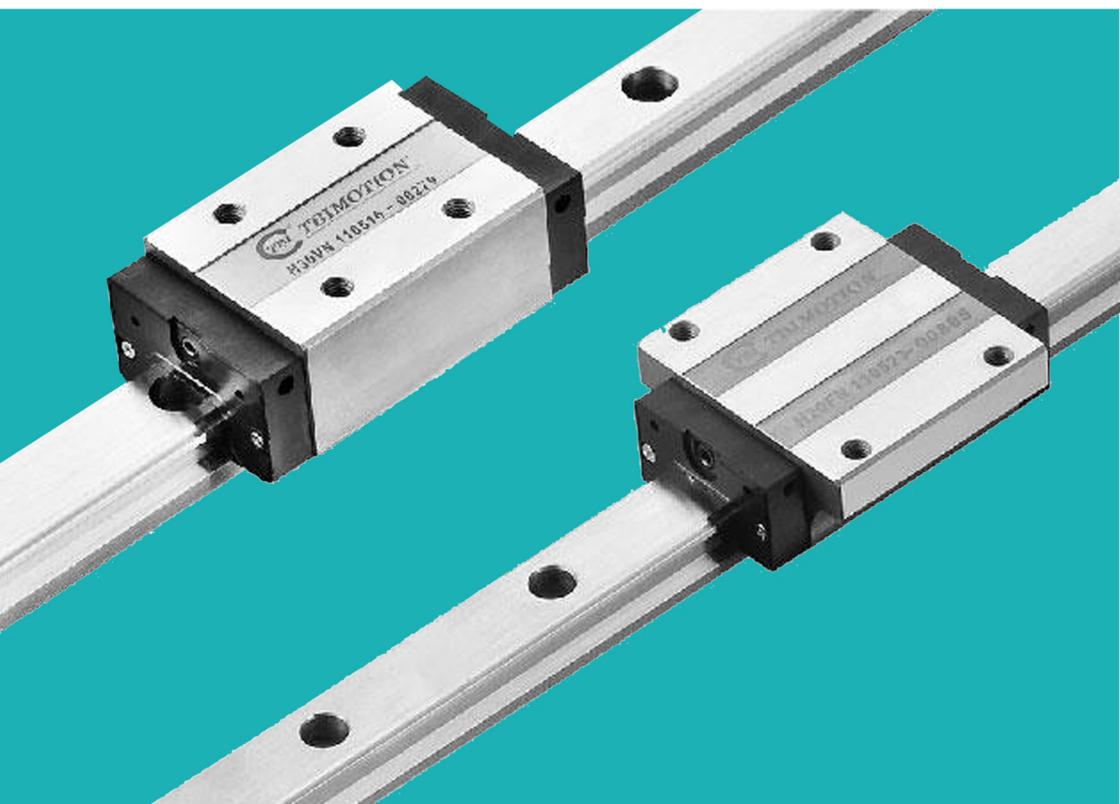




TR International Standard Linear Guide



WWW.LMGUIDEMART.COM

ABOUT LINEAR GUIDE

1-12 Lubrication

Lubrication

Lubrication is essential to linear motion system. Without lubrication, the friction of rolling parts increases and might be the main factor of service life shortening.

A lubricant :

- (1) Reduces friction on moving parts, thereby to prevent wearing due to raise in temperature.
- (2) Forms an oil film on rolling surfaces, thus decreasing stress that develops on the surfaces and safeguarding the system against rolling fatigue.
- (3) Covers metal surfaces with an oil film, thereby preventing rust.

To tap the full function of a linear motion system, lubrication is essential to meet the system service conditions.

※ Even the linear motion system is sealed, it cannot completely prevent the leakage of lubricants no matter how negligible the amount of leakage is at any given time. It is therefore necessary to replenish the lubricant periodically according to the operating conditions.

Classification of Lubricants

Primarily grease and sliding surface oil are used as lubricants for linear motion systems.

In general a lubricant must :

- (1) Form a strong oil film.
- (2) Reduce wear as much as possible.
- (3) Have high wear resistance.
- (4) Have high thermal stability.
- (5) Be non-corrosive.
- (6) Be highly rust-preventive.
- (7) Be free from dust and some moisture.
- (8) Be free from significant fluctuations in consistency against repeated agitation of grease.

Table1.12.1 Lubricants in General Use

Lubricant	Classification	Item
Grease	Lithium-based grease (JIS No.2) Urea-base grease (JIS No.2)	※ 4FB Grease (TBI MOTION) Daphne Eponex Grease No.2 (Idemitsu Kosan) or equivalent.
Oil	Sliding surface oil or turbine oil ISOVG 32~68	Super Multi 32 to 68 (Idemitsu Kosan) Vactra No.2S (Mobile Oil) DT Oil (Mobile Oil) Tonner Oil (Showa Shell Sekiyu) or equivalent

※ Feeding Should be performed every 100 km of travel under normal usage conditions to prevent incomplete lubrication by exhausted lubrication.

1-13 Precautions of Linear Guide

Handling

- (1) Tilting the linear guideway may cause the block falling out from the rail by their own weight.
- (2) Hitting or Dropping the linear guideway may cause its function to be damaged, even if the product looks intact.
- (3) Do not disassemble the block, this may cause contamination to enter into the carriage or decrease the installation accuracy.

Lubrication

- (1) Please remove the anti-rust oil.
- (2) Please do not mix different kinds of lubricants.
- (3) Lubrication can be varied, please consult TBI Motion before use.

Usage

- (1) The temperature of the place where linear guideways are used should not exceed 80°C. A higher temperature may damage the plastic end cap, do not exceed 100°C in friction.
- (2) Using under special conditions, such as constant vibration, high contamination or the temperature exceed our suggested...etc., please contact TBI MOTION.

Storage

When storing the linear guideway, enclose it in a package and store it in a horizontal orientation while avoiding high temperature, low temperature and high humidity.

TBI MOTION LINEAR GUIDE

2-1 The Types of TBI MOTION Linear Guide

In an effort to meet customer's requirement, TBI MOTION offers several different types of guides. Except for TR international standard series, TBI MOTION develops TR series with self lubrication system which is designed for environment with high contamination and miniature TM series for small machines and semiconductor industry.

Table 2.1.1 TBI MOTION Linear guide table with all series

Type	Height of Assembly Type	Square	Flange Mounting from Above, Mounting from Below
TR	High-Assembly	TRH-V	TRH-F
	Low-Assembly	TRS-V	TRS-F
	Middle-Assembly	TRC-V	-

Table 2.1.2 TBI MOTION Linear Guide - Type & Series

Type	Accessory	Characteristics	EndCap
TR	XN : Strong Bottom Seal+Strong Double-lip end seals	Strong dust-proof	Reinforcement Type
	UN : Strong Top Seal+Strong Bottom Seal+Double-lip end seals	Environment with high pollution	
	ZN : Strong Top Seal+Strong Bottom Seal+Strong Two Double-lip end seals		
	WW : Strong Bottom Seal+Felt+Strong Double-lip end seals	Self-lubrication/ Strong dust-proof	
	WU : Strong Top Seal+Strong Bottom Seal+Felt+Strong Double-lip end seals	Application with low rating load	
	WZ : Strong Top Seal+Strong Bottom Seal+Felt+Strong Two Double-lip end seals		
	SU : Strong Top Seal+Strong Bottom Seal+Strong Double-lip end seals+Strong Metal Scraper	Strong dust-proof / Application with low rating load	
	SZ : Strong Top Seal+Strong Bottom Seal+Strong Two Double-lip end seals+Strong Metal Scraper	Self-lubrication/ Strong dust-proof / Application with low rating load	
	DU : Strong Top Seal+Strong Bottom Seal+Strong Double-lip end seals+Felt+Strong Metal Scraper		
	DZ : Strong Top Seal+Strong Bottom Seal+Strong Two Double-lip end seals+Felt+Strong Metal Scraper	Long effects Self-lubrication/ Strong dust-proof	
BN : Strong Bottom Seal+Strong Double-lipendseals+Oil Reservoir			

※If Strengthen seals and Felt is required, please upgrade the block with enhanced end cap.

※Strengthen seals come in blue, if standard seals is required, please order it with code A, e.g. : XNA.

2-2 TRH / TRS / TRC International Standard Linear Guide

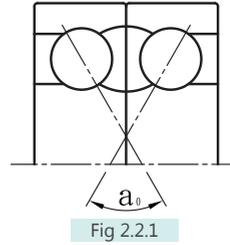
2-2-1 TBI MOTION The Characteristics of TR Series

Smooth Movement

TBI MOTION circulation system of Linear Guide block is designed to perform smooth movement.

High Stability

TBI MOTION Linear Guide block is designed under TBI's exclusive patent that can increase depth of material to improve the strength capacity, prevent deflection and provide high rigidity.



High Durability

TBI MOTION the exclusive contact point design promotes high rigidity. Moreover, self-aligning balances load rating in all directions. This design also improves performance in running accuracy and service life of the Linear Guide.

Easy Installation with Interchangeability

TBI MOTION Linear Guide is easy for installation even without fixture. The design of seal is able to combine with side seal or inner seal to save material.

2-2-2 The Structure of TR-Series

Circulation unit :

- ① Block, ② Rail, ③ End Cap, ④ Steel Balls,
- ⑤ Circulation tube.

Lubrication unit :

- ⑥ Grease nipple.

Anti-Dust Unit :

- ⑦ End Seal, ⑧ Bottom Seal, ⑨ Mounting Hole Cap.

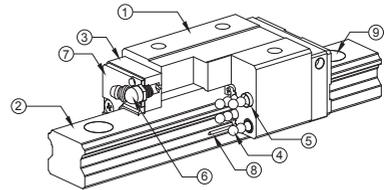


Fig 2.2.2 Material

Item	Material	Hardness
TR-Rail	S55C	HRC 58°~62°
TR-Block	SCM420H	

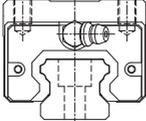
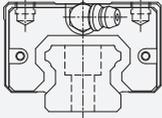
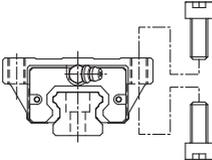
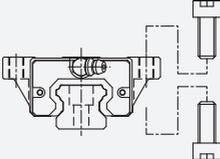
TBI MOTION LINEAR GUIDE

2-2 TRH / TRS / TRC International Standard Linear Guide

■ 2-2-3 TR-Series

TBI MOTION offers standard and flange type. The assembly height and category are listed below :

Table 2.2.2

Type	Model	Shape	Height	Rail Length	Main Application
Standard	TRH-V TRC-V	Mounting from Above 	28 ↓ 90	100 ↓ 4000	<ul style="list-style-type: none"> ● Machine Centers. ● NC Lathes. ● Food Machine. ● Grinding Machines. ● CNC Machine. ● Heavy Cutting Machines. ● Punching Machine. ● Injection Molding Machine. ● Automation Equipment. ● Transportation Equipment. ● Sealing machine.
	TRS-V	Mounting from Above 	24 ↓ 60	100 ↓ 4000	
Flange	TRH-F	Mounting from above and below 	24 ↓ 90	100 ↓ 4000	
	TRS-F	Mounting from above and below 	24 ↓ 60	100 ↓ 4000	

■ 2-2-4 Nominal Model Code for Non-Interchangeable TR Type

TR series can be classified into interchangeable and non-interchangeable types. The sizes are identical; the only difference between the two types is that the accuracy of non-interchangeable types could reach up to UP grade since **TBI MOTION** makes the linear guide set under strict international regulation. Interchangeable blocks and rails can be freely exchanged; however, the accuracy could be up to H grade only due to technical issue. It is much more convenient for customers who do not need linear guides with high accuracy to have interchangeable blocks and rails.

Non-interchangeable Type code :

T R H 20 F N - 2 - - 1200 - N - Z0 - II - K + N3 N3

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

① Nominal Model	② Block Type	③ Height of Assembly Type	④ Dimension
T	R : Standard X : Special	S : Low-Assembly C : Middle-Assembly H : High-Assembly	15, 20, 25, 30, 35, 45, 55, 65

⑤ Flange Type	⑥ Length of Block	⑦ Number of Block Per Rail	⑧ Accessory Code
F : With Flange V : Without Flange	S : Short N : Normal L : Long E : Extra-Long	EX : 2	□ : Standard (Please refer to page A58)

⑨ Length of Rail	⑩ Accuracy Grade	⑪ Preload	⑫ Two Sets per Axis	⑬ Rail Special Machining
Unit : mm	N : Normal H : High P : Precision SP : Super-Precision UP : Ultra-Precision	ZF : Slight Clearance Z0 : No Preload Z1 : Light Preload Z2 : Medium Preload Z3 : Heavy Preload	II	K : Tapped-Hole Rail X : Rail with Special Machining

⑭ Block Surface Treatment	⑮ Rail Surface Treatment
S : Standard	S : Standard
B1 : Black Oxidation	B1 : Black Oxidation
N1 : Hard Chrome Plating	N1 : Hard Chrome Plating
P : Phosphating	P : Phosphating
N3 : Nickel Plating	N3 : Nickel Plating
N4 : Raydent	N4 : Raydent
N5 : Chrome Plating	N5 : Chrome Plating

※ No symbol required when plating is not needed.

TBI MOTION LINEAR GUIDE

2-2 TRH / TRS / TRC International Standard Linear Guide

■ 2-2-5 Nominal Model Code for Interchangeable TR Type

Interchangeable Type of Block :

T R H 20 F N - [] - N - Z0 + B1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	②	③	④
Nominal Model	Block Type	Height of Assembly Type	Dimension
T	R : Standard X : Special	S : Low-Assembly C : Middle-Assembly H : High-Assembly	15, 20, 25, 30, 35, 45, 55, 65

⑤	⑥	⑦	⑧	⑨
Flange Type	Length of Block	Accessory Code	Accuracy Grade	Preload
F : With Flange V : Without Flange	S : Short N : Normal L : Long E : Extra-Long	□ : Standard	N : Normal	ZF : Slight Clearance Z0 : No Preload

⑩
Block Surface Treatment
□ : Standard
B1 : Black Oxidation
N1 : Hard Chrome Plating
P : Phosphating
N3 : Nickel Plating
N4 : Raydent
N5 : Chrome Plating

Interchangeable Type of Rail :

T R 20 - 4000 - N - K + B1

① ② ③ ④ ⑤ ⑥ ⑦

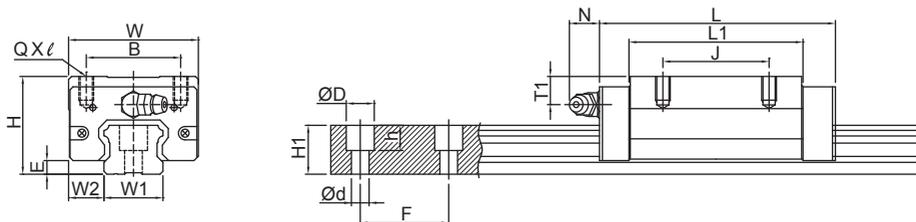
① Nominal Model	② Block Type	③ Dimension	④ Length of Rail
T	R : Standard X : Special	15, 20, 25, 30, 35, 45, 55, 65	Unit : mm

⑤ Accuracy Grade	⑥ Rail Special Machining	⑦ Block Surface Treatment
N : Normal	K : Tapped-Hole Rail X : Rail with Special Machining	□ : Standard B1 : Black Oxidation N1 : Hard Chrome Plating P : Phosphating N3 : Nickel Plating N4 : Raydent N5 : Chrome Plating

TBI MOTION LINEAR GUIDE

2-2 TRH / TRS / TRC International Standard Linear Guide

TRH-V Series Specifications

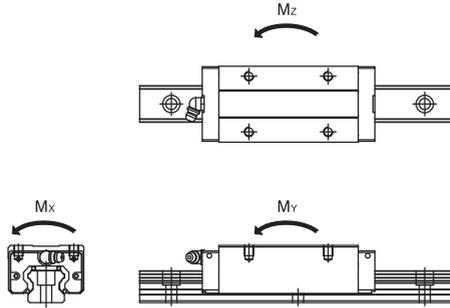


A

Linear Guide

Model No.	Assembly (mm)			Block Dimension (mm)							Rail (mm)							
	H	W2	E	W	B	J	L	L1	QXℓ	T1	Oil Hole	N	W1	H1	ØD	h	Ød	F
TRH15VN	28	9.5	3.2	34	26	26	56.9	39.5	M4X8	9.5	M4X0.7	7	15	13	7.5	6	4.5	60
TRH15VL							65.4	48										
TRH20VN	30	12	4.6	44	32	36	75.6	54	M5X7	6.5	M6X1	14	20	16.5	9.5	8.5	6	60
TRH20VE						50	99.6	78										
TRH25VN	40	12.5	5.8	48	35	35	81	59	M6X8	11.5	M6X1	14	23	20	11	9	7	60
TRH25VE						50	110	88										
TRH30VN	45	16	7	60	40	40	96.3	69.3	M8X10	11	M6X1	14	28	23	14	12	9	80
TRH30VE						60	132	105										
TRH35VN	55	18	7.5	70	50	50	109	79	M8X10	15	M6X1	14	34	26	14	12	9	80
TRH35VE						72	153	123										
TRH45VL	70	20.5	8.9	85.5	60	60	140	106	M10X15	20.5	PT1/8	12.5	45	32	20	17	14	105
TRH45VE						80	174	140										
TRH55VL	80	23.5	13	100	75	75	162	118	M12X18	21	PT1/8	12.5	53	44	23	20	16	120
TRH55VE						95	200.1	156.1										
TRH65VL	90	31.5	14	126	76	70	197	147	M16X20	19	PT1/8	12.5	63	53	26	22	18	150
TRH65VE						120	256.5	206.5										

※The above specifications provided are dedicated to XN, UN, please check table 2.2.17 for detail, if other accessories is required, please refer to page A87.

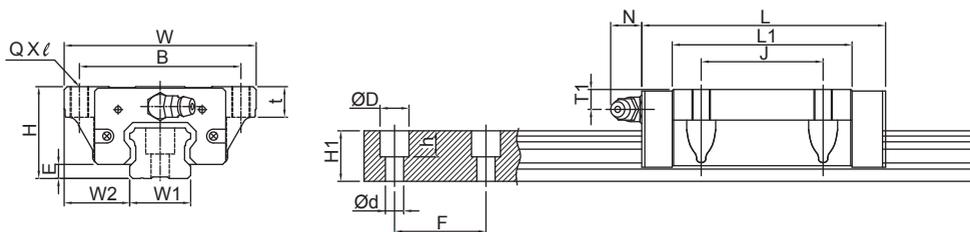


Model No.	Load Rating (kgf)		Static Permissible Moment						Weight	
			Mx (kgf-mm)		My (kgf-mm)		Mz (kgf-mm)		Block (kg)	Rail (kg/m)
	C	Co	Single Block	Single Block	Double Block	Single Block	Double Block			
TRH15VN	1206	2206	16,436	14,884	70,960	14,884	70,960	0.15	1.32	
TRH15VL	1343	2574	19,175	20,429	95,224	20,429	95,224	0.22		
TRH20VN	2050	3696	37,334	33,268	157,298	33,268	157,298	0.31	2.28	
TRH20VE	2553	5058	51,089	63,229	284,163	63,229	284,163	0.44		
TRH25VN	2581	4503	52,239	43,407	207,324	43,407	207,324	0.52	3.17	
TRH25VE	3248	6255	72,554	85,112	391,311	85,112	391,311	0.77		
TRH30VN	3807	6483	90,722	74,970	355,321	74,970	355,321	0.85	4.54	
TRH30VE	4791	9004	126,003	147,000	677,068	147,000	677,068	1.3		
TRH35VN	5090	8346	142,722	106,070	519,799	106,070	519,799	1.47	6.27	
TRH35VE	6667	12274	209,885	233,977	1,070,533	233,977	1,070,533	2.26		
TRH45VL	7572	12808	292,657	220,751	1,030,183	220,751	1,030,183	3.00	10.4	
TRH45VE	8852	16010	365,821	348,554	1,598,703	348,554	1,598,703	3.90		
TRH55VL	14703	21613	571,342	411,729	2,019,184	411,729	2,019,184	4.42	16.1	
TRH55VE	17349	27377	723,699	670,530	3,148,637	670,530	3,148,637	5.50		
TRH65VL	22526	31486	973,074	695,840	3,594,277	695,840	3,594,277	8.66	22.54	
TRH65VE	27895	42731	1,320,601	1,307,568	6,312,759	1,307,568	6,312,759	10.30		

TBI MOTION LINEAR GUIDE

2-2 TRH / TRS / TRC International Standard Linear Guide

TRH-F Series Specifications

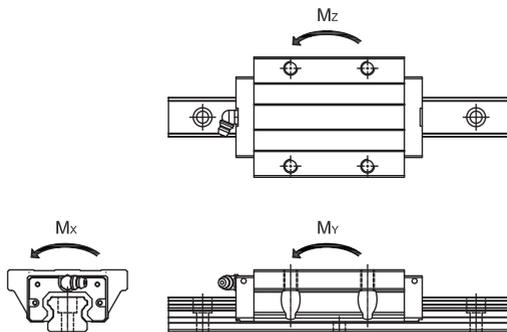


A

Linear Guide

Model No.	Assembly (mm)			Block Dimension (mm)										Rail (mm)					
	H	W2	E	W	B	J	t	L	L1	QXℓ	T1	Oil Hole	N	W1	H1	ØD	h	Ød	F
TRH15FN	24	16	3.2	47	38	30	8	56.9	39.5	M5X8	5.5	M4X0.7	7	15	13	7.5	6	4.5	60
TRH15FL								65.4	48										
TRH20FN	30	21.5	4.6	63	53	40	10	75.6	54	M6X10	6.5	M6X1	14	20	16.5	9.5	8.5	6	60
TRH20FE								99.6	78										
TRH25FN	36	23.5	5.8	70	57	45	12	81	59	M8X12	7.5	M6X1	14	23	20	11	9	7	60
TRH25FE								110	88										
TRH30FN	42	31	7	90	72	52	15	96.3	69.3	M10X15	8	M6X1	14	28	23	14	12	9	80
TRH30FE								132	105										
TRH35FN	48	33	7.5	100	82	62	15	109	79	M10X15	8	M6X1	14	34	26	14	12	9	80
TRH35FE								153	123										
TRH45FL	60	37.5	8.9	120	100	80	18	140	106	M12X18	10.5	PT1/8	12.5	45	32	20	17	14	105
TRH45FE								174	140										
TRH55FL	70	43.5	13	140	116	95	29	162	118	M14X17	11	PT1/8	12.5	53	44	23	20	16	120
TRH55FE								200.1	156.1										
TRH65FL	90	53.5	14	170	142	110	37	197	147	M16X23	19	PT1/8	12.5	63	53	26	22	18	150
TRH65FE								256.5	206.5										

※The above specifications provided are dedicated to XN, UN, please check table 2.2.17 for detail, if other accessories is required, please refer to page A87.

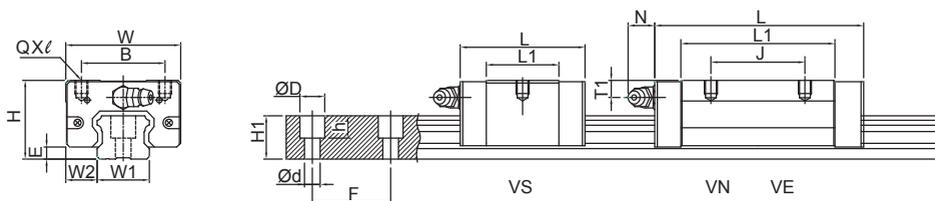


Model No.	Load Rating (kgf)		Static Permissible Moment					Weight	
			Mx (kgf-mm)		My (kgf-mm)		Mz (kgf-mm)		Block (kg)
	C	Co	Single Block	Single Block	Double Block	Single Block	Double Block		
TRH15FN	1206	2206	16,436	14,884	70,960	14,884	70,960	0.18	1.32
TRH15FL	1343	2574	19,175	20,429	95,224	20,429	95,224	0.22	
TRH20FN	2050	3696	37,334	33,268	157,298	33,268	157,298	0.39	2.28
TRH20FE	2553	5058	51,089	63,229	284,163	63,229	284,163	0.58	
TRH25FN	2581	4503	52,239	43,407	207,324	43,407	207,324	0.60	3.17
TRH25FE	3248	6255	72,554	85,112	391,311	85,112	391,311	0.85	
TRH30FN	3807	6483	90,722	74,970	355,321	74,970	355,321	1.01	4.54
TRH30FE	4791	9004	126,003	147,000	677,068	147,000	677,068	1.54	
TRH35FN	5090	8346	142,722	106,070	519,799	106,070	519,799	1.47	6.27
TRH35FE	6667	12274	209,885	233,977	1,070,533	233,977	1,070,533	2.29	
TRH45FL	7572	12808	292,657	220,751	1,030,183	220,751	1,030,183	2.80	10.4
TRH45FE	8852	16010	365,821	348,554	1,598,703	348,554	1,598,703	3.79	
TRH55FL	14703	21613	571,342	411,729	2,019,184	411,729	2,019,184	4.22	16.1
TRH55FE	17349	27377	723,699	670,530	3,148,637	670,530	3,148,637	5.6	
TRH65FL	22526	31486	973,074	695,840	3,594,277	695,840	3,594,277	9.31	22.54
TRH65FE	27895	42731	1,320,601	1,307,568	6,312,759	1,307,568	6,312,759	12.98	

TBI MOTION LINEAR GUIDE

2-2 TRH / TRS / TRC International Standard Linear Guide

TRS-V Series Specifications

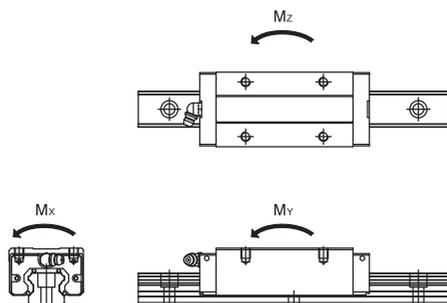


A

Linear Guide

Model No.	Assembly(mm)			Block Dimension(mm)								Rail(mm)						
	H	W2	E	W	B	J	L	L1	QXℓ	T1	Oil Hole	N	W1	H1	ØD	h	Ød	F
TRS15VS	24	9.5	3.2	34	26	40.3	22.9	M4X5	5.5	M4X0.7	7	15	13	7.5	6	4.5	60	
TRS15VN						26	56.9											39.5
TRS20VS	28	11	4.6	42	32	49.4	27.8	M5X6	4.5	M6X1	14	20	16.5	9.5	8.5	6	60	
TRS20VN						32	68.3											46.7
TRS25VS	33	12.5	5.8	48	35	57.2	35.2	M6X6.5	4.5	M6X1	14	23	20	11	9	7	60	
TRS25VN						35	81											59
TRS30VS	42	16	7	60	40	67.4	40.4	M8X8	8	M6X1	14	28	23	14	12	9	80	
TRS30VN						40	96.3											69.3
TRS35VN	48	18	7.5	70	50	50	109	79	M8X8	8	M6X1	14	34	26	14	12	9	80
TRS35VE						72	153	123										
TRS45VN	60	20.5	8.9	86	60	60	124.5	90.5	M10X15	10.5	PT1/8	12.5	45	32	20	17	14	105

※The above specifications provided are dedicated to XN, UN, please check table 2.2.17 for detail, if other accessories is required, please refer to page A87.

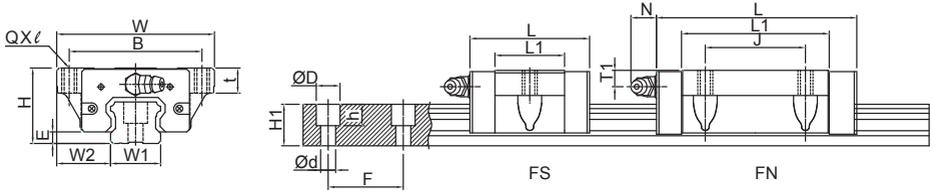


Model No.	Load Rating (kgf)		Static Permissible Moment					Weight	
			Mx (kgf-mm)	My (kgf-mm)		Mz (kgf-mm)		Block (kg)	Rail (kg/m)
	C	Co	Single Block	Single Block	Double Block	Single Block	Double Block		
TRS15VS	908	1471	10,957	6,420	33,531	6,420	33,531	0.09	1.32
TRS15VN	1206	2206	16,436	14,884	70,960	14,884	70,960	0.15	
TRS20VS	1398	2140	21,615	10,700	59,798	10,700	59,798	0.15	2.28
TRS20VN	1896	3307	33,404	26,459	126,998	26,459	126,998	0.23	
TRS25VS	1943	3002	34,826	18,725	97,890	18,725	97,890	0.25	3.17
TRS25VN	2581	4503	52,239	43,407	207,324	43,407	207,324	0.39	
TRS30VS	2697	3962	55,442	26,950	154,224	26,950	154,224	0.48	4.54
TRS30VN	3807	6483	90,722	74,970	355,321	74,970	355,321	0.77	
TRS35VN	5090	8346	142,722	106,070	519,799	106,070	519,799	1.15	6.27
TRS35VE	6667	12274	209,885	233,977	1,070,533	233,977	1,070,533	1.54	
TRS45VN	6758	10887	248,758	158,011	782,271	158,011	782,271	1.98	10.4

TBI MOTION LINEAR GUIDE

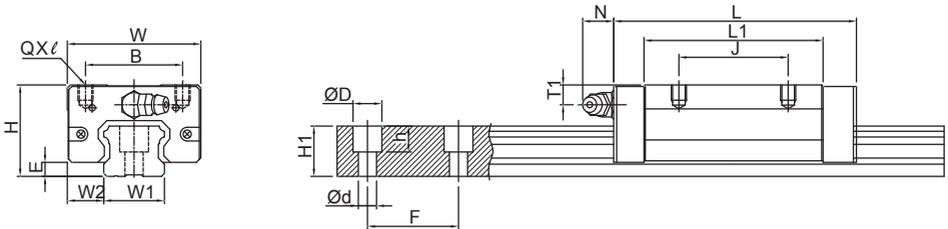
2-2 TRH / TRS / TRC International Standard Linear Guide

TRS-F Series Specifications



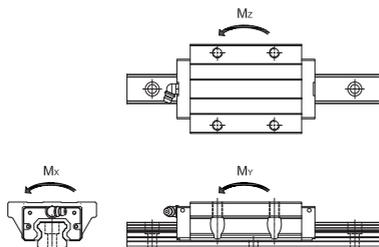
Model No.	Assembly(mm)			Block Dimension(mm)										Rail(mm)					
	H	W2	E	W	B	J	t	L	L1	QXℓ	T1	Oil Hole	N	W1	H1	ØD	h	Ød	F
TRS15FS	24	18.5	3.2	52	41	26	7	40.3	22.9	M5X7	5.5	M4X0.7	7	15	13	7.5	6	4.5	60
TRS15FN								56.9	39.5										
TRS20FS	28	19.5	4.6	59	49	32	9	49.4	27.8	M6X9	4.5	M6X1	14	20	16.5	9.5	8.5	6	60
TRS20FN								68.3	46.7										
TRS25FN	33	25	5.8	73	60	35	10	81	59	M8X10	4.5	M6X1	14	23	20	11	9	7	60

※ The above specifications provided are dedicated to XN, UN, please check table 2.2.17 for detail, if other accessories is required, please refer to page A87.

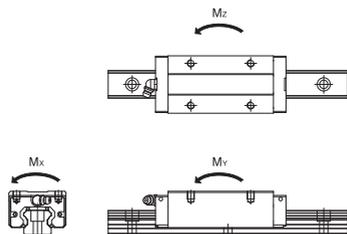


Model No.	Assembly(mm)			Block Dimension(mm)										Rail(mm)					
	H	W2	E	W	B	J	L	L1	QXℓ	T1	Oil Hole	N	W1	H1	ØD	h	Ød	F	
TRC25VE	36	12.5	5.8	48	35	50	110	88	M6X6.5	7.5	M6X1	14	23	20	11	9	7	60	

※ The above specification provided is dedicated to XN, UN, please check table 2.2.17 for detail, if other accessories is required, please refer to page A87.



Model No.	Load Rating (kgf)		Static Permissible Moment					Weight	
			Mx (kgf-mm)	My (kgf-mm)		Mz (kgf-mm)		Block (kg)	Rail (kg/m)
	C	Co		Single Block	Single Block	Double Block	Single Block		
TRS15FS	908	1471	10,957	6,420	33,531	6,420	33,531	0.12	1.32
TRS15FN	1206	2206	16,436	14,884	70,960	14,884	70,960	0.19	
TRS20FS	1398	2140	21,615	10,700	59,798	10,700	59,798	0.19	2.28
TRS20FN	1896	3307	33,404	26,459	126,998	26,459	126,998	0.29	
TRS25FN	2581	4503	52,239	43,407	207,324	43,407	207,324	0.51	3.17



Model No.	Load Rating (kgf)		Static Permissible Moment					Weight	
			Mx (kgf-mm)	My (kgf-mm)		Mz (kgf-mm)		Block (kg)	Rail (kg/m)
	C	Co		Single Block	Single Block	Double Block	Single Block		
TRC25VE	3248	6255	72,554	85,112	391,311	85,112	391,311	0.65	3.17

TBI MOTION LINEAR GUIDE

2-2 TRH / TRS / TRC International Standard Linear Guide

2-2-6 The Standard Length and Maxima Length of Linear Rail

TBI MOTION offer our customers standard and customized rail length to meet the requirement of our customers. TBI suggests that when ordering customized rail length, to prevent unstable running performance after mounting, the end cap value G should be no greater than 1/2F.

$$L = [n-1] \cdot F + 2 \cdot G$$

- L : Total Length of Rail (mm)
- n : Number of Mounting Holes
- F : Distance Between Any Two Holes (mm)
- G : Distance from the Center of the Last Hole to the Edge (mm)

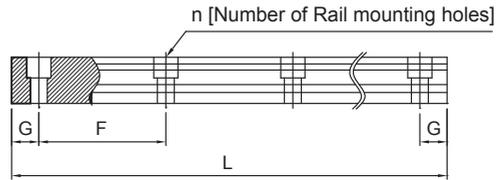


Fig 2.2.3

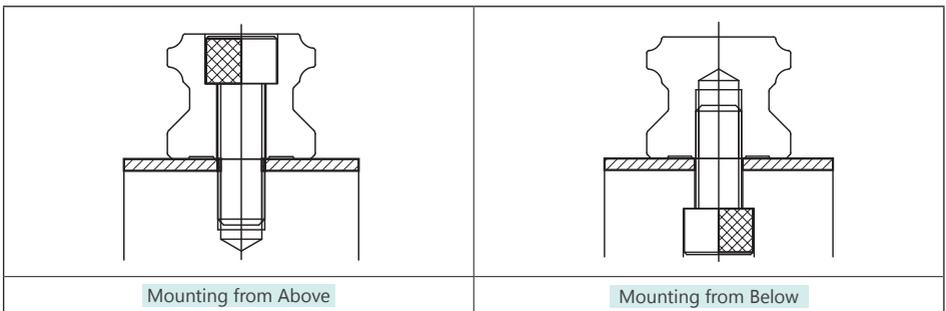
Table 2.2.3

Item	TR15	TR20	TR25	TR30	TR35	TR45	TR55	TR65
F : Pitch	60	60	60	80	80	105	120	150
G : Suggested Distance to End	20	20	20	20	20	22.5	30	35
L : Max. Length	4000	4000	4000	4000	4000	4000	4000	4000

2-2-7 Mounting Type of Linear Rail

Besides the standard top mounting type, *TBI MOTION* also offers bottom mounting type rails.

Table 2.2.4



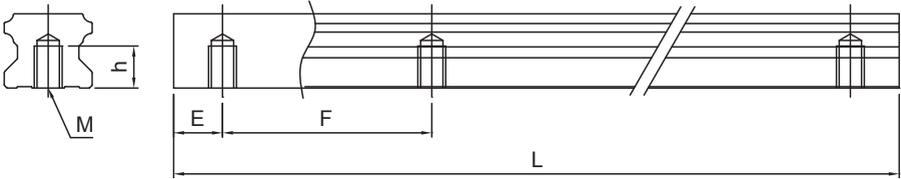


Fig 2.2.4 Mounting from below

Table 2.2.5 Rail Size Chart

Unit : mm

	M	h	E	F
TR15	M5 · 0.8	8	20	60
TR20	M6 · 1	10	20	60
TR25	M6 · 1	12	20	60
TR30	M8 · 1.25	15	20	80
TR35	M8 · 1.25	17	20	80
TR45	M12 · 1.75	24	22.5	105
TR55	M14 · 2	24	30	120
TR65	M20 · 2.5	30	35	150

2-2 TRH / TRS / TRC International Standard Linear Guide

■ 2-2-8 Accuracy Standard

The accuracy standards of TR-Series range, from normal (N), high (H), precision (P), super-precision (SP) and ultra-precision (UP). It allows our user to choose according to the accuracy standards of the equipment.

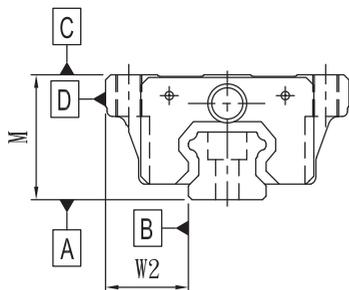
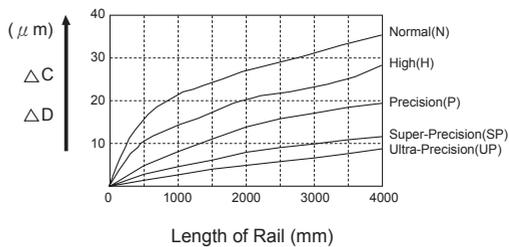


Fig 2.2.5 Accuracy Standard



TR Rail Length and Running Accuracy.

Fig 2.2.6

Table 2.2.6 TR-Accuracy of Running Parallelism

TR Rail Length (mm)	Accuracy (μm)				
	N	H	P	SP	UP
0~125	5	3	2	1.5	1
125~200	5	3.5	2	1.5	1
200~250	6	4	2.5	1.5	1
250~315	7	4.5	3	1.5	1
315~400	8	5	3.5	2	1.5
400~500	9	6	4.5	2.5	1.5
500~630	16	11	6	2.5	1.5
630~800	18	12	7	3	2
800~1000	20	14	8	4	2
1000~1250	22	16	10	5	2.5
1250~1600	25	18	11	6	3
1600~2000	28	20	13	7	3.5
2000~2500	30	22	15	8	4
2500~3000	32	24	16	9	4.5
3000~3500	33	25	17	11	5
3500~4000	34	26	18	12	6

Table 2.2.7

Unit : mm

Accuracy Standard										
TR 15 20						TR 25 30 35				
Accuracy Standard	Normal	High	Precision	Super Precision	Ultra Precision	Normal	High	Precision	Super Precision	Ultra Precision
Item	N	H	P	SP	UP	N	H	P	SP	UP
Tolerance for height M	±0.1	±0.03	0 -0.03	0 -0.015	0 -0.008	±0.1	±0.04	0 -0.04	0 -0.02	0 -0.01
Tolerance for height M difference among Linear Guide Block	0.02	0.01	0.006	0.004	0.003	0.02	0.015	0.007	0.005	0.003
Tolerance for rail-to-block lateral distance W2	±0.1	±0.03	0 -0.03	0 -0.015	0 -0.008	±0.1	±0.04	0 -0.04	0 -0.02	0 -0.01
Tolerance for rail-to-block lateral distance W2 difference among Linear Guide Block	0.02	0.01	0.006	0.004	0.003	0.03	0.015	0.007	0.005	0.003
Running parallelism of Linear Guide Block surface [C] with respect to surface [A]	Δ C, TR Rail Length and Running Accuracy (Fig 2.2.6)					Δ C, TR Rail Length and Running Accuracy (Fig 2.2.6)				
Running parallelism of Linear Guide Block surface [D] with respect to surface [B]	Δ D, TR Rail Length and Running Accuracy (Fig 2.2.6)					Δ D, TR Rail Length and Running Accuracy (Fig 2.2.6)				
Accuracy Standard										
TR 45 55						TR 65				
Accuracy Standard	Normal	High	Precision	Super Precision	Ultra Precision	Normal	High	Precision	Super Precision	Ultra Precision
Item	N	H	P	SP	UP	N	H	P	SP	UP
Tolerance for height M	±0.1	±0.05	0 -0.05	0 -0.03	0 -0.02	±0.1	±0.07	0 -0.07	0 -0.05	0 -0.03
Tolerance for height M difference among Linear Guide Block	0.03	0.015	0.007	0.005	0.003	0.03	0.02	0.01	0.007	0.005
Tolerance for rail-to-block lateral distance W2	±0.1	±0.05	0 -0.05	0 -0.03	0 -0.02	±0.1	±0.07	0 -0.07	0 -0.05	0 -0.03
Tolerance for rail-to-block lateral distance W2 difference among Linear Guide Block	0.03	0.02	0.01	0.007	0.005	0.03	0.025	0.015	0.01	0.007
Running parallelism of Linear Guide Block surface [C] with respect to surface [A]	Δ C, TR Rail Length and Running Accuracy (Fig 2.2.6)					Δ C, TR Rail Length and Running Accuracy (Fig 2.2.6)				
Running parallelism of Linear Guide Block surface [D] with respect to surface [B]	Δ D, TR Rail Length and Running Accuracy (Fig 2.2.6)					Δ D, TR Rail Length and Running Accuracy (Fig 2.2.6)				

2-2 TRH / TRS / TRC International Standard Linear Guide

■ 2-2-9 Determining the Magnitude of a Preload

What's Preload

Using larger rolling elements helps strengthen the entire rigidity of the block while there exists clearance within ball circulation.

Increasing preload would decrease the vibration and reduce the corrosion caused by running back and forth. However, it would also add the workload within those rolling elements. The greater the preload is, the greater the inner workload is. Therefore, choosing preload has to consider the effect carefully between vibration and preload.

Table 2.2.8 Preload Grade

C : Dynamic load rating

Grade	Symbol	Preload Force
Slight Clearance	ZF	0
No Preload	Z0	0
Light Preload	Z1	0.02C
Medium Preload	Z2	0.05C
Heavy Preload	Z3	0.07C

Table 2.2.9 TR Series Radial Clearances

Unit : μm

Preload Model No.	ZF	Z0	Z1	Z2	Z3
TR15	5~12	-4~4	-12~-5	-20~-13	-28~-21
TR20	6~14	-5~5	-14~-6	-23~-15	-32~-24
TR25	7~16	-6~6	-16~-7	-26~-17	-36~-27
TR30	8~18	-7~7	-18~-8	-29~-19	-40~-30
TR35	9~20	-8~8	-20~-9	-32~-21	-44~-33
TR45	10~22	-9~9	-22~-10	-35~-23	-48~-36
TR55	11~24	-10~10	-24~-11	-38~-25	-52~-39
TR65	12~26	-11~11	-26~-12	-41~-27	-56~-42

Table 2.2.10 The Difference between Interchangeability and Non-Interchangeability

Slight Clearance	Non-Interchangeable					Interchangeable
	UP	SP	P	H	N	N
Preload			Z0	Z0	ZF	ZF
	Z1	Z1	Z1	Z1	Z0	Z0
	Z2	Z2	Z2	Z2	Z1	Z1
	Z3	Z3	Z3	Z3	Z2	

■ 2-2-10 Mounting Location of Grease Nipples

The standard location of the grease nipple is at both ends of the block, but the nipple can be mounted at each side of block. For lateral installation, we recommend that the nipple be mounted at the non-reference side, otherwise please contact us. It is possible to perform lubrication by using the oil-piping joint.

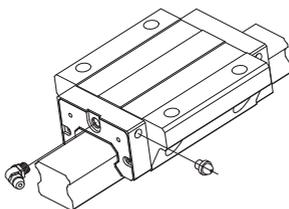


Fig 2.2.7 Mounting Location

Table 2.2.11 The Lubricant Amount for a Block Filled with Grease

Size	Grease (cm ³)
TR15	1.3
TR20	2.5
TR25	2.5
TR30	7
TR35	9
TR45	15.2
TR55	40
TR65	75

Table 2.2.12 Oil Refilling Rate

Size	Oil refilling rate (cm ² /hr)
TR15	0.2
TR20	0.2
TR25	0.3
TR30	0.3
TR35	0.3
TR45	0.4
TR55	0.5
TR65	0.6

TBI MOTION LINEAR GUIDE

2-2 TRH / TRS / TRC International Standard Linear Guide

■ 2-2-11 Grease Nipples

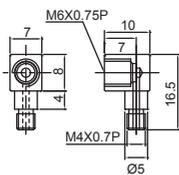
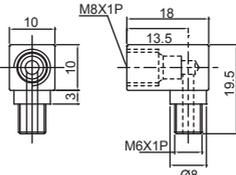
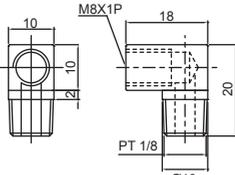
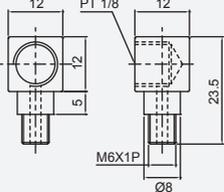
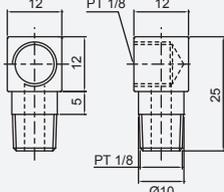
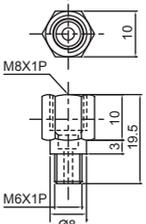
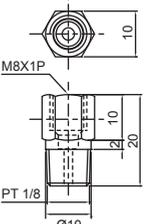
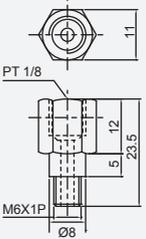
Table 2.2.13 Grease Nipples

Model	Accessory Code	Grease Nipple Code	Size
TR15	XN, UN	SD-020	
	SU, ZN	SD-024	
	SZ	SD-066	
	WW, WU, WZ, DU, DZ	-	
TR20 TR25 TR30	XN, UN	SD-021	
	SU	SD-025	
	SZ	SD-026	
	ZN	SD-075	
	WW, WU, WZ, DU, DZ	-	
TR35	XN, UN	SD-021	
	SU, ZN	SD-026	
	SZ	SD-060	
	WW, WU, WZ, DU, DZ	-	
TR45	XN, UN	SD-011	
	SZ, ZN	SD-027	
	SU	SD-068	
	WW, WU, WZ, DU, DZ	-	
TR55	XN, UN	SD-011	
	SZ, ZN	SD-059	
	SU	SD-068	
	WW, WU, WZ	-	
TR65	XN, UN	SD-011	
	SU	SD-059	
	SZ, ZN	SD-058	
	WW, WU, WZ	-	

A

Linear Guide

Table 2.2.14 Types of Lubrication Coupler

Model	TR15	TR20, 25, 30, 35	TR45, 55, 65
Types of Lubrication Coupler	<p>SD-037</p> 	<p>SD-038</p> 	<p>SD-039</p> 
	<p>SD-029</p> 	<p>SD-040</p> 	
	<p>SD-041</p> 	<p>SD-042</p> 	
	<p>SD-043</p> 	<p>SD-044</p> 