Functions & Features

1. Bearing and V groove (70°) are integrated in a single unit.
2. When using 1-Blade Tracks, there is a design freedom for the distance between trucks.
3. When using 2-Blade Tracks, system can be structured with only one truck.
4. Both 1-Blade and 2-Blade Tracks have pedestals and can be attached directly to the plate.
5. Sized in metric.

Load Calculation

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

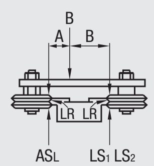
When load applied between the wheels

$LS_1 = \frac{LxB}{A+B}$

$LS_2 = L - LS_1$
(Ex.) L=500 (N) A=40 (mm)
B=60 (mm)

$LS_1 = \frac{500x60}{40+60} = 300$ (N)

$LS_2 = 500-300 = 200$ (N)



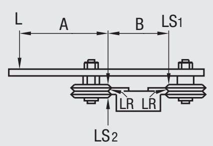
When load applied outside the wheels

$LS_1 = \frac{LxA}{B}$

$LS_2 = L + LS_1$
(Ex.) L=500 (N) A=60 (mm)
B=40 (mm)

$LS_1 = \frac{500x60}{40} = 750$ (N)

$LS_2 = 500+750 = 1250$ (N)



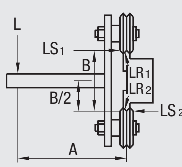
When radial and thrust load are combined

$LS_1 = LS_2 = \frac{LxA}{B}$

$LR_1 = L + LS_1$
$LR_2 = LS_2$
(Ex.) L=500 (N) A=60 (mm)
B=100 (mm)

$LS_1 = LS_2 = \frac{500x60}{100} = 300$ (N)

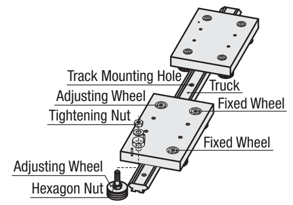
$LR_1 = 500+300 = 800$ (N)



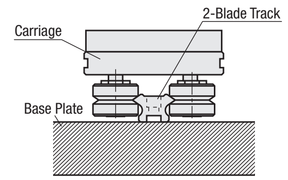
System Assembly & Adjustments

1. First, assemble the components loosely with a minimum load.
2. Fully tighten the fixed wheels.
3. Next, tighten mounting nuts of Adjusting Wheel tentatively in order to adjust them.
4. Turn hexagon 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.
5. 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.
6. Make adjustments and test all the adjustable wheels in the above manner, and fully tighten the wheel nuts to the specified torque.
7. After adjustment, check again in the same process as five to make sure of proper preload.

Basic Structure



Usage Examples



Load 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		Without Lubrication		With Lubrication	
Type	No.	LSmax (N)	LRmax (N)	LSmax (N)	LRmax (N)
MVH MVHS MVHL MVHSL	12	22.5	45	60	120
	25	100	200	320	600
	34	200	400	800	1400

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 km
Type	No.	
MVH MVHS MVHL MVHSL	12	50
	25	70
	34	100

Af= Adjustment Coefficient	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

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

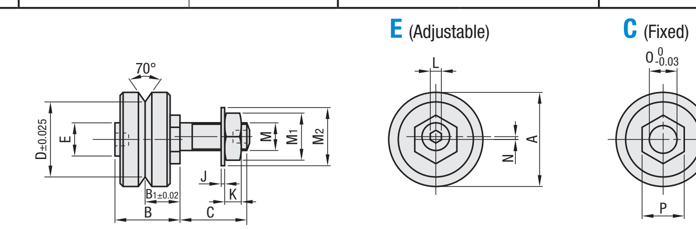
$$\text{Life (km)} = \frac{100}{(0.268)^3} \times 0.7 = 3637 \text{ km}$$

70° V-Guide Units

Wheels & Bushings / One-Blade Tracks / Double-Blade Tracks

70° V-Guide Wheels

Type	Material	Surface Hardness	Seal		Operating Temp.
MVH MVHL	52100 Bearing Steel	58~62 HRC min.	No.12	Nitrile Rubber	-20~120°C
			No.25 34	Metal Shield	
MVHS MVHSL	440C Stainless Steel Equivalent		Nitrile Rubber		



Part Number		C = Fixed E = Adjustable	Applicable Rail No.	A	B	B_1	C	D	E	M	M_1	M_2	J	K	L	N Eccentricity	O	P	Tightening Torque Nm	Thrust Load LSmax. (N)	Radial Load LRmax. (N)
Type	No.																				
MVH MVHS C Dimension Short	12	C E	12	12.7	10.1	5.47	5.8	9.51	5	M4 x 0.5	7	9	0.8	2	—	— 0.5	4	7	2	22.5	45
	25	C E	25	25	16.6	9	9.8	20.27	10	M8 x 1.0	13	17	1	5	3	— 0.75	8	13	18	100	200
	34	C E	44	34	21.3	11.5	13.8	27.13	12	M10 x 1.25	17	21	1.25	6	4	— 1.0	10	15	33	200	400
MVHL MVHSL C Dimension Long	12	C E	12	12.7	10.1	5.47	9.5	9.51	5	M4 x 0.5	7	9	0.8	2	—	— 0.5	4	7	2	22.5	45
	25	C E	25	25	16.6	9	19	20.27	10	M8 x 1.0	13	17	1	5	3	— 0.75	8	13	18	100	200
	34	C E	44	34	21.3	11.5	22	27.13	12	M10 x 1.25	17	21	1.25	6	4	— 1.0	10	15	33	200	400

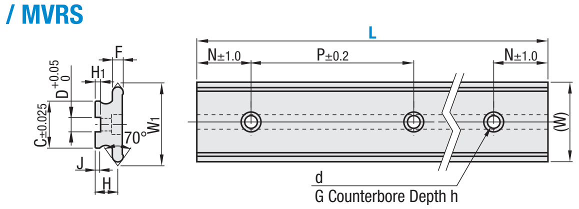
! No adjusting hexagon groove (L) for adjusting wheel (E) No.12. ! Thrust load and radial load values are those when lubricated. For values when not lubricated, see P.726.

70° V-Guide Units – Double-Sided Tracks

RoHS10

Type		Material	Surface Treatment	Hardness
Double Sided Tracks	MVR	52100 Bearing Steel	Black Oxide	58~62 HRC min. (70° Edge)
	MVRS	420 Stainless Steel	—	52 HRC min. (70° Edge)

MVR / MVRS



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

Part Number		L*	(W)	W_1	F	H	H_1	C	J	D	d x G x h	N	P
Type	No.												
MVR	12	120–1020	12	13.25	3.2	6.4	1.8	8.9	1.7	4	3.5 x 6.2 x 3.1	15	45
	25	240–1140	25	26.58	4.93	10.2	2.5	15.4	2.6	6	5.5 x 10 x 5.1	30	90
	44		44	45.58	6.42	12.7	3	26.4	2.3	8	7 x 11 x 6.1	30	90
MVRS	12	120–1020	12	12.37	3	6.2	1.8	8.5	1.7	4	3.5 x 6 x 3	15	45
	25	240–1140	25	25.74	4.5	10	2.5	15	2.5	6	5.5 x 10 x 5	30	90
	44		44	44.74	6	12.5	3	26	2.5	8	7 x 11 x 6	30	90

Part Number Example

Part Number	-	Specification	-	L
MVH12	-	C		
MVRS25			-	510