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.
16000 SERIES CRANE
35’ BOOM (1H) SPECIFICATIONS

GENERAL SPECIFICATIONS

CRANE RATING
160,000 ft-lbs (22.13 ton-meters)

REACH (from centerline of rotation)
35’-0” (10.67m)

HYDRAULIC EXTENSION
90” (228.6cm)

*LIFTING HEIGHT
47’-4” (14.43m)

CRANE WEIGHT base unit with platform and chair
8600 lbs (3900 kgs)

OUTRIGGER SPAN at ground level
17’-6” (5.33m)

*CRANE STORAGE HEIGHT
13’-3” (4.04m)

MOUNTING SPACE REQUIRED
36” (91cm)

OPTIMUM PUMP CAPACITY
tandem pump (each section)
20 + 20 U.S. GPM (75.7 + 75.7 liters/min)

OIL RESERVOIR CAPACITY
40 Gallon (151 liters)

**VERTICAL CENTER OF GRAVITY
62” (157.5cm)

from base of crane

**HORIZONTAL CENTER OF GRAVITY
82” (208.3cm)

from centerline of rotation

* Based on 40” (102cm) truck frame height.
** Based on crane with chair and platform in stored position, extension boom retracted with fork and rotator installed - fork, rotator and link weigh approximately 600 lbs (272 kg).

PERFORMANCE CHARACTERISTICS

ROTATION
450° (7.85 rad) 30 seconds/450°

24 seconds/360°

INNER BOOM ELEVATION:
-5° to +80° (-.09 to +1.40 rad) 17 seconds

OUTER BOOM ARTICULATION:
170° (2.97 rad) 17 seconds

EXTENSION BOOM:
90° (228.6cm) 8.5 seconds

OUTRIGGER EXTENSION:
52-1/2” (133.4cm) 6.5 seconds

* All times are theoretical and based on an optimum pump capacity of 20 GPM.

CYLINDERS

INNER BOOM CYLINDER
7” (17.8cm) 34” (86.4cm)

OUTER BOOM CYLINDER
6-1/2” (16.5cm) 50” (127.0cm)

EXTENSION BOOM CYLINDER
3” (7.6cm) 90” (228.6cm)

OUTRIGGER CYLINDERS
3-1/2” (8.9cm) 52-1/2” (133.4cm)

POWER SOURCE
Integral-mounted tandem hydraulic pump and PTO application. Other standard power sources may be utilized. Minimum power required is 70 horsepower.
CYLINDER HOLDING VALVES
The holding sides of all cylinders are equipped with integral-mounted counter-balance valves or load holding check valves to prevent sudden cylinder collapse in case of hose or other hydraulic component failure. In addition, the outer and extension cylinders feature double counter-balance valves. The extension cylinders also feature a regenerative circuit which reduces extension time. The outrigger cylinders feature dual load holding check valves.

The counter-balance valve serves several functions. First, it is a holding valve. Secondly, it is so constructed that it will control the lowering function and allow that motion to be feathered while under load. Finally, if a hose breaks, the only oil loss will be that in the hose. The dual load holding check valves in the outrigger cylinders prevent the cylinders from drifting down during transport and prevent the cylinders from collapsing should a hose break when the outriggers are set.

ROTATION SYSTEM
Rotation of the loader is accomplished through a turntable bearing, powered by a high torque hydraulic motor through a heavy-duty gear box equipped with a heat treated pinion. The pinion runs on the external teeth of the turntable bearing to accomplish the rotation function. Standard rotation is 450° (7.85 rad.). Total gear reduction is 123.5:1.

HYDRAULIC SYSTEM
Open-centered, full-pressure system with tandem pump requiring 20 + 20 U.S. GPM (75.7 + 75.7 liters/min) optimum oil flow at 3000 PSI (206.9 bar). Control valve consists of two four-spool, stack type valvebanks. All crane (excluding outriggers) and wallboard functions are operated by either joy sticks or foot throttles via a pilot source of oil from the valve banks. Outrigger controls - located at the base of the crane - are of the push/pull type, connected directly to the valvebank. System includes hydraulic oil reservoir, suction-filter, return-filter and control valvebank.

CAPACITY ALERT
A pressure sensor mounted on the inner-boom cylinders and connected hydraulically to the down side of the inner boom, the lift side of the outer boom and extend side of the extension boom provides a capacity alert system. If the operator tries to lift a load in excess of crane capacity, the inner boom lift and lower, the outer boom lift and the extension out functions will not operate. To relieve the condition, the outer boom can be lowered or the extension retracted.

MINIMUM CHASSIS SPECIFICATIONS

<table>
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<tr>
<th>BODY STYLE</th>
<th>Conventional Cab</th>
<th>Conventional Cab</th>
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<tr>
<td>WHEELBASE</td>
<td>259&quot;</td>
<td>(657.9cm)</td>
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<tr>
<td>CAB-TO-AXLE</td>
<td>200&quot;</td>
<td>(508.0cm)</td>
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<tr>
<td>FRAME SECTION MODULUS</td>
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<td>(492 cc)</td>
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<td>RBM</td>
<td>3,300,000 in-lbs</td>
<td>(38,021 kg-m)</td>
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<td>FRONT AXLE RATING</td>
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<td>(7258 kg)</td>
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<td>REAR AXLE RATING</td>
<td>38,000 lbs</td>
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<td>TRANSMISSION</td>
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In addition to these specifications, heavy-duty electrical and cooling systems and tandem rear axles with dual wheels are required. It is recommended that the vehicle be equipped with an electric engine tachometer and auxiliary brake locks.

_Iowa Mold Tooling Co., Inc. reserves the right to change specifications and design without notice._
GEOMETRIC CONFIGURATION

OUTRIGGER DIMENSIONS

5'-9" (1.75m)

47'-4" (14.43m) TO GROUND

4'-7" (1.40m)

39'-11" (12.17m) TO GROUND

21" (53cm)

8'-0" (2.44m)

17'-6" (5.33m)

12" (30.5cm)

17'-0" (5.18m)

27'-6" (8.38m)

35'-0" (10.67m)

15'-3" (4.65m)

13'-3" (4.04m)

11'-7" (3.53m)

40" (1.02m)
16000 Series Crane
35’ Boom (1H)

- 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.
REFERENCE DIMENSIONS

159"

330"

104"

101"

92"

80"

109.25"

(116.5 MAX BBC)

269"

210"

473"

(480" MAX)
SECTION 2. 16035 CRANE REFERENCE

MAJOR CRANE ASSEMBLIES ................................................................. 3
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MAJOR CRANE ASSEMBLIES

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

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<tr>
<th>ITEM</th>
<th>LOCATION DESCRIPTION</th>
<th>LUBRICANT</th>
<th>FREQUENCY</th>
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<td>1.</td>
<td>TURNTABLE/BEARING GREASE EXTENSION *ROTATE CRANE WHILE GREASING WALLBOARD FORKS (NOT SHOWN)</td>
<td>SHELL ALVANIA 2EP OR SHELL RETINAX “A”</td>
<td>WEEKLY</td>
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<td>2.</td>
<td>WALLBOARD FORKS (NOT SHOWN)</td>
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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.

### Recommended Spare Parts List

#### 1 Year Supply

**16035 Crane**

**For Manual: 99900735**

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<th>ASSEMBLY DESIGNATION</th>
<th>ITEM NO.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
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</table>
SERVICE TOOLS LIST

This Service Tools list is provided as a recommendation. Dealers of the equipment covered by this manual should be equipped with the following tools and devices listed. There may be useful tools which are not listed which does not preclude them from use.

GENERAL SHOP EQUIPMENT

- AIR COMPRESSOR AND AIR TOOLS
- WELDER
- BAND SAW
- VISE
- DRILL PRESS
- HYDRAULIC PRESS
- GRINDERS
- ASSORTED HYDRAULIC FITTINGS
- HOSE ASSEMBLY EQUIPMENT
- GREASE APPLICATION EQUIPMENT
- PAINT SYSTEM
- CUTTING TORCHES OR PLASMA CUTTER
- FILTER BUGGY
- OVERHEAD CRANE WITH 5-TON CAPACITY (MINIMUM)
- FLOOR JACK
- PORT-A-POWER
- WELL EQUIPPED SERVICE VEHICLE
- QUALIFIED MECHANIC

SERVICE TOOLS REQUIRED FOR THIS CRANE

- FLOW METERS (2-25 GPM MINIMUM)
- TORQUE WRENCH/MULTIPLIER (850 FT-LB)
- 5000 PSI PRESSURE GAUGES W/PARKER QUICK DISCONNECTS (2)
- 500 PSI PRESSURE GAUGES W/PARKER QUICK DISCONNECTS (2)
- VOLT/OHM METER
- REPLACEMENT RETURN FILTERS (SEE SPARE PARTS LIST)
- REPLACEMENT SUCTION FILTERS (SEE SPARE PARTS LIST)
- ELECTRICAL WIRE, ENDS AND TOOLS
- TOUCH-UP PAINT
- IMPACT WRENCH (1")
- APPROVED HYDRAULIC OIL
- MOLY GREASE (BEARINGS)
To operate the crane with the load in close proximity to the head board, do so with the inner boom elevated, as shown in Figure 1. Operation of the crane as shown in Figure 2 will result in metal to metal contact of outer and extension booms, causing premature failure. Also, damage will result to hoses and fittings at rotator, causing premature failure.

**CAUTION**

DO NOT POSITION THE LOAD AS SHOWN IN FIGURE 2.

**CORRECT OPERATION NEAR HEAD BOARD**

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

CRANE MOUNTING
1. See SPECIFICATIONS in Section 1 for crane weight. Using an overhead hoist and fabric slings of adequate capacity, lift the crane about a foot to see if the crane is adequately balanced. If not, lower hoist and adjust slings. Re-check balance and re-position crane until mounting surface is level.

2. Install the truck frame support so that the tie-down studs pass through the supports (Figure below). Cut the support to the inside dimensions of the truck frame. Allow about 1/16" extra. Grind the end of the support to fit inside the frame channel. Use a hammer to drive it into position if necessary.

3. Allow sufficient clearance between the cab and crane base, at least 5" (12.7cm). Position the crane on the chassis per the applicable installation drawing, centering the mounting slots over the truck frame rails. While holding crane with hoist, start mounting hardware per Figure below. Note position of support weldments on truck frame. Hand tighten nuts. Observe underside of crane base.

4. Torque the 1 1/4"-7 UNC Grade 5 mounting hardware to 840 ft-lbs (116 kg-m). When torquing the mounting hardware the following precautions must be followed:
   A. Never use lock washers.
   B. Hardened washers must be used, and under the turning element, whether the turning element is the nut or the head of the bolt.
   C. Torque values specified are with residual oils or without special lubricants applied to the threads. If special lubricants are used, such as Never-Seize compound graphite and oil, molybdenum disulphite colloidal copper or white lead, reduce torque values 10%. Torque values for threaded fasteners are not affected with the use of Loctite.

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

   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 840 FT. LBS. (116 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.

5. Touch up paint on crane and chassis as necessary.
To install the hydraulic hoses, fittings, etc.:

1. Plumb the suction line filter as shown in Figure below.

2. Install the 1-1/4" ID suction hose between the suction line filters and the pump inlets. Tighten the hose clamps.

3. Install the 3/4" pressure hose between the pump outlets and the inlet ports on the valvebanks.

4. Install the return line between the reservoir return line filters and valvebank (if applicable).

5. Fill the hydraulic oil reservoir.

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

7. Open the return gate valve.

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

9. Cycle all hydraulic functions. Check for leaks, and refill the reservoir if necessary.
Reproduced below is decal part number 70394441 which is mounted on the boom near the fork rotator. Route the hoses as shown on the decal.
CAUTION

REPEATED ROTATION OF THE CRANE AGAINST THE ROTATION STOPS CAN CAUSE MAJOR CRANE BASE AND/OR MAST DAMAGE, RESULTING IN EXPENSIVE NON-WARRANTABLE REPAIRS.

This crane does not provide continuous rotation. A rotation stop mechanism is used to prevent damage to hydraulic and lubricant lines.

During operation, it is necessary to reduce rotation speed and to use caution when approaching the rotation stop locations, as shown in Figure below. Also, attempt to position the unit in such a manner to avoid contacting the stops during operation.
# SECTION 3. REPLACEMENT PARTS 16035 CRANE

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PARTS INFORMATION

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

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

CRANE IDENTIFICATION
Every IMT crane has an identification placard (see figure) attached to the mast. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model numbers. All inquiries should be addressed to:
Iowa Mold Tooling Co., Inc.
Box 189, Garner, IA 50438-0189
Telephone: 515-923-3711
Technical Support Fax: 515-923-2424

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

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

ORDERING REPAIR PARTS
When ordering replacement parts:
1. Give the model number of the unit.
2. Give the serial number of the unit.
3. Specify the complete part number. When ordering cylinder parts, or one of the main weldments, always give the stamped part number.
4. Give a complete description of the part.
5. Specify the quantity required.
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<tr>
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<th>Description</th>
<th>Quantity</th>
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**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.

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**NOTE**

This parts list reflects major hose routing revisions, beginning with crane serial number 16035951039.
OUTRIGGER CYLINDER (3B003950)

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**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 (41711812)

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### Accessories

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

- **CAUTION**
  Anytime the pinion gear cap screws (item 18) are removed, apply Locotite 262 to the threads before re-assembly.
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(94394209)

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**NOTE**

This parts list reflects major hose routing revisions, beginning with Crane serial number 1603591039.

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

---

**NOTES:**

1. **NEVER-SEEZE TO COLLAR ID.**
2. **NEVER-SEEZE TO PIN AT PIN CAP, NOT TO EXCEED THE WIDTH OF THE COLLAR.**
3. **IT IS IMPERATIVE THAT NEVER-SEEZE BE APPLIED IN SUCH A MANNER THAT IT DOES NOT COME IN CONTACT WITH ANY CAR-MAX BEARING.**
4. **IF REQUIRED SHOW PIN RETAINING PLATES FLUSH (-8/-8.80) WITH OUTSIDE OF COLLAR USING .75 FLAT WASHERS AS REQUIRED.**
5. **CLEAN/PRIMED 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:**
   - **.70-.90 CAP SCREW (GR5 PLATED) = 200 FT-LBS.
   - **.85-.11 CAP SCREW (GR5 PLATED) = 115 FT-LBS.**

---

**SEE NOTES 3**

38

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**SEE NOTES 2 & 3**

39(3)

---

**SEE NOTES 1 & 3**

39(2)
### Inner Cylinder (3C117930)

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**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.
NOTE

Anytime the pin retainer plate bolts have been removed, apply Loctite 262 to the threads before re-assembly.
# OUTER CYLINDER (3C160970)

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**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.
### EXTENSION BOOM ASM (41713951)

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### 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.
### EXTENSION CYLINDER (3B204930)

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**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.
# INSTALLATION KIT (93711852)

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**Diagram:**

- **BASE REF**
  - IGNITION HOT
  - MERCURY SWITCH (PART OF CHAIR PLATFORM)
  - PILOT VALVE SOLENOID
  - PILOT SOURCE CHECK VALVE SOLENOID
  - PUMP
  - ENG KILL SWITCH
  - IGNITION HOT
  - ENG KILL RELAY

- **Interrrupt Existing Truck Chassis Wire to Fuel Solenoid**
  - To Fuel Sol (DSL)
  - To Ign Coil (Gas)
DECAL KIT (95711851)

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**DECAL PLACEMENT**

- **LOCATION**
  - **6,15,16,17,18, 22,23,24,38**: ONE ON EACH OUTRIGGER.
  - **21,28**: ONE ON EACH SIDE OF CARRIER VEHICLE.
  - **7**: AT TURNTABLE GREASE ZERK.
  - **2,3**: AT ALL GREASE ZERKS.
  - **22,23,28**: ON RESERVOIR.
  - **29**: AT OR NEAR THE DRIVELINE.

**DETAIL "A-A"**

**RESERVOIR (REF) 5(ABOVE ELBOW)
### VALVEBANK ASM (51713166)

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**Notes:**
1. ANTICAVITATION CHECK ALL PORTS.
2. 4 WAY VALVE RATED 16 GPM AT 2500 PSI 3500 PSI MAX. INLET PRESSURE.
3. HANDLE END AT "A" PORT END.
4. NO HANDLES SUPPLIED.
# SPOOL ACTUATOR ASM (70145010)

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### SPOOL POSITIONER END asm

#### (94074089)

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**Notes:**
- **Torque:** To 10-12 ft-lbs
- **Clean and Apply:** Type II, Gr. 0, Thread Locking Compound
  - Ref: LOCTITE #262 RED
CONTROLLER ASM (70731801)

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FOOT TREADLE CONTROLLER
(70731800)

FOOT CONTROLLER

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**KIT-KINSHOFER FORK MOUNTING-HARD PLUMBED (51713903)**

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**Diagram Notes:**

1. ITEMS 1, 2, 3, 9, and 13 are part of extension boom ASM.
### Wallboard Fork-Kinshofer W/ Rotator (70732903)

#### Fork Assembly

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#### Fork Cylinder Asm

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**Diagram:** Illustrations showing the assembly of the fork and cylinder components.
### DECAL KIT-RADIO REMOTE (95713964)

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<td>5. 70392109</td>
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</tr>
<tr>
<td>6. 70392213</td>
<td>DECAL-CAUTION WASH/WAX</td>
<td>3</td>
</tr>
<tr>
<td>7. 70392524</td>
<td>DECAL-ROTATE CRN/GREASE</td>
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</tr>
<tr>
<td>8. 70394864</td>
<td>DECAL-16000 IDENT</td>
<td>2</td>
</tr>
<tr>
<td>12. 70394670</td>
<td>DECAL-IMT MATL HDLG SYS</td>
<td>2</td>
</tr>
<tr>
<td>15. 70392864</td>
<td>DECAL-DANGER OR STD CLR</td>
<td>2</td>
</tr>
<tr>
<td>16. 70392890</td>
<td>DECAL-DGR STOW/UNFOLD</td>
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#### DECAL PLACEMENT

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>6,15,16,18,22,23,24,30</td>
<td>ONE ON EACH OUTRIGGER.</td>
</tr>
<tr>
<td>21,28</td>
<td>ONE ON EACH SIDE OF CARRIER VEHICLE.</td>
</tr>
<tr>
<td>7</td>
<td>AT TURNTABLE GREASE ZERM.</td>
</tr>
<tr>
<td>2,3</td>
<td>AT ALL GREASE ZERKS.</td>
</tr>
<tr>
<td>6,22,23,26</td>
<td>ON RESERVOIR.</td>
</tr>
<tr>
<td>28</td>
<td>AT OR NEAR THE DRIVELINE.</td>
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</tbody>
</table>

---

**Diagram 1:**

- Reference: 12 REF
- Location: 12—LOCATION ON OTHER SIDE OF BOOM

**Diagram 2:**

- Reference: 6(ABOVE ELBOW)
- Detail "A-A"
# HOSE ROUTING-OUTER BOOM ASM

**ITEM** | **PART NO.** | **DESCRIPTION** | **QTY** | **REFERENCE**
--- | --- | --- | --- | ---
1. | 3C170860 | OUTER CYLINDER | 1 | REF
2. | 52711699 | TROMBONE GUARD-LH | 1 | REF
3. | 52711730 | OUTER BOOM (INCL:5) | 1 | REF
4. | 70034283 | BUSHING (PART OF 4) | 1 | REF
5. | 60109919 | OUTER LINK (INCL:7,8) | 1 | REF
6. | 7BF81025 | BUSHING (PART OF 6) | 1 | REF
7. | 7BF81225 | BUSHING (PART OF 6) | 1 | REF
8. | 60109920 | OUTER LINK (INCL:10,11) | 1 | REF
9. | 7BF81025 | BUSHING (PART OF 9) | 1 | REF
10. | 7BF81225 | BUSHING (PART OF 9) | 2 | REF
11. | 60119951 | INNER LINK (INCL:13,14) | 1 | REF
12. | 70034283 | BUSHING (PART OF 12) | 3 | REF
13. | 70034284 | BUSHING (PART OF 12) | 2 | REF
14. | 52703694 | PIN | 1 | REF
15. | 52703697 | PIN | 2 | REF
16. | 52703698 | PIN | 2 | REF
17. | 52706832 | PIN | 1 | REF
18. | 52706587 | TRUHNION | 1 | REF
19. | 60030246 | GUIDE-TROMBONE | 2 | REF
20. | 60030032 | WEAR PAD | 2 | REF
21. | 60030167 | WEAR PAD | 1 | REF
22. | 60117348 | HOSE GUARD | 2 | REF
23. | 60117349 | COVER | 2 | REF
24. | 60104191 | RETAINER PLATE | 2 | REF
25. | 52706831 | RETAINER | 1 | REF
26. | 60106332 | PIN RETAINER 4" | 5 | REF
27. | 72060004 | WASHER 7/16 WRT | 6 | REF
28. | 72601530 | CAR BOLT 5/16-18X3/4 SQNK | 4 | REF
29. | 72060023 | CAP SCR 5/16-18X3/4 HHGR5 | 4 | REF
30. | 72606044 | CAP SCR 3/8-16X3/4 HHGR5 | 8 | REF
31. | 72606047 | CAP SCR 3/8-16X1-1/4 HHGR5 | 6 | REF
32. | 72606147 | CAP SCR 5/8-11X1 HHGR5 | 5 | REF
33. | 7262103 | NUT 3/8-16 LOCK | 6 | REF
34. | 7262109 | NUT 5/16-18 LOCK | 16 | REF
35. | 7263002 | WASHER 5/16 WRT | 16 | REF
36. | 7263003 | WASHER 3/8 WRT | 12 | REF
37. | 7263051 | WASHER 3/8 LOCK | 8 | REF
38. | 52711697 | TUBE | 2 | REF
39. | 72060027 | CAPSCR 5/16-18X1-1/2 HHGR5 | 8 | REF
40. | 72060026 | CAPSCR 5/16-18X1-1/4 HHGR5 | 2 | REF
41. | 89039658 | WEATHERSTRIP .19X1/2 | 4FT | REF
42. | 89044330 | LOOM | 22" | REF
43. | 70067005 | ADHESIVE | AR | REF
44. | 70034061 | TIE | 4 | REF
45. | 60117347 | HOSE CLAMP | 2 | REF
46. | 70060027 | CONVOLUTED LOOM | 2 | REF
47. | 89044330 | LOOM | 22" | REF
48. | 70067005 | ADHESIVE | AR | REF
49. | 70034061 | TIE | 4 | REF
50. | 60119978 | HOSE BRACKET | 2 | REF

---

**ATTACH ITEM 47, CONVOLUTED LOOM, WITH ITEM 48, ADHESIVE, TO ITEM 4, HOSE-OUTER WDLWT AS SHOWN.**

**VIEW A-A**
NOTES:
1. TROMBONE GUARDS (ITEM 2 & 45) MUST BE POSITIONED AS CLOSE TO THE OUTER BOOM WELDMENT (ITEM 4), AS POSSIBLE.

2. WHEN TROMBONE TUBE WELDMENT (ITEM 41) IS RETRACTED, IT MUST SIT ON THE BOTTOM OF TROMBONE GUARDS (ITEMS 2 & 45) WITH THE OUTER BOOM WELDMENT (ITEM 4) SITTING ON THE TRUNNION (ITEM 19). Usuallly the trombone stud will line up with middle of slot on the end guard.


4. ADD PLASTIC TIES (ITEM 49) AFTER THE FIRST BEND (POSITION 4A) AND ANOTHER APPROXIMATELY HALF WAY BETWEEN THE MIDDLE PLATE AND THE HOSE BRACKET (ITEM 50) (POSITION 4B).

5. FULLY RETRACT TROMBONE TUBE WELDMENT (ITEM 41). IT SHOULD LAY ON BOTTOM OF TROMBONE GUARDS (ITEM 2 & 45). ALIGN TUBE TO RUN IN CENTER OF TUBE BY ADJUSTING AT STUD ON THE END GUARD.

6. TWIST HOSES AT JIC FITTINGS ON END OF TUBE (ITEM 41) SO HOSES WILL TRACK IN TOP CORNERS OF TROMBONE GUARDS (ITEMS 2 & 45) WITH NO TWISTS.

7. EXTEND AND RETRACT HOSES WITH COVER OFF TO ENSURE THAT THE HOSES RUN TRUE IN CORNERS.
KIT-SWIVEL LINK (51709479)

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<td>SWIVEL LINK (INCL: 2,6)</td>
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<td>70055207</td>
<td>BUSHING (PART OF 1)</td>
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<td>70143730</td>
<td>ROTATOR PIN</td>
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<td>4</td>
<td>72063182</td>
<td>WASHER-FLAT</td>
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<td>5</td>
<td>72062234</td>
<td>NUT-LOCK</td>
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<tr>
<td>6</td>
<td>72053508</td>
<td>ZERK 1/8NPT (PART OF 1)</td>
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## BOOM SUPPORT ASM (51726278)
**(EFF. 9-08-14)**

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<td>KIT-BOOM SUPPORT HRDW</td>
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<td>52726279</td>
<td>BOOM SUPPORT</td>
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<td>3</td>
<td>60030481</td>
<td>PAD</td>
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<tr>
<td>4</td>
<td>60118670</td>
<td>PLATE (PART OF 1)</td>
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<tr>
<td>5</td>
<td>60118671</td>
<td>CHANNEL-FORM (PART OF 1)</td>
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<td>6</td>
<td>60118677</td>
<td>RUBBER PAD (PART OF 1)</td>
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<td>7</td>
<td>72060151</td>
<td>CAP SCREW (PART OF 1)</td>
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<td>8</td>
<td>72060959</td>
<td>BOLT (PART OF 1)</td>
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<td>9</td>
<td>72062103</td>
<td>NUT</td>
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<td>72062103</td>
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<tr>
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<td>72601310</td>
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<tr>
<td>14</td>
<td>72601859</td>
<td>NUT (PART OF 1)</td>
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**NOTE:**
1. WELD FORK SUPPORT CHANNEL, ITEM #1, IN PLACE AFTER FORK IS MOUNTED ONTO CRANE AND POSITIONED INTO BOOM SUPPORT. FOLLOWING DIMENSIONS REPRESENT APPROXIMATE PLACEMENT OF FORK SUPPORT.

\[ X = 10.62" \] FOR 54" FORK APPLICATION ON 16042 CRANE
\[ X = 16.62" \] FOR 48" FORK APPLICATION ON 16042 CRANE

2. TORQUE 5/8" BOLTS TO 160 FT-LBS.
| ITEM | PART NO. | DESCRIPTION       | QTY |
|------|----------|------------------|-----|--------------------------------------------------|
| 1    | 60119499 | PIN              | 1   |                                                  |
| 2    | 52712757 | BOOM SUPPORT     | 1   |                                                  |
| 3    | 52712761 | SADDLE           | 1   |                                                  |
| 4    | 60118671 | CHANNEL          | 2   |                                                  |
| 5    | 60118670 | PLATE            | 2   |                                                  |
| 6    | 60118677 | PAD              | 2   |                                                  |
| 7    | 72060194 | CAP SCR 3/4-10X6-1/2 HHGR5 | 4   |                                                  |
| 8    | 72060959 | CRG BOLT 3/8-16X2-1/2 SQ GR2 | 4   |                                                  |
| 9    | 72062080 | NUT 1/2-13 LOCK  | 2   |                                                  |
| 10   | 72062103 | NUT 3/8-16 LOCK  | 4   |                                                  |
| 11   | 72062114 | NUT 3/4-10 LOCK  | 4   |                                                  |
| 12   | 72063005 | WASHER 1/2 WRT   | 4   |                                                  |
| 13   | 72063008 | WASHER 3/4 WRT   | 4   |                                                  |
| 14   | 72661367 | QUICK PIN        | 2   |                                                  |
| 15   | 72601585 | CAP SCR 1/2-13X5-1/2 HHGR8 | 2   |                                                  |

**Diagram Notes:**

1. WELD BOTH ENDS OF FORK SUPPORT CHANNEL (ITEM #4) TO BOOM SUPPORT WELD MT (ITEM #2)

**Note:**

1. WELD FORK SUPPORT CHANNEL, ITEM #4, IN PLACE AFTER FORK IS MOUNTED ONTO CRANE AND POSITIONED INTO BOOM SUPPORT. FOLLOWING DIMENSIONS REPRESENT APPROXIMATE PLACEMENT OF FORK SUPPORT, ITEM #4:
   - "X" = 10.62" FOR 54" FORK APPLICATION ON 16035/16042 CRANE
   - "X" = 16.62" FOR 48" FORK APPLICATION ON 16035/16042 CRANE
### INSTALLATION KIT-RADIO REMOTE CONTROL (93712710)

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<td>4</td>
<td>72062142</td>
<td>NUT 1 1/4-7 LOCK</td>
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<td>52706660</td>
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<td>6</td>
<td>60103041</td>
<td>TANDEM PUMP SUPPORT</td>
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<td>7</td>
<td>72060046</td>
<td>CAP SCR 3/8-16X1 HHGR5</td>
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<td>72062002</td>
<td>NUT 3/8-16</td>
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<td>10</td>
<td>72532710</td>
<td>BEAD NIPPLE 1-5/8STR1-1/4 90°</td>
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<tr>
<td>11</td>
<td>72532949</td>
<td>ADAPTER #20MSTR #12FSTR</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>72053767</td>
<td>ELBOW #12MSTR #12MJIC 90°</td>
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<td>13</td>
<td>77041251</td>
<td>RELAY</td>
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<td>77041237</td>
<td>SOLENOID 12V 150A</td>
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<td>CABLE ASM #1WIRE X 6</td>
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<td>16</td>
<td>60103535</td>
<td>SWITCH BRACKET</td>
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<td>77041345</td>
<td>TOGGLE SWITCH</td>
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<td>WIRE 10GA BLK X 10</td>
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<td>20</td>
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<td>60105107</td>
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<td>22</td>
<td>72060931</td>
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<td>23</td>
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<td>24</td>
<td>72063119</td>
<td>WASHER 5/8N FLAT</td>
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</tbody>
</table>

**Diagram:**

- **PUMP**
- **TRUCK BATTERY**
- **UNDERHOOD SOLENOID**
- **TO IGNITION SWITCH**
- **ENGINE KILL RELAY**
- **SPEED CONTROL RELAY**
- **INTERRUPT EXISTING TRUCK CHASSIS WIRE TO FUEL SOLENOID**
- **TO IGNITION SOLENOID**
- **FUEL SOLENOID (DSL)**
- **TO IGN COIL (GAS)**
- **BASE REF**
- **23**
- **24**
- **22**
- **21**
- **5**
- **1**
- **3**
- **4**
- **15**
- **14**
- **19**
- **18**
- **13**
- **12**
- **11**
- **10**
HYD KIT-STD/HI FRM-RADIO-BASE & OUTRIGGERS (99901021)

| ITEM | PART NO. | DESCRIPTION | QTY | REF.
|------|----------|-------------|-----|-----
| 1    | 51394366 | HOSE ASM 1/2X123 FJ #8#8 (PART OF 19) | 2 | 2REF
| 2    | 51394365 | HOSE ASM 1/2X81 FJ #8#8 (PART OF 19) | 2 | 2REF
| 3    | 73054462 | SELECT VLV-PILOT OPERATED | 1 | 1
| 4    | 73054542 | PILOT VALVE | 1 | 1
| 5    | 51394356 | HOSE ASM 1/2X18 FF #8#12 (PART OF 19) | 1 | 1REF
| 6    | 51394359 | HOSE ASM 3/4X9-1/2 FF #12#12 (PART OF 19&20) | 1 | 1REF
| 7    | 51394364 | HOSE ASM 3/4X83 FF #12#12 (PART OF 19&20) | 1 | 1REF
| 8    | 51394358 | HOSE ASM 3/4X65 FF #12#12 (PART OF 19&20) | 1 | 1REF
| 9    | 72053767 | ELBOW #12MSTR #12MJIC 90° | 2 | 2
| 10   | 72532366 | ADAPTER #12MSTR #12MJIC | 1 | 1
| 11   | 72532950 | TEE #12 SWVL NUT RUN | 1 | 1
| 12   | 72060028 | CAP SCR 5/16-18X1-3/4 | 2 | 2
| 13   | 72060029 | CAP SCR 5/16-18X2 | 2 | 2
| 14   | 72062109 | NUT 5/16 LOCK | 2 | 2
| 15   | 72053777 | ELBOW #8MSTR #8MJIC 45° | 4 | 4
| 16   | 72053763 | ELBOW #8MSTR #8MJIC 90° | 1 | 1
| 17   | 73014618 | SHIM | 1 | 1
| 18   | 51713834 | HOSE KIT-STD FRM-RADIO (INC:1,2,5-8) | 1 | 1REF
| 19   | 51714016 | HOSE KIT-HI FRM-RADIO (INC:6-8,23-25) | 1 | 1REF
| 20   | 51394523 | HOSE ASM 1/2X113 FJ #8#8 (PART OF 20) | 1 | 1REF
| 21   | 51394524 | HOSE ASM 1/2X71 FJ #8#8 (PART OF 20) | 1 | 1REF
| 22   | 51394525 | HOSE ASM 1/2X15 FF #8#12 (PART OF 20) | 1 | 1REF

OUTRIGGER CYLINDER FITTINGS
72053777(#16) - TYP(4)

NOTE: FITTINGS SHOWN IN VALVE BANK ARE PART OF VALVE BANK ASSEMBLY
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**Diagram:**

The diagram shows the components and connections associated with the parts listed above. The diagram is not fully transcribed and should be interpreted based on the visual representation.
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**HYD KIT-STD/HI FRM-RADIO-EXT CYL (99901029)**

*Diagram of hydraulic kit components.*
HYD KIT-STD/HI FRM-RADIO-BOOM TIP FUNCTIONS (99901027)

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**HYD KIT-STD/HI FRM-RADIO-PILOT LINES (99901028)**

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**Diagram Annotations:**
- **R(Return)**
- **(P)Pressure**
- **(R)Return**
- **Base - REF**
- **To Tank**
- **View A-A (End View)**
- **Scale 2:1**

**Component Notations:**
- **Capped Pressure**
- **Return Capped**
- **To Boom Tip**
- **Return Capped**
- **Capped Pressure**
- **Fork Tilt**
- **Extension**
- **Fork Rotation**
- **Outer**
- **Inner**
- **Rotation**
- **Manifold Orientation**
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**NOTICE:**

- FITTINGS SHOWN IN VALVE BANK ARE PART OF VALVE BANK ASSEMBLY.

---

**OUTRIGGER CYLINDER FITTINGS**

- 72053777 (#16) - TYPE 4

---

**HI FRAME**

- OUTRIDER HOSES CHAIR MOUNT
  - A-51394523 (Q=23)
  - B-51394523 (Q=23)
  - C-51394524 (Q=24)
  - D-51394524 (Q=24)

- STD FRAME

  - OUTRIDER HOSES CHAIR MOUNT
    - A-51394526 (Q=1)
    - B-51394526 (Q=1)
    - C-51394527 (Q=2)
    - D-51394527 (Q=2)
HYD KIT-STD/HI FRM-CHAIR MOUNT-MAST MTD VB (99901012)

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### HYD KIT-STD/Hi FRM-CHAIR MOUNT-ROT’N (99901013)

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**Diagram:**

- **Route thru Mast and Platform to Left Hand Joystick**
- **Rotation Motor Valve Section**
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**Route thru mast and platform to left hand joystick**

**Main cylinder valve section**

**Pilot line routing**
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HYD KIT-STD/HI FRM-CHAIR MOUNT-EXT CYL (99901009)

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## HYD KIT-STD/HI FRM-CHAIR MOUNT-
## PILOT LINES (99901018)

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### ITEM PART NO. DESCRIPTION QTY

1. 52714254 BASE 1
2. 52713458 OUTRIGGER ARM 2
3. 52713460 OUTRIGGER LEG 2
4. 52713459 OUTRIGGER LINK 2
5. 52711986 OUTRIGGER PAD 2
6. 38003950 OUTRIGGER CYLINDER 2
7. 52712505 PIN 2
8. 52714382 PIN 2
9. 52710199 PIN 2
10. 72601630 CAP SCR 3/4-10X3-1/2 SH 18
11. 72600444 CAP SCR 3/8-16X3/4 8
12. 89044402 LOOM 1/2 ID X 22 2
13. 70067005 ADHESIVE-WEATHERSTRIP AR 3
14. 52712103 PIN 2
15. 70029119 SERIAL NUMBER PLACARD 1
16. 72066340 POP RIVET 1/8X3/8 GRIP 2
17. 60350055 RUBBER PAD 2
18. 72600488 CAP SCR 3/8-16X1-1/2 HHGR5 4
19. 72603003 WASHER 3/8 WRT 4
20. 52713233 LADDER EXTENSION 2
21. 72600528 CAP SCR 3/8-16X2-1/2 4
22. 7262103 NUT 3/8-16 LOCK 10
23. 52701853 OIL RESERVOIR 1
24. 70086029 GREASE 1/4LB 1
25. 72532261 SIGHT GAUGE 1
26. 73014671 FILL CAP 1
27. 73052001 PIPE PLUG 3/4NPT MAGNETIC 1
28. 73141276 FILL SCREEN 1
29. 60109337 RETAINER PLATE 6
30. 72060147 CAP SCR 5/8-11X1 6
31. 60119766 THREADED ROD 5/16-18X4 2
32. 72053508 ZERK 1/8NPT 10
33. 70034417 HOSE CLAMP 3/4 6
34. 70144819 COVER PLATE 4
35. 72060029 CAP SCR 5/16-18X2 HHGR5 2
36. 72060093 CAP SCR 1/2-13X1-1/2 12
37. 72062080 NUT 1/2-13 LOCK 12
38. 52713337 PLATFORM-BOLT ON 1
39. 60030303 WEAR PAD 2
40. 60030297 WEAR PAD 2
41. 72062109 NUT 5/16-18 LOCK 2
42. 70055173 BEARING (PART OF 3&4) 12RF
43. 60120746 BAR 2
44. 72060025 CAP SCR 5/16-18X1 HHGR5 4
45. 72063050 WASHER 5/16 LOCK 4

---

**WARNING**

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue, causing serious injury or death.
## CONTROL KIT-VOAC/HETRONIC RADIO REMOTE (90713798-1)

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SEE FOLLOWING PAGE FOR DRAWING
CONTROL KIT-VOAC/HETRONIC RADIO REMOTE (90713798-2)

To supply power to radio remote, engine start is optional.

NOTE: Numbers refer to numbers printed on wire. Cable supplied with radio wire harness.
MAST ASM-RADIO REMOTE-HETRONIC
(41713791-1)

1. 52714252 MAST 1
2. 60116308 RETAINING RING 1
3. 60120732 SLIDE-ROTATION STOP 1
4. 60114481 SPACER 4
5. 72060097 CAP SCR 1/2-13X3 HHGR5 4
6. 73051473 HYDRAULIC MOTOR 1
7. 70731795 VALVE BLOCK (INCL:39&40) 1
8. 72060023 CAP SCR 5/16-18X3/4 HH 5
9. 52713209 GUARD-TURNTABLE-FRONT 1
10. 52713201 GUARD-TURNTABLE-REAR 1
11. 72060092 CAP SCR 1/2-13X1-1/4 HHGR5 8
12. 72063053 WASHER 1/2 LOCK 4
13. 52710062 GUARD 1
14. 70056493 EDGE LINER 2
15. 72601625 CAP SCR 3/4-10X2-1/4 HHGR5 10
16. 60114482 PINION CAP 1
17. 72060356 CAP SCR 1/2-20X1-1/4 HHGR5 2
18. 71056461 PINION GEAR 1
19. 71056450 TURNTABLE BEARING 1
20. 72601629 CAP SCR 3/4-10X4 HHGR8 9
21. 72601622 CAP SCR 7/8-9X5 HHGR8 11
22. 72062120 NUT 7/8-9 11
23. 76393533 GASKET - BRAKE ESK20 REF
24. 71056465 BRAKE - HYD ESK20 W/O DRAG 1
25. 72063908 ZERK 1/8NPT 1
26. 7Q072017 O-RING 2
27. 7Q072017 O-RING (PART OF 7) 2REF
28. 73054538 VALVE 2 REF
29. 73054538 VALVE (PART OF 7) 2REF
30. 70034431 HOSE GUARD 1
31. 70034431 HOSE GUARD 1
32. 53000713 GREASE EXT 36.00 HOSE 1
33. 7Q072017 O-RING 2
34. 73054538 CARTRIDGE VLV (PART OF 7) 2REF
35. 72060757 CAP SCR 3/8-16X2-1/2 SH 3
36. 53000713 GREASE EXTENSION 38" 1
37. 27. 7Q072017 O-RING 2
38. 70034431 HOSE GUARD 1
39. 70034431 HOSE GUARD 1
40. 73054538 VALVE 2 REF
41. 70034431 HOSE GUARD 1
42. 70034431 HOSE GUARD 1

WARNING

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

CAUTION

ANYTIME THE PINION GEAR CAP SCREWS (ITEM 18) ARE REMOVED, APPLY LOCTITE 262 TO THE THREADS BEFORE RE-ASSEMBLY. NOTE 1. FILL GEARBOX WITH 4.25 PINTS OF 80/90 EP GREASE TO WITHIN 1-3/8" OF TOP FILL PLUG.

NOTES:
1. APPLY NEVER-SEEZ TO COLLAR ID.
2. IT IS IMPERATIVE THAT NEVER-SEEZ BE APPLIED IN SUCH A MANNER THAT IT DOES NOT COME IN CONTACT WITH ANY GEAR-MAX BEARING.
3. INSTALL TURNTABLE GEAR BEARING WITH A MINIMUM GEAR BACKLASH OF .009/.015", MEASURED BETWEEN SWING PINION AND TURNTABLE GEAR BEARING TEETH WITH YELLOW PAINT.

TORQUE SPECIFICATIONS

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SEE NOTES 1 & 2
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**NOTE:**
- Fill with 4.25 PINTS OF SB/SH EP GREASE. SHOULD BE FILLED TO WITHIN 1.56" OF TOP OF FILL PLUG.
- Use a cleaner/prewax on threads.
- Apply a serviceable thread locker.
- Torque cap screws to 70 FT-UGS.
### LABELING CHART

**ALL CONNECTORS WILL BE SET UP AND Labeled ACCORDINGLY**

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<tr>
<td>#5</td>
<td>FOUR-MODE DOWNTIME</td>
<td>28</td>
</tr>
<tr>
<td>#6</td>
<td>FOUR-MODE EXTENSION</td>
<td>28</td>
</tr>
<tr>
<td>#7</td>
<td>CABLE 1</td>
<td>28</td>
</tr>
<tr>
<td>#8</td>
<td>CABLE 2</td>
<td>28</td>
</tr>
<tr>
<td>#9</td>
<td>EXTENSION CABLE 1</td>
<td>28</td>
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<tr>
<td>#10</td>
<td>EXTENSION CABLE 2</td>
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</tr>
<tr>
<td>#11</td>
<td>EXTENSION CABLE 3</td>
<td>28</td>
</tr>
</tbody>
</table>

**NOTES:**

1. *BATTERY CHARGER* - #70733109 (NOT SHOWN)
2. *BATTERIES* - #7742062 (NOT SHOWN)
KIT-WB RADIO MANIFOLD (73733364)

NOTE:
ACTUAL SOLENOIDS WILL NOT BE LABELED. IDENTIFICATION IS FOR REFERENCE ONLY.
SECTION 4. GENERAL REFERENCE

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TURNTABLE BEARING INSPECTION FOR REPLACEMENT ................................. 12
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### Inspection Checklist

**CRANES**

<table>
<thead>
<tr>
<th>TYPE OF INSPECTION</th>
<th>NOTES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Consult Operator / Service Manual for additional inspection items, service bulletins and other information.</td>
<td></td>
</tr>
<tr>
<td>Before inspecting and operating crane, crane must be set up away from power lines and leveled with outriggers fully extended.</td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

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

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>ITEM</th>
<th>KEY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>D</td>
<td>Labels</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>D</td>
<td>Controls</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>D</td>
<td>Hyd System</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>D</td>
<td>Hyd System</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>D</td>
<td>Hook</td>
</tr>
<tr>
<td>D</td>
<td>6</td>
<td>D</td>
<td>Rope</td>
</tr>
<tr>
<td>D</td>
<td>7</td>
<td>D</td>
<td>Pins</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
<td>D</td>
<td>General</td>
</tr>
<tr>
<td>D</td>
<td>9</td>
<td>D</td>
<td>Operation</td>
</tr>
<tr>
<td>D</td>
<td>10</td>
<td>D</td>
<td>Remote Ctrl</td>
</tr>
<tr>
<td>D</td>
<td>11</td>
<td>D</td>
<td>Electrical</td>
</tr>
<tr>
<td>D</td>
<td>12</td>
<td>D</td>
<td>Anti 2-Blocking</td>
</tr>
<tr>
<td>D</td>
<td>13</td>
<td>D</td>
<td>Other</td>
</tr>
</tbody>
</table>

**REMARKS**

4 = SATISFACTORY

8 = DEFICIENCY (must be corrected prior to operation)

R = RECOMMENDATION (should be considered for corrective action)

NA = NOT APPLICABLE

**STATUS**

4

8

R, NA

**Notice**

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

**CRANES**

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>ITEM</th>
<th>KEY</th>
<th>INSPECTION DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 16</td>
<td>Daily</td>
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<td>All daily inspection items.</td>
</tr>
<tr>
<td>M 17</td>
<td>Cylinders</td>
<td></td>
<td>Visual inspection of cylinders for leakage at rod, fittings &amp; welds. Damage to rod &amp; case.</td>
</tr>
<tr>
<td>M 18</td>
<td>Valves</td>
<td></td>
<td>Holding valves for proper operation.</td>
</tr>
<tr>
<td>M 19</td>
<td>Valves</td>
<td></td>
<td>Control valve for leaks at fittings &amp; between sections.</td>
</tr>
<tr>
<td>M 20</td>
<td>Valves</td>
<td></td>
<td>Control valve linkages for wear, smoothness of operation &amp; tightness of fasteners.</td>
</tr>
<tr>
<td>M 21</td>
<td>General</td>
<td></td>
<td>Bent, broken or significantly rusted/corroded parts.</td>
</tr>
<tr>
<td>M 22</td>
<td>Electrical</td>
<td></td>
<td>Electrical systems for presence of dirt, moisture &amp; frayed wires.</td>
</tr>
<tr>
<td>M 23</td>
<td>Structure</td>
<td></td>
<td>All structural members for damage.</td>
</tr>
<tr>
<td>M 24</td>
<td>Welds</td>
<td></td>
<td>All welds for breaks &amp; cracks.</td>
</tr>
<tr>
<td>M 25</td>
<td>Pins</td>
<td></td>
<td>All pins for proper installation &amp; condition.</td>
</tr>
<tr>
<td>M 26</td>
<td>Hardware</td>
<td></td>
<td>All bolts, fasteners &amp; retaining rings for tightness, wear &amp; corrosion</td>
</tr>
<tr>
<td>M 27</td>
<td>Wear Pads</td>
<td></td>
<td>Presence of wear pads.</td>
</tr>
<tr>
<td>M 28</td>
<td>Pump &amp; Motor</td>
<td></td>
<td>Hydraulic pumps &amp; motors for leakage at fittings, seals &amp; between sections.</td>
</tr>
<tr>
<td>M 29</td>
<td>PTO</td>
<td></td>
<td>Transmission/PTO for leakage, abnormal vibration &amp; noise.</td>
</tr>
<tr>
<td>M 30</td>
<td>Hyd Fluid</td>
<td></td>
<td>Quality of hydraulic fluid and for presence of water.</td>
</tr>
<tr>
<td>M 31</td>
<td>Hyd Lines</td>
<td></td>
<td>Hoses &amp; tubes for leakage, abrasion damage, blistering, cracking, deterioration, fitting leakage &amp; secured properly.</td>
</tr>
<tr>
<td>M 32</td>
<td>Hook</td>
<td></td>
<td>Load hook for abnormal throat distance, twist, wear &amp; cracks.</td>
</tr>
<tr>
<td>M 33</td>
<td>Rope</td>
<td></td>
<td>Condition of load line.</td>
</tr>
<tr>
<td>M 34</td>
<td>Manual</td>
<td></td>
<td>Presence of operator’s manuals with unit.</td>
</tr>
<tr>
<td>M 35</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q 36</td>
<td>Daily</td>
<td></td>
<td>All daily inspection items.</td>
</tr>
<tr>
<td>Q 37</td>
<td>Monthly</td>
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<td>All monthly inspection items.</td>
</tr>
<tr>
<td>Q 38</td>
<td>Condition of wear pads</td>
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</tr>
<tr>
<td>Q 39</td>
<td>Rotation Sys</td>
<td></td>
<td>Rotation bearing for proper torque of all accessible mounting bolts.</td>
</tr>
<tr>
<td>Q 40</td>
<td>Hardware</td>
<td></td>
<td>Base mounting bolts for proper torque.</td>
</tr>
<tr>
<td>Q 41</td>
<td>Structure</td>
<td></td>
<td>All structural members for deformation, cracks &amp; corrosion.</td>
</tr>
<tr>
<td>Q 51</td>
<td>Hardware</td>
<td></td>
<td>Pins, bearings, shafts, gears, rollers, &amp; locking devices for wear, cracks, corrosion &amp; distortion.</td>
</tr>
<tr>
<td>Q 63</td>
<td>Hyd Lines</td>
<td></td>
<td>Hoses, fittings &amp; tubing for proper routing, leakage, blistering, deformation &amp; excessive abrasion.</td>
</tr>
</tbody>
</table>

### Status

- **4** = SATISFACTORY
- **8** = DEFICIENCY
- **R** = RECOMMENDATION (must be corrected prior to operation)
- **NA** = NOT APPLICABLE

### Frequency

- **4**, **8**
- **R, NA**
## Inspection Checklist

### CRANES

<table>
<thead>
<tr>
<th>FREQUENCY</th>
<th>ITEM</th>
<th>KEY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>70</td>
<td></td>
<td>Pumps, PTO's &amp; Motors for loose bolts/fasteners, leaks, noise, vibration, loss of performance, heating &amp; excess pressure.</td>
</tr>
<tr>
<td></td>
<td>71</td>
<td></td>
<td>Winch motor(s)</td>
</tr>
<tr>
<td></td>
<td>72</td>
<td></td>
<td>Rotation motor(s)</td>
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<tr>
<td></td>
<td>73</td>
<td></td>
<td>Other</td>
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<tr>
<td>Q</td>
<td>74</td>
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<td>Valves for cracks, spool return to neutral, sticking spools, proper relief valve setting, relief valve failure.</td>
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<tr>
<td></td>
<td>75</td>
<td></td>
<td>Main control valve</td>
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<td>76</td>
<td></td>
<td>Load holding valve(s)</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td></td>
<td>Outrigger or auxiliary control valve(s)</td>
</tr>
<tr>
<td></td>
<td>78</td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>79</td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td>81</td>
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<td>Outrigger cylinder(s)</td>
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<td>82</td>
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<td>Inner boom cylinder(s)</td>
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<td>84</td>
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<td>Extension cylinder(s)</td>
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<td>Rotation cylinder(s)</td>
</tr>
<tr>
<td></td>
<td>86</td>
<td></td>
<td>Jib lift cylinder(s)</td>
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<td></td>
<td>87</td>
<td></td>
<td>Jib extension cylinder(s)</td>
</tr>
<tr>
<td></td>
<td>88</td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>Q</td>
<td>89</td>
<td></td>
<td>Winch, sheaves &amp; drums for damage, abnormal wear, abrasions &amp; other irregularities.</td>
</tr>
<tr>
<td>Q</td>
<td>90</td>
<td></td>
<td>Hydraulic filters for replacement per maintenance schedule.</td>
</tr>
<tr>
<td>A</td>
<td>91</td>
<td></td>
<td>All daily inspection items.</td>
</tr>
<tr>
<td>A</td>
<td>92</td>
<td></td>
<td>All monthly inspection items.</td>
</tr>
<tr>
<td>A</td>
<td>93</td>
<td></td>
<td>All quarterly inspection items.</td>
</tr>
<tr>
<td>A</td>
<td>94</td>
<td></td>
<td>Hydraulic fluid change per maintenance schedule.</td>
</tr>
<tr>
<td>A</td>
<td>95</td>
<td></td>
<td>Control valve calibration for correct pressures &amp; relief valve settings</td>
</tr>
<tr>
<td>A</td>
<td>96</td>
<td></td>
<td>Safety valve calibration for correct pressures &amp; relief valve settings.</td>
</tr>
<tr>
<td>A</td>
<td>97</td>
<td></td>
<td>Valves for failure to maintain correct settings.</td>
</tr>
<tr>
<td>A</td>
<td>98</td>
<td></td>
<td>Rotation drive system for proper backlash clearance &amp; abnormal wear, deformation &amp; cracks.</td>
</tr>
<tr>
<td>A</td>
<td>99</td>
<td></td>
<td>Gear oil change in rotation drive system per maintenance schedule.</td>
</tr>
<tr>
<td>A</td>
<td>100</td>
<td></td>
<td>Check tightness of all fasteners and bolts.</td>
</tr>
<tr>
<td>A</td>
<td>101</td>
<td></td>
<td>Wear pads for excessive wear.</td>
</tr>
<tr>
<td>A</td>
<td>102</td>
<td></td>
<td>Loadline for proper attachment to drum.</td>
</tr>
</tbody>
</table>

### Deficiency / Recommendation / Corrective Action Report

<table>
<thead>
<tr>
<th>DATE</th>
<th>OWNER</th>
<th>UNIT I.D. NUMBER</th>
<th>ITEM #</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### GUIDELINES

**A.** A deficiency (8) may constitute a hazard. 8 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 (8) listed must be followed by the corresponding corrective action taken (CA).

<table>
<thead>
<tr>
<th>s = DEFICIENCY</th>
<th>R = RECOMMENDATION</th>
<th>CA = CORRECTIVE ACTION TAKEN</th>
</tr>
</thead>
</table>

---

**DATE CORRECTED**

---
### Deficiency / Recommendation / Corrective Action Report (cont)

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>EXPLANATION</th>
<th>DATE CORRECTED</th>
</tr>
</thead>
<tbody>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 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

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

1. Bolt manufacturer’s particular specifications should be consulted when provided.

2. Flat washers of equal strength must be used.

3. All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.

4. Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

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

WARNING

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

## FINE THREAD BOLTS

<table>
<thead>
<tr>
<th>SIZE (DIA-TPI)</th>
<th>BOLT DIA (INCHES)</th>
<th>PLAIN (FT-LB)</th>
<th>PLATED (FT-LB)</th>
<th>PLAIN (FT-LB)</th>
<th>PLATED (FT-LB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16-24</td>
<td>0.3125</td>
<td>19</td>
<td>14</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>3/8-24</td>
<td>0.3750</td>
<td>35</td>
<td>26</td>
<td>49</td>
<td>35</td>
</tr>
<tr>
<td>7/16-20</td>
<td>0.4375</td>
<td>55</td>
<td>41</td>
<td>78</td>
<td>58</td>
</tr>
<tr>
<td>1/2-20</td>
<td>0.5000</td>
<td>90</td>
<td>64</td>
<td>120</td>
<td>90</td>
</tr>
<tr>
<td>9/16-18</td>
<td>0.5625</td>
<td>120</td>
<td>90</td>
<td>170</td>
<td>130</td>
</tr>
<tr>
<td>5/8-18</td>
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## COARSE THREAD BOLTS

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<td>2370</td>
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</table>

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

1. Bolt manufacturer’s particular specifications should be consulted when provided.

2. Flat washers of equal strength must be used.

3. All torque measurements are given in foot-pounds. To convert to inch-pounds, multiply by 12.

4. Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

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

**WARNING**

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torquing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing serious injury or DEATH.
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, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

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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: \(0.40 \times 265 \text{ FT-LBS} = 106 \text{ FT-LBS}\))
   (EXAMPLE-METRIC: \(0.40 \times 36 \text{ KG-M} = 14.4 \text{ KG-M}\))

4. Repeat Step 3, but torqueing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.
   (EXAMPLE: \(0.75 \times 265 \text{ FT-LBS} = 199 \text{ FT-LBS}\))
   (EXAMPLE-METRIC: \(0.75 \times 36 \text{ KG-M} = 27 \text{ KG-M}\))

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

<table>
<thead>
<tr>
<th>COMPARISON CHART - MODEL TO MEASURED TILT DIMENSION</th>
</tr>
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<tbody>
<tr>
<td>BALL DIA. (REF)</td>
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<tr>
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</tr>
<tr>
<td>TILT DIM.  ( (A_1 - A_2) )</td>
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</table>
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**

<table>
<thead>
<tr>
<th>DATE</th>
<th>PRODUCT MANUAL</th>
<th>MANUAL PART NO.</th>
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<td>ADDRESS</td>
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<td>CITY, STATE, ZIP</td>
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☐ ERROR FOUND

LOCATION OF ERROR (page no.): ______________________________________

DESCRIPTION OF ERROR: ____________________________________________
__________________________________________________________________
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☐ REQUEST FOR ADDITION TO MANUAL

DESCRIPTION OF ADDITION: _________________________________________
__________________________________________________________________
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REASON FOR ADDITION: ____________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

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 occurrence.

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

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

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

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

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

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

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

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

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

Effective January, 1985

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