

# 709 CDGA/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    | 9 mm  |
| Outside diameter | 24 mm |
| Width            | 7 mm  |
| Contact angle    | 15 °  |

### Performance

|                           |                                       |
|---------------------------|---------------------------------------|
| Basic dynamic load rating | 3.58 kN                               |
| Basic static load rating  | 1.6 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                | 9 mm        | Bore diameter                                     |
| D                | 24 mm       | Outside diameter                                  |
| B                | 7 mm        | Width   |
| d <sub>1</sub>   | 14.1 mm     | Shoulder diameter of inner ring (large side face) |
| d <sub>2</sub>   | 14.1 mm     | Shoulder diameter of inner ring (small side face) |
| D <sub>1</sub>   | 18.9 mm     | Shoulder diameter of outer ring (large side face) |
| r <sub>1,2</sub> | min. 0.3 mm | Chamfer dimension                                 |
| r <sub>3,4</sub> | min. 0.2 mm | Chamfer dimension                                 |
| a                | 5.7 mm      | Distance from side face to pressure point         |

## Abutment dimensions

|                |              |                              |
|----------------|--------------|------------------------------|
| d <sub>a</sub> | min. 11 mm   | Diameter of shaft abutment   |
| d <sub>b</sub> | min. 11 mm   | Diameter of shaft abutment   |
| D <sub>a</sub> | max. 22 mm   | Diameter of housing abutment |
| D <sub>b</sub> | max. 22.6 mm | Diameter of housing abutment |
| r <sub>a</sub> | max. 0.3 mm  | Radius of fillet             |
| r <sub>b</sub> | max. 0.2 mm  | Radius of fillet             |
| d <sub>n</sub> | 15.1 mm      | Position of oil nozzle       |





## Calculation data

|   |                                       |                      |
|---|---------------------------------------|----------------------|
| Basic dynamic load rating               | C                                     | 3.58 kN              |
| Basic static load rating                | $C_0$                                 | 1.6 kN               |
| Fatigue load limit                      | $P_u$                                 | 0.068 kN             |
| Attainable speeds                       | Contact SKF for the attainable speeds |                      |
| Contact angle                           | $\alpha$                              | 15 °                 |
| Ball diameter                           | $D_w$                                 | 3.969 mm             |
| Number of rows                          | i                                     | 1                    |
| Number of balls (per bearing)           | z                                     | 10                   |
| Reference grease quantity (per bearing) | $G_{ref}$                             | 0.18 cm <sup>3</sup> |

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

|                        |   |               |
|------------------------|---|---------------|
| Preload class          |   | A             |
| Preload when unmounted | G | 10 N          |
| Axial stiffness        |   | 11 N/ $\mu$ m |

## Correction factors for preload calculation

|  |          |      |
|--|----------|------|
| Correction factor dependent on bearing series and size | f        | 1.03 |
| Correction factor dependent on contact angle           | $f_1$    | 1    |
| Correction factor, preload class A                     | $f_{2A}$ | 1    |
| Correction factor for hybrid bearings                  | $f_{HC}$ | 1    |

## Factors for equivalent bearing load calculation

|   |       |                              |
|---|-------|------------------------------|
| Calculation factor for equivalent loads | $f_0$ | 10.5                         |
| Additional factors for equivalent loads |       | Refer to Notes 1 and 2 below |

## Mass

|      |  |          |
|------|--|----------|
| Mass |  | 0.015 kg |
|------|--|----------|

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