G-Rail Bridge Cranes

Up to 2000 kg / 4400 lbs

Move up to the next level in cranes...

Engineered for the lowest rail weight, the highest strength and the greatest versatility.

GIVENS ENGINEERING INC
London Ontario

Manufactured in Canada and United States

GIVENS LIFTING SYSTEMS INC
Toledo Ohio
**Advantage: Extremely lightweight bridge**

G-Rail crane profiles combine with Slant-Truss bolt-on reinforcements to create one of the lightest lifting systems in the world. When you have to move a load quickly, the importance of a lightweight bridge becomes obvious!

The Slant Truss (patented) is an all-aluminum bolt-on system that instantly increases the stiffness of the G-Rail by several times. When spans approach 25', 30' or even 35', the weight of the bridge increases exponentially, making many traditional cranes ergonomically impossible — there is simply too much weight to pull back and forth quickly. The extremely lightweight G-Rail, reinforced with the Slant Truss, makes long spans much more feasible.

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**Advantage: Low running friction**

The key to smooth, friction-free running is in the end trucks. G-Rail end trucks are rigid, as opposed to articulating, that is, bridge cannot skew with respect to the runways. This means that the whole bridge moves along evenly, with less “pendulum effect”.

Our end trucks are machined from aluminum, not welded, making them very accurate and square-fitting, which eliminates the possibility of binding. Notice the size of the guide wheels at either end, which reduces friction further.

In some cases headroom is very limited. In the crane pictured, “strongbacks” have been used instead of trusses on the runways.
G-Rail Track Profiles:

C100 Aluminum Profile
Nominal 100kg capacity, 130mm x 55mm

C250 Aluminum Profile
Nominal 250kg capacity, 150mm x 70mm

C1000 Aluminum Profile
Nominal 1000kg capacity, 250mm x 110mm

C2000 Aluminum Profile
Nominal 2000kg capacity, 295mm x 130mm

These rail shapes feature an extremely high moment-of-inertia (stiffness) to weight ratio. They also have an unusually high torsional stiffness compared to most traditional rail profiles. Notice how high the profile is relative to its width -- maximizing the stiffness-to-weight ratio.

Advantage: Completely free-standing support frame

The support frame for the G-Rail crane is one of the strongest on the market. Competitors state that unless movement of the support frame can be tolerated, attachment to part of the building structure may be necessary.

G-Rail cranes can be completely self-supporting, due to some of the largest columns in the industry. For example, C250 cranes have 5” x 5” columns, where competitors can be 3” x 3” and 4” x 4”.

Also, G-Rail cranes are stiffened by recruiting the runway itself to rigidize the top of the frame. In effect, the runways become part of the frame! In particular, the saddle clamp, unique in the industry, connects the header absolutely rigidly to the runway.

Notice that the headers are made of tube -- not I-beam or channel-- adding to the stiffness in the direction of the runways.
The maximum capacity of the rail already takes into account its self-weight and the weight of one trolley and one hoist. That is, the capacity refers to the weight hung below the hoist hook.

<table>
<thead>
<tr>
<th>G-Rail™</th>
<th>Max. Cap.</th>
<th>Max. Span without Truss</th>
<th>Max Span with Truss</th>
</tr>
</thead>
<tbody>
<tr>
<td>C100</td>
<td>100kg</td>
<td>4m / 13’</td>
<td>9m / 30’</td>
</tr>
<tr>
<td>C250</td>
<td>250kg</td>
<td>4m / 13’</td>
<td>9m / 30’</td>
</tr>
<tr>
<td>C1000</td>
<td>1000kg</td>
<td>4m / 13’</td>
<td>9m / 30’</td>
</tr>
<tr>
<td>C2000</td>
<td>2000kg</td>
<td>4m / 13’</td>
<td>9m / 30’</td>
</tr>
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Need a non-standard crane? We can probably engineer it for your situation.
Crane Dimensions

Overall Height = HUB + (HB or HR)  
1 Meter = 3.28 Feet

<table>
<thead>
<tr>
<th>HB mm [in]</th>
<th>BRIDGE SPAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-Rail™</td>
<td>4m [13.1&quot;]</td>
</tr>
<tr>
<td>C100</td>
<td>435 [17.2&quot;]</td>
</tr>
<tr>
<td>C250</td>
<td>530 [20.9&quot;]</td>
</tr>
<tr>
<td>C1000</td>
<td>795 [31.3&quot;]</td>
</tr>
<tr>
<td>C2000</td>
<td>946 [37.3&quot;]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HR mm [in]</th>
<th>RUNWAY SPAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-Rail™</td>
<td>4m [13.1&quot;]</td>
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**Sample Front View of Single Bridge System**

**Sample Side View of a Single Bridge System**

**Example:** For estimating the overall height for a standard 4.0m HUB, C250 G-Rail™ crane that has a 7.0 m bridge span and 6.0 m runway span.

For C250 rail, 7.0m Bridge span, “HB” is 1020mm

For C250 rail, 6.0m Runway span, “HR” is 805mm

**Overall Height** = 4000mm + 1020mm = 5020mm or 5.02m

Maximum loaded rail overhangs can be increased in many cases, but only after approval from the engineers at GEI or GLS. Maximum span of 9m can also be increased in some cases, with engineering approval.

Givens Lifting Systems 6001 Brent Drive, Toledo, Ohio  |  419-724-9001  |  giveng.com  |  ray@giveng.com
G-Rail™ Crane Components

Applies to component HC, R, and ST only

For component HC
- 2.5 2.50m / 98.4” Height under Bridge
- 3.25 3.25m / 128” Height under Bridge
- 4 4.00m / 157.5” Height under Bridge
- 4.75 4.75m / 187” Height under Bridge

For Component ST
- 4m For Rail span 4-5m / 13’-16.4’
- 5m For Rail span 5-6m / 16.4’-20’
- 6m For Rail span 6-7m / 20’-23’
- 7m For Rail span 7-8m / 23’-26’
- 8m For Rail span 8-9m / 26’-30’

For Custom Header Column height, please contact Givens Engineering Inc.

Please specify the required length for G-Rail™

Trolleys (T) are meant to be used with ordinary hoists and balancers. Manipulator trolleys (MT) have large guide wheels that can withstand the side loads present with manipulators, torque arms and torque tubes.
**Disengageable Tractor Drive**

Our AT tractor drive disengages from the rail when not in use, allowing the load to ‘free-wheel’. The operator can choose to pull the load manually or engage the tractor at any time.

For heavy, continuous use, the airmotor should be supplied with a small amount of oil; for intermittent use, the tractor can be run oil-free.

The AT can pull loads of up to 2000kg. (4400 lb). Max speed with lighter loads: .75m/sec or 150 ft/min

Typically, one AT is used to pull the hoist trolley and one AT is used to pull the bridge.

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The slant truss...

...can be added to the G-Rail or not, as the loading requires. G-Rail does not need to be reinforced if the span is 4m (13’) or less. If the loading is less than the maximum rail capacity, longer spans than 4m can be used without a truss.

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**G-Rail cranes are versatile....**

We understand that a perfectly rectangular crane is not always possible, that there are often obstacles to be avoided.

If you have an unusual requirement, give us a call… we can probably create a solution.

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Givens Engineering, established in 1993, provides manipulators, cranes and custom machinery to a wide range of customers in the United States, Canada and beyond.

Almost everything we manufacture is customized and engineered to some extent. We employ engineers (mechanical and electrical), designers, machinists, millwrights, welders, electricians and controls specialists to manufacture cranes, manipulators, grippers and end effectors entirely in-house. Installation, startup support, maintenance and annual inspections are services that we routinely provide.

We have supplied equipment to these large organizations:

Toyota, Honda, GM, Chrysler, Magna, International Truck, Hino Truck, GE, Volvo, NASA, TRW, Dana, GKN, Siemens, Kaiser and many others.

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