INTERNATIONAL STANDARD

**ISO 7063**

Second edition
2003-12-01

# Rolling bearings — Needle roller bearing track rollers — Boundary dimensions and tolerances

*Roulements — Roulements à aiguilles, galets de came — Dimensions d'encombrement et tolérances*

Reference number
ISO 7063:2003(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 7063 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Subcommittee SC 5, *Needle roller bearings*.

This second edition cancels and replaces the first edition (ISO 7063:1982), which has been technically revised, as well as ISO 6278:1980, which has been withdrawn.

# Rolling bearings — Needle roller bearing track rollers — Boundary dimensions and tolerances

## 1 Scope

This International Standard specifies the boundary dimensions and the tolerances of needle roller bearing track rollers, yoke and stud types.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1132-1:2000, *Rolling bearings — Tolerances — Part 1: Terms and definitions*

ISO 5593:1997, *Rolling bearings — Vocabulary*

ISO 15241:2001, *Rolling bearings — Symbols for quantities*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1132-1 and ISO 5593 apply.

## 4 Symbols

For the purposes of this document, the symbols listed in ISO 15241 and the following apply.

The symbols (except those for tolerances) shown in Figures 1 and 2, and the values given in Tables 1 to 8 denote nominal dimensions unless specified otherwise.

$B$ overall width of inner ring and side washers of yoke-type track roller

$B_1$ distance from face of stud to face of side washer of stud-type track roller

$B_2$ length of shank on stud

$B_3$ distance from face of side washer to centre of radial lubrication hole

$C$ outer ring width

$C_1$ distance from face of outer ring to face of side washer

$D$ outside diameter of outer ring

$d$ bore diameter

$d_1$ stud diameter

$G$ designation of thread on stud

$K_{ea}$ radial runout of outer ring of assembled track roller

$l_G$ length of thread on stud

$r$ chamfer dimension of outer ring, radial and axial

$r_{s\,min}$ smallest single chamfer dimension on outer ring

$r_1$ chamfer dimension of inner ring, radial and axial

$r_{1s\,min}$ smallest single chamfer dimension on inner ring

$\Delta_{Bs}$ deviation of a single overall width of inner ring and side washers

$\Delta_{B2s}$ deviation of a single shank length

$\Delta_{Cs}$ deviation of a single outer ring width

$\Delta_{Dmp}$ deviation of mean outside diameter in a single plane

$\Delta_{dmp}$ deviation of mean bore diameter in a single plane

$\Delta_{d1s}$ deviation of a single stud diameter

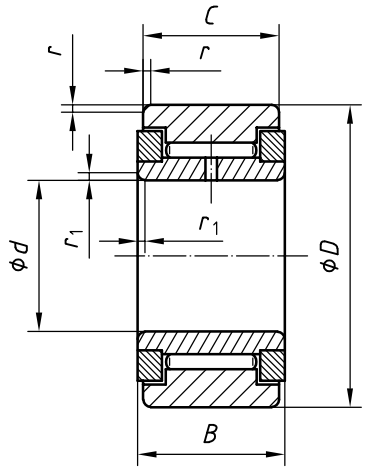


**Figure 1 — Yoke-type**

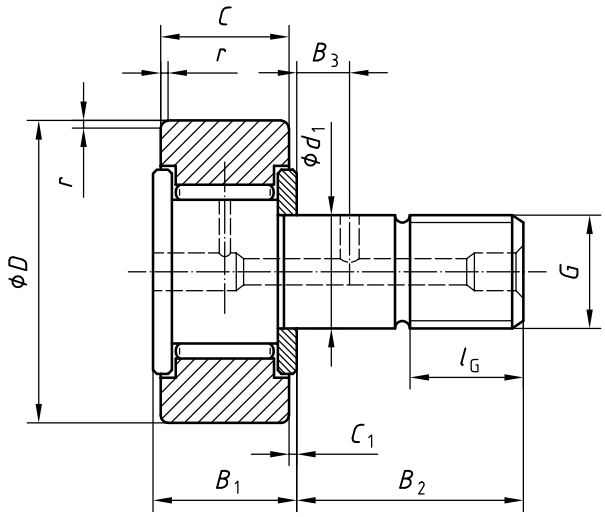


**Figure 2 — Stud-type**

## 5 Boundary dimensions

### 5.1 Track rollers — Yoke-type

Boundary dimensions for the yoke-type are given in Tables 1 and 2.

NOTE The track rollers may be manufactured with or without a cage and with or without seals.

**Table 1 — Track rollers — Yoke-type — Light series**

Dimensions in millimetres

| $D$[a] | $d$ | $B$ | $C$ | $r_{s\,min}$[b] | $r_{1s\,min}$[b, c] |
|---|---|---|---|---|---|
| 16 | 5 | 12 | 11 | 0,15 | 0,15 |
| 19 | 6 | 12 | 11 | 0,15 | 0,15 |
| 24 | 8 | 15 | 14 | 0,3 | 0,3 |
| 30 | 10 | 15 | 14 | 0,6 | 0,3 |
| 32 | 12 | 15 | 14 | 0,6 | 0,3 |
| 35 | 15 | 19 | 18 | 0,6 | 0,3 |
| 40 | 17 | 21 | 20 | 1 | 0,3 |
| 47 | 20 | 25 | 24 | 1 | 0,3 |
| 52 | 25 | 25 | 24 | 1 | 0,3 |
| 62 | 30 | 29 | 28 | 1 | 0,3 |
| 72 | 35 | 29 | 28 | 1 | 0,6 |
| 80 | 40 | 32 | 30 | 1 | 0,6 |
| 85 | 45 | 32 | 30 | 1 | 0,6 |
| 90 | 50 | 32 | 30 | 1 | 0,6 |

[a] The outside surface may be cylindrical or crowned.

[b] No maximum value is specified for chamfer dimensions $r$ and $r_1$.

[c] A circumferential counter bore may be provided as an alternative to the chamfer on the inner ring.

**Table 2 — Track rollers — Yoke-type — Heavy series**

Dimensions in millimetres

| $D$[a] | $d$ | $B$ | $C$ | $r_{s\,min}$[b] | $r_{1s\,min}$[b, c] |
|---|---|---|---|---|---|
| 32 | 10 | 18 | 17 | 0,6 | 0,3 |
| 37 | 12 | 21 | 20 | 1 | 0,3 |
| 42 | 15 | 24 | 22 | 1 | 0,3 |
| 47 | 17 | 27 | 25 | 1 | 0,3 |
| 58 | 20 | 34 | 32 | 1 | 0,3 |
| 72 | 25 | 40 | 38 | 1 | 0,3 |
| 85 | 30 | 48 | 46 | 1,5 | 0,3 |
| 100 | 35 | 56 | 54 | 1,5 | 0,6 |
| 110 | 40 | 63 | 61 | 2 | 0,6 |
| 125 | 45 | 71 | 69 | 2 | 0,6 |
| 140 | 50 | 80 | 76 | 2,5 | 0,6 |
| 160 | 60 | 90 | 86 | 2,5 | 0,6 |
| 190 | 70 | 103 | 99 | 2,5 | 0,6 |
| 210 | 80 | 115 | 111 | 2,5 | 1 |
| 240 | 90 | 132 | 128 | 3 | 1 |

[a] The outside surface may be cylindrical or crowned.

[b] No maximum value is specified for chamfer dimensions $r$ and $r_1$.

[c] A circumferential counter bore may be provided as an alternative to the chamfer on the inner ring.

## 5.2 Track rollers — Stud-type

Boundary dimensions for the stud-type are given in Tables 3 and 4.

NOTE The track rollers may be manufactured with or without a cage and with or without seals. The provision of an axial hole for lubrication in the threaded end of the stud is optional. A radial hole in the shank of the stud is also optional, but where such provision is made for lubrication purposes dimension $B_3$ applies. Lubrication hole diameters are not specified.

**Table 3 — Track rollers — Stud-type — Light series**

Dimensions in millimetres

| $D$[a] | $d_1$ | $C$ | $G$ | $l_G$ | $B_1$ max. | $B_2$ | $B_3$ | $C_1$ | $r_{s\,min}$[b] |
|---|---|---|---|---|---|---|---|---|---|
| 13 | 5 | 9 | M5 × 0,8 | 7 | 10 | 13 | — | 0,5 | 0,15 |
| 16 | 6 | 11 | M6 × 1 | 8 | 12,2 | 16 | — | 0,6 | 0,15 |
| 19 | 8 | 11 | M8 × 1,25 | 10 | 12,2 | 20 | — | 0,6 | 0,15 |
| 22 | 10 | 12 | M10 × 1[c] | 12 | 13,2 | 23 | — | 0,6 | 0,3 |
| 26 | 10 | 12 | M10 × 1[c] | 12 | 13,2 | 23 | — | 0,6 | 0,3 |
| 30 | 12 | 14 | M12 × 1,5 | 13 | 15,2 | 25 | 6 | 0,6 | 0,6 |
| 32 | 12 | 14 | M12 × 1,5 | 13 | 15,2 | 25 | 6 | 0,6 | 0,6 |
| 35 | 16 | 18 | M16 × 1,5 | 17 | 19,6 | 32,5 | 8 | 0,8 | 0,6 |
| 40 | 18 | 20 | M18 × 1,5 | 19 | 21,6 | 36,5 | 8 | 0,8 | 1 |
| 47 | 20 | 24 | M20 × 1,5 | 21 | 25,6 | 40,5 | 9 | 0,8 | 1 |
| 52 | 20 | 24 | M20 × 1,5 | 21 | 25,6 | 40,5 | 9 | 0,8 | 1 |
| 62 | 24 | 29 | M24 × 1,5 | 25 | 30,6 | 49,5 | 11 | 0,8 | 1 |
| 72 | 24 | 29 | M24 × 1,5 | 25 | 30,6 | 49,5 | 11 | 0,8 | 1 |
| 80 | 30 | 35 | M30 × 1,5 | 32 | 37 | 63 | 15 | 1 | 1 |
| 85 | 30 | 35 | M30 × 1,5 | 32 | 37 | 63 | 15 | 1 | 1 |
| 90 | 30 | 35 | M30 × 1,5 | 32 | 37 | 63 | 15 | 1 | 1 |

[a] The outside surface may be cylindrical or crowned.

[b] No maximum value is specified for chamfer dimension $r$.

[c] These track rollers are also manufactured with M10 × 1,25.

**Table 4 — Track rollers — Stud-type — Heavy series**

Dimensions in millimetres

| $D$[a] | $d_1$ | $C$ | $G$ | $l_G$ | $B_1$ max. | $B_2$ | $B_3$ | $C_1$ | $r$s min[b] |
|---|---|---|---|---|---|---|---|---|---|
| 13 | 6 | 9 | M6 × 1 | 8 | 10 | 15 | — | 0,5 | 0,3 |
| 16 | 8 | 11 | M8 × 1,25 | 10 | 12 | 19 | — | 0,5 | 0,3 |
| 19 | 10 | 11 | M10 × 1[c] | 12 | 12 | 22 | — | 0,5 | 0,3 |
| 24 | 12 | 14 | M12 × 1,5 | 14 | 15 | 26 | — | 0,5 | 0,3 |
| 32 | 14 | 17 | M14 × 1,5 | 16 | 18 | 30 | 7 | 0,5 | 0,6 |
| 37 | 16 | 20 | M16 × 1,5 | 18 | 21 | 35 | 8 | 0,5 | 1 |
| 42 | 20 | 22 | M20 × 1,5 | 21 | 24 | 41 | 10 | 1 | 1 |
| 47 | 24 | 25 | M24 × 1,5 | 25 | 27 | 48 | 11 | 1 | 1 |
| 58 | 30 | 32 | M30 × 1,5 | 30 | 34 | 59 | 14 | 1 | 1 |
| 72 | 36 | 38 | M36 × 3 | 41 | 40 | 76 | 17 | 1 | 1 |
| 85 | 42 | 46 | M42 × 3 | 46 | 48 | 87 | 20 | 1 | 1,5 |
| 100 | 48 | 54 | M48 × 3 | 53 | 56 | 100 | 23 | 1 | 1,5 |
| 110 | 56 | 61 | M56 × 4 | 61 | 63 | 115 | — | 1 | 2 |
| 125 | 64 | 69 | M64 × 4 | 68 | 71 | 129 | — | 1 | 2 |
| 140 | 72 | 76 | M72 × 4 | 73 | 79 | 143 | — | 2 | 2,5 |
| 160 | 80 | 86 | M80 × 4 | 80 | 89 | 157 | — | 2 | 2,5 |
| 190 | 80 | 99 | M80 × 4 | 80 | 102 | 160 | — | 2 | 2,5 |
| 210 | 90 | 111 | M90 × 4 | 88 | 114 | 178 | — | 2 | 2,5 |
| 240 | 100 | 128 | M100 × 4 | 96 | 131 | 197 | — | 2 | 3 |

[a] The outside surface may be cylindrical or crowned.

[b] No maximum value is specified for chamfer dimension $r_s$.

[c] These track rollers are also manufactured with M10 × 1,25.

# 6 Tolerances

## 6.1 Track rollers - Yoke-type

Tolerances for yoke-type are given in Tables 5 and 6.

**Table 5 — Outer ring**

Tolerance values in micrometres

| $D$ mm | | $\Delta_{Dmp}$ | | | | $\Delta_{Cs}$ | | $K_{ea}$ |
|---|---|---|---|---|---|---|---|---|
| | | **Outside surface** | | | | | | |
| | | **cylindrical** | | **crowned** | | | | |
| $>$ | $\leqslant$ | high | low | high | low | high | low | max. |
| 10 | 30 | 0 | –21 | 0 | –50 | 0 | –120 | 15 |
| 30 | 50 | 0 | –25 | 0 | –50 | 0 | –120 | 20 |
| 50 | 80 | 0 | –30 | 0 | –50 | 0 | –120 | 25 |
| 80 | 120 | 0 | –35 | 0 | –50 | 0 | –120 | 35 |
| 120 | 150 | 0 | –40 | 0 | –50 | 0 | –120 | 40 |
| 150 | 180 | 0 | –40 | 0 | –50 | 0 | –150 | 45 |
| 180 | 240 | 0 | –46 | 0 | –50 | 0 | –200 | 50 |

**Table 6 — Inner ring**

Tolerance values in micrometres

| $d$ mm | | $\Delta_{dmp}$ | | $\Delta_{Bs}$ | |
|---|---|---|---|---|---|
| $>$ | $\leqslant$ | high | low | high | low |
| 2,5 | 10 | 0 | –8 | 0 | –270 |
| 10 | 18 | 0 | –8 | 0 | –330 |
| 18 | 30 | 0 | –10 | 0 | –390 |
| 30 | 50 | 0 | –12 | 0 | –460 |
| 50 | 80 | 0 | –15 | 0 | –540 |
| 80 | 120 | 0 | –20 | 0 | –630 |

## 6.2 Track rollers — Stud-type

Tolerances for stud-type are given in Tables 7 and 8.

The outer ring tolerances in Table 5 also apply to stud-type track rollers.

**Table 7 — Stud diameter**

Tolerance values in micrometres

| $d_1$ mm | | $\Delta_{d1s}$ | |
|---|---|---|---|
| $>$ | $\leqslant$ | high | low |
| 3 | 6 | 0 | –12 |
| 6 | 10 | 0 | –15 |
| 10 | 18 | 0 | –18 |
| 18 | 30 | 0 | –21 |
| 30 | 50 | 0 | –25 |
| 50 | 80 | 0 | –30 |
| 80 | 120 | 0 | –35 |

**Table 8 — Length of shank on stud**

Tolerance values in millimetres

| $B_2$ | $\Delta_{B2s}$ | |
|---|---|---|
| | high | low |
| All lengths | +0,5 | –1 |

ICS 21.100.20

Price based on 8 pages