FF-S-86E
AMENDMENT 4
January 16, 1991
SUPERSEDING
Amendment 3
July 9, 1990

FEDERAL SPECIFICATION

SCREW, CAP, SOCKET-HEAD

This amendment, which forms a part of FF-S-86E, dated May 29, 1987 is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal Agencies

Page 2

Paragraph 2.1

ADD: "QQ-P-35 - Passivation Treatments for Corrosion Resistant Steel"

DELETE: "QQ-C-00465 - Copper-Aluminum Alloys (Aluminum Bronze) (Copper Alloy Numbers 606, 614, 630, 632M, and 642); Rod, Flat Products with Finished Edges (Flat Wire, Strip, and Bar) Shapes, and Forgings."

Page 3

Paragraph 2.1

ADD: "MILITARY HANDBOOKS

MIL-HDBK-57 - Listing of Fastener Manufacturers Identification Symbols"

Page 4

Paragraph 2.2, ASTM

DELETE: "ASTM A 380 - Cleaning and Descaling Stainless Steel Parts, Equipments and Systems"

ADD: "ASTM B 150 - Aluminum Bronze Rod, Bar, and Shapes"

Paragraph 2.2 (For "ASTM" Address)

DELETE: "ASME" and SUBSTITUTE "ASTM"

Page 5

Paragraph 3.1 1

AMSC N/A FSC 5305

DELETE AND SUBSTITUTE: "3.1.1 Alloy Steel. Alloy steel screws shall be of a chemical composition conforming to ASTM A574 which can be heat treated in accordance with MIL-H-6875, to meet the mechanical properties specified in 3.2.1 and 3.2.2 Grades of alloy steel in the 1300 series (UNS G13XXX) and alloy steel with a manganese content exceeding 1.5 percent shall not be used."

Paragraph 3.1.2

DELETE AND SUBSTITUTE: "3 1.2 Corrosion-Resistant Steel (Austenitic). Austenitic corrosion-resistant steel screws shall be manufactured from Type 302 (UNS S30200), Type 304 (UNS S30400), Type 305 (UNS S30500), Type 316 (UNS S31600), Type 384 (UNS S38400), or Type (UNS S30430) (formerly identified as XM-7), in accordance with the chemical compositions specified in ASTM A493 and the mechanical properties as specified in 3.2.3."

Page 6

Paragraph 3.1.4 (line 2)

DELETE: "Mechanical properties" and SUBSTITUTE. "Applicable compositions"

Paragraph 3.2.1.1 (d) (Before "percent in")

DELETE: "12" AND SUBSTITUTE: "10"

Paragraph 3.2.2 (Before "HRC", line 4)

DELETE: "42" AND SUBSTITUTE: "43"

Page 7

Paragraph 3.2.5

DELETE AND SUBSTITUTE: "3.2.5 Non-ferrous screws. The ultimate tensile strength of non-ferrous screws shall conform to Table VI. For sizes too large for available tensile capacity, a specimen machined from a finished non-ferrous screw shall meet the requirements of Table VI. For sizes too short for full size testing, a specimen machined from the same heat of material, processed with the lot it represents, shall meet the requirements of Table VI "

Page 8

Paragraph 3.3.1

DELETE AND SUBSTITUTE: "3.3 1 Passivation. Corrosion resistant steel screws shall be passivated in accordance with QQ-P-35 "

Paragraph 3.3.2, After first sentence

Insert new sentence. "For Navy and Air Force acquisition only, when specified, QQ-P-416, Type II, Class 2 or MIL-C-81562, Type II, Class 2 shall apply."

Page 10

ADD new paragraph

ADD. "3.5.5 Source identification mark. Screws with nominal size .1900 and larger shall be permanently marked to identify the source accepting responsibility for the screws meeting the requirements specified herein. The marking shall be a source identifying symbol for a manufacturer in accordance with in MIL-HDBK-57 or a private label distributor's symbol as applicable."

Paragraph 3.6 (line 1)

DELETE AND SUBSTITUTE: "3.6 Carburization and decarburization limits for alloy steel screws. For alloy steel screws, the depth of carburization,"

Paragraph 3.7.1

ADD: "Longitudinal seams rolled beneath the root of the thread and longitudinal seams in the crest of cut threads are acceptable within the limits of Table II, column 1."

Page 13

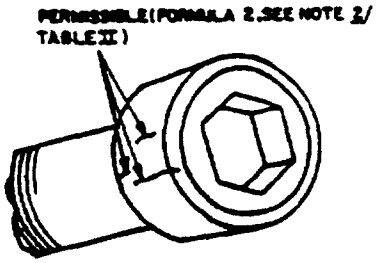
Paragraph 3.7.3 (After "Figure 4")

ADD: "and socket discontinuity locations and limits specified in ASTM A574."

Figure 5, View 5A

DELETE AND SUBSTITUTE:

"



VIEW 5A

"

Page 16

TABLE III, under "Critical" entry

ADD: "2 Source identification mark (see 3.5.5) Visual"

Page 17

Paragraph 4.3.1, first sentence, after "4.3.1.1"

DELETE: "," AND SUBSTITUTE "and"

Paragraph "4.3.1.2, first sentence, after "ASTM F606"

ADD: "For flat countersunk and button head screws, tensile failures through the head are acceptable provided the load requirements are satisfied."

Page 18

Paragraph 4.3.1.2.2

ADD: "Non-ferrous screws too short to test full size shall have tensile specimens machined from test material from the same heat of material and processed with the lot it represents."

Paragraph 4.3.1.3

DELETE AND SUBSTITUTE: "4.3.1.3 Wedge tension test (Alloy steel socket head cap screws). Samples selected as specified in 4.2.3 shall be subjected to tension testing of full-size screws with a wedge in conformance with ASTM A574. The purpose of the test is to obtain the tensile strength and to demonstrate the head quality and ductility of a screw by subjecting it to eccentric loading. Flat countersunk head and button head cap screws shall be excluded from this test."

Paragraph 4.3.3

DELETE AND SUBSTITUTE. "4.3.3 Protective coating or surface treatment tests. Protective coating or surface treatment tests shall be conducted in accordance with the applicable specification as specified in 3.3. Electroplated screws shall be subjected to the hydrogen embrittlement relief requirement and test specified in the applicable electrodeposited plating or coating specification specified in 3.3"

Paragraph 4.3.5

DELETE AND SUBSTITUTE. "4.3.5 Discontinuity inspection test. Samples selected as specified in 4.2.6 shall be subjected to MIL-STD-6866, Type I or Type II, Method A, B or D or MIL-STD-1949 inspection methods as applicable to meet the requirements of 3.7. The samples shall be metallurgically examined within a range from 15 to 50X magnification to determine the extent and depth of the discontinuities "

Page 19

Paragraph 6.2.b

DELETE AND SUBSTITUTE. "b. Type, material, size and length or standard part number (see 1.2 and 3.1)."

Page 25

TABLE VI, Nickel-Aluminum Bronze entry

DELETE AND SUBSTITUTE:

"

Material	Applicable Document	Composition Class or Alloy No.	Condition or Temper	Ultimate Tensile Strength Min	Yield Strength psi min	Elongation 1/ Percent min
Aluminum Bronze	ASTM B150	Copper Alloy UNS C63200	Quench and Temper, Heat Treatment	90,000	50,000 3/	15

"

TABLE VI, Nickel-Copper Alloy entry

DELETE AND SUBSTITUTE·

"

Material	Applicable Document	Composition Class or Alloy No	Condition or Temper	Ultimate Tensile Strength Min	Yield Strength psi min	Elongation 1/ Percent min
Nickel-Copper Alloy	QQ-N-281	Class A		80,000	40,000 2/	20

"

Page 26

Figure 8 (line 3, "Types" column for Button Drives)

DELETE: "1960 Series"

MILITARY INTERESTS

Custodians:

Army – AR
Navy – SH
Air Force – 99

Review activities.

Army – AV, EA, MI
Navy – OS
Air Force – 82
DLA – IS
NSA – NS

User activities.

Army – AT, ME
Navy – AS, MC, YD

Civil agency coordinating activities:

GSA – FSS
NASA – NA

Preparing activity:

Army – AR

DOD Project 5305-1847