



# G-Rail™ Bridge Cranes



**Move up to the next level in cranes...**

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

**GIVENS**  
ENGINEERING INC

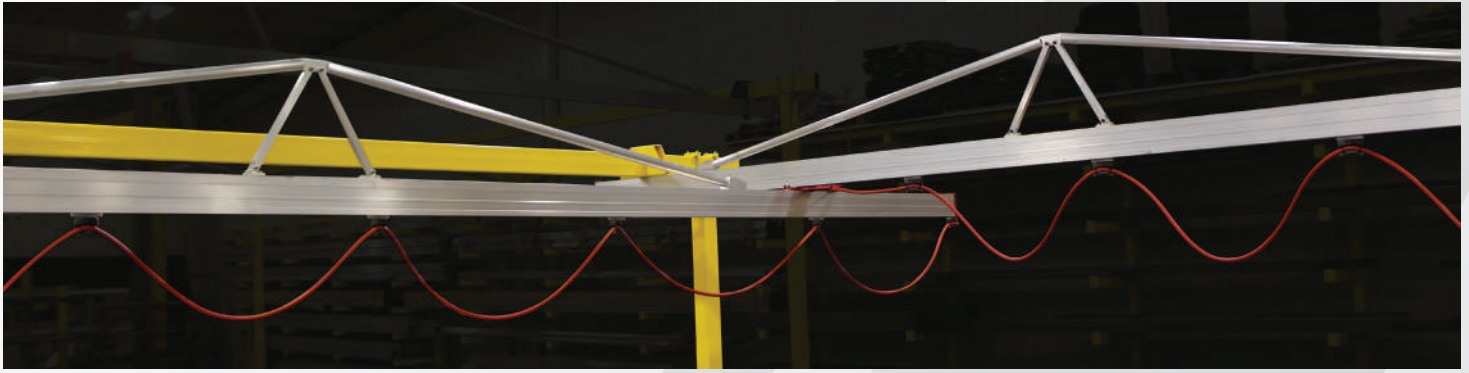
London, Ontario

**GIVENS**  
LIFTING SYSTEMS INC

Perrysburg, Ohio

Manufactured in Canada and United States

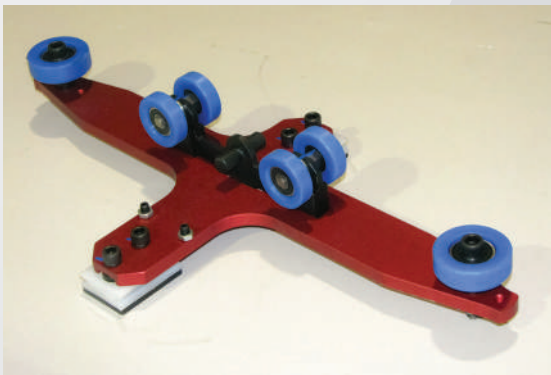
## **Advantage:** Extremely Lightweight Bridge



**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 or frequently, the importance of a lightweight bridge becomes obvious!*

The Slant Truss (patented) is an all-aluminum bolt-on system that significantly increases the stiffness of the G-Rail. When spans approach 25' or 30' 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.

## **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, the 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 cranes pictured below, “strongbacks” have been used instead of the Slant Truss on the runways. The bolt-on strongback is made from our aluminum G-Rail.



C2000 bridge with G-Rail strongback



C2000 runway with G-Rail strongback



# G-Rail Track Profiles



## C100 Aluminum Profile

Nominal 100kg capacity, 130mm x 55mm

## C250 Aluminum Profile

Nominal 250kg capacity, 150mm x 70mm

## C500 Aluminum Profile

Nominal 500kg capacity, 200mm x 100mm

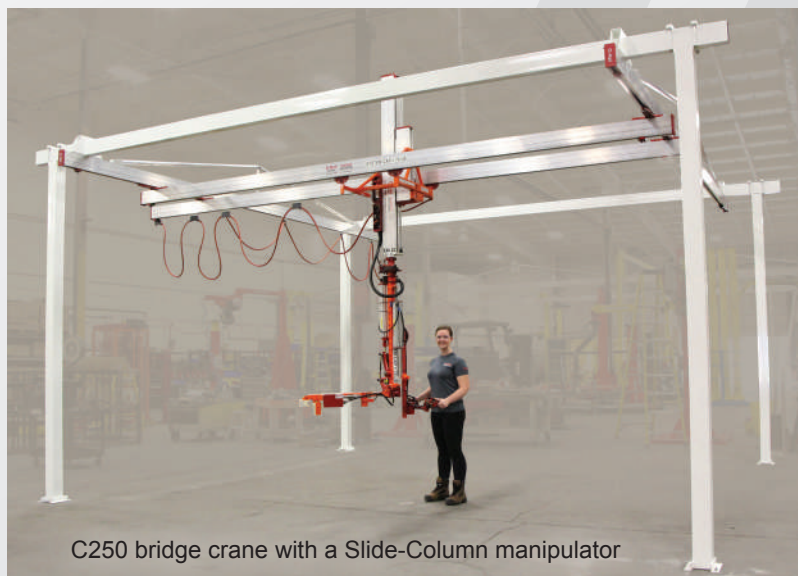
## C1000 Aluminum Profile

Nominal 1000kg capacity, 250mm x 110mm

## C2000 Aluminum Profile

Nominal 2000kg capacity, 295mm x 130mm

## Advantage: Completely Free Standing Support Frame



C250 bridge crane with a Slide-Column manipulator

**The support frame for G-Rail cranes is one of the strongest on the market.**

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" or 4" x 4". Because of our large columns, support frame sway is significantly reduced.

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.



Closeup of C1000 saddle

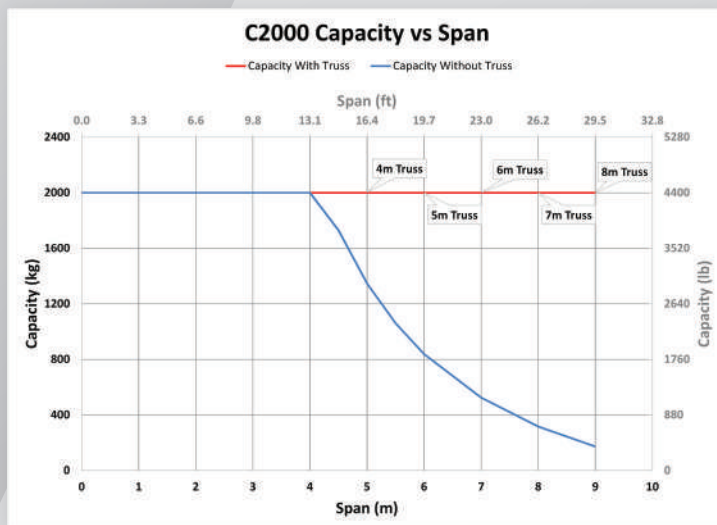
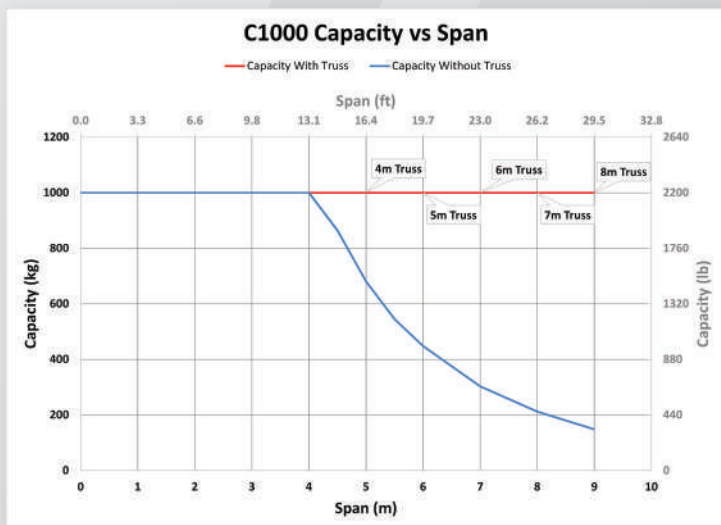
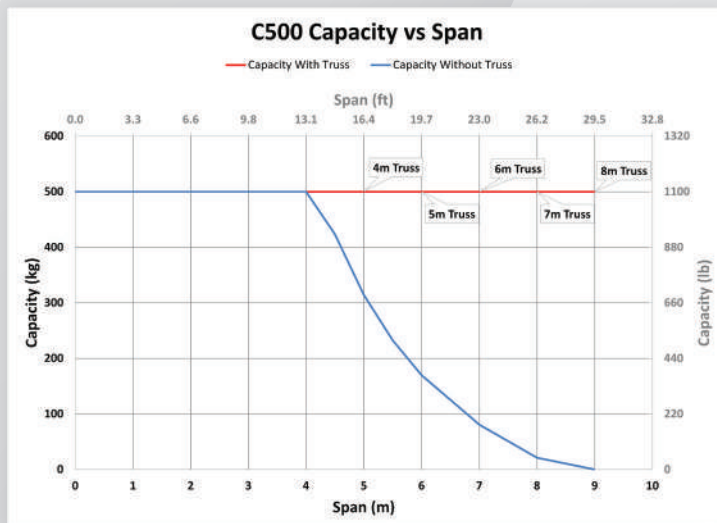
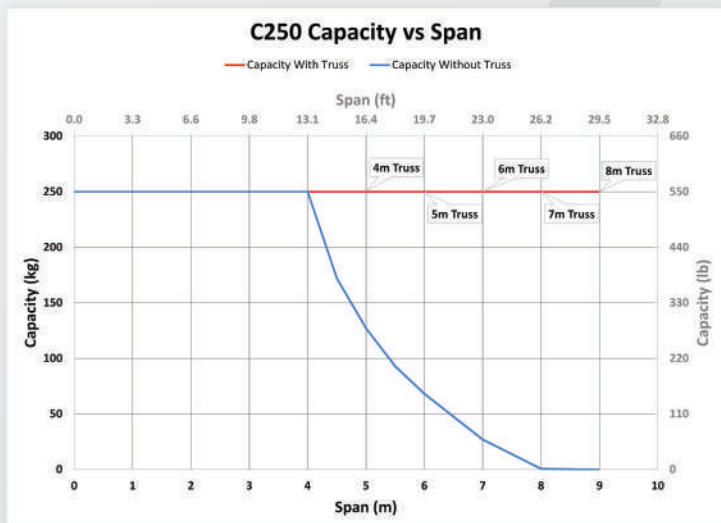
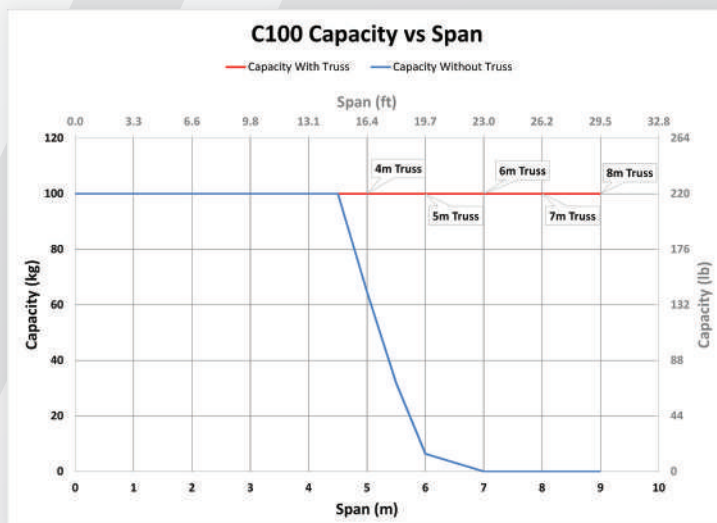


C2000 crane with 2 bridges

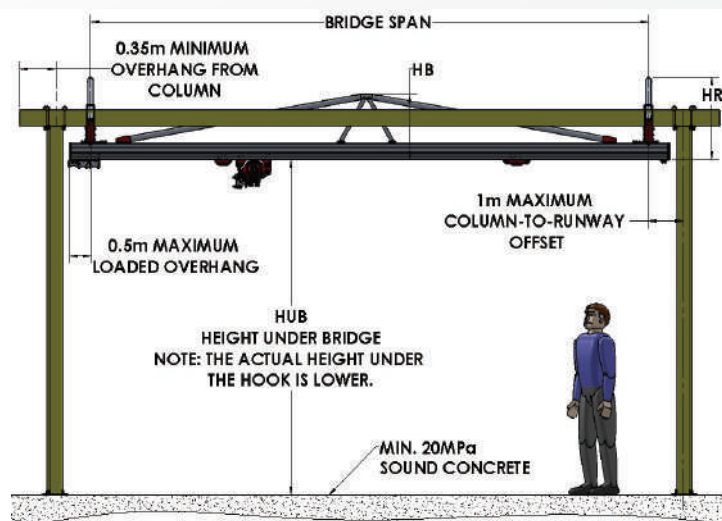
# G-Rail Crane Capacity

G-Rail™	Max. Cap.	Max. Span without Truss	Max Span with Truss
<b>C100</b>	100 kg	4m / 13'	9m / 30'
<b>C250</b>	250 kg	4m / 13'	9m / 30'
<b>C500</b>	500 kg	4m / 13'	9m / 30'
<b>C1000</b>	1000 kg	4m / 13'	9m / 30'
<b>C2000</b>	2000 kg	4m / 13'	9m / 30'

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 hook of the hoist.



# G-Rail Crane Dimensions

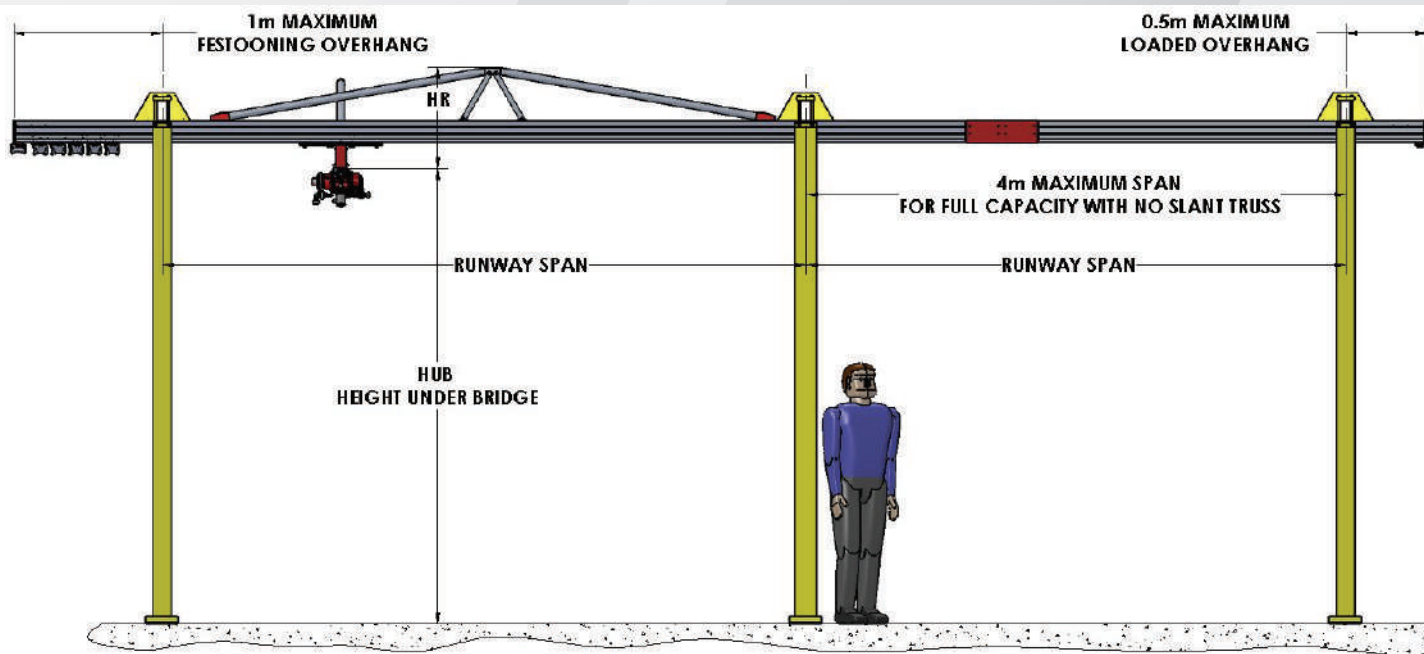


G-Rail™	HB mm[In]					
	Bridge Span					
	0-4m	4-5m	5-6m	6-7m	7-8m	8-9m
C100	130 [5.1]	515 [20.3]	600 [23.6]	690 [27.2]	780 [30.7]	865 [34.1]
C250	150 [5.9]	530 [20.9]	620 [24.4]	710 [28.0]	800 [31.5]	885 [34.8]
C500	200 [7.9]	590 [23.2]	680 [26.8]	765 [30.1]	865 [34.1]	945 [37.2]
C1000	250 [9.8]	650 [25.6]	740 [29.1]	825 [32.5]	915 [36.0]	1000 [39.4]
C2000	295 [11.6]	705 [27.8]	795 [31.3]	880 [34.6]	970 [38.2]	1060 [41.7]

\*for each exact meter spacing, the higher HB value must be used

G-Rail™	HR mm[In]					
	Runway Span					
	0-4m	4-5m	5-6m	6-7m	7-8m	8-9m
C100	485 [19.1]	665 [26.2]	750 [29.5]	840 [33.1]	930 [36.6]	1015 [40.0]
C250	530 [20.9]	705 [27.8]	795 [31.3]	880 [34.6]	970 [38.2]	1060 [41.7]
C500	695 [27.4]	830 [32.7]	920 [36.2]	1005 [39.6]	1105 [43.5]	1185 [46.7]
C1000	800 [31.5]	940 [37.0]	1030 [40.6]	1115 [43.9]	1205 [47.4]	1295 [51.0]
C2000	950 [37.4]	1055 [41.5]	1145 [45.1]	1230 [48.4]	1320 [52.0]	1410 [55.5]

\*for each exact meter spacing, the higher HR value must be used



## Example:

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

For C250 rail, 7.0m Bridge span, "HB" is 800mm

For C250 rail, 6.0m Runway span, "HR" is 880mm

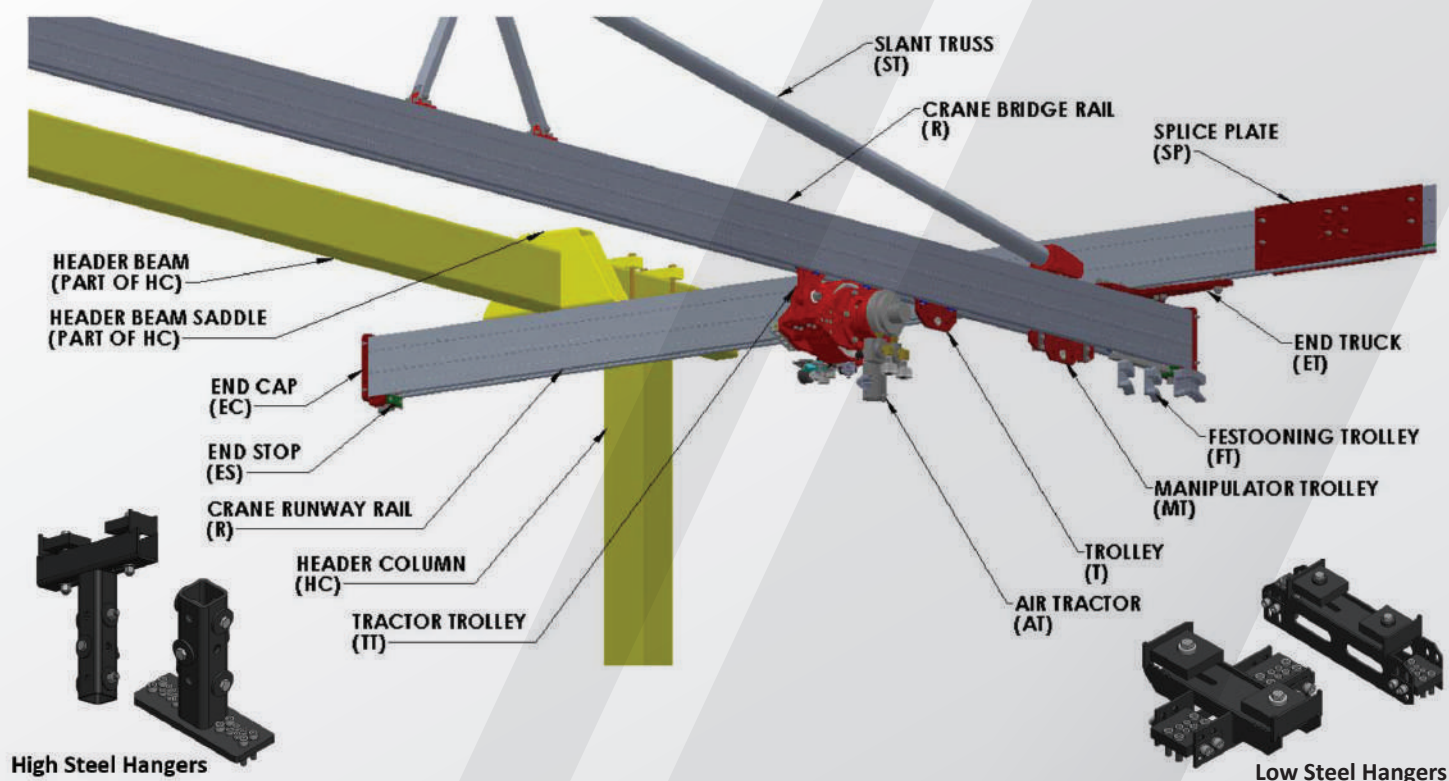
**Overall Height** = 4000mm + 880mm = 4880mm or 4.88m

Part Number	Maximum Rail Length	
	Metric	Imperial
STD-C100-R	12.2 m	40'
STD-C250-R	12.2 m	40'
STD-C500-R	12.2 m	40'
STD-C1000-R	12.2 m	40'
STD-C2000-R	9.8 m	32'

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.



# G-Rail Crane Components



C **250** - **MT** - \_\_\_\_\_

## Load Capacity

<b>100</b>	Up to 100kg
<b>250</b>	Up to 250kg
<b>500</b>	Up to 500kg
<b>1000</b>	Up to 1000kg
<b>2000</b>	Up to 2000kg

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.

G-Rail hangers (HSH & LSC) attach G-Rail profiles to the underside of your building truss or I-beam steel structure.

## Crane Components

<b>EC</b>	End Cap
<b>ES</b>	End Stop
<b>ET</b>	End Truck
<b>FT</b>	Festooning Trolley
<b>HC</b>	Header Column
<b>HSA</b>	High Steel Angle
<b>HSH</b>	High Steel Hanger
<b>LC</b>	L-Column
<b>LSH</b>	Low Steel Hanger
<b>MT</b>	Manipulator Trolley
<b>R</b>	G-Rail™
<b>RC</b>	Rail Clamp
<b>SP</b>	Splice Plate
<b>ST</b>	Slant Truss
<b>T</b>	Trolley
<b>TT</b>	Tractor Trolley

## For Component HC

Height Under Bridge (HUB) in Meters

## For Component ST

<b>4m</b>	For Rail Span 4 - 5m
<b>5m</b>	For Rail Span 5 - 6m
<b>6m</b>	For Rail Span 6 - 7m
<b>7m</b>	For Rail Span 7 - 8m
<b>8m</b>	For Rail Span 8 - 9m

## For Component R

Length of G-Rail™ in Meters

## All Other Parts

Leave Blank

## G-Rail Cranes Are Versatile



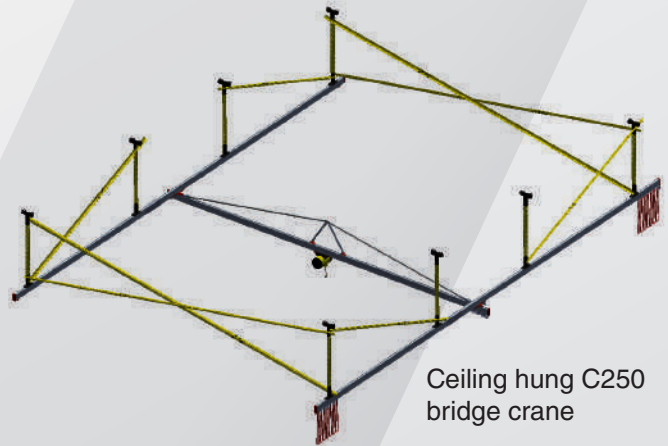
C250 cantilevered bridge crane



C250 Monorail

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 create a solution for you.



Ceiling hung C250 bridge crane

The slant truss can be added to the G-Rail crane, 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.

## Disengageable Tractor Drive

Our AT air 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 air motor should be supplied with a small amount of oil; for intermittent use, the tractor can be run oil free.



Custom pendant for air tractor control



Air tractor on G-Rail

The AT can pull loads of up to 2000kg (4400lb). Our standard AT has a max speed of: 25m/min (85ft/min) Our high speed AT has a max speed of: 61m/min (200ft/min)



# Custom End Effectors



C2000 with M60 manipulator and end effector



C250 with Slide-Column manipulator, lifting a battery

**No one is better at creating custom end effectors out of standard parts!**

We design and create specialized end effectors on a continuous basis, based on grippers, vacuum, magnets or mechanical latches. We batch-produce and stock handlebars, grippers, bearing assemblies, etc for fast turnaround.

## 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, welders, electricians and controls specialists to manufacture cranes, manipulators, grippers and end effectors entirely in-house. Installation, start-up support, maintenance and annual inspections are services we routinely provide.

**We have supplied equipment to these large organizations:**

Toyota, Honda, GM, FCA, Nissan, Magna, Tesla, International Truck, Hino Truck, GE, Volvo, NASA, ZF, Dana, Siemens, ATS, Blue Origin, and many others.



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