

FF-B-185
AMENDMENT—4
 December 26, 1963

SUPERSEDING
 Amendment—3
 January 14, 1963

FEDERAL SPECIFICATION

BEARINGS, ROLLER, CYLINDRICAL; AND BEARINGS, ROLLER, SELF-ALIGNING

This amendment, which forms a part of Federal Specification FF-B-185, dated September 10, 1956, was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

Page 3, paragraph 3.3, last sentence: Delete and substitute: "The surfaces shall be free from tool marks, chatter waves, grinding scratches, pits, rust, discoloration, soft spots, cracks, surface fractures, and other surface imperfections visible to the unaided eye, which would be detrimental to the satisfactory performance of the bearing."

Page 3, paragraph 3.4: Delete and substitute:

3.4 The rolls used in the same bearing shall be selected and graded so that the difference in maximum diameter between the largest and the smallest roller in an assembled bearing shall not exceed 0.0001 inch for roller diameters up to and including 3/8 inch; 0.00015 inch for roller diameters above 3/8 inch up to and including 1 inch; 0.0002 inch for roller diameters above 1 inch and up to and including 2 inches; and 0.00025 inch for roller diameters above 2 inches. No cylindrical roll shall show a variation of diameter greater than 0.0001 inch when measured at different positions axially. The variation in length of rolls used in the same bearing shall not exceed 0.005 inch.

Page 6, paragraph 4.1, lines 5 and 6: Delete "4.5 and 4.7" and substitute "4.5, 4.7 and 4.8".

Page 7, paragraph 4.4.2.2: Delete and substitute:

4.4.2.2 *Radial runout.* Radial runout shall be checked for conformance to the limits specified in table I. Radial runout shall be determined by mounting bearings on an arbor having a very slight taper (0.0001 to 0.0002 inch on the diameter per inch of length). For measuring outer ring radial runout, a calibrated (dial) indicator shall be set up against the center of the outer ring in a manner to register the runout, the arbor shall be stationary and the outer ring shall be rotated one revolution, and the difference between the minimum and maximum reading on the indicator is the outer ring radial runout. For measuring inner ring radial runout, the procedure shall be reversed, that is, the dial indicator shall be set up against the arbor, the outer ring shall be stationary, and the arbor shall be rotated one revolution to determine the inner ring radial runout. Neither the inner race runout nor the outer race runout shall exceed the maximum radial runout in table I.

Page 7: Add as paragraph 4.4.2.2.1:

4.4.2.2.1 The manufacturer shall not be required to measure radial runout as specified in 4.4.2.2, but shall be held to the tolerances of table I as measured by this method at a Government laboratory.

FSC 3110

FF-B-185

Page 7, paragraph 4.5.1.1: Delete last sentence.

Page 8, paragraph 4.5.4: Delete and substitute new paragraph 4.5.4:

4.5.4 Surface finish. The sample bearing taken in accordance with 4.2.4 shall be examined to verify conformance to 3.3.

Page 8, paragraph 4.5.5.1, line 2: Delete "57 to 65" and substitute "58 to 66".

Page 8, paragraph 4.5.5.2: Delete and substitute:

4.5.5.2 Ring hardness test. The hardness of steel rings shall be determined in Rockwell testing machine with a 120-degree cone and 150-kilogram load. Rings made of alloy steel shall show hardness values of 58 to 66 Rockwell C. The hardness of all the rings representing one lot shall not vary more than 4 points on the Rockwell C scale. Rings made of corrosion-resisting steel shall have a hardness value of not less than 55 Rockwell C.

Page 8, paragraph 4.5.6: Delete.

Page 8, paragraph 4.5.7, line 4: Delete "Government".

Page 9, paragraph 4.7: Delete and substitute:

"4.7 Tests at a Government laboratory."

Page 9, paragraph 4.8: Delete and substitute:

4.8 Life test. The bearings shall be subjected to a life test to determine conformance to 3.19 and to insure that bearing life, under accelerated conditions with speed and load correction applied, shall be as specified in the appendix. The test machines shall utilize a four-bearing mounted system in which all four bearings are mounted on a single arbor. The two outboard bearings shall act as pedestal bearings to oppose the

load applied to the two central bearings, housed in a loading head. Lubrication shall be accomplished by supplying Military symbol 2190 TEP oil under pressure to the inner parts of the bearings. Sufficient oil shall be supplied to maintain the general outer race temperature at 150°F. The test shall be continuous in nature and test machine cutoff shall be controlled by vibration switches. Criteria for rejection shall be failure to meet the fatigue life.

Page 9: Add as paragraph 4.10:

4.10 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

Page 53, column 5, opposite "264-18023-0000": Delete "14.9696" and substitute "14.9606".

Page 57, paragraph 10.1, lines 6 and 7: Delete and substitute: "this appendix shall govern where applicable".

Page 71, Table XXVI: Delete and substitute new Table XXVI:

Page 74, table XXVIII, column "G": Delete "—0.005" and substitute "—0.020".

Page 74, table XXVIII: Under "Minor diameter", column "Minimum": Delete "2.0999" and substitute "2.0969".

Page 75, table XXIX: In column 2, line 22, delete "4.194" and substitute "4.192", and in column 6, delete "Tangent" and substitute "Tang".

TABLE XXVI.—Recommended shaft fits for general use

Metric mm.	Inches	Rotating shaft			Stationary shaft		
		Shaft diameter		Resulting fit	Shaft diameter		Resulting fit
		Nominal		Theoretical shaft-fit	Nominal		Theoretical shaft-fit
		Plus	Inch	Maximum loose Maximum tight	Minus	Inch	Maximum loose Maximum tight
		Tolerance +0.0000					
		Minus	Inch				
4.....	0.1575	0.0003	0.0002	0.0000	0.0005	0.0003	0.0005 0.0001
5.....	.1969	.0003	.0002	.0000	.0005	.0005	.0005 .0001
6.....	.2362	.0003	.0002	.0000	.0005	.0005	.0005 .0001
7.....	.2756	.0003	.0002	-.0001	.0005	.0006	.0006 .0001
8.....	.3150	.0003	.0002	-.0001	.0005	.0006	.0006 .0001
9.....	.3543	.0003	.0002	-.0001	.0005	.0006	.0006 .0001
10.....	.3937	.0003	.0002	-.0001	.0005	.0006	.0006 .0001
12.....	.4724	.0003	.0002	-.0001	.0005	.0007	.0007 .0001
15.....	.5906	.0003	.0002	-.0001	.0005	.0007	.0007 .0001
17.....	.6803	.0003	.0002	-.0001	.0005	.0007	.0007 .0001
20.....	.7874	.0004	.0004	+.0001	.0008	.0008	.0008 .0001
25.....	.9843	.0004	.0004	+.0001	.0008	.0008	.0008 .0001
30.....	1.1811	.0004	.0004	+.0001	.0010	.0010	.0010 .0001
35.....	1.3750	.0005	.0005	+.0001	.0010	.0010	.0010 .0001
40.....	1.5748	.0005	.0005	+.0001	.0010	.0010	.0010 .0001
45.....	1.7717	.0005	.0005	+.0001	.0010	.0010	.0010 .0001
50.....	1.9685	.0005	.0005	+.0001	.0010	.0010	.0010 .0001
55.....	2.1654	.0006	.0006	+.0001	.0011	.0011	.0011 .0002
60.....	2.3622	.0006	.0006	+.0001	.0011	.0011	.0011 .0002
65.....	2.5591	.0006	.0006	+.0001	.0011	.0011	.0011 .0002
70.....	2.7559	.0006	.0006	+.0001	.0011	.0011	.0011 .0002
75.....	2.9528	.0006	.0006	+.0001	.0011	.0011	.0011 .0002
80.....	3.1496	.0006	.0006	+.0001	.0011	.0011	.0011 .0002
85.....	3.3465	.0007	.0007	+.0001	.0013	.0013	.0013 .0003
90.....	3.5433	.0007	.0007	+.0001	.0015	.0015	.0015 .0003

TABLE XXVI.—Recommended shaft fits for general use (Cont'd)

Bearing bore			Rotating shaft			Stationary shaft			
			Shaft diameter		Resulting fit	Shaft diameter		Resulting fit	
			Nominal			Nominal			
			Tolerance +0.0000	Plus	Inch	Maximum loose	Maximum tight	Minus	Maximum loose
Metric mm.	Inches	Minus	Inch	Inch	Inch	Inch	Inch	Inch	
		Inch	Inch	Inch	Inch	Inch	Inch	Inch	
95	3.7402	0.0008	0.0007	+0.0001	+0.0001	0.0015	0.0005	0.0013	0.0003
100	3.9370	.0008	.0007	+ .0001	+ .0001	.0015	.0005	.0013	.0003
105	4.1339	.0008	.0007	+ .0001	+ .0001	.0015	.0005	.0013	.0003
110	4.3307	.0008	.0007	+ .0001	+ .0001	.0015	.0005	.0013	.0003
120	4.7244	.0008	.0007	+ .0001	+ .0001	.0015	.0005	.0013	.0003
130	5.1181	.0010	.0008	+ .0001	+ .0001	.0018	.0006	.0015	.0004
140	5.5118	.0010	.0008	+ .0001	+ .0001	.0018	.0006	.0015	.0004
150	5.9055	.0010	.0008	+ .0001	+ .0001	.0018	.0006	.0015	.0004
160	6.2992	.0010	.0008	+ .0001	+ .0001	.0018	.0006	.0015	.0004
170	6.6929	.0010	.0008	+ .0001	+ .0001	.0018	.0006	.0015	.0004
180	7.0866	.0010	.0008	+ .0001	+ .0001	.0018	.0006	.0015	.0004
190	7.4803	.0012	.0010	+ .0002	+ .0002	.0022	.0006	.0015	.0004
200	7.8740	.0012	.0010	+ .0002	+ .0002	.0022	.0006	.0017	.0006
210	8.2677	.0012	.0010	+ .0002	+ .0002	.0022	.0006	.0017	.0006
220	8.6614	.0012	.0010	+ .0002	+ .0002	.0022	.0006	.0017	.0006
230	9.0551	.0012	.0010	+ .0002	+ .0002	.0022	.0006	.0017	.0006
240	9.4488	.0012	.0010	+ .0002	+ .0002	.0022	.0006	.0017	.0006
260	10.2362	.0014	.0011	+ .0002	+ .0002	.0025	.0007	.0019	.0007
280	11.0236	.0014	.0011	+ .0002	+ .0002	.0025	.0007	.0019	.0007
300	11.8110	.0014	.0011	+ .0002	+ .0002	.0025	.0007	.0019	.0007

Page 78, table XXXI: In column 3, lines 2 through 6, delete ".0005" and substitute ".0004", and opposite metric "160" in column 3, delete ".0008" and substitute ".0010"; in column 6, delete ".0018" and substitute ".0020"; and in column 11, delete ".0008" and substitute ".0010".

MILITARY CUSTODIANS:

Army—WC

Navy—Sh

Air Force—ASD