Curved



Curved Aluminum Rail Series



RAD4112 - Max. load 499 kg, radius from 0.92 m



RAD6112 - Max. load 725 kg, radius from 1.21 m



RAD7512 - Max. load 1,360 kg, radius from 1.52 m

Knight Global Curved Aluminum Rail

Series: RAD4112 / RAD6112 / RAD7512

The Knight Global **RAD4112, RAD6112 and RAD7512** curved aluminum rails use a curved enclosed track extruded from lightweight, high-strength aluminum alloy. The design lets loads travel smoothly **around corners and past fixed obstructions** in the plant.

The curved rail system is ideal for **direct loading on single curved sections**. Combined with dedicated nylon trolley wheels, it delivers **the lowest rolling resistance in the industry**, so operators can move loads with little effort and high precision.

It is well suited to lines that require non-linear routing - it optimizes floor space and extends working coverage **without complex auxiliary rails**.

***Note:** Aluminum alloy material to **ASTM B221 6005-T5**. **Custom curve radii** are available per project. Accessories can be positioned anywhere along the rail with no welding required.

Features & Benefits

Features

- **ASTM B221 6005-T5** aluminum alloy, high strength and lightweight.
- Curved enclosed track, extruded as a single piece.
- Standard curve radii:
- **Custom curve radii** available on request.
- Fully compatible with Knight Global trolleys, end trucks and hangers.
- Deflection standards of **1:350, 1:450 and 1:550**.

Benefits

- Loads can travel **around corners and overhead obstructions**.
- Optimizes floor space and extends working coverage.
- A wide range of **pre-assembled** accessories, ready to install.
- Accessories mount anywhere along the rail, **no welding required**.
- Load trolleys and end trucks designed for both **cantilever and direct loading**.
- Hangers and end trucks **prevent binding** of the bridge and runway.
- Industry-lowest rolling resistance with nylon trolleys - less operator fatigue.
- Light weight **reduces load on the building's ceiling structure**.

Load Capacity Tables by Model

***Deflection criteria:** Each hanger spacing is tested for the maximum single point load that produces a deflection ratio of **1:350** (1" of deflection per 350" of length), **1:450** (1" per 450"), **1:550** (1" per 550"). The load tables are based on **single point loading**.

RAD4112

Max. load 499 kg [1,100 lbs] · Weight 2.83 kg/m · Radius 0.92 – 2.43 m

Span ft / m	Ratio 1:350		Ratio 1:450		Ratio 1:550	
lbs	kg	lbs	kg	lbs	kg	
5 / 1.52	1100	499	950	431	700	317
6 / 1.83	1100	499	950	431	700	317
7 / 2.13	1050	476	875	397	500	227
8 / 2.45	1050	476	775	351	500	227
9 / 2.74	950	431	675	306	425	193
10 / 3.05	850	385	650	295	425	193
11 / 3.35	700	317	550	250	350	159
12 / 3.66	550	250	450	204	300	136
13 / 3.96	500	226	385	175	250	113
14 / 4.27	435	197	300	136	250	113
15 / 4.57	350	159	250	113	200	90
16 / 4.88	335	152	250	113	200	90
17 / 5.18	280	127	175	79	150	68
18 / 5.49	265	120	175	79	150	68
19 / 5.79	230	104	150	68	125	56
20 / 6.10	210	95	150	68	125	56
21 / 6.40	195	88	125	57	125	57
22 / 6.71	175	79	125	57	100	45
23 / 7.01	160	73	125	57	100	45
24 / 7.32	145	66	100	45	75	34

RAD6112

Max. load 725 kg [1,600 lbs] · Weight 3.72 kg/m · Radius 1.21 – 2.43 m

Span ft / m	Ratio 1:350		Ratio 1:450		Ratio 1:550	
lbs	kg	lbs	kg	lbs	kg	
5 / 1.52	1600	725	1300	590	1100	499
6 / 1.83	1600	725	1300	590	1100	499
7 / 2.13	1500	680	1175	533	995	451
8 / 2.45	1475	669	1075	488	900	408
9 / 2.74	1400	635	1025	465	870	395

Span ft / m	Ratio 1:350		Ratio 1:450		Ratio 1:550	
10 / 3.05	1325	601	925	420	785	356
11 / 3.35	1100	499	875	397	740	336
12 / 3.66	950	431	750	340	640	290
13 / 3.96	825	374	650	295	550	250
14 / 4.27	750	340	575	261	490	222
15 / 4.57	675	306	515	233	435	197
16 / 4.88	600	272	470	213	400	181
17 / 5.18	525	238	405	184	345	157
18 / 5.49	450	204	350	159	295	134
19 / 5.79	425	193	325	147	275	125
20 / 6.10	400	181	300	136	255	116
21 / 6.40	360	163	275	125	230	104
22 / 6.71	320	145	250	113	210	95
23 / 7.01	285	129	210	95	180	82
24 / 7.32	245	111	185	84	160	73

RAD7512

Max. load 1,360 kg [3,000 lbs] · Weight 5.95 kg/m · Radius 1.52 – 2.44 m

Span ft / m	Ratio 1:350		Ratio 1:450		Ratio 1:550	
lbs	kg	lbs	kg	lbs	kg	
5 / 1.52	3000	1360	2700	1225	1700	771
6 / 1.83	3000	1360	2700	1225	1700	771
7 / 2.13	3000	1360	2700	1225	1700	771
8 / 2.45	3000	1360	2700	1225	1700	771
9 / 2.74	2700	1225	2400	1088	1700	771
10 / 3.05	2500	1134	2000	907	1700	771
11 / 3.35	2500	1134	1900	862	1500	680
12 / 3.66	2500	1134	1800	816	1500	680
13 / 3.96	2000	907	1800	816	1500	680
14 / 4.27	2000	907	1500	680	1300	590
15 / 4.57	1900	861	1500	680	1300	590
16 / 4.88	1800	816	1200	544	1000	454
17 / 5.18	1700	771	1200	544	1000	454

Span ft / m	Ratio 1:350		Ratio 1:450		Ratio 1:550	
18 / 5.49	1600	726	1000	454	900	408
19 / 5.79	1450	658	1000	454	900	408
20 / 6.10	1300	590	900	408	800	363
21 / 6.40	1100	499	900	408	800	363
22 / 6.71	900	408	800	363	600	272
23 / 7.01	900	408	700	317	600	272
24 / 7.32	885	402	700	317	600	272
25 / 7.62	850	386	700	317	575	261
26 / 7.92	725	329	700	317	500	227
27 / 8.23	725	329	675	306	500	227
28 / 8.53	600	272	550	250	485	220
29 / 8.83	600	272	550	250	450	204

Deflection Standards & Ergonomic Force Explained

***The 1:350, 1:450 and 1:550 standards explained:**

For ergonomic reasons, each rail span is tested to determine the

maximum single point load

allowed to reach a predetermined deflection at the following ratios:

- **1:350** = 1 inch of deflection per 350 inches of rail length (more flexible, heavier loads).
- **1:450** = 1 inch of deflection per 450 inches of rail length (stiffer, better ergonomics).
- **1:550** = 1 inch of deflection per 550 inches of rail length (stiffest, optimal ergonomics).

Operating Force Estimation Formula

To quickly estimate the ergonomic operating force, use the formula:

Fs = 0.017 × Total Mass = Maximum Force (lbf) to Overcome Inertia

The force needed to keep the load moving (Fk - kinetic friction force) equals **0.35 × the force to overcome inertia (Fs)**.

Example: Mass 250 lbs (113 kg)
→ Fs = 0.017 × 250 = **4.25 lbf (1.9 kg)** to overcome inertia
→ Fk = 4.25 × 0.35 = **1.48 lbf (0.67 kg)** to keep the load moving

Elastic Deformation

Deformation that is **recoverable**. When the load is removed, the part returns to its original shape. The elastic range ends when the material reaches its yield strength, after which plastic deformation begins.

Plastic Deformation

Deformation that is **not recoverable**. Beyond this limit, the part does not return to its original shape. It ends in material fracture.

Knight Global follows material handling industry standards when rating workstation crane rail systems. Each component (rail, hanger, trolley...) is tested individually to establish its **ultimate failure point**, from which the safe working load is assigned. The recommended load tables are based on **single point loading** at the listed spans.

Technical Documents

Brochure

- Rail Brochure - Aluminum Rail Overview PDF

Manuals

- Aluminum Rail Technical Manual PDF

Installation Guides

- Aluminum Rail General Standards for Materials & Design Process PDF
- Aluminum Rail Installation Checklist PDF
- Curved Rail Installation Instructions PDF
- Curved Rail Secondary Safety Restraint Installation Instructions PDF
- Eye Bolt Safety Cable Installation Instructions PDF
- Rail Hanger Placement PDF
- Safety Cable Installation Instructions - End Trucks, Hangers, Trolleys PDF

FULL-SHARP AUTOMATIZED VN (FULLSHARP)
Authorized distributor of Knight Global aluminum rail and lifting equipment in Vietnam
For a RAD4112/RAD6112/RAD7512 curved aluminum rail configuration suited to your project, please contact a FULLSHARP representative for a quotation and detailed design drawings.

Contact us for consultation and a quotation

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Specifications may vary with the ordered configuration. Please contact FullSharp for exact details.