

PRECISION
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TO THE
POINT



*Roller cages and
complete linear guides*

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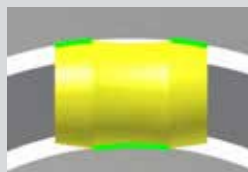
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The TH Roller Guide is an engineering element for machine building, apparatus, tool and fixture construction. A complete linear guide is made up of the guide bush, column and the matching roller cage from aluminium, bronze or plastic.

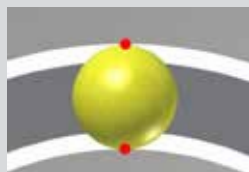
Your benefits at a glance

- **High accuracy** of the guide through the shape of the profile rollers
- **High load capacity:** A TH Profile Roller will handle 12 times higher loads than a ball of the same size
- **Long service life** through linear contact with the roll body
- **Backlash-free and rigid guide** at minimum preload
- **Easy running** due to optimal roll-off



T+H Roller Guide
Socket, column

Linear contact

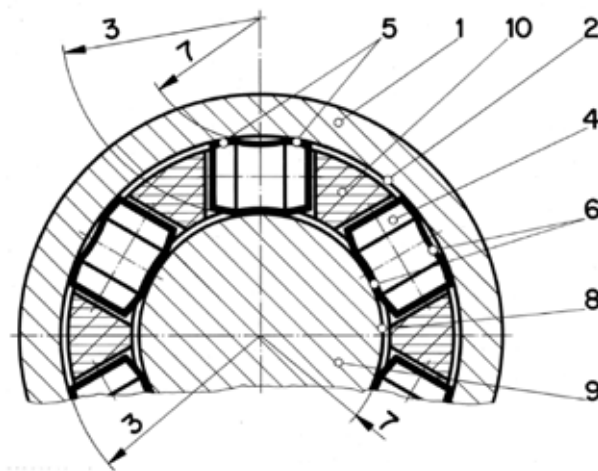


Ball bearing
Socket, column

Point contact

Engineering design

The cross-section clearly shows the linear contact of the profile roller with its saddle barrel shape. The complete linear guide is made up of the guide bush (1) where the profile rollers (4) roll off on its concave guide track (2). The roll-off takes place at the outer profile roller running faces (5) having nearly the same radius (3) as the guide bush. The inside running face (6) or the same profile roller (4) rolls off on the convex guide track (8) of the guide shaft. The saddle-shaped running face (6) has nearly the same radius (7) which corresponds to the radius (7) of the guide shaft (9). To prevent mutual contact and jamming of the profile roller (4) they are held by a plastic or metal cage (10) and space apart.



At dynamic force

V in µm	1 - 2	2 - 3		2 - 4
Dw in mm	10 - 18	19 - 30	32 - 55	72 - 92

At static force

V in µm	1 - 2	2 - 3	3 - 5	4 - 6
Dw in mm	10 - 18	19 - 30	32 - 55	72 - 92

Profile Rollers

The profile rollers are manufactured as standard from the material 100Cr6. Stainless materials upon request.

Determining the roller cage dimensions

The size of a cylinder linear guide depends on the requirements established. Knowing the total load, that is, the values of the static or dynamic forces in action, is therefore necessary. Based on these values, the dimension of the roller cage can be determined using the load ratings per roller track. We recommend including an adequate safety factor for the application.

Installation guidelines

The installation type is especially determined by the functional requirements placed on the linear guide. Principally, it must be noted that with small lifting speeds (1-10 m/min) and heavy load the higher preload values should be used. Loads and moment forces, resulting from the occurring acceleration, must be taken into account. When fitting the roller cage, it is advantageous to first manufacture the guide shaft to the corresponding dimension with a diameter tolerance ISO h4. The bore of the guide bush can then be adapted by honing. Special attention must be given to the installation of the guide bush that it does not narrow by too tight a press fit (re-hone, if necessary). Depending on the application, it can also be glued or cast. A slight close sliding fit with lateral stops is also possible depending on the design. In case of multiple bearing supports or multiple column racks precise alignment is very important to prevent any jamming.

The following points must be observed to ensure the flawless function of the linear guide:

The surface finish of shaft and bush shall not exceed the roughness of Rt 0.8 µm. Best possible cleaning of all guide elements is very important.

After the installation, the roller cage should always move within the bush and column where it must be remembered that the roller cage travels only half the distance. To prevent possible axial creeping, the roller cage should be secured by suitable stopping faces such as shaft shoulders or thrust washers.

Tolerance groups in µm

Group 1	+2 / +1
Group 2	+1 / 0
Group 3	0 / -1
Group 4	-1 / -2
Group 5	-2 / -3

Range of TH Roller Cages

Dimensions		Material		
Dw	Di	Plastic	Aluminium	Bronze
10	16	✓	✓	✓
12	18	✓	✓	✓
14	20	✓	✓	✓
15	21	✓	✓	✓
16	22	✓	✓	✓
17	23	✓	✓	✓
18	24	✓	✓	✓
19	25	✓	✓	✓
20	26	✓	✓	✓
21	27	✓	✓	✓
24	30	✓	✓	✓
25	31	✓	✓	✓
24	32	✓	✓	✓
30	38	✓	✓	✓
32	40	✓	✓	✓
38	46	✓	✓	✓
40	48	✓	✓	✓
42	50	✓	✓	✓
48	56	✓	✓	✓
50	58	✓	✓	✓
52	60	✓	✓	✓
55	63	✓	✓	✓
60	68	✓	✓	✓
63	71	✓	✓	✓
72	80	✓	✓	✓
92	100	✓	✓	✓
80	92		✓	✓
100	112		✓	✓
120	132		✓	✓
130	142		✓	✓
140	152		✓	✓
150	162		✓	✓
160	172		✓	✓
180	192		✓	✓
200	212		✓	✓

Preload

The preload (V) is the difference between the dimension of two radially positioned profile rollers which establish the contact on the guide shaft and guide bush. $V = Dw + 2R - Di$

Refer to the following table for the preload values, depending on the load and shaft diameter. They can be reached by selecting the appropriate tolerance group of the profile rollers.