

71903 CD/P4A

Super-precision, high-capacity, single row angular contact ball bearing with 15° contact angle

These super-precision, high-capacity, single row angular contact ball bearings, with 15° contact angle, accommodate radial and axial loads acting simultaneously, where the axial load acts in one direction only. They are designed to accommodate heavy loads at relatively high speeds under low to moderate operating temperatures.

- 15° contact angle
- Very high running accuracy
- Very high load carrying capacity
- Relatively high speed and stiffness



Overview

Dimensions

Bore diameter	0.669 in
Outside diameter	1.181 in
Width	0.276 in

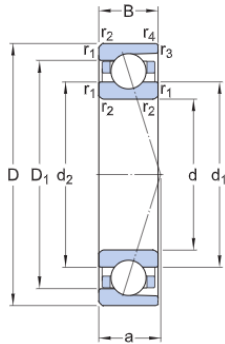
Performance

Attainable speed for grease lubrication	53 000 r/min
Attainable speed for oil-air lubrication	80 000 r/min
Basic dynamic load rating	935 lbf
Basic static load rating	468 lbf

Properties

Coating	Without
Contact type	Normal contact (two-point contact)
Design	High-capacity D
Lubricant	None
Matched arrangement	No
Matched condition (axial clearance/ preload)	Not applicable
Material, bearing	Bearing steel
Number of rows	1
Ring type	One-piece inner and outer rings
Sealing	Without
Tolerance class	P4A
Universal matching bearing	No

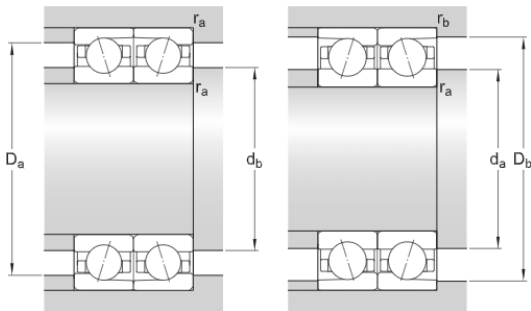
Technical Specification



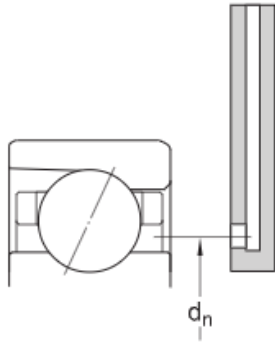
Dimensions

d	0.669 in	Bore diameter
D	1.181 in	Outside diameter
B	0.276 in	Width
d ₁	0.823 in	Shoulder diameter of inner ring (large side face)
d ₂	0.823 in	Shoulder diameter of inner ring (small side face)
D ₁	1.012 in	Shoulder diameter of outer ring (large side face)
r _{1,2}	min. 0.012 in	Chamfer dimension (large side face)
r _{3,4}	min. 0.008 in	Chamfer dimension (small side face)
a	0.264 in	Distance from side face to pressure point

Abutment dimensions



d _a	min. 0.748 in	Diameter of shaft abutment
d _b	min. 0.748 in	Diameter of shaft abutment
D _a	max. 1.102 in	Diameter of housing abutment
D _b	max. 1.126 in	Diameter of housing abutment
r _a	max. 0.012 in	Radius of fillet
r _b	max. 0.008 in	Radius of fillet
d _n	0.87 in	Position of oil nozzle



Calculation data

Basic dynamic load rating	C	935 lbf
Basic static load rating	C_0	468 lbf
Fatigue load limit	P_u	20 lbf
Attainable speed for grease lubrication		53 000 r/min
Attainable speed for oil-air lubrication		80 000 r/min
Contact angle	α	15 °
Ball diameter	D_w	0.156 in
Number of balls	z	14
Reference grease quantity	G_{ref}	0.01465 in

Preload and stiffness (back-to-back, face-to-face)

Preload class A	G_A	3.4 lbf
Axial stiffness for preload A (sets of two brgs back-to-back or face-to-face)		91 362.354 lbf/in
Preload class B	G_B	6.7 lbf
Axial stiffness for preload B (sets of two brgs back-to-back or face-to-face)		125 623.237 lbf/in
Preload class C	G_C	13 lbf
Axial stiffness for preload C (sets of two brgs back-to-back or face-to-face)		171 304.415 lbf/in
Preload class D	G_D	27 lbf
Axial stiffness for preload D (sets of two brgs back-to-back or face-to-face)		245 536.327 lbf/in

Calculation factors

Correction factor dependent on bearing series and size	f	1.05
Correction factor dependent on contact angle	f_1	1
Correction factor, preload class A	f_{2A}	1
Correction factor, preload class B	f_{2B}	1.04
Correction factor, preload class C	f_{2C}	1.09
Correction factor, preload class D	f_{2D}	1.15
Correction factor for hybrid bearings	f_{HC}	1
Calculation factor	f_0	9.8

Mass

Mass	0.037 lb
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