Enclosed Track



Enclosed Track Track Aluminum Rail Series



TR2000 - enclosed track aluminum rail



RAD4110 - Max. load 499 kg



RAD6110 - Max. load 725 kg



RAD7510 - Max. load 1,360 kg



RAD8110 - Max. load 1,814 kg



RAD7510 + Backer - up to 7,418 kg

Knight Global enclosed track aluminum rail system

Series: TR2000 / RAD4110 / RAD6110 / RAD7510 / RAD8110

Knight Global **RAD4110, RAD6110 and RAD7510** aluminum rails use an **enclosed track** design extruded from lightweight, high-strength aluminum alloy. The low rail weight shortens installation time and reduces the load demands on the overhead support structure.

The enclosed rail series is ideal for loads directly beneath the rail as well as cantilevered loads. Paired with nylon trolley wheels, Knight Global rail delivers the **lowest rolling resistance in the industry**.

For loads above **1,360 kg [3,000 lbs]**, RAD7510 rail can be fitted with a **6″ (RAA4438) or 8″ (RAA4439) backer** to significantly increase load capacity.

The **RAD8110** series was developed to compete with European-style rail, but with a sturdier profile, and shares most of its accessories with the RAD4110 series.

The compact **TR2000** series is ideal for applications under **250 kg/m [550 lbs/ft]**. Festoon trolleys and plant utilities can be mounted on the main rail to extend travel coverage. Suitable for light welding guns, workbenches, workstations, FRL units (filter - regulator - lubricator), festooning, lighting and welding curtains.

***Note:** The aluminum alloy conforms to **ASTM B221 6005-T5**. TR2000/RAD4110/RAD6110 rails are available up to 7.6 m without splicing; RAD7510 up to 9.1 m without splicing.

Features & benefits

Features

- **ASTM B221 6005-T5** aluminum alloy - high strength, light weight.
- Multiple mounting configurations: **ceiling mounted and floor mounted**.
- Fully compatible with **trolleys, end trucks and hangers**.
- TR2000/RAD4110/RAD6110 rail length: up to **7.6 m [25 ft] without splicing**.
- RAD7510 rail length: up to **9.1 m [30 ft] without splicing**.
- 6″ / 8″ backer for RAD7510 - raises capacity to over **7,000 kg**.
- **1:350 and 1:450** deflection criteria.
- Industry-lowest rolling resistance with nylon trolleys.

Benefits

- Moves loads along both the **X and Y** axes.
- 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 **cantilevered and direct loads**.
- Hangers and end trucks **prevent binding** of the bridge and runway.
- Light weight **reduces the load on the building's ceiling structure**.
- Smooth, light operation - reduces operator fatigue.
- Versatile for light-duty up to heavy-duty **1,814 kg** applications.

Rail models in the series

Aluminum rail series summary

Series	Max. Load	Rail Weight
TR2000	250 kg [550 lbs]	3.33 kg/m [2.3 lbs/ft]
RAD4110	499 kg [1,100 lbs]	6.23 kg/m [4.3 lbs/ft]
RAD6110	725 kg [1,600 lbs]	7.70 kg/m [5.2 lbs/ft]
RAD7510	1,360 kg [3,000 lbs]	12.02 kg/m [8.3 lbs/ft]
RAD8110	1,814 kg [4,000 lbs]	2.90 kg/m [6.4 lbs/ft]

Load capacity 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) and **1:450** (1" per 450"). Load tables are based on **single point loading**.

TR2000

Max. load 250 kg [550 lbs] · Weight 3.33 kg/m · One-piece rail up to 7.6 m

Span ft / m	Ratio 1:350		Ratio 1:450	
lbs	kg	lbs	kg	
5 / 1.52	550	250	470	213
6 / 1.83	400	181	340	154
7 / 2.13	350	159	295	134
8 / 2.45	250	113	210	95
9 / 2.74	200	90	170	77
10 / 3.05	175	80	150	68
11 / 3.35	160	72	135	61
12 / 3.66	135	61	115	52
13 / 3.96	125	57	105	47
14 / 4.27	115	52	95	43
15 / 4.57	90	40	75	34
16 / 4.88	75	34	65	30
17 / 5.18	65	30	55	25

RAD4110

Max. load 499 kg [1,100 lbs] · Weight 6.23 kg/m · One-piece rail up to 7.6 m

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

RAD6110

Max. load 725 kg [1,600 lbs] · Weight 7.70 kg/m · One-piece rail up to 7.6 m

Span ft / m	Ratio 1:350		Ratio 1:450	
lbs	kg	lbs	kg	
5 / 1.52	1600	725	1300	590
6 / 1.83	1600	725	1300	590
7 / 2.13	1500	680	1175	533
8 / 2.45	1475	669	1075	488
9 / 2.74	1400	635	1025	465
10 / 3.05	1325	601	925	420
11 / 3.35	1100	499	875	397

Span ft / m	Ratio 1:350		Ratio 1:450	
12 / 3.66	950	431	750	340
13 / 3.96	825	374	650	295
14 / 4.27	750	340	575	261
15 / 4.57	675	306	515	233
16 / 4.88	600	272	470	213
17 / 5.18	525	238	405	184
18 / 5.49	450	204	350	159
19 / 5.79	425	193	325	147
20 / 6.10	400	181	300	136
21 / 6.40	360	163	275	125
22 / 6.71	320	145	250	113
23 / 7.01	285	129	210	95
24 / 7.32	245	111	185	84

RAD7510

Max. load 1,360 kg [3,000 lbs] · Weight 12.02 kg/m · One-piece rail up to 9.1 m · Backer 6″ / 8″ compatible

Span ft / m	RAD7510		+ Backer 6″		+ Backer 8″	
lbs	kg	lbs	kg	lbs	kg	
5 / 1.52	3000	1360	12170	5520	16355	7418
6 / 1.83	3000	1360	10130	4595	13620	6178
7 / 2.13	3000	1360	8670	3933	11660	5289
8 / 2.45	3000	1360	7575	3436	10190	4622
9 / 2.74	2700	1225	6720	3048	9045	4103
10 / 3.05	2500	1134	6035	2737	8130	3688
11 / 3.35	2500	1134	5475	2483	7375	3345
12 / 3.66	2500	1134	5010	2272	6750	3062
13 / 3.96	2000	907	4610	2091	6215	2819
14 / 4.27	2000	907	4270	1937	5760	2613
15 / 4.57	1900	861	3975	1803	5365	2434
16 / 4.88	1800	816	3710	1683	5015	2275
17 / 5.18	1700	771	3480	1578	4750	2134
18 / 5.49	1600	726	3275	1486	4430	2009
19 / 5.79	1450	658	3090	1402	4185	1898

Span ft / m	RAD7510		+ Backer 6″		+ Backer 8″	
20 / 6.10	1300	590	2925	1327	3965	1798
21 / 6.40	1100	499	2775	1259	3760	1705
22 / 6.71	900	408	2635	1195	3575	1622
23 / 7.01	900	408	2510	1139	3410	1547
24 / 7.32	885	402	2390	1084	3255	1476
25 / 7.62	850	386	2250	1021	3110	1411
26 / 7.92	725	329	2060	934	2980	1352
27 / 8.23	725	329	1890	857	2855	1295
28 / 8.53	600	272	1735	787	2735	1241
29 / 8.83	600	272	1595	723	2525	1145

RAD8110

Max. load 1,814 kg [4,000 lbs] · European-style profile · Shares RAD4110 accessories

Span ft / m	Ratio 1:350		Ratio 1:450	
lbs	kg	lbs	kg	
5 / 1.52	4000	1814	4000	1814
6 / 1.83	3575	1622	3575	1622
7 / 2.13	3060	1388	3060	1388
8 / 2.45	2670	1211	2670	1211
9 / 2.74	2370	1075	2370	1075
10 / 3.05	2130	966	2130	966
11 / 3.35	1925	873	1925	873
12 / 3.66	1760	798	1760	798
13 / 3.96	1620	735	1400	635
14 / 4.27	1500	680	1200	544
15 / 4.57	1340	608	1030	467
16 / 4.88	1165	528	895	406
17 / 5.18	1020	463	780	354
18 / 5.49	900	408	685	311
19 / 5.79	800	363	605	274
20 / 6.10	710	322	535	243
21 / 6.40	630	286	470	213
22 / 6.71	560	254	420	191

Span ft / m	Ratio 1:350		Ratio 1:450	
23 / 7.01	500	227	370	168
24 / 7.32	450	204	330	150

Deflection criteria and ergonomic force explained

***About the 1:350 and 1:450 criteria:**

Because of ergonomic requirements, 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, higher load).
- **1:450** = 1 inch of deflection per 450 inches of rail length (stiffer, better ergonomics).

Estimating operating force

For a quick estimate of the ergonomic operating force required, use the formula:

Fs = 0.009 × 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 (113.4 kg)
→ Fs = 0.009 × 250 = **2.25 lbf (1.02 kg)** to overcome inertia
→ Fk = 2.25 × 0.35 = **0.79 lbf (0.36 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.

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, etc.) is tested individually to establish its **ultimate failure point**, from which a safe working load is assigned. Recommended load tables are based on **single point loading**.

Typical applications

Manufacturing

- Enclosed Track track workstation cranes.
- Light and medium welding guns on production lines.
- Workbenches and component assembly stations.

- Automotive and motorcycle assembly lines.
- EV and EV battery plants.
- Cleanrooms and semiconductor manufacturing.

Plant utility systems

- Compressed air FRL units (filter - regulator - lubricator).
- Cable and hose management.
- Festooning - suspended cable and hose systems.
- Movable lighting and welding curtains.
- Integration with Knight Global servo hoists.
- Integration with pneumatic balancers and lift assists.

System accessories

Knight Global aluminum rail offers a complete range of accessories compatible with the 4 main rail series: **RAD4110 / RAD6110 / RAD7510 / TR2000**. Contact FULLSHARP for help configuring a system for your project.

Technical documents

Catalog & Brochure

- Knight Rail Brochure - aluminum rail overview PDF
- RAD8110 Rail Series - dedicated brochure PDF

Spec sheets

- RAD4110 Rail - Spec Sheet PDF
- RAD6110 Rail - Spec Sheet PDF
- RAD7510 Rail - Spec Sheet PDF
- TR2000 Rail - Spec Sheet PDF

CAD drawings

- RAD4110 - CAD Drawings (.zip) ZIP
- RAD6110 - CAD Drawings (.zip) ZIP
- RAD7510 - CAD Drawings (.zip) ZIP
- TR2000 - CAD Drawings (.zip) ZIP

Technical manual

- Aluminum Rail Technical Manual (KRAD) PDF

Installation guides

- Aluminum Rail General Standards for Materials & Design PDF
- Aluminum Rail Installation Checklist PDF

- Rail Hanger Placement Guide PDF
- Eye Bolt Safety Cable Installation Instructions PDF
- Safety Cable Installation - End Trucks, Hangers, Trolleys PDF

FULL-SHARP AUTOMATIZED VN (FULLSHARP)

Authorized distributor of Knight Global aluminum rail systems and lifting equipment in Vietnam
For help configuring a TR2000/RAD4110/RAD6110/RAD7510/RAD8110 aluminum rail system for your project, 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.