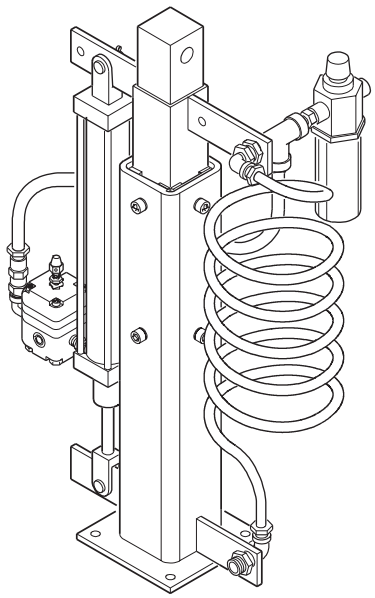
PARTS, OPERATION AND MAINTENANCE MANUAL
for

EZ-TORQUE TUBE MODELS

EZTT080 EZTT150



(Dwg. MHP1700)

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

⚠WARNING

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

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

Refer all communications to the nearest Ingersoll-Rand Material Handling Office or Distributor.

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INGERSOLL-RAND
MATERIAL HANDLING

SAFETY INFORMATION

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

Danger, Warning, Caution and Notice

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

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

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

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

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

Safety Summary

Personal protective and safety equipment must be used and maintained in accordance with the manufacturer's instructions. The EZ-Torque Tube should not be left suspended when not in use, lower the tool to the floor or a suitable location.

⚠ WARNING

• Do not use this unit or attached equipment for lifting, supporting, or transporting people or lifting or supporting loads over people.
• The supporting structures and load-attaching devices used in conjunction with these units must provide a safety factor of at least three times the rated capacity of the unit. This is the customer's responsibility. If in doubt, consult a registered structural engineer.
• If system air pressure is lost, lower the tool immediately. Operator's must stay out of the vertical path of the tool.

NOTICE

• Lifting and handling equipment is subject to different regulations in each country. These regulations may not be specified in this manual.

Employees who work near suspended loads or assist in positioning 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 and positioning 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.

It is the owner's and user's responsibility to determine the suitability of a product for any particular use. It is recommended that all applicable industry, trade association, federal, state and local regulations be checked. Read all operating instructions and warnings before operation.

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

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

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

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

SAFE 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 using this type of equipment have a safety program in force at their facility. If you are aware that some conflict exists between a rule set forth in this publication and a similar rule already set by an individual company, the more stringent of the two should take precedence.

This manual supports a fully installed system. Operators should be familiar with the operation of the unit before use.

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

1. Only allow personnel trained in, safety and operation on this product to operate and maintain the system.
2. Only operate unit if you are physically fit to do so.
3. When a **"DO NOT OPERATE"** sign is placed on the system, do not operate the unit until the sign has been removed by designated personnel.
4. Before each shift, check the unit for wear and damage. Never use a unit that inspection indicates is worn or damaged.
5. Never exceed the tool capacity of the unit.
6. Be certain the tool holder and tool extension are properly secured.
7. Pay attention to the tool at all times when operating the unit.
8. Make sure everyone is clear of the torque tube path. Do not lift over people.
9. Never use the unit for lifting or lowering people, and never allow anyone to stand on a suspended load.
10. Never weld or cut on components connected to the unit.
11. Ensure safety wire rope is installed.
12. Shut off air supply before performing any maintenance.
13. Use good posture when operating the system.
14. Check air connections for leakage.

SPECIFICATIONS

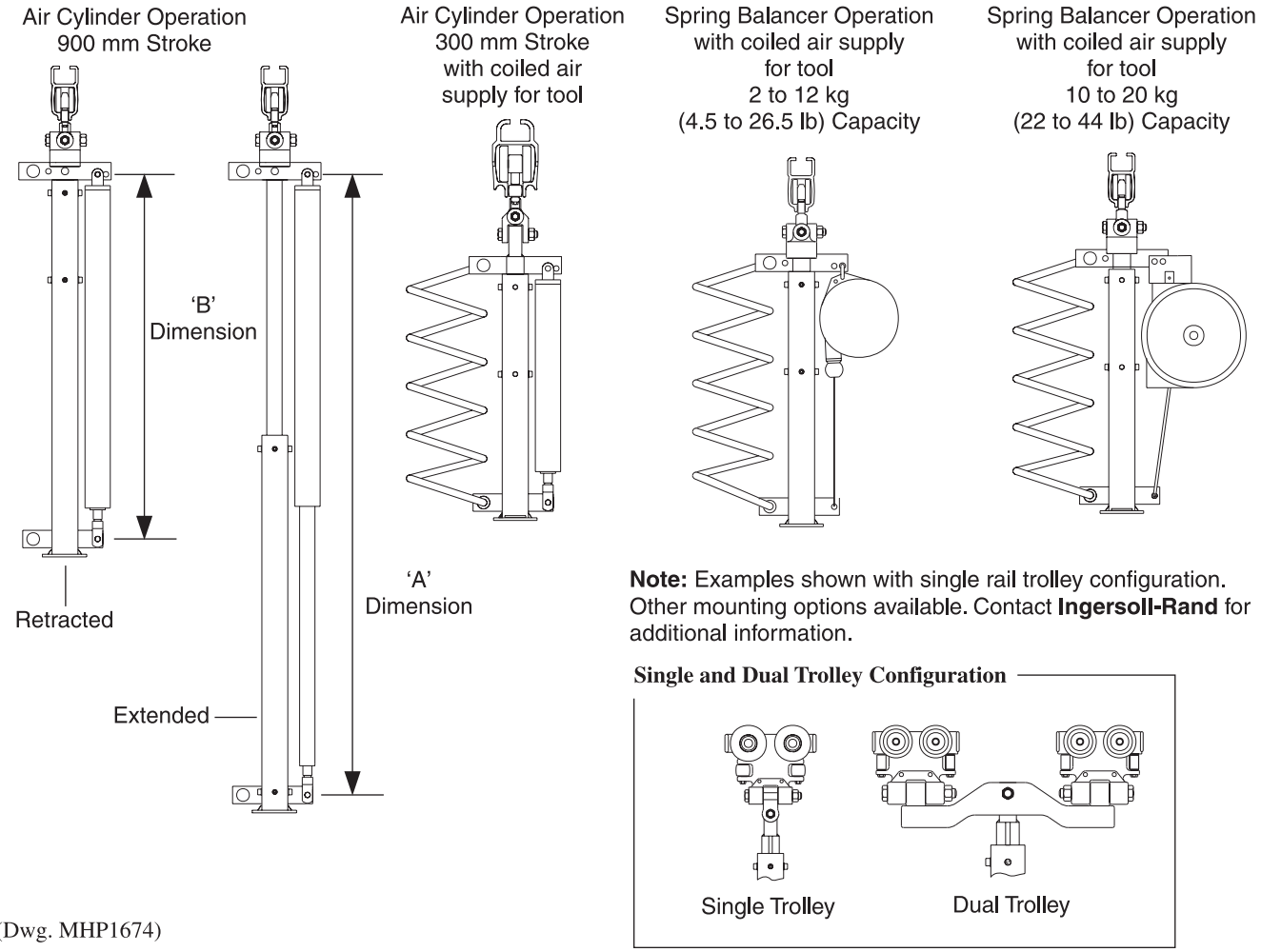
Model	Vertical Travel		'A' Dimension Cylinder Extended *		'B' Dimension Cylinder Retracted *		Air Cylinder Stroke		EZ-Torque Tube Weight **		Weight of Lower Section	
	inches	mm	inches	mm	inches	mm	inches	mm	lbs	kg	lbs	kg
EZTT080300	11.8	300	33.4	848	21.6	548	12.6	320	13.2	6	4.6	2.1
EZTT080600	23.6	600	57.0	1448	33.4	848	24.2	620	16.7	7.6	6.0	2.7
EZTT080900	35.4	900	80.6	2048	45.2	1148	36.2	920	20.3	9.2	7.3	3.3
EZTT150300	11.8	300	33.4	848	21.6	548	12.6	320	20.9	9.5	9.8	4.43
EZTT150600	23.6	600	57.0	1448	33.4	848	24.2	620	28.2	12.8	14.6	6.60
EZTT150900	35.4	900	80.6	2048	45.2	1148	36.2	920	35.5	16.1	19.2	8.77

***** Refer to Dwg. MHP1674 on Page 4 for location of 'A' and 'B' dimensions.

****** Weight listed does not include cylinder, spring balancer or other attachments. Refer to "OPTIONS, ATTACHMENTS AND ACCESSORIES" section.

	EZTT080		EZTT150	
Maximum Tool Weight	30 lb	13 kg	44 lb	20 kg
Maximum Torque Reaction	60 ft lb	80 Nm	110 ft lb	150 Nm

EZ-Torque Tube Configurations



(Dwg. MHP1674)

Note: Examples shown with single rail trolley configuration. Other mounting options available. Contact **Ingersoll-Rand** for additional information.

Single and Dual Trolley Configuration

INSTALLATION

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

⚠ CAUTION

• Owners and users are advised to examine specific, local or other regulations, including American National Standards Institute and/or OSHA Regulations which may apply to a particular type of use of this product before installing or putting the unit into use.
• Before installing, read "SAFETY INFORMATION".

Ensure the unit is properly installed. A little extra time and effort in doing so can contribute a lot toward preventing accidents, injuries and will help acheive the best service possible.

NOTICE

• Lubrication of the EZ-Torque Tube is not recommended.

Adjustments

Prior to operating the EZ-Torque Tube, but after installation, ensure the following adjustments, as they apply to your assembly and optional components, are made:

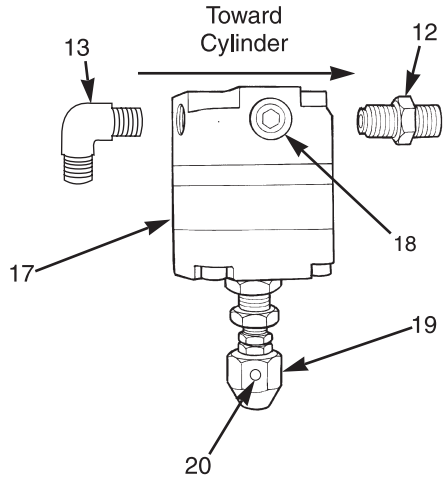
1. If necessary, adjust air regulator as described in this section. Refer to "Regulator Installation" and "Operational Adjustments".
2. If an air cylinder is used, ensure air cylinder is correctly installed, fasteners are tightened and any adjustments are complete in accordance with manufacturer's instructions.
3. If a spring balancer is used, ensure spring balancer is correctly installed, tested and performing in accordance with manufacturer's instructions.

Regulator Installation

Refer to Dwgs. MHP1703 on Page 5 and MHP1675 on Page 6. The regulator is connected with a connector fitting (12), elbow (13) and a check valve (2). The connector fitting (12) should be threaded into the rod end port on the air cylinder. The check valve (2) will be threaded into the elbow (13), which is threaded into the regulator input.

NOTICE

• The arrow on the check valve (2) must be pointing towards the cylinder. If check valve is installed backwards, the cylinder will not function.



(Dwg. MHP1703)

Regulator Parts List

Item No.	Description of Parts	Qty. Total	Part No.
- - -	Regulator Assembly (Includes items 12 and 17 through 20)	1	13825
12	Fitting, Connector	1	10731
13	Fitting, Elbow	1	10375
17	Regulator	1	13830
18	Plug	2	10764
19	Control Knob	1	13832
20	Setscrew	1	13833

Operational Adjustments

To establish a "zero gravity" condition for the operator to manipulate the tool, complete the following adjustment procedures:

⚠ WARNING

• Prior to performing operational adjustments, or servicing, ensure air supply is off and unit is not under load.

1. Turn adjustment knob (19) counterclockwise until unit stops.
2. Attach tool to unit. This will require the tool be installed in the tool holder. Connect coiled air tube.
3. Turn on air supply.
4. Turn the adjustment knob clockwise until the load begins to move. The regulator is properly set when equal effort is required to raise and lower the load.
5. Tighten locknut on regulator stem to lock adjustment in position.

Air System

An air supply system is required for EZ-Torque Tubes equipped with an air cylinder and/or air operated tool.
The supply air must be clean and free from water and water vapor. 6.9 bar/690 kPa (100 psig) at the unit is required to provide rated capacity. Do not exceed 6.9 bar/690 kPa (100 psig).

WARNING

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

Check tool manufacturers specifications for correct air supply requirements.

Air Lines

The inside diameter of the air supply lines should not be smaller than 10 mm (3/8 inch) based on a maximum of 30 metres (100 feet) between the air supply and the unit. Contact the factory for recommended air line sizes for distances greater than 30 metres (100 feet). Before making final connections, all air supply lines should be purged. Supply lines should be as short and straight as installation conditions will permit. Long transmission lines and excessive use of fittings, elbows, tees, globe valves, etc. cause a reduction in pressure due to restrictions and surface friction in the lines. If quick-disconnect fittings are used at the inlet of the unit, they must have at least a 10 mm (3/8 inch) air passage. Use of smaller fittings may affect performance.

Air Line Filter

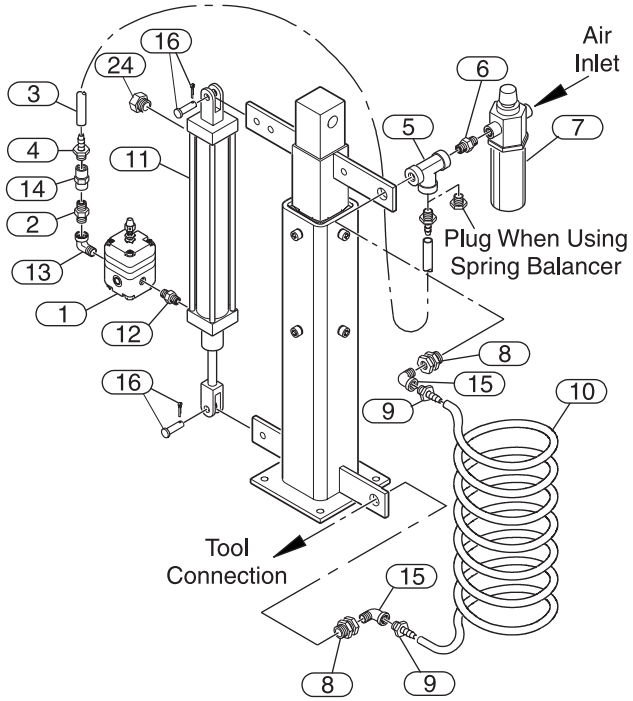
It is recommended that a filter/regulator package be used. Refer to "OPTIONS, ATTACHMENTS AND ACCESSORIES" section.

The air line strainer/filter should be installed as close as practical to the EZ-Torque Tube air inlet port. The strainer/filter should provide 5 micron filtration and include a moisture trap. Clean the strainer/filter monthly to maintain its operating efficiency.

To maintain dry air, the frequency for draining the filter should also be based on the condition of the air supply. It is recommended that the filter be drained weekly at first. Depending on air supply condition, a proper filter drain schedule should be established.

Moisture in Air Lines

Moisture that reaches the EZ-Torque Tube and associated components through the supply lines is the chief factor in determining the length of time between service overhauls. Moisture traps can help to eliminate moisture. Other methods, such as an air receiver which collects moisture before it reaches the unit, or an aftercooler at the compressor that cools air prior to distribution through the supply lines are also helpful.



(Dwg. MHP1675)

Air System Parts List

Item No.	Description of Parts	Total Qty.	Part No.
1	Regulator Assembly	1	13825
2	Check Valve	1	13270
3	Tube	1	93980-B
4	Fitting, Connector	2	93977
5	Fitting, Tee	1	10708
6	Fitting, Connector	1	Contact Factory
7	Regulator	1	See Parts Section
8	Fitting, Bulkhead	2	01170021
9	Fitting, Reducer	2	13503
10	Hose, Nylon	1	01936
11	Cylinder	1	See Parts Section
12	Fitting, Connector	1	10731
13	Fitting, Elbow	1	10375
14	Fitting, Coupling	1	10466
15	Fitting, Elbow	2	10354
16	Attaching Pin	2	Reference Only
24	Vent Plug	1	93883

Mounting The Unit

Ensure the supporting member to which the EZ-Torque Tube is attached is strong enough to support the weight of the unit plus the weight of any attached optional components and a maximum rated load plus a generous factor of at least 300% of the combined weights. If in doubt, contact a registered structural engineer.

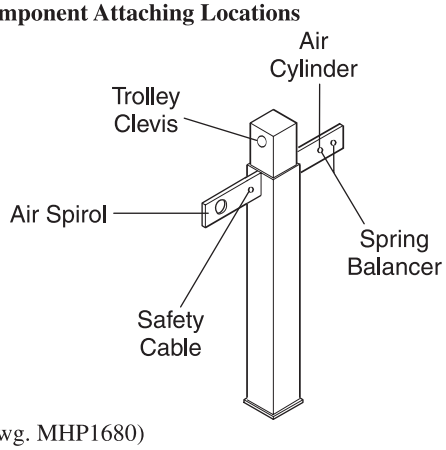
Ensure the installation area provides adequate room to safely operate the EZ-Torque Tube and attached components throughout the complete range of motion.

The EZ-Torque Tube may be mounted to numerous overhead structures. For information on mounting to a rail trolley unit, or to a stationary foundation, refer to the applicable product manual or consult a registered structural engineer.

Ensure the EZ-Torque Tube is mounted to provide operators with the most ergonomically efficient operating range.

Check that all components are correctly attached to internal column. Refer to Dwg. MHP1680 on Page 6.

Component Attaching Locations

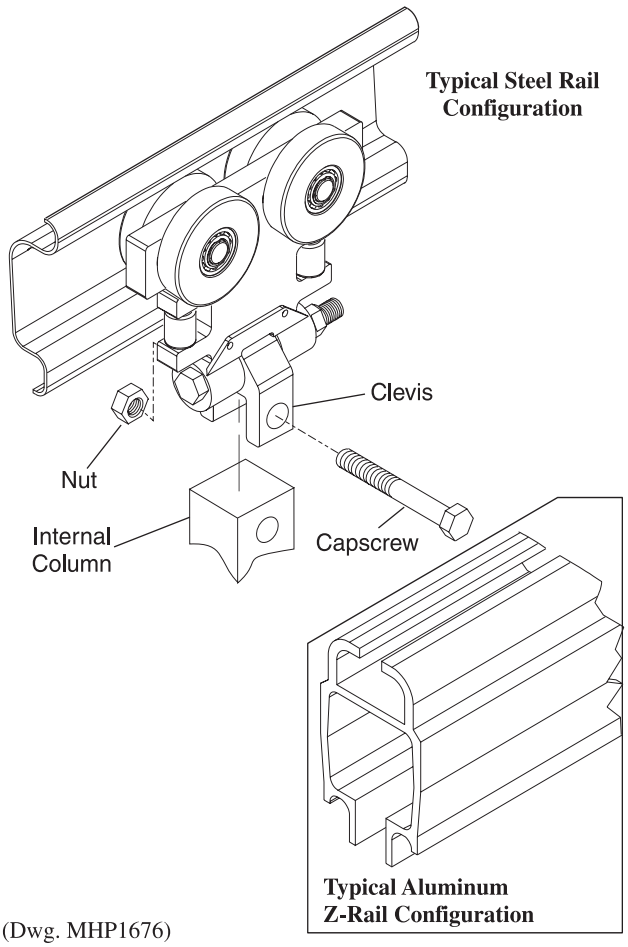


(Dwg. MHP1680)

A spring balancer or air cylinder is required for operation. A tool holder and tool extension can be added for specific applications.

Mounting to Single/Dual Rail Trolley

To attach the EZ-Torque Tube to a single/dual rail trolley, secure the internal column to the trolley clevis using capscrew and nut as shown in Dwg. MHP1676 on Page 7. Tighten capscrew until snug. Do not over-torque. It is recommended that the nut be replaced if removed.



(Dwg. MHP1676)

Attaching Safety Cable

Refer to Dwgs. MHP1681, shown on Page 7 and MHP1677, shown on Page 7.

⚠ CAUTION

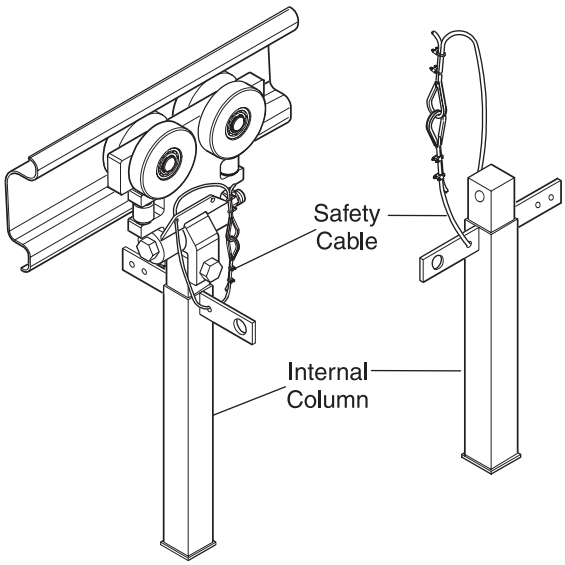
• A safety cable assembly is provided with this assembly. Ensure safety cable is properly installed. Safety cables must be installed to allow free movement of the trolley, yet provide minimum free drop of equipment if primary support fails.

1. Route the safety cable through hole in internal column and the trolley hanger assembly.

NOTICE

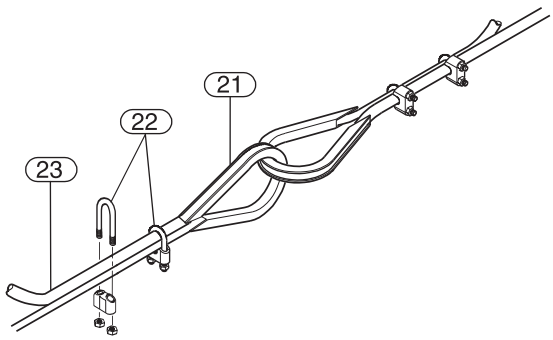
• If, for any reason, the safety cable cannot be placed through the trolley hanger, then it may be located over the rail.

Installed Safety Cable



(Dwg. MHP1681)

2. Interlock the two thimbles (21) and route the wire rope through the thimbles. Determine appropriate length of wire rope and, using side cutters, cut to length.
3. Install the first clamp (22) assembly one clamp width from the dead end of the wire rope. Snug the nuts, but do not torque.
4. Install the second clamp (22) at the thimble end. Snug the nuts but do not torque.
5. Remove any slack wire rope between thimble and clamp, and between the two clamps. Torque nuts to clamp wire rope.
6. Repeat steps 3 through 5 for the other end of wire rope.



(Dwg. MHP1677)

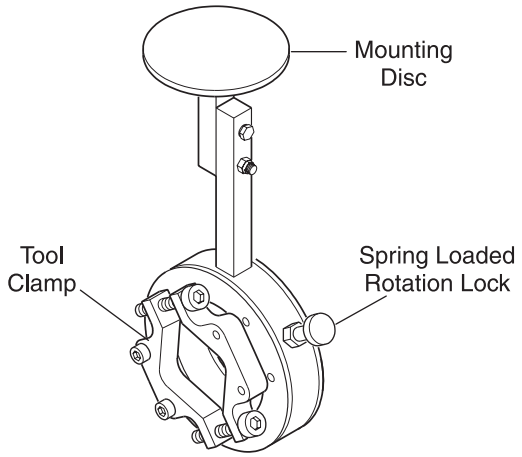
Safety Cable Parts List

Item No.	Description of Parts	Quantity Total	Part No.
21	Thimble	2	10212
22	Clamp Assembly	4	10235
23	Wire Rope	As Req'd.	10099

Attaching the Tool Holder

Refer to Dwg. MHP1697 shown on Page 8.
Attach the tool holder to the lower flange of the tool extension using four capscrews, washers, nuts and two clamping plates. To position tool holder, loosen capscrews and rotate until desired position is acheived. Retighten capscrews. Torque fasteners to 30 Nm (22 ft lbs).
Install tool in tool holder and tighten capscrews to clamp into position.

Tool Holder Components
360° Swivel Type



(Dwg. MHP1697)

Attaching a Spring Balancer

Connect spring balancer to internal column.
On 2 to 12 kg (4.5 to 26.5 lb) capacity units connect spring balancer to hanger plate with shackle and attach hanger plate to internal column with two capscrews, nuts and washers.
On 10 to 20 kg (22 to 44 lb) capacity units connect spring balancer directly to internal column using two capscrews, nuts and lockwashers.
Attach spring balancer wire rope to external column. Refer to the spring balancer manual for additional installation instructions.

Attaching Air Cylinder

Position cylinder parallel to column and align cylinder end clevis with hole in internal column cross bar. Use hole nearest column as shown on Dwg. MHP1680 on Page 7. Install pin (16) and secure in position.
Attach cylinder rod end clevis to external column. Install pin and secure in position.

OPERATION

The four most important aspects of operation are:
1. Follow all safety instructions when operating the unit.
2. Only allow people trained in safety and operation of this product to operate the unit.
3. Subject each unit to a regular inspection and maintenance program.
4. Be aware of the unit capacity at all times.

Ensure operators use suitable personnel protective equipment when operating EZ-Torque Tubes and attached tools. Maintain personnel protective equipment in accordance with manufacturers instructions.

At the end of each shift, or prior to turning off air supply, lower tool to its lowest position.

Description Of Operation

The EZ-Torque Tube is an integrated group of components designed to maximize the interaction of man and machine. Ease of operation eliminates operator fatigue and incorporates added safety during the performance of repetitive tasks.

Principles Of Operation

The EZ-Torque Tube is designed to allow vertical operational control within a specific range of motion.
When installed on a trolley-rail system, push on the external column or tool to move in the horizontal direction. During travel ensure the load travel path is clear and pay attention to the direction of travel during movement.

Vertical raising and lowering of the system should be easily accomplished by exerting force on the attached tool. On air cylinder or spring balancer equipped units, use the tool to raise and lower the Torque Tube.

Tool Holder (optional feature)

To rotate a tool held in tool holder 52100, pull out plunger and rotate to desired position. Allow plunger to spring return to locked position. Rotate tool slightly to engage the locking pin.

INSPECTION

WARNING

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

The inspection intervals recommended in this manual are based on intermittent operation of the equipment eight hours each day, five days per week, in an environment relatively free of dust, moisture and corrosive fumes. If the equipment is operated almost continuously, or more than eight hours each day, more frequent inspections will be required.

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

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

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

Records and Reports

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

Frequent Inspections

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

1. OPERATION. Check for visual signs or abnormal movement which could indicate a potential problem. Ensure tube and trolley movements are smooth and unrestricted.
2. FASTENERS. Ensure fasteners are secure. Tighten loose and replace damaged fasteners.
3. COLUMNS AND OPTIONAL TOOL EXTENSION. Check for wear and damage. Repair or replace as necessary.
4. SIDE PLATES. Check for wear or damage. Replace if worn or damaged.
5. SAFETY CABLE. Check clamps are secure. Tighten clamps if necessary.
6. AIR SYSTEM. Visually inspect all connections, fittings, hoses and components for indication of air leaks. Repair any leaks or damage, tighten any loose connections.

Periodic Inspection

Frequency of periodic inspection depends on the severity of usage:

NORMAL	HEAVY	SEVERE
yearly	semiannually	quarterly

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

Inspect all the items in “Frequent Inspection”. Also inspect the following:

1. FASTENERS. Verify fasteners are tight. Torque fasteners to recommended torque levels.
2. SIDE PLATES. Replace the side plates once per year regardless of condition. Refer to “PARTS SECTION” for replacement part numbers, and “MAINTENANCE” section for replacement instructions.
3. SPRING BALANCER. Inspect spring balancer in accordance with manufacturers literature.
4. AIR CYLINDER. Check cylinder vent is clean and unrestricted. Check cylinder for leaks and external damage. Replace or repair cylinder as required.
5. TOOL HOLDER. Check tool holder rotates freely and locking mechanism provides positive stop. Check tool holder clamps are not damaged.

INSPECTION AND MAINTENANCE REPORT

Ingersoll-Rand

EZ-Torque Tube

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

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

COMPONENT	**CONDITION**		**CORRECTIVE ACTION**		**NOTES**
	Pass	**Fail**	**Repair**	**Replace**	
Fasteners			- - -		
Columns					
Side Plates			- - -		
Safety Cable					
Tool Extension					
Supporting Structure					
Rail System/Hangers					Refer to Rail System Manual
Labels and Tags			- - -		
Air Cylinder					
Tool Holder					
Spring Balancer					Refer to Spring Balancer Manual
Air System					
Other Components (list in NOTES section)					

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

TROUBLESHOOTING

This section provides basic troubleshooting information. Determination of specific causes to problems are best identified by thorough inspections performed by personnel instructed in safety, operation and maintenance of this equipment. The chart below provides a brief guide to possible problems and remedies.

Component	Problem	Remedy
Side Plates	Side Plates are loose at fastened connection.	Inspect all connections for loose fasteners. Tighten fasteners to appropriate torque as necessary to secure components. Replace side plates if worn.
Columns	Column is loose at fastened connection.	Inspect all connections for loose fasteners. Tighten fasteners to appropriate torque as necessary to secure components.
	Loose connections at weld seems.	Inspect all welds. Replace components showing any indication of cracked or broken welds.
	Column is bent.	Replace column.
Pivot Assemblies	Movement is not smooth, or may be binding.	Inspect pivot assembly. Repair or replace as necessary to ensure pivot assembly movement is smooth and does not bind.
	Fasteners are loose.	Ensure fasteners are tightened to rated torque specifications.
	Lack of lubrication in pivot assembly.	Lubricate pivot assembly.
Trolleys	Trolley does not travel smoothly, or binds during travel.	Check rail for cleanliness and obstructions. Clean rail. Check trolley wheels roll easily on rail. Check wheels, bearings and retainer rings are not damaged. Replace wheels, bearings and retainer rings if required.
Control Hoses	Hose leaks at fittings or along length of hose.	Replace worn, leaking or damaged hoses and fittings.
	Hose binding at connections.	Ensure swivel connections operate correctly without sticking or binding. Replace fittings that stick or bind.
Safety Cable	Wire rope frayed.	Replace wire rope. Inspect rail or attaching foundation for cause of wire rope failure. Repair condition before installing wire rope.
	Wire rope connections loose.	Tighten wire rope clamps to ensure fasteners are secure.
Cylinder or Spring Balancer	Effort to extend or retract EZ-Torque Tube is not equal.	Check regulator adjustment for cylinder systems. Refer to spring balancer manual for spring balancer adjustment.
		Check cylinder vent is clean and unrestricted.

⚠ CAUTION

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

⚠ WARNING

• Never perform maintenance on the EZ-Torque Tube while it is supporting a tool.
• Before performing maintenance, tag controls:
DANGER - DO NOT OPERATE -
EQUIPMENT BEING REPAIRED.
• Only allow service personnel trained in safety and maintenance on this unit to perform maintenance.
• After performing any maintenance on the unit, adjust and test unit in specified application before returning to service.
• Shut off air system and depressurize air lines before performing any maintenance.

Maintenance Intervals

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

INTERVAL	MAINTENANCE CHECK
Start of each shift (Operator or Maintenance Personnel)	Make a thorough visual inspection of the EZ-Torque Tube and attached components for damage. Do not operate the unit, or components, if damaged.
	Operate the unit through the normal range of movements. Unit must operate smoothly without sticking, binding or abnormal noises.
3 Months (Maintenance Personnel)	Inspect the side plates. Clean or replace parts as required.
Yearly (Maintenance Personnel)	Replace side plates.
	Check all the supporting members, including the foundation, fasteners, nuts, trolley, rail, spring balancer, cylinder, tool holder, etc. for indications of damage or wear. Repair or replace as required.

Adjustments

Refer to "INSTALLATION" section for regulator adjustment.

Disassembly

Refer to Dwg. MHP1656 on Page 13.

1. Disconnect the safety cable (1) clamps and remove safety cable.
2. Remove tool holder from tool extension or external column.
3. Tool Extension Removal (optional attachment) - remove four capscrews (7), washers (8) and nuts (9) to disconnect tool extension (10) from external column (6).
4. Remove the eight capscrews (5) and lockwashers (4) attaching the side plates (3) to the external column (6).
5. Turn the unit, disengage the internal column (2) by lifting slowly 'UP'. As the four side plates (3) are raised outside of the external column (6), remove the side plates. Remove the internal column.

Cleaning, Inspection and Repair

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

Use the following procedures to clean, inspect and repair the EZ-Torque Tube and associated components.

Cleaning

Thoroughly clean all EZ-Torque Tube components in solvent. The use of a stiff bristle brush will facilitate the removal of accumulated dirt and sediments on the columns. Wipe off each part after cleaning. **Do not** allow cleaning solvents to contact side plate wear pads.

Inspection

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

1. Inspect all threaded items and replace those having damaged threads.
2. Inspect side plates for worn or loose pads. **Do not** attempt to repair or rebond. Always replace complete side plate. If replacing side plates it is recommended that all four be replaced at the same time.

Repair

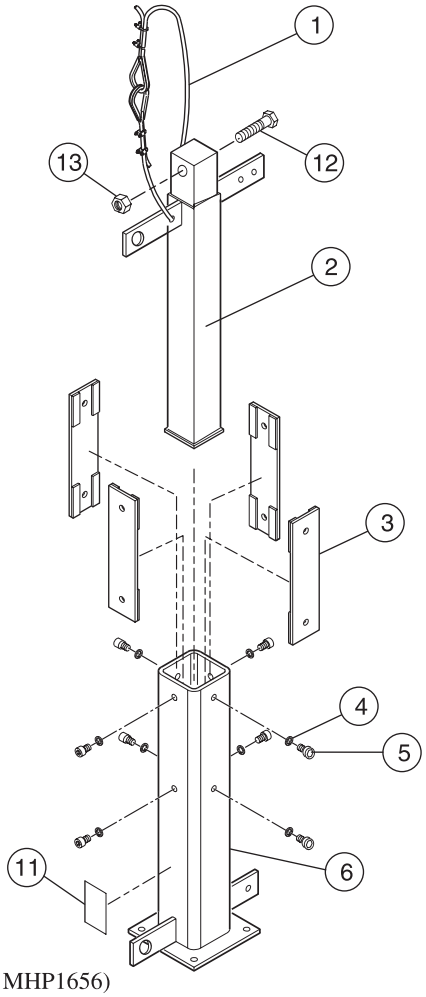
Actual repairs are limited to the removal of small burrs and other minor surface imperfections. Use a fine stone or emery cloth for this work.

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

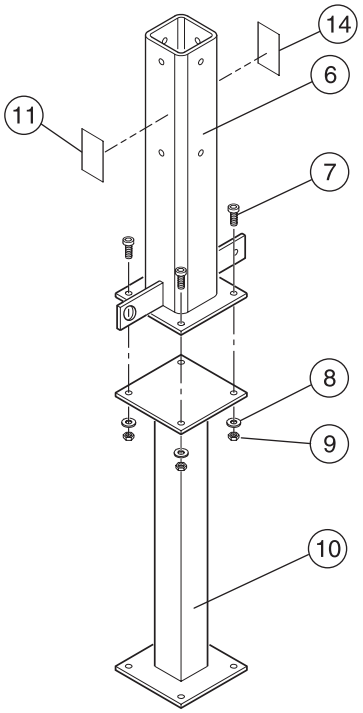
Assembly

1. Place the internal column (2) into the external column (6).
2. Install a side plate (3) between the external column and internal column. Adjust the side plates to line up holes in external column with holes in side plate. Secure side plates to external column using two capscrews (5) and lockwashers (4). Note: two lockwashers per capscrew are required on EZTT080 models; one lockwasher per capscrew is required on EZTT150 models. It is recommended that a thread sealant be used on the capscrew threads during installation. Torque capscrews on EZTT080 units to 0.3 Nm (2.6 inch lbs), and torque capscrews on EZTT150 units to 1 Nm (9 inch lbs).
3. Tool Extension Assembly (optional attachment) - using four capscrews (7), washers (8) and nuts (9), attach tool extension (10) to base of external column (6). Torque fasteners to 30 Nm (22 ft lbs).
4. Install tool holder and safety cable.

EZ-TORQUE TUBE ASSEMBLY PARTS DRAWING

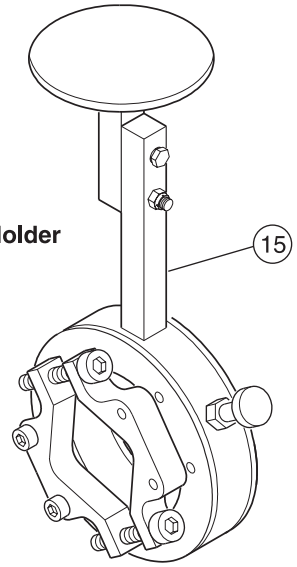


(Dwg. MHP1656)



(Dwg. MHP1657)

Tool Holder



(Dwg. MHP1699)

EZ-TORQUE TUBE ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty. Total	Part Number					
			EZTT080			EZTT150		
			300 mm	600 mm	900 mm	300 mm	600 mm	900 mm
1	Safety Cable	1	30907-06					
2	Internal Column	1	58252024	58252057	58252065	58251349	58251521	58251570
• 3	Side Plate	4	58252073			58251356		
4	Lockwasher	See ( )	58252107 (16)			58251422 (8)		
5	Capscrew M5 x 8	8	58252081			- - -		
	Capscrew M8 x 10		- - -			58252099		
6	External Column	1	58252016	58252032	58252040	58251331	58251489	58251539
12	Capscrew M16 x 120 long	1	72623M					
13	Locknut M16	1	75587M					
14	Label, Ingersoll-Rand	1	54065420					

Tool Extension Parts

7	Capscrew M8 x 25	4	58252115
8	Washer, Flat M8	4	58252123
9	Locknut M8	4	58252131
10	Tool Extension 150 mm (6 inch)	1	50150
	Tool Extension 300 mm (12 inch)		50300
	Tool Extension 450 mm (18 inch)		50450
	Tool Extension 600 mm (24 inch)		50600
	Tool Extension 750 mm (30 inch)		50750
	Tool Extension 900 mm (36 inch)		50900
11	Label, Product	1	71347405
15	Tool Holder Assembly 360°	1	52100
	Tool Holder Assembly (2 Axis)		52000 *

* Not Illustrated.

• Recommended spare.

OPTIONS, ATTACHMENTS AND ACCESSORIES

Air Cylinder

Part Number	Vertical Travel		Weight	
	inch	mm	lbs	kg
63001	11.8	300	5	2.27
66001	23.6	600	6.96	3.15
69001	35.4	900	11	4.99

Spring Balancer

EZ-Torque Tube Model	Part Number	Vertical Travel		Capacity		Weight	
		ft	m	lbs	kg	lbs	kg
EZTT080	BMDL-6	8.2	2.5	8.8 - 13.2	4 - 6	7.1	3.2
	BMDL-8			13.2 - 17.6	6 - 8	7.7	3.5
	BMDL-10			17.6 - 22	8 - 10	8.2	3.7
EZTT150	BIDS-15	6.5	2	22 - 33	10 - 15	16.5	7.5
	BIDS-20			33 - 44	15 - 20	17	7.7
	BIDS-25			44 - 55	20 - 25	17.2	7.8

Tool Holder

Part Number *	Description	Weight	
		lbs	kg
52000	Fixed horizontal/vertical	2	0.9
52100	360 degree swivel	5	2.27

* Must order one of the extension tubes. Refer to Extension Tubes listed below.

Accepts tools from 19 to 63 mm (3/4 to 2-1/2 inch) diameter.

Extension Tubes

Part Number	Length		Weight	
	inch	mm	lbs	kg
50150	5.9	150	2.7	1.2
50300	11.8	300	3.9	1.8
50450	17.7	450	5.1	2.3
50600	23.6	600	6.3	2.9
50750	29.5	750	7.5	3.4
50900	35.4	900	8.7	3.9

Suspension Kits Single Trolley

Model Number	Single Trolley Part Number	Dimensions		Weight	
		inch	mm	lbs	kg
ZRA2	16610	Contact Factory		5.5	2.49
ZRS2/3	16600				
ZRV2	16607			Contact Factory	

Suspension Kits Dual Trolley

Model Number	Dual Trolley Part Number	Dimensions		Weight	
		inch	mm	lbs	kg
ZRAT	16755	Contact Factory		10.5	4.76
ZRA1	16705				
ZRA2	16710			15.3	6.94
ZRS2/3	16700				
ZRV2	16707			Contact Factory	

OPTIONS, ATTACHMENTS AND ACCESSORIES (CON'T)

Accessories

Part Number	Description
90014	Tool air supply package 1/4 inch
B18-02-FKG0-28	Filter/Regulator 1/4 inch Compact Series
B18-03-FKG0-28	Filter/Regulator 3/8 inch Compact Series
B18-04-FKG0-28	Filter/Regulator 1/2 inch Compact Series

PARTS ORDERING INFORMATION

The EZ-Torque Tube is designed and constructed to provide long, trouble-free service. In time it may become necessary to order and install new parts to replace those that have been subjected to wear.

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

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

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

Model Number _____

Date Purchased _____

Return Goods Policy

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

NOTICE

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

Disposal

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

For additional information contact:

Ingersoll-Rand Material Handling
Zimmerman Handling Systems
29555 Stephenson Highway
Madison Heights, MI 48071-2387
Phone: (248) 398-6200
Fax: (248) 398-1374

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

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

Publication	Part/Document Number	Publication	Part/Document Number
Spring Balancer BMDL	32048-EU-7	Z-Rail System	MHD56159
Spring Balancer BIDS	32048-EU-10	Valu-Trak Rail System	MHD56161

Limited Warranty

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

If any Product proves defective within its original one year warranty period, it should be returned to any Authorized Hoist and Winch Service Distributor, transportation prepaid with proof of purchase or warranty card.

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

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

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

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

Important Notice

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

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

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

Damage Claims
You must file claims for damage with the carrier. It is the transportation company's responsibility to reimburse you for repair or replacement of goods damaged in shipment. Claims for loss or damage in shipment must not be deducted from the **Ingersoll-Rand** invoice, nor should payment of **Ingersoll-Rand** invoice be withheld awaiting adjustment of such claims as the carrier guarantees safe delivery.
You may return products damaged in shipment to us for repair, which services will be for your account and form your basis for claim against the carrier.

United States Office Locations

Technical Support contact:

Ingersoll-Rand
Zimmerman Handling Systems
29555 Stephenson Highway
Madison Heights, MI
48071-2387
Phone: (248) 398-6200
Fax: (248) 398-1374

For Order Entry, Order Status and Technical Support contact:

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

Web Site:
www.ingersoll-rand.com

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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
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
Zimmerman Handling Systems
29555 Stephenson Highway
Madison Heights, MI
48071-2387
Phone: (248) 398-6200
Fax: (248) 398-1374

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51 Worcester Road
Rexdale, Ontario
M9W 4K2
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Fax: (416) 213-4510
Order Desk
Fax: (416) 213-4506

Regional Sales Offices
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1430 Weber Center
5555 Calgary Trail N.W.
Edmonton, Alberta
T6H 5G8
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Fax: (403) 437-3145

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

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