71900 ACD/P4A

Super-precision, high-capacity, single row angular contact ball bearing with 25° contact angle

These super-precision, high-capacity, single row angular contact ball bearings, with 25° 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.

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

Overview

Dimensions

Bore diameter	0.394 in
Outside diameter	0.866 in
Width	0.236 in

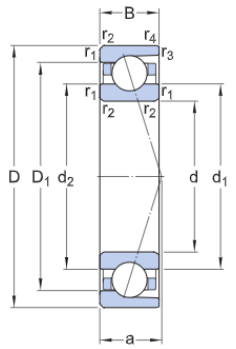
Performance

Attainable speed for grease lubrication	70 000 r/min
Attainable speed for oil-air lubrication	110 000 r/min
Basic dynamic load rating	544 lbf
Basic static load rating	238 lbf

Properties

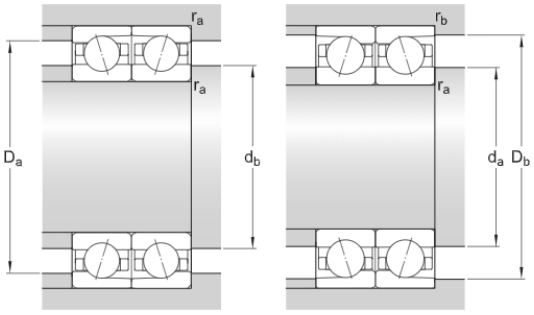
Coating	Without
Contact type	Normal contact (two-point contact)
Design	High-capacity D
Lubricant	None
Matched arrangement	No
Matched condition (axial clearance/ preload)	Not applicable
Material, bearing	Bearing steel
Number of rows	1
Ring type	One-piece inner and outer rings
Sealing	Without
Tolerance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

Technical Specification



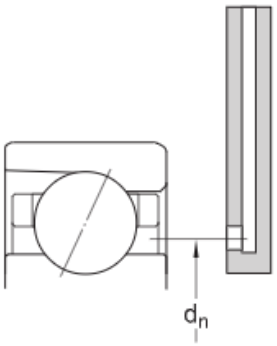
Dimensions

d	0.394 in	Bore diameter
D	0.866 in	Outside diameter
B	0.236 in	Width
d_1	0.551 in	Shoulder diameter of inner ring (large side face)
d_2	0.551 in	Shoulder diameter of inner ring (small side face)
D_1	0.709 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	0.268 in	Distance from side face to pressure point



Abutment dimensions

d_a	min. 0.472 in	Diameter of shaft abutment
d_b	min. 0.472 in	Diameter of shaft abutment
D_a	max. 0.787 in	Diameter of housing abutment
D_b	max. 0.811 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	0.583 in	Position of oil nozzle



Calculation data

Basic dynamic load rating	C	544 lbf
Basic static load rating	C_0	238 lbf
Fatigue load limit	P_u	10 lbf
Attainable speed for grease lubrication		70 000 r/min
Attainable speed for oil-air lubrication		110 000 r/min
Contact angle	α	25 °
Ball diameter	D_w	0.125 in
Number of balls	z	12
Reference grease quantity	G_{ref}	0.007323 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)		165 594.267 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)		216 985.592 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)		279 797.21 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)		371 159.565 lbf/in

Calculation factors

Correction factor dependent on bearing series and size	f	1.03
Correction factor dependent on contact angle	f_1	0.98
Correction factor, preload class A	f_{2A}	1
Correction factor, preload class B	f_{2B}	1.04
Correction factor, preload class C	f_{2C}	1.08
Correction factor, preload class D	f_{2D}	1.14
Correction factor for hybrid bearings	f_{HC}	1
Limiting value	e	0.68
Axial load factor (single, tandem)	Y_2	0.87
Axial load factor (single, tandem)	Y_0	0.38
Radial load factor (single, tandem)	X_2	0.41
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_2	0.67

Mass

Mass	0.02 lb

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