□ZAK ● Cross Roller Guide

Revolution of Guide!! ABSOLUTLY NO CREEP



ACS Cross Roller Guide with Anti-Creeping Cage System

- <Good Point>
- 1.Anti-Creeping Cage
- 2. The Best for Vertical Use
- **3.Smooth Running Motion**
- 4.Longer Roller
- **5.Longer Contact Area**
- 6.High Rigidity
- 7.Anti-Skew Design
- 8. High Reliability

Construction of ACS series





Fig31: Displacement of Roller Cage





Fig6:Comparison of Dynamic load ratings







Fig35: Load Distribution of Rollers



Fig36:Travel parallelism of ACS series





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Rigidity formula of ACS series

$$\delta = 0.077 \frac{Q^{0.9}}{l^{0.8}}$$

 δ :Elastic deformation between contact objects [µm] l_a :Contact length of a roller [mm]

- $Q^a = F/Z$
- $\mathcal{E} = I + \mathcal{L}$ F :Load [N]
- Z :The number of rollers

*In the case that contact angle is 45 degrees as a cross roller guide, use following formula.

Roller $\delta = 0.075 \frac{Q^{0.9}}{l_a^{0.8}}$ (4) Ball $\delta = 0.79 \sqrt[3]{\frac{Q^2}{Dw}}$ (5)



Fig38: Rigidity curve of ACS series



Fig39: The correction modulus of rigidity



Fig40: The rigidity comparison of balls and rollers



Fig37: Calculation of ACS rigidity as system



The performance comparison of ACS cross roller guide and miniature ball guide

1. The comparisons about dimensions, dynamic load rating and rated life

dynamic load rating and rated life <Miniature Ball Guide>



<ACS Cross Roller Guide>



Table107: Miniature ball guides performance table

			Dynamic Load Rating	Lifo	
	А	В	C×2 (kN)	LITE	
MBG7	17	8	1.76	1	
MBG15	32	16	8.82	1	
MBG20	46	25	17.64	1	

Table108: ACS cross roller guides performance table

		_	Dynamic Load Rating	Lifo	
	А	В	C (kN)	LIIE	
ACS3	18	8	4.23	×37	
ACS6	31	15	22.83	×48	
ACS9	44	22	65.54	×159	

2. The important features of ACS cross roller

The excessive pre-load like ball guide is unnecessary. Thus this series works smoothly without bumpiness. The most suitable for high speed and micro stroke operation. High performance and High rigidity under vertical use.

3.The comparison of ball guide and roller guide about rigidity Fig:41 Comparison curve about rigidity





<Numbering>

ACS6100-1set

1set includes 4 rails and 2 roller cages.

Table112:Recommended Torque for pre-load

Model No.	Screw Dia	Torque Ncm
ACS3	M4	10
ACS6	M5	26
ACS9	M6	90

< Loading direction factor>

For calculation of Basic dynamic load ratings(C) and basic static load ratings(C_0), the direction of the load is defined for ACS cross roller guides as shown by an allow A in the ISO. When you use this series as shown by an allow B, please calculate C_{eff} and C_{0eff} by using loading direction factor.



$$C_{eff} = C/f$$

$$C_{0eff} = C_0/f_0$$
(11)

Table113:Loading direction factor

Load direction factor	f	f ₀
Direction A	1	1
Direction B	1.72	2