
Manual # 99903060

14K160TH Crane-Tirehand Parts & Specifications

Rev. Date 20100331



IOWA MOLD TOOLING CO., INC.

PO Box 189

Garner, IA 50438

Tel: 641-923-3711 FAX: 641-923-2424

Website: <http://www.imt.com>

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Revisions

DATE	LOCATION	DESCRIPTION
20070410		Release in new format
20070807	99903055, 41715811, 91715845	ECN 10545 - Changed tirehand rotation asm to show hydraulic brake.
	41715821, Rotation bearing retrofit instructions	ECN 10518 - Updated arm assembly with bronze bearings. Added retrofit instructions for nylon bearings.
20070911	41715821	Added serial number break for bronze bearings in arm assembly.
20071115	91715845	ECN 10545 - Add sleeve 60350106 to 91715845 hyd kit.
20080103	3D295990	3D295990 - Wrong parts list for ext. cyl.
	99901234, 41715824	ECN 10592 - Change grease fitting connection, reroute hose.
	70056625	Added tirehand gearbox spare parts.
20080605	41715809	Added additional callouts for clarity.
20080903	41715821, 41718269	ECN 10824, 10836 - Changes to 41715821, 41718269.
	70056625	Added item # 19 part number.
20090105	99903210	ECN 9000 - Updated hydraulic schematic.
	41715811	ECN 9000 - Changed linkage to rev. M, added bushing spare part number.
20100330	73733481, 99903557	ECN11211-Added engine start function on OTR wiring.
	41715811, 91715845, 99903055	ECN 11210-Reorientation of hyd motor, shortened 51396974 hose to 51398870.

CHAPTER 1

Introduction

GENERAL

The information contained in this manual is designed to provide you with the knowledge necessary to safely and properly operate your articulated crane. This information is not intended to replace any governmental regulations, safety codes or insurance carrier requirements. Operators, maintenance and test personnel must read and understand all safety procedures applicable to the equipment in use.

For operating, maintenance, and repair instructions, refer to Volume 1: Operation, Maintenance and Repair (IMT Manual # 99900037) and IMT Crane Safety (IMT Manual # 99900313).

WARNING

READ YOUR MANUAL!! FAILURE TO READ, UNDERSTAND AND FOLLOW ANY SAFETY PROCEDURES APPLICABLE TO YOUR EQUIPMENT MAY RESULT IN EQUIPMENT DAMAGE, SERIOUS INJURY, OR DEATH.

In addition to reading the manual, it is your responsibility to become familiar with government regulations, hazards, and the specific operation of your crane. Use caution and common sense while operating and maintaining the crane, and follow all safety procedures and regulations. Refer to ANSI/ASME B30.22, the standard for Articulating Boom Cranes, for more information on crane design and test criteria. (You may obtain this publication from ASME at www.asme.org.) Crane operators must also be familiar with OSHA 29CFR, Subpart N, Article 1926.550 and CAL-OSHA Title 8, Article 93 (California).

MODIFICATIONS

Modifications to your crane must be performed with IMT approved accessories, parts and optional equipment. If in doubt about the safety, compatibility, or appropriateness of any modifications, contact IMT prior to making those modifications. **DO NOT** alter or modify any safety device! All safety devices must be inspected, tested and maintained in proper working condition.

Note that decals regarding crane safety and operation are considered safety equipment. They must be maintained just as any other safety device. Decals must be kept clean and legible to the operator, operational personnel, and bystanders as specified in the decal section of this manual. **DO NOT** remove, disable, or disregard any safety device attached to your crane.

It is the user's responsibility to maintain and operate this unit in a manner that will result in the safest working conditions possible, and to be aware of existing Federal, State, and Local codes and regulations governing the safe use and maintenance of this unit.

The crane owner and/or designated employee is responsible for informing all operators, maintenance personnel, and others involved in equipment operation about the safe operation and maintenance of the crane. If questions arise concerning safe crane operation, contact IMT or your IMT distributor for clarification.

MANUAL STRUCTURE

Three means are used throughout this manual to gain 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.

WARRANTY

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.

NOTICE TO THE OWNER / USER

If your equipment is involved in a property damage accident, contact your IMT distributor immediately and provide them with the details of the accident and the serial number of the equipment. If an accident involves personal injury, immediately notify your distributor and IMT Technical Support at:

IOWA MOLD TOOLING CO., INC.
500 HWY 18 WEST
GARNER, IA 50438
641 - 923 - 3711

CHAPTER 2

Specifications

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14K160TH System Specifications

TIREHANDLER RATING*	231,000 ft-lb	31.95 ton-m
SYSTEM CAPACITY	14,000 lb @ 16'-3"	6,350 kg @ 4953mm
	12,000 lb @ 18'-0"	5,445 kg @ 5486mm
	9,000 lb @ 20'-0"	4,080 kg @ 6096mm
	7,000 lb @ 21'-0"	3,175 kg @ 6401mm
	6,000 lb @ 22'-3"	2,720 kg @ 6782mm
CHASSIS		
Wheelbase	256"	6502 mm
Front axle rating	20,000 lb	9,072 kg
Rear axle rating	40,000 lb	18,144 kg
PTO openings	1	1
BODY	Commander IV Body	Commander IV Body
	19'-6"	5,944 mm
COMPRESSOR - SERIES 130	122 cfm Rotary	3.45 cu. meters/min
Type	Rotary Screw	Rotary Screw
Drive method	Hydraulic	Hydraulic
PTO required	Yes	Yes
SYSTEM FLOW-TIREHANDLER	16 gpm	60.56 lpm
SYSTEM FLOW-COMPRESSOR	28 gpm	106 lpm
HYDRAULIC SYSTEM TYPE-TIREHANDLER	Closed Center w/unloader valve	Closed Center w/unloader valve
HYD PUMP TYPE-TIREHANDLER & COMPRESSOR	Gear	Gear
CONTROLS	Wireless Remote	Wireless Remote
CAPACITY LIMITER	Shutdown	Shutdown
STOWED HEIGHT (based on 41" frame ht.)	12'-11"	3,937 mm

MAIN OUTRIGGERS	Fold-over	Fold-over
Span	18'-0"	5,486 mm
Activation	Line of sight	Line of sight
AUXILIARY OUTRIGGER	Not required	Not required
TIREHANDLER MOUNTING SPACE REQUIRED	52"	1321 mm
TIREHANDLER ROTATION	350°	350°
INNER BOOM ARTICULATION	-7° to 66°	-7° to 66°
OUTER BOOM ARTICULATION	96°	96°
TIREHAND TILT (using extension cylinder/link arm)	-43° to 90°	-43° to 90°
INNER BOOM CYLINDER	8" Bore	203.2 mm Bore
OUTER BOOM CYLINDER	7.5" Bore	190.5 mm Bore
HINGE POINT BEARINGS	Greaseless	Greaseless
WEIGHTS		
TireHandler	16,720 lb	7,584 kg
Body Assembly (Includes Compressor)	6,550 lb	2,970 kg
* Maximum TireHandler Rating (ft-lb) is defined as that rated load (lb) which when multiplied by its respective distance (ft) from centerline of rotation gives the greatest ft-lb value.		

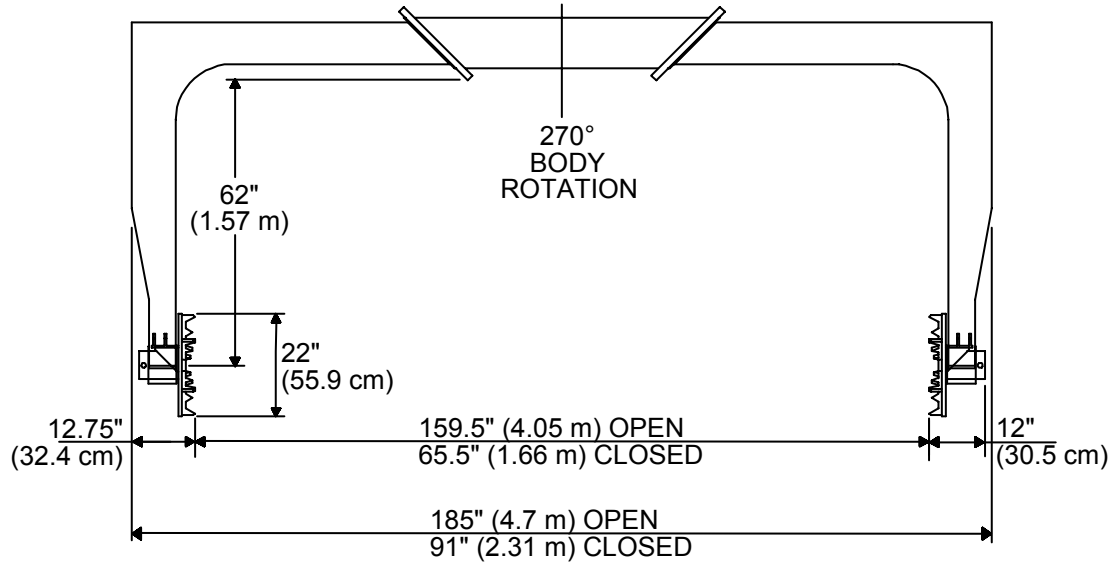
PERFORMANCE CHARACTERISTICS

TIREHANDLER ROTATION	350°	60 seconds
INNER BOOM ELEVATION	-7° to +66°	43 seconds
OUTER BOOM ARTICULATION	96°	43 seconds
EXTENSION BOOM	36" (914 mm)	26 seconds
OUTRIGGER EXTENSION	42" (1067 mm)	72 seconds

- **POWER SOURCE** - Integral-mounted hydraulic pump and PTO application. Other standard power sources may be utilized - minimum power required is 33 horsepower for the TireHandler.
- **CYLINDER HOLDING VALVES** - The holding sides of all cylinders are equipped with integral-mounted counter-balance valves to prevent sudden cylinder collapse in case of hose or other hydraulic failure. The outrigger cylinders have double pilot operated check valves. The counter-balance valve serves several functions. First, it is a holding valve. Secondly, it is so constructed that it will control the lowering function and allow that motion to be feathered while under load. Finally, if a hose breaks, the only oil loss will be that in the hose.
- **EXCESSIVE LOAD LIMITING SYSTEM** - Overloading of the crane is limited by the ELLS. This is done by disarming the crane functions which make possible the application of greater than allowable stress to the crane structure and components. Functions controlled by the ELLS are tilt up and outer boom up. To relieve the situation, the operator may set the load down or articulate the TireHandler in the opposite direction to reduce the loaded condition.
- **ROTATION SYSTEM** - Rotation of the TireHandler is accomplished through a turntable bearing, powered by a high torque hydraulic disc-valve motor through a planetary gear box. A spring applied hydraulic release brake is an integral part of each planetary gear box which provides rotational and parking brake action. Total gear reduction is 113:1.
- **HYDRAULIC SYSTEM** - The hydraulic system for the TireHandler is a closed center valvebank with an unloader valve, using a fixed displacement pump, requiring 16 gpm (60.6 lpm) optimum oil flow, at 3000 psi (207 bar). Nine-spool, stack-type control valve, six functions for crane control and three functions for TireHand control. System includes hydraulic oil reservoir, return-line filter, control valvebank and all hoses and fittings. Wireless remote control is provided for all functions except for the outriggers which utilize manual levers located on their respective sides.
- **AIR COMPRESSOR SYSTEM** - The Series 130 air compressor is a helical type, twin rotary screw, oil flooded, hydraulically driven unit, with a delivery rate of 122 cfm (3.45 cu. meters/min.) at 160 psi (11 bar). Recommended engine speed is 1250 rpm, and compressor speed is 1440 rpm, producing 39 hp at 122 cfm (3.45 cu. meters/min.). The system includes two 1/2" x 50' air hoses with retractable reels mounted curbside accessible through the front streetside compartment, compressor oil cooler, compressed air aftercooler, 22 gallon air receiver, two-stage industrial air intake filter, high temperature gauge and shutdown switch, 1/2" moisture separator/regulator/oiler, and compressor hour meter.

IMT reserves the right to change specifications and design without notice. Above specifications/characteristics are based on the IMT recommended chassis. Any other chassis applications may alter the characteristics. All other applications are to be approved by IMT.

TireHandler Specifications



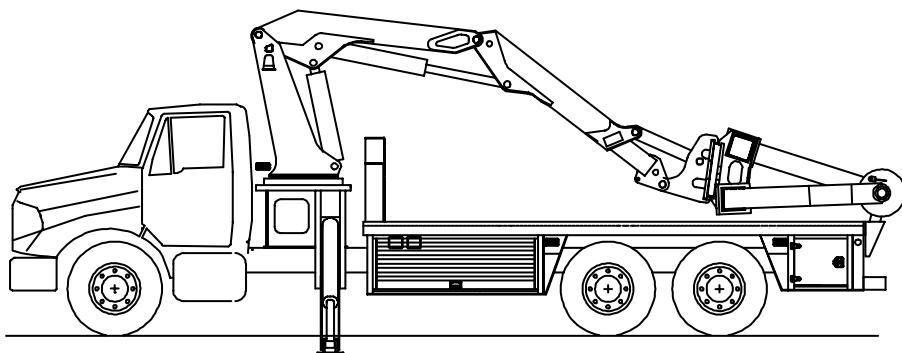
LARGEST TIRE	53.5/85R57 (no rim)	53.5/85R57 (no rim)
SMALLEST TIRE	21.00R-25	21.00R-25
MAXIMUM TIRE LOAD	14,000 lb	6,350 kg
MINIMUM TIRE DIAMETER	65.5"	1664 mm
MAXIMUM TIRE DIAMETER	159.5"	4051 mm
CLAMP SPAN	94"	2388 mm
METHOD OF CLAMP	Telescopic	Telescopic
CLAMP PAD ROTATION	90°	90°
PAD TILT METHOD	Cylinder	Cylinder
PAD DIAMETER	22"	559 mm
ROTATION SYSTEM	Worm gear drive	Worm gear drive
BODY ROTATION	270°	270°
CLAMP CYLINDER	3.5" Bore x 2" Rod	88.9mm Bore x 50.8mm Rod
PILOT OPERATED CHECK VALVES LOCATION	Clamp side	Clamp side
TIREHAND TILT	90° to -43°	90° to -43°
DISTANCE FROM TH BODY TO PAD CENTERLINE	62"	1575 mm
TIRE & RIM DISASSEMBLY/ASSEMBLY METHOD	TireHand pads or attachments	TireHand pads or attachments

IMT reserves the right to change specifications and design without notice. If applicable, specifications are in accordance with SAE standards.

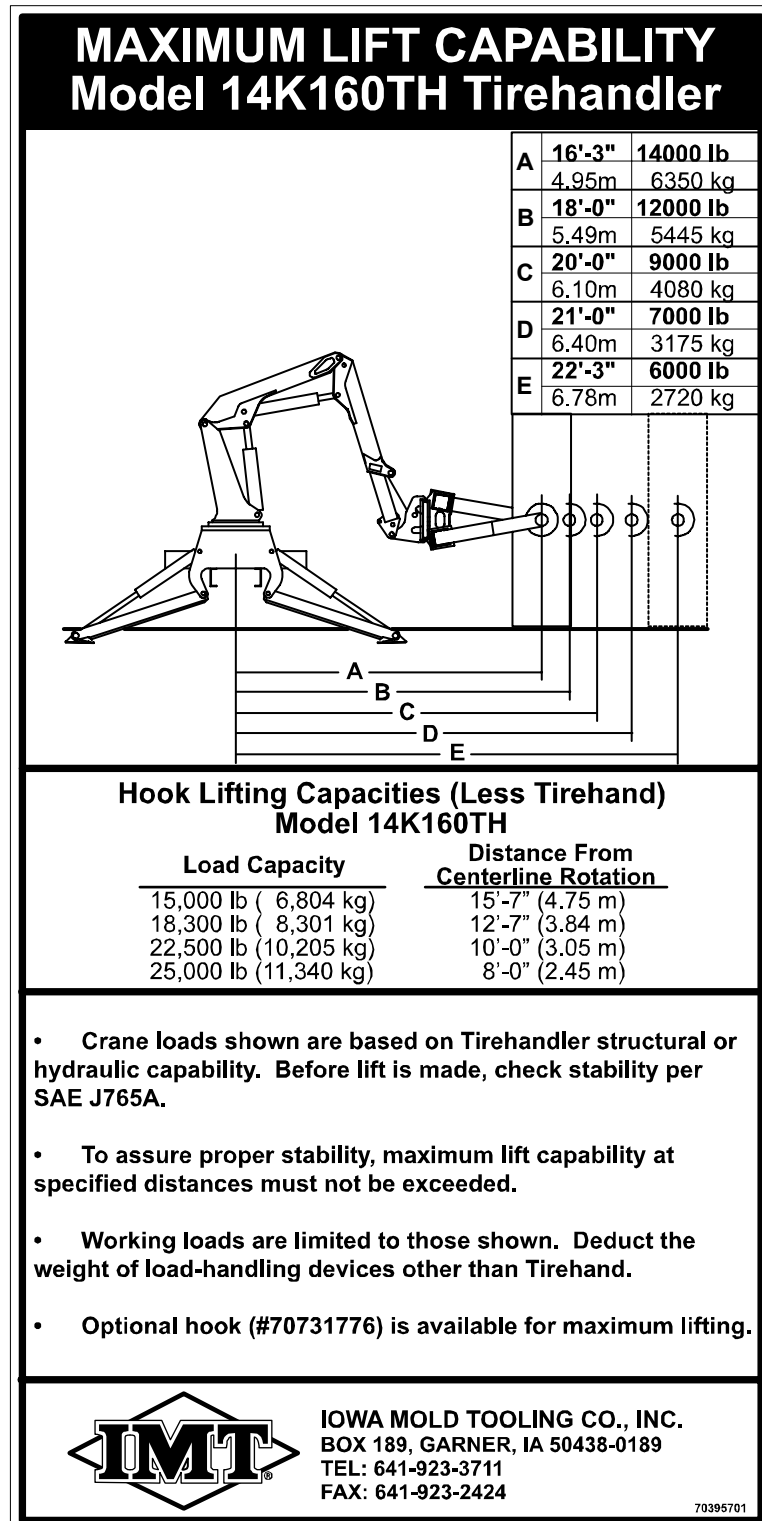
Service Body Features

- 19'-6" long heavy-duty steel mine service body.
- Heavy-duty rub rail.
- 1/4" steel tread plate deck.
- One left front underbody toolbox (31-1/2"H x 82"L x 27"D) with tire iron and hammer shelf, two 3" and one 5" x 26"L x 16"D
- One right front underbody toolbox (31-1/2"H x 82"L x 27"D) with shelf and reel divider.
- One left rear underbody toolbox (30"H x 34-3/4"L x 26"D).
- One right rear underbody toolbox (30"H x 34-3/4"L x 26"D).
- Master crane control and electrical switch storage box.
- Heavy-duty 52"H front bulkhead.
- Truck-lite body marker light kit.
- Heavy-duty push bumper and deluxe light panel.
- Left front step access onto body.

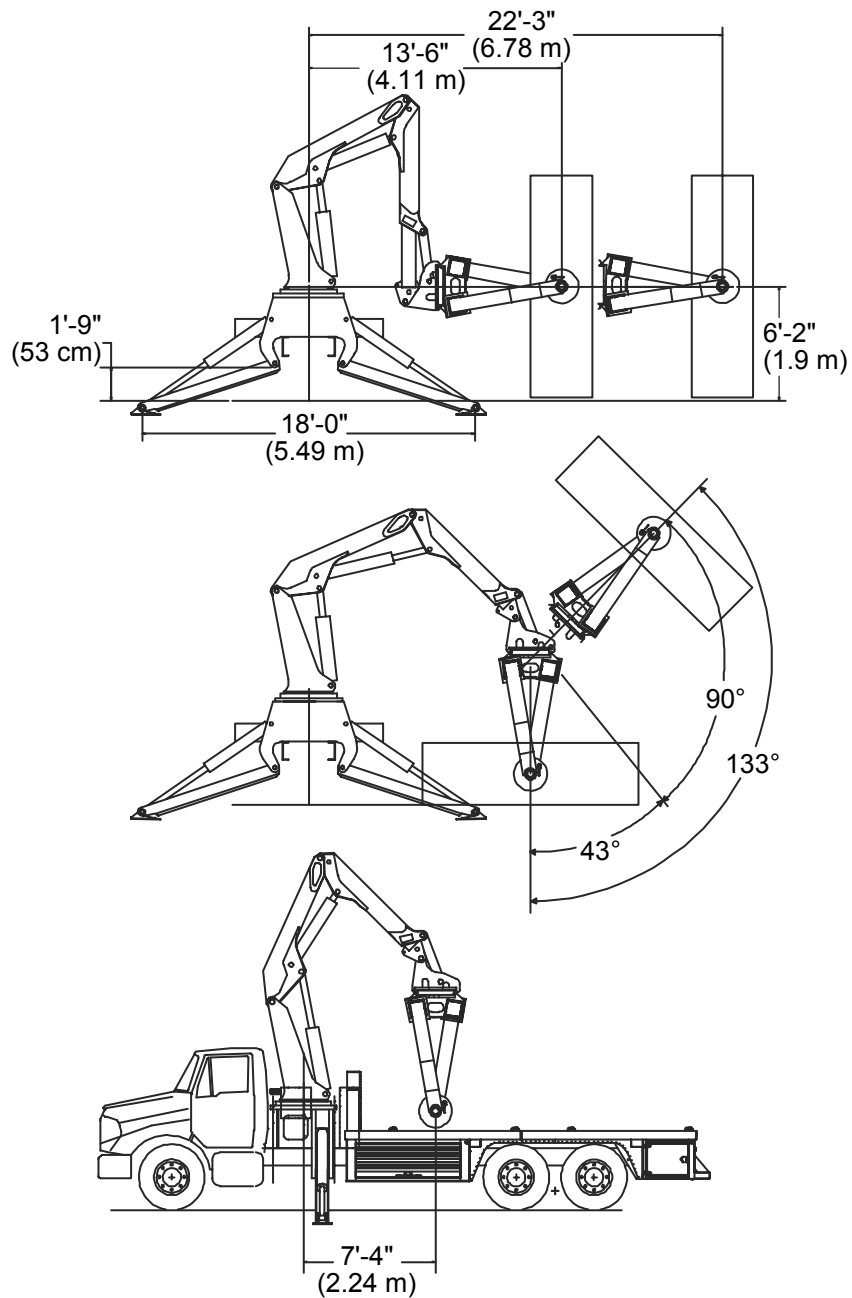
Body assembly includes aluminum roll-top front compartment doors, compartment matting, wheel well skirting with street side recessed work light pockets, D-ring tie-downs, and Imron 5000 polyurethane baked-on pure white paint finish.



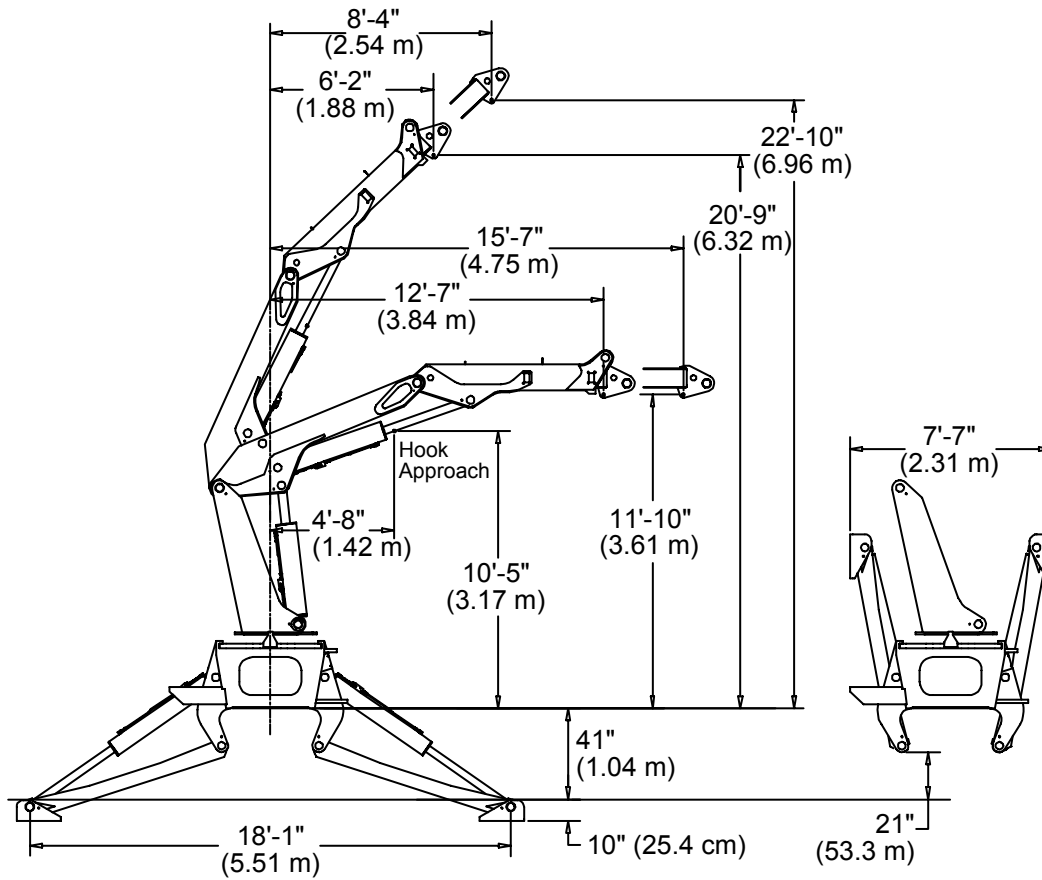
14K160TH System Capacity Chart



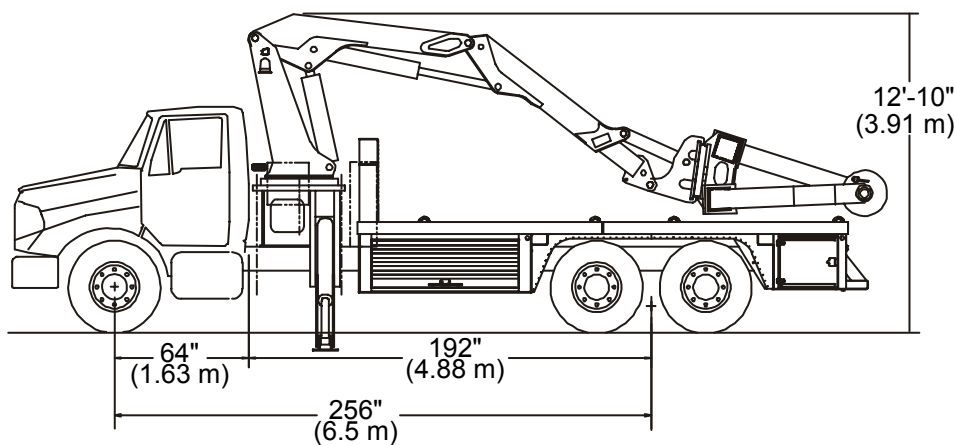
TireHand Work Positions



14K160TH Crane Geometric Configuration

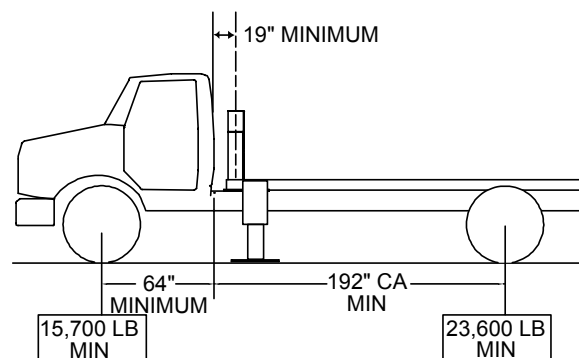


Stowed Position



Minimum Chassis Specifications

Crane Mount	Behind Cab (Consult factory for rear mount application)
Crane Working Area	350°
Chassis Style	Conventional Cab
Front Axle Rating (GAWR)	20,000 lb
Rear Axle Rating (GAWR)	Tandem Axle (40,000 lb)
**Wheelbase (Recommended)	256"
**Cab-to-axle (Recommended)	192"
Outrigger Width Required	18'-0"
RBM (Recommended)	3,300,000 in-lb
Frame Section Modulus	30 in ³
Frame Yield Strength	110,000 psi
Minimum Finished Unit Weight	
To Maintain Vehicle Stability	
Front Axle	* 15,700 lb
Rear Axle	* 23,600 lb
Total Finished Unit Wt.	39,300 lb
* Allows lifting full capacity load in 350° arc when crane is installed immediately behind cab. Great care should be taken when swinging the load from rear of vehicle to front of vehicle since the front axle springs will compress, thus affecting the levelness of the vehicle.	
** Based on IMT's recommended chassis. All other applications to be approved by IMT.	



NOTES:

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

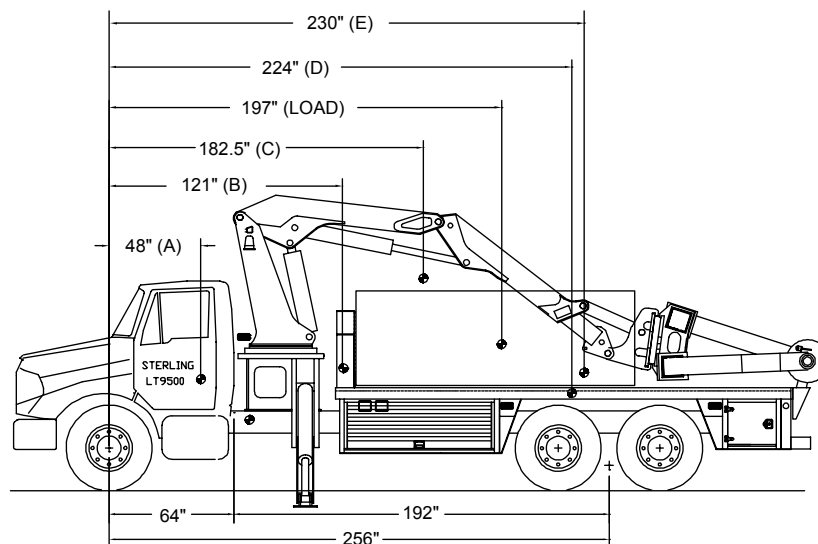
Chassis Information / Weight Distribution

CHASSIS INFORMATION

CHASSIS MAKE & MODEL	STERLING LT9513
WHEEL BASE	256.00"
CAB-TO-AXLE	192.00"
G.V.W. RATING	60,000 lb
FRONT AXLE RATING	20,000 lb
REAR AXLE RATING	40,000 lb

WEIGHT DISTRIBUTION

LOCATION	COMPONENT DESCRIPTION	COMPONENT WEIGHT	WEIGHT ADDED FRONT AXLE	WEIGHT ADDED REAR AXLE
	BARE CHASSIS WEIGHT (STD EQUIP/OIL/WATER)	18,620 lb	9,920 lb	8,720 lb
A	200 lb DRIVER & 75 GAL FUEL (525 lb)	725 lb	590 lb	135 lb
B	AIR COMPRESSOR	470 lb	220 lb	250 lb
C	TIREHANDLER	16,720 lb	6,105 lb	10,615 lb
D	BODY ASSEMBLY	6,080 lb	760 lb	5,320 lb
E	TOOL PACKAGE WITH OAK BLOCKS	590 lb	60 lb	530 lb
COMPLETED UNIT WEIGHT		43,205 lb	17,655 lb	25,550 lb
LOCATION	PAYLOAD DESCRIPTION	TOTAL WEIGHT	WEIGHT FRONT AXLE	WEIGHT REAR AXLE
LOAD	OFF ROAD TIRES	10,975 lb	2,345 lb	8,450 lb
GROSS ALLOWABLE WEIGHTS (HIGHWAY LEGAL)		54,000 lb	20,000 lb	34,000 lb
TOTAL UNIT WEIGHT-WITH SPECIFIED LOAD		54,000 lb	20,000 lb	34,000 lb



The weight calculations included in this proposal are an estimate of future vehicle weight. The actual weight as manufactured may be different from the estimated weight. Iowa Mold Tooling Co., Inc. shall not be liable for any consequences resulting from any difference between the estimated weight of a vehicle and the actual weight.

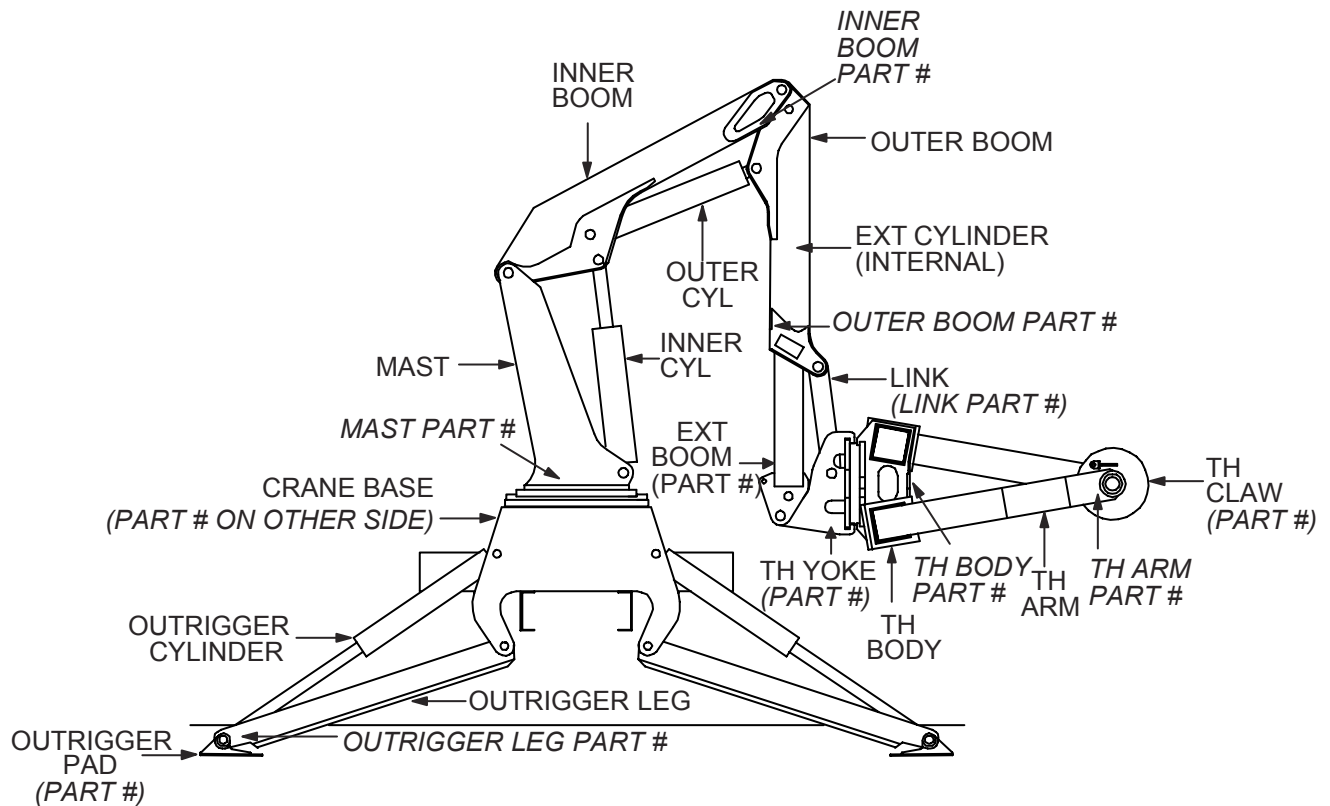
CHAPTER 3

Crane Reference

In This Chapter

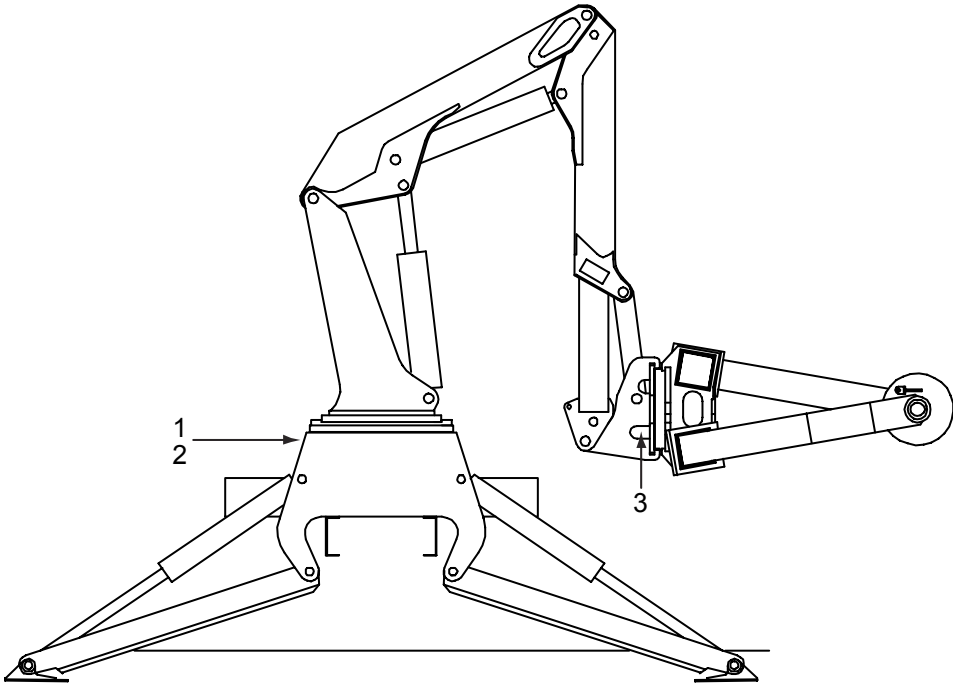
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14K160TH Major Assemblies & Part Number Locations



Major assembly locations are indicated in standard text, and the assembly part number locations are indicated in italic text and "Part #".

14K160TH Grease Zerk Locations & Lubrication Requirements



ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	TURNTABLE / BEARING GREASE EXTENSION * ROTATE CRANE WHILE GREASING	SHELL ALVANIA 2EP OR SHELL RETINAX "A"	WEEKLY
2.	DRIVE GEAR GREASE EXTENSION		
3.	TIREHAND TURNTABLE GREASE EXTENSION		

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.

14K160TH Recommended Spare Parts

Recommended Spare Parts for one-year for the 14K160TH Crane:

NOTE: 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 PART #	PART NO.	DESCRIPTION	QTY	CODE
3D312990 OUTRIGGER CYLINDER				
	6H165035	HEAD	2	W
	6I312990	PISTON	2	W
	70034454	BEARING	8	W
	73540072	CHECK VALVE	4	C
	9C312990	SEAL KIT	2	W
41715809 INNER BOOM ASSEMBLY				
	70034454	BEARING	2	W
3D293990 INNER CYLINDER				
	6IX80243	PISTON	1	W
	6HX80040	HEAD	1	W
	70034454	BEARING	3	W
	73540082	C'BAL VALVE	1	C
	9C293990	SEAL KIT	1	W
41715810 OUTER BOOM ASSEMBLY				
	60109341	WEAR PAD	4	W
	60120168	WEAR PAD	2	W
3D298990 OUTER CYLINDER				
	6H075035	HEAD	1	W
	6I298990	PISTON	1	W
	73540082	C'BAL VALVE	1	C
	9C298990	SEAL KIT	1	W
41715834 EXTENSION BOOM ASSEMBLY				
	60122274	WEAR PAD	2	W
3D295990 EXTENSION CYLINDER				
	6H060030	HEAD	1	W
	6I295990	PISTON	1	W
	70034455	BEARING	4	W
	73540082	C'BAL VALVE	1	C
	9B295990	SEAL KIT	1	W
99901234 HYD KIT-CRANE ROTATION				
	73051473	MOTOR-ROTN	1	W
91715845 HYDRAULIC KIT - TIREHANDLER				

ASSEMBLY PART #	PART NO.	DESCRIPTION	QTY	CODE
	73054980	VALVE	2	C
51715011 RESERVOIR ASSEMBLY				
	73052088	FILTER ELEMENT (PART OF PM KIT)	6	P
41715811 YOKE ASSEMBLY - TIREHAND				
	73051963	MOTOR	1	W
41715821 ARM ASSEMBLY - TIREHAND				
	60122249	WEAR PAD	2	W
	60122250	WEAR PAD	2	W
	60122253	WEAR PAD	4	W
	60122254	WEAR PAD/SLEEVE CLAW	2	W
3B314990 PAD ROTATION CYLINDER				
	6H030015	HEAD	2	W
	6I314990	PISTON	2	W
	9C314990	SEAL KIT	2	W
	73540066	C'BAL VALVE	4	C
3B316990 CLAMP CYLINDER				
	6H035020	HEAD	2	W
	6I352144	PISTON	2	W
	73540072	CHECK VALVE	2	C
	9B025920	SEAL KIT	2	W
REF	77042083	BATTERY-REMOTE CONTROL	2	C

14K160TH Preventative Maintenance Kit

91716201 PREVENTATIVE MAINTENANCE KIT		
PART #	DESCRIPTION	QUANTITY
301669	COALESCER - LONG SPIN-ON ELEMENT	1
70048209	ELEMENT-AIR (FRL)	2
73052088	FILTER ELEMENT-RETURN	2
73054974	FILTER-BREATHING OIL RESERVOIR	2
70733495	LUBRICANT-DIAMOND DOOR LUBE	1
300005001	ELEMENT-FILTER 80	2
302014	AIR FILTER ELEMENT	2
89086201	OIL COMPRESSOR, IMT BRAND	6 GALLONS
70048148	FILTER ELEMENT-100 MESH WITH GASKET	2

14K160TH Installation

GENERAL

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

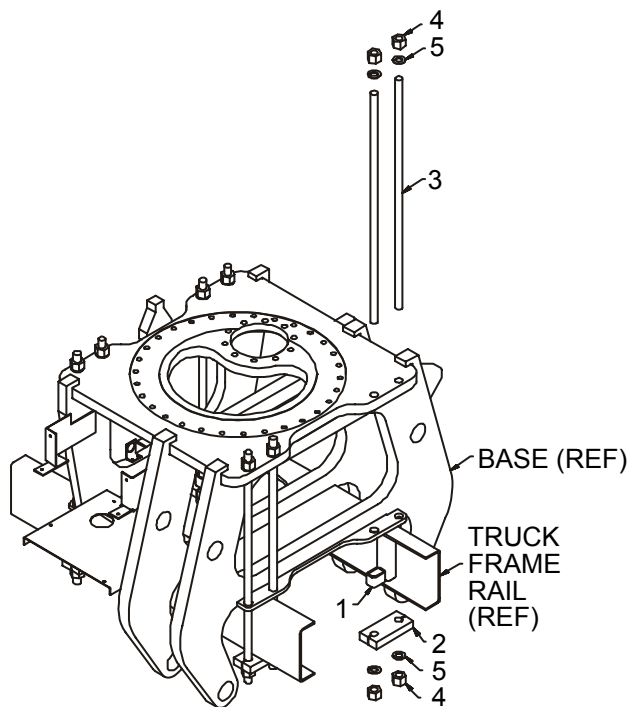
CRANE MOUNTING

- 1 See SPECIFICATIONS in Section 1 for crane weight. Using an overhead hoist and fabric slings of adequate capacity, lift the crane about a foot to see if the crane is balanced. If not, lower hoist and adjust slings. Re-check balance and re-position crane until mounting surface is level.
- 2 Install the truck frame support so that the tie-down studs pass through the supports (See figure.) Cut the support to the inside dimensions of the truck frame. Allow about 1/16" extra. Grind the end of the support to fit inside the frame channel. Use a hammer to drive it into position if necessary.
- 3 Allow sufficient clearance between the cab and crane base, at least 4" (10.2cm). Position the crane on the chassis per the applicable installation drawing, centering the mounting slots over the truck frame rails. While holding crane with hoist, start mounting hardware per Figure. Note position of support weldments on truck frame. Hand tighten nuts. Observe underside of crane base. No clearance between base and frame is allowed.
- 4 Torque the 1 1/4"-7 UNC Grade 5 mounting hardware to 840 ft-lbs (116 kg-m). When torquing the mounting hardware the following precautions must be followed:
 - a) Never use lock washers.
 - b) Only use hardened washers. Install washers under the turning element, whether the turning element is the nut or the head of the bolt.
 - c) Torque values specified are with residual oils or without special lubricants applied to the threads. If special lubricants are used, such as Never-Seize compound graphite and oil, molybdenum disulphite colloidal copper or white lead, reduce torque values 10%. Torque values for threaded fasteners are not affected with the use of Loctite.
 - d) Do not use rusty fasteners, the rust will alter torque values significantly.

CAUTION

DO NOT ATTEMPT TO APPLY THE SAME TORQUE TO THE TIE ROD AND SELF-LOCKING NUTS AS SHOWN IN THE TORQUE DATA CHART. DO NOT EXCEED 840 FT. LBS. (116 KG-M). EXCEEDING THIS TORQUE VALUE COULD DAMAGE EITHER THE CHASSIS OR CRANE BASE. POWER WRENCHING IS NOT RECOMMENDED UNTIL THE LEAD THREAD OF THE NUT INSERT IS ENGAGED BY HAND TURNING.

- 5 Touch up paint on crane and chassis as necessary.



INSTALLATION KIT COMPONENTS	
1.	SUPPORT
2.	CLAMP PLATE
3.	TIE-DOWN STUD
4.	NUT
5.	WASHER - FLAT/HARD

HYDRAULIC INSTALLATION

- 1 Refer to the hydraulic diagrams in the Parts Section for hose routings, brackets, filters, etc.
- 2 Install all hoses and fittings, making certain all connections are properly tightened.
- 3 Fill the reservoir with hydraulic fluid.
- 4 Open the valve at the suction line beneath the reservoir and any valves which may have been installed in the return line.


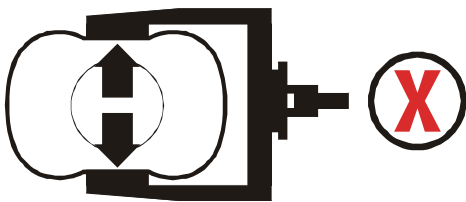
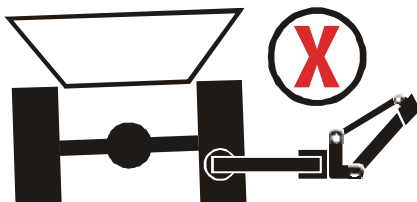


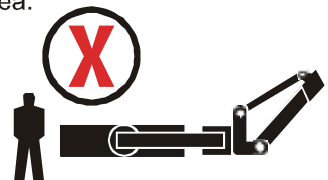


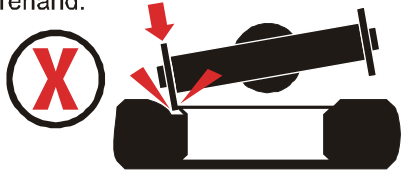
CAUTION

FAILURE TO OPEN THE GATE VALVE WILL RESULT IN A DRY RUNNING PUMP WHICH MAY DAMAGE THE PUMP.

- 5 Open the return gate valve.

- 6 Start the vehicle's engine and engage the PTO. Allow the system to run for about five minutes and then check the vacuum gauge on the suction-line filter. (It should read 8" mercury or less). If the vacuum reading is too high, check to make certain that the gate valve is opened completely. If the valve is fully opened, check for a collapsed or restricted suction line.
- 7 Cycle all hydraulic functions. Check for leaks. Refill reservoir if necessary.

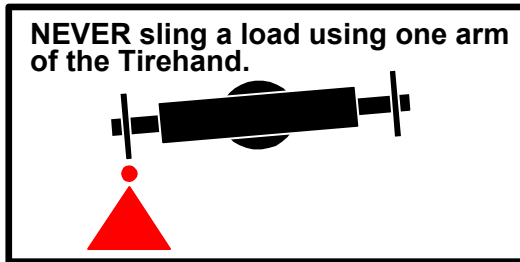
TireHand Operating Restrictions

<div> DANGER</div>		FAILURE TO OBEY THE FOLLOWING WILL RESULT IN DEATH, SERIOUS INJURY, INSTABILITY OR EQUIPMENT DAMAGE	
<p>NEVER clamp an uninflated tire and then inflate. Damage or injury WILL result.</p> 		<p>NEVER use the unit for any jacking, pulling or dragging operation involving an object or another vehicle.</p> 	
<p>NEVER impact-load or hammer-push with the unit.</p> 		<p>NEVER attempt to handle tires filled with ballast. Stability or structural failure may result if the load limit is exceeded.</p> 	
<p>NEVER operate the unit while persons not required for operation are in the work area.</p> 		<p>NEVER drag the tire-the unit is designed to lift and position.</p> 	
<p>NEVER sling a load using one arm of the Tirehand.</p> 		<p>NEVER use crane functions to break beads using only one arm of the Tirehand.</p> 	

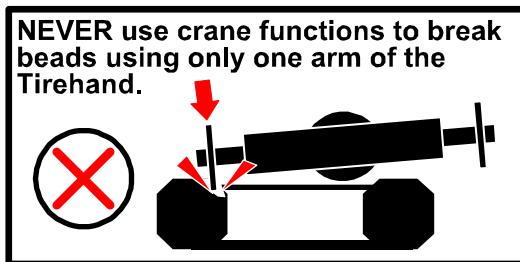
70394272

The Commander IV is intended to be a tire lifting and positioning device. There are possible misapplications of this machine that can cause serious damage to the TireHand rotation gears. It is possible to break the teeth on the TireHand rotation bearing by applying forces with the crane while attempting to break tire beads *with one arm* of the TireHand, or by slinging a load *under one arm* of the TireHand.

A load-carrying hook is attached to the outer boom for carrying loads other than tires. There is also an open clevis at the end of the extension boom on the crane that can be used for attaching slings. *Use of a single TireHand arm for lifting or carrying a load will void the TireHand warranty.*



The rotation system on the TireHand is designed to allow the user to manipulate large tires. It is a precision function that was not designed to apply high loads. However, the load holding valves that are built into this system to help control the tire during handling will also prevent the body of the TireHand from rotating freely when loads are applied to a single TireHand arm. The crane is capable of producing very large forces in the downward and outward directions. When one arm is used for bead breaking, these forces can translate into torques that attempt to rotate the body of the TireHand. The load holding valves will not allow this to occur. In this situation, the forces that are created in the TireHand rotation turntable are well in excess of what the gear teeth can tolerate. *Using one arm of the TireHand for bead breaking will void the warranty of the TireHand.*



A separate bead breaker or a push bar that carries the load to both arms of the TireHand must be used to separate the tire from the rim. It is acceptable to use the TireHand for holding the sidewall and flange away from the bead while O-rings and locking rings are being installed.

Stowing TireHand on Truck without Tires

- 1 Level the TireHand.
- 2 Retract the TireHand pads. Pad should be flush to TireHand arm.



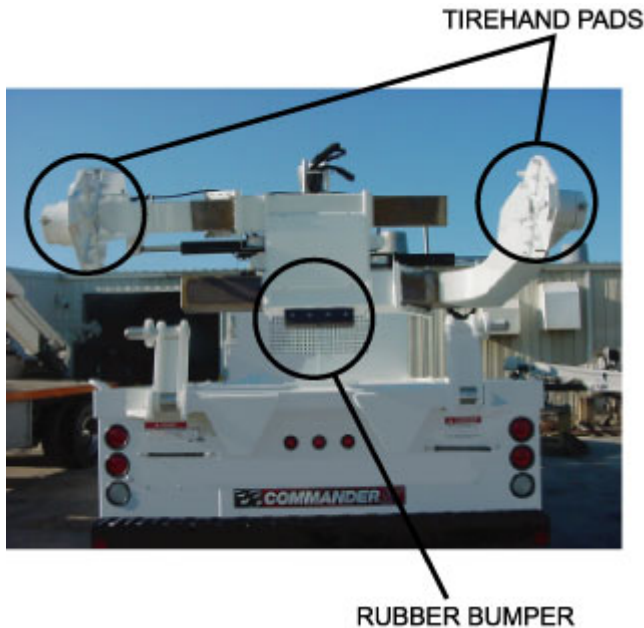
- 3 Retract TireHand arm until the white line on the outer boom meets the bottom of the arm.

NOTE

Do not fully retract TireHand arm. TireHand will not stow correctly.



- 4 Make sure TireHand pads are extended beyond body.



- 5 Lower the rubber pad on the base of the TireHand assembly into the stow cradle. Once the bumper has contacted the stow cradle, apply a small downward pressure using the lower cylinder. The bumper should have firm pressure on the body but should not exert excess pressure on the lower cylinder.



NOTE

For best results, center rubber bumper in stow cradle. This will reduce the need for future adjustments.

- 6 Flip the stow mechanisms (each side) to raised position.

**WARNING**

Avoid pinch points around the stow mechanism links.

CAUTION

Stow mechanism links are heavy.

- 7 Retract / close TireHand arm to position first stow mechanism pin. Once positioned, retract / close TireHand arm to position second stow mechanism pin. Retract / close TireHand arms for full engagement of stow mechanism pins.

WARNING

Hold the stow mechanism, not the pin. Serious injury may result.

NOTE

Either the streetside or curbside stow mechanism pin may engage first. Close TireHand arms so both pins have full engagement.



Example of stow mechanism pin being positioned into TireHand pad - street side.



Example of stow mechanism pin being positioned into TireHand pad - curb side.



Full engagement of stow mechanism pin in TireHand pad.



TireHand is fully stowed for travel.

Stowing TireHand on Truck with Tires

If there are tires on the truck load bed, the TireHand cannot be stowed per the previous instructions.

- 1 Securely strap tires to load bed.
- 2 Place the TireHand on top of the tires. Support the TireHand arms and base completely. Strap the TireHand to the body of the vehicle, making sure that the straps fully constrain the arms. Do not allow the straps to interact with the pad rotation cylinders.

AVOID STRAP CONTACT WITH
PAD ROTATION CYLINDER WHEN
STOWING TIREHAND ON A
TRUCK WITH TIRES.



- 3 Strap the stow mechanism links to the vehicle body, using elastic cords and the hooks on the body.



ELASTIC CORDS HOLD STOW
MECHANISM LINKS TO
VEHICLE BODY.

Unstowing TireHand

- 1 Extend TireHand arms so the pads are disconnected from the stow mechanism pins.
- 2 Lower the stow mechanism links into the stored position, up against the body. Use the elastic cords to hold the stow mechanism links in place.

CHAPTER 4

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 IMT crane has an identification placard (see figure). This placard is attached to the inner boom, mast, or crane base. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model numbers. Address all inquiries to your authorized IMT distributor or to:

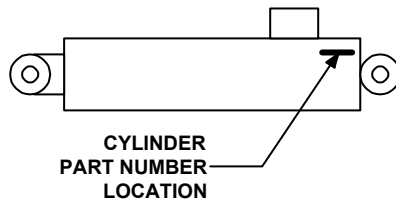
Iowa Mold Tooling Co., Inc.
Box 189, Garner, IA 50438-0189
Telephone: 641-923-3711
Technical Support Fax: 641-923-2424

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

70023119

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

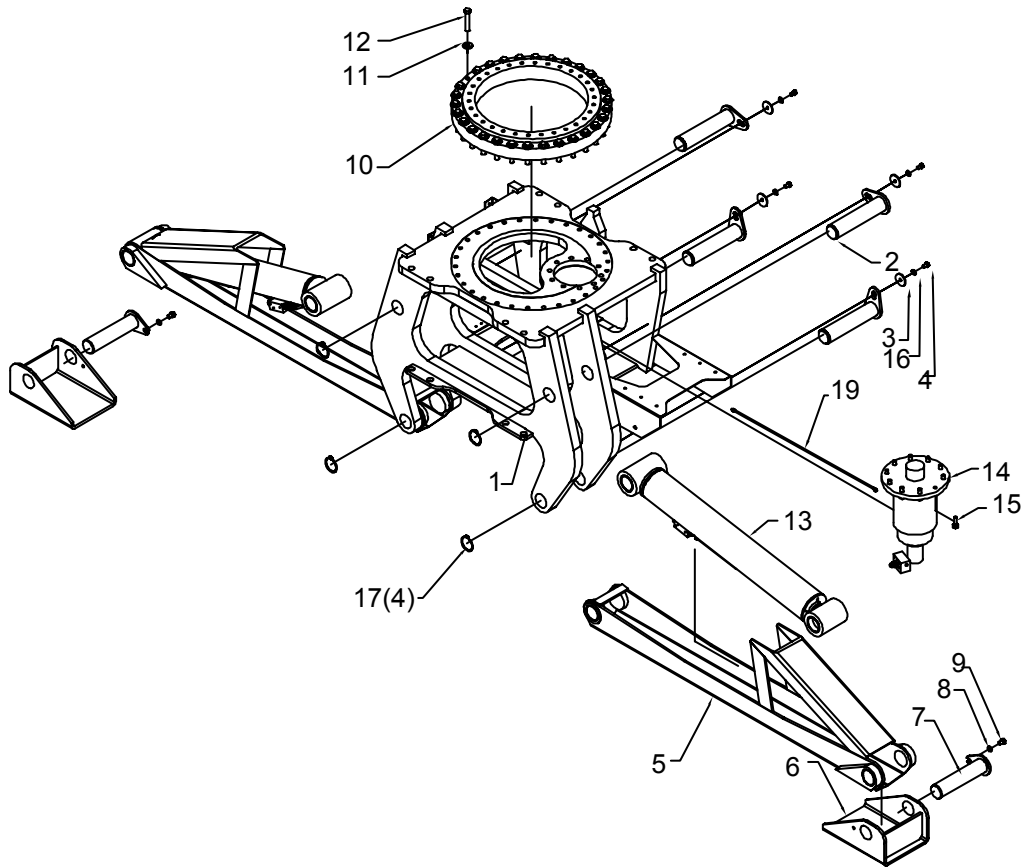
Each of the major weldments - base, mast, inner boom, outer boom, extension boom and outrigger weldments bear a stamped part number. Any time a major weldment is replaced, you must specify the complete part number as stamped on the weldment. The locations of the part numbers are shown in the Crane Reference 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 & Outrigger Assembly (41715824)



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 DEATH OR SERIOUS INJURY.

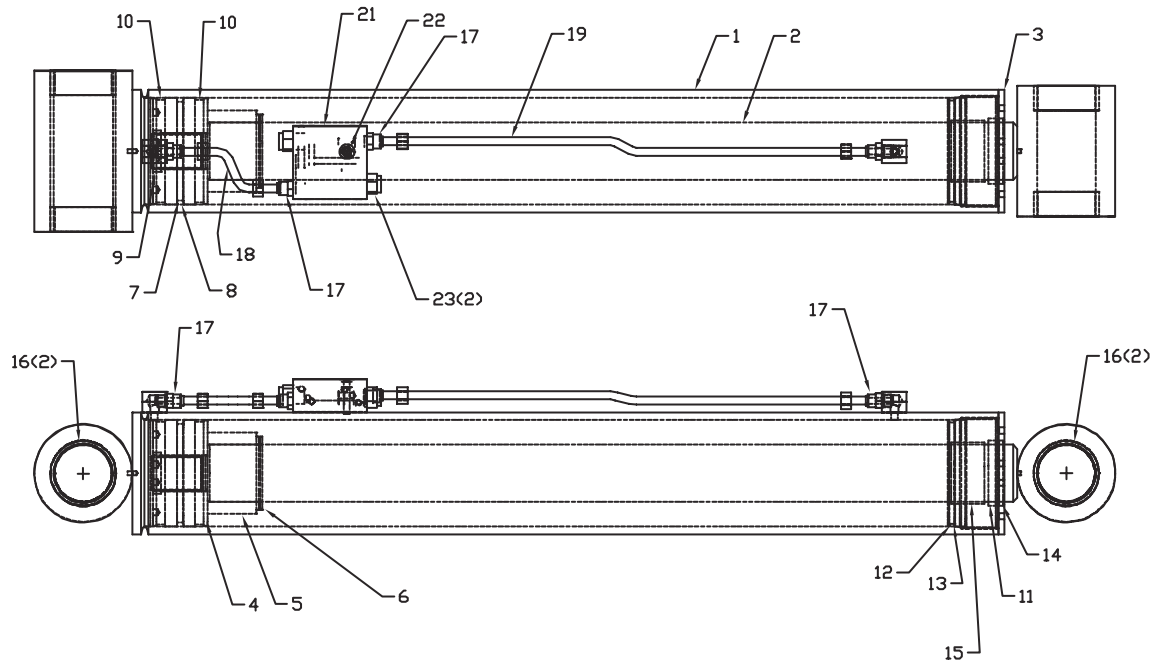
NOTES:

- 1 GEAR BACKLASH RANGE 0.009 - 0.014". TURNTABLE BEARING BACKLASH RANGE 0.008" - 0.013" (0.203 - 0.330 mm).
- 2 APPLY NEVER-SEEZ TO COLLAR I.D. AND PIN. DO NOT EXCEED COLLAR I.D.
- 3 DO NOT ALLOW NEVER-SEEZ TO CONTACT GAR-MAX BEARINGS.
- 4 APPLY SERVICEABLE THREAD LOCK TO ITEMS #4 AND #9.
- 5 ANYTIME THE PIN RETAINER PLATE BOLTS HAVE BEEN REMOVED, APPLY LOCTITE 262 TO THE THREADS BEFORE REASSEMBLY.

41715824 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52715802	BASE	1
2.	52719324	PIN (WAS 52715827)	4

41715824 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
3.	60109337	PIN RETAINER PLATE 3" (WAS 60106332)	4
4.	72060148	CAP SCR 5/8-11x1-1/4 HHGR5	4
5.	52715828	LEG	2
6.	52715826	PAD	2
7.	52715829	PIN	2
8.	72063056	WASHER 3/4 LOCK	2
9.	72060181	CAP SCR 3/4-10X1 HHGR5	2
10.	71056562	TURNTABLE GEAR	1
11.	72063115	WASHER 7/8 FLAT HARD	30
12.	72601622	CAP SCR 7/8-9X5 HHGR8	30
13.	3D312990	CYLINDER	2
14.	70056564	GEAR BOX W/BRAKE	1
15.	72601651	CAP SCR 3/4-10X2 SH	10
16.	72063055	WASHER 5/8 LOCK	4
17.	72661607	RETAINING RING	4
18.	99903611	INST, HYD SHUTDOWN PROCESS	REF
19.	53000716	GREASE EXT.	REF
REV. F 20080103			

Outrigger Cylinder (3D312990)



NOTES:

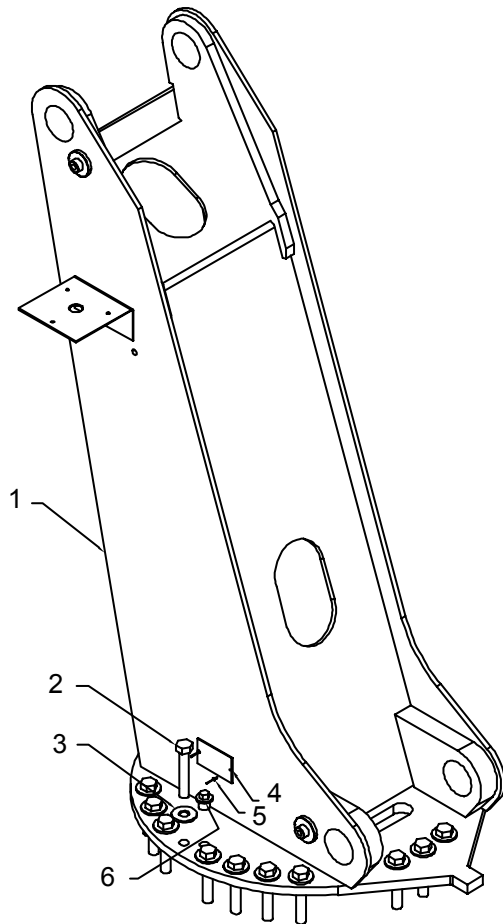
- 1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.
- 2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.
- 3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

3D312990 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	4D312990	CASE ASM (INCL:16)	1
2.	4G312990	ROD ASM (INCL:16)	1
3.	6H165035	HEAD	1
4.	6I312990	PISTON	1
5.	6C300035	STOP TUBE	1
6.	6A025035	WAFER LOCK (PART OF 24)	1REF
7.	7Q072257	O-RING (PART OF 24)	1REF
8.	7T66P650	PISTON SEAL (PART OF 24)	1REF
9.	7T61N218	LOCK RING (PART OF 24)	1REF
10.	7T2N4065	WEAR RING (PART OF 24)	2REF
11.	7R546035	U-CUP LOADED (PART OF 24)	1REF
12.	7Q10P361	BACKUP RING (PART OF 24)	1REF
13.	7Q072361	O-RING (PART OF 24)	1REF

3D312990 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
14.	7R14P035	ROD WIPER (PART OF 24)	1REF
15.	7T2N2X37	WEAR RING (PART OF 24)	2REF
16.	70034454	BEARING (PART OF 1&2)	4REF
17.	72533166	ADAPTER #8MFACE #8MSTR	4
18.	70146078	TUBE ASM	1
19.	70146079	TUBE ASM	1
21.	5V312990	VALVE BLOCK (INCL:23)	1
22.	72062103	NUT 3/8-16 LOCK	1
23.	73540072	VALVE-CHK 16GPM(PART OF 21)	2REF
24.	9C312990	SEAL KIT (INCL:6-15)	1

Mast Assembly (41715808)

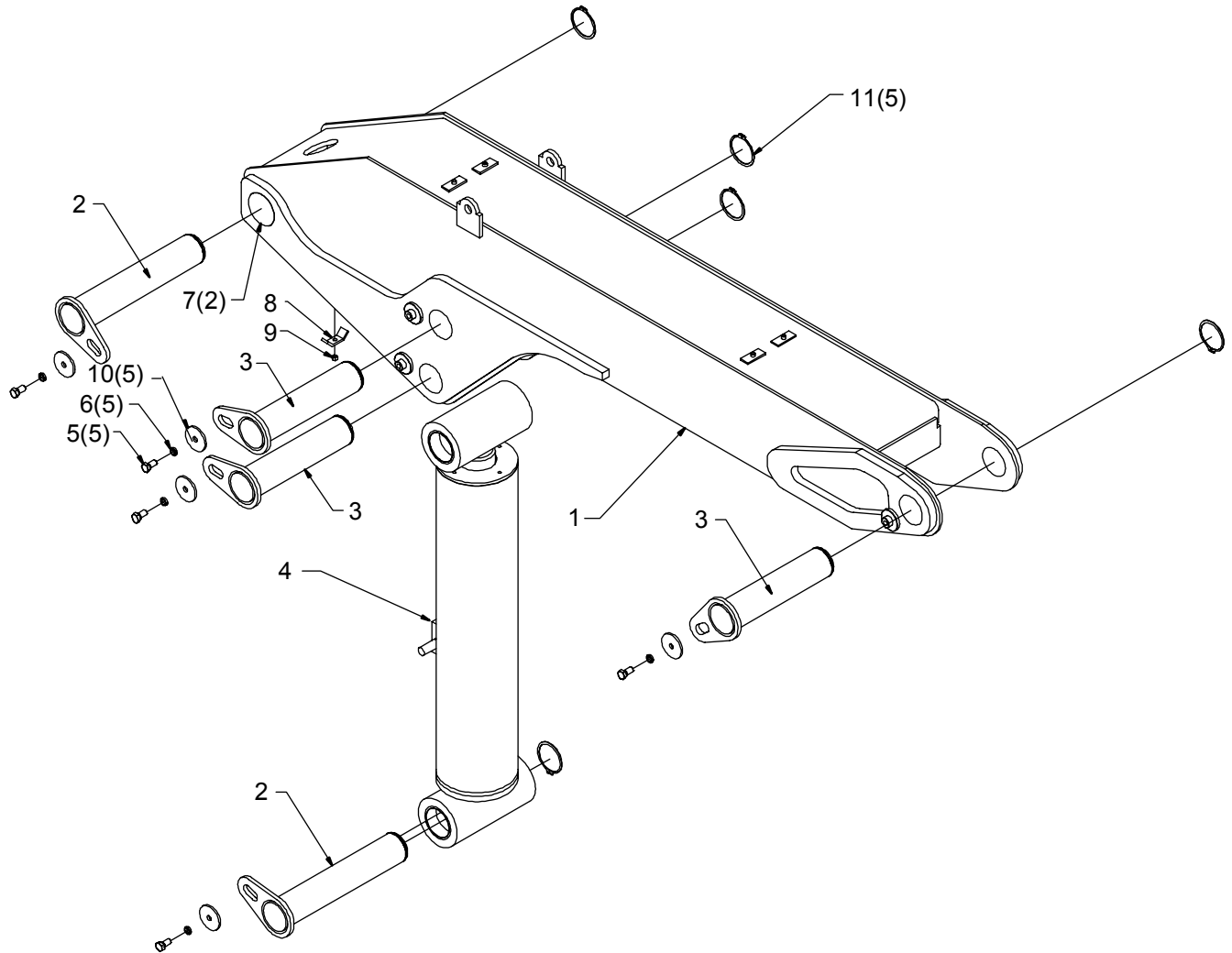


WARNING

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 DEATH OR SERIOUS INJURY.

41715808 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52715778	MAST	1
2.	72601622	CAP SCR 7/8-9X5 HHGR8	26
3.	72063115	WASHER 7/8 FLAT H ASTM F436 (WAS 72063009)	26
4.	70029119	SERIAL NUMBER PLACARD	1
5.	72066340	POP RIVET 1/8X3/8GRIP	2
6.	70029595	THREADED PLUG 1-8	1
REV E 20060714			

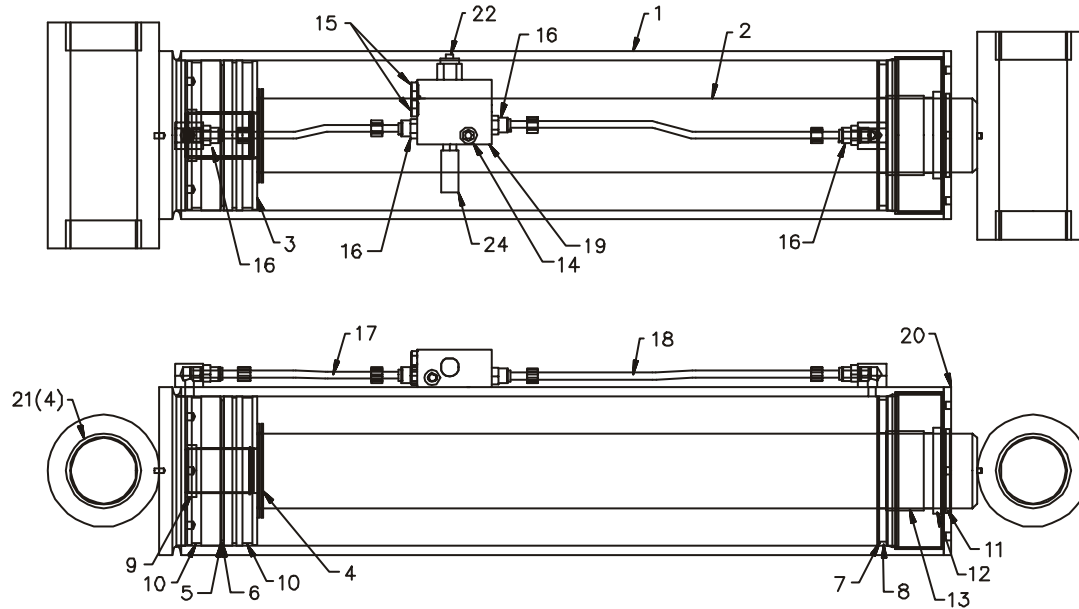
Inner Boom Assembly (41715809)

**NOTES:**

- 1 APPLY NEVER-SEEZ TO COLLAR I.D.
- 2 APPLY NEVER-SEEZ TO PINS. DO NOT EXCEED THE WIDTH OF COLLARS.
- 3 DO NOT ALLOW NEVER-SEEZ TO COME IN CONTACT WITH GAR-MAX BEARINGS.
- 4 USE SHIMS 60122814 AND 60122816 AS REQUIRED.
- 5 ANYTIME THE PIN RETAINER PLATE BOLTS HAVE BEEN REMOVED, APPLY LOCTITE 262 TO THE THREADS BEFORE REASSEMBLY.

41715809 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52715773	INNER BOOM (INCL:7)	1
2.	52719321	PIN (WAS 52715804)	2
3.	52719322	PIN (WAS 52715805)	3
4.	3D293990	CYLINDER	1
5.	72060148	CAP SCR 5/8-11X1-1/4 HHGR5 (WAS 72060149)	5
6.	72063055	WASHER 5/8 LOCK	5
7.	71024357	BEARING (PART OF 1) (WAS 70034454; 71024355)	2REF
8.	60107648	HOSE CLAMP	1
9.	72062103	NUT 3/8-16 LOCK	1
10.	60109337	RETAINER PLATE	5
11.	72661607	RETAINING RING	5
REV E 20050627			

Inner Cylinder (3D293990)



NOTES:

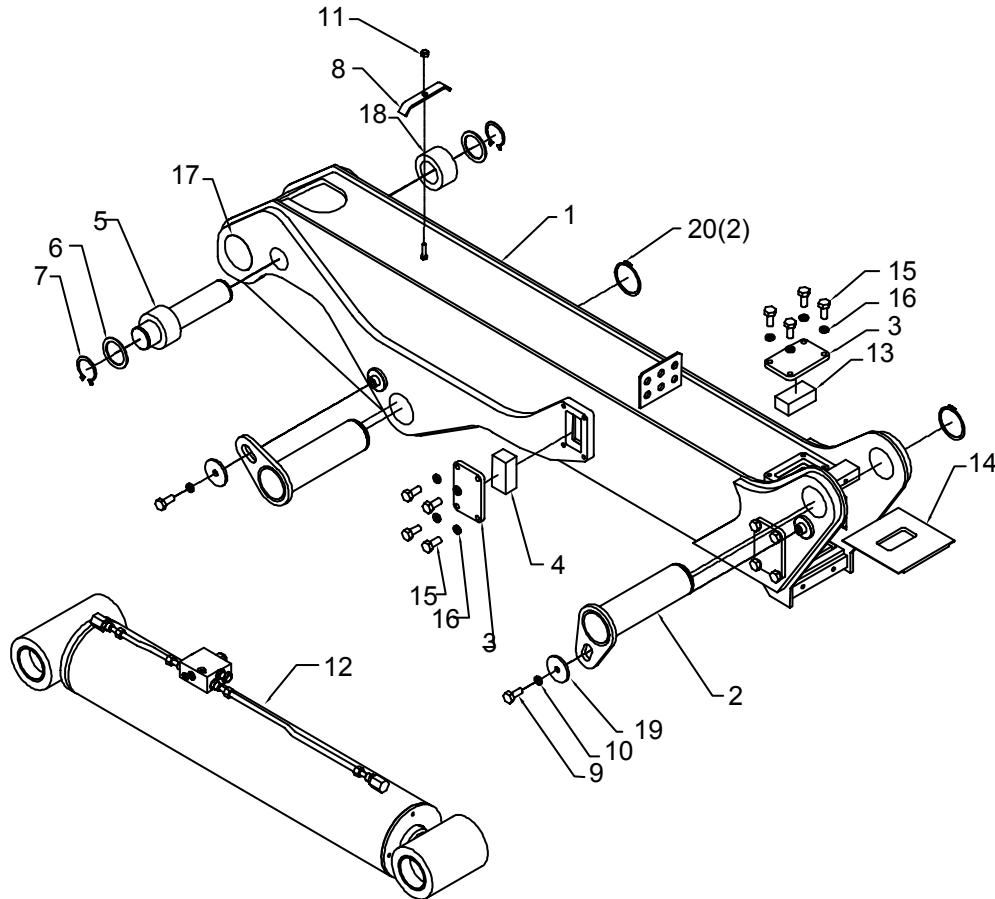
- 1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.
- 2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.
- 3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

3D293990 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	4D293990	CASE ASM (INCL:21)	1REF
2.	4G293990	ROD ASM (INCL:21)	1REF
3.	6IX80243	PISTON	1REF
4.	6A025040	WAFFER LOCK (PART OF 23)	1REF
5.	7T66P080	PISTON SEAL (PART OF 23)	1REF
6.	7Q072263	O-RING (PART OF 23)	1REF
7.	7Q072443	O-RING (PART OF 23)	1REF
8.	7Q10P443	BACKUP RING (PART OF 23)	1REF
9.	7T61N243	LOCK RING (PART OF 23)	1REF
10.	7T2N4080	WEAR RING (PART OF 23)	2REF
11.	7R14P040	ROD WIPER (PART OF 23)	1REF
12.	7R546040	U-CUP LOADED (PART OF 23)	1REF
13.	7T2N2X42	WEAR RING (PART OF 23)	1REF
14.	72062103	NUT 3/8-16 LOCK	1
15.	72532141	PLUG #8MSTR	2

3D293990 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
16.	72533166	ADAPTER #8MFACE#8MSTR	4
17.	70146073	TUBE ASM	1
18.	70146074	TUBE ASM	1
19.	5V298990	VALVE BLOCK (INCL:22)	1
20.	6HX80040	HEAD	1REF
21.	70034454	BEARING (PART OF 1&2)	4REF
22.	73540082	C'BAL VALVE 16GPM (PART OF 19)	1REF
23.	9C293990	SEAL KIT (INCL:4-13)	1REF
24.	77041561	PRESSURE SWITCH	1

Outer Boom Assembly (41715810)

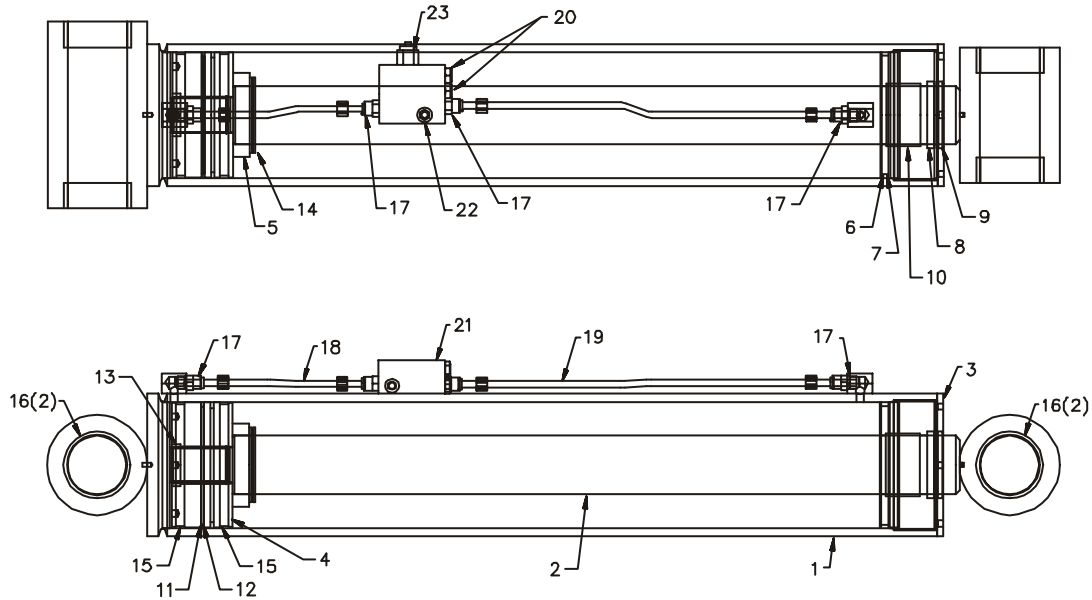


NOTES:

- 1 APPLY NEVER-SEEZ TO COLLAR I.D.
- 2 APPLY NEVER-SEEZ TO PINS. DO NOT EXCEED THE WIDTH OF COLLARS.
- 3 DO NOT ALLOW NEVER-SEEZ TO COME IN CONTACT WITH GAR-MAX BEARINGS.
- 4 USE SERVICEABLE THREAD LOCK ON CAP SCREWS #9 AND #15.
- 5 ANYTIME THE PIN RETAINER PLATE BOLTS HAVE BEEN REMOVED, APPLY LOCTITE 262 TO THE THREADS BEFORE REASSEMBLY.

41715810 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52715775	OUTER BOOM	1
2.	52719232	PIN (WAS 52715806)	2
3.	60107438	PAD RETAINER PLATE	6
4.	60109341	WEAR PAD	4
5.	60122239	PIN	1
6.	72063040	MACH BUSHING 2-1/2X10GA NR	2
7.	72066138	RETAINING RING 2-1/2 EXT HD	2
8.	60103305	HOSE CLAMP	1
9.	72060148	CAP SCR 5/8-11X1-1/4 HHGR5 (WAS 72060149)	2
10.	72063055	WASHER 5/8 LOCK	2
11.	72062103	NUT 3/8-16 LOCK	1
12.	3D298990	CYLINDER	1
13.	60030032	WEAR PAD	2
14.	60122821	WEAR PAD	2
15.	72060091	CAP SCR 1/2-13X1 HHGR5	24
16.	72063053	WASHER 1/2 LOCK	24
17.	71024357	BUSHING BRZ (WAS 71024355)	2
18.	60102954	SLEEVE	2
19.	60109337	RETAINER PLT	2
20.	72661607	RETAINING RING	2

Outer Cylinder (3D298990)



NOTES:

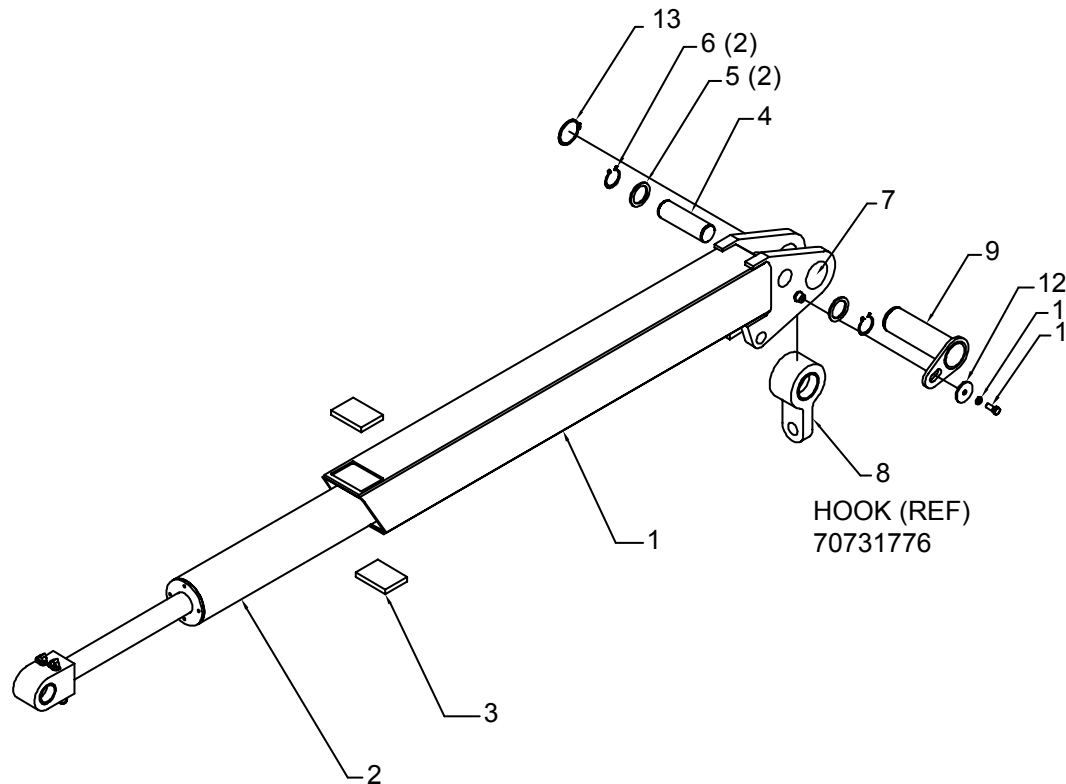
- 1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.
- 2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.
- 3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

3D298990 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	4D298990	CASE ASM (INCL:16)	1
2.	4G298990	ROD ASM (INCL:16)	1
3.	6H075035	HEAD	1
4.	6I298990	PISTON	1
5.	6C100035	STOP TUBE	1
7..	7Q10P441	BACKUP RING (PART OF 24)	1REF
8.	7R546035	U-CUP LOADED (PART OF 24)	1REF
9.	7R14P035	ROD WIPER (PART OF 24)	1REF
10.	7T2N2X37	WEAR RING (PART OF 24)	1REF
11.	7Q072261	O-RING (PART OF 24)	1REF
12.	7T66P075	PISTON SEAL (PART OF 24)	1REF
13.	7T61N218	LOCK RING (PART OF 24)	1REF
14.	6A025035	WAFFER LOCK (PART OF 24)	1REF
15.	7T2N4075	WEAR RING (PART OF 24)	2REF
16.	70034454	BEARING (PART OF 1&2)	4REF
17.	72533166	ADAPTER #8MFACE #8MSTR	4

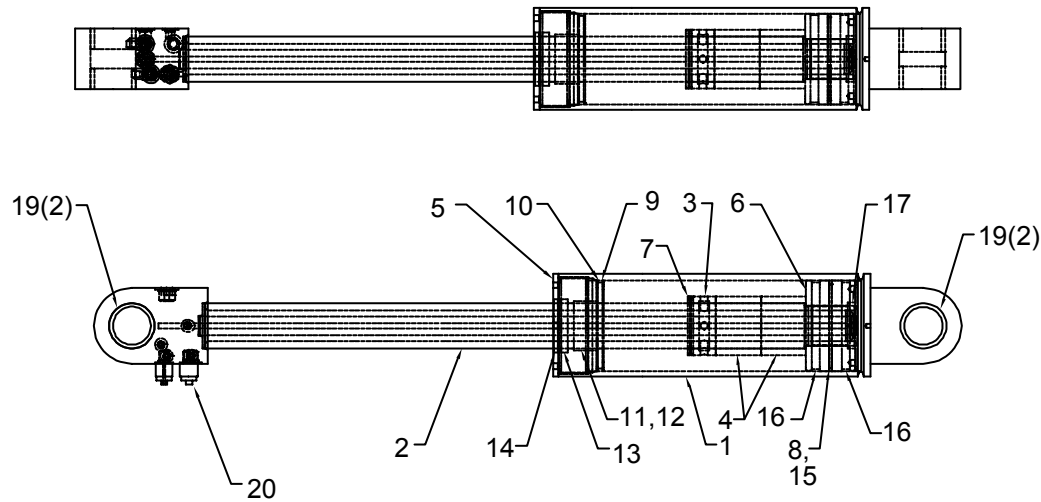
3D298990 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
18.	70146073	TUBE ASM	1
19.	70146075	TUBE ASM	1
20.	72532141	PLUG #8MSTR	2
21.	5V298990	VALVE BLOCK 16GPM (INCL 23)	1
22.	72062103	NUT 3/8-16 LOCK	1
23.	73540082	C'BAL VALVE (PART OF 21)	1REF
24.	9C298990	SEAL KIT (INCL:6-15)	1

Extension Boom Assembly (41715834)



41715834 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52715772	EXTENSION BOOM	1
2.	3D295990	CYLINDER	1
3.	60122274	WEAR PAD	2
4.	60122275	PIN	1
5.	72063040	MACH BUSHING 2-1/2X10GA NR	2
6.	72066138	RETAINING RING 2-1/2 EXT HD	2
7.	71024357	BEARING (WAS 70034454; 71024355)	2REF
8.	60124267	SWIVEL LINK, 15 T	1
9.	52719325	PIN (52715812)	1
10.	72060148	CAP SCR 5/8-11 X 1.25 HHGR5Z (WAS 72060149)	1
11.	72063055	WASHER 5/8 LOCK	1
12.	60109337	RETAINER PLT	1
13.	72661607	RETAINING RING	
REV F 20051215			

Extension Cylinder (3D295990)



NOTES:

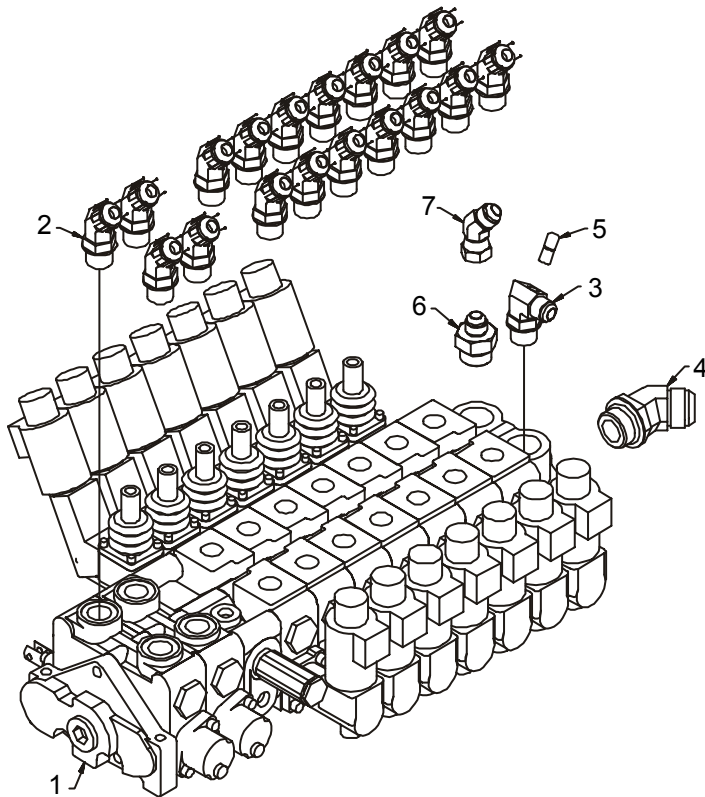
- 1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.
- 2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.
- 3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

3D295990 CYLINDER DATA	
EXTENDED	28.56 SQUARE INCHES; 4.45 GALLONS
RETRACTED	21.49 SQUARE INCHES; 3.35 GALLONS
CASE	6.03" X 6.75" X 50.47" LONG
ROD	3.00" O.D. X 2.00" I.D. X 73.88" LONG
DRY WEIGHT	293 LB
TEST PRESSURE	3500 PSI
OPERATING PRESSURE	3000 PSI

3D295990 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	4D295990	CASE ASSEMBLY	1
2.	52718610	ROD ASSEMBLY	1
3.	6C295990	STOP TUBE	1
4.	6C300030	STOP TUBE	2
5.	6H060030	HEAD	1
6.	6I295990	PISTON	1
7.	6A025030	WAFER LOCK (PART OF 21)	1REF
8.	7Q072253	O-RING (PART OF 21)	1REF
9.	7Q072358	O-RING (PART OF 21)	1REF

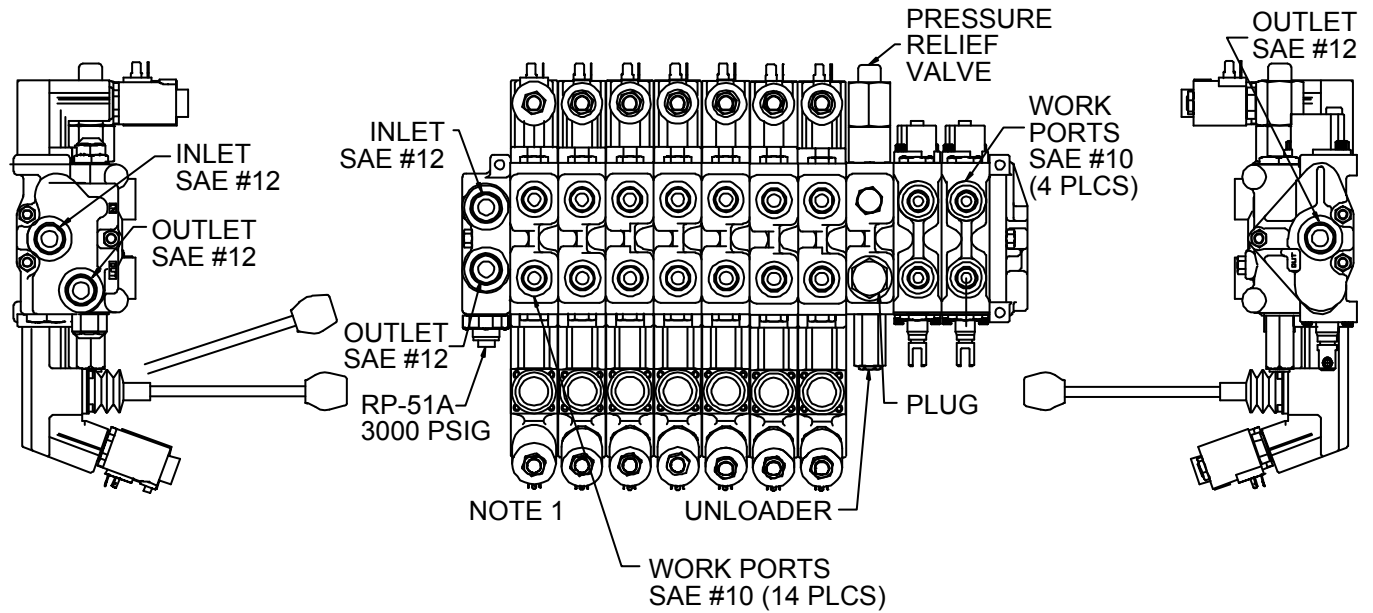
3D295990 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
10.	7Q10P358	BACKUP RING (PART OF 21)	1REF
11.	7T2N8032	WEAR RING (PART OF 21)	1REF
12.	7T2N4032	WEAR RING (PART OF 21)	1REF
13.	7R546030	U-CUP, LOADED (PART OF 21)	1REF
14.	7R14P030	ROD WIPER (PART OF 21)	1REF
15.	7T66P060	PISTON SEAL (PART OF 21)	1REF
16.	7T2N4060	WEAR RING, PISTON (PART OF 21)	1REF
17.	7T295990	LOCK RING, NYLON (PART OF 21)	1REF
19.	70034455	BEARING, GAR MAX (PART OF 1,2)	4REF
20.	73540148	VALVE-HOLDING 1.75:1 (PART OF 2)	2REF
21.	9B295990	SEAL KIT (INCL 7,9-17)	1
REV. G 20060710			

Valvebank Assembly (51715851)



51715851 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	73733415	VALVEBANK 10-SECT	1
2.	72053778	ELBOW #10MSTR #8MJIC 45°	18
3.	60107995	ELBOW-PR GUGE MOD RH	1
4.	72533651	ADPTR #12MSTR #16MJIC 45°	1
5.	72532987	NIPPLE-DISC 1/4 DIAGN W/CAP	1
6.	72532360	ADPTR #12MSTR #8MJIC	1
7.	72532670	ELBOW #8MJIC #8FJIC 45°	1

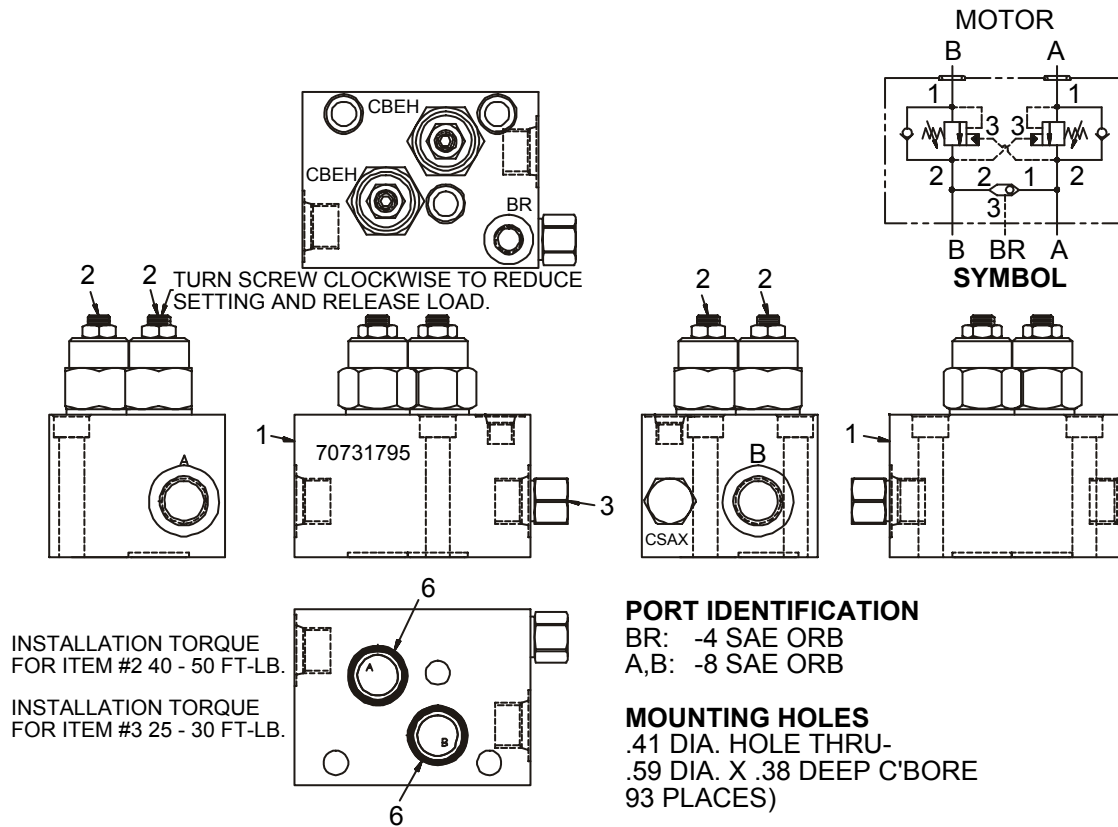
Valvebank, 10 Section (73733415)



NOTES:

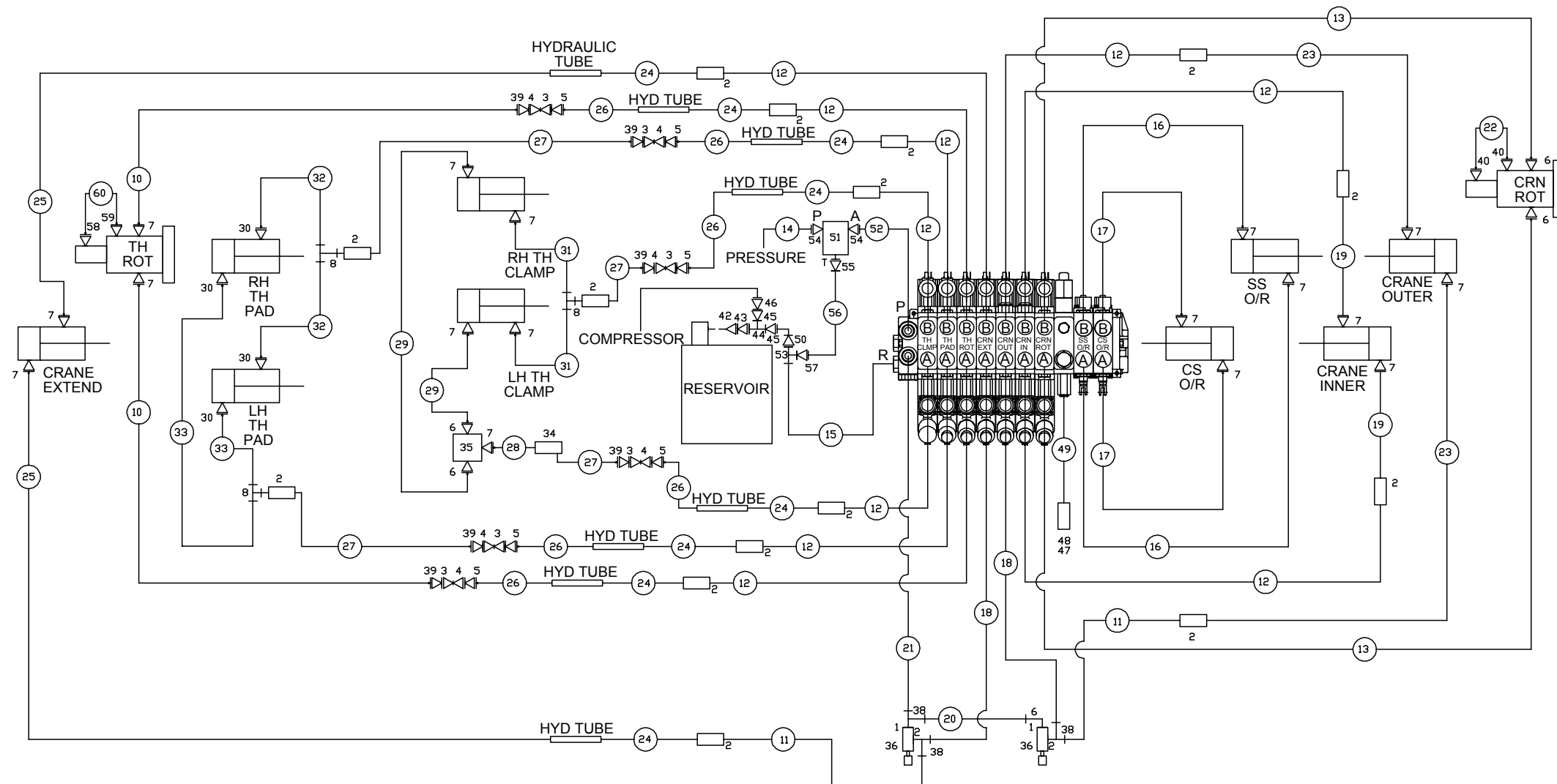
- 1 PROPORTIONAL WORK SECTIONS HAVE 12VDC COILS WITH 15.0 OHMS RESISTANCE.

Valvepack, Dual Counterbalance (70731795)



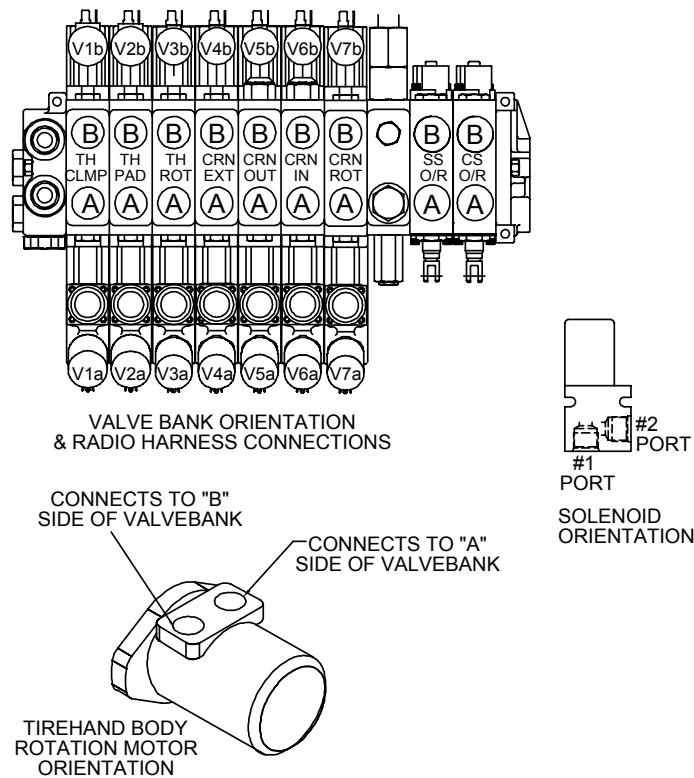
70731795 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	70143099	BODY	1
2.	73054538	C'BAL VALVE	2
3.	70146018	SHUTTLE VALVE	1
6.	7Q072017	O-RING	2

Hydraulic Kit (91715845)



NOTE:

USED ON 23516 UNITS WITH SERIAL NUMBER 23516021001 TO PRESENT, AND 14K160TH UNIT WITH SERIAL NUMBER 14K160TH021005.

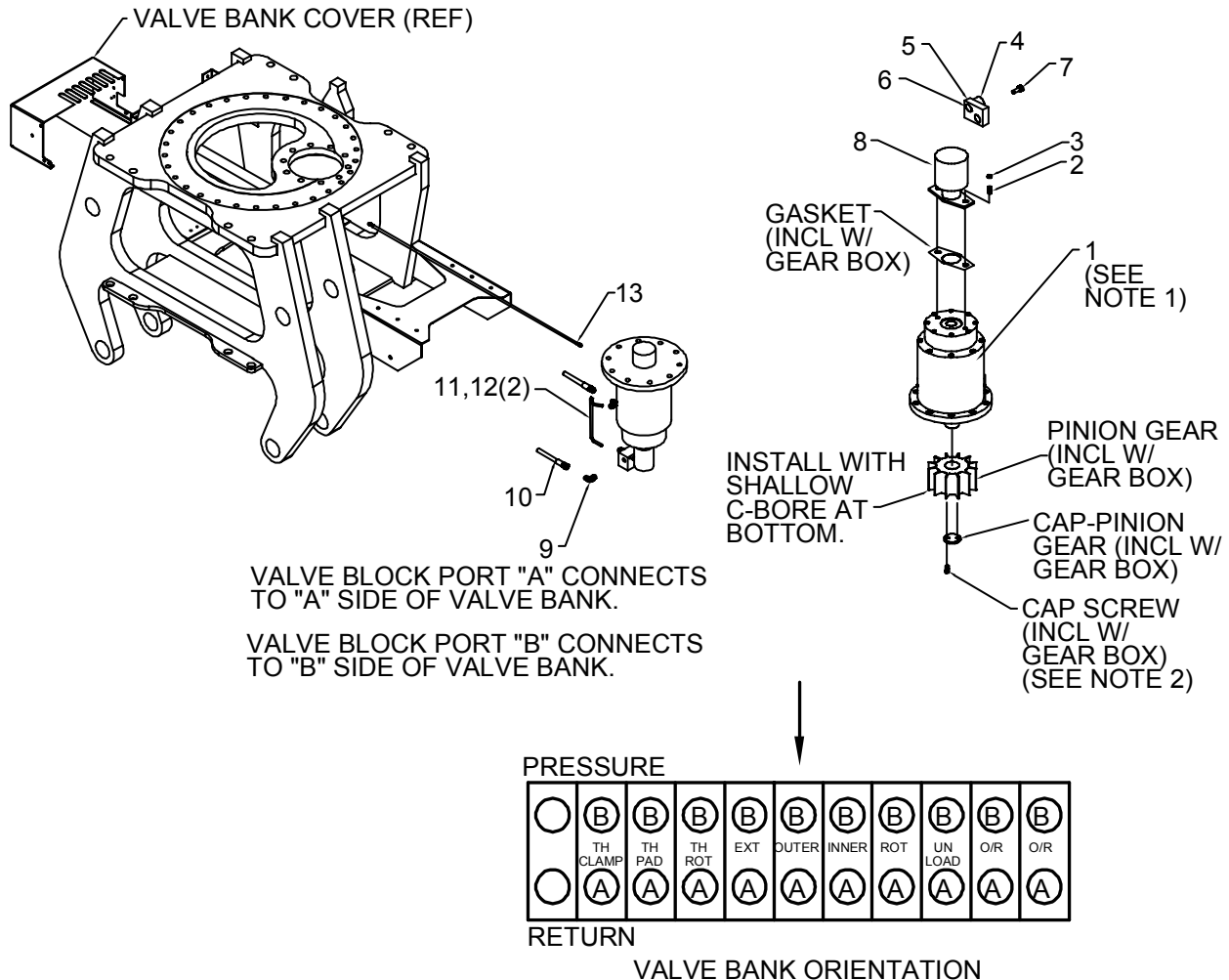
**NOTE:**

- 1 PLACE ITEM #61, WRAP AROUND SLEEVE, AROUND RADIO HARNESS WIRES ROUTED TO CONTROL BOX ASSEMBLY.

91715845 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	72053497	ADAPTER 1/2MPT #8MJIC	6
2.	72533566	SWIVEL-INLINE #8MJIC	15
3.	72533579	DISC COUPLER 1/2NPT	6
4.	72533580	COUPLER-DISC .50 (WAS 72533643)	6
5.	72533607	ADAPTER 1/2MPT #8MJIC BLKHD	6
6.	72053763	ELBOW #8MSTR #8MJIC 90°	5
7.	72532358	ADAPTER #8MSTR #8MJIC	17
8.	72532671	TEE SWVLNUTBRNCH #8JIC	3
9.	51715950	HOSE KIT (CRANE & TH) (INCL:10-21,22-29,31-33)	
10.	51395202	HOSE-FF 38X83 #8#8	2REF*
11.	51395404	HOSE-FF 50X48 #8#8	2REF*
12.	51395413	HOSE-FF 50X59 #8#8	10REF*
13.	51395429	HOSE-FF 50X45 #8#8	2REF*
14.	51395722	HOSE-FI 63X73 #12#12	1REF*
15.	51395723	HOSE-FJ 1X112 #20#16	1REF*

91715845 PARTS LIST			
16.	51395724	HOSE-FI 50X51 #8#8	2REF*
17.	51395725	HOSE-FI 50X84 #8#8	2REF*
18.	51395726	HOSE-FJ 50X25 #8#8	2REF*
19.	51395727	HOSE-FJ 50X14 #8#8	2REF*
20.	51395728	HOSE-JJ 50X12 #8#8	1REF*
21.	51395729	HOSE-FI 50X16.5 #8#8	1REF*
22.	70146107	TUBE ASM-ROTATION	1REF
23.	51395731	HOSE-FF 50X85 #8#8	2REF*
24.	51395733	HOSE-FF 50X87 #8#12	8REF*
25.	51395734	HOSE-FF 50X52 #8#12	2REF*
26.	51395735	HOSE-FF 50X94 #8#12	6REF*
27.	51395736	HOSE-FF 50X74 #8#8	4REF*
28.	51395737	HOSE-FF 50X14 #8#8	1REF*
29.	51395738	HOSE-FJ 50X37 #8#8	2REF*
30.	72532356	ADAPTER #8MSTR #6MJIC	4
31.	51395740	HOSE-FF 50X20 #8#8	2REF*
32.	51395741	HOSE-FF 38X133 #6#8	2REF*
33.	51395742	HOSE-FF 38X126 #6#8	2REF*
34.	72533648	SWIVEL #8MJIC 90°	1
35.	73054922	VALVE-FLOW DIVIDER	1
36.	73054980	VALVE-SOLENOID	2
38.	72533650	TEE #8MSTR	3
39.	72053497	ADAPTER 1/2MPT #8MJIC	6
40.	72532775	ADAPTER #4MSTR #6MJIC	2REF
42.	72532560	ADAPTER 1-1/2MSTR 1-1/2FPT	1REF
43.	72053251	PIPE NIPPLE 1-1/2NPT X CLOSE	1REF
44.	72053607	TEE 1-1/2NPT	1REF
45.	72053578	REDUCER BUSHING 1-1/2 1NPT	2REF
46.	72053680	ADAPTER 1MPT #16MJIC	1REF
47.	70733498	ACCUMULATOR	1
48.	72066507	MUFFLER CLAMP 2-1/4	1
49.	51395932	HOSE-FJ 38X18.5 #6#6	1
50.	72531430	ELBOW 1MPT #16MJIC 90°	1REF
51.	73055278	VALVE ASM - RELIEF/SOL	1REF
52.	51396300	HOSE-FF 3/4 X 35 OAL	1REF
53.	72533000	TEE-SWVL NUT RUN JIC 16	1REF
54.	72053767	ELBOW-#12MSTR #12MJIC 90°	2REF
55.	72532366	ADPTR-#12MSTR #12MJIC	1REF
56.	51396303	HOSE-FJ 3/4 X 61 OAL	1REF
57.	72532971	ELBOW #16 MJIC #16FJIC SW	1REF
58.	72532351	ELBOW-M JIC/F JIC SW 16 16	1REF
59.	72053758	ELBOW-M JIC/F JIC SW 16 16	1REF
60.	51398870	HOSE-FJ .25 X 9.5 100R17 (WAS 51396974-18")	1REF
61.	60350106	HOSE SLEEVE - WRAP AROUND	8FT
		* PART OF ITEM 9, HOSE KIT	
REV M 20100330			

Hydraulic Kit - Crane Rotation (99901234)



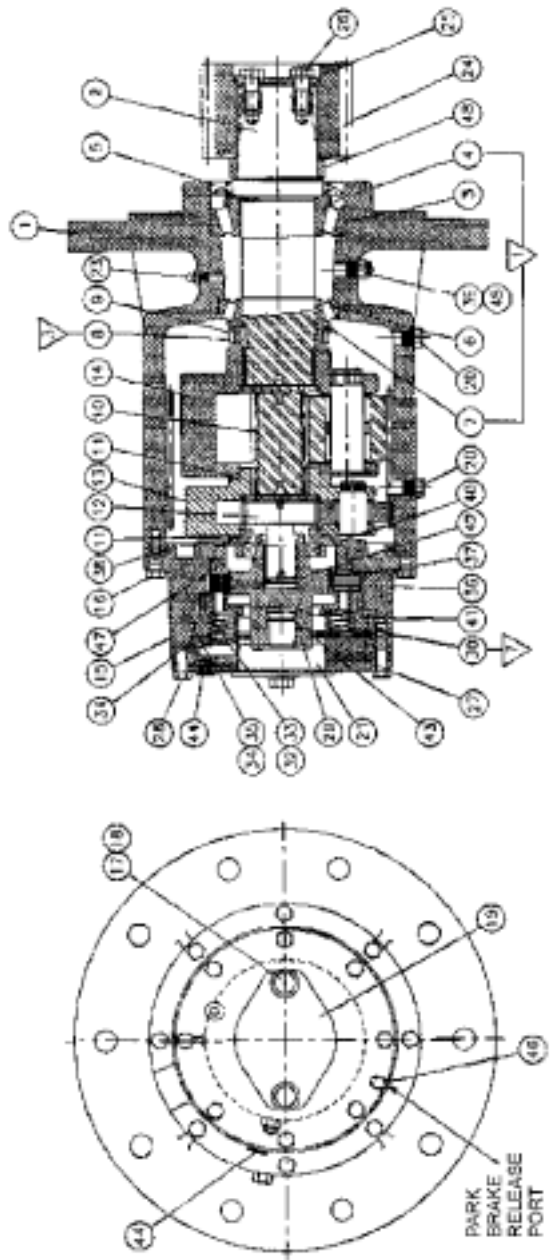
NOTES:

- 1 FILL WITH 7 PINTS OF 90 EP GEAR OIL.
- 2 USE A CLEANER/PRIMER ON THREADS. APPLY A SERVICEABLE THREAD LOCK. TORQUE CAP SCREWS TO 75 FT-LB.
- 3 BRAKE IS LUBRICATED WITH 80-90W GEAR OIL WHEN MOUNTED PINION UP ONLY.

99901234 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	70056564	GEAR BOX	1REF
2.	60106032	STUD 1/2-13X2	2
3.	72062080	NUT 1/2-13 LOCK	2
4.	73054538	C'BAL VALVE	2REF
5.	70731795	VALVEPACK-DUAL C'BAL	1
6.	7Q072017	O-RING	2REF
7.	72060757	CAP SCR 3/8-16X2-1/2 SH	3

99901234 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
8.	73051473	MOTOR-ROTN	1
9.	72053763	ELBOW #8MSTR #8MJIC 90°	2REF
10.	51395429	HOSE-FF 50X45 #8#8	2REF
11.	70146107	TUBE ASM-ROTN	1
12.	72532775	ADAPTER #4MSTR #6MJIC	2
13.	53000718	GREASE EXT 55 OAL 53 HOSE	1REF
REV D 20080103			

Gearbox (70056564)

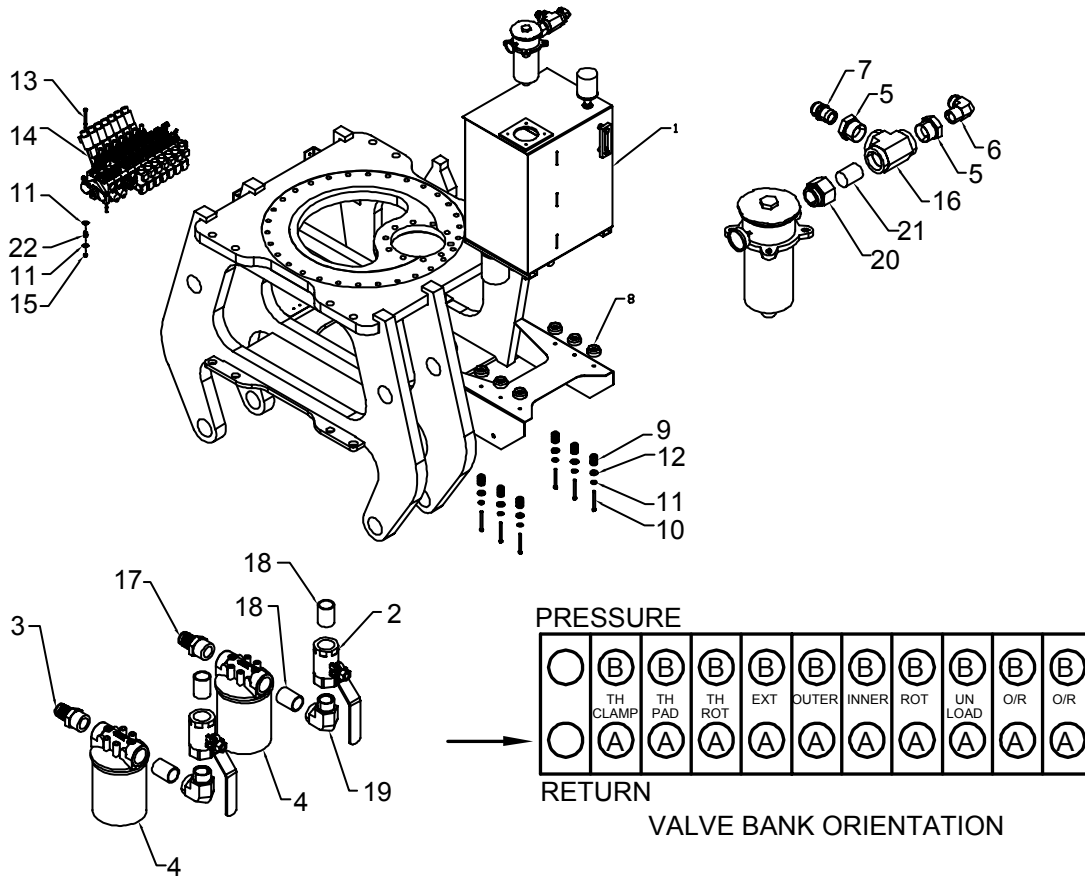


70056564 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	43502	GEAR HOUSING	1
2.	71410926	SHAFT, OUTPUT	1
3.	70146129	BEARING, CUP	1
4.	70146130	BEARING, CONE	1

70056564 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
5.	70146131	OIL SEAL	1
6.	70146132	BEARING, CUP	1
7.	70146133	BEARING, CONE	1
8.	70146134	LOCKNUT, BEARING	1
9.	70146135	LOCKWASHER, BEARING	1
10.	41742	GEAR, SUN, OUTPUT	1
11.	70146137	RACE	2
12.	42773	GEAR, SUN, INPUT	1
13.	4138	INPUT GEAR SET	1
14.	4176	GEAR SET, OUTPUT	1
15.	42897	HOUSING, BRAKE	1
16.	939261	CAPSCREW M10/12	8
17.	20913	WASHER	2
18.	23543	CAPSCREW	2
19.	33561	PROTECTOR	1
20.	70146146	PLUG, O-RING	2
21.	70146147	CAPLUG	1
23.	21128	FITTING, GREASE ZERK	1
24.	70146148	PINION GEAR	1
25.	42760	SPACER	1
26.	20524	CAPSCREW	2
27.	42712	COVER, BRAKE	1
28.	30076	CAPSCREW	8
29.	70146153	DRIVER, BRAKE	1
30.	70146154	SPRING, BRAKE	6
31.	70146155	O-RING	1
32.	70146156	O-RING	1
33.	70146157	O-RING	1
34.	70146158	O-RING	1
35.	70146159	O-RING	1
36.	70146160	DISC, FRICTION	4
37.	70146161	PLATE, STATOR	6
38.	70146162	O-RING	1
39.	13050	BREATHER	1
40.	70146164	BEARING	1
41.	70146165	PISTON, BRAKE	1
42.	70146166	RETAINING RING	1
43.	70146167	RETAINING RING	1
44.	70146168	RETAINING RING	1
45.	42752	PLUG, O-RING, SPECIAL	1
46.	70146170	CAPLUG	1
47.	70146171	PISTON, BRAKE	1
48.	70146172	SPACER	1

Hydraulic Kit - Reservoir (99901235)

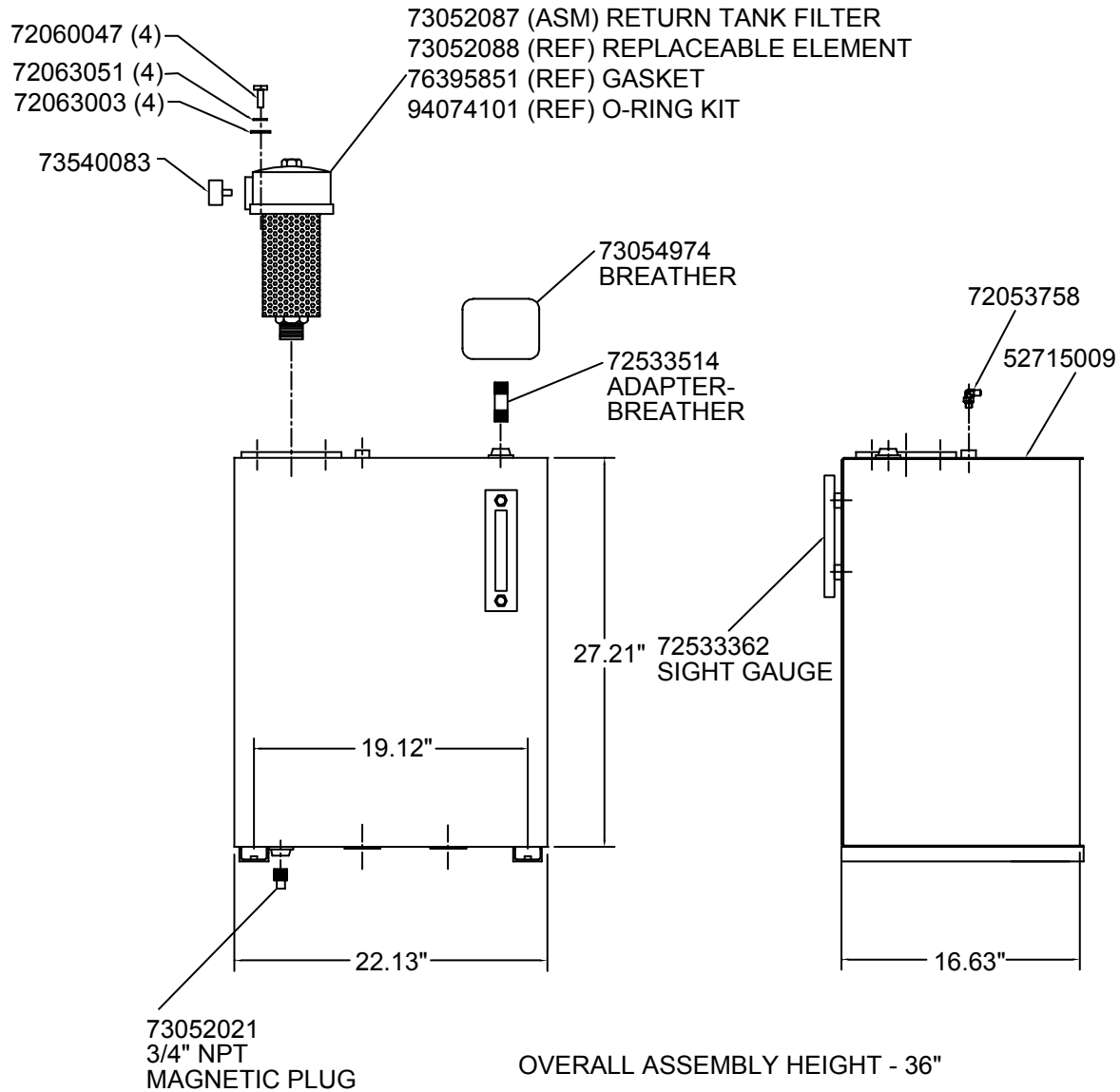


99901235 PARTS LIST

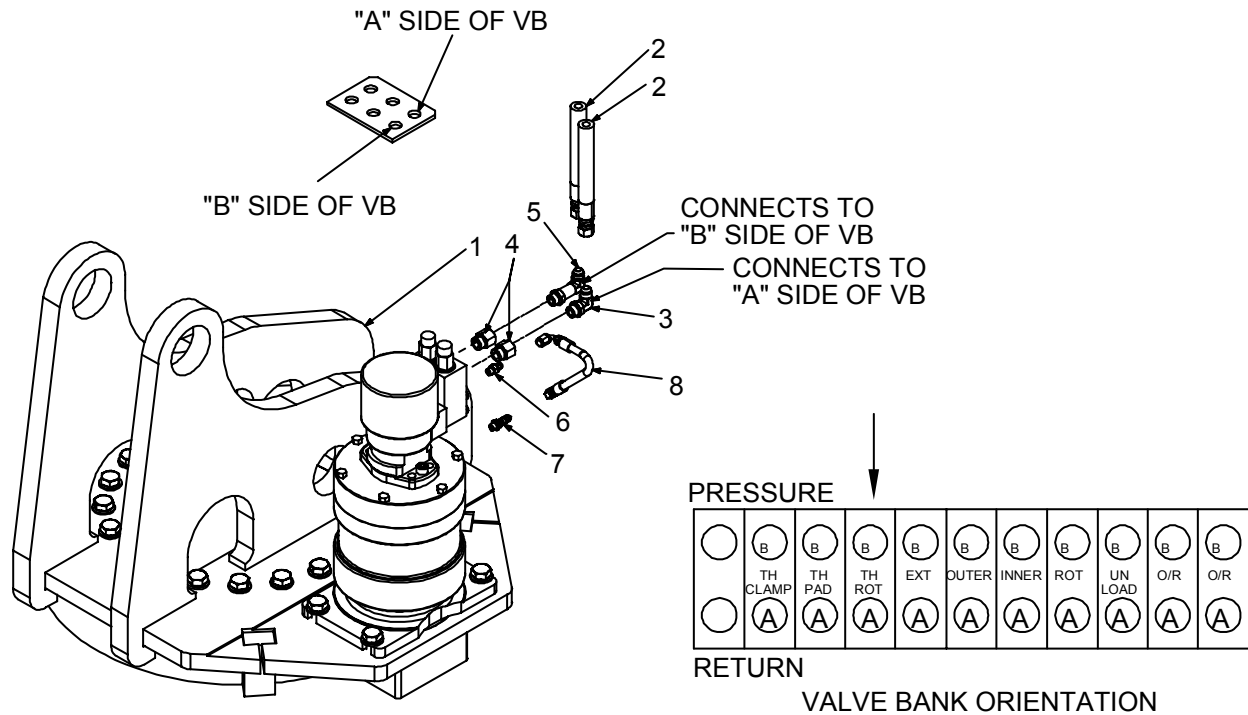
ITEM	PART #	DESCRIPTION	QUANTITY
1.	51715011	RESERVOIR ASM	1
2.	73054232	BALL VALVE 1-1/4NPT	2
3.	72531550	BARB NIPPLE 1-1/4MPT 1-1/4	1
4.	73052012	RETURN FILTER 100MESH	2
5.	72053578	REDUCER BUSHING 1-1/2 1NPT	2
6.	72531430	ELBOW 1MPT #16MJIC 90°	1
7.	72053680	ADAPTER 1MPT #16MJIC	1
8.	76391527	RUBBER BUMPER	6
9.	70144807	SPRING	6
10.	72060055	CAP SCR 3/8-16X3-1/2 HHGR5	6
11.	72063003	WASHER 3/8 WRT	12
12.	72063005	WASHER 1/2 WRT	6
13.	72060037	CAP SCR 5/16-18X4 HHGR5 (WAS 72060031)	3
14.	51715851	VALVEBANK ASM	1
15.	72062001	NUT 5/16-18 HEX	3
16.	72053607	TEE 1-1/2NPT	1

99901235 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
17.	72531551	BARB NIPPLE 1-1/4MPT 1-1/2	1
18.	72053211	PIPE NIPPLE 1-1/4NPT X CLOSE	4
19.	72531135	STREET ELBOW 1-1/4NPT 90°	2
20.	72532560	ADAPTER 1-1/2MSTR 1-1/2FPT	1
21.	72053251	PIPE NIPPLE 1-1/2NPT X CLOSE	1
22.	71410697	SPRING	3
REV C 20031216			

Reservoir Assembly (51715011)

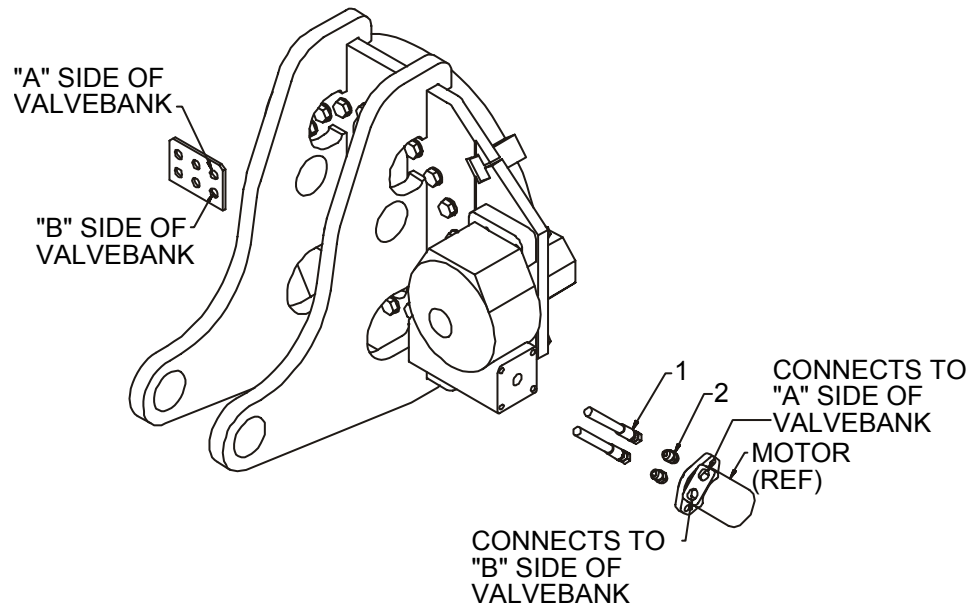


Hydraulic Kit - TireHand Rotation (99903055)

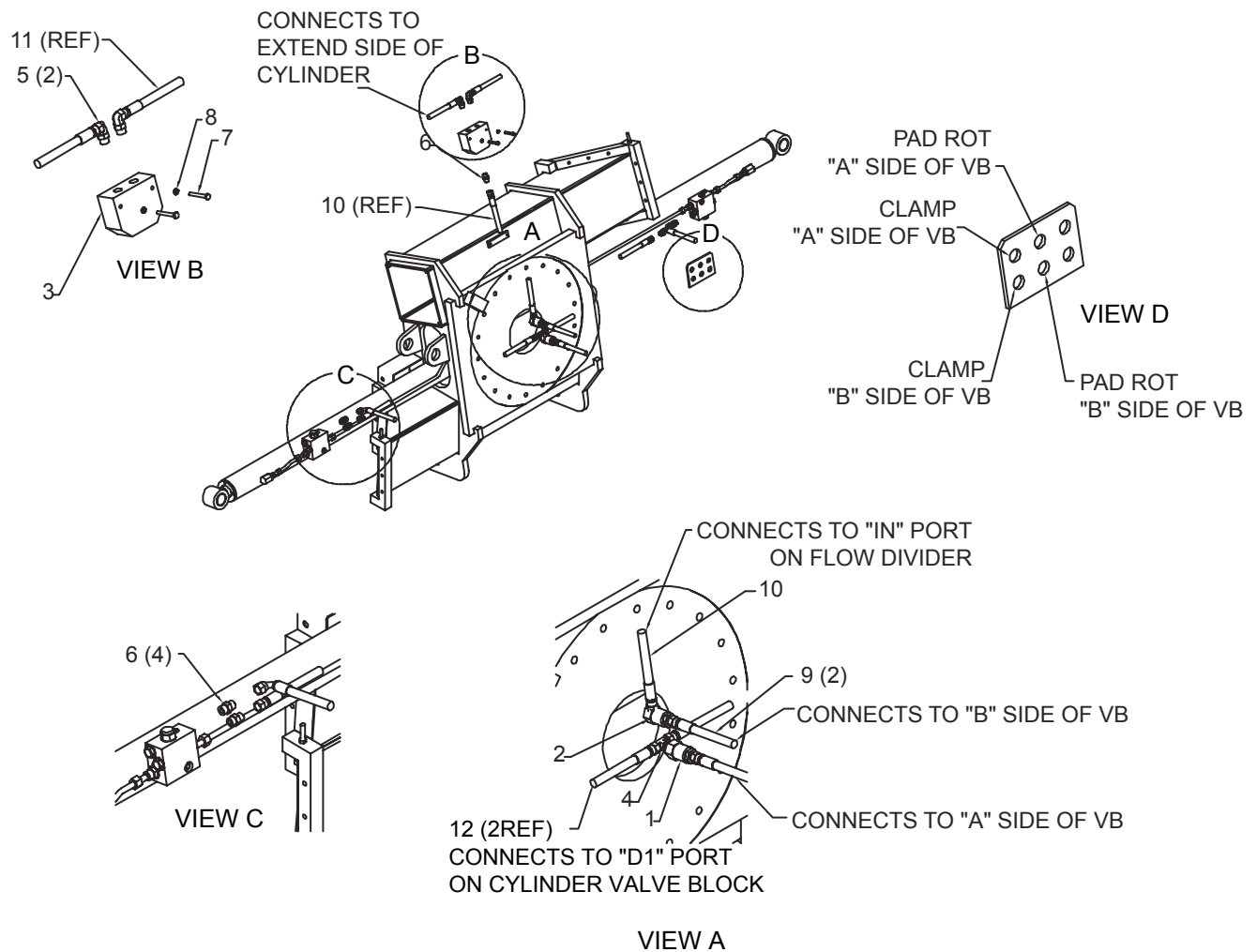


99903055 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	41715811	YOKE ASSEMBLY	REF
2.	51395202	HOSE-FF 3/8X83	2
3.	72053763	ELBOW #8MSTR #8MJIC 90DEG	1
4.	72531206	ADPTR #10MSTR #8FSTR	2
5.	72532666	ELBOW #8MSTR #8MJIC XLG	1
6.	72532351	ADAPTR-M STR/M JIC 4 4	1
7.	72053758	ELBOW-M STR/90/M JIC 4 4	1
8.	51398870	HOSE-FJ .25 X 9.5 (4-4) R10017 (WAS 51398870-18")	1
REV D 20100330			

Hydraulic Kit - TireHand Rotation (Thru 11-2005)



Hydraulic Kit-TireHand (99903056)



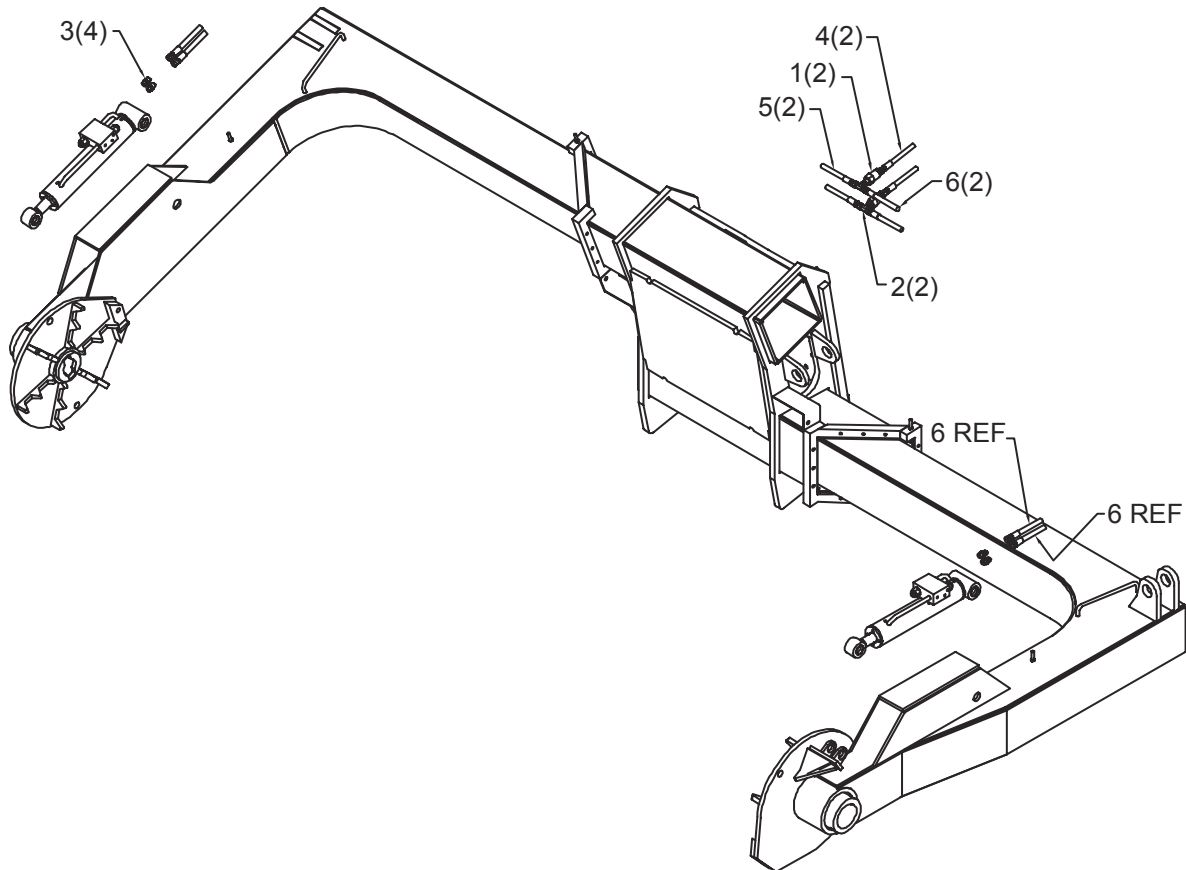
NOTE:

- 1 ROUTE ALL HOSES GOING FROM BULKHEAD PLATE TO THE TIREHAND YOKE THRU THE HOSE SLEEVE (#13).

99903056 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	72533566	SWIVEL-INLINE #8MJIC #8MJIC	1REF
2.	72533648	SWIVEL #8MJIC 90°	1REF
3.	73054922	FLOW DIVIDER VALVE	1REF
4.	72532671	TEE #8 SWVLNUTBRNCH	1REF
5.	72053763	ELBOW #8MSTR #8MJIC 90°	2REF
6.	72532358	ADAPTER #8MSTR #8MJIC	5REF
7.	72060009	CAP SCR 1/4-20X2-1/4 HHGR5	2
8.	72063049	WASHER 1/4 LOCK	2
9.	51395736	HOSE-FF .50X74 #8#8	2REF

99903056 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
10.	51395737	HOSE-FF .50X14 #8#8	1REF
11.	51395738	HOSE-FJ .50X37 #8#8	2REF
12.	5139574	HOSE-FF .50X20 #8#8	2REF
13.	60350095	SLEEVE-HOSE AS	1

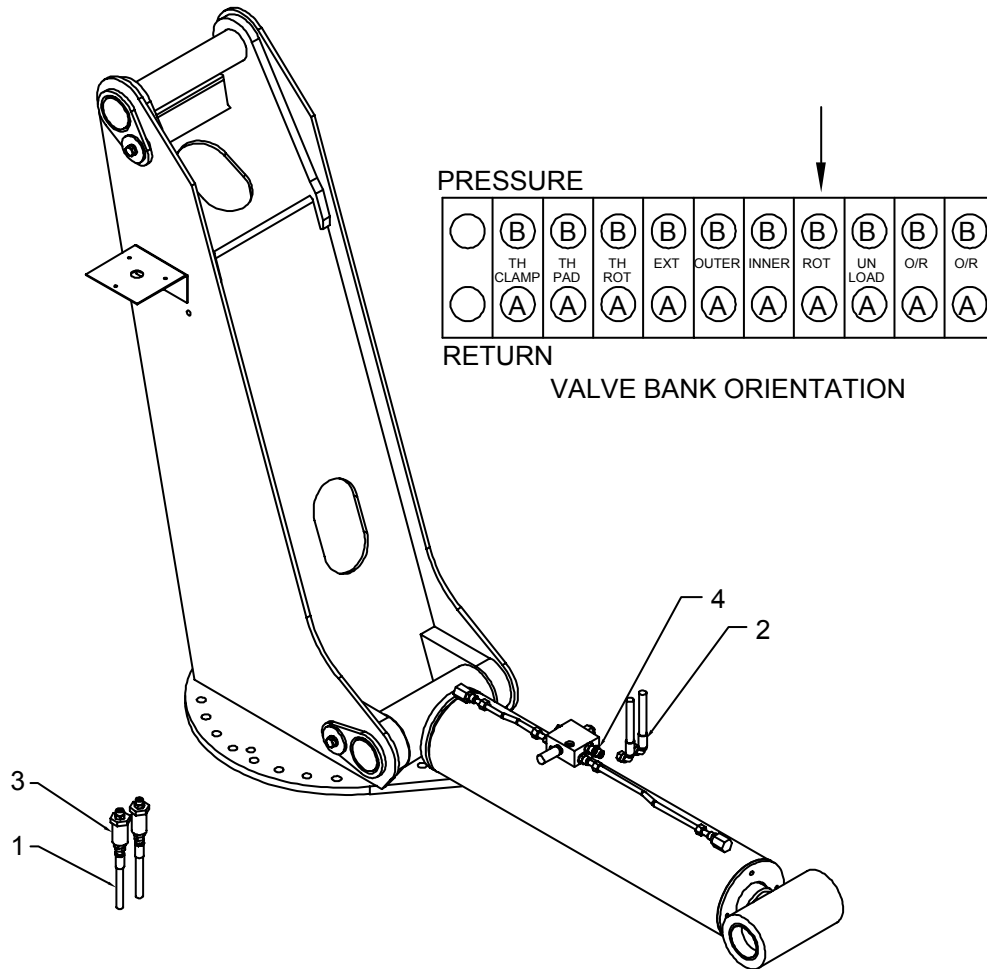
99903056-2 DRAWING**NOTES:**

- 1 "A" SIDE OF VALVE BANK CONNECTS TO BASE HOSE PORT ON CYLINDER.
- 2 "B" SIDE OF VALVE BANK CONNECTS TO ROD HOSE PORT ON CYLINDER.
- 3 INSTALL HOSES (#5 & #6) THRU SLEEVE (#7). USE THE CLAMPS ON THE ARMS TO HOLD SLEEVE IN PLACE.

99903056-2 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	72533566	SWIVEL-INLINE #8MJIC	2REF
2.	72532671	TEE #8JIC SWVLNUTBRNCH	2REF
3.	72532356	ADAPTER #8MSTR #6MJIC	4REF
4.	51395736	HOSE-FF 50X74 #8#8	2REF
5.	51395741	HOSE-FF 38X133 #6#8	2REF
6.	51395742	HOSE-FF 38X126 #6#8	2REF
7.	60350096	SLEEVE 1-5/8 X 53	2

Hydraulic Kit - Inner Cylinder (99903149)



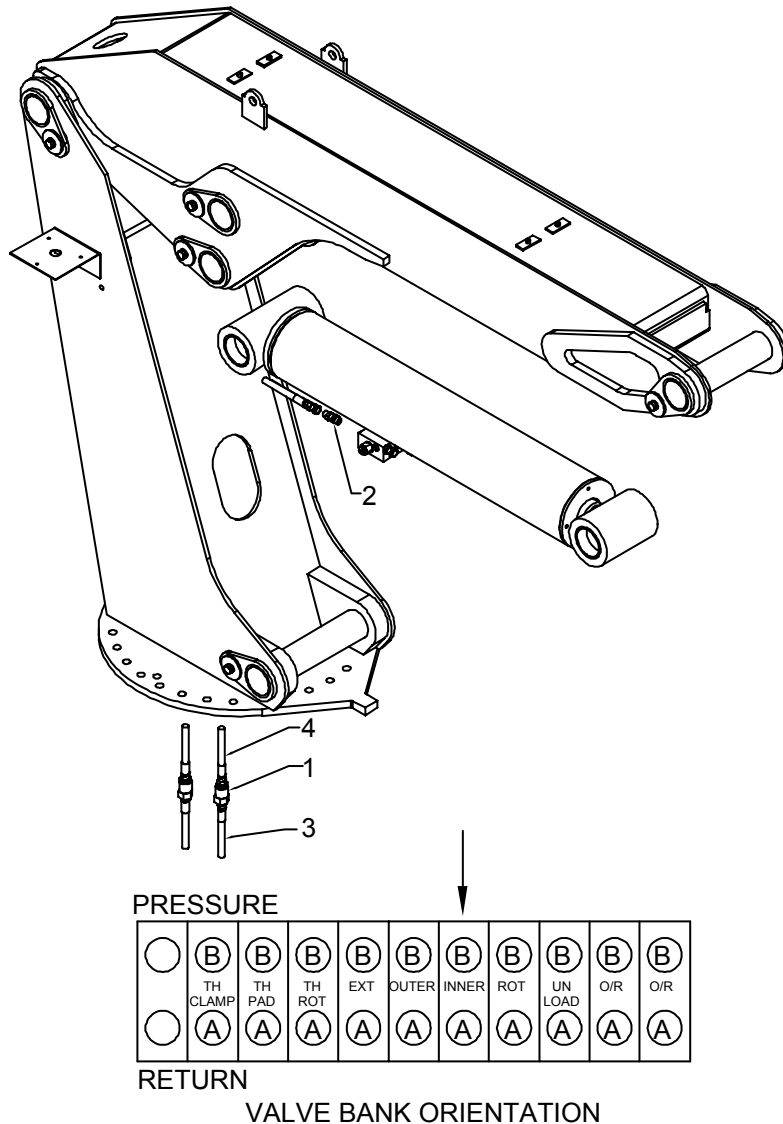
NOTES:

- 1 CYLINDER PORT "D1" CONNECTS TO "A" SIDE OF VALVE BANK
- 2 CYLINDER PORT "C1" CONNECTS TO "B" SIDE OF VALVE BANK.

99903149 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	51395413	HOSE-FF 50X59 #8#8	2REF
2.	51395727	HOSE-FJ 50X14 #8#8	2REF
3.	72533566	SWIVEL-INLINE #8MJIC	2REF
4.	72532358	ADAPTER #8MSTR #8MJIC	2REF
REV. E 20050627			

Hydraulic Kit - Outer Cylinder (99903150)



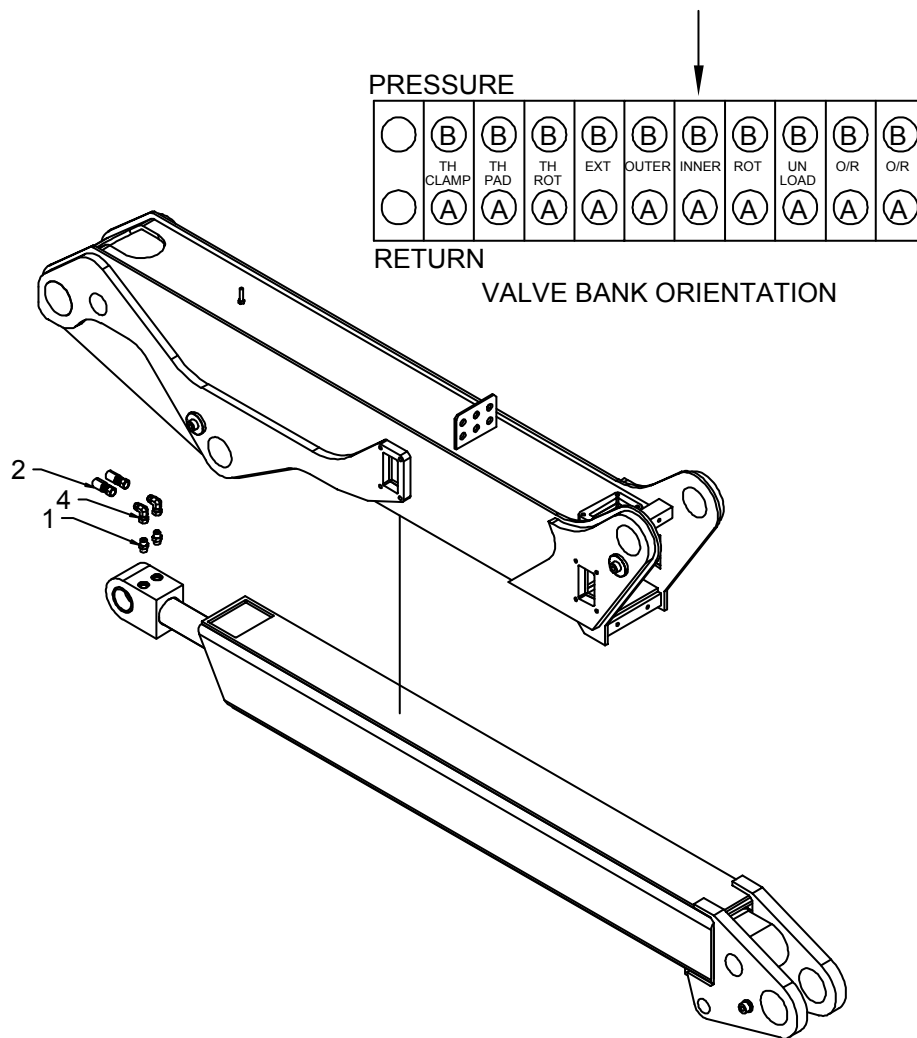
NOTES:

- 1 CYLINDER PORT "D2" CONNECTS TO "A" SIDE OF VALVEBANK.
- 2 CYLINDER PORT "C2" CONNECTS TO "B" SIDE OF VALVEBANK.

99903150 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	72533566	SWIVEL-INLINE #8MJIC	2REF
2.	72532358	ADAPTER #8MSTR #8MJIC	2REF
3.	51395413	HOSE-FF 50X59 #8#8	2REF
4.	51395731	HOSE-FF 50X85 #8#8	2REF
REV C 20050627			

Hydraulic Kit - Extension Cylinder (99903151)



NOTES:

- 1 CYLINDER PORT "E" CONNECTS TO "A" SIDE OF VALVEBANK.
- 2 CYLINDER PORT "R" CONNECTS TO "B" SIDE OF VALVEBANK.
- 3 RUN HOSES (#2) THRU SLEEVE (#3).

99903151 PARTS LIST

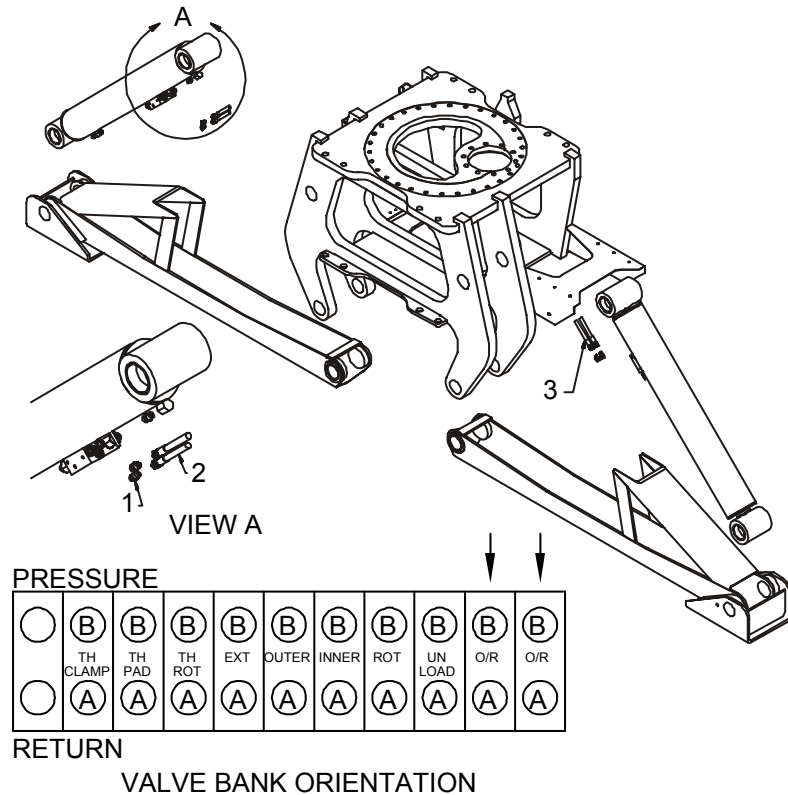
ITEM	PART #	DESCRIPTION	QUANTITY
1.	72532358	ADAPTER #8MSTR #8MJIC	2REF
2.	51395733	HOSE-FF 50X87 #8#12	2REF
3.	60350093	SLEEVE-HOSE AS	1
4.	72532658	ELBOW #8MJIC/90/#8FJIC SW	2REF

NOTES:

- 1 INSTALL HOSES THAT RUN FROM THE VALVEBANK TO THE HYDRAULIC TUBES, INSIDE ITEM #12 (SLEEVE-HOSE). TIE THE SLEEVE AS CLOSE TO THE TUBES AS POSSIBLE. (HOSES WILL BE RUN IN GROUPS OF FOUR, INSIDE THE SLEEVE.)
- 2 ROUTE THE HOSES OUT THE BOTTOM HOLE OF THE MAST AND UP THE BACK OF THE MAST (OUTSIDE).
- 3 INSTALL HOSES (#10) THAT RUN TO THE BULKHEAD PLATE INSIDE SLEEVE (#14). (HOSES RUN IN GROUPS OF 3).

99903152 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	72533579	DISC COUPLER 1/2 FF-501-8FP	6REF
2.	72533580	DISC COUPLER 1/2 FF-502-8FP	6REF
3.	72533430	ADAPTER 1/2MPT #8MJIC BLKHD	6REF
4.	70146076	TUBE ASM	8
5.	72060034	CAP SCR 5/16-18X3-1/4 HHGR5	4
6.	70034417	HOSE CLAMP 3/4	8
7.	70144819	COVER PLATE	4
8.	72533566	SWIVEL-INLINE #8MJIC	6REF
9.	51395413	HOSE-FF 50X59 #8#8	6REF
10.	51395735	HOSE-FF 50X83 #8#12	6REF
11.	72053497	ADAPTER 1/2MPT #8MJIC	6REF
12.	60350092	SLEEVE 2-3/8 X 78	2
13.	51395733	HOSE-FF 1/2 X 87 OAL (8-12)	6REF
14.	60350094	SLEEVE 2-3/8 X 70	2
REV G 20060206			

Hydraulic Kit - Outriggers (99903153)



STREETSIDE CONNECTIONS

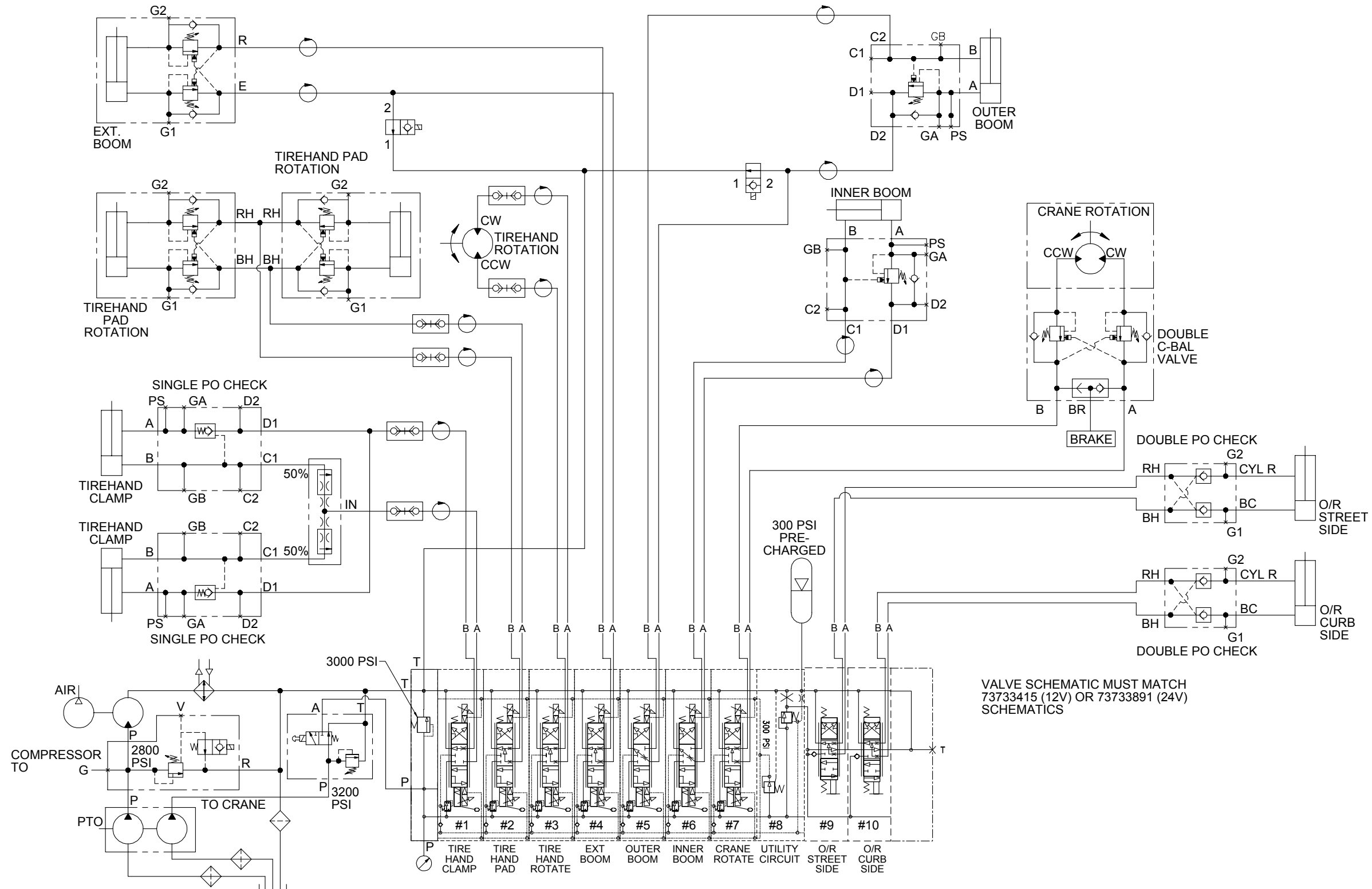
- 1 CYLINDER PORT BASE HOSE CONNECTS TO "A" SIDE OF VALVEBANK.
- 2 CYLINDER PORT ROD HOSE CONNECTS TO "B" SIDE OF VALVEBANK.

CURBSIDE CONNECTIONS

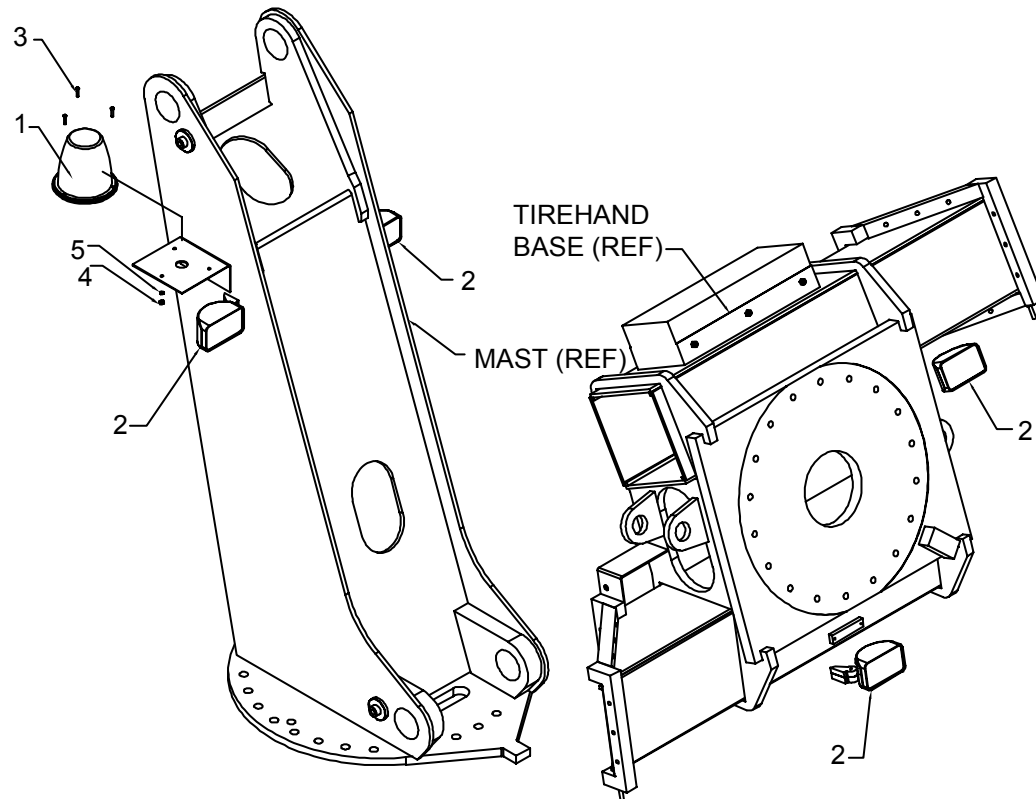
- 1 CYLINDER PORT ROD HOSE CONNECTS TO "A" SIDE OF VALVEBANK.
- 2 CYLINDER PORT BASE HOSE CONNECTS TO "B" SIDE OF VALVEBANK.

99903153 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	72532358	ADAPTER #8MSTR #8MJIC	2REF
2.	51395724	HOSE-FI 0.50 X 51 #8 #8	2REF
3.	51395725	HOSE-FI 0.50 X 84 #8 #8	2REF

Hydraulic Schematic (99903210)

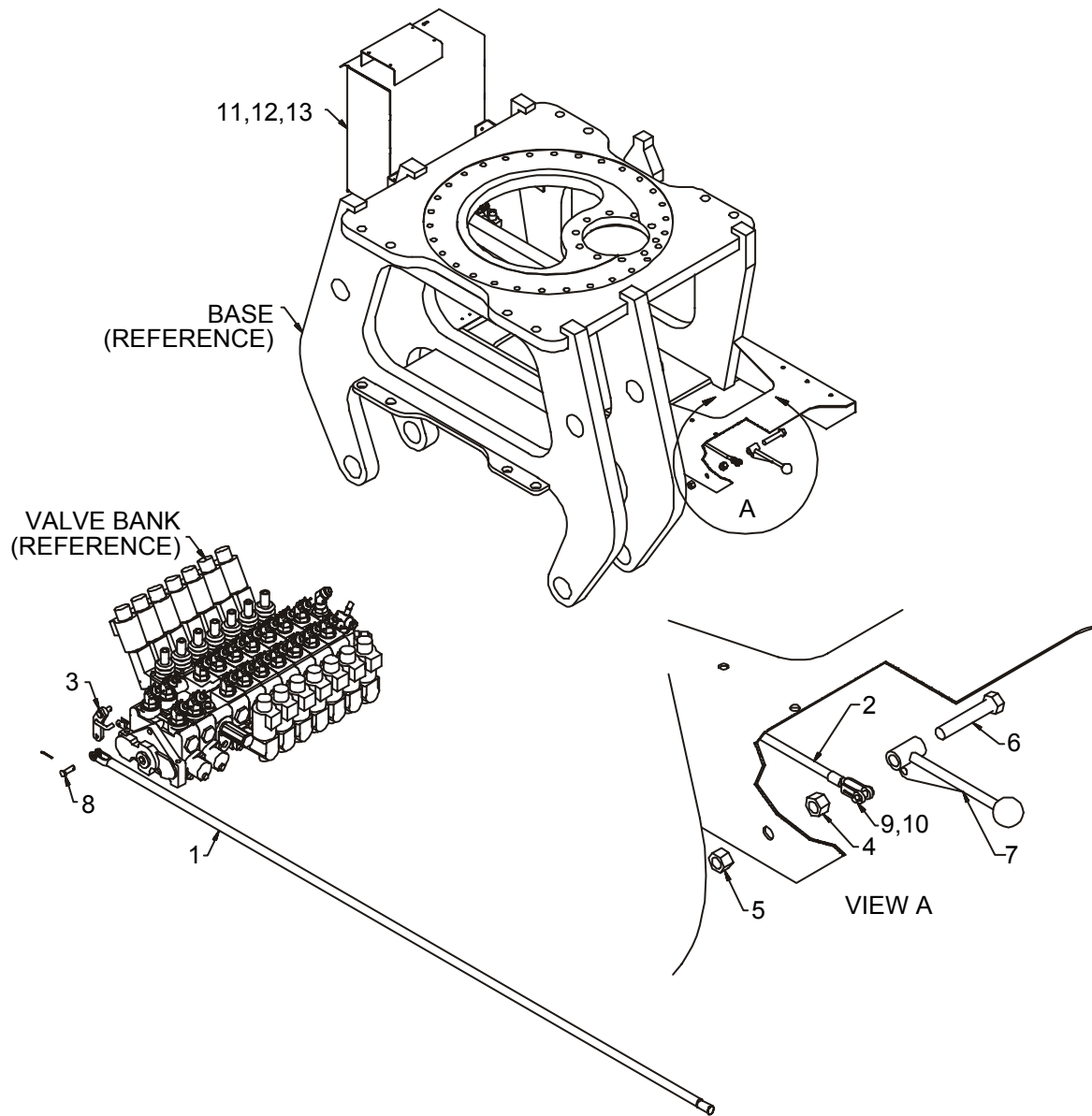


Light Kit (51715873)



51715873 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	77040417	BEACON LIGHT-AMBER	1
2.	77040404	LIGHT-SIDE MNT/WORK	2
3.	72060638	MACH SCR #10-24X1 RDHD	3
4.	72062106	NUT #10-24 LOCK	3
5.	72063047	WASHER #10 LOCK	3
6.	77044918	HARNESS-OTR CRANE	1
7.	77044958	HARNESS-OTR TIREHAND	1
REV B 20050627			

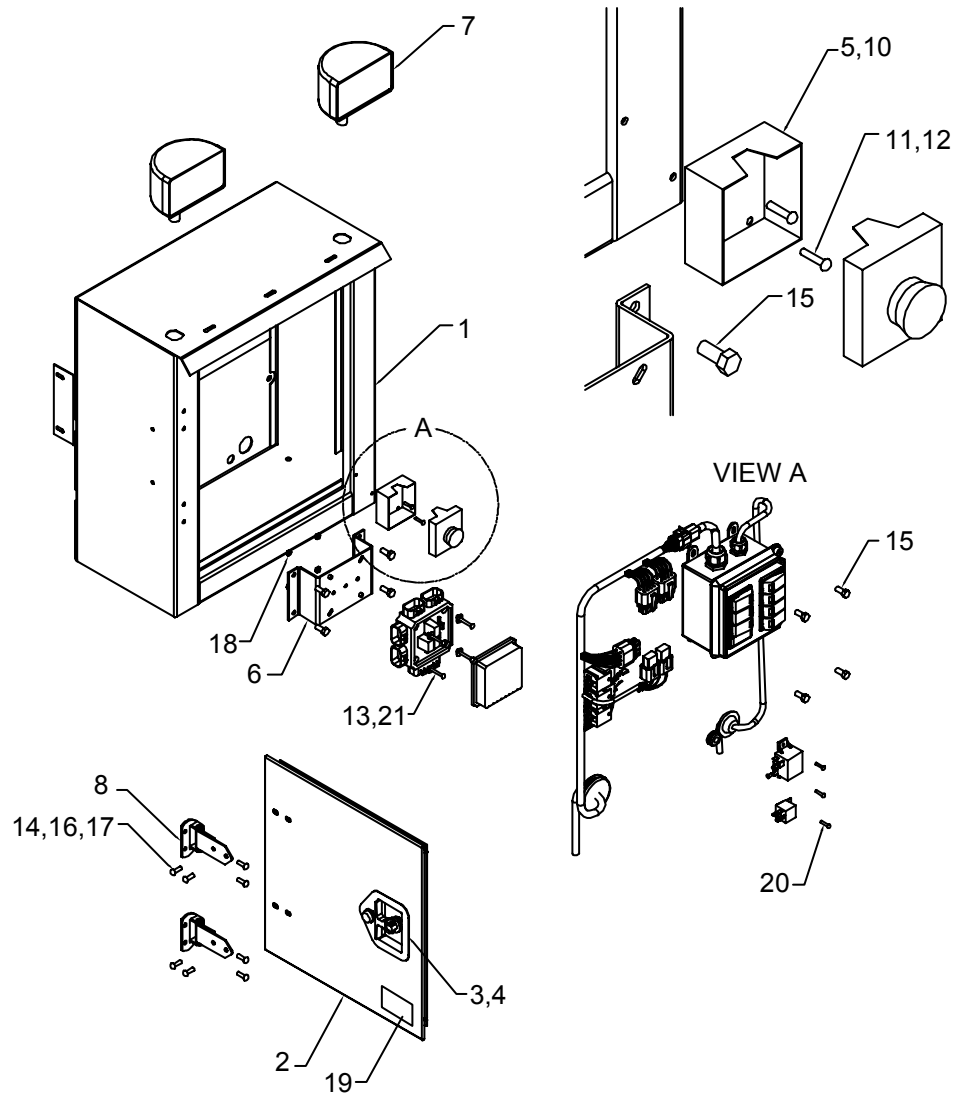
Control Kit (90715855)



90715855 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52702016	CTRL ROD-F	1
2.	52702018	CTRL ROD-M	1
3.	60122226	LINK-VB	1
4.	72062006	NUT 5/8-11 HEX	1
5.	72062091	NUT 5/8-11 LOCK	1
6.	72060155	CAP SCR 5/8-11X3-1/2 HHGR5	1

90715855 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
7.	60025254	CTRL ROD	1
8.	94731839	LINK & PIN KIT	1
9.	72066168	COTTER PIN	1
10.	72066338	CLEVIS PIN 5/16X1	1
11.	41715890	CTRL BOX ASM (SEE DWG)	1
12.	73733417	RADIO RMT KIT	1
13.	72060046	CAP SCR 3/8-16X1 HHGR5	4
14.	72062103	NUT 3/8-16 LOCK	4

Electrical Control Cabinet (41718269)



NOTES:

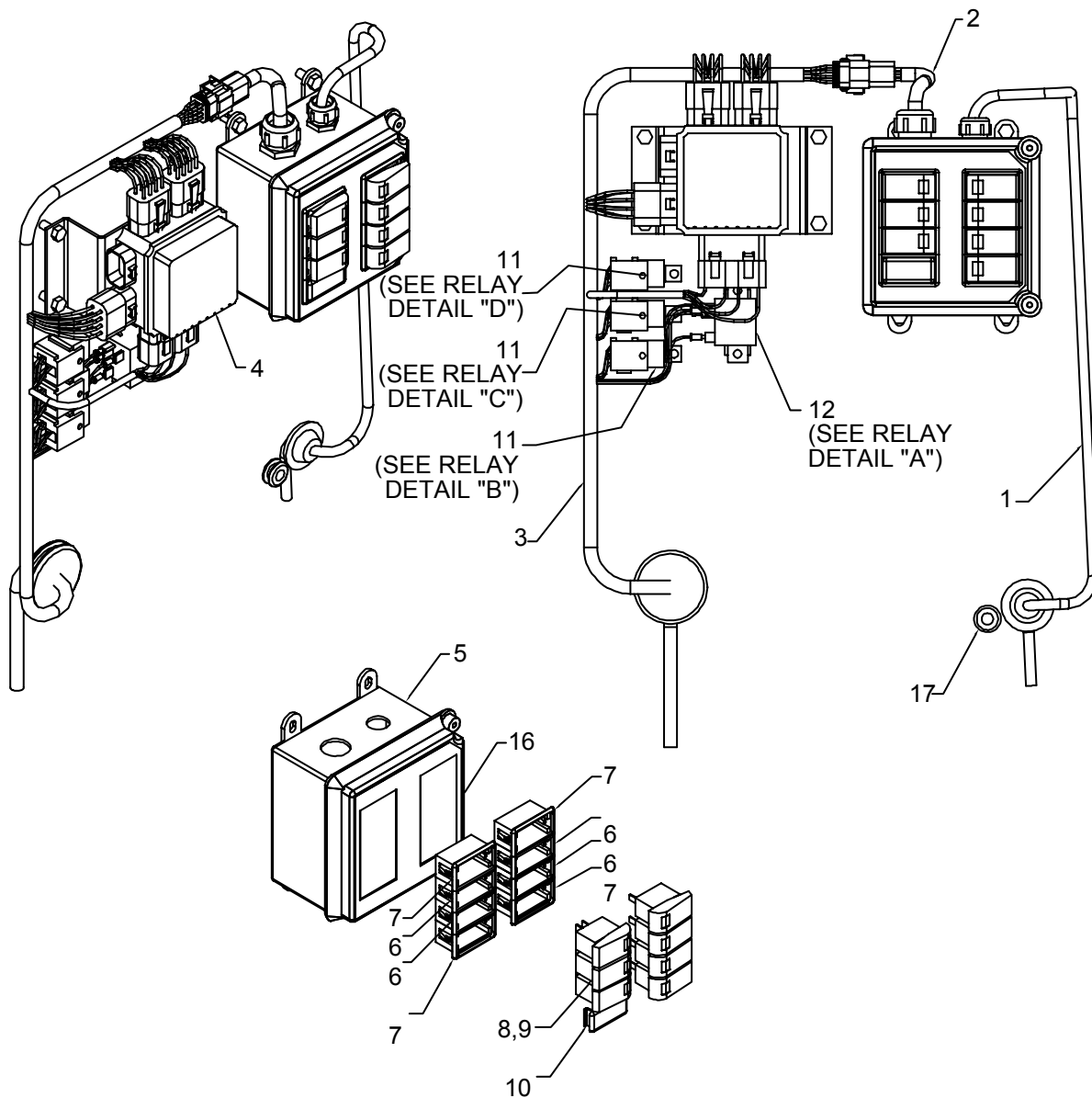
- 1 INSTALL WEATHERSTRIP (ITEM #9) AROUND DOOR OPENING.
- 2 INSTALL DUAL-LOCK FASTENER (ITEM #19) INSIDE LEFT SIDE WALL OF CABINET. USE ITEM #19 TO MOUNT RADIO REMOTE CONTROL CHARGER. (USE 2 STRIPS ON CABINET WALL AND 2 STRIPS ON CHARGER.

41718269 PARTS LIST

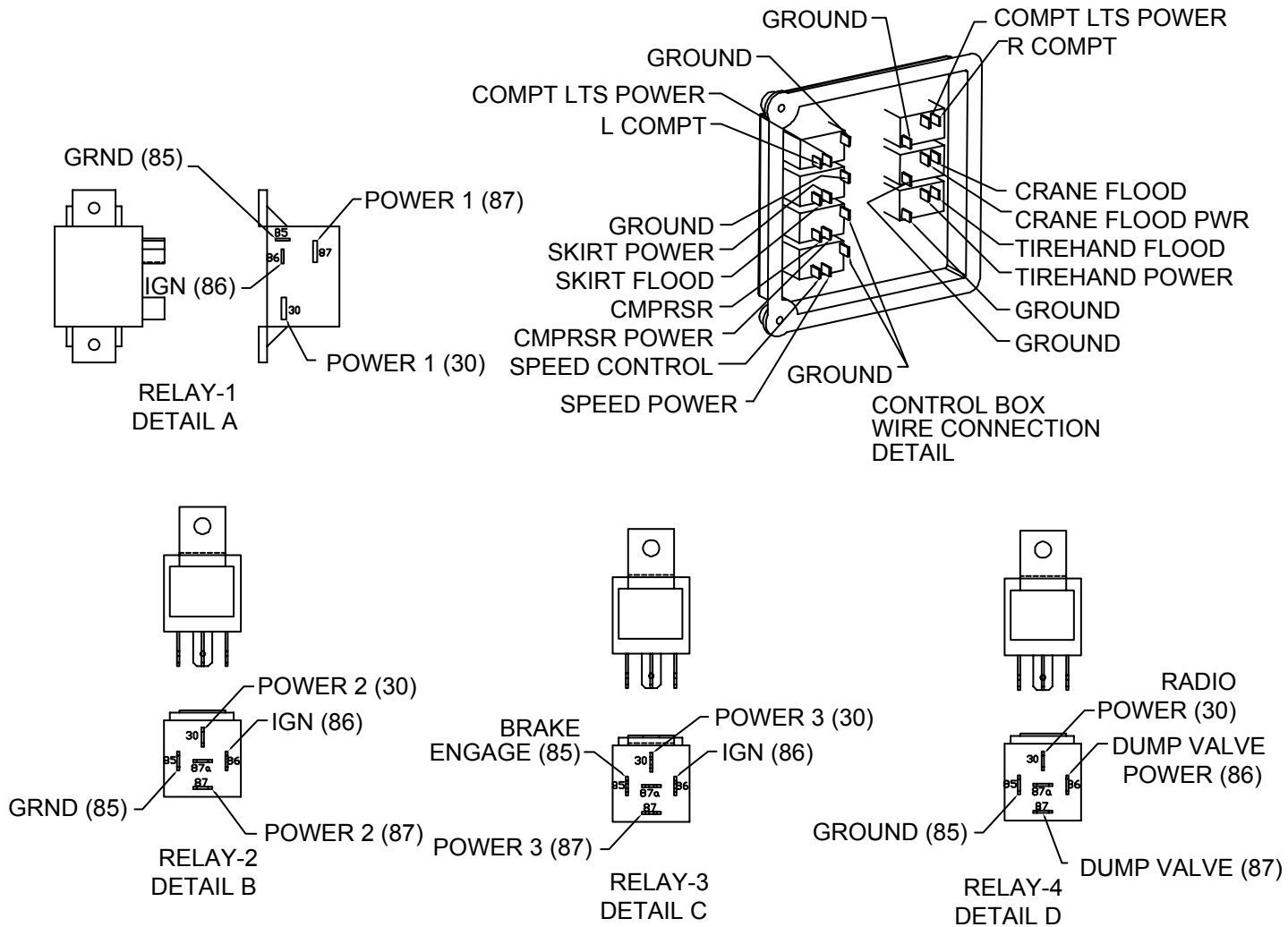
ITEM	PART #	DESCRIPTION	QUANTITY
1.	41721887	CABINET WELDMENT (WAS 52715880)	1
2.	52713707	DOOR WELDMENT	1
3.	72661470	LATCH ASM, 1-PT	1
4.	76393253	GASKET, LATCH W/STUDS	1

41718269 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
5.	77041486	SWITCH, E-STOP	1
6.	60121574	BRACKET, FUSE/RELAY BOX	1
7.	77040424	LIGHT, WORK LAMP	2
8.	72661383	HINGE, SS 10-GA	2
9.	89393637	WEATHERSTRIP, 1/2X1/2 TRIMLOC	5.5'
10.	77044468	CONNECTOR 1/2" STR REL .12-.25	1
11.	72601725	SCR-MACH 6-32 1/2 RDH PHLPS	2
12.	72601726	NUT 6-32 HEX NYLOC	2
13.	72060643	SCR-MACH 10-24 X 1.50 RDH SST	4
14.	72601652	SCR-MACH 1/4-20X3/4 TRHTORXSS	8
15.	72061004	SCR-SHT MET 14X3/4 SLT HEXZ	8
16.	72062194	NUT-SS 1/4-20 NYLOC	6
17.	72062264	NUT-1/4-20 WELD TP2120	2
18.	72062053	NUT 10-24 HEX ZINC	4
19.	70396515	DECAL-WARNING-NO STORE IN E-CABINET	1
20.	72060835	SCR-SELF TAP 8-18 3/4 HHZINC	5
21.	72063166	WASHER SS 1/4 WRT 18-8 5/8 OD	4
REV. C 20080903			

Electrical Control Box Assembly (41718269-2)

**NOTE:**

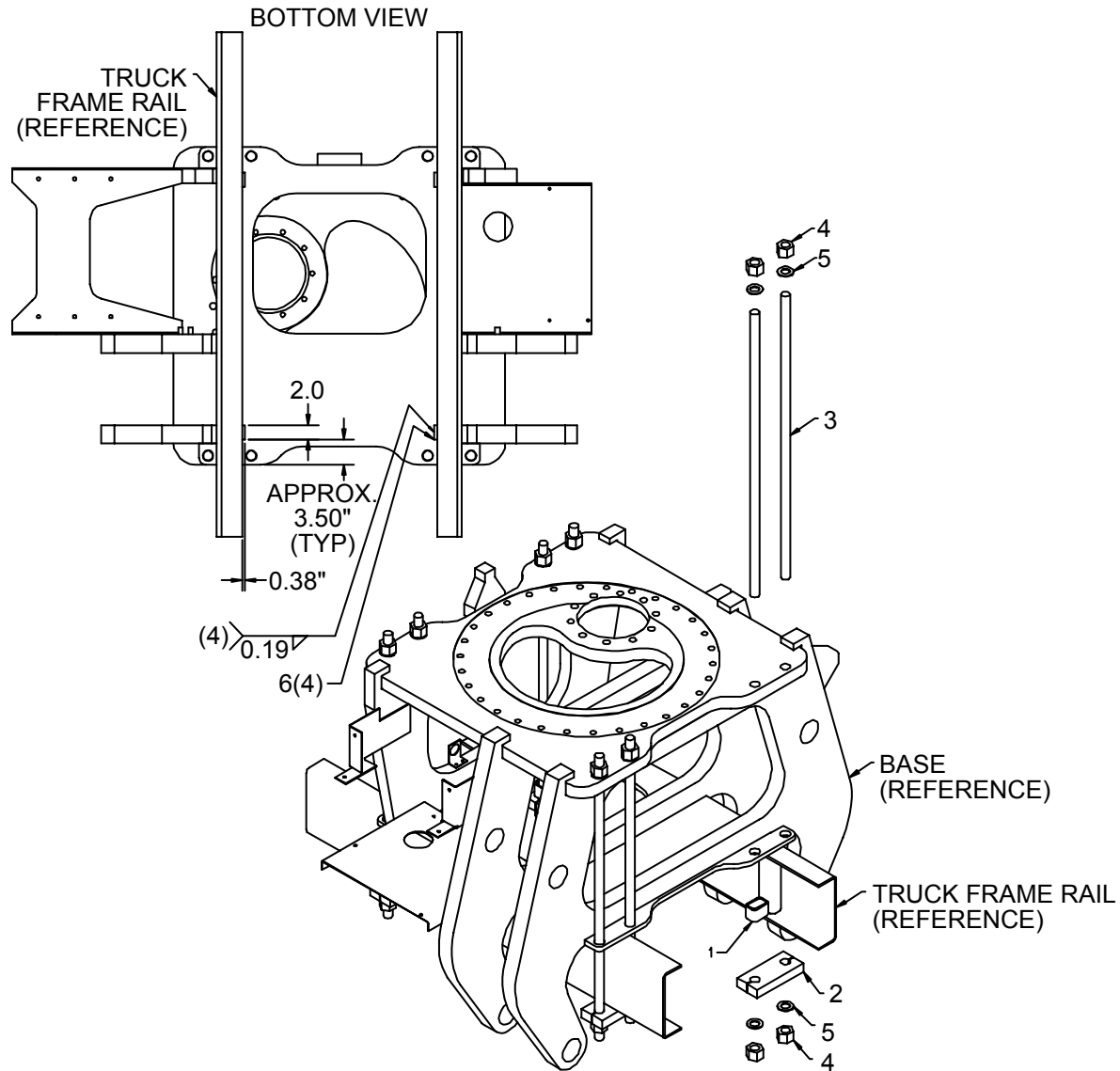
1 FOR COMPLETE WIRING CONNECTIONS, SEE WIRING SCHEMATIC.

41718269 DRAWING**41718269-2 PARTS LIST**

ITEM	PART #	DESCRIPTION	QUANTITY
1.	77044919	HARNESS, SWITCH BOX OUT	1
2.	77441086	HARNESS, SWITCH BOX IN	1
3.	77441085	HARNESS, CRANE POWER	1
4.	77044935	FUSE/RELAY BOX	1
5.	77044797	SWITCH BOX	1
6.	77041504	SWITCH, ROCKER MTG PAN MID	4
7.	77041502	SWITCH, ROCKER MTG PAN END	4
8.	77041500	SWITCH, ROCKER BODY	7
9.	77041499	SWITCH, ROCKER RED ACT.	7
10.	77041571	SWITCH, ROCKER PLUG	1
11.	77041251	RELAY, 40 AMP	3
12.	77040391	RELAY, 12V DC 75 AMP	1
13.	77044573	CONNECT., PKRD M 2-WAY WP	1
14.	77044552	TERMINAL, MALE 18-20 GA WP	2

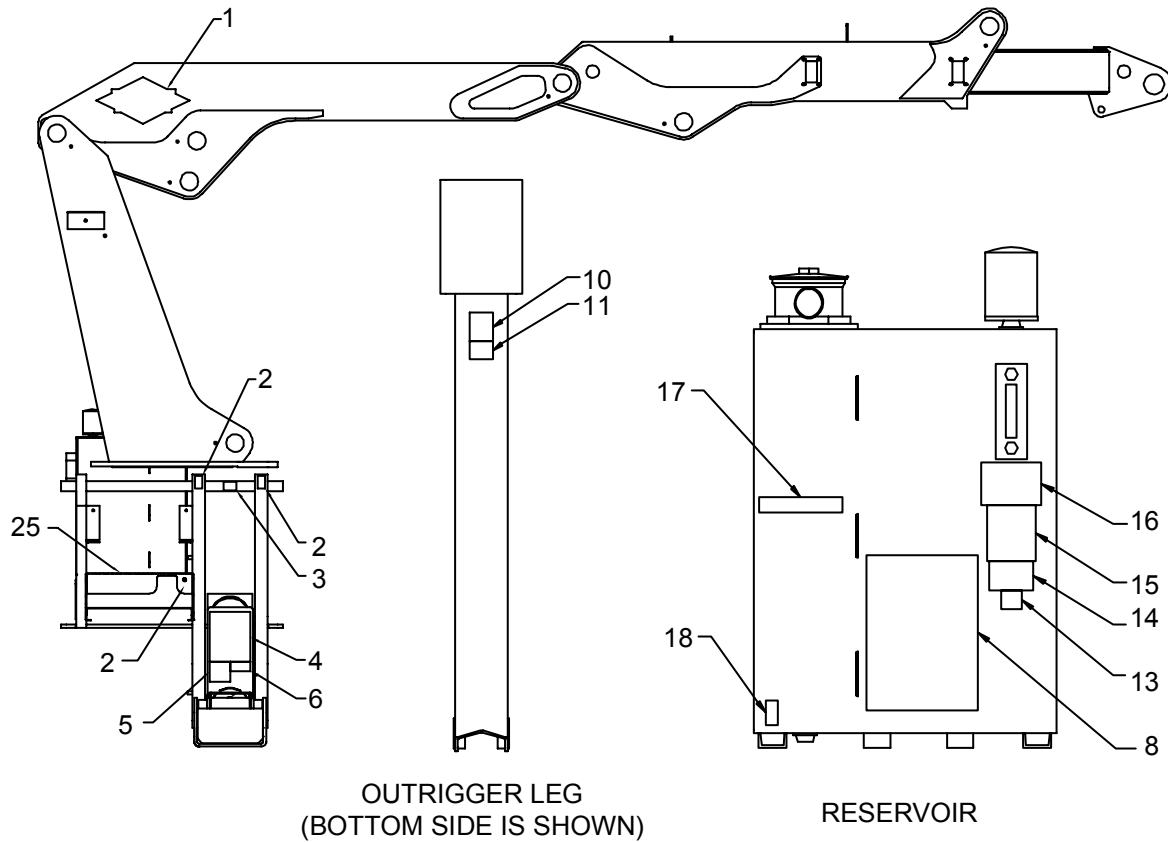
41718269-2 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
15.	70394069	SEAL, CABLE CONNECTOR	2
16.	70395669	DECAL, OTR LIGHT SWITCH	1
17.	76391200	RUBBER GROMMET, 9/16	1

Installation Kit (93715856)



93715856 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52706660	SUPPORT 9.5	4
2.	60128960	CLAMP PLATE (WAS 60010665)	4
3.	60122550	STUD-TIE DOWN 1.25-7X48	8
4.	72062142	NUT 1.25-7 LOCK STL-INSERT	16
5.	72063067	WASHER 1.25 HI-STRNGTH	16
6.	60122834	BAR	4

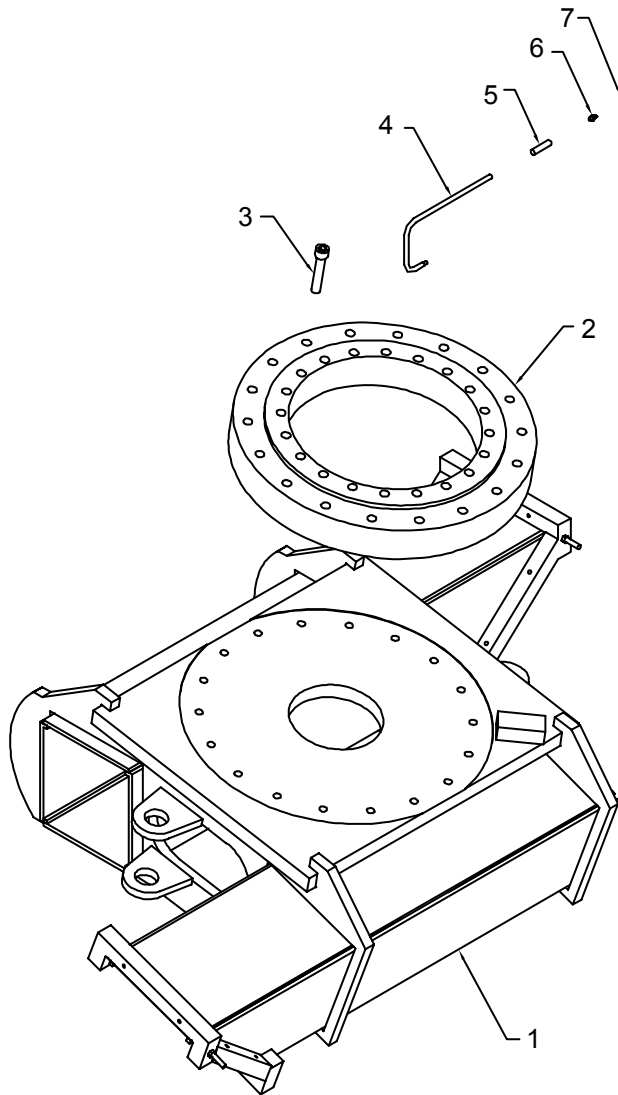
Decal Kit - Crane (95715871)



DECAL PLACEMENT (IF NOT SHOWN ON CRANE)	
ITEM #	LOCATION
8	ONE ON THE CARRIER VEHICLE, OPPOSITE SIDE OF RESERVOIR
19	ON RESERVOIR RETURN LINE
20	ON RESERVOIR SUCTION LINE
21,12	ON ALL FOUR SIDES OF VEHICLE
22	AT OR NEAR DRIVELINE
24	AT OR NEAR OPERATOR'S MANUAL CONTROLS
7	ON CONTROL BOX NEAR OUTRIGGER VALVE BANK
17	ON CONTROL BOX NEAR E-STOP SWITCH

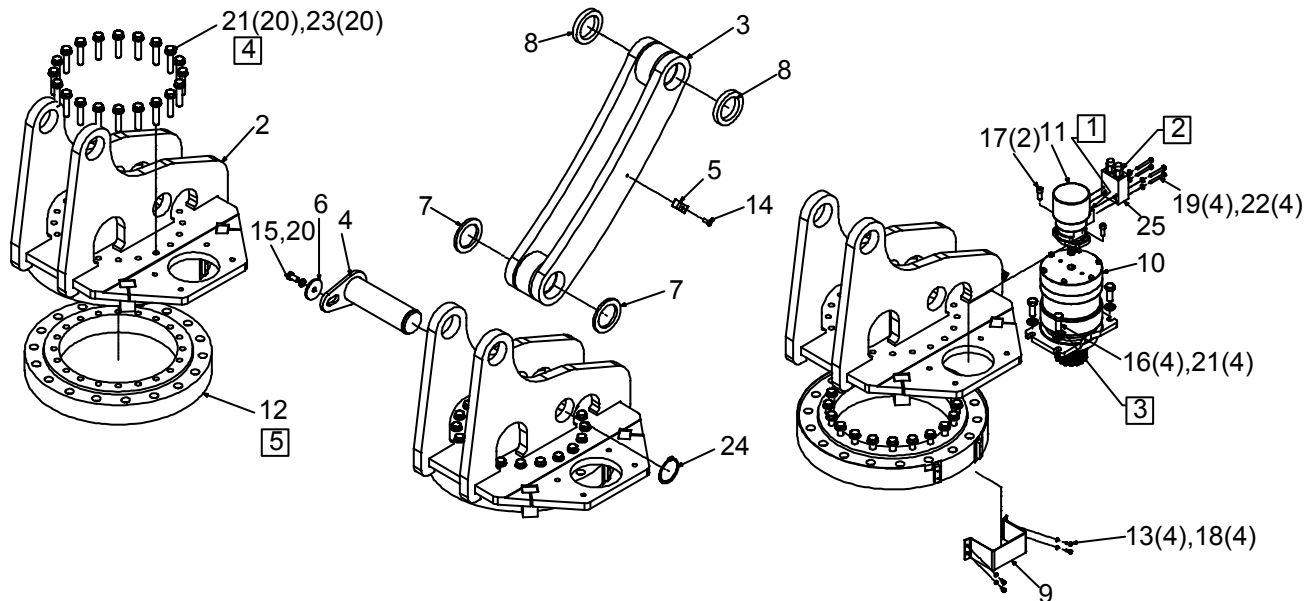
95715871 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	70029252	IMT DIAMOND	2
2.	70391612	GREASE WKLY LH	5
3.	70392524	ROTATE/GREASE	2
4.	70394764	DANGER-5 COMBINED	2
5.	70392890	DANGER-STOW/UNFOLD	2
6.	70392863	DANGER-HOIST PERS	2
7.	70394096	DECAL-E-STOP (WAS 70395788)	1
8.	70395701	MAX LIFT	2
10.	70392864	DANGER-OUTRG STD CLEAR	2
11.	70392867	DANGER-OUTRG MOVING	2
12.	70392868	DANGER-CRANE LOADLINE	2
13.	70392213	CAUTION-WASH/WAX	1
14.	70392982	SERVICE & REPAIR	1
15.	70394189	LUBE RECOMMEND	1
16.	71039134	CAUTION-OIL LEVEL	1
17.	70395869	OP INSTR-DEPLOY OUTRG	2
18.	70395783	CONTROL-OUTRG RH	1
19.	70392108	SUCTION LINE	1
20.	70392109	RETURN LINE	1
21.	70392865	DANGER-ELEC HZD-LG	4
22.	70392891	DANGER-DRIVELINE	2
23.	71302365	ALIGN CRANE-ROTATE	1
24.	70392889	DANGER-RC ELECTROCUTION	1
25.	70396301	DECAL - 23516 CONTROL	1

Body Assembly - TireHand (41715822)



41715822 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52715790	BASE	1
2.	71056563	TURNTABLE BEARING	1
3.	72601644	CAP SCR 3/4-10X4 SH	18
4.	51395083	GREASE EXT 19.5"	1
5.	72053301	COUPLING 1/8NPT	1
6.	72053508	ZERK 1/8NPT	1
7.	70034382	GREASE CAP	1

Yoke Assembly - TireHand (41715811) (Eff. 11-2005)



NOTES (SEE REFERENCE NUMBER IN BOX):

- 1 REMOVE SEALS FROM HYDRAULIC MOTOR AND SAVE TO BE REUSED IN COUNTERBALANCE VALVE.
- 2 ADJUST COUNTERBALANCE VALVE BY TURNING VALVE CCW UNTIL FULLY RETRACED. TIGHTEN NUT.
- 3 TORQUE TO 160 FT-LB.
- 4 TORQUE TO 280 FT-LB.
- 5 BEARING MUST BE INSTALLED TO BASE PRIOR TO INSTALLING IT ON THE YOKE.
- 6 PLACE GEAR BOX IN HORIZONTAL POSITION AND FILL WITH 85W90 GEAR OIL.
- 7 APPLY THREADLOCKER TO ITEMS #15, 16, 23. REAPPLY FOR REASSEMBLY.
- 8 USE SHIMS TO CREATE 1/32" MAXIMUM MOTOR SHAFT END CLEARANCE.

WARNING

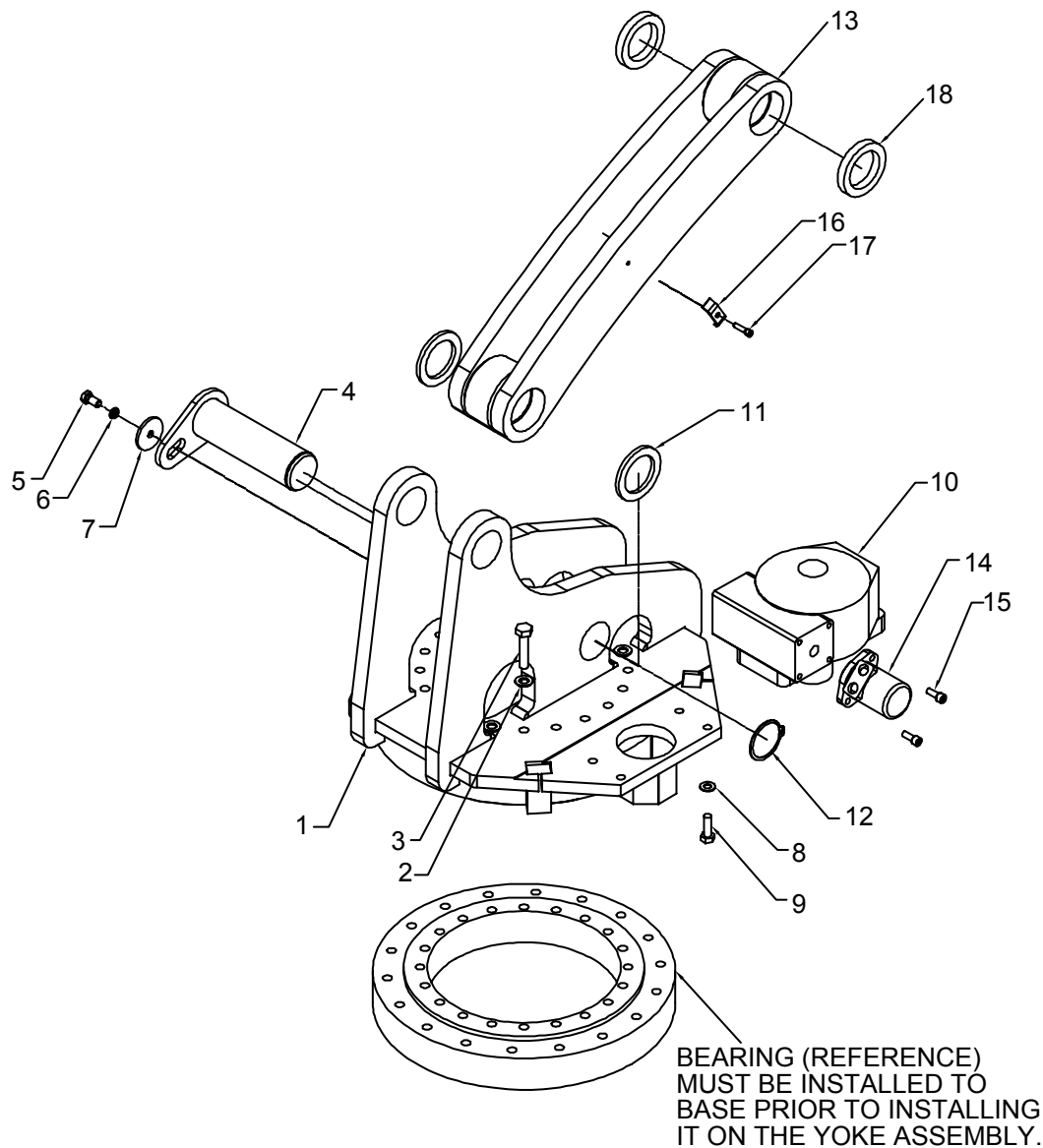
ANY TIME THE GEAR-BEARING BOLTS HAVE BEEN REMOVED, THEY MUST BE REPLACED WITH NEW BOLTS OF IDENTICAL GRADE AND SIZE. FAILURE TO REPLACE GEAR-BEARING BOLTS MAY RESULT IN BOLT FAILURE DUE TO METAL FATIGUE, CAUSING DEATH OR SERIOUS INJURY.

CAUTION

ANY TIME THE PIN RETAINER PLATE BOLTS HAVE BEEN REMOVED, APPLY LOCTITE 262 TO THE THREADS BEFORE REASSEMBLY.

41715811 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	51719939	KIT-HARDWARE YOKE ASM (INCL 13-25)	1
2.	51718964	WELDMENT-YOKE	1
3.	52718282	LINK MACHINING	1
	71024357	BUSHING (PART OF 3)	4REF
4.	52719325	PIN-TYPE II 3.50X12.00 (11.06)	1
5.	60107648	CLAMP-HOSE SMALL	1
6.	60109337	RETAINER PLT-PIN 3.00 DIA	1
7.	60122273	SPACER-3.53X 5.00X 0.38	2
8.	60124770	SPACER-3.53X 5.00X 0.38	2
9.	60126884	GEAR GUARD	1
10.	70056625	GEAR BOX-PLAN W/BRAKE (WAS 70056611)	1
11.	70570792	MOTOR-HYD	1
12.	71056563	GEAR-TURNABLE BRNG	REF
13.	72060001	CAP SCR .25-20X .62 HH GR5 Z	4
14.	72060046	CAP SCR .38-16X 1.00 HH GR5 Z	1
15.	72060148	CAP SCR .62-11X 1.25 HH GR5 Z	1
16.	72060206	CAP SCR .75-10X 2.0 HH GR8 Z	4
17.	72060794	CAP SCR .50-13X 1.25 SH PLAIN	2
18.	72063049	WASHER .25 FLAT	4
19.	72063051	WASHER .38 LOCK	4
20.	72063055	WASHER .62 LOCK	1
21.	72063116	WASHER .75 FLAT	24
22.	72601168	CAP SCR M 8-1.25X 65 HHZ	4
23.	72601295	CAP SCR .75-10X 3.50 HH GR8 Z	20
24.	72661607	RETAINING RING-EXT 3.25 STD	1
25.	73540187	VALVE-CBAL MOTOR	1
REV P 20100330			

Yoke Assembly - TireHand (41715811) (Thru 10-2005)



NOTES

- 1 TORQUE #3 CAP SCREW TO 280 FT-LB.
- 2 TORQUE #9 CAP SCREW TO 160 FT-LB.
- 3 USE NON-SERVICEABLE THREAD LOCK ON ITEMS #3 AND #9.
- 4 FILL GEAR BOX (#10) WITH 2.5 QUARTS OF 140 WT OIL. (EXXON TK 460 CYLINDER OR EQUIVALENT)

WARNING

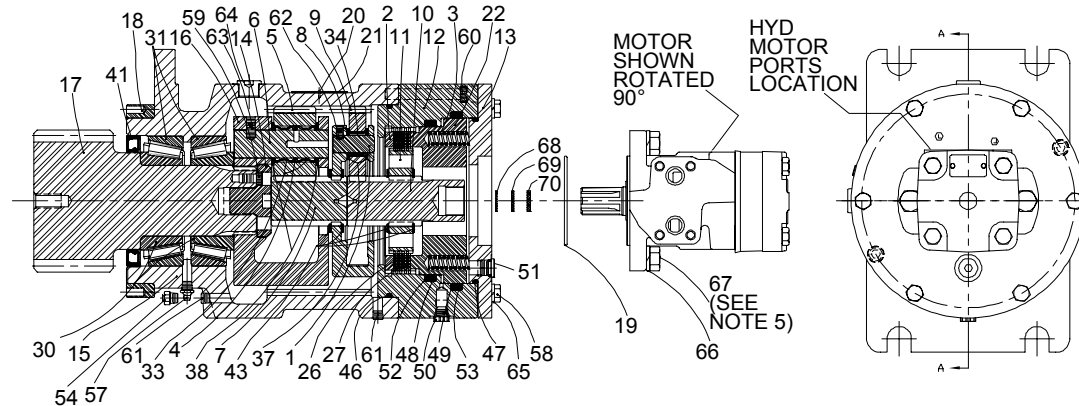
ANY TIME THE GEAR-BEARING BOLTS HAVE BEEN REMOVED, THEY MUST BE REPLACED WITH NEW BOLTS OF IDENTICAL GRADE AND SIZE. FAILURE TO REPLACE GEAR-BEARING BOLTS MAY RESULT IN BOLT FAILURE DUE TO METAL FATIGUE, CAUSING DEATH OR SERIOUS INJURY.

CAUTION

ANY TIME THE PIN RETAINER PLATE BOLTS HAVE BEEN REMOVED, APPLY LOCTITE 262 TO THE THREADS BEFORE REASSEMBLY.

41715811 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52715807	YOKE	1
2.	72063008	WASHER 3/4 FLAT HARD	20
3.	72601295	CAP SCR 3/4-10X3-1/2 HHGR8	20
4.	52719325	PIN (WAS 52715812)	1
5.	72060148	CAP SCR 5/8-11X1-1/4 HHGR5 (WAS 72060149)	1
6.	72063055	WASHER 5/8 LOCK	1
7.	60109337	RETAINER PLATE	1
8.	72063119	WASHER 5/8 FLAT	4
9.	72060151	CAP SCR 5/8-11X2 HHGR8	4
10.	71570570	GEAR REDUCER	1
11.	60122273	SPACER	2
12.	72661607	RETAINING RING	1
13.	52718282	LINK, TIREHAND YOKE	1
14.	73051963	MOTOR	1
15.	72060794	CAP SCR 1/2-13X1-1/4 SH	2
16.	60107648	HOSE CLAMP	1
17.	72060046	CAP SCR 3/8-16X1 HHGR5	1
18.	6012477	SPACER 3.53 X 5.00 X 0.75	2

Tirehand Gearbox (70056625)



NOTES:

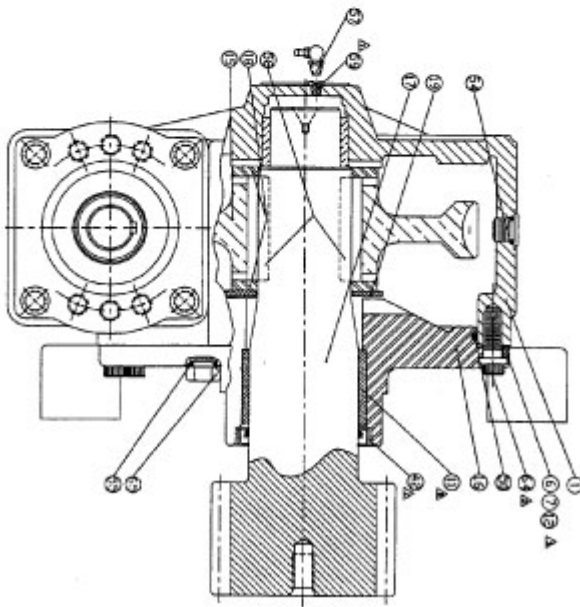
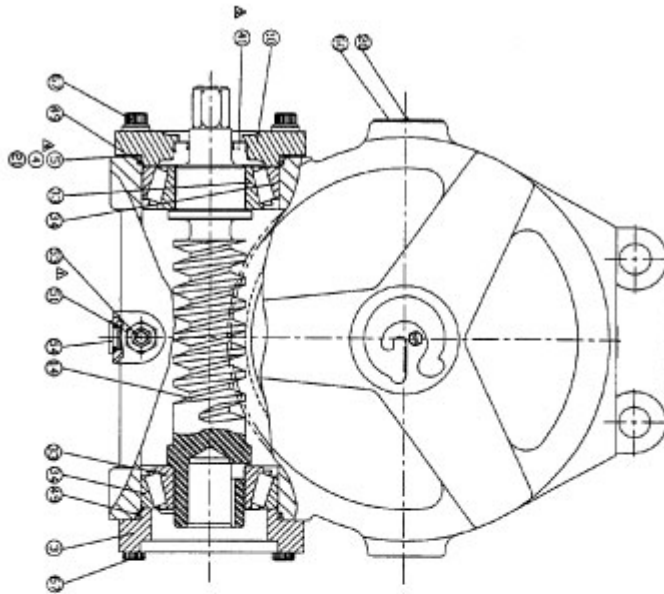
- 1 PRELOAD BEARINGS TO 40-60 IN-LB. LOCK BOLT IN PLACE.
- 2 TORQUE #58 AND #60 TO 39 FT-LB.
- 3 STAKE ITEMS #62 AND #63.
- 4 AIR TEST FOR LEAKS.
- 5 INSTALL BOLTS #67 WITH LOCTITE 242.
- 6 USE SHIMS TO CREATE 1/32" MOTOR SHAFT END CLEARANCE.

70056625 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.		SHAFT, PLANET	3
2.		PLATE, BACK-UP, 5/16 THK	1
3.		SPRING	4
4.		SPACER	3
5.		GEAR, PLANET	3
6.		SHAFT, PLANET GEAR	3
7.		GEAR, OUTPUT SUN	1
8.		CARRIER, PRI. PLANET	1
9.		GEAR, PLANET	3
10.		GEAR, INPUT	1
11.		DRIVER, BRAKE	1
12.		CYLINDER, BRAKE	1
13.		COVER, 2 BLT A	1
14.		BOLT, SPECIAL	1
15.		HOUSING, BASE, RECT	1
16.		CARRIER, PLANET	1
17.		OP, 16T, 4 STB, 2.75FW	1
18.		RING, ECCENTRIC	1
19.	76397394	O'RING, PARKER #2-152	1
20.		DRIVE SCREW	2
21.		LABEL PLATE, 2 7/8 X 2	1
22.		PISTON, BRAKE	1

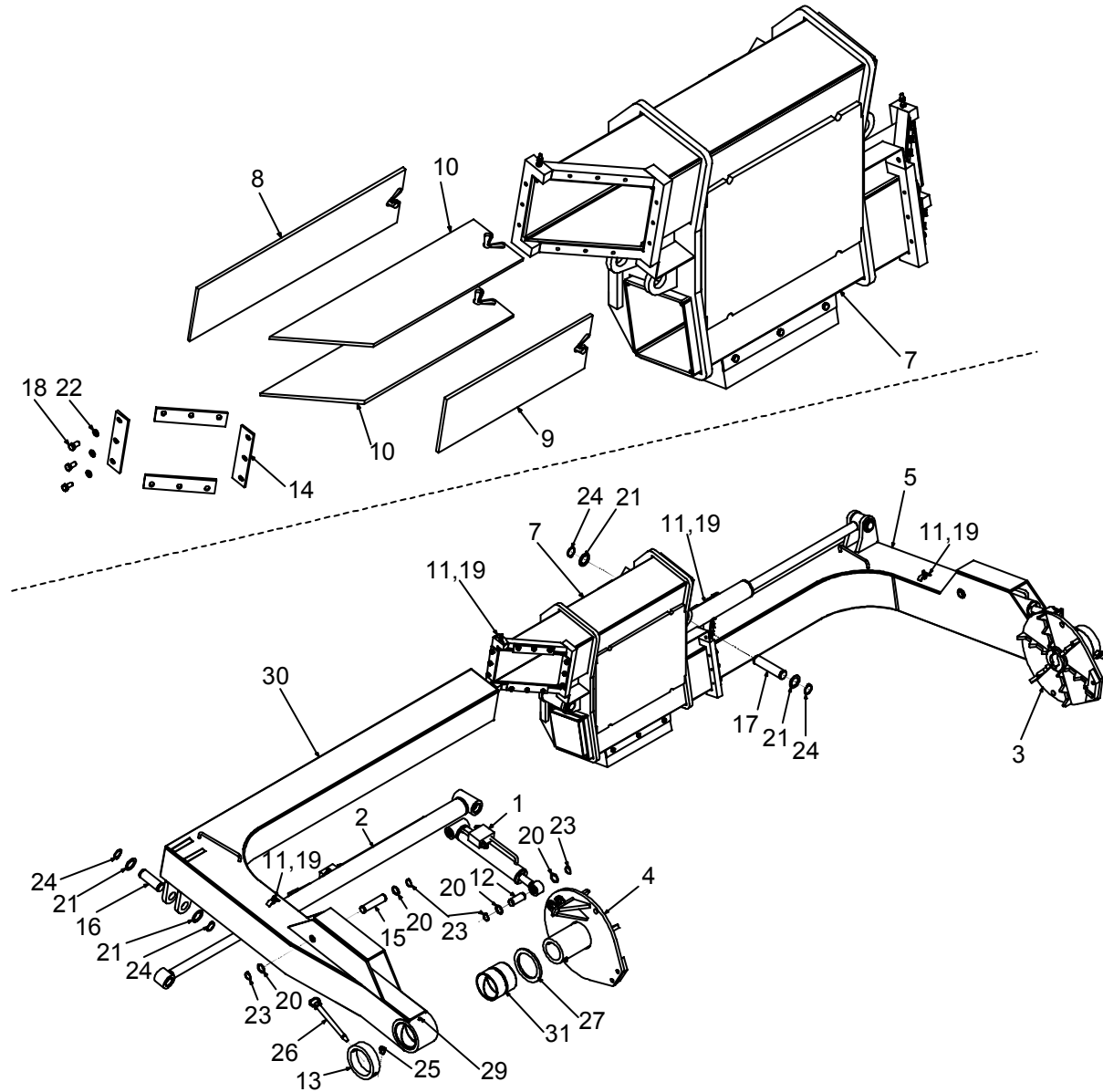
70056625 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
26.	PART OF 73	DISC, REATION	4
27.	PART OF 73	DISC, BRAKE	4
29.		COVER,SHIP,STL,2BLT A	1
30.		CONE, BRG. #JH211749	2
31.		CUP, BRG. #JH211710	2
33.		BRG, RLR TORR#WJ162112	6
34.		ROLLER, BEARING	54
37.		WASHER, THR.TOR#TRB-1018	6
38.		WASHER, THR.TOR#TRB-1625	6
41.		SEAL, NAT'L#415437	1
43.		RING, SNAP WT#5100-181	4
45.		GASKET, SAE 2A/MAG	1
46.	PART OF 72	O'RING	1
47.	PART OF 72	O'RING	1
48.	PART OF 72	O'RING	1
49.	PART OF 72	O'RING	1
50.		PLUG, SAE#4 HEX HD	1
50.		PLUG,PLASTIC SAE #4 MALE	1
51.		PLUG, SAE #6 SKT HD	1
52.	PART OF 72	RING, BACK-UP	1
53.	PART OF 72	RING, BACK-UP	1
54.		VENT, 1/8 NPT, 7-15PSI	1
57.		ZERK,SLRMIYR #1610	1
58.		CAPSCR,HX 3/8NC X 4 GR5	6
59.		CAPSCR,SKT 5/16NF X 1/2	1
60.		CAPSCR,SKT 3/8NC X 2.75	2
61.		PLUG, 1/8 NPT,SKT HD	3
62.		SETSCREW 1/4NC X 3/8SOCCUP	3
63.		SETSCR,SKT CP5/16NC X 5/8	3
64.		PLUG, SAE #8 SKT HD	2
65.		LOCKWASHER,STD 3/8 ZD	6
68.		SHIM, 3/4 DIA X .134 THK	1
69.		SHIM, 3/4 DIA X .074 THK	1
70.		SHIM, 3/4 DIA X .032 THK	1
71.		CAPSCR,HX 1/2NC X 3/4 GR5	2
72.	94734244	SEAL KIT (INCL 46-49,52,53)	1REF
73.	70734243	KIT-BRAKE DISC (INCL 26,27)	1REF
REV 20080903			

Gear Reducer (71570570)



71570570 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
8.	76039295	MOTOR GASKET	1
20.	70142375	DRIVE SCREW	2
33.	70055017	CONE BEARING M802048	2
34.	7005502	CUP BEARING M802011	2
41.	7639407	SEAL, NATURAL	1
42.	76396302	SEAL CR #26110	1
59.	72533439	PLUG, ALEMITE	1
60.	70143428	LABEL PLATE	1
64.	72061133	CAP SCREW, FERRY 7/16 NC X1	12

Arm Assembly - TireHand (41715821)



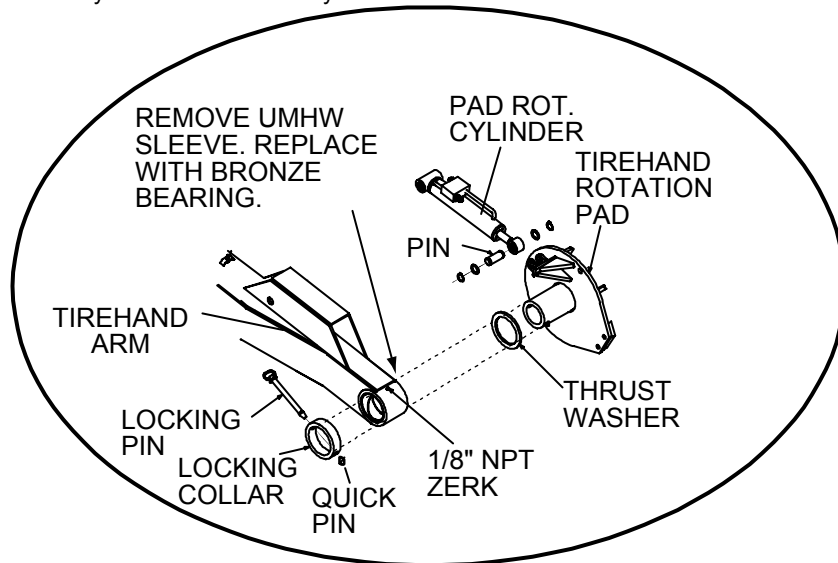
41715821 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	3B314990	CYL-3.0/1.5 13.25S 24.0 CC C	2
2.	3B316990	CYL-3.5/2.0 47.00S 61.50CC C	2
3.	52715444	CLAW-WLDMT TIREHANDLER 14K160TH LH	1
4.	52715445	CLAW-WLDMT TIREHANDLER 14K160TH RH	1
5.	52715787	WLDMT-TIREHAND ARM 14K160TH LEFT	1
7.	52715790	BASE WLDMT-14K160TH TIREHAND	1

41715821 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
8.	60030357	WEAR PAD-14K160TH TIREHAND	2
9.	60030358	WEAR PAD-14K160TH TIREHAND	2
10.	60030359	WEAR PAD-14K160TH TIREHAND	4
11.	60107648	CLAMP-HOSE SMALL	4
12.	60110742	PIN-TYPE A 1.50X 3.94 (3.31)	2
13.	60121763	LOCKING COLLAR	2
14.	60122254	WEAR PAD HLDG BRKT-14K160TH TIREHAND	8
15.	60122280	PIN-TYPE A 1.50X 6.80 (6.18)	2
16.	60122281	PIN-TYPE A 2.00X 6.09 (5.31)	2
17.	60122429	PIN-TYPE A 2.00X 8.59 (7.81)	2
18.	72060091	CAP SCR .50-13X 1.00 HH GR5 Z	24
19.	72062103	NUT .38-16 HEX NYLOCK	4
20.	72063037	MACHY BUSHING 1.50X10 GA NR	8
21.	72063039	MACHY BUSHING 2.00X10 GA NR	8
22.	72063053	WASHER .50 LOCK	24
23.	72066132	RETAINING RING-EXT 1.50 HD	8
24.	72066136	RETAINING RING-EXT 2.00 HD	8
25.	72661543	PIN-QUICK 316-10QP	2
26.	73733418	PIN-LOCK 1.00X 8.88	2
27.	60030371	WASHER-THRUST 8.00 DIA X 6.09 ID X 0.44	2
	WAS 60350079	SLEEVE - CLAW ROTATION (THRU 14K160TH071003)	2
29.	72053508	ZERK-NPT .12	2
30.	52715788	WLDMT TIREHAND ARM 14K160TH RIGHT	1
31.	70055332	BRONZE BEARING	2
REV. J 20080903			

Rotation Bearing Retrofit Kit (95721140)

Retrofit kit 95721140, which includes two each of a bronze bearing, thrust washer, and grease zerk, can be used to replace the plastic claw rotation sleeve in the tirehand claw assembly. Installing this retrofit kit will increase the durability of the claw assembly.



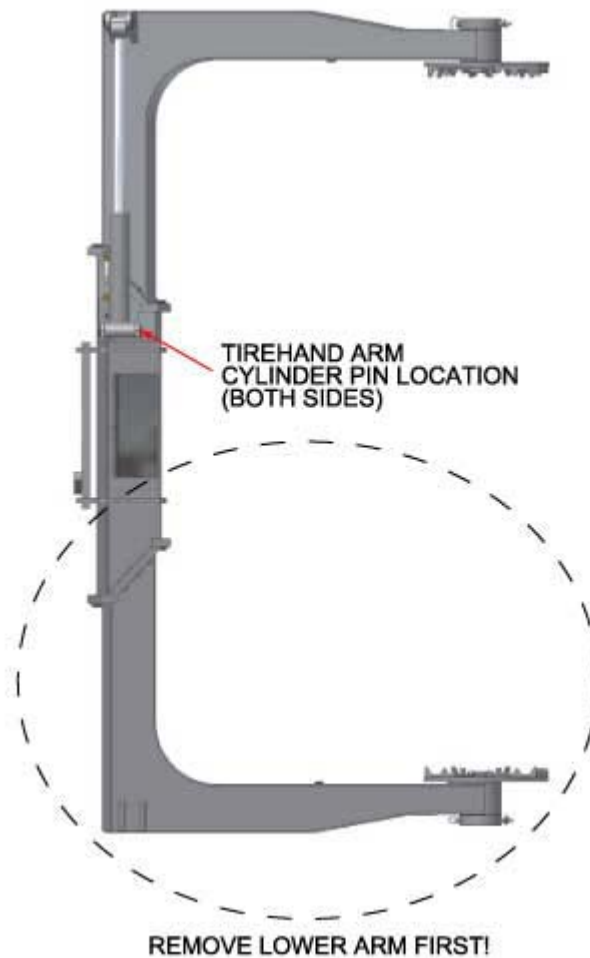
Follow this procedure for both the right and left sides of the tirehand.

- 1 Unlock quick pin, and pull out locking pin and locking collar from the tirehand arm.
- 2 Disconnect the pin which connects the pad rotation cylinder to the tirehand pad. Pull the tirehand pad away from the tirehand arm. Remove the nylatron sleeve from the end of the tirehand arm. (It may have already been removed when the tirehand pad was separated from the arm.)
- 3 Drill an $11/32$ " (0.344") hole $3/4$ " deep in the center of the sleeve welded to the end of the tirehand arm. Tap this hole with 1/8-27 NPT threads. Screw in grease zerk 72053508.
- 4 Press bronze bearing 70055332, which is part of the retrofit kit, into the end of the tirehand arm. Insert the thrust washer, 60030372, over the tirehand rotation pad.
- 5 Re-connect the pad rotation cylinder, and replace the pin.

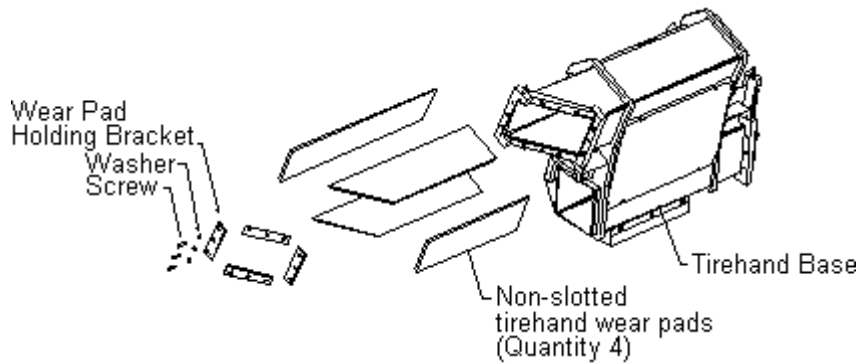
TireHand Wear Pad Installation Instructions

Effective December 1, 2006, new wear pads were designed for the Commander IV TireHand arms. These wear pads have slots which fit over steel retainers for better retention in the TireHand arms. Follow this procedure to replace the wear pads in your Commander IV TireHand.

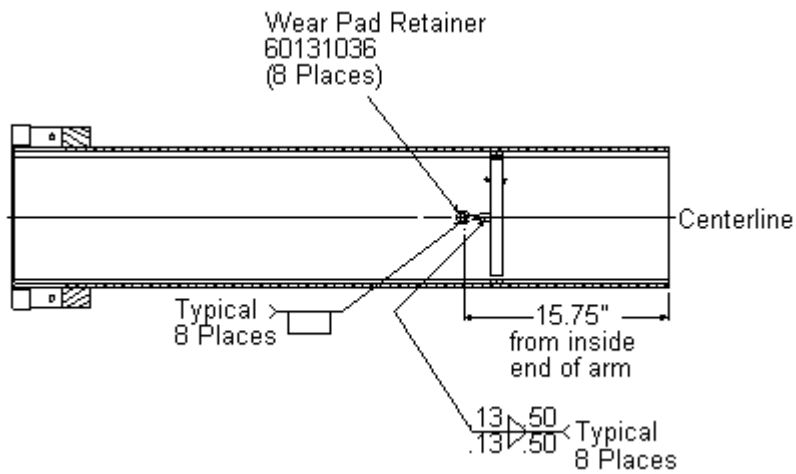
- 1 Rotate the TireHand so the arms are in a vertical position. Brace or support the TireHand arm closest to the ground so the arm assembly can be safely removed. Remove the TireHand arm cylinder pin, and disconnect and remove the TireHand rotation cylinder. The TireHand arm is now disconnected mechanically and hydraulically. After making sure the arm is braced or supported, remove the TireHand arm by lifting the TireHand.



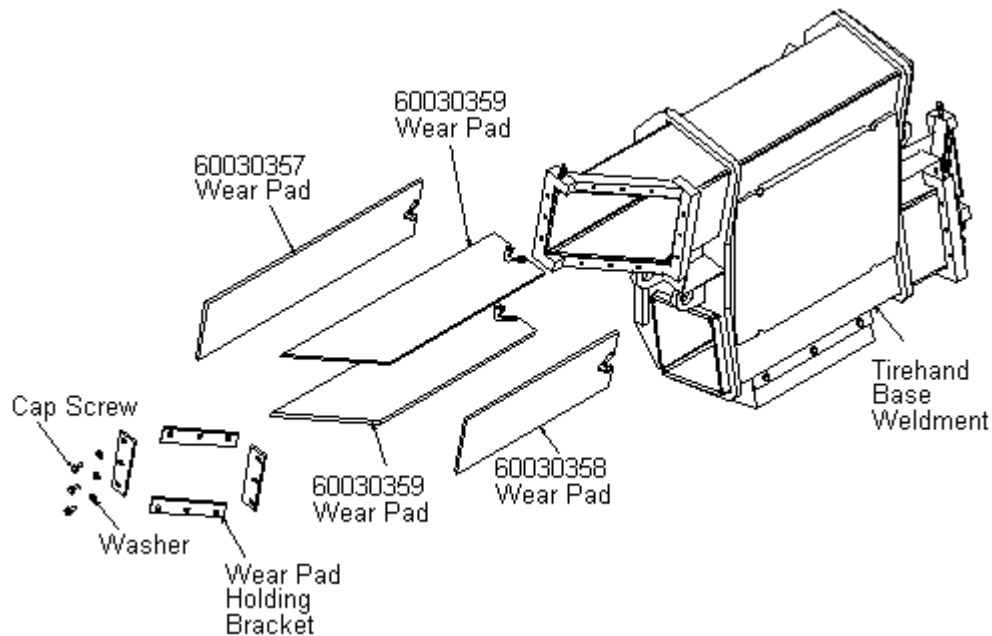
- 2 There are four wear pads on each side of the TireHand arm. Remove the TireHand arm wear pads, part numbers 60122249 (quantity 1/side), 60122250 (quantity 1/side), and 60122253 (quantity 2/side) by removing the wear pad retainer brackets, nuts, and washers.



- 3 Weld the wear pad retainers into the TireHand arms. See figure below.

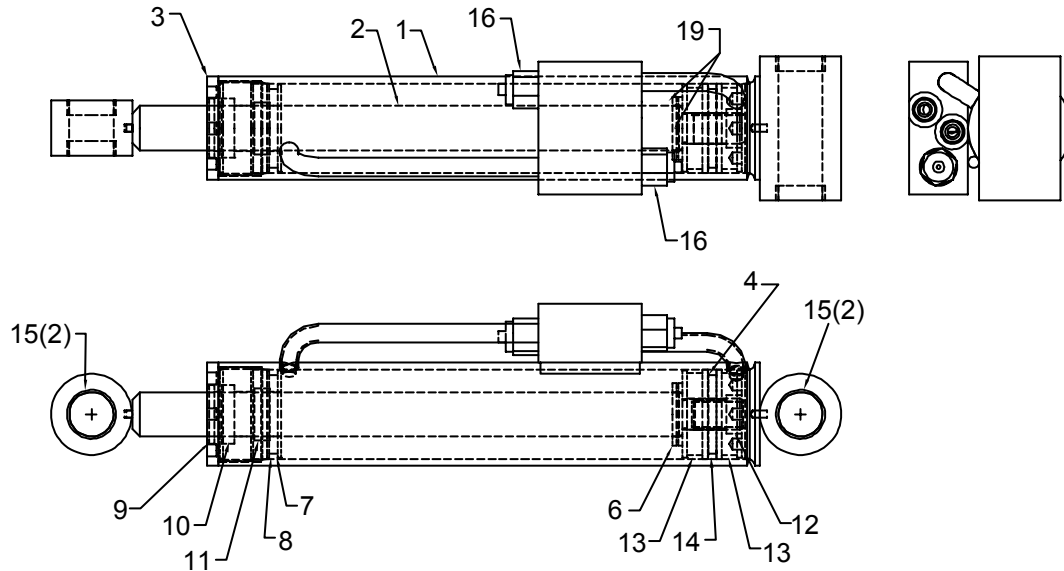


- 4 Install the wear pads, part numbers 60030357 (quantity 1/side), 60030358 (quantity 1/side), and 60030359 (quantity 2/side), using the welded retainers to position the replacement pads correctly. Do not install the wear pad holding brackets until the arms are in place.



- 5 Reinstall the TireHand arms, reconnect the TireHand rotation cylinder, and reconnect the TireHand arm cylinder pin.
- 6 Replace the wear pad holding brackets.
- 7 Rotate the TireHand arms 180°. Remove the other arm per steps 1 through 6.

Pad Rotation Cylinder (3B314990)



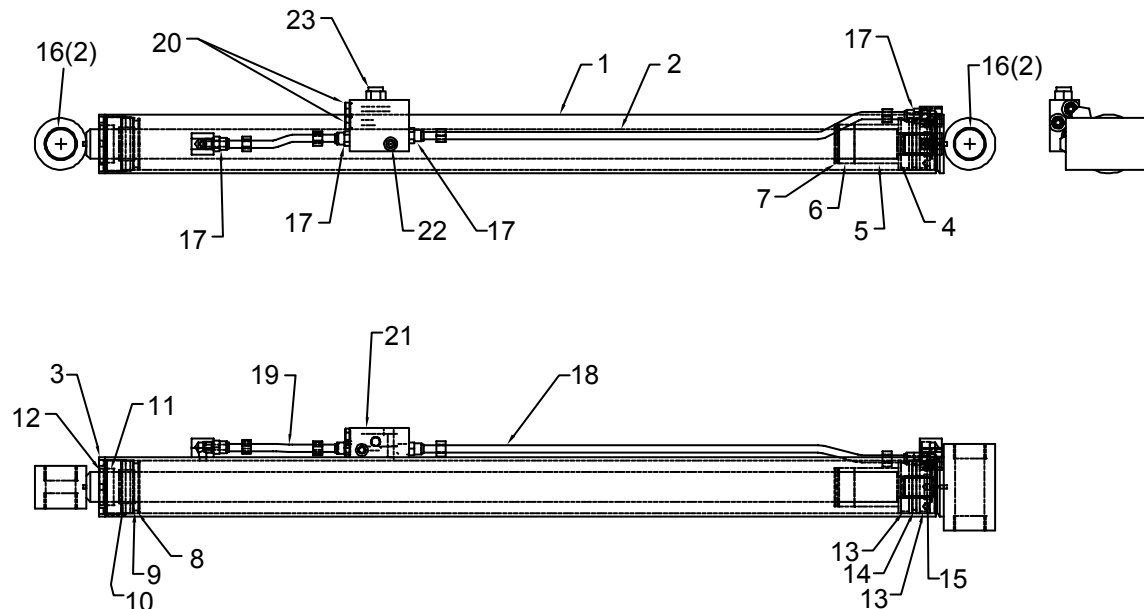
NOTES:

- 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.

3B314990 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	4B314990	CASE ASM (INCL 15,16)	1
2.	4G314990	ROD ASM (INCL 15)	1
3.	6H030015	HEAD	1
4.	6I314990	PISTON	1
5.	9C314990	SEAL KIT (INCL:7-15)	1
6.	6A025015	WAFER LOCK (PART OF 5)	1REF
7.	7Q072334	O-RING (PART OF 5)	1REF
8.	7Q10P334	BACKUP RING (PART OF 5)	1REF
9.	7R14P015	ROD WIPER (PART OF 5)	1REF
10.	7R546015	U-CUP LOADED (PART OF 5)	1REF
11.	7T2N8015	WEAR RING (PART OF 5)	1REF
12.	7T61N106	LOCK RING (PART OF 5)	1REF
13.	7T2N4030	WEAR RING (PART OF 5)	2REF
14.	7T66P300	PISTON SEAL (PART OF 5)	1REF
15.	70055284	BEARING (PART OF 1&2)	4REF
16.	73540066	C'BAL VALVE (PART OF 1)	2REF

Clamp Cylinder (3B316990)



NOTES:

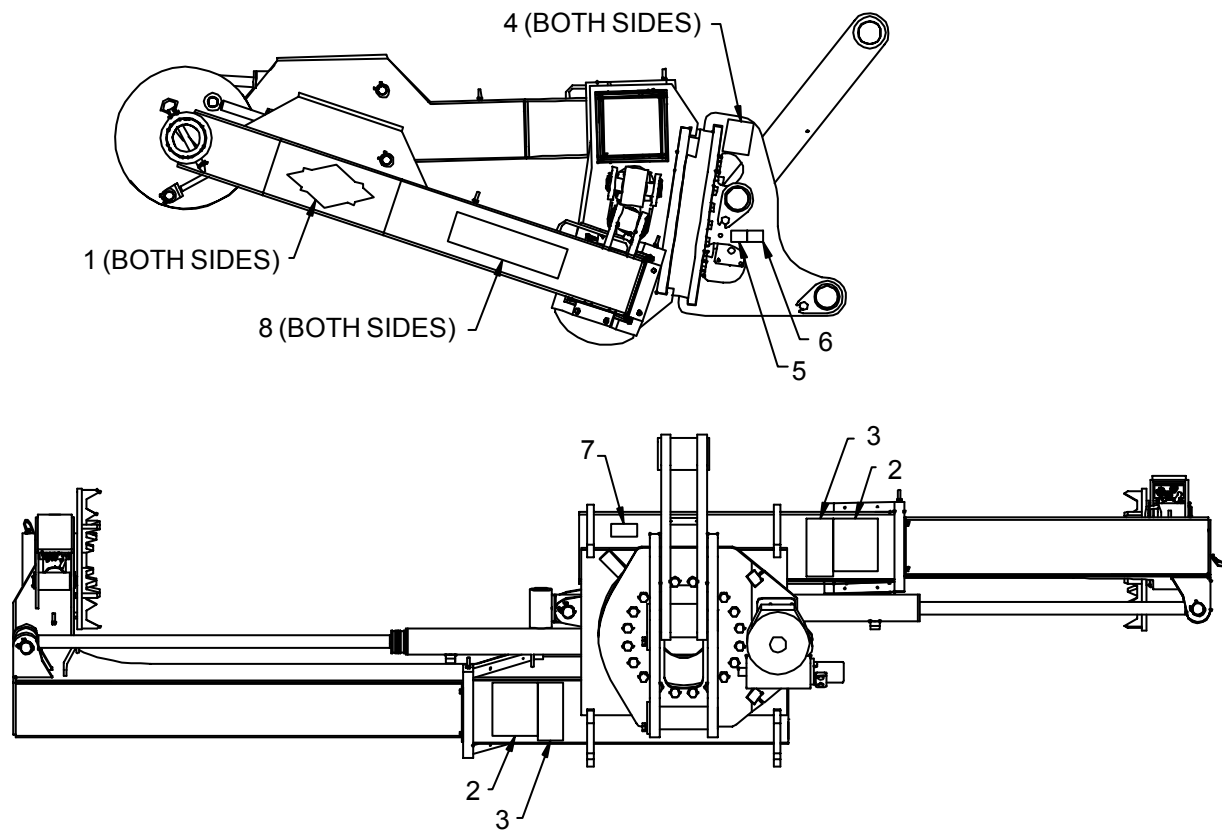
- 1 REPLACE ALL COMPONENTS OF THE SEAL KIT WHENEVER THE CYLINDER IS DISASSEMBLED. THIS WILL REDUCE FUTURE DOWNTIME.
- 2 APPLY REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON CYLINDER HEAD ONLY. KEEP AWAY FROM ALL SEALS.
- 3 APPLY "LUBRIPLATE" NO. 630-2 MEDIUM HEAVY, MULTI-PURPOSE LUBRICANT, TO ALL PISTON, HEAD GLAND, AND HOLDING VALVE SEALS, NYLON LOCK RING, CAST IRON PISTON RINGS, AND ROD STINGER THREADS.

3B316990 PARTS LIST

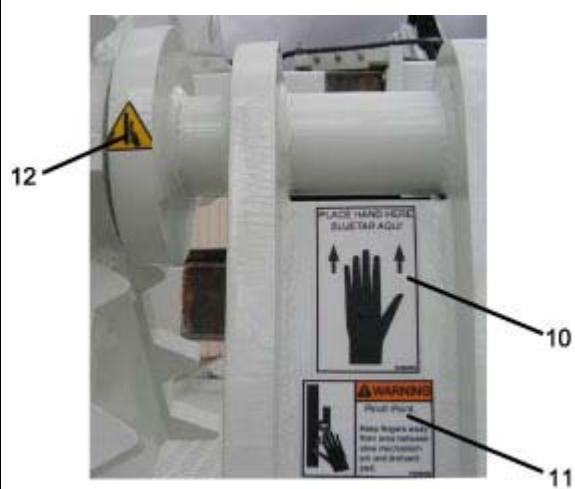
ITEM	PART #	DESCRIPTION	QUANTITY
1.	4B316990	CASE ASM (INCL:16)	1
2.	4G316990	ROD ASM (INCL:16)	1
3.	6H035020	HEAD	1
4.	6I352144	PISTON	1
5.	6C300020	STOP TUBE 3"	1
6.	6C100020	STOP TUBE 1"	1REF
7.	6A025020	WAFER LOCK (PART OF 24)	1REF
8.	7Q072338	O-RING (PART OF 24)	1REF
9.	7Q10P338	BACKUP RING (PART OF 24)	1REF
10.	7T2N8022	WEAR RING (PART OF 24)	1REF
11.	7R546020	U-CUP LOADED (PART OF 24)	1REF
12.	7R14P020	ROD WIPER (PART OF 24)	1REF
13.	7T2N4035	WEAR RING (PART OF 24)	2REF
14.	7T66P350	PISTON SEAL (PART OF 24)	1REF
15.	7T61N143	LOCK RING (PART OF 24)	1REF

3B316990 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
16.	70055181	BEARING (PART OF 1&2)	4REF
17.	72533166	ADAPTER #8MFACE #8MSTR	4
18.	7014608	TUBE ASM	1
19.	70146081	TUBE ASM	1
20.	72532141	PLUG #8MSTR	2
21.	5V124000	VALVE BLOCK 16GPM (INCL:23)	1
22.	72062103	NUT 3/8-16 LOCK	1
23.	73540072	VALVE-CHK (PART OF 21)	1REF
24.	9B025920	SEAL KIT (INCL:7-15)	1

Decal Kit - TireHand (95715872)



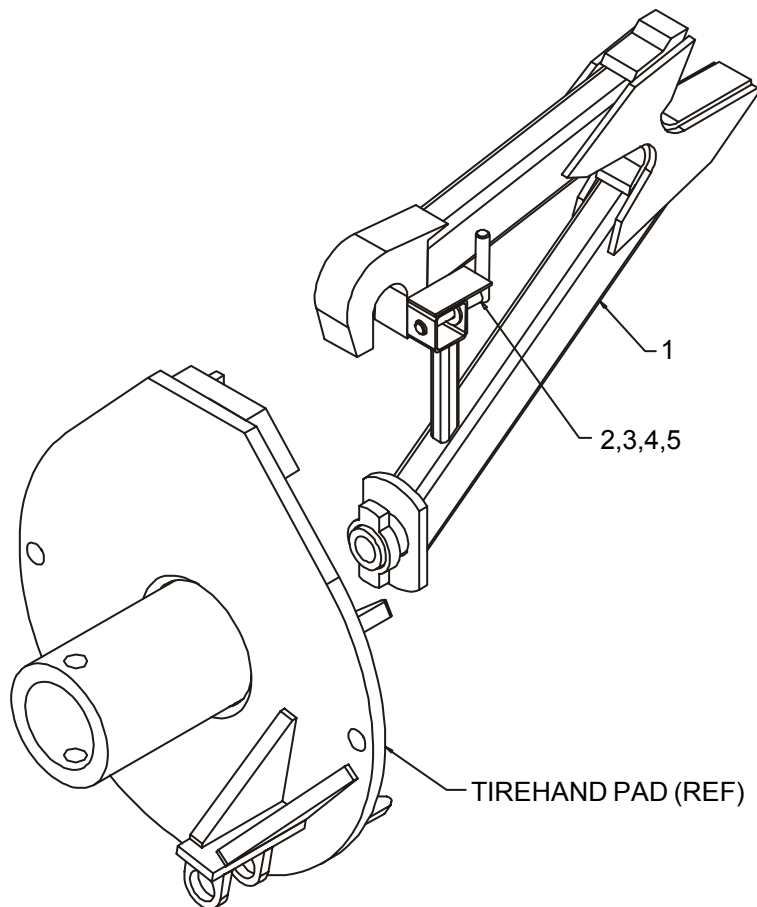
View from rear of TireHand.



Apply decals to both sides.

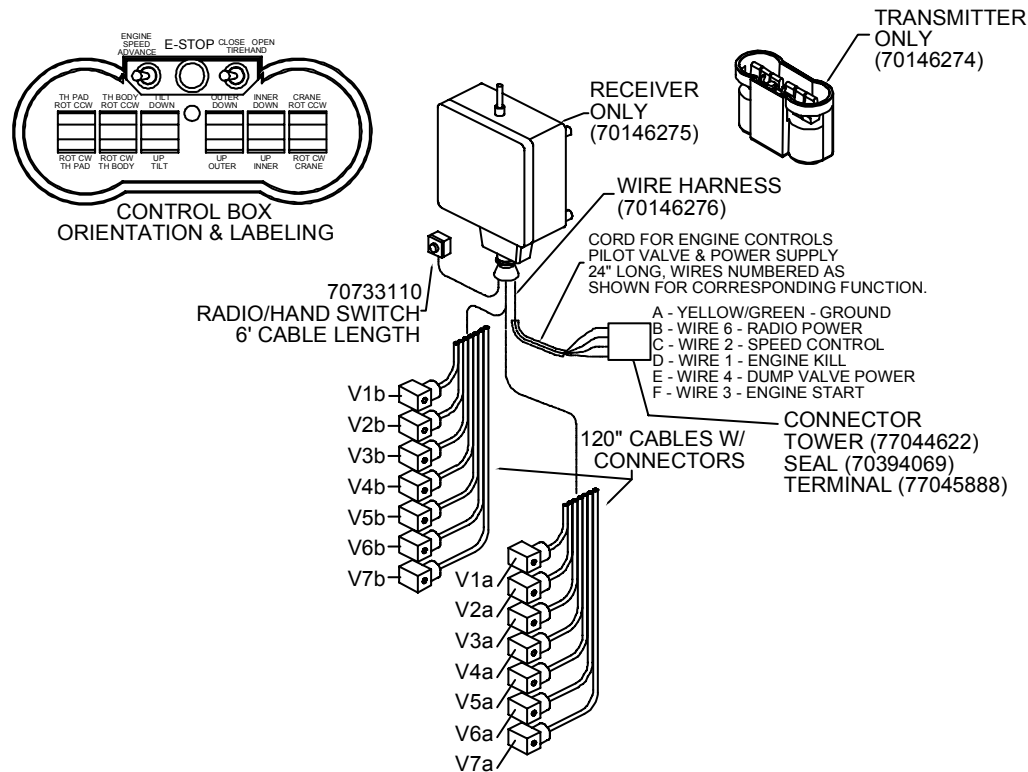
95715872 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	70392887	DECAL-DIAMOND IMT 5X10	2
2.	70394272	DECAL-OP RESTRICTIONS CR MT TH	2
3.	70393704	DECAL-TOP TH (3565)	2
4.	70393672	DECAL-DANGER TH OPERATION	2
5.	70391612	DECAL-GREASE WEEKLY (LEFT)	1
6.	70392524	DECAL-ROTATE CRANE WHILE GREAS	1
7.	70039261	PLACARD-PATENT TIREHANDLER	1
8.	70395672	DECAL-14K160 IDENTIFICATION	2
9.	70396507	DECAL-14K160TH TIREHAND STOW	2
10.	70396508	DECAL-14K160TH GRIP LOCATION	2
11.	70396509	DECAL-WARNING, PINCH POINT	2
12.	70396510	DECAL-PINCH POINT	2
REV B 20051012			

Flange Ring Tool Assembly (41716213)



41716213 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	52716212	FLANGE RING TOOL	1
2.	52716214	PIN	1
3.	72063007	WASHER 5/8 WRT	2
4.	72066185	COTTER PIN 16X1 PLAIN	1
5.	60010351	SPRING-T PIN	1

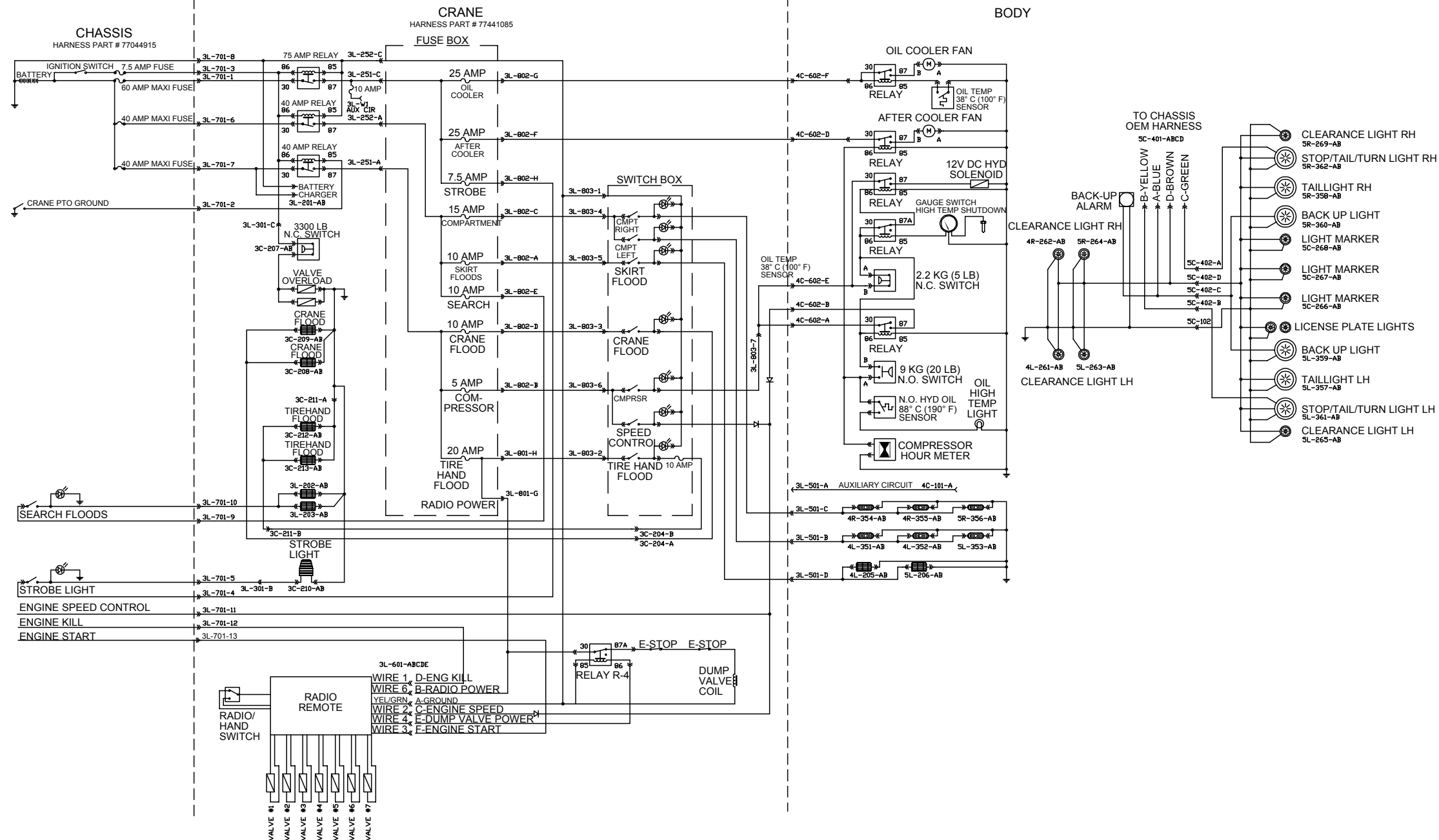
Radio Remote Kit - Nova (73733481)


















NOTES:		LABEL	CONTROLLED FUNCTION
1) SPARE PARTS - BATTERY CHARGER (70733290) (NOT SHOWN), AND 2 BATTERIES (77042092) (NOT SHOWN).		V1a	TIREHAND CLAMP - OPEN
		V1b	TIREHAND CLAMP - CLOSE
		V2a	TIREHAND PAD ROTATION - CLOCKWISE
		V2b	TIREHAND PAD ROTATION - COUNTER-CLOCKWISE
2) SOLENOID ACTUATOR SPECIFICATIONS: 12VDC OPERATING VOLTAGE; 7.5 OHMS PROPORTIONAL COIL RESISTANCE AT 68° F (20° C); 6.5 OHMS ON-OFF COIL RESISTANCE; PWM, 50 HZ FREQUENCY SIGNAL.		V3a	TIREHAND BODY ROTATION - CLOCKWISE
		V3b	TIREHAND BODY ROTATION - COUNTER-CLOCKWISE
		V4a	TILT-UP
		V4b	TILT-DOWN
3) TIREHAND CLAMP LOCKOUT IS REQUIRED FOR ACTIVATION OF CLAMP PADDLE. MOMENTARY SWITCH.		V5a	OUTER CYLINDER EXTEND - UP
		V5b	OUTER CYLINDER RETRACT - DOWN
		V6a	INNER CYLINDER EXTEND - UP
		V6b	INNER CYLINDER RETRACT - DOWN
4) THE OVERALL APPEARANCE OF THE TRANSMITTER MAY VARY. SWITCHES AND PADDLES WILL BE LABELED AS SHOWN.		V7a	CRANE ROTATION - CLOCKWISE
		V7b	CRANE ROTATION - COUNTER-CLOCKWISE
		* ALL CONNECTORS WILL BE SET-UP AND LABELED AS SHOWN.	
		* ALL CABLES ARE 120" LONG.	
REV. C 20100331			















Electrical Schematic - 14K160TH w/Dump System & Speed Control (99903557) (Eff 9/2002)




Used on 23516 units with serial number 23516021001 to present, and 14K160THY units with serial number 14K160TH021003 to present.



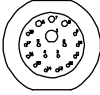


99903557 DRAWING

LOCATION(S)	APPEARANCE	CONNECTIONS
4C-101		A-AUX
3L-201		A-GROUND B-POWER 3
3L-203		A-GROUND B-SEARCH FLOOD
4L-205 5L-206		A-GROUND B- LEFT FLOOD
3C-208, 209		A-GROUND B-CRANE FLOOD
3C-211		A-GROUND B-TIREHAND FLOOD
3L-251		A-POWER 3 (87) C-POWER 1 (87)
4L-261 4R-262 5L-263 5R-264		1-GROUND 2-BLINK/TAIL
3L-301		A-NOT USED B-STROBE C-IGNITION
4R-354 4R-355 5R-356		1-GROUND 2-RIGHT COMPARTMENT
5C-402		A-RIGHT TURN B-LEFT TURN C-BACK UP D-BLINK/TAIL
5L-539 5R-360		1-GROUND 2-BACK UP
5L-362		1-GROUND 2-TAIL 3-RIGHT TURN
3L-517		A-DUMP VALVE B-GROUND
3L-601		A-GROUND B-RADIO POWER C-ENGINE SPEED D-ENGINE KILL E-DUMP VALVE POWER F-NOT USED

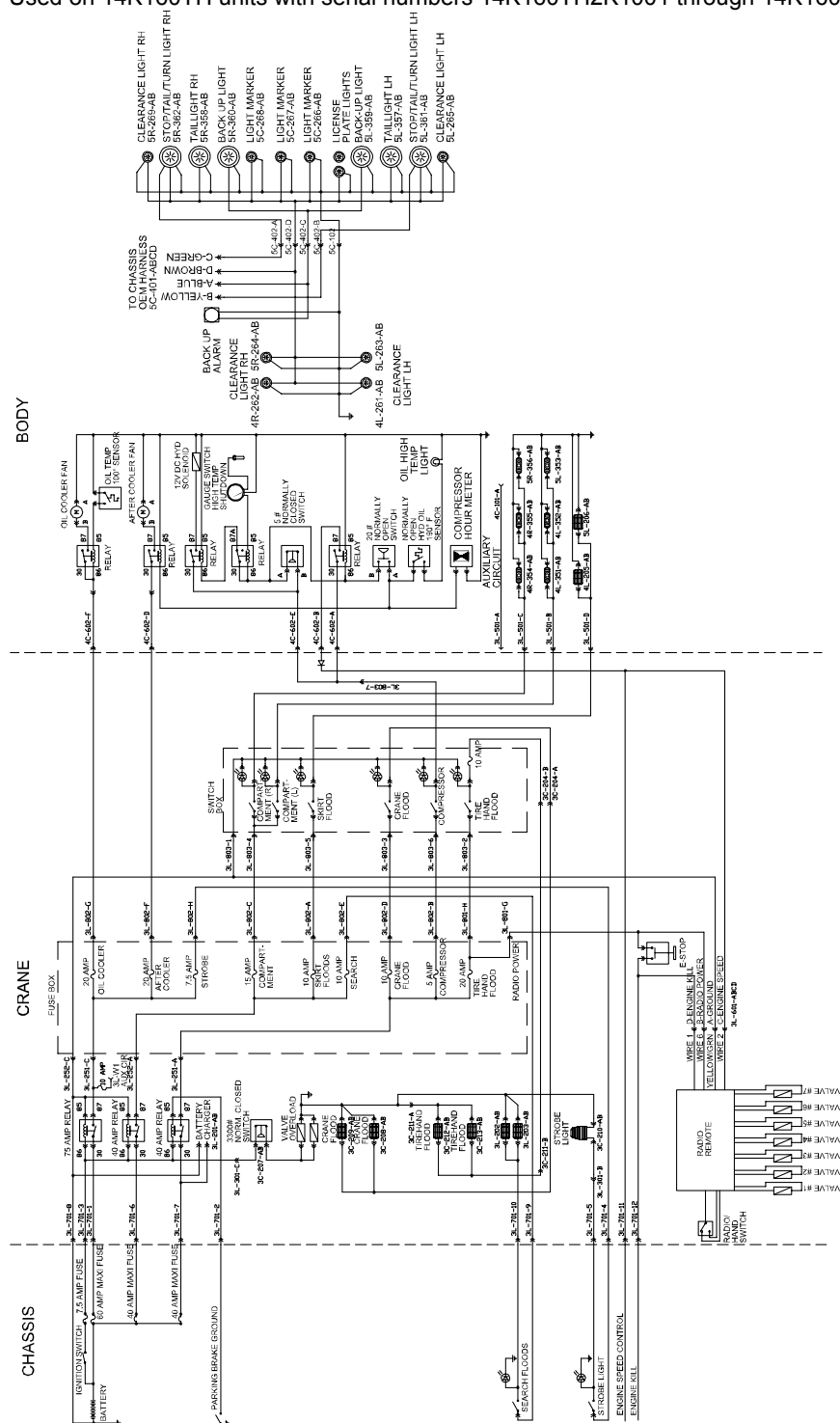
LOCATION(S)	APPEARANCE	CONNECTIONS
5C-102		A-GROUND
3L-202		A-GROUND B-SEARCH FLOOD
3L-204		A-CRANE FLOOD B-TIREHAND FLOOD
3C-207		A-VALVE (OVERLOAD) B-IGNITION
3C-210		A-GROUND B-STROBE
3C-212, 213		A-GROUND B-TIREHAND FLOOD
3L-252		A-POWER 2 (87) C-GROUND
5L-265, 5C-266 5C-267, 5C-268 5R-269		BLACK - BLINK/TAIL WHITE-GROUND
4L-351 4L-352 5L-353		1-GROUND 2-L COMPARTMENT
5L-357 5R-358		1-GROUND 2-TAIL
5R-361		1-GROUND 2-TAIL 3-LEFT TURN
5C-401		A-BACK UP B-LEFT TURN C-RIGHT TURN D-BLINK/TAIL
3L-501		A-AUXILIARY B-LEFT COMPARTMENT C-RIGHT COMPARTMENT D-LEFT FLOOD
3L-602		A-SPEED POWER B-ENGINE SPEED OUT C-NOT USED D-AFTERCOOLER E-COMPRESSOR F-OIL COOLER

3L-801		A-NOT USED B-NOT USED C-NOT USED D-NOT USED E-NOT USED F-NOT USED G-RADIO POWER H-TIREHAND
3L-803		1-GROUND 2-TIREHAND 3-CRANE FLOODS 4-COMPARTMENT LIGHTS 5-SKIRT 6-COMPRESSOR POWER 7-COMPRESSOR 8-SPEED CONTROL
3L-W1		AUX
















3L-802		A-SKIRT FLOODS B-COMPRESSOR POWER C-COMPARTMENT LIGHTS D-CRANE FLOODS E-SEARCH TO SW F-AFTERCOOLER G-OIL COOLER H-STROBE TO SW
3L-214,215,216		A-POWER IN B-POWER OUT
3L-701		1-POWER 1 (30) 2-CRANE PTO GROUND 3-IGNITION 4-STROBE TO SW 5-STROBE FROM SW 6-POWER 2 (30) 7-POWER 3 (30) 8-GROUND 9-SEARCH TO SW 10-SEARCH FROM SW 11-ENGINE SPEED OUT 12-ENGINE KILL 13-ENGINE START 14-18 - NOT USED















RELAYS	
R-2	30-POWER 2 87-POWER 2 85-GROUND 86-IGNITION
R-3	30-POWER 3 87-POWER 3 85-BRAKE ENGAGE 86-IGNITION
R-4	30-RADIO POWER 87-DUMP VALVE 85-GROUND 86-DUMP VALVE POWER







Used on 14K160TH units with serial numbers 14K160TH2K1001 through 14K160TH021004.



99903201 DRAWING

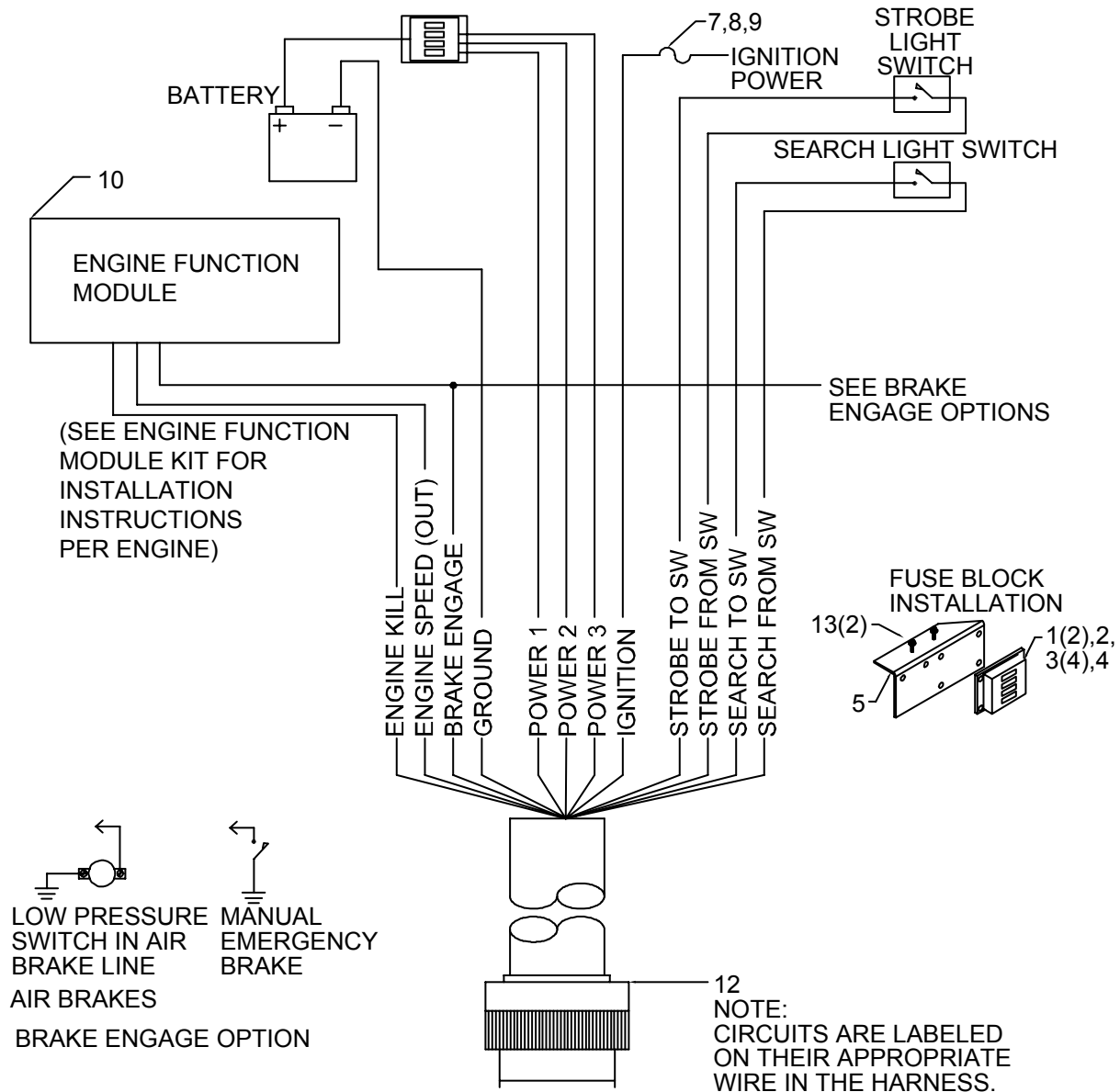
LOCATION(S)	APPEARANCE	CONNECTIONS
4C-101		A-AUX
3L-201		A-GROUND B-POWER 3
3L-203		A-GROUND B-SEARCH FLOOD
4L-205 5L-206		A-GROUND B- LEFT FLOOD
3C-208, 209		A-GROUND B-CRANE FLOOD
3C-211		A-GROUND B-TIREHAND FLOOD
3L-251		A-POWER 3 (87) C-POWER 1 (87)
4L-261 4R-262 5L-263 5R-264		1-GROUND 2-BLINK/TAIL
3L-301		A-NOT USED B-STROBE C-IGNITION
4R-354 4R-355 5R-356		1-GROUND 2-RIGHT COMPARTMENT
5C-402		A-RIGHT TURN B-LEFT TURN C-BACK UP D-BLINK/TAIL
5L-539 5R-360		1-GROUND 2-BACK UP
5L-362		1-GROUND 2-TAIL 3-RIGHT TURN
3L-517		A-DUMP VALVE B-GROUND
3L-601		A-GROUND B-RADIO POWER C-ENGINE SPEED D-ENGINE KILL E-DUMP VALVE POWER F-NOT USED

LOCATION(S)	APPEARANCE	CONNECTIONS
5C-102		A-GROUND
3L-202		A-GROUND B-SEARCH FLOOD
3L-204		A-CRANE FLOOD B-TIREHAND FLOOD
3C-207		A-VALVE (OVERLOAD) B-IGNITION
3C-210		A-GROUND B-STROBE
3C-212, 213		A-GROUND B-TIREHAND FLOOD
3L-252		A-POWER 2 (87) C-GROUND
5L-265, 5C-266 5C-267, 5C-268 5R-269		BLACK - BLINK/TAIL WHITE-GROUND
4L-351 4L-352 5L-353		1-GROUND 2-L COMPARTMENT
5L-357 5R-358		1-GROUND 2-TAIL
5R-361		1-GROUND 2-TAIL 3-LEFT TURN
5C-401		A-BACK UP B-LEFT TURN C-RIGHT TURN D-BLINK/TAIL
3L-501		A-AUXILIARY B-LEFT COMPARTMENT C-RIGHT COMPARTMENT D-LEFT FLOOD
3L-602		A-SPEED POWER B-ENGINE SPEED OUT C-NOT USED D-AFTERCOOLER E-COMPRESSOR F-OIL COOLER

3L-801		A-NOT USED B-NOT USED C-NOT USED D-NOT USED E-NOT USED F-NOT USED G-RADIO POWER H-TIREHAND
3L-802		A-SKIRT FLOODS B-COMPRESSOR POWER C-COMPARTMENT LIGHTS D-CRANE FLOODS E-SEARCH TO SW F-AFTERCOOLER G-OIL COOLER H-STROBE TO SW
3L-803		1-GROUND 2-TIREHAND 3-CRANE FLOODS 4-COMPARTMENT LIGHTS 5-SKIRT 6-COMPRESSOR POWER 7-COMPRESSOR 8-SPEED CONTROL
3L-214,215,216		A-POWER IN B-POWER OUT
3L-W1		AUX
3L-701		1-POWER 1 (30) 2-CRANE PTO GROUND 3-IGNITION 4-STROBE TO SW 5-STROBE FROM SW 6-POWER 2 (30) 7-POWER 3 (30) 8-GROUND 9-SEARCH TO SW 10-SEARCH FROM SW 11-ENGINE SPEED OUT 12-ENGINE KILL 13-18 - NOT USED

R-2	30-POWER 2 87-POWER 2 85-GROUND 86-IGNITION
R-3	30-POWER 3 87-POWER 3 85-BRAKE ENGAGE 86-IGNITION
R-4	30-RADIO POWER 87-DUMP VALVE 85-GROUND 86-DUMP VALVE POWER

Chassis Wiring (99903160)



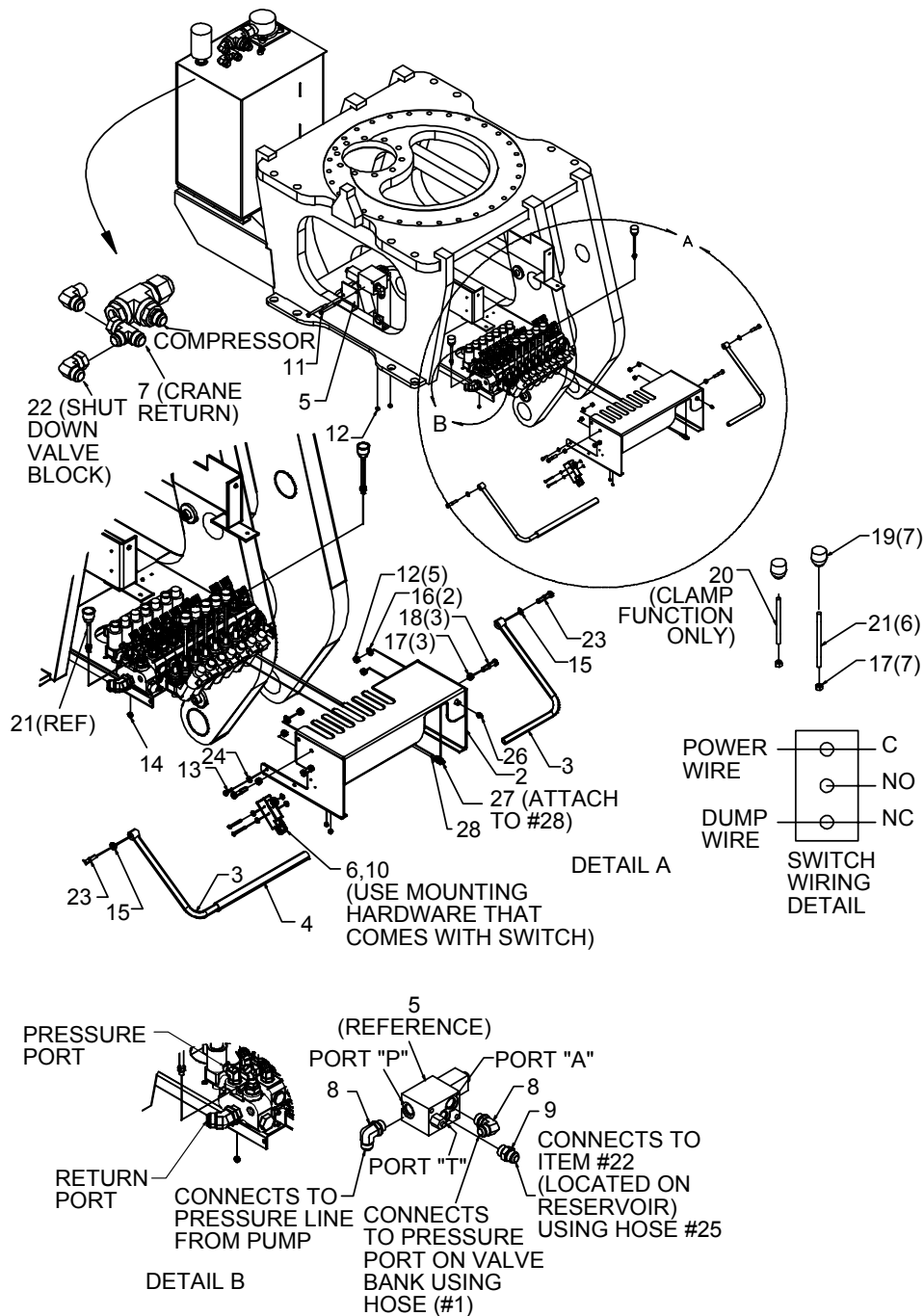
99903160 PARTS LIST

ITEM	PART #	DESCRIPTION	QUANTITY
1.	77041616	FUSE-MAXI 40 AMP	2
2.	77041678	FUSE BLOCK- 4 POSITION	1
3.	72060835	SCREW-SELF-TAP #8-18 X 3/4 HHZ	4
4.	77041619	FUSE-MAXI 60 AMP	1
5.	60251088	BRKT-RELAY & MAXI FUSE BLK	1
6.	77441110	CABLE POWER RED #6X16	1

99903160 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
7.	77041606	FUSE AGC 7.5	1
8.	77044691	FUSE HOLDER	1
9.	77040048	TERM-BUTT CONN	6
10.	51717388	KIT-EFM	1
11.	70145421	HEAT SHRINK (NOT SHOWN)	12"
12.	77044915	HARNESS	1
13.	72061739	SCR-TEK 12-14 X 1.0 HWH (N/S)	2

Hydraulic Shutdown Kit (99903465)

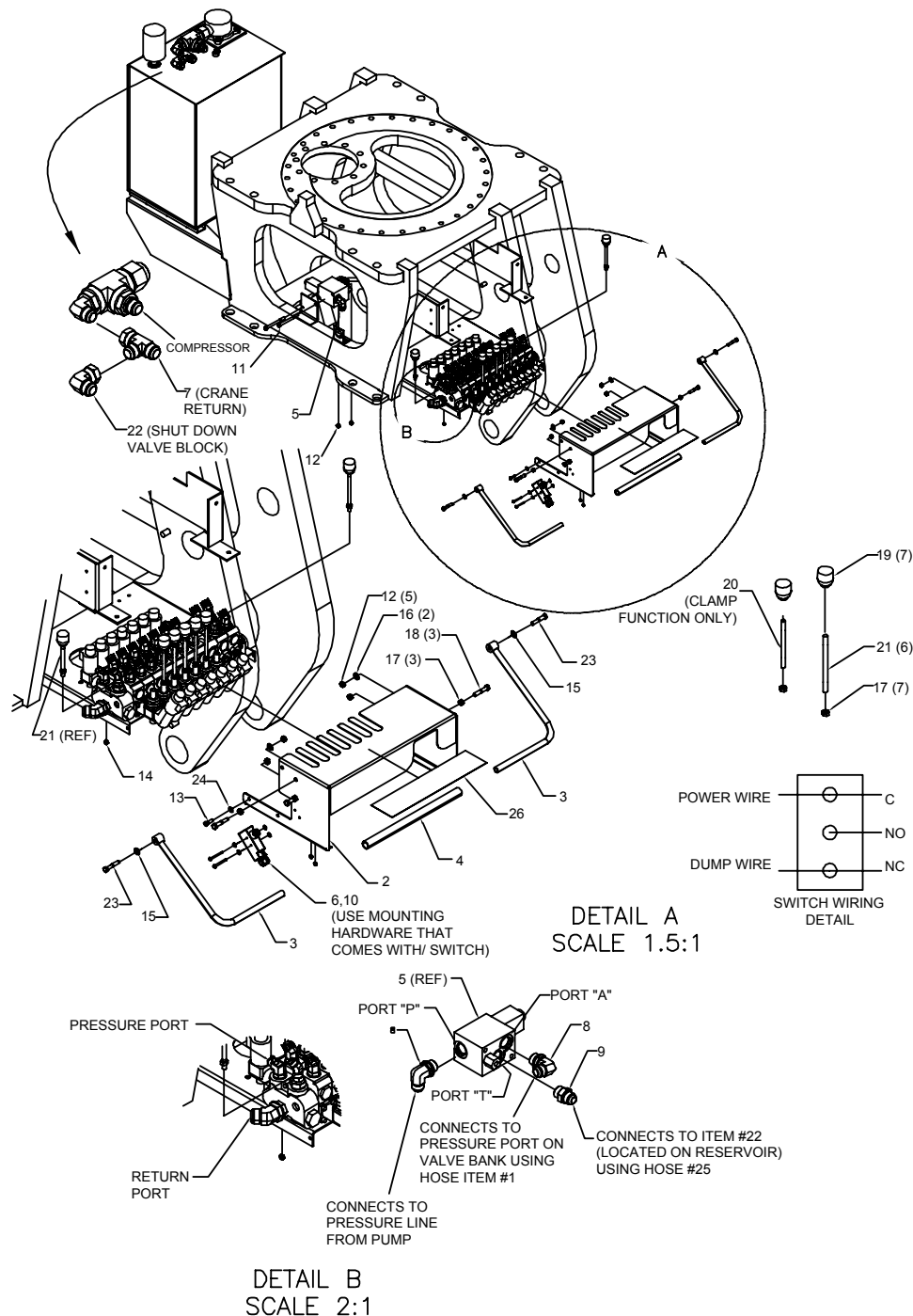
NOTE: Used on 23516 units with serial number 23516021001 to present, and 14K160TH units with serial number 14K160TH021003 to present.



99903465 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	51396300	HOSE-FF .75X 36.00 OAL(12-12)	1REF
2.	60124754	COVER WLDMT-14K160TH	1
3.	52713782	HANDLE-HYD SHUTDOWN	2
4.	60120092	TUBE-RD .75IDX 1.00ODX 15.50	1
5.	73055278	VALVE ASM-REL/SOL HYD SHUTD (12V)	1
6.	77041459	SWITCH-LIMIT	1
7.	72533000	TEE-SWVL NUT RUN JIC 16	1
8.	72053767	ELBOW-M STR/90/M JIC 12 12	2
9.	72532366	ADPTR-M STR/M JIC 12 12	1
10.	77044468	CONNECTOR- .50 STR RLF .12-.25	1
11.	72060057	CAP SCR .38-16X 4.50 HH GR5 Z	2
12.	72062103	NUT .38-16 HEX NYLOC ZINC	7
13.	72060004	CAP SCR .25-20X 1.00 HH GR5 Z	4
14.	72062104	NUT .25-20 HEX NYLOC ZINC	4
15.	72063215	WASHER-BELLVILLE .38 SS	2
16.	72063003	WASHER .38 W FLAT ANSI B27.2Z	2
17.	72062002	NUT .38-16 HEX ZINC	10
18.	72060052	CAP SCR .38-16X 2.50 HH GR5 Z	3
19.	70146062	KNOB-CNTRL HANDLE	7
20.	60124863	HANDLE-GRESEN V20 VB 5.00 LG	1
21.	60124864	HANDLE-GRESEN V20 VB 6.00 LG	6
22.	72532971	ELBOW-M JIC/F JIC SW 16 16	1
23.	72060051	CAP SCR .38-16X 2.25 HH GR5 Z	2
24.	72063001	WASHER .25 W FLAT ANSI B27.2Z	4
25.	51396303	HOSE-FJ .75X 61.00 OAL(16-12)	1REF
26.	72053508	ZERK-NPT .12 (PART OF HYD KIT)	1REF
27.	72053638	ADPTR-MPT/FPT SWVL .12 .12 (PART OF HYD KIT)	1REF
28.	53000718	GREASE EXT-55.00 OAL 53.00 HOSE (PART OF HYD KIT)	1REF
REV B 20070226			

Shutdown Conversion Kit (99903466)

USED ON 23516 UNITS WITH SERIAL NUMBER 23516021001 TO PRESENT, AND 14K160TH UNITS WITH SERIAL NUMBER 14K160TH021003 TO PRESENT.



99903466 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	51396300	HOSE FF 3/4X36.00 OAL	1
2.	60124754	COVER-SHUT DOWN V/B	1
3.	52713782	HANDLE-HYD SHUTDOWN	2
4.	60120092	TUBE-RD 3/4ID X 1.0 OD X 15.50	1
5.	73055278	VALVE ASM-RELIEF/SOL	1
6.	77041459	LIMIT SWITCH ZE-N-2 S	1
7.	72533000	TEE-SWIVEL NUT RUN JIC 16	1
8.	72053767	ELBOW #12 MSTR #12 MJIC 90°	2
9.	72532366	ADPTR-#12MSTR #12MJIC	1
10.	77044468	CONNECTOR 1/2 STR RLF 1/8-1/4	1
11.	72060057	CAP SCR 3/8-16 X 4.5 HHGR5Z	2
12.	72062103	NUT 3/8-16 HEX NYLOC	7
13.	72060004	CAP SCR 1/4-20 X 1.00 HHGR5Z	4
14.	72062104	NUT 1/4-20 HEX NYLOC ZINC	4
15.	72063215	WASHER BELLVILLE 3/8 SS	2
16.	72063003	WASHER 3/8 FLAT	2
17.	72062002	NUT 3/8-16 HEX ZINC	10
18.	72060052	CAP SCR 3/8-16 X2.50 HHGR5Z	3
19.	70146062	KNOB-CTRL HANDLE (GRES 8815)	7
20.	60124863	HANDLE 5" LONG	1
21.	60124864	HANDLE 6" LONG	6
22.	72532971	ELBOW #16MJIC #16FJIC SW	1
23.	72060051	CAP SCR 3/8-16 X 2.25 HHGR5Z	2
24.	72063001	WASHER 1/4 FLAT	4
25.	51396303	HOSE-FJ 3/4 X 61.00 OAL	1
26.	70396301	DECAL-CONTROL 23516	1
27.	60124853	BRACKET-SHUTDOWN VB	1

CHAPTER 5

General Reference

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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 <ul style="list-style-type: none"> 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. <p>NOTE: Deficiencies (X) listed must be followed by the corresponding corrective action taken (CA).</p> <p>X = DEFICIENCY R = RECOMMENDATION CA = CORRECTIVE ACTION TAKEN</p>		

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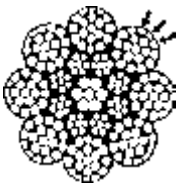
Wire Rope Inspection & Replacement

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

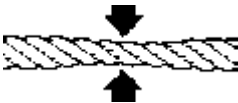
- a Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.
- b When there are either three broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



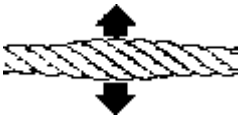
- c When flat spots on the outer wires appear and those outside wires are less than $\frac{2}{3}$ the thickness of the unworn outer wire.



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



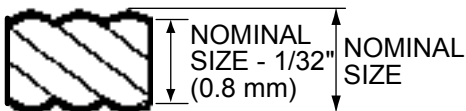
- e When kinking, crushing, birdcaging or other distortion occurs.



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



- g When the diameter is reduced from nominal size by $\frac{1}{32}$ " (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).

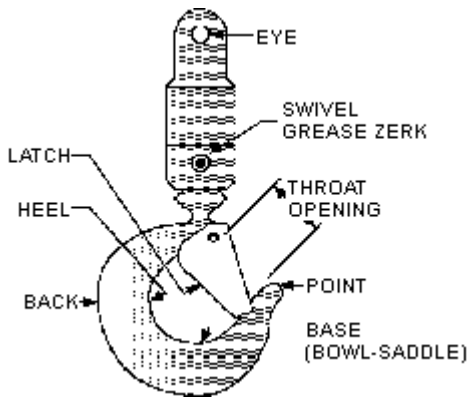
d LATCH

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.

Anti-Two-Block Device Inspection

(See the operation, maintenance, and repair manual for this crane 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.
- 4 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.
- 5 If the anti-two-block function appears to be functioning normally, winch the cable down until the sensing weight swings free.

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.

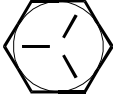

When using the torque data in the torque charts, the following rules should be observed.

- 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**

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)
5/16-24	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

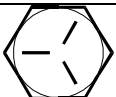
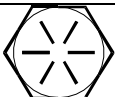
COARSE THREAD TORQUE CHART (ENGLISH)**TIGHTENING TORQUE**

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

FINE THREAD TORQUE CHART (METRIC)

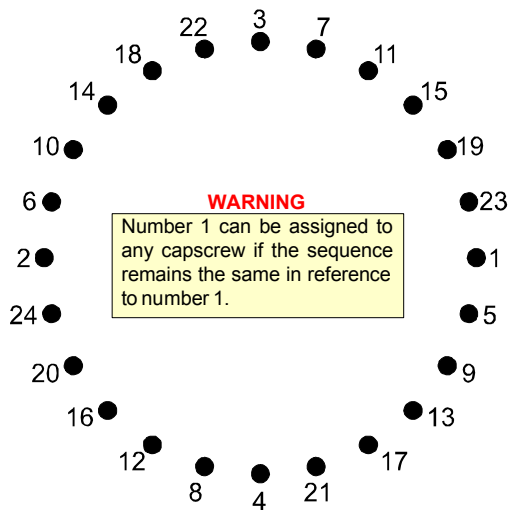
TIGHTENING TORQUE					
SIZE (DIA-TPI)	BOLT DIA. (INCHES)	 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (KG-M)	PLATED (KG-M)	PLAIN (KG-M)	PLATED (KG-M)
5/16-24	0.3125	3	2	4	3
3/8-24	0.375	5	4	7	5
7/16-20	0.4375	8	6	11	8
1/2-20	0.5	12	9	17	12
9/16-18	0.5625	17	12	24	18
5/8-18	0.625	24	18	33	25
3/4-16	0.75	41	31	58	44
7/8-11	0.875	62	45	93	69
1-12	1	89	67	138	103
1 1/8-12	1.125	123	93	200	150
1 1/4-12	1.25	171	129	278	209
1 3/8-12	1.375	232	174	375	281
1 1/2-12	1.5	304	228	492	369

COARSE THREAD TORQUE CHART (METRIC)

TIGHTENING TORQUE					
SIZE (DIA-TPI)	BOLT DIA. (INCHES)	 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	0.375	4	3	6	5
7/16-14	0.4375	7	5	10	7
1/2-13	0.5	10	8	15	11
9/16-12	0.5625	15	11	21	16
5/8-11	0.625	21	16	30	22
3/4-10	0.75	37	28	52	39
7/8-9	0.875	55	41	84	63
1-8	1	82	62	126	94
1 1/8-7	1.125	110	82	178	133
1 1/4-7	1.25	155	116	251	188
1 3/8-6	1.375	203	152	329	246
1 1/2-6	1.5	270	210	438	328

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: $.40 \times 265 \text{ FT-LB} = 106 \text{ FT-LB}$)
(EXAMPLE-METRIC: $.40 \times 36 \text{ KG-M} = 14.4 \text{ KG-M}$)
- 4 Repeat Step 3, but torquing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.
(EXAMPLE: $.75 \times 265 \text{ FT-LB} = 199 \text{ FT-LB}$)
(EXAMPLE-METRIC: $.75 \times 36 \text{ KG-M} = 27 \text{ KG-M}$)
- 5 Using the proper sequence, torque all capscrews to the listed torque value as determined from the Torque Data Chart.

Turntable Bearing Inspection for Replacement

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

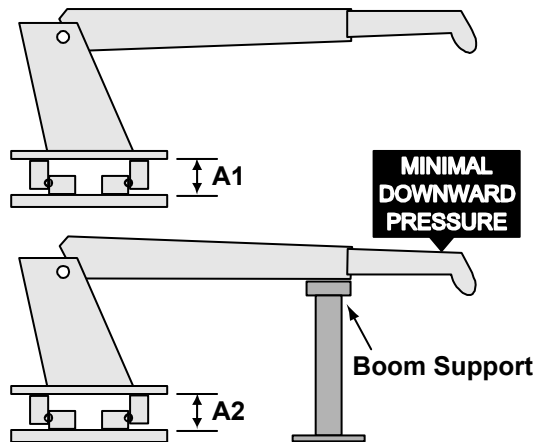
- 1 Metal particles present in the bearing lubricant.
- 2 Increased drive power required to rotate the crane.
- 3 Noise emitting from the bearing during crane rotation.
- 4 Rough crane rotation.
- 5 Uneven or excessive wear between the pinion gear and turntable gear.

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

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

Turntable Bearing Tilt Test

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



COMPARISON CHART - MODEL TO MEASURED TILT DIMENSION**NOTE:**

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.

IMT Crane, Loader or Tirehand Model	1007	5200	16000	9800
	1014	5200R	32018	12916
	1014A	5217	32027	13031
	1015	5800	32030	13034
	2015/2020	7020	T30	14000
	2109	7025	T40	15000
	3000	7200		18000
	3816/3820	7415		20017
	3016/3020	9000		8000L
	421/425	TH10 BODY		H1200
	4300	ROT'N		H1200RR
	5016/5020	TH14 BODY		T50
	6016/6020	ROT'N		TH2551B BODY
	TH7 BODY ROT'N			ROT'N
	TH1449 BODY			TH2557B BODY
	ROT'N			ROT'N
	TH15B CLAMP			TH2557A BODY
	TH2551B CLAMP			ROT'N
	TH2557A CLAMP			
Ball Dia. (Ref)	.875" (22 mm)	1.00" (25 mm)	1.18 - 1.25" (30-32 mm)	1.75" (44 mm)
Tilt Dim. (A-A)	.060" (1.524 mm)	.070" (1.778 mm)	.075" (1.905 mm)	.090" (2.286 mm)