

Characteristics of NSK Linear Rolling Guides

The following describes comparative characteristics of rolling and slide guide way, which are the most commonly used.

Comparative characteristics of rolling and sliding guide way


Function	Rolling guide	Sliding guide
Friction	<ul style="list-style-type: none"> • Friction coefficient: 0.01 or lower • Difference between static and dynamic friction is small. • Change by speed is slight. 	<ul style="list-style-type: none"> • Friction is great. • Static and dynamic friction vary greatly.
Positioning accuracy	<ul style="list-style-type: none"> • Lost motion is slight. • Stick-slip is slight. • Easy to achieve sub-micron positioning 	<ul style="list-style-type: none"> • Lost motion is great. • Stick-slip at low speed is great. • Difficult to achieve sub-micron positioning
Life	<ul style="list-style-type: none"> • Possible to estimate life 	<ul style="list-style-type: none"> • Difficult to estimate life
Static rigidity	<ul style="list-style-type: none"> • Generally high • No play because of preload • Easy-to estimate rigidity 	<ul style="list-style-type: none"> • Rigidity is great against load from a single direction. • There is mechanical play. • Difficult to estimate rigidity
Speed	<ul style="list-style-type: none"> • Wide range of use from low to high speed. 	<ul style="list-style-type: none"> • Unsuitable for extremely low and high speed
Maintenance, reliability	<ul style="list-style-type: none"> • Long life through simple maintenance 	<ul style="list-style-type: none"> • Precision is lost greatly by deteriorated guide surface.

In response to the demand for guide with high-speed, high-precision, high-quality, as well as to the demand for easy maintenance, rolling guides which have above features are becoming prevalent. Utilizing the technology we sharpened in anti-friction rotating bearings, NSK makes various types of linear guides which are highly accurate and reliable.

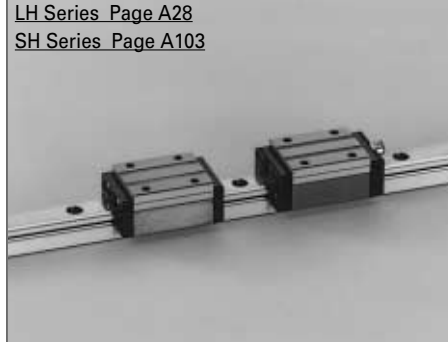

Characteristics of the NSK linear rolling guides are:

- **Designs are simple and economic. This contributes to high precision and low cost.**
- **Ultra-high purity of materials and superb processing technology assure reliability.**
- **Prompt delivery thanks to interchangeable components and abundant stock.**
- **The user can select the most suitable guide from a wide choice.**





Types of NSK Linear Rolling Guides

Product	Appearance	Features	Major applications
NSK Linear Guide	 <p>MF Series (equipped with lubrication Unit "NSK K1") main tenance free series</p> <p>Page A125</p>	<p>"NSK K1" is equipped.</p> <p>Lubricating oil seeps from the special resin, maintaining smooth operation. NSK K1 can be installed in all series listed below.</p>	<ul style="list-style-type: none"> • Automobile manufacturing equipment • Semiconductor, liquid crystal display manufacturing equipment • Industrial robots • Printing, book binding, paper manufacturing machines • Woodworking and construction machines • Optic and glass production machines • Food and medical equipment • Machine tools • Electric and communication systems





Rigidity ; ◎ : Superb ○ : Fare ○ : Low

Product	Appearance	Rolling element, etc.	Rigidity	Major applications
NSK Linear Guide	 <p>LH Series Page A28 SH Series Page A103</p>	Balls	◎	<ul style="list-style-type: none"> • Industrial robots • Materials handling • Electric discharge machines • Woodworking machines • Laser processing machines • Semiconductor manufacturing equipment • Precision measuring equipment • Packaging/packing machines • Food processing machines • Medical equipment • Tool grinders • Flat surface grinders
	 <p>LS Series Page A42 SS Series Page A103</p>	Guided by rail	◎	<ul style="list-style-type: none"> • Industrial robots • Materials handling • Electric discharge machines • Woodworking machines • Laser processing machines • Semiconductor manufacturing equipment • Precision measuring equipment • Packaging/packing machines • Food processing machines • Medical equipment • Pneumatic components


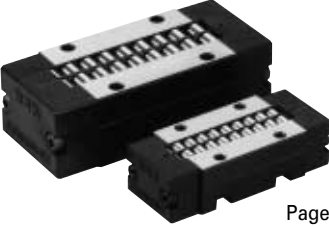


Rigidity ; ◎ : Superb ○ : Fare ○ : Low

Product	Appearance	Rolling element, etc.	Rigidity	Major applications
NSK Linear Guides	<p><u>LA Series</u></p>  <p>Page A56</p>	Balls	◎	<ul style="list-style-type: none"> • Machining centers • NC lathes • Heavy cutting machine tools • Grinders • Gear cutting machines • Press • Electric discharge machines
	<p><u>LY Series</u></p>  <p>Page A66</p>		◎	<ul style="list-style-type: none"> • Machining centers • NC lathes • Heavy cutting machine tools • Grinders • Gear cutters
	<p><u>LW Series</u></p>  <p>Page A76</p>	Guided by rail	○	<ul style="list-style-type: none"> • Semiconductor manufacturing equipment • Materials handling • Measuring/Test equipment • Electric discharge machines • Punch press • Industrial robots
	<p><u>LE Series</u></p>  <p>Page A82</p>		○	<ul style="list-style-type: none"> • Semiconductor manufacturing equipment • Liquid crystal display manufacturing equipment • Medical equipment • Optical stage • Microscope XY stage • Transporting optical fiber • Small robots

Rigidity ; ◎ : Superb ○ : Fare ○ : Low

Product	Appearance	Rolling element, etc.	Rigidity	Major applications
NSK Linear Guides	<p><u>LU Series</u></p>  <p>Page A92</p>	Balls	○	<ul style="list-style-type: none"> • Semiconductor manufacturing equipment • Liquid crystal display manufacturing equipment • Medical equipment • Optical stage • Microscope XY stage • Transporting optical fiber • Small robots • Computer peripheral equipment • Pneumatic equipment
	<p><u>LL Series</u></p>  <p>Page A100</p>	Guided by rail	○	<ul style="list-style-type: none"> • Knitting machines • Computer peripheral equipment • Pneumatic equipment • Office equipment
Linear rolling bushing	 <p>Page A223</p>	Balls Infinite stroke Round guide shaft	○	<ul style="list-style-type: none"> • Materials handling • Packaging machines • Medical equipment • Pneumatic equipment • Office equipment • Assembling machines
Crossed roller guide	 <p>Page A234</p>	Rollers Limited stroke Rail guide	◎	<ul style="list-style-type: none"> • Precision stage • Measuring equipment • Test equipment • Printed circuit board assembly

Rigidity ; ◎ : Superb ◉ : Fare ○ : Low

Product	Appearance	Rolling element, etc.	Rigidity	Major applications
Roller pack	 <p>Page A240</p>	Roller Infinite stroke Flat surface guide	◎	<ul style="list-style-type: none"> • Large machine tools • Conveyor system for heavy objects (guide for heavy load)
Linear roller bearing	 <p>Page A247</p>		◎	
Cam-follower/roller-follower	 <p>Page A252 Page A259</p>		○	<ul style="list-style-type: none"> • Conveyor systems • Packaging machines • Pallet changers • Office equipment
Translide			balls Infinite stroke Guided by rail	◎