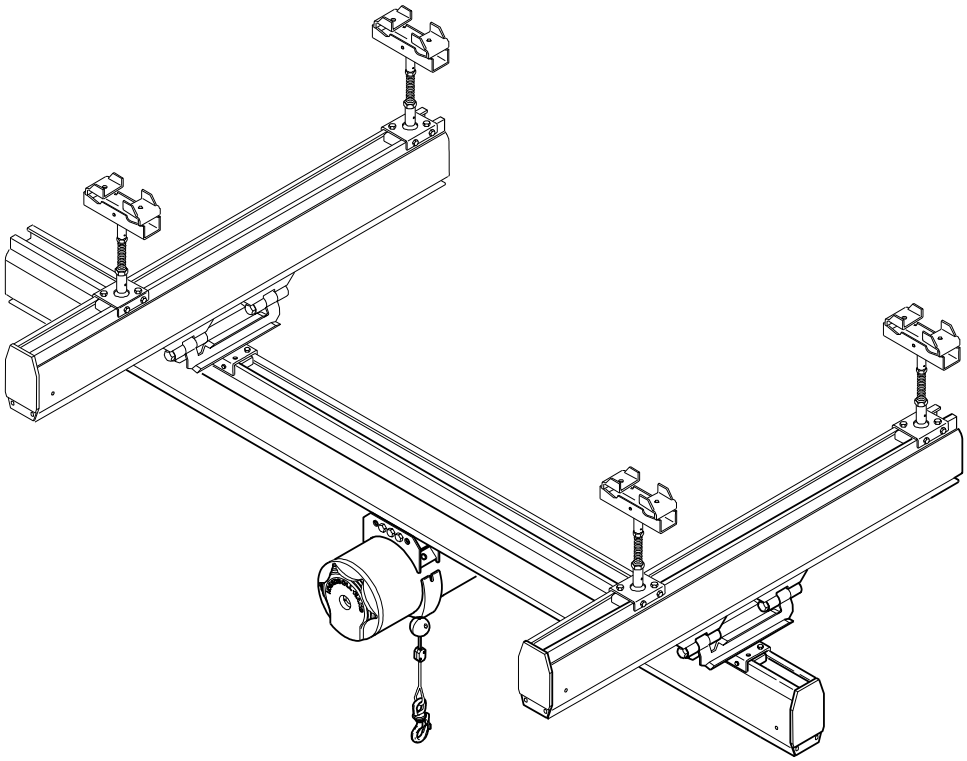
Overhead Rail System



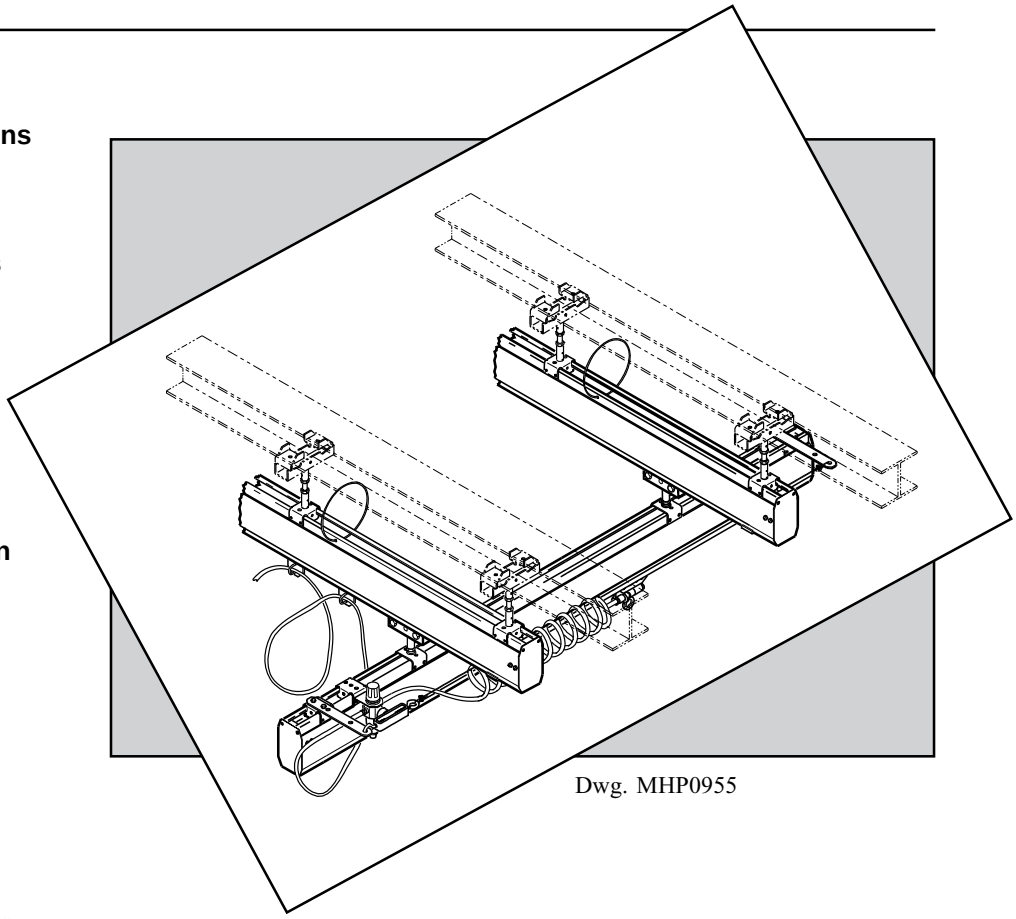
I-BEAM Suspension Kit

Installation, Operation & Maintenance Manual

Form MHD56120
Edition 1
September 1996
71306070

INGERSOLL-RAND
MATERIAL HANDLING

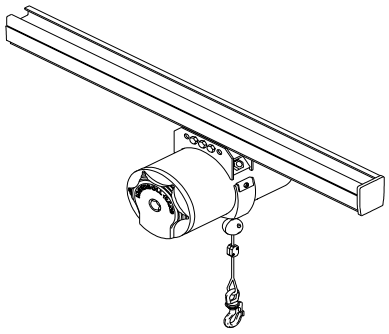
CONTENTS



Dwg. MHP0955

This manual provides necessary information for the **Ingersoll-Rand** I-Beam Suspension Overhead Rail System. It also provides an overview and general information on other **Ingersoll-Rand** Overhead Rail Systems, products and equipment.

While its scope cannot be complete unless addressing a specific system in a specific environment, it should give the installer and general operator a clearer picture of the systems that can be assembled with **Ingersoll-Rand** equipment and accessories.

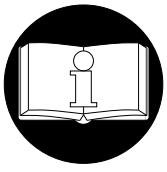


Dwg. MHP0966

Congratulations on the purchase of your Ingersoll-Rand Overhead Rail System!

This Overhead Rail system provides greater range of movement for transporting and positioning loads. It is a powerful resource that allows you to handle loads in less time and with greater efficiency. However, it is easy to take the power at your fingertips for granted, and inadvertently create dangerous situations. Take the time to review the accompanying safety issues and requirements in this manual. Use them in the installation and everyday service of the System and you will enjoy its safe operation and service for many years to come.

This manual contains important safety, installation, operation and maintenance information.



Make this manual available to all persons responsible for the operation, installation and maintenance of these products.

⚠WARNING **Do not use this Overhead Rail System for lifting, supporting or transporting people. Do not use the System to lift or support loads over people. Always operate, inspect and maintain this equipment in accordance with applicable safety codes and regulations.**

*Even if you feel you are familiar with this or similar equipment, you **should read** this manual before installing and operating the system.*

Danger, Warning, Caution and Notice
This manual contains important safety information. Disregard of this information may result in injury or damage of property. The words and icons on the right identify the level of potential hazard.

The National Safety Council, Accident Prevention Manual for Industrial Operations, Eighth Edition and other recognized 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 lifting or pulling 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.
Ingersoll Rand Material Handling Overhead Rail Systems are tested to rigid standards using the latest manufacturing technology.

It is extremely important that mechanics and operators be familiar with installation and servicing procedures of these products., and have the physical capability to conduct the procedures. These personnel shall have a working knowledge that includes:

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

Ingersoll-Rand can not anticipate the circumstances and procedures, nor potential results and hazards of user's installation, operation, maintenance and repair methods. If the user conducts procedures not specifically recommended by the manufacturer, the owner and/or user must ensure that actions taken do not endanger people or property. If unsure of an operation or maintenance procedure, personnel should place the product in a safe condition and contact supervisors and/or **Ingersoll-Rand** for technical
assistance.

Safety Summary
- Do not use this system for lifting, supporting or transporting people.
- At no time should loads be suspended over people.
- The building foundation and supporting structures for this system must adequately support the system, trolley hoist or positioner, attached equipment and intended load to a rating of five times their combined weight. This is the customer's responsibility. If in doubt consult a registered structural engineer.
- The attached hoist or positioner, fasteners, cable, chains and support devices must carry a rating of five times the system rated capacity.

⚠ DANGER "**DANGER**" indicates the presence of a hazard which ***will*** cause ***severe*** injury, death, or substantial property damage if the hazard is ignored.

⚠ WARNING "**WARNING**" indicates the presence of a hazard which ***can*** cause ***severe*** injury, death or substantial property damage if the warning is ignored.

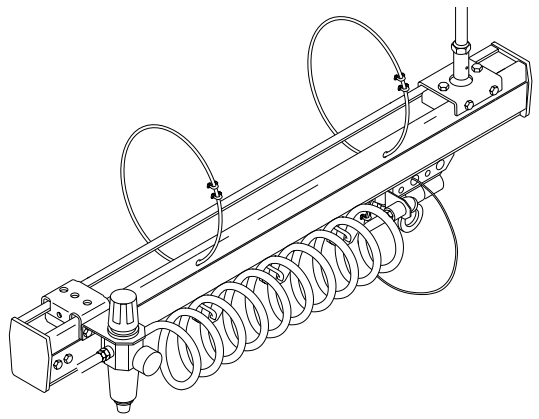
⚠ CAUTION "**CAUTION**" indicates the presence of a hazard which ***will*** or ***can*** cause injury or property damage if the warning is ignored.

NOTICE "**NOTICE**" notifies people of installation, operation or maintenance information which is important but not hazard-related.

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 with the manufactured product but address the final installation. It is the owner's and user's responsibility to determine the suitability of a product for any particular use. The owner and user should check all applicable industry, trade association, federal, state and local regulations, and be certain the applicable standards are available and adhered to during system installation, operation, maintenance and repair. Read all operating instructions and warnings before operation.
This manual provides dealers, mechanics, operators and personnel with the information required to install, operate, maintain and repair the products described herein.

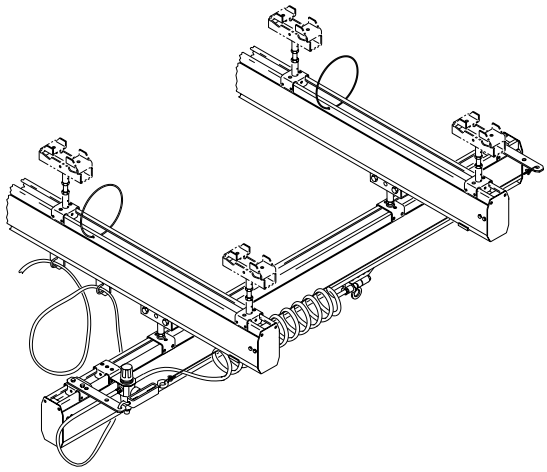
SYSTEM CONFIGURATIONS

Single Runway System



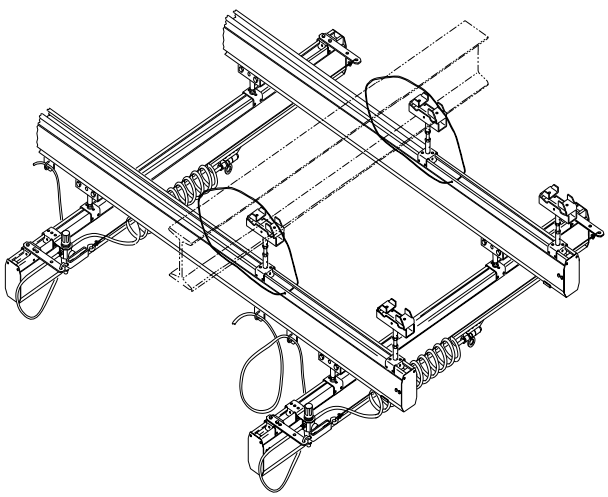
Dwg. MHP0737

Dual Runway Single Bridge System



Dwg. MHP0738

Dual Runway Dual Bridge

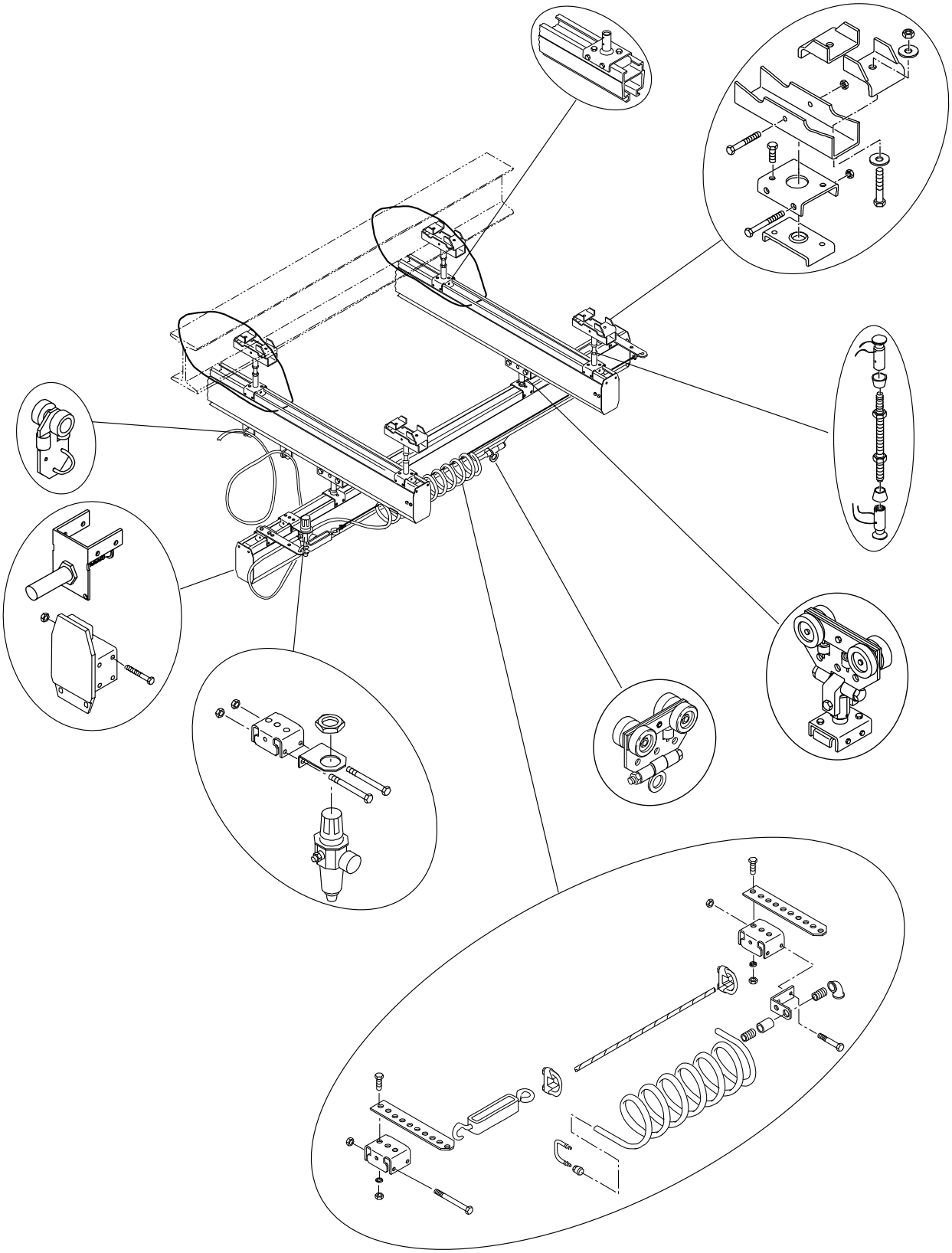


Dwg.MHP1055

Rail System Capacity Table

Model	Number and Size of Runways	Number and Size of Bridges	End Truck Type	Load Trolley Type	Number of Positioners	Capacity Max. (lbs)	
KP4000	single - 4 in	none	none	2 wheel - 4 in	one	1186	538
KP40x1	dual - 4 in	one - 4 in	2 wheel - 4 in	2 wheel - 4 in	one	500	227
KP40x2	dual - 4 in	two - 4 in	dual 2 - 4 in	dual 2 - 4 in	two	1000	454
KP4800	single - 8 in	none	none	2 wheel - 8 in	one	10440	4735
KP48x1	dual - 8 in	one - 8 in	2 wheel - 8 in	dual 3 - 8 in	one	1000	907
KP48x2	dual - 8 in	two - 8 in	dual 3 - 8 in	dual 3 - 8 in	two	2000	907

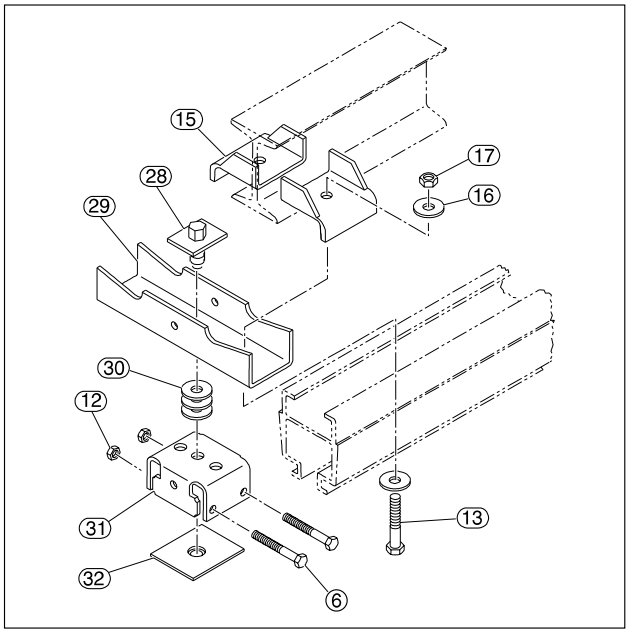
I-BEAM SYSTEM



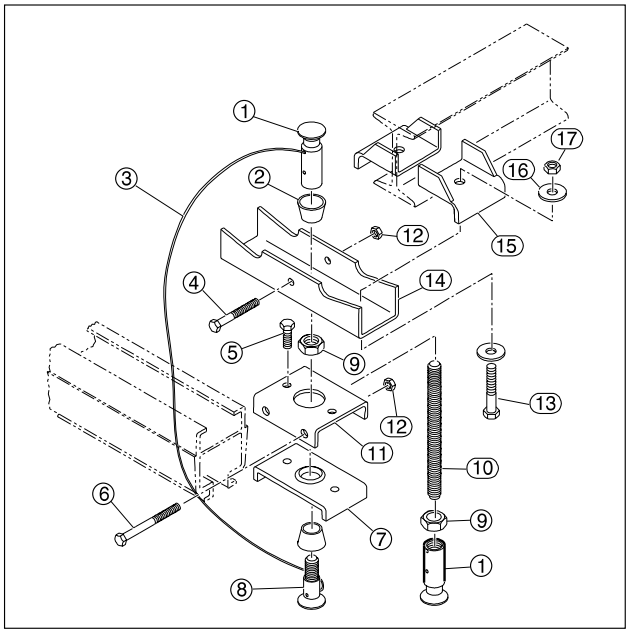
Dwg. MHP1050

I-BEAM SYSTEM COMPONENTS - DRAWINGS

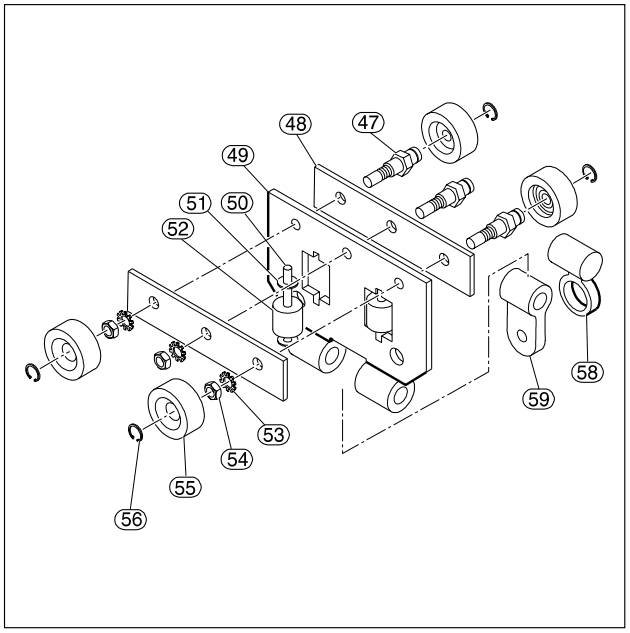
End Truck - 4 inch



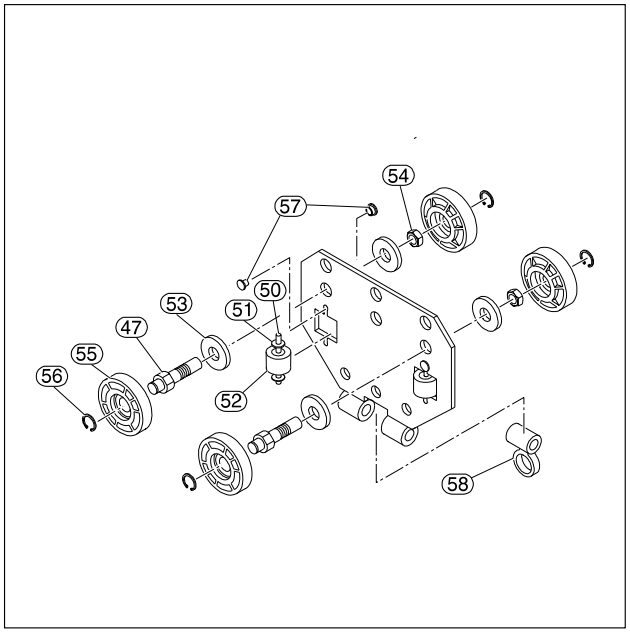
End Truck - 8 inch



Hose Trolley



Load Trolley - 8 inch



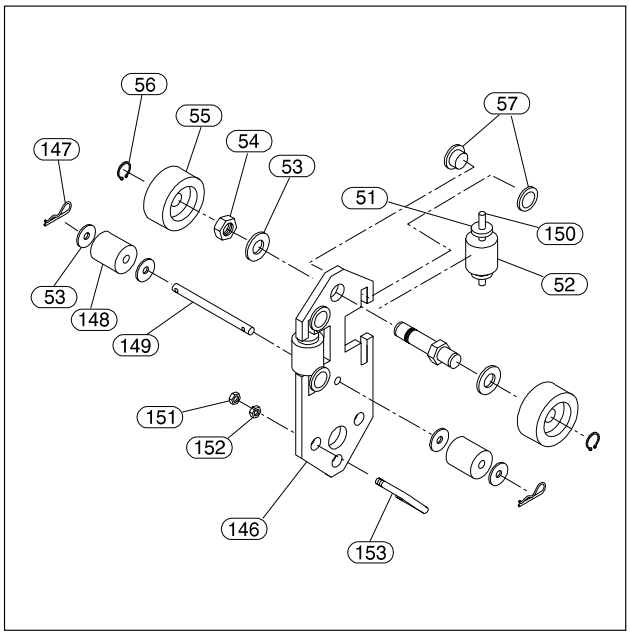
Dwg. MHP1051

Item No.	Description of Part	Part No.—4 in.	Part No.—8 in.
1	Swivel Head - female	KP4046F	KP4046F
2	Insert - nylon	KP4156A	KP4156A
3	Safety Cable		
4	Capscrew	54751	54751
5	Capscrew	50853	50853
6	Capscrew	53539	53539
7	Tap Plate	KP4084	KP4084
8	Swivel Head, Male	KP4046M	KP4046M
9	Jamb Nut	50914	50914
10	Threaded Rod - 6 in. (152 mm)	KP4017-6	KP4017-6
	Threaded Rod - 12 in. (305 mm)	KP4017-12	KP4017-12
11	Mounting Plate	KP4174	KP4174
12	Locknut	50170	50170
13	Capscrew	51763	51763
14	Bottom Bracket (2.33 - 5 in. [59 - 127 mm] wide flange)	KP4090	KP4090
	Bottom Bracket (5 - 7 in. [127 - 178 mm] wide flange)	KP4091	KP4091
15	Wedge	KP4093	KP4093
16	Flatwasher	7106844	7106844
17	Locknut	51750	51750
28	Cage Plate Bolt	KP4069	KP4069
29	Bottom Bracket — 2.33 - 5 in. (59 - 127 mm) wide flange	KP4078	KP4078
	Bottom Bracket — 5 - 7 in. (127 - 178 mm) wide flange	KP4079	KP4079
30	Spacer	KP4088	KP4088
31	Fixed Hanger Bracket	KP4085	KP4860
32	Cage Nut Plate	KP4089	KP4089
—	Load Trolley/End Truck Assembly	R003	R828
47	Axle	KP4144	KP4838
48	Outer Plate	KP4159	KP4159
49	Inner Plate	KP4146	KP4819A
50	Guide Roller Pin	KP4133	KP4133
51	Guide Roller Washer	KP 4132	KP 4132
52	Guide Roller	KP4134	KP4836
53*	Washer	---	KP4136
54	Locknut	53128	51011
55*	Wheel		
56*	Retainer		
57	Rivet	---	T312500500F
58	Eye Bolt	KP4147	KP4147
59	Male Tab	KP4148	---

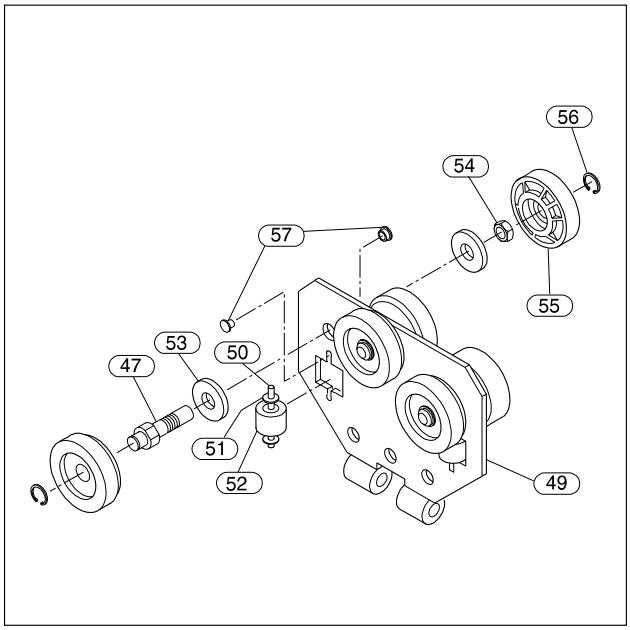
*Only available as assembly

I-BEAM SYSTEM COMPONENTS - DRAWINGS

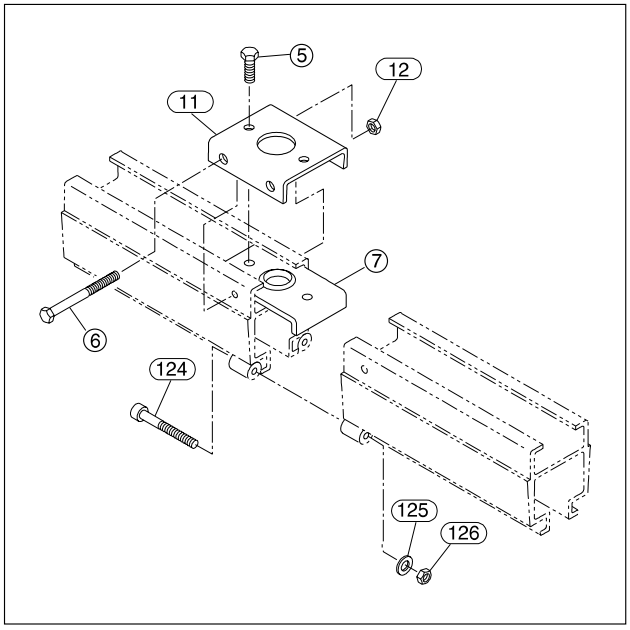
Hose Trolley



End Truck



Splice Kit

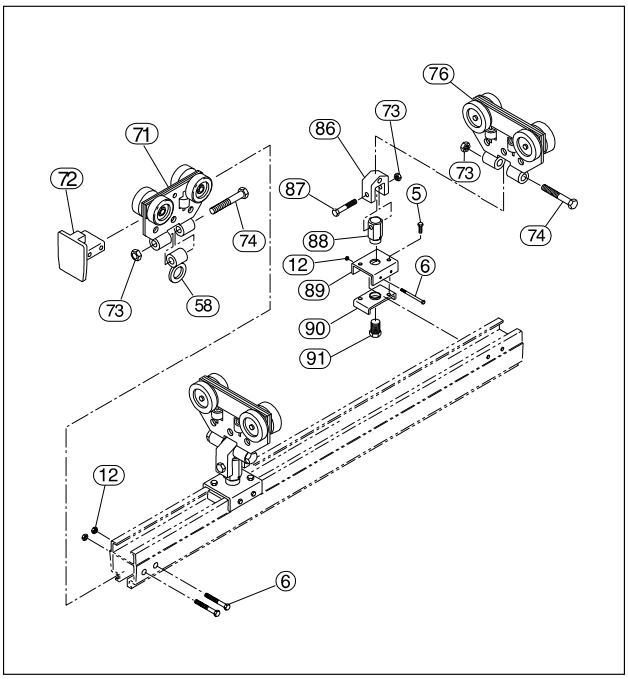


Dwg. MHP1052

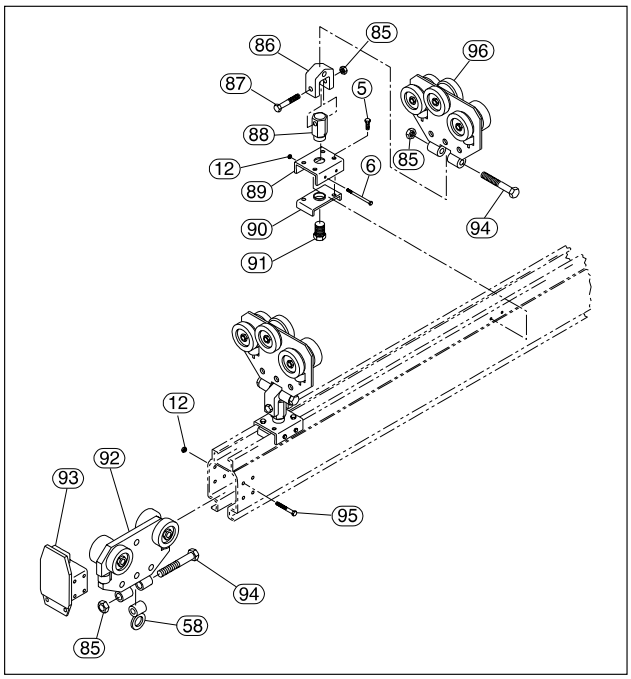
Item No.	Description of Part	Part No.—4 in.	Part No.—8 in.
5	Capscrew	50853	50853
6	Capscrew	53539	53539
7	Tap Plate	KP4084	KP4084
11	Mounting Plate	KP4174	KP4174
12	Locknut	50170	50170
47	Axle	KP4144	KP4838
49	Inner Plate	KP4146	KP4819A
50	Guide Roller Pin	KP4133	KP4133
51	Guide Roller Washer	KP 4132	KP 4132
52	Guide Roller	KP4134	KP4836
53*	Washer	---	KP4136
54	Locknut	53128	51011
55*	Wheel		
56*	Retainer		
57	Rivet	---	T312500500F
124	Capscrew	71305569	53539
125	Flat Washer	51676	50177
126	Locknut	53541	50170
146	Hose Trolley Plate	KP4123	KP4123
147**	Cotter Pin		
148	Bottom Glide Roller	KP4134	KP4134
149	Bottom Glide Roller Pin	KP4126	KP4126
150	Glide Roller Pin	KP4125	KP4125
151**	Locknut		
152**	Flatwasher		
153**	“U” Bolt		

* Only available as assembly
** Only available as assembly

Four Inch Bridge



Eight Inch Bridge



Dwg. MHP1049

Item No.	Description of Part	Part No.—4 in.	Part No.—8 in.
5	Capscrew	50853	50853
6	Capscrew	53539	53539
12	Locknut	50170	50170
58	Eye Bolt	KP4147	KP4147
71	Load Trolley	KP4003	---
72	End Cap (4 in.)	KP4179	---
73	Locknut	50812	50812
74	Capscrew	KP4180	KP4180
86	End Truck Hanger	KP4024	KP4024
87	Capscrew	53997	53997
88	End Truck Pivot	KP4168	KP4168
89	Mounting Plate	KP4174	KP4178
90	Tap Plate	KP4175	KP4175
91	Capscrew	54221	54221
92.	Load Trolley	---	KP4189
93	End Cap	---	KP4849
	Shock Absorber End Cap	---	KP4085
95	Capscrew	---	53840
96	End Truck with Kick-Up	---	KP4828

TOOL REQUIREMENTS

Main System Installation:
9/16 in. deep well socket
3/4 in. shallow well socket
3/4 - 1/2 in. drive socket
1/2 in. socket wrench
9/16 in. combination wrench
Heavy polyurethane mallet
3/4 in. open end wrench
Laser level (optional)
Hand truck
Ladders or scaffolding

Swivels:
15/16 in. open end wrench

Safety Cable:
Side cutters
Lockwire pliers
0.040 in. (1 mm) dia. lockwire
KP4109 secure retreat cable
Safety retainer assemblies

Splicing Rails:
7/16 in. deep well socket
3/16 in. allen wrench
1/2 in. ratchet

Note
All fasteners are standard thread with the exception of swivels which are reverse threaded.
During installation keep parts and tools at least 6 ft (2 m) clear of the workspace area until needed.

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

NOTICE **Do not overtighten fasteners or bolts. Overtightening may weaken fasteners.**

⚠ CAUTION **Runways more than 8 ft (2.4 m) in length may require a separate lifting device during installation. Securely attach the runway or bridge to the lifting device and attach a safety cable to the load in case of accidental release from the lifting device.**

⚠WARNING **If a leveling laser is used, wear proper eye protection and follow all manufacturer's directions and safety precautions when using the device.**

⚠WARNING **Make certain all ladders or scaffolding used by installation personnel are reliable and capable of supporting the combined weight of the installer and equipment.**

Torque Specification Table

Runway	Torque
Runway Hanger Plate (Top):	32-35 ft/lbs (42-47 Nm)
Runway Hanger Plate (Side):	32-35 ft/lbs (42-47 Nm)
End Cap Capscrews:	25-30 ft/lbs (34-40 Nm)
End Stop Capscrews:	25-30 ft/lbs (34-40 Nm)
Splice Kit Capscrews:	32-35 ft/lbs (42-47 Nm)
Shock Absorber Ca[screws:	32-35 ft/lbs (42-47 Nm)
Safety Cable U-Bolts:	20-30 ft/lbs (27-40 Nm)
Air Regulator Mount Capscrews:	32-35 ft/lbs (42-47 Nm)
Air Regulator Mount Capscrews:	Hand tighten
1/2 in. Air Fittings:	Hand tighten

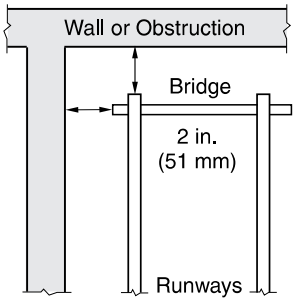
Bridge	Torque
End Truck Hanger Capscrews:	32-35 ft/lbs (42-47 Nm)
Safety Cable U-Bolts:	20-30 ft/lbs (27-40 Nm)
End Caps:	25-30 ft/lbs (34-40 Nm)
Load Trolley Main Capscrews:	65-75 ft/lbs (87-101 Nm)

I-Beam Clamp	Torque
Wedge Capscrews:	32-35 ft/lbs (42-47 Nm)
Center Bolt - Main Bracket:	32-35 ft/lbs (42-47 Nm)
Jamb Nuts:	40-45 ft/lbs (54-61 Nm)

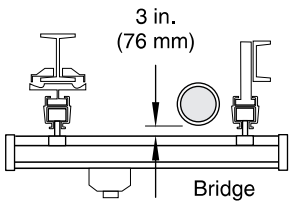
SPACE REQUIREMENTS

Take the necessary time to determine the best installation location to optimize the systems capability. When considering an appropriate location with adequate ratings to support the System and its loads, keep in mind that factors such as snow or standing water may decrease ratings when the System is mounted to the supports of a flat roof. 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 laying out the runways and bridge on the work space floor, or marking off the proposed runway and bridge placement on the floor with masking tape. This mock-up allows you to walk off the proposed load path and direction of travel.



End and Side Clearances



Top Clearance

Dwg. MHP0949

PRE-INSTALLATION CHECKLIST

1.	Is the proposed System location away from normal personnel traffic patterns?	☐ YES	☐ NO
2.	Will the operator be able to clearly see the load along its path of travel at all times?	☐ YES	☐ NO
3.	Is the location within easy and safe reach of the load receiving area?	☐ YES	☐ NO
4.	Do personnel and materials have clear access to and from the System?	☐ YES	☐ NO
5.	Will the facility structure and foundation support five times the combined weight of the System, loads and any attachments?	☐ YES	☐ NO
6.	Will the System conflict with utility supply lines, overhead electrical conduit or any utility that could represent a potential danger?	☐ YES	☐ NO
7.	Does the proposed location allow enough space for maximum load travel in the direction you propose?	☐ YES	☐ NO
8..	Is the proposed location in an area easily kept clean and free of obstruction?	☐ YES	☐ NO
9..	Does the proposed location and installation meet all code requirements?	☐ YES	☐ NO
10.	Do the proposed I-Beams and their supports provide sufficient rating to support the system and load weights?	☐ YES	☐ NO

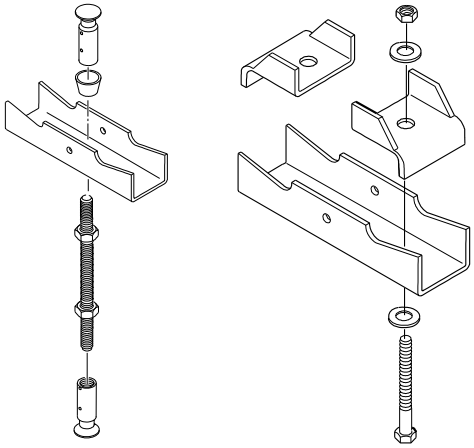
If you have answered no to any of these questions, please copy and fax this checklist to Ingersoll Rand at 206-624-6265 for a free initial consultation.

⚠ DANGER **Check the installation area for conflicts with utility supply lines, overhead electrical conduit or any utility that could present potential danger to the System or personnel.**

⚠ CAUTION **The System support structure must be strong enough to support five times the weight of the rail system and maximum loads. Factors such as snow or standing water may decrease ratings when System is mounted to supports of a flat roof.**

NOTICE **Before starting installation, clear the workspace or set-up area of debris or obstructions. Always keep System workspace clear of obstructions, debris, spills and standing water.**

1. SETUP FOR INSTALLATION / I-BEAM CLAMP

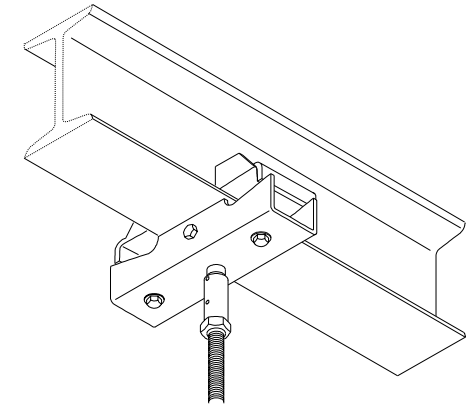


Dwg. MHP0961 Dwg.MHP1053

1. Remove swivels from one end of each threaded rod.
2. Insert one swivel into each I-Beam clamp main bracket and nylon insert.
3. Thread two jamb nuts onto each threaded rod, approximatly 3-4 in (8-10 cm) from each end.
4. Insert one end of the threaded rod with jamb nuts attached, into the receiving end of each swivel in the I-Beam clamp main bracket.
5. Use capscrews to install wedges to each end of the I-Beam clamp bracket.

⚠WARNING **Use extreme care when installing System and assemblies. Avoid distractions until each part of the System is securely attached.**

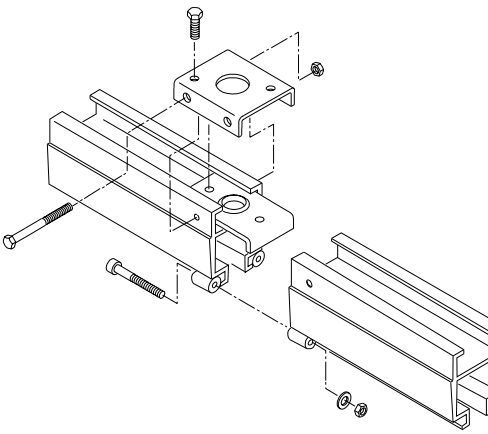
2. I-BEAM CLAMP AND HANGER SPACING



Dwg. MHP0964

1. Turn wedges aside to face away from the center of the I-Beam clamp bracket.
2. Press I-Beam clamp bracket against lower rail of I-Beam.
3. Turn wedges toward the center of the I-Beam.
4. Tighten nuts down on capscrews.
5. Position the clamp to provide the maximum amount of support for the System.
6. Position clamp mounting tabs to maximize their holding surface on the I-Beam's lower rail, and center on beam.
7. Tighten to specification.
8. Evenly divide the number of clamps and hangers between the number of runways that came with your system. If the runways in you kit are longer than 20 ft (6.1 m) for 4 inch rail and 25 ft (7.6 m) for 8 inch rail, then you will have an extra clamp and hanger for each splice.
9. Place a hanger in the runway 12 inches (305 mm) from each end of the runway.
10. The other hangers are evenly spaced out along the runway. DO NOT count or use the splice hangers for this step. Measure these distances, this is the spacing required for the I-Beam clamps.

3. SPLICING RAIL SECTIONS

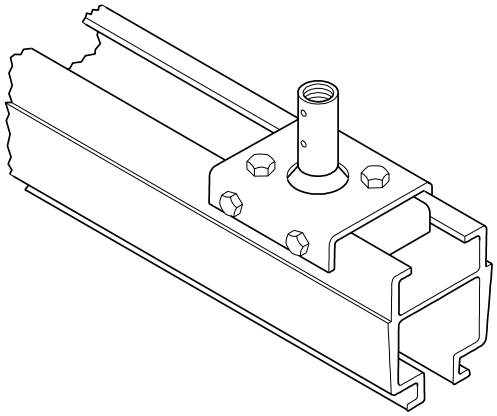


Dwg. MHP1054

1. Insert swivel through upper track tab plate and nylon insert.
2. Insert tab plate and swivel into upper track of one rail section.
3. Join rails. Center tab plate and swivel between rails.
4. Install mounting plate over swivel shaft. Insert bolts through holes in the top and sides of mounting plate.
5. Insert splicing bolts into lower holes on rail ends with washers and nuts.
6. Tighten to specification.

4. INSTALLING RUNWAY SUSPENSION

1. Insert one swivel with nylon insert through the tap plate.
2. Slide this assembly into the top section of the runway.
3. Install the capscrews through the mounting plate and engage the threaded holes in the tap plate.
4. Position hanger assemblies as described in I-Beam Clamp and Hanger Spacing, Section 2
5. Tighten mounting plate capscrews to specifications..

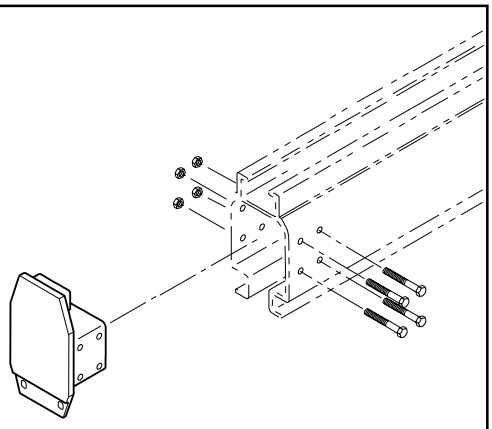


Dwg. MHP0942

⚠WARNING **Before lifting runways into position, tighten hanger brackets enough to prevent falling out during the installation process.**

5. INSTALLING ENDCAP

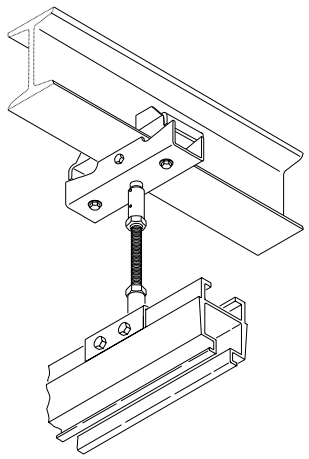
1. Install one end cap into the end of each rail section.
2. Install end cap bolts through sides of the rail section and endcap.
3. Install washers and locknuts and tighten to specification.



Dwg. MHP1057

6. SUSPENDING RUNWAY SECTIONS

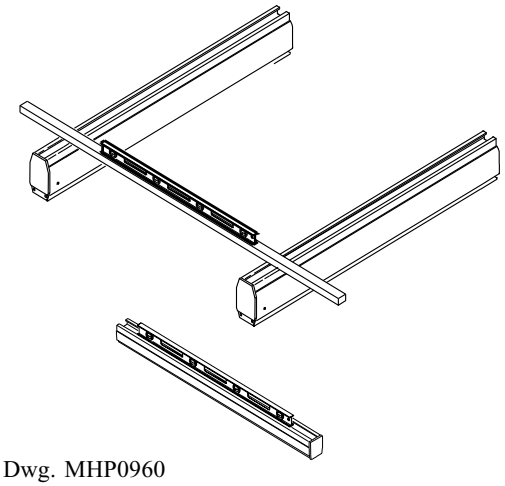
1. Center ladder or scaffolding under the runway, close to the I-Beam clamps.
2. With the help of an assistant raise the runway into position.
3. Connect the swivels attached at each end of the runway to the threaded rod suspended from the I-Beam Clamp.



Dwg. MHP1056

⚠WARNING **Do not lean on or use the Overhead Rail System as a support or balance when installing the System.**

7. LEVELING RUNWAY SECTIONS

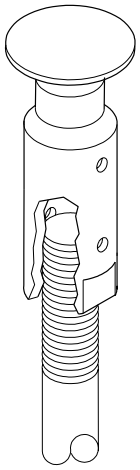


Dwg. MHP0960

1. Place a level on each runway between hangers and level runways first.
2. Place a straight piece of material between runways and level runways with each other. *In most applications an empty rail section may be used as a guide. If using a laser to level the System, use the top outside edge of the rail channel as your guide.*The swivels serve as the adjusting mechanism.
3. See Rail System Tolerance, Section 11 for specifications on leveling.

⚠WARNING **Check runways and bridges are level, prior to installing trucks and trolleys. Trucks and trolleys may roll out of the channel if end stops are not in place. Stay clear of the ends of all runway and bridge sections until runways stops, shock absorbers or end caps are in place.**

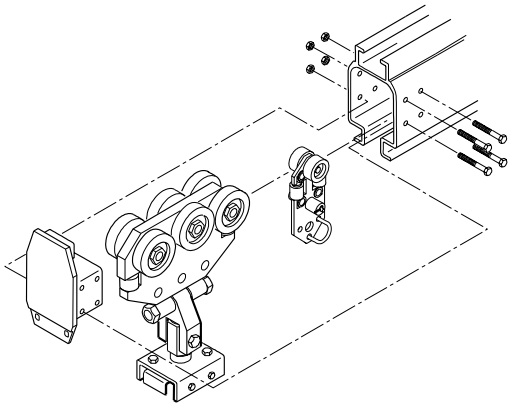
8. CHECKING THREADED ROD



Dwg. MHP0937

1. After all leveling procedures, check the suspension hangers to be sure threaded rods obscure the view hole on the swivel shafts.

9. INSTALLING TROLLEYS, TRUCKS, AND ENDCAPS IN RUNWAYS

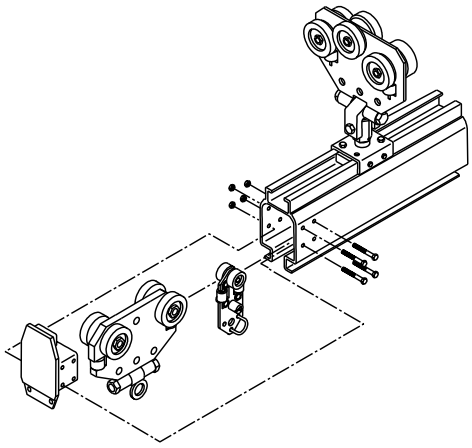


Dwg. MHP1058

1. Determine the runway nearest your air supply.
2. Insert the hose trolleys (one per 4 ft, 1.2 m of hose) into this rail section.
3. Insert hose loops to face outside of System.
4. Insert end trucks into rail sections.
5. Retain trolleys and trucks by installing endcap and bolts in the ends of all rail sections.
6. Order of hose trolley and trucks depend on air supply location.

10. INSTALLATION OF BRIDGE, HOSE TRUCKS, AND LOAD TROLLEY

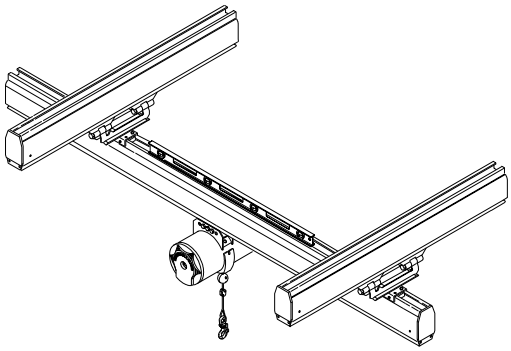
1. Attach bridge to mounting bracket at base of end trucks.
2. Insert one endcap into one end of bridge.
3. Insert hose truck(s) in end of bridge.
4. Insert load trolley in end of bridge.
5. Immediately after inserting trucks and trolleys install end caps and fasteners in ends of all bridges.
6. Order of hose trolley and trucks depends on air supply location.



Dwg. MHP1059

11. LEVELING BRIDGE SECTIONS

1. Place a level on the bridge and level.
2. The runway on one side will have to be raised or lowered to level bridge.
3. See Rail System Tolerance Section for specifications on leveling.

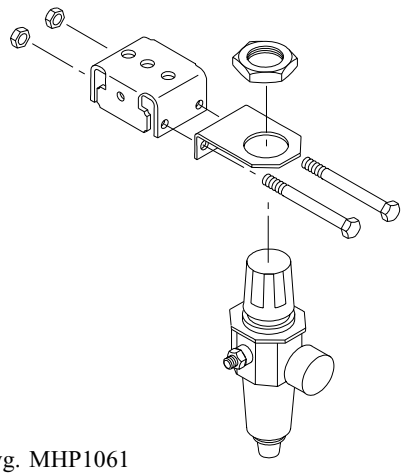


Dwg. MHP1060

12. ASSEMBLING AIR REGULATOR MOUNTING BRACKET

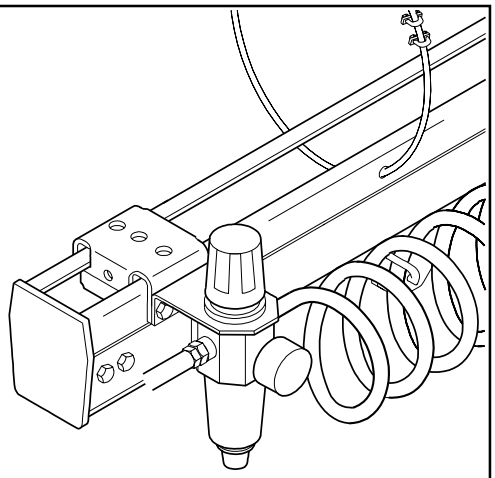
1. Insert the capscrews through the holes provided in the regulator mounting tab.
2. Guide the Air Regulator through the large opening in the regulator mounting tab. Thread the large nut onto the housing and finger tighten.

⚠ CAUTION **Position the air regulator assembly to allow sufficient clearance for personnel and/or work processes in the area.**



Dwg. MHP1061

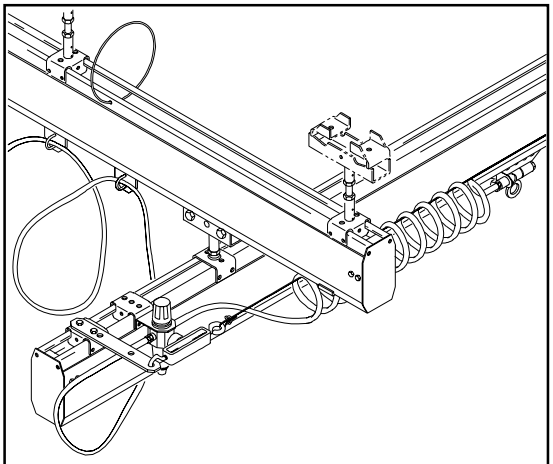
13. INSTALLATION OF AIR REGULATOR AND BRACKET



Dwg. MHP1062

1. Place the air regulator bracket in the correct position on the rail section. Align the holes in the bracket with the holes at the end of the rail section.
2. Attach the regulator mounting tab to the air regulator rail bracket using the capscrews previously placed in the mounting tab, guiding the capscrews though the air regulator rail bracket and the rail section.
3. Install washers and locknuts and tighten to specification.

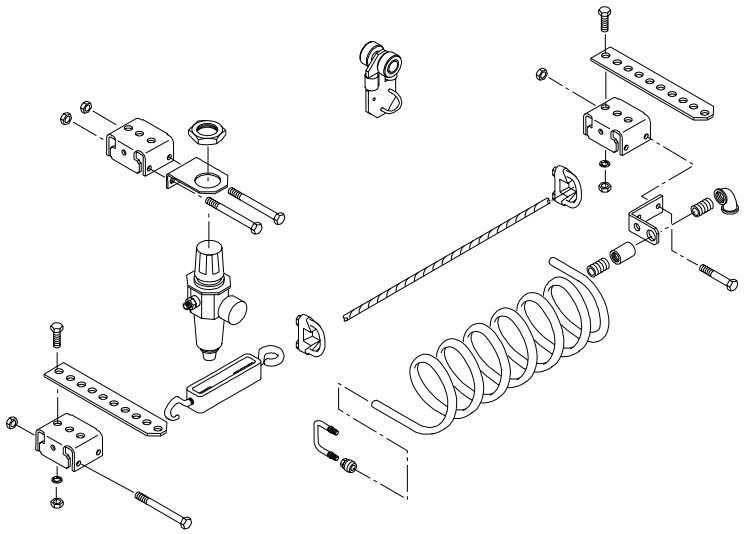
14. AIR SUPPLY LINE AND ACCESSORIES



Dwg. MHP1064

1. Connect the air supply line from the compressor to the air regulator.
2. Thread and loop the air hose through the hose trolleys. Loops should provide enough slack to prevent kinking or binding of the hose.
3. The coiled section of hose provides the link between the regulator and hoist or positioner. Mount coiled hose on bridge section. It provides flexibility and optimum range of movement while maintaining the maximum amount of tension on the line.

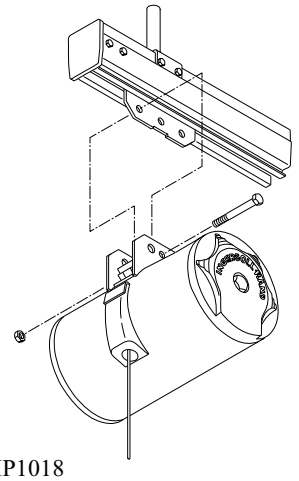
⚠ CAUTION **Allow 1-1/2 times the distance travelled for hose lengths. Inadequate or excessive hose lengths can be hazardous.**



Dwg. MHP1063

15. INSTALLATION OF POSITIONER OR HOIST

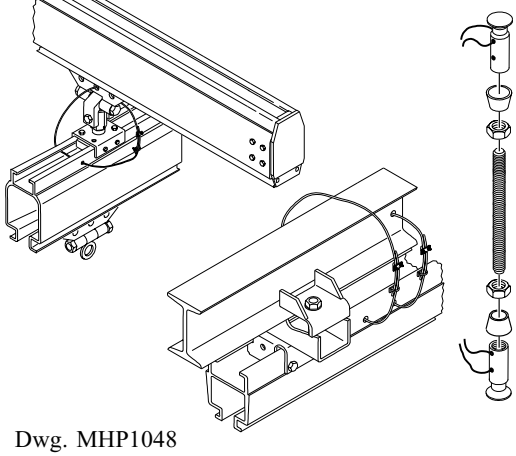
1. Install the hoist or positioner on the load trolley using either the eye ring or the lower bolt-on bracket on the load trolley plate.



Dwg. MHP1018

16. INSTALLATION OF SAFETY CABLE AND LOCKWIRE

1. Thread safety cable through hole in rail section and over the top of the I-Beam. *If for any reason the cable cannot be threaded over the beam, a small hole may have to be drilled in the center of the I-Beam to thread the cable through. Consult a structural engineer before drilling any holes in I-Beams.*
2. Using side cutters, cut cable to length.
3. Fasten each cable with two "U" Bolts.
4. Thread lockwire through holes in upper and lower swivels.
5. Attach at each end by twisting lockwire.



Dwg. MHP1048

17. FINAL ADJUSTMENT CHECK

1. Runway and bridge sections must be level within 1/8 in. (3 mm) throughout entire span.
2. Runway to runway elevation must be within 1/4 in. (6 mm) throughout the length of the rail sections.
3. Centering runway to runway must be within 1/2 in. (13 mm). Runways must be straight, parallel and at the same elevation.
4. Height difference tolerance between rail sections and suspension points should not exceed + or - 5/16 in. (8 mm).
6. Longitudinal leveling: Overall length 1/4 in. (6 mm) maximum. Rate of change for lengths over a 20 ft (6 m) center 1/8 in. (3 mm) maximum.
7. Elevation for multiple runways: Overall length 1/4 in. (6 mm) maximum. Rate of change for lengths over a 20 ft (6 m) center 1/8 in (3 mm) maximum.
8. Centering monorail systems: Overall length 1/2 in. (13 mm) maximum. Rate of change for lengths over a 20 ft (6 m) center 1/8 in. (3 mm) maximum.

⚠ CAUTION **The Overhead Rail System is designed to operate with a minimum of effort. If rails and bridge are not level to specification, unsecured loads may move to the lower end of the rail or bridge when unattended.**

Fig. 1 Elevation Tolerance Adjacent Runways

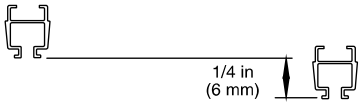


Fig. 2 Parallel Tolerances Between Runways

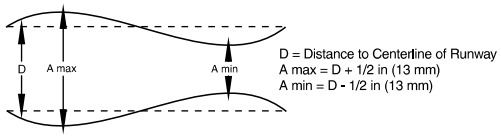
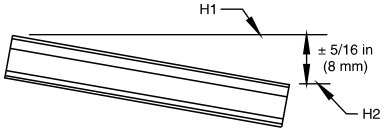


Fig. 3 Level Tolerance Along a Runway



Dwg. MHP0892

INSTALLATION CHECKLIST

Ingersoll-Rand Installation Checklist
for the I-Beam suspended Overhead Rail System

BEFORE LIFTING ANY LOAD DOUBLE CHECK YOUR INSTALLATION!

AT EACH STEP IN THE TESTING PROCESS DOUBLE CHECK THE ITEMS BELOW.

You are free to copy this form for your records and use.

- ☐ Is the support structure for the I-Beams capable of supporting five times the combined weight of the I-Beams, the Overhead Rail System and anticipated loads?
- ☐ Are I-Beams capable of suspending five times the combined weight of the System and anticipated loads?
- ☐ Are I-Beam clamps securely anchored to the beams?
- ☐ Are I-Beam clamp wedges aligned correctly and securely fastened down?
- ☐ Are the bolts in the hanger assemblies maintaining their holding ability?
- ☐ Are all safety cables installed and fastened correctly?
- ☐ Do swivels sit correctly in the I-Beam clamps?
- ☐ Is the safety wire connected between upper and lower swivels secured correctly?
- ☐ Are threaded rods straight and parallel?
- ☐ Do threaded tods obscure view hole in swivel shaft?
- ☐ Are jamb nuts tightened against all swivels?
- ☐ Does end truck sit straight in the rail channels?
- ☐ Do the airhose trolleys and the airhose arrangement, along the runway and bridge, move freely without binds.
- ☐ Are the runways and bridge straight and level to specifications?
- ☐ Is the load trolley plate straight?
- ☐ Do truck and trolley wheels roll freely?
- ☐ Does hoist or positioner move freely throughout the complete range of movement without binding?
- ☐ Are fasteners on rail splices correctly torqued, and are they aligned and straight?
- ☐ Is hoist or positioner secure, and is the connector holding correctly?
- ☐ Will a suspended load maintain its position while suspended at any point of the System's runway?
- ☐ Is any part, sub-assembly or main assembly of the hoist or positioner fractured, broken, bent, or twisted?
- ☐ Does any part show signs of undue stress or loading?
- ☐ Are end caps installed?
- ☐ Are all fasteners secure and correctly torqued?

Notes: _____

_____

_____

_____

_____

_____

_____

_____

_____

If you have any questions regarding the items on the checklist or are experiencing problems or difficulty in any testing process, please copy and fax this checklist to Ingersoll-Rand at 206-624-6265 for consultation.

After you have reviewed and checked off the items on the Installation Checklist, you are ready for the test procedure.

⚠ CAUTION **During the testing procedure clear all personnel from the area.**

⚠ WARNING **Never lift a test load while standing under or in close proximity to the lifting device, bridge rail or connected assemblies.**

⚠ CAUTION **If any problems occur during the testing process, immediately lower the load. Remove the tension from the lifting devices, then correct the problem.**

⚠ CAUTION **Limit access to the System to personnel who have read this manual and are authorized in the installation, operation, maintenance and/or repair of the System.**

1. Before the testing processes are initiated clear all unauthorized personnel from the installation site.
2. All personnel in the testing area should wear appropriate safety equipment while testing procedures are in progress.
3. Use the inspection checklist provided to prevent overlooking a potential hazard.

Step 1

Check to see that bridge, hoist and/or positioner move freely throughout the entire intended work space without binding. Ensure that hoist or positioner does not creep in any position.

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. At each testing step, correct any problems that may occur while testing the System, and retest if necessary before continuing to the next step. If you encounter a problem you do not know how to correct, call your nearest **Ingersoll-Rand** office or Distributor.

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 the System into service. If you encounter a problem you do not know how to correct, call your nearest **Ingersoll-Rand** office or Distributor.

After successfully lifting and maintaining the maximum load rate and completing the testing procedure, the system is ready to operate.

GENERAL OPERATION GUIDELINES

The following warnings and operating instructions are provided as a guide and are intended to avoid unsafe operating practices which might lead to injury or property damage. **Ingersoll Rand** recognizes that most companies who use Overhead Rail Systems have a safety program in force in their plants. In the event that some conflict exists between a rule set forth in this publication and 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. Refer to specific sections in the manual for additional safety information.

Only personnel trained in safety and operation of this product, and are physically fit to do so, should operate the Overhead Rail System. Before each shift, the operator should inspect the System for wear or damage. Periodically, qualified personnel should inspect the System thoroughly and replace worn or damaged parts. (Refer to the INSPECTION section). When a “DO NOT OPERATE” sign is placed on the System, do not operate the System until the sign has been removed by designated personnel. Never use equipment which inspection indicates is worn or damaged.

Only lift loads less than or equal to the rated capacity of the System. (Refer to the “SPECIFICATIONS” section). Because the System is designed to easliy move heavy loads, operators should pay attention to suspended loads at all times, and ensure that the path of the load is clear. Operators must never lift a load over people, use the System for lifting or lowering people, or allow anyone to stand on a suspended load. Do not swing a suspended load.

Do not weld or cut on a suspended load, and do not use any part of the System, including the hoist and positioner chain as a welding electrode. If excessive noise, jamming, overloading, or binding occurs, do not use the System until after correcting the problem. Ensure that after use, or when in a non-operational mode, the System is secured against unauthorized and unwarranted use.

MAINTENANCE

Ingersoll-Rand suggests a thorough maintenance, cleaning and inspection at least semi-annually. However, certain applications or environments may warrant more frequent maintenance.

ITEM	ACTION
I-Beam Clamp:	---
Main Bracket	I
Mounting Tabs	I, T
Threaded Rod	I, T
Jamb Nuts	I, T
Swivel Assembly	I, C
Locknuts*	R
Rail Hanger Assembly	I.C
RAils and Bridges	I, C, L
End Trucks and Load Trolleys	I, C
Rail Stops	I, T
Shock Absorbers	I, T
End Caps	I, T
Splice Sections	I, T
Air Regulator System	I, C
Safety Cables	I
Bolts	I, C, T

Action Explanation:
I = Inspect
C = Clean
T = Tighten to specifications
L = Level to specifications
R = Replace
* Locknuts on end caps and rail splice kits must be replaced, if removed.

NOTICE **Visually inspect the System before each shift for wear or damage.**

NOTICE **Thoroughly inspect the System at least semiannually, and more frequently with heavy use.**

⚠ CAUTION **During maintenance, tag the System: "DANGER- DO NOT OPERATE - EQUIPMENT UNDER REPAIR."**

NOTICE **Advise supervisor or maintenance personnel, according to company policy or procedure, of any needed maintenance. Replace worn or damaged System components. Record all inspection, cleaning, maintenance and repair.**

⚠ CAUTION **Only allow personnel trained in the operation and maintenance of the System to perform service.**

⚠ DANGER **Never perform maintenance on the System while it supports a load.**

NOTICE **After performing maintenance, test the System to 125% of its rated capacity before returning to service.**

⚠ CAUTION **Do not attempt to repair System parts. Replace the part or consult an authorized INGERSOLL-RAND service center.**

⚠ CAUTION **Do not re-use locknuts.**

CLEANING

It is important to schedule a periodic cleaning of the overhead System and its parts.

Frequency of cleaning cycles will depend on the use of the System, the personnel operating the System, and the environment the System is installed in. It is in your best interest to protect the System and its surfaces from abuse, wear, decay, or other harm, and improve its appearance and service life.

In very harsh environments moisture and contaminants can quickly destroy the integrity of the system. Although the system is made mostly of precision 6005 class T-5 strength corrosion resistant aluminum and high impact flair resistant nylon, moisture, humidity, and chemicals in time take their toll. The maintenance and preservation of the bridges, rails and suspension devices is just as necessary as the maintenance of operating equipment whether it be electrical or mechanical.

Use the following procedures to clean the components of the Overhead Rail System.

Clean all swivels bushings and threaded rod with Lubri-Link-Green or sprayed on WD-40 and dry with compressed air.
Clean all trucks and trolleys *except the nylon bushings* using suitable cleaner, dry using low-pressure, filtered, compressed air.
Remove accumulated dirt, sediment, and corrosion on the metal plates, bushings, rollers and pins.
Clean or replace air filter if used with the System.

⚠ DANGER **Solvents and certain cleaning solutions may be hazardous to your health. Beware of mixing cleaners or solvents and the vapors they produce. Use adequate ventilation. Wear protective clothing, goggles, gloves and other appropriate safety wear.**

⚠ CAUTION **Clean up all excess cleaning fluids or spills immediately after they occur.**

NOTICE **During routine cleaning always check for worn, damaged or broken parts needing replacement.**

GENERAL SYSTEM DISASSEMBLY

Never disassemble components or assemblies further than necessary to accomplish the needed repair. If excess force is used, a good part can be damaged during the course of disassembly. Do not use heat to free parts unless they are already worn or damaged beyond repair, and no additional damage will occur to other parts. As a general rule the channel that makes up the rail and bridge sections should be removed by disassembling the separate pieces at the spliced joints. In instances where the rail or bridge sections must be removed in complete assemblies, use a safety cable or chain to restrict the distance a section may fall when removed. Review all safety proceedures listed in the preceeding chapters to familarize yourself with safety issues and precautions.

For your safety follow the steps below and use due care and caution in the disassembly of the system

- Shut off and bleed down air supply.
- Disconnect the air supply and unthread the air lines from the hose trolleys.
- Remove all air accessories from the runway and bridge sections.
- Remove the hoist, positioner or lifting device from the load trolley.
- Remove one end cap from the bridge section.
- Remove the load trolley and air hose trolleys from the bridge section.
- Remove the bolts and end cap from the opposing end of the bridge section.
- Disconnect U-bolts and safety cable from bridge end trucks.
- Remove the bolts that fasten the bridge section to the end trucks.
- Remove the bridge section.
- Remove one end cap from each runway.
- Remove the end trucks, and airline trolleys from the runways.
- Remove safety cable from ends of runways.
- Remove bolts from hanger assemblies.
- Remove rail section.
- Repeat for opposite side.
- Loosen mounting tabs on I-Beam clamp.
- Remove I-Beam clamp.
- Remove swivel assemblies and threaded rods from I-Beam clamps.

⚠ CAUTION **Never disassemble the system alone! Always have someone help you.**

GENERAL INSPECTION

The Overhead Rail System requires a visual inspection before each shift, and a thorough inspection at least every six months. You are free to copy the Inspection Checksheet and maintain it in your records for future reference.

1. Keep proper records of the date, time and personnel responsible for each inspection.
2. Visually examine the System for wear or abrasion due to movement or motion.
3. Check to see if any parts show signs of excessive wear or damage.
4. Is the rail system adjusted correctly? Is it aligned and level to specifications?
5. Inspect all load bearing devices including clamps, swivels, brackets, bolts and nutplates for wear or fatigue due to System use.
6. Check all end caps or rail attachments for damage in the areas around capscrews.
7. Check all shock absorbers for proper functioning of the spring and piston assemblies.
8. Inspect all runway and bridge assemblies for ridges caused by wear. If ridges are app arent, the rail section must be replaced.
9. Inspect all truck and trolley assemblies for worn bushings or endplates.
10. Inspect all threaded items and replace those with damaged threads.
11. Check to see if any minor parts show signs of wear, overloading or undue stress.
12. Inspect all disassembled parts to determine their fitness for continued use.
13. Check hoist or positioner and the bracket that secures it to the trolley. Follow manufacturer's manuals and inspection procedures for these devices.
14. Do not reuse locknuts.

If you have any questions or experience problems or difficulty in the inspection process, please copy and fax your completed Inspection Checklist (p. 23) to Ingersoll-Rand at 206-624-6265 for consultation.

Ingersoll-Rand Overhead Rail System Inspection Form			Good condition	Fair condition	Poor condition	Return to Service Center for repair	Destroy or recycle	If the equipment condition is due to normal wear and tear, state so; if not, state circumstances.
Item No.	Description	Quantity						

Certification	Required Action:					
I certify that each part component and subassembly has been examined by me personally, and has never been previously condemned, rendered unserveable, unsafe or unsuitable for use. Operator____________________	Clean and inspect as per maintenance schedule.	Clean and inspect as per maintenance schedule.	Halt operation. Remove System from service and repair or replace affected parts.	Tag System: "Warning. Do not use. System under repair." Send parts to authorized repair center.	Clean parts and destroy, salvage or recycle. Replace parts.	Company: __________ ________________ Department: __________ ________________ Date: __________ ________________ Time: __________ ________________
I certify that the condition of the system and its components are as listed and marked on this form. Inspector____________________						
I certify I have carefully examined this inspection report and that the courses of action taken are, in my judgement, the best for the interest of safe operation. Supervisor____________________						

SHIPPING

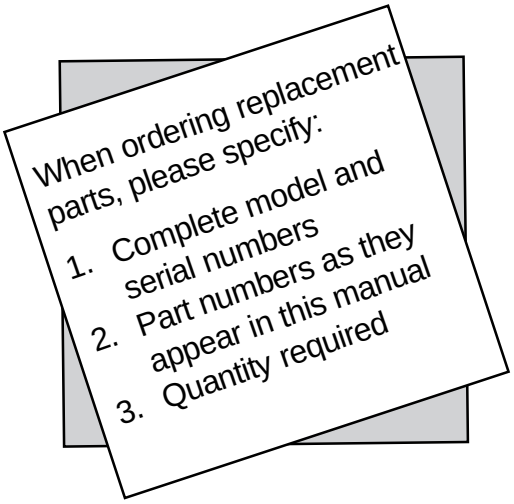
Upon receipt of shipment, carefully compare contents to the bill of lading or express receipt. For future reference when ordering replacement parts, record model information and file with System documentation.

To order parts, contact your nearest **Ingersoll-Rand** Distributor, or fax or write:

Ingersoll-Rand Material Handling
PO Box 24046
2724 Sixth Ave S
Seattle, WA 98124-0046 USA
Phone: (206) 624-0466
Fax: (206) 624-6265

or

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



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

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 goood condition has been received from the carrier. Any loss or damage which occurs to this shipment en route is not due to any action or conduct of the manufacturer.

Visible Loss or Damage
If any 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 during 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 will form your basis for claim against the carrier.

REFERENCE MANUALS

To order a copy of this or other **Ingersoll-Rand** manuals, please contact the nearsest **Ingersoll-Rand** Products Office or Distributor (see addresses on back cover) with the Form number listed below:

Overhead Rail System I-Beam Suspension - MHD56120
Overhead Rail System C-Channel Suspension - MHD56121
Overhead Rail System Floor-Mount Suspension - MHD_____
Positioner, Parts, Operation and Maintenance Manual - MHD56088

OVERHEAD RAIL SYSTEM LIMITED WARRANTY

Ingersoll-Rand Company (**I-R**) warrants to the original user its Overhead Rail System (Product) 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 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.

OFFICE LOCATIONS

Offices and distributors in principal cities througout the world are ready to serve you.
Please refer all communications to the nearest **Ingersoll-Rand** Material Handling Products Office or Distributor, or write/fax to:

Ingersoll-Rand Material Handling
P.O. Box 24046
2724 Sixth Avenue S
Seattle, WA 98124-0466 USA
Phone: (206) 624-0466
Fax: (206) 624-6265

UNITED STATES

For Order Entry and Order Status

Ingersoll-Rand
Distribution Center
P.O. Box 618
510 Hester Drive
White House, TN 37188
Phone: (615) 672-0321
Fax: (615) 672-0801

For Technical Support

Ingersoll-Rand
Material Handling
PO Box 24046
2724 Sixth Avenue S
Seattle, WA 98124-0046
Phone: (206) 624-0466
Fax: (206) 624-6265

Regional Sales Offices

Chicago, IL
888 Industrial Drive
Elmhurst, IL 60126
Phone: (708) 530-3800
Fax: (708) 530-3891

Detroit, MI
23192 Commerce Drive
Farmington Hills, MI 48335
Phone: (810) 476-6677
Fax: (810) 476-6670

Houston, TX
2500 East T.C. Jester
Suite 150
Houston, TX 77008
Phone: (713) 864-3700
Fax: (713) 864-2240

Los Angeles, CA
11909 East Telegraph Road
Santa Fe Springs, CA 90670
Phone: (310) 948-4189
Fax: (310) 948-1828

Philadelphia, PA
PO Box 425
900 E 8th Ave
Suite 103
King of Prussia, PA 19406
Phone: (610) 337-5912
Fax: (610) 337-5912

INTERNATIONAL

CANADA

National Sales Office

Regional Warehouse
Toronto, Ontario
51 Worcester Road
Rexdale, Ontario M9W 4K2
Phone: (416) 675-5611
Fax: (416) 213-4510
Order desk fax: (416) 213-4506

Regional Sales Offices

Calgary, Alberta
44 Harley Road SE
Calgary, Alberta T2V 3K3
Phone: (403) 252-4180
Fax: (403) 252-4462

Edmonton, Alberta
1430 Weber Center
5555 Calgary Trail NW
Edmonton, Alberta T6H 5G8
Phone: (403) 438-5039
Fax: (403) 437-3145

Montreal, Quebec
3501 St. Charles Blvd.
Kirkland, Quebec H9H 4S3
Phone: (514) 695-9040
Fax: (514) 695-0963

British Columbia
201-6351 Westminster Hwy
Richmond, BC V7C 5C7
Phone: (604) 278-0459
Fax: (604) 278-1254

ASIA PACIFIC Operations

Ingersoll-Rand (Japan) Ltd.
Shin-Yokohama Square Bldg.
(5th Floor)
2-3-12 Shin-Yokohama
Kouhoku-ku
Yokoham-shi, Kanagawa
Pref. 222 Japan
Phone: 81-45-476-7800
Fax: 81-45-476-7806

LATIN AMERICA Operations

Ingersoll-Rand Production
Equipment Group
730 NW 107 Ave
Suite 300
Miami, FL 33172-3107
Phone: (305) 559-0500
Fax: (305) 559-7505

EUROPE, MIDDLE EAST
& AFRICA

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

RUSSIA

Ingersoll-Rand Company
World Trade Center - Office 1101
Krasnopresnenskaya Nab. 12
Moscow, Russia 123610

Printed in USA