10	7
1/2-13	0.5000	10	8	15	11
9/16-12	0.5625	15	11	21	16
5/8-11	0.6250	21	16	30	22
3/4-10	0.7500	37	28	52	39
7/8-9	0.8750	55	41	84	63
1-8	1.0000	82	62	126	94
1 1/8-7	1.1250	110	82	178	133
1 1/4-7	1.2500	155	116	251	188
1 3/8-6	1.3750	203	152	329	246
1 1/2-6	1.5000	270	210	438	328

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

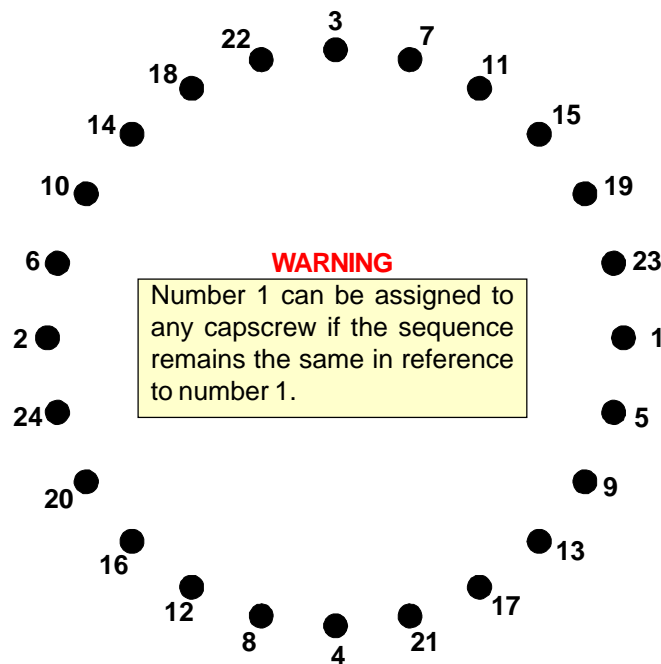
1. Bolt manufacturer's particular specifications should be consulted when provided.
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3. All torque measurements are given in kilogram-meters.
4. Torque values specified are for bolts with residual oils or no special lubricants applied.  
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5. 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.

# TURNTABLE BEARING FASTENER TIGHTENING SEQUENCE

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:  $.40 \times 265 \text{ FT-LBS} = 106 \text{ FT-LBS}$ )  
 (EXAMPLE-METRIC:  $.40 \times 36 \text{ KG-M} = 14.4 \text{ KG-M}$ )
4. Repeat Step 3, but torquing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.  
 (EXAMPLE:  $.75 \times 265 \text{ FT-LBS} = 199 \text{ FT-LBS}$ )  
 (EXAMPLE-METRIC:  $.75 \times 36 \text{ KG-M} = 27 \text{ KG-M}$ )
5. Using the proper sequence, torque all capscrews to the listed torque value as determined from the Torque Data Chart.

# 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.

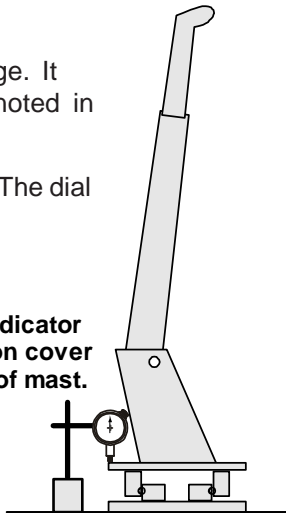
If none of the above conditions exists, the bearing is functioning properly and need not be replaced. But, if one or more of the above conditions exists, inspection may be required. Limits are measured in "TILT" which is dependent on the internal clearances of the bearing. TILT is the most practical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

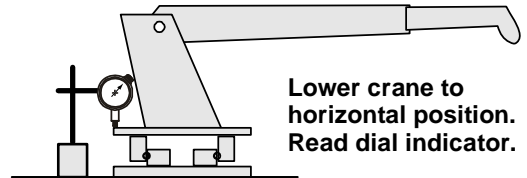
## TEST PROCEDURE

1. Place crane in vertical position.
2. Set a dial indicator at 0 on the pinion cover plate at back side of mast.
3. Lower crane to the horizontal position.
4. Check and record the dial indicator change. It should not exceed the tilt measurement noted in the chart below.
5. Return the crane to the vertical position. The dial indicator should return to 0.

Set up dial indicator to 0" on pinion cover at back side of mast.



Lower crane to horizontal position. Read dial indicator.



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

<p><b>NOTE</b> THE FIGURES LISTED IN THIS CHART ARE SERVICE GUIDELINES AND DO NOT, IN THEMSELVES, REQUIRE THAT THE BEARING BE INSPECTED.</p> <p>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.</p>	<p><b>IMT CRANE, LOADER OR TIREHAND MODEL</b></p>	1007	5200	16000	9800
		1014	5200R	32018	12916
		1014A	5217	32027	13031
	1015	5800	32030	13034	
	2015/2020	7020	T30	14000	
	2109	7025	T40	15000	
	3000	7200		18000	
	3816/3820	7415		20017	
	3016/3020	9000		8000L	
	421/425	TH10 BODY ROT'N		H1200	
	4300	TH14 BODY ROT'N		H1200RR	
	5016/5020			T50	
	6016/6020			TH2551B BODY ROT'N	
	TH7 BODY ROT'N			TH2557B BODY ROT'N	
	TH1449 BODY ROT'N			TH2557A BODY ROT'N	
	TH15B CLAMP				
	TH2551B CLAMP				
	TH2557A CLAMP				
	<b>BALL DIA. (REF)</b>	.875" (22mm)	1.00" (25mm)	1.18"-1.25" (30-32mm)	1.75" (44mm)
	<b>TILT DIM. (A<sub>1</sub>-A<sub>2</sub>)</b>	.060" (1.524mm)	.070" (1.778mm)	.075" (1.905mm)	.090" (2.286mm)

20000710

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 MANUAL	MANUAL PART NO.
SUBMITTED BY		
COMPANY		
ADDRESS		
CITY, STATE, ZIP		
TELEPHONE		

ERROR FOUND

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

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

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ERROR FOUND

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 50438-0189  
ATTN: Technical Publications



**IOWA MOLD TOOLING CO., INC.**  
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TELEPHONE: 641-923-3711  
TECHNICAL SUPPORT FAX: 641-923-2424  
[www.imt.com](http://www.imt.com)