

# 71904 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	0.787 in
Outside diameter	1.457 in
Width	0.354 in

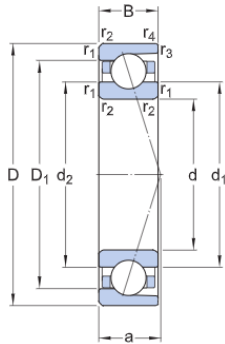
#### Performance

Attainable speed for grease lubrication	45 000 r/min
Attainable speed for oil-air lubrication	67 000 r/min
Basic dynamic load rating	1 360 lbf
Basic static load rating	719 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

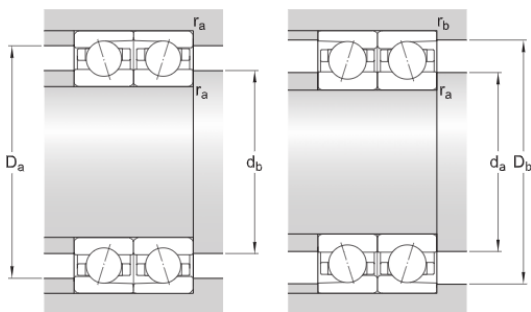
# Technical Specification



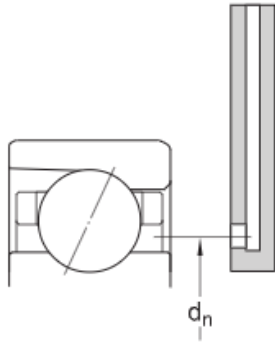
## Dimensions

d	0.787 in	Bore diameter
D	1.457 in	Outside diameter
B	0.354 in	Width
d <sub>1</sub>	1.008 in	Shoulder diameter of inner ring (large side face)
d <sub>2</sub>	1.008 in	Shoulder diameter of inner ring (small side face)
D <sub>1</sub>	1.236 in	Shoulder diameter of outer ring (large side face)
r <sub>1,2</sub>	min. 0.012 in	Chamfer dimension (large side face)
r <sub>3,4</sub>	min. 0.008 in	Chamfer dimension (small side face)
a	0.331 in	Distance from side face to pressure point

## Abutment dimensions



d <sub>a</sub>	min. 0.866 in	Diameter of shaft abutment
d <sub>b</sub>	min. 0.866 in	Diameter of shaft abutment
D <sub>a</sub>	max. 1.378 in	Diameter of housing abutment
D <sub>b</sub>	max. 1.402 in	Diameter of housing abutment
r <sub>a</sub>	max. 0.012 in	Radius of fillet
r <sub>b</sub>	max. 0.008 in	Radius of fillet
d <sub>n</sub>	1.055 in	Position of oil nozzle



### Calculation data

Basic dynamic load rating	C	1 360 lbf
Basic static load rating	C <sub>0</sub>	719 lbf
Fatigue load limit	P <sub>u</sub>	31 lbf
Attainable speed for grease lubrication		45 000 r/min
Attainable speed for oil-air lubrication		67 000 r/min
Contact angle	α	15 °
Ball diameter	D <sub>w</sub>	0.187 in
Number of balls	z	15
Reference grease quantity	G <sub>ref</sub>	0.02746 in

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

Preload class A	G <sub>A</sub>	5.6 lbf
Axial stiffness for preload A (sets of two brgs back-to-back or face-to-face)		125 623.237 lbf/in
Preload class B	G <sub>B</sub>	11 lbf
Axial stiffness for preload B (sets of two brgs back-to-back or face-to-face)		165 594.267 lbf/in
Preload class C	G <sub>C</sub>	22 lbf
Axial stiffness for preload C (sets of two brgs back-to-back or face-to-face)		228 405.886 lbf/in
Preload class D	G <sub>D</sub>	45 lbf
Axial stiffness for preload D (sets of two brgs back-to-back or face-to-face)		319 768.24 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	0.077 lb
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