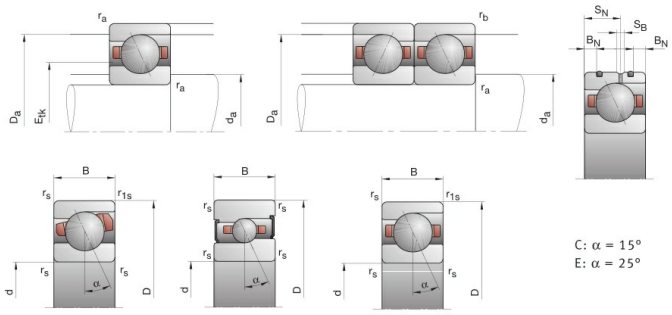
B71821-E-TPA-P4

Super Precision Angular Contact Ball Bearing



Technical sheet of B71821-E-TPA-P4

Type :		Precision spindle bearings
Model :		B71821-E-TPA-P4
Old Code :		B71821ETPAP4
Main demensions :	105 mm × 130 mm × 13 mm	Bore Dia × Outside Dia × Width Dia
M kg:	0.3	Mass
d mm:	105	inner ring diameter
D mm:	130	Outer ring diameter
B(T) mm:	13	Overall Width
Cr kN:	21.446	Radial dynamic load rating
C0r kN:	25.397	Radial static load rating
Grease r/min:	7897	Reference speed
Oil r/min:	12886	Limiting speed

Detailed parameters and installation dimensions:

Part Number	B71821-E-TPA-P4
Design Type	B = Standard bearing, Lager balls, Steel balls
Series	B718..-E-TPA-P4

Contact angle - α	(E) 25 °
Dimension series	718 (Ultra-light series)
Reference From	FAG B71821-E-TPA-P4
Dimension Inside - d φ (mm)	105
Dimension Outside - D Φ (mm)	130
Dimension Width - B (mm)	13
Accuracy class	P4
Seal	Open
Dimension - r_s(min.)	1 mm | 0.039 inch
Dimension - r_{s1}(min.)	0.3 mm | 0.012 inch
Reference speed (grease) - n_B	7897 min^{-1}
Limiting speed (oil) - n_G	12886 min^{-1}
Mounting dimensions - d_a(h12)	110 mm | 4.331 inch
Mounting dimensions - D_a(H12)	124.5 mm | 4.902 inch
Bearing Type	Super Precision Angular Contact Ball Bearing
Row No.	One
Mounting dimensions - r_a(max.)	1 mm | 0.039 inch
Mounting dimensions - r_b(max.)	0.3 mm | 0.012 inch
Bore Type	Z = Cylindrical bore
Mounting dimensions - E_{tk}(nom.)	114.4 mm | 4.504 inch
Dimension Inside - d φ (inch)	4.134
Dimension Outside - D Φ (inch)	5.118
Dimension Width - B (inch)	0.512
Manufacturer Part Code	B71821ETPAP4 , B71821E-TPA-P4
Temperature - T(min)	-30°C
Temperature - T(max)	+100°C
Units	Metric
Radial Dynamic Capacity - C_r	21446 N | 4821 lbf
Bearing Mass - m	0.3 kg | 0.661 lb
Cage	TPA = Textile laminated phenolic resin, outer ring guided
Radial static Capacity - C_{0r}	25397 N | 5709 lbf
Preload force - F_v L	109 N | 24 lbf
Preload force - F_v M	523 N | 117 lbf
Preload force - F_v H	1190 N | 267 lbf
Ball Material	GCr15SiMn
Axial rigidity - c_a L	139.8 N/µm
Axial rigidity - c_a M	251 N/µm
Axial rigidity - c_a H	349.8 N/µm
Ring Material	GCr15SiMn
Lift-off force - K_{aE} L	317 N | 71 lbf
Lift-off force - K_{aE} M	1552 N | 348 lbf
Lift-off force - K_{aE} H	3667 N | 824 lbf

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B71821-E-TPA-P4 features:

with solid outer and inner rings, ball and cage assemblies and solid window cages.
Ultimate Pursuit of Rotational Accuracy, High-Speed Performance, Rigidity, and Operational Stability
Rotational Accuracy and Low Runout: Dimensional and geometrical tolerances (such as roundness and parallelism) of the inner and outer rings and rolling elements are achieved at the sub-micron level (typically conforming to ISO P4, P2, or higher, or ABEC 7, 9 standards), ensuring extremely low radial and axial runout of the spindle or shaft system, which is the foundation for achieving high machining/measurement accuracy.
Optimized High-Speed Performance: Utilizing lightweight, high-precision ceramic balls (Si?N?) or top-grade steel balls reduces centrifugal force, lowering temperature rise and wear at high speeds; special cage designs (such as phenolic resin, special polymer, or machined brass cages) provide excellent guiding performance, low friction, and suitability for high speeds; internal geometry (contact angle, channel curvature) is optimized to balance temperature rise, rigidity, and lifespan at high speeds.
Superior Rigidity and Preload Stability: Typically supplied or installed in a "preloaded" state. Preload eliminates internal clearance, significantly improving the axial and radial stiffness of the system, raising the natural frequency, and suppressing vibration.
Excellent thermal stability and material properties: Utilizing specialized bearing steel (such as carburized steel) or high-temperature stainless steel, and undergoing special heat treatment, ensures dimensional stability and resists deformation caused by frictional heat or ambient heat.

B71821-E-TPA-P4 application:

CNC machine tool spindles (machining center spindles, milling machine spindles, precision grinding machine spindles, turning-milling composite machine tool spindles), PCB drilling machines, precision engraving and milling machines, integrated spindle motor units, turbomolecular pumps, helicopter transmission systems, aero-engine accessories, gyroscopes, radar rotary mechanisms, precision rotary tables, precision reducers (such as RV reducers) and articulated spindles for industrial robots, high-performance turbochargers, racing car gearboxes.

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