



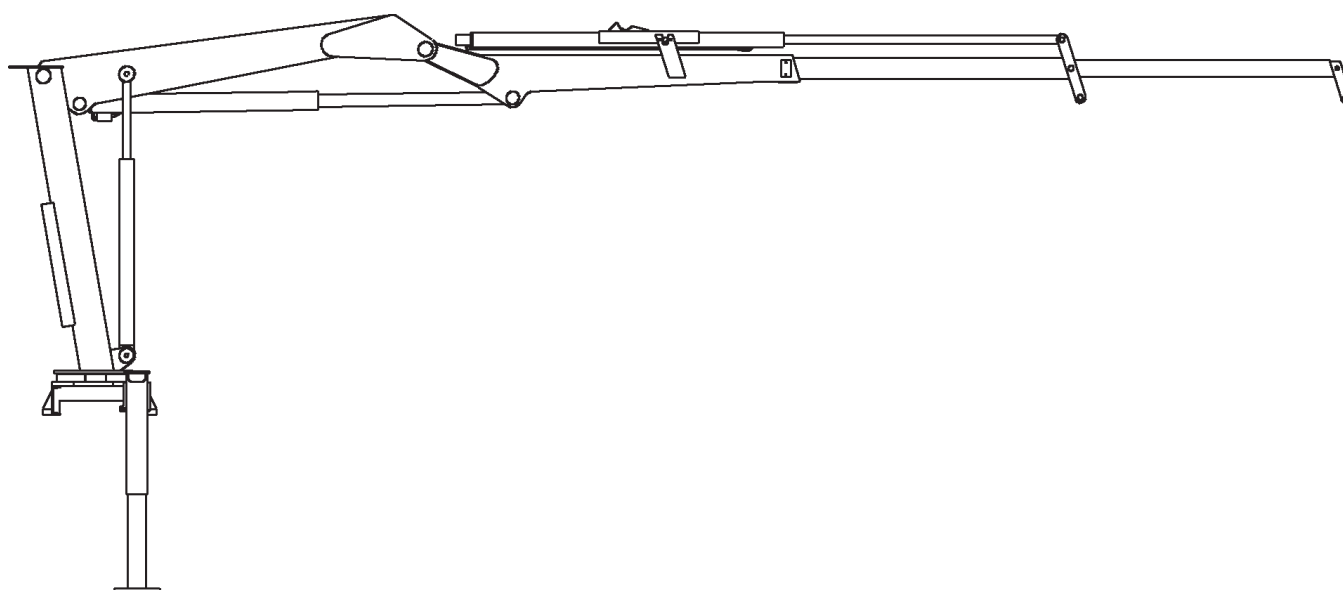
4300/680:99900921: 20061020



# **4300 Series Crane & Model 680 (Metric Version)**

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

Section 1	SPECIFICATIONS-4300 SERIES
Section 1A.	SPECIFICATIONS-680 CRANE
Section 2	CRANE REFERENCE
Section 3	REPLACEMENT PARTS
Section 4	GENERAL REFERENCE



**IOWA MOLD TOOLING CO., INC.**

BOX 189, GARNER, IA 50438-0189  
TEL: 641-923-3711

MANUAL PART NUMBER 99900921

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



4300/680:99900921: -----

## REVISIONS LIST

DATE	LOCATION	DESCRIPTION OF CHANGE
20001101	2-5	REV SPL
	3-7	ECN8615-41712338-CHG INNER BOOM CYL PN
	3-8	REPLACE INNER CYL (C'BAL VALVE CHG)
	3-15	91712395-REV BOM & DWG (C'BAL VALVE CHG)
20010109	3-15	ADD HOSE 30.51395954 & DELETE 1 4.51393922, CHG DWG
20010215	2-05-06	UPDATE SPARE PARTS LIST
20010416	2-5	UPDATE SPARE PARTS LIST
	3-1	UPDATED TABLE OF CONTENTS
	3-21	NEW PART NUMBER FOR REMOTE CONTROL KIT
	3-22	NEW DRAWING FOR VALVE BANK ASSY.
20011204	3-4	NOTE ON MOBILTAC LUBRICANT
	3-29	ECN 8834 - NEW LIGHT KIT
20020318	3-27	ECN 8886 - NEW 31717515 CAP ALERT KIT
20020722	3-27	ECN 8976 - UPDATED 31705698, REMOVED 31717515
20030721	3-31	ECN 9000 - UPDATE TO CONTROL ROD #27 ON 31713257
20040527	3-10	ECN 9468 - CHANGE TO ROD ASM ON 3B167820
20061020	1-1	UPDATED WITH NEW OWNERSHIP STATEMENT.



4300/680:99900921: 19980519

## 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.

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

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

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

Warranty of this unit will be void on any part of the unit subjected to misuse due to overloading, abuse, lack of maintenance and unauthorized modifications. No warranty - verbal, written or implied - other than the official, published IMT new machinery and equipment warranty will be valid with this unit.

In addition, it is also the user's responsibility to be aware of existing Federal, State and Local codes and regulations governing the safe use and maintenance of this unit. 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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## NOTES

This image shows a full page of blank white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, providing a template for writing or drawing. There are no margins, text, or other markings present.



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**SECTION 1. 4300 SERIES CRANE SPECIFICATIONS**

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**NOTES**

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## 4300 SERIES CRANE SPECIFICATIONS

### GENERAL SPECIFICATIONS

	<b>1H</b>	<b>1H1M</b>
<b>*CRANE RATING (ANSI B30.22)</b>	43500 ft-lbs	43500 ft-lbs
<b>*MAXIMUM CRANE RATING</b>	43500 ft-lbs	43500 ft-lbs
<b>HORIZONTAL REACH</b> from centerline of rotation	19'-10"	25'-2"
<b>HYDRAULIC EXTENSION</b>	64"	64"
<b>MANUAL EXTENSION</b>	None	64"
<b>VERTICAL REACH</b> from mounting surface	26'-2"	31'-2"
<b>VERTICAL REACH</b> from ground / 36" frame ht.	29'-2"	34'-2"
<b>CRANE WEIGHT</b>	2560 lbs	2640 lbs
<b>OUTRIGGER SPAN</b>	11'-10"	11'-10"
<b>OUTRIGGER PADS</b>	9" x 11"	9" x 11"
<b>CRANE STORAGE HEIGHT</b> from mounting surface	7'-0"	7'-0"
<b>CRANE STORAGE HEIGHT</b> from ground / 36" frame ht.	10'-0"	10'-0"
<b>**MOUNTING SPACE REQUIRED</b>	28"	28"
<b>ROTATIONAL TORQUE</b>	7375 ft-lbs	7375 ft-lbs
<b>OPTIMUM PUMP CAPACITY</b>	7 gpm	7 gpm
<b>SYSTEM OPERATING PRESSURE</b>	2600 psi	2600 psi
<b>OIL RESERVOIR CAPACITY</b>	17 U.S. gallons	17 U.S. gallons
<b>HOOK APPROACH - HORIZONTAL</b> from centerline of rotation	33"	33"
<b>HOOK APPROACH - VERTICAL</b> from mounting surface	6'-5"	6'-5"

\* Maximum Crane Rating (ft-lbs) is defined as that rated load (lbs) which when multiplied by its respective distance (ft) from centerline of rotation gives the greatest ft-lb value.

ANSI B30.22 Crane Rating (ft-lbs) = With all extensions retracted and inner plus outer boom in a horizontal position, rated load (lbs) X respective distance (ft) from centerline of rotation = nominal ft-lb value.

\*\* Add an additional 3" between the cab and crane base for swing clearance.

### PERFORMANCE CHARACTERISTICS

<b>ROTATION:</b>	450°	40 seconds
<b>INNER BOOM ELEVATION:</b>	-49° to +77°	18 seconds
<b>OUTER BOOM ARTICULATION:</b>	139°	21 seconds
<b>EXTENSION:</b>	64"	17 seconds
<b>VERTICAL OUTRIGGER STROKE:</b>	21"	8 seconds

### POWER SOURCE

Integral-mounted hydraulic pump and PTO application. Other standard power sources may be utilized - minimum power required is 13 horsepower.

IOWA MOLD TOOLING CO., INC.  
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## CYLINDER HOLDING VALVES

The holding sides of all standard cylinders are equipped with integral-mounted holding 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 on command.

The inner and outer cylinders have single pilot-operated counter balance valves. The extension cylinder features double holding 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.

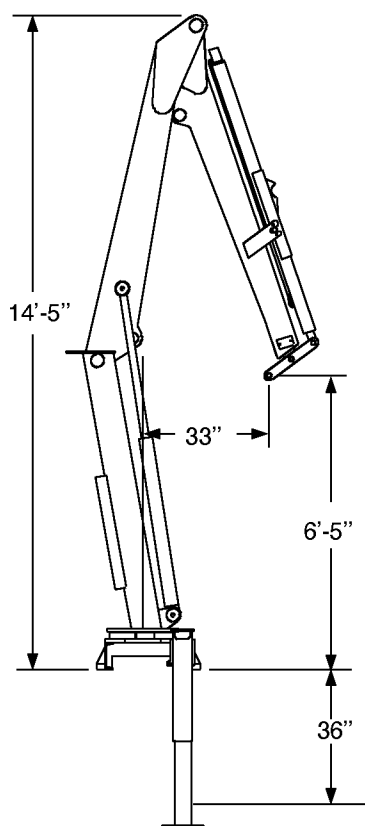
## ROTATION SYSTEM

Rotation of the crane is accomplished through a turntable bearing, powered by a high torque hydraulic motor through a ring and pinion type spur gear train. Total gear reduction is 43.1 to 1.

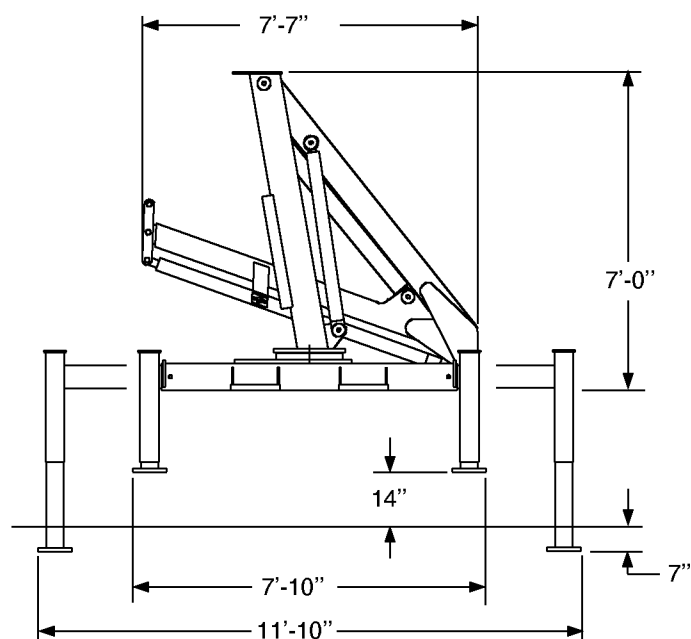
## HYDRAULIC SYSTEM

The hydraulic system is an open centered, full pressure system, requiring 7 GPM optimum oil flow, at 2600 PSI. Eight-spool, stack-type control valve, six of which are used for the standard crane and the remaining two are plugged, but easily adapted for additional optional features. Dual operational handles for six functions are located at both sides of crane for convenient operation. System includes hydraulic oil reservoir, suction-line strainer, pump, 8-section control valve, return-line filter and all hoses and fittings.

***IMT reserves the right to change specifications and design without notice.***



**HOOK APPROACH DIMENSIONS**



**STOWED POSITION AND OUTRIGGER DIMENSIONS**

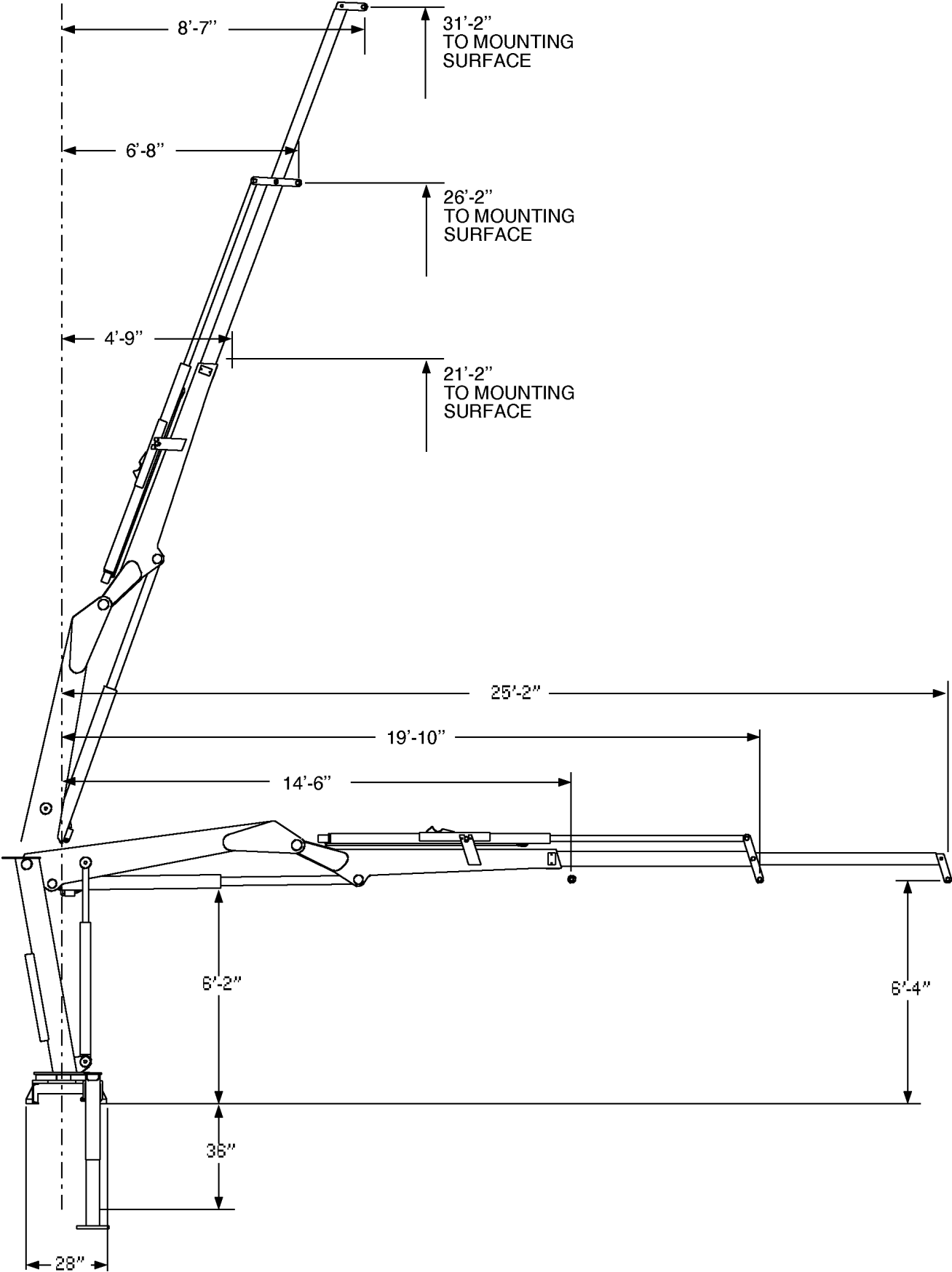




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**GEOMETRIC CONFIGURATION**





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## CAPACITY CHART

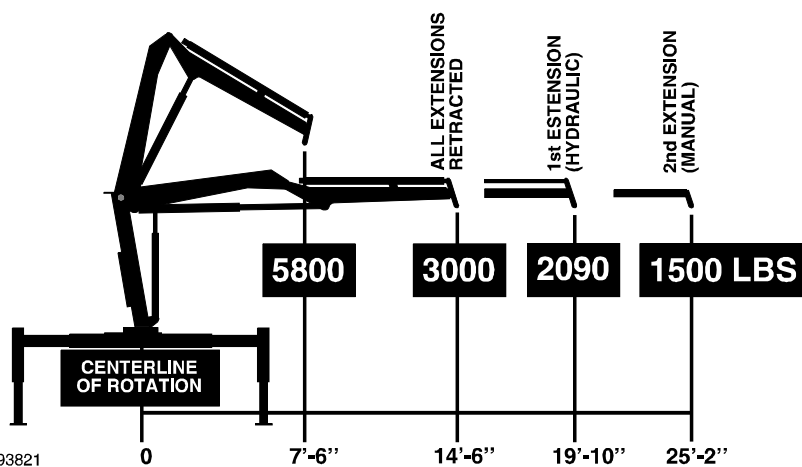
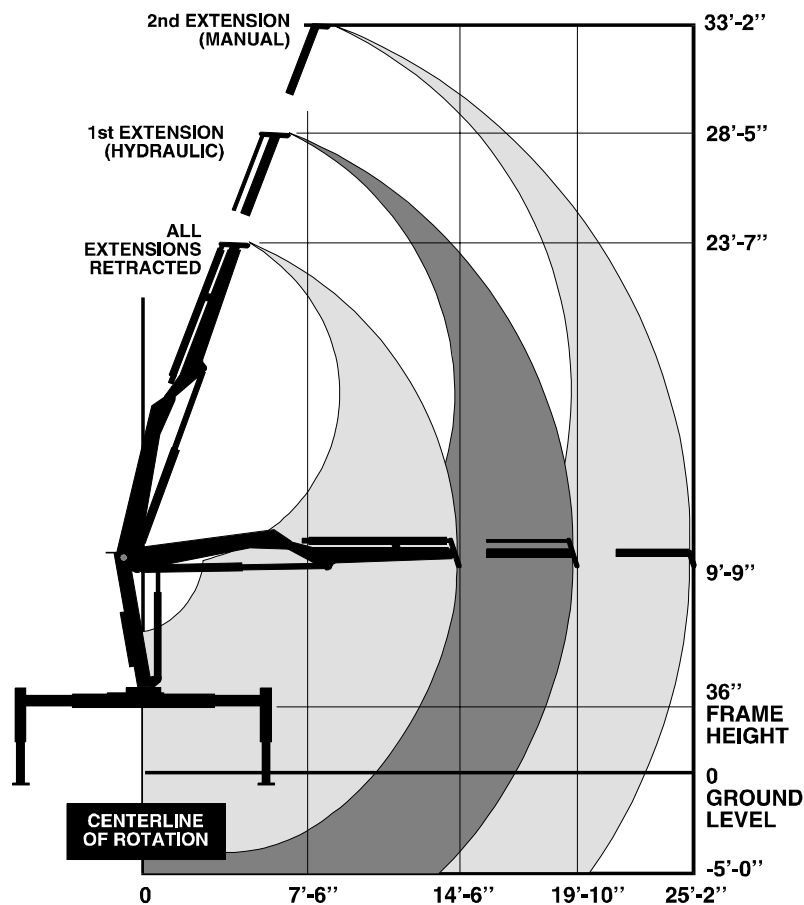
IOWA MOLD TOOLING CO., INC. • BOX 189 • GARNER • IA • 50438 • 641-923-3711  
Capacities through geometric range are limited to those shown in horizontal position.



- 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 2500 lbs for 1-part line.

# 4300

Series Crane



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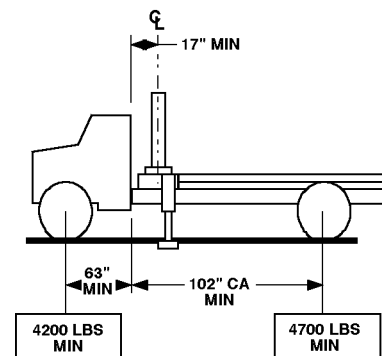
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## MINIMUM CHASSIS SPECIFICATIONS FOR STANDARD 4300 SERIES CRANE

CRANE MOUNT	Behind Cab
CRANE WORKING AREA	360°
CHASSIS STYLE	Conventional Cab
FRONT AXLE RATING (GAWR)	7000 lbs
REAR AXLE RATING (GAWR)	14000 lbs Single Axle
WHEELBASE	165"
CAB-TO-AXLE	102"
RBM	650,000 in-lbs
FRAME SECTION MODULUS	13 cubic inches
FRAME YIELD STRENGTH	50,000
MINIMUM FINISHED UNIT WEIGHT TO MAINTAIN VEHICLE STABILITY	
FRONT AXLE	4200
REAR AXLE	4700
TOTAL FINISHED UNIT WT.	8900

### 360° WORKING AREA



Allows lifting full capacity load in a 360° arc when crane is installed immediately behind the cab. Great care should be taken when swinging the load from rear of vehicle to front of vehicle since the front axle springs will compress, thus affecting the levelness of the vehicle.

#### NOTES:

1. GAWR means Gross Axle Weight Rating and is dependent on all components of the vehicle such as axles, tires, wheels, springs, brakes, steering and frame strength meeting the manufacturer's recommendations. Always specify GAWR when purchasing a truck.
2. Minimum axle requirements may increase with use of diesel engines, longer wheelbase or service bodies. Contact the factory for further information.
3. Weight distribution calculations are required to determine final axle loading.
4. All chassis and crane combinations must be stability tested to ensure stability per ANSI B30.22



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**SECTION 1A. MODEL 680 CRANE SPECIFICATIONS**

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**NOTES**

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1A-3

## MODEL 680 CRANE SPECIFICATIONS

### GENERAL SPECIFICATIONS

	680 - 1H	680 - 1H1M
<b>CRANE RATING</b>	6 ton-meters	6 ton-meters
<b>HORIZONTAL REACH</b> from centerline of rotation	6.05m	7.67m
<b>HYDRAULIC EXTENSION</b>	163cm	163cm
<b>MANUAL EXTENSION</b>	None	163cm
<b>VERTICAL REACH</b> from mounting surface	7.98m	9.50m
<b>VERTICAL REACH</b> from ground / 91cm frame ht.	8.89m	10.41m
<b>*BASE CRANE WEIGHT</b>	972 kg	1007 kg
<b>OUTRIGGER SPAN</b>	3.61m	3.61m
<b>OUTRIGGER PADS</b>	23 x 28cm	23 x 28cm
<b>CRANE STORAGE HEIGHT</b> from mounting surface	2.13m	2.13m
<b>CRANE STORAGE HEIGHT</b> from ground / 91cm frame ht.	3.04m	3.04m
<b>**MOUNTING SPACE REQUIRED</b>	70cm	70cm
<b>ROTATIONAL TORQUE</b>	1020 kg-m	1020 kg-m
<b>OPTIMUM PUMP CAPACITY</b>	34 liters/min	34 liters/min
<b>SYSTEM OPERATING PRESSURE</b>	180 bar	180 bar
<b>OIL RESERVOIR CAPACITY</b>	64 liters	64 liters
<b>HOOK APPROACH - HORIZONTAL</b> from centerline of rotation	84cm	84cm
<b>HOOK APPROACH - VERTICAL</b> from mounting surface	1.96m	1.96m

\* Without outriggers, hydraulic oil reservoir and mounting accessories.

\*\* Add an additional 8cm between the cab and crane base for swing clearance.

### PERFORMANCE CHARACTERISTICS

<b>ROTATION:</b>	450°/7.85 rad	40 seconds
<b>INNER BOOM ELEVATION:</b>	-.86 to +1.34 rad	18 seconds
<b>OUTER BOOM ARTICULATION:</b>	2.42 rad	21 seconds
<b>EXTENSION:</b>	163cm	17 seconds
<b>VERTICAL OUTRIGGER STROKE:</b>	53cm	8 seconds

### POWER SOURCE

Integral-mounted hydraulic pump and PTO application. Other standard power sources may be utilized - minimum power required is 13 horsepower.

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### CYLINDER HOLDING VALVES

The holding sides of all standard cylinders are equipped with integral-mounted holding 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 on 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.

### ROTATION SYSTEM

Rotation of the crane is accomplished through a turntable bearing, powered by a high torque hydraulic motor through a ring and pinion type spur gear train. Total gear reduction is 43.1 to 1.

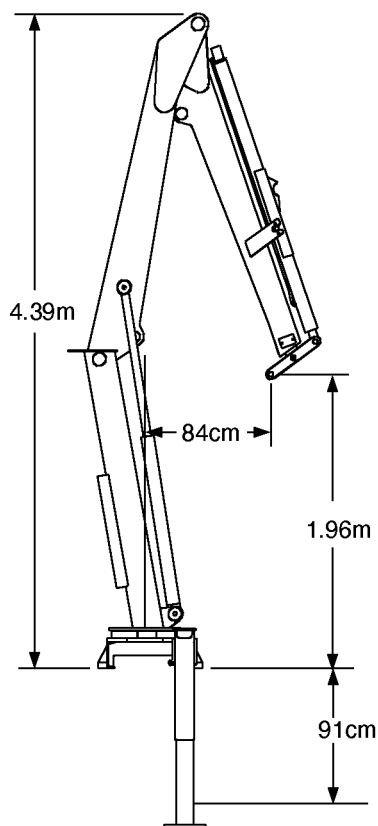
### HYDRAULIC SYSTEM

The hydraulic system is an open centered, full pressure system, requiring 34 liters/minute optimum oil flow, at 180 bar. Eight-spool, stack-type control valve, six of which are used for the standard crane and the remaining two are plugged, but easily adapted for additional optional features. Dual operational handles for six functions are located at both sides of crane for convenient operation. System includes hydraulic oil reservoir, suction-line strainer, pump, 8-section control valve, return-line filter and all hoses and fittings.

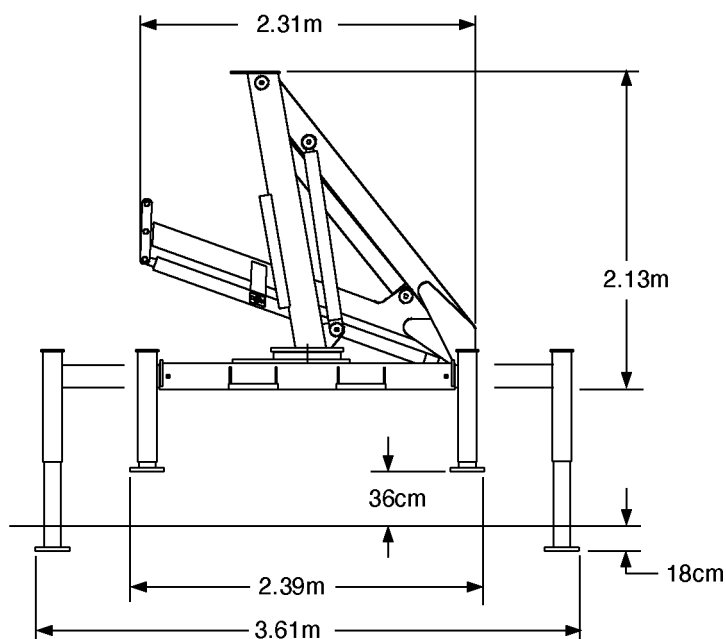
### SELECTED WEIGHTS OF ANCILLARY EQUIPMENT

OUTRIGGERS	167 kg
HYDRAULIC OIL RESERVOIR	23 kg

**IMT reserves the right to change specifications and design without notice.**



**HOOK APPROACH DIMENSIONS**



**STOWED POSITION AND OUTRIGGER DIMENSIONS**

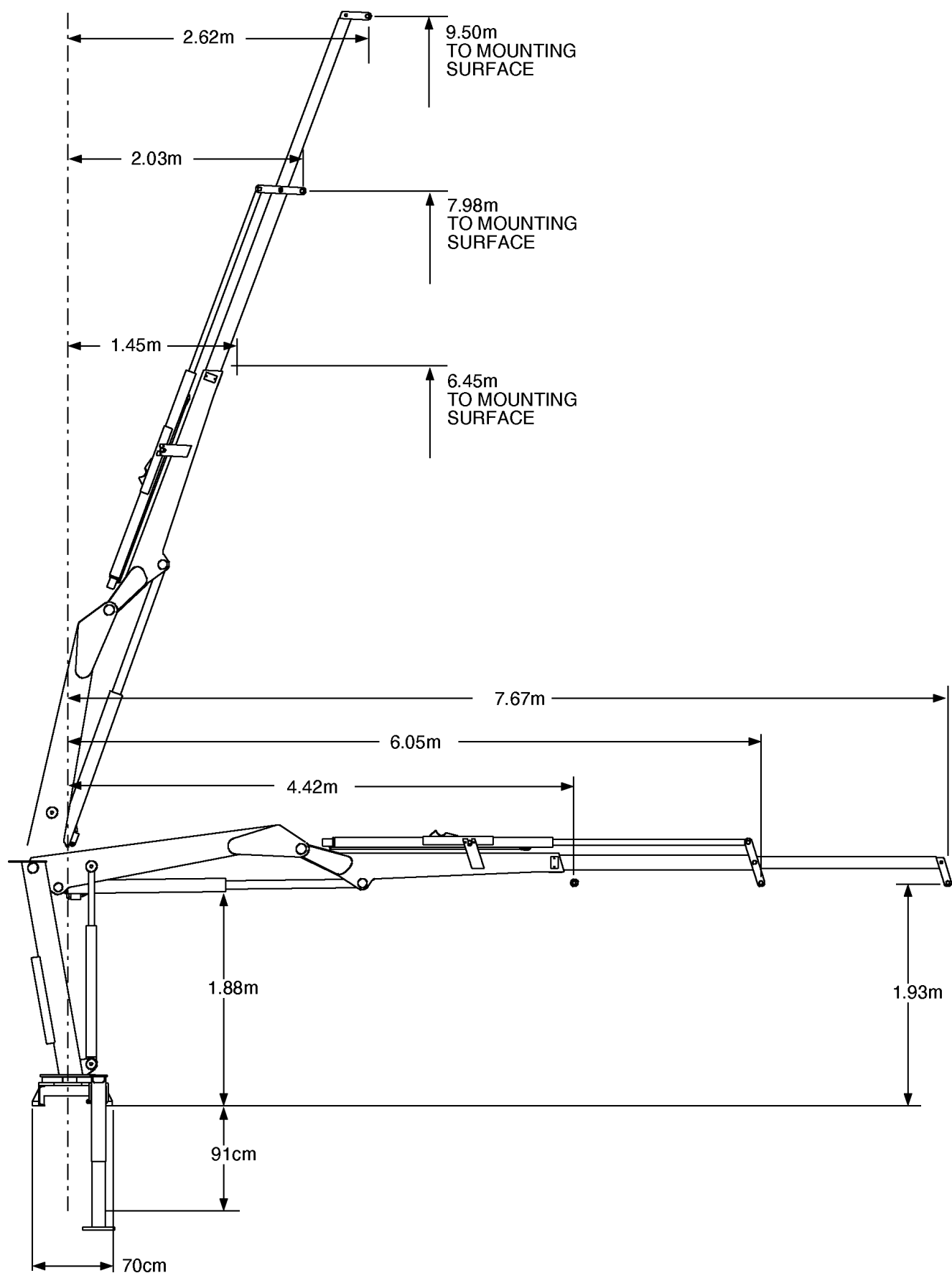




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### GEOMETRIC CONFIGURATION





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## CAPACITY CHART

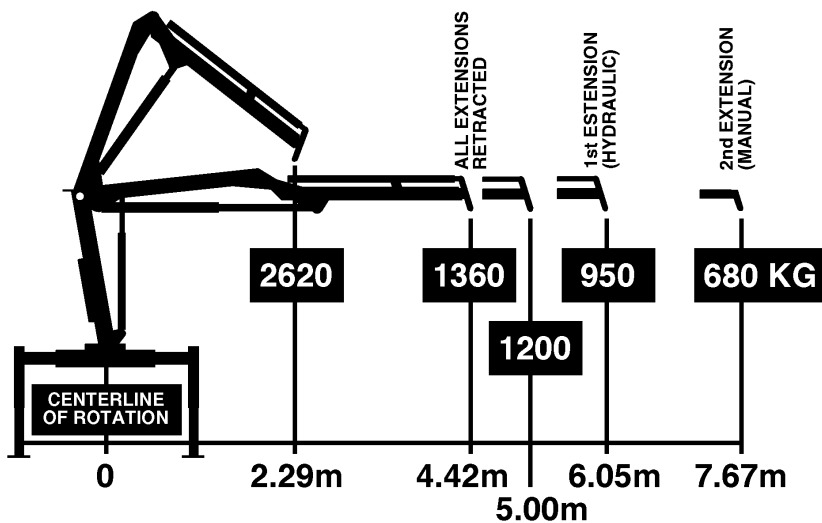
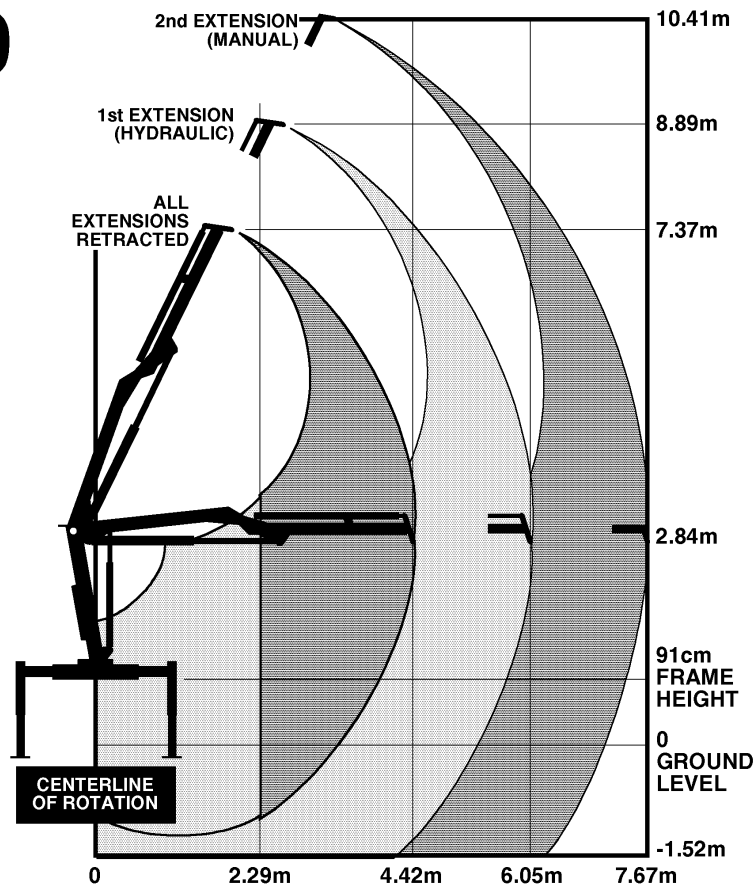
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Capacities through geometric range are limited to those shown in horizontal position.



**MODEL  
680**

- 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 1135 KG for 1-part line.



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**SECTION 2. 4300/680 CRANE REFERENCE**

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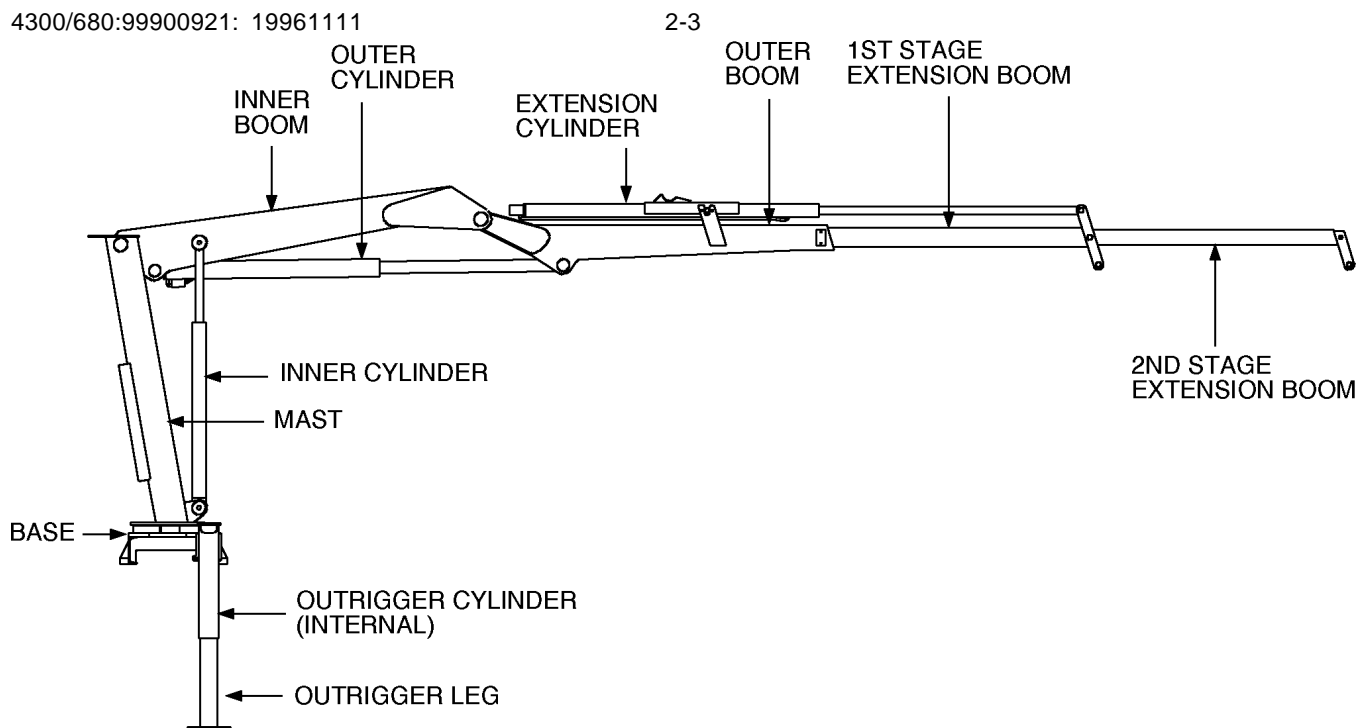
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**NOTES**

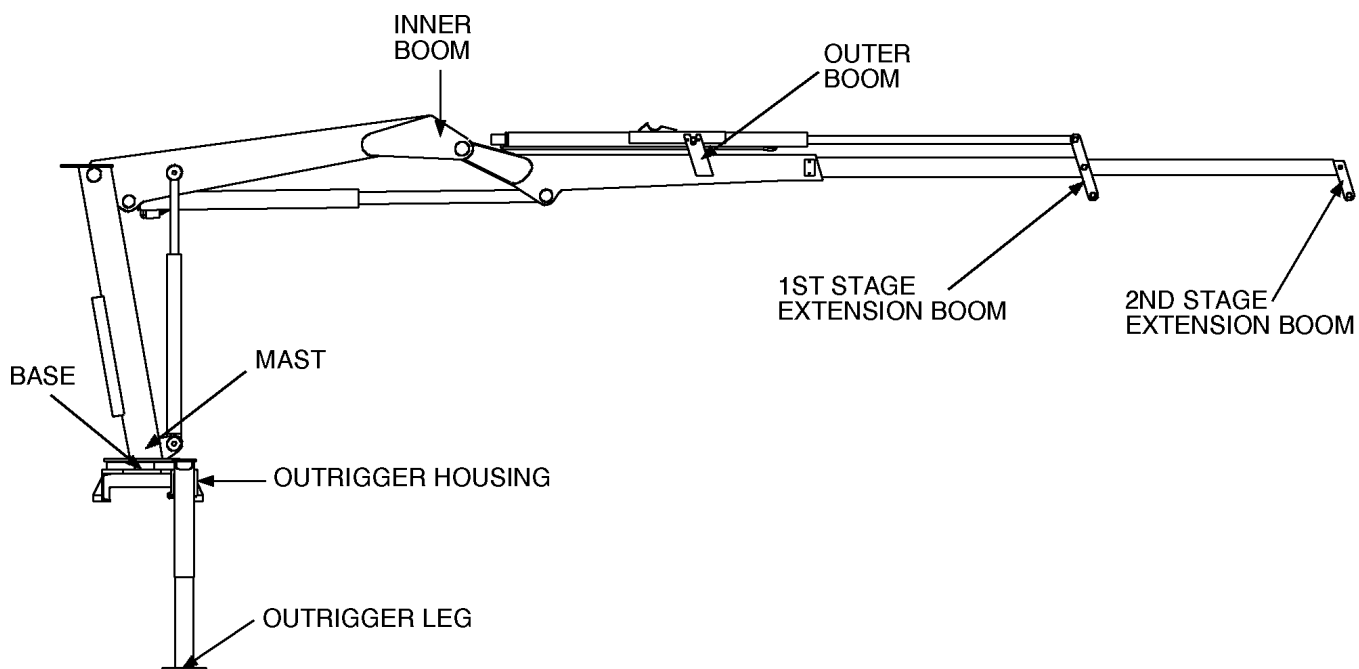
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## MAJOR CRANE ASSEMBLIES



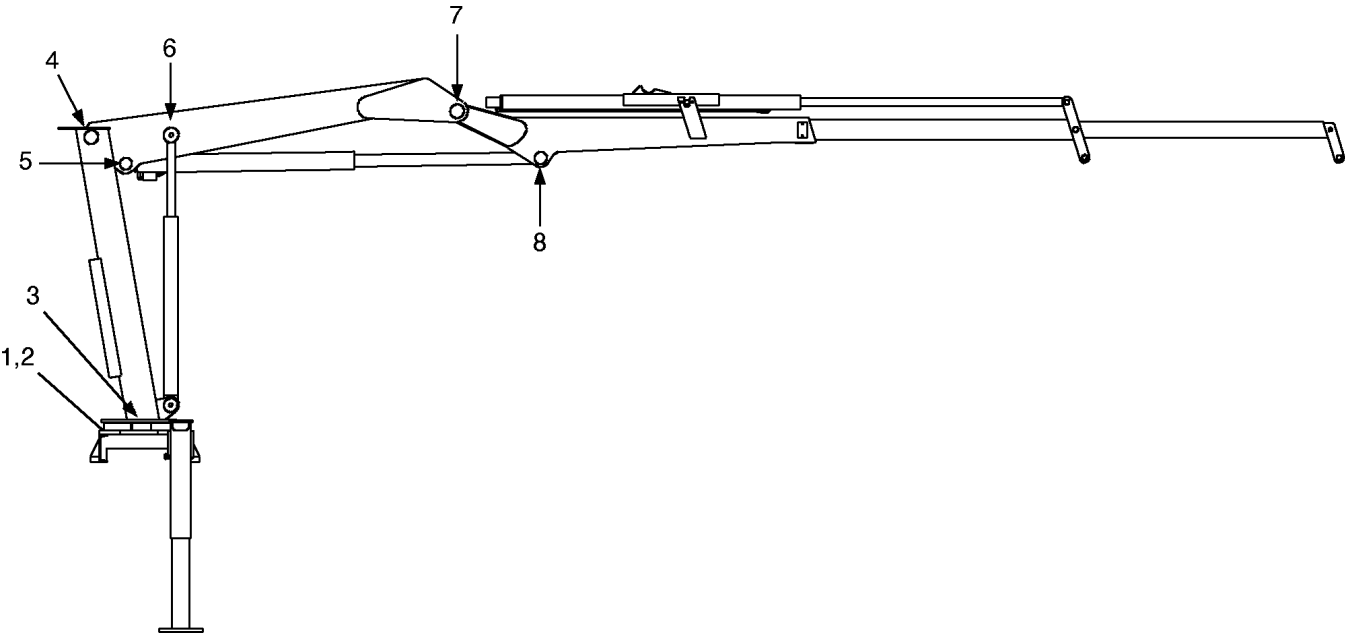
## WELDMENT PART NUMBER LOCATIONS



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## 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 BOOM HINGE PIN		
5.	OUTER CYLINDER BASE		
6.	INNER CYLINDER ROD		
7.	INNER BOOM/OUTER BOOM HINGE PIN		
8.	OUTER 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.



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**RECOMMENDED SPARE PARTS LIST****1 YEAR SUPPLY****4300/680 CRANE****FOR MANUAL: 99900921**

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
41712362.01.20000308	<b>BASE &amp; MANUAL OUTRIGGER ASM</b>						
	11	60020114	BUSHING	1	W		
	12	60020115	BUSHING	1	W		
	13	60020116	BUSHING	1	W		
	14	60020154	BUSHING	1	W		
	27	71056010	PINION GEAR	1	W		
3B166820.01.19961111	<b>OUTRIGGER CYLINDER</b>						
	5	73054004	VALVE	2	W		
	9	9B101214	SEAL KIT	2	W		
41712359.01.19961111	<b>MAST ASM</b>						
	2	7BF81520	BUSHING	2	W		
41712338.01.19961111	<b>INNER BOOM ASM</b>						
	4	7BF81520	BUSHING	4	W		
	5	7BF81220	BUSHING	6	W		
3B269000.01.20001101	<b>INNER CYLINDER</b>						
	3	7BF81020	BUSHING	8	W		
	6	6I302125	PISTON	1	W		
	7	6H030020	HEAD	1	W		
	11	73054887	COUNTERBALANCE VALVE	2	C		
	12	9C156920	SEAL KIT	2	W		
41712355.01.19961111	<b>OUTER BOOM ASM</b>						
	5	7BF81220	BUSHING	3	W		
	9	60030060	WEAR PAD	2	W		
3B167820.01.19961111	<b>OUTER CYLINDER</b>						
	5	6H040030	HEAD	1	W		
	6	6I040143	PISTON	1	W		
	7	73054242	VALVE	1	C		
	8	9C162423	SEAL KIT	1	W		
	19	7BF81520	BUSHING	2	W		
	20	7BF81220	BUSHING	2	W		
41704415.01.19961111	<b>EXTENSION BOOM ASM-1H/1M</b>						
	13	60030065	WEAR PAD	1	W		
	14	60030066	WEAR PAD	1	W		
41704637.01.19961111	<b>EXTENSION BOOM ASM-1H</b>						
	13	60030065	WEAR PAD	1	W		
	14	60030066	WEAR PAD	1	W		
3B126820.01.19961111	<b>EXTENSION BOOM CYLINDER</b>						
	5	73054304	VALVE 10GPM	2	C		
	6	6H030020	HEAD	1	W		
	7	6I030106	PISTON	1	W		
	8	9C121617	SEAL KIT	1	W		
93704355.01.19980722	<b>INSTALLATION KIT</b>						
		73052006	RETURN FILTER ELEMENT	6	P		
90716707.01.20010416	<b>PROPORTIONAL REMOTE CONTROL KIT</b>						
	5	73054876	FLOW VALVE	1	C		
	10	77041251	RELAY	2	W		
	11	77041237	SOLENOID 12V	1	W		
51713429.01.19961111	<b>PROPORTIONAL REMOTE HANDLE ASM</b>						
	11	51707507	POTENTIOMETER	1	W		
	16	77040371	TOGGLE SWITCH SPST	1	W		
	17	77040372	TOGGLE SWITCH SPDT	6	W		
	18	77040373	TOGGLE SWITCH SPST	2	W		
51713568.01.19961111	<b>CABLE ASM-JIC BOX 94"</b>						
	3	77041345	TOGGLE SWITCH ST	2	W		
	4	77041354	TOGGLE SWITCH DT	1	W		
	17	77041056	FUSE 20A IN-LINE	1	W		
70732573.01.19961111	<b>RESERVOIR ASM</b>						
	10	70144326	STRAINER 100MESH	1	P		
31713257.01.19961111	<b>WINCH KIT W/MANUAL CONTROLS</b>						
	9	52704255	PIN	1	W		
	11	89058903	CABLE 5/16 X 65'	65	W		
	17	60030082	SHEAVE 7"	1	W		



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**NOTES**

[illegible]





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## INSTALLATION

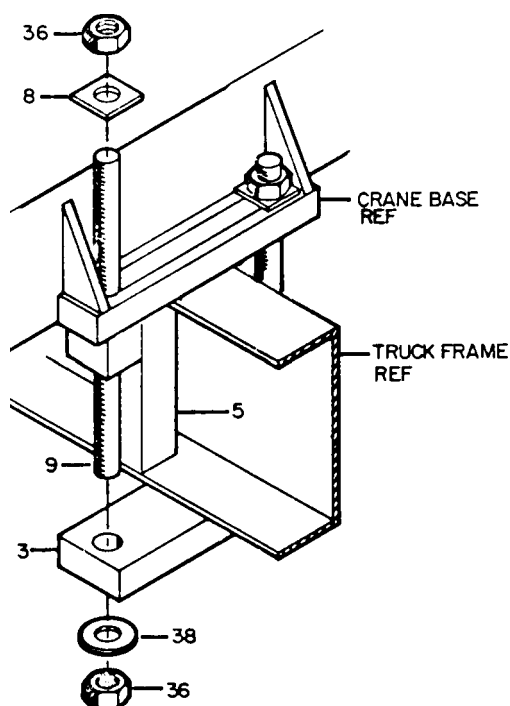
### GENERAL

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, Installation).

### 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 reposition crane until mounting surface is level.

2. Install the truck frame support so that the tie-down studs pass through the supports (See figure below). Cut the support to the inside dimensions of the truck frame. Allow about 1/16" (1.6mm) 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 REINFORCEMENT BAR	4
8.	SQUARE WASHER	8
9.	TIE DOWN STUD	8
36.	LOCK NUT	16
38.	WASHER	8

### CRANE INSTALLATION

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 below. Note position of support weldments on truck frame. Hand tighten nuts. Observe underside of crane base. No clearance between base and frame bars 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.



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**HYDRAULIC INSTALLATION**

To install the hydraulic hoses, fittings, etc.:

- 1. Plumb the suction line filter as shown in figure below.
- 2. Install the 1-1/4" suction hose between the suction-line filter and the pump inlet. Tighten the hose clamps.
- 3. Install the 1/2" pressure hose between the pump outlet and the inlet port on the valve bank.
- 4. Fill the hydraulic oil reservoir to the "FULL" mark.

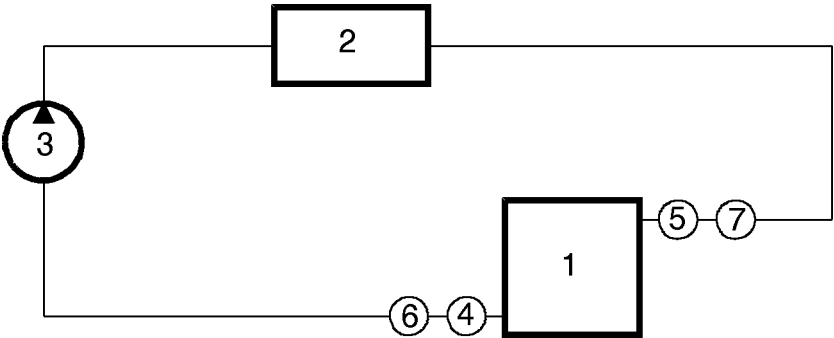
2-8

- 5. 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.

- 6. Open the return gate valve.
- 7. Start the vehicle 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" or less of mercury). If the vacuum reading is too high, check to make certain that the gate valve is open. If the valve is open, check for a collapsed or restricted suction line.



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

**HYDRAULIC INSTALLATION**



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**WINCH TROUBLESHOOTING**

POSSIBLE CAUSE	PROBABLE CURE
<b>WINCH WON'T LIFT HEAVY LOADS</b>	
TOO MUCH LOAD	RIG TO REDUCE LOADING ON WINCH
LOW OR NO GEARBOX OIL	CHECK OIL LEVEL AND ADD PROPER OIL IF NECESSARY
MOTOR INLET PRESSURE LESS THAN SPECIFICATIONS WITH LOAD STALLED	TEST HYDRAULIC PUMP
MOTOR OUTLET PRESSURE TOO HIGH WITH LOAD STALLED	FIND AND REMOVE SOURCE OF RESTRICTION
BRAKE SHOULD ENGAGE IN PAYOUT DIRECTION ONLY	RUN WINCH WITH NO LOAD IN BOTH DIRECTIONS. SYSTEM PRESSURE SHOULD BE SLIGHTLY HIGHER IN PAYOUT DIRECTION.
CHECK FLOW TO WINCH MOTOR WITH WINCH UNDER LOAD	TEST PUMP IF NOT TO SPECIFICATIONS
CHECK END PLAY IN WORM	IF GREATER THAN 0.030", INSPECT WORM BEARINGS FOR WEAR. REPLACE IF NECESSARY.
<b>WINCH WON'T HOLD LOAD</b>	
BRAKE MAY NEED ADJUSTMENT	TURN ADJUSTING SCREW CLOCKWISE 1/4 TURN AT A TIME AND TEST WINCH AGAIN
BRAKE DISKS MAY BE WORN	INSPECT AND REPLACE IF NECESSARY. ADJUST AND RETEST
CAM CLUTCH IN BRAKE MAY BE INSTALLED INCORRECTLY	REVERSE CLUTCH AND RETEST
JOURNAL ON WORM WHERE CAM CLUTCH RUNS MAY BE GALLED OR WORN	INSPECT AND REPLACE WORM IF NECESSARY
<b>WINCH RUNS TOO SLOW</b>	
SYSTEM MAY HAVE LOW FLOW	INSTALL FLOW METER IN SYSTEM AND TEST UNDER LOAD. IF FLOW IS BELOW SPECIFICATIONS, INSPECT PUMP.
MOTOR WORN OUT	REPLACE MOTOR
<b>WINCH WILL NOT RUN UNDER NO LOAD (RELIEF VALVE OPENS WITHOUT WINCH TURNING)</b>	
MOTOR SEIZED UP	REMOVE MOTOR FROM WINCH AND TEST IF OPERABLE. IF NOT, REPLACE MOTOR.
WORM AND GEAR SET DAMAGED	REPAIR GEARBOX

See Section 3 for parts drawing.



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(BLANK)



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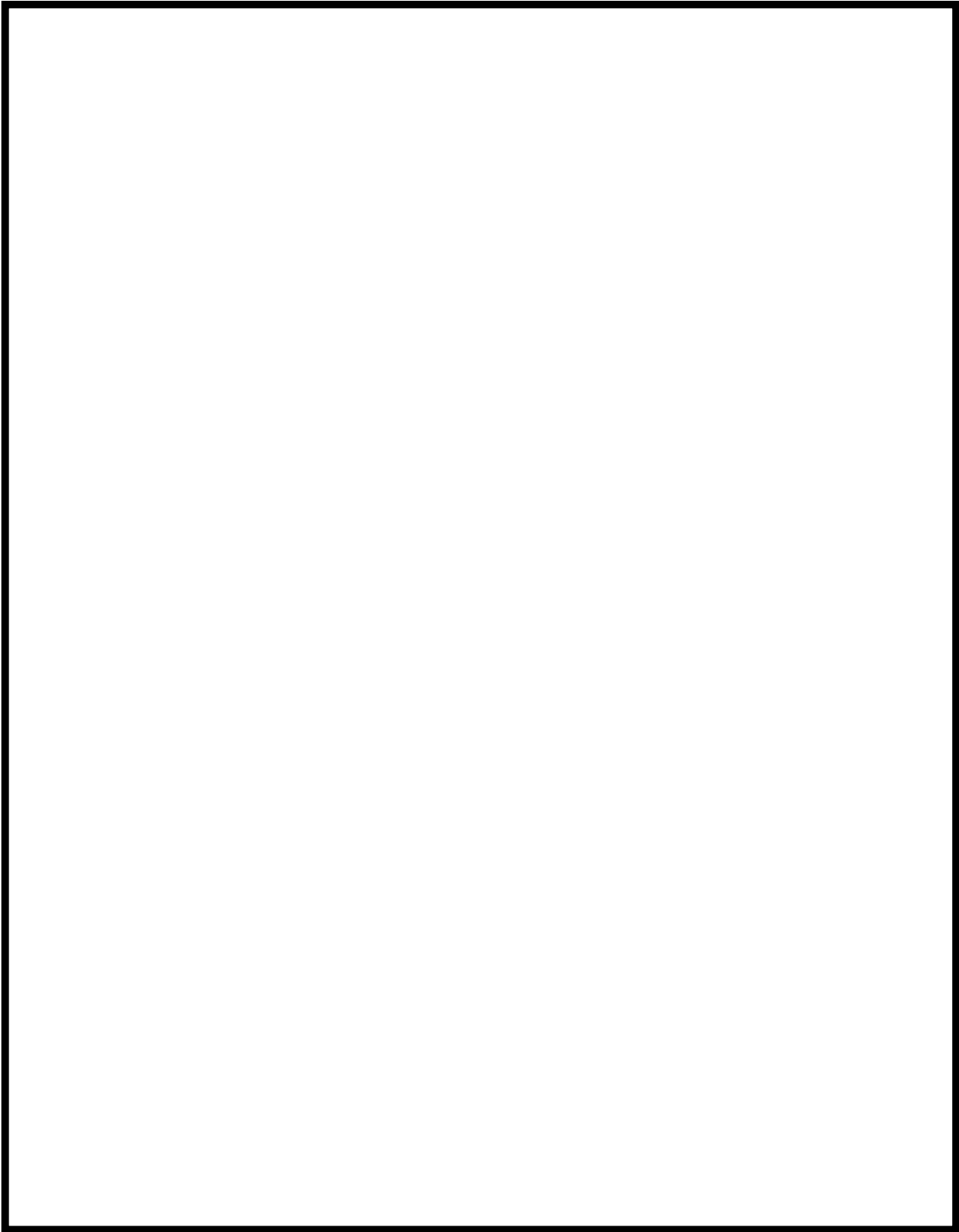
## SECTION 3. REPLACEMENT PARTS 4300/680 CRANE

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VALVEBANK ASM 4R/4M (51711707) .....	17
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4300/680: 99900921.01: 20061020

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## PARTS INFORMATION

### GENERAL

This section contains the exploded parts drawings and accompanying parts lists for the assemblies used on this crane. These drawings are intended to be used in conjunction with the instructions found in the REPAIR section in Volume 1.

#### 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). This placard is attached to the inner boom, mast, or crane base. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model numbers.

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

### CYLINDER IDENTIFICATION

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

### WELDMENT IDENTIFICATION

Each of the major weldments - base, mast, inner boom, outer boom, extension boom and outrigger weldments bear a stamped part number. Any time a major weldment is replaced, you must specify the complete part number as stamped on the weldment. The locations of the part numbers are shown in Section 2.

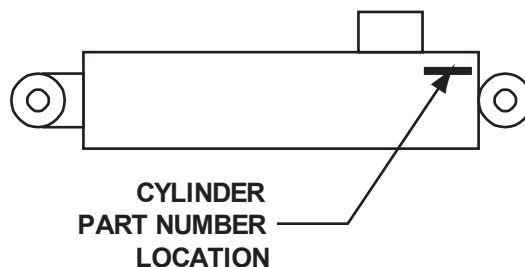
### ORDERING REPAIR PARTS

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.

IOWA MOLD TOOLING CO., INC. BOX 189, GARNER, IA 50438-0189	
MODEL NUMBER	
SERIAL NUMBER	
MFG DATE	
70029119	

**SERIAL NUMBER PLACARD**



**CYLINDER PART NUMBER LOCATION**

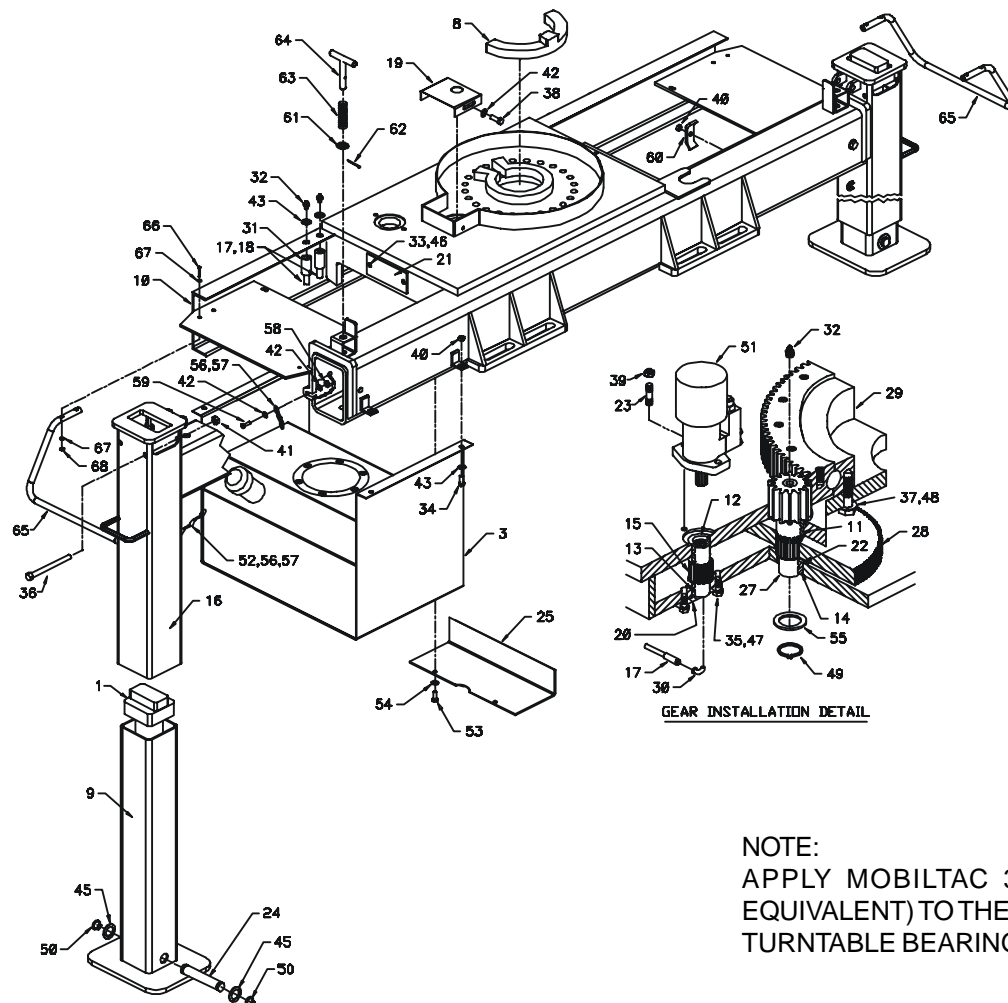


4300/680: 41712362.01.20011204

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**BASE & MNL OUTRIGGER ASM  
(41712362)**

ITEM	PART NO.	DESCRIPTION	QTY				
1.	3B166820	POWER DOWN CYLINDER	2	38.	72060833	SCR 5/16-18X3/4 SLFTPG	2
3.	70732573	RESERVOIR ASM	1	39.	72062080	NUT 1/2-13 LOCK	2
8.	71143519	STOP BLOCK	1	40.	72062103	NUT 3/8-16 LOCK	6
9.	52704388	OUTRIGGER LEG	2	41.	72062107	NUT 1/2-13 CTR LOCK	4
10.	52712360	BASE (INCL: 11-15)	1	42.	72063002	WASHER 5/16 WRT	6
11.	60020114	BUSHING (PART OF 10)	1REF	43.	72063003	WASHER 3/8 WRT	6
12.	60020115	BUSHING (PART OF 10)	1REF	45.	72063034	MACH BUSHING 1X10GA	4
13.	60020116	BUSHING (PART OF 10)	1REF	46.	72063049	WASHER 1/4 LOCK	2
14.	60020154	BUSHING (PART OF 10)	1REF	47.	72063053	WASHER 1/2 LOCK	2
15.	71056011	DRIVE GEAR (PART OF 10)	1REF	48.	72063119	WASHER 5/8 FLAT HARD	24
16.	52704387	OUTRIGGER HOUSING	2	49.	72066084	RETAINING RING 1-1/4	1
17.	53000714	GREASE EXTENSION 10"	1	50.	72066125	RETAINING RING 1	4
18.	53000717	GREASE EXTENSION 32"	1	51.	73540004	HYD MOTOR (FROM 5-15-98)	1
19.	60010235	PINION GEAR COVER	1		73051004	HYD MOTOR (TO 5-15-98)	1
20.	60010844	GREASE PLATE	1		5V151830	MOTOR BLOCK (TO 5-15-98)	1
21.	60102767	COVER	1		7Q072112	O-RING (TO 5-15-98)	2
22.	60104694	PINION SPACER	1		72060738	CAP SCR (TO 5-15-98)	4
23.	60106032	STUD 1/2-13X2	2		73054538	C'BAL VALVE (TO 5-15-98)	2
24.	60106968	PIN	2	52.	89393036	SLEEVE	5'
25.	60107524	INTERMEDIATE GEAR GUARD	1	53.	72060023	CAP SCR 5/16-18X3/4 HH GR5	2
27.	71056010	PINION GEAR	1	54.	72063050	WASHER 5/16 WRT	2
28.	71056012	INTERMEDIATE GEAR	1	55.	72063035	MACH BUSHING 1-1/4 X 10GA	1
29.	71056389	TURNTABLE BEARING	1	56.	60108883	CHAIN	2
30.	72053281	STRT ELBOW 1/8NPT 90°	1	57.	70058060	COLD SHUT LINK	2
31.	72053301	COUPLING 1/8NPT	2	58.	72062109	NUT 5/16-18 LOCK	2
32.	72053508	ZERK 1/8NPT	3	59.	72060026	CAP SCR 5/16-18X1-1/4 HHGR5	2
33.	72060002	CAP SCR 1/4-20X3/4 HH GR5	2	60.	60107648	HOSE CLAMP	2
34.	72060046	CAP SCR 3/8-16X1 HH GR5	4	61.	72063027	MACH BUSHING 5/8X14GA NR	2
35.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	2	62.	72066185	COTTER PIN .16X1	2
36.	72060102	CAP SCR 1/2-13X5-1/2 HH GR5	4	63.	60010351	SPRING	2
37.	72060931	CAP SCR 5/8-11X2-3/4 HH GR8	24	64.	52070138	T-PIN	2
				65.	60119748	GUARD-CONTROL HANDLE	2
				66.	72060005	CAP SCR 1/4-20X1-1/4 HHGR5	8
				67.	72063001	WASHER 1/4 WRT	16
				68.	72062104	NUT 1/4-20 LOCK	8

**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.

**CAUTION**

BEFORE TIGHTENING TURNTABLE BEARING BOLTS, REFER TO THE TURNTABLE BEARING FASTENER TIGHTENING SEQUENCE AND TORQUE DATA CHART IN THE REFERENCE SECTION.

**NOTE:**

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





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**OUTRIGGER CYLINDER (3B166820)**

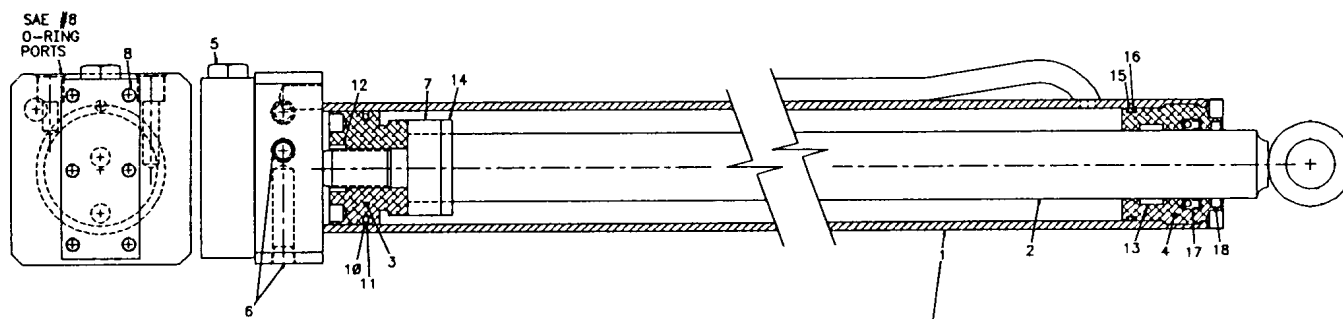
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B166820	CASE (INCL:6)	1
2.	4G166820	ROD	1
3.	6I025087	PISTON	1
4.	6H025015	HEAD	1
5.	73054004	VALVE	1
6.	7PNPXT02	PIPE PLUG 1/8 (PART OF 1)	3REF
7.	6C075015	STOP TUBE	1
8.	72060708	CAP SCR 1/4-20 X 1-1/4 SH	6
9.	9B101214	SEAL KIT (INCL:10-18)	1
10.	7Q072137	O-RING (PART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





4300/680: 41712359.01.19961111

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### MAST ASM (41712359)

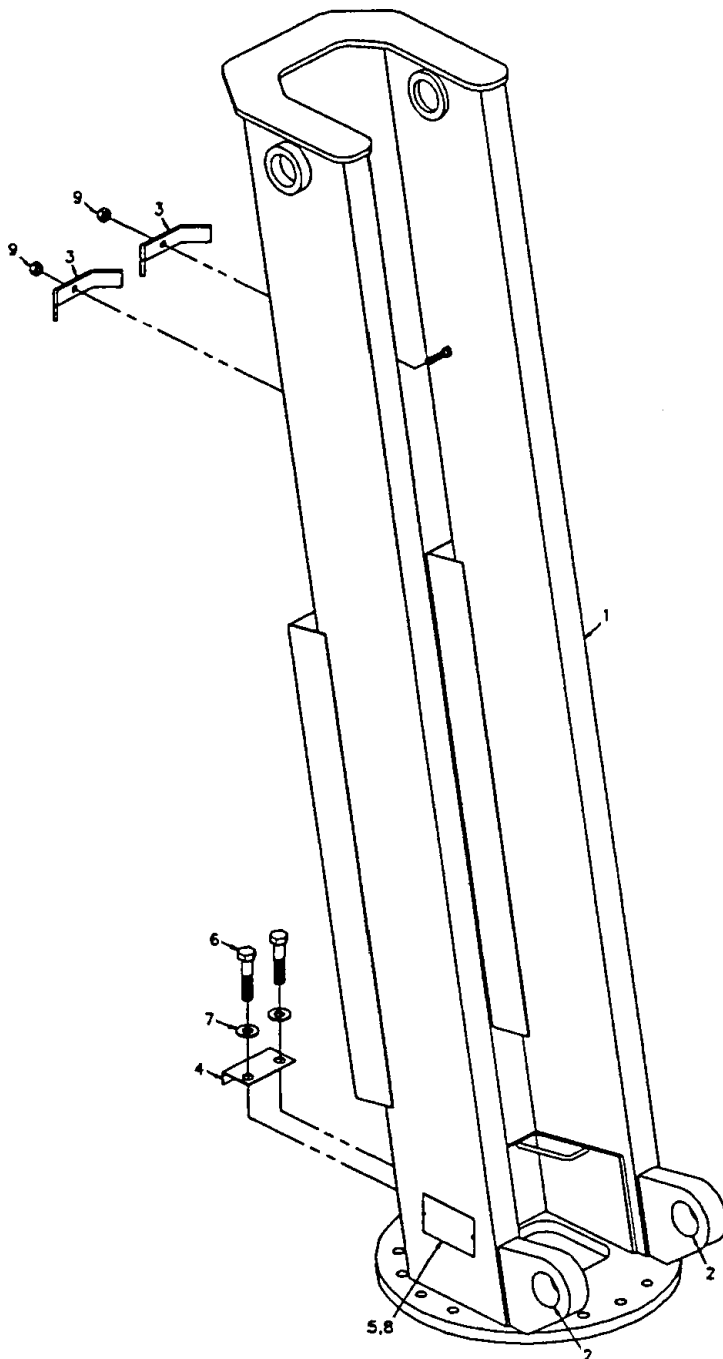
ITEM	PART NO.	DESCRIPTION	QTY
1.	52712353	MAST (INCL:2)	1
2.	7BF81520	BUSHING (PART OF 1)	2REF
3.	60010118	HOSE CLAMP	2
4.	60104540	PINION COVER	1
5.	70029119	SERIAL NUMBER PLACARD	1
6.	72601482	CAP SCR 5/8-11X2-1/2 HHGR8	14
7.	72063119	WASHER 5/8 FLAT HARD	14
8.	72066340	POP RIVET 1/8	2
9.	72062103	NUT 3/8-16 LOCK	2

#### 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.

#### CAUTION

BEFORE TIGHTENING TURNTABLE BEARING BOLTS, REFER TO THE TURNTABLE BEARING FASTENER TIGHTENING SEQUENCE AND TORQUE DATA CHART IN THE REFERENCE SECTION.





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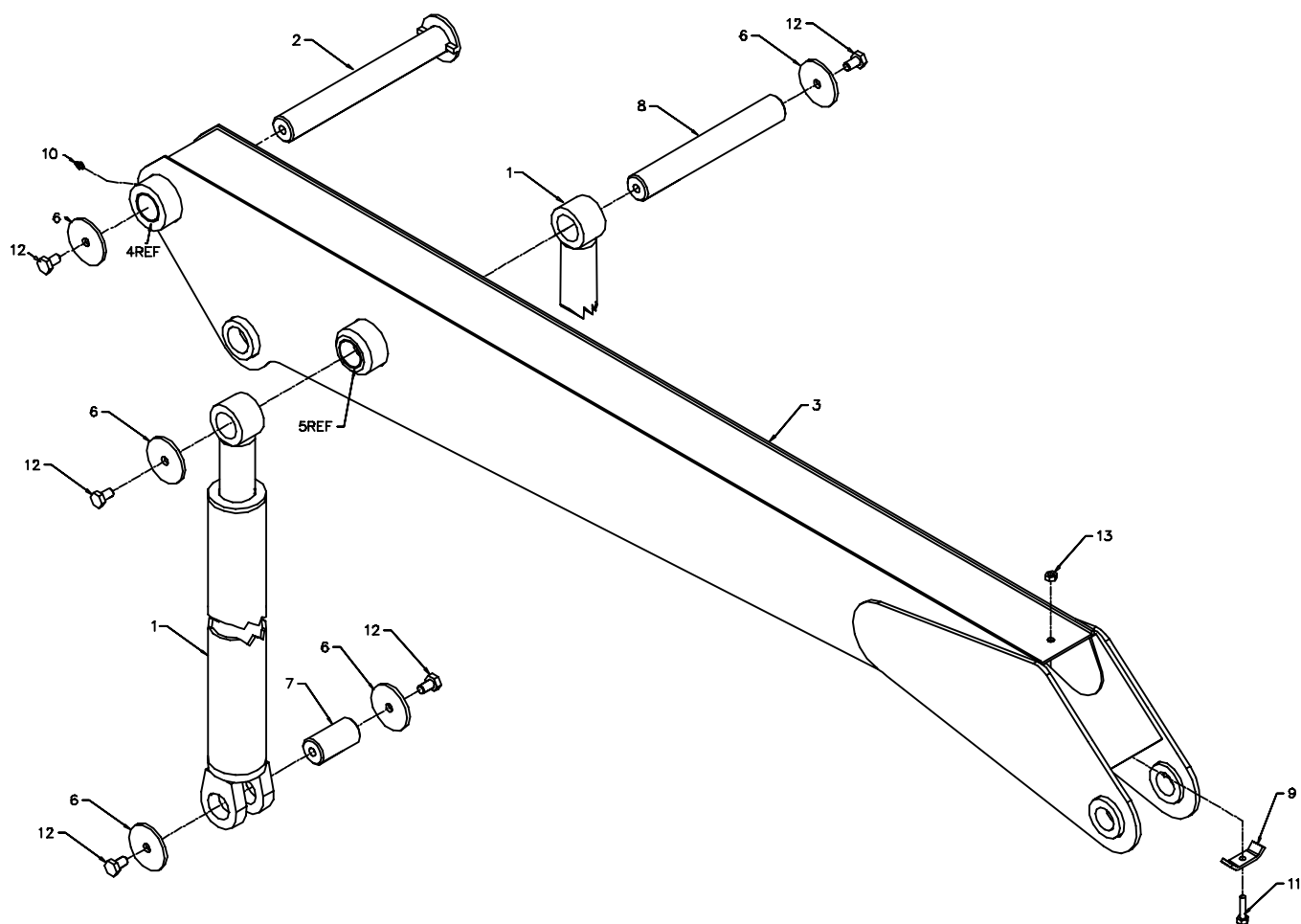
3-7

### INNER BOOM ASM (41712338)

1.	3B269000	INNER BOOM CYLINDER	2
2.	52704428	PIN	1
3.	52712337	INNER BOOM (INCL:4,5)	1
4.	7BF81520	BUSHING (PART OF 3)	4REF
5.	7BF81220	BUSHING (PART OF 3)	6REF
6.	60106331	PIN RETAINER PLATE	7
8.	60107305	PIN	2
9.	60107411	PIN	1
10.	60107648	HOSE CLAMP	1
11.	72053508	ZERK 1/8NPT	1
12.	72060049	CAP SCR 3/8-16X1-3/4 HHGR5	1
13.	72060147	CAP SCR 5/8-11X1 HHGR5	7
14.	72062103	NUT 3/8 LOCK	1

#### NOTE

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





4300/680: 3B269000.01.20001101

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**INNER CYLINDER (3B269000)**

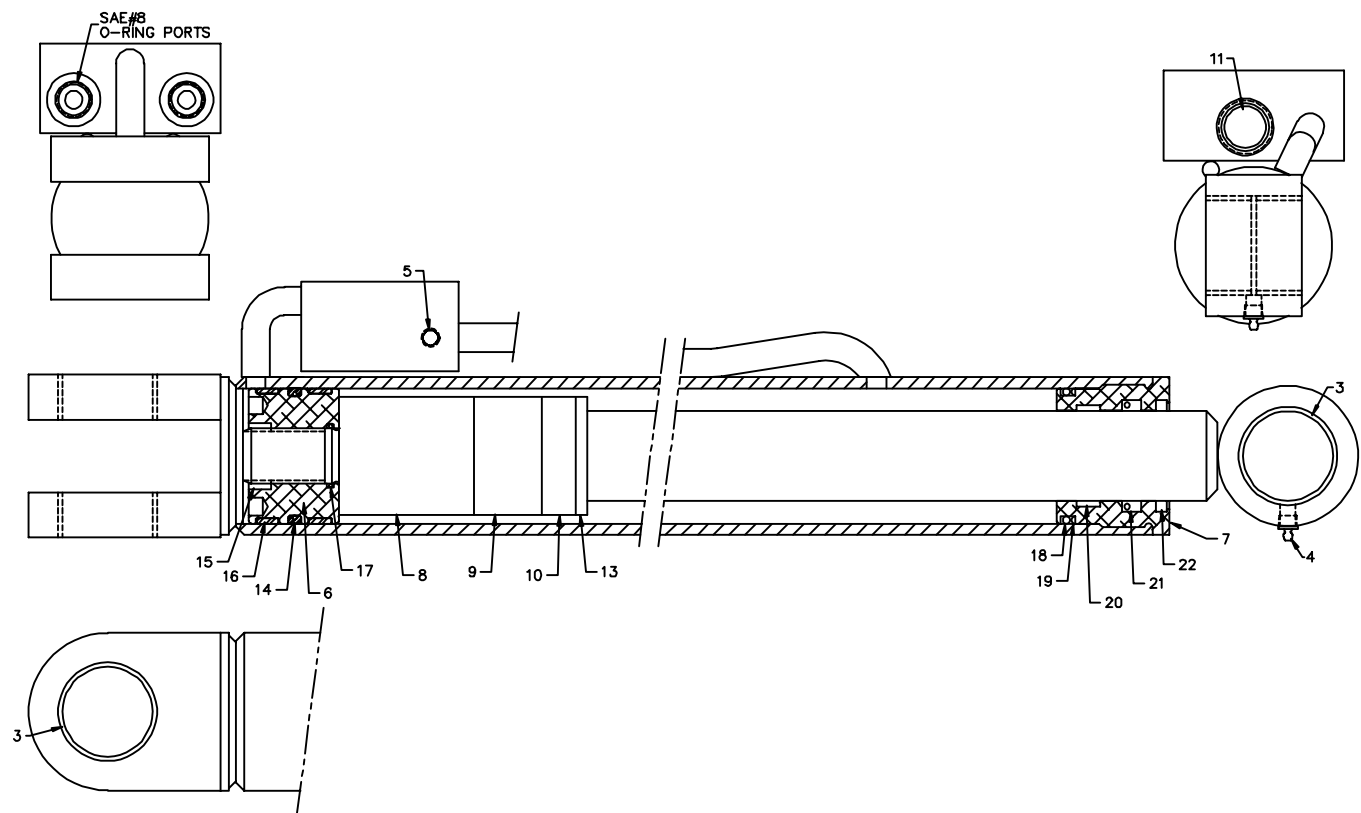
1.	4B150940	CASE ASM (INCL:3&5)	1
2.	4G150940	ROD ASM (INCL:3&4)	1
3.	7BF81020	BUSHING (PART OF 1&2)	4REF
4.	73054507	ZERK (PART OF 2)	1REF
5.	7PNPXT02	PIPE PLUG 1/8NPT (PART OF 1)	3REF
6.	6I302125	PISTON	1
7.	6H030020	HEAD	1
8.	6C300020	STOP TUBE 3"	1
9.	6C150020	STOP TUBE 1-1/2"	1
10.	6C075020	STOP TUBE 3/4"	1
11.	73054887	COUNTERBALANCE VALVE	1
12.	9C156920	SEAL KIT (INCL:13-22)	1
13.	6A025020	WAFFER LOCK (PART OF 12)	1REF
14.	7T66P300	PISTON SEAL (PART OF 12)	1REF
15.	7T61N125	LOCK RING (PART OF 12)	1REF
16.	7T2N4030	WEAR RING (PART OF 12)	2REF
17.	7Q072124	O-RING (PART OF 12)	1REF
18.	7Q072334	O-RING (PART OF 12)	1REF
19.	7Q10P334	BACK-UP RING (PART OF 12)	1REF
20.	7T2N4022	WEAR RING-ROD (PART OF 12)	1REF
21.	7R546020	U-CUP SEAL (PART OF 12)	1REF
22.	7R14P020	ROD WIPER (PART OF 12)	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.





4300/680: 41712355.01.19961111

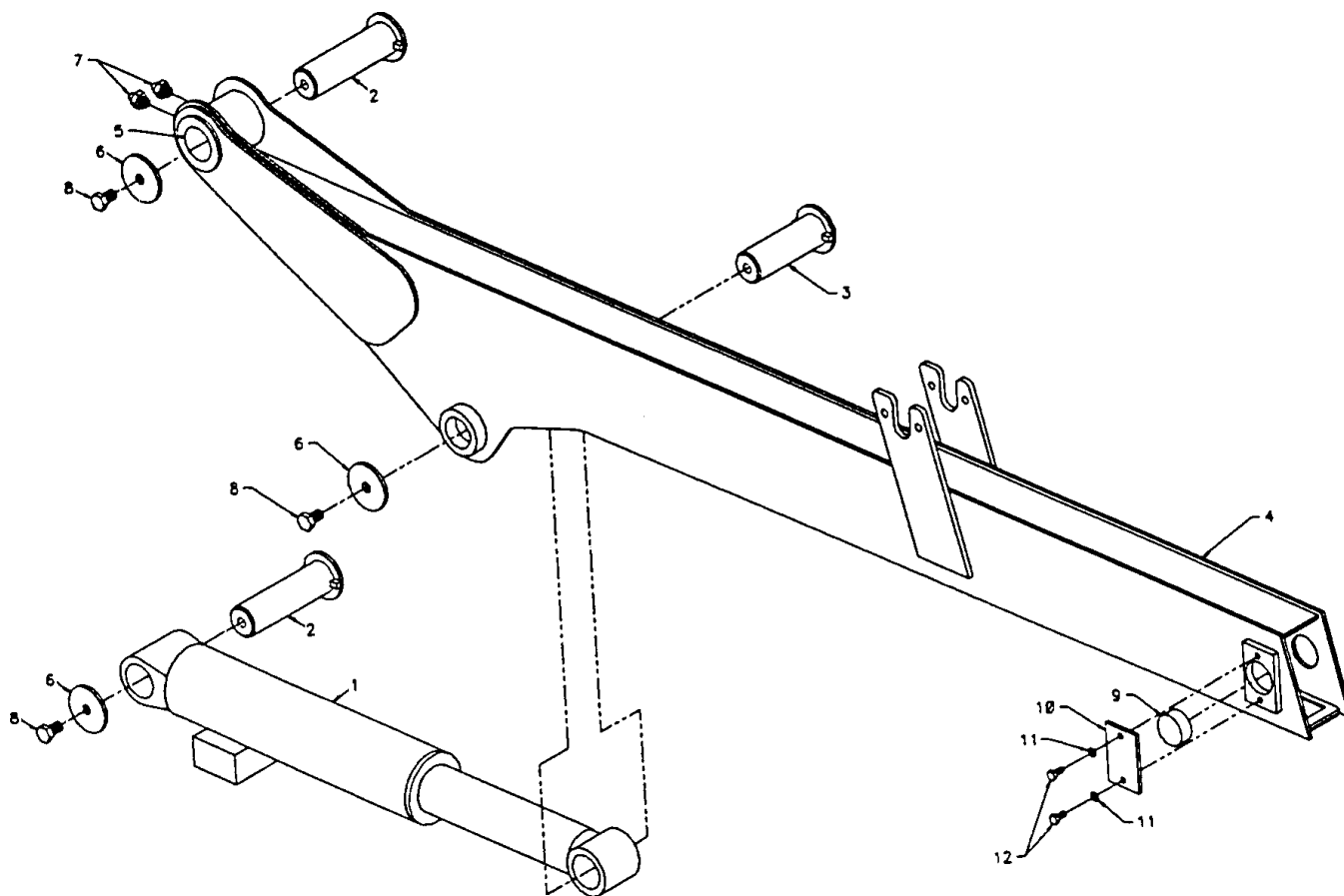
3-9

### OUTER BOOM ASM (41712355)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3B167820	OUTER CYLINDER	1
2.	52704431	PIN	2
3.	52704432	PIN	1
4.	52712350	OUTER BOOM (INCL: 5)	1
5.	7BF81220	BUSHING (PART OF 4)	3REF
6.	60106331	PIN RETAINER PLATE	3
7.	72053508	ZERK 1/8NPT	2
8.	72060147	CAP SCR 5/8-11X1HH GR5	3
9.	60030060	WEAR PAD	2
10.	60107550	LOCK PLATE	2
11.	72063051	WASHER 3/8 LOCK	4
12.	72060044	CAP SCR 3/8-16X3/4 HHGR5	4

#### NOTE

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





4300/680: 3B167820.01.REV. E 20040527

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**OUTER CYLINDER (3B167820)**

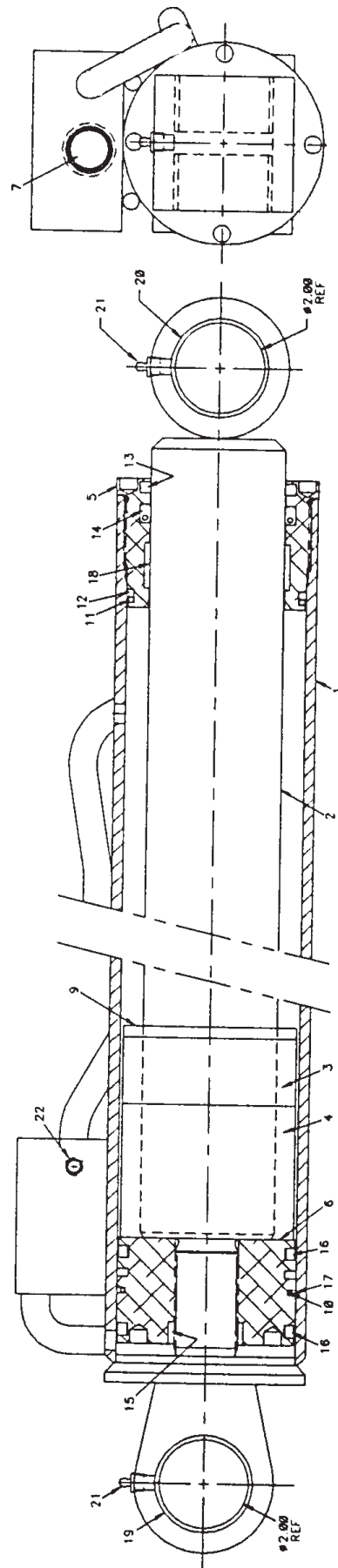
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B167820	CASE ASM (INCL:19-21,22)	1
2.	52718647	ROD (INCL:20,21) (WAS 4H180920)	1
3.	6C150030	STOP TUBE	1
4.	6C300030	STOP TUBE	1
5.	6H040030	HEAD	1
6.	6I040143	PISTON	1
7.	73054242	COUNTER BALANCE VALVE	1
8.	9C162423	SEAL KIT (INCL:9-18)	1
9.	6A025030	WAFER LOCK (PART OF 8)	1REF
10.	7Q072153	O-RING (PART OF 8)	1REF
11.	7Q072342	O-RING (PART OF 8)	1REF
12.	7Q10P342	BACK-UP RING (PART OF 8)	1REF
13.	7R14P030	ROD WIPER (PART OF 8)	1REF
14.	7R546030	ROD SEAL (PART OF 8)	1REF
15.	7T61N143	LOCK RING SEAL (PART OF 8)	1REF
16.	7T65I040	PISTON RING (PART OF 8)	2REF
17.	7T66P040	PISTON SEAL (PART OF 8)	1REF
18.	7T2N8032	ROD WEAR RING (PART OF 8)	1REF
19.	7BF81520	BUSHING (PART OF 1)	2REF
20.	7BF81220	BUSHING (PART OF 2)	2REF
21.	72053508	ZERK 1/8NPT (PART OF 1 & 2)	2REF
22.	7PNPXT02	PIPE PLUG 1/8NPT (PART OF 1) 3	

**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.





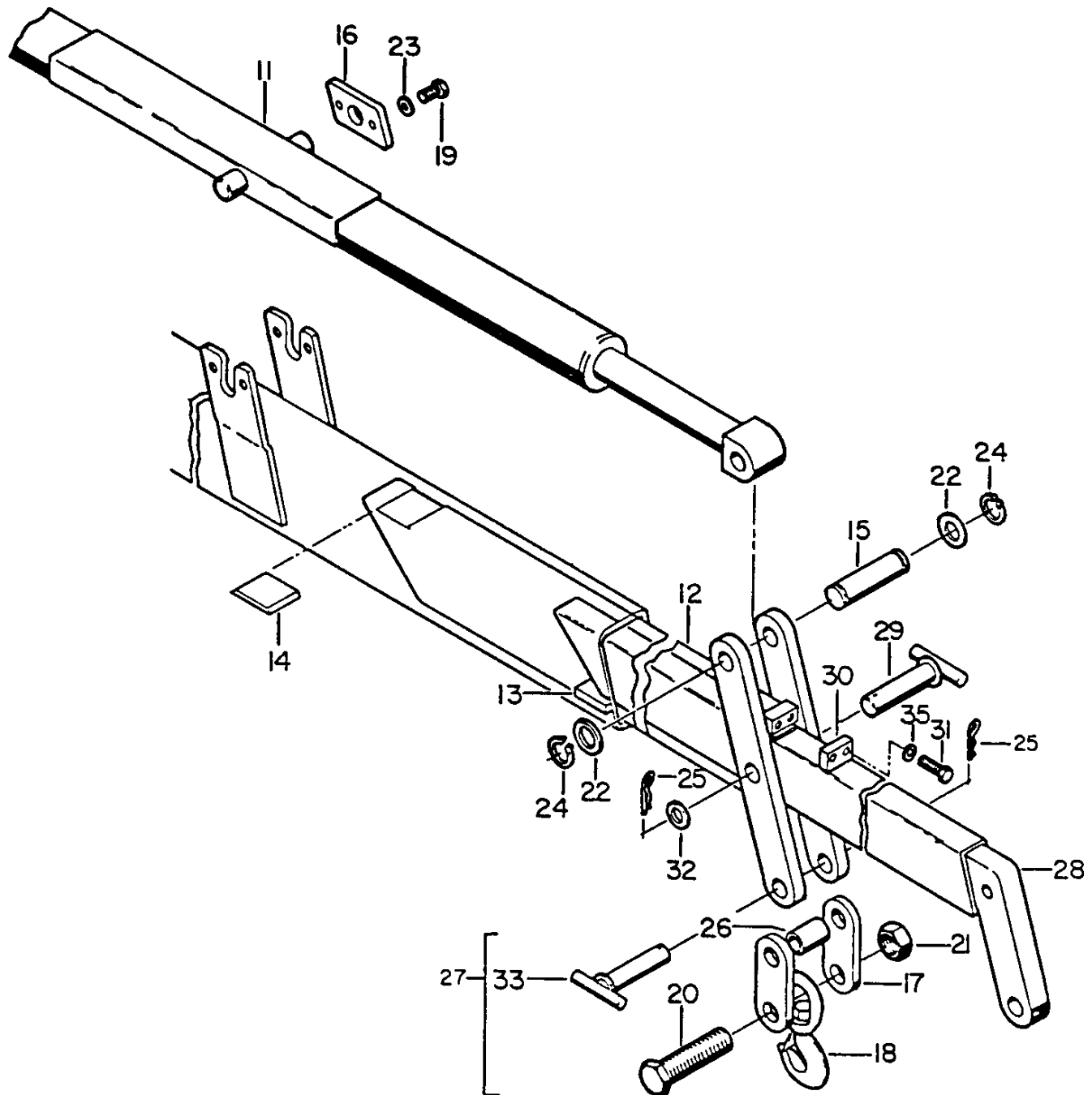
4300/680: 41704415.01.19961111

**EXTENSION BOOM ASM-1H1M  
(41704415)**

ITEM	PART	DESCRIPTION	QTY
11.	3B126820	EXTENSION CYLINDER	1
12.	52704434	1ST STG EXT BOOM	1
13.	60030065	WEAR PAD	1
14.	60030066	WEAR PAD	1
15.	60106970	PIN	1
16.	60107292	LOCK PLATE	2
17.	60107324	LINK, HOOK (PART OF 27)	2REF
18.	71073035	HOOK (PART OF 27)	1REF
19.	72060091	CAP SCR 1/2-13X1 HH GR5	4
20.	72601666	CAP SCR (PART OF 27)	1REF
21.	72062073	NUT1-1/4 (PART OF 27)	1REF

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22.	72063035	MACH BUSHING 1-1/4X10GA	2
23.	72063053	WASHER 1/2 LOCK	6
24.	72066129	RETAINING RING 1-1/4	2
25.	72066145	HAIR PIN .19 (PART OF 27)	1REF
26.	60108857	HOOK SPACER (PART OF 27)	1REF
27.	51706199	HOOK ASM (INCL:17,18,20,21,25,26,33)	1
28.	52704346	2ND STG EXT BOOM	1
29.	52704383	PIN	1
30.	60107294	STOP PLATE	1
31.	72060094	CAP SCR 1/2-13X1-3/4 HH GR5	2
32.	72063030	MACH BUSHING 3/4X10GA	1
33.	52070151	PIN (PART OF 27)	1REF



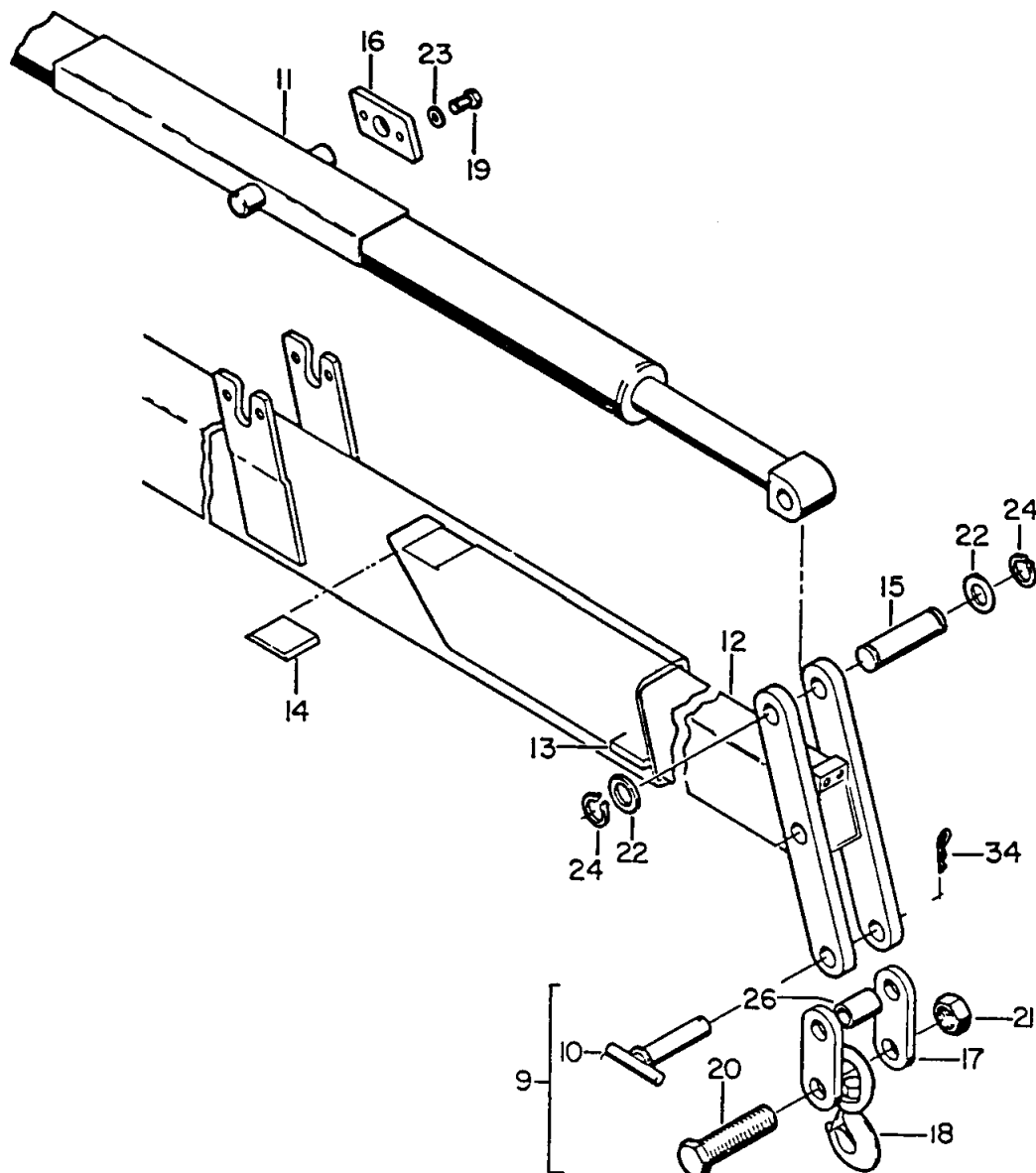


4300/680: 41704637.01.19961111

3-12

**EXTENSION BOOM-1H (41704637)**

ITEM	PART NO.	DESCRIPTION	QTY
9.	51706199	HOOK ASM 4-1/2 TON	1
10.	52070151	PIN (PART OF 9)	1REF
11.	3B126820	EXTENSION CYLINDER	1
12.	52704434	1ST STG EXT BOOM	1
13.	60030065	WEAR PAD	1
14.	60030066	WEAR PAD	1
15.	60106970	PIN	1
16.	60107292	LOCKPLATE	2
17.	60107324	HOOK LINK (PART OF 9)	2REF
18.	71073035	HOOK (PART OF 9)	1REF
19.	72060091	CAP SCR 1/2-13X1 HH GR5	4
20.	72601666	CAP SCR 1 1/4-7X4 HH GR5 (PART OF 9)	1REF
21.	72062073	NUT 1 1/4-7 (PART OF 9)	1REF
22.	72063035	MACH BUSHING 1-1/4X10GA	2
23.	72063053	WASHER 1/2 LOCK	4
24.	72066129	RETAINER RING 1-1/4	2
25.	72066145	HAIR PIN 3/16 (PART OF 9)	1REF
26.	60108857	SPACER (PART OF 9)	1REF







4300/680: 3B126820.01.19961111

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**EXTENSION CYLINDER (3B126820)**

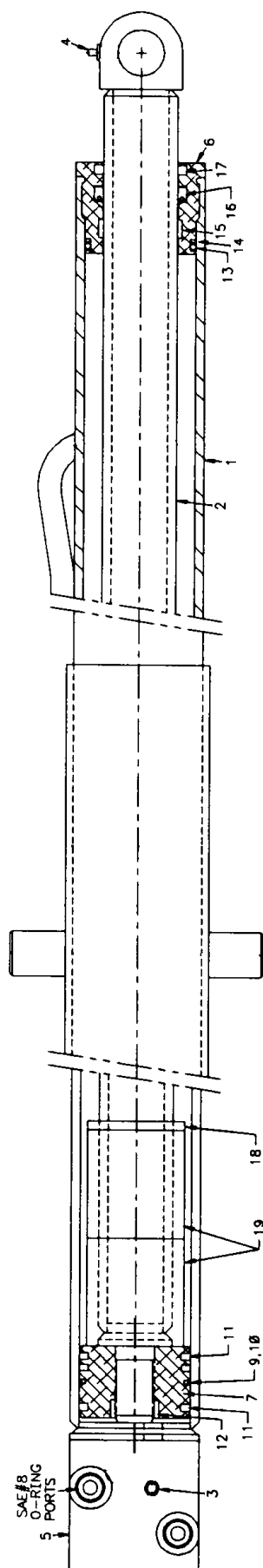
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B126820	CASE (INCL:3)	1
2.	4H127940	ROD	1
3.	7PNPXT02	PLUG 1/8NPT (PART OF 1)	5REF
4.	72053507	GREASE ZERK (PART OF 2)	1REF
5.	73054304	VALVE 10GPM	2
6.	6H030020	HEAD	1
7.	6I030106	PISTON	1
8.	9C121617	SEAL KIT (INCL:9-18)	1
9.	7Q072145	O-RING (PART OF 8)	1REF
10.	7T66P030	PISTON SEAL (PART OF 8)	1REF
11.	7T65I030	PISTON RING (PART OF 8)	2REF
12.	7T61N106	LOCK RING SEAL (PART OF 8)	1REF
13.	7Q072334	O-RING (PART OF 8)	1REF
14.	7Q10P334	BACK-UP RING (PART OF 8)	1REF
15.	7T2N4022	WEAR RING-ROD (PART OF 8)	1REF
16.	7R546020	ROD SEAL (PART OF 8)	1REF
17.	7R14P020	ROD WIPER (PART OF 8)	1REF
18.	6A025020	WAFFER LOCK (PART OF 8)	1REF
19.	6C300020	STOP TUBE	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.



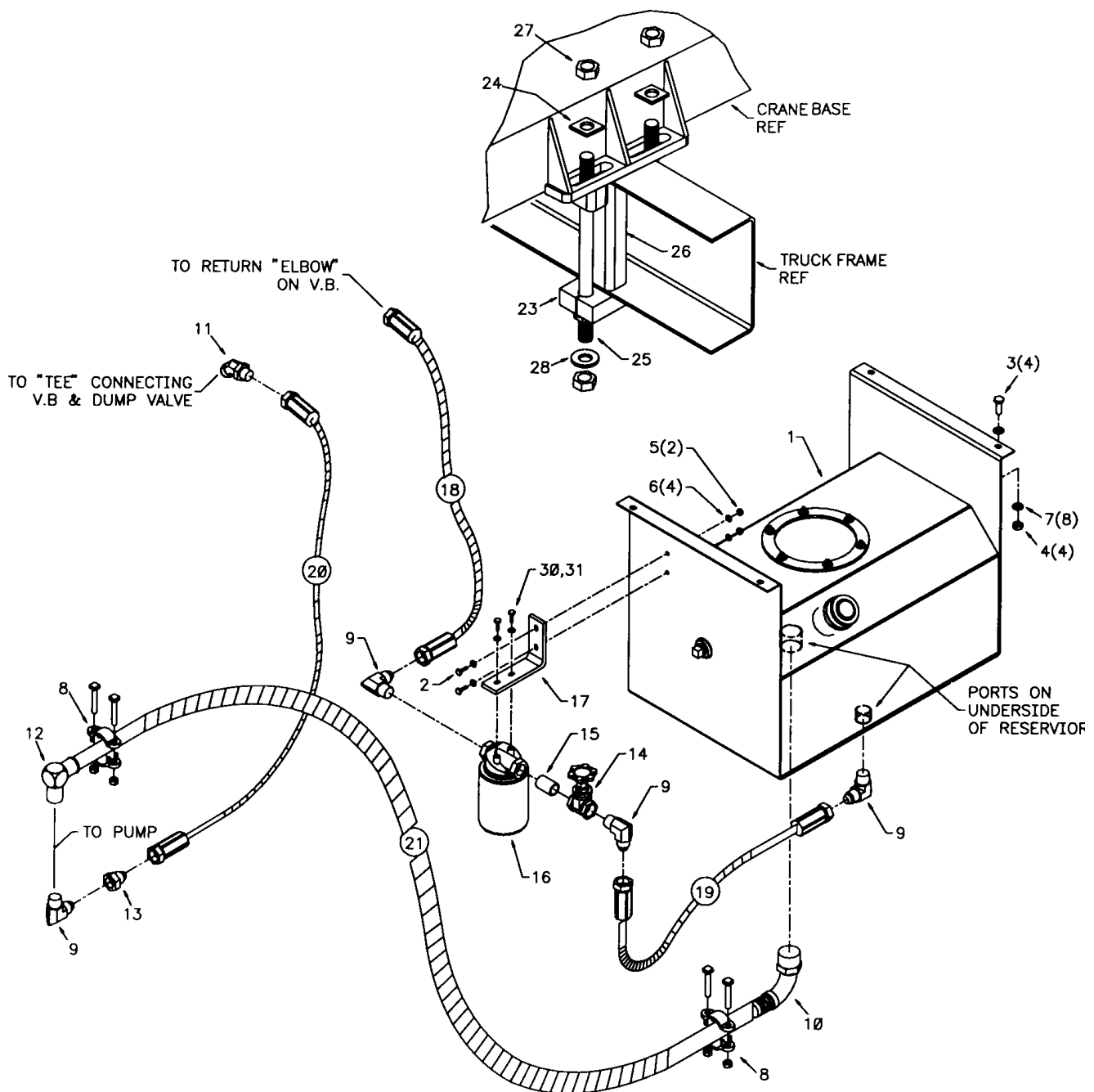


4300/680: 93704355.01.19980722

**INSTALLATION KIT (93704355)**

ITEM	PART NO.	DESCRIPTION	QTY				
1.	70732573	RESERVOIR ASM 17.3GAL	1REF	16.	73052000	HYD FILTER 10MIC 3/4NPTF	1
2.	72060004	CAP SCR 1/4-20X1 HHGR5Z	2	17.	60121443	OIL FILTER BRACKET	1
3.	72060046	CAP SCR 3/8-16X1 HHGR5Z	4	18.	51393468	HOSE 3/4X60 #12F#12F	1
4.	72062103	NUT 3/8-16 HEX NYLOC	4	19.	51394360	HOSE 3/4X24 #12F#12F	1
5.	72062104	NUT 1/4-20 HEX NYLOC	2	20.	51394916	HOSE 1/2X99 #8F#8F	1
6.	72063001	WASHER 1/4W	4	21.	60350060	HOSE 1-1/4 100R4 X 63	1
7.	72063003	WASHER 3/8W	8	23.	60010354	CLAMP PLATE	4
8.	72066516	HOSE CLAMP 1-1/4 2BOLT	2	24.	60107478	WASHER-SQUARE TIE DOWN	8
9.	72531427	ELBOW 3/4MPT #12MJIC 90°	4	25.	60107829	STUD-TIE DOWN 1X18	8
10.	72532346	BARB NIPPLE 1-1/4 1-1/4 90°	1	26.	52706660	SUPPORT-TRUCK FRAME 9-1/2	4
11.	72532670	ELBOW #8MJIC #8FJIC 45°	1	27.	72062141	NUT 1-8 HEX LOCK	16
12.	72532834	BEAD NIPPLE 1.00NPT 1-1/4 90°	1	28.	72063066	WASHER 1.00 HI STR	8
13.	72532972	ADPTR #8MJIC #12FJIC	1	30.	72060002	CAP SCR 1/4-20X3/4 HHGR5Z	2
14.	73054129	GATE VALVE 3/4 BRASS	1	31.	72063049	WASHER 1/4 LOCK	2

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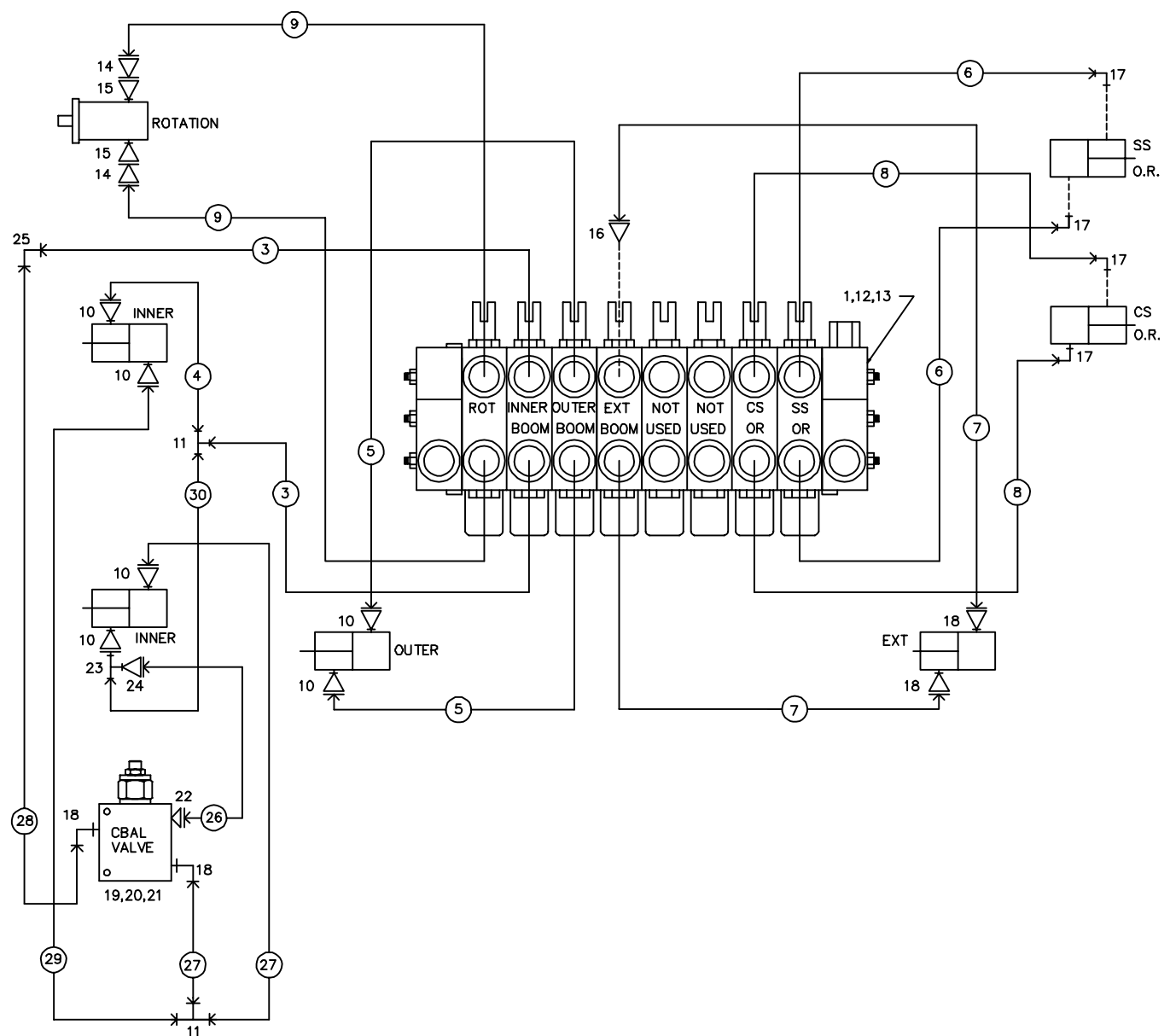
4300/680: 91712395.01.20010109

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**HYDRAULIC KIT (91712395)**

1. 51710944	VALVEBANK ASM	1REF
2. 51716365	HOSE KIT (INCL:3-9,26-30)	1
3. 51393921	HOSE ASM 3/8X30 #6F#8F	2REF
4. 51393922	HOSE ASM 3/8X26 #8F#8F	1REF
5. 51393923	HOSE ASM 3/8X111 #6F#8F	2REF
6. 51393924	HOSE ASM 3/8X105 #6F#6F	2REF
7. 51393925	HOSE ASM 3/8X212 #6F#8F	2REF
8. 51393926	HOSE ASM 3/8X83 #6F#6F	2REF
9. 51393928	HOSE ASM 1/4X51 #4F#4F	2REF
10. 72532358	ADAPTER #8MSTR #8MJIC	6
11. 72531205	TEE #8MJIC 1/2TUBE	2
12. 72062103	NUT 3/8-16 LOCK	3
13. 72060048	CAP SCR 3/8-16X1-1/2 HHGR5	3
14. 72532353	ADAPTER #6MSTR #4MJIC	2

15. 72532722	ADAPTER #10MSTR #6FSTR	2
16. 72532790	ADAPTER #6MJIC #8FJIC	1
17. 72532700	ELBOW #6MSTR #6MJIC XLG	4
18. 72053763	ELBOW #8MSTR #8MJIC 90°	4
19. 73540061	C'BAL VALVE	1
20. 72060008	CAP SCR 1/4-20X2 HHGR5	2
21. 72063049	WASHER 1/4 LOCK	2
22. 72532351	ADAPTER #4MSTR #4MJIC	1
23. 72532657	TEE #8JIC SWVLNUTRUN	1
24. 72532665	ADAPTER #4MJIC #8FJIC	1
25. 72533663	ELBOW #8MJIC #8MJIC 90°	1
26. 51395859	HOSE-FJ .25X14.5 #4#4	1REF
27. 51394424	HOSE-FF .38X12 #8#8	2REF
28. 51395858	HOSE-FF .38X20 #8#8	1REF
29. 51394588	HOSE-FF .38X41 #8#8	1REF
30. 51395954	HOSE-FJ .38X22 #8#8	1REF



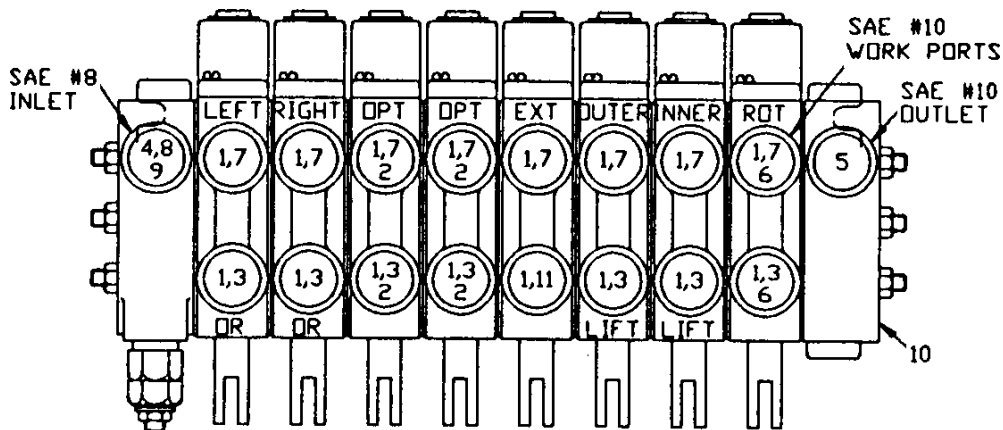


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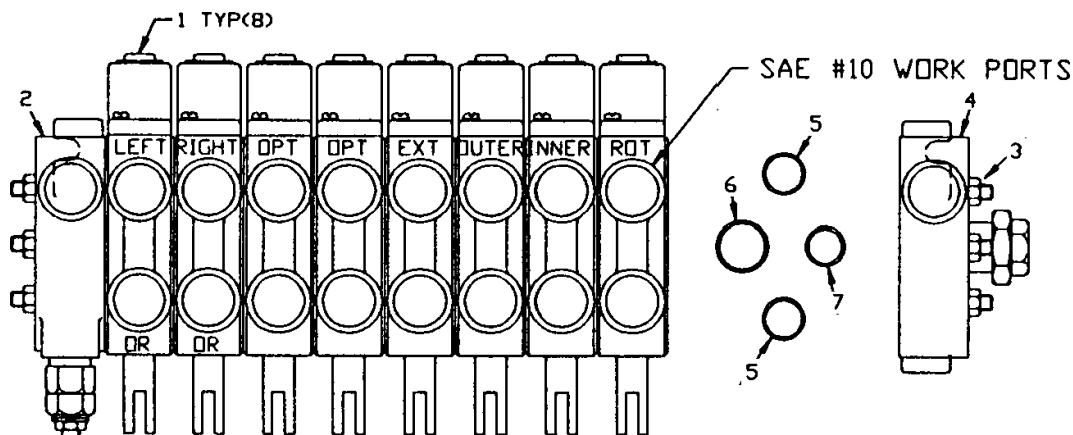
3-16

**VALVEBANK ASM-8 SECT/MNL  
(51710944)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	72532722	ADAPTER #10MSTR #6FSTR	16
2.	72532738	CAP 9/16JIC STL	4
3.	72053760	ELBOW #6MSTR #6MJIC 90°	7
4.	72053763	ELBOW #8MSTR #8MJIC 90°	1
5.	72053766	ELBOW #10MSTR #12MJIC 90°	1
6.	72532707	ADAPTER #4MJIC #6FJIC	2
7.	72532700	ELBOW #6MSTR #6MJIC XLG	8
8.	72532657	TEE 3/4JIC SWVL NUT	1
9.	72532675	CAP 3/4JIC STL	1
10.	70731499	VALVEBANK 8-SECTION	1
11.	72053763	ELBOW #6MSTR #8MJIC 90°	1

**VALVEBANK (70731499)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	73054490	TANDEM VALVE SECTION	8
2.	73054488	END CAP LH	1
3.	94731681	TIE ROD KIT	1
4.	73731576	END CAP RH	1
5.	7Q072018	O-RING	18
6.	7Q072021	O-RING	9
7.	7Q072017	O-RING	9



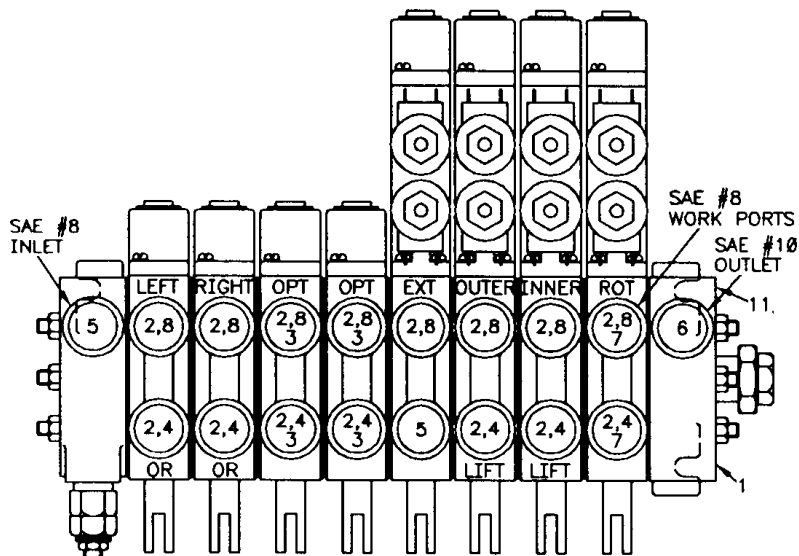


4300/680: 51711707.01.19980519

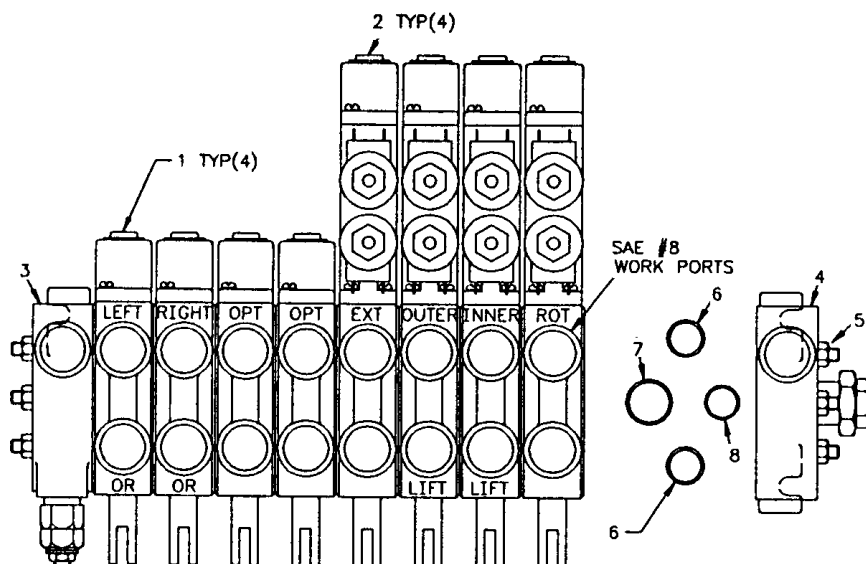
3-17

**VALVEBANK ASM 4R/4M (51711707)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	70732848	VALVEBANK 8-SECT	1
2.	72533052	ADAPTER #8MSTR #6FSTR	15
3.	72532738	CAP 9/16JIC	4
4.	72053760	ELBOW #6MSTR #6MJIC 90°	7
5.	72053763	ELBOW #8MSTR #8MJIC 90°	2
6.	72053766	ELBOW #10MSTR #12MJIC 90°	1
7.	72532707	ADAPTER #4MJIC #6FJIC	2
8.	72532700	ELBOW #6MSTR #6MJIC XLG	8
11.	72053764	ELBOW #10MSTR #8MJIC 90°	1

**VALVEBANK (70732848)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	73540007	VALVE SECTION-MNL	4
2.	73054845	VALVE SECTION-RMT	4
3.	73054488	END COVER LH	1
4.	73540009	END COVER RH	1
5.	94731681	TIE ROD KIT	1
6.	7Q072018	O-RING	18
7.	7Q072021	O-RING	9
8.	7Q072017	O-RING	9



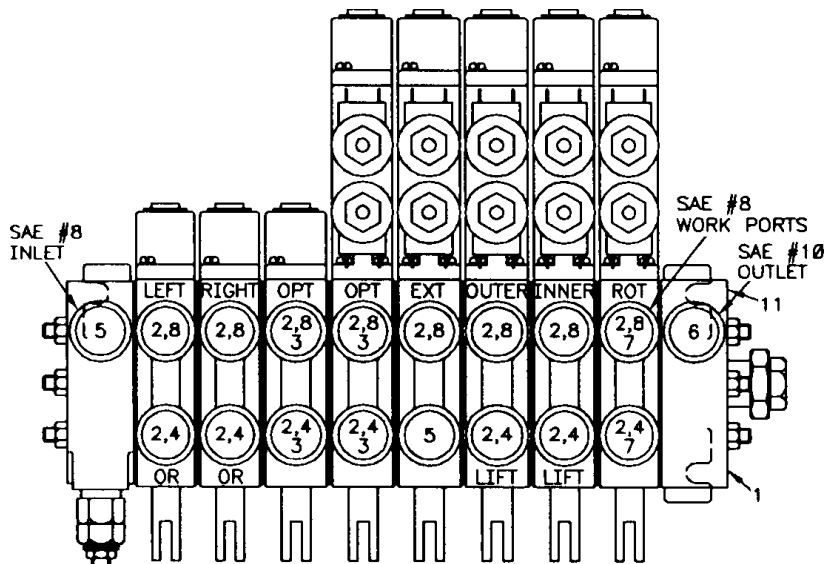


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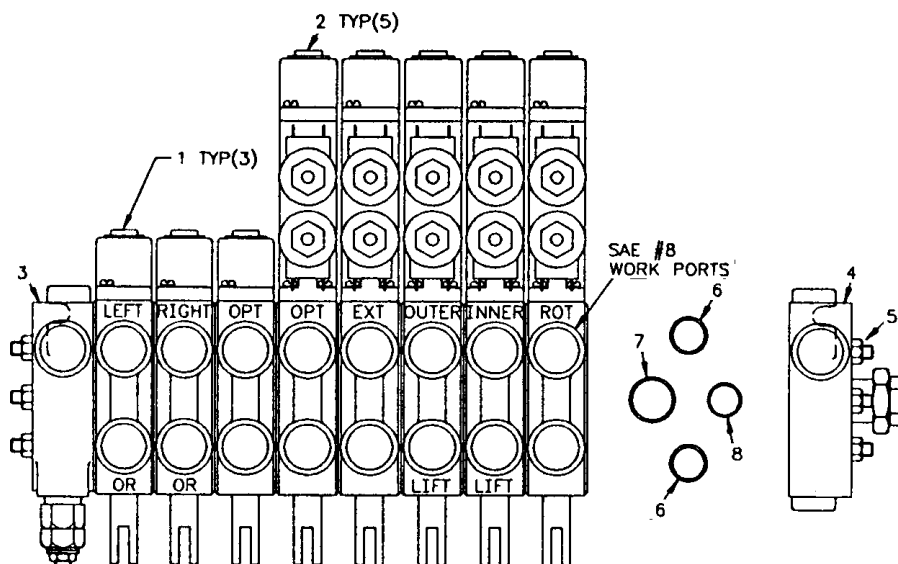
3-18

**VALVEBANK ASM 5R/3M (51711706)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	70732847	VALVEBANK 8-SECT	1
2.	72533052	ADAPTER #8MSTR #6FSTR	15
3.	72532738	CAP 9/16JIC	4
4.	72053760	ELBOW #6MSTR #6MJIC 90°	7
5.	72053763	ELBOW #8MSTR #8MJIC 90°	2
6.	72053766	ELBOW #10MSTR #12MJIC 90°	1
7.	72532707	ADAPTER #4MJIC #6FJIC	2
8.	72532700	ELBOW #6MSTR #6MJIC XLG	8
11.	72053764	ELBOW #10MSTR #8MJIC 90°	1

**VALVEBANK (70732847)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	73540007	VALVE SECTION-MNL	3
2.	73054845	VALVE SECTION-RMT	5
3.	73054488	END COVER LH	1
4.	73540009	END COVER RH	1
5.	94731681	TIE ROD KIT	1
6.	7Q072018	O-RING	18
7.	7Q072021	O-RING	9
8.	7Q072017	O-RING	9



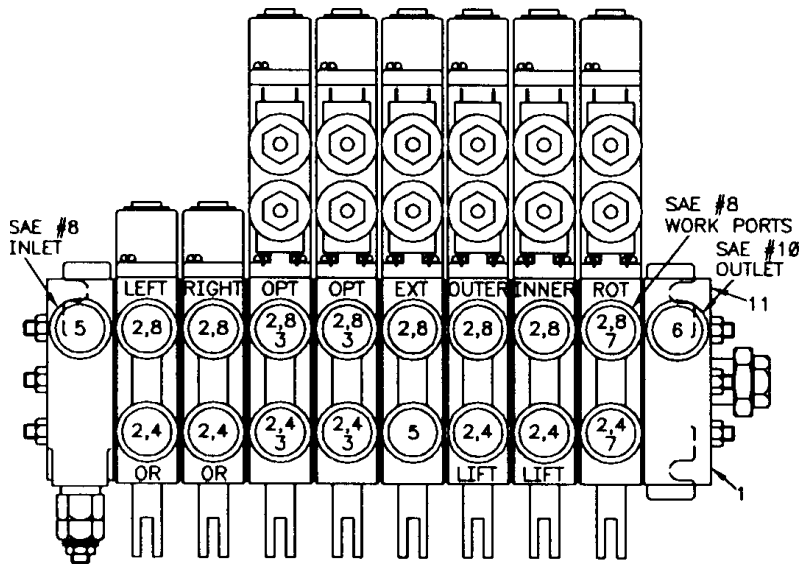


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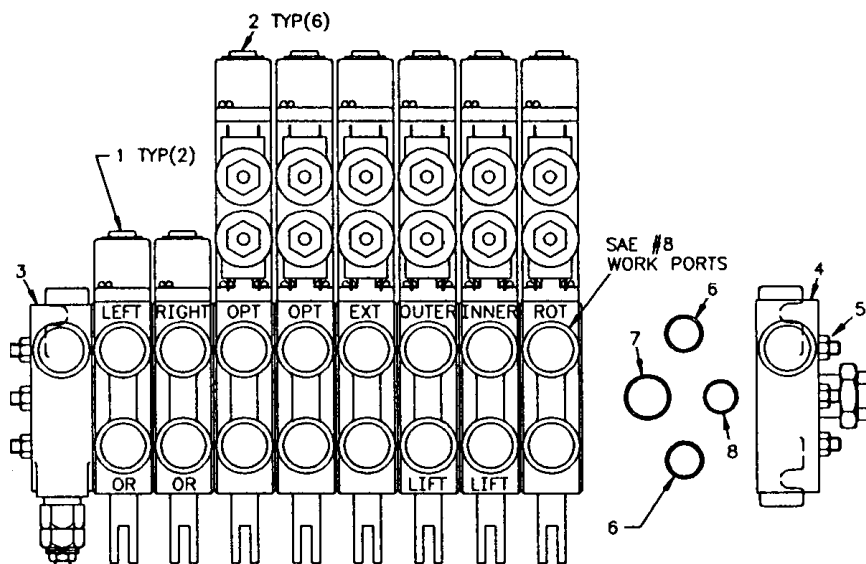
3-19

**VALVEBANK ASM 6R/2M (51711708)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	70732849	VALVEBANK 8-SECT	1
2.	72533052	ADAPTER #8MSTR #6FSTR	15
3.	72532738	CAP 9/16JIC	4
4.	72053760	ELBOW #6MSTR #6MJIC 90°	7
5.	72053763	ELBOW #8MSTR #8MJIC 90°	2
6.	72053766	ELBOW #10MSTR #12MJIC 90°	1
7.	72532707	ADAPTER #4MJIC #6FJIC	2
8.	72532700	ELBOW #6MSTR #6MJIC XLG	8
11.	72053764	ELBOW #10MSTR #8MJIC 90°	1

**VALVEBANK (70732849)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	73540007	VALVE SECTION-MNL	2
2.	73054845	VALVE SECTION-RMT	6
3.	73054488	END COVER LH	1
4.	73540009	END COVER RH	1
5.	94731681	TIE ROD KIT	1
6.	7Q072018	O-RING	18
7.	7Q072021	O-RING	9
8.	7Q072017	O-RING	9



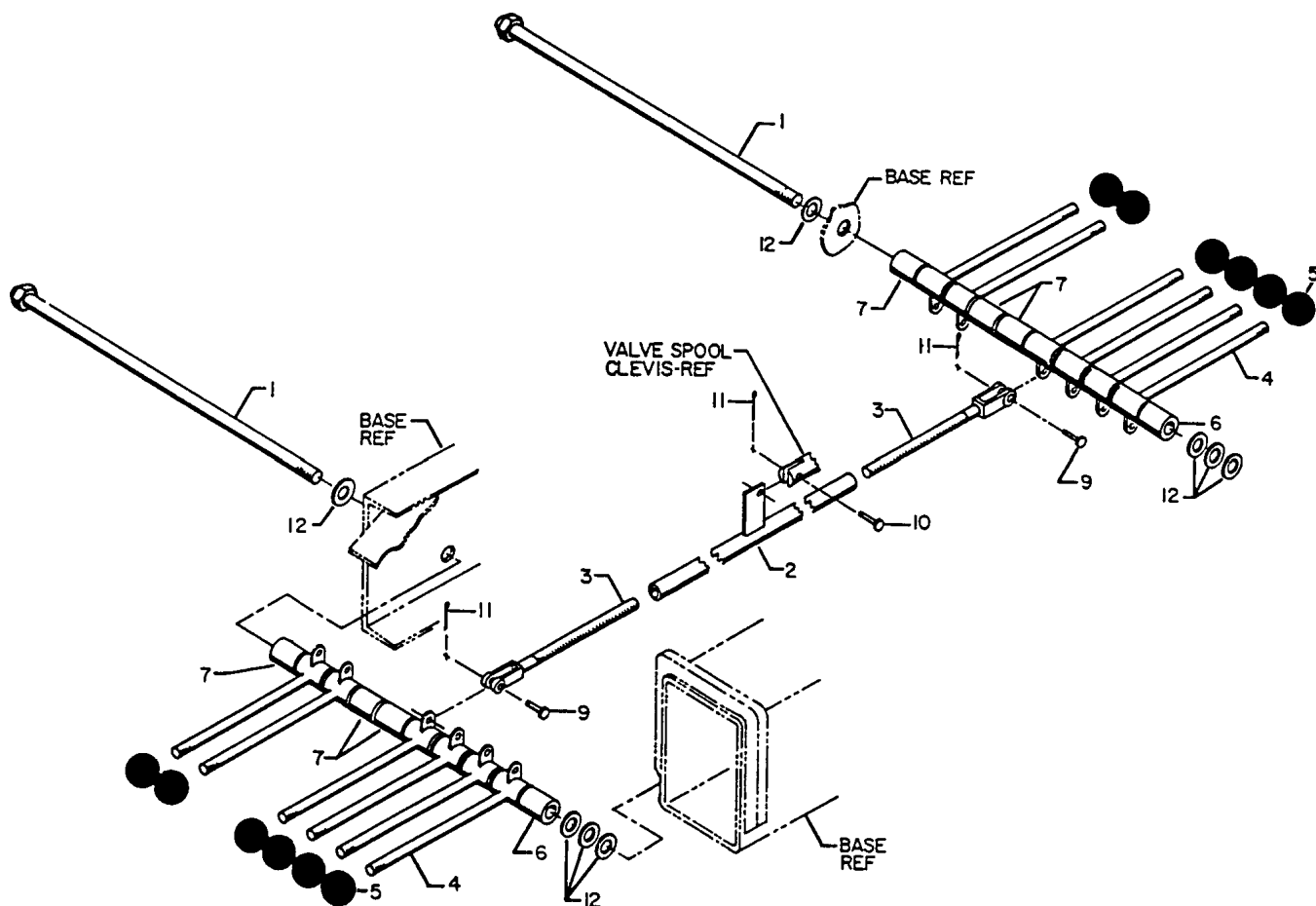


4300/680: 90704417.01.19961111

3-20

### MANUAL CONTROL KIT (90704417)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52704397	CTRL HANDLE MTG ROD	2
2.	52704744	CONTROL ROD	6
3.	52704745	CONTROL ROD	12
4.	70029451	CONTROL HANDLE	12
5.	71039096	KNOB	12
6.	60030068	SPACER 1-3/8	2
7.	60030069	SPACER 1-3/4	6
9.	72066338	CLEVIS PIN	12
10.	72661169	CLEVIS PIN	6
11.	72066168	COTTER PIN	18
12.	72063119	WASHER 5/8	8







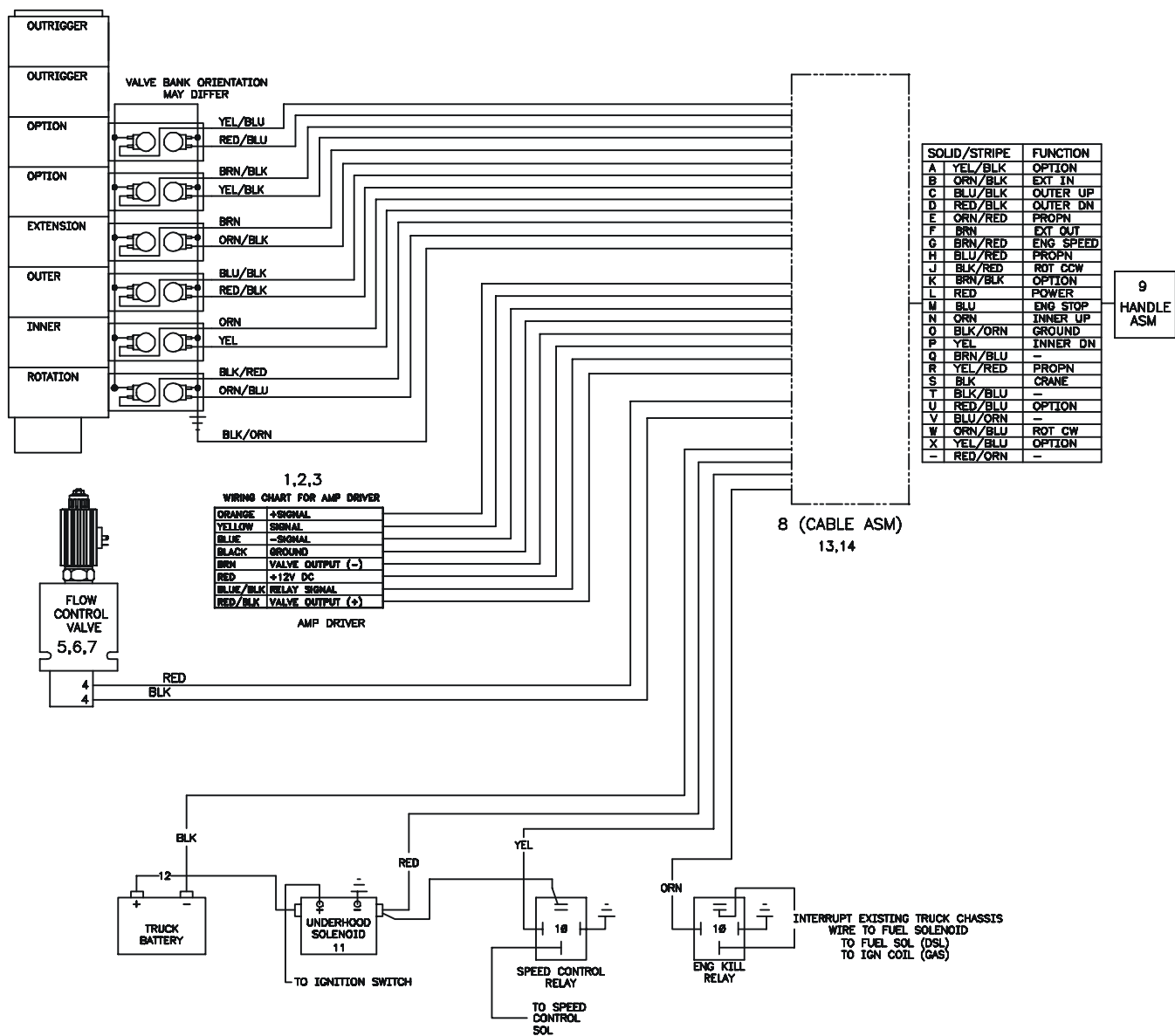
4300/680: 90713554.01.20010416

3-21

**REMOTE CONTROL KIT (90716707)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	77044837	VALVE DRIVER	1
2.	72060703	CAP SCR 1/4-20X1/2 SH	2
3.	72063049	WASHER 1/4 LOCK	2
4.	77040186	TERMINAL 1/4 FSLPON 16-14GA	2
5.	73054876	FLOW VALVE	1
6.	72060051	CAP SCR 3/8-16X2-1/4 HHGR5	2
7.	72062103	NUT 3/8-16 LOCK	2
8.	51713568	CABLE ASM	1
9.	51713429	HANDLE ASM	1
10.	77041251	RELAY	2
11.	77041237	SOLENOID 12V	1
12.	51704784	CABLE ASM #1WIRE X 6	1
13.	72060004	CAP SCR 1/4-20X1 HHGR5	4
14.	72062104	NUT 1/4-20 LOCK	4

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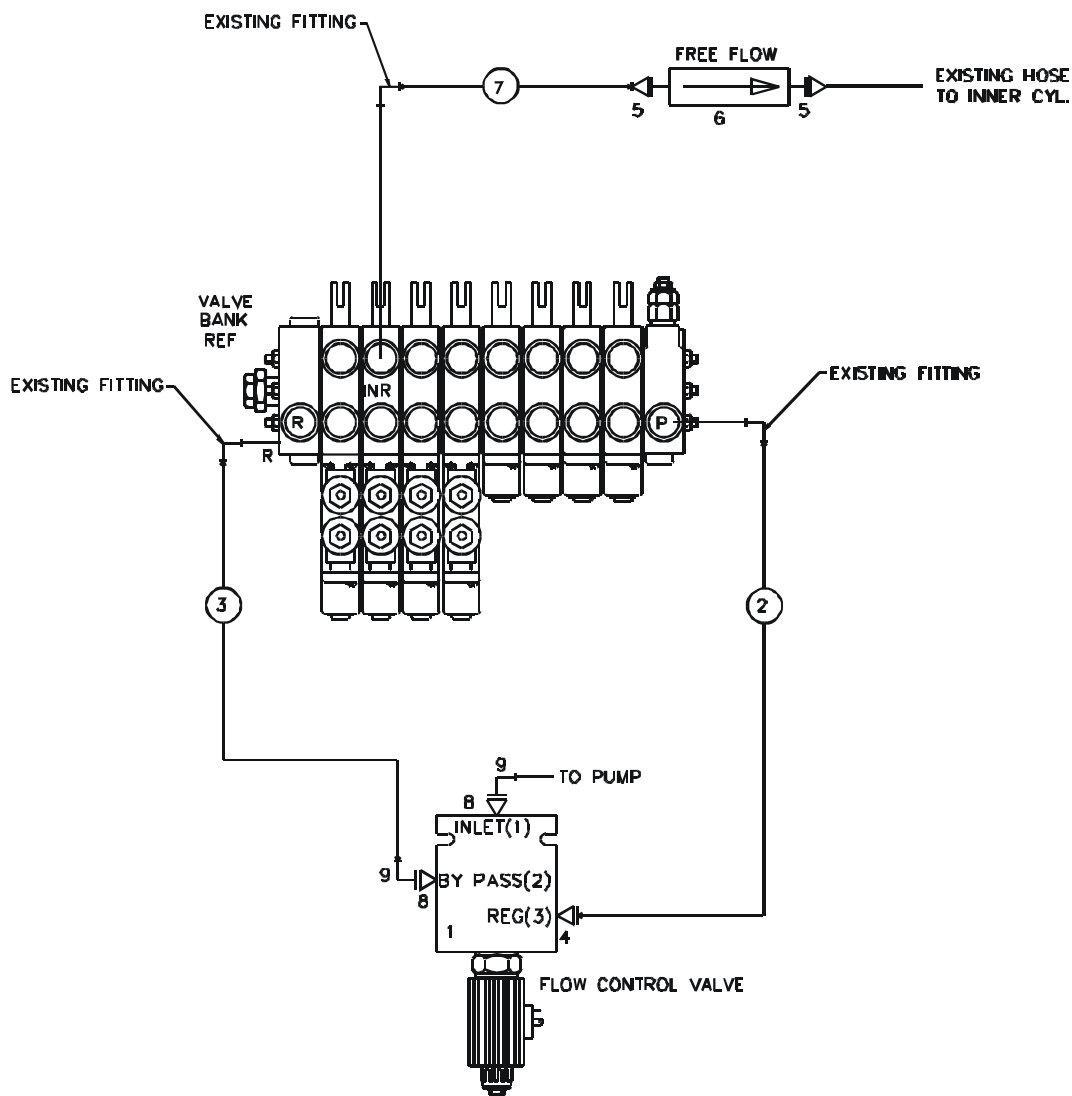


4300/680: 90716707.01.20010416

3-22

## SCHEMATIC – REMOTE CONTROL KIT V12R (90716707)

ITEM	PART NO.	DESCRIPTION	QTY
1.	73054876	VALVE-PROP N PRIORITY FLOW REF	
2.	51709389	HOSE ASM 1/2X14 #8F#8F	1
3.	51716706	HOSE ASM 1/2X9 #8F#8F	1
4.	72532360	ADAPTER #12MSTR #8MJIC	1
5.	72532358	ADAPTER #8MSTR #8MJIC	2
6.	73054426	RELIEF VALVE 750 PSI	1
7.	51708692	HOSE ASM 3/8X4 #8F#8F	1
8.	72532951	ADAPTER #12MSTR #8FSTR	2
9.	72053763	ELBOW #8MSTR #8MJIC 90°	3





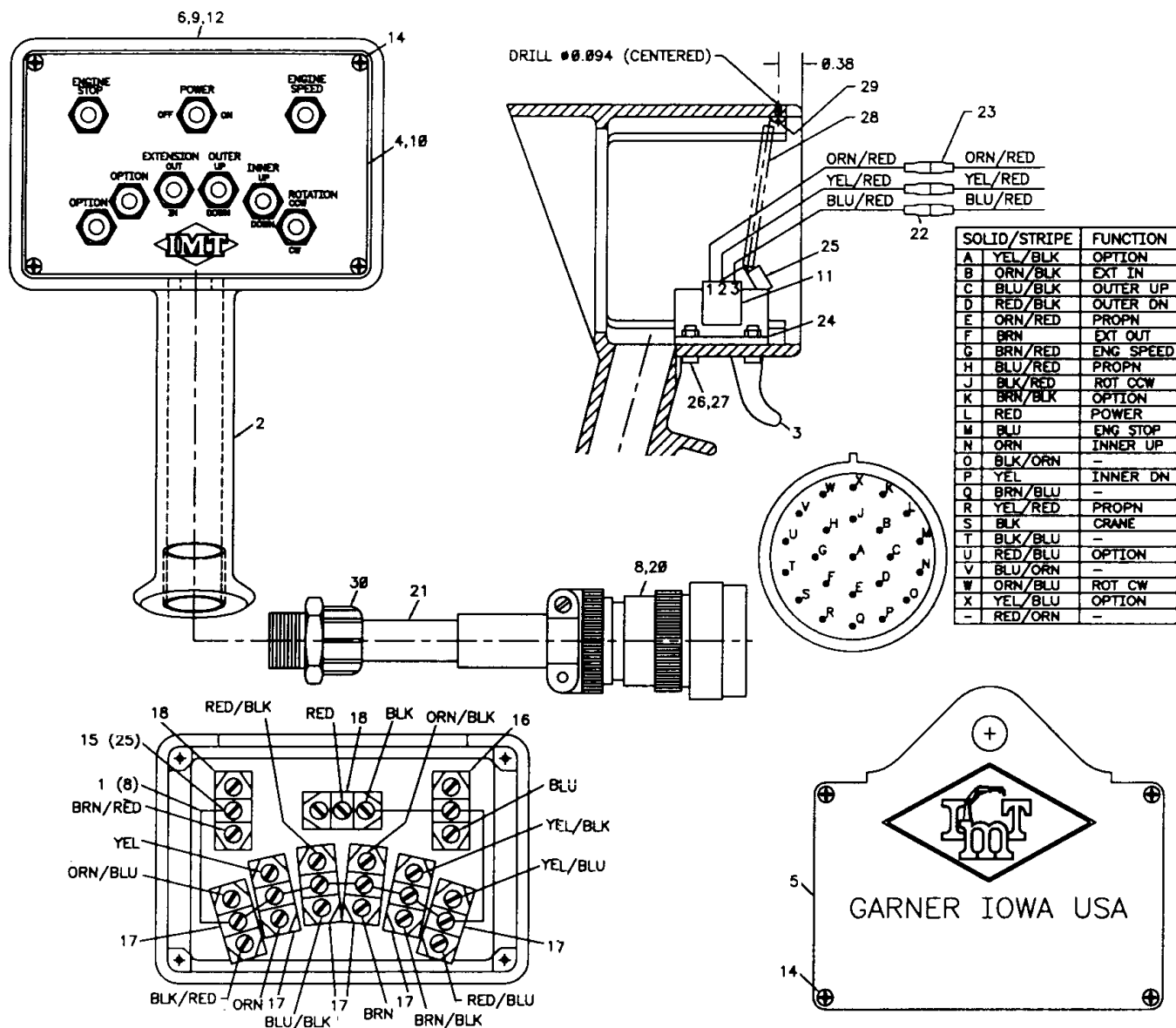
4300/680: 51713429.01.19980220

**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

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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





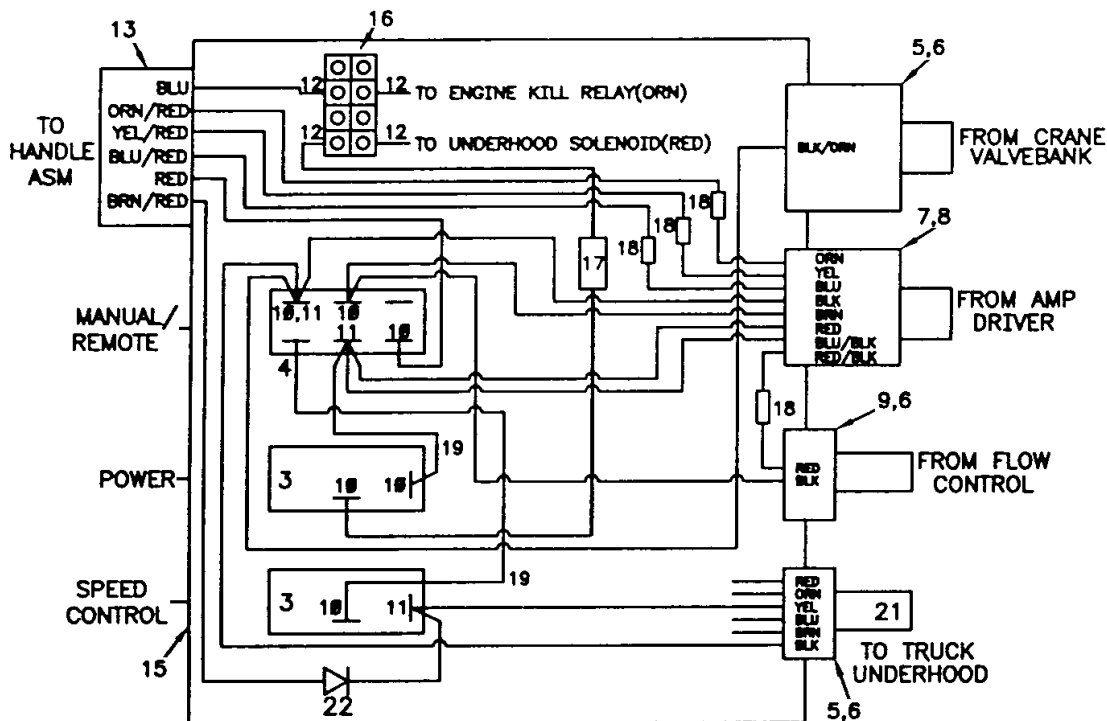
4300/680: 51713568.01.19980220

3-24

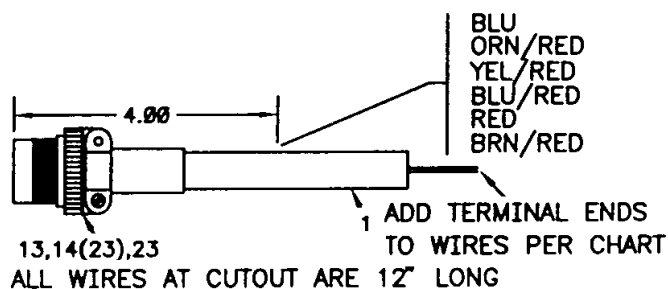
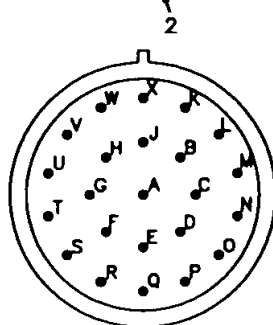
**CABLE ASM-JIC BOX 94" (51713568)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	89044100	CABLE 18GA/24WIRE X 94	1
2.	90713575	JIC BOX	1
3.	77041345	TOGGLE SWITCH ST	2
4.	77041354	TOGGLE SWITCH DT	1
5.	77044018	STRAIN RELIEF 1/2	2
6.	77044201	NUT 1/2 ELEC LOCK	3
7.	77044196	STRAIN RELIEF 3/4	1
8.	77044202	NUT 3/4 ELEC LOCK	1
9.	77044468	STRAIN RELIEF 1/2	1
10.	77040186	TERM 1/4 FSLPON 16-14GA	25
11.	77040282	TERM 1/4 PIGBAC 16-14GA	3

12.	77040051	TERM #8 SPRSPD 16-14GA	4
13.	77044620	CONNECTOR	1
14.	77044580	SOCKET	23
15.	70393257	DECAL-JIC BOX	1
16.	77044341	TERMINAL BLOCK-4	1
17.	77041056	FUSE 20A IN-LINE	1
18.	77040048	BUTT CONNECTOR 16-14GA	4
19.	89044232	WIRE 14GA RED X 3	2
20.	77044668	PLUG-SEAL	1
21.	89044354	CABLE 14GA/6WIR	84"
22.	77041423	DIODE	1
23.	77044667	PLUG-CAP	1



SOLID/STRIPE	TERM	ITEM NO
A	YEL/BLK	10
B	ORN/BLK	10
C	BLU/BLK	10
D	RED/BLK	10
E	ORN/RED	10
F	BRN	10
G	BRN/RED	10
H	BLU/RED	10
J	BLK/RED	10
K	BRN/BLK	10
L	RED	10
M	BLU	12
N	ORN	10
O	#20	-
P	YEL	10
Q	BRN/BLU	-
R	YEL/RED	10
S	BLK	10
T	BLK/BLU	-
U	RED/BLU	10
V	BLU/ORN	-
W	ORN/BLU	10
X	YEL/BLU	10
-	RED/ORN	-



13,14(23),23

ALL WIRES AT CUTOUT ARE 12" LONG



4300/680: 95712104.01.20000516

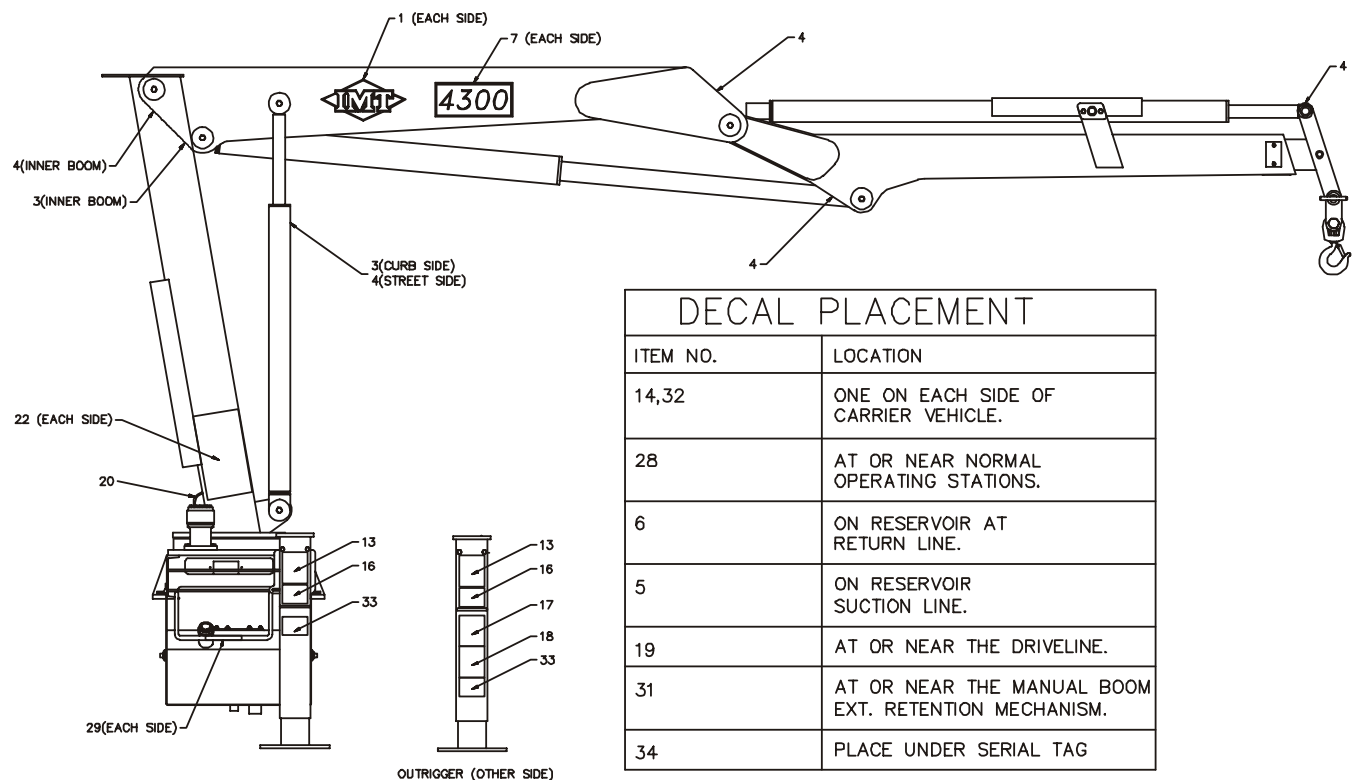
3-25

**DECAL KIT-4300 SERIES CRANE  
(95712104-1)**

1.	70029251	PLACARD-IMT DIAMOND	2
2.	70391583	DECAL-SET UP/STOW	2
3.	70391612	DECAL-GREASE WEEKLY-LT	4
4.	70391613	DECAL-GREASE WEEKLY-RT	5
5.	70392108	DECAL-SUCTION LINE	1
6.	70392109	DECAL-RETURN LINE	1
7.	71393826	DECAL-4300 IDENTIFICATION	2
8.	70392213	DECAL-CAUTION WASH/WAX	1
9.	70392524	DECAL-ROTATE CRNE/GREASE	1
10.	70392813	DECAL-DANGER ELECTRO	2
11.	70392814	DECAL-DANGER OPERATOR	2
12.	70392815	DECAL-DANGER OPERATION	2
13.	70392864	DECAL-DANGER OR STD CLR	2
14.	70392865	DECAL-DANGER ELECTRO	4
15.	70392866	DECAL-DANGER OPER COND	2
16.	70392867	DECAL-DANGER OR MOVING	2

**CONTINUED**

17.	70392888	DECAL-DGR OPER RESTRICT	2
18.	70392890	DECAL-DGR STOW/UNFOLD	2
19.	70392891	DECAL-DANGER DRIVELINE	2
20.	70392982	DECAL-CONTACT IMT	1
21.	71039134	DECAL-CAUTION OIL LEVEL	1
22.	71393821	CAPACITY PLACARD	2
23.	71392255	DECAL-CONTROL-LT	1
24.	71392256	DECAL-CONTROL-RT	1
25.	71392257	DECAL-OUTRGR PWR DN-LT	1
26.	71392258	DECAL-OUTRGR PWR DN-RT	1
27.	71392365	DECAL-ALIGNMENT CRNE ROT	1
28.	70392889	DECAL-DANGER RC ELECTRO	2
29.	70394190	DECAL-CAUTION NOT A STEP	2
30.	70394189	PLACARD-OIL REC	1
31.	70394443	DECAL-DGR FREEFALLING BM	1REF
32.	70392868	DECAL-DANGER CR LOADLINE	4
33.	70392863	DECAL-DANGER HOIST PERS	2
34.	70395323	DECAL-ASME/ANSI B30.22	1

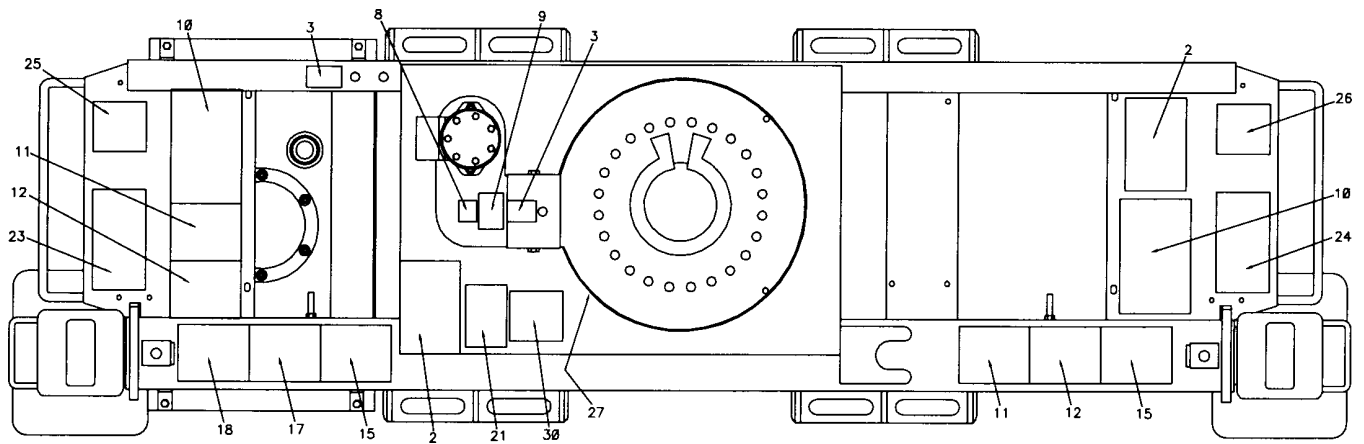




4300/680: 95712104.02.19970529

3-26

**DECAL KIT-4300 SERIES CRANE  
(95712104-2)**



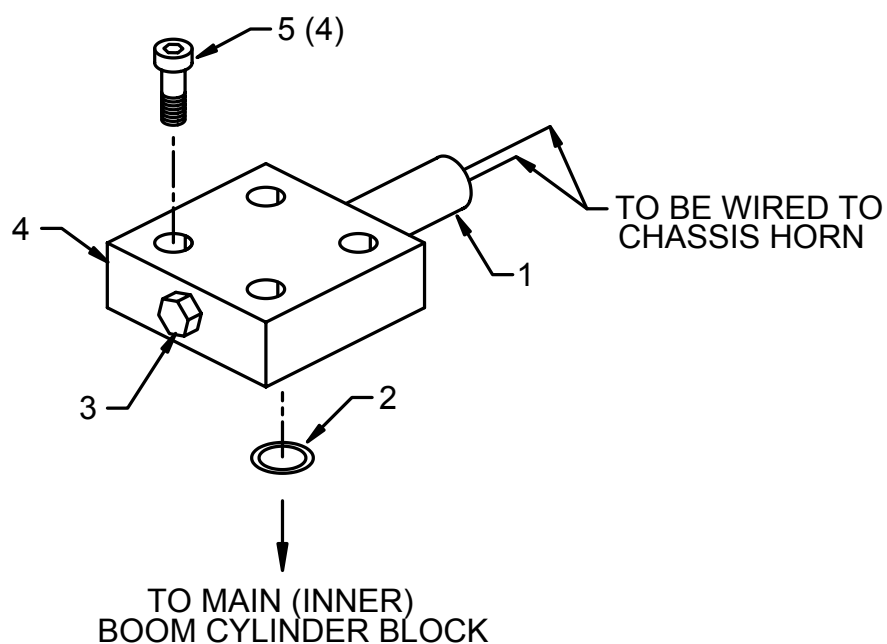


4300/680: 31705698.01.20020722

3-27

**CAPACITY ALERT KIT-AUDIBLE**  
**(31705698)**

1.	77041652	PRESSURE SWITCH	1
2.	7Q072015	O-RING	1
3.	72532140	PLUG-9/16 STR HH STL	1
4.	60025221	MANIFOLD	1
5.	72060731	CAP SCR 5/16-18 X 3/4 SH	4



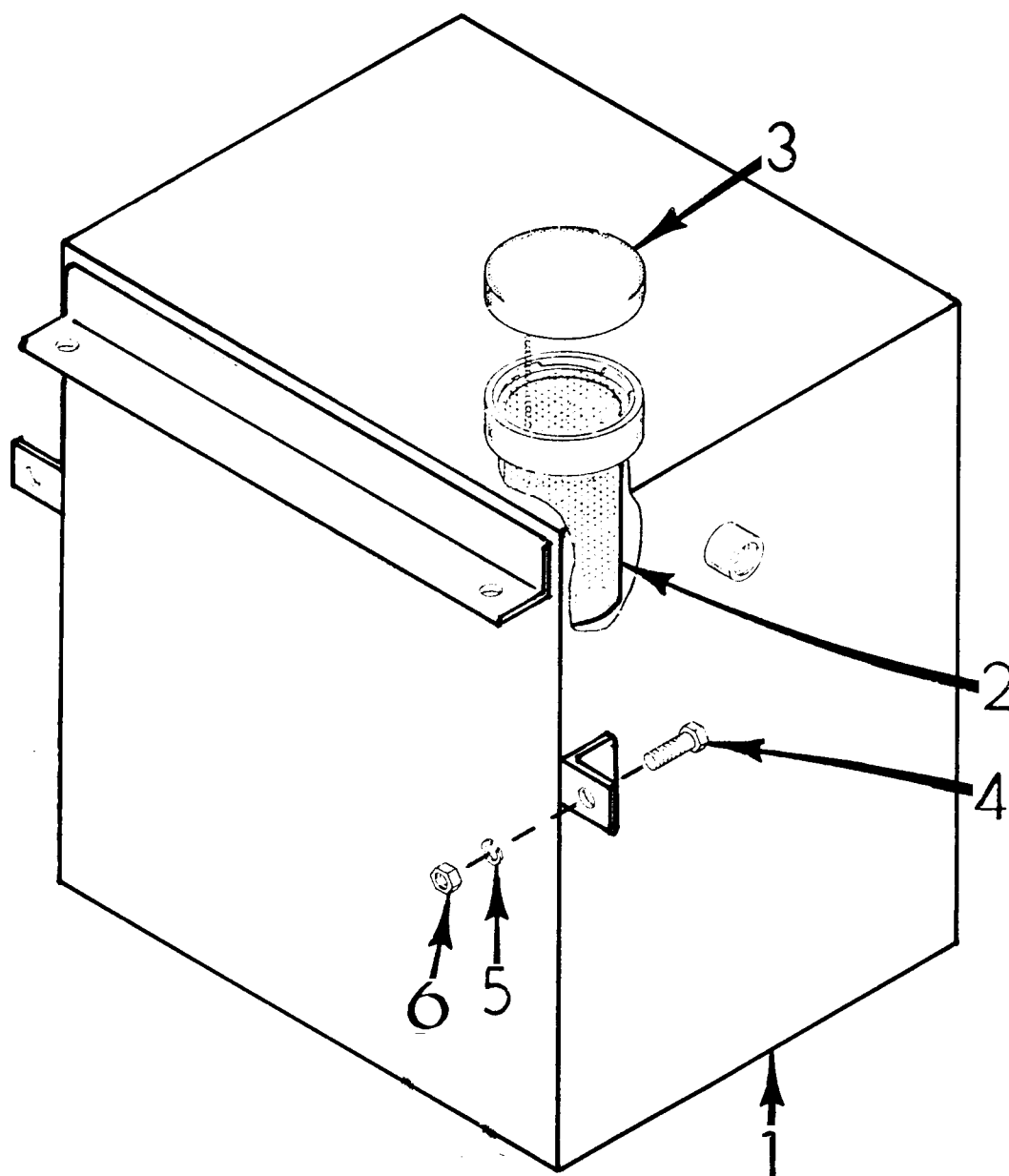


4300/680: 31701760.01.19961111

3-28

**OPTION-AUX RESERVOIR-30 GAL  
(31701760)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	52701550	RESERVOIR	1
2.	73141276	STRAINER	1
3.	73014671	FILL CAP	1
4.	72060093	CAP SCR 1/2-13X1-1/2 HHGR5	4
5.	72063053	WASHER 1/2 LOCK	4
6.	72062004	NUT 1/2-13 HEX	4





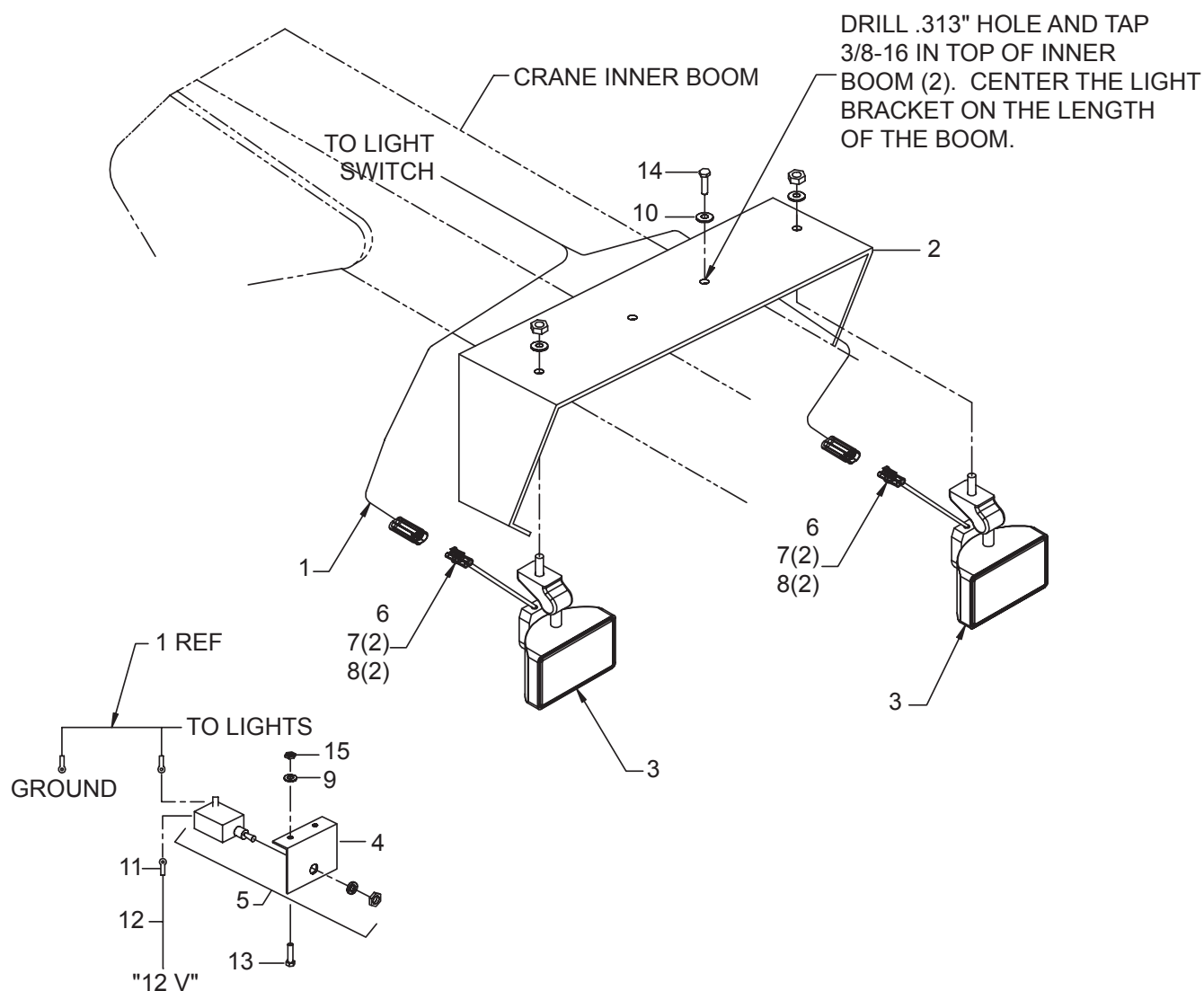


4300/680: 31717218.01.20011127

3-29

**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"
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	



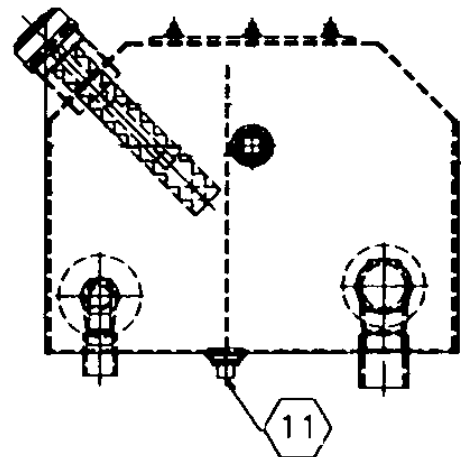
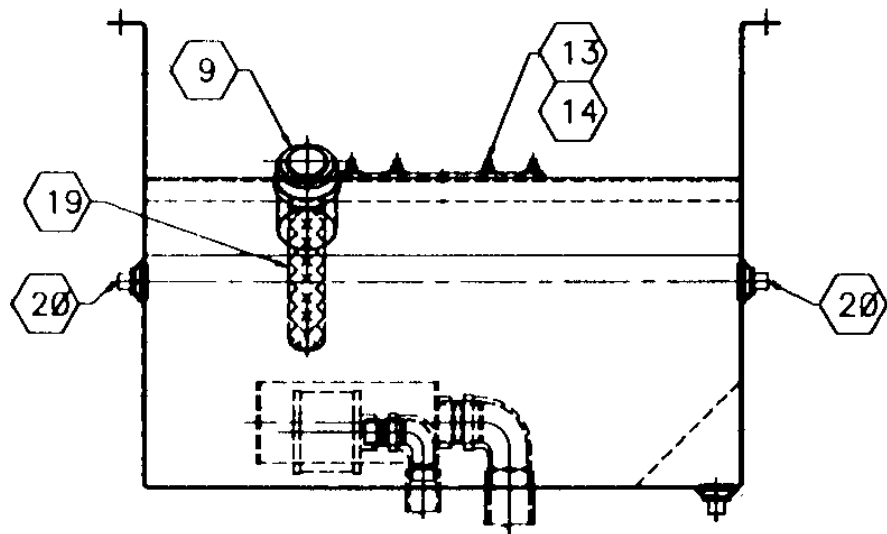
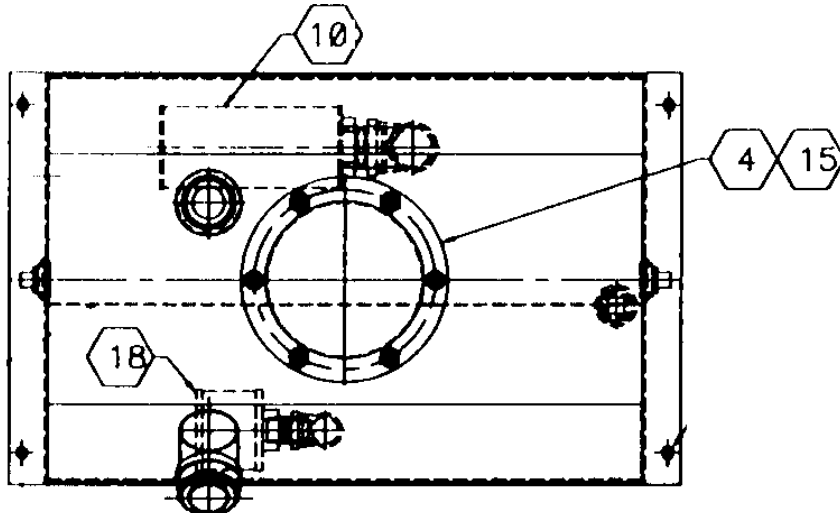


4300/680: 70732573.01.19980722

3-30

### RESERVOIR ASM (70732573)

ITEM	PART NO.	DESCRIPTION	QTY
4.	(530047)	COVER	1
9.	(820117)	DIPSTICK ASM	1
10.	70144326	STRAINER 100MESH	1
11.	73052001	PLUG 3/4FPT SQHD MAGNETIC	1
13.	72062000	NUT 1/4-20 HEX	6
14.	72063001	WASHER 1/4 FLAT	6
15.	76393565	O-RING	1
18.	70034410	DIFFUSER 3/4NPT	1
19.	70732791	SCREEN 100MESH	1
20.	72053415	PLUG 3/4 SQHD STEEL	2





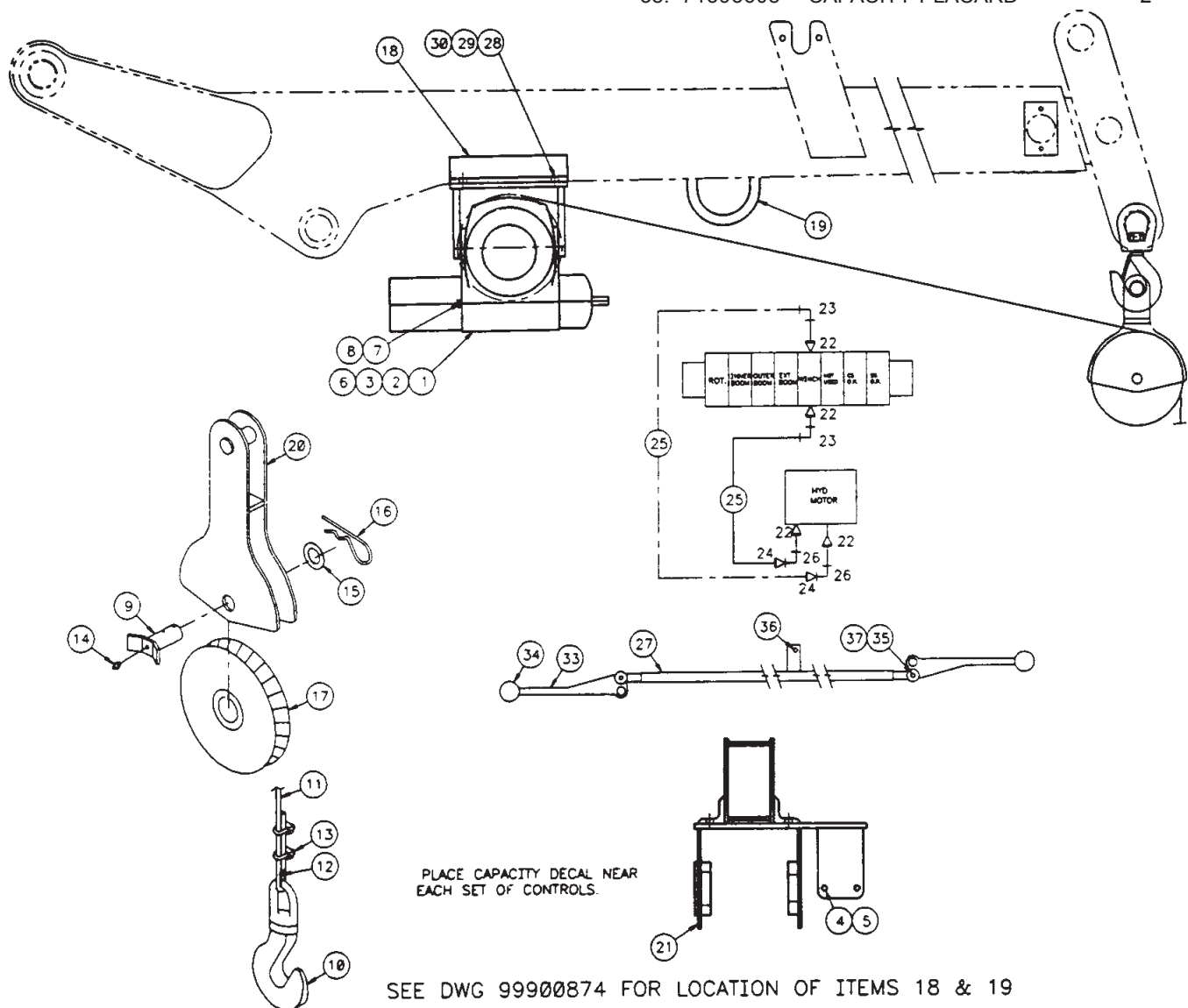
4300/680: 31713257.01.20030721

3-31

**WINCH KIT W/MNL CTRLS (31713257)**

ITEM	PART NO.	DESCRIPTION	QTY
1.	60025211	DRUM	1
2.	70055142	BEARING	1
3.	51711082	SPEED REDUCER	1
4.	72060046	CAP SCR 3/8-16X1	4
5.	72063051	WASHER 3/8 LOCK	4
6.	73051690	MOTOR	1
7.	72060063	CAP SCR 7/16-14X1-1/4	2
8.	72063052	WASHER 7/16 LOCK	2
9.	52704255	PIN	1
10.	71073921	HOOK 2-TON	1
11.	89058903	CABLE 5/16 X 65'	1
12.	70058026	THIMBLE	1
13.	70058909	CLAMP 5/16	2
14.	72053508	ZERK	1
15.	72063030	WASHER	1
16.	72066145	HAIR PIN 3/16	1
17.	60030082	SHEAVE 7"	1
18.	60119521	ANGLE	2

19.	60107589	LOOP	1
20.	52711079	SHEAVE BRACKET	1
21.	52711081	WINCH MTG BRACKET	1
22.	72532722	ADAPTER #10MSTR #6FSTR	4
23.	72053760	ELBOW #6MSTR #6MJIC 90°	2
24.	72532707	ADAPTER #4MJIC #6FJIC	2
25.	51711085	HOSE ASM FF 258"	2
26.	72532699	ELBOW #6MSTR #4MJIC 90°	1
27.	52704744	CONTROL ROD (was 52704397)	1
28.	72060093	CAP SCR 1/2-13X1-1/2	4
29.	72062004	NUT 1/2-13 HEX	4
30.	72063053	WASHER-LOCK	4
31.	99900874	MODIFICATION DRAWING	1
32.	52704745	CONTROL ROD	2
33.	70029451	CONTROL HANDLE	2
34.	71039096	KNOB	2
35.	72066338	CLEVIS PIN	2
36.	72661169	CLEVIS PIN	1
37.	72066168	COTTER PIN	3
38.	71393608	CAPACITY PLACARD	2





4300/680: 95711907.01.20000516

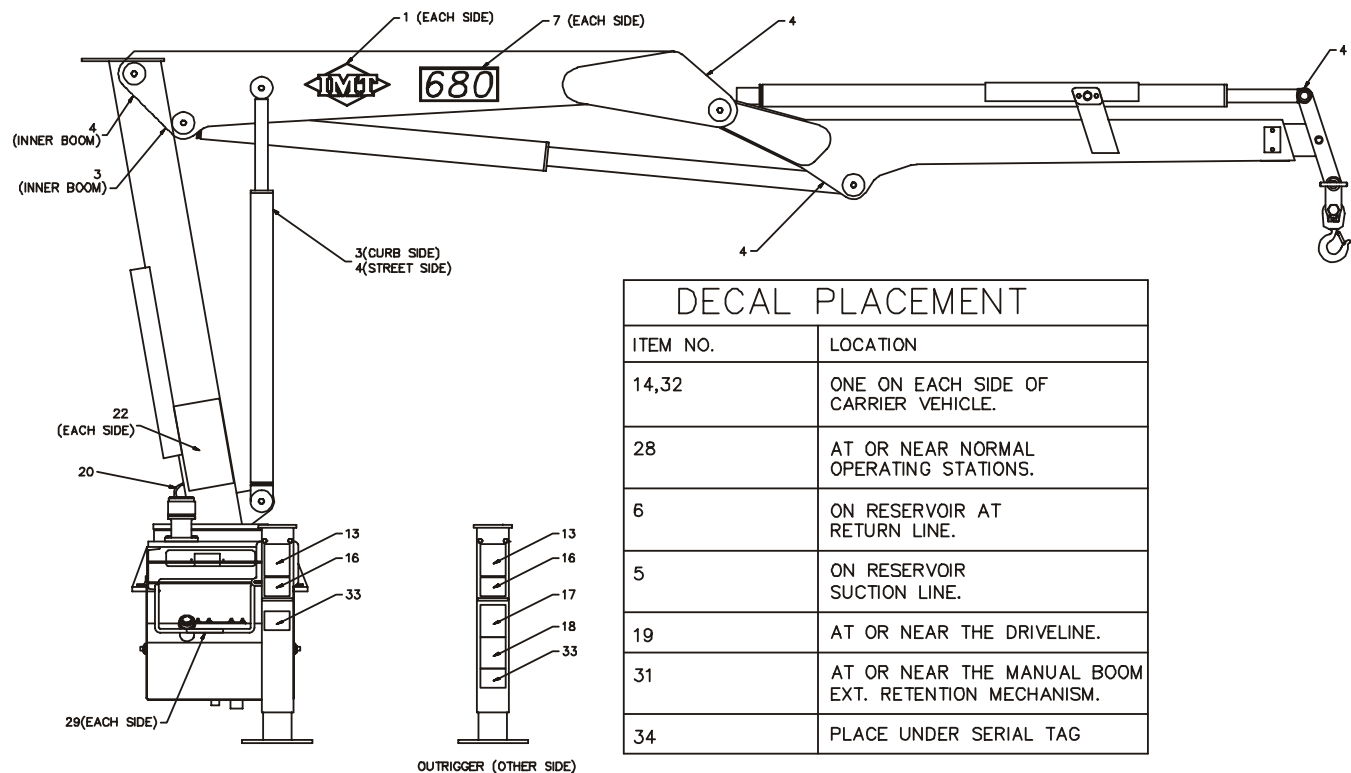
3-32

**DECAL KIT-MODEL 680 CRANE  
(95711907-1)**

1.	70029251	PLACARD-IMT DIAMOND	2
2.	70391583	DECAL-SET UP/STOW	2
3.	70391612	DECAL-GREASE WEEKLY-LT	4
4.	70391613	DECAL-GREASE WEEKLY-RT	5
5.	70392108	DECAL-SUCTION LINE	1
6.	70392109	DECAL-RETURN LINE	1
7.	71393790	DECAL-680 IDENTIFICATION	2
8.	70392213	DECAL-CAUTION WASH/WAX	1
9.	70392524	DECAL-ROT CRANE/GREASE	1
10.	70392813	DECAL-DANGER ELECTRO	2
11.	70392814	DECAL-DANGER OPERATOR	2
12.	70392815	DECAL-DANGER OPERATION	2
13.	70392864	DECAL-DANGER OR STD CLR	2
14.	70392865	DECAL-DANGER ELECTRO	4
15.	70392866	DECAL-DANGER OPER COND	2
16.	70392867	DECAL-DANGER OR MOVING	2
17.	70392888	DECAL-DGR OPER RESTRICT	2

**CONTINUED**

18.	70392890	DECAL-DNGR STOW/UNFOLD	2
19.	70392891	DECAL-DANGER DRIVELINE	2
20.	70392892	DECAL-CONTACT IMT	1
21.	71039134	DECAL-CAUTION OIL LEVEL	1
22.	71393772	CAPACITY PLACARD	2
23.	71392255	DECAL-CONTROL-LT	1
24.	71392256	DECAL-CONTROL-RT	1
25.	71392257	DECAL-OUTRGR PWR DN-LT	1
26.	71392258	DECAL-OUTRGR PWR DN-RT	1
27.	71392365	DECAL-ALIGN CRANE ROT	1
28.	70392889	DECAL-DANGER RC ELECTRO	2
29.	70394190	DECAL-CAUTION NOT A STEP	2
30.	70394189	PLACARD-OIL REC	1
31.	70394443	DECAL-DGR FREEFALLING BM	1REF
32.	70392868	DECAL-DANGER CR LOADLINE	4
33.	70392863	DECAL-DANGER HOIST PERS	2
34.	70395323	DECAL-ASME/ANSI B30.22	1

**DECAL PLACEMENT**

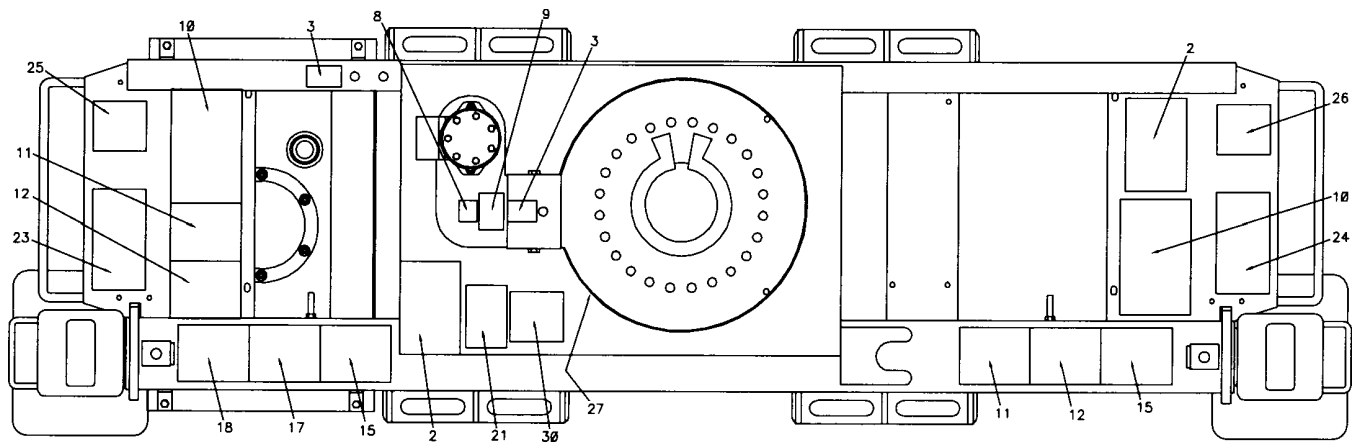
ITEM NO.	LOCATION
14,32	ONE ON EACH SIDE OF CARRIER VEHICLE.
28	AT OR NEAR NORMAL OPERATING STATIONS.
6	ON RESERVOIR AT RETURN LINE.
5	ON RESERVOIR SUCTION LINE.
19	AT OR NEAR THE DRIVELINE.
31	AT OR NEAR THE MANUAL BOOM EXT. RETENTION MECHANISM.
34	PLACE UNDER SERIAL TAG



4300/680: 95711907.02.19970529

3-33

**DECAL KIT-MODEL 680 CRANE  
(95711907-2)**





4300/680:

3-34



**SECTION 4. GENERAL REFERENCE**

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



4-2

## SECTION 4. GENERAL REFERENCE

[illegible]





20000710

4-3

SECTION 4. GENERAL REFERENCE

NOTICE
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

Inspection Checklist	
CRANES	
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	

REV: 6-18-99

**TYPE OF INSPECTION****NOTES:**

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

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

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

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

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

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

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

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

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

FREQUENCY	ITEM	KEY	✓ = SATISFACTORY ✗ = DEFICIENCY (must be corrected prior to operation)	R = RECOMMENDATION (should be considered for corrective action) NA= NOT APPLICABLE	STATUS ✓ , ✗ , R, NA
			INSPECTION DESCRIPTION		
D	1	Labels	All load charts, safety & warning labels, & control labels are present and legible.		
D	2		Check all safety devices for proper operation.		
D	3	Controls	Control mechanisms for proper operation of all functions, leaks & 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	Rope	Proper reeving of wire rope on sheaves & winch drum.		
D	8	Pins	Proper engagement of all connecting pins & pin retaining devices.		
D	9	General	Overall observation of crane for damaged or missing parts, cracked welds & presence of safety covers.		
D	10	Operation	During operation, observe crane for abnormal performance, unusual wear (loose pins, wire rope damage, etc.). If observed, discontinue use & determine cause & severity of hazard.		
D	11	Remote Ctrls	Operate remote control devices to check for proper operation.		
D	12	Electrical	Operate all lights, alarms, etc. to check for proper operation.		
D	13	Anti 2-Blocking	Operate anti 2-blocking device to check for proper operation.		
D	14		Other		
D	15		Other		



20000710

4-4

SECTION 4. GENERAL REFERENCE

**Inspection Checklist****CRANES****2**

FREQUENCY	ITEM	KEY	✓ = SATISFACTORY ✗ = DEFICIENCY (must be corrected prior to operation)	R = RECOMMENDATION (should be considered for corrective action) NA = NOT APPLICABLE	STATUS ✓, ✗, R, NA
			INSPECTION DESCRIPTION		
M	16	Daily	All daily inspection items.		
M	17	Cylinders	Visual inspection of cylinders for leakage at rod, fittings & welds. Damage to rod & case.		
M	18	Valves	Holding valves for proper operation.		
M	19	Valves	Control valve for leaks at fittings & between sections.		
M	20	Valves	Control valve linkages for wear, smoothness of operation & tightness of fasteners.		
M	21	General	Bent, broken or significantly rusted/corroded parts.		
M	22	Electrical	Electrical systems for presence of dirt, moisture & frayed wires.		
M	23	Structure	All structural members for damage.		
M	24	Welds	All welds for breaks & cracks.		
M	25	Pins	All pins for proper installation & condition.		
M	26	Hardware	All bolts, fasteners & retaining rings for tightness, wear & corrosion		
M	27	Wear Pads	Presence of wear pads.		
M	28	Pump & Motor	Hydraulic pumps & motors for leakage at fittings, seals & between sections.		
M	29	PTO	Transmission/PTO for leakage, abnormal vibration & noise.		
M	30	Hyd Fluid	Quality of hydraulic fluid and for presence of water.		
M	31	Hyd Lines	Hoses & tubes for leakage, abrasion damage, blistering, cracking, deterioration, fitting leakage & secured properly.		
M	32	Hook	Load hook for abnormal throat distance, twist, wear & cracks.		
M	33	Rope	Condition of load line.		
M	34	Manual	Presence of operator's manuals with unit.		
M	35		Other		
Q	36	Daily	All daily inspection items.		
Q	37	Monthly	All monthly inspection items.		
Q	38		Condition of wear pads		
Q	39	Rotation Sys	Rotation bearing for proper torque of all accessible mounting bolts.		
Q	40	Hardware	Base mounting bolts for proper torque.		
Q	41	Structure	All structural members for deformation, cracks & corrosion.		
	42		● Base		
	43		● Outrigger beams & legs		
	44		● Mast		
	45		● Inner boom		
	46		● Outer boom		
	47		● Extension(s)		
	48		● Jib boom		
	49		● Jib extension(s)		
	50		● Other		
Q	51	Hardware	Pins, bearings, shafts, gears, rollers, & locking devices for wear, cracks, corrosion & distortion.		
	52		● Rotation bearing(s)		
	53		● Inner boom pivot pin(s) & retainer(s)		
	54		● Outer boom pivot pin(s) & retainer(s)		
	55		● Inner boom cylinder pin(s) & retainer(s)		
	56		● Outer boom cylinder pin(s) & retainer(s)		
	57		● Extension cylinder pin(s) & retainer(s)		
	58		● Jib boom pin(s) & retainer(s)		
	59		● Jib cylinder pin(s) & retainer(s)		
	60		● Jib extension cylinder pin(s) & retainer(s)		
	61		● Boom tip attachments		
	62		● Other		
Q	63	Hyd Lines	Hoses, fittings & tubing for proper routing, leakage, blistering, deformation & excessive abrasion.		
	64		● Pressure line(s) from pump to control valve		
	65		● Return line(s) from control valve to reservoir		
	66		● Suction line(s) from reservoir to pump		
	67		● Pressure line(s) from control valve to each function		
	68		● Load holding valve pipe(s) and hose(s)		
	69		● Other		



#### SECTION 4. GENERAL REFERENCE

## 3

FREQUENCY	ITEM	KEY	✓ = SATISFACTORY ✗ = DEFICIENCY (must be corrected prior to operation)	R = RECOMMENDATION (should be considered for corrective action) NA= NOT APPLICABLE	STATUS ✓ ✗ R, NA
			INSPECTION DESCRIPTION		
Q	70	Pumps, PTO's & Motors	Pumps, PTO's & motors for loose bolts/fasteners, leaks, noise, vibration, loss of performance, heating & excess pressure.		
	71		● Winch motor(s)		
	72		● Rotation motor(s)		
	73		● Other		
Q	74	Valves	Hydraulic valves for cracks, spool return to neutral, sticking spools, proper relief valve setting, relief valve failure.		
	75		● Main control valve		
	76		● Load holding valve(s)		
	77		● Outrigger or auxiliary control valve(s)		
	78		● Other		
	79		● Other		
Q	80	Cylinders	Hydraulic cylinders for drifting, rod seal leakage & leakage at welds. Rods for nicks, scores & dents. Case for damage. Case & rod ends for damage & abnormal wear.		
	81		● Outrigger cylinder(s)		
	82		● Inner boom cylinder(s)		
	83		● Outer boom cylinder(s)		
	84		● Extension cylinder(s)		
	85		● Rotation cylinder(s)		
	86		● Jib lift cylinder(s)		
	87		● Jib extension cylinder(s)		
	88		● Other		
Q	89	Winch	Winch, sheaves & drums for damage, abnormal wear, abrasions & other irregularities.		
Q	90	Hyd Filters	Hydraulic filters for replacement per maintenance schedule.		
A	91	Daily	All daily inspection items.		
A	92	Monthly	All monthly inspection items.		
A	93	Quarterly	All quarterly inspection items.		
A	94	Hyd Sys	Hydraulic fluid change per maintenance schedule.		
A	95	Controls	Control valve calibration for correct pressures & relief valve settings		
A	96	Valves	Safety valve calibration for correct pressures & relief valve settings.		
A	97	Valves	Valves for failure to maintain correct settings.		
A	98	Rotation Sys	Rotation drive system for proper backlash clearance & abnormal wear, deformation & cracks.		
A	99	Lubrication	Gear oil change in rotation drive system per maintenance schedule.		
A	100	Hardware	Check tightness of all fasteners and bolts.		
A	101	Wear Pads	Wear pads for excessive wear.		
A	102	Loadline	Loadline for proper attachment to drum.		

### *Deficiency / Recommendation / Corrective Action Report*

UNIT I.D. NUMBER

## GUIDELINES

- A. A deficiency (**X**) may constitute a hazard. **X** must be corrected and/or faulty parts replaced before resuming operation.
- B. Recommendations (**R**) should be considered for corrective actions. Corrective action for a particular recommendation depends on the facts in each situation.
- C. Corrective actions (**CA**), repairs, adjustments, parts replacement, etc. are to be performed by a qualified person in accordance with all manufacturer's recommendations, specifications and requirements.

**NOTE:** Deficiencies (X) listed must be followed by the corresponding corrective action taken (CA).

**X** = DEFICIENCY      **R** = RECOMMENDATION      **CA** = CORRECTIVE ACTION TAKEN

[illegible]



## SECTION 4. GENERAL REFERENCE

## 4

*If additional space is required, reproduce this page and attach to this report.*



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SECTION 4. GENERAL REFERENCE

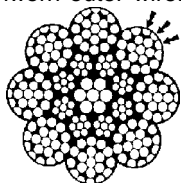
**WIRE ROPE INSPECTION**

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

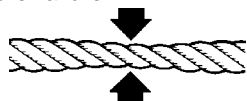
- A. Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.
- B. When there are either 3 broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



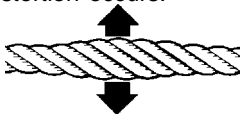
- C. When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.



- 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**

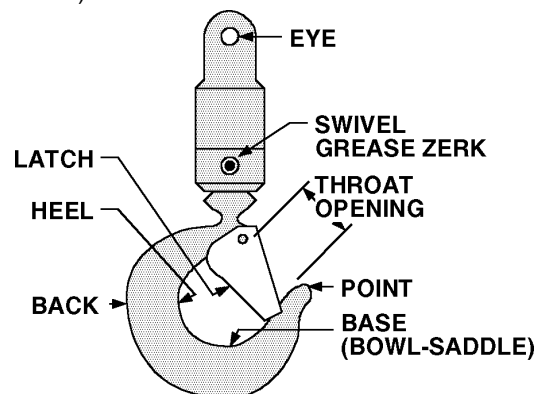
Repair of cracks, nicks, and gouges shall be carried out by a designated person by grinding longitudinally, following the contour of the hook, provided that no dimension is reduced more than 10% of its original value. (Or as recommended by the manufacturer) (A qualified person may authorize continued 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)





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SECTION 4. GENERAL REFERENCE

**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.

**ANTI-TWO BLOCKING DEVICE INSPECTION**

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

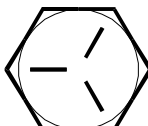

The anti two block system should be checked daily as follows:

1. Examine flexible rod and weight to insure free unrestricted mechanical operation
2. Examine cord for damage, cuts or breaks. Grasp cord and pull to check operation of cord reel. The cord should retract on reel when released.
3. Start vehicle, engage PTO and slowly winch loadline up until anti-two block weight comes in contact with the hook end of the loadline cable. At the moment the weight is fully supported, a marked difference in winch operation should be noted. At this point, the winch up function should become very sluggish or non-functioning and have very little pull capability. Slowly increase truck engine speed while simultaneously actuating the winch up function. The winch characteristics should remain sluggish with little or no tensioning of the cable. If operation other than as described occurs, stop immediately and investigate. Failure to do so will risk damage to the cable or the crane. If all is well at this point, actuate the boom extend function slowly, and gradually increase to full actuation. Once again the function should be sluggish or non-existent with no tightening of the winch cable. If operation other than described occurs, stop immediately and reverse the function.

The final check involves actuating both the winch up and extend functions together and checking for proper operation of the anti two blocking circuit. Once again, start slowly and stop if it appears the cable is being tensioned.

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.

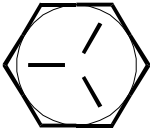
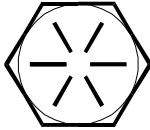
**WARNING**

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.

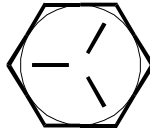
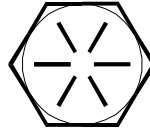


## TORQUE DATA CHART - DOMESTIC

### 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
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, collodial 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

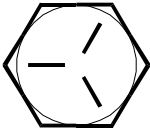

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torquing.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



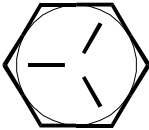



## TORQUE DATA CHART - METRIC

### 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.
2. Flat washers of equal strength must be used.
3. All torque measurements are given in kilogram-meters.
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, collodial 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

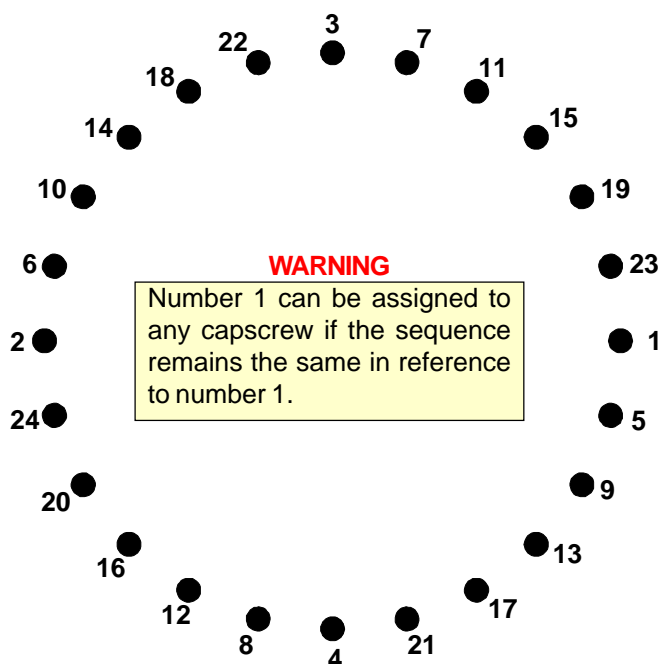
Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torquing.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





## 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 cap screw used.
2. Follow the tightening sequence shown in the diagram. Note that the quantity of cap screws may differ from the diagram, but the sequence must follow the criss-cross pattern as shown in the diagram.
3. Torque all cap screws to approximately 40% of the specified torque value, by following the sequence.  
(EXAMPLE: .40 x 265 FT-LBS = 106 FT-LBS)  
(EXAMPLE-METRIC: .40 x 36 KG-M = 14.4 KG-M)
4. Repeat Step 3, but torquing all cap screws to 75% of the specified torque value. Continue to follow the tightening sequence.  
(EXAMPLE: .75 x 265 FT-LBS = 199 FT-LBS)  
(EXAMPLE-METRIC: .75 x 36 KG-M = 27 KG-M)
5. Using the proper sequence, torque all cap screws 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 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.

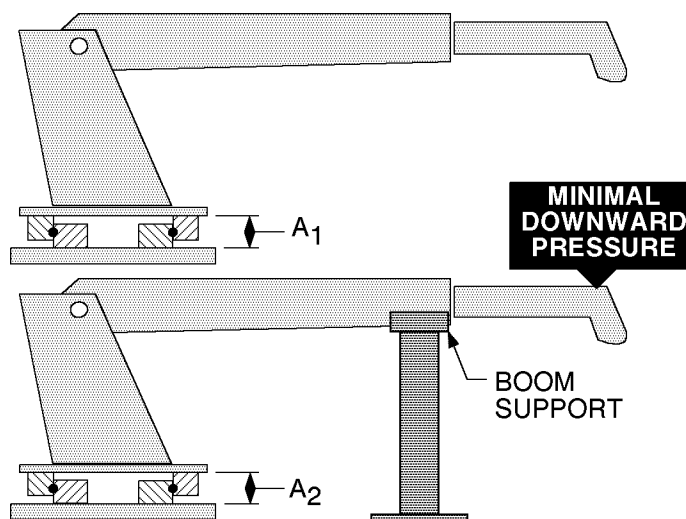
With the crane horizontal and fully extended, measure between the top and bottom mounting surfaces of the turntable bearing (A1), using a dial indicator for accuracy.

#### 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 A2.

#### STEP 3.

Subtract A1 from A2 to determine tilt and compare the result with the accompanying chart.



### COMPARISON CHART - MODEL TO MEASURED TILT DIMENSION

<b>NOTE</b> THE FIGURES LISTED IN THIS CHART ARE SERVICE GUIDELINES AND DO NOT, IN THEMSELVES, REQUIRE THAT THE BEARING BE INSPECTED.  IF THERE IS REASON TO SUSPECT AN EXCESS OF BEARING WEAR AND THE MEASURED TILT DIMENSION EXCEEDS THE DIMENSION LISTED, REMOVE THE BEARING FOR INSPECTION.	<b>IMT CRANE, LOADER OR TIREHAND MODEL</b>	1007 1014 1014A 1015 2015/2020 2109 3000 3816/3820 3016/3020 421/425 4300 5016/5020 6016/6020 TH7 BODY ROT'N TH1449 BODY ROT'N TH15B CLAMP TH2551B CLAMP TH2557A CLAMP	5200 5200R 5217 5800 7020 7025 7200 7415 9000 TH10 BODY ROT'N TH14 BODY ROT'N	16000 32018 32027 32030 T30 T40	9800 12916 13031 13034 14000 15000 18000 20017 8000L H1200 H1200RR T50 TH2551B BODY ROT'N TH2557B BODY ROT'N TH2557A BODY ROT'N
	<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:

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BOX 189

GARNER, IA 50438-0189

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BOX 189, GARNER, IA 50438-0189  
TEL: 641-923-3711  
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[www.imt.com](http://www.imt.com)