THE MATERIAL HANDLING SYSTEM FOR YOU.

2” Flange Twin Section Rail Systems
THE TC/AMERICAN MONORAIL STORY

For over 60 years TC/American Monorail has been providing industry with high performance, low cost material handling equipment. Our stringent quality control standards start with the finest raw materials, parts and components...then extend to our dealers-the finest in the industry. These professionals provide quality installations and the best followup service available.

A LOOK AT OVERHEAD CRANE AND MONORAIL SYSTEMS

Crane systems

An overhead material handling crane system consists of runways and one or more cranes. The hoisting mechanism is an integral part of the crane, providing the capability to lift, lower and move loads from one point to another throughout a rectangular area of coverage. Two or more crane systems can be interconnected to permit transferring loads from one system to another (including inter-connects with monorail systems). TC/American Monorail under-running crane equipment runs on the lower flange of an overhead runway structure.

These are advantages of the TC/American Monorail under-running cranes:
- Maximum manufacturing area coverage.
- More floor space because wide aisles aren’t needed for forklifts.
- Greater end truck and wheel life thanks to articulated flat tread trolleys and hard flat tread rails.
- Inter-system transfer through interlocks to eliminate unnecessary load re-handling.
- Lighter total system weight because of specially designed uniform tread width rails for optimum track sizes.
- Track suspended from above to provide more system support flexibility and reduced costs.
- Can be designed to meet your unique requirements.
- Expert dealers to respond to your particular situation.

Monorail systems

A monorail system is an arrangement of overhead material handling equipment consisting of straight rails, curves and switches providing a means for the transportation of loads along a fixed route between pickup and delivery points. A monorail system can be installed at one elevation throughout its length. It can also operate at various elevations through the use of lift sections, inclined rail sections with powered feed units to control the ascent or descent of trolleys and a controlled slope of the rail as it is installed. Monorails can be used in conjunction with crane systems to satisfy unique material handling requirements. The advantages of TC/American Monorail Systems include:
- More floor space available for productive manufacturing because wide aisles are not needed for forklift travel.
- Straight line routes over equipment and production areas for faster material handling.
- Designs to meet the unique requirements of each user.
- Designs to travel along specific routes, through doorways, across open areas and between building floors.
- Uniform construction to assure smooth operation.
- Accumulation and storage of work in process.
- Inventory reduction by matching work in process with production flow.
- Expert dealers to respond to your particular situation.
The TC/American Monorail 2" flange rail system is the most economical patented monorail in existence. It's also the top performer. That's because no other rail is as versatile or as easy to install and reroute. Hand-pushed monorails and cranes allow easy handling of heavy and/or odd shaped material.

Once your employees have tried the 2" equipment, they will be happier and more productive. Fatigue from handling 40 to 100 lb. loads can be costly. Yet this system will put that problem behind you. In fact, this system can easily handle up to 4,000 lb. loads.

Even though this 2" system is inexpensive, it is precision engineered and made of the finest raw materials with proven durability and performance.

There are many advantages of a 2" system over a 3 1/4" and wider flange overhead system. For example, the cost of a 90° curve is less than one-fourth the cost of most 3 1/4" curves, and even less when compared to most I-beam curves. A 2" glide switch is less than one-third the cost of most 3 1/4" glide switches.

There are many reasons why the TC/American Monorail 2" flange rail system is tops in performance. Among these are:

- Narrow track flange Carries load closer to web, thus reduced flange stress.
- Overlapping splice Provides jolt-free ride, eliminates roughness, splice clamps.
- Easily located hangers Eliminate need to drill rail holes.
- Reduced installation costs Because the rail is lighter and easier to handle, there is greater system support flexibility, and it doesn't have to be supported at connections.
- Specially designed articulating trolleys Provide rolling ease and reduced wear thanks to large diameter wheels with precision bearings and self-aligning trolleys. These greatly reduce friction, providing remarkable propulsion ease and long wear.
- Compact switches and curves Exceptional flexibility because of the short radius curves and close clearances.

TC/American Monorail components have limitless combinations for maximum material handling flexibility.

Many TC/American Monorail dealers stock the basic components needed for a small monorail system. There is no need to go to the hard pushing I-beam tracks when the 2" line is available.

Capacity through 2 tons.
Low installation cost.
Jolt-free trolley travel.
Strength of continuous rail.
Easily movable hangers.
Switch and curve flexibility.
HIGH STRENGTH RAILS

Like highways for cars, the rail is vital to the smooth performance of a crane or monorail system. TC/American Monorail's 2" rail is the finest available to industry today. That's because we start with the best raw materials. Our high carbon-manganese steel with flat treads and close tolerances is precision rolled for maximum strength and durability. These special alloy steel rails are designed and manufactured to exacting specifications and with care. Quality is on the minds of everyone connected with our products. That's because we want our rail systems to provide years of dependable service. And they do.

Half rail sections are bolted together to form a T section used for systems through 2-ton capacity. This section also provides the bottom flange running thread of the higher capacity intermittent welded solid web girder rail.

The unique twin section design with narrow flange and lap splices means remarkable ease of trolley propulsion. It's ideal for manual or motorized systems.

The automatic, positive-locking feature of the nuts and heads of the clamping bolts is unique. The bolt head and nut bind against the fillet or swell of the rail head. You can still draw the nuts tight with a wrench, but the binding resistance is sufficient to lock the bolt and nut securely in place. The bolts are seated in slotted holes and are not subject to shear stress.

Our lap splice system eliminates the roughness of "butt" joints. The clamping bolts used at each splicing point are spaced so that if you need to bend the rail during assembly, there are always matching holes for the clamping bolts.

The rail has exceptional strength because it is actually two sections of specially-rolled high carbon-manganese steel bolted back-to-back.

SPECIFICATIONS:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Rail</td>
<td>2R3-5T</td>
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<tr>
<td>Weight</td>
<td>4.7 lb./ft.</td>
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<tr>
<td>Finish</td>
<td>Gray</td>
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METALLURGICAL DATA:

<table>
<thead>
<tr>
<th>Element</th>
<th>Range</th>
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<tbody>
<tr>
<td>Carbon</td>
<td>.55-.65</td>
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<tr>
<td>Manganese</td>
<td>.80-1.10</td>
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<tr>
<td>Phosphorous</td>
<td>.04 Max.</td>
</tr>
<tr>
<td>Sulphur</td>
<td>.05 Max.</td>
</tr>
<tr>
<td>Silicon</td>
<td>.15-.30</td>
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Tensile Strength: 125,000 PS.I. Min.
Yield Strength: 65,000 PS.I. Min.
Brinell Hardness: 235 Bhn.

But that strength leads to exceptional flexibility, which means short radius curves and close clearances can be bent with little effort.

LONG LIFE TROLLEYS

TC/American Monorail trolleys are strong, durable and feature ease of propulsion. The success of any overhead handling system depends on the moving parts. Our self-aligning trolleys articulate to reduce wheel rocking. They also provide easier rolling, equal wheel loading, and reduced rail and wheel wear.

There is a wide variety of available trolleys for light, medium or heavy loads. Trolleys can carry more than 2 tons by combining load bars.

Our trolleys are designed to easily negotiate monorail curves without binding. Load equalizing connections ensure equal loading of all trolley wheels. Two-wheel trolleys can be used as single units or in pairs to carry racks, hoists or special carriers.

You can adapt your trolleys to any hoist using one of our many swivels and adapters. Also, there are special trolleys available for applications requiring bronze wheels, sealed bearings or high temperature bearings.

The trolley wheel treads are machined with regreaseable wheel bearings and a minimum B-10 life of 5,000 hours. TC/American Monorail has a complete line of trolley fittings available. These include load eyes, flat swivels, flange swivels, load hooks with safety latches, stud swivels, clevis swivels, and adaptors for all types of hoists.
SELECT THE RIGHT CRANE FOR YOUR APPLICATION

<table>
<thead>
<tr>
<th>Crane Type</th>
<th>Standard Capacity and Span</th>
<th>Bridge Speed RPM</th>
<th>Bridge Speed Steps</th>
<th>Cushioned Start</th>
<th>Crane Drive Power</th>
<th>Interface</th>
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<tr>
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<td>O</td>
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<td>O</td>
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CRANE DESIGNS THAT ARE SPECIFIC, COMPOSITE SYSTEMS

TC/American Monorail has made a thorough analysis of overhead material handling needs and created crane designs that are more than lifting devices...they are specific, composite systems. Our combination of pre-engineered components and specialty equipment will satisfy your unique requirements. Using current technology and our decades of experience, we can plan the perfect application for your plant. We'll have to know your system capacity, span, type of crane service planned, required floor coverage, lifting needs, clearances and many other considerations.

There are single girder, motor driven cranes for loads where frequent handling is required; and single girder, hand propelled cranes for applications with moderate loads from 1/4 to 2 tons.

Our cranes are all factory tested and inspected to reduce installation and field checkout time...and minimize field problems. We ship fully assembled cranes to ensure the finest in total performance.

SINGLE GIRDER CENTER DRIVE CRANES

This crane is best used for loads where frequent handling is necessary. Standard capacities from 1 to 2 tons are available. All bridge beams over 11" deep are notched beneath the end trucks as a design standard to provide maximum headroom.

Rubber drive tires (12" diameter) provide uniform and positive tractive force at both ends of the crane. They are connected by a squaring shaft to prevent skewing and binding of the end trucks.

Some of the many other standard features of TC/American Monorail's center drive cranes are outriggers to provide rigidity, TENV motors, restraining lugs, thermal overload protection, and NEMA 12 control enclosure. Electric or air motor drives are available with a wide variety of control arrangements to suit your needs.

SINGLE GIRDER HAND PROPELLED CRANES

Hand propelled cranes are best suited for applications with moderate loads from 1/4 to 2 ton and provide an economical answer for many applications. TC/American Monorail hand propelled cranes are specially designed to provide rolling ease through the use of articulating trolleys with large diameter wheels, and precision bearings. Hand propelled cranes on economical 2" line narrow tread hardened rail provide greatly reduced friction and remarkable ease of propulsion.
DRIVETRACTORS HELP YOUR PEOPLE PRODUCE

TC/American Monorail drivetractors can make your people produce more with greater efficiency because they will be less fatigued, more relaxed, and operations will be smoother and quicker. Drivetractors are used for propelling carriers and hoist units along monorails or crane bridges. They are also an economical way to motorize new or existing cranes. Electric drivetractors are often used for automatic carrier handling over a long track layout or through various pickup and delivery stations. Drivetractors can be air operated, electric or manual, with radio controls, preprogrammed automatic dispatch controls, or determined by an operator each cycle.

TC/American Monorail drivetractors are furnished with swivel type trolleys and precision machined steel wheels. Standard speed is 75 FPM single speed.

EASY TO INSTALL COMPACT ELECTRIFICATION

Electrification provides smooth operation and adds to a system’s effectiveness and appearance. All standard cranes, hoists, monorails, runways, curves, electrified switches, interlocks and most special designs can be furnished with TC/American Monorail’s electrification. Conductor bars are insulated. Web-mounted side contact permits conductor bars to be stacked vertically and curve together on the same radius to save space and assure reliable alignment on switches and interlocks. It is easy to install, compact, and contributes to long, trouble-free operation.

There are many types of systems available to power your crane and hoist. For most applications an enclosed conductor bar system with easily replaceable sliding shoes is used.

SUSPENSION

TC/American Monorail suspension systems provide maximum security with minimum space requirements. The underhung crane and monorail systems can be suspended directly from the overhead building structures without the need of interfering support columns. There’s also lower initial equipment cost and less design required in the building or supporting structure by using underhung systems.

Crane and monorail systems can be mounted with variable hanger rod lengths to position the equipment at any elevation below the support structure. You can use hanger rods between clamps or hangers. Sway and thrust bracing is required on all rod suspended systems.

Rails can also be attached to the building steel by direct bolting or flush clamping. This provides the best headroom.

INTERLOCKS OPERATE WITH EASE

TC/American Monorail interlocks provide accurate and positive alignment of bridge girders with other bridges, crossover rails or monorail spurs, for smooth, interference-free transfer of hoists and trolleys. The construction of our interlocks provides positive stops to protect hoists and trolleys from leaving the rails when connecting interlocks are not latched. The incorporation of interlocking capabilities to crane and monorail systems greatly increases the area which can be covered without the necessity of transferring loads from one hoist to another.
SWITCHES AND CURVES ADD FLEXIBILITY

Switches provide system flexibility by diverting loads from a main rail system to spur rails for storage, sorting or special processing activity areas. They can also interconnect a number of closed loops. Switches allow for a maintenance spur for monorail tractors or carriers away from a production area.

Both the tongue and glide type switches are remarkably flexible. They allow close spacing of branch track. The two-way and three-way tongue type switches feature steel mounting plates, rolled steel supporting members, a positive lock against crowding by connecting track, and a positive latch which holds the switch tongue in the desired position.

Trolleys travel easily through the curved section of two-way and three-way glide type switches. The Wye glide switch connects with diverging lines on either side of the switch’s center line.

The three-way rotary switch is ideal for extremely compact track arrangements. Positive 4-position latching and $135^\circ$ total rotation are standard.

The cross track switch lets two tracks at the same elevation cross at right angles.

The track locking lug prevents the connecting track from crowding into and interfering with the moving switch section. Thus operation is free of the switch, and trolley travel over track joints is smooth.

Curves provide a smooth change in direction of a system and can be bent to any radius to a minimum of 1' - 6". Rails can also be bent into reverse curve arrangements and provide flexibility in system layouts to permit the most desirable system configuration.

LIFT SECTIONS

Lift sections provide vertical movement in a monorail system to move loads from one elevation to another. Lift sections are frequently used in dipping operations and for transporting a large number of loads to and from definite load/unload stations. Their primary advantage is that two or three lift sections can replace many hoists, provided the location of the load/unload stations is fixed. A lift section is required at each load/unload station.

Guided lift sections can be furnished to permit transfer of trolleys from one stationary track at one elevation to another stationary track to another elevation and are frequently used to move loads between floors in a building. Lift sections can also be furnished with conductor bars to accommodate self-propelled monorail carriers and controls can be furnished for automatic system operation.

Lift sections operate by a trolley moving onto a lift rail that is separate and independent from the incoming and outgoing rails. The lift rail is then lowered by an air cylinder or hoist to the lower position. At this lower position, a load can be hooked on to the trolley previously positioned on the lift rail. The lift rail then raises to the home position, releasing the wheel stops, allowing the loaded trolley to move to its next location.

Features

- Standard capacities from 100 to 4,000 lbs. Custom engineered larger capacities available upon request.
- Standard vertical lifts from 4' to 20'. Custom engineered longer lift available on request.
- Guided and unguided lift rails available.
- 2 or 3 position lift rails available.
- Very low headroom requirements that provide maximum lift travel.
- Incoming rail, departing rail, and lift rail are all equipped with wheel stops.

Lift Sections are available in the following configurations:

- Air operated/air controlled
- Air operated/electric control
- Electric operated/electric control
GRAVITY OR HAND PUSHED SYSTEMS.

A gravity or hand pushed system is the simplest and least expensive method of material handling. Installations up to two-ton capacity can be made where material movement is infrequent over short distances and with track installed at a minimum elevation. TC/American Monorail offers a complete line of quality equipment for your crane and monorail system including trolley, switches, curves, lift sections, cranes, etc.

Boston Whaler uses a TC/American Monorail system for trouble free handling of an unusual load in their sanding/finishing area.

Pratt & Whitney Aircraft Group uses TC/American Monorail 2" cranes to move valuable precision machined jet engine components. Hand propelled cranes are ideally suited for moving lighter loads and can make dramatic productivity improvements with modest first cost investment and very low operating costs.

More than a mile of overhead monorail winds its way through this four acre commercial linen supply plant to recycle nearly 100,000 pounds of linen each day.

AUTOMATED SPECIALIZED SYSTEMS

TC/American Monorail can also furnish you with an automated specialized system that is ideally suited to applications where highly programmed flexibility is required. These systems provide pickup and delivery of loads without operator assistance. We can provide highly automated systems featuring programmable (process) controllers that can be programmed to raise, lower, store, sort and route coded products. These automated systems have the versatility of multiple travel routes, different elevations and speeds, and accumulation and interface with other handling components.

Typical Automatic controls using programmable controller.

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