

Super-precision angular contact ball bearings: High-speed, E design

719 .. E and 70 .. E series

Machine tools and other precision applications require superior bearing performance.

Extended speed capability, a high degree of running accuracy, high system rigidity, low heat generation, as well as low noise and vibration levels are just some of the performance challenges.

To meet the ever-increasing performance requirements of high-speed precision applications, SKF has developed super-precision bearings in the 719 .. E and 70 .. E series. Compared to high-speed B design bearings, high-speed E design bearings have a higher speed capability and they can accommodate heavier loads.

This desirable combination makes E design series an excellent choice for demanding applications.

These bearings are characterized by:

- very high speed capability
- high degree of stiffness
- high load carrying capacity
- extended bearing service life
- low heat generation
- compact cross section

Bearings in the 719 .. E and 70 .. E series provide high reliability and superior accuracy for applications such as high-speed machining centres, milling machines, internal grinding machines and woodworking machines.



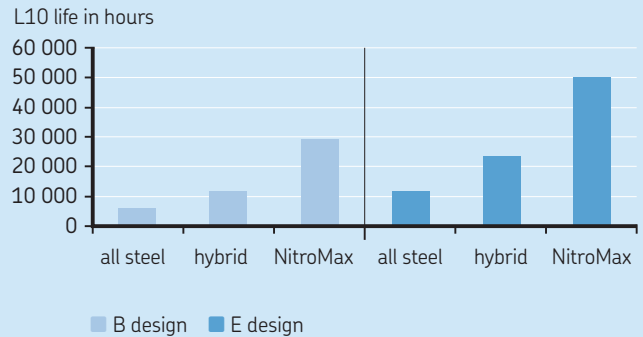
Benefits

- Very high speed capability
- High load carrying capacity
- High degree of rigidity
- Superior running accuracy, short running-in time
- Easier mounting
- Compact cross sections
- Accommodate radial loads and axial loads in one direction, good permeability for lubrication
- Extended bearing service life, superior corrosion resistance
- Prevent entry of contaminants
- Reduced mounting time
- Reduced maintenance
- Optimized oil lubrication



Application example: Milling Electro spindle
Bearing type/size: Angular contact ball bearing, 15° contact angle
Work side: 70 mm (set of two in back to back)
Rear side: 65 mm (set of two in back to back)
Spring preload (daN): 70
Lubrication: grease
Shaft temp: 45 °C
Housing temp: 35 °C
Working condition RPM: 12 000
Radial load (daN): 100
Axial load (daN): 50

Life comparison for ISO 10 series (70 mm size)

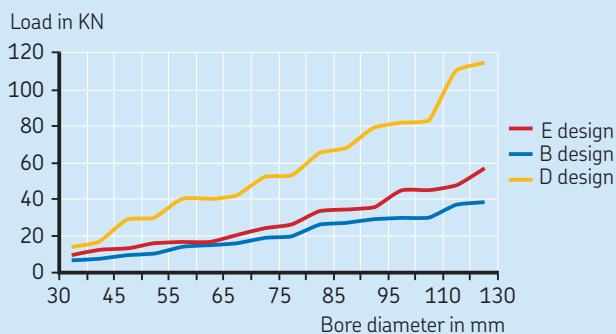


- ISO 19 and ISO 10 Dimension Series
- 15° (CE) and 25° (ACE) contact angles;; 18° (FE) on request
- Open osculation
- High number of relatively large balls
- Asymmetrical inner and outer rings
- Optimized chamfer design
- P4A tolerance class as standard, PA9A on request
- Ball materials: Carbon chromium steel (no designation suffix) or bearing grade silicon nitride Si₃N₄ (HC)
- Ring materials: SKF Grade 3 steel or NitroMax steel (high-nitrogen stainless steel)
- Bearings in most sizes can be supplied with an integral seal fitted on both sides and filled with premium grease
- Lubrication features (direct oil lubrication variants):
 - Two lubrication holes in the outer ring (suffix H)
 - Two lubrication holes in the outer ring (optimized position) (suffix H1)

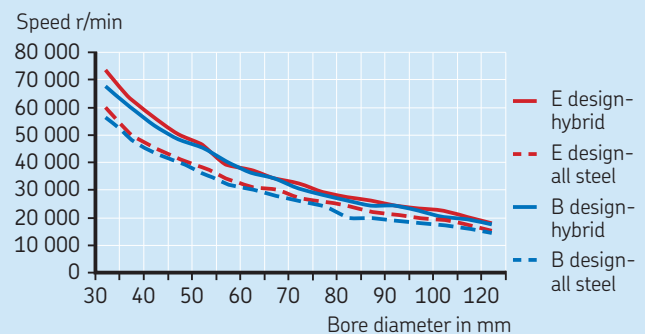
- Annular groove with two lubrication holes and two annular grooves fitted with O-rings in the outer ring (suffix L)
- Annular groove with two lubrication holes and two annular grooves fitted with O-rings in the outer ring (optimized position) (suffix L1)
- Single bearings and matched bearing sets
- Preload classes: class A, light preload; class B, moderate preload; class C, heavy preload; for asymmetrical matched bearing sets: class L, light preload; class M, moderate preload, class F, heavy preload
- Optimized lightweight one-piece outer ring shoulder-guided cage made of fabric reinforced phenolic resin that can withstand temperatures up to 120 °C
- Range: 719 .. E series: open bearings from 8 to 120 mm; sealed bearings from 20 to 120 mm. 70 .. E series: open bearings from 6 to 120 mm; sealed bearings from 10 to 120 mm.

More information is available in the dedicated publication no. 10112.

Load comparison ISO 10 series



High speed ISO 10 series



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