INCH-POUND
MIL-PRF-62560B(AT)
23 June 1997
SUPERSEDING
MIL-D-62560A(AT)
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PERFORMANCE SPECIFICATION

DISTRIBUTION BOX, ELECTRICAL

This specification is approved for use by U.S. Army Tank-automotive and Armaments Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers the performance, test, manufacture and acceptance requirements for the distribution box, electrical, shown on Drawing 19207-12292086, herein referred to as EDB (see 6.3.1).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirement documents cited in sections 3 and 4 of this specification, whether or not they are listed.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 6110

2.2 Government documents.

2.2.1 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

ARMY

19207-12292086 - Distribution Box (1A1) (Interface).

(Copies of this drawing are available from the U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E/BLUE, Warren, MI 48397-5000.)

2.3 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D2000 - Rubber Products in Automotive Applications (DoD Adopted).

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.

3.2 Materials. Materials shall be in accordance with the manufacturer's materials specifications for EDBs. Materials shall be capable of meeting all the operational and environmental requirements specified herein. Asbestos and cadmium materials shall not be used in

any form in any part of the EDB. No item, part or assembly shall contain radioactive materials in which the specific activity is greater than 0.002 microcuries per gram or activity per item equals or exceeds 0.01 microcuries (see 4.5.1).

3.2.1 Dissimilar metals. Except where necessary to complete an electrical circuit, contact between dissimilar metals which would encourage galvanic action shall be avoided. Separation of dissimilar metals shall be accomplished by providing insulation between mating surfaces (see 4.5.1).

3.2.2 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the materials meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3 Design and construction. The design and construction of the EDB shall be in accordance with the EDB manufacturer's standards. EDBs shall conform to the envelope dimension, and the electrical and mounting interfaces as shown in Drawing 19207-12292086 (see 4.5.1).

3.3.1 Rubber components. Rubber components, subject to ozone attack and where function and durability are impaired by the effect of ozone, shall conform to ASTM D2000 C12 requirements. Rubber components shall be resistant to petroleum oils and lubricants, servicing fluids, and cleaning fluids where their intended use requires it (see 4.5.1).

3.4 Performance.

3.4.1 Compatibility with 28-volt direct current (Vdc) source. The EDB shall be capable of operating from a 28 Vdc source (see 4.5.3.1).

NOTE: Unless otherwise specified herein, "28 Vdc" shall refer to nominal 27.5 to 28.5 Vdc (see 4.5.3.1); "ground" shall refer to pin E1; and "momentarily" shall refer to a time duration of 90 to 220 milliseconds (ms).

3.4.2 Relay functions. The relays shall operate as follows (see 4.5.3.2):

3.4.2.1 Cold start relay, K1. With 28 Vdc applied across J8-AZ (plus (+)) and J8-E (minus (-)), continuity shall exist between J10-A and J7-A and between J10-A and J7-B.

3.4.2.2 Fire suppressant relay, K8. Operation of K8 relay shall be as follows:

a. When 28 Vdc is applied across J2-J and ground, J8-BR is connected to ground through a 1.0 kilohm, 5 percent (%), 0.25 watt (W) resistor, and toggle switch S2 is momentarily activated, the voltage at J8-BR shall be less than 0.5 Vdc.
b. When 28 Vdc is applied to J2-J and a 10.0 ± 1.0 Vdc, and a 125 ± 50 ms pulse is applied between J1-C and ground, the relay shall latch as indicated by the constant 28 Vdc source voltage at J8-BR, referenced to ground.

3.4.2.3 Start cutout relay, K3. The operation of K3 shall be as follows:

a. 28 Vdc is applied across J8-AA and ground.
b. Control signal is applied across J7-M and J7-N, with J7-N externally connected to ground.
c. Control signal characteristic is a sinusoidal wave of 2.5 ± 0.5 V peak-to-peak (p-p) minimum amplitude with a source impedance greater than 100 ohms.
d. Critical control signal frequency is 575 to 1100 hertz (Hz).
e. For control signal frequencies less than critical value, J8-BC shall be continuous with ground; for control signal frequencies greater than critical value, contact between J8-BC and ground shall be open.

3.4.2.4 Lamp test relay, K4. With 28 Vdc applied to J8-AF, J10-A, and J8-AA, and E1 grounded, the following shall occur:

a. The voltage at J8-AE and J8-H shall be within 1.0 Vdc of J10-A.
b. The voltage at J8-T shall be within 1.0 Vdc of ground.
c. The warning signals of 3.4.3 shall occur.

3.4.2.5 Slave power relay, K5.

3.4.2.5.1 Slave, proper polarity. With 28 Vdc applied across J13 socket (positive) and J13 shell (negative), continuity shall exist between J13 socket and J10-A, and the green portion of diode DS-1 shall illuminate.

3.4.2.5.2 Slave, reverse polarity. With 28 Vdc applied across J13 socket (negative) and J13 shell (positive), continuity shall not exist between J13 socket and J10-A, and the red portion of diode DS-1 shall illuminate.

3.4.2.5.3 Master. With 28 Vdc applied across J10-A and ground, and switch S1 momentarily depressed, continuity shall exist between J10-A and J13 socket, and the green portion of diode DS-1 shall illuminate.

3.4.2.6 Hydraulic pump motor relay, K7. With 28 Vdc applied across J8-U or J3-C (positive) and J8-BD (negative), continuity shall exist between J10-A and J17-A.

3.4.3 Warning signal function. With 28 Vdc applied across J8-AA and ground, the grounding of J4-X, J7-R, J7-S, J7-U, J7-a, J7-c, J7-T, or the energizing of relay K4 as specified in 3.4.2.4 shall cause the following signals (see 4.5.3.3):

a. Head phone signal at J8-C is a signal of 760 ± 150 Hz, interrupted at a rate of from 0.5 to 1.0 seconds. The signal shall persist until the ground is removed, K4 is de-energized, or J8-AC is grounded.
b. Flasher signal at J8-AJ is a signal of 1.5 ± 0.5 Hz. The signal shall persist until ground is removed or K4 is de-energized.

3.4.4 Vehicle motion function. The input voltage for the vehicle motion circuitry shall be 23 ± 2.5 Vdc, applied across J4-W and ground. The input signal shall be applied between J9-M and J9-N. The output signal shall be between J4-K and ground. For input voltages less than the switch point, the output shall be not greater than 2.0 Vdc. For input voltages greater than the switch point, the output shall be not less than 14.0 Vdc. The EDB shall function with an input signal having the following functions (see 4.5.3.4):

a. Sine wave: 5 to 70 Hz.
b. Output resistance: 100 ± 20 ohms.
c. Maximum amplitude: 25 V, root means square (rms).
d. Switch: Between 2.6 and 9.1 V rms.

3.4.5 Simplified test equipment/internal combustion engine (STE/ICE) - test module diagnostic equipment (TMDE).

3.4.5.1 Terminations. Resistor terminations and diode terminations of contacts in connectors J14 and J15 shall be in accordance with Drawing 19207-12292086 (see 4.5.3.5.1).

3.4.5.2 Top dead center (TDC) signal. When the following inputs are present, the resultant signal at J15-c shall be a 6 to 20 ms pulse, as shown in figure 1, with an amplitude within 1.5 Vdc of the voltage source used in step b (see 4.5.3.5.2). (One pulse shall be generated for each negative-going transition of the input signal at J16-G.)

a. 28 Vdc is applied across J8-AA and ground.
b. A voltage source between 5.0 and 12.0 Vdc is applied to J14-c through a resistor that will limit the current to 2.2 ± 0.3 milliamperes (mA).
c. A 2.0 ± 0.5 Vdc p-p square-wave signal symmetrical with respect to ground with a frequency from 1 to 20 Hz applied to J16-G.

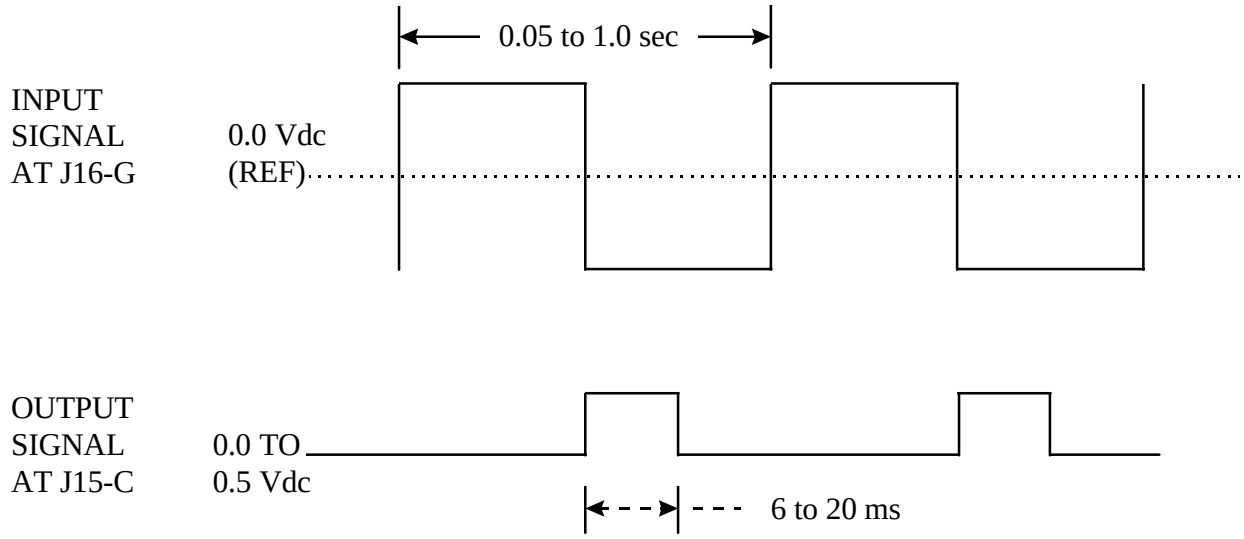


FIGURE 1. Top dead center signal.

3.4.6 Overload protection. Overload protection of the 28 Vdc source shall be in accordance with Drawing 19207-12292086 (see 4.5.3.6).

3.4.7 Wiring continuity. Wiring continuity shall be in accordance with table I (see 4.5.3.7).

TABLE I. Wiring continuity.

From connector pin	To connector pin	From connector pin	To connector pin
J1-B	J8-BS	J9-C	J8-AX
J1-H	J7-F	J9-D	J8-AY
J2-A	J15-a	J9-E	J8-BL
J2-C	E7	J9-F	J8-BU
J2-G	J15-Z	J9-G	J8-L
J2-L	J8-Y	J9-H	J8-AL
J3-C	J8-U	J9-J	J8-BV
J3-E	J7-F	J9-K	J8-A
J3-K	J4-B	J11-B	J8-D
J3-L	J8-AD	J11-C	J4-F
J4-D	J3-P	J11-E	J11-F
J4-E	J3-R		J3-K
J4-F	J11-C	J11-F	J11-K
J4-L	J11-G	J11-G	J4-L
J4-Y	J8-AM	J11-K	J11-L
J4-Z	J6-R	J12-A	J5-A
J4-j	J6-M	J12-B	J5-B
J5-A	J4-V	J13(-)	E1
	J12-A	J14-E	J14-V

TABLE I. Wiring continuity - Continued.

From connector pin	To connector pin
J5-B	J4-S
	J12-B
J5-C	J4-J
	J12-C
J5-D	J4-M
	J12-D
J5-E	J4-H
	J12-E
J5-F	J4-U
	J12-F
J5-G	J4-N
	J12-G
J5-H	J4-P
	J12-H
J5-J	J4-R
	J12-J
J5-K	J4-T
	J12-K
J5-L	J4-b
	J12-L
J5-M	J4-c
	J12-M
J5-N	J4-G
	J12-N
J5-P	J4-a
	J12-P
J6-A	J7-F
J6-D	J7-F
J6-G	J8-M
J6-H	J7-F
J6-J	J6-W
J6-K	J6-H
J6-L	J7-F
J6-U	J6-X
J6-V	J7-F
J7-A	J7-B
J7-F	E2
J7-G	J7-F
J7-f	J8-b
J8-A	J3-F
J8-B	J7-P
J8-D	J11-B
	E2
J8-K	J7-n
J8-M	J6-G
J8-T	J3-X
J8-V	J7-L

From connector pin	To connector pin
J14-M	J16-F
J14-N	J16-C
J14-O	J16-P
J14-P	J16-E
J14-S	J7-E
J14-T	J16-T
J14-V	J8-BN
J14-W	J2-C
J14-X	J2-B
J14-Y	J14-W
J14-Z	J2-E
J14-a	J2-F
J14-b	J2-F
J14-c	J15-c
J14-f	J16-a
J14-g	J16-b
J14-k	J16-h
J14-m	J16-g
J14-n	J16-L
J14-p	J16-J
J14-s	J16-S
J14-u	J16-N
J14-v	J16-M
J14-w	J16-e
J14-x	J16-f
J14-y	J16-B
J14-z	J16-A
J14-AC	J14-g
J15-E	J8-BN
J15-S	J8-BT
J15-T	J16-D
J15-V	J17-A
J15-W	J2-C
J15-X	J15-g
J15-a	J15-b
J15-c	J14-c
J15-g	J16-X
J15-k	J16-Y
J15-m	J16-Z
J15-n	J15-g
J15-u	J16-V
J15-v	J16-U
J15-w	J15-n
J15-y	J15-w
J15-z	J2-G
J15-AA	J15-y
J15-AC	J15-AA

TABLE I. Wiring continuity - Continued.

From connector pin	To connector pin	From connector pin	To connector pin
J8-AT	J7-H	J15-AG	J16-c
J8-AV	J7-V	J16-A	J14-z
J8-BA	J3-d	J16-D	J7-F
J8-BC	J15-L	J16-F	J15-M
J8-BE	J3-A	J16-K	J14-AG
J8-BF	J3-B	J16-L	J14-n
J8-BH	J3-b	J16-U	J15-v
J8-BJ	J3-a	J16-V	J15-u
J8-BK	J3-c	J16-W	J15-f
J8-BM	J3-Z	J16-Y	J15-k
J8-BN	J11-A	J16-Z	J15-m
J8-BT	J3-H	J16-b	J14-g
J9-A	J8-AW	J16-c	J15-AG
J9-B	J8-J		

3.5 Environmental conditions.

3.5.1 Low temperature. The EDB shall demonstrate no performance degradation and show no evidence of damage or deformation when stored and operated at temperatures down to -60 degrees Fahrenheit (°F) (-51 degrees Celsius (°C)) (see 4.5.4.1).

3.5.2 High temperature. The EDB shall demonstrate no performance degradation and show no evidence of damage or deformation when stored at temperatures up to 160°F (71°C) and operated at temperatures up to 130°F (54.5°C) (see 4.5.4.2).

3.5.3 Shock. The EDB shall demonstrate no performance degradation and show no evidence of damage or deformation after being exposed to sawtooth shock pulses of 40 gravity units (g) for 11 ms time duration applied along each of the three major axes (see 4.5.4.3).

3.5.4 Vibration. The EDB shall demonstrate no performance degradation and show no evidence of damage or deformation after being subjected to vibration levels, in each of the three major axes, of 1.5 and 4.2 g in the frequency range of 5 to 500 to 5 Hz with a sweep time of 15 minutes, except the horizontal axis vibration level shall be 0.4 g at frequencies of 7 to 20 Hz (see 4.5.4.4).

3.5.5 Humidity. The EDB shall demonstrate no performance degradation and show no evidence of damage or deformation after being exposed to a relative humidity ranging from 0 to 98% (see 4.5.4.5).

3.5.6 Steam and waterjet cleaning. The EDB shall demonstrate no performance degradation and show no evidence of damage or deformation after being subjected to steam

cleaning, using high pressure steam and a commercial heavy-duty non-abrasive detergent, followed by waterjet cleaning (see 4.5.4.6).

3.5.7 Environment stress screening (ESS). Unless otherwise specified (see 6.2), EDB shall be subjected to ESS (see 4.5.4.7 and 6.3.2).

3.6 Identification marking. Part identification shall be as specified on Drawing 19207-12292086 (see 4.5.2).

3.7 Workmanship. The EDB shall be free of any electrical or physical defect which would affect its reliability or performance (see 4.5.2).

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3).
b. Conformance inspection (see 4.4).

4.2 Inspection conditions. Unless otherwise specified (see 6.2), all inspections shall be conducted under the following standard (room) ambient conditions:

a. Temperature 77 $\pm$ 18°F (25 $\pm$ 10°C).
b. Relative humidity: Uncontrolled room ambient.
c. Atmospheric pressure: Site pressure.

4.3 First article inspection. Three EDBs produced in accordance with 3.1 shall be subjected to first article inspection test of table II and examinations of defects of table III.

4.3.1 First article failure. Inability of the first article samples to pass any examination or test shall constitute a failure. Failure of a sample to pass any examination or test shall be cause for refusal to grant first article approval. Such failure may, at the option of the procuring activity, be cause for refusal to allow additional examinations or tests until causes of faults have been corrected and the corrective action approved by the procuring activity.

TABLE II. Classification of inspections.

Table	Requirement	Inspection	First article sample			Conformance	
			1	2	3	Examination	Test
Group A:							
Materials design & construction	3.2, 3.2.1, 3.3 & 3.3.1	4.5.1	X	X	X		
Defects (see table III)	3.6 & 3.7	4.5.2	X	X	X	X	
Group B (Performance):							
Compatibility with 28 Vdc source	3.4.1	4.5.3.1	X	X	X		
Relay functions	3.4.2	4.5.3.2	X	X	X		X
Cold start relay, K1	3.4.2.1	4.5.3.2	X	X	X		X
Fire suppressant relay, K8	3.4.2.2	4.5.3.2	X	X	X		X
Start cutout relay, K3	3.4.2.3	4.5.3.2	X	X	X		X
Lamp test relay, K4	3.4.2.4	4.5.3.2	X	X	X		X
Slave power relay, K5	3.4.2.5	4.5.3.2	X	X	X		X
Slave, proper polarity	3.4.2.5.1	4.5.3.2	X	X	X		X
Slave, reverse polarity	3.4.2.5.2	4.5.3.2	X	X	X		X
Master	3.4.2.5.3	4.5.3.2	X	X	X		X
Hydraulic pump motor relay, K7	3.4.2.6	4.5.3.2	X	X	X		X
Warning signal function	3.4.3	4.5.3.3	X	X	X		X
Vehicle motion function	3.4.4	4.5.3.4	X	X	X		X
STE/ICE - TMDE functions	3.4.5 thru 3.4.5.2	4.5.3.5 thru 4.5.3.5.2	X	X	X		X
Overload protection	3.4.6	4.5.3.6	X	X	X		X
Wiring continuity	3.4.7	4.5.3.7	X	X	X		X
Group C (Environmental):							
Low temperature	3.5.1	4.5.4.1	X	X	X		
High temperature	3.5.2	4.5.4.2	X	X	X		
Shock	3.5.3	4.5.4.3	X	X	X		
Vibration	3.5.4	4.5.4.4	X	X	X		
Humidity	3.5.5	4.5.4.5	X	X	X		
Steam & waterjet cleaning	3.5.6	4.5.4.6	X	X	X		
ESS	3.5.7	4.5.4.7	X	X	X		X

4.3.2 Disposition of samples. Samples that have been subjected to first article inspection shall be indelibly marked “Test Equipment” and shall not be delivered as new equipment under the contract.

4.4 Conformance inspection.

4.4.1 Inspection of product for delivery. Inspection of product for delivery shall consist of the 100% inspection.

4.4.1.1 100% inspection. The 100% inspection shall consist of the inspections specified in table II and defects specified in table III.

4.4.1.1.1 Failure. The supplier may rework a rejected EDB to correct the defect(s) and resubmit it for inspection. Rework shall be within the confines of drawing and specification requirements.

4.4.2 Inspection of packaging. The sampling and inspection of packaging shall be in accordance with 5.1.

TABLE III. Classification of defects.

Category	Defect	Method of examination
Major:		
101	Faulty workmanship affecting performance and appearance (see 3.7).	Visual
Minor:		
201	Improper identification marking (see 3.6).	Visual
202	Faulty workmanship not affecting performance or appearance (see 3.7).	Visual

4.5 Methods of inspection.

4.5.1 Materials, design and construction. Conformance to 3.2, 3.2.1, 3.3 and 3.3.1 shall be determined by inspection of contractor records providing proof or certification that design, construction, processing, and materials conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports, and rating data.

4.5.2 Defects. Conformance to 3.6 and 3.7 shall be determined by examination for defects listed in table III. Examination shall be visual, tactile, or by measurement with standard inspection equipment (SIE).

4.5.3 Performance tests. Conformance to 3.4 shall be determined in accordance with test methods specified in 4.5.3.2 through 4.5.3.7 (see 6.4).

4.5.3.1 Compatibility with 28 Vdc source. To determine conformance to 3.4.1, the EDB shall be functionally tested with the 28 Vdc supplies adjusted and tested at high (29.5 to 30.0 Vdc) and low (18.0 to 18.5 Vdc) voltage limits, in addition to nominal (27.5 to 28.5 Vdc).

4.5.3.2 Relay functions. To determine conformance to 3.4.2, the relay functions shall be verified.

4.5.3.3 Warning signal function. To determine conformance to 3.4.3, the warning signal function shall be verified.

4.5.3.4 Vehicle motion function. To determine conformance to 3.4.4, the vehicle motion function shall be verified.

4.5.3.5 STE/ICE - TMDE.

4.5.3.5.1 Terminations. To determine conformance to 3.4.5.1, the STE/ICE - TMDE resistor and diode terminations shall be verified.

4.5.3.5.2 TDC signal. To determine conformance to 3.4.5.2, the TDC signal function shall be verified.

4.5.3.6 Overload protection. To determine conformance to 3.4.6, the overload protection function shall be verified.

4.5.3.7 Wiring continuity. To determine conformance to 3.4.7, the wiring continuity shall be verified.

4.5.4 Environmental tests. The following methods of inspection are acceptable for verifying compliance with 3.5. Prior to and at the conclusion of each of the environmental tests, the EDB shall be operated under stabilized standard ambient conditions (see 4.2) to determine conformance with the performance requirements specified in table II, and examined for evidence of deformation or damage.

4.5.4.1 Low temperature. To determine conformance to 3.5.1, the EDB shall be placed in a temperature chamber in a manner simulating service usage. Lower the internal chamber temperature to -60°F (-51°C) and maintain for a period of 24 hours after test temperature stabilization (see 6.3.3). Verify conformance with the performance requirements specified in table II while chamber is at -60°F (-51°C), except the performance requirements of 3.4.4 shall be met at -25°F (-32°C).

4.5.4.2 High temperature. To determine conformance to 3.5.2, the EDB shall be placed in a temperature chamber in a manner simulating service usage. Raise the internal chamber temperature to 160°F (71°C) and maintain for a period of 48 hours with a relative humidity not greater than 15%. Adjust the internal chamber temperature to 130°F (54.5°C) and maintain until temperature stabilization of the EDB is achieved. When raising or lowering the temperature of the chamber, the rate of temperature change shall be not greater than 18°F (10°C) per minute. Verify conformance to the performance requirements specified in table II while the chamber is at 130°F (54.5°C).

4.5.4.3 Shock. To determine conformance to 3.5.3, the EDB shall be rigidly mounted to a shock table and subjected to three sawtooth shocks of 40 g for a time duration of 11 ms (see figure 2) in each direction along the three mutually perpendicular axes of the EDB for a total of 18 shocks. No performance testing shall be required during shock.

4.5.4.4 Vibration. To determine conformance to 3.5.4, the EDB shall be rigidly mounted to a vibration fixture and vibrated along each of the three mutually perpendicular axes in accordance with the vibration levels specified in figure 3, except that the horizontal (side-to-side as viewed from front of EDB) vibration level shall be 0.4 g at frequencies of 7 to 20 Hz. The sweep time shall be 15 minutes for the sweep frequencies of 7 to 20 Hz. The sweep time shall be 15 minutes for the sweep frequency range of 5 to 500 to 5 Hz. The test time shall be for not less than 2.5 hours and not greater than 3 hours in each axis. The frequency of applied vibration shall be swept over the specified range logarithmically in accordance with figure 4. The specified sweep time is that of an ascending plus a descending sweep and is twice the ascending sweep time shown in figure 4 for the specified range. When EDB resonances below 5 Hz are measured, the test curve shall be extended to 2 Hz and sweep time shall be 18 minutes (2 to 500 to 2 Hz). No performance testing shall be required during vibration.

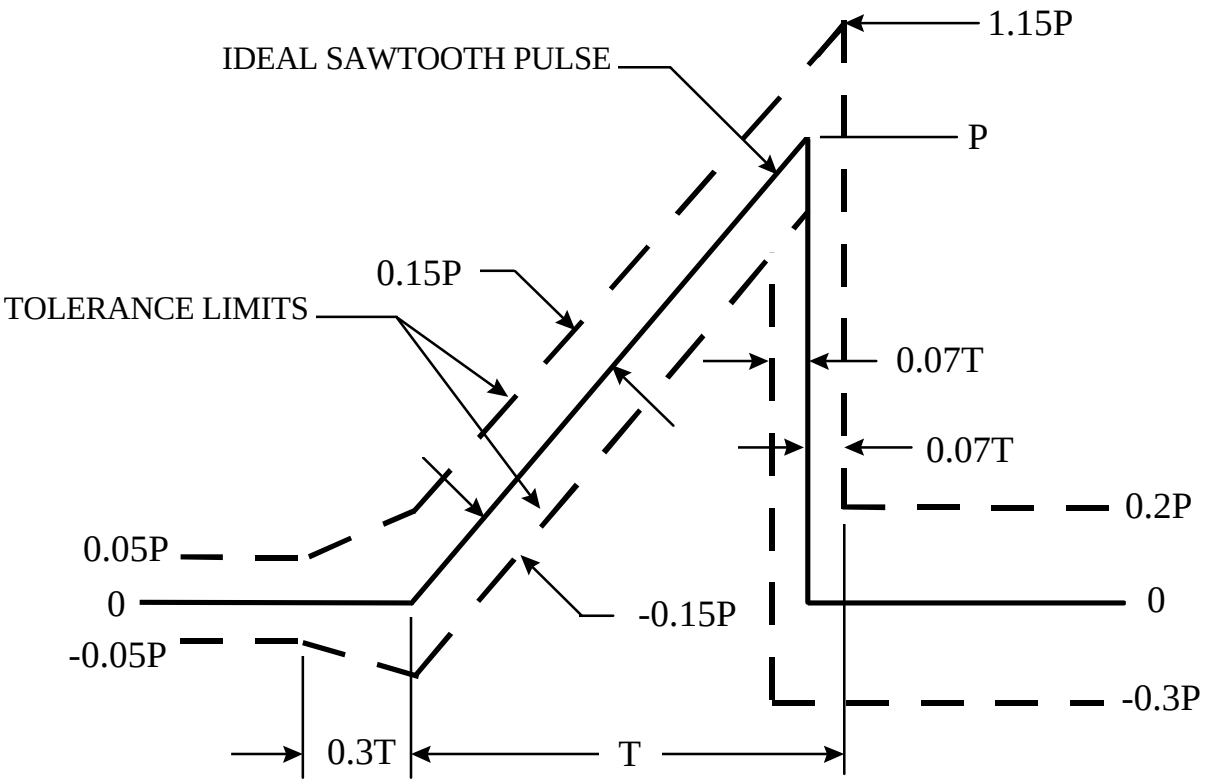
4.5.4.5 Humidity. To determine conformance to 3.5.5, the EDB assembly shall be tested as specified herein:

a. The EDB shall be placed in a chamber trap-vented to the atmosphere to prevent the build up of total pressure. No condensation shall be permitted to drip on the EDB. Relative humidity shall be determined from dry bulb/wet bulb thermometer comparison method or an equivalent method approved by the Government. Air velocity flowing across the wet bulb shall be not less than 900 feet per minute (ft/min). Provisions shall be made for controlling the flow of air throughout the internal chamber test space where the velocity of air shall be not greater than 150 ft/min. Steam or distilled demineralized, or deionized water having a hydrogen ion concentration (PH) between 6.0 and 7.2 at 73°F (23°C) shall be used to obtain the specified humidity. No rust or corrosive contaminants shall be imposed on the EDB by the test facility.

b. After having been dried for 24 hours at 129 ± 3°F (54 ± 1.7°C), the EDB shall be conditioned at 73 ± 3°F (23 ± 1.7°C) and 50 ± 10% relative humidity for 24 hours. Take initial measurements of the performance requirements specified in table II.
c. Raise the internal chamber temperature to 86 ± 3°F (30 ± 1.7°C) and relative humidity to 94 ± 4%. Expose the EDB to 5 continuous 48-hour cycles in accordance with figure 5. During the fifth humidity cycle and at the conclusion of humidity exposure, the EDB shall meet the performance requirements specified in table II.

4.5.4.6 Steam and waterjet cleaning. To determine conformance to 3.5.6, the EDB shall be subjected to steam cleaning, followed immediately by waterjet cleaning as follows. The jet shall be applied perpendicular to the surface being cleaned at a distance of not greater than 1 foot for steam cleaning, and not greater than 3 feet for waterjet cleaning. The jet pressure shall be 105 ± 5 pound-force per square inch gage (psig) (724 ± 34.5 kilopascals (kPa)) for steam cleaning and 50 ± 5 psig (345 ± 34.5 kPa) for waterjet cleaning. The jet shall be moved at such a rate that the exposed surface of the EDB is subjected to the jet at the rate of 1 square foot per minute (ft^2/min) (0.28 square meters per minute (m^2/min) for 2 to 3 minutes. Prior to and within 1 hour (unless otherwise directed by the Government) after completing the steam and waterjet cleaning, the EDB shall meet the performance requirements specified in table II. No performance testing is required during steam and waterjet exposure. Moisture inside the EDB shall not be considered a failure.

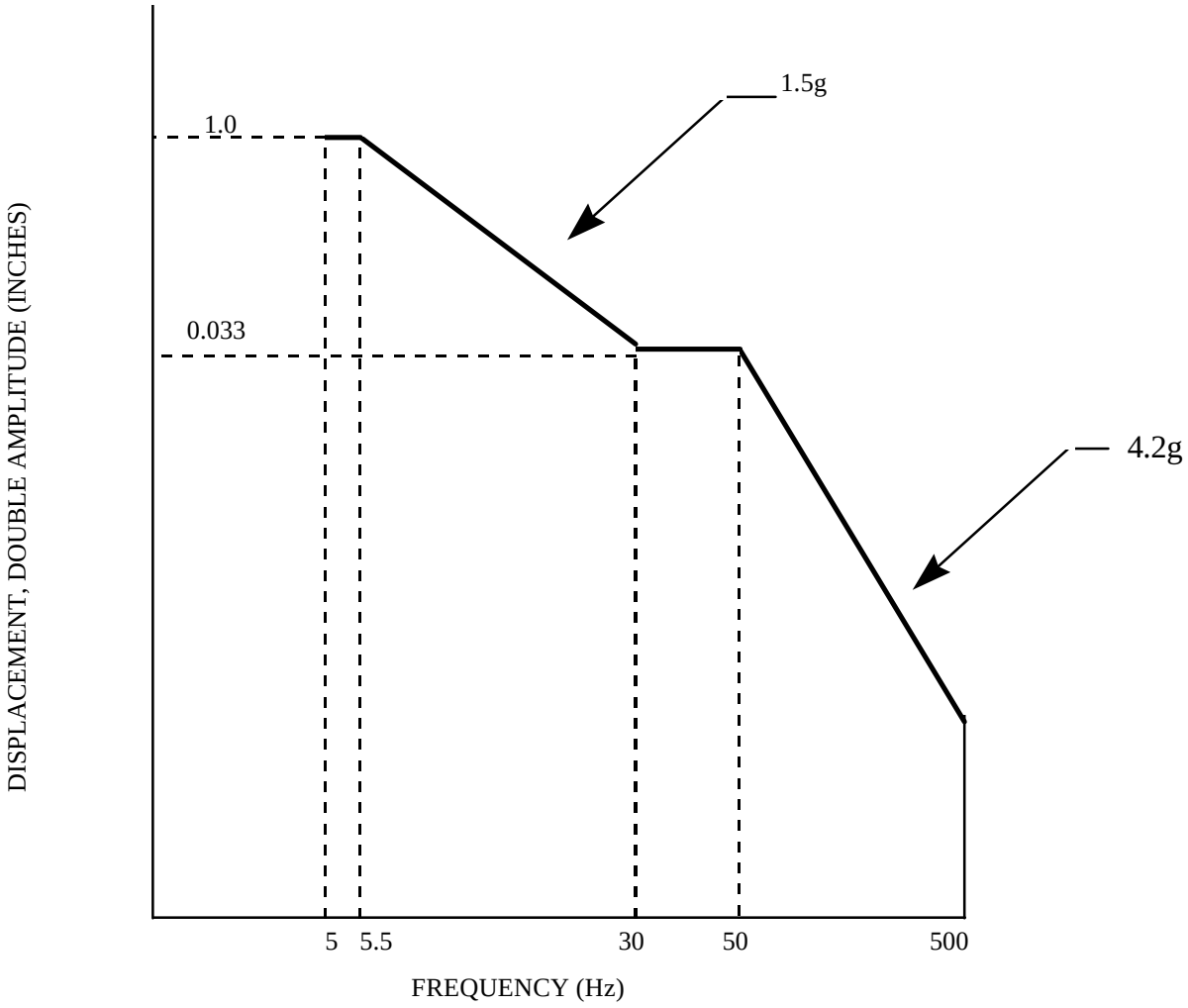
4.5.4.7 ESS. To determine conformance to 3.5.7, ESS shall be performed in accordance with Drawing 19207-12292086.



P = Peak value = 40 g
T = Nominal duration = 11 ms

NOTE: The oscillogram shall include a time about 3T long with a pulse located approximately in the center. The peak acceleration magnitude of the sawtooth pulse is P and its duration is T. The measured acceleration pulse shall be contained between the broken line boundaries, and the measured velocity change (which may be obtained by integration of the acceleration pulse) shall be within the limits of Vj $\pm$ 0.1 Vj, where Vj is the velocity-change associated with the ideal pulse which equals 0.5 PT. The integration to determine velocity change shall extend from 0.4 T before the pulse to 0.1 T after the pulse.

FIGURE 2. Terminal-peak sawtooth shock pulse configuration and tolerance limits.



NOTES:

1. Acceleration levels: ± g (peak).
2. The curve shall be extended to 2 Hz when test item resonances below 5 Hz are expected.

FIGURE 3. Vibration test curve.

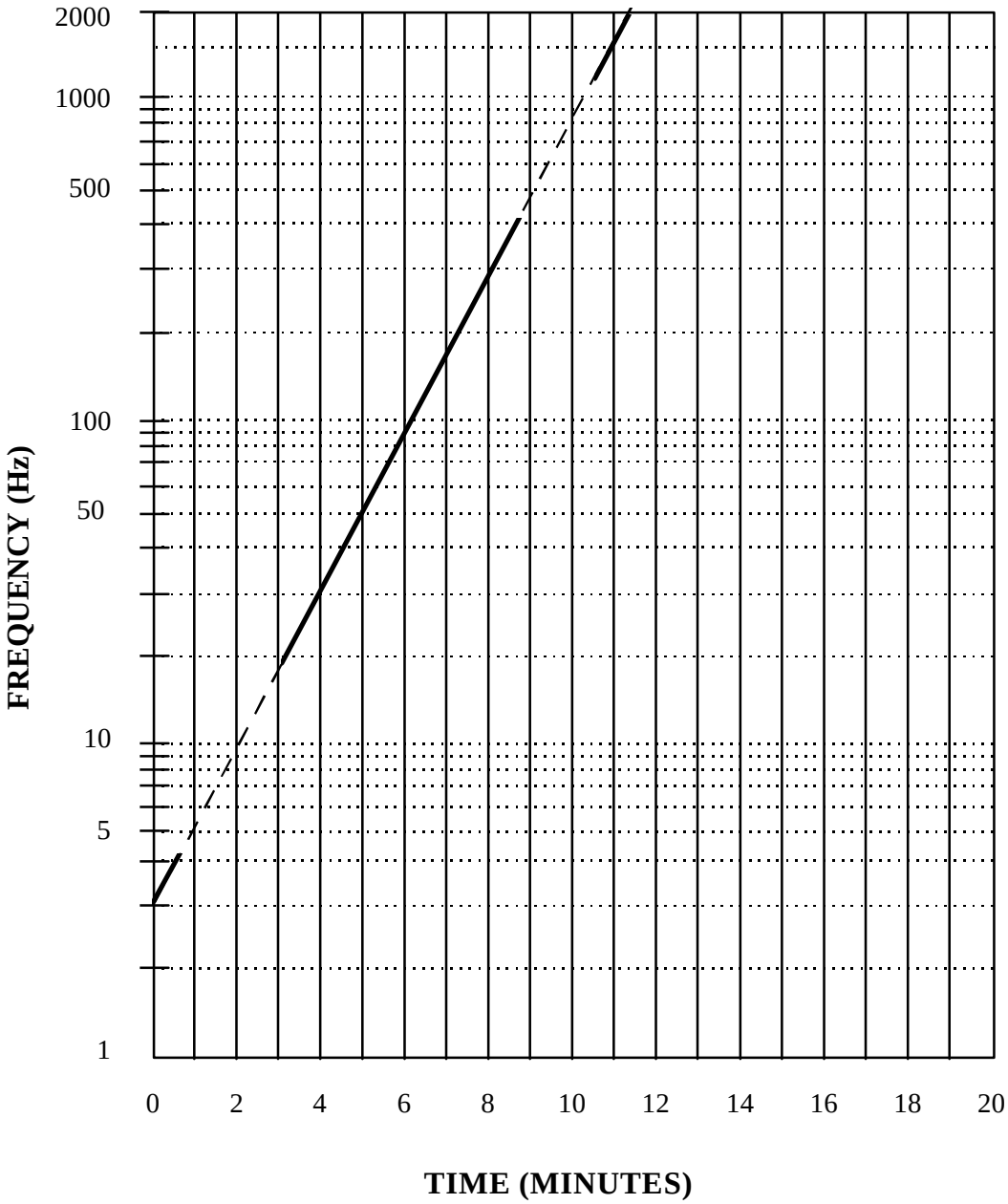
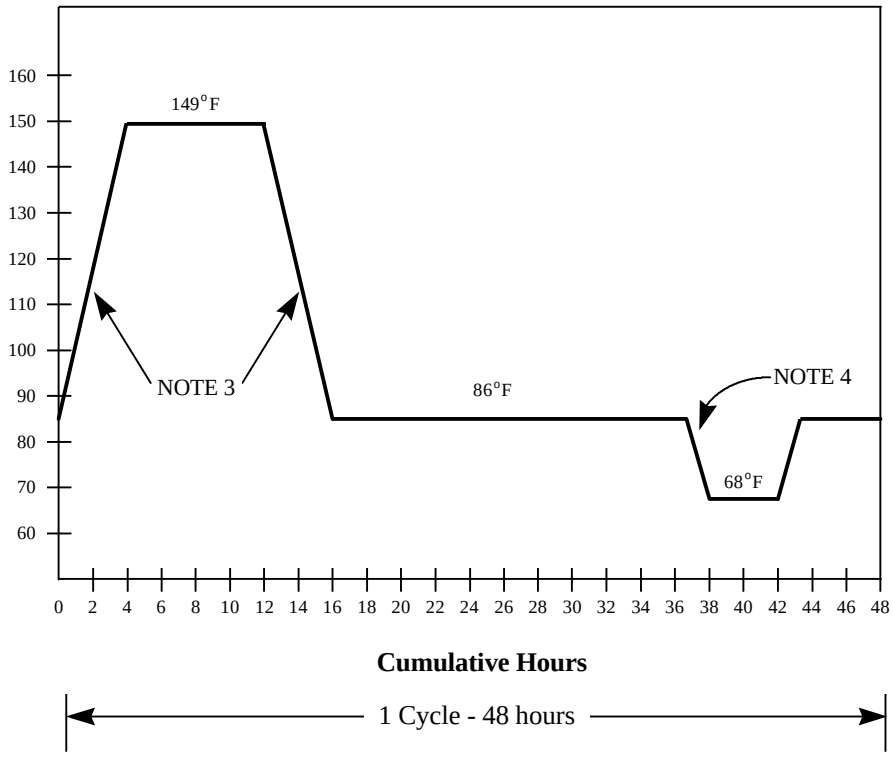


FIGURE 4. Logarithmic sweep.



NOTES:

1. Tolerance during temperature change shall be not greater than 5°F (2.8°C).
2. Relative humidity shall be maintained at 94 ± 4% at all times, except that during the descending temperature period, the relative humidity may be permitted to drop as low as 85%.
3. Rate of temperature change between 86 and 149°F (30 and 65°C), shall be not less than 14.4°F (8°C) per hour.
4. The temperature increase in this portion of the curve shall be not less than 18°F (10°C).

FIGURE 5. Humidity cycle.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. EDBs manufactured in accordance with this specification are intended for use on military tracked vehicles in the Bradley Fighting Vehicle (BFV) Family.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, revision, and date of this specification.
b. Title, number, revision, and date of part drawing.
c. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.3).
d. First article inspection, if required (see 3.1).
e. ESS, If other than as specified herein(see 3.5.7).
f. If inspection conditions other than specified (see 4.2).
g. Packaging requirements (see 5.1).

6.3 Definitions.

6.3.1 Electrical distribution box. The EDB performs the following functions:

a. Relay control of vehicle functions.
b. Connection of vehicle master/slave power transfer.
c. Warning signal generation.
d. Vehicle critical motion switching.
e. Connection of vehicle STE/ICE and TMDE.
f. Overload protection of 28 Vdc source.
g. Distribution of vehicle circuits.

6.3.2 Environmental stress screening. ESS is a process that subjects devices to physical and climatic stress (or combinations thereof). This stress forces flaws that are not ordinarily apparent into observable failures which can then be removed. Flaws are defects in design, workmanship or material that will eventually result in the failure of the device prior to its normal life expectancy.

6.3.3 Test temperature stabilization. Test temperature stabilization is the point at which the test sample will not vary more than 3.6°F (2°C) per hour.

6.4 Alternate method for performance tests. DSESTS test equipment Drawing 19207-12309756 and Drawing 19207-12354501 may be used as an alternate method for satisfying the requirements of 3.4.

6.5 Subject term (key word) listing.

Cold start
Continuity
Fire suppressant
Overload
Relay
TDC signal
Warning signal

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodian:
Army - AT

Preparing Activity:
Army - AT

(Project 6110-A401)

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8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE *(Include Area Code)* (1) Commercial (2) AUTOVON
c. ADDRESS *(Include Zip Code)* Commander U.S. Army Tank-automotive and Armaments Command ATTN: AMSTA-TR-E/BLUE Warren, MI 48397-5000	(810) 574-8745 786-8745 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