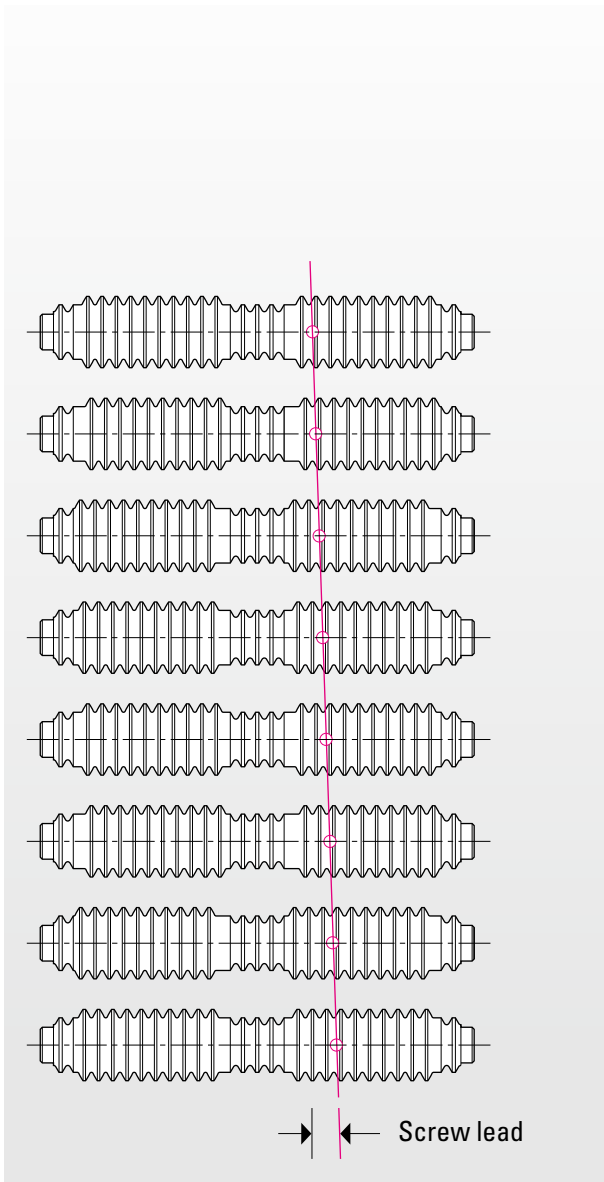


The functional principle ...

PWG Planetary roller screw



Power transmission can be through the screw shaft or the screw nut. The connection between nut and screw is formed by several rotating planetary rollers.

The transmission of the drive torque is by frictional locking. This causes low slip – which is not to be confused with backlash.

The planetary rollers with their circumferential drive grooves emulate the screw thread according to their various positions in the planet carrier.

As they orbit the screw as they spin, the screw is driven axially according to the direction of rotation. The large number of contact surfaces gives the structure high axial rigidity.

The system-related slip contributes to the robustness and durability because the contact points of the screw and planetary roller flanks change constantly, which prevents the parts being eroded. The level of slip depends on the application and is affected by factors like the direction and level of force, speed, acceleration, temperature, lubrication and other factors.

Example:

At maximum force slip of about 1 % must be allowed for. At 1 mm lead, for example, 19.80 mm travel is obtained at 20 revolutions. The slip can be compensated for by direct or indirect travel measurement. A positive feature is that the slip does not impact on the dynamic behaviour of a controlled drive axis.

The graphic (left) shows a developed view of the planetary rollers which in total represent a sort of internal thread. The axial displacement of the drive grooves is obtained from the screw lead.