NEW

Cross-Roller Guide

with Cage Alignment System



Provides stable motion using THK's proprietary rack and pinion mechanism

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Feature 1 **Prevents cage misalignment**

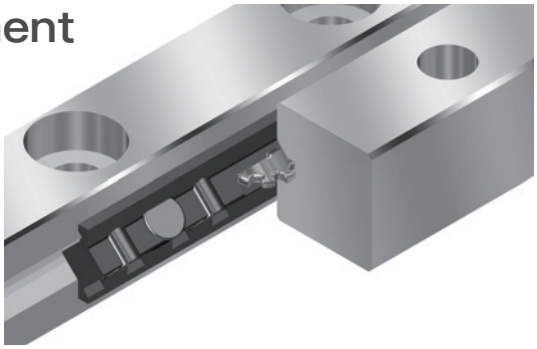
Feature 2 **Long service life and high rigidity**

Feature 3 **Interchangeable mounting dimensions**

Provides stable motion using THK's proprietary rack and pinion mechanism

Feature 1 Prevents cage misalignment

THK's proprietary rack and pinion mechanism prevents cage misalignment caused by impacts and the vibrations and inertia of running equipment.

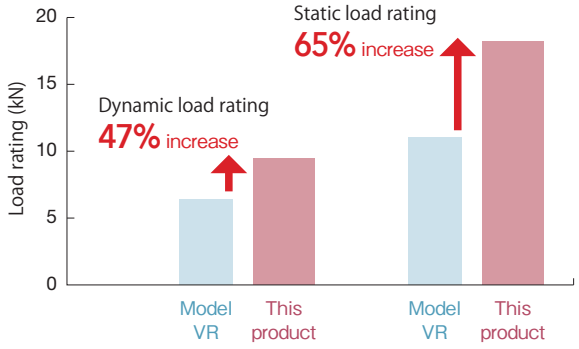


Feature 2 Long service life and high rigidity

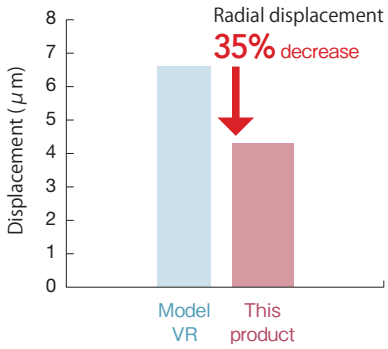
Compared to the current Model VR, the Cross-Roller Guide with Cage Alignment System has more rollers and drastically improved basic load rating and rigidity.

▶ Comparison of the VRG3-125×22Z and an equivalent VR3 model number

Basic load rating

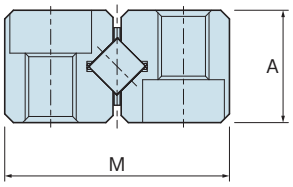


Radial displacement

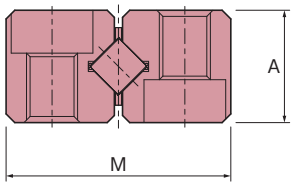


Feature 3 Interchangeable mounting dimensions

The standard Cross-Roller Guide with Cage Alignment System can easily replace the current Model VR, as it has the same mounting dimensions.



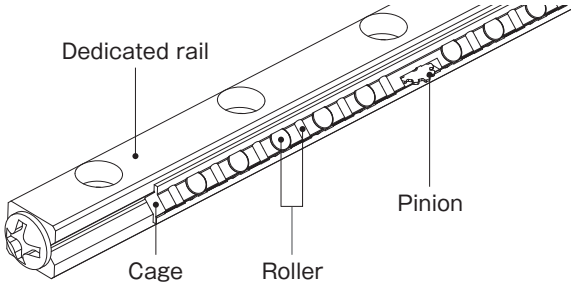
Model VR



This product (Standard type)

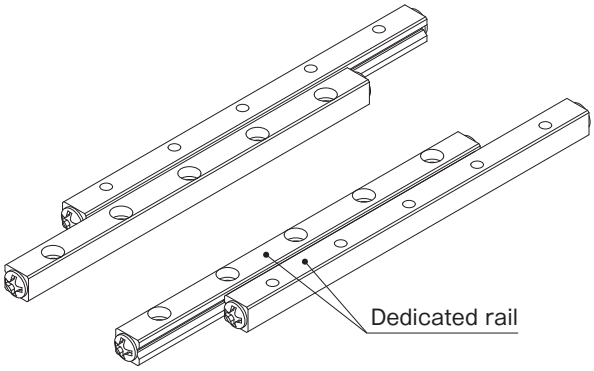
Structure of the Cross-Roller Guide with Cage Alignment System

This lightweight, finite stroke linear guide product is composed of precision rollers held in an orthogonal orientation by a cage that is assembled onto a dedicated rail. As a result, it can bear loads in every direction. It also has a high degree of rigidity and, being made of stainless steel, is extremely corrosion-resistant. Additionally, this product achieves accurate motion and maintains cage alignment through the use of a rack and pinion system.



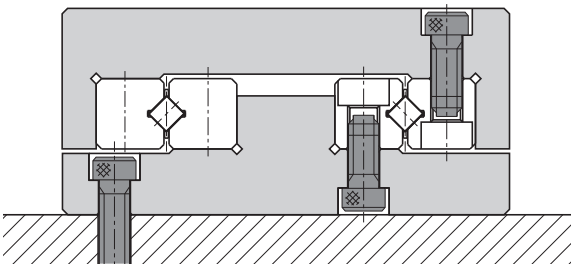
Lineup

Standard type

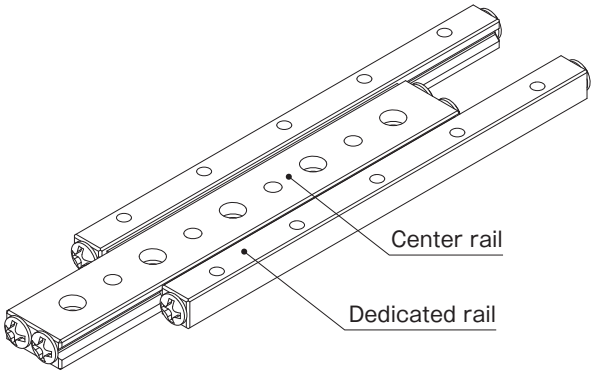


The standard type can replace the Model VR because their mounting dimensions are interchangeable. It can also be installed with the desired spacing, making it a product that offers a high degree of design flexibility.

▶ **High degree of design flexibility**

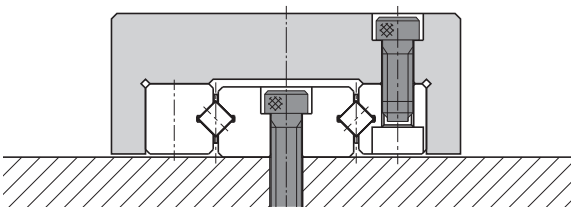


Center rail type



The center rail type combines the two inner rails of the standard type into a single rail. This makes installation easier and allows for the construction of a table unit with a more compact width.

▶ **Reduces installation work and makes equipment more compact**



Static Safety Factor

Static Safety Factor f_S

When the cross-roller guide is stationary or in motion, an unexpected external force may be applied due to vibrations, impacts, or inertia caused by starting and stopping. It is necessary to take a static safety factor into account with regard to this type of applied load.

Guidelines for the static safety factor are shown in the table to the right.

Static Safety Factor (f_S) (Guideline)

Load conditions[1]	Lower limit of f_S
Without vibrations or impacts	1 to 1.3
With vibrations or impacts	2 to 3

[1] In general, factors that cause vibration and impacts include acceleration and deceleration, sudden starts and stops, transmission of vibration and impacts from external devices and machines, and changes in processing force over time.

$$f_S = \frac{C_0}{P_C}$$

f_S: Static safety factor (see table above)
C_0: Basic static load rating (kN)
P_C: Calculated load (kN)

Nominal Life and Service Life Time

The service life of the cross-roller guide varies from unit to unit even if they are manufactured through the same process and used in the same operating conditions. Therefore, the modified nominal life defined here is typically used as a guideline for obtaining the service life of the cross-roller guide.

Nominal Life

The nominal life is the total travel distance that 90% of a group of units can achieve without flaking (scale-like pieces on the metal surface peeling off) after individually running under the same conditions.

* Basic dynamic load rating (C)
Indicates the load for which the nominal life (L_{10m}) is 100 km when the load is applied with a constant direction and size to a group of identical cross-roller guides individually running under the same conditions.

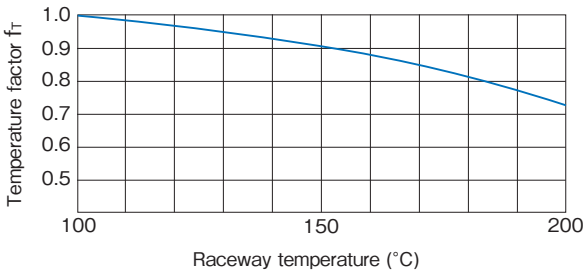
$$L_{10m} = \left(\frac{f_T}{f_W} \times \frac{C}{P_C}\right)^{\frac{10}{3}} \times 100$$

L_{10m}: Modified nominal life (km)
C: Basic dynamic load rating* (N)
P_C: Calculated load (N)
f_T: Temperature factor
f_W: Load factor

f_T: Temperature Factor

If the temperature of the operating environment exceeds 100°C, multiply by the appropriate temperature factor in the figure to the right to account for adverse effects from high temperatures.

* Contact THK if the temperature of the operating environment is to exceed 100°C.



Temperature Factor (f_T)

f_W: Load Factor

In general, reciprocating machines tend to generate vibrations and impacts during operation. It is extremely difficult to accurately determine vibrations generated during high-speed operation and impacts that occur during frequent starts and stops. Therefore, when the actual load applied to the cross-roller guide cannot be obtained, or the effects of speed and impacts are significant, divide the basic dynamic load rating (C) by the corresponding load factor in the table to the right, which has been obtained empirically.

Load Factor (f_W)

Vibrations and impacts	Speed (V)	f_W
Minute	Very low V ≤ 0.25 m/s	1 to 1.2
Minor	Low 0.25 m/s < V ≤ 1 m/s	1.2 to 1.5

Service Life Time

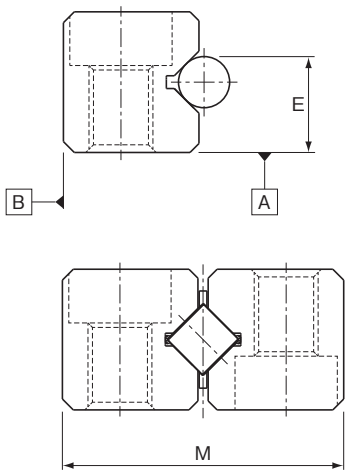
Once the nominal life (L_{10m}) has been obtained, the service life time can be obtained using the formula shown on the right if the stroke length and the number of cycles are constant.

$$L_h = \frac{L_{10m} \times 10^6}{2 \times \ell_S \times n_1 \times 60}$$

L_h: Service life time (h)
ℓ_S: Stroke length (mm)
n_1: Cycles per minute (min^{-1})

Accuracy Standards

There are two accuracy grades for the rails in the cross-roller guide: High Accuracy grade (H) and Precision grade (P).



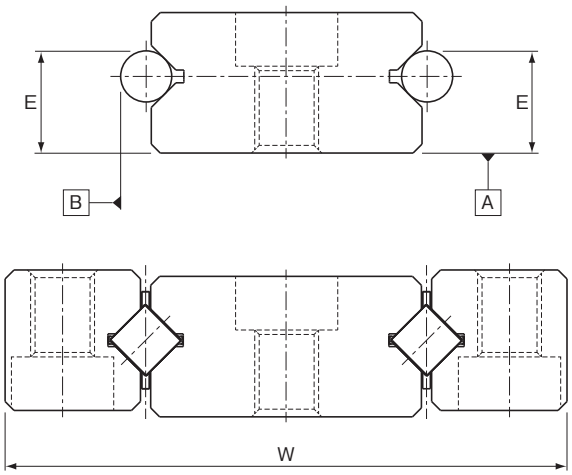
Standard type

Standard Type

Unit: mm

Accuracy grade	High Accuracy grade	Precision grade
Symbol / Item	H	P
Parallelism of the raceway to surfaces A and B	See graph below	
Dimensional tolerance in height E	±0.02	±0.01
Difference in height E*	0.01	0.005
Dimensional tolerance in width M	0 -0.2	0 -0.1

* Difference in height E applies to four rails being used on the same plane.



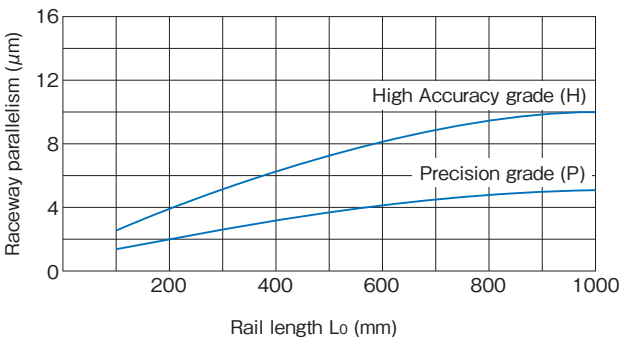
Center rail type

Center Rail Type

Unit: mm

Accuracy grade	High Accuracy grade	Precision grade
Symbol / Item	H	P
Parallelism of the raceway to surfaces A and B	See graph below	
Dimensional tolerance in height E	±0.02	±0.01
Difference in height E*	0.01	0.005
Dimensional tolerance in width W	0 -0.4	

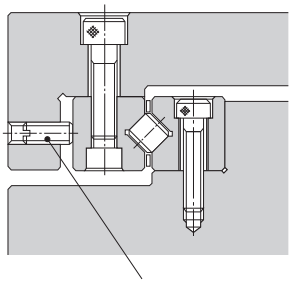
* Difference in height E applies to one center rail and two additional rails being used on the same plane.



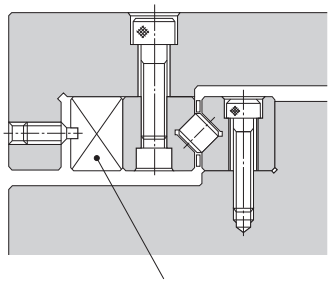
Rail Length and Raceway Parallelism

Example of Clearance Adjustment

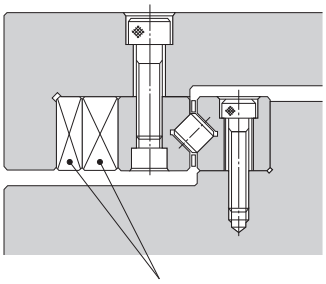
Use adjusting bolts when making clearance adjustments. Design adjusting bolts to push in line with the rollers. A high degree of accuracy and rigidity can be obtained by using a presser plate. Use tapered gibs when even higher accuracy and rigidity are required.



Adjusting bolt



Presser plate



Tapered gibs

Preload

Excessive preload can cause problems such as dents and a reduced service life. Permissible preloads for a single cage are shown on the dimensional tables. Use these to check the displacement of the contact portion of the rollers while tightening the adjusting bolts.

Mounting Surface Accuracy

Accurate parallelism and straightness on the rail mounting surface are necessary for obtaining highly accurate motion. The desired parallelism and flatness of the rail mounting surface, obtained through grinding, are equivalent to or greater than the rail parallelism (see p. 6). Install the rails on the mounting surface so that they make contact properly.

Dedicated Mounting Bolt

The dedicated mounting bolt pictured below is recommended for making adjustments if the rail tap holes on the adjusting bolt side will be used as through holes, as shown in Figures 1 and 2.

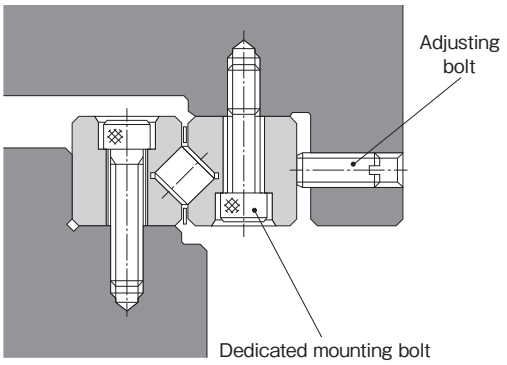


Fig. 1

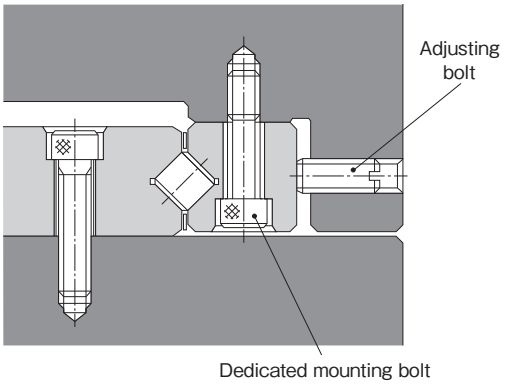
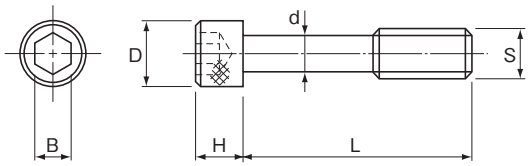


Fig. 2

■ Dedicated Mounting Bolt (Same as for the Model VR)



Dedicated Mounting Bolt

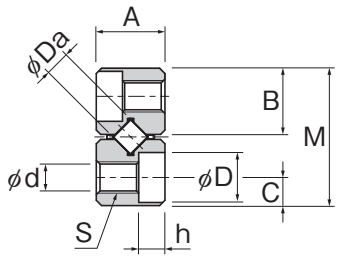
Unit: mm

Model No.	S	d	D	H	L	B	Mass g	Applicable models
S 3	M3	2.3	5	3	12	2.5	1	VRG3M, VRG3WM
S 4	M4	3.1	5.8	4	15	3	2	VRG4M, VRG4WM
S 6	M5	3.9	8	5	20	4	4	VRG6M/VRG6ME

Note: To secure the rails of Model VRG2M and VRG2WM, use M2 cross-recessed head screws for precision devices (No. 0 screws) or cross-recessed pan head screws (JIS B 1111).

Dimensional Table

VRG



Model No.	Max. stroke	Main dimensions									
		Combined dimensions			Mounting dimensions						
		M	A	L_0	G	n × F	B	C	S	d	
VRG2M-30×4Z	22			30		1×15					
VRG2M-30×6Z	13			30		1×15					
VRG2M-45×6Z	42			45		2×15					
VRG2M-45×8Z	32			45		2×15					
VRG2M-45×10Z	22			45		2×15					
VRG2M-45×12Z	12			45		2×15					
VRG2M-60×10Z	52			60		3×15					
VRG2M-60×12Z	42			60		3×15					
VRG2M-60×14Z	32			60		3×15					
VRG2M-60×16Z	22			60		3×15					
VRG2M-60×18Z	12			60		3×15					
VRG2M-75×12Z	72			75		4×15					
VRG2M-75×14Z	62			75		4×15					
VRG2M-75×16Z	52			75		4×15					
VRG2M-75×18Z	42			75		4×15					
VRG2M-75×20Z	32			75		4×15					
VRG2M-75×22Z	22	12	6	75	7.5	4×15	5.6	2.5	M3	2.55	
VRG2M-75×24Z	12			75		4×15					
VRG2M-90×16Z	82			90		5×15					
VRG2M-90×18Z	72			90		5×15					
VRG2M-90×20Z	62			90		5×15					
VRG2M-90×22Z	52			90		5×15					
VRG2M-90×24Z	42			90		5×15					
VRG2M-90×26Z	32			90		5×15					
VRG2M-90×28Z	22			90		5×15					
VRG2M-90×30Z	12			90		5×15					
VRG2M-105×18Z	102			105		6×15					
VRG2M-105×20Z	92			105		6×15					
VRG2M-105×22Z	82			105		6×15					
VRG2M-105×24Z	72			105		6×15					
VRG2M-105×26Z	62			105		6×15					
VRG2M-105×28Z	52			105		6×15					
VRG2M-105×30Z	42			105		6×15					

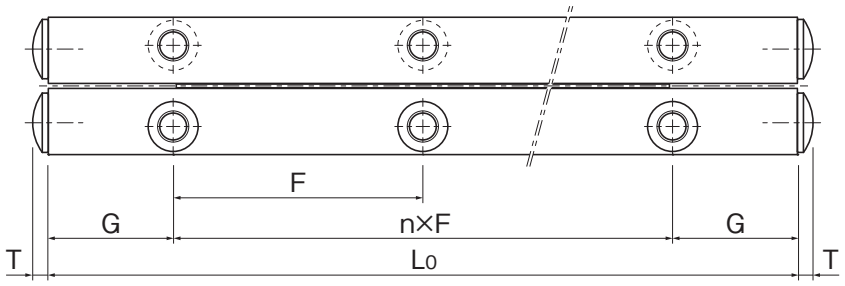
Model Number Coding

Select an option

VRG2M - 45 H × 12Z

- VRG2M: Model No.
- 45: Dedicated rail length dimension (mm)
- H: Accuracy symbol (H: High Accuracy grade, P: Precision grade)
- 12Z: Number of rollers

Note: Basic load ratings in the dimensional table reflect values for a combination of 4 rails and 2 cages.
"1 set" for the above models indicates a single combination of 4 rails and 2 cages.
An "M" in the model number indicates the rail material is stainless steel.

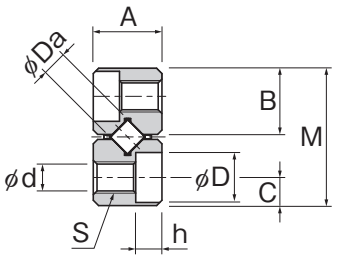


Unit: mm

						Mass/1 set	Permissible preload	Basic load rating	
				Roller diameter	No. of rollers		δ	C	C_0
	D	h	T	Da	(per cage)	(kg)	(μm)	(kN)	(kN)
	4.4	2	1.5	2	4	0.029	-3	0.83	1.09
					6	0.029		1.15	1.63
					6	0.043		1.15	1.63
					8	0.043		1.44	2.17
					10	0.043		1.72	2.72
					12	0.044		1.98	3.26
					10	0.057		1.72	2.72
					12	0.057		1.98	3.26
					14	0.057		2.24	3.8
					16	0.058		2.48	4.35
					18	0.058		2.72	4.89
					12	0.071		1.98	3.26
					14	0.071		2.24	3.8
					16	0.071		2.48	4.35
					18	0.071		2.72	4.89
					20	0.072		2.96	5.43
					22	0.072		3.18	5.98
					24	0.072		3.41	6.52
					16	0.085		2.48	4.35
					18	0.085		2.72	4.89
					20	0.085		2.96	5.43
					22	0.085		3.18	5.98
					24	0.086		3.41	6.52
					26	0.086		3.63	7.06
					28	0.086		3.84	7.6
					30	0.086		4.06	8.15
					18	0.098		2.72	4.89
					20	0.099		2.96	5.43
					22	0.099		3.18	5.98
					24	0.099		3.41	6.52
					26	0.099		3.63	7.06
					28	0.099		3.84	7.6
					30	0.1		4.06	8.15

Dimensional Table

VRG



Model No.	Max. stroke	Main dimensions									
		Combined dimensions			Mounting dimensions						
		M	A	L_0	G	n × F	B	C	S	d	
VRG3M-50×4Z	44	18	8	50	12.5	1×25	8.6	3.5	M4	3.3	
VRG3M-50×6Z	29			50		1×25					
VRG3M-50×8Z	15			50		1×25					
VRG3M-75×8Z	65			75		2×25					
VRG3M-75×10Z	50			75		2×25					
VRG3M-75×12Z	35			75		2×25					
VRG3M-75×14Z	20			75		2×25					
VRG3M-100×10Z	100			100		3×25					
VRG3M-100×12Z	85			100		3×25					
VRG3M-100×14Z	70			100		3×25					
VRG3M-100×16Z	55			100		3×25					
VRG3M-100×18Z	41			100		3×25					
VRG3M-100×20Z	26			100		3×25					
VRG3M-125×14Z	120			125		4×25					
VRG3M-125×16Z	105			125		4×25					
VRG3M-125×18Z	90			125		4×25					
VRG3M-125×20Z	75			125		4×25					
VRG3M-125×22Z	61			125		4×25					
VRG3M-125×24Z	46			125		4×25					
VRG3M-125×26Z	30			125		4×25					
VRG3M-150×18Z	140			150		5×25					
VRG3M-150×20Z	125			150		5×25					
VRG3M-150×22Z	111			150		5×25					
VRG3M-150×24Z	96			150		5×25					
VRG3M-150×26Z	80			150		5×25					
VRG3M-150×28Z	66			150		5×25					

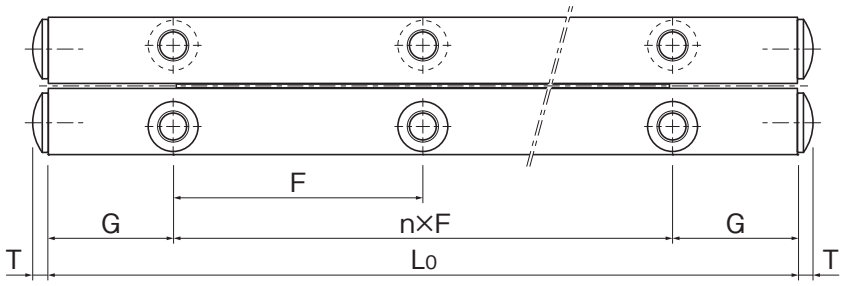
Model Number Coding

Select an option

VRG3M - 75 H × 12Z

- VRG3M: Model No.
- 75: Dedicated rail length dimension (mm)
- H: Accuracy symbol (H: High Accuracy grade, P: Precision grade)
- 12Z: Number of rollers

Note: Basic load ratings in the dimensional table reflect values for a combination of 4 rails and 2 cages.
"1 set" for the above models indicates a single combination of 4 rails and 2 cages.
An "M" in the model number indicates the rail material is stainless steel.

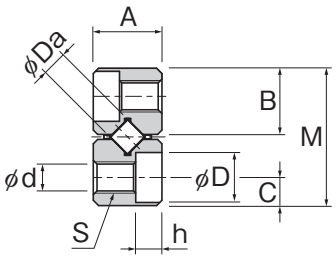


Unit: mm

						Mass/1 set	Permissible preload	Basic load rating	
				Roller diameter	No. of rollers		δ	C	C_0
	D	h	T	Da	(per cage)	(kg)	(μm)	(kN)	(kN)
	6	3.1	2	3	4	0.097	-4	2.47	3.31
					6	0.098		3.41	4.96
					8	0.099		4.27	6.61
					8	0.145		4.27	6.61
					10	0.146		5.09	8.27
					12	0.147		5.88	9.92
					14	0.147		6.63	11.6
					10	0.193		5.09	8.27
					12	0.193		5.88	9.92
					14	0.194		6.63	11.6
					16	0.195		7.36	13.2
					18	0.196		8.07	14.9
					20	0.196		8.76	16.5
					14	0.241		6.63	11.6
					16	0.241		7.36	13.2
					18	0.242		8.07	14.9
					20	0.243		8.76	16.5
					22	0.243		9.44	18.2
					24	0.244		10.1	19.8
					26	0.245		10.8	21.5
					18	0.289		8.07	14.9
					20	0.289		8.76	16.5
					22	0.29		9.44	18.2
					24	0.291		10.1	19.8
					26	0.292		10.8	21.5
					28	0.292		11.4	23.1

Dimensional Table

VRG



Model No.	Max. stroke	Main dimensions									
		Combined dimensions			Mounting dimensions						
		M	A	L_0	G	n × F	B	C	S	d	
VRG4M-80×6Z	72			80		1×40					
VRG4M-80×8Z	53			80		1×40					
VRG4M-80×10Z	34			80		1×40					
VRG4M-120×10Z	114			120		2×40					
VRG4M-120×12Z	94			120		2×40					
VRG4M-120×14Z	75			120		2×40					
VRG4M-120×16Z	57			120		2×40					
VRG4M-120×18Z	37			120		2×40					
VRG4M-160×14Z	155			160		3×40					
VRG4M-160×16Z	136			160		3×40					
VRG4M-160×18Z	116	22	11	160	20	3×40	10.6	4.5	M5	4.3	
VRG4M-160×20Z	97			160		3×40					
VRG4M-160×22Z	78			160		3×40					
VRG4M-160×24Z	58			160		3×40					
VRG4M-160×26Z	39			160		3×40					
VRG4M-200×18Z	196			200		4×40					
VRG4M-200×20Z	177			200		4×40					
VRG4M-200×22Z	158			200		4×40					
VRG4M-200×24Z	138			200		4×40					
VRG4M-200×26Z	119			200		4×40					
VRG4M-200×28Z	101			200		4×40					

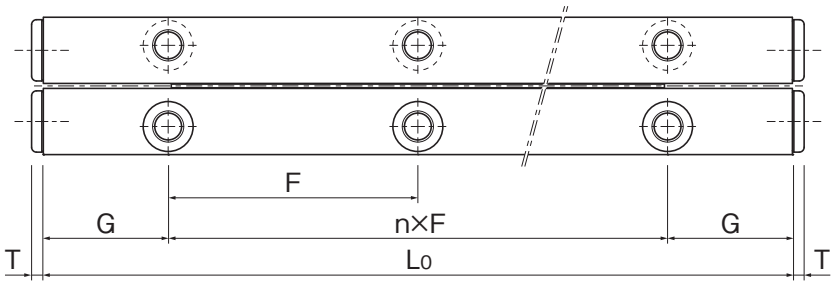
Model Number Coding

Select an option

VRG4M - 120 H × 16Z

- VRG4M: Model No.
- 120: Dedicated rail length dimension (mm)
- H: Accuracy symbol (H: High Accuracy grade, P: Precision grade)
- 16Z: Number of rollers

Note: Basic load ratings in the dimensional table reflect values for a combination of 4 rails and 2 cages.
"1 set" for the above models indicates a single combination of 4 rails and 2 cages.
An "M" in the model number indicates the rail material is stainless steel.

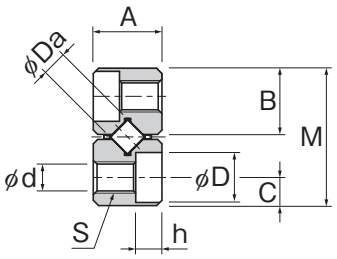


Unit: mm

						Mass/1 set	Permissible preload	Basic load rating	
				Roller diameter	No. of rollers		δ	C	C_0
	D	h	T	Da	(per cage)	(kg)	(μm)	(kN)	(kN)
	8	4.2	2	4	6	0.266	-5	7.07	10.4
					8	0.268		8.87	13.8
					10	0.269		10.6	17.3
					10	0.396		10.6	17.3
					12	0.398		12.2	20.7
					14	0.4		13.8	24.2
					16	0.401		15.3	27.6
					18	0.403		16.7	31.1
					14	0.527		13.8	24.2
					16	0.528		15.3	27.6
					18	0.53		16.7	31.1
					20	0.532		18.2	34.5
					22	0.533		19.6	38
					24	0.535		21	41.5
					26	0.537		22.3	44.9
					18	0.656		16.7	31.1
					20	0.658		18.2	34.5
					22	0.66		19.6	38
					24	0.662		21	41.5
					26	0.663		22.3	44.9
					28	0.665		23.6	48.4

Dimensional Table

VRG



Model No.	Max. stroke	Main dimensions									
		Combined dimensions			Mounting dimensions						
		M	A	L_0	G	n × F	B	C	S	d	
VRG6M-100×6Z	86	30	15	100	25	1×50	14.4	6	M6	5.2	
VRG6M-100×8Z	61			100		1×50					
VRG6M-150×10Z	134			150		2×50					
VRG6M-150×12Z	108			150		2×50					
VRG6M-150×14Z	82			150		2×50					
VRG6M-150×16Z	56			150		2×50					
VRG6M-200×14Z	182			200		3×50					
VRG6M-200×16Z	156			200		3×50					
VRG6M-200×18Z	130			200		3×50					
VRG6M-200×20Z	104			200		3×50					
VRG6M-200×22Z	78			200		3×50					
VRG6M-200×24Z	52			200		3×50					
VRG6M-250×18Z	230			250		4×50					
VRG6M-250×20Z	204			250		4×50					
VRG6M-250×22Z	178			250		4×50					
VRG6M-250×24Z	152			250		4×50					
VRG6M-250×26Z	126			250		4×50					
VRG6M-250×28Z	100			250		4×50					
VRG6M-300×22Z	278			300		5×50					
VRG6M-300×24Z	252			300		5×50					
VRG6M-300×26Z	226			300		5×50					
VRG6M-300×28Z	200			300		5×50					

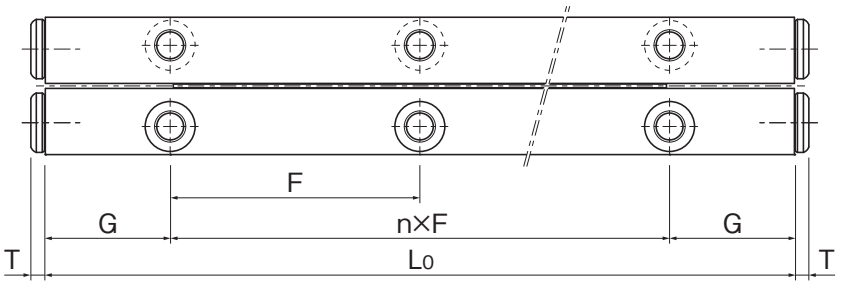
Model Number Coding

Select an option

VRG6M - 150 H × 14Z

- VRG6M: Model No.
- 150: Dedicated rail length dimension (mm)
- H: Accuracy symbol (H: High Accuracy grade, P: Precision grade)
- 14Z: Number of rollers

Note: Basic load ratings in the dimensional table reflect values for a combination of 4 rails and 2 cages.
"1 set" for the above models indicates a single combination of 4 rails and 2 cages.
An "M" in the model number indicates the rail material is stainless steel.

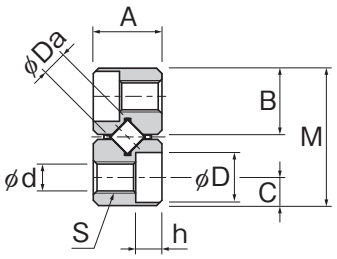


Unit: mm

						Mass/1 set	Permissible preload	Basic load rating	
				Roller diameter	No. of rollers		δ	C	C_0
	D	h	T	Da	(per cage)	(kg)	(μm)	(kN)	(kN)
	9.5	5.2	3	6	6	0.625	-7	16.4	23
					8	0.63		20.5	30.7
					10	0.931		24.5	38.4
					12	0.936		28.2	46
					14	0.941		31.8	53.7
					16	0.947		35.3	61.4
					14	1.236		31.8	53.7
					16	1.241		35.3	61.4
					18	1.246		38.7	69
					20	1.252		42.1	76.7
					22	1.257		45.3	84.4
					24	1.262		48.5	92.1
					18	1.542		38.7	69
					20	1.547		42.1	76.7
					22	1.552		45.3	84.4
					24	1.558		48.5	92.1
					26	1.563		51.6	99.7
					28	1.568		54.7	107
					22	1.848		45.3	84.4
					24	1.853		48.5	92.1
					26	1.858		51.6	99.7
					28	1.864		54.7	107

Dimensional Table

VRG



Model No.	Max. stroke	Main dimensions									
		Combined dimensions			Mounting dimensions						
		M	A	L_0	G	n × F	B	C	S	d	
VRG6ME-100×6Z	86	31	15	100	25	1×50	14.9	6	M6	5.2	
VRG6ME-100×8Z	61			100		1×50					
VRG6ME-150×10Z	134			150		2×50					
VRG6ME-150×12Z	108			150		2×50					
VRG6ME-150×14Z	82			150		2×50					
VRG6ME-150×16Z	56			150		2×50					
VRG6ME-200×14Z	182			200		3×50					
VRG6ME-200×16Z	156			200		3×50					
VRG6ME-200×18Z	130			200		3×50					
VRG6ME-200×20Z	104			200		3×50					
VRG6ME-200×22Z	78			200		3×50					
VRG6ME-200×24Z	52			200		3×50					
VRG6ME-250×18Z	230			250		4×50					
VRG6ME-250×20Z	204			250		4×50					
VRG6ME-250×22Z	178			250		4×50					
VRG6ME-250×24Z	152			250		4×50					
VRG6ME-250×26Z	126			250		4×50					
VRG6ME-250×28Z	100			250		4×50					
VRG6ME-300×22Z	278			300		5×50					
VRG6ME-300×24Z	252			300		5×50					
VRG6ME-300×26Z	226			300		5×50					
VRG6ME-300×28Z	200			300		5×50					

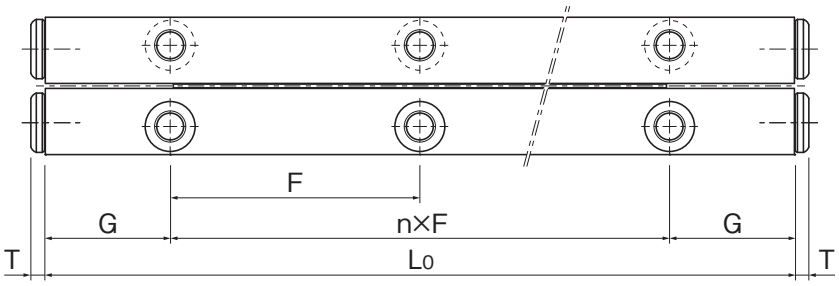
Model Number Coding

Select an option

VRG6ME - 150 H × 14Z

- VRG6ME: Model No.
- 150: Dedicated rail length dimension (mm)
- H: Accuracy symbol (H: High Accuracy grade, P: Precision grade)
- 14Z: Number of rollers

Note: Basic load ratings in the dimensional table reflect values for a combination of 4 rails and 2 cages.
"1 set" for the above models indicates a single combination of 4 rails and 2 cages.
An "M" in the model number indicates the rail material is stainless steel.

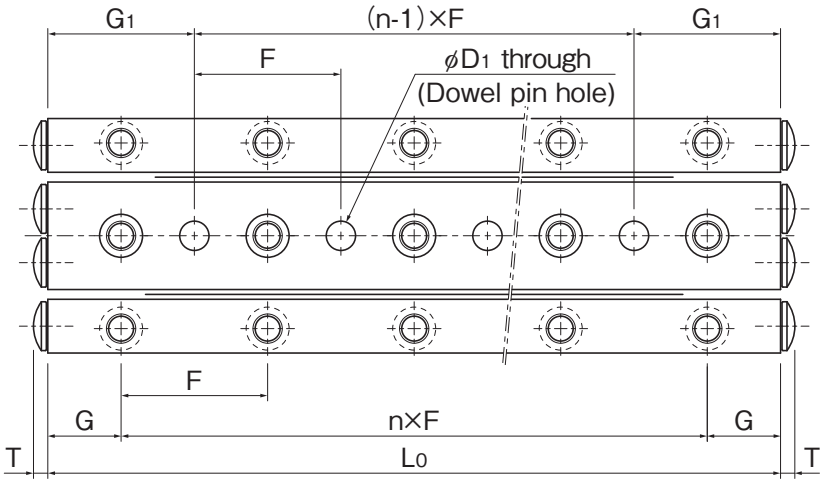


Unit: mm

						Mass/1 set	Permissible preload	Basic load rating	
				Roller diameter	No. of rollers		δ	C	C_0
	D	h	T	Da	(per cage)	(kg)	(μm)	(kN)	(kN)
	9.5	5.2	3	6	6	0.634	-7	16.4	23
					8	0.639		20.5	30.7
					10	0.944		24.5	38.4
					12	0.949		28.2	46
					14	0.954		31.8	53.7
					16	0.959		35.3	61.4
					14	1.253		31.8	53.7
					16	1.258		35.3	61.4
					18	1.264		38.7	69
					20	1.269		42.1	76.7
					22	1.274		45.3	84.4
					24	1.279		48.5	92.1
					18	1.563		38.7	69
					20	1.568		42.1	76.7
					22	1.574		45.3	84.4
					24	1.579		48.5	92.1
					26	1.584		51.6	99.7
					28	1.589		54.7	107
					22	1.873		45.3	84.4
					24	1.879		48.5	92.1
					26	1.884		51.6	99.7
					28	1.889		54.7	107

Dimensional Table

VRG-W



Model No.	Max. stroke	Main dimensions									
		Combined dimensions				Mounting dimensions					
		W	A	L_0	i	G	n × F	G_1	C	B	W_1
VRG2WM-30×4Z	22			30			1×15				
VRG2WM-30×6Z	13			30			1×15				
VRG2WM-45×6Z	42			45			2×15				
VRG2WM-45×8Z	32			45			2×15				
VRG2WM-45×10Z	22			45			2×15				
VRG2WM-45×12Z	12			45			2×15				
VRG2WM-60×10Z	52			60			3×15				
VRG2WM-60×12Z	42			60			3×15				
VRG2WM-60×14Z	32			60			3×15				
VRG2WM-60×16Z	22			60			3×15				
VRG2WM-60×18Z	12			60			3×15				
VRG2WM-75×12Z	72			75			4×15				
VRG2WM-75×14Z	62			75			4×15				
VRG2WM-75×16Z	52			75			4×15				
VRG2WM-75×18Z	42			75			4×15				
VRG2WM-75×20Z	32			75			4×15				
VRG2WM-75×22Z	22	24	6.5	75	0.5	7.5	4×15	15	2.5	19	11.2
VRG2WM-75×24Z	12			75			4×15				
VRG2WM-90×16Z	82			90			5×15				
VRG2WM-90×18Z	72			90			5×15				
VRG2WM-90×20Z	62			90			5×15				
VRG2WM-90×22Z	52			90			5×15				
VRG2WM-90×24Z	42			90			5×15				
VRG2WM-90×26Z	32			90			5×15				
VRG2WM-90×28Z	22			90			5×15				
VRG2WM-90×30Z	12			90			5×15				
VRG2WM-105×18Z	102			105			6×15				
VRG2WM-105×20Z	92			105			6×15				
VRG2WM-105×22Z	82			105			6×15				
VRG2WM-105×24Z	72			105			6×15				
VRG2WM-105×26Z	62			105			6×15				
VRG2WM-105×28Z	52			105			6×15				
VRG2WM-105×30Z	42			105			6×15				

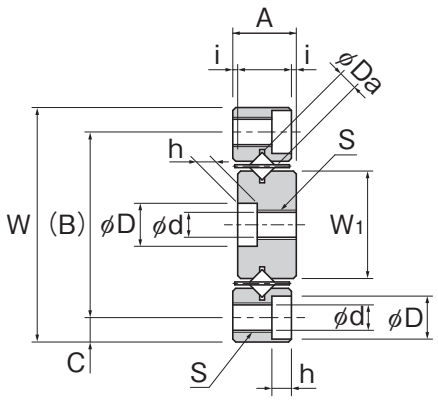
Model Number Coding

Select an option

VRG2WM - 45 H × 12Z

- VRG2WM: Model No.
- 45: Dedicated rail length dimension (mm)
- H: Accuracy symbol (H: High Accuracy grade, P: Precision grade)
- 12Z: Number of rollers

Note: "1 set" for the above models indicates a single combination of 2 rails, a center rail, and 2 cages.
An "M" in the model number indicates the rail material is stainless steel.

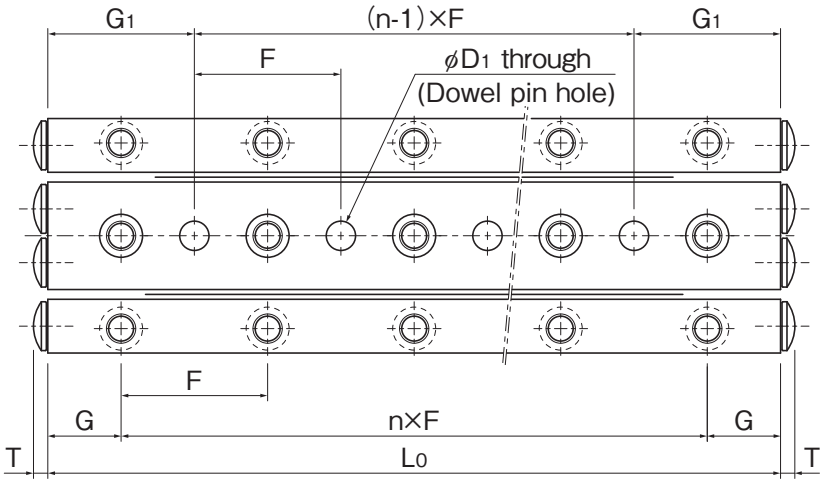


Unit: mm

								Mass /1 set	Permissible preload δ	Basic load rating	
						Roller diameter	No. of rollers			C	C_0
	S	d	D	h	D_1	T	Da	(per cage)	(kg)	(μm)	(kN)	(kN)
								4	0.029		0.83	1.09
								6	0.029		1.15	1.63
								6	0.043		1.15	1.63
								8	0.043		1.44	2.17
								10	0.043		1.72	2.72
								12	0.044		1.98	3.26
								10	0.057		1.72	2.72
								12	0.057		1.98	3.26
								14	0.057		2.24	3.8
								16	0.057		2.48	4.35
								18	0.058		2.72	4.89
								12	0.07		1.98	3.26
								14	0.071		2.24	3.8
								16	0.071		2.48	4.35
								18	0.071		2.72	4.89
								20	0.071		2.96	5.43
	M3	2.55	4.4	2	$3^{+0.010}_{0}$	1.5	2	22	0.072	-3	3.18	5.98
								24	0.072		3.41	6.52
								16	0.084		2.48	4.35
								18	0.084		2.72	4.89
								20	0.084		2.96	5.43
								22	0.084		3.18	5.98
								24	0.085		3.41	6.52
								26	0.085		3.63	7.06
								28	0.085		3.84	7.6
								30	0.085		4.06	8.15
								18	0.097		2.72	4.89
								20	0.097		2.96	5.43
								22	0.098		3.18	5.98
								24	0.098		3.41	6.52
								26	0.098		3.63	7.06
								28	0.098		3.84	7.6
								30	0.099		4.06	8.15

Dimensional Table

VRG-W



Model No.	Max. stroke	Main dimensions									
		Combined dimensions				Mounting dimensions					
		W	A	L_0	i	G	n × F	G_1	C	B	W_1
VRG3WM-50×4Z	44	36	8.5	50	0.5	12.5	1×25	25	3.5	29	17.2
VRG3WM-50×6Z	29			50			1×25				
VRG3WM-50×8Z	15			50			1×25				
VRG3WM-75×8Z	65			75			2×25				
VRG3WM-75×10Z	50			75			2×25				
VRG3WM-75×12Z	35			75			2×25				
VRG3WM-75×14Z	20			75			2×25				
VRG3WM-100×10Z	100			100			3×25				
VRG3WM-100×12Z	85			100			3×25				
VRG3WM-100×14Z	70			100			3×25				
VRG3WM-100×16Z	55			100			3×25				
VRG3WM-100×18Z	41			100			3×25				
VRG3WM-100×20Z	26			100			3×25				
VRG3WM-125×14Z	120			125			4×25				
VRG3WM-125×16Z	105			125			4×25				
VRG3WM-125×18Z	90			125			4×25				
VRG3WM-125×20Z	75			125			4×25				
VRG3WM-125×22Z	61			125			4×25				
VRG3WM-125×24Z	46			125			4×25				
VRG3WM-125×26Z	30			125			4×25				
VRG3WM-150×18Z	140			150			5×25				
VRG3WM-150×20Z	125			150			5×25				
VRG3WM-150×22Z	111			150			5×25				
VRG3WM-150×24Z	96			150			5×25				
VRG3WM-150×26Z	80			150			5×25				
VRG3WM-150×28Z	66			150			5×25				

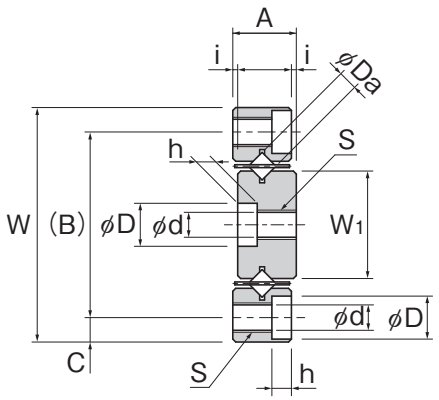
Model Number Coding

Select an option

VRG3WM - 75 H × 12Z

- VRG3WM: Model No.
- 75: Dedicated rail length dimension (mm)
- H: Accuracy symbol (H: High Accuracy grade, P: Precision grade)
- 12Z: Number of rollers

Note: "1 set" for the above models indicates a single combination of 2 rails, a center rail, and 2 cages.
An "M" in the model number indicates the rail material is stainless steel.

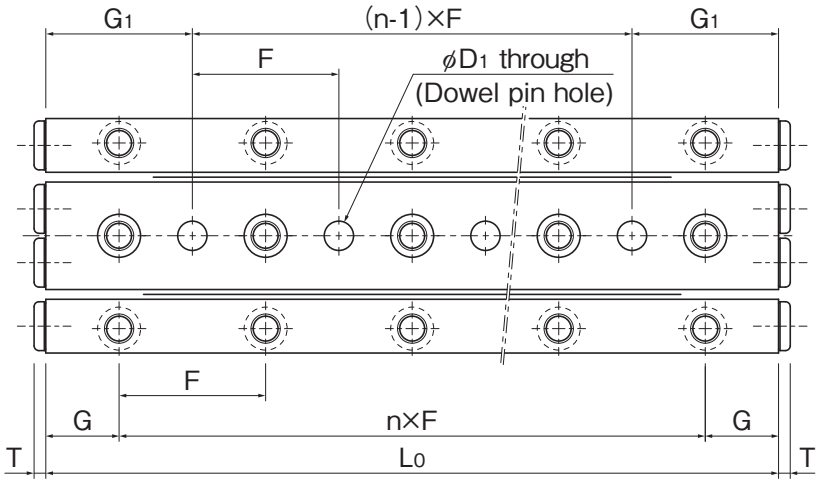


Unit: mm

							Roller diameter	No. of rollers	Mass /1 set	Permissible preload	Basic load rating	
	S	d	D	h	D_1	T	Da	(per cage)	(kg)	δ (μm)	C (kN)	C_0 (kN)
	M4	3.3	6	3.1	$4^{+0.012}_{0}$	2	3	4	0.096	-4	2.47	3.31
								6	0.097		3.41	4.96
								8	0.097		4.27	6.61
								8	0.146		4.27	6.61
								10	0.147		5.09	8.27
								12	0.147		5.88	9.92
								14	0.148		6.63	11.6
								10	0.193		5.09	8.27
								12	0.194		5.88	9.92
								14	0.195		6.63	11.6
								16	0.195		7.36	13.2
								18	0.196		8.07	14.9
								20	0.197		8.76	16.5
								14	0.235		6.63	11.6
								16	0.236		7.36	13.2
								18	0.237		8.07	14.9
								20	0.237		8.76	16.5
								22	0.238		9.44	18.2
								24	0.239		10.1	19.8
								26	0.24		10.8	21.5
								18	0.291		8.07	14.9
								20	0.291		8.76	16.5
								22	0.29		9.44	18.2
								24	0.293		10.1	19.8
								26	0.294		10.8	21.5
								28	0.294		11.4	23.1

Dimensional Table

VRG-W



Model No.	Max. stroke	Main dimensions									
		Combined dimensions				Mounting dimensions					
		W	A	L_0	i	G	n × F	G_1	C	B	W_1
VRG4WM-80×6Z	72			80			1×40				
VRG4WM-80×8Z	53			80			1×40				
VRG4WM-80×10Z	34			80			1×40				
VRG4WM-120×10Z	114			120			2×40				
VRG4WM-120×12Z	94			120			2×40				
VRG4WM-120×14Z	75			120			2×40				
VRG4WM-120×16Z	57			120			2×40				
VRG4WM-120×18Z	37			120			2×40				
VRG4WM-160×14Z	155			160			3×40				
VRG4WM-160×16Z	136			160			3×40				
VRG4WM-160×18Z	116	44	11.5	160	0.5	20	3×40	40	4.5	35	21.2
VRG4WM-160×20Z	97			160			3×40				
VRG4WM-160×22Z	78			160			3×40				
VRG4WM-160×24Z	58			160			3×40				
VRG4WM-160×26Z	39			160			3×40				
VRG4WM-200×18Z	196			200			4×40				
VRG4WM-200×20Z	177			200			4×40				
VRG4WM-200×22Z	158			200			4×40				
VRG4WM-200×24Z	138			200			4×40				
VRG4WM-200×26Z	119			200			4×40				
VRG4WM-200×28Z	101			200			4×40				

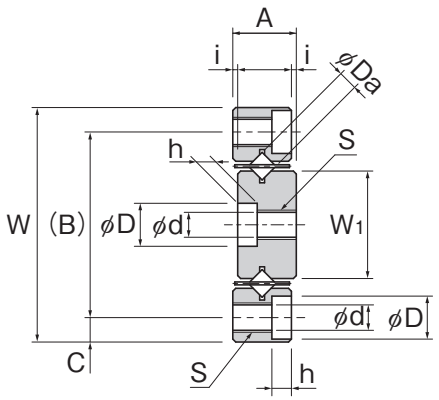
Model Number Coding

Select an option

VRG4WM - 120 H × 16Z

- VRG4WM: Model No.
- 120: Dedicated rail length dimension (mm)
- H: Accuracy symbol (H: High Accuracy grade, P: Precision grade)
- 16Z: Number of rollers

Note: "1 set" for the above models indicates a single combination of 2 rails, a center rail, and 2 cages.
An "M" in the model number indicates the rail material is stainless steel.



Unit: mm

								Mass /1 set	Permissible preload	Basic load rating	
						Roller diameter	No. of rollers		δ	C	C_0
	S	d	D	h	D_1	T	Da	(per cage)	(kg)	(μm)	(kN)	(kN)
	M5	4.3	8	4.2	$5^{+0.012}_{0}$	2	4	6	0.268	-5	7.07	10.4
								8	0.27		8.87	13.8
								10	0.271		10.6	17.3
								10	0.398		10.6	17.3
								12	0.4		12.2	20.7
								14	0.4		13.8	24.2
								16	0.403		15.3	27.6
								18	0.405		16.7	31.1
								14	0.518		13.8	24.2
								16	0.519		15.3	27.6
								18	0.52		16.7	31.1
								20	0.523		18.2	34.5
								22	0.525		19.6	38
								24	0.526		21	41.5
								26	0.528		22.3	44.9
								18	0.659		16.7	31.1
								20	0.66		18.2	34.5
								22	0.66		19.6	38
								24	0.664		21	41.5
								26	0.665		22.3	44.9
								28	0.667		23.6	48.4

MEMO

Handling

(1) Do not disassemble the parts. This will result in loss of functionality.
(2) Take care not to drop or strike the cross-roller guide. Otherwise, it may cause injury or damage the unit. Even if there is no outward indication of damage, a sudden impact could prevent the unit from functioning properly.
(3) Wear appropriate safety gear, such as protective gloves and safety shoes, when handling the product.

Use

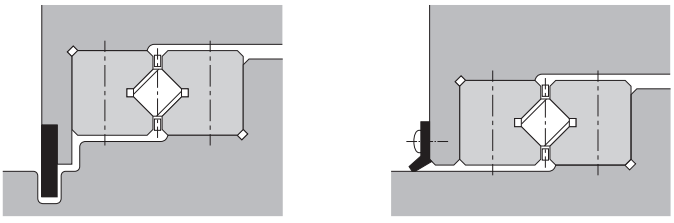
(1) Prevent foreign materials, such as cutting chips or coolant, from entering the product. Failure to do so could damage the product.
(2) Prevent foreign materials, such as cutting chips, corrosive solvents, or water from getting in the product by using a bellows or cover when the product is used in an environment where such a thing is likely.
(3) If foreign materials such as cutting chips adhere to the product, replenish the lubricant after washing the product.
(4) Do not use the product at temperatures above 100°C.
(5) Very small strokes can inhibit the formation of an oil film between the raceways and the area of contact for the rollers, resulting in fretting. Therefore, be sure to use a type of grease with high fretting resistance properties if the stroke will be small. We recommend periodically allowing the guide to travel the full length of its stroke to help ensure that a film forms between the raceways and rollers.
(6) Do not forcibly drive a pin, key, or any other positioning device into the product. This could create indentations on the raceway and impair the product's function
(7) Using the product while rollers are missing could lead to premature failure of the product.
(8) If any rollers fall out, contact THK. Do not use the product in that condition.
(9) If the mounting material lacks sufficient rigidity or accuracy, the bearing load may be focused in one area, and bearing functionality will dramatically decrease. Therefore, carefully consider the rigidity and accuracy of the housing and base, and the strength of the securing bolts.

Lubrication

(1) Thoroughly wipe off anti-rust oil and feed lubricant before using the product.
(2) When lubricating the product, apply grease directly on the raceway and stroke the product several times to let the grease spread inside.
(3) Do not mix different lubricants. Even greases containing the same type of thickening agent may, if mixed, interact negatively due to disparate additives or other ingredients.
(4) When using the product in locations exposed to constant vibrations or in special environments such as clean rooms, vacuums, and extreme heat or cold, use a lubricant suitable for its use/environment.
(5) The consistency of grease changes according to the temperature. Please keep in mind that the sliding resistance of the cross-roller guide may be affected by changes in grease consistency.
(6) After lubrication, the sliding resistance of the cross-roller guide may increase due to the stirring resistance of the grease. Be sure to perform a warm-up operation and allow the grease to break in sufficiently before operating the machine.
(7) Excess grease may spatter after lubrication. Wipe off spattered grease as necessary.
(8) Grease deteriorates over time, which decreases its lubricity, so perform regular grease inspections and replenish grease based on frequency of use.
(9) The lubrication interval varies depending on the usage conditions and environment. The final lubrication interval/amount should be set at the actual machine.

Contamination Protection

The figure below shows methods for preventing contamination from the side surface to keep foreign material from entering the cross-roller guide. Consider using a bellows or telescopic cover in front and behind of the guide.



Labyrinth cover　　Wiper seal

Contamination prevention methods

Storage

When storing the cross-roller guide, pack it as designated by THK and store it indoors in a horizontal position away from high or low temperatures and high humidity.

Disposal

The product should be treated as industrial waste and disposed of appropriately.

Cross-Roller Guide with Cage Alignment System

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