INCH-POUND

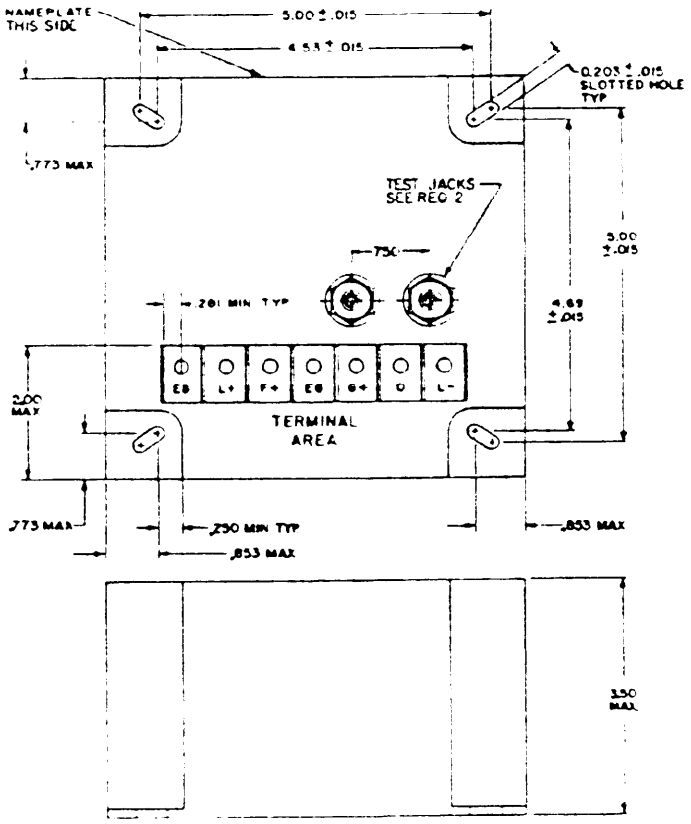
MIL-R-23761/2B(AS)
8 February 1991
SUPERSEDING
MIL-R-23761/2A(AS)
22 March 1983

MILITARY SPECIFICATION SHEET

REGULATORS, VOLTAGE, AIRCRAFT DIRECT CURRENT GENERATOR, 28-VOLT

This specification sheet is approved for use by the Naval Air Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the regulators described herein shall consist of this specification sheet and the current issue of MIL-R-23761.



NOTES

1: Dimensions: The regulator shall conform to the limits shown hereon. All dimensions are in inches. Tolerances are ± .005 unless otherwise specified.

Figure 1. Regulators with mounting holes, P/N M23761/2-1

AMSC N/A FSC 6110

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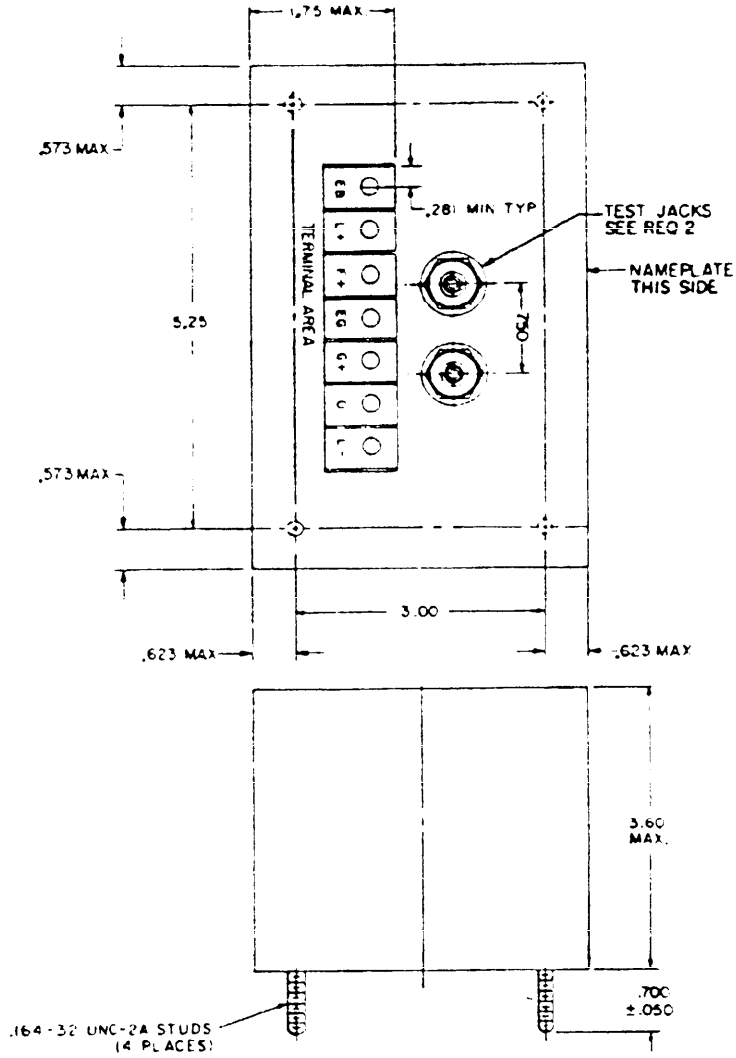

NOTES:

1. Dimensions: The regulator shall conform to the limits shown hereon. All dimensions are in inches. Tolerances are ± .005 unless otherwise specified.

Figure 2. Regulators with mounting stubs.
P/N M23761/2-2

REQUIREMENTS

1. Connections. The regulator wiring shall be terminated in a suitably designed terminal block complete with insulating cover. The terminals shall consist of seven corrosion-resistant steel 10-32 UNF-2A studs conforming to MIL-S-7742. Each stud shall be capable of accommodating two terminal lugs conforming to MIL-T-7928. One each MS14151-2 flat washer, MS35338-157 lock washer, and MS35650-304 nut shall be furnished for each stud. The terminal block shall be designed so that the threaded portion is not used as a conductor. The internal regulator circuit to terminal block connections shall be contained within the regulator housing or if external, connected to the terminal block studs in such manner that inadvertent connection of any wire to the incorrect stud cannot occur. Terminal functions using the order and designations shown in Figures 1 and 2 shall be permanently and prominently marked on the terminal block or in the area on the regulator housing adjacent to the terminal block. The terminal block insulation material and stud material shall conform to the requirements of MS27212. The molded integral studs shall not break, distort, or pull out of the terminal block when torques up to 40 inch-pounds are applied.

2. Test Jacks. Two test jacks shall be located in an accessible area on the top surface of the regulator behind the terminal area. One jack shall be black, marked with an adjacent minus (-) sign, and connected internally to terminal L-. The other jack shall be red, marked with an adjacent plus (+) sign, and connected internally to terminal L+. The jacks shall accommodate .078 ± .002 diameter by 1/2 long test probes. The jackets shall be in accordance with MIL-C-39024/10.

(B) 3. Adjustment. A rotary equalizer adjustment shall be included in an accessible area on the top surface of the regulator behind the terminal area. The rotary adjustment shall be lockable. The axes of the adjustment shall be perpendicular to the top of the regulator and operable by a standard flat blade screwdriver. The adjustment shall vary the "equalizer" input signal from the controlled generator and shall be marked "parallel" and "load increase" (load inc). Clockwise rotation shall increase the portion of load current. The equalizer pot shall have a value of 2.0 ± 10% ohms and a minimum rating of 10 watts. The resistance of the equalizer circuit shall be 0.40 ± 0.01 ohm at 25°C. The regulator shall be set to 27.5 ± 0.1 volts measured at the Point of Regulation (POR) at 125 percent minimum speed for regulation at no load on the generator and at room temperature. A concealed rotary voltage adjustment shall be included and shall be accessible from the top surface of the regulator behind the terminal area. The adjustment shall be accessible by removing a cover fastened with screws and shall be operable by a small flat blade screwdriver. Clockwise rotation of the adjustment shall increase the voltage. The regulator shall permit the POR voltage to be set at any value between 26.5 ± 0.2 volts and 28.5 ± 0.2 volts.

4. Output Protection. M23761/2-2 regulators shall contain an output protective device. If the POR voltage exceeds 30.5 volts due to failure of the regulator, the device shall open the field circuit of the controlled generator with 0.025 seconds. The field circuit shall remain open until the protective device is manually reset. The manual reset device shall be readily accessible and shall be located on the top surface of the regulator behind the terminal block. The regulator shall be marked to provide a visual indication of the reset device position ("trip" - "reset"). The reset device shall be so designed or protected to prevent accidental trip during installation or normal handling.

(B) 5. Voltage Regulation. The regulator shall maintain a voltage within ± 0.5 volts of the nominal voltage setting of 27.5 volts (or any other voltage setting in the 26.5 to 28.5 volt range) under all conditions. Once the regulated nominal voltage is set as specified in requirement 3 of this specification, it shall not require readjustment to meet all the test requirements specified in MIL-R-23761B and herein.

6. Parallel Operation. The regulator shall be capable of parallel system operation. (Two or more generator-regulator combinations in parallel.) In parallel systems with output protection, the device shall selectively trip the controlled system only and shall not cause nuisance tripping of other systems on the line. The protective device shall not be disabled by a failure of the regulator.

(B) 7. Equalizer Circuit. In addition to the requirements of 4.6.7 of MIL-R-23761, the equalizer circuit shall lower the POR voltage 9 ± 1% when any voltage value between 0.165 and 1.0 volts is applied between terminal "O" and terminal "EB". The equalizer circuit shall also lower the POR voltage by 12 to 16.7 times the value of any input voltage between 0.06 and 0.165 volts. The input voltage is applied between terminal "O" and terminal "EB" (in each case above, terminal "O" is negative with respect to terminal "EB"). The equalizer shall not increase the POR voltage by more than 0.3 volts when any voltage value between zero and 1.0 volt is applied between terminal "EB" and terminal "O" (with terminal "O" positive with respect to terminal "EB"). All specified increases or decreases in POR voltage are with reference to the existing POR voltage with no voltage applied between terminals "O" and "EB."

8. Reliability. The manufacturer shall submit with the qualification test samples a "part stress analysis" in conformance with MIL-HDBK-217. This analysis shall predict a mean time between failure (MTBF) of at least 15,000 hours. The analysis shall include the various terms used in the "part failure rate model" for each component de-rated at the most severe conditions. Paragraph 4.6.17.10 of MIL-R-23761 is deleted.

9. Nameplate Information. The information marked on the nameplate of each regulator shall include the supersession data listed in Table II.

10. Color. Except for terminal board assembly, jacks, adjustments, and identification marking, the visible parts of the regulator shall conform to FED-STD-595, color number 17875 (white).

11. Temperature.

Ambient operation -55°C to 71°C (Class A)
Non-operating -55°C to 85°C

12. Case Ground. Case ground shall be wired internally to terminal L-.

(B) 13. Regulator Case Sealing. The regulator case shall be designed to prevent water from penetrating inside the case when the regulator is exposed to falling water from condensation or leakage from upper surfaces. To demonstrate the case sealing effectiveness, the regulator shall meet the requirements of the water drip test specified in MIL-STD-810 method 506.3, paragraph II-3.2, procedure II.

TABLE I. Specification data.

FUNCTION	VALUE
Continuous field current-Minimum, amperes	8.0
Overload field current - Minimum, amperes	12.0
Weight - Maximum, pounds	3.0
Regulation limits for all conditions, volts (Nominal voltage set at 27.5 volts)	27.0 - 28.0

TABLE II. Dash numbers and supersession data.

MILITARY PART NUMBER	MEANS OF MOUNTING	OVER VOLTAGE PROTECTION	SUPERSEDES
M23761/2-1	Holes	No	AN3206, E1597, MS90492 Plug-in modules and AN3204 bases, and MS18071-1A regulators in aircraft where overvoltage protection is not provided in the aircraft.
MS23761/2-2	Studs	Yes	AN3206, E1597, MS90492 Plug-in nodules and AN3204 bases, and MS18071-12 regulators in aircraft where overvoltage protection is not provided in the aircraft.

Preparing activity
Navy - AS

(Project 6110-N368)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
	MIL-R-23761/2B(AS)	91-02-08

3. DOCUMENT TITLE

Regulators, Voltage, Aircraft, Direct Current Generator, 28 Volt

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

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c. ADDRESS (Include Zip Code) Naval Air Systems Command (AIR-53633E) Washington, DC 20361-5360	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	