Manual # 99905834

TH10 Parts & Specifications

Revised: July 8, 2021

IOWA MOLD TOOLING CO., INC.
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Iowa Mold Tooling Co., Inc. is an Oshkosh Corporation Company.

Contents

Revisions

DATE	LOCATION	DESCRIPTION
20160106	91704915	ECN12374-Replaced 72532666 with 72053763
20190314	40725987	Corrected BOM misprint, 60142355, was 30142355.
20210708	40726378	Fixed BOM errors

CHAPTER 1

Tirehand Introduction

This manual includes operation, safety, and maintenance instructions and replacement parts for your IMT Tirehand.

In addition to reading the manual, it is your responsibility to become familiar with government regulations, hazards, and the specific operation of your equipment. Use caution and common sense while operating and maintaining the equipment and follow all safety procedures and regulations. Treat this equipment with respect and service it regularly.

MODIFICATIONS

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

Decals regarding safety and operation are considered safety equipment, and must be kept clean and legible.

The equipment 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 equipment. If questions arise concerning safe operation, contact IMT or your IMT distributor for clarification.

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

RESPONSIBILITY

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

MANUAL STRUCTURE

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

NOTE

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

⚠ CAUTION

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

⚠ WARNING

A WARNING is used when there is the potential for personal injury or death.

CHAPTER 2

TH10 Specifications

GENERAL SPECIFICATIONS		
IMT CRANE WHICH TIREHAND IS DESIGNED	Model 12916 & 9616 (truck chassis mounted)	
TIREHAND MAXIMUM CAPACITY	5,000 lbs (2,268 kg)	
BODY ROTATION	342° (5.96 Rad)	
CLAMPING SPAN	55" to 115" (139.7 cm – 292.1 cm)	
METHOD OF CLAMPING	Horizontally telescoping	
CLAMPING PAD ROTATION	None – Stationary Pads	
TIREHAND TILT – 12916 CRANE (provided by crane extension boom)	+94° TO -48° (+1.64 TO -.84 Rad)	
CLAMPING LOAD HOLDING VALVES	Pilot operated check valves on clamping side	
HYDRAULIC CONTROLS	Incorporated with crane controls	
ROTATION SYSTEM	Spur gear drive	
TIREHAND WEIGHT	1,900 lbs (862 kg)	
ALLOWABLE BEAD BREAKING METHOD	Push Bar, ONLY	
CYLINDERS		
CLAMPING	**BORE** 2-1/2” (6.35 CM)	**STROKE** 30” (76.2 CM)
TILT	Provided by crane extension boom.	

IMT reserves the right to change specifications and design without notice. Where applicable, specifications are in accordance with SAE standards and ISO/DIS 3691-1, the international standard for Industrial Trucks - Safety Requirements and Verification.

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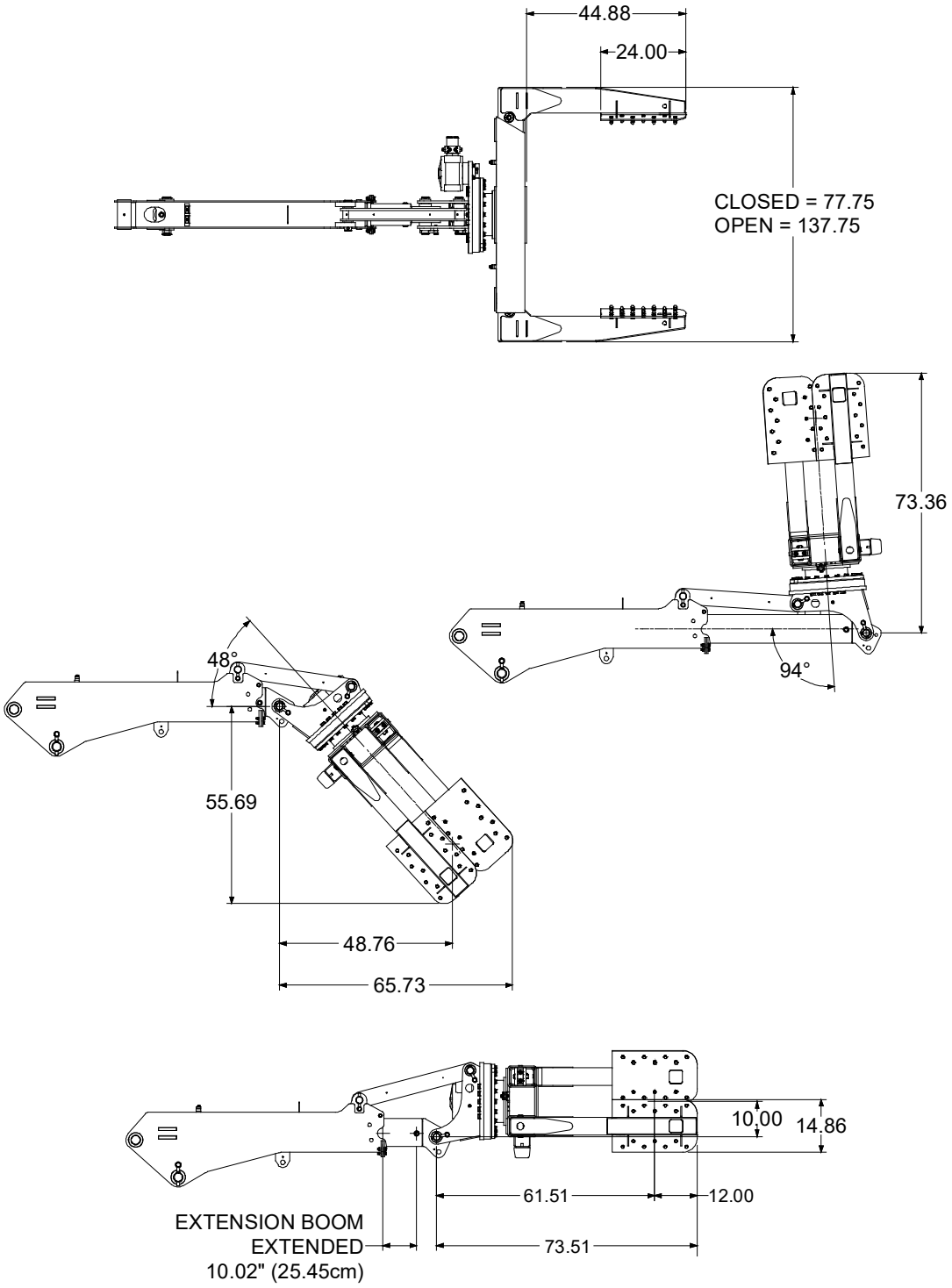
TH10 Geometric Configuration On a 12916 Crane

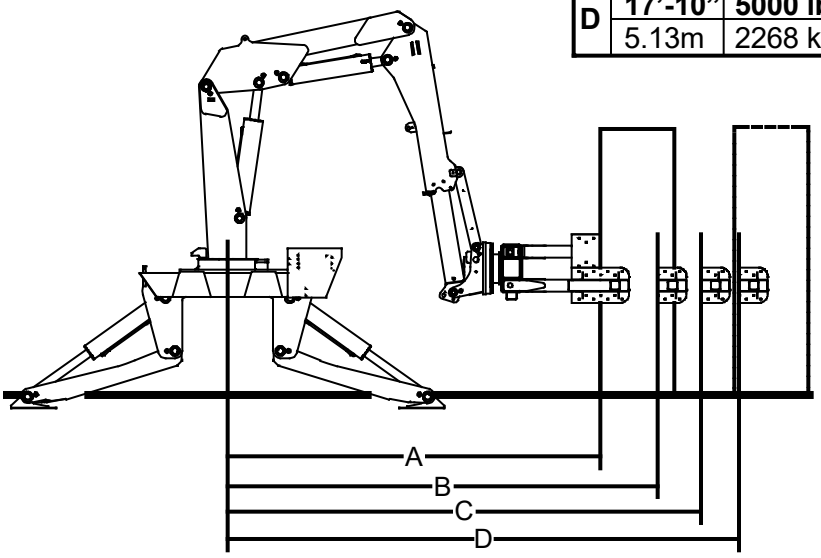


TH10 Load Limits

MAXIMUM LIFT CAPABILITY
Model 12916-TH10 Tirehandler

Clamping Span
Min: 61” (154.9 cm)
Max: 121” (350.5 cm)

A	**13’-0”**	**7000 lbs**
	3.96m	3175 kg
B	**15’-0”**	**6500 lbs**
	4.57m	2948 kg
C	**16’-6”**	**5700 lbs**
	5.03m	2585 kg
D	**17’-10”**	**5000 lbs**
	5.13m	2268 kg



- **Load shown is based on Tirehandler structural or hydraulic capacity.**
- **To assure proper stability, maximum lift capacity at specified distances must not be exceeded.**
- **Working loads will be limited to those shown.**
- **Deduct the weight of any load handling devices other than Tirehand.**

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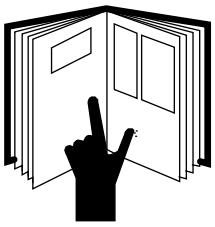
CHAPTER 3

Operation

In This Chapter

Operator Training



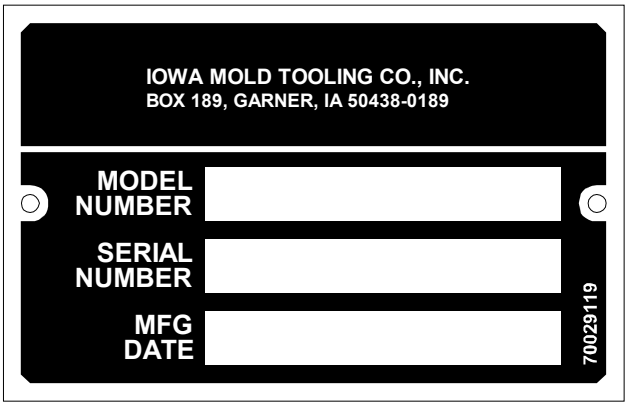
Prior to operating the Tirehand, read and follow the manual and all warning and safety decals.

The Tirehand is designed for operator simplicity. Prior to operating this unit, the operator should become thoroughly familiar with the controls, operating procedures, and safety precautions.

Tirehand Intended Use and Identification

This Tirehand is a tire lifting and positioning device. It should be used to remove, transport, replace, and storage stack tires. It is designed only as a tire handling device and should not be used for any other purposes. It is intended to permanently attach to either a forklift truck or a front-end loader.

This Tirehand has an identification placard, as shown below, fastened to the body assembly. When ordering parts, communicating warranty information, or referring to the unit in any way, always include the assigned model and serial numbers. All inquiries should be directed to Iowa Mold Tooling Co., Inc., 500 Highway 18 West, Garner, Iowa 50438, U.S.A.



Tirehand Equipment Inspection

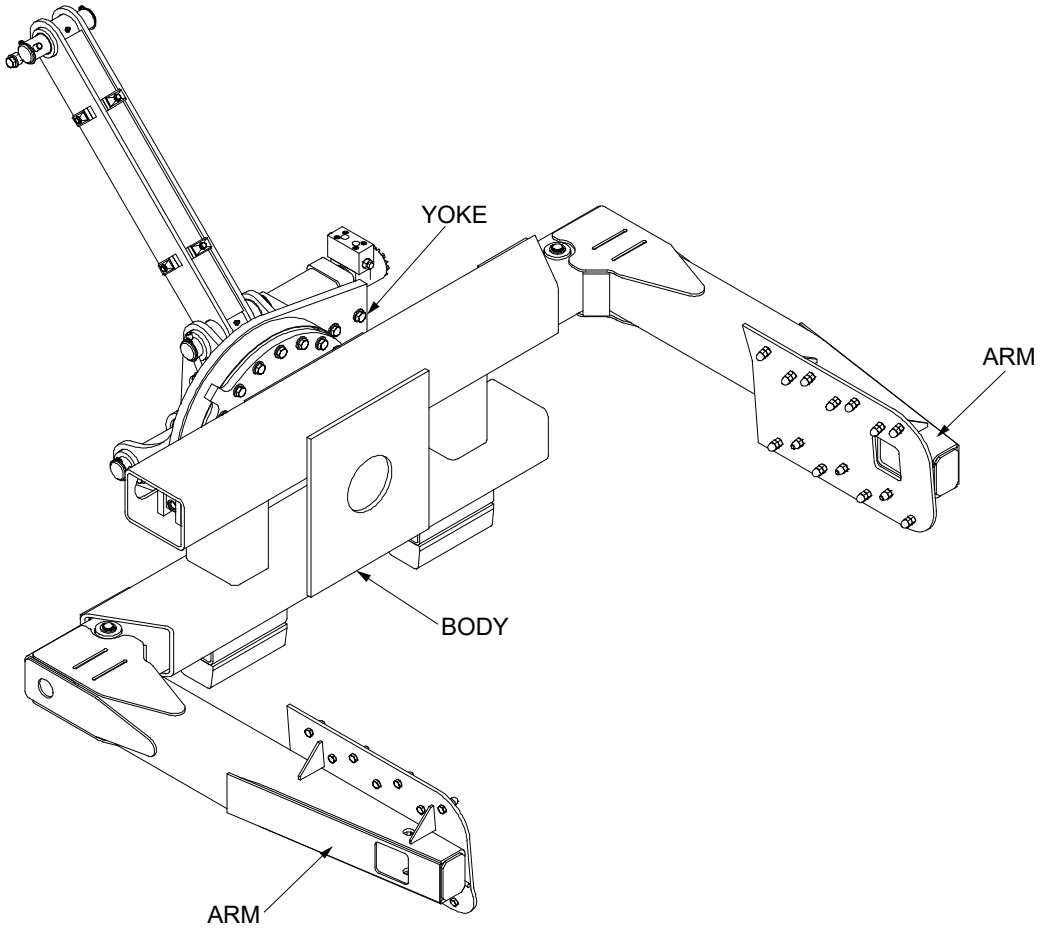
Daily and weekly, before use, the operator should inspect as listed:

ITEM	DESCRIPTION	FREQUENCY	
		DAILY	WEEKLY
WALK-AROUND INSPECTION	Inspect for hydraulic leaks, loose parts and obvious structural member damage.	■	
ROTATION SYSTEM	Check for excessive backlash (play) between pinion gear and turntable gear-bearing. If there is excess play, use a feeler gauge to measure the play and service the tirehand if needed.		■
ELECTRICAL	Check remote controls, auxiliary lighting, etc. for proper function.	■	
	Check for deterioration, dirt and moisture.		■
HYDRAULIC HOSE	Check for leaks on surface and at ends.	■	
	Check for blistering, deformation and abrasion.		■
CONTROL VALVES	Check for leaks, cracks and slow return to neutral.	■	
CARRIER VEHICLE	Follow all inspection procedures provided by the carrier vehicle manufacturer.	■	

In addition, the tirehand requires periodic inspection as noted in the maintenance section. Use the inspection chart in the maintenance section to determine critical inspection tasks.

TH10 Weldment Identification

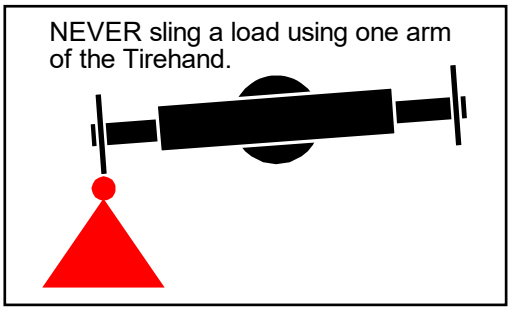
Each of the major weldments of the Tirehand bears a stamped part number. Any time a major weldment is replaced, you must specify the complete part number as stamped on the weldment. The locations of the part numbers are shown below.



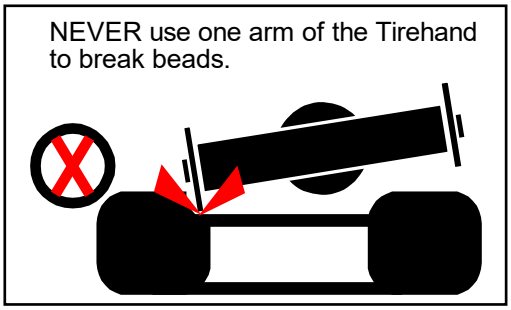
Tirehand Operating Restrictions

The Tirehand 10 mounted on a crane 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 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 of the crane 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 tire hand 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. 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 bead breaker 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.

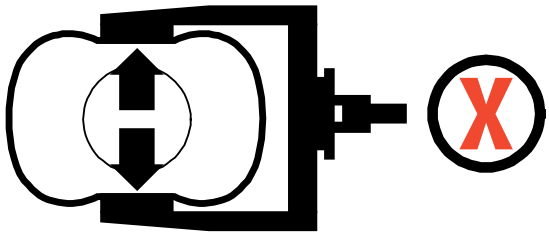
DANGER

FAILURE TO OBEY THE FOLLOWING WILL RESULT IN

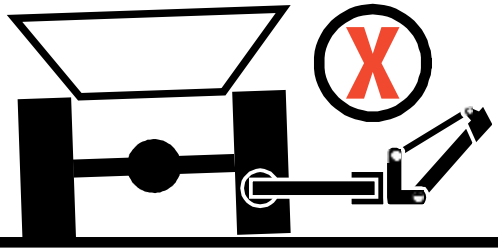
DEATH, SERIOUS INJURY,

INSTABILITY OR EQUIPMENT DAMAGE

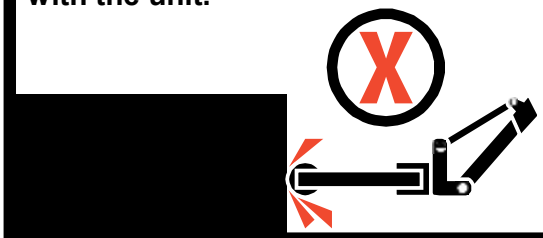
NEVER clamp an uninflated tire and then inflate. Damage or injury WILL result.



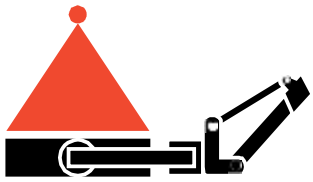
NEVER use the unit for any jacking, pulling or dragging operation involving an object or another vehicle.



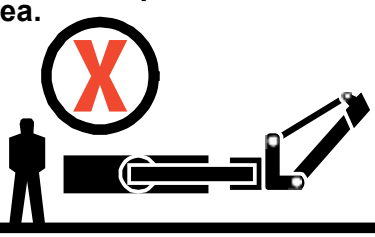
NEVER impact-load or hammer-push with the unit.



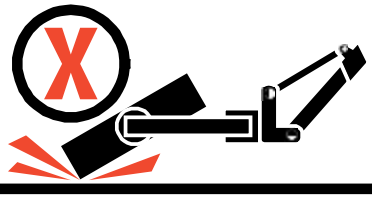
NEVER attempt to handle tires filled with ballast. Stability or structural failure may result if the load limit is exceeded.



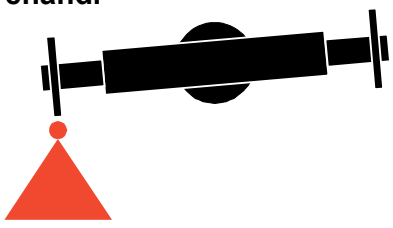
NEVER operate the unit while persons not required for operation are in the work area.



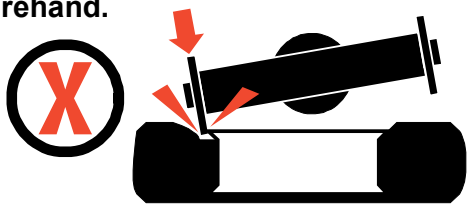
NEVER drag the tire-the unit is designed to lift and position.



NEVER sling a load using one arm of the Tirehand.



NEVER use crane functions to break beads using only one arm of the Tirehand.



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CHAPTER 4

Parts

In This Chapter

Tirehand Parts Ordering Information

GENERAL

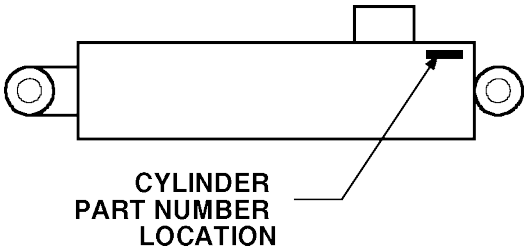
This section contains the exploded parts drawings, with accompanying parts lists, for the assemblies used on the Tirehand 10. These drawings are intended to be used in conjunction with those in 12916 and 9616 Crane manuals and the instructions found in the REPAIR section in Volume 1.

⚠ 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.

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

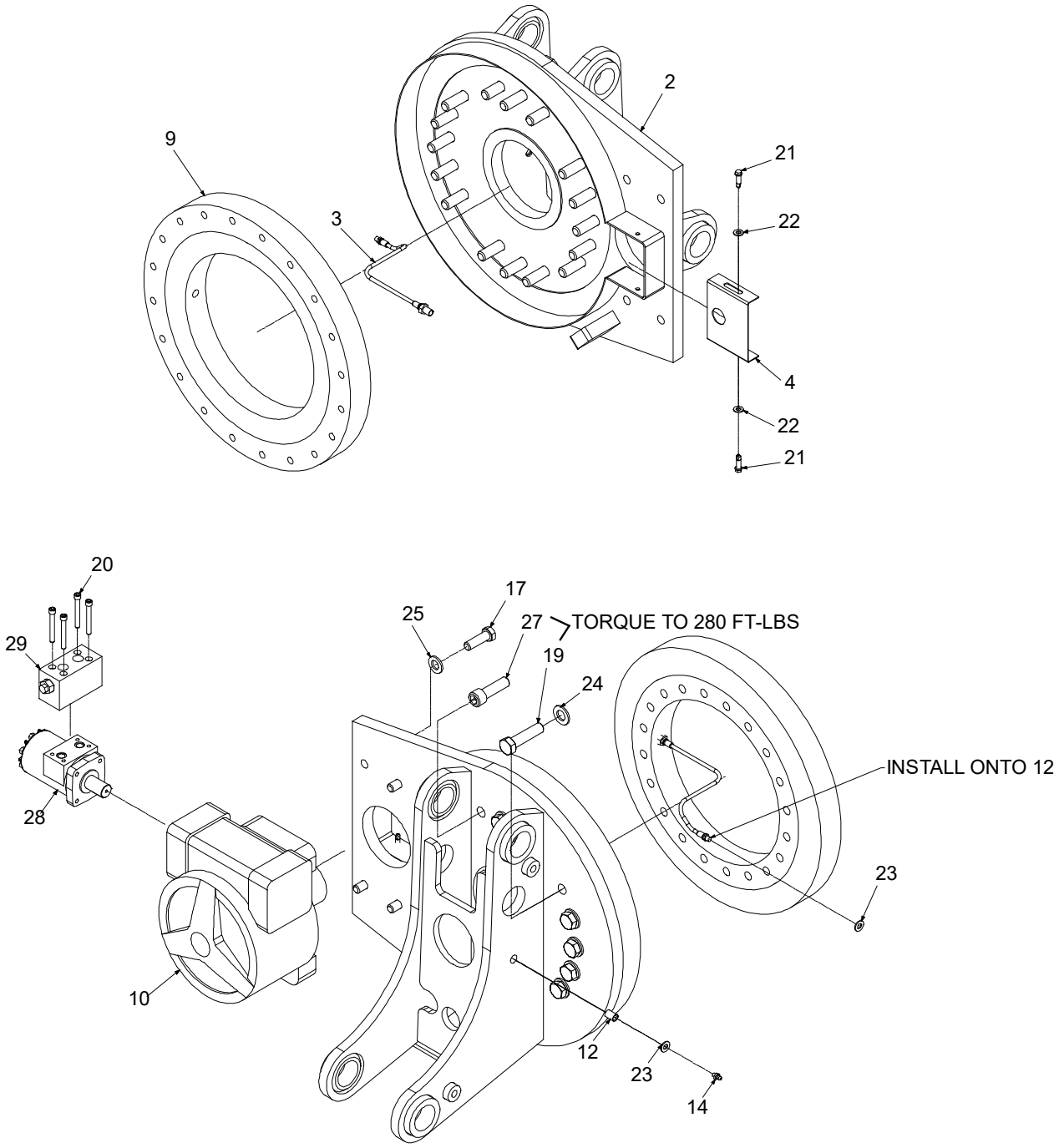
Each of the major weldments on the tirehand bears a stamped part number. Any time a major weldment is replaced, you must specify the complete part number as stamped on the weldment.

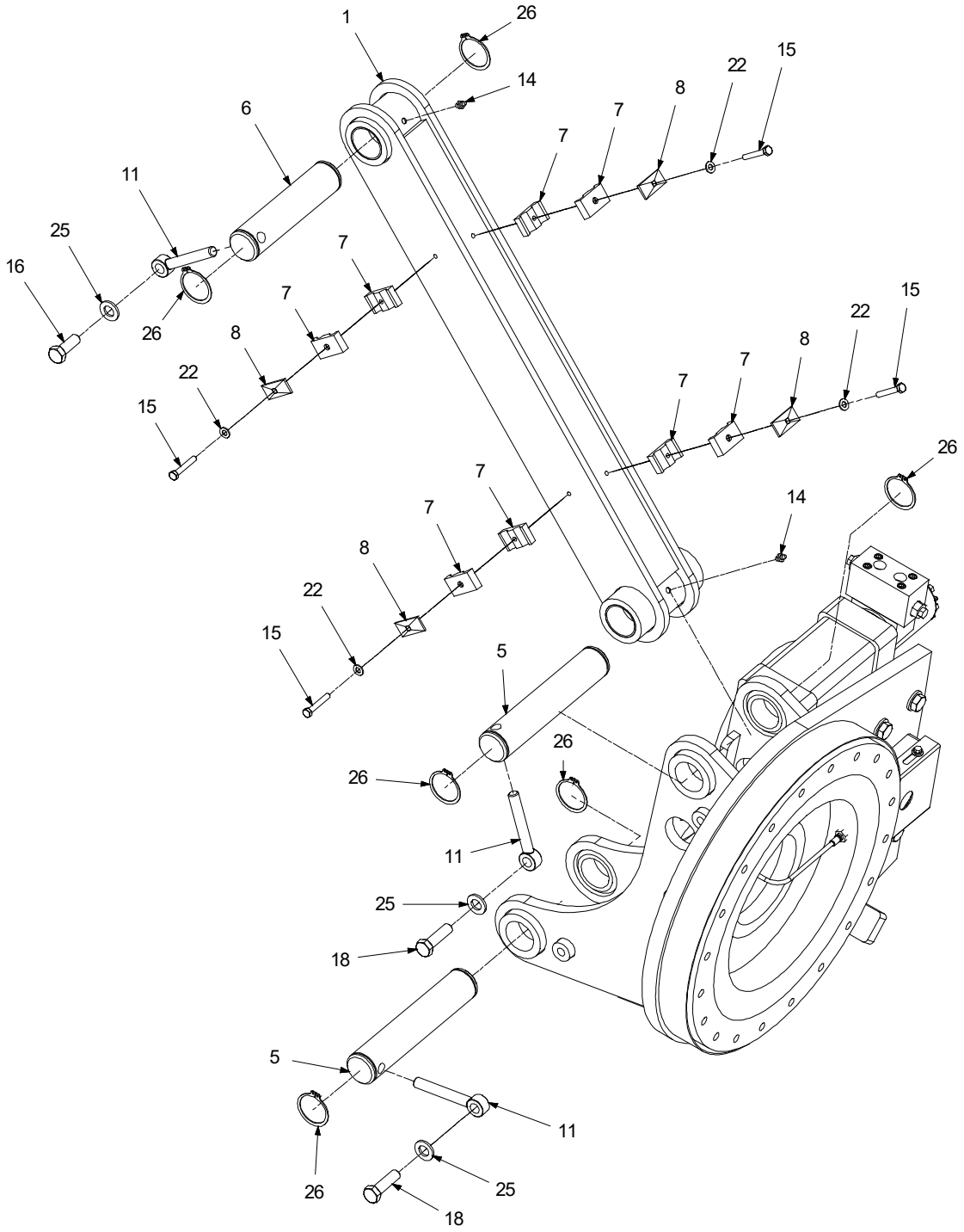
ORDERING REPAIR PARTS

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.

Yoke Assembly (40725987)

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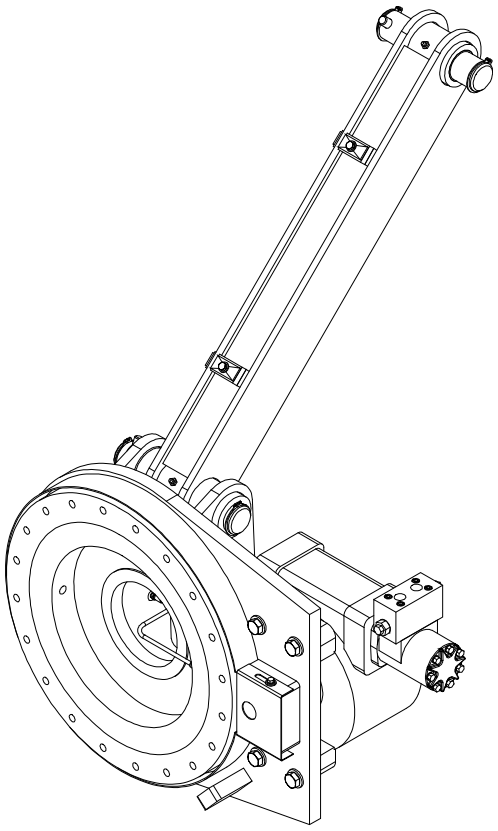
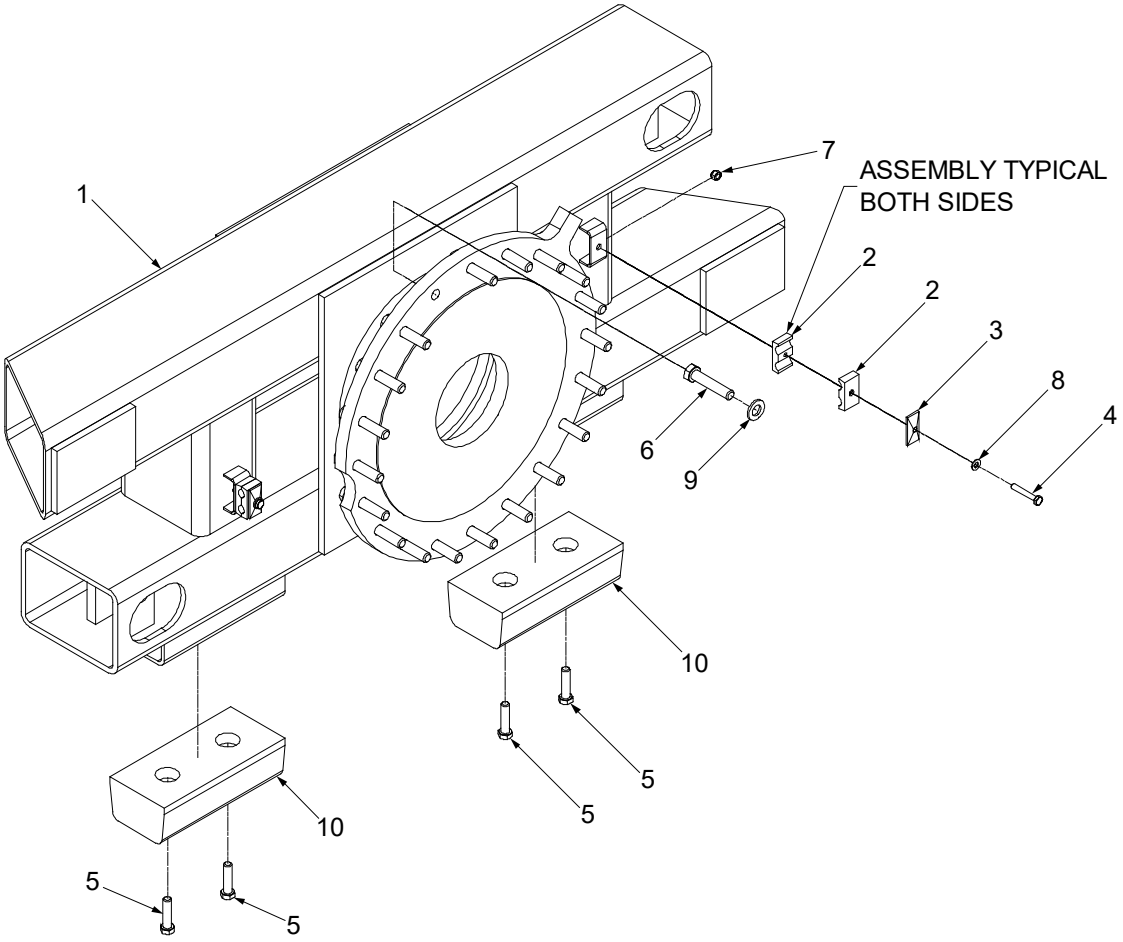
40725987 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT	QTY
1.	52725959	LINK-WLDMT TH10 12916 CRANE		1
2.	52725966	YOKE-WLDMT TH10		1
3.	53000703	GREASE EXT-20.00 OAL 18.00 HOSE		1
4.	60010235	COVER-PINION GEAR		1
5.	60142355	PIN-TYPE PP 2.00X 10.63 (9.16)		2
6.	60142356	PIN-TYPE PP 2.00 X 8.75 (7.28		1
7.	70034402	CLAMP-TIWN TUBE .62 OD		4
8.	70143829	COVER PLATE – PAR 29 CPT 2		4
9.	71056627	GEAR-TURNTABLE BEARING 44905183-2 INDU HARDENED		1
10.	71057000	GEAR REDUCER-GP 008-00202-1		1
11.	71415016	KEEPER-PIN .62		3
12.	72053301	COUPLING-GLV .12 SCH 40	30	1
13.	72053371	REDUCER BUSH-BLK .25-.12		1
14.	72053508	ZERK-NPT .12	30	3
15.	72060029	CAP SCREW .31-18X 2.00 HH GR5 Z	30	4
16.	72060150	CAP SCREW .62-11X 1.75 HH GR5 Z	30	1
17.	72060151	CAP SCREW .62-11X 2.00 HH GR8 Z	30	4
18.	72060152	CAP SCREW .62-11X 2.25 HH GR5 Z	30	2
19.	72060207	CAP SCREW .75-10X 3.00 HH GR8 Z	30	14
20.	72060738	CAP SCREW .31-18 2.50 SH PLAIN	30	4
21.	72060833	SCR-THRD.CUT .31-18X .75 HWH-1	30	2
22.	72063002	WASHER .31 FLAT	30	6
23.	72063003	WASHER .38 FLAT	30	2
24.	72063116	WASHER .75 N FLAT H ASTMF436Z	30	14
25.	72063119	WASHER .62 FLAT ASTM F436	30	7
26.	72066095	RETAINING RING-EXT 2.00 STD	30	6
27.	72601488	CAP SCREW .75-10X 2.50 SH Z	30	2
28.	73051001	MOTOR-HYD C103-1527/D151-2479		1
29.	73054015	VALVE-CUSHION 10-02		1
30.	91725995	KIT-HRDW TH10 YOKE		1
NEW 20140425				

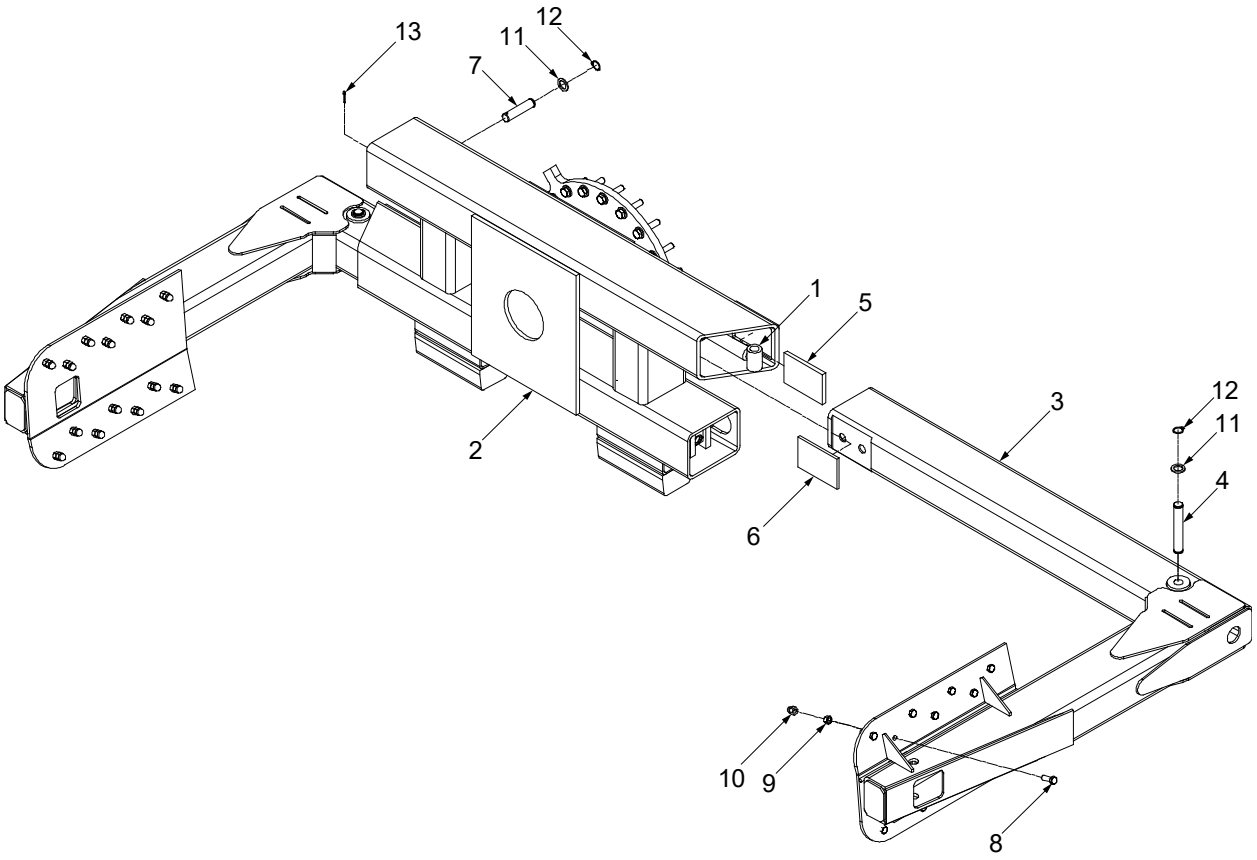


Body Assembly (40725988)



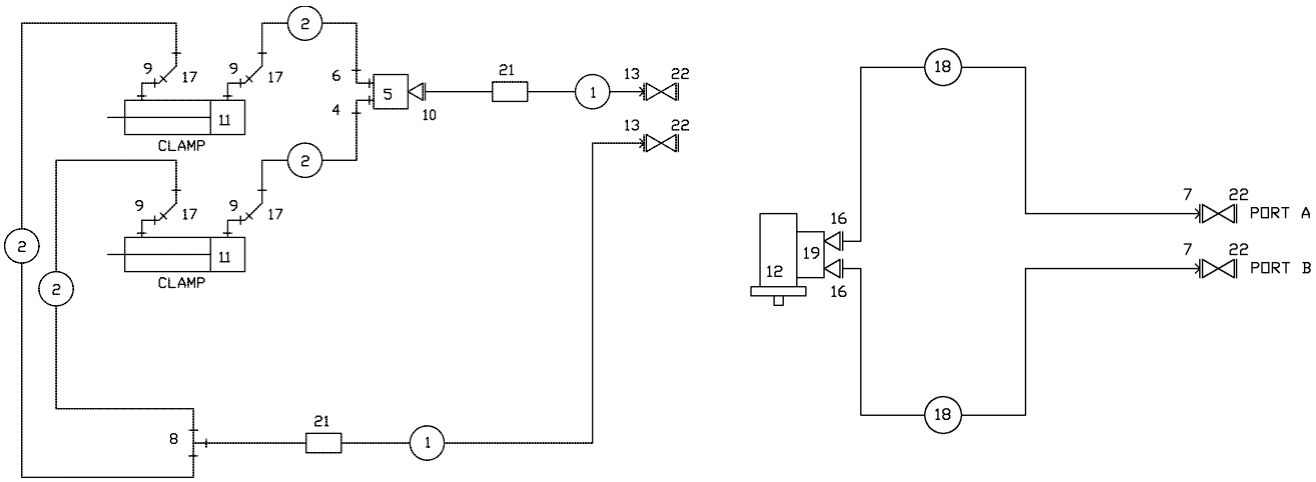
40725988 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT	QTY
1.	52725976	WLDMT-BODY TH10		1
2.	70034402	CLAMP-TIWN TUBE .62 OD		2
3.	70143829	COVER PLT-PAR29 CPT2		2
4.	72060029	CAP SCREW .31-18X 2.00 HH GR5 Z	11	2
5.	72060095	CAP SCREW .50-13X 2.00 HH GR5 Z	11	4
6.	72060177	CAP SCREW .62-11X 3.00 HH GR8 Z	11	20
7.	72062109	NUT .31-18 HEX NYLOCK	11	2
8.	72063002	WASHER .31 FLAT	11	2
9.	72063119	WASHER .62 FLAT ASTM F436	11	20
10.	76393209	BUMPER-COCK SWE12 2A094		2
11.	91725993	KIT-HRDW TH10 BODY		1

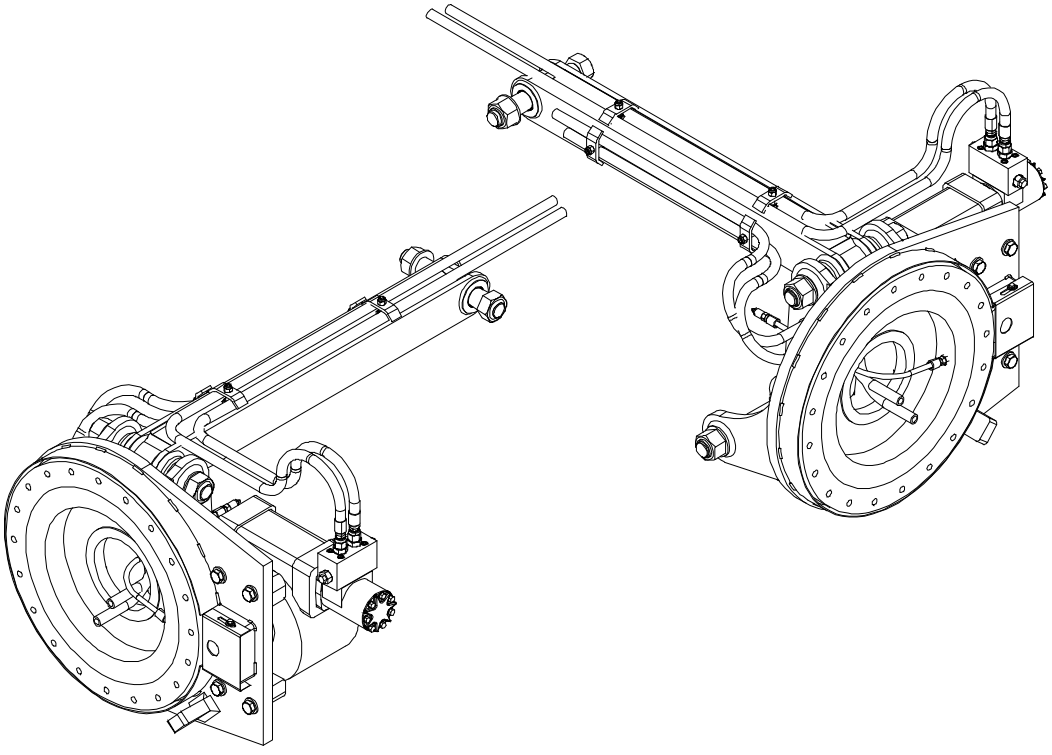
Clamp Assembly (40725989)



40725989 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT	QTY
1.	3B309511	CYLINDER-ARM CLAMP 2.5/1.5 30.00S 51.00CC		2
2.	40725988	BODY ASM-TH10 12916 CRANE		1
3.	52725977	WLDMT-ARM TH10		2
4.	60010469	PIN-TYPE A 1.00 X 6.25 (5.81)		2
5.	60030084	WEAR PAD RC NYL .50X4.00X5.88		2
6.	60030503	WEAR PAD RC 0.31X4.00X6.00		2
7.	60101905	PIN-TYPE B 1.00X4.12 (3.62)		2
8.	72060093	CAP SCREW .50-13X1.50 HH GR5 Z	14	28
9.	72062004	NUT .50-13 HEX	14	28
10.	72062134	NUT .50-13 HEX ACORN HIGH ZINC	14	28
11.	72063034	MACHY BUSHING 1.00X10 GA NR	14	6
12.	72066125	RETAINING RING-EXT 1.00 HD	14	6
13.	72066187	COTTER PIN .16X1.50 PLAIN	14	2
14.	91725994	KIT-HRDW TH10 CLAMP		1

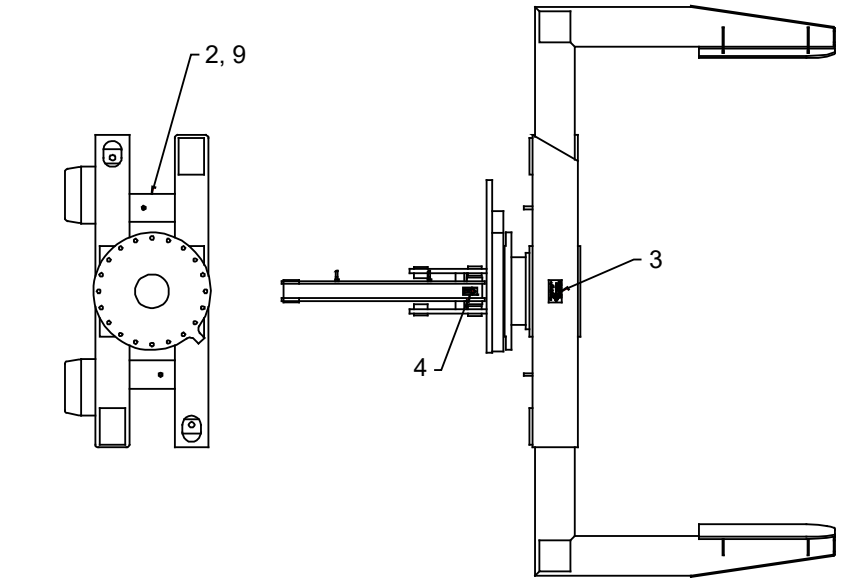
Hydraulic Kit (91704915)





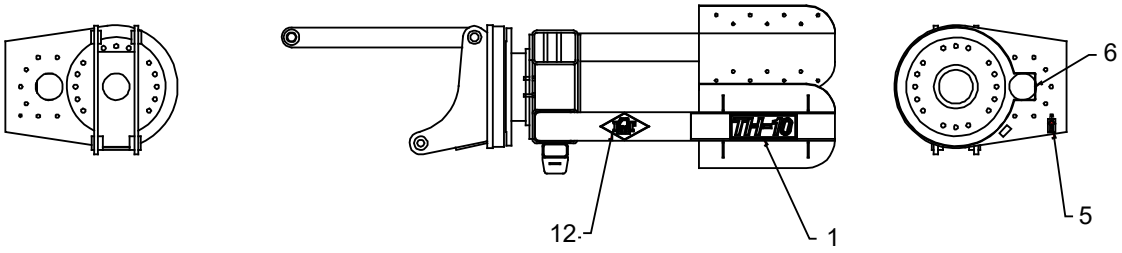
91704915 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT	QTY
1.	51395235	HOSE ASM 3/8X73 #8F#8F	20	2REF
2.	51395236	HOSE ASM 3/8X31 #8F#8F	20	4REF
4.	72532779	ELBOW MSTR/MJIC .56 .75		1
5.	73054614	VALVE-FLOW DIV/COMBINER		1
6.	72053762	ELBOW MSTR/90°/MJIC .56 .75		1
7.	72053670	ADAPTER 3/8MPT 3/4MJIC		2
8.	72531205	TEE 3/4MJIC 1/2 TUBE		1
9.	72053763	ELBOW #IMSTR#8MJIC90° XLG		4
10.	72532358	ADAPTER #IMSTR #8MJIC		1
11.	3B309511	CLAMP CYLINDER		REF
12.	73051001	ROTATION MOTOR		REF
13.	72053497	ADAPTER 1/2MPT 3/4MJIC		2
16.	72532359	ADAPTER 7/8MSTR 3/4MJIC		2
17.	72532670	ELBOW 3/4MJIC 3/4MJIC 45°		4
18.	51395198	HOSE ASM 3/8X69 #8F#8F	20	2REF
19.	73054015	CUSHION VALVE		REF
20.	51714701	HOSE KIT		1
21.	72532980	SWIVEL #8FJIC #8MJIC INLINE		2
22.	72532679	PLUG-JIC HEXHD STL 3/4THD		4

Decal Kit (41703227)



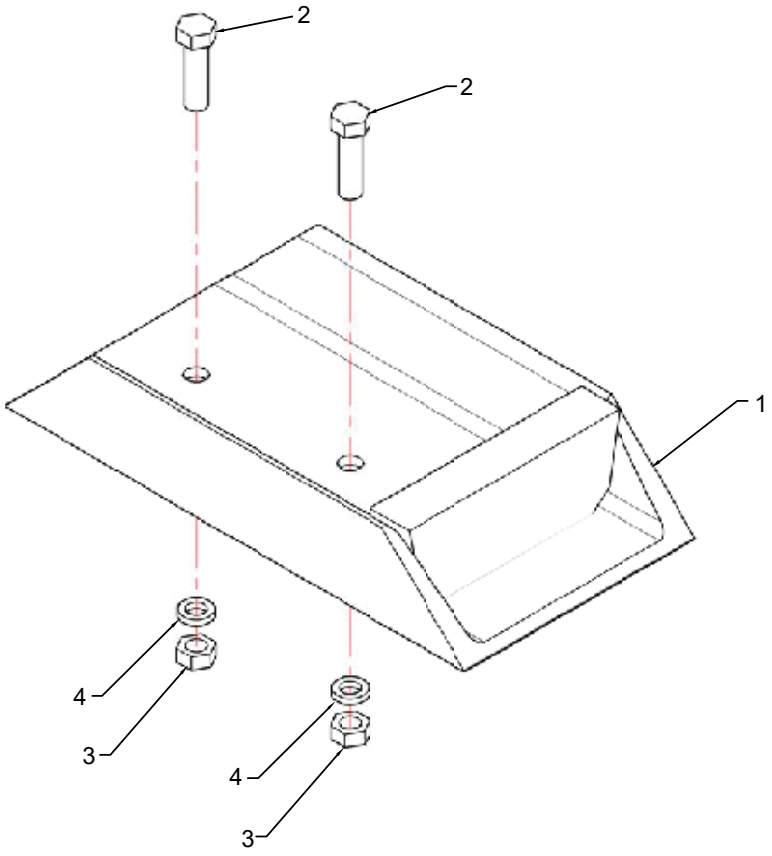
DECAL PLACEMENT

7	AT CRANE CURBSIDE CONTROLS
8	AT CRANE STREETSIDE CONTROLS
10, 11	NEAR EACH CRANE OPERATOR STATION IN CLEAR VIEW OF OPERATOR



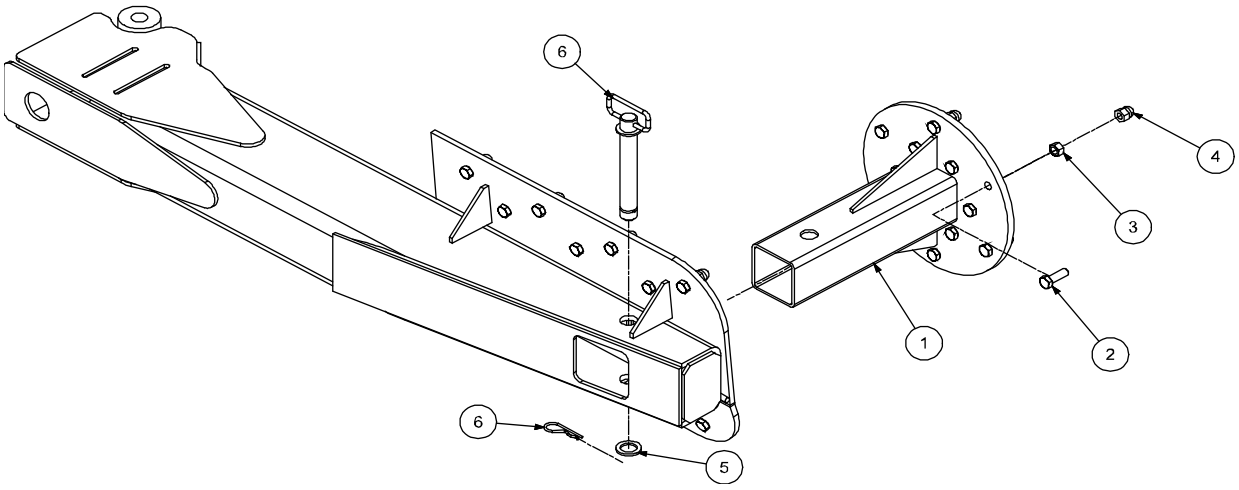
41703227 PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1.	70029082	DECAL-TH10 IDENTIFICATION	2
2.	70029119	SERIAL NUMBER PLACARD	1REF
3.	70039261	PLACARD-PATENT	1
4.	70391612	DECAL-GREASE WEEKLY LH	1
5.	70391613	DECAL-GREASE WEEKLY RH	1
6.	70392524	DECAL-ROTATE/GREASE	1
7.	71392632	DECAL-CONTROL CS	1
8.	71392633	DECAL-CONTROL SS	1
9.	72066340	POP RIVET 1/8	2REF
10.	71393700	CAPACITY PLACARD	2
11.	70394272	DECAL-OP RESTRICTIONS	2
12.	70029251	IMT DIAMOND	2

Saddle Assembly (31704683)



31704683 PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1.	52702524	SADDLE	1
2.	72060064	CAP SCREW 7/16-14X1-1/2 HH GR5	2
3.	72062003	NUT 7/16-14 HEX	2
4.	72063052	WASHER 7/16 LOCK	2

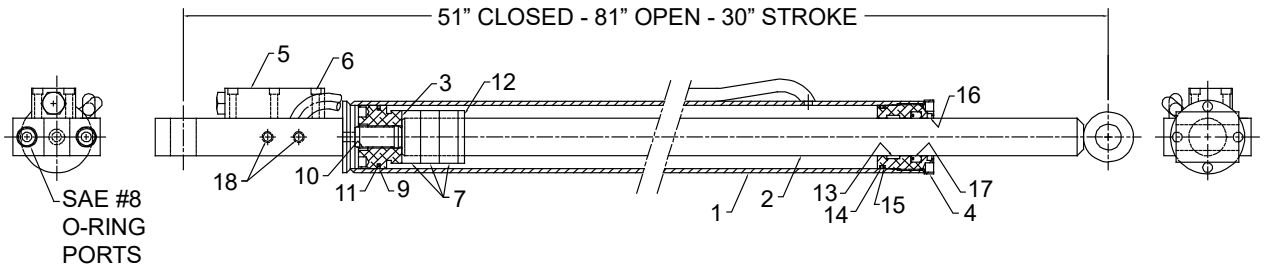
Pad Extension Kit (40726378)



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	52726379	PAD EXTENSION-TH10	2
2.	72060093	CAP SCR .50-13X 1.50 HH GR5 Z	24
3.	72062004	NUT .50-13 HEX	24
4.	72062134	NUT .50-13 HEX ACORN HIGH ZINC	24
5.	72063034	MACHY BUSHING 1.00X10 GA NR	2
6.	73733171	PIN-LOCK 1 X 6 W-HAIRPIN	2
REV. A			

SINGLE PAD EXTENSION SHOWN.

Clamp Cylinder (3B309511)



NOTES:

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

2 APPLY “NEVER-SEEZ” REGULAR GRADE ANTI-SEIZE AND LUBRICATING COMPOUND TO THREADS ON THE 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.

3B309511 PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1.	4B309511	CASE ASM-2.50 BORE X 42.81 LG (INCL 18)	1
2.	4B309510	ROD ASM-1.50 X 44.13 .88S 1.00	1
3.	6I025087	PISTON-2.50 BORE X .88 STGR	1
4.	6H025015	HEAD-2.50 BORE X 1.50 ROD	1
5.	73054004	VALVE-CHECK SUN 7807-12C-A09	1
6.	72060708	CAP SCREW .25-20 X 1.25 SH	6
7.	6C075015	STOP TUBE-1.50 ROD X 0.75 LONG	3
8.	9B101214	SEAL KIT-IMT 2.50B 1.50R .88S	0
9.	7T66P025	PISTON SEAL-DYNAMIC 2.50”	1
10.	7T61N087	LOCK RING-NYLON .88”	1
11.	7Q072137	O-RING-2.06 X 2.25 X .09	1
12.	6A025015	WAFER LOCK-IMT 1.50	1
13.	7T2N8015	WEAR RING-ROD 1.50 ID X .50W	1
14.	7Q072228	O-RING-2.25 X 2.50 X .12	1
15.	7Q10P228	BACKUP RING-2.25 ID X 2.50 OD	1
16.	7R14P015	ROD WIPER-TYPE D 1.50 ROD	1
17.	7R546015	U-CUP LOADED 1.50 X 2.00 X .38 “B”	1
18.	7PNPXT02	PLUG PIPE SOC HD TAPED .12 (PART OF 1)	4REF

TH10 Recommended Spare Parts List

This parts list 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, but it does not indicate these items will fail within a year. In addition, 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.

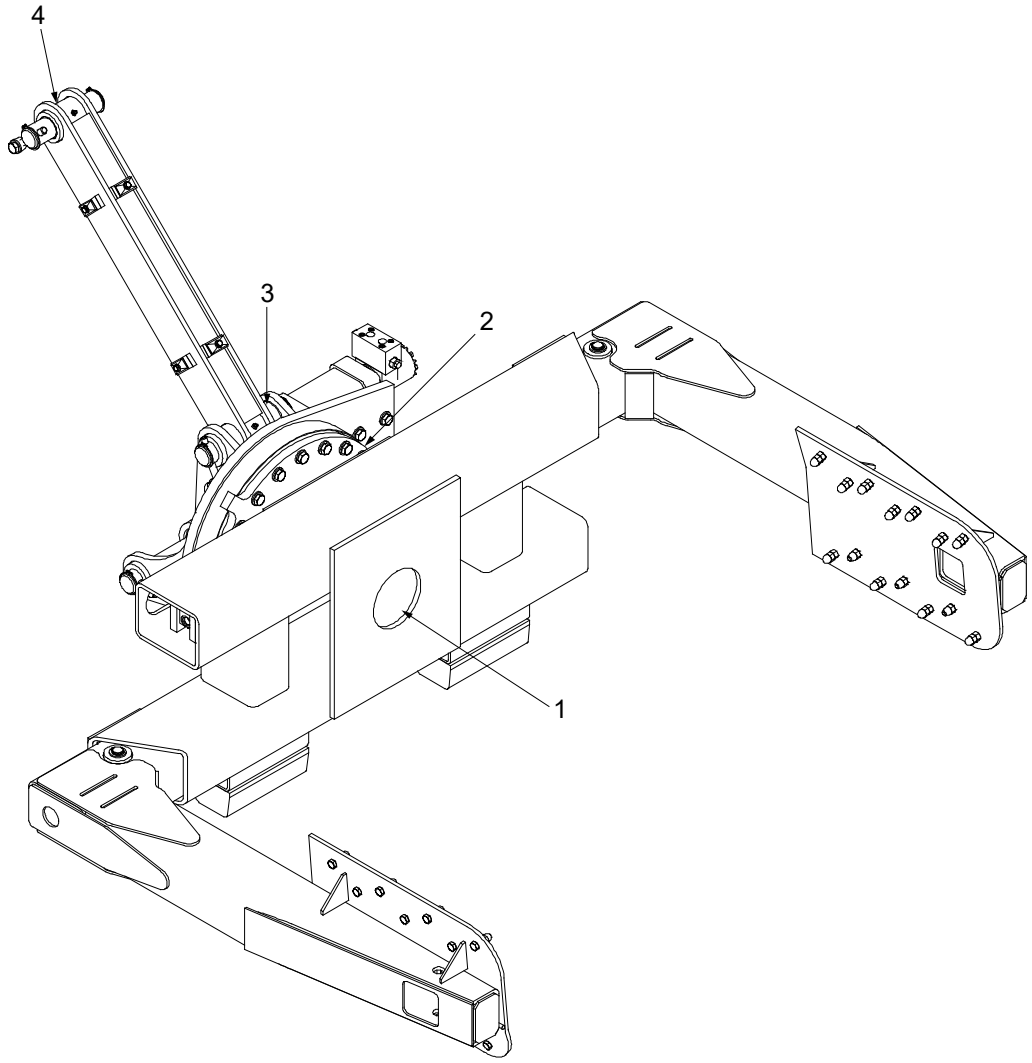
ASSEMBLY DESCRIPTION		
PART #	**SPARE PART DESCRIPTION**	**MANUAL PAGE REFERENCE**
BODY ASSEMBLY (40725988)		
76393209	BUMPER	20
CLAMP ASSEMBLY (40725989)		
72062134	ACORN NUT	21
CLAMP CYLINDER (3B309511)		
73054004	CHECK VALVE	27
9B101214	SEAL KIT	27

CHAPTER 5

Reference

In This Chapter

Grease Zerk Locations & Lubricant Requirements

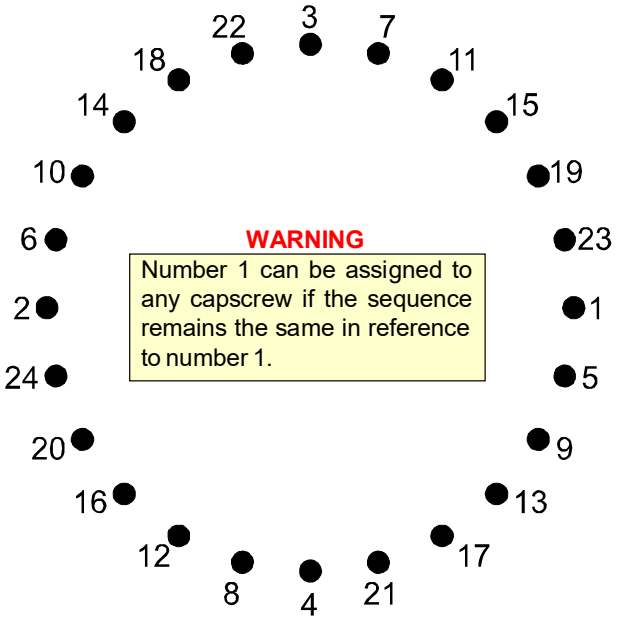


ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	TURNTABLE BEARING GREASE EXTENSION *ROTATE TIREHAND WHILE GREASING	SHELL ALVANIA 2EP	WEEKLY
2.	DRIVE GEAR	OR	
3.	LINK/TIREHAND HINGE LINK/CRANE		
4.	OUTER BOOM HINGE	SHELL RETINAX "A"	

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

Turntable Bearing Thread Tightening Sequence

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



TIGHTENING PROCEDURE

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

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

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

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

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

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

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

(EXAMPLE-METRIC: .75 x 36 KG-M = 27 KG-M)

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

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

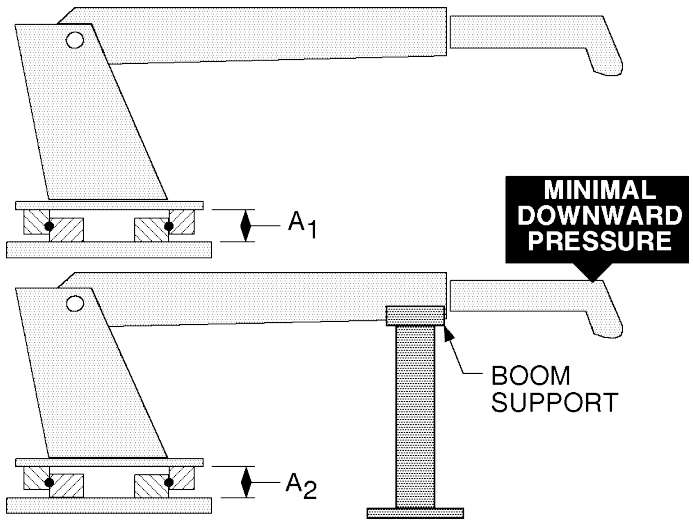
Periodic readings indicating a steady increase in TILT may be an indicator of bearing wear. Note that a bearing found to have no raceway cracks or other structural irregularities should be reassembled and returned to service.

TEST PROCEDURE

STEP 1.
With the crane horizontal and fully extended, measure between the top and bottom mounting surfaces of the turntable bearing (A1), using a dial indicator for accuracy.

STEP 2.
Reverse the load by applying minimal downward pressure on the boom while the boom is in the boom support or on a solid surface. Again measure A2.

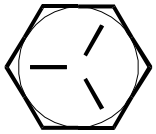
STEP 3.
Subtract A1 from A2 to determine tilt and compare the result with the accompanying chart.

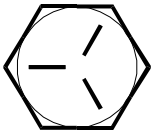
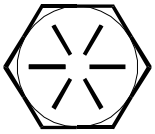


COMPARISON CHART - MODEL TO MEASURED TILT DIMENSION

NOTE					
THE FIGURES LISTED IN THIS CHART ARE SERVICE GUIDELINES AND DO NOT, IN THEMSELVES, REQUIRE THAT THE BEARING BE INSPECTED. IF THERE IS REASON TO SUSPECT AN EXCESS OF BEARING WEAR AND THE MEASURED TILT DIMENSION EXCEEDS THE DIMENSION LISTED, REMOVE THE BEARING FOR INSPECTION.	**IMT CRANE, LOADER OR TIREHAND MODEL**	1007 1014 2015 2015GH 2109 2200 3000 3016 321GH 3816 425 4300 5016 6016 TH7 BODY ROT'N TH1449 BODY ROT'N TH15B CLAMP TH2551B CLAMP TH2557A CLAMP	5200 5200R 5217 5800 7020 7025 7200 7415 9000 TH10 BODY ROT'N TH14 BODY ROT'N	16035 16042 32018 32030 T30 T40	9800 12916 13031 13034 14000 15000 18000 20017 H1200 H1200RR T50 TH2551B BODY ROT'N TH2557B BODY ROT'N TH2557A BODY ROT'N
	BALL DIA. (REF)	.875" (22mm)	1.00" (25mm)	1.18"-1.25" (30-32mm)	1.75" (44mm)
	TILT DIM. (A_1-A_2)	**.060" (1.524mm)**	**.070" (1.778mm)**	**.075" (1.905mm)**	**.090" (2.286mm)**

Thread Torque Chart (English)

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

COARSE THREAD BOLTS (ENGLISH)					
SIZE	BOLT DIA.	GRADE 5  SAE J429 GRADE 5		GRADE 8  SAE J429 GRADE 8	
(DIA-TPI)	(INCHES)	PLAIN	PLATED	PLAIN	PLATED
		(FT-LB)	(FT-LB)	(FT-LB)	(FT-LB)
5/16-18	0.3125	17	13	25	18
3/8-16	0.375	31	23	44	33
7/16-14	0.4375	49	37	70	52
1/2-13	0.5	75	57	105	80
9/16-12	0.5625	110	82	155	115
5/8-11	0.625	150	115	220	160
3/4-10	0.75	265	200	375	280
7/8-9	0.875	395	295	605	455
1-8	1	590	445	910	680
1 1/8-7	1.125	795	595	1290	965
1 1/4-7	1.25	1120	840	1815	1360
1 3/8-6	1.375	1470	1100	2380	1780
1 1/2-6	1.5	1950	1460	3160	2370

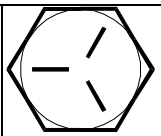
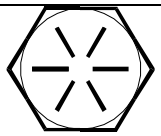
NOTES

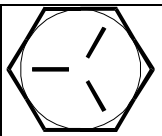
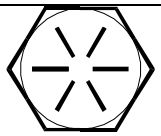
1. Tightening torques provided are midrange.
2. Consult bolt manufacturer's particular specifications, when provided.
3. Use flat washers of equal strength.
4. All torque measurements are given in foot-pounds.
5. Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphide, 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.

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 midrange.

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 disulphite, collodial copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

⚠ 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.