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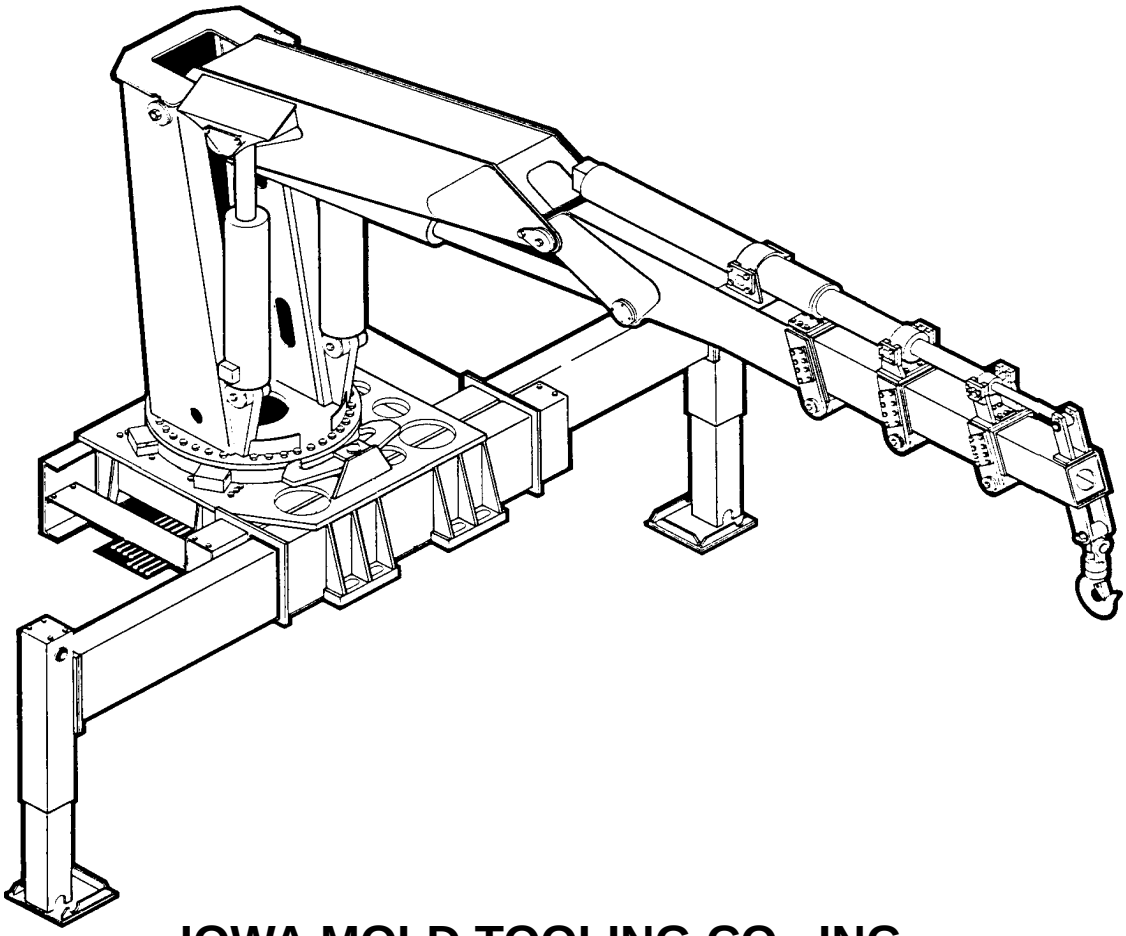
Model 32000 Series Crane
& Model 4490 (Metric Version)

Volume 2 - PARTS AND SPECIFICATIONS

Section 1	**SPECIFICATIONS-32000 SERIES**
Section 1A.	**SPECIFICATIONS-4490 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: 515-923-3711

TECHNICAL SUPPORT FAX: 515-923-2424

MANUAL PART NUMBER 99900938

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.

SECTION 1. 32000 SERIES CRANE SPECIFICATIONS

NOTES

SPECIFICATIONS-MODEL 32027 CRANE

GENERAL SPECIFICATIONS

	3H
***CRANE RATING (ANSI B30.22)**	323,750 ft lbs
***MAXIMUM CRANE RATING**	323,750 ft lbs
HORIZONTAL REACH from centerline of rotation	30'-0"
HYDRAULIC EXTENSION	55"/60"/60"
VERTICAL REACH from mounting surface	37'-3"
VERTICAL REACH from ground / 43" frame ht.	40'-10"
CRANE WEIGHT	15,160 lbs
OUTRIGGER SPAN - base mounted	18'-0"
OUTRIGGER SPAN - AUXILIARY (required)	14'-0"
OUTRIGGER PADS	16" x 16"
OUTRIGGER PADS-AUXILIARY	14" x 14"
CRANE STORAGE HEIGHT from mounting surface	9'-11"
CRANE STORAGE HEIGHT from ground/43" frame ht.	13'-6"
****MOUNTING SPACE REQUIRED**	70"
ROTATIONAL TORQUE	38320 ft-lbs
OPTIMUM PUMP CAPACITY	20 GPM
SYSTEM OPERATING PRESSURE	2500 PSI
OIL RESERVOIR CAPACITY	60 U.S. Gallons
HOOK APPROACH - HORIZONTAL from centerline of rotation	2'-11"
HOOK APPROACH - VERTICAL from mounting surface	9'-1"
***HORIZONTAL CTR OF GRAVITY** from centerline of rotation towards outriggers	6"
***VERTICAL CTR OF GRAVITY** from mounting surface	3'-6"

* 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.

** Mast will swing within the confines of the crane base requiring no addition space behind the cab.

*** Crane in stowed position.

PERFORMANCE CHARACTERISTICS

ROTATION:	400°	60 seconds
INNER BOOM ELEVATION:	-48° to +74°	46 seconds
OUTER BOOM ARTICULATION:	140°	45 seconds
TELESCOPIC EXTENSIONS:		
1st Stage	55"	54 seconds
2nd Stage	60"	32 seconds
3rd Stage	60"	14 seconds
POWER-OUT OUTRIGGER:	60"	9 seconds
POWER-DOWN OUTRIGGER:	26"	14 seconds

POWER SOURCE

Hydraulic piston pump and PTO application. Other standard power sources of the closed-center, variable displacement and load sensing type may be utilized. Minimum horsepower required is 35 H.P.

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 power-out and power-down outrigger cylinders have positive, pilot operated holding valves that open only upon command.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 two high torque hydraulic disc-valve motors through two planetary gear boxes. A fail-safe, spring-loaded brake is an integral part of each planetary gear box which provides rotational and parking brake action. Total gear reduction is 99:1.

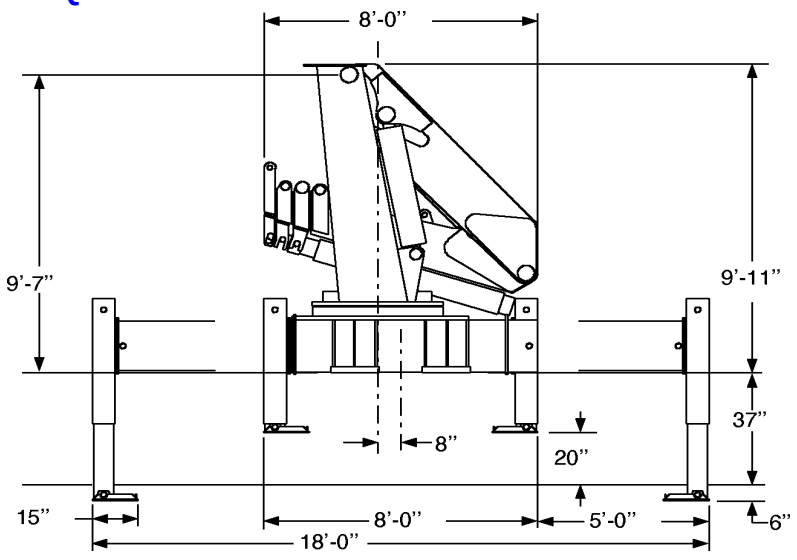
HYDRAULIC SYSTEM

The hydraulic system is a closed center, load sensing, standby-pressure system providing 20 GPM optimum oil flow at 2500 PSI. Stack type control valve with dual operational control handles located at both sides of the crane for all lift, telescope and swing functions is standard. Single control lever for each outrigger function, located on the same side as the outrigger, is standard. System includes hydraulic oil reservoir, suction and return line filters, closed center, load sensing control valve and a variable displacement radial piston pump.

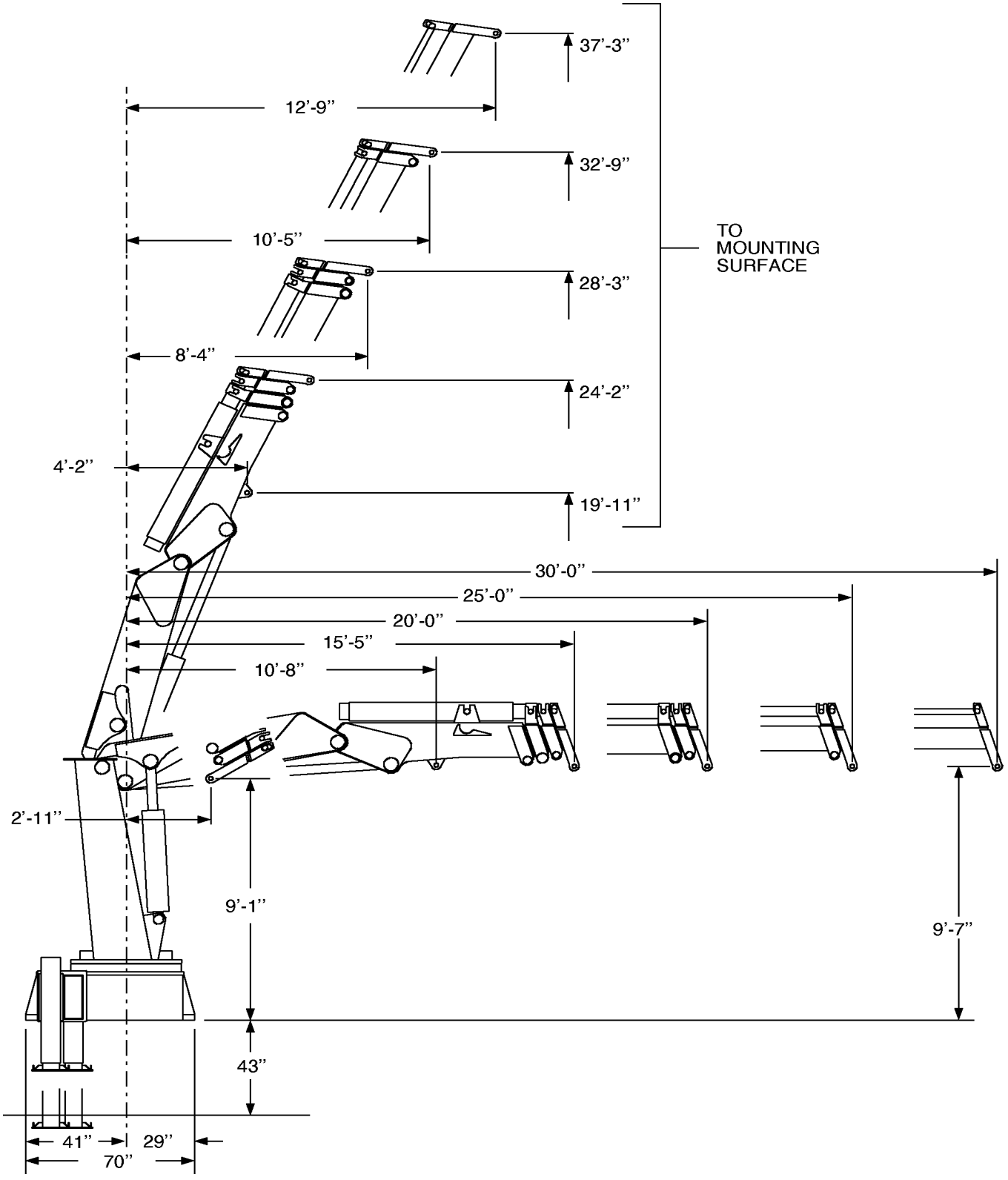
SELECTED WEIGHTS OF ANCILLARY EQUIPMENT

AUXILIARY OUTRIGGERS	1770 lbs
18' SUB-FRAME	1800 lbs
PUMP & PTO	140 lbs
MOUNTING HARDWARE	520 lbs
OIL RESERVOIR	190 lbs
OIL (60 gallons)	420 lbs

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



GEOMETRIC CONFIGURATION



CAPACITY CHART

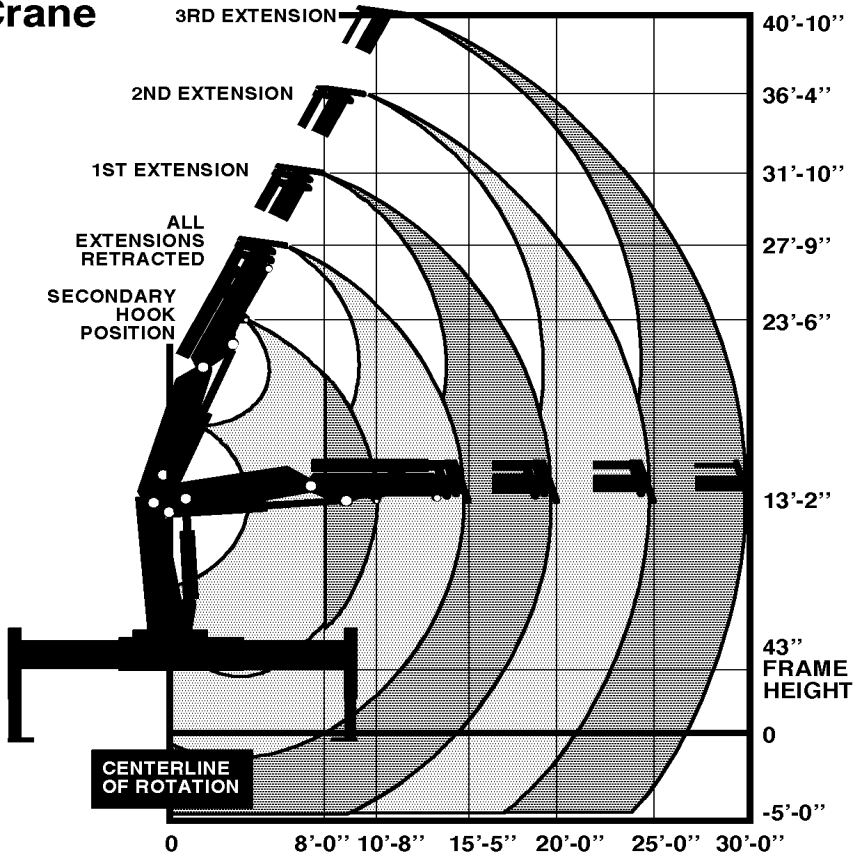
IOWA MOLD TOOLING CO., INC. ● BOX 189 ● GARNER ● IA ● 50438 ● 515-923-3711

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

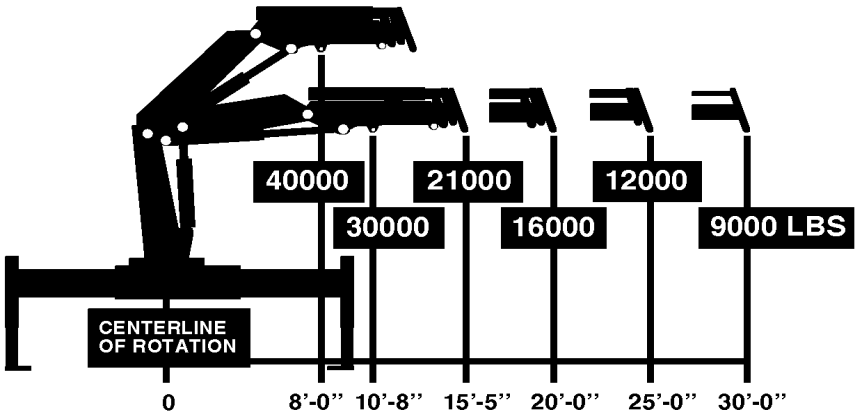
IMT

32000 Series Crane

- 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 10000 LBS for 1-part line. Maximum 20000 LBS for 2-part line.



Use optional 20-ton hook in 8'-0'' range.



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MINIMUM CHASSIS SPECIFICATIONS
For Standard 32000 Series Crane

CRANE MOUNT	Behind Cab
CRANE WORKING AREA	360°
CHASSIS STYLE	Conventional Cab
FRONT AXLE RATING (GAWR)	20000 lbs
REAR AXLE RATING (GAWR)	40000 lbs Tandem Axle
WHEELBASE	236"
CAB-TO-AXLE	156"
FRAME HEIGHT FROM GROUND	43" Maximum
RBM	5,060,000 in-lbs
FRAME SECTION MODULUS	46in3
FRAME YIELD STRENGTH	110,000 PSI

To maintain vehicle stability, it will be necessary to provide auxiliary outriggers which have, at a minimum, 14'-0" span. A subframe/torsion box must be used to tie the auxiliary outriggers to the crane. For each application contact IMT for a weight distribution and stability analysis.

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 4490 CRANE SPECIFICATIONS

NOTES

SPECIFICATIONS-MODEL 4490 CRANE

GENERAL SPECIFICATIONS

CRANE RATING	44 ton-meters
HORIZONTAL REACH from centerline of rotation	9.14m
HYDRAULIC EXTENSION	140/152/152cm
VERTICAL REACH from mounting surface	11.36m
VERTICAL REACH from ground / 1.09m frame ht.	12.45m
***BASE CRANE WEIGHT**	5875 kg
OUTRIGGER SPAN - base mounted	5.49m
OUTRIGGER SPAN - AUXILIARY (required)	4.27m
OUTRIGGER PADS	40 x 40cm
OUTRIGGER PADS-AUXILIARY	35 x 35cm
CRANE STORAGE HEIGHT from mounting surface	3.02m
CRANE STORAGE HEIGHT from ground/1.09m frame ht.	4.11m
****MOUNTING SPACE REQUIRED**	1.78m
ROTATIONAL TORQUE	5300 kg-m
OPTIMUM PUMP CAPACITY	76 liters/min
SYSTEM OPERATING PRESSURE	172 bar
OIL RESERVOIR CAPACITY	228 liters
HOOK APPROACH - HORIZONTAL from centerline of rotation	89cm
HOOK APPROACH - VERTICAL from mounting surface	2.77m
***HORIZONTAL CTR OF GRAVITY** from centerline of rotation towards outriggers	15cm
***VERTICAL CTR OF GRAVITY** from mounting surface	107cm

* Without outriggers, hydraulic oil reservoir and mounting accessories.
** Mast will swing within the confines of the crane base requiring no addition space behind the cab.
*** Crane in stowed position.

PERFORMANCE CHARACTERISTICS

ROTATION:	400°/6.98 rad	60 seconds
INNER BOOM ELEVATION:	-0.84 to +1.29 rad	46 seconds
OUTER BOOM ARTICULATION:	2.44 rad	45 seconds
TELESCOPIC EXTENSIONS:		
1st Stage	140cm	54 seconds
2nd Stage	152cm	32 seconds
3rd Stage	152cm	14 seconds
POWER-OUT OUTRIGGER:	152cm	9 seconds
POWER-DOWN OUTRIGGER:	66cm	14 seconds

POWER SOURCE

Hydraulic piston pump and PTO application. Other standard power sources of the closed-center, variable displacement and load sensing type may be utilized. Minimum horsepower required is 35 H.P.

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 power-out and power-down outrigger cylinders have positive, pilot operated holding valves that open only upon command.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 two high torque hydraulic disc-valvemotors through two planetary gear boxes. A fail-safe, spring-loaded brake is an integral part of each planetary gear box which provides rotational and parking brake action. Total gear reduction is 99:1.

HYDRAULIC SYSTEM

The hydraulic system is a closed center, load sensing, standby-pressure system providing 76 liters/minute optimum oil flow at 172 bar. Stack type control valve with dual operational control handles located at both sides of the crane for all lift, telescope and swing functions is standard. Single control lever for each outrigger function, located on the same side as the outrigger, is standard. System includes hydraulic oil reservoir, suction and return line filters, closed center, load sensing control valve and a variable displacement radial piston pump.

SELECTED WEIGHTS OF ANCILLARY EQUIPMENT

CRANE OUTRIGGERS	1000 kg
AUXILIARY OUTRIGGERS	803 kg
5.5m SUBFRAME	816 kg
PUMP & PTO	64 kg
MOUNTING HARDWARE	238 kg
HYDRAULIC OIL RESERVOIR	85 kg
230 LITERS OF HYDRAULIC OIL	193 kg

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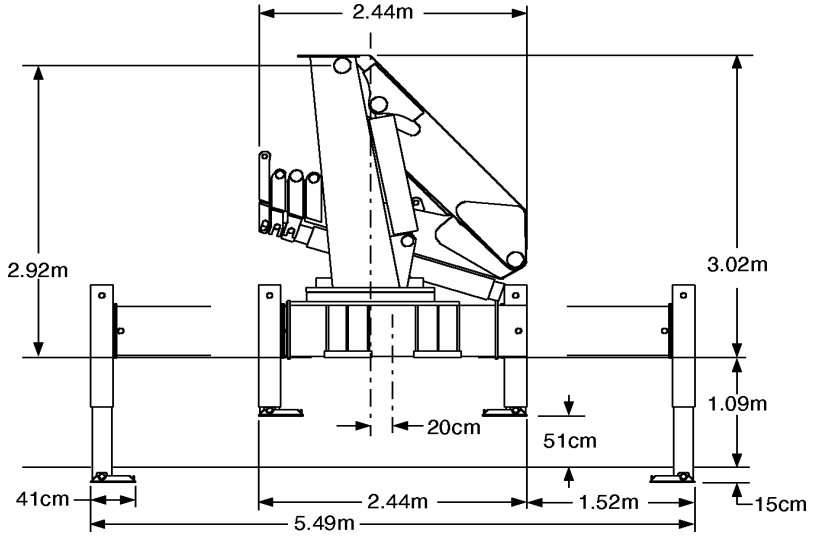
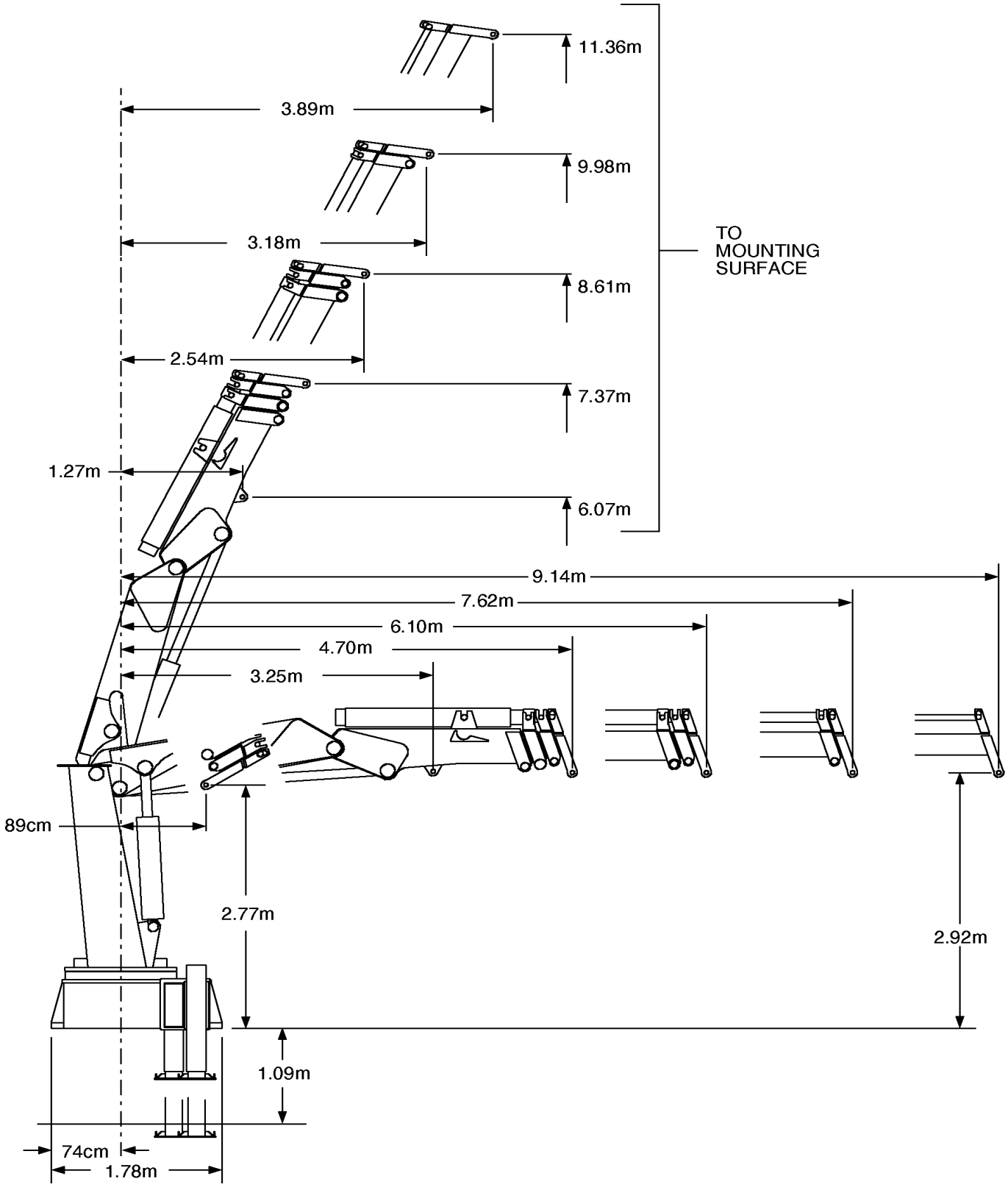


GEOMETRIC CONFIGURATION



CAPACITY CHART

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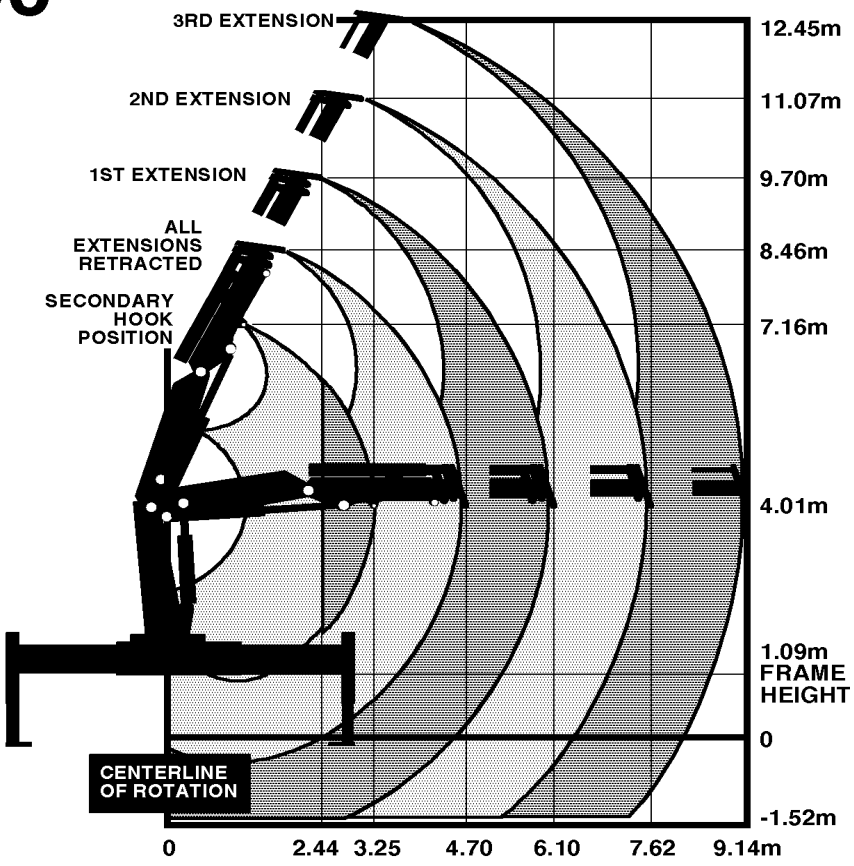
Capacities through geometric range are limited to those shown in horizontal position.

IMT

MODEL
4490

- 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 4535 KG for 1-part line. Maximum 9072 KG for 2-part line.



Use optional 18145 kg hook in 2.44m range.

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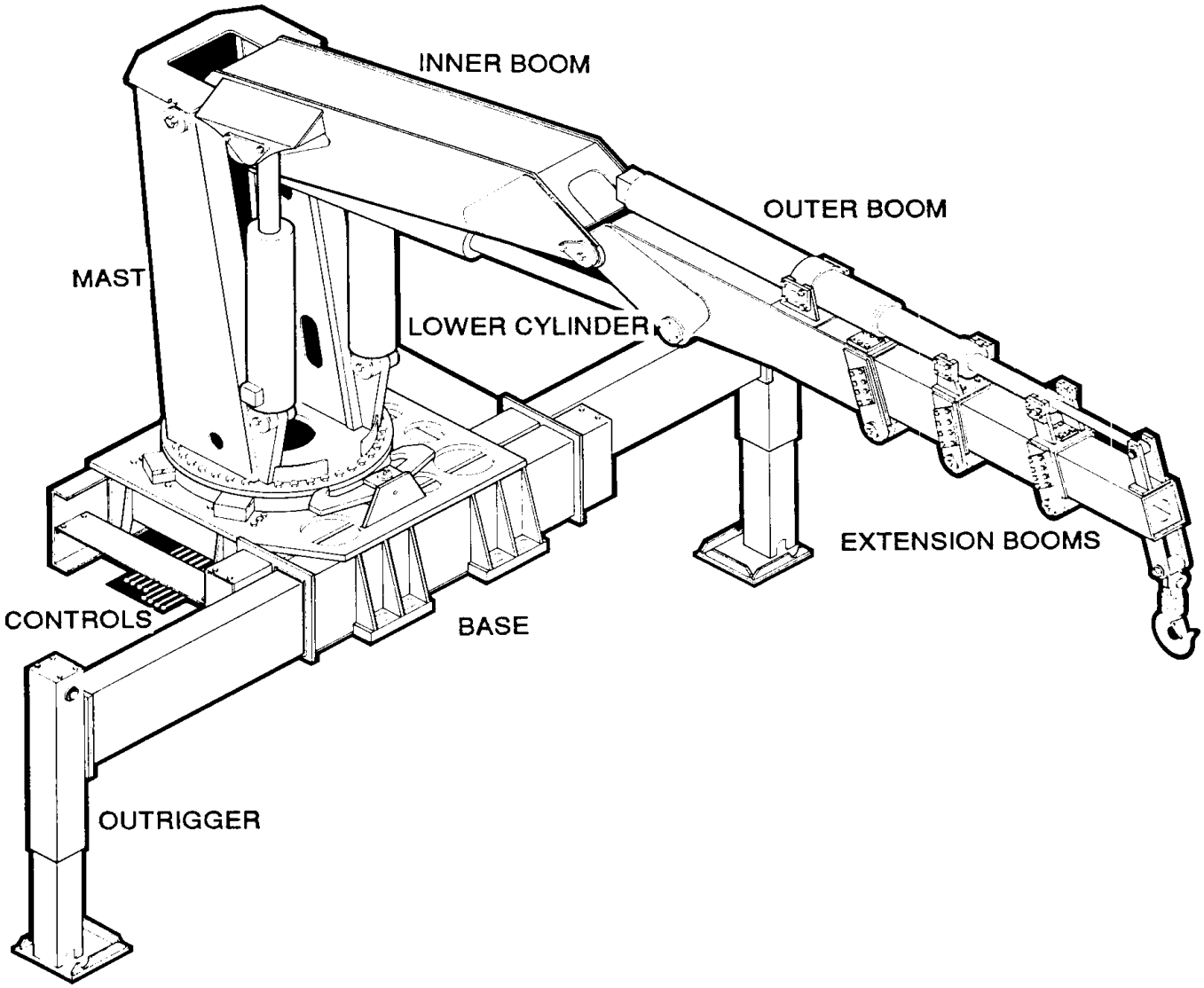
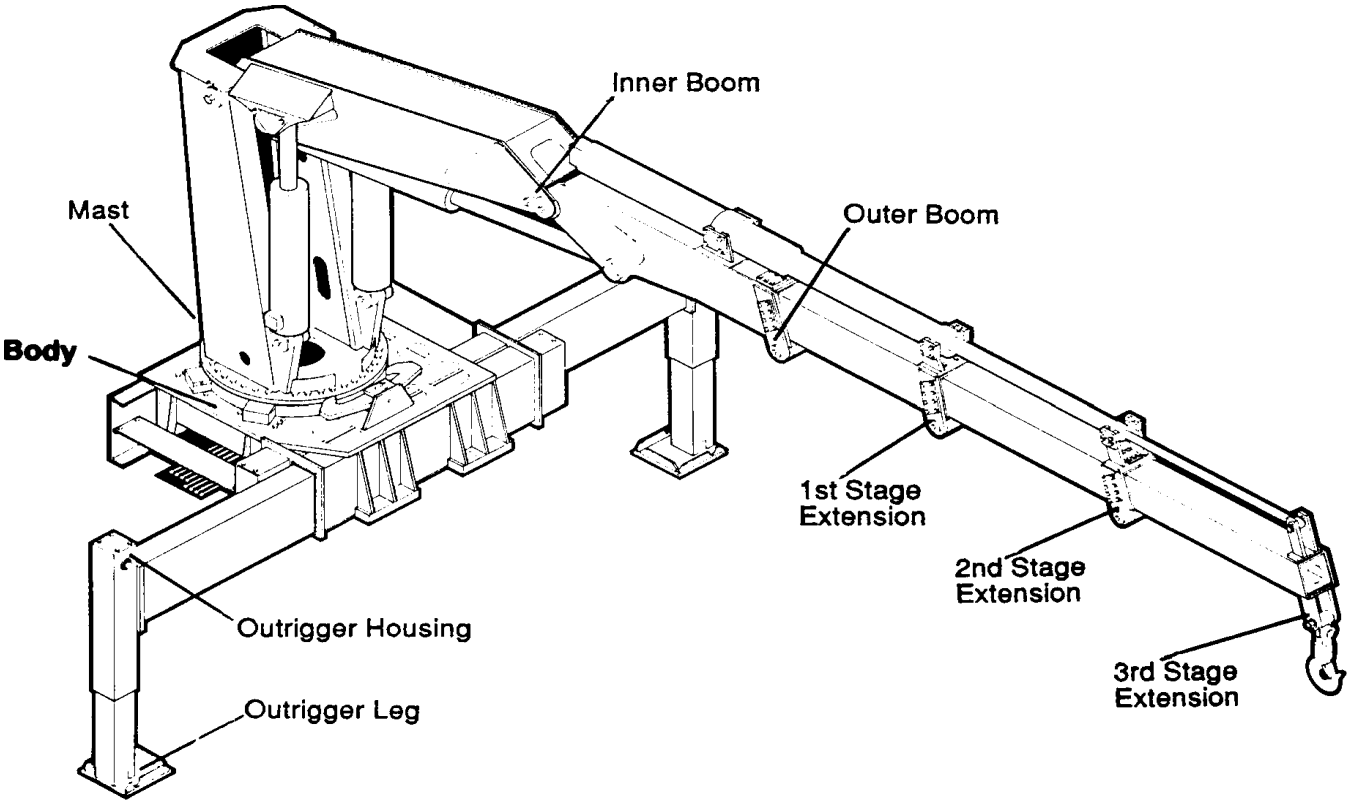
SECTION 2. 32000/4490 CRANE REFERENCE

NOTES

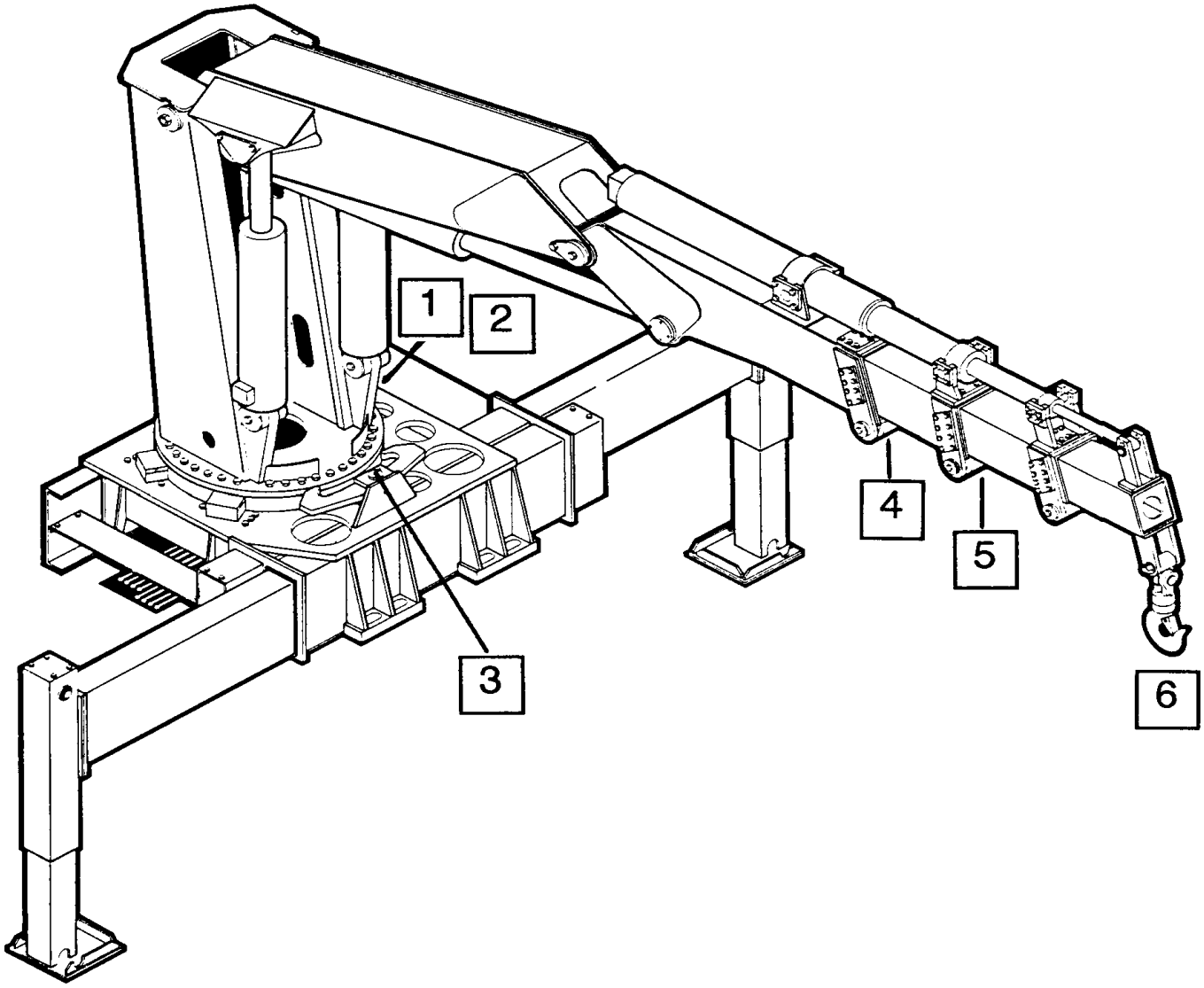
MAJOR CRANE ASSEMBLIES



WELDMENT PART NUMBER LOCATIONS



GREASE ZERK LOCATIONS & LUBRICANT REQUIREMENTS



ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	TURNTABLE/BEARING GREASE EXTENSION *ROTATE CRANE WHILE GREASING	SHELL ALVANIA 2EP OR SHELL RETINAX "A"	WEEKLY
2.	DRIVE GEAR GREASE EXTENSION		
3.	LATCH PIN		
4.	OUTER BOOM TRUNNION		
5.	FIRST STAGE EXTENSION BOOM TRUNNION		
6.	SHEAVE PIN (IF OPTIONAL CABLE & HOOK KIT)		

NOTE: All application points must be greased weekly under normal work loads and moderate weather conditions. Under severe operating conditions, lubrication should be performed more frequently. See Volume 1; Operation, Maintenance and Repair for additional lubrication requirements.

RECOMMENDED SPARE PARTS LIST

1 YEAR SUPPLY
32000/4490 CRANE
FOR MANUAL: 99900938

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
41706211.01.19961220	**BASE & OUTRG ASM**						
	43	7BF81225	BUSHING	2	W		
	48	7Q072017	O-RING	4	W		
	49	73054538	VALVE	4	C		
31706397.01.19961220	**AUXILIARY OUTRG ASM**						
	7	60030067	WEAR PAD	2	W		
	8	60030085	WEAR PAD	2	W		
3B144860.01.19961206	**POWER OUT OUTRG CYLINDER**						
	5	73054004	VALVE	2	C		
	8	9B101214	SEAL KIT	2	W		
3C145860.01.19961206	**POWER DOWN OUTRG CYLINDER**						
	1	9C202029	SEAL KIT	2	W		
	17	73054304	VALVE 10GPM	4	C		
	20	7BF81520	BUSHING	4	W		
3B148860.01.19961220	**POWER OUT AUXILIARY OUTRG CYLINDER**						
	5	73054004	VALVE	2	C		
	8	9B101214	SEAL KIT	2	W		
3B020860.01.19961220	**POWER DOWN AUXILIARY OUTRG CYLINDER**						
	4	73054304	VALVE 10GPM	4	C		
	7	9C161623	SEAL KIT	2	W		
	18	7BF81215	BUSHING	4	W		
41706212.01.19970708	**MAST ASM**						
	2	70034275	BEARING	2	W		
41706213.01.19980129	**INNER BOOM ASM**						
	11	70034274	BEARING	4	W		
	14	7Q072015	O-RING	1	W		
	17	77041283	PRESSURE SWITCH	1	C		
3D142860.01.19961220	**INNER CYLINDER**						
	15	73054242	VALVE 25GPM	1	C		
	17	70034279	BUSHING	4	W		
	19	9X323239	SEAL KIT	2	W		
41706215.01.19961220	**OUTER BOOM ASM**						
	9	60030160	WEAR PAD	2	W		
	10	60030164	WEAR PAD	4	W		
	13	60109341	WEAR PAD	2	W		
	21	70034274	BEARING	4	W		
3C147860.01.19961220	**OUTER CYLINDER**						
	15	73054242	VALVE 25GPM	4	C		
	18	70034279	BUSHING	8	W		
	19	9C283235	SEAL KIT	2	W		
41706216.01.19961220	**EXTENSION BOOM ASM-FIRST STAGE**						
	9	60030072	WEAR PAD	4	W		
	10	60030158	WEAR PAD	1	W		
	11	60030159	WEAR PAD	1	W		
	13	60109341	WEAR PAD	6	W		
41706216.01.19961220	**EXTENSION BOOM ASM-SECOND STAGE**						
	35	60030156	WEAR PAD	1	W		
	36	60030157	WEAR PAD	1	W		
	37	60030163	WEAR PAD	2	W		
	41	60109341	WEAR PAD	5	W		
41706216.01.19961220	**EXTENSION BOOM ASM-THIRD STAGE**						
	54	60030155	WEAR PAD	1	W		
	55	60030163	WEAR PAD	2	W		

(CONTINUED)

RECOMMENDED SPARE PARTS LIST (CONT.)

ASSEMBLY DESIGNATION	ITEM NO.	PART NO.	DESCRIPTION	QTY	CODE	SHELF LIFE (MO)	ORDER QTY
3K130860.01.19980114	**TELESCOPIC EXTENSION CYLINDER**						
	29	73054568	VALVE 100GPM	2	C		
	31	6HX03517	HEAD	1	W		
	32	6H055045	HEAD	1	W		
	33	6H075062	HEAD	1	W		
	34	6IX03512	PISTON	1	W		
	35	6I140860	PISTON	1	W		
	36	6IX13286	PISTON	1	W		
	43	9X130860	SEAL KIT	1	W		
41708187.01.19961220	**EXTENSION BOOM ASM W/WINCH-FIRST STAGE**						
	9	60030072	WEAR PAD	4	W		
	10	60030158	WEAR PAD	1	W		
	11	60030159	WEAR PAD	1	W		
	13	60109341	WEAR PAD	6	W		
41708187.01.19961220	**EXTENSION BOOM ASM W/WINCH-SECOND STAGE**						
	35	60030156	WEAR PAD	1	W		
	36	60030157	WEAR PAD	1	W		
	37	60030163	WEAR PAD	2	W		
	41	60109341	WEAR PAD	5	W		
41708187.01.19961220	**EXTENSION BOOM ASM W/WINCH-THIRD STAGE**						
	54	60030155	WEAR PAD	1	W		
	55	60030163	WEAR PAD	2	W		
93706217.01.19961220	**INSTALLATION KIT**						
	6	70048149	ELEMENT-100 MESH	3	P		
	47	73052014	ELEMENT-25MIC	3	P		
31708195.01.19970122	**CABLE & HOOK KIT**						
	5	60110339	CABLE	1	W		
	8	70056401	SHEAVE	1	W		

INSTALLATION

GENERAL

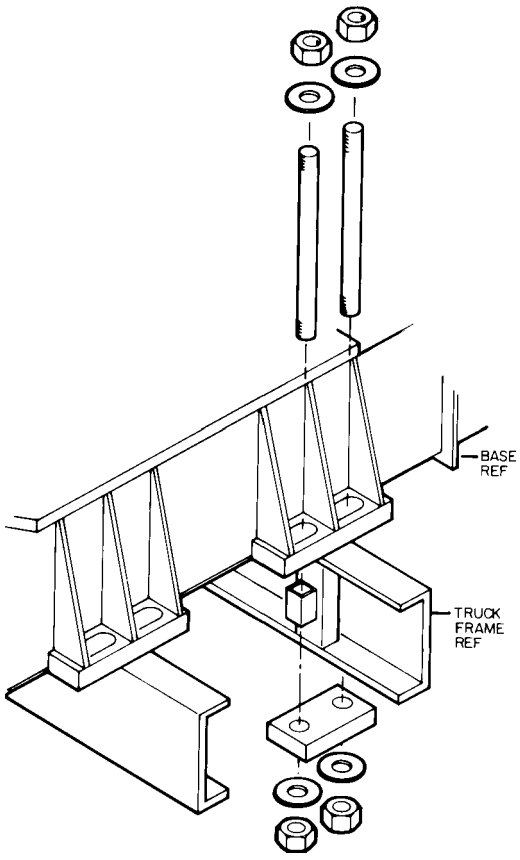
This section contains specific instructions for the installation of your crane. Prior to installing the crane and hydraulic components, make sure the chassis is ready to receive the crane (refer to VOLUME 1, Installation).

Components used in each installation may vary. It is important to use hoses of proper length, pumps of correct size, and PTO's of adequate speed ratio and power rating.

CRANE MOUNTING

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



CRANE INSTALLATION

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.

3. Allow sufficient clearance between the cab, or other obstructions, and crane base. 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 is allowed.

4. Torque the 2"-4 1/2 mounting hardware to 1125 ft-lbs (510 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 collodial 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 1125 FT. LBS. (156 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.

HYDRAULIC INSTALLATION

1. Install the suction filter to the suction port, and the return filter to the return port of the standard reservoir with a 1-1/4" (31.75mm) nipple and gate valve.

2. Install the 1-1/4" (31.75mm) diameter suction hose between the pump and the suction filter, using barbed nipples, hose clamps, and adapter fittings as needed (See figure below).

3. Install the 3/4" (19mm) diameter pressure hose between the pump and the valve bank inlet section.

4. Install the 1-1/4" (31.75mm) diameter return hose between the valve bank outlet section and the return line filter.

5. Install the 1/4" (6.35mm) pressure hose from the load sense port on the control valve to the load sense port on the pump.

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

7. Check all connections for leaks.

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

9. Lightly turn the flow compensator (load sense) adjustment in until it stops.

10. Turn the pressure compensator adjustment until desired system pressure is reached (see specifications). Lock the adjustment lock nut.

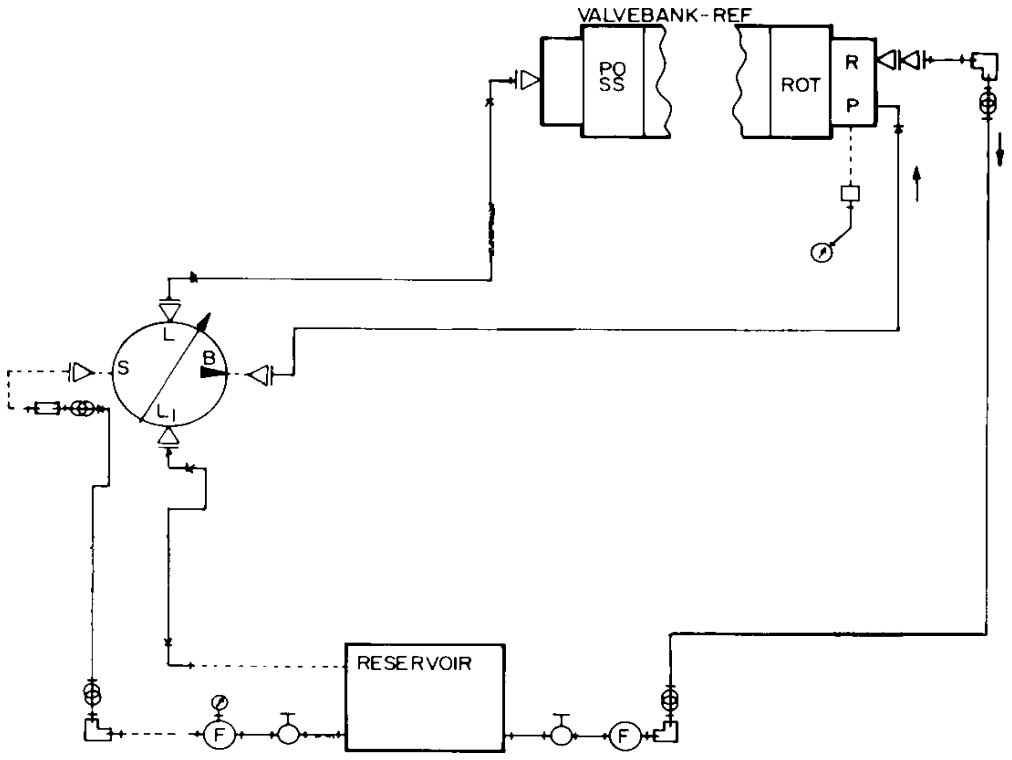
11. Turn the flow compensator adjustment out until standby pressure of approximately 250 PSI (17.24 bar) is reached. Lock the flow compensator adjustment lock nut.

12. Operate all hydraulic functions to ensure proper pressure settings.

NOTE

PUMP PRESSURE ADJUSTMENTS MAY VARY SLIGHTLY FROM ONE MANUFACTURER TO ANOTHER.

13. Check the oil level in the hydraulic reservoir, and add oil if needed.



HYDRAULIC INSTALLATION

SECTION 3. REPLACEMENT PART 32000/4490 CRANE

NOTES

PARTS INFORMATION

GENERAL

This section contains the exploded parts drawings and accompanying parts lists for the assemblies used on this crane. These drawings are intended to be used in conjunction with the instructions found in the REPAIR section in Volume 1. For optional equipment, refer to the appropriate manual, or consult your IMT sales reprsentative.

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 attached to the mast or to one of the booms in a prominent location. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model number. All inquiries should be directed to:

Iowa Mold Tooling Co., Inc.
Box 189, Garner, IA 50438-0189
Telephone: 515-923-3711
Technical Support Fax: 515-923-2424

CYLINDER IDENTIFICATION

To insure that the proper cylinder replacement parts are recieved, it is necessary to specify the complete number/letter sequence for any part requested. Part numbers must be verified by checking the number stamped on the cylinder case (See figure below) against the information included in the service manual. You must include the part number stamped on the cylinder case when ordering parts.

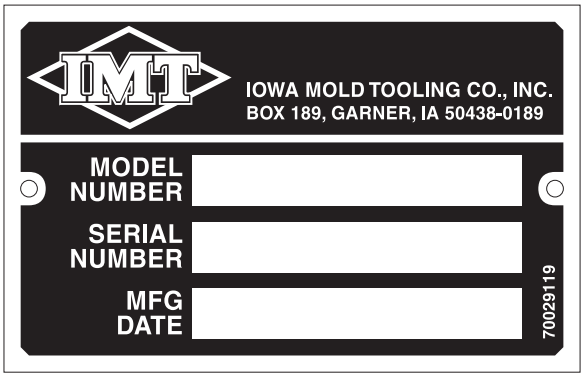
WELDMENT IDENTIFICATION

Each of the major weldments, base, mast, inner boom, outer boom, extension boom, and outriggers, have a part number stamped on them. Any time one of the weldments is to be replaced, it is necessary to specify the complete part number as stamped on that weldment. The location of the part numbers are shown in Section 2.

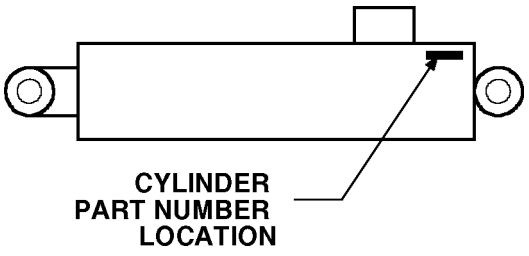
ORDERING REPAIR PARTS

When ordering replacement parts it is important to follow the steps as outlined below.

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



SERIAL NUMBER PLACARD



CYLINDER PART NUMBER LOCATION

BASE & OUTRIGGER ASM (41706211-1)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3B144860	POWER-OUT CYLINDER	2
2.	3C145860	POWER-DOWN CYLINDER	2
3.	51706327	ROTATION LATCH (INCL:43)	1
4.	52706309	OUTRIGGER ARM	2
5.	52706313	OUTRIGGER LEG/PAD	2
6.	52706314	OUTRIGGER TUBE COVER	2
7.	52706315	OUTRIGGER HOUSING	2
8.	52706325	PIN	1
9.	52706330	BASE	1
10.	60101720	PIN	2
11.	60104239	LATCH FOLLOWER	1
12.	60104241	DETENT HOUSING	1
13.	60109500	PIN	2
14.	60109501	PIN	2
15.	60109502	PIN	2
16.	60109538	PINION COVER	2
17.	60109553	CONTROL HANDLE COVER - SS	1
18.	52706436	VB COVER W/LIP	1
19.	7Y016724	SPRING	1
20.	71056373	TURNTABLE BEARING	1
21.	70057696	ROTATION GEAR BOX	2REF
22.	72053508	ZERK 1/8NPT	3
23.	72060002	CAP SCR 1/4-20X3/4 HH GR5	16
24.	72060091	CAP SCR 1/2-13X1 HH GR5	1
25.	72060095	CAP SCR 1/2-13X2 HH GR5	4
26.	72060812	CAP SCR 5/8-11X1-1/2 SH	28
27.	72060833	SCR 5/16-18X3/4 HH SLFTPG	14
28.	72060920	CAP SCR 1/2-13X3-1/4 HH GR5	8
29.	51710622	GEARBOX ASM (INCL:21,44)	2
30.	72063001	WASHER 1/4 WRT	16
31.	72063002	WASHER 5/16 WRT	14
32.	72063034	MACH BUSHING 1 X 10GA NR	8
33.	72063049	WASHER 1/4 LOCK	16
34.	72063053	WASHER 1/2 LOCK	5
35.	72063055	WASHER 5/8 LOCK	28
36.	72063039	MACH BUSHING 2 X 10GA NR	8
37.	72063116	WASHER 3/4 FLAT HARD	36
38.	72066125	RETAINING RING 1" EXT HD	8
39.	72066136	RETAINING RING 2" EXT HD	8
40.	72066444	BALL 9/16	1
41.	72601468	CAP SCR 3/4-10X4-1/2 HH GR8	36
42.	60109518	COVER	2
43.	7BF81225	BUSHING (PART OF 3)	2REF
44.	73051473	HYDRAULIC MOTOR	2REF
45.	72062107	NUT 1/2-13 CTR LOCK	8
46.	70731795	VALVE BLOCK (INCL:48 & 49)	2
47.	72060757	CAP SCR 3/8-16X2-1/2 SH	6
48.	7Q072017	O-RING (PART OF 46)	4REF
49.	73054538	VALVE (PART OF 46)	4REF
50.	70142935	BALL(PART OF 46-NOT SHOWN)	2REF
51.	70142934	SEAL(PART OF 46-NOT SHOWN)	2REF
52.	70142933	PLUG(PART OF 46-NOT SHOWN)	2REF
53.	70143099	BODY(PART OF 46-NOT SHOWN)	2REF
54.	60107648	HOSE CLAMP	6
55.	72062103	NUT 3/8-16 LOCK	7
56.	53000717	GREASE EXTENSION 32"	2
57.	60114210	HOSE CLAMP MTG BAR	1
58.	72053438	COUPLER 1/8NPT	2
59.	72060048	CAP SCR 3/8-16X1-1/2 HHGR5	3

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.

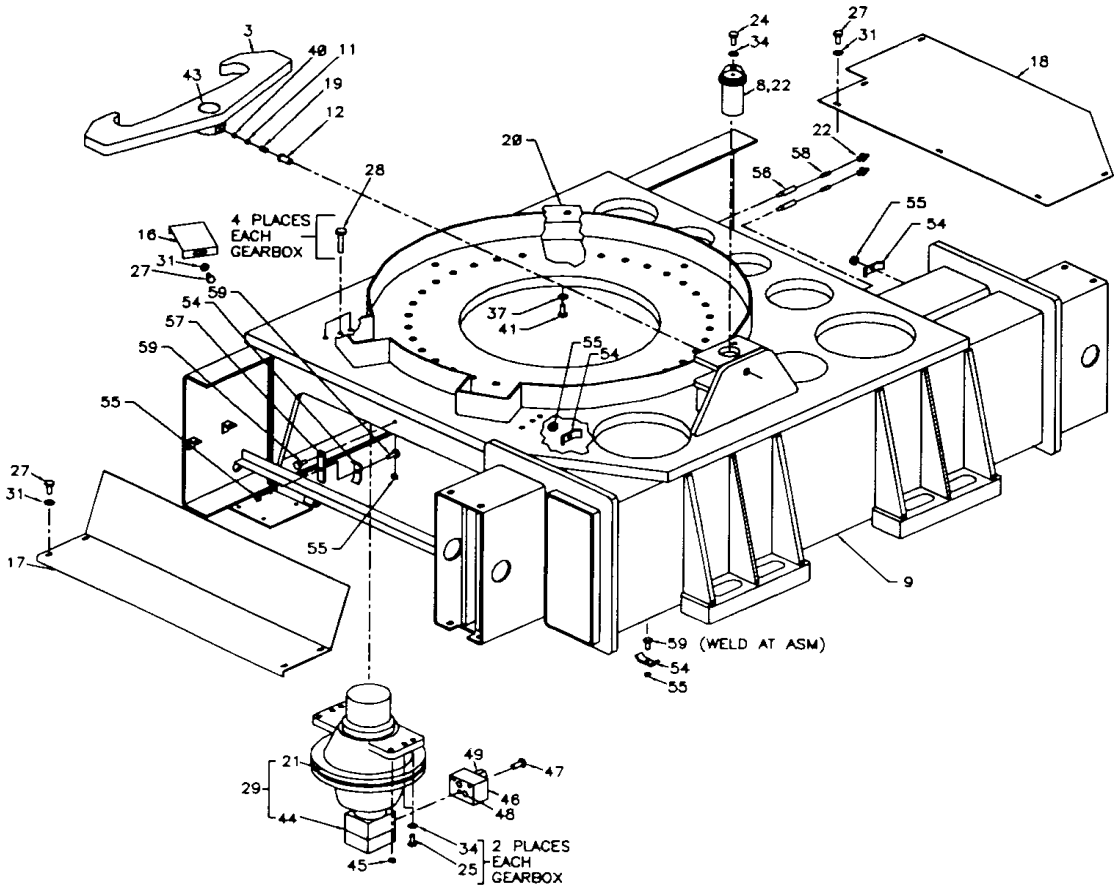
NOTES

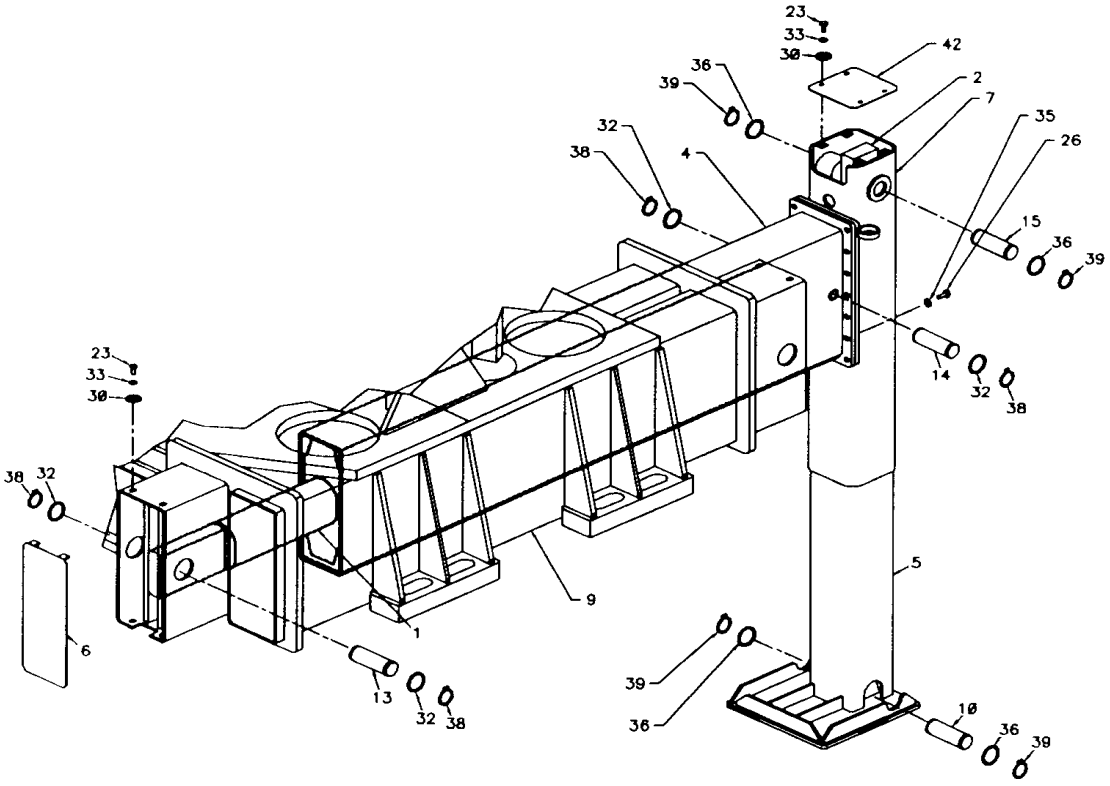
MOTOR (44) AND GEARBOX (21) COME ASSEMBLED. CHECK THE OIL LEVEL. IF NECESSARY, ADD 80-90 WT OIL AS NEEDED.

TURNTABLE BEARING BACKLASH:0.010"-0.017" (0.254-0.432MM)

CONTINUED ON FOLLOWING PAGE

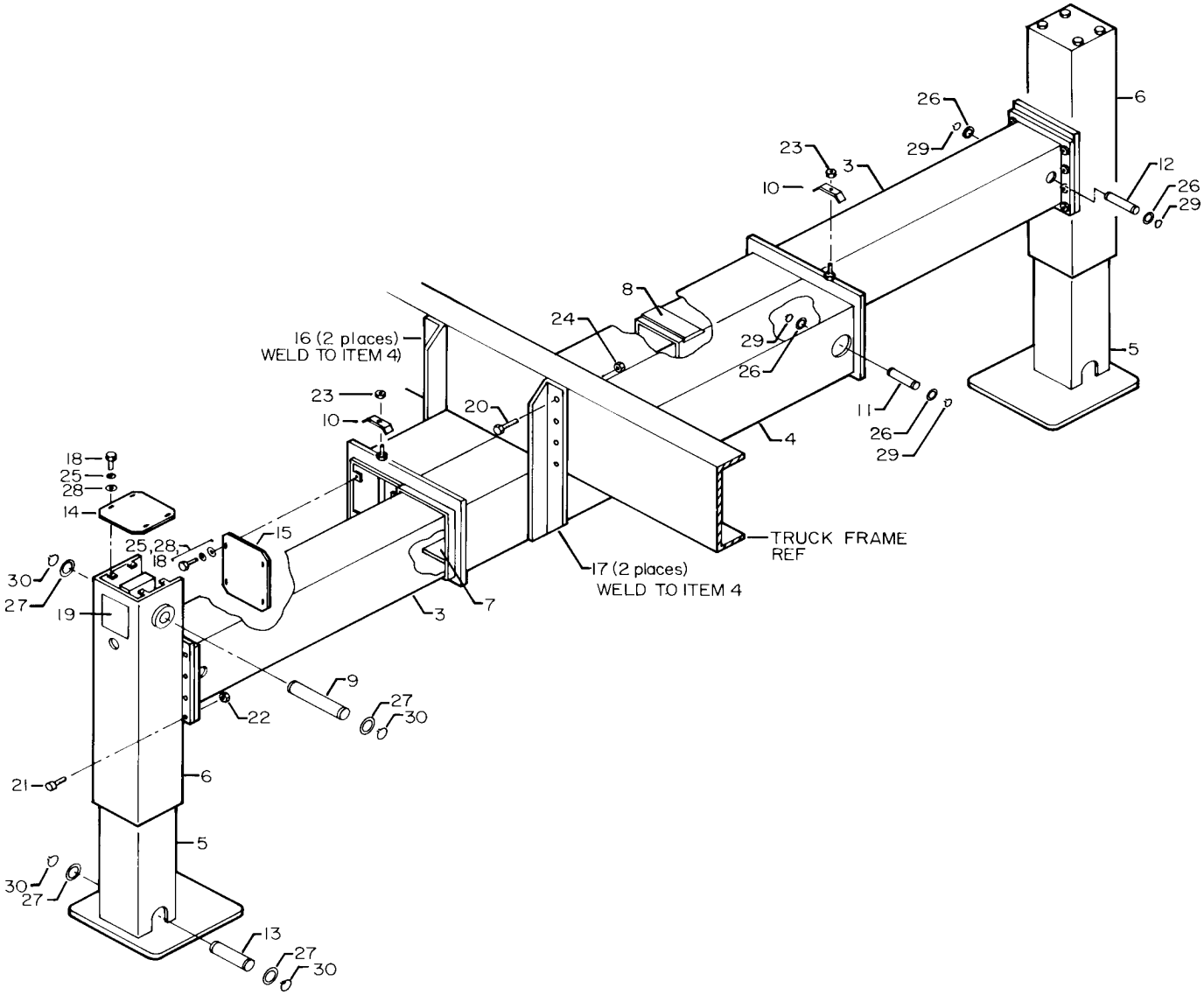
BASE & OUTRIGGER ASM (41706211-2)





AUX OUTRIGGER ASM (31706397)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3B020860	POWER-DOWN CYLINDER	2
2.	3B148860	POWER-OUT CYLINDER	2
3.	52706375	ARM	2
4.	52706385	ARM HOUSING	1
5.	52706388	LEG	2
6.	52706396	HOUSING	2
7.	60030067	WEAR PAD	2
8.	60030085	WEAR PAD	2
9.	60105321	PIN	2
10.	60107648	HOSE CLAMP	2
11.	60109500	PIN	2
12.	60109501	PIN	2
13.	60109593	PIN	2
14.	60109594	OUTRIGGER HSG COVER	2
15.	60109595	ARM HSG COVER	2
16.	60109606	REAR MTG ANGLE	2
17.	60109687	FRONT MTG ANGLE	2
18.	72060002	CAP SCR 1/4-20X3/4 HH GR5	16
19.	70392864	DECAL - DANGER OR STD CLR	2
20.	72060186	CAP SCR 3/4-10X2-1/2 HH GR5	16
21.	72060816	CAP SCR 5/8-11X2-1/2 SH	16
22.	72062091	NUT 5/8-11 LOCK	16
23.	72062103	NUT 3/8-16 LOCK	2
24.	72062114	NUT 3/4-10 LOCK	16
25.	72063001	WASHER 1/4 WRT	16
26.	72063034	MACH BUSHING 1 X 10GA NR	8
27.	72063037	MACH BUSHING 1-1/5 X 10GA NR	8
28.	72063049	WASHER 1/4 LOCK	16
29.	72066125	RETAINING RING 1" EXT HD	8
30.	72066132	RETAINING RING 1-1/2 EXT HD	8



PWR-OUT OUTRIGGER CYLINDER (3B144860)

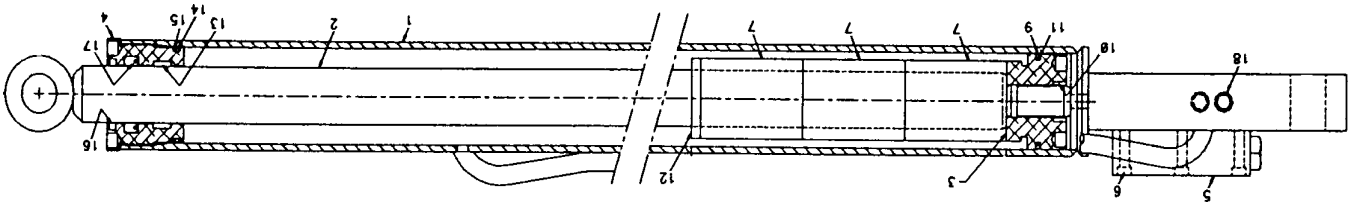
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B144860	CASE ASM (INCL: 18)	1
2.	4G144860	ROD ASM	1
3.	6I025087	PISTON	1
4.	6H025015	HEAD	1
5.	73054004	VALVE	1
6.	72060708	SCREW 1/4-20X1-1/4 SH	6
7.	6C300015	STOP TUBE	3
8.	9B101214	SEAL KIT (INCL:9-17)	1
9.	7T66P025	PISTON SEAL (PART OF 8)	1REF
10.	7T61N087	LOCK-RING SEAL (PART OF 8)	1REF
11.	7Q072137	O-RING (PART 0F 17)	1REF
12.	6A025015	WAFER LOCK (PART OF 8)	1REF
13.	7T2N8015	WEAR RING (PART OF 8)	1REF
14.	7Q072228	O-RING (PART OF 8)	1REF
15.	7Q10P228	BACK-UP RING (PART OF 8)	1REF
16.	7R14P015	ROD WIPER (PART OF 8)	1REF
17.	7R546015	ROD SEAL (PART OF 8)	1REF
18.	7PNPXT02	PLUG 1/8NPT (PART OF 1)	2REF

NOTE

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

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

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



PWR-DN OUTRIGGER CYLINDER (3C145860)

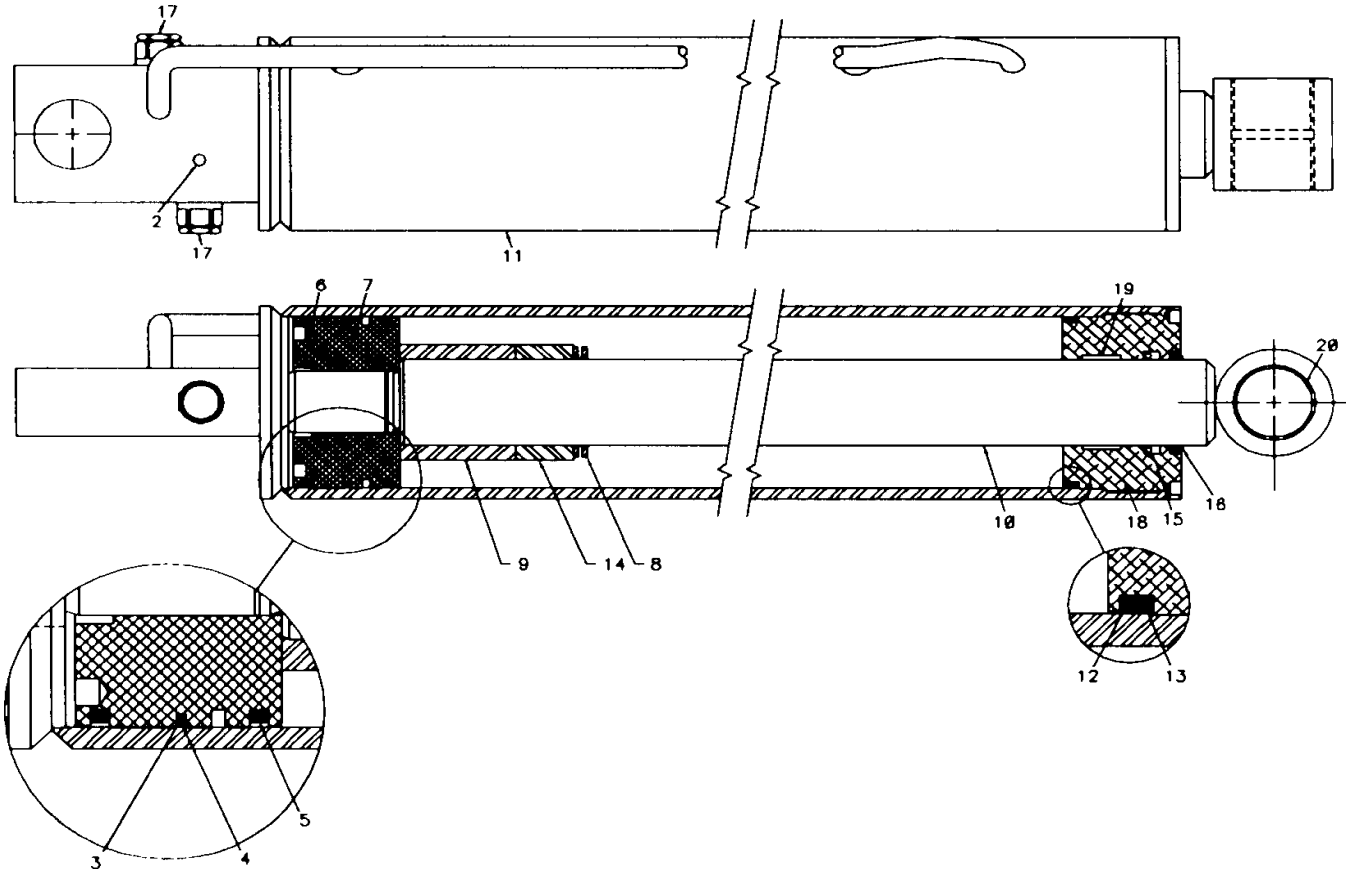
ITEM	PART NO.	DESCRIPTION	QTY
1.	9C202029	SEAL KIT(INCL:3-6,8,12,13,15,16,19)	1
2.	7PNPXT02	PLUG 1/8NPT (PART OF 11)	2REF
3.	7Q072157	O-RING (PART OF 1)	1REF
4.	7T66P050	PISTON SEAL (PART OF 1)	1REF
5.	7T65I050	PISTON RING (PART OF 1)	2REF
6.	7T61N181	LOCK-RING SEAL (PART OF 1)	1REF
7.	6I050181	PISTON	1
8.	6A025025	WAFER LOCK (PART OF 1)	1REF
9.	6C300025	STOP TUBE	1
10.	4G145860	ROD ASM (INCL: 20)	1
11.	4C145860	CASE ASM (INCL: 2)	1
12.	7Q072350	O-RING (PART OF 1)	1REF
13.	7Q10P350	BACK-UP RING (PART OF 1)	1REF
14.	6C150025	STOP TUBE	1
15.	7R546025	ROD SEAL (PART OF 1)	1REF
16.	7R14P025	ROD WIPER (PART OF 1)	1REF
17.	73054304	VALVE 10GPM	2
18.	6H050025	HEAD	1
19.	7T2N8027	WEAR RING (PART OF 1)	1REF
20.	7BF81520	BUSHING (PART OF 10)	2REF

NOTE

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

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

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



PWR-OUT AUX OUTRIGGER CYLINDER (3B148860)

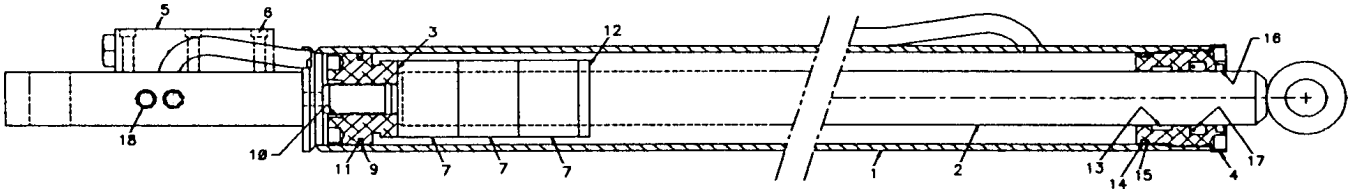
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B148860	CASE ASM (INCL:18)	1
2.	4G148860	ROD ASM	1
3.	6I0025087	PISTON	1
4.	6H025015	HEAD	1
5.	73054004	VALVE	1
6.	72060708	CAP SCR 1/4-20X1-1/4 SH	6
7.	6C150015	STOP TUBE	3
8.	9B101214	SEAL KIT (INCL:9-17)	1
9.	7T66P025	PISTON SEAL (PART OF 8)	1REF
10.	7T61N087	LOCK RING SEAL (PART OF 8)	1REF
11.	7Q072137	O-RING (PART OF 8)	1REF
12.	6A025015	WAFER LOCK (PART OF 8)	1REF
13.	7T2N8015	WEAR RING (PART OF 8)	1REF
14.	7Q072228	O-RING (PART OF 8)	1REF
15.	7Q10P228	BACK-UP RING (PART OF 8)	1REF
16.	7R14P015	ROD WIPER (PART OF 8)	1REF
17.	7R546015	ROD SEAL (PART OF 8)	1REF
18.	7PNPXT02	PIPE PLUG (PART OF 1)	2REF

NOTE

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

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

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



PWR-DN AUX OUTRIGGER CYLINDER (3B020860)

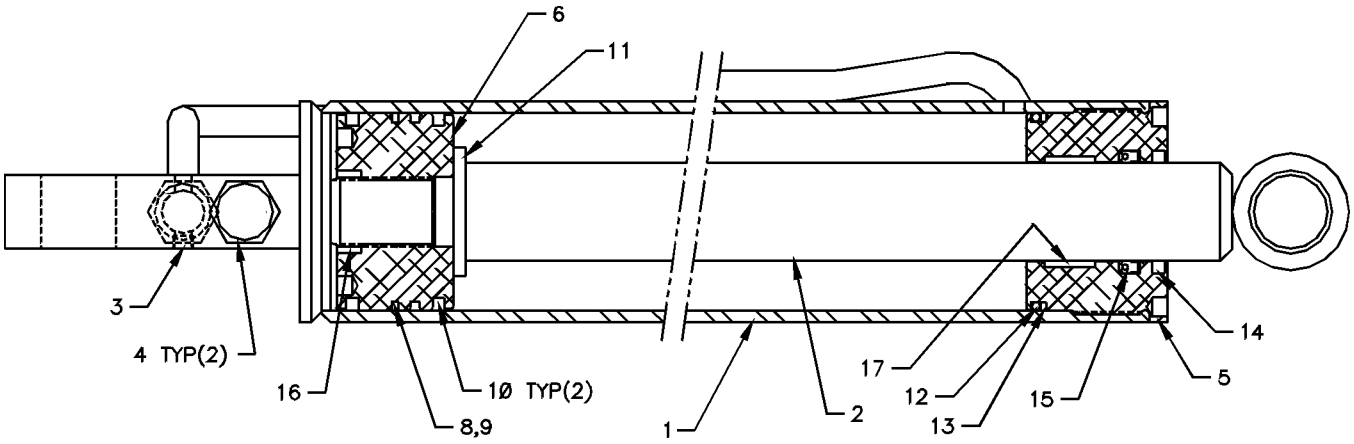
ITEM	PART NO.	DESCRIPTION	QTY
1.	4B020860	CASE ASM (INCL:3)	1
2.	4G020860	ROD ASM (INCL:17)	1
3.	7PNPXT02	PIPE PLUG 1/8NPT (PART OF 1)	2REF
4.	73054304	C'BALANCE VALVE 10GPM	2
5.	6H040020	HEAD	1
6.	6I040143	PISTON	1
7.	9C161623	SEAL KIT (INCL:8-17)	1
8.	7Q072153	O-RING (PART OF 7)	1REF
9.	7T66P040	PISTON SEAL (PART OF 7)	1REF
10.	7T65I040	PISTON RING (PART OF 7)	2REF
11.	6A025020	WAFER LOCK (PART OF 7)	1REF
12.	7Q072342	O-RING (PART OF 7)	1REF
13.	7Q10P342	BACKUP RING (PART OF 7)	1REF
14.	7R14P020	ROD WIPER (PART OF 7)	1REF
15.	7R546020	U-CUP SEAL (PART OF 7)	1REF
16.	7T61N143	LOCK RING (PART OF 7)	1REF
17.	7T2N8022	ROD WEAR RING (PART OF 7)	1REF
18.	7BF81215	BUSHING (PART OF 2)	2REF

NOTE

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

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

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

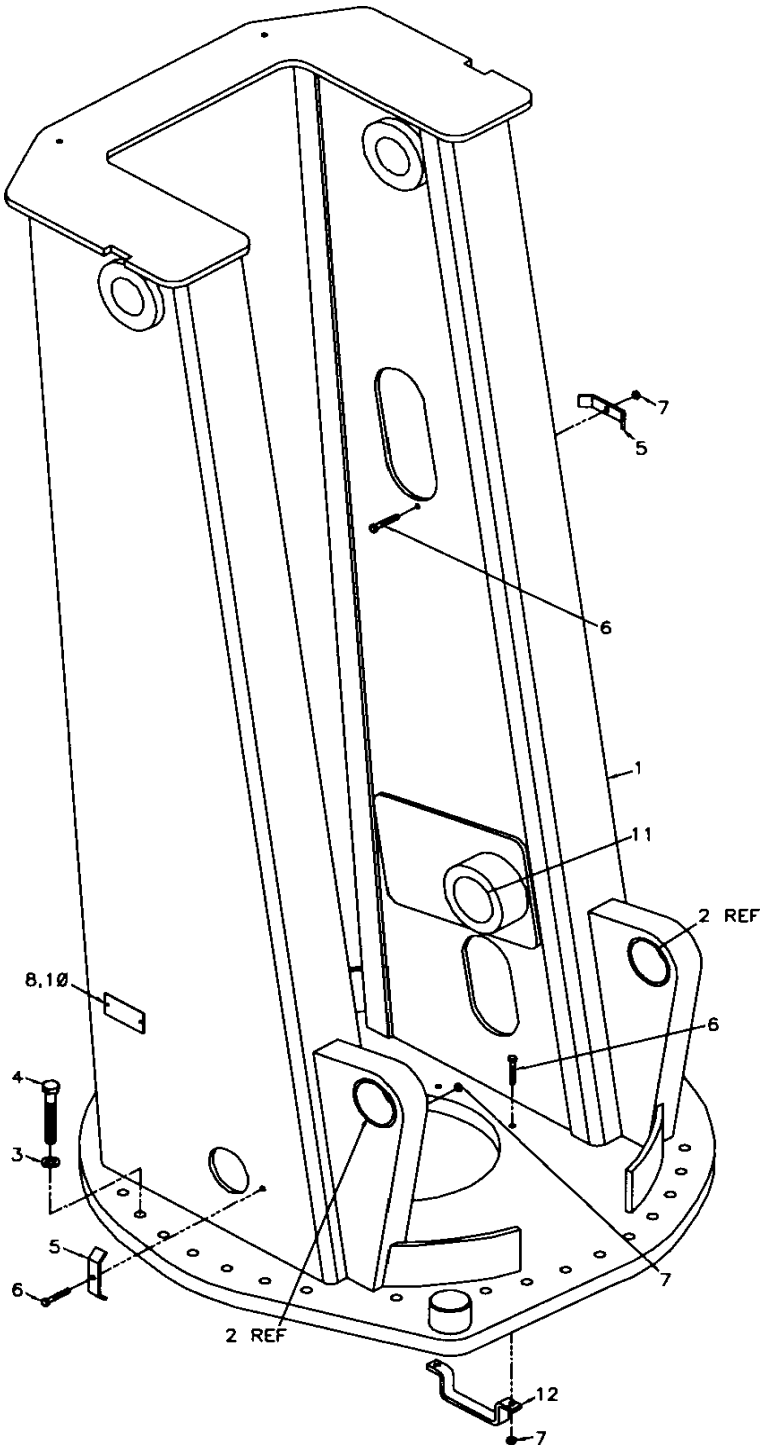


MAST ASM (41706212)

ITEM	PART NO.	DESCRIPTION	QTY
1.	51706422	MAST (INCL:2)	1
2.	70034275	BEARING (PART OF 1)	2REF
3.	72063116	WASHER 3/4 FLAT HARD GR8	36
4.	72601466	CAP SCR 3/4-10X5 HH GR8	36
5.	60010118	HOSE CLAMP	4
6.	72060051	CAP SCR 3/8-16X2-1/4 HH GR5	8
7.	72062103	NUT 3/8-16 LOCK	8
8.	70029119	SERIAL NUMBER PLACARD	1
10.	72066340	POP RIVET 1/8X3/8GRIP	2
11.	60109582	SLEEVE	2
12.	60114209	HOSE SUPPORT	2

WARNING

Anytime the gear bearing bolts have been removed, they must be replaced with bolts of identical grade and size. Failure to replace the gear bearing bolts may result in serious injury or death.

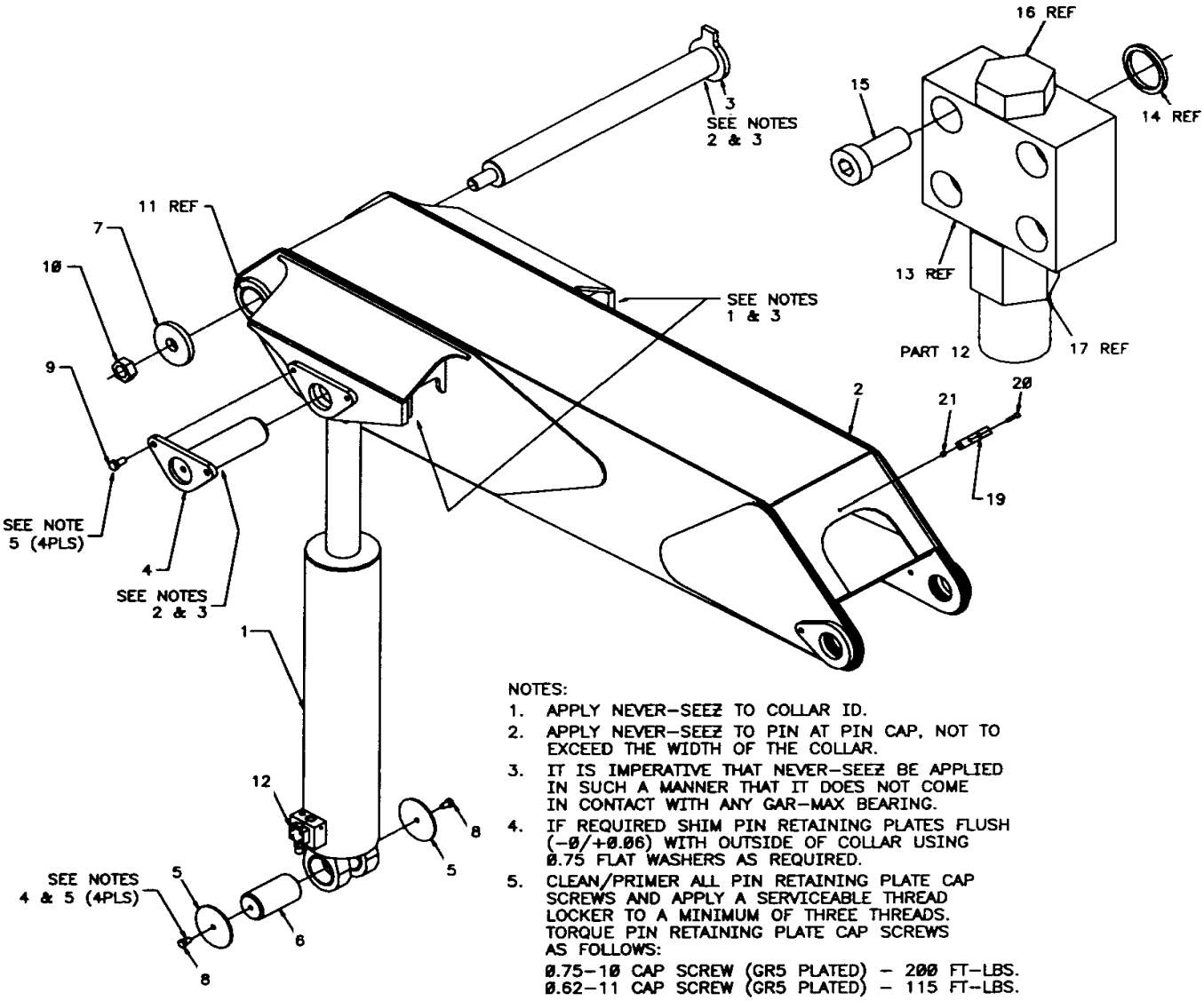


INNER BOOM ASM (41706213)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3D142860	INNER CYLINDER	2
2.	51706296	INNER BOOM (INCL: 11)	1
3.	52706294	PIN	1
4.	52706295	PIN	2
5.	60109452	PIN RETAINER	4
6.	60109456	PIN	2
7.	60109472	PIN RETAINER PLATE	1
8.	72060147	CAP SCR 5/8-11X1 HH GR5	4
9.	72060183	CAP SCR 3/4-10X1-1/2 HH GR5	4
10.	72062135	NUT 1-3/4 - 5 SLOTTED	1
11.	70034274	BEARING (PART OF 2)	4REF
12.	31705698	CAPACITY ALERT (INCL: 13-18)	1
13.	60025221	MANIFOLD (PART OF 12)	1REF
14.	7Q072015	O-RING (PART OF 12)	1REF
15.	72060731	CAP SCR 5/16-18X3/4SH(PART OF 12)	4REF
16.	72532140	PLUG (PART OF 12)	1REF
17.	77041283	PRESSURE SWITCH (PART OF 12)	1REF
18.	99900118	INSTALLATION DRAWING(PART OF 12)	1REF
19.	60010118	HOSE CLAMP	1
20.	72060051	CAP SCR 3/8-16X2-1/4 HH GR5	1
21.	72062103	NUT 3/8-16 LOCK	1

NOTE

Anytime the pin retainer bolts have been removed, apply Loctite 262 to the threads before reassembly.



NOTES:

1. APPLY NEVER-SEEZ TO COLLAR ID.
2. APPLY NEVER-SEEZ TO PIN AT PIN CAP, NOT TO EXCEED THE WIDTH OF THE COLLAR.
3. IT IS IMPERATIVE THAT NEVER-SEEZ BE APPLIED IN SUCH A MANNER THAT IT DOES NOT COME IN CONTACT WITH ANY GAR-MAX BEARING.
4. IF REQUIRED SHIM PIN RETAINING PLATES FLUSH (-Ø/+Ø.Ø6) WITH OUTSIDE OF COLLAR USING Ø.75 FLAT WASHERS AS REQUIRED.
5. CLEAN/PRIMER ALL PIN RETAINING PLATE CAP SCREWS AND APPLY A SERVICEABLE THREAD LOCKER TO A MINIMUM OF THREE THREADS. TORQUE PIN RETAINING PLATE CAP SCREWS AS FOLLOWS:

   Ø.75-1Ø CAP SCREW (GR5 PLATED) - 2ØØ FT-LBS.
   Ø.62-11 CAP SCREW (GR5 PLATED) - 115 FT-LBS.

INNER CYLINDER (3D142860)

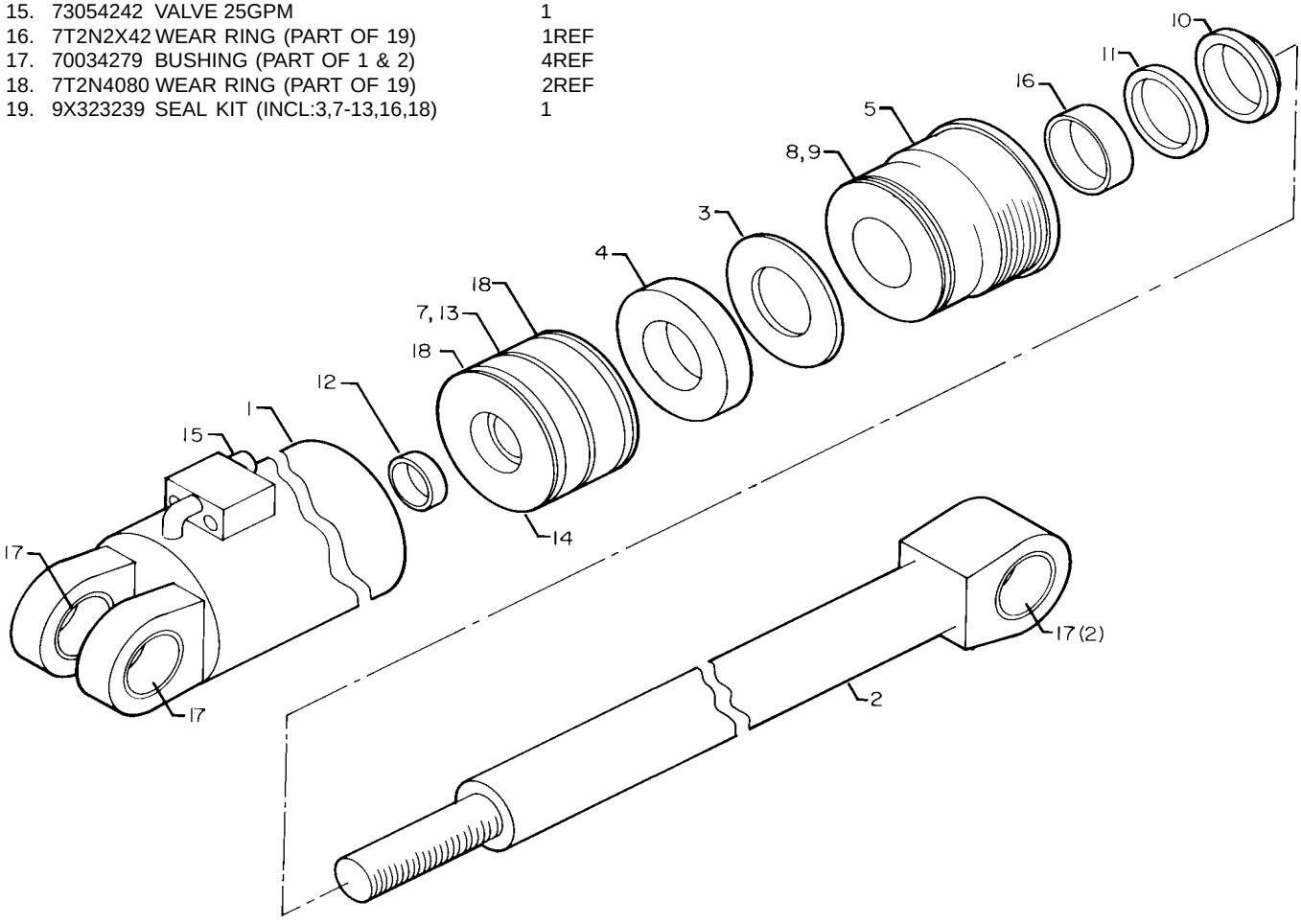
ITEM	PART NO.	DESCRIPTION	QTY
1.	4D142860	CASE ASM (INCL:6,17)	1
2.	4G150860	ROD ASM (INCL: 17)	1
3.	6A025040	WAFER LOCK (PART OF 19)	1REF
4.	6C150040	STOP TUBE	1
5.	6HX80040	HEAD	1
6.	7PNPXT02	PIPE PLUG 1/8NPT(PART OF 1)	3REF
7.	7Q072263	O-RING (PART OF 19)	1REF
8.	7Q072443	O-RING (PART OF 19)	1REF
9.	7Q10P443	BACK-UP RING (PART OF 19)	1REF
10.	7R14P040	ROD WIPER (PART OF 19)	1REF
11.	7R546040	ROD SEAL (PART OF 19)	1REF
12.	7T61N243	LOCK RING SEAL (PART OF 19)	1REF
13.	7T66P080	PISTON SEAL (PART OF 19)	1REF
14.	6IX80243	PISTON	1
15.	73054242	VALVE 25GPM	1
16.	7T2N2X42	WEAR RING (PART OF 19)	1REF
17.	70034279	BUSHING (PART OF 1 & 2)	4REF
18.	7T2N4080	WEAR RING (PART OF 19)	2REF
19.	9X323239	SEAL KIT (INCL:3,7-13,16,18)	1

NOTE

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

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

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

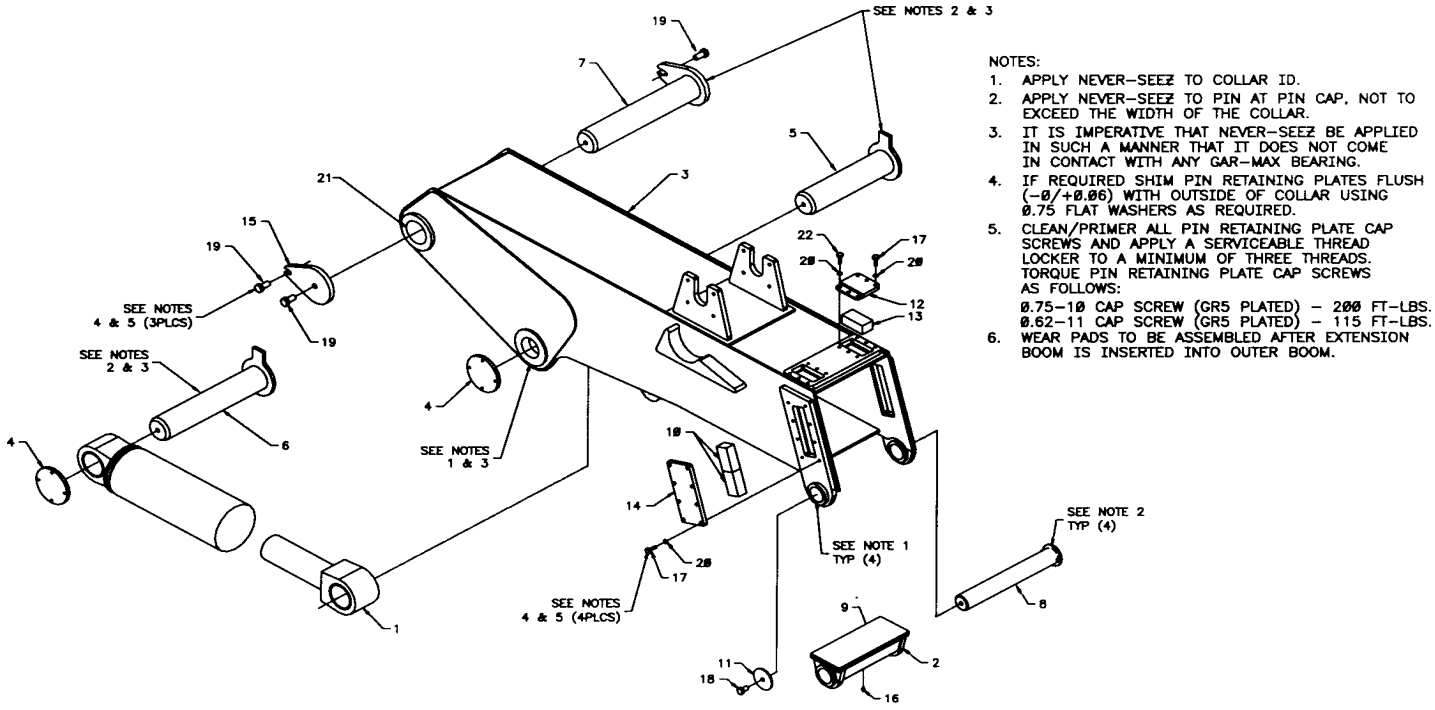


OUTER BOOM ASM (41706215)

ITEM	PART NO.	DESCRIPTION	QTY
1.	3C147860	OUTER CYLINDER	2
2.	51706269	TRUNNION	1
3.	51706291	OUTER BOOM (INCL: 21)	1
4.	52706274	PIN RETAINER	2
5.	52706275	PIN	1
6.	52714241	PIN	1
		(FROM CRANE SERIAL NO. 32018981001)	
	52706276	PIN	1
		(TO SERIAL NO. 32018981001)	
7.	52706277	PIN	1
8.	52706278	PIN	1
9.	60030160	WEAR PAD	2
10.	60030164	WEAR PAD	4
11.	60106331	PIN RETAINER	1
12.	60109715	RETAINER PLATE	2
13.	60109341	WEAR PAD	2
14.	60109344	RETAINER PLATE	2
15.	60109422	RETAINER	1
16.	72053508	ZERK 1/8NPT	1
17.	72060092	CAP SCR 1/2-13X1-1/4 HHGR5	22
18.	72060147	CAP SCR 5/8-11X1 HHGR5	1
19.	72060183	CAP SCR 3/4-10X1-1/2 HHGR5	3
20.	72063053	WASHER 1/2 LOCK	28
21.	70034274	BEARING (PART OF 3)	4REF
22.	72060091	CAP SCR 1/2-13X1 HHGR5	6

NOTE

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



NOTES:
1. APPLY NEVER-SEEZ TO COLLAR ID.
2. APPLY NEVER-SEEZ TO PIN AT PIN CAP, NOT TO EXCEED THE WIDTH OF THE COLLAR.
3. IT IS IMPERATIVE THAT NEVER-SEEZ BE APPLIED IN SUCH A MANNER THAT IT DOES NOT COME IN CONTACT WITH ANY GAR-MAX BEARING.
4. IF REQUIRED SHIM PIN RETAINING PLATES FLUSH (-Ø/+Ø.Ø6) WITH OUTSIDE OF COLLAR USING Ø.75 FLAT WASHERS AS REQUIRED.
5. CLEAN/PRIMER ALL PIN RETAINING PLATE CAP SCREWS AND APPLY A SERVICEABLE THREAD LOCKER TO A MINIMUM OF THREE THREADS. TORQUE PIN RETAINING PLATE CAP SCREWS AS FOLLOWS:
   Ø.75-1Ø CAP SCREW (GR5 PLATED) - 2ØØ FT-LBS.
   Ø.62-11 CAP SCREW (GR5 PLATED) - 115 FT-LBS.
6. WEAR PADS TO BE ASSEMBLED AFTER EXTENSION BOOM IS INSERTED INTO OUTER BOOM.

OUTER CYLINDER (3C147860)

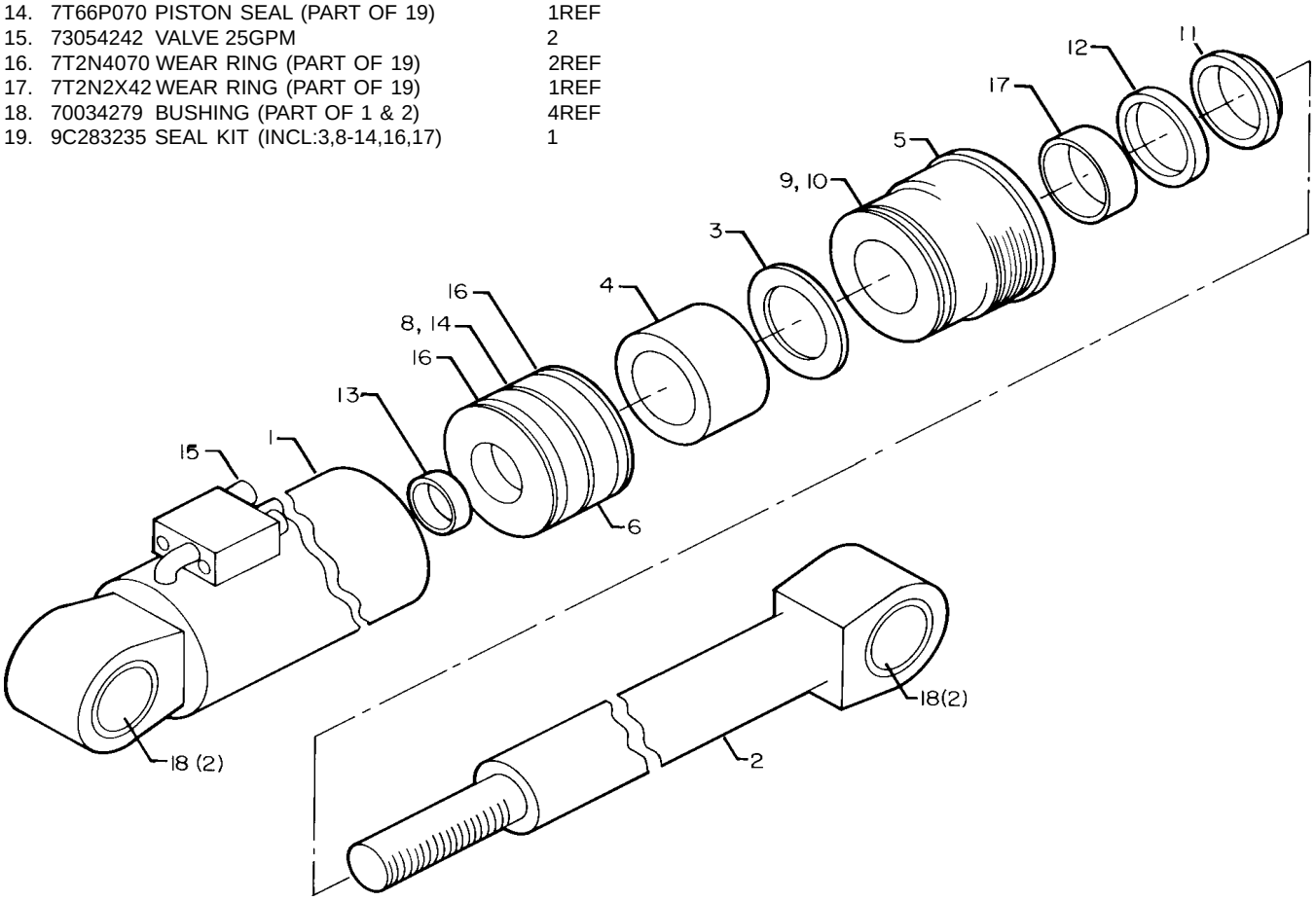
ITEM	PART NO.	DESCRIPTION	QTY
1.	4C147860	CASE ASM (INCL: 7,18)	1
2.	4G147860	ROD ASM (INCL: 18)	1
3.	6A025040	WAFER LOCK (PART OF 19)	1REF
4.	6C350040	STOP TUBE	1
5.	6HX70040	HEAD	1
6.	6IX70218	PISTON	1
7.	7PNPXT02	PIPE PLUG (PART OF 1)	2REF
8.	7Q072259	O-RING (PART OF 19)	1REF
9.	7Q072363	O-RING (PART OF 19)	1REF
10.	7Q10P363	BACK-UP RING (PART OF 19)	1REF
11.	7R14P040	ROD WIPER (PART OF 19)	1REF
12.	7R546040	ROD SEAL (PART OF 19)	1REF
13.	7T61N218	LOCK RING SEAL (PART OF 19)	1REF
14.	7T66P070	PISTON SEAL (PART OF 19)	1REF
15.	73054242	VALVE 25GPM	2
16.	7T2N4070	WEAR RING (PART OF 19)	2REF
17.	7T2N2X42	WEAR RING (PART OF 19)	1REF
18.	70034279	BUSHING (PART OF 1 & 2)	4REF
19.	9C283235	SEAL KIT (INCL:3,8-14,16,17)	1

NOTE

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

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

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



1ST STG EXT BOOM ASM (41706216-1)

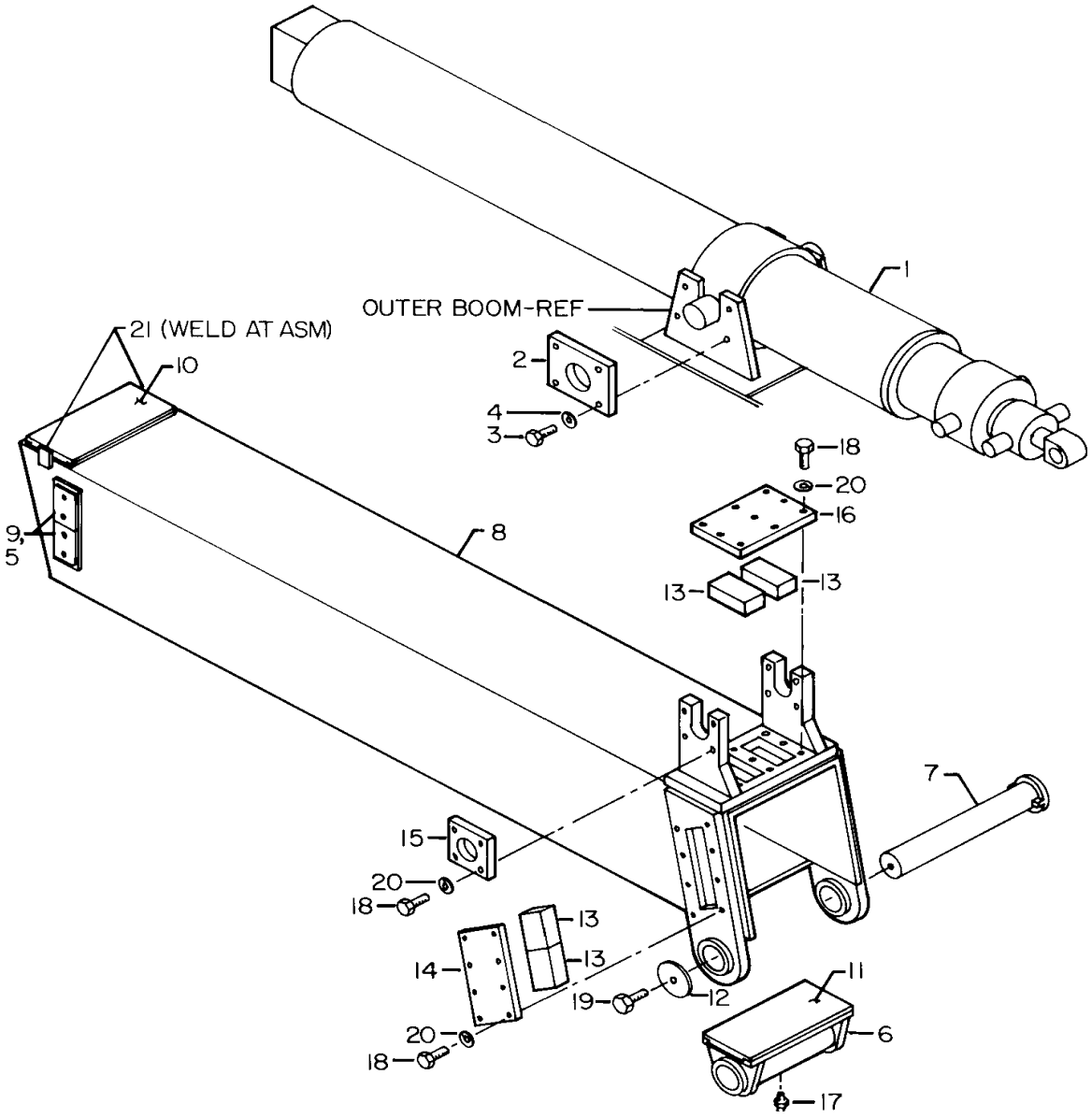
ITEM	PART NO.	DESCRIPTION	QTY
1.	3K130860	EXTENSION CYLINDER	1
2.	60109424	LOCK PLATE	2
3.	72060149	CAP SCR 5/8-11X1-1/2 HH GR5	8
4.	72063055	WASHER 5/8 LOCK	8
5.	72601026	CAP SCR 3/8-16X1/2 FLTHDSOC	8
6.	51706242	TRUNNION	1
7.	52706245	PIN	1
8.	52706246	1ST STAGE EXT BOOM	1
9.	60030072	WEAR PAD	4
10.	60030158	WEAR PAD	1
11.	60030159	WEAR PAD	1
12.	60106331	PIN RETAINER PLATE	1
13.	60109341	WEAR PAD	6
14.	60109344	RETAINER PLATE	2
15.	60109355	LOCK PLATE	2
16.	60109357	RETAINER PLATE	1
17.	72053508	ZERK 1/8NPT	1
18.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	33
19.	72060147	CAP SCR 5/8-11X1 HH GR5	1
20.	72063053	WASHER 1/2 LOCK	33
21.	60109709	PLATE	2

NOTE

After high-pressure wash or the extend function becomes erratic, apply Lubriplate lubricant to the underside of the extension boom.

NOTE

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

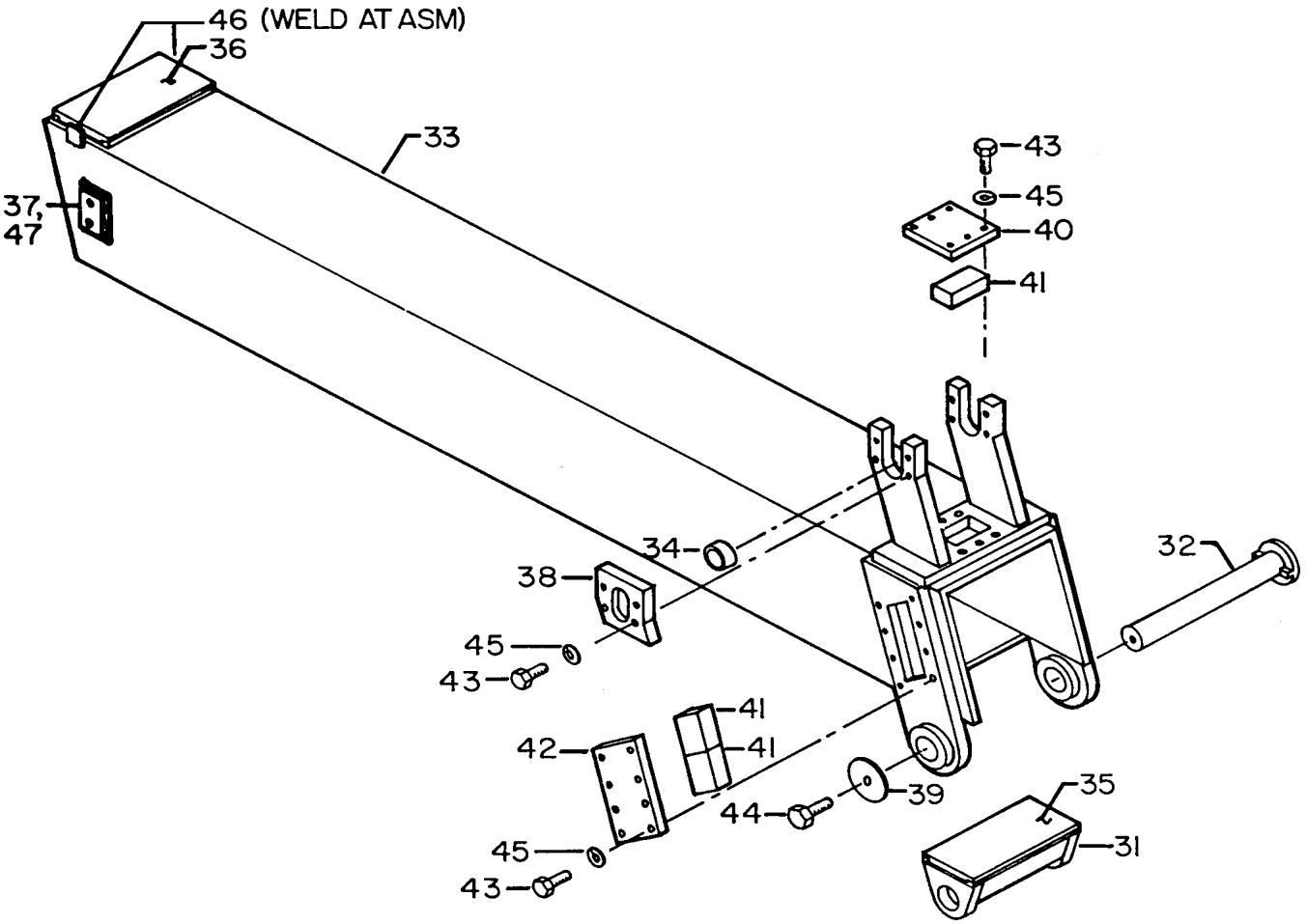


2ND STG EXT BOOM ASM (41706216-2)

ITEM	PART NO.	DESCRIPTION	QTY
31.	51706226	TRUNNION	1
32.	52706228	PIN	1
33.	52706229	2ND STG EXT BOOM	1
34.	60020211	ROLLER	2
35.	60030156	WEAR PAD	1
36.	60030157	WEAR PAD	1
37.	60030163	WEAR PAD	2
38.	60109336	LOCK PLATE	2
39.	60109337	PIN RETAINER PLATE	1
40.	60109339	RETAINER PLATE	1
41.	60109341	WEAR PAD	5
42.	60109344	RETAINER PLATE	2
43.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	30
44.	72060147	CAP SCR 5/8-11X1 HH GR5	1
45.	72063053	WASHER 1/2 LOCK	30
46.	60109709	PLATE	2
47.	72601026	CAP SCR 3/8-16X1/2 FLTHDSOC	4

NOTE

After high-pressure wash or the extend function becomes erratic, apply Lubriplate lubricant to the underside of the extension boom.NOTEAnytime the pin retainer plate bolts have been removed, apply Loctite 262 to the threads before re-assembly.

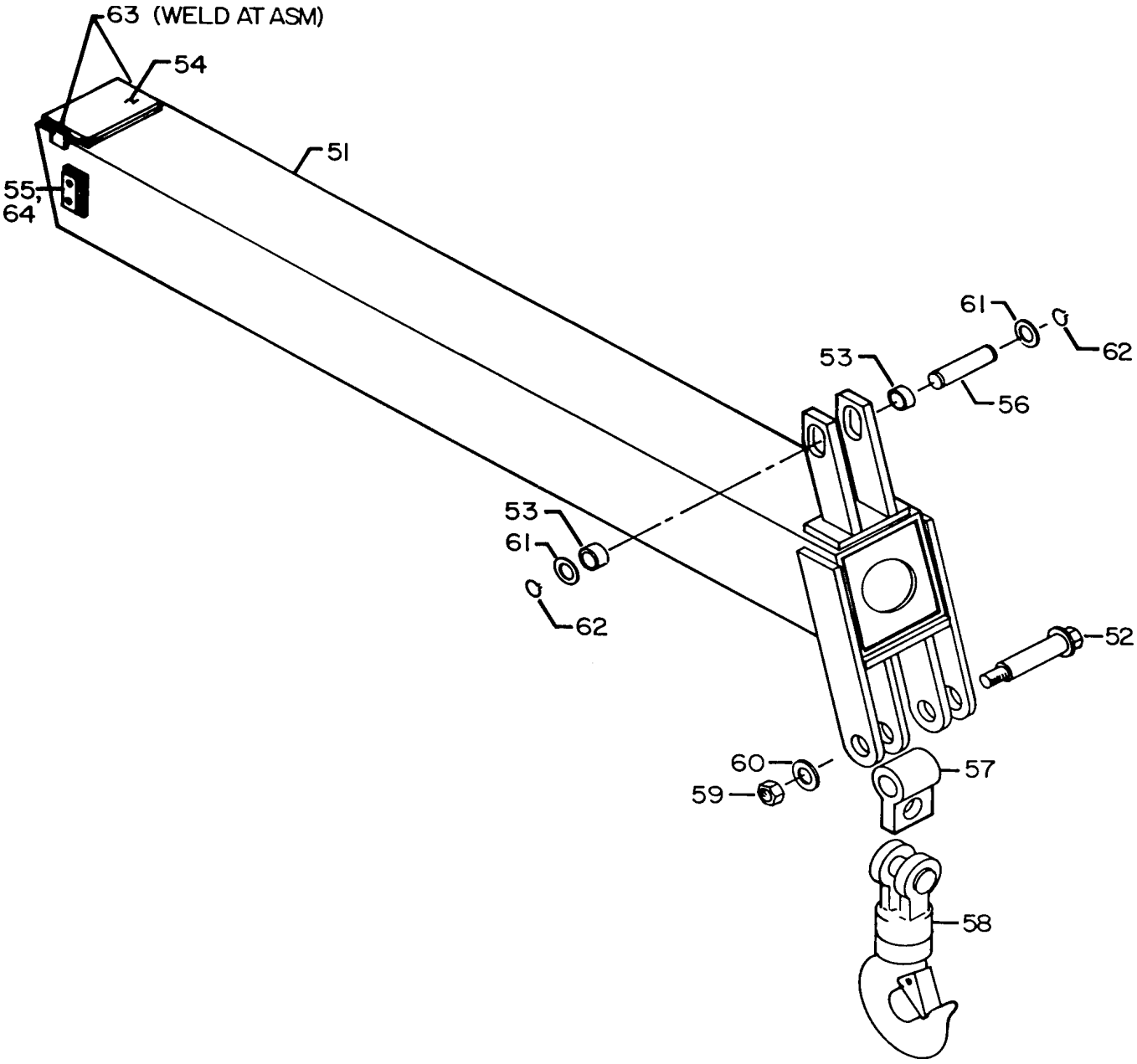


3RD STG EXT BOOM ASM (41706216-3)

ITEM	PART NO.	DESCRIPTION	QTY
51.	52706220	3RD STG EXT BOOM	1
52.	52709805	PIN	1
53.	60020211	ROLLER	2
54.	60030155	WEAR PAD	1
55.	60030163	WEAR PAD	2
56.	60102201	PIN	1
57.	60109323	SWIVEL LINK	1
58.	70731776	SWIVEL HOOK 15-TON W/LATCH	1
59.	72062142	NUT 1-1/4-7 LOCK STL INSERT	1
60.	72063012	WASHER 1-1/4 WRT	1
61.	72063014	WASHER 1-1/2 WRT	2
62.	72066132	RETAINING RING 1-1/2 EXT HD	2
63.	60109709	PLATE	2
64.	72601026	CAP SCR 3/8-16X1/2 FLTHDSOC	4

NOTE

After high-pressure wash or the extend function becomes erratic, apply Lubriplate lubricant to the underside of the extension boom.



TELESCOPIC EXTENSION CYLINDER (3K130860)

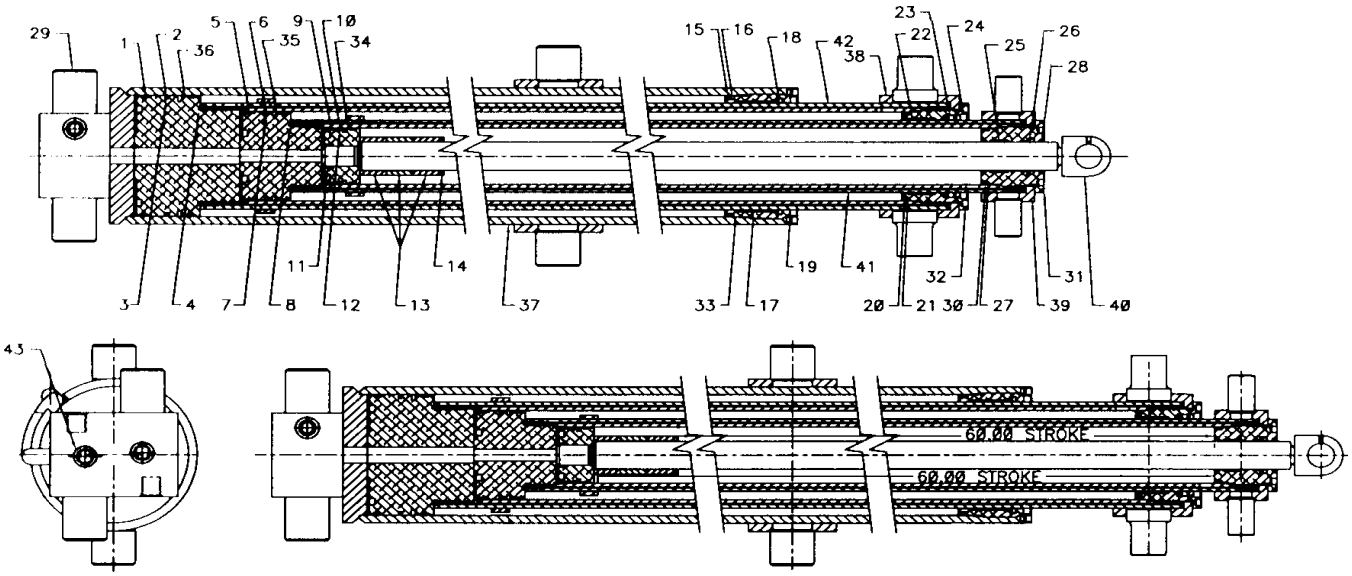
ITEM	PART NO.	DESCRIPTION	QTY
1.	7T2N4075	WEAR RING (PART OF 43)	2REF
2.	7T66P075	PISTON SEAL (PART OF 43)	1REF
3.	7Q072261	O-RING (PART OF 43)	1REF
4.	7Q072256	O-RING (PART OF 43)	1REF
5.	7T2N4055	WEAR RING (PART OF 43)	2REF
6.	7T66P055	PISTON SEAL (PART OF 43)	1REF
7.	7Q072159	O-RING (PART OF 43)	1REF
8.	7Q072240	O-RING (PART OF 43)	1REF
9.	7T2N3035	WEAR RING (PART OF 43)	2REF
10.	7T66P035	PISTON SEAL (PART OF 43)	1REF
11.	7T61N125	LOCK RING (PART OF 43)	1REF
12.	7Q072151	O-RING (PART OF 43)	1REF
13.	6C150017	STOP TUBE	3
14.	6A025017	WAFER LOCK (PART OF 43)	1REF
15.	7Q072441	O-RING (PART OF 43)	1REF
16.	7Q10P441	BACK-UP RING (PART OF 43)	1REF
17.	7T2N2X68	WEAR RING (PART OF 43)	1REF
18.	7R546066	ROD SEAL (PART OF 43)	1REF
19.	7R14P066	ROD WIPER (PART OF 43)	1REF
20.	7Q072354	O-RING (PART OF 43)	1REF
21.	7Q10P354	BACK-UP RING (PART OF 43)	1REF
22.	7T2N1245	WEAR RING (PART OF 43)	1REF
23.	7R512450	ROD SEAL (PART OF 43)	1REF
24.	7R14P045	ROD WIPER (PART OF 43)	1REF
25.	7T2N8020	WEAR RING (PART OF 43)	1REF
26.	7R546017	ROD SEAL (PART OF 43)	1REF
27.	7Q10P338	BACK-UP RING (PART OF 43)	1REF
28.	7R14P017	ROD WIPER (PART OF 43)	1REF
29.	73054568	VALVE 100GPM	2
30.	7Q072338	O-RING (PART OF 43)	1REF
31.	6HX03517	3RD STG HEAD	1
32.	6H055045	2ND STG HEAD	1
33.	6H075062	1ST STG HEAD	1
34.	6IX03512	3RD STG PISTON	1
35.	6I140860	2ND STG PISTON	1
36.	6IX13286	1ST STG PISTON	1
37.	4K130860	CASE	1
38.	4FG13286	1ST STG SPUD RING	1
39.	4FG13486	2ND STG SPUD RING	1
40.	4G130860	3RD STG ROD	1
41.	4H130860	2ND STG ROD	1
42.	4H132860	1ST STG ROD	1
43.	9X130860	SEAL KIT (INCL:1-12,14-28,30)	1
44.	72053405	PLUG 3/4 SOC HD	4

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.



1ST STG EXT BOOM ASM w/WINCH (41708187-1)

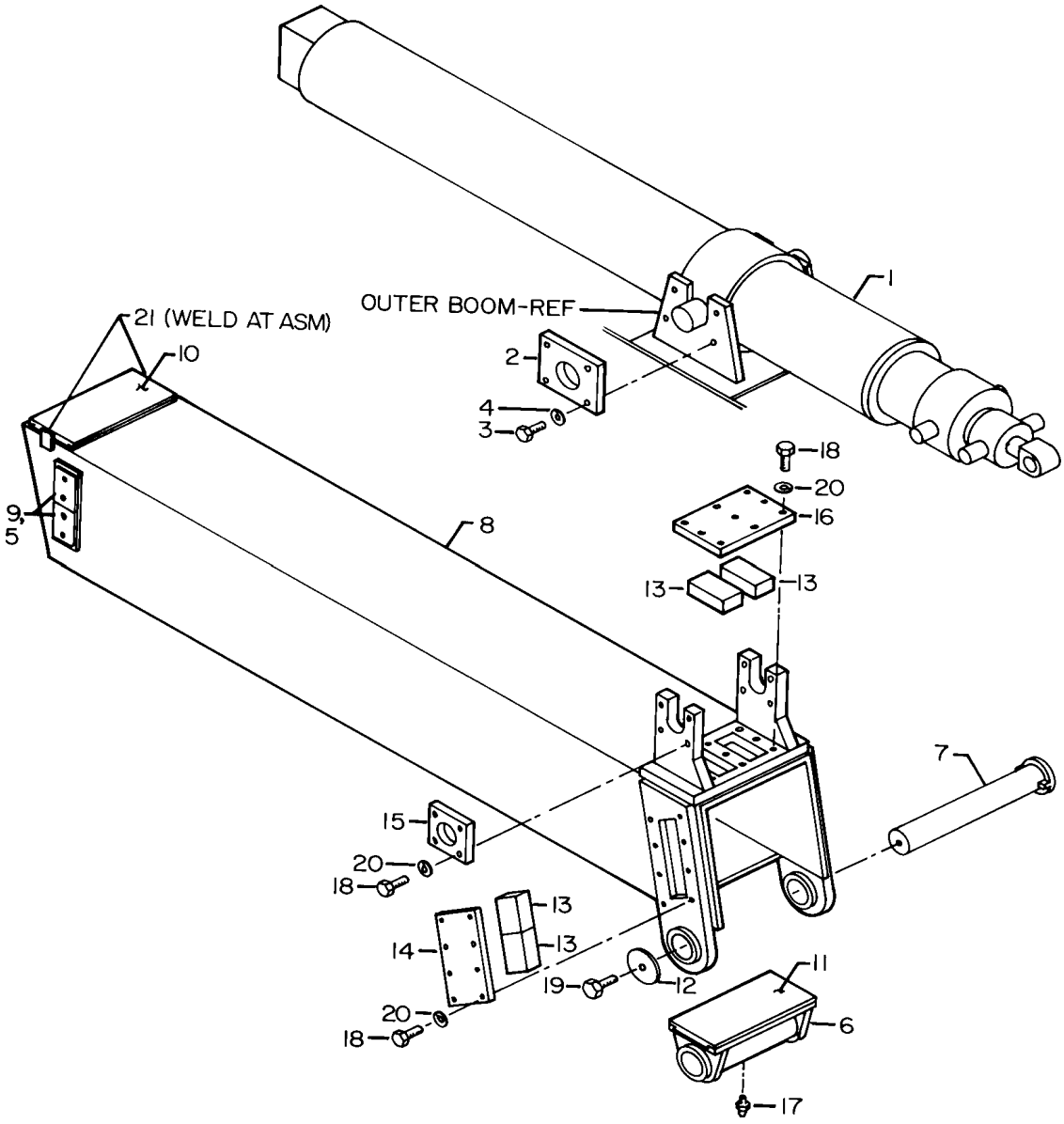
ITEM	PART NO.	DESCRIPTION	QTY
1.	3K130860	EXTENSION CYLINDER	1
2.	60109424	LOCK PLATE	2
3.	72060149	CAP SCR 5/8-11X1-1/2 HH GR5	8
4.	72063055	WASHER 5/8 LOCK	8
5.	72601026	CAP SCR 3/8-16X1/2 FLTHDSOC	8
6.	51706242	TRUNNION	1
7.	52706245	PIN	1
8.	52706246	1ST STAGE EXT BOOM	1
9.	60030072	WEAR PAD	4
10.	60030158	WEAR PAD	1
11.	60030159	WEAR PAD	1
12.	60106331	PIN RETAINER PLATE	1
13.	60109341	WEAR PAD	6
14.	60109344	RETAINER PLATE	2
15.	60109355	LOCK PLATE	2
16.	60109357	RETAINER PLATE	1
17.	72053508	ZERK 1/8NPT	1
18.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	33
19.	72060147	CAP SCR 5/8-11X1 HH GR5	1
20.	72063053	WASHER 1/2 LOCK	33
21.	60109709	PLATE	2

NOTE

After high-pressure wash or the extend function becomes erratic, apply Lubriplate lubricant to the underside of the extension boom.

NOTE

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



2ND STG EXT BOOM ASM w/WINCH (41708187-2)

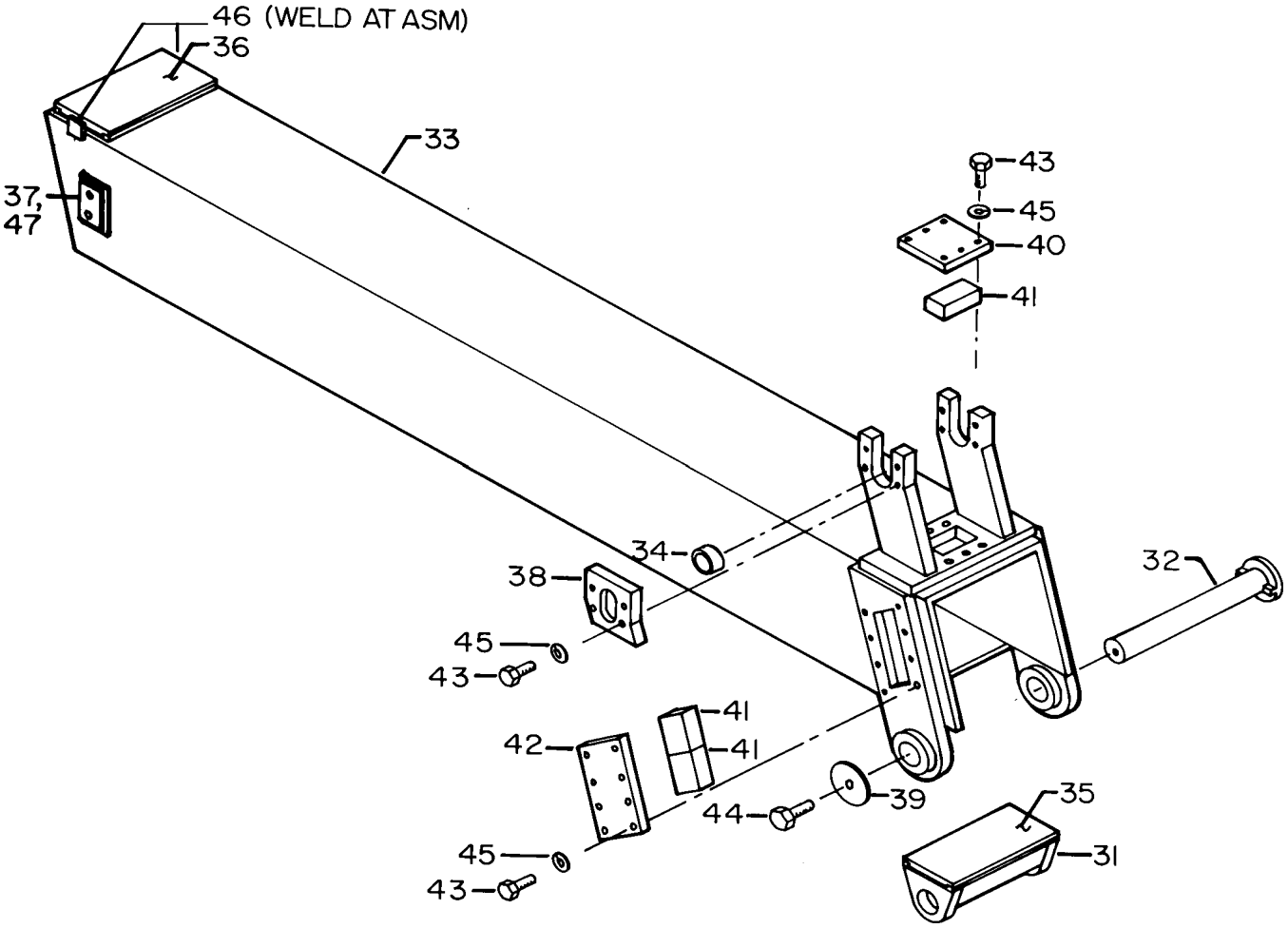
ITEM	PART NO.	DESCRIPTION	QTY
31.	51706226	TRUNNION	1
32.	52706228	PIN	1
33.	52706229	2ND STG EXT BOOM	1
34.	60020211	ROLLER	2
35.	60030156	WEAR PAD	1
36.	60030157	WEAR PAD	1
37.	60030163	WEAR PAD	2
38.	60109336	LOCK PLATE	2
39.	60109337	PIN RETAINER PLATE	1
40.	60109339	RETAINER PLATE	1
41.	60109341	WEAR PAD	5
42.	60109344	RETAINER PLATE	2
43.	72060092	CAP SCR 1/2-13X1-1/4 HH GR5	30
44.	72060147	CAP SCR 5/8-11X1 HH GR5	1
45.	72063053	WASHER 1/2 LOCK	30
46.	60109709	PLATE	2
47.	72601026	CAP SCR 3/8-16X1/2 FLTHDSOC	4

NOTE

After high-pressure wash or the extend function becomes erratic, apply Lubriplate lubricant to the underside of the extension boom.

NOTE

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

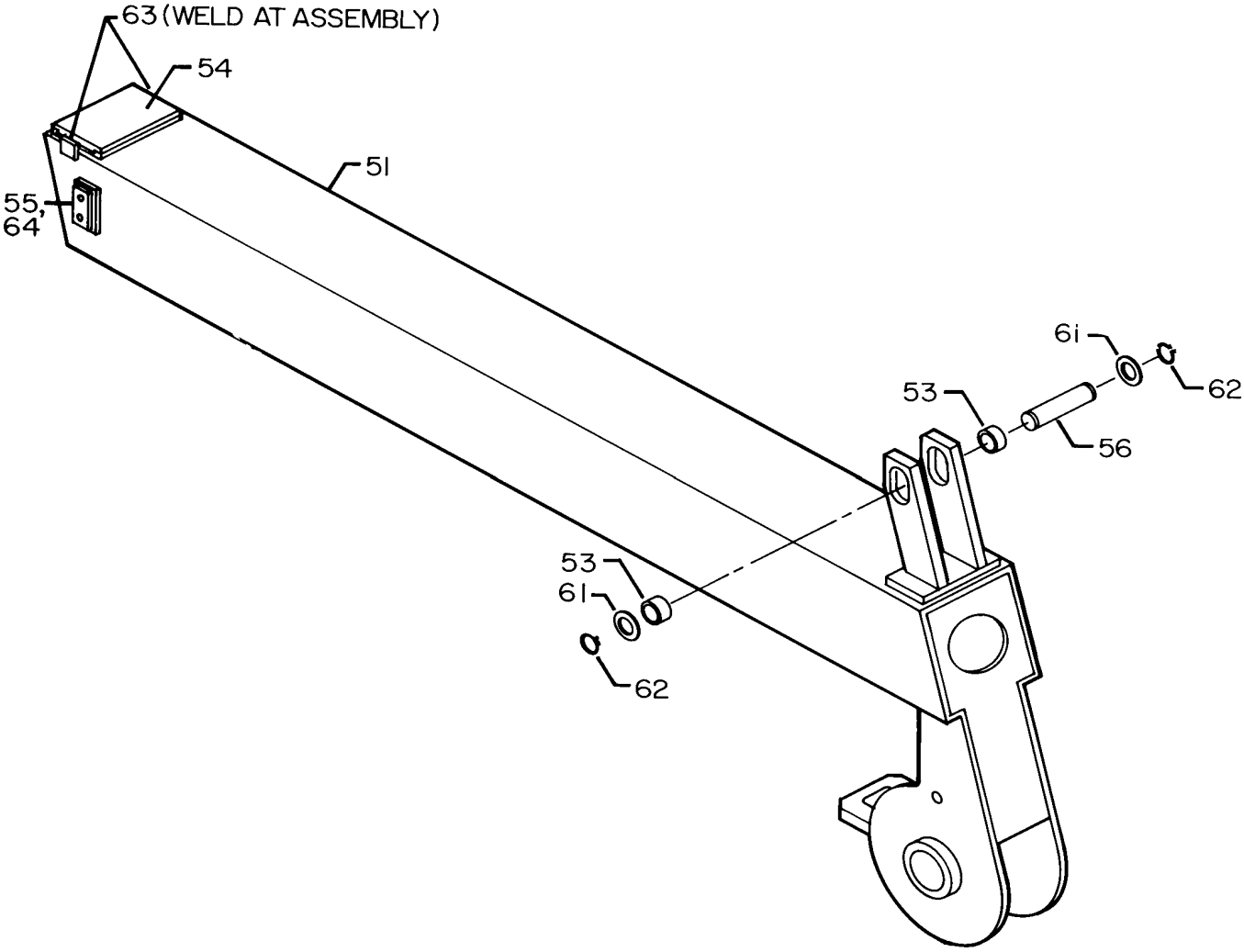


3RD STG EXT BOOM ASM w/WINCH (41708187-3)

ITEM	PART NO.	DESCRIPTION	QTY
51.	52708186	3RD STG EXT BOOM W/WN	1
53.	60020211	ROLLER	2
54.	60030155	WEAR PAD	1
55.	60030163	WEAR PAD	2
56.	60113694	PIN	1
61.	72063014	WASHER 1-1/2 WRT	2
62.	72066132	RETAINING RING 1-1/2 EXT HD	2
63.	60109709	PLATE	2
64.	72601026	CAP SCR 3/8-16X1/2 FLTHDSOC	4

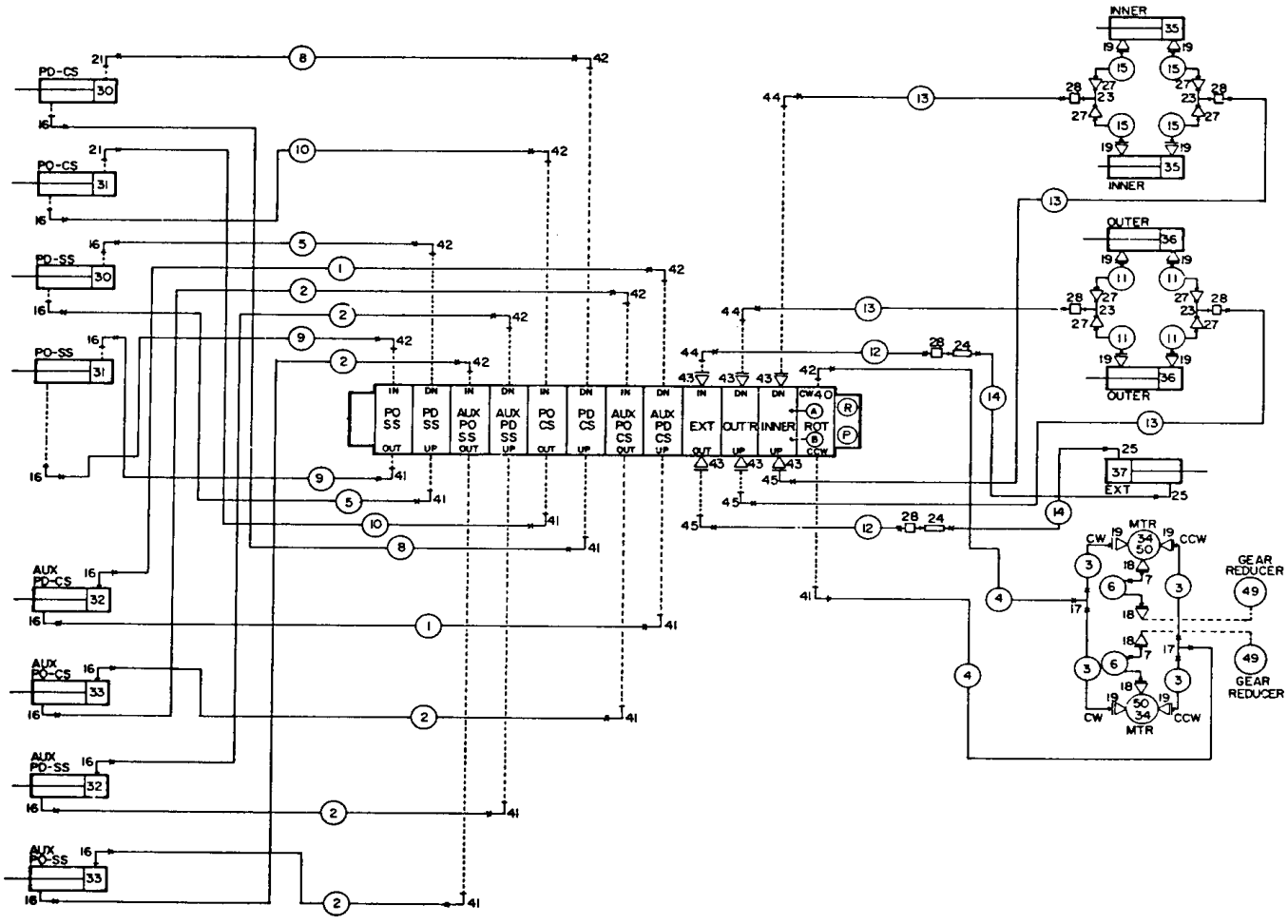
NOTE

After high-pressure wash or the extend function becomes erratic, apply Lubriplate lubricant to the underside of the extension boom.



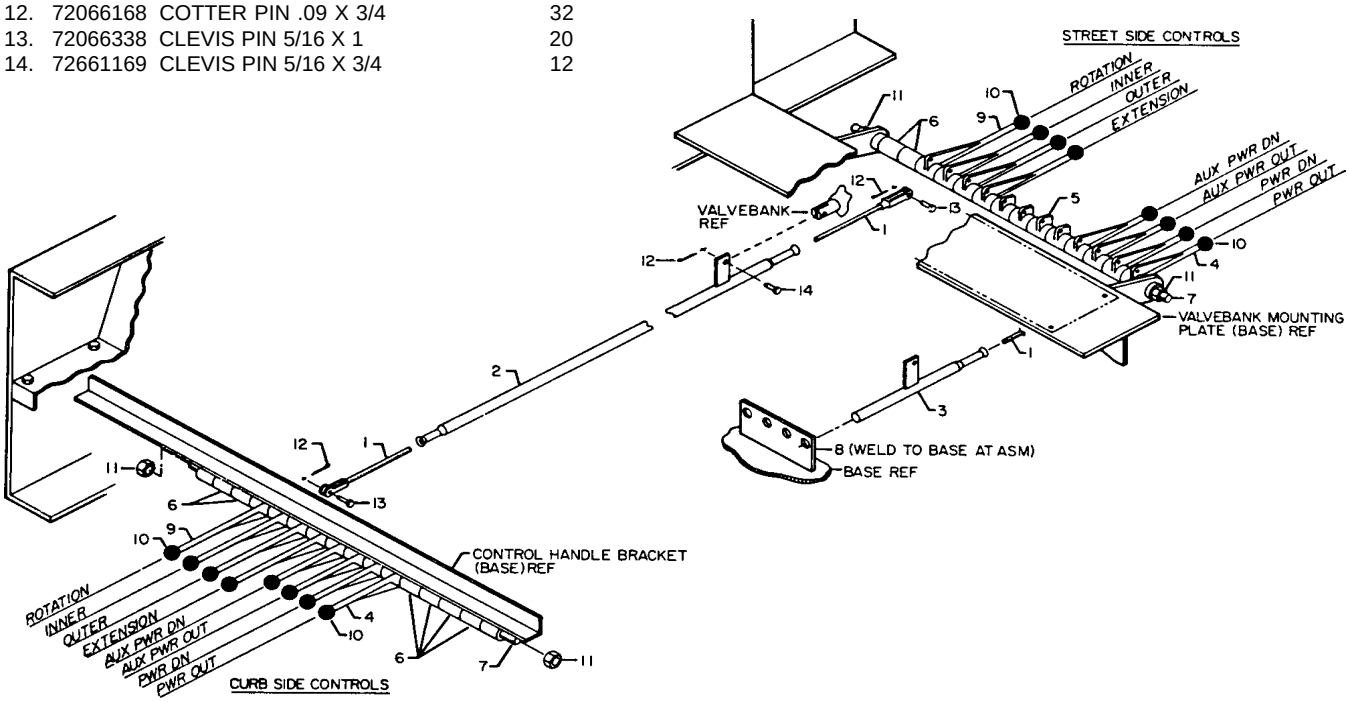
HYDRAULIC KIT (91706219)

ITEM	PART NO.	DESCRIPTION	QTY
1.	51706467	HOSE ASM 3/8 X 264	2
2.	51706466	HOSE ASM 3/8 X 252	6
3.	51706463	HOSE ASM 1/2 X 18	4
4.	51706464	HOSE ASM 1/2 X 78	2
5.	51706465	HOSE ASM 1/2 X 98	2
6.	51711553	HOSE ASM 1/4 X 6	2
7.	72532690	ELBOW 7/16MJIC 7/16FJIC SWVL	2
8.	51706439	HOSE ASM 1/2 X 165	2
9.	51706440	HOSE ASM 1/2 X 68	2
10.	51706441	HOSE ASM 1/2 X 117	2
11.	51706444	HOSE ASM 1/2 X 112	4
12.	51706445	HOSE ASM 3/4 X 30	2
13.	51706446	HOSE ASM 3/4 X 35	4
14.	51706447	HOSE ASM 3/4 X 252	2
15.	51706448	HOSE ASM 1/2 X 45	4
16.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	14
17.	72531205	TEE 3/4MJIC	2
18.	72532351	ADAPTER 7/16MSTR 7/16MJIC	4
19.	72532358	ADAPTER 3/4MSTR 3/4MJIC	12
21.	72532666	ELBOW 3/4MSTR 3/4MJIC 90° XLG	2
23.	72532695	TEE 1-1/16MJIC	4
24.	72532855	MALE TUBE UNION 1-1/16 1-1/16	2
25.	72532970	SWVL PR. ELBOW 1-1/16MSTR 1-1/16MJIC 90°	2
27.	72532972	REDUCER 3/4MJIC 1-1/16FJIC	8
28.	72532973	IN-LINE PR. SWVL 1-1/16FJIC 1-1/16MJIC	6
30.		POWER-DOWN CYLINDER	2REF
31.		POWER-OUT CYLINDER	2REF
32.		AUX POWER-DOWN CYLINDER	2REF
33.		AUX POWER-OUT CYLINDER	2REF
34.		MOTOR	2REF
35.		INNER CYLINDER	2REF
36.		OUTER CYLINDER	2REF
37.		EXTENSION CYLINDER	1REF
40.		VALVEBANK	1REF
41.		ELBOW 3/4MSTR 3/4MJIC 90°	14REF
42.		ELBOW 3/4MSTR 3/4MJIC 90° XLG	14REF
43.		ADAPTER 7/8MSTR 1-1/16MJIC	4REF
44.		ELBOW 1-1/16FJIC 1-1/16MJIC 90° SWVL XLG	2REF
45.		ELBOW 1-1/16FJIC 1-1/16MJIC 90° SWVL	2REF
49.		GEAR REDUCER	2REF
50.		MANIFOLD W/SHUTTLE	2REF



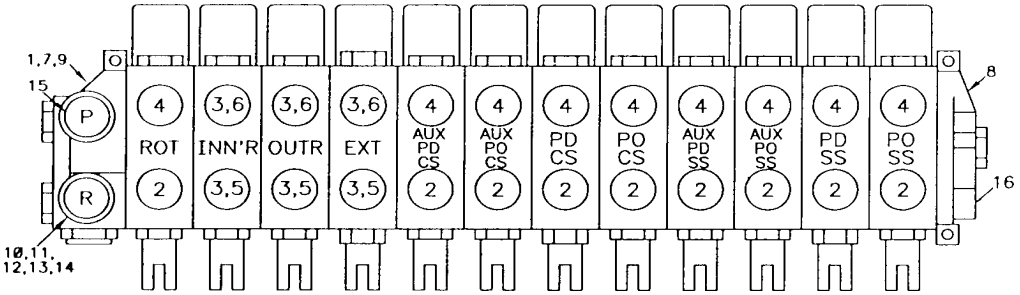
CONTROL KIT (90706218)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52704745	CONTROL ROD - M	20
2.	52706316	CONTROL ROD - F	8
3.	52706434	CONTROL ROD - F SHORT	4
4.	60025254	CONTROL HANDLE 6-1/2"	8
5.	60025467	CONTROL HANDLE - CUT	4
6.	60030069	SPACER 1-3/4	8
7.	60109530	CONTROL HANDLE ROD	2
8.	60109695	SUPPORT PLATE	1
9.	70029451	CONTROL HANDLE 8-1/2"	8
10.	71039096	KNOB	16
11.	72062091	NUT 5/8-11 LOCK	4
12.	72066168	COTTER PIN .09 X 3/4	32
13.	72066338	CLEVIS PIN 5/16 X 1	20
14.	72661169	CLEVIS PIN 5/16 X 3/4	12



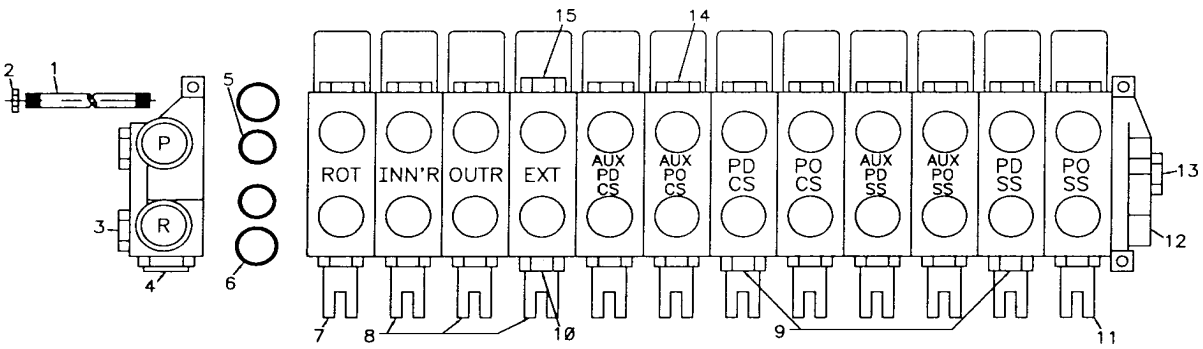
VALVEBANK ASM (51706373)

ITEM	PART NO.	DESCRIPTION	QTY
1.		PRESSURE PLUG	1REF
2.	72053763	ELBOW #8MSTR #8MJIC 90°	9
3.	72532365	ADAPTER #10MSTR #12MJIC	6
4.	72532666	ELBOW #8MSTR #8MJIC 90° XLG	9
5.	72532696	ELBOW #12MJIC #12FJIC 90° SWVL	3
6.	72532969	ELBOW #12MJIC #12FJIC 90°SW XL	3
7.	73054435	PRESSURE GAUGE	1
8.	73731796	VB - 12 SECTION	1
9.	72053631	ELBOW #4MSTR 1/4FPT 45° SWVL	1
10.	72053747	ADAPTER #12MSTR 3/4FPT	1
11.	72053556	STREET ELBOW 3/4NPT 90°	1
12.	72053558	ADAPTER #8MPT #8MPT	1
13.	72053489	REDUCER COUPLING 1-1/4NPT 3/4	1
14.	72531550	BARB NIPPLE 1-1/4NPT 1-1/4HOSE	1
15.	72053767	ELBOW #12MSTR #12MJIC 90°	1
16.	72053758	ELBOW #4MSTR #4MJIC 90°	1



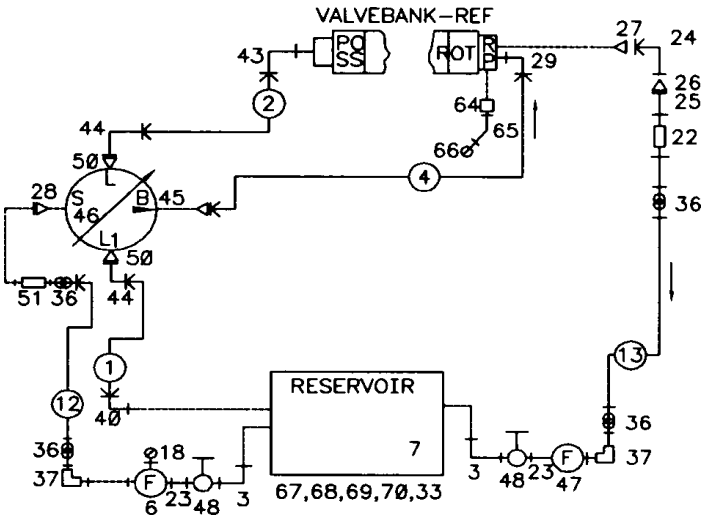
VALVEBANK (73731796)

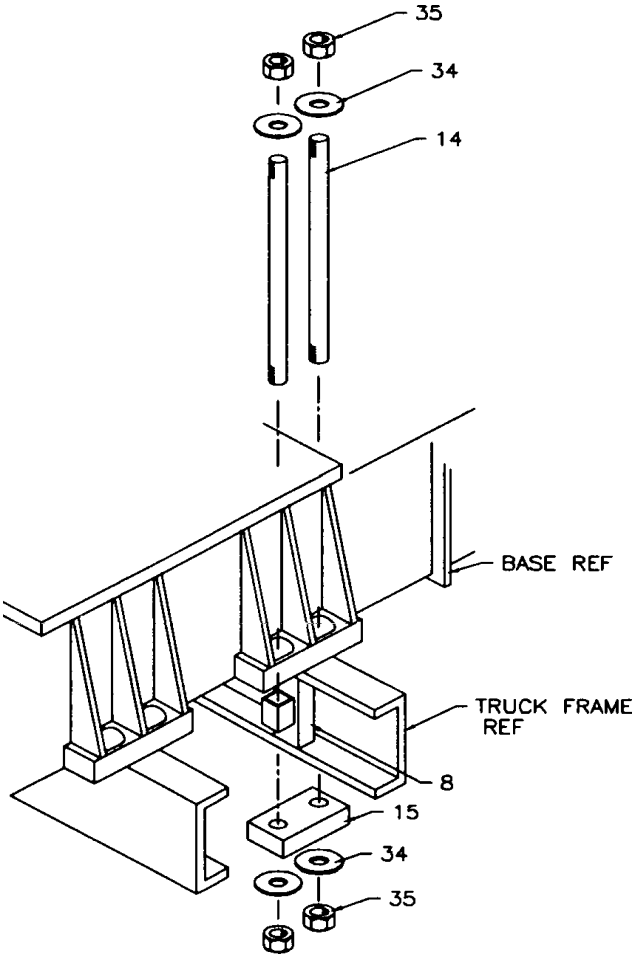
ITEM	PART NO.	DESCRIPTION	QTY
1.	73143117	STUD 3/8-24X24	3
2.	72062037	NUT 3/8-24 HEX	6
3.	73054567	END CAP-LH	1
4.	73054537	MAIN RELIEF 2500PSI	1
5.	7Q072019	O-RING	26
6.	7Q072021	O-RING	26
7.	73054562	TANDEM VALVE SECTION W/BLDR	1
8.	73054563	TANDEM VALVE SECTION SAE#10	3
9.	73054430	PORT RELIEF 100PSI NON-ADJ	2
10.	73054400	RELIEF 2300PSI NON-ADJ (SERIAL #4490971001)	1
11.	73054561	TANDEM VALVE SECTION SAE#8	8
12.	73054560	END CAP-RH	1
13.	73073022	CONVERSION PLUG	1
14.	73054010	LOAD CHECK VALVE	20
15.	73054565	PORT RELIEF 1500PSI	1



INSTALLATION KIT (93706217)

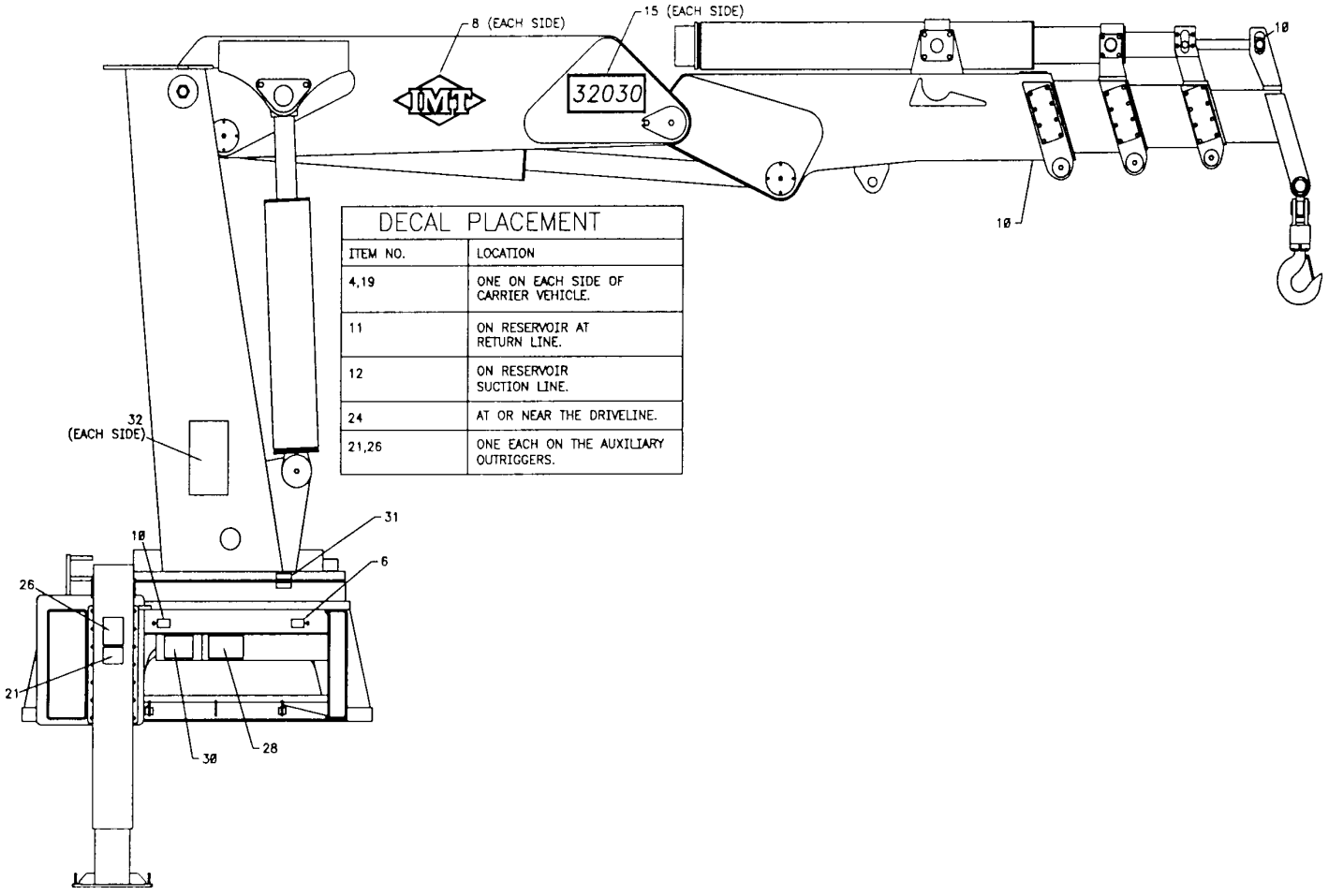
ITEM	PART NO.	DESCRIPTION	QTY
1.	51711561	HOSE ASM 1/4 X 72	1
2.	51711559	HOSE ASM 1/4 X 52	1
3.	72053287	STREET ELBOW 1-1/4NPT 90°	2
4.	51706442	HOSE ASM 3/4X50	1
6.	73052012	SUCTION FILTER	1
	70048149	ELEMENT-100MESH	REF
	73052014	ELEMENT-25MIC	REF
7.	51706368	RESERVOIR 60-GAL	1
8.	52706374	FRAME SUPPORT	4
12.	60035598	HOSE 1-1/4 100R4 X 72	1
13.	60035679	HOSE 1-1/4 100R4 X 96	1
14.	60109531	TIE-DOWN STUD 2-4-1/2X26	8
15.	60109532	CLAMP PLATE	4
18.	70048031	VACUUM GAUGE	1
22.	72531550	BARB NIPPLE 1-1/4MPT 1-1/4HOSE	1REF
23.	72053211	PIPE NIPPLE 1-1/4NPT X CLOSE	2
24.	72053556	STREET ELBOW 3/4NPT 90°	1REF
25.	72053489	REDUCER COUPLING 1-1/4 3/4NPT	1REF
26.	72053558	ADAPTER 3/4MPT 3/4MPT	1REF
27.	72053747	ADAPTER #12MSTR 3/4FPT	1REF
28.	72052854	ADAPTER #20MSTR 1FPT	1
29.	72053767	ELBOW #12MSTR #12MJIC 90°	1REF
33.	72062080	NUT 1/2-13 LOCK	6
34.	72063168	WASHER 2" FLAT	16
35.	72062198	NUT 2"-4-1/2 SLFLK STL INSERT	16
36.	72066516	HOSE CLAMP	4
37.	72532346	BARB NIPPLE 1-1/4BARB 1-1/4 90°	2
40.	72531412	ELBOW 1/4MPT #4MJIC 90°	1
43.	72053758	ELBOW #4MSTR #4MJIC 90°	1REF
44.	72532699	ELBOW #6MSTR #4MJIC 90°	2
45.	72532367	ADAPTER 1-5/16MSTR #12MJIC	1
46.	7305XXXX	PUMP	REF
47.	73052091	RETURN FILTER	1
	73054014	ELEMENT-25MIC	REF
48.	73054130	GATE VALVE 1-1/4NPT	2
50.	72532722	ADAPTER 7/8MSTR 9/16FSTR	2
51.	72532833	BEAD NIPPLE 1MPT 1-1/4HOSE	1
64.		PLUG	REF
65.	72053631	ELBOW #4MSTR 1/4NPT 45°	1REF
66.	73054435	PRESSURE GAUGE	1REF
67.	72063005	WASHER 1/2 WRT	6
68.	72060093	CAP SCR 1/2-13X1-1/2 HHGR5	6
69.	60112281	PLATE 1/4X13X13	2
70.	60112282	TUBE	2





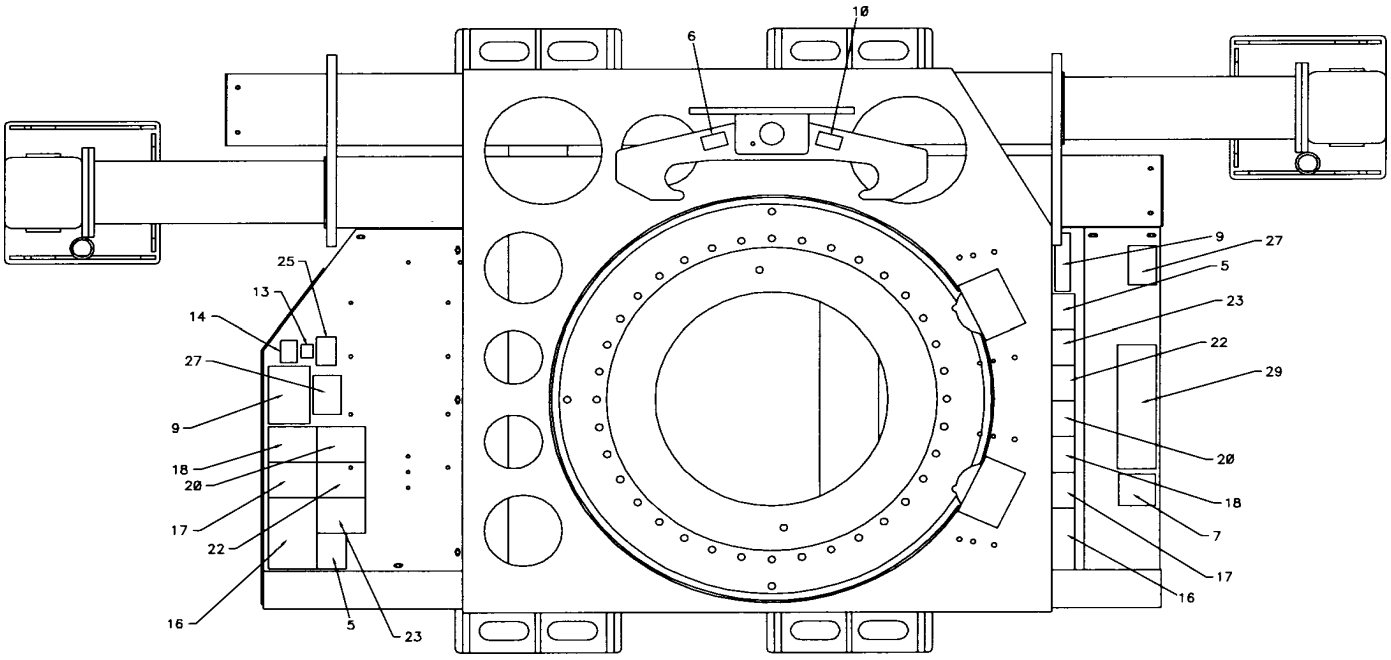
DECAL KIT-32000 (95708757-1)

ITEM	PART NO.	DESCRIPTION	QTY
4.	70392868	DECAL-DANGER CR LOADLINE	4
5.	70392863	DECAL-DANGER HOIST PERS	2
6.	70391612	DECAL-GREASE WKLY LEFT	2
7.	70394189	DECAL-RECOMMENDED HYD OIL	1
8.	70029252	PLACARD - IMT DIAMOND	2
9.	70391583	DECAL - SET UP/STOW	2
10.	70391613	DECAL - GREASE WKLY RIGHT	4
11.	70392109	DECAL - RETURN LINE	1
12.	70392108	DECAL - SUCTION LINE	1
13.	70392213	DECAL - CAUTION WASH/WAX	1
14.	70392524	DECAL - ROTATE/GREASE	1
15.	70392553	DECAL - 32000 SERIES IDENT	2
16.	70392813	DECAL - DANGER ELECTRO	2
17.	70392814	DECAL - DANGER OPER TRAIN'G	2
18.	70392815	DECAL - DANGER OPERATION	2
19.	70392865	DECAL - DANGER ELEC HZD-LG	4
20.	70392866	DECAL - DANGER OPER COND	2
21.	70392867	DECAL - DANGER O.R. MOVING	4
22.	70392888	DECAL - DANGER OPER RESTRICT	2
23.	70392890	DECAL - DANGER STOW/UNFOLD	2
24.	70392891	DECAL - DANGER DRIVELINE	2
25.	70392982	DECAL - CONTACT IMT	1
26.	70392864	DECAL - DANGER O.R. STD CLR	4
27.	71039134	DECAL - CAUTION OIL LEVEL	2
28.	70592563	DECAL - CONTROL SS	1
29.	70392562	DECAL - CONTROL CS	1
30.	70392565	DECAL - AUX OR CTRL SS	1
31.	71392365	DECAL - ALIGN CRANE	1
32.	71392557	CAPACITY PLACARD	2



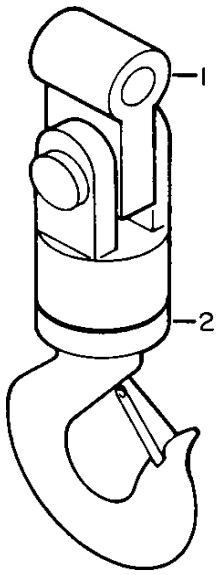
DECAL PLACEMENT	
ITEM NO.	LOCATION
4,19	ONE ON EACH SIDE OF CARRIER VEHICLE.
11	ON RESERVOIR AT RETURN LINE.
12	ON RESERVOIR SUCTION LINE.
24	AT OR NEAR THE DRIVELINE.
21,26	ONE EACH ON THE AUXILIARY OUTRIGGERS.

DECAL KIT-32000 (95708757-2)



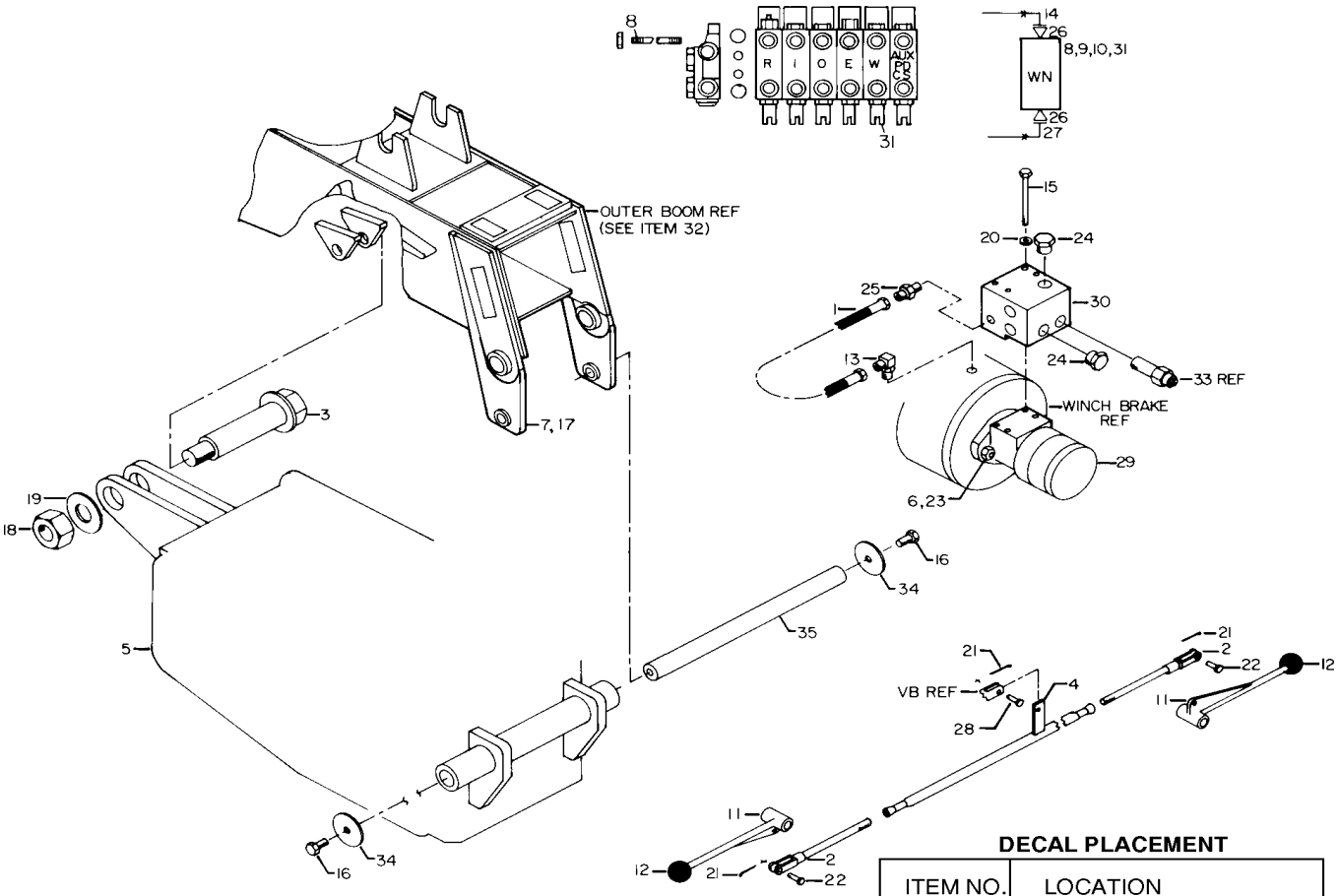
OPTION-AUX 20-TON HOOK KIT (51707907)

ITEM	PART NO.	DESCRIPTION	QTY
1.	60112048	SWIVEL LINK 20-TON	1
2.	70731936	SWIVEL HOOK W/LATCH 20-TON	1



OPTION-WINCH KIT-9000 LB (31706973)

ITEM	PART NO.	DESCRIPTION	QTY
1.	51703592	HOSE ASM 1/4 X 10	1
2.	52704745	CONTROL ROD M	2
3.	52706221	PIN	1
4.	52706316	CONTROL ROD F	1
5.	52706970	WINCH WITH MTG EARS	1
6.	60106032	STUD 1/2-13X2	2
7.	60110329	EAR	2
8.	60110932	STUD 3/8-24X25 3/4	3
9.	7Q072019	O-RING	2
10.	7Q072021	O-RING	2
11.	70029451	CONTROL HANDLE	2
12.	71039096	KNOB	2
13.	72053758	ELBOW 7/16MSTR 7/16MJIC 90°	1
14.	72053763	ELBOW 3/4MSTR 3/4MJIC 90°	1
15.	72060037	CAP SCR 5/16-18X4 HH GR5	4
16.	72060147	CAP SCR 5/8-11X1 HH GR5	2
17.	60111202	SLEEVE	2
18.	72062142	NUT 1-1/4-7 LOCK STL INSERT	1
19.	72063012	WASHER 1-1/4 WRT	1
20.	72063050	WASHER 5/16 LOCK	4
21.	72066168	COTTER PIN .09 X 3/4	3
22.	72066338	CLEVIS PIN 5/16 X 1	2
23.	72062080	NUT 1/2-13 LOCK	2
24.	72532141	PLUG 3/4STR HEX	2
25.	72532351	ADAPTER 7/16MSTR 7/16MJIC	1
26.	72532358	ADAPTER 3/4MSTR 3/4MJIC	2
27.	72532666	ELBOW 3/4MSTR 3/4MJIC 90° XLG	1
28.	72661169	CLEVIS PIN 5/16 X 3/4	1
29.	73051508	MOTOR	1
30.	73054496	FLOW DIVIDER	1
31.	73054562	VALVE SECTION V20LS	1
32.	99900134	OUTER BOOM MOD DRAWIING	1
33.	73054470	C'BAL VALVE (PART OF 30)	REF
34.	60106333	PIN RETAINER PLATE 2-1/2	2
35.	60107769	PIN	1
36.	70392861	DECAL - DANGER 2-BLOCKING	2
37.	70392863	DECAL - DANGER HOIST PERS	2
38.	70392868	DECAL - DANGER CR LOADLINE	4



DECAL PLACEMENT

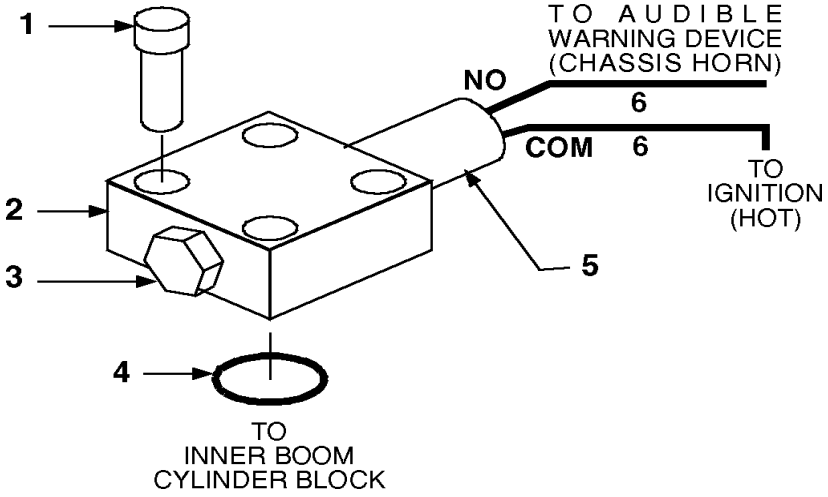
ITEM NO.	LOCATION
36,37	AT OR NEAR NORMAL OPERATING STATION
38	ONE ON EACH SIDE OF CARRIER VEHICLE

OPTION-CAPACITY ALERT KIT-AUDIBLE (31705698)

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

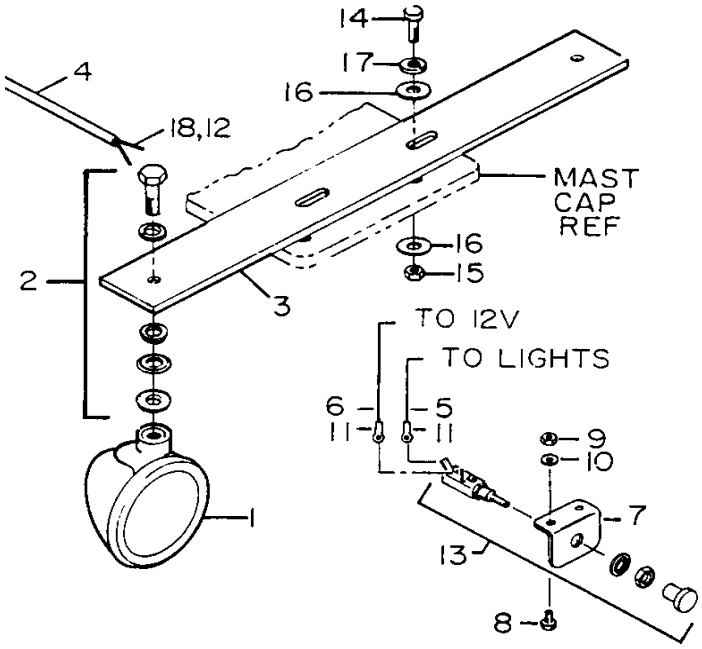
NOTE

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



OPTION -LIGHT KIT (51709314)

ITEM	PART NO.	DESCRIPTION	QTY
1.	77040281	FLOODLIGHT-12V CHROME	2
2.	77040280	MOUNTING KIT	2REF
3.	60113427	LIGHT BRACKET	1
4.	89044351	LOOM	16FT
5.	89044274	WIRE 14GA BLK X 18FT	2
6.	60045056	WIRE 14GA BLK X 36"	1
7.	60103535	SWITCH BRACKET	1
8.	72060000	CAP SCR 1/4-20X1/2 HHGR5	2
9.	72062000	NUT 1/4-20 HEX	2
10.	72063049	WASHER 1/4 LOCK	2
11.	77040000	TERMINAL #10 STUD 16-14GA	2
12.	77040048	BUTT CONNECTOR 16-14GA	2
13.	77041014	SWITCH-PUSH/PULL W/FUSE	1
14.	72060048	CAP SCR 3/8-16X1-1/2 HHGR5	2
15.	72062103	NUT 3/8-16 LOCK	2
16.	72063003	WASHER 3/8 WRT	4
17.	72063051	WASHER 3/8 LOCK	2
18.	60030049	SPIRAL WRAP 10"	2



OPTION-HYD OVERLOAD KIT 3F (51710923)

ITEM	PART NO.	DESCRIPTION	QTY
1.	72532657	TEE #8JIC SWVL NUT RUN	5
2.	72532658	ELBOW #8MJIC #8FJIC	5
3.	72053763	ELBOW #8MSTR #8MJIC 90°	3
4.	72532358	ADAPTER #8MSTR #8MJIC	3
5.	73054426	RELIEF VALVE	1
6.	72532366	ADAPTER #12MSTR #12MJIC	2
7.	72532950	TEE #12JIC SWVL NUT RUN	2
8.	72532696	ELBOW #12MJIC #12FJIC SWVL	2
9.	72532972	ADAPTER #8MJIC #12FJIC	2
10.	51706238	HOSE ASM 3/4X6 FF	1
11.	73054576	SOLENOID VALVE	3
12.	72532358	ADAPTER #8MSTR #8MJIC	2
13.	51706239	HOSE ASM 1/2X5 FF	1
14.	51704914	HOSE ASM 3/8X60 FF	4
15.	51703701	HOSE ASM 3/8X10 FF	2
16.	77040186	TERM-FSLPON 1/4TAB 16-14GA	8
17.	77040282	TERM-PIGBAC 1/4TAB 16-14GA	4
18.	60250259	MTG ANGLE-DUMP VALVE	2
19.	60250260	MTG SPACER-DUMP VALVE	2
20.	72060004	CAP SCR 1/4-20X1 HH GR5	4
21.	72062104	NUT 1/4-20 LOCK	6
22.	60117338	THREADED ROD 1/4-20X6-1/2	2
23.	89044232	WIRE 14GA RED X 180	1
24.	89044232	WIRE 14GA RED X 120	1
25.	89044232	WIRE 14GA RED X 6	2
26.	89044274	WIRE 14GA BLK X 60	1
27.	89044274	WIRE 14GA BLK X 6	2

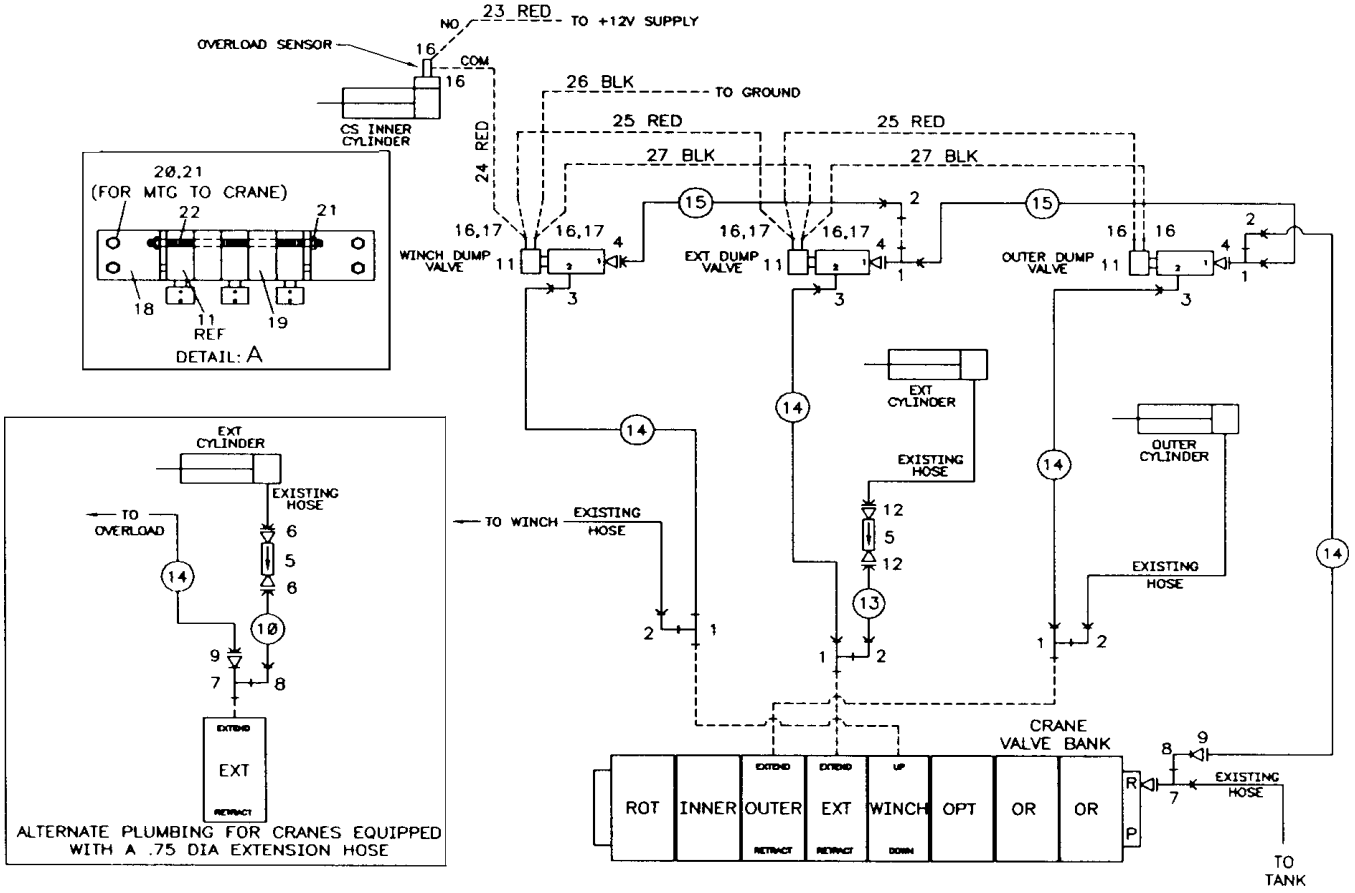
NOTES:

1. FUNCTION OF SYSTEM IS SUCH THAT WHEN THE INNER CYLINDERS ARE OVERLOADED, THE PRESSURE SWITCH, MOUNTED ON THE INNER CYLINDER, WILL ACTIVATE THE SOLENOID DUMP VALVE(S); THUS DUMPING OIL TO “TANK” INSTEAD OF THE OUTER CYLINDER “EXTEND”, EXTENSION CYLINDER “EXTEND”, OR WINCH “UP” FUNCTIONS WHICH WILL NOT ALLOW PRESSURE TO BUILD FOR THESE FUNCTIONS. THIS SYSTEM IS BASED ON THE FACT THAT THE OIL WILL TAKE THE PATH OF LEAST RESISTANCE.

2. THE FUNCTIONS THAT ARE SHUT DOWN, IF OVERLOADED, ARE THE FOLLOWING:
   A. OUTER BOOM “EXTEND”
   B. EXTENSION CYLINDER “EXTEND”
   C. WINCH “UP”

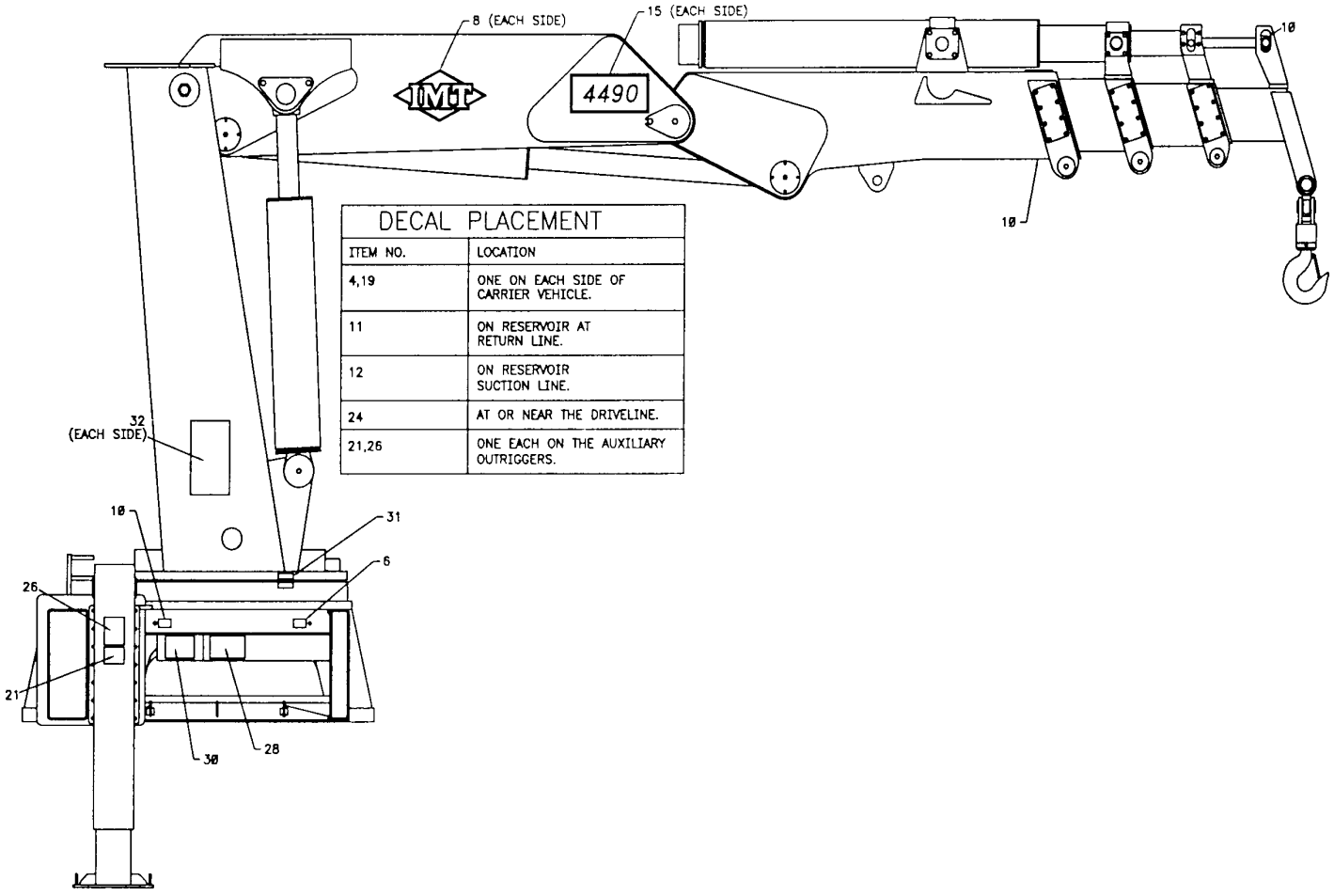
3. INSTALL A RELIEF VALVE IN THE EXTEND LINE OF THE EXTENSION CYLINDER SO CYLINDER WILL NOT EXTEND WHEN DUMP SYSTEM IS ACTIVATED.

4. ITEMS 11, 18, 19, 20, 21 AND 22 SHOULD BE BOLTED TOGETHER BEFORE THEY ARE MOUNTED TO THE CRANE (SEE DETAIL A).



DECAL KIT-4490 (95711913-1)

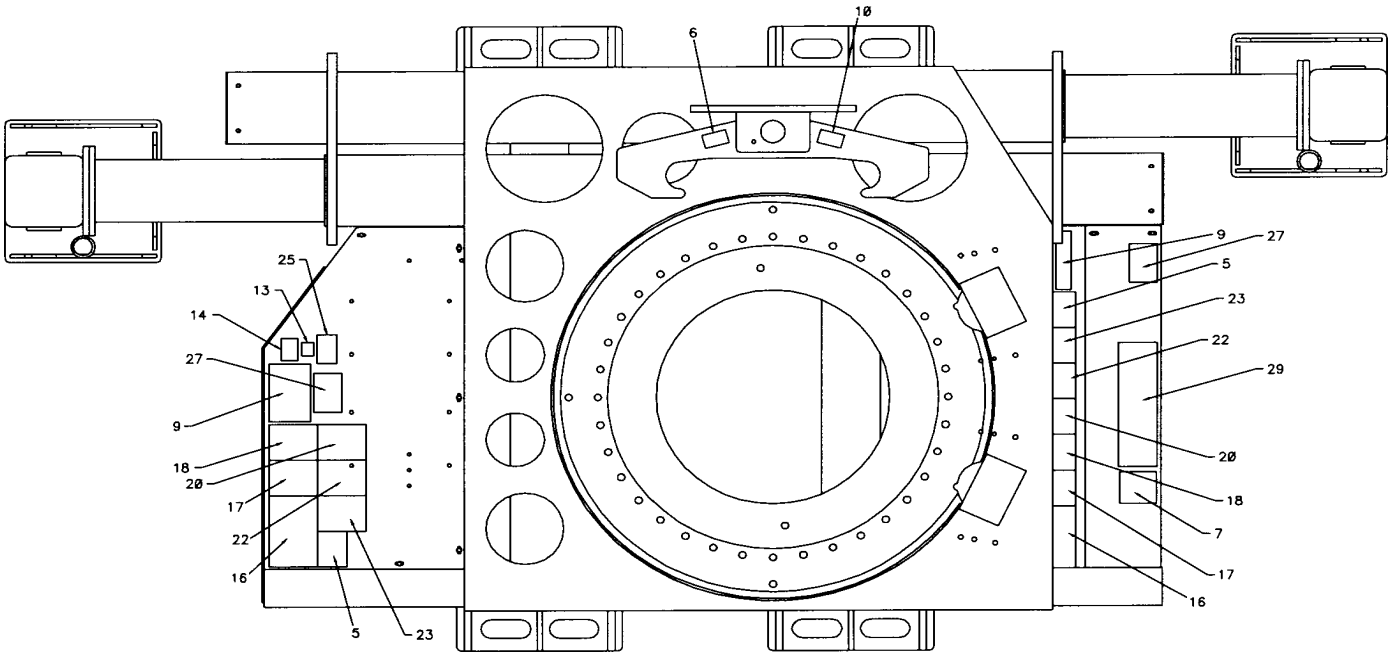
ITEM	PART NO.	DESCRIPTION	QTY
4.	70392868	DECAL-DANGER CR LOADLINE	4
5.	70392863	DECAL-DANGER HOIST PERS	2
6.	70391612	DECAL-GREASE WKLY LEFT	2
7.	70394189	DECAL-RECOMMENDED HYD OIL	1
8.	70029252	PLACARD-IMT DIAMOND	2
9.	70391583	DECAL-SET UP/STOW	2
10.	70391613	DECAL-GREASE WKLY RIGHT	4
11.	70392109	DECAL-RETURN LINE	1
12.	70392108	DECAL-SUCTION LINE	1
13.	70392213	DECAL-CAUTION WASH/WAX	1
14.	70392524	DECAL-ROTATE/GREASE	1
15.	71393798	DECAL-4490 IDENT	2
16.	70392813	DECAL-DANGER ELECTRO	2
17.	70392814	DECAL-DANGER OPER TRAIN'G	2
18.	70392815	DECAL-DANGER OPERATION	2
19.	70392865	DECAL-DANGER ELEC HZD-LG	4
20.	70392866	DECAL-DANGER OPER COND	2
21.	70392867	DECAL-DANGER O.R. MOVING	4
22.	70392888	DECAL-DANGER OPER RESTRICT	2
23.	70392890	DECAL-DANGER STOW/UNFOLD	2
24.	70392891	DECAL-DANGER DRIVELINE	2
25.	70392982	DECAL-CONTACT IMT	1
26.	70392864	DECAL-DANGER O.R. STD CLR	4
27.	71039134	DECAL-CAUTION OIL LEVEL	2
28.	70592563	DECAL-CONTROL SS	1
29.	70392562	DECAL-CONTROL CS	1
30.	70392565	DECAL-AUX OR CTRL SS	1
31.	71392365	DECAL-ALIGN CRANE	1
32.	71393777	CAPACITY PLACARD	2



DECAL PLACEMENT

ITEM NO.	LOCATION
4,19	ONE ON EACH SIDE OF CARRIER VEHICLE.
11	ON RESERVOIR AT RETURN LINE.
12	ON RESERVOIR SUCTION LINE.
24	AT OR NEAR THE DRIVELINE.
21,26	ONE EACH ON THE AUXILIARY OUTRIGGERS.

DECAL KIT-4490 (95711913-2)



SECTION 4. GENERAL REFERENCE

NOTES

NOTICE

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

Inspection Checklist

CRANES

1

REV: 6-18-99

OWNER/COMPANY	*TYPE OF INSPECTION (check one)* ☐ *DAILY (if deficiency found)* ☐ *QUARTERLY* ☐ *MONTHLY* ☐ *ANNUAL*
CONTACT PERSON	
CRANE MAKE & MODEL	*DATE INSPECTED*
CRANE SERIAL NUMBER	*HOUR METER READING (if applicable)*
UNIT I.D. NUMBER	*INSPECTED BY (print)*
LOCATION OF UNIT	*SIGNATURE OF INSPECTOR*

TYPE OF INSPECTION

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

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

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

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

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

DAILY (D): Before each day of operation, those items designated with a (**D**) must be inspected. This inspection need not be recorded unless a deficiency (✘) 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.

✔ = SATISFACTORY
✘ = DEFICIENCY (must be corrected prior to operation)
R = RECOMMENDATION (should be considered for corrective action)
NA = NOT APPLICABLE

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS ✔ , ✘ *R, NA*
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	

Inspection Checklist — CRANES — 2

✔ = SATISFACTORY
✘ = DEFICIENCY (must be corrected prior to operation)
R = RECOMMENDATION (should be considered for corrective action)
NA = NOT APPLICABLE

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS ✔ , ✘ R, NA
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	

Inspection Checklist — CRANES — 3

✔ = SATISFACTORY
✘ = DEFICIENCY (must be corrected prior to operation)
R = RECOMMENDATION (should be considered for corrective action)
NA = NOT APPLICABLE

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS ✔, ✘ R, NA
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

DATE	*OWNER*	*UNIT I.D. NUMBER*

GUIDELINES

A. A deficiency (✘) may constitute a hazard. ✘ 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 (✘) listed must be followed by the corresponding corrective action taken (**CA**).*

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

✘, R, CA	ITEM #	EXPLANATION	DATE CORRECTED

Deficiency / Recommendation / Corrective Action Report (cont) 4

✘, R, CA	ITEM #	EXPLANATION	DATE CORRECTED

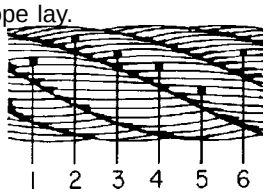
If additional space is required, reproduce this page and attach to this report.

WIRE ROPE INSPECTION

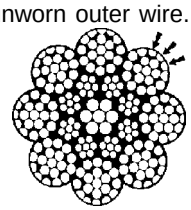
Wire rope with any of the deficiencies shown below shall be removed and replaced immediately.

A. Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.

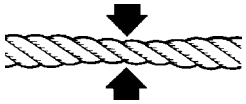
B. When there are either 3 broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



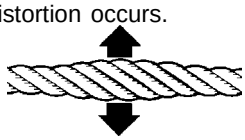
C. When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.



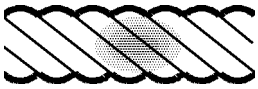
D. When there is a decrease of diameter indicating a core failure.



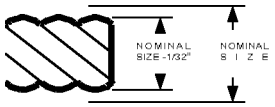
E. When kinking, crushing, birdcaging or other distortion occurs.



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



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



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

HOOK INSPECTION

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

A. DISTORTION

Bending / Twisting

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

Increased Throat Opening

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

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

B. WEAR

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

C. CRACKS, NICKS, GOUGES

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

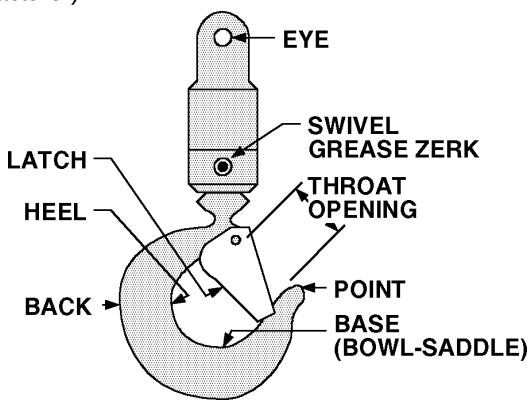
D. LATCH

Engagement, Damage & Malfunction

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

E. HOOK ATTACHMENTS & SECURING MEANS

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



HOLDING VALVE INSPECTION

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

1. With a full rated load, extend the cylinder in question and kill the engine.

2. Operate the control valve to retract the cylinder. If the cylinder “creeps”, replace the holding valve. If the cylinder does not “creep”, the valve is serviceable.

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

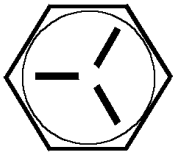
2. Examine cord for damage, cuts or breaks. Grasp cord and pull to check operation of cord reel. The cord should retract on reel when released.

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-LB)	PLATED (FT-LB)	PLAIN (FT-LB)	PLATED (FT-LB)
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 fatique causing serious injury or DEATH.

TORQUE DATA CHART - DOMESTIC

FINE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE SAE J429 GRADE 5 PLAIN (FT-LB)	SAE J429 GRADE 5 PLATED (FT-LB)	SAE J429 GRADE 8 PLAIN (FT-LB)	SAE J429 GRADE 8 PLATED (FT-LB)
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 PLAIN (FT-LB)	SAE J429 GRADE 5 PLATED (FT-LB)	SAE J429 GRADE 8 PLAIN (FT-LB)	SAE J429 GRADE 8 PLATED (FT-LB)
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 fatique causing serious injury or DEATH.

TORQUE DATA CHART - METRIC

FINE THREAD BOLTS

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

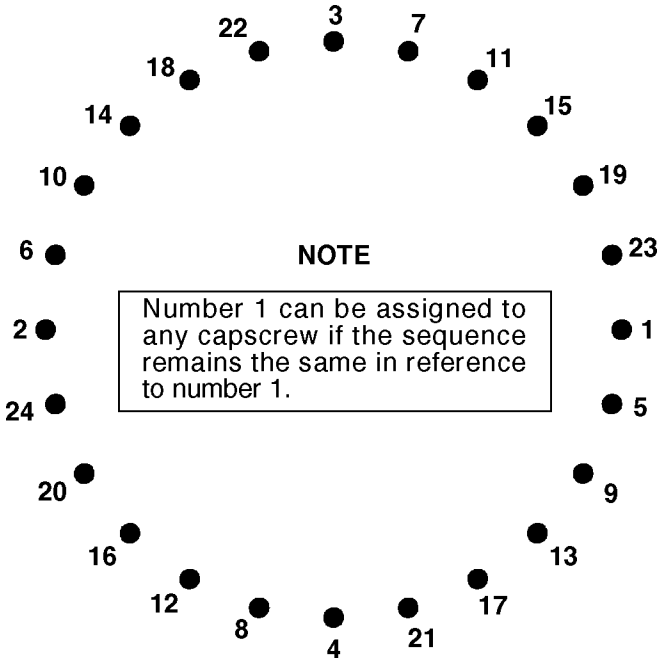
5. Torque values for socket-head capscrews are the same as for Grade 8 capscrews.

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 fatique causing serious injury or DEATH.

TURNTABLE BEARING FASTENER TIGHTENING SEQUENCE

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



TIGHTENING PROCEDURE:

1. Refer to the Torque Data Chart to determine the proper torque value to apply to the size of capscrew used.

2. Follow the tightening sequence shown in the diagram. Note that the quantity of capscrews may differ from the diagram, but the sequence must follow the criss-cross pattern as shown in the diagram.

3. Torque all capscrews to approximately 40% of the specified torque value, by following the sequence.
   (EXAMPLE: .40 x 265 FT-LBS = 106 FT-LBS)
   (EXAMPLE-METRIC: .40 x 36 KG-M = 14.4 KG-M)

4. Repeat Step 3, but torqueing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.
   (EXAMPLE: .75 x 265 FT-LBS = 199 FT-LBS)
   (EXAMPLE-METRIC: .75 x 36 KG-M = 27 KG-M)

5. Using the proper sequence, torque all capscrews to the listed torque value as determined from the Torque Data Chart.

TURNTABLE BEARING INSPECTION FOR REPLACEMENT

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

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

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

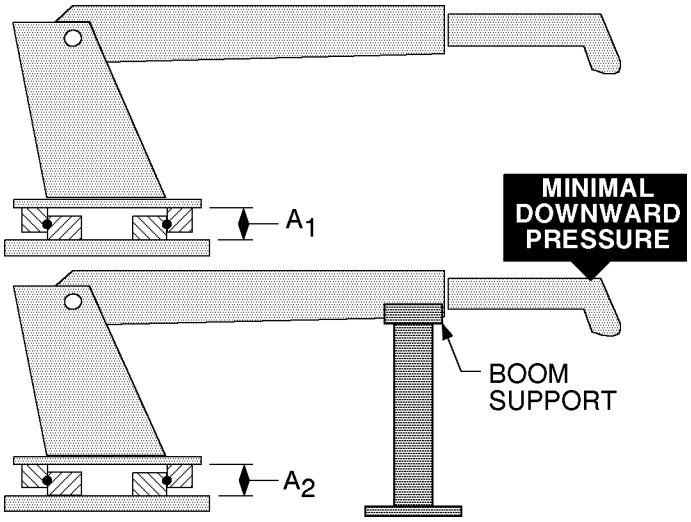
Periodic readings indicating a steady increase in TILT may be an indicator of bearing wear. Note that a bearing found to have no raceway cracks or other structural irregularities should be reassembled and returned to service.

TEST PROCEDURE

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

NOTE	IMT CRANE, LOADER OR TIREHAND MODEL				
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.		1007 1014 1014A 2015 2020 2109 3000 3016 3816 3020 425 4300 5016 6016 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 32030 T30 T40	9800 12916 13031 13034 14000 15000 18000 20017 H1200 H1200RR T50 TH2551B BODY ROT'N TH2557B BODY ROT'N TH2557A BODY ROT'N
	BALL DIA. (REF)	.875" (22mm)	1.00" (25mm)	1.18"-1.25" (30-32mm)	1.75" (44mm)
	TILT DIM. (A_1-A_2)	**.060" (1.524mm)**	**.070" (1.778mm)**	**.075" (1.905mm)**	**.090" (2.286mm)**

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: _____

_____

_____

_____

_____

_____

_____

_____

☐ REQUEST FOR ADDITION TO MANUAL

DESCRIPTION OF ADDITION: _____

_____

_____

_____

REASON FOR ADDITION: _____

_____

_____

_____

MAIL TO: IOWA MOLD TOOLING Co., Inc.
Box 189,
Garner IA 50438-0189
ATTN: Technical Publications

LIMITED WARRANTY

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

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

2. One (1) year; original IMT parts from the date of shipment to the end user.

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

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

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

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

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

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

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

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

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

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

Effective January, 1985

IOWA MOLD TOOLING CO., INC.
BOX 189, GARNER, IA 50438-0189
TEL: 515-923-3711
TECHNICAL SUPPORT FAX: 515-923-2424