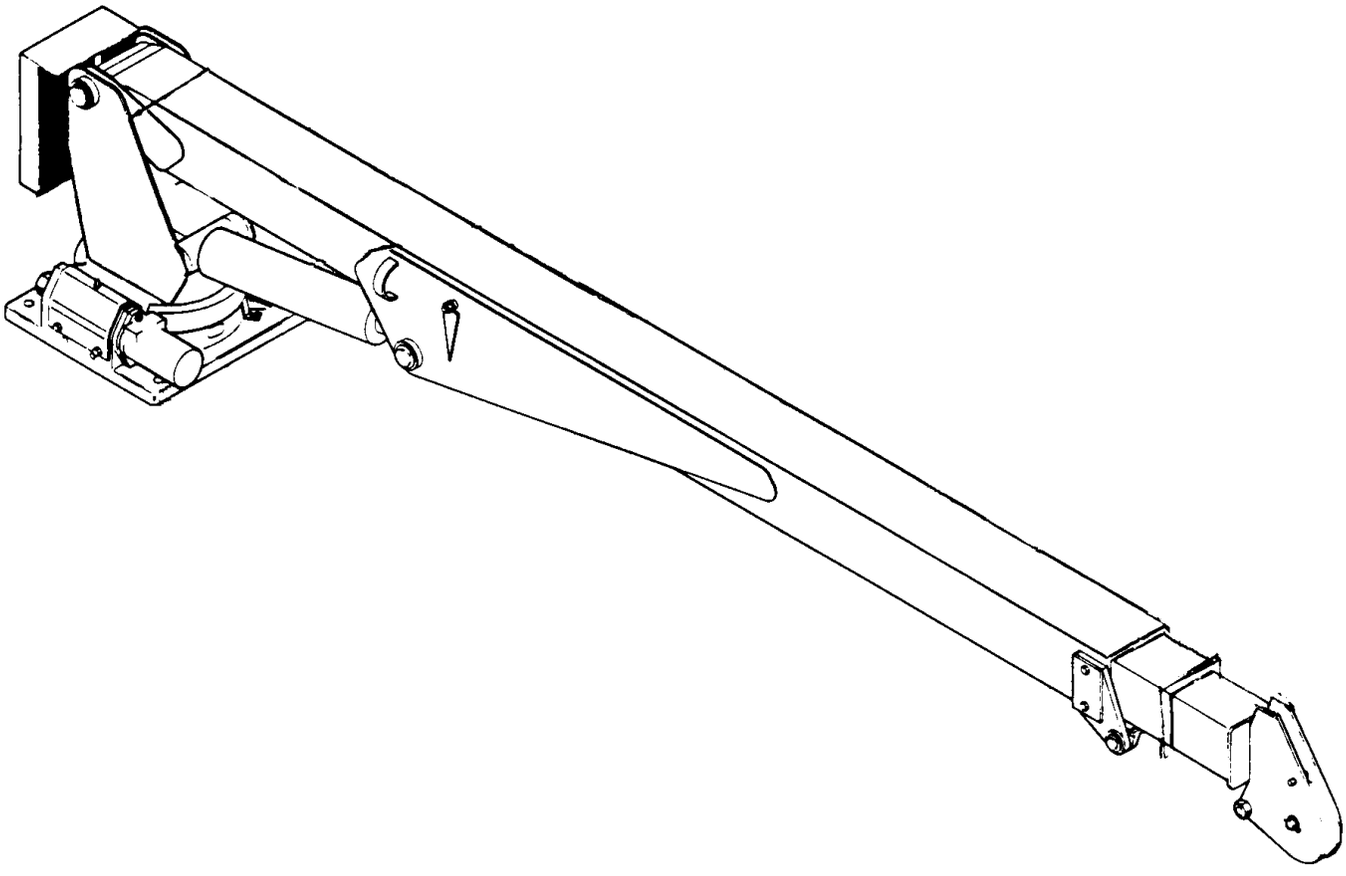
002015GH:99900415: 19960627

Model 2015GH Crane

REF PART NO. 7192015GH

Volume 2 - PARTS AND SPECIFICATIONS



IOWA MOLD TOOLING CO., INC.

BOX 189, GARNER, IA 50438-0189
TEL: 515-923-3711
TECHNICAL SUPPORT FAX: 515-923-2424

MANUAL PART NUMBER 99900415

002015GH:99900415: 19960627

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. MODEL 2015GH CRANE SPECIFICATIONS

NOTES

MODEL 2015GH CRANE SPECIFICATIONS

GENERAL SPECIFICATIONS

CRANE RATING	20,000 ft-lbs (2.77 ton-meters)
REACH - from centerline of rotation	20'-0" (6.10m)
MANUAL EXTENSIONS (2)	60" X 2 (152.4cm X 2)
LIFTING HEIGHT - from base of crane	20'-11" (6.38m)
WEIGHT OF CRANE	920 lbs (417 kg)
STORAGE HEIGHT - crane only	28" (71.1cm)
MOUNTING SPACE REQUIRED (crane base)	17" x 17-3/4" (43.1cm x 45.1cm)
TIE-DOWN BOLT PATTERN	14-3/4" x 14-3/4" (37.5cm x 37.5cm)
HORIZONTAL CENTER OF GRAVITY - from centerline of rotation	31" (78.7cm)
VERTICAL CENTER OF GRAVITY - from bottom of crane base	17" (43.2cm)
OPTIMUM PUMP CAPACITY (PTO)	5 U.S. Gallons/minute (18.9 liters/minute)
DESIGN FACTORS - pins and hydraulics	4/1

PERFORMANCE CHARACTERISTICS

ROTATION - 400° (6.96 Rad.) *24 seconds
LOWER BOOM ELEVATION - 0° to +72° (0 Rad. to +1.26 Rad.) *10 seconds
* Rotation and lower boom times are based on 5 GPM (18.9 liters/min.). These speeds are theoretical and are based on pump delivery, cylinder bore and cylinder stroke.

CYLINDERS

	BORE	STROKE
LOWER BOOM CYLINDER	3-1/2" (8.9cm)	18" (45.7cm)

POWER SOURCE (PTO DRIVEN)

Integral-mounted hydraulic pump and PTO application. Other standard power sources may be used - minimum power required is 8 horsepower based on 5 GPM at 2350 PSI.

ROTATION SYSTEM

Turntable bearing with external worm gear powered with a high-torque hydraulic motor through a self-locking worm.

CYLINDER HOLDING VALVES

The base end (extend side) of the lower boom is equipped with an integral-mounted counter-balance valve to prevent sudden cylinder collapse in the event of a hose breakage or other hydraulic component failure.

The extend side of the lower boom cylinder is equipped with a 10 GPM counter balance valve. The counter balance valve serves several functions. First, it is a holding valve. Secondly, it is designed to control the speed at which the lowering function operates, and allows that motion to be metered under load. Finally, it prevents the loss of an excess amount of oil in the event of a hose failure. Only the oil in the hose, at the time of the failure, will be lost.

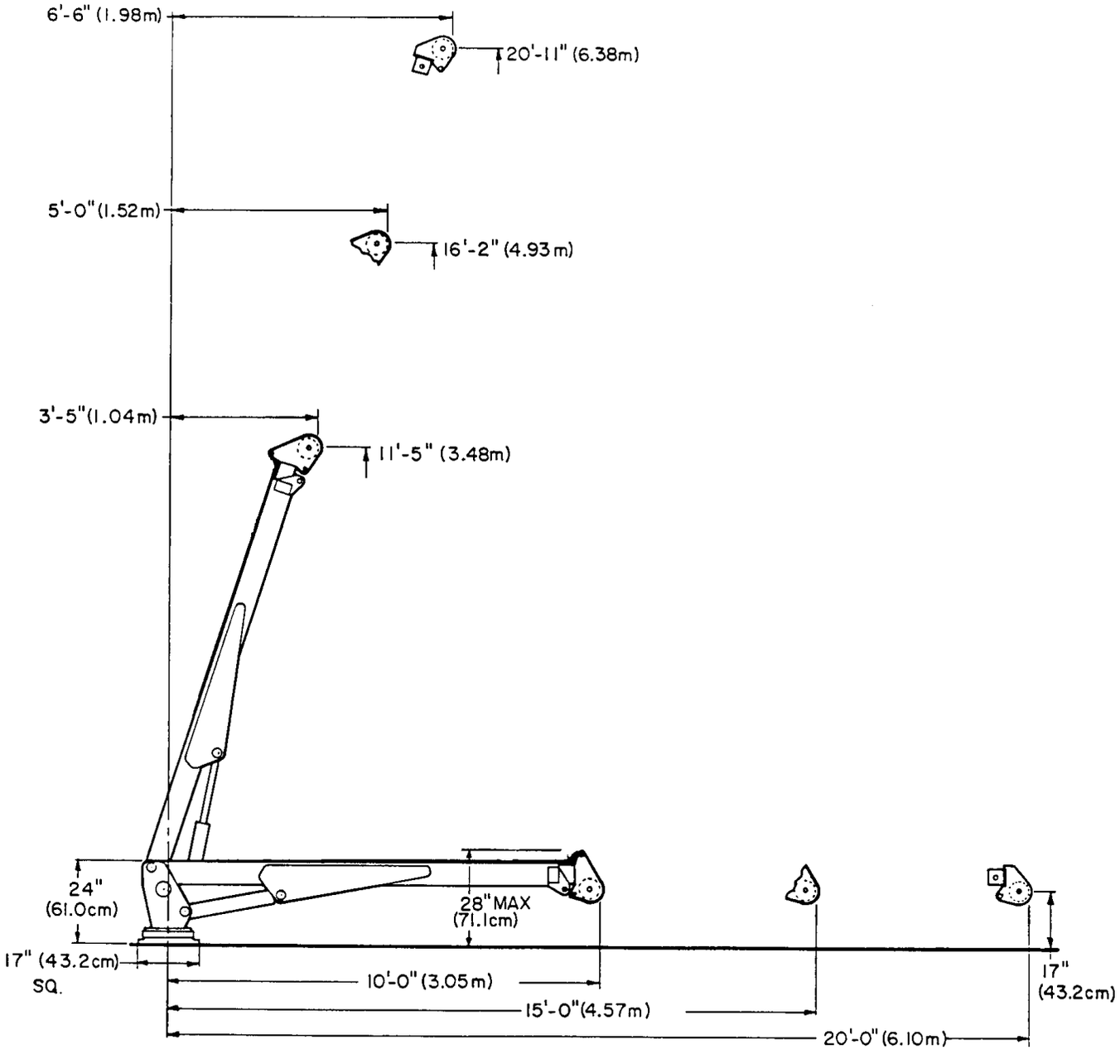
HYDRAULIC SYSTEM (PTO DRIVEN)

Open-centered, full-pressure system that requires 5 GPM (18.9 liters/minute) optimum oil flow at 2350 PSI (165.2 kg/sq cm). 2-spool, stack-type, electric, remote-control valve with 25' (7.62m) control cable. System includes control valve and return-line filter.

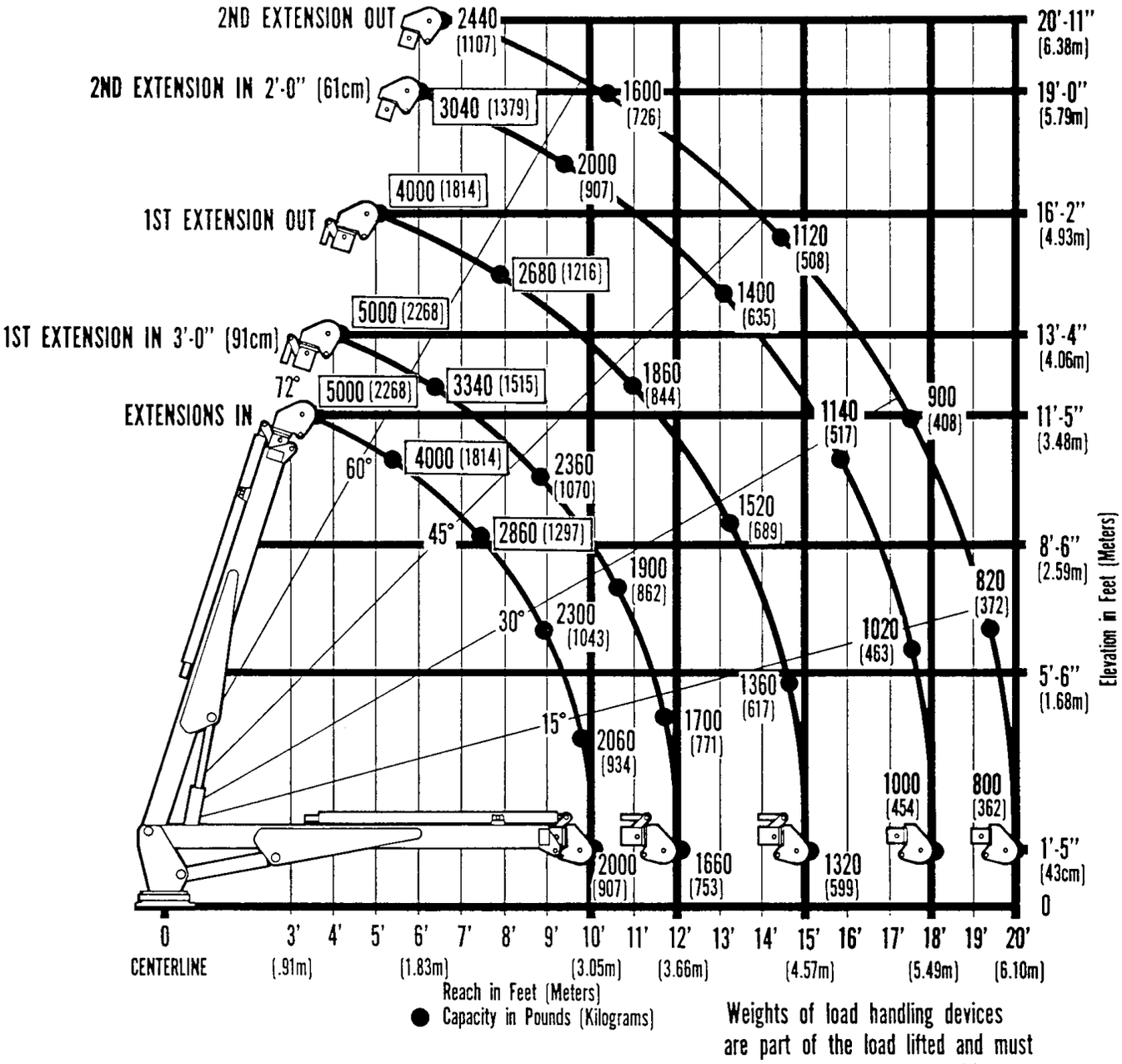
MINIMUM CHASSIS SPECIFICATIONS

BODY STYLE	Conventional Cab	Conventional Cab
WHEEL BASE	137"-161"	348cm-409cm
CAB TO AXLE	60"-84""	152cm-213cm
FRAME SECTION MODULUS	8.0"^{3}	131.12cc
RBM	290,000 in-lbs	3342 kg-meter
FRONT AXLE RATING	4000 lbs	1814 kg
REAR AXLE RATING	7500 lbs	3402 kg

GEOMETRIC CONFIGURATION



CAPACITY CHART

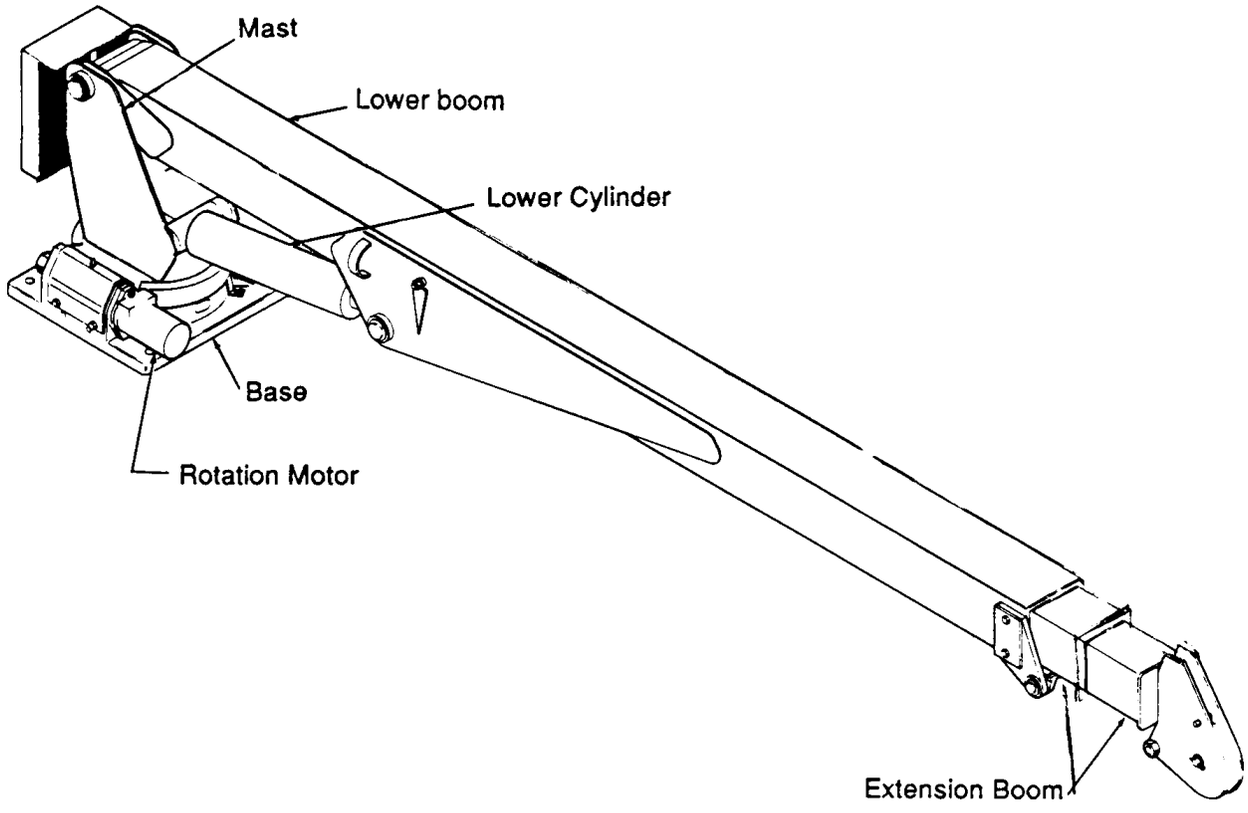


Weights of load handling devices are part of the load lifted and must be deducted from the capacities.

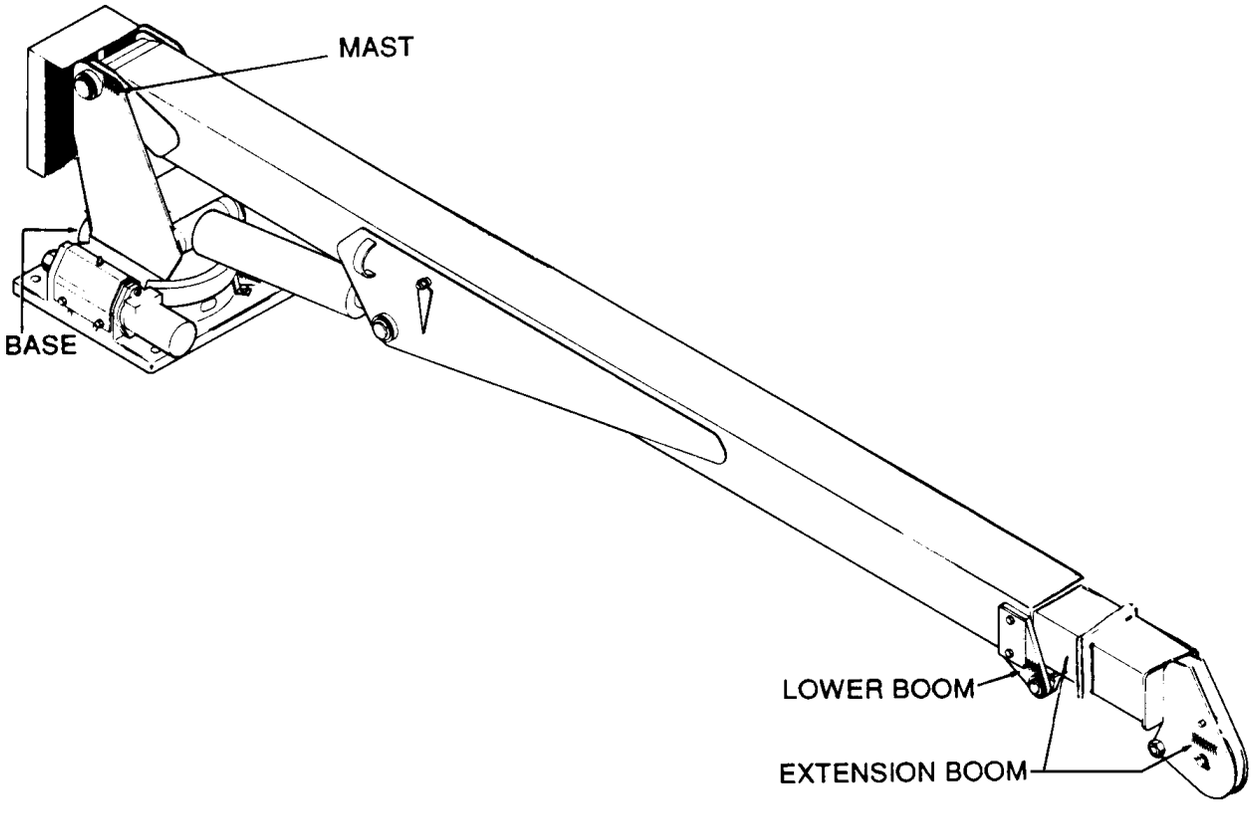
IOWA MOLD TOOLING CO., INC.
BOX 189, GARNER, IA 50438-0189
TEL: 515-923-3711
FAX: 515-923-2424

SECTION 2. MODEL 2015GH CRANE REFERENCE

NOTES

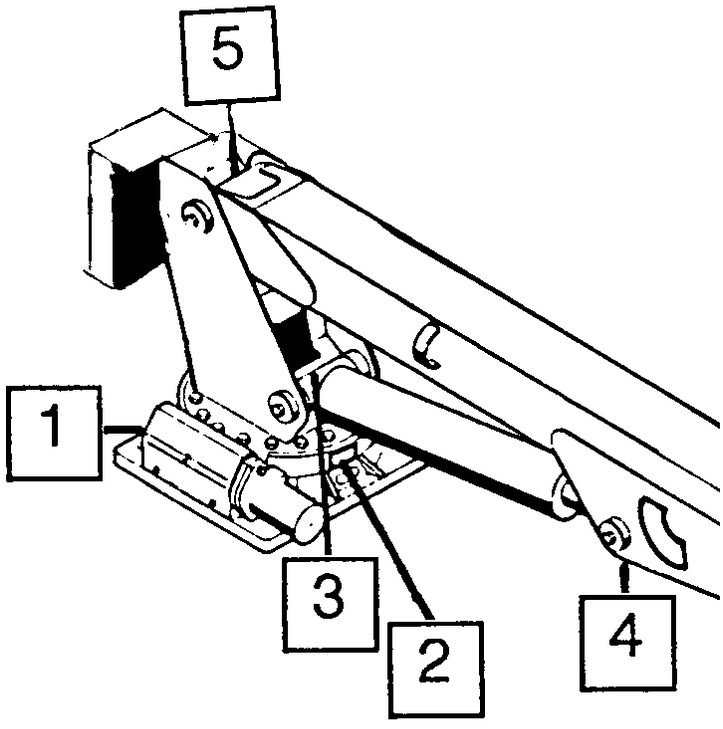


MAJOR CRANE ASSEMBLIES



WELDMENT PART NUMBER LOCATIONS

GREASE ZERK LOCATIONS & LUBRICANT REQUIREMENTS



ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	WORM GEAR	SHELL ALVANIA 2EP OR SHELL RETINAX “A”	WEEKLY
2.	TURNTABLE/BEARING GREASE EXTENSION *ROTATE CRANE WHILE GREASING		
3.	LOWER CYLINDER BASE		
4.	LOWER CYLINDER ROD		
5.	MAST/LOWER BOOM HINGE PIN		

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
MODEL 2015GH CRANE
FOR MANUAL: 99900415

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
41704555.01.19960627	**BASE ASM**						
	4	60030116	THRUST BEARING	2	W		
	7	70055147	BEARING	1	W		
	8	70055148	BEARING	1	W		
	9	70056307	WORM GEAR	1	W		
		89086159	MOLUB	2	P		
41710001.01.19950501	**MAST ASM**						
	21	72063117	WASHER	12	W		
	22	720601144	CAP SCREW	12	W		
41710004.01.19950501	**LOWER BOOM ASM**						
	4	7BF81215	BUSHING	4	W		
	5	60030007	WEAR PAD	2	W		
	6	60030083	WEAR PAD	1	W		
3B144820.01.19921006	**LOWER BOOM CYLINDER**						
	3	73054304	VALVE 10GPM	1	C		
	9	6I035125	PISTON	1	W		
	13	6H035017	HEAD	1	W		
	17	7BF81215	BUSHING	2	W		
	19	9C141420	SEAL KIT	1	W		
41710008.01.19940808	**EXTENSION BOOM ASM**						
	5	60030081	WEAR PAD	1	W		
51710012.01.19910830	**REMOTE CONTROL HANDLE**						
	11	77041345	TOGGLE SWITCH-ST	2	W		
	12	77041346	TOGGLE SWITCH-DT	2	W		
	13	77041347	TOGGLE SWITCH-MOMENTARY	1	W		
93710007.01.19920407	**INSTALLATION KIT-PTO**						
	19	77041237	SOLENOID 12V 150A	1	W		
	25	77041251	RELAY	2	W		
	REF	73052006	RETURN FILTER ELEMENT	6	P		

(BLANK)

INSTALLATION

CAUTION

DO NOT ATTEMPT TO APPLY THE SAME TORQUE TO THE SELF LOCKING NUTS AND TIE RODS AS SHOWN IN THE TORQUE DATA CHART. DO NOT EXCEED 200 FT- LBS. EXCEEDING THE STATED TORQUE OF 200 FT- LBS. (28 KG-M) MAY DAMAGE EITHER THE CRANE BASE OR THE BODY.

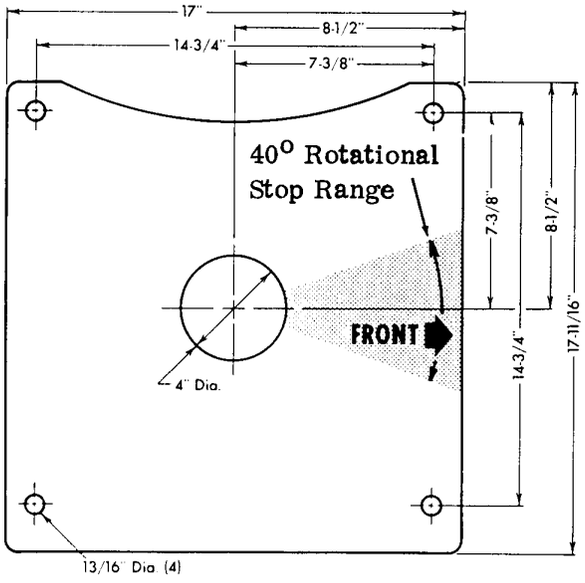
POWER WRENCHING OF THE NUT IS NOT RECOMMENDED UNTIL THE LEAD THREAD OF THE NUT INSERT IS ENGAGED BY HAND TURNING.

WARNING

THE USE OF THIS CRANE ON A BODY NOT CAPABLE OF THE LOADS IMPOSED ON IT BY THE CRANE MAY RESULT IN SERIOUS INJURY OR DEATH.

NOTE

IN ADDITION TO THESE SPECIFICATIONS, A HEAVY DUTY BATTERY AND ALTERNATOR ARE REQUIRED. IT IS RECOMMENDED THAT THE VEHICLE BE EQUIPPED WITH POWER STEERING AND DUAL REAR WHEELS. IMT RECOMMENDS THE ADHERENCE TO THE UPPER LIMIT OF THESE SPECIFICATIONS FOR THE BEST SYSTEM PERFORMANCE.



MOUNTING HOLE LAYOUT

GENERAL

This section is intended to serve as a guide for the installation of the IMT Model 2015GH crane. Since each installation may vary, depending on the chassis, some components may require alteration to fit the chassis.

CHASSIS INFORMATION

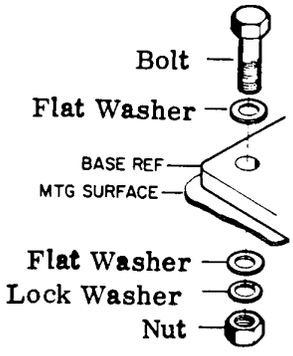
The crane is designed for use with an IMT body installed on a vehicle meeting minimum chassis requirements as specified in Section 1 of this manual.

If this crane is to be installed on any body other than an IMT mechanics body, consult the body manufacturer to determine the suitability of that body. If it is determined that the body will not support the crane and full rated load, at a minimum reinforce the body as shown in figure on Page 2-8. Use 1/4" fillet welds and AWS qualified welders.

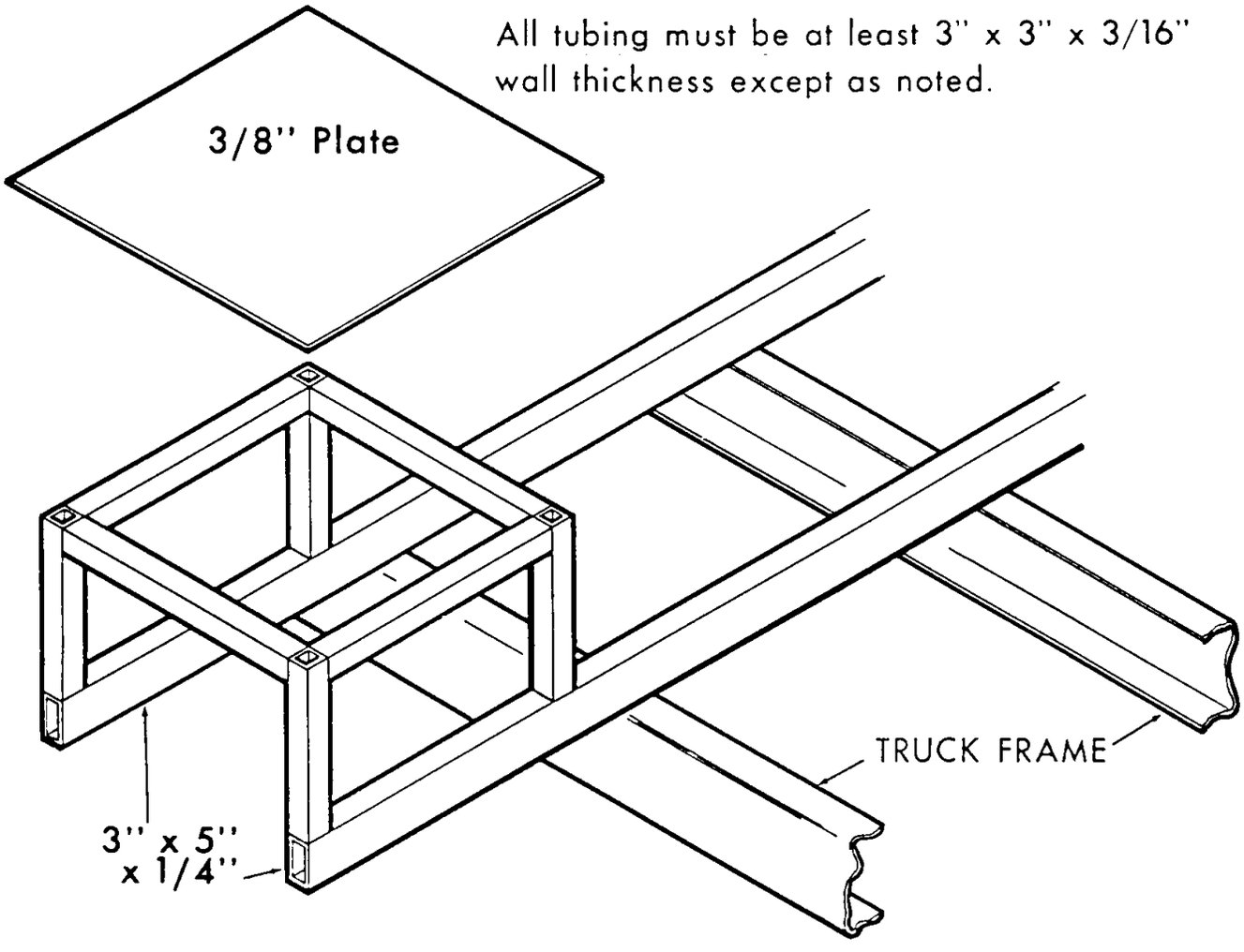
CRANE INSTALLATION

The crane requires a mounting space of no less than 17-11/16" wide and 17" long. If necessary, the truck body can be reinforced to give sufficient strength to support the crane in its operating condition. Locate and drill four pilot holes then four 13/16" diameter holes (Figure below). Cut the 4" diameter hole with a saw after starting with a drill. Deburr all holes. Lift the crane into position on the body using a lifting device capable of lifting the weight of the crane, 920 lbs (417 kg).

Install the bolts, washers, lock washers and nuts to secure the crane to the chassis (Figure below). Torque the bolts to 200 ft-lbs (27.66 kg-m).

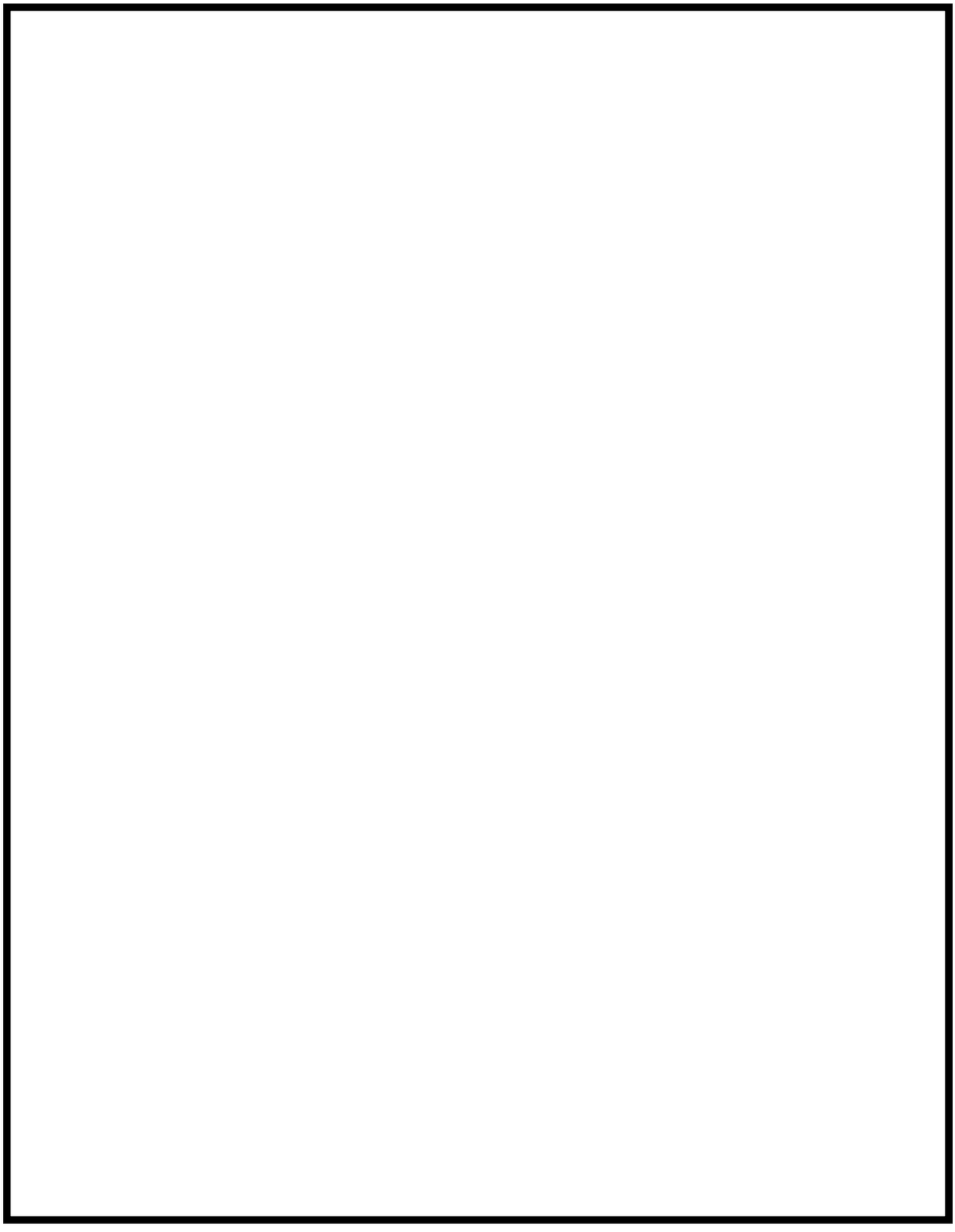


CRANE INSTALLATION



CHASSIS REINFORCEMENT

SECTION 3. MODEL 2015GH REPLACEMENT PARTS



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
Product 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.

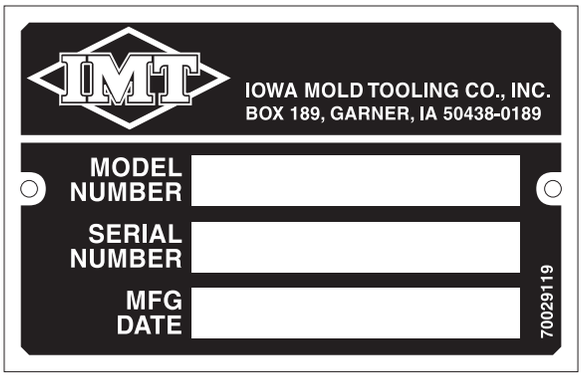
WELDMENT IDENTIFICATION

Each of the major weldments, base, mast, lower 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 Section 2.

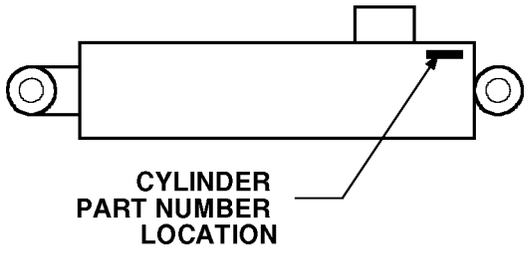
ORDERING REPAIR PARTS

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 ASM (41704555)

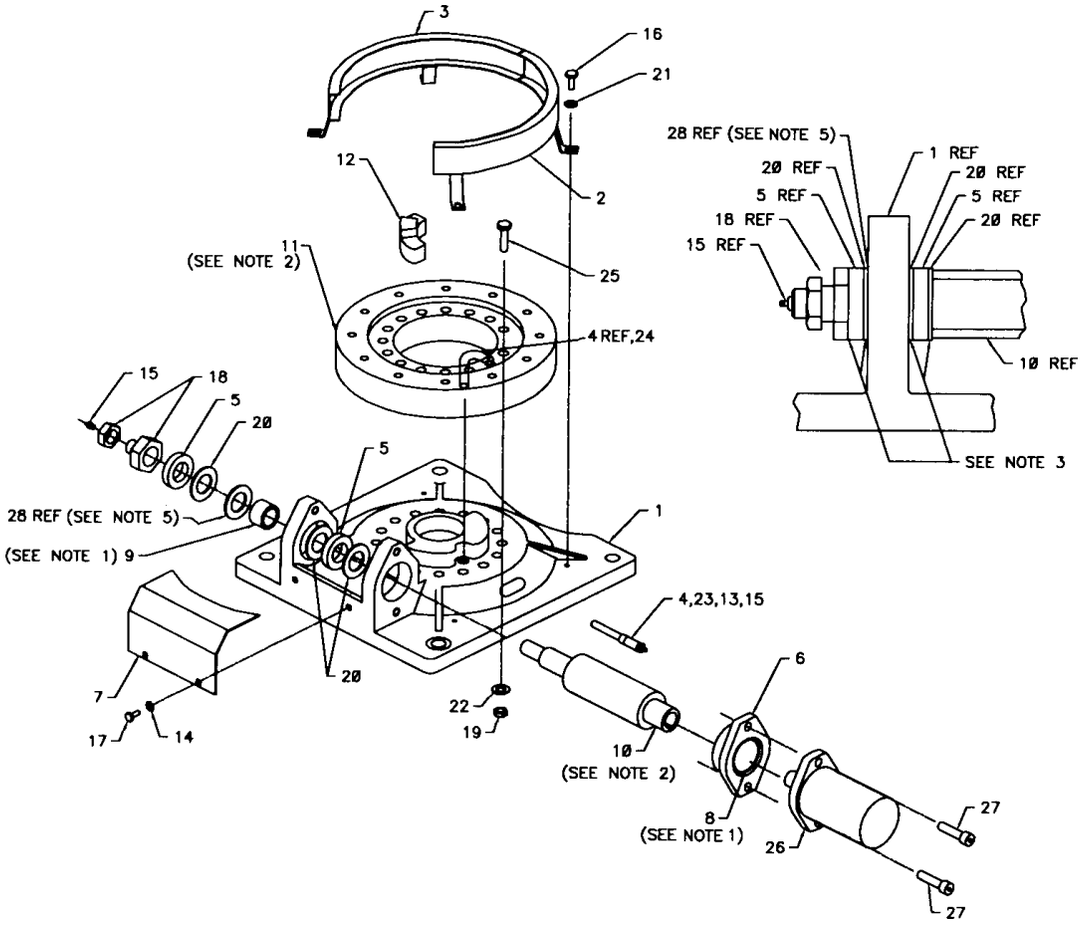
ITEM	PART NO.	DESCRIPTION	QTY
1.	51704551	BASE	1
2.	52713750	TURNTABLE GUARD-LH	1
3.	52713751	TURNTABLE GUARD-RH	1
4.	60030086	TUBING	1
5.	60030116	THRUST BEARING	2
6.	60107543	SUPPORT PLATE	1
7.	60107617	COVER	1
8.	70055147	BEARING	1
9.	70055148	BEARING	1
10.	70056307	WORM GEAR	1
11.	71056308	TURNTABLE-BEARING	1
12.	71142535	SLIDE	1
13.	72053301	COUPLING 1/8NPT	1
14.	72063050	WASHER 5/16 LOCK	2
15.	72053508	ZERK 1/8NPT	2
16.	72060000	CAP SCR 1/4-20X1/2 HHGR5	4
17.	72060023	CAP SCR 5/16-18X3/4 HHGR5	2
18.	72062251	NUT 7/8-9 LOCK 2-PC GR8	1
19.	72062162	NUT 9/16-12 HEX GR8	15
20.	72063161	WASHER 1-1/8	3
21.	72063049	WASHER 1/4 LOCK	4
22.	72063117	WASHER 9/16 FLAT GR8	15
22.	72531731	ADAPTER 18MPT 1/4TUBE	1
24.	72531746	ADAPTER 1/8MPT 1/4TUBE 90°	1
25.	72601313	CAP SCR 9/16-12X3-1/2 HH GR8	15
26.	73051482	HYDRAULIC MOTOR	1
27.	72601486	CAP SCR 1/2-13X1-3/4 SH	2
28.	60121433	SHIM-2-1/4X1.81X16GA	REF

WARNING

Any time the gear-bearing bolts have been removed, they must be replaced with new bolts of identical grade and size. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing serious injury or death.

NOTE

1. Bearings must be packed with grease at assembly.
2. Apply Molub-Alloy 936 to turntable bearing and worm teeth at assembly.
3. Initial lubrication of both sides of thrust bearings is required at the time of assembly.
4. Approved lubricants are Slip Plate, Lubri-Plate, or other lubricants containing graghite or MSO_2.
5. Shim as required if needed.

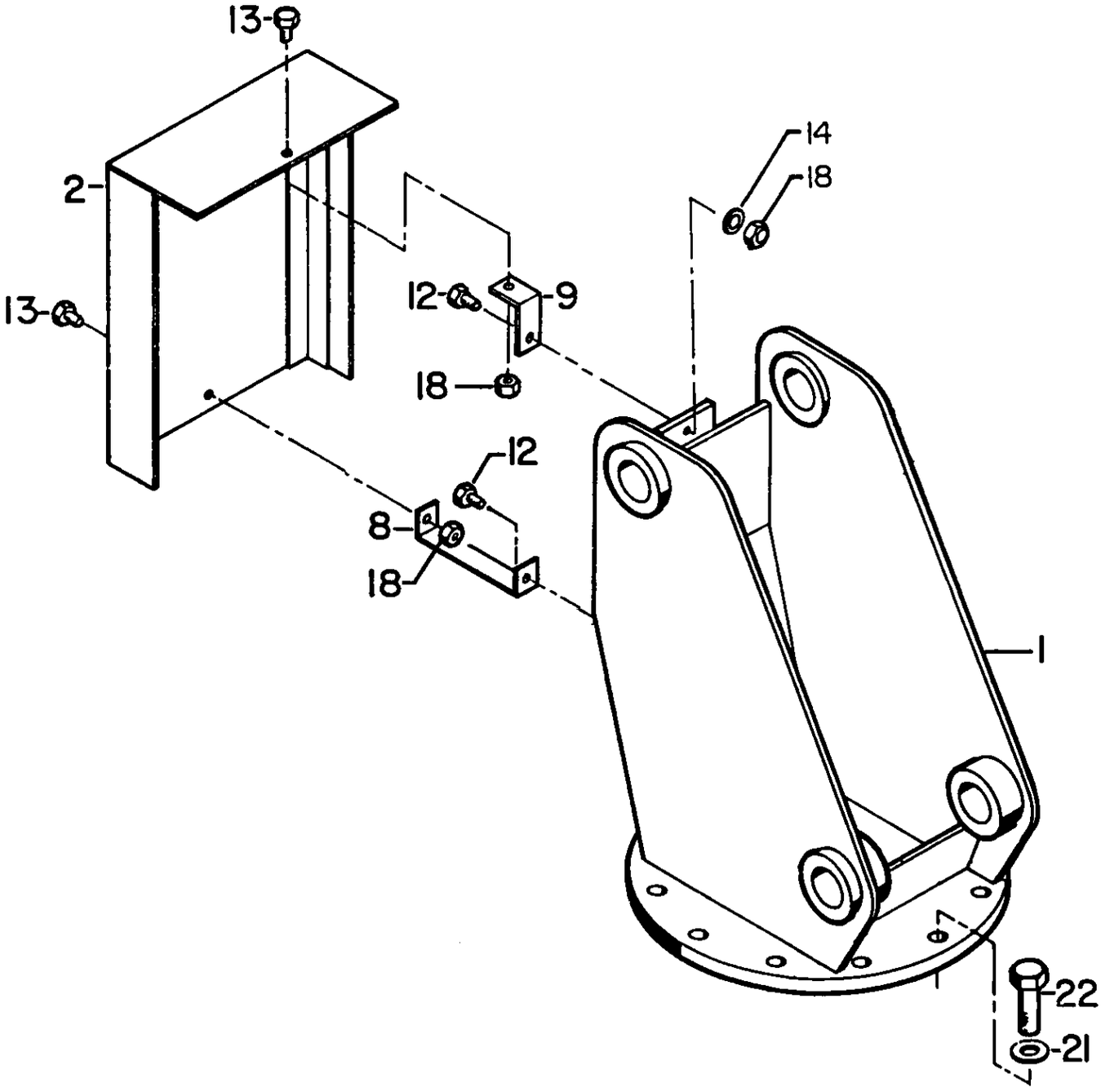


MAST (41710001)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52710002	MAST	1
2.	52704603	VB COVER	1
8.	60107612	BOTTOM SUPPORT - VB COVER	1
9.	60107613	TOP SUPPORT - VB COVER	1
12.	72060025	CAP SCR 5/16-18X1 HHGR5	2
13.	72060023	CAP SCR 5/16-18X3/4 HHGR5	2
14.	72063002	WASHER 5/16 WRT	2
18.	72062109	NUT 5/16-18 LOCK	4
21.	72063117	WASHER 9/16 FLAT GR8	12
22.	72601144	CAP SCR 9/16-12X2 HHGR8	12

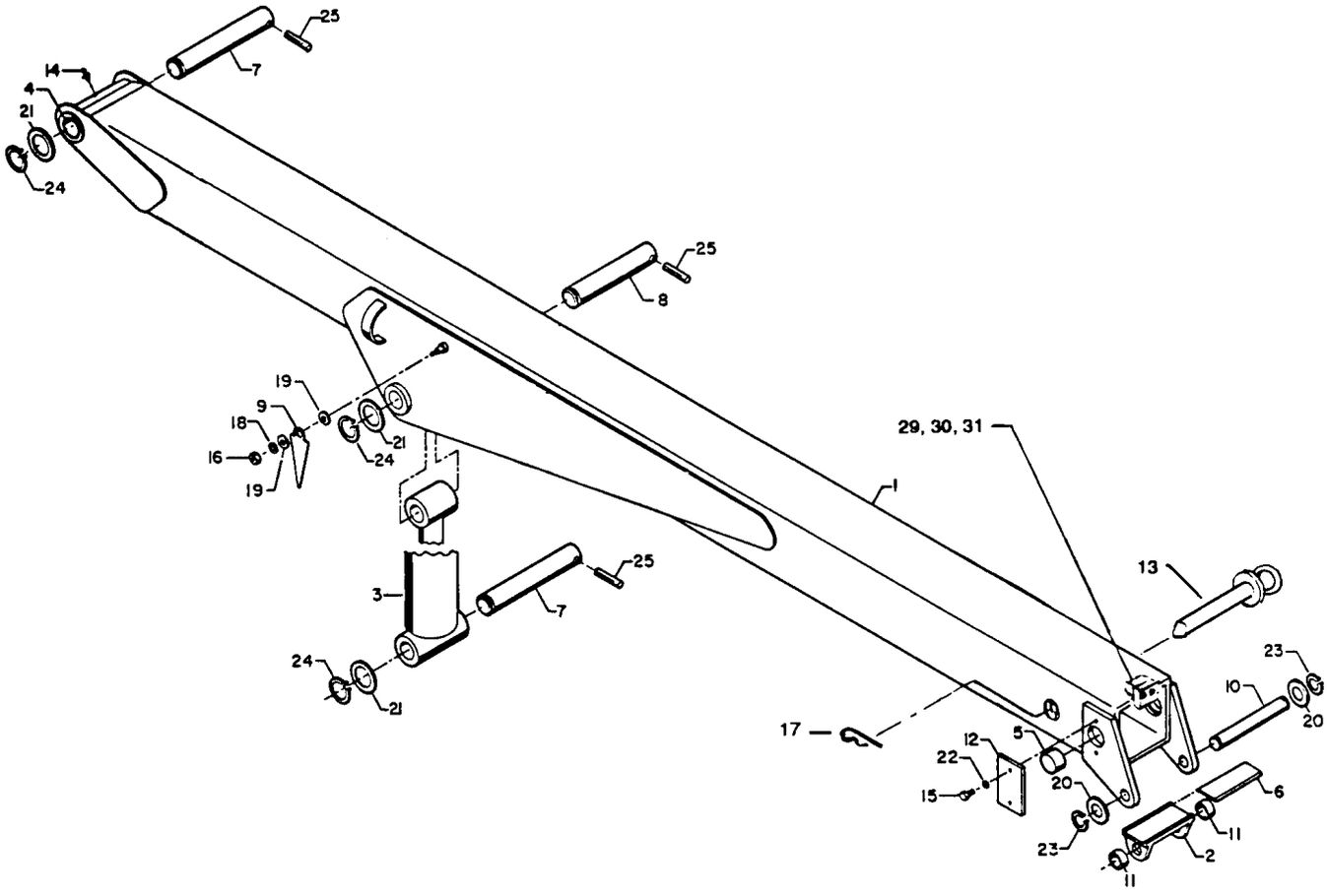
WARNING

ANYTIME THE GEAR-BEARING BOLTS HAVE BEEN REMOVED, THEY MUST BE REPLACED WITH NEW BOLTS OF IDENTICAL GRADE AND SIZE. FAILURE TO REPLACE GEAR-BEARING BOLTS MAY RESULT IN BOLT FAILURE DUE TO METAL FATIGUE, CAUSING SERIOUS INJURY OR DEATH.



LOWER BOOM (41710004)

ITEM	PART NO.	DESCRIPTION	QTY
1.	52710003	LOWER BOOM (INCL:4)	1
2.	52704549	TRUNNION	1
3.	3B144820	LOWER CYLINDER	1
4.	7BF81215	BUSHING (PART OF 1)	4REF
5.	60030007	WEAR PAD	2
6.	60030083	WEAR PAD	1
7.	60102376	PIN	2
8.	60102388	PIN	1
9.	60105544	ANGLE INDICATOR	2
10.	60105749	PIN	1
11.	60107538	PIPE	2
12.	60107550	LOCK PLATE	2
13.	52702082	PIN	1
14.	72053508	ZERK 1/8NPT	1
15.	72060044	CAP SCR 3/8-16 X 3/4 HH GR5	4
16.	72062103	NUT 3/8-16 LOCK	2
17.	72066145	HAIR PIN	1
18.	72063003	WASHER 3/8 WRT	2
19.	72063005	WASHER 1/2 WRT	4
20.	72063034	MACH BUSHING 1 X 10GA	2
21.	72063037	MACH BUSHING 1-1/2 X 10GA	3
22.	72063051	WASHER 3/8 LOCK	4
23.	72066125	RETAINING RING 1" EXT HD	2
24.	72066132	RETAINING RING 1-1/2 EXT HD	3
25.	72661157	GROOVE PIN 1/2 X 2-1/2	3
26.	72066340	POP RIVET 1/8	2
28.	70029119	SERIAL NUMBER PLACARD	1
29.	60114374	STROKE STOP	1
30.	72063053	WASHER 1/2 LOCK	2
31.	72060092	CAP SCR 1/2-13 X 1-1/4 HHGR5	2



LOWER CYLINDER (3B144820)

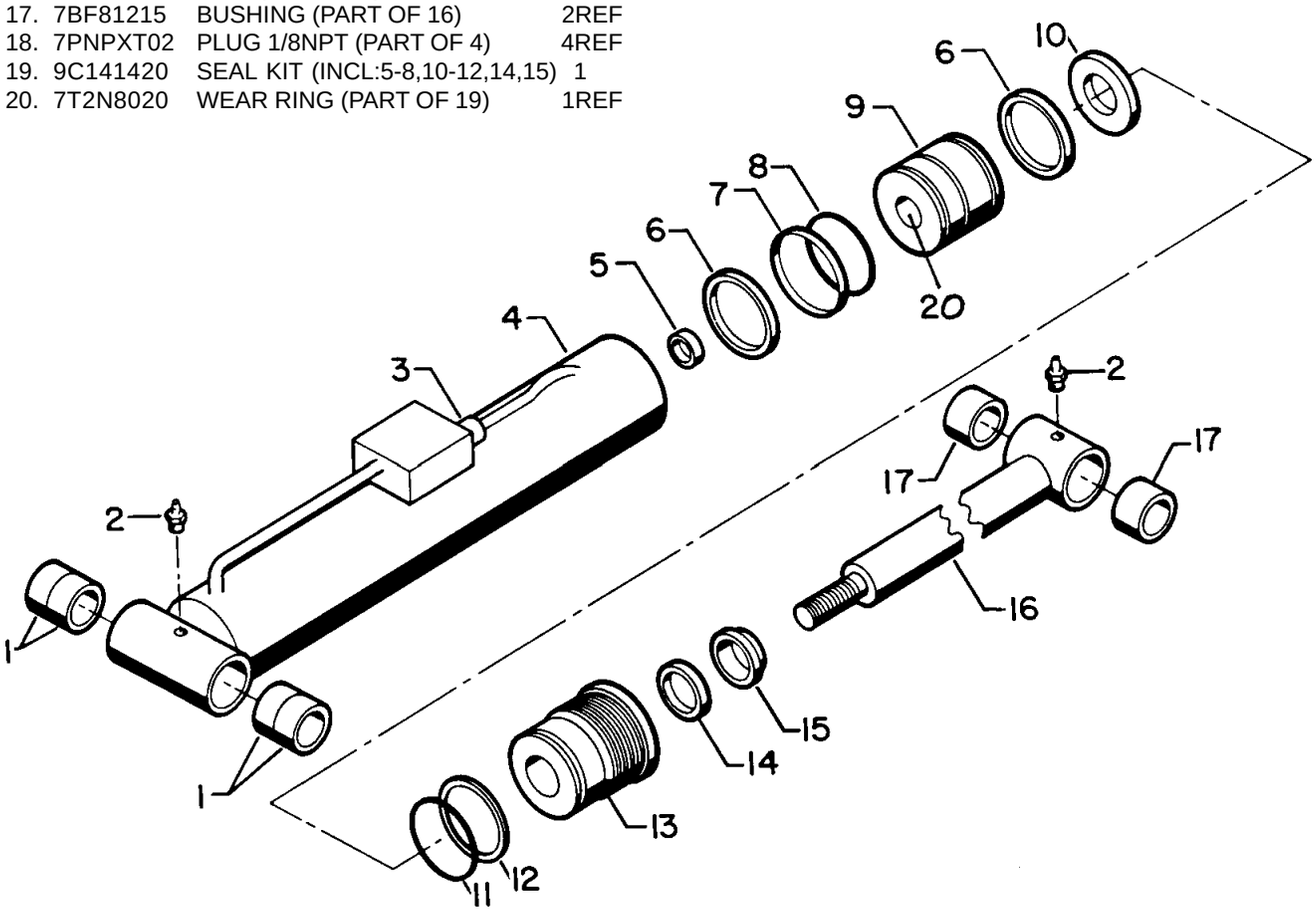
ITEM	PART NO.	DESCRIPTION	QTY
1.	7BF81015	BUSHING (PART OF 4)	4REF
2.	72053507	ZERK 1/4-28 (PART OF 4 & 16)	2REF
3.	73054304	VALVE 10GPM	1
4.	4B144820	CASE (INCL:1,2,18)	1
5.	7T61N125	LOCK RING SEAL (PART OF 19)	1REF
6.	7T65I035	PISTON RING (PART OF 19)	2REF
7.	7T66P035	PISTON SEAL (PART OF 19)	1REF
8.	7Q072151	O-RING (PART OF 19)	1REF
9.	6I035125	PISTON	1
10.	6A025017	WAFER LOCK (PART OF 19)	1REF
11.	7Q072338	O-RING (PART OF 19)	1REF
12.	7Q10P338	BACK-UP RING (PART OF 19)	1REF
13.	6H035017	HEAD	1
14.	7R546017	ROD SEAL (PART OF 19)	1REF
15.	7R14P017	ROD WIPER (PART OF 19)	1REF
16.	4G144820	ROD (INCL:2,17)	1
17.	7BF81215	BUSHING (PART OF 16)	2REF
18.	7PNPXT02	PLUG 1/8NPT (PART OF 4)	4REF
19.	9C141420	SEAL KIT (INCL:5-8,10-12,14,15)	1
20.	7T2N8020	WEAR RING (PART OF 19)	1REF

NOTE

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

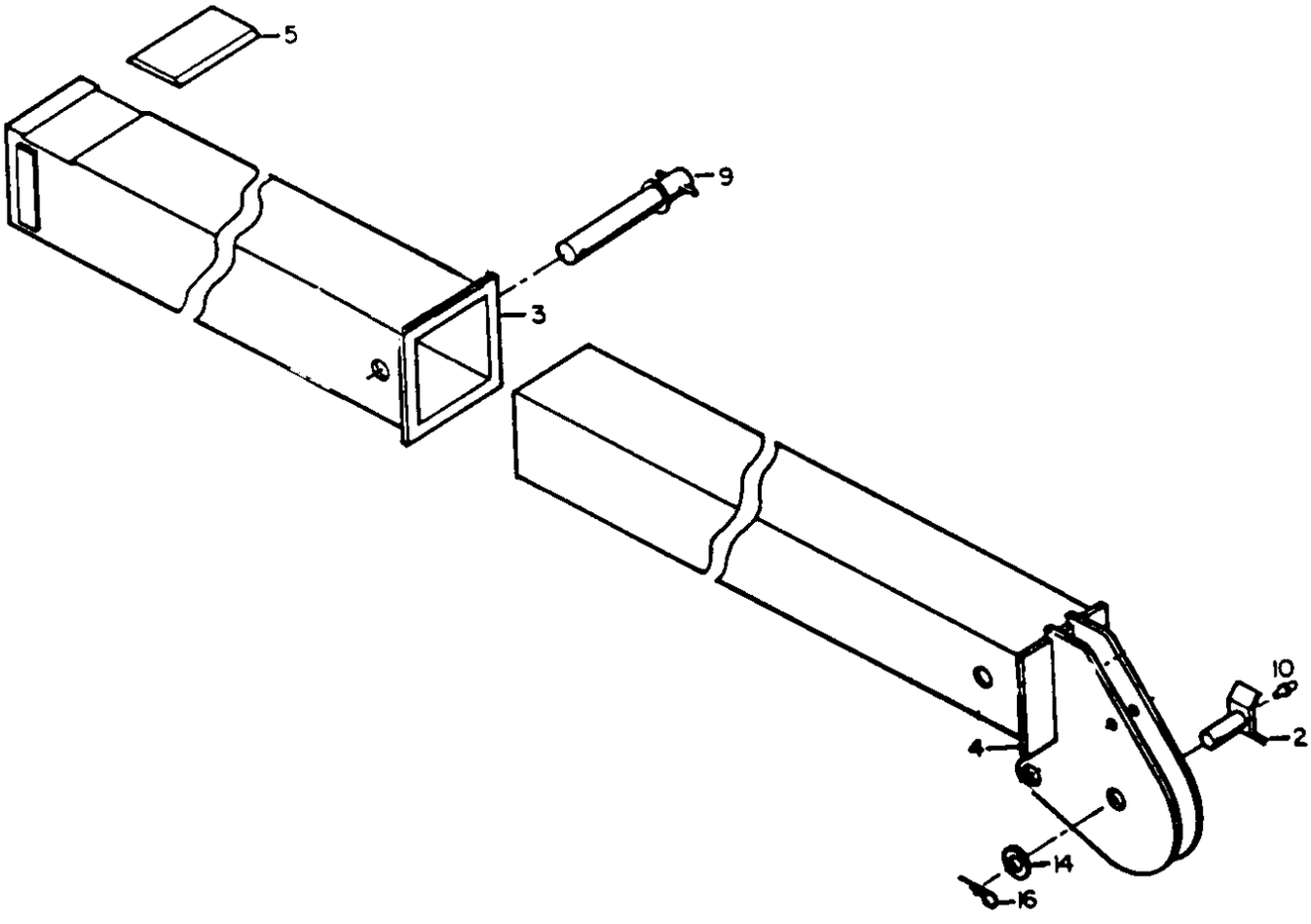
APPLY “LUBRIPLATE #630-2” MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT OR EQUIVALENT TO ALL PISTON AND HEAD GLANDS, LOCK RING AND ROD THREADS BEFORE ASSEMBLY.

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



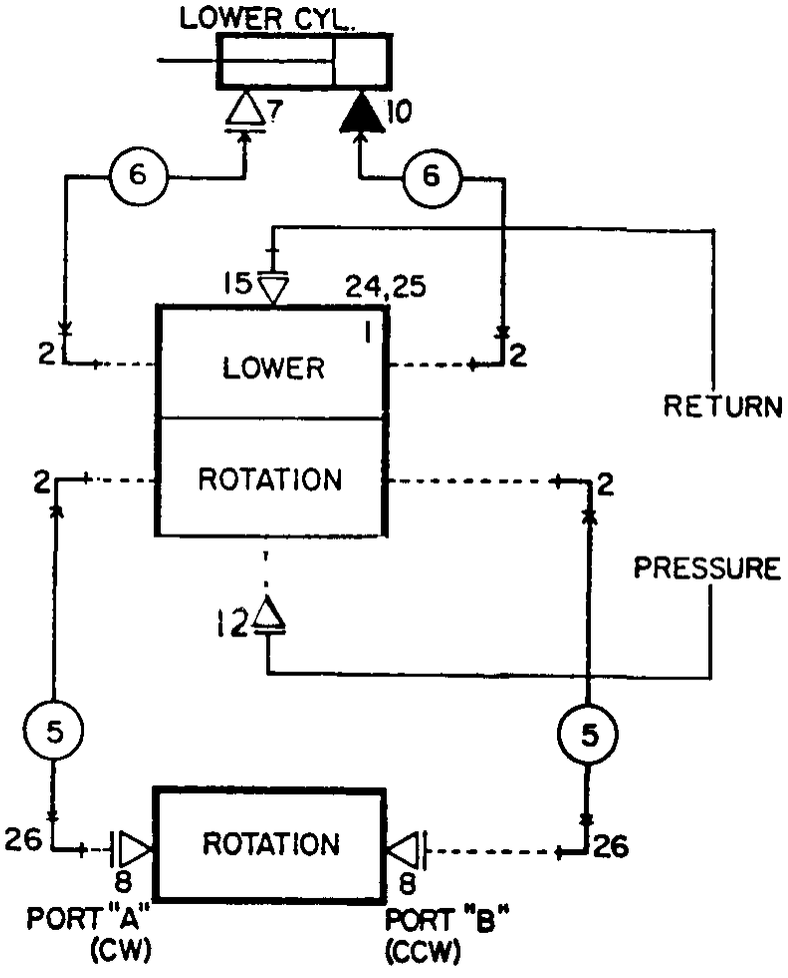
EXTENSION BOOM ASM (41710008)

ITEM	PART NO.	DESCRIPTION	QTY
2.	52704255	PIN	1
3.	52710009	1ST STAGE EXTENSION BOOM	1
4.	52710010	2ND STAGE EXTENSION BOOM	1
5.	60030081	WEAR PAD	1
9.	71731799	QUICK RELEASE PIN	1
10.	72053508	ZERK 1/8NPT	1
14.	72063030	MACH BUSHING 3/4 X 10GA	1
16.	72066145	HAIR PIN 3/16	1



HYDRAULIC KIT-PTO (91710005)

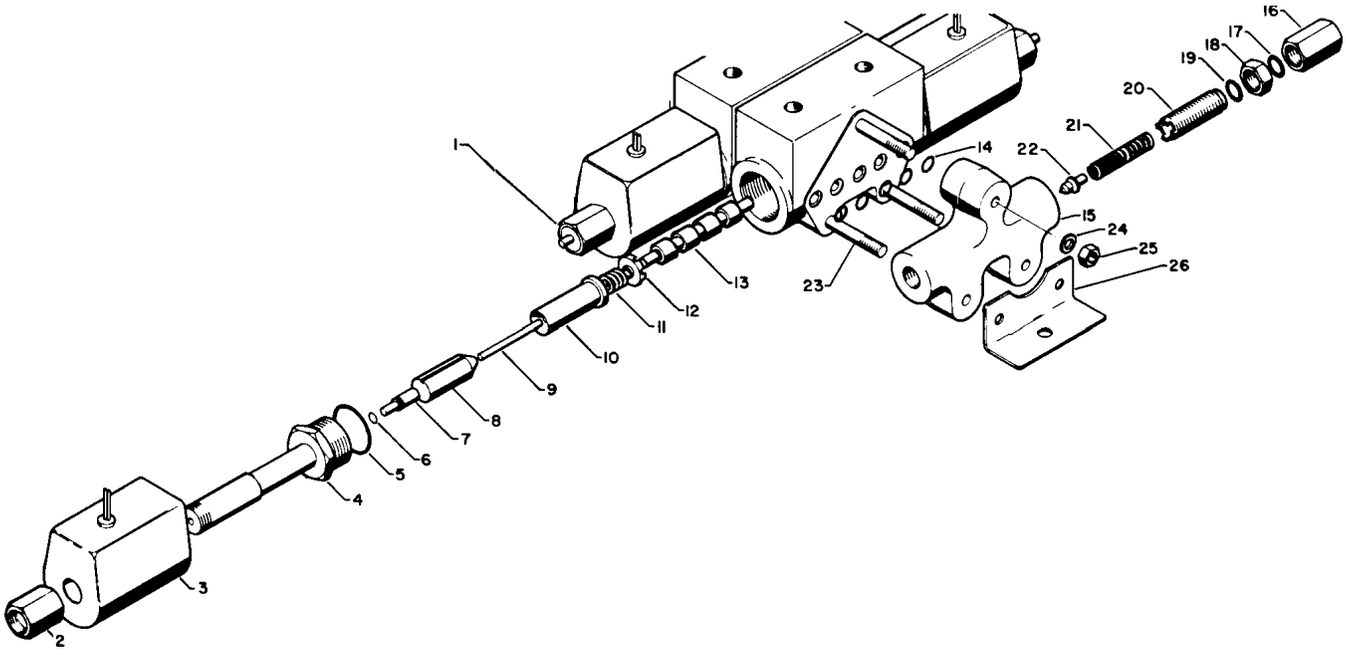
ITEM	PART NO.	DESCRIPTION	QTY
1.	51710013	VALVEBANK 4-SECTION	1
2.	72532699	ELBOW 9/16MSTR 7/16MJIC 90°	4
5.	51704625	HOSE ASM 1/4X38	2
6.	51708210	HOSE ASM 1/4X44	2
7.	72532351	ADAPTER 7/16MSTR 7/16MJIC	1
8.	72532722	ADAPTER 7/8MSTR 9/16FSTR	2
10.	73054487	FLOW RESTRICTOR	1
12.	72532357	ADAPTER 9/16MSTR 3/4MJIC	1
15.	72532795	ADAPTER 9/16MSTR 3/8FPT	1
24.	72060021	CAP SCR 5/16-18X1/2 HHGR5	2
25.	72063050	WASHER 5/16 LOCK	2
26.	72532985	ELBOW 9/16MSTR 7/16MJIC 45°	2



VALVEBANK-2 SECTION (51710013)

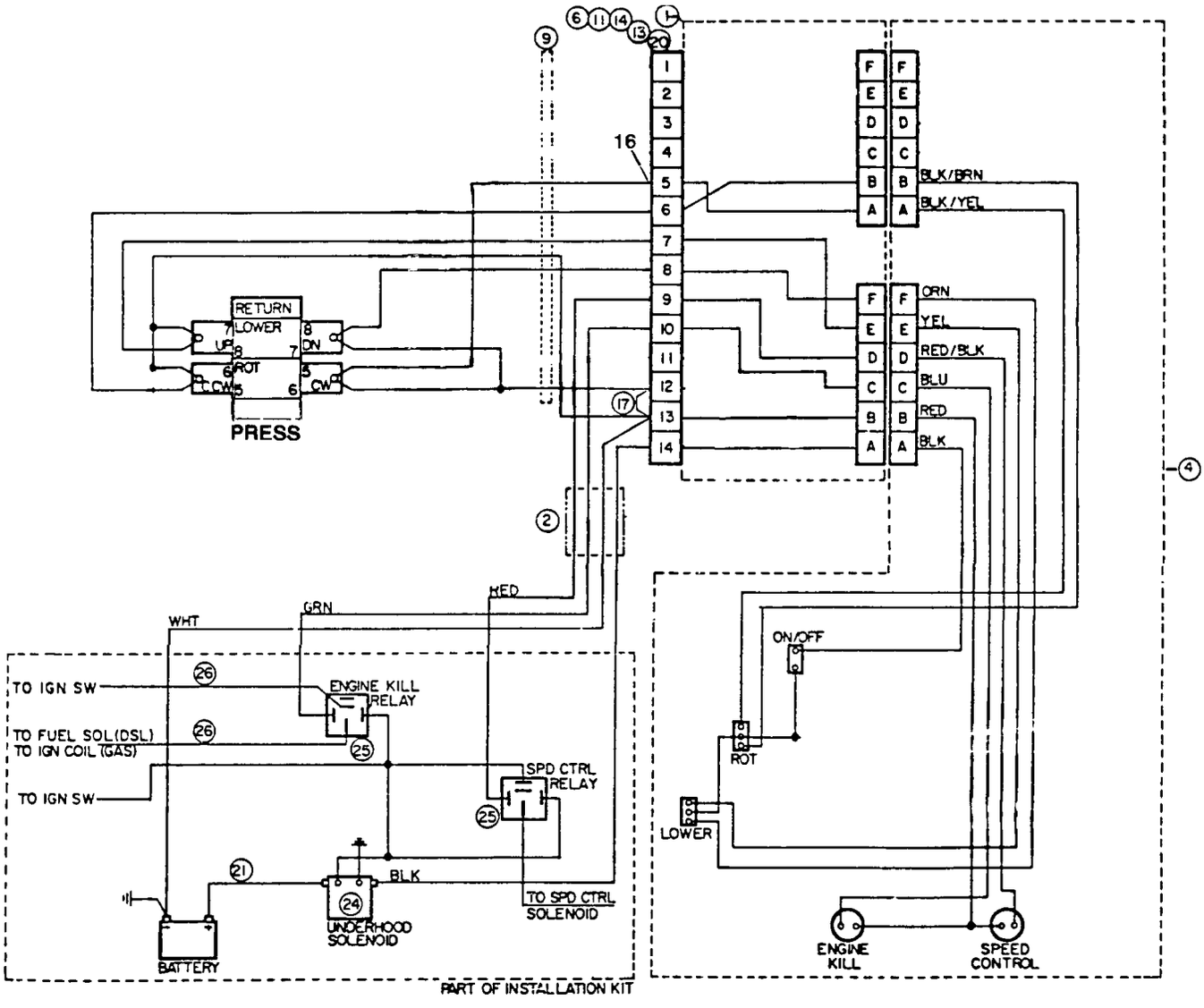
ITEM	PART NO.	DESCRIPTION	QTY
1.	73054077	VALVE SECTION (INCL:2-14)	2
2.	73014950	NUT (PART OF 1)	1REF
3.	77040028	COIL 12VDC (PART OF 1)	2REF
4.	73014958	TUBE (PART OF 1)	2REF
5.	7Q072113	O-RING (PART OF 1)	2REF
6.	7Q072008	O-RING (PART OF 1)	2REF
7.	73014957	BUTTON (PART OF 1)	2REF
8.	73014956	PLUNGER (PART OF 1)	2REF
9.	73014954	PIN (PART OF 1)	2REF
10.	73014955	PLUG (PART OF 1)	2REF
11.	73014953	SPRING (PART OF 1)	2REF
12.	73014952	SPRING RETAINER (PART OF 1)	2REF
13.	51014951	SPOOL & BODY (MATCHED SET)	1REF
14.	7Q072012	O-RING (PART OF 1)	5REF
15.	73014948	INLET (INCL:16-22)	1
16.		ADJUSTMENT CAP(PART OF 15)	1REF
17.		O-RING (PART OF 15)	1REF
18.		JAM NUT (PART OF 15)	1REF
19.		O-RING (PART OF 15)	1REF
20.		ADJUSTMENT ROD(PARTOF 15)	1REF
21.		SPRING (PART OF 15)	1REF
22.		NEEDLE (PART OF 15)	1REF
23.	73014960	TIE ROD	3
24.	72063002	WASHER 5/16	6
25.	72062001	NUT 5/16	6
26.	73014959	MOUNTING BRACKET	2

NOTE:
ITEMS 16-22 ARE NOT AVAILABLE SEPARATELY. IMT DOES NOT RECOMMEND REPAIR OR ADJUSTMENT OF THE FACTORY SET RELIEF PRESSURE.



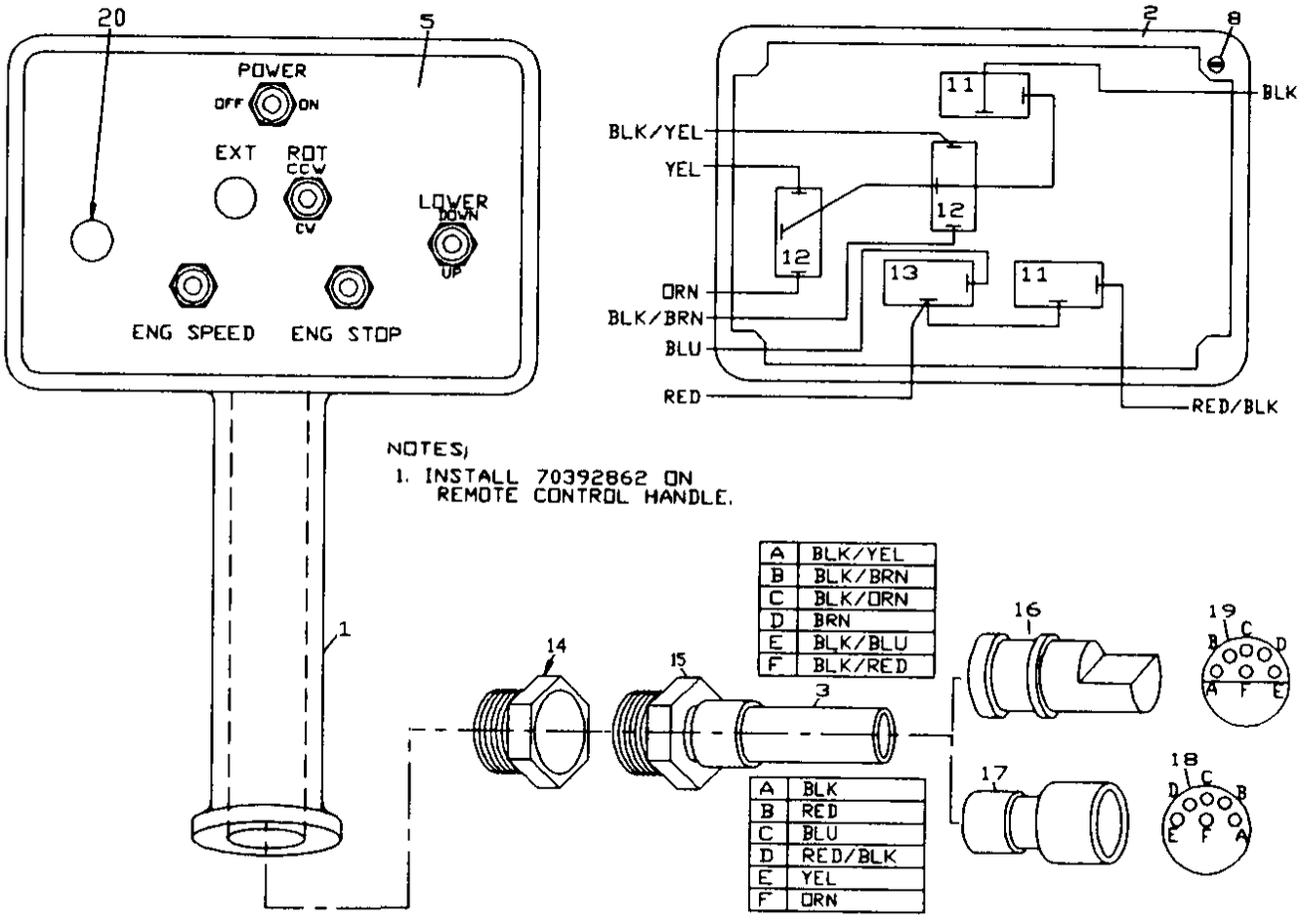
REMOTE CONTROL KIT (90710006)

ITEM	PART	DESCRIPTION	QTY
1.	51704539	CABLE ASM 18GA 12WIRE X 42	1
2.	60045019	CABLE ASM 16GA	1
4.	51710012	HANDLE ASM	1
6.	60105825	TERMINAL BLOCK	1
9.	70034060	TIE	4
11.	72060002	CAP SCR 1/4-20 X 3/4 HH GR5	2
13.	72061009	SHT MTL SCR #6 X 3/4 PH	2
14.	72066525	HOSE CLAMP	1
16.	77040051	TERMINAL	8
17.	77040130	JUMPER BAR	1
20.	77044309	TERMINAL BLOCK	1
21.		CABLE ASM #1WIRE X 6	1REF
24.		SOLENOID 12V 150A	1REF
25.		RELAY	2REF
26.		EXISTING TRUCK WIRING	REF



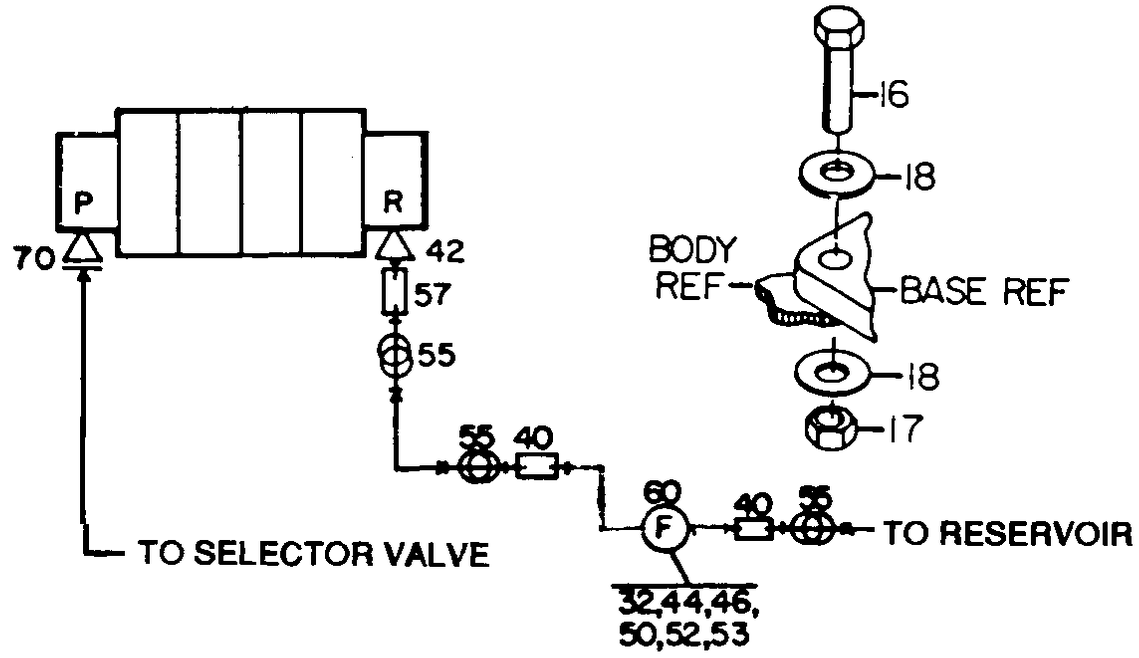
RMT CTRL HANDLE (51710012)

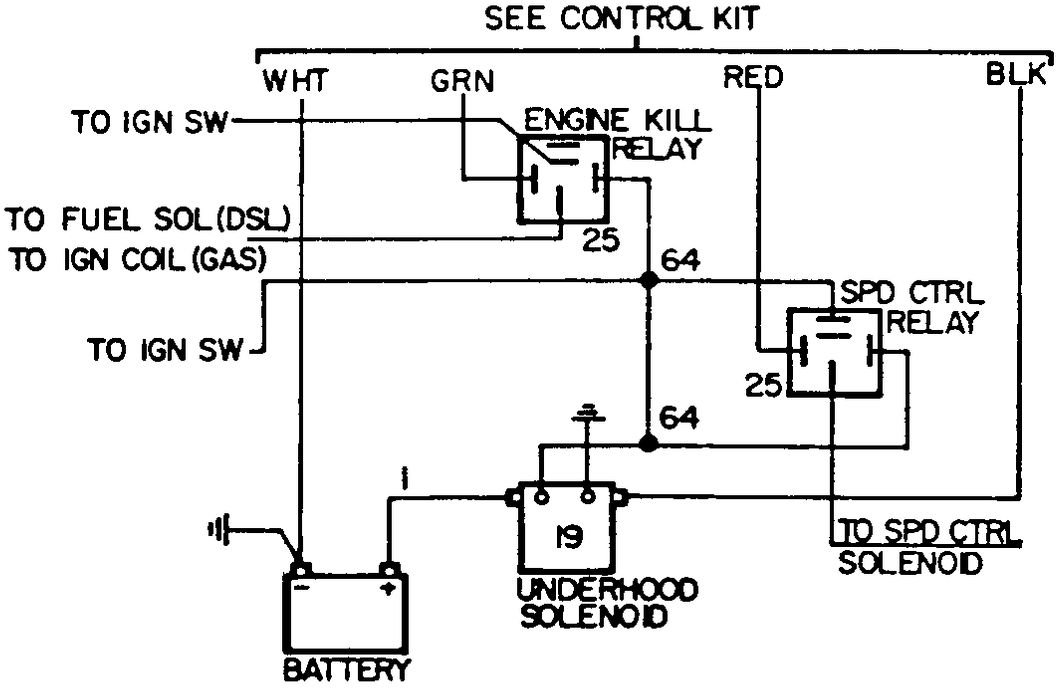
ITEM	PART	DESCRIPTION	QTY
1.	60111140	HANDLE	1
2.	70034306	BACK	1
3.	89044136	CABLE 18GA 12WIRE X 300	1
4.	89044214	WIRE 18GA GRN	1.62'
5.	70393261	DECAL - REMOTE CONTROL	1
6.	70392862	DECAL - DANGER RC ELECTRO	1
7.	70029119	PLACARD - SERIAL NUMBER	1
8.	72061009	SHT MTL SCR #6 X 3/4 PH	4
9.	72066340	POP RIVET 1/8	2
10.	77040186	TERMINAL	12
11.	77041345	TOGGLE SWITCH - SGL THROW	2
12.	77041346	TOGGLE SWITCH - DBL THROW	2
13.	77041347	TOGGLE SWITCH - MOMENTARY	1
14.	72531833	REDUCER BUSHING 3/4 1/2	1
15.	77044096	CABLE GRIP	1
16.	77044204	PLUG 6WIRE	1
17.	77044205	RECEPTACLE 6WIRE	1
18.	77044206	PIN	6
19.	77044207	SOCKET	6
20.	70392785	PLUG 1/2	2



INSTALLATION KIT-PTO (93710007)

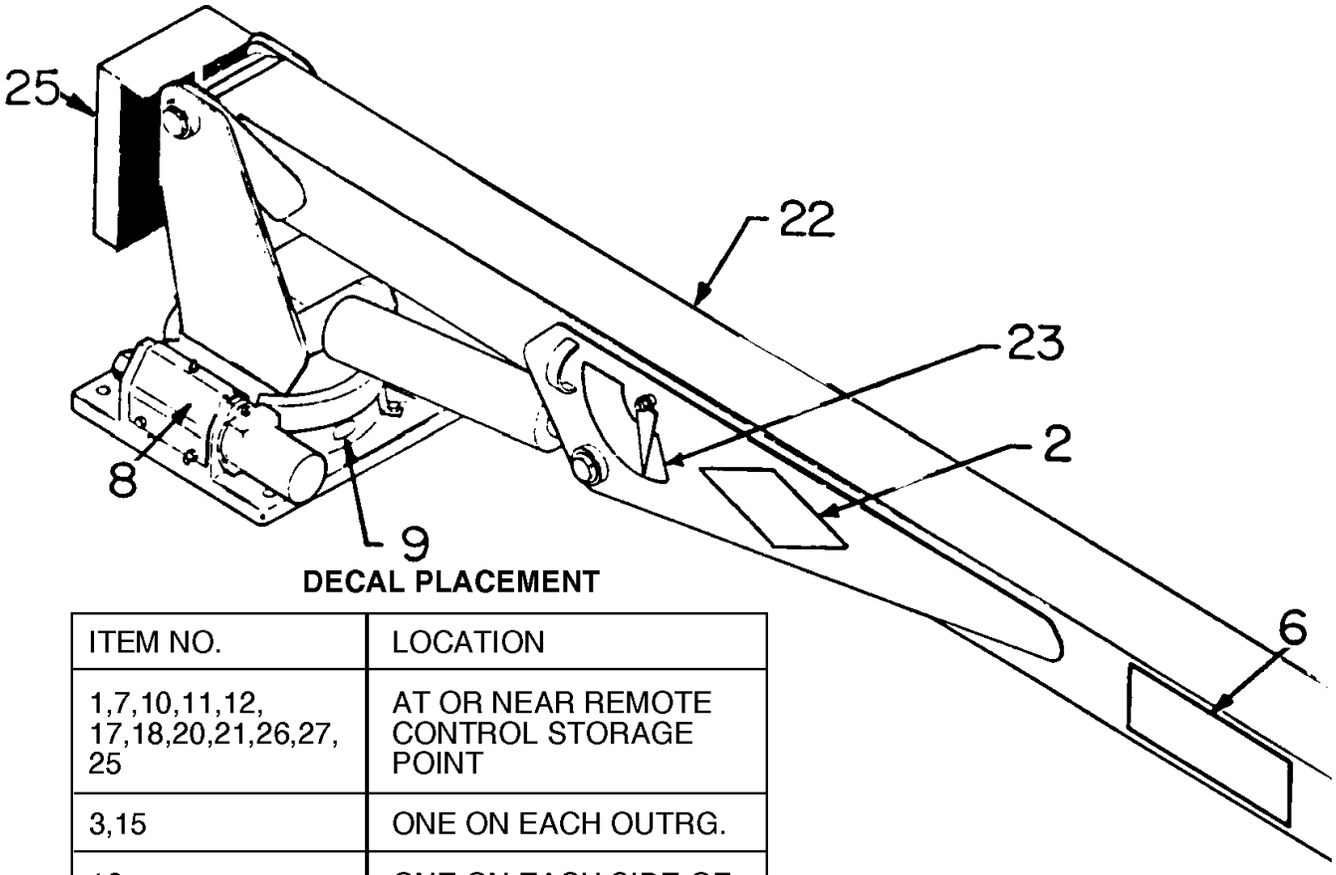
ITEM	PART	DESCRIPTION	QTY
1.	51704784	CABLE ASM #1WIRE X 6	1
2.	95710011	DECAL KIT (SEE DWG)	1
16.	72060187	CAP SCR 3/4-10 X 3 HH GR5	4
17.	72062140	NUT 3/4-10 LOCK STL INSERT	4
18.	72063008	WASHER 3/4 WRT	8
19.	77041237	SOLENOID 12V 150AMP	1
25.	77041251	RELAY	2
32.	60103870	OIL FILTER BRACKET	1
40.	72053458	BARB NIPPLE 3/4MPT 3/4HOSE	2
42.	72532795	ADAPTER 9/16MSTR 3/8FPT	1REF
44.	72060002	CAP SCR 1/4-20 X 3/4 HH GR5	2
46.	72060025	CAP SCR 5/16-18 X 1 HH GR5	2
50.	72062109	NUT 5/16-18 LOCK	1
52.	72063049	WASHER 1/4 LOCK	2
53.	72063050	WASHER 5/16 LOCK	1
55.	72066000	HOSE CLAMP	3
56.	72066377	CABLE STOP (NOT SHOWN)	1
57.	72532794	BARB NIPPLE 3/8MPT 3/4HOSE	1
60.	73052000	RETURN FILTER	1
64.	77040048	TERMINAL	2
70.	72532357	ADAPTER 9/16MSTR 3/4MJIC	1REF





DECAL KIT-PTO (95710011)

ITEM	PART	DESCRIPTION	QTY
1.	71039134	DECAL-CAUTION OIL LEVEL	1
2.	70392887	IMT DIAMOND	2
3.	70391598	DECAL-WARNING OUTRIGGER	2
4.	70391612	DECAL-GREASE WKLY LEFT	1
5.	70391613	DECAL-GREASE WKLY RIGHT	3
6.	70393318	DECAL-IDENTIFICATION 2015GH	2
7.	70392213	DECAL-CAUTION WASH/WAX	1
8.	70392399	DECAL-LUBRICATE WORM	1
9.	70392524	DECAL-ROTATE CRN/GREASE	1
10.	70392813	DECAL-DANGER ELECTRO	1
11.	70392814	DECAL-DGR OPER TRAINING	1
12.	70392815	DECAL-DANGER OPERATION	1
15.	70392864	DECAL-DGR OUTRG STD CLR	2
16.	70392865	DECAL-DANGER ELECTRO	4
17.	70392866	DECAL-DANGER OPER COND	1
18.	70392867	DECAL-DGR OUTRG MOVING	1
20.	70392888	DECAL-DGR OPER RESTRICT	1
21.	70392889	DECAL-DGR RC ELECTRO	1
22.	71391522	DECAL-ANGLE CHART RH	1
23.	71391523	DECAL-ANGLE CHART LH	1
24.	71392095	DECAL-CAUTION CONNECTOR	1
25.	71392690	CAPACITY PLACARD	2
26.	70392982	DECAL-CONTACT IMT	1
27.	70392891	DECAL-DANGER DRIVELINE	1
28.	70392109	DECAL-RETURN LINE	1
29.	70392108	DECAL-SUCTION LINE	1



DECAL PLACEMENT

ITEM NO.	LOCATION
1,7,10,11,12, 17,18,20,21,26,27, 25	AT OR NEAR REMOTE CONTROL STORAGE POINT
3,15	ONE ON EACH OUTRG.
16	ONE ON EACH SIDE OF CARRIER VEHICLE
9	AT TURNTABLE GREASE ZERKS
4,5	AT ALL GREASE ZERKS
24	NEAR CONNECTOR
28	ON RESERVOIR AT RETURN LINE
29	ON RESERVOIR AT SUCTION LINE

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	*DATE INSPECTED*
CRANE MAKE & MODEL	*HOUR METER READING (if applicable)*
CRANE SERIAL NUMBER	*INSPECTED BY (print)*
UNIT I.D. NUMBER	*SIGNATURE OF INSPECTOR*
LOCATION OF UNIT	

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

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

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

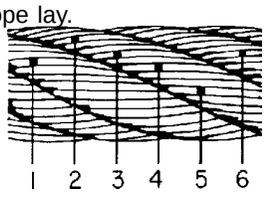
If additional space is required, reproduce this page and attach to this report.

WIRE ROPE INSPECTION

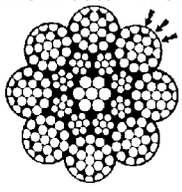
Wire rope with any of the deficiencies shown below shall be removed and replaced immediately.

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

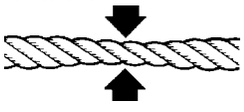
B. When there are either 3 broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



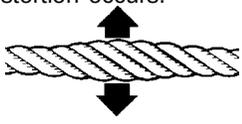
C. When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.



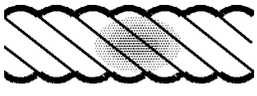
D. When there is a decrease of diameter indicating a core failure.



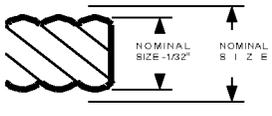
E. When kinking, crushing, birdcaging or other distortion occurs.



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.)

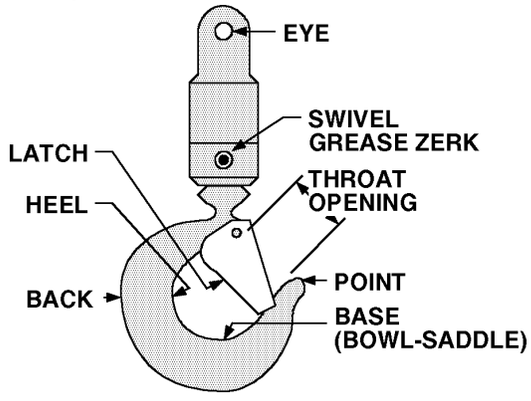
D. LATCH

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

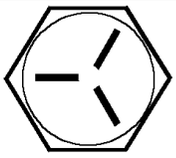
2. Examine cord for damage, cuts or breaks. Grasp cord and pull to check operation of cord reel. The cord should retract on reel when released.

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.

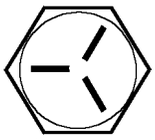
5. Torque values for socket-head capscrews are the same as for Grade 8 capscrews.

WARNING

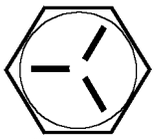
Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torquing. 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		 SAE J429 GRADE 8	
		PLAIN (KG-M)	PLATED (KG-M)	PLAIN (KG-M)	PLATED (KG-M)
5/16-24	0.3125	3	2	4	3
3/8-24	0.3750	5	4	7	5
7/16-20	0.4375	8	6	11	8
1/2-20	0.5000	12	9	17	12
9/16-18	0.5625	17	12	24	18
5/8-18	0.6250	24	18	33	25
3/4-16	0.7500	41	31	58	44
7/8-11	0.8750	62	45	93	69
1-12	1.0000	89	67	138	103
1 1/8-12	1.1250	123	93	200	150
1 1/4-12	1.2500	171	129	278	209
1-3/8-12	1.3750	232	174	375	281
1 1/2-12	1.5000	304	228	492	369

COARSE THREAD BOLTS

SIZE (DIA-TPI)	BOLT DIA (INCHES)	TIGHTENING TORQUE			
		 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (KG-M)	PLATED (KG-M)	PLAIN (KG-M)	PLATED (KG-M)
5/16-18	0.3125	2	2	3	2
3/8-16	0.3750	4	3	6	5
7/16-14	0.4375	7	5	10	7
1/2-13	0.5000	10	8	15	11
9/16-12	0.5625	15	11	21	16
5/8-11	0.6250	21	16	30	22
3/4-10	0.7500	37	28	52	39
7/8-9	0.8750	55	41	84	63
1-8	1.0000	82	62	126	94
1 1/8-7	1.1250	110	82	178	133
1 1/4-7	1.2500	155	116	251	188
1-3/8-6	1.3750	203	152	329	246
1 1/2-6	1.5000	270	210	438	328

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

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

2. Flat washers of equal strength must be used.

3. All torque measurements are given in kilogram-meters.

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

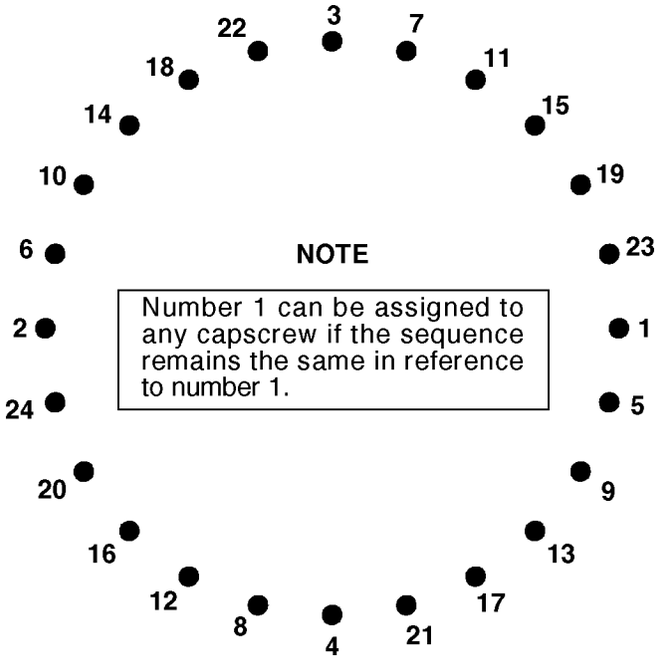
5. Torque values for socket-head capscrews are the same as for Grade 8 capscrews.

WARNING

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

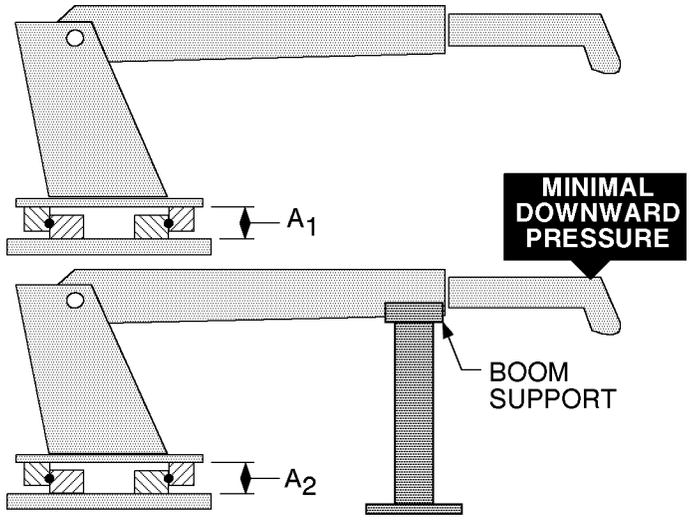
Periodic readings indicating a steady increase in TILT may be an indicator of bearing wear. Note that a bearing found to have no raceway cracks or other structural irregularities should be reassembled and returned to service.

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)**

19990519

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

19990519

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