

INCH-POUND

A-A-59652B  
8 September 2011  
SUPERSEDING  
A-A-59652A  
22 May 2006

## COMMERCIAL ITEM DESCRIPTION

### BEARINGS, ROLLER, TAPERED, SINGLE ROW, STEEP ANGLE, FLANGED CUP (TYPE TSSF)

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) single row, tapered, roller bearings with steep angle, flanged cup (type TSSF) 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 (TSSF) 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](mailto: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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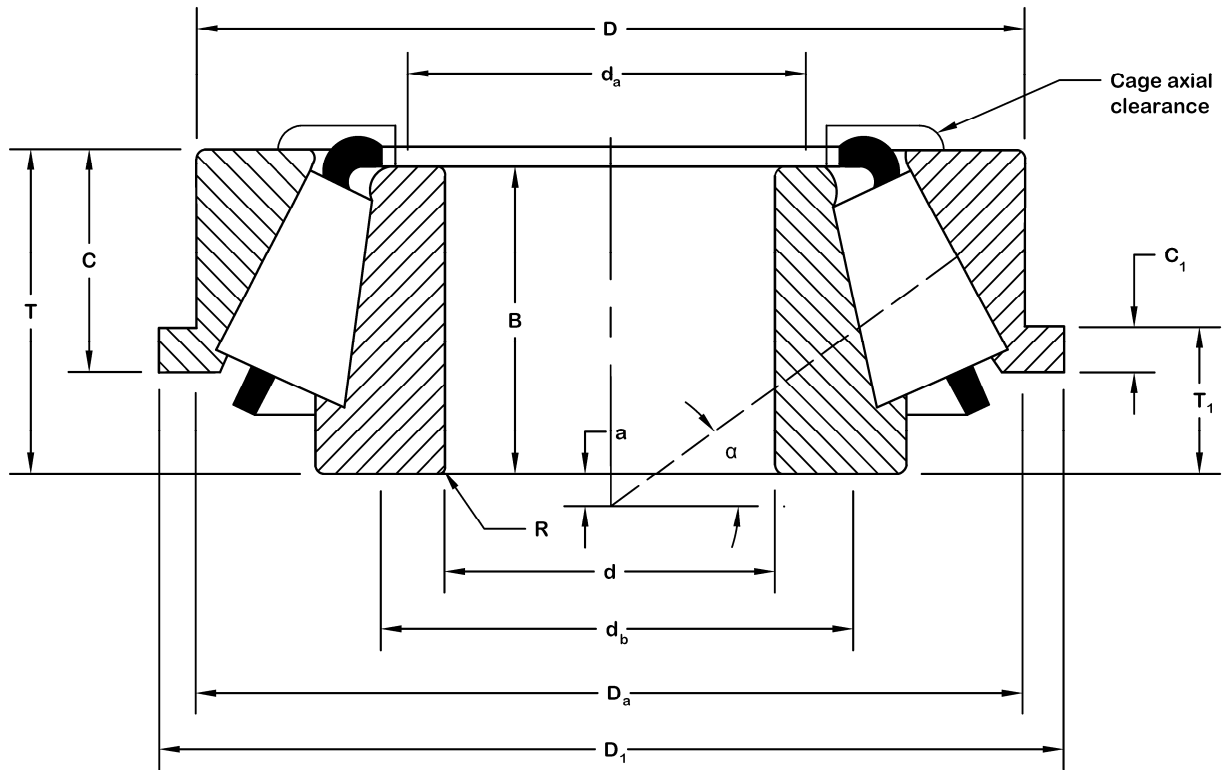


FIGURE 1. Bearing characteristics.

TABLE I. Size codes and dimensions.

Size code	Part number <sup>1</sup>	d	D	T	T <sub>1</sub>	B	C	R <sup>2</sup>	D <sub>1</sub>	C <sub>1</sub>	d <sub>b</sub>	d <sub>a</sub>	D <sub>a</sub>	K factor	Basic dynamic load ratings (lb.)	a <sup>3</sup>
		Bore	Outside diameter	Bearing width	Standout	Cone width	Cup width	Shaft fillet radius	Flange		Backing shoulder diameters		Radial		Effective load center	
	Diameter								Width	Shaft		Housing				
001	21075 - 21212-B	0.7500	2.1250	0.8750	0.4062	0.8598	0.6250	0.06	2.2772	0.1562	1.24	1.04	2.05	0.99	7500	-0.23
002	23100 - 23256-B	1.0000	2.5625	0.8750	0.4063	0.8450	0.6250	0.06	2.7147	0.1563	1.54	1.36	2.48	0.80	88100	-0.09
003	41126 - 41286-B	1.1250	2.8593	0.9688	0.5000	0.9550	0.6875	0.06	3.0741	0.2187	1.63	1.45	2.76	0.97	11200	-0.16
004	43125 - 43312-B	1.2500	3.1250	1.0000	0.5313	0.9478	0.6875	0.06	3.3390	0.2188	1.73	1.63	3.03	0.08	12500	-0.08
005	43131 - 43312-B	1.3125	3.1250	1.0000	0.5313	0.9478	0.6875	0.14	3.3390	0.2188	2.01	1.65	3.03	0.08	12500	-0.08
006	43132 - 43312-B	1.3125	3.1250	1.0000	0.5313	0.9478	0.6875	0.08	3.3390	0.2188	1.89	1.66	3.03	0.08	12500	-0.08
007	44143 - 44348-B	1.4375	3.4843	1.0000	0.5312	0.9330	0.6875	0.09	3.6983	0.2187	2.13	1.97	3.39	0.09	13600	0.09
008	44162 - 44348-B	1.6250	3.4843	1.0000	0.5312	0.9330	0.6875	0.09	3.6983	0.2187	2.24	2.00	3.39	0.09	13600	0.09
009	53176 - 53387-B	1.7500	3.8750	1.2188	0.6563	1.1142	0.8125	0.05	4.1210	0.2500	2.32	2.08	3.62	0.79	16200	-0.01
010	55209C - 55437-B	2.0000	4.3750	1.1875	0.5938	1.0594	0.8125	0.14	4.5938	0.2188	2.80	2.54	4.21	0.03	20600	0.30
011	55206 - 55437-B	2.0625	4.3750	1.1875	0.5938	1.0594	0.8125	0.14	4.5938	0.2188	2.83	2.52	4.21	0.03	20600	0.28
012	55206C - 55437-B	2.0625	4.3750	1.1875	0.5938	1.0594	0.8125	0.14	4.5938	0.2188	2.83	2.54	4.21	0.03	20600	0.30
013	66225 - 66462-B	2.2500	4.6250	1.3125	0.6250	1.2500	0.9375	0.14	4.8750	0.2500	2.99	2.71	4.45	0.93	24000	-0.01
014	HM911249 - HM911210-B	2.4375	5.1250	1.4375	0.7500	1.3125	0.9375	0.14	5.3750	0.2500	3.35	2.93	4.87	0.71	26900	0.21
015	9380 - 9321-B	3.0000	6.7500	1.9375	1.0000	1.8125	1.2500	0.14	7.0620	0.3125	4.13	3.87	6.46	0.76	49100	0.17
016	9386H - 9321-B	3.3125	6.7500	1.9375	1.0000	1.8125	1.2500	0.14	7.0620	0.3125	4.37	3.87	6.46	0.76	49100	0.17
017	98400 - 98788-B	4.0000	7.8740	2.0772	1.0772	1.9375	1.3750	0.14	8.2500	0.3750	5.04	4.76	7.40	0.92	65200	0.05
018	37425 - 37625-B	4.2500	6.2500	0.9063	0.4688	0.8440	0.6250	0.14	6.4336	0.1875	4.80	4.53	6.02	0.54	18900	0.54
019	37431 - 37625-B	4.3125	6.2500	0.9063	0.4688	0.8440	0.6250	0.14	6.4336	0.1875	4.84	4.57	6.02	0.54	18900	0.54

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<sup>1</sup> 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.

<sup>2</sup> These maximum fillet radii shall be cleared by the bearing corners.

<sup>3</sup> 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.

TABLE II. Cone bore tolerance.

Cone bore (d)			
Size range B		Tolerance	
Over	Inclusive	Plus	Minus
0.0000	3.0000	5	0
3.0000	6.0000	10	0

Note: Allowable tolerances are in 0.0001 inch.

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TABLE III. 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 IV. Standout tolerance.

Standout (T1)			
Bore size range		Tolerance	
Over	Inclusive	Plus	Minus
0.0000	4.0000	80	0
4.0000	6.0000	140	100

Note: Allowable tolerances are in 0.0001 inch.

TABLE V. Cup flange tolerance.

Cup flange outside diameter (D1)			
Size range		Tolerance	
Over	Inclusive	Plus	Minus
0.0000	12.0000	20	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.

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 Effective load center. Dimension (a) in [figure 1](#) locates a point on the cone axis, which is the center of pressure of all resisting forces set up by the rollers. All moments should be calculated from this point when determining bearing loading and shaft stresses. A plus value of (a) indicates that the center is outside the cone backface.

**3.7 Steep angle.** A steep angle bearing has a contact angle between 22 and 31 degrees. The contact angle is the angle between the line of action of the roller load and a plane perpendicular to the bearing axis.

4.1 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).

## 5. PRODUCT CONFORMANCE PROVISIONS

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

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\(c\)](#)).

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

AA59652 - 003 indicates: Bearing bore 1.1250 inches; outside diameter 2.8593 inches; width 0.9688 inches.

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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.

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

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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 3110-2011-021)

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/>.