

# PDF technical sheet

## 7903UCG/GNP42U3G



### High precision angular contact ball bearings

High precision angular contact ball bearing, moulded polyamide cage centred on balls

| Product definition      |          |
|-------------------------|----------|
| d                       | 17 mm    |
| D                       | 30 mm    |
| B                       | 7 mm     |
| d1                      | 21.30 mm |
| d2                      | 20.30 mm |
| D1                      | 25.70 mm |
| D2                      | 27.80 mm |
| a                       | 6.70 mm  |
| Contact angle, $\alpha$ | 15 °     |
| rs min                  | 0.30 mm  |
| r1s min                 | 0.15 mm  |
| f0                      | 14.8     |
| Precision class         | P42      |
| Mass                    | 0.02 kg  |
| Brand                   | NTN      |



| Product performance                           |                  |
|-----------------------------------------------|------------------|
| Dynamic load, C                               | 5.35 kN          |
| Static load, C0                               | 3.20 kN          |
| Nlim (oil)                                    | 79,800 Tr/min    |
| Nlim (grease)                                 | 49,900 Tr/min    |
| Preload level                                 | GN               |
| Peload value                                  | 29 kN            |
| axial rigidity                                | 25.4 N/ $\mu$ m  |
| radial rigidity                               | 137.7 N/ $\mu$ m |
| Min operating temperature, Tmin               | -20 °C           |
| Max operating temperature, Tmax               | 120 °C           |
| Characteristic cage frequency, FTF            | 0.42 Hz          |
| Characteristic rolling element frequency, BSF | 5.72 Hz          |
| Characteristic outer ring frequency, BPF0     | 5.85 Hz          |
| Characteristic inner ring frequency, BPFI     | 8.15 Hz          |



### Abutment dimensions

|         |          |
|---------|----------|
| da min  | 19.50 mm |
| Da max  | 27.50 mm |
| Db max  | 28.80 mm |
| r1a max | 0.15 mm  |
| ra max  | 0.30 mm  |
| D6      | 21.50 mm |

### Calculation factors

#### Equivalent dynamic radial load

$$P = X \cdot Fr + Y \cdot Fa$$

| Series                                                                |     |       | e    | Single or DT bearing arrangement |   |             |      | DB or DF arrangement |      |             |      |
|-----------------------------------------------------------------------|-----|-------|------|----------------------------------|---|-------------|------|----------------------|------|-------------|------|
|                                                                       |     |       |      | Fa / Fr ≤ e                      |   | Fa / Fr > e |      | Fa / Fr ≤ e          |      | Fa / Fr > e |      |
|                                                                       |     |       |      | X                                | Y | X           | Y    | X                    | Y    | X           | Y    |
| 70 (NTN & SNR)<br>72 (NTN & SNR)<br>78 (NTN)<br>79 (NTN)<br>719 (SNR) | 15° | 0.178 | 0.38 | 1                                | 0 | 0.44        | 1.47 | 1                    | 1.65 | 0.72        | 2.39 |
|                                                                       |     | 0.357 | 0.4  |                                  |   |             | 1.4  |                      | 1.57 |             | 2.28 |
|                                                                       |     | 0.714 | 0.43 |                                  |   |             | 1.3  |                      | 1.46 |             | 2.11 |
|                                                                       |     | 1.07  | 0.46 |                                  |   |             | 1.23 |                      | 1.38 |             | 2    |
|                                                                       |     | 1.43  | 0.47 |                                  |   |             | 1.19 |                      | 1.34 |             | 1.93 |
|                                                                       |     | 2.14  | 0.5  |                                  |   |             | 1.12 |                      | 1.26 |             | 1.82 |
|                                                                       |     | 3.57  | 0.55 |                                  |   |             | 1.02 |                      | 1.14 |             | 1.66 |
|                                                                       |     | 5.35  | 0.56 |                                  |   |             |      |                      | 1.12 |             | 1.63 |
|                                                                       |     | 7.14  | 0.56 |                                  |   |             | 1    |                      | 1.12 |             | 1.63 |
|                                                                       | 25° |       | 0.68 |                                  |   | 0.41        | 0.87 |                      | 0.92 | 0.67        | 1.41 |
|                                                                       | 30° |       | 0.8  |                                  |   |             | 0.76 |                      | 0.78 |             | 1.24 |

#### Equivalent static radial load

$$Po = Xo \cdot Fr + Yo \cdot Fa$$

| Series                                                                |     |  | Single or DT bearing arrangement |                | DB or DF arrangement |                |
|-----------------------------------------------------------------------|-----|--|----------------------------------|----------------|----------------------|----------------|
|                                                                       |     |  | X <sub>0</sub>                   | Y <sub>0</sub> | X <sub>0</sub>       | Y <sub>0</sub> |
|                                                                       |     |  |                                  |                |                      |                |
| 70 (NTN & SNR)<br>72 (NTN & SNR)<br>78 (NTN)<br>79 (NTN)<br>719 (SNR) | 15° |  | 0.5                              | 0.46           | 1                    | 0.92           |
|                                                                       | 25° |  |                                  | 0.38           |                      | 0.76           |
|                                                                       | 30° |  |                                  | 0.33           |                      | 0.66           |

For single or DT bearing arrangement :

If  $Po < Fr$ , then use  $Po = Fr$