

71902 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	0.591 in
Outside diameter	1.102 in
Width	0.276 in

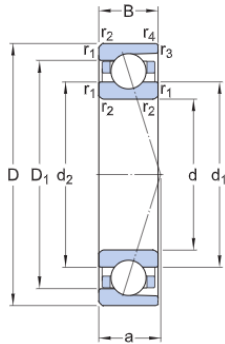
Performance

Attainable speed for grease lubrication	60 000 r/min
Attainable speed for oil-air lubrication	90 000 r/min
Basic dynamic load rating	892 lbf
Basic static load rating	427 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

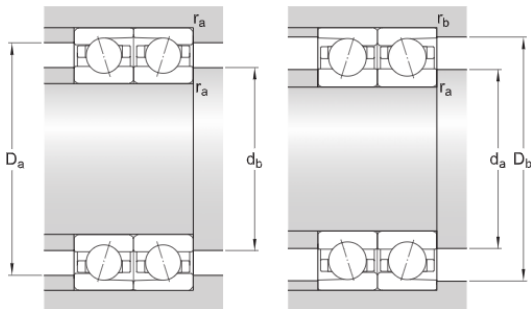
Technical Specification



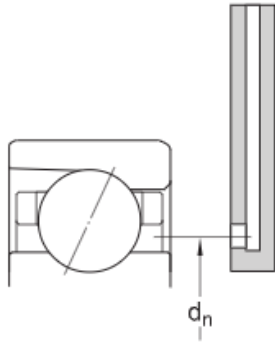
Dimensions

d	0.591 in	Bore diameter
D	1.102 in	Outside diameter
B	0.276 in	Width
d ₁	0.744 in	Shoulder diameter of inner ring (large side face)
d ₂	0.744 in	Shoulder diameter of inner ring (small side face)
D ₁	0.933 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	0.252 in	Distance from side face to pressure point

Abutment dimensions



d _a	min. 0.669 in	Diameter of shaft abutment
d _b	min. 0.669 in	Diameter of shaft abutment
D _a	max. 1.024 in	Diameter of housing abutment
D _b	max. 1.047 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	0.791 in	Position of oil nozzle



Calculation data

Basic dynamic load rating	C	892 lbf
Basic static load rating	C_0	427 lbf
Fatigue load limit	P_u	18 lbf
Attainable speed for grease lubrication		60 000 r/min
Attainable speed for oil-air lubrication		90 000 r/min
Contact angle	α	15 °
Ball diameter	D_w	0.156 in
Number of balls	z	13
Reference grease quantity	G_{ref}	0.01282 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)		119 913.09 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)		165 594.267 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)		234 116.033 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	9.6

Mass

Mass	0.033 lb
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