

7209 ACDGA/P4A



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 arrangements to provide effective load sharing, within a predetermined preload range, without the use of shims or similar devices.

- Very high running accuracy
- Very high load carrying capacity
- Relatively high speed and stiffness
- Universally matchable

Overview

Dimensions

Bore diameter	45 mm
Outside diameter	85 mm
Width	19 mm
Contact angle	25 °

Performance

Basic dynamic load rating	41 kN
Basic static load rating	30 kN
Note	Contact SKF for the attainable speeds

Properties

Contact type	Normal contact (two-point contact)
Number of rows	1
Ring type	One-piece inner and outer rings
Design	High-capacity D
Universal matching bearing	Yes, back-to-back (<>), face-to-face (><) or tandem (>>)
Matched arrangement	No
Matched condition (axial clearance/ preload)	Measuring load, class A

Tolerance class	P4A
Material, bearing	Bearing steel
Coating	Without
Sealing	Without
Lubricant	None

Technical Specification

Universal matching bearing(s)

Yes, back-to-back (<>), face-to-face (><) or tandem (>>)



Dimensions

d	45 mm	Bore diameter
D	85 mm	Outside diameter
B	19 mm	Width
d_1	57.3 mm	Shoulder diameter of inner ring (large side face)
d_2	57.3 mm	Shoulder diameter of inner ring (small side face)
D_1	72.7 mm	Shoulder diameter of outer ring (large side face)
$r_{1,2}$	min. 1.1 mm	Chamfer dimension
$r_{3,4}$	min. 0.6 mm	Chamfer dimension
a	24.8 mm	Distance from side face to pressure point

Abutment dimensions

d_a	min. 52 mm	Diameter of shaft abutment
d_b	min. 52 mm	Diameter of shaft abutment
D_a	max. 78 mm	Diameter of housing abutment
D_b	max. 80.8 mm	Diameter of housing abutment
r_a	max. 1 mm	Radius of fillet
r_b	max. 0.6 mm	Radius of fillet
d_n	60.6 mm	Position of oil nozzle





Calculation data

Basic dynamic load rating	C	41 kN
Basic static load rating	C_0	30 kN
Fatigue load limit	P_u	1.25 kN
Attainable speeds	Contact SKF for the attainable speeds	
Contact angle	α	25 °
Ball diameter	D_w	12.7 mm
Number of rows	i	1
Number of balls (per bearing)	z	14
Reference grease quantity (per bearing)	G_{ref}	5.922 cm ³

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

Preload class		A
Preload when unmounted	G	260 N
Axial stiffness		146 N/ μ m

Correction factors for preload calculation

Correction factor dependent on bearing series and size	f	1.07
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

Factors for equivalent bearing load calculation

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	0.41 kg
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