For special environment

IKO

Non-Magnetic

Linear Motion Rolling Guide Series

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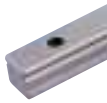
CAT-5937

IKO Non-Magnetic Linear Motion Rolling Guide Series



Linear Motion Rolling Guides that are used in semiconductor and liquid crystal manufacturing equipment and inspection equipment may be operated within a magnetic field or in a place that must avoid the influence of magnetic force in the equipment using electron beams. Non-Magnetic Linear Motion Rolling Guides using a combination of non-magnetic stainless steel, non-magnetic hard alloy, or ceramics for the casing, track rail, and way, and silicon nitride ceramics for the rotating elements are useful for these applications.

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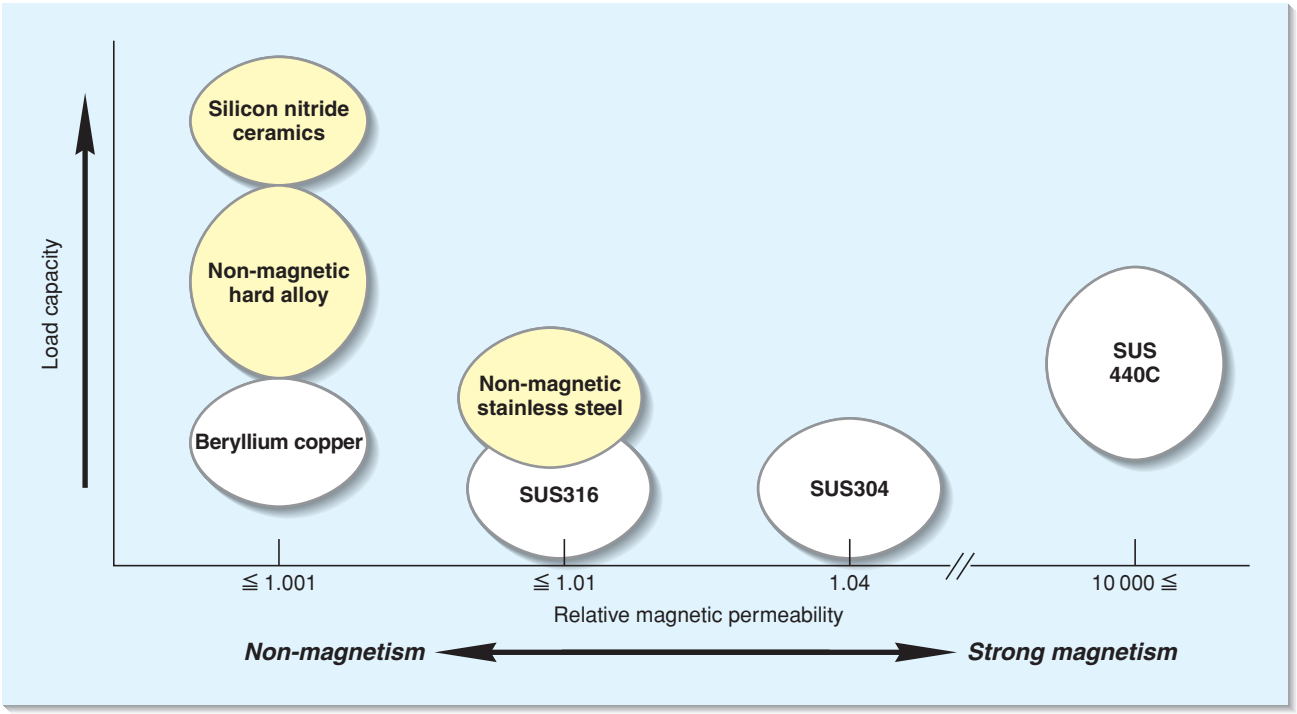
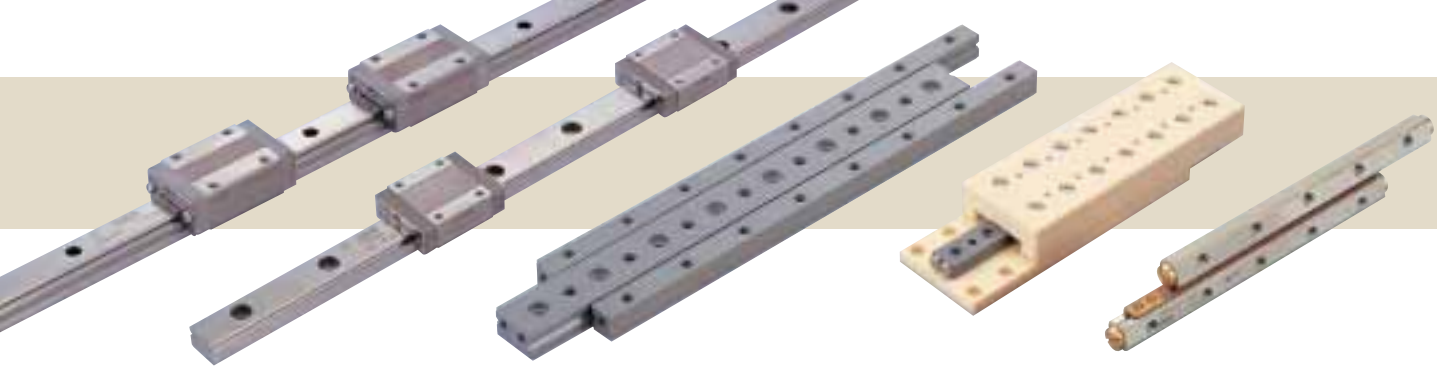
Characteristics of non-magnetic materials

	Silicon nitride ceramics	Beryllium copper(4)	Non-magnetic hard alloy	Non-magnetic stainless steel	SUS316	SUS304
Relative magnetic permeability(1)	1 (0.999991)	1 (1.00002)	1.001 max. (1.0002)	1.01 max. (1.005)	1.01 max. (1.0091)	1.04 max. (1.0366)
Electric conductivity	×	○	○	○	○	○
Hardness(2) Hv	1400～1600	350～410	1200～1450	380～450	～200	～200
Linear expansion coefficient(3) $\times 10^{-6}$/℃	3.2	17.5～18.0	5.1	19.0	16.2 (20～316℃)	17.8 (20～316℃)
Specific gravity g/cm³	3.2	8.3	14.5	7.9	7.9	7.9
Main ingredients	Si_3N_4	Cu、Be	Ni、WC	Fe、Mn、Cr	Fe、Ni、Cr	Fe、Ni、Cr
Cost	△	○	△	◎	–	–
Remark	Excellent corrosion resistance	Environmental load material	Sintered alloy	Higher hardness than beryllium copper	–	–

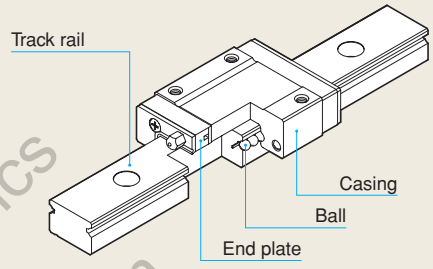
Remark : This table shows a property comparison among general non-magnetic materials. ▭ is a recommended material for the raceway.
Note (1) The value in parentheses is an example of measured value.
(2) Hardness after age hardening for beryllium copper and non-magnetic stainless steel.SUS304 and SUS316 have no quench hardness.
(3) A mean value of 20℃ to 400℃ unless otherwise specified.
(4) Beryllium copper is not available in consideration of the environment.





Combination of Specifications

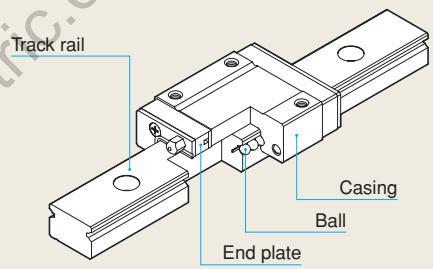
Non-magnetic stainless steel specification (Relative magnetic permeability ≦ 1.01)



■ **Standard specification**

Casing	Non-magnetic stainless steel
Track rail	Non-magnetic stainless steel
Ball	Silicon nitride ceramics
End plate	General-purpose engineering plastics, SUS316
Screws	SUS316

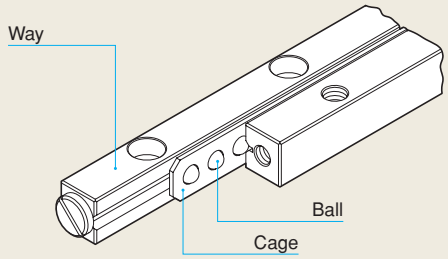
Non-magnetic hard alloy specification (Relative magnetic permeability ≦ 1.001)



■ **Standard specification**

Casing	Non-magnetic hard alloy
Track rail	Non-magnetic hard alloy
Ball	Silicon nitride ceramics
End plate	General-purpose engineering plastics, Specific engineering plastic
Screws	Titanium alloy

Ceramics specification (Relative magnetic permeability ≦ 1.001)



■ **Standard specification**

Way	Silicon nitride ceramics
Ball	Silicon nitride ceramics
Cage	Phosphor bronze
Screws	Phosphor bronze

Selection of Lubricant

By selecting a lubricant (grease for vacuum, special polymeric fluoride coating, etc.), this series can be used in various operating environments such as a vacuum environment and a clean environment.

Load Capacities

The load capacities are compared as Silicon nitride ceramics > Non-magnetic hard alloy > Non-magnetic stainless steel.

Availability of Series and Model Codes

Series	*Main model code*
Linear Way L	**LWL, LWLF**
Linear Way E	**LWE**
Linear Way H	**LWH**
Crossed Roller Way	**CRW, CRWU**
High Rigidity Precision Linear Slide Unit	**BWU**

Products are manufactured on a make-to-order basis. If any combination of specification other than the above is required. Ask IKO for availability.

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