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POWER CARTRIDGE HANDBOOK. FOURTH
EDITION

Naval Air Systems Command
Washington, D. C.

15 August 1973

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NAVAIR REPORT No. 7836

DEPARTMENT OF THE NAVY
NAVAL AIR SYSTEMS COMMAND

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FOURTH EDITION

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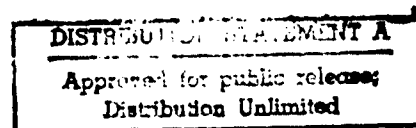
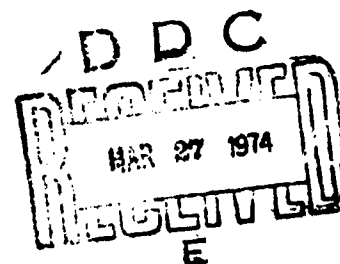
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**DEPARTMENT OF THE NAVY
NAVAL AIR SYSTEMS COMMAND**

**POWER CARTRIDGE
HANDBOOK**

FOURTH EDITION



**PUBLISHED BY DIRECTION OF THE
COMMANDER OF THE NAVAL AIR SYSTEMS COMMAND**

15 AUG 1973

FOREWORD

The Navy Power Cartridge Handbook, NAVAIR Report No. 7836, was first published in October 1958 to fill a need for a readily available source of information on power cartridges. A second edition was published in September 1961, and a third edition in March 1967. This fourth edition is published to reflect changes in the status of cartridges since the last edition, to include new cartridges accepted for Navy service use in the interim, to expand the information published on each cartridge, and to include information on proprietary cartridges accepted for Navy use. Cartridges are treated in numerical sequence by MARK-MOD and Source Control Drawing Number assignments (see Contents), and information on percussion primers and electric igniters widely used in Navy cartridges is included. The sections on the Interior Ballistics and Optimization of Cartridge Actuated Devices have been deleted. The information on each cartridge and igniter is presented on the two sides of a single sheet to facilitate future changes, additions, deletions and revisions, and to preserve the numerical order of presentation as additions are made. These changes and expansions in presentation have necessitated a complete revision in this edition.

The information on each cartridge is presented by means of a quarter-section isometric drawing showing the relations between the components in the cartridge, an outline drawing showing the nominal envelope dimensions of the cartridge, a wiring schematic for electrically fired cartridges, and a tabulation of applicable information on the cartridge. Primers and igniters are treated in a comparable manner, with current-time functioning curves included for electrically fired igniters. Information on proprietary cartridges is necessarily limited to that revealed on the source control drawings and in the qualification tests. Brief explanations of the several items of information given for each cartridge (when available or applicable) are given below.

Envelope Dimensions - The dimensions given on the outline drawings are the nominal dimensions; consult documentary drawings for tolerances.

Specification No. - The identifying number of the document governing the fabrication and acceptance of fully documented items for service use.

Data List or List of Drawing No. The identifying number of the document listing the drawings and specifications documenting the item.

Source - The manufacturer of the proprietary item.

Source Control Drawing No. - The identifying number of the document governing the fabrication and acceptance of proprietary items for service use.

Federal Stock No. - The identifying number of the item in the Federal Supply Service, General Services Administration.

DOD Code No. - The identifying number of the item assigned by the Department of Defense.

Qualification - The level of acceptance for use accorded the cartridge, usually as defined in MIL-D-21625 or MIL-D-81303. Military Specification MIL-D-21625 provides general guides for the design of cartridges to be used in cartridge actuated devices (except store separation cartridges) and establishes the general test program for assuring that the requirements of performance, safety, soundness of mechanical design and resistance to the environment generally encountered in storage, handling and service use have been attained. Military Specification MIL-D-81303 is the complimentary specification for cartridges used in store separation equipment. Both specifications define four progressive levels of acceptance for use. A Type I release certifies that the cartridge is safe to handle and install in devices of application. It is required prior to any flight of Navy aircraft or missile bearing the cartridge. A Type II release certifies that the cartridge may be used in devices of application on flights of aircraft involving Navy personnel. A Type III-A release certifies the cartridge for admission into the Navy supply system as a fully documented cartridge for service use. A Type III-B release certifies the cartridge for service use in those instances when the cartridge can be documented only by a Specification Control or Source Control Drawing because of proprietary rights, patents, etc. A Type IV release certifies the cartridge for use in a new application after it has been granted a Type III-A or Type III-B release in one or more related applications. In this handbook, a Type III-A or Type III-B qualification listing for a cartridge having multiple applications implies that Type IV releases have been accorded the cartridge for each succeeding application after the first.

Table I compares the testing programs of the two specifications by tabulating the tests and number of cartridges required on each test under the two specifications. Under MIL-D-21625, a Type II release may be converted to Type III-A or Type III-B release upon submission of applicable documentation, and the Naval Air Systems Command may authorize interim procurement of a cartridge for service use on the basis of a Type II release. MIL-D-81303 standardizes both the envelope dimensions (except length) and the electric circuitry for all store separation cartridges. It also requires high-altitude/high temperature and iced rack tests not required in MIL-D-21625.

Service Life - The estimated length of time that the cartridge is expected to perform acceptably. Estimates are based on the results from qualification and surveillance tests of the cartridge. The total service life is the length of time from fabrication of the cartridge to its mandatory removal from service. The installed service life is the length of time the cartridge may remain in a service device. However, this length of time is measured from the time the hermetic seal of the cartridge container is opened, even though the cartridge is not installed immediately in a service device. Further, the aggregate of the times the cartridge is held in its hermetically sealed container and is installed in a service device shall not exceed the total service life set for the cartridge.

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Temperature Limits - The temperature range over which acceptable performance of the cartridge is established for the intended application.

Cook-Off Temperature - The maximum temperature (within 25°F) which the cartridge can sustain for one hour without auto-igniting.

Impetus - The theoretical impetus of the cartridge computed from the impetus of the igniter, booster and main charges.

No-Fire, Electric Igniter - The maximum firing current which does not cause ignition within five minutes.

All-Fire, Electric Igniter - The minimum firing current which causes ignition within 50 milliseconds.

Recommended Firing, Electric Igniter - The firing current which causes ignition within an acceptable time, usually less than ten milliseconds.

No-Fire, Percussion Igniter - The maximum energy which does not cause ignition with the specified firing pin.

All-Fire, Percussion Igniter - The minimum energy which causes ignition with the specified firing pin.

Recommended Firing, Percussion Igniter - The indentation of the primer by the specified firing pin which assures ignition.

Bridge Resistance - The resistance of the bridge or bridges measured in fully assembled igniters, between electrode and case if case-grounded, and between pins if not case-grounded. Most igniters have two bridges, but they may be wired in parallel, with one pin common, or with two pins per bridge.

Bridge Material - The diameter and material of the bridge wire.

Ignition Material - The first-fire material of the igniter.

Booster Material, Igniters - The material ignited by the first-fire material which in turn ignites the booster or main charge of the cartridge.

Nominal Delay - The delay time at about 70°F.

Specification Limits - The acceptable delay times over the operating range for which the cartridge is qualified.

Granulation - The shape and size of the individual pieces of propellant. In the tabulations, 1-perf indicates a cylindrical grain with one axial perforation, 7-perf indicates a cylindrical grain with seven perforations, D is the diameter of the grain, d is the diameter of the perforation(s) and h is the length of the grain.

Flame Temperature - The theoretical adiabatic flame temperature of the propellant defined in the relation $F = NRT_v$.

Applications - The specific or class of cartridge actuated devices for which the cartridge is qualified.

As new applications for cartridges arise, it is inevitable that new cartridges will be developed. However, in the interest of keeping the Navy's inventory of cartridges to a practical minimum for logistic purposes, service approved cartridges should be used in new applications whenever feasible. The use of approved cartridges also eliminates the delays and costs involved in developing and qualifying new cartridges. In many cases minor adjustments in the design of cartridge-powered devices make it feasible to employ existing cartridges without compromising the performance of the device.

TABLE I

Specification Type of Release	MIL-D-21625				MIL-D-81303			
	I	II	III	IV	I	II	III	IV
Cartridges Required	42	200		18	30	54	180	30
Expended in Tests	42	156		18	30	54	168	30
Visual Inspection	42	200		18	30	54	180	30
Radiographic Inspection	42	200		18				
Leak	42	200		18	30	54	180	30
40-Foot Drop	6	6			6		6	
6-Foot Drop	6	6			6		6	
Shock	6	12			6			
Vibration	6	12			6		12	
Functional at -65°F	6	12		6		12	12	6
Functional at +70°F	6	12		6	6	12	12	12
Functional at +200°F	6	12		6		12	12	6
Temp-Humidity Cycling		18				18	18	
Salt Fog		12					12	
High Temp. Storage		18					18	
Cook-off		12					12	
High-Temp. Exposure		12					12	
High Altitude at -65°F		12					12	6
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NOTE: Under MIL-D-21625, a Type II release may become a Type III release upon submission of appropriate documentation.

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CARTRIDGE, Impulse, MARK 1 MOD 3

Specification no.: MIL-C-18653
Drawing list no.: 276296
Federal stock no.: 1377-293-8183
DOD code no.: M365
Qualification: BUWEPS service release*
Service life: one year installed, five years total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 18,800 ft-lb
Weight: 0.134 lb

IGNITER, electric

Specification no.: none (subassembly of cartridge)
No-fire: 1.5 amp
All-fire: 3.0 amp
Recommended firing: 10.0 amp
Bridge resistance: 0.11-0.18 ohm
Bridge material: 0.002" platinum-iridium
Ignition material: normal lead styphnate

BOOSTER CHARGE: black powder

Specification no.: MIL-P-223
Weight: 2.20 gm
Granulation: FFG

MAIN CHARGE, smokeless pyrocellulose

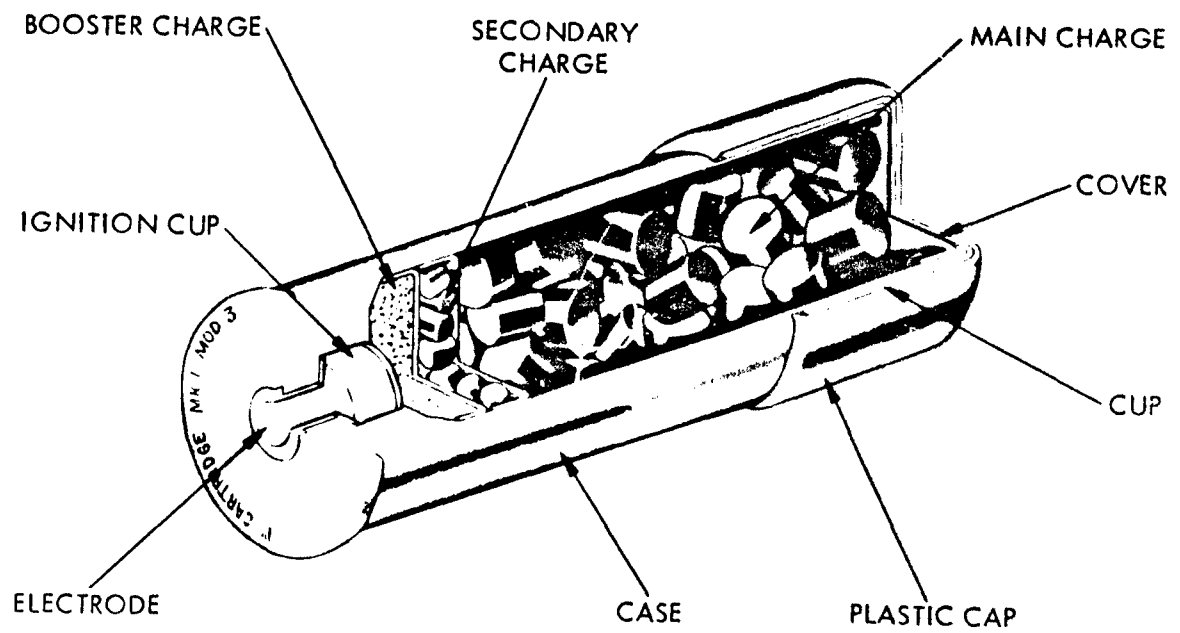
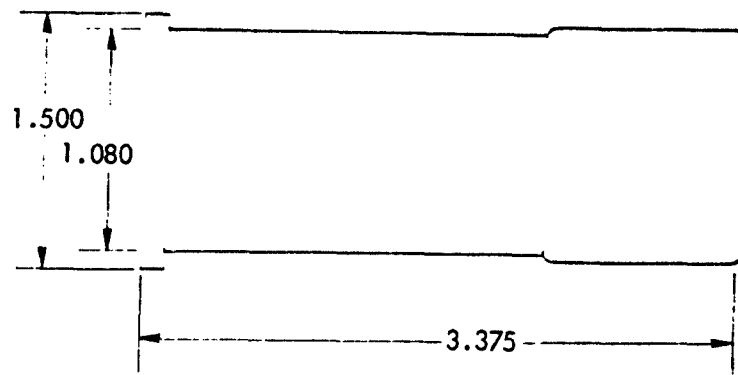
Specification no.: MIL-P-231
Weight: 26.4 gm
Granulation: 2.0 gm cylinder, D=0.1", h=0.12"
2.4 gm cylinder, D=0.25", h=0.25"
22.0 gm cylinder, D=0.312", h=0.312"
Flame temperature: 2552°K

APPLICATIONS: release and ejection of stores

NOTES: *ballistics adversely affected after five days of temperature and humidity cycling per MIL-C-21625; qualification data not available

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CARTRIDGE, Impulse, MARK 1 MOD 3



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CARTRIDGE, Impulse, MARK 2 MOD 1

Specification no.: MIL-C-18653
Drawing list no.: 276297
Federal stock no.: 1377-293-8184
DOD code no.: M190
Qualification: BUWEPS service release*
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 3500 ft-lb
Weight: 0.073 lb

IGNITER, electric

Specification no.: subassembly of cartridge
No-fire: 1.5 amp
All-fire: 3.0 amp
Recommended firing: 10.0 amp.
Bridge resistance: 0.11 - 0.18 ohm
Bridge material: 0.002 in. platinum-iridium
Ignition material: normal lead styphnate

BOOSTER CHARGE, black powder

Specification no.: MIL-P-223
Weight: 2.2 gm.
Granulation: FFG

MAIN CHARGE, smokeless pyrocellulose

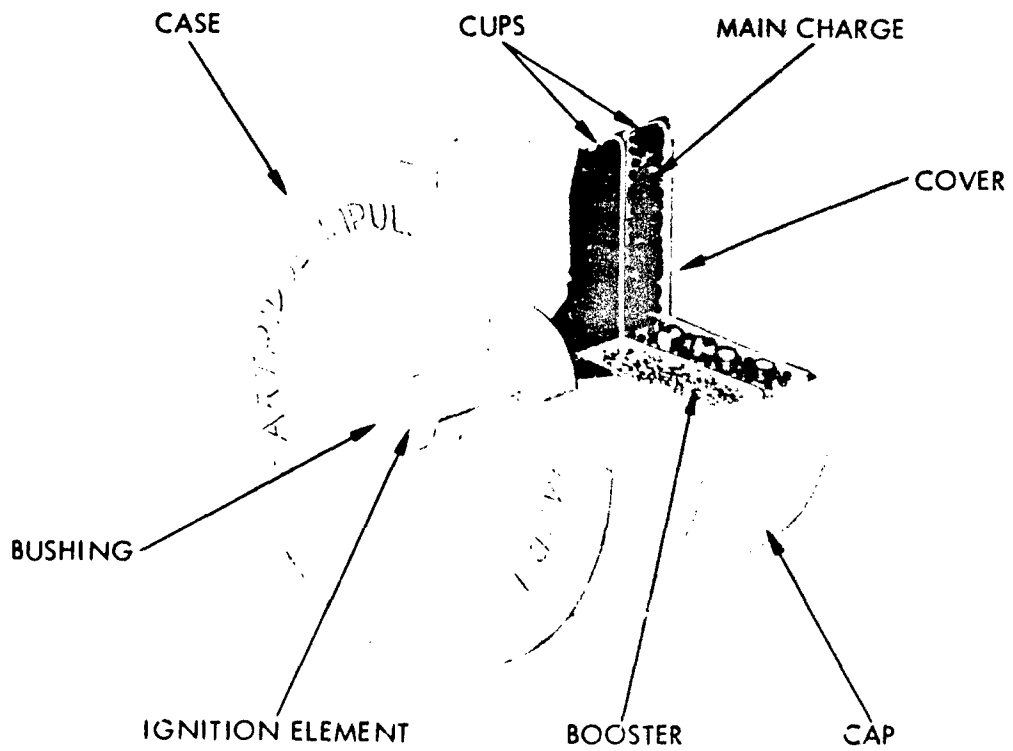
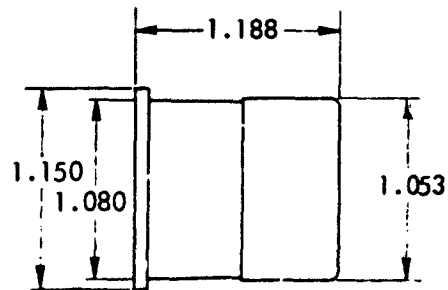
Specification no.: MIL-P-231
Weight: 4.4 gm.
Granulation: 2.0 gm. cylinder, D = .100, h = .120 in.
2.4 gm. cylinder, D = .250, h = .250 in.
Flame temperature: 2552°K

APPLICATIONS: release and ejection of stores

NOTES: *ballistics adversely affected after 5 days of temperature and humidity cycling per MIL-D-21625. Qualification data unavailable.

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CARTRIDGE, Impulse, MARK 2 MOD 1



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CARTRIDGE, Delay, MARK 3 MOD 0
Specification no.: MIL-C-21048
Drawing list no.: 299325
Federal stock no.: 1377-605-5494
DOD code no.: M280
Qualification: BUWEPS service release*
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 525°F
Impetus: 330 ft-lb
Weight: 0.155 lb

IGNITER, stab; primer, MARK 102 MOD 1
Specification no.: MIL-P-18613
No-fire:
All-fire: 7 in.-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 0.95 sec.

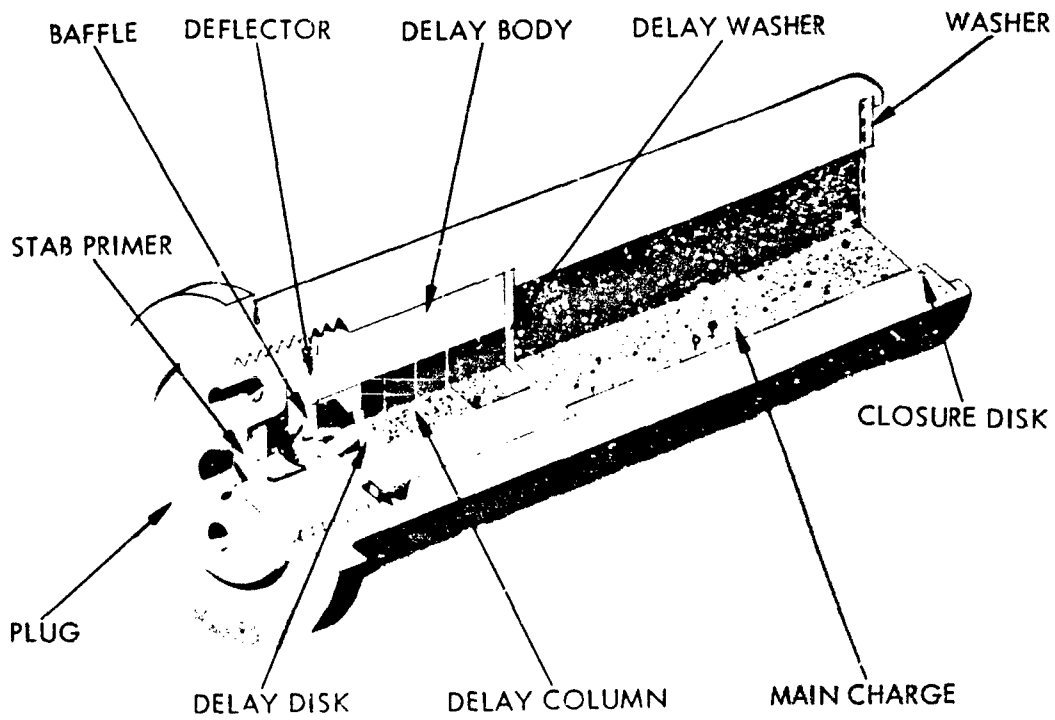
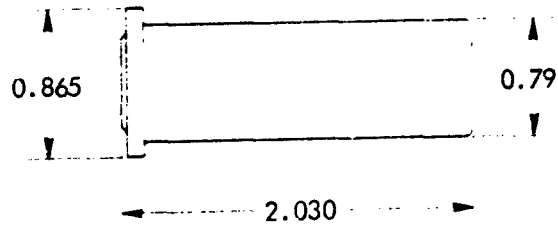
MAIN CHARGE, black powder
Specification no.: MIL-P-223
Weight: 1.5 gm.
Granulation: FFG
Flame temperature:

APPLICATIONS: AMEL lap belt

NOTES: *qualification data unavailable; delay components same as in
other delay cartridges

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CARTRIDGE, Delay, MARK 3 MOD 0



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CARRIDGE, Impulse, MARK 3 MOD 1
Specification no.: MIL-C-21234
Drawing list no.: 491832
Federal stock no.: 1377-707-0589
DOD code no.: M292
Qualification: MIL-D-21625, Type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 60,200 ft-lb
Weight: 0.572 lb

IGNITER, percussion; primer 50M(5061W)
Specification no.: Army Ord. Dwg. 7645339
No-fire: 20 in-oz
All-fire: 120 in-oz
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 6.48 gm
Granulation: A-1

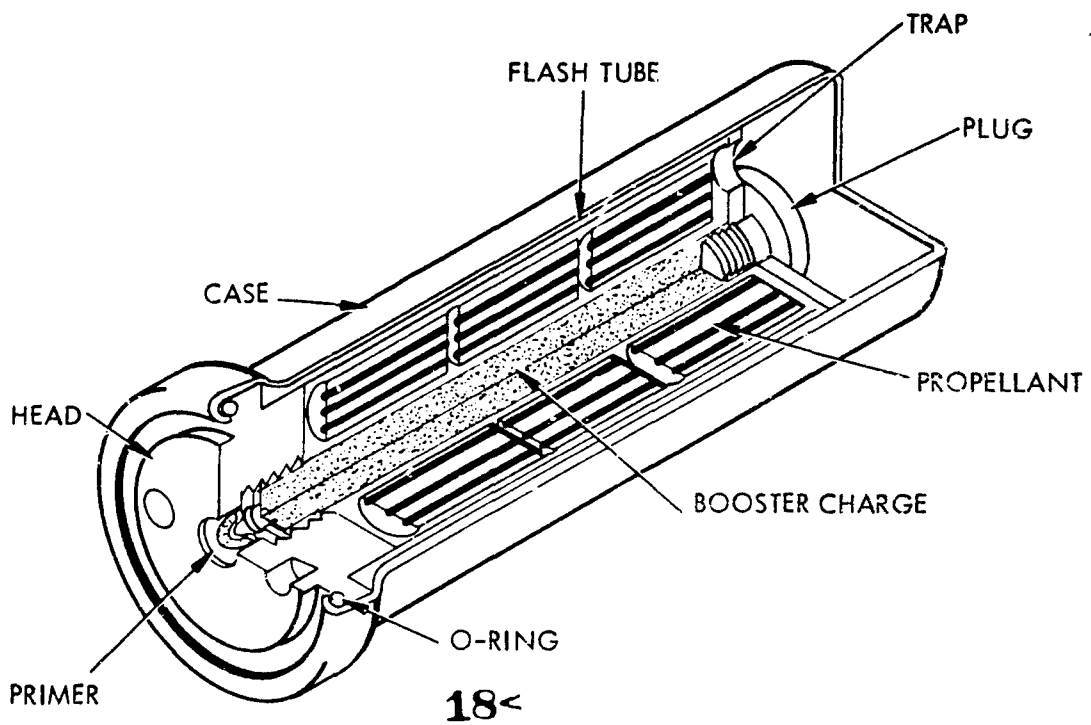
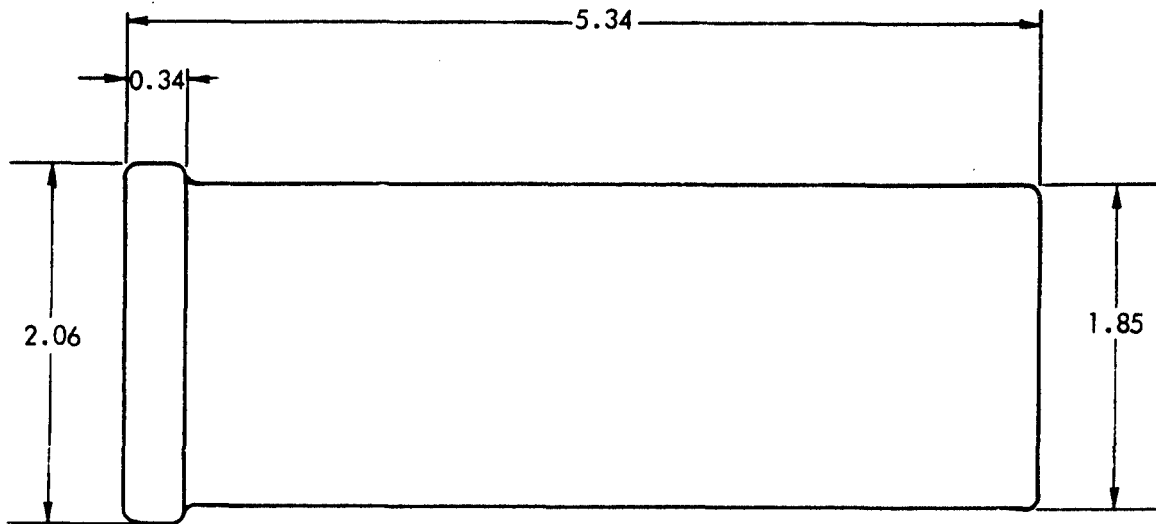
MAIN CHARGE, single base, SPDN-10387
Specification no.: MIL-P-309
Weight: 84.5 gm
Granulation: 7-perf, D = .439, d = .044, h = 1.029 in.
Flame temperature: 2565°K

APPLICATIONS: Pilot ejection Navy light ejection seat (Douglas
Integrated Harness System)

NOTES: Replaces Cartridge, Ejection Seat Catapult, Mk3 Mod 0 and
Mk 3 Mod 1

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CARTRIDGE, Impulse, MARK 3 MOD 1



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CARTRIDGE, Delay, MARK 4 MOD 2

Specification no.: AS 1072
Drawing list no.: 2519703
Federal stock no.: 1377-105-6659
DOD code no.: M282
Qualification: MIL-D-21625, Type III
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 79 ft-lb
Weight: .025 lb

IGNITER, percussion; primer M42

Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition

Specification no.: MIL-M-21383
Nominal delay/specification limits: 0.75 sec./0.95-0.61 sec.

MAIN CHARGE, double-base, unique

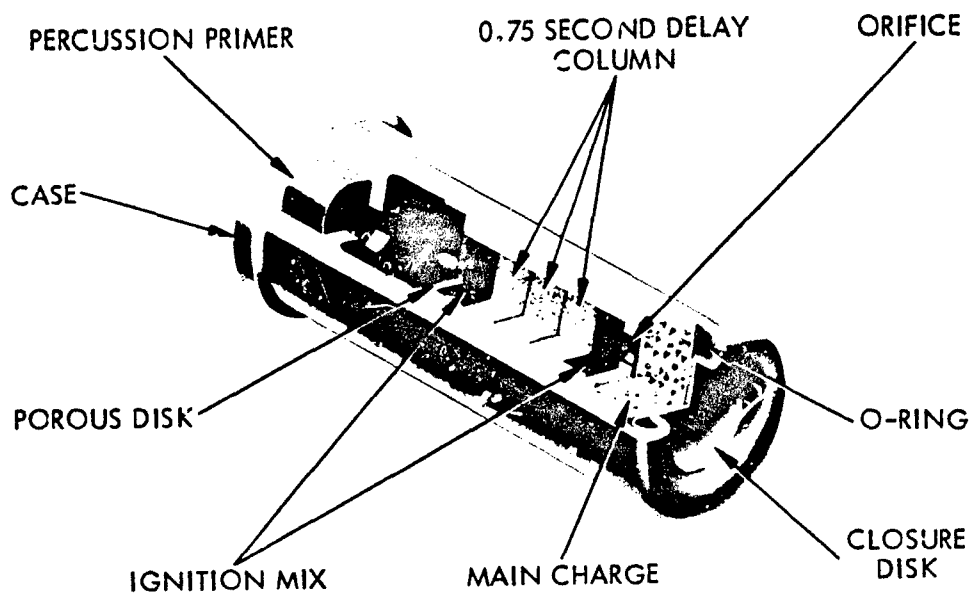
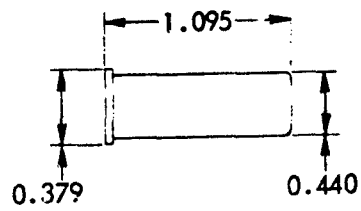
Specification no.: HPSK-BUP
Weight: 0.092 gm
Granulation: disc, D = .065, h = .007 in.
Flame temperature: 3771°K

APPLICATIONS: Lap belt release and parachute deployment

NOTES:

4-2
15Aug73

CARTRIDGE, Delay, MARK 4 MOD 2



5-2
15Aug73

CARTRIDGE, Delay, MARK 5 MOD 2
Specification no.: AS 1072
Drawing list no.: 2519704
Federal stock no.: 1377-105-6661
DOD code no.: M284
Qualification: MIL-D-21625, Type III
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 79 ft-lb
Weight: .025 lb

IGNITER, percussion; primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz
All-fire: 26 in-oz
Recommended firing:

DELAY, pyrotechnic manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 2.00 sec./2.53-1.62 sec

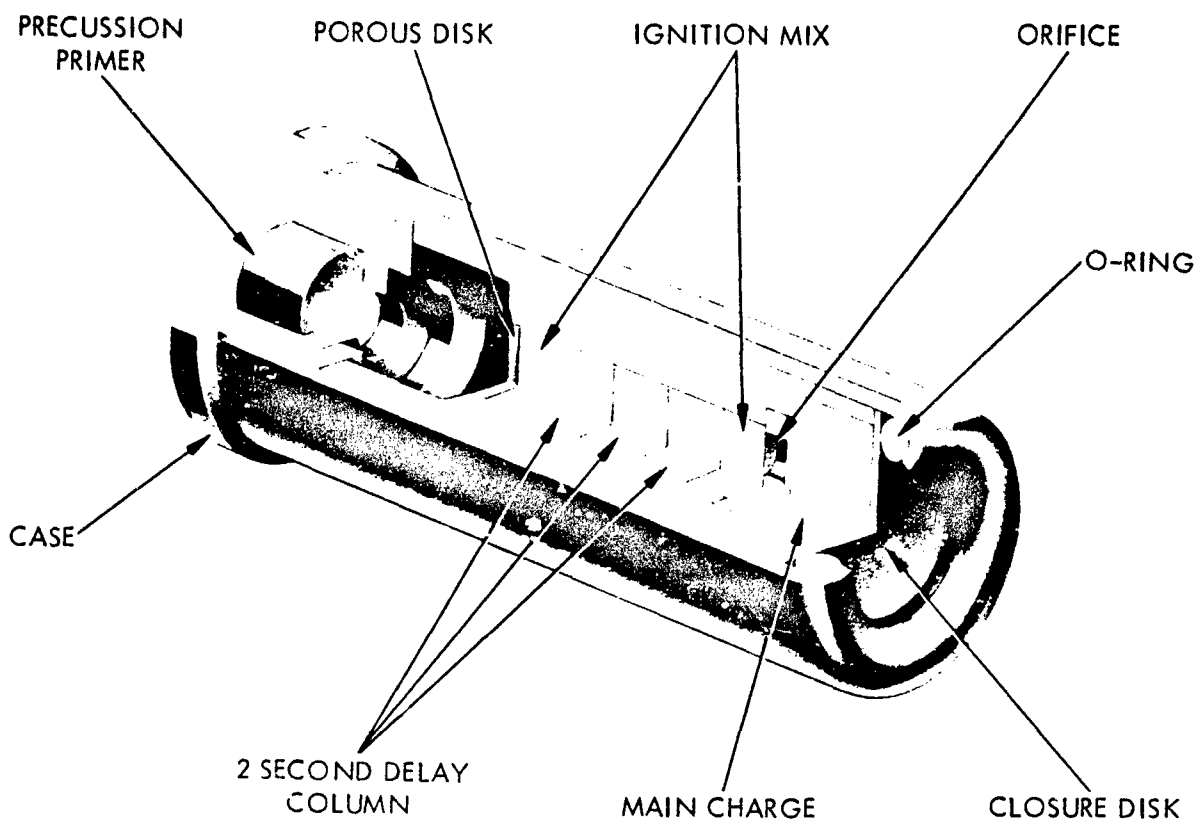
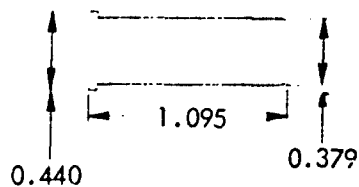
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.092 gm
Granulation: Disc, D = .065, h = .007 in
Flame temperature: 3771°K

APPLICATIONS: lap belt release and parachute deployment

NOTES:

5-2
15Aug73

CARTRIDGE, Delay, MARK 5 MOD 2



6-2
15Aug73

CARTRIDGE, Delay, MARK 6 MOD 2

Specification no.: AS 1072
Drawing list no.: 2519705
Federal stock no.: 1377-105-6660
DOD code no.: M285
Qualification: MIL-D-21625, type III
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 79 ft-lb
Weight: .025 lb

IGNITER, percussion; primer M42

Specification no.: MIL-P-20444
No-fire: 4 in-oz
All-fire: 26 in-oz
Recommended firing:

DELAY, pyrotechnic, manganese delay composition

Specification no.: MIL-M-21383
Nominal delay/specification limits: 3.00 sec./3.80-2.43 sec

MAIN CHARGE, double-base, unique

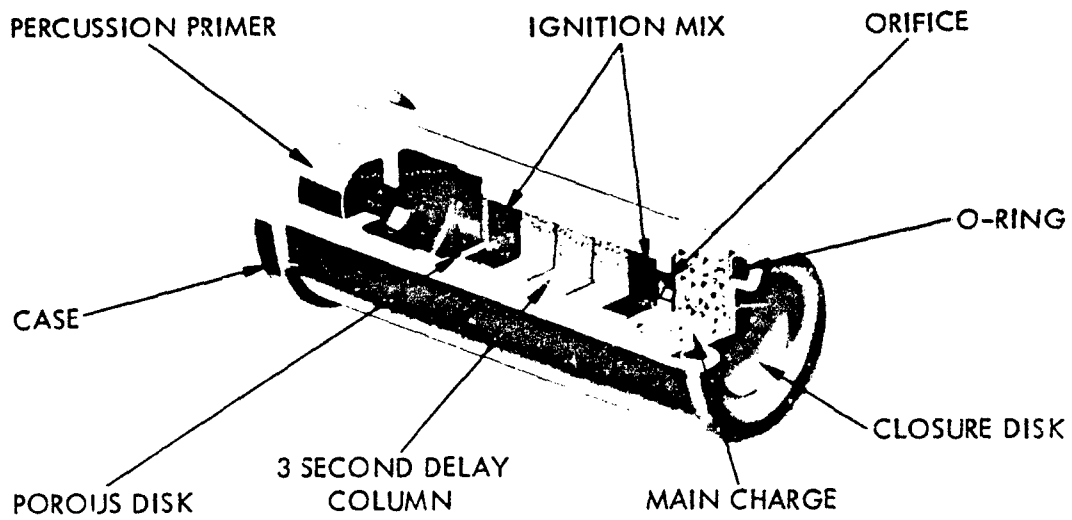
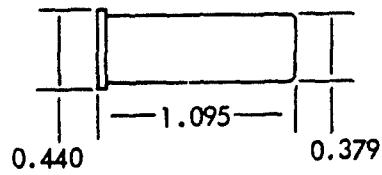
Specification no.: HPSK-BUP
Weight: 0.092 gm
Granulation: Disc, D = .065, h = .007 in.
Flame temperature: 3771°K

APPLICATIONS: lap belt release and parachute deployment.

NOTES:

6-2
15Aug73

CARTRIDGE, Delay, MARK 6 MOD 2



8-0
15Aug73

CARTRIDGE, Impulse, MARK 8 MOD 0
Specification no.: MIL-C-24017
Drawing list no.: 537909
Federal stock no.: 1377-075-5846
DOD code no.: M185
Qualification: MIL-D-21625, Type III
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 250°F
Impetus: 15,500 ft-lb
Weight: 0.139 lb

IGNITER, electric; ignition element MARK 11 MOD 0
Specification no.: MIL-I-81530
No-fire: 2.0 amp
All-fire: 3.0 amp
Recommended firing: 10.0 amp
Bridge resistance: 0.08-0.14 ohm
Bridge material: 0.002 in. platinum-iridium
Ignition material: 0.034 gm lead styphnate
Booster material: 0.270 gm FA-878

BOOSTER CHARGE, double-base, bullseye
Specification no.: OS 9862, Type II
Weight: 0.75 gm
Granulation: Disc, D = .875, h = .055 in

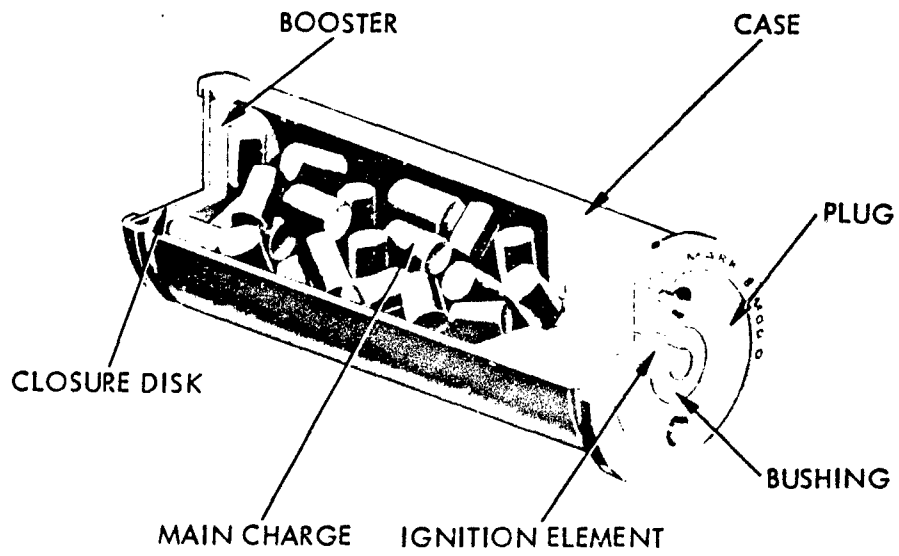
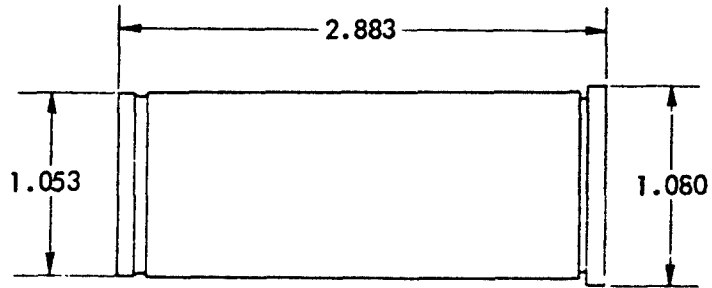
MAIN CHARGE, double-base, HPC-86
Specification no.: HPC-86
Weight: 19.0 gm
Granulation: Cylinder, D = .317, h = .250 in
Flame temperature: 3221°K

APPLICATIONS: release and ejection of stores

NOTES:

8-0
15Aug73

CARTRIDGE, Impulse, MARK 8 MOD 0



9-0
15Aug73

CARTRIDGE, Impulse, MARK 9 MOD 0
Specification no.: MIL-C-23931
Drawing list no.: 5379C
Federal stock no.: 1377-731-9264
DOD code no.: M509
Qualification: MIL-D-21625, Type III*
Service life: 1 yr installed, 5 yr total
Temperature limits: -65° to +225°F
Cook-off temperature: 250°F
Impetus: 6600 ft-lb
Weight: 0.099 lb

IGNITER, electric; ignition element MARK 11 MOD 0
Specification no.: MIL-I-81530
No-fire: 2.0 amp
All-fire: 3.0 amp
Recommended firing: 10.0 amp
Bridge resistance: 0.08-0.14 ohm
Bridge material: 0.002 in. platinum-iridium
Ignition material: 0.034 gm lead styphnate
Booster material: 0.270 gm FA-878

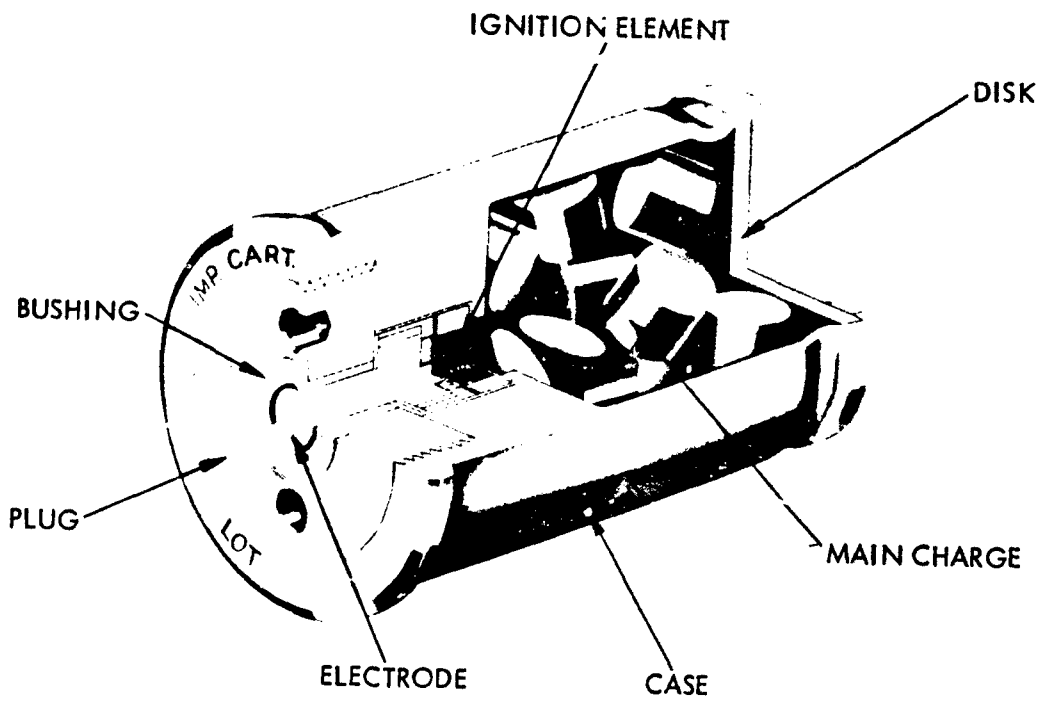
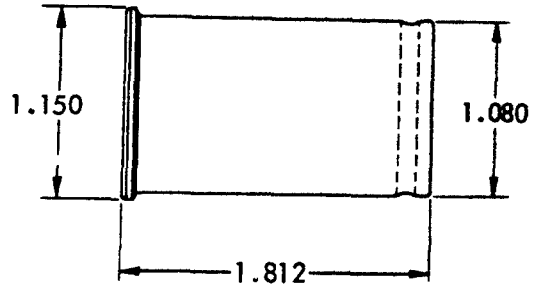
MAIN CHARGE, double-base, HPC-87
Specification no.: HPC-87
Weight: 8.2 gm
Granulation: 7-perf, D = .260, d = .016, h = .240 in
Flame temperature: 3214°K

APPLICATIONS: release and ejection of stores

NOTES: *ballistics adversely affected after 21 days of temperature
and humidity cycling

9-0
15Aug73

CARTRIDGE, Impulse, MARK 9 MOD 0



C10-0
15Aug7

CARTRIDGE, Impulse, MARK 10 MOD 0
Specification no.: WS 2123
Drawing list no.: 537910
Federal stock no.: 1377-075-5847
DCD code no.: M190
Qualification: MIL-D-21625, Type III
Service life: 18 mo installed, 5 yr total
Temperature limits: -65° to +160°F
Cook-off temperature: 250°F
Impetus: 2900 ft-lb
Weight: 0.085 lb

IGNITER, electric; ignition element, MARK 11 MOD 0
Specification no.: MIL-I-81530
No-fire: 2.0 amp
All-fire: 3.0 amp
Recommended firing: 10.0 amp
Bridge resistance: 0.08-0.14 ohm
Bridge material: 0.002 in platinum-iridium
Ignition material: 0.034 gm lead styphnate
Booster material: 0.270 gm FA-878

BOOSTER CHARGE, double-base, bullseye
Specification no.: OS 9862, Type II
Weight: 0.75 gm
Granulation: Disc, D=.875, h=.055 in

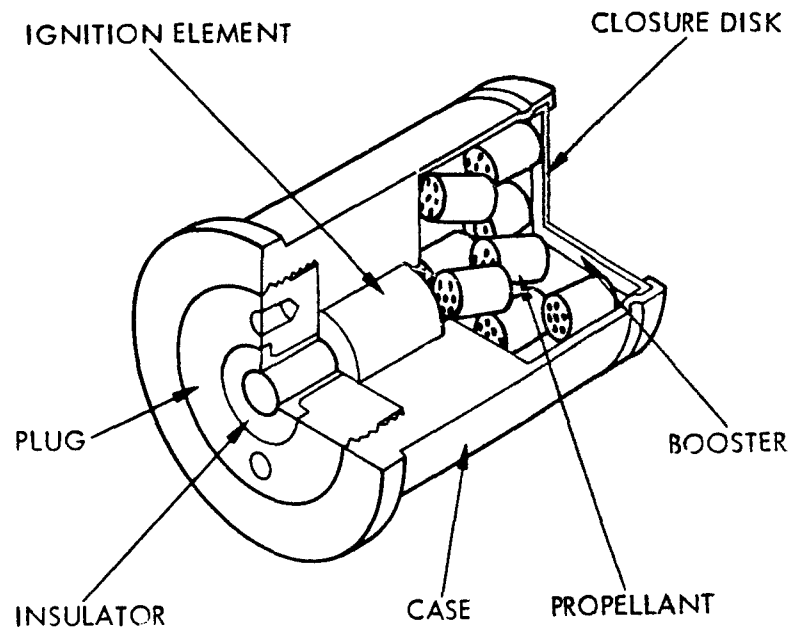
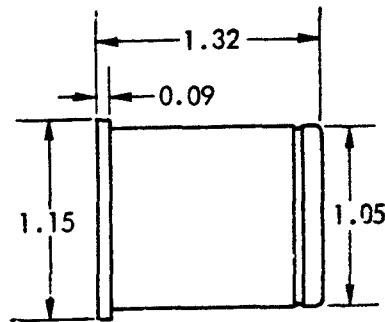
MAIN CHARGE, double-base, HPC-87
Specification no.: HPC-87
Weight: 2.8 gm
Granulation: 7-perf, D=.260, d=.016, h=.240 in
Flame temperature: 3214°K

APPLICATIONS: release and ejection of stores

NOTES:

C10-0
15Aug73

CARTRIDGE, Impulse, MARK 10 MOD 0



I10-0
15Aug73

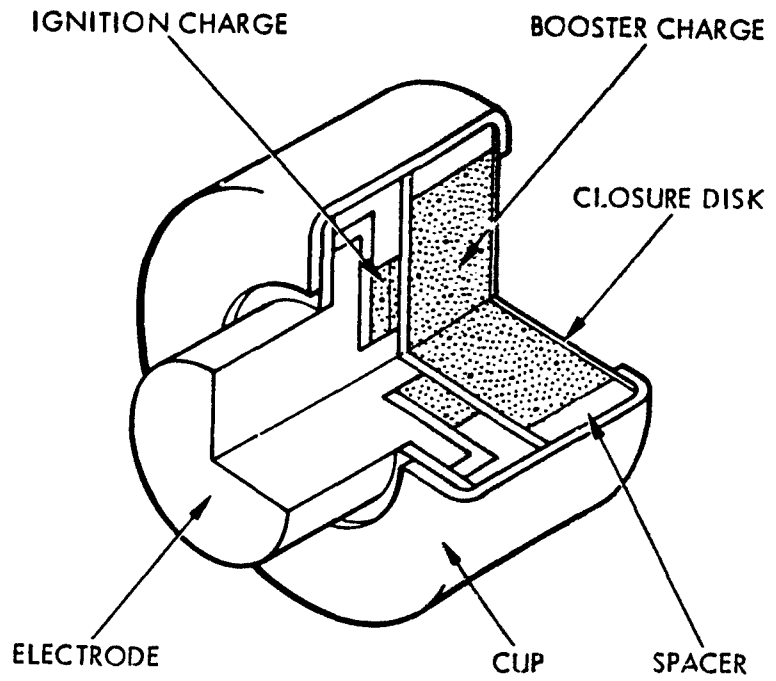
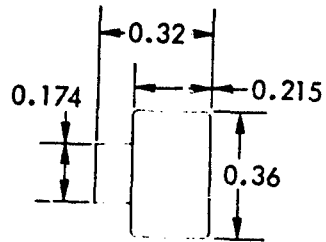
IGNITION ELEMENT, Electric, MARK 10 MOD 0
Specification no.: OS 11514
Drawing list no.: 546641
Federal stock no.:
DOD code no.:
Qualification: BUWEPS release to service
Service life: 2 yr installed, 5 yr total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:
No-fire: 2.0 amp.
All-fire: 3.0 amp.
Recommended firing: 10.0 amp.-20 volt. AC/DC
Bridge resistance: 0.08-0.14 ohm
Bridge material: 0.002 in. platinum-iridium
Ignition charge: 0.034 gm. lead styphnate
Booster charge: 0.220 gm. FA-878
Circuit test current: 25 mamp. maximum

APPLICATIONS:

NOTES:

I10-0
15Aug73

IGNITION ELEMENT, Electric, MARK 10 MOD 0



11-0
15Aug7:

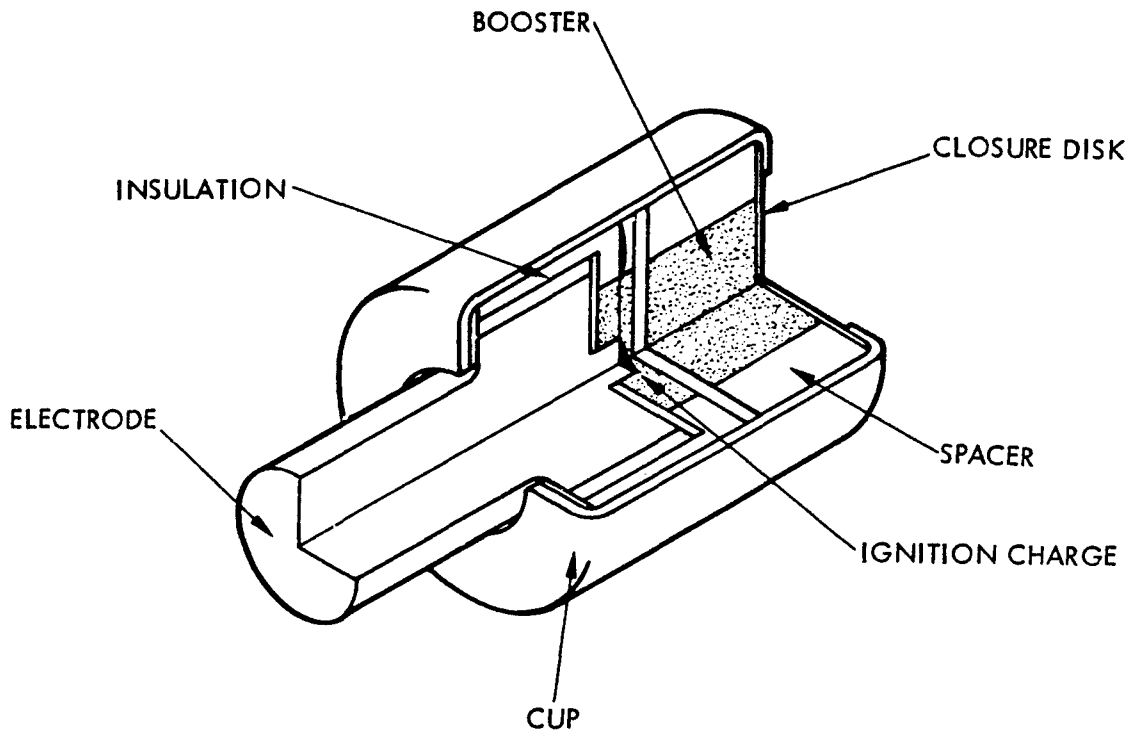
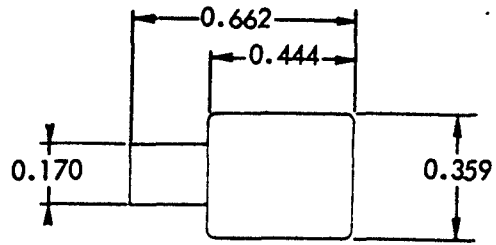
IGNITION ELEMENT, Electric, MARK 11 MOD 0
Specification no.: OS 11521
Drawing list no.: 546659 A.D. 2302122
Federal stock no.:
DOD code no.
Qualification: BUWEPS service release
Service life:
Temperature limits: MIL-STD-354
Cook-off temperature:
Impetus:
Weight:
No-fire: 2.0 amp.
All-fire: 3.0 amp.
Recommended firing: 10.0 amp.-20 volt. AC/DC
Bridge resistance: 0.08-0.14 ohm
Bridge material: 0.002 in. platinum-iridium
Ignition charge: 0.034 gm. lead styphnate
Booster charge: 0.270 gm. FA-878
Circuit test current: 25 mamp. maximum

APPLICATIONS:

NOTES:

11-0
15Aug73

IGNITION ELEMENT, Electric, MARK II MOD 0



34<

C13-0
15Aug7

CARTRIDGE, Impulse, MARK 13 MOD 0
Specification no.: MIL-C-22651
Drawing list no.: 419701
Federal stock no.: 1377-793-9927
DOD code no.: M010
Qualification: Mil-D-21625, Type III*
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 250°F
Impetus: 260 ft-lb
Weight: 0.034 lb

IGNITER, electric; ignition element, MARK 11 Mod 0
Specification no.: MIL-I-81530
No-fire: 2.0 amp
All-fire: 3.0 amp.
Recommended firing: 10.0 amp
Bridge resistance: 0.08-0.14 ohm
Bridge material: 0.002 in. platinum-iridium
Ignition material: 0.034 gm lead styphnate
Booster material: 0.270 gm FA-878

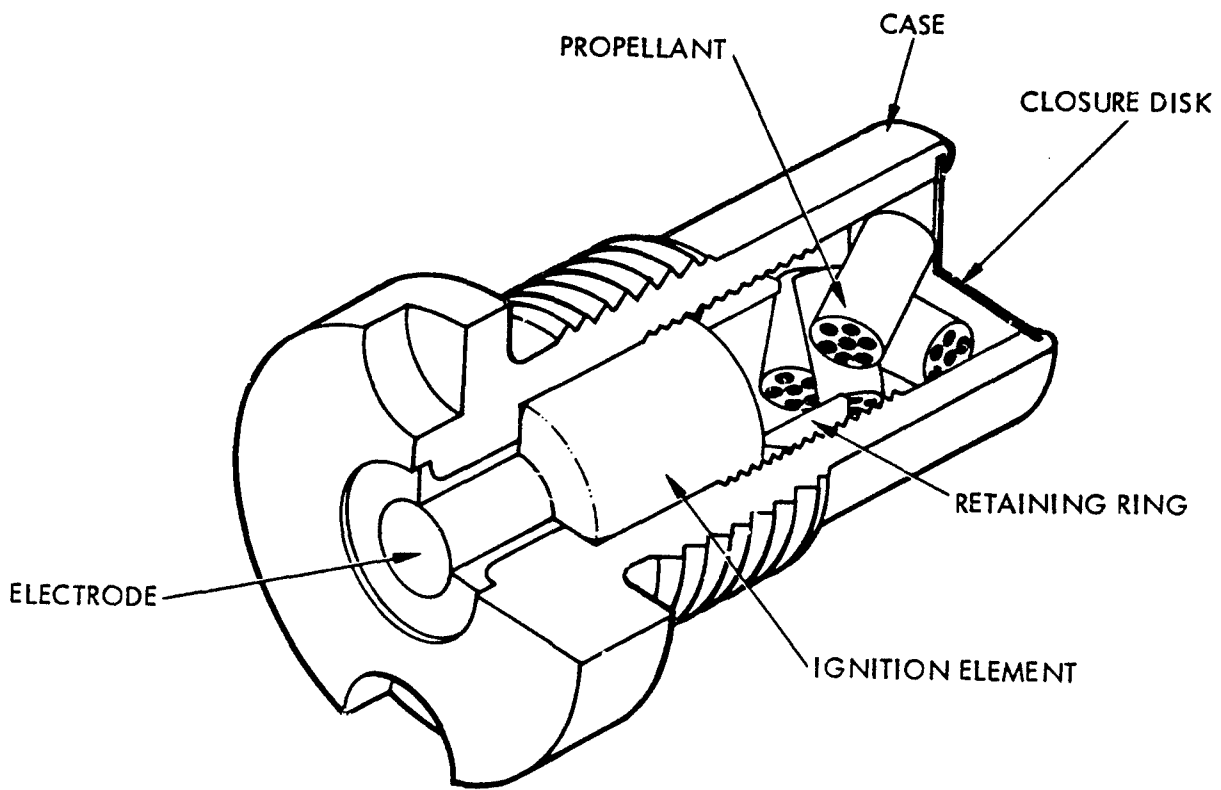
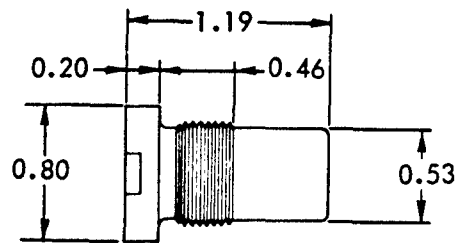
MAIN CHARGE, double-base, HPC-95
Specification no.: HPC-95
Weight: 4 pieces (app. .320 gm.)
Granulation: 7-perf, D=.157, d=.011, h=.170 in.
Flame temperature: 3630°K

APPLICATIONS: release and ejection of light stores.

NOTES: *ballistics adversely affected after 21 days of temperature
and humidity cycling

C13-0
15Aug73

CARTRIDGE, Impulse, MARK 13 MOD 0



I13-0
15Aug73

IGNITION ELEMENT, Electric, MARK 13 MOD 0

Specification no.: WS 4783A

Drawing list no.: 613460

Federal stock no.:

DOD code no.:

Qualification:

Service life:

Temperature limits: MIL-STD-354

Cook-off temperature:

Impetus:

Weight:

No-fire: 2.0 amp.

All-fire: 3.0 amp.

Recommended firing: 10.0 amp.-20 volt. AC/DC

Bridge resistance: 0.08-0.14 ohm

Bridge material: 0.002 in platinum-iridium

Ignition charge: 0.034 gm lead styphnate

Booster charge: 0.270 gm. FA-878

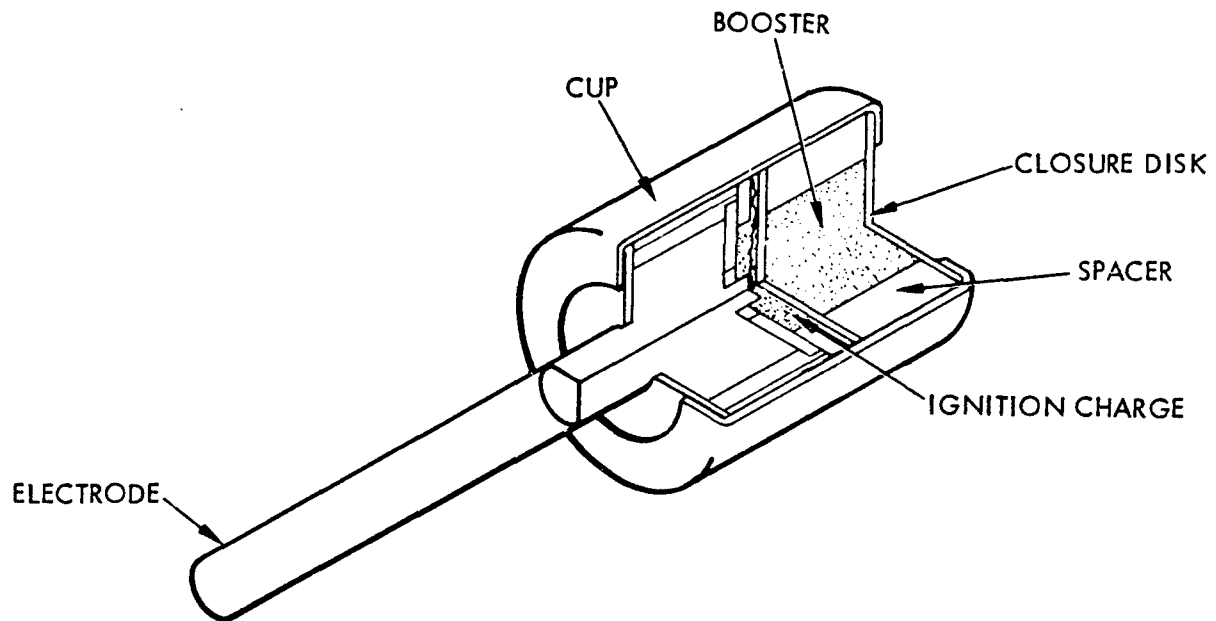
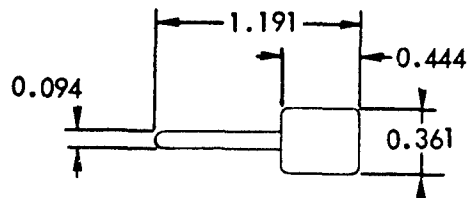
Circuit test current: 25 mamp. maximum

APPLICATIONS:

NOTES:

I13-0
15Aug73

IGNITION ELEMENT, Electric, MARK 13 MOD 0



C14-0
15Aug73

CARTRIDGE, Impulse, MARK 14 MOD 0
Specification no.: MIL-C-22656
Drawing list no.: 491824
Federal stock no.: 1377-658-3059
DOD code no.: M219
Qualification: MIL-D-21625, Type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 2050 ft-lb
Weight: 0.104 lb

IGNITER, percussion; primer 50 M(5061W)
Specification no.: Army Ord. Dwg. 7645339
No-fire: 20 in-oz
All-fire: 120 in-oz
Recommended firing:

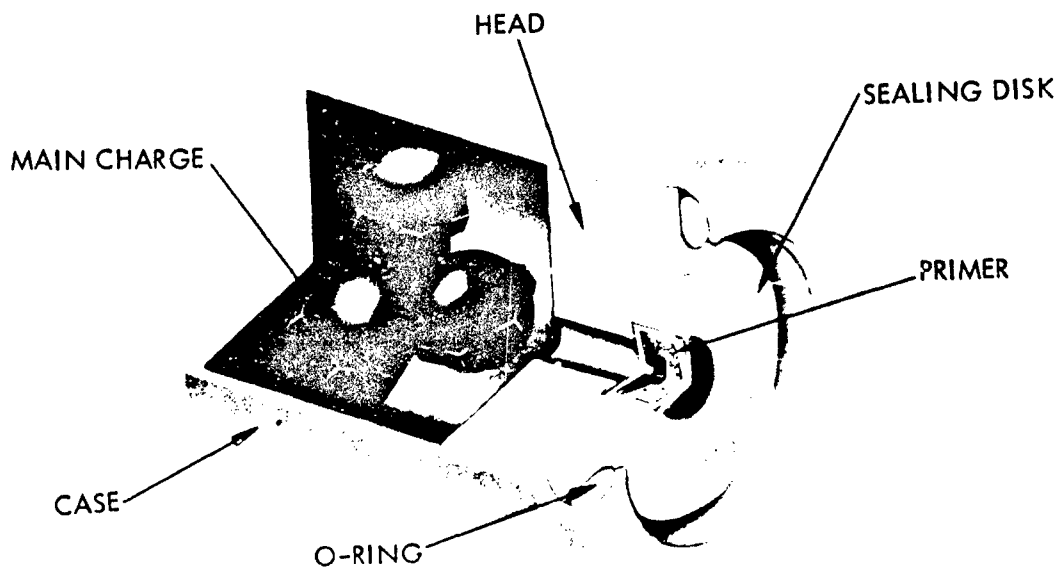
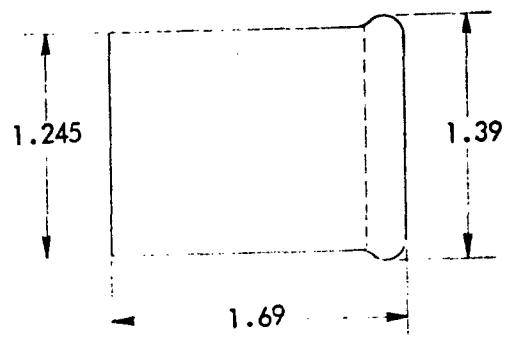
MAIN CHARGE, black powder spirohexagonal (Class 9)
Specification no.: MIL-P-223
Weight: 9.3 gm
Granulation: D=.6 in
Flame temperature:

APPLICATIONS: canopy removal on F8U-1 aircraft

NOTES:

C14-0
15Aug73

CARTRIDGE, Impulse, MARK 14 MOD 0



114-0
15Aug7

IGNITION ELEMENT, Electric, MARK 14 MOD 0
Specification no.: AS 1075
Drawing list no.: 2520046
Federal stock no.:
DOD code no.:
Qualification: MIL-I-23659, Type IIIA
Service life: 1 yr until installed in ctg.
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER

Specification no.:
No-fire: 1.2 amp
All-fire: 2.0 amp.
Recommended firing: 5.0 amp.
Bridge resistance:
Bridge material:
Bead material: .300 gm ignition composition
Booster material: .150 gm FA-878
Charge: .155 gm HES 6573.3

DELAY

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE

Specification no.:
Weight:
Granulation:

MAIN CHARGE

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Mk 124 & 125

NOTES:

I14-0
15Aug73

IGNITION ELEMENT, Electric, MARK 14 MOD 0

(PICTORIAL INFORMATION NOT AVAILABLE.)

16-0
15Aug73

CARTRIDGE, Delay, MARK 16 MOD 0
Specification no.: MIL-C-22567
Drawing list no.: 482719
Federal stock no.: 1377-678-5873
DOD code no.: M281
Qualification: MIL-D-21625
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 525°F
Impetus: 330 ft-lb
Weight: 0.162 lb

IGNITER, stab; primer, MARK 102 MOD 1
Specification no.: MIL-P-18613
No-fire:
All-fire:
Recommended firing: 7 in-oz

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 2.0 sec.

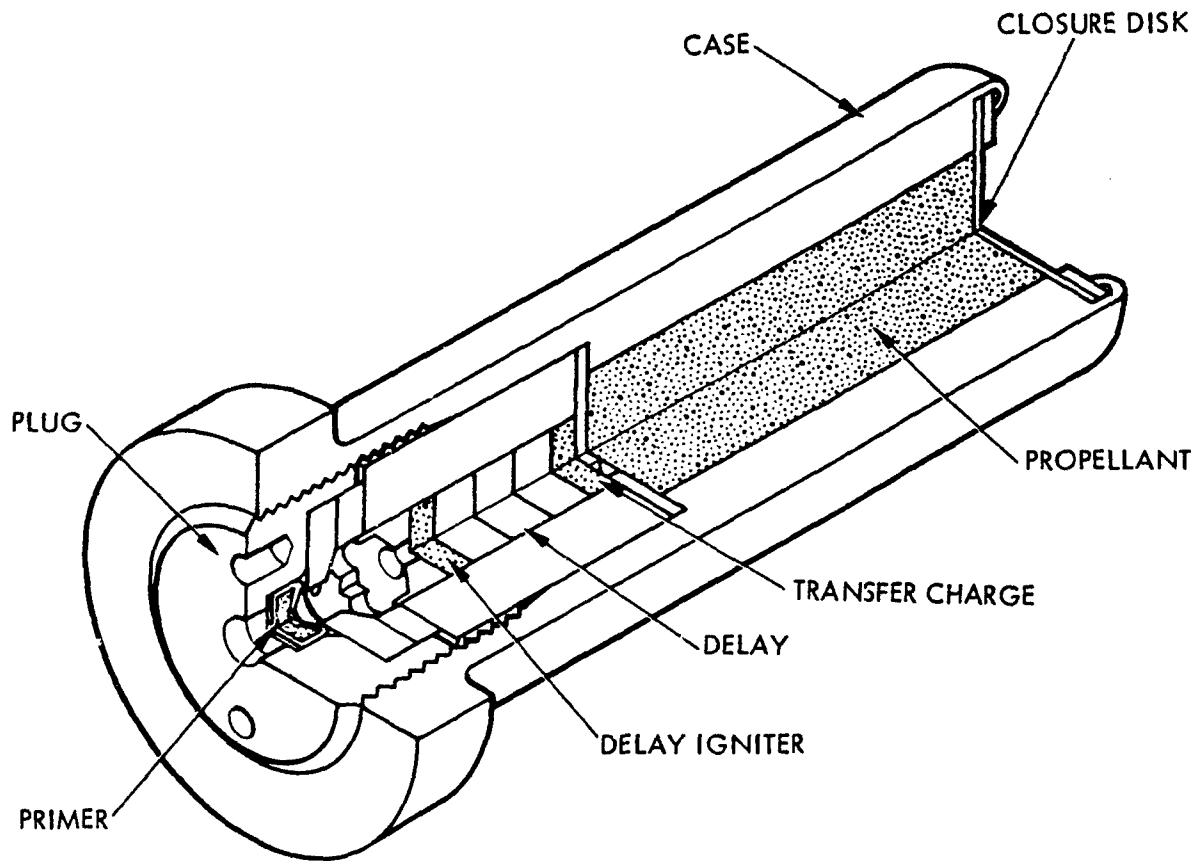
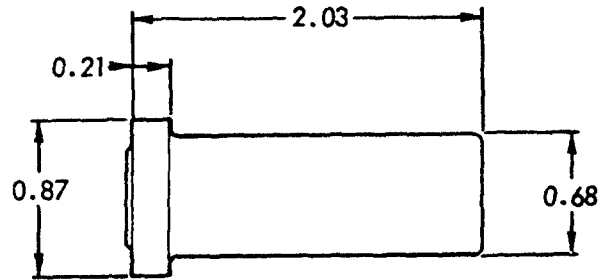
MAIN CHARGE, black powder
Specification no.: MIL-P-223
Weight: 1.5 gm
Granulation: FFG
Flame temperature:

APPLICATIONS: AMEL lap belt

NOTES:

16-0
15Aug73

CARTRIDGE, Delay, MARK 16 MOD 0



IGNITION ELEMENT, Electric, MARK 17 MOD 0

Specification no.: WS 4787
Drawing list no.: 613468
Federal stock no.:
DOD code no.:
Qualification: MIL-I-23659
Service life: 2 yr. installed, 5 yr total
Temperature limits: -85° to +225°F
Cook-off temperature:
Impetus:
Weight:
No-fire: 1.2 amp
All-fire: 2.0 amp
Recommended firing: 4.0 amp
Bridge resistance: 0.9-1.1 ohm (1.1 \pm .1 in WS)
Bridge material: 0.002 in platinum*
Ignition charge:
Intermediate charge: .125 gm FA-878
Output charge: .082 gm. unique propellant
Circuit test current: 25 mamp maximum

DELAY

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE

Specification no.:
Weight:
Granulation:

MAIN CHARGE

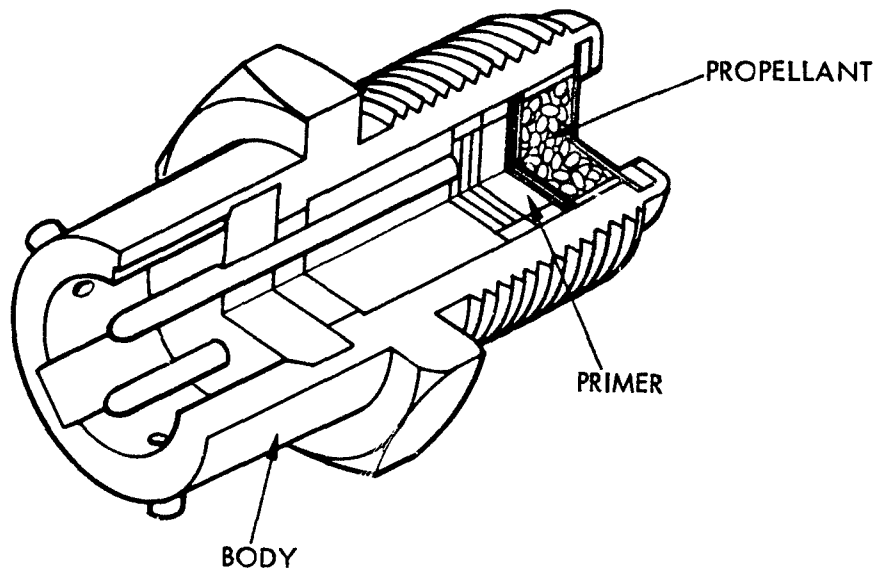
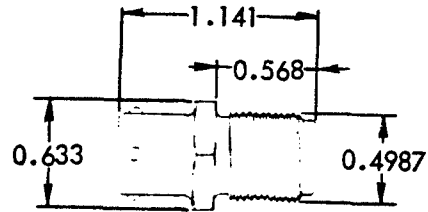
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS:

NOTES: *85 to 95% platinum, balance tungsten, tantalum, molybdenum

I17-0
15Aug73

IGNITION ELEMENT, Electric, MARK 17 MOD 0



C17-1
15Aug73

CARTRIDGE, Impulse, MARK 17 MOD 1
Specification no.: MIL-C-22079, Rev. B
Drawing list no.: 534559
Federal stock no.: 1377-021-4213
DOD code no.: M011
Qualification: MIL-D-21625, Type III*
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 510 ft-lb
Weight: 0.102 lb

IGNITER, electric, ignition element, MARK 13 MOD 0
Specification no.: MIL-I-81537
No-fire: 2.0 amp
All-fire: 3.0 amp.
Recommended firing: 10.0 amp
Bridge resistance: 0.08-0.14 ohm
Bridge material: 0.002 in. platinum-iridium
Ignition material: 0.034 gm. lead styphnate
Booster material: 0.270 gm. FA-878

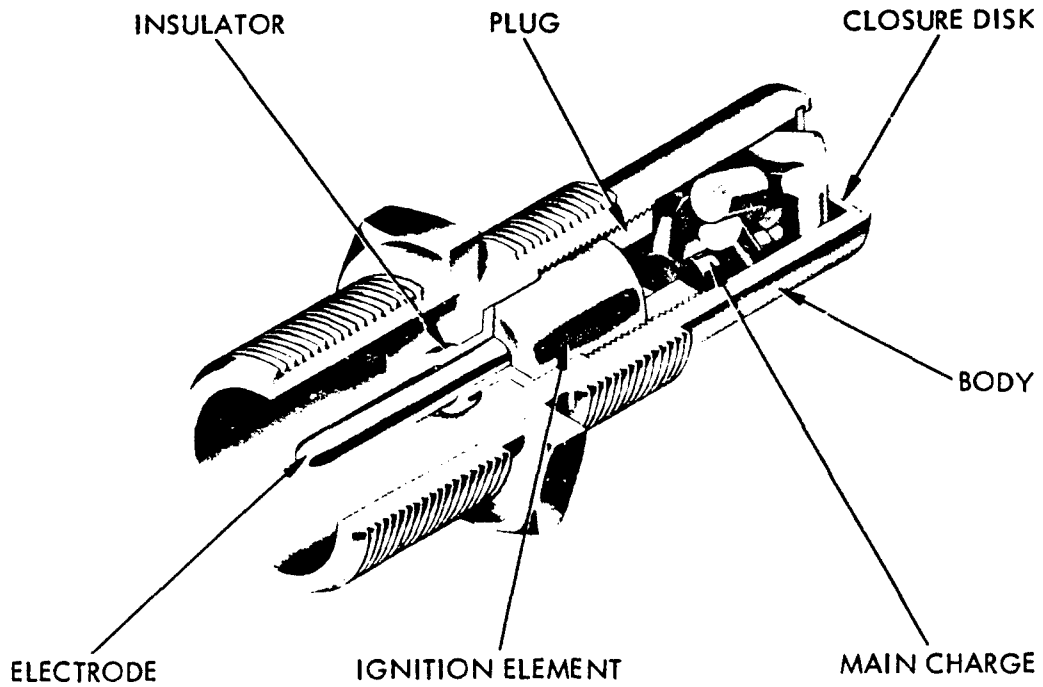
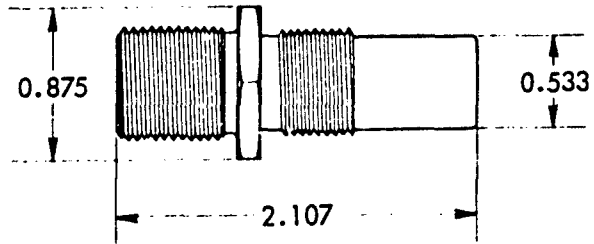
MAIN CHARGE, double-base, HPC-95
Specification no.: HPC-95
Weight: 8 pieces (app. .640 gm)
Granulation: 7-perf, D=.157, d=.011, h=.170 in
Flame temperature: 3630°K

APPLICATIONS: missile jettisoning and stores release

NOTES: *ballistics adversely affected after 21 days of temperature
and humidity cycling

C17-1
15Aug73

CARTRIDGE, Impulse, MARK 17 MOD 1



CA18-0
15Aug73

CARTRIDGE, Impulse, MARK 18 MOD 0
Specification no.: MIL-C-22362
Drawing list no.: 491833
Federal stock no.: 1377-705-9494
DOD code no.: M510
Qualification: MIL-D-21625, Type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 69,600 ft-lb
Weight: 0.384 lb

IGNITER, percussion; primer 50M(5061W)
Specification no.: Army Ord. Dwg. 7645339
No-fire: 20 in-oz
All-fire: 120 in-oz
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 6.48 gm
Granulation: A-1

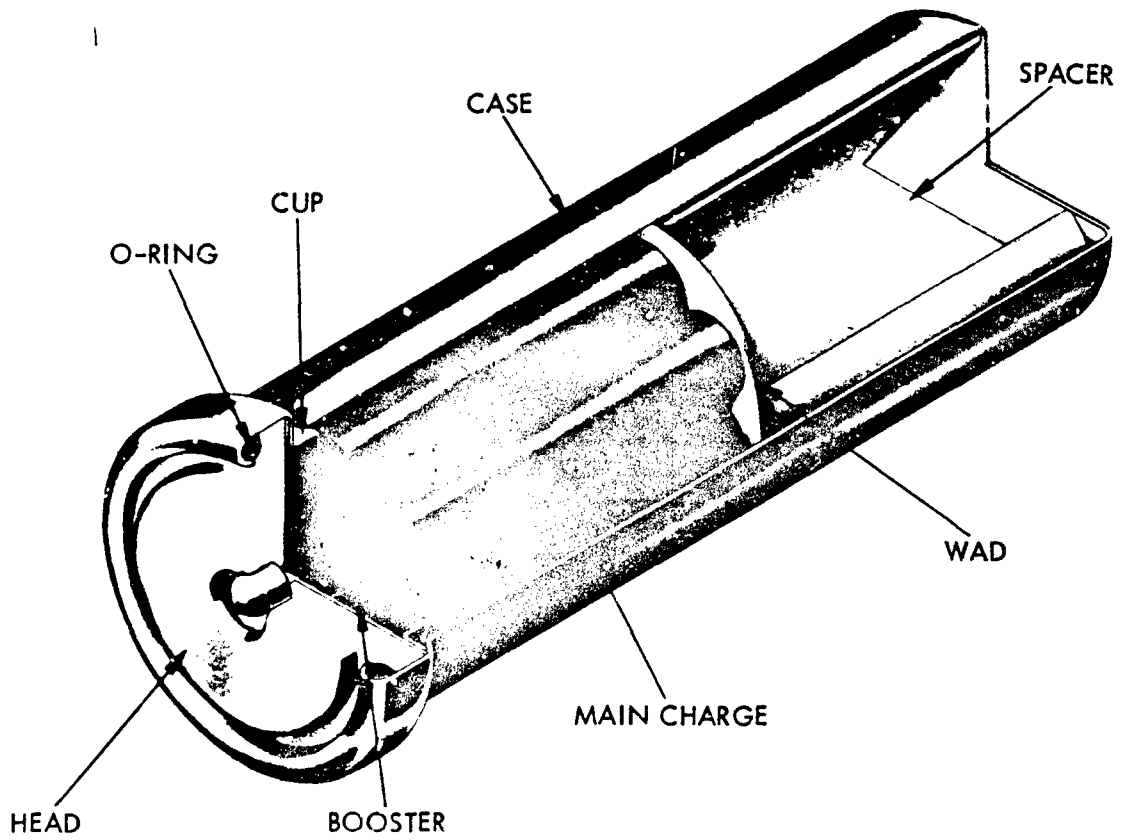
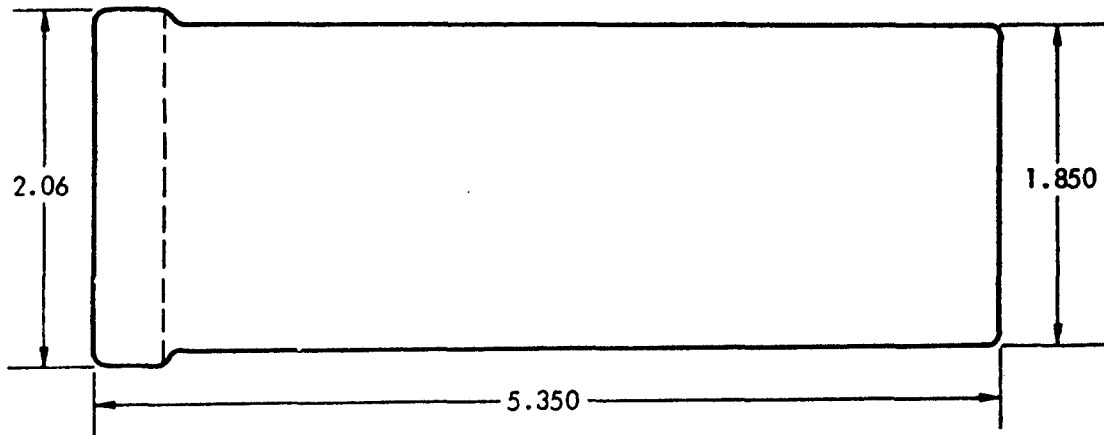
MAIN CHARGE, single-base, IOW7199 (M6)
Specification no.: MIL-P-309
Weight: 94 gm
Granulation: 7-perf, D=.647, d=.064, h=1.54 in.*
Flame temperature: 2727°K

APPLICATIONS: hatch opener in A3 aircraft

NOTES: *charge consists of 5 whole grains and 5 grains cut to
approximately 15/16 in

CA18-0
15Aug73

CARTRIDGE, Impulse, MARK 18 MOD 0



50<

CUTTER, Cartridge Actuated, MARK 18 MOD 0
Specification no.: WS 4382
Drawing list no.: 2518207
Federal stock no.: 1377-777-5670
DOD code no.: M492
Qualification: MIL-D-21625, Type III*
Service life: 1 yr installed, 3 yr total
Temperature limits: -65° to +165°F
Cook-off temperature:
Impetus:
Weight:

IGNITER, primer, M42
Specification no.: MIL-P-20444
No-fire: 4 in oz
All-fire: 26 in oz
Recommended firing:

DELAY, pyrotechnic, delay mix no. 213
Specification no.: BUWEPS 2518213
Nominal delay/specification limits: 4.9 to 7.00 seconds

BOOSTER CHARGE, igniter mix no. 212
Specification no.: BUWEPS 2518212
Weight:
Granulation

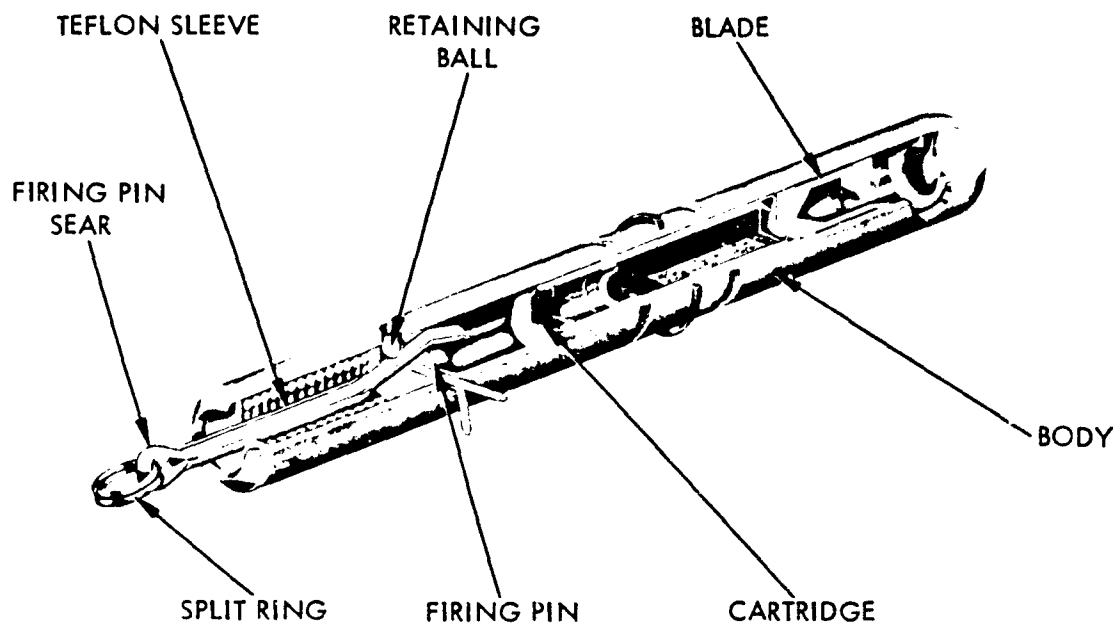
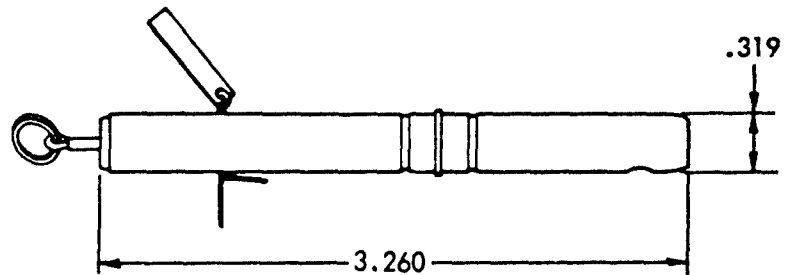
MAIN CHARGE, explosive charge no. 211
Specification no.: BUWEPS 2518211
Weight: 65 + 5 mg
Granulation:
Flame temperature:

APPLICATIONS: dereefing the recovery parachute of the KDA target

NOTES: *ballistics adversely affected after 7 days of temperature
and humidity cycling

CU18-0
15Aug73

CUTTER, Cartridge Actuated, MARK 18 MOD 0



19-0
15Aug73

CARTRIDGE, Impulse, MARK 19 MOD 0
Specification no.: MIL-C-22653
Drawing list no.: 419700
Federal stock no.: 1377-793-9926
DOD code no.: M012
Qualification: MIL-D-21625, Type III*
Service life: 1 yr installed, 5 yr total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 510 ft-lb
Weight: 0.038 lb

IGNITER, electric; ignition element, MARK 11 MOD 0
Specification no.: MIL-I-81530
No-fire: 2.0 amp
All-fire: 3.0 amp
Recommended firing: 10.0 amp
Bridge resistance: 0.08-0.14 ohm
Bridge material: 0.002 in platinum-iridium
Ignition bead material: 0.034 gm lead styphnate
Booster material: 0.270 gm FA-878

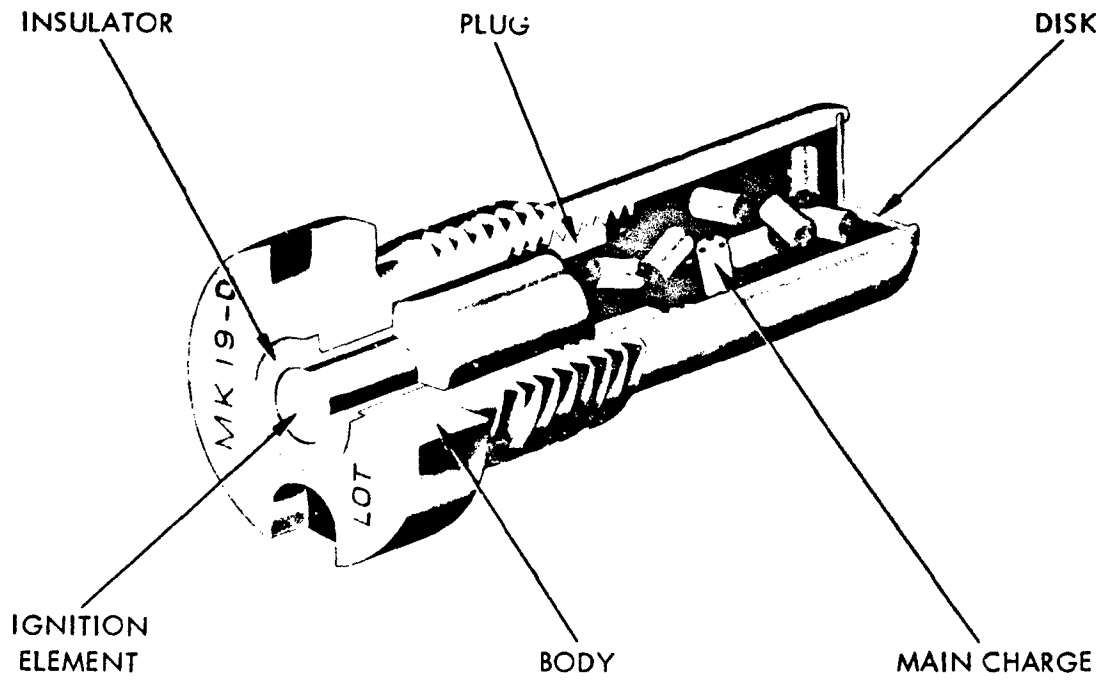
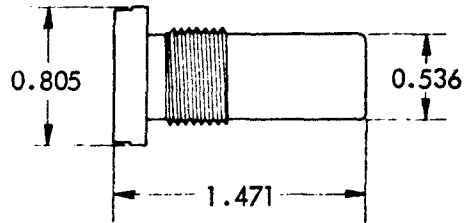
MAIN CHARGE, double-base, HPC-95
Specification no.: HPC-95
Weight: 8 pieces (app .640 gm)
Granulation: 7-perf, D=.157, d=.011, h=.170 in
Flame temperature: 3630°K

APPLICATIONS: release and ejection of light stores

NOTES: *ballistics adversely affected after 21 days of temperature
and humidity cycling

19-0
15Aug73

CARTRIDGE, Impulse, MARK 19 MOD 0



22-0
15Aug73

IGNITION ELEMENT, Electric, MARK 22 MOD 0

Specification no.: NAVWEPS WS 4376
Drawing list no.: BUWEPS 2518291
Federal stock no.: 1377-690-1456
DOD code no.: M265
Qualification: MIL-D-23659
Service life: 30 mo installed, 5 yr total
Temperature limits:
Cook-off temperature:
Impetus:
Weight: .132 lb

IGNITER

Specification no.:
No-fire: 1.0 amp
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE

Specification no.:
Weight:
Granulation:

MAIN CHARGE

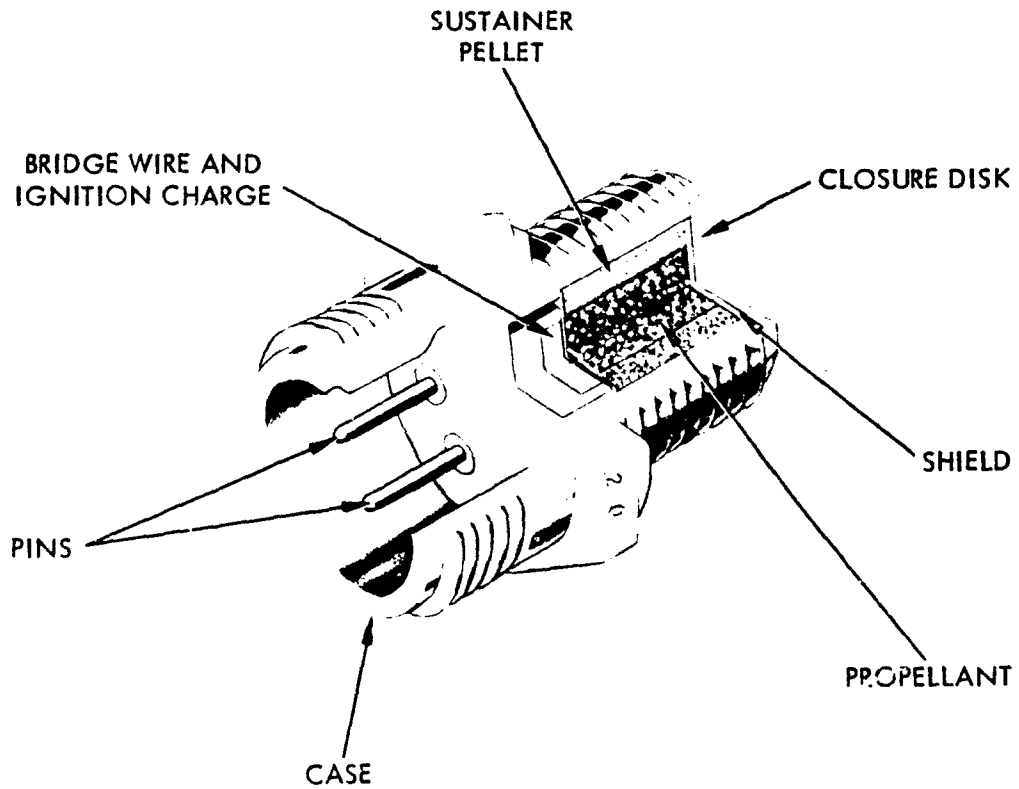
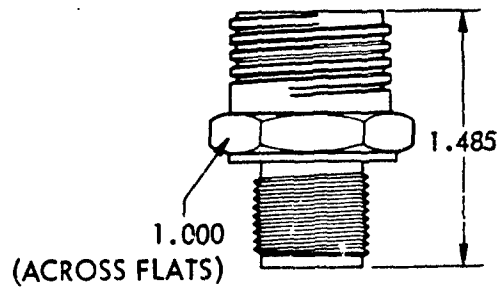
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: ignites propellant grain, W-K P/N 842077 in UH-2A
helicopter flotation gear

NOTES:

22-0
15Aug73

IGNITION ELEMENT, Electric, MARK 22 MOD 0



23-0
15Aug73

CARTRIDGE, Impulse, MARK 23 MOD 0
Specification no.: MIL-C-22244
Drawing list no.: 491837
Federal stock no.: 1377-632-8714
DOD code no.: M161
Qualification: MIL-D-21625, type III*
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 110 ft-lb.
Weight: .040 lb.

IGNITER, electric
Specification no.: subassembly of cartridge
No-fire:
All-fire:
Recommended firing:
Bridge resistance: 3.0 to 6.5 ohm
Bridge material: no. 35 nichrome

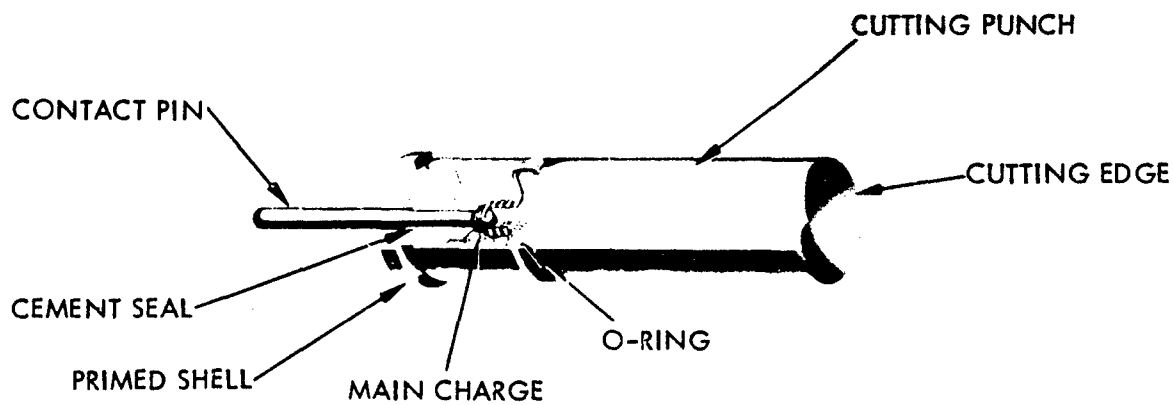
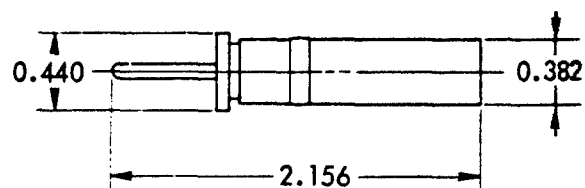
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.130 gm.
Granulation: disc, D=.065, h=.007 in.
Flame temperature: 3771°K

APPLICATIONS: Emergency flotation gear pod UH-2 helicopter (type IV)
Rescue hoist cable cutter in HOK-1 helicopter.

NOTES: *Ballistics adversely affected after 14 days of temperature
and humidity cycling.

23-0
15AUG73

CARTRIDGE, Impulse, MARK 23 MOD 0



CARTRIDGE, Actuator, MARK 25 MOD 0
Specification no.: MIL-C-22652
Drawing list no.: 537886
Federal stock no.: 1377-543-3552
DOD code no.: M013
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 1020 ft-lb.
Weight: .019 lb.

IGNITER, percussion; primer 72M
Specification no.: Army Ord. dwg. 7645332
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 0.50 gm
Granulation: A-2

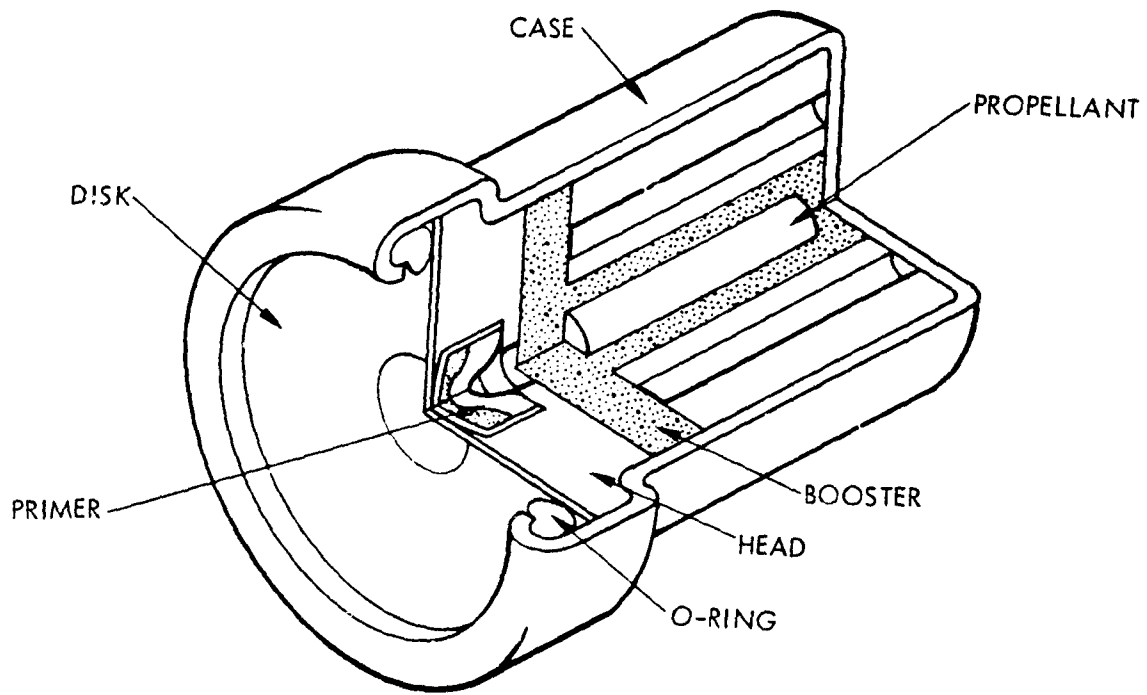
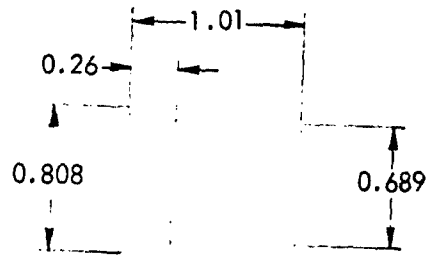
MAIN CHARGE, double-base, HES 5130.36
Specification no.: Hercules HES 5130.36
Weight: 1.30 gm
Granulation: 1-perf, D=.1779, d=.0099, h=.4337 in.
Flame temperature: 2491°K

APPLICATIONS: canopy unlock thruster in TT-1 aircraft.

NOTES:

25-0
15Aug73

CARTRIDGE, Actuator, MARK 25 MOD 0



60<

26-
15Aug7

CARTRIDGE, Actuator, MARK 26 MOD 0
Specification no.: MIL-C-22657
Drawing list no.: 537887
Federal stock no.: 1377-829-8772
DOD code no.: M014
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 13,000 ft-lb.
Weight: 0.120 lb.

IGNITER, percussion; primer 50M (5061W)
Specification no.: Army Ord. dwg. 7645339
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 1.50 gm
Granulation: A-1

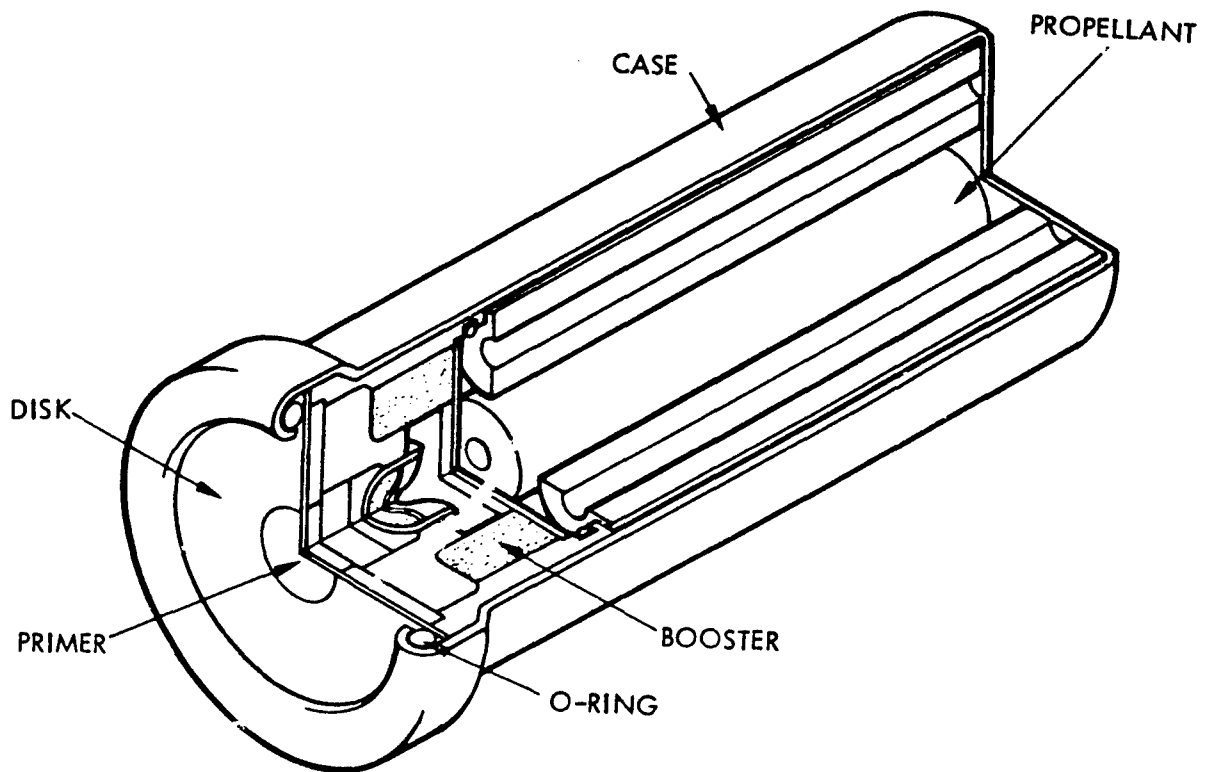
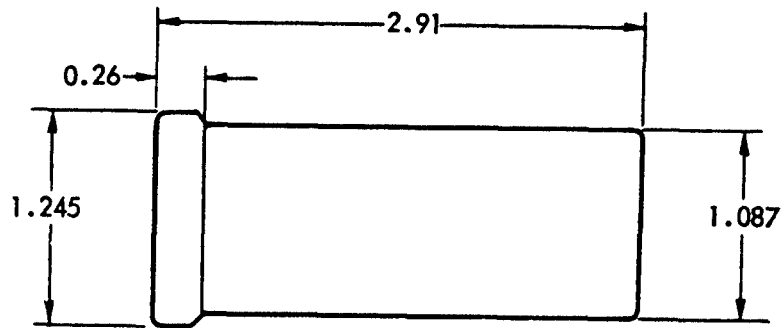
MAIN CHARGE, double-base, HES 5130.12D
Specification no.: Hercules HES 5130.12D
Weight: 18.0 gm
Granulation: 1-perf, D=.3633, d=.0919, h=8.125 in.
Flame temperature: 2491°K

APPLICATIONS: Canopy actuator in TT-1 aircraft.

NOTES:

26-0
15Aug73

CARTRIDGE, Actuator, MARK 26 MOD 0



27-0
15Aug73

CARTRIDGE, Actuator, MARK 27 MOD 0
Specification no.: OS 8812
Drawing list no.: 419702
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III
Service life: 2 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature 275°F
Impetus: 1690 ft-lb.
Weight: .018 lb.

IGNITER, percussion; primer 72M
Specification no.: Army Ord. dwg. 7645332
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 1.20 gm.
Granulation: A-2

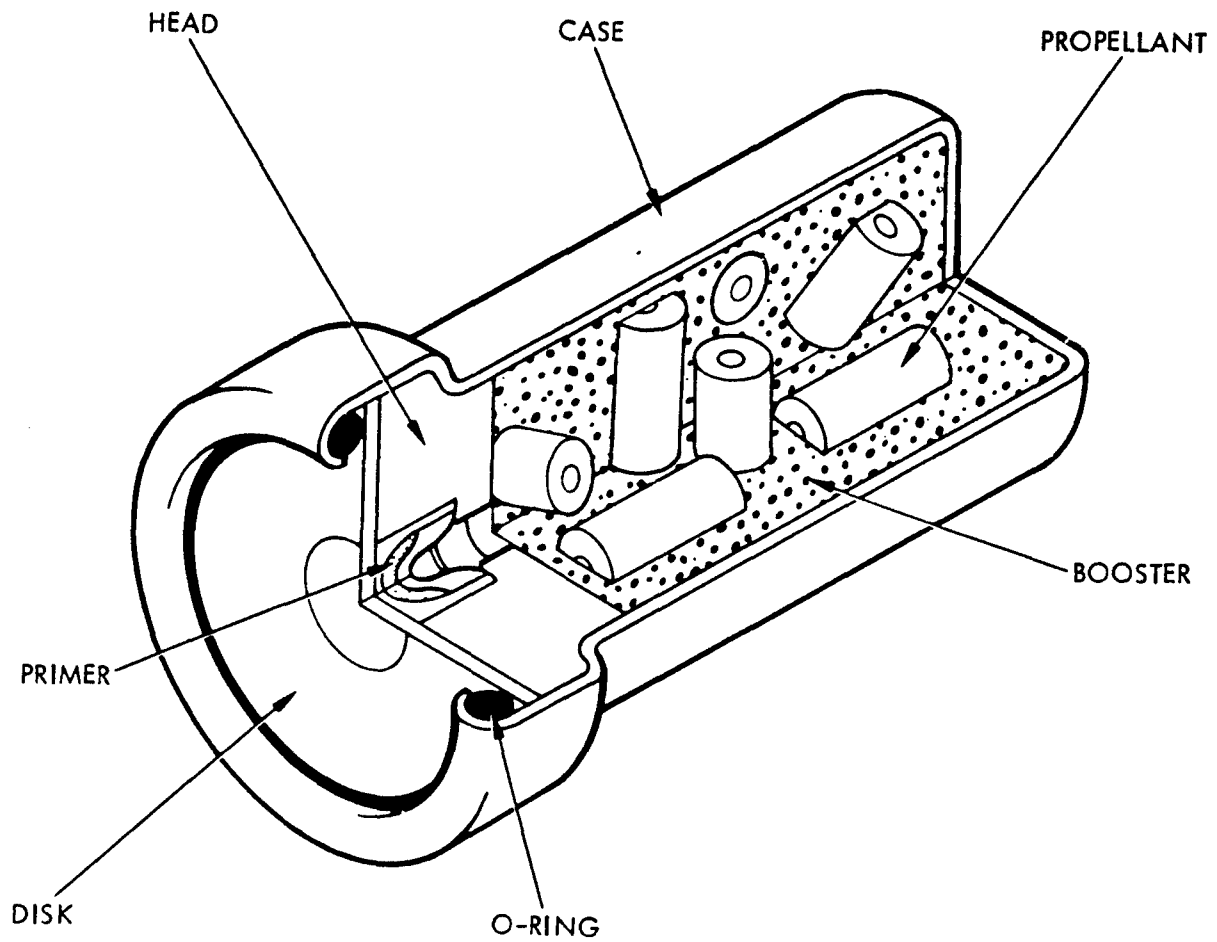
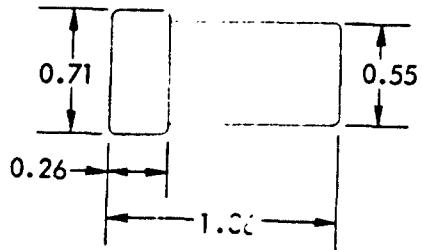
MAIN CHARGE, double-base, HES 4831.9B
Specification no.: Hercules HES 4831.9B
Weight: 1.80 gm.
Granulation: 1-perf, D=.2401, d=.0527, h=.4635
Flame temperature: 3319°K

APPLICATIONS: Bypass unlatch actuator in P6M aircraft.

NOTES:

27-0
15Aug73

CARTRIDGE, Actuator, MARK 27 MOD 0



CARTRIDGE, Actuator, MARK 28 MOD 0

Specification no.: OS 9893
Drawing list no.: 419703
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 800 ft-lb.
Weight: .012 lb.

IGNITER, percussion; primer 72M

Specification no.: Army Ord. dwg. 7645332
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder

Specification no.: MIL-P-223
Weight: 0.70 gm.
Granulation: A-4

MAIN CHARGE, single-base, IMR 5010

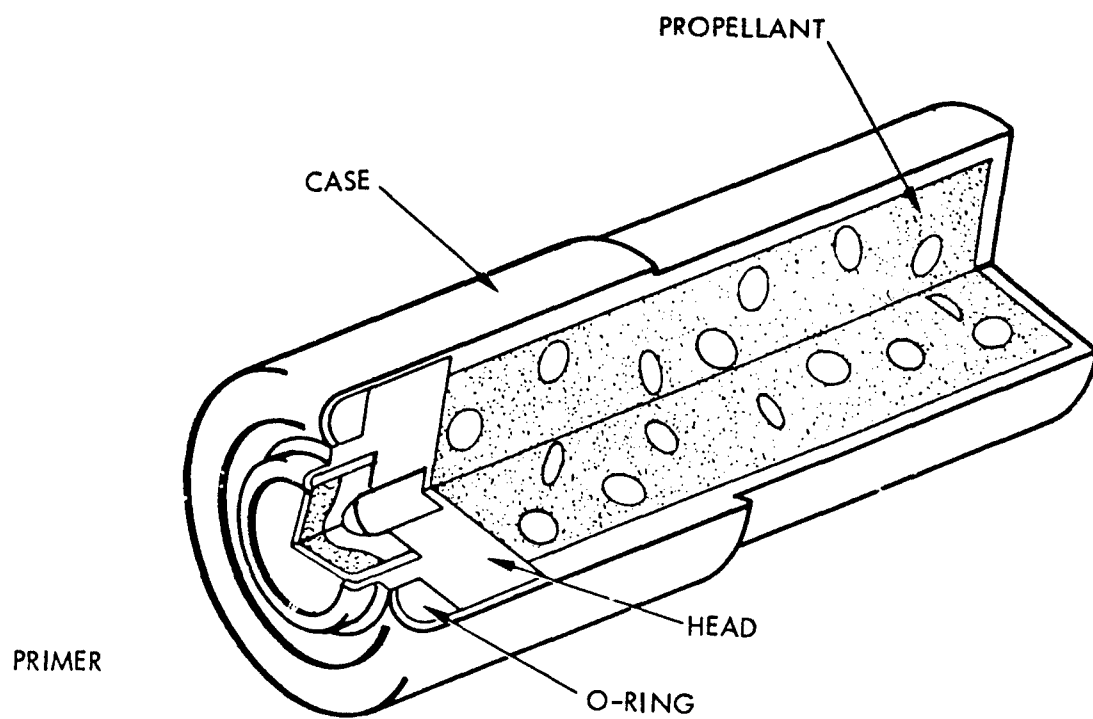
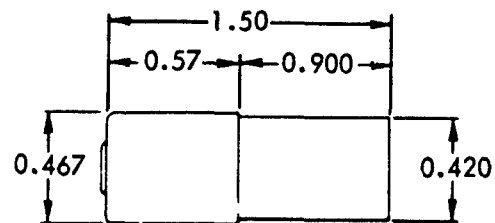
Specification no.: MIL-P-3984, type II, class 2
Weight: 0.90 gm.
Granulation: 1-perf, D=.083, d=.021, h=.0909
Flame temperature: 2892°K

APPLICATIONS: Thruster, P6M aircraft.

NOTES:

28-0
15Aug73

CARTRIDGE, Actuator, MARK 28 MOD 0



66<

29-0
15Aug73

CARTRIDGE, Actuator, MARK 29 MOD 0

Specification no.: OS 8806
Drawing list no.: 419686
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 1260 ft-lb.
Weight: 0.159 lb.

IGNITER, stab; primer, MARK 102 MOD 1

Specification no.: MIL-P-18613
No-fire:
All-fire: 7 in-oz.
Recommended firing:

MAIN CHARGE, single-base, cal. 45 propellant

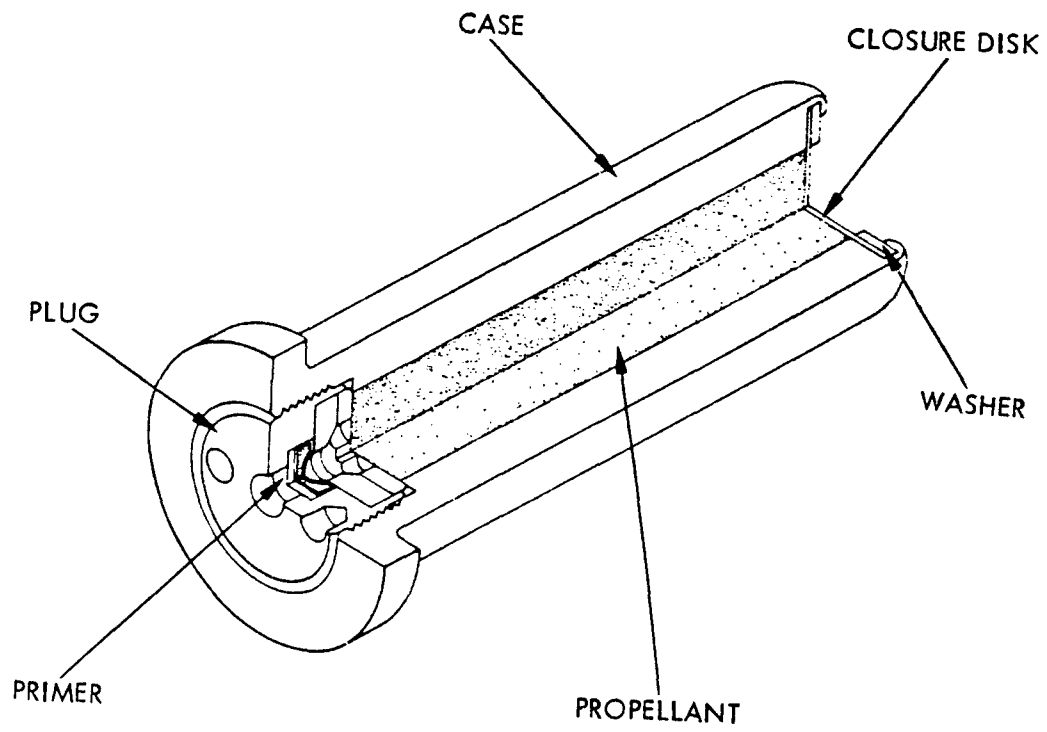
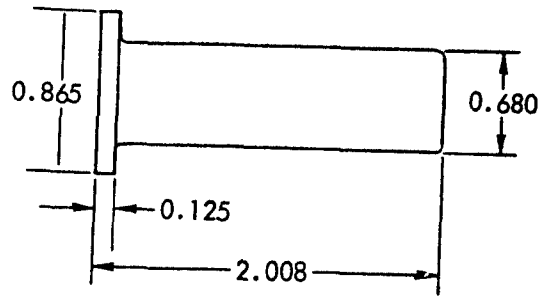
Specification no.: MIL-P-3207
Weight: 1.81 gm.
Granulation: disc or flake of irregular shape
Flame temperature:

APPLICATIONS: Seat drogue gun in P6M aircraft.

NOTES:

29-0
15Aug73

CARTRIDGE, Actuator, MARK 29 MOD 0



31-0
15Aug73

CARTRIDGE, Delay, MARK 31 MOD 0
Specification no.: MIL-C-22328
Drawing list no.: 419691
Federal stock no.: 1377-779-0035
DOD code no.: M406
Qualification: MIL-D-21625, type III
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 840 ft-lb.
Weight: 0.288 lb.

IGNITER, electric
Specification no.: subassembly of cartridge
No-fire:
All-fire:
Recommended firing: 5.0 amp per bridge
Bridge resistance: 0.15 ohm
Bridge material: 0.0071 in tophet A
Ignition material: priming mix. no. 815

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 1.25 sec. ±.75 sec

BOOSTER CHARGE, explosive mix. no. 816
Specification no.: BUWEPS dwg. 2171816
Weight: 0.050 gm.

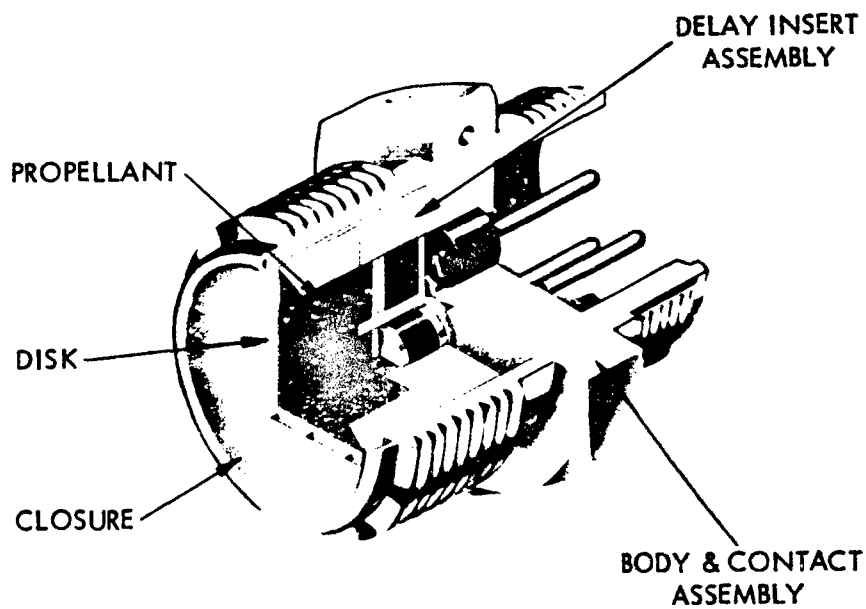
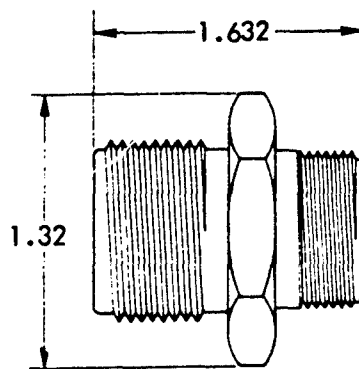
MAIN CHARGE, double-base, bullseye
Specification no.: HPSK-BUP
Weight: 1.0 gm.
Granulation: disc, D=.038, h=.004 in.
Flame temperature: 3780°K

APPLICATIONS: Refueling hose guillotine in FJ-4B aircraft.

NOTES: *Ballistics adversely affected after 7 days of temperature and humidity cycling.

31-0
15Aug73

CARTRIDGE, Delay, MARK 31 MOD 0



CARTRIDGE, Impulse, MARK 33 MOD 1
Specification no.: MIL-C-23334
Drawing list no.: 537914
Federal stock no.: 1340-807-3604
DOD code no.: M 755
Qualification: MIL-D-21625, type III
Service life: 2 yr. installed*, 5 yr. total
Temperature limits: 0° to 160°F
Cook-off temperature: 275°F
Impetus: 1280 ft-lb.
Weight: 0.038 lb.

IGNITER, electric; ignition element, MARK 10 MOD 0
Specification no.: MIL-I-23488
No-fire: 2.0 amp.
All-fire: 3.0 amp.
Recommended firing: 10.0 amp.
Bridge resistance: 0.08-0.14 ohm.
Bridge material: 0.002 in. platinum-iridium
Ignition material: 0.034 gm lead styphnate
Booster material: 0.270 gm FA-878

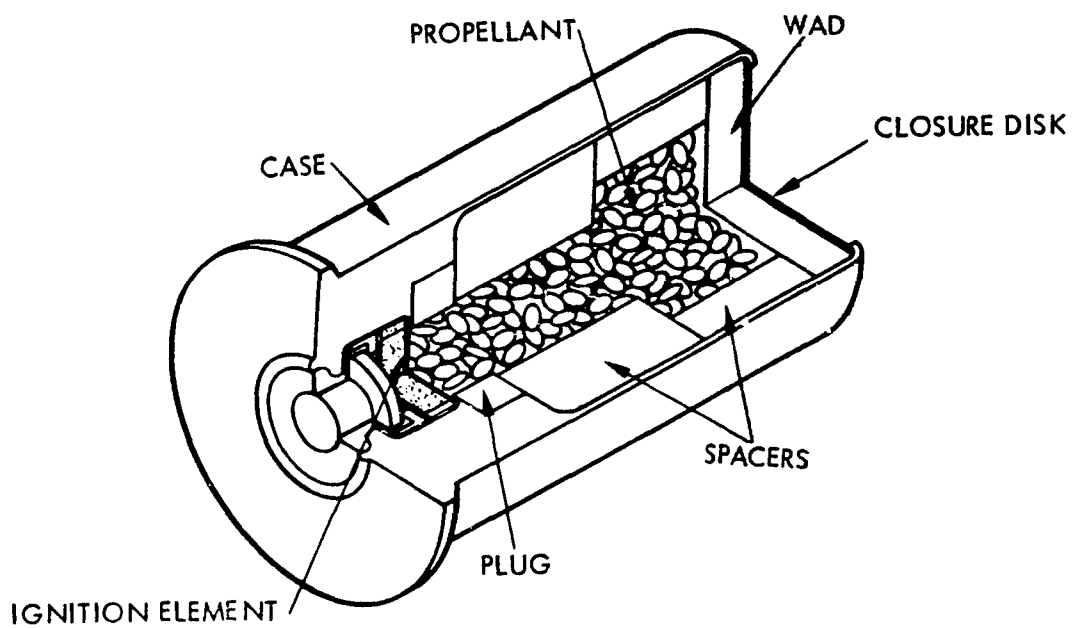
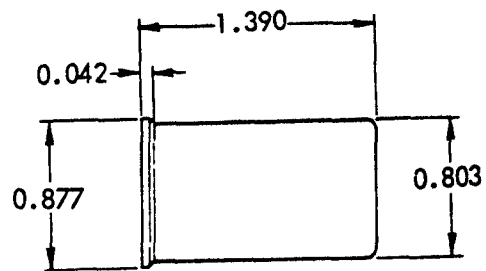
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 1.49 gm.
Granulation: disc, D=.065, h=.007
Flame temperature: 3771°K

APPLICATIONS: To propel MK 12 projector charge for practice hedgehog
weapon.

NOTES: *2 yr. after removal from hermetically sealed container.

33-1
15Aug73

CARTRIDGE, Impulse, MARK 33 MOD 1



35-0
15Aug73

CARTRIDGE, Delay, MARK 35 MOD 0
Specification no.: MIL-C-22845
Drawing list no.: 419707
Federal stock no.: 1377-792-9108
DOD code no.: M202
Qualification: MIL-D-21625, type III*
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 680 ft-lb.
Weight: 0.035 lb.

IGNITER, percussion; primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 0.625 sec. \pm .125

BOOSTER CHARGE, double-base, bullseye
Specification no.: OS9862, type II
Weight: 0.175 gm.
Granulation: disc. D=.038, h=.004 in.

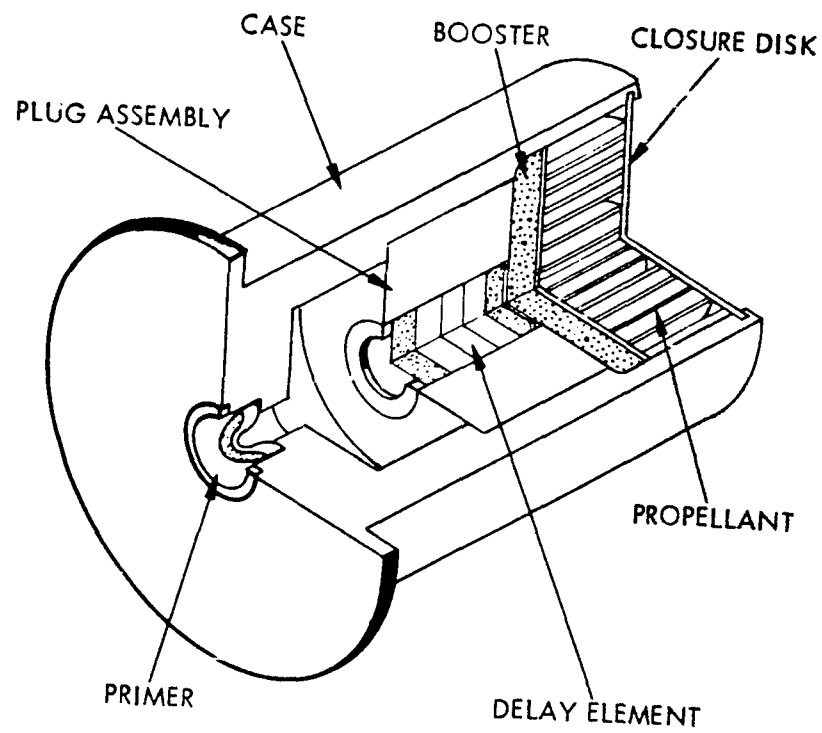
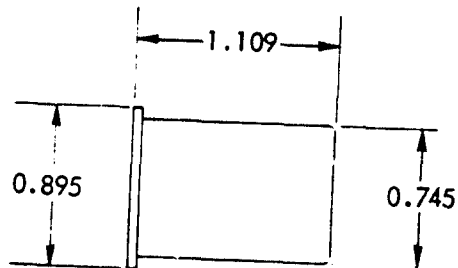
MAIN CHARGE, double-base, HES 5354.26A
Specification no.: dwg. 2230819
Weight: 0.676 gm.
Granulation: 7-perf, D=.185, d=.035, h=.333 in.
Flame temperature: 3319°K

APPLICATIONS: Harness release and bladder actuator in T2 aircraft.

NOTES: *Ballistics adversely affected after 7 days of temperature and humidity cycling.

35-0
15Aug73

CARTRIDGE, Delay, MARK 35 MOD 0



CARTRIDGE, Delay, MARK 36 MOD 0
Specification no.: MIL-C-23024
Drawing list no.: 419708
Federal stock no.: 1377-731-4496
DOD code no.: M204
Qualification: MIL-D-21625, type III*
Service life: 18 mo. installed, 5 yrs. total
Temperature limits: -65° to +160°F
Cook-off temperature: 250°F
Impetus: 100 ft-lb.
Weight: 0.015 lb.

IGNITER, percussion; primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 0.575 sec.

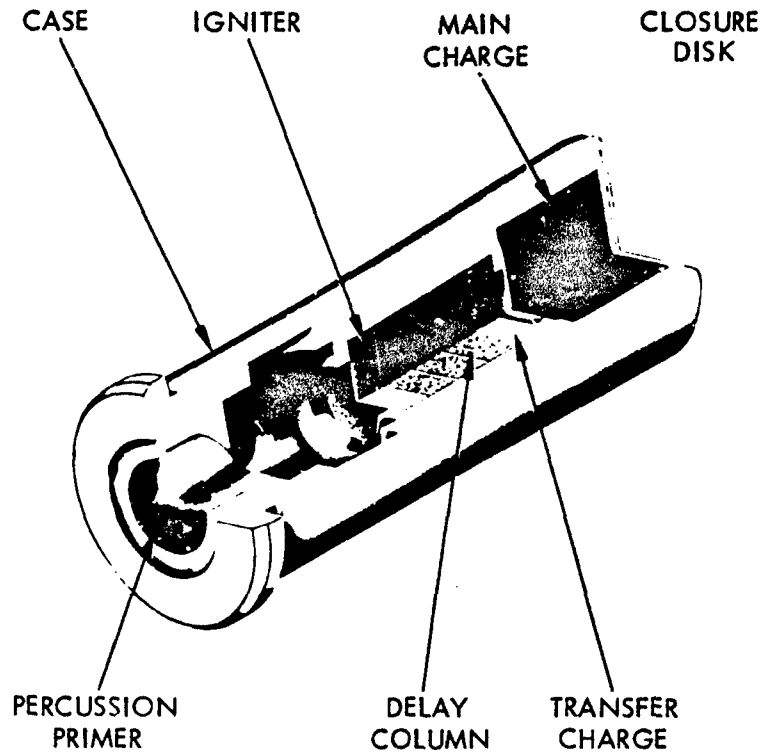
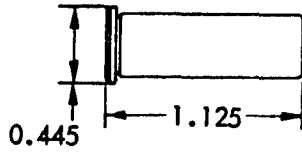
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.115 gm.
Granulation: disc, D=.065, h=.007
Flame temperature: 3771°K

APPLICATIONS: Automatic sequencing of T2 aircraft escape system.

NOTES: *Ballistics adversely affected after 7 days of temperature and humidity cycling.

36-0
15Aug73

CARTRIDGE, Delay, MARK 36 MOD 0



37-0
15Aug73

CARTRIDGE, Impulse, MARK 37 MOD 0
Specification no.: MIL-C-22848
Drawing list no.: 419706
Federal stock no.: 1377-731-9285
DOD code no.: M019
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 225°F
Impetus: 2050 ft-lb.
Weight: 0.030 lb.

IGNITER, percussion; primer 116M-282A
Specification no.: Army Ord. dwg 6200959
No-fire: 6 in-oz.
All-fire: 36 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 0.750 gm.
Granulation: FG

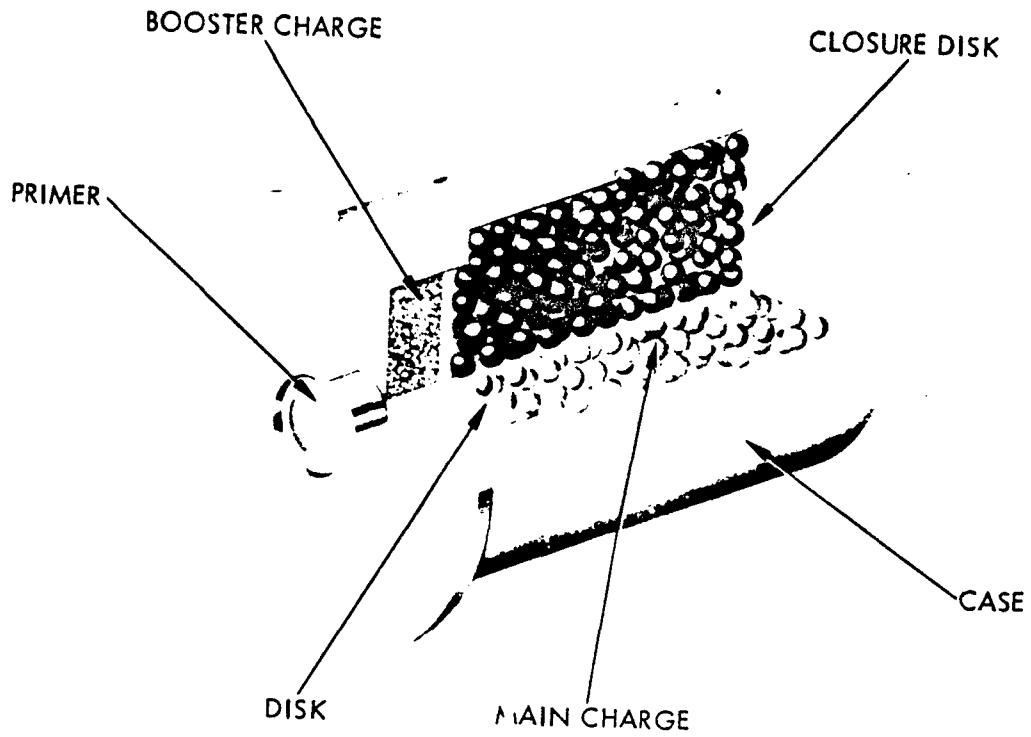
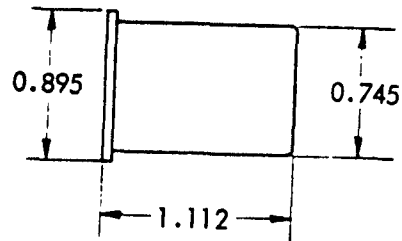
MAIN CHARGE, double-base, HES 5354.26A
Specification no.: dwg. 2230819
Weight: 2.38 gm.
Granulation: 7-perf, D=.185, d=.035, h=.333 in.
Flame temperature: 3319°K

APPLICATIONS: Harness and foot retainer release actuator in A5
(A3J) aircraft.

NOTES:

37-0
15Aug73

CARTRIDGE, Impulse, MARK 37 MOD 0



CARTRIDGE, Impulse, MARK 38 MOD 0

Specification no.: MIL-C-23333

Drawing list no.: 419709

Federal stock no.: 1377-731-4497

DOD code no.: M511

Qualification: MIL-D-21625, type III

Service life: 30 mo. installed, 5 yr. total

Temperature limits: -65° to +160°F

Cook-off temperature: 275°F

Impetus: 2660 ft-lb.

Weight: 0.040 lb.

IGNITER, percussion, primer 120M (257W)

Specification no.: MIL-P-46610

No-fire:

All-fire:

Recommended firing

BOOSTER CHARGE, double-base, bullseye

Specification no.: HPSK-BUP

Weight: 0.125 gm

Granulation: disc, D=.038, h=.004

MAIN CHARGE, single-base, M1

Specification no.: JAN-P-270

Weight: 3.8 gm.

Granulation: 40 mm cannon powder

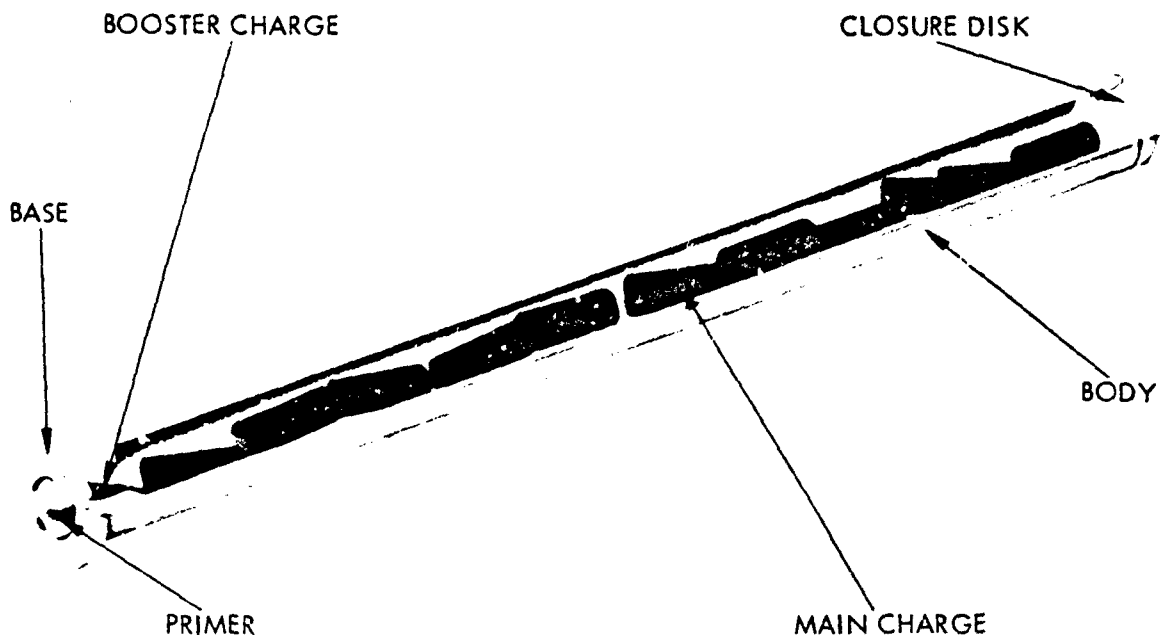
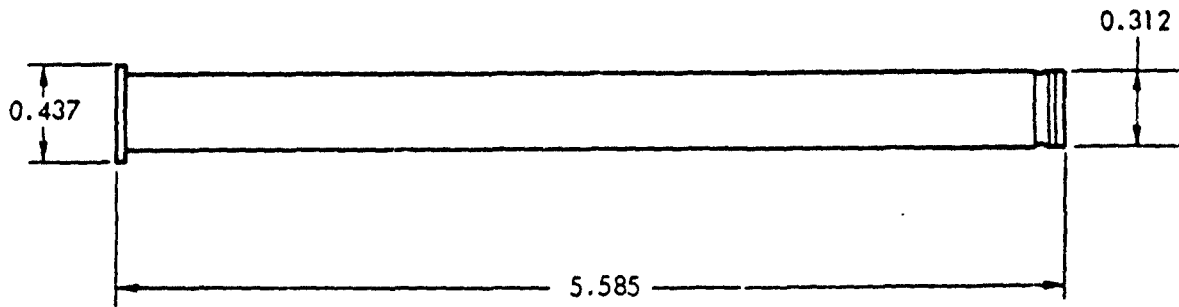
Flame temperature: 2417°K

APPLICATIONS: Drogue chute ejector thruster in A5 (A3J) aircraft.

NOTES:

38-0
15Aug73

CARTRIDGE, Impulse, MARK 38 MOD 0



39-0
15Aug73

CARTRIDGE, Impulse, MARK 39 MOD 0
Specification no.: MIL-C-22996
Drawing list no.: 537895
Federal stock no.: 1377-731-4494
DOD code no.: M021
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 250 ft-lb.
Weight: 0.025 lb.

IGNITER, percussion, primer 116M-282A
Specification no.: Army Ord. dwg. 6200959
No-fire: 6 in-oz.
All-fire: 36 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 0.130 gm
Granulation: FFFG

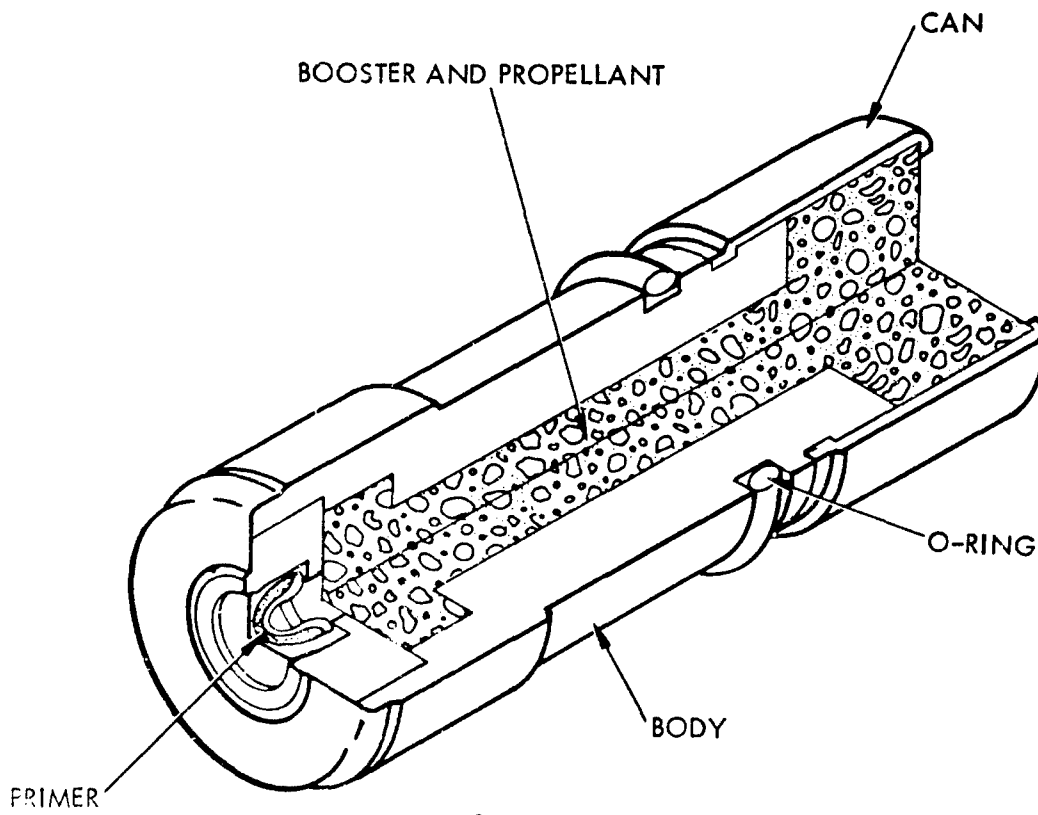
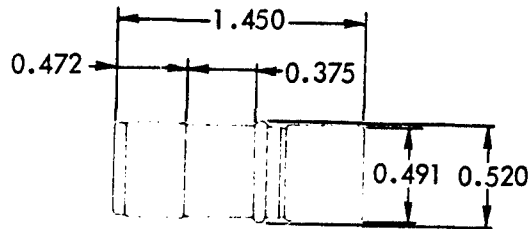
MAIN CHARGE, double-base, bullseye
Specification no.: HPSK-BUP
Weight: 0.259 gm.
Granulation: disc, D=.038, h=.004
Flame temperature: 3780°K

APPLICATIONS: Drogue chute ejector thruster in T2 aircraft.

NOTES:

39-0
15Aug73

CARTRIDGE, Impulse, MARK 39 MOD 0



40-0
15Aug73

CARTRIDGE, Impulse, MARK 40 MOD 0
Specification no.: MIL-C-23590
Drawing list no.: 537911
Federal stock no.: 1377-981-5639
DOD code no.: M522
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 3160 ft-lb.
Weight: 0.063 lb.

IGNITER, percussion; primer 50M (5061W)
Specification no.: Army Ord. dwg. 7645339
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, double-base, M2
Specification no.: MIL-P-323
Weight: 0.05 gm
Granulation:

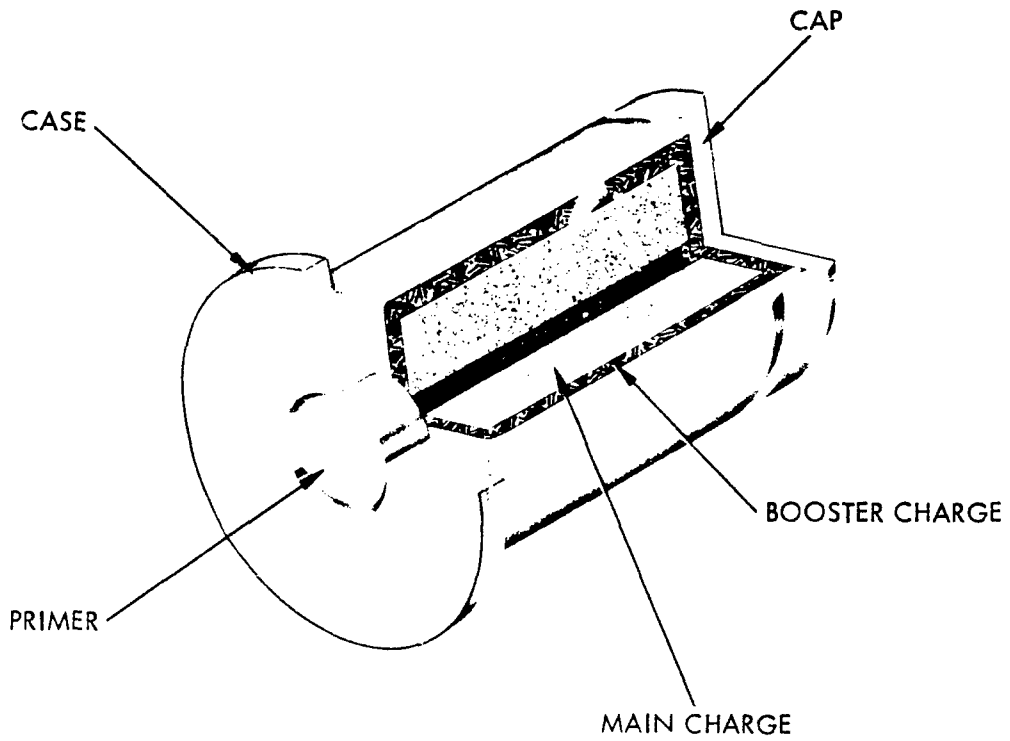
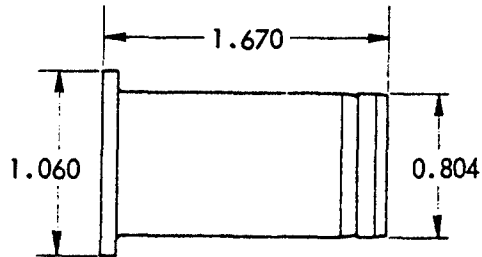
MAIN CHARGE, double-base, HES 5251.9
Specification no.: Hercules HES 5251.9
Weight: 4.25 gm.
Granulation: single grain; 1-perf, D=.592, d=.089, h=1.5 in
Flame temperature: 3037°K

APPLICATIONS: Arm retention cable take-up reel in A5 (A3J) aircraft.

NOTES:

40-0
15Aug73

CARTRIDGE, Impulse, MARK 40 MOD 0



42-0
15Aug73

CARTRIDGE, Impulse, MARK 42 MOD 0

Specification no.: MIL-C-23672
Drawing list no.: 547736
Federal stock no.: 1377-731-4495
DOD code no.: M512
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off limits: 275°F
Impetus: 3900 ft-lb.
Weight: 0.071 lb.

IGNITER, percussion; primer 50M (5061W)

Specification no.: Army Ord. dwg. 7645339
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder

Specification no.: MIL-P-223
Weight: 3.50 gm.
Granulation: A-2

MAIN CHARGE, double-base, HES 5192.73

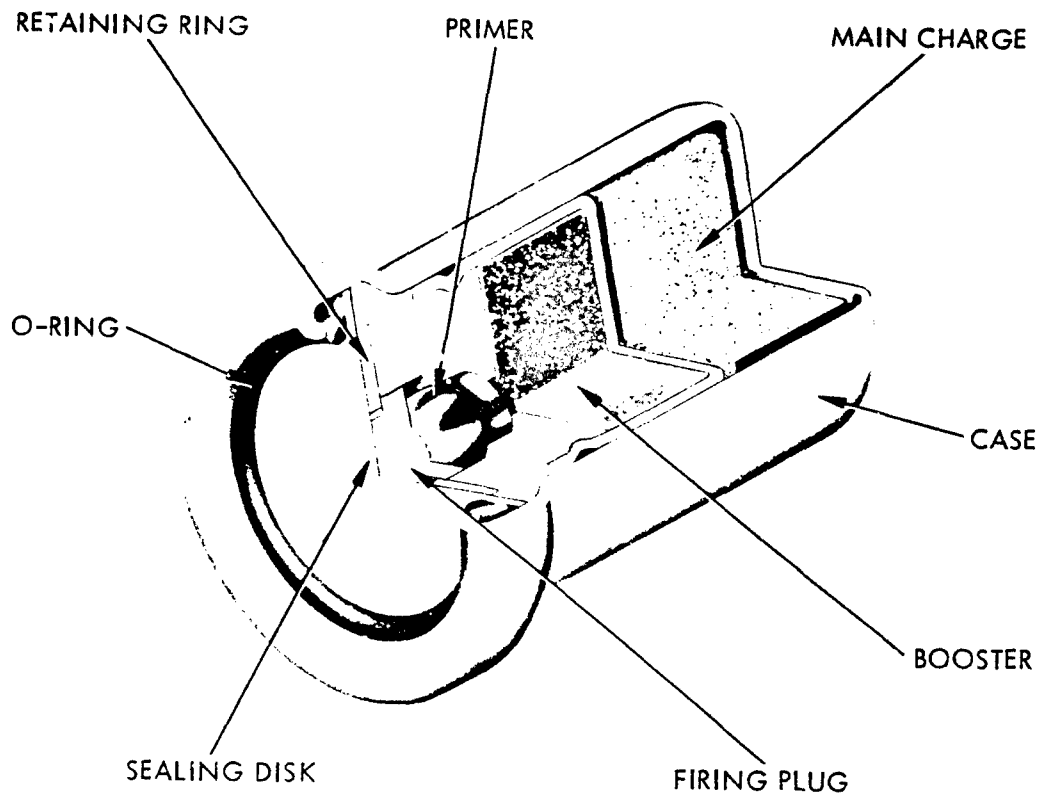
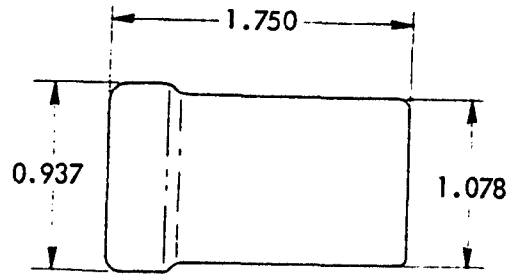
Specification no.: Hercules HES 5192.73
Weight: 4.5 gm
Granulation: single grain; 1-perf. D=.706, d=.060, h=1.758 in.
Flame temperature: 2491°K

APPLICATIONS: Knee elevator actuator in A5 (A3J) aircraft.

NOTES:

42-0
15Aug73

CARTRIDGE, Impulse, MARK 42 MOD 0



CARTRIDGE, Impulse, MARK 43 MOD 0
Specification no.: MIL-C-23673
Drawing list no.: 547735
Federal stock no.: 1377-731-9266
DOD code no.: M513
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 2840 ft-lb.
Weight: 0.047 lb.

IGNITER, percussion; primer 50M (5061W)
Specification no.: Army Ord. dwg. 7645339
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 1.2 gm.
Granulation: A-1

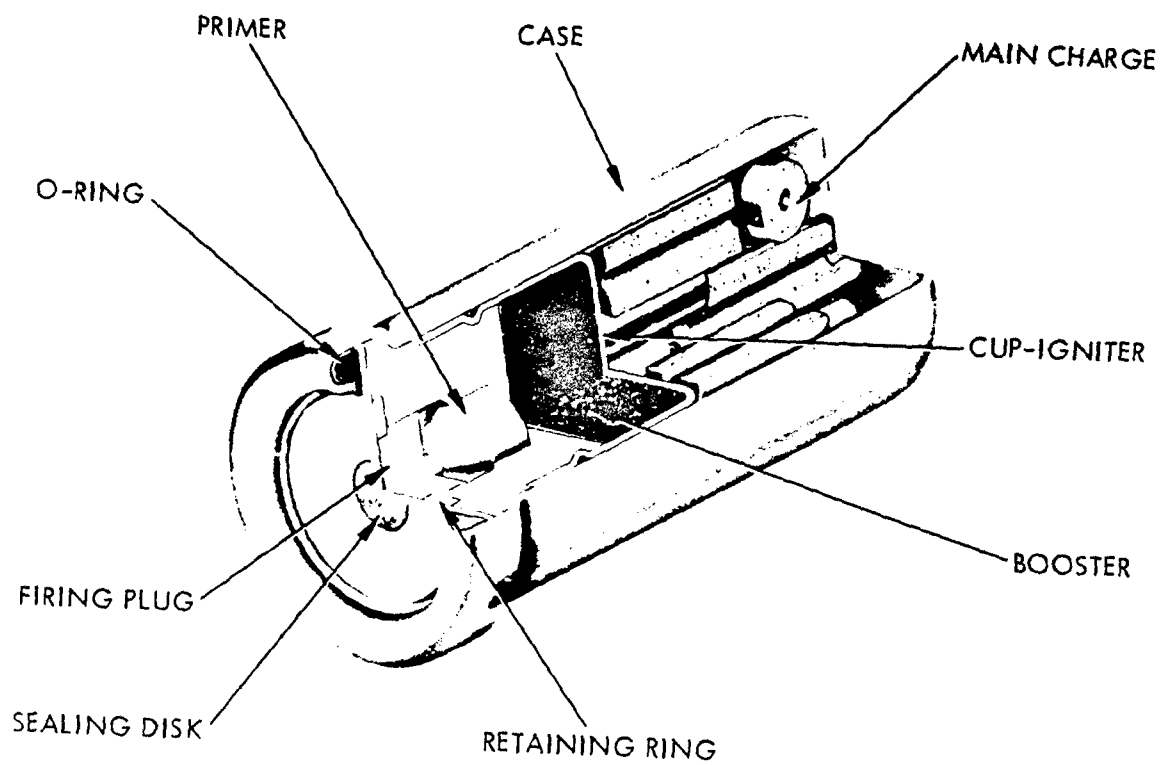
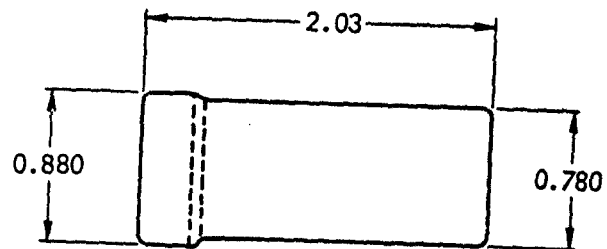
MAIN CHARGE, double-base, HES 5130.44
Specification no.: Hercules HES 5130.44
Weight: 3.68 gm.
Granulation: 6-1/2 grains; 1-perf, D=.237, d=.023, h=.537
Flame temperature: 2491°K

APPLICATIONS: Seat bottoming actuator in A5 (A3J) aircraft.

NOTES:

43-0
15Aug73

CARTRIDGE, Impulse, MARK 43 MOD 0



44-0
15Aug73

CARTRIDGE, Impulse, MARK 44 MOD 0
Specification no.: MIL-C-23933
Drawing list no.: 537925
Federal stock no.: 1377-987-3603
DOD code no.: M514
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +220°F
Cook-off temperature: 275°F
Impetus: 120 ft-lb.
Weight: 0.034 lb.

IGNITER, electric
Specification no.: subassembly of cartridge
No-fire: 1.0 amp. per bridge
All-fire: 2.0 amp. per bridge
Recommended firing: 5.0 amp. per bridge
Bridge resistance: 0.30 ohm.
Bridge material: 0.0045 in. tophet A
Ignition material: primer mix no. 487

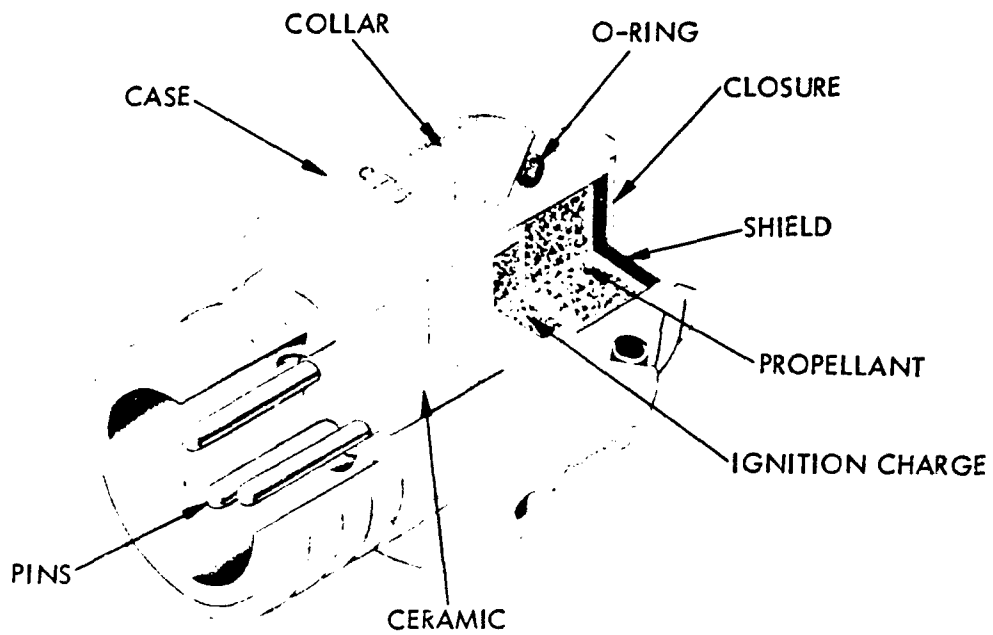
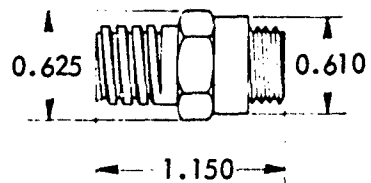
MAIN CHARGE, double-base, Hercules HiTemp
Specification no.: HPSK-HT
Weight: 0.125 gm.
Granulation: disc, D=.053, h=.011 in.
Flame temperature: 3822°K

APPLICATIONS: Self-destruct unit in KD2B-1 target drone.
Emergency release mechanism, type A helicopter cargo
hook - type IV P/N 31430B.

NOTES:

44-0
15Aug73

CARTRIDGE, Impulse, MARK 44 MOD 0



45-
15Aug7

CARTRIDGE, Impulse, MARK 45 MOD 0
Specification no.: MIL-C-23661
Drawing list no.: 537926
Federal stock no.: 1377-075-5844
DOD code no.: M516
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 130 ft-lb.
Weight: 0.053 lb.

IGNITER, electric
Specification no.: subassembly of cartridge
No-fire: 2.0 amp. per bridge
All-fire: 3.0 amp. per bridge
Recommended firing: 7.0 amp. per bridge
Bridge resistance: 0.13-0.16 ohm per bridge
Bridge material: 0.0071 in. tophet A
Ignition material: primer mix no. 487

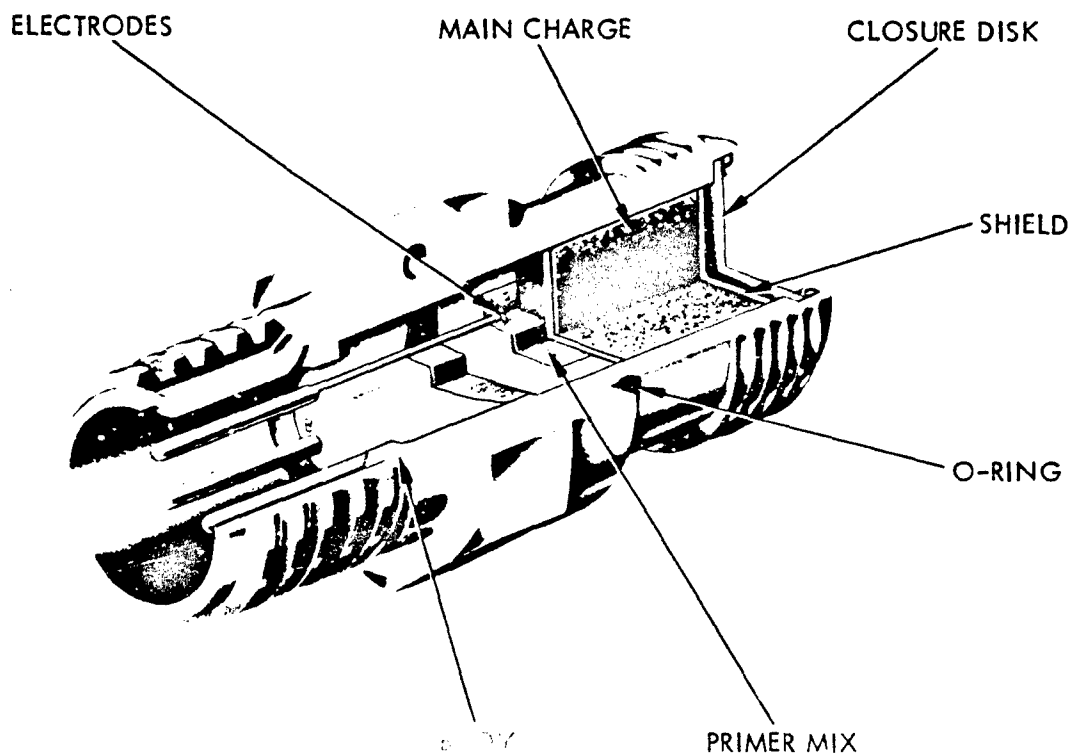
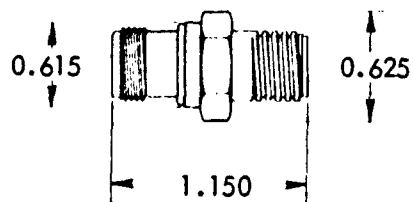
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.150 gm.
Granulation: disc, D=.065, h=.007 in.
Flame temperature: 3771°K

APPLICATIONS: control valve in KD2B-1 target drone.

NOTES:

45-0
15Aug73

CARTRIDGE, Impulse, MARK 45 MOD 0



46-0
15Aug73

CARTRIDGE, Impulse, MARK 46 MOD 0
Specification no.: MIL-C-23932
Drawing list no.: 537885
Federal stock no.: 1377-654-0875
DOD code no.: M508
Qualification: MIL-D-21625, type III*
Service life: 6 mo. installed, 3 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature +275°F
Impetus: 592,000 ft-lb.
Weight: 4.350 lb.

IGNITER, electric
Specification no.: subassembly of cartridge
No-fire: 1.0 amp. per bridge
All-fire: 2.5 amp. per bridge
Recommended firing: 5.0 amp. per bridge
Bridge resistance: 0.14-0.22 ohm. per bridge
Bridge material: 0.002 in. platinum
Ignition material: 25 gm boron potassium nitrate

BOOSTER CHARGE, single-base, IMR5010
Specification no.: JAN-P-3984
Weight: 65 gm.
Granulation: 1-perf, D=.083, d=.021, h=.0909

MAIN CHARGE, inhibited rocket grain type N-4
Specification no.: MIL-P-16401
Weight: 744 gm
Granulation: tubular, D=3.35, d=2.95, h=14.54 in**
Flame temperature: 2812°K

APPLICATIONS: Rearward stores ejection in A5 (A3J) aircraft.

NOTES: *Exposure to 14 days of temperature and humidity cycling and to a temperature of 225°F for 12 hours causes cartridge end seal to bulge.

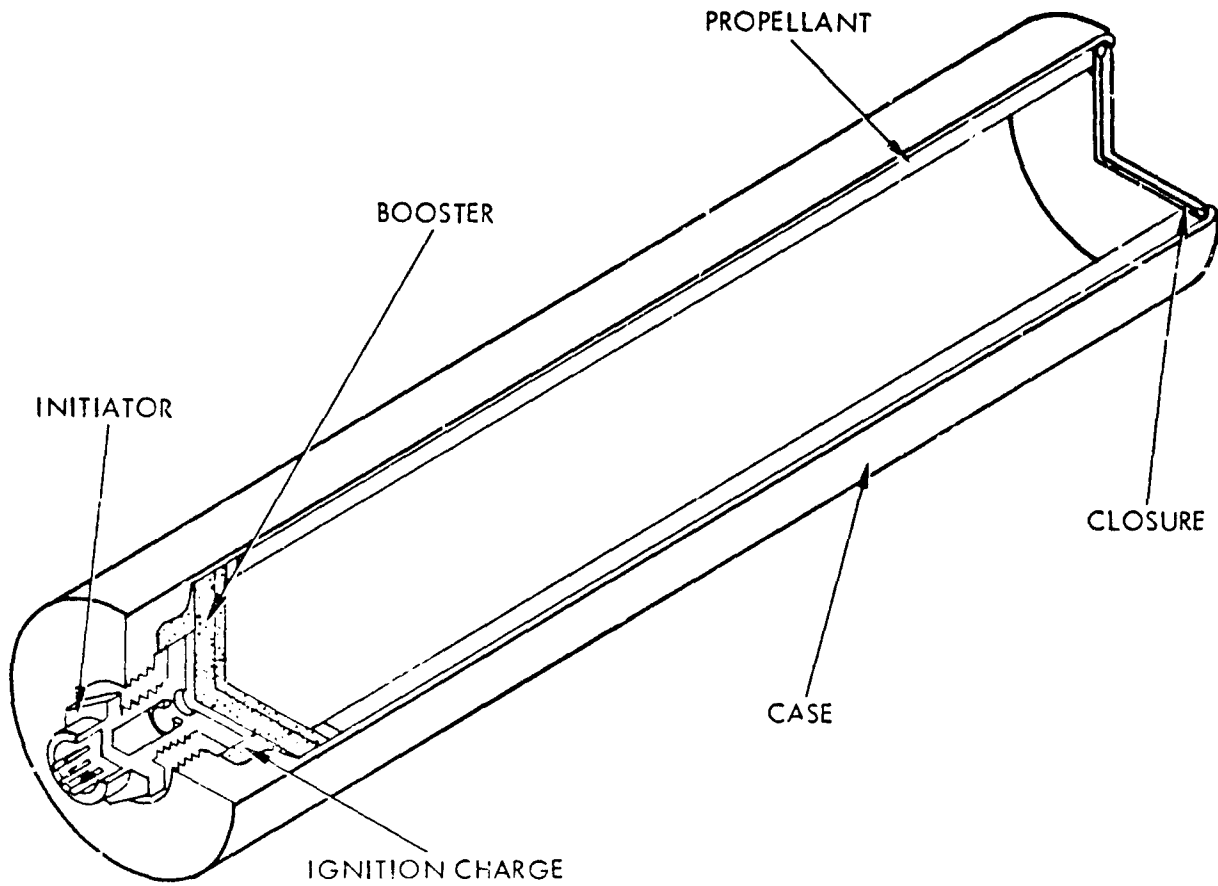
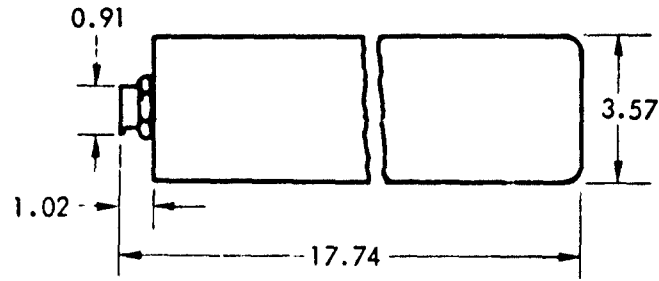
**Inner surface inhibitor slotted axially.

Volume = 28.763 in²

Density = .057 lb/in³

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CARTRIDGE, Impulse, MARK 46 MOD 0



47-0
15Aug73

CARTRIDGE, Impulse, MARK 47 MOD 0
Specification no.: MIL-C-23935
Drawing list no.: 534539
Federal stock no.: 1377-065-4619
DOD code no.: M517
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 12,500 ft-lb.
Weight: 0.122 lb.

IGNITER, percussion; primer 50M
Specification no.: Army Ord. dwg. 7645339
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 2.0 gm
Granulation: A-2

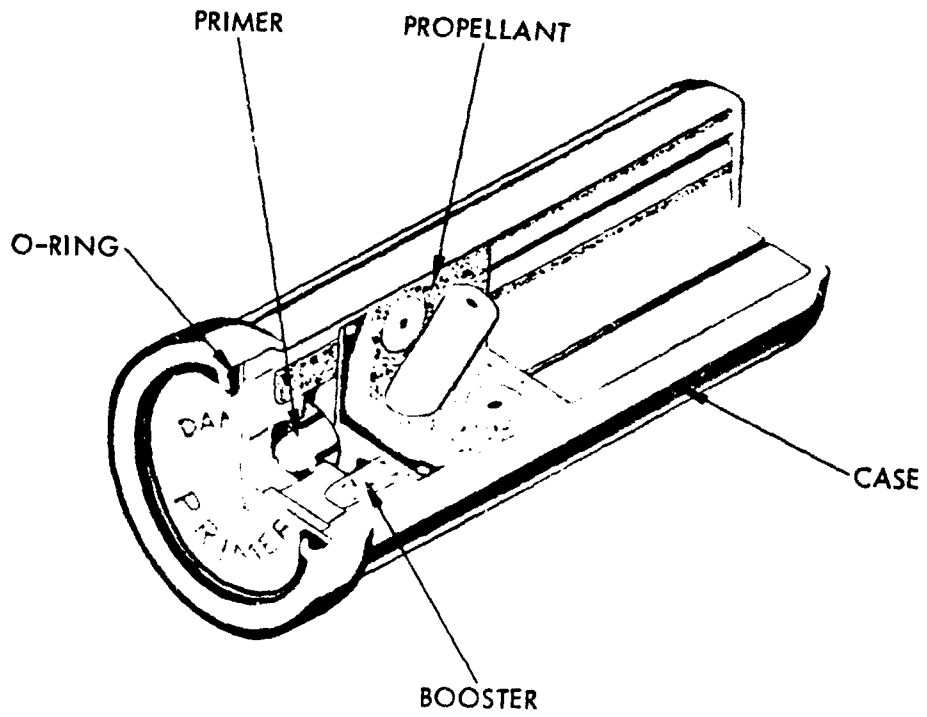
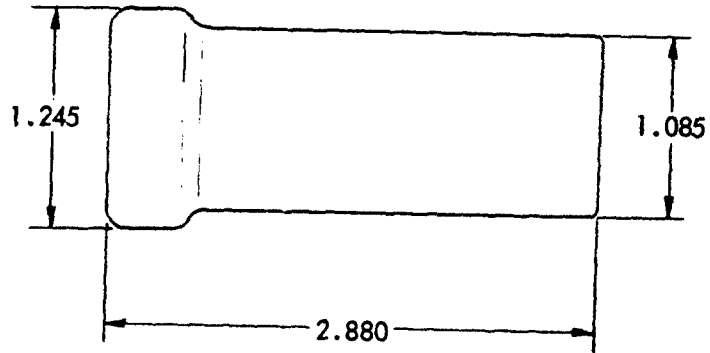
MAIN CHARGE, double-base, HES5130.39; inhibited double-base, HES5130.44;
A2 black powder
Specification no.: HPSK5130.39, HPSK5130.44, MIL-P-223
Weight: 12.8 gm. HES5130.39 (2 pieces, inhibited*)
3.9 gm. HES5130.44 (approximately 7 pieces)
1.5 gm. black powder
Granulation: HES5130.39: 1 perf., D=0.534, d=0.060, h=1.41
HES5130.44: 1 perf., D=0.237, d=0.023, h=0.537
Flame temperature: 2491°K

APPLICATIONS: Shoulder harness take-up reel in T2 and A5 (A3J)
aircraft.

NOTES: *One piece trimmed to give flat surface and total weight of
12.8 gm.

47-0
15Aug73

CARTRIDGE, Impulse, MARK 47 MOD 0



49-0
15Aug73

CARTRIDGE, Impulse, MARK 49 MOD 0
Specification no.: MIL-C-23934
Drawing list no.: 534525
Federal stock no.: 1377-083-8754
DOD code no.: M518
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus:
Weight: 0.010 lb.

IGNITER, percussion; primer 116M-282A
Specification no.: Army Ord. dwg. 6200959
No-fire: 6 in-oz.
All-fire: 36 in-oz.
Recommended firing

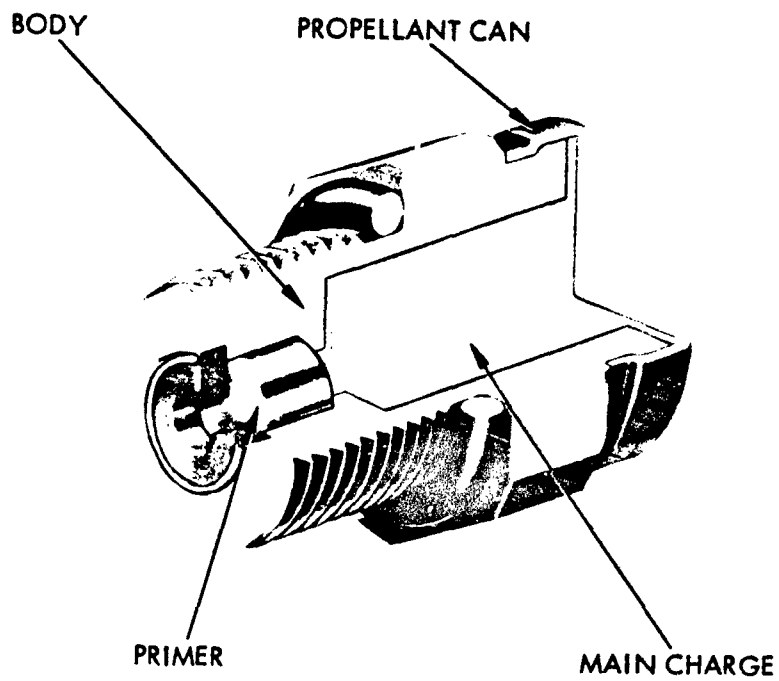
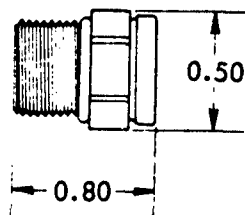
MAIN CHARGE, lead azide, boron, barium nitrate mixture
Specification no.: BUWEPS dwg. 2299582
Weight: 0.143 gm.
Granulation: powder
Flame temperature:

APPLICATIONS: Seat static line cutter in A5 (A3J) aircraft.

NOTES:

49-0
15Aug73

CARTRIDGE, Impulse, MARK 49 MOD 0



CARTRIDGE, Impulse, MARK 50 MOD 0

Specification no.: WS 4133
Drawing list no.: 534547
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 1750 ft-lb.
Weight: 0.021 lb.

IGNITER, percussion; primer 116M-282A

Specification no.: Army Ord. dwg. 6200959
No-fire: 6 in-oz.
All-fire: 36 in-oz.
Recommended firing

BOOSTER CHARGE, explosive mix no. 505

Specification no.: BUWEPS dwg. 2406505
Weight:
Granulation:

MAIN CHARGE, single-base, M1 (SPDN 7807)

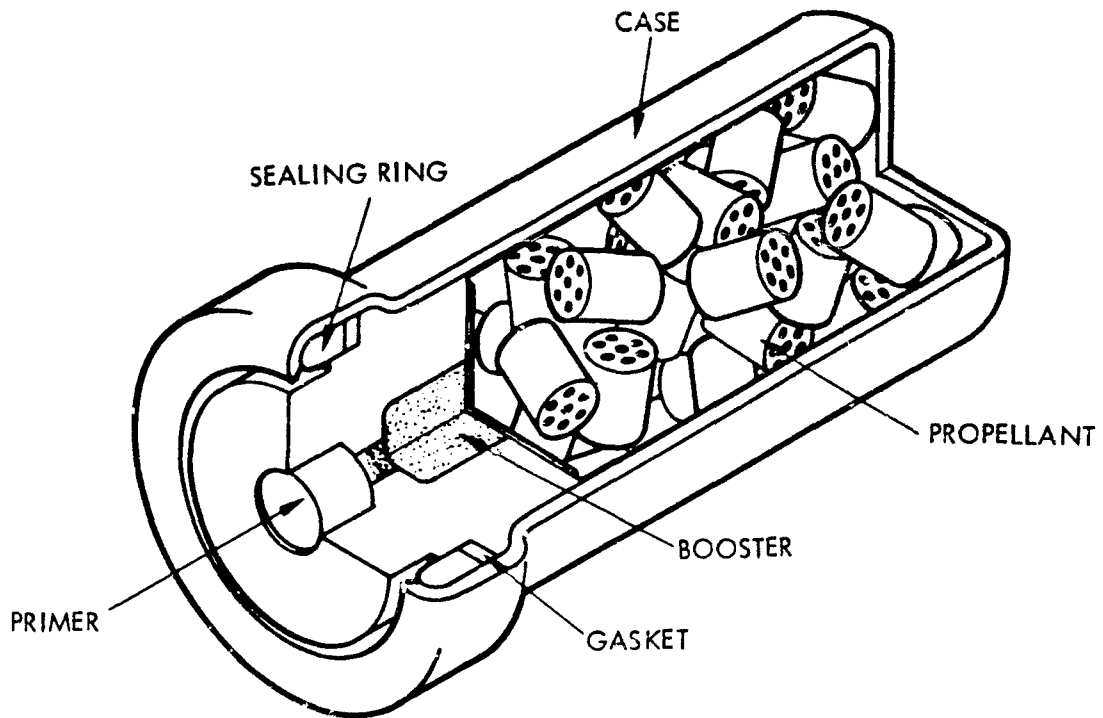
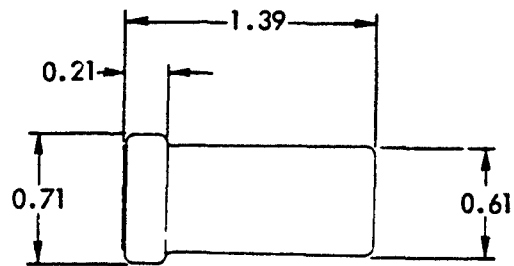
Specification no.: JAN-P-309
Weight: 2.2 gm.
Granulation: 7-perf, D=.1226, d=.0135, h=.2738 in
Flame temperature: 2417°K

APPLICATIONS: Cartridge actuated initiators, MK 9 and MK 10

NOTES:

50-0
15Aug73

CARTRIDGE, Impulse, MARK 50 MOD 0



100<

51-1
15Aug73

CARTRIDGE, Impulse, MARK 51 MOD 1
Specification no.: MIL-C-24016
Drawing list no.: 2838297
Federal stock no.: 1377-486-8619
DOD code no.: M519
Qualification: MIL-D-21625, type III-A
Service life: 1 yr. installed, 5 yr. total
Temperature limits -65° to +160°F*
Cook-off temperature: 275°F
Impetus: 1370 ft-lb.
Weight: 0.089 lb.

IGNITER, electric, ignition element, MARK 11 MOD 0
Specification no.: sub-assembly of cartridge
No-fire: 2.0 amp.
All-fire: 3.0 amp.
Recommended firing: 10.0 amp.
Bridge resistance: 0.08-0.14 ohm.
Bridge material: 0.002 in platinum-iridium
Ignition material: 0.034 gm lead styphnate
Booster material: 0.100 gm titanium/potassium perchlorate**

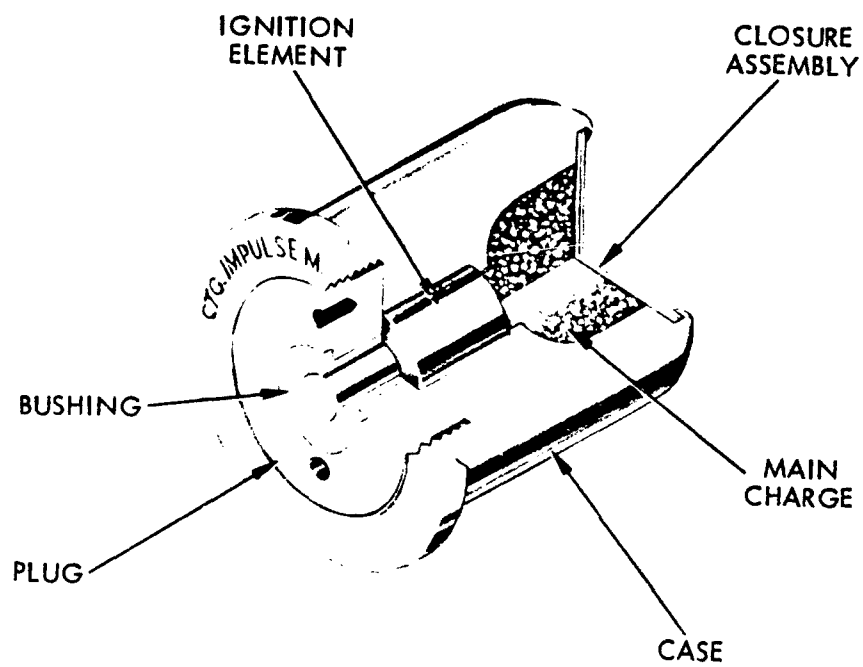
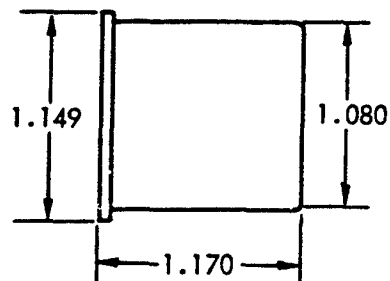
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 1.6 gm.
Granulation: disc, D=.065, h=.007 in.
Flame temperature: 3771°K

APPLICATIONS: Release and ejection of stores.

NOTES: *Marginal performance at 200°F to 225°F; ballistics adversely
affected after 21 days of temperature and humidity cycling.
**60% titanium, 40% potassium percholorate.

51-1
15Aug73

CARTRIDGE, Impulse, MARK 51 MOD 1



CARTRIDGE, Impulse, MARK 52 MOD 0

Specification no.: MIL-C-81029
Drawing list no.: 534532
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 38,500 ft-lb.
Weight: 0.256 lb.

IGNITER, percussion; primer 50M (5061W)

Specification no.: Army Ord. dwg. 7645339
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, U.S.F. 2K ignition granules, type I

Specification no.: U.S. Flare spec. manual 1009
Weight: 2.3 gm
Granulation: powder

MAIN CHARGE, double-base, HPC-86

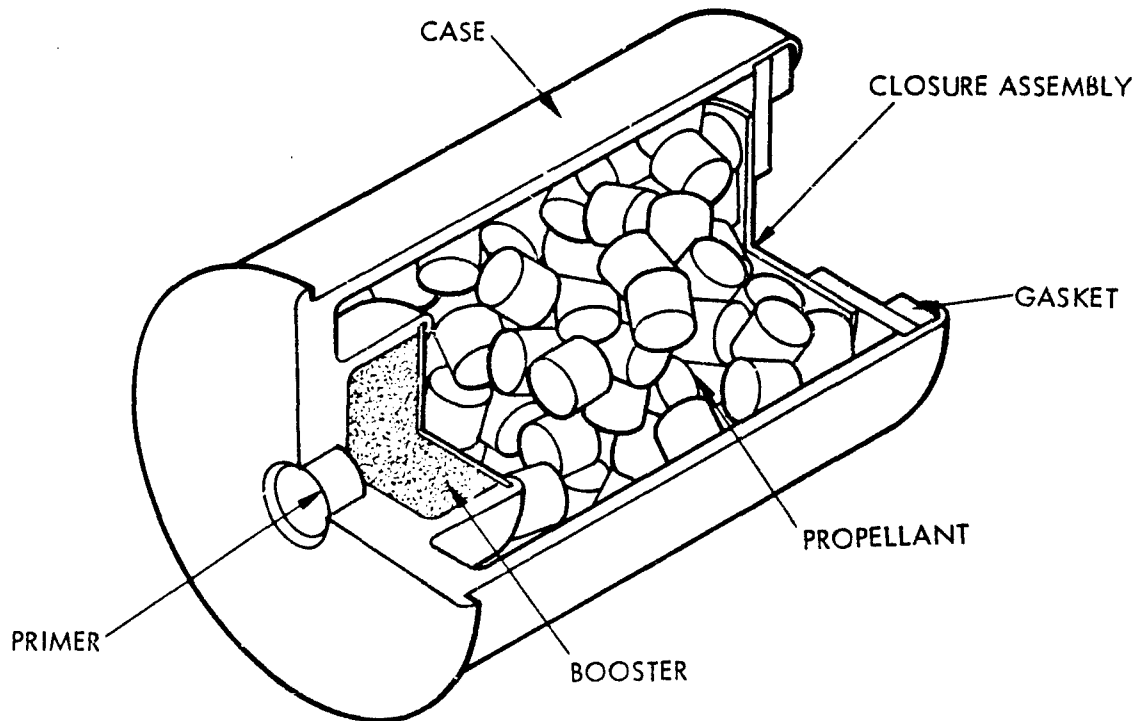
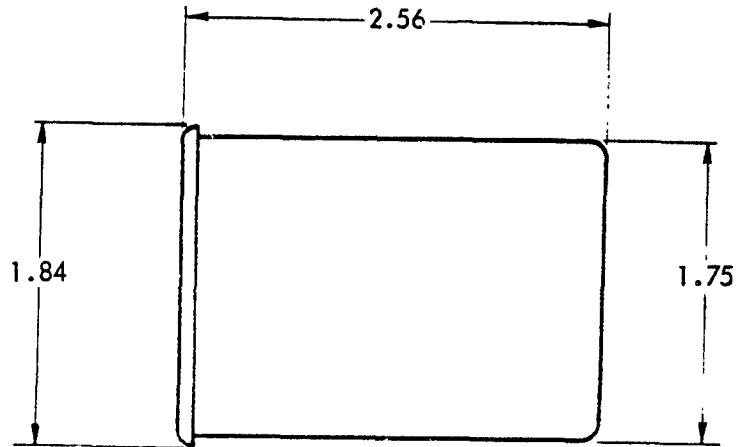
Specification no.: HPC-86
Weight: 48.5 gm.
Granulation: cylinder, D=.317, h=.250
Flame temperature: 3221°K

APPLICATIONS: Primary cartridge for Martin Baker ejection seat.

NOTES: Replacement for Martin Baker primary cartridge P/N MBEU 7840.

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CARTRIDGE, Impulse, MARK 52 MOD 0



104<

53-0
15Aug73

CARTRIDGE, Impulse, MARK 53 MOD 0
Specification no.: MIL-C-81029
Drawing list no.: 534531
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 36,200 ft-lb.
Weight: 0.176 lb.

IGNITER, none, sympathetically ignited

BOOSTER CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.75 gm.
Granulation: disc, D=.065, h=.007 in.

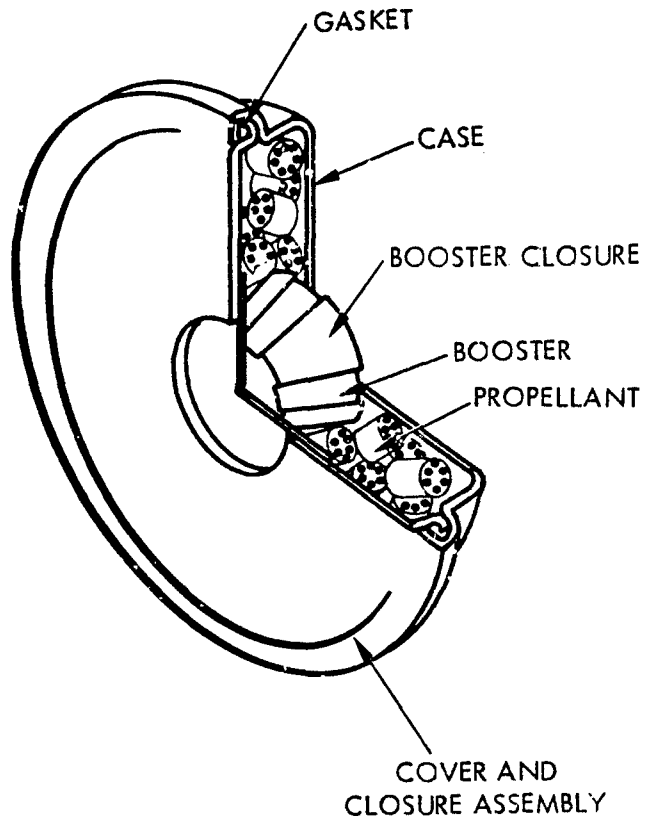
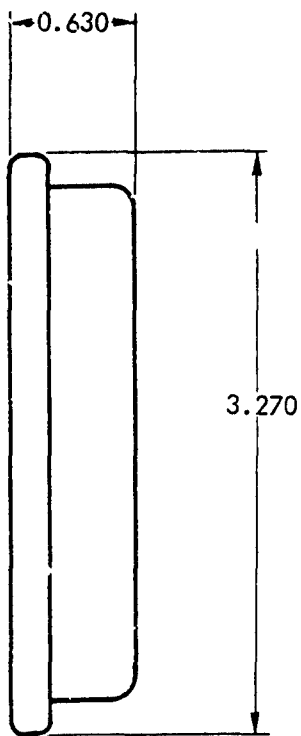
MAIN CHARGE, double-base, HPC-87
Specification no.: HPC-87
Weight: 44.0 gm.
Granulation: 7-perf, D=.260, d=.016, h=.240 in.
Flame temperature: 3214°K

APPLICATIONS: Secondary cartridge for Martin Baker ejection seat.

NOTES: Replacement for Martin Baker secondary cartridge P/N MBEU
29231.

53-0
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CARTRIDGE, Impulse, MARK 53 MOD 0



64-0
15Aug73

CARTRIDGE, Impulse, MARK 64 MOD 0

Specification no.: WS 4383
Drawing list no.: 2518410
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -80° to +225°F
Cook-off temperature: 245°F
Impetus: 3800 ft-lb.
Weight: 0.190 lb.

IGNITER, electric; ignition element MARK 17 MOD 0

Specification no.: WS 4787
No-fire: 1.0 amp.
All-fire: 4.0 amp.
Recommended firing: 5.0 amp.
Bridge resistance: 0.9-1.1 ohm
Bridge material: 0.002 in platinum*
Ignition material: 0.125 gm FA-878
Booster material: 0.082 gm unique

BOOSTER CHARGE, double-base, unique

Specification no.: HPSK-BUP
Weight: 0.200 gm
Granulation: disc, D=.065, h=.007 in

MAIN CHARGE, double-base, HPC-87

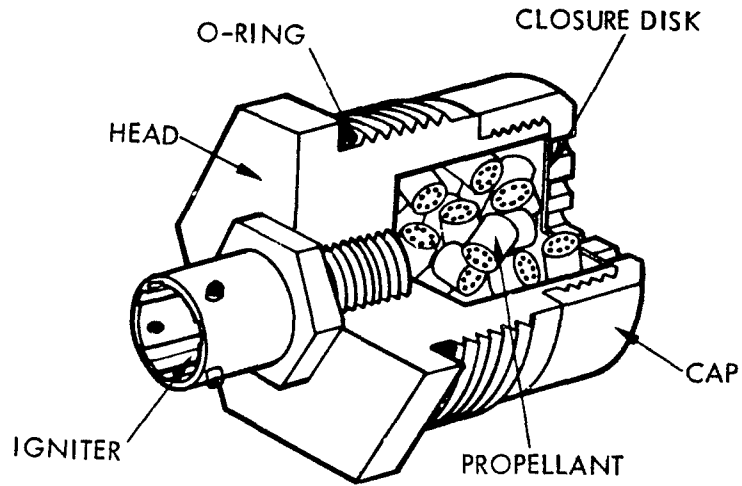
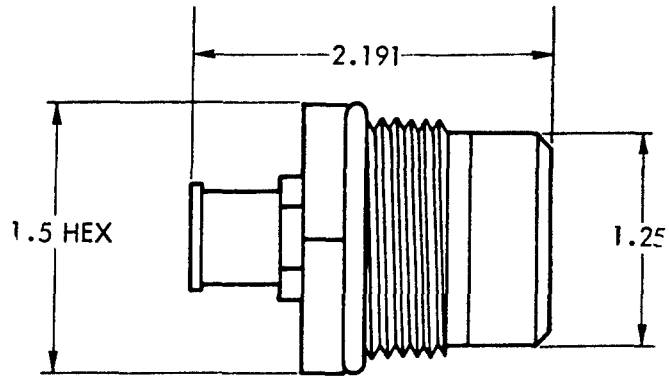
Specification no.: HPC-87
Weight: ~4.5 gm (14 propellant grains)
Granulation: 7-perf., D=.260, d=.016, h=.240 in
Flame temperature: 3214°K

APPLICATIONS: LAU-25/A aircraft flare launcher.

NOTES: *85 to 95% platinum, remainder of tungsten, tantalum,
molybdenum.

64-0
15Aug73

CARTRIDGE, Impulse, MARK 64 MOD 0



66-
15Aug7

CARTRIDGE, Impulse, MARK 66 MOD 0
Specification no.: MIL-C-81028
Drawing list no.: 534553
Federal stock no.: 1377-793-9928
DOD code no.: M520
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 1200 ft-lb.
Weight: 0.079 lb.

IGNITER, percussion; primer 116M-282A
Specification no.: Army Ord. dwg. 6200959
No-fire: 6 in-oz.
All-fire: 36 in-oz.
Recommended firing:

BOOSTER CHARGE, ignition mix, FA 878
Specification no.: Army manual P-1 (10/54)
Weight: 0.270 gm
Granulation: powder

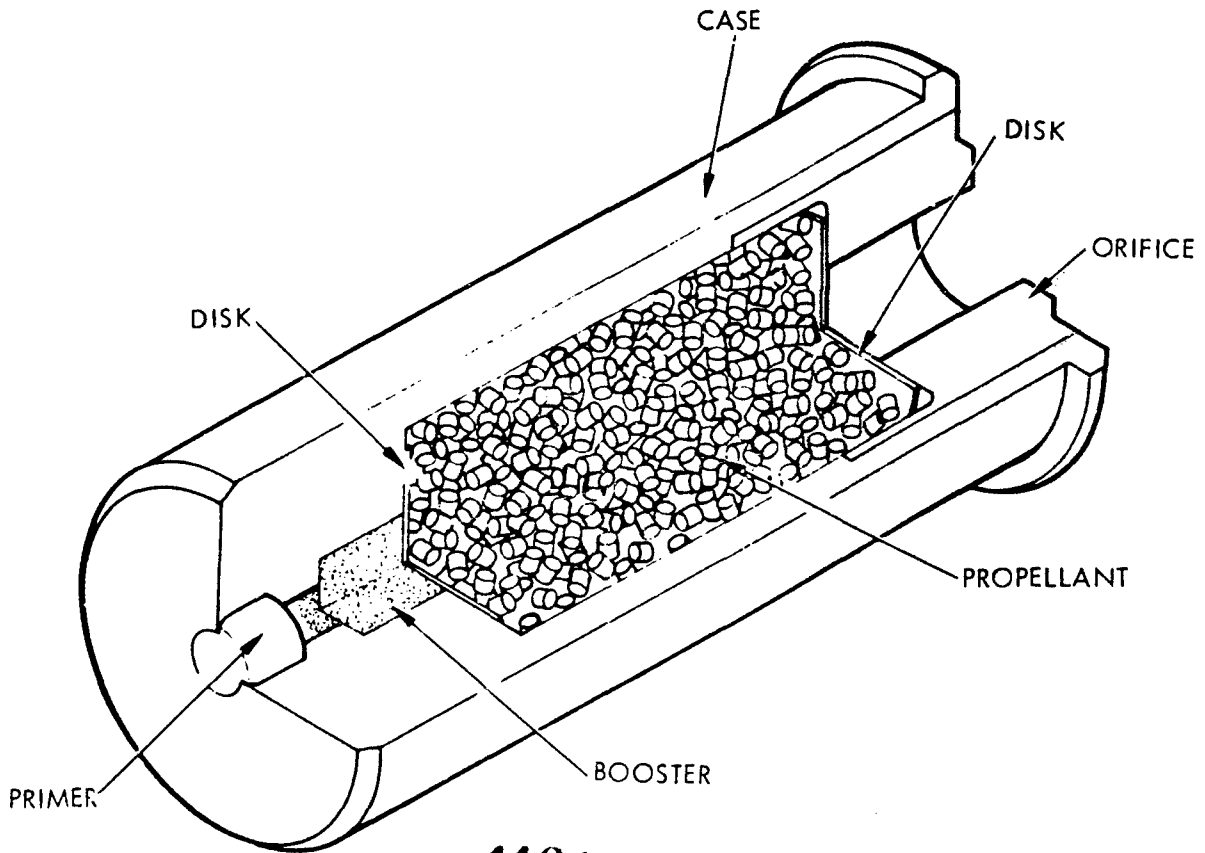
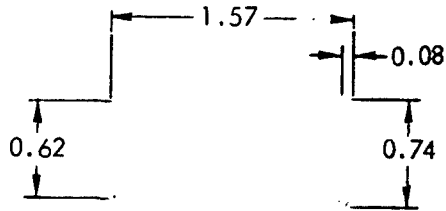
MAIN CHARGE, single-base, IMR5010
Specification no.: MIL-P-3984, type II, class 2
Weight: 1.60 gm.
Granulation: 1-perf, D=.083, d=.021, h=.0909
Flame temperature: 2892°K

APPLICATIONS: Guillotine of Martin Baker ejection seat.

NOTES: Replacement for Martin Baker guillotine cartridge P/N MBEU
16650.

66-0
15Aug73

CARTRIDGE, Impulse, MARK 66 MOD 0



110<

67-0
15Aug73

CARTRIDGE, Impulse, MARK '67 MOD 0
Specification no.: WS 4388
Drawing list no.: 2519598
Federal stock no.: 1377-984-6280
DOD code no.: M535
Qualification: MIL-D-21625
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65°F to +236°F
Cook-off temperature: 275°F
Impetus: 6150 ft-lb.
Weight: 0.131 lb.

IGNITER, electric; ignition element, MARK 13 MOD 0
Specification no.: MIL-I-81537
No-fire: 2.0 amp.
All-fire: 3.0 amp.
Recommended firing: 10.0 amp.
Bridge resistance: 0.08-0.14 ohm.
Bridge material: 0.002 in. platinum-iridium
Ignition material: 0.034 gm. lead styphnate
Booster material: 0.270 gm. FA-878

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

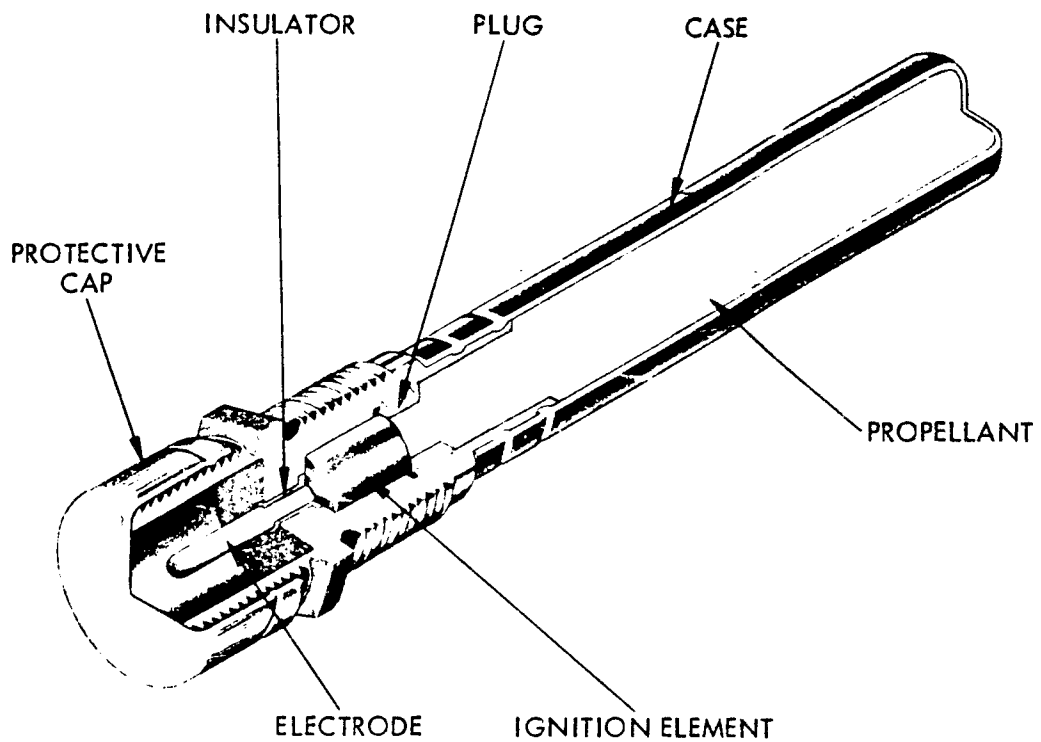
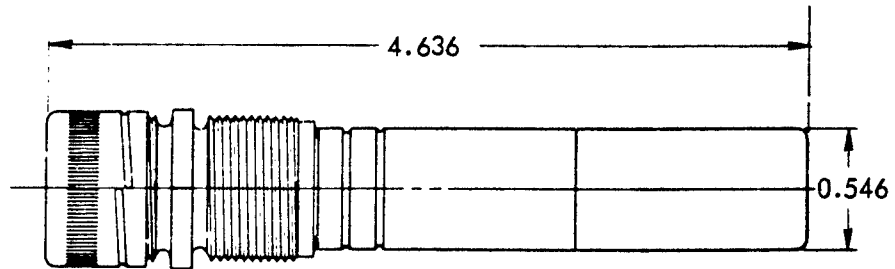
MAIN CHARGE, single-base, IMR6962 (20mm A/C Gun MK 12)
Specification no.: MIL-P-18942
Weight: 8.6 gm.
Granulation: 1-perf
Flame temperature: 2892°K

APPLICATIONS: Explosive bolt in LAU-17/A missile launcher.

NOTES:

67-0
15Aug73

CARTRIDGE, Impulse, MARK 67 MOD 0



CARTRIDGE, Impulse, MARK 73 MOD 0
Specification no.: MIL-C-81331
Drawing list no.: 2518226
Federal stock no.: 1377-754-4784
DOD code no.: M506
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: +275°F
Impetus: 49,100 ft-lb.
Weight: 0.236 lb.

IGNITER, percussion; primer 50M (5061W)
Specification no.: Army Ord. dwg. 7645339
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

BOOSTER CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.75 gm.
Granulation: disc, D=.065, h=.007 in.

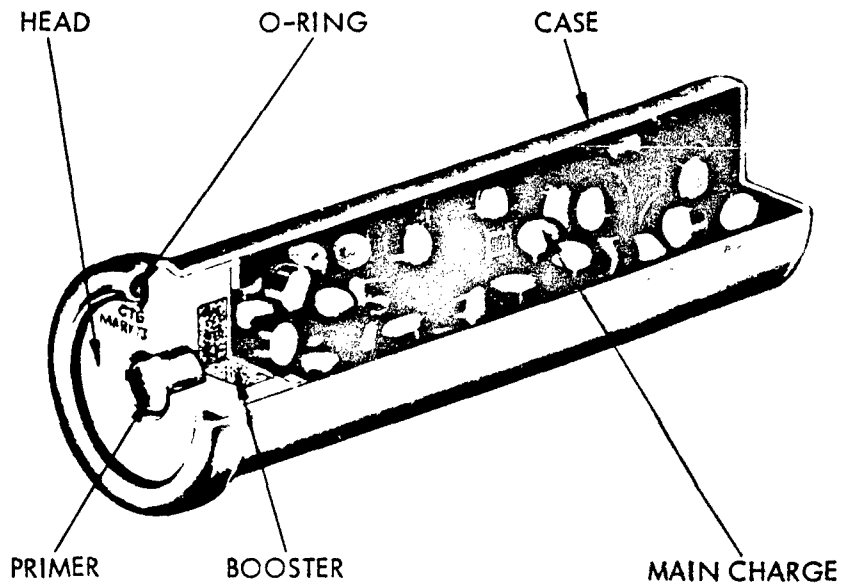
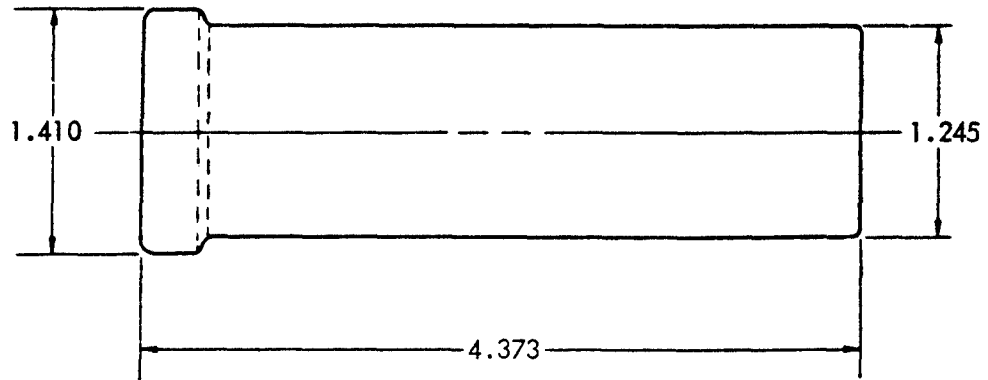
MAIN CHARGE, double-base, HPC-86
Specification no.: HPC-86
Weight: 60.0 gm.
Granulation: cylinder, D=.317, h=.250 in.
Flame temperature: 3221°K

APPLICATIONS: Canopy jettison cylinder in A-6A (A2F-1) aircraft.

NOTES:

73-0
15Aug73

CARTRIDGE, Impulse, MARK 73 MOD 0



CARTRIDGE, Delay, MARK 76 MOD 0
Specification no.: MIL-C-81568
Drawing list no.: 2518478
Federal stock no.: 1377-992-9793
DOD code no.: M407
Qualification: MIL-D-21625, type III*
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 500 ft-lb.
Weight: .372 lb.

IGNITER, percussion; primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 1.46 to 1.97 sec.

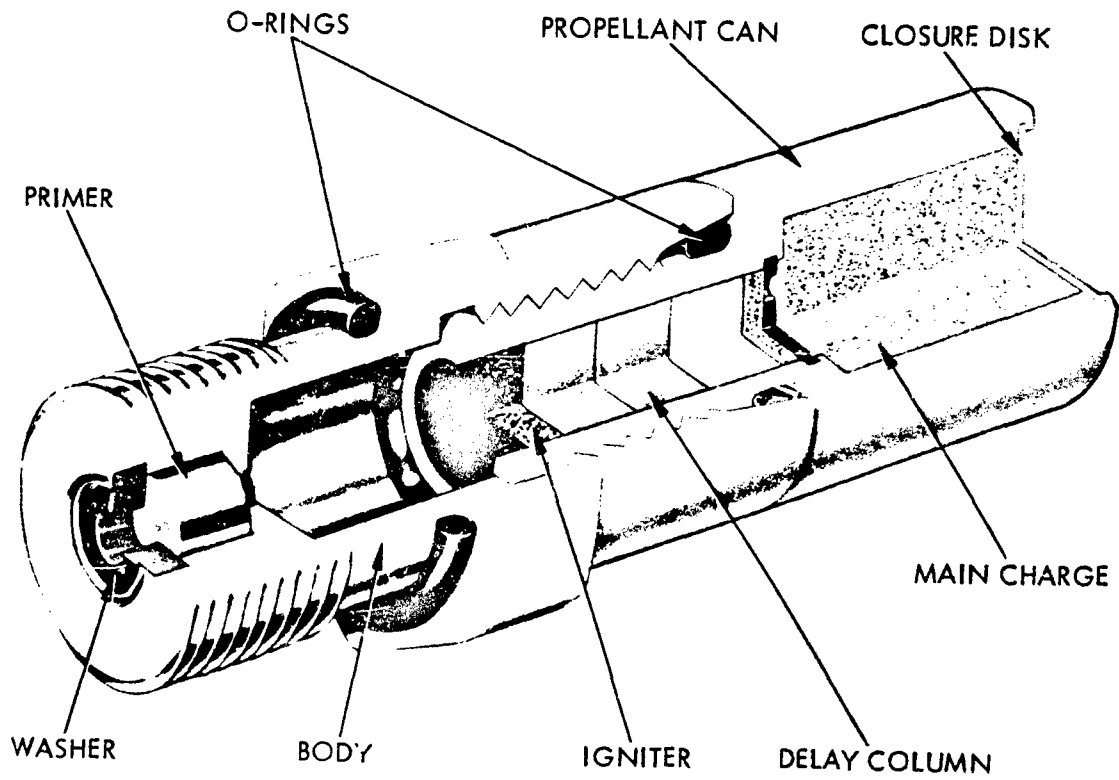
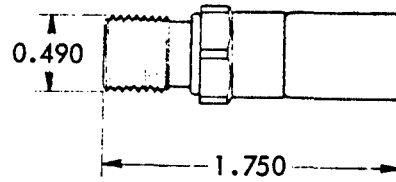
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.583 gm
Granulation: disc, D=.065, h=.007 in.
Flame temperature: 3771°K

APPLICATIONS: Ballistic manifold in A-5 aircraft escape system.

NOTES: *Ballistics adversely affected after 14 days of temperature and humidity cycling, and after 8 days at +160°F.

76-0
15Aug73

CARTRIDGE, Delay, MARK 76 MOD 0



CARTRIDGE, Impulse, MARK 82 MOD 0
Specification no.: MIL-C-81524, WS 4378
Drawing list no.: 2518360
Federal stock no.: 1377-021-9526
DOD code no.: M521
Qualification: MIL-D-21625, type III*
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: +275°F
Impetus: 18,800 ft-lb.
Weight: 0.184 lb.

IGNITER, electric
Specification no.: subassembly of cartridge
No-fire: 2.0 amp. per bridge
All-fire: 3.0 amp. per bridge
Recommended firing: 5.0 amp. per bridge
Bridge resistance: 0.08-0.14 ohm per bridge
Bridge material:
Ignition material:
Booster material:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 2.2 gm.
Granulation: FFG

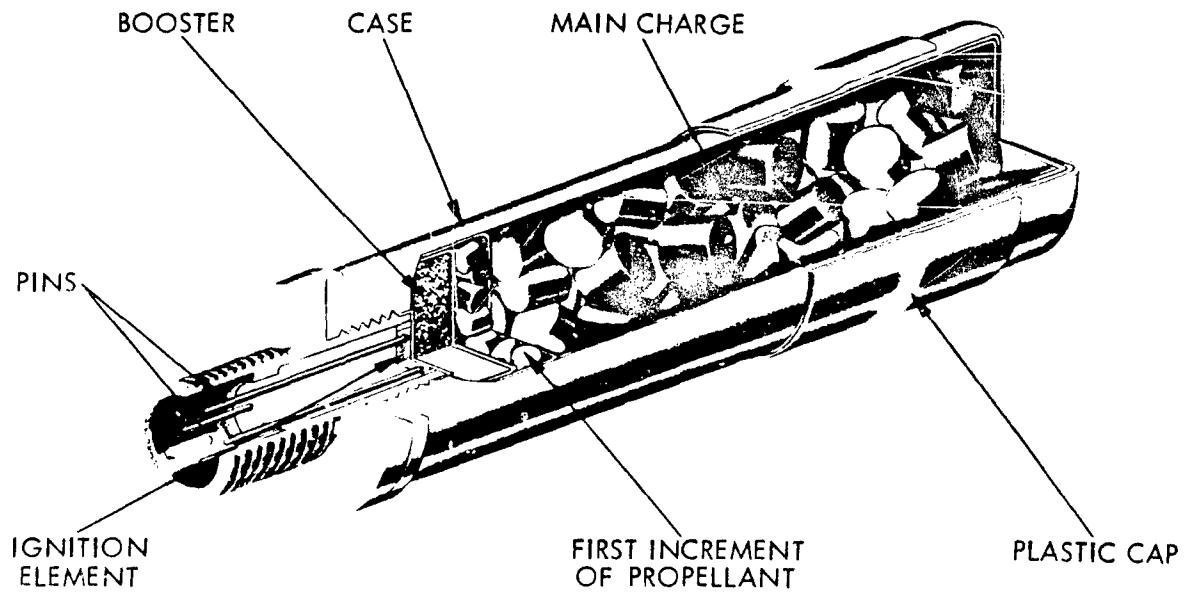
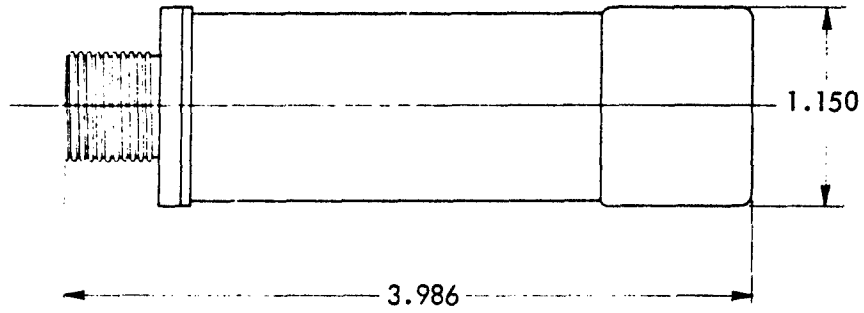
MAIN CHARGE, smokeless pyrocellulose
Specification no.: MIL-P-231
Weight: 26.4 gm.
Granulation: 2.0 gm cylinder, D=.100, h=.120
 2.4 gm cylinder, D=.250, h=.250
 22.0 gm cylinder, D=.312, h=.312
Flame temperature: 2552°K

APPLICATIONS: Escape hatch opener in A3A and A3B aircraft.

NOTES: *Ballistics adversely affected after 5 days of temperature and humidity cycling.

82-0
15Aug73

CARTRIDGE, Impulse, MARK 82 MOD 0



DETONATOR, Electric, MARK 83 MOD 0
Specification no.: MIL-D-81549
Drawing list no.: 537917
Federal stock no.: 1377-857-0951
DOD code no.: M815
Qualification: MIL-D-21625, type III
Service life: 2 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: +225°F
Impetus: 240 ft-lb.
Weight: .043 lb.

IGNITER, electric
Specification no.: subassembly of cartridge
No-fire: 2.0 amp.
All-fire: 4.0 amp.
Recommended firing: 5.0 amp.
Bridge resistance: 0.057-0.097 ohm.
Bridge material: 0.002 in. platinum-iridium
Ignition material: 0.135 gm lead styphnate

BOOSTER CHARGE, dextrinated lead azide
Specification no.: MIL-L-3055
Weight: 0.200 gm
Granulation: consolidated

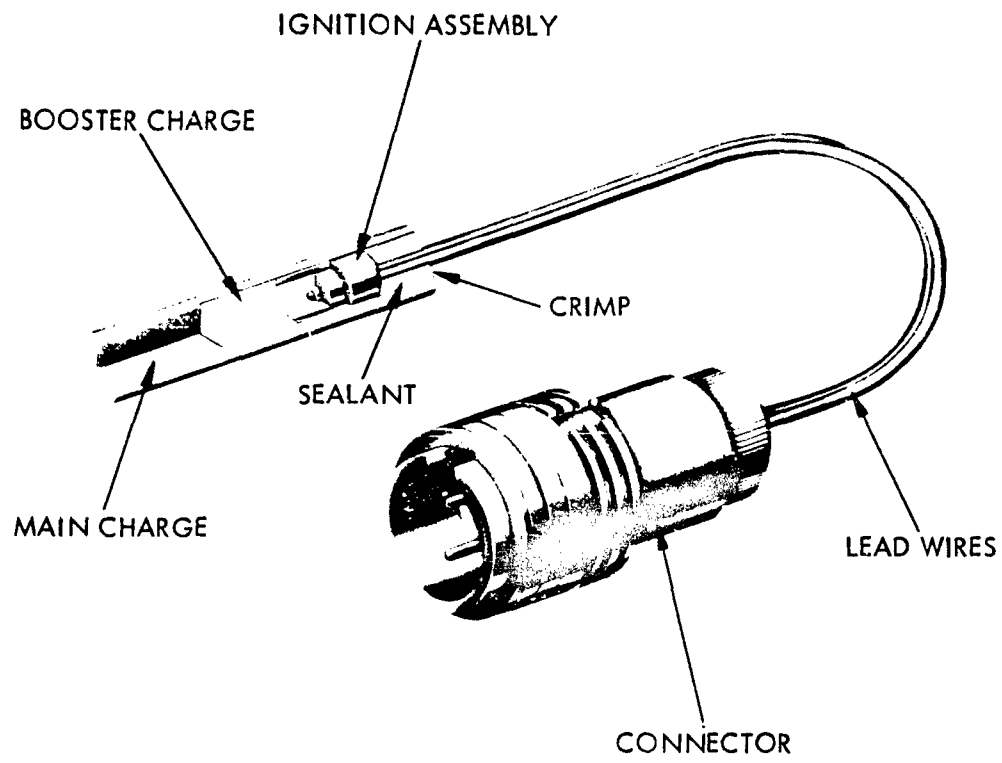
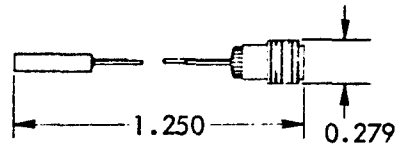
MAIN CHARGE, PETN
Specification no.: MIL-P-387, class 4
Weight: 0.447 gm
Granulation: consolidated
Flame temperature:

APPLICATIONS: Rupture of plastic air seal in nose cone of MK 12
MOD 0 chemical spray tank.

NOTES:

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15Aug73

DETONATOR, Electric, MARK 83 MOD 0



84-0
15Aug73

CARTRIDGE, Delay, MARK 84 MOD 0
Specification no.: MIL-C-81110
Drawing list no.: 534552
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III*
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 64 ft-lb.
Weight: 0.025 lb.

IGNITER, percussion; primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 2.5 sec./1.5 to 3.5 sec
(-15° to +130°F)

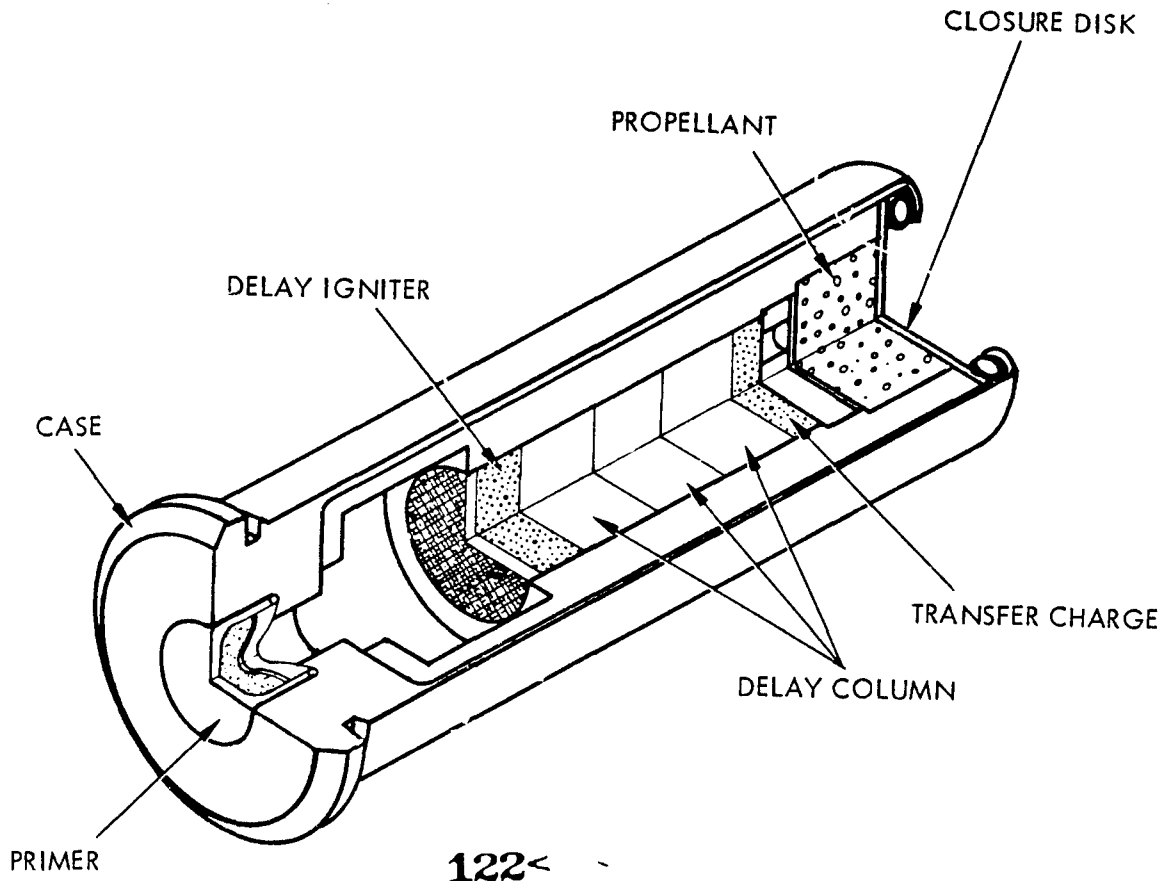
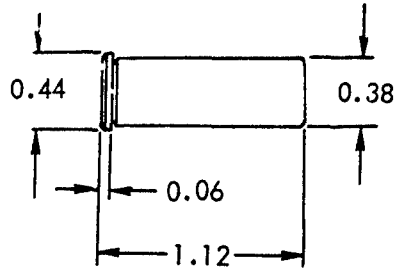
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.075 gm.
Granulation: disc, D=.065, h=.007 in.
Flame temperature: 3771°K

APPLICATIONS: Missile stage release mechanism.

NOTES: *Ballistics adversely affected after 7 days of temperature and humidity cycling. Similar to MARK 4 MOD 2 delay cartridge.

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15Aug73

CARTRIDGE, Delay, MARK 84 MOD 0



85-0
15Aug73

CARTRIDGE, Impulse, MARK 85 MOD 0
Specification no.: MIL-C-81027
Drawing list no.: 534543
Federal stock no.: 1377-960-0453
DOD code no.: M507
Qualification: MIL-D-21625, type III
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 250°F
Impetus: 2150 ft-lb.
Weight: 0.086 lb.

IGNITER, percussion; primer 72M
Specification no.: Army Ord. dwg. 7645332
No-fire: 20 in-oz.
All-fire: 120 in-oz.
Recommended firing:

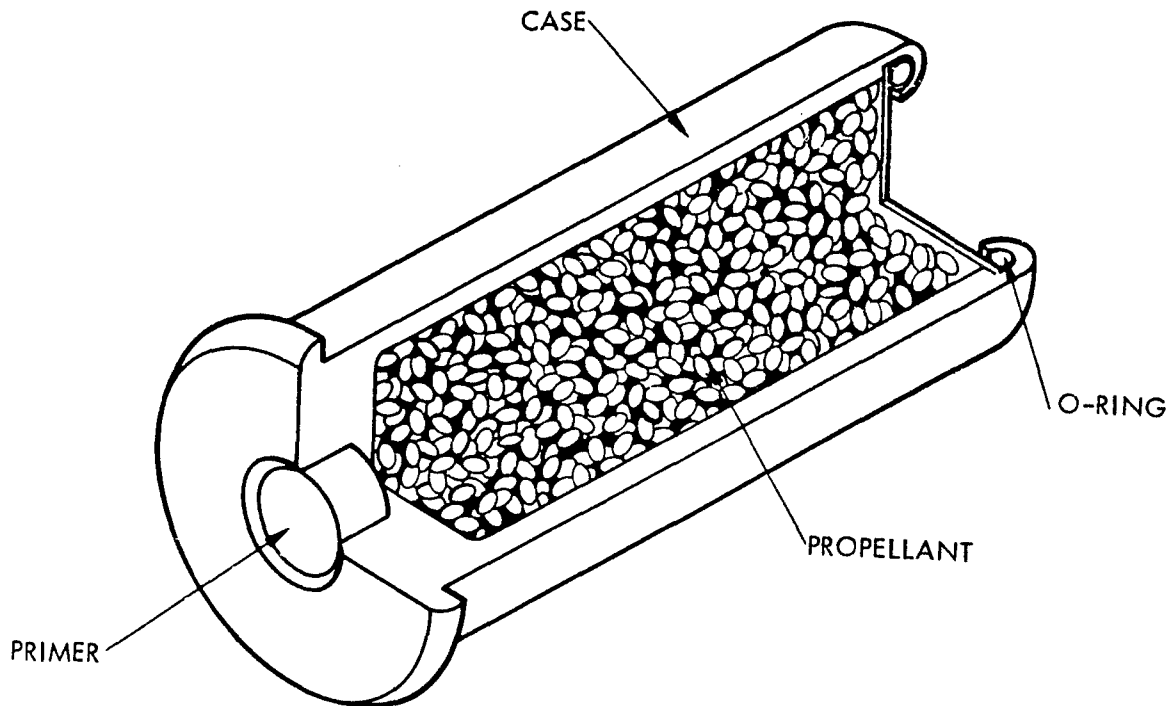
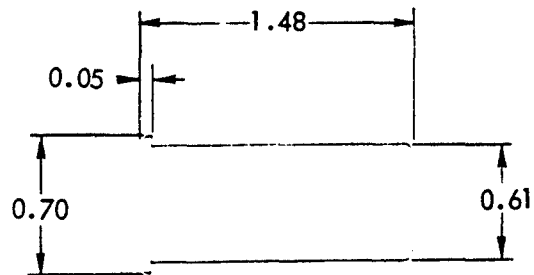
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 2.5 gm.
Granulation: disc, D=.065, d=.007 in
Flame temperature: 3771°K

APPLICATIONS: Drogue gun of Martin Baker ejection seat.

NOTES: Replacement for Martin Baker drogue gun cartridge P/N MBEU
7536.

85-0
15Aug73

CARTRIDGE, Impulse, MARK 85 MOD 0



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CARTRIDGE, Delay, MARK 86 MOD 0
Specification no.: MIL-C-21048
Drawing list no.: 534545
Federal stock no.: 1377-962-8626
DOD code no.: M283
Qualification: MIL-D-21625, Type III*
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 525°F**
Impetus: 330 ft-lb
Weight: 0.155 lb

IGNITER, stab; primer, MARK 102 MOD 1
Specification no.: MIL-P-18613
No-fire:
All-fire: 7 in-oz
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 0.95 sec.

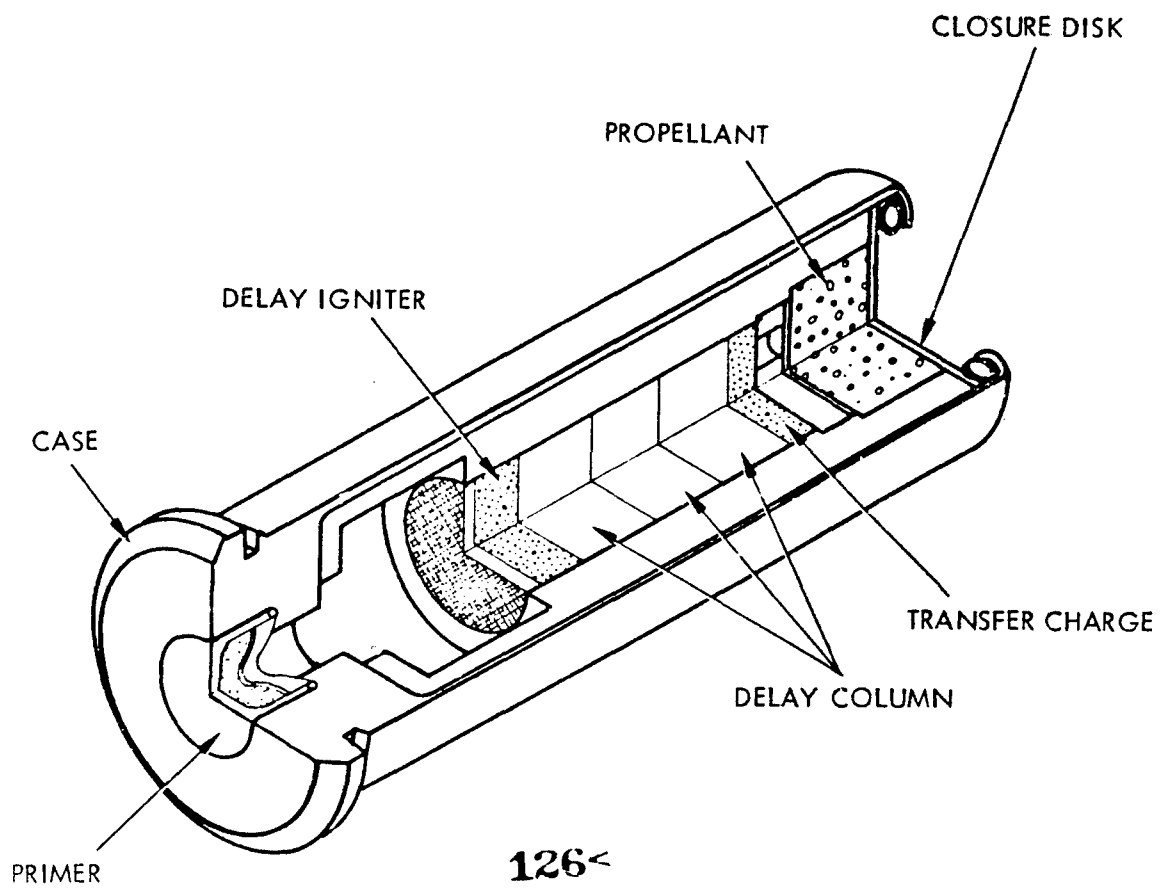
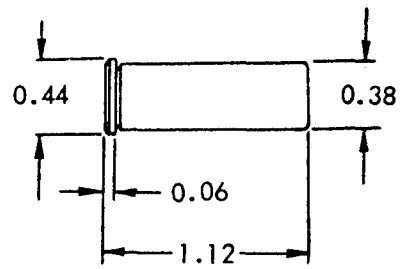
MAIN CHARGE, black powder
Specification no.: MIL-P-223
Weight: 1.5 gm
Granulation: FFG
Flame temperature:

APPLICATIONS: harness release actuator in A4(A4D) aircraft

NOTES: *ballistics adversely affected after 7 days of temperature
and humidity cycling
**from Mk3 MOD 0

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15Aug73

CARTRIDGE, Delay, MARK 86 MOD 0



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15AUG73

CARTRIDGE, Delay, MARK 87 MOD 0
Specification no.: MIL-C-81330
Drawing list no.: 2518218
Federal stock no.
DOD code no.:
Qualification: MIL-D-21625, Type III*
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -15° to +130°F
Cook-off temperature: 250°F
Impetus: 158 ft-lb
Weight: 0.025 lb

IGNITER, percussion; primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz
All-fire: 26 in-oz
Recommended firing:

DELAY, pyrotechnic, tungsten delay composition
Specification no.: MIL-T-23132
Nominal delay/specification limits: 2.5 sec/1.5 to 3.5 sec

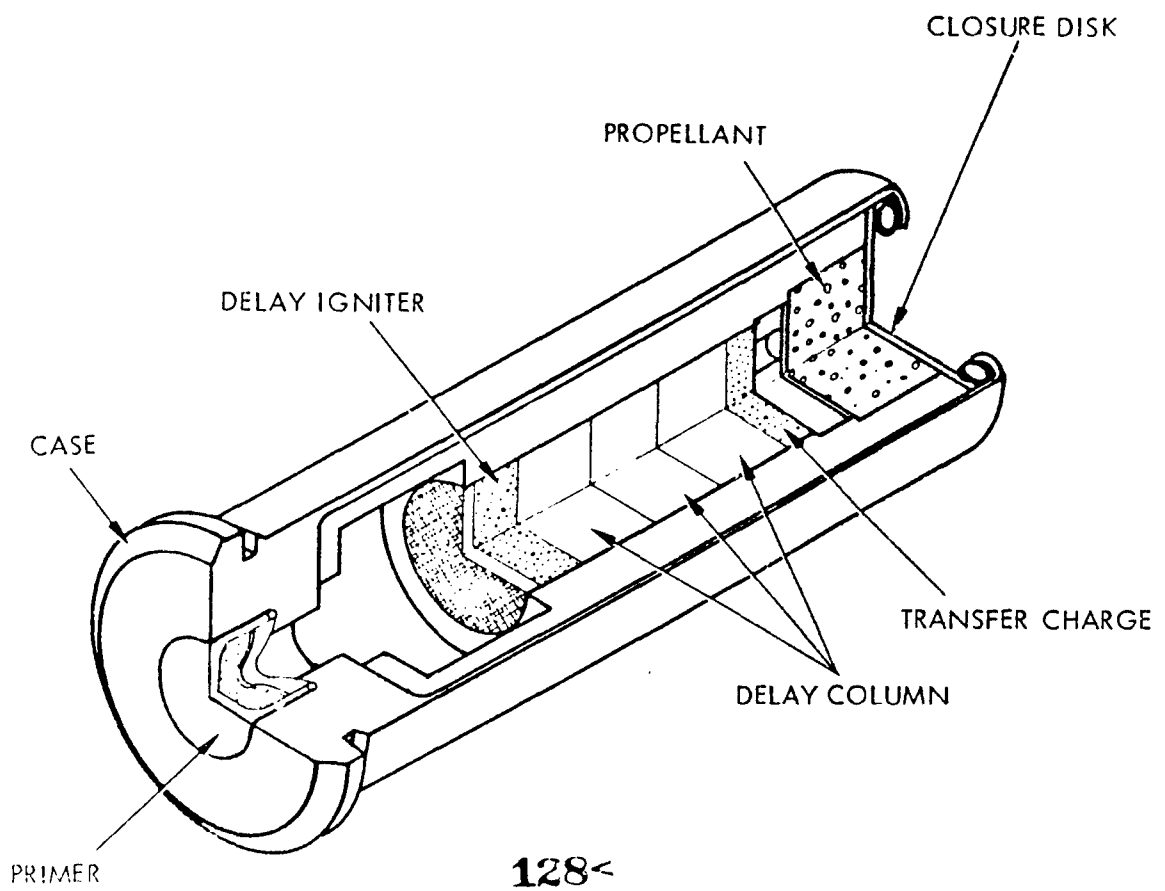
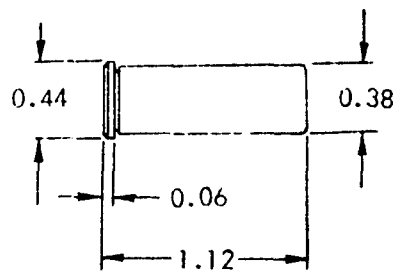
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.184 gm
Granulation: disc, D=.065, h=.007
Flame temperature: 3771°K

APPLICATIONS: terrier missile booster release assembly

NOTES: *ballistics adversely affected after 7 days of temperature
and humidity cycling and when fired under simulated altitude
conditions

87-0
15Aug73

CARTRIDGE, Delay, MARK 87 MOD 0



97-0
15AUG73

CARTRIDGE, Impulse, MARK 97 MOD 0
Specification no.: MIL-C-81317
Drawing list no.: 2518250
Federal stock no.
DOD code no.:
Qualification: MIL-D-21625, Type III
Service life: 30 mo installed, 5 yr total
Temperature limits: -65° to +160°F
Cook-off temperature: 250°F
Impetus: 1960 ft-lb
Weight: 0.046 lb.

IGNITER, percussion; primer 120M-257W
Specification no.: Army Ord Dwg B-7645332 MIL-P-46610
No-fire:
All-fire:
Recommended firing:

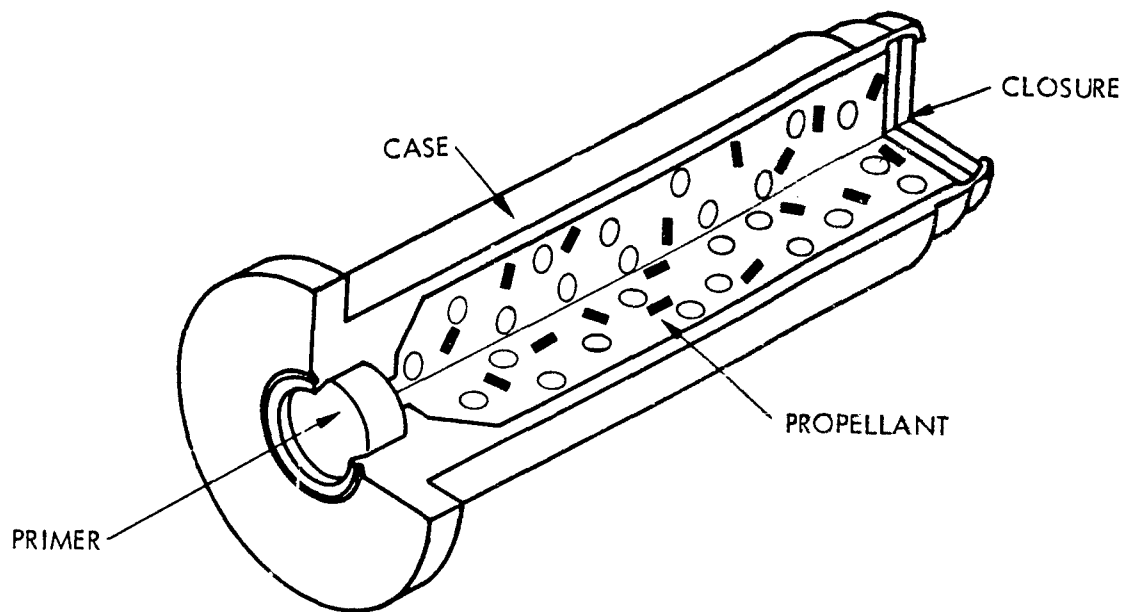
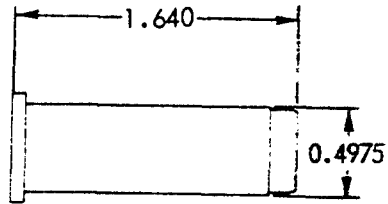
MAIN CHARGE, 81MM mortar powder, M9 (F=382,000)
Specification no.: MIL-P-20306
Weight: 2.33 gm
Granulation: disc, D=.059, h=.010 in
Flame temperature: 3799°K

APPLICATIONS: powers Mk 12 and Mk 17 mine chain/cable cutters

NOTES:

97-0
15Aug73

CARTRIDGE, Impulse, MARK 97 MOD 0



CARTRIDGE, Delay, MARK 101 MOD 0
Specification no.: MIL-C-81567
Drawing list no.: 2518477
Federal stock no.: 1377-888-3466
DOD code no.: M408
Qualification: MIL-D-21625, Type III*
Service life: 18 mo installed, 5 yr total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 56 ft-lb
Weight: .208 lb.

IGNITER, percussion; primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz
All-fire: 26 in-oz
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: .45 to .70 sec

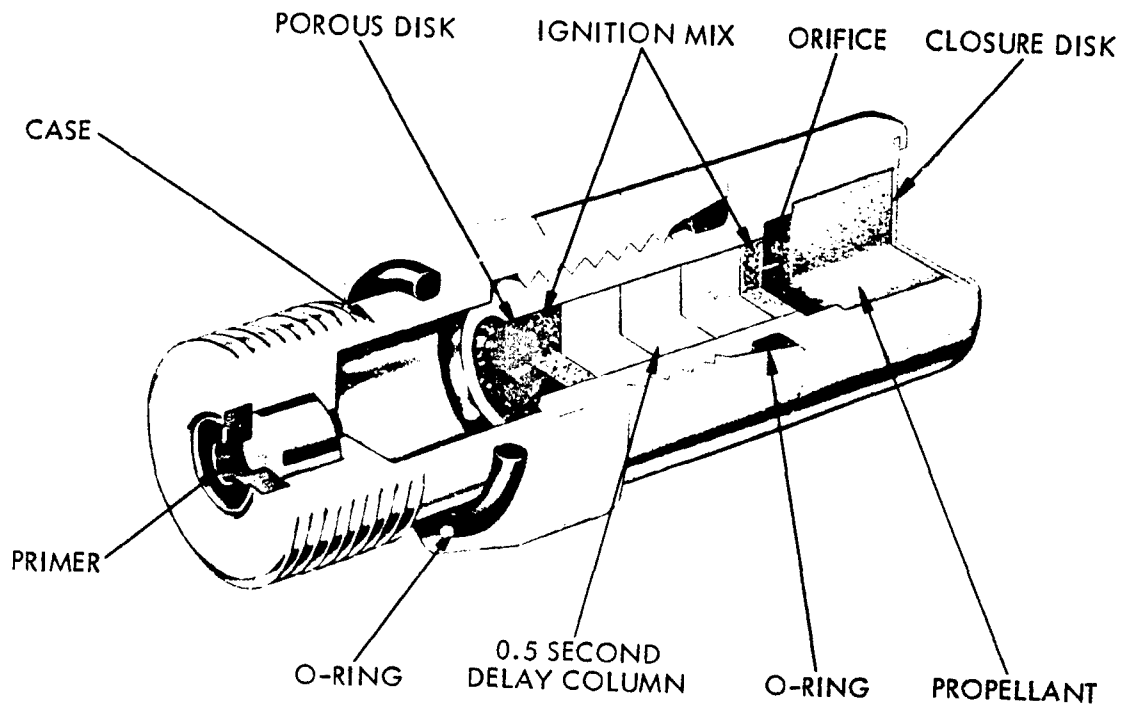
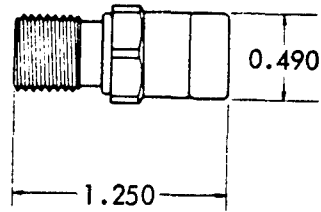
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: .065 gm
Granulation: disc, D=.065, h=.007 in
Flame temperature: 3771°K

APPLICATIONS: parachute static line cutter in A-5 aircraft escape system

NOTES: *ballistics adversely affected after 7 days of temperature and humidity cycling
Report does not mention above, only that delay times incurred after 8 days at 160°F but not beyond tolerances set. Times OK after 28 days T&H.

101-0
15Aug73

CARTRIDGE, Delay, MARK 101 MOD 0



102-1
15AUG73

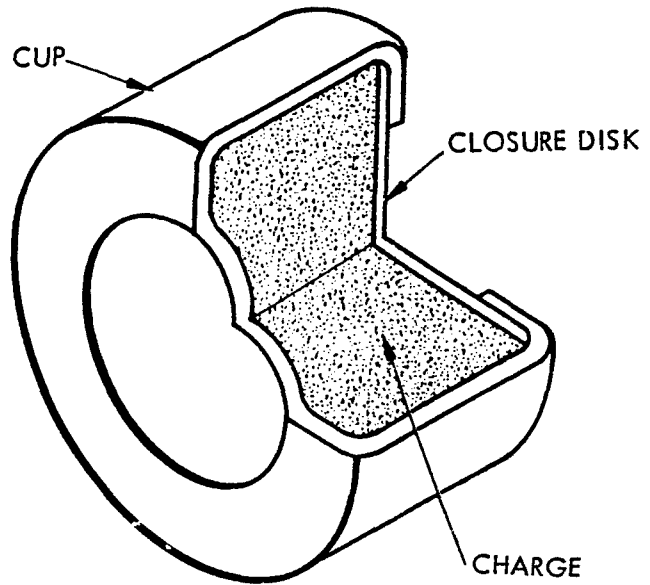
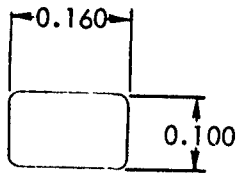
PRIMER, Stab, MARK 102 MOD 1
Specification no.: MIL-P-18613
Drawing list no.: 275909
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature: +350°F in 1 minute
Impetus:
Weight:
50%-fire: 1.86 in-oz⁽¹⁾
All-fire: 7 in-oz⁽¹⁾
Recommended firing:
Charge: 0.063 gm lead styphnate (NOL-130)

APPLICATIONS:

NOTES: (1) 0.010" firing pin radius, 28' cone angle, 0.1" diameter
flat point

102-1
15Aug73

PRIMER, Stab, MARK 102 MOD 1



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15AUG73

CARTRIDGE, Impulse, MARK 103 MOD 0
Specification no.: MIL-C-21234
Drawing list no.: 491830
Federal stock no.: 1377-707-0592
DOD code no.: M290
Qualification: MIL-D-21625, Type III
Service life: 30 mo installed, 5 yr total
Temperature limits: -65° to +165°F
Cook-off temperature: 275°F
Impetus: 64,300 ft-lb
Weight: 0.601 lb

IGNITER, percussion, primer 50M (5061W)
Specification no.: Army Crd. Dwg 7645339
No-fire: 20 in-oz
All-fire: 120 in-oz
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 6.48 gm
Granulation: A-1

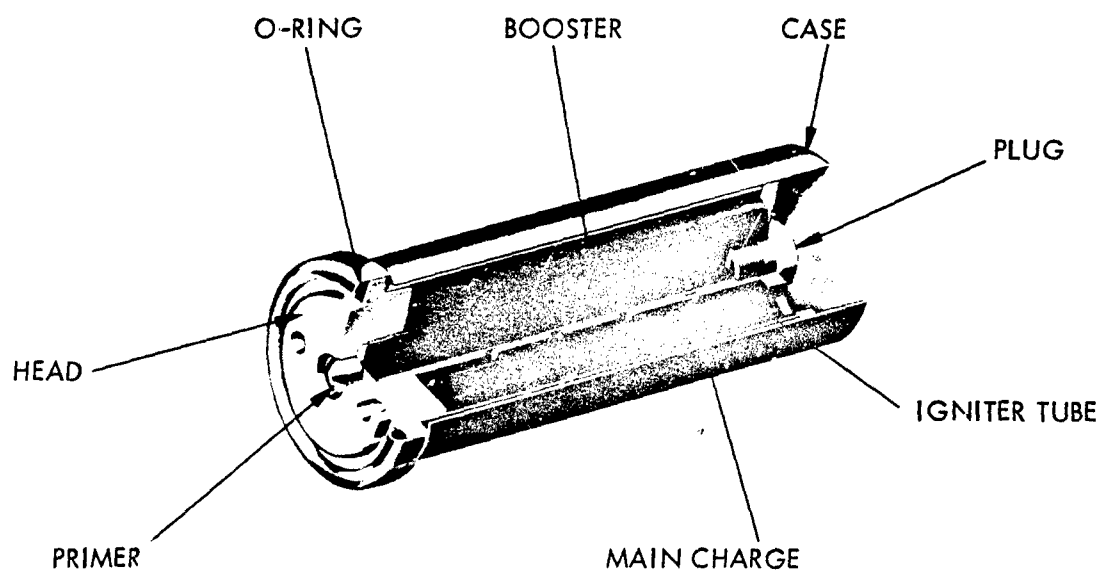
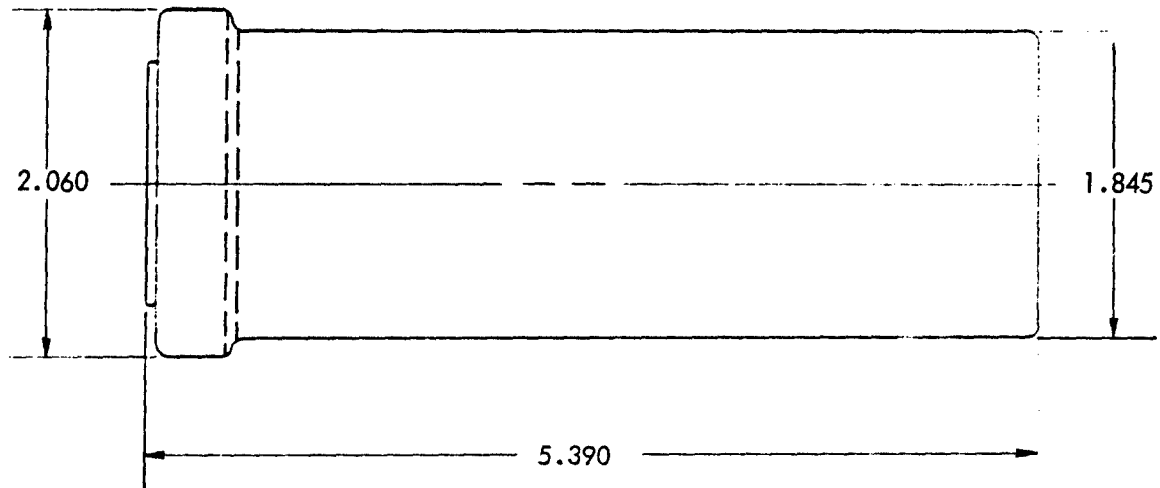
MAIN CHARGE, single-base, SPDN 10387
Specification no.: Jan-P-309
Weight: 90.5 gm
Granulation: 7-perf, D=.442, d=.044, h=1.016
Flame temperature: 2565°K

APPLICATIONS: pilot ejection Navy heavy (425 lb man-seat) ejection
seat

NOTES: replaces cartridge, aircraft ejection seat catapult, Mk 1
MOD 0 and Mk 1 MOD 2

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15Aug73

CARTRIDGE, Impulse, MARK 103 MOD 0



104-0
15AUG73

CARTRIDGE, Impulse, MARK 104 MOD 0
Specification no.: MIL-C-21496
Drawing list no.: 491831
Federal stock no.: 1377-707-0590
DOD code no.: M291
Qualification: MIL-D-21625, Type III
Service life: 30 mo installed, 5 yr total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 22,100 ft-lb
Weight: 0.452 lb

IGNITER, percussion, primer 50M (5061W)
Specification no.: Army Ord Dwg 7645339
No-fire: 20 in-oz
All-fire: 120 in-oz
Recommended firing:

BOOSTER CHARGE, black powder
Specification no.: MIL-P-223
Weight: 6.48 gm
Granulation: A-1

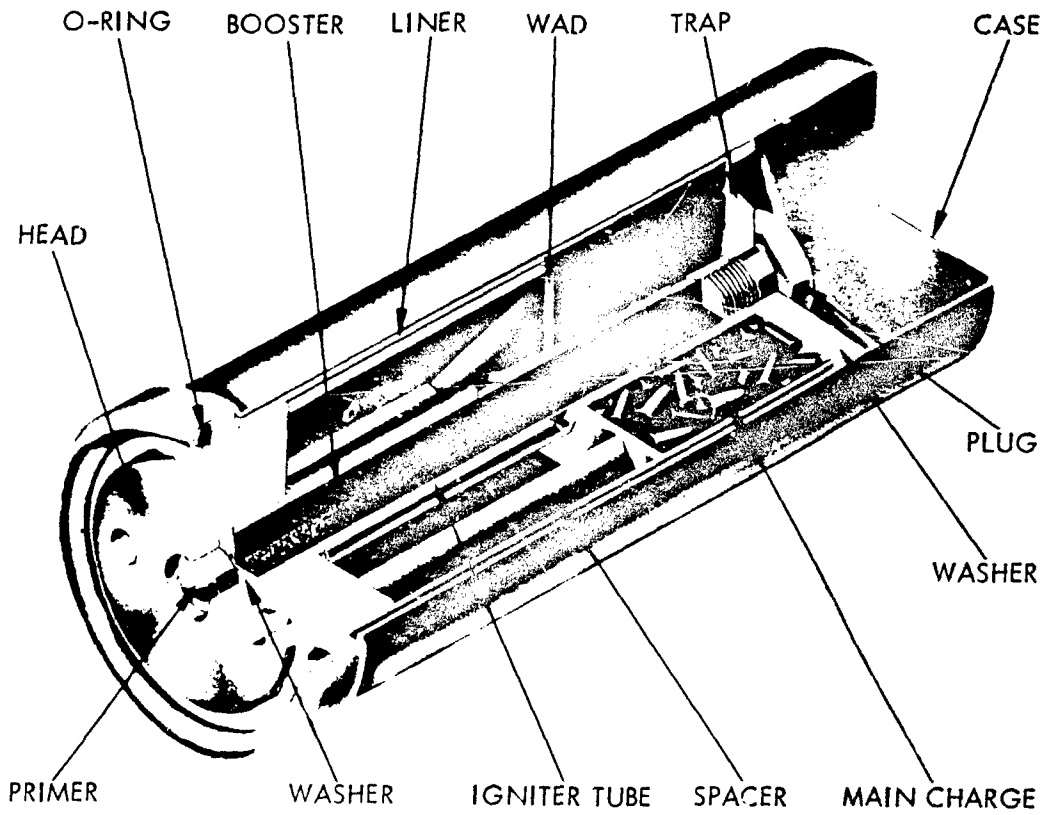
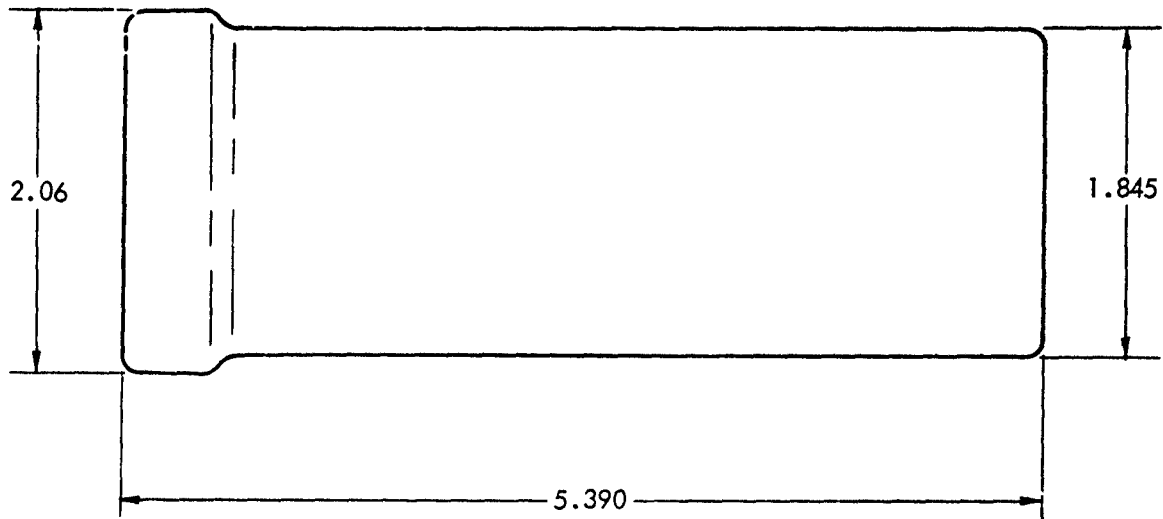
MAIN CHARGE, double-base, HPC-96
Specification no.: HPC-96
Weight: 25 gm
Granulation: 1-perf, D=.292, d=.081, h=.522
Flame temperature: 3674°K

APPLICATIONS: ejection seat trainer

NOTES: replaces cartridge, aircraft ejection seat catapult, Mk2
MOD 0 and Mk 2 MOD 1

104-0
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CARTRIDGE, Impulse, MARK 104 MOD 0



105-0
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CARTRIDGE, Impulse, MARK 105 MOD 0
Specification no.: MIL-C-81536
Drawing list no.: 2519597
Federal stock no.: 1377-509-9427
DOD code no.: M523
Qualification: MIL-D-21625, Type III
Service life: 30 mo installed, 5 yr total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 390 ft-lb
Weight: .197 lb

IGNITER, electric
Specification no.: subassembly of cartridge
No-fire: 1.0 amp.
All-fire: 2.7 amp
Recommended firing: 5.0 amp
Bridge resistance: 0.9-1.1 ohm
Bridge material: .0035 in Fed Spec QQ-R-175, composition E
Bead material:
Ignition material: 0.200 gm primer mix No 487 (BUWEPS Dwg 2406487)
Charge:

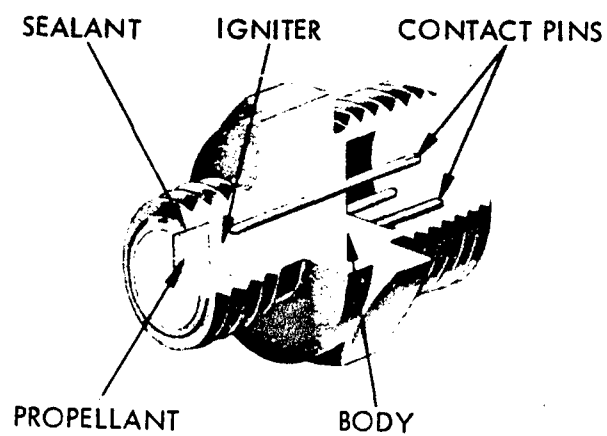
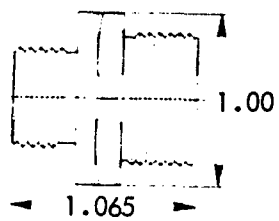
MAIN CHARGE, double-base, unique
Specification no.: HPSK-BUP
Weight: 0.450 gm
Granulation: disc, D=.065, h=.007
Flame temperature: 3771°K

APPLICATIONS: emergency severance guillotine for cable of AQS-10
Sonar

NOTES:

105-0
15Aug73

CARTRIDGE, Impulse, MARK 105 MOD 0



CARTRIDGE, Impulse, Ex 107 MOD 5

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625 Type II
Service life:
Temperature limits: -65° to +225°F
Cook-off temperature:
Impetus: 20,300 ft-lb
Weight: 0.390 lb

IGNITER, electric, ignition element MARK 17 MOD 0

Specification no.: WS 4787
No-fire:
All-fire:
Recommended firing: 5.0 amp
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

BOOSTER CHARGE, double base, bullseye

Specification no.: HPSK-BUP
Weight: 1.1 gm
Granulation: disc, D=.038, h=.004

MAIN CHARGE, double base, HPC-87

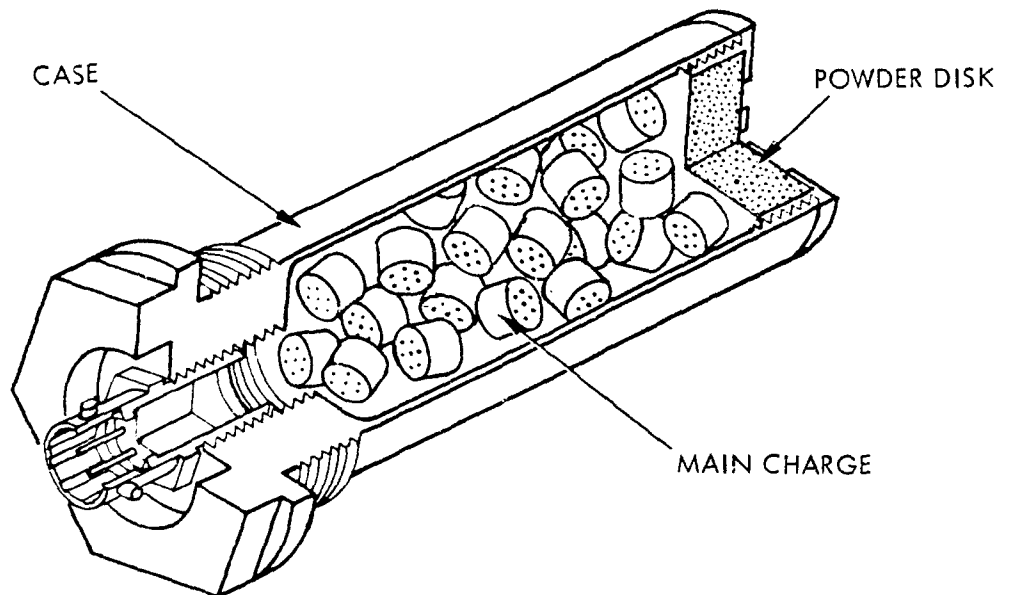
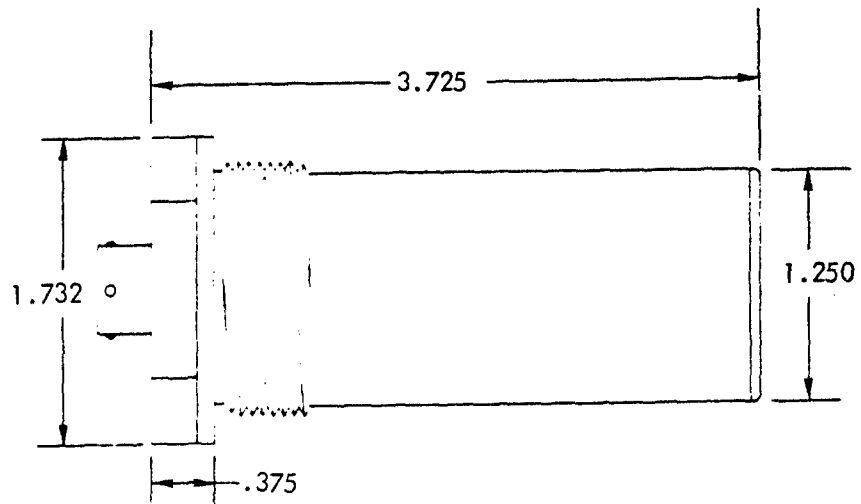
Specification no.: HPC-87
Weight: 24 gm
Granulation: 7-perf, D=.260, d=.016, h=.240 in
Flame temperature: 3214°K

APPLICATIONS: LAU-93/A Phoenix Missile Launcher, F-14A aircraft
Fuel Tank Jettison Release Mechanism, F-14A aircraft

NOTES:

Ex107-5
15Aug73

CARTRIDGE, Impulse, Ex 107 MOD 5



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CARTRIDGE, Test, Turbojet Engine, MARK 119 MOD 0
Specification no.: WS 4631
Drawing list no.: 615248 (assy. dwg. 2113080)
Federal stock no.: 1377-060-8771
DOD code no.: MW03
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER, percussion, Remington 79M primer
Specification no.:
No-fire:
All-fire:
Recommended firing:
Booster material:
Charge: 0.45 grain

BOOSTER CHARGE, none⁽¹⁾

MAIN CHARGE, none⁽¹⁾

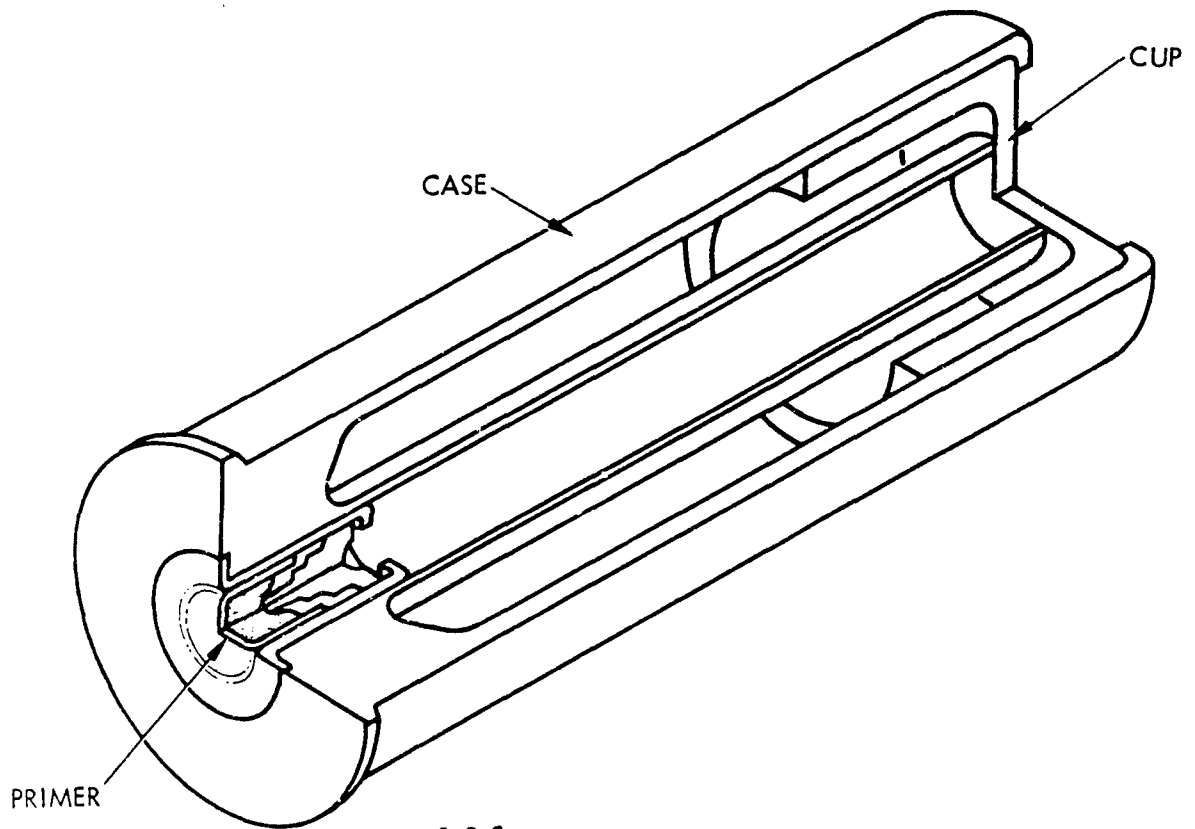
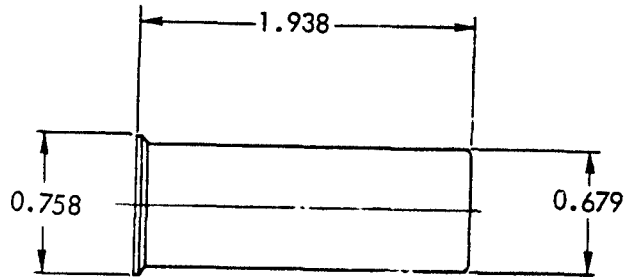
APPLICATIONS: testing J48 jet engine

NOTES: described in NAVORD OP 2213/NAVAIR 11-15-7, pyrotechnics,
screening and marking devices

(1) cartridge contains primer only; used to test engine
restart mechanism

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15Aug73

CARTRIDGE, Test, Turbojet Engine, MARK 119 MOD 0



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15AUG73

CARTRIDGE, Impulse, MARK 124 MOD 0
Specification no.: AS 1076
Drawing list no.: 2838195
Federal stock no.: 1377-193-8832
DOD code no.: M363
Qualification: MIL-D-21625, Type IIIA
Service life: 1 yr installed, 5 yr total
Temperature limits: -65° to +200°F
Cook-off temperature: 275°F
Impetus: 6460 ft-lb
Weight: .076 lb

IGNITER, electric, ignition element, MARK 14 MOD 0
Specification no.: AS 1075
No-fire: 1.0 amp
All-fire: 2.0 amp
Recommended firing: 5.0 amp.
Bridge resistance: 1.1 ohm
Bridge material: 0.002 in platinum*
Ignition material: 0.300 gm ignition comp** +0.150 gm FA878
Booster material: 0.155 gm HES 6573.3

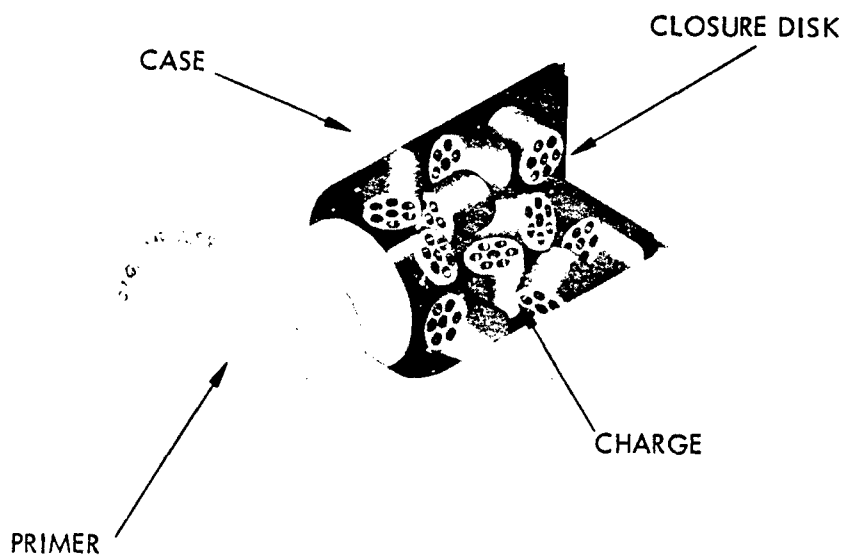
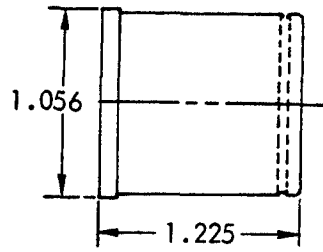
MAIN CHARGE, double-base HPC-87
Specification no.: HPC-87
Weight: 8.0 gm***
Granulation: 7-perf, D=.260, d=.016, h=.240 in
Flame temperature: 3214°K

APPLICATIONS: release and ejection of stores

NOTES: *85-95% platinum, balance tungsten, tantalum, molybdenum
**titanium, barium chromate, potassium perchlorate
***consumable closure =.9gm propellant

124-0
15Aug73

CARTRIDGE, Impulse, MARK 124 MOD 0



146<

CARTRIDGE, Impulse, MARK 125 MOD 0
Specification no.: AS 1077
Drawing list no.: 2838200
Federal stock no.: 1377-193-8834
DOD code no.: M364
Qualification: MIL-D-21635, type III-A
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +200°F
Cook-off temperature: 275°F
Impetus: 3230 ft-lb.
Weight: .066 lb.

IGNITER, electric, ignition element, MARK 14 MOD 0
Specification no.: AS 1075
No-fire: 1.0 amp.
All-fire: 2.0 amp.
Recommended firing: 5.0 amp.
Bridge resistance: 1.1 ohm.
Bridge material: 0.002 in. platinum*
Igniter material: 0.300 gm igniter comp.** & 0.150 gm FA-878
Booster material. 0.155 gm HES 6573.3

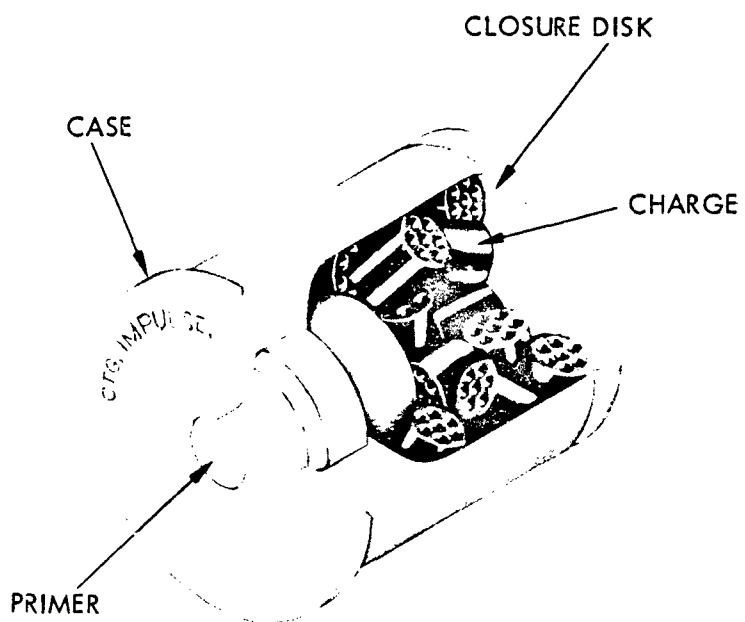
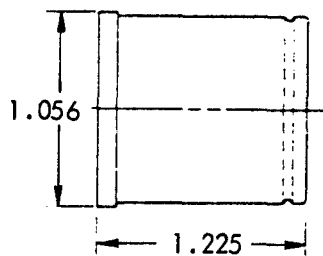
MAIN CHARGE, double-base, HPC-87
Specification no.: HPC-87
Weight: 4.0 gm.*
Granulation: 7-perf, D=.260, d=.016, h=.240 in.
Flame temperature: 3214°K

APPLICATIONS: Release and ejection of stores.

NOTES: *85-95% platinum, balance tungsten, tantalum, molybdenum
**Titanium, barium chromate, potassium perchlorate
***Consumable closure = .9 gm propellant

125-0
15Aug73

CARTRIDGE, Impulse, MARK 125 MOD 0



125-0
15Aug73

CARTRIDGE, Impulse, MARK 125 MOD 0
Specification no.: AS 1077
Drawing list no.: 2838200
Federal stock no.: 1377-193-8834
DOD code no.: M364
Qualification: MIL-D-21635, type III-A
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +200°F
Cook-off temperature: 275°F
Impetus: 3230 ft-lb.
Weight: .066 lb.

IGNITER, electric, ignition element, MARK 14 MOD 0
Specification no.: AS 1075
No-fire: 1.0 amp.
All-fire: 2.0 amp.
Recommended firing: 5.0 amp.
Bridge resistance: 1.1 ohm.
Bridge material: 0.002 in. platinum*
Igniter material: 0.300 gm igniter comp.** & 0.150 gm FA-878
Booster material: 0.155 gm HES 6573.3

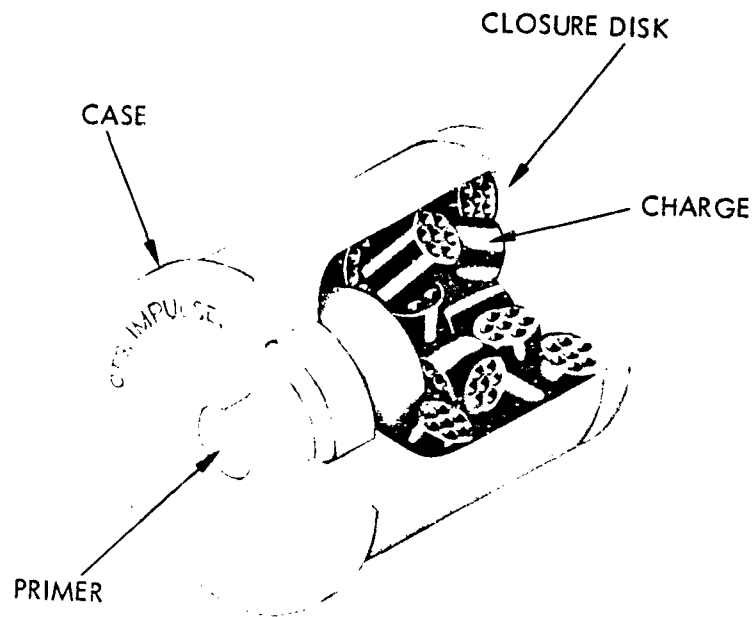
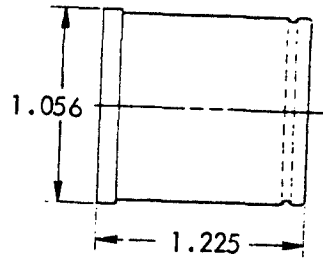
MAIN CHARGE, double-base, HPC-87
Specification no.: HPC-87
Weight: 4.0 gm.*
Granulation: 7-perf, D=.260, d=.016, h=.240 in.
Flame temperature: 3214°K

APPLICATIONS: Release and ejection of stores.

NOTES: *85-95% platinum, balance tungsten, tantalum, molybdenum
**Titanium, barium chromate, potassium perchlorate
***Consumable closure = .9 gm propellant

125-0
15Aug73

CARTRIDGE, Impulse, MARK 125 MOD 0



150<

127-0
15Aug73

CARTRIDGE, Impulse, MARK 127 MOD 0
Specification no.: AS 1070
Drawing list no.: 2519678
Federal stock no.: 1377-103-2655
DOD code no.: M548
Qualification: MIL-D-21625, type III-A
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 340 ft-lb.
Weight: .010 lb.

IGNITER, percussion; primer 116M-282A
Specification no.: Army Ord. dwg. 6200959
No-fire: 6 in-oz.
All-fire: 36 in-oz.
Recommended firing:

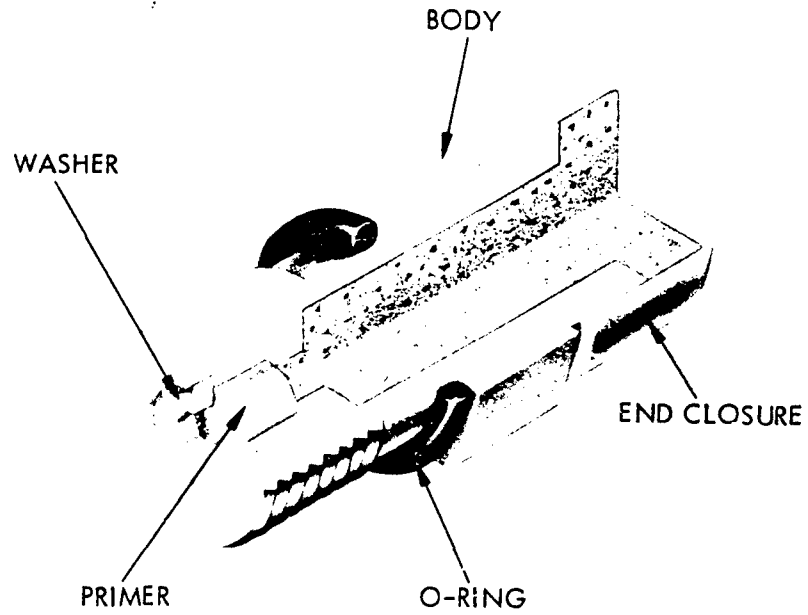
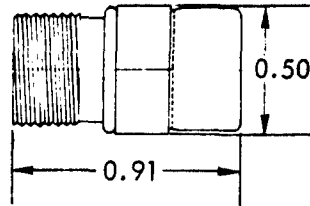
MAIN CHARGE, double-base, bullseye
Specification no.: HPSK-BUP
Weight: 0.400 gm
Granulation: disc. D=.038, h=.004 in.
Flame temperature: 3780°K

APPLICATIONS: Drogue thruster in T-2 aircraft escape system.

NOTES: Replaces cartridge, impulse, MARK 39 MOD 0.

127-0
15Aug73

CARTRIDGE, Impulse, MARK 127 MOD 0



129-0
15Aug73

CARTRIDGE, Impulse, MARK 129 MOD 0

Specification no.: AS 1068
Drawing list no.: 2519638
Federal stock no.:
DOD code no.:
Qualification: MIL-C-21625, type III-A
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus: 760 ft-lb.
Weight: 0.016 lb.

IGNITER, percussion; primer 120M-257W

Specification no.: MIL-P-46610
No-fire:
All-fire:
Recommended firing:

MAIN CHARGE, 81mm mortar powder, M9

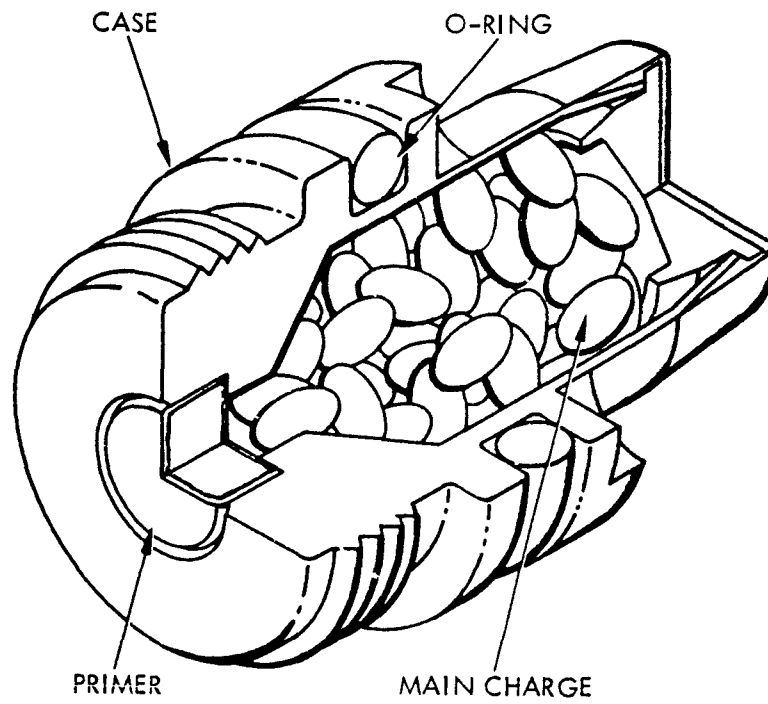
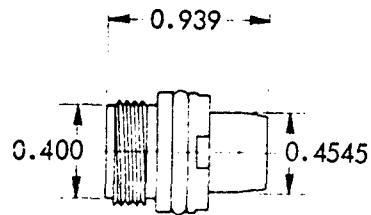
Specification no.: MIL-P-20306
Weight: .907 gm.
Granulation: disc. D=.059, h=.010 in.
Flame temperature: 3799°K

APPLICATIONS: Mine sweeping cutter MARK 16.

NOTES:

129-0
15Aug73

CARTRIDGE, Impulse, MARK 129 MOD 0



CARTRIDGE, Impulse, MARK 131 MOD 0

Specification no.: AS 1073
Drawing list no.: 2518352
Federal stock no.: 1377-999-7462
DOD code no.: M197
Qualification: MIL-D-21625, type III-A
Service life: 1 yr. installed, 5 yr. total
Temperature limits:
Cook-off temperature: 325°F
Impetus: 53 ft-lb.
Weight: .020 lb.

IGNITER, electric

Specification no.: subassembly of cartridge
No-fire:
All-fire:
Recommended firing: 5.0 amp.
Bridge resistance: 0.30-0.50 ohm.
Bridge material: .0056 in. composition E (F.S. QQ-R-175)
Ignition material: lead styphnate

MAIN CHARGE, black powder

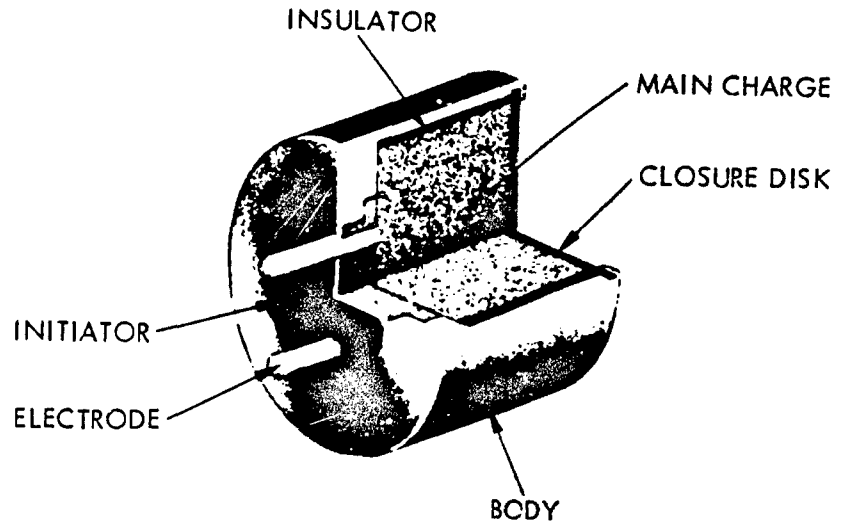
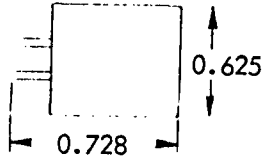
Specification no.: MIL-P-223
Weight: .240 gm
Granulation: class 6
Flame temperature:

APPLICATIONS: AN/ALE-29 & 29A chaff dispenser pod.

NOTES:

131-0
15Aug73

CARTPIDGE, Impulse, MARK 131 MOD 0



CARTRIDGE, Delay, MARK 136 MOD 0
Specification no.: AS 1646
Drawing list no.: 2519923
Federal stock no.: 1377-017-0682
DOD code no.: M770
Qualification: MIL-D-21625, type III-A
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 450°F
Impetus:
Weight: .020 lb.

IGNITER, percussion, primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits:

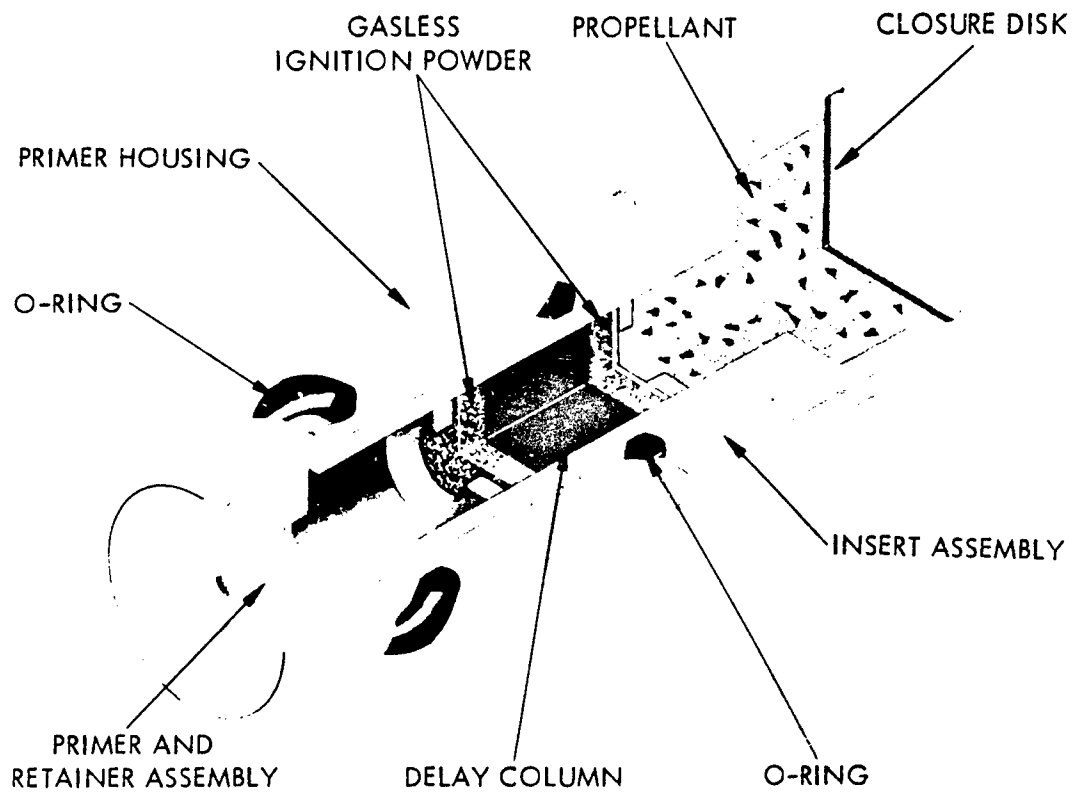
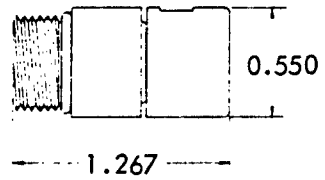
MAIN CHARGE, lead azide/boron/barium nitrate*
Specification no.: dwg. 2299582
Weight: .142 gm
Granulation: powder (no. 35 sieve)
Flame temperature:

APPLICATIONS: , Parachute static line cutter in OV-10A aircraft.

NOTES: *Lead azide 27.2% no. 35 sieve
Boron, amorphous 8.8%
Barium nitrate 64.0%

136-0
15Aug73

CARTRIDGE, Delay, MARK 136 MOD 0



137-0
15Aug73

CARTRIDGE, Delay, MARK 137 MOD 0

Specification no.: AS 1079
Drawing list no.: 2838225
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III-A
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +200°F
Cook-off temperature: 325°F
Impetus:
Weight:

IGNITER, percussion, primer M42 - (5086)

Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Igniter material: 0.0155 gm lead styphnate

DELAY, pyrotechnic, manganese delay composition

Specification no.: MIL-M-21383
Nominal delay/specification limits: 1.3 sec/1.05 to 1.65
(-65° to +200°F)

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Parachute timer, T-28 aircraft.

NOTES: Master specialities model 1000-E.

137-0
15Aug73



CARTRIDGE, Delay, MARK 137 MOD 0

(PICTORIAL INFORMATION NOT AVAILABLE.)

160<

141-0
15Aug73

CARTRIDGE, Delay, MARK 141 MOD G

Specification no.: AS 1082
Drawing list no.: 2519935
Federal stock no.: 1377-957-0877
DOD code no.: M771
Qualification: MIL-D-21625, type III-A
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus: 340 ft-lb.
Weight: .025 lb.

IGNITER, percussion, primer M42

Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition

Specification no.: MIL-M-21383
Nominal delay/specification limits: 2.0 sec/2.6 sec max

MAIN CHARGE, double-base, unique

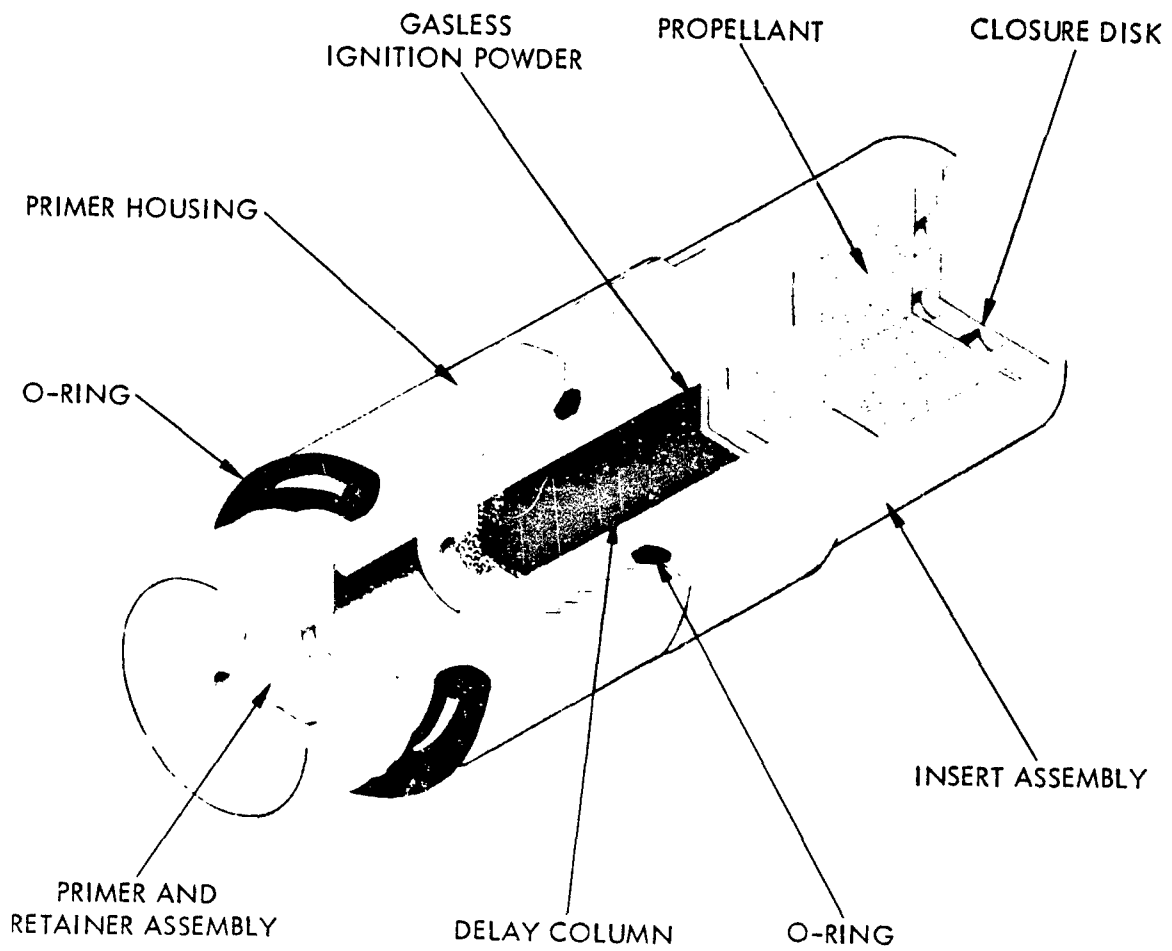
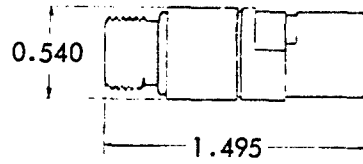
Specification no.: HPSK-BUP
Weight: .40 gm
Granulation: disc, D=.065, h=.007 in.
Flame temperature: 3771°K

APPLICATIONS: Personnel chute thruster (high speed) in OV/10A aircraft.

NOTES:

141-0
15Aug73

CARTRIDGE, Delay, MARK 141 MOD 0



142-0
15Aug73

CARTRIDGE, Delay, MARK 142 MOD 0

Specification no.: AS 1083
Drawing list no.: 2519943
Federal stock no.: 1377-997-0876
DOD code no.: M772
Qualification: MIL-D-21625, type III-A
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +165°F
Cook-off temperature: 300°F
Impetus: 1330 ft-lb.
Weight: .039 lb.

IGNITER, percussion, primer M42

Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition

Specification no.: MIL-M-21383
Nominal delay/specification limits: 0.125 sec/0.25 sec max after
28 days T&H

BOOSTER CHARGE, gasless ignition powder, A-1A

Specification no.: MIL-P-22264
Weight: .200 gm
Granulation: powder

MAIN CHARGE, double-base, Hercules 2400

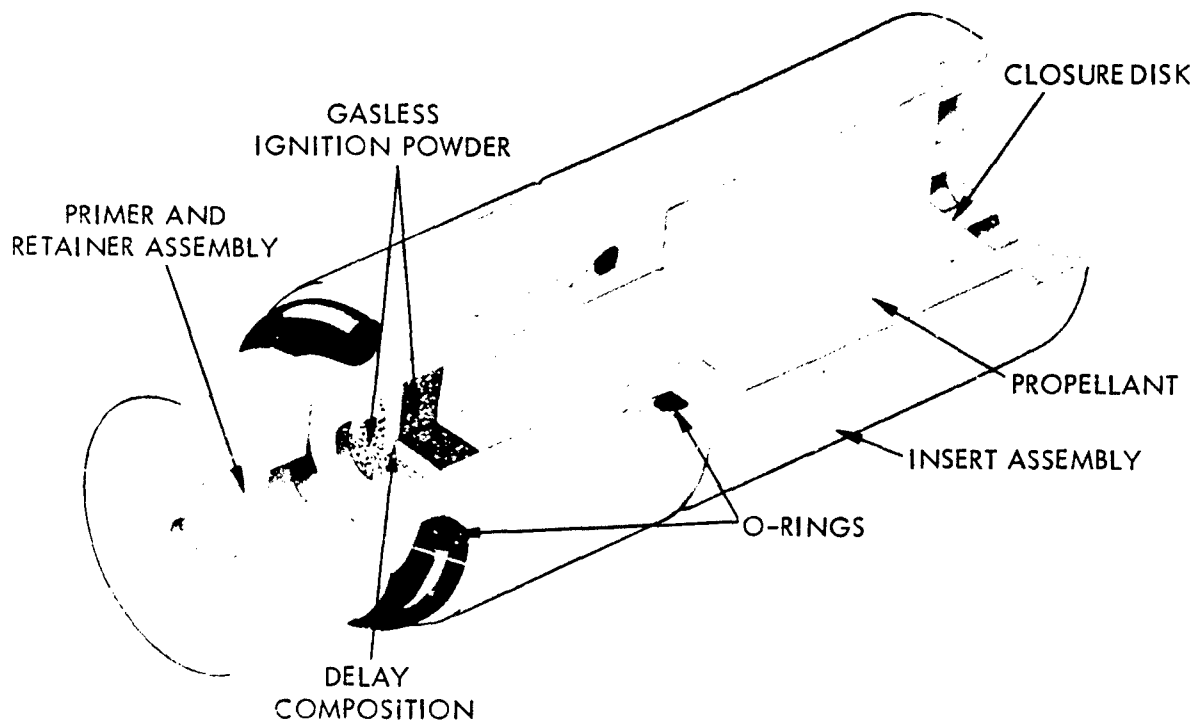
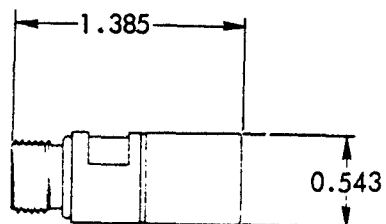
Specification no.: Hercules 2400
Weight: 1.60 gm
Granulation: disc, D=.038, h=.0125
Flame temperature: 3284°K

APPLICATIONS: Personnel chute thruster (low speed) in OV-10A aircraft.

NOTES:

142-0
15Aug73

CARTRIDGE, Delay, MARK 142 MOD 0



243-2
15Aug73

CARTRIDGE, Igniter, Turbo-Jet Engine, MK 243 MOD 2

Specification no.:
Drawing list no.: 282766
Federal stock no.: 1377-674-4323
DOD code no.: M374
Qualification:
Service life: 60 hours flight time, 1 year opened, 6 years total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER, percussion, primer no. 68

Specification no.:
No-fire:
All-fire:
Recommended firing:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

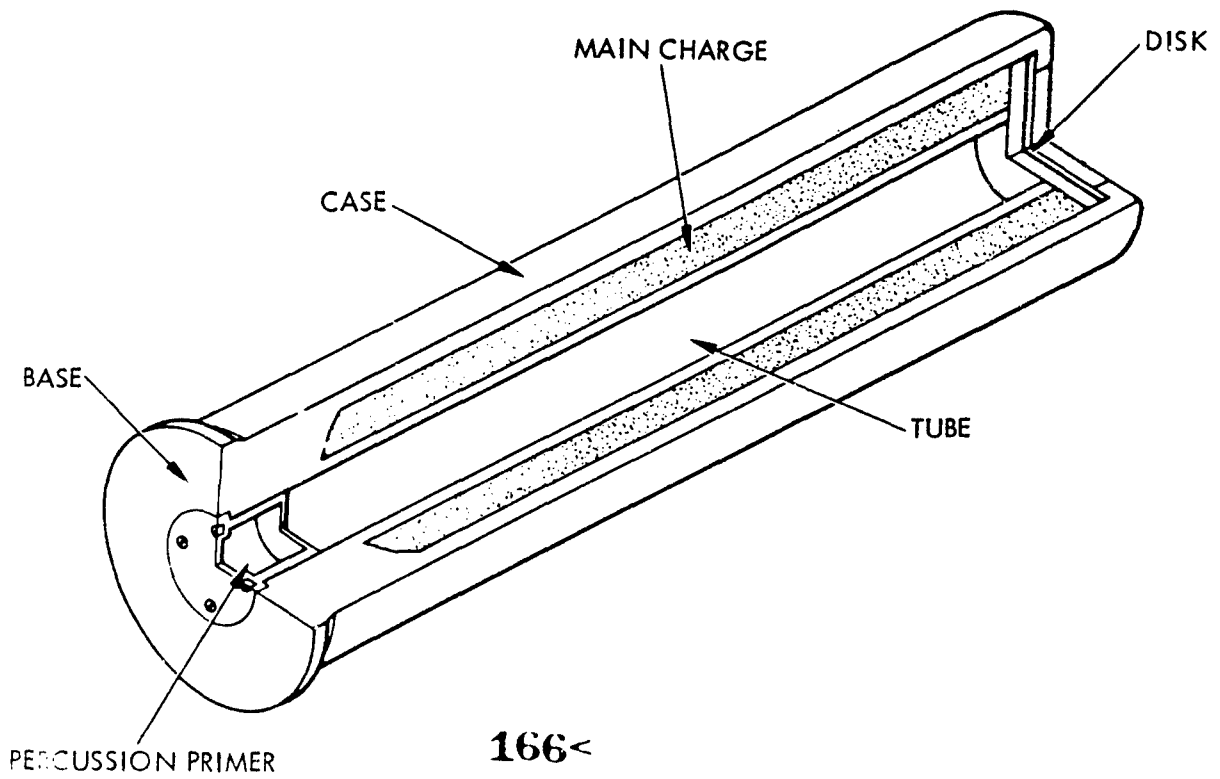
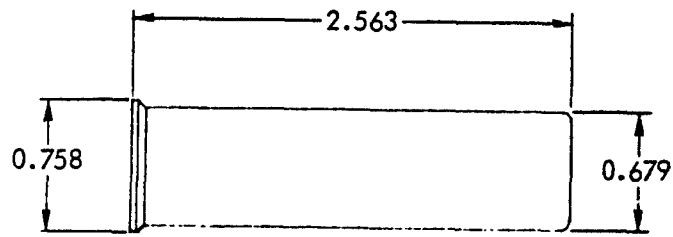
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: J48 jet engine igniter.

NOTES: Described in NAVWEPS OP 2213, Pyrotechnics, Screening and
Dye Marking Devices (First Revision).

243-2
15Aug73

CARTRIDGE, Igniter, Turbo-Jet Engine, MK 243 MOD 2



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CCU-4/A
15Aug73

CARTRIDGE. Delay, CCU-4/A
Specification no.: AS 1084
Drawing list no.: 234AS100
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625 Type III A
Service life: 18 mo. installed, 5 yrs total
Temperature limits: -65° to +200°F
Cook-off temperature: 325°F
Impetus: 96 ft-lb
Weight: .020 lb.

IGNITER, percussion, primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:

DELAY, pyrotechnic, manganese delay composition
Specification no.: MIL-M-21383
Nominal delay/specification limits: 1.0 sec/0.75 to 1.25 sec(-65° to 200°F)

MAIN CHARGE, double-base, hi-temp
Specification no.: HPSK-HT
Weight: .100gm
Granulation: disc, D = .053, h = .011
Flame temperature: 3822°K

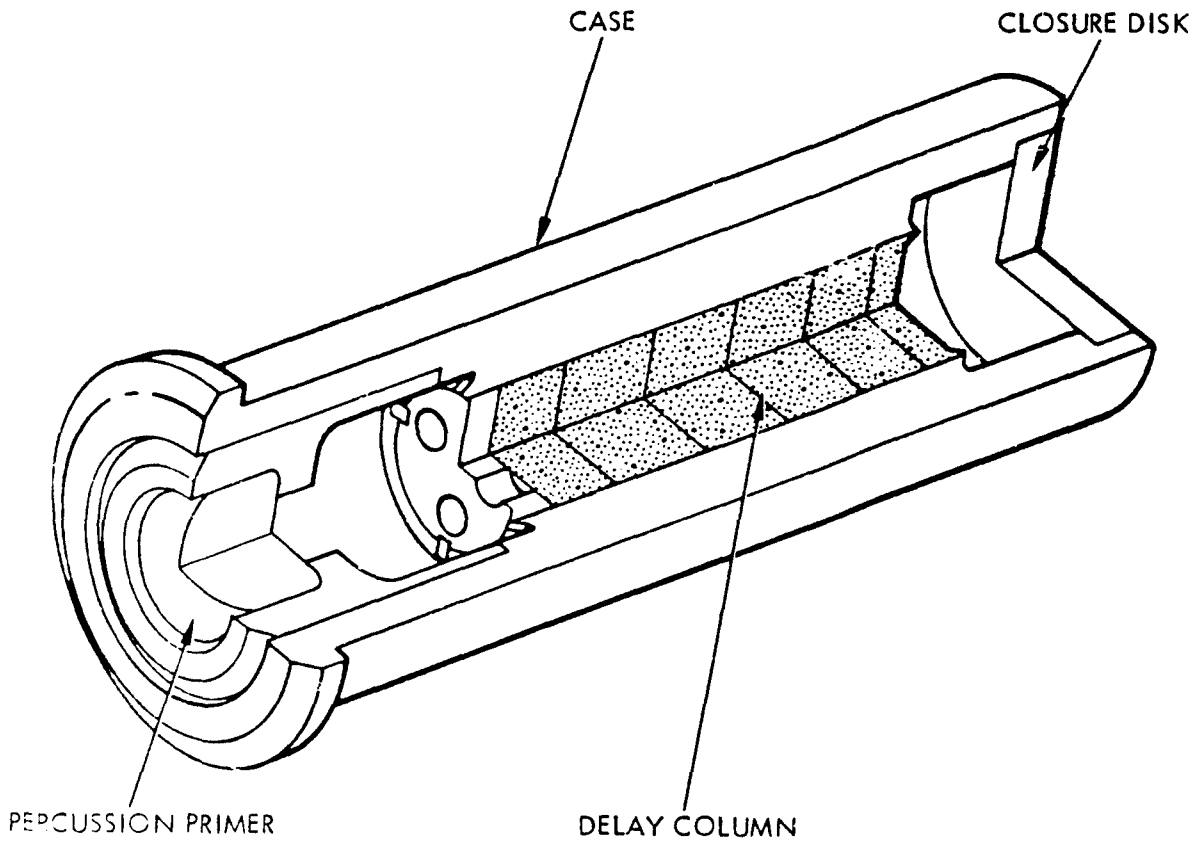
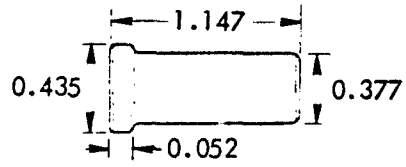
APPLICATIONS: parachute timer, BDU-36C, practice bomb, T-28 aircraft

NOTES:

167<

CCU-4/A
15Aug73

CARTRIDGE, Delay, CCU-4/A



MXU-4A
15Aug73

CARTRIDGE, Engine Starter, MXU-4A

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE

Specification no.:
Weight:
Granulation:

MAIN CHARGE

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: .

NOTES: Described in NAVAIR AD100

MXU-4A
15Aug73

CARTRIDGE, Engine Starter, MXU-4A

(PICTORIAL INFORMATION NOT AVAILABLE.)

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MXU-4A/A
15Aug73

CARTRIDGE, Engine Starter, MXU-4A/A

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE

Specification no.:
Weight:
Granulation:

MAIN CHARGE

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS:

NOTES:

MXU-4A/A
15Aug73

CARTRIDGE, Engine Starter, MXU-4A/A

(PICTORIAL INFORMATION NOT AVAILABLE.)

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2406377
15Aug73

CARTRIDGE, Impulse, (NAVAIR dwg 2406377)

Specification no.: OS11701
S.C.D.: 2406377
Federal stock no.: 1377-857-0952 (MK 1 MOD 0 explosive bolt)
DOD code no.: M341 (MK 1 MOD 0 explosive bolt)
Qualification: type III
Service life: 12 months installed, 5 years total
Temperature limits: -65° to +165°F
Cook-off temperature:
Impetus: 160 ft-lb
Weight:

IGNITER, electric

Specification no.:
No-fire: 2.0 amp. per bridge
All-fire: 4.0 amp. per bridge
Recommended firing: 5.0 amp. per bridge
Bridge resistance: 0.09 - 0.16 ohm per bridge
Bridge material: tophet c
Ignition material: 0.045 gm. lead styphnate

BOOSTER CHARGE, lead azide

Specification no.:
Weight: 0.175 gm.
Granulation: consolidated

MAIN CHARGE, petn

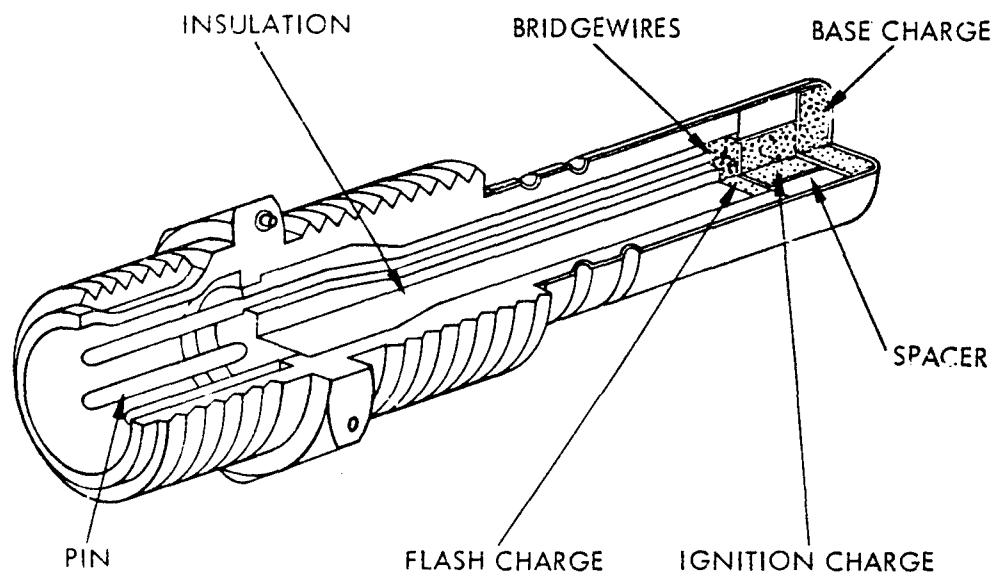
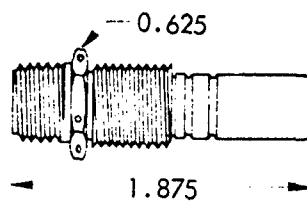
Specification no.: MIL-P-3870, class 4
Weight: 0.274 gm.
Granulation: consolidated
Flame temperature:

APPLICATIONS: subassembly of Mark 1 Mod 0 explosive bolt used in
Mark 12 Mod 0 aircraft chemical spray tank.

NOTES:

2406377
15Aug73

CARTRIDGE, Impulse, (NAVAIR dwg 2406377)



2518141
15Aug73

SQUIB, Electric, (NAVAIR dwg. 2518141)

Specification no.:
Drawing list no.: 2518141
Federal stock no.:
DOD code no.: M829
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +120°F
Cook-off temperature:
Impetus
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing: 2.0 amp at 20 volts
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits: 7.0 seconds
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

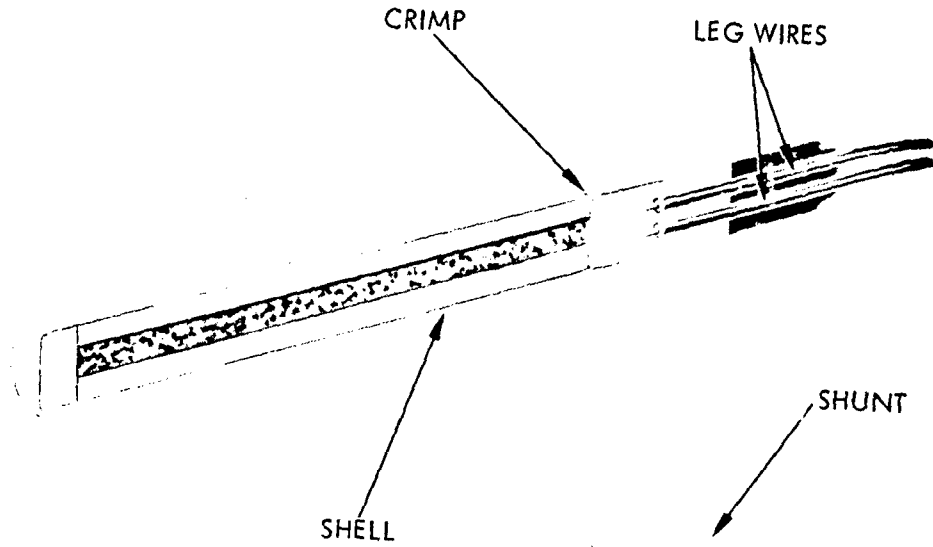
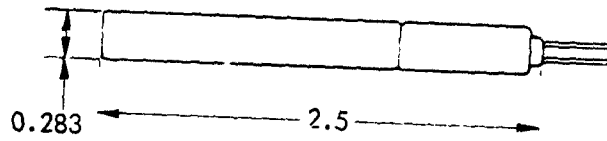
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: drone version of F-9F fire indicator pods.

NOTES:

2518141
15Aug73

SQUIB, Electric, (NAVAIR dwg. 2518141)



2518358
15Aug73

SQUIB, Electric, (NAVAIR dwg. 2518358)

Specification no.:
Drawing list no.: 2518358
Federal stock no.:
DOD code no.: M836
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +120°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing: 2.0 amp.
Bridge resistance: 0.6 - 1.2 ohm
Bridge material:
Bead material:
Booster material:
Charge:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

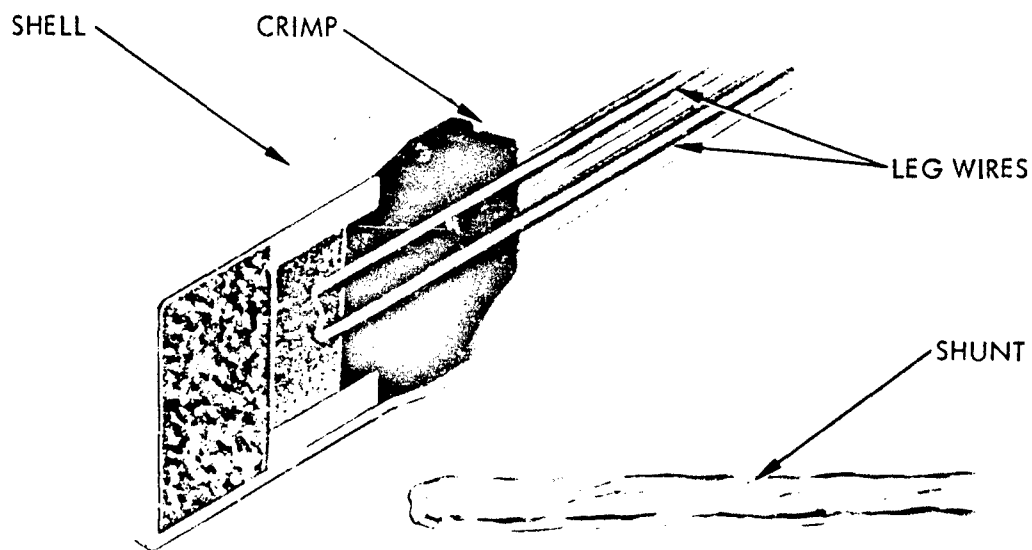
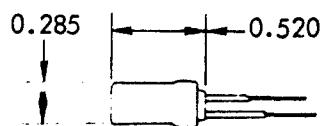
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: used in explosive bolt attaching tail cone to the body
of a target drone.

NOTES:

2518358
15Aug73

(SQUIB, Electric, (NAVAIR dwg. 2518358))



2518359
15Aug73

SQUIB, Electric, (NAVAIR dwg. 2518359)

Specification no.:
Drawing list no.: 2518359
Federal stock no.:
DOD code no.: M855
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +120°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing: 1.5 amp. (max. 5 amp.)
Bridge resistance: 0.6 - 1.2 ohm
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits: 0.5 second
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

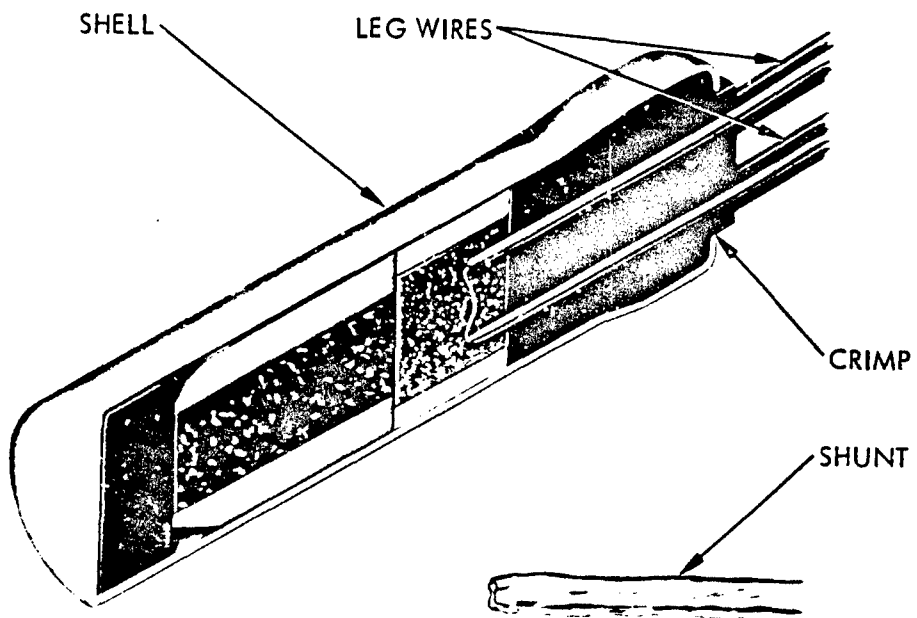
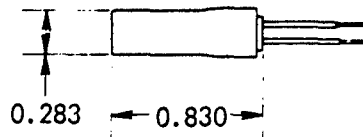
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: installed in recovery parachute disconnect mechanism of
a target drone.

NOTES:

2518359
15Aug73

SQUIB, Electric, (NAVAIR dwg. 2518359)



2518373
15Aug73

CARTRIDGE, Cable Cutter, (NAVAIR dwg. 2518373)
Source: Mine Safety Appliance Co. P/N 96747
Source control dwg.: 2518373
Federal stock no.: 1377-220-2361
DOD code no.: M018
Qualification: MIL-D-21625, type II
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 225°F
Impetus:
Weight: .040 lb.

IGNITER, electric
Specification no.:
No-fire:
All-fire:
Recommended firing: 5.0 amp.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

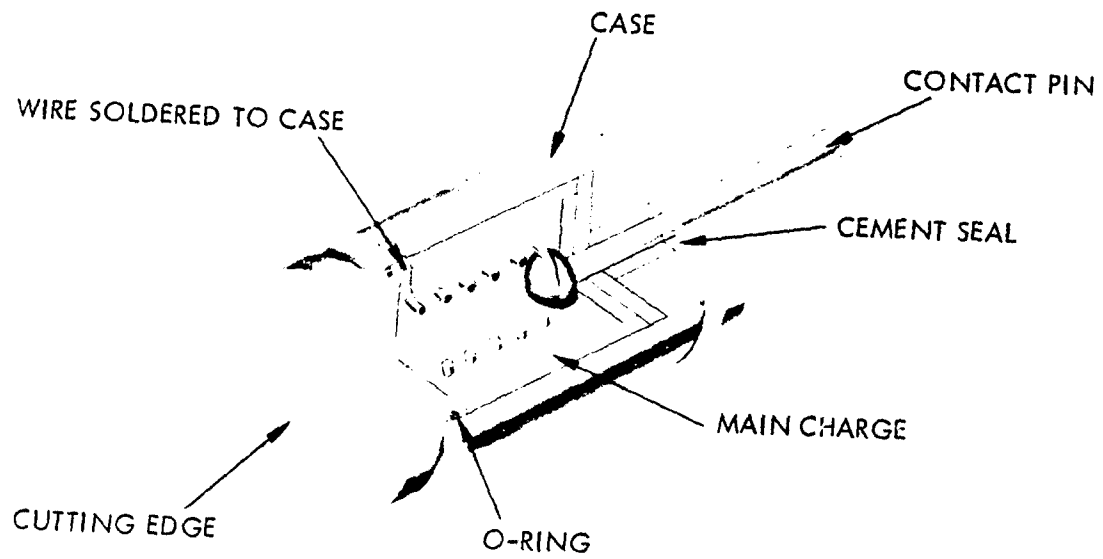
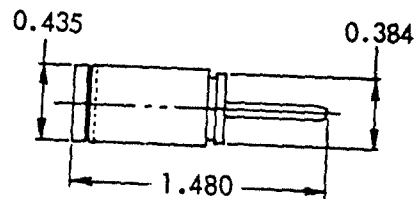
MAIN CHARGE, double-base
Specification no.:
Weight: .291 gm
Granulation:
Flame temperature:

APPLICATIONS: Turtle II hoist cable cutter, RH-3A Helicopter.

NOTES:

2518373
15Aug73

CARTRIDGE, Cable Cutter(NAVAIR dwg. 2518373)



2518426
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2518426)

Source: Mine Safety Appliance Co. P/N TA-96713
Source control dwg.: 2518426
Federal stock no.: 1377-999-7463
DOD code no.: M162
Qualification:
Service life: 1 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: .040 lb.

IGNITER, electric

Specification no.:
No-fire:
All-fire:
Recommended firing: 8.0 amp.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

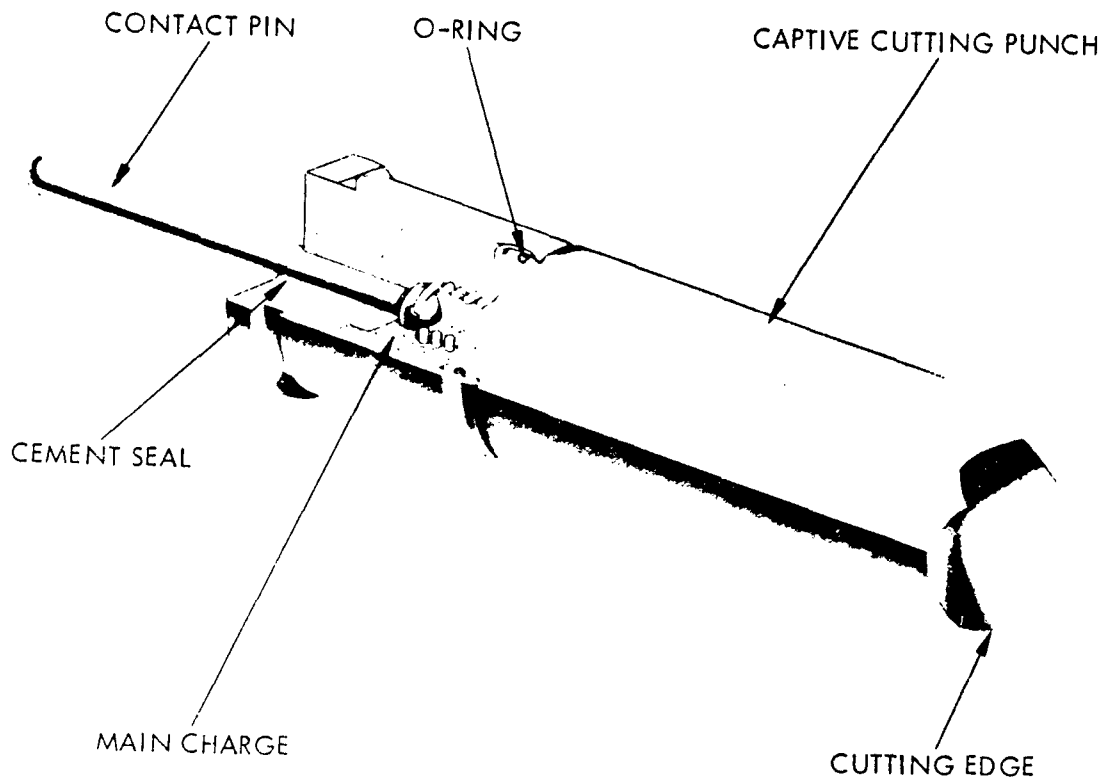
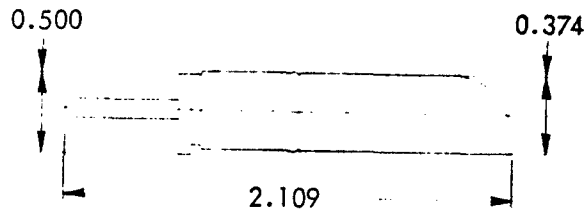
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Rescue hoist cable cutter in CH-46A Helicopter.

NOTES:

2518426
15Aug73

CARTRIDGE, Impulse(NAVAIR dwg. 2518626)



2518431
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2518431)

Source: Talley Industries P/N 1013-40
Source control dwg.: 2518431
Federal stock no.: 1377-630-9597
DOD code no.: M105
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: .088 lb.

IGNITER, electric

Specification no.:
No-fire:
All-fire:
Recommended firing: 10.0 amp.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

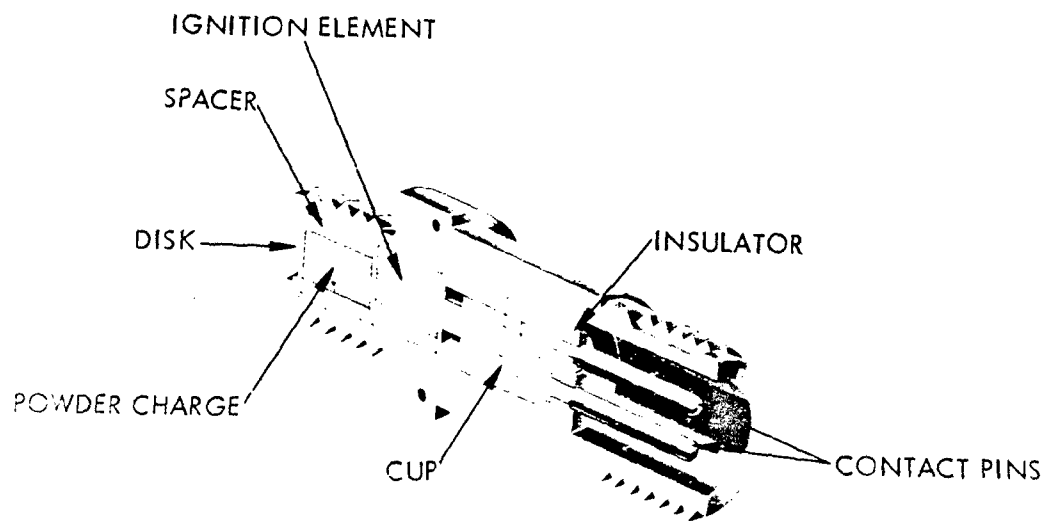
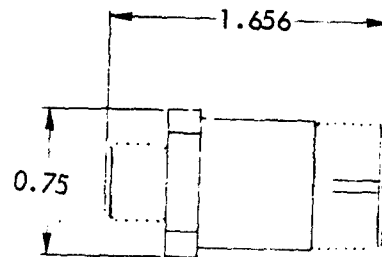
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Hoist cable cutter, P/N 1041-1, in SH-3A, CH-19E, UH-19F,
UH-34D and UH-34E Helicopters.

NOTES:

2518431
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2518431)



2518493
15Aug73

GRAIN, Propellant (NAVAIR dwg. 2518493)

Source: Walter Kidde P/N 842077
Source control dwg.: 2518493
Federal stock no.: 1377-910-6097
DOD code no.: M811
Qualification: limited procurement
Service life: 30 mo. installed, 5 yr. total
Temperature limits:
Cook-off temperature:
Impetus:
Weight: .950 lb.

IGNITER, electric, ignition element, MARK 22 MOD 0

Specification no.: WS4376
No-fire: 1.0 amp.
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

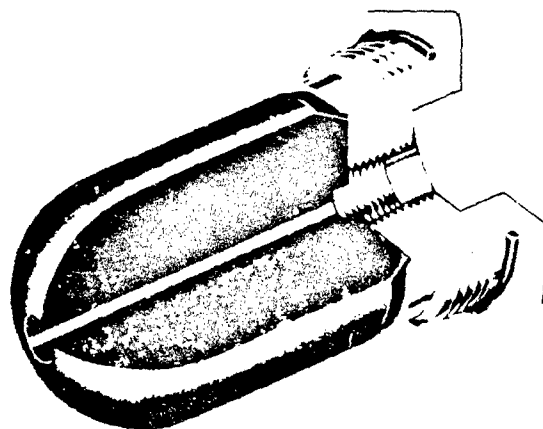
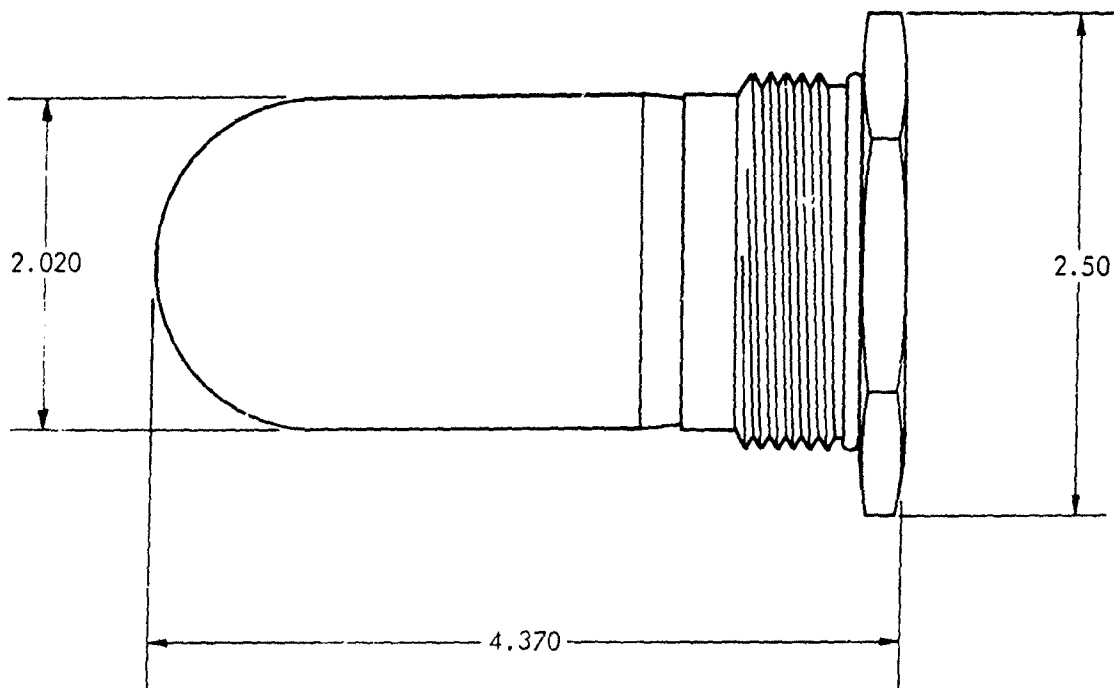
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Walter Kidde gas generator in UH-2A Helicopter.

NOTES:

2518493
15Aug73

GRAIN, Propellant (NAVAIR dwg. 2518493)



188<

251850
15Aug7

CARTRIDGE, Delay (NAVAIR dwg. 2518508)

Source: Horex, Inc. P/N 1875
Source control dwg.: 2518508
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 mo. installed, 5 yr. total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER, percussion, primer 120M

Specification no.: MIL-P-46610
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits: 3.0 sec/
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Thruster T-39D aircraft escape system.

NOTES:

2518508
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 2518508)

(PICTORIAL INFORMATION NOT AVAILABLE.)

130<

2518509
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher (NAVAIR dwg. 2518509)

Source: *
Drawing list no.: 2518509
Federal stock no.: 1377-021-9525
DOD code no.: M178
Qualification: MIL-D-21625 type III-B
Service life: 18 mo. installed, 5 yr. total
Temperature limits:
Cook-off temperature:
Impetus:
Weight: .025 lb

IGNITER, electric

Specification no.:
No-fire:
All-fire:
Recommended firing: 3.0 amp.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

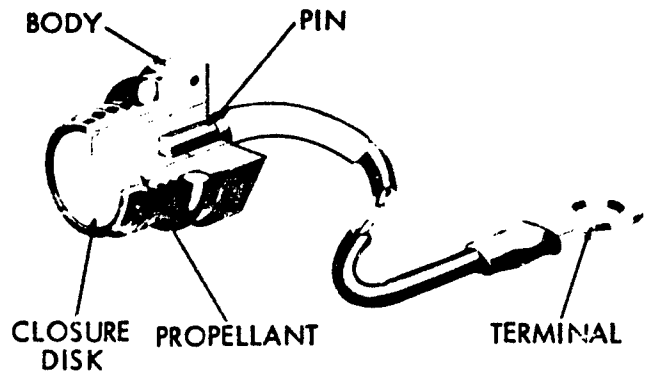
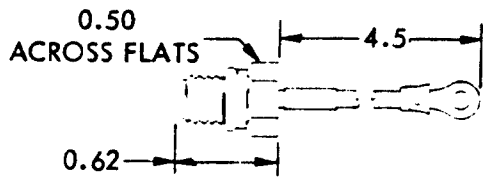
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: release fire extinguishing agent around aircraft engine.

NOTES: *APCO P/N 800545
Holex Inc. P/N 4199
McCormick-Selph P/N 808814M45 or M008

2518509
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher (NAVAIR dwg. 2518509)



2518519
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher (NAVAIR dwg. 2518519)

Source: Walter Kidde Co. P/N 895188
Source control dwg.: 2518519
Federal stock no.: 1377-756-1384
DOD code no.: M182
Qualification: MIL-D-21625 type III-B
Service life: 18 mo. installed, 5 yr. total
Temperature limits: *
Cook-off temperature:
Impetus:
Weight: .169 lb.

IGNITER, electric, DuPont E-92 Squib (two)

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

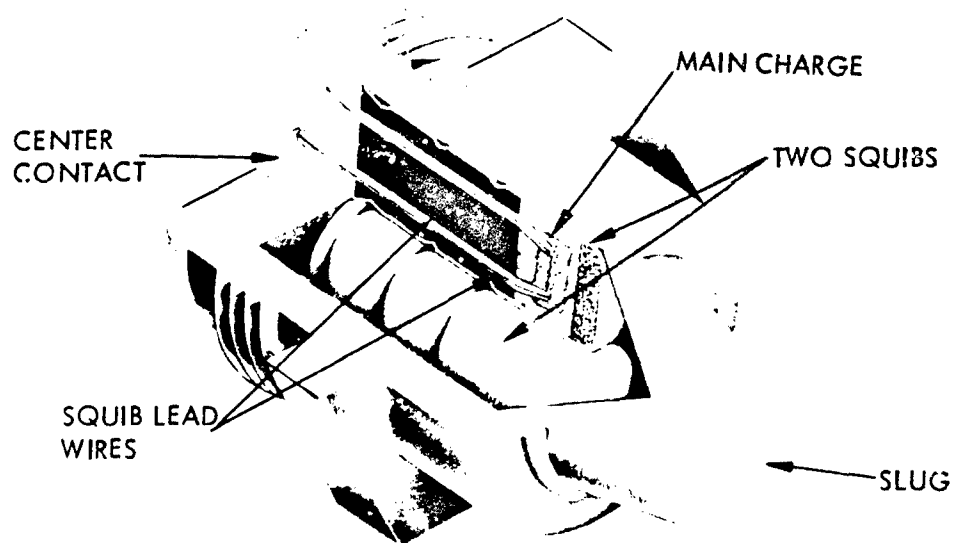
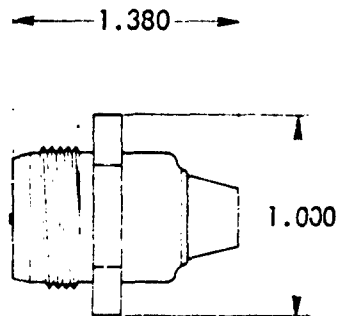
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Walter Kidde fire extinguisher systems in 9 aircraft.

NOTES: *Replace after 2000 hrs. in environment of +100° to +160°F.

2518519
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher, (NAVAIR dwg. 2518519)



194<

2519524
15Aug73

SQUIB, Electric, (NAVAIR dwg. 2519524)

Specification no.:
Drawing list no.: 2519524
Federal stock no.:
DOD code no.: M862
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +120°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing: 1.0 amp.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

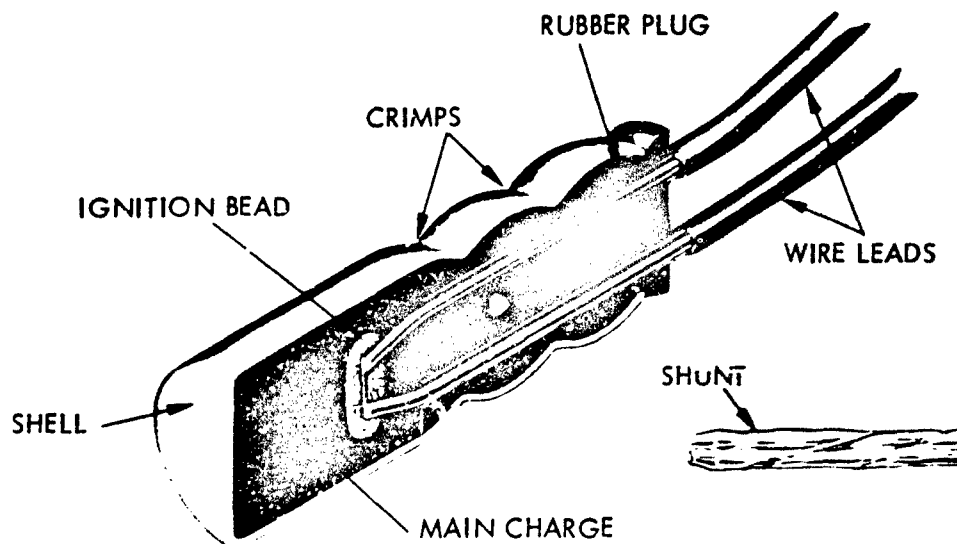
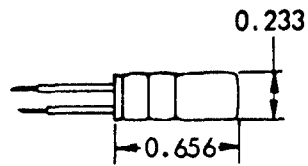
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: used in explosive bolts attaching tail cone of a target drone.

NOTES:

2519524
15Aug73

SQUIB, Electric, (NAVAIR dwg. 2519524)



2519527
15Aug73

CARTRIDGE-VIAL, Life Raft (NAVAIR dwg. 2519527)

Source: Walter Kidde Co. P/N 928425
Source control dwg.: 2519527
Federal stock no.: 1377-038-4954
DOD code no.: M175
Qualification: MIL-D-21625 type II
Service life: 30 mo. installed, 5 yr. total
Temperature limits:
Cook-off temperature:
Impetus:
Weight: .009 lb.

IGNITER, electric

Specification no.:
No-fire:
All-fire:
Recommended firing: 8.0 amp.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

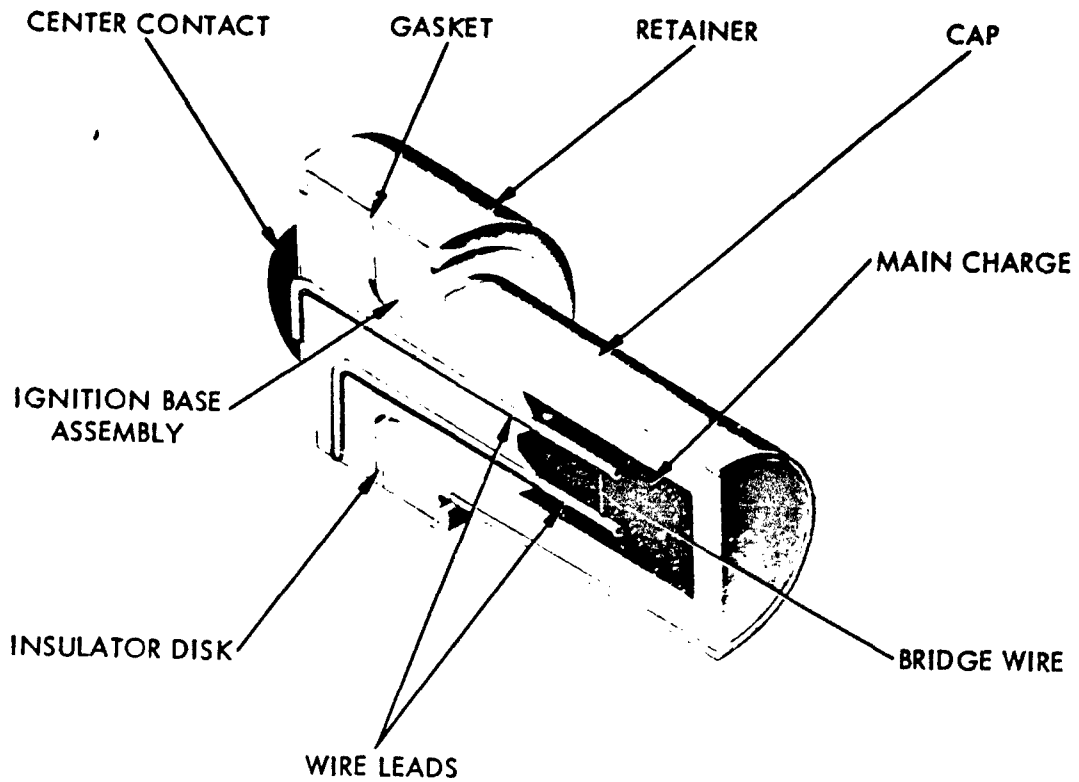
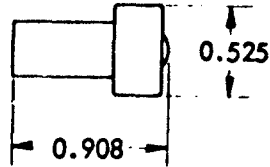
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Vial Life Raft Bottle Assembly 80023.

NOTES:

2519527
15Aug73

CARTRIDGE-VIAL, Life Raft (NAVAIR dwg. 2519527)



2519590
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher (NAVAIR 2519590)

Source: Walter Kidde Co. P/N 895189
Source control dwg.: 2519590
Federal stock no.: 1377-446-7238
DOD code no.: M179
Qualification: MIL-D-21625 type III-B
Service life: 18 mo. installed, 5 yr. total
Temperature limits: *
Cook-off temperature:
Impetus:
Weight: .135 lb.

IGNITER, electric

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

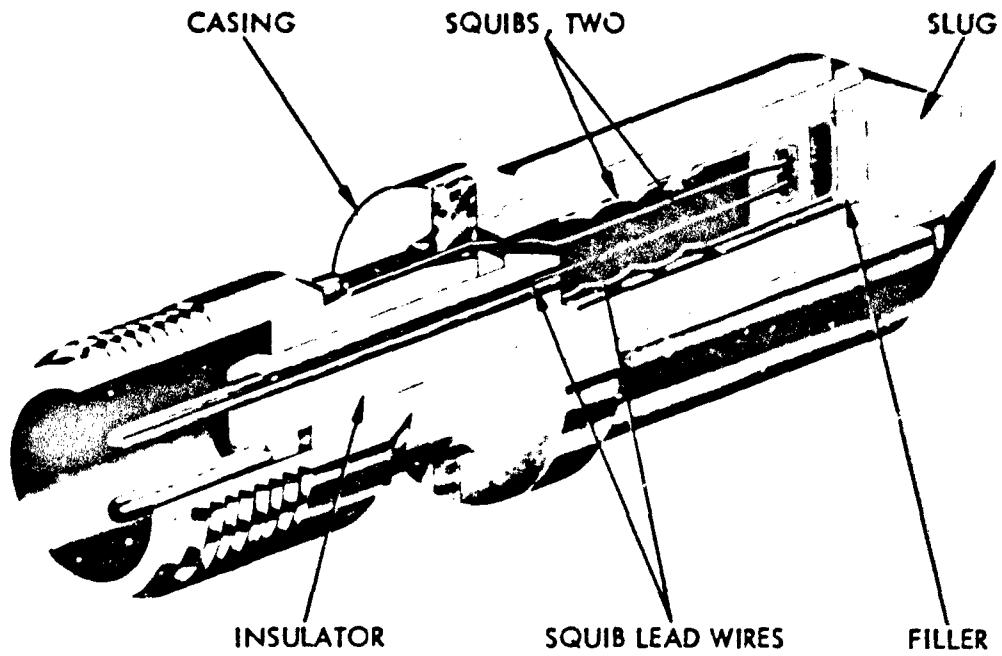
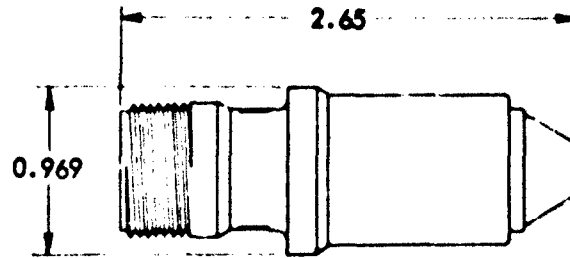
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: release fire extinguishing agent around aircraft engine.

NOTES: *Replace after 2000 hours in environment of +100° to +160°F.

2519590
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher (NAVAIR dwg. 2519590)



2519608
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2519608)

Source: Flare-Northern P/N 200034
Source control dwg.: 2519608
Federal stock no.: 1177-984-1604
DOD code no.: M570
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus
Weight: .067 lb.

IGNITER, percussion

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

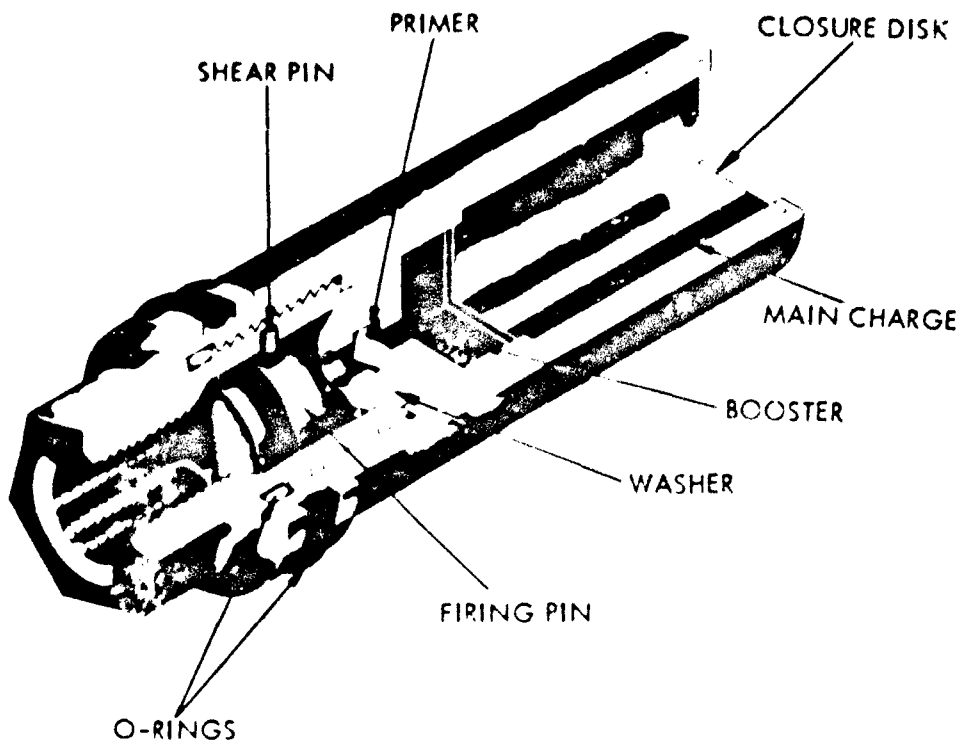
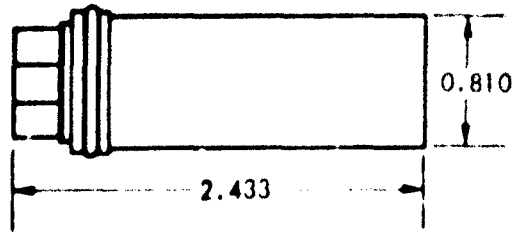
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: personnel restraint harness take-up reel in A4 and
TA-4 aircraft.

NOTES:

2519608
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2519608)



2519614
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher (NAVAIR dwg 2519614)

Source: American Standard P/N 13083-5
Source control dwg.: 2519614
Federal stock no.: 1377-930-9390
DOD code no.: M193
Qualification: MIL-D-21625 type III-B*
Service life: 12 mo. installed, 5 yr. total
Temperature limits:
Cook-off temperature: +500°F
Impetus:
Weight: .060 lb.

IGNITER, electric

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

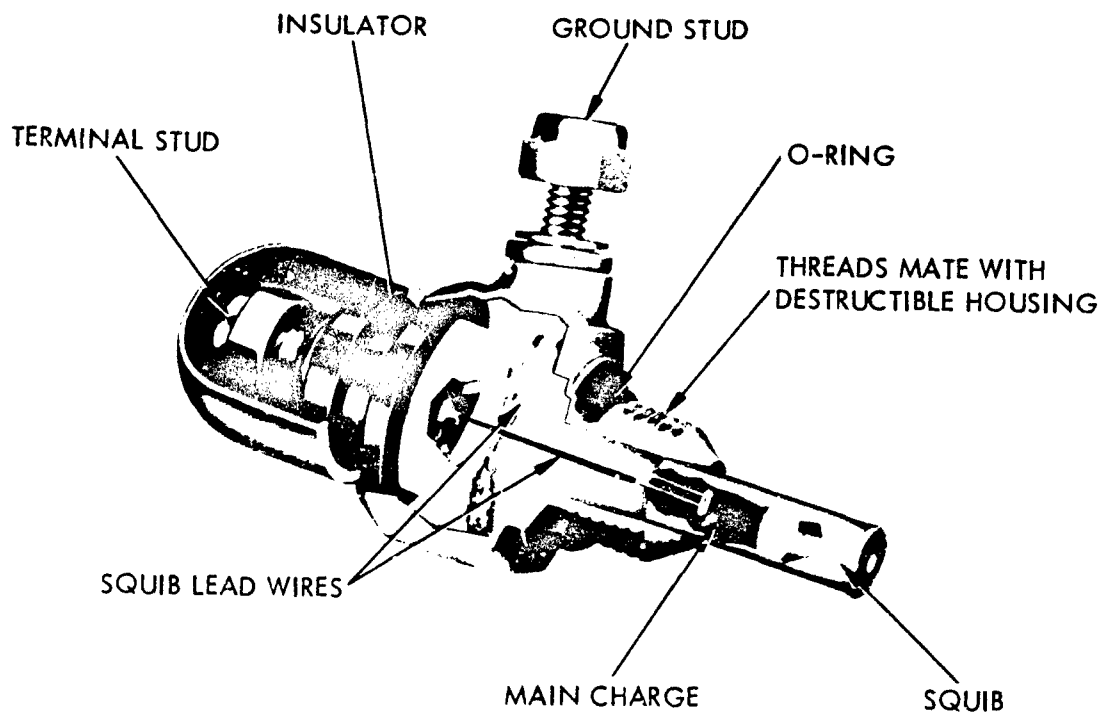
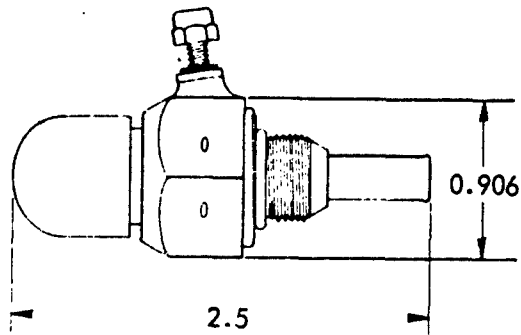
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Release fire extinguisher agent around aircraft engine.

NOTES: *Prolonged exposure to high temperature and vibration may have adverse affects upon bridge wire resistance; temperature-humidity cycling may affect output.

2519614
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher, (NAVAIR dwg. 2519614)



251963:
15Aug7:

SQUIB, Electric (NAVAIR dwg. 2519631)
Source: Beckman & Whitley P/N BW 10057
Source control dwg.: 2519631
Federal stock no.: 1377-010-8703
DOD code no.: M905
Qualification: MIL-D-21625 type III-B
Service life: 2 yr. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight:
No-fire: 1.0 amp.
All-fire: 1.8 amp. (6 times)
Recommended firing: 3.0 amp.
Bridge resistance: 0.18 \pm .04 ohm
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

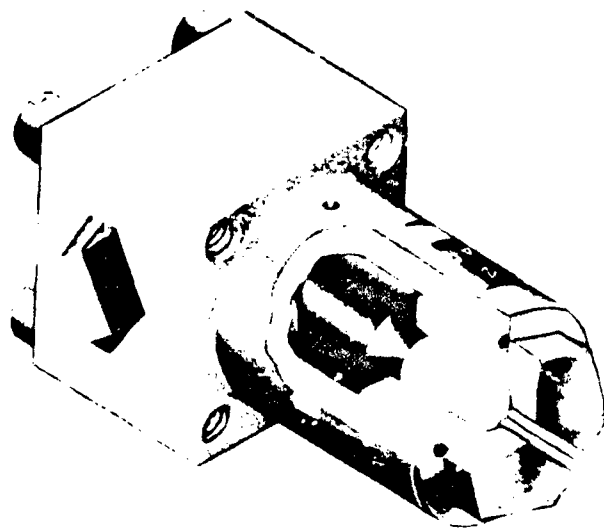
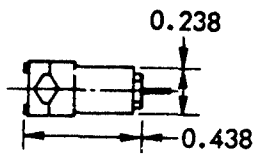
MAIN CHARGE,
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Guillotine (B/W P/N 100996) of rescue hoist cable
UH-1E helicopter.

NOTES:

2519631
15Aug73

SQUIB, Electric, (NAVAIR dwg. 2519631)



2519676
15Aug73

CARTRIDGE, Gas Generation (NAVAIR dwg. 2519676)

Source: Walter Kidde, Co. P/N 874891
Source control dwg.: 2519676
Federal stock no.: 1377-411-0476
DOD code no.: M569
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: 3.77 lb.

IGNITER, percussion

Specification no.:
No-fire:
All-fire:
Recommended firing: 10 to 18 lb. acting over 1.75 in. max.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

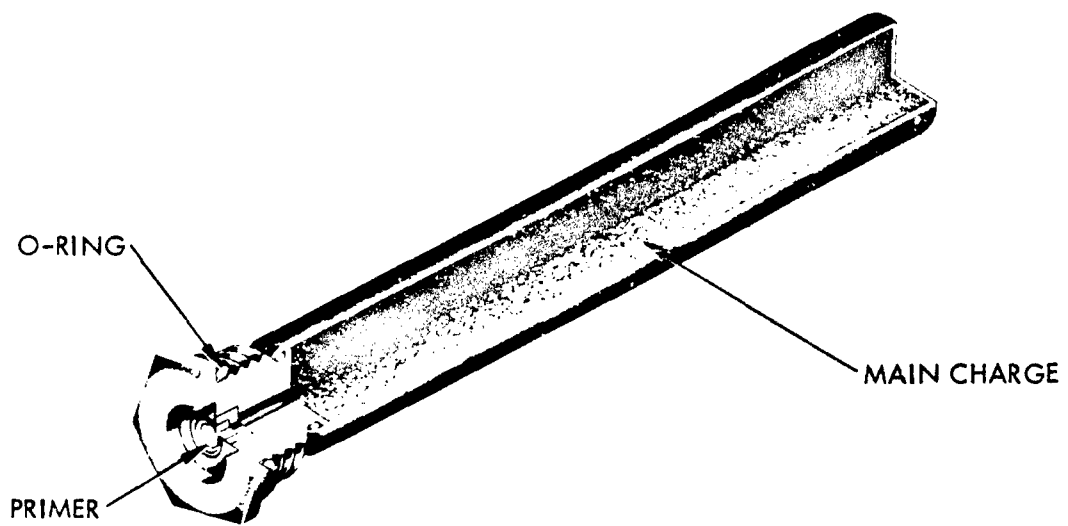
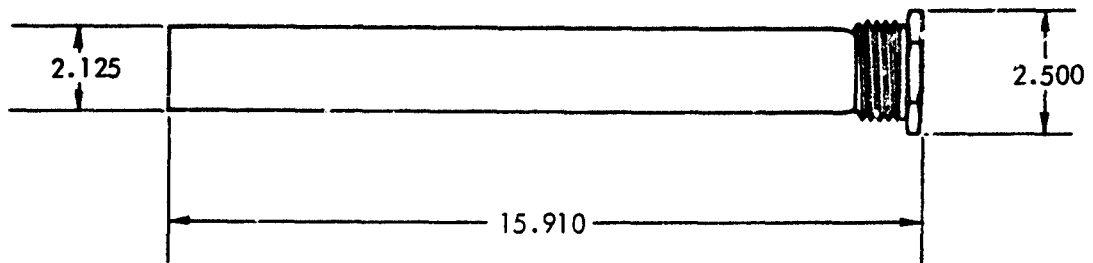
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: cool gas generator W/K P/N 89 3209 for inflating 25-man
life raft (LR-25) in C-2A aircraft.

NOTES:

2519676
15Aug73

CARTRIDGE, Gas Generation (NAVAIR dwg. 2519676)



2519696-1
15Aug73

CARTRIDGE, Reduced Charge Primary (NAVAIR dwg. 2519696-1)

Source: Martin Baker Aircraft Ltd. P/N MBEU 26434

Source control dwg.: 2519696-1

Federal stock no.: 1377-845-5242*

DOD code no.: M397

Qualification: MIL-D-21625 type III-B

Service life: 30 mo. installed, 5 yr. total

Temperature limits: -65° to +165°F

Cook-off temperature: 275°F

Impetus:

Weight: .50 lb.

IGNITER, percussion

Specification no.:

No-fire:

All-fire:

Recommended firing:

Bridge resistance:

Bridge material:

Bead material:

Booster material:

Charge:

DELAY,

Specification no.:

Nominal delay/specification limits:

Delay material:

BOOSTER CHARGE,

Specification no.:

Weight:

Granulation:

MAIN CHARGE, single base

Specification no.:

Weight: 33.7 gm

Granulation:

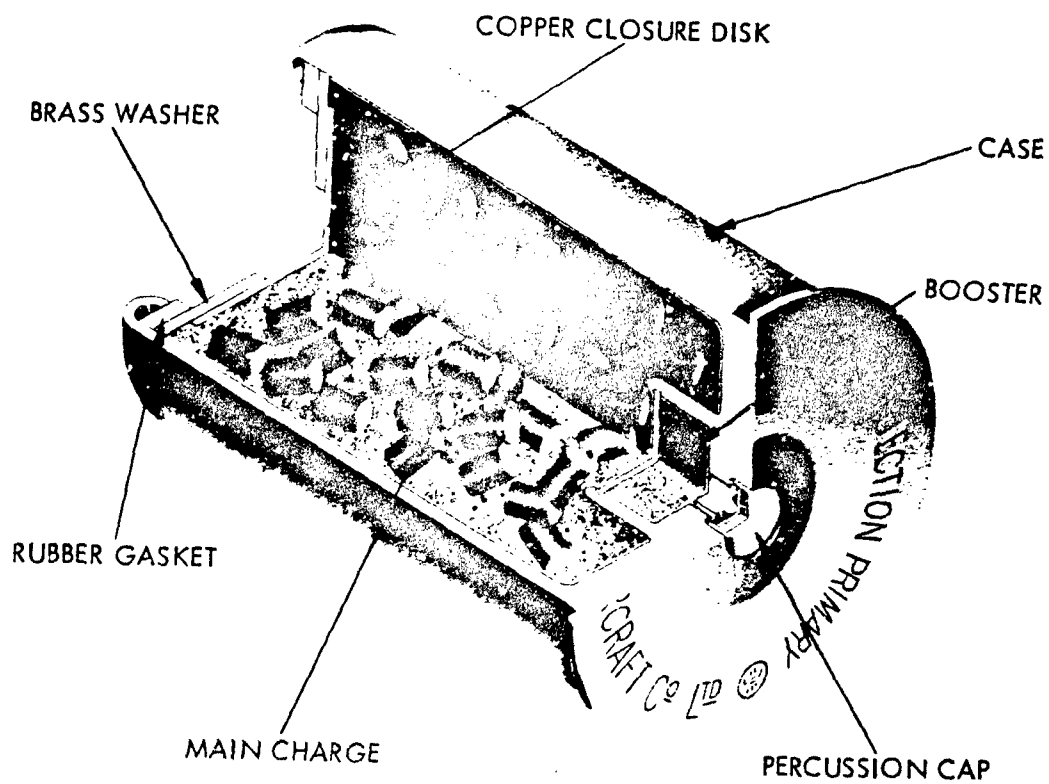
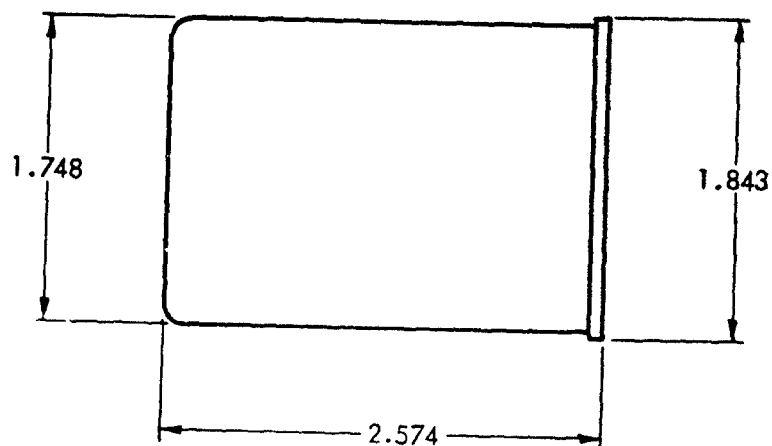
Flame temperature:

APPLICATIONS: Martin Baker Personnel Escape System.

NOTES: *Issued as part of Martin Baker Cartridge Set, Seat Ejection,
Reduced Charge Primary.

2519696-1
15Aug73

CARTRIDGE, Reduced Charge Primary (NAVAIR dwg. 2519696-1)



2519696-2
15Aug73

CARTRIDGE, Secondary Catapult (NAVAIR dwg. 2519696-2)
Source: Martin Baker Aircraft Ltd. P/N MBEU 29231
Source control dwg.: 2519696-2
Federal stock no.: 1377-883-8994 or 1377-845-5242*
DOD code no.: M399 or M397*
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 275°F
Impetus:
Weight: .319 lb.

IGNITER, sympathetic ignition
Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

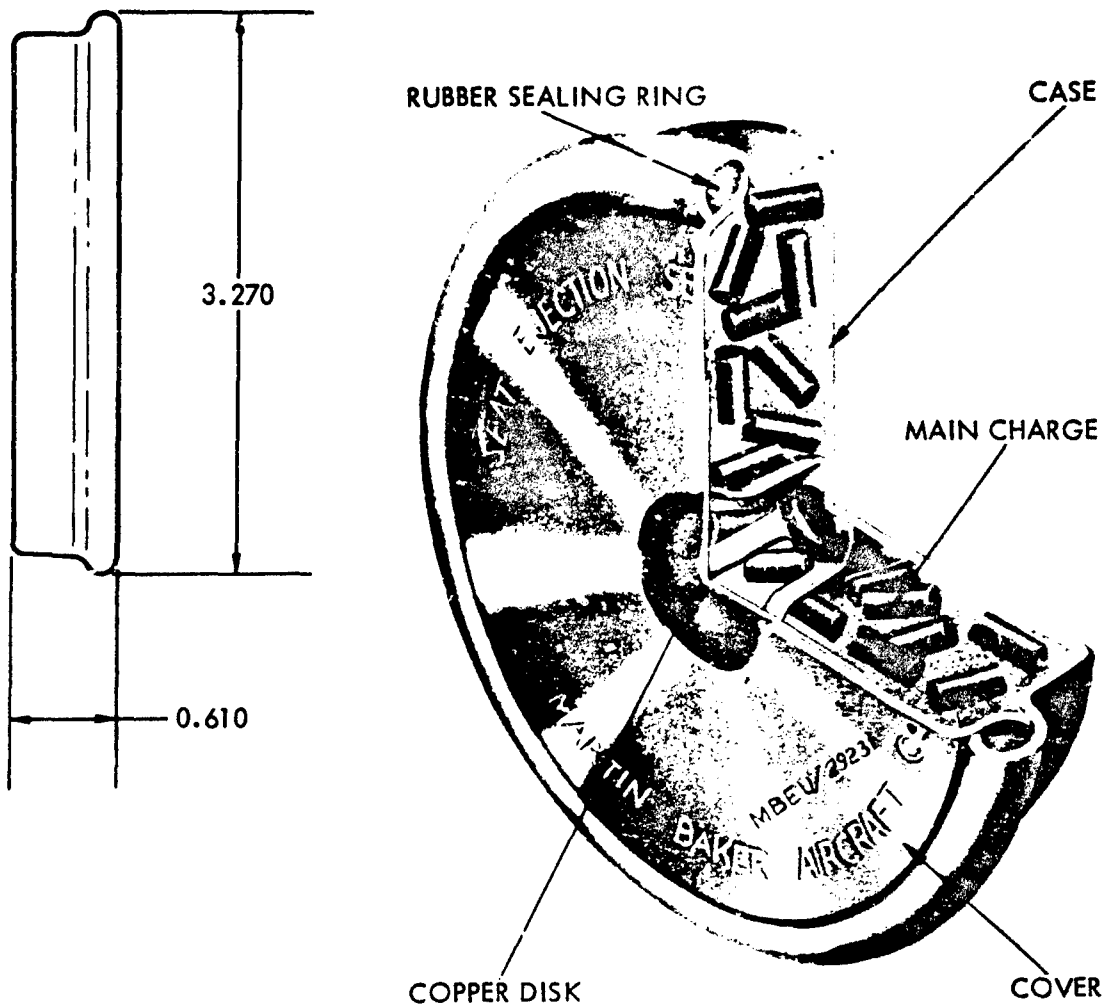
MAIN CHARGE,
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Personnel Escape System.

NOTES: *Issued as part of Martin Baker Cartridge Set, Standard Primary
and Martin Baker Cartridge Seat, Reduced Charge Primary.

2519696-2
15Aug73

CARTRIDGE, Secondary Catapult (NAVAIR dwg. 2519696-2)



2519697
15Aug73

CARTRIDGE, Primary Catapult (NAVAIR dwg. 2519697)
Source: Martin Baker Aircraft Ltd. P/N MBEU 7840
Source control dwg.: 2519697
Federal stock no.: 1377-883-8994*
DOD code no.: M399*
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus:
Weight: .507 lb.

IGNITER, percussion
Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

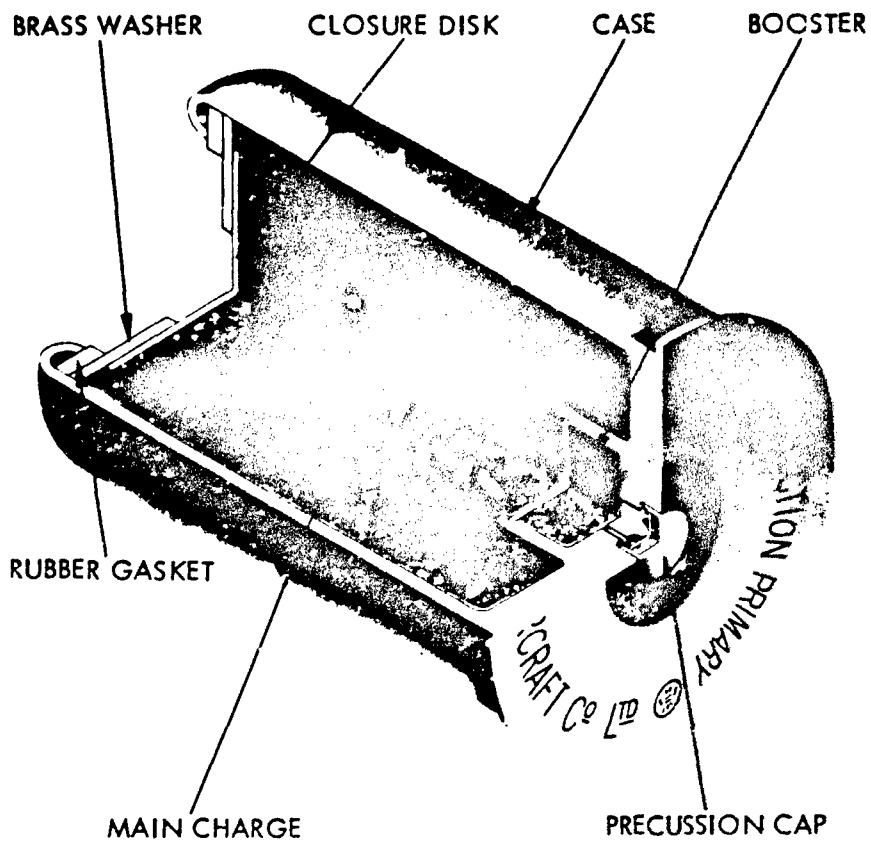
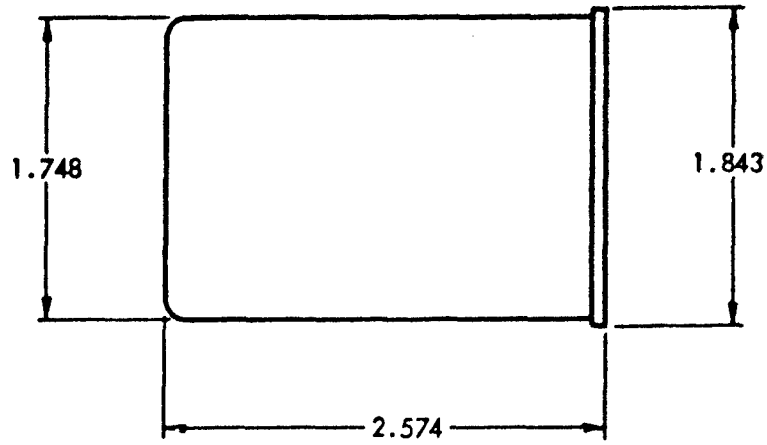
MAIN CHARGE,
Specification no.:
Weight: 40.82 gm
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Personnel Escape System.

NOTES: *Issued as part of Martin Baker Cartridge Set, Seat Ejection,
Standard Primary.

2519697
15Aug73

CARTRIDGE, Primary Catapult (NAVAIR dwg. 2519697)



214<

2519698
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2519698)

Source: Martin Baker Aircraft Ltd. P/N MBEU 16650
Source control dwg.: 2519698
Federal stock no.: 1377-883-8998
DOD code no.: M520
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to 160°F
Cook-off temperature: 275°F
Impetus:
Weight: .079 lb.

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

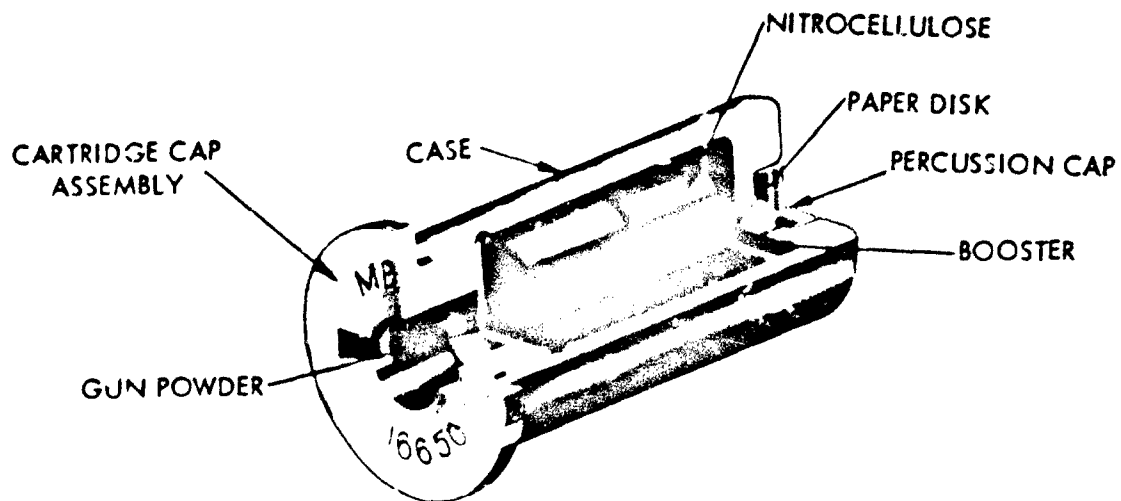
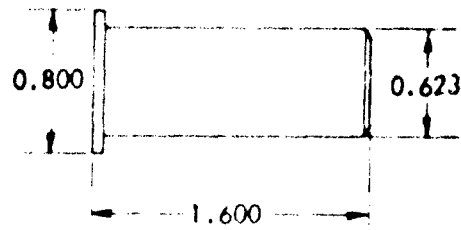
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Personnel Escape System.

NOTES:

2519698
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2519698)



2519707
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher (NAVAIR dwg. 2519707)

Source: Walter Kidde Co. P/N 894846
Source control dwg.: 2519707
Federal stock no.: 1377-824-5858
DOD code no.: M232
Qualification: MIL-D-21625 type III-B
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F*
Cook-off temperature: 375°F
Impetus:
Weight: .169 lb.

IGNITER, electric, Dupont E-92EB squib (two)

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance: .025 - .100 ohm.
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

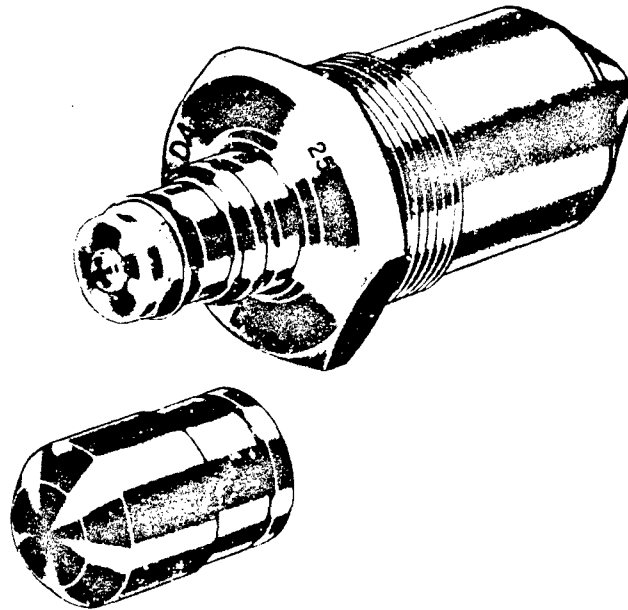
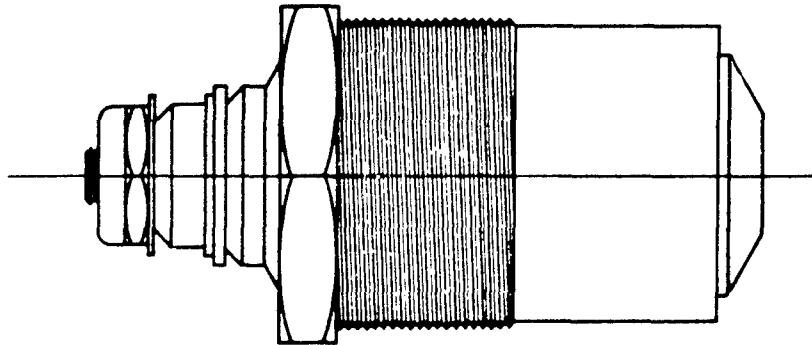
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: engine fire extinguishing system, UH-2C and CH-53A helicopters.

NOTES: *Replace after 2000 hours in environments of +100° to +160°F.

2519707
15Aug73

CARTRIDGE, Aircraft Fire Extinguisher (NAVAIR dwg. 2519707)



218<

2519953
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2519953)
Source: Mine Safety Appliance Co. P/N SK-15330-9
Source control dwg.: 2519953
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III-B
Service life: 12 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: .090 lb.

IGNITER, electric
Specification no.:
No-fire:
All-fire:
Recommended firing: 10.0 amp.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

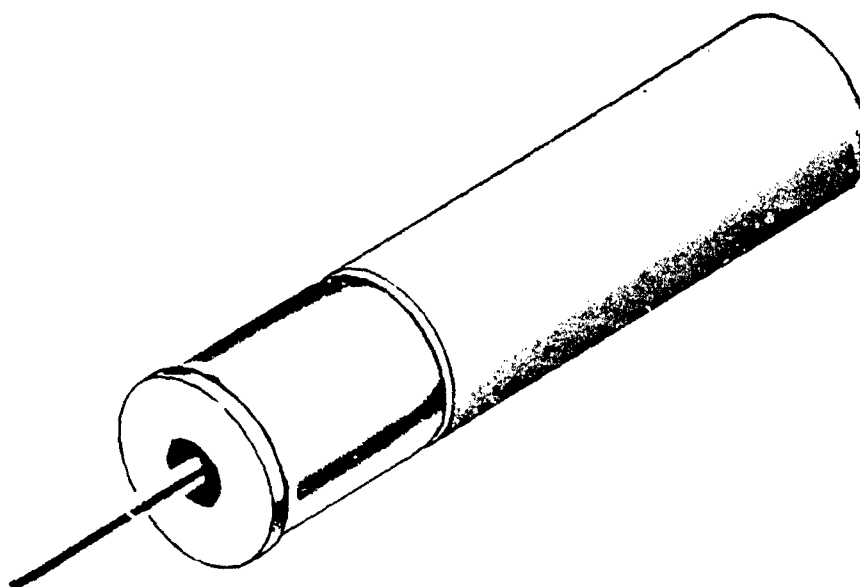
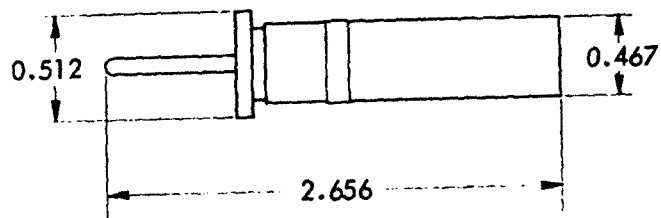
MAIN CHARGE,
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Velocity Power Cutter P/N A375-2.

NOTES:

2519953
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2519953)



220<

2519954
15Aug73

CARTRIDGE, Impulse (NAVJIR dwg. 2519954)
Source: Mine Safety Appliance Co. P/N SK-15331-9
Source control dwg.: 2519954
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625 type III-B
Service life: 12 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: .060 lb.

IGNITER, electric
Specification no.:
No-fire:
All-fire:
Recommended firing: 10.0 amp.
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

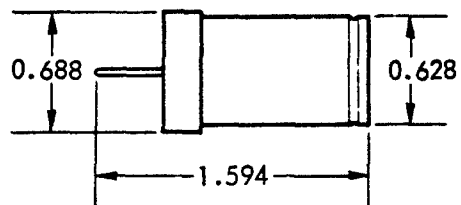
MAIN CHARGE,
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Cable Cutter, MSA P/N 15380-1 in CH-53 helicopter.

NOTES:

2519954
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2519954)



2520002
15Aug73

CARTRIDGE, Impulse Drogue (NAVAIR dwg. 252C002)
Source: Martin Baker Aircraft Ltd. P/N MBEU 7536
Source control dwg.: 2520002
Federal stock no.: 1377-883-8997
DOD code no.: M507
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr total
Temperature limits: -65° to +160°F
Cook-off temperature: 450°F
Impetus:
Weight: .086 lb.

IGNITER, percussion
Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

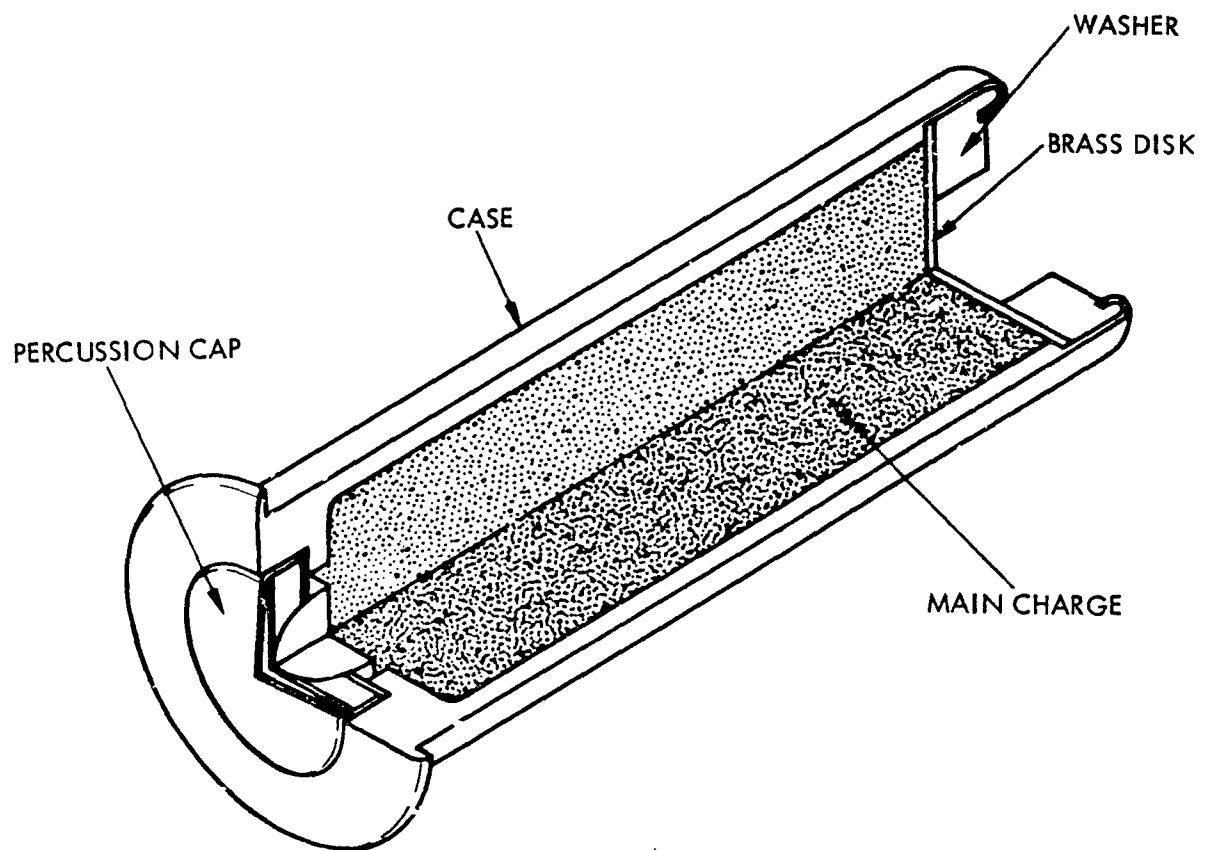
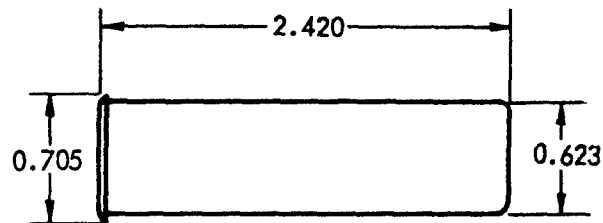
MAIN CHARGE,
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Personnel Escape System.

NOTES:

2520002
15Aug73

CARTRIDGE, Impulse Droque (NAVAIR dwg. 2520002)



224<

252004
15Aug7

CARTRIDGE, Impulse (NAVAIR dwg. 2520045)
Source: Aero Engineering Corp. P/N SK 86-0016-1
Source control dwg.: 2520045
Federal stock no.: 1377-490-6251
DOD code no.: M654
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus:
Weight: .068 lb.

IGNITER, percussion
Specification no.: Army Ord. dwg 8596412
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

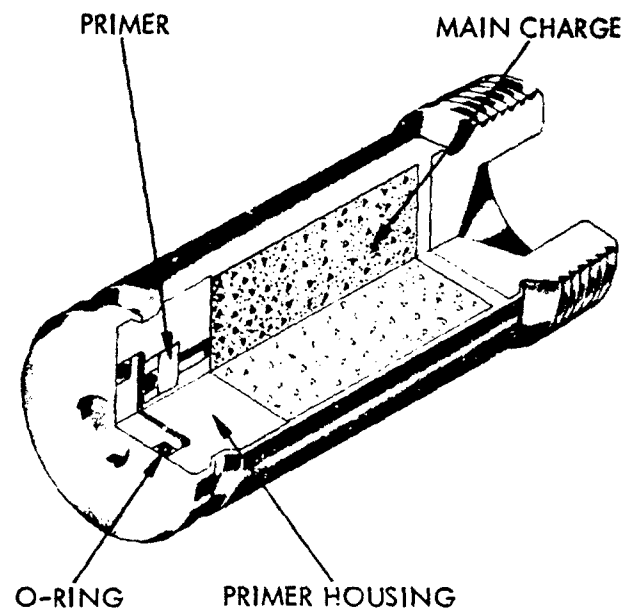
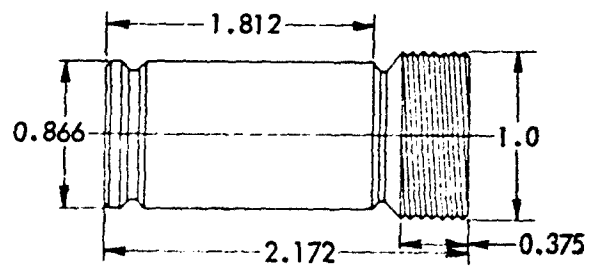
MAIN CHARGE, double-base, hi temp
Specification no.:
Weight: 1.5 gm
Granulation:
Flame temperature:

APPLICATIONS: spreading gun in A4A, B, C and E aircraft escape system

NOTES:

2520045
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 2520045)



294AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 294AS100)

Source: Martin Baker Aircraft Ltd. P/N MBEU 36120
Source control dwg.: 294AS100
Federal stock no.: 1377-245-2959
DOD code no.: M571
Qualification: MIL-D-21625 type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 225°F
Impetus:
Weight: .230 lb.

IGNITER, percussion

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

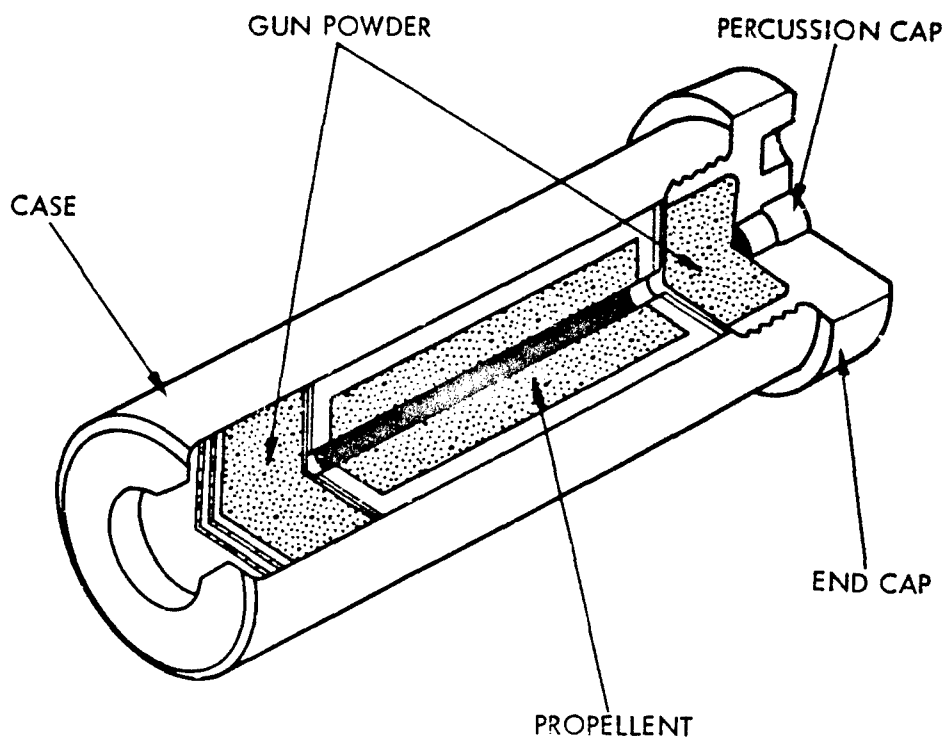
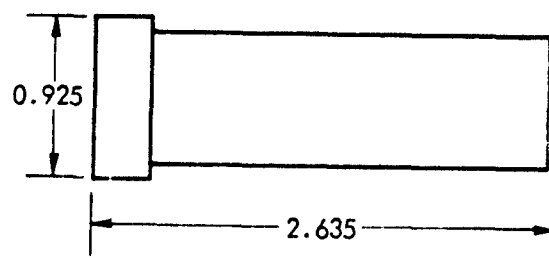
APPLICATIONS: Personnel restraint harness take-up reel (MBEU-3506 and 3800) in A-6A, F-4, F-8 aircraft escape systems.

NOTES:

227<

294AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 294AS100)



29/AS100
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 297AS100)

Source: Ordnance Engineering Associates P/N 2130750
Source control dwg.: 297AS100
Federal stock no.: 1377-245-2962*
DOD code no.: M719*
Qualification: MIL-D-21625 type III-B
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature.
Impetus:
Weight:

IGNITER, percussion, primer M42

Specification no.: MIL-P-20444
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits: 0.75 sec/0.60 to 0.90
Delay material:

BOOSTER CHARGE, black powder

Specification no.:
Weight: .50 gm
Granulation: A4

MAIN CHARGE, double base, 030 SP M2

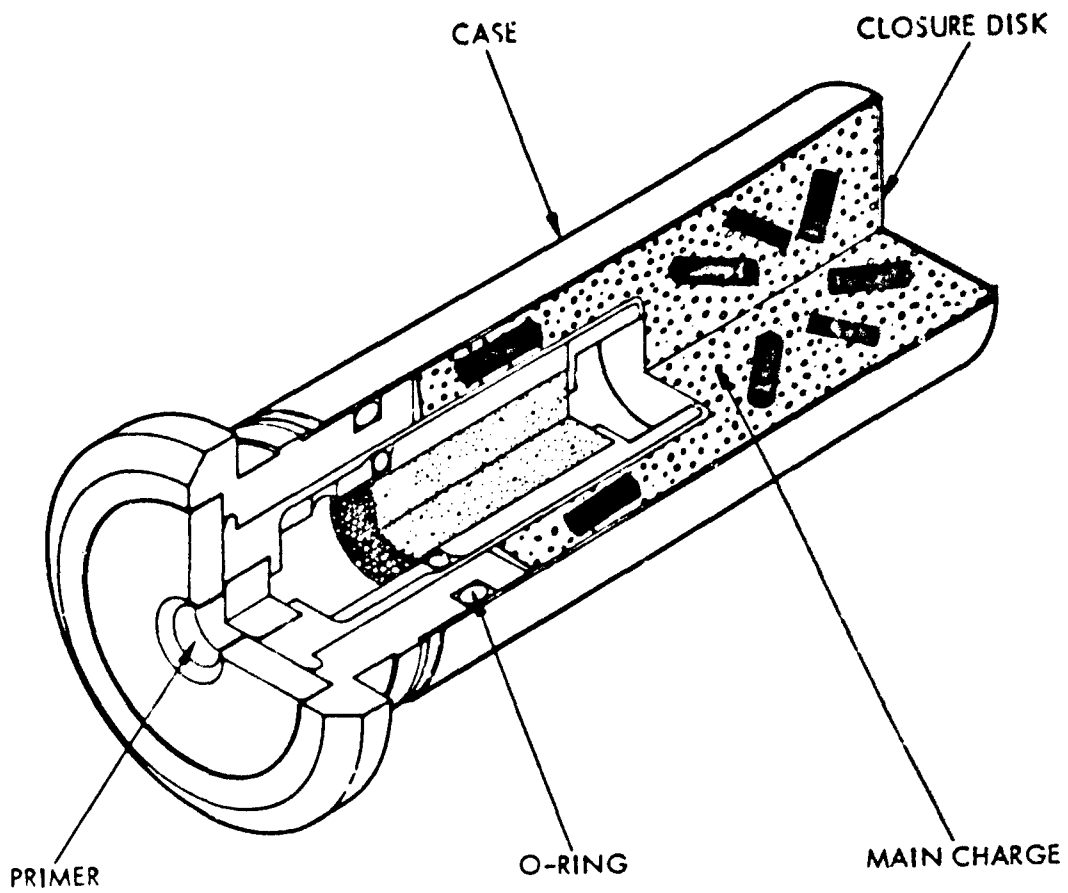
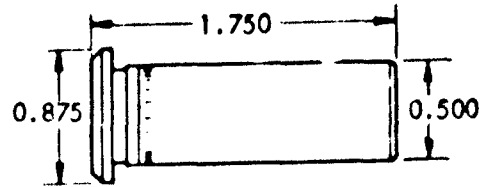
Specification no.:
Weight: .40 gm
Granulation: 1-perf, D=.067, d=.007, h=.247 in.
Flame temperature:

APPLICATIONS: Delay Initiator, OEA P/N 21301100 (296AS100), F-4
aircraft escape system.

NOTES: *Device; sealed assembly

297AS100
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 297AS100)



309AS100
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 309AS100)

Source: Ordnance Engineering Associates P/N 2129500
Source control dwg.: 309AS100
Federal stock no.: 1377-245-296
DOD code no.:
Qualification: MIL-D-21625 type III-B
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Beam material:
Booster material:
Charge:

DELAY, pyrotechnic

Specification no.:
Nominal delay/specification limits: 0.3 sec/
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

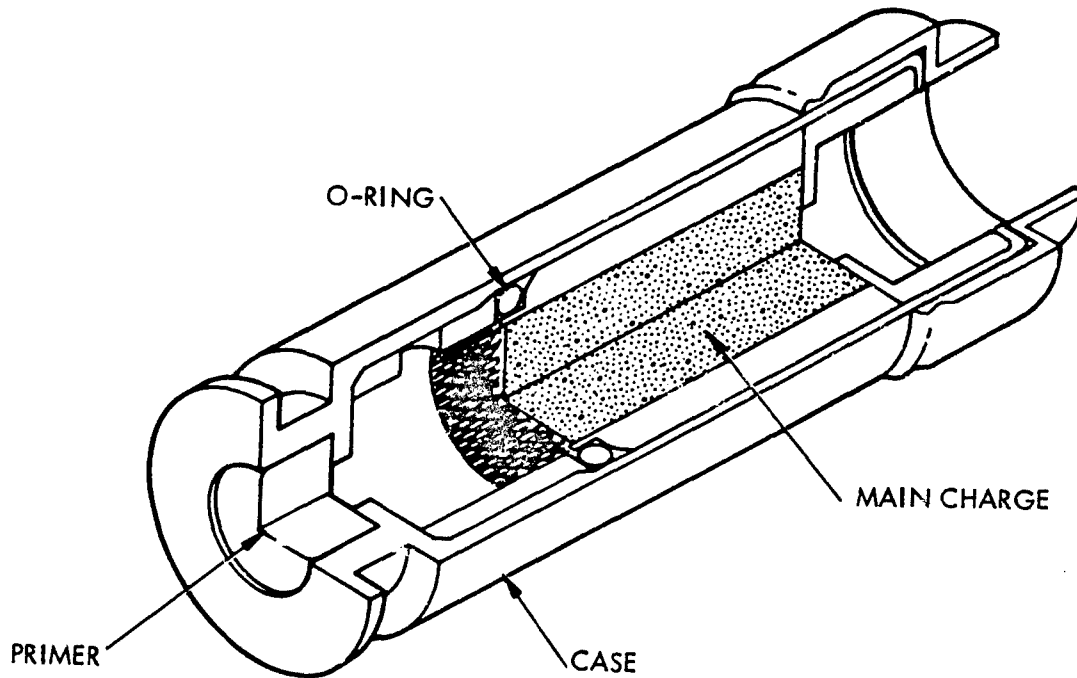
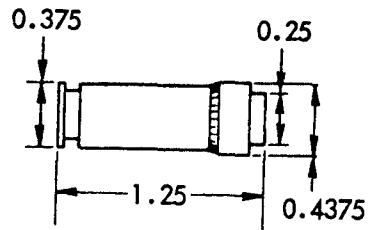
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Delay Initiator, OEA 2129100 (307AS100), F-4 aircraft
escape system.

NOTES:

309AS100
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 309AS100)



310AS100
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 310AS100)

Source: Ordnance Engineering Associates P/N 21291100
Source control dwg.: 310AS100
Federal stock no.: 1377-245-2960
DOD code no.:
Qualification: MIL-D-21625 type III-B
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature: 300°F
Impetus:
Weight:

IGNITER, percussion, primer M42

Specification no.: MIL-P-20444
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY, pyrotechnic

Specification no.:
Nominal delay/specification limits: 0.4 sec./ .300 to .508 sec
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

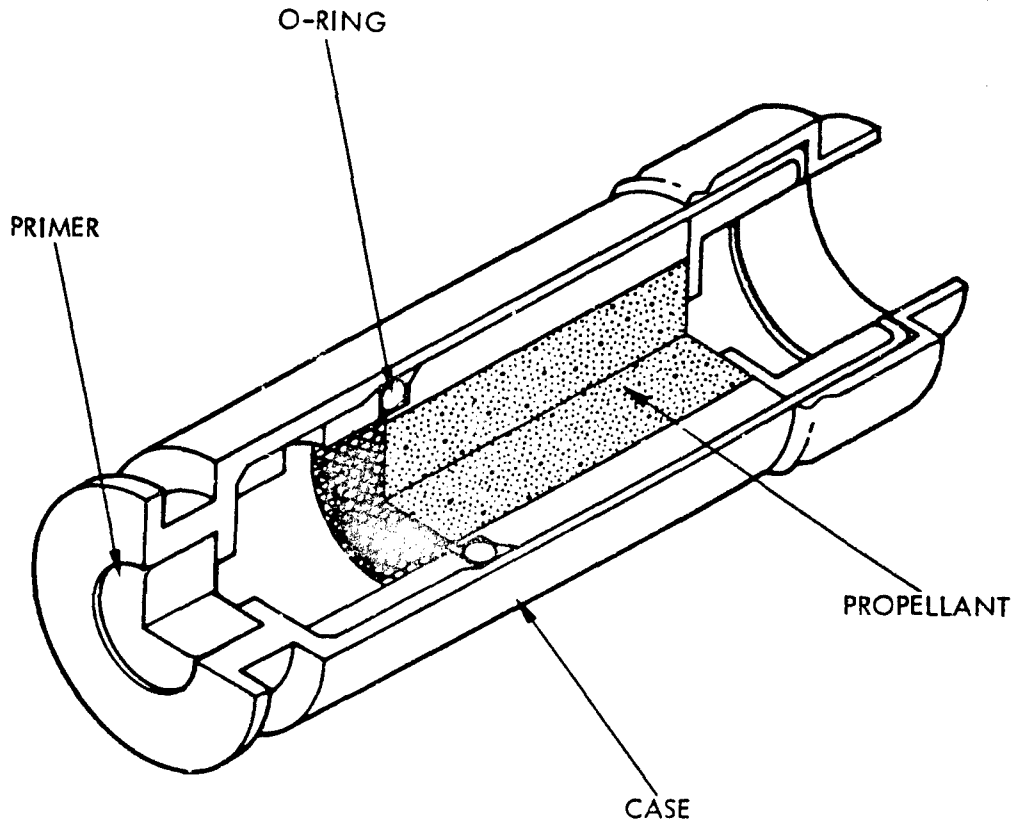
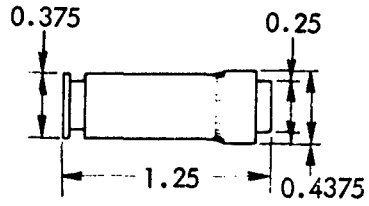
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Delay Initiator, OEA 21291500 (308AS100), F-4 aircraft
escape system.

NOTES:

310AS100
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 310AS100)



314AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 314AS100)
Source: Ordnance Engineering Associates P/N 2130900
Source control dwg.: 314AS100
Federal stock no.: 1377-245-2963
DOD code no.:
Qualification: MIL-D-21625, type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight:

IGNITER, percussion, primer 72M
Specification no.: MIL-P-46610
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

BOOSTER CHARGE, black powder
Specification no.:
Weight: 0.50 gm
Granulation: A4

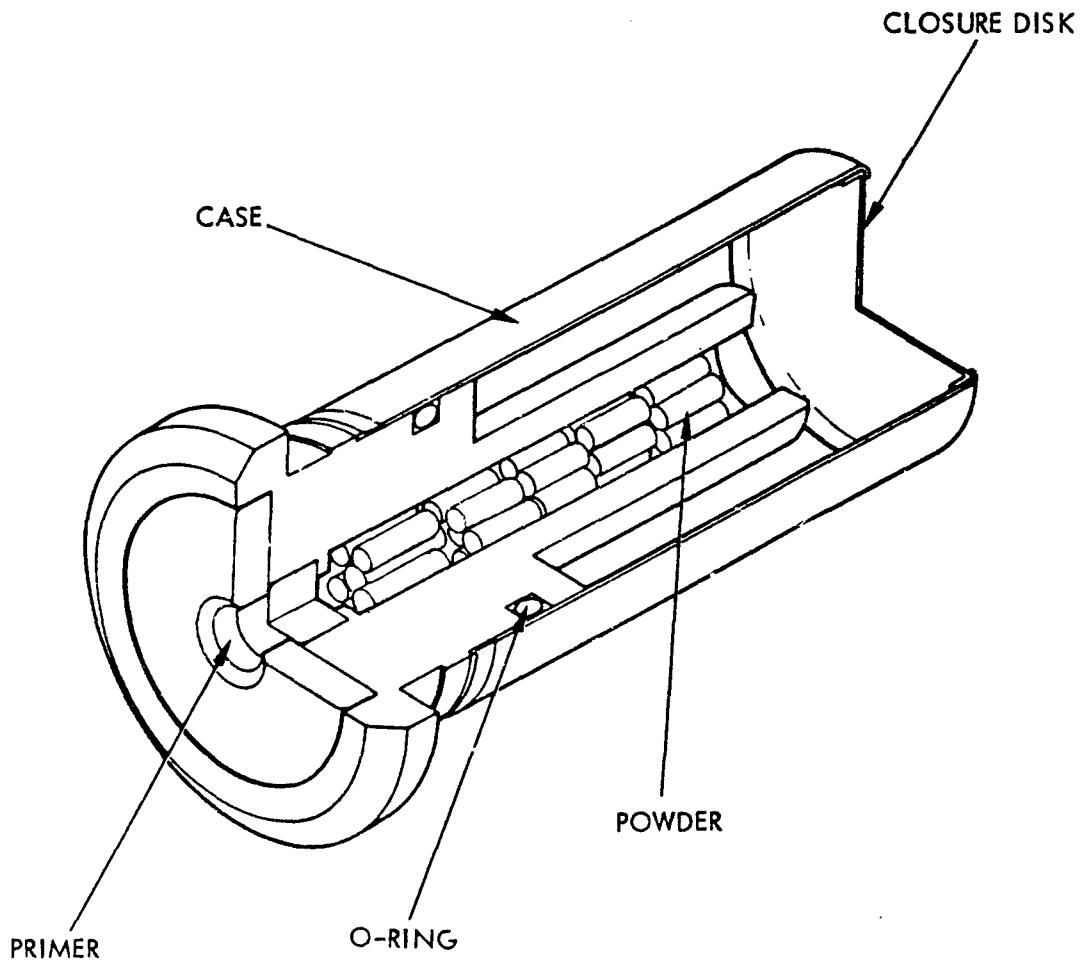
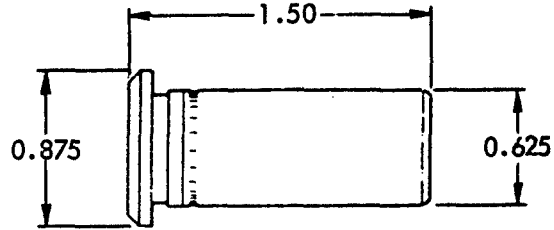
MAIN CHARGE, double base, M2
Specification no.:
Weight: 0.10 gm 015SPM2; 1.60 gm 030SPM2
Granulation: 0.15SPM2
0.30SPM2 1 perf, D=.067, d=.007, h=.247 in.
Flame temperature:

APPLICATIONS: Initiator, OEA P/N 2130300 (312AS100), F-4 aircraft
escape system.

NOTES:

314AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 314AS100)



236<

315AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 315AS100)
Source: Ordnance Engineering Associates P/N 21301500
Source control dwg.: 315AS100
Federal stock no.: 1377-245-2964
DOD code no.:
Qualification: MIL-D-21625, type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER, percussion, primer 72M
Specification no.: MIL-P-46610
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

BOOSTER CHARGE, black powder
Specification no.:
Weight: 0.30 gm
Granulation: A4

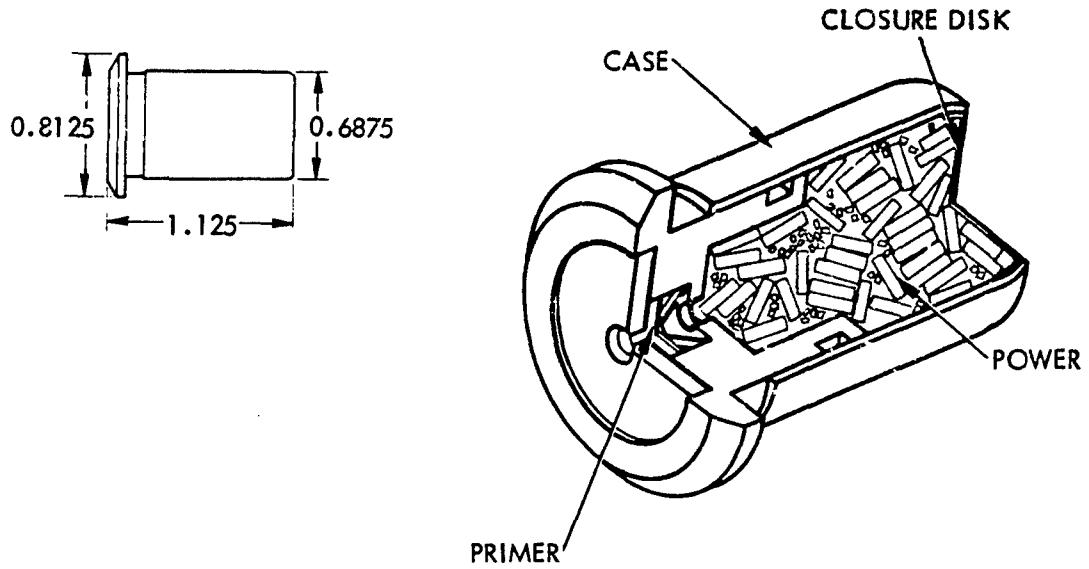
MAIN CHARGE, double-base, M2
Specification no.:
Weight: 0.10 gm 015SPM2, 0.95 gm 030SPM2
Granulation: 015SPM2
030SPM2 1-perf, D=.067, d=.007, h=.247 in.
Flame temperature:

APPLICATIONS: Initiator, OEA P/N 21301300 (313AS100), F-4 aircraft
escape system.

NOTES:

315AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 315AS100)



376AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 376AS100)
Source: Talley Industries P/N 1146-275
Source control dwg.: 376AS100
Federal stock no.: 1377-404-1184
DOD code no.: M357
Qualification: MIL-D-21625, type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: .040 lb.

IGNITER, percussion, primer M42
Specification no.: MIL-P-20444
No-fire: 4 in-oz.
All-fire: 26 in-oz.
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

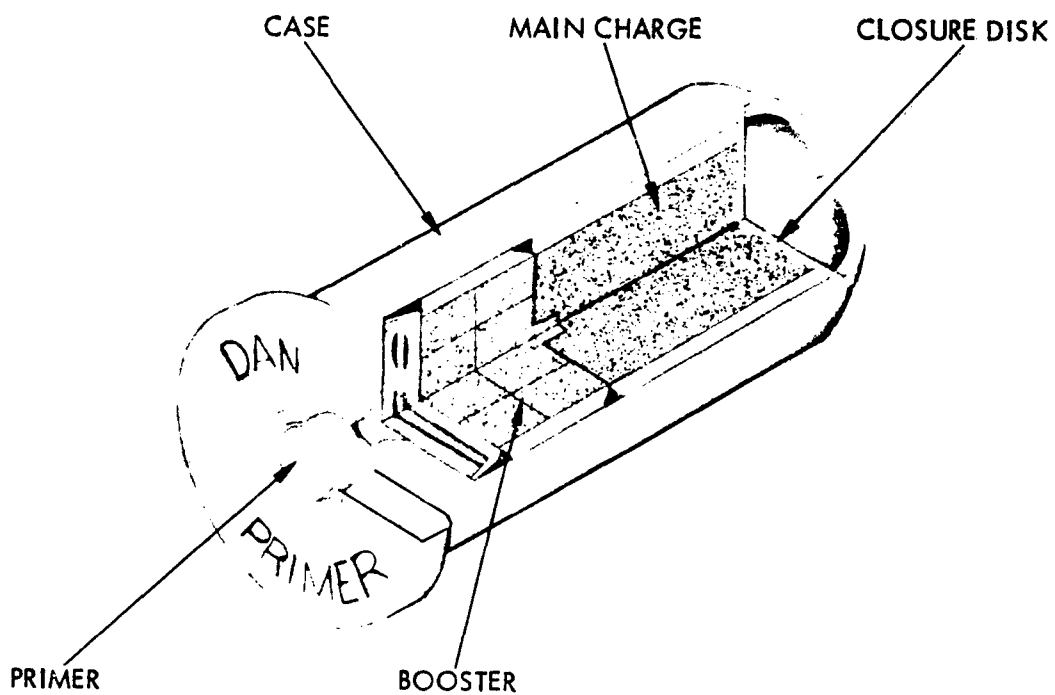
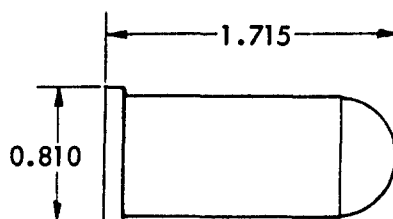
MAIN CHARGE,
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Personnel restraint harness take-up reel, Talley 1146-275 (376AS100), in F-4 aircraft escape system.

NOTES:

376AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 376AS100)



548AS100
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 548AS100)

Source: Ordnance Engineering Associates P/N 2130800
Source control dwg.: 548AS100
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III-B
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +200°F
Cook-off temperature:
Impetus:
Weight:

IGNITER, percussion, primer M42

Specification no.: MIL-P-20444
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY, pyrotechnic

Specification no.:
Nominal delay/specification limits: 0.75 sec/0.562 to 0.938 sec
Delay material:

BOOSTER CHARGE, black powder

Specification no.:
Weight: 0.5 gm
Granulation: A4

MAIN CHARGE, double base, M2

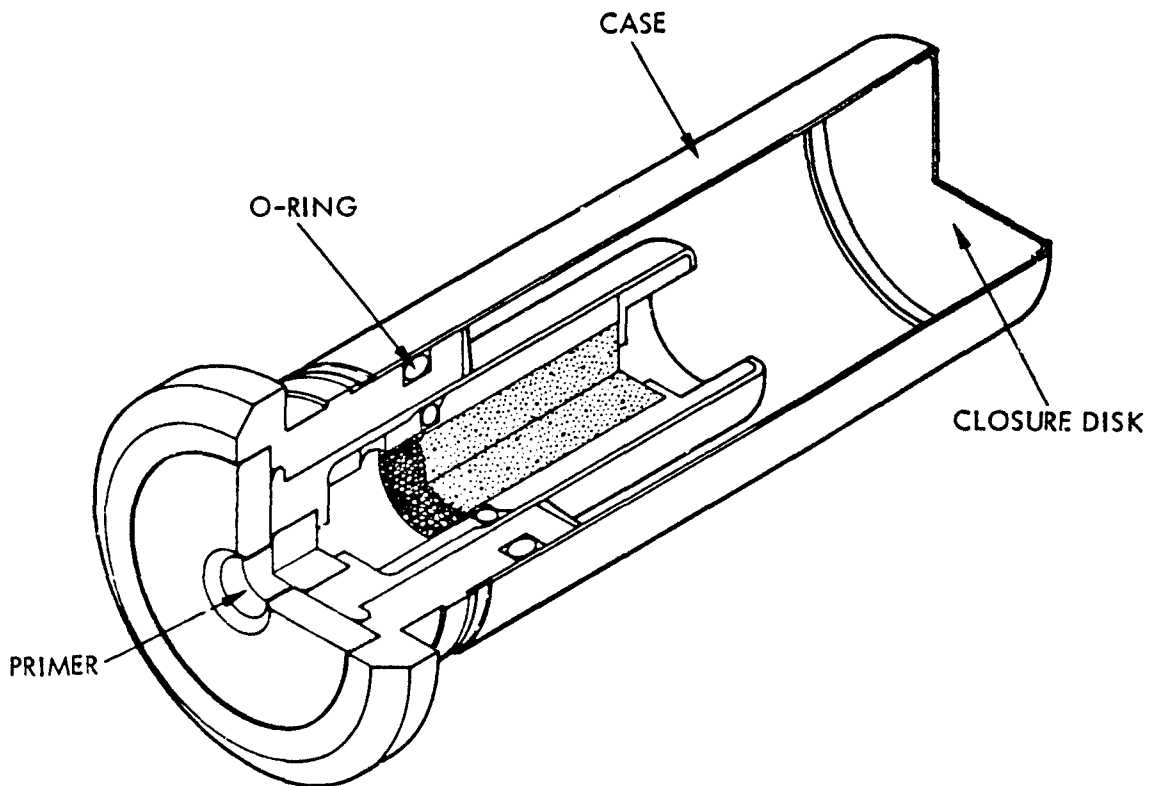
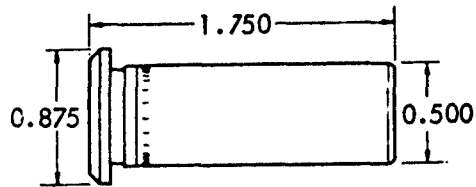
Specification no.:
Weight: 0.80 gm
Granulation: 1-perf, D=.067, d=.007, h=.247 in
Flame temperature:

APPLICATIONS: Explosive Valve, OEA P/N 2192100-1 (627AS100) F-4
aircraft escape system.
Delay Initiator, OEA P/N 21301900 (547AS100) F-4
aircraft escape system.

NOTES:

548AS100
15Aug73

CARTRIDGE, Delay (NAVAIR dwg. 548AS100)



626AS10
15Aug'

CARTRIDGE, Impulse (NAVAIR dwg. 626AS100)

Source: Ordnance Engineering Associates P/N 2197200

Source control dwg.: 626AS100

Federal stock no.: 1377-412-3205

DOD code no.: M359

Qualification: MIL-D-21625, type III-B

Service life: 30 mo. installed, 5 yr. total

Temperature limits: -65° to +200°F

Cook-off temperature:

Impetus:

Weight:

IGNITER, electric

Specification no.:

No-fire: 1.0 amp

All-fire:

Recommended firing:

Bridge resistance 1.0 ohm ±.2

Bridge material:

Bead material:

Booster material:

Charge:

BOOSTER CHARGE,

Specification no.:

Weight:

Granulation:

MAIN CHARGE, M2

Specification no.:

Weight: 0.8 gm

Granulation:

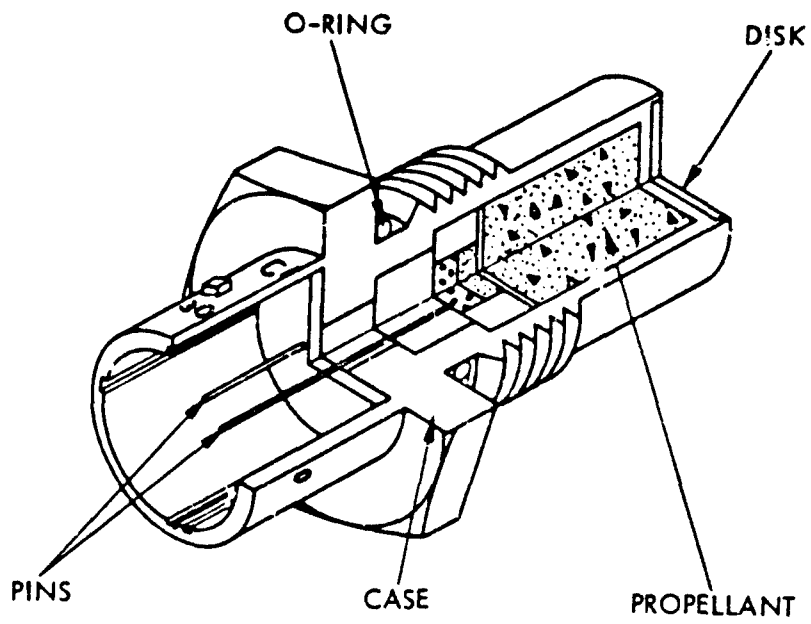
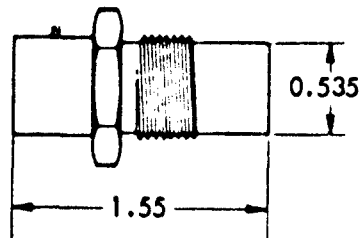
Flame temperature:

APPLICATIONS: Canopy thrusters, OEA 2197100-2 (624AS100) and OEA 2197100-3 (625AS100), F-4 aircraft escape system.

NOTES:

626AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 626AS100)



644AS100
15Aug73

CARTRIDGE, Initiator (NAVAIR dwg. 644AS100)
Source: Martin Baker Aircraft, Ltd. P/N MBEU 50058
Source control dwg.: 644AS100
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, Type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -80° to +225°F
Cook-off temperature 450°F
Impetus:
Weight:

IGNITER,
Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,
Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,
Specification no.:
Weight:
Granulation:

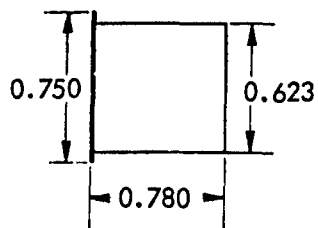
MAIN CHARGE, CS5110G40
Specification no.:
Weight: 18 gr
Granulation:
Flame temperature:

APPLICATIONS: F-14 and A6A aircraft escape systems.

NOTES:

644AS100
15Aug73

CARTRIDGE, Impulse (NAVAIR dwg. 644AS100)



682AS100
15Aug73

CUTTER, CARTRIDGE ACTUATED, (NAVAIR dwg. 682AS100)

Specification no.:
Drawing list no.: 682AS100
Federal stock no.:
DOD code no.: M515
Qualification:
Service life: 18 months installed, 5 years total
Temperature limits: -65° to +165°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

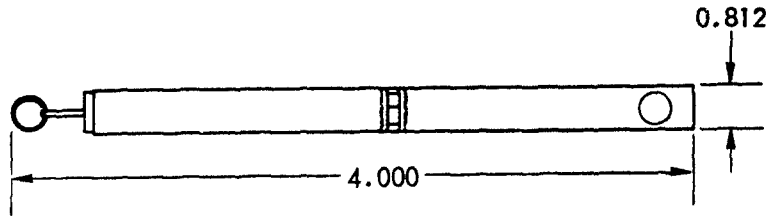
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Installed in recovery parachute canopy of MQM-74 target drone.

NOTES:

682AS100
15Aug73

CUTTER, CARTRIDGE ACTUATED, (NAVAIR dwg. 682AS100)



685AS100
15Aug73

CARTRIDGE, IMPULSE (NAVAIR dwg. 685AS100)

Source: Talley Industries, P/N 5000-1
Source control dwg.: 685AS100
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +200°F
Cook-off temperature: 425°F
Impetus:
Weight: 0.032 lb.

IGNITER, percussion

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

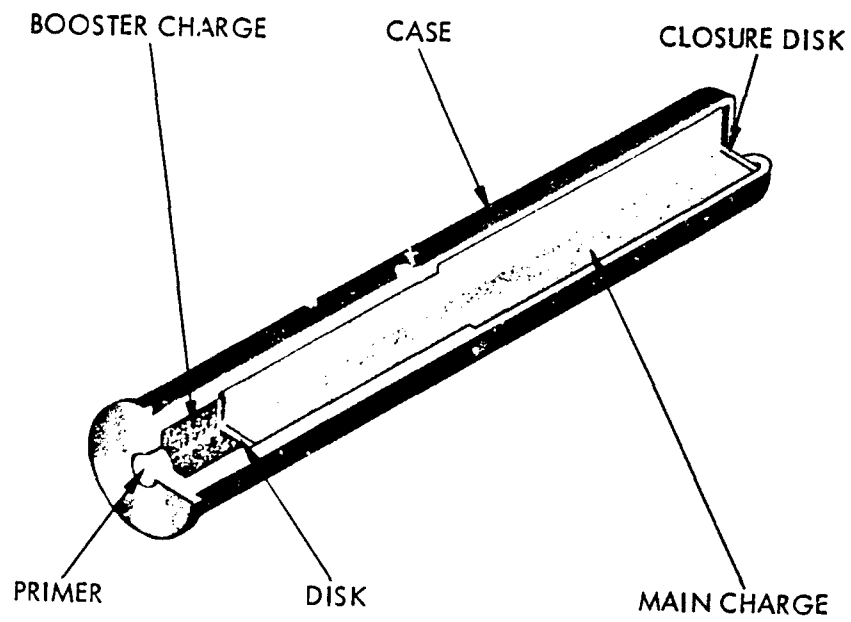
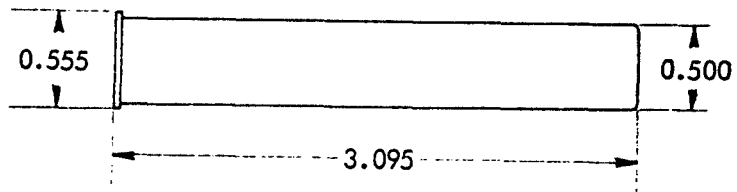
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Rotary Actuator, Talley Industries P/N 1000-39 T-33B
A/C escape system.

NOTES:

685AS100
15Aug73

CARTRIDGE, IMPULSE (NAVAIR dwg. 685AS100)



M28A1
15Aug73

CARTRIDGE, IMPULSE, M28A1

Specification no.: MIL-C-46271
Source: Frankford Arsenal
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: 0.335 lb.

IGNITER, primer, percussion, 50M (or equal)

Specification no.: MIL-P-46610
No-fire: 2-1/2 inches
All-fire: 15 inches
Recommended firing:
Charge: Remington Arms 5061W.

IGNITER, black powder, grade A-1

Specification no.: MIL-P-223
Weight: 4.21 gm
Granulation: A-1

MAIN CHARGE, propellant, M-6

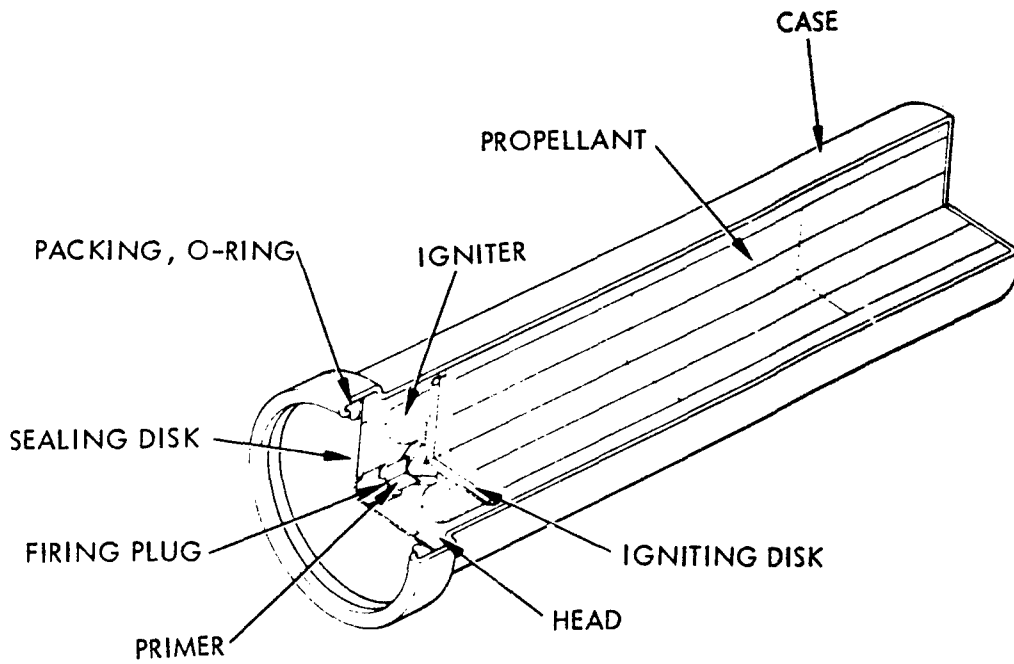
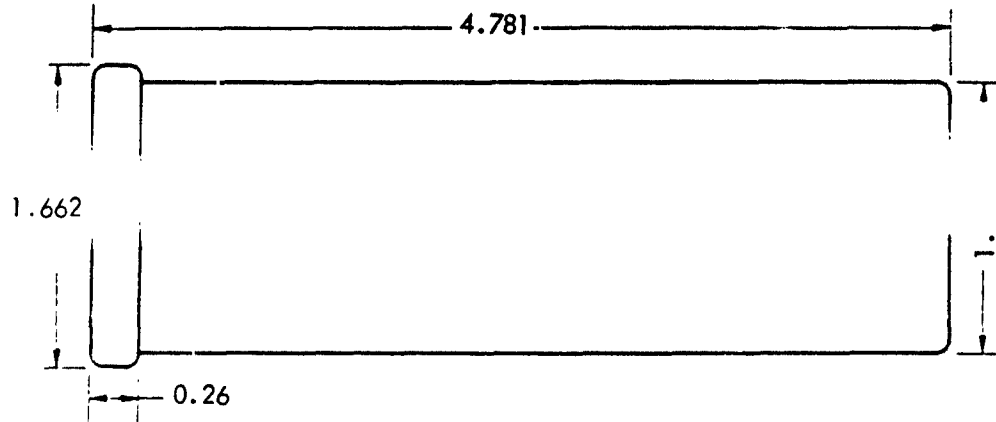
Specification no.: JAN-P-309
Weight: 82.3 gm.
Granulation: cylindrical sticks - 1.240 L.X.630 diam.
Flame temperature:

APPLICATIONS: Catapult, Aircraft Ejection Seat, M5A1 (M324).

NOTES:

M28A1
15Aug73

CARTRIDGE, IMPULSE, M28A1



252<

M29A2
15Aug73

CARTRIDGE, IMPULSE, M29A2

Specification no.: MIL-C-46615

Source: Frankford Arsenal

Federal stock no.:

DOD code no.:

Qualification:

Service life: 30 months installed, 5 years total

Temperature limits: -65° to +160°F

Cook-off temperature: will cook-off @ 300°F after 1 hour

Impetus:

Weight: 0.119 lb.

IGNITER, primer, percussion 50M (or equal)

Specification no.: MIL-P-46610

No-fire: 2-1/2 inches

All-fire: 15 inches

Recommended firing:

Charge: Remington Arms 5061W

IGNITER, black powder, grade A-4

Specification no.: MIL-P-223

Weight: 1.62 gm

Granulation: A-4

MAIN CHARGE, propellant M2

Specification no.: MIL-STD-652

Weight: 8.42 gm.

Granulation: cylindrical - .485 L. x .250

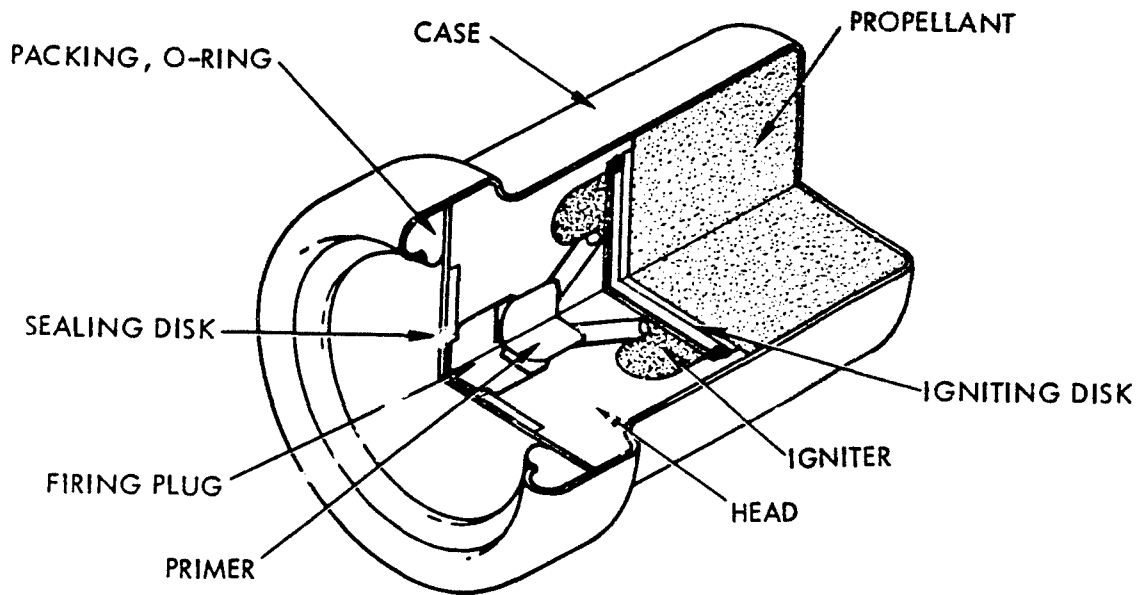
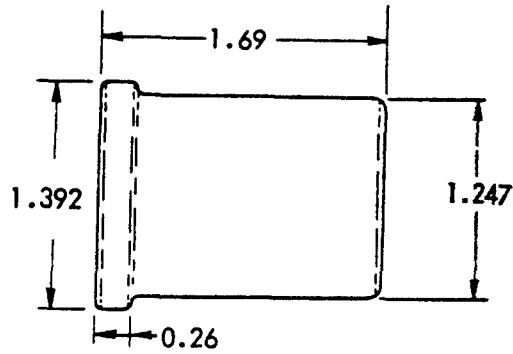
Flame temperature:

APPLICATIONS: Remover, Aircraft Canopy, M1A3 (M246).

NOTES:

M29A2
15Aug73

CARTRIDGE, IMPULSE, M29A2



M31A1
15Aug73

CARTRIDGE, IMPULSE, M31A1
Specification no.: MIL-C-46239
Source: Frankford Arsenal
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: 0.127 lb.

IGNITER, primer, percussion 50M (or equal)
Specification no.: MIL-P-46610
No-fire: 2-1/2 inches
All-fire: 15 inches
Recommended firing:
Charge: Remington Arms 5061W

IGNITER, black powder, grade A-1
Specification no.: MIL-P-223
Weight: 1.62 gm.
Granulation: A-1

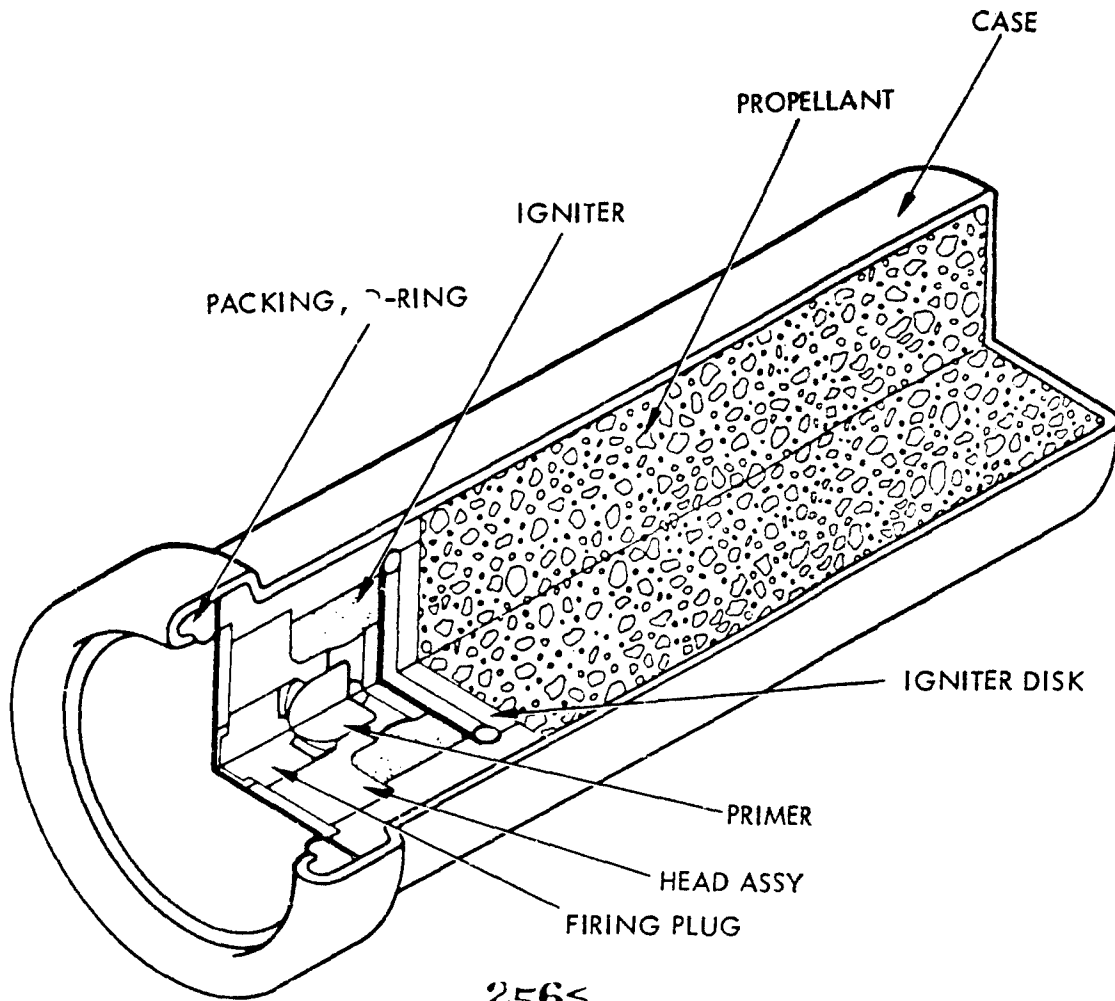
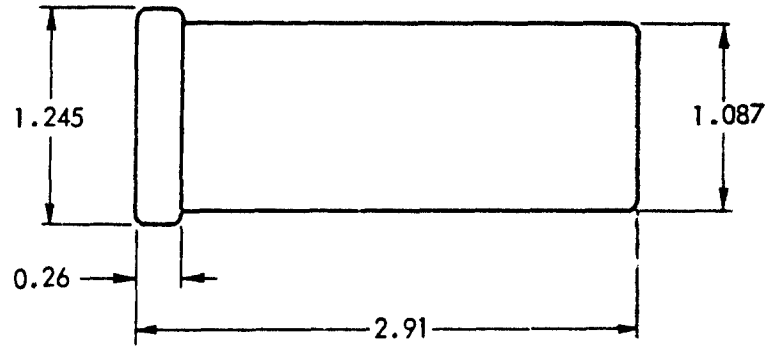
MAIN CHARGE, propellant, M2
Specification no.: MIL-STD-652
Weight: 25.3 gm.
Granulation: cylindrical - .243 L. x .073 diam
Flame temperature:

APPLICATIONS: Remover, Aircraft Canopy, M3A1 (M249).

NOTES:

M31A1
15Aug73

CARTRIDGE, IMPULSE, M31A1



256<

M42
15Aug73

PRIMER, Percussion, M42

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:
No-fire: 2 in-oz (1)
All-fire: 13 in-oz (1)
Recommended firing:
Charge:

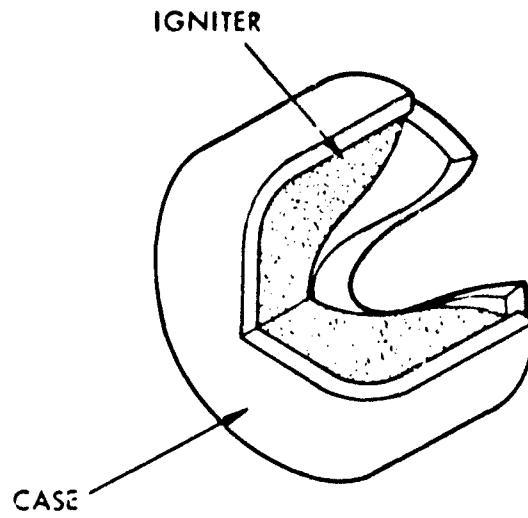
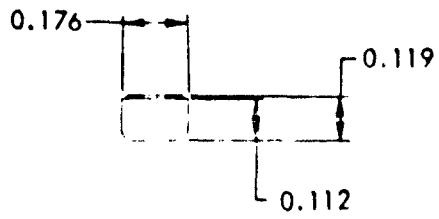
APPLICATIONS:

NOTES: (1) 0.02" firing pin radius.

257<

M42
15Aug73

PRIMER, Percussion, M42



M55
15Aug73

IGNITION ELEMENT, Electric, M55

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.: M264
Qualification:
Service life: 1 year installed, 5 years total
Temperature limits: -65° to +165°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing: 5.0 amp. at 20 volts
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

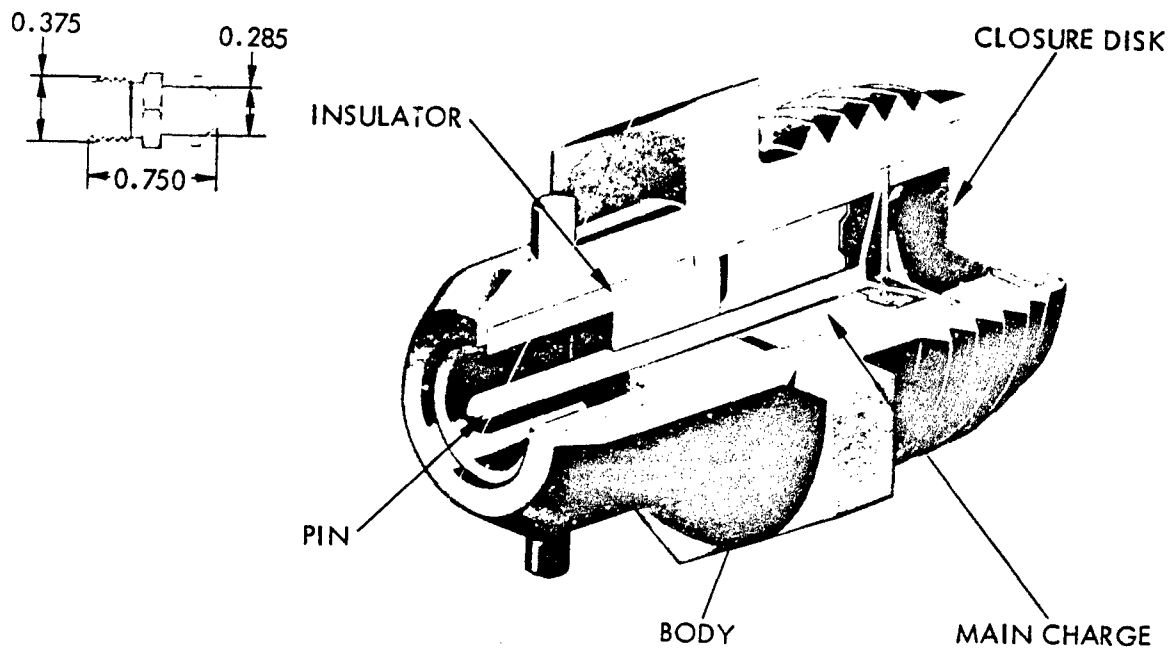
Specification no.:
Weight:
Granulation:
Main charge data:
Flame temperature:

APPLICATIONS: MARK 8 MOD 4 bomb shackle; aero 65A bomb rack; MARK 51
MOD 14 bomb rack.

NOTES:

M55
15Aug73

IGNITION ELEMENT, Electric, M55



M73
15Aug73

CARTRIDGE, IMPULSE, M73

Specification no.: MIL-C-46618
Source: Frankford Arsenal
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: 0.021 lb.

IGNITER, primer, percussion 72M (or equal)

Specification no.: MIL-P-46610
No-fire: 2-1/2 inches
All-fire: 15 inches
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge: Remington Arms 5061W

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

IGNITER, black powder A-4

Specification no.: MIL-P-223
Weight: 1.04 gm.
Granulation: A-4

MAIN CHARGE, propellant, type HES5808, composite

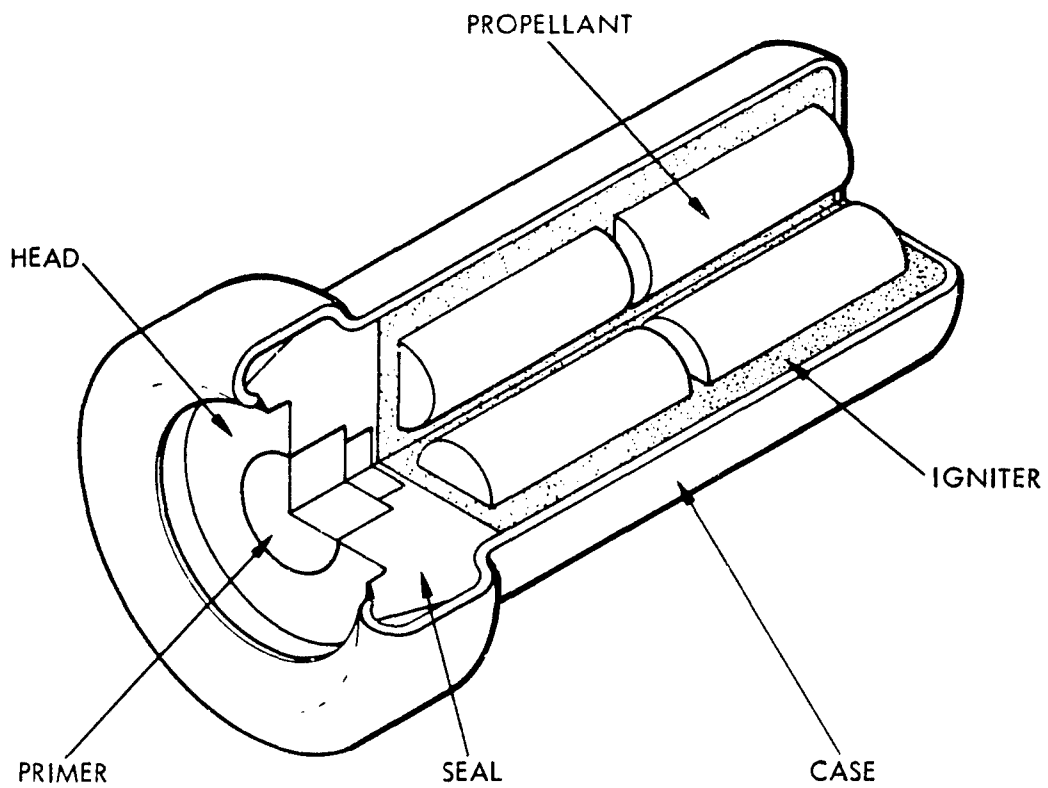
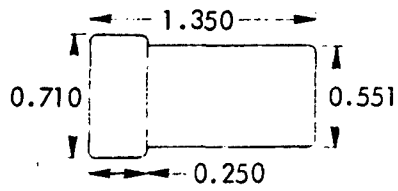
Specification no.: none
Weight: 2.92 gm.
Granulation: cylindrical - .455 L. x .190 diam
Flame temperature:

APPLICATIONS: Initiator, Cartridge Actuated, M5A2 (M692).

NOTES:

M73
15Aug73

CARTRIDGE, IMPULSE, M73



M91
15Aug73

CARTRIDGE, IMPULSE, M91

Specification no.: MIL-I-60518(MU)
Source: Frankford Arsenal
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III-A
Service life: 18 mo. installed, 5 yr. total
Temperature limits: -65° to +200°F
Cook-off temperature: 350°F
Impetus:
Weight: 0.024 lb.

IGNITER, percussion, primer M29A1

Specification no.: MIL-P-2496
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge: Remington Arms mix. no. 5061 FA dwg. 8798312

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE, black powder

Specification no.: MIL-P-223
Weight: 0.97 gm.
Granulation: class 5

MAIN CHARGE, HES 5808, ammonium perchlorate cellulose acetate

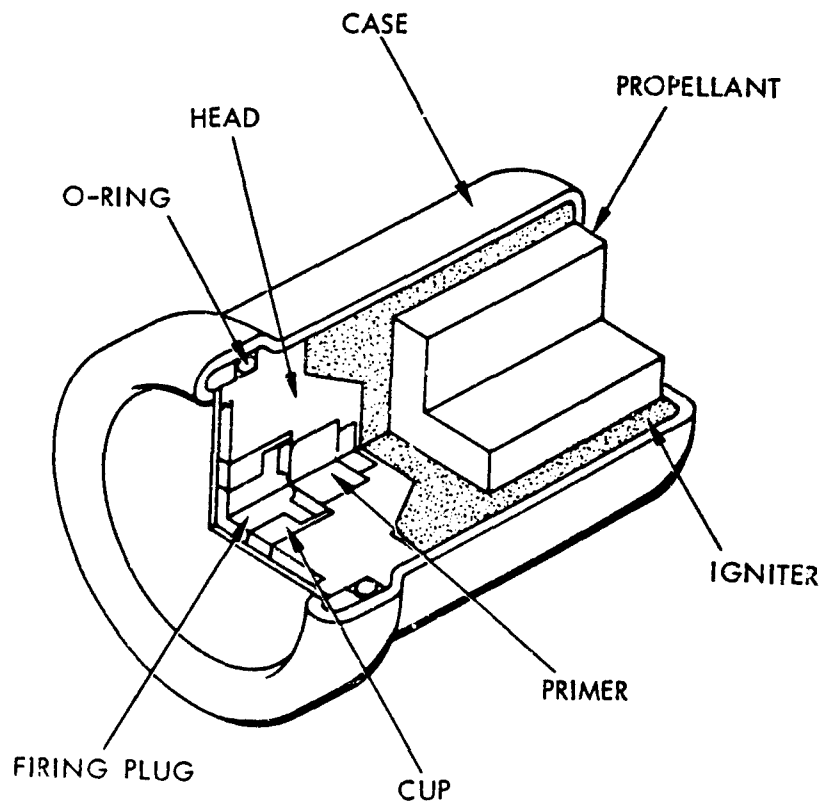
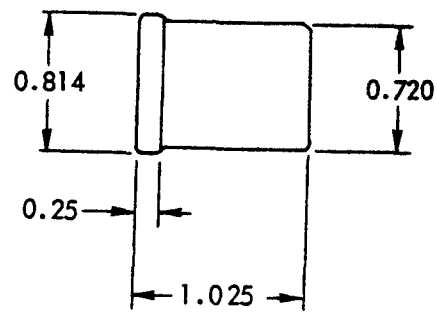
Specification no.: F.A. dwg. C-10534817
Weight: 2.01 gm.
Granulation: 7-perf, D=.190, d=.014, h=.450 in.
Flame temperature:

APPLICATIONS: M28 initiator, T-33A A/C escape system.

NOTES:

M91
15Aug73

CARTRIDGE, IMPULSE, M91



264<

CARTRIDGE, Delay, M93

Specification no.:
Source: Frankford Arsenal
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III-A
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +200°F
Cook-off temperature: 325°F
Impetus:
Weight: 0.057 lb.

IGNITER, percussion, primer M42

Specification no.: MIL-P-20444
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge: Remington Arms mix. no. 5086, FA dwg. 8799925

DELAY, pyrotechnic, barium chromate/boron type-10 delay composition

Specification no.: F.A. dwg. 8593163 (M8 delay element)
Nominal delay/specification limits: 1.0 sec.

BOOSTER CHARGE, black powder

Specification no.: MIL-P-223
Weight: 1.09 gm.
Granulation: class 5

MAIN CHARGE: HES 5808 ammonium perchlorate cellulose acetate

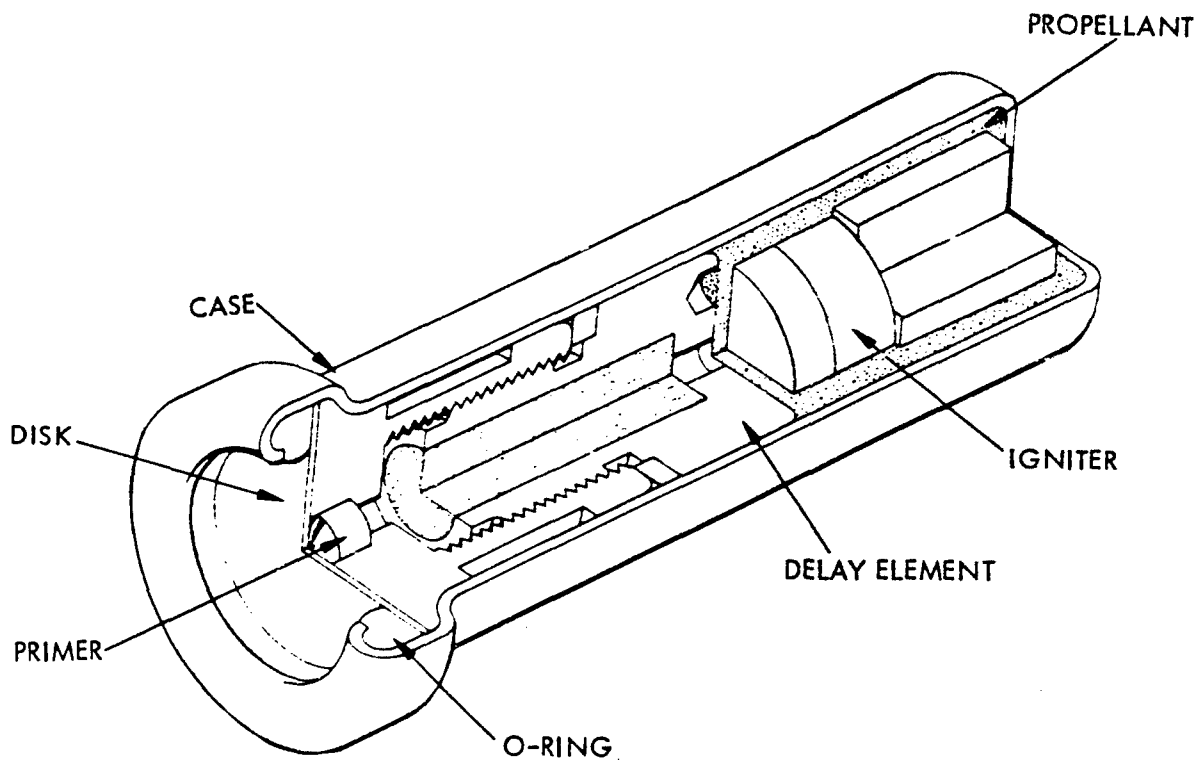
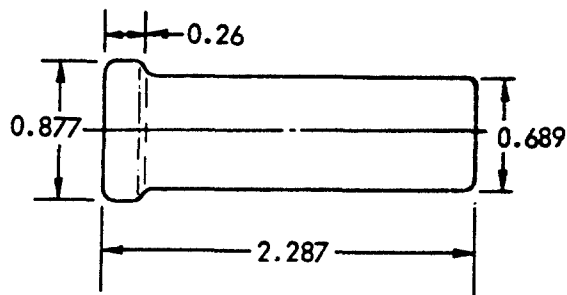
Specification no.: F.A. dwg. C-10534817
Weight: 3.37 gm.
Granulation: 7-perf. D=.190, d=.014, h=.450 in.
Flame temperature:

APPLICATIONS: M32A1 initiator, T-33A A/C escape system.

NOTES:

M93
15Aug73

CARTRIDGE, Delay, M93



266<

M119
15Aug73

CARTRIDGE, IMPULSE, M119

Specification no.: MIL-C-60604
Source: Frankford Arsenal
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight: 0.023 lb.

IGNITER, primer, percussion, 72M (or equal)

Specification no.: MIL-P-46610
No-fire: 2-1/2 inches
All-fire: 15 inches
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge: Remington Arms 5061W

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

IGNITER, black powder, grade A-4

Specification no.: MIL-P-223
Weight: 0.194 gm.
Granulation: A-4

MAIN CHARGE, propellant. M-6, modified

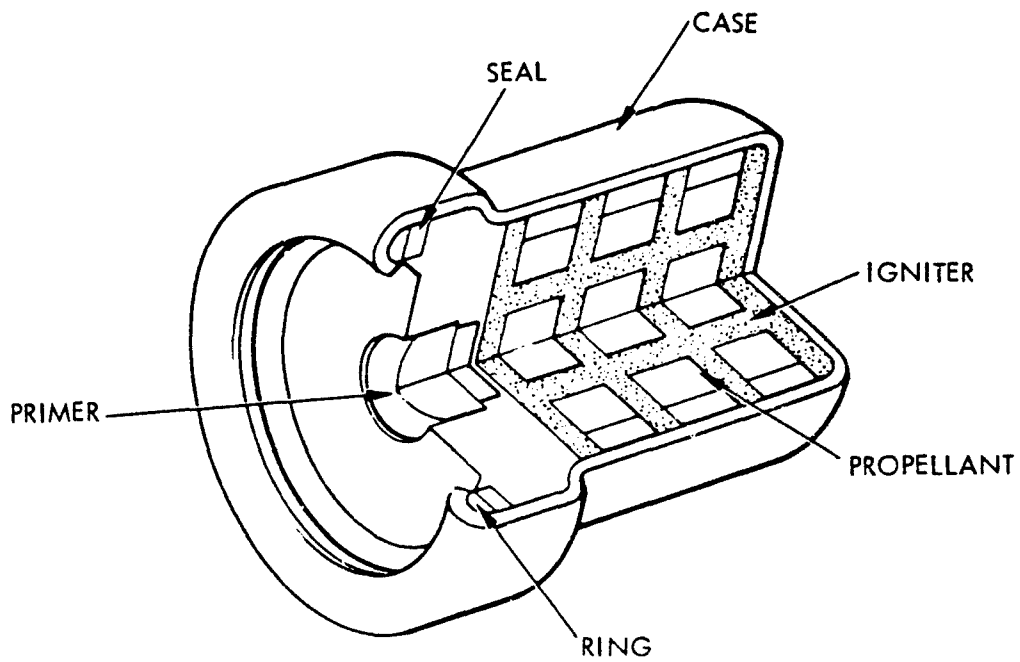
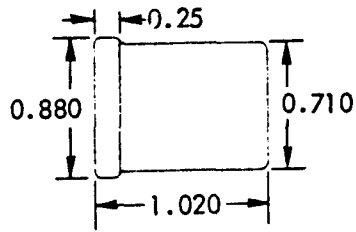
Specification no.: JAN-P-309
Weight: 2.92 gm.
Granulation: cylindrical - .150 L. x .123 diam
Flame temperature:

APPLICATIONS: Thruster, Cartridge Actuated, M13, (M881) used on
TA-4E aircraft.

NOTES:

M119
15Aug73

CARTRIDGE, IMPULSE, M119



268<

M129
15Aug73

CARTRIDGE, DELAY, M129

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

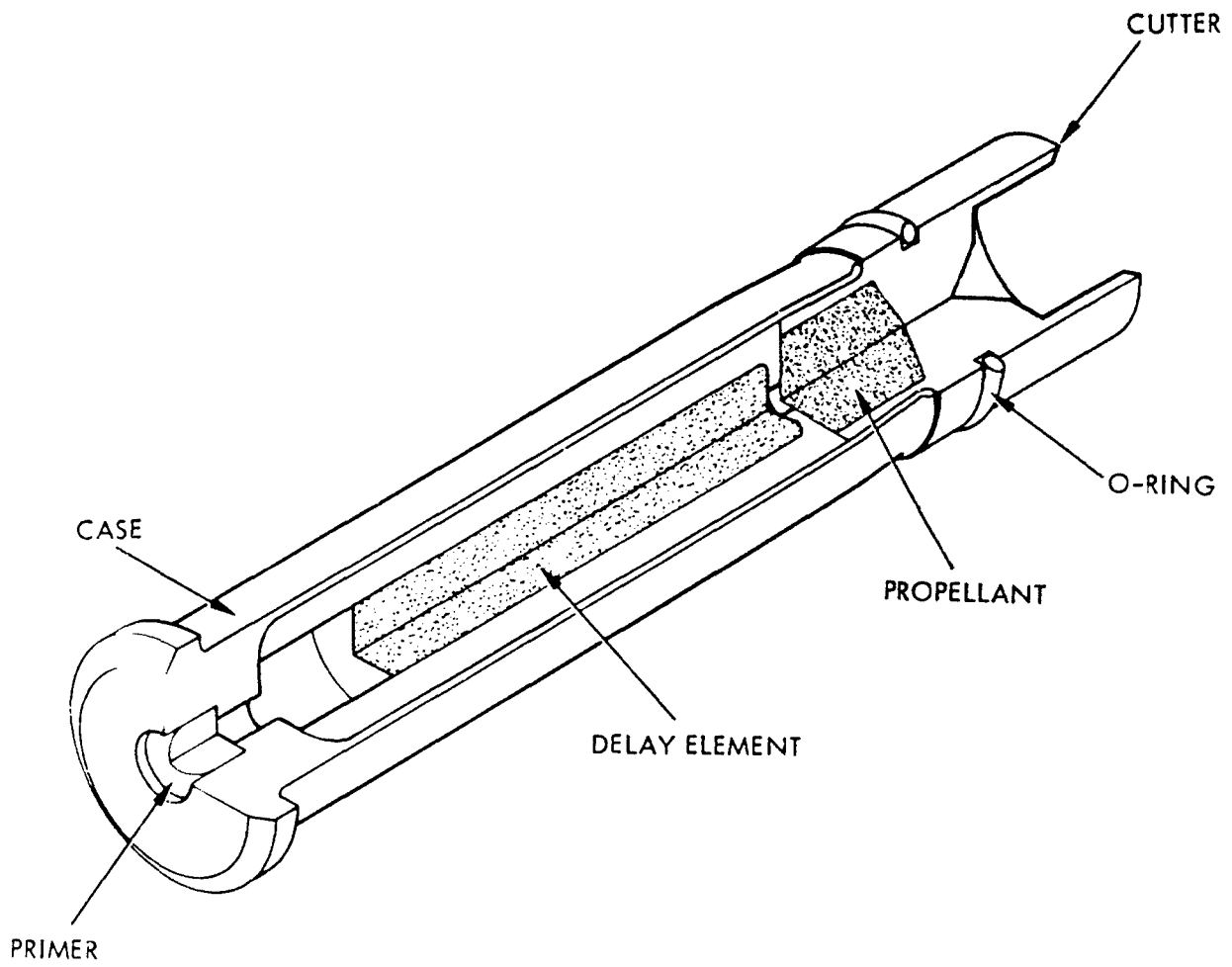
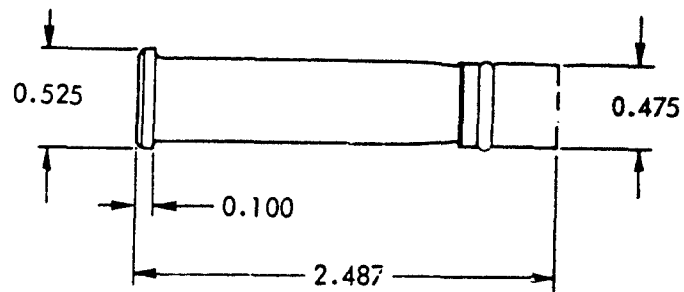
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS:

NOTES:

M129
15Aug73

CARTRIDGE, DELAY, M129



270<

M1
15Aug

CARTRIDGE, INITIATOR, DELAY, M155

Specification no.:
Source: Frankford Arsenal
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type III-A
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +200°F
Cook-off temperature: 325°F
Impetus:
Weight: 0.058 lb.

IGNITER, percussion, primer M42

Specification no.: MIL-P-20444
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge: Remington Arms mix no. 5086, FA dwg. 8799925

DELAY, pyrotechnic, barium chromate/boron, type 10 delay composition

Specification no.: F.A. dwg. D-10521650 (M28 delay element)
Nominal delay/specification limits: 0.5 sec.

BOOSTER CHARGE, black powder

Specification no.: MIL-P-223
Weight: 1.81 gm.
Granulation: class 5

MAIN CHARGE, HES 5308, ammonium perchlorate cellulose acetate

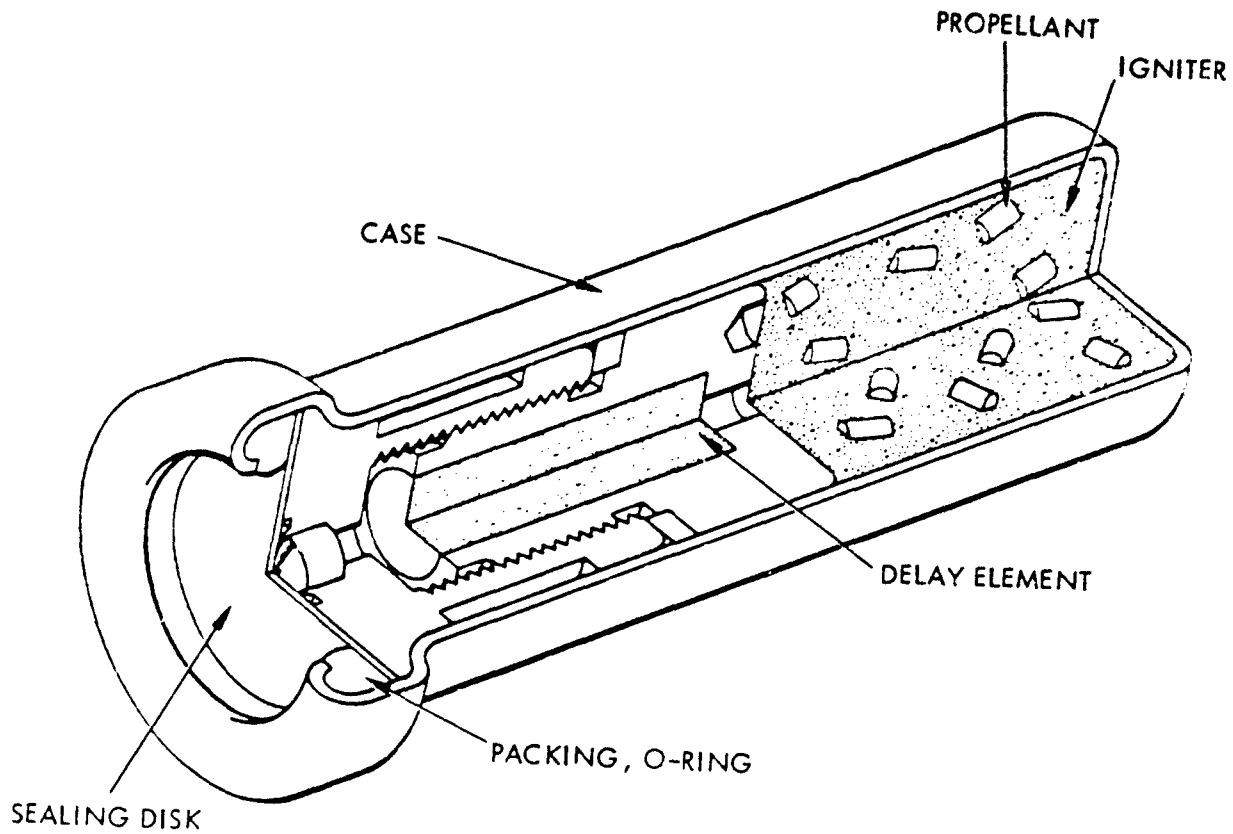
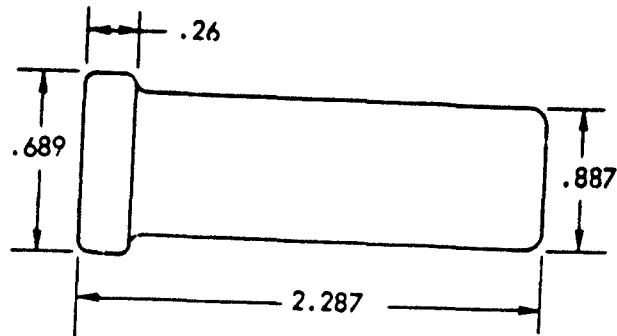
Specification no.: F.A. dwg. C-10534817
Weight: 3.37 gm.
Granulation: 7-perf, D=.190, d = .014, h = .450 in.
Flame temperature:

APPLICATIONS: M72 initiator, T-33B A/C escape system.
(Replaces M32A1 initiator)
M92 delay initiator, QT-33A aircraft escape system.

NOTES:

M155
15Aug73

CARTRIDGE, INITIATOR, DELAY, M155



272<

50M
15Aug73

PRIMER, Percussion, 50M

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:
No-fire: 20 in-oz(1)
All-fire: 120 in-oz(1)
Recommended firing:
Charge:

APPLICATIONS:

NOTES: (1) 0.045" firing pin radius.

50M
15Aug73

PRIMER, Percussion, 50M

(PICTORIAL INFORMATION NOT AVAILABLE.)

274<

72M
15Aug73

PRIMER, Percussion, 72M
Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:
No-fire: 20 in-oz.(1)
All-fire: 120 in-oz.(1)
Recommended firing:
Charge:

APPLICATIONS:

NOTES: (1) 0.045" firing pin radius.

72M
15Aug73

PRIMER, Percussion, 72M

(PICTORIAL INFORMATION NOT AVAILABLE.)

276<

116M
15Aug73

PRIMER, Percussion, 116M

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits
Cook-off temperature:
Impetus:
Weight:
No-fire: 6 in-oz. (1)
All-fire: 36 in-oz. (1)
Recommended firing:
Charge:

APPLICATIONS:

NOTES: (1) 0.039" firing pin radius.

277<

116M
15Aug73

PRIMER, Percussion, 116M

(PICTORIAL INFORMATION NOT AVAILABLE.)

278<

120M
15Aug73

PRIMER, Percussion, 120M
Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:
No-fire:
All-fire:
Recommended firing:
Charge:

APPLICATIONS: Cartridge, Impulse, MARK 38 MOD 0.

NOTES:

120M
15Aug73

PRIMER, Percussion, 120M

(PICTORIAL INFORMATION NOT AVAILABLE.)

280<

MW-43
15Aug73

CARTRIDGE, Reduced Charge Primary (MW-43)

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.: MW-43
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

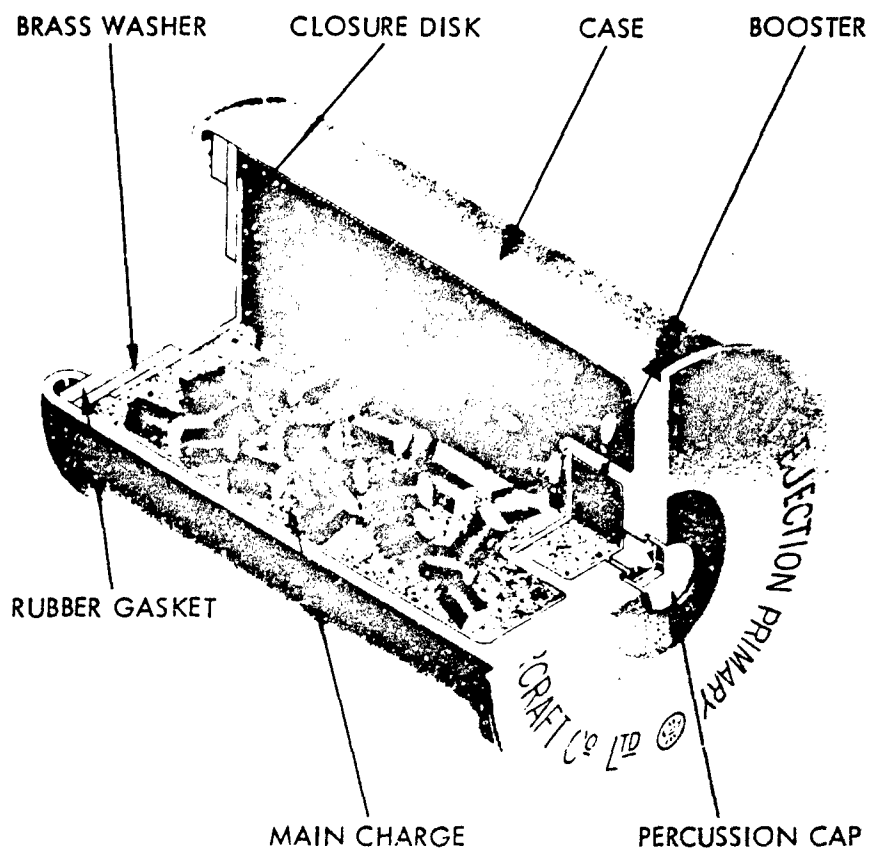
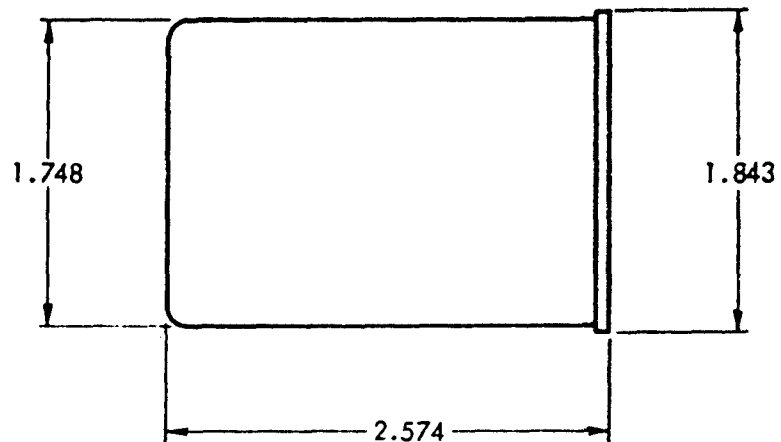
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Ejection Seat (AV-8A aircraft only).

NOTES:

MW-43
15Aug73

CARTRIDGE, Reduced Charge Primary (MW-43)



282<

MW45
15Aug73

CAPTRIDGE UNIT, Aircraft Fire Extinguisher, 2-Pin No. 1, MK 3

Source: Graviner, England
Drawing list no.:
Federal stock no.:
DOD code no.: MW45
Qualification:
Service life: 1 year installed, 4 years total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER, electric

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance: 5-6 ohm
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE, G20 gunpowder

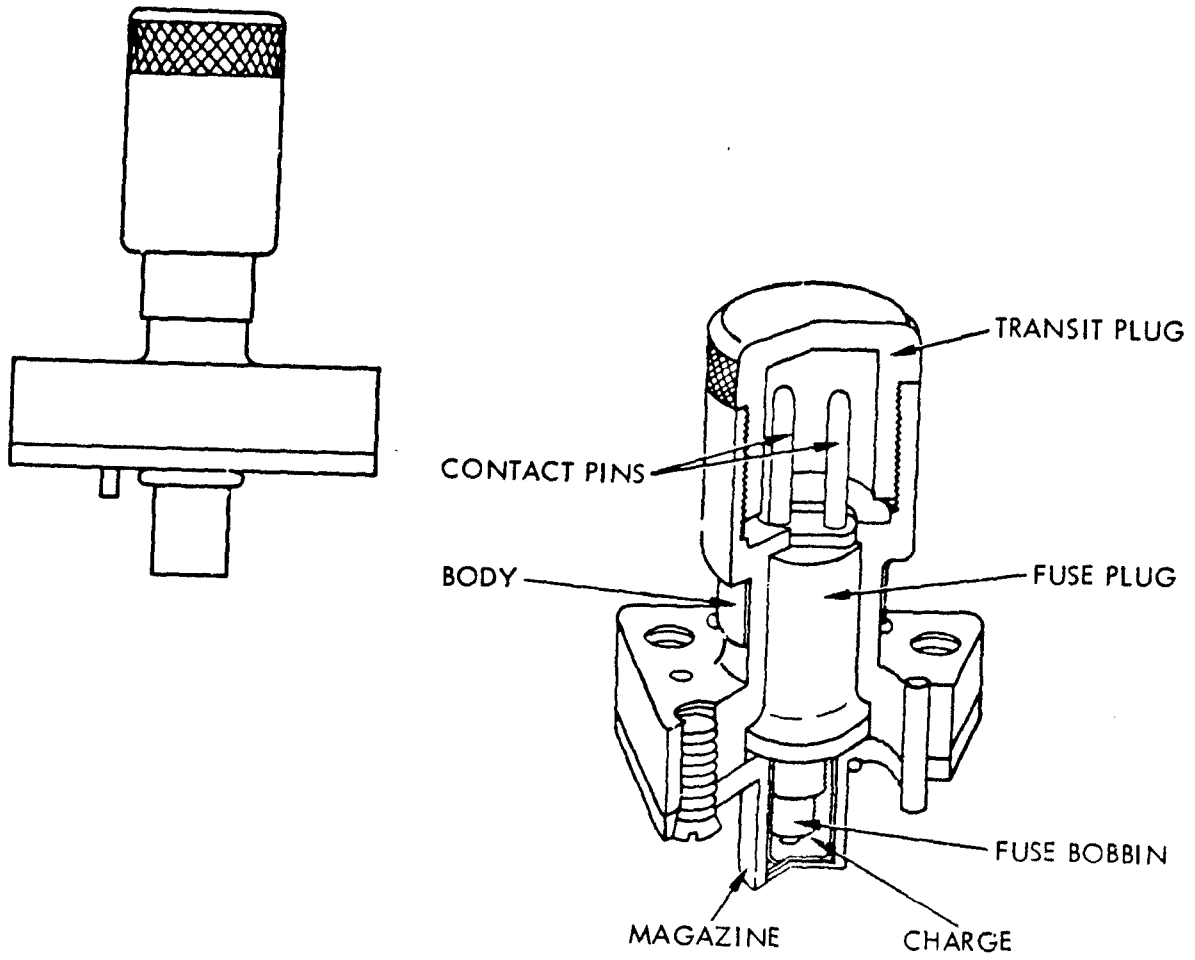
Specification no.:
Weight: 10 grains
Granulation:
Flame temperature:

APPLICATIONS: AV-8A automatic fire extinguisher.

NOTES:

MW45
15Aug73

CARTRIDGE, UNIT, Aircraft Fire Extinguisher, 2-Pin No. 1, MK 3



MW46
15Aug73

IGNITER, Frangible Pillar Assembly, MK 3

Source: Hymatic Engineering Co., England, PAF 205-002
Drawing list no.:
Federal stock no.:
DOD code no.: MW46
Qualification:
Service life: 18 months installed, 4 years total
Temperature limits: -150° to +235°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire: 1.0 amp.
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

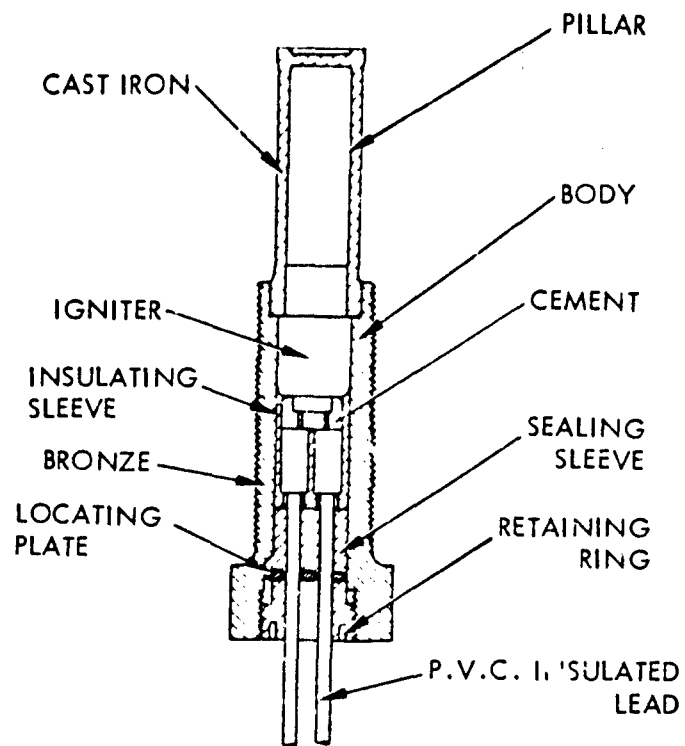
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS:

NOTES:

MW46
15Aug73

IGNITER, Frangible Pillar Assembly, MK 3



MW47
15Aug73

CORD, Miniature Detonating (MW47)

Source: Royal Ordnance Factory P/N E1914A55
Drawing list no.:
Federal stock no.:
DOD code no.: MW47
Qualification:
Service life: 18 months installed, 2 years total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: AV-8A cockpit canopy.

NOTES:

MW47
15Aug73

CORD, Miniature Detonating, P/N E1914A55

(PICTORIAL INFORMATION NOT AVAILABLE.)

MW-48
15Aug73

DETONATOR ASSEMBLY (MW-48)

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.: MW-48
Qualification:
Service life: 18 months installed, 2 years total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Ejection Seat (AV-8A aircraft only)

NOTES:

MW-48
15Aug73

DETONATOR ASSEMBLY (MW-48)

(PICTORIAL INFORMATION NOT AVAILABLE.)

SQUIB, S-68, 10 Grain

Source: Dupont
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life: 2 years total
Temperature limits: -65° to +120°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing: 3.0 amps
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

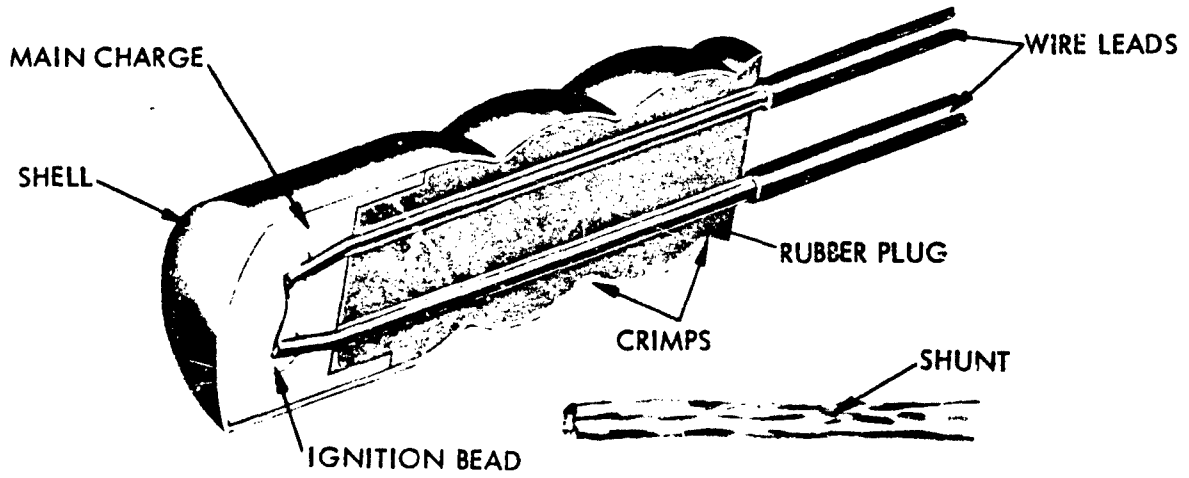
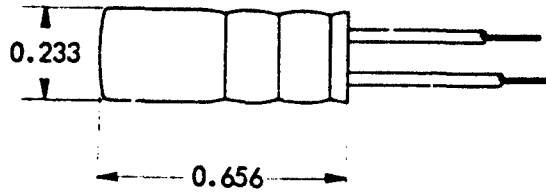
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: QF-9F drone fire error indicator explosive bolt.

NOTES:

DUP S-68
15Aug73

SQUIB, S-68, 10 Grain



CARTRIDGE, Impulse, Horex P/N 3215

Source: Horex Inc.
Source control dwg.:
Federal stock no.: 1377-113-9049
DOD code no.: M009
Qualification: MIL-D-21625, type III-B
Service life: 30 mo. installed, 5 yr. total
Temperature limits: -65° to +160°F
Cook-off temperature
Impetus:
Weight: .040 lb.

IGNITER, electric

Specification no.:
No-fire:
All-fire:
Recommended firing: 5.0 amp
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Hoist cable cutter, Breeze P/N 3032, in UH-34D
helicopter.

NOTES:

HOL3215
15Aug73

CARTRIDGE, Impulse, Horex P/N 3215

(PICTORIAL INFORMATION NOT AVAILABLE.)

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MBE 27722
15Aug73

CARTRIDGE, Droque, (MBEU P/N 27722)

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

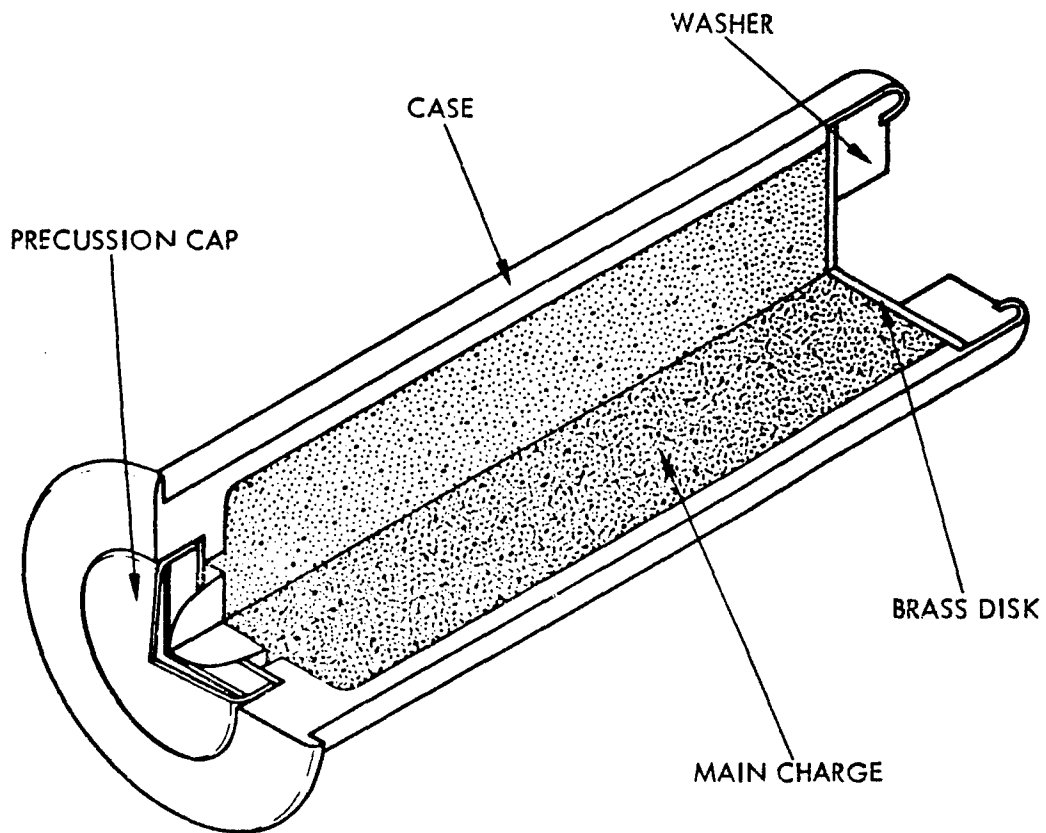
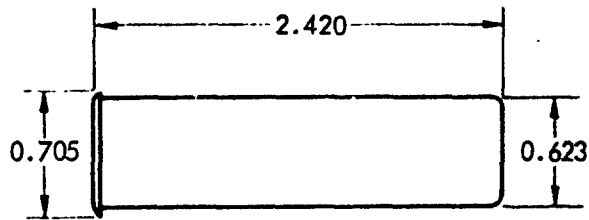
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Ejection Seat (AV-8A aircraft only).

NOTES:

MBE 27722
15Aug73

CARTRIDGE, Drogue, (MBEU P/N 27722)



296<

CARTRIDGE, Secondary Catapult, (MBEU P/N 35756)

Specification:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 months installed, 5 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

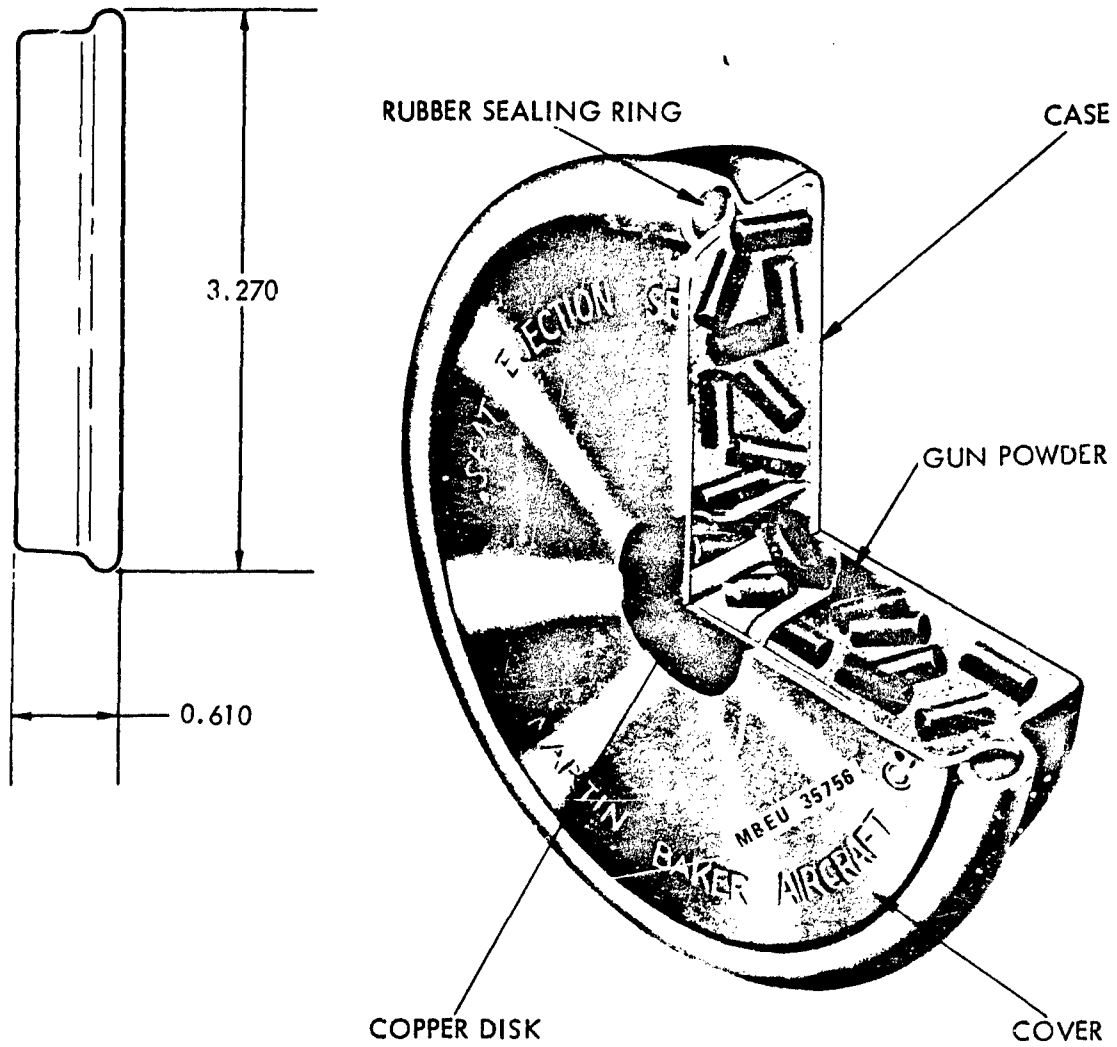
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Ejection Seat (AV-8A aircraft only).

NOTES:

MBE 35756
15Aug73

CARTRIDGE, Secondary Catapult, (MBEU P/N 35756)



MBE 41184
15Aug73

CARTRIDGE, Harness Retraction and Seat Firing (MBEU P/N 41184)

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 months installed, 4 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

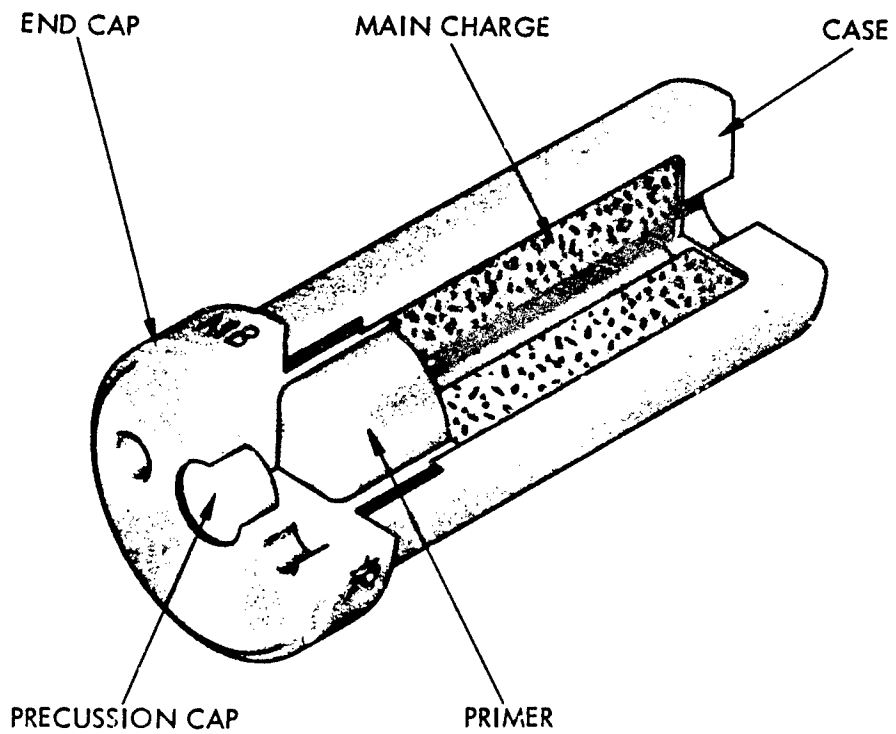
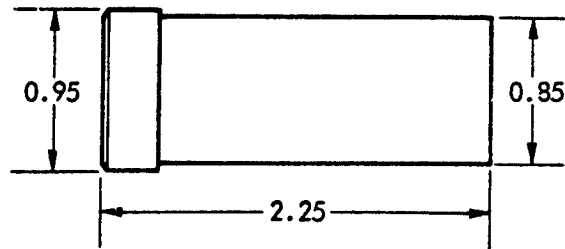
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Ejection Seat (AV-8A aircraft only).

NOTES:

MBE 41184
15Aug73

CARTRIDGE, Harness Retraction and Seat Firing (MBEU P/N 41184)



MBE 41880
15Aug73

CARTRIDGE, Guillotine and Harness Release (MBEU P/N 41880)

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life: 30 months installed, 4 years total
Temperature limits: -65° to +160°F
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

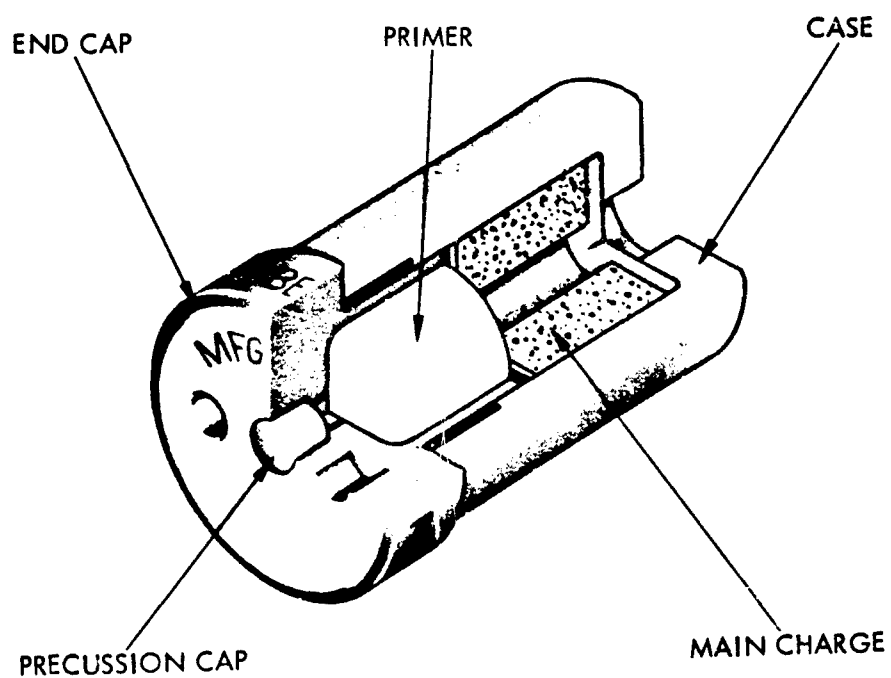
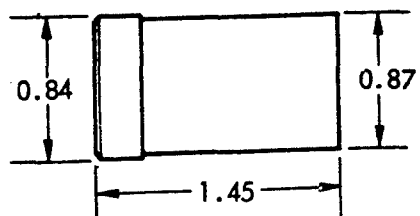
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Martin Baker Ejection Seat (AV-8A aircraft only).

NOTES:

MBE 41880
15Aug73

CARTRIDGE, Guillotine and Harness Release (MBEU P/N 41880)



GENERATOR, Gas, (McCormick-Selph P/N 807207)

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life: 36 months installed, 5 years total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Installed in hydraulic power transmitter unit gas generator, (NAVAIR dwg. 2518507), (McCormick-Selph P/N 807270).

NOTES:

MCS 807207
15Aug73

GENERATOR, Gas, (McCormick-Selph P/N 807207)

(PICTORIAL INFORMATION NOT AVAILABLE.)

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MCS 807268
15Aug73

THRUSTER, Cartridge Actuated, McCormick-Selph P/N 807268

Source: McCormick-Selph
Source control dwg.:
Federal stock no.:
DOD code no.: M395
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delayed material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

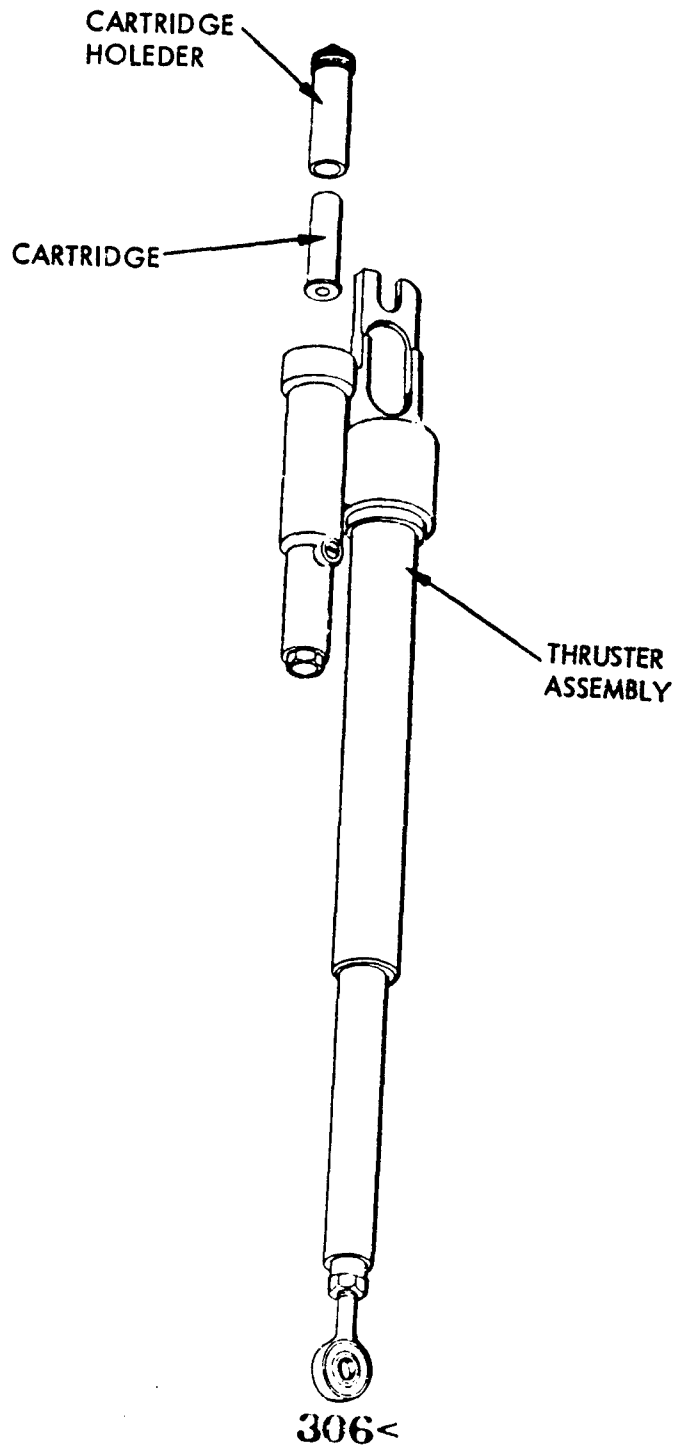
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: T-39D aircraft emergency escape hatch.

NOTES:

MCS 807268
15Aug73

THRUSTER, Cartridge Actuated, McCormick-Selph P/N 807268



CARTRIDGE, Delay, (McCormick-Selph P/N 807274)

Specification no.:
Drawing list no.:
Federal stock no.:
DOD code no.:
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS:

NOTES:

MCS 807274
15Aug73

CARTRIDGE, Delay, (McCormick-Selph P/N 807274)

(PICTORIAL INFORMATION NOT AVAILABLE.)

308<

CUTTER, Webbing, Cartridge Actuated, Mine Safety Appliances P/N TA96850

Source: Mine Safety Appliances Co.
Source control dwg. no.:
Federal stock no.:
DOD code no.: M470
Qualification:
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

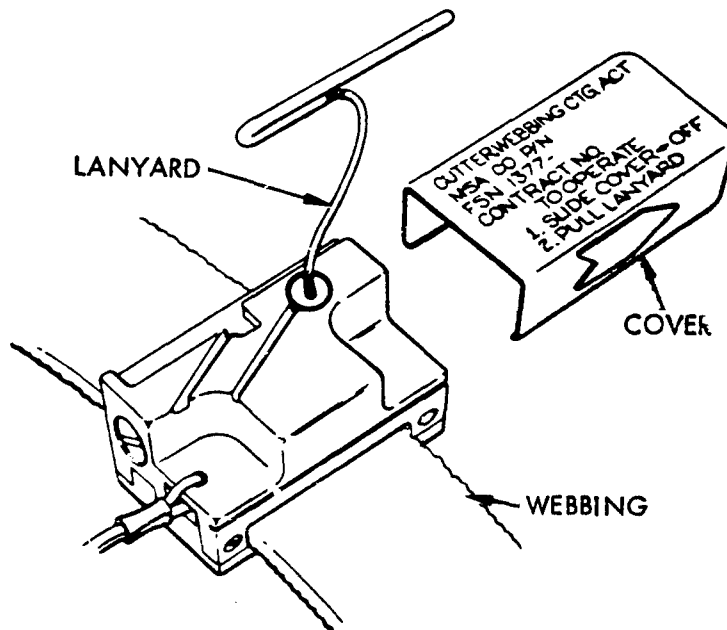
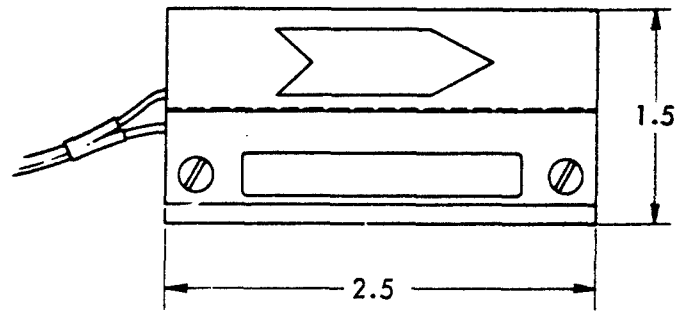
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS:

NOTES:

MSA TA96850
15Aug73

CUTTER, Webbing, Cartridge Actuated, Mine Safety Appliances P/N TA96850



310<

OEA 2245116-1
15Aug73

CARTRIDGE, Tray Thruster, Ordnance Engineering Associates P/N 2245116-1

Source: Ordnance Engineering Associates
Source control dwg. no.:
Federal stock no.:
DOD code no.:
Qualification: MIL-D-23615 type III-A (w. documentation)
Service life: 30 mo. installed, 5 yr. total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

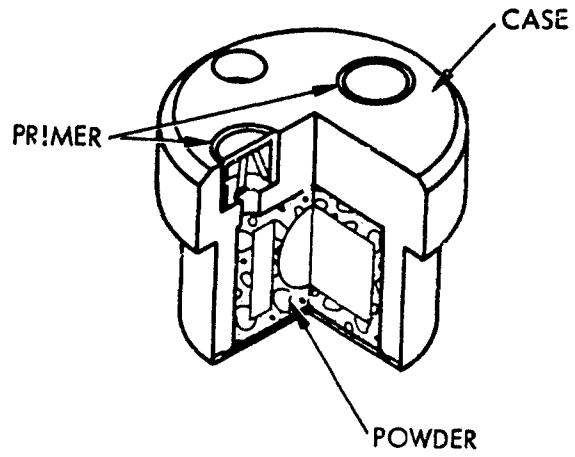
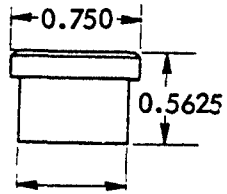
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Tray thruster (OEA P/N 2245100) S-3A aircraft aircrew
escape system.

NOTES:

OEA 2245116-1
15Aug73

CARTRIDGE, Tray Thruster, Ordnance Engineering Associates P/N 2245116-1



OEA 2248130
15Aug73

CARTRIDGE, Delay, Ordnance Engineering Associates P/N 2248130

Source: Ordnance Engineering Associates
Source control dwg.
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type II
Service life: 18 months installed, 5 years total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits: .3 sec.
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

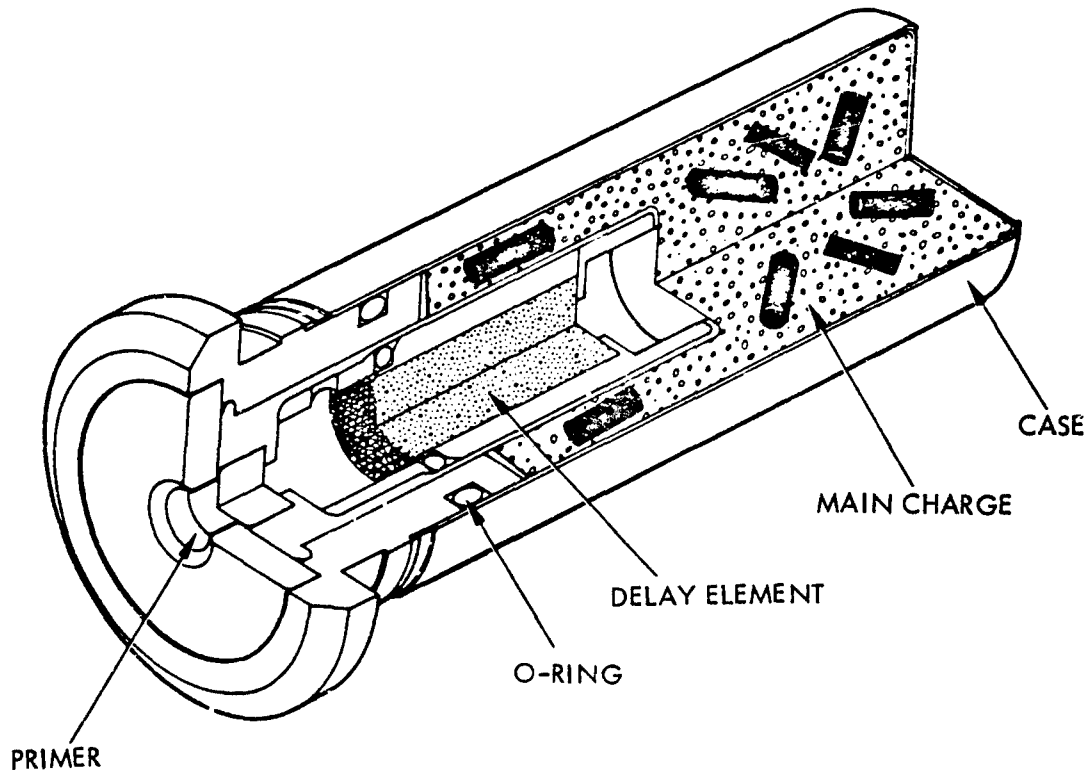
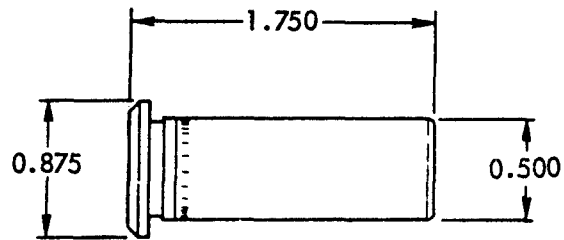
Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS: Delay initiator, P/N 2248100 S-3A aircraft aircrew
escape system.

NOTES:

OEA 2248130
15Aug73

CARTRIDGE, Delay, Ordnance Engineering Associates P/N 2248130



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GENERATOR, Gas, Pacific Scientific Company P/N 0103826-1

Source: Pacific Scientific Co.
Source control dwg.:
Federal stock no.:
DOD code no.:
Qualification: MIL-D-21625, type I
Service life:
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER,

Specification no.:
No-fire:
All-fire:
Recommended firing:
Bridge resistance:
Bridge material:
Bead material:
Booster material:
Charge:

DELAY,

Specification no.:
Nominal delay/specification limits:
Delay material:

BOOSTER CHARGE,

Specification no.:
Weight:
Granulation:

MAIN CHARGE,

Specification no.:
Weight:
Granulation:
Flame temperature:

APPLICATIONS:

NOTES:

PSC 0103826-1
15Aug73

GENERATOR, Gas, Pacific Scientific Company P/N 0103826-1

(PICTORIAL INFORMATION NOT AVAILABLE.)

316<

UPC 1004-4
15Aug73

GENERATOR, Gas, Gyro Spin-Up, Universal Propulsion Company P/N 1004-4
Source: Universal Propulsion Co.
Source control dwg. no.:
Federal stock no.:
DCD code no.:
Qualification: MIL-D-21625, type III-A
Service life: 30 months installed, 5 years total
Temperature limits:
Cook-off temperature:
Impetus:
Weight:

IGNITER, primer, percussion, Remington 44G-11
Specification no.:
No-fire:
All-fire:
Recommended firing:
Booster material: barium potassium nitrate (BKNO₃) powder
Charge: 20 grains

BOOSTER CHARGE, barium potassium nitrate (BKNO₃) pellets
Specification no.:
Weight: 5 pieces by count
Granulation: 0.125" diam. by 0.187" long

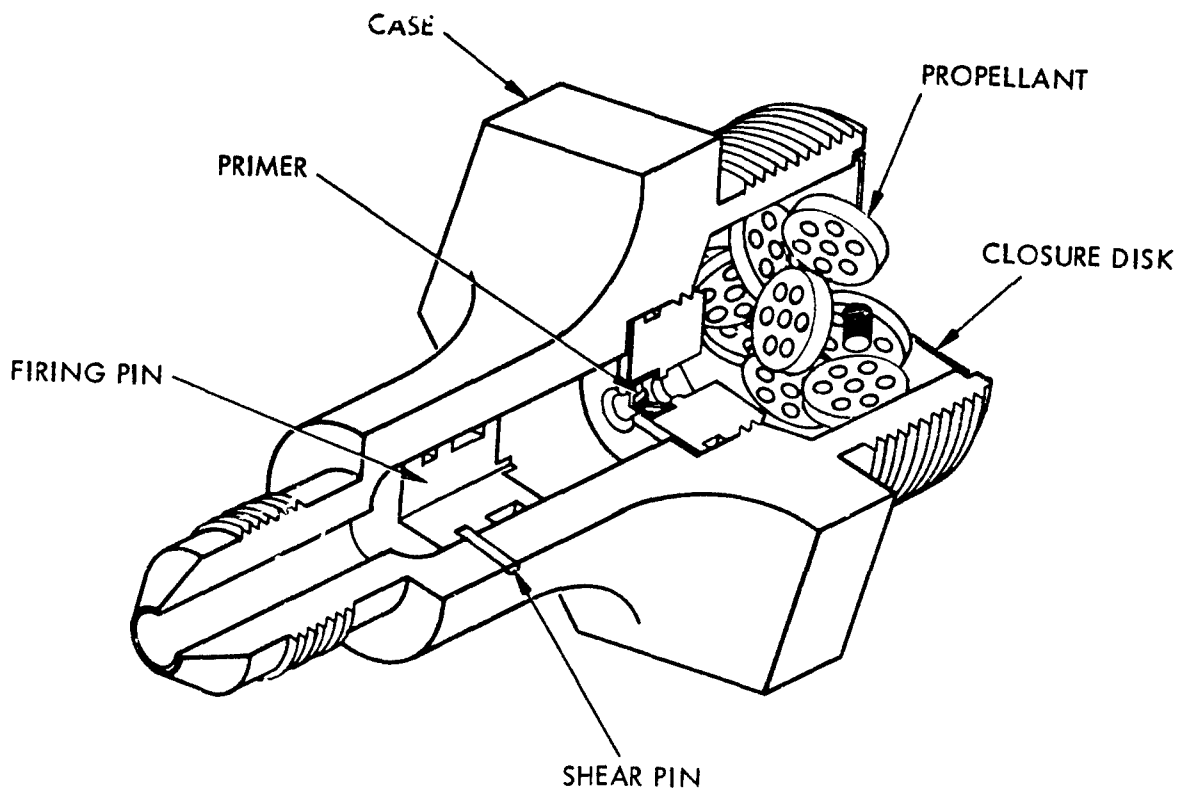
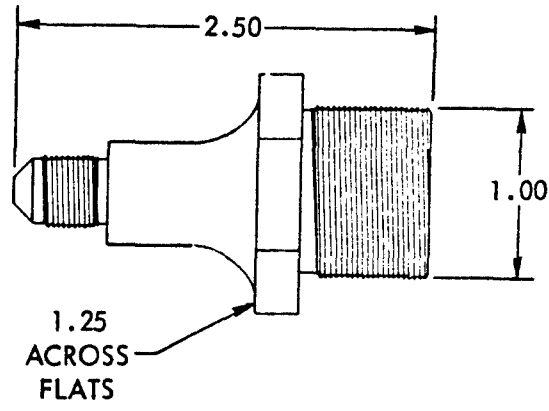
MAIN CHARGE, Hercules HES 6574
Specification no.:
Weight: 2.075 grains
Granulation: 7 perf. D=0.25" d=0.026, h= (1)
Flame temperature: 2998°K

APPLICATIONS: S-3A aircraft crew escape system.

NOTES: (1) Contains approximately 40 pieces with h=0.05" and 20 pieces with h=0.04". Ratio may vary.

UPC 1004-4
15Aug73

GENERATOR, Gas, Gyro Spin-Up, Universal Propulsion Company P/N 1004-4



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CARTRIDGE, IMPULSE, MARK 47 MOD 0
CARTRIDGE, IMPULSE, MARK 49 MOD 0
CARTRIDGE, IMPULSE, MARK 50 MOD 0
CARTRIDGE, IMPULSE, MARK 51 MOD 1
CARTRIDGE, IMPULSE, MARK 52 MOD 0
CARTRIDGE, IMPULSE, MARK 53 MOD 0
CARTRIDGE, IMPULSE, MARK 64 MOD 0
CARTRIDGE, IMPULSE, MARK 66 MOD 0
CARTRIDGE, IMPULSE, MARK 67 MOD 0
CARTRIDGE, IMPULSE, MARK 73 MOD 0
CARTRIDGE, IMPULSE, MARK 82 MOD 0
CARTRIDGE, IMPULSE, MARK 85 MOD 0
CARTRIDGE, IMPULSE, MARK 97 MOD 0
CARTRIDGE, IMPULSE, MARK 103 MOD 0
CARTRIDGE, IMPULSE, MARK 104 MOD 0
CARTRIDGE, IMPULSE, MARK 105 MOD 0
CARTRIDGE, IMPULSE, EX 107 MOD 5
CARTRIDGE, IMPULSE, MARK 124 MOD 0
CARTRIDGE, IMPULSE, MARK 125 MOD 0
CARTRIDGE, IMPULSE, MARK 127 MOD 0
CARTRIDGE, IMPULSE, MARK 129 MOD 0
CARTRIDGE, IMPULSE, MARK 131 MOD 0
CARTRIDGE, IMPULSE, 2406377
CARTRIDGE, IMPULSE, 2518373
CARTRIDGE, IMPULSE, 2518426
CARTRIDGE, IMPULSE, 2518431

CARTRIDGE, IMPULSE, 2518507
CARTRIDGE, IMPULSE, 2519953
CARTRIDGE, IMPULSE, 2519954
CARTRIDGE, IMPULSE, 2520045
CARTRIDGE, IMPULSE, 294AS100
CARTRIDGE, IMPULSE, 315AS100
CARTRIDGE, IMPULSE, 376AS100
CARTRIDGE, IMPULSE, 626AS100
CARTRIDGE, IMPULSE, 644AS100
CARTRIDGE, IMPULSE, 685AS100
CARTRIDGE, IMPULSE, M28A1
CARTRIDGE, IMPULSE, M29A2
CARTRIDGE, IMPULSE, M31A1
CARTRIDGE, IMPULSE, M73
CARTRIDGE, IMPULSE, M91
CARTRIDGE, IMPULSE, M119
CARTRIDGE, IMPULSE, HOL 3215

CARTRIDGE, IMPULSE DROGUE, 2520002

CARTRIDGE, IMPULSE GUILLOTINE, 2519698

CARTRIDGE, INITIATOR DELAY, M155

CARTRIDGE, JET ENGINE IGNITER, MARK 243 MOD 2

CARTRIDGE, PRIMARY CATAPULT, 2519697

CARTRIDGE, REDUCED CHARGE PRIMARY, 2519696-1
CARTRIDGE, REDUCED CHARGE PRIMARY, MW43

CARTRIDGE, SECONDARY CATAPULT, 2519696-2
CARTRIDGE, SECONDARY CATAPULT, MBE 35756

CARTRIDGE, TEST TURBOJET ENGINE, MARK 119 MOD 0

CARTRIDGE, TRAY THRUSTER, OEA 2245116-1

CARTRIDGE UNIT, AIRCRAFT FIRE EXTINGUISHER, MW45

CARTRIDGE-VIAL, LIFE RAFT, 2519527

CORD, MINIATURE DETONATING, MW47

CUTTER, CARTRIDGE ACTUATED, MARK 18 MOD 0
CUTTER, CARTRIDGE ACTUATED, 682AS100

CUTTER, WEBBING, CARTRIDGE ACTUATED, MSA TA96850

DETONATOR ASSEMBLY, MW48

DETONATOR, ELECTRIC, MARK 83 MOD 0

GENERATOR, GAS, PSC 0103826-1
GENERATOR, GAS, UPC 1004-4

GRAIN, PROPELLANT, 2518493

IGNITER, FRANGIBLE PILLAR ASSEMBLY, MW46

IGNITION ELEMENT, ELECTRIC, MARK 10 MOD 0
IGNITION ELEMENT, ELECTRIC, MARK 11 MOD 0
IGNITION ELEMENT, ELECTRIC, MARK 13 MOD 0
IGNITION ELEMENT, ELECTRIC, MARK 14 MOD 0
IGNITION ELEMENT, ELECTRIC, MARK 17 MOD 0
IGNITION ELEMENT, ELECTRIC, MARK 22 MOD 0
IGNITION ELEMENT, ELECTRIC, M55

PRIMER, PERCUSSION, M42
PRIMER, PERCUSSION, 50M
PRIMER, PERCUSSION, 72M
PRIMER, PERCUSSION, 116M
PRIMER, PERCUSSION, 120M

PRIMER, STAB, MARK 102 MOD 1

SQUIB, DUP S-68

SQUIB, ELECTRIC, 2518141
SQUIB, ELECTRIC, 2518358
SQUIB, ELECTRIC, 2518359
SQUIB, ELECTRIC, 2519524
SQUIB, ELECTRIC, 2519631

THRUSTER, CARTRIDGE ACTUATED, MC3 807268

INCREASING IMPETUS (FT-LB) OF CARTRIDGE

THIS INDEX CONTAINS ONLY THOSE CARTRIDGES FOR WHICH THE CARTRIDGE
IMPETUS HAS BEEN CALCULATED

IMPETUS	CARTRIDGE
53	MARK 131 MOD 0
56	MARK 101 MOD 0 (DELAY)
64	MARK 84 MOD 0 (DELAY)
79	MARK 4 MOD 2 (DELAY)
79	MARK 5 MOD 2 (DELAY)
79	MARK 6 MOD 2 (DELAY)
96	CCU-4/A (DELAY)
100	MARK 36 MOD 0 (DELAY)
110	MARK 23 MOD 0
120	MARK 44 MOD 0
130	MARK 45 MOD 0
158	MARK 87 MOD 0 (DELAY)
160	2406377
240	MARK 83 MOD 0
250	MARK 39 MOD 0
260	MARK 13 MOD 0
330	MARK 3 MOD 0 (DELAY)
330	MARK 16 MOD 0 (DELAY)
330	MARK 86 MOD 0 (DELAY)
340	MARK 127 MOD 0
340	MARK 141 MOD 0 (DELAY)
390	MARK 105 MOD 0
500	MARK 76 MOD 0 (DELAY)
510	MARK 17 MOD 1
510	MARK 19 MOD 0
680	MARK 35 MOD 0 (DELAY)
760	MARK 129 MOD 0
800	MARK 28 MOD 0
840	MARK 31 MOD 0 (DELAY)
1,020	MARK 25 MOD 0
1,200	MARK 66 MOD 0
1,260	MARK 29 MOD 0
1,280	MARK 33 MOD 0
1,330	MARK 142 MOD 0 (DELAY)
1,370	MARK 51 MOD 0
1,690	MARK 27 MOD 0
1,750	MARK 50 MOD 0
1,960	MARK 97 MOD 0
2,050	MARK 14 MOD 0
2,050	MARK 37 MOD 0
2,150	MARK 85 MOD 0
2,660	MARK 38 MOD 0
2,840	MARK 43 MOD 0
2,900	MARK 10 MOD 0

IMPETUS

CARTRIDGE

3,160	MARK 40 MOD 0
3,230	MARK 125 MOD 0
3,500	MARK 2 MOD 1
3,800	MARK 64 MOD 0
3,900	MARK 42 MOD 0
6,150	MARK 67 MOD 0
6,460	MARK 24 MOD 0
6,600	MARK 9 MOD 0
12,500	MARK 47 MOD 0
13,000	MARK 26 MOD 0
15,500	MARK 8 MOD 0
18,800	MARK 1 MOD 3
18,800	MARK 82 MOD 0
20,300	EX 107 MOD 5
22,100	MARK 104 MOD 0
36,200	MARK 53 MOD 0
38,500	MARK 52 MOD 0
49,000	MARK 73 MOD 0
60,200	MARK 3 MOD 1
64,300	MARK 103 MOD 0
69,600	MARK 18 MOD 0
592,000	MARK 46 MOD 0

INCREASING FLAME TEMPERATURE (DEG K) OF CARTRIDGE

THIS INDEX CONTAINS ONLY THOSE CARTRIDGES FOR WHICH THE CARTRIDGE FLAME TEMPERATURE HAS BEEN CALCULATED

FLAME TEMP.	CARTRIDGE
2417	MARK 38 MOD 0
2417	MARK 50 MOD 0
2491	MARK 25 MOD 0
2491	MARK 26 MOD 0
2491	MARK 42 MOD 0
2491	MARK 43 MOD 0
2491	MARK 47 MOD 0
2552	MARK 1 MOD 3
2552	MARK 2 MOD 1
2552	MARK 82 MOD 0
2565	MARK 3 MOD 1
2565	MARK 103 MOD 0
2727	MARK 18 MOD 0
2812	MARK 46 MOD 0
2892	MARK 28 MOD 0
2892	MARK 66 MOD 0
2892	MARK 67 MOD 0
3037	MARK 40 MOD 0
3214	MARK 9 MOD 0
3214	MARK 10 MOD 0
3214	MARK 53 MOD 0
3214	MARK 64 MOD 0
3214	EX 107 MOD 5
3214	MARK 124 MOD 0
3214	MARK 125 MOD 0
3221	MARK 8 MOD 0
3221	MARK 52 MOD 0
3221	MARK 73 MOD 0
3284	MARK 142 MOD 0 (DELAY)
331.9	MARK 27 MOD 0
3319	MARK 35 MOD 0 (DELAY)
3319	MARK 37 MOD 0
3630	MARK 13 MOD 0
3630	MARK 17 MOD 0
3630	MARK 19 MOD 0
3664	MARK 104 MOD 0
3771	MARK 4 MOD 2 (DELAY)
3771	MARK 5 MOD 2 (DELAY)
3771	MARK 6 MOD 2 (DELAY)
3771	MARK 23 MOD 0
3771	MARK 33 MOD 1
3771	MARK 36 MOD 0 (DELAY)

FLAME TEMP.

CARTRIDGE

3771	MARK 45 MOD 0
3771	MARK 51 MOD 1
3771	MARK 76 MOD 0 (DELAY)
3771	MARK 84 MOD 0 (DELAY)
3771	MARK 85 MOD 0 (DELAY)
3771	MARK 87 MOD 0 (DELAY)
3771	MARK 101 MOD 0 (DELAY)
3771	MARK 105 MOD 0
3771	MARK 141 MOD 0 (DELAY)
3780	MARK 31 MOD 0 (DELAY)
3780	MARK 39 MOD 0
3780	MARK 127 MOD 0
3799	MARK 97 MOD 0
3799	MARK 129 MOD 0
3822	MARK 44 MOD 0
3822	CCU-4/A