



IOWA MOLD TOOLING CO., INC.

P.O. Box 189
Garner, IA 50438
Tel: 641.923.3711
Fax: 641.923.2424
www.imt.com

Manual # 99903060

14K160TH Crane - Tirehand Parts & Specifications

Revised 04-25-2019

Copyright © 2019 Iowa Mold Tooling Co., Inc.
All rights reserved

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of Iowa Mold Tooling Co., Inc.

Iowa Mold Tooling Co., Inc. is an Oshkosh Corporation Company

Table of Contents

Section - 1	1
Introduction	2
Section - 2	5
14K160TH System Specifications.....	6
Tirehandler Specifications.....	9
Service Body Features.....	10
14K160TH System Capacity Chart	11
Tirehand Work Positions	12
14K160TH Crane Geometric Configuration	13
Minimum Chassis Specifications	14
Chassis Information / Weight Distribution	15
Section - 3	17
14K160TH Major Assemblies & Part Number Locations	18
14K160TH Grease Zerk Locations & Lubrication Requirements	19
14K160TH Recommended Spare Parts	20
14K160TH Preventative Maintenance Kit.....	21
14K160TH Installation.....	22
TireHand Operating Restrictions.....	24
Stowing TireHand on Truck without Tires.....	26
Stowing TireHand on Truck with Tires.....	30
Unstowing TireHand.....	31
Section - 4	33
Parts Information.....	34
Base & Stabilizer Assembly (41715824).....	36
Stabilizer Cylinder (3D312990)	38
Mast Assembly (41715808)	39
Inner Boom Assembly (41715809).....	40
Inner Cylinder (3D293990).....	41
Outer Boom Assembly (41715810).....	42
Outer Cylinder (3D298990).....	43
Extension Boom Assembly (41715834)	44
Extension Cylinder (3D295990).....	45
Valve Bank Assembly (51715851)	46
Valve Bank, 10 Section (73733415).....	48
Valvepack, Dual Counterbalance (70731795)	50
Hydraulic Kit (91715845)	52
Hydraulic Kit - Crane Rotation (99901234)	56
Hydraulic Kit - Reservoir (99901235).....	58
Reservoir Assembly (51715011)	60
Hydraulic Kit - TireHand Rotation (99903055)	61
Hydraulic Kit - TireHand Rotation (Thru 11-2005).....	62
Hydraulic Kit-TireHand (99903056).....	63
Hydraulic Kit - Inner Cylinder (99903149).....	65
Hydraulic Kit - Outer Cylinder (99903150)	66
Hydraulic Kit - Extension Cylinder (99903151)	67
Hydraulic Kit - Bulkhead Layout (99903152)	68
Hydraulic Kit - Stabilizers (99903153).....	70
Hydraulic Schematic (99903210).....	72
Light Kit (51715873).....	73

Control Kit (90715855).....	74
Electrical Control Cabinet (41718269).....	76
Electrical Control Box Assembly (41718269-2).....	78
Installation Kit (93715856).....	80
Decal Kit - Crane (95715871).....	81
Body Assembly - TireHand (41715822).....	83
Yoke Assembly - TireHand (41715811) (Eff. 11-2005).....	84
Yoke Assembly - TireHand (41715811) (Thru 10-2005).....	86
Arm Assembly - TireHand (41715821).....	88
Rotation Bearing Retrofit Kit (95721140).....	90
TireHand Wear Pad Installation Instructions.....	91
Pad Rotation Cylinder (3B314990).....	93
Clamp Cylinder (3B316990).....	93
Decal Kit - TireHand (95715872).....	94
Flange Ring Tool Assembly (41716213).....	96
Radio Remote Kit (73733417).....	97
Radio Remote Kit - Nova (73733481).....	98
Electrical Schematic - 14K160TH w/Dump System & Speed Control (99903557) (Eff 9/2002).....	100
Wiring Schematic (99903201) (Thru 8/2002).....	102
Wiring Schematic (99903201) (Thru 8/2002).....	103
Chassis Wiring (99903160).....	106
Hydraulic Shutdown Kit (99903465).....	108
Shutdown Conversion Kit (99903466).....	110

Section - 5

113

Hook Inspection.....	114
Holding Valve Inspection.....	115
Turntable Bearing Inspection.....	116
Turntable Bearing Tilt Test.....	116
14K160TH - Turntable Bearing Thread Tightening Sequence.....	118
14K160TH - Thread Torque Chart (English).....	119
14K160TH - Thread Torque Chart (Metric).....	120

Introduction

Section - 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

NOTE, CAUTION and WARNING and are defined as follows:

A **NOTE** is used to either convey additional information or to provide further emphasis for a previous point.

A **CAUTION** is used when there is the very strong possibility of damage to the equipment or premature equipment failure.

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

This page left intentionally blank

Specifications

Section - 2

14K160TH System Specifications

Tirehandler Rating*	231,000 ft-lb	31.95 tm
System Capacity	14,000 lb @ 16'-3"	6,350 kg @ 4953 mm
	12,000 lb @ 18'-0"	5,445 kg @ 5486 mm
	9,000 lb @ 20'-0"	4,080 kg @ 6096 mm
	7,000 lb @ 21'-0"	3,175 kg @ 6401 mm
	6,000 lb @ 22'-3"	2,720 kg @ 6782 mm
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 L/pm
SYSTEM FLOW-COMPRESSOR	28 gpm	106 L/pm
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 Stabilizers	Fold-over	Fold-over
Span	18'-0"	5,486 mm
Activation	Line of sight	Line of sight
Auxiliary Stabilizers	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
Stabilizer Extension	42" (1067 mm)	72 seconds

POWER SOURCE - Integral-mounted hydraulic pump and PTO application. Other standar 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 wit integral-mounted counter-balance valves to prevent sudden cylinder collapse in case of hose or other hydraulic failure. The stabilizer cylinders have double pilot operated check valves. The counter-balance valve is a holding valve, constructed to prevent sudden cylinder rod movement in the event of hydraulic hose or component failure and to limit oil loss from a hose break to the oil contained 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.

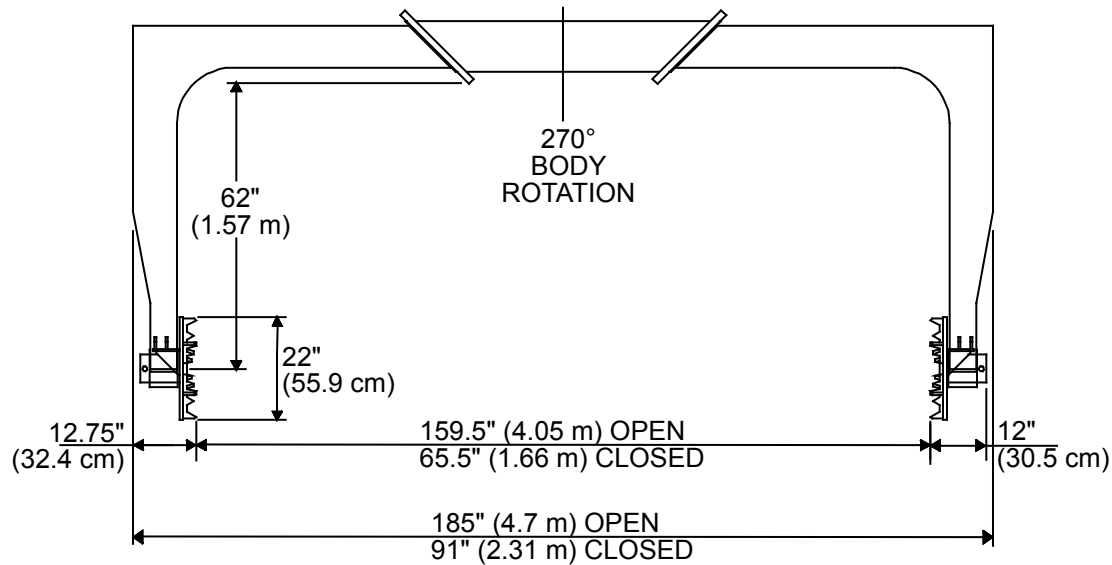
ROTATION SYSTEM - Rotation of the TireHandler is accomplished through a turntable bearing, powered by a high torque hydraulic disc-valve motor through a planetary gear box. A spring applied hydraulic release brake is an integral part of each planetary gear box which provides rotational and parking brake 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 stabilizers 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

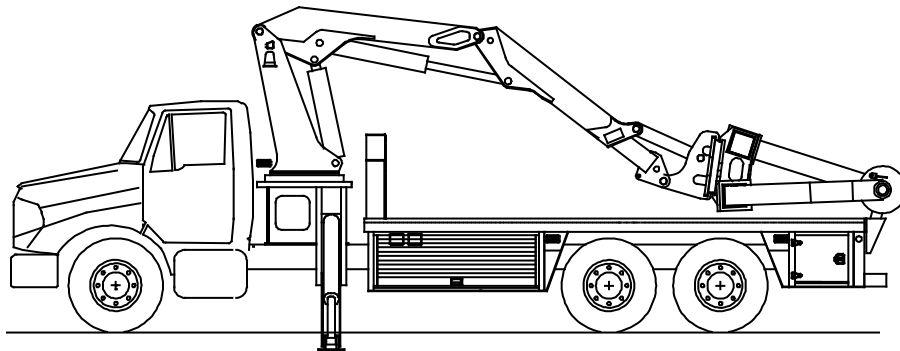
IMT reserves the right to change specifications and design without notice. If applicable, specifications are in accordance with SAE standards.

Service Body Features

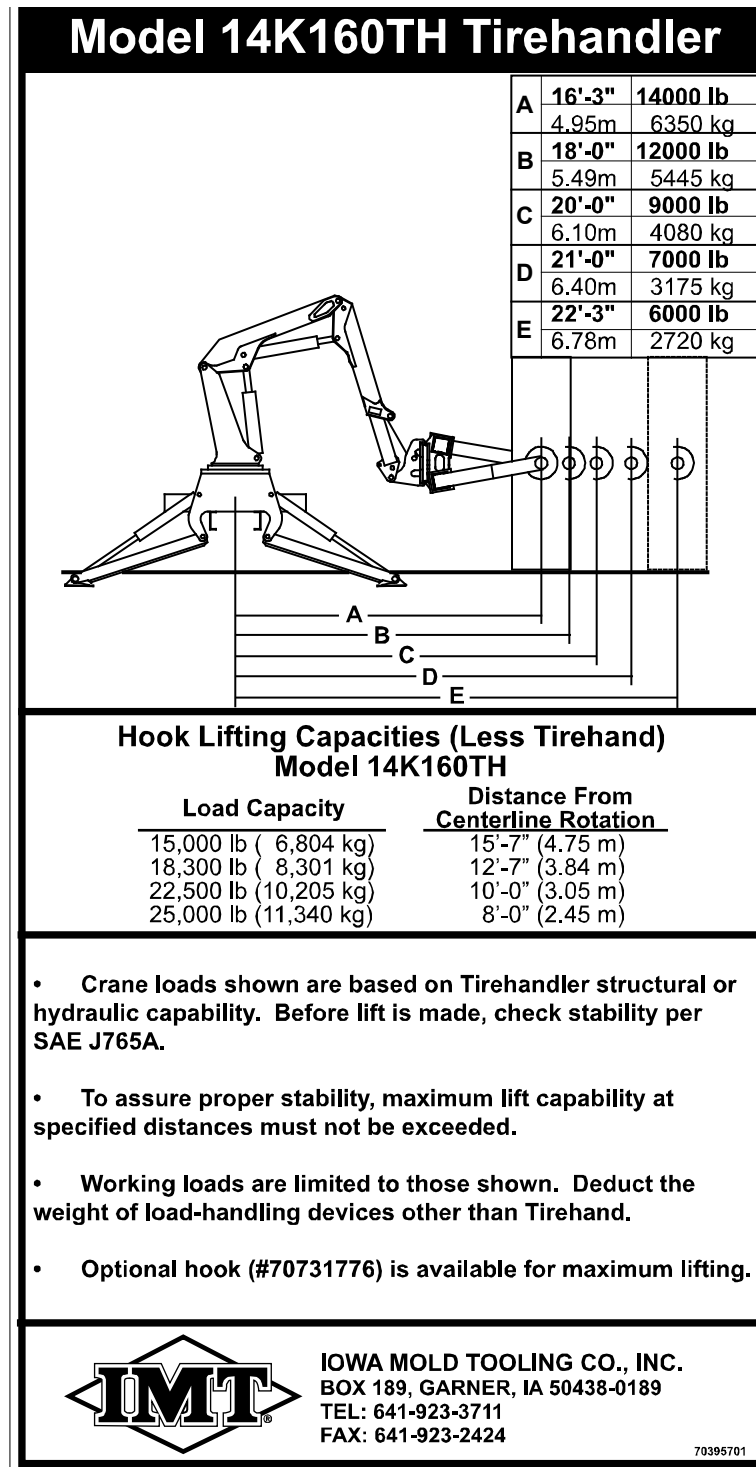
19'-6" long heavy-duty steel mine service body.

- 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.

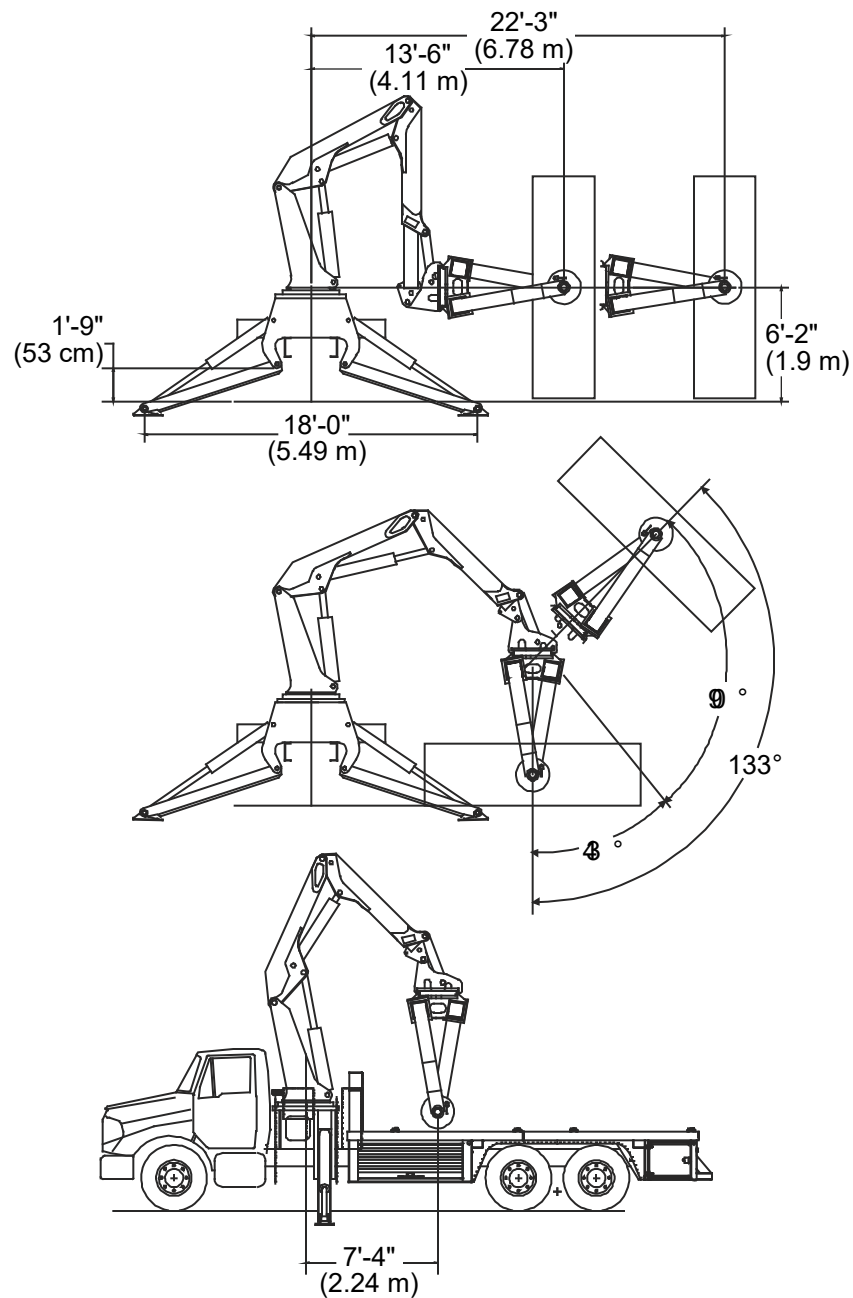
Body assembly includes aluminum roll-top front compartment doors, compartment matting, wheel well skirting with street side recessed work light pockets, D-ring tie-downs, and Imron 5000 polyurethane baked-on pure white paint finish.



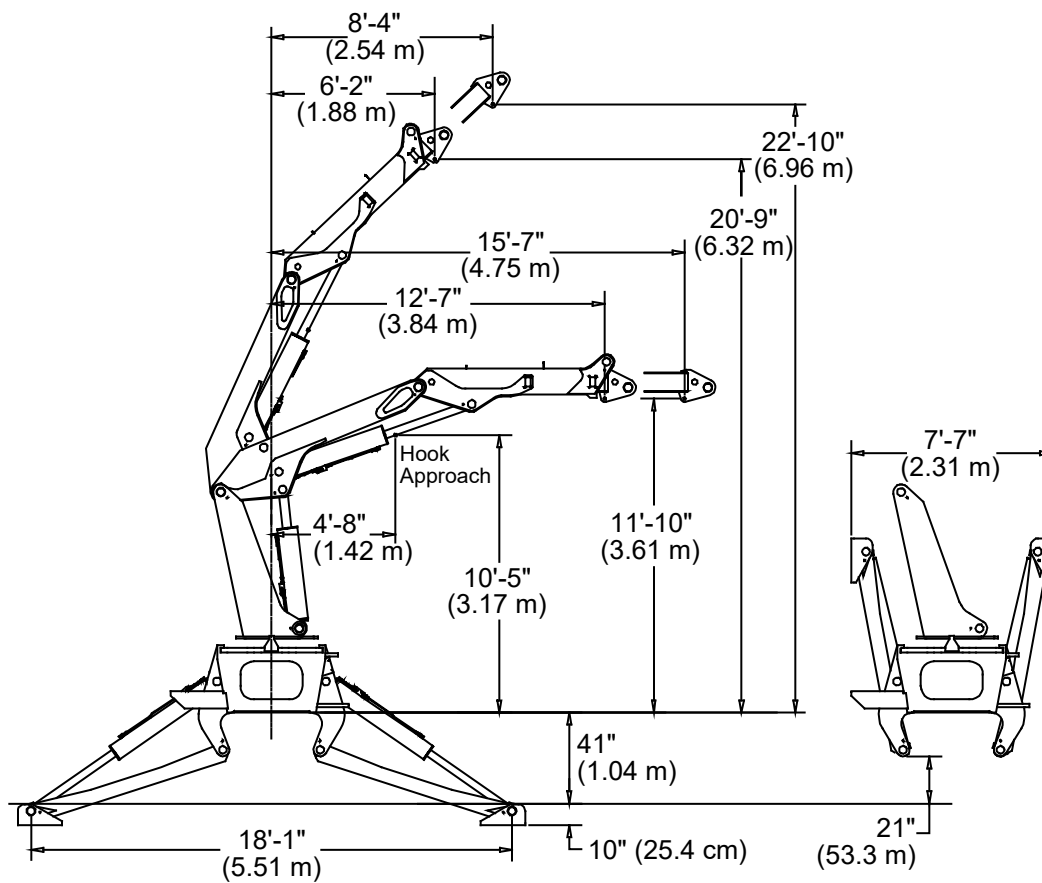
14K160TH System Capacity Chart



Tirehand Work Positions

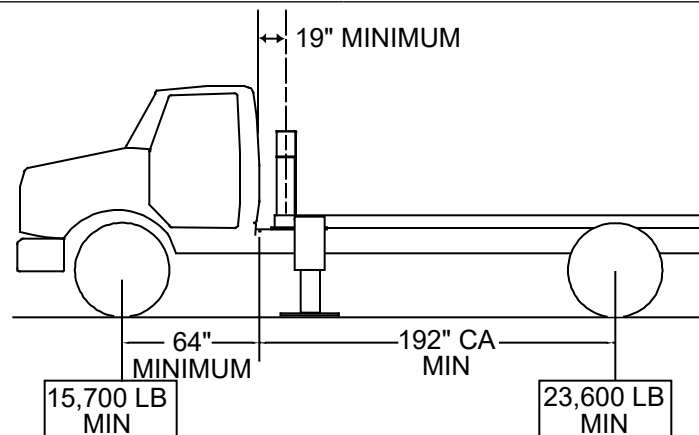


14K160TH Crane Geometric Configuration



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"
Stabilizer 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.

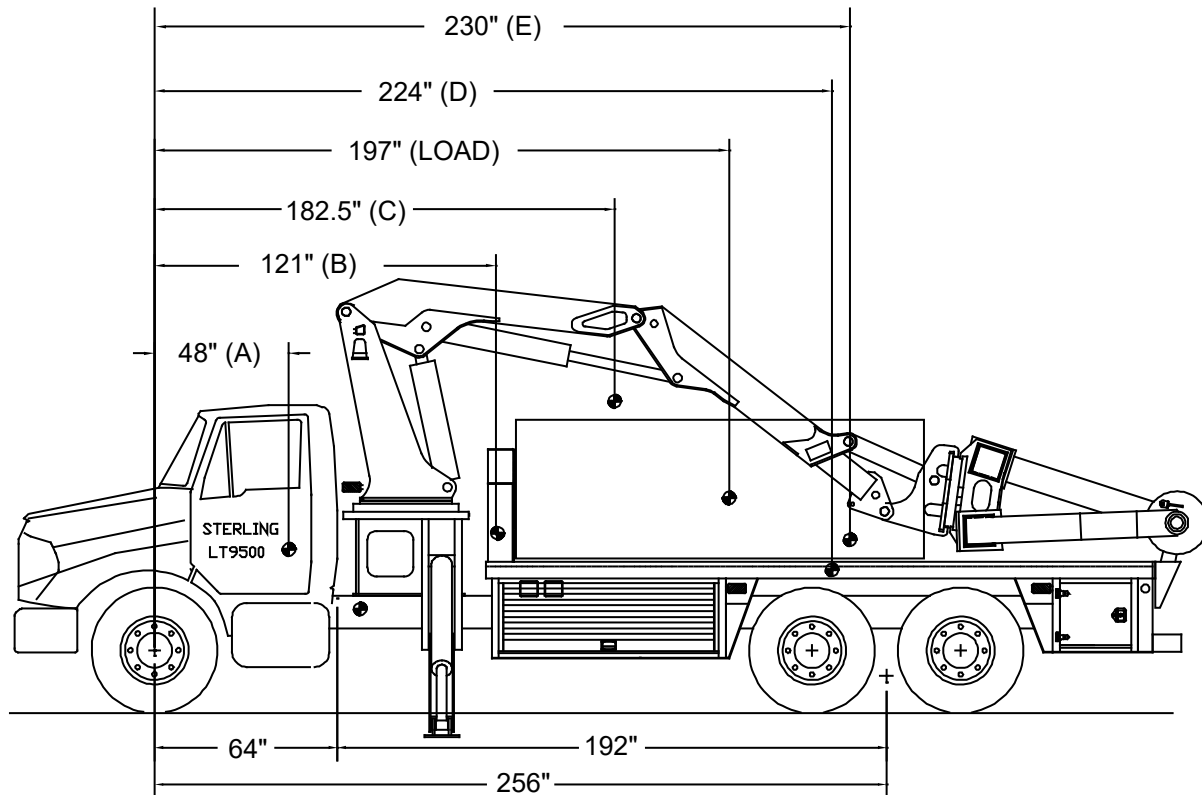
Chassis Information / Weight Distribution

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	Comonent 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
<i>Load</i>	<i>Off Road Tires</i>	<i>10,975 lb</i>	<i>2,345 lb</i>	<i>8,450 lb</i>
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

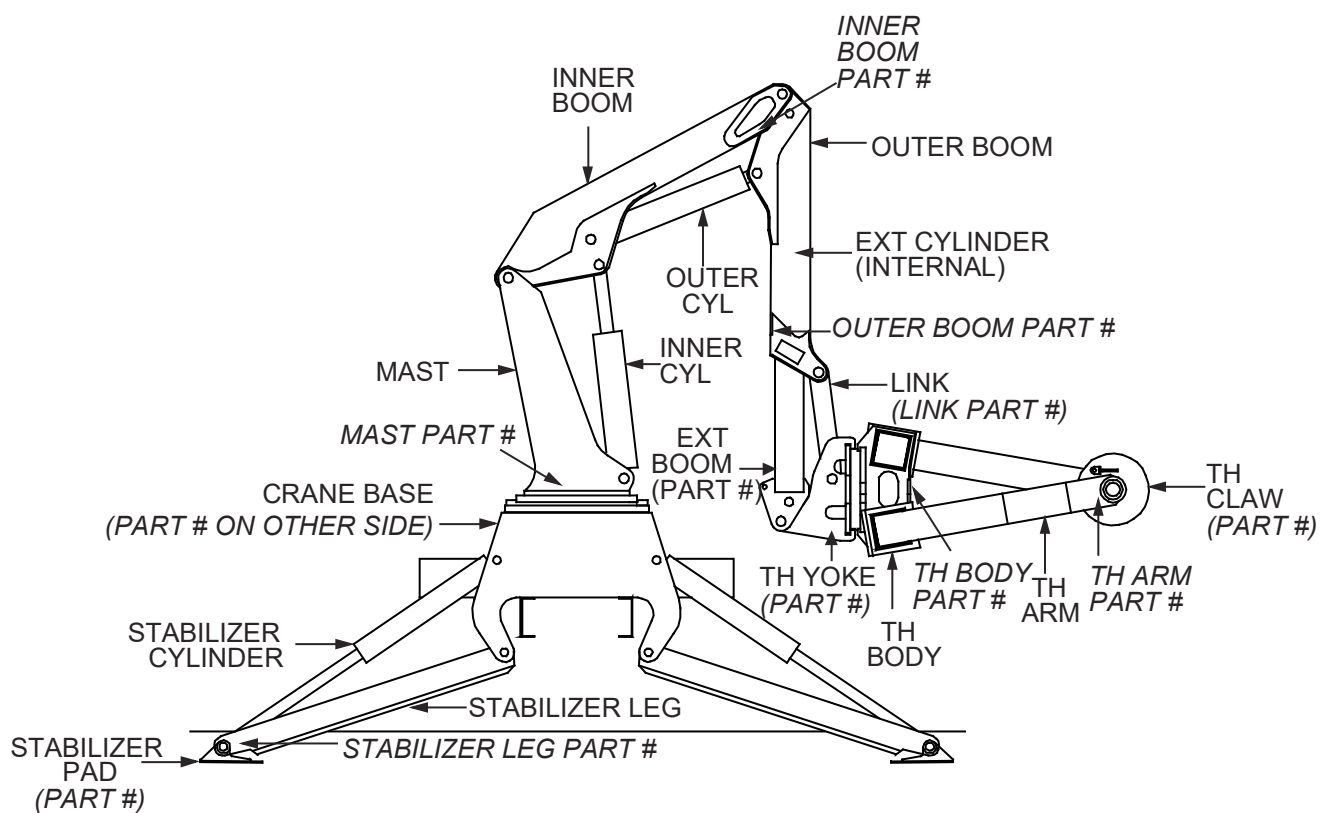


The weight calculations included in this proposal are an estimate of future vehicle weight. The actual weight as manufactured may be different from the estimated weight. Iowa Mold Tooling Co., Inc. shall not be liable for any consequences resulting from any difference between the estimated weight of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

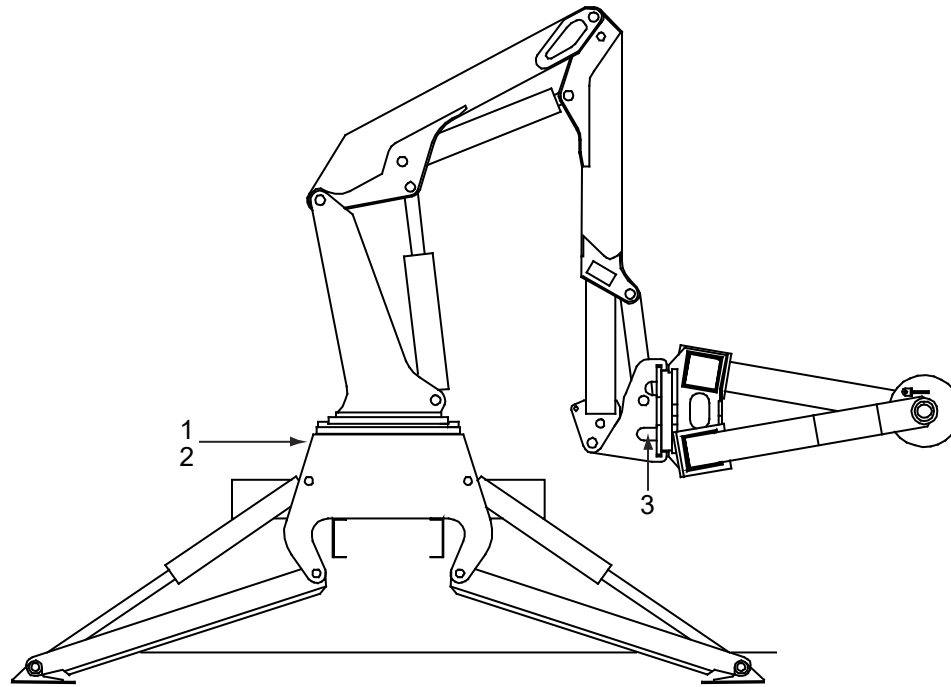
Crane References

Section - 3

14K160TH Major Assemblies & Part Number Locations



14K160TH Grease Zerk Locations & Lubrication Requirements



Item	Loaction 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		

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 NO.	PART NO.	DESCRIPTION	QTY.	CODE
3D312990 STABILIZER 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
	60122821	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				
	73511313	MOTOR-HYD 104-1413-006	1	W

ASSEMBLY PART NO.	PART NO.	DESCRIPTION	QTY.	CODE
91715845 HYDRAULIC KIT - TIREHANDLER				
	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 NO.	DESCRIPTION	QTY.
301669	COALESCER - LONG SPIN-ON ELEMENT	1
70048209	ELEMENT-AIR (FRL	2
73052088	FILTER ELEMENT-RETURN	2
73054974	FILTER-BREATHER 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 GAL
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:

Never use lock washers.

Only use hardened washers. Install washers under the turning element, whether the turning element is the nut or the head of the bolt.

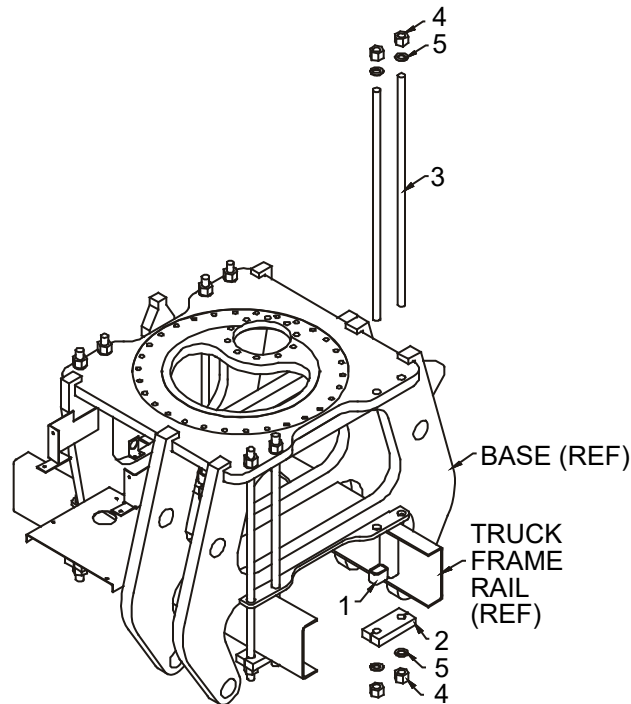
Torque values specified are with residual oils or without special lubricants applied to the threads. If special lubricants are used, such as Never-Seize compound graphite and oil, molybdenum disulphide colloidal copper or white lead, reduce torque values 10%. Torque values for threaded fasteners are not affected with the use of Loctite.

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

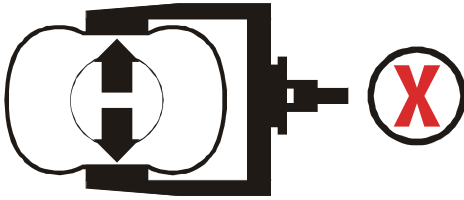
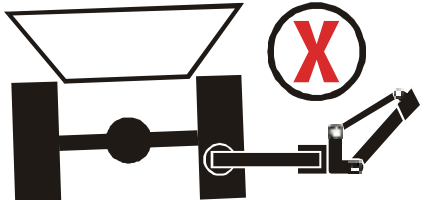
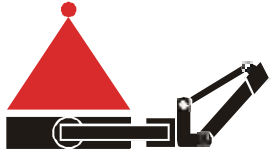
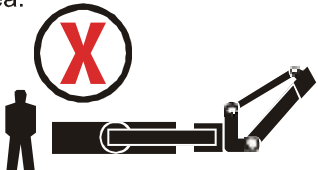
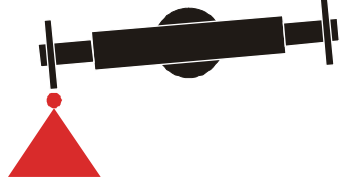
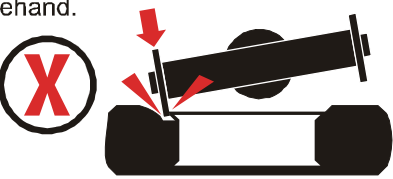
1. Refer to the hydraulic diagrams in the Parts Section for hose routings, brackets, filters, etc.
2. Install all hoses and fittings, making certain all connections are properly tightened.
3. Fill the reservoir with hydraulic fluid.
4. Open the valve at the suction line beneath the reservoir and any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

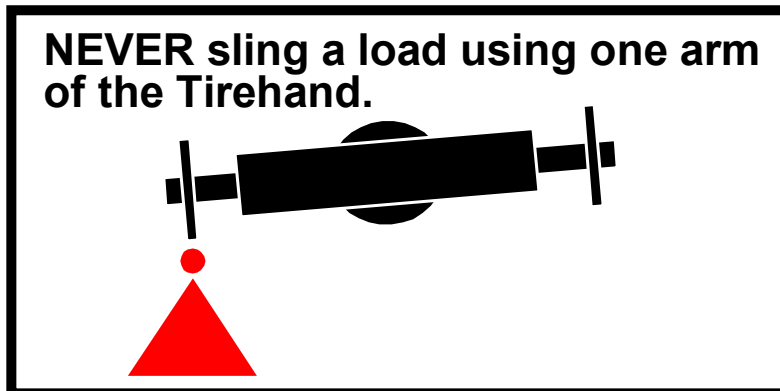
TireHand Operating Restrictions

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

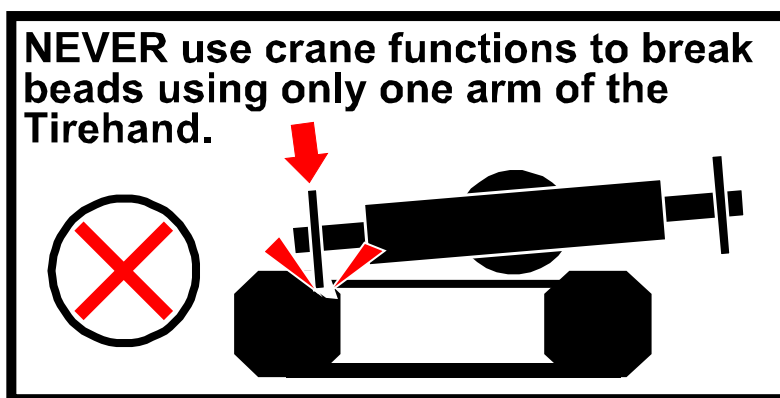
70394272

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.

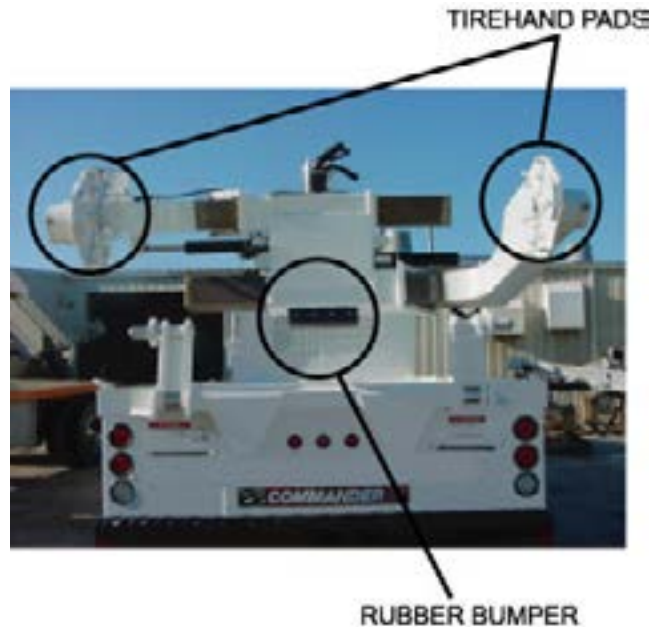


3. Retract TireHand arm until the white line on the outer boom meets the bottom of the arm.

**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.



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.

This page left intentionally blank

Parts

Section - 4

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.

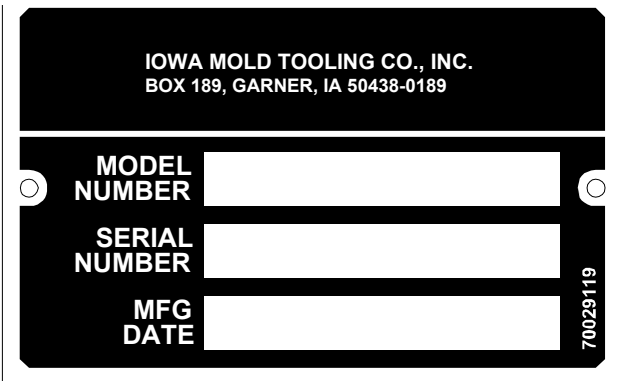
WARNING:

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

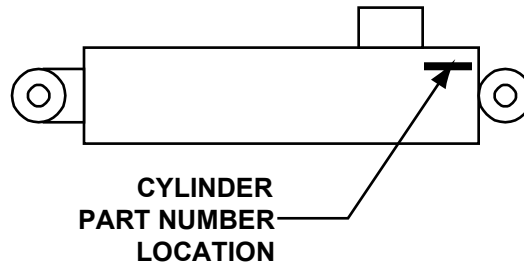
Every IMT crane has an identification placard (see figure). This placard is attached to the inner boom, mast, or crane base. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model numbers. Address all inquiries to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



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

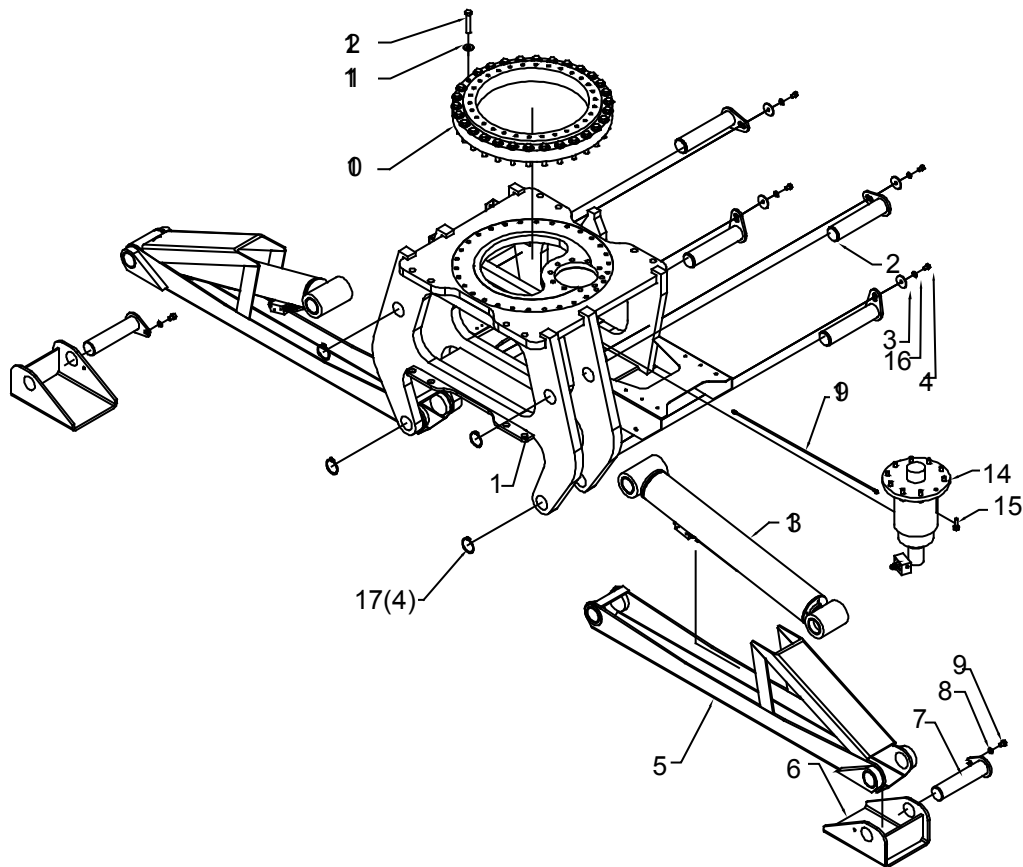
Each of the major weldments - base, mast, inner boom, outer boom, extension boom and stabilizer weldments bear a stamped part number. Any time a major weldment is replaced, you must specify the complete part number as stamped on the weldment. The locations of the part numbers are shown in the Crane Reference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

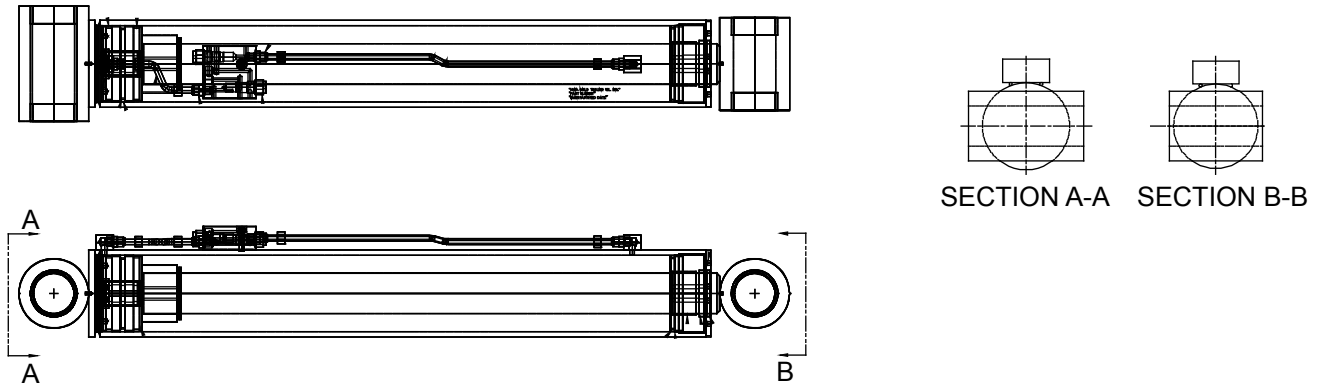
NOTES:

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 gear-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

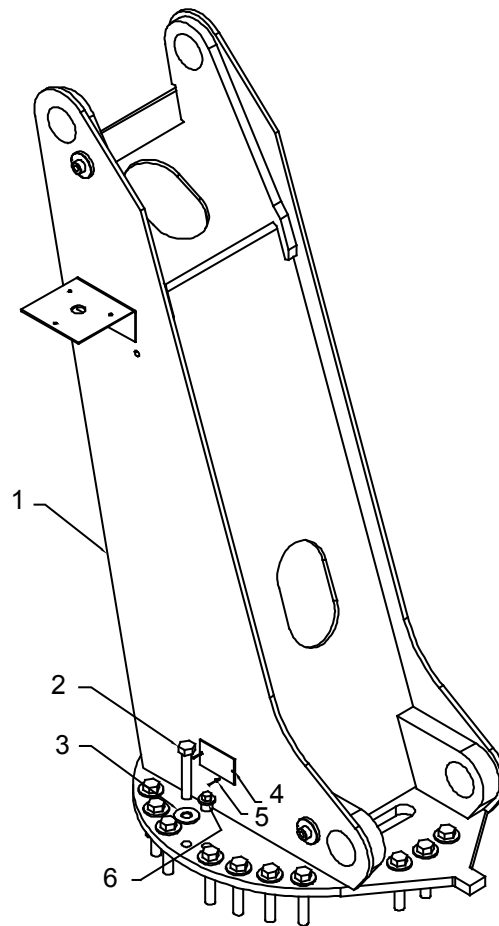
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	52715802	BASE WLDMT-14K160TH CRANE	1
2.	52715828	WLDMT-OUTRG LEG 14K160TH CRANE	2
3.	52715826	WLDMT-OUTRIGGER PAD	2
4.	71056562	GEAR-TURNABLE BEARING 450-05198-1	1
5.	52715829	PIN-TYPE MM 3.50X15.13 (14.63)	2
6.	52719324	PIN-TYPE II 3.50X16.50 (15.56)	4
7.	3D312990	CYL-6.5/3.5 42.00S 60.25CC C	2
8.	70056564	GEAR BOX-PLANETARY W/BRAKE 81623	1
9.	72661607	RETAINING RING-EXT 3.25 STD	4
10.	72063055	WASHER .62 LOCK	4
11.	60109337	RETAINER PLT-PIN 3.00 DIA	4
12.	72060148	CAP SCR .62-11X 1.25 HH GR5 Z	4
13.	72063115	WASHER .88 FLAT ASTM F436	30
14.	72601622	CAP SCR .88-9X 5.00 HH GR8 Z	30
15.	72063056	WASHER .75 LOCK	2
16.	72060181	CAP SCR .75-10X 1.00 HH GR5 Z	2
17.	72601651	CAP SCR .75-10X 2.00 SH PLAIN	10
REV. G			

Stabilizer Cylinder (3D312990)



NOTE: Items shown are common service items, for part numbers not assigned contact:
IOWA MOLD TOOLING CO., INC.
TECHNICAL SUPPORT TEAM
TELEPHONE: 800-554-4421

Mast Assembly (41715808)

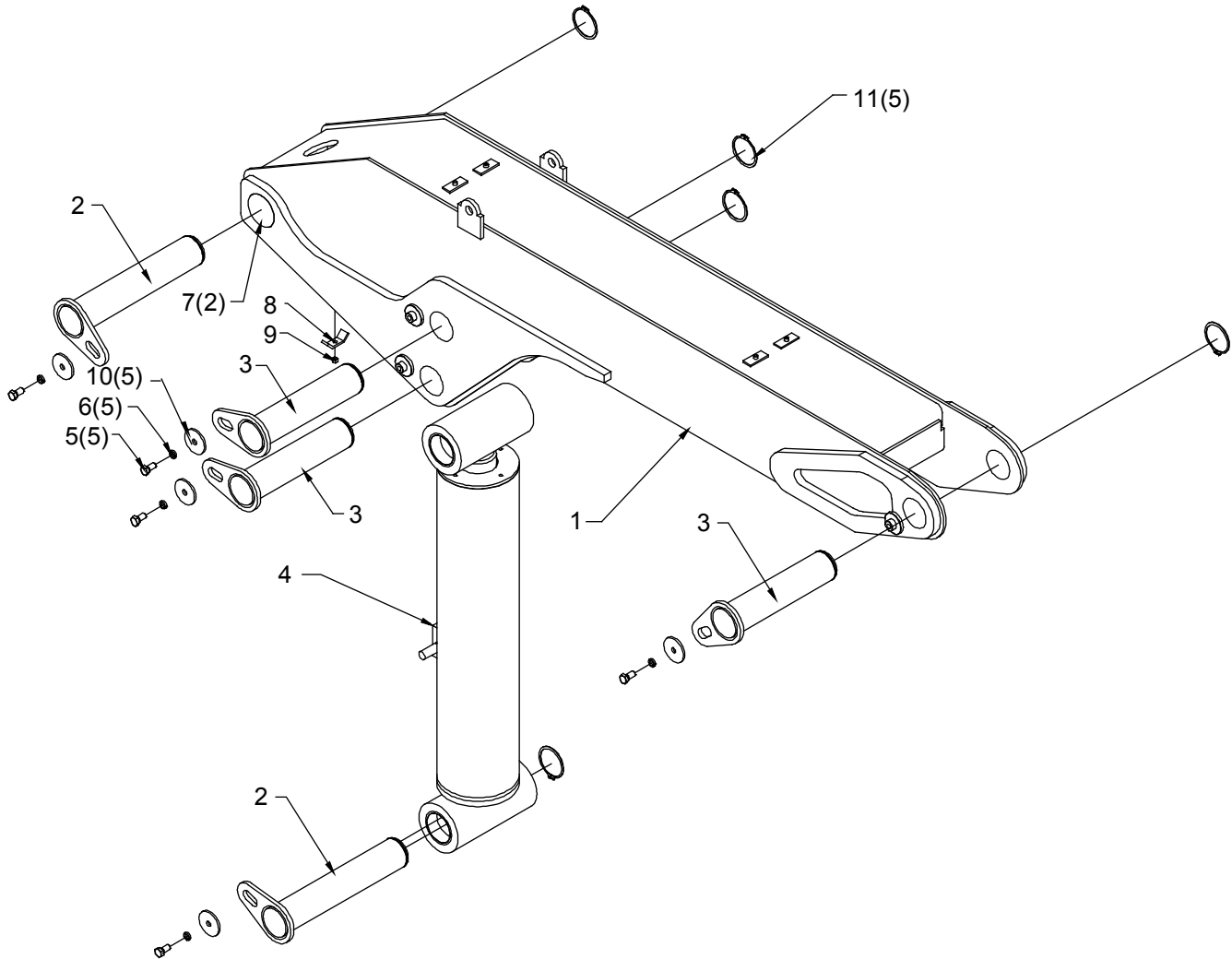


ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	52715778	MAST	1
2	72601622	CAP SCR 7/8-9X5 HHGR8	26
3	72063115	WASHER 7/8 FLAT H ASTM F436 (WAS 72063009)	26
4	70029119	SERIAL NUMBER PLACARD	1
5	72066340	POP RIVET 1/8X3/8GRIP	2
6	70029595	THREADED PLUG 1-8	1
REV. E			

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.

Inner Boom Assembly (41715809)

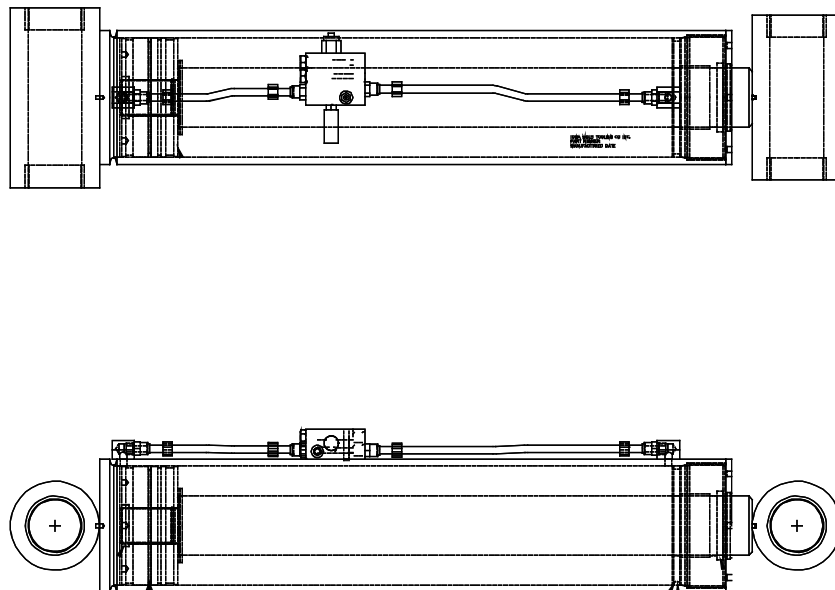


NOTES:

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 60122815 and 60122816 as required.
5. Anytime the pin retainer plate bolts have been removed, apply loctite 262 to the threads before reassembly.

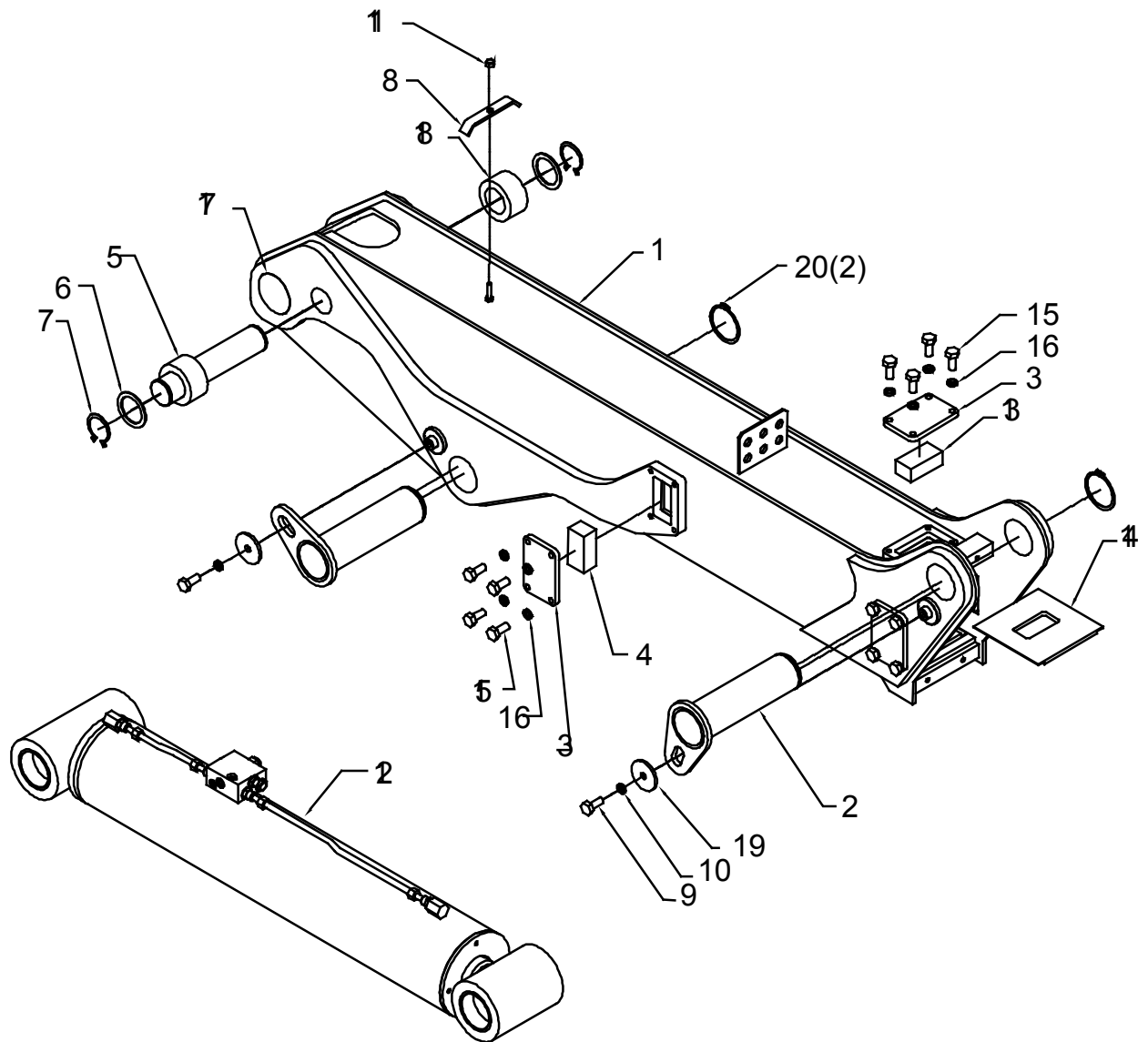
41715809 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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			

Inner Cylinder (3D293990)

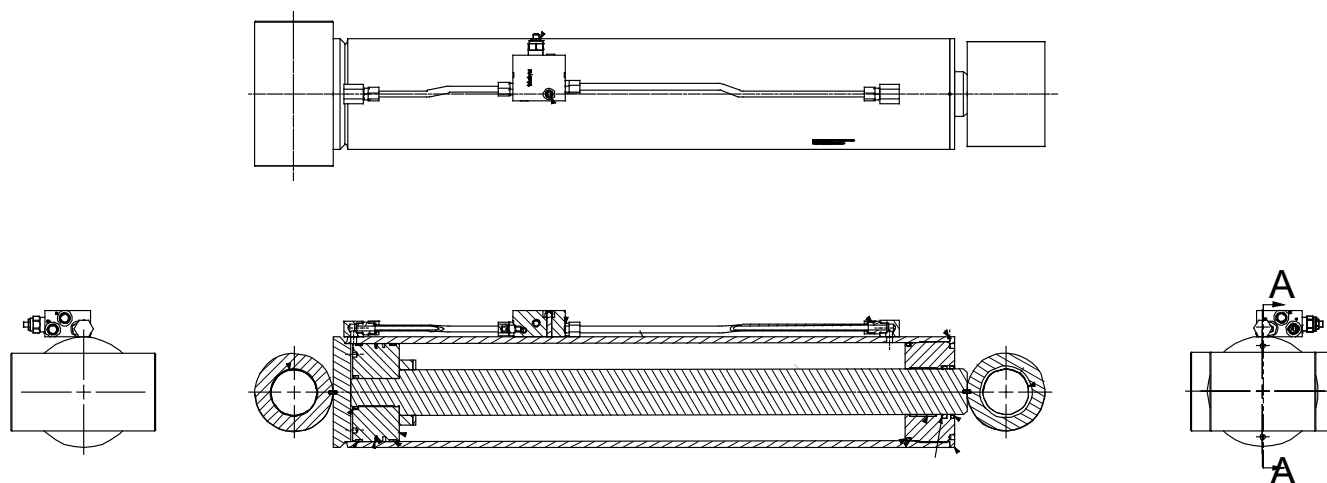
NOTE: Items shown are common service items, for part numbers not assigned contact:
IOWA MOLD TOOLING CO., INC.
TECHNICAL SUPPORT TEAM
TELEPHONE: 800-554-4421

Outer Boom Assembly (41715810)



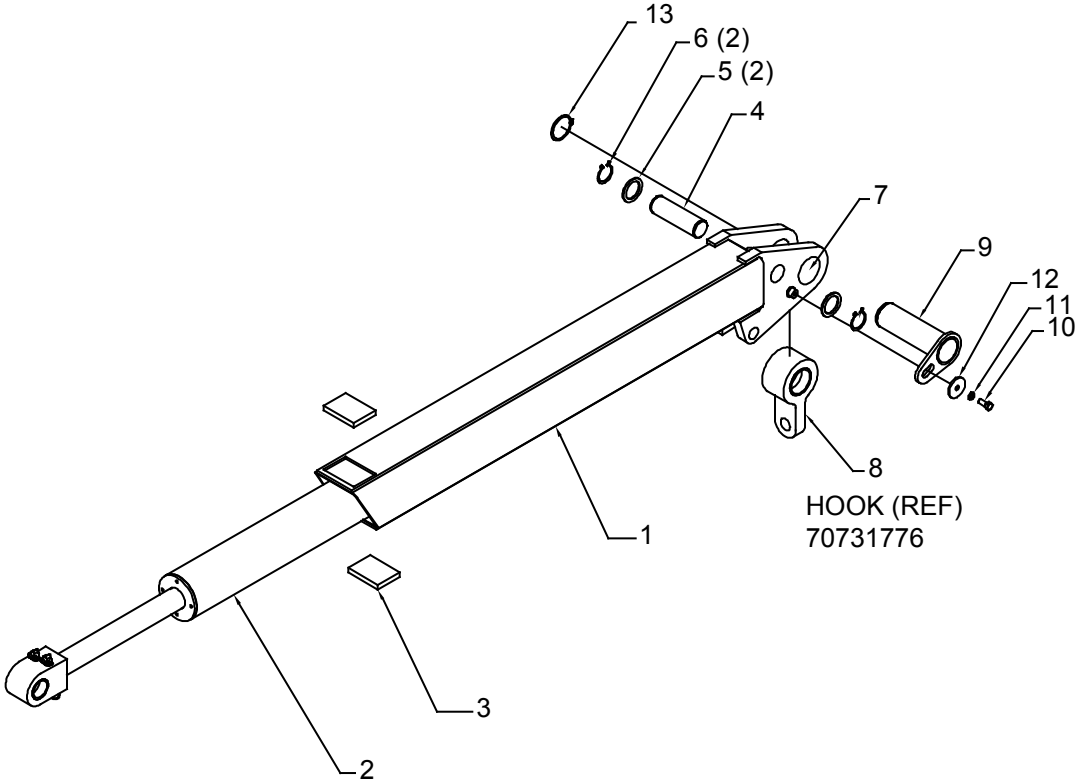
41715810 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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	72066103	RETAINING RING 2.5 EXT (WAS 72066138)	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 BRONZE (WAS 71024355)	2
18.	60102954	SLEEVE	2
19.	60109337	RETAINER PLT	2
20.	72661607	RETAINING RING	2
REV. F			

Outer Cylinder (3D298990)

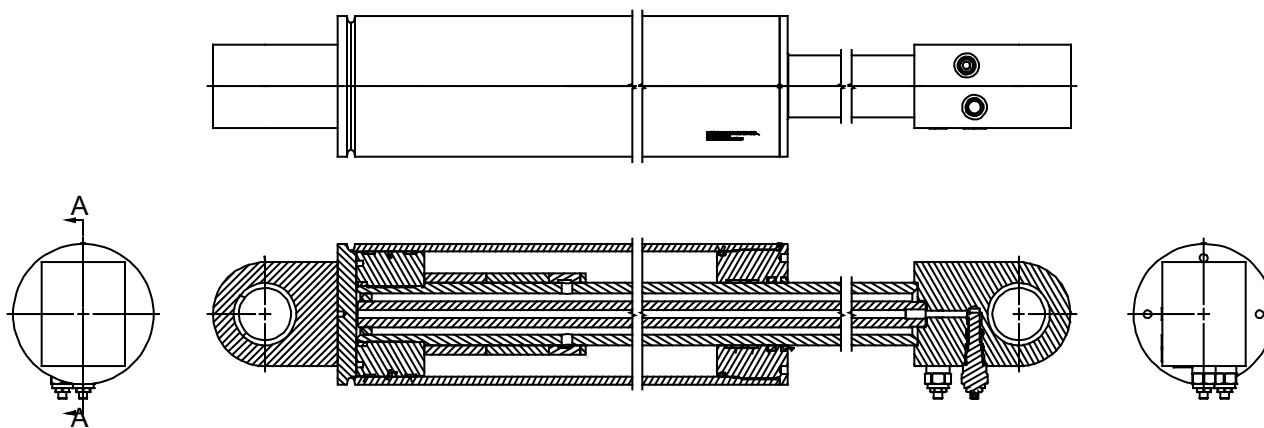
NOTE: Items shown are common service items, for part numbers not assigned contact:
IOWA MOLD TOOLING CO., INC.
TECHNICAL SUPPORT TEAM
TELEPHONE: 800-554-4421

Extension Boom Assembly (41715834)



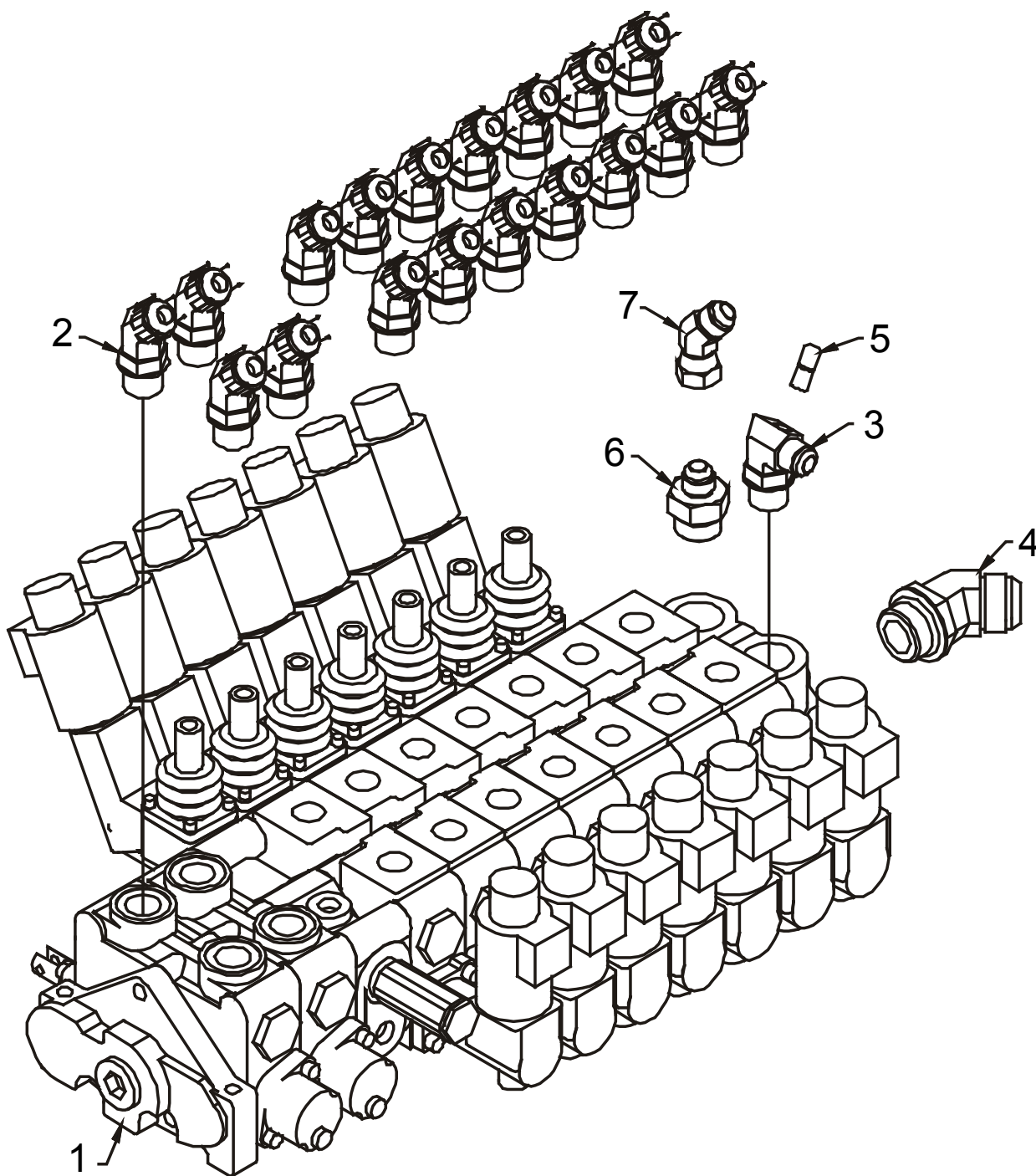
41715834 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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.	72066103	RETAINING RING 2-1/2 EXT (WAS 72066138)	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. G			

Extension Cylinder (3D295990)

NOTE: Items shown are common service items, for part numbers not assigned contact:
IOWA MOLD TOOLING CO., INC.
TECHNICAL SUPPORT TEAM
TELEPHONE: 800-554-4421

Valve Bank Assembly (51715851)



51715851 PARTSL LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	73733415	VALVE BANK 10-SECT	
2.	72053778	ELBOW #10MSTR #8MJIC 45°	
3.	60107995	ELBOW-PR GUGE MOD RH	
4.	72533651	ADPTR #12MSTR #16MJIC 45°	
5.	72532987	NIPPLE-DISC 1/4 DIAGN W/CAP	
6.	72532360	ADPTR #12MSTR #8MJIC	
7.	72532670	ELBOW #8MJIC #8FJIC 45°	
REV. B			

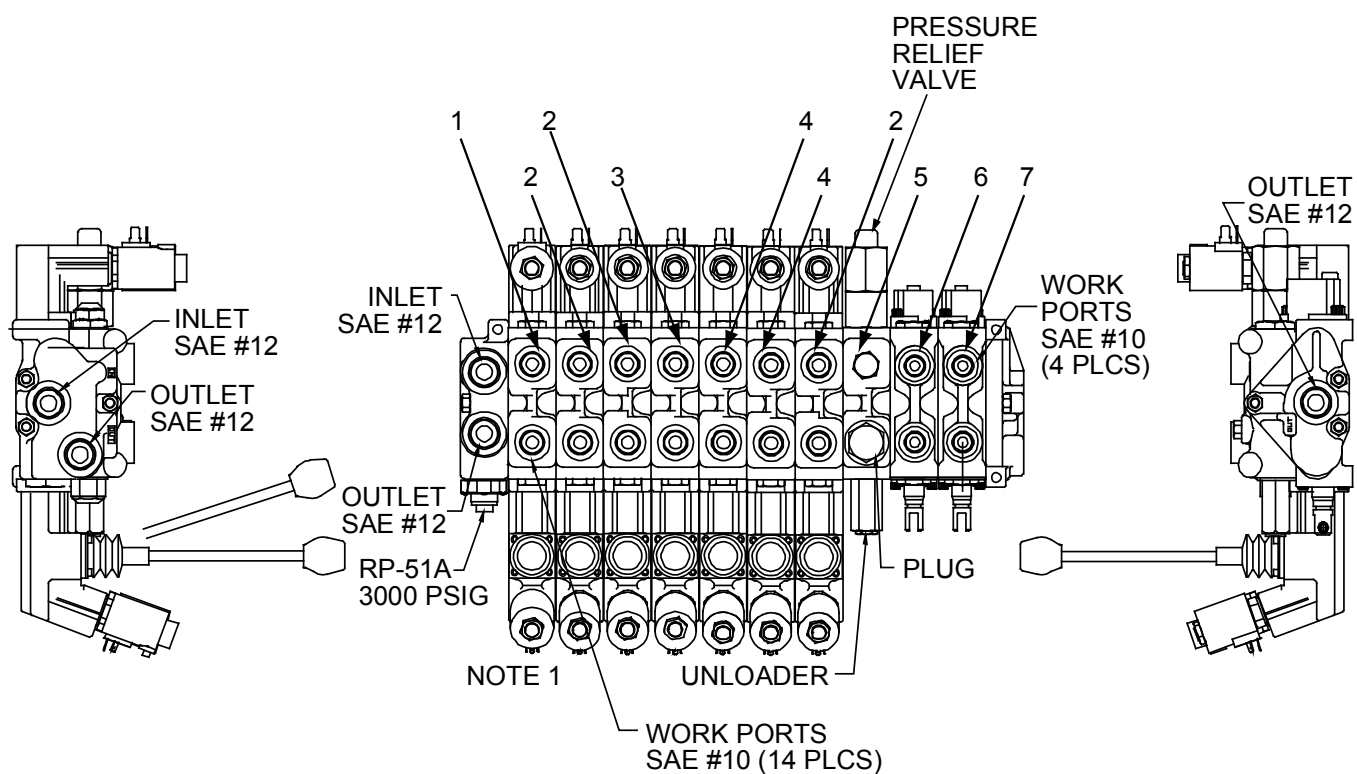
Valve Bank, 10 Section (73733415)

VALVE BANK ORIENTATION

PRESSURE

○	Ⓑ	Ⓑ	Ⓑ	Ⓑ	Ⓑ	Ⓑ	Ⓑ	Ⓑ	Ⓑ	Ⓑ
	TH	TH	TH	EXT	OUTER	INNER	ROT	UN	STAB	STAB
	CLAMP	PAD	ROT					LOAD		
○	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ	Ⓐ

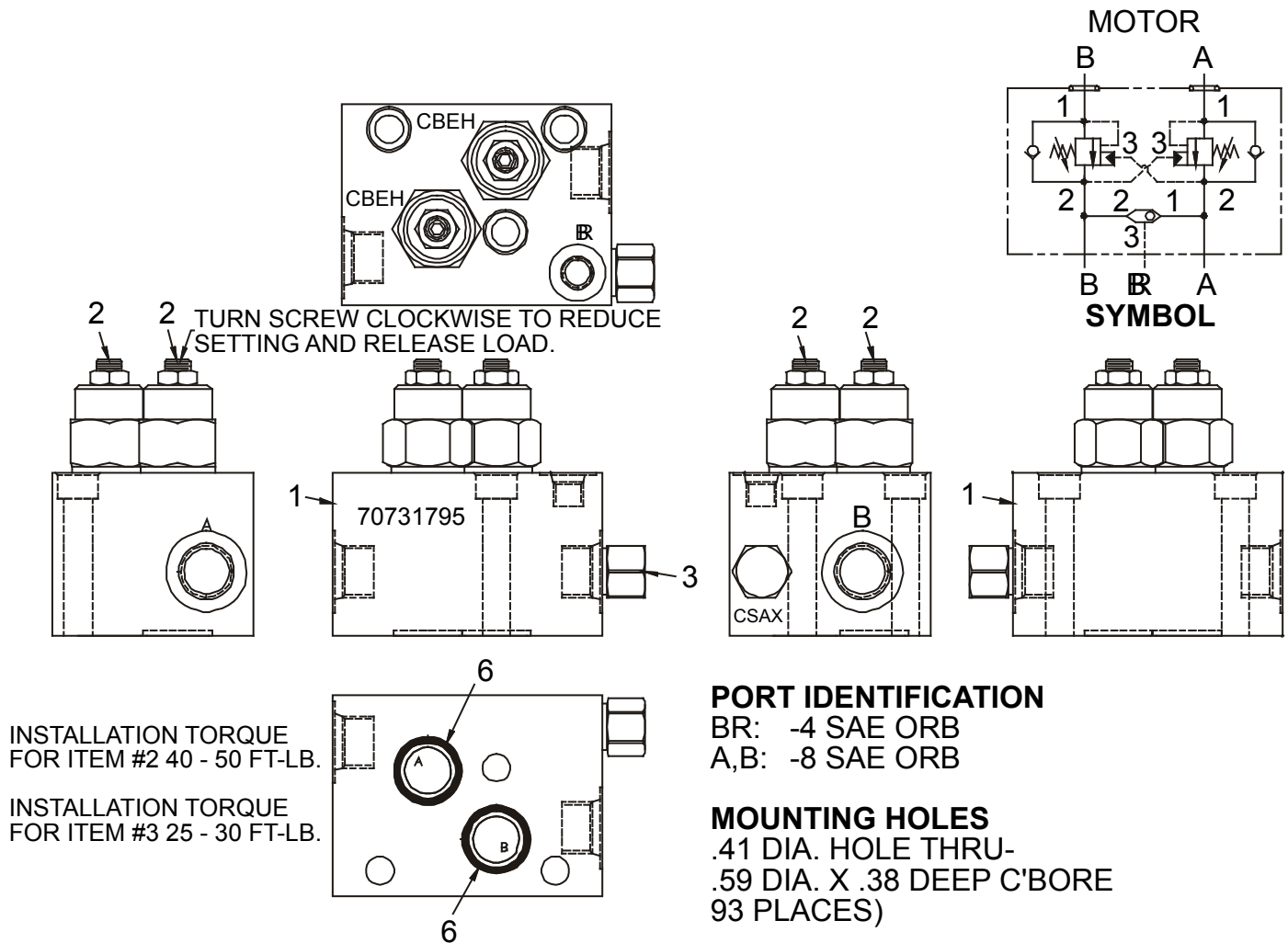
RETURN



73733415 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	73050208	VALVE SECT V20EPC 4-W 10GPM BLDR B -10	1
2.	73050205	VALVE SECT V20EPC 4-WAY 5GPM BLDR AB -10	3
3.	73050207	VALVE SECT V20EPC 4-W 10GPM BLDR AB -10	1
4.	73050206	VALVE SECT V20EPC 4-W 10GPM BLDR A -10	2
5.	73050211	UTILITY SECTION	1
6.	73050209	VALVE SECT V20 4-W O-R TNDM BLDR AB -10	1
7.	73050210	VALVE SECT V20 4-W O-R PAR BLDR AB -10	
REV. A			

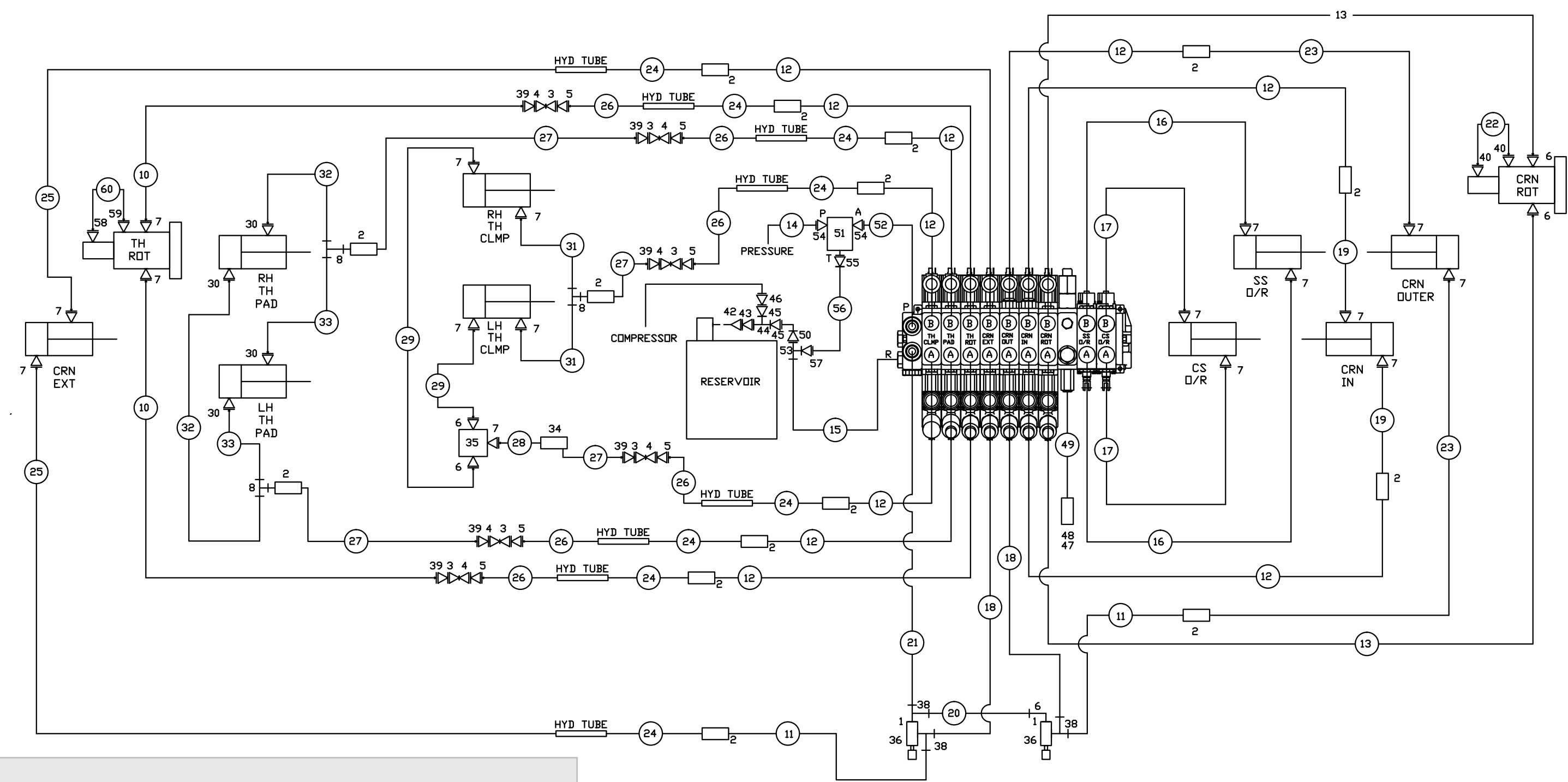
Valvepack, Dual Counterbalance (70731795)



7073175 PARTS LIST

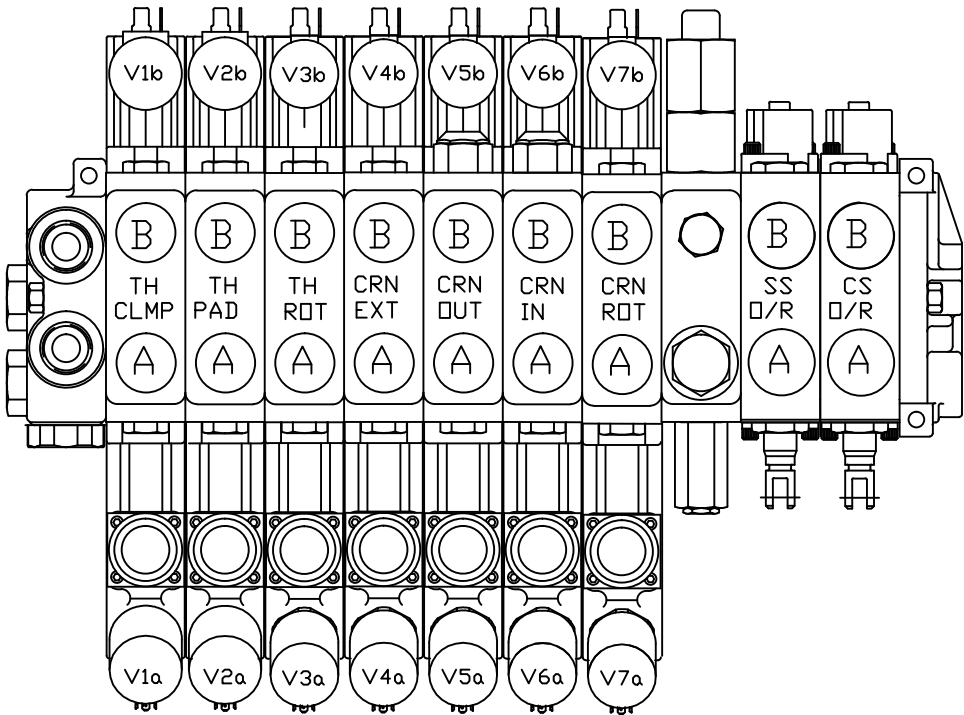
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1..	70143099	BODY	1
2	73054538	C'BAL VALVE	2
3.	70146018	SHUTTLE VALVE	1
6.	7Q072017	O-RING	2
REV. C			

Hydraulic Kit (91715845)

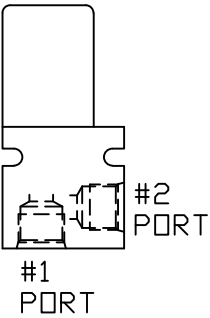


NOTE:
Used on 23516 units with serial number 23516021001 to present and 14K160TH unit with serial number 14K160TH021005.

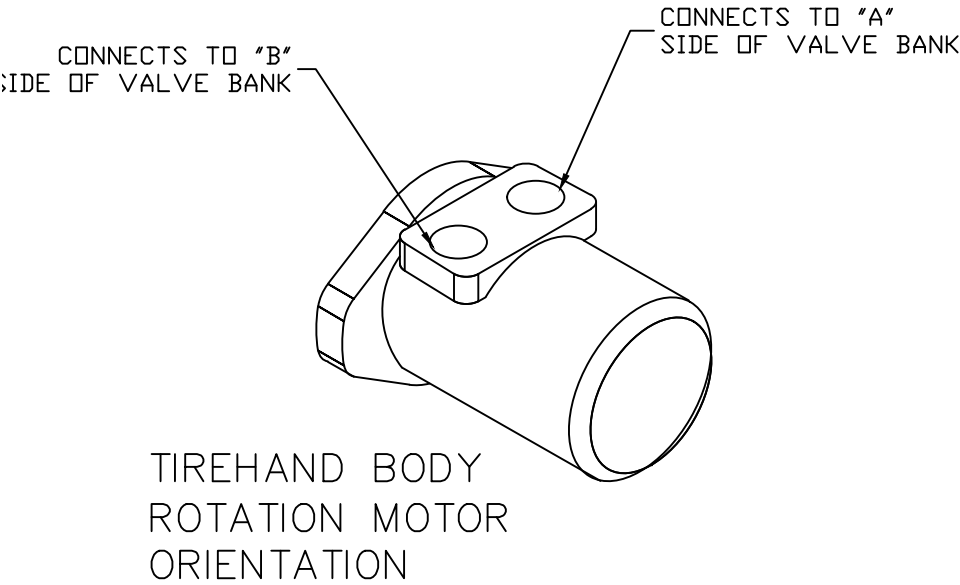
91715845 CONTINUED



VALVE BANK ORIENTATION
& RADIO HARNESS CONNECTIONS



SOLENOID
ORIENTATION

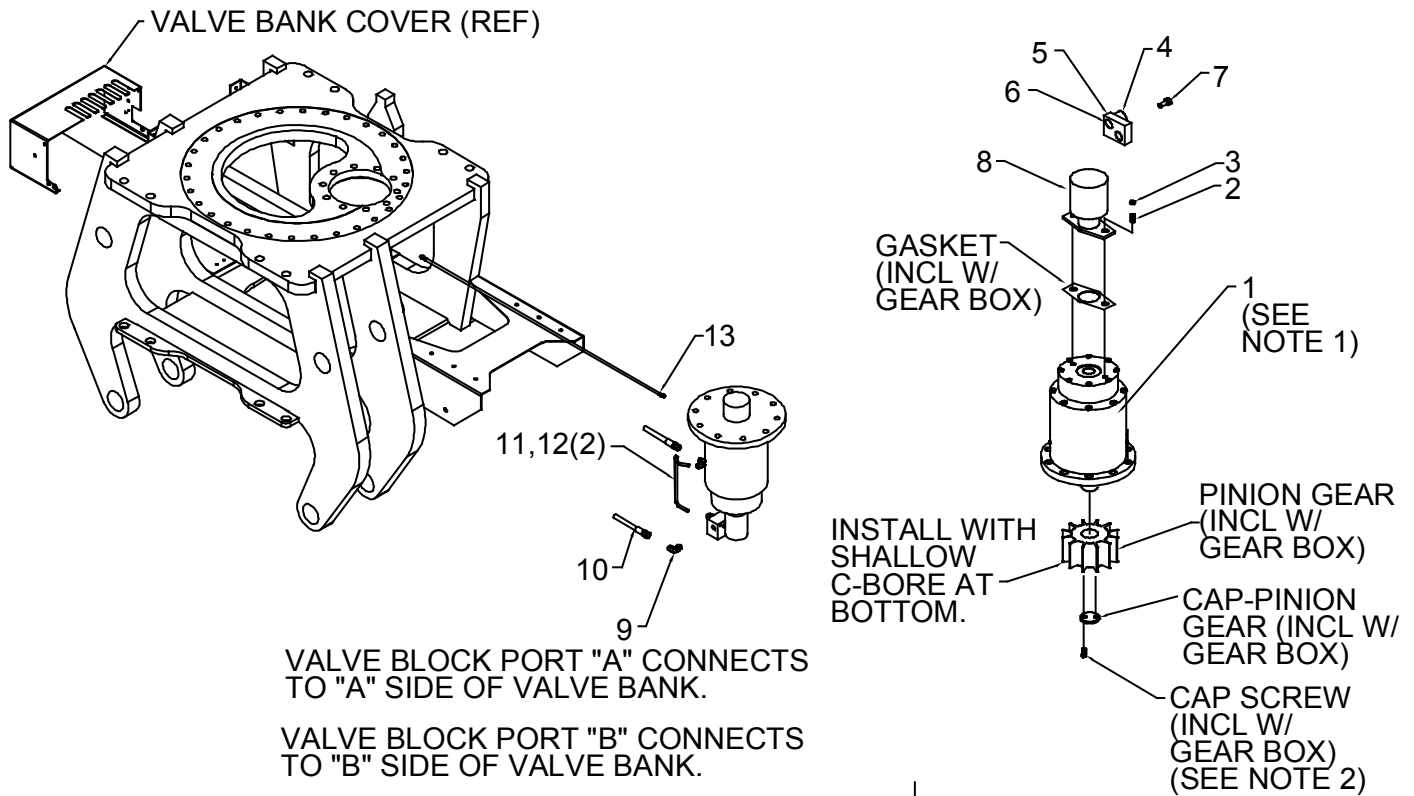


91715845 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	72053497	ADPTR-MPT/M JIC .50 8	6
2.	72533566	SWIVEL-M JIC/M JIC 8 8 IN-LINE	16
3.	72533579	COUPLER-DISC .50 FF-501-8FP	6
4.	72533580	COUPLER-DISC .50 FF-502-8FP	6
5.	72533607	ADPTR-MPT/M JIC .50 8 BLKHD (OBS)	6
6.	72053763	ELBOW-M STR/90/M JIC 8 8	5
7.	72532358	ADPTR-M STR/M JIC 8 8	17
8.	72532671	TEE-SWVL NUT BRANCH JIC 8	3
9.	51715950	HOSE KIT-14K160TH (CRANE AND TIREHAND)	1
10.	51395202	HOSE-FF .38 X 83.00 (8-8) 100R17	2REF
11.	51395404	HOSE-FF .50 X 48.00 (8-8) 100R17	2REF
12.	51395414	HOSE-FJ .75 X 39.00 (12-12) 100R4	10REF
13.	51395429	HOSE-FF .50 X 45.00 (8-8) 100R17	2REF
14.	51395722	HOSE-FI .63 X 73.00 (12-12) 100R17	1REF
15.	51395723	HOSE-FJ 1.00 X 112.00 (16-16) 100R17	1REF
16.	51395724	HOSE-FI .50 X 51.00 (8-8) 100R17	2REF
17.	51395725	HOSE-FI .50 X 84.00 (8-8) 100R17	2REF
18.	51395726	HOSE-FJ .50 X 25.00 (8-8) 100R17	2REF
19.	51395727	HOSE-FJ .50 X 14.00 (8-8) 100R17	2REF
20.	51395728	HOSE-JJ .50 X 17.50 (8-8) 100R17	1REF
21.	51395729	HOSE-FI .50 X 22.00 (8-8) 100R17	1REF
22.	70146107	TUBE ASM-ROTATION	REF
23.	51395731	HOSE-FF .50 X 95.00 (8-8) 100R17	2REF
24.	51395733	HOSE-FF .50 X 87.00 (8-12) 100R17	8REF
25.	51395734	HOSE-FF .50 X 52.00 (8-12) 100R17	2REF
26.	51395735	HOSE-FF .50 X 94.00 (8-12) 100R17	6REF
27.	51395736	HOSE-FF .50 X 74.00 (8-8) 100R17	4REF
28.	51395737	HOSE-FF .50 X 14.00 (8-8) 100R17	1REF
29.	51395738	HOSE-FJ .50 X 37.00 (8-8) 100R17	2REF
30.	72532356	ADPTR-M STR/M JIC 8 6	4
31.	51395740	HOSE-FF .50 X 20.00 (8-8) 100R17	2REF
32.	51395741	HOSE-FF .38 X 133.00 (6-8) 100R17	2REF
33.	51395742	HOSE-FF .38 X 126.00 (6-8) 100R17	2REF
34.	72533648	SWIVEL-M JIC/90/M JIC 8 8	1
35.	73054922	VALVE-FLOW DIVIDER RD 1508 140	1
36.	73054980	VALVE-SOL NO 12V 2-WAY OVERLOAD FASTONS	2
38.	72533650	TEE-STL STR/JIC/JIC 8 8 8 RUN	3
39.	72053497	ADPTR-MPT/M JIC .50 8	6
40.	72532775	ADPTR-M STR/M JIC 4 6	2REF
42.	72532560	ADPTR-M STR/FPT 24 1.50	1REF
43.	72053251	NIPPLE-PIPE BLK 1.50X CLOSE	1REF
44.	72053607	TEE-BLK 1.50	1REF
45.	72053578	REDUCER BUSH-BLK 1.50-1.00	2REF

ITEM NO.	PART NO.	DESCRIPTION	QTY.
46.	72053680	ADPTR-MPT/M JIC 1.00 16	1REF
47.	70733498	ACCUMULATOR-14K160TH	1
48.	72066507	CLAMP-EXHAUST U 2.25	1
49.	51395932	HOSE-FJ .38 X 18.50 (6-6) 100R17	1
50.	72531430	ELBOW-MPT/90/M JIC 1.00 16	1REF
51.	73055278	VALVE ASM-RELIEF/SOL HYD SHUTD 12 VOLT	1REF
52.	51396300	HOSE-FF .75 X 36.00 (12-12) 100R17	1REF
53.	72533000	TEE-SWVL NUT RUN JIC 16	1REF
54.	72053767	ELBOW-M STR/90/M JIC 12 12	2REF
55.	72532366	ADPTR-M STR/M JIC 12 12	1REF
56.	51396303	HOSE-FJ .75 X 61.00 (16-12) 100R17	1REF
57.	72532971	ADPTR-M STR/M JIC 4 4	1REF
58.	72532351	ADPTR-M STR/M JIC 4 4	1REF
59.	72053758	ELBOW-M STR/90/M JIC 4 4	1REF
60.	51398870	ELBOW-M STR/90/M JIC 4 4	1REF
61.	60350105	SLEEVE-HOSE VELCRO CLOSURE 4in DIA	8 FT
REV. P			

Hydraulic Kit - Crane Rotation (99901234)



PRESSURE

	(B)	(B)	(B)	(B)	(B)	(B)	(B)	(B)	(B)	(B)
	TH CLAMP	TH PAD	TH ROT	EXT	OUTER	INNER	ROT	UN LOAD	O/R	O/R
	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)

RETURN

VALVE BANK ORIENTATION

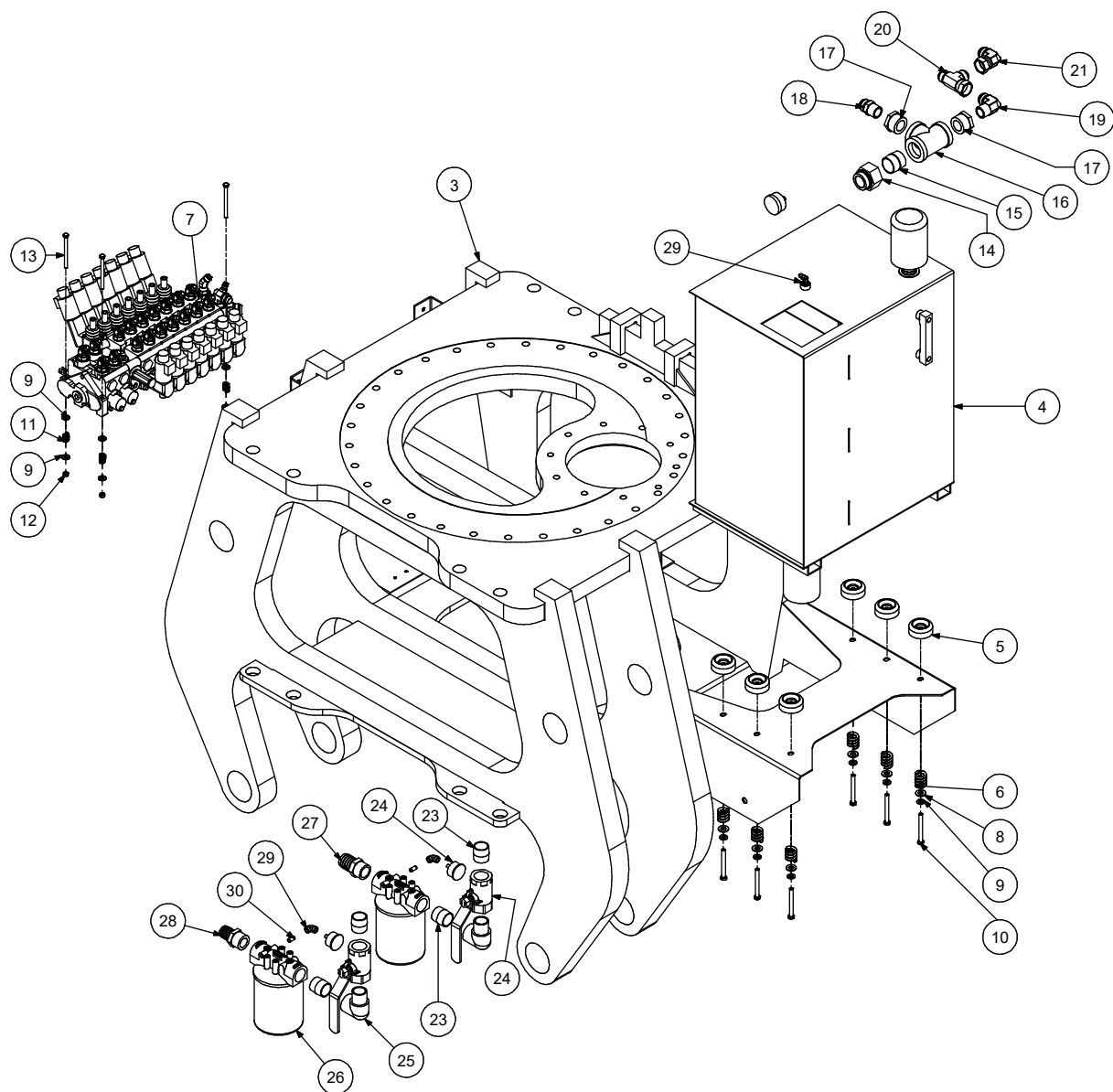
99901234 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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	P SCR 3/8-16X2-1/2 SH	3
8.	73511313	MOTOR-HYD 104-1413-006	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	1R
REV. E			

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.

Hydraulic Kit - Reservoir (99901235)

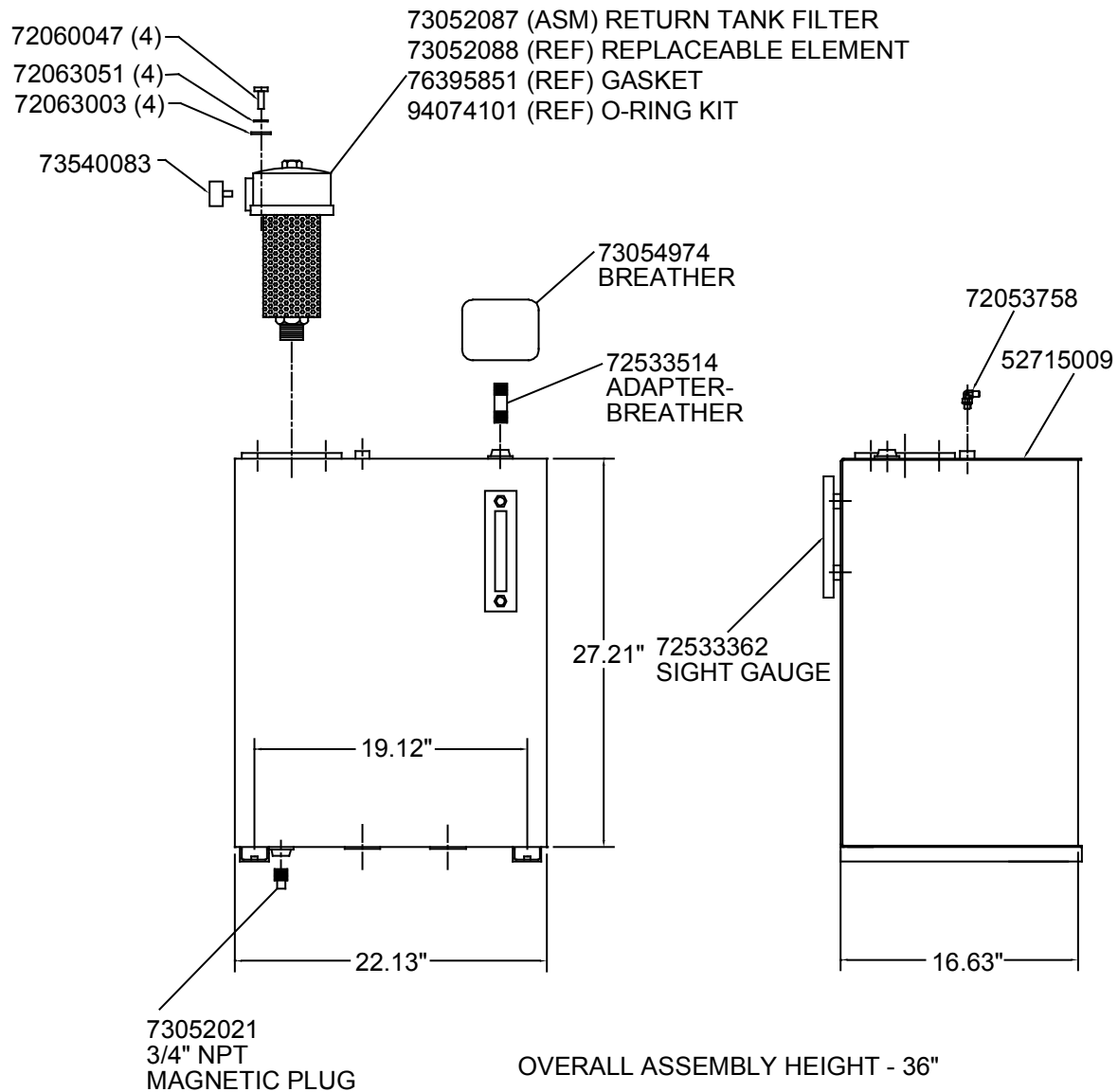


PRESS	(B)	(B)	(B)	(B)	(B)	(B)	(B)	(B)	(B)	(B)
()	TH	TH	TH	EXT	OUTER	INNER	ROT	UNLOAD	O/R	O/R
RETURN	CLAMP	PAD	ROT	A	A	A	A	A	A	A
VALVE BANK ORIENTATION										

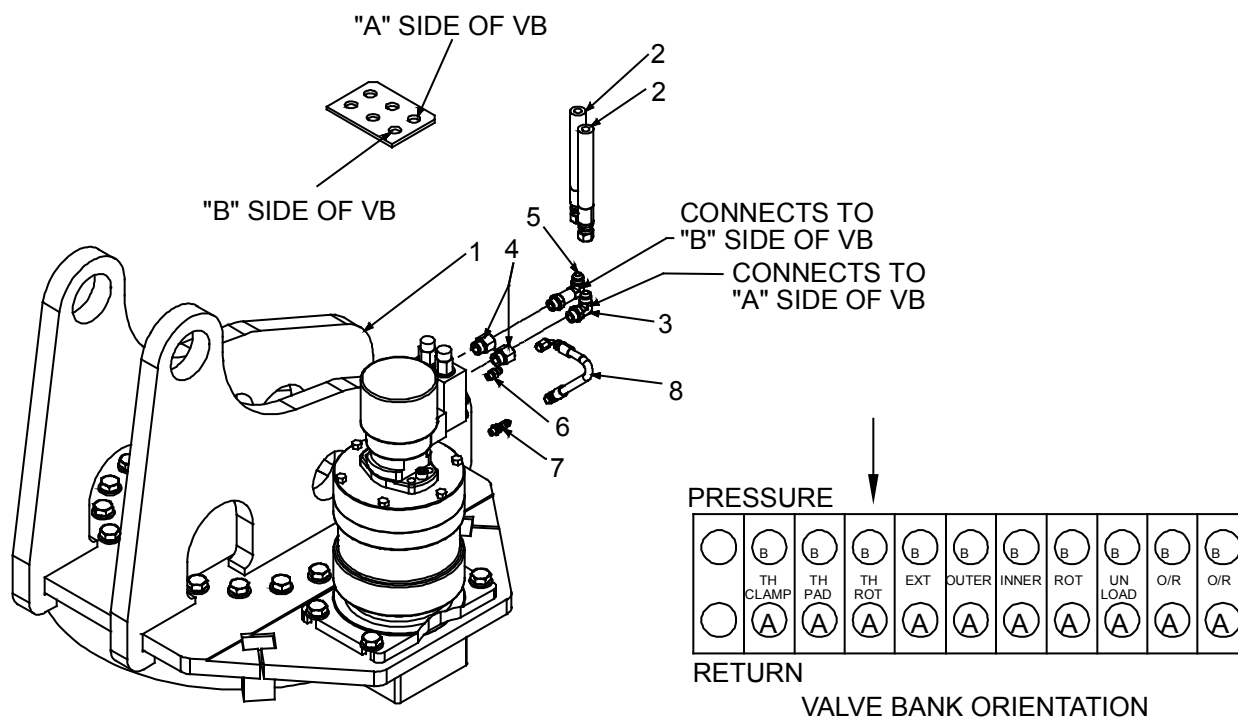
99901235 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	KIT NO.	QTY
1.	91727620	HYD KIT-14K160TH MISC HYD PARTS		1
2.	91727627	KIT-HRDW 14K160TH		1
3.	52715802	BASE WLDMT-14K160TH CRANE		1REF
4.	51715011	RESERVOIR-ASM 40.00 GAL 16000SII		1
5.	76391527	RUBBER BUMPER (20013 CPRSR MTG PAD)		6
6.	70144807	SPRING-DIE 1.19 X .63 X 1.5 LG	#2	6
7.	51715851	VALVE BANK ASM-14K160TH TIREHANDLER 12v		1
8.	72063005	WASHER .50 FLAT		6
9.	72063003	WASHER .38 FLAT		12
10.	72060055	CAP SCR .38-16X 3.50 HH GR5 Z	#2	6
11.	71410697	SPRING- .344 ID X .625 OD X 1.00 LG		3
12.	72062001	NUT .31-18 HEX		3
13.	72060037	CAP SCR .31-18X 4.00 HH GR5 Z		3
14.	72532560	ADPTR-M STR/FPT 24 1.50	#1	1
15.	72053251	NIPPLE-PIPE BLK 1.50X CLOSE	#1	1
16.	72053607	TEE-BLK 1.50	#1	1
17.	72053578	REDUCER BUSH-BLK 1.50-1.00	#1	2
18.	72053680	ADPTR-MPT/M JIC 1.00 16	#1	1
19.	72531430	ELBOW-MPT/90/M JIC 1.00 16	#1	1
20.	72533000	TEE-SWVL NUT RUN JIC 16	#1	1
21.	72532971	ELBOW-M JIC/90/F JIC SW 16 16	#1	1
22.	72053758	ELBOW-M STR/90/M JIC 4 4		1REF
23.	72053211	NIPPLE-PIPE BLK 1.25X CLOSE	#1	4
24.	73054232	VALVE-BALL 1.25	#1	2
25.	72531135	ELBOW-STREET STL 1.25 X 90 DEG	#1	2
26.	73052012	FILTER-HYD SUC-100 MESH W/GAGE	#1	2
27.	72531551	NIPPLE-BARB STL 1.25MPT 1.50	#1	1
28.	72531550	NIPPLE-BARB STL 1.25MPT 1.25	#1	1
29.	72531098	ELBOW-STL .12 X 90 DEG		2
30.	72053000	NIPPLE-PIPE BLK .12X CLOSE		2
REV. F CN848				

Reservoir Assembly (51715011)

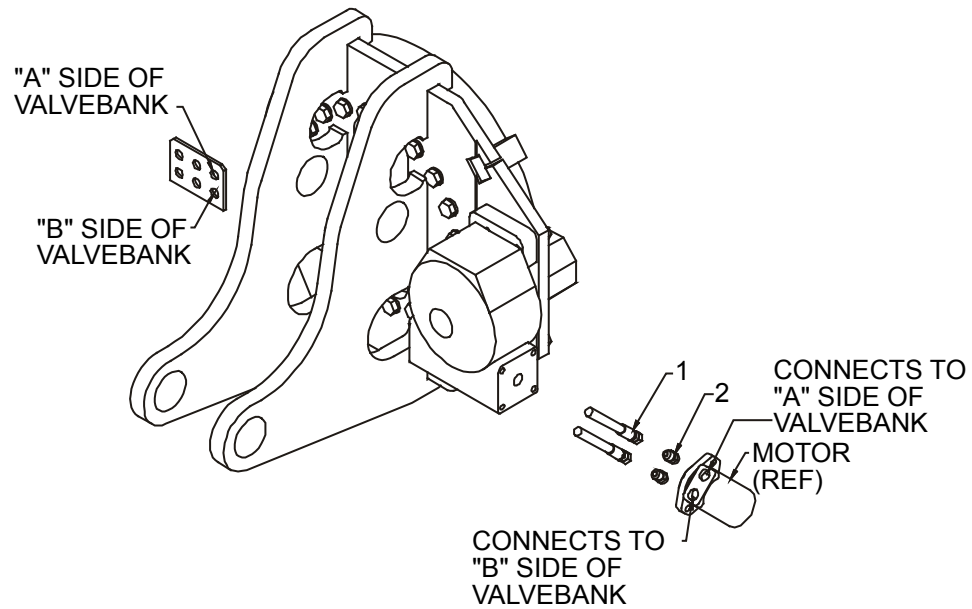


Hydraulic Kit - TireHand Rotation (99903055)

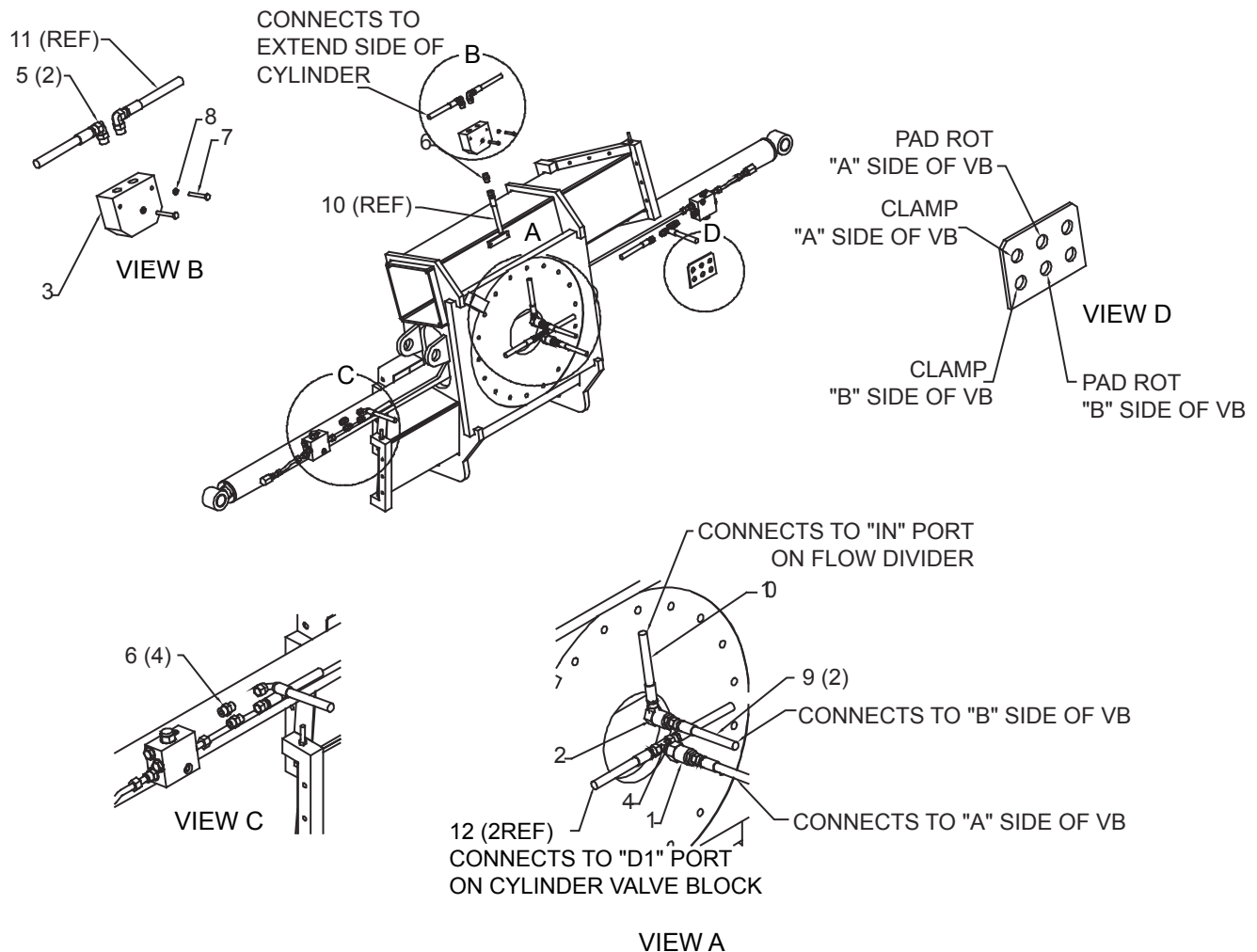


ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	41715811	YOKE ASM-14K160TH TIREHAND	REF
2.	51395202	HOSE-FF .38 X 83.00 (8-8) 100R17	2
3.	72053763	ELBOW-M STR/90/M JIC 8 8	1
4.	72531206	ADPTR-M STR/F STR 10 8	2
5.	72532666	ELBOW-M STR/90/M JIC XLG 8 8	1
6.	72532351	ADPTR-M STR/M JIC 4 4	1
7.	72053758	ELBOW-M STR/90/M JIC 4 4	1
8.	51398870	HOSE-FJ .25 X 9.50 (4-4) 100R17	1
REV. E			

Hydraulic Kit - TireHand Rotation (Thru 11-2005)



Hydraulic Kit-TireHand (99903056)



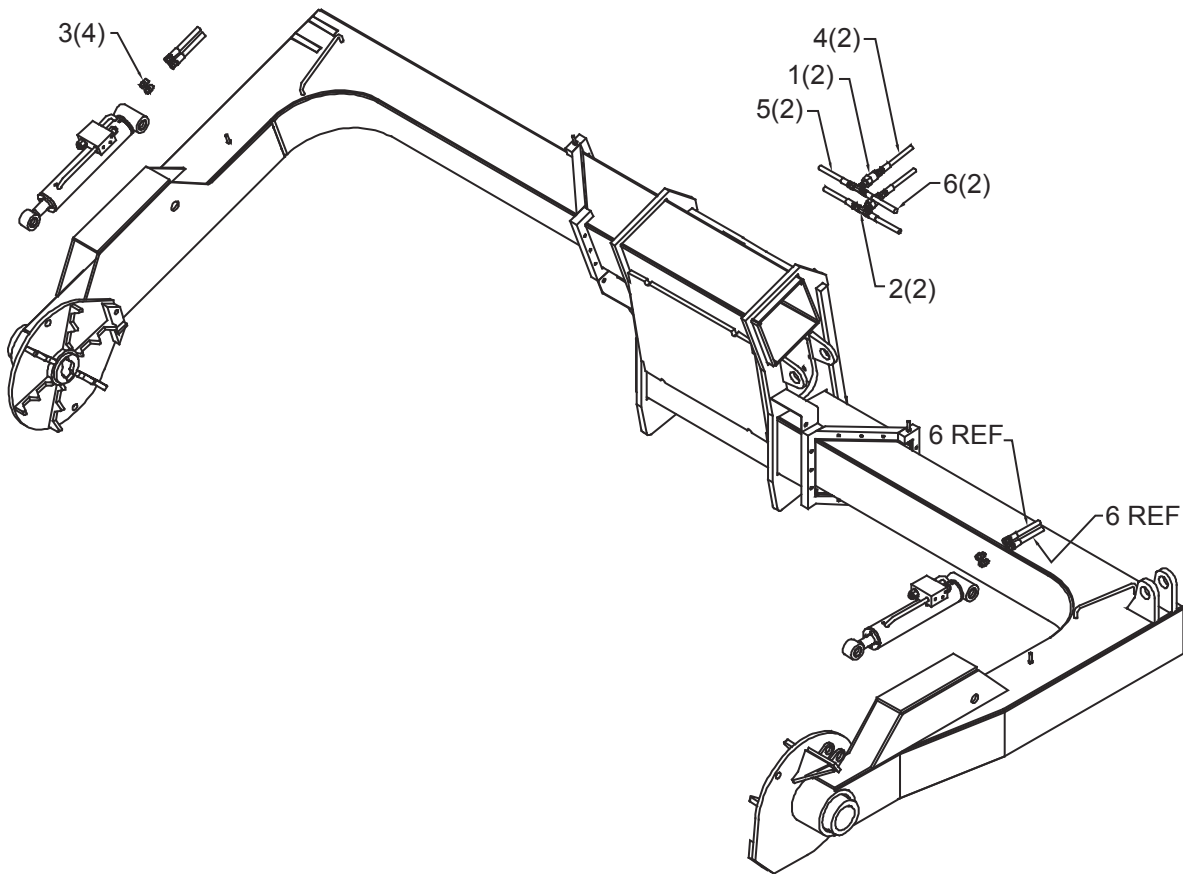
NOTE:

Route all hoses going from bulkhead plate to the tirehand yoke through the hose sleeve (#13).

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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
10.	51395737	HOSE-FF .50X14 #8#8	1REF
11.	51395738	HOSE-FJ .50X37 #8#8	2REF
12.	51395740	HOSE-FF .50X20 #8#8	2REF
13.	60350095	SLEEVE-HOSE AS	1

REV. B

99903056-1

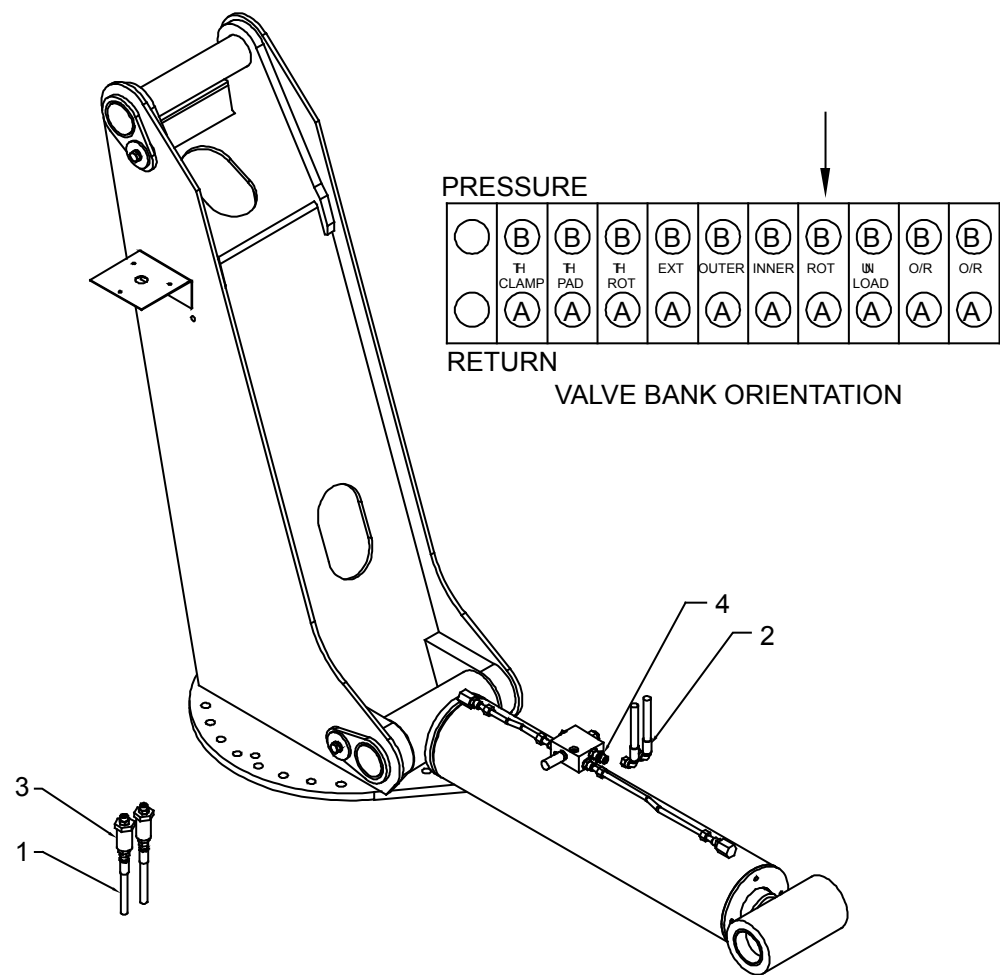


NOTE:

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) through sleeve (#7). Use the clamps on the arms to hold sleeve in.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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
REV. B			

Hydraulic Kit - Inner Cylinder (99903149)

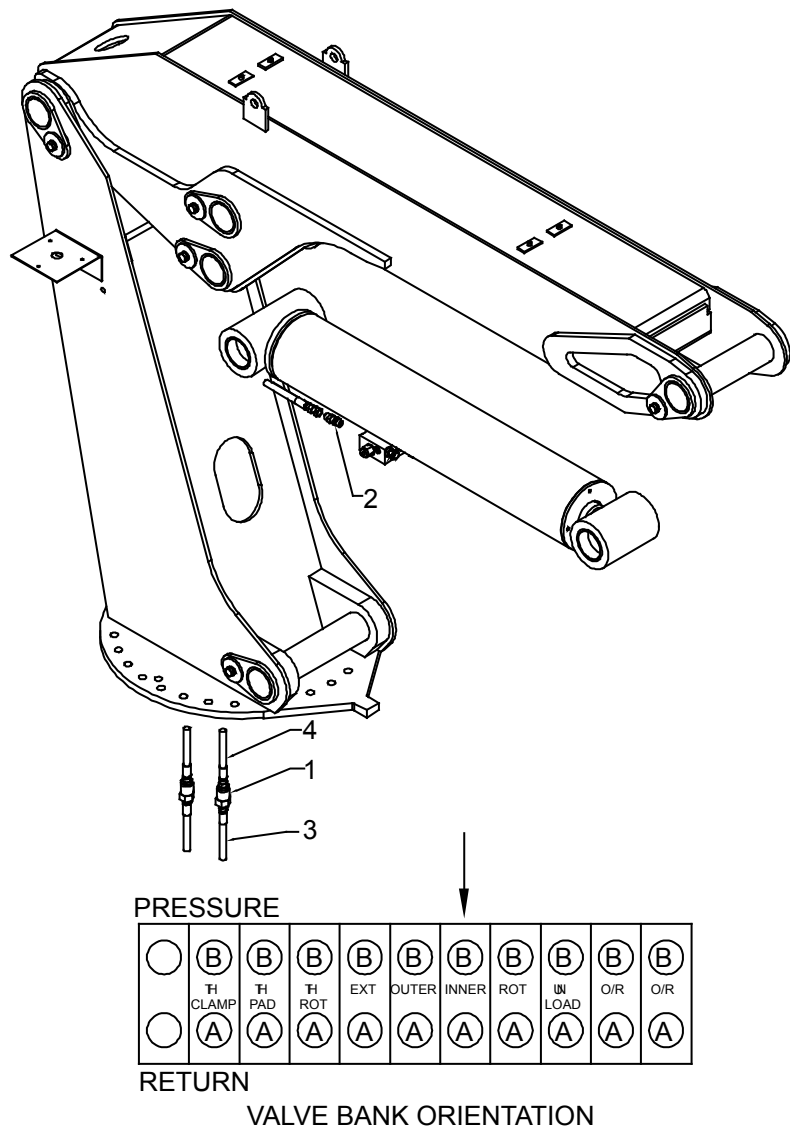


NOTES:

- 1. Cylinder port “D1” connects to “A” side of valve bank.
- 2. Cylinder port “C1” connects to “B” side of valve bank.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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			

Hydraulic Kit - Outer Cylinder (99903150)

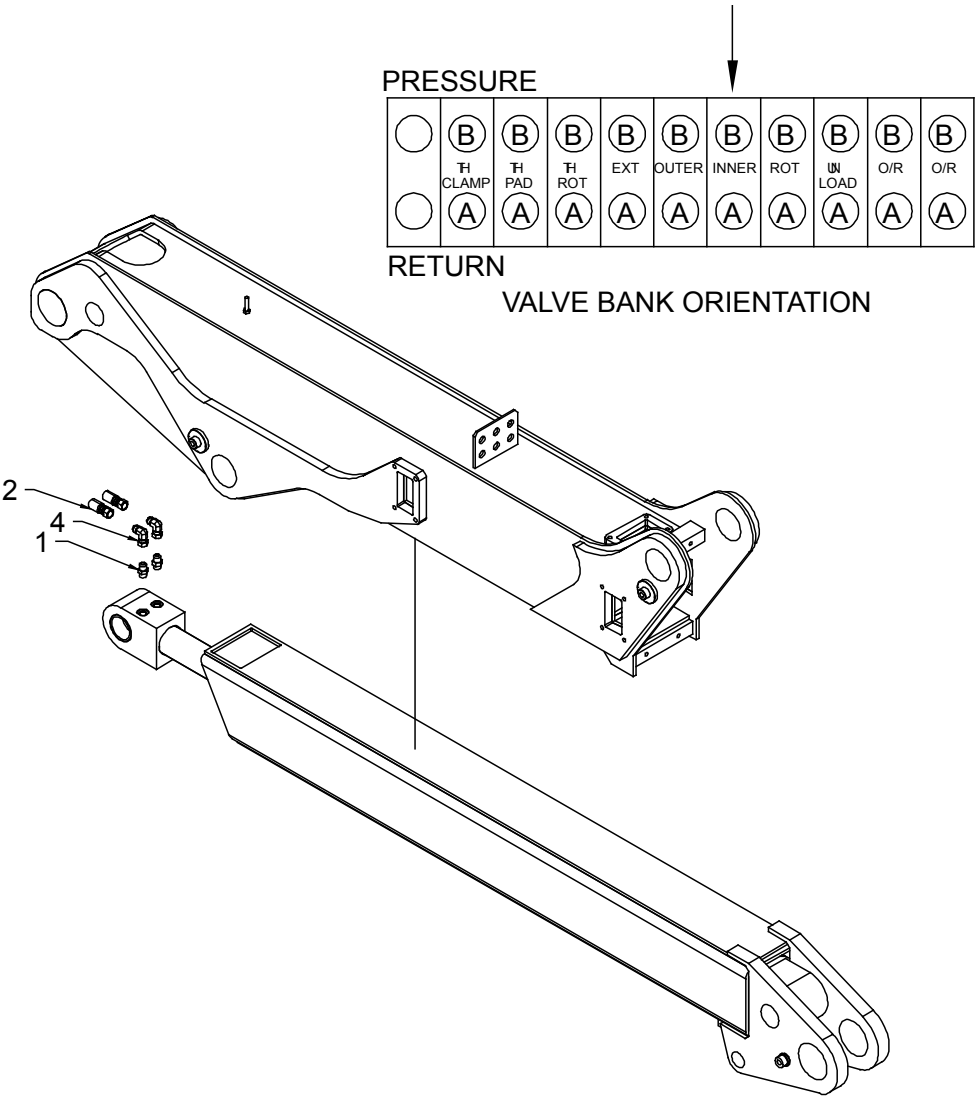


NOTES:

1. Cylinder port "D2" connects to "A" side of valve bank.
2. Cylinder port "C2" connects to "B" side of valve bank.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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

Hydraulic Kit - Extension Cylinder (99903151)

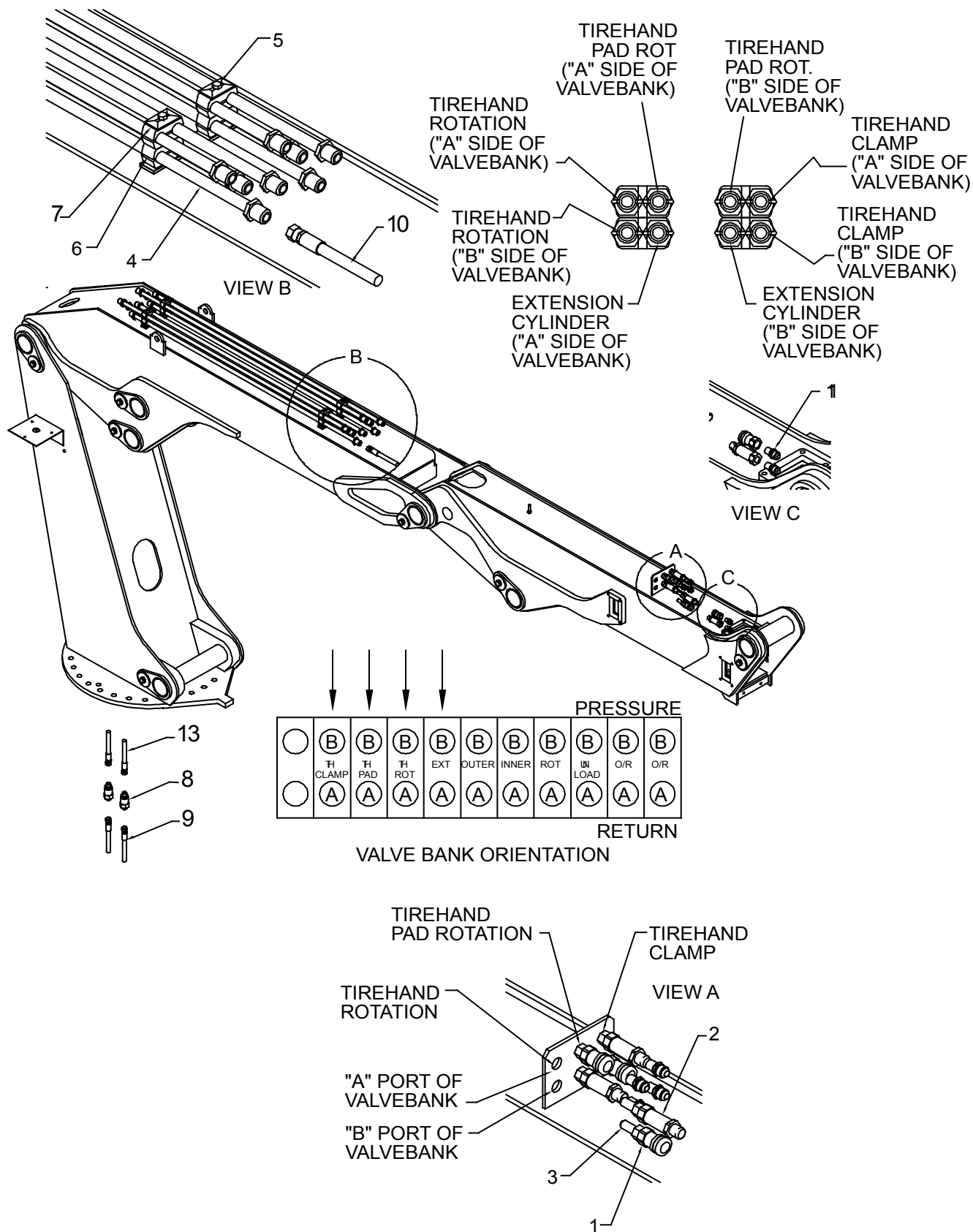


NOTES:

1. Cylinder port "E" connects to "A" side of valve bank.
2. Cylinder port "R" connects to "B" side of valve bank.
3. Run hoses (#2) thru sleeve (#3).

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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

Hydraulic Kit - Bulkhead Layout (99903152)



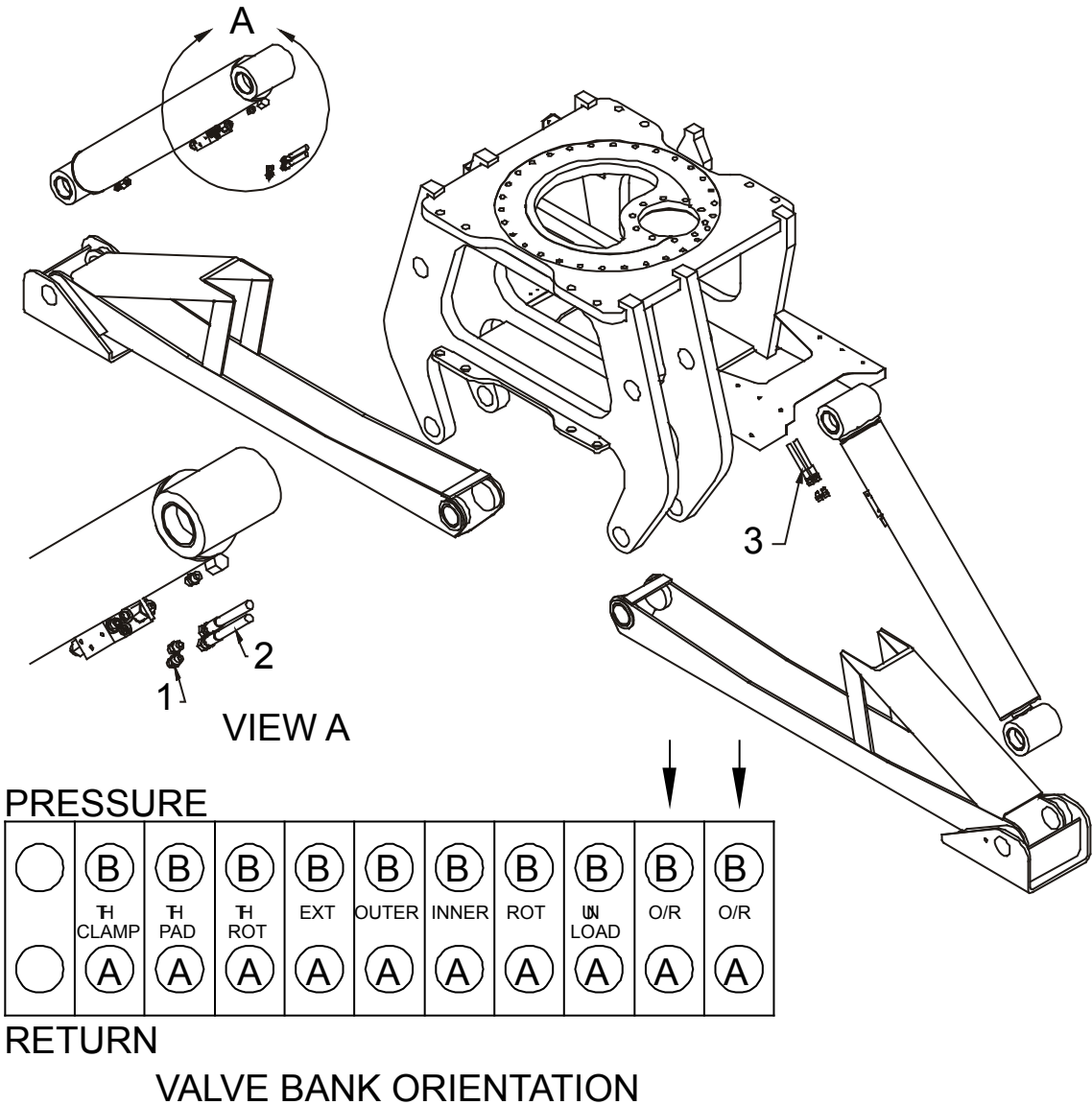
99903152 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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			

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).

Hydraulic Kit - Stabilizers (99903153)



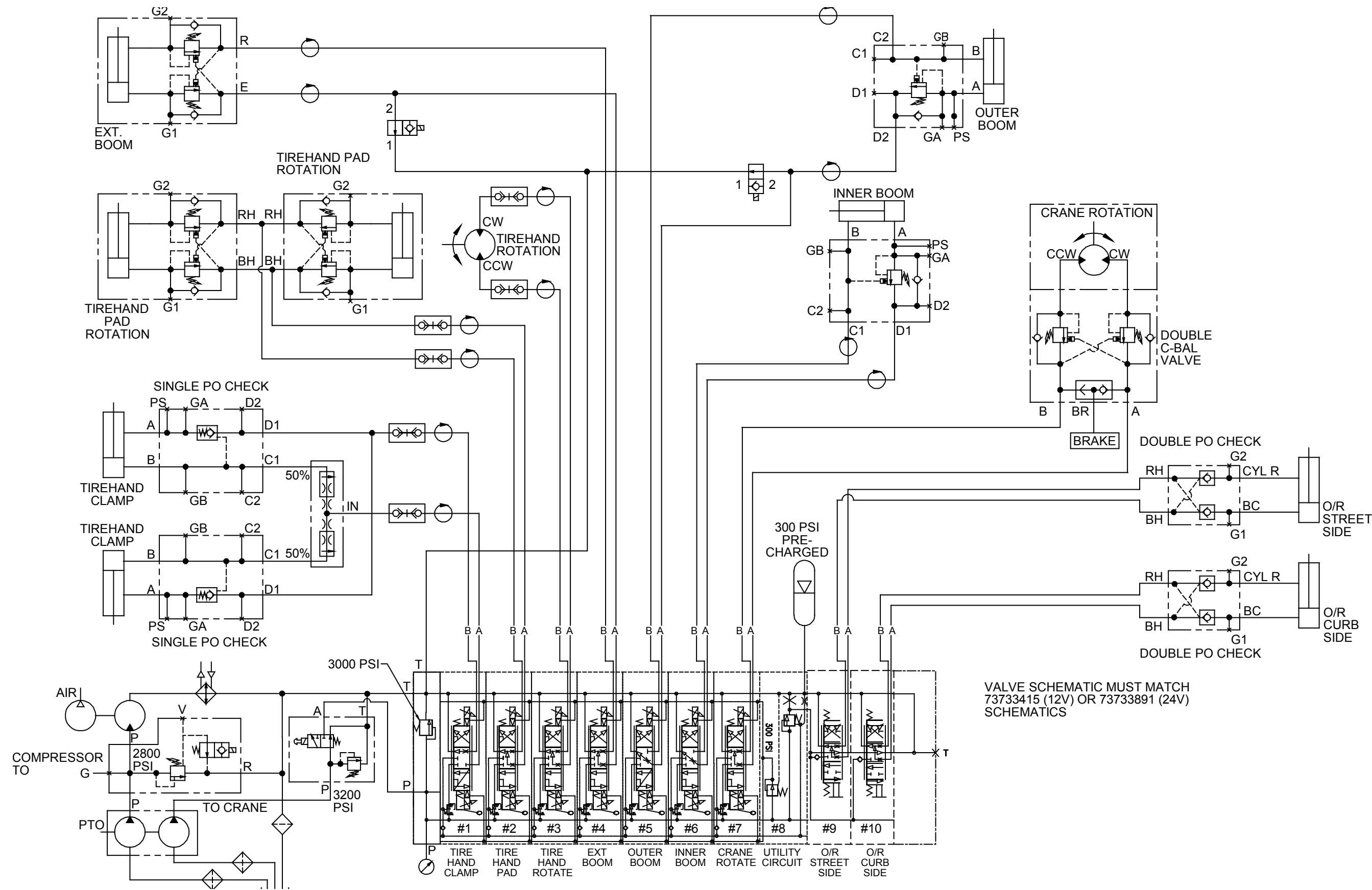
I			
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	72532358	ADAPTER #8MSTR #8MJIC	2REF
2.	51395724	HOSE-FI 0.50 X 51 #8 #8	2REF
3.	51395725	HOSE-FI 0.50 X 84 #8 #8	2REF

STREETSIDE CONNECTIONS:
Cylinder port base hose connects to “A” side of valve bank.
Cylinder port rod hose connects to “B” side of valve bank.

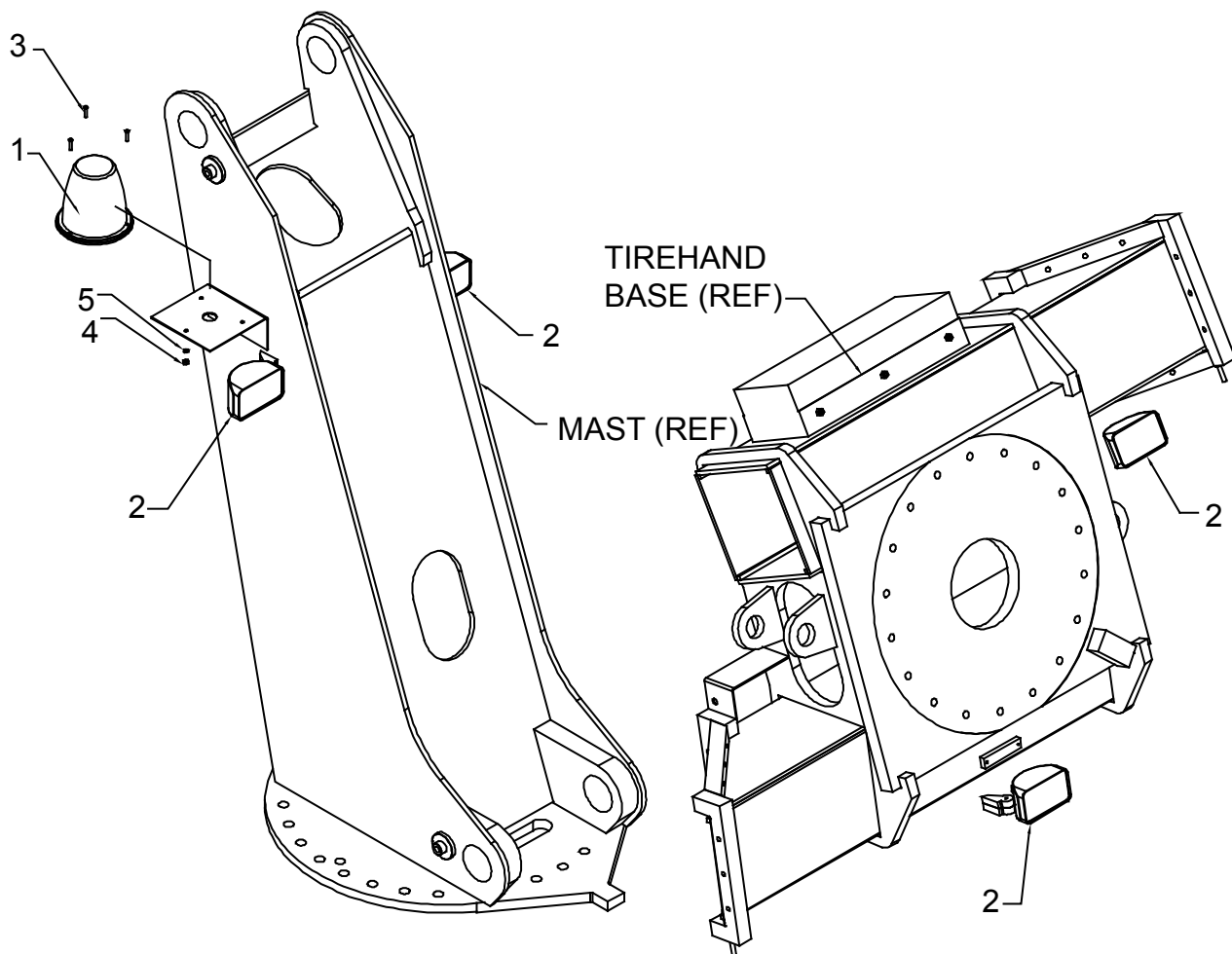
CURBSIDE CONNECTIONS:
Cylinder port rod hose connects to “A” side of valve bank.
Cylinder port base hose connects to “B” side of valve bank

This page left intentionally blank

Hydraulic Schematic (99903210)

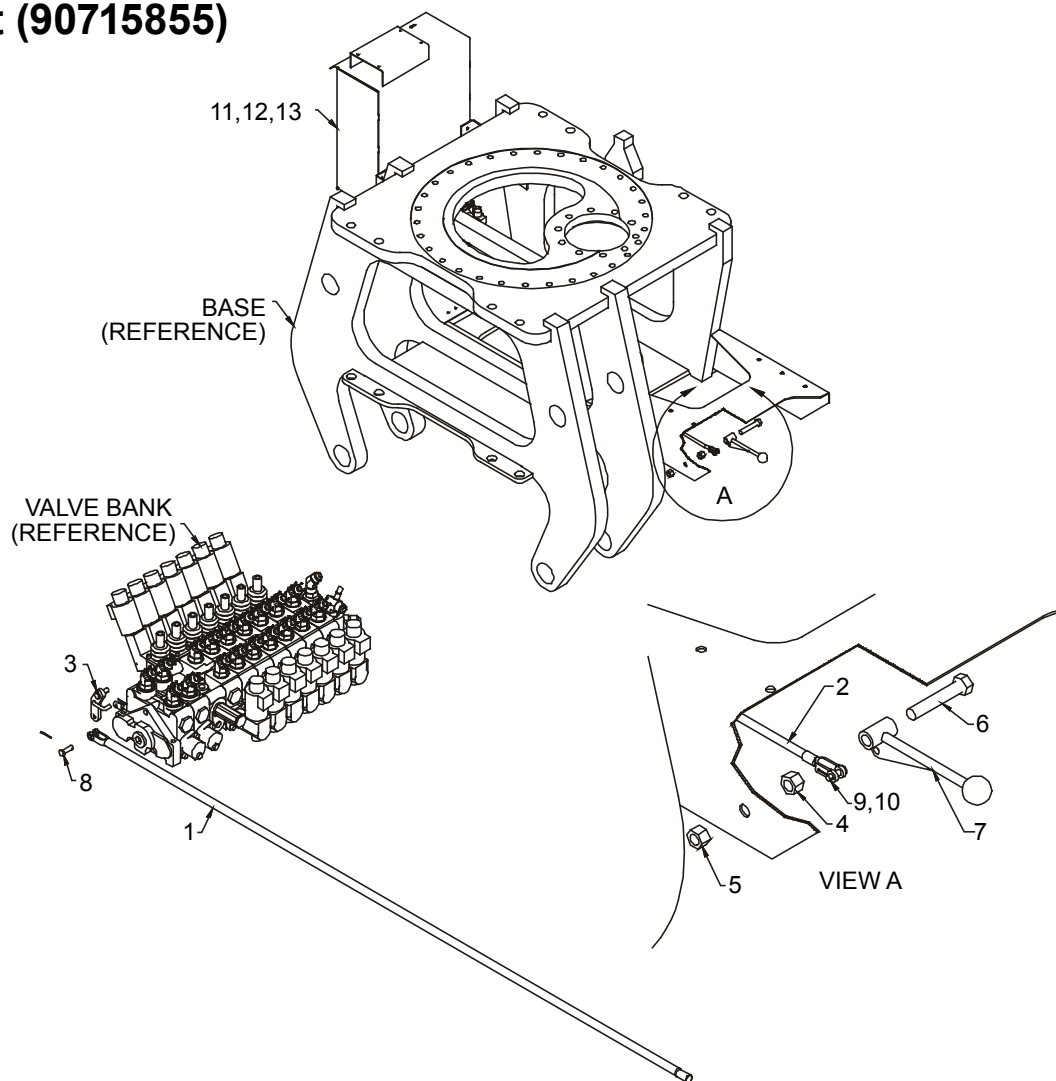


Light Kit (51715873)



ITEM NO.	PART NO.	DESCRIPTION	QTY.
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			

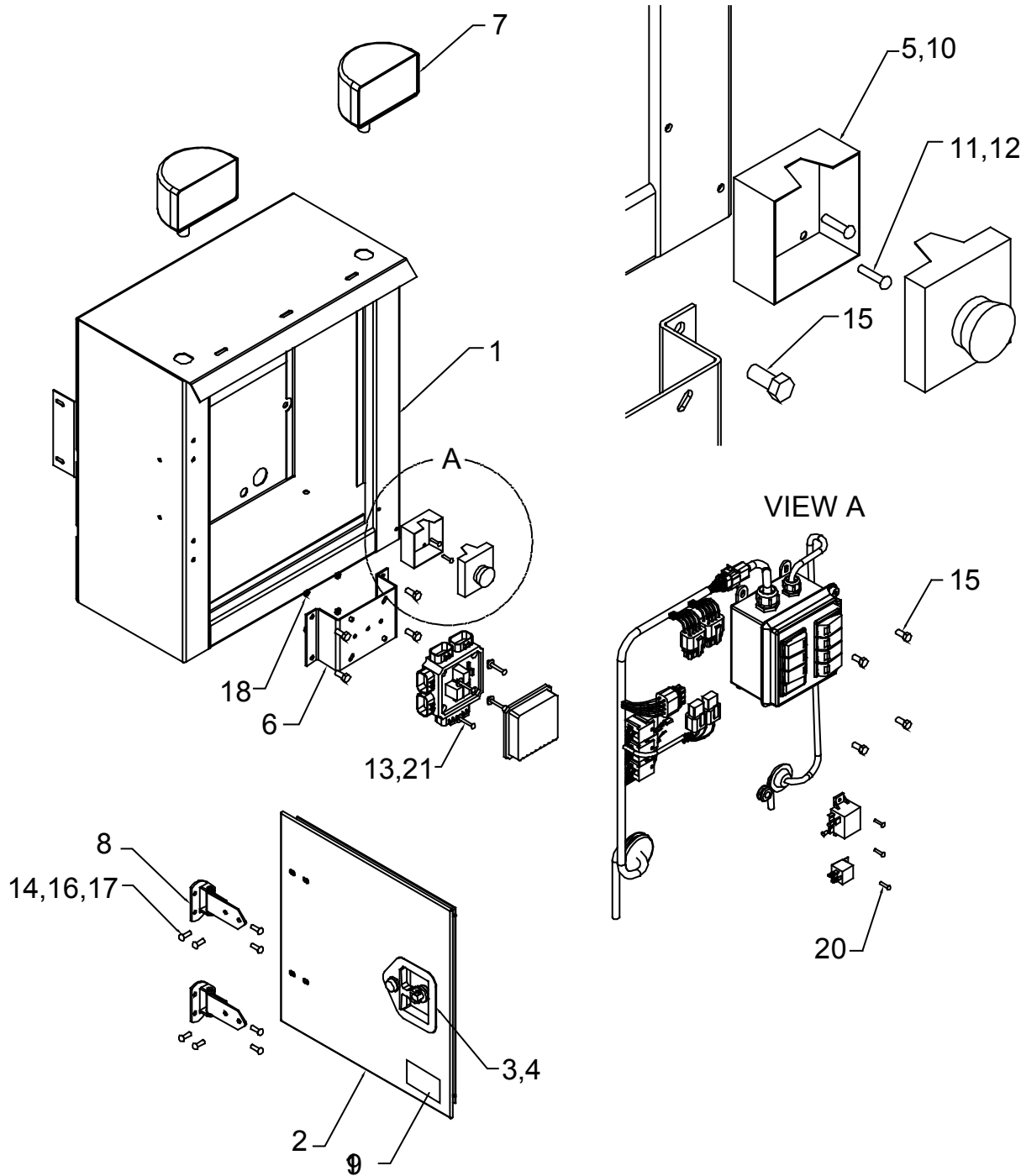
Control Kit (90715855)



ITEM NO.	PART NO.	DESCRIPTION	QTY.
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
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

This page left intentionally blank

Electrical Control Cabinet (41718269)



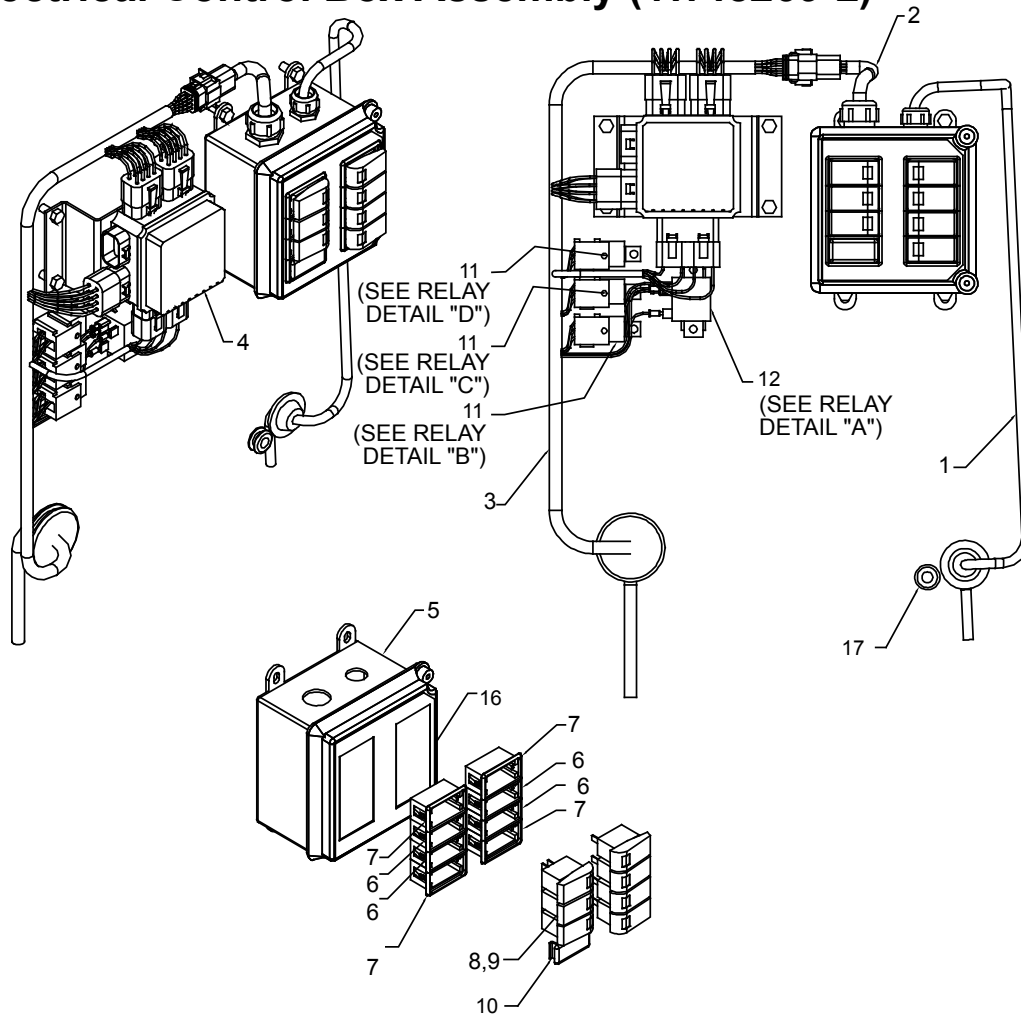
41718269 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	41721887	CABINET WELDMENT (WAS 52715880)	1
2.	52713707	DOOR WELDMENT	1
3.	72661470	LATCH ASSEMBLY, 1-PT	1
4.	76393253	GASKET, LATCH WITH STUDS	1
5.	77041486	SWITCH, E-STOP	1
6.	60121574	BRACKET, FUSE/RELAY BOX	1
7.	77040424	LIGHT, WORK LAMP	2
	77040572	LIGHT, WORK LAMP	2
8.	72661383	HINGE	2
9.	89393637	WEATHERSTRIP	5.5'
10.	77044468	CONNECTOR	1
11.	72601725	SCREW-MACHINE	2
12.	72601726	NUT	2
13.	72060643	SCREW-MACHINE	4
14.	72601652	SCREW-MACHINE	8
15.	72061004	SCR-SHEET METAL	8
16.	72062194	NUT	6
17.	72062264	NUT	2
18.	72062053	NUT	4
19.	70396515	DECAL-WARNING-NO STORE IN E-CABINET	1
20.	72060835	SCREW-SELF TAPPING	5
21.	72063166	WASHER	4
REV. C			

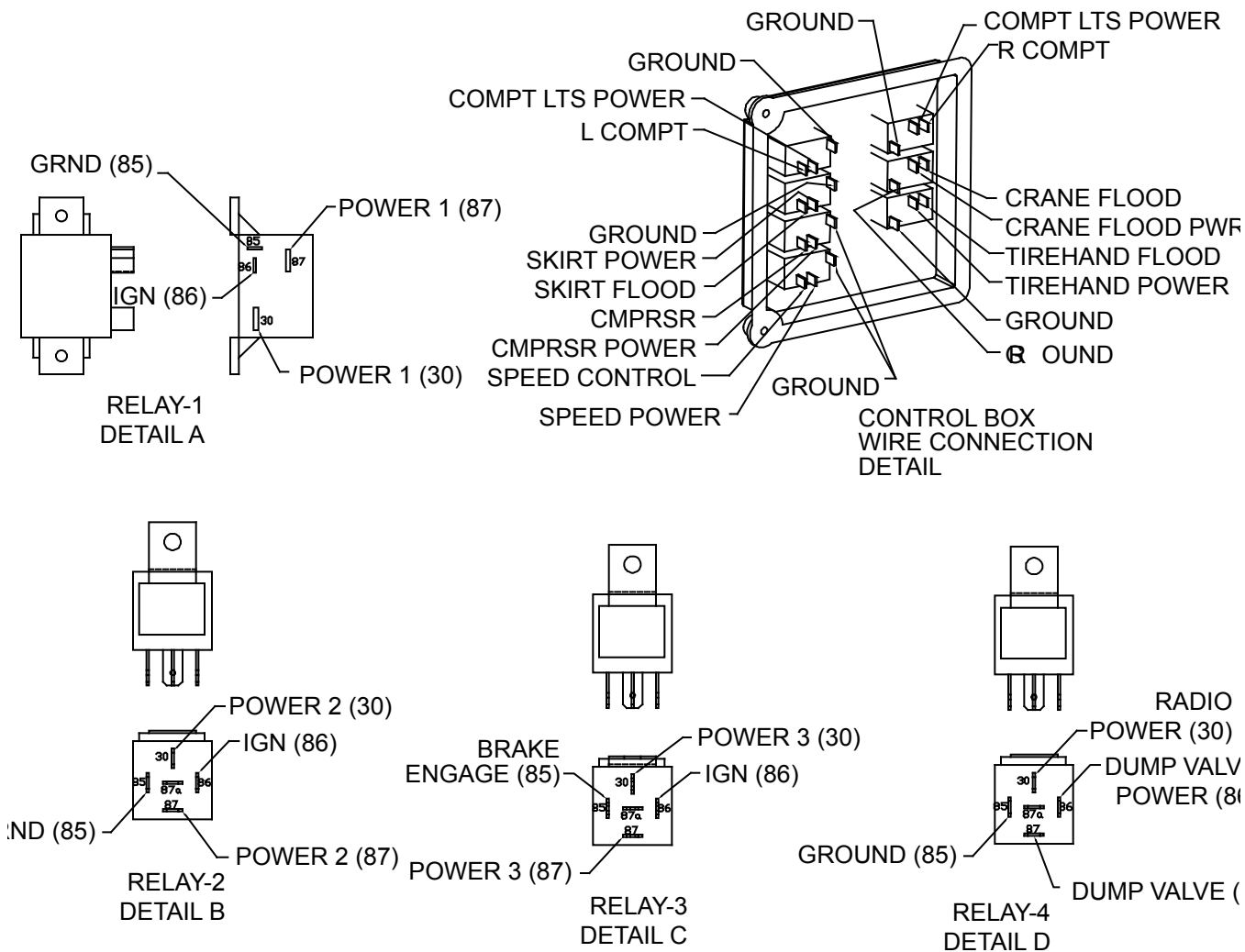
NOTES:

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)

Electrical Control Box Assembly (41718269-2)

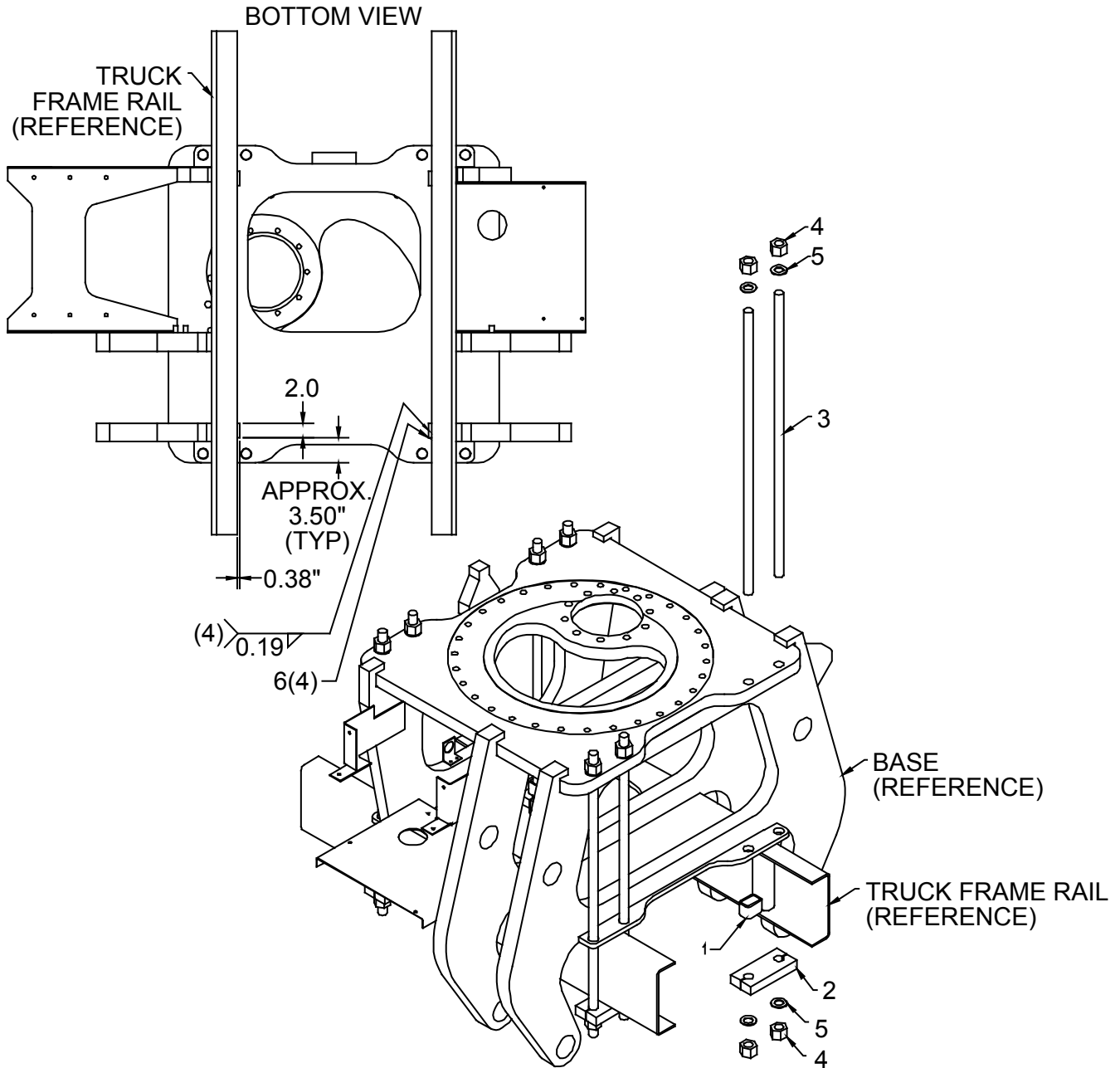


ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	77044919	HARNESS, SWITCH BOX OUT	1
2.	77441086	HARNESS, SWITCH BOX IN	1
3.	77441085	HARNESS, CRANE POWER	1
4.	77044935	FUSE/RELAY BOX	1
5.	77044797	SWITCH BOX	1
6.	77041504	SWITCH, ROCKER MTG PAN MID	4
7.	77041502	SWITCH, ROCKER MTG PAN END	4
8.	77041500	SWITCH, 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
15.	70394069	SEAL, CABLE CONNECTOR	2
16.	70395669	DECAL, OTR LIGHT SWITCH	1
17.	76391200	RUBBER GROMMET, 9/16	1

41718269 - CONTINUED**NOTES:**

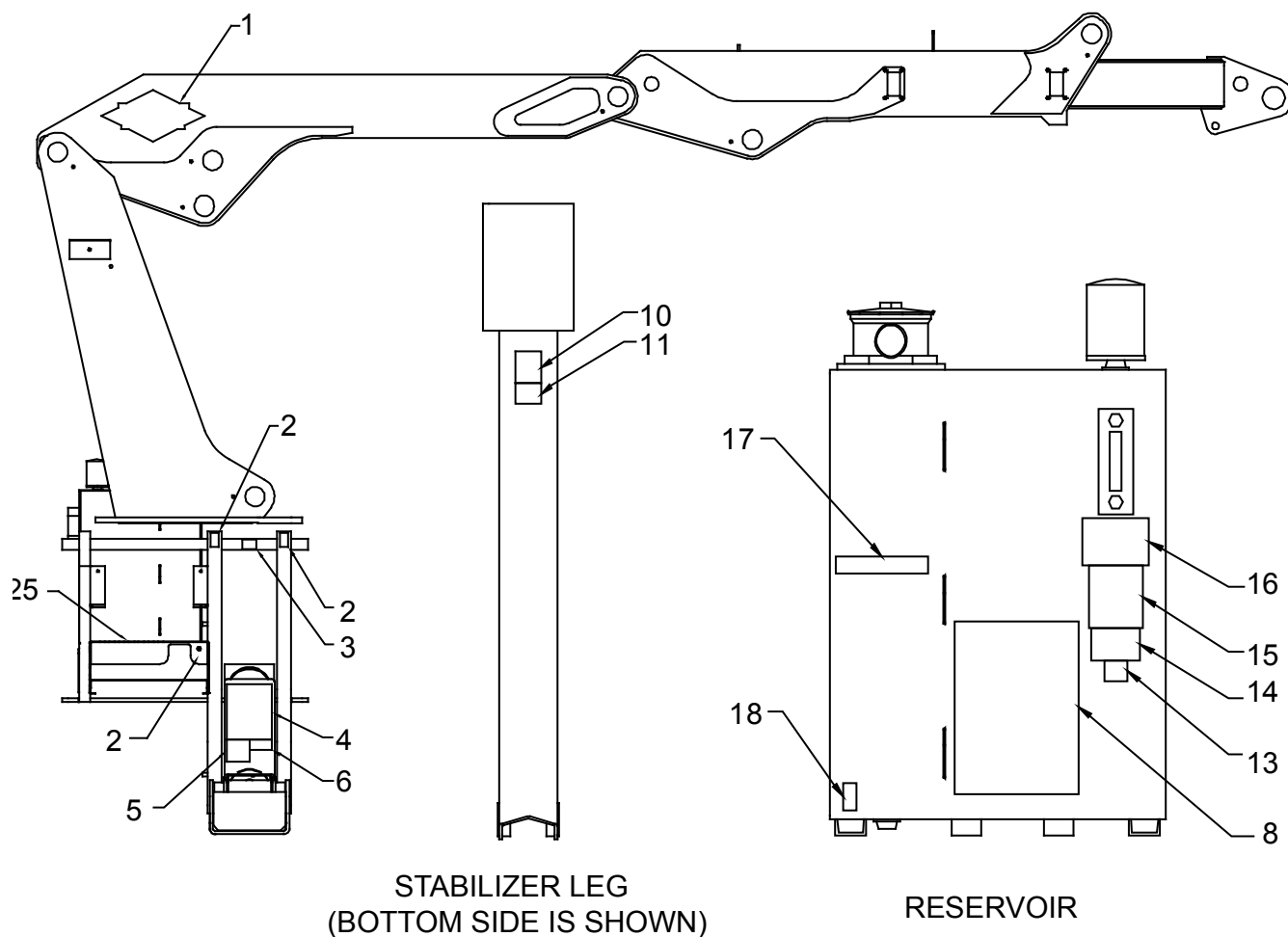
1. For complete wiring connections, see wiring schematic.

Installation Kit (93715856)



ITEM NO.	PART NO.	DESCRIPTION	QTY.
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)

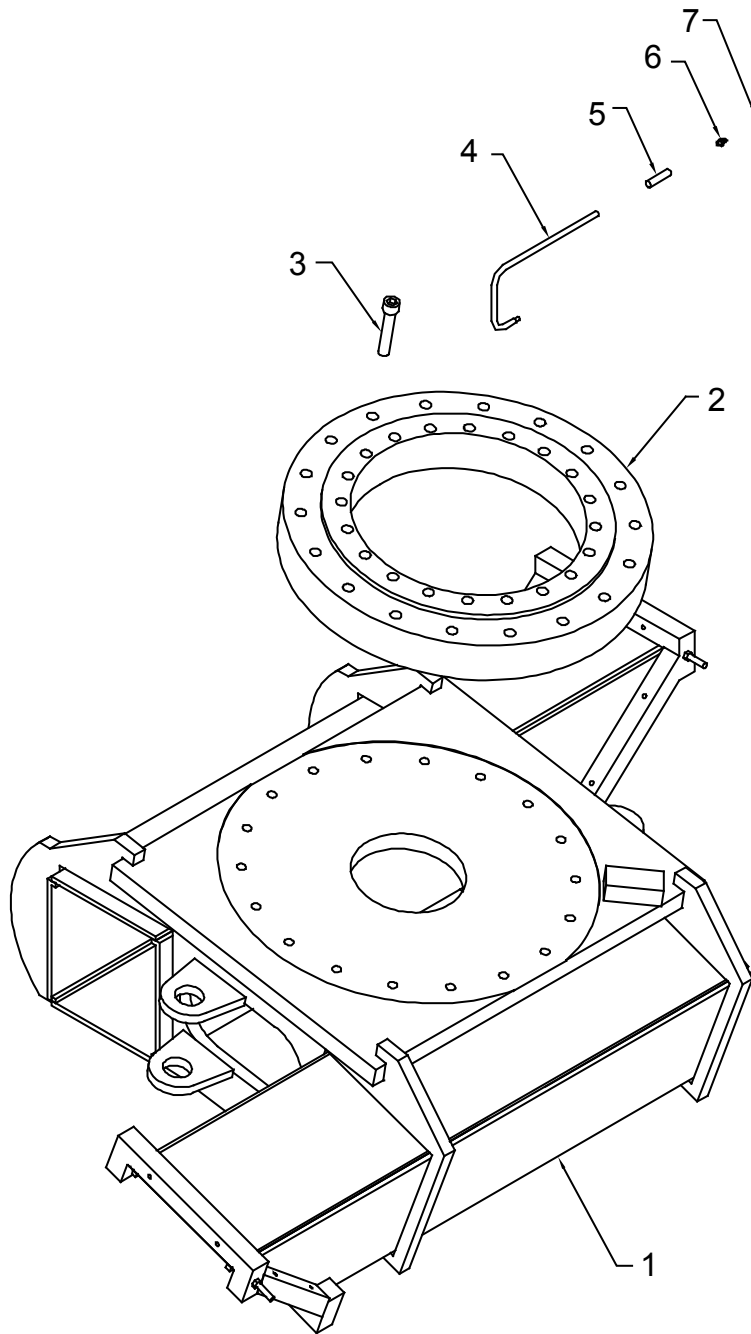


ITEM NO.	LOCATION
8	ONE ON THE CARRIER VEHICLE, OPPOSITE SIDE OF RESERVOIR
19	ON RESERVOIR RETURN LINE
20	ON RESERVOIR SUCTION LINE
21,12	ON ALL FOUR SIDES OF VEHICLE
22	AT OR NEAR DRIVELINE
24	AT OR NEAR OPERATOR'S MANUAL CONTROLS
7	ON CONTROL BOX NEAR STABILIZER VALVE BANK
17	ON CONTROL BOX NEAR E-STOP SWITCH
26	ON FRONT AND SIDE OF CRANE BASE

DECAL KIT - CONTINUED

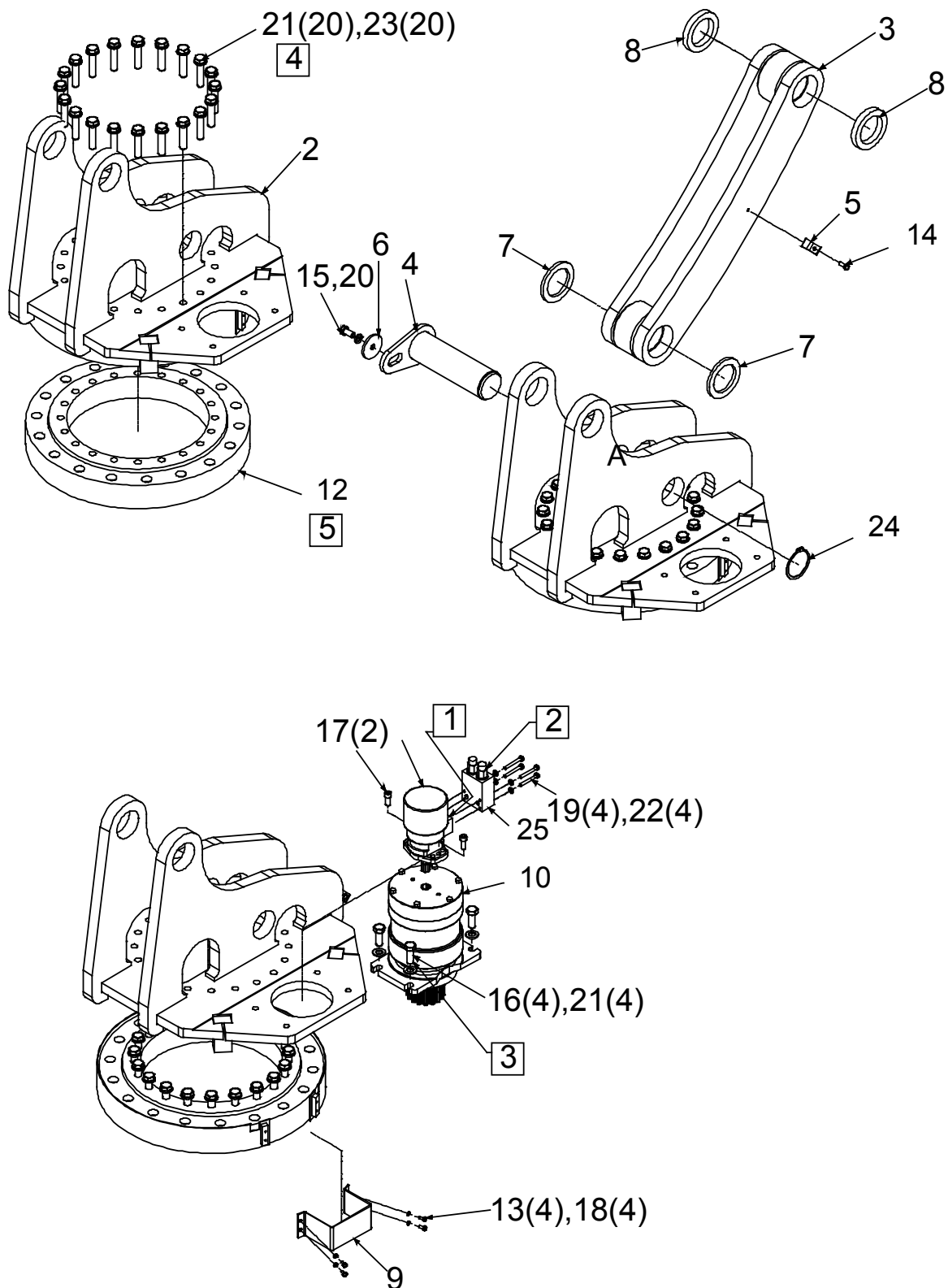
ITEM NO.	PART NO.	DESCRIPTION	QYT.
1.	70029252	IMT DIAMOND	2
2.	70391612	GREASE WKLY LH	5
3.	70392524	ROTATE/GREASE	2
4.	70394764	DANGER-5 COMBINED	2
5.	70392890	DANGER-STOW/UNFOLD	2
6.	70392863	WARNING-HOIST PERS	2
7.	70394096	DECAL-E-STOP (WAS 70395788)	1
8.	70395701	MAX LIFT	2
10.	70392864	WARNING-STAB STD CLEAR	2
12.	70392868	WARNING-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 STAB	2
18.	70395783	CONTROL-STAB 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
26.	72042097	LEVEL	2
REV. F			

Body Assembly - TireHand (41715822)



ITEM NO.	PART NO.	DESCRIPTION	QTY.
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)



41715811 PARTS LIST

ITEM NO	PART NO.	DESCRIPTION	QTY.
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-TURNTABLE 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			

NOTES:

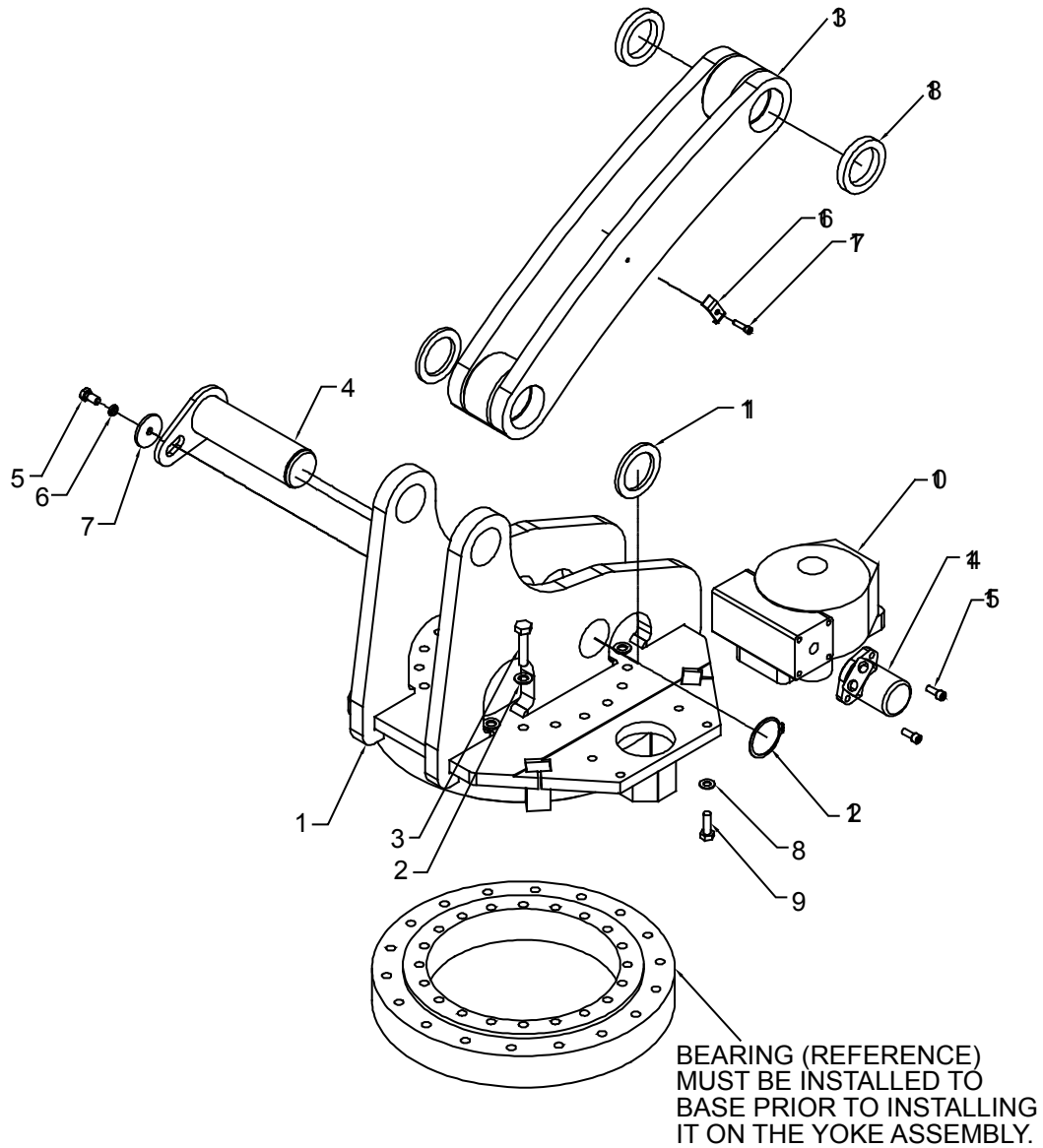
1. Remove seals from hydraulic motor and save to be reused in counterbalance valve.
2. Adjust counterbalance valve by turning valve counterclockwise until fully retracted. Tighten nut.
3. Torque to 160 ft-lb.
4. Torque to 280 ft-lb.
5. Bearing must be installed to base prior to installing it on the yoke.
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.

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.

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



41715811 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	Qty.
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

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).

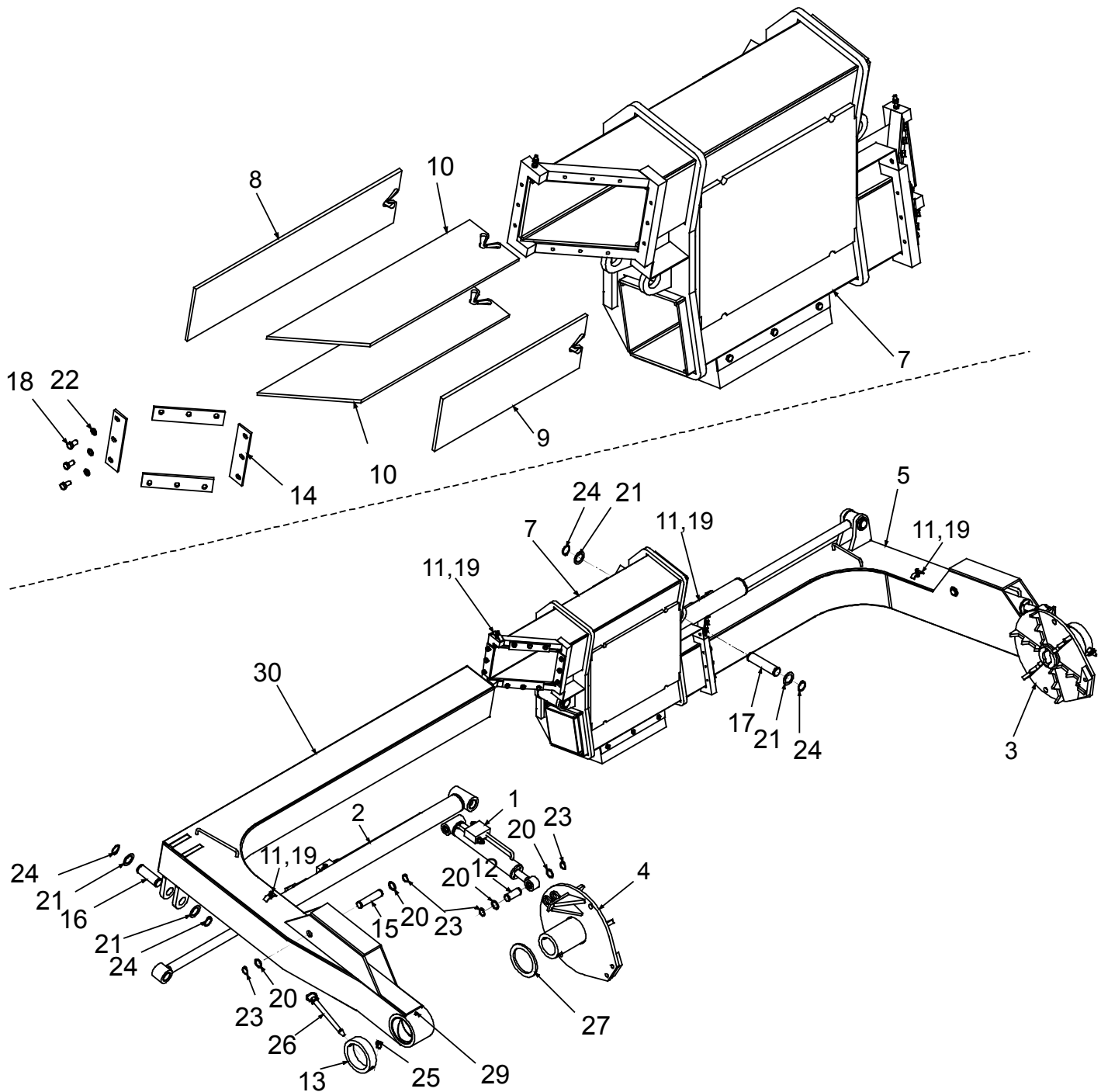
WARNING

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.

Arm Assembly - TireHand (41715821)

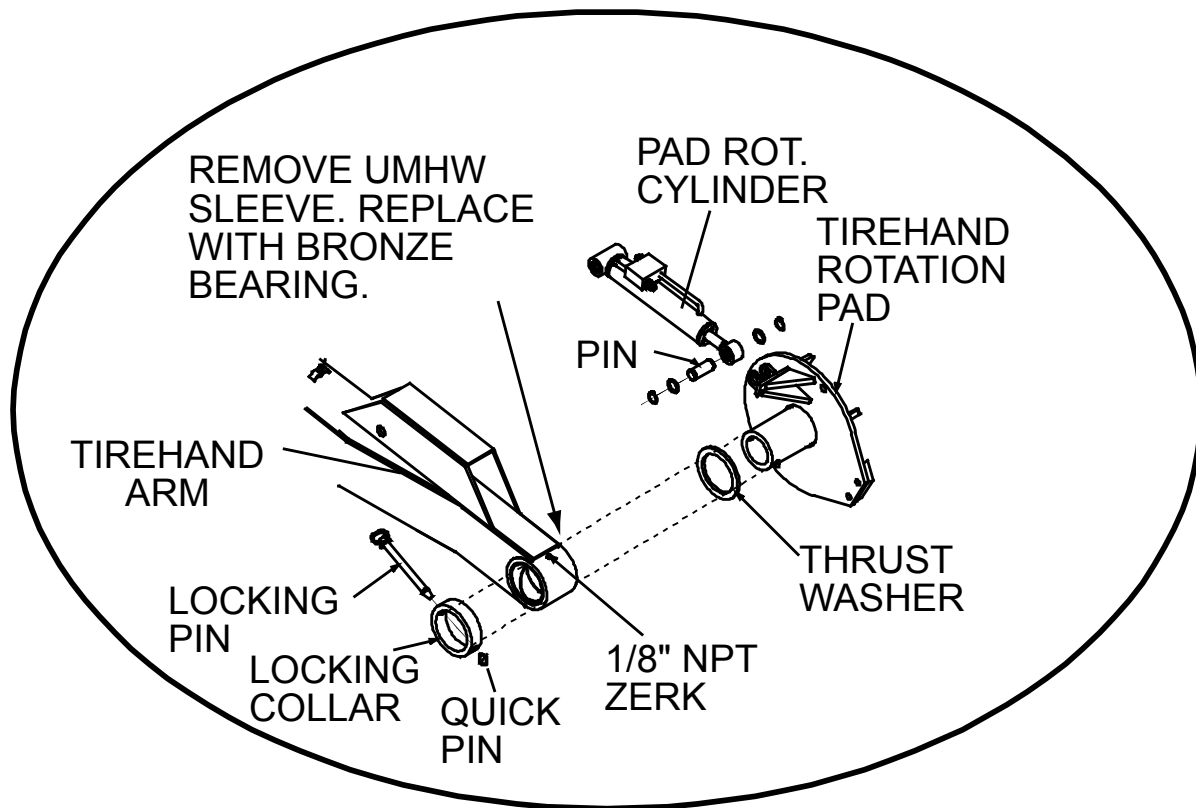


41715821 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
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
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.	72661367	PIN-QUICK 250-14QP (WAS 72661543)	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. K 20111101			

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.



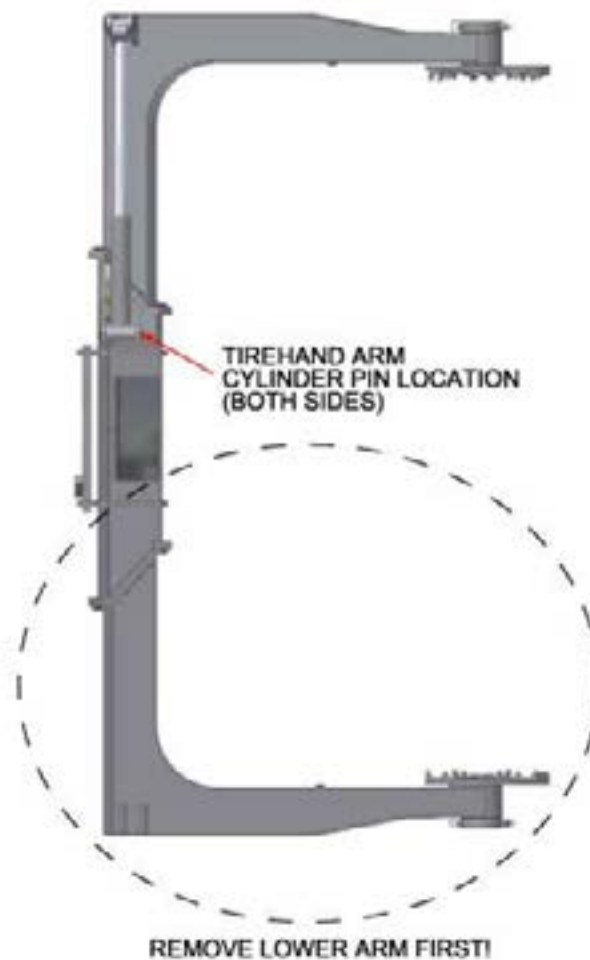
Follow this procedure for both the right and left sides of the tirehand.

- 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

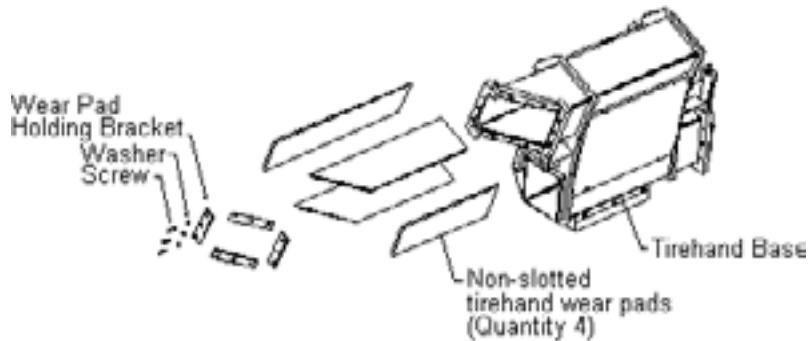
Effective December 1, 2006, new wear pads were designed for the Commander IV TireHand arms. These wear pads have slots which fit over steel retainers for better retention in the TireHand arms. Follow this procedure to replace the wear pads in your Commander IV TireHand.

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.

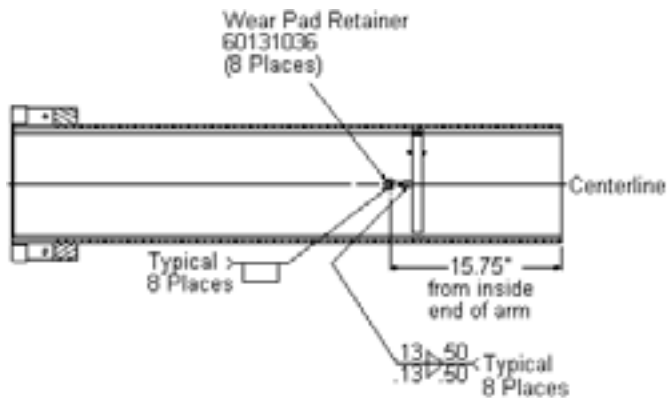


TIREHAND WEAR PAD INSTALLATION INSTRUCTIONS (CONTINUED)

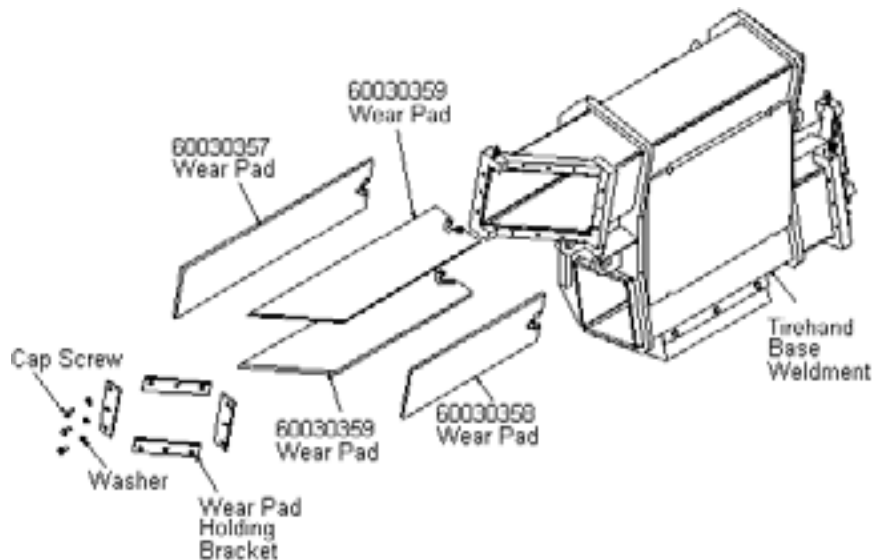
- 2 There are four wear pads on each side of the TireHand arm. Remove the TireHand arm wear pads, part numbers 60122249 (quantity 1/side), 60122250 (quantity 1/side), and 60122253 (quantity 2/side) by removing the wear pad retainer brackets, nuts, and washers.



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

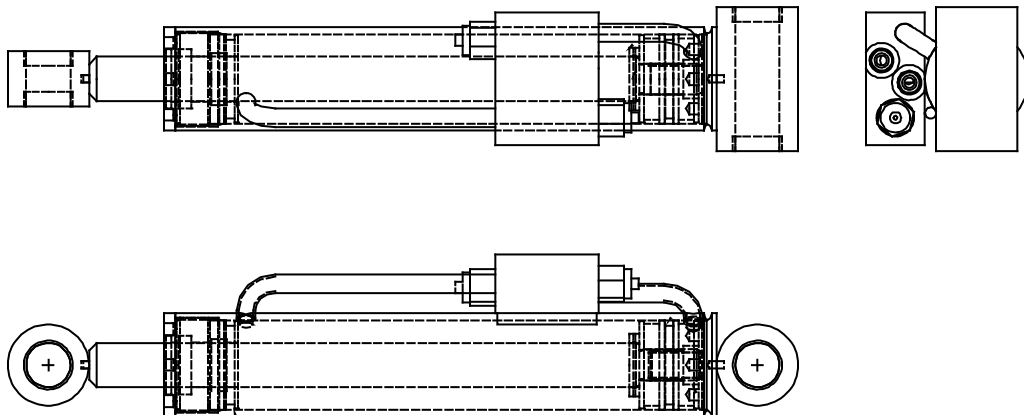


- 4 Install the wear pads, part numbers 60030357 (quantity 1/side), 60030358 (quantity 1/side), and 60030359 (quantity 2/side), using the welded retainers to position the replacement pads correctly. Do not install the wear pad holding brackets until the arms are in place.

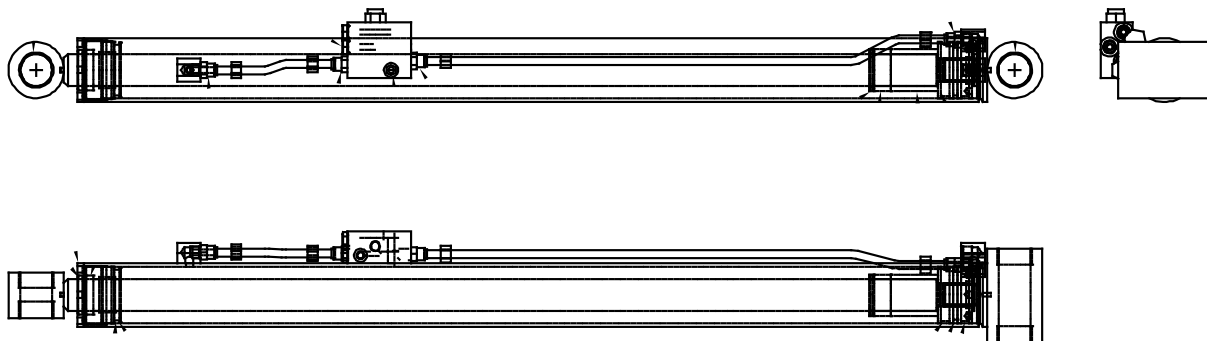


5. Reinstall the TireHand arms, reconnect the TireHand rotation cylinder, and reconnect the TireHand arm cylinder pin.
 6. Replace the wear pad holding brackets.
 7. Rotate the TireHand arms 180°. Remove the other arm per steps 1 through 6.

Pad Rotation Cylinder (3B314990)



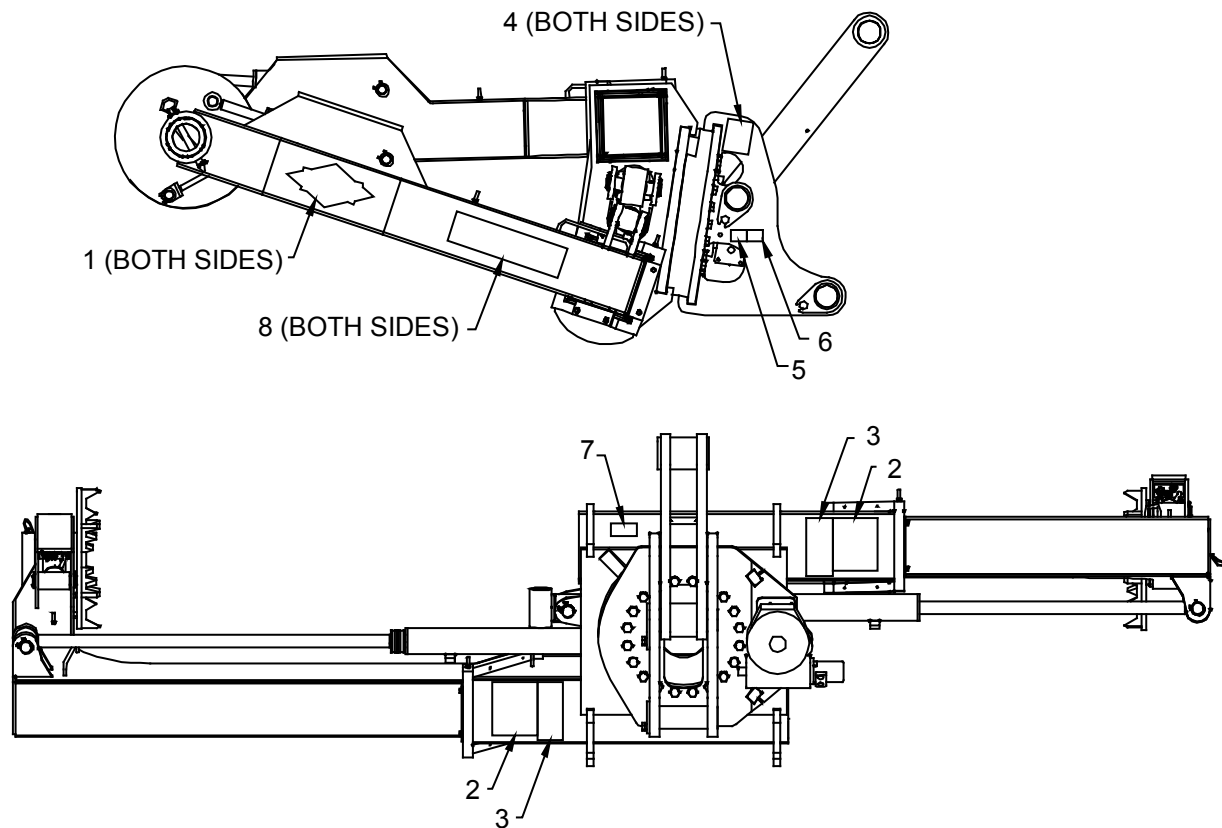
Clamp Cylinder (3B316990)



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.
4. Item #7, stop tube, replaces 6a025020 wafer lock. Use stop tube instead of wafer lock when resealing cylinder.
5. Press locking pin (item #26) into #15 hole drilled 0.188" Deep.
- 7 .Torque piston to 710-740 ft-lb, head to 350 ft-lb, and cartridge to 30-35 ft-lb.

Decal Kit - TireHand (95715872)



View from rear of TireHand.

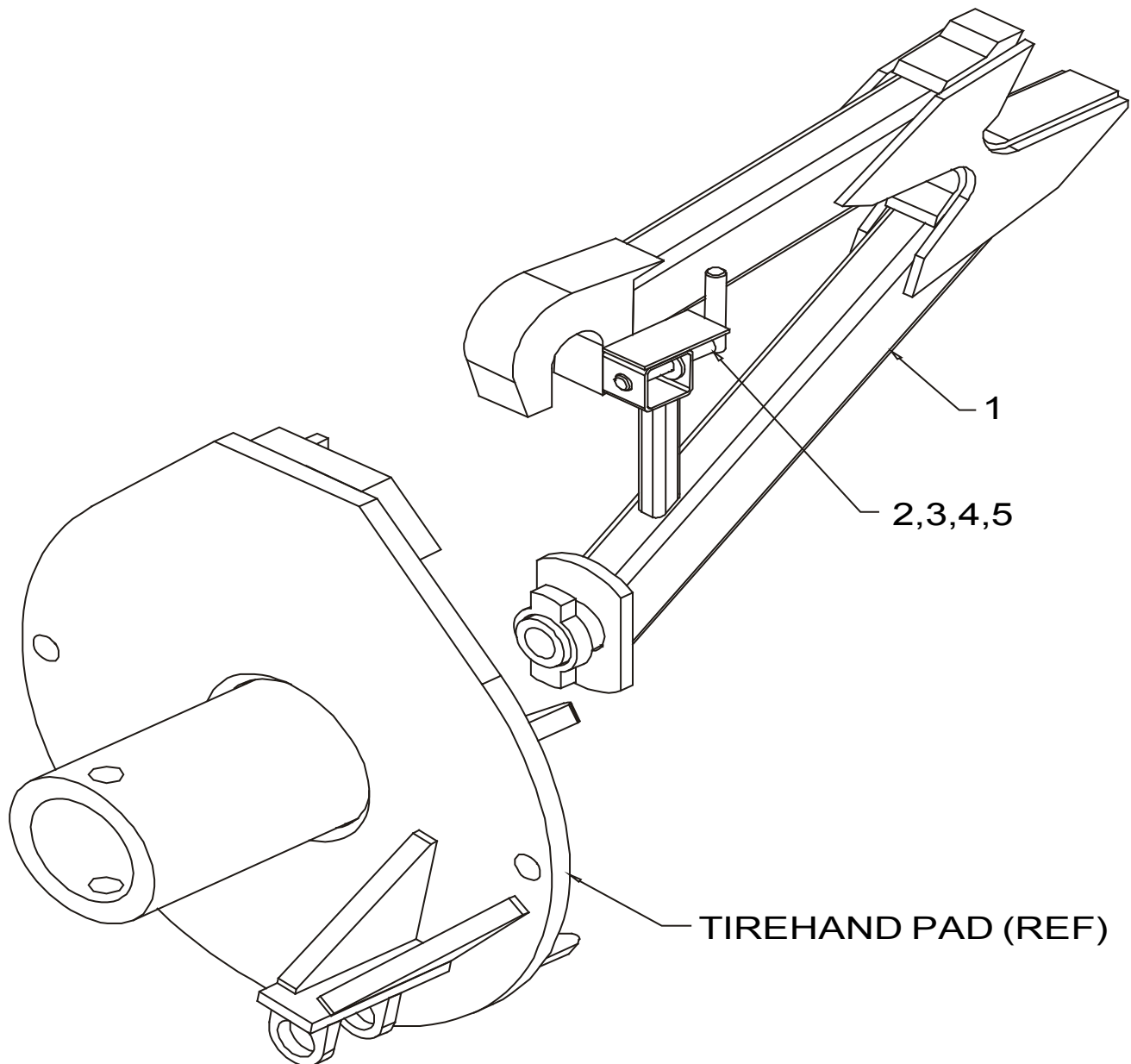


Apply decals to both sides.

95715872 PARTS LIST

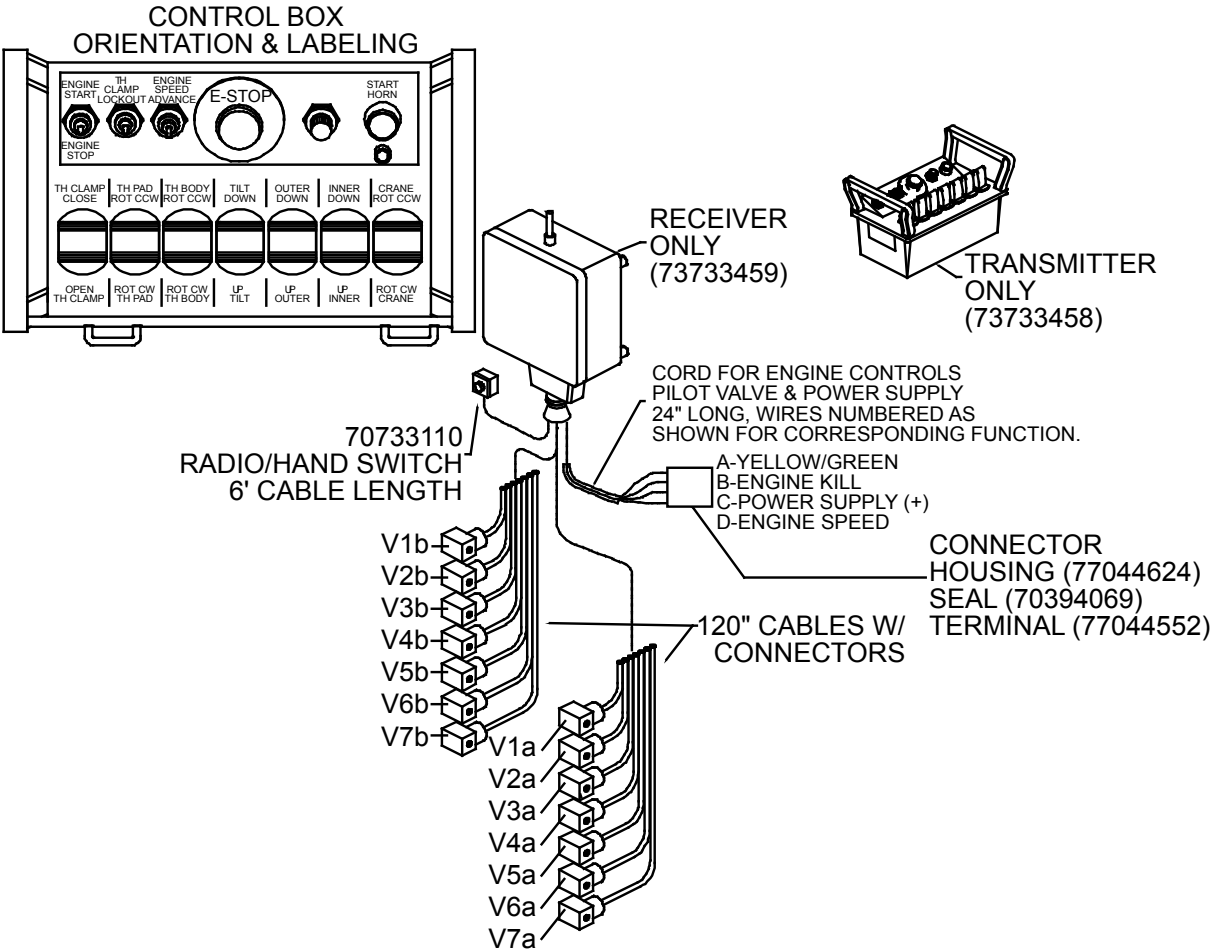
ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	70392887	DECAL-DIAMOND IMT 5X10	2
2.	70394272	DECAL-OP RESTRICTIONS CR MT TH	2
3.	70393704	DECAL-TOP TH (3565)	2
4.	70393672	DECAL-DANGER TH OPERATION	2
5.	70391612	DECAL-GREASE WEEKLY (LEFT)	1
6.	70392524	DECAL-ROTATE CRANE WHILE GREAS	1
7.	70039261	PLACARD-PATENT 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			

Flange Ring Tool Assembly (41716213)



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	52716212	WLDMT-14K160TH FLANGE RING TOOL	2
2.	52716214	PIN-WLDMT TYPE T (14K160TH FLANGE TOOL)	2
3.	60010351	SPRING-COMPRESSION .062 X 1.50 X .845OD	2
4.	72063027	MACHY BUSHING .62X14 GA NR	4
5.	72066185	COTTER PIN .16X1.00 PLAIN	2
REV. B			

Radio Remote Kit (73733417)



NOTES:

1) SPARE PARTS - BATTERY CHARGER (70733109) (NOT SHOWN), AND 2 BATTERIES (77042083) (NOT SHOWN).

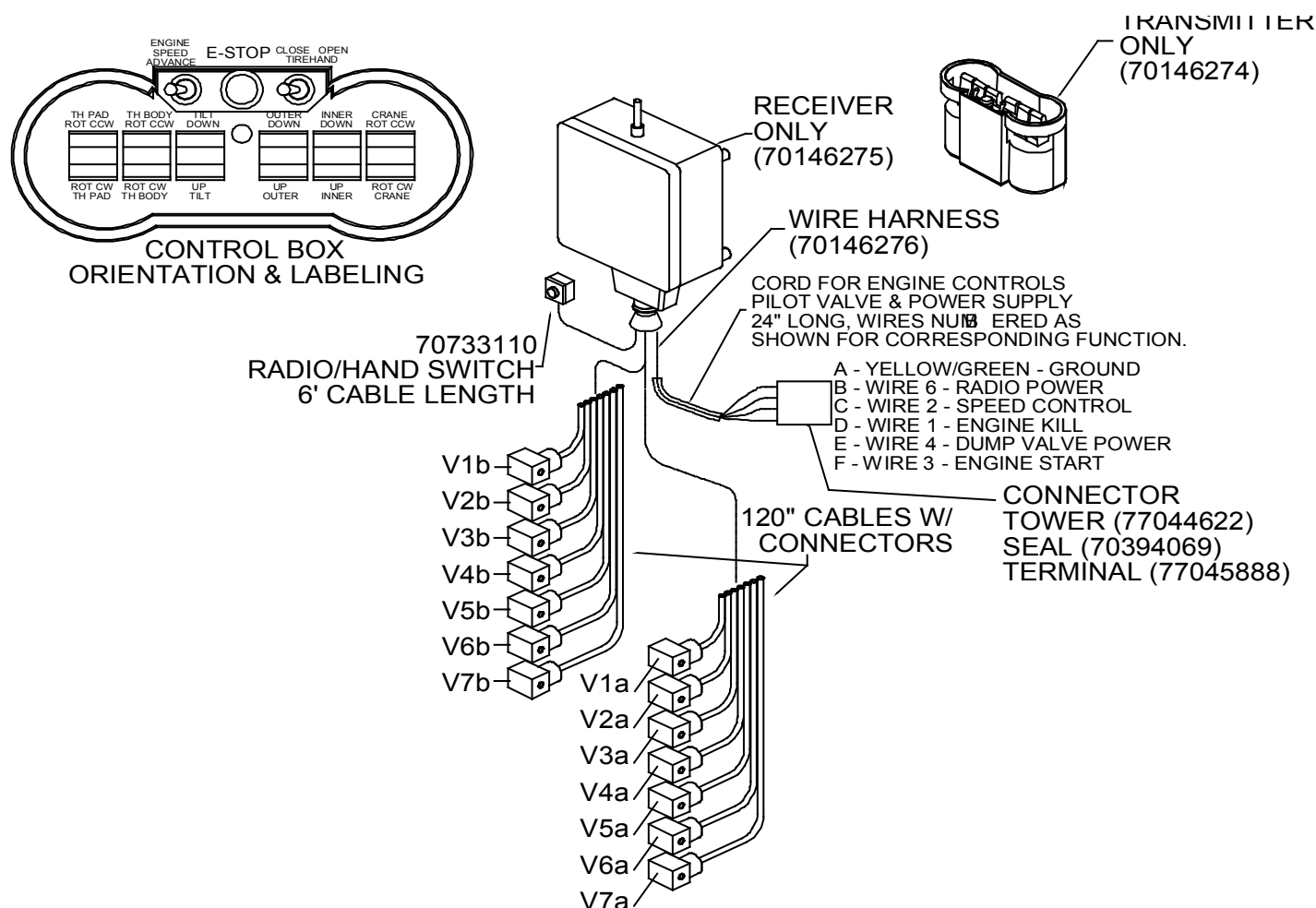
2) SOLENOID ACTUATOR SPECIFICATIONS: 12VDC OPERATING VOLTAGE; 7.5 OHMS PROPORTIONAL COIL RESISTANCE AT 68° F (20° C); 6.5 OHMS ON-OFF COIL RESISTANCE; PWM, 50 HZ FREQUENCY SIGNAL.

3) TIREHAND CLAMP LOCKOUT IS REQUIRED FOR ACTIVATION OF CLAMP PADDLE. MOMENTARY SWITCH.

4) THE OVERALL APPEARANCE OF THE TRANSMITTER MAY VARY. SWITCHES AND PADDLES WILL BE LABELED AS SHOWN.

LABEL	CONTROLLED FUNCTION
V1a	TireHand CLAMP - OPEN
V1b	TIREHAND CLAMP - CLOSE
V2a	TIREHAND PAD ROTATION - CLOCKWISE
V2b	TIREHAND PAD ROTATION - COUNTER-CLOCKWISE
V3a	TIREHAND BODY ROTATION - CLOCKWISE
V3b	TIREHAND BODY ROTATION - COUNTER-CLOCKWISE
V4a	TILT-UP
V4b	TILT-DOWN
V5a	OUTER CYLINDER EXTEND - UP
V5b	OUTER CYLINDER RETRACT - DOWN
V6a	INNER CYLINDER EXTEND - UP
V6b	INNER CYLINDER RETRACT - DOWN
V7a	CRANE ROTATION - CLOCKWISE
V7b	CRANE ROTATION - COUNTER-CLOCKWISE
* ALL CONNECTORS WILL BE SET-UP AND LABELED AS SHOWN.	
* ALL CABLES ARE 120" LONG.	

Radio Remote Kit - Nova (73733481)



NOTES:

- 1) SPARE PARTS - BATTERY CHARGER (70733109) (NOT SHOWN), AND 2 BATTERIES (77042083) (NOT SHOWN).
- 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.
- 3) TIREHAND CLAMP LOCKOUT IS REQUIRED FOR ACTIVATION OF CLAMP PADDLE. MOMENTARY SWITCH.
- 4) THE OVERALL APPEARANCE OF THE TRANSMITTER MAY VARY. SWITCHES AND PADDLES WILL BE LABELED AS SHOWN.

LABEL	CONTROLLED FUNCTION
V1a	TireHand CLAMP - OPEN
V1b	TIREHAND CLAMP - CLOSE
V2a	TIREHAND PAD ROTATION - CLOCKWISE
V2b	TIREHAND PAD ROTATION - COUNTER-CLOCKWISE
V3a	TIREHAND BODY ROTATION - CLOCKWISE
V3b	TIREHAND BODY ROTATION - COUNTER-CLOCKWISE
V4a	TILT-UP
V4b	TILT-DOWN
V5a	OUTER CYLINDER EXTEND - UP
V5b	OUTER CYLINDER RETRACT - DOWN
V6a	INNER CYLINDER EXTEND - UP
V6b	INNER CYLINDER RETRACT - DOWN
V7a	CRANE ROTATION - CLOCKWISE
V7b	CRANE ROTATION - COUNTER-CLOCKWISE
* ALL CONNECTORS WILL BE SET-UP AND LABELED AS SHOWN.	
* ALL CABLES ARE 120" LONG.	

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

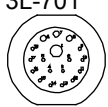


99903557 CONTINUED

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

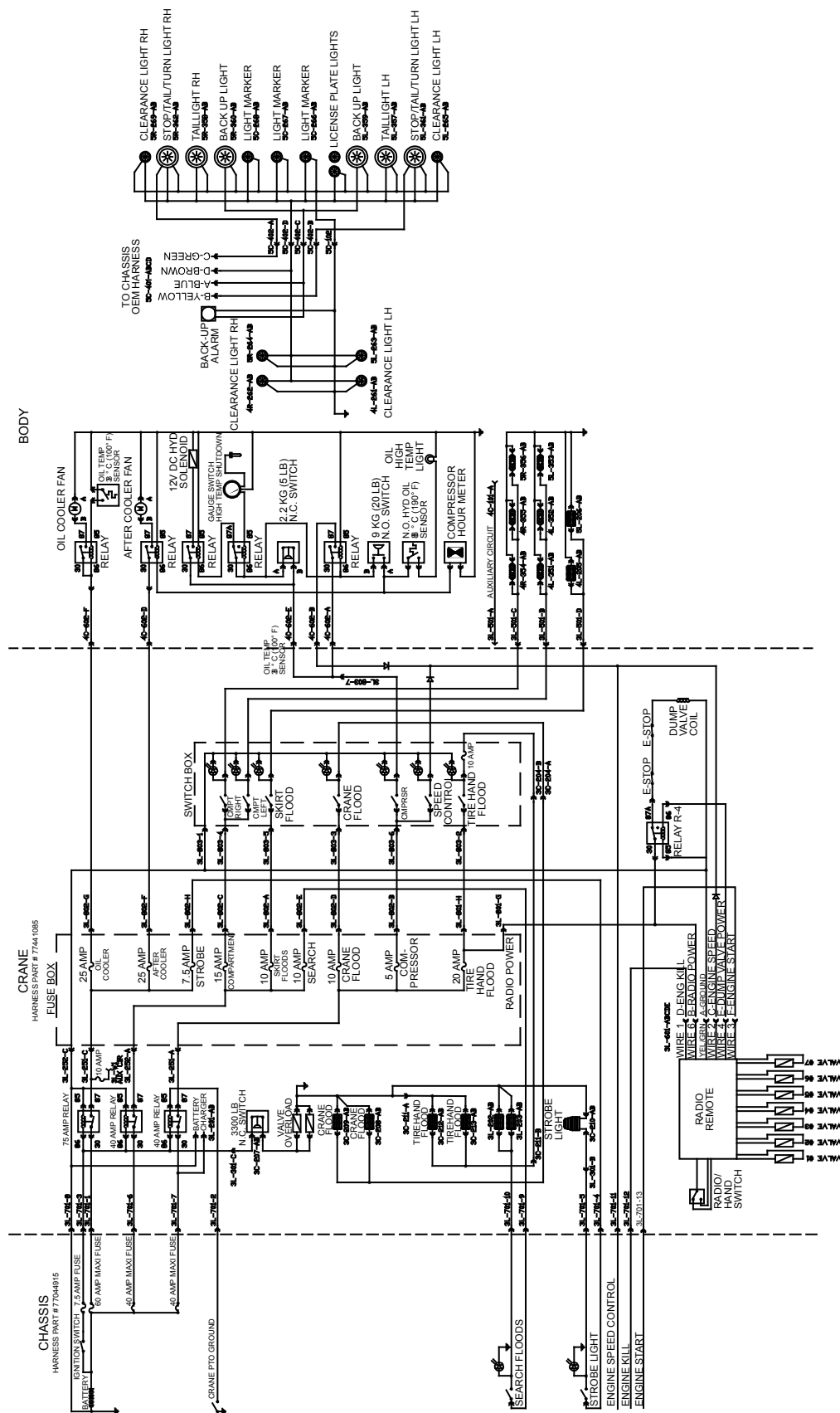
Wiring Schematic (99903201) (Thru 8/2002)

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

REV C 20100330

Wiring Schematic (99903201) (Thru 8/2002)



99903201-1

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

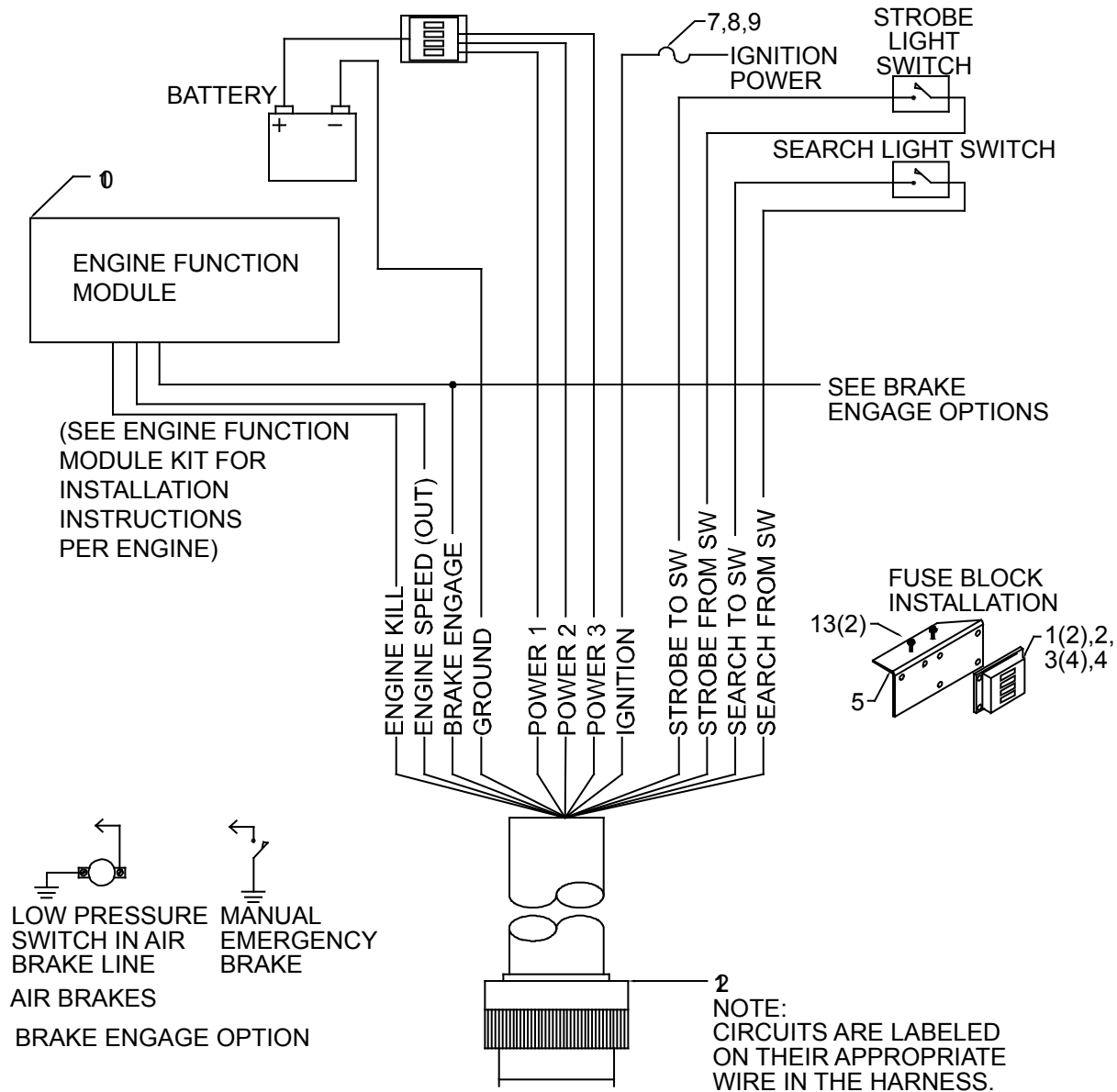
99903201-2

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 13-18 - 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)

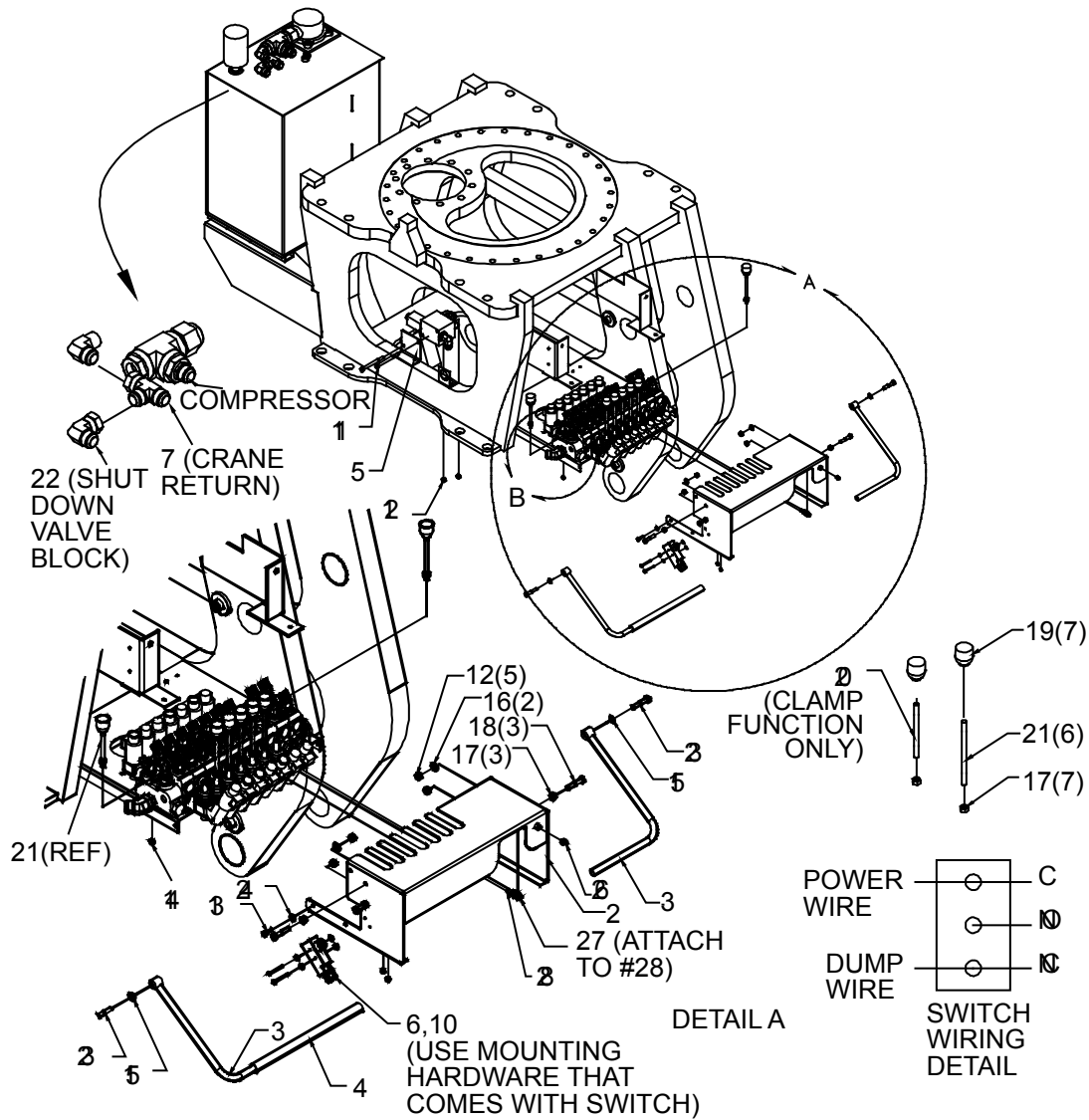


99903160 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY..
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
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.

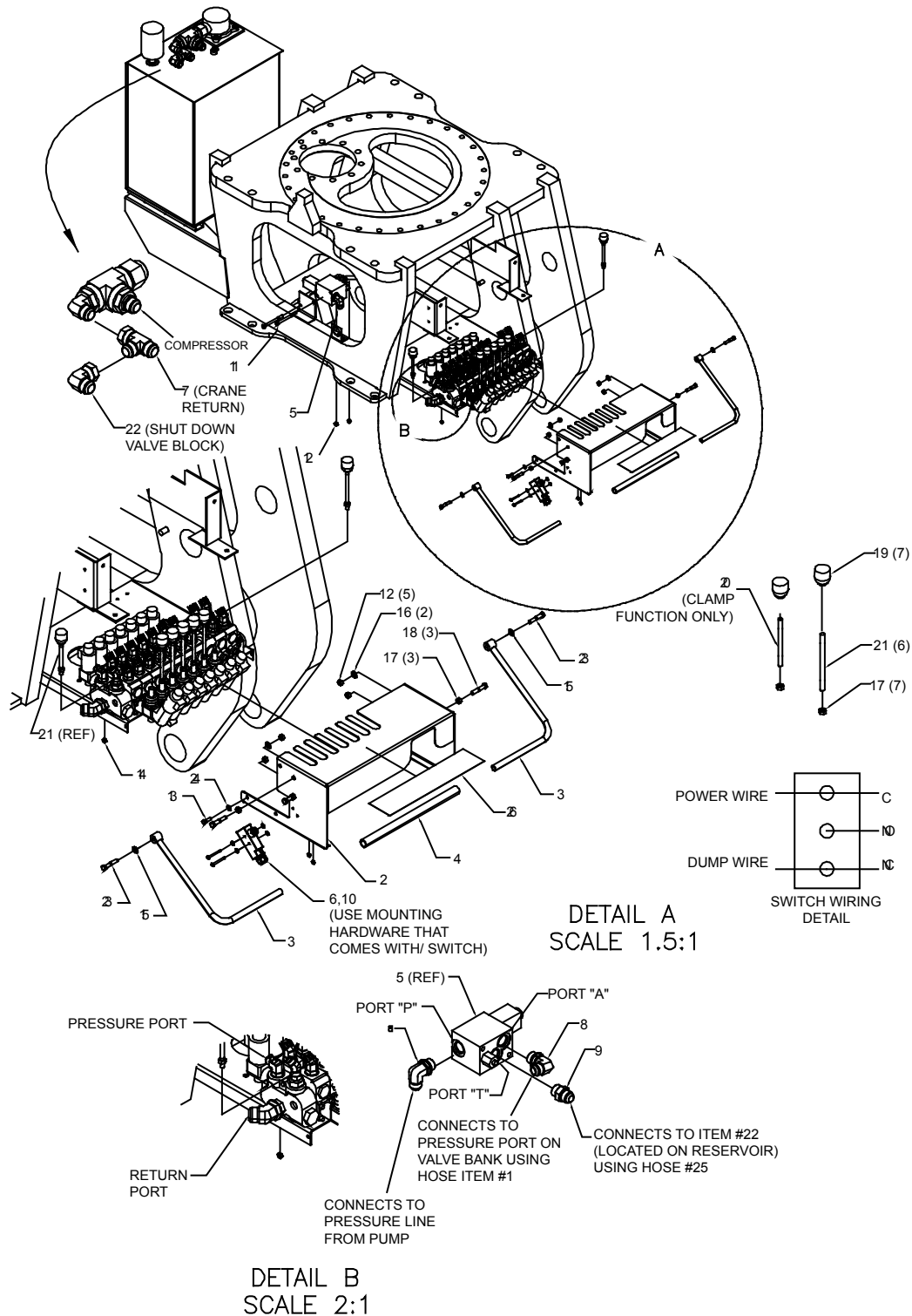


99903465 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY,
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			

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 NO.	PART NO.	DESCRIPTION	QTY.
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

This page left intentionally blank

General Information

Section - 5

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).

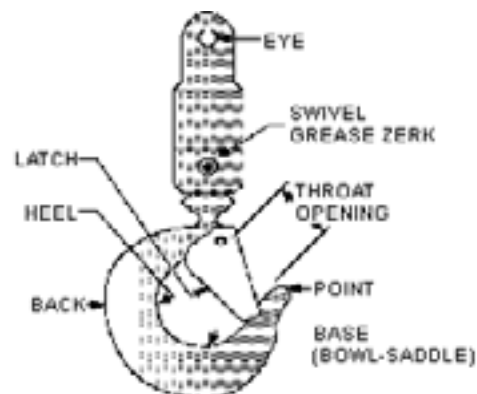
d LATCH

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.

Turntable Bearing Inspection

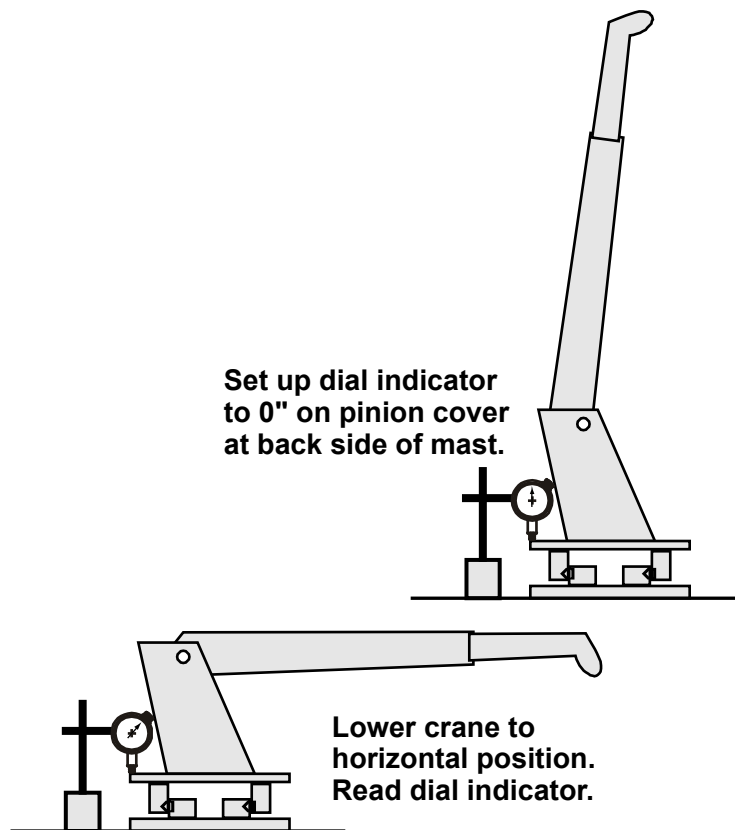
Turntable bearings may experience wear. One of the following conditions may indicate turntable bearing wear:

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

If one or more of the above conditions exists, further inspection may be required. Contact IMT for assistance.

Turntable Bearing Tilt Test

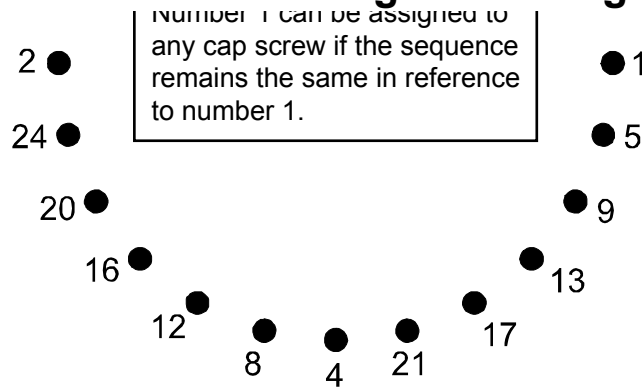
1. Place crane in vertical position.
2. Set a dial indicator at 0 on the pinion cover plate at back side of mast.
3. Lower crane to the horizontal position.
4. Check and record the dial indicator change.
5. The measurement should not exceed the tilt measurement noted in the chart below.



6. Return the crane to the vertical position. The dial indicator should return to 0.

COMPARISON CHART - MEASURED TILT DIMENSION PER CRANE MODEL					
NOTE: The tilt dimensions 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 1014/1014A 1015 2015/2020 2109 2820 3000 3016/3020 3203i 3816/3820 4004i 421/425 4300 5005i 5016/5020 6006i 6016/6020 6022 5525 / 6025 / 6625 EZ Hauler I, II EZ Hauler 3000 / 5500	5200 5200R 5217 5800 7020 7025 7200 7415 8025 9000	16000-I, II, III 32018 32027 32030 T30 T40	23516 14K160TH COMMANDER IV	1221R 1225R 8000L 9800 12916 13031 13034 14000 15000 18000 20017 8000L H1200 H1200RR T50
Ball Dia. (Ref)	.875" (22 mm)	1.00" (25 mm)	1.18 - 1.25" (30-32 mm)	1.5" (38 mm)	1.75" (44 mm)
Tilt Dim.	.060" (1.524 mm)	.070" (1.778 mm)	.075" (1.905 mm)	.085" (2.159 mm)	.090" (2.286 mm)

14K160TH - Turntable Bearing Thread Tightening Sequence



ble Bearing Thread Tightening diagram for proper tightening-torquir
o the crane base and crane mast. The total quantity of cap screws v

PROCEDURE:

TIGHTENING PROCEDURE

1. Refer to the torque data chart to determine the proper torque value to apply to the size of cap screw 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 cap screws 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 cap screws 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 cap screws to the listed torque value as determined from the torque data chart.

NOTES:

Refer to the turntable bearing thread tightening diagram 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.

14K160TH - Thread Torque Chart (English)

FINE THREAD BOLTS (ENGLISH)						COARSE THREAD BOLTS (ENGLISH)					
SIZE	BOLT DIA.	 GRADE 5 SAE J429 GRADE 5		 GRADE 8 SAE J429 GRADE 8		SIZE	BOLT DIA.	 GRADE 5 SAE J429 GRADE 5		 GRADE 8 SAE J429 GRADE 8	
(DIA-TPI)	(INCHES)	PLAIN	PLATED	PLAIN	PLATED	(DIA-TPI)	(INCHES)	PLAIN	PLATED	PLAIN	PLATED
		(FT-LB)	(FT-LB)	(FT-LB)	(FT-LB)			(FT-LB)	(FT-LB)	(FT-LB)	(FT-LB)
5/16-24	0.3125	19	14	27	20	5/16-18	0.3125	17	13	25	18
3/8-24	0.375	35	26	49	35	3/8-16	0.375	31	23	44	33
7/16-20	0.4375	55	41	78	58	7/16-14	0.4375	49	37	70	52
1/2-20	0.5	90	64	120	90	1/2-13	0.5	75	57	105	80
9/16-18	0.5625	120	90	170	130	9/16-12	0.5625	110	82	155	115
5/8-18	0.625	170	130	240	180	5/8-11	0.625	150	115	220	160
3/4-16	0.75	300	225	420	315	3/4-10	0.75	265	200	375	280
7/8-11	0.875	445	325	670	500	7/8-9	0.875	395	295	605	455
1-12	1	645	485	995	745	1-8	1	590	445	910	680
1 1/8-12	1.125	890	670	1445	1085	1 1/8-7	1.125	795	595	1290	965
1 1/4-12	1.25	1240	930	2010	1510	1 1/4-7	1.25	1120	840	1815	1360
1 3/8-12	1.375	1675	1255	2710	2035	1 3/8-6	1.375	1470	1100	2380	1780
1 1/2-12	1.5	2195	1645	3560	2670	1 1/2-6	1.5	1950	1460	3160	2370

NOTES:

1. Tightening torques provided are midrange.
2. Consult bolt manufacturer's particular specifications, when provided.
3. Use flat washers of equal strength.
4. All torque measurements are given in foot-pounds.
5. 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 disulfide, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of loctite does not affect the torque values listed above.

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 torqueing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing death or serious injury.

14K160TH - Thread Torque Chart (Metric)

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

NOTES:

1. Tightening torques provided are mid-range.
2. Consult bolt manufacturer's particular specifications, when provided.
3. Use flat washers of equal strength.
4. All torque measurements are given in kilogram-meters.
5. 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 disulfide, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of loctite does not affect the torque values listed above.

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 torqueing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing death or serious injury.

[illegible]



IOWA MOLD TOOLING CO., INC.

P.O. Box 189 Garner, IA 50438

Tel: 641.923.3711

Fax: 641.923.2424

www.imt.com

IMT reserves the right to make changes in engineering, design, specifications, add improvements or discontinue manufacturing at any time without notice or obligation.

IMT and IMT LOGO are registered trademarks of Iowa Mold Tooling Co., Inc., Garner, IA, USA.

© 2019 Iowa Mold Tooling Co., Inc. All Right Reserved.