

**METRIC**

DOD-S-17773B(SH)  
 AMENDMENT 1  
 20 January 1988

# MILITARY SPECIFICATION

## SWITCHES, BUS TRANSFER, ELECTRIC POWER AUTOMATIC AND MANUAL (METRIC)

This amendment forms a part of DOD-S-17773B(SH), dated 14 September 1983, and is approved for use within the Naval Sea Systems Command, Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 1

Preamble, first line: Delete "by" and substitute "within".

1.2.1: Delete and substitute:

"1.2.1 Bus transfer switch part numbers. The standard type designations for the bus transfer switches shall be designated as follows:

<u>ABT</u>	—	<u>4</u>		<u>A</u>		<u>1</u>		<u>S</u>	—	<u>XXX</u>		<u>D</u>
Style		Voltage		Frequency		Application		Special		Current		Cabinet
(see		(see		(see		(see		features		rating		integrity
1.2.1.1)		1.2.1.2)		1.2.1.3)		1.2.1.4)		(see		(see		(see
								1.2.1.5)		1.2.1.6)		1.2.1.7)

At bottom of page: Delete and substitute:

" Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter. "

AMSC N/A

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FSC 6110

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1.2.1.1, line 1: Delete "Type." and substitute "Style."

1.2.1.2: Delete and substitute:

"1.2.1.2 Voltage.

1 - 120 V

2 - 208 V (400 Hz only), 240 V (dc only)

3 - 450 V (ac only)"

1.2.1.4, item 5, line 2: Delete "drop-out" and substitute "transfer".  
Line 3: Delete "instantaneous drop-out below 60 to 70 percent" and substitute "random transfer below 25 percent."

Under "Note" change to "Notes: 1." and add: "2. Inphase monitors are not used in 400 Hz ABTs on Naval vessels."

1.2.1.5: Delete and substitute:

"1.2.1.5 Special features. An abstract letter shall be added after or in place of designation of application to show special features, such as: "a non-standard pick-up and drop-out voltage setting, load fuses, frequency sensing in other than application 5 or special timing."

1.2.1.7: Add new:

"1.2.1.7 Cabinet integrity.

D - Dripproof

W - Watertight

No designation - open (switchboard) mounted."

2.1.1: Delete and substitute:

"2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation."

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2.2: Delete and substitute:

"2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted shall be those listed in the issue of the DoDISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS shall be the issue of the nongovernment documents which is current on the date of the solicitation."

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2.2, lines 13 to 15: Delete and substitute:

"(Nongovernment standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)"

2.3: Delete and substitute:

"2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained."

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3.2, line 1: Delete "(see 6.2.1)" and substitute "in the contract or purchase order."

3.3.1, line 2: Delete "circuits." and substitute "systems."

3.4.3.1, line 2: Delete "450 line V" and substitute "450 rms line V. 400 Hz switches, in addition to above, shall be rated for 208 rms line volts."

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Table I, column 3: Delete "50 to 1600" and "AQB". Row 4: Delete "1600" and substitute "600".

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3.4.13, Add: "A 60 Hz comparison test may be used for dc and 400 Hz testing in cases where these required laboratory power supplies are not practicable."

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Table III: Delete and substitute:

Continuous rating (A)	Short circuit current (A) at pf 0.15-0.20		Duration (seconds)	
	60 Hz and dc	400 Hz	60 Hz and dc	400 Hz
To 50	10000	10000	0.017	0.021
100	15000	10000	.017	.021
250	20000	10000	.025	.028
400	30000	10000	.028	.033
600	50000	10000	.028	.033
<u>1/</u> over 600				

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3.5.2.10.1.1, line 10: Delete "manual" and substitute "mechanical".

3.5.2.10.4: Delete and substitute:

"3.5.2.10.4 Operating voltages.

"3.5.2.10.4.1 Drop-out voltages. Drop-out voltage for type applications A1, 2, 3, 6 and 9 and F1 and 2 as specified in 1.2.1 shall be between 60 and 70 percent. For A4 and F4, the drop-out voltage shall be between 75 and 85 percent. A tighter tolerance may be specified (see 6.2.1). For type applications A3, A5, A6 and A9 supplied with an inphase monitor, the inphase transfer shall operate between 80 and 85 percent to between 20 and 30 percent. Below 20 to 30 percent, instantaneous random transfer shall occur.

"3.5.2.10.4.2 Pick-up voltage. Pick-up voltage shall be between 85 and 95 percent. A tighter tolerance may be specified for type applications A4 and F4 and A5."

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3.5.2.10.5.3, lines 8 to 13: Delete from "When" to end of paragraph and substitute:

"When the voltage falls below 20 to 30 percent of nominal, on switches furnished with an inphase monitor, the transfer shall be initiated instantaneously."

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3.5.2.10.6: Delete and substitute:

"3.5.2.10.6 Operating frequency. When specified by type designation (see 1.2.1), transfer shall be initiated when the frequency falls 2 to 3 Hz below operating frequency. Unless otherwise specified (see 6.2.1), if transfer is not initiated before the voltage drops below 20 to 30 percent of operating voltage, instantaneous random transfer shall occur."

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3.5.2.10.9: Delete and substitute:

"3.5.2.10.9 Inphase monitor control circuit. When specified (see 6.2.1), automatic bus transfer switches shall be provided with an inphase monitor that will limit the motor inrush current to its starting current upon completion of transfer. This is equivalent to completing transfer when the two sources are within 60 electrical degrees of each other."

3.5.2.11, last line: Delete "ABT-AL" and substitute "ABT-A6".

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4.1.1: Delete and substitute:

"4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material."

4.1.2: Add new paragraph:

"4.1.2 Inspection system. When specified in the contract or order an inspection system shall be maintained (see 6.2.2)."

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4.8: Add: "When exact test settings are specified, the tolerance shall be either plus or minus so as to verify the specified set point."

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4.8.12.1.4 (cont.) line 2: Delete "0.50" and substitute "0.05".

4.8.12.1.7: Delete and substitute:

"4.8.12.1.7 Inphase monitor. Automatic bus transfer switches furnished with inphase monitors shall be operated five times in each direction including the low voltage dropout point (minimum of 80 percent voltage or as specified) and 30 percent voltage or less. The frequency of the two sources shall be a nominal 60 Hz. After these operations are completed the voltage shall be rapidly reduced to  $25 \pm 5$  percent for instantaneous random transfer verification. When frequency sensing is specified, the switch shall be operated five additional times in each direction. The voltage shall be set at 5 points including 114 percent or greater and 85 percent or less. These tests shall be conducted by one of the two following methods:

- (a) The tests shall be performed with a load consisting of a motor of sufficient size to maintain a voltage greater than 30 percent for minimum of 0.50 second after the power is suddenly disconnected.
- (b) The tests shall be performed with any convenient load. A calibrated phase angle sensing instrument shall be used to record the phase angle displacement between the normal and alternate sources at the completion of transfer. In each operation, except the instantaneous random transfer when voltage is reduced to 25 percent, the phase angle difference at the completion of transfer shall not exceed 60 degrees.

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6.2.2: Delete and substitute:

"6.2.2 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DOD FAR Supplement, Part 27, Sub-Part 27.410-6 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification are cited in the following paragraphs."

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6.2.2, ~~line 16:~~ Delete "final" and substitute "standard".

6.2.2, line 17: Delete "4.1.1" and substitute "4.1.2".

6.2.2, line 22: Delete "5000.19L., Vol. II" and substitute "5010.12-L.,".

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6.4 Delete and substitute:

"6.4 First article inspection. When a first article inspection is required, the item should be a sample from normal production line as specified in 4.5.2. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples of bus transfer switches with special type designation for first article inspection as to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract."

Preparing activity:  
Navy - SH  
(Project 6110-N252)