

[METRIC]
A-A-52526
September 22, 1995
SUPERSEDING
MIL-T-62063(AT)
4 May 1967

COMMERCIAL ITEM DESCRIPTION

TIME DELAY UNIT; ADJUSTABLE, SOLID STATE (METRIC)

The General Services Administration has authorized the use of this commercial item description (CID) for all federal agencies.

1. SCOPE.

This CID covers a solid state, electrical time delay unit capable of providing an adjustable time delay cycle at a specific time between 50 milliseconds (msec) and 10 seconds, with a minimum output of 2 amperes at 28 volts, for use in direct current (dc) electrical circuits. The input of the time delay unit is solid state but the output may be solid state or relay. The electrical time delay unit is referred to herein as "time delay".

2. SALIENT CHARACTERISTICS.

2.1 **Materials.** Materials shall be as specified herein. Materials not specifically designated shall be suitable for use in the time delay operating over an ambient temperature range from -54°C to 85°C without any change in physical or dimensional properties that would result in operation of the time delay outside of the limits herein specified. The use of recovered materials made in compliance with regulatory requirements is acceptable providing that all other requirements of this CID are met (see 3.).

Beneficial comments, recommendations, additions, deletions clarifications, etc. and any other data which may improve this document should be sent by letter to U.S Army Tank-automotive and Armaments Command, ATTN: AMSTA-TR-E, Warren, MI 48397-5000

FSC 5945

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A-A-52526

2.1.1 **Semiconductor material.** The JANTX, JANTXV, and JANS versions of semiconductor devices shall be used and shall be made of silicon or organic materials.

2.1.2 **Capacitors.** Capacitors shall be fixed type with plastic or metal cases.

2.1.3 **Resistors** Resistors shall be fixed type and shall be film, composition or wire-wound.

2.1.4 **Relays.** Relays shall be electromagnetic.

2.1.5 **Dissimilar metals.** Except where necessary to complete an electrical circuit, contact between dissimilar metals which would encourage galvanic action shall be avoided

2.2 **Design and construction.** Time delay shall conform to figure 1 with respect to mounting and clearance dimensions and shall be contained within the envelope outline indicated thereon.

**TIME DELAY CIRCUIT
OUTPUTS**

PIN 1 (+)

PIN 2

PIN 3 (+)

PIN 4 (+)

PIN 5

PIN 6 (-)

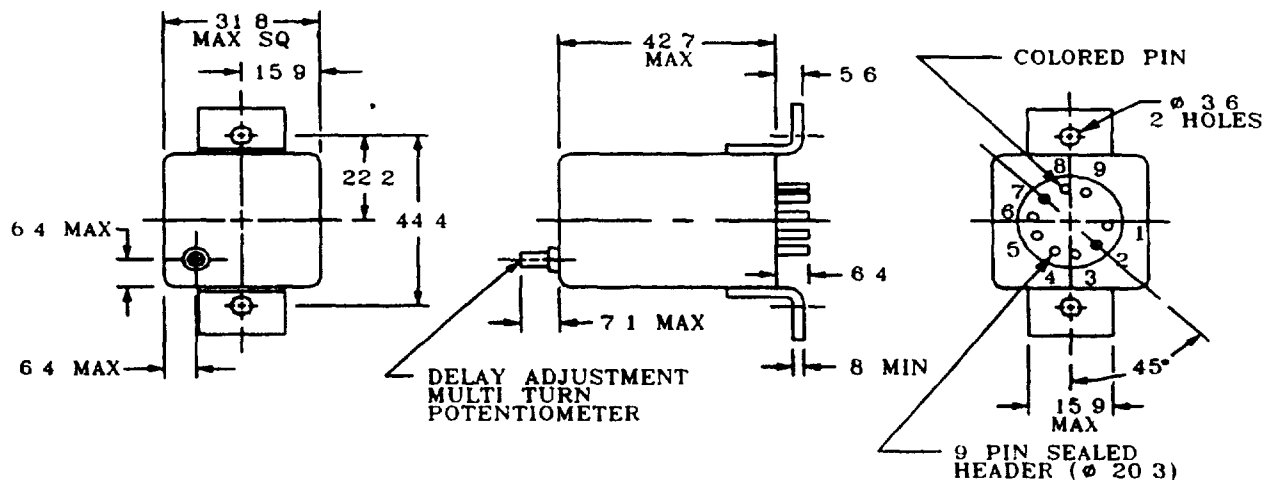
PIN 7

PIN 8

PIN 9

PINS 3 AND 4 MUST BE
CONNECTED TO POSITIVE
POTENTIAL RELATIVE TO
PINS 2 AND 5 RESPECTIVELY

CONNECTION OPTIONAL



NOTES:

1. Dimensions are in millimeters (mm).
2. Tolerances are ± 0.3 mm

FIGURE 1 Time delay-envelope and mounting

2.2.1 Circuit diagram. An electrical schematic circuit shall be provided with each time delay. If modules are used, the encapsulated circuitry shall be shown. The diagram shall be marked white-on-black on the housing in a readily accessible location. Height and size of diagram symbols and lettering shall be sufficient to provide legibility to normal 20/20 vision at a distance of two feet. Input and output terminals shall be plainly marked.

2.3 Electrical.

2.3.1 Polarity. Time delay shall operate with a negatively grounded circuit. The voltage input shall be positive at terminal 1 and negative at terminal 6.

2.3.2 Polarity protection. Time delay shall be polarity protected to continuous reversed input voltages from 0 to 50 volts dc with a maximum current flow of 5 milliamperes (mA)

2.3.3 Insulation resistance. All insulation between ungrounded circuits and ground shall have a minimum resistance of 100 megohms at 85°C and shall withstand 500 ± 50 volts dc for 2 minutes without any evidence of physical or electrical damage. Measurements shall be made between the case and terminals 1 through 9 tied together.

2.3.4 Dielectric strength. There shall be no arcing, no physical damage, and no decrease in dielectric strength after 1000 +0/-50 volts root-mean-square (vrms) at 60 Hertz (Hz) is applied between the case and terminals 1 through 9 tied together of the time delay. The duration of this application shall not be less than three, nor more than five seconds.

2.3.5 Short circuit protection (solid state only). Short circuit protection shall be provided. The time delay shall withstand a short circuited output while operating at 2 ampere output load within the functional operational range (16-35 volts dc).

2.3.6 Low voltage input. Protection shall be provided against damage and malfunction from continuous input potentials below 16 volts dc with an output load of 2 amperes.

2.3.7 Input operating voltage. Time delay shall be capable of continuous operation without damage or malfunction with input potentials ranging from 16 to 35 volts dc and an output load of 2 amperes resistive.

2.3.8 Transient. Time delay shall withstand 2000 transient cycles without damage or malfunction. Each cycle shall consist of a 50 volt square wave applied for 10 msec on and 750 msec off.

2.3.9 Output rating Time delay output contacts shall carry and switch a minimum of 2 amperes at 28 volts dc with a resistive load.

A-A-52526

2.3.10 Power drain. Time delay shall have a power drain of 2 watts maximum at 26 volts dc.

2.3.11 Voltage drop. The maximum voltage drop across the time delay output contacts shall not exceed 1.0 volt.

2.4 Performance.

2.4.1 Repeatability. Time delay shall have a repeatability of + 3 percent at any specific reset time and ambient temperature and voltage.

2.4.2 Power off operation. Time delay shall not operate with primary power source disconnected.

2.4.3 Reset time. The time for snap over from the timing circuit to the output shall not exceed 10 msec.

2.4.4 Recycle time. Recycle time shall be no greater than 750 msec (see 6.4).

2.4.5 Adjustment. Time delay shall provide adjustable delays from 50 msec to 10 seconds by means of an adjustable screw (see figure 1). Adjustment shall be accomplished in approximately 25 turns of the adjustment screw.

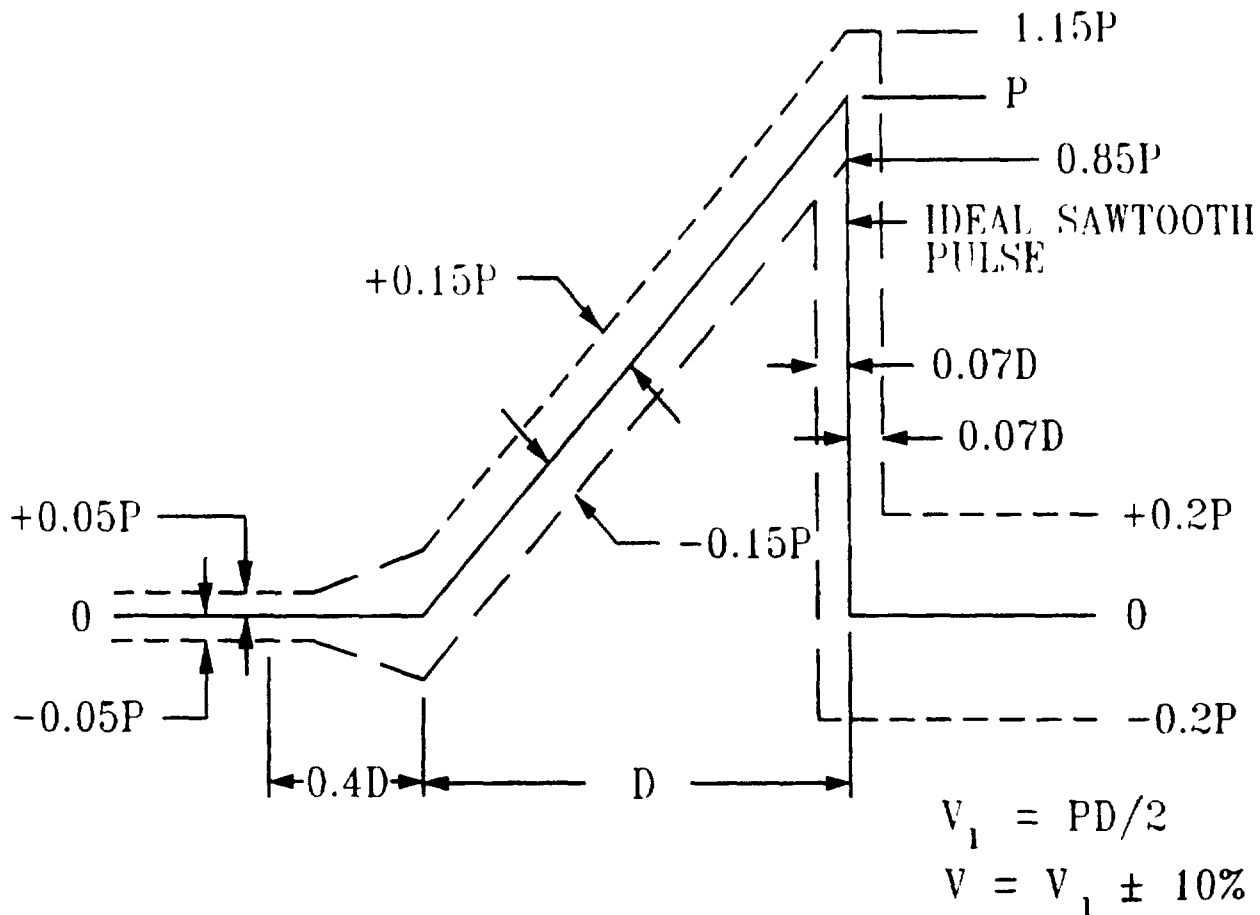
2.5 Environmental.

2.5.1 High temperature. Time delay shall meet the electrical and performance requirements after being stabilized at a temperature of $85^{\circ} \pm 3^{\circ}\text{C}$ and operated continuously in still air for 10,000 operational cycles at 30 ± 0.5 volts dc input and with an output load at 2 ampere resistive.

2.5.2 Low temperature. Time delay shall meet the electrical and performance requirements after being stabilized at $-54^{\circ} \pm 3^{\circ}\text{C}$ for a minimum of one hour with an input of 18 volts dc, and then operated at -40°C for 10,000 operational cycles with an input voltage of 19 ± 0.5 volts dc.

2.5.3 Storage temperature. Time delay shall show no evidence of physical failure and shall meet the electrical and performance requirements after storage at ambient temperatures of 85°C and -54°C for eight hours at each temperature.

2.5.4 Shock. Time delay shall evidence no breakage, loosened or distorted parts or other physical damage and shall meet the electrical and performance requirements after enduring three shock pulses conforming to figure 2, applied along each of the three mutually perpendicular axes

**NOTES:**

1. $P = 100$ gravity units; $D = 6$ msec; $V_i = 3.0$ meter/second.
2. The oscillogram should include a time about $3D$ long with the pulse approximately in the center. The integration to determine the velocity change should extend from $.4D$ before the pulse to $.1D$ beyond the pulse. The peak acceleration magnitude of the sawtooth pulse is P and its duration is D . Any measured acceleration pulse which can be contained between the broken line boundaries is a nominal terminal-peak sawtooth pulse of nominal peak value, P , and nominal duration, D . The velocity-change associated with the measured acceleration pulse is V .

FIGURE 2. Shock pulse

A-A-52526

2.5.5 Vibration. Time delay shall evidence no breakage, loosened or distorted parts or other physical damage after enduring a simple harmonic motion for 4 hours, applied along each of the three mutually perpendicular axes for a total of 12 hours under the following conditions.

- a. Vibration amplitude shall be $1.5 \pm .2$ millimeters.
- b. Vibration frequency shall be varied logarithmically from 10 Hz to 2000 Hz and return to 10 Hz in 20 minutes. This frequency variation shall be repeated 12 times along each of the three mutually perpendicular axes

2.5.6 Humidity. Time delay shall show no change in physical, electrical, or material characteristics and shall meet the electrical and performance requirements after exposure to the humidity condensation cycle shown in figure 3. Distilled or demineralized water having a pH value of between 6.5 and 7.5 at 25°C shall be used to obtain a 95% humidity.

2.5.7 Water resistance. Time delay shall evidence no water penetration or damage that would impair performance after having been subjected to 10.2 centimeters of rainfall per hour for 2 hours at a temperature between 20°C to 30°C.

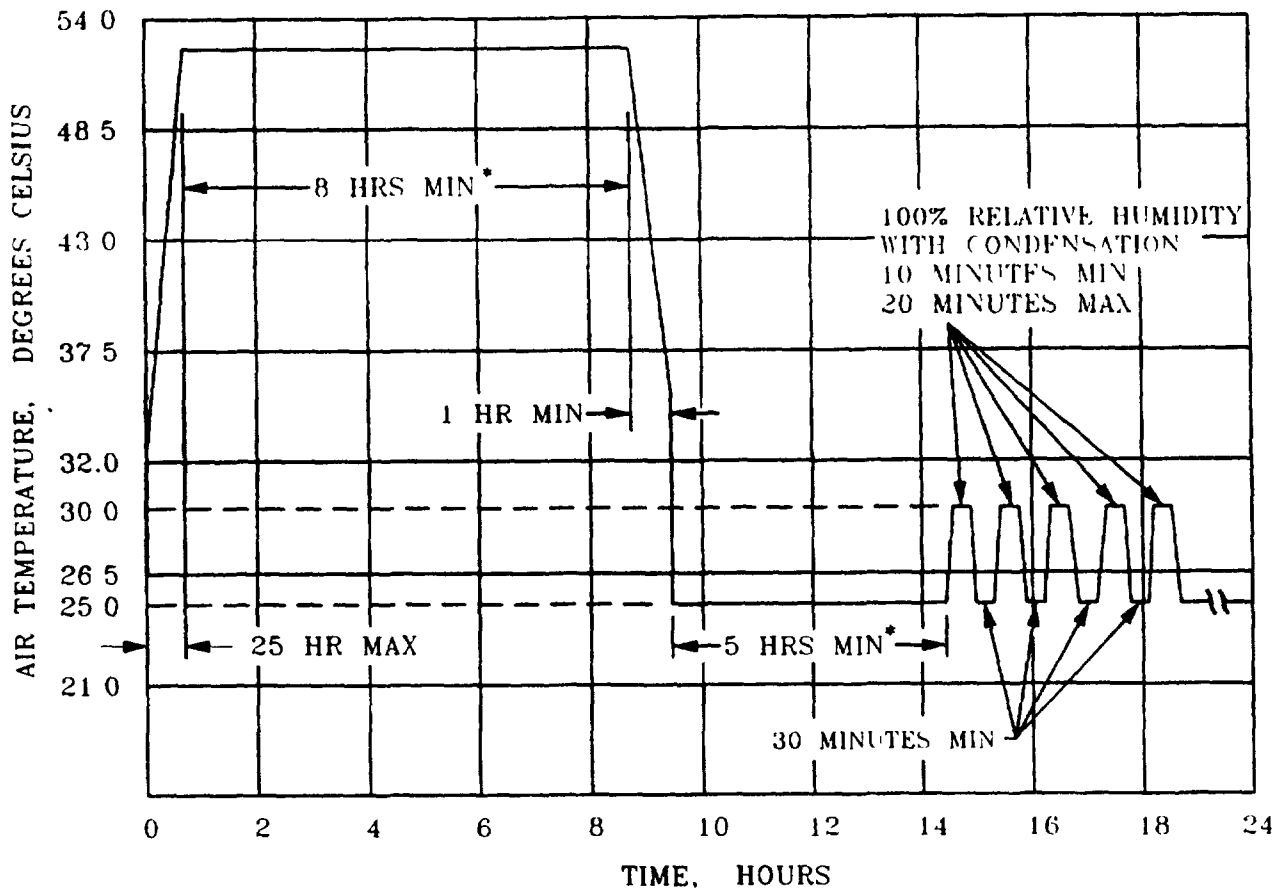
2.5.8 Dustproofness. Time delay shall show no change in physical, electrical, or material characteristics and no evidence of leakage current to ground or short circuits after exposure to blowing dust for a minimum of 24 hours under the following conditions:

- a. Air temperature shall be 23°C and relative humidity shall be less than 30%.
- b. Dust shall be red china clay or silica flour and shall consist of particles small enough to pass through a 100 mesh screen.
- c. Blowing dust shall have an air velocity of 1.5 meter/second and a concentration of 10.6 ± 7 gram/cubic meter.
- d. Time delay shall be operated at 24 volts for the duration of exposure

2.5.9 Corrosion. Time delay shall evidence no corrosion affecting performance and shall meet the electrical and performance requirements after being subjected to a 5% salt spray in accordance with ASTM B117 for 96 hours.

2.5.10 Fungus. Time delay shall evidence no microbial growth adversely affecting performance and shall meet the electrical and performance requirements after a 90 day exposure to a spore incubation. Time delays covered by this CID are sealed units and should not be operated during the exposure except possibly for final examination, and only if practical.

2.6 Weight. Time delay weight shall not exceed 85.0 grams.



* - or until equipment stabilization (whichever is longer)

NOTES:

1. Humidity shall be $95 \pm 5\%$ relative humidity throughout cycle except where otherwise noted.
2. A tolerance of $\pm 1^\circ\text{C}$ shall be allowed at every point throughout the temperature cycle.

FIGURE 3. Humidity condensation cycle.

2.7 Electromagnetic compatibility. Time delay shall cause no radio interference or electrical disturbance which produces an undesirable response or malfunctioning of communication equipment.

2.8 Identification marking. Unless otherwise specified (see 6.2), identification marking shall be permanent and legible and shall include, as a minimum, the manufacturer's CAGE code and part number, and the part identification number (PIN) A52526-1

A-A-52526

3. REGULATORY REQUIREMENTS.

The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

4 QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. The contractor is responsible for the performance of all inspections (examinations and tests).

4.2 Contractor certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this CID and that the product conforms to the producer's own drawings, specifications, standards, and quality assurance practices, and is the same product offered for sale in the commercial marketplace. The Government reserves the right to require proof of such conformance prior to the first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

5. PACKAGING.

Preservation, packing, and marking shall be as specified in the contract or order (see 6.2).

6. NOTES

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

6.1 Non-Government documents. Copies of ASTM B117 "Standard Practice for Operating Salt Spray (Fog) Testing Apparatus" are available from the American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103-1187.

6.2 Ordering data. Acquisition documents must specify the following:

- a Title, number, and date of this CID.
- b Issue of Department of Defense Index of Specifications and Standards (DODISS) to be cited in the solicitation, and if required, the specific issue of individual documents referenced
- c PIN and quantity of time delay units required
- d If special marking is required
- e Applicable packaging requirements.

A-A-52526

6.3 **Cross-reference.** Time delay units conforming to this CID are interchangeable/substitutable with time delay units conforming to MIL-T-62063(AT), dated 4 May 1967.

6.4 **Recycle time.** Recycle time is the time interval required to reactivate the circuit after actuating the input (see 2.4.4).

MILITARY INTERESTS:

Custodian:

Army - AT

Review activity:

DLA - ES

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

PREPARING ACTIVITY:

Army - AT

(Project 5945-0976)