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GRENADES, HAND AND RIFLE

DEPARTMENTS OF THE ARMY AND THE NAVY

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DEPARTMENTS OF THE ARMY

AND THE NAVY

WASHINGTON, D.C. *17 September 1971*

GRENADES, HAND AND RIFLE

* This manual supersedes TM 9-1330-200, 24 June 1966, including all changes.

LIST OF ILLUSTRATIONS

CHAPTER 1

INTRODUCTION

1–1. Scope

a. This manual provides general and technical information concerning hand and rifle grenades. It covers general characteristics, specific data, means of identification, precautions and general information on packing. General information pertaining to all types and kinds of conventional ammunition and explosives is contained in TM 9–1300–200. General information on care, handling, preservation, sorting, shipping and destruction of ammunition and explosives is contained in TM 9–1300–206. Information on training of troops in tactical use of grenades will be found in FM 23–30.

b. The grenades and components described in chapters 2 and 3 belong to Federal Supply Class 1330. Other items used in conjunction with, or in lieu of grenades are covered in other publications. These items include demolition charges, fire crackers, hand grenade simulators, ammunition pouches and rifle grenade sights.

1–2. Reporting Of Equipment Publication Improvements

The Reporting of errors, omissions and recommendations for improving this publication by the individual user is encouraged; Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to the Commanding Officer, Picatinny Arsenal, ATTN: SMUPA–DC5, Dover, NJ 07801.

CHAPTER 2

HAND GRENADES

Section 1. INTRODUCTION

2–1. General

a. Hand grenades are of various types. These include fragmentation, illuminating, chemical, offensive and practice (fig. 2–1). Grenades are of a size and shape convenient for throwing by hand. Hand grenades are used to supplement small arms for effect against an enemy in close combat. They are used against a variety of combat targets, riot control, incendiary purposes and training. Figures 2–2 and 2–3 show typical inner and outer packings, respectively.

b. There are five basic types of hand grenades:

(1) *Fragmentation hand grenades.* These grenades are used to produce casualties by high velocity projection of fragments.

(2) *Illuminating hand grenades.* These grenades are used to provide illumination of terrain and targets.

(3) *Chemical hand grenades.* These grenades are used for riot control, incendiary, smoke (screening, signaling) practice and incapacitating purposes.

(4) *Offensive hand grenades.* These grenades are used for blast effect.

(5) *Practice and training hand grenades.* These grenades are for training personnel in use, care and handling of service grenades.

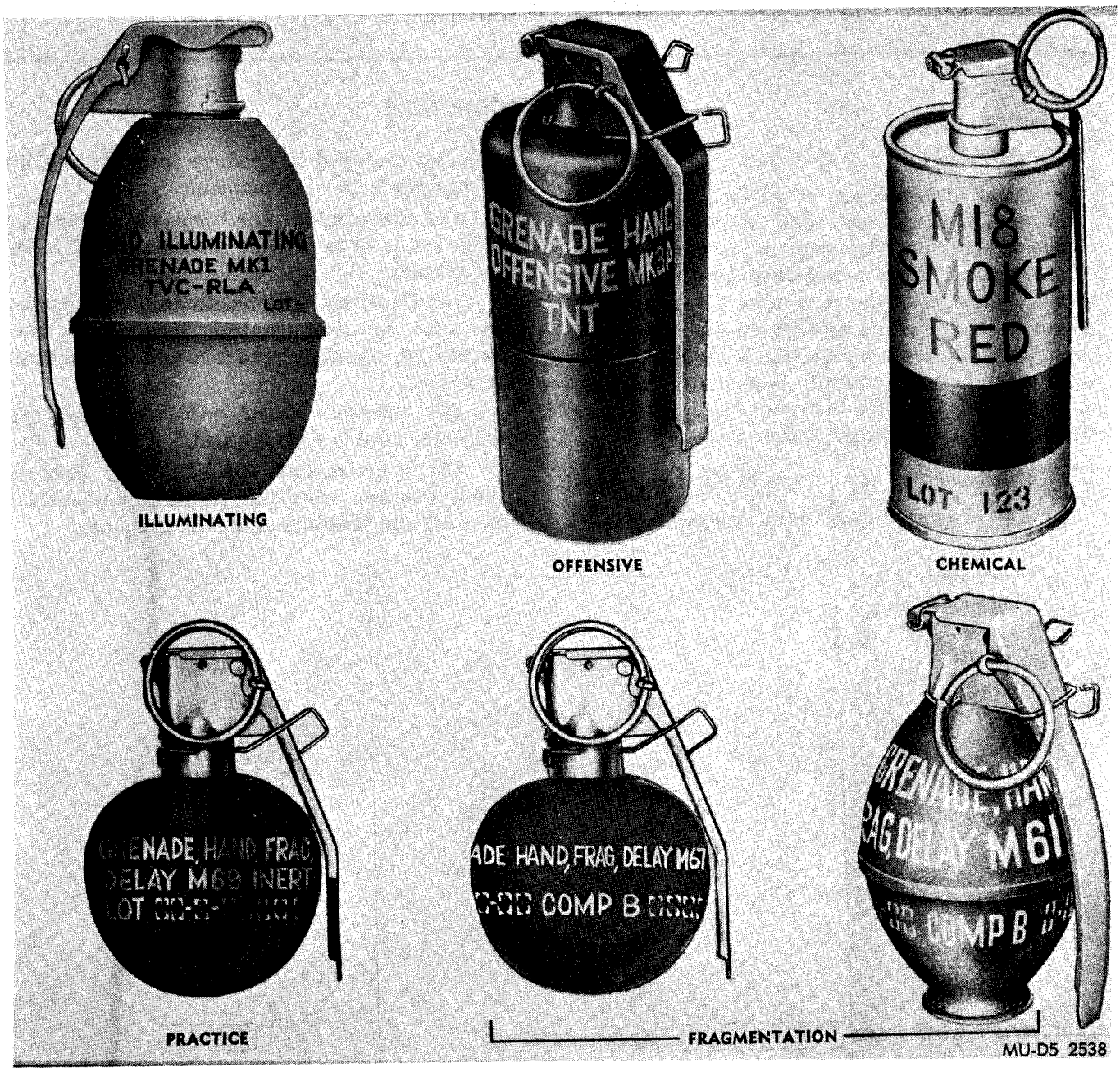


Figure 2-1. Typical hand grenades.

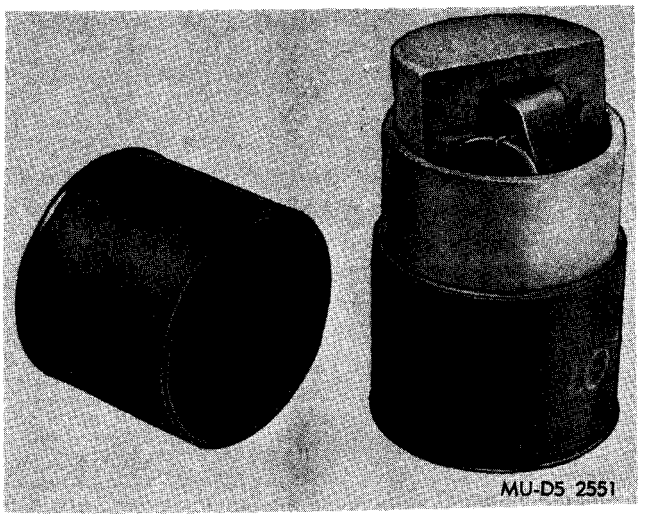


Figure 2–2. Typical containers for hand grenades.

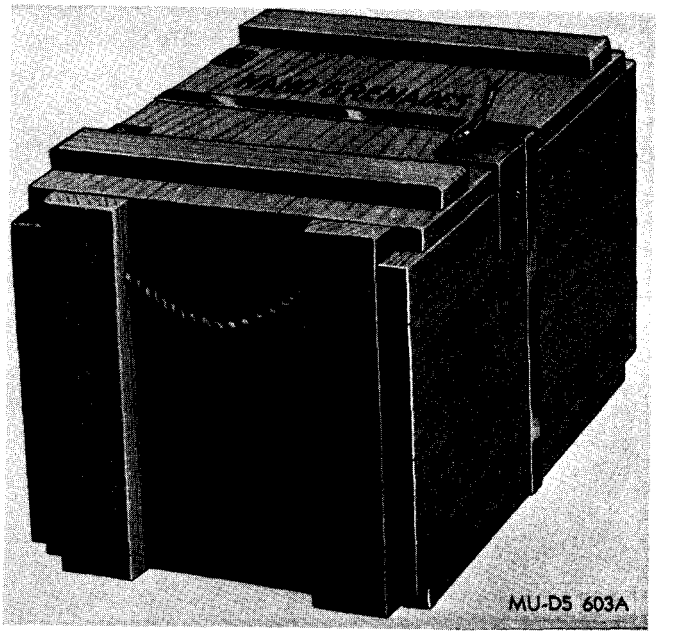


Figure 2–3. Typical packing box for hand grenades.

Section II. FRAGMENTATION HAND GRENADES

2–2. General

Fragmentation hand grenades are used primarily for fragmentation effect. Their blast effect, however, may be used advantageously in small, enclosed places. Fragmentation is more effective against a scattered deployment of personnel because the effective range of high-speed fragments projected by the explosion is much greater than the effective radius of the blast effect. The effective casualty radius of fragmentation hand grenades due to fragmentation effect is comparably greater than that of offensive hand grenades due to blast effect.

2–3. Grenades, Hand: Fragmentation, Delay, M67 and M33

a. General. Hand Grenade M67 (fig. 2–4) is Hand Grenade M33 with a safety clip. Each grenade is assembled with a fuze that initiates the explosive charge. These grenades detonate at the expiration of 4 to 5 seconds after release of the safety lever.

b. Description.

(1) *Grenade body.* Bodies of the M67 and M33 are identical. The shape is essentially spherical. The body measures 2.5 inches in diameter. Bodies contain a high-explosive filler.

(2) *Fuze, hand grenade: M213.* Hand Grenade Fuze M213 (fig. 2–5) is a pyrotechnic delay-detonating fuze. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin and pull ring, safety clip, and a detonator assembly. (Older models do not have the safety clip.)

(3) *Safety clip.*

(*a*) The hand grenade safety clip is designed to keep the safety lever in place, should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(*b*) The hand grenade safety clip, of spring-steel wire, is shaped in a special configuration for installation on the grenade. It consists of a clamp, which fits around an extension of the fuze body and the safety lever, holding the safety lever snugly against the fuze body.

(*c*) Clips of older design consist of a loop, which fits around the neck of the grenade, and a clamp which fits over the safety lever.

(4) *Data.*

Grenade (with fuze):	
Model(s)	M67, M33
Body	Steel
Weight	14 oz
Length (max)	3.53 in.
Diameter	2.5 in.
Color	Olive drab w/yellow markings
Packing	1 per fiber container; 30 per packing box
Filler:	
Type	Comp B
Weight	6.5 oz
Fuze:	
Model(s)	M213
Type	Pyrotechnic delay-detonating
Primer (percussion)	M42

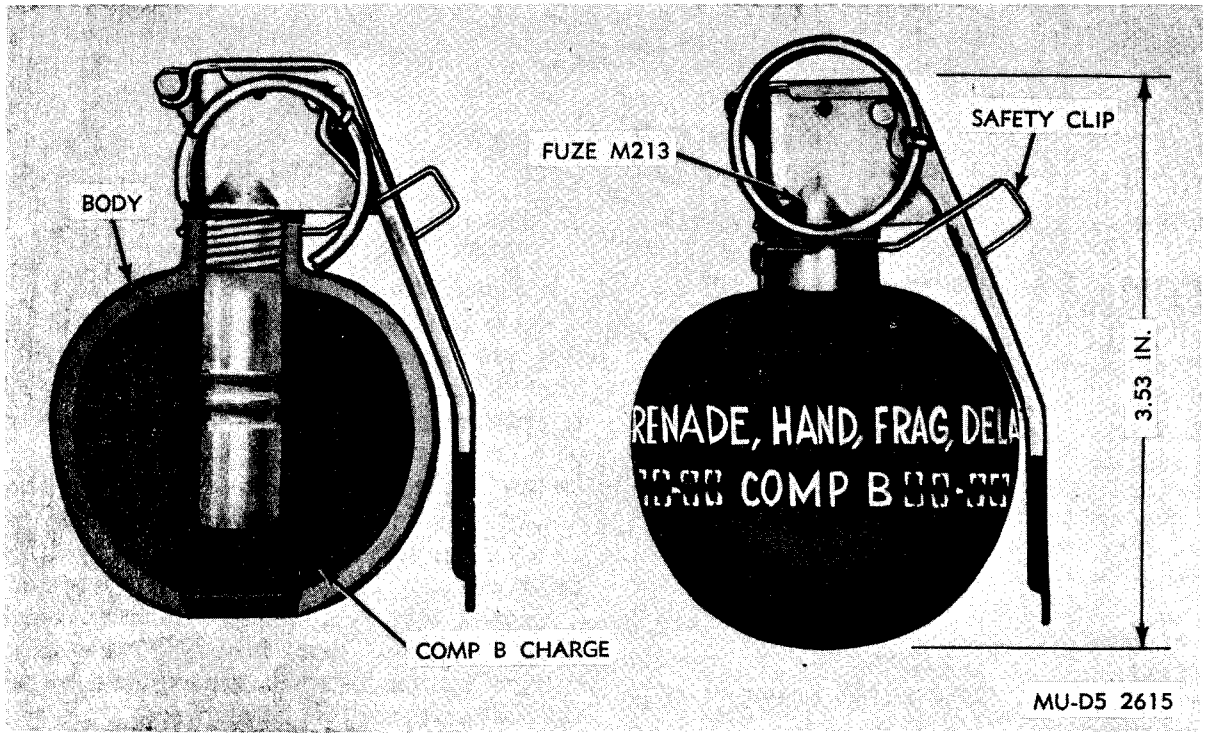


Figure 2–4. Fragmentation hand grenade M67.

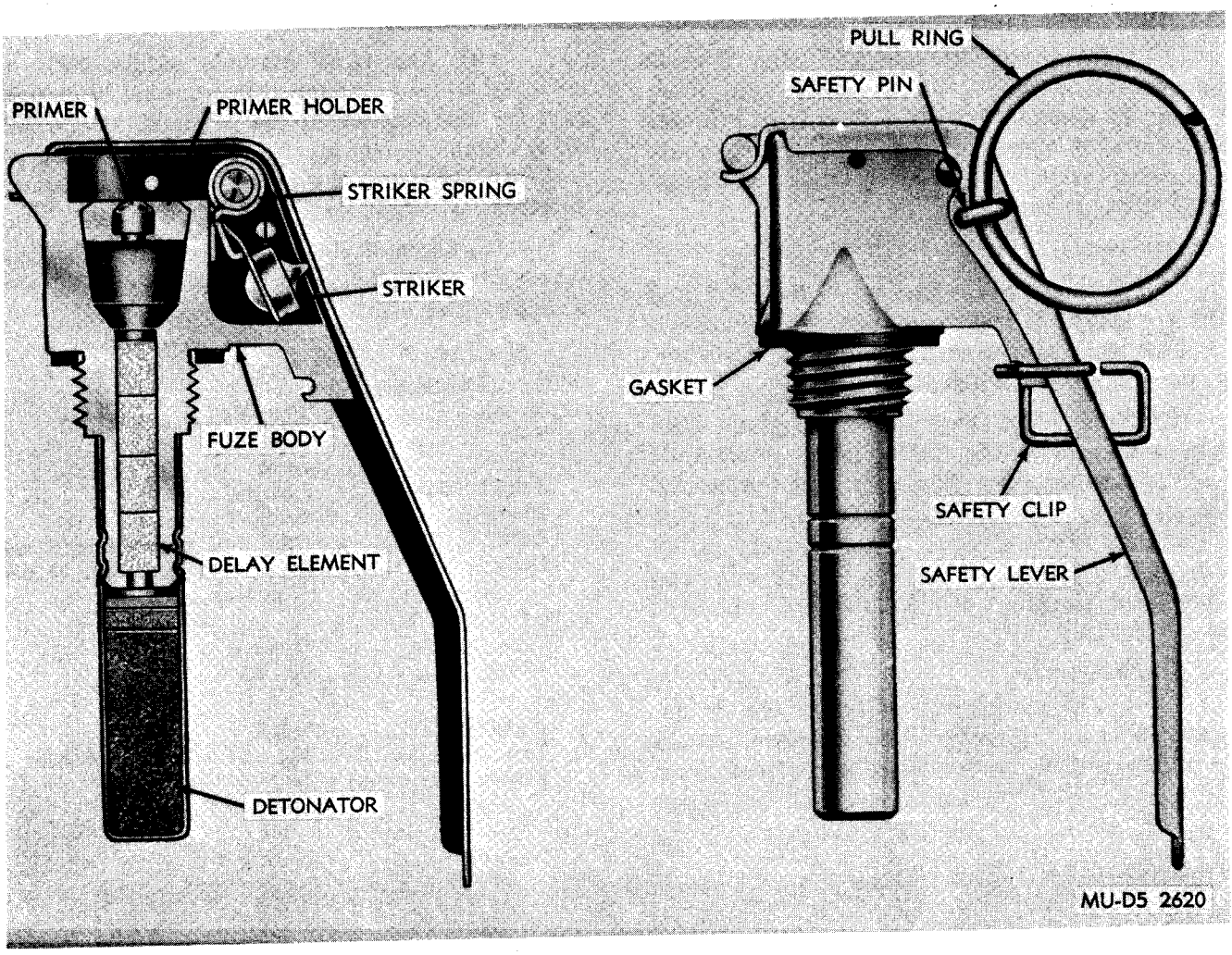


Figure 2–5. Hand grenade fuze M213.

Detonator	Lead azide, lead styphnate, and RDX
Delay time	4–5 sec
Weight	2.5 oz
Length	3.33 in.
Color, safety lever	Olive drab w/black markings
Packing	Not issued separately
Safety device(s):	
Pull ring and safety pin	Grenade M33
Pull ring and safety pin, and safety clip	Grenade M67
Packing box:	
Weight (with contents)	52.0 lb
Dimensions	20½" x 11¾" x 11⅝"
Cube	1.60 cu ft
DODIC:	
G881 (Grenade M67)	G881
G888 (Grenade M33)	G888

c. Functioning.

(1) *Hand grenade M67.* Release of the safety clip and removal of the safety pin permit release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis and strikes the percussion primer. The primer emits a small, intense spit of flame, igniting the delay element. The delay element burns for 4 to 5 seconds, then sets off the detonator. The detonator explodes, thus initiating the explosive charge. The explosive charge explodes, rupturing the body and projecting fragments.

(2) *Hand grenade M33.* Except for release of the safety clip, functioning is the same as that for the M67.

2–4. Grenade, Hand: Fragmentation, Delay, M61, M26A1 and M26

a. General. Hand Grenade M61 (fig. 2–6) is Hand Grenade M26A1 with a safety clip. The M26A1 is the M26 with preformed tetryl pellets around the fuze well liner. Each grenade is assembled with a fuze that initiates the explosive charge. These grenades detonate 4 to 5 seconds after release of the safety lever.

b. Description.

(1) *Grenade body.* Bodies of the M61, M26A1 and M26 are identical. The body constructed of two pieces of thinwall sheet steel, has a notched fragmentation coil liner.

(2) *Fuzes, hand grenade: M204A1 and M204A2.* Fuze M204A1 and Fuze M204A2 (fig. 2–7) are pyrotechnic delay-detonating fuzes. They differ only in body construction. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, and a detonator assembly. The split end of the safety pin has an angular spread or diamond crimp.

(3) *Safety clip.*

(*a*) The hand grenade safety clip is designed to keep the safety lever in place should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(*b*) The safety clip, of spring steel wire, consists of a loop which fits around the fuze body and a clamp which fits over the safety lever.

(*c*) Safety clips on Hand Grenades M61 and M67 are not interchangeable.

(4) *Data.*

Grenade (with fuze):	
Model(s)	M61, M26A1, M26
Body	Thin-wall sheet steel w/inner fragmentation coil
Weight	16 oz
Length (max)	3.9 in.
Diameter	2.25 in.
Color	Olive drab w/yellow markings
Packing	1 per fiber container; 30 per packing box
Filler:	
Type:	
Comp B w/tetryl pellets	M61, M26A1
Comp B	M26
Weight:	
M61, M26A1	
Comp B	5.5 oz
Tetryl pellets	.3 oz
M26	
Comp B	5.8 oz
Fuze:	
Model(s)	M204A1, M204A2
Type	Pyrotechnic delay-detonating
Primer (percussion)	M42
Detonator	Lead azide, lead styphnate, and RDX
Delay time	4 to 5 sec
Weight	2.6 oz
Length	4 in.
Color, safety lever	Olive drab w/black markings
Packing	Not issued separately

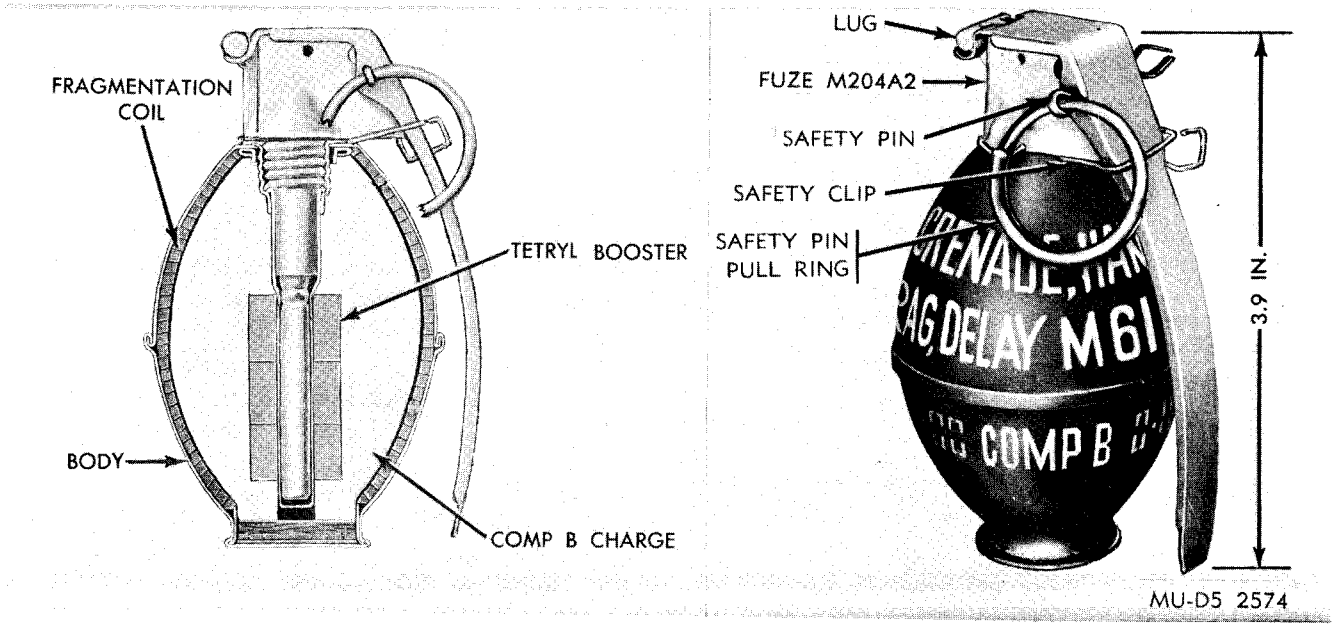


Figure 2–6. Fragmentation hand grenade M61.

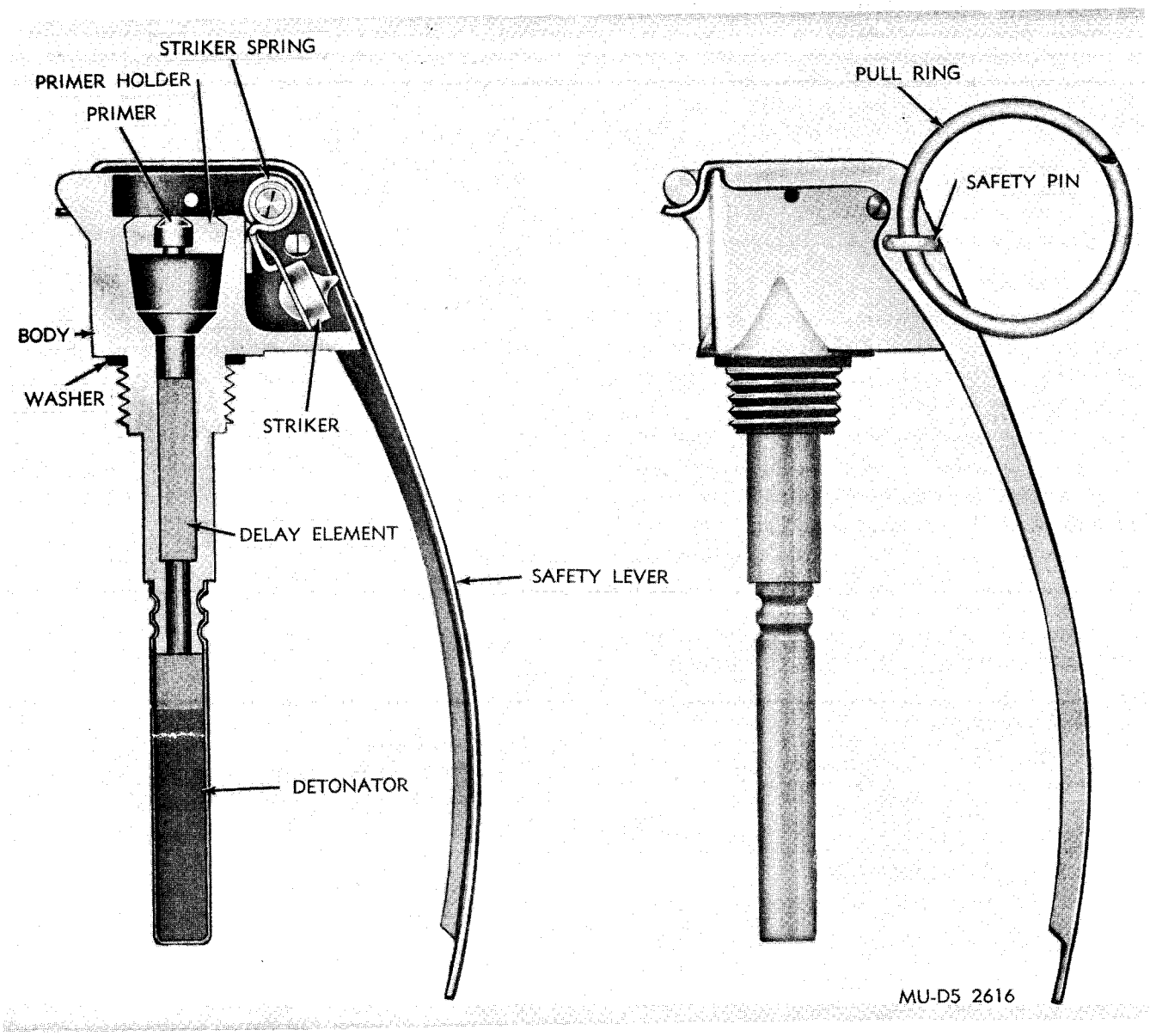


Figure 2-7. Hand grenade fuze M204A2.

Safety device(s):	
Pull ring and safety pin	Grenade M26A1, M26
Pull ring and safety pin, and safety clip	Grenade M61
Packing box:	
Weight (with contents)	53.0 lb
Dimensions	19 7/16" x 11 3/8" x 12 23/32"
Cube	1.60 cu ft
DODIC:	
G880	Grenade, M61
G890	Grenade, M26
G890	Grenade, M26A1

c. Functioning.

(1) *Hand grenade M61.* Release of the safety clip and removal of the safety pin permit release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis and strikes the percussion primer. The primer emits a small, intense spit of flame, igniting the delay element. The delay element burns for 4 to 5 seconds, then sets off the detonator. The detonator explodes, thus initiating the explosive charge. The explosive charge explodes, rupturing the body and projecting fragments.

(2) *Hand grenades M26A1 and M26.* Except for release of the safety clip, functioning is the same as that for the M61.

2–5. Grenade, Hand: Fragmentation, Mk2

NOTE

Hand Grenade Mk2 is authorized for Navy use only.

a. General. Because of the shape and deep serrations of its body, Hand Grenade Mk2 (fig. 2–8) was dubbed "pineapple." These serrations delineate fragmentation of the body when the grenade explodes. No safety clip is authorized for use with this grenade.

b. Description.

(1) *Grenade body.* The body is of cast iron. It contains a high-explosive filler.

(2) *Fuzes, hand grenade: M204A1 and M-204A2.* Fuze M204A1 and Fuze M204A2 (fig. 2–7) are pyrotechnic delay-detonating fuzes. They differ only in body construction. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, and a detonator assembly. The split end of the safety pin has an angular spread or diamond crimp.

(3) *Safety clip.* Safety clips are not used with Hand Grenade Mk2.

(4) *Data.*

Grenade (with fuze):	
Model(s)	Mk2
Body	Cast iron
Weight	21 oz
Length (max)	4.5 in.
Diameter	2.25 in.
Color	Olive drab, or olive drab w/ yellow band around top of fuze well.
Packing	1 per fiber container; 25 per packing box
Filler:	
Type	TNT (flaked or granular)
Weight	2 oz
Fuze:	
Model(s)	M204A1, M204A2
Type	Pyrotechnic delay-detonating
Primer	M42
Detonator	Lead azide, lead styphnate, and RDX
Delay time	4–5 sec
Weight	2.6 oz
Length	4 in.
Color, safety lever	Olive drab w/black markings
Packing	Not issued separately
Safety device:	
Pull ring and safety pin	Grenade Mk2
Packing box:	
Weight (with contents)	57.6 lb
Dimensions	17¾" x 16¼" x 11⅝"
Cube	1.27 cu ft
DODIC	G890

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a strikerspring. The striker rotates on its axis and strikes the percussion primer. The

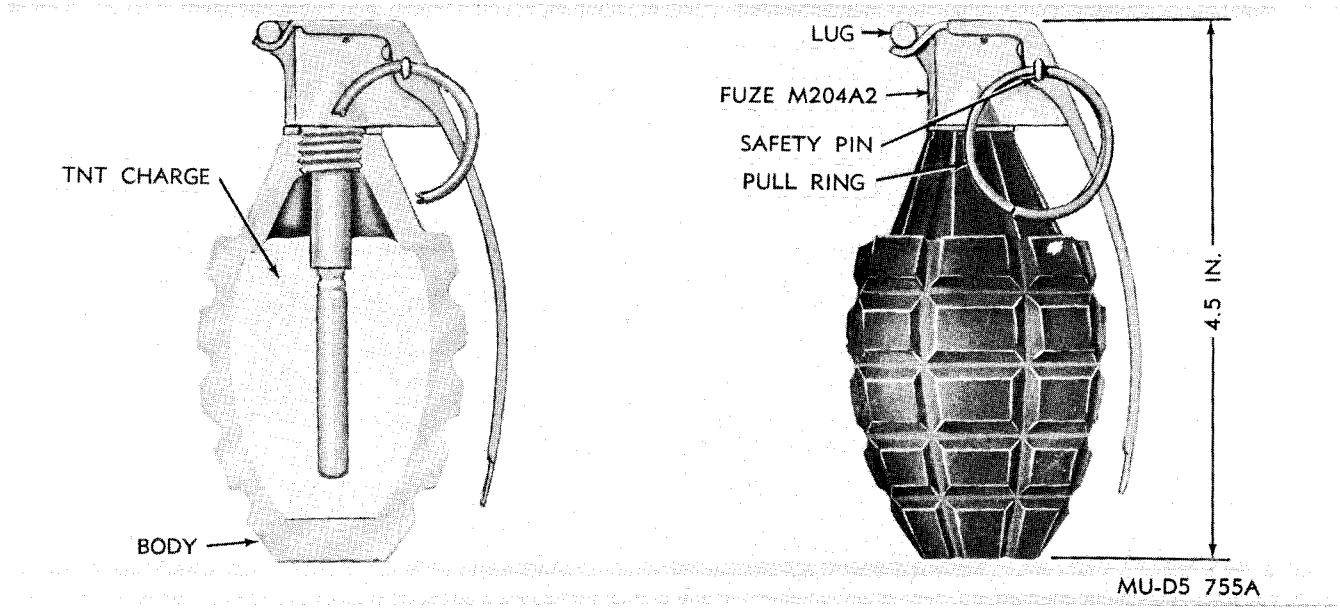


Figure 2–8. Fragmentation hand grenade Mk2.

primer emits a small, intense spit of flame, igniting the delay element. The delay element burns for 4 to 5 seconds, then sets off the detonator. The detonator explodes, thus initiating the explosive charge. The explosive charge explodes, rupturing the body and projecting fragments.

2–6. Grenade, Hand: Fragmentation, Impact M68 and M59 (M33 w/Fuze M217).

a. General. Hand Grenade M68 (fig. 2–9) is Hand Grenade M59 with a safety clip. Each grenade is assembled with an electrical impact fuze.

b. Description.

(1) *Grenade body.* Bodies of the M68 and M59 are identical. The bodies of these grenades are the same as those of Hand Grenades, Fragmentation, Delay, M67 and M33. The shape is essentially spherical. The body measures 2.5 inches in diameter. Bodies contain a high explosive filler.

(2) *Fuze, hand grenade: M217.* Fuze M217 (fig. 2–10) is equipped with a safety pin, the split end of which is either spread or has a diamond crimp, and a pull ring. IMPACT is embossed on the safety lever. (Older models had red safety levers with or without IMPACT painted thereon in black.) The major component are as follows: a bouchon assembly, a fuze body assembly (which contains a thermal power supply, an arming delay thermal switch, a delay-detonation thermal switch assembly, an impact switch assembly and an electric detonator), and a booster pellet. The bouchon assembly consists of a striker, striker spring, striker hinge pin, safety lever and safety pin with pull ring. The fuze body is hermetically sealed.

(3) *Safety clip.*

(*a*) The hand grenade safety clip is designed to keep the safety lever in place, should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(*b*) Clips, of spring steel wire, consist of a loop, which fits around the neck of the grenade, and a clamp, which fits over the safety lever.

(*c*) The safety clips on Hand Grenades M68, M61, M67 and M57 are not interchangeable.

(4) *Data.*

Grenade (with fuze):	
Model(s)	M68, M59 (M33 w/Fuze M217) (M33A1)
Body	Steel
Weight	14 oz
Length (max)	3.2 in.
Diameter	2.5 in.
Color	Olive drab w/yellow markings
Packing	1 per fiber container; 30 per packing box
Filler:	
Type	Comp B
Weight	6.5 oz
Fuze:	
Model(s)	M217
Type	Electrical impact w/overriding delay function feature
Primer	M42

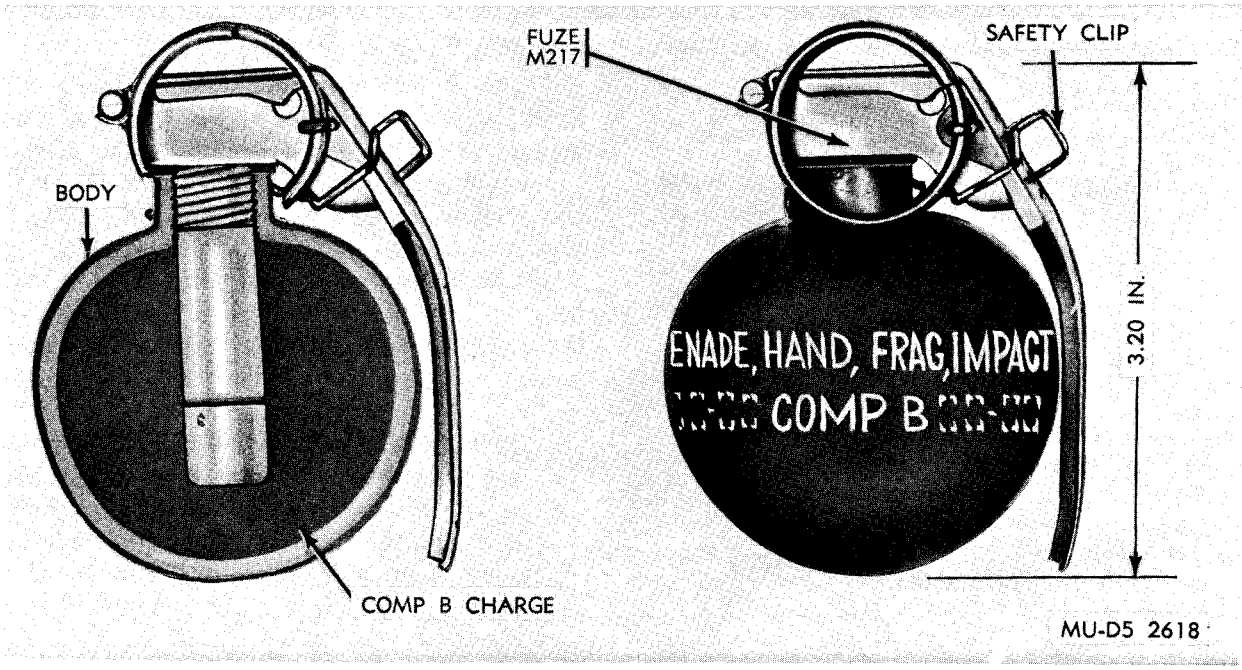


Figure 2–9. Fragmentation hand grenade M68.

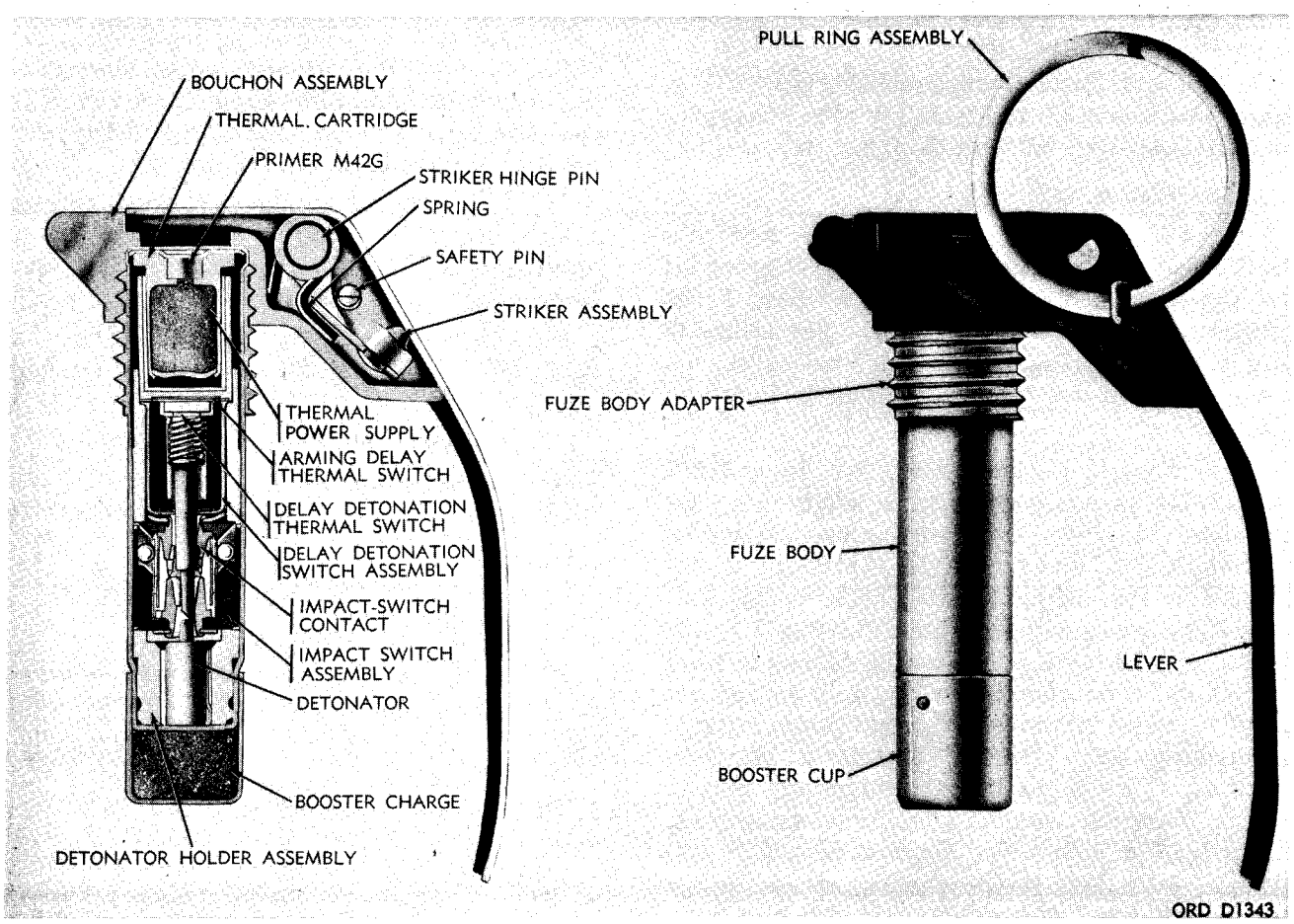


Figure 2–10. Hand grenade fuze M217.

Detonator	Lead azide, lead styphnate, PETN
Delay time	3 to 7 seconds
Weight	2.7 oz
Length	3.0 in.
Color, safety lever	Oliver drab handle w/IMPACT embossed on lever, red lever w/ or w/o IMPACT stenciled in black on lever
Packing	Not issued separately
Safety device(s):	
Pull ring and safety pin	Grenade, M59 (M33 w/Fuse M217)
Pull ring and safety pin, and safety clip	Grenade, M68
Packing box:	
Weight (with contents)	52.0 lb
Dimensions	20½" x 11¾" x 11⅜"
Cube	1.60 cu ft
DODIC:	
Grenade, M59	G887
Grenade, M68	G882

c. Functioning.

(1) *Hand grenade M68.* Release of the safety clip and removal of the safety pin permit release of the safety lever. When the grenade is thrown, the striker assembly, through action of the striker spring, throws off the safety lever and impacts the percussion primer. The primer initiates the power supply, which causes the fuze to arm within one to two seconds; thereafter, the grenade is subject to detonation upon impact.

NOTE

At high temperature (+125° F.), arming time may be as short as 1 second; at low temperature (−40° F.), as long as 2 seconds. The secondary pyrotechnic delay feature functions within 3 to 7 seconds throughout the temperature range of −40° F. to +125° F.

If the grenade does not detonate on impact (after proper arming time), the grenade will be de-

tonated by the secondary pyrotechnic delay feature. If the fuze fails to function after release of the safety lever, the fuze power supply will become inactive within 30 seconds.

(2) *Hand grenade M59 (M33 w/fuze, M217) (M33A1).* Except for release of the safety clip, functioning is the same as for the M68.

2–7. Grenade, Hand: Fragmentation, Impact M57 and M26A2

a. General. Hand Grenade M57 (fig. 2–11) is Hand Grenade M26A2 with a safety clip. Each grenade is assembled with an electrical impact fuze.

b. Description.

(1) *Grenade body.* Bodies of the M61, M26A1 and M26 are identical to the M26A2 except the fuze threads are different. The body, constructed of two pieces of thinwall sheet steel, has a notched fragmentation coil liner. Bodies contain a high explosive filler. Bodies of the M61, M26A1 and M26 contain booster pellets and are longer and narrower than those of the M26A2 and M57. Bodies of the M26A2 and M57 do not contain booster pellets.

(2) *Fuze, hand grenade: M217.* Fuze M217 (fig. 2–10) is equipped with a safety pin, the split end of which is either spread or has a diamond crimp, and a pull ring. IMPACT is embossed on the safety lever. (Older models had red safety levers with or without IMPACT painted thereon in black.) The major components are as follows: a bouchon assembly, a fuze body assembly (which contains a thermal power supply, an arming delay thermal switch, a delay-detonation terminal switch assembly, an impact switch assembly and an electric detonator), and a booster pellet. The bouchon assembly consists of a striker, striker spring, a striker hinge pin, safety lever and safety pin with pull ring. The fuze body assembly is hermetically sealed.

(3) *Safety clip.*

(*a*) The hand grenade safety clip is designed to keep the safety lever in place, should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(*b*) Clips, of spring steel wire, consist of a loop, which fits around the neck of the grenade, and a clamp, which fits over the safety lever.

(*c*) The safety clips on Hand Grenades M68, M61, M67 and M57 are not interchangeable.

(4) *Data.*

Grenade (with fuse):

Model(s)	M57, M26A2
Body	Thin-wall sheet steel w/ notched fragmentation coil
Weight	16 oz
Length (max)	3.9 in.
Diameter	2.25 in.

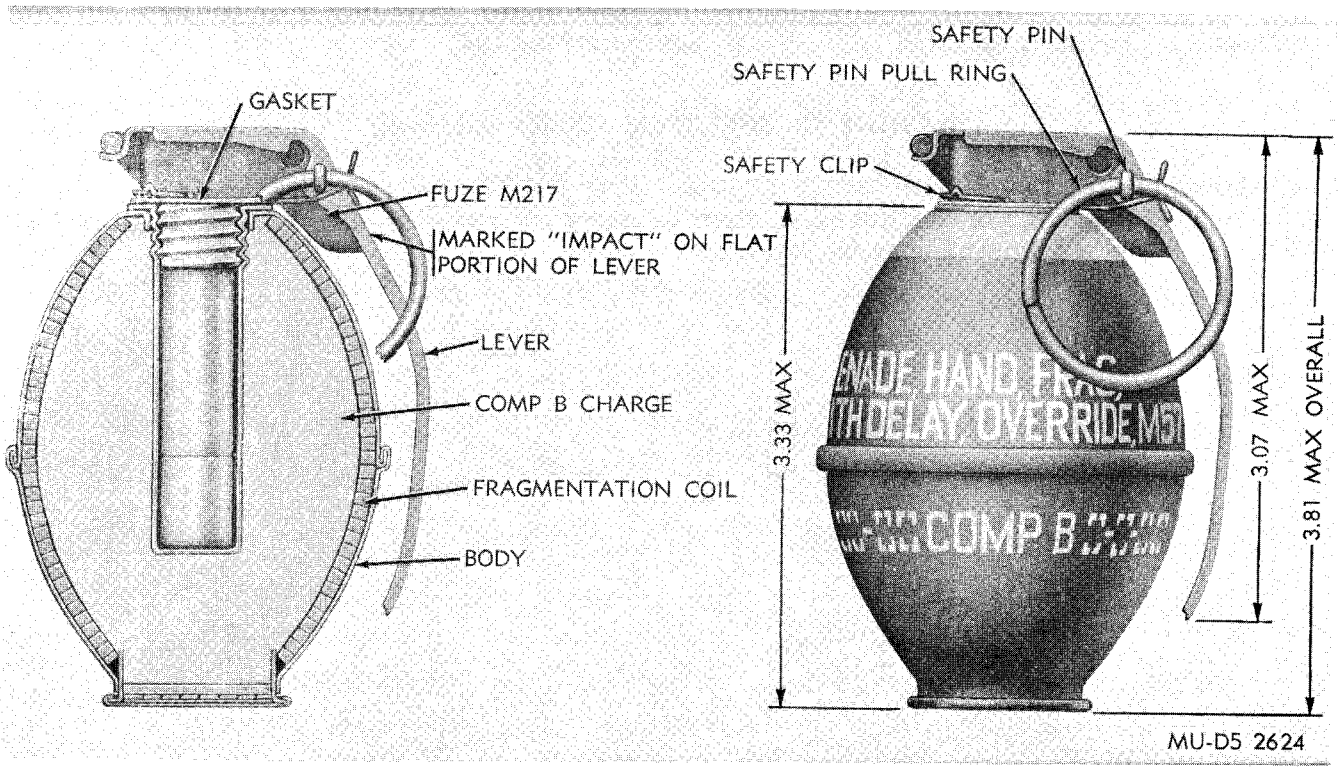


Figure 2–11. Fragmentation hand grenade M57.

Color	Olive drab w/yellow markings
Packing	1 per fiber container; 30 per packing box
Filler:	
Type	Comp B w/tetryl pellets
Weight:	
Comp B	5.5 oz
Tetryl pellets	0.3 oz
Fuze:	
Model(s)	M217
Type	Electrical impact w/overriding delay function feature
Primer	M42
Detonator	Lead azide, lead styphnate, PETN
Delay time	3 to 7 seconds
Weight	2.7 oz
Length	3.0 in.
Color, safety lever	Red handle w/IMPACT embossed, in lever; red lever w/ or w/o IMPACT stenciled in black on lever
Packing	Not issued separately
Safety device(s):	
Pull ring and safety pin	Grenade, M26A2
Pull ring and safety pin, and safety clip	Grenade, M57
Packing box:	
Weight (with contents)	51 lb
Dimensions	19 3/4" x 11 9/16" x 12 13/32"
Cube	1.60 cu ft
DODIC:	
M57	G896
M26A2	G889

c. Functioning.

(1) *Hand grenade M57.* Release of the safety clip and removal of the safety pin permit release of the safety lever. When the grenade is thrown, the striker assembly, through action of the striker spring, throws off the safety lever and impacts the percussion primer. The primer initiates the power supply, which causes the fuze to arm within one to two seconds; thereafter, the grenade is subject to detonation upon impact.

NOTE

At high temperature (+125° F.), arming time may be as short as 1 second; at low temperature (−40° F.), as long as 2 seconds. The secondary pyrotechnic delay feature functions within 3 to 7 seconds throughout the temperature range of −40° F. to +125° F.

If the grenade does not detonate on impact (after proper arming time), the grenade will be detonated by the secondary pyrotechnic delay feature. If the fuze fails to function after release of the safety lever, the fuze power supply will become inactive within 30 seconds.

(2) *Hand grenade M26A2.* Except for release of the safety clip, functioning is the same as for the M57.

SECTION III. OFFENSIVE HAND GRENADE

2–8. General

Offensive hand grenades are used for blast effect or demolition. Since fragments may be projected over 185 meters (608 feet), offensive hand grenades are not used in training without adequate cover.

2–9. Grenade, Hand: Offensive, Mk3A2

a. General. Hand Grenade Mk3A2 (fig. 2–12) is the only offensive hand grenade authorized for issue and use. It is about the same size as the fragmentation hand grenade, but has a cylindrical body made of pressed fiber. The shape of the fuze safety lever is slightly different from that of a fragmentation grenade and conforms to the shape of the body of the grenade. The Mk3A2 may be issued fuzed with or without safety clips, or unfuzed.

b. Description.

(1) *Grenade Body.* The grenade body is a cylinder made of pressed fiber and contains high explosive TNT.

(2) *Fuzes, hand grenade: M206A1 or M206-A2.* Fuze M206A1 and Fuze M206A2 (fig. 2–13) are pyrotechnic delaydetonating fuzes. They differ only in body construction. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, and a detonator assembly. The split end of the safety pin has an angular spread or diamond crimp.

(3) *Safety clip.*

(*a*) The hand grenade safety clip is designed to keep the safety lever in place, should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(*b*) Safety clips, of spring steel wire, consist of a loop, which fits around the threaded section of the fuze, and a clamp, which fits over the safety lever. Because the loop fits around the threaded section of the fuze, the clip must be assembled to the grenade when the fuze is assembled to the grenade.

(4) *Data.*

Grenade (with fuze):
Model(s) ---------- Mk3A2
Body ---------- Asphalt-impregnated fiber

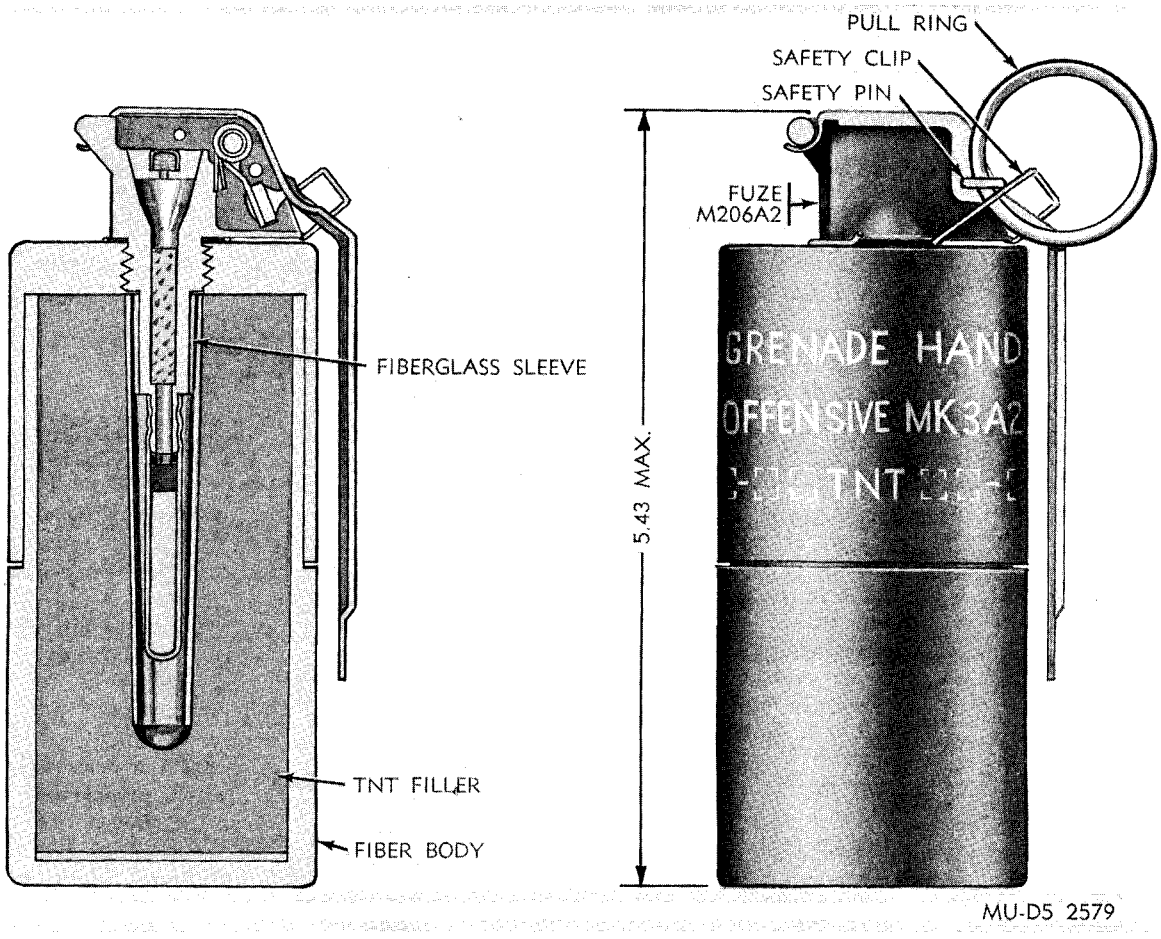


Figure 2–12. Offensive hand grenade Mk3A2.

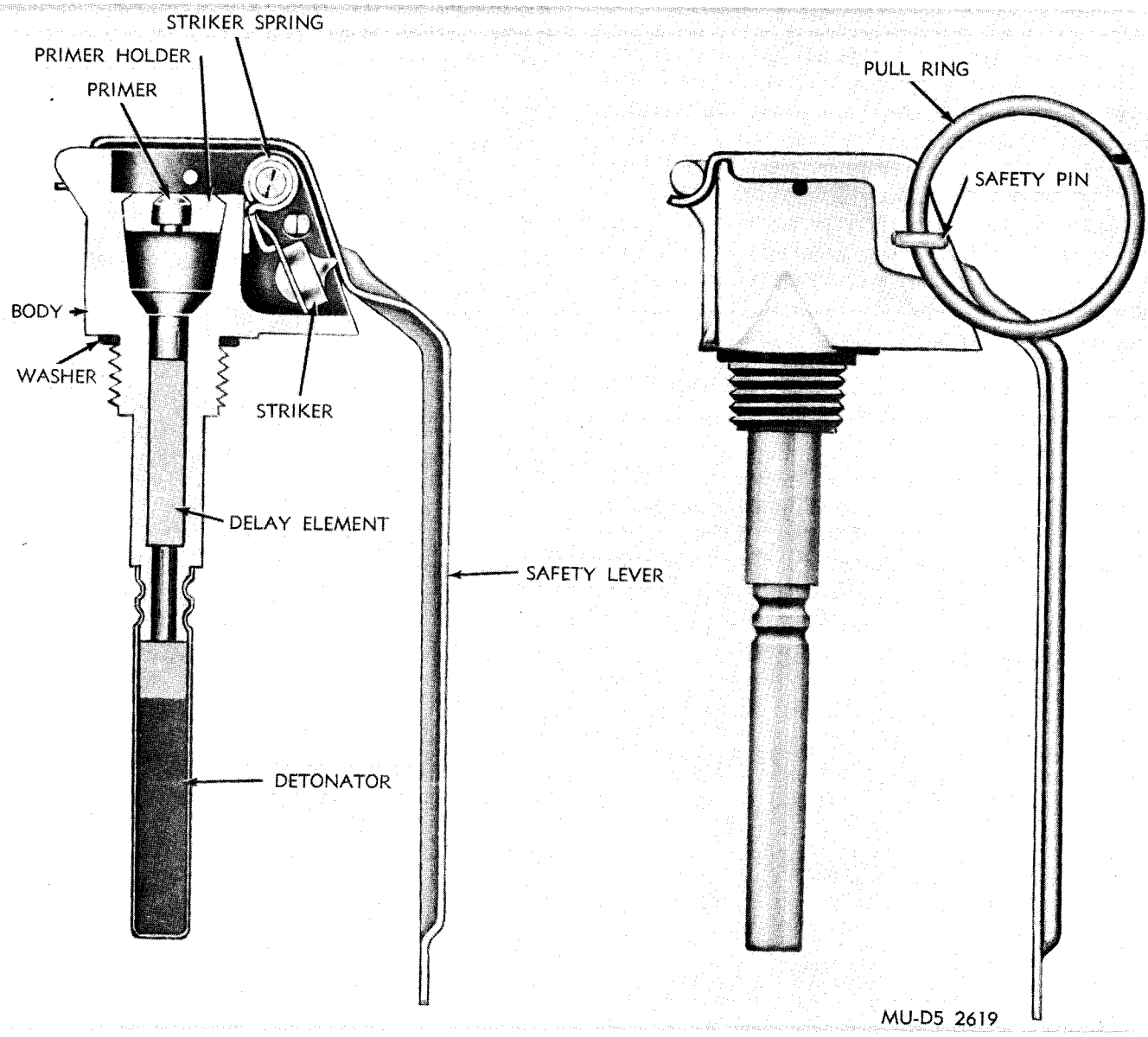


Figure 2–13. Hand grenade fuze M206A2.

Weight	15.6 oz
Length (max)	5.275 in.
Diameter	2.13 in.
Color	Black w/yellow markings
Packing	1 per carton; 20 cartons per wooden box

Packing box:

Weight (with contents)	45.1 lb
Dimensions	17⅝″ x 13¼″ x 8½″
Cube	1.06 cu ft

Filler:

Type	TNT (flaked)
Weight	8 oz

Fuze:

Model(s)	M206A2
Type	Pyrotechnic delay-detonating
Primer	M42
Detonator	Lead azide, lead styphnate, and RDX
Delay time	4–5 oz
Weight	2.6 oz
Length	4.3 in.
Color	Olive drab w/black markings
Packing	25 per carton; 8 cartons per wooden box

Packing box:

Weight (with contents)	65.8 lb
Dimensions	25½″ x 16½″ x 14¼″
Cube	2.74 cu ft

DODIC	G911
Safety device(s):*	
Pull ring and safety pin	Fuzed grenades
Pull ring and safety pin, and safety clip	Fuzed grenades

*Unfuzed grenades have no safety devices.

c. Functioning.

(1) *With safety clip.* Release of the safety clip and removal of the safety pin permit release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis and strikes the percussion primer. The primer emits a small, intense spit of flame, igniting the delay element. The delay element burns for 4 to 5 seconds, then sets off the detonator. The detonator explodes, thus initiating the explosive charge. When the filler detonates, the force of the explosion is dissipated mainly in the form of shock waves rather than high velocity fragments.

(2) *Without safety clip.* Except for release of the safety clip, functioning is the same as in (1), above.

Section IV. ILLUMINATING HAND GRENADE

2-10. General

Illuminating hand grenades are used primarily for illumination and signaling. Because of high temperatures generated by the pyrotechnic illuminating composition, these grenades may be used for incendiary purposes against flammable targets. When used for illumination on soggy or swampy ground, these grenades may become embedded, producing little or no illumination.

2–11. Grenade, Hand: Illuminating, Mk1

a. General. Hand Grenade Mk1, (fig. 2–14) is the only illuminating hand grenade authorized for issue and use. In outward appearance, the Mk1 resembles fragmentation hand grenades of the M26 series.

b. Description.

(1) *Grenade body.* The body is made in two pieces. The illuminating charge is pressed into the lower half of the body and covered with a layer of first-fire composition. This, in turn, is covered with an igniter charge.

(2) *Fuze.* The fuze is an integral part of the grenade. The body contains a primer and quickmatch bushing. Assembled to the body of the fuze are a striker, striker spring, safety lever, and safety pin with pull ring. The split end of the safety pin has an angular spread.

(3) *Safety clips.* Safety clips are not required with illuminating hand grenades.

(4) *Data.*

Grenade (with fuze):	
Model(s)	Mk1
Body	Thin-sheet steel
Weight	10 oz
Length (max)	4.35 in.
Diameter	2.19 in.
Color	All white or unpainted w/ white band w/black markings
Packing	1 per fiber container; 25 containers per wooden box
Filler:	
Type	Pyrotechnic composition
Weight	3.5 oz
Fuze:	
Model(s)	Integral
Type	Pyrotechnic delay-igniting
Primer	Percussion
Igniter charge	Quickmatch
Delay time	7 sec
Weight	N/A
Length	N/A
Color, safety lever	White or olive drab w/black markings
Packing	N/A
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	51.0 lb
Dimensions	19 3/4" x 11 9/16" x 12 1/32"
Cube	1.45 cu ft
DODIC	G895

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis and strikes the percussion primer. The primer initiates the quickmatch, which burns for seven seconds, and then ignites the igniter charge. The igniter charge ignites the first-fire composition which, in turn, ignites the illuminating charge. Gas pressure produced by burning of the

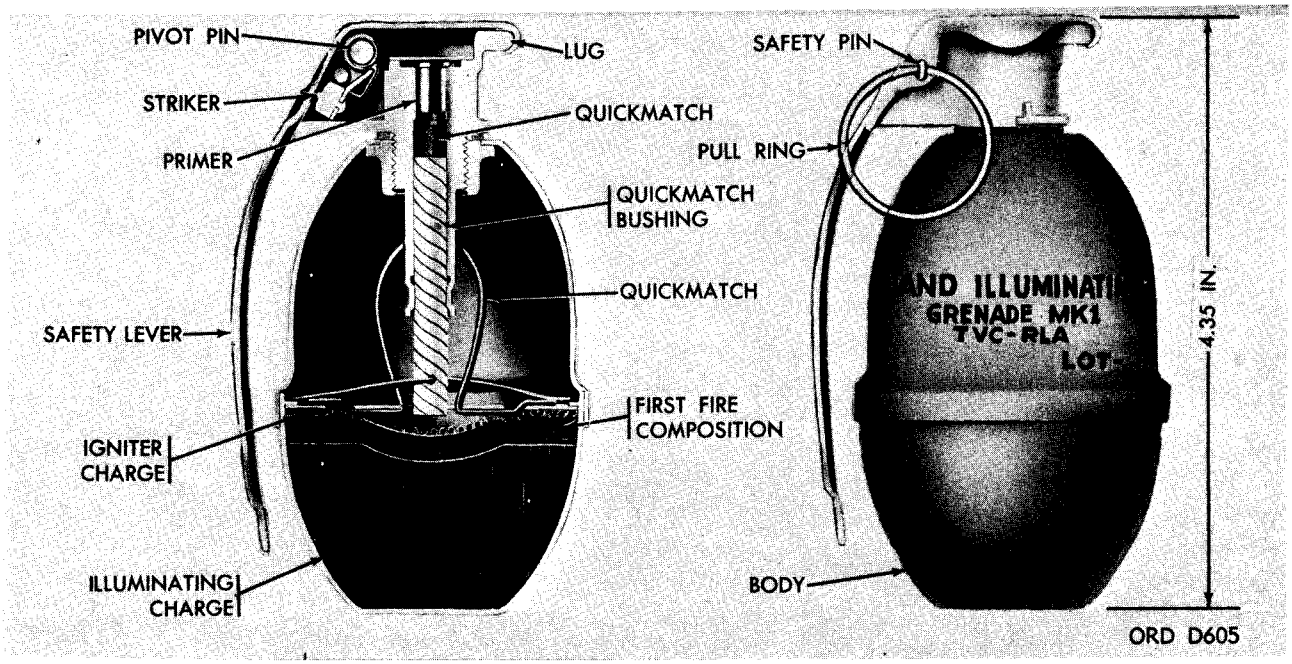


Figure 2–14. Illuminating hand grenade Mk1.

illuminating composition causes the upper half of the grenade body to separate from the lower half. This exposes the burning illuminating charge. The grenade will burn for 25 seconds with approximately 55000 candle-power and will illuminate an area of 200 meters (656 feet) in diameter.

Section V. CHEMICAL HAND GRENADES

2–12. General

Chemical hand grenades are used for riot control, smoke (screening and signaling), practice, incapacitating and incendiary purposes. For screening and/or signaling purposes, white and various colored smokes are used. Antipersonnel (AP) grenade agents include irritating agents and WP burning compositions. Incendiary grenades provide a high temperature burning agent against flammable or light, armored targets. Safety clips are not required with chemical grenades.

2–13. Grenades, Hand: Riot, CN, M7 and M7A1

a. General. Grenade M7 and Grenade M7A1 (fig. 2–15) are burning type riot control agent grenades and may be used to simulate casualty agents during training. CN has a powerful lachrimal effect and is irritating to the upper respiratory passages. In higher concentrations it is irritating to the skin, causing a burning and itching sensation. The onset of incapacitation is 15 to 30 seconds and duration from 5 to 20 minutes depending upon dosage concentration.

b. Description.

(1) *Grenade body.* The grenade bodies of these grenades are of thin sheet metal and are cylindrical in shape. The filling is compressed into the grenade body, a tapered hole being formed through the body of the filling. The top surface of the filling and the tapered walls of the hole are coated with starter mixture (to aid ignition of the fuel by the fuze).

(2) *Fuze, hand grenade: M201A1.* Fuze M-201A1 (fig. 2–16) is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture, pyrotechnic delay column and igniter mixture. Assembled to the body are a striker, striker spring, safety lever and safety pin with pull ring. The split end of the safety pin has an angular spread.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):

Model(s)	M7, M7A1
Body	Sheet metal
Weight	(M7) 17 oz; (M7A1) 18½ oz
Length	5.7 in.
Diameter	2.5 in.
Color	Gray w/1 red band and red markings
Packing	1 per container; 16 per packing box

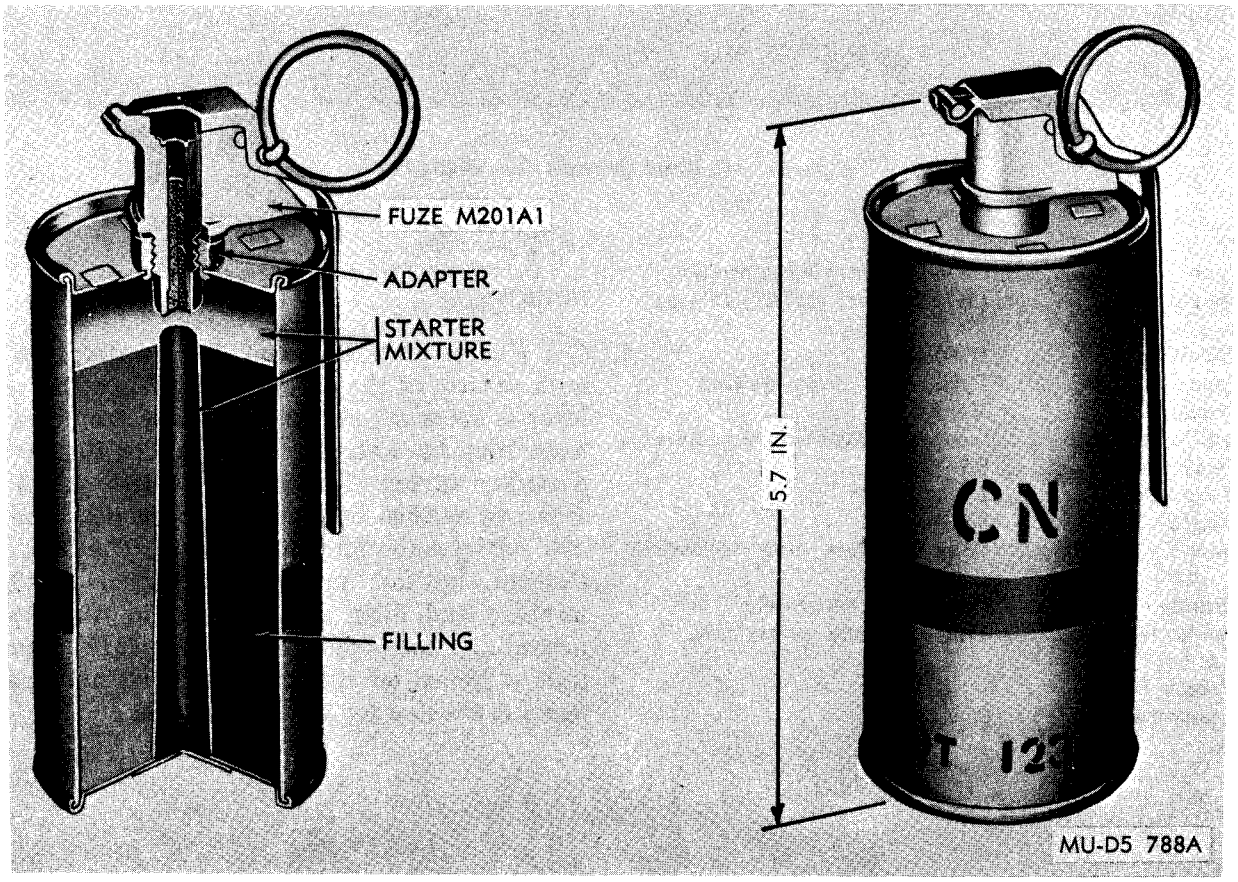


Figure 2–15. CN riot hand grenade M7A1.

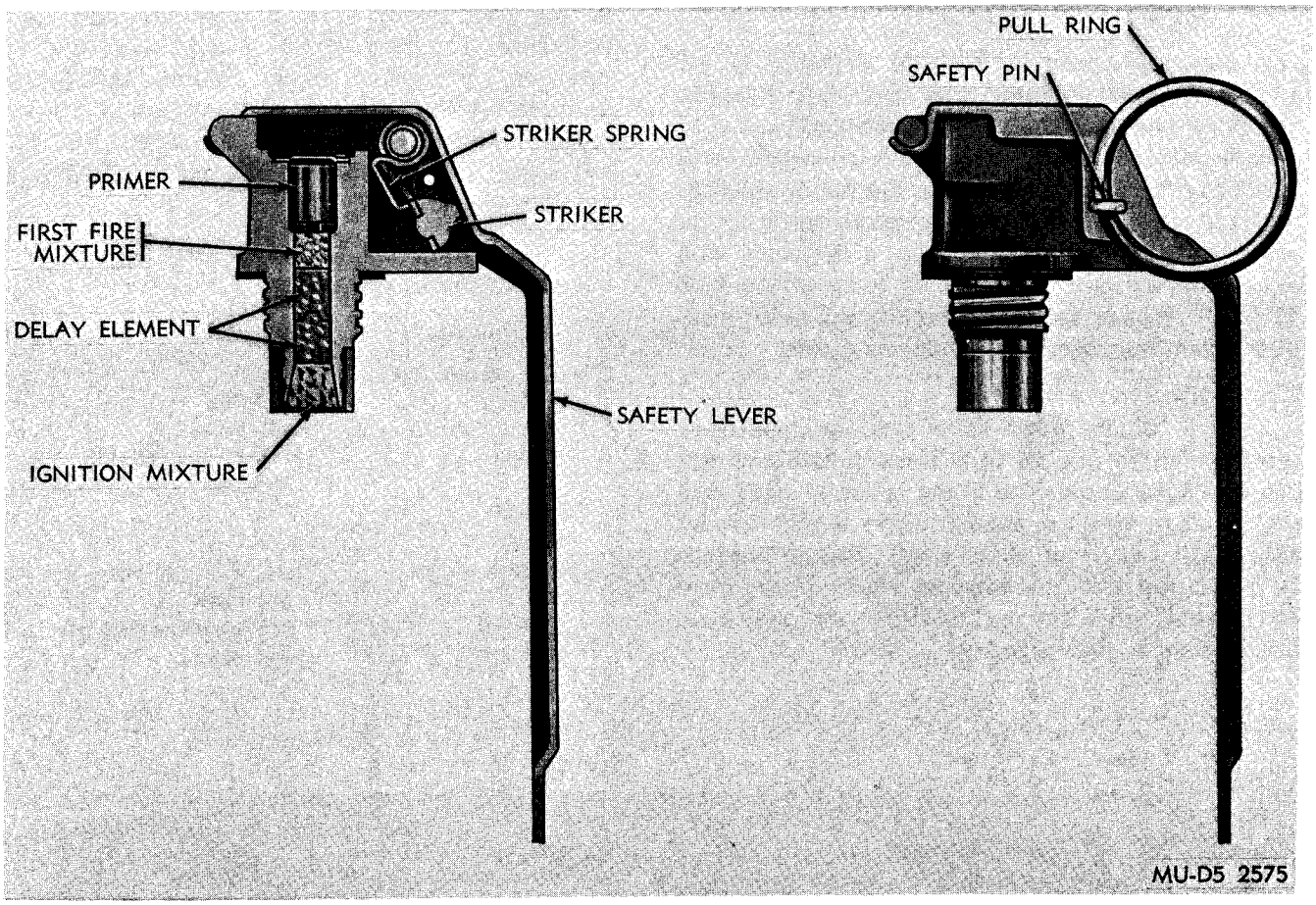


Figure 2-16. Hand grenade fuze M201A1.

Filler:	
Type	CN—Pyrotechnic composition
Weight	(M7) 10¼ oz; (M7A1) 12½ oz
Fuze:	
Model(s)	M201A1
Type	Pyrotechnic delay-igniting
Primer	M39A1
Ignition mixture	Iron oxide, titinium, zirconium
Delay time	0.7—2 sec
Weight	1.5 oz
Length	3.9 in.
Color	Gray or olive drab w/black markings
Packing	Not issued separately
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	35.0 lb
Dimensions	14" x 12.5" x 8.0"
Cube	0.80 cu ft
DODIC	G960

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its own axis and strikes the percussion primer. The primer initiates the first-fire mixture. The fuze delay element, ignition mixture, and grenade starter mixture and filler are initiated in turn by the preceding component. The pressure sensitive tape is blown off the emission holes and the CN agent is emitted for 15 to 30 seconds.

2–14. Grenades, Hand: Riot, CS, M7A2 and M7A3

a. General. Grenades M7A2 and M7A3 are similar in appearance to the M7A1 (fig. 2–15). They are burning type riot control agent grenades and may be used to simulate casualty agents during training. CS has a powerful lachrinal effect and is irritating to the upper respiratory passages causing coughing, difficulty in breathing and chest tightness. Heavy concentrations will cause nausea and vomiting as well. The onset of incapacitation is 15 to 30 seconds and duration is less than 10 minutes after personnel is removed to fresh air. CS is more persistent and has a more severe reaction than CN.

b. Description.

(1) *Grenade body.* The body is a cylinder of thin sheet metal. The filler is compressed into the grenade body with a starter mix.

(2) *Fuze, hand grenade: M201A1.* Fuze M-201A1 (fig. 2–16) is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture, pyrotechnic delay column and ignition mixture. Assembled to the body are a striker, striker spring, safety lever and safety pin with pull ring. The split end of the safety pin has an angular spread.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model(s)	M7A2, M7A3
Body	Sheet metal
Weight	15½ oz
Length (max)	5.7 in.
Diameter	2.5 in.
Color	Gray w/1 red band; red markings
Packing	1 per container; 16 per packing box
Filler:	
Type	CS
Weight	(M7A2) 5.5 oz burning mixture and 3.5 oz powdered CS in gelatine capsules; (M7A3) 7.35 oz burning mixture and 4.5 oz pelletized CS agent
Fuze:	
Model(s)	M201A1
Type	Pyrotechnic delay-igniting
Primer	M39A1
Ignition mixture	Iron oxide, titanium, zirconium
Delay time	0.7—2 sec
Weight	1.5 oz
Length	3.9 in.
Color	Gray or olive drab, w/black markings
Packing	Not issued separately
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	30.0 lb
Dimensions	14.0″ x 14.0″ x 8.0″
Cube	0.90 cu ft
DODIC	G963

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its own axis and strikes the percussion primer. The primer initiates the first-fire mixture. The fuze delay element, ignition mixture, and grenades starter mixture and filler are initiated in turn by the preceding component. The pressure sensitive tape is blown off the emission holes and CS agent is emitted for 15 to 35 seconds.

2–15. Grenade, Hand: Smoke, HC, AN–M8

a. General. HC Smoke Hand Grenade AN–M8 (fig. 2–17) is a burning type grenade used to generate white smoke for screening activities of small units. It is also used for ground-to-air signaling. The duration of smoke screen or signal is 105 to 150 seconds.

b. Description.

(1) *Grenade body.* The grenade body is a cylinder of thin sheet metal. It is filled with HC smoke mixture topped with a starter mixture directly under the fuze opening.

(2) *Fuze, hand grenade: M201A1.* Fuze M-201A1 (fig. 2–16) is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture, pyrotechnic delay column, and ignition mixture. Assembled to the body are a striker, striker spring, safety lever and safety pin with pull ring. The split end of the safety pin has an angular spread.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model (s)	AN–M8
Body	Sheet metal
Weight	24 oz
Length	5.7 in.
Diameter	2.5 in.
Color	Light green w/black markings
Packing	1 per container; 16 per packing box
Filler:	
Type	HC (type C)
Weight	19 oz
Fuze:	
Model (s)	M201A1
Type	Pyrotechnic delay-igniting
Primer	M39A1
Ignition mixture	Iron oxide, titanium, zirconium
Delay time	0.7–2 sec
Weight	1.5 oz
Length	3.9 in.

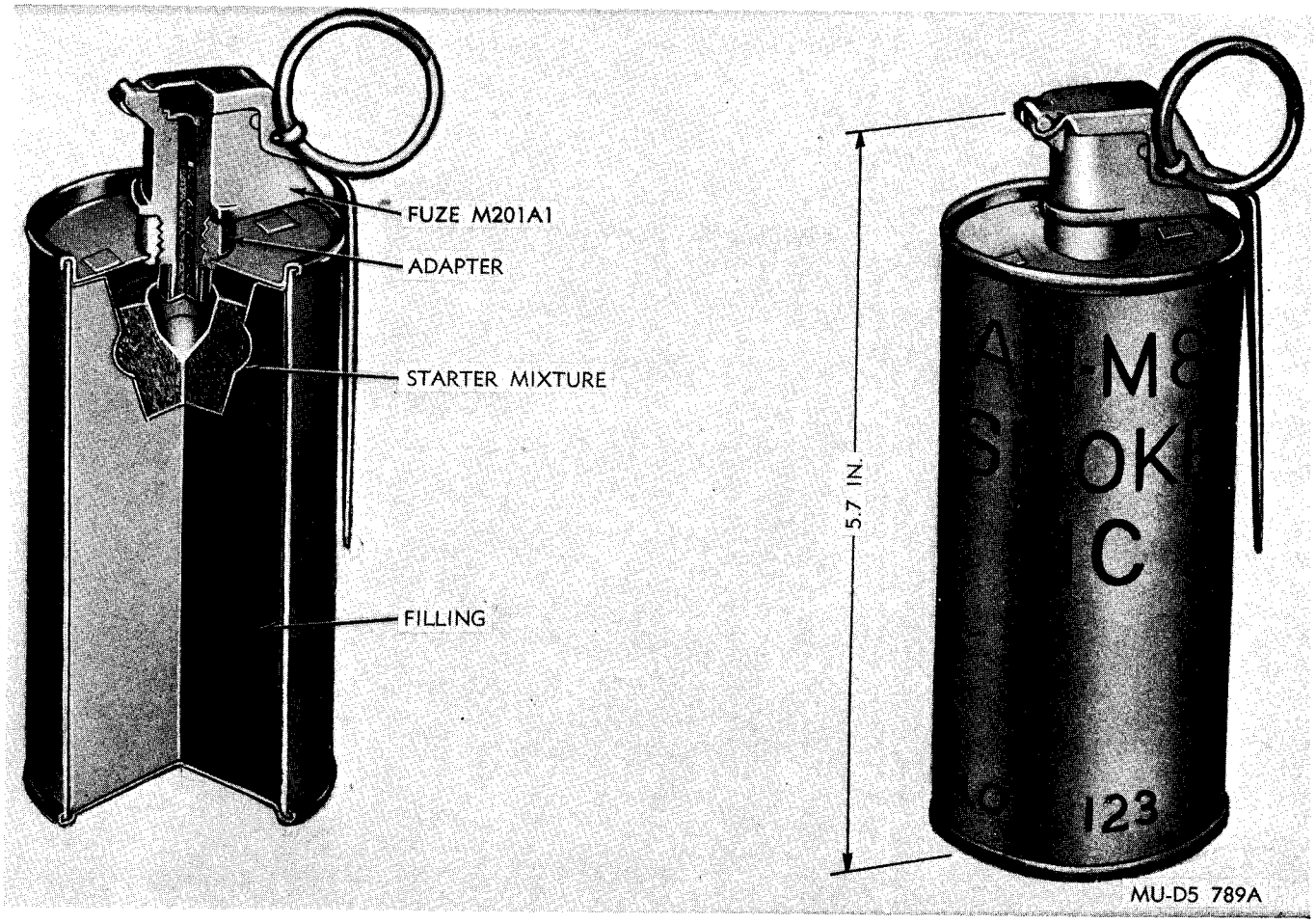


Figure 2–17. HC smoke hand grenade AN–M8.

Color (safety lever)	Gray or olive drab w/black markings
Packing	Not separately issued
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	41.0 lb
Dimensions	14.0" x 14.0" x 8.0"
Cube	0.90 cu ft
DODIC	G 930

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its own axis and strikes the percussion primer. The primer initiates the first fire mixture. The fuze delay element, ignition mixture, and grenade starter mixture and filler are initiated in turn by the preceding component. The pressure sensitive tape is blown off the emission holes and smoke is emitted for 105 to 150 seconds.

2–16. Grenade, Hand: Incendiary, TH3, AN–M14

a. General. TH3 Incendiary Hand Grenade AN–M14 (fig. 2–18) is used primarily to provide a source for intense heat to destroy equipment. It generates heat to 4000° F. The grenade filler will burn from 30 to 45 seconds.

b. Description.

(1) *Grenade body.* The grenade body, of thin sheet metal, is cylindrical in shape. It is filled with an incendiary mixture, Thermite TH3 and First Fire Mixture V II.

(2) *Fuze, hand grenade: M201A1.* Fuze M201–A1 is a pyrotechnic delay-igniting fuze. The body contains a primer first-fire mixture, pyrotechnic delay column and ignition mixture. Assembled to the body are a striker, striker spring, safety lever and safety pin with pull ring. The split end of the safety pin has an angular spread.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model (s)	AN–M14
Body	Sheet metal
Weight	32 oz
Length	5.7 in.
Diameter	2.5 in.
Color	Light red w/black markings
Packing	1 per container; 16 per packing box
Filler:	
Type	Igniter mixture III, delay mixture V, FF mixture VII, incendiary mixture, Thermite, TH3 and thermite, plain
Weight	26 1/2 oz
Fuze:	
Model (s)	M201A1
Type	Pyrotechnic delay-igniting
Primer	M39A1
Ignition mixture	Iron oxide, titanium, zirconium
Delay time	0.7–2 sec
Weight	1.5 oz
Length	3.9 in.
Color	Gray or olive drab w/black markings

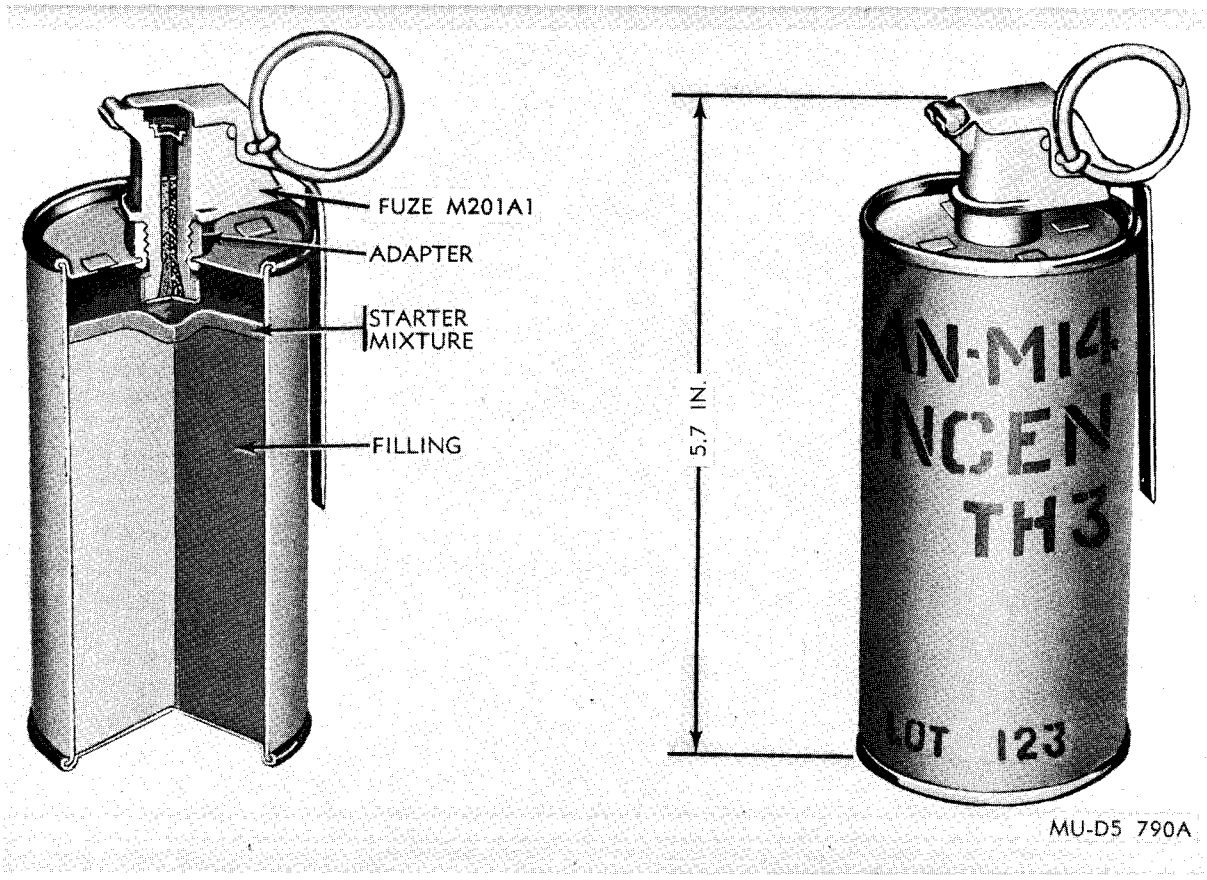


Figure 2–18. TH3 incendiary hand grenade AN–M14.

Packing	Not separately issued
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	47.0 lb
Dimensions	14.0″ x 12.5″ x 8.0″
Cube	0.80 cu ft
DODIC	G 900

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its own axis and strikes the percussion primer. The primer initiates the first fire mixture. The fuze delay element, ignition mixture, and grenade starter mixture and filler are initiated in turn by the preceding component.

2–17. Grenade, Hand: Smoke, WP, M15

a. General. WP Smoke Hand Grenade M15 (fig. 2–19) is a bursting type grenade used for signaling, screening and incendiary purposes. The screening effect of the smoke is limited because WP burns with such intense heat, the smoke tends to rise rapidly. Pieces of WP will burn for about 60 seconds, igniting any flammable substance contacted. Since WP burns the flesh, it is effective against personnel. The effective casualty radius is 15 meters (49.2 feet).

b. Description.

(1) *Grenade body.* The grenade body, of sheet steel, is cylindrical in shape. The body has a fuze well liner and is filled with WP.

(2) *Fuze, hand grenade: M206A1 and M-206A2.* Fuze M206A1 and Fuze M206A2 (fig. 2–13) are pyrotechnic delay-detonating fuzes. They differ only in body construction. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, and a detonator assembly. The split end of the safety pin has an angular spread or a diamond crimp.

(3) *Safety Clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model (s)	M15
Body	Sheet metal
Weight	31 oz
Length (max)	4.5 in.
Diameter	2 3/8 in.
Color	Grey w/1 yellow band and yellow markings
Packing	1 per container; 16 per packing box
Filler:	
Type	WP
Weight	15 oz
Fuze:	
Model (s)	M206A1, M206A2
Type	Pyrotechnic delay-detonating
Primer	M42
Detonator	Lead azide, Lead Styphnate, RDX
Delay time	4–5 sec
Weight	2.6 oz
Length	4.3 in.

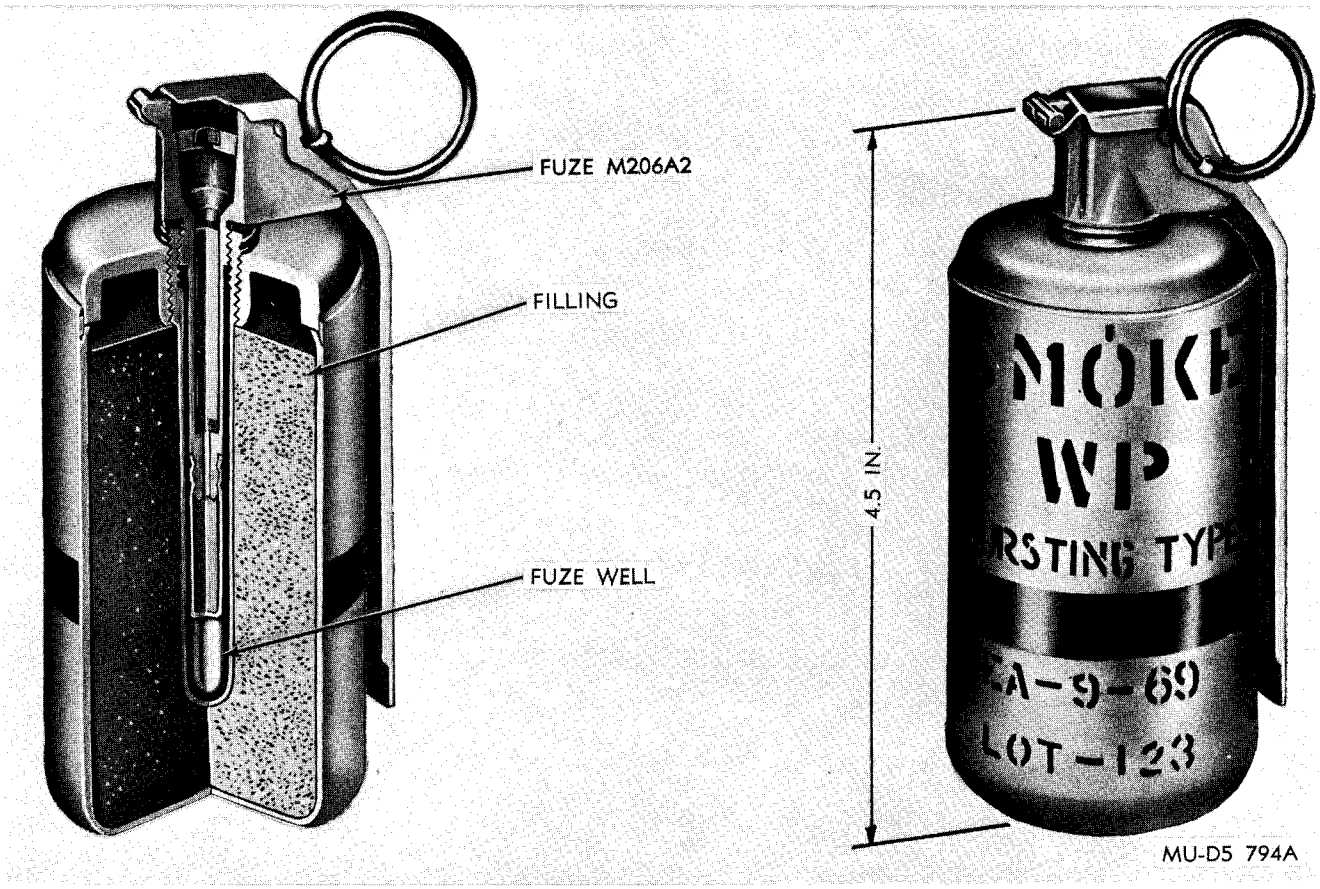


Figure 2–19. WP smoke hand grenade M15.

Color	Olive drab w/black markings
Packing	N/A
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	46.0 lb
Dimensions	14.0" x 12.5" x 8.0"
Cube	0.80 cu ft
DODIC	G 935

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis and strikes the percussion primer. The primer emits a small, intense spit of flame, igniting the delay element. The delay element burns for 4 to 5 seconds, then sets off the detonator. The detonator explodes rupturing the body and exposing the WP filler to air. The WP will burn for approximately 60 seconds.

2–18. Grenade, Hand: Colored Smoke (Red, Green, Yellow or Violet) M18

a. General. Colored Smoke Hand Grenade M18 (fig. 2–20) is used for ground-to-air or ground-to ground signaling. Grenades may be filled with any one of four smoke colors: red, green, yellow or violet. Each grenade will emit smoke for 50 to 90 seconds.

b. Description.

(1) *Grenade body.* The body, of thin sheet metal, is filled with red, green, yellow or violet smoke composition. The filler is topped with a starter mixture.

(2) *Fuze, hand grenade: M201A1.* Fuze M-201A1 (fig. 2–16) is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture, pyrotechnic delay column, and ignition mixture. Assembled to the body are a striker, striker spring, safety lever, and safety pin with pull ring. The split end of the safety pin has an angular spread.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model (s)	M18
Body	Sheet metal
Weight	19 oz
Length	5.75 in.
Diameter	2.5 in.
Color	Light green w/black markings
Packing	1 per container; 16 per packing box
Filler:	
Type	Smoke composition
Weight	11 1/2 oz
Fuze:	
Model (s)	M201A1
Type	Pyrotechnic delay-igniting
Primer	M39A1
Ignition mixture	Iron oxide, titanium, zirconium
Delay time	0.7–2 sec
Weight	1.5 oz
Length	3.9 in.
Color	gray or olive drab w/black markings

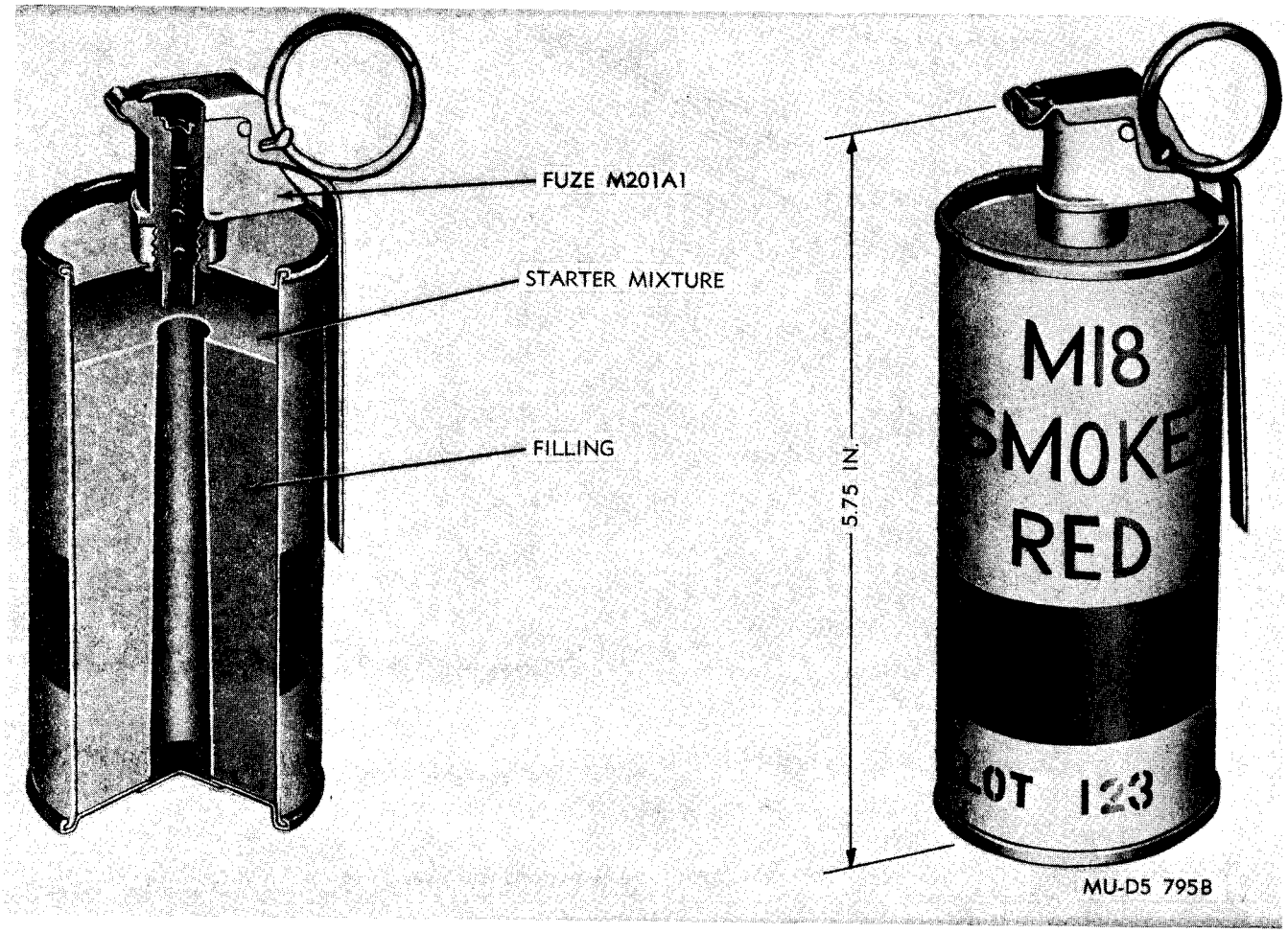


Figure 2–20. Colored smoke hand grenade M18.

Packing	Not separately issued
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	34.0 lb
Dimensions	15.5″ x 14.0″ x 9.0″
Cube	1.1 cu ft
DODIC:	
Red	G950
Green	G940
Yellow	G945
Violet	G955

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its own axis and strikes the percussion primer. The primer initiates the first fire mixture. The fuze delay element, ignition mixture, and grenade starter mixture and filler are initiated in turn by the preceding component. The pressure sensitive tape is blown off the emission holes and the colored smoke emits from these holes.

2–19. Grenades, Hand: CN1, ABC–M25A1 and ABC–M25A2

a. General. CN1 Hand Grenades ABC–M25A1 and ABC–M25A2 (fig. 2–21) are bursting type grenades used for riot control and to simulate casualty agents during training. CN1 has a powerful lachrimal effect and is irritating to the upper respiratory passages. In higher concentrations, it is irritating to the skin, causing a burning and itching sensation. The onset of incapacitation is from 15 to 30 seconds and the duration from 5 to 20 minutes depending upon dosage concentration.

b. Description.

(1) *Grenade body.* The grenade body is spherical. It is made of two plastic hemispheres cemented together. The two pieces together form a burster well and slider housing.

(2) *Fuze.* The fuze is a pyrotechnic delay-detonating type integral with the grenade body. The fuzing components consist of an arming sleeve, arming pin, firing spring, slider assembly and firing pin. The slider assembly contains a primer, pyrotechnic delay column and a detonator. The grenade is assembled with a safety pin and pull ring.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model (s)	ABC–M25A1, ABC–M25A2
Body	Plastic hemispheres (2)
Weight	7.5 oz
Length (max)	3.4 in.
Diameter	2.93 in.
Color	Gray w/red band and red markings
Packing	1 per can; 50 per packing box
Filler:	
Type	CN1
Weight	3.2 oz
Fuze:	
Model (s)	Integral
Type	Pyrotechnic delay-detonating
Primer	2926a (Olin)
Detonator	Lead azide, lead styphnate and tetryl
Delay time	1.4–3 sec
Weight	N/A
Length	N/A
Color (safety lever)	N/A
Packing	N/A
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	50.0 lb
Dimensions	20 7/8" x 18 7/8" x 8 3/4"
Cube	1.80 cu ft
DODIC	G927

c. Functioning. The safety pin locks the arming sleeve to the grenade body through the slider

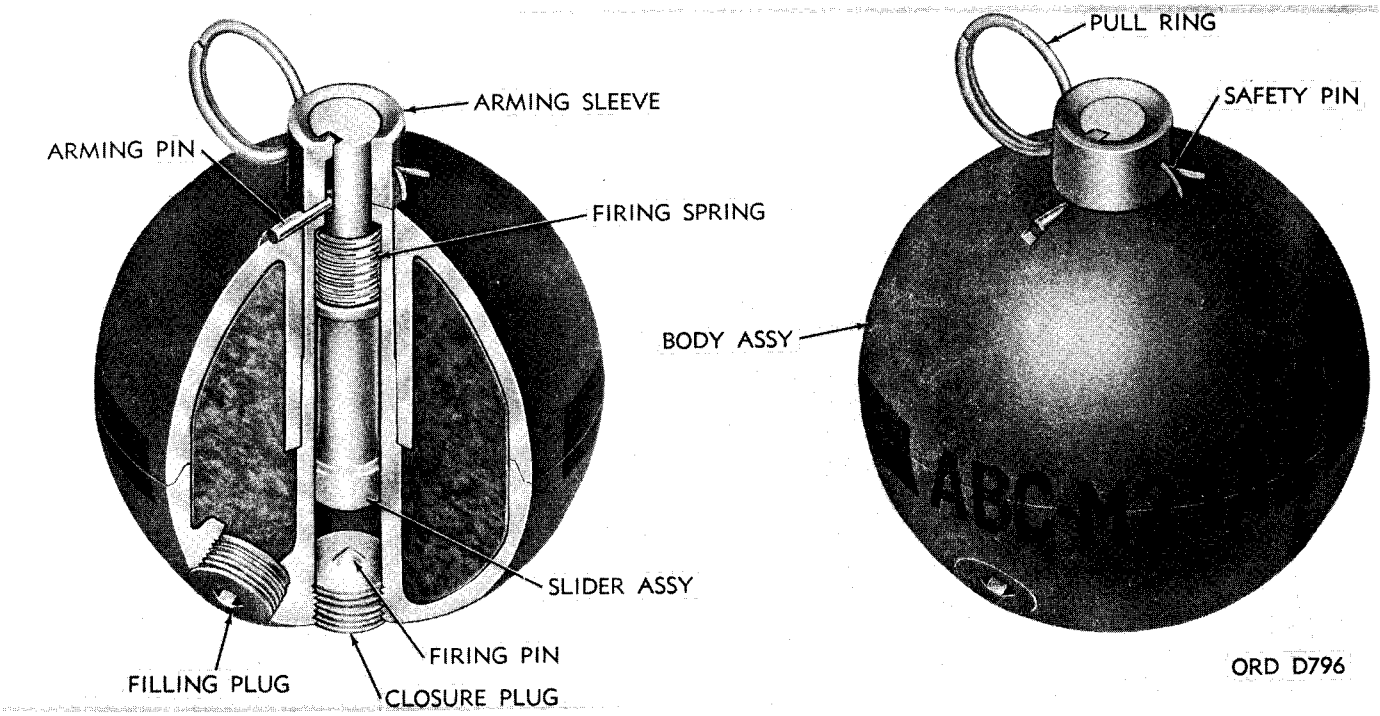


Figure 2–21. CN1 hand grenade ABC–M25A2.

assembly. It also retains the arming pin in a horizontal position. When the safety pin is removed, the arming sleeve is free to separate from the grenade body. The slider assembly is released and is driven against the firing pin. The firing pin initiates a primer in the end of the slider. The primer initiates the delay column which, in turn, initiates the detonator. The detonator shatters the grenade body, dispersing the agent.

2–20. Grenade, Hand: Riot, CS1, ABC–M25A2

a. General. Grenade CS1, ABC–M25A2 is similar to Grenade, CN1, ABC–M25A2 (fig. 2–21). It is a bursting-type riot control agent grenade and may be used to simulate casualty agents during training. CS has a powerful lachrimal effect and is irritating to the upper respiratory passages, causing coughing, difficulty in breathing and chest tightness. Heavy concentrations will cause nausea and vomiting as well. The onset of incapacitation is 15 to 30 seconds and duration from 30 minutes to several hours depending upon the dosage concentration. CS is more persistent and has a more severe reaction than CN.

b. Description.

(1) *Grenade body.* The grenade body is spherical. It is made of two plastic hemispheres cemented together. The two pieces together form a burster well and slider housing.

(2) *Fuze.* The fuze is a pyrotechnic delay-detonating type integral with the grenade body. The fuzing components consist of an arming sleeve, arming pin, firing spring slider assembly and firing pin. The slider assembly contains a primer, pyrotechnic delay column, and a detonator. The grenade is assembled with a safety pin and pull ring.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model (s)	ABC–M25A2
Body	Plastic hetmispheres (2)
Weight	8 oz
Length (max)	3.4 in.
Diameter	2.93 in.
Color	Gray w/red band and red markings
Packing	1 per can; 50 per packing box
Filler:	
Type	CS1
Weight (approx)	2 oz
Fuze:	
Model (s)	Integral
Type	Pyrotechnic delay-detonating
Primer	2926a (olin)
Detonator	Lead azide, lead styphnate and tetryl
Delay time	1.4–3 sec
Weight	N/A
Length	N/A
Color (safety lever)	N/A
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	50.0 lb
Dimensions	20 7/8″ x 18 7/8″ x 8 3/4″
Cube	1.80 cu ft
DODIC	G924

c. Functioning. The safety pin locks the arming sleeve to the grenade body through the slider assembly. It also retains the arming pin in a horizontal position. When the safety pin is removed, the arming sleeve is free to separate from the grenade body. The slider assembly is released and is driven against the firing pin. The firing pin initiates a primer in the end of the slider. The primer initiates the delay column which, in turn, initiates the detonator. The detonator shatters the grenade body, dispersing the agent.

2–21. Grenade, Hand-Rifle: Smoke, WP, M34

a. General. Hand-Rifle Grenade M34 (fig. 2–22) is used for signaling, screening and incendiary purposes. The screening effect of the smoke is limited because WP burns with such intense heat, the smoke tends to rise rapidly. Pieces of WP will burn for about 60 seconds, igniting any flammable substance contacted. Since WP burns the flesh, it is effective against personnel. The effective casualty radius is 25 meters (82 feet).

b. Description.

(1) *Grenade body.* The grenade body, of serrated steel, is cylindrical in shape. The serrations assure body breakup. The body has a fuze well liner and is filled with WP.

(2) *Fuze, hand grenade: M206A2.* Fuze M206A2 (fig. 2–13) is a pyrotechnic delay-detonating fuze. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, safety clip, and a detonator. (Older models do not have the safety clip.) The split end of the safety pin has an angular spread or a diamond crimp.

(3) *Safety clip.*

(*a*) The hand grenade safety clip is designed to keep the safety lever in place, should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(*b*) Safety clips, of spring steel wire, consist of a loop, which fits around the threaded section of the fuze, and a clamp, which fiits over the safety lever. Because the loop fits around the threaded section of the fuze, the clip must be assembled to the grenade when the fuze is assembled to the grenade.

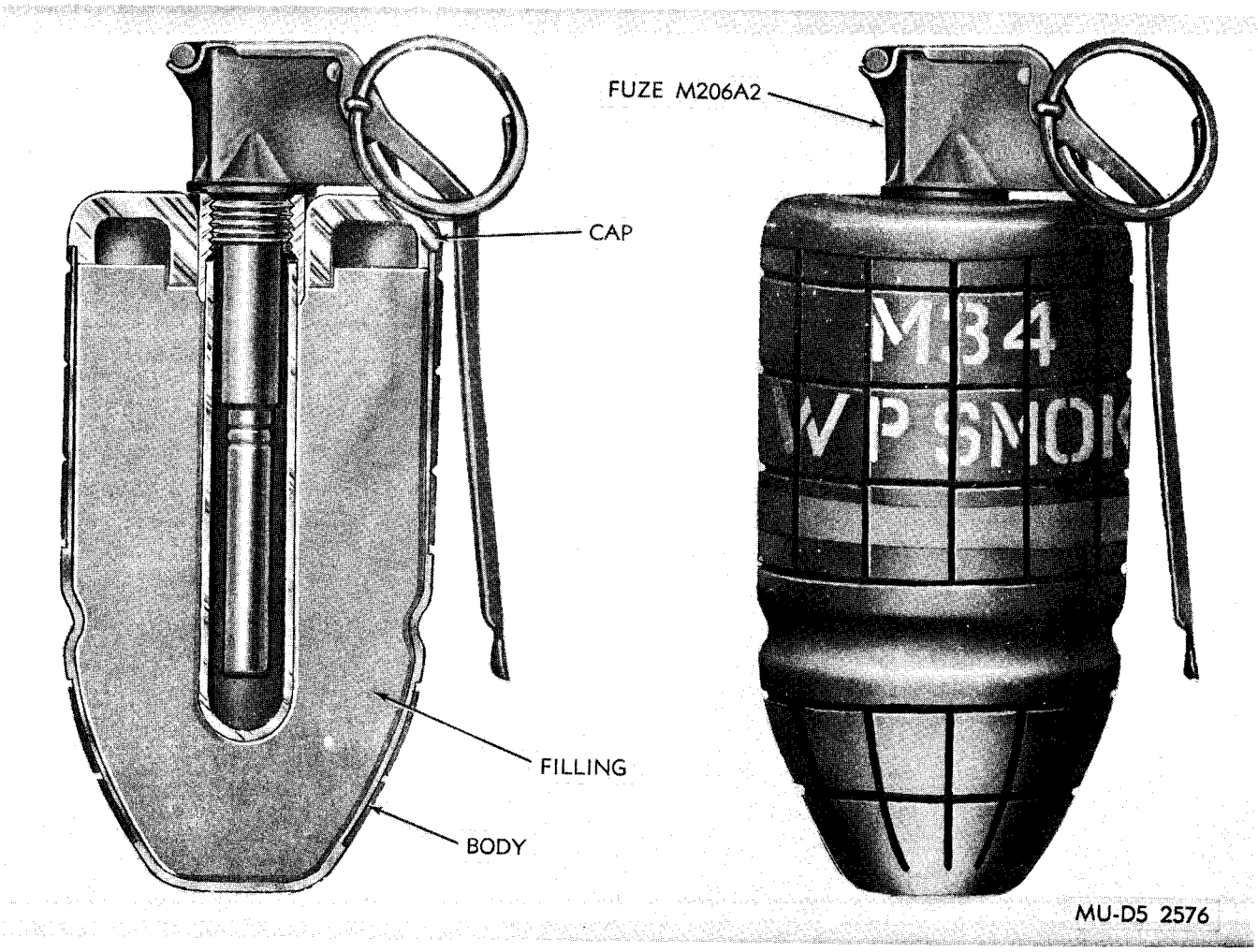


Figure 2–22. WP smoke hand-rifle grenade M34.

(4) *Data.*

Grenade (with fuze):

Model (s)	M34
Body	Steel
Weight	24 oz
Length	5 1/5 in.
Diameter	2 3/8 in.
Color	Light green w/1 yellow band; light red markings
Packing	1 per can; 16 cans per packing box

Filler:

Type	WP
Weight	15 oz

Fuze:

Model (s)	M206A2
Type	Pyrotechnic delay detonating
Primer	M42
Detonator mixture	Lead azide, lead sytphnate and RDX
Delay time	4 to 5 seconds
Weight	2.6 oz
Length	4.3 in.
Color	Olive drab w/black markings
Safety device	Pull ring and safety pin (older models) Pull ring, safety pin, safety clip (newer models)

Packing box:

Weight (with contents)	42.0 lb
Dimensions	14 5/8" x 3 1/8" x 9 1/8"
Cube	0.7 cu ft
DODIC	G937

c. Functioning.

(1) *With safety clip.* Release of the safety clip and removal of the safety pin permit release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis and strikes the percussion primer. The primer emits a small, intense spit of flame, igniting the delay element. The delay element burns for 4 to 5 seconds, then sets off the detonator. The detonator explodes, rupturing the body and exposing the WP filler to the air. The WP will burn for approximately 60 seconds.

(2) *Without safety clip.* Except for release of the safety clip, functioning is the same as in (1) above.

2–22. Grenade, Hand: 8 to 12 Second Delay, CS, M54

a. General. Grenade, M54 (fig. 2–23) is a burning-type riot control agent grenade and may be used to simulate casualty agents during training. CS has a powerful lachrimal effect and is irritating to the upper respiratory passages, causing coughing, difficulty in breathing and chest tightness. Heavy concentrations will cause nausea and vomiting as well. The onset of incapacitation is 15 to 30 seconds and duration is from 30 minutes to several hours, depending upon dosage concentration. CS is more persistent and has a more severe reaction than CN.

b. Description.

(1) *Grenade body.* The grenade body is thin sheet steel, cylindrical in shape. The grenade is filled with a mix of CS pellets and fuel mixture. The filler is loaded through a flash hole in the center. The sides of the flash hole and top of the filler are coated with a starter mixture.

(2) *Fuze, hand grenade: M226.* Fuze, M226 (fig. 2–24) is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture, delay column, and ignition misture. Assembled to the body are a striker, striker spring, safety lever and safety pin with a pull ring. The split end of the safety pin has an angular spread.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model (s)	M54
Body	Thin sheet steel
Weight	16 oz
Length	5.75 in.
Diameter	2.5 in.
Color	Gray w/red band, red markings
Packing	1 per container, 16 containers per packing box
Filler:	
Type	CS
Weight	4.2 oz

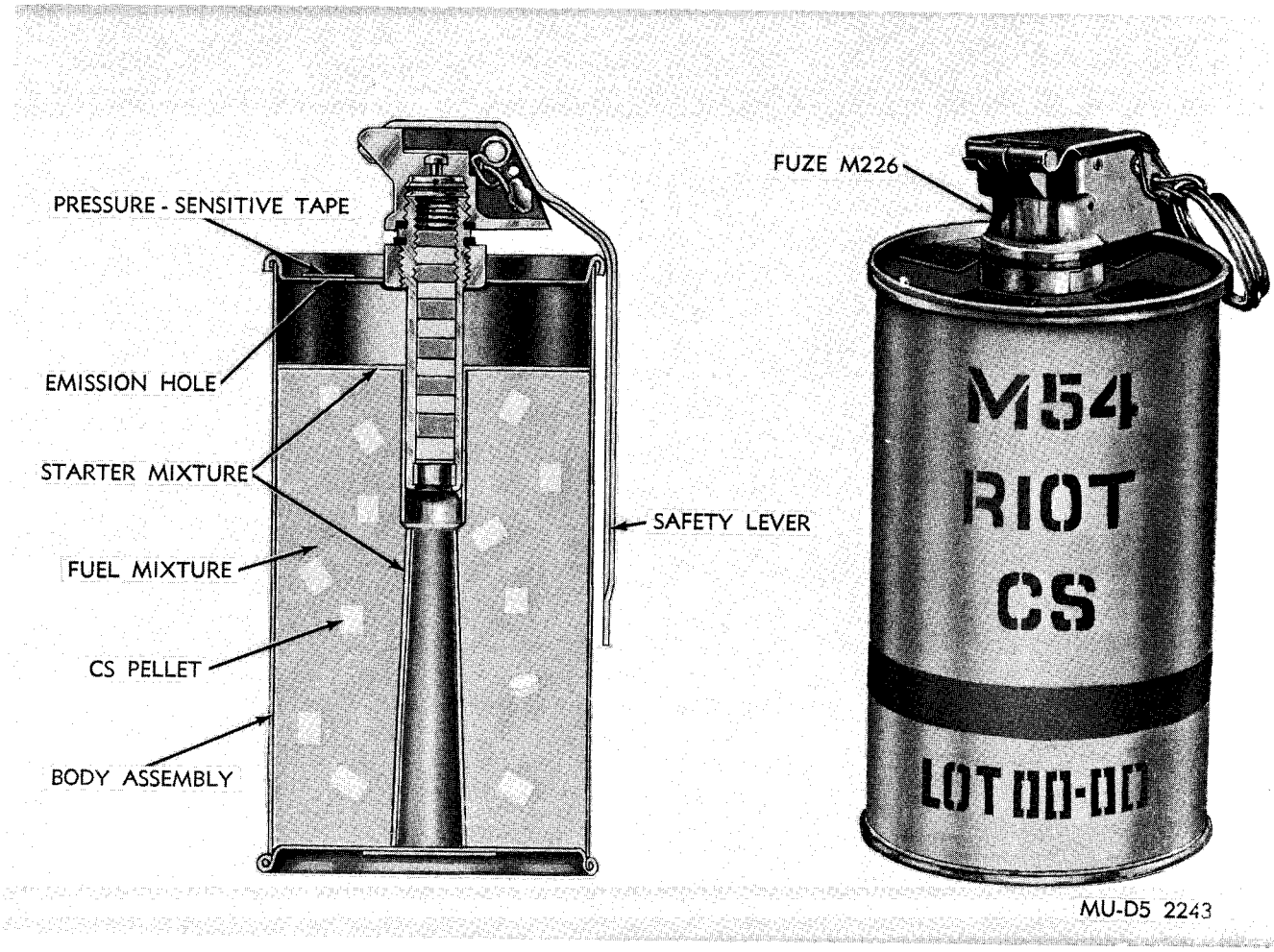


Figure 2–23. CS 8 to 12 second delay hand grenade M54.

Fuze:

Model (s)	M226
Type	Pyrotechnic delay igniting
Primer	Percussion w/no designation
Igniter mixture	Iron oxide, titanium and zirconium
Delay itme	8 to 12 seconds
Weight	
Length	
Color	Olive drab w/black markings
Safety device	Pull ring and safety pin

Packing box:

Weight (with contents)	36 lb
Dimensions	13″ x 13″ x 8″
Cube	0.8 cu ft
DODIC	G923

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its own axis and strikes the percussion primer. The primer initiates the first-fire mixture. The fuze delay element, ignition mixture, and grenade starter mixture and filler are initiated in turn by the preceding component. The pressure sensitive tape is blown off the emission holes and the CS riot control agent is emitted for 15 to 35 seconds.

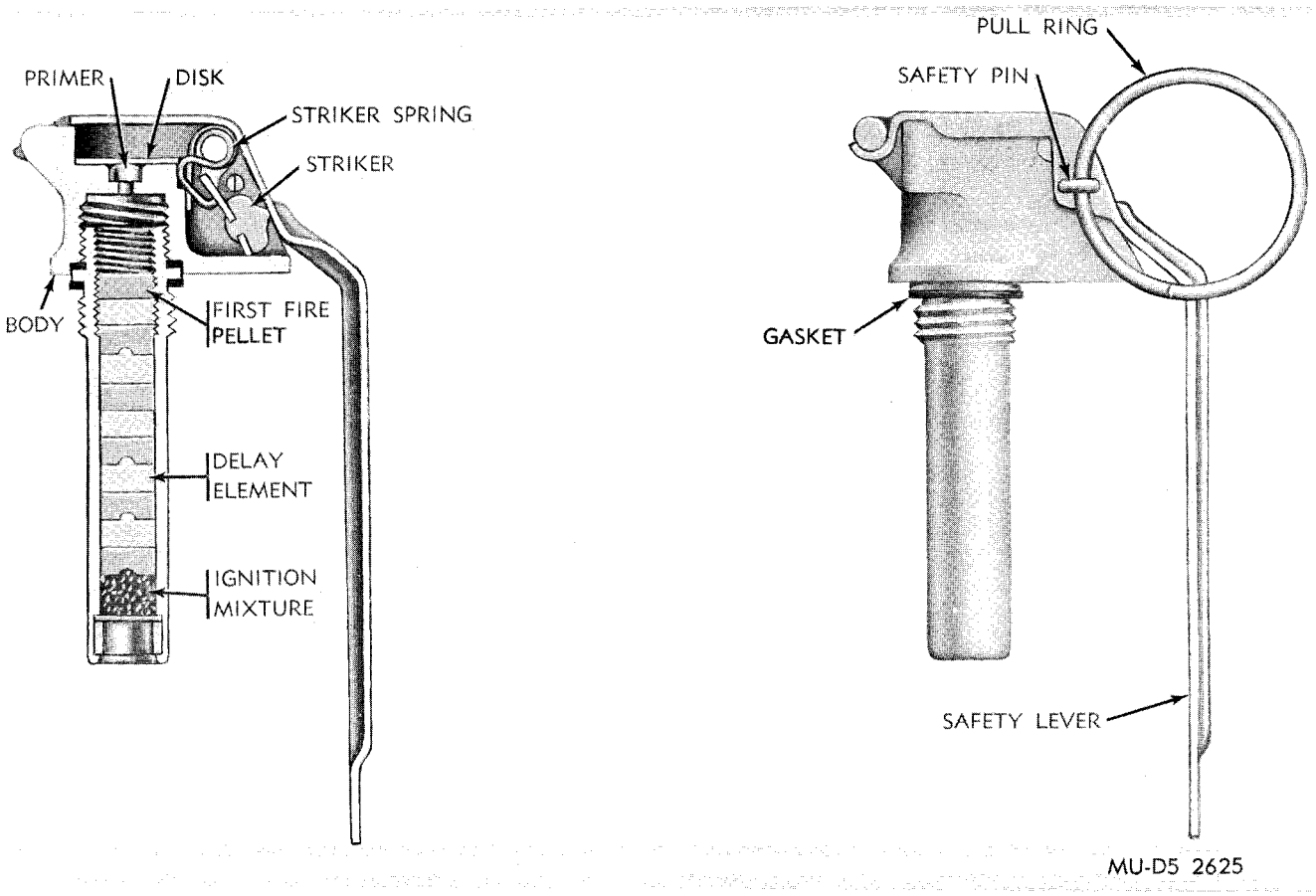


Figure 2–24. Hand grenade fuze M226.

2–23. Grenade, Hand: Riot, Pocket, CS, XM58

a. General. CS Pocket Riot Hand Grenade XM58 (fig. 2–25) is a burning-type riot control agent grenade and may be used to simulate casualty agents during training. CS has a powerful lachrimal effect and is irritating to the upper respiratory passages, causing coughing, difficulty in breathing and chest tightness. Heavy concentrations will cause nausea and vomiting as well. The onset of incapacitation is 15 to 30 seconds and duration is less than 10 minutes after personnel is removed to fresh air. CS is more persistent and has a more severe reaction than CN.

b. Description.

(1) *Grenade body.* The body is a thin-walled, two-piece aluminum cylinder. It contains a CS-pyrotechnic composition. There is a hole in the base of the body which is used for agent emission after functioning.

(2) *Fuze, hand grenade: M201A1E1.* This fuze is similar to the Fuze, M201A1. Fuze M201A1 is a pyrotechnic delay-igniting fuze. The body contains a primer, fire mixture, pyrotechnic delay column and ignition mixture. Assembled to the body are a striker, striker spring, safety lever and safety pin with pull ring. The split end of the safety pin has an angular spread.

(3) *Safety clips.* Safety clips are not required with these grenades.

(4) *Data.*

Grenade (with fuze):	
Model (s)	XM58
Body	Aluminum
Weight (approx)	4 oz
Length (max)	3.26 ni.
Diameter	1.31 in.
Color	Gray w/red band and red markings
Packing	10 per fiberboard box; 10 per packing box
Filler:	
Type	CS–pyrotechnic composition
Weight	1.4 oz
Fuze:	
Model (s)	M201A1E1
Type	Pyrotechnic delay-igniting

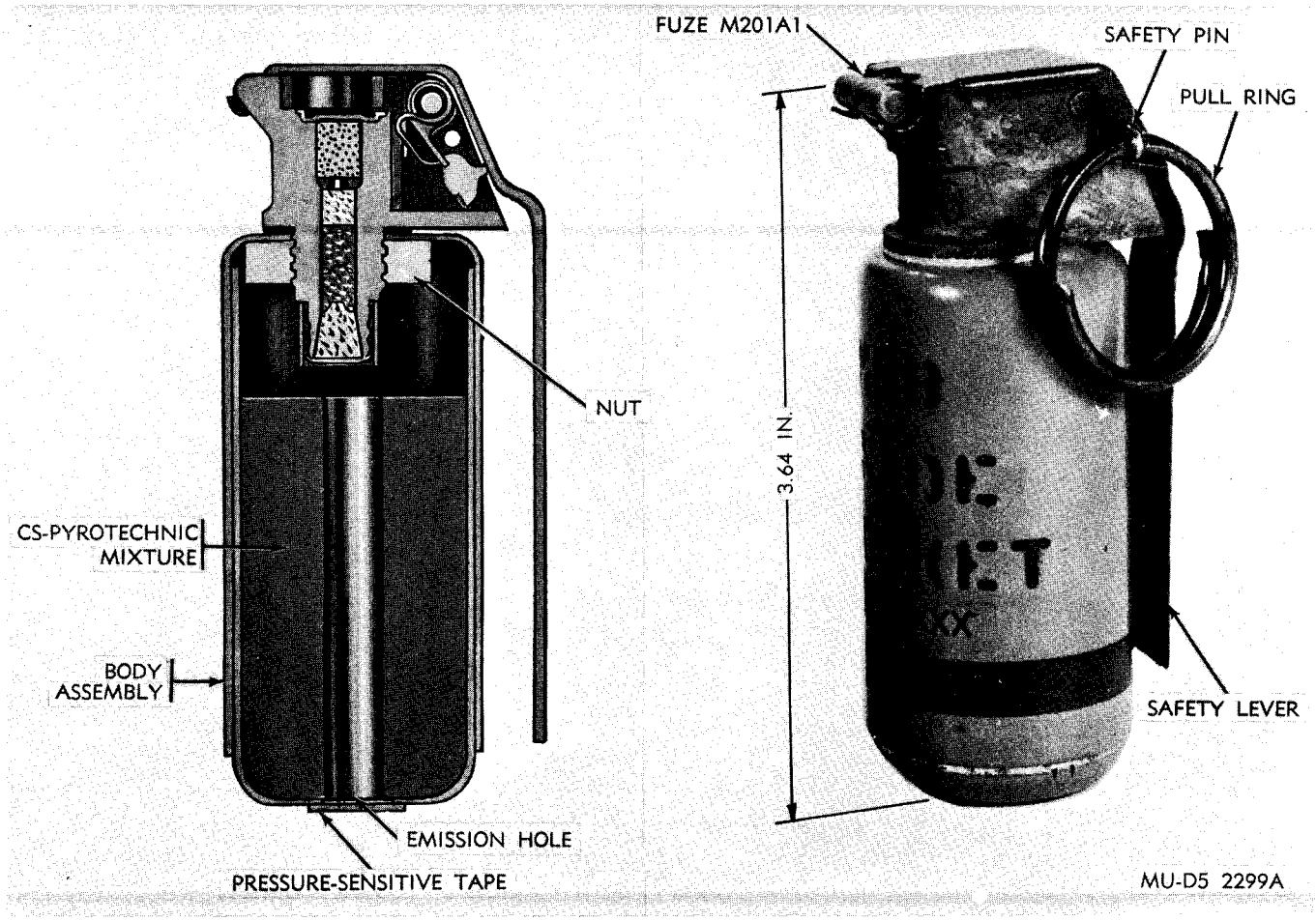


Figure 2–25. CS pocket riot hand grenade XM58.

Primer	M39A1
Igniter mixture	Iron oxide, titanium, zirconium
Delay time	0.7–2 sec
Weight	1.5 oz
Length	3 in.
Color	Olive drab w/black markings
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	45.0 lb
Dimensions	26.15″ x 13.75″ x 12.75″
Cube	2.4 cu ft
DODIC	G933

c. Functioning. Removal of the safety pin permits release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its own axis and strikes the percussion primer. The primer initiates the first-fire mixture. The fire train, fuze delay element, ignition mixture, grenade starter mixture and filler are initiated in turn by the preceding component. The pressure sensitive tape is blown off the emission holes and CS agent is emitted for 8 to 28 seconds.

Section VI. PRACTICE AND TRAINING HAND GRENADES

2–24. General

Practice hand grenades simulate functioning of service hand grenades to provide realism in training. Training hand grenades are completely inert and do not function in any way. Practice and training hand grenades are used only for training personnel in handling and throwing of hand grenades.

2–25. Grenade, Hand: Practice, Delay, M69

a. General. Delay Practice Hand Grenade M69 (fig. 2–26) is the practice version of Grenade M67. The safety clip is assembled to the fuze. (Older models have the safety clip assembled to the grenade and positioned around the safety lever. The grenade body may be recovered and reloaded with a new fuze and safety clip).

b. Description.

(1) *Grenade body.* The grenade body, of steel, is essentially spherical in shape. The body is empty, i.e., without any explosive filler. There is a hole in the base of the body. (This vents the gases generated from the fuze igniter and permits removal of residual metal that remains in the grenade body from the detonator.)

(2) *Fuze, hand grenade: practice, M228.* Practice Hand Grenade Fuze M228 (fig. 2–27) is a pyrotechnic delay-igniting fuze. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, safety clip, and igniter assembly. (Older models do not have the safety clip.) The split end of the safety pin has an angular spread or a diamond crimp.

(3) *Safety clip.*

(*a*) The hand grenade safety clip is designed to keep the safety lever in place, should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(*b*) The hand grenade safety clip of spring steel wire is assembled to the fuze. It has been designed to be omitted from the grenade to eliminate possibility of bouncing back onto the lever. (The older model is shaped in a special configuration for installation on the grenade. It consists of a clamp, which fits around the neck of the grenade and over the safety lever.) The safety clip serves to prevent release of the grenade safety lever if the safety pin is accidentally removed.

(*c*) Safety clips from expended grenades may be reused, provided that visual examination indicates the clip is not damaged or distorted.

(4) *Data.*

Grenade (with fuze):	
Model (s)	M69
Body	Steel
Weight	14 oz
Length (max)	3.6 in.
Diameter	2.62 in.
Color	Blue w/brown band w/white or no markings
Packing	50 per carton; 1 carton per barrier bag; 1 bag per wooden box
Filler:	
Type	None

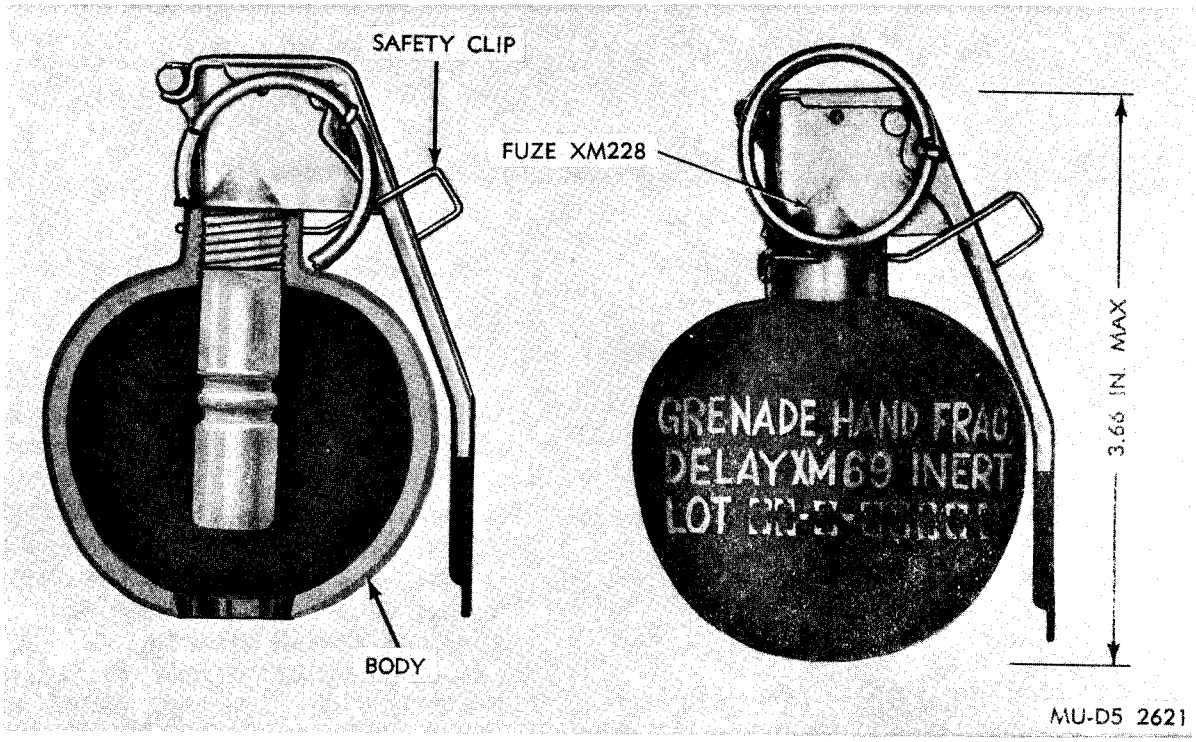


Figure 2–26. Delay practice hand grenade M69.

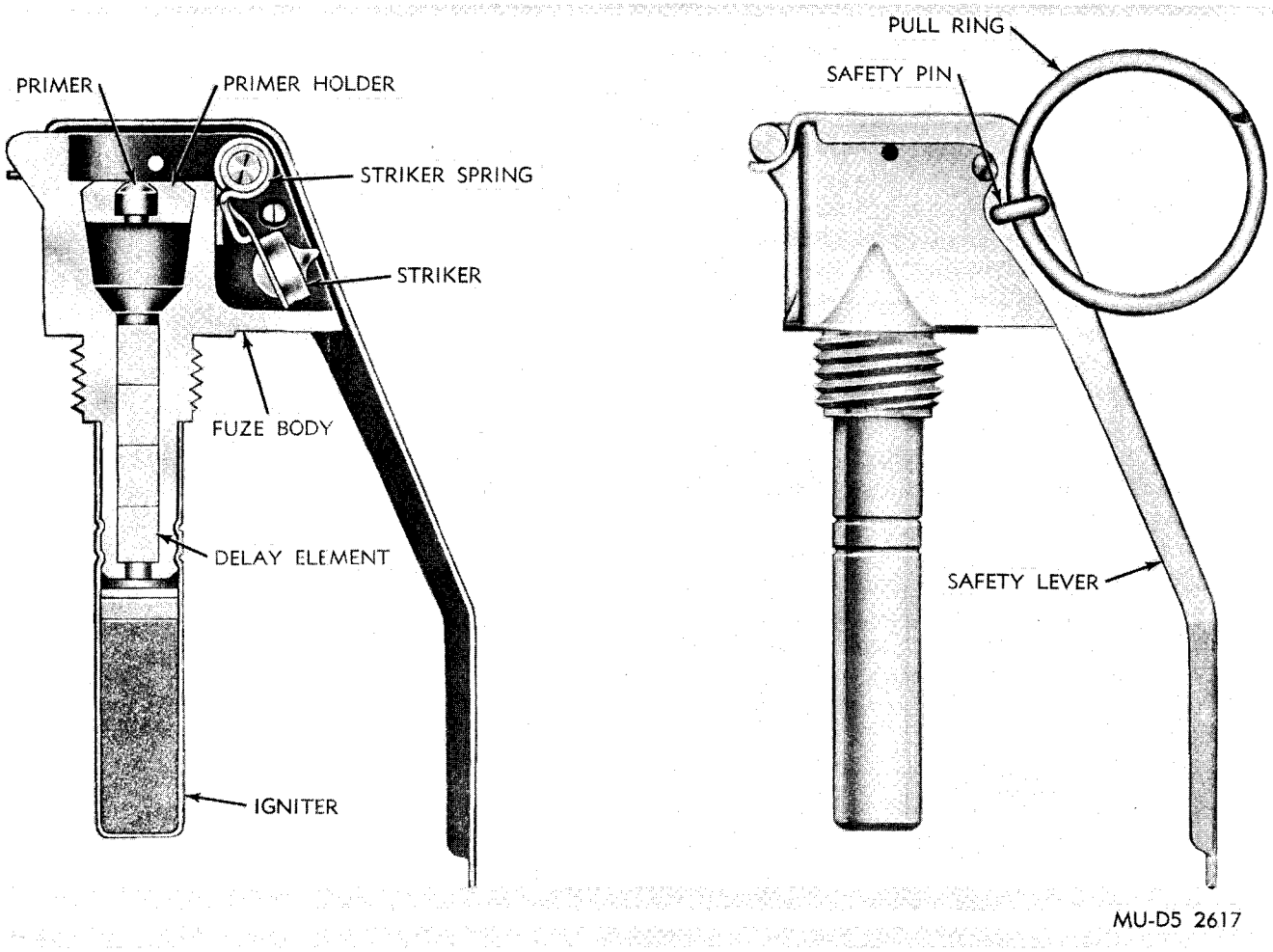


Figure 2-27. Practice hand grenade fuze M228.

Weight	None
Fuze:	
Model (s)	M228
Type	Pyrotechnic delay-igniting
Primer	M42
Igniter	Black powder
Delay time	4-5 sec
Weight	2.5 oz
Length	3.33 in.
Color (safety lever)	Blue w/red band; markings in black
Packing	360 per box
Safety device	Pull ring and safety pin, and safety clip
Packing box:	
Weight (with contents)	68.5 lb
Dimensions	18.0" x 15.0" x 8.0"
Cube	1.5 cu ft
DODIC	G918

c. Functioning. Release of the safety clip and removal of the safety pin permit release of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis and strikes the percussion primer. The primer emits a small, intense spit of flame, igniting the delay element. The delay element burns for 4 to 5 seconds, then sets off the igniter. A loud report, like that of a firecracker, and a puff of white smoke follow.

2–26. Grenade, Hand: Practice, Delay, M62 and Grenade, Hand: Practice, M30

a. General. Delay Practice Hand Grenade M62 (fig. 2–28) is the M30 with a safety clip. These grenades are used for training in care, handling and throwing of Fragmentation Hand Grenades M61, M26A1 and M26. After use, the grenade body may be recovered, and reloaded with a new fuze, and black powder charge and stopper, if used.

b. Description.

(1) *Grenade body.* The grenade body is of cast iron. Its external configuration is identical with that of the M61, M26A1 and M26. The body is not loaded with a high-explosive filler but may have a small, separate black powder charge.

(2) *Fuzes, hand grenade: M205A1 and M205-A2.* Hand grenade fuzes M205A1 and M205A1 (fig. 2–29) are pyrotechnic delay-igniting fuzes. They differ in body construction only.
The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, and an igniter assembly. The split end of the safety pin has an angular spread or a diamond crimp.

(3) *Safety Clip.*

(*a*) The hand grenade safety clip is designed to keep the safety lever in place, should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(*b*) The hand grenade safety clip, of spring-steel wire, is shaped in a special configuration for installation on the grenade. It consists of a clamp, which fits around the fuze body and over the safety lever. It serves to prevent release of the grenade safety lever if the safety pin is accidentally released.

(*c*) Safety clips from expended grenades may be reused, provided that visual examination indicates the clip is not damaged or distorted.

(4) *Data.*

Grenade (with fuze):

Model (s)	M62, M30
Body	Cast iron
Weight	16 oz
Length (max)	3.9 in.
Diameter	2 25 in.
Color	Blue w/brown band w/white or no markings
Packing	1 per container; 30 per packing box

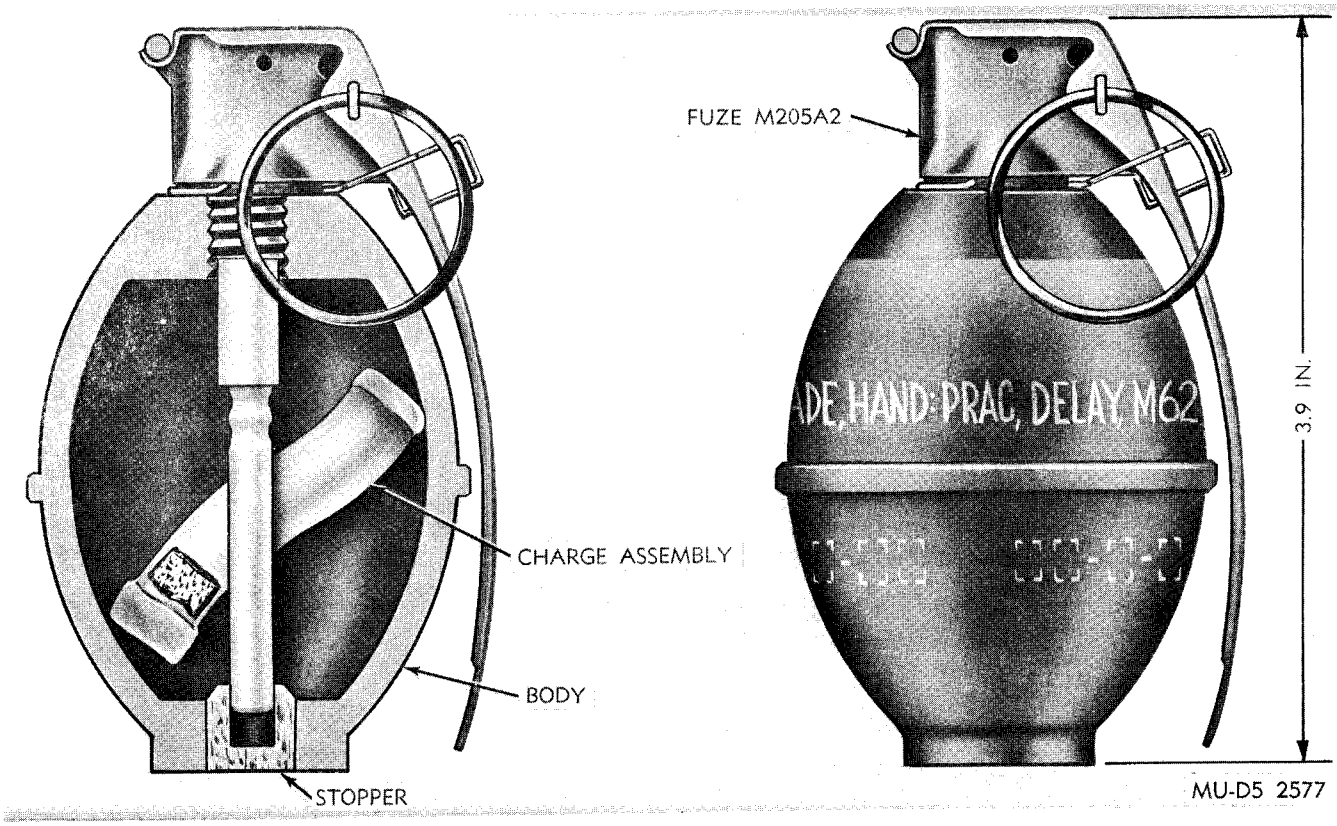


Figure 2–28. Delay practice hand grenade M62.

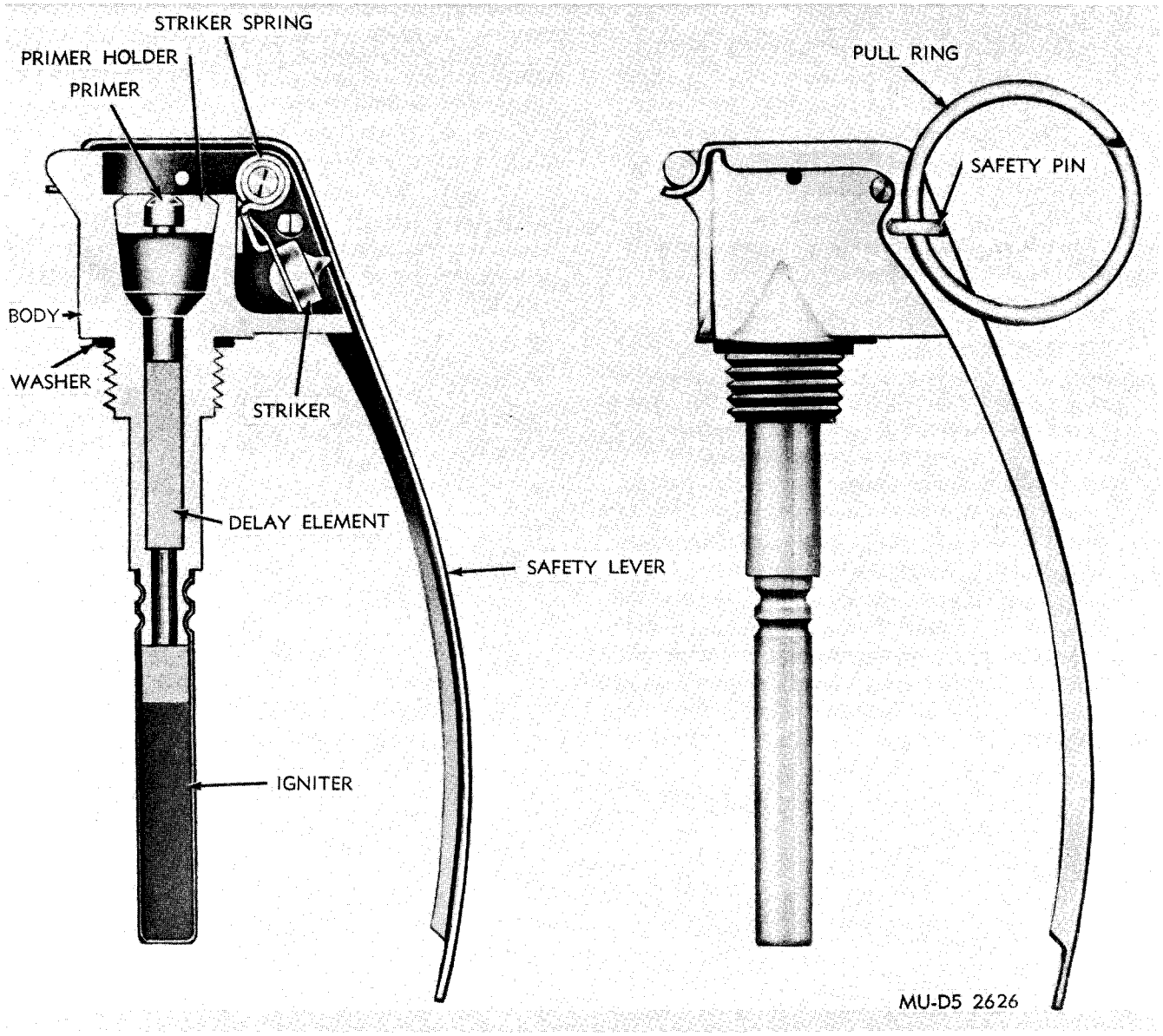


Figure 2–29. Hand grenade fuze M205A2.

Filler:
- Type ..... Black powder
- Weight ..... 21 grains

Fuze:
- Model(s) M205A1, M205A2
- Type ..... Pyrotechnic delay-igniting
- Primer M42
- Ignition mixture .... Zirconium nickel alloy, potassium perchlorate barium chromate
- Delay time ..... 4–5 sec
- Igniter ..... Black powder
- Weight ..... 2.6 oz
- Length ..... 4.0 in.
- Color (safety lever).. Blue w/red band, markings in black
- Packing ..... 360 per wooden box

Safety device (s):
- Pull ring and safety pin ..... Grenade M30
- Pull ring and safety pin, and safety clip .. Grenade M62

Packing box:
- Weight (with contents) ..... 53.0 lb
- Dimensions ..... 19 1/2" x 11 1/2" x 12 3/4"
- Cube ..... 1.65 cu ft

DODIC:
- Grenade, M62 ..... G914
- Grenade, M30 ..... G915

c. Functioning.

(1) *Hand grenade M62.* Release of the safety clip and removal of the safety pin permit re-

lease of the safety lever. When the safety lever is released, it is forced away from the grenade body by a striker acting under the force of a striker spring. The striker rotates on its axis and strikes the percussion primer. The primer emits a small, intense spit of flame, igniting the delay element. The delay element burns for 4 to 5 seconds, then sets off the igniter. The igniter initiates the black powder charge (when installed). The stopper (when installed) is forced from the base of the body. A loud report, like that of a firecracker, and a puff of white smoke follow.

(2) *Hand grenade M30.* Except for release of the safety clip, functioning is the same as that for the M62.

2–27. Grenade, Hand: Training, Mk1A1

a. General. Training Hand Grenade Mk1A1 (fig. 2–30) is a nonfunctioning type. It is used for training in handling and throwing of Fragmentation Hand Grenade Mk2. Because it is completely inert, Grenade Mk1A1 may be used for practice in throwing hand grenades in small confined areas. The grenade is used principally to improve techniques in throwing and accuracy.

b. Description.

(1) *Grenade body.* The body is of cast iron.

(2) *Fuze.* Training Hand Grenade Mk1A1 has no fuze.

(3) *Safety clips.* Safety clips are not required for these grenades.

(4) *Data.*

Grenade:	
Model (s)	Mk1A1
Body	Cast iron
Weight	21 oz
Length (max)	4.5 in.
Diameter	2.25 in.
Color	Black w/no markings
Packing	24 per packing box
Filler	None
Fuze	None
Safety device	Pull ring and safety pin
Packing box:	
Weight (with contents)	46.7 lb
Dimensions	24.0″ x 9.375″ x 7.0″
Cube	0.94 cu ft
DODIC	G965

c. Functioning. Training Hand Grenade Mk1 A1 is nonfunctioning.

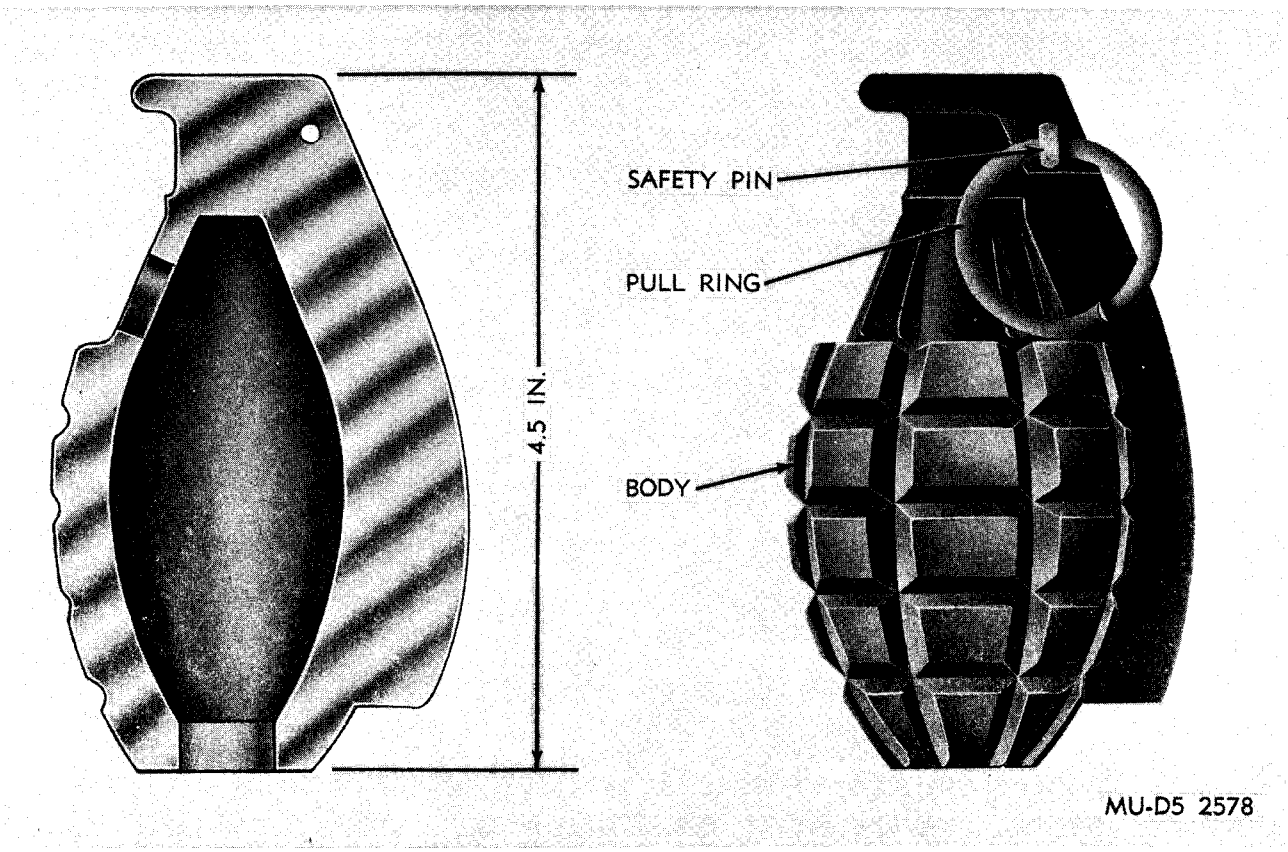


Figure 2–30. Training hand grenade Mk1A1.

CHAPTER 3

RIFLE GRENADES

Section I. INTRODUCTION

3–1. General

a. Rifle grenades (fig. 3–1) are fin stabilized. They are launched from a rifle. Some hand grenades may also be adapted for launching from a rifle by means of a projection adapter. The propelling force for the grenade is provided by a special gas-producing grenade cartridge, which is loaded into the rifle chamber. Rifle grenades may be used against armored targets, against personnel, for screening or signaling, or for incendiary effect against flammable targets. Rifle grenades may be fired at low angles (direct fire) or high angles (indirect fire), depending on the type of grenade being fired and effect desired. Figure 3–2 shows typical fiber containers for rifle grenades.

b. Three general types of rifle grenades are currently available:

(1) *Antitank (AT) rifle grenades.* Antitank rifle grenades are used against armored targets or fortifications. An AT rifle grenade is

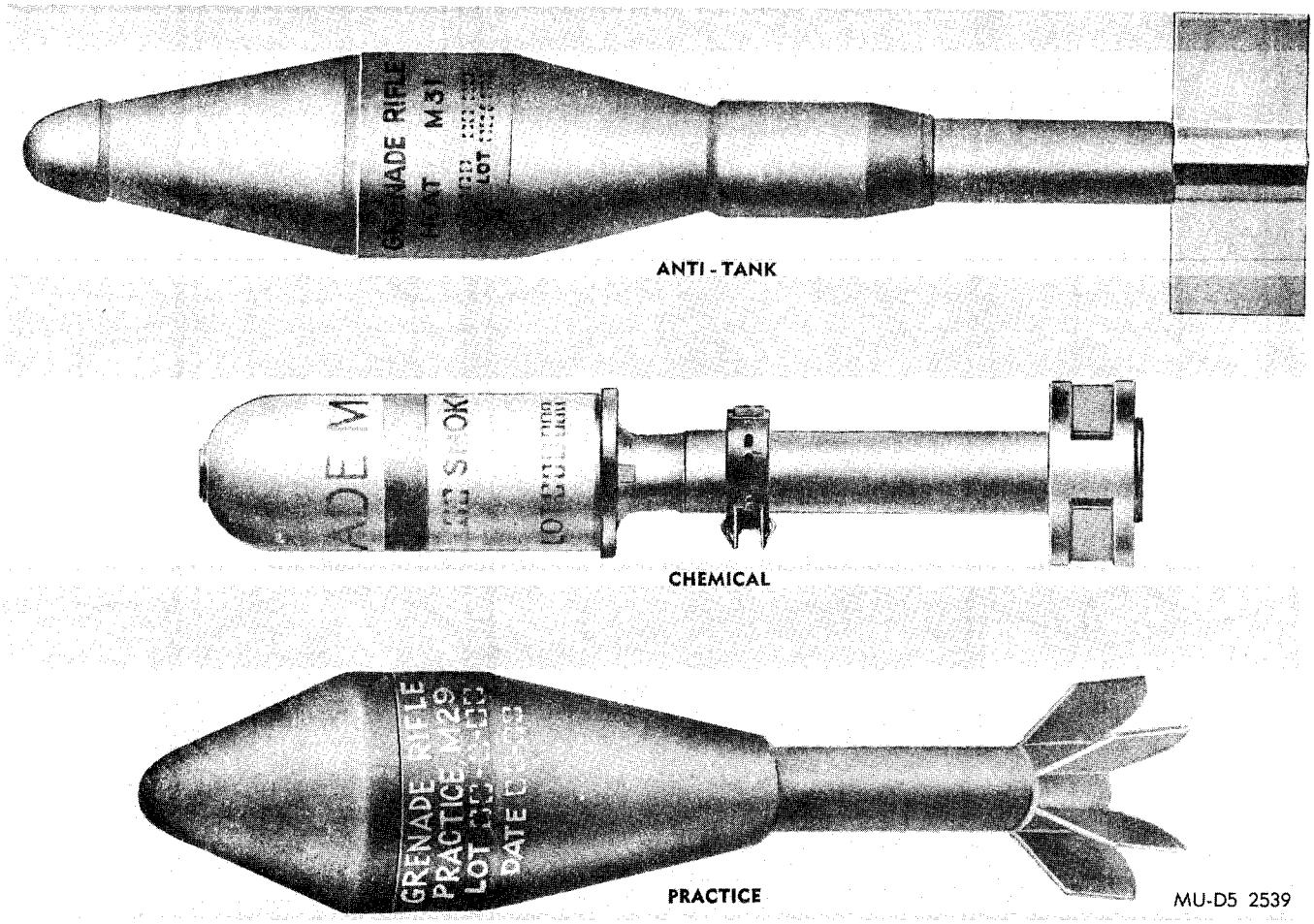
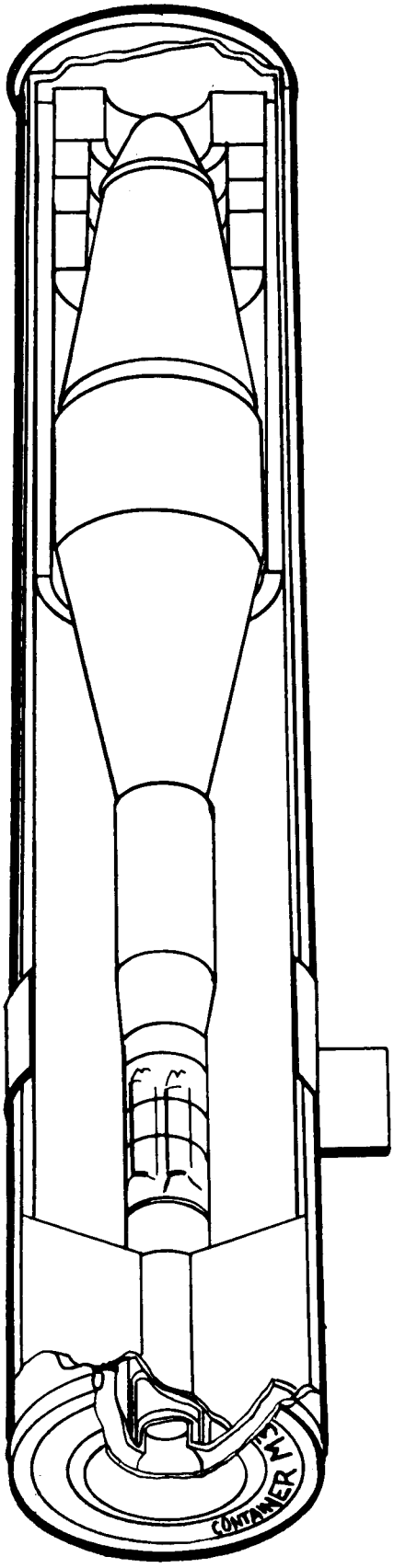


Figure 3–1. Typical rifle grenades.



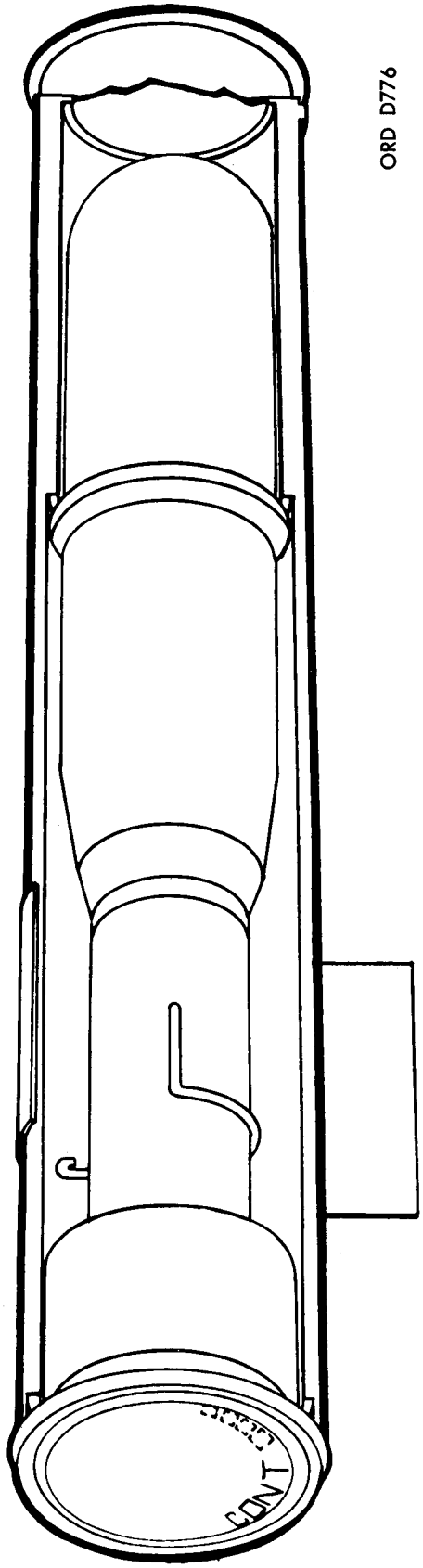


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Figure 3–2. Typical fiber containers for rifle grenades.

a shaped charge capable of penetrating up to 10 inches of armor plate or up to 20 inches of reinforced concrete at an effective range of 115 meters.

(2) *Chemical rifle grenades.* Chemical rifle grenades are used primarily for screening or signaling purposes. The WP grenade can also be used for incendiary effect against flammable targets. They may be used against personnel. Chemical rifle grenades function either on impact with targets to produce clouds of smoke, or upon launching to produce a long trail of smoke through the air.

(3) *Practice rifle grenades.* Practice rifle grenades are used for training personnel in care, handling and use of service rifle grenades.

Section II. ANTITANK RIFLE GRENADES

3-2. General

Antitank rifle grenades produce a penetrating effect against targets by means of a shaped charge. Detonation of the charge travels from the fuze to the high explosive. There, the detonation wave is "focused" by the shape of the liner to produce a very high velocity jet of hot gases and metal. This jet will blast deep holes into or through steel, concrete and similar materials. In addition, a slug of metal formed from the shaped charge cavity liner acts as a projectile. This slug will be projected into or through the hole.

3–3. Grenade, Rifle: HEAT, M31

a. General. This rifle grenade (fig. 3–3) is a point-initiated, base-detonated (PIBD), high-explosive, antitank (HEAT) grenade. It employs a shaped charge to defeat armor plate or concrete, and will function against targets at all angles of obliquity up to 65°. The grenade uses a piezoelectric assembly which generates an electric current when crushed on impact with the target. This action initiates the explosive train. Only Rifle Grenades M31, which are assembled with modified nose assemblies, are authorized for use. The modified nose assembly has a positive ground between the piezoelectric crystal and the metal nose protector cap.

b. Description.

(1) *General.* Rifle Grenade M31 consist of three basic parts: the cylindrical body with conical ogive and conical rear section; the fuze; and the stabilizer. The ogive contains a piezoelectric assembly in the nose. A lead wire (in conduit) connects this assembly to the fuze, in the base of the body. The body contains Comp B molded against a copper shaped charge liner. A booster is contained in the fuze at the base of the body. Fuze M211 consists of a base, spring-driven detonator rotor and a cover. The detonator rotor contains an electric detonator. The base contains a setback leaf assembly. The cover contains a booster pellet. The aluminum stabilizer consists of a stabilizer tube, with an adapter at its forward end (for connection to the body), and a fin assembly at the other end. When assembled, the fuze is held within the adapter.

(2) *Data.*

Model	M31
Type	HEAT
Weight (as issued)	1.56 lb
Explosive charge (COMP B)	9.92 oz
Dimensions:	
Diameter	2.61 in.
Height	16.96 in.
Body	Steel
Fuze:	M211
Type	PIBD
Color	Olive drab w/yellow markings
Packing	1 per container; 10 containers per packing box with 20 grenade cartridges M3
Loaded packing box:	
Weight	75.0 lb
Dimensions	24.0″ x 10.0″ x 20.875″
Cube	2.85 cu ft
DODIC	G970

c. Functioning. An inertia-actuated setback leaf assembly prevents alinement of the detonator with the booster in the fuze until the rifle grenade is launched. Prior to arming, the detonating circuit within the fuze is grounded. Thus, current cannot pass through the detonating circuit, and current from an accidentally crushed or stressed crystal is short circuited to the body of the grenade. The detonating switch is contained within a small rotor which is locked into the short-circuit position by a set-back leaf assembly. When the grenade is launched, the setback leaf assembly releases the rotor. The rotor turns 90°, opening the shorting switch and closing the firing switch. Upon launching, the grenade functions as follows:

(1) Inertia setback causes the first of the three setback leaves in the setback leaf assembly to overcome the tension of its spring. This releases the second leaf.

(2) The second leaf rotates, releasing the third leaf.

(3) The third leaf rotates, releasing a rotor assembly containing the firing circuit.

(4) The rotor assembly turns 90° to close the firing circuit, thus arming the grenade.

(5) Upon impact with the target, the crystal is crushed and generates an electrical impulse.

(6) The electrical impulse is conducted through a lead wire in the conduit to the electric fuze.

(7) The electrical impulse passes through a resistance wire in the detonator, initiating the explosive train.

(8) The detonator detonates the booster and, in turn, the shaped charge.

(9) The principal explosive force of the shaped charge is directed forward to penetrate the target.

Section III. CHEMICAL RIFLE GRENADES

3–4. General

There are four basic types of chemical rifle grenades: WP smoke, HC and colored smoke, incendiary, and smoke streamer. All are used primarily to produce smoke: either for signaling or screening purposes. The WP smoke rifle grenade, however, also has incendiary capabilities and may be used to ignite flammable targets.

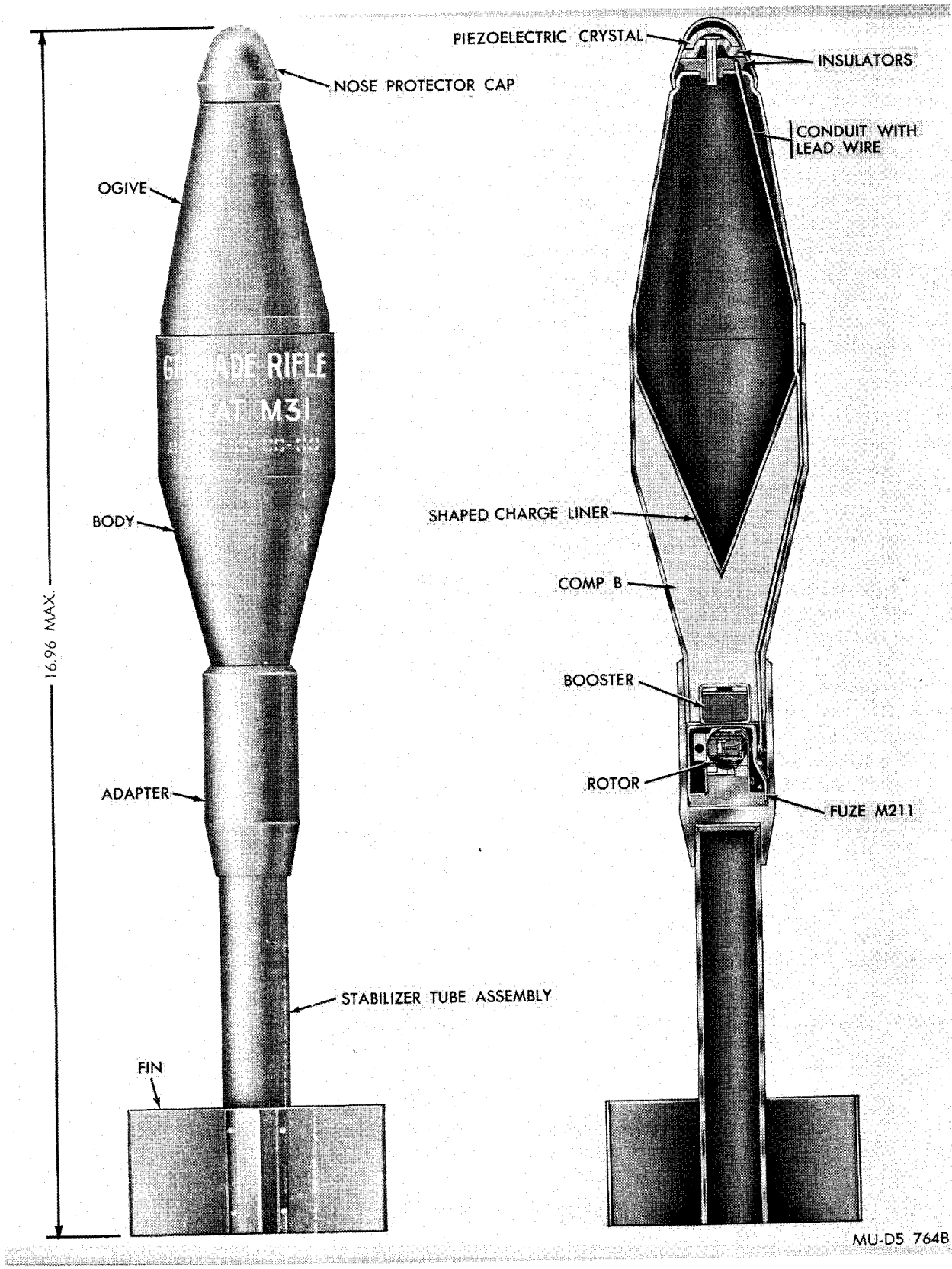

Figure 3-3. HEAT rifle grenade M31.

3–5. Grenade, Rifle: Smoke, WP, M19A1

a. General. WP Smoke Rifle Grenade M19A1 (fig. 3–4) is filled with WP. This chemical agent ignites spontaneously when exposed to air, producing a yellow-white flame and giving off a dense cloud of white smoke. When used as an antipersonnel weapon, Grenade M19A1 has an effective casualty radius of 10 meters. Grenade M19A1 has a maximum range of approximately 195 meters.

b. Description.

(1) *General.* WP Smoke Rifle Grenade M19-A1 consists of three basic parts: a steel stabilizer tube assembly, an integral fuze and a body.

(2) *Data.*

Model	M19A1
Type	Smoke (WP)
Weight	1.5 lb
Dimensions:	
Diameter	2.0 in.
Height	11.31 in.
Charge (WP):	8.5 oz
Body	Sheet steel
Fuze:	Integral
Type	Mechanical impact detonating
Color	Light green w/yellow band; red marking
Packing	1 per container; 10 containers per packing box
Loaded packing box:	
Weight	40.9 lb
Dimensions	19.75″ x 7.875″ x 16.75″
Cube	1.51 cu ft
DODIC	H030

c. Functioning. After the grenade is launched, the fuze functions on impact. It bursts the body and scatters particles of burning WP over a large area. Grenade and fuze function as follows:

(1) The grenade ogive strikes the ground or other resistant object.

(2) Inertia of the firing pin overcomes spring tension and the firing pin strikes the primer.

(3) The primer emits a small, intense spit of flame.

(4) Flame from the primer explodes the detonator.

(5) Explosion of the detonator ruptures the body. Fragments of the body and particles of WP scatter over an area with a radius of approximately 10 meters.

(6) Particles of WP ignite upon coming into contact with air and produce a dense cloud of white smoke.

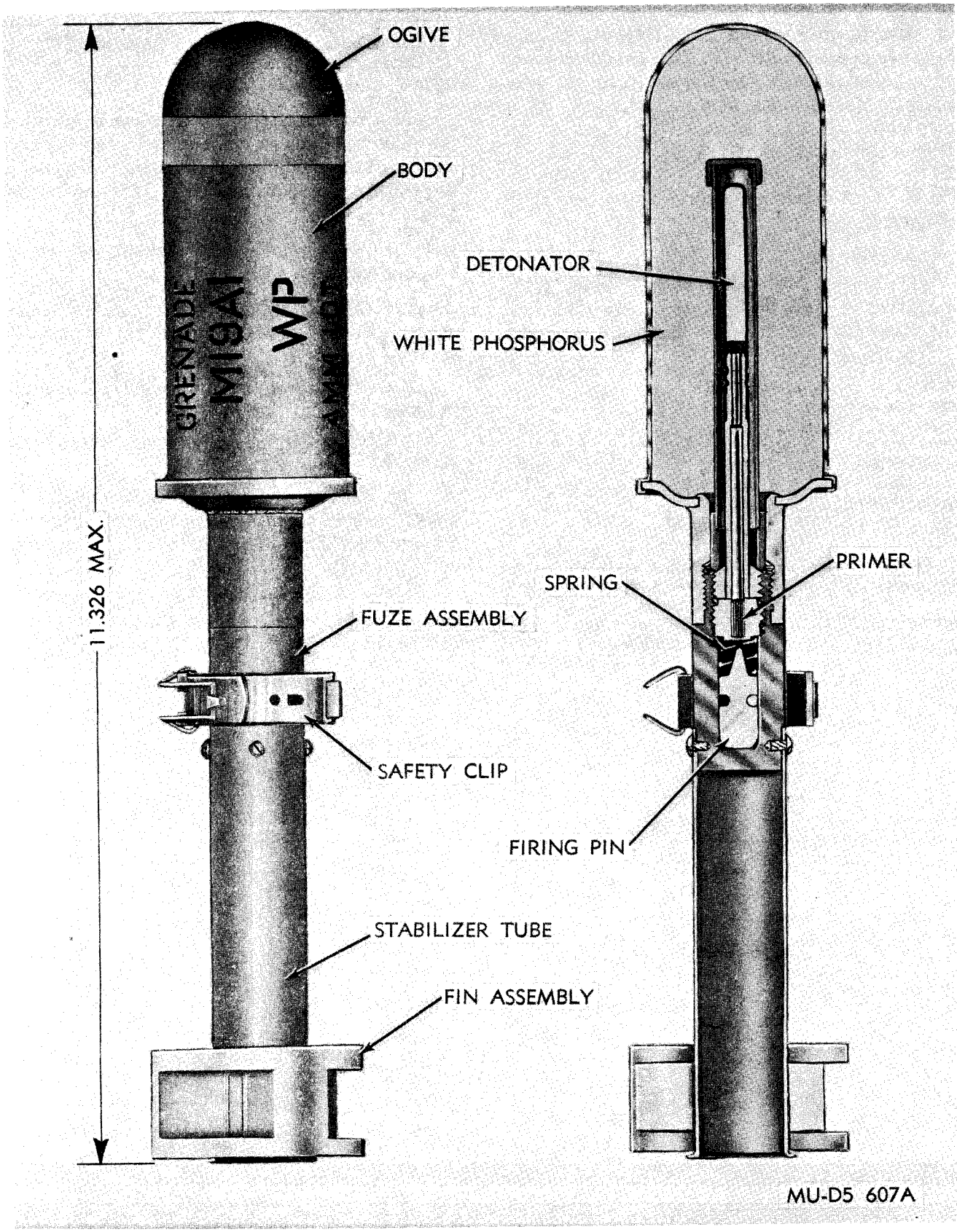

Figure 3–4. WP smoke rifle grenade M19A1.

3–5. Grenade, Rifle: Smoke, WP, M19A1

a. General. WP Smoke Rifle Grenade M19A1 (fig. 3–4) is filled with WP. This chemical agent ignites spontaneously when exposed to air, producing a yellow-white flame and giving off a dense cloud of white smoke. When used as an antipersonnel weapon, Grenade M19A1 has an effective casualty radius of 10 meters. Grenade M19A1 has a maximum range of approximately 195 meters.

b. Description.

(1) *General.* WP Smoke Rifle Grenade M19A1 consists of three basic parts: a steel stabilizer tube assembly, an integral fuze and a body.

(2) *Data.*

Model	M19A1
Type	Smoke (WP)
Weight	1.5 lb
Dimensions:	
Diameter	2.0 in.
Height	11.31 in.
Charge (WP):	8.5 oz
Body	Sheet steel
Fuze:	Integral
Type	Mechanical impact detonating
Color	Light green w/yellow band; red marking
Packing	1 per container; 10 containers per packing box
Loaded packing box:	
Weight	40.9 lb
Dimensions	19.75″ x 7.875″ x 16.75″
Cube	1.51 cu ft
DODIC	H030

c. Functioning. After the grenade is launched, the fuze functions on impact. It bursts the body and scatters particles of burning WP over a large area. Grenade and fuze function as follows:

(1) The grenade ogive strikes the ground or other resistant object.

(2) Inertia of the firing pin overcomes spring tension and the firing pin strikes the primer.

(3) The primer emits a small, intense spit of flame.

(4) Flame from the primer explodes the detonator.

(5) Explosion of the detonator ruptures the body. Fragments of the body and particles of WP scatter over an area with a radius of approximately 10 meters.

(6) Particles of WP ignite upon coming into contact with air and produce a dense cloud of white smoke.

3–6. Grenades, Rifle: Smoke, Green, Red, Violet or Yellow, M22 and M22A2

a. General. Colored Smoke Rifle Grenades M22 and M22A2 (fig. 3–5) are launched from a rifle. These grenades, used only for signaling and for laying smoke screens, produce green, red, violet or yellow smoke. The M22 and the M22-A2 differ only in minor features. Colored Smoke Rifle Grenades M22 and M22A2 have a range of over 200 meters.

b. Description.

(1) *General.* Colored Smoke Rifle Grenades M22 and M22A2 are similar in appearance to WP Smoke Rifle Grenade M19A1 (para 3–5) but are somewhat smaller. The M22 and M22A2 consist of three basic parts: a steel stabilizer assembly, an integral fuze and a body. The fuze is a mechanical impact-igniting type. The body is filled with a burning-type smoke charge which contains a dye to color the smoke. The surfaces of the smoke charge within the body are coated with a starter mixture charge to facilitate ignition. A small opening or air hole in the nose of the ogive is covered by a nose closing plug.

(2) *Data.*

Model (s)	M22 or M22A2
Type	Smoke (colored)
Weight	1.26 lb
Dimensions:	
Diameter	1.8 in.
Height	10.72 in.
Charge (a mixture of baking soda, potassium perchlorate, sugar and a dye to color the smoke)	0.4 lb
Body	Sheet steel
Fuze	Integral
Type	Mechanical impact igniting
Color	Light green w/color of smoke produced painted on body union; black marking
Packing	1 per container; 10 containers per packing box
Loaded packing box:	
Weight	31.5 lb
Dimensions	19.0″ x 6.5″ x 14.625″
Cube	1.05 cu ft
DODIC:	
Green	G995
Red	H010
Violet	H020
Yellow	H035

c. Functioning. Colored Smoke Rifle Grenades M22 and M22A2 function on impact, emitting a cloud of colored smoke for approximately one minute. After being fired from a rifle equipped with a grenade launcher, these grenades function as follows:

(1) The grenade ogive strikes the ground or other resistant object.

(2) Inertia of the firing pin overcomes spring tension and the firing pin strikes the primer.

(3) The primer emits a small, intense spit of flame.

(4) Flame from the primer ignites the starter mixture charge.

(5) The burning starter mixture charge ignites the smoke charge.

(6) The smoke charge burns for approximately 1 minute, emitting a dense cloud of colored smoke through holes in the base of the body.

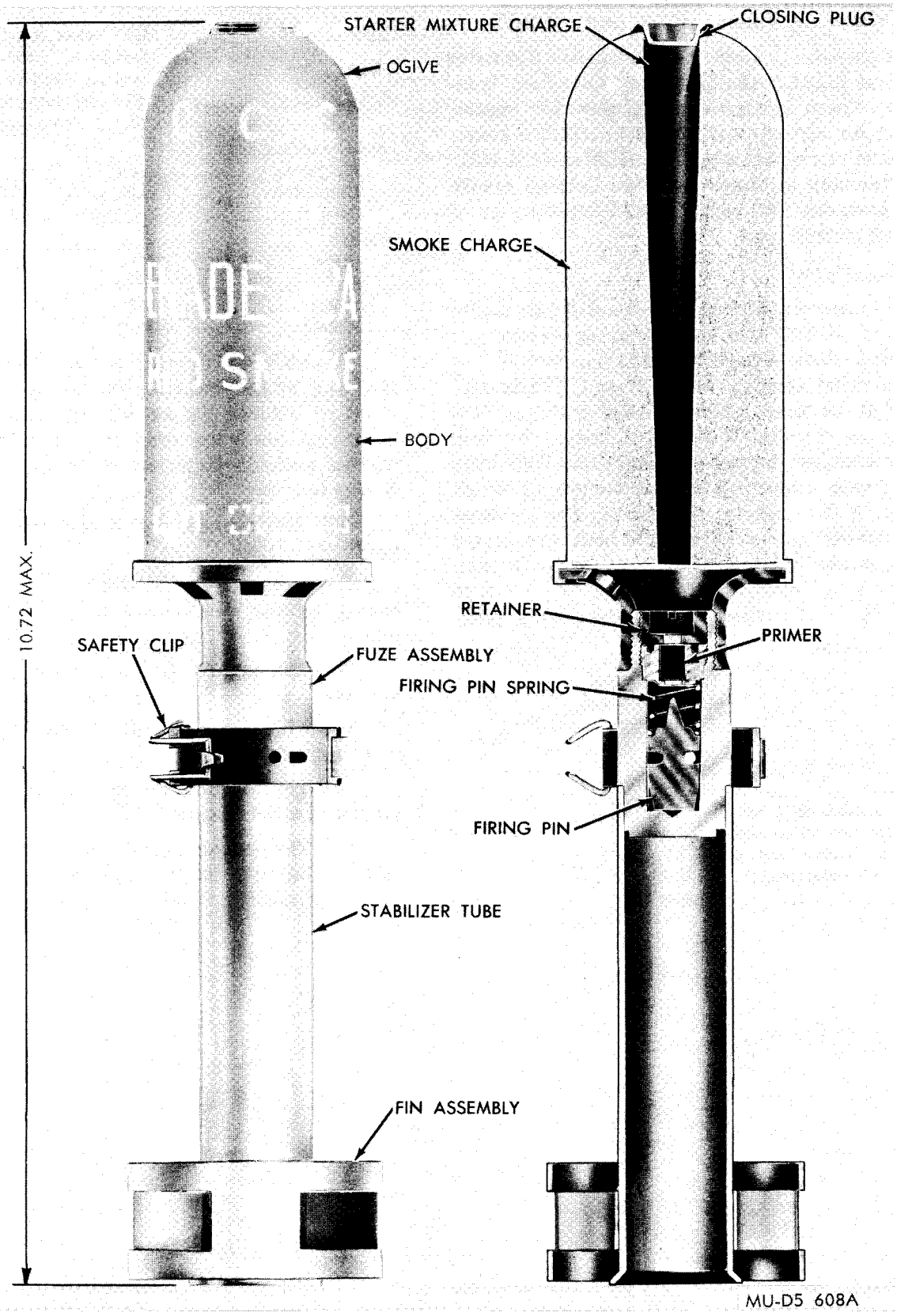

Figure 3–5. Colored smoke rifle grenade M22A2.

3–7. Grenades, Rifle: Smoke, Green, Red, Violet or Yellow, Streamer, M23 and M23A1

a. General. Colored Smoke Streamer Rifle Grenades M23 and M23A1 (fig. 3–6) are projected from a rifle assembled with a grenade launcher, using a grenade cartridge. These grenades, used only for signaling purposes, produce green, red, violet or yellow smoke streamers. The M23 and M23A1 differ only in minor features. Colored Smoke Streamer Rifle Grenades M23 and M23A1 have a range of over 200 meters.

b. Description.

(1) *General.* Colored Smoke Streamer Rifle Grenades M23 and M23A1 are fabricated from the same metal parts (except for the fuze) as Colored Smoke Rifle Grenades M22 and M22A2 (para 3–6). The M23 and M23A1 consist of three basic parts: a steel stabilizer tube assembly, a fuze and a body. The body is filled with a burning-type smoke charge which contains a dye to color the smoke. The surfaces of the smoke charge within the body are coated with a starter mixture charge (to facilitate ignition). A small air hole opening in the nose of the ogive is covered by a piece of tape (to protect the filler against moisture). The tape must be removed prior to firing.

(2) *Data.*

Model (s)	M23, M23A1
Type	Colored smoke streamer
Weight	1.16 lb
Dimensions:	
Diameter	1.8 in.
Height	9.89 in.
Charge (a mixture of baking soda, potassium perchlorate, sugar and a dye to color the smoke)	0.4 lb
Body	Sheet steel
Fuze:	Integral
Type	Igniting
Color	Light green w/color of smoke produced painted on body union; black marking
Packing	1 per container; 10 containers per packing box
Loaded packing box:	
Weight	31.5 lb
Dimensions	19.0″ x 6.5″ x 14.625″
Cube	1.05 cu ft
DODIC:	
Green	H000
Red	H015
Violet	H025
Yellow	H040

c. Functioning. Colored Smoke Streamer Rifle Grenades M23 and M23A1 function on firing, emitting a stream of colored smoke over the entire trajectory. Upon firing the grenade cartridge in the rifle, these grenades are launched and function as follows:

(1) Flash from the grenade cartridge passes from the rifle through orifices in the fuze to ignite the igniting charge in the fuze.

(2) The igniting charge ignites the starter mixture charge.

(3) The starter mixture charge ignites the smoke charge.

(4) The smoke charge begins to burn, generating colored smoke.

(5) Air entering the air hole in the nose of the grenade forces smoke out of holes in the base of the body, producing streamers of colored smoke.

(6) The smoke charge continues to burn, producing smoke over the entire trajectory of the grenade, and for a few seconds after striking the ground. (Total burning time: approximately 12 seconds.)

Section IV. PRACTICE RIFLE GRENADES

3–8. General

Practice rifle grenades are used for training personnel in care, handling and use of rifle grenades prior to training with service grenades. One type of practice rifle grenade is issued ready for use. Other types are assembled from practice and training hand grenades and grenade projection adapters.

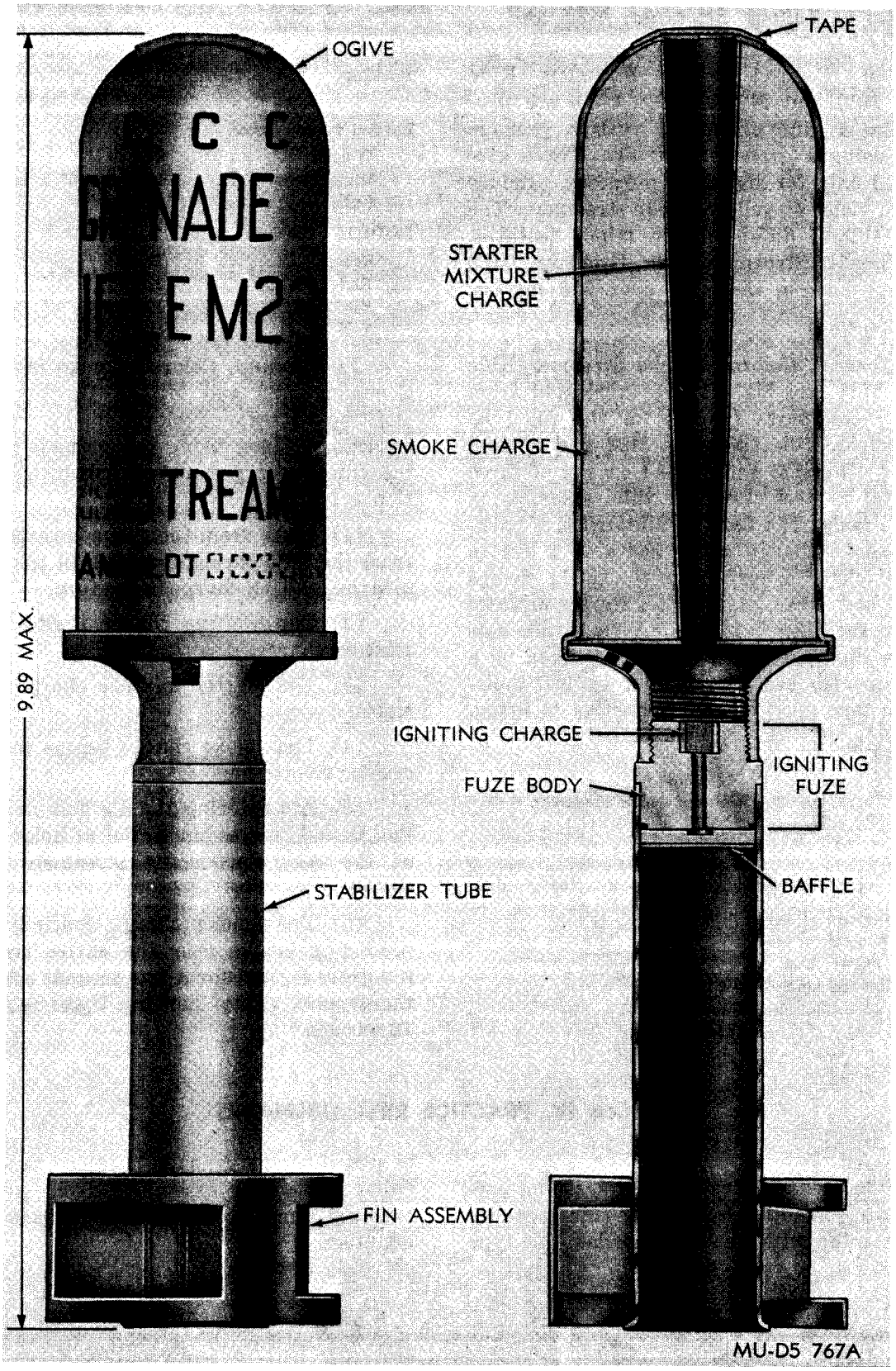

Figure 3–6. Colored smoke streamer rifle grenade M23A1.

3–9. Grenade, Rifle: AT, Practice, M29

a. General. Practice AT Rifle Grenade M29 has no filler or fuze. The M29 (fig. 3–7) may be fired at a target without danger to the target other than from impact. Grenade M29 may be used repeatedly if the stabilizer tube fin assembly is replaced when it becomes damaged. Grenade M29 has a maximum range of approximately 150 meters.

b. Description.

(1) *General.* Practice AT Rifle Grenade M29 consists of two parts: a body and a stabilizer tube-fin assembly of steel. A separately issued stabilizer tube-fin assembly is available for replacement purposes.

(2) *Data.*

Model	M29
Type	Practice AT
Weight	1.5 lb
Dimensions:	
Diameter	3.0 in.
Height	14.5 in.
Charge	None
Body	Cast iron
Fuze	None
Color	Black w/white markings or blue w/white markings
Packing	1 per container; 20 containers per packing box
Loaded packing box:	
Weight	66.5 lb
Dimensions	20.75″ x 15.75″ x 17.15″
Cube	3.3 cu ft
DODIC	G980

c. Functioning. None.

Section V. GRENADE PROJECTION ADAPTERS

3–10. General

a. Grenade projection adapters are used to adapt hand grenades for launching from rifles assembled with grenade launchers. With a grenade projection adapter, a hand grenade can be converted into a rifle grenade, thus extending its range. Grenade projection adapters consist of a stabilizer tube with a fin assembly on one end and gripping claws on the other end. The claws, of spring steel, grip the hand grenade and hold it in place on the adapter. Grenade-adapter combinations are shown in table 3–1.

Table 3–1. Grenade-Adapter Combinations

Grenade projection adapter	Grenades
M1	Fragmentation hand grenade Mk2
M1A1 and M1A2	Illuminating hand grenade Mk1 Fragmentation hand grenades Mk2, M26, M26A1, and M61 Practice hand grenade M62 WP smoke hand-rifle grenade M34
M2 and M2A1	CN riot hand grenades M7 and M7A1 CS hand grenades ABC–M7A2 and ABC–M7A3 HC smoke hand grenade AN–M8 TH3 incendiary hand grenade AN–M14 Colored smoke (red, green, yellow or violet) hand grenade M18

b. Grenade projection adapters fitted with hand grenades may be fired high angle or direct fire, depending on the effect desired. For example, a grenade projection adapter fitted with a fragmentation hand grenade may be fired high angle for an above-ground burst (15 meters maximum) to produce a free scattering of fragments. It may be projected to produce a more effective fragment dispersion against a concentration of personnel.

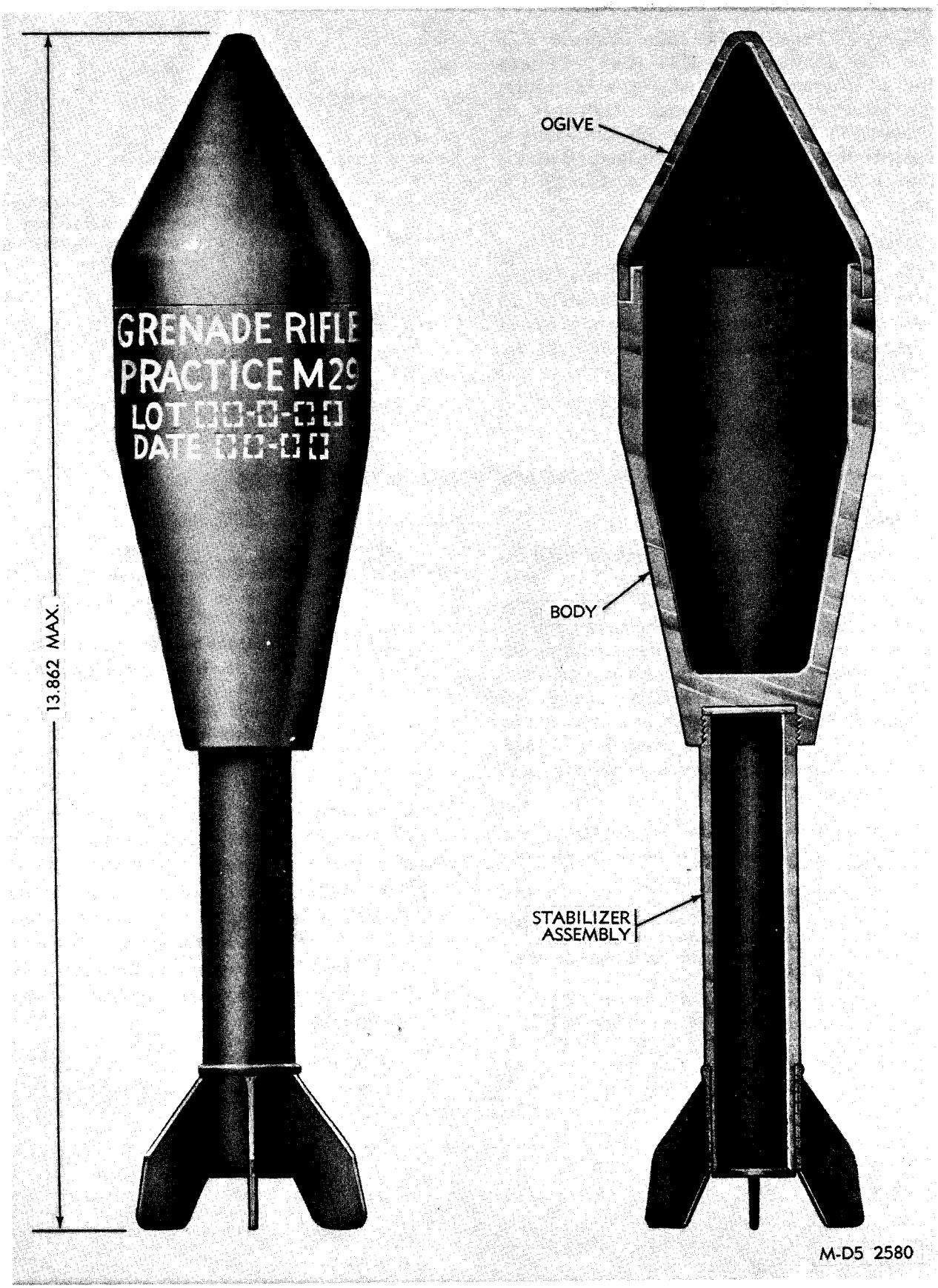

Figure 3–7. Practice AT rifle grenade M29.

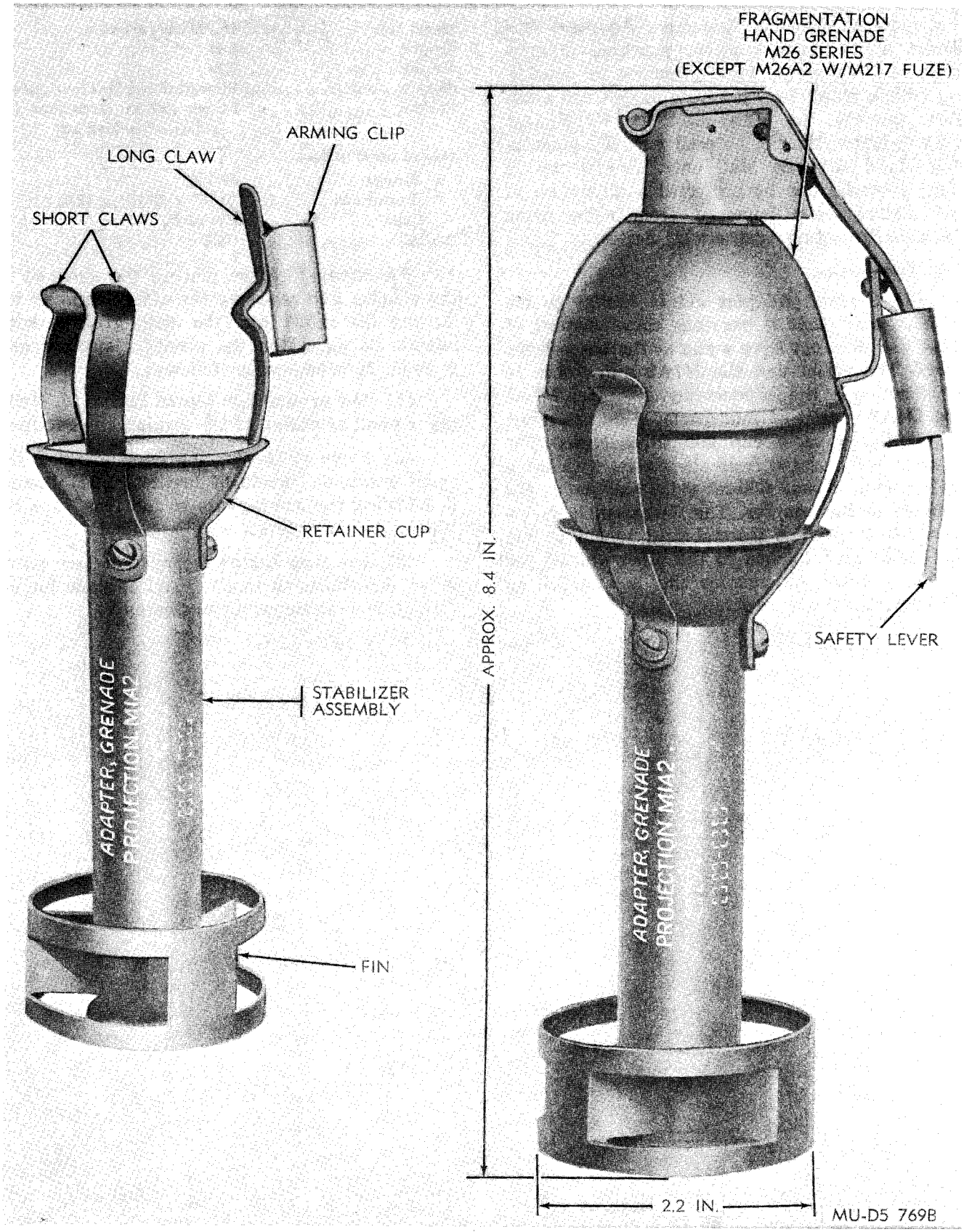

Figure 3–8. Grenade projection adapter M1A2 w/fragmentation hand grenade.

3–11. Adapters, Grenade Projection, M1-Series

a. General. Grenade Projection Adapters M1-Series adapt fragmentation, practice, illuminating and WP smoke hand grenades for launching from a rifle. Three different models are available: the M1, the M1A1 and the M1A2 (fig. 3–8). Adapter M1 can be used with Fragmentation Hand Grenade Mk2 only. Fragmentation hand grenades can be projected a maximum of 160 meters when launched from rifles using Grenade Projection Adapters M1-Series.

b. Description.

(1) *General.* Adapter M1 is similar to the M1A1, except that it has four claws instead of three and does not have a cup at the base of the claws. The M1A1 and the M1A2 differ only in construction of the fin assembly. Adapters M1A1 and M1A2 consist of four parts: a fin assembly, a stabilizer tube, a cup and three claws. The adapter is fabricated from sheet steel with three spring-steel claws. These grip and hold the grenade in the adapter. The fin assembly is attached to one end of the stabilizer tube. The cup and claws are attached to the other end of the stabilizer tube. An arming clip is attached to the longest of the three claws.

(2) *Data.*

Model (s)	M1, M1A1, M1A2
Weight	6 oz
Height	7 in.
Color	Olive drab w/black markings
Packing	24 per carton; 2 cartons (48 units) in packing box
Loaded packing box:	
Weight	49.0 lb
Dimensions	30.75″ x 13.75″ x 12.0″
Cube	1.74 cu ft
DODIC	G800

c. Functioning. After placing the grenade in the adapter and releasing the safety clip and removing the safety pin, the hand grenade with adapter is placed on the grenade launcher and is fired. It functions as follows:

(1) The arming clip moves rearward, striking a small extension of the arming clip retainer.

(2) Force of the arming clip's striking the small extension (made of brittle metal) breaks it, allowing the arming clip to fall free, thus releasing the safety lever.

(3) The fuze begins to function (see paragraph describing particular hand grenade for information on subsequent functioning).

3–12. Adapter, Grenade Projection, M2-Series

a. General. Grenade Projection Adapters M2-Series adapt cylindrical hand grenades for launching from rifles. Two different models are available: the M2 and the M2A1 (fig. 3–9).

b. Description.

(1) *General.* Adapters M2 and M2A1 differ only in the method of attaching the claws and claw base plate to the stabilizer tube. Grenade Projection Adapters M2-Series consist of five parts: a fin assembly, a stabilizer tube, a claw base plate, three claws, and a setback band. The adapter is fabricated from sheet steel. The three spring steel claws grip the lip of the base of the grenade body and hold the grenade in the adapter. The fin assembly is attached to one end of the stabilizer tube. The claw base plate and claws are attached to the other end of the stabilizer. The setback band is placed around the body of the grenade over the safety lever.

(2) *Data.*

Models	M2, M2A1
Weight	
Height	5 in.
Color	Gray with black marking
Packing	50 per packing box
Loaded packing box:	
Weight	48.9 lb
Dimensions	17.0″ x 15.0″ x 15.22″
Cube	2.03 cu ft

c. Functioning. When the hand grenade with adapter placed on the grenade launcher is fired, it functions as follows:

(1) Set back force moves the setback band to the rear, releasing the safety lever.

(2) Fuze begins to function (see paragraph describing particular hand grenade for information on subsequent functioning).

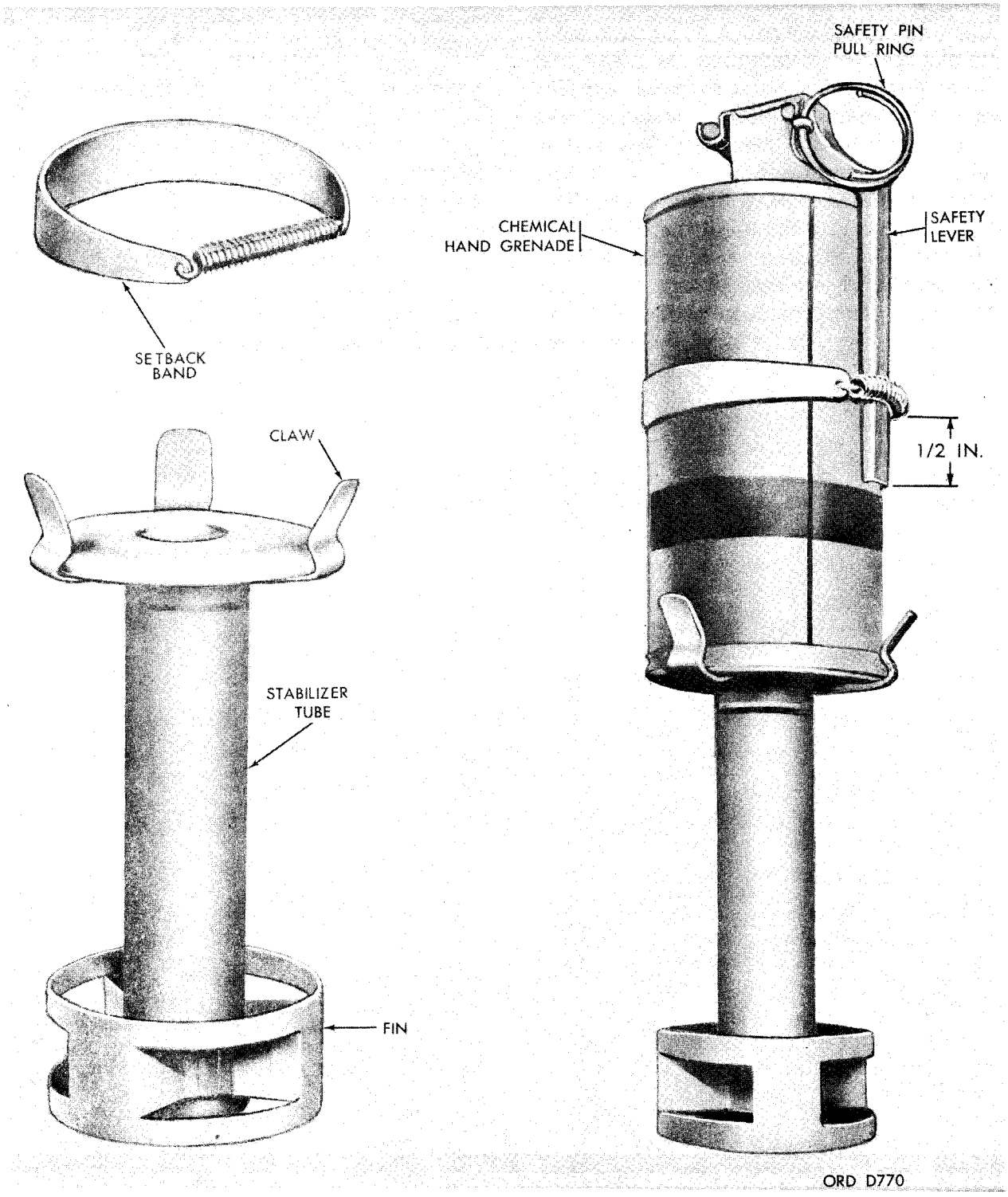

Figure 3–9. Grenade projection adapter M2A1 w/chemical hand grenade.