



ANSI/AFBMA
Std. 18.2—1982
(Revision of
ANSI/AFBMA
18.2-1976)
(Reaffirmed: April 28, 1988)

AMERICAN NATIONAL STANDARD
AFBMA STANDARD

NEEDLE ROLLER BEARINGS
RADIAL, INCH DESIGN

Sponsor

**The Anti-Friction Bearing
Manufacturers Association, Inc.**

Approved May 14, 1982

American National Standards Institute, Inc.

Copyright© American Bearing Manufacturers Association, Inc. This reproduction made under license agreement by CSSinfo, (734) 930-9277. No part of the printed publication, nor any part of the electronic file may be reproduced or transmitted in any form, including transmittal by e-mail, by file transfer protocol (FTP), or by being made part of a network-accessible system, without the prior written permission of the copyright owner.

American National Standard

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of publication. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Published by

The Anti-Friction Bearing Manufacturers Association, Inc.
1101 Connecticut Avenue, N.W., Suite 700
Washington, D.C. 20036

Copyright 1983 by The Anti-Friction Bearing Manufacturers Association, Inc.

FOREWORD

(This foreword is not part of ANSI/AFBMA Standard 18.2, Needle Roller Bearings — Radial, Inch Design.)

This Standard comprises a revision of those portions of ANSI/AFBMA Std. 18.2-1976, Inch Design Radial Needle Roller Bearings, which relate to Inch Design Product. All material which relates only to Metric Design Product will be found in Standard 18.1.

Most of the Table numbers have been changed. Using the numbering sequence in this standard, major changes have been made to Tables 4.1 and 5.7. Minor changes have been made to most of the other Tables.

The material in this standard conforms, where possible, to recommendations of the International Standards Organization, Technical Committee 4, Rolling Contact Bearings, in whose work the U.S.A. has actively participated through delegates officially appointed by the American National Standards Institute.

Copies of ISO Recommendations concerning Rolling Contact Bearings (Ball and Roller Bearings) are available from the American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018.

Suggestions for the improvement of this standard gained through experience with its use will be welcomed. These should be sent to the American National Standards Institute, Inc., 1430 Broadway, New York, N.Y. 10018.

The officers of Sectional Committee B3 of the American National Standards Institute and the organizations represented at the time this standard was submitted are as follows:

S. R. Ahlman, Chairman

J. J. Whitsett, Secretary

American Gear Manufacturers Association
American Society of Agricultural Engineers
Anti-Friction Bearing Manufacturers Association
Hydraulic Institute
National Electrical Manufacturers Association
National Machine Tool Builders Association
Society of Automotive Engineers
U.S. Department of the Air Force
U.S. Department of Defense, DISC
U.S. Department of the Navy
Xerox

**Other related AFBMA Standards
for
Ball and Roller Bearings
and Balls**

- 1 — Terminology
- 4 — Tolerance Definitions and Gaging Practices
- 7 — Shaft and Housing Fits for Metric Radial Ball and Roller Bearings (Except Tapered Roller Bearings) Conforming to Basic Boundary Plans
- 8.2 — Ball and Roller Bearing Mounting Accessories, Inch Design
- 9 — Load Ratings and Fatigue Life for Ball Bearings
- 10 — Metal Balls
- 11 — Load Ratings and Fatigue Life for Roller Bearings
- 12 — Instrument Ball Bearings
- 13 — Roller Bearing Vibration and Noise
- 14 — Housing for Bearings With Spherical Outside Surfaces
- 15 — Ball Bearings With Spherical Outside Surfaces and Extended Inner Ring Width (Includes Eccentric Locking Collars)
- 16.2 — Airframe Ball, Roller and Needle Roller Bearing, Inch Design
- 17 — Needle Rollers, Metric Design
- 18.1 — Needle Roller Bearings — Radial, Metric Design
- 18.2 — Needle Roller Bearings — Radial, Inch Design
- 19 — Tapered Roller Bearings, Radial, Inch Design
- 20 — Metric Ball and Roller Bearings (Except Tapered Roller Bearings) Conforming to Basic Boundary Plans
- 21 — Metric Thrust Needle Roller and Cage Assemblies and Thrust Washers
- 21.2 — Thrust Bearings of Ball, Cylindrical Roller, Tapered Roller and Needle Roller Types, Inch Design
- 22 — Spherical Plain Bearings, Joint Type

An AFBMA Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an AFBMA Standard does not in any respect preclude anyone, whether he has approved the Standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. AFBMA Standards are subject to revision or withdrawal at any time and users who refer to an AFBMA Standard should satisfy themselves that they have the latest information from the Association.

Needle Roller Bearings Radial, Inch Design

CONTENTS

SECTION	PAGE
1. Scope	1
2. Identification Code	1
3. Boundary Dimensions	4
4. Tolerances	4
5. Fitting and Mounting Practice	5
5.1 General	5
5.2 Needle Roller Bearings, Drawn Cup	5
5.3 Needle Roller Bearings, Machined Ring	5
5.4 Needle Roller and Cage Assemblies	6
5.5 Needle Roller Bearing Track Rollers	6
List of Tables	iv

LIST OF TABLES*

Table No.	Title	Page
BASIC PLANS FOR BEARING BOUNDARY DIMENSIONS		
3.1	Drawn Cup, Without Inner Ring	Part 1 mm 8 Part 2 inches 10
3.2	Machined Ring, Without Inner Ring,	Part 1 mm 12 Part 2 inches 13
3.3	Inner Ring	Part 1 mm 14 Part 2 inches 15
3.4	Needle Roller and Cage Assembly	Part 1 mm 16 Part 2 inches 17
Track Roller, Machined Ring,		
3.5	Non-Separable Threaded Stud	Part 1 mm 18 Part 2 inches 19
3.6	Non-Separable Inner Ring	Part 1 mm 20 Part 2 inches 21
BEARING TOLERANCE LIMITS		
4.1	Drawn Cup, Without Inner Ring	Part 1 mm 22 Part 2 inches 22
4.2	Machined Ring, Without Inner Ring	Part 1 mm 23 Part 2 inches 23
4.3	Inner Ring	Part 1 mm 24 Part 2 inches 24
4.4	Needle Roller and Cage Assembly	Part 1 mm 25 Part 2 inches 25
Track Roller, Machined Ring,		
4.5	Non-Separable Threaded Stud	Part 1 mm 26 Part 2 inches 26
4.6	Non-Separable Inner Ring	Part 1 mm 27 Part 2 inches 27

Table No.	Title	Page
MOUNTING SURFACE TOLERANCE LIMITS – INCH DESIGN		
Drawn Cup, Without Inner Ring		
5.1	Outer Ring Stationary Relative to Load	Part 1 mm 28
		Part 2 inches 28
5.2	Outer Ring Rotating Relative to Load	Part 1 mm 29
		Part 2 inches 29
Machined Ring, Without Inner Ring		
5.3	Outer Ring Stationary Relative to Load	Part 1 mm 30
		Part 2 inches 30
5.4	Outer Ring Rotating Relative to Load	Part 1 mm 31
		Part 2 inches 31
5.5	Inner Ring	Part 1 mm 32
		Part 2 inches 32
5.6	Needle Roller and Cage Assembly	Part 1 mm 33
		Part 2 inches 33
Track Roller, Machined Ring,		
5.7	Non-Separable Threaded Stud	Part 1 mm 34
		Part 2 inches 35
5.8	Non-Separable Inner Ring	Part 1 mm 36
		Part 2 inches 37

*This standard contains only Inch Design Products. Metric Design Products will be found in Standard 18.1 (AFBMA Standard 18.1)

Needle Roller Bearings Radial, Inch Design

1. SCOPE

This standard for Inch Design Industrial Radial Needle Roller Bearings and components includes:

- Identification Code
- Boundary Dimensions
- Bearing Tolerances
- Fitting and Mounting Practice

Airframe Needle Roller Bearings, Needle Roller Thrust Bearings, and bearings of other types are covered in separate AFBMA-ANSI Standards.

2. IDENTIFICATION CODE

2.1 General. This code identifies and, as far as possible, describes each needle roller bearing or component on the basis of complete dimensional and functional interchangeability. This code establishes a universal language for describing and identifying bearings and components in order to facilitate communications between the user and the manufacturer. The code is also intended to simplify the handling by

user personnel of identical bearings made by different manufacturers, whose identification numbers may be different and difficult to interpret.

This code applies only to those radial needle roller bearings or components whose boundary dimensions and tolerances conform to this standard.

2.2 Structure of Code. As shown in the following table, Schematic Arrangement of a Complete Code Number, the code consists of three sections.

Section 1, called the Basic Number, includes a diameter symbol made up of a group of numerals, followed by a type symbol made up of a group of letters and finally by a dimension series symbol made up of a group of numerals. This Basic Number must always be used.

Sections 2 and 3 delineate modification of design and lubricants and, if required to complete the identification, consist of additional letters.

In the Schematic Arrangement Tables, "O" represents any code numeral and "A" represents any code letter.

SCHEMATIC ARRANGEMENT OF A COMPLETE CODE NUMBER

Section 1, Basic Number			Section 2	Section 3
Diameter	Type	Dimension Series	Cage Material or Integral Seals or Crowned Outside Surface	Lubricant or Preservative
000	AAAA	00	AAA	A