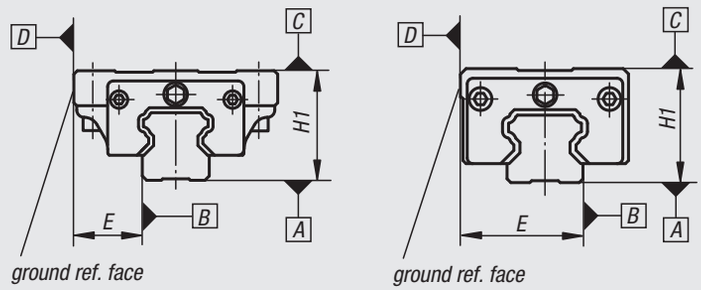
Technical Information for profile guide rails

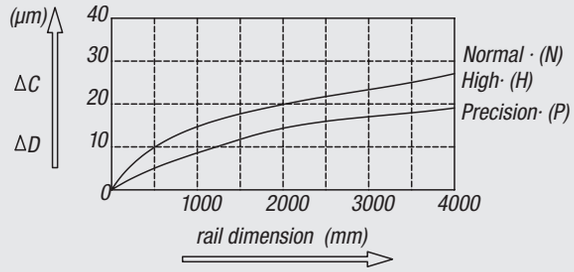
A profile guide rail allow linear motion with the aid of bearing balls. Using balls between rails and carriage allows a profile guide rail to attain extremely precise linear motion. Compared to a conventional glide rails the coefficient of friction is only one fiftieth.

The ball row arrangement based on two-point contact with four ball arrays always at a 45° contact angle lends the profile guide rail consistent load ratings in all primary directions with excellent running properties. The profile guide rail can be mounted in various positions for diverse applications.

Profile guide rails of the same size can be exchanged with each other allowing individual carriages or rails to be exchanged or added to at any time. Our profile guide rails correspond to the market standard and can replace linear guides of the same design by other manufacturers.

Accuracy Classes
Profile guide rails are available in three accuracy classes. The maximum relative tolerance of each accuracy class is specified.





		Accuracy Class		
		Normal (N)	High(H)	Precision (P)
maximum deviation for systems with one carriage	height tolerance H1	±0,1	±0,04	-0,04
	length tolerance E	±0,1	±0,04	-0,04
maximum deviation for systems with several carriages	Δ H1	0,03	0,02	0,01
	Δ E	0,03	0,02	0,01
run parallelism of face C in relation to face A		see diagram		
run parallelism of face D in relation to face B		see diagram		

Pretensioning Classes
With regard to the diverse requirements of the user, profile guide rails are available in four different pre-load classes. A higher pre-load improves the rigidity and reduces the elastic deformation during load changes.

Class	Preload	Preload force	Applications with	Examples
Z0	no preload	0	- constant load direction - imprecise mounting surface	- linear axis - push and pull equipment
Z1	light preloading	0,02 C (C = dynamic load rating)	- constant load direction - light impacts and vibrations - low loading	- engraving machines - packaging machines - industrial handling
Z2	medium preloading	0,05 C (C = dynamic load rating)	- high precision requirements - torque loading	- positioning units - fast feeding units - metrology
Z3	heavy preloading	0,07 C (C = dynamic load rating)	- high rigidity requirements - impacts and vibrations - heavy loading	- machining centres - grinders - large boring machines

Calculating the service life
The nominal service life L can be calculated from the following equation:

$$L = \left(\frac{C_{dyn}}{P}\right)^3 \cdot 50000\ m$$

L = nominal service life (m)
C_{dyn} = dynamic load rating (N)
P = dynamic equivalent load (N)