Change in force: C 1

SB 742-1345-94-522
C1

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 10 August 1987

SUPPLY BULLETIN

MINE, ANTIPERSONNEL: M16 SERIES, WITH FUSE, MINE, COMBINATION M605 AMMUNITION SURVEILLANCE PROCEDURES

SB 742-1345-94-522, 29 May 1987, is changed as follows:

Page 6, Authentication, Delete:

MILDRED E. HEDBERG
Brigadier General, United States Army
The Adjutant General

and change to read:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

This copy is a reprint which includes current pages from Change 1.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

R. L. DILWORTH
Brigadier General, United States Army
The Adjutant General

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To be distributed in accordance with DA Form 12-34B, requirements for Storage Servicability Standards General.

*SB 742-1345-94-522

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

Mine, Antipersonnel: M16 Series, With Fuze, Mine, Combination, M605 Ammunition Surveillance Procedures

Headquarters, Department of the Army, Washington, DC

29 May 1987

1. Purpose and scope. This bulletin, when used in conjunction with SB 742-1, provides a method for determining the serviceability of Mine, Antipersonnel, M16 series, with Fuze, Mine, Combination, M605 (complete round), 1345-K092 and the serviceability of Fuze, Mine, Combination, M605 M605 (separate issue), 1345-K058. The visual inspections and function tests in this procedure will be accomplished under a centralized control program managed by the U.S. Army Armament, Munitions, and Chemical Command (AMCCOM), AMSMC-QAS-P, Rock Island, IL 61299-6000. This bulletin is to be used in the serviceability assessment of specified mine and fuze lots based on an inspection and test of individual mines and/or fuzes. The provisions of this bulletin are mandatory for use by all Department of the Army organizations within CONUS and OCONUS with an ammunition receipt, storage, and distribution mission. This bulletin is not intended for use by organizations with stocks in basic loads. SB 742-1 contains additional information pertaining to frequency of test, sample selection, defect standards, reports, and records.

2. Errors, omissions, and recommended changes. Direct reporting of errors, omissions, and recommendations for improving this bulletin is authorized and encouraged. A DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be completed and forwarded to Commander, AMCCOM, ATTN: AMSMC-QAS-P, Rock Island, IL 61299-6000.

3. Safety. The inspection and surveillance function testing must be conducted in accordance with all appropriate safety regulations and instructions with special attention given to technical manuals describing these mines and fuzes. A standing operating procedure (SOP) is required for this operation which must specify safety requirements. The absence of a safety regulation in this or in any other publication is not to be construed that a precaution is unnecessary. (Note: A missile (fragment) hazard exists out to a distance of 385 meters (1,263 ft) from point of functioning.

4. Personnel. Visual examination and function testing will be conducted under the direct control of a Quality Assurance Specialist (Ammunition Surveillance) hereinafter referred to as a QASAS. All personnel connected with this operation must be familiar with the testing procedures and aware of the associated hazards of the mine and fuze.

5. Size of sample. Unless otherwise directed, a sample size of 40 mines with fuzes or 40 fuzes is required for the visual inspection and surveillance function test. To satisfy requirements of the periodic inspection prescribed in conjunction with the surveillance function test, additional sampling

*This bulletin supersedes SB 742-1345-94-444, 3 April 1972.

and inspection of boxes and packing material may be required in accordance with SB 742-1.

6. Sample selection. Samples will be selected in accordance with the provisions of SB 742-1. The samples must be a true representation of the lot in storage. Whenever practical, only two mines should be taken from any one box (outer pack). Due to packaging configuration for separate fuze lots (K058) no more than eight fuzes should be selected from any one box. Boxes should be selected from different positions in a stack. If the samples are to be function tested at an installation other than the one at which the parent lot is stored, the packing boxes and containers will be inspected prior to shipment. To document the inspection it is important that the appropriate parts of DA Form 984 (Munitions Surveillance Report) be properly completed in accordance with requirements of SB 742-1.

7. Surveillance test equipment. The following Ammunition Peculiar Equipment (APE) is to be used for testing mines and fuzes in accordance with this procedure:

Tank, Immersion, APE 1901.
Table, Testing, APE 1903.
Device, Testing, Pressure Push and Pull, APE 1907.
Kit, Function Test, M605 Mine, APE 1907E007.
Thermometer, Cup-Cased, APE 1912.
Shield, Operational, APE 1920.
Shelter, Personnel Protection, APE 1937.
Kit, Periscope and Step Stool, APE 1937E001.
Fixture, Testing, M16 Mine, APE 1940M3.
Mine, Antipersonnel, M16A1, Inert (NSN 1345-00-799-7391).

8. Preparation for test. Assure that sample units are numbered 1 through 40 and are identified as to the boxes from which they were drawn. If a mine lot is to be tested, each fuze will have the same number as the mine with which it is to be tested. One-half of the samples (samples 1 through 20) will be preconditioned by being immersed in water prior to testing. The remaining 20 samples (21 through 40) will receive no treatment or conditioning before the function test. The function test report must indicate by sample number which mines and fuzes were immersed in water and which received no treatment or conditioning.

a. Carefully examine the fuzes which are to be water-tested for evidence of damage or missing safety pins. Assure that a rubber gasket is present around the fuze. If a mine lot is to be function-tested, assemble each fuze to be water-conditioned with the mine having the same sample number. Using the M25 combination wrench, assure that the fuze well bushing adapters on the mines are tight, and then tighten the fuzes sufficiently to ensure a waterproof seal. Save the mine shipping plugs for use after water conditioning. If a separately issued fuze lot is to be tested, each fuze that is to be water-conditioned should be installed in a dummy or inert mine as directed above.

b. The immersion tank (APE 1901) should be used for water preconditioning. Immerse the 20 samples (1 through 20) in water at a temperature of 70 degrees +/- 10 degrees F (21.1 degrees +/-5.6 degrees C) for a minimum of 24 hours. Ensure that each fuze is in an upright position with the prongs 6 to 9 inches (15 to 23 centimeters) below the water surface.

c. Remove the samples from the water after 24 hours and check for evidence of leaks or water damage. Unscrew the fuzes from the mines and inspect each fuze well and flash tube for water or moisture. Remove any accumulation of water by inverting the mine. Replace the shipping plug in the mine. Record the presence of water or moisture on DA Form 984 by sample number.

9. Test procedure. This test determines the pressure and the pull tension required to release the striker (firing pin) of the fuze and the ability of the mine to function as intended. Fuzes (and mines) conditioned by water (para 8) will not be static-tested (or function-tested) whenever the temperature at the test site is at or below freezing (32 degrees F or 0 degrees C). Testing will only be conducted during daylight and only when there is good visibility. Testing will not be conducted during an electrical, rain, or snow storm, or during any other conditions that might affect the test results or create a hazardous condition. Testing should also comply with all other applicable regulations, i.e., U.S. Environmental Protection Agency (EPA), local restrictions, etc.

a. Fuze static test (mine lot). The mine fuze (M605) as a component of a mine lot (M16 mine series) will be static-tested twice and then used to function the mine to which it belongs (same sample number). A static test functions only the mechanical parts of the fuze; the primer will remain intact and serviceable so that the fuze can be recocked and used to function the mine.

(1) Set up the pressure push-and-pull testing device (APE 1907) and mount it on the testing table (APE 1903) in accordance with the appropriate APE manual, The protective shield must be properly mounted on the bottom of the table as

instructed in the APE 1907 Manual. The operator will stand on the shielded side of the table at all times to provide maximum protection while testing fuzes.

(2) Thread the fuze hand-tight into the holding device of the APE 1907. Remove the safety pin that passes through the end of the release pin (this will release the interlocking pin from the positive safety pin). Discard the interlocking pin and replace the safety pin. Remove the positive safety pin and discard. Place the wire provided with the APE 1907 E007 through the firing pin in place of the positive safety pin. Remove the safety pin.

(3) One-half of the water-conditioned fuzes (samples 1 through 10) and half of the unconditioned fuzes (samples 21 through 30) will be static-tested first by pressure on the prongs, described in 9a (4) below. and then, after recocking, will be static-tested by a pull on the release pin ring, described in 9a(5) below. The other half of the samples (samples 11 through 20 and 31 through 40) will be static-tested in reverse order. That is, these fuzes will be static-tested first by a pull on the release pin ring, 9a(5) below: and after recocking, will be static-tested by pressure on the prongs, 9a(4) below. The result will be a division of the entire sample of 40 fuzes into 4 groups of 10 each depending on water conditioning and testing sequence. Proceed to 9a(4) or 9a (5) below as applicable.

(4) Fuze pressure tension test. Install the gage assembly on the testing device (APE 1907) and set the indicator to "0." Turn the crank handle to apply pressure parallel to the axis of the fuze. Pressure must be applied at a uniform rate of load equally distributed on the three prongs. When the striker is released, the release pin ring will fly off the fuze. Retain the release pin ring for later use. Note and record the pressure tension after the striker is released. Recock the fuze using the wire as a handle, and reinsert the release pin ring. The release pin ring must be reinserted while the fuze is being recocked. Proceed to 9a(5) below or 9a(6) below, as applicable.

(5) Fuze pull tension test. Remove the gage assembly from the testing device (APE 1907) and set the indicator to "0." For convenience, the gage may be left in the testing device and another gage used for the pull test. Attach the gage to the release pin ring and apply a slow gradual pull parallel to the axis of the release pin. Note and record the pull tension required to release the striker. After release of the striker, recock the fuze using the wire as a handle, and reinsert the release pin ring. The release pin must be reinserted while the fuze is being recocked. Proceed to 9a(4) above or 9a(6) below, as applicable.

(6) The results of both tests for each group of fuzes will be recorded and reported. However, it is important to record which test was done first (whether the pressure or pull test) since only the tension measurement of the first test will be used to assess the serviceability and determine the functional code of the lot. The tension measurement of the second test (after recocking) of each fuze will be recorded and submitted for information only. After static testing, be sure that each fuze is recocked and the release pin ring is in place. Reinsert the safety pin and then remove the wire.

(7) If the sample fuze is to he used for a mine function test, the locking safety pin will be reassembled; but instead of the positive safety pin, a common carrier pin will be inserted in the hole of the striker pin and spread to approximately a 30-degree angle. The cotter pin must be inserted from the same side of the fuze as the safety pin. Each fuze will then be assembled to the mine with the same assigned sample number.

b. Mine function test. Function test of the mine assembly will be accomplished using the fixture APE 1940M3 as described below. All safety precautions must be carefully observed (see para 3) when this mine is handled or tested.

(1) Set up, prepare, and check out the mine testing fixture as instructed in the APE 1940M3 Operational Manual. This testing fixture must be at least 45 meters (148 feet) away from the personnel protective shelter (APE 1937). Assure that the operational shield, APE 1920, is in place in front of the shelter, and the periscope is adjusted for M16 mines as instructed in the APE 1937 Operational Manual.

(2) During the mine function test operation, the control valve assembly and the lanyard handle will be locked inside the control box in the shelter. The operator who places the sample mine in the testing fixture and attaches the lanyard assembly shall maintain possession of the key to the control box at all times. All other crew members should remain inside the shelter with one observing the hook-up through the periscope.

(3) Insert the sample mine (with fuze installed) in the mine holder of the testing fixture (APE 1940M3) and attach the lanyard assembly as instructed in the operational manual. Caution: Ensure that the shorter lanyards are hooked to the safety pin and the cotter pin, and the longest lanyard is hooked to the release pin ring so that it

is withdrawn last; otherwise a misfire could occur.

(4) Assure that all personnel are inside the shelter before unlocking the lanyard control box. Apply a slow steady pull on the lanyard until the cotter pin and release pin are withdrawn and the mine functions. Observe the mine functioning through the periscope, record height of burst, and relock the control box. In case of a misfire, refer to paragraph 9c below.

(5) Remove the mine outer casing from the mine holder of the testing fixture and remove the release pin ring and cotter pin from the lanyard assembly. Inspect the testing fixture for damage (see the APE 1940M3 manual). Remove all fragments from the mine holder cavity in front of the fixture. Use a file to remove any burrs from the mine holder and ejection plate which may have been caused by fragments. Check to see that the fixture is adequately protected by timbers. Ensure that the mine holder and ejection plate are properly in place and free to move as required. The operator may return to the shelter and function the ejector mechanism, if necessary, to verify proper operation.

(6) Repeat steps (3) through (5) above for the remaining sample mines, and record the appropriate observations as instructed in paragraphs 10 and 13 below.

c. Misfire procedures. If the mine fails to function after the lanyard assembly is pulled, it is a misfire and must be treated as follows:

(1) Wait one minute after pulling the lanyard; then while observing the mine through the periscope, pull the control valve lever to the rear to shear the fuze. Release the lever to neutral position. Remove the detent pin from the safety pin bracket, push the valve control lever forward to eject the mine from the testing fixture, and observe the mine ejection through the periscope. Release the level to neutral position, replace the detent pin in the safety pin bracket, and relock the control box.

(2) Warning. All personnel must remain inside the protection shelter for at least 30 minutes after the mine is ejected from the testing fixture. After the required 30-minute wait, dispose of the dud or misfired mine by detonation in place using standard demolition procedures in accordance with the approved SOP. Caution: Do not touch or disturb the mine during disposal operations. Retrieve the mine holder and ejection plate, and inspect the testing fixture as instructed in 9b(5) above.

d. Fure function test. When the sample fuze is part of a separately issued fuze lot (bulk pack, 1345-K058), it will be static-tested in accordance with procedures below; and then the fuze, including the primer, will be function-tested. The function test will fire the primer and render the fuze unserviceable.

(1) One half of the water-conditioned fuzes (samples 1 through 10) and one-half of the unconditioned fuzes (samples 21 through 30) will be static-tested first by pressure on the prongs (see 9a(4) above). After recocking, these fuzes will then be function tested by a pull on the release pin ring. The remaining sample fuzes (samples 11 through 20 and 31 through 40) will be tested in reverse order. That is, they will be static-tested first by a pull on the release pin ring (see 9a(5) above), and after recocking, will be function-tested by pressure on the prongs. For more information on testing order and reporting, see 9a(3) above.

(2) The fuzes will be static-tested and recocked in accordance with 9a(4) or 9a(5) above, as applicable. The function test procedure is identical to the static test except that no wire is inserted in the safety pin hole. With all safety pins withdrawn, the striker (firing pin) is free to strike the primer and function it. The primer should function with a clearly audible "pop" 1 to 2 seconds after the striker is released. The tension measurements of both tests (static and function) for each fuze will be recorded and reported; however, only the first tension measure ment (static test) will be used to assess the serviceability and function code of the lot. The second tension measurement (function test) will be submitted for information only. The functioning of the primer will also determine serviceability and function code of the lot.

10. Observations. All observations of nonstandard conditions and malfunctions, especially those not included among the defects listed in paragraph 12 and 13 below or in SB 742-1, must be reported and described in full detail. Pictorial evidence of nonstandard conditions should be included whenever pertinent and practical. As a minimum, the report must provide the following information:

a. Record any marking which is incomplete, unidentifiable, or misleading.

b. Give the location and extent of any rust or corrosion.

c. Record the pressure tension of the prongs (to the nearest half-pound or quarter-kilogram) required to release the striker (firing pin).

d. Record the pull tension on the release pin ring (to the nearest half-pound or quarter-kilogram) required to release the striker.

e. If the fuze is being function-tested by itself,

assure that it functions properly and report any sample fuze that malfunctions.

f. Record the height of burst above the ground to the nearest foot (0.3 meter).

g. Record all misfires (mines that neither eject nor burst). Note: All bulged mine bodies (after misfire) should be identified if readily apparent. However, under no circumstances is the misfired mine body to be disturbed to record or identify such defects.

h Record all duds (mines that eject but fail to burst).

i. Record the occurrence of any and al) nonstandard conditions or malfunctions classified as defects in paragraphs 12 and 13 below or in SB 742-1; and record any nonstandard condition or irregularity (even if not specifically classified as a defect) which, in the opinion of responsible personnel, merits consideration.

11. Classification of defects. The defects observed during inspection and testing will be classified in accordance with paragraphs 12 and 13 below and with SB 742-1. Any defects, observed or suspected, which are not listed below or in SB 742-1, will be described fully and reported with the recommendations of the QASAS as to classification.

12. Nonfunctioning defects.

a Critical-

(1) Both safety pins are missing.

(2) Safety pins are insecurely assembled to the extent that handling or storage of the item is unsafe.

b. Major-

(1) The mine container assembly is damaged (punctured or cracked) or top is inadequately secured to side.

(2) Fuze container is punctured, dented, cracked, or not sealed (specify).

(3) The fuze or any component is missing or damaged to an extent which precludes use of the mine:

(a) prongs,
(b) pull ring,
(c) threads,
(cl) any other part of the item (specify).

(4) Water leaks into the fuze well.

c. Minor-

(1) Marking is missing, misleading, or unidentifiable.

(2) Shipping plug is loose (less than finger-tight).

(3) Bushing is loose (less than 20-inch-pounds or 2.26 Newton-meters).

(4) There is no varnish on the bushing threads.

(6) Any of the following is missing or damaged to an extent that its use is precluded but use of the mine is not precluded:

(a) trip wire,
(b) combination wrench (M25),
(c) shipping plug,
(d) shipping gasket,
(e) key for fuze container,
(f) any other item (specify).

13. Functioning defects.

a Critical-

(1) Fuze striker (firing pin) releases when a safety pin is removed. (DA001)

(2) Less than 6 pounds (2.72 kilograms) of pressure tension on the prongs releases the striker. (DD001)

(3) Less than 3 pounds (1.36 kilogram) of pull tension on the release pin ring releases the striker. (DA002)

b. Major-

(1) More than 45 pounds (20.43 kilograms) of pressure tension on the prongs is required to release the striker. (DA021)

(2) More than 15 pounds (6.8 kilograms) of pull tension on the release pin ring is required to release the striker. (DA020)

(3) The striker does not release when pressure or pull tension is applied. (DA022)

(4) Fuze primer fails to function (during fuze function test). (CA021)

(5) The mine misfires (neither ejects nor bursts). (DA023)

(6) The mine is a dud (ejects but fails to burst.) (DA024)

(7) The mine explodes low order. (CL022)

c. Minor-

(1) Height of burst is greater than 3 meters (10 feet). (DA050)

(2) Mine does not eject but bursts in place. (DA051)

Note: The 5-digit functional defect code listed after each defect is for use et testing facilities only.

14. Evaluation. Using the following criteria, and considering functional codes and nonfunctional characteristics separately, an interim condition code will be assigned in accordance with SB 742-1. A lot will be classified condition code J and reported in accordance with SB 742-1 if any critical defect is observed.

a Nonfunctional characteristics.

(1) Serviceable for unrestricted issue and use. A lot not classified condition code J shall qualify as serviceable for unrestricted issue and use if it meets the following requirements during inspec-

tion by attributes of 40 mines and/or fuzes:

(a) Not more than 2 major defectives.

(b) Not more than 3 minor defectives.

(2) Serviceable for priority of issue. A lot not classified condition code J or serviceable for unrestricted issue and use shall qualify as serviceable for priority of issue if it meets the following requirements during inspection by attributes of 40 mines and/or fuzes:

(a) Not more than 5 major defectives.

(b) Not more than 8 minor defectives.

(3) Unserviceable. A lot not classified as serviceable for unrestricted issue and use or for priority of issue shall be classified unserviceable.

b. Functional codes.

(1) Code A. A lot not classified condition code J shall qualify for functional code A if it meets the following requirements in the test of 40 mines ann/or fuzes:

(a) Not more than 2 major defectives.

(b) Not more than 3 minor defectives.

(2) Code B. A lot not classified condition code J or functional code A shall qualify for functional code B if it meets the following requirements in the test of 40 mines and/or fuzes:

(a) Not more than 5 major defectives.

(b) Not more than 8 minor defectives.

(3) Code D. A lot not classified condition code J, functional code A, or functional code B shall be functional code D.

15. Records and reports. Inspection and function test results will be recorded and reported on the DA Form 984 and other appropriate forms as outlined in SB 742-1.

By Order of the Secretary of the Army:

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:
MILDRED E. HEDBERG
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-34B, Requirements for Storage Servicability Standards General.

*U.S. GOVERNMENT PRINTING OFFICE: 1994-300-421-82638

PIN: 061669-000

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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