

MIL-P-24423(SHIPS)  
AMENDMENT-1  
30 January 1978

**MILITARY SPECIFICATION**  
**PROPULSION AND AUXILIARY CONTROL CONSOLES AND**  
**ASSOCIATED CONTROL AND INSTRUMENTATION EQUIPMENT,**  
**NAVAL SHIPBOARD USE, BASIC DESIGN REQUIREMENTS**

This amendment forms a part of Military Specification MIL-P-24423(SHIPS), dated 1 May 1970 and is approved for use by the Naval Sea Systems Command and is available for use by all Departments and Agencies of the Department of Defense.

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2.1, under "SPECIFICATIONS, FEDERAL", add: "QQ-A-250/20 - Aluminum Alloy 5456, Plate and Sheet, For Sea Water Applications."

PAGES 2 through 4

2.1, under "SPECIFICATIONS, MILITARY", delete reference to "MIL-D-1000", "MIL-D-1000/2", "MIL-L-3661/50", "MIL-C-3965", "MIL-C-11015", "MIL-C-11272", "MIL-C-14157", "MIL-M-15071", "MIL-C-18312", and "MIL-R-22684".

Add the following:

- "MIL-L-3661/35 - Lampholder, Lens, Indicator-Light, Watertight, Style LC35.
- MIL-L-3661/47 - Lampholder, Housing, Indicator-Light, Watertight, Style LH89.
- MIL-M-7793 - Meter, Time Totalizing.
- MIL-R-22097 - Resistors, Variable, Nonwire-Wound (Adjustment Type), General Specification For.
- MIL-S-22885/10 - Switch, Push Button, Illuminated Indicator Light For, Modular, 4-Lamp.
- MIL-L-23886 - Liquid Level Indicating Equipment (Electrical) (Naval Shipboard Use).
- MIL-M-24100 - Manuals, Technical: Functionally Oriented Maintenance Manuals (FOMM) For Equipment and Systems.
- MIL-I-24204 - Insulation, Electrical, High Temperature, Bonded, Synthetic Fiber Paper.
- MIL-S-24370 - Solenoids, Electrical (Naval Shipboard).
- MIL-R-27208 - Resistors, Variable, Wire-Wound (Adjustment Type) General Specification For.
- MIL-R-28803 - Readouts, Segmented, General Specification For.
- MIL-R-39035 - Resistor, Variable, Nonwire-Wound (Adjustment Type), Established Reliability, General Specification For.
- MIL-I-46058 - Insulating Compound Electrical (for Coating Printed Circuit Assemblies).
- MIL-R-83726 - Relay, Time Delay, Electric and Electronic, General Specification for."

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2.1, under "STANDARDS, MILITARY", delete reference to "MIL-STD-167", "MIL-STD-761", and "MIL-STD-806".

Add the following:

- "MIL-STD-167-1 - Mechanical Vibrations of Shipboard Equipment (Type I - Environmental and Type II - Internally Excited).
- MIL-STD-1310 - Shipboard Bonding, Grounding and Other Techniques For Electromagnetic Compatibility and Safety.
- MIL-STD-1331 - Parameters to be Controlled for the Specification of Microcircuits.
- MIL-STD-1399, Section 103 - Interface Standard for Shipboard Systems, Electric Power, Alternating Current.
- MIL-STD-1562 - Lists of Standard Microcircuits."

2.1, under "DRAWINGS, MILITARY", add: "810-1385917 - Temperature and Indicator and Thermowell Selection."

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2.2, under "AMERICAN SOCIETY FOR TESTING AND MATERIALS", delete reference to "A-415" and add: "A569 - Steel Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip, Commercial Quality."

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3.6.3, line 2: Delete "by" and substitute "for".

3.6.5, line 2: Delete "MIL-STD-167" and substitute "MIL-STD-167-1".

3.7.1, line 2: Delete "MIL-STD-761" and substitute "MIL-STD-1399, Section 103."

Second sentence: Delete and substitute: "The nominal power supply voltage rating for the utilization console shall be 115 volts rms as specified in the type I power of MIL-STD-1399, Section 103."

Fourth sentence: Add "beyond those allowed by MIL-STD-1399, Section 103."

Add: "The console shall be capable of normal operation immediately following the test of 4.6.6.1."

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3.7.1.1, line 3: Delete "MIL-STD-761" and substitute "MIL-STD-1399, Section 103."

3.7.1.2, line 2: Delete "voltage of" and substitute "voltage at".

Line 3: Delete "selected" and substitute "specified".

3.7.1.4, line 4: Delete "MIL-STD-761" and substitute "MIL-STD-1399, Section 103".

3.7.5, item (a), line 5: Delete "0.063" and substitute "0.062".

Item (b), add: "This coating shall be type UR of MIL-I-46058. The coating shall be easily removable for repair purposes without damaging the printed wiring board."

Item (g), second sentence: Delete and substitute: "Test jacks shall be provided on the extender board for each conductor. These jacks shall be accessible with the board being tested and installed on the extender board without removing any other board."

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3.7.6.5, add as third sentence: "Both male and female portions of the cable connectors shall be provided by the supplier and shall be keyed to prevent improper connections."

Line 8: Delete "grouping" and substitute "grounding".

Add: "Each individual pin socket contact shall be properly identified to facilitate wiring installation."

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3.7.7, line 3: After "permanent" add "legible".

Add as paragraph 3.7.7.1:

"3.7.7.1 Internal wiring in a wire bundle terminating at a multipin connector does not require wire markers at the end of the wire which terminates at the connector."

3.7.12, add : "Bonding shall be in accordance with MIL-STD-1310."

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Add as paragraphs 3.7.14.5 and 3.7.14.6:

"3.7.14.5 The removal, replacement or blowing of any fuse with the console energized or operating shall not result in the failure of any electrical or electronic parts."

"3.7.14.6 The accidental shorting of the test jacks to each other, to ground, or to common shall not cause damage to any circuit or affect the operation of unrelated circuits. This shall be demonstrated during first article testing."

3.8.3.1, first sentence: Delete and substitute: "The test voltage shall have a closely sinusoidal wave of a frequency not less than 60 Hz."

3.9.8, line 4: Delete "of" and substitute "or".

3.9.9.4, line 1: After "rear" add "vertical".

Line 2: Before "panels" add "vertical".

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3.12.4.1, line 3: Delete "ASTM A-415" and substitute "ASTM A569".

3.12.4.2, line 2: Delete "6062" and substitute "6061".

Third sentence: Delete and substitute: "Aluminum alloy conforming to alloy 5052, temper H32 or H34 of QQ-A-250/8, or alloy 6061, temper T6 of QQ-A-250/11, or alloy 5456, temper H116 or H117 of QQ-A-250/20 shall be used for plates and sheets."

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3.12.7.1: Delete.

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3.13.5, second sentence: Add ", except that an edgewise type meter (see 3.13.16.1) or a digital indicator (see 3.13.16.2) shall be used to indicate shaft speed."

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Table II, title: Delete "hoodup" and substitute "hookup".

Footnote 3, line 3: Delete second "the".

3.13.8.1, line 2: Delete "MIL-C-11015 or".

3.13.8.3, line 2: Delete "MIL-C-11272 or".

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3.13.8.5, lines 1 and 2: Delete "(or polyester film)" and substitute "-plastic".

Line 3: Delete "MIL-C-18312 or".

3.13.8.7: Delete.

3.13.8.9, line 2: Delete "MIL-C-3965 or".

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3.13.12, add: "The filters shall be selected and applied in accordance with requirement 70 of MIL-STD-454."

3.13.14, item (a), line 1: Delete "or PHL14G" and substitute ", PHL14G, FHL32W, PHL33W, or PHL35W".

Item (b), line 1: After "Types" add "PHL18G,".

Item (c), line 1: After "types" add "PHL18G,".

3.13.14.1, second sentence: Add ", if the fuseholders have test prod holes."

3.13.15, line 5: Delete "style LHC91".

Line 6: Delete "MIL-L-3661/50" and substitute "MIL-S-22885/10".

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3.13.15.1, third sentence: Delete and substitute: "Lamps for use with the MIL-S-22885/10 indicator shall conform to MS25237-328 (Industry No.328), or MS25237-387 (Industry No. 387

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3.13.15.2, add: "Lenses for MIL-S-22885/10 indicator lights shall be provided with panel seals and color filters of the type specified in MIL-S-22885/10."

Add as paragraph 3.13.15.2.1:

"3.13.15.2.1 The markings on all lenses shall be easily readable both when the light is and is not illuminated."

3.13.15.3, item (b), line 1: Delete "cirucit" and substitute "circuit".

3.13.15.3.2, first sentence: Add ", except where MIL-S-22885/10 indicators are used for this application."

Add as paragraph 3.13.15.4:

"3.13.15.4 For the bearing temperature monitoring mimic display panel on the Propulsion Control Console, light emitting diode indicators may be used with lamps conforming to MS25237-387, lenses conforming to MIL-L-3661/35, and housings conforming to MIL-L-3661/47."

3.13.16.1, line 4: Delete "vertical".

Line 5: Delete "in accordance with MIL-M-24359" and substitute "and meet the performance requirements and quality assurance provisions of MIL-M-24359."

Add: "Meters shall meet the enclosure requirements of 3.9.3 herein."

3.13.16.2, first sentence: Add ", or segmented readouts, style II, type R01, in accordance with MIL-R-28803."

Third sentence: Add ", except that red shall be used for alpha-numeric displays."

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3.13.18, line 1: After "MIL-STD-242" add "(see 3.7.14.6)".

3.13.21.1, line 1: Delete "2.13.21.1" and substitute "3.13.21.1". Add "or MIL-R-83726."

3.13.21.2, line 3: Delete "the general requirements" and substitute "enclosure design symbol 4,".

3.13.22, line 4: Delete "through 3.13.22.5" and substitute "and 3.13.22.4".

3.13.22.1, line 2: Delete "MIL-R-22684".

3.13.22.2, line 2: Delete "MIL-R-39002, or MIL-R-39015" and substitute "MIL-R-22097, MIL-R-27208, MIL-R-39002, MIL-R-39015, or MIL-R-39035."

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3.13.24, third sentence: Delete and substitute: "Hermetically packaged SIC's only shall be used."

Add as fifth sentence: "Where used, SIC's shall be in accordance with the requirements of requirement 64 of MIL-STD-454 and shall be selected from MIL-STD-1562."

Line 5: Delete "Each" and substitute "Where SIC's are not covered by MIL-STD-454, each"

3.13.24.1, add as first sentence: "The SIC detailed specification shall be in accordance with MIL-STD-1331 and shall be submitted with the non-standard part data sheet for review by the procuring activity."

Fifth sentence: Add "for SIC's that are not covered by MIL-STD-454."

3.13.26, line 2: Delete "specified in this specification" and substitute "of MIL-24370".

## PAGE 27

3.13.28.4, second sentence: Add ", or type MS25237-387 (Industry No.387). The industry number shall be marked on the indicator. Lenses shall be as provided for in 3.13.15.2 and 3.13.15.2.1."

3.13.28.9.1, second sentence: Delete.

Line 4: Delete "over 30 amperes".

3.13.28.9.2, item (a), line 1: Delete "class SRN" and substitute "class SR".

3.13.28.9.2.1, line 3: After "presented" add "(see 3.13.1.1)".

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3.13.33.3, add: "Thermowell selection and installation shall be in accordance with Drawing 810-1385917."

3.13.33.4, add "or MIL-L-23886."

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3.13.35.6, line 3: Delete "MIL-STD-167" and substitute "MIL-STD-167-1".

Add as paragraph 3.13.35.7:

"3.13.35.7 Radiofrequency transformers and coils. Radiofrequency transformers and coils shall conform to requirement 14 of MIL-STD-454."

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Table III, under "Electrical insulation material", opposite "Ground" and "Layer": Before "As required by MIL-E-917", add "MIL-I-24204 or".

3.13.37, line 4: Delete "MIL-STD-167" and substitute "MIL-STD-167-1".

Table IV, under "Material", opposite "Up to 105", line 4: Add "(type I only)". Add as line 5: "Type II, polyester tape, with finish E".

Under "Applicable document", opposite "Up to 105", add as line 4: "MIL-T-43435".

Under "Material", opposite "Up to 200", line 3: Delete "finishes D or F" and substitute "finish C".

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3.13.53, line 4: Delete "tenths of a minute (1 digit)" and substitute "seconds (2 digits)".

Third sentence: Delete.

Add: "Means shall be provided for manual resetting of date and time."

Add as paragraph 3.13.56:

"3.13.56 Time totalizing meters. Time totalizing meters shall be 115 volt, 60 Hz, in accordance with MIL-M-7793."

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3.14.5, lines 6 and 7: Delete "on the front of the panel or".

3.15.2, line 1: Delete "points" and substitute "jacks".

Add, "(see 3.7.14.6)."

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3.15.2.1, lines 1, 3, and 5: Delete "points" and substitute "jacks".

Add: "The console shall be designed so that calibration and alignment procedures can be performed without disconnecting any electrical wires (for example, unscrewing or unsoldering terminal or part wires)."

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Table V, delete and substitute:

TABLE V. List of portable test equipment.

Item	Type number	SCAT number
(a) Digital multimeter	Fluke 8000A, or equivalent	4237
(b) Oscilloscope	AN/USM-281	4308
(c) Ohmmeter, insulation resistance	Biddle 21159, or equivalent	4452
(d) Temperature bridge	Leeds and Northrup Model 8064A, or equivalent	4122
(e) Millivolt potentiometer	Leeds and Northrup Model 8693, or equivalent	4127
(f) Decade resistance box	General Radio Model 1433T, or equivalent	4046
(g) Hydraulic comparator	Mansfield and Green type T-3A, or equivalent	

3.15.4.1, delete and substitute:

"3.15.4.1 In the event that test equipment requirements exist which cannot be satisfied by the equipment in table V, selection of test equipment shall be made from NAVSEA 0969-LP-019-7000 or requirements shall be submitted to NAVSEA for selection of appropriate test equipment. Justification as to why the console cannot be designed to use the preferred test equipment of table V shall be submitted prior to the start of manufacture of the console."

3.15.4.2, lines 4 and 5: Delete "for any special test equipment which is necessary but is not covered by table V."

3.15.4.3: Delete.

3.15.5: Delete.

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3.16.2, item (e): Delete "Federal" and substitute "National".

3.16.3, line 2: Delete "(metallic only)".

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3.17.1, delete and substitute:

"3.17.1 General requirements. Drawings shall be in accordance with the data ordering document (see 6.3.1), and as specified in 3.17.2 through 3.17.4.3."

3.17.3.1, second sentence: Delete and substitute: "Installation drawings shall contain the information specified in 3.17.4.1".

3.17.3.2, line 2: Delete "and shall be type II of MIL-D-1000/2".

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3.17.3.2.7, line 2: Delete "as specified in "MIL-D-1000/2".

3.17.3.3, second sentence: Delete.

3.17.3.4, second sentence: Delete and substitute: "Block diagrams shall be as specified in the individual console specification."

3.17.3.5, line 2: Delete "as defined in MIL-STD-806".

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3.17.4.2, item (1) (14) a, lines 2 through 4: Delete "MIL-STD-806" and substitute "MIL-STD-100".

3.18, line 1: Delete "type III of MIL-M-15071" and substitute "type I of MIL-M-24100".

PAGES 44 through 48

3.18.1 through 3.18.6, delete and substitute:

"3.18.1 The separate parts list shall be provided in the manuals."

"3.18.2 Selection of test equipment shall be made in accordance with 3.15.4 and 3.15.4.1."

"3.18.3 The troubleshooting/repair volume shall be the left hand edge bound style."

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4.3.1, item (e): Delete and substitute:

"(e) Repair parts required to insure timely completion of the inspection on an expedited basis following notification of the need for such parts."

4.3.2, under "Examination and tests" and "Paragraph reference": Add as line 9 "Spike voltage" and "4.6.6.1".

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4.4, under "Examination and tests" and "Paragraph reference": Delete "Dielectric strength" and "4.6.2".

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4.6.1, add: "A procedure shall be included in this test to demonstrate the requirement of 3.7.14.6."

4.6.3, add as fourth sentence: "As an alternative test for the 60 seconds application, the supplier may, when performing insulation resistance tests of a wired harness assembly, use an automatic harness tester of the go-no-go type for a minimum of one second similar to the DITMCO automatic harness tester or equivalent."

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Add as paragraph 4.6.6.1:

"4.6.6.1 Spike voltage (short time transient) test. In addition to the test of 4.6.6, the console shall be subjected to an input supply line spike voltage of 2500 volts peak amplitude to show conformance with 3.7.1. The wave shape shall correspond with that of the figure for the "Spike voltage (short time transient) wave shape" of MIL-STD-1399, Section 103. This spike shall be impressed at nominal supply line voltage and frequency while the console is in operation. The console shall be capable of normal operation immediately following the test."

PAGE 55

4.6.10, add: "Class No. ID applies."

4.6.11, line 2: Delete "sturctureborne" and substitute "structureborne".

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4.6.20, lines 2 and 5: Delete "MIL-STD-167" and substitute "MIL-STD-167-1".

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6.2, item (t): Delete.

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6.3, items (s) and (t): Delete.

Add as 6.3.1 and 6.3.1.1:

"6.3.1 Data requirements. When this specification is used in a procurement which invokes the provision of the "Requirements for Data" of the Armed Services Procurement Regulations (ASPR), the data identified below, which are required to be developed by the contractor, as specified on an approved Data Item Description (DD Form 1664), and which are required to be delivered to the Government, should be selected and specified on the approved Contract Data Requirement List (DD Form 1423) and incorporated in the contract. When the provisions of the "Requirements for Data" of the ASPR are not invoked in a procurement, the data required to be developed by the contractor and required to be delivered to the Government should be selected from the list below and specified in the contract.

<u>Paragraph</u>	<u>Data Requirements</u>	<u>Applicable DID</u>	<u>Option</u>
3.17.1	Drawing, engineering and associated lists, level 3 (production)	DI-E-7015	Design activity designation-contractor Drawing number-contractor

(Copies of data item descriptions required by the contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.)

6.3.1.1 The data requirements of 6.3.1 and any task in section 3, 4, or 5 of the specification required to be performed to meet a data requirement may be waived by the procuring/purchasing activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item procured to this specification. This does not apply to specific data which may be required for each procurement regardless of whether an identical item has been supplied previously (for example, test reports)"

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6.5.9, line 1: Delete "metallic".

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Index: Add the following:

	<u>Paragraph</u>	<u>Page</u>
"Coils, radiofrequency - - - - -"	3.13.35.7	29
Meters, time totalizing - - - - -"	3.13.56	33
Transformers, radiofrequency - - - - -"	3.13.35.7	29
Time totalizing meters - - - - -"	3.13.56	33"

Preparing activity:  
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