INCH-POUND

MIL-G-18997E(SH)
AMENDMENT 1
1 June 1995

# MILITARY SPECIFICATION

## GAUGE, PRESSURE, DIAL INDICATING (NAVAL SHIPBOARD USE)

This amendment is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense with MIL-G-18997E(SH) dated 18 November 1991.

**PAGE 1**

Document identifier: Correct "MIL-I-18997D" to read "MIL-G-18997D."

**PAGE 3**

1.2.6, Under pressure connection column: Delete "7/16-20 UNF-28 (HEMPI only)" and substitute "7/16-20 UNF-2B (HEMPI only)".

**PAGE 4**

1.2.8: Delete.

**PAGES 4 AND 5**

2.1.1, SPECIFICATIONS

Under FEDERAL, Delete:

"UU-P-268 - Paper, Kraft, Wrapping.
PPP-B-566 - Boxes, Folding, Paperboard.
PPP-B-636 - Boxes, Shipping, Fiberboard.
PPP-B-640 - Boxes, Fiberboard, Corrugated, Triple-Wall.
PPP-B-665 - Boxes, Paperboard, Metal Edged and Components
PPP-B-676 - Boxes, Setup.
PPP-C-850 - Cushioning Material, Polystyrene, Expanded, Resilient (For Packaging Uses).
PPP-C-1120 - Cushioning Material, Uncompressed Bound Fiber For Packaging."

Add:

"TT-P-645 - Primer, Paint, Zinc-Molybdate, Alkyd Type."

**Under MILITARY, Delete:**

"MIL-B-117 - Bags, Sleeves and Tubing.
MIL-R-6130 - Rubber, Cellular, Chemically Blown.
MIL-E-15090 - Enamel, Equipment, Light Gray (Formula No. 111).
MIL-R-20092 - Rubber or Plastic Sheets and Assembled and Molded Shapes, Synthetic, Foam or Sponge, Open Cell.
MIL-P-26514 - Polyurethane Foam, Rigid or Flexible, for Packaging."

Add:

"MIL-B-7883 - Brazing of Steels, Copper, Copper Alloys, Nickel Alloys, Aluminum and Aluminum Alloys.
MIL-E-24635 - Enamel, Silicone Alkyd Copolymer (Metric)."

STANDARDS

MILITARY: Delete:

"MIL-STD-1330 - Cleaning and Testing of Shipboard Oxygen, Nitrogen and Hydrogen Gas Piping Systems.
MIL-STD-1622 - Cleaning of Shipboard Compressed Air Systems.
MIL-STD-45662 - Calibration System Requirements."

**PAGE 6**

2.1.2: Add the following Government publication:

"Appendix A to Section 40, Code of Federal Regulations, Part 355 - Protection of the Environment."

**PAGES 6 AND 7**

2.2: AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) (continued)

Delete:
"D 3951 - Standard Practice for Commerical Packaging. (DoD adopted)"

Add:
"D 2109 - Standard Test Methods for Nonvolatile Matter in Halogenated Organic Solvents and Their Admixtures.

F 331 - Standard Test Method for Nonvolatile Residue in Halogenated Solvent Extract from Aerospace Components (Using Rotary Flash Evaporator)."

**PAGE 8**

TABLE I, Under Part colum; Gaskets, Under Remarks column: After "Class 4, type A" add "Class 2, type A 12/".

**PAGE 9**

TABLE I, Under Part colum; Elastic element, Under Material colum: Delete "K-monel UNS-N05500" and substitute "K-monel UNS-N07500". After "Inconel UNS-07750" add "11/".

Under footnote 2/: Delete "flash air dry primer" and substitute "primer in accordance with TT-P-645" and delete "type II of MIL-E-15090" and substitute "type II, class 2 or 3 of MIL-E-24635."

**PAGE 10**

Under Footnote 11/, Add; "12/ Class 2, type A gasket material is not compatible with window material per MIL-P-5425."

**PAGE 11**

3.3.4: Delete and substitute:

"3.3.4 Cleaning. Pressure gauges shall be cleaned in accordance with the requirements of 3.3.4.1 through 3.3.4.4."

After 3.3.4, add the following new paragraphs:

"3.3.4.1 Gauge cleanliness. The exterior and interior of the pressure gauge case and associated gauge parts shall be free of loose scale, rust, grit, filings, mercury, calibration liquids, oil, grease, solvents, or other organic materials.

3.3.4.2 Elastic element cleanliness. Cleaning of the pressure gauge elastic element and connection interior (that portion which contacts the service media) shall be in accordance with 3.3.4.2.1 through 3.3.4.2.2.

3.3.4.2.1 General application. Unless otherwise specified (see 6.2), pressure gauge elastic element and connection interior shall meet the following cleanliness requirements:

Maximum allowable particulate size: 15 micrometers ($\mu$m)
Maximum allowable non-volatile residue: 10 milligrams per 0.1 square meter (mg/0.1 $m^2$)*

*0.1 square meter ($m^2$) equals 1.0 square foot ($ft^2$)

3.3.4.2.2 Caution label. Each pressure gauge shall have the following **CAUTION** label affixed to its shipping bag. The manufacturer shall specify the cleaning solvent in place of the double asterisk.

**CAUTION**

This gauge was cleaned with _____**_____ to general application standards of 15 $\mu$m particulate size and 10 mg/0.1 $m^2$ allowable non-volatile residue. If this gauge is to be used in any system which requires greater cleanliness, such as oxygen, divers mixed gas, or divers air, it must be recleaned to the increased cleanliness level of that system prior to use.

3.3.4.3 Cleaning solvent selection.

3.3.4.3.1 Soil removal. The cleaning solvent selected shall achieve the cleanliness levels of 3.3.4.2.1.

3.3.4.3.2 Material compatibility. Metallic and non-metallic material normally wetted by the cleaning solvent during the cleaning process shall be compatible.

3.3.4.3.3 Toxicity. The cleaning solvent shall have no known carcinogenic or potentially carcinogenic materials identified by Occupational Safety and Health Administration (OSHA) as regulated carcinogens, or International Agency for Research on Cancer (IARC) latest monographs, or the latest annual report of the National Toxicology Program (NTP); shall have no Navy occupational chemical reproductive hazards; and shall have no extremely hazardous substances (EHS) identified in Appendix A to Section 40 Code of Federal Regulations 355, The List of Extremely Hazardous Substances, shall have no benzene compounds (defined as any compound which contains benzene), shall have no chlorohydrocarbon compounds (defined as any compound whose only constituients are chlorine and carbon, such as tricholoethylene), and shall not contain chlorodifluoromethane (HCFC-22, CAS No. 75-45-6).

3.3.4.4 Deviation from cleaning requirements. Any deviation from the requirements of the 3.3.4 through 3.3.4.3.3 shall be obtained in writing from NAVSEA (see 6.2)."

3.3.5, Delete the second sentence and substitute "Welding shall be in accordance with MIL-STD-278, brazing shall be in accordance with NAVSHIPS 0900-001-7000 and nicrobrazing shall be in accordance with MIL-B-7883."

**PAGE 16**

TABLE IV,

Under Gauge pressure ranges colum, 0/800, 3-1/2 inch size: Delete minor graduation "20" and substitute "10".

Under Gauge pressure ranges colum, 0/2000, 8-1/2 inch size: Delete minor graduation "10" and substitute "20".

**PAGE 19**

3.3.11.1, fourth line: Delete "excveeding" and substitute "exceeding".

**PAGE 20**

3.3.12, Delete and substitute:

"3.3.12 Red index. A red index (see 6.7) shall be provided."

3.4.1.1.5, last line: Delete "1" and substitute "10".

**PAGE 22**

3.4.10.2, Fourth line: Delete "each set of" and substitute "all". Sixth line: Delete "each of".

**PAGE 25**

Table XV, add the following new examination:

| | | | | | |
|---|---|---|---|---|---|
| "Cleaning | 3.3.4.2.1 & 3.3.4.3.1 | 4.8 & 4.9" | X | ---- | ---- |

**PAGE 26**

4.2.2.2, third line: Delete "form" and substitute "from".

**PAGE 37**

4.4.9.5.2(c)(1), Delete "1 Hz." and substitute "5 Hz." Add new sentence; "Each discrete frequency shall be maintained for a minimum of 2 minutes."

**PAGE 40**

4.7, Delete.

Add the following new paragraphs:

"4.7 Determination of non-volatile residue. The non-volatile residue shall be as specified in 3.3.4.2.1. A recommended procedure for determination of non-volatile residue in a solvent is ASTM D 2109 or ASTM F 331. Solvents addressed in ASTM D 2109 or ASTM F 331 which are excluded by 3.3.4.3.3 shall not be used.

4.8 Solvent cleaning ability verification. The ability of the solvent to achieve the required cleanliness levels shall be as specified in 3.3.4.3.1. A recommended procedure to verify ability of the cleaning solvent to achieve the cleanliness levels of 3.3.4.2.1 is to clean a pressure gauge elastic element with the selected cleaning solvent after the element has been artificially contaminated to 50 mg/0.1 $m^2$ with representative soil."

**PAGES 40 through 42**

5. through 5.4: Delete.

**PAGE 44**

6.2(i): Delete and substitute:

"(i). Special cleanliness requirements (see 3.3.4.2.1)."

6.2(k): Delete and substitute:

"(k). When deviating from cleaning requirements (see 3.3.4.4), a letter to NAVSEA with a justification is required."

6.2(l), (m), (n): Delete.

Preparing activity:
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