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**AMERICAN NATIONAL STANDARD
AFBMA STANDARD**

**LOAD RATINGS AND FATIGUE LIFE
FOR BALL BEARINGS**

Sponsor

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

Approved July 17, 1990

American National Standards Institute, Inc.

American National Standard

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FOREWORD

(This Foreword is not a part of American National Standard, Load Ratings and Fatigue Life for Ball Bearings.)

This revision of ANSI/AFBMA Standard 9 has as its principal features:

1) The use of an increased calculated stress at the center of the most heavily loaded rolling element/raceway contact which results in a total permanent deformation of 0.0001 of the rolling element diameter; and 2) the utilization of the factor f_{cm} which depends on the geometry of the bearing components, the accuracy to which the various components are made and contemporary, normally used material and its manufacturing quality.

This standard is in close conformity with ISO 76-1987 (Rolling bearings-Static load ratings) and with ISO DIS 281-1989 (Rolling bearings-Dynamic load ratings and rating life). Any significant differences, where they occur, are indicated in this standard.

The principal difference between this standard and ISO DIS 281 is the use of the f_{cm} factor which combines the f_c and b_m factors used in ISO 281. Dynamic load ratings calculated for the same bearing should have the same value, however, when following either this or the ISO Standard unless noted otherwise in this standard.

The life adjustment factor for special bearing properties, a_2 , intended for use with capacities calculated in accordance with previous revisions of this Standard may not be valid for use with the current capacities. The present f_{cm} values incorporate material and processing improvements which were previously adjusted by means of the a_2 factor.

Copies of ISO Standards concerning Rolling Contact Bearings (Ball and Roller Bearings) are available from the American National Standards Institute.

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

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

S.R. Ahlman, Chairman

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Anti-Friction Bearing Manufacturers Association
Hydraulic Institute
National Machine Tool Builders Association
Society of Tribologists and Lubrication Engineers
U.S. Department of the Navy
U.S. Department of Defense, DISC

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 Roller 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

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.

Load Ratings and Fatigue Life For Ball Bearings

CONTENTS

SECTION	PAGE
1. Introduction	1
1.1 Purpose of Standard	1
1.2 Life Criterion	1
1.3 Static Load Criterion	1
2. Symbols	2
3. Definitions	3
3.1 Life	3
3.2 Reliability	3
3.3 Static Load	3
3.4 Pitch Diameter of a Ball Set, D_{pw}	3
3.5 Basic Rating Life, L_{10}	3
3.6 Adjusted Rating Life, L_{na}	3
3.7 Basic Dynamic Radial Load Rating, C_r	3
3.8 Basic Static Radial Load Rating, C_{or}	3
3.9 Basic Dynamic Axial Load Rating, C_a	3
3.10 Basic Static Axial Load Rating, C_{oa}	3
3.11 Dynamic Equivalent Radial Load, P_r	4
3.12 Static Equivalent Radial Load, P_{or}	4
3.13 Dynamic Equivalent Axial Load, P_a	4
3.14 Static Equivalent Axial Load, P_{oa}	4
3.15 Nominal Contact Angle, α	4
3.16 Conventional Operating Conditions	4
4. Scope	4
4.1 Bearing Types	4
4.1.1 General	4
4.1.2 Radial Deep Groove and Angular Contact	4
4.1.3 Filling Slot, Deep Groove	4
4.1.4 Radial, Self-Aligning	4
4.1.5 Thrust	4
4.1.6 Double Row, Radial and Angular Contact	4
4.2 Limitations	4
4.2.1 Truncated Contact Area	4
4.2.2 Materials	4
4.2.3 Types	5
4.2.4 Lubrication	5
4.2.5 Ring Support and Alignment	5
4.2.6 Internal Clearance	5
4.2.7 High Speed Effects	5
4.2.8 Groove Radii	5
4.2.9 Tolerances	5
4.2.10 Plastic Deformation in the Contact Area	5
4.3 Operating Parameters	5

5.	Radial and Angular Contact Ball Bearings	5
5.1	Basic Dynamic Radial Load Rating	5
5.1.1	Bearing Combinations	6
5.2	Dynamic Equivalent Radial Load	6
5.2.1	Bearing Combinations	6
5.3	Basic Rating Life	6
5.4	Basic Static Radial Load Rating	11
5.4.1	Bearing Combinations	11
5.5	Static Equivalent Radial Load	12
5.5.1	Bearing Combinations	12
6.	Thrust Ball Bearings	13
6.1	Basic Dynamic Axial Load Rating	13
6.1.1	Single Row Bearings	13
6.1.2	Bearings with Two or More Rows of Balls	13
6.2	Dynamic Equivalent Axial Load	13
6.3	Basic Rating Life	14
6.4	Basic Static Axial Load Rating	14
6.5	Static Equivalent Axial Load	14
7.	Life Adjustment Factors	15
7.1	General	15
7.2	Limitations	15
7.3	Life Adjustment Factor for Reliability, a_1	15
7.4	Life Adjustment Factor for Special Bearing Properties, a_2	16
7.5	Life Adjustment Factor for Operating Conditions, a_3	16

LIST OF TABLES

TABLE NO.	TITLE	PAGE
	RADIAL BALL BEARINGS	
1.	Values of f_{cm}	7
2.	Values of X and Y	8
3.	Values of f_o	9
4.	Values of X_o and Y_o	12
	THRUST BALL BEARINGS	
5.	Values of f_{cm}	13
6.	Values of X and Y	15
7.	Life Adjustment Factors for Reliability	15