



ANSI/AFBMA  
STD. 21.2-1988

**AMERICAN NATIONAL STANDARD**

**AFBMA STANDARD**

**THRUST NEEDLE ROLLER AND  
CAGE ASSEMBLIES AND THRUST WASHERS  
INCH DESIGN**

Sponsor

**The Anti-Friction Bearing  
Manufacturers Association**

Approved November 29, 1988

**American National Standards Institute, Inc.**

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## FOREWORD

(This foreword is not a part of ANSI/AFBMA Standard 21.1-1988, Thrust Needle Roller and Cage Assemblies and Thrust Washers, Metric Design.)

This American National Standard consolidates the boundary dimensions, tolerance limits and fitting and mounting practices for metric design thrust needle rollers and cage assemblies and thrust washers which have been in general use in the USA in recent years. Many of the boundary dimensions are formerly found in ANSI/AFBMA Standard 21-1977.

The dimensions, tolerances and clearances stated in this standard are based on U.S. customary (inch-pound) units and are found in Part II of the various tables. A soft conversion to metric units is provided in Part I of the various tables for the convenience of the user.

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, NY 10018.

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

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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
- 8.1 — Ball and Roller Bearing Mounting Accessories, Metric Design
- 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 Ball Bearings
- 12.1 — Instrument Ball Bearings, Metric Design
- 12.2 — Instrument Ball Bearings, Inch Design
- 13 — Rolling 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)
- 16.1 — Airframe Ball, Roller and Needle Roller Bearings, Metric Design
- 16.2 — Airframe Ball, Roller and Needle Roller Bearings, 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, Metric Design
- 20 — Radial Bearings of Ball Cylindrical Roller and Spherical Roller Types, Metric Design
- 21.1 — Thrust Needle Roller and Cage Assemblies and Thrust Washers, Metric Design
- 21.2 — Thrust Needle Roller and Cage Assemblies and Thrust Washers, Inch Design
- 22.2 — Spherical Plain Bearings, Joint Type, Inch Design
- 23.2 — Thrust Bearings of Tapered Roller Type, Inch Design
- 24.1 — Thrust Bearings of Ball, Cylindrical Roller and Spherical Roller Types, Metric Design
- 24.2 — Thrust Bearings of Ball and Cylindrical Roller Types, Inch Design

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# Thrust Needle Roller and Cage Assemblies and Thrust Washers Inch Design

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# Thrust Needle Roller and Cage Assemblies and Thrust Washers - Inch Design

## 1. SCOPE

This standard for inch thrust needle roller and cage assemblies and thrust washers covers:

- Identification Code
- Symbols and Nomenclature
- Boundary Dimensions
- Tolerances
- Mounting Practice

All thrust needle roller and cage assemblies and thrust washers listed in this standard are not necessarily available. For availability, consult bearing manufacturers. Other applicable standards should be consulted for tolerance definitions, gaging practices and methods of evaluating load ratings.

This standard only covers external dimensions. Functional interchangeability between different makes of standard thrust needle roller and cage assemblies and thrust washers of the same size may depend on bearing features which are not standardized. Hence, the substitution of one make of a standard bearing for another should only be made after careful comparison of their characteristics and consideration of the requirements of the particular application.

## 2. IDENTIFICATION CODE

**2.1 General**—This code identifies and, as far as possible, describes each thrust needle roller and cage assembly or thrust washer on the basis of complete dimensional interchangeability. This code establishes a universal language for describing and identifying inch design thrust needle roller and cage assemblies and thrust washers in order to facilitate communication 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.

This code applies only to those inch design thrust needle roller and cage assemblies and thrust washers whose boundary dimensions and tolerances conform to this standard.

**2.2 Structure of the Code**—As shown in the following table, Schematic Arrangement of a Complete Code Number, the code consists of one or two 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 a dimension series symbol made up of a group of numerals. This Basic Number must always be used.

Section 2, pertains only to thrust needle roller and cage assemblies, and when used delineates cage materials.

In the Schematic Arrangement Table below, "0" represents any code numeral and "A" represents any code letter.

**SCHEMATIC ARRANGEMENT OF A  
COMPLETE CODE NUMBER**

SECTION 1, BASIC NUMBER			SECTION 2*
Diameter	Type	Dimension Series	Cage Material
00	AAA	000	A

\*Section 2, when used, pertains only to thrust needle roller and cage assemblies.