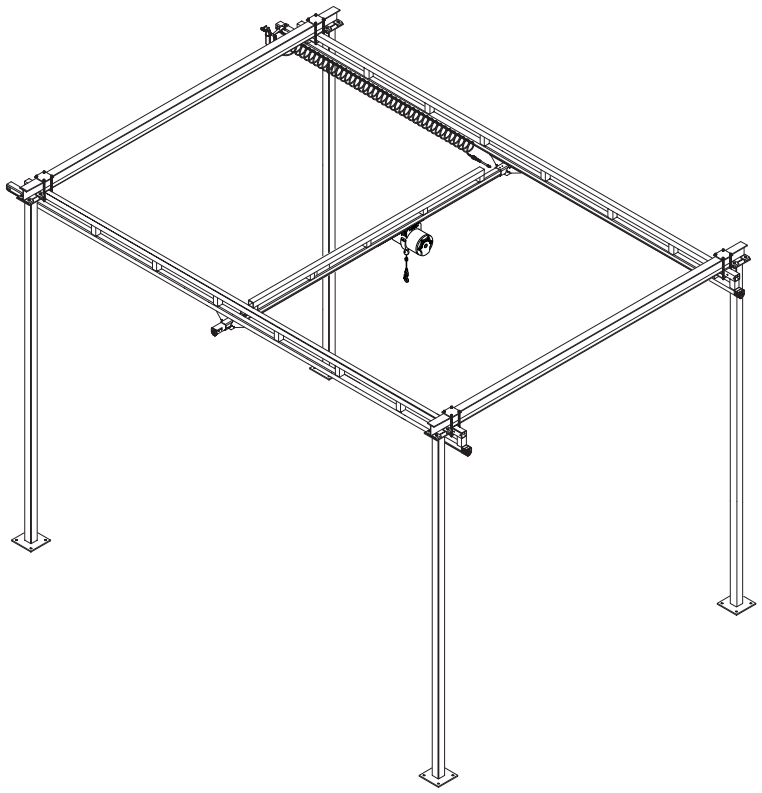
Parts, Installation and Maintenance Manual

Valu-Trak Rail Systems



(Dwg. MHP1607)

This manual contains important information for the correct installation, operation and maintenance of the equipment described herein. All persons involved in such installation, operation and maintenance should be thoroughly familiar with the contents of this manual. Follow the recommendations and instructions in this manual and keep it available for future reference.

⚠WARNING

Equipment shown in this manual is intended for industrial use only and should not be used to lift, support or transport people. Use only Ingersoll-Rand components in installation. All Ingersoll-Rand components are tested and certified to applicable safety standards.

Form MHD56161
Edition 1
July 1999
71341762

INGERSOLL-RAND
MATERIAL HANDLING

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System Order Number: _____

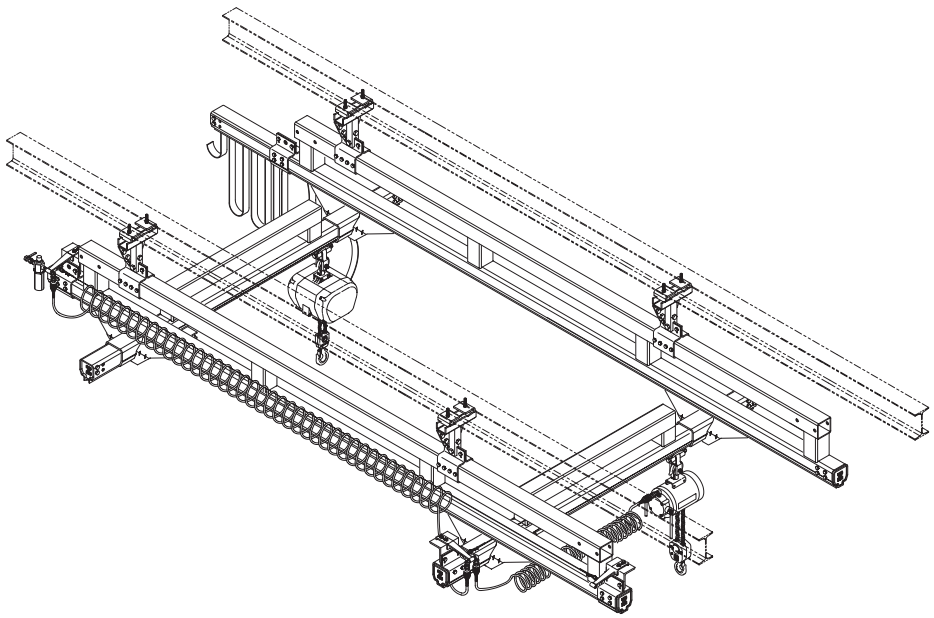
Installation Drawing Number(s): _____

Installation Date: _____

Location: _____

Application: _____

Ceiling Mount System



(Dwg. MHP1608)

INTRODUCTION

Valu-Trak workstation rail systems have been designed to solve your material handling needs. A Valu-Trak system combined with an **Ingersoll-Rand** Air Hoist, Electric Hoist, Load Positioner or handling device creates the optimum material handling solution.

Rail systems cover rectangular areas and can be floor-supported or hung from the ceiling.

Freestanding floor-supported systems do not impose stresses on the building's overhead structure. Installation is straightforward, and allows possible future relocation.

Ceiling-mounted systems require a building with an overhead structure that provides adequate support for hanging the rail system and loads. With ceiling-mounted systems, supporting columns are avoided, eliminating some load handling restrictions.

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

⚠ WARNING

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

NOTICE

- **Lifting and handling 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 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.

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, associated 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.

Rigging: It is the responsibility of the operator to exercise caution, use common sense and be familiar with proper rigging techniques. Refer to ASME B30.9 for rigging information, American National Standards Institute, 1430 Broadway, New York, NY 10018.

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** 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 result 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 **Ingersoll-Rand** for technical assistance.

All **Ingersoll-Rand** runway rails, trolleys and bridges conform to OSHA Safety Standards and Federal Regulations, July 1, 1984 revision.

Load ratings are clearly marked on both sides of bridge beams and are in accordance with ASME B30.11 Safety Standard for Monorails and Underhung Cranes. These ratings are determined by **Ingersoll-Rand**, based on tests performed at independent laboratories. These tests involve but are not limited to:

1. Load carrying capacities of each trolley wheel.
2. Load deflection of rails.
3. Individual, static load test of all components that make up a rail system.

⚠WARNING

- **When determining the total weight of the suspended load, include all hoists, positioners, handling devices, buckets, hooks, etc. The total weight of the suspended load must not exceed the load rating marked on the rail.**

The rated load of the trolley or runways shall be the maximum load for which the trolley or runways are designed and built. In determining the rated load, all handling devices such as hoists, positioners, arms, buckets, magnets, grabs, etc., shall be included as part of the load to be handled.

Clearance shall be provided between the runways or monorail and any lateral or overhead obstruction. All factors that influence clearances, such as load deflection shall be considered. Clearances should take into account the dimensions of load, hoists and trolleys.

SAFE OPERATING 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 rail systems have a safety program in force at their facility. In the event 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.

Load ratings are marked on both sides of each bridge beam. These ratings are established by **Ingersoll-Rand** though exhaustive testing.

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 of this rail system to operate and maintain the system.
2. When a **"DO NOT OPERATE"** sign is placed on the rail system, do not use until repairs or adjustments have been completed and the sign has been removed by designated personnel.
3. Before each shift, visually check the rail system, lifting device, support structure and mounting hardware for wear and damage. Never use equipment that inspection indicates is worn or damaged.
4. Never exceed the rated capacity of the rail system. Refer to labels attached to the rail system.
5. Pay attention to loads suspended from the rail system and never leave a suspended load unattended.
6. Make sure everyone is clear of the load path. Do not lift a load over people.
7. Never use the rail system and attached equipment for lifting or lowering people, and never allow anyone to stand on a suspended load.
8. Do not swing a suspended load.
9. Never suspend a load for an extended period of time.
10. Never weld or cut a load suspended from the rail system.
11. Do not operate rail system if jamming, overloading or binding occurs.
12. Avoid collision or bumping of suspended components on the rail system.
13. To move a trolley or bridge, push on the load or load connector.
14. Do not use end stops to position a load. Frequent collision with end stops can cause excessive wear of suspension components. Keep hand-pushed loads under control at all times to avoid impacting the end stops.
15. Loads, load attachment devices and lifting equipment must be suspended in a manner that does not restrict trolley movement.
16. Never attempt to lift a load that is not directly under the lifting device.

MODEL CODE

Example: V2F05502010012 — **V2 F 0550 20 10 012**

Model:
- V2 = Valu-Trak

Mounting:
- F = Floor
- C = Ceiling

Hanger Type: (ceiling mount only)
- S = Standard Hanger Brackets for 2.5 to 5 in. flange structural steel
- W = Hanger Brackets for 5 to 10 in. flange structural steel

Capacity:
- 0275 = 275 lbs (125 kg)*
- 0550 = 550 lbs (250 kg)
- 1100 = 1,100 lbs (500 kg)
- 2200 = 2,200 lbs (1,000 kg)

Bridge Length:
- 10 = 10 ft (3.1 m)
- 15 = 15 ft (4.6 m)
- 20 = 20 ft (6.1 m)
- 24 = 24 ft (7.4 m)
- 28 = 28 ft (8.6 m)

Hook/Underclearance: **
- 10 = 10 ft (3.1 m)
- 12 = 12 ft (3.7 m)
- 14 = 14 ft (4.3 m)

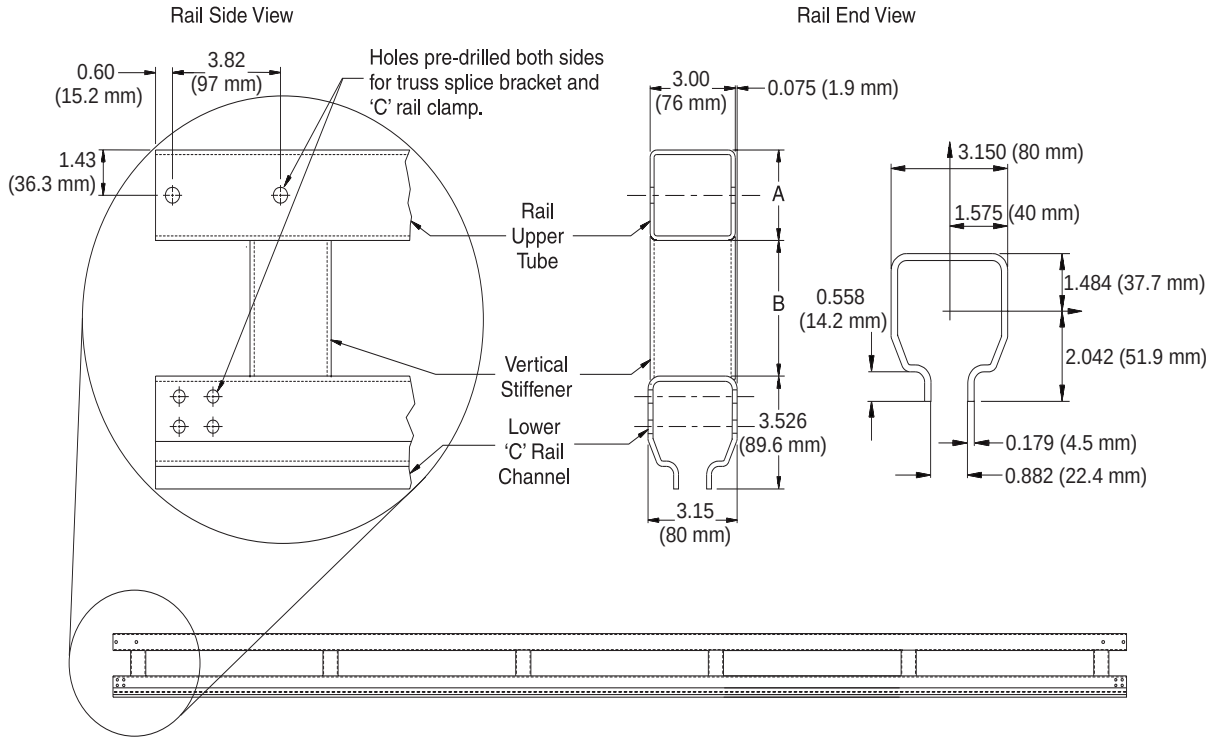
Overall Runway Length:
- 012 = 12 ft (3.7 m)
- 023 = 23 ft (7.0 m)
- 032 = 32 ft (9.8 m)
- 043 = 43 ft (13.1 m)
- 052 = 52 ft (15.8 m)
- 063 = 63 ft (19.2 m)
- 073 = 73 ft (22.3 m)
- 083 = 83 ft (25.3 m)
- 093 = 93 ft (28.3 m)
- 103 = 103 ft (31.4 m)
- 123 = 123 ft (37.5 m)

* Ceiling Mount system kits only.

** This measurement is not included in Ceiling Mount system kit model numbers.

DIMENSIONS

1. RAIL



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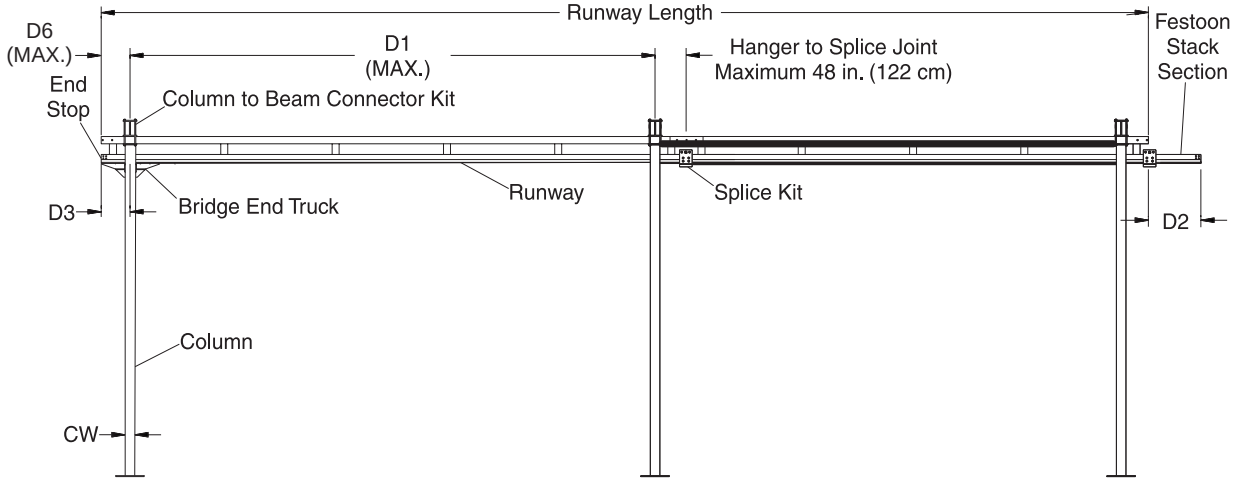
PART NUMBER	DIMENSION 'A'		DIMENSION 'B'	
	in.	mm	in.	mm
Bridges				
ZRV22628	4	101.6	8.063	204.8
ZRV22224	3	76.2		
ZRV21820			7	177.8
ZRV21315			4.5	114.3
ZRV20810			2.5	63.5
31618	4	101.6	4.5	114.3
31614	3	76.2		
31613				
31612			2.5	63.5
31611			0	0
Runways				
31620	3	76.2	4.5	114.3
31635				
31621				
31636				
31622			8.063	204.8
31623				
31624				
31625				

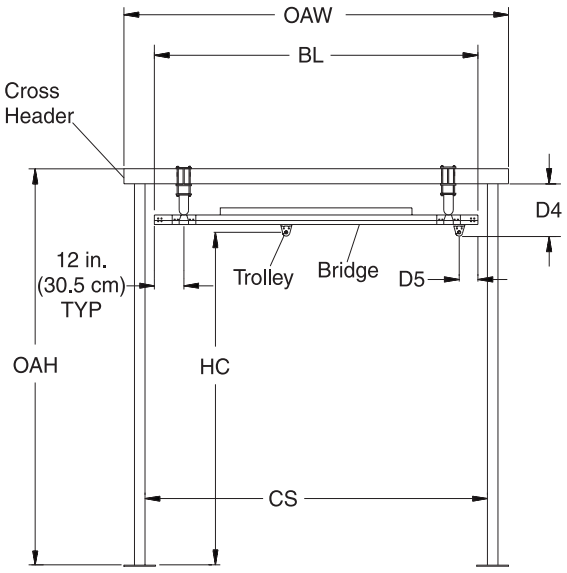
2. FLOOR MOUNTED SYSTEM

Refer to Sales Brochure, Form MHD55251 or drawings accompanying the rail system for dimensions.

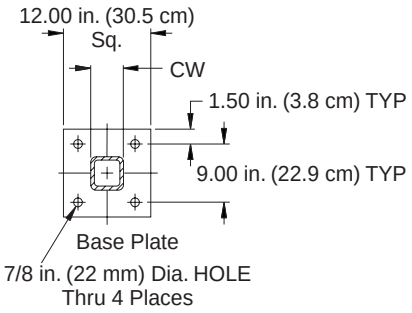
Side View



End View



BL = Bridge Length
CS = Clear Span
CW = Column Width
D1 = Distance between Column Center Lines
D2 = Length of Festoon Stack Section
D3 = Minimum Distance from Center Line of Bridge to End of Runway
D4 = Bridge Stackup from Bottom of Cross Beam
D5 = Minimum Distance from Bridge Trolley to End of Bridge Steel
D6 = Maximum Runway Overhang
HC = Hook Clearance
OAH = Overall Height
OAW = Overall Width



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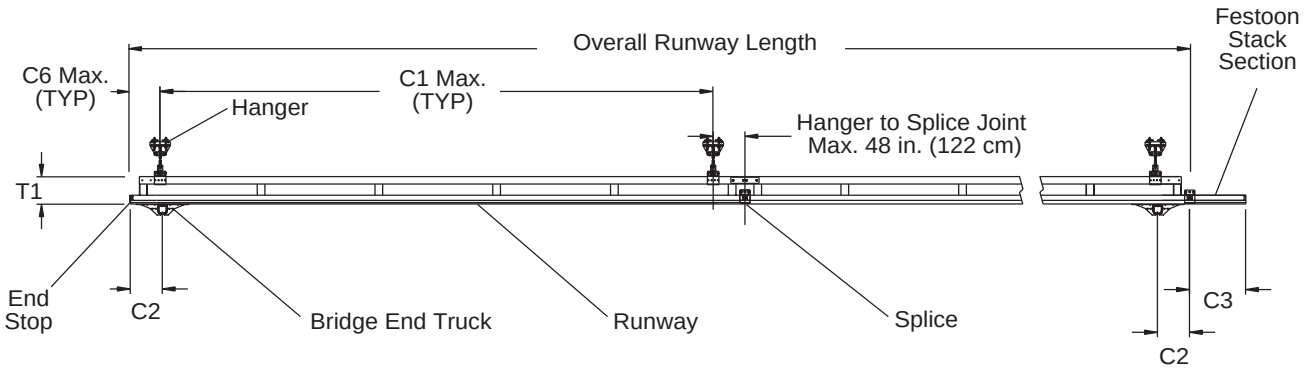
3. CEILING MOUNTED SYSTEM

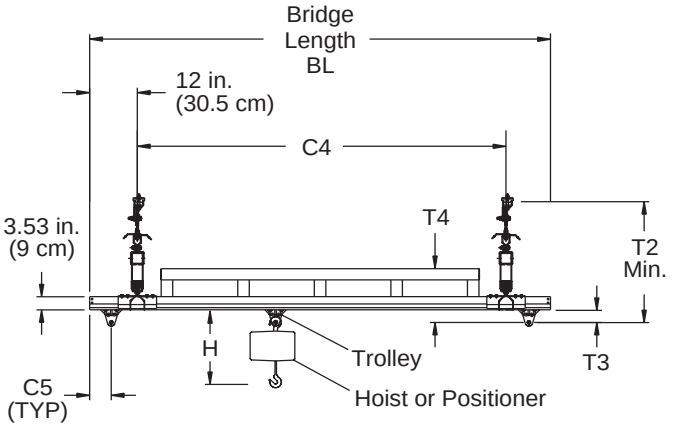
Refer to Sales Brochure, Form MHD55251 or drawings accompanying the rail system for dimensions.

Side View



BL = Bridge Length
C1 = Runway Span
C2 = Minimum Distance from Bridge Center Line to End of Runway
C3 = Length of Festoon Stack Section
C4 = Bridge Span
C5 = Minimum Distance from Bridge Trolley to End of Bridge
C6 = Maximum Runway Overhang
H = Hook Stackup from Bottom of Bridge
T1 = Runway Height
T2 = Stackup from Runway Hanger to Hook Clearance
T3 = Trolley Clearance
T4 = Top of Bridge to Hook

End View



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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.	Has the rail system's anchorage been designed by a registered structural engineer to suit the installation?	☐ 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 applicable code requirements?	☐ YES	☐ NO
10.	If a ceiling-supported system is to be installed, has a registered structural engineer reviewed the existing ceiling structure to determine if it is adequate to support the system and load weights?	☐ YES	☐ NO

If you answered no to any of these questions, please copy and fax this checklist to Ingersoll-Rand at 248-398-1374 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.**

⚠ 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.**

The following should be adhered to during installation:

1. All track suspension hardware and splices must be accessible for maintenance checks and inspection after installation.
2. 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 the workspace or set-up area of debris or obstructions. Always keep system workspace clear of obstruction, debris, spills and standing water.**

TOOL REQUIREMENTS

Typical Installation

- Socket set 1/2 in. drive
- Ladders / man lifts
- Leveling tools
- Lifting device to lift columns, headers, runways and bridges
- 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 rail systems 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 before installing rail system.

INSTALLATION

1. ERECTING THE COLUMNS

1. Mark rail system column centerlines 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."
3. Position the first 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.
5. Using the top of the first column as a benchmark install the remaining columns as described in steps 3 and 4 with their tops level with he first column.

2. ANCHORING THE SYSTEM

⚠WARNING

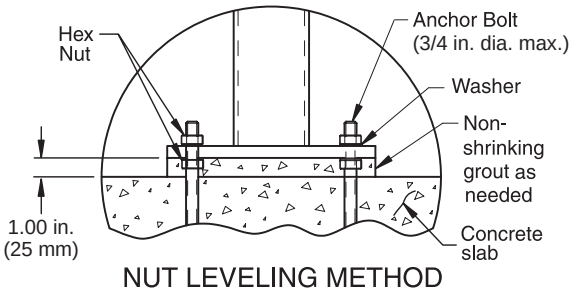
- **For proper installation of a floor supported Valu-Trak rail system a minimum of a 6 in. (15.2 cm) thick reinforced concrete floor is required. Ingersoll-Rand assumes no responsibility for the conditions of the mounting surface. Consult a registered structural engineer before installing the rail system.**

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 4 bottom hex nuts with washers on the anchor bolts so the top of the washers is 1 inch (25 mm) above the mounting surface.
2. Set the column on the anchor bolts and thread the remaining 4 hex nuts and washers down hand tight.
3. Place a level on one face of the column and plumb vertical by adjusting the 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 the upper hex nuts to the anchor bolt manufacturers recommended torque while making sure the lower hex nuts remain fixed.
7. Pack the remaining void below the base plate with non-shrinking grout until the grout is flush with all sides of the base plate.

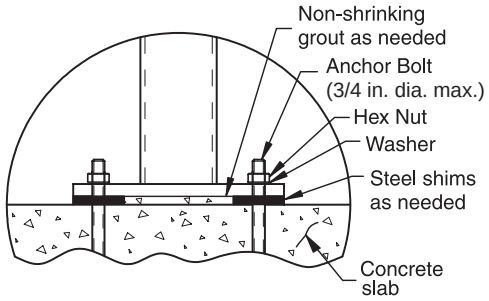


NUT LEVELING METHOD

(Dwg. MHP1609)

Shim Leveling Method

1. Set the column on the anchor bolts and thread the 4 hex nuts and washers down hand tight.
2. Place a level on the face of the column and plumb vertical by loosening the anchor bolt nuts as necessary and placing shims under the 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 the anchor bolt manufacturers recommended torque.
6. Pack the remaining void below the base plate with non-shrinking grout until the grout is flush with all sides of the base plate.



SHIM LEVELING METHOD

(Dwg. MHP1859)

NOTICE

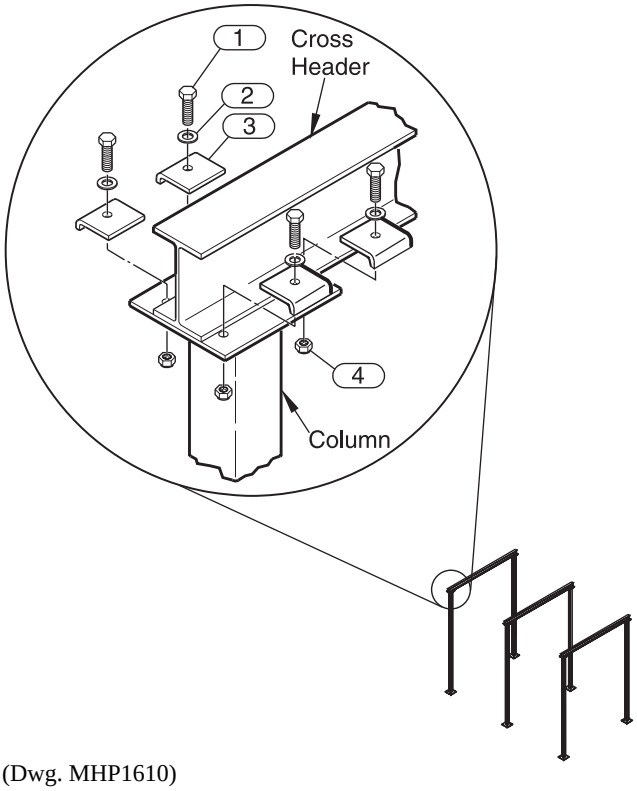
- **If complete rigidity of the system is required, then additional bracing (not included) is necessary.**

3. CROSS HEADERS

1. Position header from column to column and secure in place with toe clamps and fasteners provided.
2. Tighten fasteners to torque specifications on page 9.

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
301	Column to Beam Connector Kit (Incl's items 1 thru 4)	A/R	31541
1	Capscrew, 1/2 - 13 x 2.0 in.	4	72002
2	Washer, Flat 1/2 in.	4	74517
3	Toe Clamp	4	30160
4	Locknut, Flanged 1/2 - 13	4	75589

Note: Quantities are for each column.



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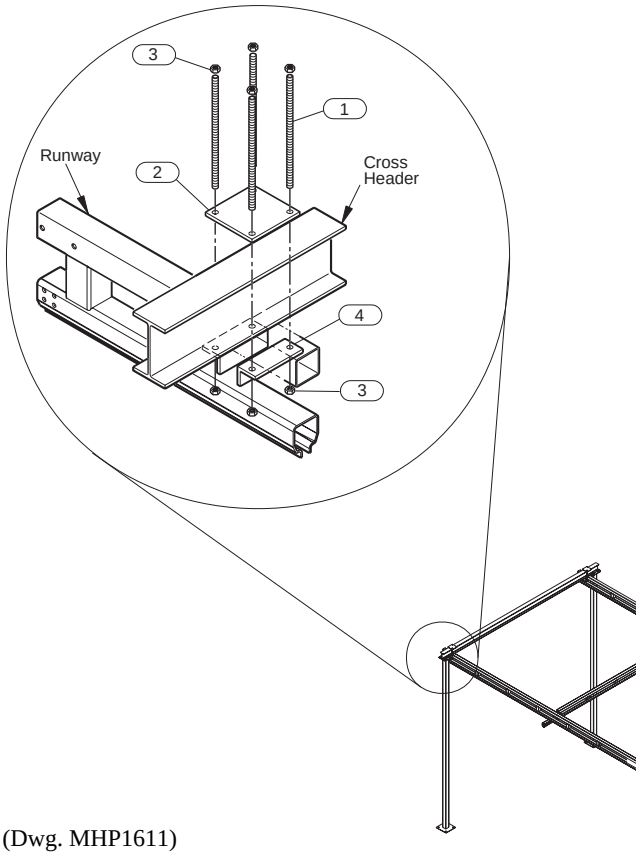
4. RUNWAYS

⚠ CAUTION

- **Runways 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.**

1. Place first section of runway under cross header. Refer to dimension drawing package for exact distance of runway from column.
2. Insert threaded rods into holes in one hanger plate (2) and secure with locknuts (3).
3. Place this hanger plate on top of cross header. Position the hanger angles (4) beneath the upper tube of the rail, inserting the ends of the threaded rods into the holes in the hanger angles.
4. Secure with locknuts (3), but do not fully tighten runways into place.
5. Install all other sections of runway beneath cross headers.
6. Splice runway sections together. Splice must be no more than 48 in. (1.2 m) from cross header. Tighten splice jam nuts.
7. Align runways using standard leveling device. Refer to 'Alignment' section and Dwg. MHP1613 on page 12, for tolerances.
8. When runways comply with alignment requirements, tighten hanger plate locknuts.
9. Install end stops at one end of both runways in preparation for bridge installation.



(Dwg. MHP1611)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
302	Runway Hanger Kit (Incl's. items 1, 2, 3 and 4)	A/R	30755
1	Threaded Round Bar 1/2 - 13 x 11.0 in.	4	84038
2	Runway Hanger Plate	1	30756
3	Locknut	8	75589
4	Hanger Angle	2	30756

Note: Quantities are for each hanger kit.

Alignment

Ingersoll-Rand Rail Systems must be installed level and parallel as described in these instructions.

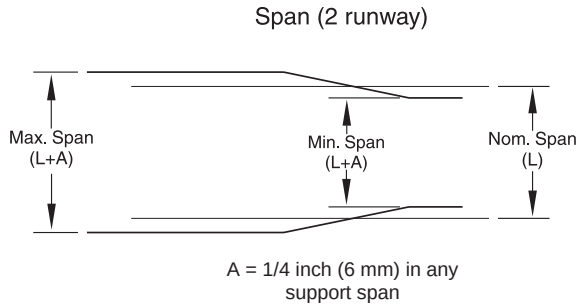
⚠ WARNING

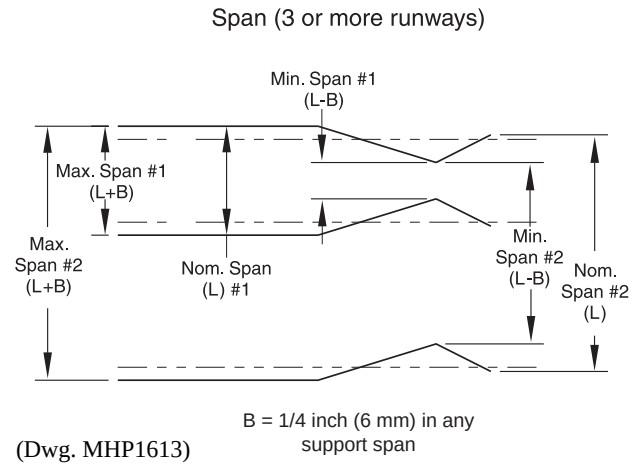
- **Failure to align the system to these specifications may void the warranty and can result in accelerated component wear and possibly system failure.**

1. **Longitudinal leveling,** systems with multiple runways and single rail systems shall be level to within 0.25 in. (6 mm) in overall length. The maximum rate of change shall be no more than 0.125 in. (3 mm) on 20 ft. (6 m) rail centers.

⚠ WARNING

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

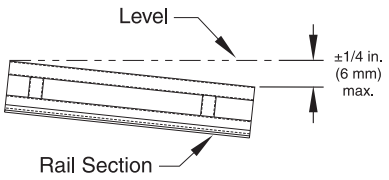




(Dwg. MHP1613)

10. **Elevation (runway to runway),** bridge systems shall be level to within 0.25 in. (6 mm) in span of the bridge. The maximum rate of change shall be no more than 0.125 in. (3 mm) on 20 ft. (6 m) rail centers.

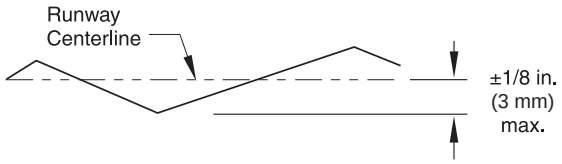
Level Tolerance Along Runway



(Dwg. MHP1712)

11. **Centering runway to runway** shall be within 0.1875 in. (4 mm) in overall length of the system. The maximum rate of change shall be no more than 0.125 in. (3 mm) on 20 ft. (6 m) rail centers.

Runway Straightness



(Dwg. MHP1711)

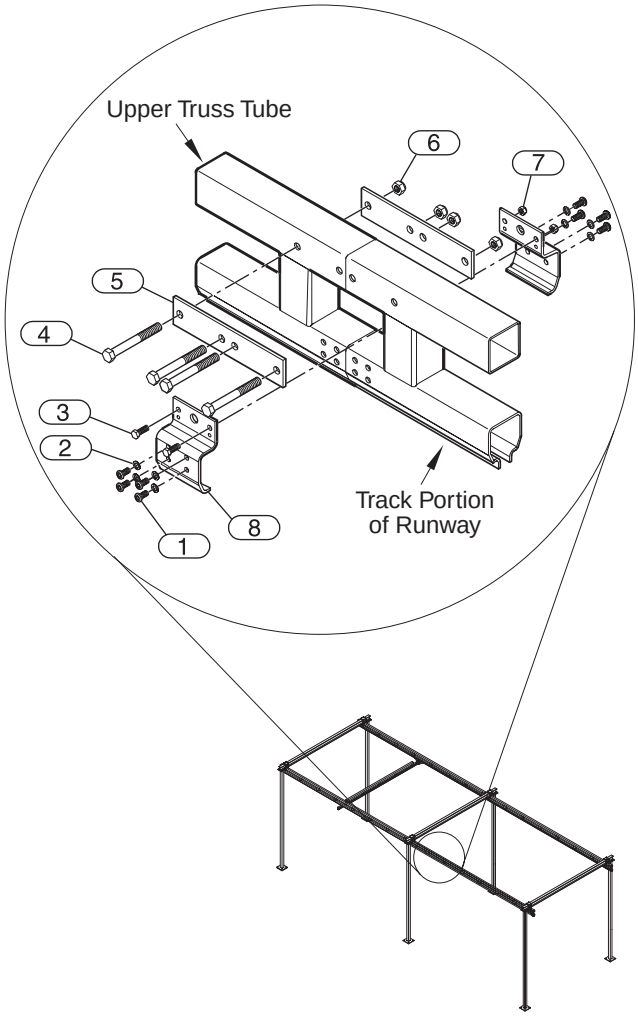
12. **Centering for a single rail,** systems which are parallel to a conveyor or work station shall be centered to the parallel delivery system to within ± 0.50 in. (12 mm) in overall length of the monorail system. The maximum rate of change shall be no more than 0.125 in. (3 mm) on 20 ft. (6 m) rail centers.

5. SPLICING RUNWAYS

NOTICE

- **Do not overtighten splice joints (may permanently deform track).**

1. Place a 'C' clamp (8) on each side of the track portion of the runway. Position clamp so that the two holes at the bottom left cover the two at the very end of the left section of runway. The two holes at the bottom right of the clamp should cover the two holes at the very end of the right section of the runway.
2. Secure with capscrews (1) and lockwashers (2). Do not torque until runway has been adjusted for smooth transition.
3. Insert capscrews (3) into upper part of 'C' clamp and secure with locknuts (7).
4. Place a truss splice bracket (5) on each side of the upper truss tube and secure with capscrews (4) and locknuts (6).
5. To adjust track for smooth transition, slightly tighten bolts along **top of splice joint** to force track down onto lower flanges of splice. Check to see that transition from one track to the other is smooth: no raised areas to inhibit trolley or end truck operation. Slightly tighten bolts along **side of splice joint** to align track laterally. Check to see that track portion of runway is horizontally and vertically flush: transition from one track to other is smooth. Tighten locknuts to lock bolts in place. **Do not "overtighten" bolts.**
6. Refer to 'Torque Specification Table' on page 9 and tighten nuts accordingly.



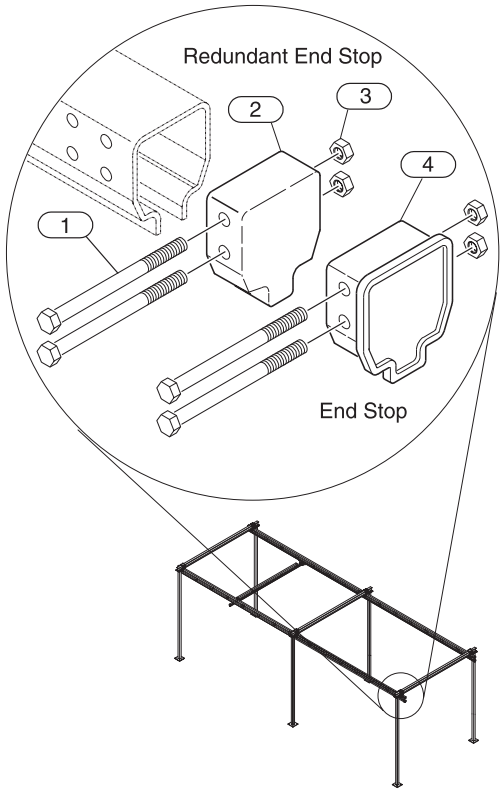
(Dwg. MHP1614)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
303	Splice Kit (Incl's items 1 thru 8)	A/R	31602
304	Splice Kit 'C' Rail (Incl's items 1, 2, 3, 7 and 8	A/R	31522
1	Capscrew, 3/8 - 16 x 5/8 in.	8	71405
2	Lockwasher, 3/8 in.	8	74507
3	Capscrew, 3/8 - 16 x 1-1/4 in.	2	71427
4	Capscrew, 1/2 - 13 x 4-1/2 in.	4	72064
5	Truss Splice Bracket	2	30760
6	Locknut, 1/2 - 13	4	75589
7	Locknut, 3/8 - 16	2	75583
8	'C' Clamp	2	31505

6. END STOP

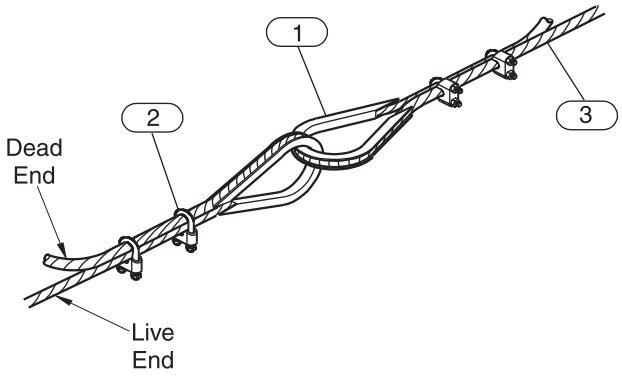
1. Bolt in end stops immediately after installing bridge(s) on runways and end trucks on bridges and festooning sliders and trolleys on both.
2. Identify redundant end stop (2) without raised flange and position first in end of runway or bridge.
3. Install end stop at very end of runway or bridge.
4. Insert capscrews (1) and tighten locknuts (3).

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
305	End Stop Kit (Incl's items 1, 3, and 4)	A/R	31528
306	Redundant End Stop Kit (Incl's items 1, 2, and 3)	A/R	31529
	Redundant End Stop Kit Festoon Slider Accessible (Incl's items 1, 2 and 3)	A/R	31546
1	Capscrew, 3/8 - 16 x 4 in. long	2	71471
2	Redundant End Stop	1	31527 (order item 306)
	Redundant End Stop Festoon Slider Accessible	1	31547
3	Locknut, 3/8 - 16	2	75583
4	End Stop (Incl's items 1 and 3)	1	31528



(Dwg. MHP1638)

7. SAFETY CABLE



(Dwg. MHP1622)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
307	Safety Cable Assy. (Incl's items 1, 2 and 3)	A/R	30907-xx
1	Thimble 1/4 in.	2	10212
2	Wire Rope Clamp 1/4 in.	4	10235
3	Wire Rope 1/4 in.	As Req'd	10099

xx = Wire rope length (feet)

After the suspension hardware is properly attached and securely bolted into place, safety cables **must** be installed.

1. Route the wire rope through the hole in the rail and around the cross header. Use the two thimbles to make interlocked connection and route the wire rope around the thimbles, then apply the first clamp one inch (25 mm) from the dead end of the wire rope.

⚠WARNING

- **Loop end of wire rope clamp must go around dead end not live part of wire rope.**

2. Snug the nuts, but do not tighten. Apply the second clamp adjacent to the thimble. Snug the nuts but do not tighten. For maximum holding power they should be installed six to seven times the diameter of the wire rope apart.
3. Take up the slack by applying tension to the thimble and wire rope, then tighten all nuts to 15 ft-lb (21 Nm) torque. Safety cables must be installed to allow free movement of the hanger kit, yet provide minimum free drop of components if the primary support should fail. **Wire rope must pass through hole in rail (9/32 in. (7 mm) dia. hole).**

8. END TRUCKS

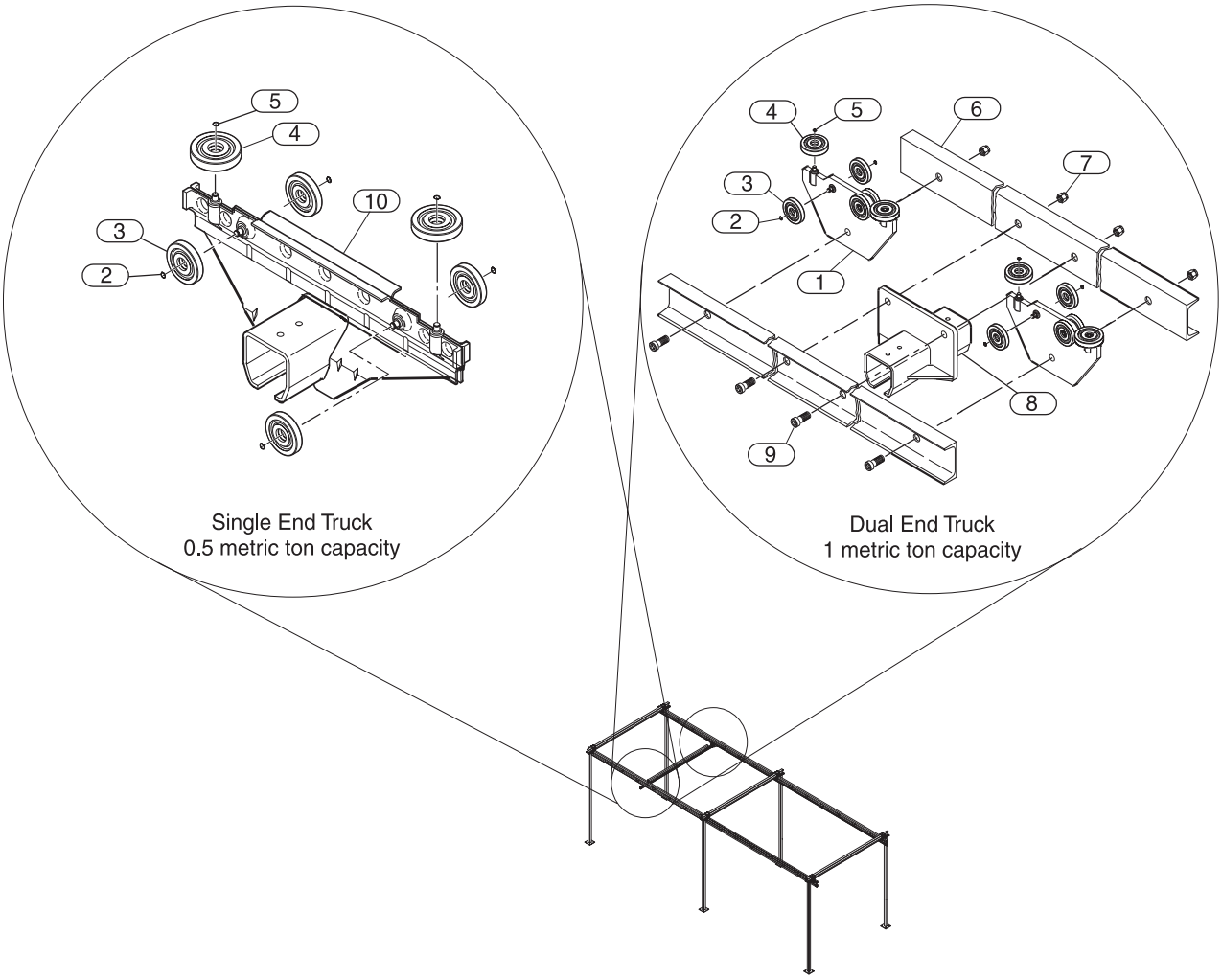
1. Slide end truck sleeves over open ends of bridge to a position 12 in. (30 cm) from each bridge end.
2. To ensure correct installation of bridge, there should be one person at each end. Raise bridge to runways and slide wheels on both end trucks simultaneously into open ends of runway track.
3. After bridge is in place on the runway, it is important that runway end stops be installed immediately. This will prevent the bridge from accidentally rolling off the open end.
4. Install end stop on one end of bridge, leaving the other end open for hoist, positioner or handling device trolley installation.

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
308	Single End Truck Assy. 0.5 metric ton capacity (Incl's items 2, 3, 4, 5 and 10)	A/R	31612000
309	Dual End Truck Assy. 1 metric ton capacity (Incl's items 1 thru 9)	A/R	30613000
1	Dual End Truck Body*	2	30613002
2	Retainer Ring	8 (4)	93939
3	Wheel (Incl's bearing)	8 (4)	31535
4	Guide Roller (Incl's bearing)	4 (2)	31612002
5	Guide Roller Retainer Ring	4 (2)	99085
6	C-Channel Tie Bar*	2	Contact Factory
7	Locknut*	4	75587
8	Bridge Sleeve*	1	30613001
9	Capscrew*	4	72622
10	Single End Truck Body**	2	31612001

* Not required for Single End Truck

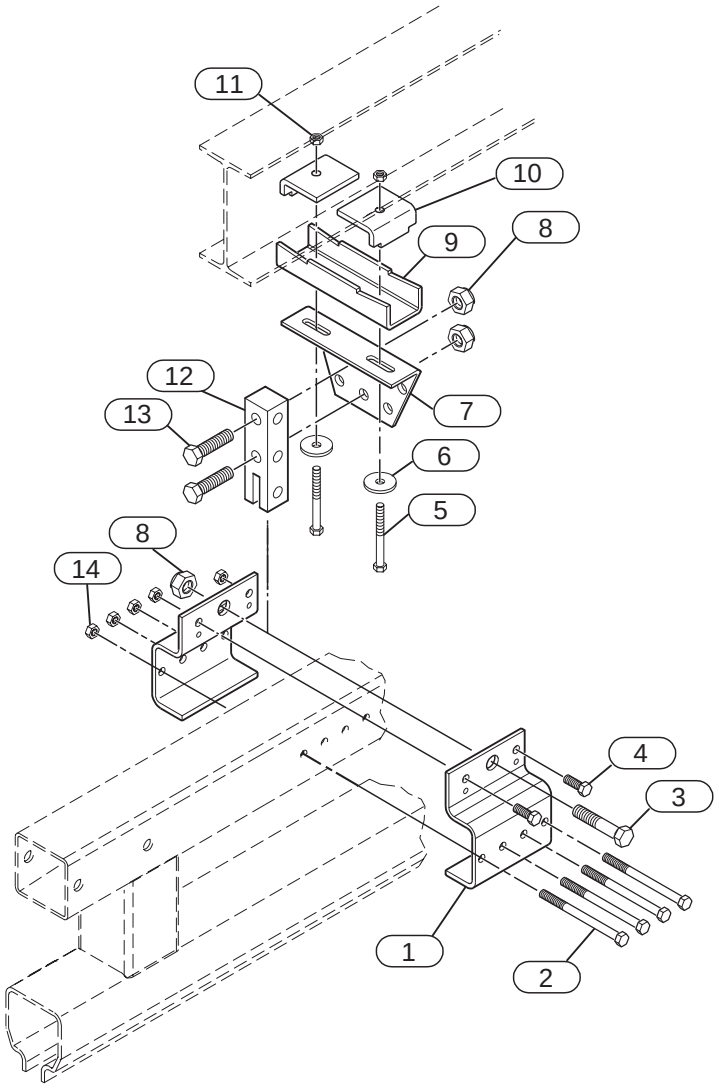
** Not required for Dual End Truck

( ) Quantity required for Single End Truck



(Dwg. MHP1616)

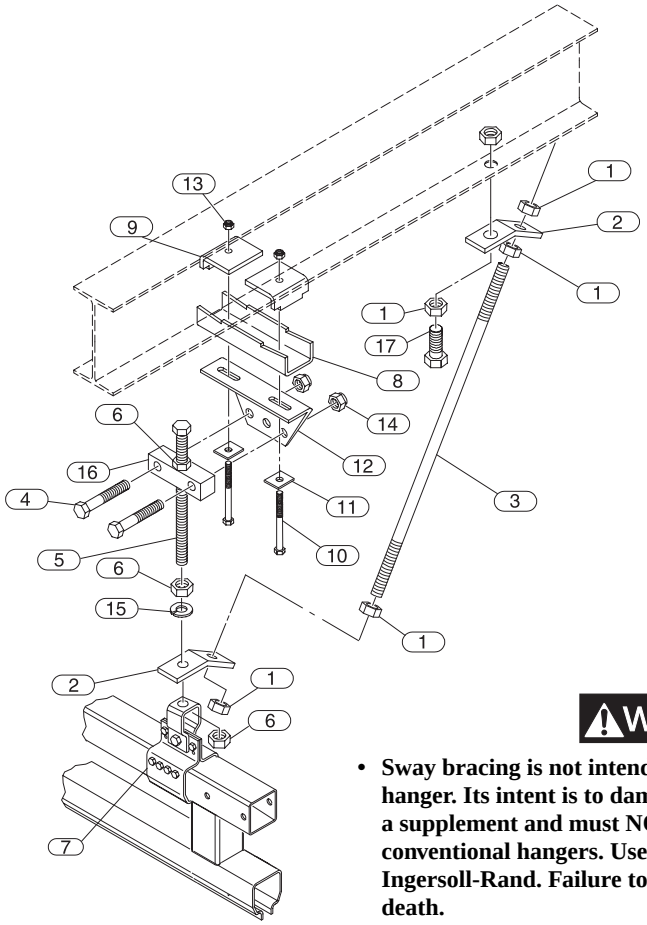
9. HANGER BRACKETS



(Dwg. MHP1636)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
316	Hanger Kit Std. Flange Beam (Incl's items 5, 6, 7, 9, 10 and 11)	A/R	30186
317	Block Hanger Kit (Incl's items 1, 3, 4, 8, 12 and 14)	A/R	31607
1	Clamp	2	31603
2	Capscrew	4	72629
3	Capscrew	1	71427
4	Capscrew	2	71427
5	Capscrew, 1/2 - 13 x 4 in. long	2	72037
6	Washer	2	30094
7	Hanger Bracket	1	30188
8	Nut	3	75587
9	Beam Clamp (Std. Flange Beam)	1	30091
	Beam Clamp (Wide Flange Beam)	1	30154
10	Toe Clamp	2	30062
11	Nut	2	75589
12	Hanger Block	1	31508
13	Capscrew	2	72646
14	Nut	4	75583

10. SWAY BRACES WITH ADJUSTABLE HANGER



(Dwg. MHP1620)

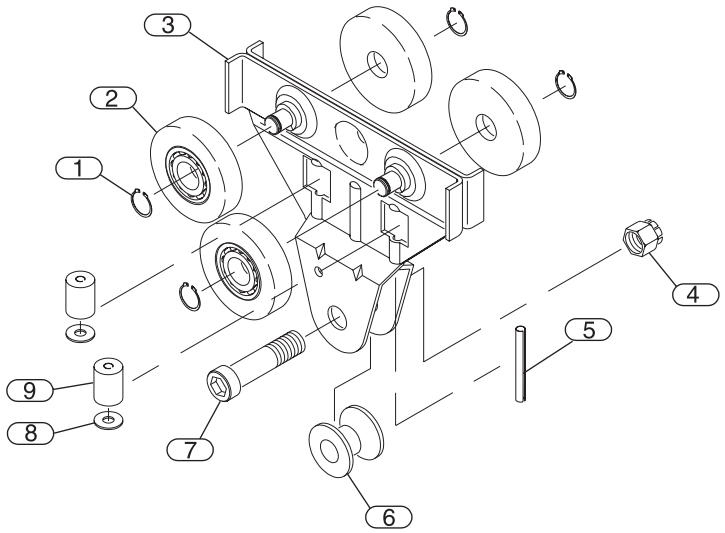
⚠WARNING

- **Sway bracing is not intended for use as a main structural hanger. Its intent is to dampen sway only. Sway bracing is a supplement and must NOT be used as a substitute for conventional hangers. Use only bolts and nuts supplied by Ingersoll-Rand. Failure to comply may cause injury or death.**

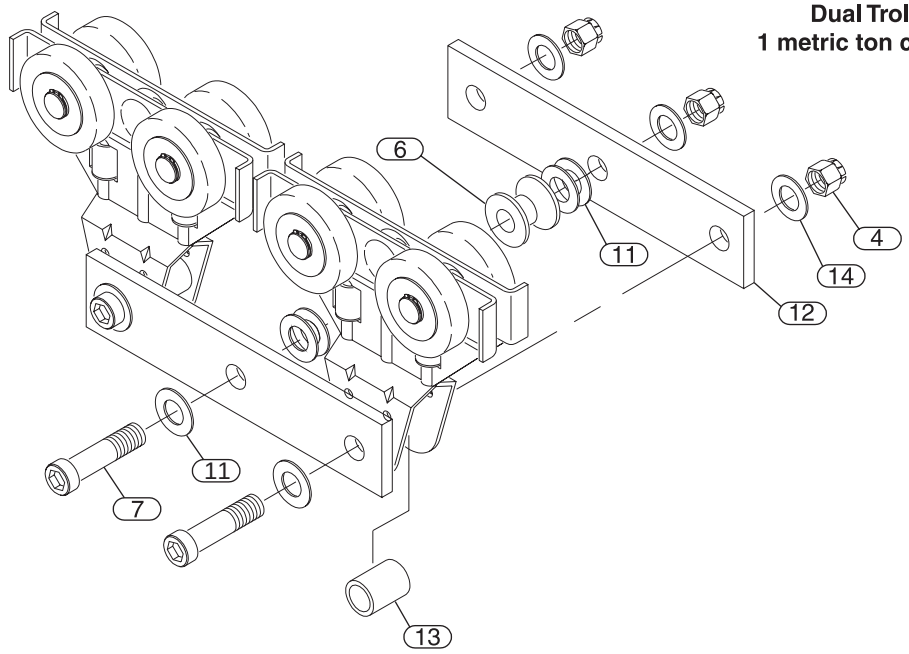
ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER	ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
311	Hanger Kit (Std. Flange Beam) (Incl's items 8 thru 13)	A/R	30186	6	Nut, 5/8 - 18	3	75515
	Hanger Kit (Wide Flange Beam) (Incl's items 8 thru 13)		30187	7	Clamp	2	31603
1	Nut	5	customer provided	8	Beam Clamp (Std. Flange Beam)	1	30091
2	Bracket	2	30097		Beam Clamp (Wide Flange Beam)	1	30154
3	Threaded Rod 1/2 in. dia.	1	customer provided	9	Toe Clamp	2	30062
4	Capscrew, 5/8 - 11 x 3-1/4 in. lg.	2	72646	10	Capscrew, 1/2 - 13 x 4 in. lg.	2	72037
5	Adjustment Rod	1		11	Washer	2	30094
	6.00 in. (15 cm) long		30192-006	12	Hanger Bracket (Std. Flange Beam)	1	30188
	12.00 in. (30.5 cm) long		30192-012		Hanger Bracket (Wide Flange Beam)		30187
	18.00 in. (46 cm) long		30192-018	13	Nut, Flanged	2	75589
	24.00 in. (61 cm) long		30192-024	14	Locknut	2	75587
	36.00 in. (91.5 cm) long		30192-036	15	Lockwasher	1	74521
	48.00 in. (122 cm) long		30192-048	16	Adjustment Block	1	30194
	60.00 in. (152.5 cm) long		30192-060	17	Capscrew	1	customer provided
	72.00 in. (183 cm) long		30192-072	* Sway bracing is required when the length of item 5, Adjustment Rod, exceeds 24 in. (61 cm).			

11. TROLLEYS

1. Insert hoist trolley into open end of bridge and immediately install end stop.



Single Trolley
0.5 metric ton capacity



Dual Trolley
1 metric ton capacity

(Dwg. MHP1617)

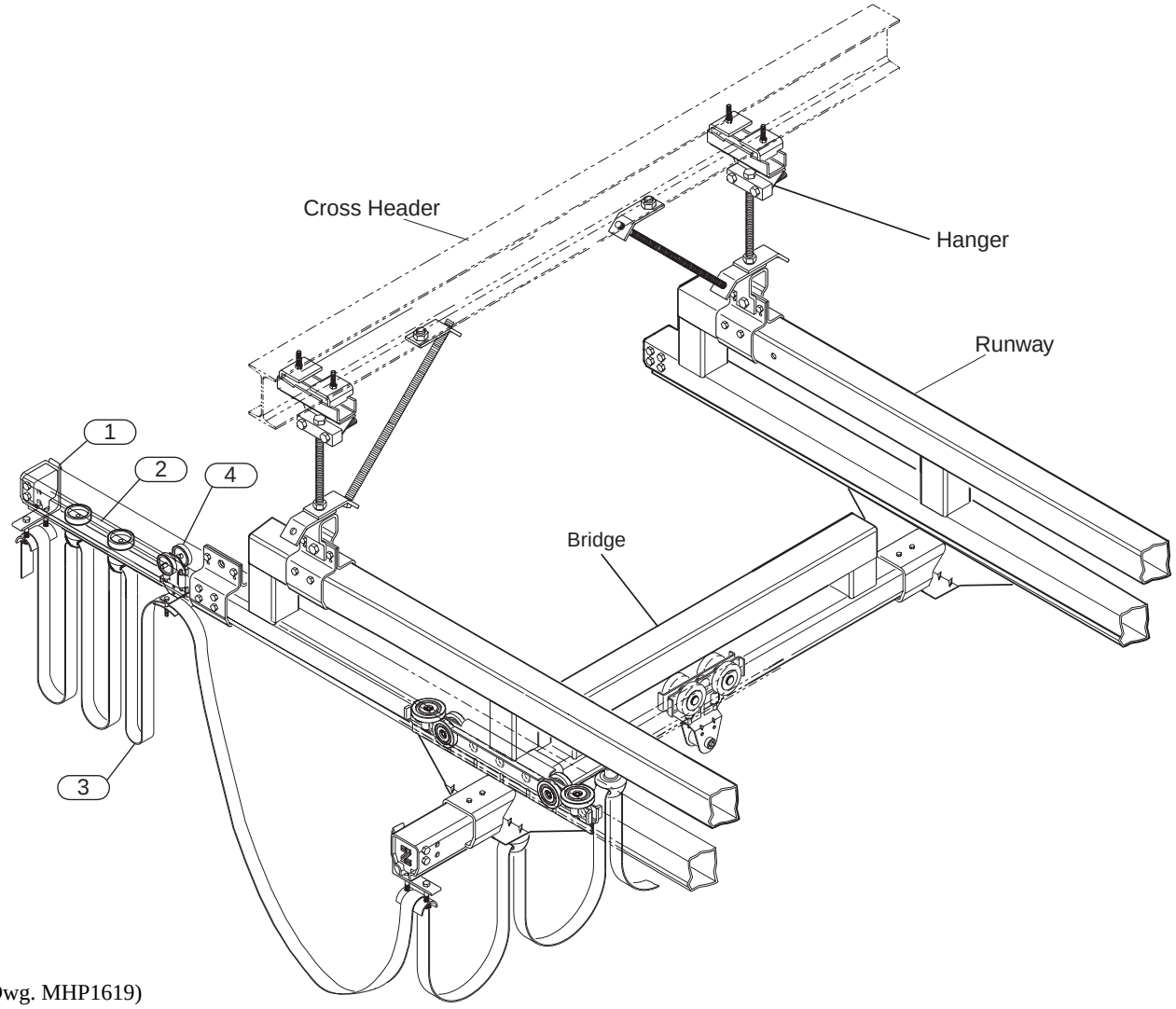
ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER	ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
312	Single Trolly Assembly	A/R	31516	7	Capscrew	1 (3)	72608
313	Dual Trolley Assembly	A/R	30757	8	Washer	2 (4)	74504
1	Retainer Ring	4 (8)	93939	9	Guide Roller	2 (4)	31513
2	Trolley Wheel (Incl's bearing)	4 (8)	31535	11	Washer *	7	74514
3	Trolley Body	1 (2)	31517	12	Tie Bar *	2	30758
4	Locknut	1 (3)	75589	13	Sleeve *	2	30759
5	Spring Pin	2 (4)	77047	14	Washer*	3	74517
6	Hook Roller	1	30905				

* Not required for Single Trolley

( ) Quantity required for Dual Trolley only

12. ELECTRIFICATION KITS

1. Refer to the detailed drawing included with each kit.
2. Refer to Dwgs. MHP1655 and MHP1698 on pages 7 and 8 with accompanying dimensional drawing for Overall Runway Length (OARL).



(Dwg. MHP1619)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Festoon Clamp Kit	2	30611000
2	Festoon Slider, Bridge	Refer to Tables on pages 20 and 21	99039
	Festoon Slider, Runway		
3	Electric Flat Cable	As Req'd	Refer to Tables on pages 20 and 21
4	Festoon Trolley*	As Req'd	30763

*Not included in kits.

Optional Electrification Flat Cable**

ITEM NO.	PART NUMBER	NUMBER OF CONDUCTORS	CONDUCTOR SIZE-AWG	AMP RATING NEC 310 16
3	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 following configurations. To determine the correct cable length, add 10 ft, plus 10% of system.

10 ft. Bridge

KIT NUMBER	OARL		Required Electric Flat Cable		Bridge Festoon Sliders	Bridge Festoon Sliders	Festoon Stack Section Length	
	ft.	m	ft.	m			in.	mm
V2E10012	12	3.7	30	9.1	3	2	7	178
V2E10023	23	7.0	36	11.0		3	10	254
V2E10032	33	10.1	48	14.6		5	14	356
V2E10043	43	13.1	60	18.3		7	19	483
V2E10052	53	16.2	66	20.1		8	21	533
V2E10063	63	19.2	78	23.8		10	26	660
V2E10073	73	22.2	90	27.4		12	31	787
V2E10083	83	25.3	96	29.3		13	33	838
V2E10093	93	28.3	108	32.9		15	38	965
V2E10103	103	31.4	120	36.6		17	43	1092
V2E10123	123	37.5	138	42.1		20	50	1270

15 ft. Bridge

KIT NUMBER	OARL		Required Electric Flat Cable		Bridge Festoon Sliders	Bridge Festoon Sliders	Festoon Stack Section Length	
	ft.	m	ft.	m			in.	mm
V2E15012	12	3.7	36	11.0	5	2	7	178
V2E15023	23	7.0	42	12.8		3	10	254
V2E15032	33	10.1	54	16.5		5	14	356
V2E15043	43	13.1	66	20.1		7	19	483
V2E15052	53	16.2	72	21.9		8	21	533
V2E15063	63	19.2	84	25.6		10	26	660
V2E15073	73	22.2	96	29.3		12	31	787
V2E15083	83	25.3	102	31.1		13	33	838
V2E15093	93	28.3	114	34.7		15	38	965
V2E15103	103	31.4	126	38.4		17	43	1092
V2E15123	123	37.5	144	43.9		20	50	1270

Metric equivalents are shown for reference only.

20 ft. Bridge

KIT NUMBER	OARL		Required Electric Flat Cable		Bridge Festoon Sliders	Bridge Festoon Sliders	Festoon Stack Section Length	
	ft.	m	ft.	m			in.	mm
V2E20012	12	3.7	39	11.9	6	2	7	178
V2E20023	23	7.0	45	13.7		3	10	254
V2E20032	33	10.1	57	17.4		5	14	356
V2E20043	43	13.1	69	21.0		7	19	483
V2E20052	53	16.2	75	22.9		8	21	533
V2E20063	63	19.2	87	26.5		10	26	660
V2E20073	73	22.2	99	30.2		12	31	787
V2E20083	83	25.3	105	32.0		13	33	838
V2E20093	93	28.3	117	35.7		15	38	965
V2E20103	103	31.4	129	39.3		17	43	1092
V2E20123	123	37.5	147	44.8		20	50	1270

24 ft. Bridge

KIT NUMBER	OARL		Required Electric Flat Cable		Bridge Festoon Sliders	Bridge Festoon Sliders	Festoon Stack Section Length	
	ft.	m	ft.	m			in.	mm
V2E24012	12	3.7	45	13.7	8	2	7	178
V2E24023	23	7.0	51	15.5		3	10	254
V2E24032	33	10.1	63	19.2		5	14	356
V2E24043	43	13.1	75	22.9		7	19	483
V2E24052	53	16.2	81	24.7		8	21	533
V2E24063	63	19.2	93	28.3		10	26	660
V2E24073	73	22.2	105	32.0		12	31	787
V2E24083	83	25.3	111	33.8		13	33	838
V2E24093	93	28.3	123	37.5		15	38	965
V2E24103	103	31.4	136	41.1		17	43	1092
V2E24123	123	37.5	153	46.6		20	50	1270

28 ft. Bridge

KIT NUMBER	OARL		Required Electric Flat Cable		Bridge Festoon Sliders	Bridge Festoon Sliders	Festoon Stack Section Length	
	ft.	m	ft.	m			in.	mm
V2E28012	12	3.7	48	14.6	9	2	7	178
V2E28023	23	7.0	54	16.5		3	10	254
V2E28032	33	10.1	66	20.1		5	14	356
V2E28043	43	13.1	78	23.8		7	19	483
V2E28052	53	16.2	84	25.6		8	21	533
V2E28063	63	19.2	96	29.3		10	26	660
V2E28073	73	22.2	108	32.9		12	31	787
V2E28083	83	25.3	114	34.7		13	33	838
V2E28093	93	28.3	126	38.4		15	38	965
V2E28103	103	31.4	138	42.1		17	43	1092
V2E28123	123	37.5	156	47.5		20	50	1270

Metric equivalents are shown for reference only.

13. FESTOONING

NOTICE

- **Enough carriers (festoon sliders or festoon trolleys) are supplied to support festoon cable or hose every 6 ft. (2 m) on runways and every 3 ft. (1 m) on bridges.**

Installing Festoon Sliders

1. Slide festoon sliders through open end of **bridge** that corresponds with festooning on runway. Space festoon sliders every 3 ft. (1 m) along bridge.
2. Slide festoon clamp into place at end of bridge and tighten clamp bolt.
3. Install end stops in open end of bridge.
4. Install the slider accessible redundant end stop in the end of the runway.
5. Place the assembled rail splice clamp on the end of the runway track (loose).
6. Slide the festoon stack section of track into the clamp and support it while tightening the clamp bolts.
7. Slide festoon sliders through open end of **runway** track (on festooning side of runway). Space festoon sliders every 6 ft. (2 m) along runway. Refer to Dwg. MHP1629 on page 22.
8. Slide festoon clamp into each end of each runway and tighten clamp bolt.
9. Install the standard end stop in the end of the stack.

Installing Trolleys

1. Roll festoon trolleys through open end of **bridge** that corresponds with festooning on runway. Space festoon trolleys every 3 ft. (1 m) along bridge.
2. Slide festoon clamp into place at end of bridge and tighten clamp bolt.
3. Install an end stop.
4. Roll festoon trolleys through open end of **runway** track, on festooning side of runway. Space festoon trolleys every 6 ft. (2 m) along runway.
5. Slide festoon clamp into end of runway and tighten clamp bolt.
6. Re-install end stops on runway.

Festoon Electrical Cable/Air Hose/Vacuum Hose

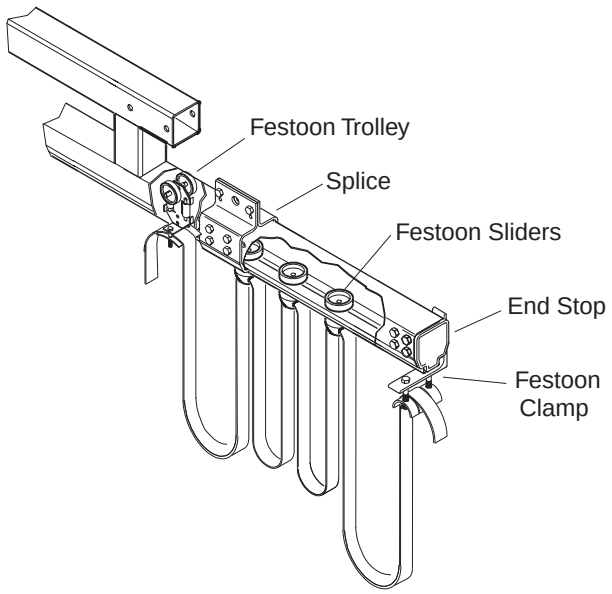
Festoon Sliders: Sliders are designed to accept 4-conductor (#10, #12 or #14 gauge) electric flat cable. Thread cable through hole in slider. Carefully clamp cable by tightening screw (2). Refer to Dwg. MHP1718 on page 23.

NOTICE

- **Bridge cannot be utilized as a ground (earth): 4-conductor cable MUST be used.**

Festoon Trolleys: Loosen nuts and clamp-plate enough to thread air hose between the two bolts and clamp plate on festoon trolley. Secure hose by tightening nuts on festoon clamp, forcing clamp plate snug against hose. Be careful not to overtighten bolts as this can cause damage to hose.

Festoon Stack Section



(Dwg. MHP1629)

1. Slide the top section of festoon sliders through the open end of runway so that the slider foot is on the side away from the line of travel of the bridge. On the bridge, slider feet should be located away from hoist, positioner or other handling device. Refer to Dwg. MHP1629 on page 22.
2. Enough carriers (sliders or trolleys) are supplied with each system to support festoon cable or hose every 6 ft (2 m) on runways and every 3 ft (1 m) on bridges.
3. Once carriers are in place, install a festoon clamp at the end of each runway and bridge.

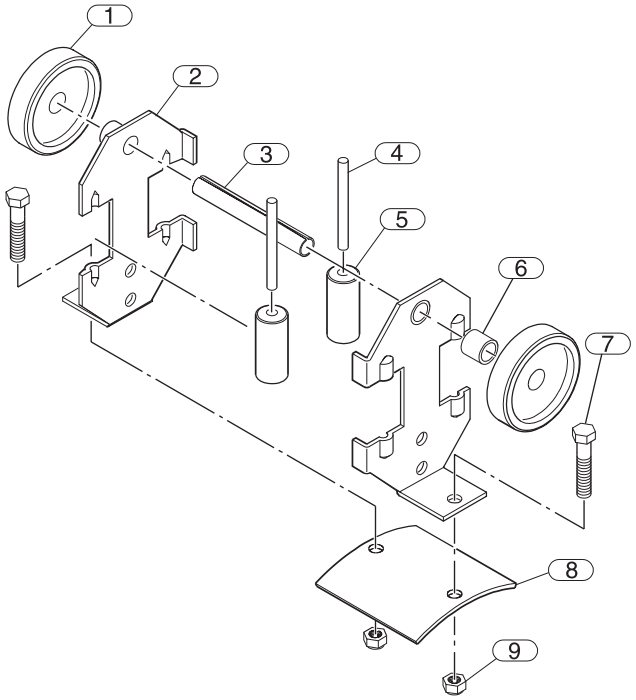
NOTICE

- **Adding a festoon stack section to the end of the runway allows cable or hose to stack up at the end, permitting full use of the runway.**
- **For additional support, attach a hanger to stack sections that are longer than 26 in. (66 cm) (model numbers V2F063 and higher).**

Festoon Trolley (Hose)

Refer to Dwg. MHP1618 on page 23.

1. Items 1 through 6 are provided factory pre-assembled.
2. Attach clamp plate (8) using tap bolts (7) and locknuts (9).
3. If spring pin and wheels were removed, drive spring pin (3) through spacers (6) at top of side plates.
4. Compress ends of spring pin and push on the wheels (1).



(Dwg. MHP1618)

Festoon Trolley Parts List

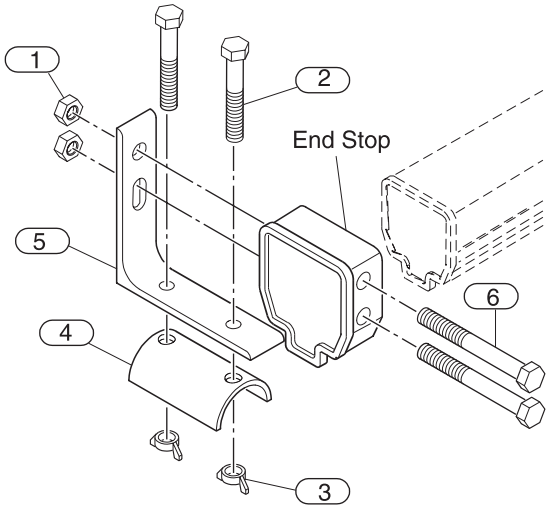
ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
314	Festooning Trolley Assy. (Incl's items 1 thru 9)	A/R	30763
1	Wheel	2	99069
2	Side Plate	2	30577
3	Spring Pin	1	77047
4	Spring Pin	2	77057
5	Guide Roller	2	30223
6	Spacer	2	55930002
7	Tap Bolt 1/4-20 x 2 in. lg.	2	70498
8	Clamp Plate	1	30578
9	Locknut	2	75581

Note: Items 1 to 6 are factory pre-assembled.

Festoon Clamp (Hose/Electrical)

Refer to Dwg. MHP1634 on page 23.

1. Attach saddle (4) to boom (5) using capscrews (2) and secure with wing nuts (3). Leave adequate space between saddle and boom for cable, air or vacuum hose.
2. Insert an end stop into the end of the runway or bridge and fasten with capscrews (6) and locknuts (1).



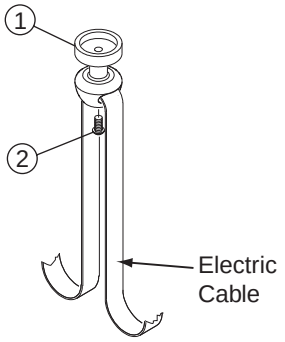
(Dwg. MHP1634)

Festoon Clamp Parts List

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
315	Festoon Clamp Assembly (Incl's items 4 and 5)	A/R	30611000
1	Locknut	2	75583
2	Capscrew	2	Order item 4
3	Wing Nut	2	
4	Saddle Assembly (Incl's items 2 and 3)	1	99042
5	Boom	1	30611001
6	Capscrew	2	71471

Festoon Sliders (Flat Cable/Electrical)

1. Sliders are designed to accept 4-conductor (#10, #12 or #14 gauge) electric flat cable.
2. Thread cable through slot of slider foot. Secure cable by lightly tightening screw (2).

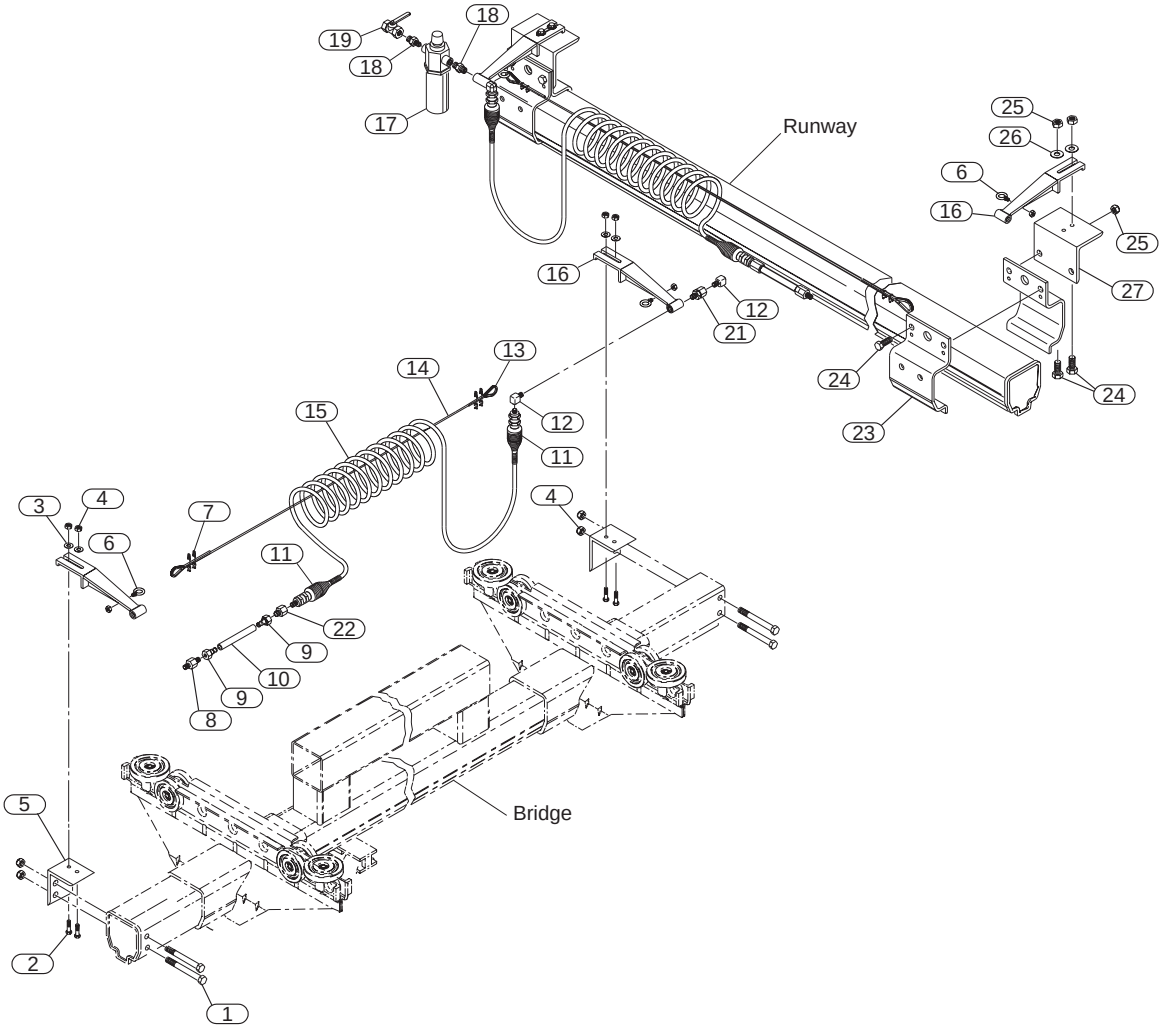


(Dwg. MHP1718)

Slider Parts List

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER
1	Slider (Incl's item 2)	A/R	99048
2	Screw	1	N/A

14. AIR SUPPLY KITS



(Dwg. MHP1621)

ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER		ITEM NO.	DESCRIPTION OF PART	QTY TOTAL	PART NUMBER	
			1/2 in.	3/8 in.				1/2 in.	3/8 in.
318	'C' Rail Bracket Assy (Incl's items 16 and 23 to 27)	A/R	31530		14	Cable, Coated	See Table	10105	
319	Air Bracket Assy. (Incl's items 1 to 5 and 16)	A/R	30112		15	Pre-coil Hose (bulk)	A/R	01912	01910
1	Capscrew, 3/8 - 16 x 4.5 in. lg.	4	71481		16	Bracket, Runway	2	31530-500	31530-375
2	Capscrew, 3/8 - 16 x 1.5 in. lg.	4	71428			Bracket, Bridge		30112	
3	Washer, Flat	4	74508		17	Regulator	1	01971	01939
4	Locknut, 3/8 - 16	8	75583		18	Fitting	2	10756	10705
5	Bracket Mount	4	30111		19	Shut Off Valve	1	90335	01965
6	Eye Bolt and Nut	4	01918		20 *	Hose Union	A/R	01980	01965
7	Cable Clamp	8	10230		21	Swivel Fitting	1	01976	01975
8	Adapter Fitting	2	10567	10566	22	Adapter Fitting	2	10768	10765
9	Swivel Fitting	2	10561	10560	23	Clamp	2	31505	
10	Control Hose	1	10556-B	10555-B	24	Capscrew	4	71427	
11	Pre-coil Fitting	2	01956	01957	25	Nut	4	75583	
12	Elbow Cap Fitting	2	01961	10354	26	Washer	2	74540	
13	Thimble	4	10210		27	Bracket Mount	1	31532	

* Not Illustrated - for connecting pre-coiled hose sections

Runway Hose and Cable Lengths

OARL		Pre-Coil Hose		Pre-Coil Hose Union Qty. (item 20)	1/8 in. Cable Coated to 3/16 in.		Kit Number*	
ft	m	ft	m		ft	m	3/8 in.	1/2 in.
12	3.7	24	7.3	None	17	5.2	V2A38R012	V2A12R012
23	7.0	46	14.0	None	28	8.5	V2A38R023	V2A12R023
33	10.1	66	20.1	None	38	11.6	V2A38R033	V2A12R033
43	13.1	86	26.2	None	48	14.6	V2A38R043	V2A12R043
53	16.2	106	32.3	1	58	17.7	V2A38R053	V2A12R053
63	19.2	126	38.4	1	68	20.7	V2A38R063	V2A12R063
73	22.2	146	44.5	1	78	23.8	V2A38R073	V2A12R073
83	25.3	166	50.6	1	88	26.8	V2A38R083	V2A12R083
93	28.3	186	56.7	1	98	29.9	V2A38R093	V2A12R093
103	31.4	206	62.8	2	108	32.9	V2A38R103	V2A12R103
123	37.5	246	75.0	2	128	39.0	V2A38R123	V2A12R123

Bridge Hose and Cable Lengths

OABL		Pre-Coil Hose		1/8 in. Cable Coated to 3/16 in.		Kit Number**	
ft	m	ft	m	ft	m	3/8 in.	1/2 in.
10	3.0	20	6.1	15	4.6	V2A38B10	V2A12B10
15	4.6	30	9.1	20	6.1	V2A38B15	V2A12B15
20	6.1	40	12.2	25	7.6	V2A38B20	V2A12B20
24	7.3	48	14.6	29	8.8	V2A38B24	V2A12B24
28	8.5	56	17.1	33	10.0	V2A38B28	V2A12B28

* Kits include: Air brackets, tagline assembly, pre-coiled hoses, straight hoses and filter regulator.

** Kits include: Air brackets, tagline assembly, pre-coiled hoses and straight hoses.

Metric equivalents are shown for reference only.

Refer to dwg. MHP1621 on page 24.

1. Install brackets (16) on runway and/or bridge.
2. Loosely install eye bolts (6) with nuts in brackets.
3. Loop one cable (14) end through eye bolts and fasten with two cable clamps (7). Make sure cable clamp saddles are on the live cable side and the ‘U’ bolt on the dead cable side.
4. Loop the other end of the cable through the second eye bolt. Ensure eye bolt nuts are installed approximately one nut height onto the eye bolt. This will allow sufficient room for adjustment.
5. Pull the cable taut and install two cable clamps, as described in Step 3. Cut off excess cable.
6. Adjust nuts on eye bolts to tension cable.
7. Determine length of coiled hose required. Install fittings and coil onto cable.
8. Connect fittings to brackets.

INSTALLATION CHECKLIST

Ingersoll-Rand *Installation Checklist for the Valu-Trak Rail System*

BEFORE LIFTING ANY LOAD VERIFY INSTALLATION!

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

This form may be copied and used as a permanent record.

- ❑ Has the support structure for the I-Beams been designed by a registered Structural Engineer and is it capable of supporting five times the combined weight of the I-Beams, the Valu-Trak Rail System, attached equipment and anticipated loads?
- ❑ Are I-Beams capable of suspending five times the combined weight of the system, attached equipment 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 securely fastened?
- ❑ Are all safety cables installed and fastened correctly?
- ❑ Are threaded rods straight and parallel?
- ❑ Does end truck sit straight in the rail channels?
- ❑ Do the festooning trolleys and the airhose or electrical cables, along the runway and bridge, move freely without binds?
- ❑ Are the runways and bridge straight and level to specifications?
- ❑ 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 rails aligned and straight?
- ❑ Is hoist or positioner top hook correctly installed on trolley?
- ❑ Does any part appear damaged or show signs of undue stress or wear?
- ❑ Are end stops 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 248-398-1374 for consultation.

When all items on the Installation Checklist have been verified, proceed with "TESTING THE INSTALLATION".

TESTING THE INSTALLATION

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

1. Prior to conducting test procedures, 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 installation checklist provided on page 26 to prevent overlooking a test procedure.

Step 1
Verify that bridge, hoist, positioner or handling device move freely throughout the 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 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 positioning the maximum load rate and completing the testing procedure, the system is ready to operate.

GENERAL INSPECTION

The **Ingersoll-Rand** Valu-Trak Rail System requires a visual inspection before each shift and a thorough inspection at least every six months. The Inspection Record form on page 29 can be copied and maintained in your files for future reference. If problems are found ensure corrective procedures are completed prior to continuing Rail System operation.

1. Keep proper records of the date, time and personnel responsible for each inspection.
2. Visually examine the entire system for wear or abrasion due to use.
3. Examine parts for signs of excessive wear or damage.
4. Check rail system adjustment. Verify alignment 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 that end stops are installed and functional. Inspect for damage or loose connections.
7. Inspect all runway and bridge assemblies for ridges caused by wear. If ridges are apparent, the rail section must be replaced.
8. Inspect all truck and trolley assemblies for worn guide wheels and bearings.
9. Inspect all threaded items and replace those with damaged threads.
10. Inspect all disassembled parts to determine their fitness for continued use.
11. Check hoist, positioner or handling device and trolley hanger. Follow manufacturers' manuals and inspection procedures for these devices.
12. Do not reuse locknuts.

If problems are experienced during the inspection process, please copy and fax your completed Inspection Record (page 30) to Ingersoll-Rand at 248-398-1374 for consultation.

INSPECTION RECORD

Ingersoll-Rand Valu-Trak Rail System Inspection Form **Component**	**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 use, state so; if not, state circumstances.**
	Required Action:					
Operator _____ Date:_____ Inspector_____ Date:_____ Supervisor_____ Date:_____	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, or recycle. Replace parts.	Company:_____ Department:_____ Date:_____ Time:_____

This page may be photocopied and used by inspectors or maintenance personnel.

LUBRICATION

The **Ingersoll-Rand** Valu-Trak Rail System has been designed to require minimal lubrication. The runways and bridges require no lubrication; although some attachments do require lubrication.

Whenever a Rail System is disassembled for overhaul or replacement of parts, lubricate as follows:

1. Lubricate the hook and hook latch pivot points on lifting device. Hook and latch should swivel/pivot freely.
2. Lubricate eye bolts, end truck pivots and guide roller pins.
3. Use **Ingersoll-Rand** LUBRI-LINK-GREEN® or an ISO VG46 oil.

Trolley and Trucks

The 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

This section provides basic troubleshooting information. 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 rail symptoms, probable causes and remedies.

Symptom	Cause	Remedy
Change in rolling effort or erratic operation.	Dirt or obstruction in rail.	Clean all parts and inspect for wear.
	Damaged or bent rail.	Inspect all parts and replace those that are damaged. Determine cause of damage prior to operation.
	Misaligned bridge or runway.	Check for loose or broken fasteners. Tighten if loose or replace if broken. Check alignment.
	Worn or damaged trolley wheels and/or guide rollers.	Inspect wheels and rollers. Replace damaged parts.
	Spliced sections misaligned.	Ensure inside running surfaces at the splice are flush and aligned.
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.	Runway or bridge not level.	Level components to specifications.
	Runway or bridge 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

The minimum maintenance required for a rail system requires inspection of suspension hardware and all bolted connections.

⚠ CAUTION

- **Any operating problems such as a change in rolling effort or unusual noises must be identified and corrected immediately.**

Re-tighten all bolt connections (suspension hardware, trolleys attaching hardware, etc.) two weeks after installation and again after two months of operation.

The maintenance schedule below is provided to minimize problems and identify component wear. This chart should be used based on system use and/or local requirements for safe operation. This schedule does not contain daily inspections that may be required by local regulations.

If there are problems with the rail system (worn or damaged components) and replacement is required, refer to appropriate parts list to order replacements. Some components can only be ordered as complete assemblies. If they are worn or damaged, the complete assembly must be replaced, not just the worn parts.

The trolley wheels have anti-friction bearings which are lubricated for life and only require replacement parts under extreme conditions. If these wheels must be replaced, they can be ordered separately - there is no need to replace the entire assembly.

⚠ WARNING

- **Never perform maintenance on the system while it supports a load.**

⚠ CAUTION

- **During maintenance, tag the system: "CAUTION - DO NOT OPERATE - EQUIPMENT UNDER REPAIR".**
- **Do not attempt to repair system parts. Replace the part or consult an authorized Ingersoll-Rand service center.**
- **Do not re-use locknuts, install new locknuts.**
- **Only allow personnel trained in the operation and maintenance of the system to perform service.**

NOTICE

- **Visually inspect the system before each shift for wear or damage.**
- **Advise supervisor or maintenance personnel, according to company policy or procedure, of any needed maintenance. Replace all damaged system components. Record all inspection, cleaning, maintenance and repair.**
- **After performing maintenance, test the system to its rated capacity before returning to service.**

Component	**Inspect For**	**Maintenance Procedure**	**Interval**	
			6 months	12 months
Complete rail system	General condition (roll resistance, rough operation).	Clean and realign system components.	X	
Rail system suspension	Loose mountings, wear or damage.	Tighten or replace mountings.		X
	Loose bolted connections.	Tighten bolts.		X
Runway rails and bridge rails	Loose bolted clamp connections.	Tighten clamp bolts.		X
	Loose bolted rail clamping connections.	Tighten connections.		X
	Suspension wear.	Replace worn components.		X
	Loose connections.	Tighten connections.		X
Rail system splices and end stops	Loose bolted connections.	Tighten splice and end stop bolts.		X
	Improper joint alignment.	Realign joints.		X

CLEANING

It is important to schedule periodic cleaning of the Valu-Trak Rail System.

Frequency of cleaning cycles will depend on system use and environment.

The system is made of 7-gauge rolled steel that is powder-coated for durability and smoothness. Moisture, humidity, chemicals and harsh environments will reduce system life. The maintenance and preservation of the bridges, rails and suspension devices is important to the overall life of the system.

Use the following procedures to clean the components of the Valu-Trak Rail System.

1. Clean all hanger assemblies with LUBRI-LINK-GREEN® or spray-on WD40® and dry with compressed air.
2. Clean all trucks and trolleys using suitable cleaner, dry using low-pressure, filtered, compressed air.
3. Remove accumulated dirt, sediment or corrosion on runway and bridge outer and rolling surfaces.
4. Clean or replace air filter if used with the system.

⚠WARNING

- **Solvents and certain cleaning solutions can be hazardous. 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 that need 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 beams 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 procedures listed in the preceding chapters to familiarize yourself with safety issues and precautions.

A list of tools that may assist the disassembly and assembly of the rail system is provided on page 9.

For your safety follow the steps below and exercise caution when disassembling the system.

1. Remove any loads from the system.
2. Shut off and bleed down air supply.
3. Disconnect the air supply from the bridge air stanchion and runway air regulator.
4. Remove one end stop from the bridge section.
5. Remove the festooning.
6. Remove hoist, positioner or lifting device from the bridge section.
7. Remove an end stop from one end of each runway.
8. Remove the bridge section and festooning trolleys.
9. Remove safety cables from the runways.
10. Loosen mounting tabs on I-Beam clamp.
11. Remove runway sections.

⚠ CAUTION

- **Never disassemble the system alone. Always have someone help you.**

PARTS ORDERING INFORMATION

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.

The use of other than **Ingersoll-Rand** Material Handling replacement parts may result in decreased performance, and may invalidate the warranty.

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

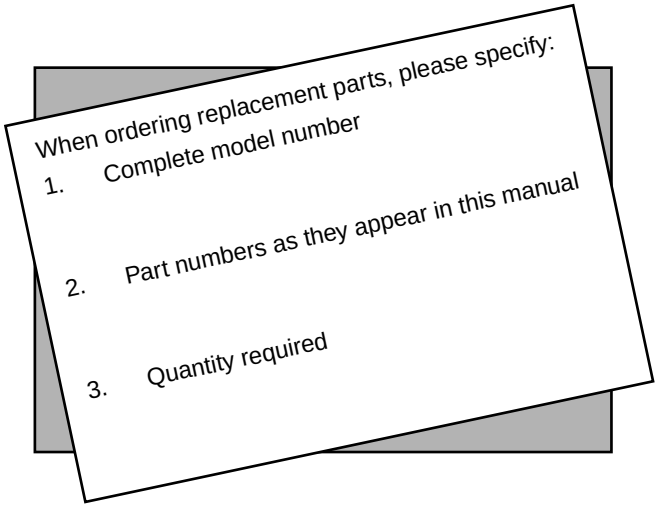
Ingersoll-Rand Material Handling
Zimmerman Handling Systems
29555 Stephenson Hwy.
Madison Heights, MI 48071
Phone: (248) 398-6200
Fax: (248) 398-1374
Toll Free: (800) 347-7047

or

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

Disposal

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



LIMITED WARRANTY

Ingersoll-Rand Company (**I-R**) warrants to the original user its Valu-Trak 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.

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 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.

NOTES

United States Office Locations

Technical Support

Ingersoll-Rand
Material Handling
29555 Stephenson Hwy.
Madison Heights, MI 48071
Phone: (248) 398-6200
Fax: (248) 398-1374
Toll free: (800) 347-7047

For Order Entry,
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

Web Site:
www.ingersoll-rand.com

Regional Sales Offices

Chicago, IL
888 Industrial Drive
Elmhurst, IL 60126
Phone: (630) 530-3800
Fax: (630) 530-3891

Detroit, MI
23192 Commerce Drive
Farmington Hills, MI 48335
Phone: (248) 476-6677
Fax: (248) 476-6670

Houston, TX
450 Gears Road
Suite 210
Houston, TX 77067-4516
Phone: (281) 872-6800
Fax: (281) 872-6807

Los Angeles, CA
11909 E. Telegraph Road
Santa Fe Springs, CA
90670-0525
Phone: (562) 948-4189
Fax: (562) 948-1828

Philadelphia, PA
P.O. Box 425
900 E. 8th Ave., Suite 103
King of Prussia, PA 19406
Phone: (610) 337-5930
Fax: (610) 337-5912

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:

Ingersoll-Rand
Material Handling
29555 Stephenson Hwy.
Madison Heights, MI 48071
Phone: (248) 398-6200
Fax: (248) 398-1374

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

Regional Sales Offices

Edmonton, Alberta
1430 Weber Center
5555 Calgary Trail NW
Edmonton, Alberta
T6H 5P9
Phone: (780) 438-5039
Fax: (780) 437-3145

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

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

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Printed in USA