



# **AMERICAN NATIONAL STANDARD**

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## **ABMA Standard**

  

### **Ball and Roller Bearing Mounting Accessories, Inch Design**

Sponsor  
American Bearing Manufacturers Association

November 9, 1999  
American National Standards Institute



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# Ball and Roller Bearing Mounting Accessories, Inch Design

Secretariat  
**American Bearing Manufacturers Association**

Approved November 9, 1999  
**American National Standards Institute, Inc.**

## Foreword

(This foreword is not a part of American National Standard ANSI/ABMA Std. 8.2-1999, Ball and Roller Bearing Mounting Accessories, Inch Design).

This Standard is a revision of the former ANSI/AFBMA Standard 8.2-1991 and covers some of the inch design ball and roller bearing mounting accessories presently in production in the U.S.A.

This Standard establishes dimensions and minimum physical properties of mounting accessories used for locating or fixing inch design ball and roller bearings to the shaft of a machine or mechanism. All components covered by this Standard are designed to U.S. Customary (inch) dimensions. The equivalent S.I. (metric) dimensions are provided for the convenience of those using that system.

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., 11 West 42nd Street, New York, NY 10036.

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

W. G. Looft, Chairman

G.T. Satterfield, Secretary

American Bearing Manufacturers Association  
Hydraulic Institute  
Society of Tribologists and Lubrication Engineers  
U.S. Department of Defense, DISC  
U.S. Department of the Navy

## **ABMA Standards for Ball and Roller Bearings and Balls**

### **ANSI/ABMA Standards**

- 4 -- Tolerance Definitions and Gauging 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 Roller Bearings
- 12.1 -- Instrument Ball Bearings, Metric Design
- 12.2 -- Instrument Ball Bearings, Inch Design
- 13 -- Rolling Bearing Vibration and Noise
- 14 -- Housings 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
- 18.1 -- Needle Roller Bearings - Radial, Metric Design
- 18.2 -- Needle Roller Bearings - Radial, Inch Design
- 19.1 -- Tapered Roller Bearings, Radial, Metric Design
- 19.2 -- Tapered Roller Bearings, Radial, Inch 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
- 25.2 -- Rolling Bearings, Linear Motion, Recirculating Ball, Sleeve Type, Inch Series
- 26.2 -- Thin Section Ball Bearings - Inch Design

### **ANSI/ABMA/ISO Standards**

- 3096-1997 Rolling bearings - Needle rollers - Dimensions and tolerances
- 5593-1984 Rolling bearings - Vocabulary
- 10285-1994 Rolling bearings - Linear motion, recirculating ball, sleeve type - Metric series

An ABMA Standard is intended as a guide to aid the manufacturer, the consumer and the general public. The existence of an ABMA 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. ABMA Standards are subject to revision or withdrawal at any time and users who refer to an ABMA Standard should satisfy themselves that they have the latest information from the Association.

**BALL AND ROLLER BEARING  
MOUNTING ACCESSORIES  
INCH DESIGN**

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# BALL AND ROLLER BEARING MOUNTING ACCESSORIES INCH DESIGN

## 1. Scope

Mounting accessories covered in this standard are commonly used for the location or fixing of ball and roller bearings to the shaft of a machine or mechanism. The purpose of the standard is to establish dimensions and minimum physical properties of these components consistent and compatible with ABMA and ANSI Standards relating to ball and roller bearings. Products manufactured in accordance with this standard will fulfill the expected function when used with properly-designed shafts. This standard covers:

**1.1 Locknuts and removal nuts** - Locknuts and removal nuts for ball bearings, cylindrical, spherical, and tapered roller bearings.

**1.2 Locking devices** - Lockwashers and lockplates for ball bearings, cylindrical, spherical and tapered roller bearings.

**1.3 Mounting sleeves** - Adapter sleeves and withdrawal sleeves, for ball bearings and spherical roller bearings.

**1.4 Shaft dimensions** - Required dimensions for threads, keyways, and reliefs for shafts.

**1.5 General information** - Symbols, definitions, part numbers, materials, tolerances, and threads.

## 2. Identification code

### 2.1 Definitions

#### 2.1.1 Locknuts and removal nuts

**2.1.1.1 Bearing locknut** - A fastener with internal threads utilized to secure and/or position the inner ring of a rolling element bearing to a shaft or mounting sleeve. (Some sizes may be used as removal nuts.)

**2.1.1.2 Removal nut** - A fastener with internal threads utilized to facilitate disassembly of a bearing from the withdrawal sleeve.

**2.1.1.3 Face runout** - A dimensional characteristic denoting total indicator reading at the locknut chamfer face while locknut is rotated one revolution on the axis of its threaded pitch diameter. Also denoted as squareness of the face with thread.

**2.1.1.4 Locknut slot** - Slots are provided on the outer diameter of locknuts and removal nuts. These slots aid in tightening with a spanner wrench or other types of turning tools and permit locking of the nut in final position, except on larger locknuts utilizing lockplates rather than lockwashers.

**2.1.1.5 Chamfer face** - The locknut face adjoining large O.D. chamfer, the face normally positioned against lockwasher or bearing.

**2.1.1.6 Face parallelism** - A term defining the parallel relationship between the chamfer face of the locknut and the opposite face of locknut.

#### 2.1.2 Locking devices

**2.1.2.1 Lockwasher** - A washer used in conjunction with bearing locknut to maintain in locking engagement the adjusted or tightened position of a bearing locknut with respect to the shaft or mounting sleeve. A washer key tang projects from the lockwasher bore, to engage a key slot in the shaft or mounting sleeve. The O.D. periphery of the lockwasher is provided with a quantity of tangs, one of which is bent down into a locknut slot to provide the locking of the mounting system.

**2.1.2.2 Key tang** - The tang projecting inwardly from the bore of lockwasher is designed to engage with a shaft or mounting sleeve key slot. The key tang is either bent at 90° to one face of lockwasher or is straight, depending on type of lockwasher.