AMERICAN NATIONAL STANDARD

Accredited Standards Committee B3

Ball Bearings With Spherical Outside Surfaces And Extended Inner Ring Width (Includes Eccentric Locking Collars) ANSI/ABMA 15:1991

Secretariat

American Bearing Manufacturers Association

ANSI/ABMA 15:1991 Stabilized

Maintenance 2020

American Bearing Manufacturers Association ABMA

ABMA
2025 M Street, NW
Suite 800
Washington, DC 20036
Ph: 202-367-1155
Fax: 202-367-2155
E-mail: info@americanbearings.org
www.americanbearings.org

AVA Documents
Document Sharing Hub

Full document details: ABMA(BEARING) 15 2020

AMERICAN NATIONAL STANDARD

(This is not an approved part of the standard)

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus means substantial agreement has been reached by directly and materially affected interests. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution.

The use of an American National Standard is completely voluntary; their existence does not in any respect preclude anyone, whether they approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat of the sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time.

This standard is maintained under stabilized maintenance and will be reviewed by Accredited Standards Committee B3 on a 10-year cycle. Any materially affected and interested party that feels this standard should be revised or withdrawn should submit their rationale for revision or withdrawal to the B3 Secretariat at the address below.

Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute or online at www.ANSI.org.

Published by
American Bearing Manufacturers Association
2025 M Street, N.W., Suite 800
Washington, DC 20036
Copyright © 2011 by American Bearing Manufacturers Association

All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of the publisher.

Printed in the United States of America

Documents
Document Sharing Hub

Full document details: ABMA(BEARING) 15 2020

ERRATA SHEET FOR STANDARD 15-1991

Table 1 Part 1

d = 52.338 should be d = 52.388

Table 2 Part 1

d = 52.338 should be d = 52.388

Table 3 Part 1

d = 52.338 should be d = 52.388

Table 4 Part 1

d = 52.338 should be d = 52.388

Table 5 Part 1

d = 52.338 should be d = 52.38

Documents
Document Sharing Hub

Full document details: ABMA(BEARING) 15 2020

BALL BEARINGS WITH SPHERICAL OUTSIDE SURFACES AND EXTENDED INNER RING WIDTH (INCLUDES ECCENTRIC LOCKING COLLARS)

CONTENTS

Section **Page**

1. Scope 1
2. Symbols and Definitions 1

LIST OF TABLES

Table No. Page

BOUNDARY DIMENSIONS

1 BEARINGS WITH ECCENTRIC LOCKING COLLAR — WIDE SERIES
Part 1—Dimensions shown in mm 3
Part 2—Dimensions shown in inches 4

2 BEARINGS WITH ECCENTRIC LOCKING COLLAR — NARROW SERIES
Part 1—Dimensions shown in mm 5
Part 2—Dimensions shown in inches 6

3 BEARINGS WITH SET SCREW INNER RING OR CONCENTRIC COLLAR — INTERMEDIATE SERIES
Part 1—Dimensions shown in mm 7
Part 2—Dimensions shown in inches 8

4 BEARINGS WITH SET SCREW INNER RING — NARROW SERIES
Part 1—Dimensions shown in mm 9
Part 2—Dimensions shown in inches 10

5 ECCENTRIC LOCKING COLLARS
Part 1—Dimensions shown in mm 11
Part 2—Dimensions shown in inches 12

TOLERANCES

6 INNER RINGS 13

7 ECCENTRIC LOCKING COLLARS 13

8 RADIAL INTERNAL CLEARANCE 14

Documents
Document Sharing Hub

Full document details: ABMA(BEARING) 15 2020

BALL BEARINGS WITH SPHERICAL OUTSIDE SURFACES AND EXTENDED INNER RING WIDTH (Includes Eccentric Locking Collars)

1. SCOPE

This Standard specifies boundary dimensions and tolerances for bearings with spherical outside surfaces and extended inner ring width and eccentric locking collars. These bearings are frequently mounted in housings having mating internal spherical surfaces to provide alignment at mounting.

Relubrication features are optional and may be designed to interface with the lubrication zones of mating housings so that the bearings will be properly lubricated. The relubrication means in the outer ring, if used, shall be located on one or both sides of the outer ring zones, defined by dimensions in the tables, in such a way that lubricant will satisfactorily feed into the bearing from a housing bore groove covering the zone.

2. SYMBOLS AND DIMENSIONS

A = Width of inner ring eccentric surface
A_1 = Width of collar eccentric surface
ΔA_{1s} = Eccentric locking collar, deviation of a single collar eccentric surface width
B = Nominal inner ring width
B_1 = Overall inner ring width including eccentric locking collar
B_2 = Nominal eccentric locking collar width
ΔB_{2s} = Eccentric locking collar, deviation of a single collar width
C = Nominal outer ring width
C_a = Distance from center of outer ring width to center of lubrication zone
C_b = Width of lubrication zone
d = Nominal bearing and eccentric locking collar bore diameter
Δd_{mp} = Single plane mean bore diameter deviation
V_{dp} = Bore diameter variation in a single radial plane
Δd_s = Deviation of a single bore diameter
d_1 = Eccentric locking collar outside diameter
d_2 = Eccentric locking collar small bore diameter of eccentric surface at theoretical sharp corner
Δd_{2s} = Eccentric locking collar, deviation of a single small bore diameter of eccentric surface
d_3 = Large diameter of inner ring eccentric surface at theoretical sharp corner
D = Nominal bearing outside diameter
H = Eccentricity
ΔH_s = Eccentricity deviation in a single radial plane
r_1 = Chamfer dimension of inner ring eccentric surface
$r_{1s\,min}$ = Smallest single chamfer dimension of inner ring eccentric surface
r_2 = Fillet radius of inner ring eccentric surface
$r_{2s\,max}$ = Largest single fillet radius of inner ring eccentric surface
r_3 = Fillet radius of collar eccentric surface
$r_{3s\,max}$ = Largest single fillet radius of collar eccentric surface
r_4 = Chamfer dimension of collar eccentric surface
$r_{4s\,min}$ = Smallest single chamfer dimension of collar eccentric surface
S = Distance from center of inner ring raceway to inner ring face on side opposite the locking device
S_1 = Distance from center of inner ring raceway to the face of inner ring or locking collar limiting the overall bearing width on the locking device side

Dimensions labeled maximum represent the largest actual value permitted.
Dimensions labeled minimum represent the smallest actual value permitted.

Documents
Document Sharing Hub

Full document details: ABMA(BEARING) 15 2020

Inner Ring: Tables 1 through 4 represent commonly used bearing types. The actual inner ring width and face to center of raceway dimensions are rarely critical in practical applications since those bearings are most commonly used with straight cylindrical shafting having no inner ring face abutting shoulders. These width values are reference dimensions except where noted as maximums.

Outer Ring: Outer ring widths also are not generally critical since axial abutting shoulders or snap rings would normally not be used or required for axial retention of spherical-outside-diameter rings. In addition, due to various relubricatable designs outer ring widths vary between manufacturers. For these reasons, the minimum and maximum outer ring widths are not tolerances; they indicate the range within the nominal must fall.

Collars: Users frequently purchase bearings and collars from different sources. In order to help promote standardization and interchangeability eccentric surface dimensions (d_2 and d_3) are shown for both inner rings and collars.

Documents
Document Sharing Hub

Full document details: ABMA(BEARING) 15 2020