

2.2. Structure and Feature of the Caged Roller LM Guide

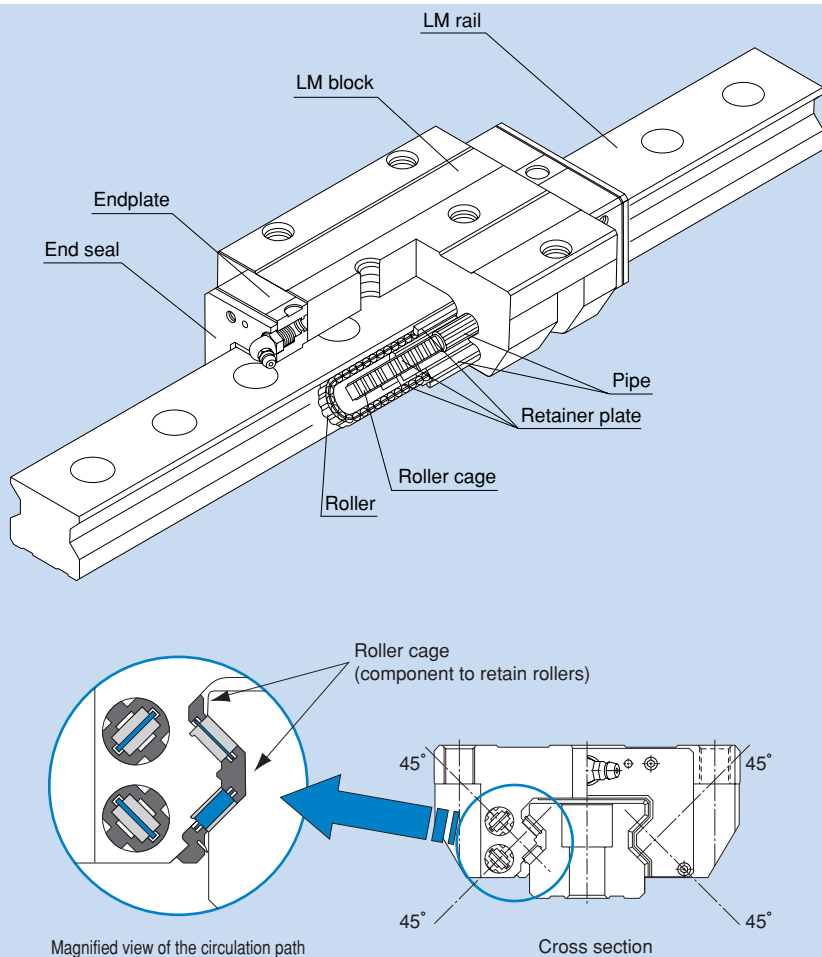


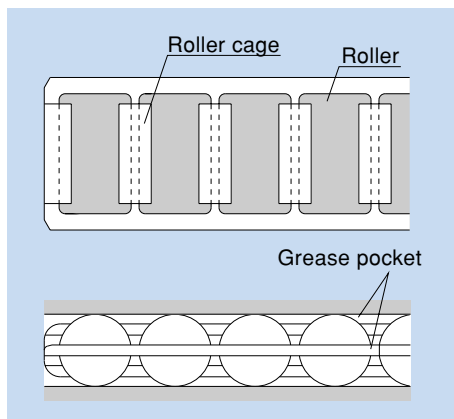
Fig. 3 Structural Drawing of Model SRG

Using a roller cage, the Caged Roller LM Guide achieves low-friction and smooth motion and long-term maintenance-free operation. In addition, to ensure super-ultra-high rigidity, rollers with low elastic deformation are used as the rolling elements and the roller diameter and the roller length are optimized.

Furthermore, the lines of rollers are placed at a contact angle of 45° so that the same rated load is applied in the four (radial, reverse and lateral) directions.

2.2.1. Advantages of the Roller Cage Technology

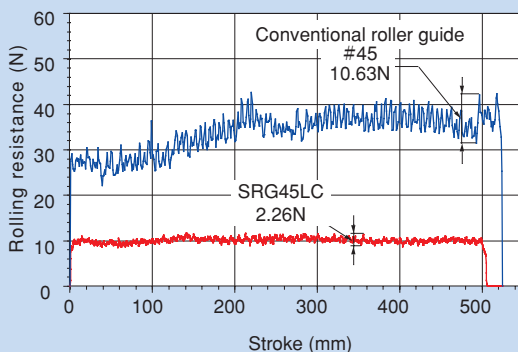
- ① Evenly spaced and aligned rollers circulate, preventing the rollers from skewing, minimizing rolling resistance fluctuations and achieving smooth and stable motion.
- ② The absence of friction between rollers allows grease to be retained in grease pockets and achieves long-term maintenance-free operation.
- ③ The absence of friction between rollers achieves low heat generation and superbly high speed.
- ④ The absence of roller-to-roller collision ensures low noise and acceptable running sound.



Smooth Motion

Rolling resistance data

Evenly spaced and aligned rollers circulate, minimizing rolling resistance fluctuations and achieving smooth and stable motion.



Result of measuring rolling resistance fluctuations

[Conditions] Feeding speed: 10 mm/s;
applied load : none (one block)

● Long-term Maintenance-free Operation

■ High-speed durability test data

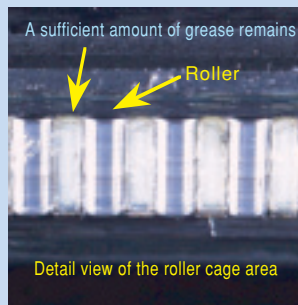
Use of a roller cage eliminates friction between rollers and increases grease retention, thus to achieve long-term maintenance-free operation.

[Tested model] SRG45LCC0

[Conditions] Preload : CO clearance
 Stroke : 2,300 mm
 Acceleration : 1.5G
 Speed : 180m/min
 Lubrication : initial lubrication only
 (THK AFB grease)

[Test result]

No anomaly observed after running 15,000 km

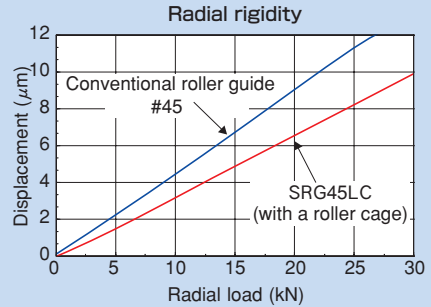
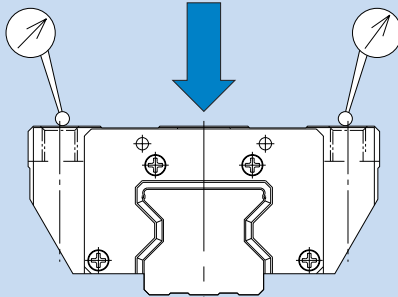


● Super-ultra-high Rigidity

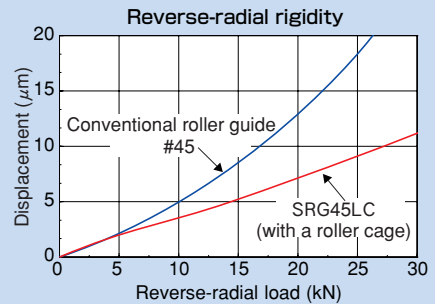
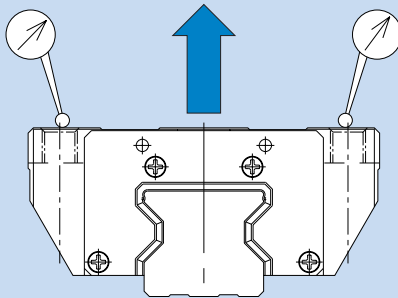
■ High rigidity evaluation data

[Preload] SRG : radial clearance C0
Conventional type: radial clearance equivalent to C0

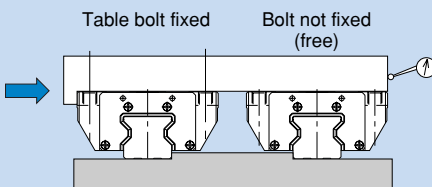
Radial rigidity



Reverse-radial rigidity



Horizontal rigidity



Rigidity is measured with the two axes placed in parallel and one of the axes not fixed with a bolt in order not to apply a moment.

