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INCH-POUND

A-A-59656B
8 September 2011
SUPERSEDING
A-A-59656A
22 May 2006

COMMERCIAL ITEM DESCRIPTION

BEARINGS, ROLLER, TAPERED, DOUBLE ROW, NORMAL ANGLE, TWO SINGLE CONES, ONE DOUBLE CUP, NONADJUSTABLE (TYPE TNA)

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

1. SCOPE. This commercial item description (CID) covers government acquisition requirements for complete (cone with rollers and cup) double row, tapered, roller bearings with normal angle, two single cones, and one double cup, nonadjustable (type TNA) for general purpose use. These bearings are not intended for use in special precision applications such as on aircraft, precision ordnance, or submarine equipment.

2. CLASSIFICATION. The roller bearings shall be of one type (TNA) and classified by the size codes listed in table I. The column headings in table I refer to bearing characteristics defined in figure 1.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: STDZNMGT@dla.mil or DLA Aviation VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616. Since contact information can change, you may want to verify the currency of this address information using the ASSIST database at https://assist.daps.dla.mil/.

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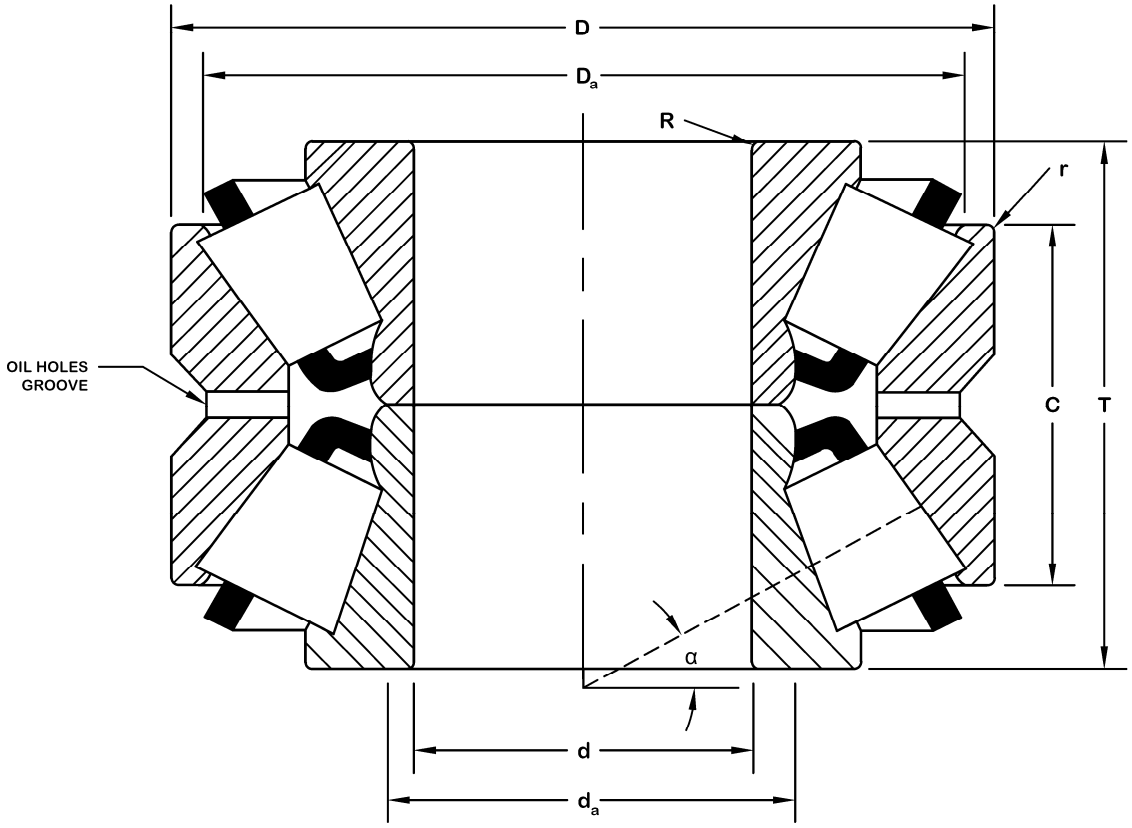

FIGURE 1. Bearing characteristics.

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TABLE I. Size codes and dimensions.

Size code	Part number [1]	d	D	T	B	R [2]	r [2]	d_a	D_a	K factor	Basic dynamic load ratings (lb.)
		Bore	Outside diameter	Bearing width over cups	Cone width	Max. shaft fillet radius	Max. housing fillet radius	Recommended shoulder diameter			
	Cone-cup							Shaft	Housing		Two row radial
001	NA05075 - 05185D	0.7500	1.8504	0.9926	1.2500	0.05	0.03	1.00	1.67	1.64	7500
002	NA08125 - 08231D	1.2500	2.3125	0.9688	1.2812	0.06	0.02	1.52	2.17	1.23	8900
003	NA13687 - 13621D	1.5000	2.7170	1.5000	1.8124	0.08	0.03	1.83	2.56	1.45	15400
004	NA438 - 432D	1.7500	3.7500	2.0000	2.4376	0.14	0.03	2.24	3.43	2.05	35200
005	NA366 - 363D	1.9685	3.5433	1.6563	1.9789	0.14	0.03	2.40	3.31	1.83	14000
006	NA3780 - 3729D	2.0000	3.6718	2.0625	2.5625	0.14	0.03	2.52	3.46	1.73	19700
007	NA455 - 452D	2.0000	4.2500	2.1250	2.5626	0.14	0.03	2.56	3.94	1.74	21800
008	NA539 - 533D	2.1250	4.3750	2.5000	3.1250	0.14	0.06	2.68	3.94	1.97	27600
009	NA385 - 384D	2.1654	3.9370	1.6875	2.0625	0.14	0.03	2.64	3.66	1.65	14800
010	NA558 - 552D	2.3750	4.8750	2.5000	3.1250	0.14	0.06	2.99	4.53	1.69	30700
011	NA569 - 563D	2.6250	5.0000	2.5625	3.1875	0.14	0.06	3.23	4.69	1.61	50000
012	NA482 - 472D	2.7500	4.7244	2.1250	2.5626	0.14	0.03	3.27	4.49	1.52	23100
013	NA484 - 472D	2.7559	4.7244	2.1250	2.5626	0.14	0.03	3.27	4.49	1.52	23100
014	NA567 - 563D	2.8750	5.0000	2.5625	3.1875	0.27	0.06	3.70	4.69	1.61	32000
015	NA495A - 493D	3.0000	5.3750	2.1250	2.7500	0.14	0.03	3.62	5.12	1.31	25000
016	NA659 - 654D	3.0000	6.0000	3.0000	3.7500	0.14	0.06	3.66	5.55	1.43	39600
017	NA580 - 572D	3.2500	5.5115	2.6250	3.2500	0.14	0.03	3.86	5.24	1.45	51100
018	NA749 - 742D	3.2500	6.1250	3.3750	4.0000	0.14	0.06	3.90	5.63	1.80	50800
019	NA0593 - 592D	3.5000	6.0000	2.5000	3.2500	0.14	0.03	4.09	5.67	1.32	34800
020	NA759 - 752D	3.5000	6.3750	3.3750	4.1250	0.14	0.06	4.17	5.91	1.71	52300
021	NA52375 - 52637D	3.7500	6.3750	2.4375	3.2499	0.14	0.03	4.41	6.06	1.23	36100
022	NA0593 - 592D	3.7500	7.0866	3.3750	4.1250	0.14	0.03	4.49	6.61	1.51	88200
023	NA776 - 774D	3.7500	7.1250	3.3750	4.1250	0.14	0.06	4.49	6.61	1.51	88200

[1] Part numbers are for reference only. Part numbers reflect the cup and cone numbers used by industry and the ABMA. Some cones and cups may be used in multiple configurations and are not limited to one bearing assembly.
[2] These maximum fillet radii shall be cleared by the bearing corners.
[3] Minus value indicates load center inside cone backface.

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TABLE I. Size codes and dimensions.

Size code	Part [1] number	d	D	T	B	R [2]	r [2]	d_a	D_a	K factor	Basic dynamic load ratings (lb.)
		Bore	Outside diameter	Bearing width over cups	Cone width	Max. shaft fillet radius	Max. housing fillet radius	Recommended shoulder diameter			
	Cone-cup							Shaft	Housing		Two row radial
024	NA691 - 672D	4.0000	6.6250	2.7500	3.6250	0.14	0.03	4.65	6.30	1.24	68200
025	NA780 - 773D	4.0000	7.0866	3.3750	4.1250	0.14	0.03	4.69	6.61	1.51	88200
026	NA780 - 774D	4.0000	7.1250	3.3750	4.1250	0.14	0.06	4.69	6.61	1.51	88200
027	NA861 - 854D	4.0000	7.5000	4.0000	5.0000	0.14	0.06	4.72	6.85	1.74	125400
028	HH221449NA - HH221410D	4.0000	7.5000	4.1250	5.0000	0.14	0.06	4.80	7.05	1.74	85200
029	NA782 - 773D	4.1250	7.0866	3.3750	4.1250	0.14	0.03	4.80	6.61	1.51	88200
030	NA782 - 774D	4.1250	7.1250	3.3750	4.1250	0.14	0.06	4.80	6.61	1.51	88200
031	NA71450 - 71751D	4.5000	7.5000	3.1875	4.1875	0.14	0.06	5.20	7.13	1.40	58300
032	NA938 - 932D	4.5000	8.3750	4.6250	5.6250	0.14	0.06	5.28	7.60	1.79	142900
033	NA48291 - 48220D	5.0000	7.1875	2.8750	3.3750	0.14	0.03	5.55	6.93	1.91	43200
034	NA798 - 792D	5.0000	8.1250	3.2500	4.2500	0.14	0.03	5.71	7.80	1.27	97800
035	NA95500 - 95927D	5.0000	9.2500	4.5000	5.6250	0.14	0.06	5.87	8.54	1.58	153000
036	NA48390 - 48320D	5.3750	7.5000	2.8750	3.3750	0.14	0.03	5.94	7.24	1.82	75000
037	NA81550 - 81963D	5.5000	9.6250	3.1250	4.2500	0.14	0.06	6.34	9.02	1.66	111200
038	NA48686 - 48620D	5.6250	7.8750	2.8750	3.6876	0.14	0.03	6.22	7.60	1.74	74600
039	NA82576 - 82951D	5.7500	9.5000	4.1875	5.1875	0.14	0.06	6.54	8.90	1.32	82500
040	NA99600 - 99102D	6.0000	10.0000	4.3750	5.6250	0.14	0.06	6.85	9.37	1.43	156800
041	NA67787 - 67720D	6.8750	9.7500	3.3125	4.0625	0.14	0.03	7.56	9.45	1.33	66800
042	NA87700 - 87112D	7.0000	11.1250	3.1250	4.2500	0.14	0.06	7.87	10.50	1.45	119700
043	NA94700 - 94114D	7.0000	11.3750	4.3750	5.6250	0.22	0.06	7.99	10.71	1.25	173800
044	HM237545NA - HM237510D	7.0000	11.3750	4.3750	5.6250	0.22	0.06	7.95	10.68	1.83	211900

[1] Part numbers are for reference only. Part numbers reflect the cup and cone numbers used by industry and the ABMA. Some cones and cups may be used in multiple configurations and are not limited to one bearing assembly.
[2] These maximum fillet radii shall be cleared by the bearing corners.
[3] Minus value indicates load center inside cone backface.

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TABLE I. Size codes and dimensions.

Size code	Part number [1]	d	D	T	B	R [2]	r [2]	d_a	D_a	K factor	Basic dynamic load ratings (lb.)
		Bore	Outside diameter	Bearing width over cups	Cone width	Max. shaft fillet radius	Max. housing fillet radius	Recommended shoulder diameter			
	Cone-cup							Shaft	Housing		Two row radial
045	NA94700 - 94118D	7.0000	11.7500	4.3750	5.6250	0.22	0.06	7.99	10.71	1.25	173800
046	H239649NA - H239612D	7.3750	12.6250	5.4375	7.3125	0.22	0.06	8.43	11.73	1.83	303000
047	NA93800 - 93127D	8.0000	12.5000	4.3750	5.7500	0.22	0.06	9.06	11.81	1.12	200400
048	NA130902 - 131401D	9.0000	14.0000	4.3750	5.7500	0.25	0.06	10.08	13.01	1.77	231800
049	NA170950 - 171451D	9.5000	14.5000	3.3750	4.7500	0.25	0.06	10.59	13.27	1.61	165300

[1] Part numbers are for reference only. Part numbers reflect the cup and cone numbers used by industry and the ABMA. Some cones and cups may be used in multiple configurations and are not limited to one bearing assembly.
[2] These maximum fillet radii shall be cleared by the bearing corners.
[3] Minus value indicates load center inside cone backface.

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3. SALIENT CHARACTERISTICS

3.1 Dimensions. Bearing dimensions (and dynamic load ratings, see 3.4) shall conform to the requirements specified in table I for each of the bearing part numbers. The listed dimensions conform to the requirements specified in American Bearing Manufacturers Association (ABMA) Standard 19.2, "Tapered Roller Bearings - Radial Inch Design". The bearing size shall be specified in the acquisition order (see 7.3(b)). For any unlisted bearing size codes, the associated dimensional and dynamic load rating requirements should also be specified in the acquisition order.

3.2 Materials.

3.2.1 Cones (inner rings), cups (outer rings), and rollers. The bearing cones, cups, and rollers shall be made of case carburized or through-hardened steel produced in accordance with the ASTM International (ASTM) A295/A295M, "Standard Specification for High-Carbon Anti-Friction Bearing Steel", or ASTM A534, "Standard Specification for Carburizing Steels for Anti-Friction Bearings". The steel shall show a fine fracture grain size in accordance with ASTM E112, "Standard Test Methods for Determining Average Grain Size". Material hardness shall be no less than Rockwell hardness number of 58 on Rockwell C scale (HRC) and no more than 64 HRC as defined in ASTM E18, "Standard Test Methods for Rockwell Hardness of Metallic Materials".

3.2.2 Cage. The bearing cage material shall be impervious to deterioration from any lubricant, preservative, solvent, or other chemical substance expected to contact the bearing during normal use or storage. Similarly, the material shall not cause any chemical deterioration of any other bearing component. The cages shall be made from carbon steel (one piece stamped). Materials shall operate from -65 to 230 °F (-53.9 to 110 °C).

3.3 Tolerance class. The tolerance limits for bearings shall conform to tolerance class 4 as tabulated in ABMA Standard 19.2. Allowable tolerances for bearing components and assembled bearings are listed in tables II through VI.

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TABLE II. Running clearance.

Bearings manufactured with correct running clearance for these fits									
Size code (ref)	Live shaft diameter limits	Dead shaft diameter limits	Housing		Size code (ref)	Live shaft diameter limits	Dead shaft diameter limits	Housing	
	Tight fit	Split fit	Live shaft bore limits	Dead shaft bore limits		Tight fit	Split fit	Live shaft bore limits	Dead shaft bore limits
			Loose fit	Tight fit				Loose fit	Tight fit
001	0.7515 - 0.7510	0.7505 - 0.7500	1.8534 - 1.8524	1.8494 - 1.8484	026	4.0030 - 4.0020	4.0010 - 4.0000	7.1280 - 7.1270	7.1240 - 7.1230
002	1.2515 - 1.2510	1.2505 - 1.2500	2.3155 - 2.3145	2.3115 - 2.3100	027	4.0030 - 4.0020	4.0010 - 4.0000	7.5030 - 7.5020	7.4990 - 7.4980
003	1.5015 - 1.5010	1.5005 - 1.5000	2.7200 - 2.7190	2.7160 - 2.7150	028	4.0030 - 4.0020	4.0010 - 4.0000	7.5030 - 7.5020	7.4990 - 7.4980
004	1.7517 - 1.7510	1.7505 - 1.7500	3.7530 - 3.7520	3.7490 - 3.7480	029	4.1280 - 4.1270	4.1260 - 4.1250	7.0896 - 7.0886	7.0856 - 7.0846
005	1.9700 - 1.9695	1.9690 - 1.9685	3.5463 - 3.5453	3.5423 - 3.5413	030	4.1280 - 4.1270	4.1260 - 4.1250	7.1280 - 7.1270	7.1240 - 7.1230
006	2.0020 - 2.0010	2.0005 - 2.0000	3.6748 - 3.6738	3.6708 - 3.6698	031	4.5035 - 4.5025	4.5010 - 4.5000	7.5030 - 7.5020	7.4990 - 7.4980
007	2.0020 - 2.0010	2.0005 - 2.0000	4.2530 - 4.2520	4.2490 - 4.2480	032	4.5035 - 4.5025	4.5010 - 4.5000	8.3780 - 8.3770	8.3740 - 8.3730
008	2.1270 - 2.1260	2.1255 - 2.1250	4.3780 - 4.3770	4.3740 - 4.3730	033	5.0035 - 5.0025	5.0010 - 5.0000	7.1905 - 7.1895	7.1865 - 7.1855
009	2.1674 - 2.1664	2.1659 - 2.1654	3.9400 - 3.9390	3.9360 - 3.9350	034	5.0035 - 5.0025	5.0010 - 5.0000	8.1280 - 8.1270	8.1240 - 8.1230
010	2.3770 - 2.3760	2.3755 - 2.3750	4.8780 - 4.8770	4.8740 - 4.8730	035	5.0035 - 5.0025	5.0010 - 5.0000	9.2530 - 9.2520	9.2490 - 9.2480
011	2.6275 - 2.6265	2.6255 - 2.6250	5.0030 - 5.0020	4.9990 - 4.9980	036	5.3785 - 5.3775	-	7.5030 - 7.5020	-
012	2.7525 - 2.7515	2.7505 - 2.7500	4.7274 - 4.7264	4.7234 - 4.7224	037	5.5040 - 5.5030	-	9.6280 - 9.6270	-
013	2.7584 - 2.7574	2.7564 - 2.7559	4.7274 - 4.7264	4.7234 - 4.7224	038	5.6290 - 5.6280	-	7.8780 - 7.8770	-
014	2.8775 - 2.8765	2.8755 - 2.8750	5.0030 - 5.0020	4.9990 - 4.9980	039	5.7540 - 5.7530	-	9.5030 - 9.5020	-
015	3.0025 - 3.0015	3.0005 - 3.0000	5.3780 - 5.3770	5.3740 - 5.3730	040	6.0040 - 6.0030	-	10.0030 - 10.0020	-
016	3.0025 - 3.0015	3.0005 - 3.0000	6.0030 - 6.0020	5.9990 - 5.9980	041	6.8795 - 6.8785	-	9.7530 - 9.7520	-
017	3.2525 - 3.2515	3.2505 - 3.2500	5.5145 - 5.5135	5.5105 - 5.5095	042	7.0045 - 7.0035	-	11.1280 - 11.1270	-
018	3.2525 - 3.2515	3.2505 - 3.2500	6.1280 - 6.1270	6.1240 - 6.1230	043	7.0045 - 7.0035	-	11.3780 - 11.3770	-
019	3.5030 - 3.5020	3.5010 - 3.5000	6.0030 - 6.0020	5.9990 - 5.9980	044	7.0045 - 7.0035	-	11.3780 - 11.3770	-
020	3.5030 - 3.5020	3.5010 - 3.5000	6.3780 - 6.3770	6.3740 - 6.3730	045	7.0045 - 7.0035	-	11.7530 - 11.7520	-
021	3.7530 - 3.7520	3.7510 - 3.7500	6.3780 - 6.3770	6.3740 - 6.3730	046	7.3795 - 7.3785	-	12.6310 - 12.6290	-
022	3.7530 - 3.7520	3.7510 - 3.7500	7.0896 - 7.0886	7.0856 - 7.0846	047	8.0050 - 8.0040	-	12.5060 - 12.5040	-
023	3.7530 - 3.7520	3.7510 - 3.7500	7.1280 - 7.1270	7.1240 - 7.1230	048	9.0055 - 9.0045	-	14.0060 - 14.0040	-
024	4.0030 - 4.0020	4.0010 - 4.0000	6.6280 - 6.6270	6.6240 - 6.6230	049	9.5060 - 9.5050	-	14.5060 - 14.5040	-
025	4.0030 - 4.0020	4.0010 - 4.0000	7.0896 - 7.0886	7.0856 - 7.0846	-	-	-	-	-

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TABLE III. Cone bore tolerance.

Cone bore (d)			
Size range		Tolerance	
Over	Inclusive	Plus	Minus
0.0000	3.0000	5	0
3.0000	12.0000	10	0

Note: Allowable tolerances are in 0.0001 inch.

TABLE IV. Cup diameter tolerance.

Cup diameter (D)			
Size range		Tolerance	
Over	Inclusive	Plus	Minus
0.0000	12.0000	10	0
12.0000	24.0000	20	0

Note: Allowable tolerances are in 0.0001 inch.

TABLE V. Bearing width tolerance.

Bearing width (T)			
Bore size range		Tolerance	
Over	Inclusive	Plus	Minus
0.0000	5.0000	100	0
5.0000	12.0000	300	0

Note: Allowable tolerances are in 0.0001 inch.

TABLE VI. Assembled bearing tolerance.

Assembled bearing maximum radial runout		
Cup outside diameter (D)		Tolerance
Over	Inclusive	
0.0000	24.0000	20

Note: Allowable tolerances are in 0.0001 inch.

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3.4 Dynamic load rating. The bearing dynamic load rating shall conform to the requirements specified in table I for each bearing size code. The listed ratings conform to the requirements specified in ABMA Standard 11, "Load Ratings and Fatigue Life for Roller Bearings".

3.5 Lubrication. The bearings shall be furnished without lubrication.

3.6 Contact angle. All bearings are normal angle bearings having a contact angle between 10 and 19 degrees. The contact angle is the angle between the line of action of the roller load and a plane perpendicular to the bearing axis.

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 Foreign acquisition restrictions. Unless otherwise indicated in the solicitation and resulting contract, the foreign acquisition restrictions in Section 252.225, Clause 252.225.7016, 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 CID, 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 products offered must have been previously sold either to the government or on the commercial market.

6. PACKAGING

6.1 Preservation, packing, and marking. Unless otherwise specified in the acquisition order, the bearings shall be preserved, packaged, and marked in accordance with MIL-DTL-197, "Packaging of Bearings, Associated Parts and Subassemblies" (see 7.3(c)).

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7. NOTES

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

AA59656 - 002 Example of reference part number

Size code (see table I)

CID Number

AA59656 - 002 indicates: Bearing bore 1.2500 inches; outside diameter 2.3125 inches; width 0.9688 inches.

7.2 Sources of documents.

7.2.1 DFARS and FAR. Copies of DFARS and FAR may be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Electronic copies of DFARS may be obtained from http://www.acq.osd.mil/dpap/dars/dfarspgi/current/index.html. Electronic copies of FAR may be obtained from https://www.acquisition.gov/far/.

7.2.2 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 may be obtained from https://assist.daps.dla.mil/.

7.2.3 ABMA standards. Copies of ABMA standards may be obtained from the American Bearing Manufacturers Association, 2025 M Street NW, Suite 800, Washington, DC 20036. Electronic copies may be obtained from http://www.abma-dc.org/.

7.2.4 ASTM standards. Copies of ASTM standards may be obtained from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. Electronic copies may be obtained from http://www.astm.org/.

7.3 Ordering data. The acquisition order should specify the following information:

a. CID document number, revision, and CID PIN.
b. Bearing size (with dimension/load requirements if size is unlisted) (see 3.1).
c. Preservation, packaging, and marking requirements (see 6.1).

7.4 Cross-reference information. Table VII relates the original specification slant sheets to the replacement CIDs.

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TABLE VII. Federal specification to CID cross-reference.

FF-B-187B specification sheets	Replacement CID numbers	ABMA types
1	A-A-59649	TS
2	A-A-59650	TSF
3	A-A-59651	TSS
4	A-A-59652	TSSF
5	A-A-59653	TDI and TDIS
6	A-A-59654	TDO
7	A-A-59655	TDOS
8	A-A-59656	TNA (normal angle)
9	A-A-59657	TNAS (steep angle)
10	A-A-59658	TNASW
11	A-A-59659	TNASWE

7.5 Subject term (key word) listing.

Bore
Cone
Cup
Load
Width

MILITARY INTERESTS:

Custodians:
Army - AR
Navy - MC
Air Force - 99
DLA - GS

Review Activities:
Navy - OS
Air Force - 84

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FAS

Preparing Activity:
DLA - GS4

(Project 3110-2011-025)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST database at https://assist.daps.dla.mil/.