SKF compact inverted roller screws are designed to provide powerful electromechanical actuation where compactness and high load capability are prerequisites. In applications such as factory automation, car assembly lines, oil & gas subsea, aerospace, etc., the compact inverted roller screw – incorporated inside an electromechanical actuator – can replace hydraulic or pneumatic actuation, providing the benefits of electronic control.

**How it works**

The compact inverted roller screw works on the same principle as a planetary roller screw, with the roller’s rotation being synchronized with the threaded shaft through toothed rings. Either nut or shaft can be rotated by an electric motor to allow the non-rotating component to act as the push tube of an actuator. The application loads acting on the translating push tube travel through the planetary rollers to the rotating shaft or nut.

Toothed rings and guiding rings ensure the rolling motion and even circumferential position of the rollers for perfect load distribution and to eliminate any parasitic friction between rollers.

**Benefits**

- Very small lead, down to 1.00 mm, while providing a high load carrying capacity
- High speed capability
- Guiding and sealing functions easily integrated on smooth surface of nut or shaft, resulting in high performance sealing
- Compact, low weight and reduced number of parts in overall system
- Customized attachment between electric rotor and screw components, and easy rotor integration
- Screw or nut directly used as push tube
- Long service life and increased reliability improving customer installation productivity
- Reduced requirements for electric motor torque to reach high load actuation
- Environmentally friendly solution

The compact inverted roller screw is a solution provided for specific applications where a small lead is required.

**SKF – The Knowledge Engineering Company**

SKF is the leading supplier of roller screws, and also offers ball screws from miniature dimensions to large sizes. Through our long history of cooperation with industrial equipment suppliers, we have developed a unique ability to propose optimized solutions.
Definitions

$d_0 = \text{screw pitch diameter \([mm]\)}$

$P_h = \text{lead \([mm]\)}$

$I = \text{reference maximum threaded length \([mm]\)}$

$L = \text{indicative maximum length \([mm]\)}$

$D = \text{recommended minimum outer diameter \([mm]\)}$

$D_p = \text{nominal nut thread diameter \([mm]\)}$

$S = \text{reference maximum stroke \([mm]\)}$

Availability and compatibility

The SKF compact inverted roller screw is currently available with screw pitch diameter $d_0$ between 12 and 120 mm, lead from 1 to 18 mm, and maximum stroke up to 175 mm depending on screw dimensions.

Not all combinations of shaft pitch diameter and lead are possible. Please consult SKF for feasibility and recommendations.

When first approaching product selection, designers can consider all planetary roller screw sizes available in the SKF catalog, with screw pitch diameter $d_0$ less than 48 mm but with 3 starts instead of 5, or 4 starts instead of 6, while maintaining the same load carrying capacities. For these sizes, the nut dimensions can remain identical to those specified in the catalog, or adjusted upon request. The maximum possible stroke should be confirmed by SKF.

The compact inverted roller screw is also available for specific sizes with $d_0$ greater than 48 mm, and up to 120 mm.

Please contact your local sales office for technical support.