

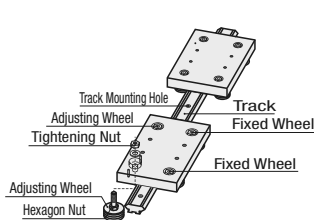
# V Guide Systems - Overview

## Metric Size 70° Type

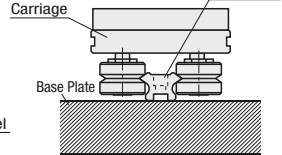
### Functions and Features

- Bearing and V groove (70°) are integrated in a single unit.
- System construction can be achieved by using only one Double Sided Track.
- Sized in metric.

### Basic Structure



### App. Example



### Load Calculation

L = Load (N)  
LS = Thrust load applied to wheel (N)  
LR = Radial Load applied to wheel (N)  
A, B = Distance (mm)

<b>When load applied between the wheels</b> $LS_1 = \frac{L \times B}{A+B}$ $LS_2 = L - LS_1$ (Ex.) L=500 (N) A=40 (mm) B=60(mm) $LS_1 = \frac{500 \times 60}{40+60} = 300(N)$ $LS_2 = 500 - 300 = 200(N)$	
<b>When load applied outside the wheels</b> $LS_1 = \frac{L \times A}{B}$ $LS_2 = L + LS_1$ (Ex.) L=500 (N) A=60 (mm) B=40(mm) $LS_1 = \frac{500 \times 60}{40} = 750(N)$ $LS_2 = 500 + 750 = 1250(N)$	
<b>When radial and thrust load are combined</b> $LS_1 = LS_2 = \frac{L \times A}{B}$ $LR_1 = L + LS_1$ $LR_2 = LS_2$ (Ex.) L=500 (N) A=60 (mm) B=100(mm) $LS_1 = LS_2 = \frac{500 \times 60}{100} = 300(N)$ $LR_1 = 500 + 300 = 800(N)$	

### Load Factor Calculation

Calculate the load factor (LF) of the wheel to which the biggest load is applied.  
Select the wheel whose load factor is less than 1.

$$LF = \frac{LS}{LS_{max}} + \frac{LR}{LR_{max}}$$

LF = Load Factor  
LS = Thrust Load applied to wheel  
LS max = Maximum Thrust Load applied to wheel  
LR = Radial Load applied to wheel  
LR max = Maximum Radial Load applied to wheel

Part Number		W/o Lubrication		With Lubrication	
Type	No.	LSmax(N)	LRmax(N)	LSmax(N)	LRmax(N)
MVH	12	22.5	45	60	120
MVHS	25	100	200	320	600
MVHL	34	200	400	800	1400
MVHSL					

### Life Calculation

Calculate life of the system and confirm the validation of size selection.

$$\text{Life (km)} = \frac{LC}{(LF)^3} \times Af$$

LF= Load Factor  
LC= Basic Life  
Af = Adjustment Coefficient

Part Number		LC Basic Life
Type	No.	km
MVH	12	50
MVHS	25	70
MVHL	34	100
MVHSL		

Af = Adjustment Factor	Application Conditions
1.0-0.7	Clean, Low Speed, Low Shock, Light Load
0.7-0.4	Medium Level Contamination, Medium Level Shock, Medium Load, Vibration
0.4-0.1	Severe Contamination, High Level Acceleration, Heavy Load, Vibration, High Cycle

<Calculation Example>

When using MVH-34C under the conditions of LS=100 (N), LR=200 (N) and Af=0.7

$$\text{Load Factor } LF = \frac{100}{800} + \frac{200}{1400} = 0.268 \leq 1.0$$

$$\text{Life (km)} = \frac{100}{(0.268)^3} \times 0.7 = 3637 \text{ km}$$

### System Assembly and Adjustments

- First, assemble the components loosely with a minimum load.
- Fully tighten the fixed wheels.
- Next, tighten mounting nuts of adjusting wheel tentatively in order to adjust them.
- Turn the hex nut in the center of Adjusting Wheel gradually by wrench to set the minimum preload, and do not leave a gap between each pair of wheels facing each other.
- Check if proper preload is applied by turning the wheels with fingers while track is fixed and carriage plate remains still. Although a slight resistance may be felt, the wheels should turn freely under a proper preload. Excessive preload results in a shorter product life.
- Make adjustments and test all the adjustable wheels in the above manner, and fully tighten the wheel nuts to the specified torque.
- After adjustment, check again in the same process as 5 to make sure of proper preload.

# V Guide Systems

## Metric Size 70° Type Wheels and Bushings / Double Sided Tracks

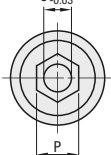
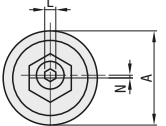
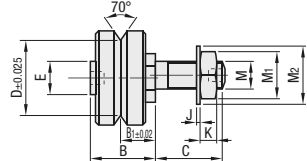
### Millimeter Size 70° Type Wheels and Bushings



Type	MMaterial	HSurface Hardness	Seal		Operating Temp.
MVH	EN 1.3505 Equiv.	58~62HRC	No.12	Nitrile Rubber	-20°C~120°C
MVHL			No.32	Metal Shield	
MVHS	EN 1.4125 Equiv.		Nitrile Rubber		
MVHSL					

E (Adjustable)

C (Fixed)



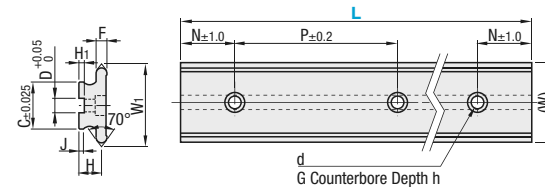
Part Number		C-Fixed E=Adjustable	Applicable Rail No.	A	B	B1	C	D	E	M	M1	M2	J	K	L	N Eccentricity	O	P	Tightening Torque N·m	Thrust LoadLSmax. (N)	Radial LoadLRmax. (N)	Unit Price	
Type	No.																					MVHL	MVHSL
MVH	12	C	12	12.7	10.1	5.47	5.8	9.51	5	M4x0.5	7	9	0.8	2	-	0.5	4	7	2	22.5	45		
	25	E	25	25	16.6	9	9.8	20.27	10	M8x1.0	13	17	1	5	3	0.75	8	13	18	100	200		
	34	E	44	34	21.3	11.5	13.8	27.13	12	M10x1.25	17	21	1.25	6	4	1.0	10	15	33	200	400		
MVHL	12	C	12	12.7	10.1	5.47	9.5	9.51	5	M4x0.5	7	9	0.8	2	-	0.5	4	7	2	22.5	45		
	25	E	25	25	16.6	9	19	20.27	10	M8x1.0	13	17	1	5	3	0.75	8	13	18	100	200		
	34	E	44	34	21.3	11.5	22	27.13	12	M10x1.25	17	21	1.25	6	4	1.0	10	15	33	200	400		

⚠ No adjusting hexagon groove (L) for adjusting wheel (E) No.12. ⚠ Thrust load and radial load values are those when lubricated. For values when not lubricated, see P.653.

### Millimeter Size 70° Type Double Sided Tracks



Type	Material	Surface Treatment	Hardness
Double Sided Tracks	MVR	Black Oxide	58 ~ 62 HRC (70° Edge)
	MVRS	-	52HRC (70° Edge)



⚠ W1 is the dimension at the intersection of 70°. (Both ends are R machined.)  
⚠ Tolerance C±0.025 is applicable to MVRS only.

Part Number		L Selection *	(W)	W1	F	H	H1	C	J	D	dxGxh	N	P
Type	No.												
MVR	12	120~1020	12	13.25	3.2	6.4	1.8	8.9	1.7	4	3.5x6.2x3.1	15	45
	25	240~1140	25	26.58	4.93	10.2	2.5	15.4	2.6	6	5.5x10x5.1	30	90
	44		44	45.58	6.42	12.7	3	26.4	2.3	8	7x11x6.1	30	90
MVRS	12	120~1020	12	12.37	3	6.2	1.8	8.5	1.7	4	3.5x6x3	15	45
	25	240~1140	25	25.74	4.5	10	2.5	15	2.5	6	5.5x10x5	30	90
	44		44	44.74	6	12.5	3	26	2.5	8	7x11x6	30	90

\* For L dimensions, please refer to the price list.

Ordering Example	Part Number	-	Spec.	-	L
	MVH12	-	C	-	510
	MVRS25	-		-	

L (Selection)		Unit Price	
		MVR12	MVRS12
120	165		
210	255		
300	345		
390	435		
480	525		
570	615		
660	705		
750	795		
840	885		
930	975		
1020			

L (Selection)		Unit Price			
		MVR25	MVRS25	MVR44	MVRS44
240	330				
420	510				
600	690				
780	870				
960	1050				
1140					