

## A-4-2.2 DV Model



### 1. Features

#### (1) High-performance end seals

High-performance end seals with a multi-lip structure prevent the entry of various kinds of foreign matter.

#### (2) NSK K1-L™ Lubrication unit (standard)

The outstanding lubrication support provided by NSK K1-L units further improves resistance to dust and durability. Additional NSK K1-L units can be mounted for specific usage conditions and environments.

#### (3) Double the life of standard linear guides

DV model is based on our proven, highly reliable standard VH model that feature an optimized groove shape. Applying our special TF heat treatment achieves even longer life.

What is TF (Tough) Technology?

NSK's TF technology is an exclusive heat treatment developed and cultivated over years of experience with rolling bearings and materials. TF technology helps suppress surface flaking on the raceway.

Load ratings are 1.25 times higher and service life is doubled compared to conventional VH model<sup>\*1</sup>. DV linear guide offers greatly improved life at the same size and equal or longer life to the next smallest conventional model, allowing for equipment downsizing.

\*1: Representative values for model.

#### (4) All mounting dimensions are the same as the VH Model

The dimensions surrounding the mounting (assembled dimensions), such as mounting height, width, mounting hole diameter/pitch, etc. of the DV model are identical to the VH model, allowing for easy replacement without design changes.

#### (5) High vertical load carrying capacity

The contact angle is set at 50 degrees, thus increasing load carrying capacity as well as

rigidity in the vertical direction.

#### (6) High resistance against impact load

The bottom ball groove forms a Gothic arch and the center of the top and bottom grooves are offset as shown in Fig. 2.

Vertical load is generally carried by the top rows at two contact points, but with this design, the bottom rows also carry load when a large impact load is applied vertically as shown in Fig. 3. This assures high resistance to impact load.

#### (7) High accuracy

As shown in Fig. 4, fixing the master rollers to the ball grooves is easy thanks to the Gothic arch groove. This makes for easy and accurate measuring of ball grooves.

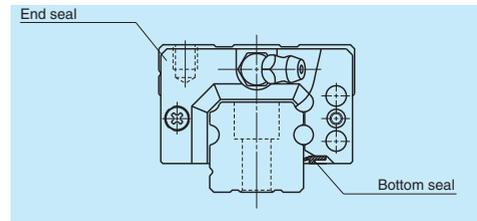


Fig. 1 DV Model

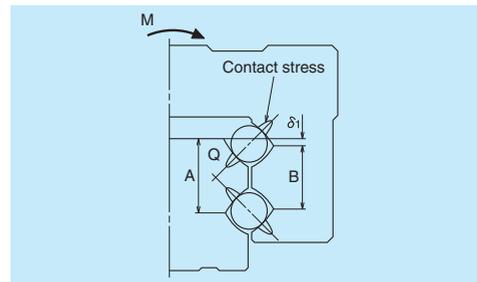


Fig. 2 Enlarged illustration of the offset Gothic arch groove

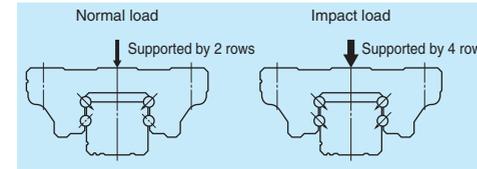


Fig. 3 When load is applied

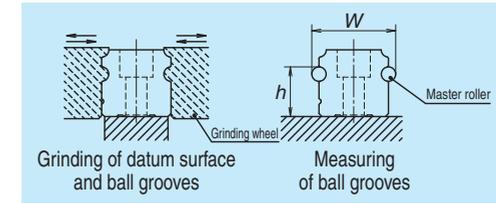
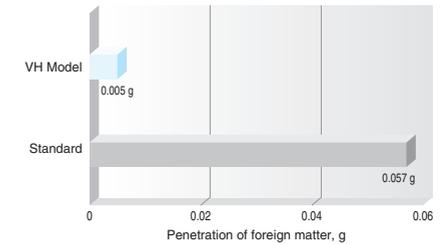


Fig. 4 Rail grinding and measuring

### Comparison with NSK standard products

**Level of fine contaminants reduced by 90% or more.** Results of dust resistance tests reveal that the entry of fine contaminants is reduced to less than one-tenth that of existing standard models due to improvements in sealing.

Test sample : VH30AN  
 Speed : 16.7 mm/sec  
 Contaminant : Graphite powder (average grain size: 0.037 mm) + Grease

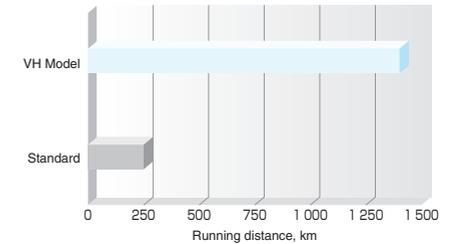


### Operating life under contaminated environments is more than 5 times longer

#### Durability test with rubber fragments

Extreme durability tests under contaminated environments using rubber fragments show that durability of the VH Model is more than five times longer than the existing standard model, as shown in the graph.

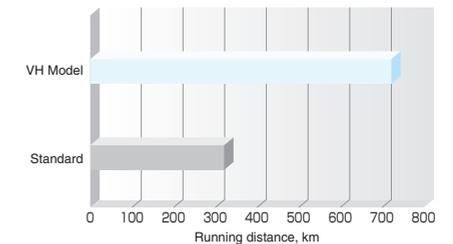
Test sample : VH30AN, preload code Z1 (preload of 245 N)  
 Rail orientation : Horizontal (wall mount)  
 Speed : 500 mm/sec  
 Lubrication : AS2 grease (prepacked AS2 only)  
 Contaminant : Rubber fragments



#### Durability test with fine wood particles

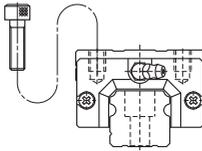
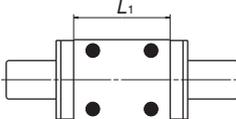
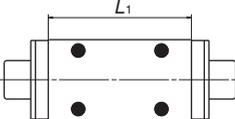
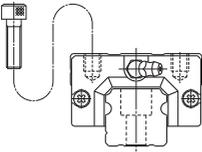
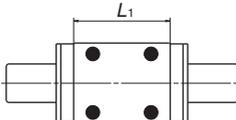
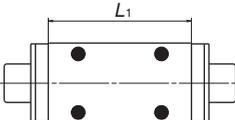
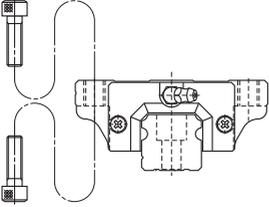
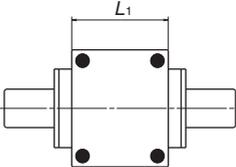
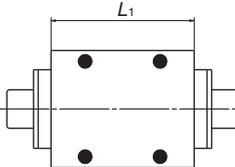
Extreme durability tests in a contaminated environment with fine wood particles show that durability of the VH Model is more than double that of the standard model, as shown in the graph.

Test sample : VH30AN (preload of 3 200 N)  
 Rail orientation : Horizontal (wall mount)  
 Speed : 400 mm/sec  
 Lubrication : AS2 grease (prepacked AS2 only)  
 Contaminant : Fine wood particles



The data shown in the catalog are the results of our tests, and no warranty is given to sealing performance in actual machine usage. Sealing performance is affected by usage environment and lubrication conditions. Dust covers and other measures to keep machinery free of dust are recommended.

2. Ball slide shape

Ball slide shape code	Shape/installation method	Type (Upper row, Rating: Lower row, Ball slide length)	
		High-load Standard	Super-high-load Long
AN BN		AN	BN
			
AL BL		AL	BL
			
EM GM		EM	GM
			

3. Accuracy and preload

(1) Running parallelism of ball slide

Table 1

Unit:  $\mu\text{m}$

Rail length (mm)	Preloaded assembly				
	Ultra precision P3	Super precision P4	High precision P5	Precision grade P6	Normal grade PN
over					
or less					
– 50	2	2	2	4	5
50 – 80	2	2	3	4	5
80 – 125	2	2	3	4	5
125 – 200	2	2	3.5	5	6
200 – 250	2	2.5	4.5	6	7.5
250 – 315	2	2.5	5	6.5	8.5
315 – 400	2	3	5.5	7	9.5
400 – 500	2	3	6	7.5	11
500 – 630	2	3.5	6.5	8.5	12
630 – 800	2	4	7	9.5	13
800 – 1 000	2.5	4.5	7.5	10	15
1 000 – 1 250	3	5	8.5	12	16
1 250 – 1 600	3.5	5.5	9.5	13	17
1 600 – 2 000	4	6.5	11	14	19
2 000 – 2 500	4.5	7.5	12	16	21
2 500 – 3 150	5.5	8.5	13	18	23
3 150 – 4 000	6	9.5	14	19	25

(2) Accuracy standard

The preloaded assembly has five accuracy grades: Ultra precision P3, Super precision P4, High precision P5, Precision P6, and Normal PN grades.

• Tolerance of preloaded assembly

Table 2

Unit:  $\mu\text{m}$

Characteristics	Accuracy grade	Ultra precision P3	Super precision P4	High precision P5	Precision grade P6	Normal grade PN
Mounting height $H$		$\pm 8$	$\pm 10$	$\pm 20$	$\pm 40$	$\pm 80$
Variation of $H$ (All ball slides on a set of rails)		3	5	7	15	25
Mounting width $W_2$ or $W_3$		$\pm 10$	$\pm 15$	$\pm 25$	$\pm 50$	$\pm 100$
Variation of $W_2$ or $W_3$ (All ball slides on reference rail)		3	7	10	20	30
Running parallelism of surface C to surface A Running parallelism of surface D to surface B		Shown in Table 1, Fig. 5				

(3) Combinations of accuracy and preload

Table 3

		Accuracy grade				
		Ultra precision	Super precision	High Precision	Precision grade	Normal grade
With NSK K1-L lubrication unit		L3	L4	L5	L6	LN
Preload	Fine clearance Z0	○	○	○	○	○
	Slight preload Z1	○	○	○	○	○
	Medium preload Z3	○	○	○	○	—

(4) Assembled accuracy

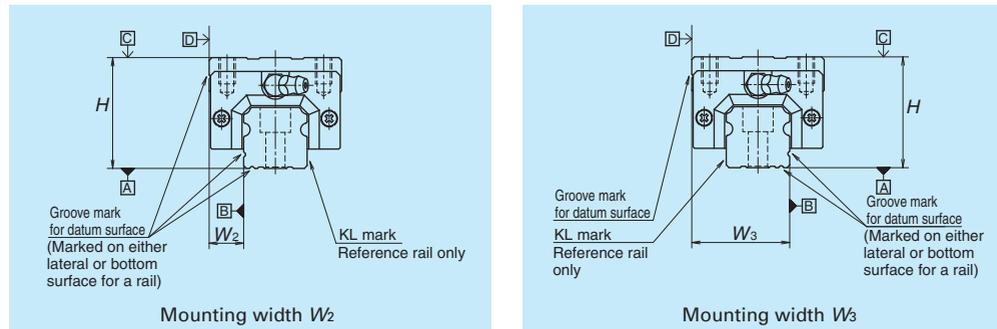


Fig. 5

(5) Preload and rigidity

We offer three levels of preload: Slight preload Z1, Medium preload Z3 and Fine clearance Z0.

• Preload and rigidity of preloaded assembly

Table 4

Model No.		Preload (N)		Rigidity (N/μm)			
				Vertical direction		Lateral direction	
		Slight preload Z1	Medium preload Z3	Slight preload Z1	Medium preload Z3	Slight preload Z1	Medium preload Z3
High-load	DV15 AN, EM	78	490	137	226	98	186
	DV20 AN, EM	147	835	186	335	137	245
	DV25 AN, AL, EM	196	1 270	206	380	147	284
	DV30 AN, AL	245	1 570	216	400	157	294
	DV30 EM	294	1 770	265	480	186	355
	DV35 AN, AL, EM	390	2 350	305	560	216	390
	DV45 AN, AL, EM	635	3 900	400	745	284	540
Super-high-load	DV55 AN, AL, EM	980	5 900	490	910	345	645
	DV15 BN, GM	98	685	196	345	137	284
	DV20 BN, GM	196	1 080	265	480	196	355
	DV25 BN, BL, GM	245	1 570	294	560	216	400
	DV30 BN, BL, GM	390	2 260	360	665	265	480
	DV35 BN, BL, GM	490	2 940	430	795	305	570
	DV45 BN, BL, GM	785	4 800	520	960	370	695
	DV55 BN, BL, GM	1 180	7 050	635	1 170	440	835

Note: Clearance for Fine clearance Z0 is 0 to 3 μm. Therefore, preload is zero.  
However, Z0 of PN grade is 0 to 15 μm.

4. Maximum rail length

Table 5 shows the limitations of rail length (maximum length). However, the limitations vary by accuracy grade.

Table 5 Length limitations of rails

Unit: mm

Model	Size Material	15	20	25	30	35	45	55
		DV	Special high carbon steel	2 000	3 960	3 960	4 000	4 000

Note: Rails can be butted if user requirements exceed the rail length shown in the table. Please consult NSK.

## 5. Installation

### (1) Permissible values of mounting error

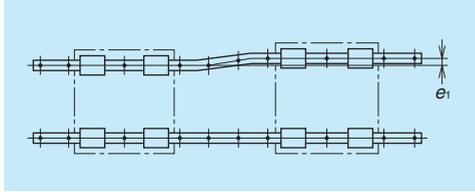


Fig. 6

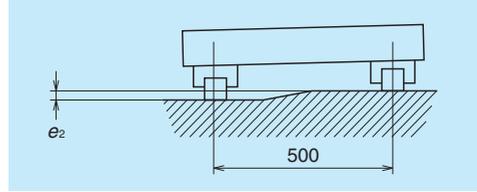


Fig. 7

Table 6

Unit:  $\mu\text{m}$

Value	Preload	Model No.						
		DV15	DV20	DV25	DV30	DV35	DV45	DV55
Permissible values for parallelism error of two rails $e_1$	Z0	22	30	40	45	55	65	80
	Z1	18	20	25	30	35	45	55
	Z3	13	15	20	25	30	40	45
Permissible values for height error of two rails $e_2$	Z0	375 $\mu\text{m}/500\text{ mm}$						
	Z1, Z3	330 $\mu\text{m}/500\text{ mm}$						

### (2) Shoulder height of the mounting surface and corner radius r

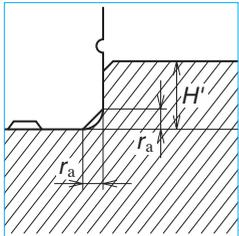


Fig. 8 Shoulder for the rail datum surface

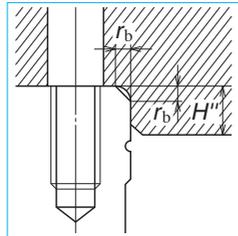


Fig. 9 Shoulder for the ball slide datum surface

Table 7

Unit: mm

Model No.	Corner radius (maximum)		Shoulder height	
	$r_a$	$r_b$	$H'$	$H''$
DV15	0.5	0.5	4	4
DV20	0.5	0.5	4.5	5
DV25	0.5	0.5	5	5
DV30	0.5	0.5	6	6
DV35	0.5	0.5	6	6
DV45	0.7	0.7	8	8
DV55	0.7	0.7	10	10

### (3) Specification for tapped holes on a rail bottom surface

- Applicable accuracy grades are precision grade (P6) and normal grades (PN) only.
- The minimum rail length for production is 400 mm.
- The tapping pitch is the same as the pitch for regular mounting bolt holes. Please refer to the dimension table.

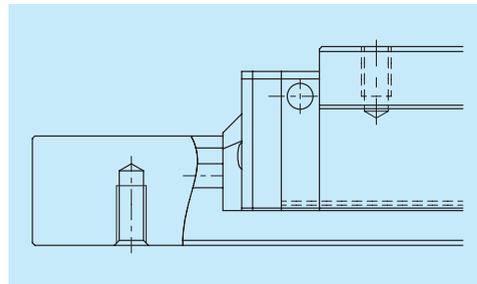


Fig. 10

## 6. Lubrication components

Refer to pages A58 and D13 for the lubrication of linear guides.

### (1) Types of lubrication accessories

Fig. 11 and Table 8 show grease fittings and tube fittings.

We provide lubrication accessories with an extended thread body length ( $L$ ) for the addition of dust-resistant accessories such as NSK K1-L lubrication units, double seals and protectors. We provide suitable lubrication accessories for special dust-resistant requirements upon request.

NSK can also provide extended length threads for ease of replenishment.

Please contact NSK if stainless lubrication accessories are required.

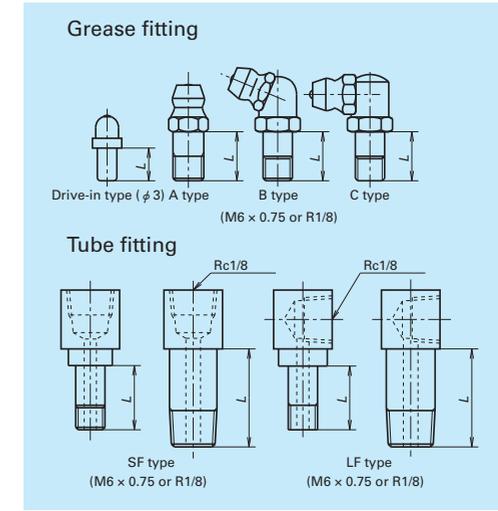


Fig. 11 Grease fitting and tube fitting

### (2) Mounting position of lubrication accessories

The standard position for grease fittings is at the end face of the ball slide, but we can mount them on the side of the end cap as an option. (Fig. 12)

Please consult NSK for the installation of grease or tube fittings to the ball slide body.

Using a piping unit with thread of  $M6 \times 1$ , requires a connector to connect to a grease fitting mounting hole with  $M6 \times 0.75$ . The connector is available from NSK.

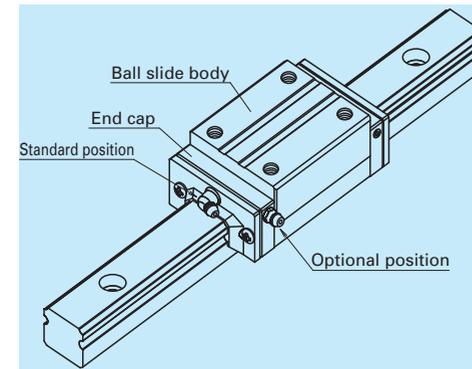


Fig. 12 Mounting position of lubrication accessories

Table 8

Unit: mm

Model No.	Dust-resistant specification	Dimension L		
		Grease fitting / Drive-in type	Tube fitting	
			SF type	LF type
DV15	Standard*	10	-	-
	Double seal	**	-	-
	Protector	**	-	-
DV20	Standard*	12	-	-
	Double seal	18	-	-
	Protector	18	-	-
DV25	Standard*	12	15	16
	Double seal	18	23	24.5***
	Protector	18	17	18
DV30	Standard*	14	18	17.5
	Double seal	22	25	24.5
	Protector	22	19.5	19
DV35	Standard*	14	15	15
	Double seal	22	25	24.5
	Protector	22	21.5	22
DV45	Standard*	18	22	21.5
	Double seal	22	32	32
	Protector	28	28	30
DV55	Standard*	18	20	20
	Double seal	22	32	32
	Protector	28	28	30

\*) NSK K1-L units are mounted as a standard specification for DV models.

\*\*) A connector is required for grease fitting. Please contact NSK.

\*\*\*) Only available for AN and BN type ball slides.

## 7. Dust-resistant components

### (1) Standard specification

Under normal applications, the DV model can be used without modification thanks to its dust resistance. To keep foreign matter from entering inside the ball slide, the DV model has an end seal on both ends and bottom seals at the bottom.

Two NSK K1-L lubrication units, one at each end, are installed as standard.

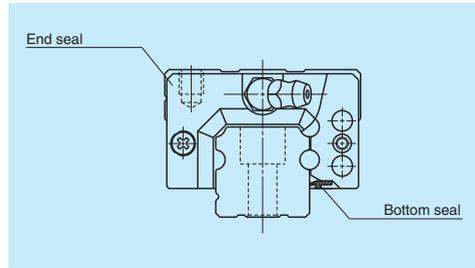


Fig. 13

Table 9 Seal friction per ball slide (maximum value)

Model	Size	Unit: N						
		15	20	25	30	35	45	55
DV		11	13	14	17	23	33	44

### (2) Double seal and protector

For DV Models, double-seals and protectors can be installed only before shipping from the factory. Please consult with NSK when double seals or protectors are required.

Table 10 shows the ball slide length when a double seal set and a protector are installed.

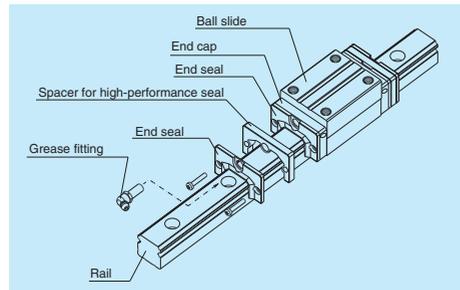


Fig. 14 Double seal

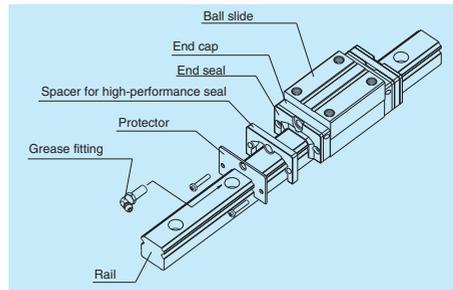


Fig. 15 Protector

Table 10 Dimensions with optional dust-resistant components installed

Unit: mm

Model No.	Ball slide length	Ball slide shape code	Ball slide length L		
			Standard	Double seal installation	Protector installation
DV15	Standard type	AN, EM	70.6	81.6	77
	Long type	BN, GM	89.6	100.6	96
DV20	Standard type	AN, EM	87.4	100.4	94.2
	Long type	BN, GM	109.4	122.4	116.2
DV25	Standard type	AN, AL, EM	97	110	104.4
	Long type	BN, BL, GM	125	138	132.4
DV30	Standard type	AN, AL, EM	104.4	120.4	114.8
	Long type	BN, BL, GM	143.4	159.4	153.8
DV35	Standard type	AN, AL, EM	128.8	144.8	139.2
	Long type	BN, BL, GM	162.8	178.8	173.2
DV45	Standard type	AN, AL, EM	161.4	180.4	174.2
	Long type	BN, BL, GM	193.4	212.4	206.2
DV55	Standard type	AN, AL, EM	185.4	204.4	198.2
	Long type	BN, BL, GM	223.4	242.4	236.2

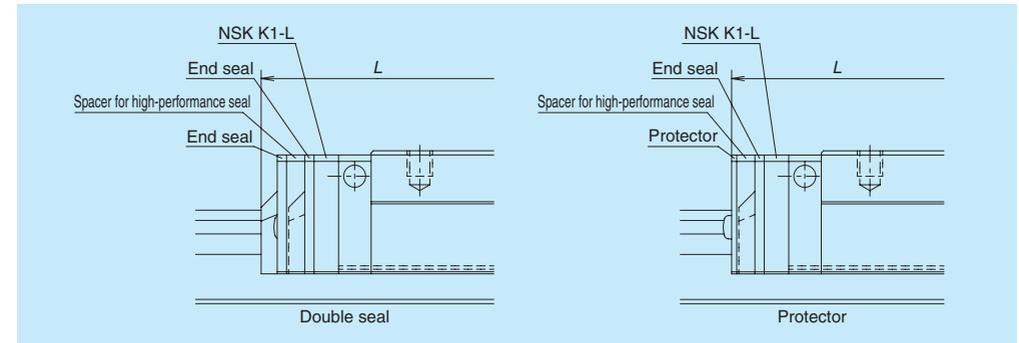


Fig. 16

### (3) Caps to plug the rail mounting bolt hole

Table 11 Caps to plug rail bolt hole

Model No.	Bolt to secure rail	Cap reference No.	Quantity /case
DV15	M4	LG-CAP/M4	20
DV20	M5	LG-CAP/M5	20
DV25	M6	LG-CAP/M6	20
DV30, DV35	M8	LG-CAP/M8	20
DV45	M12	LG-CAP/M12	20
DV55	M14	LG-CAP/M14	20

### (4) Inner seal

Inner seals are only available for the models shown below.

Table 12

Model	Model No.
DV	DV20, DV25, DV30, DV35, DV45, DV55

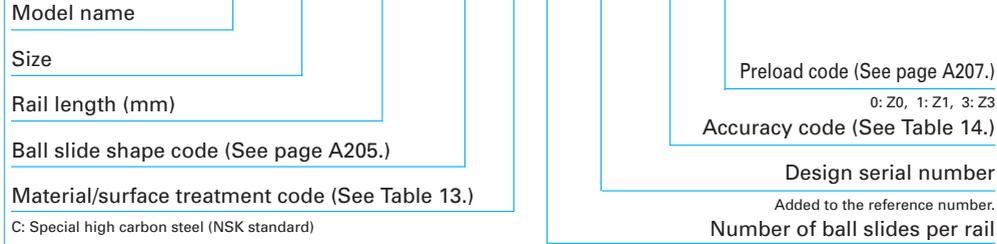
## 8. Design Precautions

Because the product is used under severe operating conditions that require high-performance end seals, please inform NSK about your service conditions using the technical data sheet on page A146.

**9. Reference number**

A reference number (designation) is set and indicated on the specification drawing for an individual NSK linear guide when its specifications are finalized.  
Please specify the reference number, except design serial number, to identify the product when ordering, requiring estimates, or inquiring about specifications from NSK.

**DV 30 1000 ANC 2 -\*\* L5 3**



**Table 13 Material/surface treatment code**

Code	Description
C	Special high carbon steel + counterbores on a rail top surface
D	Special high carbon steel with surface treatment + counterbores on a rail top surface
V	Special high carbon steel + tapped holes on a rail bottom surface
W	Special high carbon steel with surface treatment + tapped holes on a rail bottom surface
Z	Other, special

**Table 14 Accuracy code**

Accuracy	With NSK K1-L
Ultra precision grade	L3
Super precision grade	L4
High precision grade	L5
Precision grade	L6
Normal grade	LN

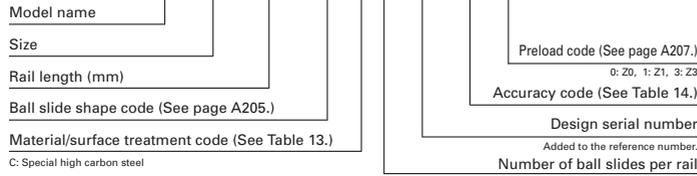
Note: Refer to page A58 for details on NSK K1-L lubrication units.

10. Dimensions

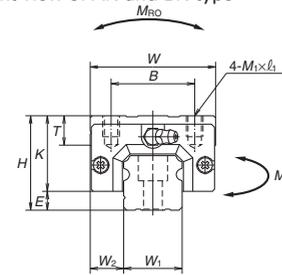
DV-AN (High-load / Standard)

DV-BN (Super-high-load / Long)

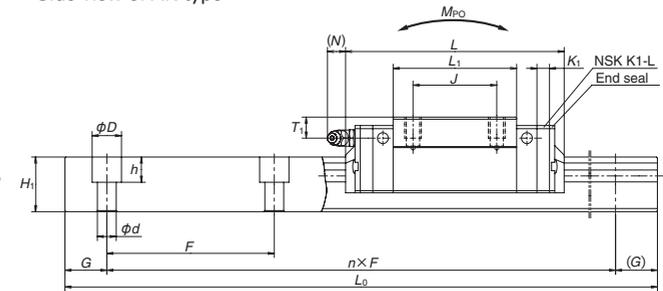
**DV 30 1000 ANC 2 -\*\* L5 3**



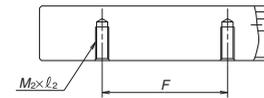
Front view of AN and BN type



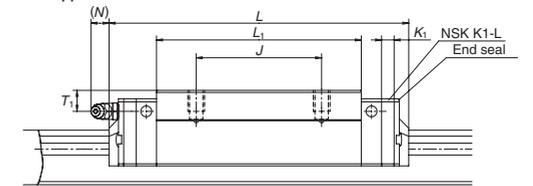
Side view of AN type



Specification for tapped holes on a rail bottom face



Side view of BN type



Model No.	Assembly			Ball slide											Width	Height	
	Height	E	W <sub>2</sub>	Width	Length	Mounting hole					Grease fitting						
						B	J	M <sub>1</sub> × pitch × l <sub>1</sub>	L <sub>1</sub>	K	T	K <sub>1</sub>	Hole size	T <sub>1</sub>			N
DV15AN DV15BN	28	4.6	9.5	34	70.6 ( 77 ) 89.6 ( 96 )	26	26	M4×0.7×6	39 58	23.4	8	5.3	φ 3	8.5	1 ( 8.2 )	15	15
DV20AN DV20BN	30	5	12	44	87.4 ( 94.2 ) 109.4 ( 116.2 )	32	36 50	M5×0.8×6	50 72	25	12	5.3	M6×0.75	5	11.1 ( 12.3 )	20	18
DV25AN DV25BN	40	7	12.5	48	97 ( 104.4 ) 125 ( 132.4 )	35	35 50	M6×1×9	58 86	33	12	5.8	M6×0.75	10	9.6 ( 12.9 )	23	22
DV30AN DV30BN	45	9	16	60	104.4 ( 114.8 ) 143.4 ( 153.8 )	40	40 60	M8×1.25×10	59 98	36	14	6	M6×0.75	10	11.4 ( 14.2 )	28	26
DV35AN DV35BN	55	9.5	18	70	128.8 ( 139.2 ) 162.8 ( 173.2 )	50	50 72	M8×1.25×12	80 114	45.5	15	6.5	M6×0.75	15	10.9 ( 13.7 )	34	29
DV45AN DV45BN	70	14	20.5	86	161.4 ( 174.2 ) 193.4 ( 206.2 )	60	60 80	M10×1.5×17	105 137	56	17	7.5	Rc1/8	20	12.5 ( 14.1 )	45	38
DV55AN DV55BN	80	15	23.5	100	185.4 ( 198.2 ) 223.4 ( 236.2 )	75	75 95	M12×1.75×18	126 164	65	18	7.5	Rc1/8	21	12.5 ( 14.1 )	53	44

Notes: 1) Figures inside ( ) apply when equipped with a protector.  
2) DV models do not have a ball retainer. Note that balls will fall out when the ball slide is removed from the rail.

Rail		Basic load ratings							Weight					
Pitch	Mounting bolt hole	Tapped hole	G	Max. length	<sup>3)</sup> Dynamic		Static	Static moment (N-m)				Ball slide	Rail	
					[50km]	[100km]		C <sub>0</sub>	M <sub>RO</sub>	M <sub>PO</sub>				M <sub>VO</sub>
F	d × D × h	M <sub>2</sub> × pitch × l <sub>2</sub>	(reference)	L <sub>0max</sub>	C <sub>50</sub> (N)	C <sub>100</sub> (N)	(N)			One slide	Two slides	One slide	Two slides	(kg)
60	4.5×7.5×5.3	M5×0.8×8	20	2 000	17 800 22 800	14 200 18 100	20 700 32 000	108 166	94.5 216	575 1 150	79.5 181	480 965	0.18 0.26	1.6
60	6×9.5×8.5	M6×1×10	20	3 960	29 800 38 000	23 700 30 000	32 500 50 500	219 340	185 420	1 140 2 230	155 355	955 1 870	0.33 0.48	2.6
60	7×11×9	M6×1×12	20	3 960	42 500 57 500	33 500 45 500	46 000 71 000	360 555	320 725	1 840 3 700	267 610	1 540 3 100	0.55 0.77	3.6
80	9×14×12	M8×1.25×15	20	4 000	51 500 77 000	41 000 61 000	51 500 91 500	490 870	350 1 030	2 290 5 600	292 865	1 920 4 700	0.72 1.3	5.2
80	9×14×12	M8×1.25×17	20	4 000	78 500 102 000	62 500 81 000	80 500 117 000	950 1 380	755 1 530	4 500 8 350	630 1 280	3 800 7 000	1.5 2.1	7.2
105	14×20×17	M12×1.75×24	22.5	3 990	135 000 164 000	107 000 131 000	140 000 187 000	2 140 2 860	1 740 3 000	9 750 15 600	1 460 2 520	8 150 13 100	3.0 3.9	12.3
120	16×23×20	M14×2×24	30	3 960	199 000 243 000	158 000 193 000	198 000 264 000	3 600 4 850	3 000 5 150	16 300 26 300	2 510 4 350	13 700 22 100	4.7 6.1	16.9

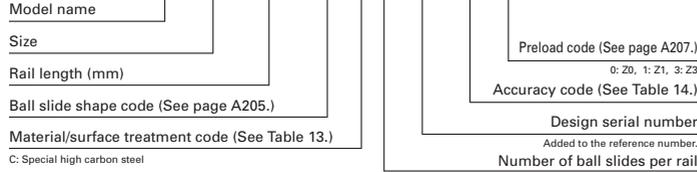
3) The basic load ratings comply with the ISO standard. (ISO 14728-1, 14728-2) For long-life DV model, the rated load is multiplied by a coefficient that reflects the effect of life improvement technologies based on these ISO standards.  
C<sub>50</sub>: the basic dynamic load rating for 50 km rated fatigue life C<sub>100</sub>: the basic dynamic load rating for 100 km rated fatigue life  
The basic static load rating shows static permissible load.



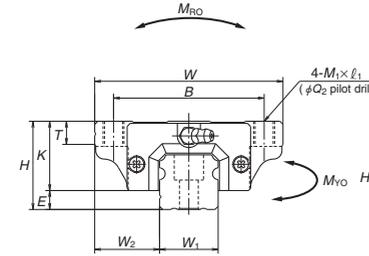
# Dust-Resistant DV Model

DV-EM (High-load / Standard)  
DV-GM (Super-high-load / Long)

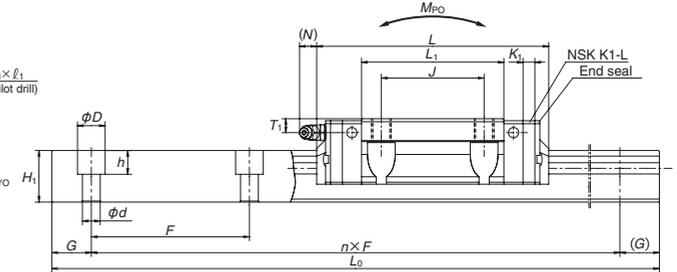
**DV 30 1000 EMC 2 -\*\* L5 3**



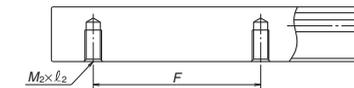
Front view of EM and GM type



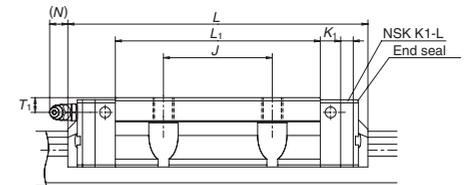
Side view of EM type



Specification for tapped holes on a rail bottom face



Side view of GM type



Unit: mm

Model No.	Assembly		Ball slide											Width	Height			
	Height	E	W <sub>2</sub>	W	Length	Mounting hole				Grease fitting			W <sub>1</sub>			H <sub>1</sub>		
						B	J	M <sub>1</sub> × pitch × l <sub>1</sub>	Q <sub>2</sub>	L <sub>1</sub>	K	T					K <sub>1</sub>	Hole size
DV15EM DV15GM	24	4.6	16	47	70.6 ( 77 ) 89.6 ( 96 )	38	30	M5×0.8×7	4.4	39 58	19.4	8	5.3	φ3	4.5	1 ( 8.2 )	15	15
DV20EM DV20GM	30	5	21.5	63	87.4 ( 94.2 ) 109.4 ( 116.2 )	53	40	M6×1×9.5	5.3	50 72	25	10	5.3	M6×0.75	5	11.1 ( 12.3 )	20	18
DV25EM DV25GM	36	7	23.5	70	97 ( 104.4 ) 125 ( 132.4 )	57	45	M8×1.25×10	6.8	58 86	29	11	5.8	M6×0.75	6	9.6 ( 12.9 )	23	22
DV30EM DV30GM	42	9	31	90	117.4 ( 127.8 ) 143.4 ( 153.8 )	72	52	M10×1.5×12	8.6	72 98	33	11	6	M6×0.75	7	11.4 ( 14.2 )	28	26
DV35EM DV35GM	48	9.5	33	100	128.8 ( 139.2 ) 162.8 ( 173.2 )	82	62	M10×1.5×13	8.6	80 114	38.5	12	6.5	M6×0.75	8	10.9 ( 13.7 )	34	29
DV45EM DV45GM	60	14	37.5	120	161.4 ( 174.2 ) 193.4 ( 206.2 )	100	80	M12×1.75×15	10.5	105 137	46	13	7.5	Rc1/8	10	12.5 ( 14.1 )	45	38
DV55EM DV55GM	70	15	43.5	140	185.4 ( 198.2 ) 223.4 ( 236.2 )	116	95	M14×2×18	12.5	126 164	55	15	7.5	Rc1/8	11	12.5 ( 14.1 )	53	44

Notes: 1) Figures inside ( ) apply when equipped with a protector.  
 2) DV models do not have a ball retainer. Note that balls will fall out when the ball slide is removed from the rail.

Rail		Basic load ratings							Weight				
Pitch	Mounting bolt hole	Tapped hole	G	Max. length	Dynamic		Static	Static moment (N-m)		Ball slide	Rail		
					[50km]	[100km]		C <sub>0</sub>	M <sub>RO</sub>			M <sub>VO</sub>	
F	d × D × h	M <sub>2</sub> × pitch × l <sub>2</sub>	(reference)	L <sub>0max</sub>	C <sub>50</sub> (N)	C <sub>100</sub> (N)	(N)			One slide	Two slides	(kg)	(kg/m)
60	4.5×7.5×5.3	M5×0.8×8	20	2 000	17 800	14 200	20 700	108	94.5	575	79.5	480	0.17
60	6×9.5×8.5	M6×1×10	20	3 960	22 800	18 100	32 000	166	216	1 150	181	965	0.25
60	7×11×9	M6×1×12	20	3 960	29 800	23 700	32 500	219	185	1 140	155	955	0.45
60	9×14×12	M8×1.25×15	20	4 000	38 000	30 000	50 500	340	420	2 230	355	1 870	0.65
80	9×14×12	M8×1.25×15	20	4 000	42 500	33 500	46 000	360	320	1 840	267	1 540	0.63
80	9×14×12	M8×1.25×17	20	4 000	57 500	45 500	71 000	555	725	3 700	610	3 100	0.93
80	9×14×12	M8×1.25×17	20	4 000	59 000	47 000	63 000	600	505	3 150	425	2 650	1.2
105	14×20×17	M12×1.75×24	22.5	3 990	77 000	61 000	91 500	870	1 030	5 600	865	4 700	1.6
105	14×20×17	M12×1.75×24	22.5	3 990	78 500	62 500	80 500	950	755	4 500	630	3 800	1.7
120	16×23×20	M14×2×24	30	3 960	102 000	81 000	117 000	1 380	1 530	8 350	1 280	7 000	2.4
120	16×23×20	M14×2×24	30	3 960	135 000	107 000	140 000	2 140	1 740	9 750	1 460	8 150	3.0
120	16×23×20	M14×2×24	30	3 960	164 000	131 000	187 000	2 860	3 000	15 600	2 520	13 100	3.9
120	16×23×20	M14×2×24	30	3 960	199 000	158 000	198 000	3 600	3 000	16 300	2 510	13 700	5.0
120	16×23×20	M14×2×24	30	3 960	243 000	193 000	264 000	4 850	5 150	26 300	4 350	22 100	6.5

3) The basic load ratings comply with the ISO standard. (ISO 14728-1, 14728-2) For long-life DV model, the rated load is multiplied by a coefficient that reflects the effect of life improvement technologies based on these ISO standards.  
 C<sub>50</sub>: the basic dynamic load rating for 50 km rated fatigue life C<sub>100</sub>: the basic dynamic load rating for 100 km rated fatigue life  
 The basic static load rating shows static permissible load.