THOMSON™

T-Series Ball Profile Rail
TECHNICAL BULLETIN

DANAHER
MOTION

*Helping you build a better machine, **faster.***

T-Series Profile Rail

Industry standard dimensions

Low cost installation – no need for high precision base mounts

Approximately 5 times more forgiving than all steel profile rail guides

Forgiving and flexible proprietary U Channel design accomodates misalignment from machine basesor installation errors

Balls are not retained in carriage

Lightweight design and construction

Lubrication inlets on both ends of carriage

N class radial run out accuracy

Low drag seal option available

Sold as assemblies only

Contamination protection with lip seal

Speeds up to 3m/s
Acceleration up to 50 m/s^2

Multiple carriage design

One piece rail length up to 3 meters

Four-runner block attachment bolts

Aluminum rail with hardened steel ball path insert

Corrosion resistance with Armoloy® Thin Dense Chrome plating optional

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T-Series

AT 25 A LXXXX LDS Y=

Product Type
AT T-Series

Length

Y Dimension
The distance (from the rail end to the first hole) will be equal unless specified

Size

Carriage Style
A Dimensionally Interchangeable with THK HSR A, B, CA & CB
E Dimensionally Interchangeable with THK HSR R & TR
F Dimensionally Interchangeable with THK SR W
G Dimensionally Interchangeable with THK SR TB

Extended Standards
A   Armoloy
LDS Low Drag Seal
S...   Special Option – sequential numbers

Note: 1. Sold as assemblies only
2. Carriages are dimensionally matched to rails during assembly

T-Series Ball Profile Rail

Features

The Thomson T-Series Ball Profile Rail is lightweight, highly flexible and forgiving — an ideal choice for poor misalignment. It has a low cost of installation and industry standard dimensions for easy replacement. It is a lightweight and forgiving alternative to all-steel profile rail.

Materials

The Thomson T-Series Ball Profile Rail carriage and rail is produced from high quality aircraft aluminum alloy. The carriage has hardened steel load bearing plates. The rail has a custom ball path insert made of hardened steel. Stringent quality controls are in place to ensure consistency of steel from the source, allowing us to ensure that we deliver the highest quality product.

Lightweight

The aluminum carriage and rail dramatically reduces the total weight of the assembly making Thomson T-Series an ideal choice for applications requiring reduced weight inertia such as airplanes, ships, automobiles, etc.

Accuracy

As a result of it's high flexibility to misalignment errors, the T-Series Ball Profile Rail is available in an N class radial run out only.

Forgiving to Misalignment

The Thomson T-Series propriety "U" channel construction allows the rail to "flex" to accommodate poor machine bases or misalignment errors.

Low Cost

The Thomson T-Series can be mounted direct to non-machined bases without sacrificing total operational efficiency or the need for special tools or gauges to ensure proper rail and base straightness. By eliminating the costly machined base and special tools the installation time or machine build time can be cut in half, saving valuable time and money.

Drop-in Replacement

The Thomson T-Series is designed to industry standard dimensions and rail hole patterns. This means it can be used as a drop-in replacement for any conventional all steel profile linear guide in the market today.
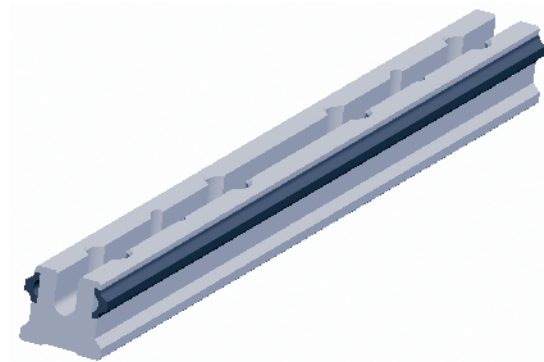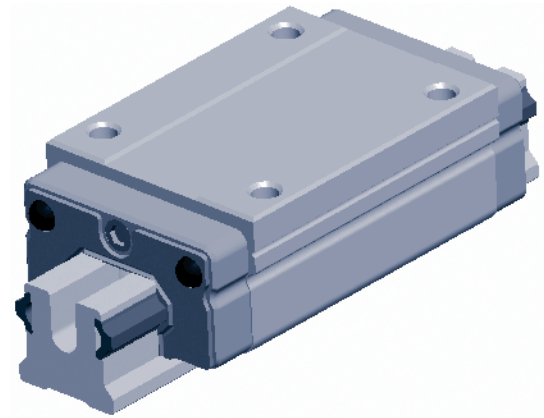
For more information, or to place an order, please contact your local authorized Thomson™ distributor or Danaher Motion at 1-540-633-3400, Fax: 1-540-633-4162, or E-mail at profilerail@DanaherMotion.com.
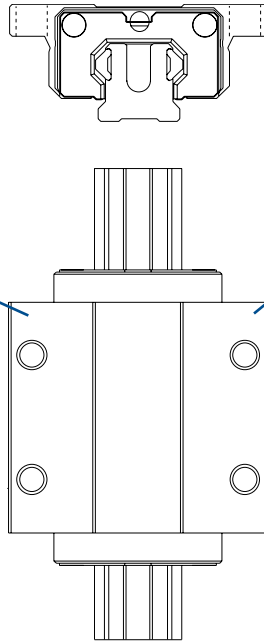
T-Series Carriage Styles

Standard Carriage Style A
Sizes 20, 25, 35
Dimensionally interchangeable to THK
HSR A, B, CA, CB and Thomson 511 A

Standard Short Hole Spacing Style G
Sizes 20, 25, 35
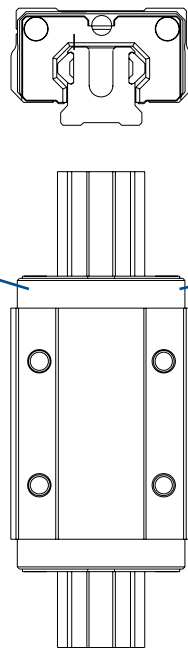Dimensionally interchangeable to THK SR TB
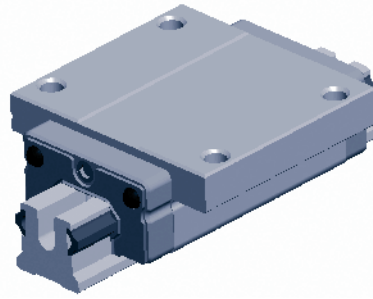
Narrow Carriage Style E
Sizes 20, 25, 35
Dimensionally interchangeable to THK
HSR R and TR and Thomson 511 E
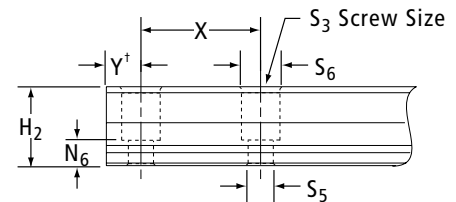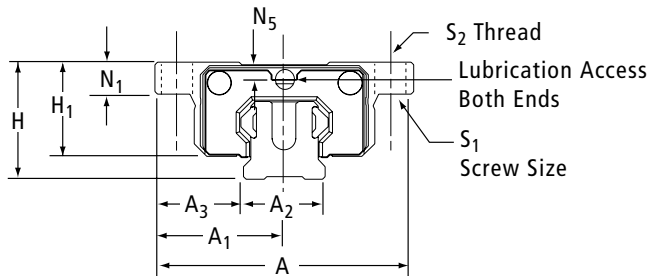
Narrow High Style F
Sizes 20, 25, 35
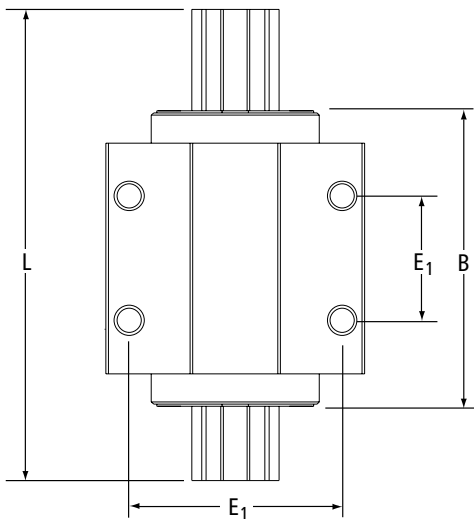Dimensionally interchangeable to THK SR W

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T-Series
Style A and G

N5

N1

H1

H

S2 Thread

Lubrication Access
Both Ends

S1
Screw Size

A3   A2

A1

A

X   S3 Screw Size

Y†   S6

H2

N6

S5

†- Will be equal on both ends,
unless otherwise specified.

L

E1   B

E1

Supplied
Lubrication Fittings

M6
Tapered Thread

9

45

15

M6
Tapered Thread

T-Series Profile Rail Standard High "A" Style

Size	A	A1	A2	A3	H	H1	H2	B	E1	E2	S1	S2	S3	S5	S6	N1	N5	N6	X	L$_{max}$
20	63	31.5	20	21.5	30	25	18	76	53	40	M5	M6	M5	5.8	9.5	10	6.25	7,5	60	3000
25	70	35	23	23.5	36	29.5	22	88	57	45	M6	M8	M6	7	10.7	12	8	10	60	3000
35	100	50	34	33	48	40	29	117	82	62	M8	M10	M8	9	14	15.26	6.6	11	80	3000

All dimensions in mm unless shown otherwise

T-Series Profile Rail Standard "G" Style

Size	A	A1	A2	A3	H	H1	H2	B	E1	E2	S1	S2	S3	S5	S6	N1	N5	N6	X	L$_{max}$
20	59	29.5	20	19.5	28	23	18	76	49	32	M5	M6	M5	5.8	9.5	8	4.25	7.5	60	3000
25	73	36.5	23	25	33	26.5	22	88	60	35	M6	M8	M6	7	10.7	9	5	10	60	3000
35	100	50	34	33	48	40	29	117	82	50	M8	M10	M8	9	14	15.26	6.6	11	80	3000

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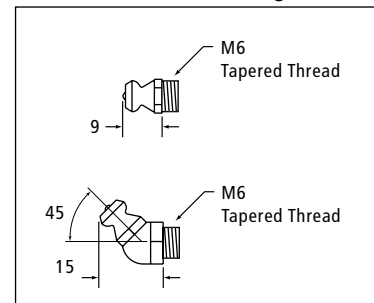or Danaher Motion at 1-540-633-3400, Fax: 1-540-633-4162, or E-mail at profilerail@DanaherMotion.com.*

T-Series
Style A and G
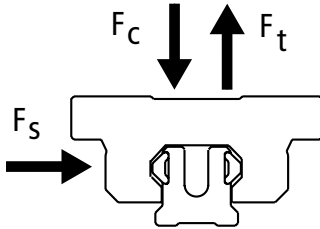
Dynamic Load Rating

C = Dynamic load rating

The dynamic load rating is based upon a 100 km travel life. In order to compare with bearings rated for 50 km, divide the dynamic rating of the bearing rated for 50 km by 1.26.

Static Load Capacity

C_O = Static load capacity

The static load capacity is the maximum radial load that should be applied to the bearing while there is no relative motion between the carriage and rail.

Size	Style	Load Ratings N (lbf)		Mass	
		C (@100km)	C_o	Carriage kg	Rail kg/m
20	A G	9000 (2025)	11000 (2475)	0.22	0.79
25	A G	13000 (2925)	15000 (3375)	0.30	1.06
35	A G	25000 (5620)	28000 (6295)	0.74	2.27

	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	C	0.6C
F_s	C	0.6C

Bearing Travel Life Calculation

$L = (C/F)^3 \times 100$ km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N
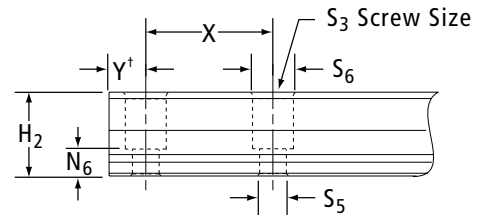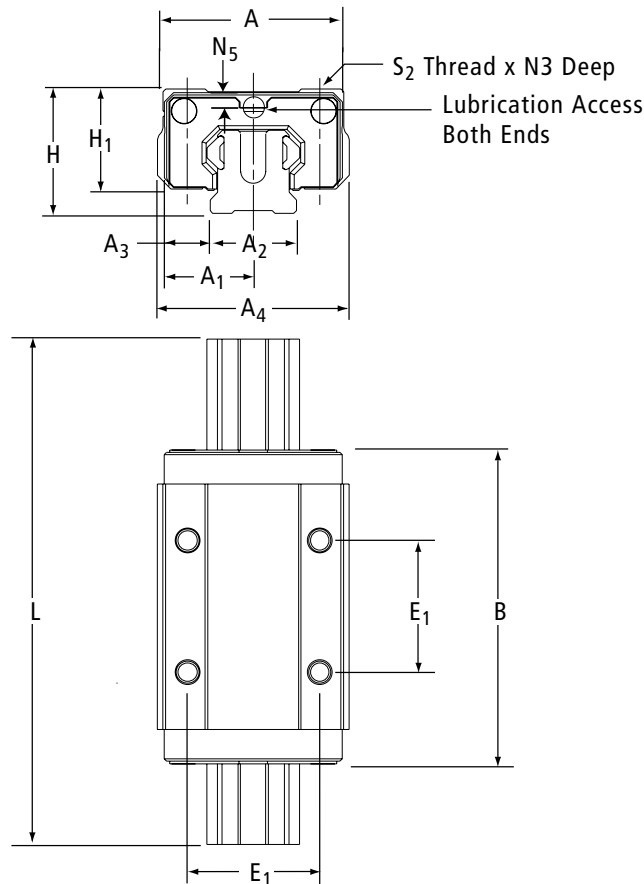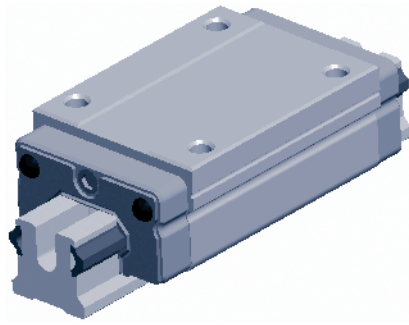
Operating Parameters

Maximum Velocity = 3 m/s

Maximum Acceleration = 50 m/s2
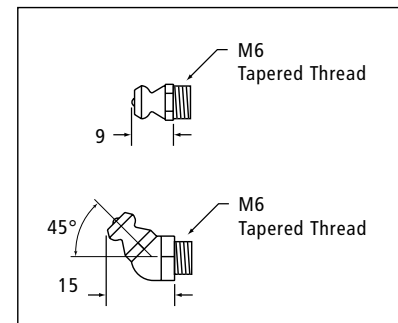
Maximum Temperature = 80°C

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T-Series
Style E and F

S_2 Thread x N3 Deep
Lubrication Access
Both Ends

S_3 Screw Size

†- Will be equal on both ends,
unless otherwise specified.

Supplied
Lubrication Fittings

M6
Tapered Thread

M6
Tapered Thread

T-Series Profile Rail Narrow "E" Style

Size	A	A1	A2	A3	A4	H	H1	H2	B	E1	E2	S2	S3	S5	S6	N3	N5	N6	X	L_{max}
20	44	22	20	12	41.5	30	25	18	76	32	36	M5	M5	5.8	9.5	6	6.25	7.5	60	3000
25	48	24	23	12.5	50.9	40	33.5	22	88	35	35	M6	M6	7	10.7	8	12	10	60	3000
35	70	35	34	18	68.0	55	47	29	117	50	50	M8	M8	9	14	12	13.6	11	80	3000

All dimensions in mm unless shown otherwise

T-Series Profile Rail Narrow High "F" Style

Size	A	A1	A2	A3	A4	H	H1	H2	B	E1	E2	S2	S3	S5	S6	N3	N5	N6	X	L_{max}
20	42	21	20	11	41.5	28	23	18	76	32	32	M5	M5	5.8	9.5	6	4.25	7.5	60	3000
25	48	24	23	12.5	51.0	33	26.5	22	88	35	35	M6	M6	7	10.7	8	5	10	60	3000
35	70	35	34	18	68.0	48	40	29	117	50	50	M8	M8	9	14	12	6.6	11	80	3000

All dimensions in mm unless shown otherwise

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T-Series
Style E and F
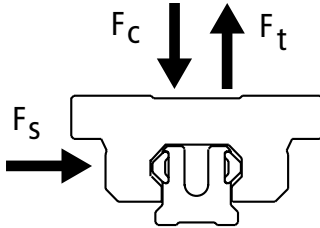
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Static Load Capacity

C_o = Static load capacity

The static load capacity is the maximum radial load that should be applied to the bearing while there is no relative motion between the carriage and rail.

Size	Style	Load Ratings N (lbf)		Mass	
		C (@100km)	C_o	Carriage kg	Rail kg/m
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	Dynamic Load Rating	Load Limit
F_c	C	C
F_t	C	0.6C
F_s	C	0.6C

Bearing Travel Life Calculation

$L = (C/F)^3 \times 100$ km

where:

L = travel life, km

C = dynamic load rating, N

F = applied dynamic load, N

Operating Parameters

Maximum Velocity = 3 m/s

Maximum Acceleration = 50 m/s2

Maximum Temperature = 80°C

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