INCH-POUND

MIL-B-17931E
AMENDMENT 1
3 July 1991

MILITARY SPECIFICATION

BEARINGS, BALL, ANNULAR, FOR QUIET OPERATION

This amendment forms a part of MIL-B-17931E, dated 27 July 1987, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 5

3.3.2, Sentence 3: Delete and substitute, "The mean hardness of the balls shall be at least two Rockwell C points greater than the mean hardness of the rings."

3.3.3, Line 2: Delete "300^{0}F" and substitute "a minimum of 250^{0}F".

PAGE 11

TABLE I, OD max/min column for standard part number M17931-G088: Delete "11.4173/11.4173" and substitute "11.4173/11.1470".

TABLE I, Add footnote "2" reference to width max column for standard part number M17931-G087.

TABLE I, Add footnote 2:

"2/ Under 15-pound axial gage load, the unloaded side face of the inner ring shall stick out .0110 -.0115 inches beyond the outer ring side face for both loading directions. Inner ring width variance to satisfy the stickout requirement is permitted."

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Add new paragraph 6.4.6:

"6.4.6. Mean hardness. Mean hardness is the arithmetic mean of hardness values found in the required standardizing test of each lot reported to the nearest tenth:

Mean hardness: $R = (R1+R2+...Rn)/n$

Where R1,...Rn are the hardness values of n samples in the lot."

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30.1, Delete and substitute:

"30.1 Fatigue life. Bearing fatigue life for single bearings shall be calculated in accordance with ANSI/AFBMA Standard 9. Bearing fatigue life for bearings in duplex arrangements shall be calculated in accordance with ANSI/AFBMA Standard 9 with the following exceptions:

(a) Treat the duplex bearing as two individual single row bearings.
(b) Account for axial and radial forces from all external and internal loads, including centrifugal force, preload, shaft-to-bearing interference fit, and differential thermal expansion of the races and balls as the bearing heats up to operating temperature.
(c) Use the Palmgren combined life expectancy formula to account for the reduced reliability of a two-bearing arrangement:

$$\frac{1}{L^{10/9}} = \frac{1}{L_1^{10/9}} + \frac{1}{L_2^{10/9}}$$

Where L1 and L2 are the calculated lives of the individual bearings.

Bearing life adjustment factors shall not be used in the calculation, unless specifically permitted by the equipment specification."

30.4, Last sentence, delete "tongs" and substitute "tangs".

PAGE 36

TABLE XI, Housing bore diameter (inches) max column: Delete "5.5135" and substitute "5.5128".

PAGE 39

TABLE XII, Add item: Standard part number "M17931-G056", Navy code "2122".

Preparing activity:
Navy - SH
(Project 3110-0807)

Custodians:
Army - AV
Navy - SH
Air Force - 99

Review activities:
Air Force - 84
DLA - IS

User activity:
Army - AT