INCH-POUND
A-A-59647
30 October 2001
SUPERSEDING
FF-B-2844/07
15 February 1994

COMMERCIAL ITEM DESCRIPTION

BEARING, BALL, ANNULAR, SINGLE ROW, RADIAL, NON-FILLING SLOT, LIGHT SERIES (LS - SERIES)

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. SCOPE. This commercial item description (CID) establishes the government acquisition requirements for single row, radial, non-filling slot, light series (LS - series), annular ball bearings for general purpose use.

2. CLASSIFICATION. The bearings shall be of one type and identified by the sizes, cage materials, lubricants/preservatives and shield and seal configurations, and tolerance classes and internal clearances listed below. The selected size (see 7.4(b)) shall be specified in the acquisition order.

Sizes (see table I)

Cage materials (see table II)

Lubricants/preservatives and shield and seal configurations (see table III)

Tolerance classes and radial internal clearances (see table IV)

3. SALIENT CHARACTERISTICS.

3.1 Dimensions. Bearing boundary dimensions and dynamic load ratings (see 3.5) shall conform to the requirements specified in table I for each of the coded bearing sizes. These dimensions conform to the requirements specified for the listed bearing sizes in American National Standards Institute/American Bearing Manufacturers Association (ANSI/ABMA) Standard 20, "Radial Bearings of Ball, Cylindrical Roller and Spherical Roller Types Metric Design" (DoD adopted).

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: Defense Supply Center Richmond (DSCR), ATTN: DSCR-VBD, 8000 Jefferson Davis Highway, Richmond, VA 23297-5610.

AMSC N/A FSC 3110

TABLE I. Boundary dimensions.[1]

Size code	Bore diameter (inch)	Bore diameter (mm)	Outside diameter	Width	Chamfer min.[2]	Dia. series[3]	Dynamic load rating (lbs.)
01	0.5000	12.7000	1.3125	0.3750	0.031	2	1,311
02	0.6250	15.8750	1.5625	0.4375	0.047	2	2,014
03	0.7500	19.0500	1.8750	0.5625	0.062	2	2,622
04	0.8750	22.2250	2.0000	0.5625	0.062	2	2,993
05	1.0000	25.4000	2.2500	0.6250	0.062	2	3,002
06	1.1250	28.5750	2.5000	0.6250	0.062	2	4,123
07	1.2500	31.7500	2.7500	0.6875	0.062	2	4,470
08	1.3750	34.9250	3.0000	0.6875	0.062	2	5,434
09	1.5000	38.1000	3.2500	0.7500	0.093	2	6,175
10	1.6250	41.2750	3.5000	0.7500	0.093	3	6,916
11	1.7500	44.4500	3.7500	0.8125	0.093	3	7,410
12	1.8750	47.6250	4.0000	0.8125	0.093	3	7,964
13	2.0000	50.8000	4.0000	0.8125	0.093	2	7,964
14	2.2500	57.1500	4.5000	0.8750	0.093	3	9,239
15	2.5000	63.5000	5.0000	0.9375	0.093	2	12,212
16	2.7500	69.8500	5.2500	0.9375	0.093	2	12,978
17	3.0000	76.2000	5.7500	1.0625	0.093	3	14,072
18	3.2500	82.5500	6.0000	1.0625	0.093	2	16,495
19	3.5000	88.9000	6.5000	1.1250	0.125	2	17,382
20	3.7500	95.2500	6.7500	1.1250	0.125	2	17,263
21	4.0000	101.6000	7.2500	1.2500	0.125	2	20,023
22	4.2500	107.9500	7.5000	1.2500	0.125	2	20,952
23	4.5000	114.3000	8.0000	1.3125	0.125	2	23,992
24	4.7500	120.6500	8.2500	1.3125	0.125	2	23,873
25	5.0000	127.0000	9.0000	1.3750	0.125	2	27,001
26	5.5000	139.7000	9.5000	1.3750	0.125	2	28,083

[1] All dimensions are in inches unless otherwise specified.
[2] The chamfer on bearings will clear a maximum fillet radius equal to a minimum chamfer.
[3] Diameter series is a soft metric conversion of the inch outside diameter and width in comparison with the boundary dimension in ASTM/ABMA Standard 20.

3.2 Materials.

3.2.1 Ring and ball materials. The ring and ball material shall be chromium alloy steel 52100 (G52986) as specified in the American Society for Testing and Materials (ASTM) A 295, "Standard Specification for High-Carbon Anti-Friction Bearing Steel" (DoD adopted).

3.2.2 Cages. The cage material shall be compatible with and shall be resistant to deterioration due to lubricant, preservative, hydraulic fluid, solvents, or other substances and chemicals that can be expected to come into contact with the bearing, and shall cause no deterioration of the same. Non-metallic cages shall meet the same inspections and performance requirements as those conducted on bearings with metallic cages. Materials shall operate from -65 to 230 ºF (-54 to 110 ºC). The cage material shall be one of the coded options listed in table II (see 7.4(c)).

TABLE II. Cage materials.

Code	Cage material
A	Pressed steel or molded plastic
B	Machined brass or bronze
C	Machined non metallic (phenolic)
D	Pressed brass
E	Other (specify in acquisition order)

3.2.3 Closures. Shields and seals shall be fabricated from the manufacturer's recommended materials or as specified in the acquisition order (see 7.4(d)). Materials shall be compatible with and resistant to deterioration due to lubricants, preservatives, hydraulic fluid, solvents, and other substances or chemicals that can be expected to come in contact with the bearing, and shall cause no deterioration of the same. Closures shall not affect the specified dimensional tolerance, nor shall they inhibit the free rotation of the bearing rings, and may be either removable or non-removable. Seals shall be impervious contact type. Closure materials shall operate from -65 to 230 ºF (-54 to 110 ºC). Unless specified otherwise in the acquisition order, the closure configuration for the bearing shall be one of the coded options listed in table III (see 7.4 (e)).

3.3 Lubrication and preservation. When grease is required, the bearing void shall be 25 to 50 percent filled in accordance with DOD-G-24508, "Grease, High Performance, Multi-purpose (Metric)" or MIL-PRF-81322, "Grease, Aircraft, General Purpose, Wide Temperature Range". The bearing part number shall include the appropriate code from table III. Preservative compound shall be applied to all open and single closure bearings that have no additional lubricant requirement. If a preservative compound is required for packing or storage, the compound name and any applicable specification shall be specified in the acquisition order (see 7.4(f)).

TABLE III. Lubricants, preservatives, and shield and seal configurations.

Code	Lubricant	Shield and seal
A	DOD-G-24508	Open
B	MIL-PRF-81322	
C	Preservative[1]	
D	DOD-G-24508	Single shield
E	MIL-PRF-81322	
F	Preservative[1]	
G	DOD-G-24508	Double shield
H	MIL-PRF-81322	
J	DOD-G-24508	Single seal
K	MIL-PRF-81322	
L	Preservative[1]	
M	DOD-G-24508	Double seal
N	MIL-PRF-81322	
P	DOD-G-24508	Single shield and seal
R	MIL-PRF-81322	

[1] Preservative shall be in accordance with MIL-DTL-197, "Packaging of Bearings, Antifriction, Associated Parts and Subassemblies".

3.4 Precision tolerance. The bearing precision tolerance level shall conform to Annular Bearing Engineers Committee (ABEC) class ABEC-1 and ABEC-5 as defined in ANSI/ABMA Standard 20. The tolerance class and associated radial internal clearance shall be specified in the acquisition order using the codes listed in table IV (see 7.4(g)).

TABLE IV. Tolerance class and radial internal clearance.

Code	Tolerance class	Radial internal clearance	Clearance in 0.0001 inches
A	ABEC-1	Tight	1 - 3
B		Normal	2 - 5
C		Loose	5 - 8
D		Extra-loose	8 - 11
E	ABEC-5	Tight	1 - 3
F		Normal	2 - 5
G		Loose	5 - 8
H		Extra-loose	8 - 11

3.5 Dynamic load rating. The listed ratings in table I conform to the requirements specified in ANSI/ABMA Standard 9, "Load Ratings and Fatigue Life for Ball Bearings" (DoD adopted).

3.6 Hardness. The finished ring hardness shall be at least 58 HRC as defined in ASTM E 18, "Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials" (DoD adopted), and shall not vary more than three points on the Rockwell C scale on any one ring. The ball hardness shall be within 60-70 HRC in accordance with ASTM E 18. Case or work hardened balls shall not be acceptable.

3.7 Grain size. The grain size for the ring and ball material shall be in accordance with ASTM E 112, "Standard Test Methods for Determining Average Grain Size" (DoD adopted).

4. REGULATORY REQUIREMENTS

4.1 Recovered materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

4.2 Unless otherwise specified in the solicitation and resulting contract, the foreign acquisition restrictions in Section 225.7019 of the Defense Federal Acquisition Regulation Supplement (DFARS) apply to products described by this CID.

5. PRODUCT CONFORMANCE PROVISIONS

5.1 Product conformance. The products provided shall meet the salient characteristics of this commercial item description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The government reserves the right to require proof of such conformance.

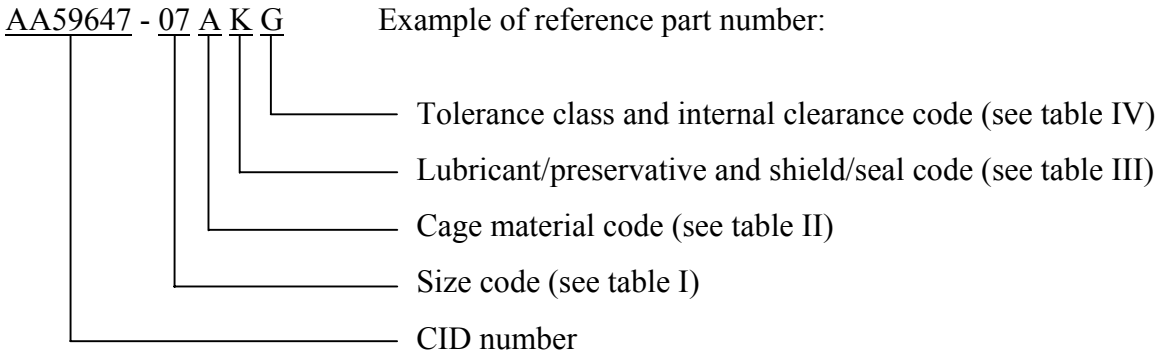
5.2 Market acceptability. The product offered must have been previously sold either to the government or on the commercial market.

6. PACKAGING

6.1 Preservation, packing, and marking. For acquisition purposes, the product shall be preserved, packed, and marked as specified in the acquisition order (see 7.4(h)).

7. NOTES

7.1 Part or identification number (PIN). The following part or identification numbering procedure is for government purposes and does not constitute a requirement for the contractor.



AA59647-07 A K G indicates: 1.2500 bore diameter; 2.7500 outside diameter; 0.6875 width; pressed steel or molded plastic cage; a single seal bearing lubricated in accordance with MIL-PRF-81322; ABEC-5 tolerance class, loose internal clearance.

7.2 Sources of documents.

7.2.1 Military specifications. Copies of military specifications may be obtained from Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094. Electronic copies of military specifications may be obtained from http://astimage.daps.dla.mil/quicksearch/.

7.2.2 FAR and DFARS. Copies of the FAR and DFARS may be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Electronic copies of the FAR may be obtained from http://www.arnet.gov/far/. Electronic copies of the DFARS may be obtained from http://www.acq.osd.mil/dp/dars/dfars.html.

7.2.3 ANSI standards. Copies of ANSI standards may be obtained from the American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036. Electronic copies of ANSI standards may be obtained from http://web.ansi.org/.

7.2.4 ASTM standards. Copies of ASTM standards may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. Electronic copies of ASTM standards may be obtained from http://www.astm.org/.

7.3 Sources of supply. The manufacturers and/or supplier listed below are known to supply products that meet the salient characteristics requirements of this document. Competition is not limited to the listed firms.

Messinger Bearings, Inc.
Philadelphia, PA 19124

Jamaica Bearings Co. Inc.
New York, NY 11040

7.4 Ordering data. Acquisition documents should specify the following information:

a. CID document number, revision, and CID PIN
b. Bearing size (see 2)
c. Cage material (see 3.2.2)
d. Closure material (see 3.2.3)
e. Closure configuration (see 3.2.3)
f. Preservative compound and specification, if required (see 3.3)
g. Precision tolerance (see 3.4)
h. Preservation, packing, and marking requirements (see 6.1)

7.5 Supersession data. Table V contains cross reference data between FF-B-2844 slant sheets and the superseding CID numbers.

TABLE V. Document supersession data.

FF-B-2844 slant number	Replacement CID
FF-B-2844/01	A-A-59643
FF-B-2844/02	A-A-59644
FF-B-2844/03	A-A-59645
FF-B-2844/04	A-A-59643
FF-B-2844/05	A-A-59644
FF-B-2844/06	A-A-59646
FF-B-2844/07	A-A-59647
FF-B-2844/08	A-A-59648

7.6 Codes cross reference. Table VI cross-references the bore codes listed in FF-B-2844/07 to the size codes of this CID.

TABLE VI. Bearing size cross reference.

FF-B-2844/07 bore codes	A-A-59647 size code	Bore diameter	Outside diameter	Width
AA	01	0.5000	1.3125	0.3750
AB	02	0.6250	1.5625	0.4375
AC	03	0.7500	1.8750	0.5625
AD	04	0.8750	2.0000	0.5625
BA	05	1.0000	2.2500	0.6250
BB	06	1.1250	2.5000	0.6250
BC	07	1.2500	2.7500	0.6875
BD	08	1.3750	3.0000	0.6875
BE	09	1.5000	3.2500	0.7500
BF	10	1.6250	3.5000	0.7500
BG	11	1.7500	3.7500	0.8125

TABLE VI. Bearing size cross reference - Continued.

FF-B-2844/07 bore codes	A-A-59647 size code	Bore diameter	Outside diameter	Width
BH	12	1.8750	4.0000	0.8125
CA	13	2.0000	4.0000	0.8125
CB	14	2.2500	4.5000	0.8750
CC	15	2.5000	5.0000	0.9375
CD	16	2.7500	5.2500	0.9375
DA	17	3.0000	5.7500	1.0625
DB	18	3.2500	6.0000	1.0625
DC	19	3.5000	6.5000	1.1250
DD	20	3.7500	6.7500	1.1250
EA	21	4.0000	7.2500	1.2500
EB	22	4.2500	7.5000	1.2500
EC	23	4.5000	8.0000	1.3125
ED	24	4.7500	8.2500	1.3125
FA	25	5.0000	9.0000	1.3750
FB	26	5.5000	9.5000	1.3750

7.7 Subject term (key word) listing.

bore
cage
closures
hardness
load
lubrication
size code

MILITARY INTERESTS:

Custodians:
Navy - OS
Air Force - 99

Reviewers:
Air Force - 11, 84

CIVIL AGENCY
COORDINATING ACTIVITY:

GSA - 7FXE

Preparing activity:
DLA - GS4

(Project 3110-1235)