EWELLIX

MAKERS IN MOTION

Profile rail guides - LLT catalogue

1.1 Product description

The productivity and economic success of a given application depends, to a large extent, on the quality of the selected linear components. Often these components determine market acceptance and thus help to obtain a competitive edge for the manufacturer. To do this, the linear components have to be as adaptable as possible to precisely meet the application's requirements, ideally with standard components.

The Ewellix profile rail guide series LLT satisfies these market demands: available in a wide range of sizes, carriages and accessories as well as in various preload and precision classes, LLT profile rail guides facilitate adaptation to individual application demands. In combination with their ability to operate at virtually unlimited stroke, this opens up almost any design option.

The range of possible applications include material handling, plastic injection moulding, woodworking, printing, packaging and medical devices, to name only a few. In these types of applications, the design of the LLT reveals its full capabilities.

Ewellix manufactures LLT profile rail guides in an X-arrangement with a 45° contact angle between the rolling elements and raceways. This design promotes equal load sharing in all four main load directions to provide greater design flexibility. Moreover, deviations in parallelism and height, which usually occur in multi-axis systems, can be compensated for more efficiently, resulting in reliable and smooth operation under a variety of operating conditions.

In addition, Ewellix offers a miniature profile rail guide series and a series of ready assembled and driven profile rail guide slides. Contact your Ewellix representative for additional information.

1.2 Design

Just as with rotary bearings, the raceways of profile rail guides can be arranged in an X- or O-configuration. The technical characteristics of these two arrangements are essentially the same. Therefore, there are no basic differences in behaviour in the vast majority of load situations, except when they are subjected to moment loads around the x-axis.

The Profile rail guides from Ewellix feature an X-arrangement, based on the contact angle of the rolling elements (↳ **fig. 1**).

The advantage of this arrangement is that deviations in parallelism and height, which usually appear in multi-axes systems, can be accommodated more effectively (↳ **fig. 2**).

Due to the design-related smaller lever arm, the X-arrangement provides better self-aligning capability.

In combination with a two-point contact of the rolling elements, running friction is kept to a minimum.

This results in a smooth and stick-slip-free operation of the guidance system.

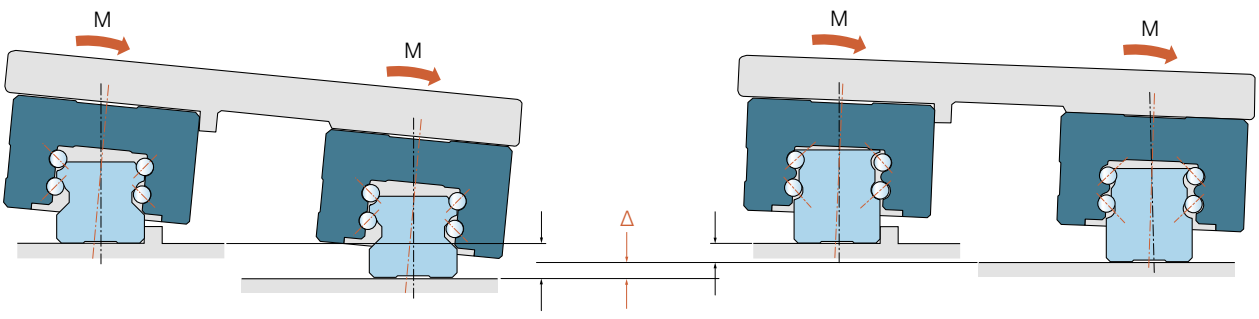
Fig. 1

Schematic illustration of the different ball-arrangements

X-arrangement O-arrangement

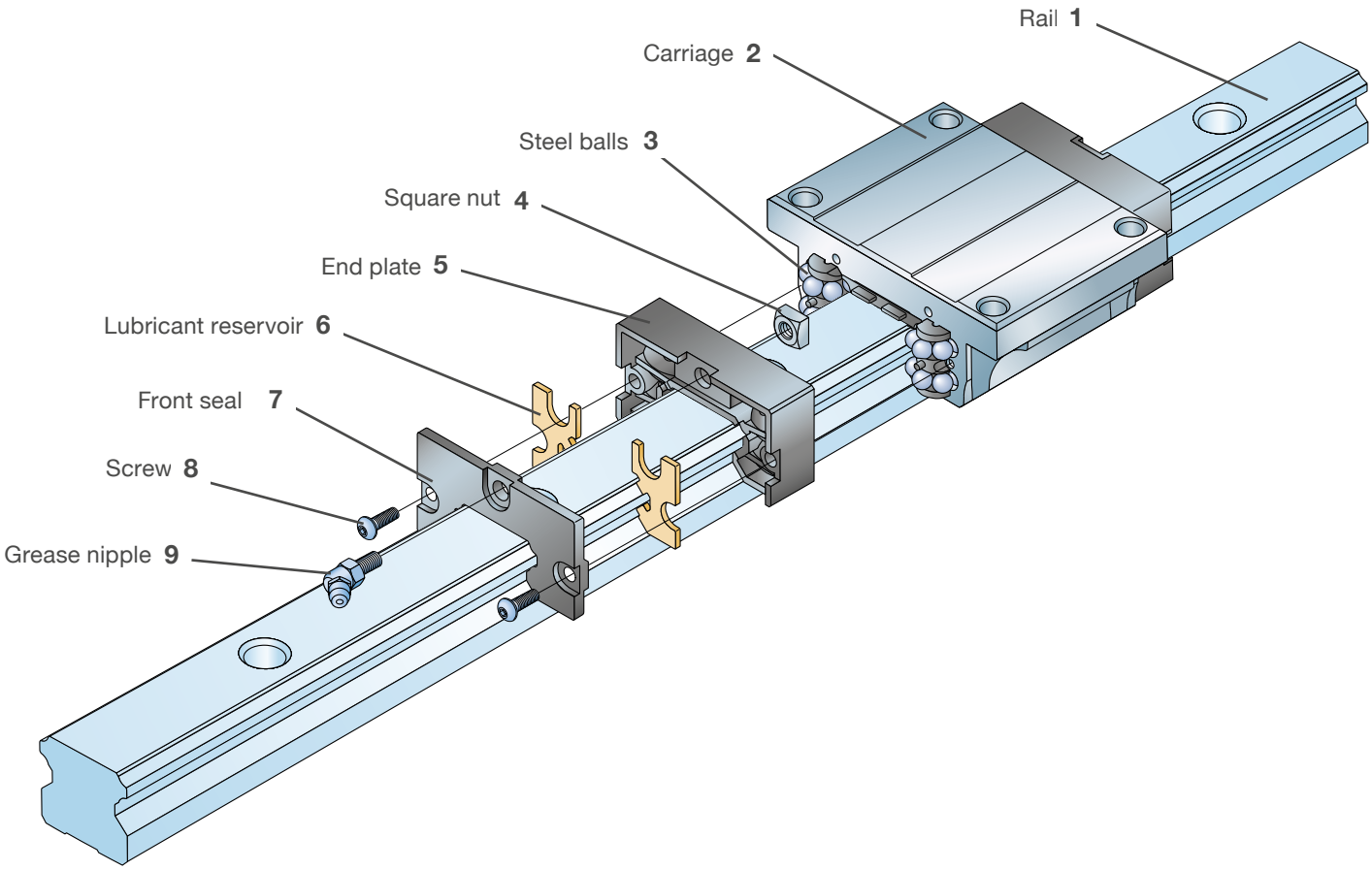
Fig. 2

Self-aligning capability in comparison



X-arrangement O-arrangement

1.2.1 Components and material specifications



Material specifications

1. Steel, inductive hardened
2. Steel, case hardened
3. Bearing steel
4. Steel, zinc coated
5. POM, reinforced
6. EPU foam
7. PA 6.6 and Elastomer; alternative low friction S0 shield made from PA 6.6
8. Steel
9. Steel, nickel coated

1.2.2 Standard carriage components

Seals

The ingress of dirt, swarf and liquids, as well as lubricant leakage can significantly reduce the service life of a profile rail guide system. Ewellix LLT profile rail guide carriages are therefore supplied with front, side and inner seals as standard, which can significantly extend service life.

Front seal

Front seals are especially important since they provide protection for the carriage in the direction of movement.
They are designed as double-lip seals in order to provide improved wiping properties (↳ **fig. 3**).

Side seal

Side seals effectively prevent contaminants from working environment into the system from below. Seal design can deviate based on size (↳ **fig. 4**).

Inner seal

Inner seals are an additional means of protection against lubricant leakage. Seal design can deviate based on size (↳ **fig. 5**).

Grease nipple

Two lube ports with metal thread are located on both front sides of each carriage. As standard, one grease nipple for manual relubrication is supplied along with the carriage, while the opposite side is secured by a set screw. The metal thread also enables the easy and reliable mounting of automatic lubricators.

Grease nipples are according to standard JIS 1575:2000 (↳ **page 70**).

If some accessories require longer grease nipples, they will be provided.

Fig. 3

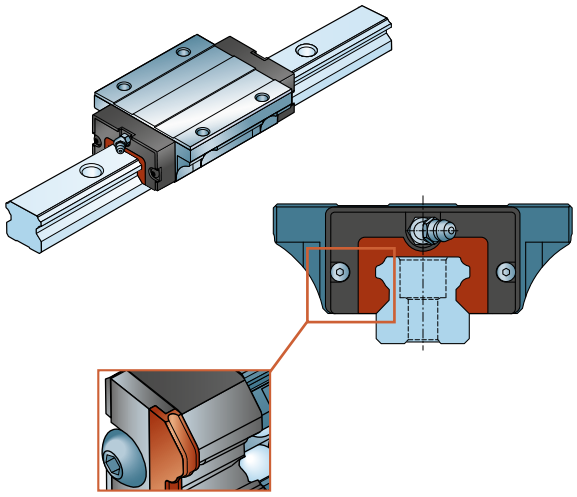


Fig.4

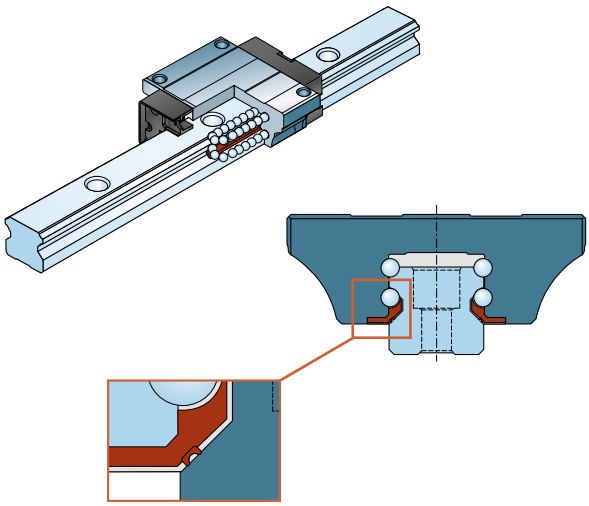
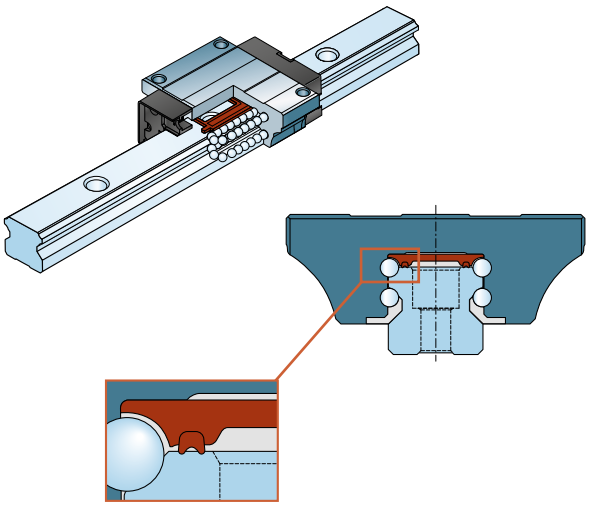
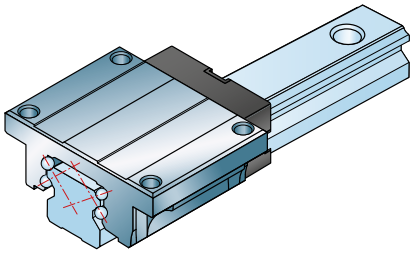


Fig. 5

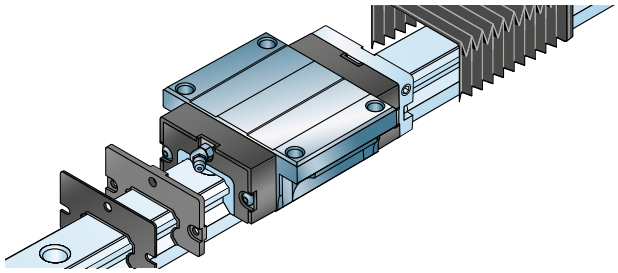


1.3 Features and benefits



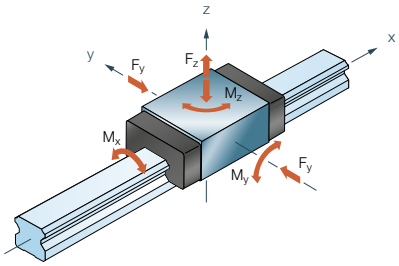
Improved running performance

The LLT profile rail guide has four rows of balls with a 45° contact angle between the rolling elements and raceways. This X-arrangement improves the system's self-aligning capability. Mounting deviations can be accommodated even under preload, resulting in smooth running performance. Friction is kept to a minimum due to two-point ball contact. This enables reliable, stick-slip-free operation for the life of the rail guide.



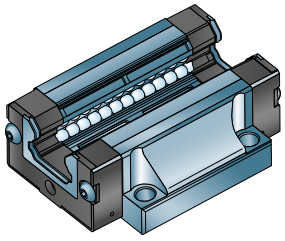
Modular concept for customized solutions

Applications have different speed, precision and environmental requirements. As a result, Ewellix LLT rail guides use modular components so that cost-effective solutions can be built based on the needs of the application. Various precision and preload classes are available to meet different precision and rigidity requirements. Furthermore, a wide range of accessories supports its adaptation to specific environmental needs.



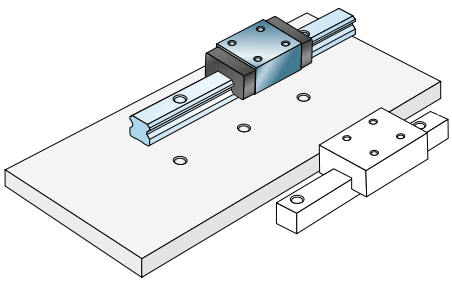
Rigidity, strength and precision for improved production processes

The four-row arrangement of balls at a 45° angle optimizes load sharing in all four main load directions and is in accordance with ISO 14728. This feature provides a high degree of design flexibility. The ability to accommodate high loads and moment loads makes these rail guides ideal even for single carriage systems.



Longer service life and reduced maintenance

Ewellix profile rail guide carriages are pre-lubricated at the factory. The integrated lubricant reservoirs, located in the end plates, constantly relubricate the circulating balls. Both ends of the carriage have threaded metal lubrication ports to accommodate an automatic re-lubrication system. One grease nipple is provided as standard with each carriage. These fully sealed carriages have double lip seals on both ends as well as side and inner seals. The low-friction seals are highly effective against the ingress of contaminants.



Interchangeability and global availability

The main dimensions of Ewellix profile rail guides are in accordance with ISO 12090-1. This enables dimensional interchangeability with all ISO-compliant brands. Ewellix's global sales and distribution network results in availability of replacement parts and serviceability for all systems worldwide.

1.4 Product range

1.4.1. Product overview

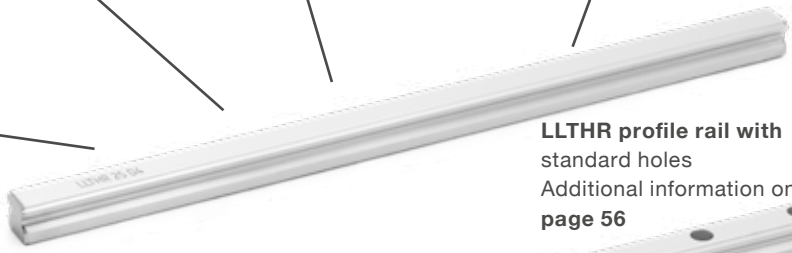
LLTHC ... SA
Flanged carriage, short length, standard height
Further information on **page 38**

LLTHC ... A
Flanged carriage, standard length, standard height.
Further information on **page 40**

LLTHC ... LA
Flanged carriage, extended length, standard height
Further information on **page 42**

LLTHC ... R
Slim-line carriage, standard length, extended height
Further information on **page 50**

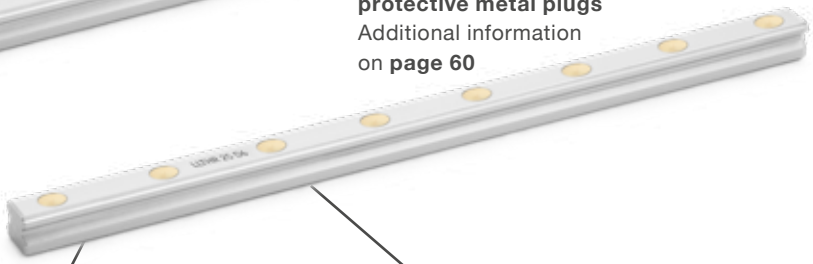
LLTHR profile rail with blind holes
Additional information on **page 58**



LLTHR profile rail with standard holes
Additional information on **page 56**

LLTHR profile rail with protective metal plugs
Additional information on **page 60**

LLTHC ... LR
Slim-line carriage, extended length, extended height
Further information on **page 52**



LLTHC ... SU
Slim-line carriage, short length, standard height
Further information on **page 44**

LLTHC ... U
Slim-line carriage, standard length, standard height
Further information on **page 46**

LLTHC ... LU
Slim-line carriage, extended length, standard height
Further information on **page 48**