

4.5. Designing a Guide Structure

THK offers various types of LM Guides in order to meet diversified service conditions. Supporting ordinary horizontal mount, vertical mount, inverted mount, slant mount wall mount and single-axis mount, the wide array of LM Guide types makes it easy to achieve a linear guide system with a long service life and high rigidity while minimizing the required space for installation.

4.5.1. Examples of the Guide Structure

The following are representative guide structures and arrangements when installing the LM Guide.

Examples of Arrangements of the Guide Structure

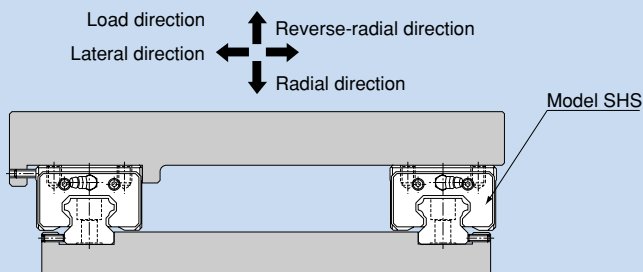


Fig. 2 Double-rail Configuration When High Rigidity is Required in All Directions

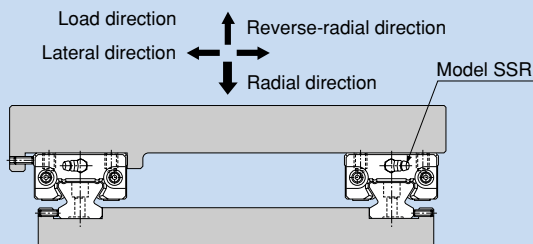


Fig. 3 Double-rail Configuration When High Rigidity is Required in the Radial Direction

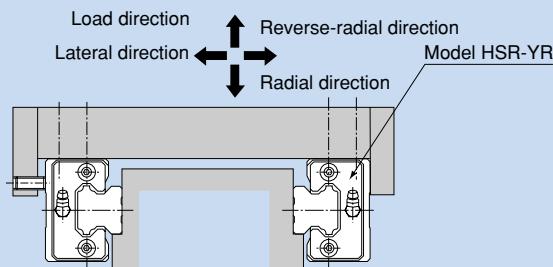


Fig. 4 When High Rigidity is Required in All Directions and the Installation Space is Limited in Height

Examples of Representative Arrangements of the Guide Structure

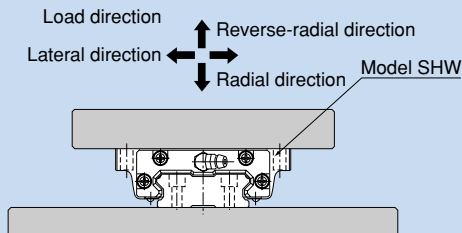


Fig. 5 Single-rail Configuration

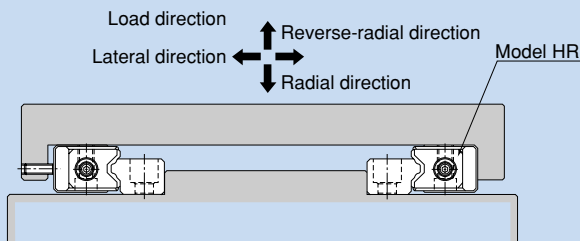


Fig. 6 When the Minimum Possible Height of the Equipment is Allowed

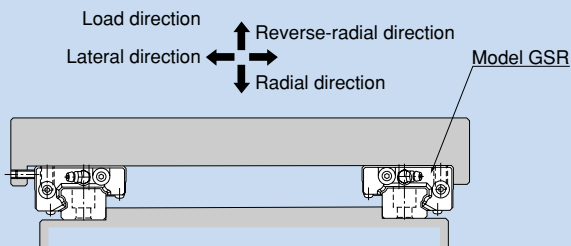


Fig. 7 When a Moderate Load is Applied and the Mounting Surface is Rough

Examples of Arrangements of the Guide Structure

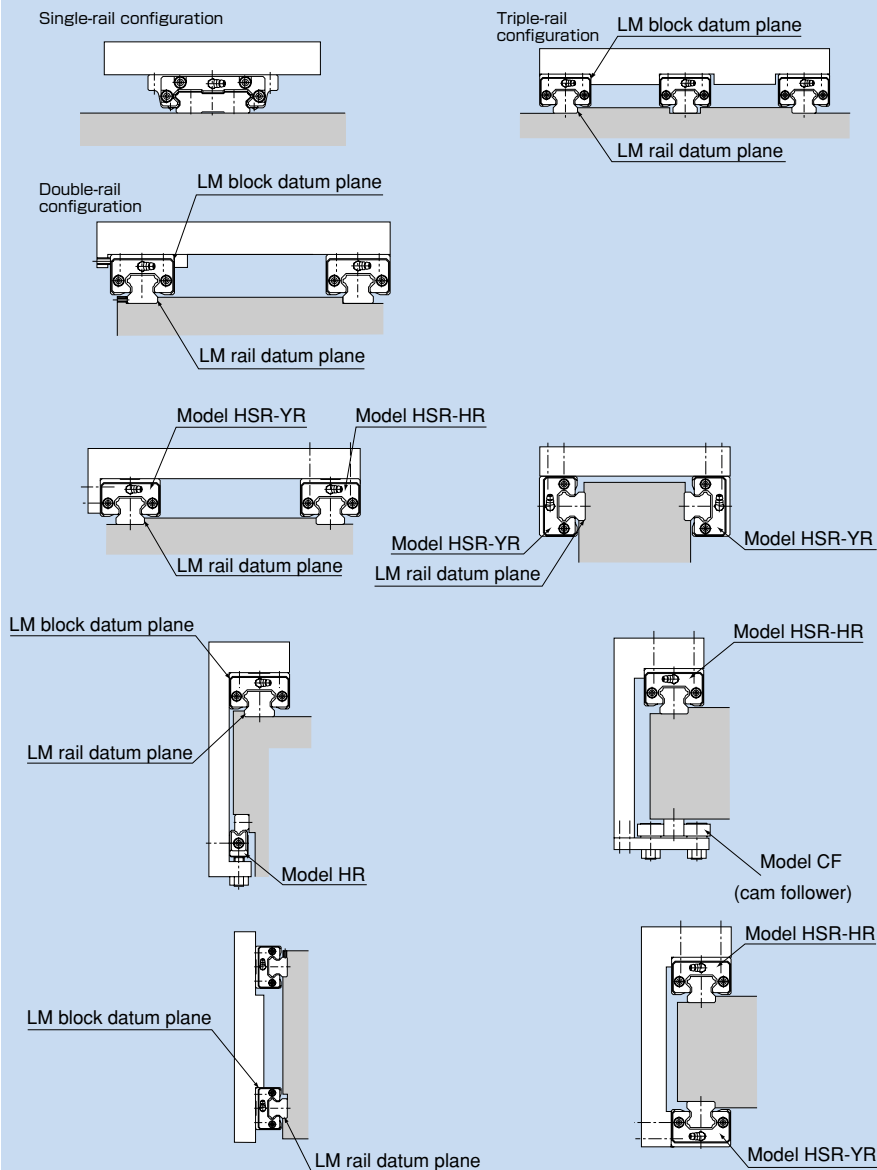


Fig. 8

Examples of Arrangements of the Guide Structure

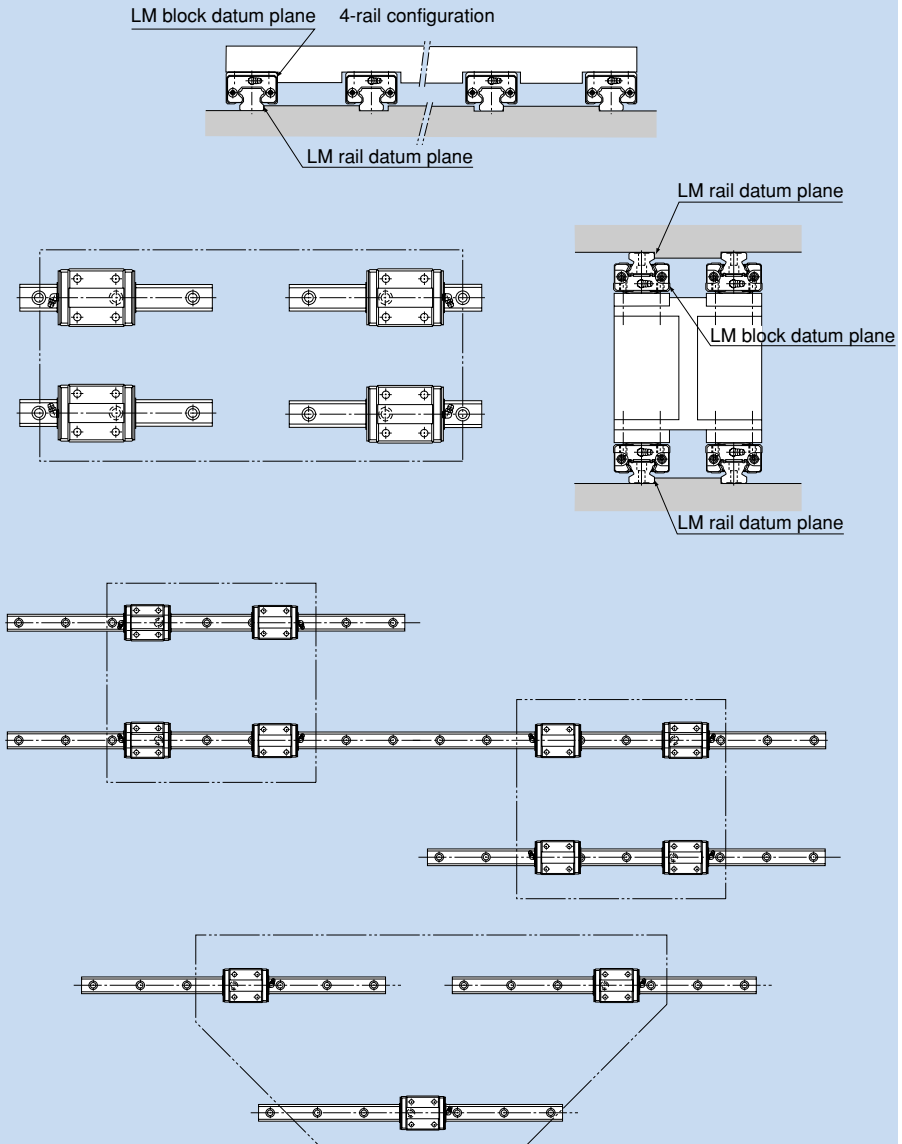


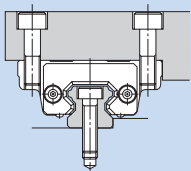
Fig. 9

4.5.2. Method for Securing an LM Guide® to Meet the Service Conditions

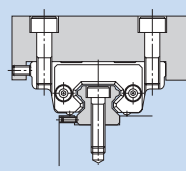
LM Guides are categorized into groups of types by mounting space and structure: a group of types to be mounted with bolts from the top, and another of types to be mounted from the bottom. LM rails are also divided into types secured with bolts and those secured with clamps (model JR). This wide array of types allows you to make a choice according to the application. There are several ways of mounting the LM Guide as shown in Fig. 10. When the machine is subject to vibrations that may cause the LM rail(s) or LM blocks to loosen, we recommend the securing method indicated by Fig. 12 (if 2 or more rails are used in parallel, only the LM block on the master rail should be secured in the crosswise direction). If this method is not applicable for a structural reason, hammer in knock pins to secure the LM block(s) as shown in Fig. 11. When using knock pins, machine the top/bottom surfaces of the LM rail by 2 to 3 mm using a carbide end mill before drilling the holes since the surfaces are hardened.

Fig. 10 Major Securing Methods on the Master-rail Side

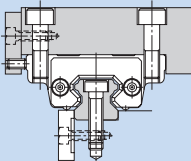
a Secured only with side datum planes



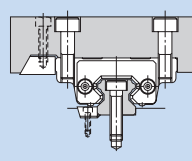
b Secured with setscrews



c Secured with a presser plate



d Secured with tapered gibs



e Secured with pins

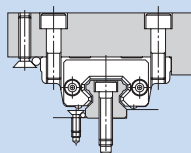
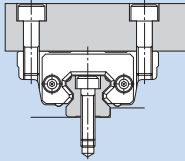
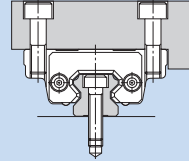


Fig. 11 Major Securing Methods on the Subsidiary-rail Side

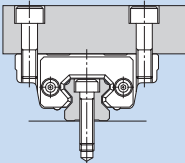
(a) Secured only with the side datum plane of the rail



(b) Secured only with the side datum plane of the block



(c) Secured without a side datum plane



(d) Secured with knock pins

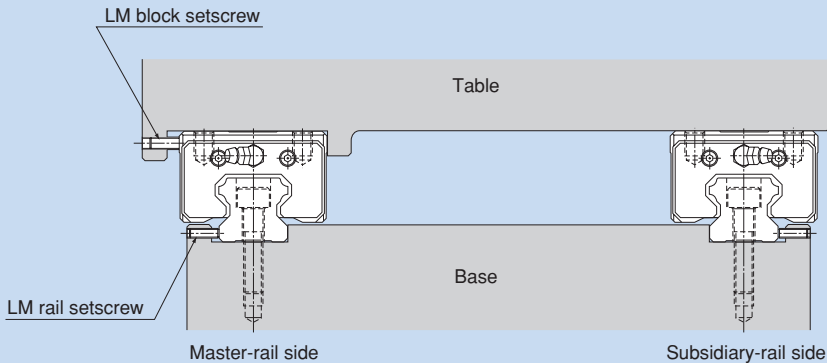
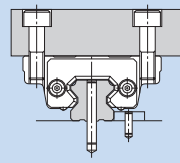


Fig. 12 When the Machine Receives Vibrations or Impact