Manual # 99904825

EZ Hauler 3000

Revised 20100301

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Crane manufactured exclusively for S.D.P. MANUFACTURING, INC. by Iowa Mold Tooling Co., Inc.

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DATE	LOCATION	DESCRIPTION

CHAPTER 1

Introduction

This manual includes parts, specifications, and installation information for your particular crane. It is your 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. This crane was designed and built to meet the standards of ANSI/ASSE A10.31-1995, Safety Requirements, Definitions, and Specifications for Digger Derricks. Contact the American National Standards Institute (www.ansi.org) for more information.

Throughout this manual, three means are used to draw the attention of personnel. They are NOTEs, CAUTIONs and WARNINGs 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.

For optimum safety, treat this equipment with respect and service it regularly.

Safety

WARNING

KEEP CHILDREN, BY-STANDERS, AND PERSONS NOT REQUIRED IN THE OPERATION OF EQUIPMENT AT LEAST 10'-0" (3.05 m) FROM THE OUTERMOST RANGE OF THE CRANE.

CRANE OPERATION

- Make sure the chassis is rated to withstand the crane weight and load moment.
- Know the position of the booms at all times while operating the crane.
- Eliminate swing by positioning the boom tip directly over the center of the load before lifting.
- Never drag a load.
- Check the safety of the load by first lifting the load barely off the ground.
- Stop all crane operation at a signal from anyone.
- When you rotate the crane, the load may change from being supported by the outriggers to the vehicle suspension. Be cautious as you rotate the crane, because the springs on the carrier vehicle will respond differently to the load than the tires will.
- Position the crane in its stowed position when not in use.

FIRE PRECAUTIONS

To avoid fires,

- Use safety-type portable gasoline containers equipped with an automatic closing cap and flame arrester.
- DO NOT refuel while the vehicle engine is running.
- DO NOT smoke in a refueling area.
- Install in the vehicle cab a portable fire extinguisher with a basic minimum extinguisher rating of 10 BC *and know how to use the fire extinguisher.*

READ THE ENTIRE MANUAL BEFORE OPERATING THE CRANE.

Use this manual for reference and for training operators. This manual covers the basics of safe and correct operation of your crane. However, success and safety depends greatly upon the skill and caution of the person actually doing the work. Persons engaging in these procedures do so entirely at their own risk.

Daily Safety Inspection

Using the Crane Log, IMT Manual No. 99900686, or the inspection checklist in the reference section of this manual, inspect the crane on a daily, weekly, and monthly basis. Use the following list as a guide when you are inspecting your unit at start-up and during operation:

1 Vehicle - Check oil level, battery, lights, brakes, and tires for inflation, pressure, cuts, and loose or missing wheel lugs.

2 Safety Accessories - Check for proper function, oil levels, leaks and malfunctions.

3 Weldments - Check visually for damage, especially cracks or breaks in welds.

4 Fasteners - Check pins, sheaves, nuts and bolts for breakage, excessive wear and tightness.

5 Crane Hooks - Check for the presence of a safety catch, twists, cracks, or damage.

6 Covers and Guards - Check for missing or improperly maintained covers and guards.

7 Operation Placards and Safety Decals - Check for illegible or missing decals and placards. Refer to the decal section of this manual for more information on the required decals.

Replace or repair any items as needed prior to equipment operation.

CHAPTER 2

Specifications

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EZ Hauler 3000 Specifications

CRANE RATING *	24,000 ft-lb (3.3 ton-meters)
REACH (from centerline of rotation)	26'-0" (7.9 m)
HYDRAULIC EXTENSIONS (3)	56-1/8" each (142.5 cm) 168-3/8" total (427.5 cm)
MANUAL EXTENSION	Not applicable
LIFTING HEIGHT (from base of crane)	28'-5" (8.7 m)
CRANE WEIGHT	2,800 lb (1270 kg)
MOUNTING SPACE REQUIRED (crane base)	21" x 21" (53.3 cm x 53.3 cm)

* Crane rating (ft-lb) is the rated load (lb) multiplied by the respective distance (ft) from centerline of rotation with all extensions retracted and lower boom in horizontal position.

PERFORMANCE CHARACTERISTICS

ROTATION	Continuous	60 seconds
LOWER BOOM ELEVATION	-10 to 80 degrees	16.3 seconds extension 11.4 seconds retraction
STINGER		11.7 seconds extension 14.4 seconds retraction
EXTENSION BOOMS	56-1/8" each (142.5 cm each)	21.8 seconds extension 13.1 seconds retraction
WINCH UP		82 ft/min

CYLINDERS

	BORE	STROKE
LOWER BOOM CYLINDER	4" (10.2 cm)	30.06" (76.4 cm)
FIRST, SECOND, AND THIRD EXTENSION CYLINDER	2.5" (6 cm)	56-1/8" (142.5 cm)

SYSTEM SPECIFICATIONS

ROTATION SYSTEM

Turntable bearing with an external worm gear driving an intermediate gear, powered by a high-torque hydraulic motor through a self-locking worm.

MOTOR DISPLACEMENT	5.9 ci/rev
MOUNTING FLANGE	2 bolt std: 3.25" dia. x 0.12 pilot, 0.535" dia. mounting holes on 4.18" dia. b. c.
OUTPUT SHAFT	1" dia. straight with woodruff key and 1/4-2 threaded hole
PORT TYPE	0.875-14 UNF-2B o-ring port, size 10. Accepts fittings for SAE J1926.
CASE DRAIN	No case drain
SPECIAL FEATURES	High pressure shaft seal
COLOR	Gloss black

CYLINDER HOLDING VALVES

The base ends (extend sides) of the lower boom and extension cylinders are equipped with integral-mounted counter-balance valves to prevent sudden cylinder collapse in case of hose or other hydraulic failure.

The counter balance valves serve several functions. These include:

1 Holding valves

2 Speed control for the lowering function which causes that function to be metered under load

3 Prevention of excessive oil loss during a hose failure.

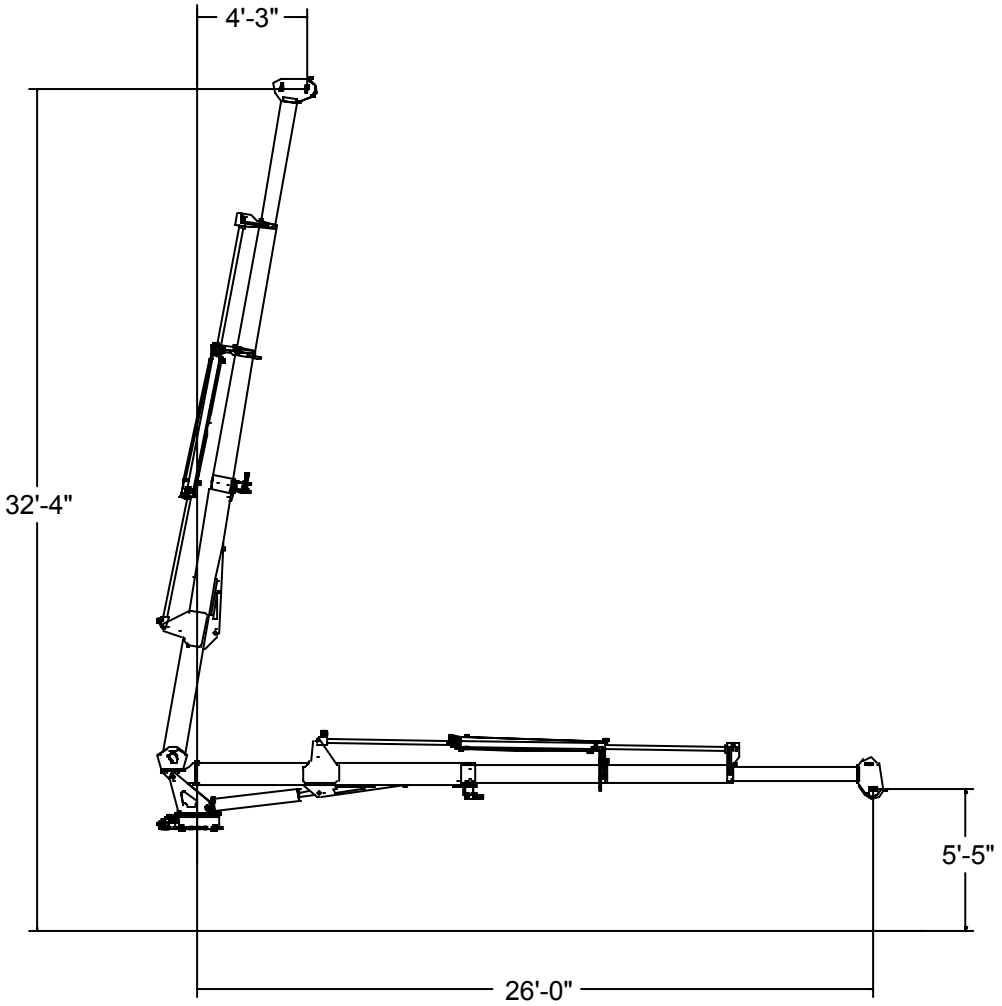
WINCH

The winch is powered by a hydraulic motor through a planetary gear with a mechanical brake. Only single line is permitted. The maximum single line capacity is 3800 lb. The winch is equipped with 1/2" diameter synthetic fiber rope.

HYDRAULIC SYSTEM

The eight-section crane valvebank is operated by a radio remote control with a manual handle as a back-up system. The system pressure is 2500 psi (172 bar) at 10 gpm (37.8 l/min).

EZ Hauler 3000 Geometric Configuration



EZ Hauler Capacity

Your equipment is designed for specific loads which are described on the capacity placard mounted near the normal operator's station. Exceeding the limits presented on the capacity placard will create severe safety hazards and will shorten the life of your equipment. The operator and other concerned personnel must know the load capacities of the equipment and the weight of the load being lifted!

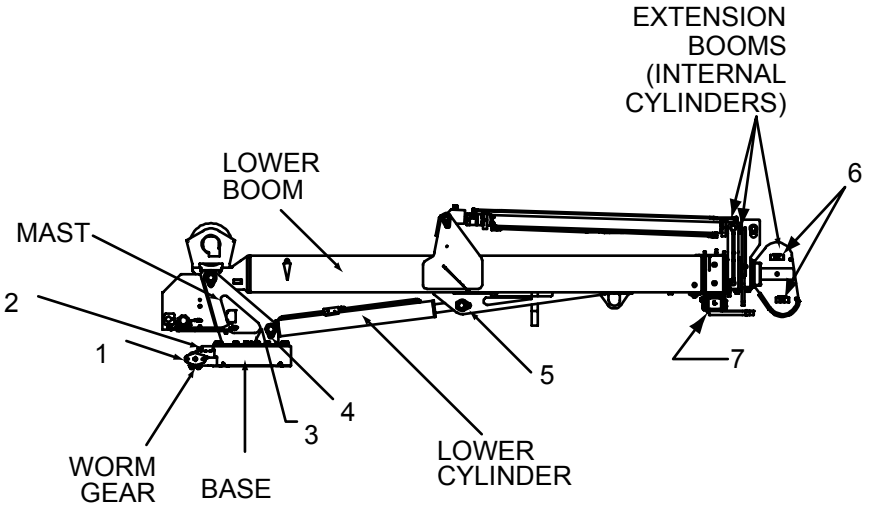
Refer to the load chart mounted on the unit for specific capacity information.

EZ Hauler 3000 Recommended Spare Parts List

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 minimal down-time waiting for parts. There may be parts failures not covered by this list. Parts not listed are considered not to be Critical or Normal Wear items during the first year of operations, and you will need to contact your distributor or manufacturer for availability.

ASSEMBLY NAME (PART #)		
COMPONENT PART #	**DESCRIPTION**	**QUANTITY**
BASE & MAST ASSEMBLY (99904779)		
76393171	GASKET HYD MOTOR	1
LOWER CYLINDER (51722419)		
9D161823	SEAL KIT- LOWER CYLINDER	1
BOOM ASSEMBLY (99904780)		
60135201	SHIM	2
60135202	SHIM	2
60135203	SHIM	2
60135204	SHIM	2
60030353	WEAR PAD RND	1
60030398	WEAR PAD- STINGER	1
60030402	WEAR PAD	1
60030400	WEAR PAD	1
60030396	WEAR PAD	1
60030395	WEAR PAD	1
60030411	WEAR PAD	1
60030410	WEAR PAD- EXTENSION CYLINDER	1
60030082	SHEAVE	2
60030415	WEAR PAD, ROUND	8
60030399	WEAR PAD	2
60030404	GUIDE- FEEDER TUBES	2
60030397	WEAR PAD- STINGER	2
60030416	WEAR PAD, ROUND	1
60030417	WEAR PAD	1
60030418	WEAR PAD, ROUND	1
CRANE & WINCH ASSEMBLY (99904781)		
60030401	WEAR PAD	1
60126691	ENERGY CHAIN	1
70034402	CLAMP- TUBE .62 OD	4
70034432	CLAMP- TUBE .50 OD	6
70144819	COVER PLATE	2
70143829	COVER PLATE	3
EXTENSION CYLINDERS (51722432 / 51722423 / 51722424)		
91744176	SEAL KIT- EXTENSION CYLINDERS	3
FEEDER TUBE ASSEMBLIES (51722748 / 51722747)		
51744195	SEAL KIT-FEEDER TUBES	4

Crane Assemblies, Grease Zerk Locations



ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	INTERMEDIATE GEAR	SHELL ALVANIA 2EP OR SHELL RETINAX "A"	WEEKLY
2.	WORM GEAR		
3.	TURNTABLE (ROTATE CRANE WHILE GREASING)		
4.	LOWER CYLINDER (LOWER END)		
5.	LOWER CYLINDER (UPPER END)		
6.	SHEAVES		
7.	AUGER PIVOT		

CHAPTER 3

Parts

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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 maintenance and repair manuals for this crane family. For optional equipment such as winches and remote controls, refer to the appropriate service manual.

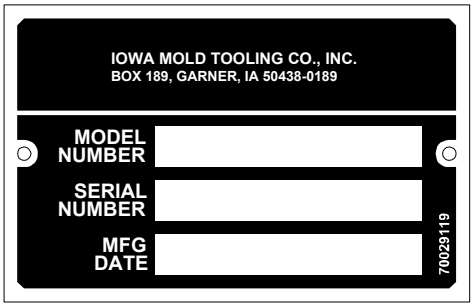
WARNING

DO NOT ATTEMPT TO REPAIR ANY COMPONENT WITHOUT READING THE INFORMATION CONTAINED IN THE REPAIR SECTION. 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

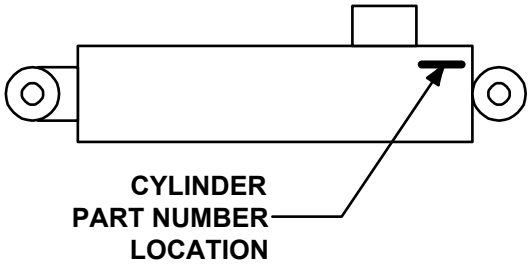
Every crane has an identification placard (see figure) attached to the mast. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model numbers. All inquiries should be addressed to:

S.D.P. Manufacturing
400 Industrial Drive
Dunkirk, IN 47336
Telephone: 765-768-5000
Technical Support Fax: 765-768-5015



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 the Crane Reference Section.

ORDERING REPAIR PARTS

When ordering replacement parts:

1 Give the model number of the unit.

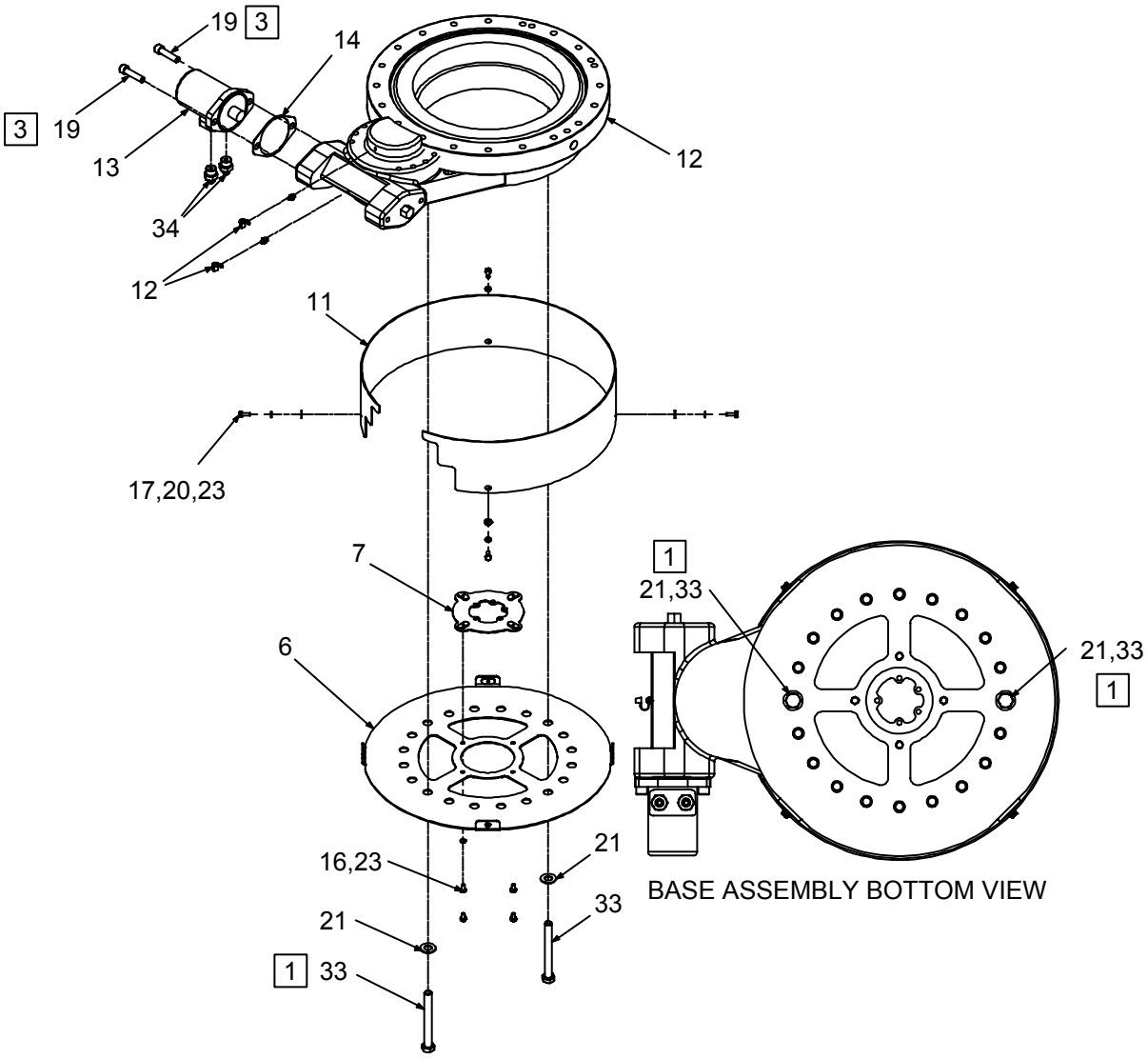
2 Give the serial number of the unit.

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.

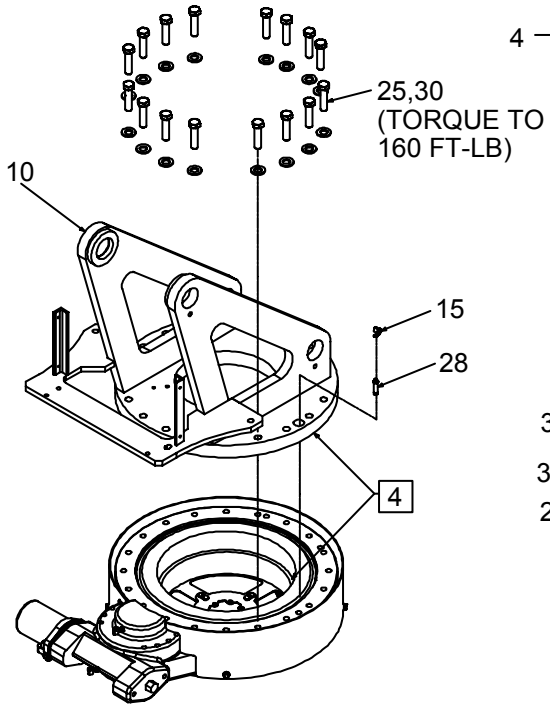
5 Specify the quantity required.

Base & Mast Assembly (99904779)

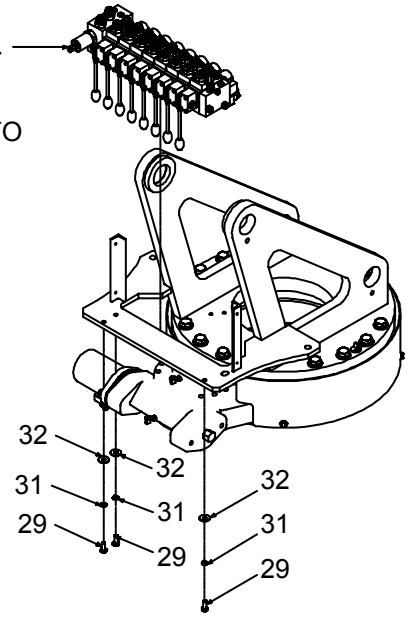


BASE ASSEMBLY BOTTOM VIEW

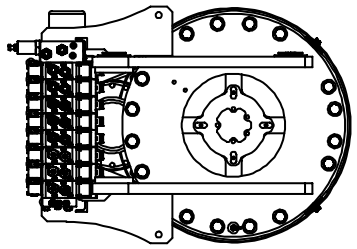
BASE ASSEMBLY



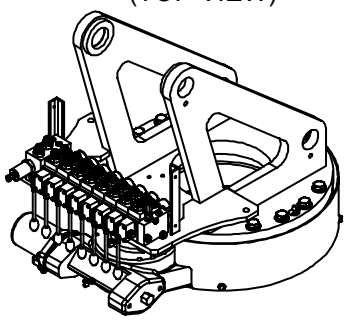
MAST ASSEMBLY



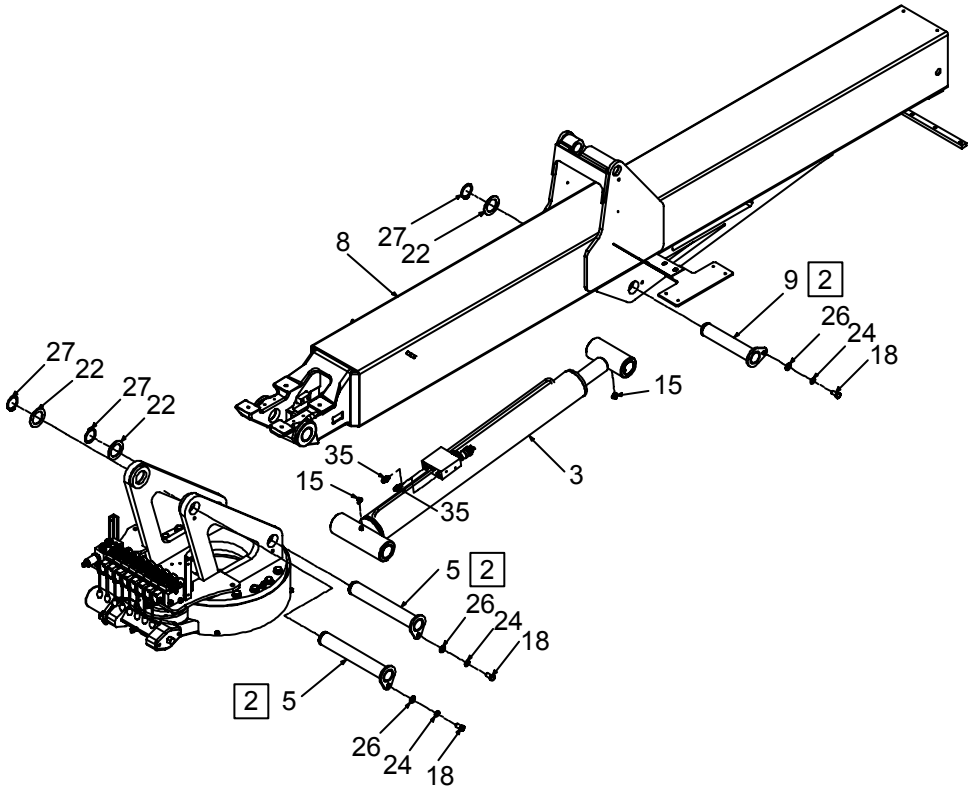
VALVE BANK ASSEMBLY



MAST ASSEMBLY
(TOP VIEW)



MAST ASSEMBLY



LOWER BOOM ASSEMBLY

NOTES (SEE REFERENCE NUMBER IN BOX):

1 CAP SCREWS (IMT # 72601864) USED ONLY FOR INSTALLING BASE ASSEMBLY TO SHIPPING BLOCK. DISCARD AFTER USE.

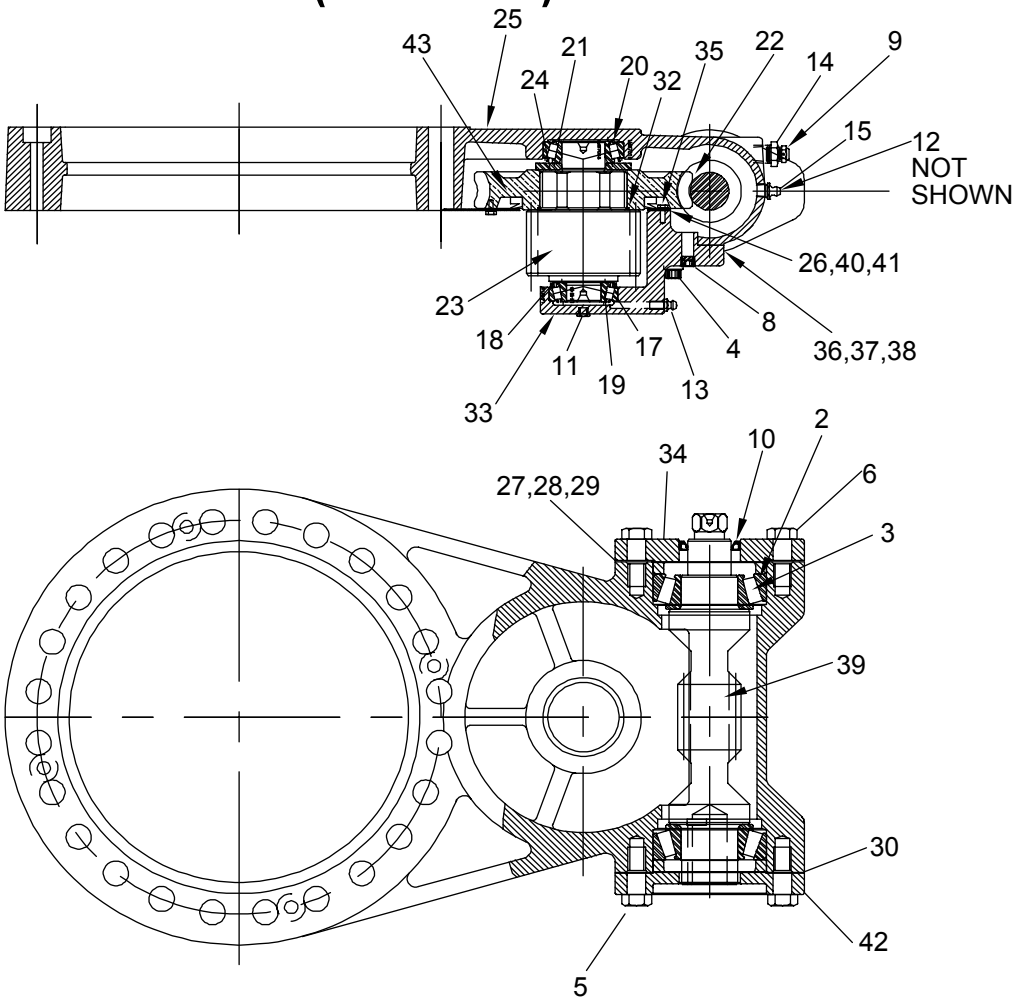
2 USE ANTI-SEEZ ON PINS.

3 USE BLUE THREAD LOCKER.

4 APPLY RUST PREVENTATIVE TO BEARING RACK AND UNDERSIDE OF MAST.

99904779 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722740	HARDWARE KIT- BASE & MAST EZ 3000		1
2.	51722744	HYDRAULIC KIT- ASM EZ3000		1
3.	51722419	CYLINDER-4.0/2.2 30.06S 49.69CC C		1
4.	51722745	VALVE BANK ASM- 8SEC EZ 3000/5000		1
5.	52719058	PIN WELDMENT		2
6.	52719525	GEAR GUARD WELDMENT		1
7.	52719599	WELDMENT-SWIVEL ADAPTER PLATE		1
8.	52722336	WELDMENT-LOWER BOOM EZ3000		1
9.	52722362	PIN		1
10.	52722623	MAST WELDMENT		1
11.	60128858	GEAR GUARD		1
12.	71056608	GEAR BOX-ROT WORM DRIVE W/BASEPLATE		1
13.	73051963	MOTOR-ROTATION		1
14.	76393171	GASKET-WINCH		1
15.	70034382	CAP-GREASE	#1	3
16.	72060000	CAP SCREW .25-20X .50 HH GR5 Z	#1	4
17.	72060002	CAP SCREW .25-20X .75 HH GR5 Z	#1	4
18.	72060091	CAP SCREW .50-13X 1.00 HH GR5 Z	#1	3
19.	72060796	CAP SCREW .50-13X 2.00 SH PLAIN	#1	2
20.	72063001	WASHER .25 FLAT	#1	4
21.	72063007	WASHER .62 FLAT	#1	2
22.	72063039	MACHY BUSHING 2.00X10 GA NR	#1	3
23.	72063049	WASHER .25 LOCK	#1	8
24.	72063053	WASHER .50 LOCK	#1	3
25.	72063119	WASHER .62 FLAT ASTM F436	#1	16
26.	72063132	WASHER .50 FLAT ASTM F436	#1	3
27.	72066136	RETAINING RING-EXT 2.00 HD	#1	3
28.	72534418	ZERK-NPT .12 X 1.75 LG	#1	1
29.	72602040	CAP SCREW M 8-1.25X 25 HHZ	#1	3
30.	72601482	CAP SCREW .62-11X 2.50 HH GR8 Z	#1	16
31.	72601797	WASHER-LOCK 8MM	#1	3
32.	72601799	WASHER-FLAT M 8	#1	3
33.	72601854	CAP SCREW .62-11X 5.50 HH GR8 Z	#1	2
34.	72533613	ADAPTER-M STR/M JIC 10 6	#2	2
35.	72532775	ADAPTER-M STR/M JIC 4 6	#2	2
REV. A 2010212				

Gear Rotator (71056608)

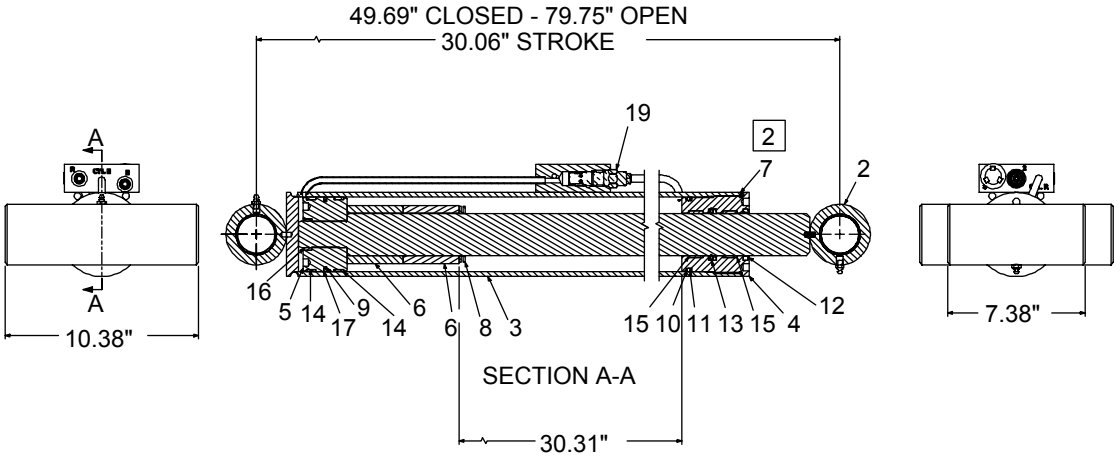


71056608 PARTS LIST (PARTS SHOWN ON DRAWING 99903804)			
ITEM	PART #	DESCRIPTION	QUANTITY
2.	70055307	BEARING, ROLL CUP	2
3.	70055308	BEARING, ROLL CONE	2
4.	71412279	3/8-16X1-1/4 12 PT CBB GR8	8
5.	71412280	CAP SCR 1/2-13X1 HH (SHIPPING ONLY)	2
6.	71412281	CAP SCR 1/2-13X1-1/4 HH PLATE GR5	2
8.	71412282	PLUG, PIPE 1/8" HEX SUN	1
9.	71412283	VENT PLUG	1
10.	76396847	SEAL, OIL	1
11.	71412284	PLUG, THREADED 1/4-28	1
12.	70034484	CAP, GREASE FIT PLASTIC COVER	2
13.	71412285	GREASE FITTING 1/4-28 STRAIGHT	1
14.	71412286	BUSHING, RED 1/8X1/4	1
15.	71412287	GREASE FITTING 1/8 NPT STRAIGHT	1
17.	70055309	BEARING, ROLL CUP	1

71056608 PARTS LIST (PARTS SHOWN ON DRAWING 99903804)			
ITEM	PART #	DESCRIPTION	QUANTITY
18.	71412288	RING, GREASE	1
19.	70055310	BEARING, ROLL CONE	1
20.	70055311	BEARING, ROLL CUP	1
21.	70055312	BEARING, ROLL CONE	1
22.	71056614	GEAR, WORM	1
23.	71056615	PINION, OUTPUT	1
24.	71412289	SPACER, WASHER	1
25.	71412290	HOUSING	1
26.	71412291	COVER	1
27.	76029615	SHIM, WORM 0.010 BROWN	2
28.	76029616	SHIM, WORM 0.0075 CLEAR	2
29.	76029617	SHIM, WORM 0.005 BLUE	3
30.	76029618	SHIM, WORM 0.020 YELLOW	2
32.	76396848	O-RING	1
33.	71412292	CAP, GEAR	1
34.	71412293	CAP, WORM	1
35.	71412294	SCREW, 6-32X3/8" HWHTR	8
36.	76029610	SHIM, GEAR 0.0075 NAT ALUMINUM	4
37.	76029611	SHIM, GEAR 0.005 BLUE ALUMINUM	4
38.	76029612	SHIM, GEAR 0.003 GREEN ALUMINUM	4
39.	71412295	WORM, GROUND	1
40.	76029613	SHIM, COVER 0.005 BLUE ALUMINUM	3
41.	76029614	SHIM, COVER 0.020 YELLOW ALUMINUM	2
42.	71412296	MTR ADAPTER	1
43.	76396849	SEAL, FACE	1
REF	70734049	SHIM KIT (INCL. 27-30,35-38,40,41)	1
REF	94396846	SEAL KIT (INCL. 10,32,43)	1

REV. 20060302

Lower Cylinder (51722419)



NOTES:

1 TO REDUCE DOWNTIME, REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED.

2 DRILL #15 HOLE 3/16" DEEP. PRESS IN ITEM #7, 60125699.

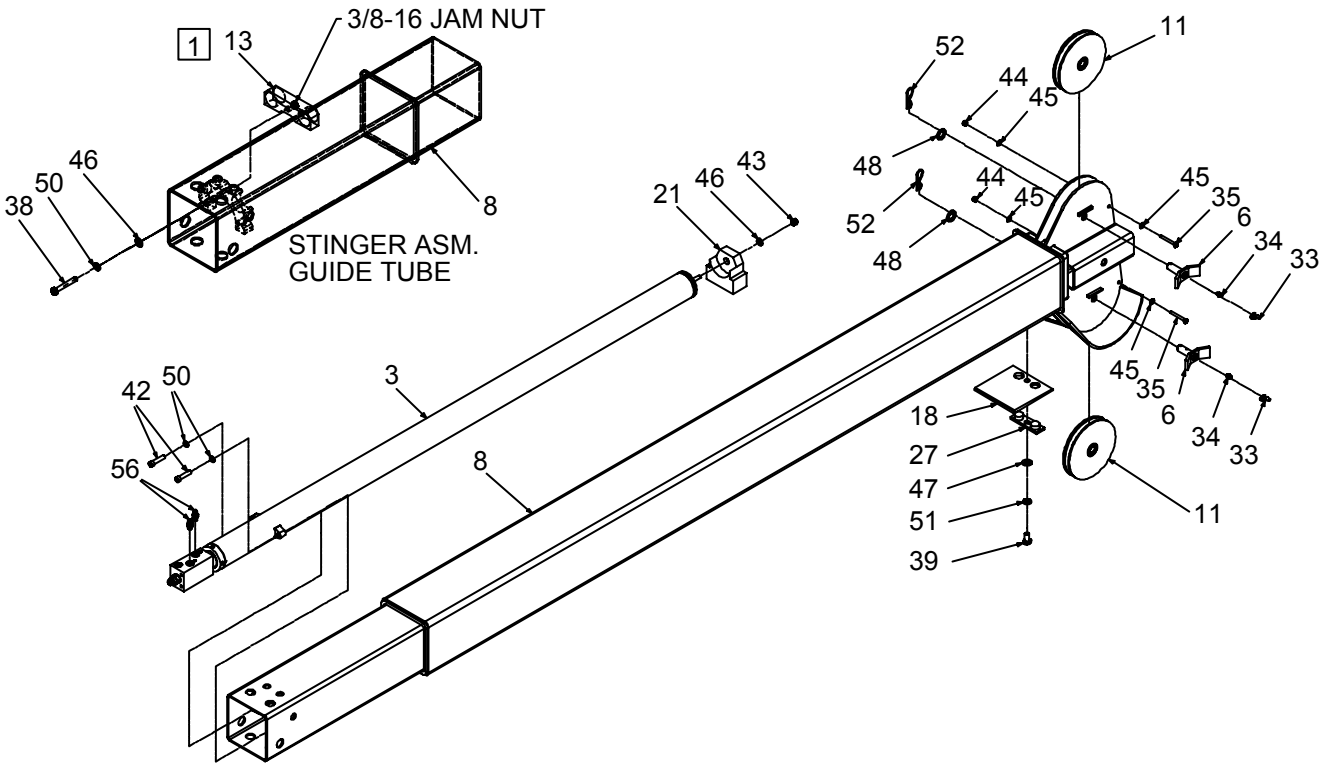
51722419 CYLINDER DATA	
EXTENDED	12.57 IN², 1.64 GAL
RETRACTED	3.98 IN², 0.52 GAL
CASE	ø4.5" OD x 4" BORE X 44.44" LONG
ROD	ø2.25" X 45.81
DRY WEIGHT	146 LB
TEST PRESSURE	3000 PSI
OPERATING PRESSURE	2500 PSI
PORTS	SAE #4 O-RING BOSS (0.438-20 UNF-2B)
CYLINDER TUBE BURST PRESSURE	8,333 PSI
TORQUES	PISTON TO ROD: 710-740 FT-LB HEAD GLAND TO CYLINDER: 450 FT-LB

51722419 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	9D161823	SEAL KIT	#20	1
2.	52722420	ROD ASSEMBLY	#20	1
3.	52722421	CASE ASSEMBLY	#20	1
4.	6HD40022	HEAD	#20	1
5.	6ID40143	PISTON	#20	1
6.	6C300022	STOP TUBE	#20	2
7.	60125699	PIN - LOCK	#1	1
8.	6A025022	WAFER LOCK- IMT 2.25	#1	1
9.	7Q072153	O-RING - 3.5 X 3.69 0.09 70	#1	1
10.	7Q072342	O-RING - 3.62 X 4 0.19 70	#1	1
11.	7Q10P342	BACK-UP RING 3.62 BORE 4 O.D. 0.07 THK	#1	1
12.	7R14P022	ROD WIPER-TYPE D 2.25 ROD	#1	1

51722419 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
13.	7R546022	U-CUP LOADED 2.25X2.75X.38 "B	#1	1
14.	7T2N4040	WEAR RING - PISTON 4.00 O.D. X .50 W	#1	2
15.	7T2NX625	WEAR RING-ROD 2.25 IDX0.75	#1	2
16.	7T61N143	LOCK RING-NYLON 1.43	#1	1
17.	7T66P040	PISTON SEAL DYNAMIC 4.00"	#1	1
18.	73054999	VALVE-COUNTERBALANCE	#3	1
19.	77041845	SWITCH-PRESSURE		1
20.	51722419A	CYLINDER		1
REV. A 20100128				

Boom Assembly (99904780)

STINGER ASSEMBLY (99904780-2)



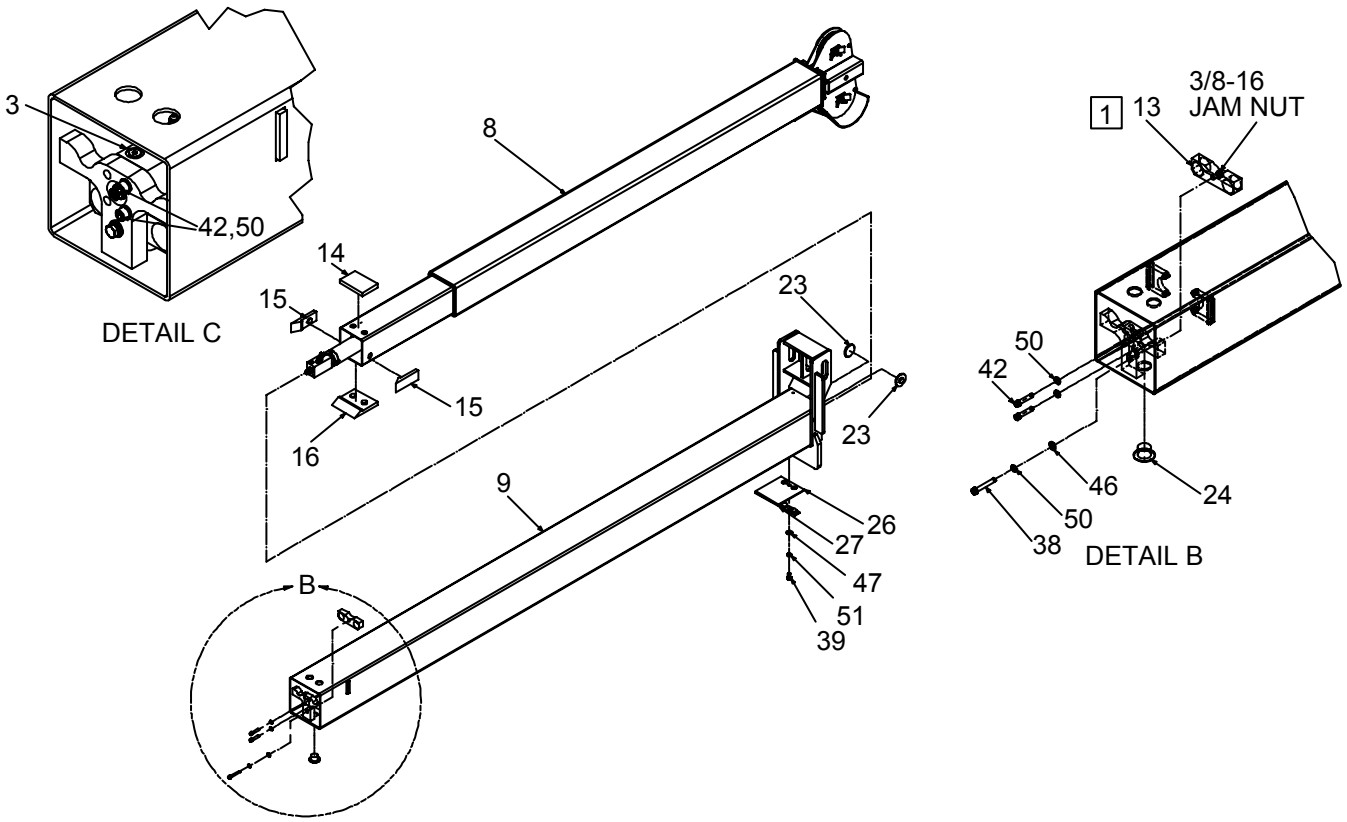
NOTES (SEE REFERENCE NUMBER IN BOX):

1 FEEDER TUBE GUIDE, SHOWN HERE FOR CLARITY, IS MOUNTED INSIDE BOOM. NOTE LOCATION OF JAM NUT.

STINGER ASSEMBLY (99904780-2) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722741	HARDWARE KIT- BOOM ASSEMBLY EZ3000		1
3.	51722432	CYLINDER-2.50/1.75 56.12S 77.38CC C		1
8.	52722328	BOOM ASSEMBLY - STINGER EZ3000		1
11.	60030082	SHEAVE- 7.00 NYLON W/BEARING		2
13.	60030395	GUIDE- FEED TUBE		2
18.	60030400	WEAR PAD-RC .31 X 6.00 X 6.00		1
21.	60030410	WEAR PAD-INNER CYL EZ3000		1
27.	60134503	LOCK PLATE-WEAR PAD		2
33.	70034382	CAP-GREASE PRO20 GC-RED	#1	2
34.	72053508	ZERK-NPT .12	#1	2
35.	72060009	CAP SCREW .25-20X 2.25 HH GR5 Z	#1	2
38.	72060052	CAP SCREW .38-16X 2.50 HH GR5 Z	#1	2

STINGER ASSEMBLY (99904780-2) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
39.	72060090	CAP SCREW .50-13X .88 HH GR5 Z	#1	2
42.	72060759	CAP SCREW .38-16X 1.75 SH PLAIN	#1	4
43.	72062103	NUT .38-16 HEX NYLOCK	#1	1
44.	72062104	NUT .25-20 HEX NYLOCK	#1	2
45.	72063001	WASHER .25 FLAT	#1	4
46.	72063003	WASHER .38 FLAT	#1	15
47.	72063005	WASHER .50 FLAT	#1	2
48.	72063030	MACHY BUSHING .75X10 GA NR	#1	2
50.	72063051	WASHER .38 LOCK	#1	18
51.	72063053	WASHER .50 LOCK	#1	2
52.	72066145	HAIR PIN .19 ZINC	#1	2
56.	72532351	ADAPTER-M STR/M JIC 4 4	#2	4
REV. A 20100212				

2ND EXTENSION ASSEMBLY (99904780-3)



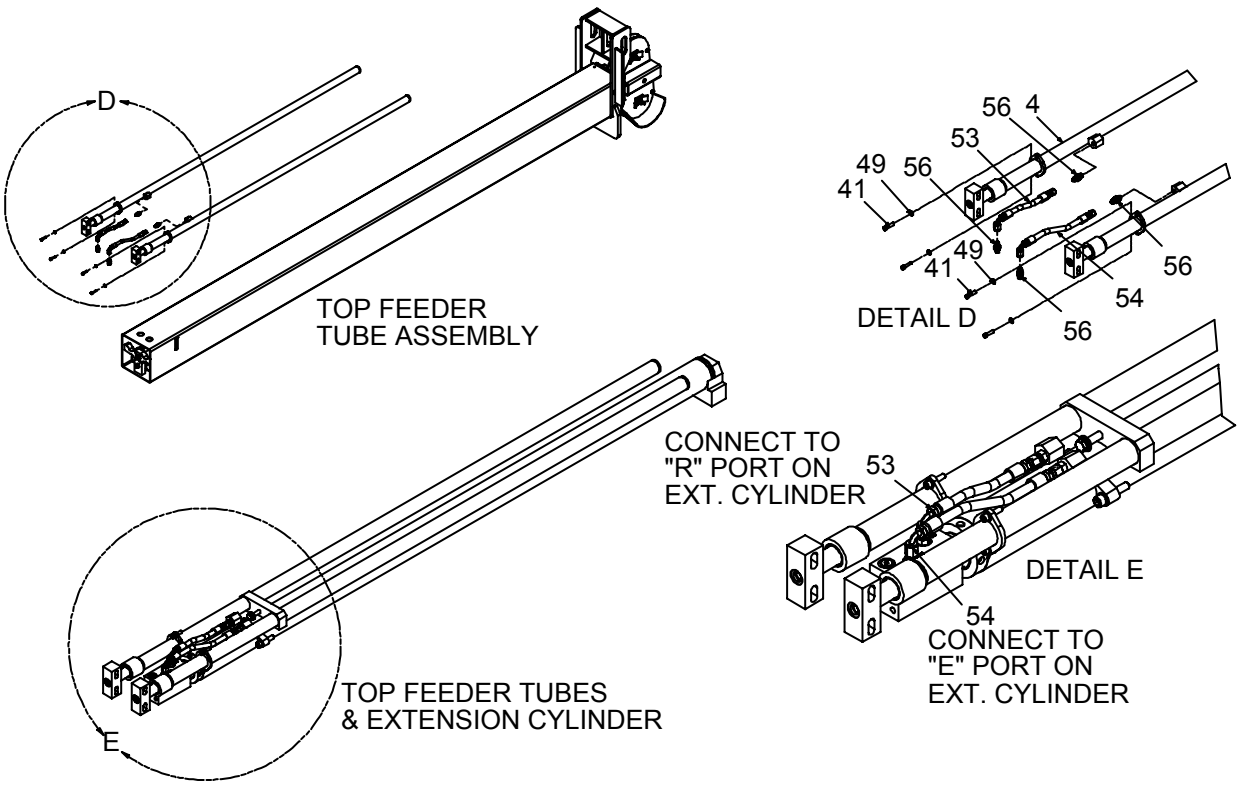
NOTES (SEE REFERENCE NUMBER IN BOX):

1 FEEDER TUBE GUIDE, SHOWN HERE FOR CLARITY, IS MOUNTED INSIDE BOOM. NOTE LOCATION OF JAM NUT.

2ND EXTENSION ASSEMBLY (99904780-3) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722741	HARDWARE KIT- BOOM ASSEMBLY EZ3000		1
3.	51722432	CYLINDER-2.50/1.75 56.12S 77.38CC C		1
8.	52722328	BOOM ASSEMBLY - STINGER EZ3000		1
9.	52722334	WELDMENT-2ND EXT BOOM EZ3000		1
13.	60030395	GUIDE- FEED TUBE		2
14.	60030396	WEAR PAD-RC NYL .81X4.00X 6.00		1
15.	60030397	WEAR PAD- EZ3000 STINGER		2
16.	60030398	WEAR PAD- EZ3000		1
23.	60030415	WEAR PAD-RND 2.50 DIA X 1 DIA X .55 L		6
24.	60030416	WEAR PAD-RND 2.00 DIA X 1.25 DIA X 1.00		1
26.	60030418	WEAR PAD-RC 0.25 X 7.00 X 6.00		1
27.	60134503	LOCK PLATE-WEAR PAD		2
38.	72060052	CAP SCREW .38-16X 2.50 HH GR5 Z	#1	2
39.	72060090	CAP SCREW .50-13X .88 HH GR5 Z	#1	2
42.	72060759	CAP SCREW .38-16X 1.75 SH PLAIN	#1	4

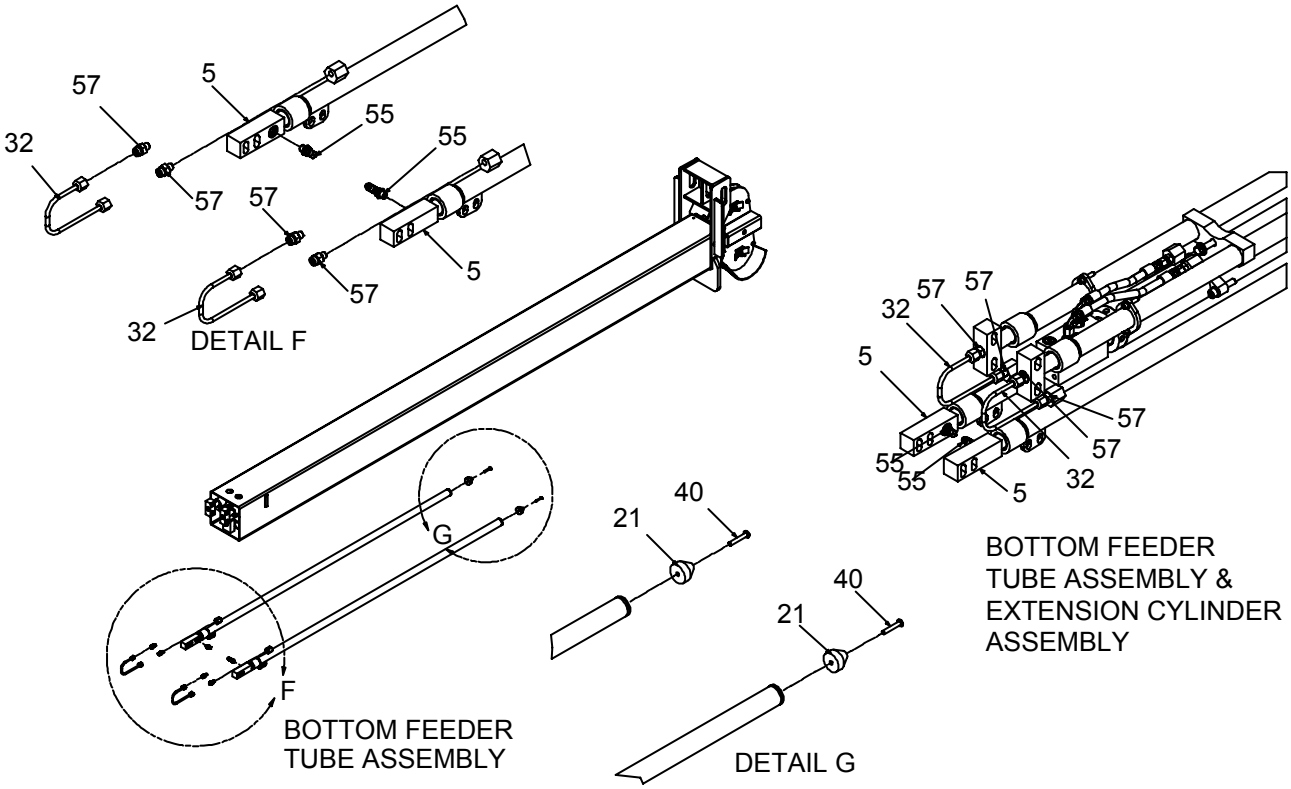
2ND EXTENSION ASSEMBLY (99904780-3) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
46.	72063003	WASHER .38 FLAT	#1	15
47.	72063005	WASHER .50 FLAT	#1	2
50.	72063051	WASHER .38 LOCK	#1	18
51.	72063053	WASHER .50 LOCK	#1	2
REV. A 20100212				

TOP FEEDER TUBE ASSEMBLY (99904780-4)



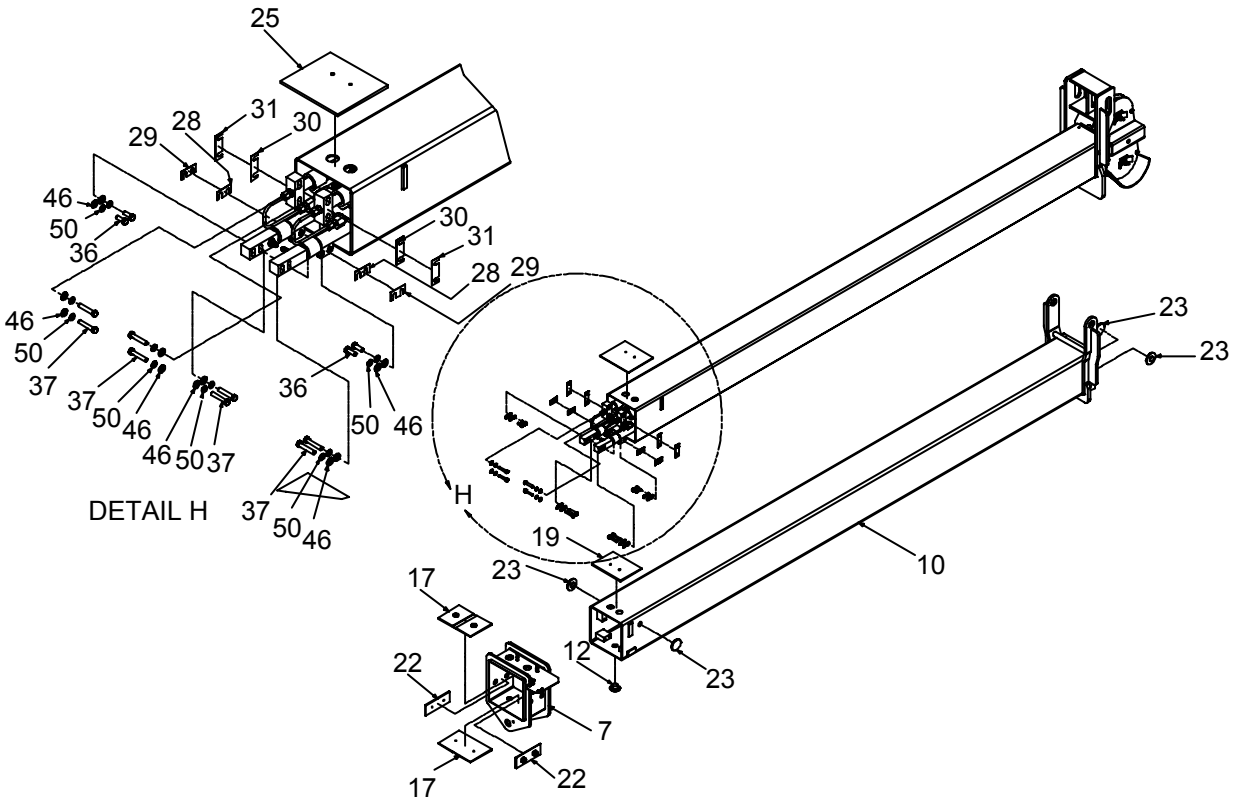
TOP FEEDER TUBE ASM (99904780-4) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722741	HARDWARE KIT- BOOM ASSEMBLY EZ3000		1
2.	51722743	HYDRAULIC KIT-FEEDER TUBE EZ3000		1
4.	51722747	FEEDER TUBE, TOP		2
41.	72060707	CAP SCREW .25-20X 1.00 SH PLAIN	#1	4
49.	72063049	WASHER .25 LOCK	#1	4
53.	51398869	HOSE-FJ .25 X 8.12 (4-4) 100R17	#2	1
54.	51398870	HOSE-FJ .25 X 9.50 (4-4) 100R17	#2	1
56.	72532351	ADAPTER-M STR/M JIC 4 4	#2	4
REV. A 20100212				

BOTTOM FEEDER TUBE ASSEMBLY (99904780-5)



BOTTOM FEEDER TUBE ASSEMBLY (99904780-5) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722741	HARDWARE KIT- BOOM ASSEMBLY EZ3000		1
2.	51722743	HYDRAULIC KIT-FEEDER TUBE EZ3000		1
5.	51722748	FEEDER TUBE, BOTTOM		2
21.	60030410	WEAR PAD-INNER CYL EZ3000		1
32.	71413607	TUBE-HYD EZ3000 FEED TUBE		2
40.	72060652	SCREW-MACH .25-20X 1.50 RDH	#1	2
55.	72053758	ELBOW-M STR/90/M JIC 4 4	#2	2
57.	72533376	ADAPTER-M FACE/M STR 4 4	#2	4
REV A 20100215				

1ST STAGE EXTENSION ASSEMBLY (99904780-6)



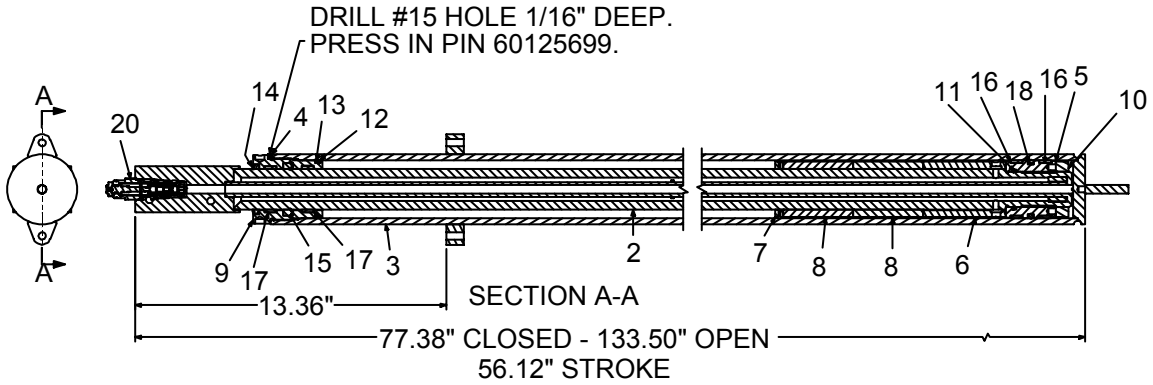
1ST STAGE EXTENSION ASSEMBLY (99904780-6) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722741	HARDWARE KIT- BOOM ASSEMBLY EZ3000		1
7.	52722318	WELDMENT- AUGER MOUNT EZ 3000		1
10.	52722335	WELDMENT-1ST EXT BOOM EZ3000		1
12.	60030353	WEAR PAD-RND 2.00 DIA X 1.00 DIA X 1.00		1
17.	60030399	WEAR PAD-RC NYL .25X6.00X 9.00		2
19.	60030402	WEAR PAD-RC .31 X 6.00 X 8.00		1
22.	60030411	WEAR PAD 2.50 X 6.81 X 1.00 X .25		2
23.	60030415	WEAR PAD-RND 2.50 DIA X 1 DIA X .55 L		6
25.	60030417	WEAR PAD-RC 0.25 X 7.00 X 8.00		1
28.	60135201	SHIM-1.00X2.00 X 0.015THK		AS REQ'D
29.	60135202	SHIM-1.00X2.00 X 0.031THK		AS REQ'D
30.	60135203	SHIM-1.00X3.00 X 0.015THK		AS REQ'D
31.	60135204	SHIM-1.00X3.00 X 0.031THK		AS REQ'D
32.	71413607	TUBE-HYD EZ3000 FEED TUBE		2
36.	72060046	CAP SCREW .38-16X 1.00 HH GR5 Z	#1	4
37.	72060050	CAP SCREW .38-16X 2.00 HH GR5 Z	#1	8
46.	72063003	WASHER .38 FLAT	#1	15
50.	72063051	WASHER .38 LOCK	#1	18
REV. A 20100215				

99904780 Parts List, Complete

99904780 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722741	HARDWARE KIT- BOOM ASSEMBLY EZ3000		1
2.	51722743	HYDRAULIC KIT-FEEDER TUBE EZ3000		1
3.	51722432	CYLINDER-2.50/1.75 56.12S 77.38CC C		1
4.	51722747	FEEDER TUBE, TOP		2
5.	51722748	FEEDER TUBE, BOTTOM		2
6.	52704255	PIN-TYPE T .75X 1.88		2
7.	52722318	WELDMENT- AUGER MOUNT EZ 3000		1
8.	52722328	BOOM ASSEMBLY - STINGER EZ3000		1
9.	52722334	WELDMENT-2ND EXT BOOM EZ3000		1
10.	52722335	WELDMENT-1ST EXT BOOM EZ3000		1
11.	60030082	SHEAVE- 7.00 NYLON W/BEARING		2
12.	60030353	WEAR PAD-RND 2.00 DIA X 1.00 DIA X 1.00		1
13.	60030395	GUIDE- FEED TUBE		2
14.	60030396	WEAR PAD-RC NYL .81X4.00X 6.00		1
15.	60030397	WEAR PAD- EZ3000 STINGER		2
16.	60030398	WEAR PAD- EZ3000		1
17.	60030399	WEAR PAD-RC NYL .25X6.00X 9.00		2
18.	60030400	WEAR PAD-RC .31 X 6.00 X 6.00		1
19.	60030402	WEAR PAD-RC .31 X 6.00 X 8.00		1
20.	60030404	GUIDE- FEED TUBE		2
21.	60030410	WEAR PAD-INNER CYL EZ3000		1
22.	60030411	WEAR PAD 2.50 X 6.81 X 1.00 X .25		2
23.	60030415	WEAR PAD-RND 2.50 DIA X 1 DIA X .55 L		6
24.	60030416	WEAR PAD-RND 2.00 DIA X 1.25 DIA X 1.00		1
25.	60030417	WEAR PAD-RC 0.25 X 7.00 X 8.00		1
26.	60030418	WEAR PAD-RC 0.25 X 7.00 X 6.00		1
27.	60134503	LOCK PLATE-WEAR PAD		2
28.	60135201	SHIM-1.00X2.00 X 0.015THK		AS REQ'D
29.	60135202	SHIM-1.00X2.00 X 0.031THK		AS REQ'D
30.	60135203	SHIM-1.00X3.00 X 0.015THK		AS REQ'D
31.	60135204	SHIM-1.00X3.00 X 0.031THK		AS REQ'D
32.	71413607	TUBE-HYD EZ3000 FEED TUBE		2
33.	70034382	CAP-GREASE PRO20 GC-RED	#1	2
34.	72053508	ZERK-NPT .12	#1	2
35.	72060009	CAP SCREW .25-20X 2.25 HH GR5 Z	#1	2
36.	72060046	CAP SCREW .38-16X 1.00 HH GR5 Z	#1	4
37.	72060050	CAP SCREW .38-16X 2.00 HH GR5 Z	#1	8
38.	72060052	CAP SCREW .38-16X 2.50 HH GR5 Z	#1	2
39.	72060090	CAP SCREW .50-13X .88 HH GR5 Z	#1	2
40.	72060652	SCREW-MACH .25-20X 1.50 RDH	#1	2
41.	72060707	CAP SCREW .25-20X 1.00 SH PLAIN	#1	4
42.	72060759	CAP SCREW .38-16X 1.75 SH PLAIN	#1	4

99904780 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
43.	72062103	NUT .38-16 HEX NYLOCK	#1	1
44.	72062104	NUT .25-20 HEX NYLOCK	#1	2
45.	72063001	WASHER .25 FLAT	#1	4
46.	72063003	WASHER .38 FLAT	#1	15
47.	72063005	WASHER .50 FLAT	#1	2
48.	72063030	MACHY BUSHING .75X10 GA NR	#1	2
49.	72063049	WASHER .25 LOCK	#1	4
50.	72063051	WASHER .38 LOCK	#1	18
51.	72063053	WASHER .50 LOCK	#1	2
52.	72066145	HAIR PIN .19 ZINC	#1	2
53.	51398869	HOSE-FJ .25 X 8.12 (4-4) 100R17	#2	1
54.	51398870	HOSE-FJ .25 X 9.50 (4-4) 100R17	#2	1
55.	72053758	ELBOW-M STR/90/M JIC 4 4	#2	2
56.	72532351	ADAPTER-M STR/M JIC 4 4	#2	4
57.	72533376	ADAPTER-M FACE/M STR 4 4	#2	4
REV. A 20100212				

Cylinder, 2nd Extension (51722432)



NOTES:

1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

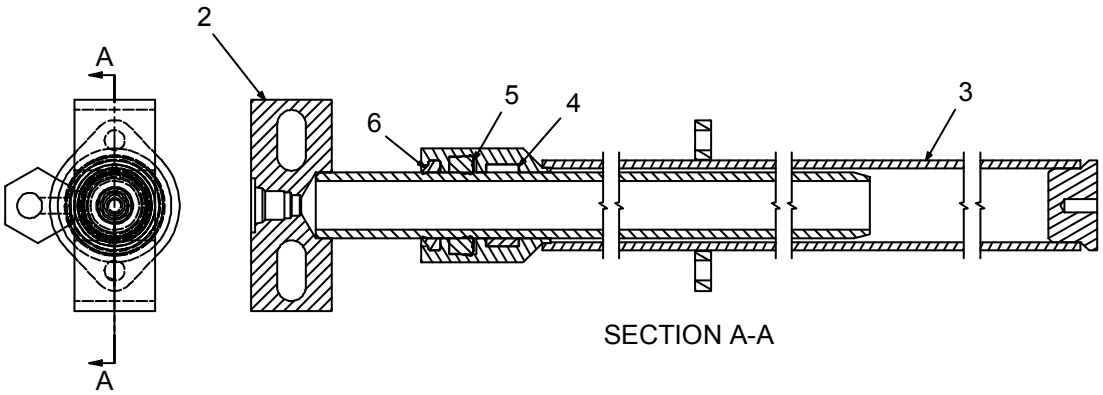
2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.

3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

4 PISTON TORQUE (ITEM #5) - 500-530 FT-LB; HEAD GLAND TORQUE (ITEM #9) - 250 FT-LB.

51722432 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	91744176	SEAL KIT - IMT 2.50B X 1.75R 1.50 STGR		1
2.	52722434	ROD ASM-1.75 DIA X 76.88 LG 1.50 S		1
3.	52722433	CASE ASM-2.50 BORE X 71.57LG		1
4.	60125699	PIN - LOCK TUBE 0.19 OD X 0.065 WALL	#1	1
5.	60134013	PISTON-2.50 BORE X 1.50 STGR		1
6.	60133610	STOP TUBE-1.75 ROD X 3.57LG 4 HOLE		1
7.	6A025017	WAFER LOCK-IMT 1.75	#1	1
8.	6C300017	STOP TUBE-1.75 ROD X 3.00 LONG		2
9.	6HD25017	HEAD-2.50 BORE X 1.75 ROD (DUCTILE IRON)		1
10.	72062305	COLLAR-LOCK 1.50-12 THREADED 1-PC		1
11.	7Q072222	O RING 1.50X 1.75X .12 70	#1	1
12.	7Q072228	O RING 2.25X 2.50X .12 70	#1	1
13.	7Q10P228	BACKUP RING-2.25 ID X 2.50 OD	#1	1
14.	7R14P017	ROD WIPER - TYPE D 1.75 ROD	#1	1
15.	7R546017	U-CUP SEAL (LSU) 1.50 ID X 2.00D	#1	1
16.	7T2N4025	WEAR RING-PISTON 2.50 ODX .50W	#1	2
17.	7T2NX420	WEAR RING-ROD 1.75 ID X 0.50 W	#1	2
18.	7T66P250	PISTON SEAL-DYNAMIC 2.50in CP	#1	1
20.	73054999	VALVE-CBAL SUN01 CBBC-LHN		1
NEW 20100215				

Top Feeder Tube Assembly (51722747)

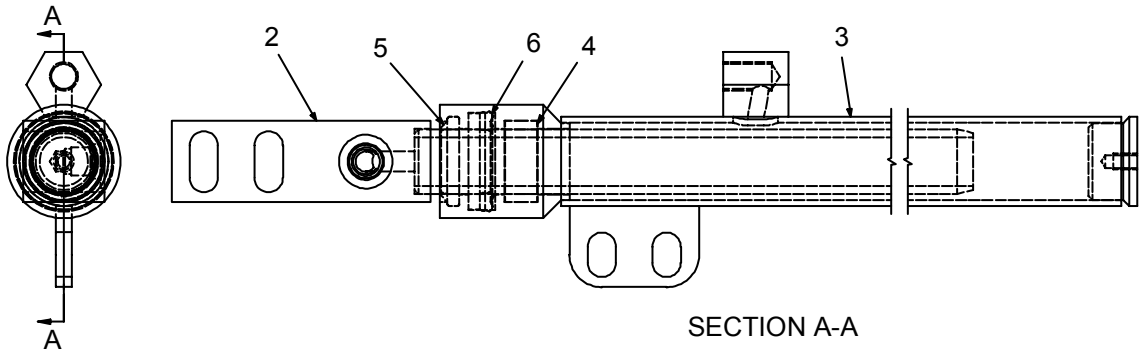


NOTES:

1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE TUBE IS DISASSEMBLED.

51722747 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51744195	SEAL KIT-IMT 1.14B 1.00R		1
2.	52722326	ROD WLDMT- UPPER FEED TUBE		1
3.	52722665	CASE WLDMT- UPPER FEED TUBE		1
4.	76398867	WEAR RING-ROD 1.00 ID X .50W	#1	1
5.	76534650	U-CUP LOADED 1.00X1.25X.250 B	#1	1
6.	76398868	ROD WIPER-TYPE D 1.00 ROD	#1	1
NEW 20100215				

Bottom Feeder Tube Assembly (51722748)



SECTION A-A

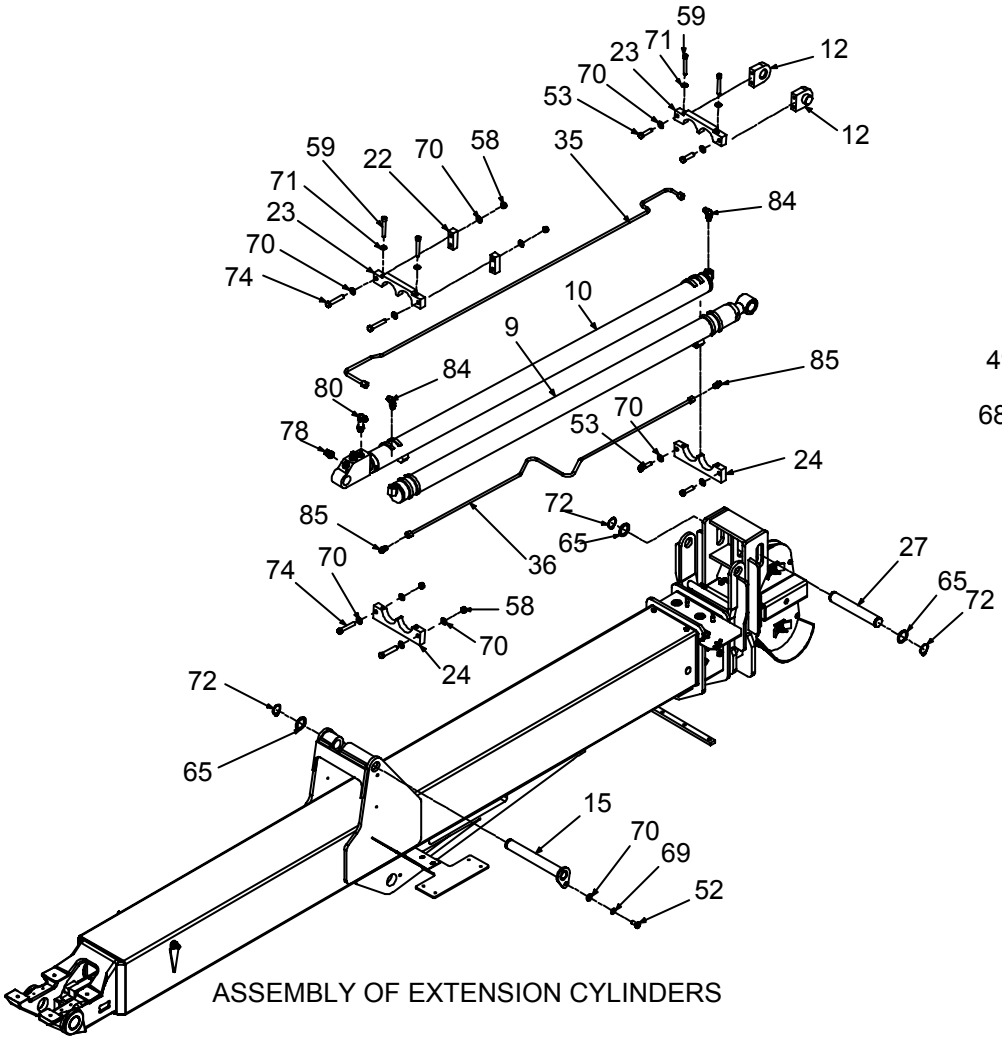
NOTES:

1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE TUBE IS DISASSEMBLED.

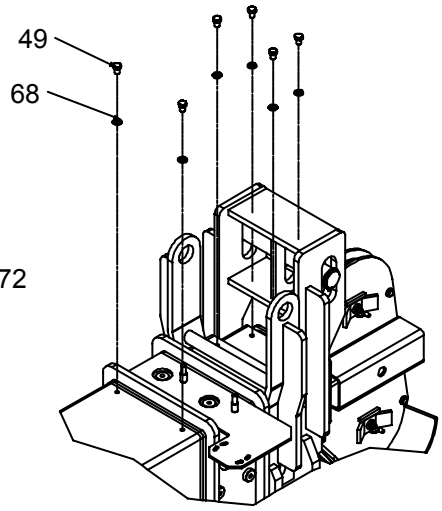
51722748 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51744195	SEAL KIT-IMT 1.14B 1.00R		1
2.	52722325	ROD WLDMT-LOWER FEED TUBE		1
3.	52722664	CASE WLDMT- LOWER FEED TUBE EZ3000		1
4.	76398867	WEAR RING-ROD 1.00 ID X .50W	#1	1
5.	76398868	ROD WIPER-TYPE D 1.00 ROD	#1	1
6.	76534650	U-CUP LOADED 1.00X1.25X.250 B	#1	1
NEW 20100215				

Crane & Winch Assembly (99904781)

EXTENSION CYLINDER ASSEMBLY (99904781-2)



ASSEMBLY OF EXTENSION CYLINDERS

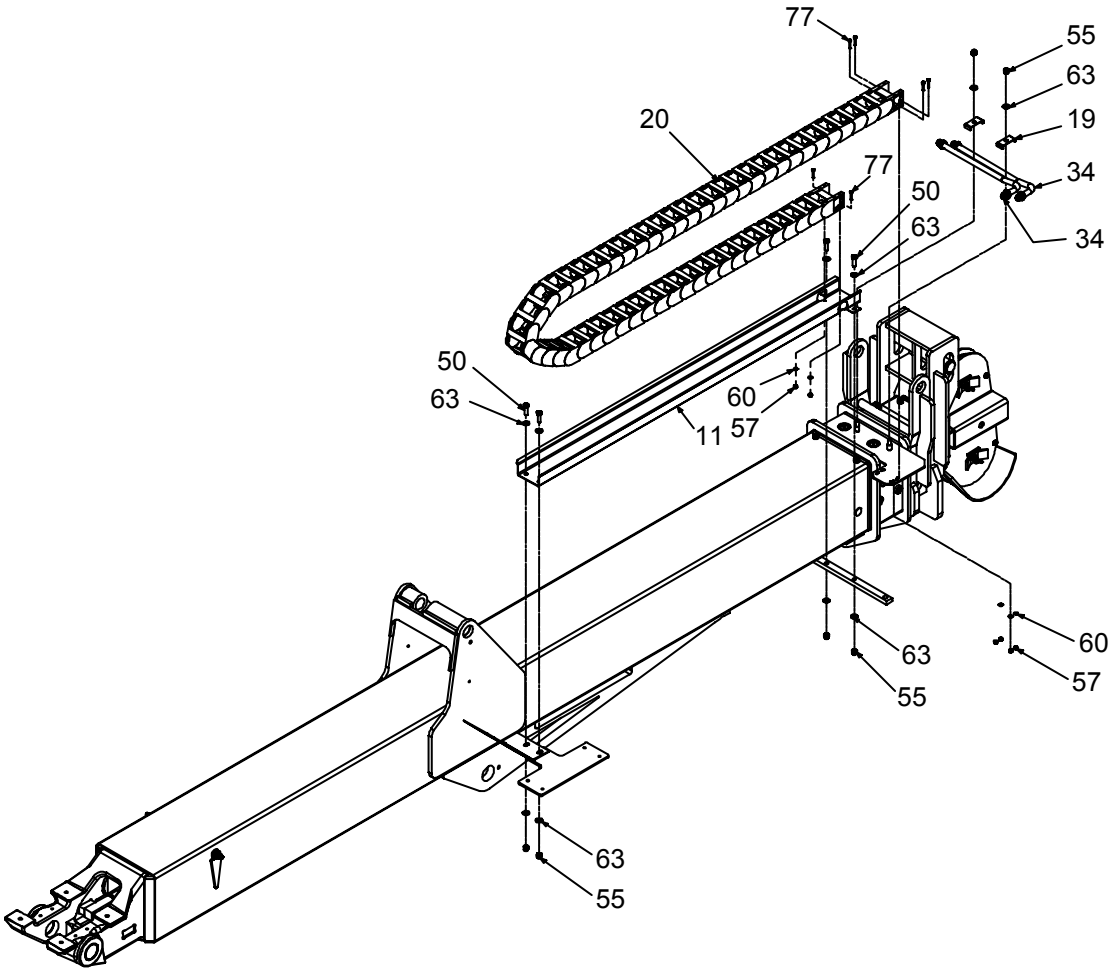


WEAR PAD BOLTS

EXTENSION CYLINDER ASSEMBLY (99904781-2)				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722742	KIT-HARDWARE CRANE & WINCH ASSEMBLY		1
2.	51722744	KIT-HYDRAULIC ASSEMBLY EZ3000		1
9.	51722423	CYLINDER-2.50/1.75 56.12S 75.31CC C		1
10.	51722424	CYLINDER-2.50/1.75 56.12S 77.88CC C		1
12.	52722016	WELDMENT- TRUNNION		2
15.	52722361	PIN TYPE-MM 1.50 X 11.88(11.19)		1
22.	60133733	CLAMP PLATE-1.00X 1.00X 3.00		2
23.	60133759	CLAMP- PLATE TOP DUAL CYLINDER		2
24.	60133760	CLAMP- PLATE BOTTOM DUAL CYLINDER		2

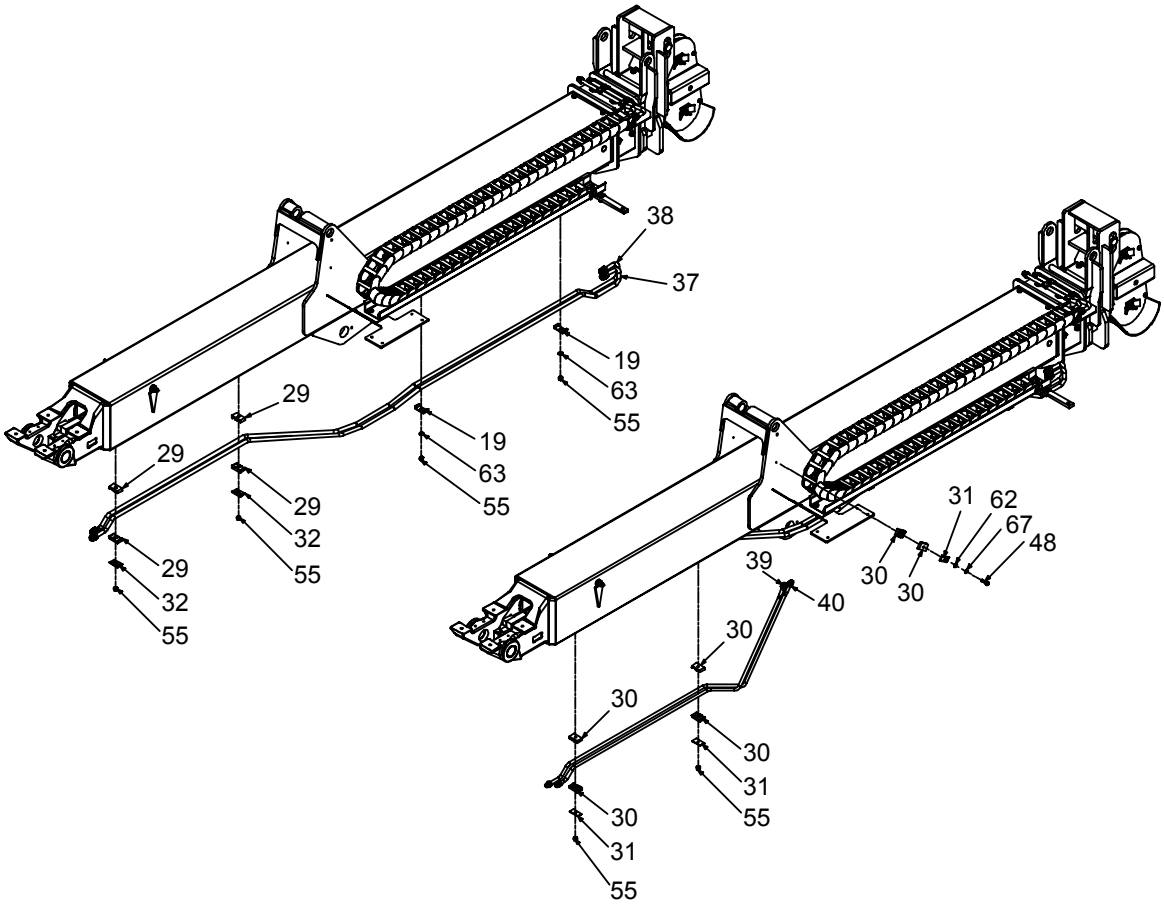
EXTENSION CYLINDER ASSEMBLY (99904781-2)				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
27.	60134504	PIN-TYPE A 1.50X 9.88 (9.31)		1
35.	71413280	TUBE ASSEMBLY-HYDRAULIC .38 X 71.19LG ORFS/ORF		1
36.	71413281	TUBE ASSEMBLY-HYDRAULIC .38 X 57.11LG ORFS/ORF		1
49.	72060042	CAP SCREW .38-16X .50 HH GR5 Z	#1	6
52.	72060091	CAP SCREW .50-13X 1.00 HH GR5 Z	#1	3
53.	72060118	CAP SCREW .50-13X 2.00 HH GR8 Z	#1	4
58.	72062107	NUT .50-13 HEX CENTER LOCK Z	#1	4
59.	72062335	CAP SCREW .44-14X 3.00 SH GR8 Z	#1	4
65.	72063037	MACHY BUSHING 1.50X10 GA NR	#1	5
68.	72063051	WASHER .38 LOCK	#1	6
69.	72063053	WASHER .50 LOCK	#1	8
71.	72063269	WASHER .44 N FLAT H ASTM F436	#1	4
72.	72066132	RETAINING RING-EXT 1.50 HD	#1	5
74.	72601369	CAP SCREW .50-13X 3.00 HH GR8 Z	#1	4
78.	72053763	ELBOW-M STR/90/M JIC 8 8	#2	1
79.	72532359	ADAPTER-M STR/M JIC 10 8	#2	2
84.	72533163	ELBOW-M STR/90/M FACE 6 6	#2	2
85.	72533186	ADAPTER-M FACE/M STR 6 6	#2	2
REV. B 20100215				

ENERGY CHAIN ASSEMBLY (99904781-3)



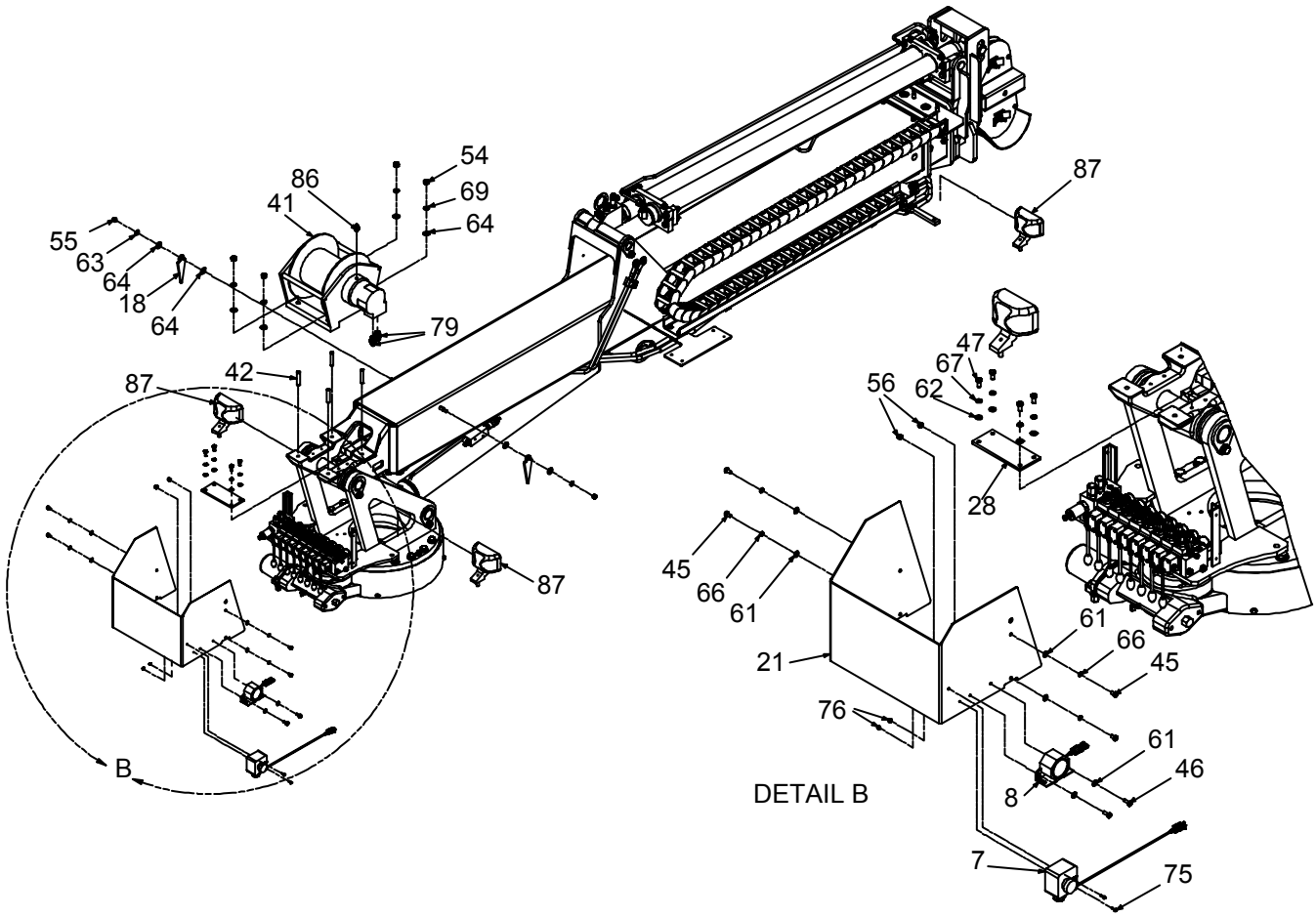
ENERGY CHAIN ASSEMBLY (99904781-3) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722742	KIT-HARDWARE CRANE & WINCH ASSEMBLY		1
11.	52722832	ENERGY CHAIN TRAY WELDMENT		1
19.	60126637	TUBING CLAMP 0.63 X 2.27		4
20.	60126691	ENERGY CHAIN ASSEMBLY		1
34.	71411213	TUBE ASSEMBLY- 0.063 OD X 0.063W X 14.12LG MJIC-MJIC		2
50.	72060047	CAP SCREW .38-16X 1.25 HH GR5 Z	#1	4
55.	72062103	NUT .38-16 HEX NYLOCK	#1	14
57.	72062106	NUT 10-24 HEX NYLOCK	#1	6
60.	72063000	WASHER .19 W FLAT ANSI B27.2Z	#1	6
63.	72063003	WASHER .38 FLAT	#1	14
77.	72601744	CAP SCREW #10-24X1.00 SH	#1	6
REV. B 20100215				

HYDRAULIC TUBE ASSEMBLY (99904781-4)



HYDRAULIC TUBE ASSEMBLY (99904781-4) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722742	KIT-HARDWARE CRANE & WINCH ASSEMBLY		1
19.	60126637	TUBING CLAMP 0.63 X 2.27		4
29.	70034402	CLAMP-TWIN TUBE .62 OD		4
30.	70034432	CLAMP-TWIN TUBE .50 OD		6
31.	70143829	COVER PLT-PAR29 CPT2		3
32.	70144819	COVER PLT-PAR29 CPT3		2
37.	71413634	TUBE ASSEMBLY- 0.63 OD X 0.063W X 119.10		1
38.	71413635	TUBE ASSEMBLY- 0.63 OD X 0.063W X 118.85		1
39.	71413636	TUBE ASSEMBLY- 0.50 OD X 0.063W X 51.16		1
40.	71413637	TUBE ASSEMBLY- 0.50 OD X 0.063W X 53.81		1
48.	72060026	CAP SCREW .31-18X 1.25 HH GR5 Z	#1	1
55.	72062103	NUT .38-16 HEX NYLOCK	#1	14
62.	72063002	WASHER .31 FLAT	#1	5
63.	72063003	WASHER .38 FLAT	#1	14
67.	72063050	WASHER .31 LOCK	#1	5
REV. B 20100215				

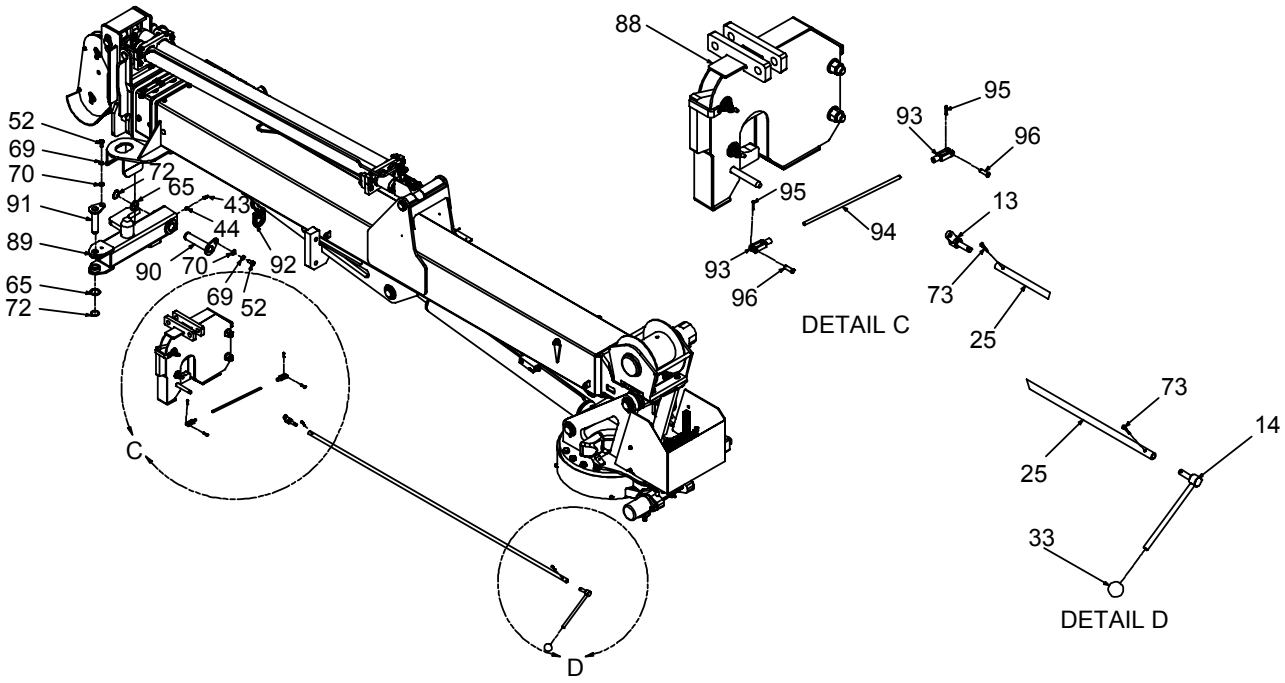
WINCH & VALVEBANK COVER ASSEMBLY (99904781-5)



WINCH & VALVEBANK COVER ASSEMBLY (99904781-5) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722742	KIT-HARDWARE CRANE & WINCH ASSEMBLY		1
2.	51722744	KIT-HYDRAULIC ASSEMBLY EZ3000		1
3.	51722753	LIGHT KIT		1
7.	51719813	CABLE ASSEMBLY-E STOP SWITCH		1
8.	51719826	CABLE ASSEMBLY-HOP ALARM		1
18.	60105544	PLATE-ANGLE PLASTIC		2
21.	60128886	COVER VALVE BANK		1
28.	60135219	PLATE- .50X 3.00X 7.00		1
41.	71570935	WINCH		1
42.	72601871	STUD .50-13X 2.00 NC GR5 STL		4
45.	72060000	CAP SCREW .25-20X .50 HH GR5 Z	#1	4
46.	72060002	CAP SCREW .25-20X .75 HH GR5 Z	#1	2
47.	72060023	CAP SCREW .31-18X .75 HH GR5 Z	#1	4
54.	72062004	NUT .50-13 HEX	#1	4
55.	72062103	NUT .38-16 HEX NYLOCK	#1	14
56.	72062104	NUT .25-20 HEX NYLOCK	#1	2
61.	72063001	WASHER .25 FLAT	#1	6

WINCH & VALVEBANK COVER ASSEMBLY (99904781-5) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
62.	72063002	WASHER .31 FLAT	#1	5
63.	72063003	WASHER .38 FLAT	#1	14
64.	72063005	WASHER .50 FLAT	#1	9
66.	72063049	WASHER .25 LOCK	#1	4
67.	72063050	WASHER .31 LOCK	#1	5
69.	72063053	WASHER .50 LOCK	#1	8
75.	72601725	SCREW-MACH # 6-32 .50 RDH PHLPS	#1	2
76.	72601726	NUT 6-32 HEX NYLOCK	#1	2
79.	72532359	ADAPTER-M STR/M JIC 10 8	#2	2
86.	72533490	ADAPTER-M BSPP/M JIC 4 4	#2	1
87.	77040424	FLOODLIGHT-COMPOSITE WORK LAMP TOP MTG	#3	3
REV. B 20100215				

AUGER ASSEMBLY (99904781-6)



AUGER ASSEMBLY (99904781-6) PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722742	KIT-HARDWARE CRANE & WINCH ASSEMBLY		1
4.	51722754	SHIPPING KIT		1
13.	52722321	WELDMENT- AUGER LATCH PIVOT		1
14.	52722322	WELDMENT-AUGER RELEASE HANDLE		1
25.	60134453	PIPE-AUGER RELEASE		1
33.	71039096	KNOB-CONTROL 1.50 BLK		1
43.	70034382	CAP-GREASE	#1	1
44.	72053507	ZERK-STR THD .25-28	#1	1
52.	72060091	CAP SCREW .50-13X 1.00 HH GR5 Z	#1	3
65.	72063037	MACHY BUSHING 1.50X10 GA NR	#1	5
69.	72063053	WASHER .50 LOCK	#1	8
70.	72063132	WASHER .50 FLAT ASTM F436	#1	15
72.	72066132	RETAINING RING-EXT 1.50 HD	#1	5
73.	72066192	COTTER PIN .19X1.00	#1	2
88.	51722366	DRAWING-AUGER RETAINER FRAME	#4	1
89.	52722319	WELDMENT- AUGER SWING	#4	1
90.	52722363	PIN-TYPE MM 1.50X 6.56 (5.94)	#4	1
91.	52722364	PIN-TYPE MM 1.25X 5.69 (4.94)	#4	1
92.	70732871	HOOK-SWIVEL 3T W/LATCH	#4	1
93.	71058002	CLEVIS W/ .31-24 THD	#4	2
94.	71413839	THREADED ROD-0.31-24 X 13.45 LG	#4	1
95.	72066168	COTTER PIN .09X .75 ZINC	#4	2
96.	72066338	PIN-CLEVIS .31X 1.0 ZINC	#4	2
REV. B 20100215				

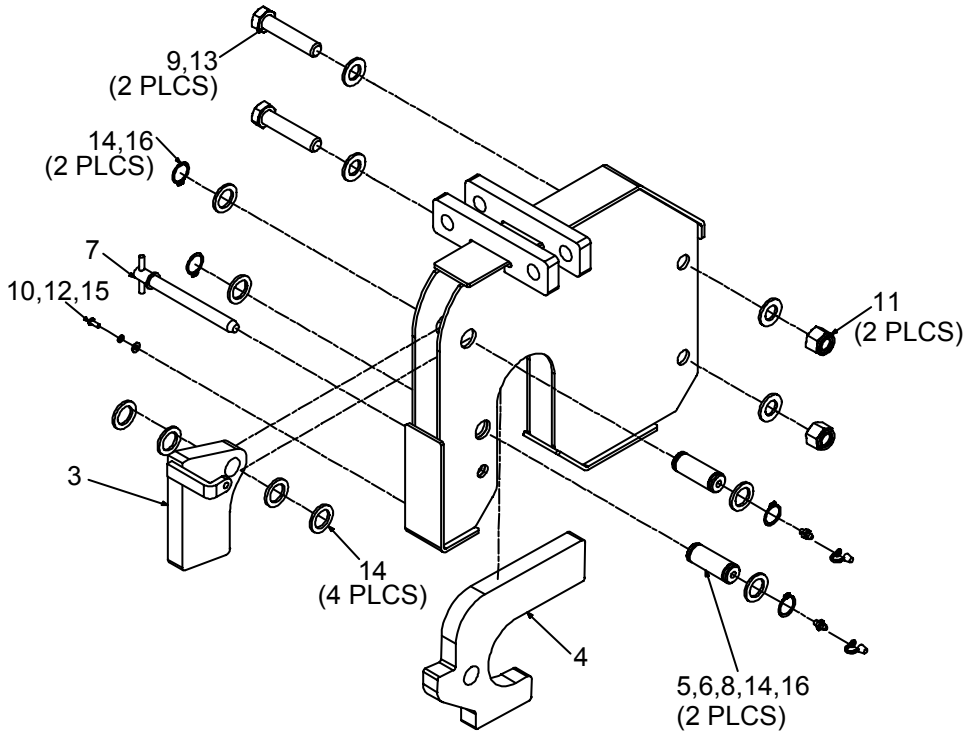
99904781 Parts List, Complete

99904781 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722742	KIT-HARDWARE CRANE & WINCH ASSEMBLY		1
2.	51722744	KIT-HYDRAULIC ASSEMBLY EZ3000		1
3.	51722753	LIGHT KIT		1
4.	51722754	SHIPPING KIT		1
5.	99904779	DRAWING-BASE AND MAST ASSEMBLY		1
6.	99904780	DRAWING-BOOM ASSEMBLY		1
7.	51719813	CABLE ASSEMBLY-E STOP SWITCH		1
8.	51719826	CABLE ASSEMBLY-HOP ALARM		1
9.	51722423	CYLINDER-2.50/1.75 56.12S 75.31CC C		1
10.	51722424	CYLINDER-2.50/1.75 56.12S 77.88CC C		1
11.	52722832	ENERGY CHAIN TRAY WELDMENT		1
12.	52722016	WELDMENT- TRUNNION		2
13.	52722321	WELDMENT- AUGER LATCH PIVOT		1
14.	52722322	WELDMENT-AUGER RELEASE HANDLE		1
15.	52722361	PIN TYPE-MM 1.50 X 11.88(11.19)		1
16.	60030401	WEAR PAD-RC .31 X 6.00 X 7.00		1
17.	60030415	WEAR PAD-RND 2.50 DIA X 1.00 DIA X .55L		2
18.	60105544	PLATE-ANGLE PLASTIC		2
19.	60126637	TUBING CLAMP 0.63 X 2.27		4
20.	60126691	ENERGY CHAIN ASSEMBLY		1
21.	60128886	COVER VALVE BANK		1
22.	60133733	CLAMP PLATE-1.00X 1.00X 3.00		2
23.	60133759	CLAMP- PLATE TOP DUAL CYLINDER		2
24.	60133760	CLAMP- PLATE BOTTOM DUAL CYLINDER		2
25.	60134453	PIPE-AUGER RELEASE		1
26.	60134502	LOCK PLATE-WEAR PAD		1
27.	60134504	PIN-TYPE A 1.50X 9.88 (9.31)		1
28.	60135219	PLATE- .50X 3.00X 7.00		1
29.	70034402	CLAMP-TWIN TUBE .62 OD		4
30.	70034432	CLAMP-TWIN TUBE .50 OD		6
31.	70143829	COVER PLATE		3
32.	70144819	COVER PLATE		2
33.	71039096	KNOB-CONTROL 1.50 BLK		1
34.	71411213	TUBE ASSEMBLY- 0.063 OD X 0.063W X 14.12LG MJIC-MJIC		2
35.	71413280	TUBE ASSEMBLY-HYDRAULIC .38 X 71.19LG ORFS/ORF		1
36.	71413281	TUBE ASSEMBLY-HYDRAULIC .38 X 57.11LG ORFS/ORF		1
37.	71413634	TUBE ASSEMBLY- 0.63 OD X 0.063W X 119.10		1
38.	71413635	TUBE ASSEMBLY- 0.63 OD X 0.063W X 118.85		1
39.	71413636	TUBE ASSEMBLY- 0.50 OD X 0.063W X 51.16		1

99904781 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
40.	71413637	TUBE ASSEMBLY- 0.50 OD X 0.063W X 53.81		1
41.	71570935	WINCH		1
42.	72601871	STUD .50-13X 2.00 NC GR5 STL		4
43.	70034382	CAP-GREASE	#1	1
44.	72053507	ZERK-STR THD .25-28	#1	1
45.	72060000	CAP SCREW .25-20X .50 HH GR5 Z	#1	4
46.	72060002	CAP SCREW .25-20X .75 HH GR5 Z	#1	2
47.	72060023	CAP SCREW .31-18X .75 HH GR5 Z	#1	4
48.	72060026	CAP SCREW .31-18X 1.25 HH GR5 Z	#1	1
49.	72060042	CAP SCREW .38-16X .50 HH GR5 Z	#1	6
50.	72060047	CAP SCREW .38-16X 1.25 HH GR5 Z	#1	4
51.	72060090	CAP SCREW .50-13X .88 HH GR5 Z	#1	1
52.	72060091	CAP SCREW .50-13X 1.00 HH GR5 Z	#1	3
53.	72060118	CAP SCREW .50-13X 2.00 HH GR8 Z	#1	4
54.	72062004	NUT .50-13 HEX	#1	4
55.	72062103	NUT .38-16 HEX NYLOCK	#1	14
56.	72062104	NUT .25-20 HEX NYLOCK	#1	2
57.	72062106	NUT 10-24 HEX NYLOCK	#1	6
58.	72062107	NUT .50-13 HEX CENTER LOCK Z	#1	4
59.	72062335	CAP SCREW .44-14X 3.00 SH GR8 Z	#1	4
60.	72063000	WASHER .19 W FLAT ANSI B27.2Z	#1	6
61.	72063001	WASHER .25 FLAT	#1	6
62.	72063002	WASHER .31 FLAT	#1	5
63.	72063003	WASHER .38 FLAT	#1	14
64.	72063005	WASHER .50 FLAT	#1	9
65.	72063037	MACHY BUSHING 1.50X10 GA NR	#1	5
66.	72063049	WASHER .25 LOCK	#1	4
67.	72063050	WASHER .31 LOCK	#1	5
68.	72063051	WASHER .38 LOCK	#1	6
69.	72063053	WASHER .50 LOCK	#1	8
70.	72063132	WASHER .50 FLAT ASTM F436	#1	15
71.	72063269	WASHER .44 N FLAT H ASTM F436	#1	4
72.	72066132	RETAINING RING-EXT 1.50 HD	#1	5
73.	72066192	COTTER PIN .19X1.00	#1	2
74.	72601369	CAP SCREW .50-13X 3.00 HH GR8 Z	#1	4
75.	72601725	SCREW-MACH # 6-32 .50 RDH PHLPS	#1	2
76.	72601726	NUT 6-32 HEX NYLOCK	#1	2
77.	72601744	CAP SCREW #10-24X1.00 SH	#1	6
78.	72053763	ELBOW-M STR/90/M JIC 8 8	#2	1
79.	72532359	ADAPTER-M STR/M JIC 10 8	#2	2
80.	72532666	ELBOW-M STR/90/M JIC XLG 8 8	#2	1
81.	72532674	CAP-JIC STL 4 (.44 THD)	#2	7
82.	72532675	CAP-JIC STL 8 (.75 THD)	#2	2
83.	72532738	CAP-JIC STL 6 (.56 THD)	#2	2
84.	72533163	ELBOW-M STR/90/M FACE 6 6	#2	2
85.	72533186	ADAPTER-M FACE/M STR 6 6	#2	2

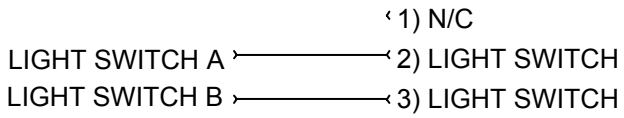
99904781 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
86.	72533490	ADAPTER-M BSPP/M JIC 4 4	#2	1
87.	77040424	FLOODLIGHT-COMPOSITE WORK LAMP TOP MTG	#3	3
88.	51722366	DRAWING-AUGER RETAINER FRAME	#4	1
89.	52722319	WELDMENT- AUGER SWING	#4	1
90.	52722363	PIN-TYPE MM 1.50X 6.56 (5.94)	#4	1
91.	52722364	PIN-TYPE MM 1.25X 5.69 (4.94)	#4	1
92.	70732871	HOOK-SWIVEL 3T W/LATCH	#4	1
93.	71058002	CLEVIS W/ .31-24 THD	#4	2
94.	71413839	THREADED ROD-0.31-24 X 13.45 LG	#4	1
95.	72066168	COTTER PIN .09X .75 ZINC	#4	2
96.	72066338	PIN-CLEVIS .31X 1.0 ZINC	#4	2
97.	70034459	TIES-PLASTIC		2
REV. B 20100301				

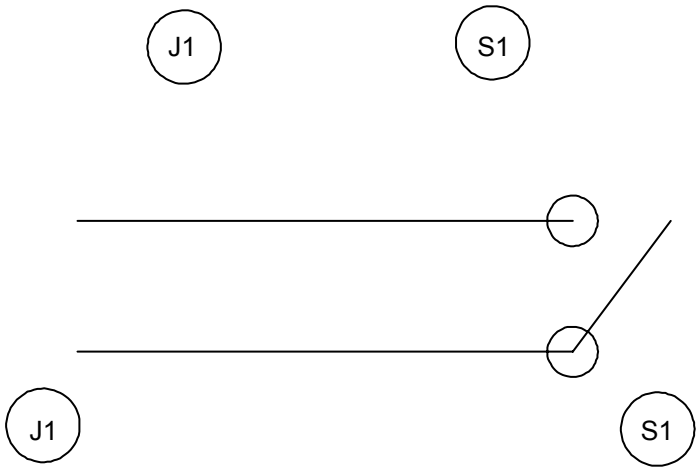
Auger Retainer Frame (51722366)



51722366 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51719555	KIT-HARDWARE AUGER RETAINER FRAME		1
2.	52719019	RETAINER FRAME WELDMENT		1
3.	52722320	LATCH RELEASE- AUGER		1
4.	60126635	YOKE/CLASP 10.25 x 7.88		1
5.	60126636	PIN Ø1.0 x 2.62		2
6.	70034382	CAP-GREASE		2
7.	71731799	PIN-T QUICK RELEASE .62D/5.0 CRIT		1
8.	72053508	ZERK-NPT .12		2
9.	72060188	CAP SCREW .75-10X 3.50 HH GR5 Z	1	2
10.	72060622	SCREW-MACH #10-32X .50 RDH	1	1
11.	72062114	NUT .75-10 HEX NYLOCK	1	2
12.	72063000	WASHER .19 W FLAT ANSI B27.2Z	1	1
13.	72063008	WASHER .75 FLAT	1	4
14.	72063034	MACHY BUSHING 1.00X10 GA NR	1	8
15.	72063047	WASHER #10 LOCK	1	1
16.	72066125	RETAINING RING-EXT 1.00 HD	1	4
NEW 20100224				

Light Switch Harness (77441179)



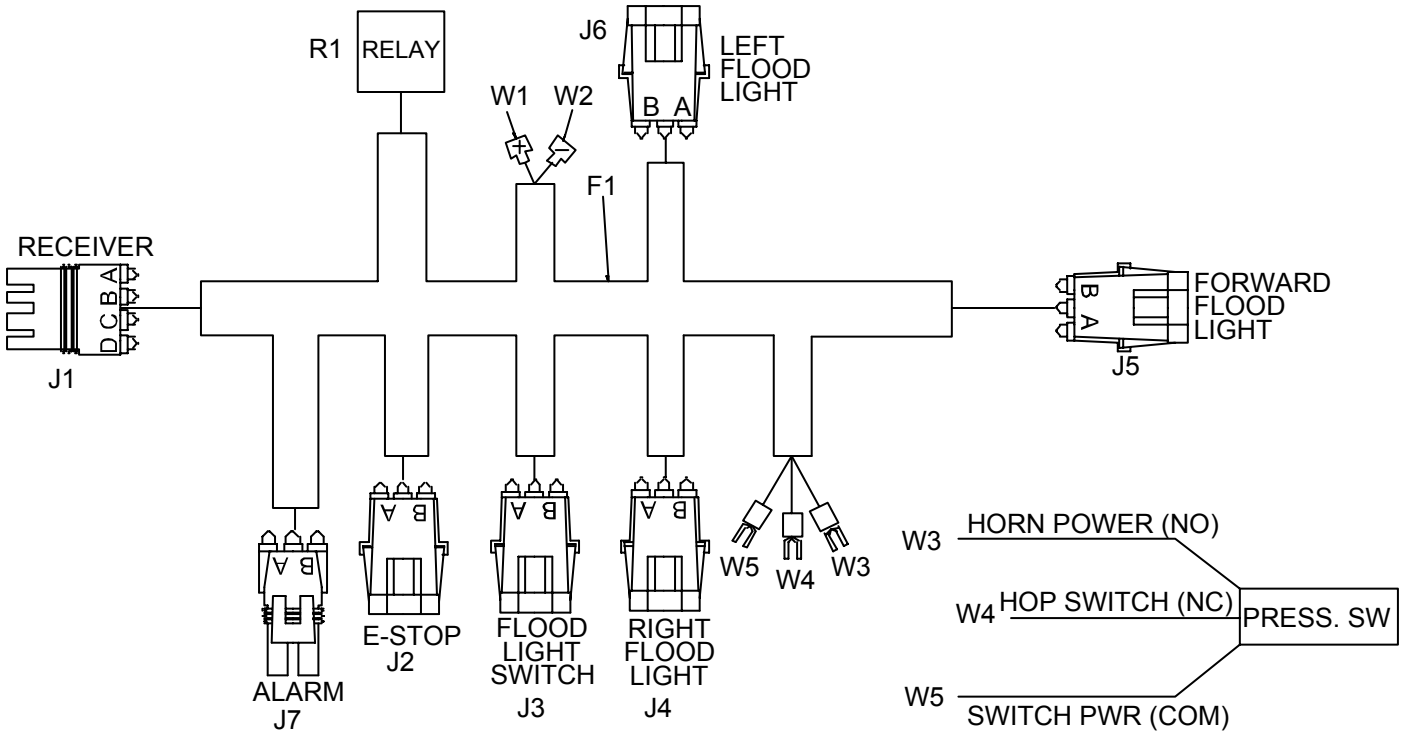


LOCATOR CODE: J1				PACKARD:12015792		
TERM: 12124580				SEAL: 12015323		
CAVITY	COLOR	GA.	PRINT LABEL	TO	CON-SPLC	CAVITY
A	RED	16	LIGHT SWITCH	TO	S1	2
B	RED	16	LIGHT SWITCH	TO	S1	3
LOCATOR CODE: S1				EATON SWITCH: 8510K9		
CAVITY	COLOR	GA.	PRINT LABEL	TO	CON-SPLC	CAVITY
2	RED	16	LIGHT SWITCH	TO	J1	A
3	RED	16	LIGHT SWITCH	TO	J1	B

NEW 20050719

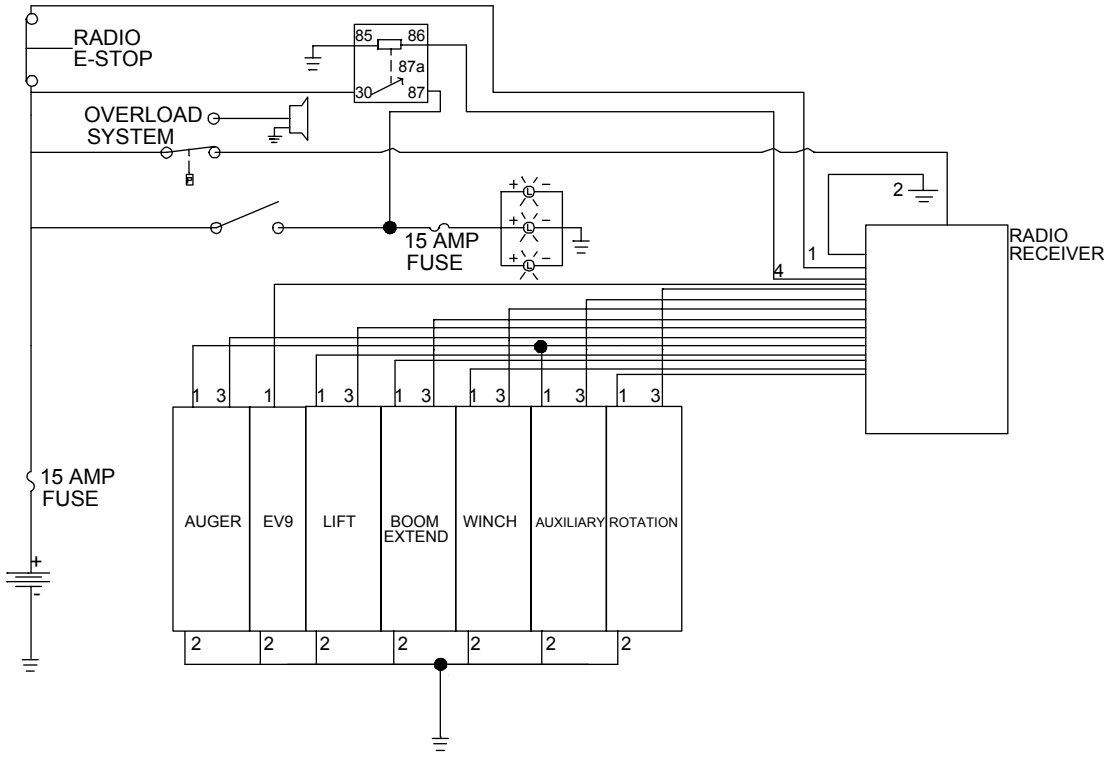
Wiring Harness (77441356)

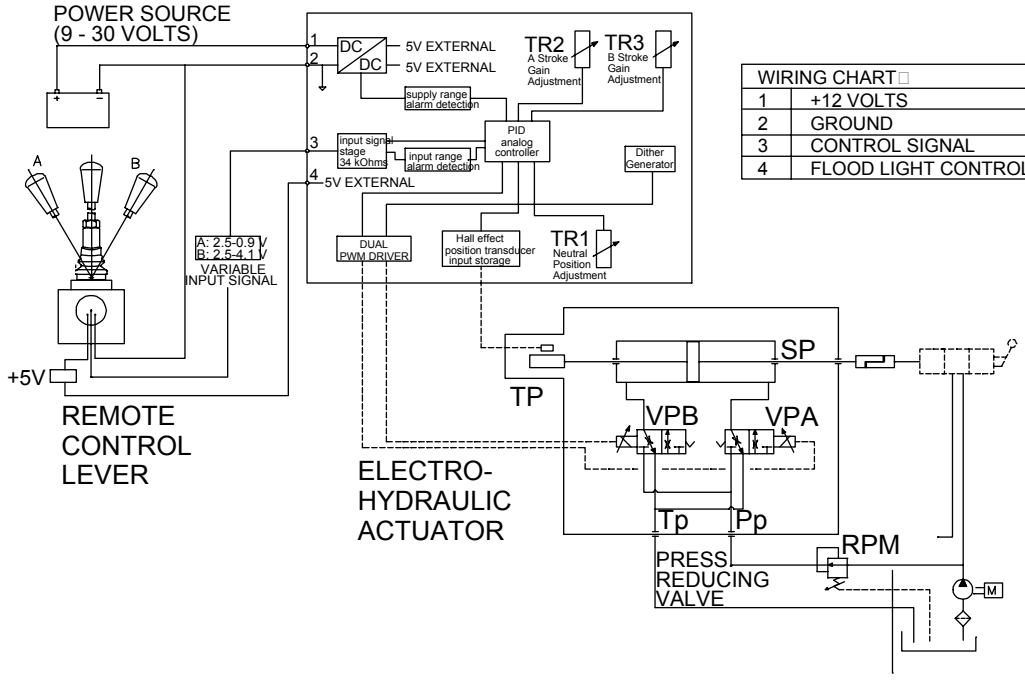
77441356-1 DRAWING



REV. B 20100301

77441356-2 SCHEMATIC

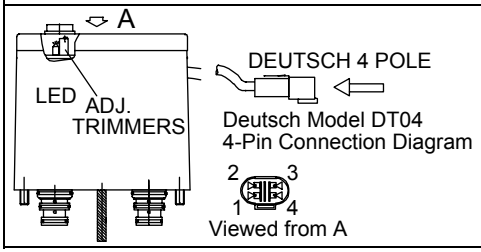




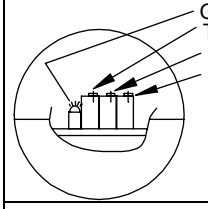
WIRING CHART	
1	+12 VOLTS
2	GROUND
3	CONTROL SIGNAL
4	FLOOD LIGHT CONTROLS

Mod. MLT/FD4 Proportional Actuator System - Electro-hydraulic proportional actuators with closed-loop position control of the valve spool stroke and integrated electronics.

ELECTRICAL SPECIFICATIONS	
Supply voltage	9-30 VDC
Max. current draw	750 mA/section
Max. power absorption	8 watt
Input impedance	40 KOhm
Voltage control range	Neutral position - 2.5 volt ± 0.1 volts at rest (0.5 volts total dead zone)
	Netraul to max. stroke A: 4.1 volts (Do not exceed 4.75 volts)
	Neutral to max. stroke B: 0.9 volts (Do not drop below 0.25 volts)
10 Amp fast type fuse must be used (for pin #1 power source) WHERE CONTROL DOES NOT PROVIDE FOR PROTECTION	
HYDRAULIC SPECIFICATIONS	
Max. supply pressure	35 bar (508 psi)
Min.supply pressure	12 bar (175 psi)
Max. back pressure	1.5 bar (22 psi)
Pilot flow requirement	0.2 lpm (0.05 gpm)
Oil temperature range	-20 to +95º C
Oil viscosity range	3 cSt - 650 cSt
Filtration:	18/15 (ISO 4406)

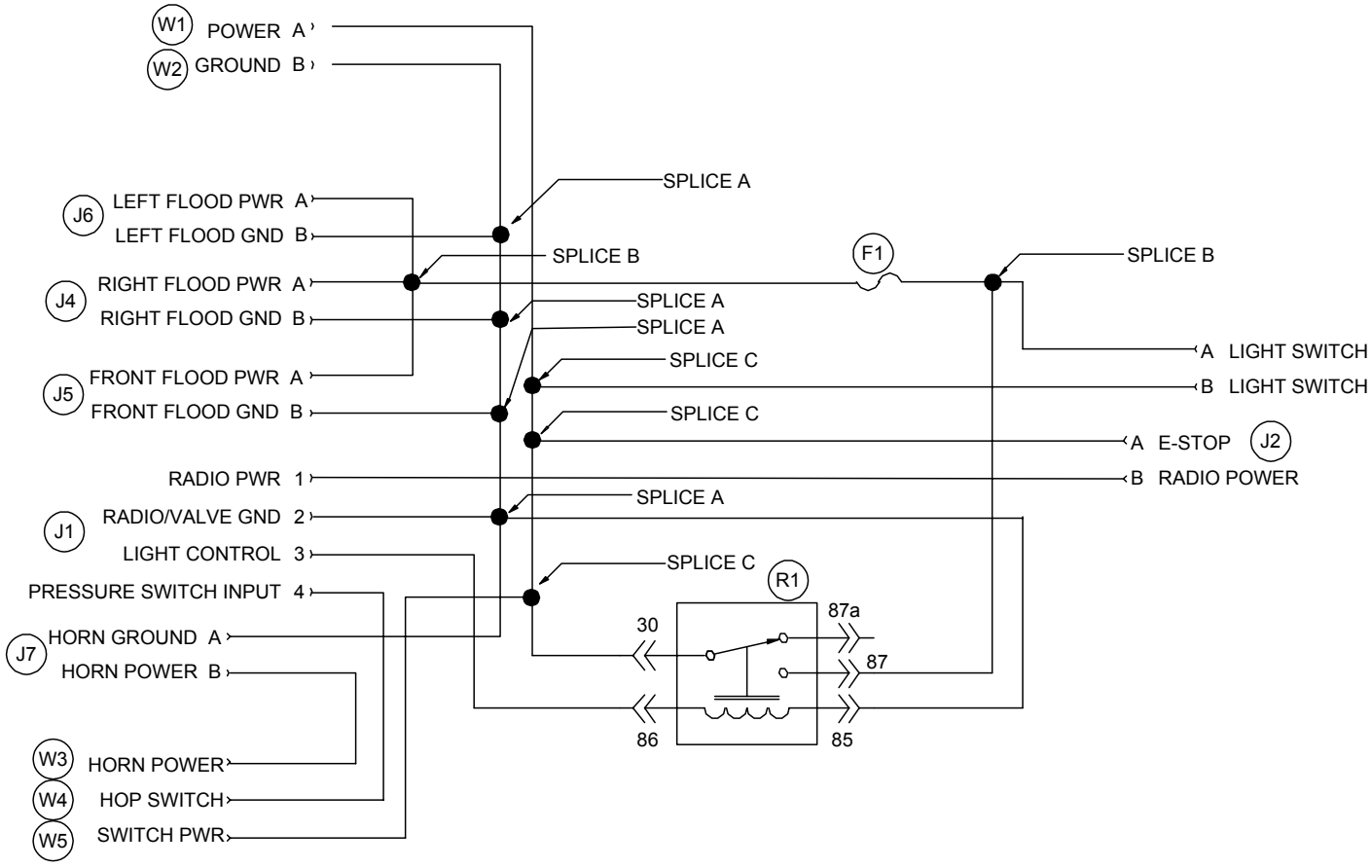


BLUE	1 (+) / Power Source
YELLOW / GREEN	2 (-) / Power Source
BROWN	3 Control Signal
BLACK	4 +5 volt voltage supply to the remote control potentiometer

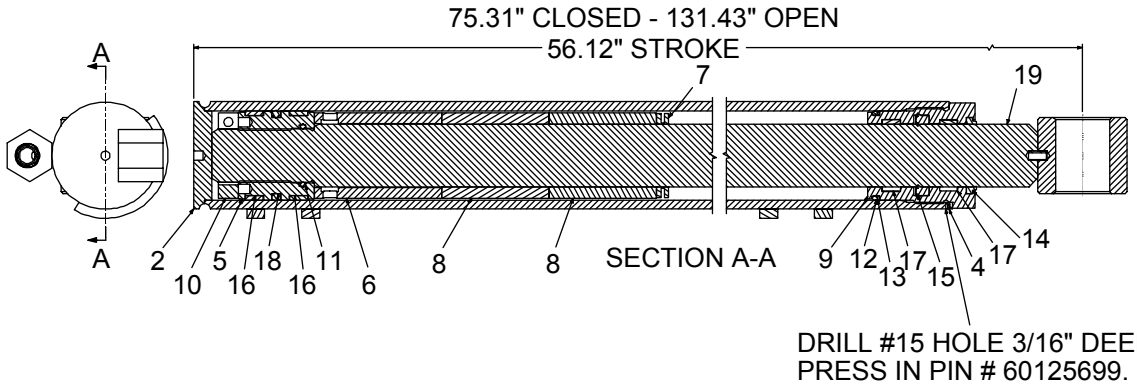


REMOTE CONTROL POTENTIOMETER CHARACTERISTIC		
	Configuration	3-pin
	Ohmic resistance	1k/ 5K /10 Kohm
	Electrical power rating	0.25 watt
	Output voltage	95-98% of Vin

77441356-3 WIRING



Cylinder, Extension (51722423)



NOTES:

1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.

3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

4 PISTON TORQUE (ITEM #5) - 500-530 FT-LB; HEAD GLAND TORQUE (ITEM #9) - 250 FT-LB.

51722423 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	91744176	SEAL KIT - IMT 2.50B X 1.75R 1.50 STGR		1
2.	52722427	CASE ASM-2.50 BORE X 69.01LG		1
4.	60125699	PIN - LOCK TUBE 0.19 OD X 0.065 WALL		1
5.	60134013	PISTON-2.50 BORE X 1.50 STGR		1
6.	60133610	STOP TUBE-1.75 ROD X 3.57LG 4 HOLE		1
7.	6A025017	WAFER LOCK-IMT 1.75	#1	1
8.	6C300017	STOP TUBE-1.75 ROD X 3.00 LONG		2
9.	6HD25017	HEAD-2.50 BORE X 1.75 ROD (DUCTILE IRON)		1
10.	72062305	COLLAR-LOCK 1.50-12 THREADED 1-PC		1
11.	7Q072222	O RING 1.50X 1.75X .12 70	#1	1
12.	7Q072228	O RING 2.25X 2.50X .12 70	#1	1
13.	7Q10P228	BACKUP RING-2.25 ID X 2.50 OD	#1	1
14.	7R14P017	ROD WIPER - TYPE D 1.75 ROD	#1	1
15.	7R546017	U-CUP SEAL (LSU) 1.50 ID X 2.00D	#1	1
16.	7T2N4025	WEAR RING-PISTON 2.50 ODX .50W	#1	2
17.	7T2NX420	WEAR RING-ROD 1.75 ID X 0.50 W	#1	2
18.	7T66P250	PISTON SEAL-DYNAMIC 2.50in CP	#1	1
19.	52722426	ROD ASM-1.75 DIA X 74.81 LG 1.50 STGR		1
NEW 20100215				

Cylinder, Extension (51722424)

NOTES:

1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.

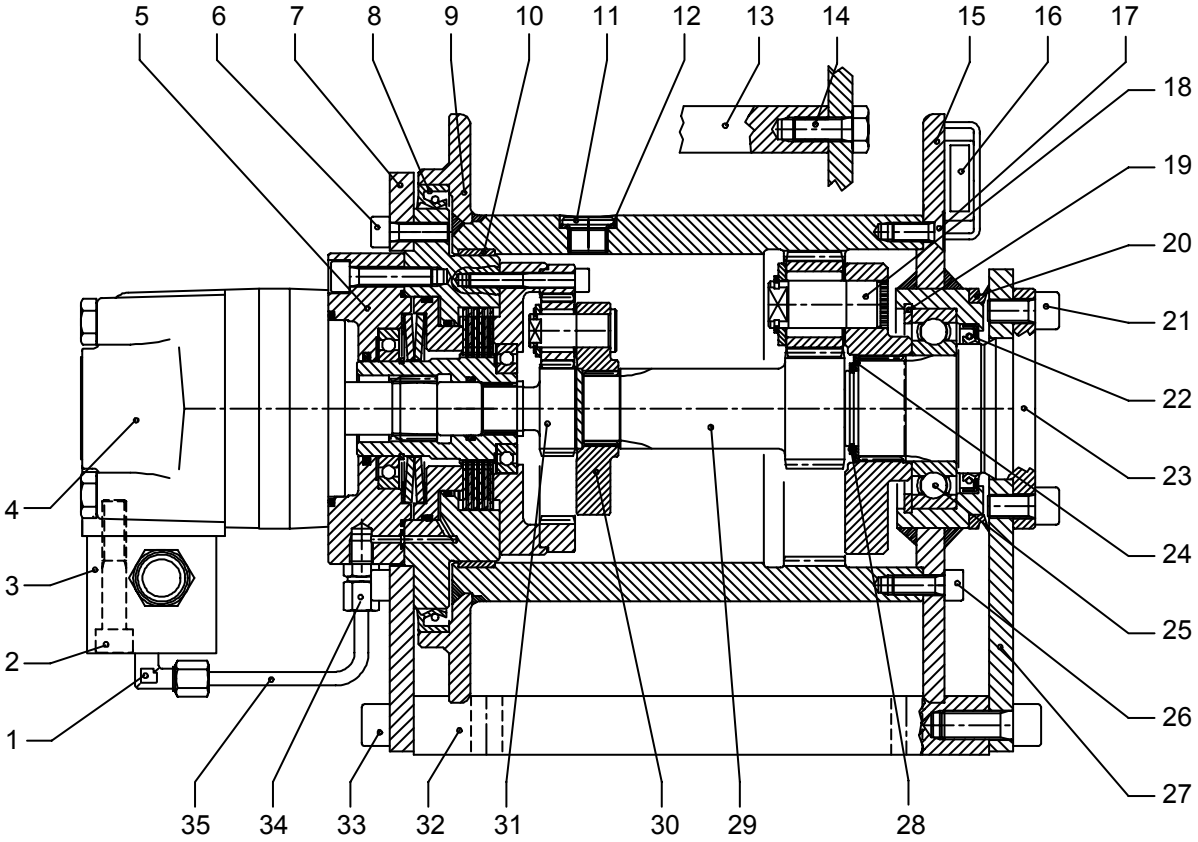
2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.

3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

4 PISTON TORQUE (ITEM #5) - 500-530 FT-LB; HEAD GLAND TORQUE (ITEM #9) - 250 FT-LB.

51722424 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	91744176	SEAL KIT - IMT 2.50B X 1.75R 1.50 STGR		1
2.	52722428	ROD ASM-1.75 DIA X 74.81 LG 1.50 S		1
3.	52722427	CASE ASM-2.50 BORE X 69.01LG		1
4.	60125699	PIN - LOCK TUBE 0.19 OD X 0.065 WALL	#1	1
5.	60134013	PISTON-2.50 BORE X 1.50 STGR		1
6.	60133610	STOP TUBE-1.75 ROD X 3.57LG 4 HOLE		1
7.	6A025017	WAFER LOCK-IMT 1.75	#1	1
8.	6C300017	STOP TUBE-1.75 ROD X 3.00 LONG		2
9.	6HD25017	HEAD-2.50 BORE X 1.75 ROD (DUCTILE IRON)		1
10.	72062305	COLLAR-LOCK 1.50-12 THREADED 1-PC		1
11.	7Q072222	O RING 1.50X 1.75X .12 70	#1	1
12.	7Q072228	O RING 2.25X 2.50X .12 70	#1	1
13.	7Q10P228	BACKUP RING-2.25 ID X 2.50 OD	#1	1
14.	7R14P017	ROD WIPER - TYPE D 1.75 ROD	#1	1
15.	7R546017	U-CUP SEAL (LSU) 1.50 ID X 2.00D	#1	1
16.	7T2N4025	WEAR RING-PISTON 2.50 ODX .50W	#1	2
17.	7T2NX420	WEAR RING-ROD 1.75 ID X 0.50 W	#1	2
18.	7T66P250	PISTON SEAL-DYNAMIC 2.50in CP	#1	1
19.	7PNPXT02	PLUG-PIPE SOC HD TAPED .12		1
20.	73054999	VALVE-CBAL		1
NEW 20100215				

Winch Assembly (71570935)

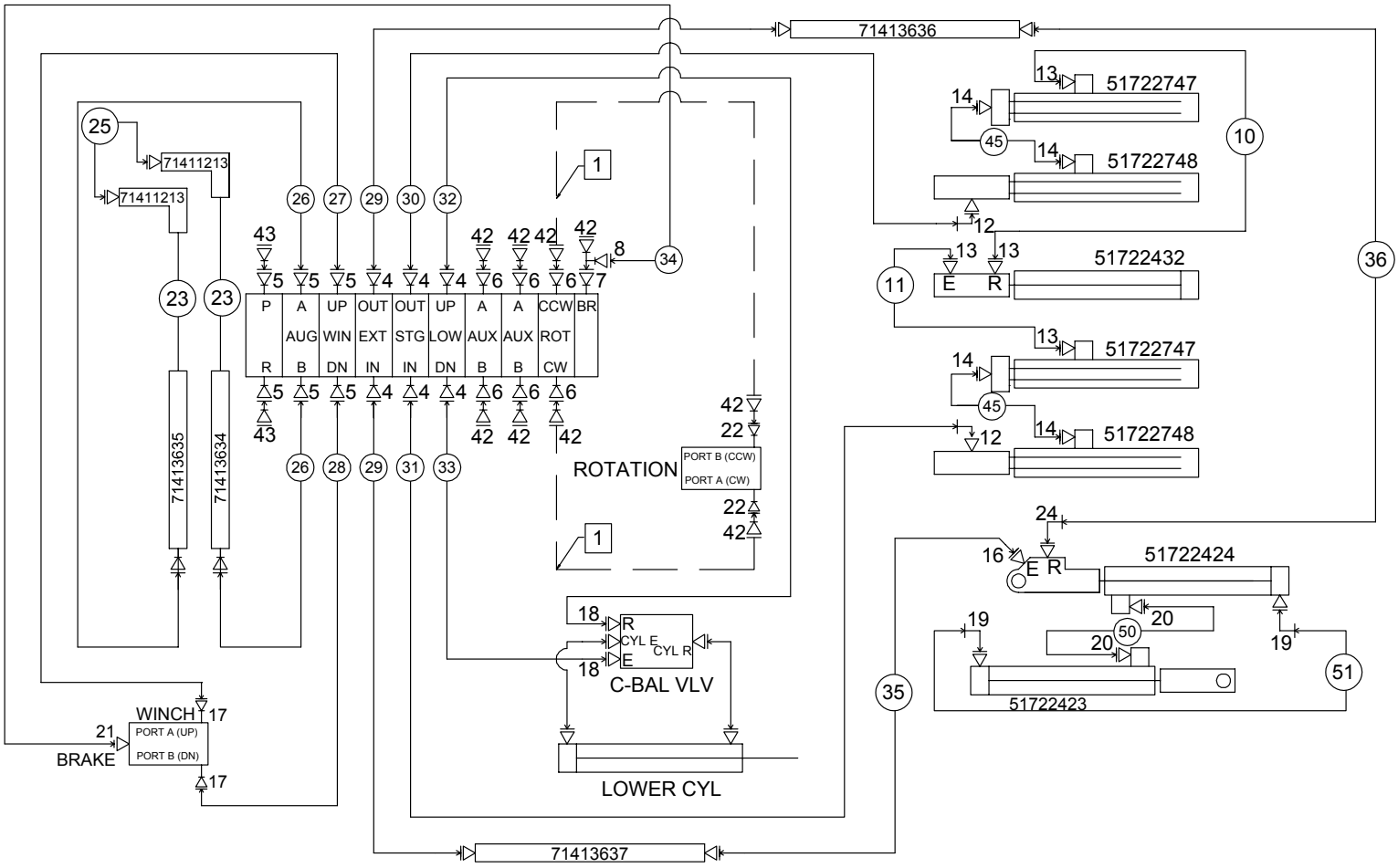


71570935 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.		CONNECTION, 90º CONICAL	1
2.		CAPSCREW, SOCKET HEAD	2
3.	73540308	VALVE ASSEMBLY, DUAL COUNTERBALANCE	1
4.	73511107	MOTOR, HYDRAULIC	1
5.	73511163	BRAKE UNIT	1
6.		CAPSCREW, SOCKET HEAD	8
7.		MOTOR SIDE SUPPORT	1
8.	73534535	OIL RETAINER SEAL	1
9.		WINCH DRUM	1
10.		GUIDE BUSHING	1
11.		PLUG	2
12.		WASHER, COPPER	2
13.		CROSS MEMBER	2
14.		HEX SCREW	4
15.		SIDE FLANGE (GEAR SIDE)	1
16.		THIMBLE	1
18.		REDUCTION GEAR UNIT	1
19.		RETAINING RING	1
20.		SEAL	1
21.		SOCKET HEAD CAP SCREW	8

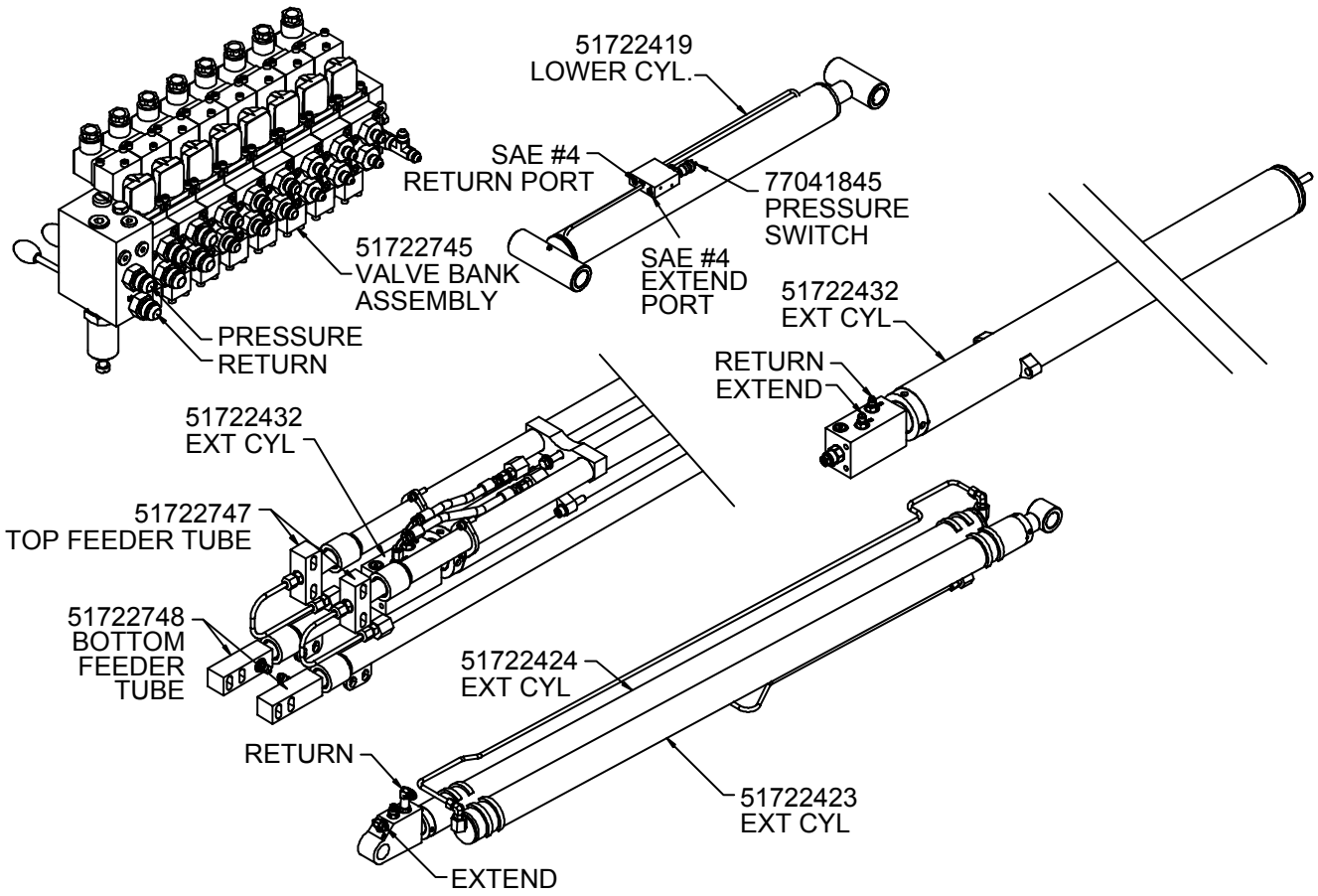
71570935 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
22.		OIL RETAINER SEAL	1
23.		ANTI-ROTATION FLANGE	1
24.		SHIM RING	2
25.	73534536	BALL BEARING	1
26.		CAPSCREW, SOCKET HEAD	6
27.		GEAR SIDE SUPPORT	1
28.		RETAINING RING	1
29.		SUN GEAR	1
30.		REDUCTION GEAR UNIT	1
31.		SUN GEAR	1
32.		FASTENING SURFACE PLATE	2
33.		CAPSCREW, SOCKET HEAD	8
34.		STRAIGHT PIPE FITTING	1
35.		BRAKE PIPE	1
REV. 20100215			

Hydraulic Installation (99904827)

HYDRAULIC SCHEMATIC (99904827-2)



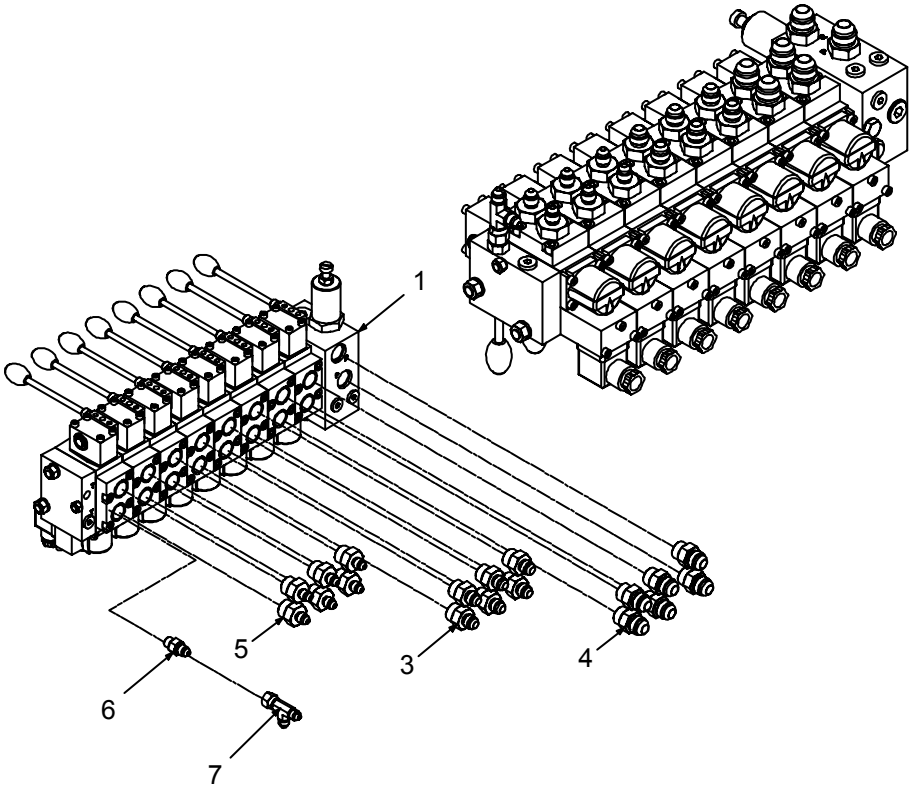
HYDRAULIC COMPONENTS (99904827-3)



99904827 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51722745	VALVE BANK ASSEMBLY, 8-SECTION		1
2.	70734456	VALVE BANK-HAWE	#1	1REF
3.	51722746	HYDRAULIC KIT, VALVE BANK	#1	1REF
4.	72532356	ADAPTER-MSTR/MJIC 8 G	#1	6REF
5.	72532358	ADAPTER-MSTR/MJIC 8 8	#1	6REF
6.	72532792	ADAPTER-MSTR/MJIC 8 4	#1	6REF
7.	72534712	ADAPTER-MJIC/MBSPP 4 2	#1	1REF
8.	72532981	TEE-SWIVEL NUT RUN JIC 4	#1	1REF
9.	51722743	HYDRAULIC KIT-FEEDER TUBE		1
10.	51398869	HOSE-FJ .25 X 8.12 (4-4) 100R17	#9	1REF
11.	51398870	HOSE-FJ .25 X 9.50 (4-4) 100R17	#9	1REF
12.	72053758	ELBOW-MSTR/90/MJIC 4 4	#9	2REF
13.	72532351	ADAPTER-MSTR/MJIC 4 4	#9	4REF
14.	72533376	ADAPTER-MFACE/MSTR 4 4	#9	4REF
15.	51722744	KIT-HYDRAULIC ASSEMBLY		1
16.	72053763	ELBOW-MSTR/90/MJIC 8 8	#15	1REF

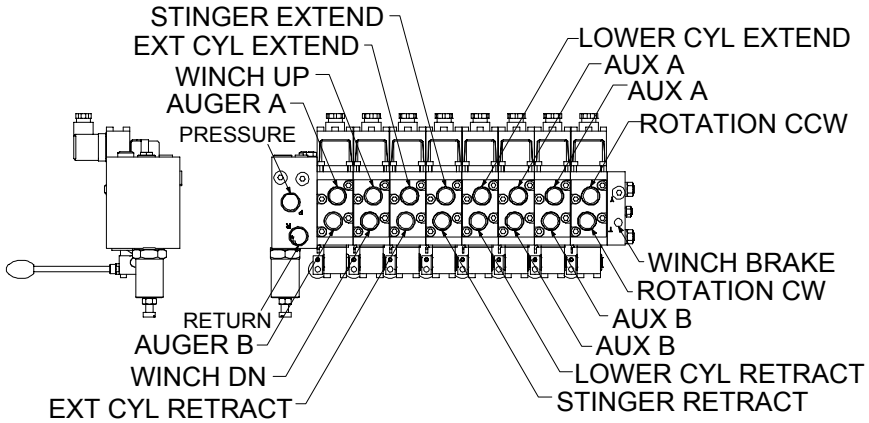
99904827 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
17.	72532359	ADAPTER-MSTR/MJIC 10 8	#15	2REF
18.	72532775	ADAPTER-MSTR/MJIC 4 6	#15	2REF
19.	72533163	ELBOW-MSTR/90/MFACE 6 6	#15	2REF
20.	72533186	ADAPTER-MFACE/MSTR 6 6	#15	2REF
21.	72533490	ADAPTER-MJIC/MBSPP 4 4	#15	1REF
22.	72533613	ADAPTER-MSTR/MJIC 10 6	#15	2REF
23.	51396739	HOSE-FF .50X126 (8-8) 100R17	#15	2REF
24.	72532666	ELBOW-MSTR/90/MJIC XLG 8 8	#15	1REF
25.	51395728	HOSE-JJ .50X17.5 (8-8) 100R17	#15	1REF
26.	51398907	HOSE-FF .50X32 (8-8) 100R17	#15	2REF
27.	51397506	HOSE-FJ .50 X 37.5 (8-8) 100R17	#15	1REF
28.	51396490	HOSE-FZ .50 X 38 (8-8) 100R17	#15	1REF
29.	51398908	HOSE-FF .38 X 31 (6-8) 100R17	#15	2REF
30.	51398909	HOSE-FF .38 X 24.5 (6-6) 100R17	#15	1REF
31.	51398910	HOSE-FF .38 X 25.5 (6-6) 100R17	#15	1REF
32.	51398913	HOSE-FJ .38 X 36 (6-6) 100R17	#15	1REF
33.	51398915	HOSE-FZ .38 X 37.5 (6-6) 100R17	#15	1REF
34.	51398912	HOSE-FJ .25X34.5 (4-4) 100R17	#15	1REF
35.	51395201	HOSE-FF .38X15 (8-8) 100R17	#15	1REF
36.	51395238	HOSE-FF .38 X 16 (8-8) 100R17	#15	1REF
37.	60350066	SLEEVE-HOSE 1.63" D X 19"	#15	1REF
38.	60350071	SLEEVE-HOSE 1.63" D X 20"	#15	1REF
39.	60350075	SLEEVE-HOSE 1.63" D X 24"	#15	1REF
40.	60350084	SLEEVE-HOSE 1.63" D X 27"	#15	1REF
41.	60350162	SLEEVE-HOSE 1.63" D X 30"	#15	1REF
42.	72532674	CAP-JIC STL 4 (.44 THD)	#15	9REF
43.	72532675	CAP-JIC STL 8 (.75 THD)	#15	2REF
44.	71411213	TUBE-HYD EZ3000 FEED TUBE		2
45.	71413607	TUBE ASSEMBLY-14.12 LONG		2
46.	71413634	TUBE ASSEMBLY-120.3 LONG		1
47.	71413635	TUBE ASSEMBLY-121.3 LONG		1
48.	71413636	TUBE ASSEMBLY-51.16 LONG		1
49.	71413637	TUBE ASSEMBLY-53.81 LONG		1
50.	71413280	TUBE ASSEMBLY-HYD 71.19 LONG ORFS/ORF		1
51.	71413281	TUBE ASSEMBLY-HYD 57.11 LONG ORFS/ORF		1
NEW 20100215				

Valve Bank Assembly (51722745)

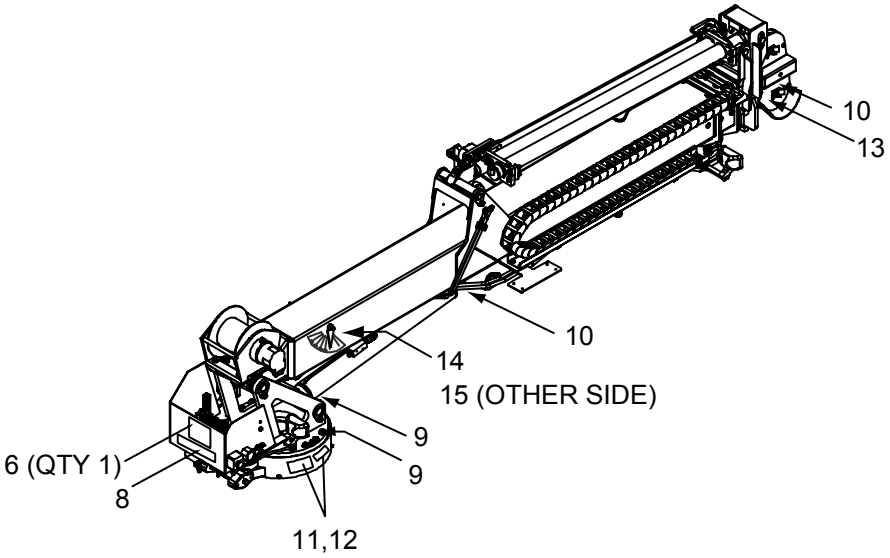


51722745 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	70734456	VALVE BANK	1
2.	51722746	HYDRAULIC KIT-HYD VALVEBANK	1
3.	72532356	ADPTR-M STR/M JIC 8 6	6
4.	72532358	ADPTR-M STR/M JIC 8 8	6
5.	72532792	ADPTR-M STR/M JIC 8 4	6
6.	72534712	ADPTR-M JIC/M BSPP 4 2	1
7.	72532981	TEE-SWVL NUT RUN JIC 4	1
REV. A 20100215			

Valve Bank (70734456)



EZ Hauler 3000 Decal Placement



DECAL KIT - EZ HAULER 3000				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	95722750	DECAL KIT-EZ HAULER 3000/5500		1
2.	95719347	DECAL KIT-TELE COMMON		1
3.	70392863	DECAL-DANGER HOISTING PERSONNEL	1	4
4.	70392864	DECAL-DANGER OUTRG STAND CLEAR	1	4
5.	70396614	DECAL-DANGER, CRANE SAFETY	1	1
6.	70398809	DECAL-CONTROLS	1	1
7.	70396748	DECAL-DANGER, ELECTROCUTION	1	4
8.	70398808	DECAL-CAPACITY CHART EZ3000		2
9.	70391612	DECAL-GREASE WEEKLY (LEFT)	2	AS NEEDED
10.	70391613	DECAL-GREASE WEEKLY (RIGHT)	2	AS NEEDED
11.	70392399	DECAL-LUBRICATE WORM	2	1
12.	70392524	DECAL-ROTATE CRANE WHILE GREAS	2	1
13.	70394443	DECAL-DANGER FREEFALLING BOOMS	2	1
14.	71391522	DECAL-ANGLE INDICATOR RH	2	1
15.	71391523	DECAL-ANGLE INDICATOR LH	2	1
16.	70392213	DECAL-CAUTION DONT WASH/WAX	2	1
20100219				

CHAPTER 4

Crane Reference

In This Chapter

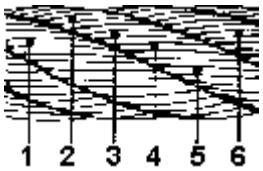
Wire Rope Inspection & Replacement 63
Hook Inspection.....64
Holding Valve Inspection.....65
Inspection Checklist 66
Deficiency / Recommendation / Corrective Action Report 70
Thread Torques.....72
Turntable Bearing Thread Tightening Sequence 74

Wire Rope Inspection & Replacement

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

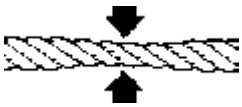
a Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.

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

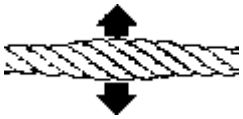


c When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.

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

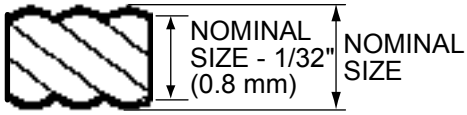


e When kinking, crushing, birdcaging or other distortion occurs.



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" (0.8 mm) 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).

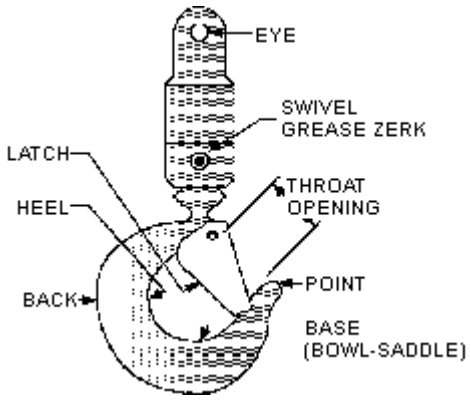
d LATCH

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 wired closed (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.

Inspection Checklist

NOTICE:

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

OWNER/COMPANY:	TYPE OF INSPECTION (circle one):			
CONTACT PERSON:	DAILY	MONTHLY	QUARTERLY	ANNUAL
CRANE MAKE & MODEL:	DATE INSPECTED:			
CRANE SERIAL NUMBER:	HOURMETER READING (if applicable):			
UNIT I.D. NUMBER:	INSPECTED BY (print):			
LOCATION OF UNIT:	SIGNATURE OF INSPECTOR:			

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

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

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

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

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

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

INSPECTION CHECKLIST STATUS KEY:	
S = Satisfactory	R = Recommendation (should be considered for corrective action)
X = Deficient (must be corrected prior to operation)	NA = Not Applicable

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
D	1	Labels	All load charts, safety & warning labels, and control labels are present and legible.	
D	2	Crane	Check all safety devices for proper operation.	
D	3	Controls	Control mechanisms for proper operation of all functions, leaks and cracks.	
D	4	Station	Control and operator's station for dirt, contamination by lubricants, and foreign material.	
D	5	Hydraulic System	Hydraulic system (hoses, tubes, fittings) for leakage and proper oil level.	
D	6	Hook	Presence and proper operation of hook safety latches.	
D	7	Rope	Proper reeving of wire rope on sheaves and winch drum.	
D	8	Pins	Proper engagement of all connecting pins and pin retaining devices.	
D	9	General	Overall observation of crane for damaged or missing parts, cracked welds, and 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 and determine cause and severity of hazard.	
D	11	Remote Ctrl	Operate remote control devices to check for proper operation.	
D	12	Electrical	Operate all lights, alarms, etc. to check for proper operation.	
D	13	Anti 2-Block	Operate anti 2-block device to check for proper operation.	
D	14		Other (Per customer requirements)	
D	15		Other (Per customer requirements)	
M	16	Daily	All daily inspection items.	
M	17	Cylinders	Visual inspection of cylinders for leakage at rod, fittings, and welds. Damage to rod and case.	
M	18	Valves	Holding valves for proper operation.	
M	19	Valves	Control valves for leaks at fittings and between stations.	
M	20	Valves	Control valve linkages for wear, smoothness of operation, and tightness of fasteners.	
M	21	General	Bent, broken, or significantly rusted/corroded parts.	
M	22	Electrical	Electrical systems for presence of dirt, moisture, and frayed wires.	
M	23	Structure	All structural members for damage.	
M	24	Welds	All welds for breaks and cracks.	
M	25	Pins	All pins for proper installation and condition.	
M	26	Hardware	All bolts, fasteners and retaining rings for tightness, wear and corrosion.	
M	27	Wear Pads	Presence of wear pads.	
M	28	Pump & Motor	Hydraulic pumps and motors for leakage at fittings, seals, and between sections.	
M	29	PTO	Transmission/PTO for leakage, abnormal vibration, and noise.	
M	30	Hyd Fluid	Quality of hydraulic fluid and presence of water.	

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
M	31	Hyd Lines	Hoses & tubes for leakage, abrasion damage, blistering, cracking, deterioration, fitting leakage, and secured properly.	
M	32	Hook	Load hook for abnormal throat distance, twist, wear, and cracks.	
M	33	Rope	Condition of load line.	
M	34	Manual	Presence of operator's manual with unit.	
M	35		Other	
Q	36	Daily	All daily inspection items.	
Q	37	Monthly	All monthly inspection items.	
Q	38	Extensions	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 and corrosion.	
	42		• Base	
	43		• Outrigger beams and 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, bearing, shafts, gears, rollers, and locking devices for wear, cracks, corrosion and distortion.	
	52		• Rotation bearing(s)	
	53		• Inner boom pivot pin(s) and retainer(s)	
	54		• Outer boom pivot pin(s) and retainer(s)	
	55		• Inner boom cylinder pin(s) and retainer(s)	
	56		• Outer boom cylinder pin(s) and retainer(s)	
	57		• Extension cylinder pin(s) and retainer(s)	
	58		• Jib boom pin(s) and retainer(s)	
	59		• Jib cylinder pin(s) and retainer(s)	
	60		• Jib extension cylinder pin(s) and retainer(s)	
	61		• Boom tip attachment	
	62		• Other	
Q	63	Hyd Lines	Hoses, fittings and tubing for proper routing, leakage, blistering, deformation and 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	
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	

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
	76		• Load holding valve(s)	
	77		• Outrigger or auxiliary control valve(s)	
	78		• Other valves (per customer requirements)	
	79		• Other (per customer requirements)	
Q	80	Cylinders	Hydraulic cylinders for drifting, rod seal leakage and leakage at welds. Rods for nicks, scores and dents. Case for damage. Case and rod ends for damage and 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 (per customer requirements)	
Q	89	Winch	Winch, sheaves and drums for damage, abnormal wear, abrasions and 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 pressure & relief valve settings.	
A	96	Valves	Safety valve calibration for correct pressure & 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 and cracks.	
A	99	Lubrication	Gear oil change in rotation drive system per maintenance schedule.	
A	100	Hardware	Check tightness of all fasteners and bolts, using torque specifications on component drawings or torque chart.	
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 (X) may constitute a hazard. Deficiency must be corrected and/or faulty parts replaced before resuming operation.

b Recommendations (R) should be considered for corrective actions. Corrective action for a particular recommendation depends on the facts in each situation.

c Corrective actions (CA), repairs, adjustments, parts replacement, etc. are to be performed by a qualified person in accordance with all manufacturer's recommendations, specifications and requirements.

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

X = DEFICIENCY R = RECOMMENDATION CA = CORRECTIVE ACTION TAKEN

X,R,CA	ITEM #	EXPLANATION	DATE CORRECTED

X,R,CA	ITEM #	EXPLANATION	DATE CORRECTED

Thread Torques

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 torque charts, the following rules should be observed.

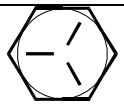
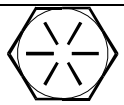
1 Bolt manufacturer's particular specifications should be consulted when provided.

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.

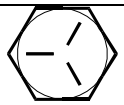
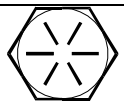
4 Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, collodial copper or white lead are applied, multiply the torque values in the charts by the factor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

FINE THREAD TORQUE CHART (ENGLISH)

TIGHTENING TORQUE					
		 SAE J429 GRADE 5		 SAE J429 GRADE 8	
SIZE (DIA-TPI)	BOLT DIA. (INCHES)	PLAIN (FT-LB)	PLATED (FT-LB)	PLAIN (FT-LB)	PLATED (FT-LB)
5/16-24	0.3125	19	14	27	20
3/8-24	0.375	35	26	49	35
7/16-20	0.4375	55	41	78	58
1/2-20	0.5	90	64	120	90
9/16-18	0.5625	120	90	170	130
5/8-18	0.625	170	130	240	180
3/4-16	0.75	300	225	420	315
7/8-11	0.875	445	325	670	500
1-12	1	645	485	995	745
1 1/8-12	1.125	890	670	1445	1085
1 1/4-12	1.25	1240	930	2010	1510
1 3/8-12	1.375	1675	1255	2710	2035
1 1/2-12	1.5	2195	1645	3560	2670

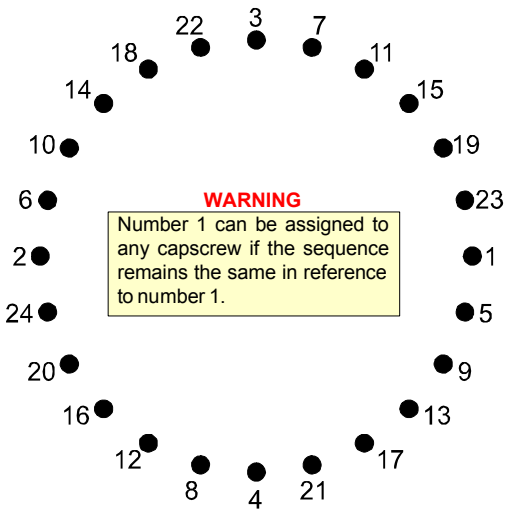
COARSE THREAD TORQUE CHART (ENGLISH

TIGHTENING TORQUE

SIZE (DIA-TPI)	BOLT DIA. (INCHES)	 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	0.375	31	23	44	33
7/16-14	0.4375	49	37	70	52
1/2-13	0.5	75	57	105	80
9/16-12	0.5625	110	82	155	115
5/8-11	0.625	150	115	220	160
3/4-10	0.75	265	200	375	280
7/8-9	0.875	395	295	605	455
1-8	1	590	445	910	680
1 1/8-7	1.125	795	595	1290	965
1 1/4-7	1.25	1120	840	1815	1360
1 3/8-6	1.375	1470	1100	2380	1780
1 1/2-6	1.5	1950	1460	3160	2370

Turntable Bearing Thread Tightening Sequence

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



TIGHTENING PROCEDURE

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

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

3 Torque all capscrews to approximately 40% of the specified torque value, by following the sequence.

(EXAMPLE: .40 x 265 FT-LB = 106 FT-LB)

(EXAMPLE-METRIC: .40 x 36 KG-M = 14.4 KG-M)

4 Repeat Step 3, but torquing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.

(EXAMPLE: .75 x 265 FT-LB = 199 FT-LB)

(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.