

Guide, types, design, rigidity

Petr Zelený – Production Machines I

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Guide, types, design, rigidity

Guide allows direct movements of machine parts, e.g. machine tool carriage.

Guide must have the following characteristics :

- **High precision straightness track, secured low backlash and high rigidity,**
- **Possibility of setting guide backlash,**
- **Low friction and low wear,**
- **If possible, good vibration damping capability,**
- **Simple maintenance and lubrication,**
- **Protection against dirt and chips.**

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Types of guides according to the shape (profile) of the guide track :

- Flat,
- V-guide,
- Prismatic,
- Cylindrical (circular).

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Types of guides according to direction of loads:

- Open,
- Close.

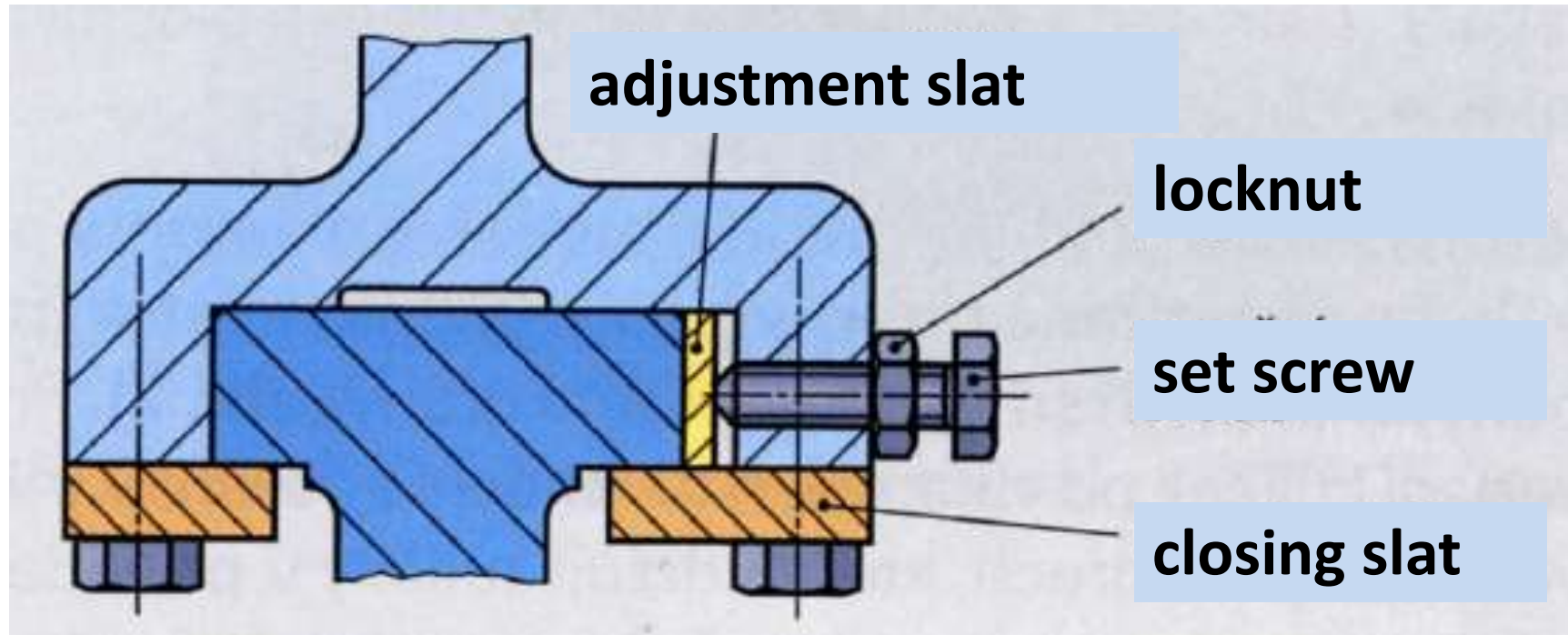
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Types of guides according to type of friction:

- **Rolling,**
- **Sliding,**
- **Combination,**
- **another.**

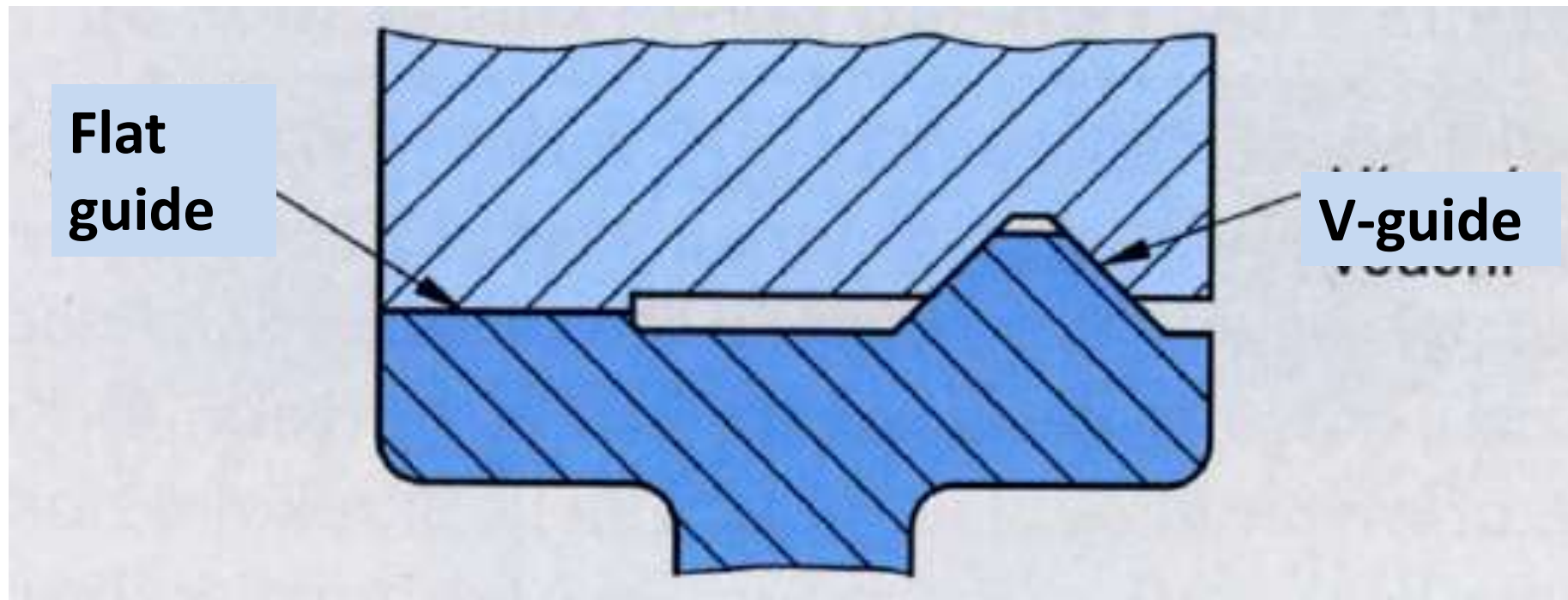
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Flat guide



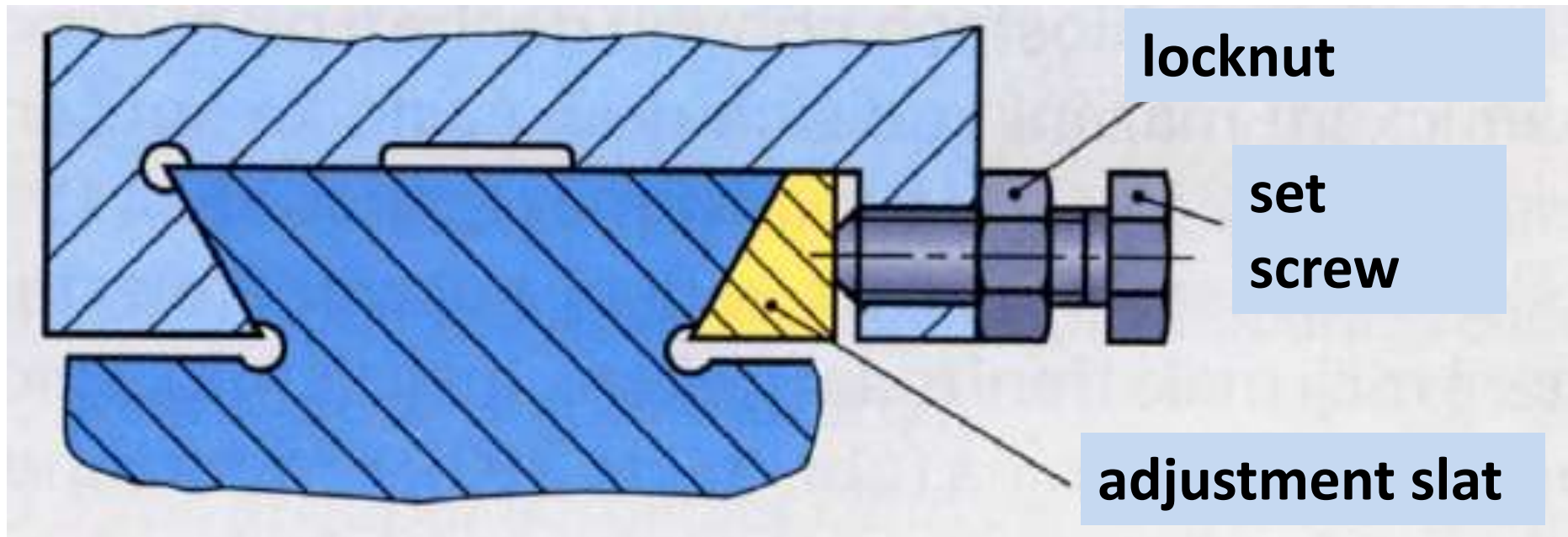
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V-guide, combination



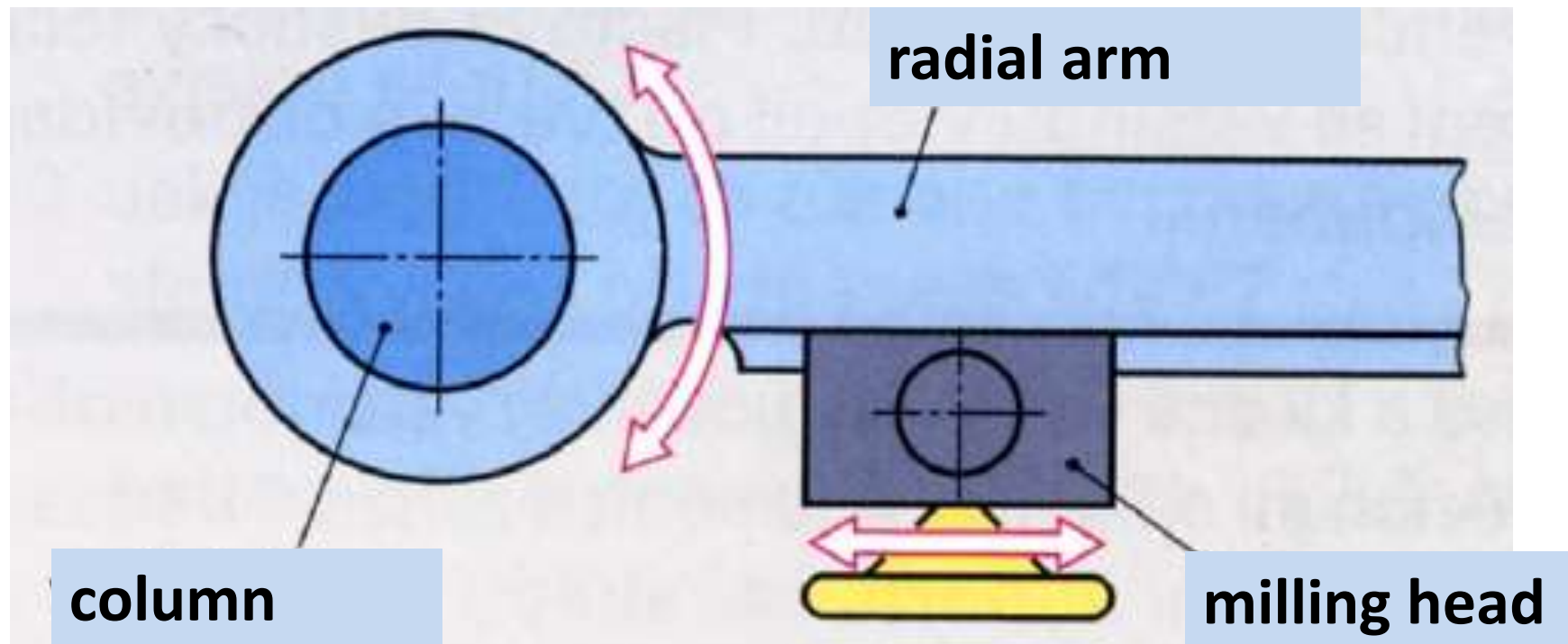
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Prismatic guide



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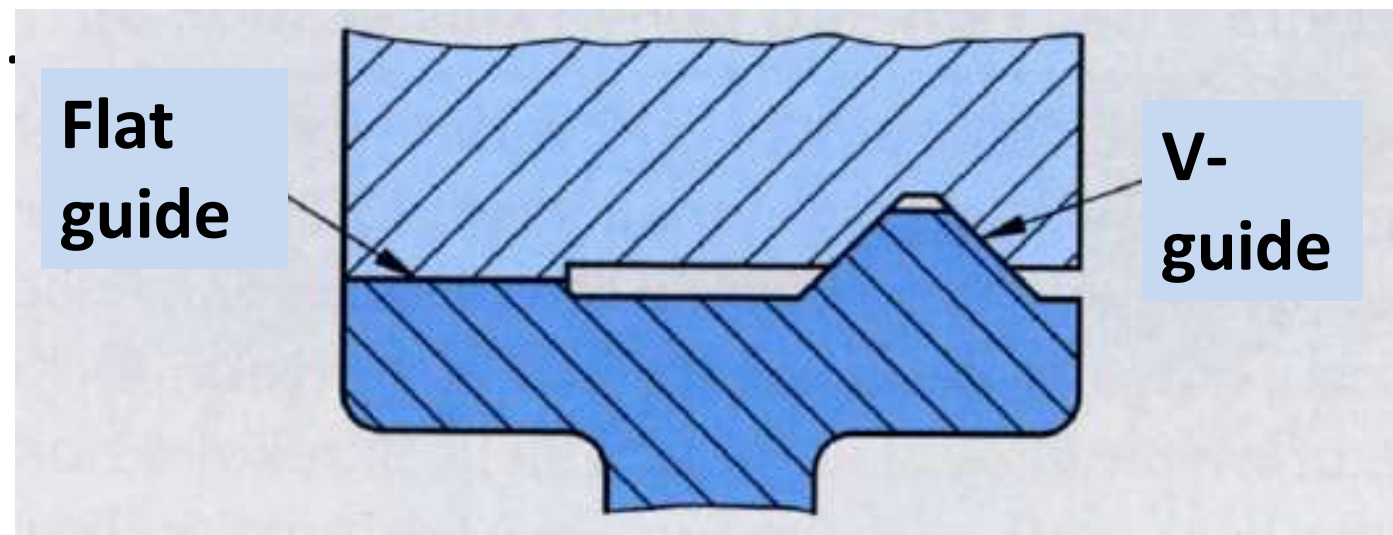
Cylindrical guide



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Open guide

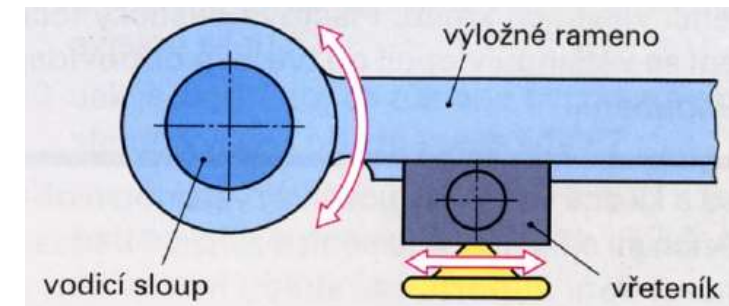
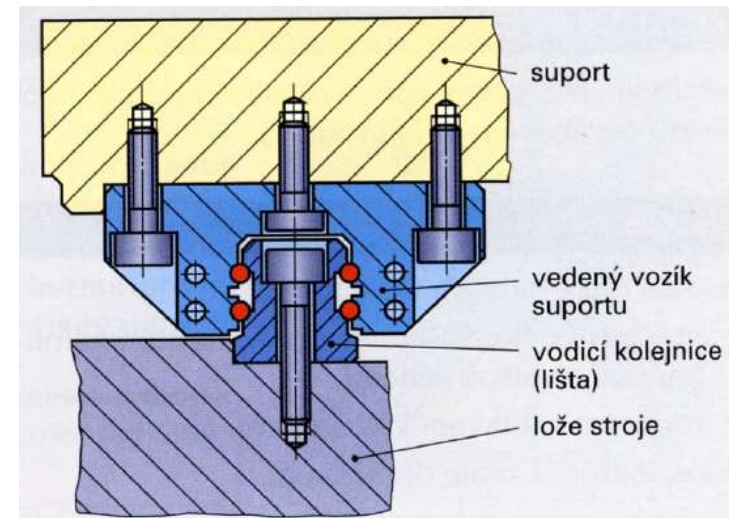
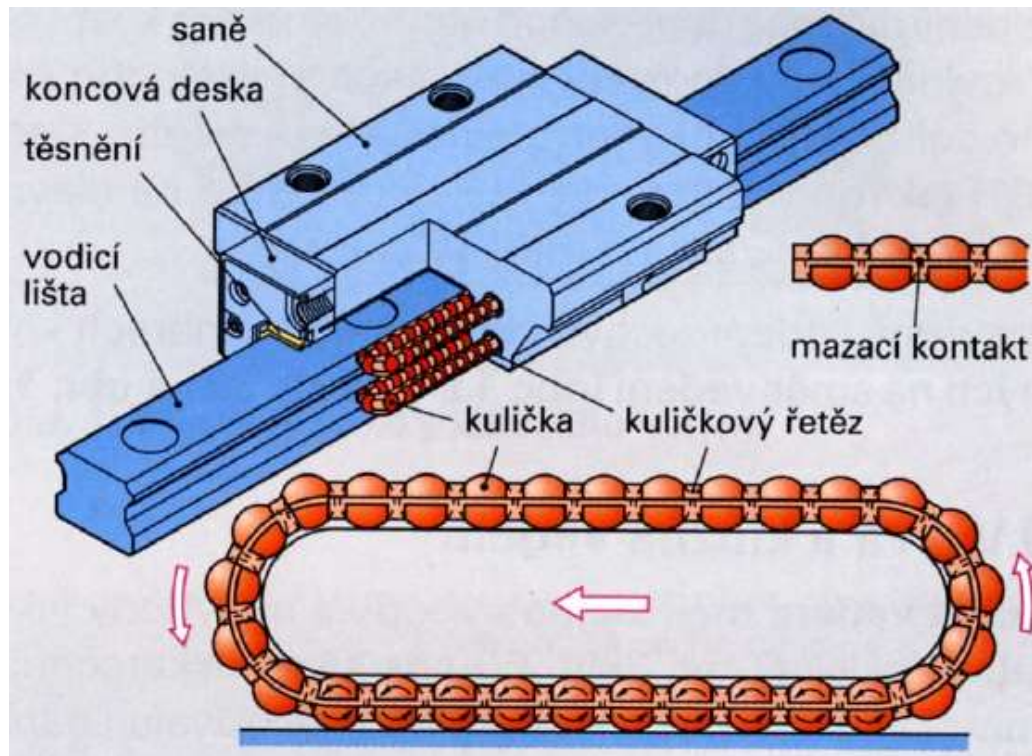
Open guideway can detect force acting on the guide portion only in directions perpendicular to the plane of the main guide surface (vertically or obliquely downward). Combined open guide can capture large forces perpendicular to the main surface of the lead, but little lateral strength.



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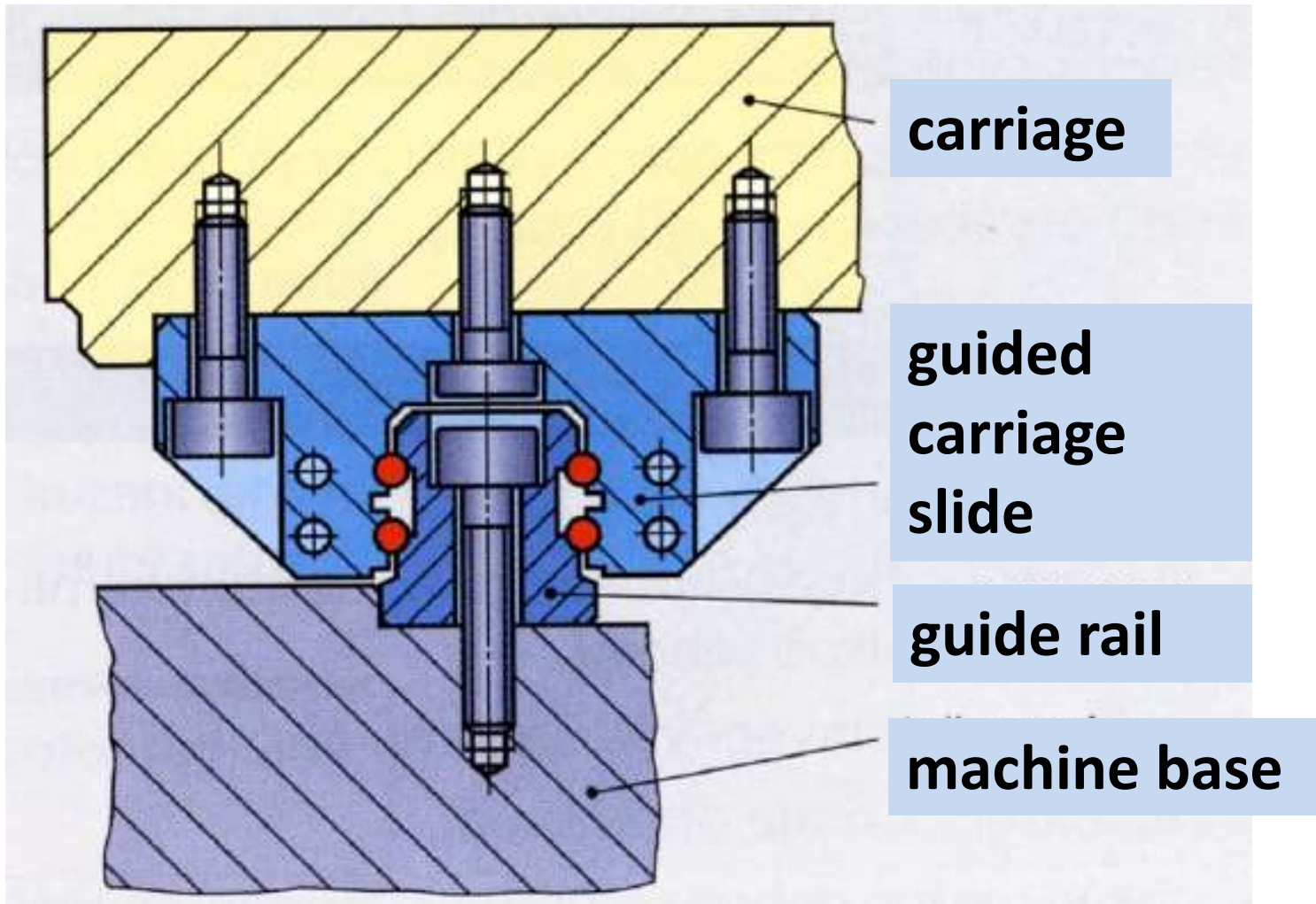
Close guide

Captures forces in all directions perpendicular to the direction of guidance.



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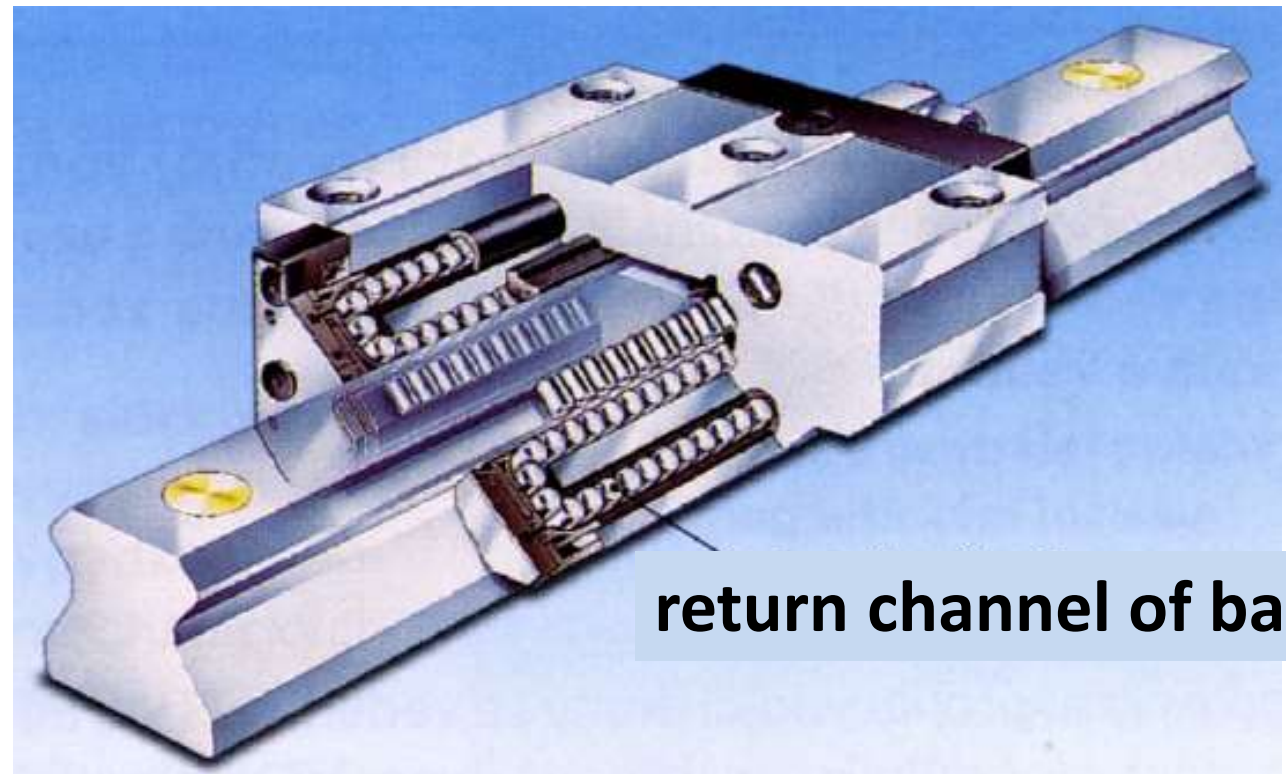
Rolling line guide



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Rolling line guide

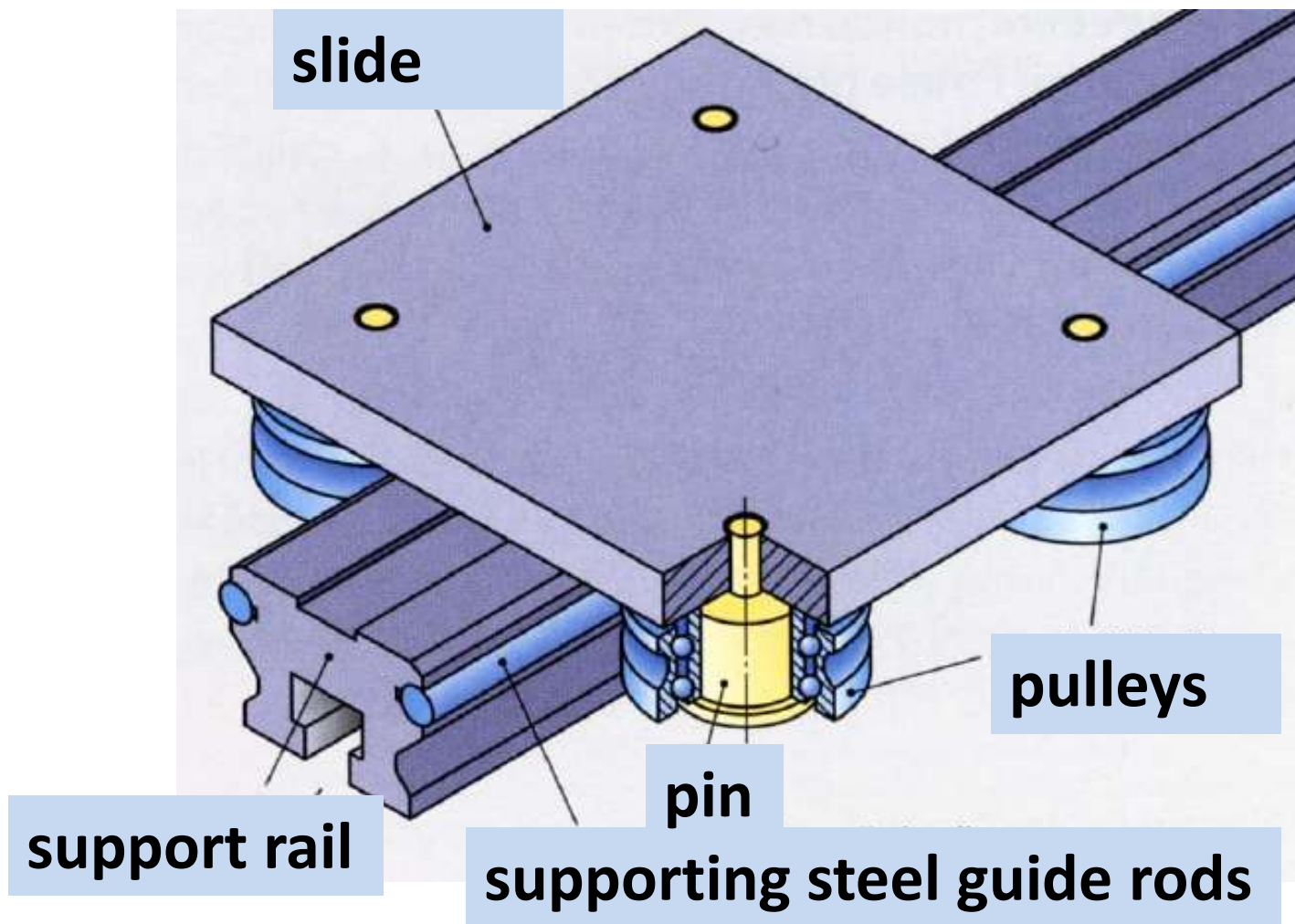
In cases of long guide, rolling elements after the run of loaded tracks are returning back to the beginning of the loaded track.



return channel of balls

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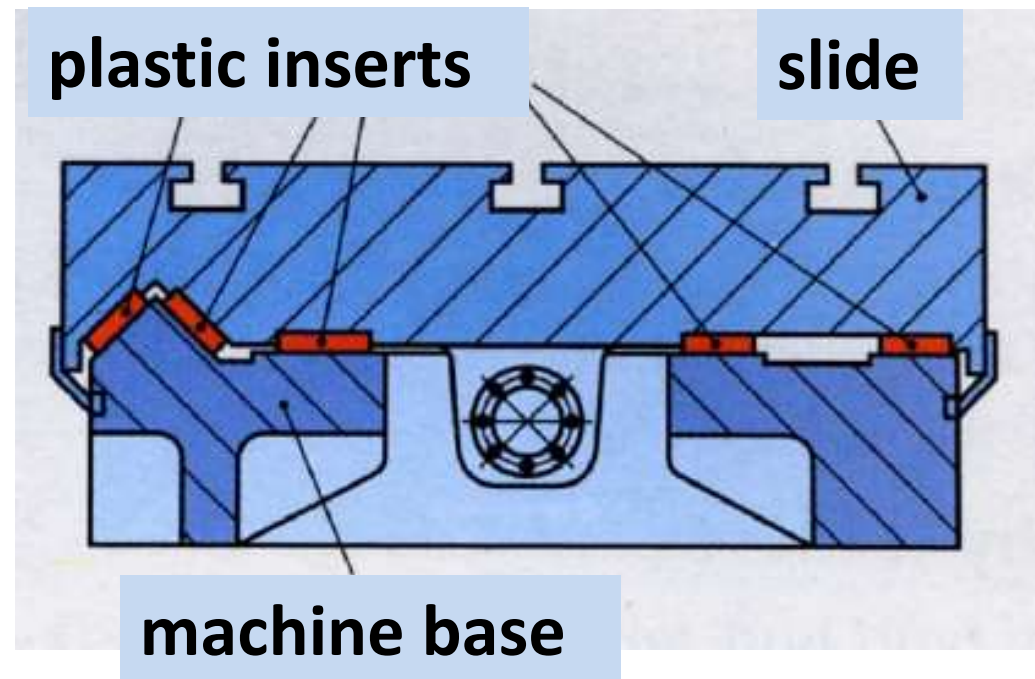
Rolling pulley guide



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Friction guide

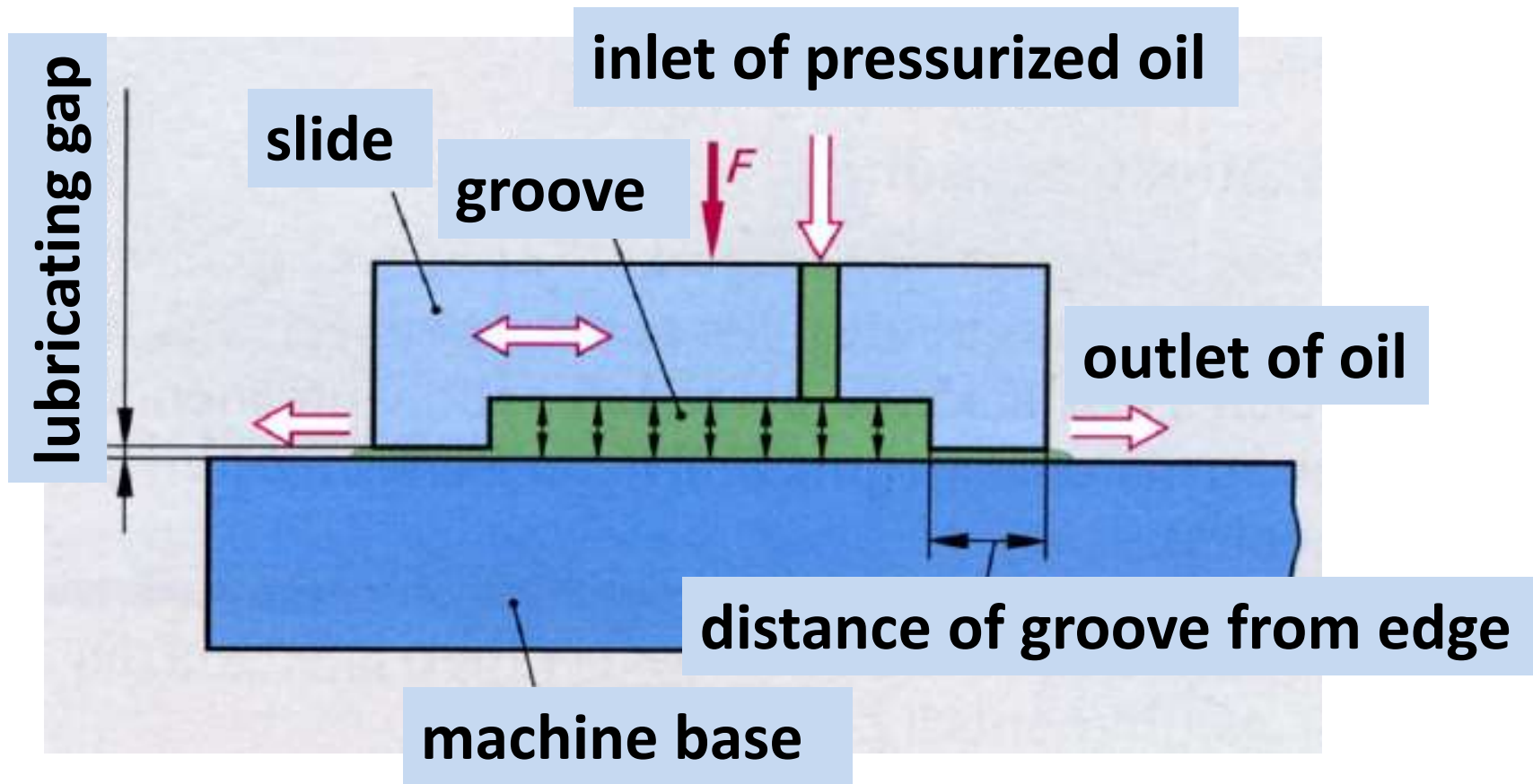
For machine tools are often use guide coated with plastic (e.g. Teflon), having damping ability and are inexpensive. Static coefficient of friction is the same as dynamic. This eliminates jerking.



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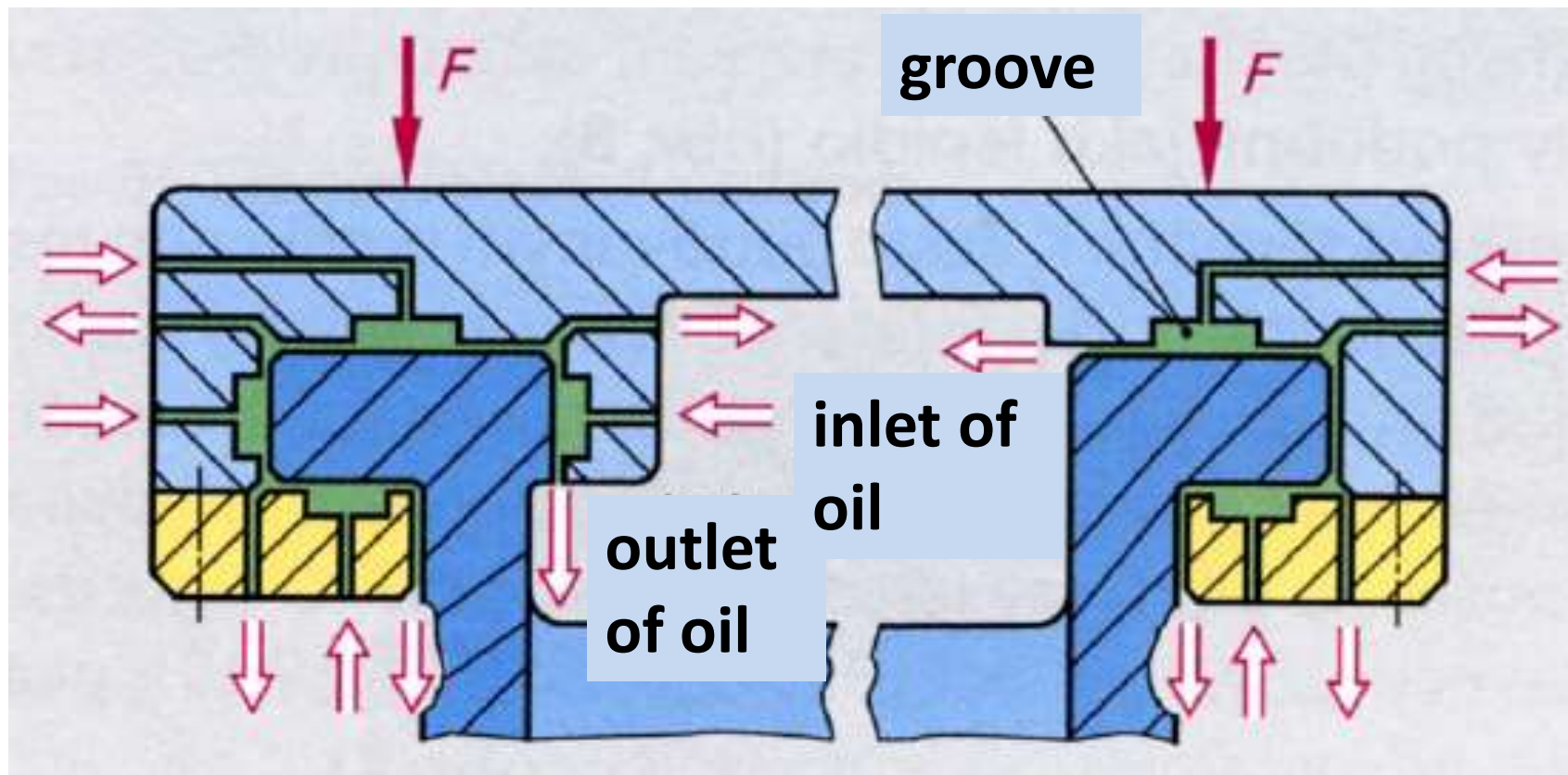
Hydrostatic friction guide

Moving almost without friction. Eliminated jerking.



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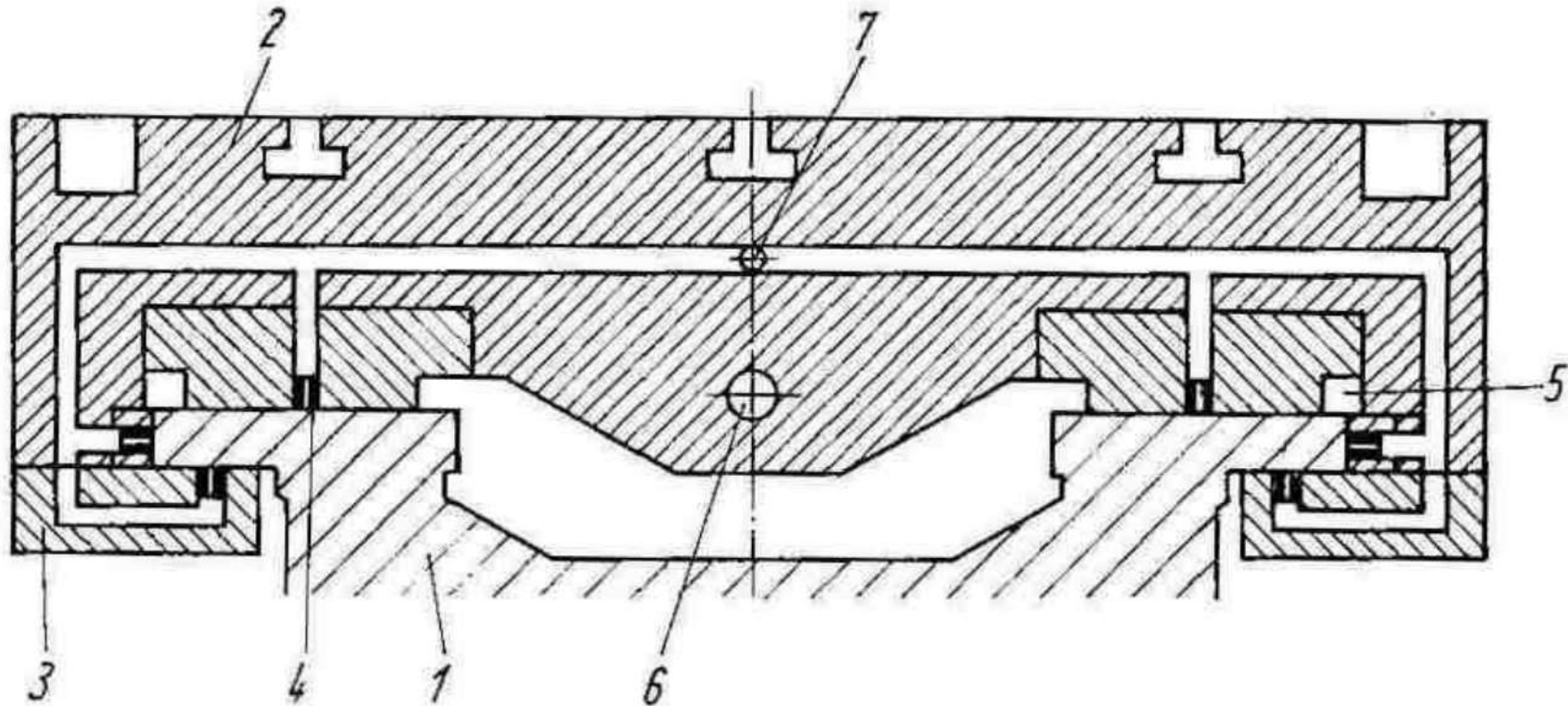
Hydrostatic friction guide



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Aerostatic friction guide

Instead of oil pressure is compressed air. Friction smaller than the hydrostatic lubrication. Without jerking.



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Aerostatic friction guide

Rotary table with aerostatic bearings.

