

# 71905 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	0.984 in
Outside diameter	1.654 in
Width	0.354 in

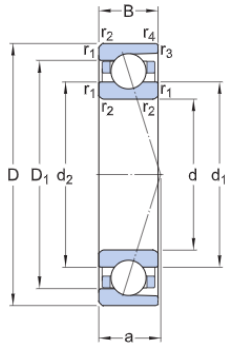
### Performance

Attainable speed for grease lubrication	38 000 r/min
Attainable speed for oil-air lubrication	56 000 r/min
Basic dynamic load rating	1 520 lbf
Basic static load rating	899 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

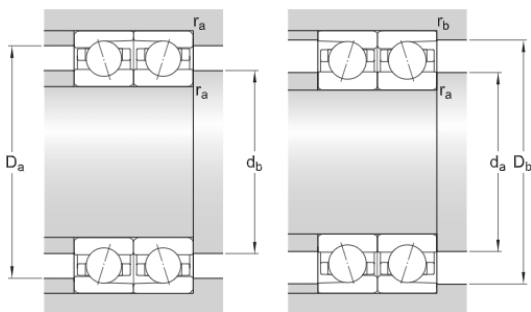
# Technical Specification



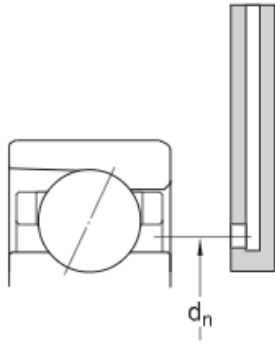
## Dimensions

d	0.984 in	Bore diameter
D	1.654 in	Outside diameter
B	0.354 in	Width
d <sub>1</sub>	1.205 in	Shoulder diameter of inner ring (large side face)
d <sub>2</sub>	1.205 in	Shoulder diameter of inner ring (small side face)
D <sub>1</sub>	1.433 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	0.354 in	Distance from side face to pressure point

## Abutment dimensions



d <sub>a</sub>	min. 1.063 in	Diameter of shaft abutment
d <sub>b</sub>	min. 1.063 in	Diameter of shaft abutment
D <sub>a</sub>	max. 1.575 in	Diameter of housing abutment
D <sub>b</sub>	max. 1.598 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>	1.252 in	Position of oil nozzle



### Calculation data

Basic dynamic load rating	C	1 520 lbf
Basic static load rating	C <sub>0</sub>	899 lbf
Fatigue load limit	P <sub>u</sub>	38 lbf
Attainable speed for grease lubrication		38 000 r/min
Attainable speed for oil-air lubrication		56 000 r/min
Contact angle	α	15 °
Ball diameter	D <sub>w</sub>	0.187 in
Number of balls	z	18
Reference grease quantity	G <sub>ref</sub>	0.03295 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)		137 043.532 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)		182 724.709 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)		251 246.475 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)		354 029.123 lbf/in

### Calculation factors

Correction factor dependent on bearing series and size	$f$	1.07
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	$f_0$	10.2

## Mass

Mass	0.093 lb
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