71905 CD/HCP4A

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

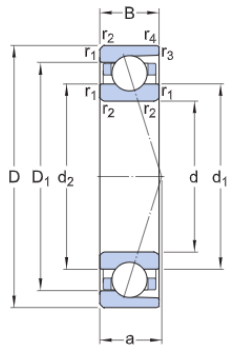
Performance

Attainable speed for grease lubrication	45 000 r/min
Attainable speed for oil-air lubrication	70 000 r/min
Basic dynamic load rating	1 520 lbf
Basic static load rating	899 lbf

Properties

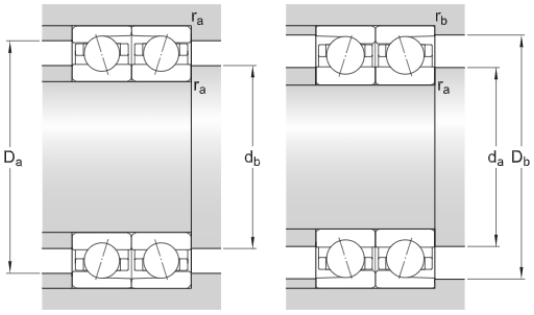
Coating	Without
Contact type	Normal contact (two-point contact)
Design	High-capacity D
Lubricant	None
Matched arrangement	No
Matched condition (axial clearance/ preload)	Not applicable
Material, bearing	Hybrid
Number of rows	1
Ring type	One-piece inner and outer rings
Sealing	Without
Tolerance class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

Technical Specification



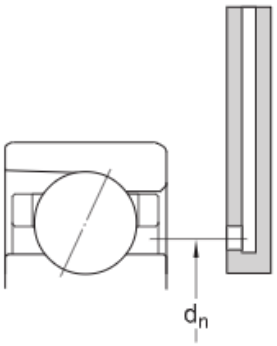
Dimensions

d	0.984 in	Bore diameter
D	1.654 in	Outside diameter
B	0.354 in	Width
d_1	1.205 in	Shoulder diameter of inner ring (large side face)
d_2	1.205 in	Shoulder diameter of inner ring (small side face)
D_1	1.433 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	0.354 in	Distance from side face to pressure point



Abutment dimensions

d_a	min. 1.063 in	Diameter of shaft abutment
d_b	min. 1.063 in	Diameter of shaft abutment
D_a	max. 1.575 in	Diameter of housing abutment
D_b	max. 1.598 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	1.252 in	Position of oil nozzle



Calculation data

Basic dynamic load rating	C	1 520 lbf
Basic static load rating	C_0	899 lbf
Fatigue load limit	P_u	28 lbf
Attainable speed for grease lubrication		45 000 r/min
Attainable speed for oil-air lubrication		70 000 r/min
Contact angle	α	15 °
Ball diameter	D_w	0.187 in
Number of balls	z	18
Reference grease quantity	G_{ref}	0.03295 in

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

Preload class A	G_A	5.6 lbf
Axial stiffness for preload A (sets of two brgs back-to-back or face-to-face)		154 173.973 lbf/in
Preload class B	G_B	11 lbf
Axial stiffness for preload B (sets of two brgs back-to-back or face-to-face)		205 565.297 lbf/in
Preload class C	G_C	22 lbf
Axial stiffness for preload C (sets of two brgs back-to-back or face-to-face)		279 797.21 lbf/in
Preload class D	G_D	45 lbf
Axial stiffness for preload D (sets of two brgs back-to-back or face-to-face)		394 000.153 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}	1.07
Correction factor, preload class C	f_{2C}	1.12
Correction factor, preload class D	f_{2D}	1.18
Correction factor for hybrid bearings	f_{HC}	1.04
Calculation factor	f_0	10.2

Mass

Mass	0.086 lb

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