TECHNICAL MANUAL

# ARMY DATA SHEETS FOR CARTRIDGES, CARTRIDGE ACTUATED DEVICES AND PROPELLANT ACTUATED DEVICES FSC 1377



HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1991

## WARNING

**THE SQUIB SHALL NOT BE EXPOSED TO SOLVENTS OR ACIDS. THEY SHALL NOT BE SUBJECTED TO SEVERE SHOCK OR JAR WHICH MIGHT BREAK THE BRIDGE WIRE RENDERING THE SQUIB INOPERATIVE.**

**TO PREVENT DISCONNECTED SQUIBS FROM FIRING BARE ENDS OF LEAD WIRES SHALL BE TWISTED TOGETHER SO THAT THEY ARE IN FIRM CONTACT WITH ONE ANOTHER.**

**THIS ELECTRIC SQUIB SHALL NOT BE RESISTANCE CHECKED EITHER PRIOR TO OR AFTER INSTALLATION IN THE DEVICE OF INTENDED APPLICATION.**

Change )
)
No. 2 )

**HEADQUARTERS**
**DEPARTMENT OF THE ARMY**
**Washington, DC, 30 June 1994**

**TECHNICAL MANUAL**

# ARMY DATA SHEETS FOR CARTRIDGES, CARTRIDGE ACTUATED DEVICES AND PROPELLANT ACTUATED DEVICES (FSC 1377)

TM 43-0001-39, 20 December 1991, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added or revised illustrations are indicated by a vertical bar adjacent to the identification number.

| Remove pages | Insert pages |
|---|---|
| A and B | A and B |
| i thru iv | i thru iv |
| 5-99 thru 5-102 | 5-99 thru 5-102 |

2. File this change sheet in front of the publication for reference purposes,

By Order of the Secretary of the Army:

**GORDON R. SULLIVAN**
***General, United States Army***
***Chief of Staff***

**Official:**

**MILTON H. HAMILTON**
***Administrative Assistant to the Secretary of the Army***
06338

DISTRIBUTION:

To be distributed in accordance with DA Form 12-34-E, Block 0933, Requirements for TM 43-0001-39.

Change )
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**HEADQUARTERS**
**DEPARTMENT OF THE ARMY**
**Washington, DC, 1 March 1994**

**TECHNICAL MANUAL**

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| i and ii | i and ii |
| 3-3 and 3-4 | 3-3 and 3-4 |
| none | 3-4.1 and 3-4.2 |

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TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 231
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| *Page No.* | **Change No.* | *Page No.* | **Change No.* |
|---|---|---|---|
| Cover | 0 | 6-3 thru 6-15 | 0 |
| Inside cover | 0 | 6-16 blank | 0 |
| A | 2 | 6-17 thru 6-28 | 0 |
| B | 1 | 7-1 | 0 |
| i | 2 | 7-2 blank | 0 |
| ii | 0 | 7-3 thru 7-6 | 0 |
| lll | 2 | 8-1 | 0 |
| iv | 0 | 8-2 blank | 0 |
| 1-1 and 1-2 | 0 | 8-3 and 8-4 | 0 |
| 2-1 | 0 | 9-1 | 0 |
| 2-2 blank | 0 | 9-2 blank | 0 |
| 2-3 thru 2-12 | 0 | 9-3 thru 9-8 | 0 |
| 3-1 | 0 | 10-1 | 0 |
| 3-2 blank | 0 | 10-2 blank | 0 |
| 3-3 and 3-4 | 1 | 10-3 thru 10-8 | 0 |
| 3-4.1 and 3-4.2 | 1 | A-1 and A-2 | 0 |
| 3-5 thru 3-12 | 0 | B-1 thru B-6 | 0 |
| 4-1 | 0 | C-1 and C-2 | 0 |
| 4-2 blank | 0 | D-1 and D-2 | 0 |
| 4-3 thru 4-8 | 0 | E-1 thru E-3 | 0 |
| 5-1 thru 5-98 | 0 | E-4 blank | 0 |
| 5-99 thru 5-102 | 2 | F-1 and F-2 | 0 |
| 5-103 thru 5-109 | 0 | G-1 thru G-3 | 0 |
| 5-110 blank | 0 | G-4 blank | 0 |
| 6-1 | 0 | H-1 and H-2 | 0 |
| 6-2 blank | 0 | Authentication page | 0 |

* Zero indicates an original page.

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Technical Manual )
)
No. 43-0001-39 )

**HEADQUARTERS**
**DEPARTMENT OF THE ARMY**
**Washington, DC, 20 December 1991**

# ARMY DATA SHEETS FOR CARTRIDGES, CARTRIDGE ACTUATED DEVICES AND PROPELLANT ACTUATED DEVICES

REPORTING OF ERRORS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know, Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Commander, US. Army Armament Research, Development and Engineering Center, ATTN: SMCAR-LSB, Picatinny Arsenal, NJ 07806-5000. A reply will be furnished directly to you. Comment or questions concerning individual items must be addressed to the cognizant field activity at Naval Ordnance Station, ATTN: Code 5320C, Indian Head, MD, 20640-5000. Also see Chapter 1, para 1-1.d.



*This manual supersedes TM 43-0001-39, 28 November 1985, including all changes.

# CHAPTER 1

# INTRODUCTION

## 1-1. Purpose

a. This manual is a reference handbook published as an aid in planning, training, and identification of Cartridges/Cartridge Actuated Devices (CADS) and Propellant Actuated Devices (PADs). It is not to be used as authorization for requisitioning, stockage, maintenance, or issue of this materiel.

b. The CADs/PADs data sheets in this manual are arranged by chapters according to their characteristics. Each data sheet uses the item nomenclature as its title, In most cases, a DODIC (in parentheses) will follow the item name, References and cross-references are located in Appendix A thru Appendix H.

c. Throughout this manual, the term CAD shall be synonymous with and collectively represent FSC 1377 cartridges, cartridge actuated devices, and explosive detonating cords used in aircraft/helicopter emergency escape systems, fire extinguisher systems, and equipment/ stores jettison and separation systems. The term PAD shall be synonymous with and collectively represent FSC 1377 rocket catapults and rocket motors used in aircraft escape systems.

d. The Naval Ordance Station (NAVORDSTA), Indian Head, MD 20640-5000 (Code 5320C) has been designated as the Cognizant Field Activity (CFA) for CADS and PADs. Any questions concerning the CADs/PADs described in this publication should be directed to this station, Code 5320C.

## 1-2. Scope

a. This manual contains descriptive and technical data for 1377 class CADS and PADs used by the Army For each CAD/PAD, there are illustrations, descriptions, and technical data related to the CAD/PAD use, characteristics, shipping and storage, and function, plus a list of reference publications,

b. Service life is the period of time a CAD/PAD can be issued and used with an ensured high degree of reliability, Performance of CADs/PADs is influenced by the environment to which they are exposed (e.g., temperature, humidity vibration, shock). For current data on Service life (Shelf & Installed), refer to Appendix B of TB 9-1300-385. Updates to the TB are issued quarterly.

c. Shelf life is the period of time, beginning from date of manufacture, that a CAD/PAD can remain in its hermetically-sealed container and still be serviceable. Shelf life is always computed from date of manufacture available from the lot number.

d. Installed life is the period of time a CAD/PAD is allowed to be used after its hermetically-sealed container is opened, The installed life expiration date shall never exceed the shelf life expiration date as established from the date of manufacture,

e. The shelf life and installed life are the maximum approved limits established for Army use. TB 9-1300-385 shall be consulted prior to installing any CAD/PAD and for periodic inspections of installed CADs/PADs to ensure the lots installed in operational Army aircraft/helicopters/equipment have not been suspended or restricted from use.

f. In the event of differences concerning the shelf lives and installed lives, TB 9-1300-385 shall take precedence,

g. CAD/PAD shelf lives and installed lives are not to be combined. A CAD/PAD is over age is either of these limits is exceeded.

h. Information concerning supply operation, safe handling, and maintenance of these devices can be found in TM 9-1377-200-20&P.

i. Included for the devices in this manual are the Type Classification and Logistics Control Code (LCC). Devices with the following type classifications are included:

(1) Standard (LCC-A, LCC-B)

(2) Contingency (CON)

(3) Limited Procurement

(4) Reclassified Obsolete (OBS) for regular Army use, but used by National Guard or Reserve Limits.

(5) Reclassified OBS for all Army use but used by Marine Corps, Air Force, or Navy.

(6) Reclassified OBS, no uses, but US stocks remain.

(7) Reclassified OBS for all US use; no US stocks remain (foreign use or stock may remain).

j. Numerical values, such as weights, dimensions, etc., are nominal values except when specified as minimum or maximum limits. Actual values may vary slightly from these values due to established tolerance limits. Allowable tolerance limits can be obtained from the drawings indicated in the data sheets.

k. The FSCM is now replaced by CAGE (Commercial and Government Entity) Code in the Tabulated Data section of data sheets.

### 1.3. DOT Shipping Class and Designation

The DOT classification changed effective 21 December 1990. Users of this manual must consult the Joint Hazard Classification System (JHCS) for Ammunition and Explosives (updated quarterly) for DOT Hazardous Materials Description (Proper Shipping Name) and Identification Number (United Nations Serial Number) for each item herein. This data is advisory only for shipments between Depots, user storage, and user facilities. Data in the latest issue of the JHCS will always take precedence unless written authorization to the contrary is obtained from the PICA (AMCCOM Attn: DRSMC-DSD-AS (R), Rock Island, IL 61299). Additional data on this matter is currently being developed and will be incorporated in future changes to this manual as it becomes official.

### 1-4. Disposal

Disposal of CADs/PADs determined to be in a hazardous, damaged, or overaged condition is the responsibility of Explosive Ordnance Disposal (EOD) personnel, A CAD/PAD may only be disassembled by EOD personnel in order to render the unit safe. No other disassembly is authorized, When a unit has been rendered safe by EOD personnel, it shall then be disposed of in accordance with TM 9-1300-206, DARCOM Reg 385-100, or applicable Depot Maintenance Work Requirement (DMWR).

### 1-5. Reference Publications

Refer to Appendix A for reference publications.

# CHAPTER 2

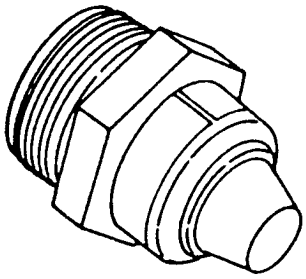
# CARTRIDGES
# AIRCRAFT FIRE EXTINGUISHER

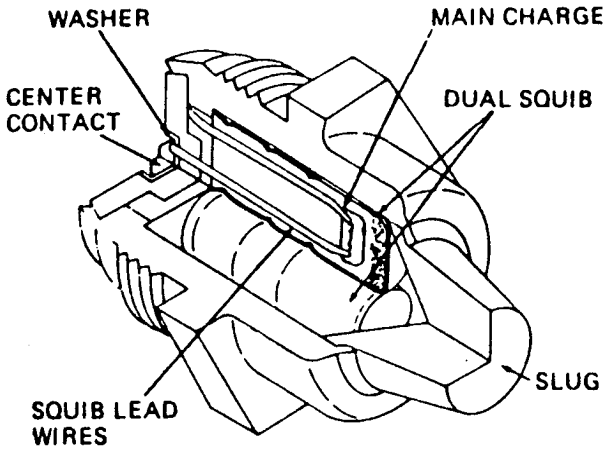
## 2-1. General

a. This chapter contains descriptive and technical data pertaining to the aircraft fire extinguisher cartridges used in Army aircraft/helicopter fire extinguishing systems.

b. The cartridges described in this chapter are electrically initiated, These cartridges shall not be resistance-checked either prior to or after installation in the device of intended application. Prior to installation of these cartridges, all circuits of the actuating system shall be open.

## CARTRIDGE, AIRCRAFT FIRE EXTINGUISHER (M182)



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AR 4253

**Type Classification:**

Refer to associated aircraft subsystem.

**Use:**

To release fire extinguishing fluid into the area surrounding an aircraft engine in the event of a fire.

**Description:**

The cartridge consists of a machined brass casing with a hexagonal midsection and a threaded end enclosing a pair of electrically-fired DuPont E-92 type squibs, placed side by side. The output end of the cartridge is crimped over a brass slug,

Each squib is a self-contained unit contained in a thin shell of bronze alloy, 0.272-inch in diameter, and with an integrally-formed convex head.

In the assembly one lead wire of each squib is brought through a phenolic insulator and soldered to a common center contact, The insulator is sealed in place by crimping the casing over its edge, The other wire of each squib is brought into electrical contact with the cartridge casing. Joined in parallel to common electrical contacts, both squibs fire simultaneously.

Each squib creates sufficient force to rupture the frangible disc in the valve body of the container.

The cartridge is seated in the firing head of the valve body fixed to the underside of the extinguishing fluid container, This equipment is secured within an access pocket in the wing adjacent to the engine area it is to protect.

**Functioning**

An insulated plug, attached to the firing head of the container, connects with the aircraft electric supply and to a firing switch in the pilot's compartment. When the firing switch is actuated, electric current causes the squibs to fire, creating gas pressure which propels the slug toward the seal disc, The slug pierces the segmented frangible seal disc in the exit valve body. The fluid ($CF_2Br_2$ or $CF_3Br$), which has been held under gas pressure (nitrogen) in the container, is thereby released, and flows from the fluid container in the wing access pocket to the distributing nozzles in the engine area.

Gas, developed by the extinguishing agent, reduces the oxygen content in the engine area to a point where combustion cannot be supported, thus quenching the fire.

Recommended firing current is 8 amperes.

**Tabulated Data**

NSN ---------- 1377-00-756-1384
DODIC ---------- M182
Drawing number ---------- 2518519
Vendor CAGE Code and
part number ---------- (33525) 895188
replaces 841155
Item weight ---------- 0.17 lb (0,08 kg)
Diameter ---------- 1 in. (2.54 cm)
Length ---------- 1.38 in. (3.5 cm)
Method of actuation --------- Electrical
Body material ---------- Brass
Propellant/explosive material:
Type ---------- Lead azide, Type II
Weight ---------- 0.00029 lb (2.03 grains)

**Performance:**

**Packaging:**

Inner Container:
Reference ---------- MIL-C-10464
Type ---------- Hermetically-sealed metal container
Dimensions ---------- 3 in. dia x 2
Items per package ---------- 2 (es)
Weight ---------- 1.25 lb

Outer Container:
Reference ---------- SPI (AM) P-1377-M182
Type ---------- PPP-B-1672-Type II, Style D
Dimensions ---------- 18 in. x 12 in. x 4.5 in.
Weight ---------- 2.5 lb
Cube ---------- 0.56 cu ft

**Temperature Limits:**

Upper ---------- +160°F (71°C)
Lower ---------- -65°F (-54°C)

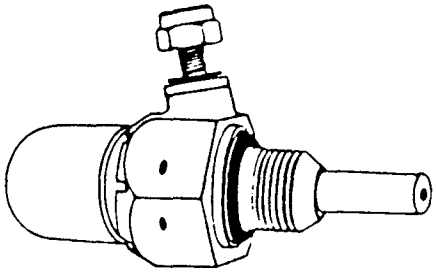
**Shipping and Storage Data:**

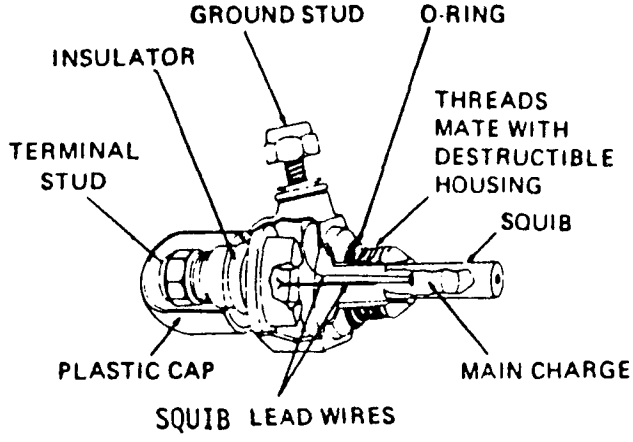
Quantity distance class ----- 1.4
Storage compatibility
group ---------- s
DOT shipping class ---------- c
DOT designation ---------- ACTUATING CARTRIDGES, EXPLOSIVE, FIRE EXTINGUISHER, HANDLE CAREFULLY

**References:**

TM 9-1377-200-20&P
TM 55-1520-209-23
TM 55-1520-227-23
TM 55-1520-240-23
TM 55-1015-204-23
TM 55-1510-213-23
TB 9-1300-385, App B

## CARTRIDGE, AIRCRAFT FIRE EXTINGUISHER: (M193)



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AR 4254

**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To release fire extinguishing agent into the area surrounding an aircraft engine in the event of a fire.

**NOTE**

To be replaced by MH92.

**Description:**

The aircraft fire extinguisher cartridge which is electrically initiated, consists of an aluminum hexagonal midsection with a threaded end, enclosing an electrically fired squib explosive. Two threaded electrical connectors, one of which is insulated from the body of the cartridge, provides the means for completing the electrical circuit through a grounded bridgewire to the aircraft electrical system.

The aircraft fire extinguisher cartridge is threaded into the discharge valve body of the fire extinguishing agent container, This equipment is secured within an access area above and between the engines.

**Functioning**

When the fire control switch is operated, electric current causes the squib to fire, creating gas pressure which separates the split sleeve from the housing. When the split sleeve separates, pressure from the fire extinguisher agent then is released and flows from the container to the distributing nozzles in the engine area.

Gas developed by the extinguishing agent reduces the oxygen content in the engine area to a point where combustion cannot be supported, thus quenching the fire.

**Tabulated Data**

NSN ---------- 1377-00-930-9390
DODIC ---------- M193
Drawing number ---------- 2519614
Vendor (CAGE code) and
part number ---------- (05167) 13083-5
Item weight ---------- 0.06 lb (0.03 kg)
Diameter ---------- 0.906 in. (2.54 cm)
Length ---------- 2.5 in. (6.4 cm)
Method of actuation --------- Electrical
Body material ---------- Aluminum
Propellant/explosive material:
Type ---------- Lead Azide, Type II
Weight ---------- 0.4409 lb. (3086.3 grains)

**Performance:**

Bridgewire resistance ------- .90 ohm to 1.40 ohm
Minimum pressure:
-65°F (-54°C) ---------- 475 psi in 6 ms
+70°F (+21°C) ---------- 600 psi in 4 ms
+ 160°F (+71°C) ---------- 670 psi in 4 ms

**Packaging**

Inner Container:
Reference ---------- PPP-C-96
Type ---------- Hermetically sealed metal container
Dimensions ---------- 2-1/2 in. x 7/8 in. dia
Items per package ---------- 4
Weight ---------- .75 lb
Outer Container:
Reference ---------- PPP-B-1672
Type ---------- Wood box
Dimensions ---------- .66 x .66x 1.00 ft
Weight ---------- 2.5 lb
Cube ---------- .440 ft

**Temperature Limits:**

Upper ---------- +160°F(+71°C)
Lower ---------- -65°F (-54°C)

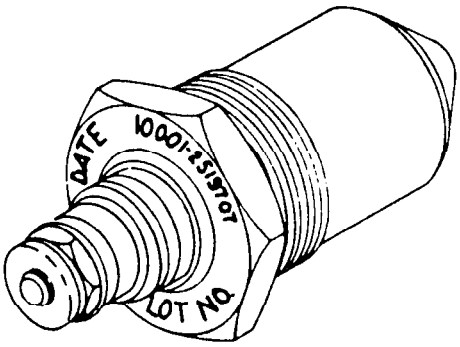
**Shipping and Storage Data:**

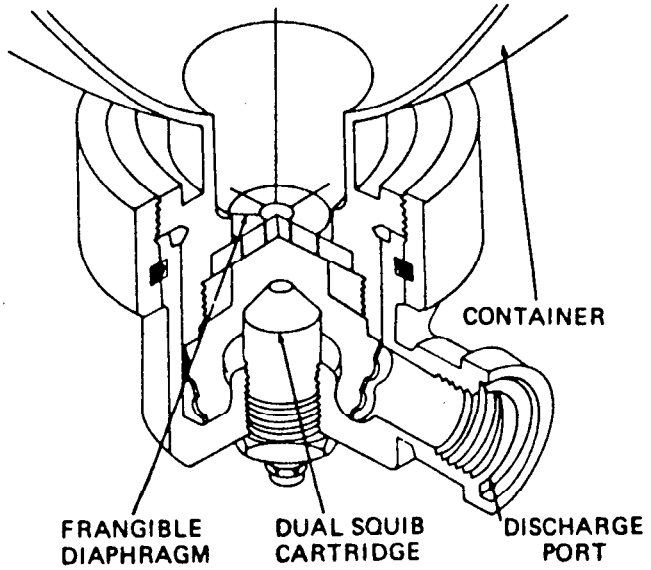
Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- ACTUATING CARTRIDGES, EXPLOSIVE, FIRE EXTINGUISHER, HANDLE CAREFULLY

**References:**

TM 9-1377 -200 -20&P
TM 55-1520-204-23
TM 55-1520-213-23
TM 55-1520-209-23
TM 55-1510-227-23
TM 55-1510-240-23
TB 9-1300-385, Appendix B

## CARTRIDGE, AIRCRAFT FIRE EXTINGUISHER: (M232)

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AR 4255

### Type Classification

Refer to aircraft subsystem.

**Use:**

To release fire extinguishing fluid into the area surrounding an aircraft engine in the event of a fire.

**Description:**

The cartridge consists of a hexheaded aluminum casing, and a threaded end, enclosing a pair of electrically-fired Dupont E-92 type squibs, placed side by side. The output end of the cartridge is crimped over a brass slug. One lead wire of each squib is brought through a phenolic insulator and soldered to a common center contact. The insulator is sealed in place by crimping the casing over its edge. The other wire of each squib is brought into electrical contact with the cartridge case, Both squibs fire simultaneously.

**Functioning**

An insulated plug, attached to the firing head of the container, connects with the aircraft electric supply and to a firing switch in the pilot's compartment. When the firing switch is actuated, electric current causes the squibs to fire, creating gas pressure which propels the slug toward the seal disc, The slug pierces the segmented frangible seal disc in the exit valve body. The fluid (CF2Brs or CF3Br), which has been held under gas pressure (nitrogen) is released. The fluid flows from the container in the wing access pocket to the distributing nozzles in the engine area.

Gas, developed by the extinguishing agent, reduces the oxygen content in the engine area to a point where combustion cannot be supported, thus quenching the fire.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-257-1359 |
| NSN | 1377-00-087-7103 |
| NSN | 1377-00-824-5858 |
| DODIC | M232 |
| Drawing number | 2519707/ 1660AS200 |
| Vendor (CAGE code) and part number | 873364 |
| Item weight | 0.034 lb (0.0154 kg) |
| Diameter | 1 in. (2.54 cm) |
| Length | 2.560 in. (6.50 cm) |
| Method of actuation | Electrically fired 8 amperes |
| Body material | Aluminum |
| Propellant/explosive material: | |
| Type | Lead Azide |
| Weight | 0.00037 lb (2.6 grains) |

**NOTE**

M232 P/N 1660AS200 is a replacement for M232 P/N 2519707, NSN 1377-00-824-5858/1377-00-087-7103, The external physical characteristics are identical except for the identification markings. Continued use of M232 P/N 2519707 is authorized until stocks are exhausted.

**Performance:**

Bridgewire resistance is 0.025 ohms minimum and 0.100 maximum, The cartridge shall provide sufficient energy to extrude the lead crusher to a minimum length of 0.224 inches.

| | |
|---|---|
| Firing Temperature Limits: | |
| Upper | +160°F (+71°C) |
| Lower | -65°F (-54°C) |

**Packaging**

| | |
|---|---|
| Inner Container: | |
| Reference | MIL-C-10464 |
| Type | Hermetically sealed metal container |
| Dimensions | |
| Items per package | 2 |
| Outer Container: | |
| Reference | PPP-B-621 Class 2 Style 4 |
| Type | Wood box |
| Dimensions | 4.75 x 3.5x 3.5 in. (12.07 X 8.89X 8.89 cm) |
| Weight | 0.3 lb (0.136 kg) |
| Cube | 0.0337 cu ft |

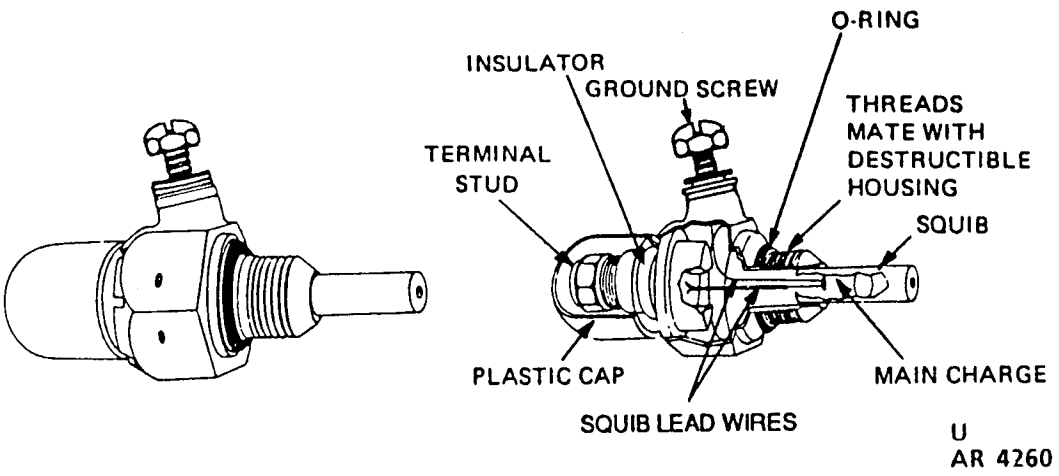
**Shipping and Storage Data:**

| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | S |
| DOT shipping class | C |
| DOT designation- | ACTUATING CARTRIDGES, EXPLOSIVE FIRE EXTINGUISHER, HANDLE CAREFULLY |

**References:**

TM 9-1377-200-20&P
TM 55-1520-227-23
TM 55-1520-240-23
TB 9-1300-385, Appendix B

## CARTRIDGE, AIRCRAFT FIRE EXTINGUISHER CCU-90/A (MH92)




**Type Classification:**

Refer to aircraft subsystem

**Use:**

To release fire extinguishing agent into the engine compartment on the UH-60 helicopter in the event of a fire.

**Description:**

The aircraft fire extinguisher cartridge is electrically initiated. It consists of an aluminum hexagonal mid-section with a threaded end enclosing an electrically fired squib.There are two threaded electrical connectors, one is insulated from the body of the cartridge and provides a path for completing the electrical circuit. The other connection is connected to ground.

**Functioning**

The aircraft fire extinguisher cartridge is threaded into the discharge valve body of the fire extinguishing agent container. Switches for completing the electrical circuit are located in the aircraft cockpit. Placing the switch in the fire position completes the electrical circuit, thus firing the squib and releasing the fire extinguishing agent.

**Tabulated Data**

NSN ..... 1377-01-185-2622
DODIC ---------- MH92
Drawing number ---------- 1512AS105
Vendor (CAGE code) and
part number ---------- (30003) 39040020
Item weight ---------- 0.066 lb (0.03 kg)
Diameter ---------- 0.875 in, (2.22, cm)
Length ---------- 2.500 in. (6.35 cm)
Method of actuation --------- Electrically fired
Body material ---------- Aluminum
Propellant/explosive material:
Type ---------- RDX
Weight ---------- 0.000441 lb (3,0865 grains)

**Performance:**

Bridgewire resistance is 0.90 ohms minimum and 1.40 ohms maximum. Pressure ranges from 475 psi at -65°F to 670 psi at + 160°F. Ignition delay shall not exceed 25 milliseconds.

Firing Temperature Limits:
Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Packaging**

Inner Container:
Reference ---------- MIL-C-10464
Type ---------- Hermetically sealed metal container
Dimensions ---------- 6 x 2-5/8 dia
Items per package ---------- 4
Weight ---------- .50
Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiberboard box
Dimensions ---------- 1.54 X 1.04X .27 ft
Weight ---------- 2.5 lb
Cube ---------- .560 ft

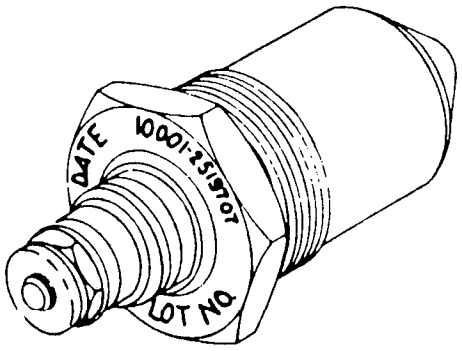
**Shipping and Storage Data:**

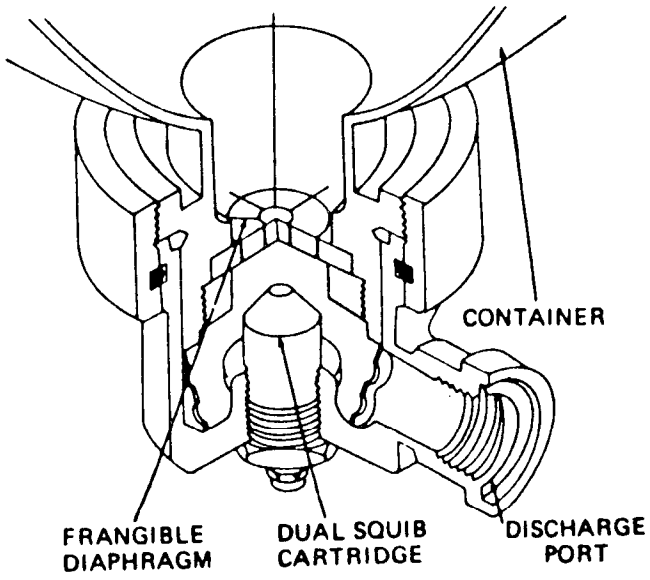
Quantity distance class ----- 1.4
Storage compatibility
group ---------- s
DOT shipping class ---------- C
DOT designation ---------- Actuating Cartridge, Explosive Fire Extinguisher, Handle Carefully

**References:**

TM 9-1377-200-20&P
TM 55-1520-209-23
TM 55-1520-227-23
TM 55-1520-240-23
TM 55-1015-204-23
TM 55-1510-213-23
TB 9-1300-385, Appendix B

## CARTRIDGE, AIRCRAFT FIRE EXTINGUISHER (MT20)

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AR 4255

**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To release fire extinguishing fluid into the area surrounding an aircraft engine in the event of a fire in the UH-60 helicopter.

**Description:**

The cartridge consists of a hexheaded aluminum casing, and a threaded end, enclosing a pair of electrically-fired Dupont E-92 type squibs, placed side by side, The output end of the cartridge is crimped over a brass slug. One lead wire of each squib is brought through a phenolic insulator and soldered to a common center contact. The insulator is sealed in place by crimping the casing over its edge, The other wire of each squib is brought into electrical contact with the cartridge case. Both squibs fire simultaneously.

**Functioning**

An insulated plug, attached to the firing head of the container, connects with the aircraft electric supply and to a firing switch in the pilot's compartment. When the firing switch is actuated, electric current causes the squibs to fire, creating gas pressure which propels the slug toward the seal disc. The slug pierces the segmented frangible seal disc in the exit valve body. The fluid (CF2Brs or CF3Br), which has been held under gas pressure (nitrogen) is released. The fluid flows from the container in the wing access pocket to the distributing nozzles in the engine area.

Gas, developed by the extinguishing agent, reduces the oxygen content in the engine area to a point where combustion cannot be supported, thus quenching the fire.

**Tabulated Data:**

NSN ..... 1377-01-263-3627
DODIC ---------- MT20
Drawing number ---------- 1512AS105
Vendor (CAGE code) and
part number ---------- 897899
Item weight ---------- 0.034 lb (0.0154 kg)
Diameter ---------- 1 in. (2.54 cm)
Length ---------- 2.560 in. (6.50 cm)
Method of actuation --------- Electrically fired 8 amperes
Body material ---------- Aluminum
Propellant/explosive material:
Type ---------- Lead Azide
Weight ---------- 0.00037 lb (2.6 grains)

**Performance:**

Bridgewire resistance is 0.025 ohms minimum and 0.100 ohms maximum. The cartridge shall provide sufficient energy to extrude the lead crusher to a minimum length of 0.224 inches.

Firing Temperature Limits:
Upper ---------- + 160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Packaging**

Inner Container:
Reference ---------- MIL-C-10464
Type ---------- Hermetically sealed metal container
Dimensions ----------
Items per package ---------- 2
Outer Container:
Reference ---------- PPP-B-621 Class 2 Style 4
Type ---------- Wood box
Dimensions ---------- 4.75 x 3.5 x 3.5 in (12.07 X 8.89X 8.89 cm)
Weight ---------- 0.3 lb (0.136 kg)
Cube ---------- 0.0337 cu ft

**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- ACTUATING CARTRIDGE, EXPLOSIVE FIRE EXTINGUISHER, HANDLE CAREFULLY

**References:**

TM 9-1377-200-20&P
TM 55-1520-227-23
TM 55-1520-240-23
TB 9-1300-385, Appendix B

# CHAPTER 3

# CUTTERS

## 3-1. General

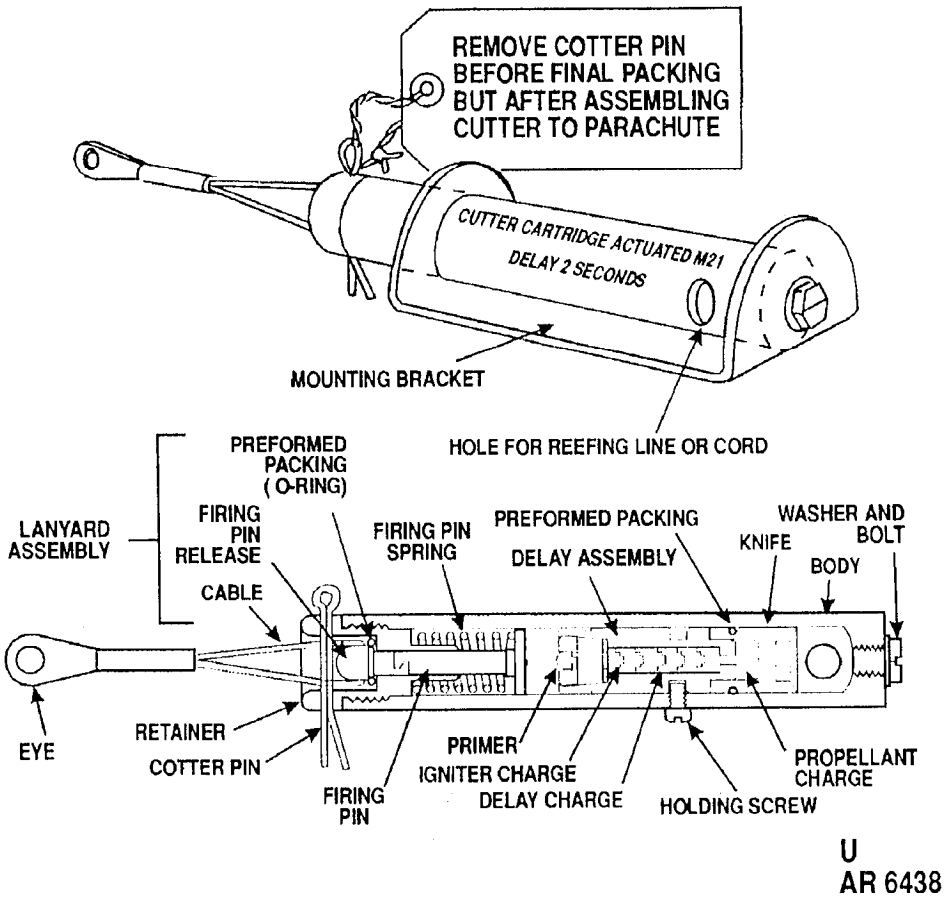
A cutter is a cartridge or propellant actuated device that is used in aerial delivery systems for cargo, helicopter cargo and rescue hoist cable systems and drone recovery systems. Cutters are classified in accordance with the following characteristics: (1) Method of Actuation - mechanical or electrical, (2) Function Time - nondelay or delay.

## 3-2. Operation

a. Actuation of the mechanical cutter is accomplished by applying a pull force to the cable or lanyard with sear attached, The lanyard sear is engaged in the firing pin; therefore, the pull of the lanyard applies a load to the firing pin spring. Compression of the firing pin spring and the release of the firing pin are accomplished with one motion when the firing pin moves rearward. The sear moves outward to the cutter body section having an enlarged internal diameter, which then permits the sear to move sideward to release the firing pin. The firing pin is propelled forward under the action of the spring force and strikes the primer, which ignites the delay element, if applicable, then the propellant. Under the force of the propellant gas pressure, the cutter blade is propelled onto the anvil severing the wires or cable.

b. Function of electrically or mechanically initiated cutters is basically the same. The cutters have a specific nondelay or delay time and shall be used only for their designed application.

## CUTTER, CARTRIDGE ACTUATED: M21 (M500)




**Type Classification:**

ATC-S LCC-A

To sever a nylon reefing line which allows the parachute to fully deploy The cutter is installed in a mounting bracket which is attached to the parachute.

**Description:**

The M21 reefing line cutter is a cartridge actuated, one shot, disposable mechanical unit with the cartridge sealed internally, Major components consist of case, firing pin assembly, lanyard, knife assembly delay assembly and cotter pin.

**Functioning:**

A drogue chute is used to pull the load out of the delivery aircraft and to deploy the main chute, which inflates in a reefed configuration The deployment of the main chute applies a tensile force to the lanyard assembly, which is attached to the firing pin. Compression of the firing pin spring and release of the firing pin are accomplished with the same motion. The potential energy stored in the spring propels the firing pin forward, striking the primer. The flash of the primer ignites the 2-second pyrotechnic delay mix which, in turn, sets off the propellant charge behind the cutter blade assembly.

Under the force of the propellant gas pressure, the cutter blade separates from the knife-delay assembly and is propelled forward in the bore of the housing The impact of the blade on the anvil severs the nylon reefing line inserted in the cutter, allowing full deployment of the main parachute.

## Tabulated Data:

| | |
|---|---|
| NSN | 1377-00-060-0885 |
| DODIC | M500 |
| Drawing number | 8875978 |
| Vendor (CAGE code) and part number | (19200) 8875978 |
| Item weight | |
| Diameter | 0.75 in. (1.905 cm) |
| Length | 6.0 in. (15.24 cm) |
| Method of actuation | Manual percussion primer |
| Body material | Aluminum alloy/ carbon steel blade |
| Propellant/Explosive Material: | |
| Type | Bullseye black powder |
| Weight | 0.0040 lb (28 grains) |
| Printer | Percussion Primer, M42 |

## Performance:

| | |
|---|---|
| Delay Time: | |
| -65°F | 3.0 sec maximum |
| +70°F | 1.6 sec minimum<br>2.4 sec maximum |
| +160°F | 1.2 sec minimum |

## Packaging:

| | |
|---|---|
| Inner Container: | |
| Reference | MIL-P-25732/8863435 |
| Type | Fiberboard box |
| Dimensions | PPP.B-636 |
| Items per package | 80 |
| Weight | 40 lb |
| Outer Container: | |
| Reference | 8863436 |
| Type | Wirebound wood box Type II Class 2 MIL-B-2472 |
| Dimensions | 12-11/16 x 11-3/8 x 7 in. |
| Weight | 50 lb |
| Cube | 0.6 cu ft |

## Temperature Limits:

| | |
|---|---|
| Upper | +160°F (+71°C) |
| Lower | -65°F (-54°C) |

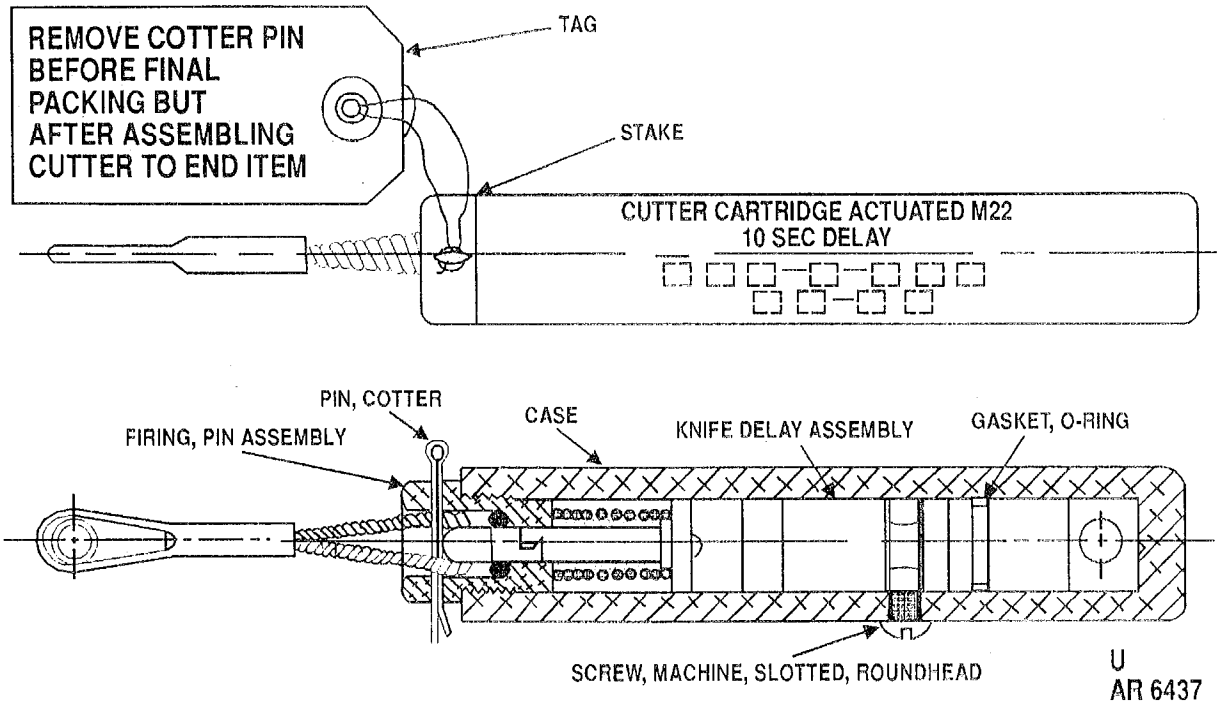
## Shipping and Storage Data:

| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | S |
| DOT shipping class | C |
| DOT designation | EXPLOSIVE CABLE CUTTER, HANDLE CAREFULLY KEEP FIRE AWAY |
| UN Code | 0070 |
| UN Proper shipping name | Cutter, Cable, Explosive |

## References:

TM 9-1377-200-20&P
TM 10-1670-215-23
TB 9-1300-385, App B

## CUTTER, CARTERIDGE ACTURATED: M22 (M504)




**Type Classification:**

ATC-S LCC-A

### Use:

To sever a nylon reefing line which allows the parachute to fully deploy, The cutter is installed in a mounting bracket which is attached to the parachute.

### Description:

The M22 reefing line cutter is a cartridge actuated, one shot, disposable mechanical unit with the cartridge sealed internally Major components consist of case, firing pin assembly, lanyard, knife assembly delay assembly, and cotter pin.

**Functioning:**

A drogue chute is used to pull the load out of the delivery aircraft and to deploy the main chute, which inflates in a reefed configuration. The deployment of the main chute applies a tensile force to the lanyard assembly, which is attached to the firing pin. Compression of the firing pin spring and release of the firing pin are accomplished with the same motion. The potential energy stored in the spring propels the firing pin forward, striking the primer. The flash of the primer ignites the 10-second pyrotechnic delay mix which, in turn, sets off the propellant charge behind the cutter blade assembly.

Under the force of the propellant gas pressure, the cutter blade separates from the knife-delay assembly and is propelled forward in the bore of the housing. The impact of the blade on the anvil severs the nylon reefing line inserted in the cutter, allowing full deployment of the main parachute.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-00-060-0886 |
| DODIC | M504 |
| Drawing number | 8875979 |
| Vendor (CAGE code) and part number | (19203) |
| Item weight | |
| Diameter | 0.75 in. (1.905 cm) |
| Width | 1.07 in. |
| Height | 8.85 in. |
| Length | 5.1 in, |
| Method of actuation | Manual percussion primer |
| Body material | Aluminum alloy/ carbon steel blade |
| Propellant/Explosive Material: | |
| 'hype | Bullseye black powder |
| Weight | 0.00043 lb (3 grains) |
| Net explosive wt (incl. delay elements) | 0.0064 lb |
| Primer | Percussion Primer, M42 |

Performance:

| | |
|---|---|
| Delay Time: | |
| -65°F | 15 sec maximum |
| +70°F | 10 sec nom, |
| +160°F | 8 sec minimum |

Packaging:

| | |
|---|---|
| Inner Container: | |
| Reference | 754020103653 |
| Type | Fiberboard box |
| Dimensions | 6 x 4.75 in. |
| Items per package | 1 |
| Weight | 3 lb |
| Outer Container: | |
| Reference | 8863436 |
| Type | Wirebound wood box Type II Class 2 MIL-B-2427 |
| Dimensions | 12-11/16 X 11-3/8 x 7 in. |
| Weight | 50 lb |
| Cube | 0.6 cu ft |

**Temperature Limits:**

| | |
|---|---|
| Upper | +160°F (+71°C) |
| Lower | -65°F (-54°C) |

**Shipping and Storage Data:**

| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | S |
| DOT shipping class | C |
| DOT designation | EXPLOSIVE CABLE CUTTER, HANDLE CAREFULLY. KEEP FIRE AWAY |
| UN Code | 0070 |
| UN Proper shipping name | Cutter, Cable, Explosive |

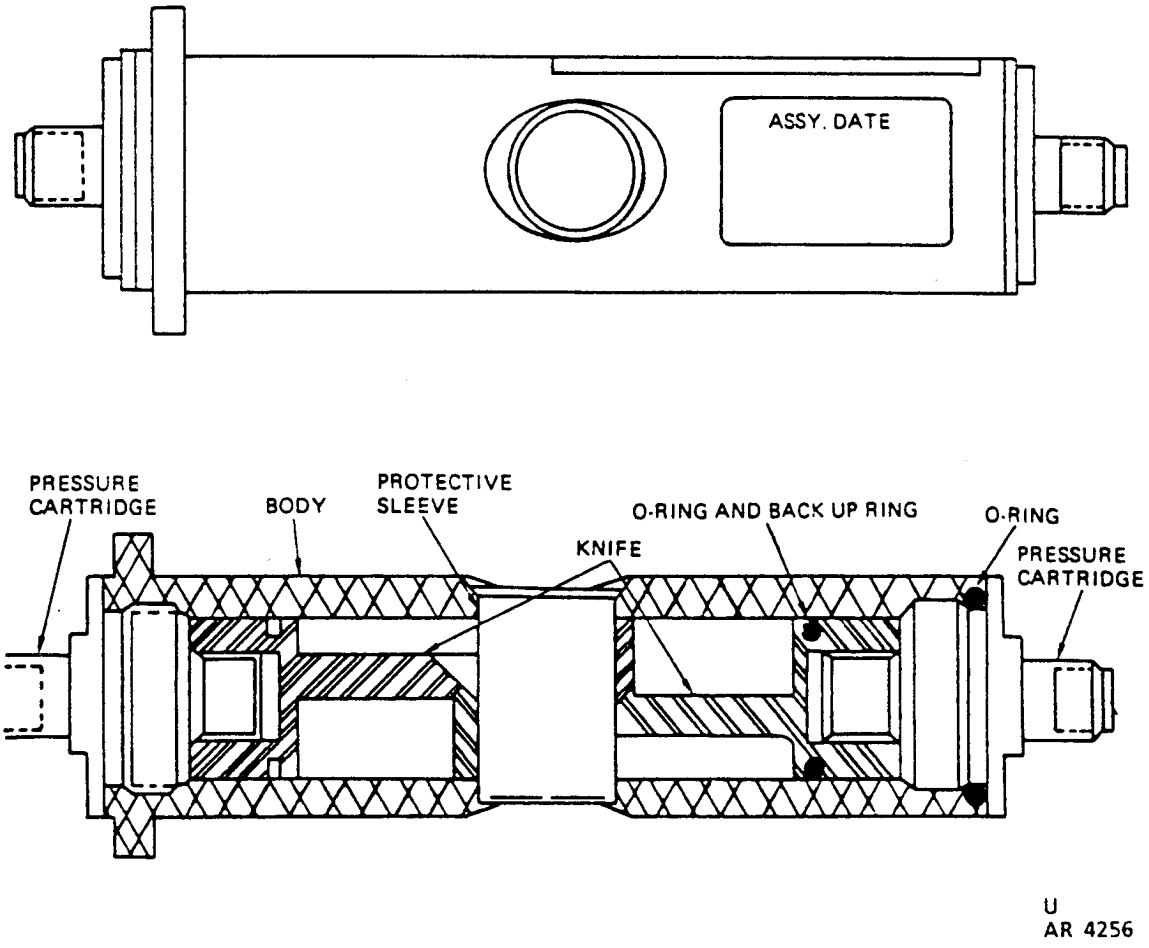
**References:**

TM 9-1377-200-20&P
TM 10-500/TO 13C7-1-5
TB 9-1300-206/TO11A-1-37



*U.S. G.P.O.:1994-546-043:80739

## CUTTER, CARTRIDGE ACTUATED: (M554)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To sever stainless steel cable that has a breaking strength of 25,000 lbs minimum.

**Description:**

The cable cutter consists of an aluminum body two steel knives, two Holex 8830-2 cartridges, a protective sleeve, a cartridge O-ring, and a knife O-ring with a backup ring.

**Functioning**

Firing of the electrically initiated cartridges produces gas pressure within the cutter body which drives two knives onto the cable, cutting the cable.

**Tabulated Data:**

NSN ---------- 1377-00-412-4377
DODIC ---------- M554
Drawing number ---------- 14195-1
Vendor (CAGE code) and
part number ---------- (96603) 14195-1
Item weight ---------- 1.26 lb (0.6 kg)
Diameter ---------- 2.0 in, (5.08 cm)
Length ---------- 7.0 in, (17.78 cm)
Method of actuation --------- Electrically fired
Body material ---------- Aluminum
Propellant/explosive material:
Type ---------- HI TEMP
Weight ---------- 0.00195 lb (13.658 grains)

**Performance:**

No-Fire ---------- 1.0 amp max for 5 minutes
Bridgewire resistance ------- 1.05 + 0.05 ohms
Insulation resistance -------- 2 megohms min at 500 Vdc
Firing current ---------- 4.5 amps min

**Firing Temperature Limits:**

Upper ---------- +125°F (+52°C)
Lower ---------- -65°F (-54°C)

**Packaging**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag
Dimensions ---------- 4 x 12
Items per package ---------- 1
Weight ---------- 1.25 lb
Outer Container:
Reference ---------- PPP-B-1672
Type ---------- Fiberboard box
Dimensions ---------- .70 x .70 x 1.04 ft
Weight ---------- 2.5 lb
Cube ---------- .509 cu ft

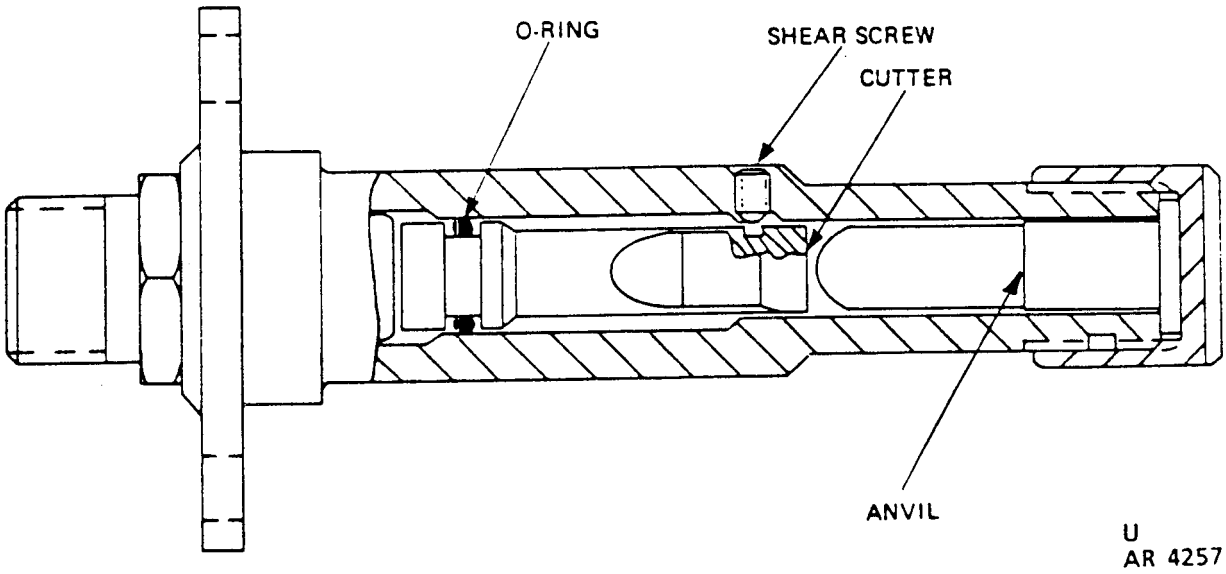
**Shipping and Storage Data**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- EXPLOSIVE CABLE CUTTER, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-217-XX-1-23
TM 55-1520-217-XX-2-23
TB 9-1300-385, App B.

## CUTTER, CARTRIDGE ACTUATED: P/N 303104-1 (MU02)




**Type Classification:**

Standard.

**Use:**

UH-1 HELICOPTER or as otherwise applied.

**Description:**

The cutter contains an electrically fired cartridge, shear screw, cutter, body, and anvil.

**Functioning:**

Firing of the electrically initiated pressure cartridge produces sufficient gas pressure to overcome the shear screw. The cutter blade is driven onto the anvil cutting the cable that passes through the cutter body.

**Tabulated Data:**

NSN ..... 1377-01-087-5166
DODIC ---------- MU02
Drawing number ----------
Vendor (CAGE code) and
part number ---------- (22567) 303104-1
(82402) 42277E182
Item weight ---------- 0.25 lb (0.1134 kg)
Diameter ---------- 0.625 in. (1.59 cm)
Length ---------- 2.99 in. (7.59 cm)
Method of actuation --------- Electrically fired
Bode material ---------- Steel
Propellant/explosive material:
Type ---------- Bullseye black powder
Weight ---------- 0.000243 lb (1.7 grains)

**Performance:**

Bridgewire resistance ------- .9 to 1.1 ohm

**Firing Temperature Limits:**

Upper ---------- +165°F (+74°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-C-10464
Type ---------- Type I hermetically sealed metal container
Dimensions ---------- 2.25 x 2.25 x 4.50 in.
Items per package ---------- 1
Weight ---------- .25 lb

**Outer Container:**

Reference ---------- PPP-B-1672
Type ---------- II
Dimensions ---------- 1.54 x 1.04x .35 ft
Weight ---------- 2.50 lb
Cube ---------- .560 cu ft

**Shipping and Storage Data:**

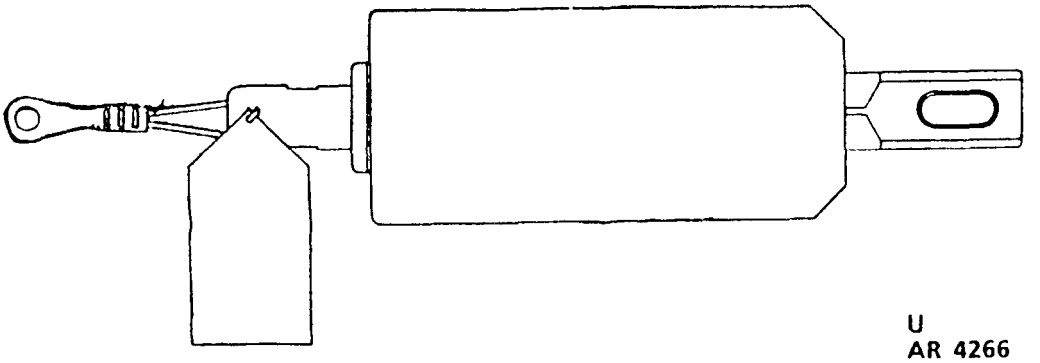
Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C

DOT designation ---------- EXPLOSIVE CABLE CUTTER, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-210-23 (Series)
TM 55-1520-237-23
TB 9-1300-385, App B

## CUTTER, ASSEMBLY P/N FTL 3648-2 (MU03)



U
AR 4266

**Type Classification:**

Refer to aircraft subsystem.

**Use:**

Designed for interim high altitude parachute delivery systems.

**Description:**

The cutter contains a thermal battery electrically initiated cartridge, a mechanical firing pin, steel cutter, and aluminum body.

**Functioning:**

When the ASPSU is dropped from the aircraft, a mechanical firing pin mechanism is actuated by a pull from a static line attached to the aircraft. This action cocks and releases a firing pin, which impacts the percussion primer of the thermal battery. The thermal battery fires and produces 19 volts within 0.500 second and maintains a voltage between 19 and 35 volts for a minimum of 120 seconds, with a 28-milliampere current drain. This energy is stored in capacitors within the cutter and altitude sensor modules until the preselected altitude is reached. At that time the firing circuit is triggered, and an electric current pulse of at least 7.65 amperes is applied to the cartridge-actuated cutter. The cutter then fires, severing the 9,000-pound (40.03kN)-test woven nylon line. The G-12 main parachute is then allowed to open.

**Tabulated Data**

NSN ---------- 1377-01-064-4927
DODIC ---------- MU03
Drawing number ---------- 11-1-3043
Vendor (CAGE code) and
part number ---------- (26687) FTL 3648-2
Item weight ---------- 1.81 lb (0.82 kg)
Diameter ----------
Length ----------
Method of actuation --------- Electric
Body material ---------- Steel
Propellant/explosive material:
Type ---------- HI TEMP
Weight ---------- 0.0004 lb (2.8 grains)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-81705
Type ---------- Hermetically sealed antistatic plastic bag
Dimensions ---------- 11 x 3.5 x 3.5 in. (27.9 x 8.9 x 8.9 cm)
Items per package --------- 1
Weight ---------- 4.688 lb
Outer Container:
Reference ---------- PPP-B-621
Type ---------- Wood Box
Dimensions ----------
Weight ----------
Cube ----------

**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- EXPLOSIVE CABLE CUTTER, HANDLE CAREFULLY, KEEP FIRE AWAY

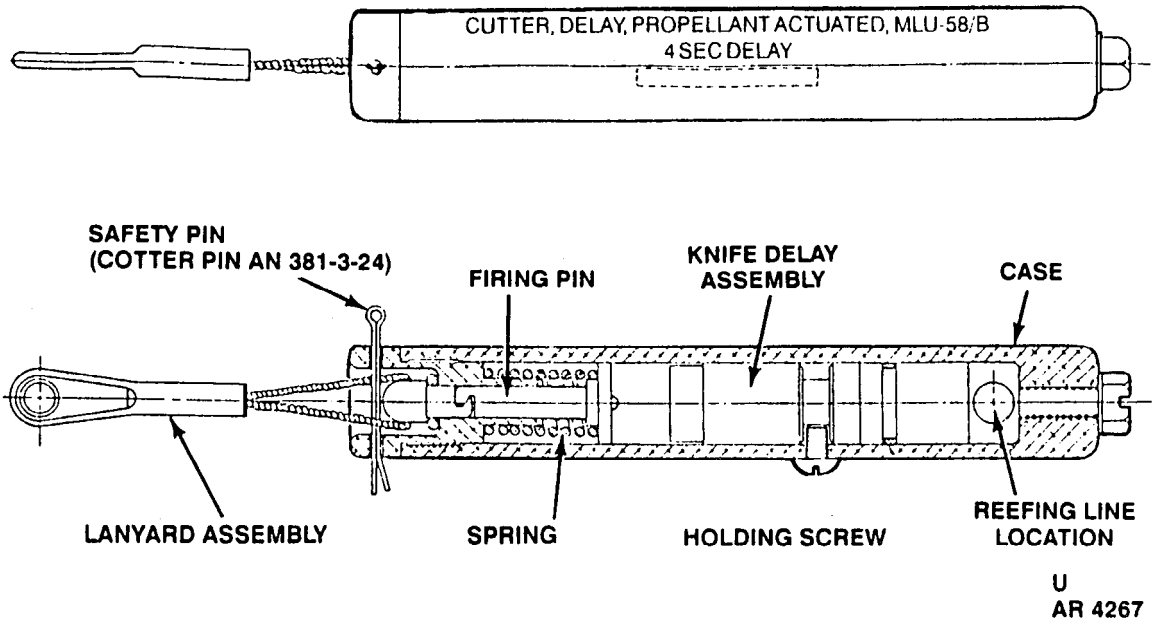
**Temperature Limits:**

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**References:**

TM 9-1377-200-20&P
TB 9-1300-385, App B

## CUTTER, DELAY, PROPELLANT ACTUATED: (MU11)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To sever a nylon reefing line which allows the parachute to fully deploy The cutter is installed in a mounting bracket which is attached to the parachute.

**Description:**

The MU11 reefing line cutter is a cartridge actuated, one shot, disposable mechanical unit with the cartridge sealed internally. Major components consist of case, firing pin assembly, lanyard, knife assembly, delay assembly and cotter pin.

**Functioning:**

A drogue chute is used to pull the load out of the delivery aircraft and to deploy the main chute, which inflates in a reefed configuration. The deployment of the main chute applies a tensile force to the lanyard assembly which is attached to the firing pin. Compression of the firing pin spring and release of the firing pin are accomplished with the same motion. The potential energy stored in the spring propels the firing pin forward, striking the primer. The flash of the primer ignites the four-second pyrotechnic delay mix which, in turn, sets off the propellant charge behind the cutter blade assembly.

Under the force of the propellant gas pressure, the cutter blade separates from the knife-delay assembly and is propelled forward in the bore of the housing. The impact of the blade on the anvil severs the nylon reefing line inserted in the cutter, allowing full deployment of the main parachute.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-288-0418 |
| DODIC | MU11 |
| Drawing number | 6261278 |
| Vendor (CAGE code) and part number | 11862 |
| Item weight | .7 lb |
| Diameter | 0.75 in. (1.905 cm) |
| Length | 6.0 in. (15.24 cm) |
| Method of actuation | Manual percussion primer |
| Body material | Aluminum alloy/carbon steel blade |

Propellant/explosive material:
- Type ---------- Bullseye black powder
- Weight ---------- 0.0040 lb (28 grains)

**Performance:**

Delay Times:
- -65°F ---------- 3.0 sec mm
- +70°F ---------- 1.6 sec min 2.4 sec max
- + 160°F ---------- 1.2 sec min

**Packaging:**

Inner Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiberboard box
- Dimensions ----------
- Items per package ---------- 80
- Weight ---------- 43 lb

Outer Container:
- Reference ---------- MIL-B-2427
- Type ---------- Wood box
- Dimensions ---------- 15-13/16 x 12-15/16 in.
- Weight ---------- 50 lb
- Cube ----------

**Temperature Limits:**

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- EXPLOSIVE CABLE CUTTER, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 10-1670-215-23
TB 9-1300-385, App B

# CHAPTER 4

# TIME DELAY CARTRIDGES

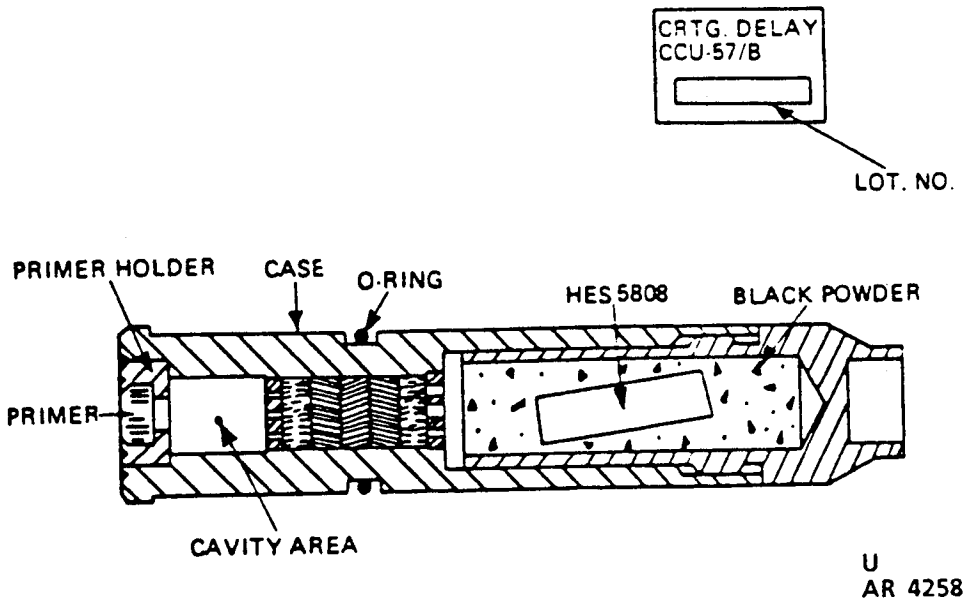
## 4-1. General

a. Delay cartridges consist of a body a primer seat, a primer, a time delay charge, an output charge, and a closure disc. The composition and the measure of the delay element (charge) determine the length of the delay.

b. Time delay cartridges are designed to function at specific delay times and shall only be used for designed application.

c. This chapter contains technical data for the time delay cartridges used by the Army.

## CARTRIDGE, DELAY CCU-57/B (MF35)




**Type Classification:**

ATC-S LCC-A

**Use:**

The CCU-57/B (MF35) delay cartridge is sealed in the TCU-1B thruster. The TCU-1B thruster is part of a high speed aerial delivery system.

**Description:**

Major components consist of aluminum case, primer, O-ring, delay charge and main output charge.

**Functioning:**

Firing of the M42 primer ignites the 0.4 second delay train which in turn fires the main output charge that provides gas pressure for the thruster.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-084-6046 |
| DODIC | MF35 |
| Drawing number | 5184858 |
| Vendor (CAGE code) and part number | (53711) 5184858 |
| Item weight | |
| Diameter | 0.375 in. (0.9525 cm) |
| Length | 2 in. (5.08 cm) |
| Method of actuation | Percussion primer M43 |
| Body material | Aluminum alloy |
| Propellant/explosive material: | |
| Type | Black powder and HES 5808 |
| Weight | 0.0025 lb (17.5 grains) |

**Performance:**

| | |
|---|---|
| Delay time | 0.4 + 0.1 second |
| Thrust (upper limit) | 2000 lb (900 kg) max |
| Minimum stroke | 1.5 in. (3.8 cm) |

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

This item cannot be procured or packaged separately. It is installed in the TCU-1B thruster as a sealed-in-device.

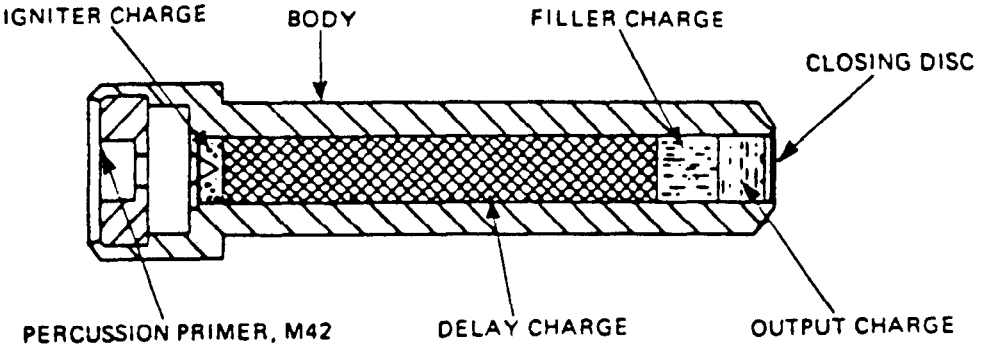
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- SMALL ARMS AMMUNITION, CLASS C, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 9-1300-385, App B.

## CARTRIDGE, DELAY CCU-89/B: (MH88)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

The MH88 activates the release mechanism used in the parachute harness of cargo dropped from aircraft. The release mechanism allows the parachute to detach from the cargo after landing. This prevents the parachute from dragging the cargo and causing damage.

**Description:**

The cartridge consists of a cylindrical aluminum body primer (ignition device), washer, ignition charge, delay charge, filler charge, output charge, and metal closure charge.

**Functioning:**

Primer initiation ignites a composition igniter charge adjacent to the delay column. Upon the elapse of approximately 20 seconds the delay mix ignites the filler and output charge.

## CARTRIDGE, DELAY CCU-89/B: MH88

### Tabulated Data:

NSN ..... 1377-01-178-6691
DODIC ---------- MH88
Drawing number ---------- 5185107
Vendor (CAGE code) and
part number ---------- (30003) 5185107
Item weight ----------
Diameter ---------- 0.506 in. (1.29 cm)
Length ---------- 2.0 in. (5.08 cm)
Method of actuation --------- Percussion (M42)
Body material ---------- Aluminum
Propellant/explosive material:
Type ---------- Tungsten delay composition
Weight ---------- 0.00616 (42 grains)

### Performance:

20 second delay.

### Packaging:

Inner Container:
Reference ----------
Type ----------
Dimensions ----------
Items per package ---------- 10
Weight ----------

Outer Container:
Reference ----------
Type ---------- Wood box
Dimensions ---------- 8.38 x 8.38 x 14.63 in.
Weight ----------
Cube ---------- 0.6 cu ft

### Temperature Limits:

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

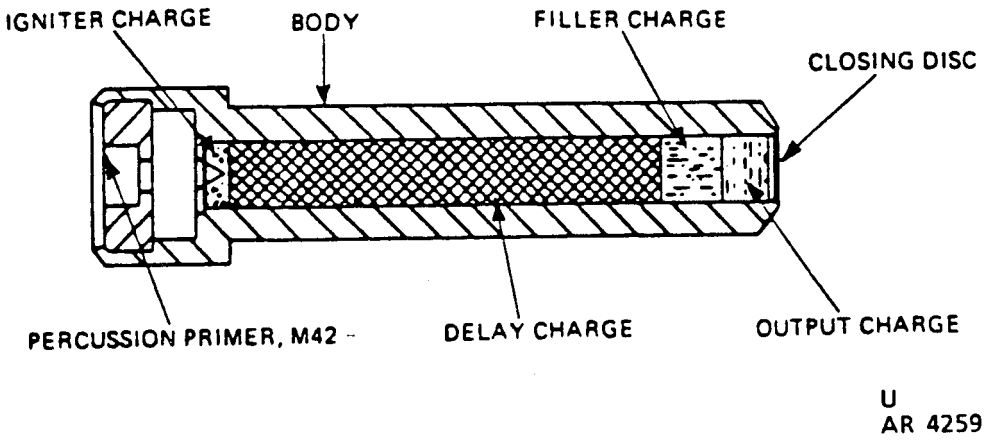
### Shipping and Storage Data

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- SMALL ARMS AMMUNITION, HANDLE CAREFULLY, KEEP FIRE AWAY

### References:

TM 9-1377-200-20&P
TM 10-1670-215-23
TB 9-1300-385, App B.

## CARTRIDGE, DELAY: (M308)




**Type Classification:**

ATC-S LCC-A

**Use:**

Power device for the 5,000 lb. capacity cargo parachute release.

**NOTE**

Replacement is MH88.

**Description:**

The M252 delay cartridge is cylindrical in shape, It consists of the body a primer seat, washer, M42 primer, A1A igniter charge, delay charge, output charge, and closing disc.

**Functioning:**

Its function is to allow a nominal 20-second delay, during which cargo descent is stabilized, before tripping a spinner mechanism which allows the parachute to release upon landing.

When the cargo is jettisoned from the aircraft, parachute deployment activates the firing mechanism. This compresses a spring behind the firing pin. The stored energy of the compressed spring drives the firing pin into the M42 percussion primer of the M252 cartridge.

Primer initiation ignites an A1A composition igniter charge adjacent to the delay column. Upon the elapse of approximately 20 seconds, the delay mix ignites the filler and output charge; the resulting gases rotate the spinner on the release mechanism which releases the ground disconnect pin attached to the catch. Upon ground contact (no load on the release), the rotated spinner allows the latch holding the cargo to release. Thus, the parachute is prevented from dragging or causing the cargo to tumble along the ground.

**Tabulated Data:**

NSN ..... 1377-00-958-1048
DODIC ---------- M308
Drawing number ---------- 8886478 (19203)
Vendor (CAGE code) and
part number ---------- (81337) 11-1-329 (26687)
Item weight ---------- 0.007 lb (0.0032 kg)
Diameter ---------- 0.375 in. (0.9525 cm)
Length ---------- 2 in. (5.08 cm)
Method of actuation --------- Percussion primer M42
Body material ---------- Steel
Propellant/explosive material:
Type ---------- Lead azide
Weight ---------- 0.006 lb (42 grains)

Performance:

Delay time ---------- 20 seconds

Firing Temperature Limits:

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container: 1
Reference ---------- PPP-B-636
Type ---------- Fiberboard box
Dimensions ----------
Items per package ---------- 100
Weight ---------- 0.70 lb (0.32 kg)
Inner Container: 11
Reference ---------- MIL-B-117
Type ---------- Barrier bag
Dimensions ----------
Items per package ---------- 1
Weight ---------- 1.5 lb (0.68 kg)

Outer container:
Reference ---------- PPP-631
Type ---------- Class 2/Style 4
Dimensions ---------- Wood box
Weight ---------- 30 lb (13.6 kg)
Cube ----------

**Skipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- SMALL ARMS AMMUNITION, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 10-1670-215-23
TB 9-1300-385, App B.

# CHAPTER 5

# EMERGENCY ESCAPE SYSTEMS FOR HELICOPTERS, AH-64

## Section I. AH-1 (COBRA)

### 5-1. General (for Army AH-1 (Cobra) Helicopter)

a. Section I of this chapter contains descriptive and technical data pertaining to systems used for the Army AH1E-F/P/S (MOD) Helicopter Personnel Emergency Escape Systems. Each system is used to explosively cut the windows of the canopy and doors from the canopy support structure to provide a rapid means of escape/access to/from the crew compartment.

b. The system consists of four linear explosive window cutting assemblies (WCA) which are installed around the rim of the canopy and door windows of the crew compartment (fig. 5-1), three armed/firing mechanisms, and interconnecting flexible confined detonating cords (FCED) and rigid shielded mild detonating cord (SMDC) lines (fig. 5-2). One armed/firing mechanism is located in the pilot's instrument panel to the left of the glare shield, another is located in the gunner/copilot's right console, and the third is in the nose of the helicopter located to provide external access by rescue personnel, Any one of the three armed/firing mechanisms can be used to actuate the linear explosive escape system.

c. The detonating cord set consists of eight SMDC assemblies, two FCDC assemblies and four WCA assemblies. Each type assembly is described in this section. Individual detonating cord lines are listed in table 5-1. Table 5-2 lists these components and their location and function. Table 5-3 lists detonating cord assemblies used in AH-1 series Army helicopters.

d. Section I also contains descriptive information pertaining to the inert connectors used in the helicopter canopy removal system.

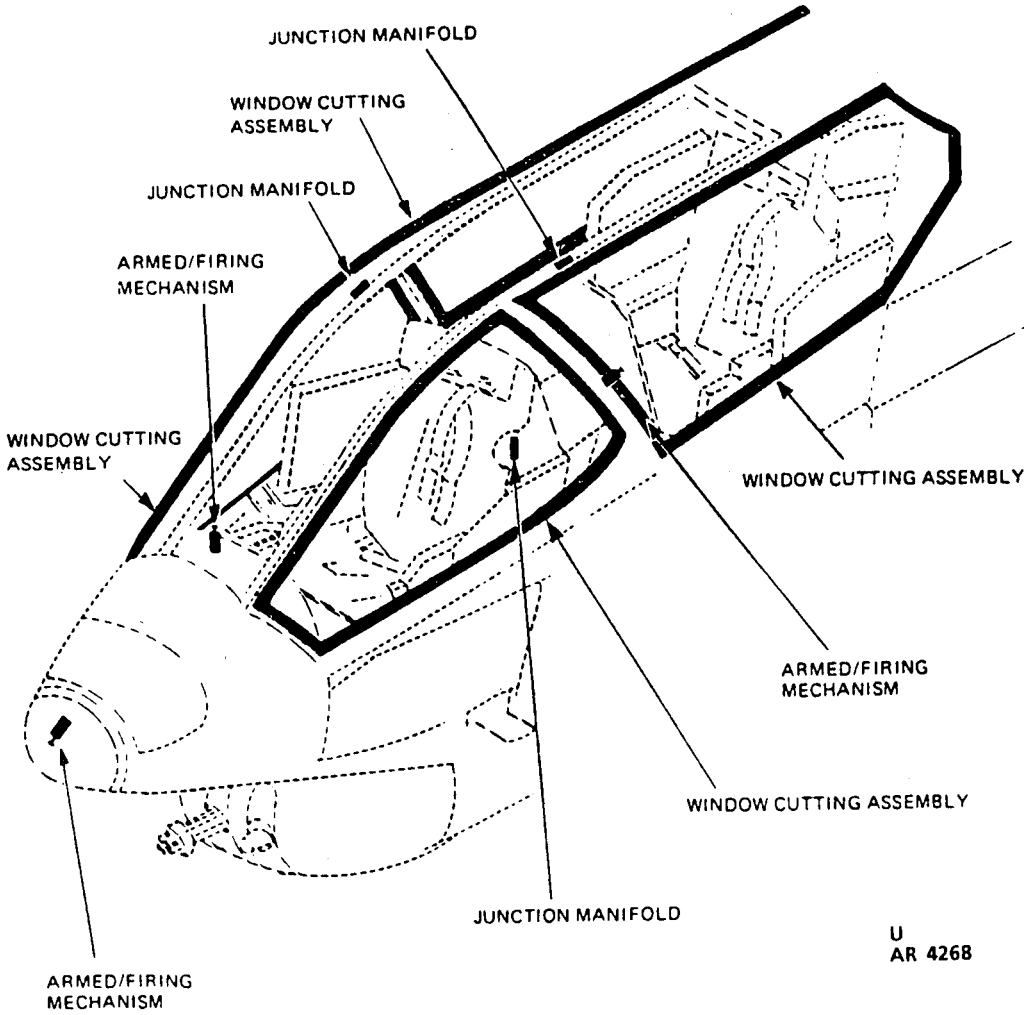



**Figure 5-1. Attack Helicopter, Model AH-1, All Modifications, Emergency Canopy Jettison Elements.**

## Table 5-1. Explosive Components Technical Data and Cross-Reference

**AH-1 Series**

| DODIC | Assembly | *T-McC-S P/N | **Bell P/N | NSN 1377-oo- | Length (IN.) | Explosive Weight (LB) |
|---|---|---|---|---|---|---|
| MD15 | FCDC | 813592-6 | 209-030-711-11 | 410-8271 | 67,5 | 0,01115 |
| MD16 | FCDC | 813592-5 | 209-030-711-13 | 409-1099 | 22.4 | 0,00787 |
| MD17 | SMDC | 813475-19 | 209-030-711-19 | 410-8297 | 6.5 | 0.00065 |
| MD18 | SMDC | 813475-27 | 209-030-711-27 | 409-1098 | 6.6 | 0.00063 |
| MD33 | WCA | 814280-15 | 209-030-711-105 | 409-1096 | 150,0 | 0.00461 |
| MD34 | WCA | 814280-9 or 814280-13 | 209-030-711-99 | 409-1095 | 110.0 | 0.00390 |
| MD35 | WCA | 814280-102 or 814280-11 | 209-030-711-37 | 106-7773 | 110,0 | 0.00375 |
| MD36 | WCA | 814280-101 or 814280-9 | 209-030-711-103 | 409-1097 | 150.0 | 0.00466 |
| ME83 | ***CORD SET, DETONATING | ..... | ..... | 01-060-8531 | ..... | 0.03268 |
| | ARMED/ FIRING MECHANISM | 813633-4 | 209-030-711-61 | 410-8265 | 6.5 | 0.00019 |

*CAGE Code 06331
**CAGE Code 97499
***Contains one each of of all items except the armed/firing mechanism

## Table 5-2. Summary of Devices in AH-1 Series Canopy Release System

| DODIC | Nomenclature | Quantity/Location | *Function |
|---|---|---|---|
| MD15 | Flexible Confined Detonating Cord (FCDC) 857AS500-2 | 1- Between left junction manifold and WCA gunner's door | Provides flexible explosive media between junction manifold and |
| MD16 | FCDC - 857AS500-1 | 1- Between right junction manifold and WCA pilot's door | Provides flexible explosive media between junction manifold and WCA |
| MD17 | Shielded Mild Detonating Cord (SMDC) - 857AS400-1 | 1- Between left junction manifold and WCA pilot's window | Provides explosive media between junction manifold and WCA |
| MD18 | SMDC - 857AS400-2 | 1- Between right junction manifold and WCA gunner's window | Provides explosive media between junction manifold and WCA |
| MD33 | Window Cutting Assembly (WCA) - 857AS300-4 or 857AS300-15 | 1- Pilot's canopy window | Explosively cuts (removes) and ejects glass from pilot's canopy window |
| MD34 | WCA - 857AS300-3 or 857AS300-13 | 1- Gunner's canopy window | Explosively cuts (removes) and ejects glass from gunner's canopy window |
| MD35 | WCA - 857AS300-2 or 857AS300-11 | 1- Gunner's door window | Explosively cuts (removes) and ejects glass from gunner's door window |
| MD36 | WCA - 857AS300-1 or 857AS300-9 | 1- Pilot's door window | Explosively cuts (removes) and ejects glass from pilot's door window |
| ME83 | Cord Set, Detonating, Canopy Removal System 857AS600 | ..... | System procurement |
| — | Armed/Firing Mechanism | 3- One each at pilot's and gunner's stations and one in fuselage nose | Initiates detonation wave to actuate window cutting assemblies |

*Service life at end of table.

**Table 5-2. Summary of Devices in AH-1 Series Canopy Release System (Continued)**

| DODIC | Nomenclature | Quantity/Location | **Function |
|---|---|---|---|
| INERT | In-line connector 857AS103-1 | 1- Forward bulkhead section | Detonation transfer media |
| INERT | Tee Connector 857AS101-1 | 1- Behind gunner's seat | Detonation transfer media |
| INERT | Cross Connector 857AS102-1 | 2- Upper right canopy structure and upper left canopy structure | Detonation transfer media |

***Service Life: (Explosive Devices)**

Service life listed in this TM is nominal. Specific service life data is listed in TB 9-1300-385, App B. Updates to the TB are issued quarterly

****Service Life: (Inert Connectors)**

Item is an assembly of metal parts only. Replacement is determined by "On Condition" (OC), after inspection for visible wear or defect,

**Table 5-3. Detonating Cord Assemblies and Elements Used in Army Helicopters: AH-1 Series**

| NSN | DODIC | Nomenclature | *(CAGE) P/N |
|---|---|---|---|
| 1377-00-409-1100 | MS50 | Cord, Detonating (SMDC) | (97499) 209-030-711-25<br>(06331) 813475-25 |
| 1377-00-410-8222 | MS49 | Cord, Detonating (SMDC) | (97499) 209-030-711-21<br>(06331) 813475-21 |
| 1377-00-410-8228 | .... | Manifold, Junction (Inert) | (97499) 209-030 -711-9<br>(06331) 813487-2 |
| 1377-00-410-8266 | MS47 | Cord, Detonating (SMDC) | (97499) 209-030-711-15<br>(06331) 813475-15 |
| 1377-00-410-8289 | MS48 | Cord, Detonating (SMDC) | (97499) 209-030-711-17<br>(06331) 813475-17 |
| 1377-01-032-1047 | MS76 | Cord, Detonating (LSC) | (97499) 209-033-009-1<br>(06331) 816986-1 |
| 1377-01-032-1048 | MS77 | Cord, Detonating (LSC) | (97499) 209-033-009-3<br>(06331) 816986-3 |
| 1377-01-032-1049 | MS78 | Cord, Detonating Window Cutting Assy | (97499) 209-033-010-103<br>(06331) 816987-103 |
| 1377-01-032-1050 | MS79 | Cord, Detonating Window Cutting Assy | (97499) 209-033-010-105<br>(06331) 816987-105 |
| 1377-01-032-3279 | MS60 | Cord, Detonating (SMDC) | (97499) 209-033-011-123<br>(06331) 813475-123 |
| 1377-01-032-3280 | MS61 | Cord, Detonating (SMDC) | (97499) 209-033-011-23<br>(97499) 209-033-011-49 |
| 1377-01-100-1718 | MS62 | Cord, Detonating (SMDC) | (30003) 813-475-127 |
| 1377-01-032-3283 | MS59 | Cord, Detonating (SMDC) | (97499) 209-033-011-125<br>(06331) 813475-125 |
| 1377-01-032-3286 | MS58 | Cord, Detonating (SMDC) | (97499) 209-033-011-119<br>(06331) 813475-119 |
| 1377-01-033-5088 | --- | Arm, Fire Initiator | (97499) 209-033-008-101<br>(06331) 814033-101 |
| 1377-01-035-4124 | MS51 | Cord, Detonating (SMDC) | (97499) 209-033-011-105<br>(06331) 813475-105 |
| 1377-01-037-4090 | MS53 | Cord, Detonating (SMDC) | (97499) 209-033-011-109<br>(06331) 813475-109 |

***Coxmnercial And Government Entity (CAGE) (Formerly FSCM Code).**

**Table 5-3. Detonating Cord Assemblies and Elements Used in Army Helicopter AH-1 Series (Continued)**

| NSN | DODIC | Nomenclature | *(CAGE) P/N |
|---|---|---|---|
| 1377-01-037-4091 | .... | Pin Puller, Explosive | (97499) 209-033-006-101<br>(06331) 816984-107 |
| 1377-01-037-4092 | .... | Manifold, Junction (Inert) | (97499) 209-033-011-101<br>(06331) 817295-101 |
| 1377-01-037-4093 | MS57 | Cord, Detonating (SMDC) | (97499) 209-033-011-117<br>(06331) 813475-117 |
| 1377-01-037-4094 | MS56 | Cord, Detonating (SMDC) | (97499) 209-033-011-115<br>(06331) 813475-115 |
| 1377-01-037-4095 | MS55 | Cord, Detonating (SMDC) | (97499) 209-033-011-113<br>(06331) 813475-113 |
| 1377-01-037-4096 | MS54 | Cord, Detonating (SMDC) | (97499) 209-033-011-111<br>(06331) 813475-111 |
| 1377-01-037-9237 | MS52 | Cord, Detonating (SMDC) | (97499) 209-033-011-107<br>(06331) 813475-107 |
| 1377-01-062-4195 | .... | Connector, In-line (Inert) | (97499) 209-033-011-103<br>(06331) 819347-103 |

***Coxmnercial And Government Entity (CAGE) (Formerly FSCM Code Number).**

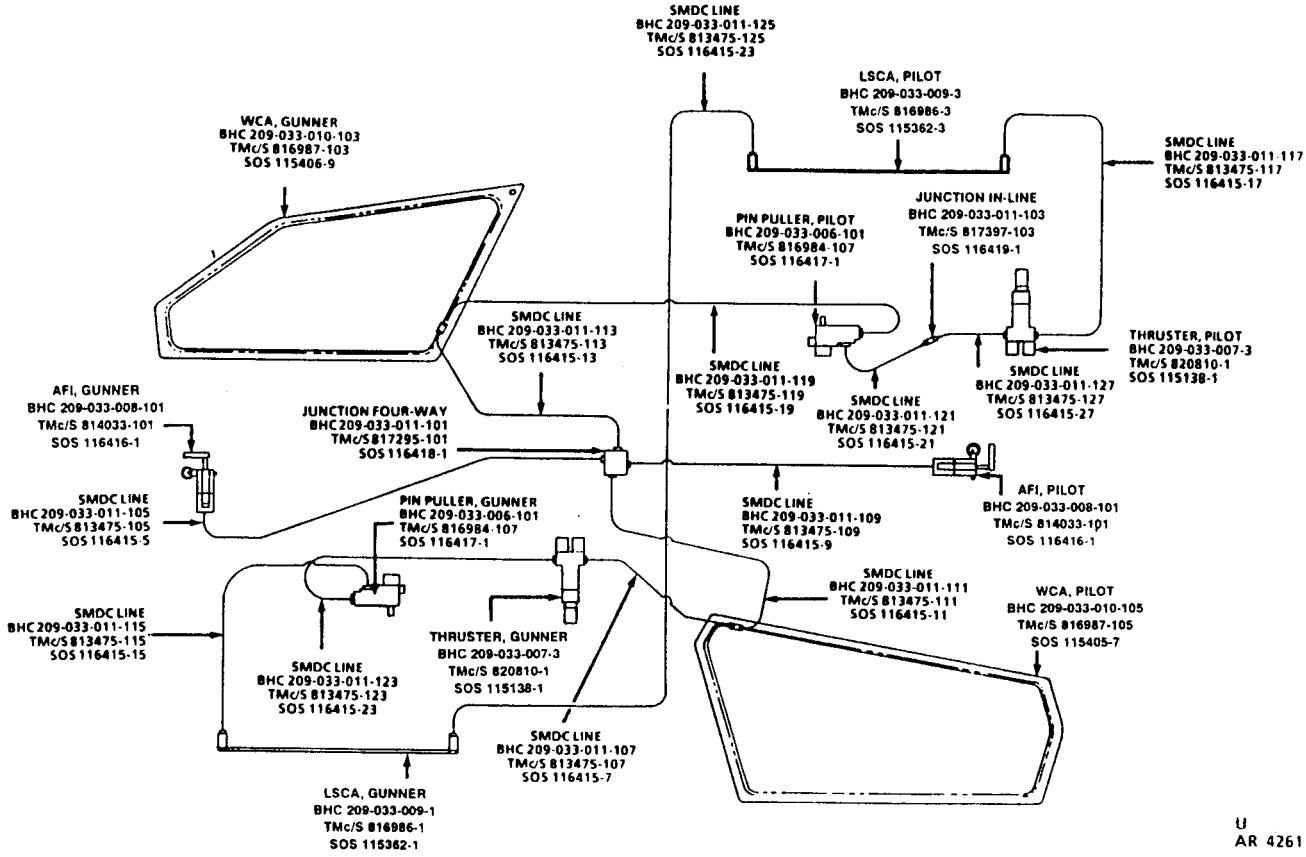
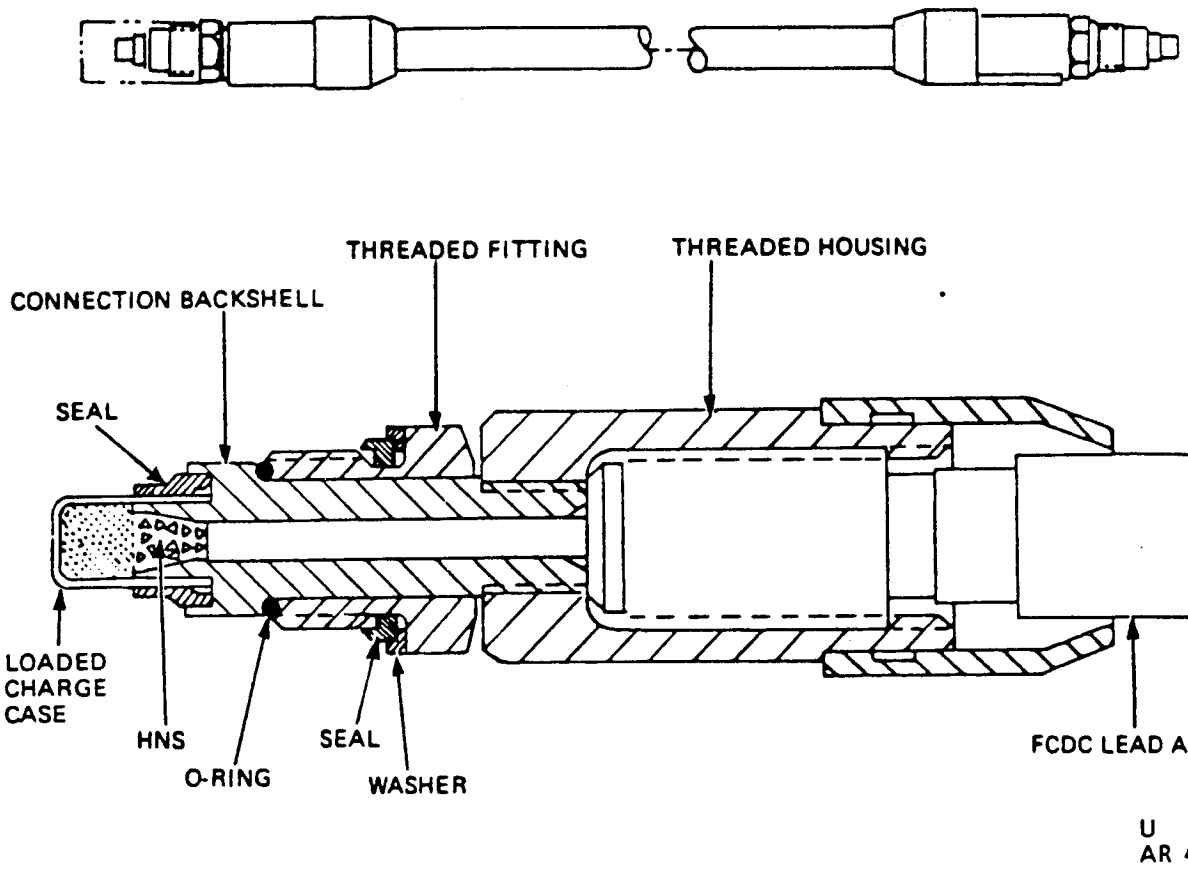



**Figure 5-2. Canopy Jettison Removal System (Schematic) for the AH-1 Series.**

## CORD, DETONATING, ASSEMBLY, FLEXIBLE CONFINED (FCDC) (GUNNER): (MD15)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide and interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy door used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the FCDC assembly are housing, threaded fittings, seals, loaded charge case, lead sheath assembly, and prescribed amounts of Hexanitrostilbene (HNS). This FCDC lead sheathed assembly is located in the canopy between the left junction manifold and the adapter to the WCA in the gunner's canopy door.

**NOTE**

The MD15 is identical in design and physical appearance to the MD16, The difference is in length and amount of explosive,

**Functioning**

When any one of the three armed/firing mechanisms is actuated, the FCDC line receives a detonating stimulus via a junction manifold and transmits it to the WCA in the gunner's canopy door.

**Tabulated Data:**

NSN ---------- 1377-00-410-8271
DODIC ---------- MD15
Drawing number ---------- 857AS500-2
Vendor (CAGE code) and
part number ---------- (97499) 209-030-711-11 (06331) 813592-6
Item weight ----------
Diameter ---------- 0,5 in, (1.27 cm)
Length ---------- 67,5 in, (171,45 cm)
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Types ---------- HNS, Type I Grade A
Weight ---------- 0.01115 lb. (78.05 grains)

**Performance:**

Minimum detonation
velocity ---------- 6050 meters/see at -65° (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner container:
Reference ---------- MIL-B-817051 857AS500-2
Type ---------- Sealed bag
Dimensions ---------- 68' long x 1“ dia (172.7 cm long x 2.5 cm dia)
Items per package ---------- 1
Weight ---------- 0.5 lb (0.23 kg)

Outer Container:
Reference ---------- Commercially packed
Type ---------- II
Dimensions ---------- 1.54 x 1.04x .27
Weight ---------- 1.50 (lb)
Cube ---------- .464 cu ft

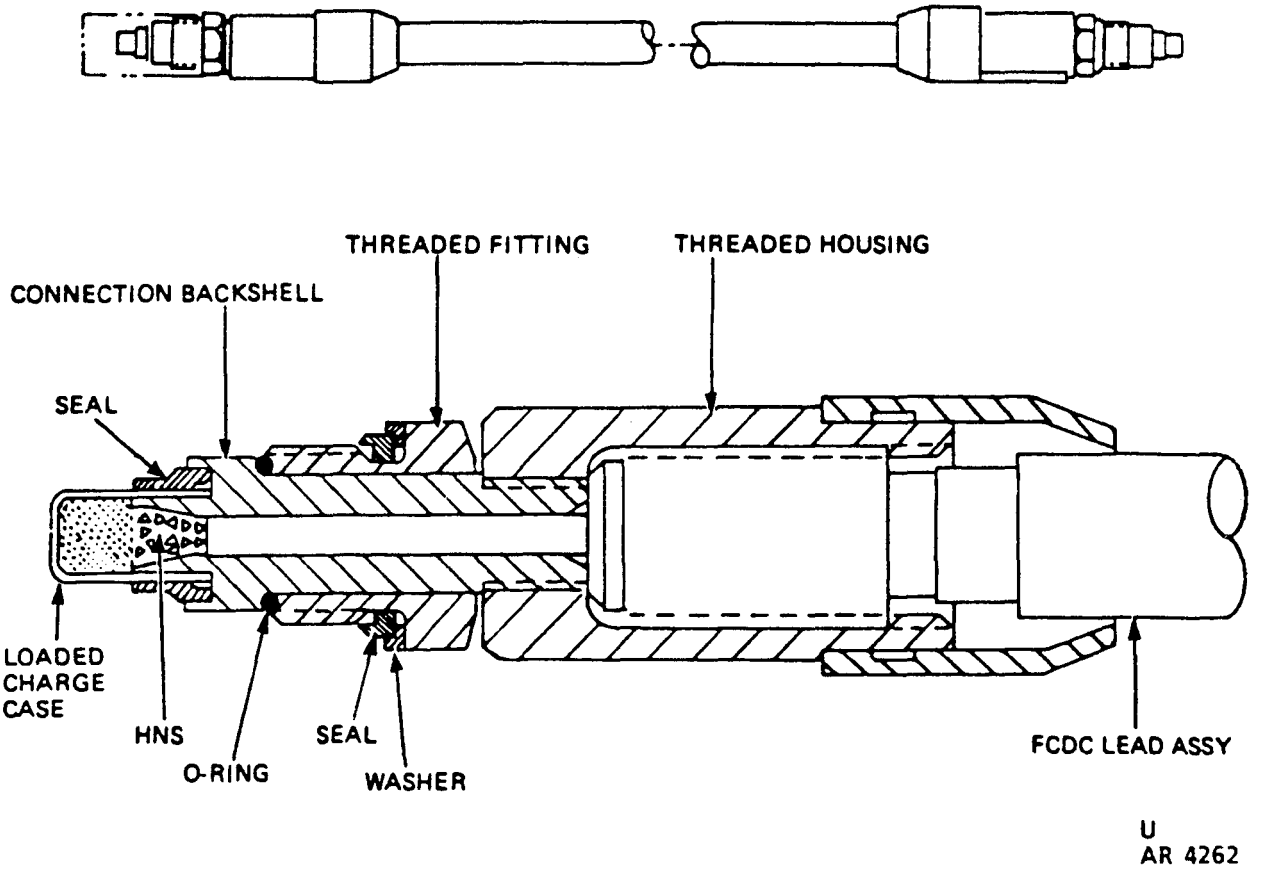
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- Flexible Linear Shaped Charge, Handle Carefully Keep Fire Away

**Reference:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TM 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, FLEXIBLE CONFINED (FCDC) (PILOT): (MD16)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide and interconnecting explosive media to the Window Cutting Assembly (WCA) of the pilot's canopy door used in the Emergency Canopy Removal System of the AH-1 series Helicopter,

**Description:**

Major components of the FCDC Assembly are housing, threaded fittings, seals charge case, Hexanitrostilbene (HNS), lead sheathed assembly This FCDC lead sheathed assembly is located in the canopy between the left junction manifold and the adapter to the WCA in the pilot's canopy door,

**NOTE**

The MD16 is identical in design and physical appearance to the MD 15. The difference is in length and amount of explosive.

**Functioning:**

When any one of the three armed/firing mechanisms is actuated, the FCDC line receives a detonating stimulus via a junction manifold and transmits it to the WCA in the pilot's canopy door.

**Tabulated Data:**

NSN ..... 1377-00-409-1099
DODIC ---------- MD16
Drawing number ---------- 857AS500-1
Vendor (CAGE Code) and
part number ---------- (97499) 209-030-711-13 (0633.1) 813592-5
Item Weight ----------
Diameter ---------- 0.5 in. (1.27 cm)
Length ---------- 22.4 in. (58.9 cm)
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, Type I, grade A
Weight ---------- 0.00187 lb (55.09 grains)

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

Firing Temperature Limits:

Upper ---------- +200°F (+93° C)
Lower ---------- -65°F (-54° C)

**Packaging:**

Inner Container:
Reference ---------- MIL-C-10464
Type ---------- Type I, Hermetically sealed metal container
Dimensions ---------- 62-1/2 x 1/2 in.
Items per package ---------- 1
Weight ---------- 0.2 lb (0.09 kg)

Outer Container:
Reference ---------- Commercially packed
Type ---------- II
Dimensions ---------- 1.54 X 1.04X .27 ft
Weight ---------- 2 lb
Cube ---------- .464 ft

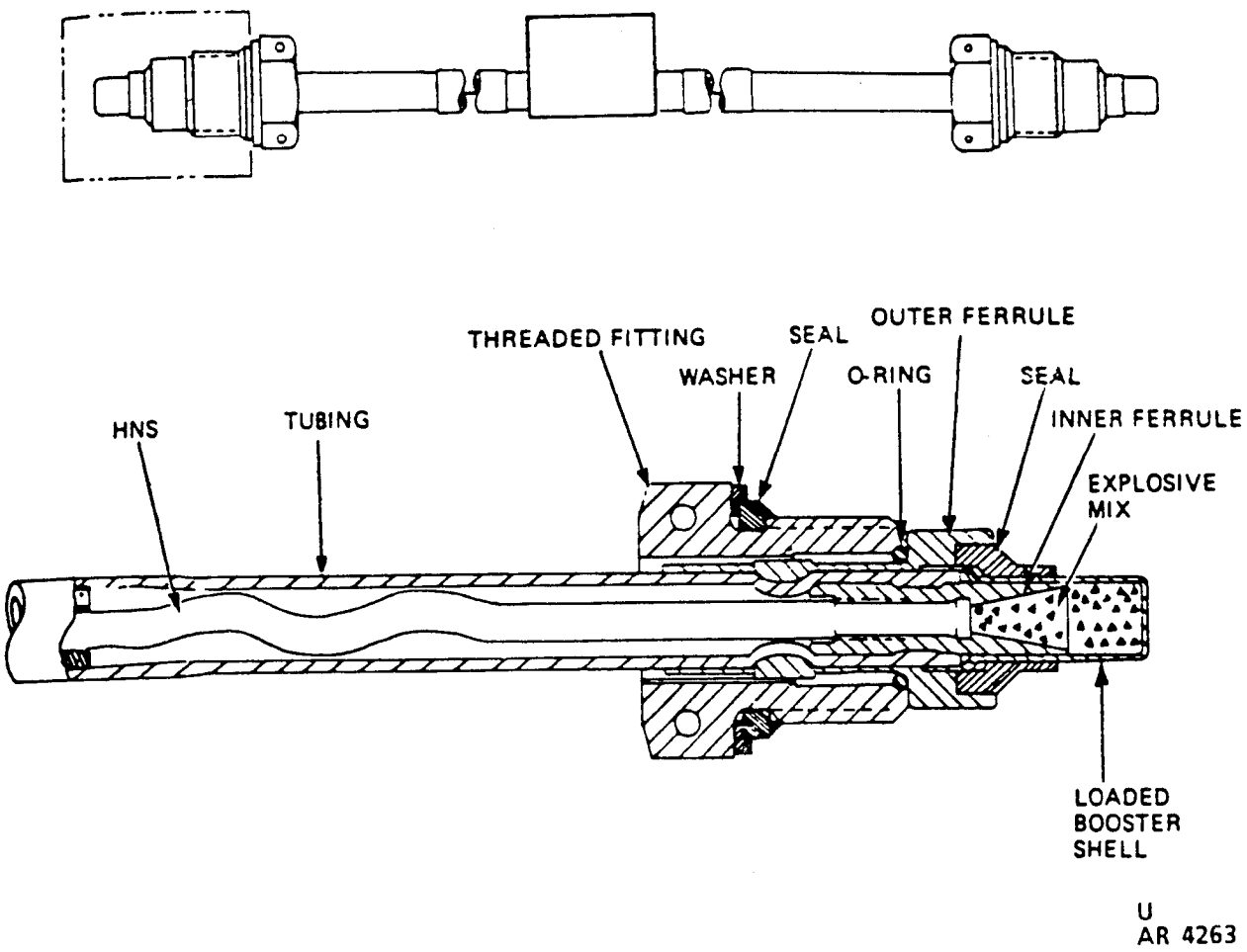
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- FLEXIBLE LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, SHIELDED MILD (SMDC): (MD17)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the pilot's canopy door used in the Emergency Canopy Removal System of the AH-1 series Helicopter,

**Description:**

Major components of the FCDC Assembly are (MD17) are threaded fittings, seals washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord. This assembly is located between the left junction manifold and the WCA in the pilot's canopy door.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the left junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the pilot's canopy WCA.

**Tabulated Data:**

NSN ..... 1377-00-410-8297
DODIC ---------- MD17
Drawing number ---------- 857AS400-1
Vendor (CAGE Code) and
part number ---------- (97499) 209-030-711-19 (06331) 813475-19
Item Weight ----------
Diameter ---------- 0.23 in. (0.58 cm)
Length ---------- 6.45 in. (16.4 cm)
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, Type I, grade A
Weight ---------- 0.00065 lb (4.55 grains)

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging**

Inner Container:
Reference ---------- MIL-B-81795
Type ---------- Type II, heat sealed, anti-static plastic bag
Dimensions ---------- 12 in. long x 1. in. dia (30.4 cm long x 2,54 cm dia)
Items per package ---------- 1
Weight ---------- 0.2 lb (0.091 kg)

Outer Container:
Reference ---------- PP-B-621
Type ---------- Class II style 4 Wood Box
Dimensions ---------- 1.54 X 1.04X .27 ft
Weight ---------- 2 lb
Cube ---------- .464 ft

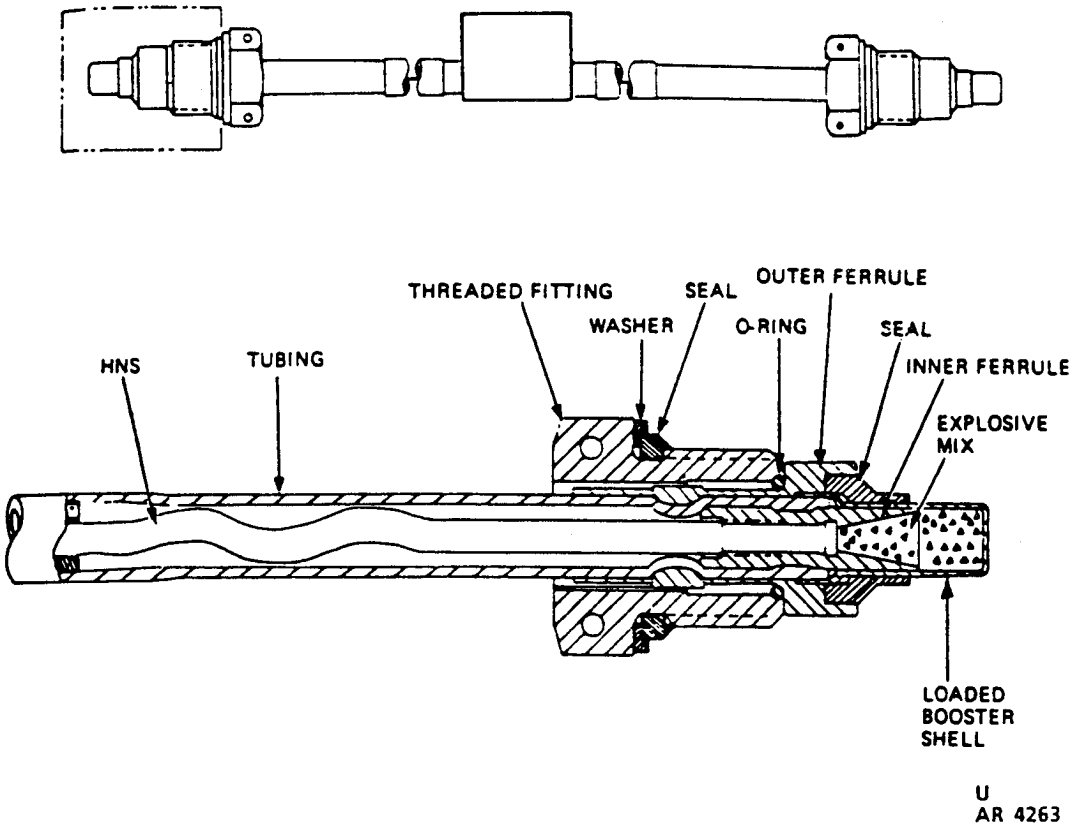
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MD18)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly (MD18) are threaded fitting seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord,

This assembly is located between the right junction manifold and the WCA of the gunner's canopy window.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the left junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the gunner's canopy WCA.

**NOTE**

The MD18 is identical to the MD17 in physical appearance and design, The difference is in length and amount of explosive,

**Tabulated Data:**

NSN ..... 1377-00-409-1098
DODIC ---------- MD18
Drawing number ---------- 857AS400-2
Vendor (CAGE Code) and
part number ---------- (97499) 209-030-711-27 (06331) 813475-27
Item Weight ----------
Diameter ---------- 0.23 in. (0,58 cm)
Length ---------- 6.0 in. (15.24 cm)
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, Type I Grade A
Weight ---------- 0.00063 lb (4,41 grains)

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65° F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-81705
Type ---------- Type II, heat sealed anti-static plastic bag
Dimensions ---------- 12 in. long x 1. in. dia (30.48 cm long x 2.54 cm dia)
Items per package ---------- 1
Weight ---------- 0.2 lb (0.91 kg)

Outer Container:
Reference ---------- PPP-C-1672
Type ---------- Class II style 4 Wood Box
Weight ---------- 2 lb
Cube ---------- .464 ft

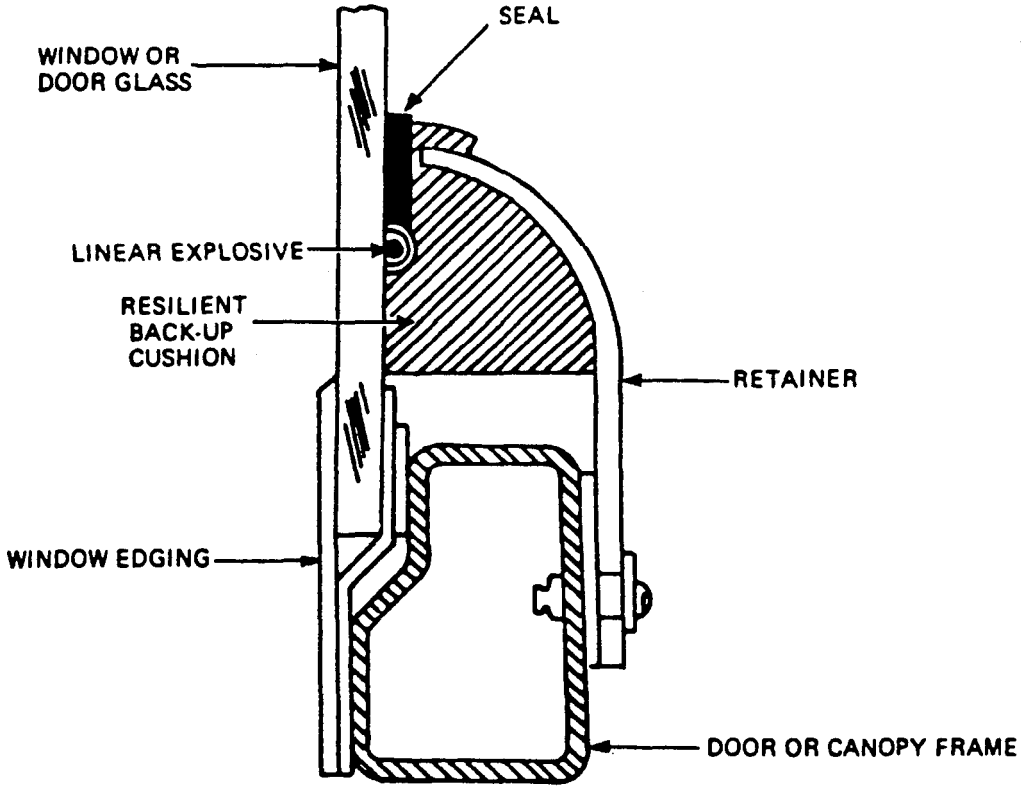
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CUTTING ASSEMBLY, WINDOW (WCA): (MD33)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

An explosive device used in the AH-IS (MOD) Helicopter Emergency Canopy Removal System to assure exit from or access to the crew compartment of the aircraft in an emergency.

**Description:**

Major components of the WCA are: manifold release assemblies and window cutting retainer subassemblies for doors and windows, linear explosive, resilient back-up cushion, retainer, and seal,

The assemblies are located on the periphery of the four windows in the crew compartment.

**Functioning**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the interconnecting FCDC and SMDC lines to the linear explosive of the WCA. The explosive force is outward, simultaneously cutting out the four plastic window glasses of the crew compartment,

**Tabulated Data:**

NSN ..... 1377-00-409-1096
DODIC ---------- MD33
Drawing number ---------- 857AS300-4
Vendor (CAGE Code) and
part number ---------- (97499) 209-030-711-35 (06331) 813475-104
Item Weight ---------- 5 lb (2.27 kg)
Width ---------- 32 in. (81.3 cm)
Height ---------- 5 in. (12.7 cm)
Length ---------- 62 in. (157,5 cm)
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade B
Weight ---------- 0.004608 lb (32.3 grains)

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-81705
Type ---------- Type II, heat sealed anti-static plastic bag
Dimensions ---------- 72x 32x 5 in,
Items per package ---------- 1
Weight ---------- 3 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 6,63 x 3.29x 1.05 ft
Weight ---------- 52 lb
Cube ---------- 23.108 ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

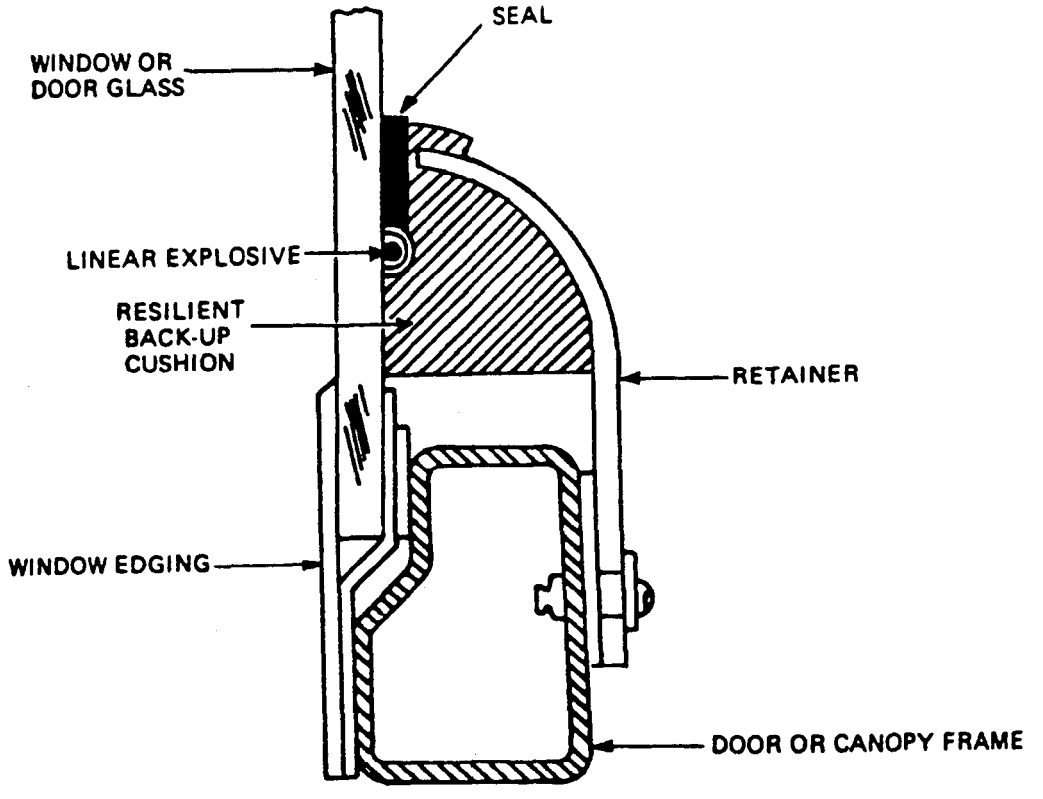
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CUTTING ASSEMBLY, WINDOW (WCA): (MD34)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

An explosive device used in the AH-1 S (MOD) Helicopter Emergency Canopy Removal System to assure exit from or access to the crew compartment of the aircraft in an emergency

**Description:**

Major components of the WCA are: manifold release assemblies and window cutting retainer sub-assemblies for doors and window, linear explosive, resilient back-up cushion, retainer, and seal.

The assemblies are located on the outer edge of the four windows in the crew compartment.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the interconnecting FCDC and SMDC lines to the linear explosive of the WCA. The explosive force is outward, simultaneously cutting out the four plastic window glasses of the crew compartment.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-00-409-1095 |
| DODIC | MD34 |
| Drawing number | 857AS300-3 |
| Vendor (CAGE Code) and part number | (97499) 209-030-711-29 (06331) 813475-9 |
| Item Weight | 5 lb (2.27 kg) |
| Width | 32 in. (81.3 cm) |
| Height | 5 in. (12.7 cm) |
| Length | 62 in. (157.5 cm) |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |
| Propellant/explosive material: | |
| Type | HNS, type II, grade B |
| Weight | 0.003902 lb (27.3 grains) |

**Performance:**

| | |
|---|---|
| Minimum detonation velocity | 6050 meter/sec at -65°F (-54°C) |

**Packaging:**

| | |
|---|---|
| Inner Container: | |
| Reference | MIL-B-81705 |
| Type | Type II, heat sealed anti-static plastic bag |
| Dimensions | 40x 70 in. |
| Items per package | 1 |
| Weight | 5.00 lb |
| Outer Container: | |
| Reference | PPP-B-636 |
| Type | Fiber board box |
| Dimensions | 5.60 X 3.42x 1.08 ft |
| Weight | 47 lb |
| Cube | 20.728 ft |

**Temperature Limits:**

| | |
|---|---|
| Upper | +200°F (+93°C) |
| Lower | -65°F (-54°C) |

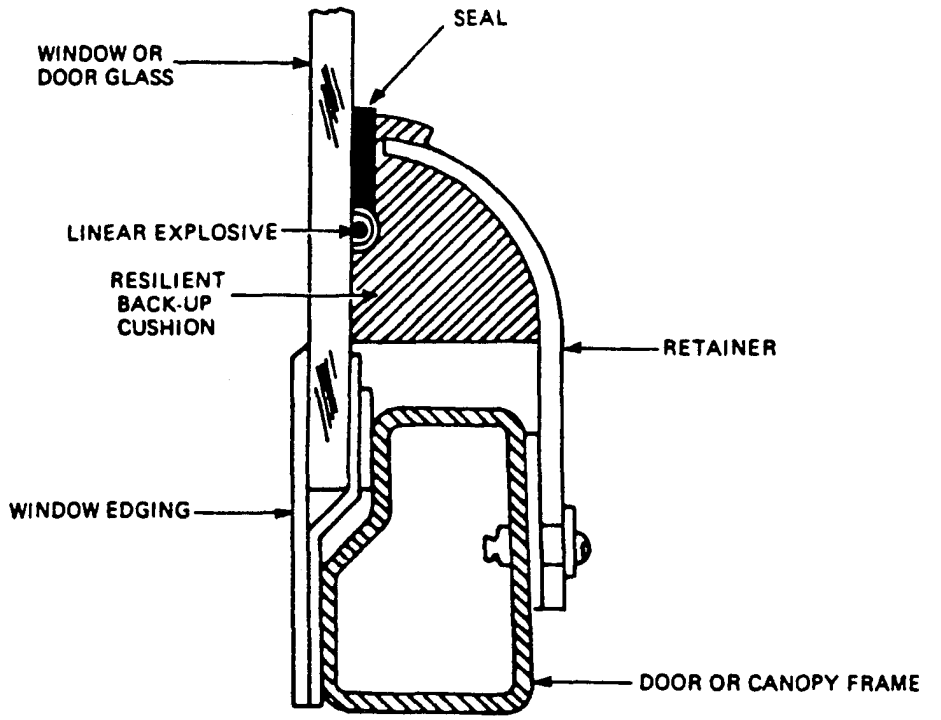
**Shipping and Storage Data:**

| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | S |
| DOT shipping class | C |
| DOT designation | CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY |

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CUTTING ASSEMBLY, WINDOW (WCA): (MD35)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

An explosive device used in the AH-1 S (MOD) Helicopter Emergency Canopy Removal System to assure exit from or access to the crew compartment of the aircraft in an emergency.

**Description:**

Major components of the WCA are: manifold release assemblies and window cutting retainer sub-assemblies for doors and window, linear explosive, resilient back-up cushion, retainer, and seal.

The assemblies are located on the outer edge of the four windows in the crew compartment.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the interconnecting FCDC and SMDC lines to the linear explosive of the WCA. The explosive force is outward, simultaneously cutting out the four plastic window glasses of the crew compartment.

**Tabulated Data:**

NSN ..... 1377-00-106-7773
DODIC ---------- MD35
Drawing number ---------- 857AS300-2
Vendor (CAGE Code) and
part number ---------- (97499) 209-030-711-29 (06331) 813475-102
Item Weight ---------- 5 lb (2.27 kg)
Width ---------- 32 in. (81.3 cm)
Height ---------- 5 in. (12.7 cm)
Length ---------- 62 in. (157.5 cm)
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade B
Weight ---------- 0.003902 lb (24,7 grains)

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/sec at -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-81705
Type ---------- Type II, heat sealed anti-static plastic bag
Dimensions ---------- 38x 65 in.
Items per package ---------- 1
Weight ---------- 3 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 15-1/2 X 40-1/2X 65-1/2 in.
Weight ---------- 46 lb
Cube ---------- 23.949 ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

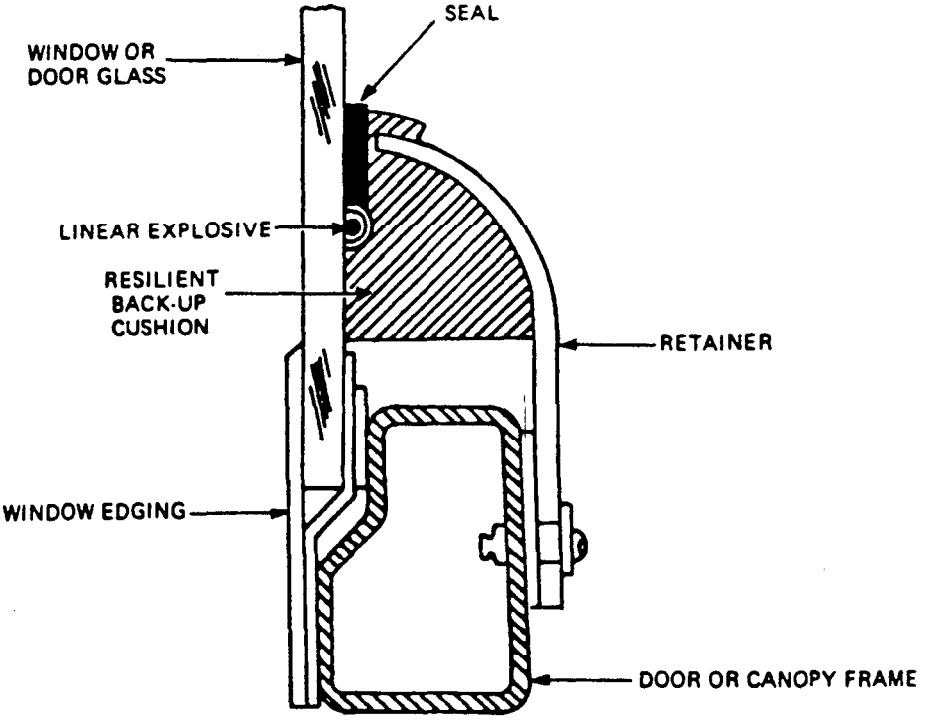
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CUTTING ASSEMBLY, WINDOW (WCA): (MD36)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

An explosive device used in the AH-1 S (MOD) Helicopter Emergency Canopy Removal System to assure exit from or access to the crew compartment of the aircraft in an emergency.

**Description:**

Major components of the WCA are: manifold release assemblies and window cutting retainer sub-assemblies for doors and window, linear explosive, resilient back-up cushion, retainer, and seal.

The assemblies are located on the outer edge of the four windows in the crew compartment.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanism, a detonation wave is received via the interconnecting FCDC and SMDC lines to the linear explosive of the WCA. The explosive force is outward, simultaneously cutting out the four plastic window glasses of the crew compartment.

**Tabulated Data:**

NSN ---------- 1377-00-106-1097
DODIC ---------- MD36
Drawing number ---------- 857AS300-1
Vendor (CAGE Code) and
part number ---------- (97499) 209-030-711-29 (06331) 813475-101
Item Weight ---------- 5 lb (2.27 kg)
Width ---------- 32 in. (81.3 cm)
Height ---------- 5 in. (12.7 cm)
Length ---------- 62 in. (157.5 cm)
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade B
Weight ---------- 0.004365 lb (30.6 grains)

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-81705
Type ---------- Type II, heat sealed anti-static plastic bag
Dimensions ---------- 29,5 x 7 x 75.5 in.
Items per package ---------- 1
Weight ---------- 3 lb

Outer Container:
Reference ---------- PPP-C-636
Type ---------- Fiber board box
Dimensions ---------- 6.54 x 2.83x .98 ft
Weight ---------- 50 lb
Cube ---------- 18.138 ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65° F (-54°C)

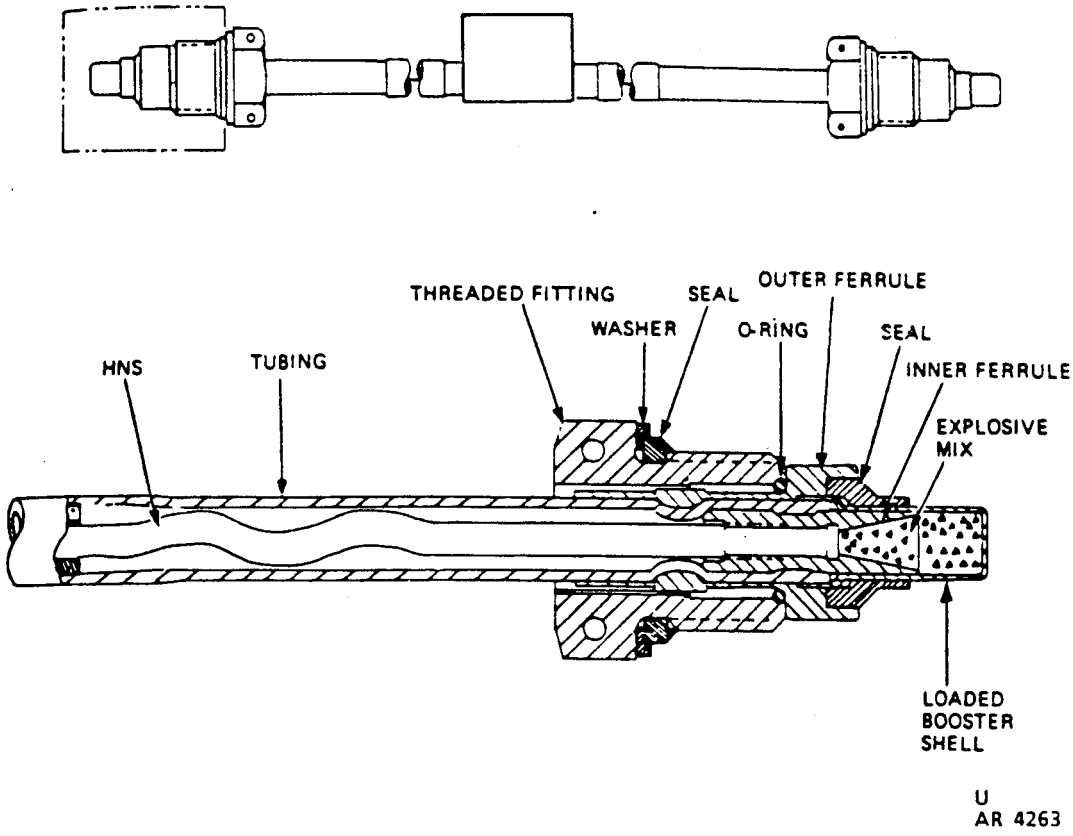
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS47)




**Type Classification:**

Refer to aircraft subsystem,

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly,

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design, The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ---------- 1377-00-410-8266
DODIC ---------- MS47
Drawing number ---------- 857AS400-15
Vendor (CAGE Code) and
part number ---------- (30003) 813475-15
209-030-711-15
Item Weight ---------- 0.268 lb
Diameter ---------- 0,18 in.
Length ---------- 32,0 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0,001860 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 6 x 55 in.
Items per package ---------- 1
Weight ---------- 0.50 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 3.20 x 1.60x 1.08 ft
Weight ---------- 15 lb
Cube ---------- 5.530 ft

**Temperature Limits:**

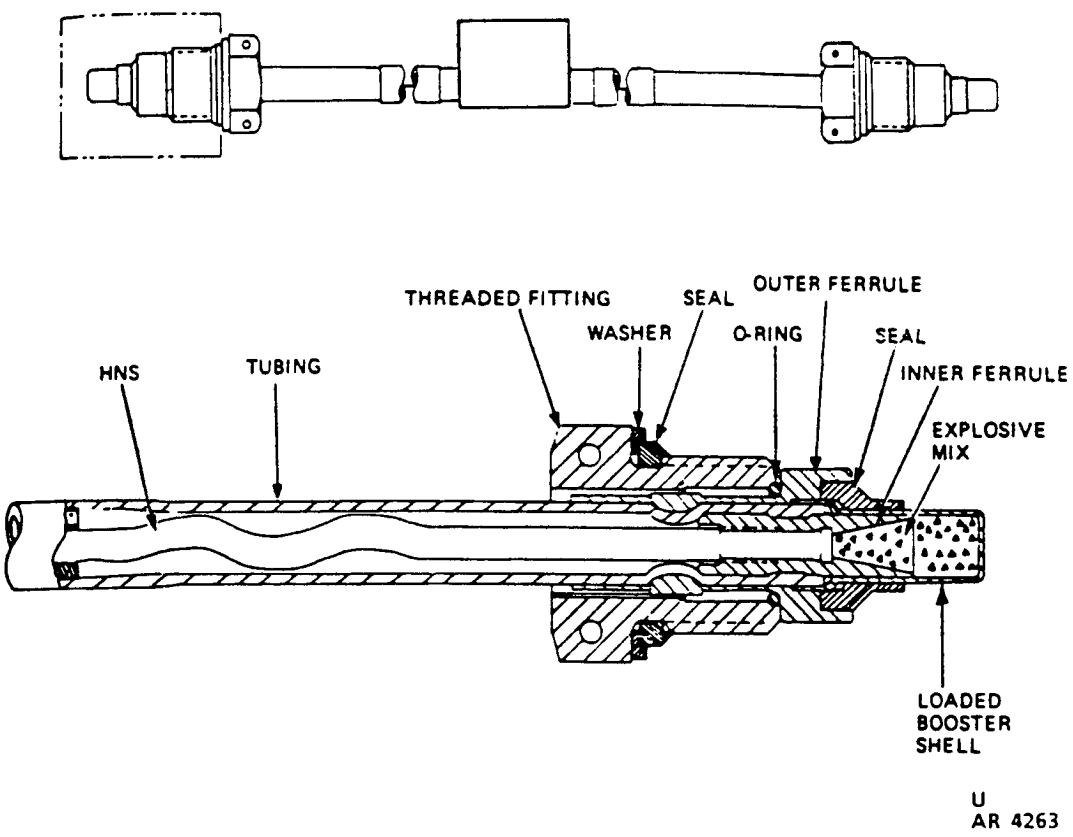
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS48)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ---------- 1377-00-410-8289
DODIC ---------- MS48
Drawing number ---------- 857AS400-17
Vendor (CAGE Code) and
part number ---------- (30003) 813475-15
209-030-711-17
Item Weight ---------- 0.227 lb
Diameter ---------- .18 in,
Length ---------- 30 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0,001561 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 4 x 40 in.
Items per package ---------- 1
Weight ---------- 0.501 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 3.06 x 1.25 x .93 ft
Weight ---------- 15 lb
Cube ---------- 3.568 ft

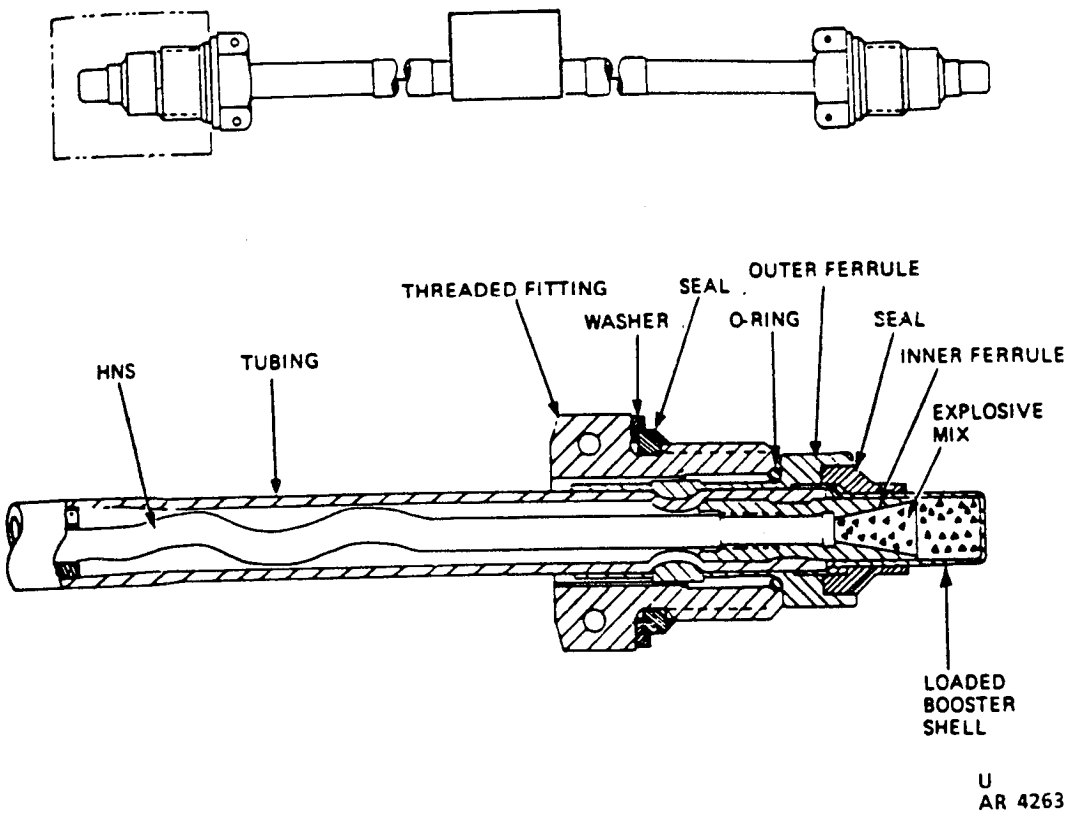
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS49)




**Type Classification:**

Refer to aircraft subsystem,

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design, The difference is in length and amount of explosive.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-00-410-8222 |
| DODIC | MS49 |
| Drawing number | 857AS400-21 |
| Vendor (CAGE Code) and part number | (30003) 813475-21<br>209-030-711-21 |
| Item Weight | 0.389 lb |
| Diameter | 0.18 in. |
| Length | 34 in. |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type II, grade A |
| Weight | 0.002685 lb |

**Performance:**

| | |
|---|---|
| Minimum detonation velocity | 6050 meter/see at -65°F (-54°C) |

**Firing Temperature Limits:**

| | |
|---|---|
| Upper | +200°F (+93°C) |
| Lower | -65°F (-54°C) |

**Packaging:**

| | |
|---|---|
| Inner Container: | |
| Reference | MIL-B-117 |
| Type | Bag, sealed |
| Dimensions | 6 x 47 in. |
| Items per package | 1 |
| Weight | 0.50 lb |
| Outer Container: | |
| Reference | PPP-B-636 |
| Type | Fiber board box |
| Dimensions | 3.62 X 3.29 × 1.33 ft |
| Weight | 20 lb |
| Cube | 11.464 cu ft |

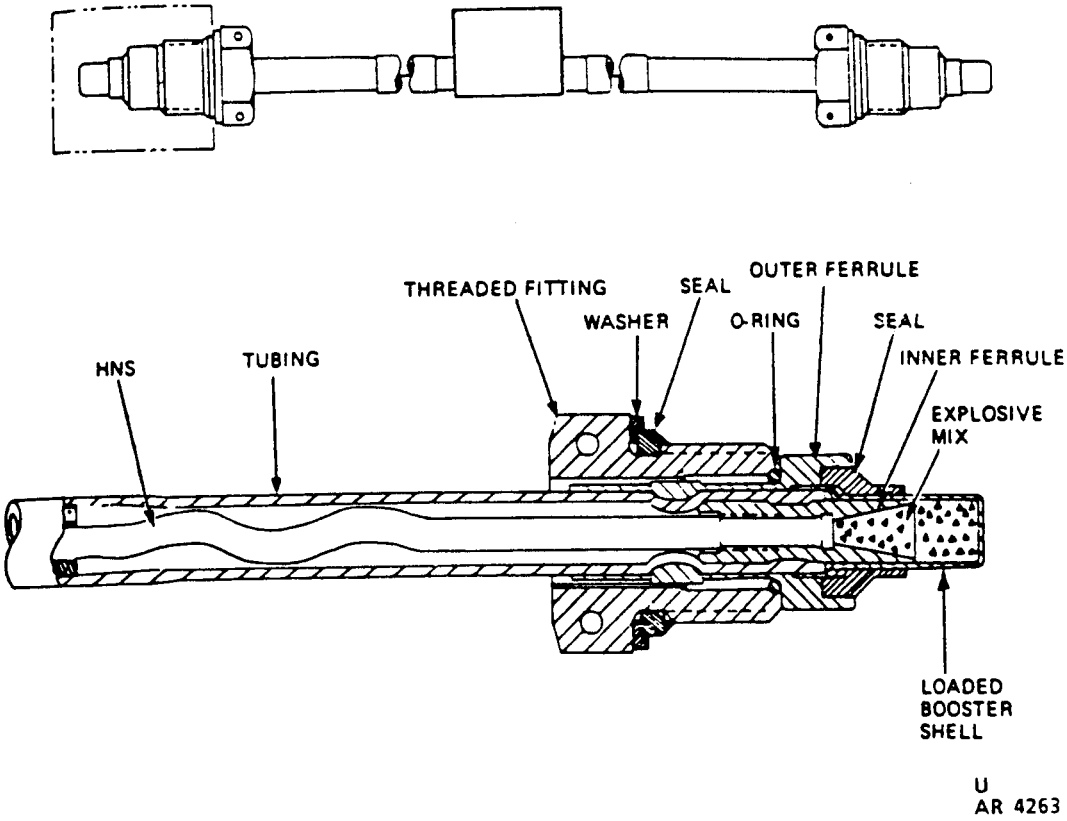
**Shipping and Storage Data:**

| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | S |
| DOT shipping class | C |
| DOT designation | LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY KEEP FIRE AWAY |

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS50)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description (General all sizes)**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ---------- 1377-00-409-1100
DODIC ---------- MS50
Drawing number ---------- 857AS400-25
Vendor (CAGE Code) and
part number ---------- (30003) 813475-25
209-030-711-25
Item Weight ---------- 0.543 lb
Diameter ---------- 0.18 in.
Length ---------- 52 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.003856 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 6 x 100 in.
Items per package ---------- 1
Weight ---------- 0.75 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 3.50 x 4.75 x 1.37 ft
Weight ---------- 17 lb
Cube ---------- 22.776 cu ft

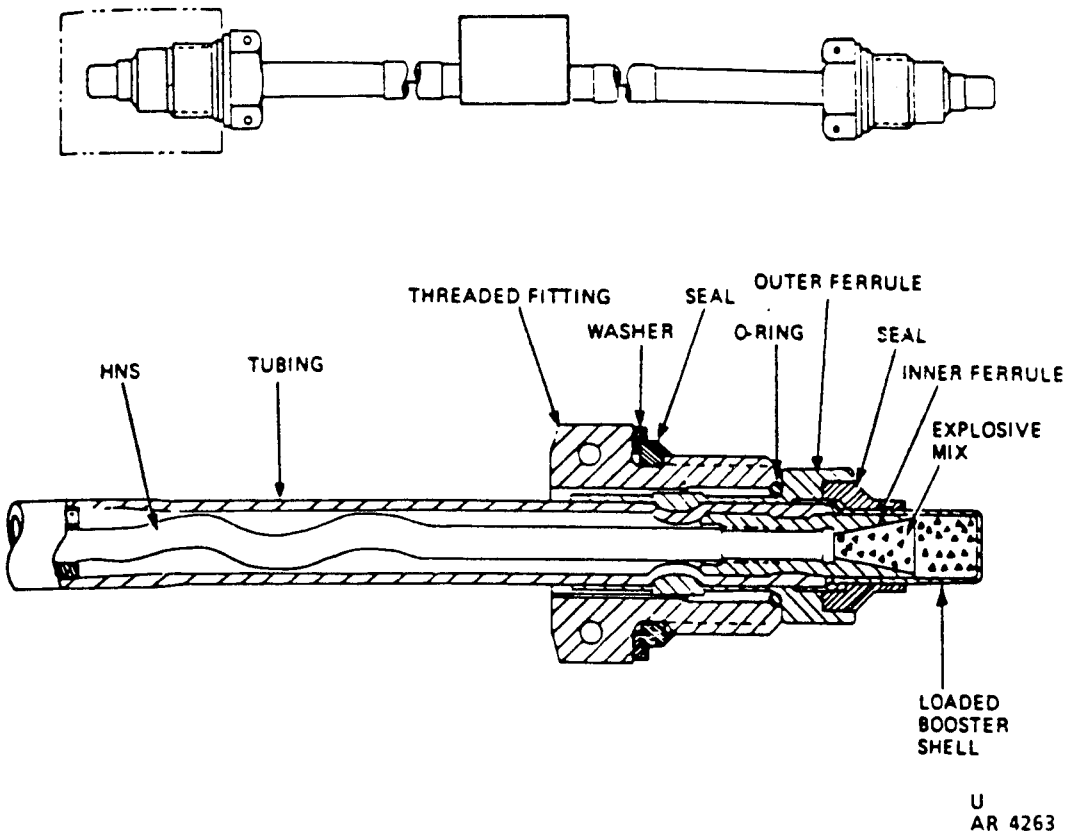
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS51)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description: (General all sizes)**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ---------- 1377-01-035-4124
DODIC ---------- MS51
Drawing number ---------- 857AS400-105
Vendor (CAGE Code) and
part number ---------- (30003) 813475-105
209-033-011-105
Item Weight ---------- 0.400 lb
Diameter ---------- 0.18 in.
Length ---------- 40 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0,002872 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/sec at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-636
Type ---------- Bag, sealed
Dimensions ---------- 6 x 79 in.
Items per package ---------- 1
Weight ---------- 2.50 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 4.02 x 2.33x 2.54 ft
Weight ---------- 20 lb
Cube ---------- 23.791 cu ft

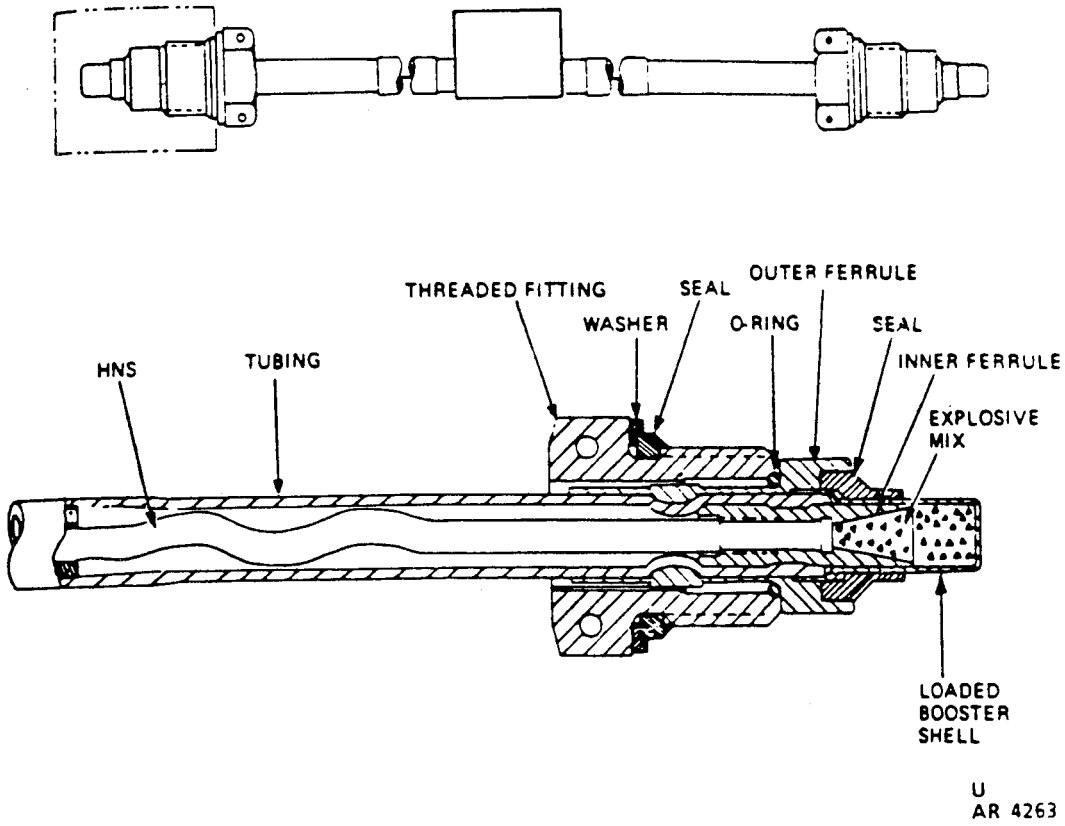
**Shipping and Storage Data**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS52)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description (General all sizes)**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design, The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ..... 1377-01-037-9237
DODIC ---------- MS52
Drawing number ---------- 857AS400-107
Vendor (CAGE Code) and
part number ---------- (30003) 813475-107
116415-7
Item Weight ---------- 0.183 lb
Diameter ---------- 0.18 in.
Length ---------- 22 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.001455 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 4 x 32 in.
Items per package ---------- 1
Weight ---------- 0.25 lb

Outer Container:
Reference ---------- PPP-B-566
Type ---------- Fiber board box
Dimensions ---------- 3.0 x 1.18 x .98 ft
Weight ---------- 15 lb
Cube ---------- 3.461 cu ft

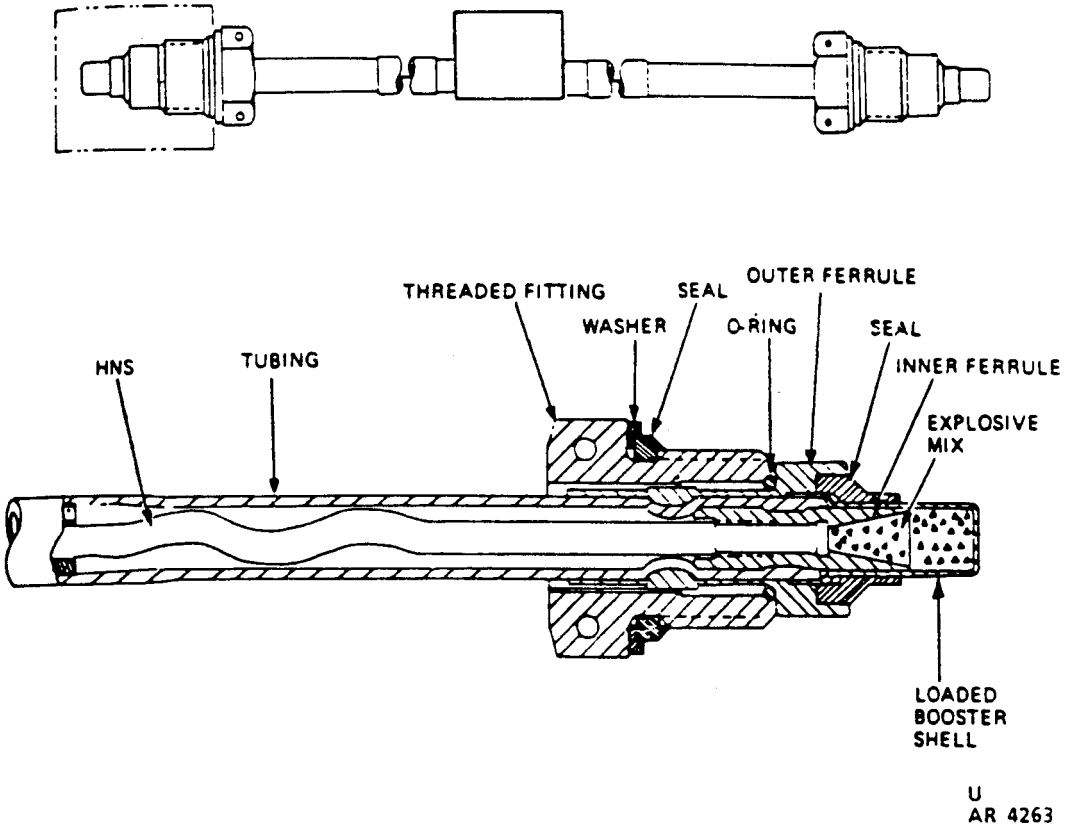
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS53)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description: (General all sizes)**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design, The difference is in length and amount of explosive,

**Tabulated Data:**

NSN ---------- 1377-01-037-4090
DODIC ---------- MS53
Drawing number ---------- 857AS400-109
Vendor (CAGE Code) and
part number ---------- (30003) 813475-109
116415-9
Item Weight ---------- 0.132 lb
Diameter ---------- 0.18 in.
Length ---------- 18 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS. type II. grade A
Weight ---------- 0.001463 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/sec at -65°F (-54°C)

Firing Temperature Limits:

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag. sealed
Dimensions ---------- 24x 4 in.
Items per package ---------- 1
Weight ----------

Outer Container:
Reference ---------- PPP-B-1672
Type ---------- Fiber board box
Dimensions ---------- 1.67 x 1.13x 0.58 ft
Weight ---------- 12 lb
Cube ---------- 1.907 cu ft

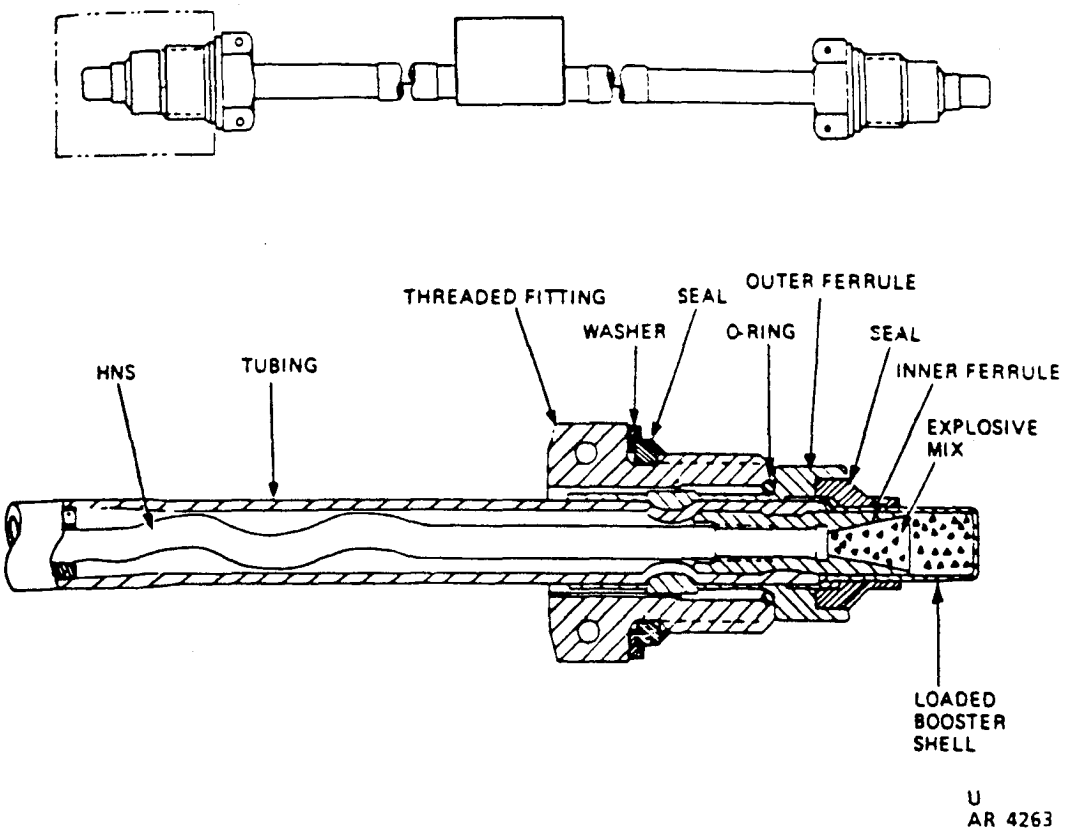
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- FLEXIBLE LINEAR SHAPED CHARGE, HANDLE CAREFULLY) KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385. App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS54)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description (General all sizes)**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data**

NSN ..... 1377-01-037-4096
DODIC ---------- MS54
Drawing number ---------- 857AS400-111
Vendor (CAGE Code) and
part number ---------- (30003) 813475-111
116415-11
Item Weight ---------- 0.114 lb
Diameter ---------- 0.18 in.
Length ---------- 13 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.001036 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 6 x 19 in.
Items per package ---------- 1
Weight ----------

Outer Container:
Reference ---------- PPP-B-1672
Type ---------- Fiber board box
Dimensions ---------- 1.75 x 1.08x 0.88 ft
Weight ---------- 12 lb
Cube ---------- 1.675 cu ft

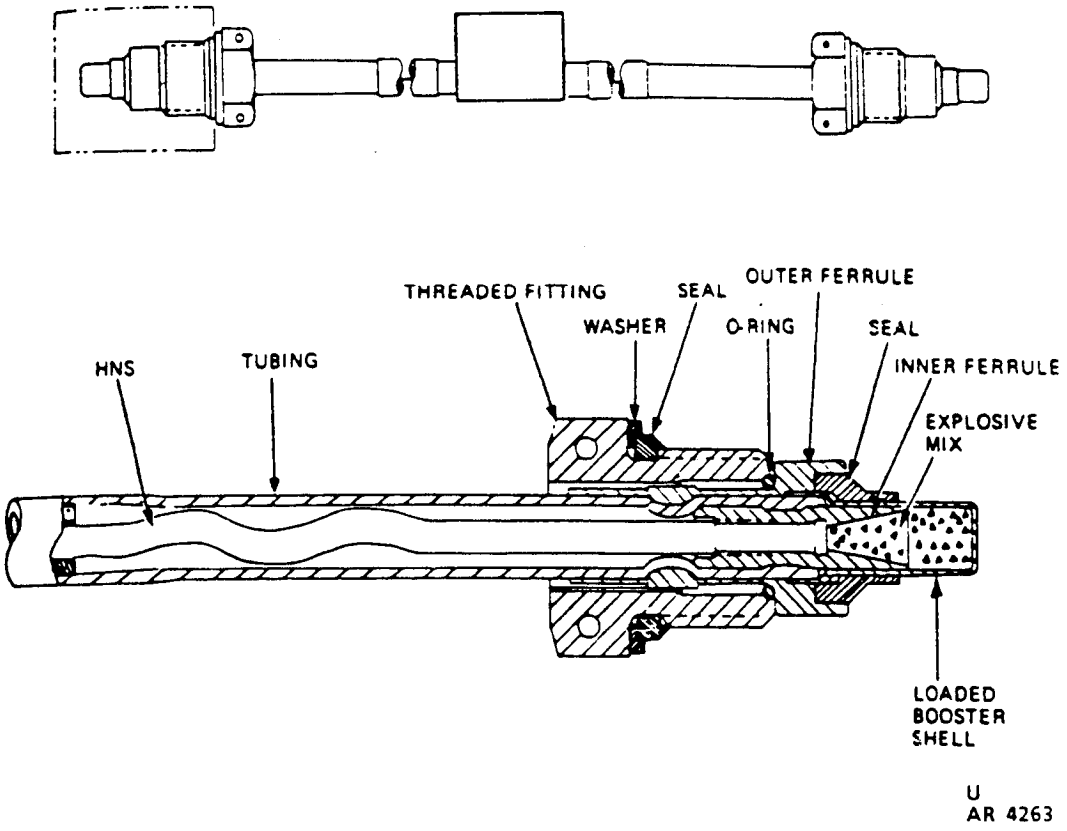
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- FLEXIBLE LINEAR SHAPED CHARGE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-208zP
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC):(MS55)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ---------- 1377-01-037-4095
DODIC ---------- MS55
Drawing number ---------- 857AS400-113
Vendor (CAGE Code) and
part number ---------- (30003) 813475-113
116415-13
Item Weight ---------- 0.209 lb
Diameter ---------- 0.18 in.
Length ---------- 26 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.001632 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 6 x 48 in.
Items per package ---------- 1
Weight ---------- 0.50 lb

Outer Container:
Reference ---------- PPP-B-566
Type ---------- Fiber board box
Dimensions ---------- 2.83 x 1.67 x 0.83 ft
Weight ---------- 15 lb
Cube ---------- 3.923 cu ft

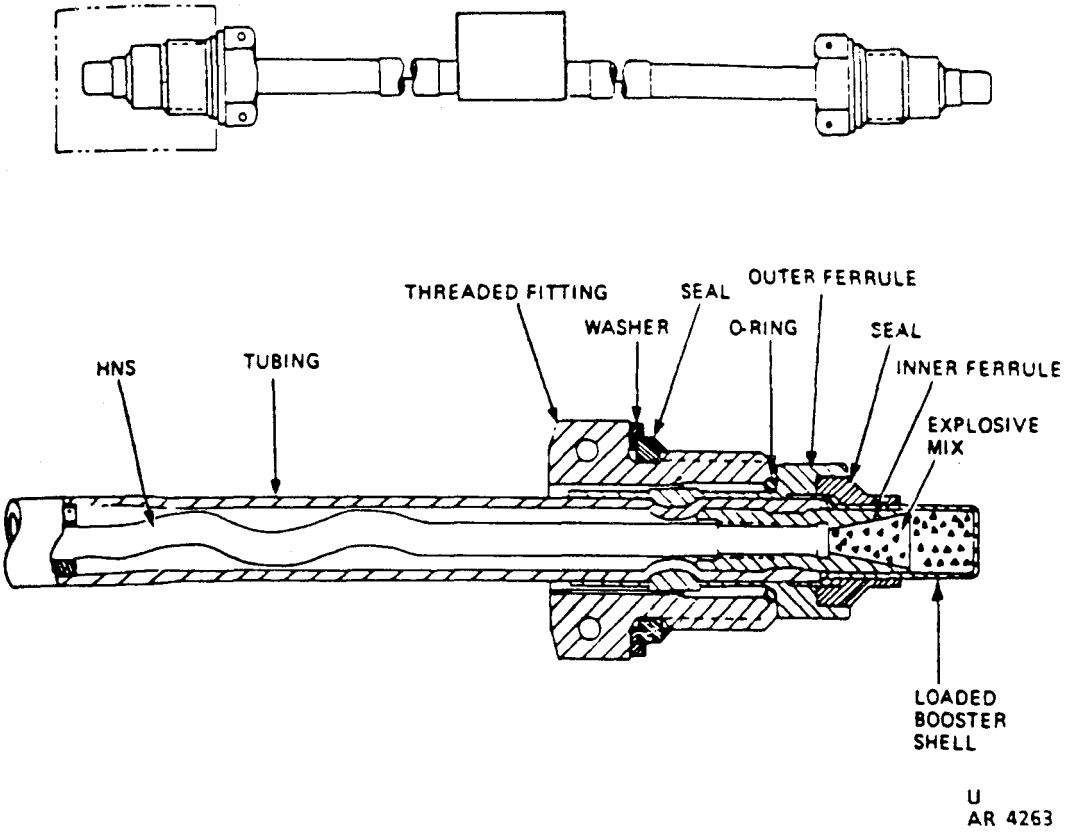
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- FLEXIBLE LINEAR SHAPED CHARGE, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS66)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data**

NSN ---------- 1377-01-037-4094
DODIC ---------- MS56
Drawing number ---------- 857AS400-115
Vendor (CAGE Code) and
part number ---------- (30003) 813475-115
116415-15
Item Weight ---------- 0.248 lb
Diameter ---------- 0.18 in.
Length ---------- 33 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.001852 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Plastic bag
Dimensions ---------- 6 x 46 in.
Items per package ---------- 1
Weight ---------- 0.25 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 3.48 x 1.58x 0.96 ft
Weight ---------- 15 lb
Cube ---------- 5.278 cu ft

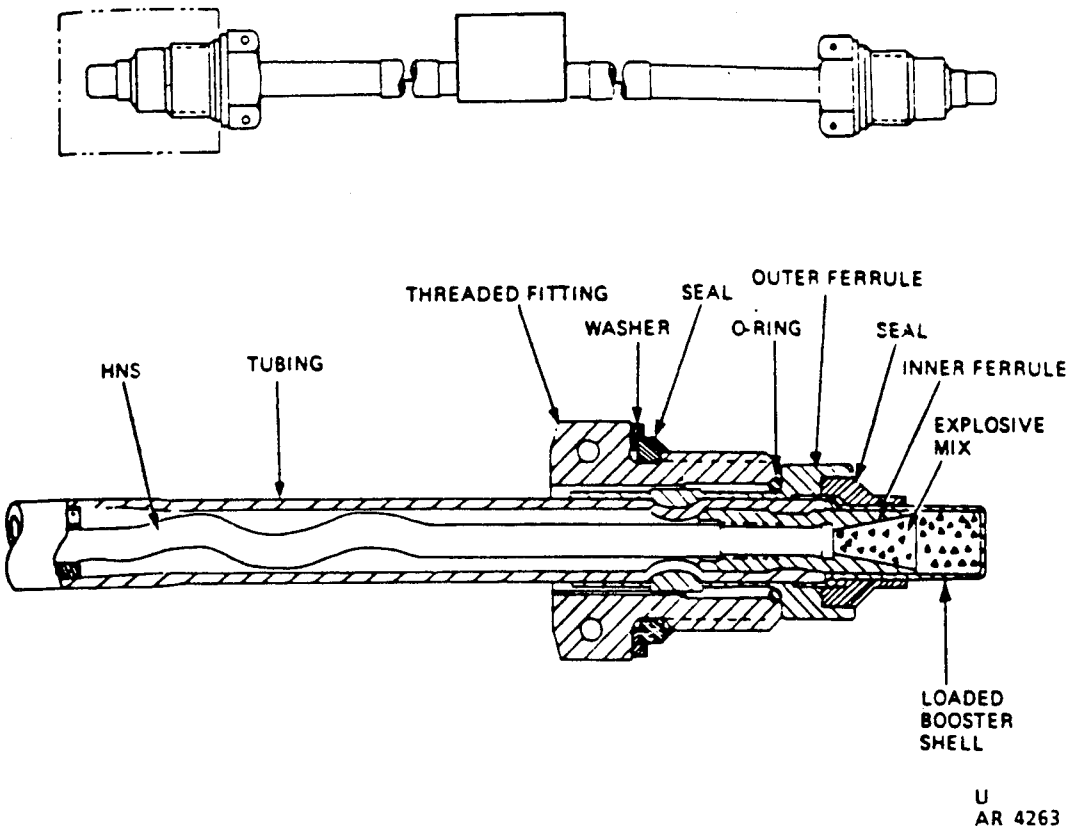
**Shipping and Storage Data**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-208zP
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS57)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ---------- 1377-01-037-4093
DODIC ---------- MS57
Drawing number ---------- 857AS400-117
Vendor (CAGE Code) and
part number ---------- (30003) 116415-15
813475-115
Item Weight ---------- 0.312 lb
Diameter ---------- 0.18 in.
Length ---------- 39 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.002270 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ---------- 6 x 65 in.
Items per package ---------- 1
Weight ---------- 0.50 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 4.04 x 2.21 x 0.92 ft
Weight ---------- 20 lb
Cube ---------- 8.214 cu ft

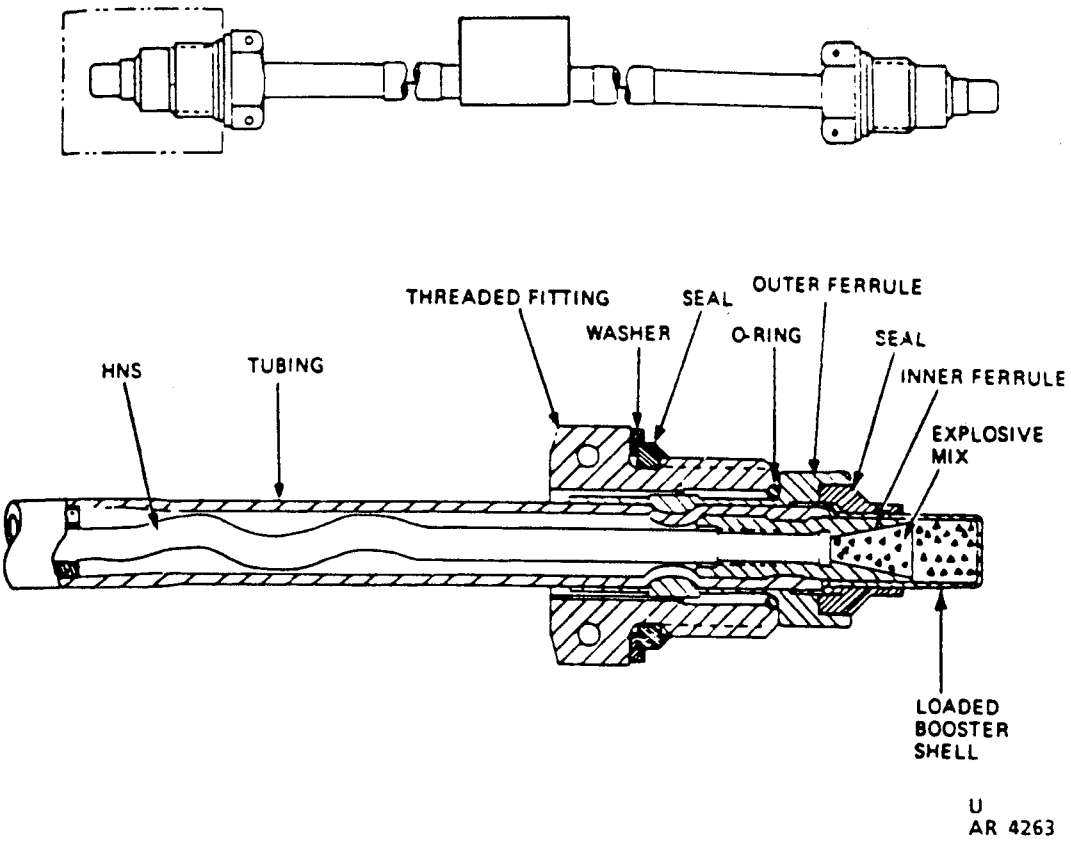
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS58)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ..... 1377-01-032-3286
DODIC ---------- MS58
Drawing number ---------- 857AS400-119
Vendor (CAGE Code) and
part number ---------- (30003) 116415-19
813475-119
Item Weight ---------- 0.1151b
Diameter ---------- 0.18 in.
Length ---------- 20 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.001036 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ---------- 4 x 22 in.
Items per package ---------- 1
Weight ---------- 0.25 lb

Outer Container:
Reference ---------- PPP-C-1672
Type ---------- Fiber board box
Dimensions ---------- 1.54 x 1.04x 0.27 ft
Weight ---------- 2.0 lb
Cube ---------- 0.464 cu ft

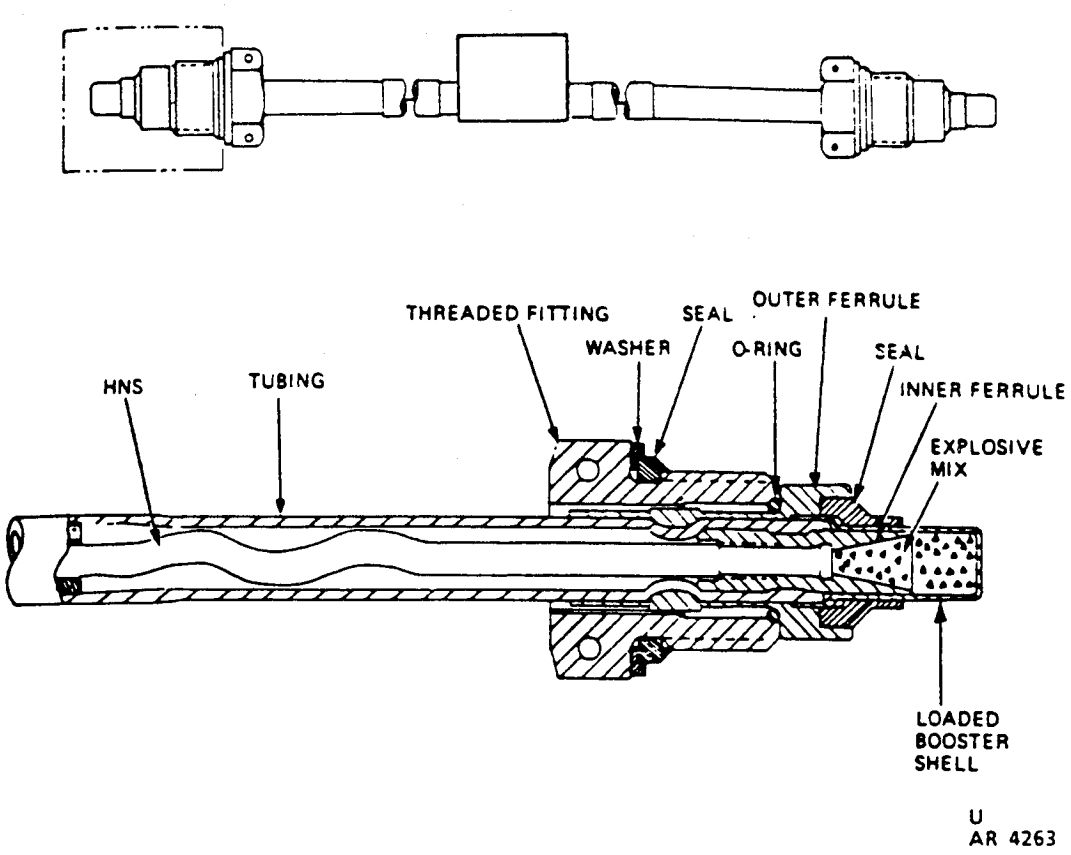
Shipping and Storage Data:

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS59)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design, The difference is in length and amount of explosive.

**Tabulated Data**

NSN ..... 1377-01-032-3283
DODIC ---------- MS59
Drawing number ---------- 857AS400-125
Vendor (CAGE Code) and
part number ---------- (30003) 116415-25
813475-125
Item Weight ---------- 0,0197 lb
Diameter ---------- 0.18 in,
Length ---------- 27 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.0017631b

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ---------- 4 x 43 in.
Items per package ---------- 1
Weight ---------- 0,25 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 3.33 x 1.75x 0.73 ft
Weight ---------- 15 lb
Cube ---------- 4.254 cu ft

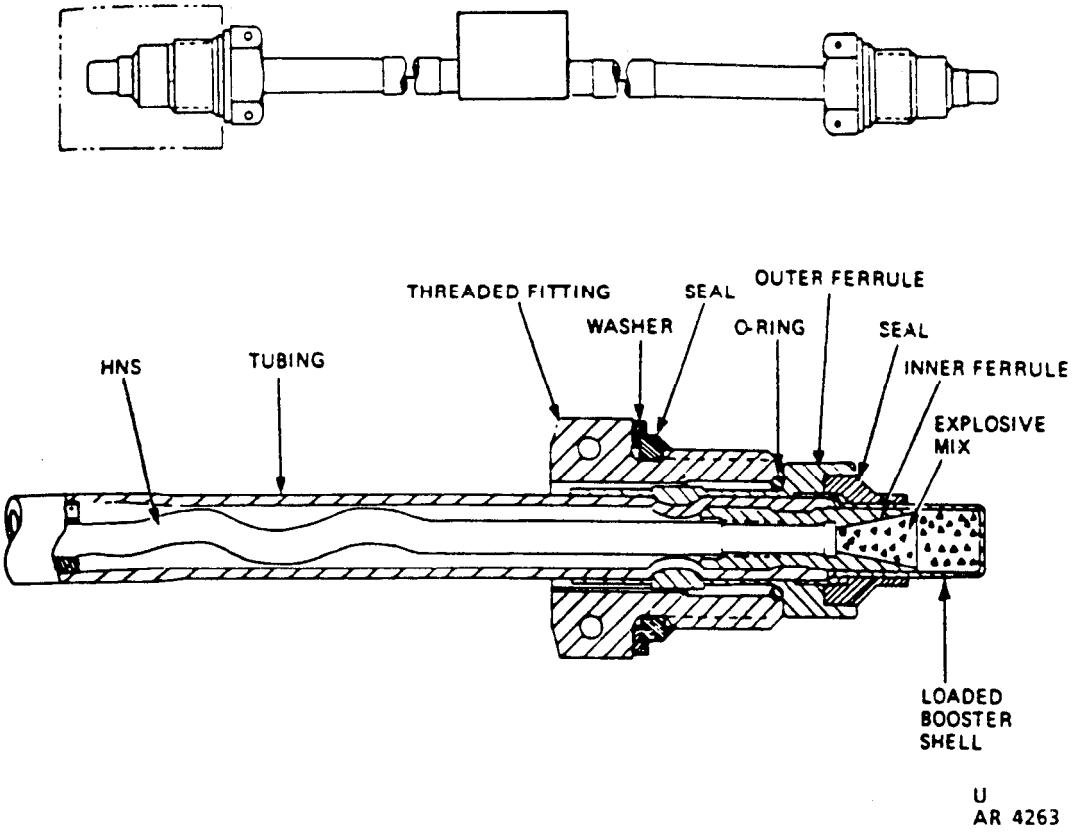
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS60)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design, The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ---------- 1377-01-032-3279
DODIC ---------- MS60
Drawing number ---------- 857AS400-123
Vendor (CAGE Code) and
part number ---------- (30003) 116415-23
813475-123
Item Weight ---------- 0.208 lb
Diameter ---------- 0.18 in.
Length ---------- 36 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.001609 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65° F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag. heat sealed
Dimensions ---------- 6 x 53 in.
Items per package ---------- 1
Weight ---------- 0.25 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 3.64 x 1.33x 0.64 ft
Weight ---------- 15.0 lb
Cube ---------- 3.098 cu ft

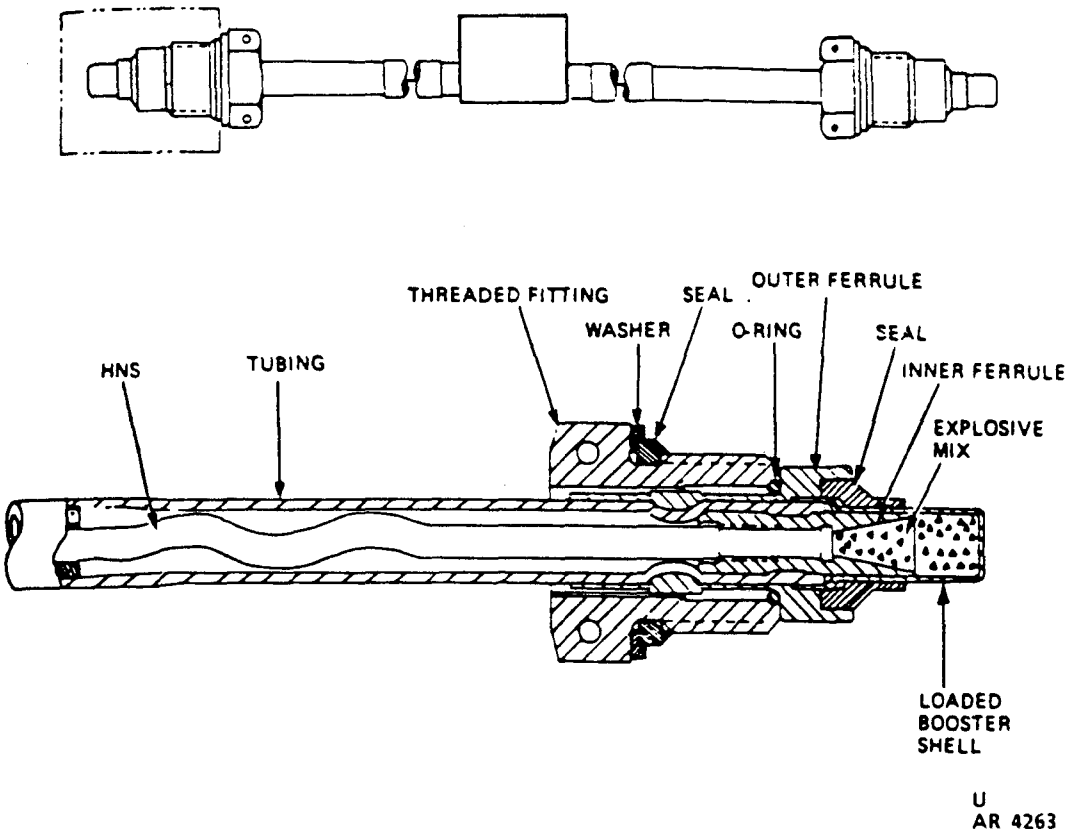
**Shipping and Storage Data**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS61)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design. The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ..... 1377-01-032-3280
DODIC ---------- MS61
Drawing number ---------- 857AS400-121
Vendor (CAGE Code) and
part number ---------- (30003) 116415-21
813475-121
Item Weight ---------- 0.226 lb
Diameter ---------- 0.18 in,
Length ---------- 31 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.001543 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ---------- 6 x 37 in.
Items per package ---------- 1
Weight ---------- 0.25 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 2.96 X 1.25X 0.93 ft
Weight ---------- 12.0 lb
Cube ---------- 3.441 cu ft

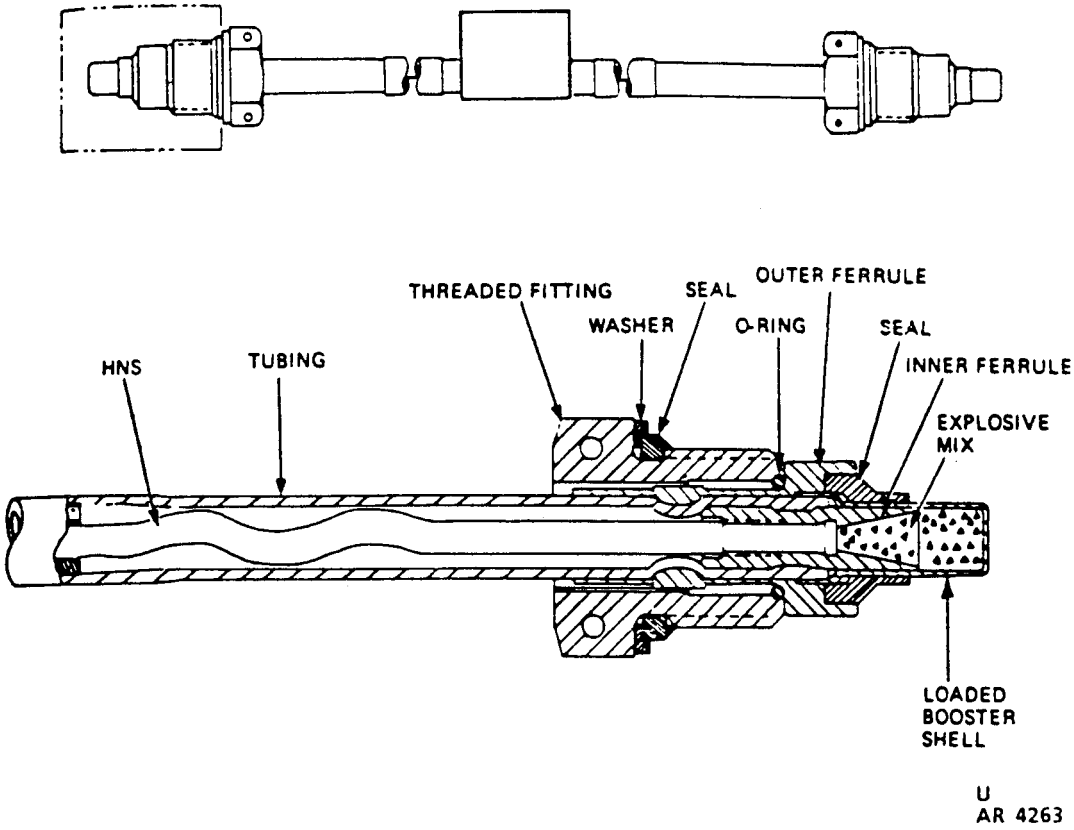
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- s
DOT shipping class ---------- c
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS62)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the Window Cutting Assembly (WCA) of the gunner's canopy window used in the Emergency Canopy Removal System of the AH-1 series Helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fitting, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly.

**NOTE**

The MS47 thru MS62 are identical in physical appearance and design, The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ..... 1377-01-100-1718
DODIC ---------- MS62
Drawing number ---------- 857AS400-127
Vendor (CAGE Code) and
part number ---------- (30003) 116415-27
813475-127
Item Weight ---------- 0.065 lb
Diameter ---------- 0.18 in,
Length ---------- 8 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Silver sheathed, high fine silver 99.95%
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.000727 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ---------- 4 x 16 in,
Items per package ---------- 1
Weight ---------- 0.25 lb

Outer Container:
Reference ---------- PPP-B-1672
Type ---------- Fiber board box
Dimensions ---------- 1.54 x 1.04x 0.27 ft
Weight ---------- 2.50 lb
Cube ---------- 0.432 cu ft

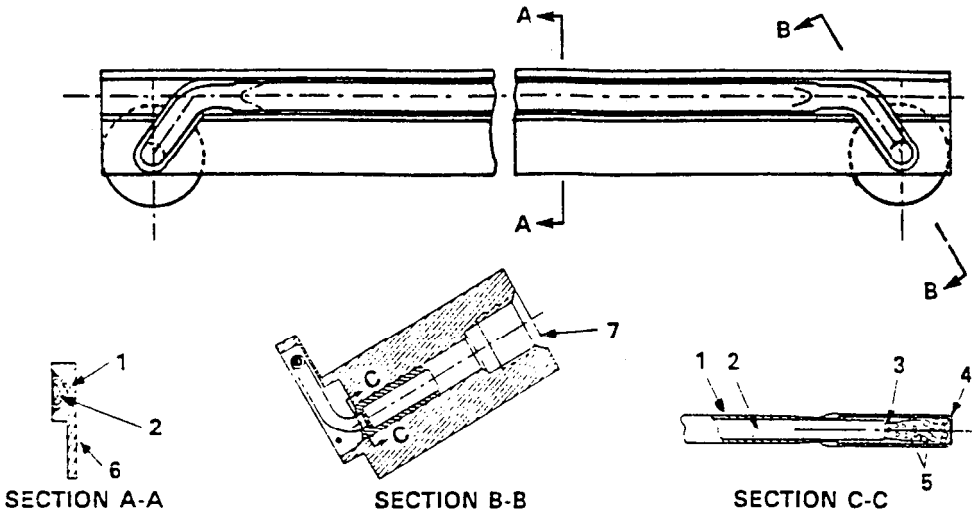
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**Reference:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## LINEAR EXPLOSIVE ASSEMBLY (LEA): (MS76)




LEGEND

1 THERMOFIT HEAT SHRINKABLE TUBING
2 FLEXIBLE LINEAR EXPLOSIVE ASSEMBLY SHAPED CHARGE
3 PRELOADED FERRULE ADAPTER
4 LOADED SHELL
5 HNS
6 HOLDER SUBASSEMBLY
7 SMDC PORT

U
AR 4291

**Type Classification:**

Refer to aircraft subsystem

**Use:**

The Linear-Explosive Assembly is used in the AH-1 E/F/P helicopter to explosively sever the canopy door hinge in an emergency.

**Functioning:**

**NOTE**

The MS76 and MS77 are identical in physical appearance to the M79, The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ..... 1377-01-032-1047
DODIC ---------- MS76
Drawing number ---------- 6261062
Vendor (CAGE Code) and
part number ---------- 115362-1816986-1
Item Weight ---------- 0.344 lb
Diameter ---------- N/A
Length ---------- 30.70 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ----------

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ---------- 4 x 37 in.
Items per package ---------- 1
Weight ---------- 0.25 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 3.25 x 0.79x 0.71 ft
Weight ---------- 10.00 lb
Cube ---------- 1.823 cu ft

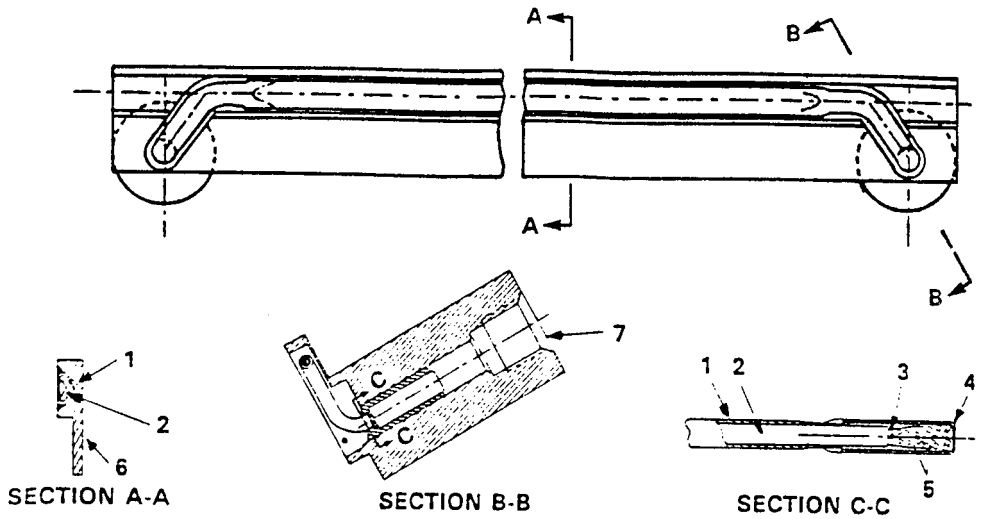
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- FLEXIBLE LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## LINEAR EXPLOSIVE ASSEMBLY (LEA): (MS77)




LEGEND

1 THERMOFIT HEAT SHRINKABLE TUBING
2 FLEXIBLE LINEAR EXPLOSIVE ASSEMBLY SHAPED CHARGE
3 PRELOADED FERRULE ADAPTER
4 LOADED SHELL
5 HNS
6 HOLDER SUBASSEMBLY
7 SMDC PORT

U
AR 4291

**Type Classification:**

Refer to aircraft subsystem

**Use:**

The Linear-Explosive Assembly is used in the AH-1 E/F/P helicopter to explosively sever the canopy door hinge in an emergency.

**Functioning:**

**NOTE**

The MS76 and MS77 are identical in physical appearance to the M79, The difference is in length and amount of explosive.

Tabulated Data:

NSN ---------- 1377-01-032-1048
DODIC ---------- MS77
Drawing number ---------- 6261062
Vendor (CAGE Code) and
pmt. number ---------- 115362 -3816986-3
Item Weight ---------- 0.0408 lb
Diameter ---------- N/A
Length ---------- 38.95 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.006216 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ---------- 4 x 44 in.
Items per package ---------- 1
Weight ---------- 0.50 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 4.00 x 0.81 x 0.73 ft
Weight ---------- 12.00 lb
Cube ---------- 2.365 cu ft

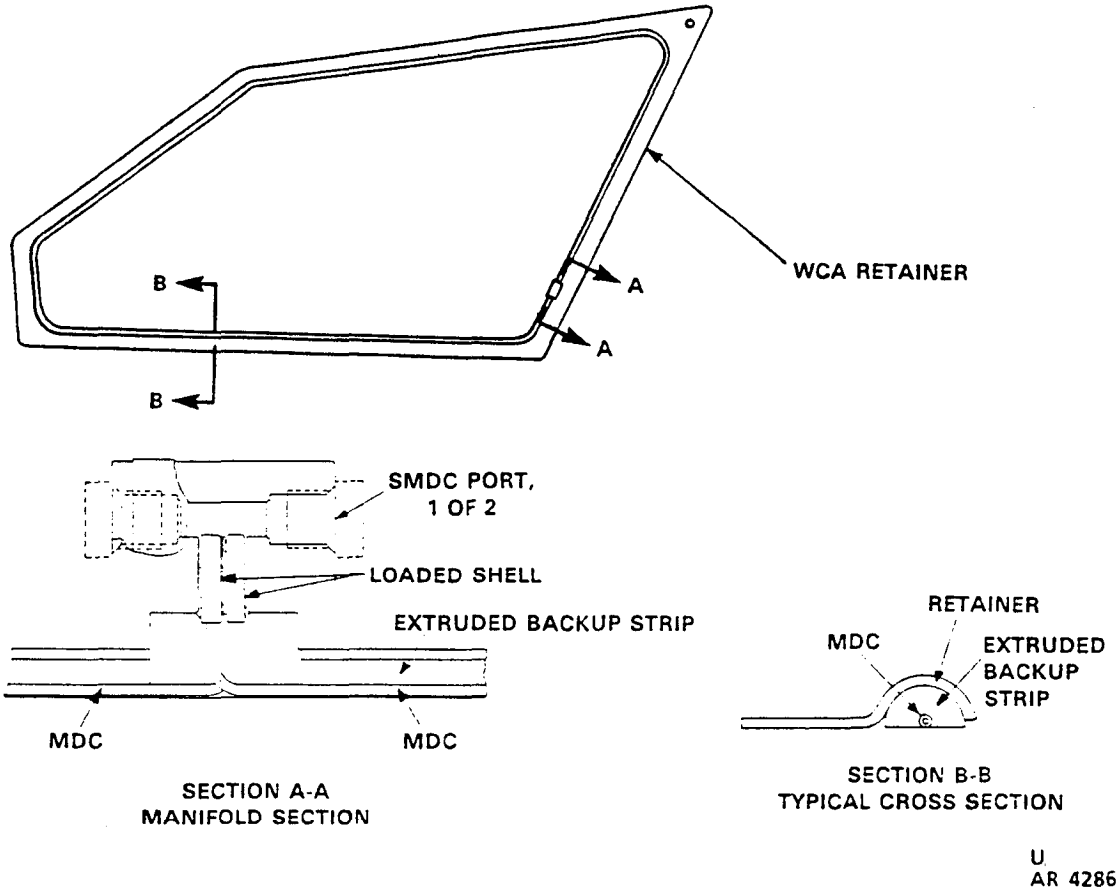
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- FLEXIBLE LINEAR SHAPED CHARGE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## LINEAR EXPLOSIVE ASSEMBLY, WINDOW (WCA): (MS78)




**Type Classification:**

Refer to aircraft subsystem

An explosive device used in the AH-1 E/F/P Helicopter Emergency Canopy Removal System to assure exit from or access to the crew compartment of the aircraft in an emergency.

Major components of the WCA are: manifold release assemblies and window cutting retainer subassemblies for doors and windows, linear explosive, extruded back-up cushion, retainer, and seal.

The assemblies are located on the periphery of the four windows in the crew compartment.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the interconnecting LEA and SMDC lines to the linear explosive of the WCA. The explosive force is outward? simultaneously cutting out the four plastic window glasses of the crew compartment.

**NOTE**

The MS76 and MS77 are identical in physical appearance to the M79. The difference is in length and amount of explosive,

**Tabulated Data:**

NSN ---------- 1377-01-032-1049
DODIC ---------- MS78
Drawing number ---------- 6261063
Vendor (CAGE Code) and
part number ---------- 816987-103 115406-9
Item Weight ----------
Diameter ----------
Length ---------- 55.25 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.005070 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

Firing Temperature Limits:

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ----------
Items per package ---------- 1
Weight ----------

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 5.27 x 3.00x 0.75 ft
Weight ---------- 30.00 lb
Cube ---------- 11.850 cu ft

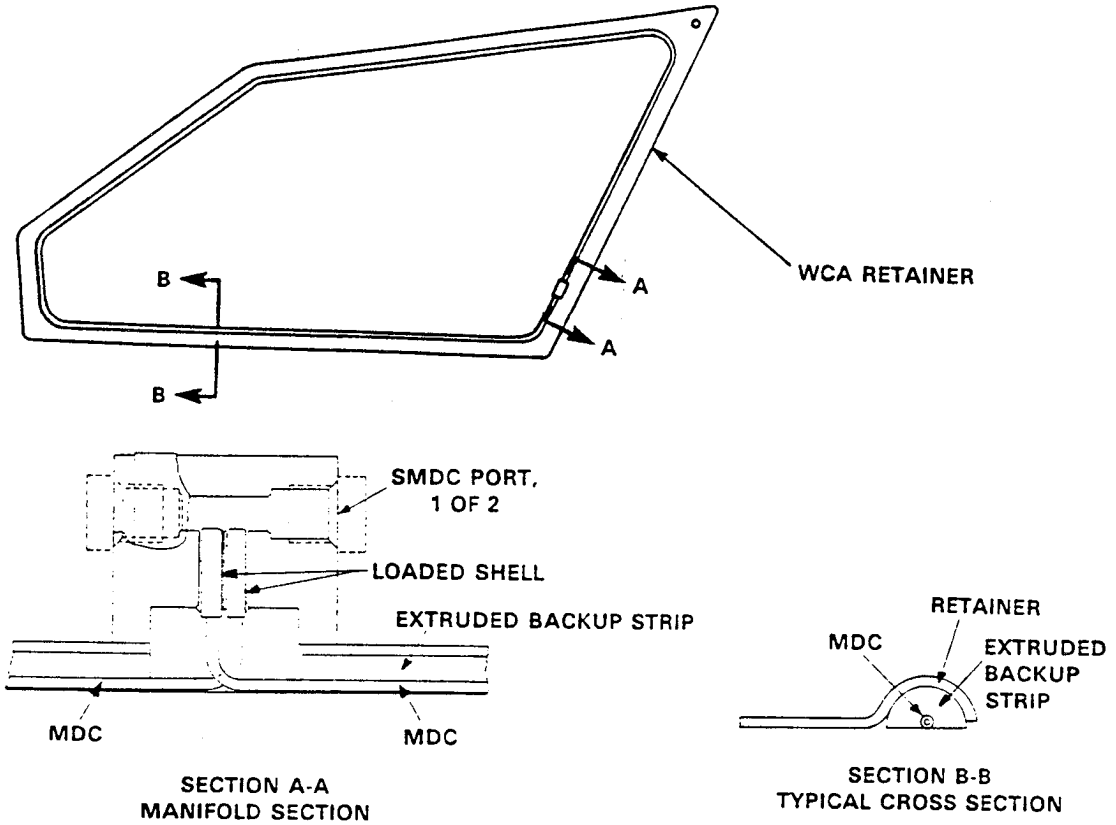
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- MILD DETONATING FUSE, METAL CLAD, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200 -20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## LINEAR-EXPLOSIVE ASSEMBLY, WINDOW (WCA): (MS79)




**Type Classification:**

Refer to aircraft subsystem

**Use:**

An explosive device used in the AH-1 E/F/P Helicopter Emergency Canopy Removal System to assure exit from or access to the crew compartment of the aircraft in an emergency.

**Description:**

Major components of the WCA are: manifold release assemblies and window cutting retainer subassemblies for doors and windows, linear explosive, extruded back-up cushion, retainer, and seal.

The assemblies are located on the outer edge of the four windows in the crew compartment.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing mechanisms, a detonation wave is received via the interconnecting LEA and SMDC lines to the linear explosive of the WCA, The explosive force is outward? simultaneously cutting out the four plastic window glasses of the crew compartment.

**NOTE**

The MS78 is identical in design and physical appearance to the MS79. The difference is in length and amount of explosive.

**Tabulated Data:**

NSN ..... 1377-01-032-1050
DODIC ---------- MS79
Drawing number ---------- 6261063
Vendor (CAGE Code) and
part number ---------- 816987-105
115405-7
Item Weight ----------
Diameter ----------
Length ---------- 55.50 in.
Method of actuation --------- High order detonation wave
Body Material ---------- Lead 6% antimony alloy sheathed
Propellant/explosive material:
Type ---------- HNS, type II, grade A
Weight ---------- 0.005488 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, heat sealed
Dimensions ---------- 66x 35.5 in.
Items per package ---------- 1
Weight ---------- 3 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 5.29 x 3.02 x 0.77 ft
Weight ---------- 30.00 lb
Cube ---------- 12.301 cu ft

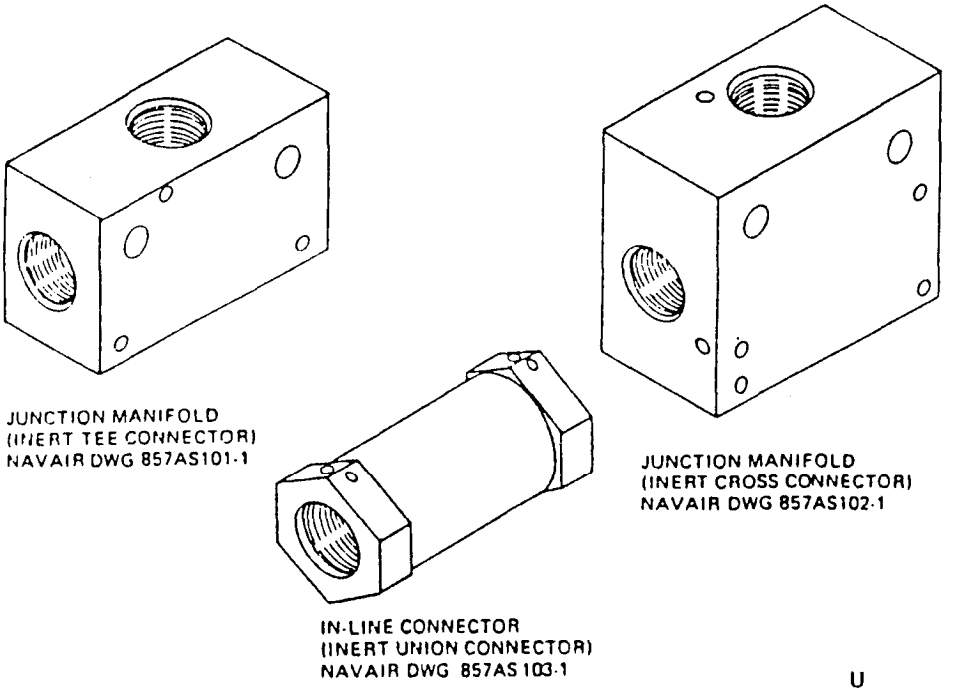
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TB 9-1300-385, App B

## INERT CONNECTORS




**Type Classification:**

Refer to helicopter subsystem.

**Use:**

Used in the AH-1 series helicopter canopy release system as detonation transfer media between detonating cord sequencing system assemblies, and as a means to secure the assemblies to the aircraft structure.

**Description:**

Three types of inert connectors are used as detonation transfers in the ballistic sequencing system: the tee, cross, and in-line (union).

There is one tee connector, mounted behind the gunner's seat which serves as a junction manifold for the crossover lines between the right and left junction manifolds and the interconnecting line assemblies from the nose (external) armed/firing mechanism.

The system has two cross connectors, one mounted in the upper right canopy structure and the other mounted in the upper left canopy structure. The cross connector mounted on the left serves as a junction manifold for ballistic sequencing assemblies between the pilot's armed/firing mechanism, the WCA for the gunner's door, and the tee connector behind the gunner's seat, The cross connector mounted on the right serves as a junction manifold for ballistic sequencing assemblies between the gunner's armed/firing mechanism, the WCA for the pilot's door, and the tee connector behind the gunner's seat.

There is one in-line connector mounted at the forward bulkhead in the nose section which serves as a connector union between the SMDC assemblies interconnecting the nose (external) armed/firing mechanism, and the junction manifold mounted behind the gunner's seat.

**Tabulated Data:**

**Tee Connector:**

NSN ---------- 1377-00-410-8228
Drawing number ---------- 857AS101-2
Vendor (CAGE Code) and
part number ---------- 813487-2 (30003)
209-030 -711-9
Weight ---------- 0.112 lb
Length ---------- 1.680 in.
Width ..... .0.760 in.
Depth ..... 1.050 in.

**Cross Connector:**

NSN ---------- 1377-00-409-1101
Drawing number ---------- 857AS102-1
Vendor (CAGE Code) and
part number ---------- 813488-1 (30003)
209-030-711-7
Weight ---------- 0.196 lb
Length ---------- 1.680 in.
Width ..... 0.875 in.
Depth ---------- 1.480

**In-Line Connector:**

NSN ---------- 1377-01-062-4195
Drawing number ----------
Vendor (CAGE Code) and
part number ---------- 819397-103
Weight ---------- 0.062 lb
Length ---------- 1.650 in.
Diameter ---------- 0.060 in.
Diameter (hex end
fittings) ---------- 0.075 in.

**Service Life:**

There is no specific service life for inert connectors because they consist of metal parts, (Refer to TB 9-1300-385, App B). However, due to installation torques and possible damage during SMDC line removal, all connectors should be checked for visible wear and tear and, if damaged, replaced.

Table 5-3 shows the detonating cord assemblies, inert connectors, and detonators used in AH-1E/F/P/S (MOD) Army helicopters.

**References:**

TB 9-1300-385, Appendix B

# CHAPTER 5

# EMERGENCY ESCAPE SYSTEMS FOR HELICOPTERS, AH-64

## Section II. AH-64 (APACHE)

### 5-2. General (for Army AH-64 (Apache) Helicopters).

a. Section 2 of this chapter contains descriptive and technical data pertaining to the systems used for the Army AH-64 Helicopter. The system is used to explosively cut and eject the windows of the canopy and doors from the canopy and door framing structure to provide a rapid means of escape and/or access from/to the crew compartment.

b. The AH-64 emergency canopy jettison system consists of four linear explosive canopy severance assemblies which are installed around the rim of the canopy windows and door windows of the crew compartment. Also, three armed/firing initiators (fig. 5-4) and interconnecting flexible confined detonating cord (FCDC) and shielded mild detonating cord (SMDC) lines. One arxned/firing initiator is located in the pilot's instrument panel to the left of the glare shield, another is located in the gunner/copilots right console, and the third is in the nose of the helicopter which is located to provide external access by rescue personnel. Any one of the three armed/firing initiators can be used to actuate the linear explosive escape system.

c. The detonating cord set consists of nine SMDC lines; five FCDC lines and four canopy severance assemblies. This chapter describes each assembly. Assemblies differ only in length and explosive weight. Table 5-4 is a list of the individual detonating cord lines, canopy severance assemblies and arming/firing initiators. Each explosive item includes the Department of Defense Identification Code (DODIC), Hughes Helicopter P/N, National Stock Number (NSN), Vendor Part Number, Nomenclature, Drawing number, and explosive weight.

d. This Section also contains descriptive information pertaining to the inert connectors in the AH-64 Helicopter canopy severance system. Table 5-5 has inert items with the National Stock Number, Vendor Part Number (CAGE Code), Nomenclature, Drawing Number and Quantity per helicopter.

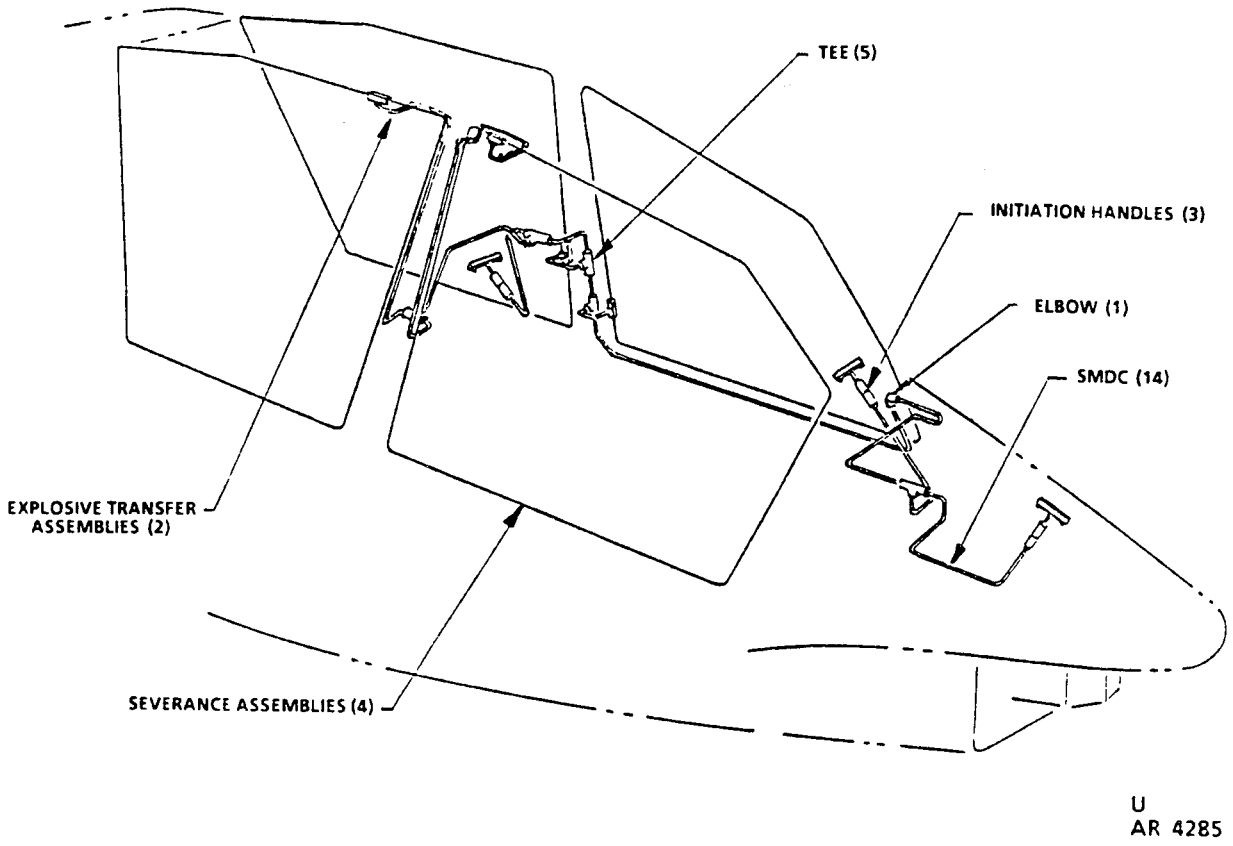



**Figure 5-3. AH-64 Emergency Canopy Jettison System Elements**

**TABLE 5-4. AH-64 HELICOPTER CANOPY SEVERANCE SYSTEM (EXPLOSIVE ITEMS)**

| DODIC | *HUGHES PART NO. | NSN 1377-01- | **EXPLOSIVE TECHNOLOGY PART NO. | NOMENCLATURE | DRAWING NO. | EXPLOSIVE WEIGHT (LB) | LENGTH (INCHES) |
|---|---|---|---|---|---|---|---|
| MS80 | 7-311112017-17 | 170-5244 | 51134-47 | CORD, DETONATING (SMDC) | 841AS425-47 | 0.002028 | 51.0 |
| MS81 | 7-311112017-15 | 170-5245 | 51134-53 | CORD, DETONATING (SMDC) | 841AS425-53 | 0.000529 | 4.0 |
| MS82 | 7311112017-13 | 170-5246 | 51134-51 | CORD, DETONATING (SMDC) | 841AS425-51 | 0.001587 | 29.0 |
| MS83 | 7-311112017-27 | 170-5261 | 51134-45 | CORD, DETONATING (SMDC) | 841AS425-45 | 0.002601 | 59.0 |
| MS84 | 7-311112017-25 | 170-5262 | 51134-57 | CORD, DETONATING (SMDC) | 841AS425-57 | 0.001829 | 36.0 |
| MS85 | 7-311112017-23 | 170-5263 | 51134-55 | CORD, DETONATING (SMDC) | 841AS425-55 | 0.000816 | 9.0 |
| MS86 | 7-311112017-21 | 170-5264 | 51134-23 | CORD, DETONATING (SMDC) | 841AS425-23 | 0.000529 | 4.0 |
| MS87 | 7-311112017-19 | 170-5265 | 51134-49 | CORD, DETONATING (SMDC) | 841AS425-49 | 0.000772 | 8.0 |
| MS88 | 7-311112017-29 | 186-9898 | 51134-35 | CORD, DETONATING (SMDC) | 841AS425-35 | 0.000506 | 3.0 |
| MS89 | 7-311112017-43 | 170-5260 | 51135-5 | CORD, DETONATING (FCDC) | 6260906-5 | 0.003024 | 9.45 |
| MS90 | 7-31111-2017-31 | 186-9899 | 51135-1 | CORD, DETONATING (FCDC) | 6260906-1 | 0.004800 | 15.0 |
| MS91 | 7-311112017-33 | 186.9900 | 51135-2 | CORD, DETONATING (FCDC) | 6260906-2 | 0.007040 | 22.0 |
| MS92 | 7-311112017-35 | 186-9901 | 51135-7 | CORD, DETONATING (FCDC) | 6260906-7 | 0.005104 | 15.95 |
| MS93 | 7-311112017-37 | 186-9902 | 51135-4 | CORD, DETONATING (FCDC) | 6206906-4 | 0.004800 | 15.0 |
| MS94 | 7-311112017-5 | 184-6112 | 51188-1 | CUTTING ASSEMBLY GUNNERS WINDOW | 6206965-1 | 0.004321 | 71X24.5X1.5 |
| MS95 | 7-311112017-7 | 185-6113 | 51390-1 | CUTTING ASSEMBLY PILOT'S WINDOW | 6260965-3 | 0.004079 | 47X34.5X1.5 |
| MS96 | 7-311112017-11 | 185-8908 | 51391-1 | CUTTING ASSEMBLY PILOT'S DOOR | 6260965-4 | 0.003814 | 44X33X1.5 |
| MS97 | 7-311112017-9 | 187-4477 | 41389-1 | CUTTING ASSEMBLY GUNNERS DOOR | 6260965-2 | 0.003946 | 66X23.5X1.5 |
| MT06 | 7-311112017-39 | 2696496 | 51207.3 | INITIATOR, MECH ACTUATED JUA-59/A | 6260964 | 0.000269 | 5.4X2.75X1.9 |

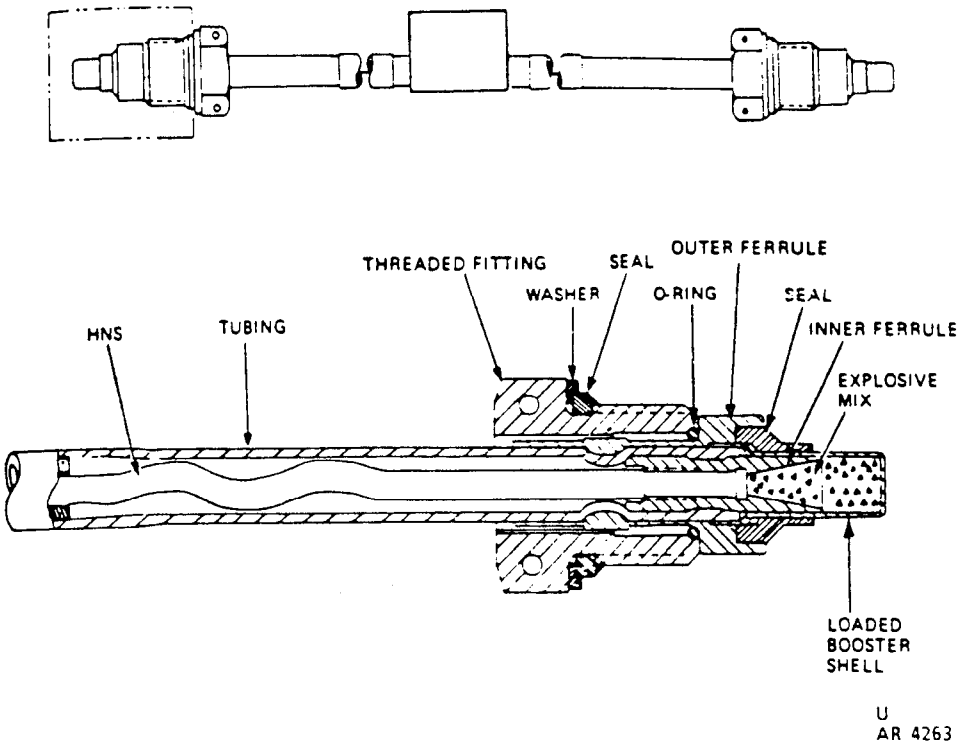
* CAGE Code element
** CAGE Code element

**TABLE 5-5. AH-64 HELICOPTER CANOPY SEVERANCE SYSTEM (INSERT CONNECTORS)**

| *HUGHES PART NO. | NSN 1377-01 | **EXPLOSIVE TECHNOLOGY PART NO. | NOMENCLATURE | DRAWING NO. | QTY PER A/C |
|---|---|---|---|---|---|
| 7-311112017-3 | 170-5319 | 21738-3 | CONNECTOR, TEE | 6261072 | 5 |
| 7-311112017-41 | 170-5321 | 21602-2 | CONNECTOR, 180 DEGREE UNION | 6261071 | 2 |
| 7-311112017-45 | 170-4493 | 23869-2 | CONNECTOR ELBOW | 6261073 | 1 |

* CAGE Code element
** CAGE Code element

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS80)




**Type Classification:**

Standard.
Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergency Canopy Removal System of the AH-64 series helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the canopy severance assemblies.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-170-5244 |
| DODIC | MS80 |
| Drawing number | 841AS42547 |
| CAGE Code and part number | 7-311112017-17 51134-47 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 51.0 in. |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.002028 lb |

**Performance:**

Minimum detonation velocity ---------- 6050 meter/see at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 6 x 65 in,
- Items per package ---------- 1 ea
- Weight ---------- 0.31 lb

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiber board box
- Dimensions ---------- 4.85 x 1.77 x 0.90 ft
- Weight ---------- 20.0 lb
- Cube ---------- 7.73 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

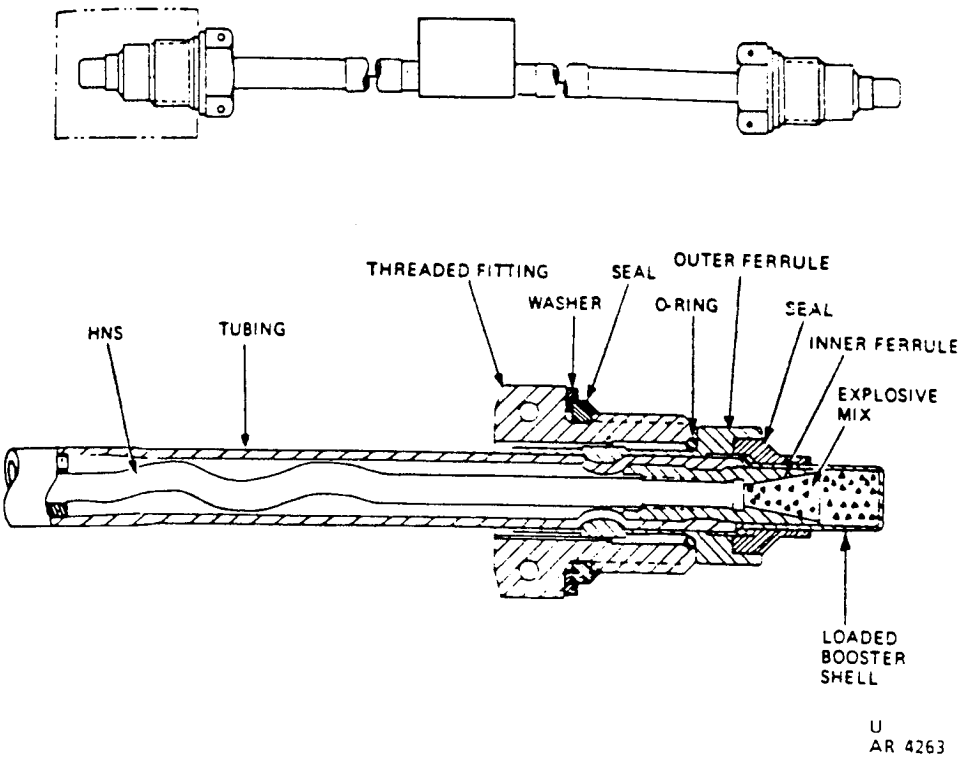
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP AWAY FROM FIRE,

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS81)




**Type Classification:**

Standard.
Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergency Canopy Removal System of the AH-64 series helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actu-

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-170-5245 |
| DODIC | MS81 |
| Drawing number | 841AS425-53 |
| CAGE Code and part number | 7-311112017-15 51134-53 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.000529 lb |

**Performance:**

Minimum detonation velocity ---------- 6050 meter/see at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 6 x 6 in,
- Items per package ---------- 1 ea
- Weight ---------- 0.04 lb

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiber board box
- Dimensions ---------- 0.9 x 0.65x 0.65 in,
- Weight ---------- 3.0 lb
- Cube ---------- 0.38 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65° F (-54°C)

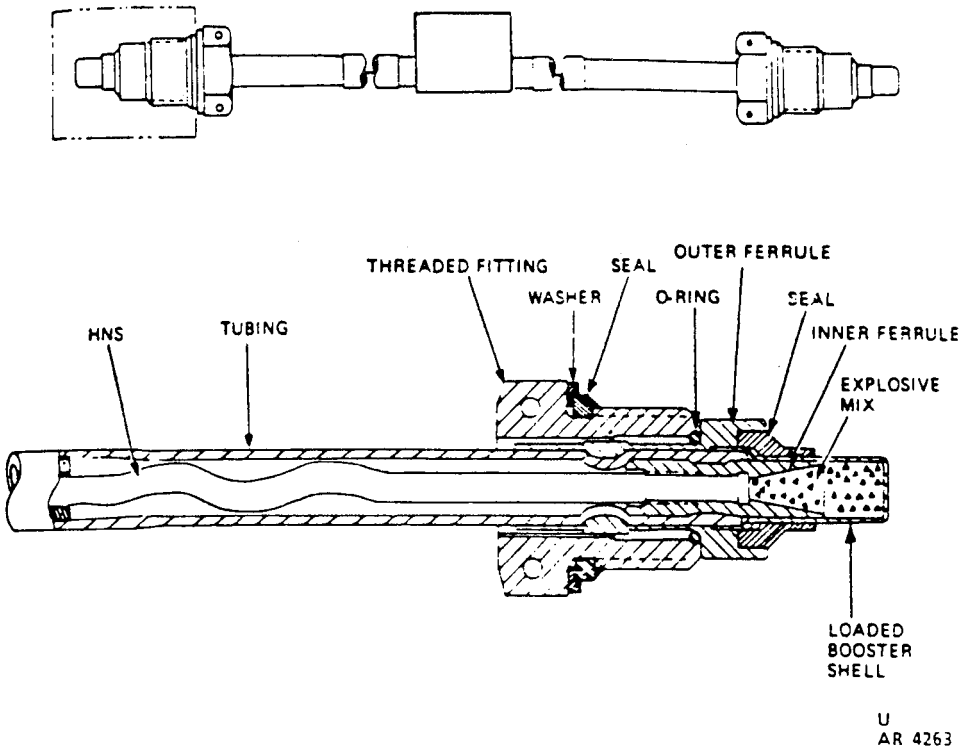
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY, KEEP AWAY FROM FIRE,

References:

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS82)




**Type Classification:**

Standard,
Refer to aircraft subsystem.

Use:

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergency Canopy Removal System of the AH-64 series helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell, The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the canopy severance assemblies,

Tabulated Data:

| | |
|---|---|
| NSN | 1377-01-170-5246 |
| DODIC | MS82 |
| Drawing number | 841AS425-51 |
| CAGE Code and part number | 7-311112017-13 51134-51 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 29.0 |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.001587 lb |

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 6 x 45 in.
Items per package ---------- 1 ea
Weight ---------- 0.24 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 2.98 x 0.98x 0.81 ft
Weight ---------- 15.0 lb
Cube ---------- 2.37 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65° F (-54°C)

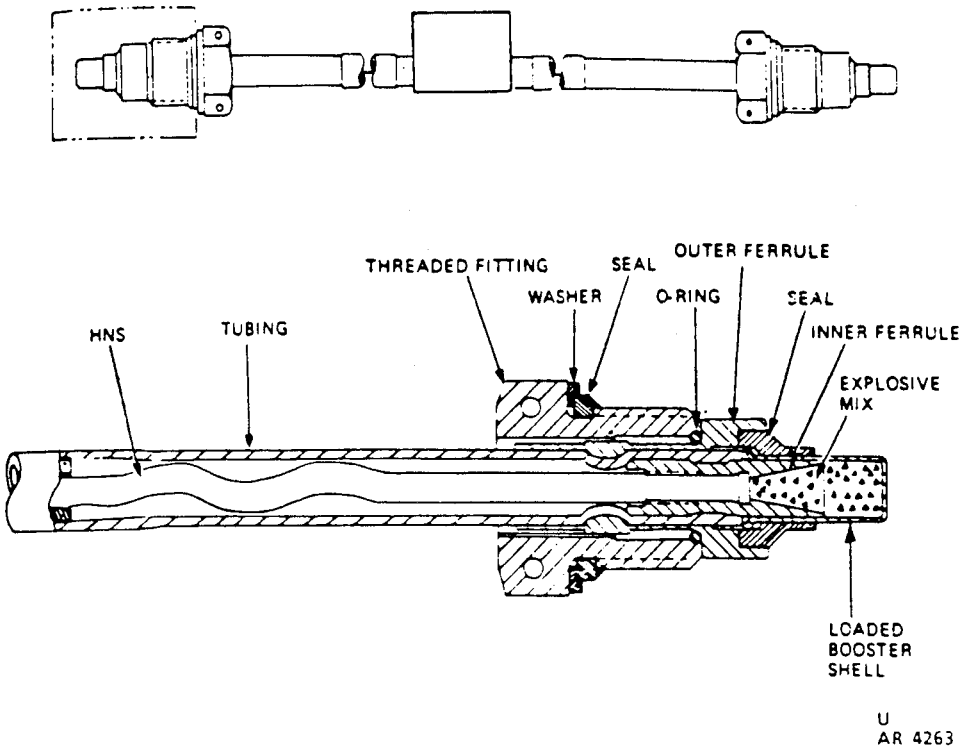
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS83)




**Type Classification:**

Standard.
Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergency Canopy Removal System of the AH-64 series helicopter,

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord,

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the canopy severance assemblies.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-170-5261 |
| DODIC | MS83 |
| Drawing number | 841AS425-45 |
| CAGE Code and part number | 7-311112017-27 51134-45 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 59.0 |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.002601 |

**Performance:**

Minimum detonation velocity ---------- 6050 meter/sec at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 6 x 80 in,
- Items per package ---------- 1 ea
- Weight ---------- 0.43 lb

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiber board box
- Dimensions ---------- 5.48 x 1.65 x 0.65 ft
- Weight ---------- 15.0 lb
- Cube ---------- 5.84 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

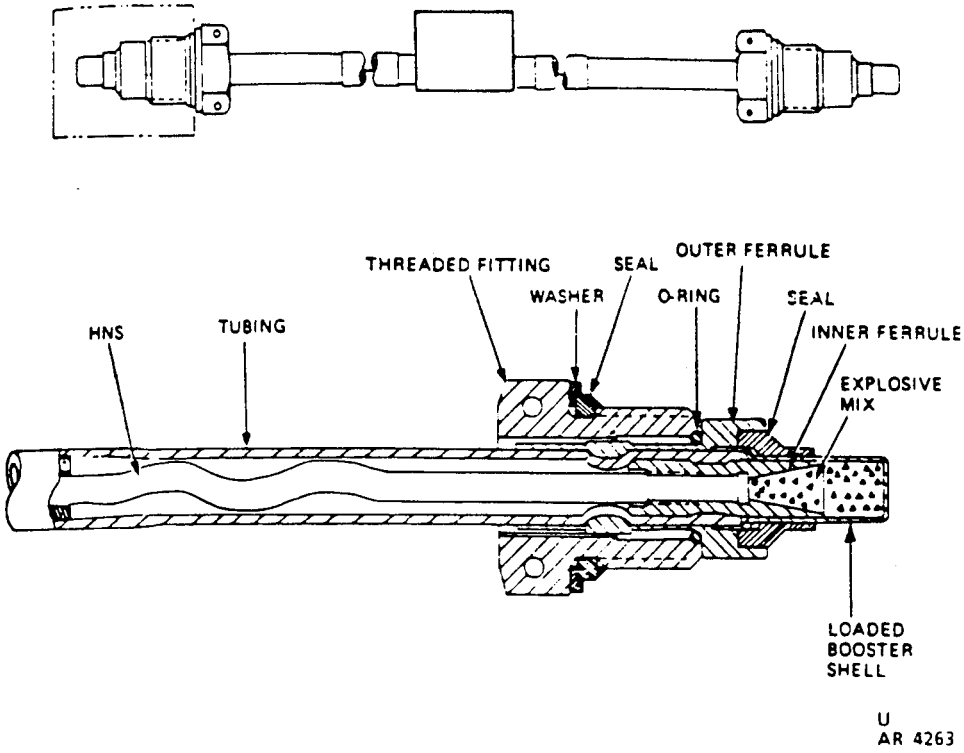
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS84)




**Type Classification:**

Standard.
Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergency Canopy Removal System of the AH-64 series helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the canopy severance assemblies.

Tabulated Data:

| | |
|---|---|
| NSN | 1377-01-170-5262 |
| DODIC | MS84 |
| Drawing number | 841AS425-57 |
| CAGE Code and part number | 7-311112017-25 51134-57 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 36.0 |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.001829 lb |

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/sec at -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 6 x 55 in,
Items per package ---------- 1 ea
Weight ---------- 0.28 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 3.56 x 1.90x .98 ft
Weight ---------- 17.0 lb
Cube ---------- 6.63 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65° F (-54° C)

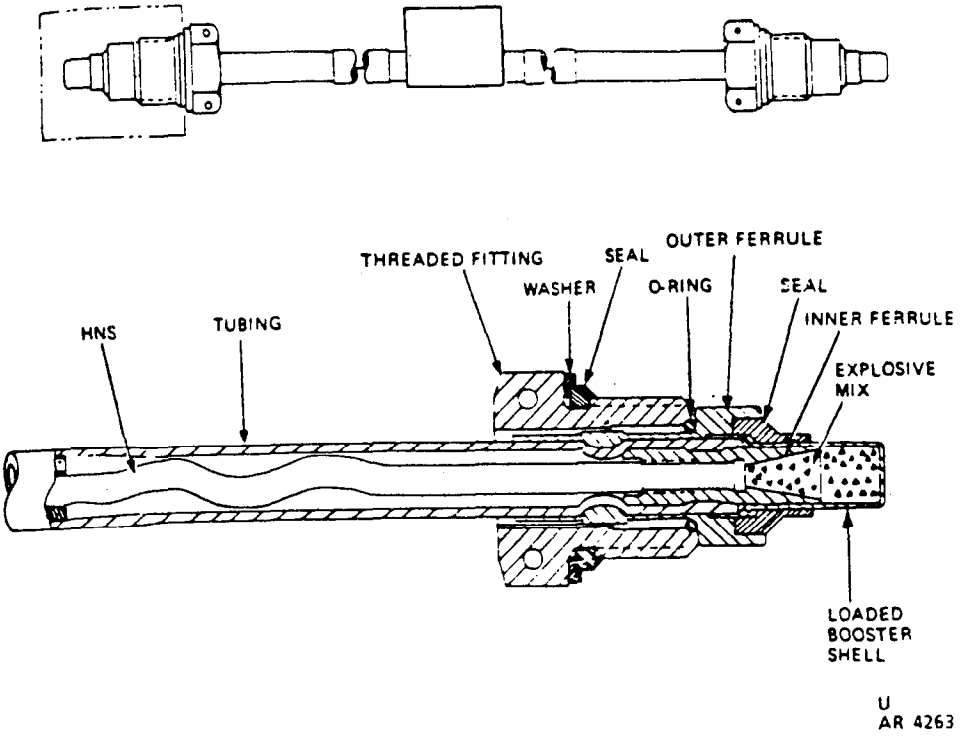
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS85)




**Type Classification:**

Standard.
Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergent Canopy Removal System of the AH-64 series helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the canopy severance assemblies.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-170-5263 |
| DODIC | MS85 |
| Drawing number | 841AS425-55 |
| CAGE Code and part number | 7-311112017-23 51134-55 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 9.0 |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.000816 lb |

**Performance:**

Minimum detonation
velocity ---------- 6050 meter/see at -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 6 x 20 in.
Items per package ---------- 1 ea
Weight ---------- 0.10 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiber board box
Dimensions ---------- 1.31 x 0.90x 0.81 ft
Weight ---------- 9.0 lb
Cube ---------- 0.96 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C

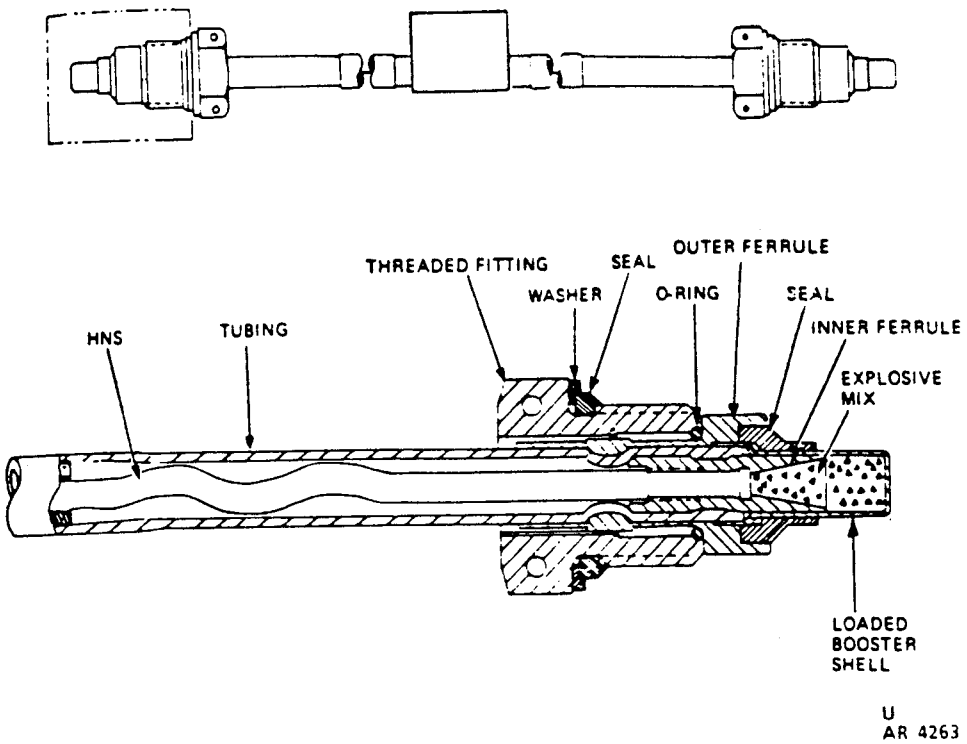
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS86)




**Type Classification:**

Standard.
Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergency Canopy Removal System of the AH-64 series helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the canopy severance assemblies.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377~01-170-5264 |
| DODIC | MS86 |
| Drawing number | 841AS425-23 |
| CAGE Code and part number | 7-311112017-21 51134-23 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 4.0 |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.000529 lb |

**Performance:**

Minimum detonation velocity ---------- 6050 meter/sec at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 6 x 8 in.
- Items per package ---------- 1 ea
- Weight ---------- 0.07 lb

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiber board box
- Dimensions ---------- 0.90 x 0.65 x 0.65 ft
- Weight ---------- 3.0 lb
- Cube ---------- 0.38 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

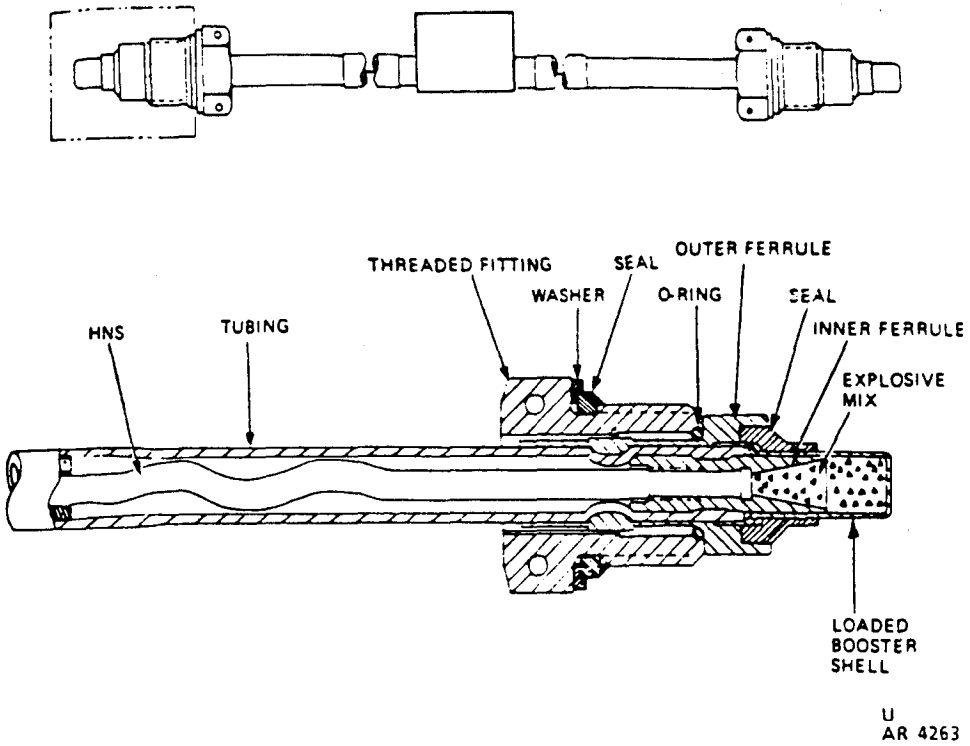
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS87)




**Type Classification:**

Standard.
Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergency Canopy Removal System of the AH-64 series helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell, The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the canopy severance assemblies.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-170-5265 |
| DODIC | MS87 |
| Drawing number | 841AS425-49 |
| CAGE Code and part number | 7-311112017-19 51134-49 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 8.0 |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.000772 lb |

**Performance:**

Minimum detonation velocity ---------- 6050 meter/see at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 6 x 12 in.
- Items per package ---------- 1 ea
- Weight ---------- 0.09 lb

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiber board box
- Dimensions ---------- 1.23 x 0.04x 0.90 ft
- Weight ---------- 10.0 lb
- Cube ---------- 1.04 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

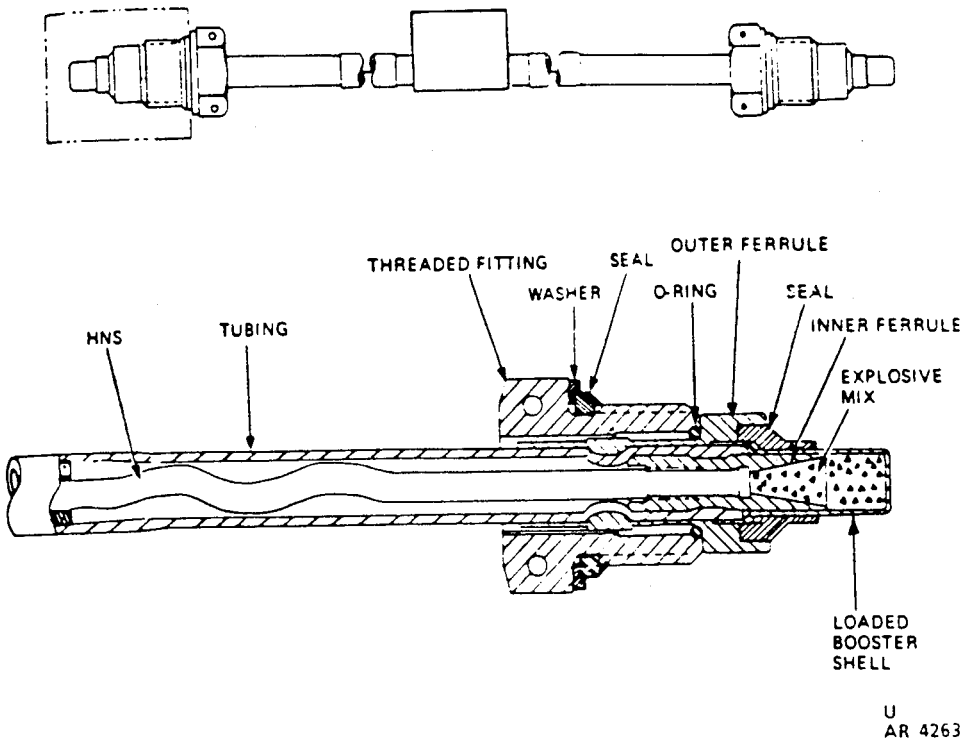
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, DETONATING, ASSEMBLY, SHIELDED, MILD (SMDC): (MS88)




**Type Classification:**

Standard.
Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartments in the Emergency Canopy Removal System of the AH-64 series helicopter.

**Description:**

Major components of the SMDC Assembly are threaded fittings, seals, washers, inner and outer ferrules, loaded booster shell, and silver sheathed mild detonating cord.

**Functioning:**

Upon actuation of the system by arming and firing any one of the three armed/firing initiators, a detonation wave is received via the junction manifold and is boosted by the loaded booster shell. The stimuli from the booster actuates the HNS within the SMDC assembly to the adapter of the canopy severance assemblies.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-186-9898 |
| DODIC | MS88 |
| Drawing number | 841AS425-35 |
| CAGE Code and part number | 7-311112017-29 51134-35 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 3.0 |
| Method of actuation | High order detonation wave |
| Body Material | Silver sheathed, high fine silver 99.95% |
| Propellant/explosive material: | |
| Type | HNS, type I, grade A |
| Weight | 0.000506 lb |

**Performance:**

Minimum detonation velocity ---------- 6050 meter/see at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 6 x 8 in.
- Items per package ---------- 1 ea
- Weight ---------- 0.04 lb

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiber board box
- Dimensions ---------- 0.90 x 0.65 x 0.65 ft
- Weight ---------- 3.0 lb
- Cube ---------- 0.38 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

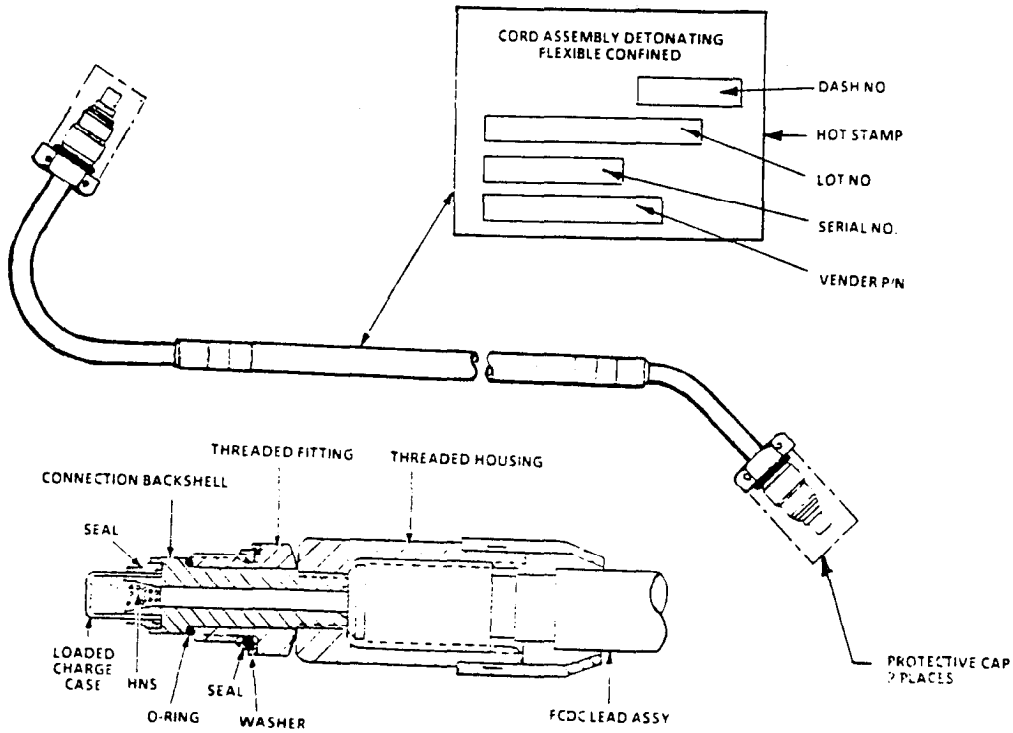
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TM 9-1300-385, App B.

## CORD, ASSEMBLY, DETONATING, FLEXIBLE CONFINED (FCDC): (MS89)




U
AR 4287

**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartment doors and windows,

**Description:**

Major components of the flexible confined detonating cord (FCDC) are housing, threaded fittings, seals, charge case, Hexanitrostibene (HNS), lead sheathed assembly

**Functioning:**

When the armed/firing initiators are actuated, the FCDC lines receive a detonating stimulus via a junction manifold and transmits it to the canopy severance assemblies in the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-170-5260 |
| DODIC | MS89 |
| Drawing number | 6260906-5 |
| CAGE Code and part number | 7-311112017-43 51135-35 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 9.45 in. |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |
| Propellant/explosive material: | |
| Type | HNS, type I, grade B |
| Weight | 0.003024 lb |

**Performance:**

When initiated, the energy output of the FCDC shall be substantial enought to cause 0.020 inch minimum diametrical swelling of the witness cap threaded onto the remote end of the FCDC assembly.

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 6 x 12 in.
- Items per package ---------- 1 ea
- Weight ---------- 0.12 lb

Outer Container:
- Reference ---------- PPP-B-1672
- Type ---------- Fiber board box
- Dimensions ---------- 1.0 x .66x .21 ft
- Weight ---------- 2.0 lb
- Cube ---------- 0.3 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

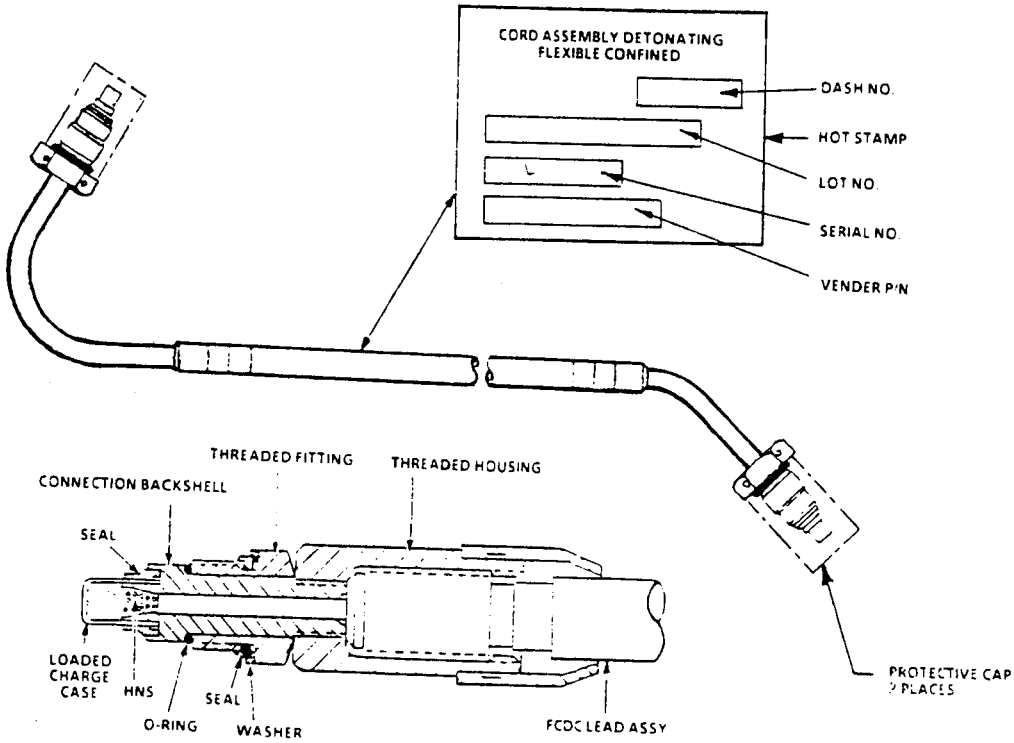
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, ASSEMBLY, DETONATING, FLEXIBLE CONFINED (FCDC): (MS90)




U
AR 428

**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartment doors and windows,

**Description:**

Major components of the flexible confined detonating cord (FCDC) are housing, threaded fittings, seals, charge case, Hexanitrostilbene (HNS), lead sheathed assembly.

**Functioning:**

When the armed/firing initiators are actuated, the FCDC lines receive a detonating stimulus via a junction manifold and transmits it to the canopy severance assemblies in the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-186-9899 |
| DODIC | MS90 |
| Drawing number | 6260906-1 |
| CAGE Code and part number | 7-311112017-31 51135-1 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 15.0 |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |
| Propellant/explosive material: | |
| Type | HNS, type I, grade B |
| Weight | 0.004800 lb |

**Performance:**

When initiated, the energy output of the FCDC shall be substantial enough to cause 0.020 inch minimum diametrical swelling of the witness cap threaded onto the remote end of the FCDC assembly.

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 16 x 12 in.
- Items per package ---------- 1 ea
- Weight ---------- 0.14 lb

Outer Container:
- Reference ---------- PPP-B-1672
- Type ---------- Fiber board box
- Dimensions ---------- 1.5 x 1.0x 0.21 ft
- Weight ---------- 2.0 lb
- Cube ---------- 0.4 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65° F (-54°C)

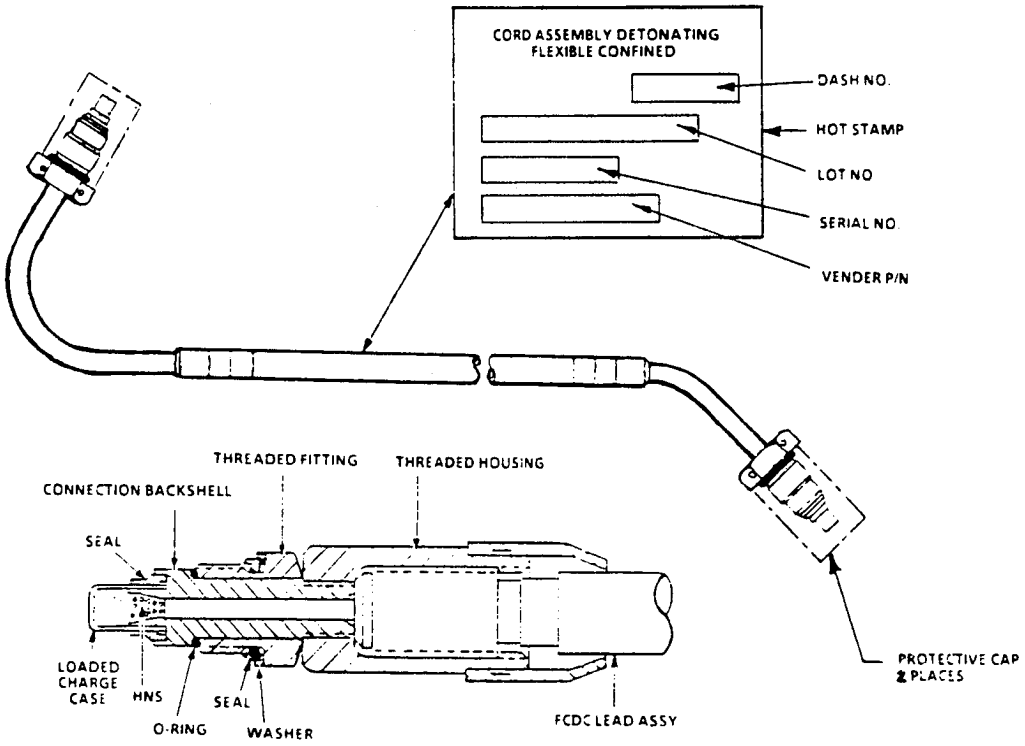
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, ASSEMBLY, DETONATING, FLEXIBLE CONFINED (FCDC): (MS91)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartment doors and windows.

**Description:**

Major components of the flexible confined detonating cord (FCDC) are housing, threaded fittings, seals, charge case, Hexanitrostilbene (HNS), lead sheathed assembly.

Functioning:

When the armed/firing initiators are actuated, the FCDC lines receive a detonating stimulus via a junction manifold and transmits it to the canopy severance assemblies in the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-186-9900 |
| DODIC | MS91 |
| Drawing number | 6260906-2 |
| CAGE Code and part number | 7-311112017-33 51135-2 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 22.0 |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |
| Propellant/explosive material: | |
| Type | HNS, type I, grade B |
| Weight | 0.007040 lb |

**Performance:**

When initiated, the energy output of the FCDC shall be substantial enough to cause 0.020 inch minimum diametrical swelling of the witness cap threaded onto the remote end of the FCDC assembly.

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 24x 12 in.
- Items per package ---------- 1 ea
- Weight ---------- 0.18 lb

Outer Container:
- Reference ---------- PPP-B-1672
- Type ---------- Fiber board box
- Dimensions ---------- 1.1 x 1,1 x 0.30 ft
- Weight ---------- 3.0 lb
- Cube ---------- 0.5 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93° C)
Lower ---------- -65°F (-54°C)

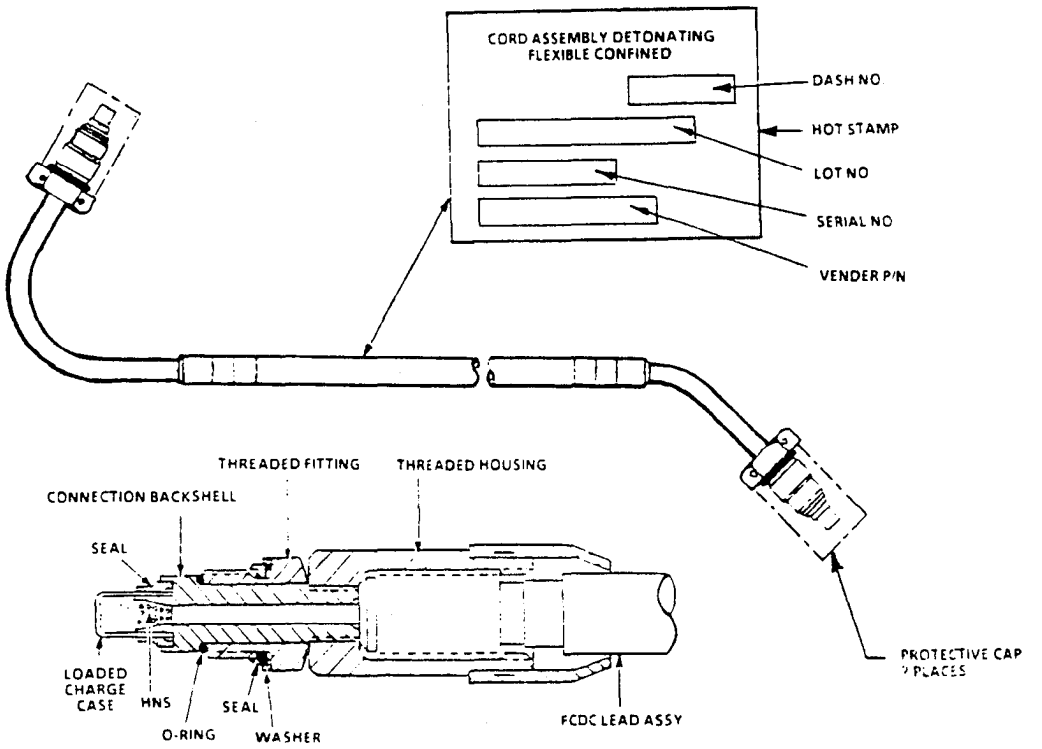
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

References:

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, ASSEMBLY, DETONATING, FLEXIBLE CONFINED (FCDC): (MS92)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartment doors and windows.

**Description:**

Major components of the flexible confined detonating cord (FCDC) are housing, threaded fitting, seals, charge case, Hexanitrostilbene (HNS), lead sheathed assembly.

**Functioning:**

When the armed/firing initiators are actuated, the FCDC lines receive a detonating stimulus via a junction manifold and transmits it to the canopy severance assemblies in the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-186-9901 |
| DODIC | MS92 |
| Drawing number | 6260906-7 |
| CAGE Code and part number | 7-311112017-35 51135-7 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 15,95 |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |
| Propellant/explosive material: | |
| Type | HNS, type I, grade B |
| Weight | 0.005104 lb |

**Performance:**

When initiated, the energy output of the FCDC shall be substantial enough to cause 0.020 inch minimum diametrical swelling of the witness cap threaded onto the remote end of the FCDC assembly.

**Packaging:**

Inner Container:
- Reference ---------- MIL.B.117
- Type ---------- Bag, sealed
- Dimensions ---------- 16x 12 in,
- Items per package ---------- 1 ea
- Weight ---------- 0.15 lb

Outer Container:
- Reference ---------- PPP-B-1672
- Type ---------- Fiber board box
- Dimensions ---------- 1.5 x 1.0x 0.21 ft
- Weight ---------- 3.0 lb
- Cube ---------- 0.4 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

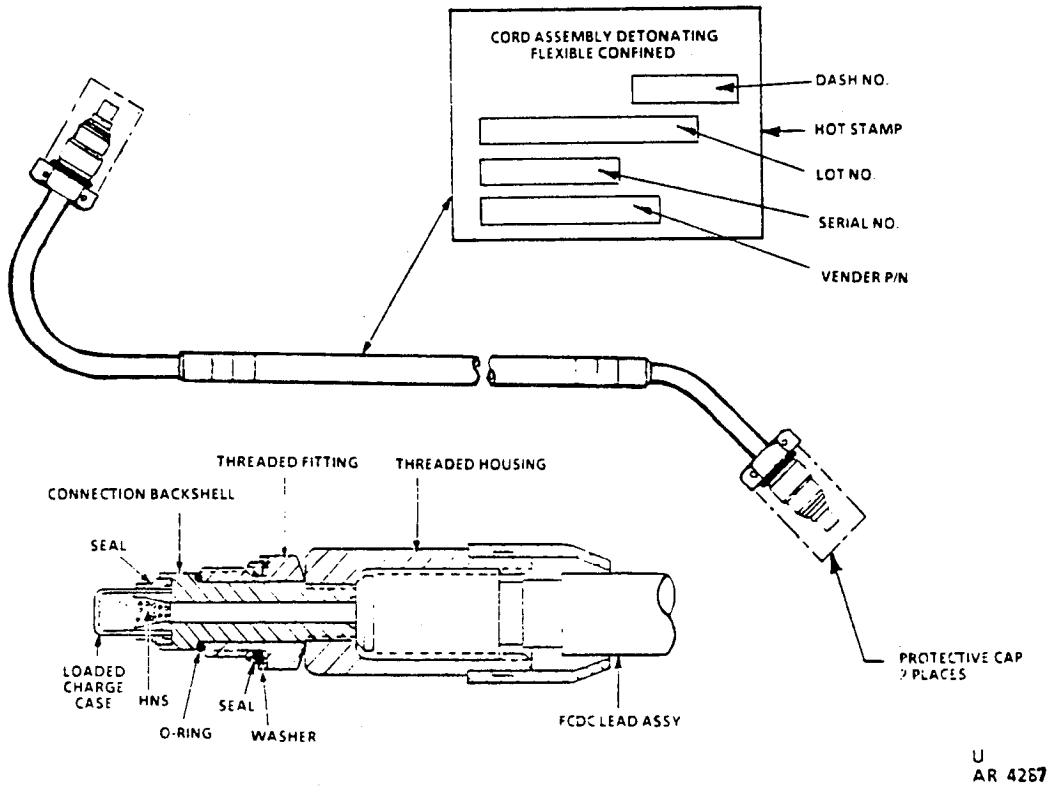
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CORD, ASSEMBLY, DETONATING, FLEXIBLE CONFINED (FCDC): (MS93)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

To provide an interconnecting explosive media to the canopy severance assemblies of the crew compartment doors and windows.

**Description:**

Major components of the flexible confined detonating cord (FCDC) are housing, threaded fittings, seals, charge case, Hexamtrostilbene (HNS), lead sheathed assembly.

**Functioning:**

When the armed/firing initiators are actuated, the FCDC lines receive a detonating stimulus via a junction manifold and transmits it to the canopy severance assemblies in the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-186-9902 |
| DODIC | MS93 |
| Drawing number | 6260906-4 |
| CAGE Code and part number | 7-311112017-37 51135-4 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | 15.0 |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6'% antimony alloy sheathed |
| Propellant/explosive material: | |
| Type | HNS, type I, grade B |
| Weight | 0.004800 lb |

**Performance:**

When initiated, the energy output of the FCDC shall be substantial enough to cause 0.020 inch minimum diametrical swelling of the witness cap threaded onto the remote end of the FCDC assembly.

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 16x 12 in.
- Items per package ---------- 1 ea
- Weight ---------- 0.14 lb

Outer Container:
- Reference ---------- PPP-B-1672
- Type ---------- Fiber board box
- Dimensions ---------- 1.5 x 1,0x 0.21 ft
- Weight ---------- 3.0 lb
- Cube ---------- 0.3 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65° F (-54°C)

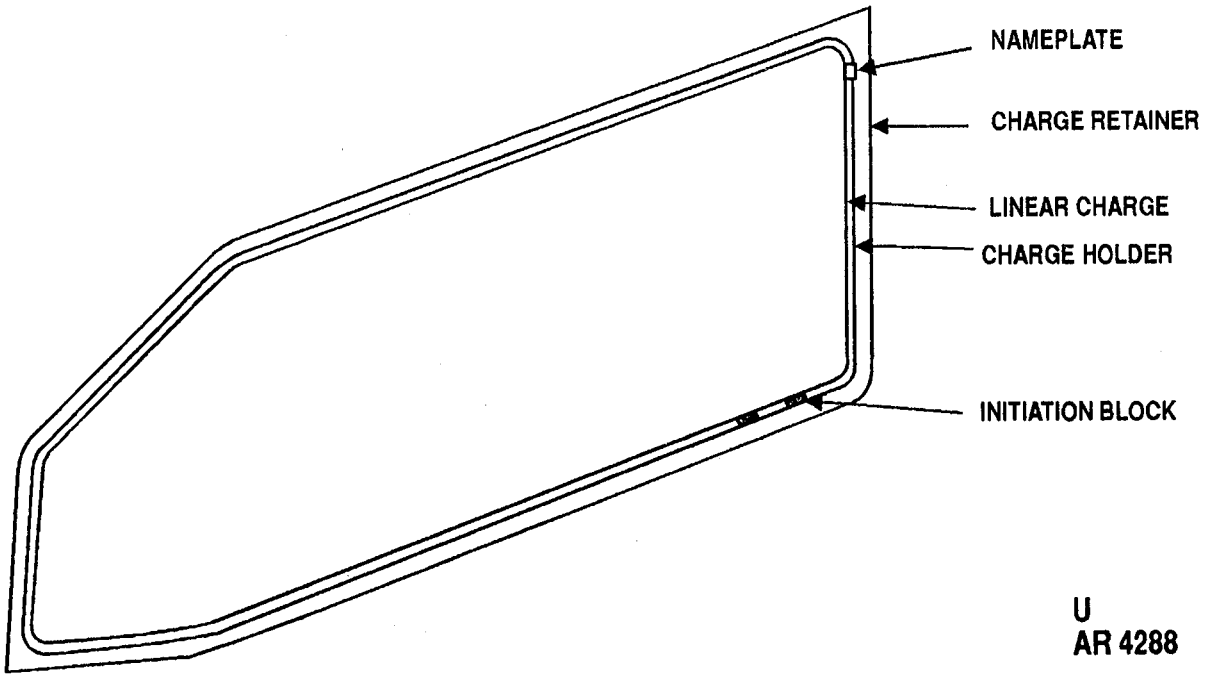
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CANOPY SEVERANCE ASSEMBLY FORWARD PANEL: (MS94)




Type Classification:

Refer to aircraft subsystem.

**Use:**

An explosive device used in the AH-64 helicopter emergency canopy severance system to provide quick exit from, or access to the crew compartments of the aircraft in an emergency

**Description:**

Major components of the canopy severance assembly are charge retainer, charge holder, sleeve booster, initiation block, linear explosive and nameplate.

**Functioning:**

Upon actuation of the system by any one of the armed/firing initiators, a detonation wave is received via the interconnecting FCDC and SMDC lines to the canopy severance assemblies. The explosive force of the linear explosive charge is outward, thus severing the plastic panels of the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-184-6112 |
| DODIC | MS94 |
| Drawing number | 6260965-1 |
| CAGE Code and part number | 7-311112017-5<br>51188-1 |
| Item weight | |
| Dimensions | |
| Diameter | |
| Length | |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |

Propellant/Explosive
Material:
Type ---------- HNS, type II, grade

Weight ---------- 0.000269 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meters/sec at -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 85 x 45 m.
Items per package ---------- 1 ea
Weight ---------- 1.83 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiberboard box
Dimensions ---------- 6.65 x 2.56x 0.98 ft
Weight ---------- 50.0 lb
Cube ---------- 16.67 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C
Lower ---------- -65°F (-54°C)

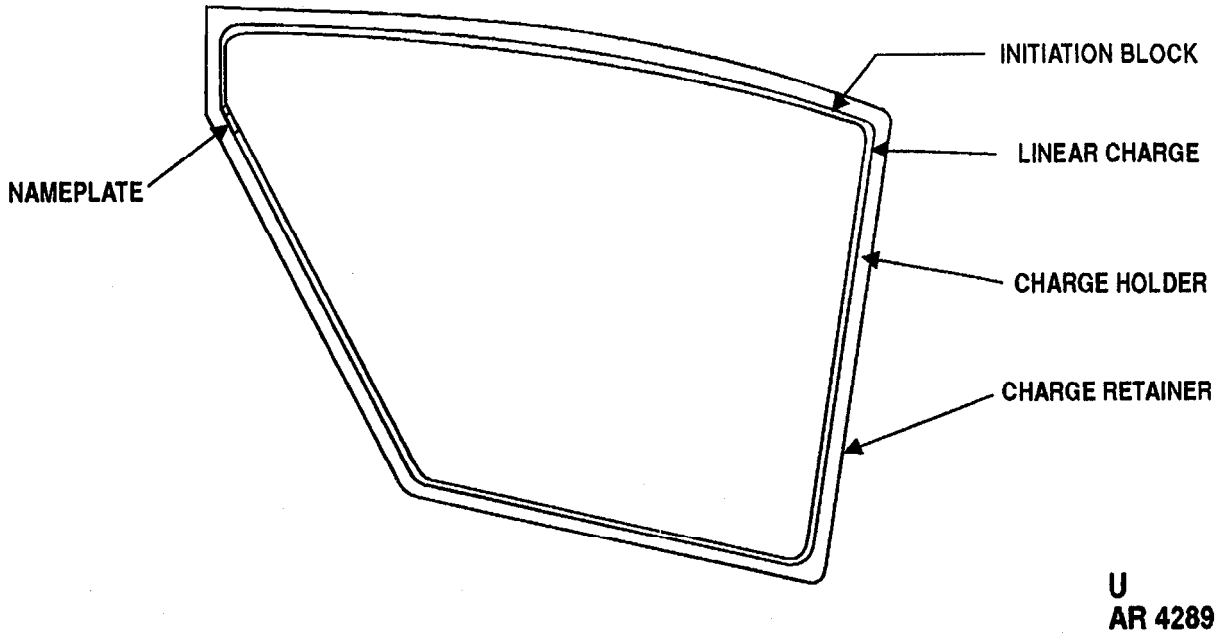
**Shipping and Storage Data:**

Quantity distance class ------ 1.4
Storage compatibility group ..... S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP AWAY FROM FIRE

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B

## CANOPY SEVERANCE ASSEMBLY REAR (AFT) PANEL: (MS95)




Type Classification:

Refer to aircraft subsystem.

**Use:**

An explosive device used in the AH-64 helicopter emergency canopy severance system to provide quick exit from, or access to the crew compartments of the aircraft in an emergency.

**Description:**

Major components of the canopy severance assembly are charge retainer, charge holder, sleeve booster, initiation block, linear explosive and nameplate.

**Functioning:**

Upon actuation of the system by any one of the armed/firing initiators, a detonation wave is received via the interconnecting FCDC and SMDC lines to the canopy severance assemblies. The explosive force of the linear explosive charge is outward, thus severing the plastic panels of the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-184-6113 |
| DODIC | MS95 |
| Drawing number | 6260965-3 |
| CAGE Code and part number | 7-311112017-7<br>51390-1 |
| Item weight | |
| Dimensions | |
| Diameter | |
| Length | |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |

Propellant/Explosive
Material:
Type ---------- ENS, type II, grade

Weight ---------- 0.004079 lb

**Performance:**

Minimum detonation
velocity ---------- 6050 meters/see at -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Bag, sealed
Dimensions ---------- 60 x 45 in.
Items per package ---------- 1 ea
Weight ---------- 1.66 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiberboard box
Dimensions ---------- 4.65 x 3.4x 0.94 ft
Weight ---------- 50.0 lb
---------- 14.85 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C
Lower ---------- -65°F (-54°C)

**Shipping and Storage Data:**

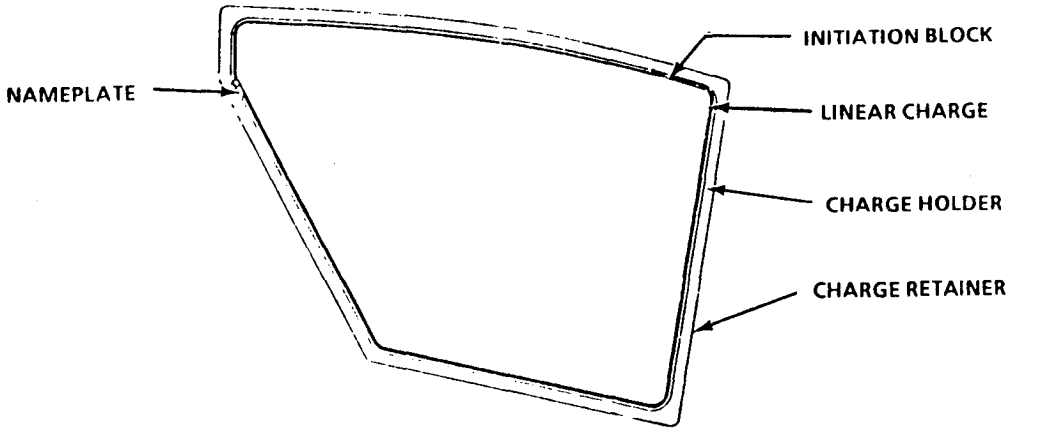
Quantity distance class ------ 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP AWAY FROM FIRE

**References:**

TM 9-1377 -200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B


*U.S. GOVERNMENT PRINTING OFFICE: 1994- 546.043/00706

## CANOPY SEVERANCE ASSEMBLY REAR (AFT) PANEL: (MS96)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

An explosive device used in the AH-64 helicopter emergency canopy severance system to provide quick exit from, or access to the crew compartments of the aircraft in an emergency.

**Description:**

Major components of the canopy severance assembly are: charge retainer, charge holder, sleeve booster, initiation block, linear explosive and nameplate.

**Functioning:**

Upon actuation of the system by any one of the armed/firing initiators, a detonation wave is received via the interconnecting FCDC and SMDC lines to the canopy severance assemblies, The explosive force of the linear explosive charge is outward, thus severing the plastic panels of the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-185-8908 |
| DODIC | MS96 |
| Drawing number | 626095-4 |
| CAGE Code and part number | 7-311112017-11 51391-1 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |
| Propellant/explosive material: | |
| Type | HNS, type II grade B |
| Weight | 0.003814 lb |

**Performance:**

Minimum detonation velocity ---------- 6050 meters/sec at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 60 x 45 in.
- Items per package ---------- 1 ea
- Weight ---------- 1.50 lb

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiber board box
- Dimensions ---------- 4.35 x 3.27 x .94 ft
- Weight ---------- 50.0 lb
- Cube ---------- 13.4 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

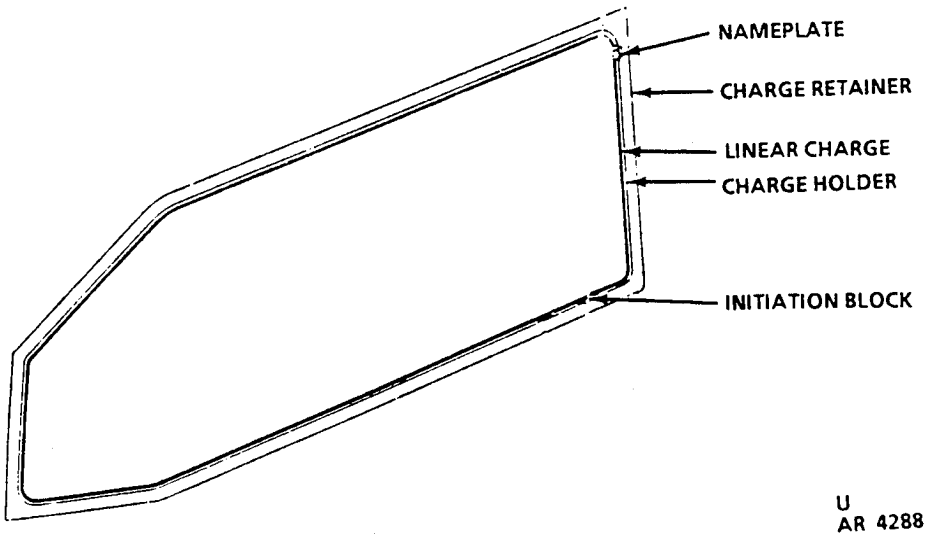
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## CANOPY SEVERANCE ASSEMBLY FORWARD PANEL: (MS97)




**Type Classification:**

Refer to aircraft subsystem.

**Use:**

An explosive device used in the AH-64 helicopter emergency canopy severance system to provide quick exit from, or access to the crew compartments of the aircraft in an emergency.

**Description:**

Major components of the canopy severance assembly are: charge retainer, charge holder, sleeve booster, initiation block, linear explosive and nameplate.

**Functioning:**

Upon actuation of the system by any one of the armed/firing initiators, a detonation wave is received via the interconnecting FCDC and SMDC lines to the canopy severance assemblies. The explosive force of the linear explosive charge is outward, thus severing the plastic panels of the crew compartments.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-187-4477 |
| DODIC | MS97 |
| Drawing number | 6260965-2 |
| CAGE Code and part number | 7-311112017-9 51389-1 |
| Item Weight | |
| Dimensions | |
| Diameter | |
| Length | |
| Method of actuation | High order detonation wave |
| Body Material | Lead 6% antimony alloy sheathed |
| Propellant/explosive material: | |
| Type | HNS, type II, grade B |
| Weight | 0.000269 lb |

**Performance:**

Minimum detonation velocity ---------- 6050 meters/sec at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 80 x 35 in.
- Items per package ---------- 1 ea
- Weight ---------- 1.75 lb

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiber board box
- Dimensions ---------- 6.19 x 2.48 x .94 ft
- Weight ---------- 50.0 lb
- Cube ---------- 14.4 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

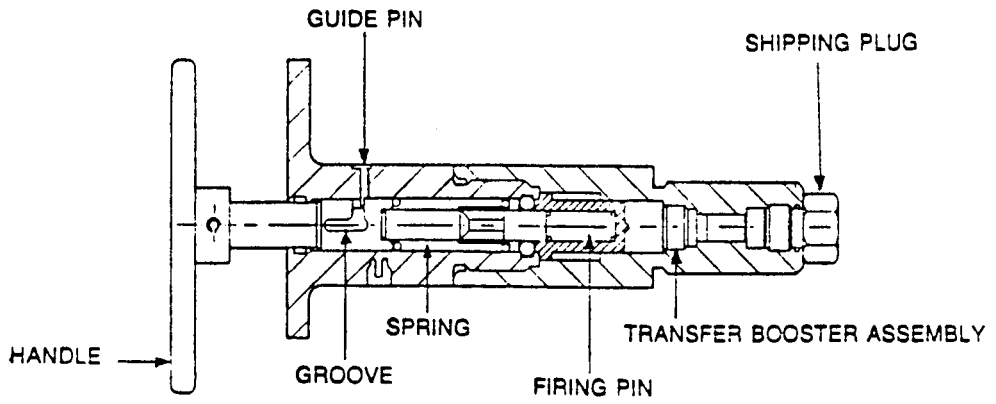
**Shipping and Storage Data**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

## ARMING/FIRING INITIATOR JUA-59: (MT06)




U
AR 4290

**Type Classification:**

Refer to aircraft subsystem.

**Use:**

A mechanically actuated detonator-type initiator used to actuate the emergency canopy severance system on the AH-64 helicopter.

**Description:**

The arming/firing initiator is a mechanically actuated percussion-type detonator consisting of a body handle assembly, firing pin, M42 primer, a demolition transfer charge assembly, seals and a fitting port.

**Functioning:**

The initiator handles are turned and pushed to actuate the initiators. The handles can be rotated in either direction 90° to arm the initiator. As the handle is pushed, the spring behind the firing pin is compressed. At 0.3 in. (0.76 cm) fo travel, lock balls release the firing pin, and it strikes the primer. The primer ignites the lead azide transfer charge, which in turn ignites the main charge of HNS.

**Tabulated Data:**

NSN ---------- 1377-01-269-6496
DODIC ---------- MT06
Drawing number ---------- 6260964
CAGE Code and
part number ---------- 17610/51207-3
Item Weight ----------
Dimensions ---------- 1.875 in.
Diameter ---------- 5.4 in.
Length ----------
Method of actuation --------- Mechanical
Body Material ---------- Steel
Propellant/explosive material:
Type ---------- HNS, type I, grade A
Weight ---------- 0.000269 lb

**Performance:**

Minimum detonation velocity ---------- 6050 meters/sec at -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Bag, sealed
- Dimensions ---------- 8 x 12 in.
- Items per package ---------- 1 ea
- Weight ---------- 0.443 lb

Outer Container:
- Reference ---------- PPP-B-1672
- Type ---------- Fiber board box
- Dimensions ---------- 1.5 x 1.0 x 0.3 ft
- Weight ---------- 3.0 lb
- Cube ---------- 0.5 cu ft

**Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

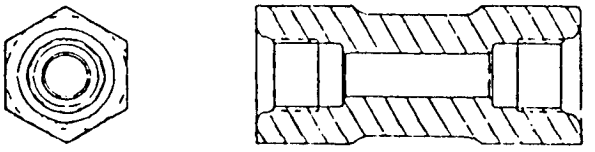
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE. HANDLE CAREFULLY. KEEP AWAY FROM FIRE.

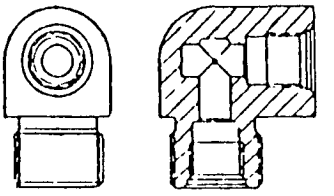
**References:**

TM 9-1377-200-20&P
TM 55-1520-238-23
TB 9-1300-385, App B.

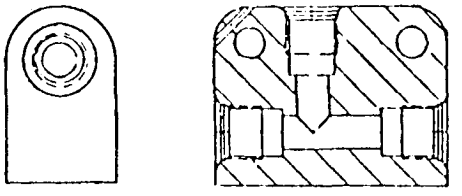
# INERT CONNECTORS



CONNECTOR, IN-LINE, UNION



CONNECTOR, ELBOW



CONNECTOR, TEE

U
AR 4352

**Type Classification:**

**Use:**

Used in the AH-64 series helicopter canopy release system as detonation transfer media between between system assemblies, and as a means to secure the assemblies to the aircraft structure.

**Description:**

Three types of inert connectors are used as detonation transfers in the system: the tee, the elbow, and the union.

**Tabulated Data:**

**CONNECTOR, IN-LINE, UNION**

| | |
|---|---|
| NSN | 1377-01-170-5321 |
| Drawing no. | 6261071 |
| CAGE Code and part no. | 7-311112017-41<br>21601-2 |
| Quantity per aircraft | 2 |

**CONNECTOR, ELBOW**

| | |
|---|---|
| NSN | 1377-01-170-5319 |
| Drawing no. | 6261073 |
| CAGE code and part no. | 7-311112017-45<br>23869-2 |
| Quantity per Aircraft | 1 |

**CONNECTOR, TEE**

| | |
|---|---|
| NSN | 1377-01-170-5319 |
| Drawing no. | 6261072 |
| CAGE Code and part no. | 7-311112017-3<br>21738-3 |
| Quantity per aircraft | 5 |

**Service Life:**

INERT - Item is assembly of metal part only. Replacement is determined by "On Condition" (OC), after inspection for visible wear or defect.

# CHAPTER 6

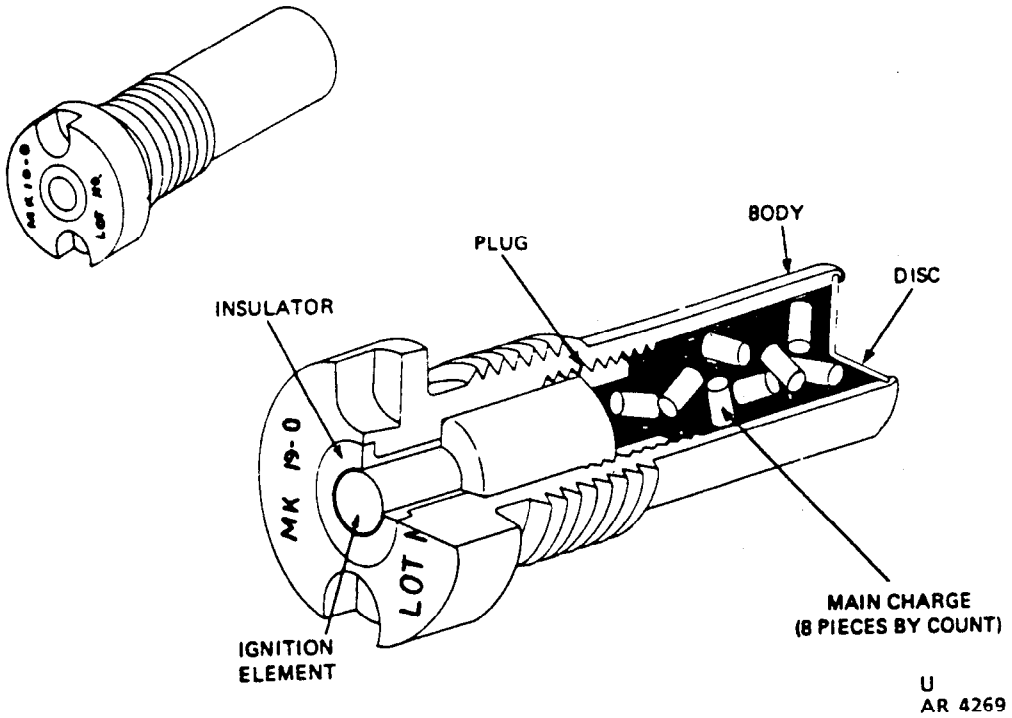
# IMPULSE CARTRIDGES

## 6-1 General

a. The Impulse Cartridges described in this chapter have a wide range of application, characteristics, and physical appearances. These cartridges shall be used only for their designated application.

b. The Impulse Cartridges listed in this chapter are grouped by their method of initiation; (1) electrical and (2) percussion.

## CARTRIDGE, IMPULSE, MARK 19 Mod 0: (MO12)




### Type Classification

Refer to Aircraft Subsystem.

### Use:

Used as the power source in stores release/ejector systems on aircraft.

### Description:

This is an electrically initiated, case-grounded, screw-in type cartridge, consisting of a body, Mark 11 Mod 0 ignition element, hollow metal plug and main charge, The open end is crimped over a sealing disc. The electrode of the ignition element is separated from the body by an insulator. A hollow metal plug is threaded inside the body, between the igniter assembly and the propellant. The cartridge is located in the firing breech of the mechanism it is to operate.

### Functioning:

When the cartridge is fired, the resulting gas pressure operates the store release/ejector mechanism.

### Tabulated Data:

| | |
|---|---|
| NSN | 1377-00-793-9926 |
| DODIC | MO12 |
| Drawing number | 2164465 |
| Vendor (CAGE Code) and part number | (10001) LD419700 |
| Item weight | 0.038 lb (0.017 kg) |
| Diameter | 0.805 in. (2.045 cm) |
| Length | 1.471 in. (3.736 cm) |
| Method of actuation | Electrical 5 amperes |

Body material ---------- Aluminum alloy
Propellant/explosive material:
  Type ---------- Smokeless powder, HPSK 5250.95
  Weight ---------- 0.0021 lb (14.77 grains)

**Performance:**

600 Explosive Power Rating

**Firing Temperature Limits:**

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
  Reference ---------- PPP-P-291
  Type ---------- Bag, heat sealed
  Dimension ---------- 2.25 wide x 2.062 depth in. (6.41 wide x 5.24 depth)
  Items per package ---------- 2
  Weight ---------- 0.25 lb
Outer Container:
  Reference ---------- PPP-C-1672
  Type ---------- Fiberboard box
  Dimension ---------- 1.54 x 1.04 x 0.27 ft
  Weight ---------- 2.00 lb
  Cube ---------- .464 cu ft

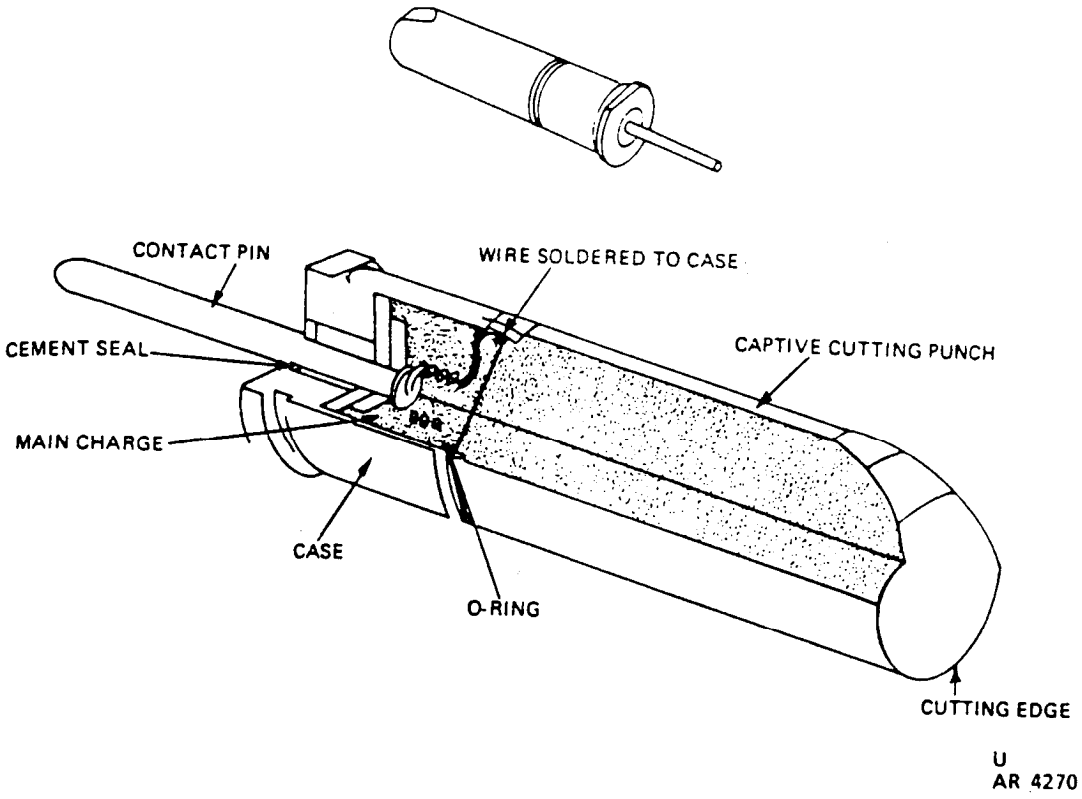
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- Small Arms Ammunition, Handle Carefully, Keep Fire Away

**References:**

TM 9-1377-200-20&P
TM 55-1510-204-23
TM 55-1510-213-23
TB 9-1300-385, App B

## CARTRIDGE, IMPULSE: (M162)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

To actuate a helicopter hoist cable cutter to cut and release a steel hoist cable and its load, in an emergency (CH-47).

**Description:**

The impulse cartridge is an electrically initiated cartridge. The contact pin which extends from the firing end of the cartridge case is connected to a wire within the powder chamber. The other end of the wire is connected to the cartridge case adjacent to the steel cutting punch. The design and contour of the cutting edge of the captive cutting punch is such that the punch cuts and wedges the severed ends of the reeved portion of the hoist cable in the cutter to prevent whiplash.

The cartridge is oriented to the correct position in the cable cutter by a flat surface on the rim of the cartridge case. This flat surface ensures that the captive cutting punch strikes the anvil of the cable cutter and wedges the reeved end of the hoist cable.

**Functioning:**

When the cable cutter switch is operated, electrical current initiates the cartridge in the cable cutter. The expanding gas from the cartridge forces the punch against one side of the cable as the other side of the hoist cable is forced against the anvil in the cable cutter. The cutting edge of the punch severs and releases the cable and its load from the hoist. The cutting punch also secures the reeved end of the hoist cable in the cable cutter, thus preventing whiplash.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-00-999-7463 |
| DODIC | M162 |
| Drawing number | 2518426 |
| Vendor (CAGE Code) and part number | (40912) MSA96713 |
| Item weight | 0.04 lb (0.02 kg) |
| Diameter | 0.500 in. (1.27 cm) |
| Length | 2.109 in. (5.36 cm) |
| Method of actuation | Electrical 5 amperes |
| Body material | Brass |
| Propellant/explosive material: | |
| Type | Double base |
| Weight | 0.0003 lb (2.10 grains) |

**Performance:**

**Firing Temperature Limits:**

| | |
|---|---|
| Upper | +160°F (+71°C) |
| Lower | -65°F (-54°C) |

**Packaging:**

| | |
|---|---|
| Inner Container: | |
| Reference | MIL-C-10464 |
| Type | Type 1 hermetically sealed metal container |
| Dimensions | 2.625 x 2.625 × 1.5 in. |
| Items per package | 2 |
| Outer Container: | |
| Reference | PPP-C-1672 |
| Type | Fiberboard box |
| Dimensions | 17 x 12 x 9 in. (43.18 x 30.48 x 22.86 cm) |
| Weight | 2 lb |
| Cube | 0.464 cu ft |

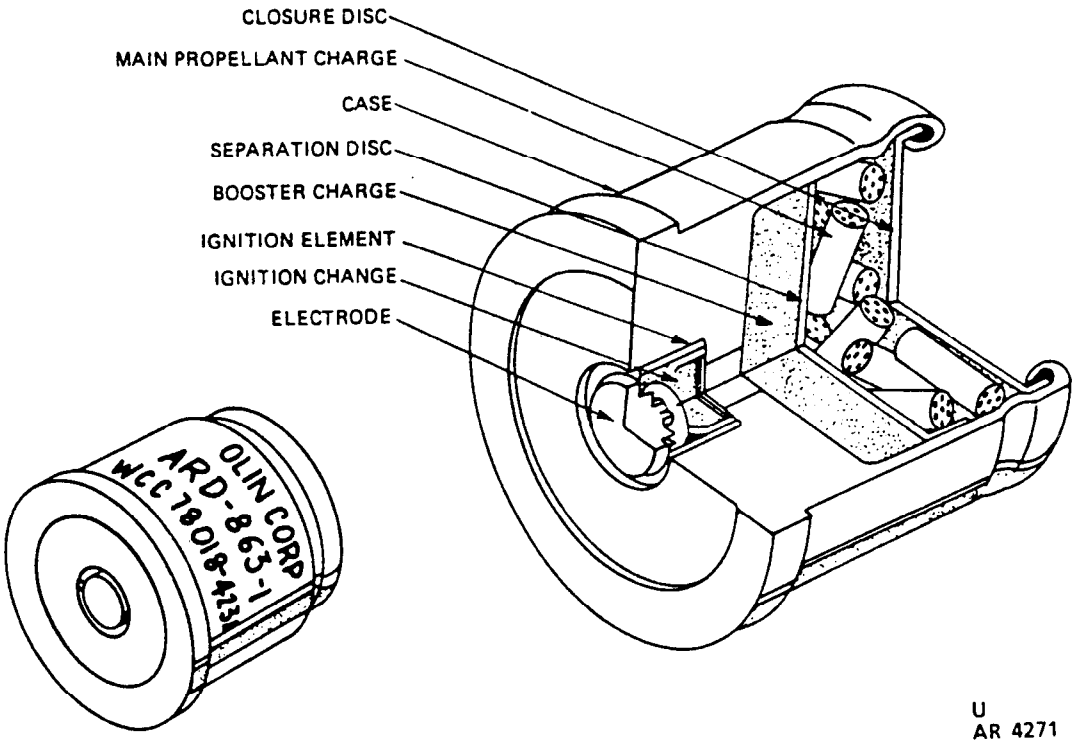
**Shipping and Storage Data:**

| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | S |
| DOT shipping class | C |
| DOT designation | Small Arms Ammunition, Class C Explosive, Handle Carefully, Keep Fire Away |

**References:**

TM 9-1377-200-20&P
TM 55-1520-209-23
TM 55-1520-227-23
TB 9-1300-385, App B

## CARTRIDGE, IMPULSE: ARD-863-1 (M189)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

For external stores ejection on the AH-1 series helicopter.

**Description:**

The ARD-863-1 Impulse Cartridge is a standardized store ejection and release cartridge and consists of a cylindrical aluminum alloy case and ignition element (electrode, bridgewire, and ignition charge) and a separation disc. The CCU-44/B Impulse Cartridge NSN-1377-01-033-2622 (MD66) is a suitable substitute for the ARD-863-1 (M189).

**Functioning:**

Upon receipt of an electrical signal the ignition element is fired and the resulting gas pressure ignites the main charge. When sufficient pressure is developed, the closure disc ruptures and the released gas pressure actuates the release/ejector mechanism.

**Tabulated Data:**

NSN ---------- 1377-01-057-0686
DODIC ---------- M189
Drawing number ---------- N/A
Vendor (CAGE Code) and
part number ---------- (80236) ARD-863-1
(79495) P7911-2
Item weight ----------
Diameter ---------- 1.075 in.
(2.731 cm)
Length ---------- 1.03 in. (2.616 cm)
Method of actuation --------- Electrical 5
amperes
Body material ---------- Aluminum
Propellant/explosive material:
Type ---------- Double base, 2.75
gm Booster
Charge, 1.15 gm
Weight ---------- 0.0090 lb (63
grains)

**Performance:**

**Firing Temperature Limits:**

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-C-10464
Type ---------- Type 1 hermeti-
cally sealed metal
container
Dimensions ---------- 3.5 x 3 (dia)
Items per package ---------- 8
Weight ---------- 0.188 lb
(0.0853 kg)
Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiberboard box
Dimensions ---------- 8.25 x 8.25 x 14.5
in. (21 x 21 x
36.82 cm)
Weight ---------- 2 lb (0.9072 kg)
Cube ---------- 0.57 cu ft

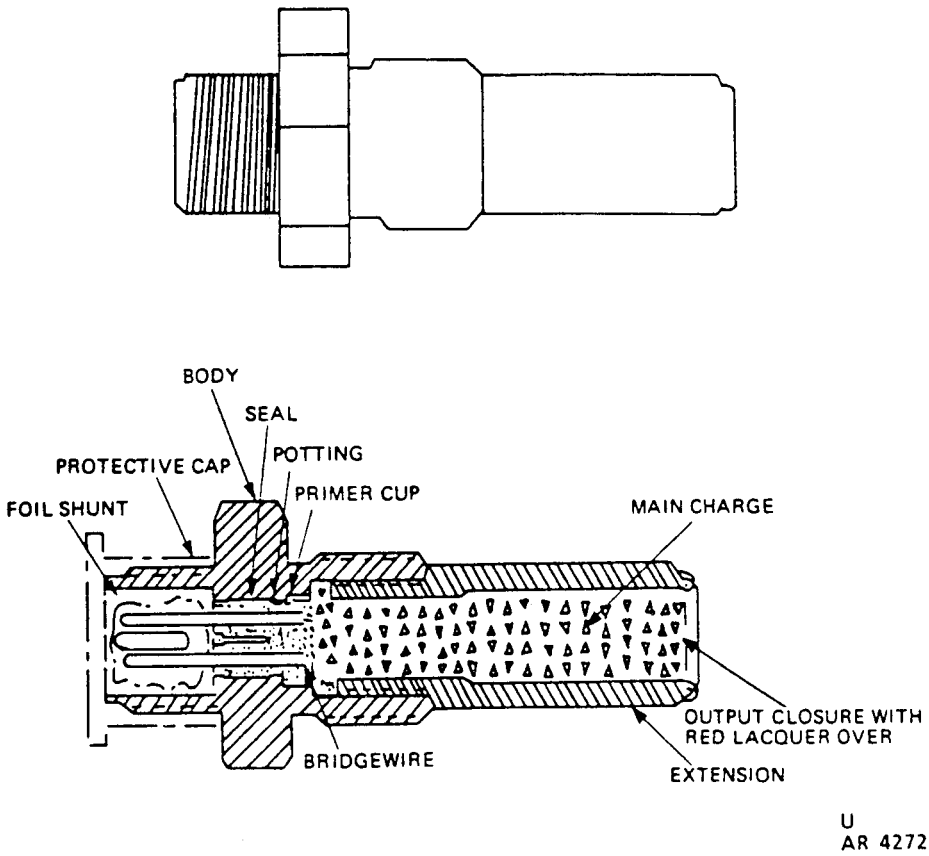
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- C
DOT shipping class ---------- C
DOT designation ---------- Small Arms
Ammunition, Class
C Explosive,
Handle Carefully,
Keep Fire Away

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-237-23
TM 55-1520-236-23
TB 9-1300-385, App B

## CARTRIDGE, IMPULSE: (M253)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

Used in the Holex cable cutter on the Army CH-54A helicopter cargo hoist cable system.

**Description:**

The M253 Impulse Cartridge consists of a steel case, two electrodes, bridgewire, ignition element, main charge, and closure assembly. The M253 is sometimes referred to as the explosive bolt.

**Functioning:**

Upon receiving an electric current, the bridgewire attached to the electrical pins heats and ignites the primer. The primer in turn ignites the main charge. The pressure developed by the main charge propels the cutter blade with sufficient force to sever the main hoist cable, a 7/8-inch (2.22 cm) special steel cable.

**Tabulated Data:**

NSN ---------- 1377-00-878-6510
DODIC ---------- M253
Drawing number ----------
Vendor (CAGE Code) and
part number ---------- (10640) R 4181-1
Item weight ----------
Diameter ---------- 1 in. (2.54 cm)
Length ---------- 2.62 in. (6.67 cm)
Method of actuation --------- Electrical
Body material ---------- Steel
Propellant/explosive material:
Type ---------- HI TEMP
Weight ---------- 0.004206 lb (29.442 grains)

**Performance:**

**Firing Temperature Limits:**

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-B-117
Type ---------- Barrier bag
Dimensions ---------- 8 x 5 in.
Items per package ---------- 1
Weight ---------- 0.25 lb
Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiberboard box
Dimensions ---------- 1.6 x 1.05 x 0.30 ft
Weight ---------- 2 lb
Cube ---------- 0.464 cu ft

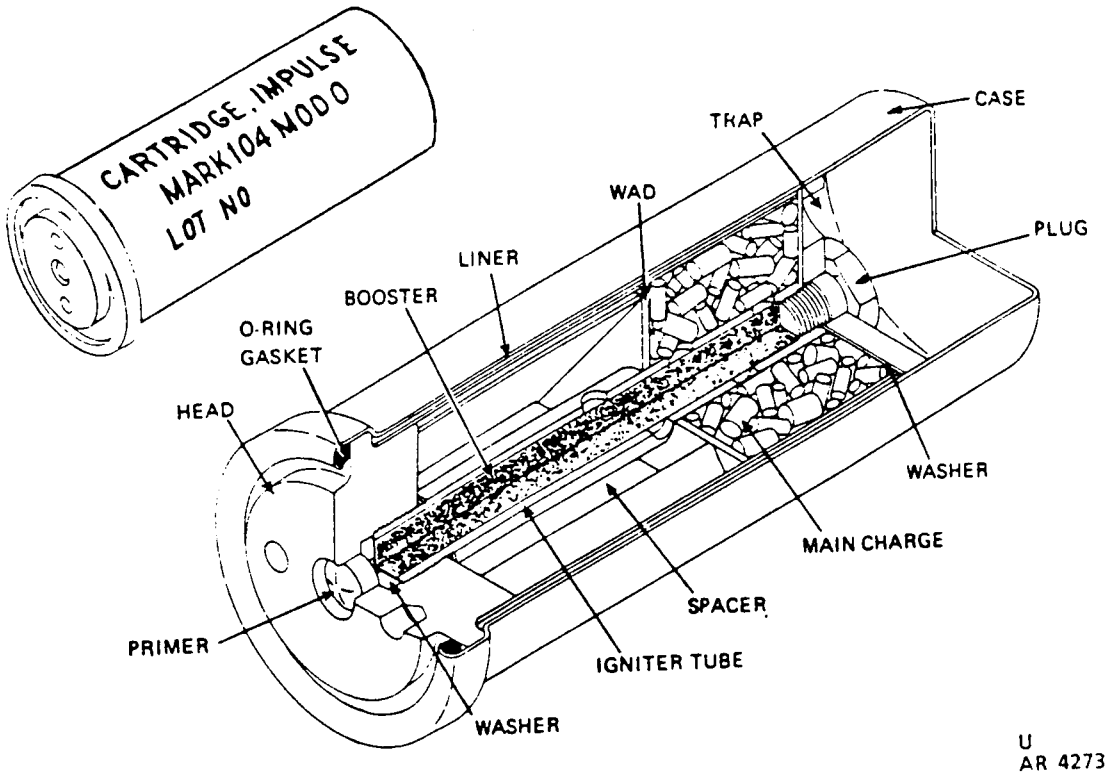
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
group ---------- S
DOT shipping class ---------- C
DOT designation ---------- Explosive Release Device, Class C Explosive, Handle Carefully, Keep Fire Away

**References:**

TM 9-1377 -200 -20&P
TM 55-1520-209-23
TM 55-1520-227-23
TB 9-1300-385, App B

## CARTRIDGE, IMPULSE, MARK 104 Mod 0: (M291)




**Type Classification:**

ATC-S LCC-A.
Refer to Aircraft subsystem.

**Use:**

To actuate a telescoped catapult Ejection Seat Trainer Device. The device is used to train pilots and crew members on procedures to be followed when ejecting from an aircraft during an emergency.

**NOTE**

Impulse cartridges Mark 103 Mod 0, Mark 104 Mod 0 and Mark 3 Mod 1 are identical in general appearance, diameter, and length. Each of these three types of cartridges is designed for a different purpose and contains a different quantity of propellant. Impulse cartridge Mark 104 Mod 0 shall be used only in the catapult of the ejection seat trainer device for which it was designed.

**Description**

The M291 Mark 104 Mod 0 Impulse Cartridge case has a cup-type case crimped over a head with an O-ring gasket for sealing. A lacquer sealed 50M percussion primer is recessed in the head. The steel igniter tube is screwed into the head and separated from the primer by a brass washer. A steel plug is screwed into one end of the igniter tube and is staked to a disc-shaped aluminum trap having holes for the escape of the propellant gases.

**Functioning**

To operate the catapult, the trainee, seated in the ejection seat of the training device, reaches up with both hands and pulls the handle of the face curtain at the top of the seat. Movement of the curtain pulls a cable which releases a spring-loaded firing pin at the top of the catapult. Firing of the cartridge builds up pressure in the catapult, thrusting the seat and occupant upward along the rails with a minimum of 6 g's, simulating the effect of ejecting from an aircraft. The seat decelerates to a stop at a height of less than 20 feet and before reaching the top of the tower.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-00-707-0590 |
| DODIC | M291 |
| Drawing number | 1863079 |
| Vendor (CAGE Code) and part number | (10001) LD491831 |
| Item weight | |
| Diameter | 2.06 in. (5.232 cm) |
| Length | 5.42 in. (13.77 cm) |
| Method of actuation | Percussion primer |
| Body material | Aluminum |
| Propellant/explosive material: | |
| Type | Black powder, HES 5250 |
| Weight | 0.0705 lb (493.5 grains) |

**Performance:**

18900 ft-lb Explosive Power Rating

**Firing Temperature Limits:**

| | |
|---|---|
| Upper | +160°F (+71°C) |
| Lower | -65°F (-54°C) |

**Packaging**

| | |
|---|---|
| Inner Container: | |
| Reference | MIL-C-10464 |
| Type | Type I hermetically-sealed metal container |
| Dimensions | 6.0 x 2.532 in dia (15.24 x 6.432 cm dia) |
| Items per package | 1 |
| Outer Container: | |
| Reference | PPP-B-621 |
| Type | Wood box |
| Dimensions | 13.375 x 9.0 x 7.25 in. (33.97 x 22.86 x 18.42 cm) |
| Weight | 13 lb (5.897 kg) |
| Cube | 0.5 cu ft |

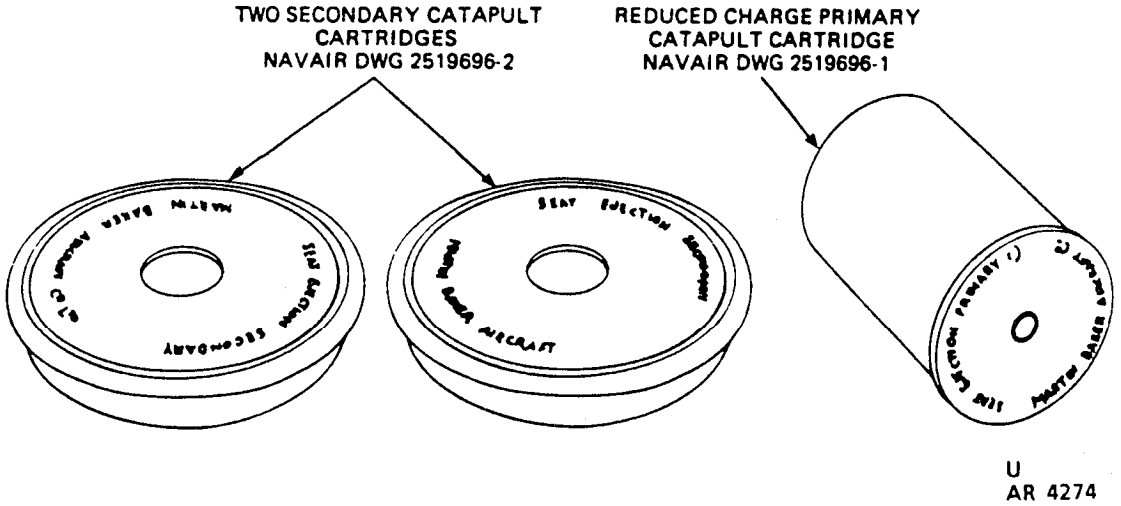
**Shipping and Storage Data:**

| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | C |
| DOT shipping class | C |
| DOT designation | Small Arms Ammunition, Handle Carefully, Keep Fire Away |

**References:**

TM 9-1377-200-20&P
TB 9-1300-385, App B

## CARTRIDGE SET, IMPULSE, REDUCED CHARGE, PRIMARY: (M397)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

The reduced charge cartridge set is in the Martin-Baker ejection seat and consists of one reduced charge primary catapult cartridge and two secondary catapult cartridges which, when fired in sequence, provide recoil forces and ballistic gases sufficient to eject the seat and its occupant from the aircraft in an emergency.

**Description:**

Components of the reduced charge primary catapult cartridge are copper disc, and brass and rubber washers, metal case, and a percussion cap primer. Components of each of the two secondary catapult cartridges are brass cover with a 0.75-inch hole covered with a 0.003-inch thick copper disc, rubber sealing ring, and brass case. The secondary cartridges require no primer or booster.

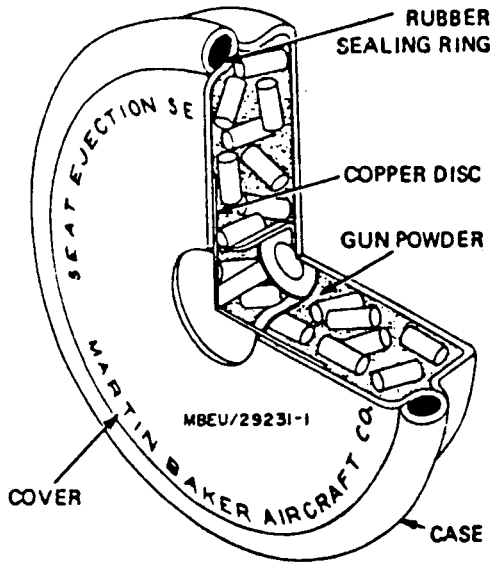
**Functioning:**

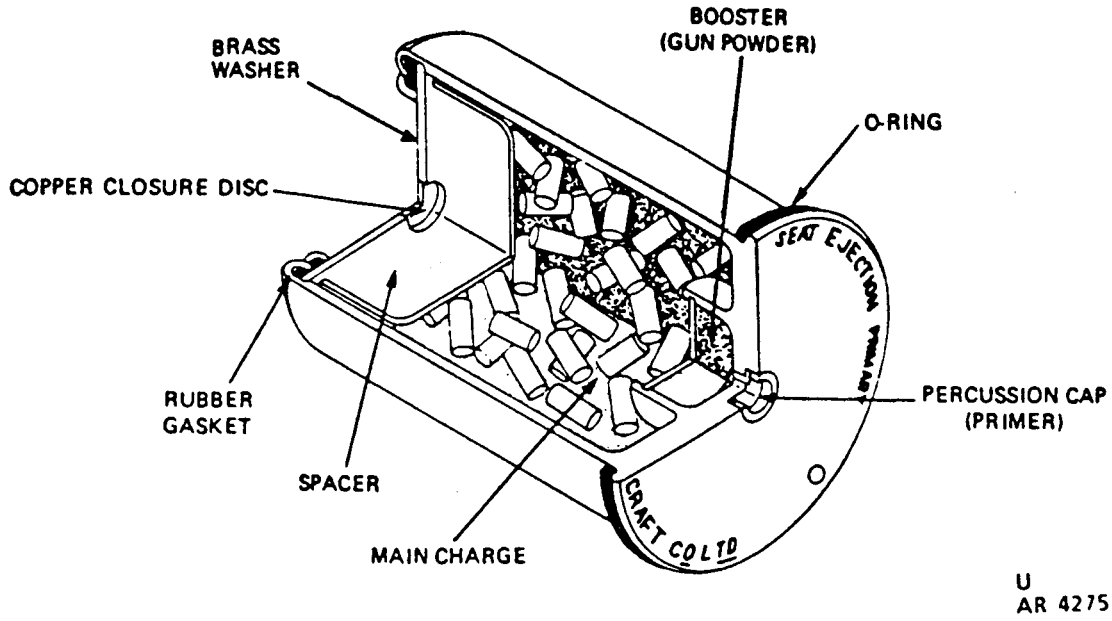
The ejection process is actuated when the occupant of the ejection seat pulls a fabric blind, to which a cable is attached, down over his face. This action causes the cable to withdraw a sear from the firing mechanism of the ejection gun which releases a spring-loaded firing pin. Movement of the firing pin initiates the percussion primer of the primary catapult cartridge; flame then passes through two vent openings, igniting the booster, which ignites the main charge of the primary catapult cartridge.

When the reduced charge primary catapult cartridge fires, recoil pressure forces the inner tube to cam the springloaded plunger out of the seat locking latch window. This latch retains the ejection seat in the aircraft.

Inner and intermediate tubes of the ejection gun rise together, raising the ejection seat away from the floor of the cockpit. After 14 inches of movement, a port in the outer tube is uncovered, exposing the lower secondary catapult cartridge at the upper half of the barrel. After a total movement of 39.35 inches, the intermediate tube is stopped by a flange. These firings eject the top unit of the barrel (together with the seat and occupant) from the cockpit; the two extended telescoping units remain attached to the floor of the aircraft.

## CARTRIDGE SET, IMPULSE, REDUCED CHARGE, PRIMARY: M397



**Tabulated Data**

| | |
|---|---|
| NSN | 1377-00-845-5242 |
| DODIC | M397 |
| Drawing number | 2519696 |
| Vendor (CAGE Code and part number | (MBEU) 26434-1 (1 ea) (MBEU) 29434-2 (2 ea) |
| Item weight | 0.03164 lb (0.01435 kg) |
| Diameter | Primary 1.843 in. (4.681 cm) Secondary 3.27 in. (8.306 cm) |
| Length | Primary 2.574 in. (6.538 cm) Secondary 0.610 in. (1.549 cm) |
| Method of actuation | Primary - percussion primer; Secondary - pressure and heat from primary |
| Body material | Brass |
| Propellant/explosive material: | |
| Type | Nitrocellulose, black powder |
| Weight | 0.0815 lb (570.5 grains) |

**Performance:**

**Firing Temperature Limits:**

| | |
|---|---|
| Upper | +160°F (+71°C) |
| Lower | -65°F (-54°C) |

**Packaging:**

| | |
|---|---|
| Inner Container: | |
| Reference | MIL-P-116 |
| Type | Type I Hermetically sealed metal container |
| Dimensions | 3.27 x 3.27 x 3 in. (8.306 x 8.306 x 7.62 cm) |
| Items per package | 1 set |
| Weight | 0.5 lb (0.227 kg) |

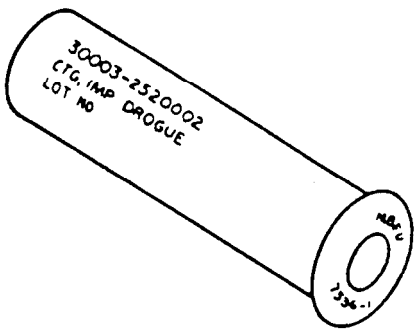
**Shipping and Storage Data:**

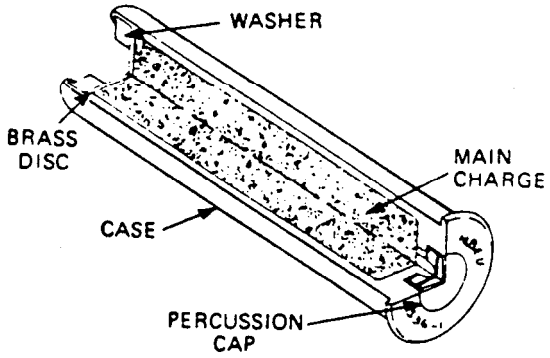
| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | S |
| DOT shipping class | C |
| DOT designation | EXPLOSIVE POWER DEVICE, CLASS C, HANDLE CAREFULLY, KEEP FIRE AWAY |

**References:**

TM 9-1377-200-20&P
TM 55-1510-204-23
TM 55-1510-213-23
TB 9-1300-385, App B

## CARTRIDGE, IMPULSE DROGUE: (M507)




U
AR 4276

**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

Used in a drogue gun on the Martin-Baker ejection seat to automatically operate the gun which releases two drogue parachutes after the seat and occupant are ejected from the aircraft in an emergency escape.

**Description:**

Components of the drogue impulse cartridge are: metal case, percussion cap primer, brass disc, and neoprene washer. The primer is encased in tinfoil and requires no anvil. An anvil is machined into the primer cavity of the case.

**Functioning:**

When the ejection catapult ejects the seat and occupant free of the aircraft, a trip rod attached to the bulkhead removes a sear pin from the drogue gun.

When the sear has been pulled, and a mechanically induced delay time (determined by sear series) has expired, the percussion cap in the cartridge is fired by a blow from the firing pin actuated by a compression spring. When the percussion cap fires, the gaseous flame is forced through two vents leading to the powder chamber, igniting the main charge. The resultant gases expand and force a piston member out of the top of the drogue gun. As the piston leaves the gun, a shackle attached to the top of the piston and to a drogue withdrawal line, pulls out an 18-inch controller drogue (parachute) and a 60-inch stabilizer drogue from a stowage compartment at the top of the seat.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-00-883-8997<br>1377-00-960-0453 |
| DODIC | M507 |
| Drawing number | 2520002 |
| Vendor (CAGE Code and part number | (MBEU) 7536-1 |
| Item weight | 0.0922 lb (0.042 kg) |

Diameter ---------- 0.705 in. (1.791 cm)
Length ---------- 2.420 in. (6.147 cm)
Method of actuation --------- Percussion primer
Body material ---------- Brass
Propellant/explosive material:
  Type ----------
  Weight ----------

**Performance:**

**Firing Temperature Limits:**

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
  Reference ---------- MIL-C-10464
  Type ---------- Type I Hermetically sealed metal container
  Dimensions ---------- 2.062 x 2.2 in. dia
  Items per package ---------- 4
  Weight ---------- 0.167 lb (0.076 kg)
Outer Container:
  Reference ---------- PPP-B-621
  Type ---------- Wood box
  Dimensions ---------- 9.75 x 5.688 x 3.313 in (24,765 x 14.46 x 8.415 cm)
  Weight ---------- 3 lb (31.361 kg)
  Cube ---------- 0.1 cu ft

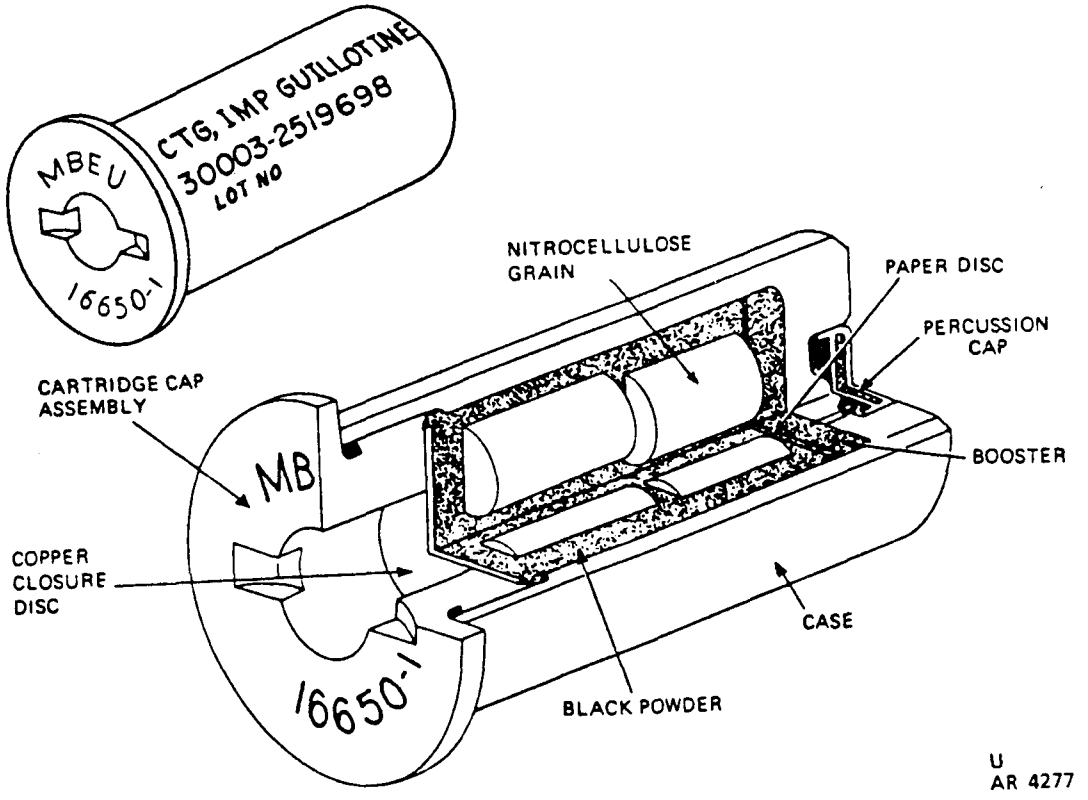
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- C
DOT shipping class ---------- C
DOT designation ---------- SMALL ARMS AMMUNITION, CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1510-204-23
TM 55-1510-213-23
TB 9-1300-385, App B

## CARTRIDGE, IMPULSE, GUILLOTINE: (M520)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

Used in the guillotine firing unit on some Martin-Baker Mark 5 series and some Mark 6 series ejection seats to furnish gas pressure for actuation of the parachute withdrawal line guillotine.

**Description:**

Components of the guillotine cartridge are: metal case, guillotine cartridge cap and disc, a paper disc, and percussion cap primer.

The primer is encased in tin foil and requires no anvil. An anvil is machined into the primer cavity of the case. The primer is force-fitted into the cartridge case to ensure contact between the tin foil and the anvil point. The percussion cap is sealed in the head of the case with dark purple lacquer.

**Functioning:**

When the manual override lever of the ejection seat is operated, the sear is withdrawn from the guillotine firing unit and the firing pin moves under strong spring pressure to strike the percussion cap of the cartridge. The gas generated from the fired cartridge is fed via a stainless steel pipe and flexible hose to the guillotine. When actuated, the guillotine severs the nylon parachute withdrawal line.

**Tabulated Data:**

NSN ---------- 1377-00-883-8998
DODIC ---------- M520
Drawing number ---------- 2519698
Vendor (CAGE Code and part number ---------- (U1604) 16650-1
Item weight ---------- 0.135 lb (0.062 kg)
Diameter ---------- 0.800 in. (2.03 cm)
Length ---------- 1.600 in. (4.1 cm)
Method of actuation --------- Percussion primer
Body material ---------- Aluminum
Propellant/explosive material:
- Type ---------- Nitrocellulose, gun powder
- Weight ---------- 0.00352 lb (24.64 grains)

**Performance:**

1410 ft-lb Explosive Power Rating

**Firing Temperature Limits:**

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-C-10464
- Type ---------- Type I Hermetically sealed metal container
- Dimensions ---------- 2.63 x 2.63 x 3 in.
- Items per package ---------- 2
- Weight ---------- 0.30 lb

Outer Container:
- Reference ---------- PPP-B-1672
- Type ---------- Fiberboard box
- Dimensions ---------- 1.54 x 1.04 x 0.35 ft
- Weight ---------- 3 lb (1.361 kg)
- Cube ---------- 0.11 cu ft

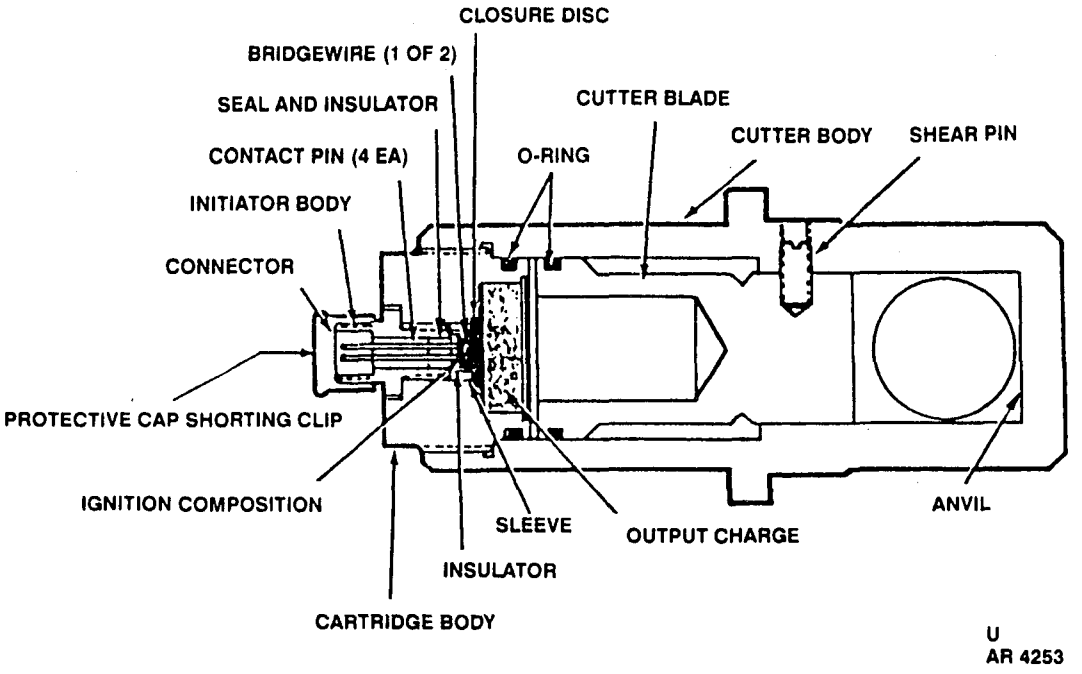
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- C
DOT shipping class ---------- C
DOT designation ---------- Small Arms Ammunition, Handle Carefully, Keep Fire Away

**References:**

TM 9-1377-200-20&P
TM 55-1510-204-23
TM 55-1510-213-23
TB 9-1300-385, App B

## CARTRIDGE, IMPULSE: (M657)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

Used in the CH-54B helicopter to sever a 7/8-inch (2.22 cm) diameter stainless steel hoist cable.

**Description:**

The M657 is used in the cable cutter NSN: 1377-00-178-8416. Two cutters are used in the CH-54B helicopter. The cartridge consists of an ignition element, body, and output charge. The ignition element has an initiator body four-pin electrical connector, two bridgewires and a sleeve with a closure disc. The cartridge body houses the ignition element and output charge. A closure disc hermetically seals the output charge within the cavity of the cartridge body.

**Functioning:**

Firing of the electrically initiated cartridge produces gas pressure to overcome the sheer pin. The cutter blade is driven onto the anvil cutting the cable that passes through the cutter body.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-00-168-5802 |
| DODIC | M657 |
| Drawing number | |
| Vendor (CAGE Code) and part number | (22567) 300051-1 |
| Item weight | |
| Diameter | 2 in. (5.08 cm) |
| Length | 1.65 in. (4.17 cm) |
| Method of actuation | Electrical |
| Body material | Steel |

Propellant/explosive material:
Type ---------- High Temperature Smokeless Powder
Weight ---------- 0.0038 lb

**Performance:**

**Temperature Limits:**

Upper ---------- +165°F (+74°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-C-10464
Type ---------- Type I hermetically sealed metal container
Dimensions ---------- 8 x 6 in.
Items per package ---------- 1
Weight ---------- 1 lb

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiberboard box
Dimensions ----------
Weight ---------- 2.50 lb
Cube ---------- 0.560 cu ft

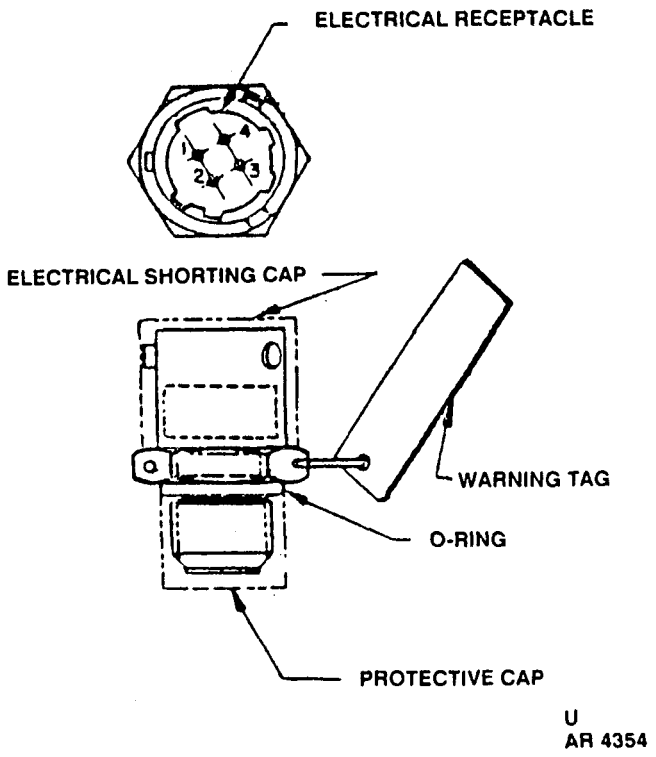
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TB 9-1300-385, App B.

## CARTRIDGE, IMPULSE, CCU-92/A: (MJ21)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

CCU-92/A is used as the power source for the TCU-3/A Thruster.

**Description:**

The impulse cartridge CCU-92/A is electrically initiated and consists of cylindrical aluminum body loaded phenolic spacer, main charge, aluminum closure disc. Four insulated contact pins complete the internal electrical circuit through two separate bridgewires.

**Functioning:**

Upon receipt of firing current the bridgewires are fired which in turn fires the main charge that supplies the gas pressure for the TCU-3/A Thruster.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-211-7211 |
| DODIC | MJ21 |
| Drawing number | 1512AS121 |
| Vendor (CAGE Code) and part number | (01276) FE7590-95 |
| Item weight | |
| Diameter | 0.572 in. (1.45 cm) |
| Length | 0.88 in. (2.24 cm) |
| Method of actuation | Electrical |
| Body material | Aluminum |
| Propellant/explosive material: | |
| Type | Black powder |
| Weight | 0.00052 lb (3.64 grains) |

**Performance:**

**Temperature Limits:**

Upper ---------- +200°F (+93.4°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
Reference ---------- MIL-C-10464
Type ---------- Type I heretically sealed metal container
Dimensions ----------
Items per package ---------- 1
Weight ----------

Outer Container:
Reference ---------- PPP-B-636
Type ---------- Fiberboard box
Dimensions ----------

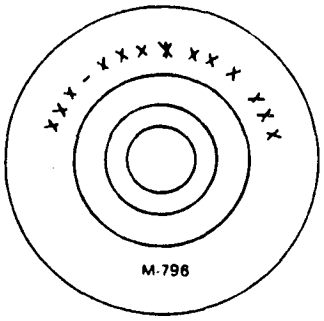
**Shipping and Storage Data:**

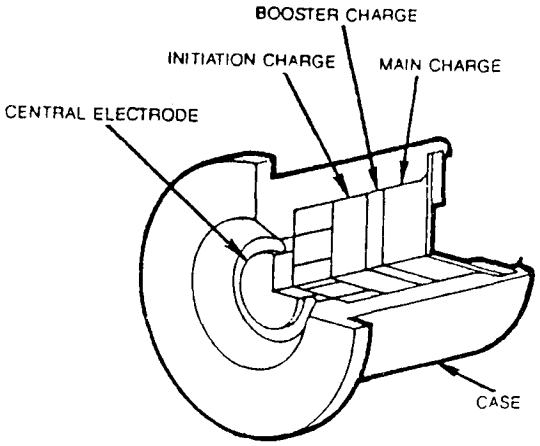
Quantity distance class ----- 1.4
Storage compatibility group ---------- C
DOT shipping class ---------- C
DOT designation ---------- Class C Explosive, Handle Carefully, Keep Fire Away

**References:**

TB 9-1300-385, App B.

## CARTRIDGE, IMPULSE, M796: (MD73)

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AR 4279

**Type Classification:**

ATC-S LCC-A.
Refer to Aircraft Subsystem.

**Use:**

Power source for the M1 chaff cartridge of the M206 flare cartridge on a one to one match which is used in the M130 dispenser pod on various aircraft.

**Description:**

The M796 cartridge consists of an aluminum case, header assembly, igniter charge, booster charge, output charge, closure disc and closure washer.

**Functioning:**

The impulse cartridge is fired electrically. The resulting hot ballistic gases developed by the impulse cartridge ignite the flare pellet causing the piston to expel the flare pellet from the case.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-049-6365 |
| DODIC | MD73 |
| Drawing number | 9311660 |
| Vendor (CAGE Code) and part number | (14083) 9311660 |
| Item weight | 0.278 lb (0.126 kg) |
| Diameter | 0.625 in. (1.59 cm) |
| Length | 0.50 in. (1.40 cm) |
| Method of actuation | Electrical |
| Body material | Aluminum |
| Propellant/explosive material: | |
| Type | HPC 1, M1911 |
| Weight | 0.0088 lb (61.6 grains) |

**Performance:**

**Firing Temperature Limits:**

| | |
|---|---|
| Upper | +160°F (+71°C) |
| Lower | -65°F (-54°C) |

**Packaging:**

Inner Container:
- Reference ---------- MIL-C-10464
- Type ---------- Type I, Hermetically sealed metal container
- Dimensions ----------
- Items per package ---------- 60
- Weight ---------- 1.67 lb (0.758 kg)

Outer Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiberboard box
- Dimensions ----------
- Weight ---------- 60 lb (27.22 kg)

**Shipping and Storage Data:**

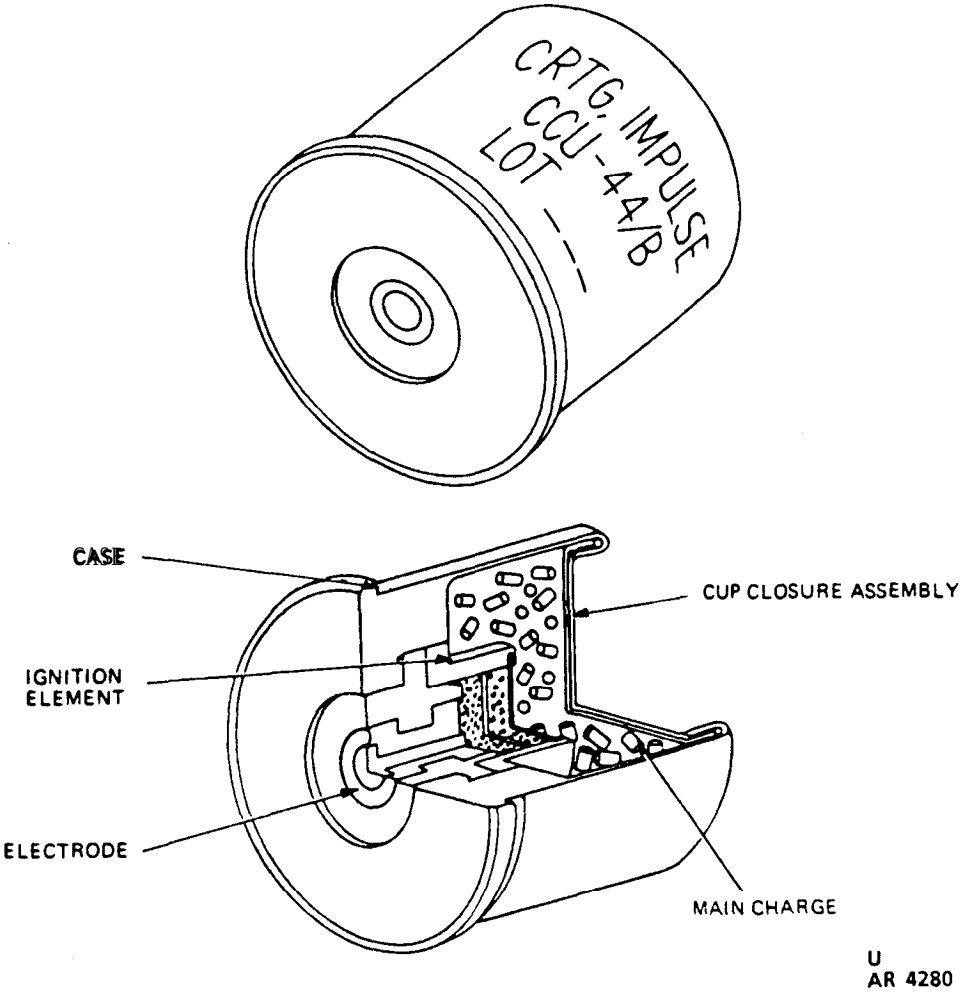
Quantity distance class ----- 1.4

Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- ELECTRICAL SQUIB, CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 9-1095-206-13&P
TB 9-1300-385, App B.

## CARTRIDGE, IMPULSE, CCU-44/B: (MD66)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

Utilized as a power source for the ejection of stores from aircraft/helicopter missile launchers and bomb racks. This cartridge is a suitable substitute for the ARD-863-1, M189.

**Description:**

The CCU-44/B cartridge is an electrically initiated cartridge installed in the firing chamber of the ejection mechanism of a missile launcher or bomb rack. The cartridge consists of a case, electrode, ignition element, main charge, and cap closure assembly.

**Functioning:**

Upon receipt of firing current the ignition element is fired and the resulting gas pressure ignites the main charge. When sufficient pressure is developed, the cup closure assembly ruptures and the released gas pressure actuates the release/ejector mechanism.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-063-3161<br>1377-01-063-3164<br>1377-01-063-3165 |
| DODIC | MD66 |
| Drawing Number | (53711) |
| Vendor (CAGE Code) and part number | 5184850 |
| Item weight | 0.086 lb (0.04 kg) |
| Diameter | 1.555 in. (2.934 cm) |
| Length | 1.155 in. (2.934 cm) |
| Method of actuation | Electrical 10 amperes |
| Body material | Aluminum alloy |
| Propellant/explosive material: | |
| Type | Double Base Nitro Cellulose |
| Weight | 0.01014 lb (70.98 grains) |

**Performance:**

**Firing Temperature Limits:**

| | |
|---|---|
| Upper | +225°F (+107°C) |
| Lower | -65°F (-54°C) |

**Packaging:**

| | |
|---|---|
| Inner Container: | |
| Reference | MIL-C-10464 |
| Type | Type I hermetically sealed metal container |
| Dimensions | 4.13 x 6.19 in. dia (10.49 x 15.723 cm dia) |
| Items per package | NSN 1377-01-063-3161 = 60<br>NSN 1377-01-063-3164 = 80<br>NSN 1377-01-063-3165 = 10 |
| Outer Container: | |
| Reference | PP-B-1672 |
| Type | Class II STYLE D |
| Dimensions | 2 x 1.33 x 0.35 ft |
| Weight | 10 lb |
| Cube | 0.78 cu ft |

**Shipping and Storage Data:**

| | |
|---|---|
| Quantity distance class | 1.4 |
| Storage compatibility group | C |
| DOT shipping class | C |
| DOT designation | SMALL ARMS AMMUNITION, CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY |

**References:**

TM 9-1377-200-20&P
TB 9-1300-385, App B

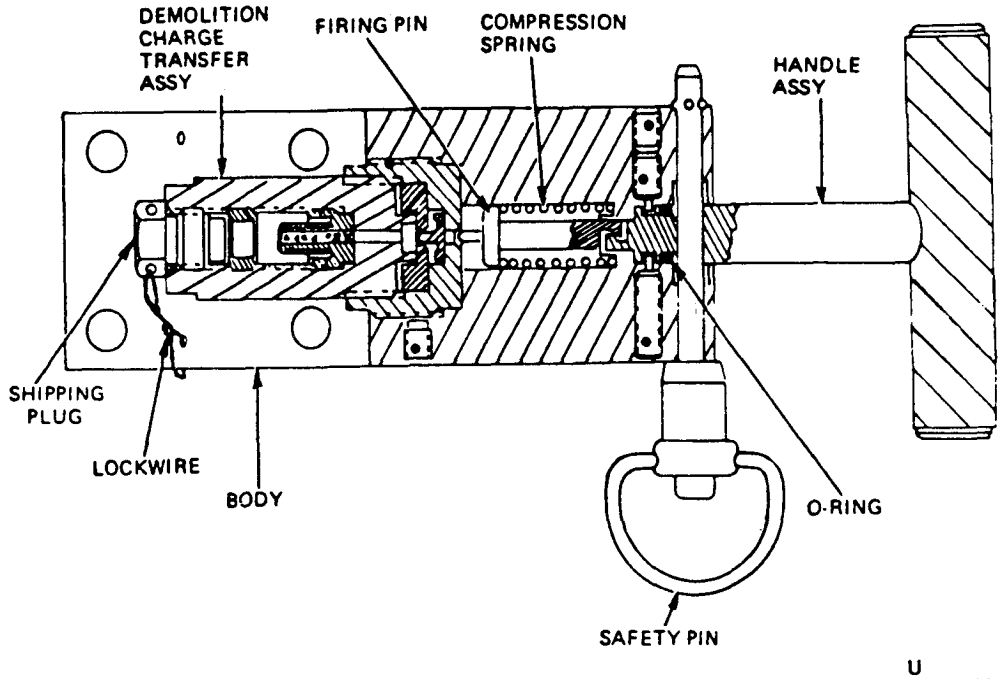
# CHAPTER 7

# INITIATORS/DETONATORS (ARMING/FIRING MECHANISMS)

## 7-1. General

Initiators are explosive devices that use ballistic gas pressure or high order detonation waves to start a chain of events or functions within a system.

## ARMING/FIRING MECHANISM: P/N 813633-4




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

A detonator-type mechanism used in the AH-1 series helicopter to actuate the canopy removal system.

**NOTE**

Arming/Firing Mechanism PN 813633-4 to be replaced by 3W84, 1377-01-234-0667.

**Description:**

The armed/firing mechanism is a manually operated percussion-type detonator assembly consisting of a body, handle assembly, firing pin, compression spring, a demolition transfer/charge assembly quick release pin, seals, fittings, and attaching hardware.

There are three armed/firing mechanisms in the system, one each at the pilot's and gunner's stations and one in the fuselage nose for external access by rescue personnel.

**Functioning:**

To actuate the system, the handle of the armed/firing mechanism is rotated 90 degrees counterclockwise to arm and pulled to fire a primer charge initiating a detonation wave which is transmitted through the system to detonate all four window cutting assemblies.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-00-410-8265 |
| DODIC | |
| Drawing number | 813633-4 |
| Vendor (CAGE Code) and part number | (97499) 209-030-711-37<br>(06331) 813633-4 |
| Item weight | 2.5 lb (1.134 kg) |
| Width | 17 in. (17.8 cm) |
| Height | 5 in. (12.7 cm) |
| Length | 12 in. (30.5 cm) |
| Method of actuation | Manually operated |
| Body material | Aluminum alloy |
| Propellant/explosive material: | |
| Type | HNS, Type I, grade B |
| Weight | 0.000190 lb (1.33 grains) |
| Body material | Steel |

**Performance:**

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C

**Packaging:**

Inner Container:
- Reference ---------- MIL-C-10464
- Type ---------- Type I hermetically sealed metal container
- Dimensions ---------- 6 x 11.5 in.
- Items per package ---------- 1
- Weight ---------- 1lb

Outer Container:
- Reference ---------- PPP-B-621
- Type ---------- Wood box
- Dimensions ---------- 1.6 x 1.1 ft
- Weight ---------- 2.5 lb
- Cube ---------- 0.562 cu ft

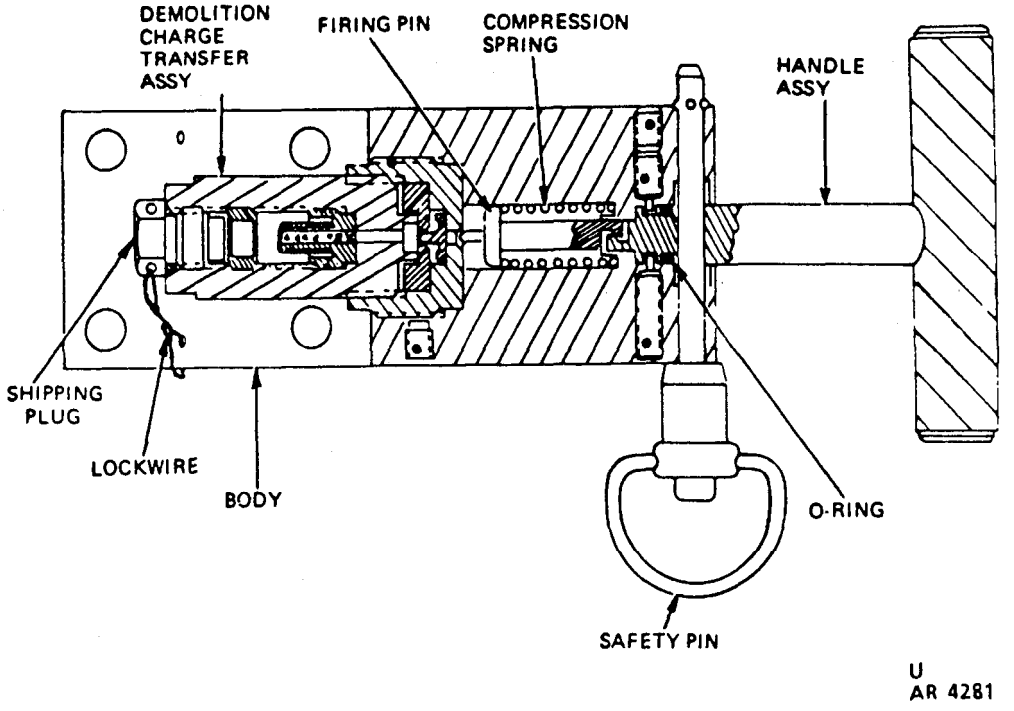
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TM 55-1520-236-23
TM 55-1520-239-23
TB 9-1300-385, App B

## ARMING/FIRING MECHANISM: P/N 814033-101




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

A detonator-type mechanism used in the AH-1 series helicopter to actuate the canopy removal system.

**NOTE**

Arming/Firing Mechanism PN 814033-101 to be replaced by 3W84, 1377-01-234-0667.

**Description:**

The armed/firing mechanism is a manually operated percussion-type detonator assembly consisting of a body, handle assembly firing pin, compression spring, a demolition transfer/charge assembly quick release pin, seals, fittings, and attaching hardware.

There are three armed/firing mechanisms in the system, one each at the pilot's and gunner's stations and one in the fuselage nose for external access by rescue personnel.

**Functioning:**

To actuate the system, the handle of the armed/firing mechanism is rotated 90 degrees counterclockwise to arm and pulled to fire a primer charge initiating a detonation wave which is transmitted through the system to detonate all four window cutting assemblies.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-033-5088 |
| DODIC | N/A |
| Drawing number | 814033-101 |
| Vendor (CAGE Code) and part number | 116-416-1<br>209-033-008-101 |
| Item weight | |
| Diameter | 2.7 in. (6.86 cm) |
| Length | 7.9 in. (20.07 cm) |
| Method of actuation | Manual |
| Body material | Steel |
| Propellant/explosive material: | |
| Type | HNS |
| Weight | 0.000190 lb (1.33 grains) |

**Performance:**

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65°F (-54°C)

**Packaging:**

Inner Container:
- Reference ---------- MIL-C-10464
- Type ---------- Type I hermetically sealed metal container
- Items per package ---------- 1
- Weight ---------- 1 lb

Outer Container:
- Reference ---------- PPP-621
- Type ---------- Wood box
- Dimensions ---------- 1.6 x 1.1 x 0.4 ft
- Weight ---------- 2.5 lb
- Cube ---------- 0.562 cu ft

**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-221-23
TM 55-1520-234-23
TM 55-1520-236-23
TM 55-1520-239-23
TB 9-1300-385, App B

# CHAPTER 8

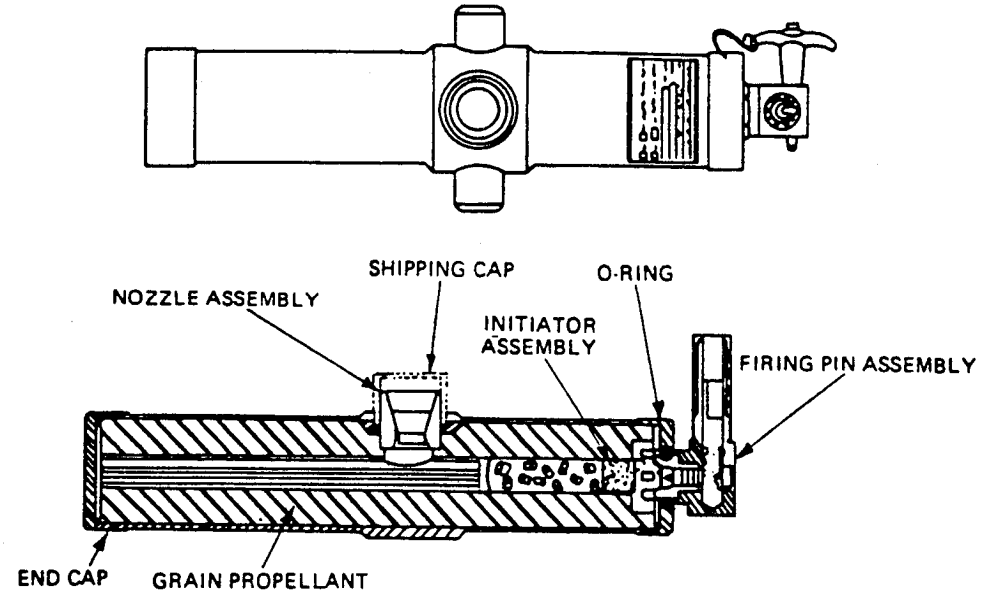
# ROCKET MOTORS/CATAPULTS

## 8-1. General

a. Rocket Motors and Rocket Catapults are explosive devices used in various aircraft egress systems to assist or propel the ejection seat and its occupant from the aircraft in an emergency situation.

b. This chapter contains technical data, use, and description of rocket motors/rocket catapults.

## ROCKET MOTOR: (M447)




U
AR 4282

**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

To provide stabilization and improved trajectories of the seat escape system.

**Description:**

The M119 tip-off compensation rocket motor is designed for use in the Grumman OV-1 Mohawk airplane on the MD-S5 seat system. The unit provides sufficient energy to stabilize the ejection seat in the correct attitude to insure drogue chute deployment in the optimum direction.

**Functioning:**

The M119 rocket motor is trunnion mounted under the seat. The nozzle is oriented in a down position. A steel wire lanyard is threaded into the firing mechanism and attached to the cable dispenser which is attached to the aircraft bulkhead.

After the lanyard is connected, the safety pin is removed from the firing mechanism. Once the escape system is actuated, the lanyard automatically triggers the firing mechanism and initiates the igniter assembly which, in turn, ignites the propellant grain which provides the additional propulsion to the seat.

**Performance:**

Rocket Motor Performance

| Parameter | -65 to -70°F | | +65 to +75°F | | +160 to +165°F | |
|---|---|---|---|---|---|---|
| | Min | Max | Min | Max | Min | Max |
| Peak Thrust (lb) | 1200 | 1800 | 1500 | 2300 | 1700 | 2700 |
| Total Impulse (lb-sec) | 370 | 430 | 370 | 430 | 370 | 430 |
| Action Time (sec) | 0.280 | 0.420 | 0.230 | 0.350 | 0.180 | 0.320 |
| Burning Time (sec) | 0.220 | 0.310 | 0.180 | 0.270 | 0.140 | 0.250 |
| Ignition Delay Time (sec) | 0.000 | 0.015 | 0.000 | 0.015 | 0.000 | 0.015 |

**Firing Temperature Limits:**

Upper ---------- +160°F (+71°C)
Lower ---------- -65°F (-54°C)

**Tabulated Data:**

NSN ---------- 1377-00-244-1578
DODIC ---------- M447
Drawing number ---------- 11740301
Vendor (CAGE Code)
and part number ---------- (51998) 1044-2
Item weight ---------- 6.36 lb (2.9 kg)
Diameter ---------- 4.202 in. (10.67 cm)
Length ---------- 13.3 in. (33.78 cm)
Method of actuation --------- Mechanical
Body material ---------- 4130 steel and aluminum alloy
Propellant/explosive material:
Type ---------- High-density carboxy terminated polybutadiene, N-53 (U) MIL-P-82676
Weight ---------- 2.56 lb (17920 grains)

**Packaging:**

Inner Container:
Reference ---------- PPP-B-636
Type ---------- Fiberboard
Dimensions ---------- (34.1 x 13.2 x 8.1 cm)
Items per package ---------- 1 ea
Weight ---------- 8 lb
Outer container:
Reference ---------- PPP-B-621
Type ---------- Wood box
Dimensions ---------- 17 x 12-1/16 x 4-11/16 in. ((43.2 x 30.6 x 12 cm)
Weight ---------- 13 lb
Cube ---------- 1.639 cu ft

**Shipping and Storage Data:**

Quantity distance class ----- 1.3
Storage compatibility
group ---------- F
DOT shipping class ---------- B
DOT designation ---------- CLASS B EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1510-204-23
TM 55-1510-213-23
TB 9-1300-385, App B

# CHAPTER 9

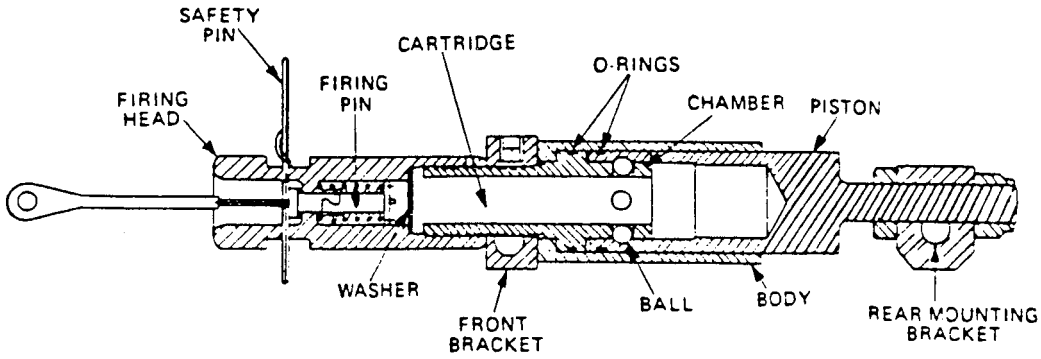
# THRUSTERS

## 9-1. General

a. A thruster is a component part of an aircraft escape system or aerial delivery system, which is used to accomplish a certain task prior to implementing the final phases of escape, for crewmen from a disable aircraft, or separation of the components of an aerial delivery system.

b. The basic parts of a thruster consist of a firing mechanism, cartridge, chamber and piston. The main purpose of a thruster is to impart a thrust to a known load or oppose a force through a given travel (stroke).

## THRUSTER, CARTRIDGE ACTUATED, TCU-1/B: (MF24)




**Type Classification:**

Type III A Release by Navy.

STD LCCA

**Use:**

Used on the high speed aerial delivery system and receives its ballistic power from the CCU-57/B Delay Cartridge.

**Note**

TCU-1/B replaces XM5 thruster.

**Description:**

The TCU-1/B thruster consists of a cartridge (CCU-57/B), firing mechanism, body piston assembly, front and rear brackets and safety pin.

**Functioning:**

When the CTU-2/A container is released from the aircraft, an attached lanyard from the aircraft initiates the CCU-57/B cartridge. After the 0.4 second time delay, the TCU-1/B thruster releases a tail cone which houses a recovery parachute. The aerodynamic load on the tail cone thus serves to deploy the parachute.

**Tabulated Data:**

NSN ---------- 1377-01-075-6433
DODIC ---------- MF24
Drawing number ---------- 5184910
Vendor (CAGE Code) and
part number ---------- 5184910
Item weight ---------- 1.36 lb (0.62 kg)
Diameter ----------
Length ---------- 9.0 in. (22.86 cm)
Method of actuation --------- Manual
Body material ---------- Steel
Propellant/explosive material:
Type ---------- Black powder and HES 5808
Weight ---------- 0.0025 lb (17.5 grains)

**Performance:**

Delay time ---------- 0.4 sec +0.1
Minimum stroke 1.5 in. (3.81 cm)

**Firing Temperature Limits:**

Upper ---------- +200°F (+93°C)
Lower ---------- -65F°(-54°C)

**Packaging:**

Inner Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiberboard box
- Dimensions ---------- 10-3/16 x 2-1/2 x 2-1/2 in. (25.9 x 6.4 x 6.4 cm)
- Items per package ---------- 1
- Weight ---------- 1.6 lb (0.73 kg)

Outer Container:
- Reference ---------- PPP-B-621
- Type ---------- Wood Box
- Dimensions ---------- 19 x 12-3/16 x 11-7/8 in. (48.3 x 30.46 x 30.16 cm)
- Weight ----------
- Cube ---------- 1.6 cu ft

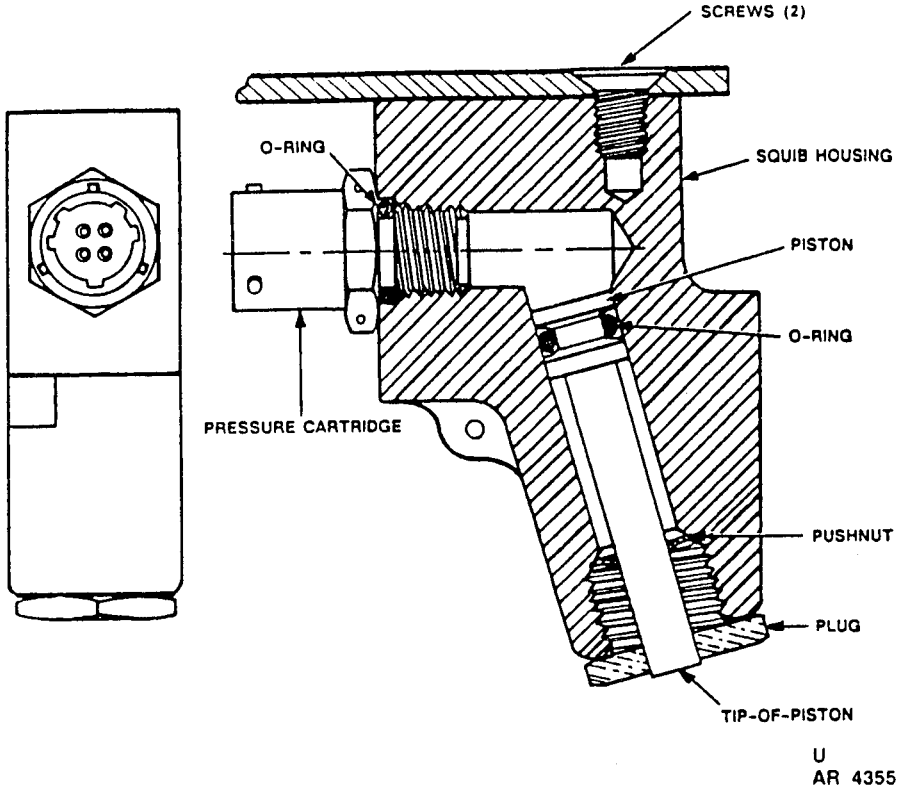
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- EXPLOSIVE POWER DEVICE, CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

FM 10-547
TM 9-1377-200-20&P
TB 9-1300-385, App B

## THRUSTER, CARTRIDGE ACTUATED, TCU-3/A: (MJ20)




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

UH-60 cargo hook release mechanism, Provides a power source to release the load applied to the 6,000 lb cargo hoist hook in the event of an emergency.

**Description:**

The cartridge assembly for the cargo hook consists of an aluminum body, a pressure cartridge, piston, plug, washer, piston retaining ring and O-rings.

**Functioning:**

The cargo hook cartridge assembly is fired electrically by placing a switch in the crew compartment to the release position. Ballistic gas pressure from the cartridge forces the piston out of the body assembly thus mechanically operating the release mechanism on the cargo hook.

**Tabulated Data:**

NSN ---------- 1377-01-211-7212
DODIC ---------- MJ20
Drawing number ---------- 1512AS120

Vendor (CAGE Code) and part number ---------- (01270) FE 7590-98
Item weight ---------- 0.21 lb
Diameter ---------- 0.735 in. (1.867 cm)
Length ---------- 253 in. (6.426 cm)
Method of actuation --------- Electrical
Body material ---------- Aluminum
Propellant/explosive material:
  Type ---------- SP
  Weight ---------- 0.00052 lb (3.64 grains)

**Performance:**

**Firing Temperature Limits:**

Upper ---------- +200°F (+93.4°C)
Lower ---------- -65°C (-54°C)

**Packaging:**

Inner Container:
  Reference ---------- MIL-C-10464
  Type ---------- Hermetically sealed metal container
  Dimensions ----------
  Item per package ---------- 1
  Weight ----------
Outer Container:
  Reference ---------- PPP-B-636
  Type ---------- Fiberboard box
  Dimensions ----------
  Weight ----------
  Cube ----------

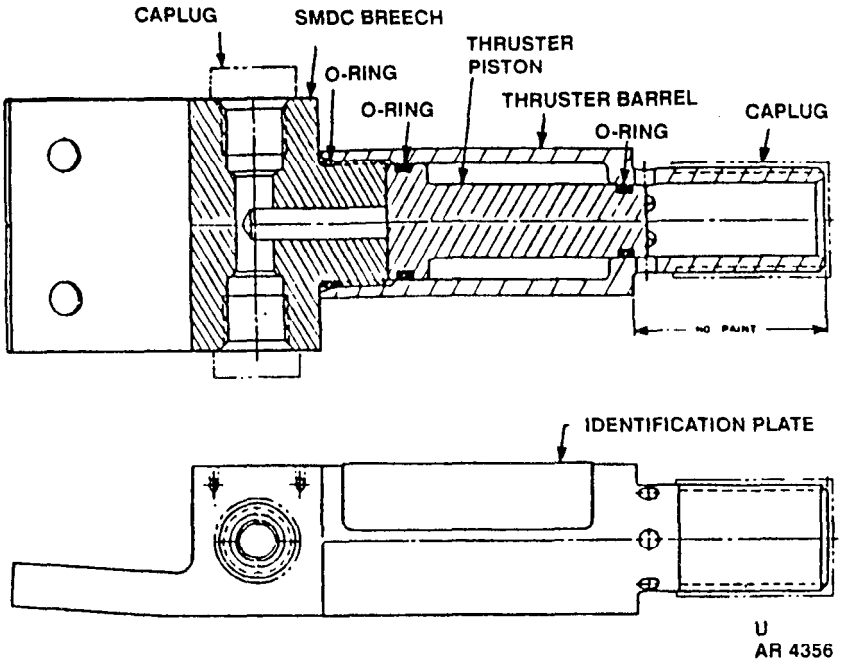
**Shipping and Storage Data**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- EXPLOSIVE POWER DEVICE, CLASS C EXPLOSIVE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TM 9-1377-200-20&P
TM 55-1520-237-23
TB 9-1300-385, App B

## THRUSTER, EXPLOSIVE ACTUATED: P/N 209-033-007-3




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

Used on the AH-E/F/P Helicopter.

**Description:**

The thruster is a steel manifold that transmits an explosive force from shielded mild detonating cord (SMDC) to a thruster piston. (Detonating cord provided at installation.)

**Functioning:**

Upon detonation of the SMDC the explosive force is applied to the piston driving it forward.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-062-4196 |
| DODIC | |
| Drawing number | 820810 |
| Vendor (CAGE Code) and part number | (97499) 209-033-007-3 |
| Item weight | 0.37 lb |
| Diameter | 0.88 in. |
| Length | 4.78 in. |
| Method of actuation | Explosively Initiated |

Propellant/explosive material: None/Inert

| | |
|---|---|
| Type | N/A |
| Weight | N/A |

**Performance:**

**Firing Temperature Limits:**

Upper ---------- +200°F (+93.4°C)
Lower ---------- -65°C (-54°C)

**Packaging:**

Reference ---------- MIL-B-117
Type ---------- Heat sealed
Dimensions ---------- 9 x 6 in.
Weight ---------- 0.6 lb
Cube ---------- 0.30 cu ft

**Shipping and Storage Data:**

Quantity distance class -----

Storage compatibility
group ----------
DOT shipping class ----------
DOT designation ----------

**References:**

TB 9-1300-385, App B

# CHAPTER 10

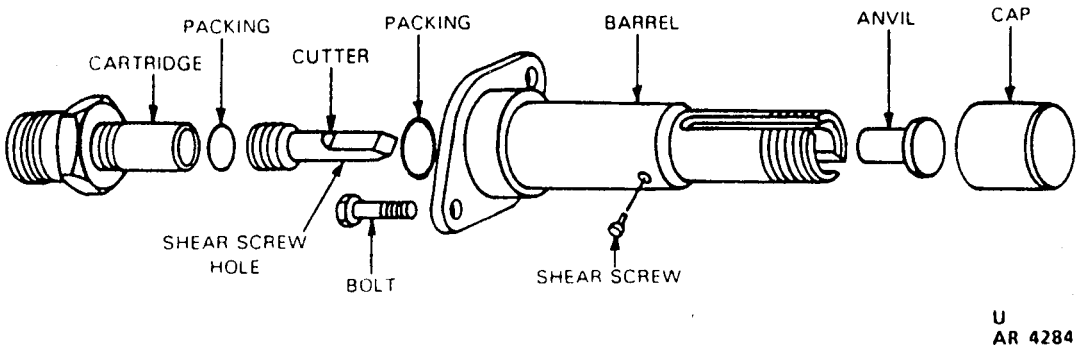
# MISCELLANEOUS ITEMS

## 10-1. General

a. The items listed in this chapter have characteristics which set them apart from the Cartridges, Cartridge Actuated Devices (CADs) and Propellant Actuated Devices (PADs) described in the other chapters of this manual.

b. Some of the items described in this chapter are part of a kit or component and will refer to the data sheet on such items.

## REFIRE KIT: 073-3831




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

The refire kit is used to rebuild the cable cutter on UH-1 and UH-60.

**Description:**

The refire kit consists of a cartridge assembly, shear pin, anvil, cutter, and two O-rings.

**Functioning:**

The Refire Kit is used to reload the UH-1 and UH-60 Cable Cutter.

**Tabulated Data:**

| | |
|---|---|
| NSN | 1377-01-073-3831 |
| DODIC | |
| Drawing number | |
| Vendor (CAGE Code) and part number | (22567) K303104-1<br>(82402) 42277E182 |
| Item weight | |
| Diameter | 4.0 in. (10.16 cm) |
| Length | 6.0 in. (15.24 cm) |
| Method of actuation | Electrical |
| Body material | Aluminum |
| Propellant/explosive material: | |
| Type | Dupont bullseye black powder |
| Weight | 0.000243 lb (1,7 grains) |

**Performance:**

**Firing Temperature Limits:**

| | |
|---|---|
| Upper | + 165°F (+74° C) |
| Lower | -65°F (-54°C) |

**Packaging:**

Inner Container:
- Reference ---------- PPP-B-636
- Type ---------- Fiberboard box
- Dimensions ----------
- Items per package
- Weight ---------- 0.3 lb

Outer Container:
- Reference ---------- PPP-B-621
- Type ---------- Wood box
- Dimensions ---------- 1.6 x 1.1 x 0.4 ft
- Weight ---------- 2.5 lb
- Cube ---------- 0.560 cu ft

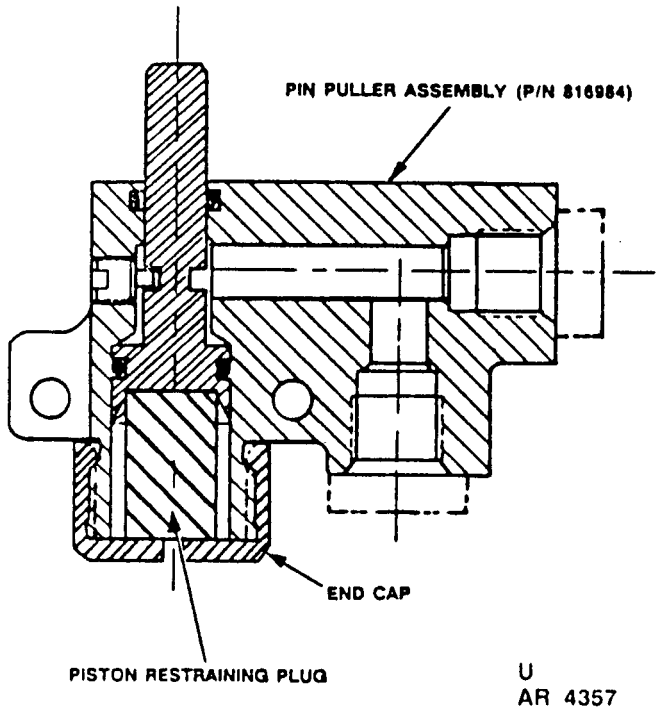
**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility group ---------- S
DOT shipping class ---------- C
DOT designation ---------- EXPLOSIVE POWER DEVICE, HANDLE CAREFULLY, KEEP FIRE AWAY

**References:**

TB 9-1300-385, App B.

## PIN PULLER, EXPLOSIVE ACTUATED P/N 816984




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

The pin puller is used in the AH-1 canopy removal system(s).

**Description**

The Pin Puller is a steel manifold that transmits an Explosive Force from shielded mild detonating cord (SMDC) to a puller position.

**Functioning:**

Upon detonation of the SMDC, the explosive force is applied to the piston. Movement of the piston pulls the pin that retains the canopy.

**Tabulated Data:**

NSN ---------- 1377-01-037-4091
DODIC ----------
Drawing number ---------- 816984
Vendor (CAGE Code) and part number ---------- (06331) 816984
Item weight ----------
Diameter ---------- 1.5 in. (3.81 cm)
Length ---------- 2.25 in. (5.72 cm)
Method of actuation --------- Explosively actuated
Body Material ---------- Steel
Propellant/explosive material ---------- Not loaded - inert.

Performance:

Firing Temperature Limits:

Upper ---------- +200°F (+93.4°C)
Lower ---------- -65°F (-54°C)

## PIN PULLER, EXPLOSIVE ACTUATED: P/N 816984

**Packaging:**

Inner Container:
- Reference ---------- MIL-B-117
- Type ---------- Type I, class B
- Dimensions ---------- 4 x 6 in.
- Items per package ---------- 1
- Weight ---------- 0.5 lb

Outer Container:
- Reference ---------- SPI (AMOP-01-037-4091)
- Type ----------
- Dimensions ---------- 0.6 x 0.5x 0.2 ft
- Weight ---------- 0.5 lb
- Cube ---------- 0.046 cu ft

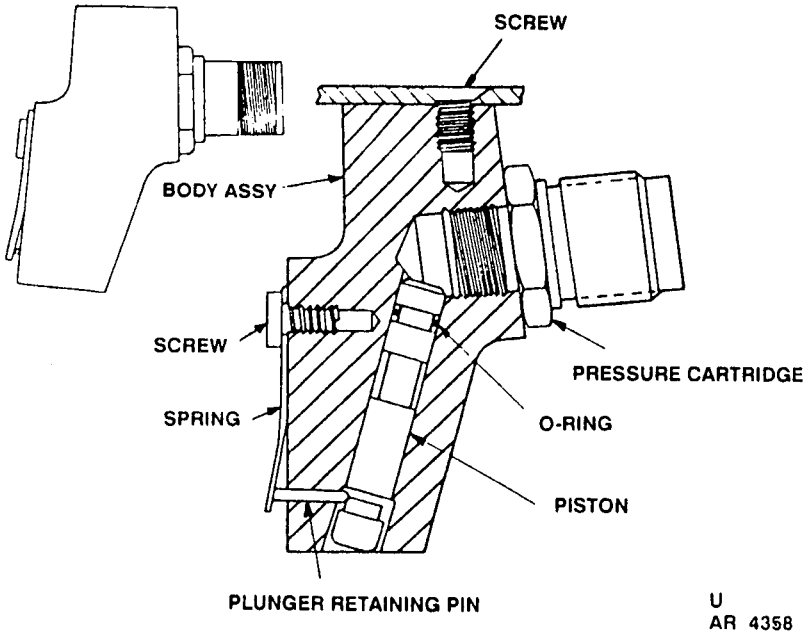
**Shipping and Storage Data:**

Quantity distance class ----- N/A
Storage compatibility group ---------- N/A
DOT shipping class ---------- N/A
DOT designation ---------- N/A

**References:**

TM 9-1377-200-20&P
TM 55-1520-236-23
TB 9-1300-385, App B.

## CARTRIDGE ASSEMBLY, CARGO HOOK: PY58




**Type Classification:**

Refer to Aircraft Subsystem.

**Use:**

UH-60 cargo hook release mechanism. Provides a power source to release the load applied to the 8,000 lb cargo hoist hook in the event of an emergency.

**NOTE**

To be replaced by CCU-921A Impulse Cartridge MJ21 1377-01-211-7212

**Description:**

The cartridge assembly for the cargo hook consists of an aluminum body, a pressure cartridge, piston, plug, washer piston retaining ring and O-rings.

**Functioning:**

The cargo hook cartridge assembly is fired electrically by actuating a switch in the crew compartment to the release position. Ballistic gas pressure from the cartridge forces the piston out of the body assembly thus mechanically operating the release mechanism on the cargo hook.

**Tabulated Data:**

NSN ---------- 1377-01-149-5917
DODIC ---------- PY58
Drawing number ---------- FE7590-65
Vendor (CAGE Code) and
part number ---------- (01276) FE7590-65
Item weight ----------
Diameter ---------- 0.75 in. (1.91 cm)
Length ---------- 2.36 in. (5.99 cm)
Method of actuation --------- Electrical
Body material ---------- Aluminum
Propellant/explosive material:
Type ----------
Weight ----------

**Performance:**

**Firing Temperature Limits:**

Upper ---------- N/A
Lower ---------- N/A

**Packaging:**

Inner Container:
  Reference ----------
  Type ----------
  Dimensions ----------
  Items per package ----------
  Weight ----------
Outer Container:
  Reference ----------
  Type ----------
  Dimensions ----------
  Weight ----------
  Cube ----------

**Shipping and Storage Data:**

Quantity distance class ----- 1.4
Storage compatibility
  group ---------- C
DOT shipping class ---------- C
DOT designation ---------- Explosive Power Device, Class C Explosive, Handle Carefully Keep Fire Away.

**References:**

TM 9-1377-200-20&P
TM 55-1520-237-23
TB 9-1300-385, App B

# APPENDIX A

# REFERENCE PUBLICATIONS

## A-1. Army Regulations

Army Safety Program ..... AR 385.10
System Safety Engineering and Management ..... AR 385-16
Accident Reporting and Records ..... AR 385-40
Ammunition and Explosive Safety Standards ..... AR 385-64
Identification of Inert Ammunition and Ammunition Components ..... AR 385-65
Reporting of Transportation Discrepancies in Shipments ..... AR 55-38
Worldwide Ammunition Reporting System (WARS) ..... AR 700-22
Ammunition Stockpile Reliability Program ..... AR 702-6
Type Classification/Reclassification of Army Material ..... AR 71-6
Report of Item and Packaging Discrepancies ..... AR 735-11-2
Malfunctions Involving Ammunition and Explosives ..... AR 75-1
Hazardous Item Contracts ..... DARCOM-R 385-17
Determination and Assignment of Ammunition and Explosives
Hazard (classifications ..... DARCOM-R 385-21
Safety Manual ..... DARCOM 385
Safety Manual ..... DARCOM 385-100

## A-2. Technical Manuals

The Army Maintenance Management System ..... DA PAM 738-750
Operator's Aviation Unit Maintenance and Aviation Intermediate Maintenance Manual Repair Parts and Special Tools List (Incl RPSTL) Dispenser, General Purpose Aircraft: M130 ..... TM 9-1095-206-13&P
Ammunition, General ..... TM 9-1300-200
Ammunition and Explosive Standards ..... TM 9-1300-206
Ammunition Maintenance ..... TM 9-1300-250
Organizational and Maintenance Manual (Incl RPSTL) Cartridges, Cartridge Actuated Devices and Propellant Actuated Devices. TM 9-1377-200-20&P
Aviation Unit and Intermediate Maintenance Manual:
Army Models OV-1B/OV-1C Aircraft. ..... TM 55-1510-204-23
Aviation Unit and Intermediate Maintenance Manual:
Army Models OV-1D/RV-1D Aircraft ..... TM 55-1510-213-23
Aviation Unit and Aviation Intermediate Maintenance Manual:
Army Model CH-47A Helicopter ..... TM 55-1520-209-23
Aviation Unit and Intermediate Maintenance Instructions:
Army Model UH-1D/H/V/EH-1H Helicopters ..... TM 55-1520-210-23
Aviation Unit and Intermediate Maintenance Instructions:
CH-54A Helicopter ..... TM 55-1520-217-23
Aviation Unit and Intermediate Maintenance Instructions:
Army Model UH-1C/M Helicopters ..... TM 55-1520-220-23

]Aviation Unit and Aviation Intermediate Maintenance Manual:
Army Model AH-1G and AH-1Q Helicopters ..... TM 55-1520-221-23
Aviation Unit and Aviation Intermediate Maintenance Manual:
Army Model CH-47B and CH-47C Helicopters ..... TM 55-1520-227-23
Avum and Avim Maintenance Manual: AH-1S (MOD) ..... TM 55-1520-234-23
Aviation Unit and Intermediate Maintenance Manual:
Army Model AH-IS (PROD), AH-IS (ECAS) and AH-1S
(Modernized COBRA) Helicopters ..... TM 55-1520-236-23
Aviation Unit and Intermediate Maintenance Wiring Data
Manual for UH-60A Helicopter ..... TM 55-1520-237-23
Aviation Unit and Intermediate Maintenance Repair Parts and
Special Tools List (Incl Depot Maintenance RPSTL) for
Helicopter, Attack, AH-1S (Modernized COBRA) ..... TM 55-1520-239-23
Aviation Unit and Aviation Intermediate Maintenance Manual:
CH-47D Helicopter ..... TM 55-1520-240-23

## A-3. Technical Bulletins

Department of Defense Explosive Hazard Classification Procedures. . . . . TB 700-2
Munitions Suspended or Restricted ..... TB 9-1300-385-1
Munition Permanently Suspended or Restricted ..... TB 9-1300-385-2

## A-4. Supply Catalogs

DOD Consolidated Ammunition Catalog. . . . . SB 708-4

## A-5. Blank Forms

Recommended Changes to Publications and Blank Forms ..... DA Form 2028
Ammunition Condition Report ..... DA Form 2415
Accident Report ..... DA form 285
Discrepancy in Shipment Report . . . . . SF 361
Packaging and Improvement Report ..... SF 364

## A-6. Navy Publications

Ordnance Safety Precautions, Their Origin and Necessity. . . . . .OP 1014
Index to Navy Ammunition Stocks, Cartridges and Cartridge
Actuated Devices. . . . . .TW010-AA-ORD-010
Navy Transportation Safety Handbook. . . . . OP 2165
United States Navy Ordnance Safety Precautions ..... OP 3347
Ammunition Afloat ..... .OP 4
Ammunition and Explosives Ashore ..... OP 5

# APPENDIX B

## CAD/PAD AIRCRAFT/HELICOPTER/EQUIPMENT CROSS REFERENCE

| CAD/PAD | NSN | APPLICATION |
|---|---|---|
| Arm-Fire Initiator | 1377-01-033-5088 | AH-E/F/P (Cobra) |
| Cartridge, Aricraft Fire Extinguisher | 1377-00-087-7103 | |
| Cartridge, Aircraft Fire Extinguisher | 1377-00-756-1384 | CH-47 (Chinook) |
| Cartridge, Aircraft Fire Extinguisher | 1377-00-824-5858 | |
| Cartridge, Aircraft Fire Extinguisher | 1377-00-930-9390 | OV-1 (Mohawk)<br>CH-47 (Chinook) |
| Cartridge, Aircraft Fire Extinguisher | 1377-01-113-8530 | AH-1 (Cobra) |
| | 1377-01-263-3627 | UH-60A (Blackhawk) |
| Cartridge, Aircraft Fire Extinguisher | 1377-01-185-2622 | |
| Cartridge, Assembly Cargo Hook | 1377-01-115-3711 | UH-60A (Blackhawk) |
| Cartridge, Assembly Cargo Hook | 1377-01-149-5917 | UH-60A (Blackhawk) |
| Cartridge, Delay | 1377-00-774-7259 | |
| Cartridge, Delay | 1377-00-958-1048 | 20 sec delay<br>Cargo Parachute |
| Cartridge, Delay | 1377-01-084-6064 | TCU-1/B Thruster |
| Cartridge, Impulse | 1377-00-168-5802 | CH 54B |
| Cartridge, Impulse | 1377-00-253-4436 | |
| Cartridge, Impulse | 1377-00-585-9291 | AH-S(MOD) E/F/P (Cobra)<br>AH-1S/MOD E<br>AH-1S/MOD F<br>AH-1S/MOD P |
| Cartridge, Impulse | 1377-00-707-0590 | |
| Cartridge, Impulse | 1377-00-793-9926 | OV-1A (Mohawk) |
| Cartridge, Impulse | 1377-00-805-9281 | |
| Cartridge, Impulse | 1377-00-878-6510 | |
| Cartridge, Impulse | 1377-00-883-8997 | OV-1 (Mohawk) |
| Cartridge, Impulse | 1377-00-883-8998 | OV-1 (Mohawk) |
| Cartridge, Impulse | 1377-00-999-7463 | |
| Cartridge, Impulse | 1377-01-049-6365 | |
| Cartridge, Impulse | 1377-01-057-0686 | UH-60A (Blackhawk) |
| Cartridge, Impulse | 1377-01-063-3161 | UH-60A (Blackhawk) |
| Cartridge, Impulse | 1377-01-063-3164 | UH-60A (Blackhawk) |
| Cartridge, Impulse | 1377-01-063-3165 | UH-60A (Blackhawk) |
| Cartridge, Set, Impulse | 1377-01-211-7211 | TCU-3/A Thruster |
| Cartridge, Impulse | 1377-00-845-5242 | OV-1 (Mohawk) |
| Connector, Inline (Inert) | 1377-00-062-4195 | AH-1E/F/P (Cobra)<br>AH-1S/MOD E<br>AH-1S/MOD F<br>AH-1S/MOD P |
| Cord, Detonating | 1377-00-409-1098 | AH-1S (MOD) |
| Cord, Detonating | 1377-00-409-1099 | AH-1S (MOD) |
| Cord, Detonating | 1377-00-409-1100 | AH-1S (MOD) |
| Cord, Detonating | 1377-00-410-8266 | AH-1S (MOD) |
| Cord, Detonating | 1377-00-410-8271 | AH-1S (MOD) |
| Cord, Detonating | 1377-00-410-8289 | AH-1S (MOD) |
| Cord, Detonating | 1377-00-410-8297 | AH-1S (MOD) |
| Cord, Detonating | 1377-01-032-1047 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-032-1048 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-032-1049 | AH-1 E/F/P (Cobra) |

| CAD/PAD | NSN | APPLICATION |
|---|---|---|
| Cord, Detonating | 1377-01-032-1050 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-032-3279 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-032-3280 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-032-3283 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-032-3286 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-035-4124 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-037-4090 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-037-4093 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-037-4094 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-037-4095 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-037-4096 | AH-1 E/F/P (Cobra) |
| Cord, Detonating | 1377-01-037-9237 | AH-1 E/F/P (Cobra) |
| Cutter Assembly | 1377-01-064-4927 | UH-1 (Iroquois) |
| Cutter, Cartridge Actuated | 1377-00-412-4377 | CH-54 (Tarhe) |
| Cutter, Cartridge Actuated | 1377-01-087-5166 | |
| Cutter, Reef Line | 1377-00-060-0885 | High Speed Aerial Deliver, CTU-2A |
| Cutting Assembly | 1377-00-106-7773 | AH-1S (MOD) (Cobra) |
| Cutting Assembly | 1377-00-409-1095 | AH-1S (MOD) (Cobra) |
| Cutting Assembly | 1377-00-409-1096 | AH-1S (MOD) E/F/P (Cobra) |
| Cutting Assembly | 1377-00-409-1097 | AH-1S (MOD) (Cobra) |
| Firing Mechanism | 1377-00-410-8265 | AH-1S (MOD) E/F/P (Cobra) |
| Interconnecting Line | 1377-01-100-1718 | AH-1S (MOD) (Cobra) |
| Junction Manifold (Inert) | 1377-00-409-1101 | AH-1S (MOD) (Cobra) |
| Junction Manifold (Inert) | 1377-00-410-8228 | AH-1S (MOD) (Cobra) |
| Junction Manifold (Inert) | 1377-01-037-4092 | AH-1 E/F/P (Cobra) |
| Pin Puller, Explosive | 1377-01-037-4091 | AH-1 E/F/P (Cobra) |
| Refire Kit | 1377-01-073-3831 | UH-1 (Iroquois) |
| Rocket Motor | 1377-00-244-1578 | OV-1 (Mohawk) |
| Thruster, Cartridge Actuated | 1377-01-075-6433 | High Speed Aerial Delivery, CTU-2A |
| Thruster, Cartridge Actuated | 1377-01-211-7212 | UH-60A (Blackhawk) |
| Thruster, Explosive | 1377-01-062-4196 | AH-1E/F/P (Cobra) |

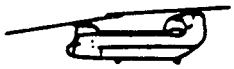
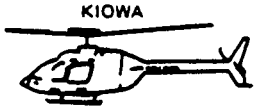
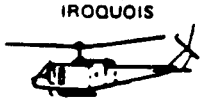
| PRE-FERRED | POPULAR NAME AND TYPE | COMBAT ACCEPT SUBST | FOLLOW-ON AIRCRAFT |
|---|---|---|---|
| AH-1 E/F/P | COBRA  ATTACK HELICOPTER | UH-1B UH-1C UH-1M | AH-64A |
| CH-47A/B/C | CHINOOK  CARGO TRANSPORT HELICOPTER | | CH-47D |
| CH-54A/B | TARHE  CARGO TRANSPORT HELICOPTER | | |
| OH-6A | CAYUSE  | | |
| OH-58A/C | KIOWA  LIGHT OBSERVATION HELICOPTER | | |
| UH-1H UH-1V | IROQUOIS  UTILITY HELICOPTER | UH-1B | UH-60A |
| TH-55A | OSAGE  TRAINER HELICOPTER | | OFF-THE-SHELF |

**Figure B-1. Designation of Rotary Wing Army Aircraft (sheet 1 of 2).**

| PRE-FERRED | POPULAR NAME AND TYPE | COMBAT ACCEPT SUBST | FOLLOW-ON AIRCRAFT |
|---|---|---|---|
| UH-60A | BLACKHAWK  UTILITY HELICOPTER | UH-1H | |
| AH-64A | AAH  ATTACK HELICOPTER | | |
| UH-1C/M | IROQUOIS  UTILITY HELICOPTER | | |
| AH-1 S (MOD) | COBRA  ATTACK HELICOPTER | UH-1B UH-1C UH-1M | AH-64A |

**Figure B-1. Designation of Rotary Wing Army Aircraft (sheet 2 0f 2).**

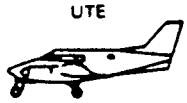
| PRE-FERRED | POPULAR NAME AND TYPE | COMBAT ACCEPT SUBST | FOLLOW-ON AIRCRAFT |
|---|---|---|---|
| U-8F | SEMINOLE  UTILITY AIRCRAFT | | |
| U-10A | COURIER  UTILITY AIRCRAFT | | |
| U-21 A/G RU-21A D/H | UTE  UTILITY AIRCRAFT | | |
| OV-1B/C/D RV-1D | MOHAWK  OBSERVATIONS/SURVEIL-LANCE AIRCRAFT | | |
| T-41B | MESCALERO  TRAINER AIRCRAFT | | OFF-THE-SHELF |
| T-42A | COCHISE  TRAINER AIRCRAFT | | OFF-THE-SHELF |

**Figure B-2. Designation of Fixed Wing Army Aircraft (sheet 1 of 2).**

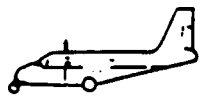
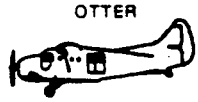
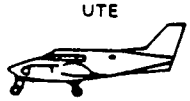
| PRE-FERRED | POPULAR NAME AND TYPE | COMBAT ACCEPT SUBST | FOLLOW-ON AIRCRAFT |
|---|---|---|---|
| U-9C | AERO COMMANDER  UTILITY AIRCRAFT | | |
| C-12A/C RU-21J | HURON  CARGO AIRCRAFT | | C-12D |
| UV-18A | TWIN OTTER  UTILITY STOL AIRCRAFT | | |
| U-1A | OTTER  UTILITY AIRCRAFT | | |
| U-21F RU-21B, C | UTE  UTILITY AIRCRAFT | | |

**Figure B-2. Designation of Fixed Wing Army Aircraft (sheet 2 of 2).**

# APPENDIX C

## AIRCRAFT/HELICOPTER/EQUIPMENT TO CAD/PAD CROSS-REFERENCE

| Type - Aircraft Equipment | CAD/PAD | NSN | DODIC |
|---|---|---|---|
| AH-IS (MOD) | Cartridge, Impulse | 1377-00-585-9291 | M189 |
| | Cord, Detonating | 1377-00-409-1098 | MD18 |
| | Cord, Detonating | 1377-00-409-1099 | MD16 |
| | Cord, Detonating | 1377-00-409-1100 | MS50 |
| | Cord, Detonating | 1377-00-410-8222 | |
| | Cord, Detonating | 1377-00-410-8266 | MS47 |
| | Cord, Detonating | 1377-00-410-8271 | MD15 |
| | Cord, Detonating | 1377-00-410-8289 | MS48 |
| | Cord, Detonating | 1377-00-410-8297 | MD17 |
| | Cutting, Assembly | 1377-00-106-7773 | MD35 |
| | Cutting, Assembly | 1377-00-409-1095 | MD34 |
| | Cutting, Assembly | 1377-00-409-1096 | MD33 |
| | Cutting, Assembly | 1377-00-409-1097 | MD36 |
| | Firing Mechanism | 1377-00-410-8265 | — |
| | Junction Manifold (Inert) Cross | 1377-00-409-1101 | — |
| | Junction Manifold (Inert) Tee | 1377-00-410-8228 | — |
| AH-1 E/F/P | Cartridge, Impulse | 1377-00-585-9291 | M189 |
| | Connector, Inline | 1377-01-062-4195 | |
| | Cord, Detonating | 1377-01-032-1047 | MS76 |
| | Cord, Detonating | 1377-01-032-1048 | MS77 |
| | Cord, Detonating | 1377-01-032-1049 | MS78 |
| | Cord, Detonating | 1377-01-032-1050 | MS79 |
| | Cord, Detonating | 1377-01-032-3279 | MS60 |
| | Cord, Detonating | 1377-01-032-3280 | MS61 |
| | Cord, Detonating | 1377-01-032-3283 | MS59 |
| | Cord, Detonating | 1377-01-032-3286 | MS58 |
| | Cord, Detonating | 1377-01-035-4124 | MS51 |
| | Cord, Detonating | 1377-01-037-4090 | MS53 |
| | Cord, Detonating | 1377-01-037-4093 | MS57 |
| | Cord, Detonating | 1377-01-037-4094 | MS56 |
| | Cord, Detonating | 1377-01-037-4095 | MS55 |
| | Cord, Detonating | 1377-01-037-4096 | MS54 |
| | Cord, Detonating | 1377-01-037-9237 | MS52 |
| | Junction, Manifold (Inert) Inline | 1377-01-037-4092 | — |
| | Pin Puller, Explosive | 1377-01-037-4091 | — |
| | Thruster, Explosive | 1377-01-062-4196 | — |
| AH-1 E/F/P | Cord, Detonating | 1377-01-100-1718 | MS62 |
| | Initiator, Arm-Fire | 1377-01-033-5088 | — |
| AH-64 | Connector, Elbow | 1377-01-170-4493 | — |
| | Connector, Union | 1377-01-170-5321 | — |
| | Connector, Tee | 1377-01-170-5319 | |
| | Cord, Detonating | 1377-01-186-9899 | MS90 |
| | Cord, Detonating | 1377-01-186-9900 | MS91 |
| | Cord, Detonating | 1377-01-186-9901 | MS92 |
| | Cord, Detonating | 1377-01-186-9902 | MS93 |

| Type - Aircraft Equipment | CAD/PAD | NSN | DODIC |
|---|---|---|---|
| | Cord, Detonating | 1377-01-170-5260 | MS89 |
| | Cord, Detonating | 1377-01-170-5245 | MS81 |
| | Cord, Detonating | 1377-01-170-5246 | MS82 |
| | Cord, Detonating | 1377-01-170-5244 | MS80 |
| | Cord, Detonating | 1377-01-170-5265 | MS87 |
| | Cord, Detonating | 1377-01-170-5264 | MS86 |
| | Cord, Detonating | 1377-01-170-5263 | MS85 |
| | Cord, Detonating | 1377-01-170-5262 | MS84 |
| | Cord, Detonating | 1377-01-170-5261 | MS83 |
| | Cord, Detonating | 1377-01-186-9898 | MS88 |
| | Cutting Assembly | 1377-01-184-6112 | MS94 |
| | Cutting Assembly | 1377-01-184-6113 | MS95 |
| | Cutting Assembly | 1377-01-187-4477 | MS97 |
| | Cutting Assembly | 1377-01-185-8908 | MS96 |
| | Initiator, Mechanical | 1377-01-269-6496 | MT06 |
| Cargo Parachute | Cartridge, Delay | 1377-00-958-1048 | M308 |
| CH-46, CH-47 | Cartridge, Aircraft Fire Extinguisher | 1377-00-756-1384 | M182 |
| CH-47 | Cartridge, Aircraft Fire Extinguisher | 1377-00-930-9390 | M193 |
| | Cartridge, Impulse | 1377-00-999-7463 | M162 |
| CH-54 | Cartridge, Impulse | 1377-00-168-5802 | M657 |
| | Cutter, Cartridge Actuated | 1377-00-412-4377 | M554 |
| CTU-2/A, TCU-1/B | Cartridge, Delay | 1377-01-084-6046 | MF35 |
| | Cutter, Reef Line | 1377-00-060-0885 | M500 |
| | Thruster, Cartridge Actuated | 1377-01-075-6433 | MF24 |
| OV-1 | Cartridge, Aircraft Fire Extinguisher | 1377-00-930-9390 | — |
| | Cartridge, Impulse | 1377-00-793-9926 | M012 |
| | Cartridge, Impulse | 1377-00-883-8997 | M507 |
| | Cartridge, Impulse | 1377-00-883-8998 | M520 |
| | Cartridge Set, Impulse | 1377-00-845-5242 | M397 |
| | Rocket Motor | 1377-00-244-1578 | M447 |
| | Parts Kit, Cutter | 1377-00-011-9082 | — |
| UH-1 | Parts Kit, Cutter | 1377-00-011-9082 | — |
| | Refire Kit | 1377-01-073-3831 | — |
| UH-60 | Cartridge, Aircraft Fire Extinguisher | 1377-01-113-8530 | — |
| | Cartridge, Pressure Cargo Hook | 1377-01-115-3711 | |
| | Cartridge, Impulse ARD 863-1 | 1377-01-057-0686 | M189 |
| | Cartridge, Aircraft Fire Extinguisher | 1377-01-263-3627 | MT20 |
| | Cartridge, Impulse CCU-44/B | 1377-01-063-3164 | MD66 |

# APPENDIX D

## CAD/PAD INDEX BY DODIC

| DODIC | NOMENCLATURE | PAGE |
|---|---|---|
| MS47 | Cord, Detonating (SMDC) | 5-25 |
| MS48 | Cord, Detonating (SMDC) | 5-27 |
| MS49 | Cord, Detonating (SMDC) | 5-29 |
| MS50 | Cord, Detonating (SMDC) | 5-31 |
| MS51 | Cord, Detonating (SMDC) | 5-33 |
| MS52 | Cord, Detonating (SMDC) | 5-35 |
| MS53 | Cord, Detonating (SMDC) | 5-37 |
| MS54 | Cord, Detonating (SMDC) | 5-39 |
| MS55 | Cord, Detonating (SMDC) | 5-41 |
| MS56 | Cord, Detonating (SMDC) | 5-43 |
| MS57 | Cord, Detonating (SMDC) | 5-45 |
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| MS59 | Cord, Detonating (SMDC) | 5-49 |
| MS60 | Cord, Detonating (SMDC) | 5-51 |
| MS61 | Cord, Detonating (SMDC) | 5-53 |
| MS62 | Cord, Detonating (SMDC) | 5-55 |
| MS76 | Linear Explosive Assembly (LEA) | 5-57 |
| MS77 | Linear Explosive Assembly (LEA) | 5-59 |
| MS78 | Linear Explosive Assembly Window (WCA) | 5-61 |
| MS79 | Linear Explosive Assembly Window (WCA) | 5-63 |
| MS80 | Cord, Detonating (SMDC) | 5-71 |
| MS81 | Cord, Detonating (SMDC) | 5-73 |
| MS82 | Cord, Detonating (SMDC) | 5-75 |
| MS83 | Cord, Detonating (SMDC) | 5-77 |
| MS84 | Cord, Detonating (SMDC) | 5-79 |
| MS85 | Cord, Detonating (SMDC) | 5-81 |
| MS86 | Cord, Detonating (SMDC) | 5-83 |
| MS87 | Cord, Detonating (SMDC) | 5-85 |
| MS88 | Cord, Detonating (SMDC) | 5-87 |
| MS89 | Cord, Detonating (FCDC) | 5-89 |
| MS90 | Cord, Detonating (FCDC) | 5-91 |
| MS91 | Cord, Detonating (FCDC) | 5-93 |
| MS92 | Cord, Detonating (FCDC) | 5-95 |
| MS93 | Cord, Detonating (FCDC) | 5-97 |
| MS94 | Canopy Severance Assembly Forward Panel | 5-99 |
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| MS97 | Canopy Severance Assembly Forward Panel | 5-105 |
| MT06 | Arming/Firing Initiator | 5-107 |
| MT20 | Cartridge, Aircraft Fire Extinguisher | 2-11 |
| MU02 | Cutter, Cartridge Actuated | 3-7 |
| MU03 | Cutter, Assembly | 3-9 |
| MU11 | Cutter, Delay, Propellant Actuated MLU-58/B | 3-11 |
| PY58 | Cartridge Assembly Cargo Hook | 10-7 |

# APPENDIX E

## CAD/PAD INDEX BY NSN

| NSN 1377- | NOMENCLATURE | DODIC |
|---|---|---|
| 00-087-5326 | Cutter Propellant Actuated Mk 20 Mod 0 | M648 |
| 00-060-0885 | Cutter, Reef Line M21 | M500 |
| 00-087-7103 | Cartridge Aircraft Fire Extinguisher | M232 |
| 00-106-7773 | Cutting Assembly Gunner's Door Window | MD35 |
| 00-168-5802 | Cartridge, Impulse | M657 |
| 00-244-1578 | Rocket Motor | M447 |
| 00-253-5536 | Cartridge, Impulse | MF90 |
| 00-328-8080 | Firing Mechanism | |
| 00-409-1095 | Cutting Assembly Gunner's Canopy Window | MD34 |
| 00-409-1096 | Cutting Assembly Pilot's Canopy Window | MD33 |
| 00-409-1097 | Cutting Assembly Pilot's Door Window | MD36 |
| 00-409-1098 | Cord, Detonating (SMDC) | MD18 |
| 00-409-1099 | Cord, Detonating (FCDC) | MD16 |
| 00-409-1100 | Cord, Detonating (SMDC) | MS50 |
| 00-409-1101 | Junction, Manifold (Inert) | — |
| 00-410-8222 | Cord, Detonating (SMDC) | MS49 |
| 00-410-8228 | Junction, Manifold (Inert) | — |
| 00-410-8265 | Armed/Firing Mechanism | — |
| 00-410-8266 | Cord, Detonating (SMDC) | MS47 |
| 00-410-8271 | Cord, Detonating (FCDC) | MD15 |
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By Order of the Secretary of the Army:

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