

For special environment

IKO

Non-Magnetic

Linear Motion Rolling Guide Series



*Challenging the new frontier of special environment
with fresh ideas and long experiences.*

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.

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⁾ × 10 ⁻⁶ /°C	3.2	17.5 ~ 18.0	5.1	19.0	16.2 (20 ~ 316°C)	17.8 (20 ~ 316°C)
Specific gravity g/cm ³	3.2	8.3	14.5	7.9	7.9	7.9
Main ingredients	Si ₃ N 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	—	—

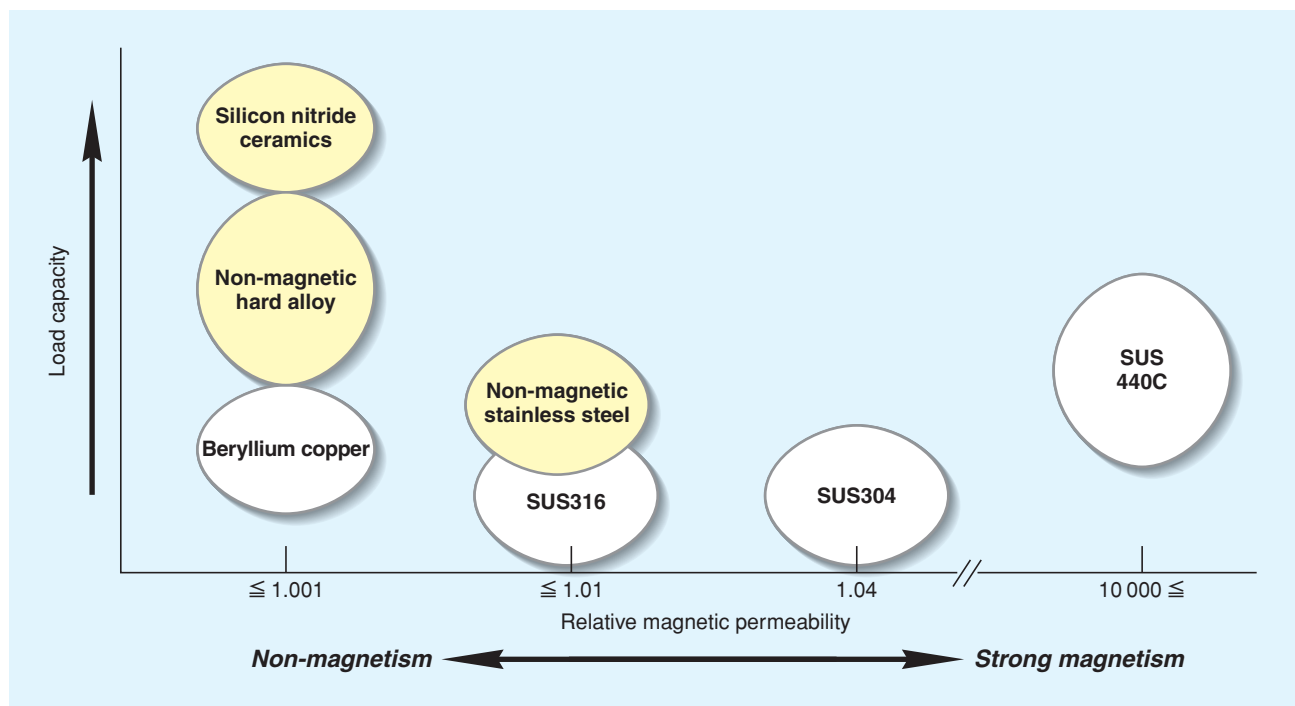
Remark : This table shows a property comparison among general non-magnetic materials. is a recommended material for the raceway.

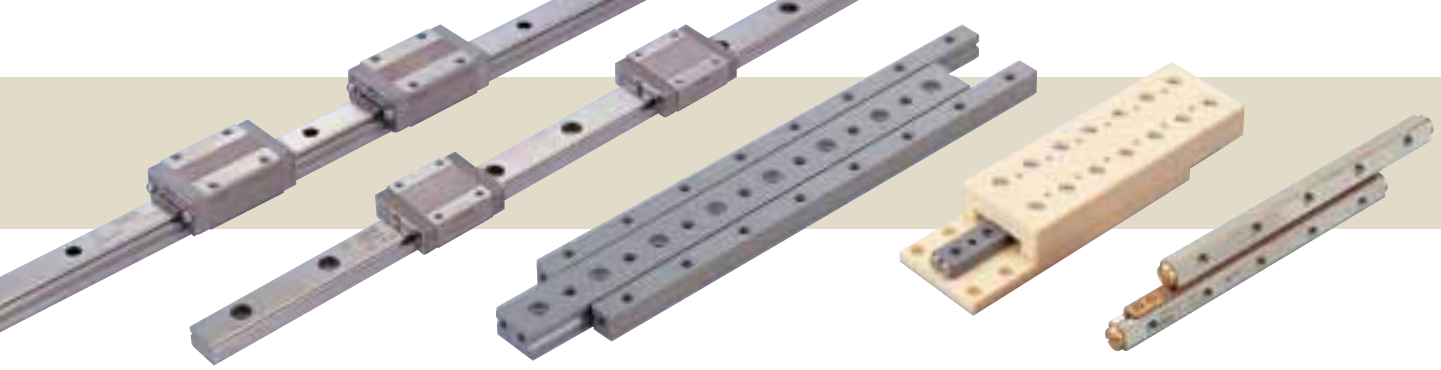
Note (1) The value in parentheses is an example of measured value.

(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°C to 400°C unless otherwise specified.

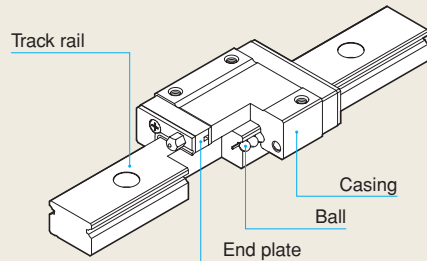
(4) Beryllium copper is not available in consideration of the environment.





Combination of Specifications

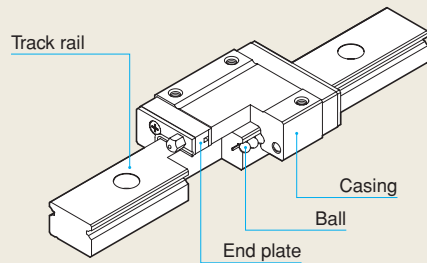
Non-magnetic stainless steel specification (Relative magnetic permeability ≤ 1.01)



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

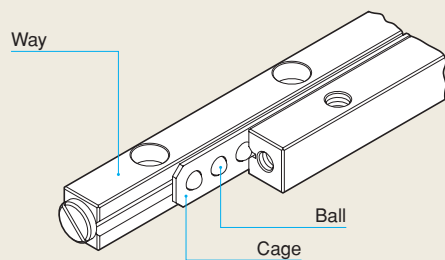
Non-magnetic hard alloy specification (Relative magnetic permeability ≤ 1.001)



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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