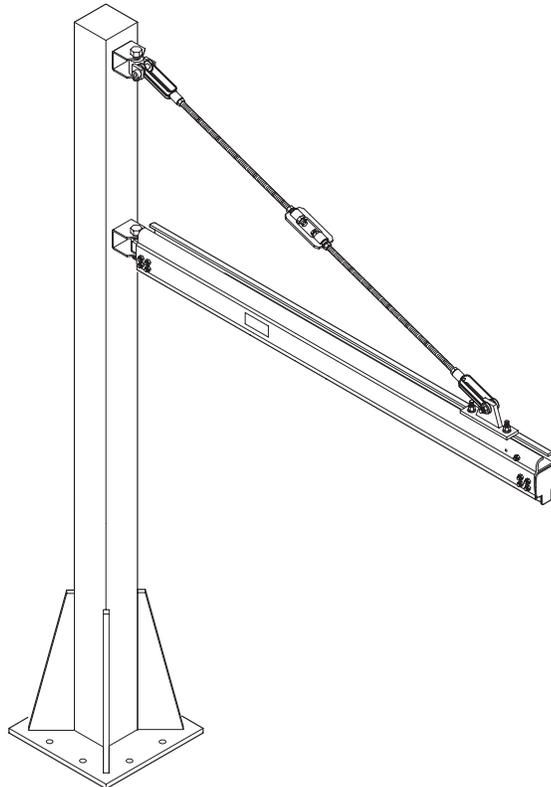
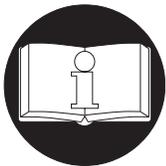


PARTS, OPERATION AND MAINTENANCE MANUAL
for
JIB CRANE
MODELS
700J **800J** **900J**



(Dwg. MHP2035)



READ THIS MANUAL BEFORE USING THESE PRODUCTS. This manual contains important safety, installation, and maintenance information. Make this manual available to all persons responsible for the installation, operation and maintenance of these products.

⚠ WARNING

This equipment is intended for industrial use only and should not be used for lifting, supporting, or transporting people or lifting or supporting loads over people.

Always operate, inspect and maintain this unit in accordance with applicable safety codes and regulations.

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Discontinued Jib Crane Models V2JF0550 and V2JF1100 are not covered in this manual. Contact factory for information on either of these models.

SAFETY INFORMATION

This manual provides important information for all personnel involved with the safe installation, operation, and proper maintenance of this product. Even if you feel you are familiar with this or similar equipment, you should read this manual before operating the product.

Danger, Warning, Caution, and Notice

Throughout this manual there are steps and procedures which, if not followed, may result in a hazard. The following signal words are used to identify the level of potential hazard.

DANGER

Danger is used to indicate the presence of a hazard which *will* cause *severe* injury, death, or substantial property damage if the warning is ignored.

WARNING

Warning is used to indicate the presence of a hazard which *can* cause *severe* injury, death, or substantial property damage if the warning is ignored.

CAUTION

Caution is used to indicate the presence of a hazard which *will* or *can* cause injury or property damage if the warning is ignored.

NOTICE

Notice is used to notify people of installation, operation, or maintenance information which is important but not hazard-related.

Safety Summary

Personal protective and safety equipment required by the operator's surrounding environment must be used and maintained in accordance with manufacturer's instructions.

WARNING

- **Do not use this unit or attached equipment for lifting, supporting, or transporting people or lifting or supporting loads over people.**
- **The supporting structures and load-attaching devices used in conjunction with these units must provide a safety factor of at least three times the rated capacity of the unit. This is the customer's responsibility. If in doubt, consult a registered structural engineer.**

NOTICE

- **Lifting equipment is subject to different regulations in each country. These regulations may not be specified in this manual.**

The National Safety Council, Accident Prevention Manual for Industrial Operations, Eighth Edition and other recognized safety sources make a common point: Employees who work near suspended loads or assist in hooking on or arranging a load should be instructed to keep out from under the load. From a safety standpoint, one factor is paramount: conduct all operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under a raised load and keep out of the line of force of any load.

The Occupational Safety and Health Act of 1970 generally places the burden of compliance with the owner/employer, not the manufacturer. Many OSHA requirements are not concerned or connected with the manufactured product but are, rather, connected with the final installation. It is the owner's and user's responsibility to determine the suitability of a product for any particular use. It is recommended that all applicable industry, trade association, federal, state and local regulations be checked. Read all operating instructions and warnings before operation.

This manual has been produced by **Ingersoll-Rand** to provide dealers, mechanics, operators and company personnel with the information required to install, operate, maintain and repair the products described herein.

It is extremely important that mechanics and operators be familiar with the servicing procedures of these products, or like or similar products, and are physically capable of conducting the procedures. These personnel shall have a general working knowledge that includes:

1. Proper and safe use and application of mechanics common hand tools as well as special **Ingersoll-Rand** or recommended tools.
2. Safety procedures, precautions and work habits established by accepted industry standards.

Ingersoll-Rand cannot know of, or provide all the procedures by which product operations or repairs may be conducted and the hazards and/or results of each method. If operation or maintenance procedures not specifically recommended by the manufacturer are conducted, it must be ensured that product safety is not endangered by the actions taken. If unsure of an operation or maintenance procedure or step, personnel should place the product in a safe condition and contact supervisors and/or the factory for technical assistance.

SAFE OPERATION INSTRUCTIONS

The following warnings and operating instructions are intended to avoid unsafe operating practices which might lead to injury or property damage.

Ingersoll-Rand recognizes that most companies who use material handling equipment have a safety program in force at their facility. If you are aware that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

Safe Operating Instructions are provided to make an operator aware of dangerous practices to avoid and are not necessarily limited to the following list. Refer to specific sections in the manual for additional safety information.

1. Only allow personnel trained in, safety and operation on this product to operate and maintain the jib crane.
2. Only operate a jib crane if you are physically fit to do so.
3. When a **“DO NOT OPERATE”** sign is placed on the jib crane, do not operate unit until sign has been removed by designated personnel.
4. Before each shift, check unit for wear and damage. Never use a unit that inspection indicates is worn or damaged.
5. Never lift a load greater than rated capacity of unit. Refer to capacity labels attached to the unit.
6. Only operate the unit when the lifting device is centered over the load. Do not “side pull” or “yard”.
7. Pay attention to the load at all times when operating the unit.
8. Make sure everyone is clear of the load path. Do not lift a load over people.
9. Never use the unit for lifting or lowering people, and never allow anyone to stand on a suspended load.
10. Never weld or cut a load suspended by the unit.
11. Do not operate the unit if noise, jamming, or binding occurs.
12. Shut off air or electrical supply before performing any maintenance.
13. Avoid collision or bumping of the units.
14. Use good posture when operating the system.
15. Check air connections for leakage.

WARNING LABEL

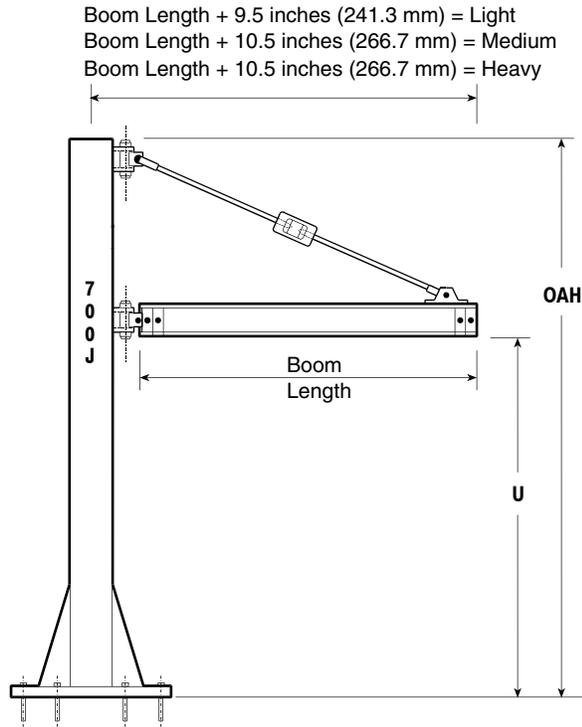
Each Jib Crane is supplied from the factory with the warning label shown. If the warning label is not attached to your Jib Crane, order a new label and install it. Refer to parts list for part number. Read and obey all warnings and other safety information attached to the Jib Crane. Warning label may not be shown actual size. The warning label must be clearly visible at all times.



Part Number 04306445

SPECIFICATIONS

Jib cranes consist of a swinging boom which is attached to a column or wall mount system that offers a large coverage area. Jib cranes can be used to support a variety of lifting devices.



(Dwg. MHP2022)

Refer to Dwg. MHP2029 on page 9 for baseplate configuration.

ZRA2 Boom Type 220° Rotation (heavy)

Part No.	Boom		Capacity		OAH = U +		Weight	
	ft	m	lbs	kg	in	mm	lbs	kg
7200JA2F04144	4	1.22	2000	909	39	991	910	413.6
7200JA2F06144	6	1.83					925	420.5
7200JA2F08144	8	2.44					940	427.3
7160JA2F10144	10	3.05	1600	727.3			955	434.1
7135JA2F12144	12	3.66	1350	613.6			970	441
7115JA2F14144	14	4.27	1150	522.7			985	447.7
7100JA2F16144	16	4.88	1000	454.5	51	1295	1000	454.5
7080JA2F18144	18	5.49	800	363.6			1065	484.1
7065JA2F20144	20	6.1	650	294.8			1080	491

Dimensional Notes:

ZRA1 (light)

- U Standard columns 6 x 6 in. (152 x 152 mm) designed for 144 in. (12 ft/3.7 m) under clearance or less.
- P Base plate 3/4 x 18 x 18 in. (19 x 457 x 457 mm), 8-holes 7/8 in. (22 mm) diameter on a 16 in. (406.4 mm) bolt circle. 3/4 in. (19 mm) stud anchors or bolts are to be supplied by the customer.

ZRA2, ZRS2 (medium)

- U Standard columns 8 x 8 in. (203 x 203 mm) designed for 144 in. (12 ft/3.7 m) under clearance or less.
- P Base plate 3/4 x 24 x 24 in. (19 x 610 x 610 mm), 8-holes 7/8 in. (22 mm) diameter on a 20 in. (508 mm) bolt circle. 3/4 in. (19 mm) stud anchors or bolts are to be supplied by the customer.

ZRA2, ZRS3 (heavy)

- U Standard columns 8 x 8 in. (203 x 203 mm) designed for 144 in. (12 ft/3.7 m) under clearance or less.
- P Base plate 3/4 x 24 x 24 in. (19 x 610 x 610 mm), 8-holes 7/8 in. (22 mm) diameter on a 20 in. (508 mm) bolt circle. 3/4 in. (19 mm) stud anchors or bolts are to be supplied by the customer.

ZRA1 Boom Type 220° Rotation (light)

Part No.	Boom		Capacity		OAH = U +		Weight	
	ft	m	lbs	kg	in	mm	lbs	kg
7090JA1F04144	4	1.22	900	409	38	965	375	170.5
7061JA1F06144	6	1.83	610	277			384	174.1
7046JA1F08144	8	2.44	460	208.7			391	177.7
7037JA1F10144	10	3.05	370	167.8			399	181.4
7030JA1F12144	12	3.66	300	136.4			407	185
7026JA1F14144	14	4.27	260	118			414	188.2
7023JA1F16144	16	4.88	230	104.3			423	192.3
7020JA1F18144	18	5.49	200	90.9			431	195.9
7016JA1F20144	20	6.1	160	72.6			439	199.5

ZRS2 Boom Type 220° Rotation (medium)

Part No.	Boom		Capacity		OAH = U +		Weight	
	ft	m	lbs	kg	in	mm	lbs	kg
7200JS2F04144	4	1.22	2000	909	39	961	660	300
7140JS2F06144	6	1.83	1400	636.4			675	306.8
7105JS2F08144	8	2.44	1050	477.3			690	313.6
7085JS2F10144	10	3.05	850	385.6			705	320.5
7070JS2F12144	12	3.66	700	318.2			720	327.3
7060JS2F14144	14	4.27	600	272.7			735	334.1
7053JS2F16144	16	4.88	530	240.4			782	355.5
7048JS2F18144	18	5.49	480	217.7			797	362.3
7042JS2F20144	20	6.1	420	190.5			812	369.1

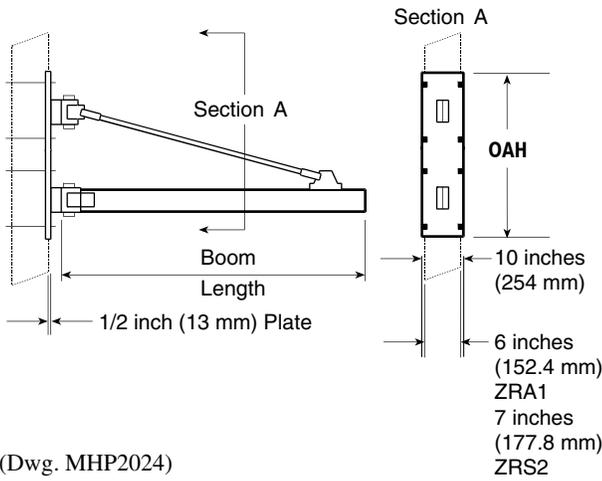
ZRA2 Boom Type 220° Rotation (medium)

Part No.	Boom		Capacity		OAH = U +		Weight	
	ft	m	lbs	kg	in	mm	lbs	kg
7200JA2F04144	4	1.22	2000	909	39	991	660	300
7140JA2F06144	6	1.83	1400	636.4			675	307
7105JA2F08144	8	2.44	1050	477.3			690	313.6
7080JA2F10144	10	3.05	800	363.6			705	320.5
7070JA2F12144	12	3.66	700	318.2			720	327.3
7060JA2F14144	14	4.27	600	272.7			735	334.1
7050JA2F16144	16	4.88	500	227.3			782	355.5
7045JA2F18144	18	5.49	450	204.5			797	362.3
7040JA2F20144	20	6.1	400	181.8			812	369.1

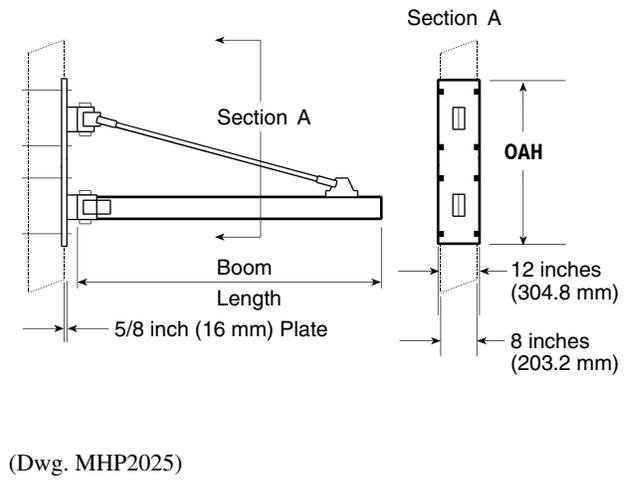
ZRS3 Boom Type 220° Rotation (heavy)

Part No.	Boom		Capacity		OAH = U +		Weight			
	ft	m	lbs	kg	in	mm	lbs	kg		
7200JS3F04144	4	1.22	2000	909	40	1016	910	413.6		
7200JS3F06144	6	1.83					927	421.4		
7200JS3F08144	8	2.44					944	429.1		
7160JS3F10144	10	3.05					1600	727.3	961	436.8
7135JS3F12144	12	3.66					1350	613.6	978	444.5
7115JS3F14144	14	4.27					1150	522.7	995	452.3
7100JS3F16144	16	4.88	1000	454.5	52	1321	1062	482.7		
7080JS3F18144	18	5.49	800	363.6			1079	490.5		
7060JS3F20144	20	6.1	600	272.7			1096	498.2		

ZRA1 and ZRS2



ZRA2 and ZRS3



Refer to “INSTALLATION” section on page 9, and ‘Wall Mount’ on page 10 for additional mounting information.

ZRA1 Boom Type Wall Mount (light)

Part No.	Boom		Capacity		OAH		Weight	
	ft	m	lbs	kg	in	mm	lbs	kg
7100JA1W04	4	1.22	1000	454.5	44	1118	120	54.5
7100JA1W06	6	1.83					131	59.5
7100JA1W08	8	2.44					142	64.5
7080JA1W10	10	3.05	800	363.6			153	69.5
7050JA1W12	12	3.66	500	227.3			164	74.5
7036JA1W14	14	4.27	360	163.3			175	79.5
7026JA1W16	16	4.88	260	117.9			186	84.5
7020JA1W18	18	5.49	200	90.9			197	89.5
7016JA1W20	20	6.1	160	72.6			208	94.5

ZRA2 Boom Type Wall Mount (heavy)

Part No.	Boom		Capacity		OAH		Weight			
	ft	m	lbs	kg	in	mm	lbs	kg		
7200JA2W04	4	1.22	2000	909	44	1118	145	65.9		
7200JA2W06	6	1.83					154	70		
7200JA2W08	8	2.44					181	82.3		
7190JA2W10	10	3.05	1900	863.6			199	90.5		
7160JA2W12	12	3.66	1600	727.3			217	98.6		
7135JA2W14	14	4.27	1350	613.6			235	106.8		
7100JA2W16	16	4.88	1000	454.5			266	120.9		
7080JA2W18	18	5.49	800	363.6			56	1423	310	140.9
7060JA2W20	20	6.1	600	272.7					354	160.9

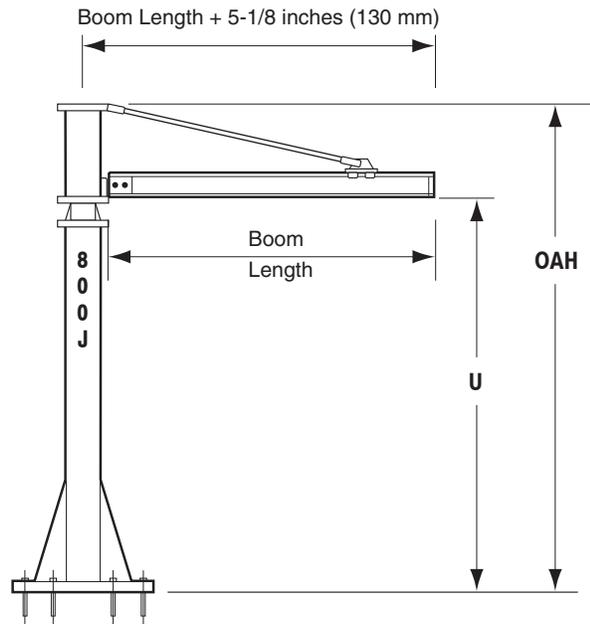
ZRS2 Boom Type Wall Mount (medium)

Part No.	Boom		Capacity		OAH		Weight			
	ft	m	lbs	kg	in	mm	lbs	kg		
7200JS2W04	4	1.22	2000	909	44	1118	145	65.9		
7200JS2W06	6	1.83					163	74.1		
7200JS2W08	8	2.44					181	82.3		
7190JS2W10	10	3.05	1900	868.6			199	90.5		
7160JS2W12	12	3.66	1600	727.3			217	98.6		
7100JS2W14	14	4.27	1000	454.5			235	106.8		
7080JS2W16	16	4.88	800	363.6			266	120.9		
7060JS2W18	18	5.49	600	272.7			56	1423	310	140.9
7045JS2W20	20	6.1	450	204.5					354	160.9

ZRS3 Boom Type Wall Mount (heavy)

Part No.	Boom		Capacity		OAH		Weight			
	ft	m	lbs	kg	in	mm	lbs	kg		
7200JS3W04	4	1.22	2000	909	44	1118	146	66.4		
7200JS3W06	6	1.83					166	75.5		
7200JS3W08	8	2.44					186	84.5		
7195JS3W10	10	3.05	1950	884.5			206	93.6		
7160JS3W12	12	3.66	1600	727.3			226	102.7		
7135JS3W14	14	4.27	1350	613.6			246	111.8		
7100JS3W16	16	4.88	1000	454.5			56	1423	278	126.4
7080JS3W18	18	5.49	800	363.6					322	146.6
7060JS3W20	20	6.1	600	272.7					366	166.4

Contact Factory for Model 900J Jib Crane Specifications.



(Dwg. MHP2023)

Refer to Dwg. MHP2029 on page 9 for baseplate configuration.

ZRS2 Boom Type 360° Rotation

Part No.	Boom		Capacity		OAH = U +		Weight	
	ft	m	lbs	kg	in	mm	lbs	kg
8082JS2F04144	4	1.22	820	371.9	38	965	419	190.5
8055JS2F06144	6	1.83	550	250			435	197.7
8041JS2F08144	8	2.44	410	186			451	205
8033JS2F10144	10	3.05	330	149.7			467	212.3
8027JS2F12144	12	3.66	270	122.5			483	219.5
8023JS2F14144	14	4.27	230	104.3			499	226.8
8020JS2F16144	16	4.88	200	90.9			515	234.1
8018JS2F18144	18	5.49	180	81.6			531	241.4
8016JS2F20144	20	6.1	160	72.6			547	248.6

ZRA1 Boom Type 360° Rotation

Part No.	Boom		Capacity		OAH = U +		Weight	
	ft	m	lbs	kg	in	mm	lbs	kg
8082JA1F04144	4	1.22	820	371.9	38	965	415	188.6
8055JA1F06144	6	1.83	550	250			423	192.3
8041JA1F08144	8	2.44	410	186			431	195.9
8033JA1F10144	10	3.05	330	149.7			439	199.5
8027JA1F12144	12	3.66	270	122.5			447	203.2
8023JA1F14144	14	4.27	230	104.3			455	206.8
8020JA1F16144	16	4.88	200	90.9			463	210.5
8018JA1F18144	18	5.49	180	81.6			471	214.1
8016JA1F20144	20	6.1	160	72.6			479	217.7

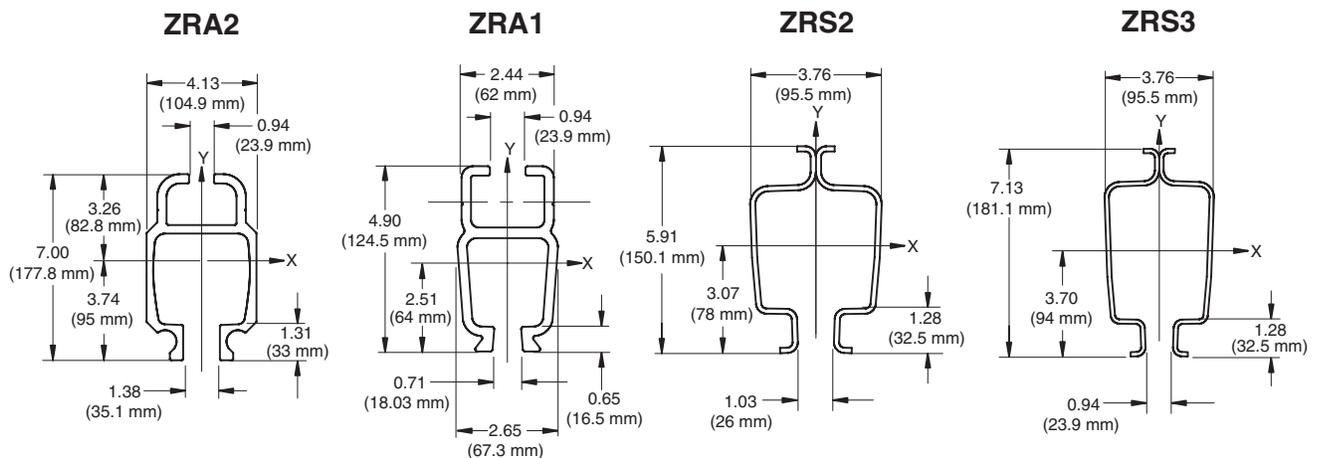
ZRA2 Boom Type 360° Rotation

Part No.	Boom		Capacity		OAH = U +		Weight	
	ft	m	lbs	kg	in	mm	lbs	kg
8082JA2F04144	4	1.22	820	371.9	38	965	419	190.5
8055JA2F06144	6	1.83	550	250			435	197.7
8041JA2F08144	8	2.44	410	186			451	205
8033JA2F10144	10	3.05	330	149.7			467	212.3
8027JA2F12144	12	3.66	270	122.5			483	219.5
8023JA2F14144	14	4.27	230	104.3			499	226.8
8020JA2F16144	16	4.88	200	90.9			515	234.1
8018JA2F18144	18	5.49	180	81.6			531	241.4
8016JA2F20144	20	6.1	160	72.6			547	248.6

Dimensional Notes:

ZRA1, ZRA2 and ZRS2 (medium)

- U Standard columns 6 x 6 in. (152 x 152 mm) designed for 144 in. (12 ft/3.7 m) under clearance or less.
- P Base plate 3/4 x 18 x 18 in. (19 x 457 x 457 mm), 8-holes 7/8 in. (22 mm) diameter on a 16 in. (406.4 mm) bolt circle. 3/4 in. (19 mm) stud anchors or bolts are to be supplied by the customer.

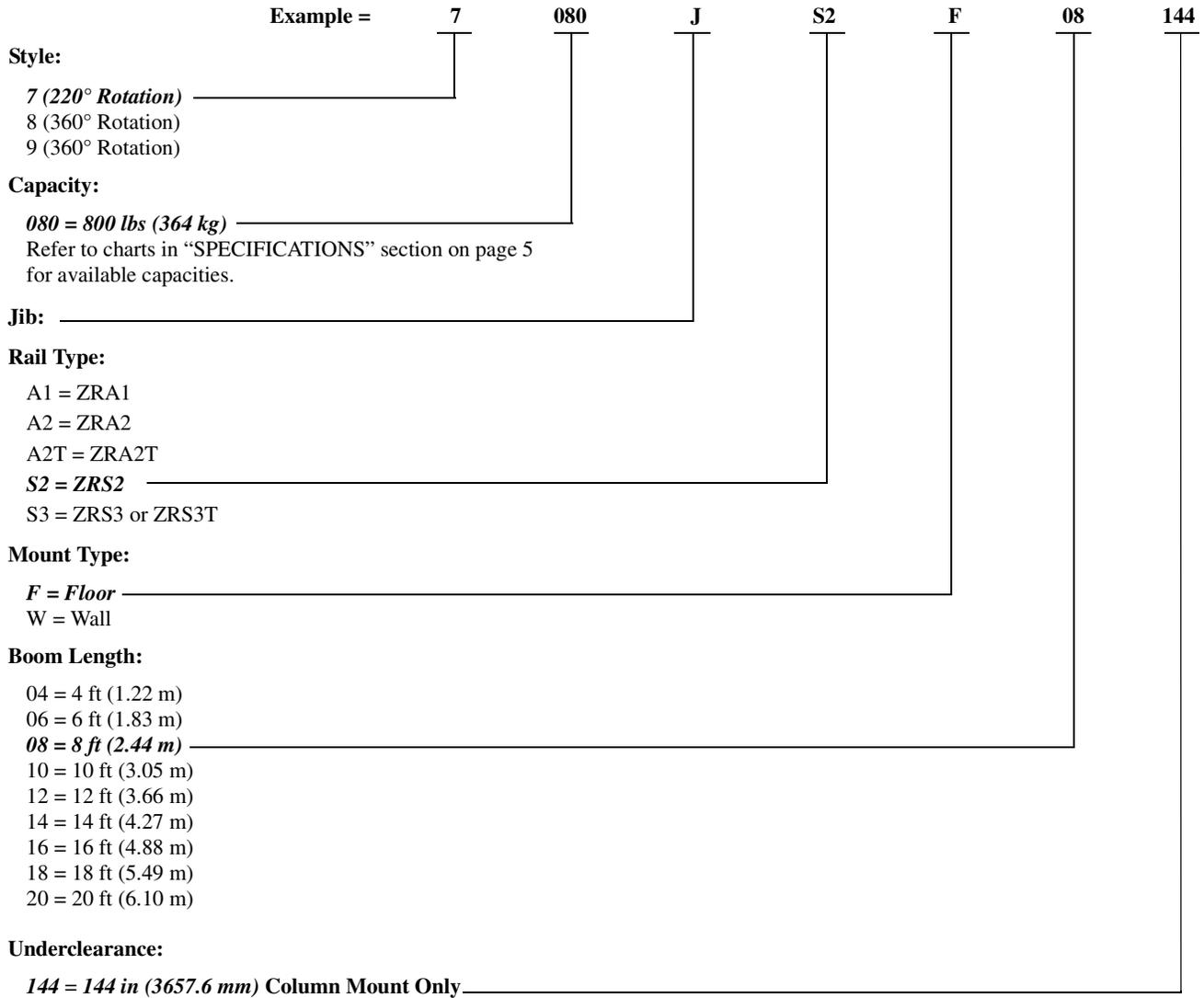


(Dwg. MHP2046)

*Rail sections not shown to scale.

Contact Factory for Model 900J Jib Crane Specifications.

Model 700J, 800J and 900J Jib Crane Model Driver



INSTALLATION

Prior to installing unit, carefully inspect it for possible shipping damage.

CAUTION

- Owners and users are advised to examine specific, local or other regulations, including American National Standards Institute and/or OSHA Regulations which may apply to a particular type of use of this product before installing or putting the unit into use.
- A falling load can cause injury or death. Before installing, read “SAFETY INFORMATION” on page 3.

Mounting

Make certain unit is properly installed. A little extra time and effort in doing so can contribute a lot toward preventing accidents and helping you get the best service possible.

Always make certain the existing structure, that the unit is mounted to, is strong enough to support the weight of the unit plus the weight of a maximum rated load plus a generous factor of at least 300% of the combined weights. Always contact a registered structural engineer.

Space Requirements

Take the necessary time to determine the best installation location to optimize the system’s capability. Allow adequate space, clear of system and attachments, for safe traffic flow of personnel and materials to and from the area. Allow clearance for the height of transported loads and necessary work space. For optimum system life, install the system indoors, or under shelter to reduce exposure to weather.

Visually define where to install the system by marking the boom pivot point on the work space floor, and marking off the boom tip radius. This mock-up allows you to walk off the proposed load path and direction of travel.

Tool Requirements

Typical Installation

- Socket set 1/2 in. drive
- Ladders / man lifts
- Leveling tools
- Lifting device to lift column and boom
- Mallet / hammer
- Chalk line
- Tape measure
- Torque wrench (up to 108 ft-lbs (147 Nm))
- Steel shims
- Anchor bolts (3/4 in. dia. max.)
- Non-shrinking grout

WARNING

- Ensure ladders or scaffolding used by installation personnel are reliable and capable of supporting the combined weight of the installer and equipment.

NOTICE

- DO NOT replace self-locking nuts with standard nuts and lockwashers. DO NOT reuse self-locking nuts. All fasteners for jib crane must be grade 5 or better.
- Do not overtighten fasteners or bolts. Overtightening may weaken fasteners.

Torque Specification Table

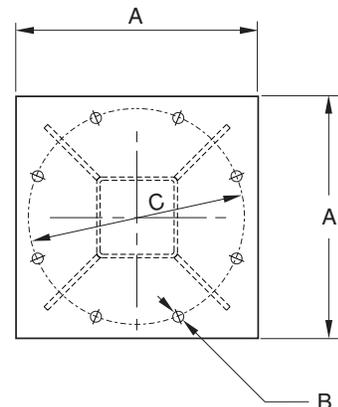
Bolt Dia. inches	Grade 5 Tightening Torque			
	Dry		Lubricated	
	ft-lb	Nm	ft-lb	Nm
1/4 - 20	8	11	6	8
5/16 - 18	17	23	13	18
3/8 - 16	31	42	23	31
1/2 - 13	76	103	57	77
5/8 - 11	150	203	112	151

Refer to ‘Safety Information’ section on page 3 before installing rail system.

Erecting Column

1. Mark jib crane column location on mounting surface with chalk.
2. Install footings (if required) per registered structural engineer’s instructions. If footings are not required, install anchors per the engineer’s and manufacturer’s specifications. Refer to “Anchoring the System” on page 10.
3. Position column in place.
4. Plumb and level the column using the appropriate method as described in either the **Nut Leveling Method** or the **Shim Leveling Method**, then tighten anchor bolts to manufacturer’s torque specifications.

Jib Crane Models
700J, 800J and 900J



(Dwg. MHP2029)

Model	Dimensions					
	A		B		C	
	ins	mm	ins	mm	ins	mm
700J Light Duty	18	457	0.875	22.2	16	406
800J Light Duty						
900 J Light Duty						
700J Medium and Heavy Duty	24	610	0.875	22.2	20	508
800J Medium and Heavy Duty						
900J Medium and Heavy Duty						

Use 3/4 in. Grade 5 or better bolts.

Anchoring the System

⚠ WARNING

• For proper installation of a floor supported jib crane system a minimum of a 6 in. (15.2 cm) thick reinforced concrete floor is required. Ingersoll-Rand assumes no responsibility for the conditions of the mounting surface. Consult a registered structural engineer before installing the jib crane.

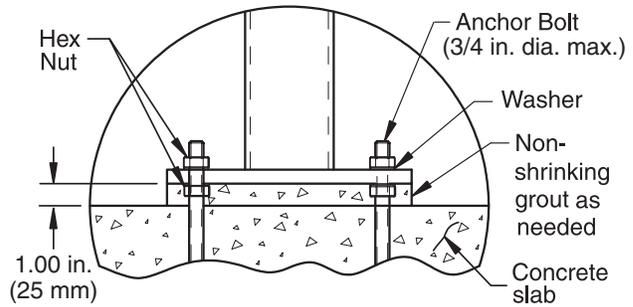
NOTICE

• Column anchorages should be designed by a registered structural engineer who is licensed in the state the system is being erected. This is required to ensure local building codes and laws, possible seismic loading considerations and variance in concrete slab and soil conditions are addressed.

Nut Leveling Method

1. Thread the 8 bottom hex nuts with washers onto the anchor bolts so the top of the washers are 1 inch (25 mm) above the mounting surface.
2. Set column on anchor bolts and thread remaining 8 hex nuts and washers down hand tight.
3. Place a level on one face of the column and plumb vertical by adjusting hex nuts on that side of the base plate up or down as needed.
4. Repeat step 3 on an adjacent side.
5. Recheck the side of the column plumbed in step 3 and repeat steps 3, 4 and 5 until both sides are plumb.
6. Tighten upper hex nuts to the anchor bolt manufacturers recommended torque while making sure lower hex nuts remain fixed.

7. Pack remaining void below base plate with non-shrinking grout until grout is flush with all sides of base plate

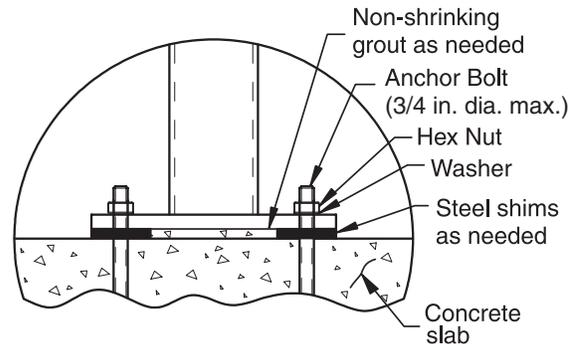


NUT LEVELING METHOD

(Dwg. MHP1609)

Shim Leveling Method

1. Set column on anchor bolts and thread 8 hex nuts and washers down hand tight.
2. Place a level on the face of the column and plumb vertical by loosening anchor bolt nuts as necessary and placing shims under base plate on that side of the column as needed.
3. Repeat step 2 on an adjacent side.
4. Recheck the side of the column plumbed in Step #2 and repeat steps 2, 3 and 4 until both sides are plumb.
5. Tighten the hex nuts to anchor bolt manufacturers recommended torque.
6. Pack remaining void below the base plate with non-shrinking grout until grout is flush with all sides of base plate.



SHIM LEVELING METHOD

(Dwg. MHP1859)

NOTICE

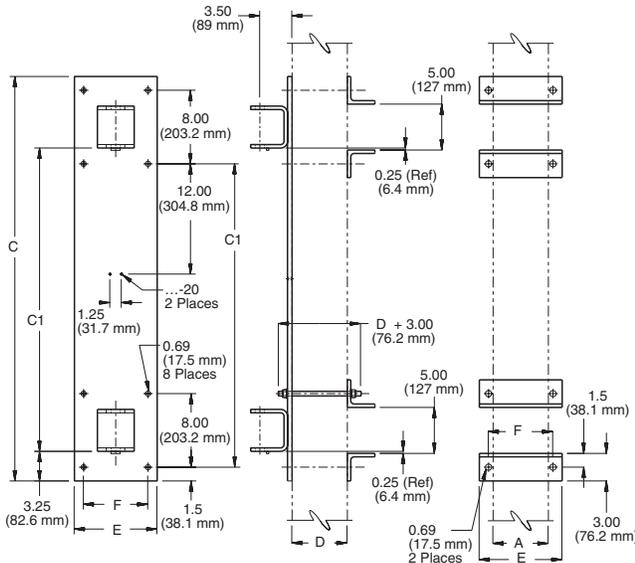
• If complete rigidity of the system is required, then additional bracing (not included) is necessary.

Wall Mount

Model 700J

Zimmerman Handling Systems assumes no responsibility for the strength of structures to which the Jib is mounted. Any structure to which the Jib is mounted should be certified for this purpose by a registered structural engineer.

- Bolt brackets to structurally adequate wall, pipe or column. Bracket (17) and angle clamps (15) are drilled to accommodate 5/8 in. diameter bolts or studs. Refer to Dwg. MHP2112 on page 11 for position of holes.
- Make sure the mounting bracket is vertical. Plumb through the pivot bracket holes. Note: Do not attempt to level via the boom assembly. When the boom is leveled properly the distance from the bottom of the boom to the floor should not vary more than 1/640 of the span over the length of the boom.
- Slide festoon gliders (if applicable) and the hoist trolley into the open end of the boom track. If using festoon gliders be sure that they are inserted into the track before the trolley to insure proper operation when using electrification. Install the end stop through bolts immediately so the trolley does not roll out of the end of the track.
- Carefully swing boom through entire travel to insure the boom is clear of any obstructions.



(Dwg. MHP2112)

Model	Jib Boom Type					
	ZRA1		ZRS2		ZRA2/ZRS3	
	in	mm	in	mm	in	mm
A "Column Width"	6	152.4	7	177.8	8	203.2
E	10	254	10	254	12	304.8
F	6.75	171.5	7.75	196.8	8.75	222.2

Dimensions	Jib Boom Length			
	Less than 15 ft.		More than 15 ft.	
	in	mm	in	mm
C	44	1117.6	56	1422.4
C1	33	838.2	45	1143

- Slide festoon gliders, festoon clamp (if applicable) and the hoist trolley in to the open end of the boom track. If using festoon gliders be sure that they are inserted into the track before the hoist trolley, to insure proper operation when using electrification. Install the end stop through bolts immediately so the trolley does not roll out of the end of the track.
- Carefully swing boom through entire travel to insure the boom is clear of any obstructions.

Column Mount

Models 700J and 800J

- Place the boom assembly onto the jib column.
- Be sure the boom is leveled properly. Level by adjusting the tie rod. When the boom is leveled properly the distance from the underside of the boom to the floor, should not vary more than 1/640 of the span over the length of the boom.

Model 900J

Providing column is correctly installed and vertical, boom level adjustments should not be required. Follow steps 3 and 4 for festoon installation and boom clearance information.

Adjustable Rotation Stops

Models 700J, 800J and 900J (Optional Feature)

220° Swivel (Reference Dwg. MHP2012 on page 36.)

- Install adjustable stop plate (101) on column with angle brackets (102). Loosely clamp plate and angle brackets to column with threaded rod (103), nuts (105) and washers (104).
- Position adjustable stop plate just above the top of the boom. Swing boom through its full rotational travel to ensure there is no contact.
- Install bumpers (110) with capscrews (111), nuts (112) and washers (113) to bumper brackets (106).
- Install assembled bumper brackets to plate (101) with capscrews (107), nuts (108) and washers (109).
- Position bumpers toward the boom. Select required hole positions to limit the range of boom movement.
- Once rotation stops are correctly positioned tighten all capscrews and nuts.
- Recheck boom rotation to ensure there is no interference and only bumpers contact boom.

360° Swivel (Reference Dwg. MHP2013 on page 36.)

- Install lower stop plate (122) between column and pivot assembly (52). Ensure attached stop plate is up.
- Install pivot assembly (52) and upper stop plate (121). Install boom mount (13).
- Install bumpers (124) with capscrews (125), nuts (126) and washers (127) to bumper brackets (123).
- Install assembled bumper brackets to upper stop plate (121) with capscrews (128), nuts (129) and washers (130).
- Position bumpers toward the boom. Select required hole positions to limit the range of boom movement.
- Once rotation stops are correctly positioned tighten all capscrews and nuts.
- Recheck boom rotation to ensure there is no interference and only bumpers contact boom.

Pre-installation Checklist

- Is the proposed system location away from normal personnel traffic patterns?
- Will the operator be able to clearly see the load along its path of travel at all times?
- Is the location within easy and safe reach of the load receiving area?
- Do personnel and materials have clear access to and from the system?

5. Has the Jib Crane's anchorage been designed by a registered structural engineer to suit the installation?
6. Will the Jib Crane conflict with utility supply lines, overhead electrical conduit or any utility that could represent a potential danger?
7. Does the proposed location allow enough space for maximum load travel in the direction you propose?
8. Is the proposed location in an area easily kept clean and free of obstruction?
9. Does the proposed location and installation meet all applicable code requirements?

If you answered no to any of these questions, please copy and fax this checklist to Ingersoll-Rand at 248-293-5800 for a free initial consultation.

DANGER

- Check the installation area for conflicts with utility supply lines, overhead electrical conduits or any utility that could present potential danger to the system or personnel.

WARNING

- System installation, maintenance and disassembly procedures require at least two people. Parts are too large and heavy for one person to safely handle.

The following should be adhered to during installation:

1. All bolted constructions must be completely tightened and torqued to specifications as shown in the Torque Specification Table on page 9.

NOTICE

- Before starting installation, clear workspace or set-up area of debris or obstructions. Always keep system workspace clear of obstruction, debris, spills and standing water.

Air System

Most handling devices will require an air supply which is clean and free from water, water vapor and oil. 6.9 bar/690 kPa (100 psi) at the handling device is normally required to provide rated capacity. Do not exceed 6.9 bar/690kPa (100 psi).

WARNING

- Do not use an air line lubricator of any kind. Oil may damage internal components.

Check handling device manufacturer's specifications for correct air supply requirements.

1. Install handling device on Jib Crane.
2. Install air system as described in "MAINTENANCE" section on page 17.
3. Connect air supply to handling device.
4. Turn on air supply and check system for leaks.
5. Operate handling device.

Refer to "AIR SUPPLY ASSEMBLY" on page 33 in parts section for air supply kits.

Electrification System

1. Install handling device on Jib Crane.
2. Install electrification system as described in "MAINTENANCE" section on page 17.
3. Connect electrical power supply to handling device.
4. Turn on power.
5. Operate handling device.

Refer to "ELECTRIFICATION ASSEMBLY" on page 35 in parts section for electrification kits.

Installation Test

Step 1

Verify that jib crane boom, hoist, positioner or handling device move freely throughout entire intended work space without binding.

Step 2

Lift a test load *while standing clear of the system*. This load should be 1/4 the maximum load. Notice any problems that may occur while lifting this load. Repeat step 1 with this load. At each testing step, correct any problems that may occur while testing system, and retest if necessary before continuing to the next step.

Step 3

Repeat steps 1 and 2, lifting the maximum rated load. Correct any problems that may occur while lifting this load, and retest if necessary before putting system into service. If you encounter a problem you do not know how to correct, call your nearest **Ingersoll-Rand** office or distributor.

OPERATION

Description Of Operation

The Jib Crane is an integrated group of components designed to maximize the interaction of man and machine.

Positioning a load is best accomplished by the operator, when moving away from the Jib Crane pivot point. Jib Crane will freely follow.

General Operating Information

Operate the Jib Crane and trolley from a position that allows you to observe the load and intended path of movement of the load.

Do not walk in the path of a moving load, or walk backwards when moving a load.

Refer to the handling device Parts, Operation and Maintenance manual for specific instructions on raising and lowering the load.

Always look in the direction you are moving.

Yarding



• **Do not operate the unit if load is not centered under the lifting device. Yarding can result in uncontrolled load movement.**

Load should not be yarded more than 10 degrees in any direction from the center line of the lifting device.

Excessive yarding will cause increased wear on the unit and may decrease the working life of the components.

INSPECTION

WARNING

- All new, altered or modified equipment should be inspected and tested by personnel instructed in safety, operation and maintenance of this equipment to ensure safe operation at rated specifications before placing equipment in service.
- Never use a unit that inspection indicates is damaged.

Frequent and periodic inspections should be performed on equipment in regular service. Frequent inspections are visual examinations performed by operators or personnel trained in safety and operation of this equipment and include observations made during routine equipment operation. Periodic inspections are thorough inspections conducted by personnel trained in the safety, operation and maintenance of this equipment. Inspection intervals depend upon the nature of the critical components of the equipment and the severity of usage.

Careful inspection on a regular basis will reveal potentially dangerous conditions while still in the early stages, allowing corrective action to be taken before the condition becomes dangerous.

Deficiencies revealed through inspection, or noted during operation, must be reported to designated personnel instructed in safety, operation and maintenance of this equipment. A determination as to whether a condition constitutes a safety hazard must be decided, and the correction of noted safety hazards accomplished and documented by written report before placing the equipment in service.

Records and Reports

Inspection records, listing all points requiring periodic inspection should be maintained for all load bearing equipment. Written reports, based on severity of service, should be made on the condition of critical parts as a method of documenting periodic inspections. These reports should be dated, signed by the person who performed the inspection, and kept on file where they are readily available for authorized review.

Frequent Inspections

For equipment in continuous service, frequent inspections should be made by operators at the beginning of each shift.

1. OPERATION. Check Jib Crane for full range of motion, smooth operation and ease of movement. Locate the source of any binding or rough operation and repair.
2. THREADED CONNECTIONS. Check all threaded connections for tightness. Tighten if loose or replace if damaged.
3. MOUNTING. If any loose or missing hardware is detected, tighten or replace.

4. AIR SYSTEM. Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any leaks or damage, tighten any loose connections.
5. ELECTRICAL SYSTEM. Visually inspect all connections and components for indication of damage or loose connections. Shut off and disconnect power prior to removing inspection covers, repairing any damage or tightening connections.

Periodic Inspection

Frequency of periodic inspection depends on the severity of usage:

NORMAL	HEAVY	SEVERE
yearly	semiannually	quarterly

Disassembly may be required for HEAVY or SEVERE usage. Keep accumulative written records of periodic inspections to provide a basis for continuing evaluation.

Inspect all the items in "Frequent Inspection" on page 14. Also inspect the following:

1. FASTENERS. Check all cotter pins, capscrews and nuts. Replace if missing or tighten if loose.
2. ALL COMPONENTS. Inspect for wear, damage, deterioration, deformation and cleanliness. If external evidence indicates the need, disassemble. Check bearings, rollers, and plates. Replace worn or damaged parts. Clean, lubricate and reassemble.
3. PIVOT ASSEMBLY. Inspect pivoting connections for looseness, bearing wear, and smooth operation. Repair or replace any loose or worn components.
4. SUPPORTING STRUCTURE. Check for distortion, wear and continued ability to support load.
5. LABELS AND TAGS. Check for presence and legibility of labels. Replace if damaged or missing.
6. HANDLING DEVICE. Inspect in accordance with recommendations in manufacturers Parts, Operation and Maintenance manual.

Units Not in Regular Use

1. Units which have been idle for a period of one month or more, but less than one year, should be given an inspection conforming with the requirements of "Frequent Inspection" on page 14 prior to being placed into service.
2. Units which have been idle for a period of more than one year should be given an inspection conforming with the requirements of "Periodic Inspection" on page 14 prior to being placed into service.
3. Standby units should be inspected at least semiannually in accordance with the requirements of "Frequent Inspection" on page 14. In abnormal operating conditions, units should be inspected at shorter intervals.

INSPECTION AND MAINTENANCE REPORT

Ingersoll-Rand Jib Crane

Model Number:	Date:	
Serial Number:	Inspected By:	
Reason for Inspection: (Check Applicable Box)		
	1. Scheduled Periodic Inspection (_____ Quarterly _____ Semiannually _____ Yearly)	Operating Environment: Normal _____ Heavy _____ Severe _____
	2. Discrepancies noted during Frequent Inspection	
	3. Discrepancies noted during Maintenance	
	4. Other: _____	

Refer to the Parts, Operation and Maintenance Manual "INSPECTION" section on page 14 for general inspection criteria. Also, refer to appropriate National Standards and codes of practice. If in doubt about an existing condition, contact the nearest **Ingersoll-Rand** Distributor or the factory for technical assistance.

COMPONENT	CONDITION		CORRECTIVE		NOTES
	Pass	Fail	Repair	Replace	
Column					
Boom/Rail					
Fasteners					
Bearings			---		
Trolley					
End Stops					
Pivot Assembly					
Tie Rod					
Air System					
Rollers					
Supporting Structure					
Electrical System					
Labels and Tags			---		
Other Components (list in NOTES section)					

This page may be photocopied and used as an Inspection/Maintenance record.

LUBRICATION

Pivot assembly (52) is pre-packed with grease at the factory and should not require any additional lubrication.

If after time it becomes necessary to disassemble the pivot assembly, all parts should be cleaned with a mineral spirit solution and the bearings repacked with grease. Recommended lubricant (10885) is available through **Ingersoll-Rand**.

Trolley

Trolley wheels have anti-friction bearings which are lubricated for life and only require replacement under extreme conditions. If these wheels must be replaced, they can be ordered separately.

TROUBLESHOOTING

The following table is for Jib Crane specific problems. This section provides basic troubleshooting information. Determination of specific causes to problems are best identified by thorough inspections performed by personnel instructed in safety, operation and maintenance of this equipment. The chart below provides a brief guide to common problems, probable causes and remedies. Refer to manufacturers Manual for specific lifting device problems.

Symptom	Possible Cause	Remedy
Jib Crane movement is stiff.	Swivel assembly bearings require lubrication.	Check locknut adjustment and lubricate bearings.
	Clevis bushings are worn or require lubrication.	Inspect bushings and replace if worn.
Change in rolling effort or erratic operation.	Dirt or obstruction in rail.	Clean all parts and inspect for wear.
	Damaged or bent rail.	Inspect rail and replace if damaged or bent. Determine cause of damage prior to operation.
	Worn or damaged trolley wheels and/or guide rollers.	Inspect wheels and rollers. Replace damaged parts.
Unusual noises.	Broken trolley guide roller and/or wheel.	Inspect and replace damaged parts.
	Dirt or obstruction in rail.	Clean all parts and inspect for wear.
Load creeping.	Jib boom not level.	Level components to specifications.
	Jib crane overloaded.	Reduce load to within rated capacity.
Hoist, positioner or handling device malfunctioning.	Leaking or damaged air hose, fittings or electrical cable.	Check and repair leaks. Tighten fittings if loose. Replace electrical cable. Refer to hoist, positioner or handling device service manual for additional repair instructions.

MAINTENANCE

⚠ CAUTION

- Use of other than genuine Ingersoll-Rand replacement parts could result in damage to the unit and void the warranty.

⚠ WARNING

- Never perform maintenance on the Jib Crane while it is supporting a load.
- Before performing maintenance, tag unit:
WARNING - DO NOT OPERATE - EQUIPMENT BEING REPAIRED.
- Only allow service personnel trained in safety and maintenance on this unit to perform maintenance.
- After performing any maintenance on the unit, adjust and test unit in specified application before returning to service.

Maintenance Intervals

The Maintenance Interval chart is based on intermittent operation of the unit eight hours each day, five days per week. If unit operation exceeds eight hours per day, or use is under HEAVY or SEVERE conditions, more frequent maintenance should be performed. Refer to 'Periodic Inspection' in the "INSPECTION" section on page 14 for interval guidance.

INTERVAL	MAINTENANCE CHECK
Start of each shift (Operator or Maintenance Personnel)	Make a thorough visual inspection of the Jib Crane and attached components for damage. Do not operate the unit, or components, if damaged.
	Operate the unit through the normal range of movements. Unit must operate smoothly without sticking, binding or abnormal noises.
3 months (Maintenance Personnel)	Check operation of lifting device. Refer to manufacturer's manual for maintenance information.
Yearly (Maintenance Personnel)	Inspect pivot assembly.
	Check all the supporting members, including the clamps, fasteners, nuts, etc. for indications of damage or wear. Repair or replace as required.

Disassembly

700J Jib Crane

Refer to Dwg. MHP1993 on page 22 and MHP1996 on page 24.

1. Turn off all power to lifting device and disconnect power source.
2. Remove lifting device from Jib Crane trolley.
3. Remove capscrews (31), nuts (32) and end caps (30) and (34) from boom (41) tip.
4. Remove cotter pin (20) then loosen nuts (21) on tie rod (39).
5. Support the weight of the boom (41) and remove shoulder screw (11) and nut (10) from suspension clevis (25).

6. Remove capscrew (2), nut (8) and washer (7) from lower boom clevis (40).
7. Slide boom from mounting bracket (17) or column (12) and carefully lower to the floor. Save thrust bearing (6) and thrust washer (3) which will come loose when boom is removed.
8. Remove capscrew (2), nut (8) and washer (7) from top clevis (5).
9. Remove tie rod and top clevis assembly. Save thrust bearing (6) and thrust washer (3) which will come loose when tie rod and top clevis assembly is removed.
10. Remove shoulder bolt (9) and nut (10) from top clevis (5) and separate parts.
11. Loosen nuts (27) on suspension clevis and slide suspension brackets (24) from boom (41).

800J Jib Crane

Refer to Dwg. MHP1994 on page 26.

1. Turn off all power to lifting device and disconnect power source.
2. Remove lifting device from Jib Crane trolley.
3. Remove capscrews (31), nuts (32) and end cap (30) from boom (41) tip.
4. Remove cotter pin (20) then loosen nuts (21) on tie rod (39).
5. Support the weight of the boom (41) and remove shoulder screw (11) and nut (10) from suspension clevis (25).
6. Remove capscrews (36) and nuts (35) from upper mast (13).
7. Slide boom from upper mast mounting bracket and carefully lower to the floor.
8. Remove shoulder screw (11) and nut (10) from upper mast.
9. Remove tie rod assembly.
10. Remove capscrews (9), nuts (8) and lockwashers (7) which secure upper mast (13) to pivot assembly (52). Remove upper mast.
11. Remove capscrews (2), nuts (8) and lockwashers (7) from lower column (12). Remove pivot assembly from lower column.

900J Jib Crane

Refer to Dwg. MHP1995 on page 28.

1. Turn off all power to lifting device and disconnect power source.
2. Remove lifting device from Jib Crane trolley.
3. Remove capscrews (36) and nuts (35) from boom (41) at column end.
4. Support the weight of the boom (41) and slide boom from upper mast mounting bracket (13). Carefully lower to the floor.
5. Remove capscrews (9), nuts (8) and lockwashers (7) which secure boom mount (13) to pivot assembly (52). Remove boom mount.
6. Remove capscrews (9), nuts (8) and lockwashers (7) from column (12). Remove pivot assembly (52) from column.

Pivot Removal and Disassembly

Refer to Dwg. MHP1566 on page 30.

1. Remove pivot assembly (52) from Jib Crane column.
2. Bend locking tang on lockwasher (65) away from nut (66).
3. Use a 3-5/8 in. spanner with a 0.360/0.365 in. (9.1/9.3 mm) slot and remove spanner nut (66).
4. Remove lockwasher (65).
5. Remove bearing hub (64) from bearing post (61). Removal may require the use of a hammer and brass or non-marring punch to lightly tap bearing and hub from bearing post.
6. Remove bearings (62) from bearing hub (64).
7. Inspect bearing assemblies (62) for smooth rotation, binding, rust, and corrosion. None should be present or visible.

Cleaning, Inspection and Repair

Examine disassembled components and fasteners for wear or damage. If worn or damaged, do not reuse. During reassembly all damaged and worn components should be replaced to prevent component failure which may result in injury or property damage.

It is recommended that lockwashers be discarded and replaced with new ones after each use.

Use the following procedures to clean, inspect and repair the Jib Crane and associated components.

Cleaning

Thoroughly clean all Jib Crane components in solvent. The use of a stiff bristle brush will facilitate the removal of accumulated dirt and sediments on the column and boom. Wipe off each part after cleaning. Remove all old Loctite® residue.

Inspection

All disassembled parts should be inspected to determine their fitness for continued use. Pay particular attention to the following:

1. Inspect all threaded items and replace those having damaged threads.
2. Inspect all bearings for freeness of rotation and wear. Replace bearings if rotation is rough or bearings are worn.
3. Inspect bushings. Replace worn bushings.
4. Inspect stop pins, stop plates and bumpers for damage. Replace if worn or deformed.
5. Inspect clevis brackets for wear. Replace if damaged or worn.
6. Inspect air lines for cracks, cuts and leakage.
7. Inspect air fittings for cracks, leakage and security.

Repair

Actual repairs are limited to the removal of small burrs and other minor surface imperfections. Use a fine stone or emery cloth for this work.

1. Worn or damaged parts must be replaced. Refer to the parts section for specific replacement parts information.
2. Inspect all remaining parts for evidence of wear or damage. Replace or repair any part which is in questionable condition. The cost of the part is often minor in comparison with the cost of redoing the job.
3. When fastening components, always use Loctite® 243 on capscREW threads.

Assembly

700J Jib Crane

Refer to Dwg. MHP1993 on page 22 and Dwg. MHP1996 on page 24.

1. On ZRA1 and ZRA2 booms, loosely assemble nuts (27), suspension clevis (25) and suspension brackets (24). Slide assembly into boom.
2. Install capscrews (26) and nuts (28) to position suspension bracket in boom.
3. Press bushings (4) into top clevis (5) and boom clevis (40) if removed during disassembly.
4. Install shoulder bolt (9), nut (10) and tie rod clevis (37) to top clevis (5).
5. Install assembled parts in support bracket with thrust bearing (6) at the bottom and thrust washer (3) on top. Secure with bolt (2), washer (7) and nut (8).
6. Install boom clevis (40) in support bracket with thrust bearing (6) and thrust washer (3). Secure with bolt (2), washer (7) and nut (8).
7. Ensure redundant end stop (34) is installed in boom at pivot end with bolts (36) and nuts (35).
8. Keeping boom parallel to the floor, slide boom (41) onto boom clevis (40). Secure with bolts (36) and nuts (35).
9. Install shoulder screw (11) and nut (10) through suspension clevis (25).
10. Install tie rod (39) with rod coupler (19) and adjust nuts (21) on tie rod (39) to level boom. Refer to "INSTALLATION" section on page 9. Install cotter pin (20) after adjustment is complete.
11. Install trolley.
12. Install capscrews (31), nuts (32) and end cap (30) in boom (41) tip.
13. Verify all fasteners are tight and secure. Install lifting device on Jib Crane trolley.
14. Turn on power to lifting device and test operation.

800J Jib Crane

Refer to Dwg. MHP1994 on page 26.

1. Install air supply line in column if required and connect to pivot assembly (52).
2. Install pivot assembly (52) on top of lower column (12). Secure with capscrews (2) and lockwashers (7).
3. Install upper mast (13) on pivot assembly (52) and secure with capscrews (9), lockwashers (7) and nuts (8). Check upper mast rotates freely.
4. On ZRA1 and ZRA2 booms, loosely assemble nuts (27), suspension clevis (25) and suspension brackets (24). Slide assembly into boom.
5. Install capscrews (26) and nuts (28) to position suspension brackets in boom.
6. Install shoulder bolt (11), nut (10) and tie rod clevis (37) to upper mast (13).
7. Ensure redundant end stop (34) is installed in boom at upper mast end with bolts (36) and nuts (35).
8. Keeping boom (41) parallel to the floor, slide boom onto upper mast (13) boom bracket.
9. Install tie rod (39) with rod coupler (19) and adjust nuts (21) on tie rod (39) to level boom. Refer to "INSTALLATION" section on page 9. Install cotter pin (20) after adjustment is complete.
10. Install trolley.
11. Install redundant end stop (34) and end cap (30) in boom (41) tip. Secure with capscrews (31), nuts (32).

12. Verify all fasteners are tight and secure. Install lifting device on Jib Crane trolley.
13. Turn on power to lifting device and test operation.

900J Jib Crane

Refer to Dwg. MHP1995 on page 28.

1. Install air supply line in column if required and connect to pivot assembly (52).
2. Install pivot assembly (52) on column (12). Secure in position with capscrews (9), lockwashers (7) and nuts (8).
3. Install boom mount (13). Secure boom mount (13) to pivot assembly (52) with capscrews (9), nuts (8) and washers (7). Check boom mount rotates freely.
4. Ensure redundant end stop (34) is installed in boom at boom mount end with bolts (36) and nuts (35).
5. Support the weight of the boom (41) and keeping boom parallel to the floor slide boom onto boom mount (13). Secure in position with capscrews (36) and nuts (35).
6. Install trolley.
7. Install redundant end stop (34) and end cap (30) in boom (41) tip. Secure with capscrews (31) and (36) and nuts (32).
8. Verify all fasteners are tight and secure. Install lifting device on Jib Crane trolley.
9. Turn on power to lifting device and test operation.

Pivot Assembly and Installation

Refer to Dwg. MHP1566 on page 30.

1. Clean bearings (62) with mineral spirit solution to remove all grease. Dry bearings.
2. Re-pack bearings with grease (Zimmerman P/N 10885 – refer to “LUBRICATION” Section on page 16).
3. Install bearings to bearing hub (64) and bearing post (61).
4. Install bearing hub (64) on bearing post (61).
5. Install lockwasher (65) on bearing post (61).



• **The following torque procedure must be followed to ensure that spanner nut torque is correct, bearings have been seated, and nut will not lose torque. Failure to follow these instructions will decrease performance of the pivot and may cause damage to the jib boom.**

6. Tighten spanner nut (66) to 200 ft.-lbs. (271 Nm)
7. Rotate pivot assembly left and right to seat bearings.
8. Torque spanner nut to 200 ft.-lbs. (271 Nm)
9. Rotate pivot assembly left and right to seat bearings.
10. Torque spanner nut to 200 ft.-lbs. (271 Nm)
11. Rotate nut clockwise until a lockwasher tang is aligned with a slot on spanner nut. Bend tang into slot.
12. Install pivot assembly on column.
13. Torque pivot mounting bolts to 50 ft.-lbs. (68 Nm)

NOTICE

- **Ensure the tang on the lockwasher in the upper housing engages a slot on the pivot pin.**
- **Tighten pivot spanner nut securely, but not so much that the lower housing assembly will not swivel.**

Air System Installation

Refer to Dwg. MHP2051 on page 32.

1. Assemble swivel compression fittings (148) to pre-coiled tubing (149).
2. Install hose fittings (151) to each end of the rubber hose (152).
3. Install adapter-fitting (153) to one end of the rubber hose (152).
4. Connect adapter (150) to one end of the pre-coiled tube (149).
5. Align bracket (83) with each end of the jib boom.
6. Determine which side of the bracket to install the filter/regulator (55). The regulator should be installed at the pivot end of the boom, to the column or wall side of the bracket.
7. Install filter/regulator (55) to bracket (83).
8. Install elbow fitting (147) to bracket (83).
9. Install eye bolt and nut assemblies (94) to brackets (83). The eye portion of the bolts will face each other when the brackets are installed.
10. Install thimble (93) to eyebolt (94).
11. Thread cable (91) through the center of the pre-coiled tube (149).
12. Thread cable (91) through the eyebolt (94) and thimble (93).
13. Install clamps (92) to cable (91). Do not tighten, rather snug the bolts so cable will not slip through clamp.
14. Install brackets (83) to top of jib boom with the eyebolts toward each other, using bolts (80), washers (82), lockwashers (81) and plates (84).
15. Tighten clamps (92) at one end of cable.
16. At opposite end of cable thread excess cable through clamps increasing tension until cable supports the weight of the pre-coiled tube.
17. Tighten clamp (92).
18. Connect adapter-fitting (152) to lifting unit inlet.
19. Rotate shut off valve to the closed position.
20. Connect plant air supply or column air supply to regulator (55) inlet.
21. Rotate shut valve to the open position.
22. Adjust regulator to 100 psi (6.9 bar).

Electrification System Installation

Refer to Dwg. MHP2050 on page 34.

1. Align bracket (83) with each end of the jib boom.
2. Determine which side of the bracket to install the anchor bracket (96). The anchor bracket must be installed closest to the pivot or wall end.
3. Install eye bolt and nut assemblies (94) to brackets (83). The eye portion of the bolts will face each other when the brackets are installed.
4. Install thimble (93) to eyebolt (94).
5. Thread cable trolleys (90) and towing trolley (86) onto cable (91). Ensure towing trolley is nearest the handling device. Wheels of towing trolley sit below cable.
6. Thread cable (91) through the eyebolt (94) and thimble (93).
7. Install clamps (92) to cable (91). Do not tighten, rather snug the bolts so cable will not slip through clamp.
8. Install brackets (83) to top of boom with the eyebolts toward each other, using bolts (80), washers (82), lockwashers (81) and plates (84).

9. Tighten clamps at one end of cable.
10. At opposite end of cable thread excess cable through clamps increasing tension until cable can support the weight of the trolleys and electrical cable.
11. Tighten clamp (92).
12. Connect electrical supply and test handling device.

Testing

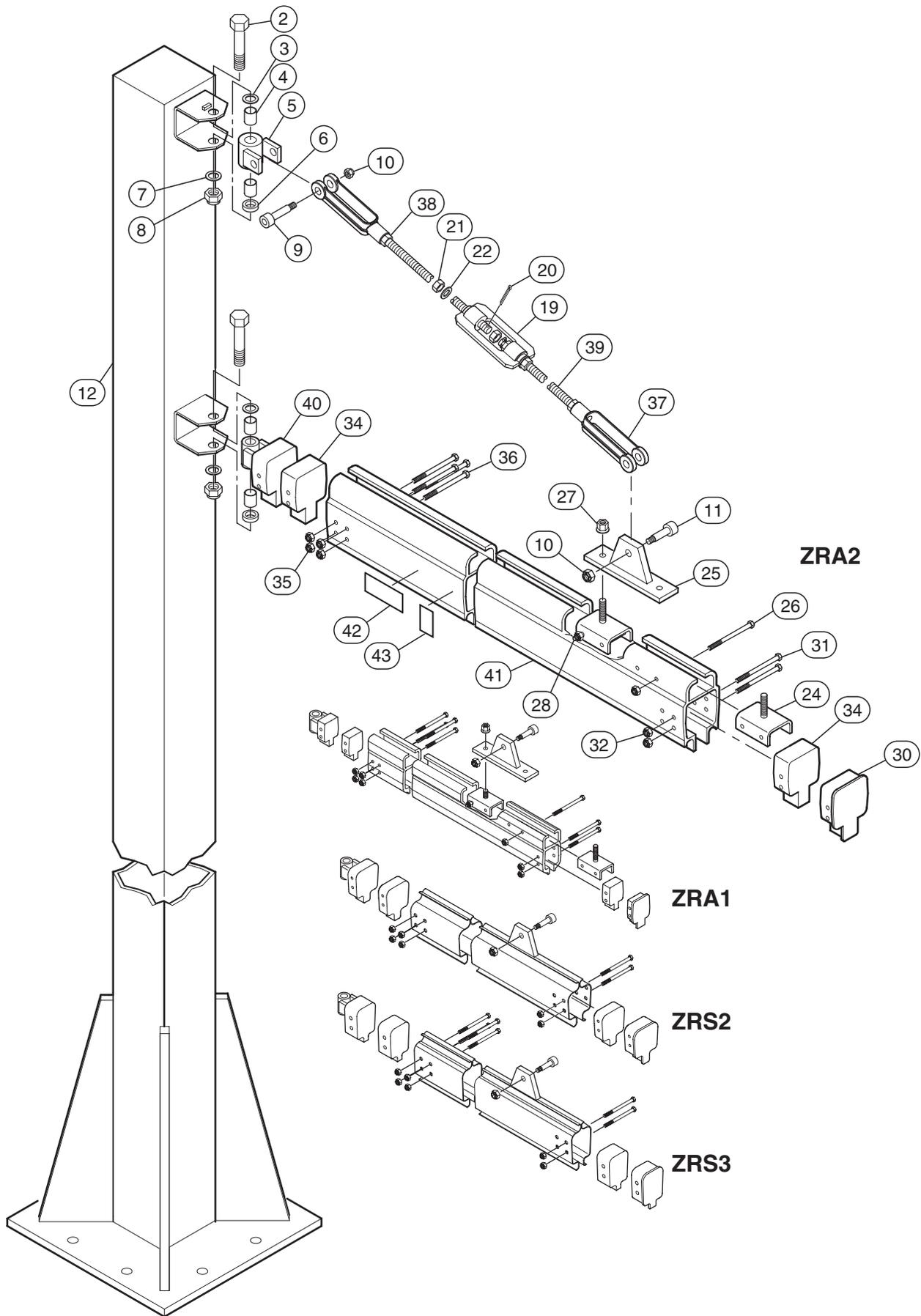
Prior to initial use, all new, altered or repaired Jib Cranes shall be tested to ensure proper operation.

1. Check Jib Crane movement through full operational range. Ensure movement is smooth and without binding. Ensure there are no obstructions through the operation range.
2. Install lifting device to be used. Check position and power connections.
3. Check operation of lifting device. Ensure lifting device responds correctly to control operation.

700J JIB CRANE WALL MOUNT ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty Total	Part Number			
			ZRA1	ZRA2	ZRS2	ZRS3
1	Jib Hardware Kit	1	41038			
2	Bolt	2	74102			
3	Thrust Washer	2	65069			
4	Bushing	4	Not sold separately order item #5			
5	Top Clevis Assembly	1	41790			
6	Thrust Bearing	2	65067			
7	Washer	2	74542			
8	Nut	2	75614			
9	Shoulder Screw	1	73132			
10	Nut	2	75587			
11	Shoulder Screw	1	73111			
12	Wall Mount Plate Assembly	1	42091			
13	Nut	16	75575			
14	Washer	16	74514			
15	Angle Clamp (bulk)	4	80214 (specify 10 or 12 inch length)			
16	Threaded Rod (bulk)	8	84151 (specify length)			
17	Bracket	1	Order item 12			
18	Tie Rod Coupler Assembly (Req'd on booms over 15 ft. (4.57 m))	1	41848			
19	Rod Coupler	1	41705			
20	Cotter Pin	2	99007			
21	Nut	4	75517			
22	Lockwasher	2	74523			
23	Tie Rod Attachment Assembly	1	42465	42466	---	
24	Suspension Bracket	2	30326	30109	---	
25	Clevis	1	42034		---	
26	Bolt	2	70968	71481	---	
27	Flanged Lock Nut	2	75589		---	
28	Lock Nut	2	75582	75583	---	
29	End Stop Kit	1	30275	30183	30804	30808
30	End Stop	1	30274	30182	30803	30807
31	Bolt	2	71479	71472	71481	
32	Lock Nut	2	75583			
33	Redundant End Stop Kit	2	30277	30185	30806	30810
34	Redundant End Stop	1	30276	30184	30805	30809
35	Lock Nut	2	75583			
36	Bolt	2	71479	71472	71481	
37	Clevis	2	40708			
38	Nut	2	75517			
39	Tie Rod	As Req'd	84011 (specify length)			
40	Boom Clevis	1	41736	41791	41802	41939
41	Rail, Boom (specify length)	As Req'd	30200	30000	30500	30550
42	Label, Logo	1	Contact Factory			
43	Label, Warning	1	04306445			

700J JIB CRANE 220° COLUMN MOUNT ASSEMBLY PARTS DRAWING

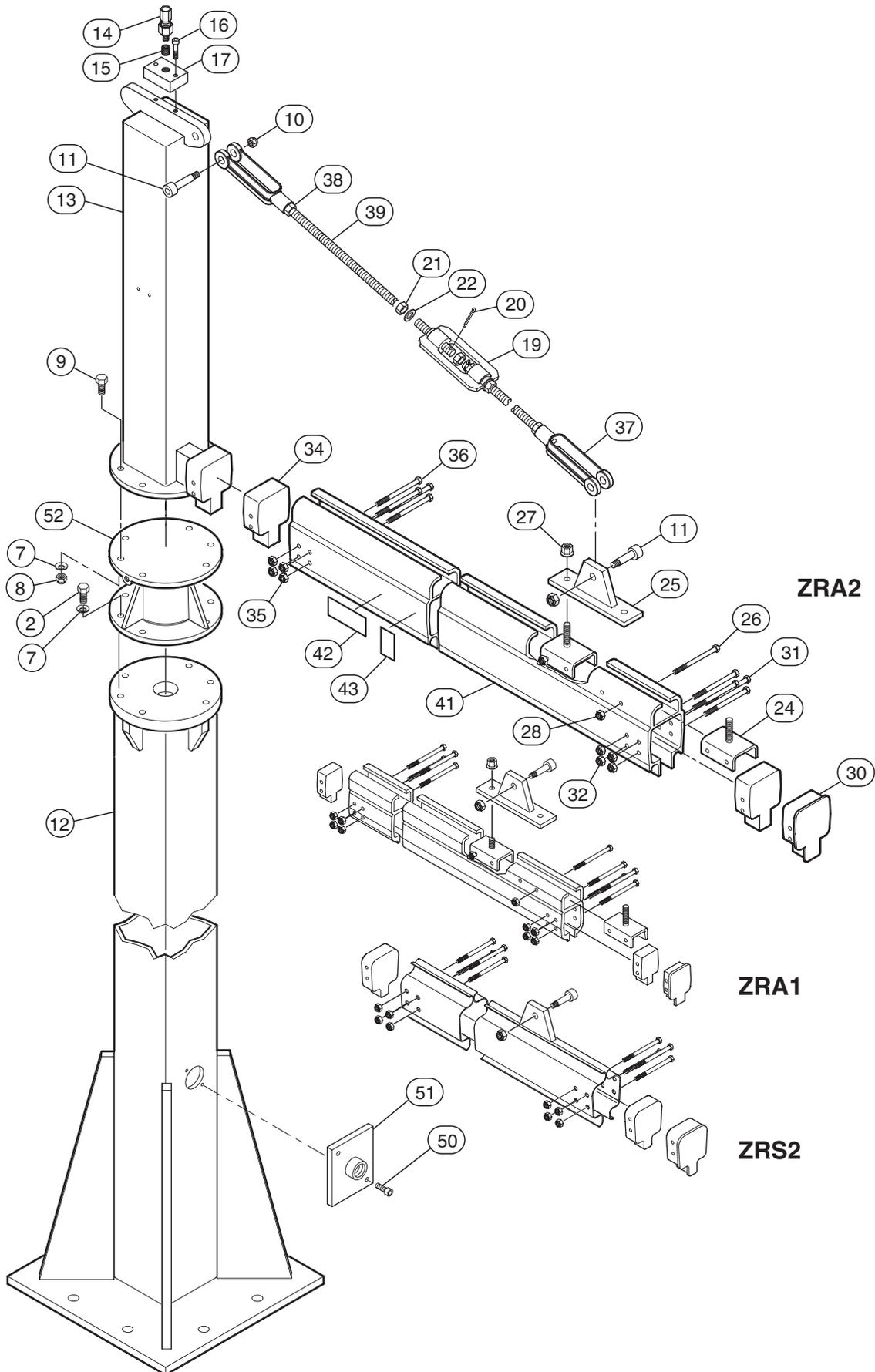


(Dwg. MHP1996)

700J JIB CRANE 220° COLUMN MOUNT ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty Total	Part Number			
			ZRA1	ZRA2	ZRS2	ZRS3
1	Jib Hardware Kit	1	41038			
2	Bolt	2	74102			
3	Thrust Washer	2	65069			
4	Bushing	4	Not sold separately order item #5			
5	Top Clevis Assembly	1	41790			
6	Thrust Bearing	2	65067			
7	Washer	2	74542			
8	Nut	2	75614			
9	Shoulder Screw	1	73132			
10	Nut	2	75587			
11	Shoulder Screw	1	73111			
12	Column	1	42093			
18	Tie Rod Coupler Assembly (Req'd on booms over 15 ft. (4.57 m))	1	41848			
19	Rod Coupler	1	41705			
20	Cotter Pin	2	99007			
21	Nut	4	75517			
22	Lockwasher	2	74523			
23	Tie Rod Attachment Assembly	1	42465	42466	---	
24	Suspension Bracket	2	30326	30109	---	
25	Clevis	1	42034		---	
26	Bolt	2	70968	71481	---	
27	Flanged Lock Nut	2	75589		---	
28	Lock Nut	2	75582	75583	---	
29	End Stop Kit	1	30275	30183	30804	30808
30	End Stop	1	30274	30182	30803	30807
31	Bolt	2	71479	71472	71481	
32	Lock Nut	2	75583			
33	Redundant End Stop Kit	2	30277	30185	30806	30810
34	Redundant End Stop	2	30276	30184	30805	30807
35	Lock Nut	4	75583			
36	Bolt	4	71479	71472	71481	
37	Clevis	2	40708			
38	Nut	2	75517			
39	Tie Rod	1	84011			
40	Boom Clevis	1	41736	41791	41802	41939
41	Rail, Boom (specify length)	As Req'd	30200	30000	30500	30550
42	Label, Logo	1	Contact Factory			
43	Label, Warning	1	04306445			

800J JIB CRANE 360° COLUMN MOUNT ASSEMBLY PARTS DRAWING

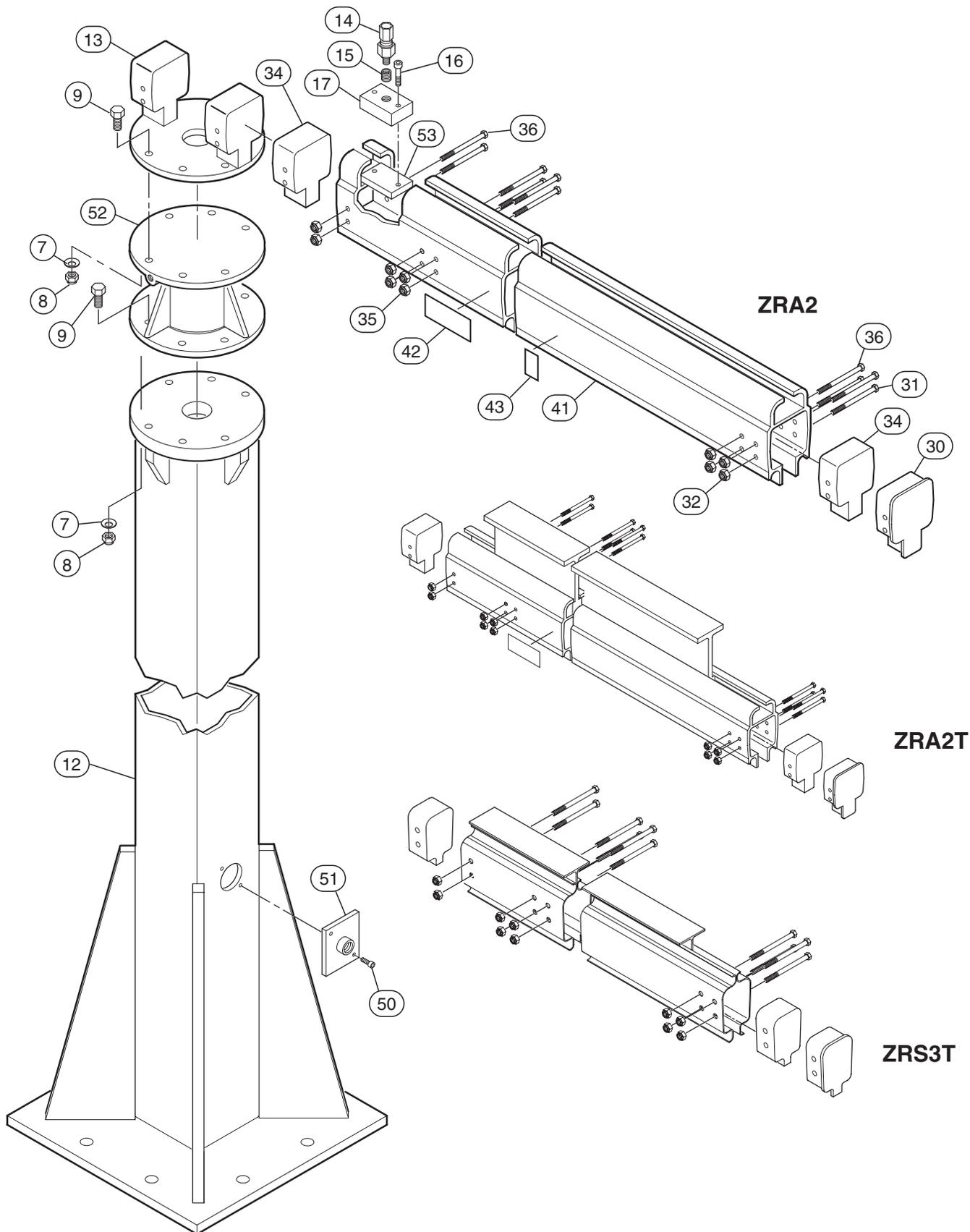


(Dwg. MHP1994)

800J JIB CRANE 360° COLUMN MOUNT ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty Total	Part Number		
			ZRA1	ZRA2	ZRS2
2	Bolt	6		72021	
7	Lockwasher	12		74513	
8	Nut	6		75512	
9	Bolt	6		72029	
10	Lock Nut	2		75587	
11	Shoulder Bolt	2		73111	
12	Lower Column	1		42095	
13	Upper Mast	1	42081	42998	42927
14	Swivel Fitting	1		93821	
15	Reducer Bushing	1		13503	
16	Capscrew	2		70405	
17	Air Inlet	1		40793	
18	Tie Rod Coupler Assembly	1		41848	
19	Rod Coupler	1		41705	
20	Cotter Pin	2		99007	
21	Nut	4		75517	
22	Lockwasher	2		74523	
23	Tie Rod Attachment Assembly	1	42465	40694	---
24	Suspension Bracket	2	30326	30109	---
25	Clevis	1	42034		---
26	Bolt	2	70968	71481	---
27	Flanged Lock Nut	2	75589		---
28	Lock Nut	2	75582	75583	---
29	End Stop Kit	1	30275	30183	30804
30	End Stop	1	30274	30182	30803
31	Bolt	2	71479	71472	71481
32	Lock Nut	2	75583		
33	Redundant End Stop Kit	2	30277	30185	30806
34	Redundant End Stop	1	30276	30184	30805
35	Lock Nut	2	75583		
36	Bolt	2	71479	71472	71481
37	Clevis	2	40708		
38	Nut	2	75517		
39	Tie Rod	1	84011		
41	Rail, Boom (specify length)	As Req'd	30200	30000	30500
42	Label, Logo	1	Contact Factory		
43	Label, Warning	1	04306445		
50	Capscrew	2	70498		
51	Inlet Assembly	1	40656		
52	Pivot Assembly	1	40606		

900J JIB CRANE 360° COLUMN MOUNT ASSEMBLY PARTS DRAWING

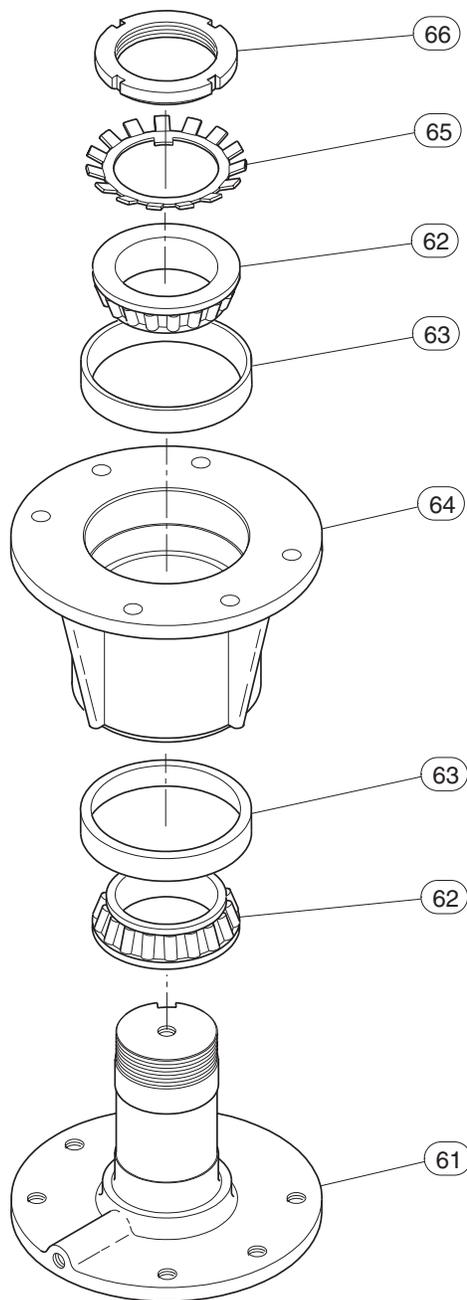


(Dwg. MHP1995)

900J JIB CRANE 360° COLUMN MOUNT ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty Total	Part Number		
			ZRA2	ZRA2T	ZRS3T
7	Lockwasher	12	74513		
8	Nut	12	75512		
9	Bolt	12	72029		
12	Column	1	40649		
13	Boom Mount	1	43017		42069
14	Swivel Fitting	1	93821		
15	Reducer Bushing	1	13503		
16	Capscrew	2	70407		
17	Air Inlet	1	40793		
29	End Stop Kit	1	30183		30808
30	End Stop	1	30182		30807
31	Bolt	2	71472		71481
32	Lock Nut	2	75583		
33	Redundant End Stop Kit	2	30185		30810
34	Redundant End Stop	1	30184		30809
35	Lock Nut	2	75583		
36	Bolt	2	71479	71472	71481
41	Rail, Boom (specify length)	As Req'd	30000	41750	30550
42	Label, Logo	1	Contact Factory		
43	Label, Warning	1	04306445		
50	Capscrew	2	70498		
51	Inlet Assembly	1	40656		
52	Pivot Assembly	1	40606		
53	Tap Mount Plate	1	41748		

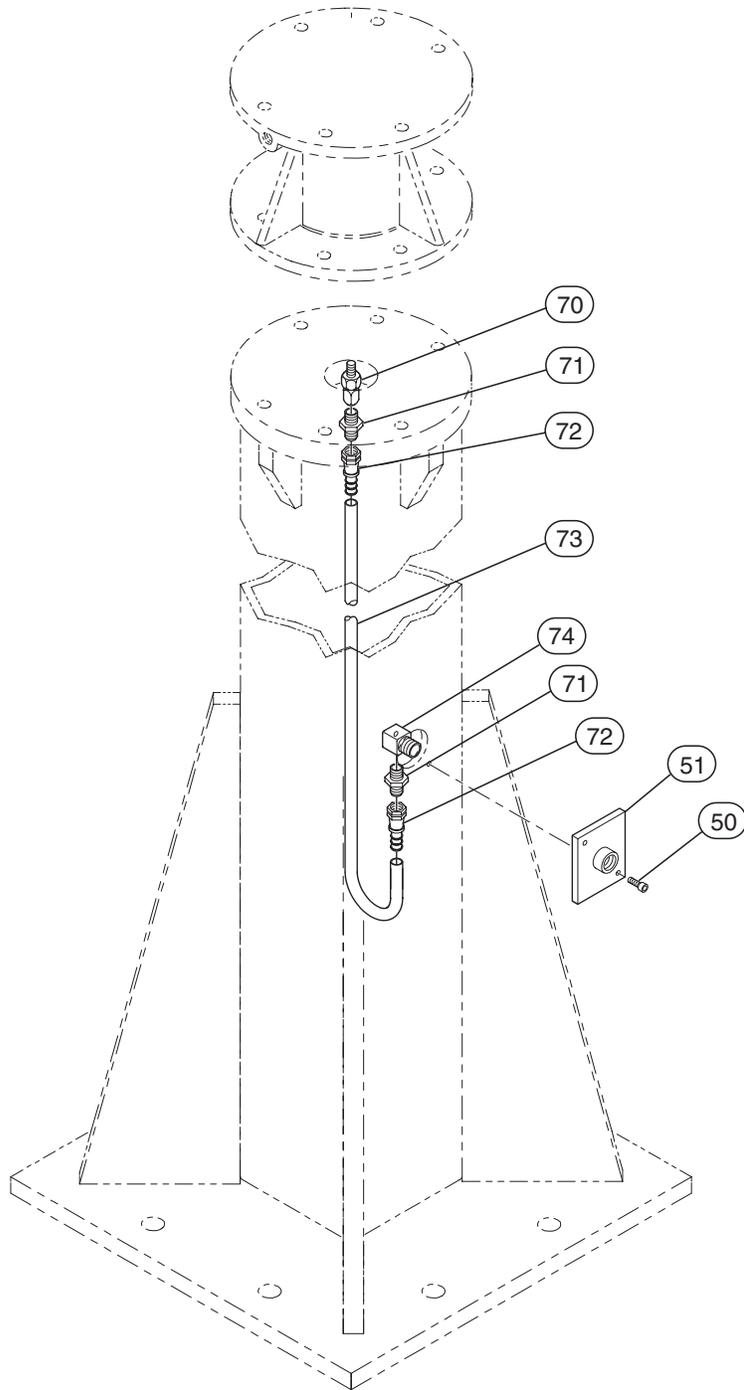
COLUMN MOUNT PIVOT ASSEMBLY DRAWING AND PARTS LIST



(Dwg. MHP1566)

Item No.	Description of Part	Qty Total	Part Number
52	Pivot – Column Mount Assembly (incl's items 61 to 66)	1	40606
61	Bearing Post	1	40603
62	Bearing Cone (Timken #34478)	2	65002
63	Bearing Cup (Timken #34301)	2	65001
64	Bearing Hub	1	40604
65	Lockwasher (Whittet Higgins #W-15)	1	74533
66	Locknut (Whittet Higgins #AN-15)	1	75548

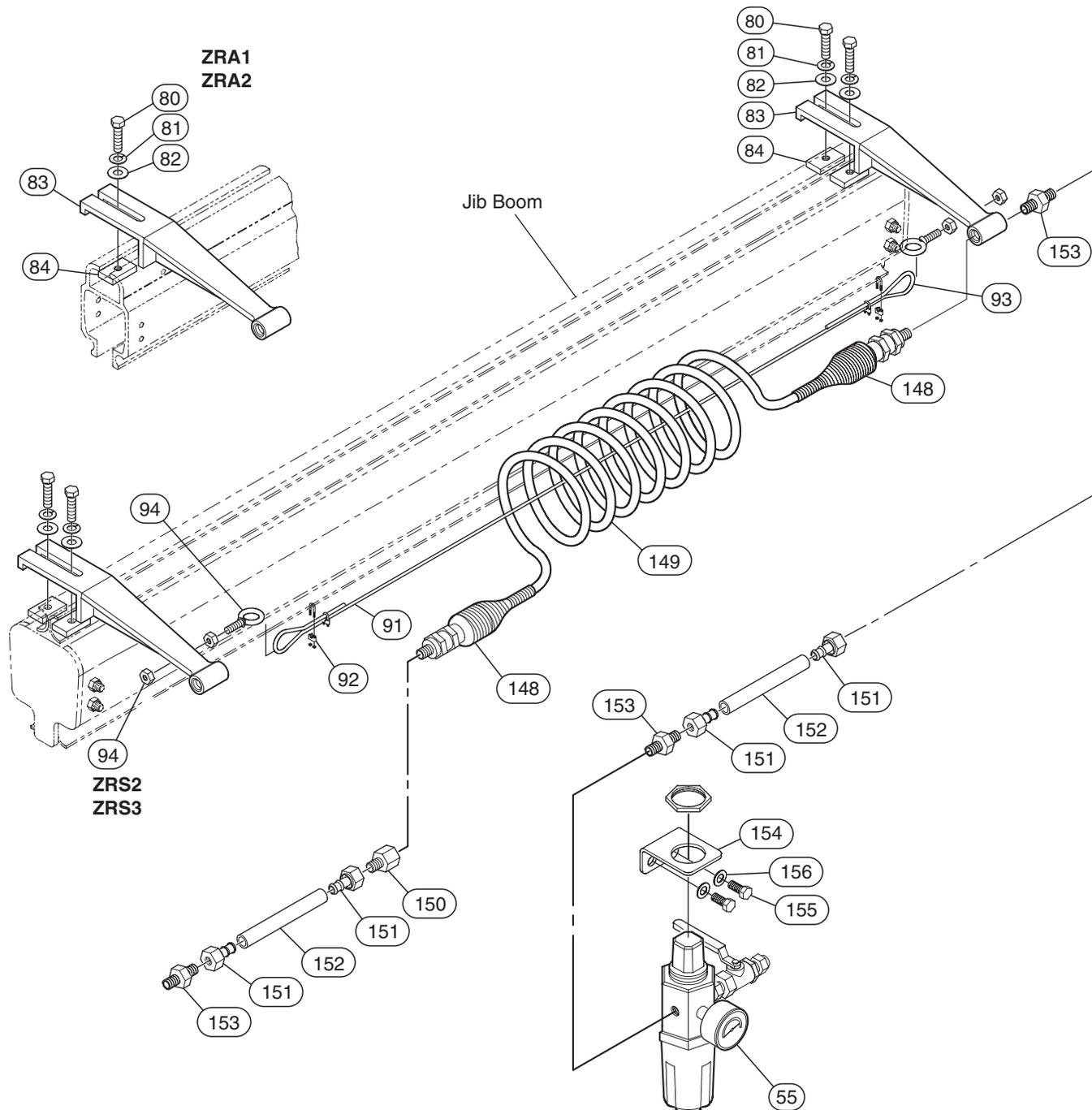
COLUMN AIR SUPPLY SYSTEM ASSEMBLY DRAWING AND PARTS LIST



(Dwg. MHP2017)

Item No.	Description of Part	Qty Total	Part Number	
			3/8 in. Air Supply	1/2 in. Air Supply
49	Internal Air Supply Assy (incl's items 50, 51 and 70 to 74)	1	90029	90030
50	Screw	2	70469	
51	Inlet Assembly	1	40656	
70	Fitting, Swivel	1	93821	99172
71	Fitting, Adapter	()	10565 (1)	10567 (2)
72	Swivel, Hose End	2	10560	10561
73	Hose	1	10555-B	10556-B
74	Fitting, Elbow	1	10354	01961

AIR SUPPLY ASSEMBLY PARTS DRAWING



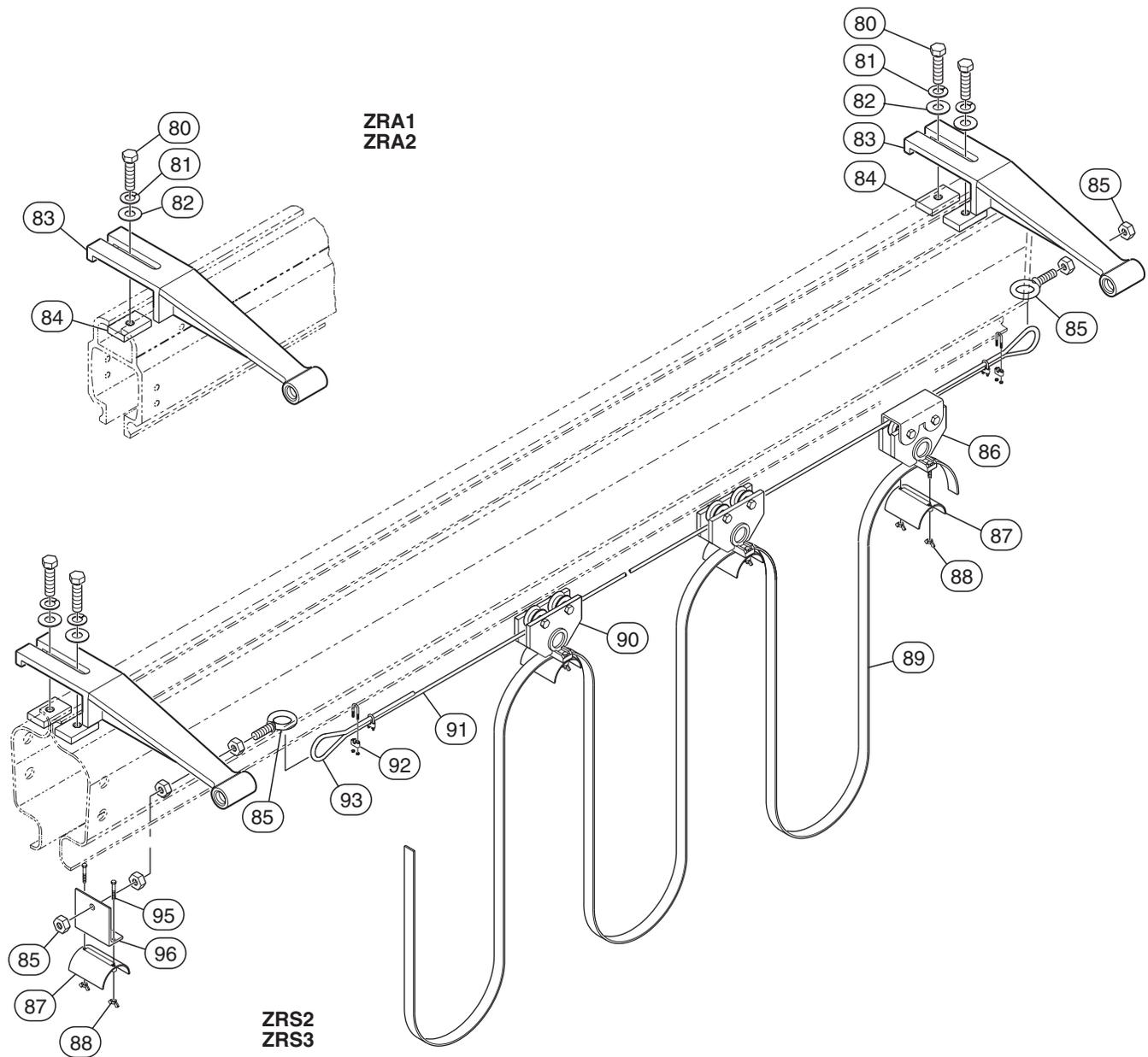
(Dwg. MHP2051)

AIR SUPPLY ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty. Total	Part Number	
			3/8 inch	1/2 inch
54	Air Supply Kit*	1	90027	90028
55	Filter/Regulator/Gauge Kit	1	01941	01972
80	Bolt 3/8-24 x 1.5 in.	2 or 4	71480	
81	Lockwasher	2 or 4	74507	
82	Washer	2 or 4	74540	
83	Bracket	2	30114-375	30114-500
84	Plate	2 or 4	30038	
91	Cable	Specify Length	10105	
92	Clamp Assembly	4	10230	
93	Thimble	2	10210	
94	Eyebolt and Nut Assembly	2	01918	
148	Fitting, Swivel	2	01957	01956
149	Precoil Hose	Specify Length	01910	01912
150	Fitting, Adapter	1	10765	10568
151	Fitting, Swivel	4	10560	10561
152	Adapter Hose	Specify Length	10555-B	10556-B
153	Fitting, Adapter	3	10566	10734
154	Bracket	1	01978	
155	Capscrew	2	70414	
156	Nut	2	74503	

* Each kit includes: Brackets, tagline assembly, and coiled hose assembly.

ELECTRIFICATION ASSEMBLY PARTS DRAWING



(Dwg. MHP2050)

ELECTRIFICATION ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty. Total	Part Number			
			ZRA1	ZRA2	ZRS2	ZRS3
79	Electrification Festooning Kit (Up to 12 ft (3.66 m) Boom Length)	1	90090-1			
	Electrification Festooning Kit (Up to 25 ft (7.6 m) Boom Length)		90090-2			
80	Bolt 3/8-24 x 1.50	2 or 4	71480			
81	Lockwasher	2 or 4	74507			
82	Flat Washer	2 or 4	74540			
83	Bracket	2	30114-375			
84	Plate	2 or 4	30038			
85	Eyebolt and Nut Assembly	2	01918			
86	Towing Trolley	1	99040			
87	Flat Cable Clip	As Req'd	99042			
88	Wing Nut Assembly	As Req'd	Order Item 96			
89	Electrical Cable	Specify Length	Refer to chart			
90	Cable Trolley (20 ft (6.1 m) Boom)	4	99041			
91	Cable	1	10105			
92	Clamp Assembly	4	10230			
93	Thimble	2	10210			
95	Capscrew	2	Order Item 96			
96	Anchor Bracket	1	99043			

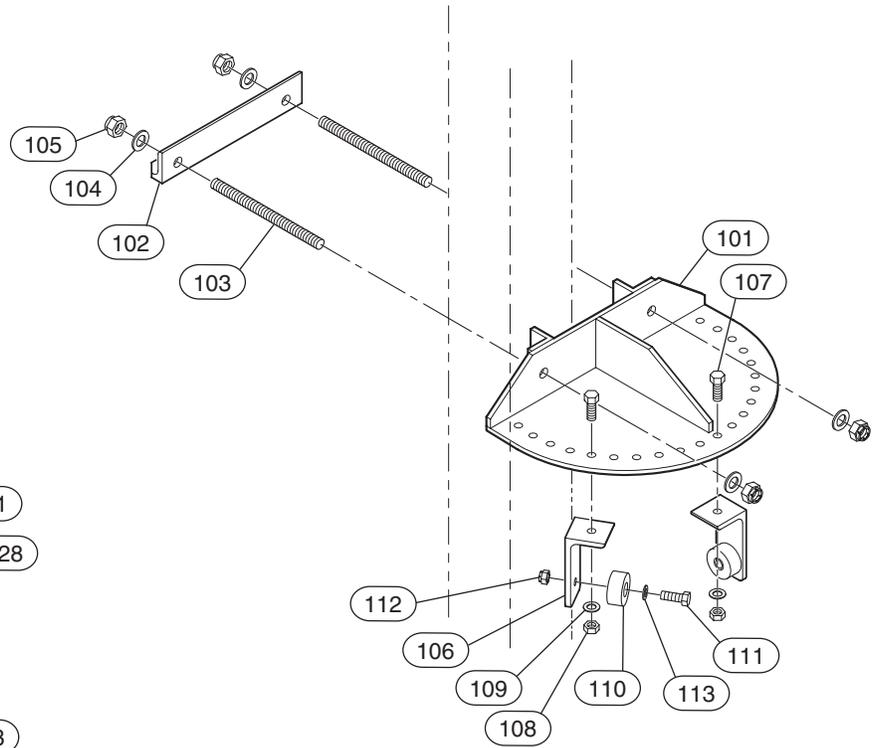
Optional Flat Electrification Cable*

Item No.	Part No.	No. of Conductors	Conductor Size-AWG	AMP rating NEC 310 16
89	99050	8/C	16	15
	99051	12/C	16	15
	99052	4/C	14	17
	99053	8/C	14	17
	99054	12/C	14	17
	99055	4/C	12	30
	99056	7/C	12	30
	99057	4/C	10	40

* PVC Jacket flat cable is available in the configurations shown.
 To determine the correct cable length, add 10 ft (3.05 m), plus 10% of system.

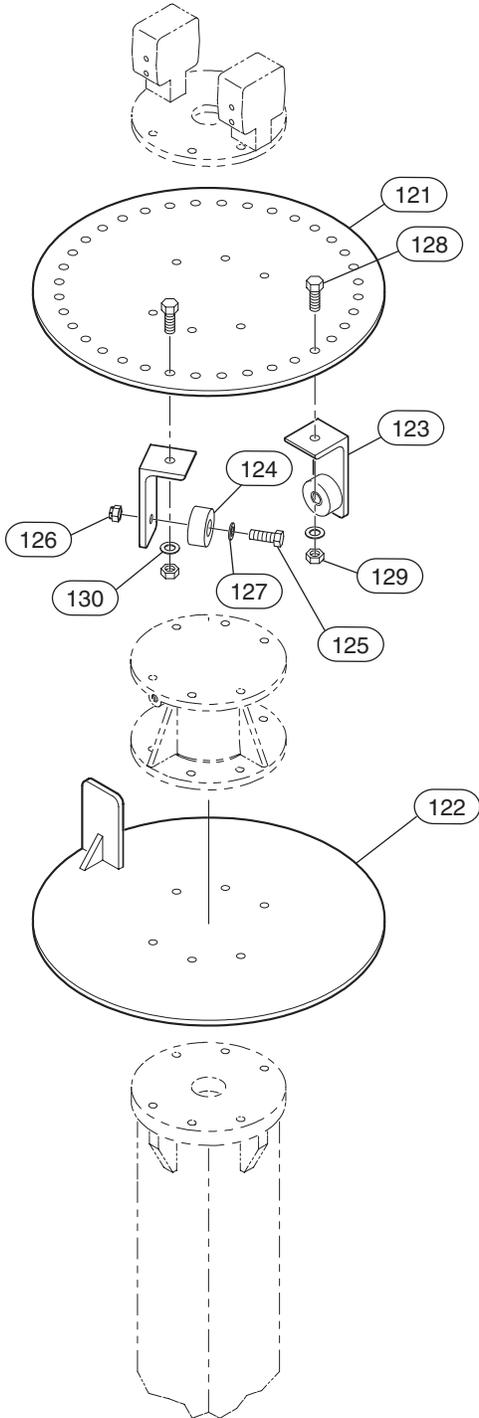
ADJUSTABLE ROTATION STOPS PARTS DRAWING

Model 700J Wall and Column Mount



(Dwg. MHP2012)

Model 800J and 900J Column Mount



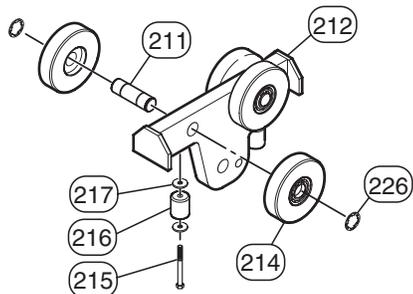
(Dwg. MHP2013)

ADJUSTABLE ROTATION STOPS PARTS LIST

Item No.	Description of Part	Qty. Total	Part Number
100	Adjustable Stop Assembly 220°	1	42982
101	Plate	1	54026901
102	Angle Bracket (bulk)	2	54031000
103	Threaded Rod (bulk)	2	84151 (Specify Length)
104	Washer	4	74514
105	Locknut	4	75575
106	Bumper Bracket	2	54026893
107	Capscrew	4	72021
108	Locknut	4	75585
109	Washer	4	74517
110	Bumper	2	93096
111	Capscrew	2	70957
112	Locknut	2	75582
113	Washer	2	74505
120	Adjustable Stop Assembly 360°	1	42203
121	Upper Stop Plate	1	42203001
122	Lower Stop Plate	1	42203002
123	Bumper Mount	2	42203003
124	Bumper	2	93096
125	Capscrew	2	70957
126	Locknut	2	75582
127	Washer	2	74505
128	Capscrew	4	72021
129	Locknut	4	75585
130	Washer	4	74517

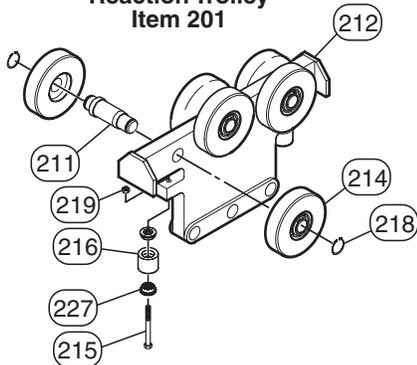
TROLLEY PARTS DRAWING

**ZRA1 Universal Trolley
Item 200**



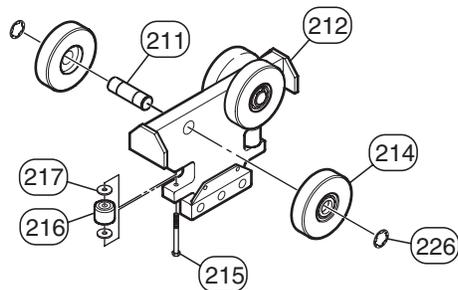
(Dwg. MHP2077)

**ZRA2/ZRS2/3
Reaction Trolley
Item 201**



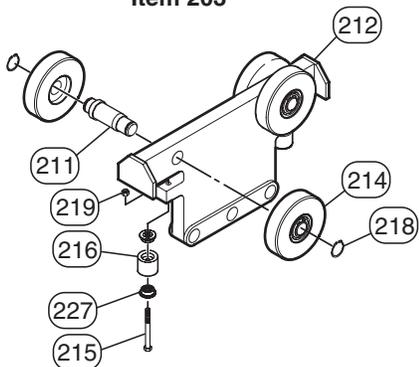
(Dwg. MHP2078)

**ZRA1/ZRT
Universal Trolley
Item 202**



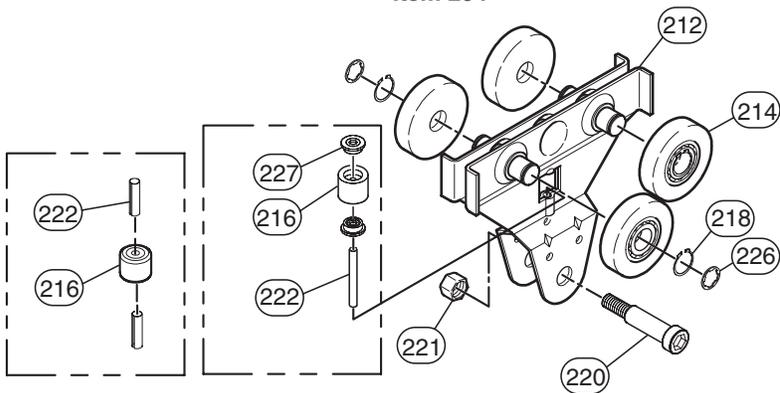
(Dwg. MHP2079)

**ZRA2/ZRS2/3 Load Trolley
Item 203**



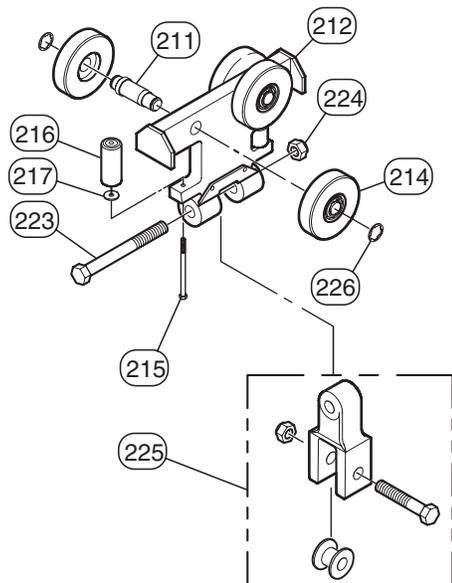
(Dwg. MHP2081)

**ZRA1/ZRA2/ZRS2/ZRS3
Universal Trolley
Item 204**



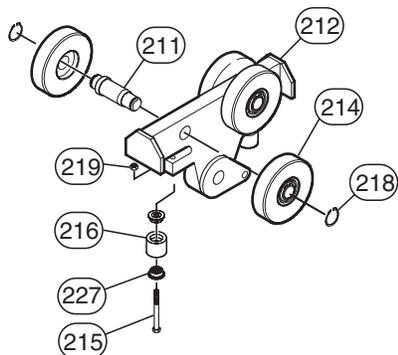
(Dwg. MHP2080)

**ZRA1/ZRAT Trolley
Item 205**



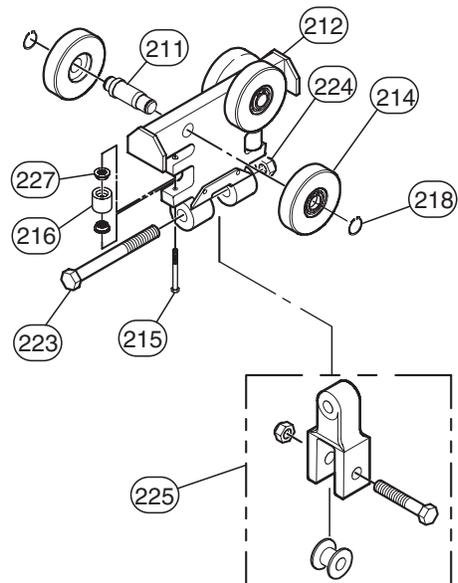
(Dwg. MHP2082)

**ZRA2/ZRS2/3
Universal Trolley
Item 206**



(Dwg. MHP2083)

**ZRA2
Load Trolley
Item 207**



(Dwg. MHP2139)

TROLLEY PARTS LIST

ZRA1 Universal Aluminum Trolley 500 lbs (227 kg) Capacity (Dwg. MHP2077)

Item No.	Description of Part	Qty. Total	Part Number	
			ZRA1	
200	Trolley Assembly	1	30204	
211	Axle	2	30203	
212	Trolley Body	1	30201	
214	Wheel Assembly	4	30208	
215	Bolt	2	70476	
216	Guide Roller	2	30223	
217	Washer	4	74504	
226	Clip Ring	4	99085	

ZRA2 and ZRS2/3 Aluminum Reaction Trolley 1000 lbs (454 kg) Capacity with Bracket (Dwg. MHP2078)

Item No.	Description of Part	Qty. Total	Part Number	
			ZRA2	ZRS2/3
201	Trolley Assembly	1	30016	30511
211	Axle	3	93934	
212	Trolley Body	1	30014	
214	Wheel Assembly	6	30056	
215	Bolt	2	70484	
216	Guide Roller	2	93935	93936
218	Retainer Ring	6	93939	
219	Locknut	2	75581	
227	Bearing	4	65038	

ZRA1 and ZRAT Universal Trolley (Aluminum) 500 lbs (227 kg) Capacity (Dwg. MHP2079)

Item No.	Description of Part	Qty. Total	Part Number	
			ZRA1	ZRAT
202	Aluminum Trolley	1	30279	31056
211	Axle	2	30203	
212	Trolley Body	1	30278	
214	Wheel Assembly	4	30208	31007
215	Bolt	2	70484	
216	Guide Roller	2	30223	
217	Washer	4	74504	
226	Clip Ring	4	99085	

ZRA2 and ZRS2/3 Aluminum Load Trolley 1000 lbs (454 kg) Capacity (Dwg. MHP2081)

Item No.	Description of Part	Qty. Total	Part Number	
			ZRA2	ZRS2/3
203	Trolley Assembly	1	30015	30510
211	Axle	2	93934	
212	Trolley Body	1	30014	
214	Wheel Assembly	4	30056	
215	Bolt	2	70484	
216	Guide Roller	2	93935	93936
218	Retainer Ring	4	93939	
219	Locknut	2	75581	
227	Bearing	4	65038	

ZRA1 and ZRA2 Universal Trolley (Steel) 500 lbs (227 kg) Capacity (Dwg. MHP2080)

Item No.	Description of Part	Qty. Total	Part Number		
			ZRA1	ZRA2	
204	Steel Trolley	1	30259	30126	30131
212	Trolley Body	1	30602	30125	
214	Wheel Assembly	4	30208	30056	
216	Guide Roller	1	30262	93935	
218	Retainer Ring	4	---	93939	
220	Shoulder Bolt	1	72013	---	72608
221	Locknut	1	75583	---	75585
222	Roll Pin	1 (2)	77057	77062	
226	Clip Ring	4	99085	---	
227	Bearing	2	---	65038	

ZRS2/3 Universal Trolley (Steel) 1000 lbs (454 kg) Capacity (Dwg. MHP2080)

Item No.	Description of Part	Qty. Total	Part Number	
			ZRS2/3	
204	Trolley Assembly	1	30561	30565
212	Trolley Body	1	30125	
214	Wheel Assembly	4	30056	
216	Guide Roller	1	93936	
218	Retainer Ring	4	93939	
220	Shoulder Bolt	1	---	72608
221	Locknut	1	---	75585
222	Pin	1	77062	
227	Bearing	2	65038	

ZRA1 and ZRAT Hoist Trolley - Aluminum
500 lbs (227 kg) Capacity (Dwg. MHP2082)

Item No.	Description of Part	Qty. Total	Part Number		
			ZRA1	ZRAT	
205	Aluminum Trolley	1	30304	31057	30281
211	Axle	2	30203		
212	Trolley Body	1	30280		
214	Wheel Assembly	4	30208	31007	
215	Bolt	2	70484		
216	Guide Roller	2	30223		
217	Washer	2	74504		
223	Bolt	1	72623	---	
224	Locknut	1	75587	---	
225	Hook Bracket Assy	1	30903	---	
226	Clip Ring	4	99085		

ZRA2 Aluminum Load Trolley
1000 lbs (454 kg) Capacity (Dwg. MHP2139)

Item No.	Description of Part	Qty. Total	Part Number		
			ZRA2		
207	Aluminum Trolley	1	30172	30923	30314
211	Axle	2	93934		
212	Trolley Body	1	30171		
214	Wheel Assy	4	30056		
215	Bolt	2	70416		
216	Guide Wheel Assy	2	93935		
218	Retainer Ring	4	93939		
223	Bolt	1	---	72623	
224	Locknut	1	---	75587	
225	Hook Bracket Assy	1	---	30903	
227	Bearing	4	65038		

ZRA2 and ZRS2/3 Aluminum Trolley
1000 lbs (454 kg) Capacity (Dwg. MHP2083)

Item No.	Description of Part	Qty. Total	Part Number	
			ZRA2	ZRS2/3
206	Aluminum Trolley	1	30011	30512
211	Axle	2	93934	
212	Trolley Body	1	30010	
214	Wheel Assembly	4	30056	
215	Bolt	2	70484	
216	Guide Roller	2	93935	93936
218	Retainer Ring	4	93939	
219	Locknut	2	75581	
227	Bearing	4	65038	

PARTS ORDERING INFORMATION

These units are designed and constructed to provide long, trouble-free service. In time it may become necessary to order and install new parts to replace those that have been subjected to wear.

Use of other than **Ingersoll-Rand** replacement parts may result in decreased performance, and may, at the company's option invalidate the warranty. For prompt service and genuine **Ingersoll-Rand** parts, provide your nearest Distributor with the following:

1. Complete unit model number.
2. Part number and part description as shown in this manual.
3. Quantity required.

For your convenience and future reference it is recommended that the following information be recorded:

Model Number _____

Serial Number _____

Date Purchased _____

Return Goods Policy

Ingersoll-Rand will not accept any returned goods for warranty or service work unless prior arrangements have been made and written authorization has been provided from the location where the goods were purchased.

NOTICE

• **Continuing improvement and advancement of design may produce changes to this unit which are not included in this manual. Manuals are periodically revised to incorporate changes. Always check manual edition number on front cover for latest issue.**

Disposal

When the life of the unit has expired, it is recommended that the air motor be disassembled, degreased and parts separated as to materials so that they may be recycled.

For additional information contact:

**Ingersoll-Rand
Zimmerman Handling Systems**

1872 Enterprise Drive
Rochester Hills, MI 48309
Phone: (248) 293-5700
Fax: (248) 293-5800

or

Ingersoll-Rand

Douai Operations
111, avenue Roger Salengro
59450 Sin Le Noble, France
Phone: (33) 3-27-93-08-08
Fax: (33) 3-27-93-08-00

For additional information on the following products order the publication by the referenced Part/Document Number listed:

Publication	Part/Document Number	Publication	Part/Document Number
Z-Balancer	ZBSM0195	Z-Rail System	MHD56159
Rotary Action Handler	MHD56163	Valu-Trak Rail System (discontinued product)	MHD56161
Bundle Handler	MHD56227		

NOTES

LIMITED WARRANTY

Ingersoll-Rand Company (I-R) warrants to the original user its Products to be free of defects in material and workmanship for a period of one year from the date of purchase. **I-R** will repair, without cost, any Product found to be defective, including parts and labor charges, or at its option, will replace such Products or refund the purchase price less a reasonable allowance for depreciation, in exchange for the Product. Repairs or replacements are warranted for the remainder of the original warranty period.

If any Product proves defective within its original one year warranty period, it should be returned to any Authorized **I-R** Material Handling Service Distributor, transportation prepaid with proof of purchase or warranty card.

This warranty does not apply to Products which **I-R** has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine **I-R** parts.

I-R makes no other warranty, and all implied warranties including any warranty of merchantability or fitness for a particular purpose are limited to the duration of the expressed warranty period as set forth above. I-R's maximum liability is limited to the purchase price of the Product and in no event shall I-R be liable for any consequential, indirect, incidental, or special damages of any nature rising from the sale or use of the Product, whether based on contract, tort, or otherwise.

Note: Some states do not allow limitations on incidental or consequential damages or how long an implied warranty lasts so that the above limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

IMPORTANT NOTICE

It is our policy to promote safe delivery of all orders.

This shipment has been thoroughly checked, packed and inspected before leaving our plant and receipt for it in good condition has been received from the carrier. Any loss or damage which occurs to this shipment while en route is not due to any action or conduct of the manufacturer.

Visible Loss or Damage

If any of the goods called for on the bill of lading or express receipt are damaged or the quantity is short, do not accept them until the freight or express agent makes an appropriate notation on your freight bill or express receipt.

Concealed Loss or Damage

When a shipment has been delivered to you in apparent good condition, but upon opening the crate or container, loss or damage has taken place while in transit, notify the carrier's agent immediately.

Damage Claims

You must file claims for damage with the carrier. It is the transportation company's responsibility to reimburse you for repair or replacement of goods damaged in shipment. Claims for loss or damage in shipment must not be deducted from the **Ingersoll-Rand** invoice, nor should payment of **Ingersoll-Rand** invoice be withheld awaiting adjustment of such claims as the carrier guarantees safe delivery.

You may return products damaged in shipment to us for repair, which services will be for your account and form your basis for claim against the carrier.

United States Office Locations

Technical Support

**Ingersoll-Rand
Zimmerman Handling
Systems**
1872 Enterprise Drive
Rochester Hills, MI 48309
Phone: (248) 293-5700
Fax: (248) 293-5800

For Order Entry, Order Status

**Ingersoll-Rand
Global Logistics**
P.O. Box 618
510 Hester Drive
White House, TN 37188
Phone: (615) 474-8665
Fax: (615) 672-0854

Web Site:

www.irco.com

Regional Sales Offices

Annandale, NJ
P.O. Box 970
1467 Route 31 South
Annandale, NJ 08801
Phone: (908) 238-7000
Fax: (908) 238-7048

Detroit, MI
1872 Enterprise Drive
Rochester Hills, MI 48309
Phone: (248) 293-5700
Fax: (248) 293-5800

International Office Locations

Offices and distributors in principal cities throughout the world. Contact the nearest **Ingersoll-Rand** office for the name and address of the distributor in your country or write/fax to:

Canada National Sales Office Regional Warehouse Toronto, Ontario

51 Worcester Road
Rexdale, Ontario
M9W 4K2
Phone: (416) 213-4500
Fax: (416) 213-4510

Order Desk

Fax: (416) 213-4506

Latin America Operations

Ingersoll-Rand
730 NW 107th Avenue
Suite 300, Miami, FL
33172-3107
Phone: (305) 559-0500
Fax: (305) 222-0864

Europe, Middle East and Africa

**Ingersoll-Rand
Material Handling
Douai Operations**
111, avenue Roger Salengro
59450 Sin Le Noble, France
Phone: (33) 3-27-93-08-08
Fax: (33) 3-27-93-08-00

Asia Pacific Operations Ingersoll-Rand Ltd.

42 Benoi Road
Jurong, Singapore
629903
Phone: 65-861-1555
Fax: 65-862-1373

Russia

Ingersoll-Rand
Kuznetsky Most 21/5
Entrance 3
Moscow 103895
Russia
Phone: (7) 501 923 9134
Fax: (7) 501 924 4625

Australia

Ingersoll-Rand Aust
1 Hartnett Drive
Seaford, Vic 3198
Australia
Phone: 61 3 95541642
Fax: 61 3 95541607