

# 7007 ACDGA/HCP4A



## Super-precision, high-capacity, universally matchable single row angular contact ball bearing

These super-precision, high-capacity, single row angular contact ball bearings 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. Being universally matchable, they can be used together in arrangement to provide effective load sharing, within a predetermined preload range, without the use of shims or similar devices.

- 15° or 25° contact angle
- Very high running accuracy
- Very high load carrying capacity
- Relatively high speed and stiffness
- Universally matchable

## Overview

### Dimensions

Bore diameter	1.378 in
Outside diameter	2.441 in
Width	0.551 in

### Performance

Basic dynamic load rating	3 327 lbf
Basic static load rating	2 023 lbf

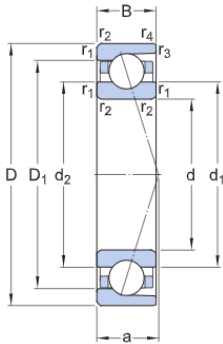
### Properties

Coating	Without
Contact type	Normal contact (two-point contact)
Design	High-capacity D
Lubricant	None
Matched arrangement	No
Matched condition (axial clearance/ preload)	Measuring load, class A
Material, bearing	Hybrid
Number of rows	1
Ring type	One-piece inner and outer rings
Sealing	Without
Tolerance class	P4A

Universal matching bearing

Yes

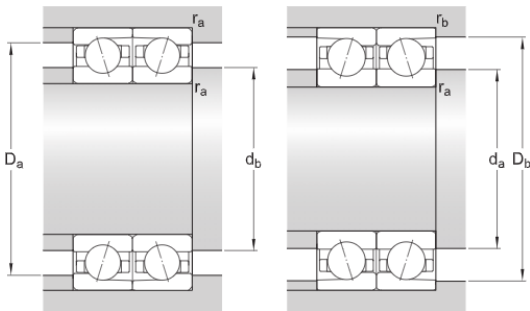
# Technical Specification



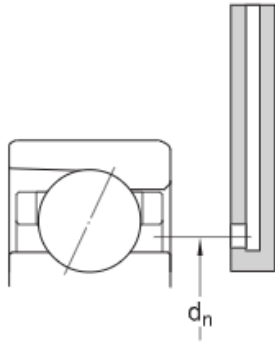
## Dimensions

d	1.378 in	Bore diameter
D	2.441 in	Outside diameter
B	0.551 in	Width
d <sub>1</sub>	1.72 in	Shoulder diameter of inner ring (large side face)
d <sub>2</sub>	1.72 in	Shoulder diameter of inner ring (small side face)
D <sub>1</sub>	2.098 in	Shoulder diameter of outer ring (large side face)
r <sub>1,2</sub>	min. 0.039 in	Chamfer dimension (large side face)
r <sub>3,4</sub>	min. 0.012 in	Chamfer dimension (small side face)
a	0.728 in	Distance from side face to pressure point

## Abutment dimensions



d <sub>a</sub>	min. 1.559 in	Diameter of shaft abutment
d <sub>b</sub>	min. 1.559 in	Diameter of shaft abutment
D <sub>a</sub>	max. 2.26 in	Diameter of housing abutment
D <sub>b</sub>	max. 2.362 in	Diameter of housing abutment
r <sub>a</sub>	max. 0.039 in	Radius of fillet
r <sub>b</sub>	max. 0.012 in	Radius of fillet
d <sub>n</sub>	1.783 in	Position of oil nozzle



### Calculation data

Basic dynamic load rating	$C$	3 327 lbf
Basic static load rating	$C_0$	2 023 lbf
Fatigue load limit	$P_u$	63 lbf
Contact angle	$\alpha$	25 °
Ball diameter	$D_w$	0.313 in
Number of balls	$z$	16
Reference grease quantity	$G_{ref}$	0.1208 in

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

Preload class A	$G_A$	20 lbf
Axial stiffness for preload A (sets of two brgs back-to-back or face-to-face)		542 463.979 lbf/in

### Calculation factors

Correction factor dependent on bearing series and size	$f$	1.06
Correction factor dependent on contact angle	$f_1$	0.99
Correction factor, preload class A	$f_{2A}$	1
Correction factor for hybrid bearings	$f_{HC}$	1.02
Limiting value	$e$	0.68
Axial load factor (single, tandem)	$Y_1$	0
Axial load factor (single, tandem)	$Y_2$	0.87
Axial load factor (single, tandem)	$Y_0$	0.38

Radial load factor (single, tandem)	$X_1$	1
Radial load factor (single, tandem)	$X_2$	0.41
Radial load factor (single, tandem)	$X_0$	0.5
Axial load factor (back-to-back, face-to-face)	$Y_1$	0.92
Axial load factor (back-to-back, face-to-face)	$Y_2$	1.41
Axial load factor (back-to-back, face-to-face)	$Y_0$	0.76
Radial load factor (back-to-back, face-to-face)	$X_1$	1
Radial load factor (back-to-back, face-to-face)	$X_2$	0.67
Radial load factor (back-to-back, face-to-face)	$X_0$	1

## Mass

Mass	0.293 lb
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