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of ANSI B3-22-1976)

AMERICAN NATIONAL STANDARD
AFBMA STANDARD

SPHERICAL PLAIN RADIAL BEARINGS, JOINT TYPE
INCH DESIGN

Sponsor
**The Anti-Friction Bearing
Manufacturers Association**

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American National Standards Institute, Inc.

American National Standard

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Foreword

(This foreword is not a part of American National Standard for Spherical Plain Bearings, Joint Type—Inch Design, ANSI/AFBMA Standard 22.2—1988)

This standard covers inch design spherical plain bearings of types which are presently in production in the U.S.A.

Typical utilization of swaged bearings, Series 1 and 2 in this Standard, includes airframe control surfaces, involving high load, oscillation and misalignment, normally with intermittent operation. Reference: MIL-B-8942 (Bearings, Plain, TFE Lined, Self-Aligning), MIL-B-8976 (Bearings, Plain, Self-Aligning, All Metal), MIL-B-81820 (Bearings, Plain, Self-Lubricating, Self-Aligning, Low Speed), MIL-B-81936 (Bearings, Plain, Self-Aligning, BeCu Ball, CRES Race).

The typical use of fractured bearings, Series 3 in this Standard, involves slow rotation or oscillation with medium or heavy misaligned loading.

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:

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American Society of Agricultural Engineers
American Society of Lubrication Engineers
Anti-Friction Bearings Manufacturers Association
Hydraulic Institute
National Machine Tool Builders Association
Society of Automotive Engineers
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SPHERICAL PLAIN RADIAL BEARINGS, JOINT TYPE

Inch Design

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SPHERICAL RADIAL PLAIN BEARINGS, JOINT TYPE

Inch Design

1. SCOPE

1.1 General. This standard for spherical bearings, joint type (without rolling elements) has been established for the purpose of defining the characteristics of these bearings such as boundary dimensions, tolerances and terminology. This style of bearing consists of an outer ring having an inner concave sphered sliding contact surface and an inner ring having a matched outer convex sphered sliding contact surface. Two general styles, related to manufacturing method are included, swaged (1.2) and fractured (1.3).

1.2 Swaged. This style of bearing is manufactured utilizing a "swaging" or forming of the outer ring over the inner ring (ball). These bearings are Series 1 and 2 in this Standard.

1.3 Fractured. This style of bearing has the outer ring split or fractured in one position to facilitate manufacturing assembly of the rings. These bearings are Series 3 in this Standard.

2. REFERENCE ANSI/AFBMA STANDARDS

2.1 ANSI/AFBMA Std. 4, Tolerance Definitions and Gaging Practices for Ball and Roller Bearings.

3. TERMINOLOGY

3.1 Types of Bearings

3.1.1 Spherical Plain Bearing, Joint Type. A spherical plain bearing designed primarily to accommodate oscillatory, tilting and low speed rotational movements. Sliding motion is accommodated at the spherical contact surface and/or at the inner ring bore.

3.1.1.1 Spherical Plain Radial Bearings. A spherical plain bearing intended to support radial load.

3.1.1.2 Spherical Plain Angular Contact Bearing. A spherical plain bearing intended to support a combination of radial and axial loads. (Not covered by this Standard at this time.)

3.1.1.3 Spherical Plain Thrust Bearing. A spherical plain bearing intended to support primarily axial loads. (Not covered by this Standard at this time.)

3.2 Bearing Components

3.2.1 Inner Ring. That part of a spherical plain bearing, joint type, having a convex sphered outer surface and a cylindrical inside surface.

3.2.2 Outer Ring. That part of a spherical plain bearing, joint type, having a concave sphered inner surface and a cylindrical outside surface.

3.2.2.1 One Piece Outer Ring. An outer ring manufactured and assembled in one piece., i.e., not divided or split in anyway.

3.2.2.2 Swaged Outer Ring. A one piece outer ring manufactured by deformation of the outer ring material around the inner ring to obtain the sphered inner surface.

3.2.2.3 Single Fractured Outer Ring. An outer ring manufactured in one piece and subsequently split or fractured in one position in an axial plane, to facilitate manufacturing assembly.

3.3 Features

3.3.1 Bore Cylindrical Surface. The inside surface of an inner ring having a basically cylindrical form.

3.3.2 Outside Cylindrical Surface. The outside surface of an outer ring having a basically cylindrical form.

3.3.3 Sphered Outer Surface. That surface of an inner ring intended to make sliding contact with an outer ring and having the form of part of the outside surface of a sphere whose center lies on the bearing axis.

3.3.4 Sphered Inner Surface. That surface of an outer ring intended to make sliding contact with an inner ring and having the form of part of the inside surface of a hollow sphere whose center lies on the bearing axis.