TECHNICAL MANUAL

UNIT MAINTENANCE MANUAL

(INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS)

ARTILLERY AMMUNITION
FOR
GUNS, HOWITZERS, MORTARS,
RECOILLESS RIFLES,
AND
40-MM GRENADE LAUNCHERS

HEADQUARTERS DEPARTMENT OF THE ARMY

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Unit Maintenance Manual
(Including Repair Parts and Special Tools List)
for
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*This manual supersedes TM 9-1300-251-20, dated 21 December 1973.

Page

CHAPTER 1
INTRODUCTION

NOTE

No maintenance is authorized below depot level for munitions filled with lethal agents.

1-1. Scope

a. This manual, one of a series on maintenance and service of ammunition, contains the information required to support organizational level maintenance of artillery ammunition ranging in calibers from 37 millimeters through 8 inches. Artillery ammunition, as it is defined in this manual, includes conventional and Improved Conventional Munitions for guns, howitzers, mortars, recoilless rifles and 40mm grenade launchers.

b. Operating instructions are contained in the appropriate weapon's manual.

c. Military Specification format for TM's requires that the Organizational Maintenance level TM's contain the complete Maintenance Allocation Chart (MAC).

d. Higher levels are to perform any maintenance authorized at a lower level (unless specifically stated otherwise) and to utilize any tools authorized for the maintenance operation.

e. The format requires that the available repair parts be authorized in the RPSTL for the lowest maintenance level that can perform the operation (eg. Organizational Maintenance is authorized to repack the item so we make the NSN for the box available to them this way the NSN is available and authorized for any level that could require it).

f. The format requires separate appendices for tools and expendable supplies.

1-2. Forms, Records and Reports

a. *Authorized Forms.* Forms required by organizational maintenance personnel are listed in Appendix A. Information on applicability and instructions for completing forms are published in DA PAM 738-750.

b. *Field Report of Accidents.* Accidents involving injury to personnel or damage to materiel will be reported on DA Form 285 in accordance with AR 385-40. Malfunctions will be reported in accordance with AR 75-1.

e. *Report of Damaged or Improper Shipment.* Materiel received in damaged or otherwise unsatisfactory condition because of deficiencies in preservation, packaging, marking, loading, storage, or handling will he reported on Standard Form 364 in accordance with AR 735-11-2. Reports of improper shipment or damage caused by transportation discrepancies will be reported on SF 361 in accordance with AR 55-38.

1-3. Destruction of Ammunition to Prevent Enemy Use

Destruction of artillery munitions when subject to capture or abandonment will be undertaken by the user only when, in judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by, the Army commander. (Refer to TM 43-0002-33.)

1-4. Safety

Observe all safety regulations, local standing operating procedures and precautions generally applicable to ammunition. Safety rules peculiar to artillery ammunition are discussed below.

a. Fuzes contain extremely sensitive explosives and must be handled carefully at all times.

b. Disassembly of explosive components without specific authorization is prohibited.

c. Electrically primed ammunition must be handled very carefully when out of its packaging in work areas. Operators handling such ammunition must wear conductive safety shoes and the work area must be equipped with conductive floors or mats. Refer to TM 9-1300-206 for complete precautions.

1-5. Care and Handling

a. Do not drop, drag, throw, tumble or otherwise strike boxes containing explosive components.

b. Store ammunition in a dry, well ventilated place, protected from the direct rays of the sun and other sources of excessive heat.

c. Protect ammunition from mud, sand, moisture, frost, snow, ice, dirt, oil, grease and other foreign matter.

d. Handle unpacked ammunition carefully to prevent damage to primer, cartridge case, rotating band and fuzes.

e. Observe storage procedures outlined in chapter 4.

CHAPTER 2
DESCRIPTION AND DATA

SECTION I. GENERAL

2-1. Types of Complete Rounds

A complete round of ammunition consists of all the components required to fire a weapon once. Artillery ammunition comprises several different types (fixed, semifixed, and separate loading) designed for ease in handling and loading. The descriptive material in this chapter and the Maintenance Allocation Charts in appendix B are organized to reflect these classifications. Because of their unique maintenance requirements, 152-mm ammunition, 155-mm Copperhead rounds, mortar rounds and fuzes are covered separately.

2-2. Identification

a. *Markings.* Ammunition is identified by markings on the packaging container, on the item proper, and/or on individual components. These markings include, as appropriate, National Stock Number (NSN), Department of Defense Identification Code (DODIC), caliber and type of weapon, type and model of projectile/cartridge, weight zone markings, ammunition lot number and loader's symbol, functional markings, characteristics, and other appropriate information. Ammunition is painted to protect it from deterioration. Specific colors are painted on the ammunition as a secondary means of identification.

b. *Color Coding*. Ammunition is color coded to identify its functioning or content. (For example, high explosive-loaded items are painted olive drab and marked with yellow lettering.) Color coding standards have been altered over the years, one reason being to achieve international standardization. This has resulted in more than one version of an item in the field; e.g., in the case of inert, practice, and training items there are three distinct generations in the field. The oldest, designated "inert," was painted black. The black color was also used on inert sections (projectiles) of fixed artillery rounds which had live, loaded cartridge cases. The second generation designated "training," or "practice," was painted blue. Training items are completely inert and practice items may or may not contain explosive sections such as propellant charges or spotting charges. Practice items containing such explosive sections are indicated by an olive drab band. The newest generation merely has the inert training items painted bronze, while practice items are blue or blue with a brown or yellow stripe.

SECTION II. FIXED AMMUNITION FOR GUNS, RECOILLESS RIFLES, AND GRENADE LAUNCHERS

2-3. Description

Fixed ammunition (fig 2-1) is designed for use in guns, recoilless rifles, and 40mm grenade launchers. It is issued completely assembled with the cartridge case (containing propelling charge and primer) permanently crimped or otherwise attached to a fuzed or unfuzed projectile.

2-4. Data

All Army-authorized fixed rounds for guns are listed in table 2-1; for recoilless rifles, in table 2-2; and for 40mm grenade launchers in table 2-3. Group numbers listed in these tables reflect authorized maintenance functions indicated in Appendix B, Section II for 01 GROUP, FIXED AMMUNITION (EXCEPT 152MM).

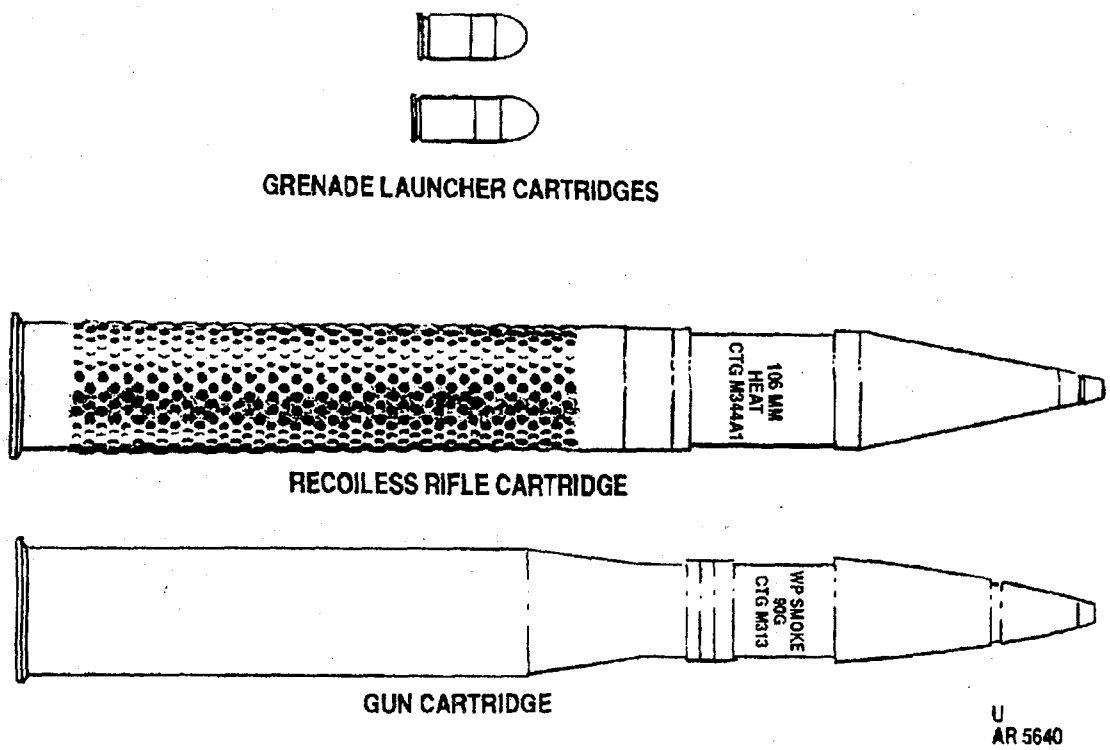


Figure 2-1. Typical rounds of fixed ammunition.

Table 2-1. Army Authorized Ammunition for Guns (35-MM through 165-MM)

NOMENCLATURE AND CALIBER	LENGTH[2] (in.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
35MM						
CARTRIDGE, 35MM: TP-T, M968 (TPGID)	15.24	3.46	Blue w/white markings	B591	0101 0102 0103	a,c a a,c,e,g
37MM						
CARTRIDGE, 37MM: TP, M63 MOD 1 (Subcaliber)	8.98	2.01	Blue w/white markings	B526	0101 0102 0103	a,c b a,c,e
40MM						
CARTRIDGE, 40MM: AP-T, M81A1 and M81[1]	17.60	4.58	Black w/white markings	B552	0101 0102 0103	a,c b,d a,c,e
CARTRIDGE, 40MM: HE-T, SD, MK 2, MK 11, MV 2870	17.60	4.75	OD w/yellow markings	B562	0101 0102 0103	a,c b,d a,c,e
CARTRIDGE, 40MM: HEI-T, SD, MK 2, MK 11, MV 2890	17.60	4.75	OD w/yellow markings	B559	0101 0102 0103 0104	a,c b,d a,c,e c
CARTRIDGE, 40MM: TP-T, M91	17.60	4.72	Blue w/white markings	B564	0101 0102 0103	a,c b,d a,c,e
DUMMY CARTRIDGE, 40MM: M25	17.60	4.75	Black w/white markings	B565	0101 0102 0103	a,c b a,c,e
CARTRIDGE, 40MM: HEI, M811 (Sgt York)	21	5.5	Yellow w/red band and black markings	B517	0101 0102 0103 0104	a,c b,d a,c,g c
CARTRIDGE, 40MM: TP, M813 (Sgt York)	21	5.5	Blue w/white markings	B511	0101 0102 0103	a,c b,d a,c,e
CARTRID(E, 40MM: HE, M822 (Sgt York)	21	5.5	OD w/yellow markings	B518	0101 0102 0103 0104	a,c b,d a,c,e c

See footnotes at the end of this table.

Table 2-1. Army Authorized Ammunition for Guns (35-MM through 165-MM)

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B) GROUP NO.	FUNC-TIONAL GROUP
DUMMY (INERT) CARTRIDGE, 40MM M851 (Sgt York)	21	5.5	Bronze w/white markings	B583	0101 0102 0103	a,c b a,c,e
DUMMY (INERT) CARTRIDGE, 40MM, M922A1	4.42	0.77	Gold with black markings	B472	0101	a,b,c,d ,e,f
75MM						
CARTRIDGE, 75MM BLANK: M377A2	7.25	3.25	None	C025	0101 0103	a,c a,c,e
84MM						
LAUNCHER and CARTRIDGE, 84MM: M136 (AT4)	40 markings	14.8	Black w/yellow	C995	0101 0102 0103 0104	a,c a b f
90MM						
CARTRIDGE, 90MM: APC-T, M82	38.24	43.87	OD w/yellow markings	C260	0101 0102 0103	a,c b,d a,c,e
CARTRIDGE, 90MM: APERS-T, M580	38.07	41.25	OD w/white markings and white diamonds	C275	0101 0102 0103 0104	a,c b,d a,c,e b
CARTRIDGE, 90MM: AP-T, M318A1 AND M3181	37.11	43.91	Black w/white markings	C285	0101 0102 0103	a,c b,d a,c,e
CARTRIDGE, 90MM BLANK: M394	7.27	8.23	None	C261	0101	a,c
CARTRIDGE, 90MM CANISTER: M336	33.74	41.60	Black w/white markings or OD w/white markings	C262	0101 0102 0103	a,c b a,c,e
CARTRIDGE, 90MM CANISTER, APERS, M377	34.07	39.30	OD w/white markings and white diamonds	C601	0101 0102 0103	a,c b a,c,e

See footnotes at end of this table.

Table 2-1. Army Authorized Ammunition for Guns (35-MM through 165-MM)

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B) GROUP NO.	MAINTENANCE FUNCTIONS (REF TO APP B) FUNC-TIONAL GROUP
CARTRIDGE, 90-MM: HE, M71 and HE-T, M71AI.[1]	37.45	38.80	OD w/yellow markings.	C265 (M71 w/ MTSQ fuze)	0101	a, c
					0102	b, c, h
					0103	a, c, e
				C266 (M71 w/PD fuze)	0104	a
				C267 (M71 w/o fuze)		
				C280 (M71A1)	0101	a, c
					0102	b, c, d, h
					0103	a, c, e
					0104	a
CARTRIDGE, 90-MM: HEAT, M348A1, M348.	33.74	34.79	OD w/yellow markings.	C268	0101	a, c
					0102	b, c
					0103	a, c, e
					0104	d
CARTRIDGE, 90-MM: HEAT-T, M431 Series.'	36.00	33.00	Black w/yellow markings.	C294	0101	a, c
					0102	a, d, e
					0103	a, c, e, g
					0104	d
CARTRIDGE, 90-MM: HVAP-T, M332 Series.	35.92	32.30	Black w/white markings.	C270	0101	a, c
					0102	b, d
					0103	a, c, e
CARTRIDGE, 90-MM: Smoke, WP M313C and M313. (M313)	37.40	42.50	Gray w/yellow markings and yellow band.	C258 (M313C) C273	0101	a, c
					0102	b, f
					0103	a, c, e
					0104	a
CARTRIDGE, 90-MM: TP-T, M353A1 and M353.	36.95 markings.	43.91	Blue w/white	C290	0101	a, c
					0102	b, d
					0103	a, c, e

See footnotes at the end of this table.

Table 2-1. Army Authorized Ammunition for Guns (35-MM through 165-MM)

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B) GROUP NO.	FUNC-TIONAL GROUP
DUMMY CARTRIDGE, 90-MM: M12 Series.	37.4	42.00	Black w/white markings or blue w/white markings or bronze w/white markings.	C263	0101 0102 0103	a, c b a, c, e
					105-MM	
CARTRIDGE, 105-MM: APERS-T, M494.	39.17	55.00	OD w/white markings, white dia-monds and yellow band.	C519	0101 0102 0103 0104	a, c b a, c, e b
CARTRIDGE, 105MM: APDS-T, M392A2, M392A1 and L36A1, (M392).1	33.00	41.00	Black w/white markings.	C505 C506 (L36A1)	0101 0102 0103	a, c a a, c, e, g
CARTRIDGE, 105MM: HVAP-DS (GE), DM.	33.5	40.06	Black w/white markings.	13B1	0101 0102 0103	a, c a a, c, e, g
CARTRIDGE, 105MM: APF-SDS-T, M735.	37.94	39.50	Black w/white markings.	C521	0101 0102 0103	a, c a, d, e a, c, e, g
CARTRIDGE, 105MM: APFSDS-T, M774.	35.75	37.80	Black w/white markings.	C523	0101 0102 0103	a, c a, d, e a, c, e, g
CARTRIDGE, 105MM: APDS-T, M728	33.0	41.70	Black w/white markings.	C494	0101 0102 0103	a, c a a, c, e, g
CARTRIDGE, 105MM: APFSDS-T, M833.	39.32	38.2	Black w/white markings.	C524	0101 0102 0103	a, c a, d, e a, c, e, g
CARTRIDGE, 105MM: APFSDS-T, M900.	39.5	40.8	Black w/white markings.	C543	0101 0102 0103	a, c a, d, e a, c, e, g

See footnotes at end of this table.

Table 2-1 Army Authorized Ammunition for Guns (35-MM through 165-MM)--Continued

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B) GROUP NO.	FUNC-TIONAL GROUP
CARTRIDGE, 105MM: HEAT-T, M456A1 and M456.1	39.01	46.5	Black w/white markings.	C508	0101 0102 0103	a, c a, c a, c, e
CARTRIDGE, 105MM: HEAT-T-MP, M456A2.	39.6	49.0	Black w/yellow markings.	C508	0101 0102 0103 0104	a, c b a, c, e a
CARTRIDGE, 105MM: HEP-T, M, M393A1 and M393A2 (M393AE1).	37.00	46.70	OD w/yellow markings and yellow band.	C518	0101 0102 0103 0104	a, c b a, c, e a
				C429 (M391A1)	0101 0102 0103 0104	a, c h, g a, c, e a
CARTRIDGE, 105MM: Smoke WP-T, M416.	37.00	45.50	Lt green w/lt red markings and yellow band.	C512	0101 0102 0103 0104	a, c b, g a, c, e d
CARTRIDGE, 105MM: TPCSDS-T, DM 128.	36.40	36.60	Blue w/white markings.	C533	0101 0102 0103	a, c a a, c, e, g
CARTRIDGE, 105MM: TP-T, M467	39.30	48.00	Blue w/white markings.	C510	0101 0102 0103	a, c b a, c, e
CARTRIDGE, 105MM: TP-T, M393A1 w/o Fuze. band.	37.00	46.70	OD w/white markings and	C503	0101 0102 0103	a, c b a, c, e
CARTRIDGE, 105MM: TP-T, M490, M490A1.3	39.30	45.00	Blue w/white markings.	C511	0101 0102 0103	a, c b a, c, e, g
CARTRIDGE, 105-MM: TPDS-T, M724, M724A1.3	33.00	32.3	Blue w/white markings.	C520	0101 0102 0103	a, c a a, c, e, g

See footnotes at end of this table.

Table 2-1. Army Authorized Ammunition for Guns (35-MM through 165-MM)

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B) GROUP NO.	FUNC-TIONAL GROUP
DUMMY CARTRIDGE, 105-MM: M457.	37.00	46.70	Blue w/white markings.	C514	0101 0102	a, c b
120-MM						
CARTRIDGE, 120MM: APDS-T, M829.	36.8	41.2	Black w/white markings.	C786	0101 0102 0103	a, c a, d, e a, c, e, i
CARTRIDGE, 120MM: APFSDS-T, M829A1. projectile.	38.75	46	Black w/white markings on	C380	0101 0102 0103	a, c a, d, e a, c, e, g, i
CARTRIDGE, 120MM: APFSDS-T, M829A2. projectile.	38.74	44.88	Black w/white markings on	C792	0101 0102 0103	a, c a, d, e a, c, e, g, i
CARTRIDGE, 120MM: HEAT-MP-T, M830.	38.6	53.4	Black w/yellow markings.	C787	0101 0102 0103 0104	a, c a, d, e a, c, e, i f
CARTRIDGE, 120MM: HEAT-MP-T, M830A1.	38.74	50.1	Black w/yellow markings.	C791	0101 0102 0103 0104	a, c a, d, e, f a, c, e, g, i f, h, i
CARTRIDGE, 120MM: TP-T, M831.	38.6	53.4	Blue w/white markings.	C784	0101 0102 0103	a, c a, d, e a, c, e, i
CARTRIDGE, 120MM: TP-T, M831A1	38.62	50.5	Blue w/white markings.	C784	0101 0102 0103	a, c a, d, e a, c, e, i
CARTRIDGE, 120MM: TPCSDS-T, M865.	34.7	41.9	Blue w/white markings.	C785	0101 0102 0103	a, c a, d, e a, c, e, i
165-MM						
CARTRIDGE, 165MM: HEP, M123A1 and M123.	27.62	67.60	OD w/yellow markings and black band.	D570	0101 0102 0103 0104	a, c b a, c, e, h e

[1]Length and weight reflect the latest production model.
[2]Values are nominal.
[3]The M409A1 and M724A1 training rounds may be assembled with the spiral-wrapped cartridge, case.

Table 2-2. Army Authorized Ammunition for Recoilless Rifles (90-MM through 106-MM)

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
CARTRIDGE, 165MM: TP, M623.	27.62	65.00	Blue w/white markings.	D590	0101 0102 0103	a, c b a, c, e, h
CARTRIDGE, 90-MM: HEAT, M371A1.1	28.10	9.25	OD w/black markings or black w/yellow markings.	C282	0101 0102 0103 0104	a, c a, e a f
CARTRIDGE, 90-MM CANISTER: M590.	19.19	6.79	Black w/white markings and white diamonds or OD w/white markings and white diamonds.	C410	0101 0102 0103	a, c b a
CARTRIDGE, 90-MM: Practice, M371 (M379).	28.10	9.25	Blue w/white markings and yellow band.	C283	0101 0102 0103 0104	a, c a, e a f
106MM CARTRIDGE, 106-MM: APERS-T, M581	48.29	41.29	OD w/white markings, white diamonds and yellow band	C660	0101 0102 0103 0104	a, c a, d a, c, e, g g
CARTRIDGE, 106-MM: HEAT, M344A1.	39.31	37.23	OD w/white markings or or black w/yellow markings.	C650	0101 0102 0103 0104	a, c a, e a, c, e, g f
CARTRIDGE, 106-MM: HEP-T, M346 Series.	38.10	37.37	OD w/yellow markings and black band.	C651	0101 0102 0103 0104	a, c a, e a, c, e, g e
DUMMY CARTRIDGE, 106-MM: M368	37.26	37.93	Black w/white markings.	C654	0101 0102 0103	a, c a a, g

[1]Length and weight reflect the latest production model.
[2]Values are nominal.

Table 2-3. Army-Authorized Ammunition for Grenade Launchers (40-MM Only)

Nomenclature and caliber	Length[1] (in.)	Weight[1] (lb)	Color Identification			DODIC	Maintenance functions (Ref to appendix B)	
			Projectile body	Ogive	Markings		Group No.	Functional group
CARTRIDGE, 40MM: Chemical Agent, CS, M674	8.81	0.75	Gray	Gray	Red w/red band and brown band	B537	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40MM: HE, M38	3.90	0.49	Green	Gold	Yellow	B568	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40MM: HE, M383	4.42	0.79	OD	Gold	Yellow	B571 (M16A2) link)	0101 0102 0103 0104	a,c b b,d,f b
CARTRIDGE, 40-MM: HE, M384	4.42	0.75	OD	Gold	Yellow	B572 (M16 link) B470 (M16A1 link)	0101 0102 0103 0104	a,c b b,d,f b
CARTRIDGE, 40MM: HE, M386	3.89	0.50	Green	Gold	Yellow	B574	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40MM: HE, M397	4.05	0.51	OD	Gold	Yellow	B569	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40MM: HE, M406	3.08	0.50	Green	Gold	Yellow	B568	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40MM: HE, M441	3.89	0.50	OD	Gold	Yellow	B575	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40MM: HEDP, M430, M430A1	4.42	0.75	OD	Gold	Yellow	B542	0101 0102 0103 0104	a,c b b,d,f f
CARTRIDGE, 40MM: HEDP, M433	4.06	0.51	OD	Gold	Yellow	B546	0101 0102 0103 0104	b,c b b,d,f f
CARTRIDGE, 40MM: Multiple Projectile, M576	2.65	0.25	Black	None	White	B534	0101 0102 0103	b,c b b,d,f
CARTRIDGE, 40MM: DUMMY, M922, M922A1	4.42	0.77	Gold	Gold	Black	B472	0101	a,b,c,
CARTRIDGE, 40-MM: CANISTER, M1001	4.42	0.75	OD	OD	White w/white diamonds on brown band	BA11	0101 0102 0103	a, c a b, d, f
CARTRIDGE, 40-MM: Low Cost Training, XM1023	4.42	0.77	Blue	Blue	White	TBD	0101 0102 0103	b, c b b, d, f

See footnote at end of this table.

Table 2-3. Army-Authorized Ammunition for Grenade Launchers (40-MM Only) - Continued

Nomenclature and caliber	Length[1] (in.)	Weight[1] (lb)	Color Identification			DODIC	Maintenance functions (Ref to appendix B)	
			Projectile body	Ogive	Markings		Group No.	Functional group
CARTRIDGE, 40MM: Dummy, M922A1	4.42	0.77	Gold	Gold	Black	B472	0101	a, b,c d, e, f
CARTRIDGE, 40MM: Practice, M382	3.08	0.50	OD	Gray	Yellow	B577	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40-MM: Practice, M385, M385A1	4.42	0.75	Blue	Integral Blue	Black	B576 (M16 link) B480 (M16A1 link)	{0101 {0102 {0103	a,c b b,d,f
CARTRIDGE, 40MM: Practice, M407A1	3.08	0.50	Green or Blue Gold	Gray Blue	Yellow White	B577	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40MM: Practice, M781	4.05	0.45	Blue	Blue	White	B519	0101 0102 0103	b,c b b,d,f
CARTRIDGE, 40MM: Practice, M918	4.34	0.76	Blue	Blue	Black w/ brown band	B584	0101 0102 0103	b,c b b,d,f
CARTRIDGE, 40MM: Smoke, M675	8.81	0.75	Green	Red “R”	Black	B538	0101 0102 0103 0104	b,c b b,d,f b
CARTRIDGE, 40MM: Tactical, CS, M651	4.57	0.63	Gray		Red with red band	B567	0101 0102 0103 0104	b,c b b,d,f b

See footnotes at end of this table.

Table 2-3. Army-Authorized Ammunition for Grenade Launchers (40-MM Only) - Continued

Nomenclature and caliber	Length[1] (in.)	Weight[1] (lb)	Color Identification			DODIC	Maintenance functions (Ref to appendix B)	
			Projectile body	Ogive	Markings		Group No.	Functional group
CARTRIDGE, 40MM: White Star Cluster, M585	5.27	0.23	White	White w/ five raised dots & "W"	Black	B536	0101 102 103	b,c b b, d, f
CARTRIDGE, 40MM: White Star Parachute, M583A1, M583	5.27	0.23	White	White with raised "W"	Black	B535	0101 0102 0103	b,c b b,d,f
CARTRIDGE, 40-MM: Green Star Parachute, M661	5.272	0.49	White	Green "G"	Black	B504	0101 0102 0103	b,c b b,d,f
CARTRIDGE, 40MM: Red Star Parachute, M662	5.272	0.49	White	Red	Yellow White	B505	0101 0102 0103	b,c b b,d,f
CARTRIDGE, 40MM: Red Smoke Ground Marker, M713	3.91	0.49	Light Green	Red	Black	B506	0101 0102 0103 0104	b,c b b,d,f d
CARTRIDGE, 40MM: Green Smoke Ground Marker, M715	3.91	0.49	Light Green	Green	Black	B503	0101 0102 0103 0104	b,c b b,d,f d
CARTRIDGE, 40MM: Yellow Smoke Ground Marker, M716	3.91	0.49	Light Green	Yellow	Black	B509	0101 0102 0103 0104	b,c b b,d,f d
CARTRIDGE, 40MM: Non-Lethal, M1006	3.95	0.15	Black	Green	White	BA06	0101 0102 0103	b,c b b,d,f
CARTRIDGE, 40MM: Crowd Dispersal, M1029	4.8	0.47	Silver/ green	White	Green	BA13	0101 0102 0103	b,c b b,d,f

[1]Values are nominal.

SECTION III. FIXED AMMUNITION FOR 152-MM GUN-LAUNCHERS

2-5. Description

Conventional ammunition for 152-mm gunlaunchers is issued in the form of fixed, complete rounds (fig. 2-2). Like other fixed ammunition, each round consists of a cartridge case (containing a propelling charge and primer) attached to a fuzed or unfuzed projectile. It is the nonmetallic cartridge case which distinguishes this ammunition from other conventional rounds.

2-6. Data

All Army authorized rounds of 152-mm ammunition are listed in table 2-4. Group numbers listed in this table reflect authorized maintenance functions indicated in appendix B, section II for 02 GROUP, FIXED AMMUNITION (152-MM ONLY).

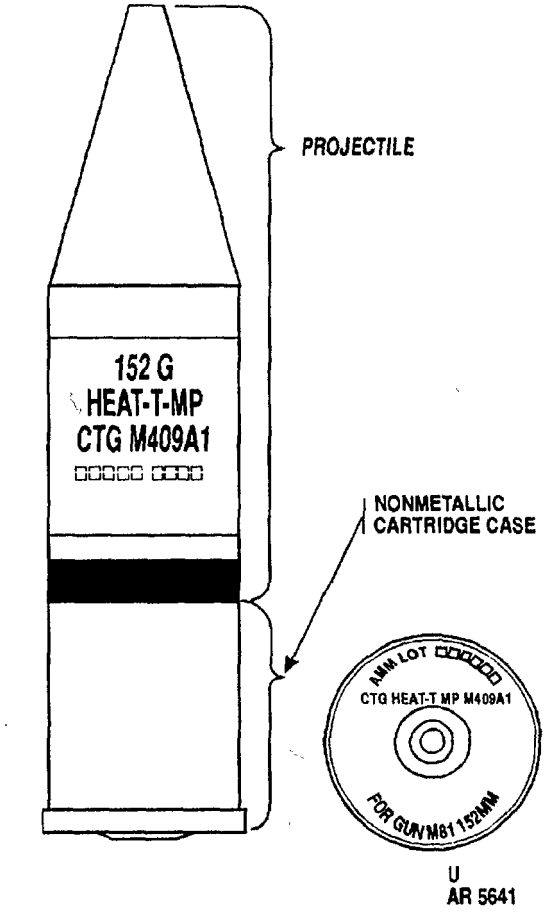


Figure 2-2. Typical round of 152-mm ammunition.

Table 2-4. Army-Authorized Ammunition for Gun-Launchers

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B GROUP NO.	MAINTENANCE FUNCTIONS (REF TO APP B FUNC-TIONAL GROUP
CARTRIDGE, 152-MM: CANISTER M625A1 and M625.	19.2	48.5	OD w/white markings, white diamonds & yellow band.	D390	0201 0202 0203	a, b a a, b, c
CARTRIDGE, 152-MM: HEAT-T, MP, M409A1 (XM-409E6) and M409 (XM409E5).	26.9	49.8	Black w/yellow markings.	D381	0201 0202	a, b a, b
			Black w/white markings and yellow band (M409A1 only).		0203 0204	a, b, c b
CARTRIDGE, 152-MM: HE-T, M657 (XM657E2).	24.6	51.5	OD w/yellow markings.	D592	0201 0202 0203 0204	a, b a, b, c a, b, c a
CARTRIDGE, 152-MM: TP-T, M411 (XM411E3).	26.7	48.8	Blue w/white markings and yellow band.	D380	0201 0202 0203 0204	a, b a, b a, b, c c
M411A1 (XM411E4).	26.7	49.8	Blue w/white markings.	D383	0201 0202 0203	a, b a, b a, b, c
M411A2 (XM411E5).	26.9	49.8	Blue w/white markings.	D383	0201 0202 0203	a, b a, b a, b, c
M411A3 (XM411E7).	26.9	49.8	Blue w/white markings.	D383	0201 0202 0203	a, b a, b a, b, c
DUMMY CARTRIDGE, 152-MM: M596.	26.9	49.8	Blue w/white markings.	D500	0201	a, b

[1] Values are nominal.

SECTION IV. SEMIFIXED AMMUNITION

2-7. Description

Semifixed ammunition, ammunition with an adjustable propelling charge, is designed for use in howitzers and mortars. In semifixed howitzer ammunition (fig. 2-3), the cartridge case is loose-fitted over the base of the fuzed projectile.

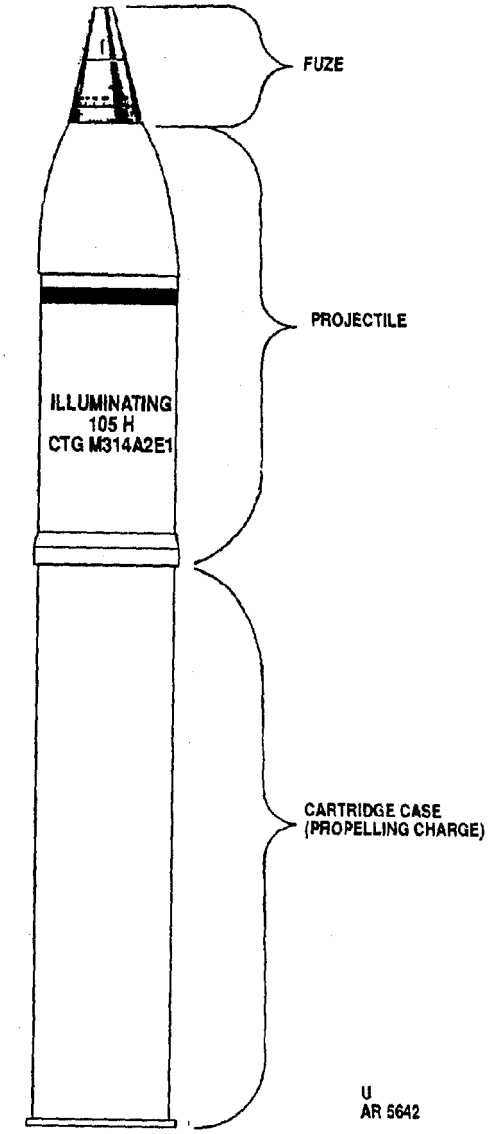


Figure 2-3. Typical round of semifixed ammunition for howitzers.

The propelling charge is bagged inside a primed cartridge case. Some 105mm howitzers and 4.2-inch mortar cartridges are issued unfuzed. A metal, screw-in nose plug and a cardboard spacer or a press-in plastic nose plug (fig. 2-4) protect the fuze well and its threads and immobilize the supplementary charge during shipping and storage. Semifixed mortar rounds which have a different configuration are discussed in section V

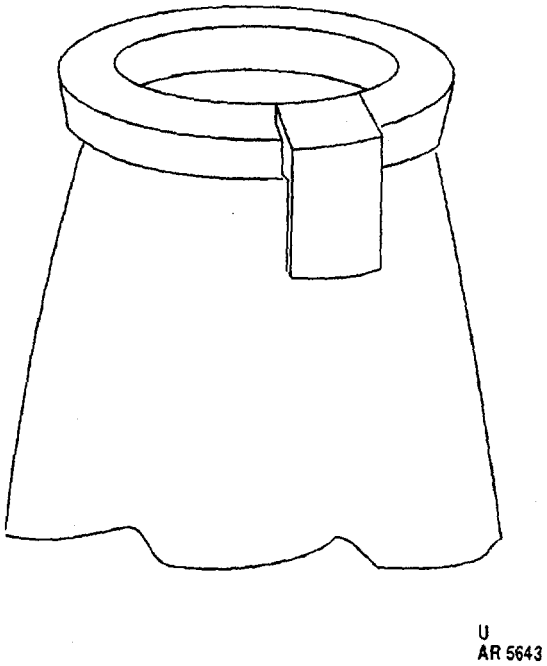


Figure 2-4. Plastic nose plug.

2-8. Data

All Army authorized rounds of semifixed ammunition for howitzers are listed in table 2-5. Group numbers listed in this table reflect authorized maintenance functions indicated in appendix B, section II for 03 GROUP, SEMIFIXED AMMUNITION (EXCEPT MORTAR).

Table 2-5. Army Authorized Ammunition for Howitzers (105-MM Only)

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
CARTRIDGE, 105-MM: Gas, Persistent, H, HD, M60.	31.07	42.92	Gray w/green markings and two green bands.	C442	No main-tenance author-ized be-low depot level.	N/A
CARTRIDGE, 105-MM: Gas, Nonpersistent, GB, M360.	31.18	43.86	Gray w/green markings and 2 green bands or gray w/green markings and 3 green bands.	C441	No main-tenance author-ized be-low depot level.	N/A
CARTRIDGE, 105-MM: APE-RST, XM546.	34.15	38.25	OD w/white markings, white markings and yellow band.	C513	0301 0302 0303 0304	a, b a, c, i l, m a, b, d b
CARTRIDGE, 105-MM: HE, M1.	31.07	42.92	OD w/yellow markings.	C445 w/o Fuze) C444 (w/PD Fuze) C443 (w/ MTSQ Fuze)	0301 0302 0303 0304	a, b a, b, d o a, b, d b, d
CARTRIDGE, 105MM: HE, M760 (w/M200 Propelling Charge).	28.60	39.92	OD w/yellow markings.	w/o fuze	0301 0302	a, b a, b, d
CARTRIDGE, 105-MM: HE, M413.	31.04	42.00	OD w/yellow markings.	C469	0301 0302 0303 0304	a, b a, f, i, k a, b, d a
CARTRIDGE, 105-MM: HE, M444.	31.04	42.00	OD w/yellow markings or OD w/yellow mark-ings and yellow diamonds.	C462	0301 0302 0303 0304	a, b a, f, i, k a, b, d a

See footnotes at end of this table.

Table 2-5. Army Authorized Ammunition for Howitzers (105-MM Only) -- Continued

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
CARTRIDGE, 105-MM: HEP-T, M327.	29.08	33.45	OD w/yellow markings.	C448	0301 0302 0303 0304	a, b a, c a, c, d c, e
CARTRIDGE, 105-MM: HERA, M548.	32.70	38.50	OD w/yellow markings.	C463	0301 0302 0303 0304	a, b a,b,d,o,p,q a, b, d a, d
CARTRIDGE, 105-MM: Il-luminating, M314 Series.'	32.17	46.43	White w/black markings.	C449	0301 0302 0303 0304	a, b a, e, h, j, k a, b, d b, e
CARTRIDGE, 105-MM: Leaflet, BE, M84, M84B1.'	30.49	39.7	Aluminum w/ black markings.	C450	0301 0302 0303 0304	a, b a, g, k a, b, d b, e
CARTRIDGE, 105-MM: Smoke, WI, M60 Series.'	31.07	42.92	Gray w/yellow markings or lt green w/lt red markings and yellow band.	C454 C447 (w/o Fuze)	0301 0302 0303 0304	a, b a, d, n a, b, d a, e, f
. CARTRIDGE, 105-MM: Smoke, HC and Colored, BE, M84, M84B1 and Smoke, HC, M84A1.	30.49	41.96	Lt green w/black markings and yellow band.	C451 (green) C452 (HC) C453 (red) C455 (Yellow)	0301 0302 0303 0304	a, b a, e, h k a, b, d b, e
CARTRIDGE, 105-MM: Tactical, CS, XM629.	32.17	42.00	Gray w/red markings and red band.	C468	0301 0302 0303 0304	a, b a, e, h, k a, b, d b, e
CARTRIDGE, 105-MM: TP-T, M67.	31.75	37.06	Black w/white markings or blue w/white markings.	C457	0301 0302 0303	a, b a, c a, c, d

See footnotes at end of this table.

Table 2-5. Army-Authorized Ammunition for Howitzers (105mm Only) - Continued.

Nomenclature and Caliber	Length[2] (in.)	Weight[2] (lb)	Color Identification	DODIC	Maintenance Functions (Ref to Appendix B)	
					Group No.	Functional Group
CARTRIDGE, 105MM BLANK: M395	6.02	6.2	Brass w/black markings or steel w/brown markings	C440	No maintenance authorized below depot level	N/A
DUMMY CARTRIDGE, 105MM: M14	31.07	42.06	Unpainted brass	C458	0301 0302 0303 0304	a, b a a, c a
CARTRIDGE, 105MM: HERA, M913	33.10	38.5	Olive drab w/yellow diamonds	C546	0301 0302	a, b a, b, d, o
CARTRIDGE, 105MM: DPICM, M915	36.6	43.7	Olive drab w/yellow diamonds	CA12	0301 0302 0303 0304	a,b a,f,i,k a,d a
CARTRIDGE, 105MM: DPICM, M916	36.6	41.6	Olive drab w/yellow diamonds	TBD	0301 0302 0303 0304	a,b a,f,i,k a,b,d a
CARTRIDGE, 105MM: HERA, M927	33.10	37.1	Olive drab w/yellow diamonds	C544	0301 0302	a,b a,b,d,o

[1]Length and weight reflect the latest production model.
[2]Values are nominal.

SECTION V. SEMIFIXED AMMUNITION FOR MORTARS

2-9. Description

Mortar ammunition (fig. 2-5) is considered semifixed because the propelling charge is adjustable. On 60mm, 81mm, and 120mm rounds, bags of granular or horseshoe-shaped propellant are attached to the fins or boom. On 4.2- inch rounds, sheet-type propellant or a combination of sheet propellant and doughnut shaped propellant increments are fitted around the ignition cartridge housing. Cartridges, 81mm and 4.2-inch, are issued with and without fuzes.

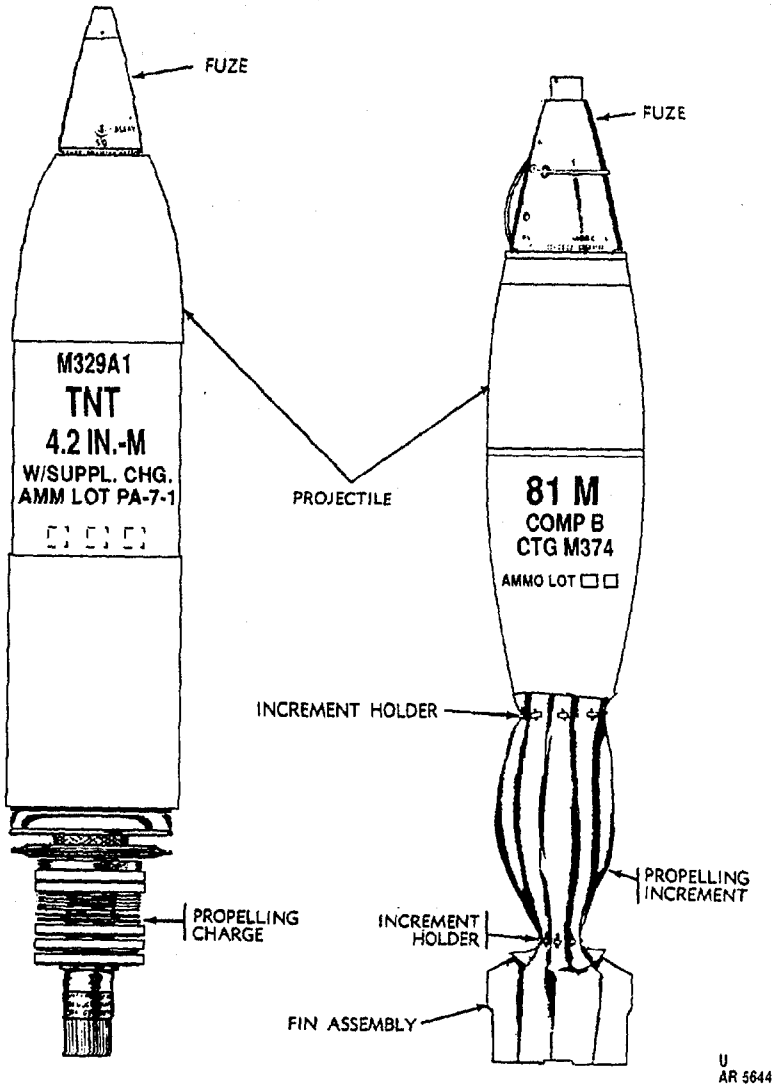


Figure 2-5. Typical rounds of mortar ammunition.

2-10. Data

All Army authorized rounds of mortar ammunition are listed in table 2-6. Group numbers listed in this table reflect authorized maintenance functions indicated in appendix B, section II for 04 GROUP, SEMIFIXED AMMUNITION (MORTAR ONLY).

Table 2-6. Army Authorized Ammunition for Mortars (60-MM through 120-MM)

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
60-MM						
CARTRIDGE, 60-MM: HE, M49A4.	11.61	3.15	OD w/yellow markings.	B632	0401 0402 0403 0404	a, b a, j a, c, d b
CARTRIDGE, 60-MM: HE, M49A2, M49A3.	9.61	3.05	OD w/yellow markings.	B632	0401 0402 0403 0404	a, b a, j a, c, d b
CARTRIDGE, 60-MM: HE, M720.	14.85	3.75	OD w/yellow markings.	B642	0401 0402 0403 0404	a, b a, k a, c, d b
CARTRIDGE, 60-MM: Il-luminating, M83 Series.l	14.28	4.15	Gray w/white markings and white band or white w/black markings.	B627	0401 0402 0403 0404	a, b a, f, g, i, j a, c, d b, e
CARTRIDGE, 60-MM: Smoke M302, M302A1 and M302A2.1	13.07	4.10	Gray w/yellow markings and yellow band or lt green w/red markings and yellow band.	B630	0401 0402 0403 0404	a, b a, e, j a, c, d b
CARTRIDGE, 60-MM: TP, M50A3.	11.61	3.15	Blue w/white markings and brown band.	B634	0401 0402 0403 0404	a, b a, j a, c, d b, c
CARTRIDGE, 60-MM: Il-luminating, M721	16.58	3.76	White w/black markings.	B649	0401 0402 0403 0404	a, b a, f, g, k a, c b
CARTRIDGE, 60-MM: Smoke (WP), M722	14.84	3.7	Light green w/ red markings and one yellow band.	B646	0401 0402 0403 0404	a, b a, e, k a, c b

See footnotes at end of this table.

Table 2-6. Army Authorized Ammunition for Mortars (60-MM through 120-MM)--Continued

NOMENCLATURE AND CALIBER	$LENGTH_2$ (IN.)	$WEIGHT_2$ (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
PROJECTILE, 60-MM: Training M69.	7.72	4.43	Black w/white markings or blue w/white markings.	B629	0401 0402 0403	a, b a, l b, e
60-MM MORTAR TRAINING DEVICE: 60-mm Sabot (Inert) M3.*	15.618	6.25	Aluminum	B611	0401 0402	a, b a
81-MM						
CARTRIDGE, 81-MM, HE, M43A1 and M43A1B1.1	13.32	7.15	OD w/yellow markings.	C225	0401 0402 0403 0404	a, b a, j a, c, d b
CARTRIDGE, 81-MM: HE, M362A1 and M362.1	20.80	9.42 (w/fuze) 8.62 (w/o fuze)	OD w/yellow markings. C223	C222 (w/fuze) (w/o fuze)	0401 0402 0403 0404	a, b a, c, d, k a, c, d a
CARTRIDGE, 81-MM: HE, M374 Series.	20.80	9.34 (w/fuze) 8.54 (w/o fuze)	OD w/yellow markings.	C256 (w/fuze) C236 (w/o fuze)	0401 0402 0403 0404	a, b a, c, d, k a, c, d a
CARTRIDGE, 81-MM: HE, M821 and M821E1.	20.1	8.96	OD w/yellow markings.	C868 0402	0401 0403 0404	a, b a, c, d, k a, c, d a
CARTRIDGE, 81-MM: HE, M889 and M889E1.	20.0	8.96	OD w/yellow markings.	C869	0401 0402 0403 0404	a, b a, c, d, k a, c, d a
CARTRIDGE, 81-MM: Illuminating, M302 Series.l	22.48	10.1	Gray w/white markings and white band or white w/black markings.	C226	0401 0402 0403 0404	a, b a, f, g, i, k a, c, d b

See footnotes at end of this table.

Table 2-6. Army Authorized Ammunition for Mortars (60-MM through 120-MM)-- Continued

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
CARTRIDGE, 81-MM: Illuminating, M853A1.	25.43	8.8	White w/black markings.	C871	0401 0402 0403 0404	a, b a, f, g, h, i, a, c, d b
CARTRIDGE, 81-MM: Smoke, WP, M57A1 and M57.1	22.91	12.46	Gray w/yellow markings and yellow band or lt green w/lt red markings and yellow band.	C230	0401 0402 0403 0404	a, b a, e, k a, c, d a
CARTRIDGE, 81-MM: Smoke, WI, M375 Series.1	20.80	9.34	Lt green w/lt red markings and yellow band.	C276	0401 0402 0403 0404	a, b a, e, k a, c, d a
CARTRIDGE, 81-MM: Smoke, RP, M819.	25.43	10.2	Green w/black markings and brown band.	C870	0401 0402 0403 0404	a, b a, e, k a, c, d a
CARTRIDGE, 81-MM: TP, M43A1.	13.32	7.15	Blue w/white markings.	C227	0401 0402 0403 0404	a, b a, c, j a, c, d b
PROJECTILE, 81-MM: Training, M68	11.08	9.8	Black w/white markings.	C228	0401 0402 0403	a, b a, l b, e
81-MM MORTAR TRAINING DEVICE 81-MM SABOT (INERT) M1	15.618	8.5	Aluminum	C004	0401 0402	a, b a
AND 22-MM SUBCALIBER PRACTICE CARTRIDGES M744 (Charge 1)	9.697	1.097	Blue w/white markings.	A680	0401 0402 0403	a, b a c, e
CARTRIDGES, M745 (Charge 2)	9.697	1.097	Blue w/white markings.	A681	0401 0402 0403	a, b a c, e

See footnotes at end of this table.

Table 2-6. Army-Authorized Ammunition for Mortars (60-MM through 120-MM) -- Continued

					Maintenance Functions	
Nomenclature and Caliber	Length[2] (In.)	Weight[2] (Lb)	Color Identification	DODIC	Group No.	Functional Group
CARTRIDGES M746 (Charge 3)	9.697	1.097	Blue w/white markings.	A682	0401 0402 0403	a, b a c, e
CARTRIDGES M747 (Charge 4)	9.69	1.097	Blue w/white markings.	A683	0401 0402 0403	a, b a c, e
4.2 Inch CARTRIDGE, 4.2-INCH: Gas Persistent, HD, HT, M2A1, and M2[1]	21.01	24.67	Gray w/green markings and 2 green bands.	C703	No maintenance authorized below depot level.	N/A
CARTRIDGE, 4.2-INCH: HE, M3 Series.	23.05	26.95	OD w/yellow markings.	C704 (w/fuze)	0401 0402 0403 0404	a, b a, b, c, m a, c, d, f b
CARTRIDGE, 4.2-INCH: HE, M3 Series. [1]	26.23	27/07	OD w/yellow markings.	C704 (w/fuze) (C705 w/o fuze)	0401 0402 0403 0404	a, b a, b, c, d, m a, c, d, f b
CARTRIDGE, 4.2-INCH: Illuminating, M335 Series	25.70	26.70	White w/black markings.	C706	0401 0402 0403 0404	a, b a, f, g, i, m a, c, d, f b
CARTRIDGE, 4.2-INCH: Smoke, WP, M2 Series	21.01	24.91	Gray w/yellow markings and yellow band or lt green w/red markings and yellow band.	C708	0401 0402 0403 0404	a, b a, m a, c, d, f b

[1] Length and weight reflect the latest production model.

[2] Values are nominal.

Table 2-6. Army-Authorized Ammunition for Mortars (60-MM through 120-MM) -- Continued

					Maintenance Functions (ref to appendix B)	
Nomenclature and Caliber	Length[2] (In.)	Weight[2] (Lb)	Color Identification	DODIC	Group No.	Functional Group
CARTRIDGE, 4.2-INCH: Smoke, WP, M328S series.	25.77	28.66	Gray w/yellow markings and yellow band or lt green w/lt red markings and yellow band.	C708	0401 0402 0403 0404	a, b a, e, m, n a, c, d, f b
CARTRIDGE, 4.2-INCH: Tactical CS, M630.	25.70	27.07	Gray w/red markings.	C710	0401 0402 0403 0404	a, b a, h, i, m a, c, d, f b
CARTRIDGE, 120MM: HE, M57	26.18	28.65	OD w/white markings.	C788	0401 0402 0403 0404	a, b a, k a, c, d b
CARTRIDGE, 120MM: Smoke (WP), M68.	26.18	28.65	Light green w/black mark-ings.	C789	0401 0402 0403 0404	a, b a, e, k a, c, d b
CARTRIDGE, 120MM: Illu-mination, M91.	26.18	27.0	White w/black markings.	C790	0401 0402 0403 0404	a, b a, e, f, g, k a, c, d b
CARTRIDGE, 120MM: HE, M933, M934	27.99	31.2	OD w/yellow markings.	C623 C379	0401 0402 0403 0404	a, b a, k a, c, d b
CARTRIDGE, 120MM: Smoke (WP), XM929, M929	27.85	31.2	Light green w/yellow band and light red markings.	C624 CA03	0401 0402 0403 0404	a, b a, e, k a, c, d b
CARTRIDGE, 120MM: Illu-minating, XM930.	27.70	31.2	White w/black markings.	C625	0401 0402 0403 0404	a, b a, e, f, g, k a, c, d b
CARTRIDGE, 120MM, FullRange Practice, M931.	27.99	31.2	Blue w/white markings and brown band.	CA09	0401 0402 0403 0404	a, b a, k a, c, d b

[1] Length and weight reflect the latest production model.

[2] Values are nominal.

[3] Information for 22-mm subcaliber cartridge is listed under 81-mm Sabot M1.

SECTION VI. SEPARATE-LOADING AMMUNITION

2-11. Description

Separate-loading ammunition (fig 2-6) is designed for use in large guns and howitzers. The major components of a complete round (fuze, projectile, propelling charge, and primer) are issued unassembled. Such miscellaneous components as propelling charge flash reducers and bore-wear reducing additive jackets are also issued separately. Projectiles are issued with eyebolt-lifting plugs threaded in the fuze wells. The M712 Copperhead round (fig 2-7) contains an integral fuze within its warhead section and does not use an eyebolt-lifting plug.

2-12. Data

All Army-authorized rounds and propelling charges of separate-loading ammunition for guns and howitzers are listed in tables 2-7 and 2-8. Separately issued primers and miscellaneous components are listed in table 2-9. Fuzes are listed in tables 2-10 through 2-12. Group numbers listed in the above tables reflect authorized maintenance functions indicated in appendix B, section II for 05 GROUP, SEPARATE-LOADING AMMUNITION.

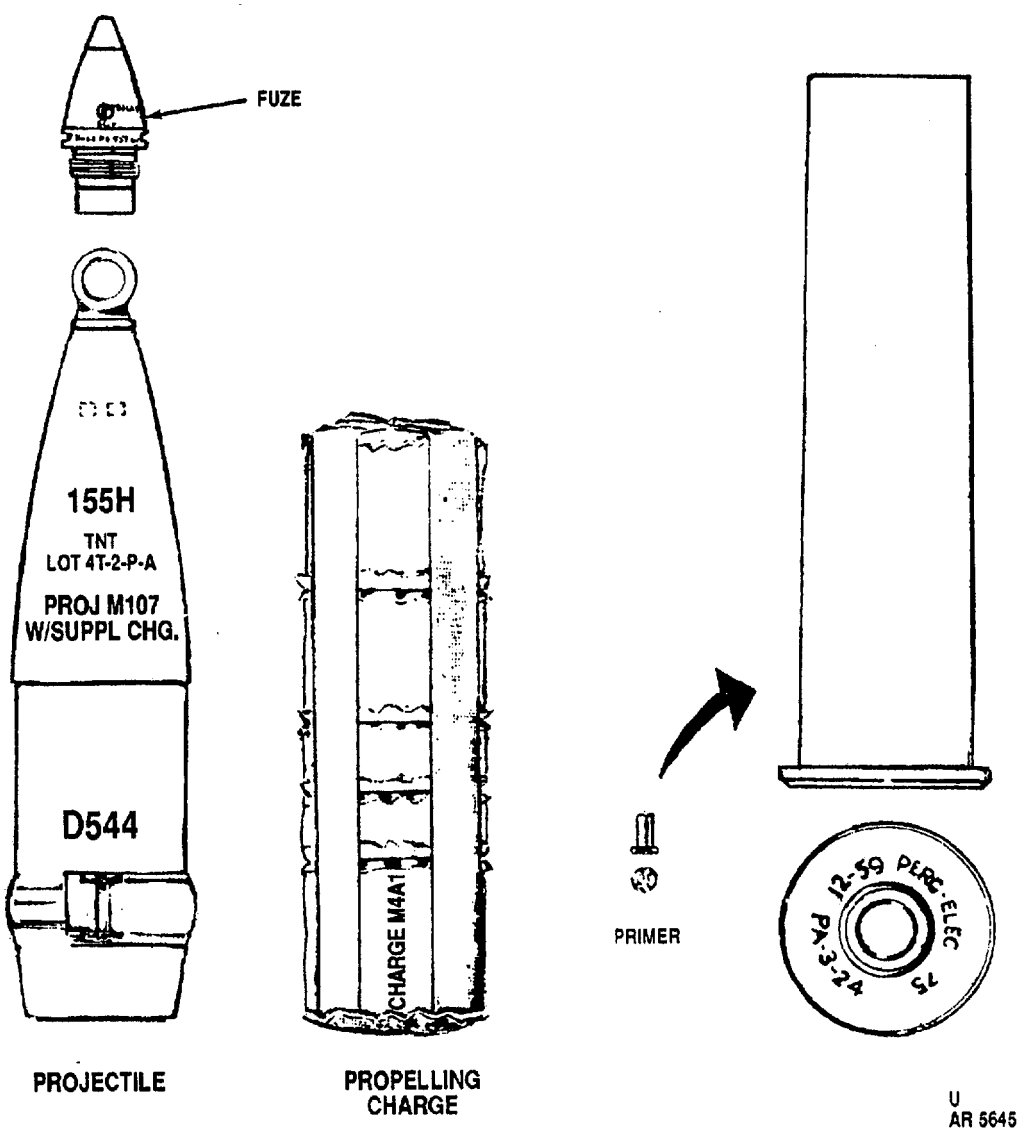


Figure 2-6. Typical round of separate-loading ammunition.

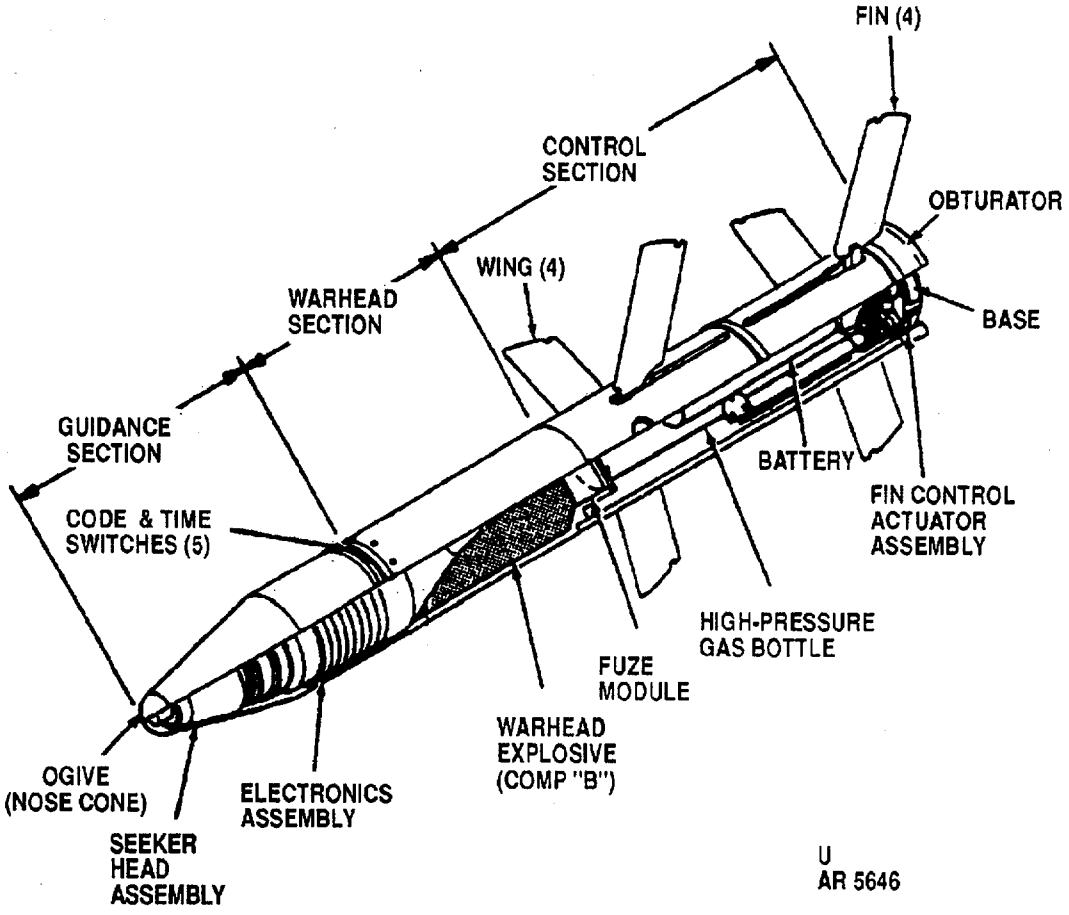


Figure 2-7. M712 Projectile (Copperhead) arrangement of components.

Table 2-7. Army Authorized Projectiles and Propelling charges for Guns (175MM Only)

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
PROJECTILES						
PROJECTILE, 175MM: HE, M437A2 (M437E2) and M437A1 (M437E1).	37.89	147.30 markings.	OD w/yellow	D572 D591 (w/o Supple-mental charge)	0501 0501	a, c, d, k, l, m, n, o a, d, l, m, n, o
PROJECTILE, 175MM: DUMMY, M458	37.23	148.7	Bronze w/black markings.	D709	0501	a, c, d, h, l, m, n, o
PROPELLING CHARGES						
CHARGE, PROPELLING 175MM: M86 Series.'	49.50	58.00	White w/black markings.	D361	0502	a, c, d, e, f, g
CHARGE, PROPELLING, 175MM: M124, DUMMY PROPELLING CHARGE, 175MM: M98.	16.0	17.5	Green w/black markings.	D536	0502	a, d, e
DUMMY PROPELLING CHARGE, 175MM: 175MM: M98.	49.5	56.7	White w/black markings.	D535	0502	a, e

1Length and weight reflect the latest production model.
2Values are nominal.

Table 2-8. Army Authorized Projectiles and Propelling Charges for Howitzers (155MM and 8-Inch)

NOMENCLATURE AND CALIBER	LENGTH$_2$ (IN.)	WEIGHT$_2$ (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
155MM PROJECTILES PROJECTILE, 155MM: Gas, Nonpersistent, GB VX, M121A1 and M121.	27.59	99.70	Gray w/green markings and 2 green bands or gray w/green markings, 3 green bands and 1 yellow band.	D542 (GB) ized below level.	No main-tenance author-	N/A
PROJECTILE, 155MM: Gas, Persistent, H, HD, M110.	26.78	98.5	Gray w/green markings and 2 green bands.	D543 tenance author-ized below depot level.	No main-	N/A
PROJECTILE, 155MM: HE, M107.	27.57	96.25	OD w/yellow markings.	D544(w/ supple-mentary charge) D571 (w/o supple-mentary charge)	0501	a, c, d, k, l, m, n
PROJECTILE, 155MM: HE, M449, M449E1, and M449A1 (M449E2).	26.9	95.00	OD w/yellow markings or w/yellow mark-ings, yellow diamonds.	D571 OD D561 (M449, M449E1) D562 M449E2. M449A1)	0501	a, e, g, h, k, l, n
PROJECTILE, 155MM: HE, M483.	32.2	102.7	OD w/yellow markings and diamonds.	D563	0501	a, e, g, h, k, l, n, o
PROJECTILE, 155MM: HE, M483A1.	31.6	102.6	OD w/yellow markings and diamonds.	D563	0501	a, e, g, h, k, l, n, o
PROJECTILE, 155MM: HE M692.	31.6	102.5	OD w/yellow markings and diamonds.	D501	0501	a, e, g, h, i, n, o

See footnotes at end of this table.

Table 2-8. Army-Authorized Projectiles and Propelling Charges for Howitzers (155MM and 8-Inch)--Continued

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
PROJECTILE, 155MM: HE, M731.	31.6	102.5	OD w/yellow markings and triangles.	D502	0501	a, e, g, h, l, n, o
PROJECTILE, 155MM: HERA, M549A1.	34.39	95	OD w/yellow markings.	D579	0501	a, c, d, k, m, n, o, P, gg
PROJECTILE, 155MM: HERA, M549.	34.39	96	OD w/yellow markings.	D579	0501	a, c, d, k, l, m, n, o, p
PROJECTILE, 155MM: AT, M718 and M741 and (RAAM).	33.8	103	OD w/yellow markings and triangles.	N718/ D503 M741/ D509	0501	a, e, h, l, m, n, o
PROJECTILE, 155MM: Illuminating M485 Series.	23.79	94.00	Gray w/white markings and white band.	D505	0501	a, d, f, g, h, l, m, n, o
PROJECTILE, 155MM: Smoke, WE M110 Series.	26.93	99.00	Gray w/yellow markings and yellow band or lt green w/lt red markings and yellow band.	D550	0501	a, i, j, l, m, n, o
PROJECTILE, 155MM: Smoke, colored, BE, M116 Series.	27.57	86.23	Gray w/yellow markings and yellow or it green w/black markings.	D547 (green) D459 (red) D551 (yellow) D548	0501	a, c, d, f, i, l, m
PROJECTILE, 155MM: Smoke, HC, BE M116A1.	26.72	94.7	Green w/black markings.	D506	0501	a, c, d, f, i, l, m
PROJECTILE, 155MM: HEAT, M712.	54.0	138	Black w/yellow markings.	D510	0501	s
PROJECTILE, 155MM: training, M823	54.0	138	Bronze w/black markings.	D511	0501	t, u, v, w, x, y, z, aa
PROJECTILE, 155MM: practice, M804.	26.85	91.5	Blue w/white markings and brown band.	D513	0501	a, d, l, m, n, r

See footnotes at end of this table.

Table 2-8. Army-Authorized Projectiles and Propelling Charges for Howitzers (155MM and 8-Inch)--Continued

NOMENCLATURE AND CALIBER	LENGTH[2] (IN.)	WEIGHT[2] (LB)	COLOR IDENTIFICATION	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B)	
					GROUP NO.	FUNC-TIONAL GROUP
PROJECTILE, 155MM: practice, M804A1.	26.85	91.5	Blue w/white markings and yellow band.	D513	0501	a, d, l, m, n, r
DUMMY PROJECTILE, 155MM: M7.	27.56	95.00	Black w/red and brass.	D553	0501	a
PROJECTILE, 155MM: Smoke, WE, M825.	31.6	102.6	Lt green w/lt red markings and yellow band.	D528	0501	a, e, g, i, k, l, m, n, o
PROJECTILE, 155MM: Smoke, W, M825A1.	31.6	102.6	Lt green w/lt red markings and two bands; yellow (below weight zone mkg) and red above weight zone mkg).	D528	0501	a, e, g, i, k, l, m, n, o
PROJECTILE, 155MM: Extended Range, DP, M864.	31.6	102.6	OD w/yellow markings and diamonds.	D864	0501	a, e, h, k, l, n, o, ff
PROJECTILE, 155MM: GB2, M687.	31.6	93.0	Gray w/dark green markings and yellow band.	D594	0501	a, d, l, m, n, o, bb, cc
CHARGES PROPELLING 155MM						
CHARGE PROPELLING, 155MM: Green Bag, M3 Series.	16.00	17.46	Green w/black markings.	D540	0502	a, d, e
CHARGE PROPELLING, 155MM: White Bag, M3 Series.	21.00	27.1	White w/black markings.	D541	0502	a, b, d, e
CHARGE PROPELLING, 155MM: White Bag, M119.	26.00	21.0	White w/black markings.	D533	0502	a, d, e, f, g, h
CHARGE PROPELLING,: 155MM M119A1.	26.00	23.0	White w/black markings.	D533	0502	a, d, e, f, g, h

See footnotes at end of this table.

Table 2-8. Army-Authorized Projectiles and Propelling Charges for Howitzers (155MM and 8-Inch) - Continued

Nomenclature and caliber	Length[1] (in.)	Weight[1] (lb)	Color Identification	DODIC	Maintenance functions (Ref to appendix B)	
					Group No.	Functional group
CHARGE PROPELLING, 155MM: M119A2	28.50	23.5	Red w/black markings	D533	0502	a, e
CHARGE PROPELLING, 155MM: M203	30.25	30.0	Red w/black markings	D532	0502	a, b, d, e, f, g, h
CHARGE PROPELLING, 155MM: M203A1	30.25	31.0	Neutral w/black	D532	0502	a, d, e, j
DUMMY PROPELLING CHARGE, 155MM: M2	21.00	27.1	None	D539	0502	a, e
CHARGE PROPELLING, 155MM: M231 (MACS)	6.00	4.25	Green w/black band and markings	DA12	0502	a, e, g, j
CHARGE PROPELLING, 155MM: M232 (MACS)	6.14	5.85	Brown w/black markings	DA13	0502	a, e, g, j
8-INCH PROJECTILES						
PROJECTILE, 8-INCH: Gas, Persistent, VX, M426. Gas, Nonpersistent, GB, M426	34.39	200.89	Gray w/green markings and 2 or 3 green bands (w/o burster) or gray w/ green markings, 2 or 3 green bands and 1 yellow band (w/burster)	D695 (VX) D696 (GB)	No maintenance authorized below depot level	N/A
PROJECTILE, 8-INCH: HE, M106	34.46	201.0	OD w/yellow markings	D680	0501	a, c, d, k, l, m, n
PROJECTILE, 8-INCH: HE, M404	34.4	200.0	OD w/yellow markings, yellow diamonds or OD w/yellow markings	D684	0501	a, e, g, h, k, l, n
PROJECTILE, 8-INCH: HE, M509A1	42.4	207.7	OD w/yellow markings and diamonds	D651	0501	e, h, l, m
PROJECTILE, 8-INCH: HE, M650	43.95	200	OD w/yellow markings		0501	a, b, d, k, l, m, n, o, p, gg
DUMMY PROJECTILE, 8-INCH: M14	34.40	200.0	Black w/red band and brass	D679	0501	a
CHARGE PROPELLING, 8-INCH: Green Bag, M1	21.00	36.54	Green w/black markings	D676	0502	a, b, d, e

See footnotes at end of this table.

Table 2-8. Army-Authorized Projectiles and Propelling Charges for Howitzers (155MM and 8-Inch) - Continued

Nomenclature and caliber	Length[1] (in.)	Weight[1] (lb)	Color Identification	DODIC	Maintenance functions (Ref to appendix B)	
					Group No.	Functional group
CHARGE PROPELLING, 8-INCH: White Bag, M2	24.00	58.48	White w/black markings	D676	0502	a, b, d, e
CHARGE PROPELLING, 8-INCH: M188	31.00	42.50	White w/black markings	D661	0502	a, b, d, e, f, g, h
CHARGE PROPELLING, 8-INCH: M188A1	32.00	50.0	White w/black markings	D662	0502	a, d, e, f, g, h
CHARGE PROPELLING, 8-INCH: M4	24.00	58.48	None	D677	0502	a, e

[1]Length and weight reflect the latest publication model.
[2]Values are nominal.

Table 2-9. Miscellaneous Components for Separate-Loading Ammunition

Nomenclature	Authorized cannon (caliber and Model)	Weight (lb)	DODIC	Maintenance functions (Ref to appendix B)	
				Group No.	Functional group
ADDITIVE JACKET, BORE, WEAR REDUCING: M1	175mm gun M113, M113A1	1.6	D110	0502	c, e
PRIMER, ELECTRIC AND PERCUSSION, Mk15, Mods 1 & 2	115mm howitzers M45. 8-Inch howitzers M2A1E1, M47, 155mm guns M45, M126, M126A1, M185, M199, 175mm gun M113, M113A1	0.14	N535	0502	d, e
PRIMER, PERCUSSION: M82	8-Inch howitzers M2A2, M47, M201, M201A1	0.14	N523	0502	d, e
PRIMER PERCUSSION: Mk2A4	155mm howitzers M1, M1A1, M1A2	0.06	N525	0502	d, e
REDUCER, FLASH PROPELLING CHARGE M2(T2)	8-Inch howitzers M2, M2A1				
REDUCER, FLASH, PROPELLING CHARGE M3	155mm howitzers (all)	0.06	D552	0502	b, e
REDUCER FLASH, PROPELLING CHARGE: M5	8-Inch howitzers (all)	1.0	D581	0502	b, e
SPACER for CHARGE PROPELLING, M124	175mm gun M113, M113A1 175mm gun M113, M113A1	1.0 1.0	D493 N/A	0502 0502	b, e e, i

Section VII. FUZES

2-13. Description

a. Artillery fuzes encompass a variety of types: point detonating (PD), concrete piercing (PDCP), base detonating (BD), point initiating base detonating (PIBD), time (T), mechanical time (MT), mechanical time and superquick (MTSQ), electronic time (ET), proximity (PROX) (also called variable time (VT)) and multi-option (MO).

b Fuzes are usually assembled to fixed and semifixed rounds at the time of manufacture. BD and PIBD fuzes are integral components of the projectiles. PD, MT, MTSQ, PROX (VT) and ET fuzes are issued separately for use in semifixed and mortar ammunition to meet the prescribed tactical situation.

c Fuzes used with separate-loading ammunition are issued separately for assembly to the projectile prior to firing. These fuzes are PD, MT, MTSQ, PROX (VT), and ET fuzes as required to meet the prescribed tactical situation.

2-14. Data

a Only those fuzes which are issued separately and/or are authorized for installation at the organization level are included in the data tabulated below. BD and PIBD fuzes are not included.

b PD and PDCP fuzes are covered in table 2-10, T, ET, MT, MTSQ and MO fuzes in table 2-11, and proximity fuzes in table 2-12.

Table 2-10. Point Detonating and Point Detonating, Concrete Piercing Fuze Data

Nomenclature	Length (in.)	Weight (lb)	DODIC	Maintenance functions (Ref to appendix B)	
				Group No.	Functional group
FUZE, PD: M524 Series	6.01	1.27	N308	0503	a, b
FUZE, PD: M525 Series	3.53	0.44	N312	0503	a, b
FUZE, PD: M527	2.95	0.45	N313	0503	a, b
FUZE, PD: M557	5.93	2.15	N335	0503	a, b
FUZE, PD: M567	5.97	1.3	N334	0503	a, b
FUZE, PD: M572	5.93	2.30	N311	0503	a, b
FUZE, PD: Concrete Piercing, M78A1	3.48	2.09	N331	0503	a, b
FUZE, PD: M739 Series	5.97	1.54	N430	0503	a, b
FUZE, PD: MK399 Mod 1 (MOUT)	6.0	2.64	N659	0503	a, b

Table 2-11. Mechanical Time, Mechanical Time and Superquick and Time Fuze Data

Nomenclature	Length (in.)	Weight (lb)	DODIC	Maintenance functions (Ref to appendix B)	
				Group No.	Functional group
FUZE, MT: M565	5.27	2.05	N248	0503	a, b
FUZE, MTSQ: M501, M501A1	4.55	1.41	N276	0503	a, b
FUZE, MTSQ: M548	5.27	2.05	N282	0503	a, b
FUZE, MTSQ: M564	5.82	2.10	N278	0503	a, b
FUZE, MTSQ: M577 Series	5.28	1.45	N285	0503	a, b
FUZE, T: M84 Series	3.85	1.82	N384	0503	a, b
FUZE, MTSQ: M520 Series	5.95	2.06	N280	0503	a, b
FUZE, ELECTRONIC TIME AND SUPERQUICK: M724	5.27	1.69	N601	0503	a, b
FUZE, ET: M762/M762A1	5.24	1.10	N289/ NA17	0503	a, b
FUZE, ET: M767/M767A1	5.97	1.13	N290/ NA15	0503	a, b
FUZE, MULTI-OPTION ARTILLERY: M782	5.97	1.94	NA09	0503	a, b

Table 2-12. Proximity Fuze Data

NOMENCLATURE AND CALIBER	$LENGTH_2$ (IN.)	$WEIGHT_2$ (LB)	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B) GROUP NO.	FUNC-TIONAL GROUP
FUZE, PROXIMITY: M513 Series	8.60	2.96	N412	0503	a, b
FUZE, PROXIMITY: M514 Series	8.60	2.19	N462	0503	a, b
FUZE, PROXIMITY: M532	5.98	1.28	N402	0503	a, b
FUZE, PROXIMITY: M728	8.60	2.19	N462	0503	a, b
FUZE, PROXIMITY: M732	5.97	1.75	N464	0503	a, b
FUZE, PROXIMITY: M732A2	5.97	1.24	N464	0503	a, b

Table 2-13. Inert and Dummy Fuzes

NOMENCLATURE AND CALIBER	$LENGTH_2$ (IN.)	$WEIGHT_2$ (LB)	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B) GROUP NO.	FUNC-TIONAL GROUP
Fuze, PD Inert, M151 Series	5.93	2.15	N507	0503	a, b
Fuze, PD Dummy, M59 (Simulates M48, M51, M557, M572 Series)	4.55	1.4	N205	0503	a, b
Fuze, PD, Dummy, M69 (Simulates ME27)	2.375	0.225	N208	0204	a, b
Fuze, PD, Dummy, M73	5.71	2.15	N209	0503	a, b
Fuze, MT, Dummy, M44 Series	4.51	1.41	N207	0503	a, b
Fuzes, MTSQ Inert, M500	5.95	2.14	N505	0503	a, b
Fuze, PD, Practice, M524 Inert	5.96	1.27	M513	0503	a, b
Fuze, ET, Training, M744 Inert	5.968	1.81	N/A	0503	a, b

Table 2-14. Packaging Material for Copperhead

NOMENCLATURE	PROJ. USED WITH	COLOR IDENTIFICATION	WEIGHT (lb)	DODIC	MAINTENANCE FUNCTIONS (REF TO APP B) GROUP NO.	FUNC-TIONAL GROUP
METAL CONTAINER	M712	forest green w/yellow marking	67.5	N/A	0504	e through n, p, q
METAL CONTAINER	M823	forest green w/white markings and bronze patches	67.5	N/A	0504	a, d, e, g, h i, k
PALLET AND DUN-NAGE (holds 6 projectiles)	M712, M823	N/A	122	N/A	0504	o

CHAPTER 3
MAINTENANCE INSTRUCTIONS

SECTION I. SERVICE UPON RECEIPT OF MATERIEL

3-1. General

a. Upon receipt of ammunition, verify each packaged item against the requisition list. If marking on packaging conflicts with nomenclature on requisition, check with ammunition supply personnel to determine if an issue error has been made.

b. Unless packing boxes show evidence of moisture or damage to the extent that contents may be unusable, do not open until materiel is to be used.

c. Some 152mm cartridges TP-T, M411A3 and HEAT-T-MP, M409A1 are packed in PA 64 metal containers which are similar to separate loading propelling charge containers. Other 152mm cartridges will be packed in this manner in the future both in initial production and renovation. Follow special unpacking and repacking procedures in paragraphs 3-3 and 3-16

d. Copperhead projectiles M712 and M823 (155mm) are packed in reusable containers. Follow special unpacking and repacking procedures.

e. The 155mm GB2 M687 projectiles are packed horizontally in a pallet. In addition to the procedures in this manual, see TM 31320-242-10 for inspection criteria and maintenance instructions (i.e. upload/download).

3-2. Precautions

a. Avoid injury from sharp edges when cutting and handling metal strapping. The end of the band may fly up suddenly when tension is released.

b. Limit the quantity of ammunition and flammables at work site to the minimum necessary for efficient operation.

c. Follow standard precautions for care and handling of ammunition are applicable to artillery items.

d. In handling the APFSDS-T rounds, take care not to impact the windshield (protruding nose). A small dent or slight dislocation of the windshield can severely affect the accuracy of the subprojectile flight.

e. In view of d above and the tight, hardedged environment of tanks, keep the rounds, whenever practicable, in their fiber containers until they are put in the ready racks. Remove rounds from the tank while rounds are still inside the container.

f. If *any* APFSDS-T round is found with a hose clamp around the sabot, immediately remove the clamp (using a screwdriver to loosen it) and report the lot number of the round found with the clamp as you would a malfunction of the ammunition (in accordance with AR 75-1). Firing a round with a clamp around the sabot will result in gross inaccuracy and total ineffectiveness of the shot.

g. Handle electrically primed ammunition very carefully when out of its packaging in work areas. Operators handling such ammunition must wear conductive safety shoes and the work area must be equipped with conductive floors or mats. Refer to TM 9-1300-206 for complete precautions.

3-3. Unpacking Procedures

a. *Inspection.*

(1) Inspect markings on packaging for legibility of lot number. If illegible, open box, note lot number stenciled on inner pack or item, and restore illegible numbers.

NOTE

Manufacturer's identification and year of manufacture will be embossed on container. If the container has been reconditioned, the words "REHAB", month and year of reconditioning, and activity performing reconditioning will be stenciled on the container.

(2) Visually inspect each box/container for damage or indication that the contents may be damaged.

(3) Unpack only as far as necessary to determine the serviceability of the materiel. Do not open undamaged barrier bags or jungle wrapped containers or hermetically sealed container.

NOTE

If visual inspection in high humidity areas reveals that jungle wrap has been damaged to the extent black fiber container is visible, the ammunition will be declared unserviceable and returned to supply point; however, in other moderate less high humidity areas, ammunition may still be serviceable. Remove the jungle wrap, open the container, and inspect the cartridge. If there is no evidence of moisture, repack the cartridge in its container and give it priority of issue.

(4) If outer box/container is damaged beyond repair, transfer contents to a serviceable box/container and mark accordingly.

(5) If necessary, visually inspect each item according to procedures in paragraph 39.

(6) If barrier bags are damaged but ammunition is serviceable, repackage per paragraph 3-16 and give priority of issue.

(7) If jungle wrap is damaged to the extent of exposing the container (black), ammunition is unserviceable. Repackage in original outer pack, mark as unserviceable, and return to ammunition supply point.

(8) A plastic nose plug is fitted to some fixed and semifixed rounds which are normally issued unfuzed in sealed packages. Unlike the metal plug it replaces, the plastic nose plug does not require a cardboard spacer to immobilize the supplementary charge in the fuze well. The plastic plug does not unscrew like the metal plug. To remove--

(a) Hold projectile securely and pull tab up breaking its sides loose from the plug.

(b) Push the tab into the center of the plug.

(c) Squeeze the plug and withdraw it from the fuze well.

NOTE

Save some boxes and packing material for immediate reuse. Contact Direct Support Maintenance for disposition of remaining boxes.

(9) Inspect reusable Copperhead containers for defects per paragraph 3-8a(8).

CAUTION

DO NOT USE ROPE HANDLES ON COPPERHEAD CONTAINERS IF THEY SHOW SIGNS OF DAMAGE. IF ROPE HANDLES APPEAR TO BE UNSAFE, USE BAIL HANDLES ON LOWER CONTAINER HALF OR USE 3/4-INCH ROD THROUGH HOLES IN STIFFENING RIBS (CHANNELS) OR CONTAINER COVER.

b. *Pallets.*

WARNING

USE GLOVES OR A RAG TO HOLD STRAP NEAR THE END WHERE IT WILL SPRING LOOSE WHEN CUT.

(1) Cut straps with metal cutting shears.

(2) Remove boxes/containers/ammunition from pallet.

(3) Dispose of strapping and non-recoverable materials. Return serviceable pallets and components to ammunition supply.

c. Wirebound Boxes (fig. 3-1).

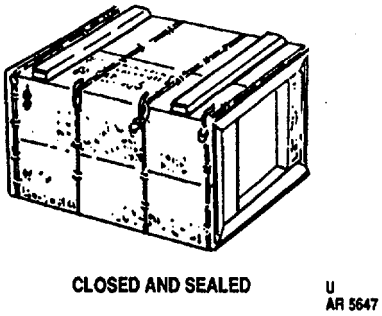


Figure 3-1. Typical wire bound box.

(1) Cut lead seal wire with pliers and remove.
(2) Bend wire loops up straight using a sallee closer (fig. 3-2), screwdriver, or pliers.
(3) Lift lid panel to open box.
(4) Remove top packing (if any) from box.
(5) Remove inner pack(s).

d. Wood Boxes with Metal Hardware (except Wing Nut Fastener) (fig. 3-3).

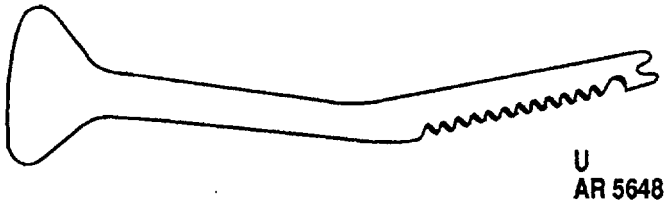
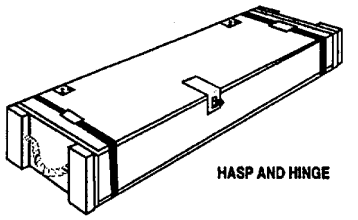
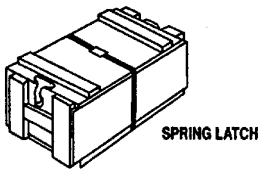


Figure 3-2. Sallee closer.





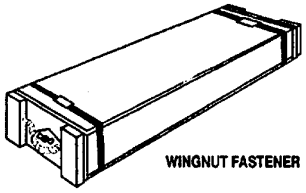


Figure 3-3. Typical wood boxes.

(1) Cut steel strapping with metal cutting shears.
(2) Remove and dispose of straps.

WARNING

TO PREVENT INJURY, RELEASE TENSION BY PRESSING DOWN ON TOP OF BOX WHILE CUTTING STRAPS ON SIDE OF BOX.

(3) Cut lead seal wire with pliers and remove.
(4) Turn catch and open hasp or pull out on spring-latch to release.
(5) Lift box top to open. On spring-latched boxes, note position of top for guidance in repacking.
(6) Remove top padding/filler (if any) from box.
(7) Remove inner pack(s).

e. Wingnut Fastener Boxes (fig. 3-3).

(1) Cut lead seal wire with pliers and remove.

(2) Unscrew wingnut(s) and remove.

(3) Lift box top or end and remove to open box.

(4) Remove padding/filler (if any) from box.

(5) Remove inner pack(s).

f. Metal Containers (fig. 3-4).

(1) Cut lead seal wire with pliers and remove.

(2) Loosen round or square ended containers by doing the following:

(a) For round ended containers turn locking bar counterclockwise to loosen cover assembly. Use pry bar to loosen locking bar if necessary.

(b) For square ended containers flip handle 180 degrees to open position.

(3) Remove container end using twisting pulling motion.

(4) Remove of propelling charge by doing the following:

(a) Remove padding from container. Check padding for primers which are packed inside padding in certain propelling charge packages.

(b) Remove charge from container.

(c) For M203A1 propelling charge only pull pull-straps until the buttons on the base igniter assembly clear the mouth of the container. Grasp charge around the buttons and pull charge out of the container supporting it along its length to avoid dropping the charge.

(d) For M86 propelling charge only pull pull-tab to open black plastic bag then pull black plastic bag from charge.

(5) Remove cartridge by doing the following (except 152mm ammunition--see below).

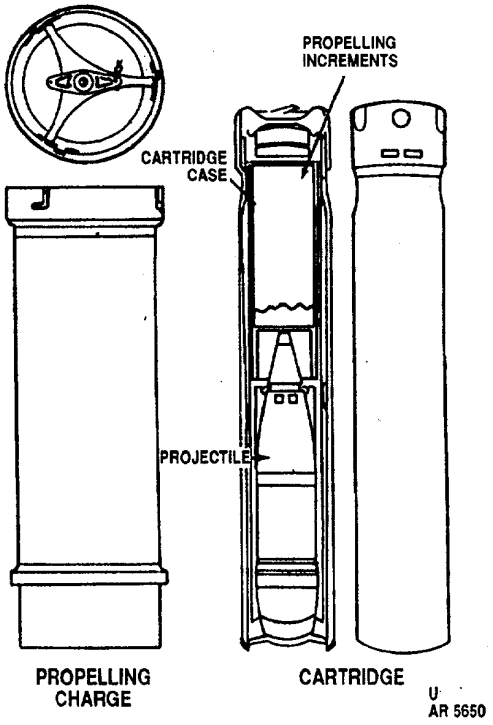


Figure 3-4. Typical metal containers.

(a) Remove padding from container. Tilt container to permit cartridge case and propelling charge to slide out far enough to grasp rim of cartridge case.

(b) Remove cartridge case and propelling charge. Avoid dropping case on its base.

(c) Tilt container to permit interior packing and projectile to slide out. Discard interior packing and grasp projectile by fuze or closing plug. If projectile is fuzed, do not drop projectile on fuze.

(6) Replace packing materials in container, insert and twist end cap into place, and secure by turning locking bar clockwise until hand-tight.

g. Projectile Grommets (fig. 3-5).

(1) Type A: wire-tied metal.

(a) Remove tie wires with pliers and discard.

(b) Spread grommet ends and slide grommet and padding over nose or base of projectile.

(2) Type B: wound fiberglass.

(a) Spread grommet ends by pulling outward on aluminum tabs.

(b) Slide grommet over nose or base of projectile.

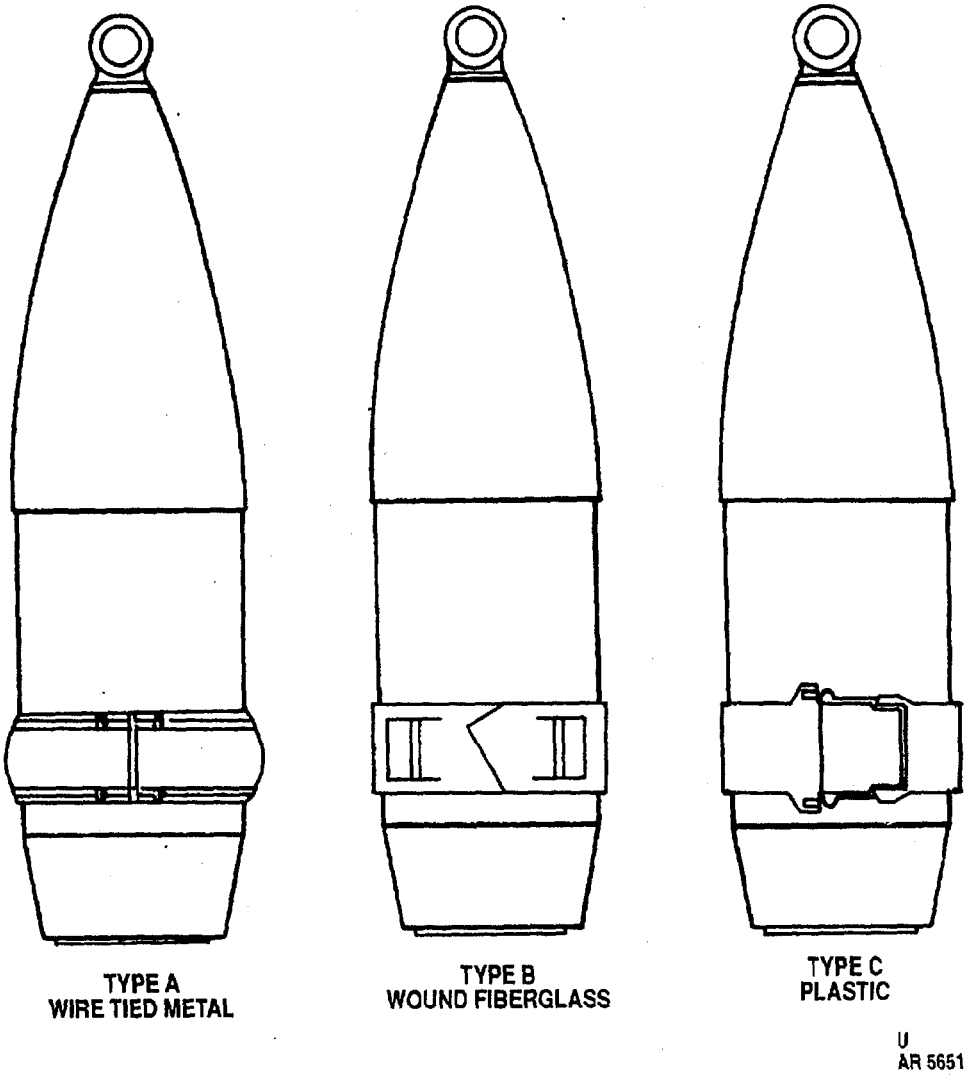


Figure 3-5. Typical projectile grommets.

(3) Type C: high-impact plastic.

(a) Unsnap locking wire from holding tabs.

(b) Pull locking wire out and back to release lock.

(c) Spread grommet ends by pulling outward and slide grommet over nose or base of projectile.

h. Metal Boxes with Latches (fig. 3-6).

(1) Cut lead seal wire with pliers and remove.

(2) Release latches by pulling out and lifting up bottom of tab.

(3) Remove box top and set aside.

(4) Remove any top padding from box.

(5) Remove inner pack(s).

i. Metal Box with Screw Locks (fig. 3-6).

(1) Cut lead seal wires with pliers and remove.

(2) Turn the four locking thumbscrews counterclockwise 4-to-5 turns to loosen latches.

(3) Turn locking bar counterclockwise approximately 90° to release latches.

(4) Lift box top.

(5) Remove any top padding.

(6) Remove inner packs, clips, or items.

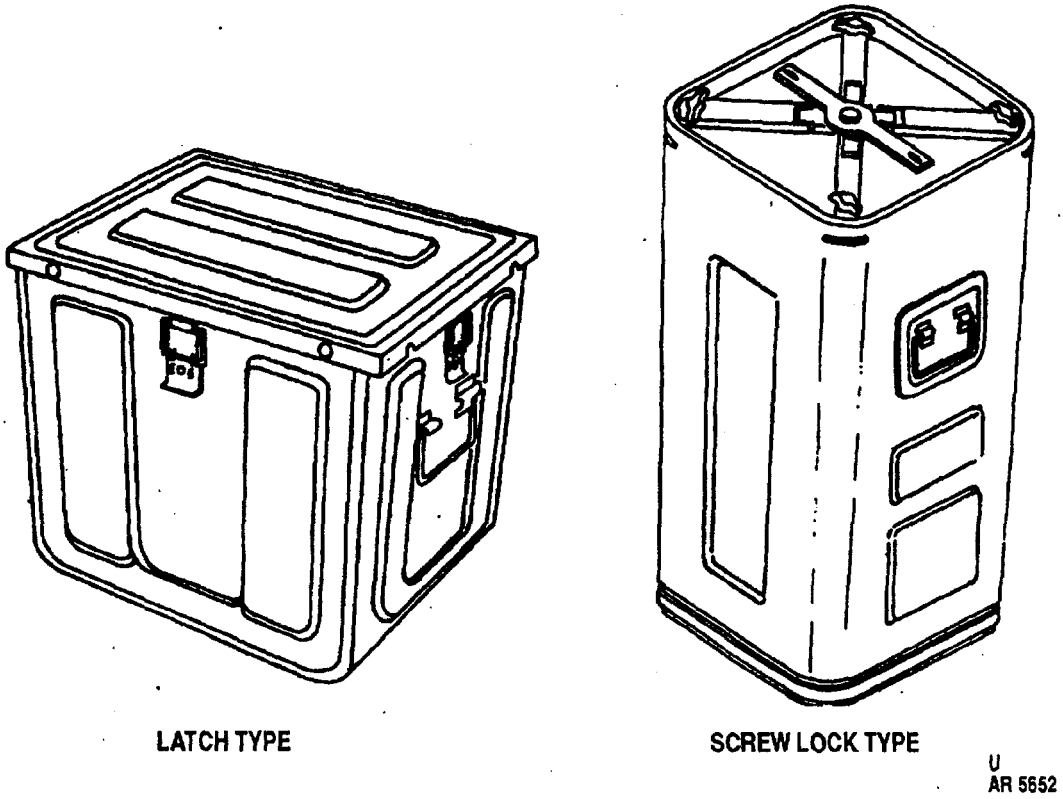


Figure 3-6. Typical metal boxes.

j. Fiber Containers (fig. 3-7).

(1) Remove sealing tape(s) by pulling end tab or tear strip.

(2) Twist end cap and pull off. If container has two end caps, do not remove second end cap until contents have been remove from the open end.

(3) Remove any padding pieces from container.

(4) Remove contents by pulling out item. Container may be tilted to allow item to slide out far enough to be grasped by hand.

k. Vapor Barrier Bags.

(1) Cut barrier bag open along the edge with most excess material as close to seal as possible.

(2) Cut or remove tape from inner container.

(3) Open container and remove padding, if any.

(4) Remove items. If all items are not removed, repack in accordance with paragraph 3-16 and reseal barrier bags in accordance with paragraph 3-16e.

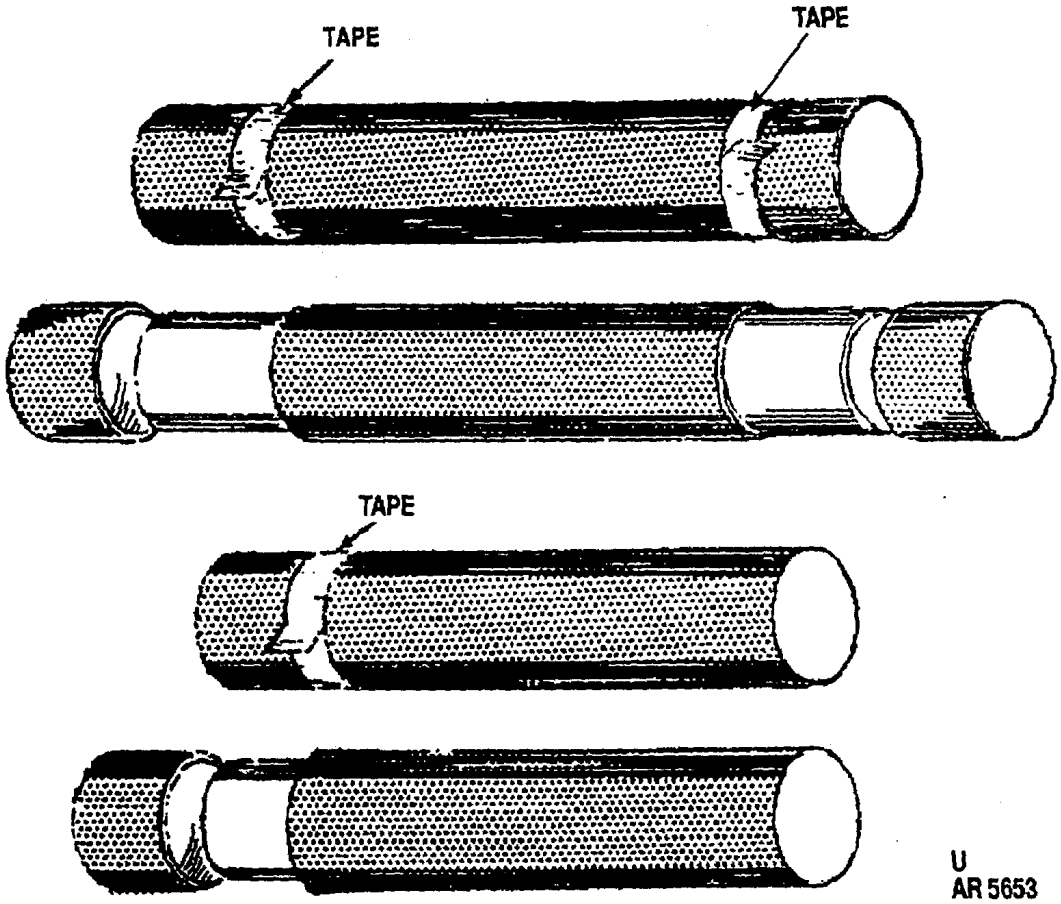


Figure 3-7. Typical fiber containers.

l. Metal Box (such as M2A1) (fig. 3-8).

(1) Release latch by pulling out and lifting up bottom tab.

(2) Open top of box. Top may be completely removed by sliding one-half inch to the side which releases hinge pins.

(3) Remove any padding if any

(4) Remove contents.

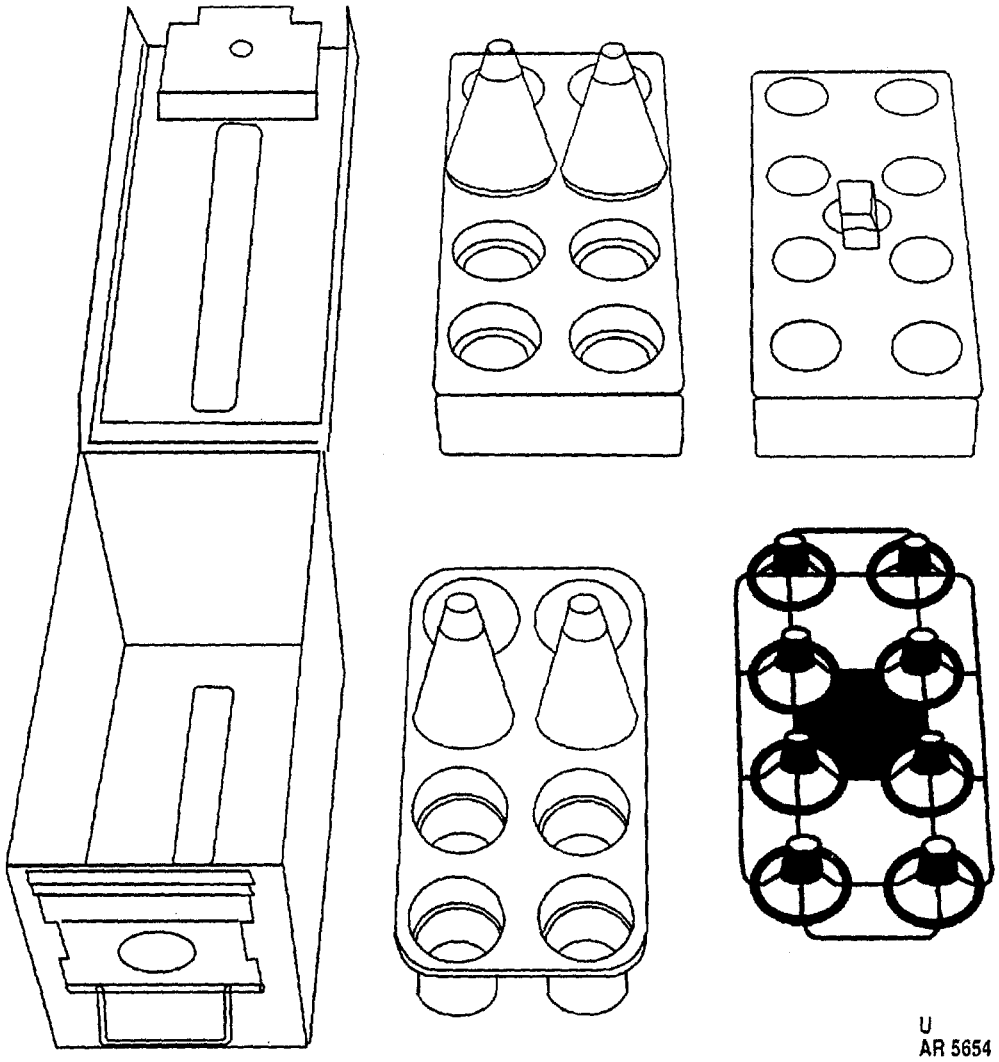


Figure 3-8. Fuzes packed in M2A1 metal box.

m. Ammunition Metal Container (fig. 3-9).

(1) Using key attached to container (or from another container), remove sealing strip.

(2) Remove top of can.

(3) Remove any padding from container.

(4) Remove contents.

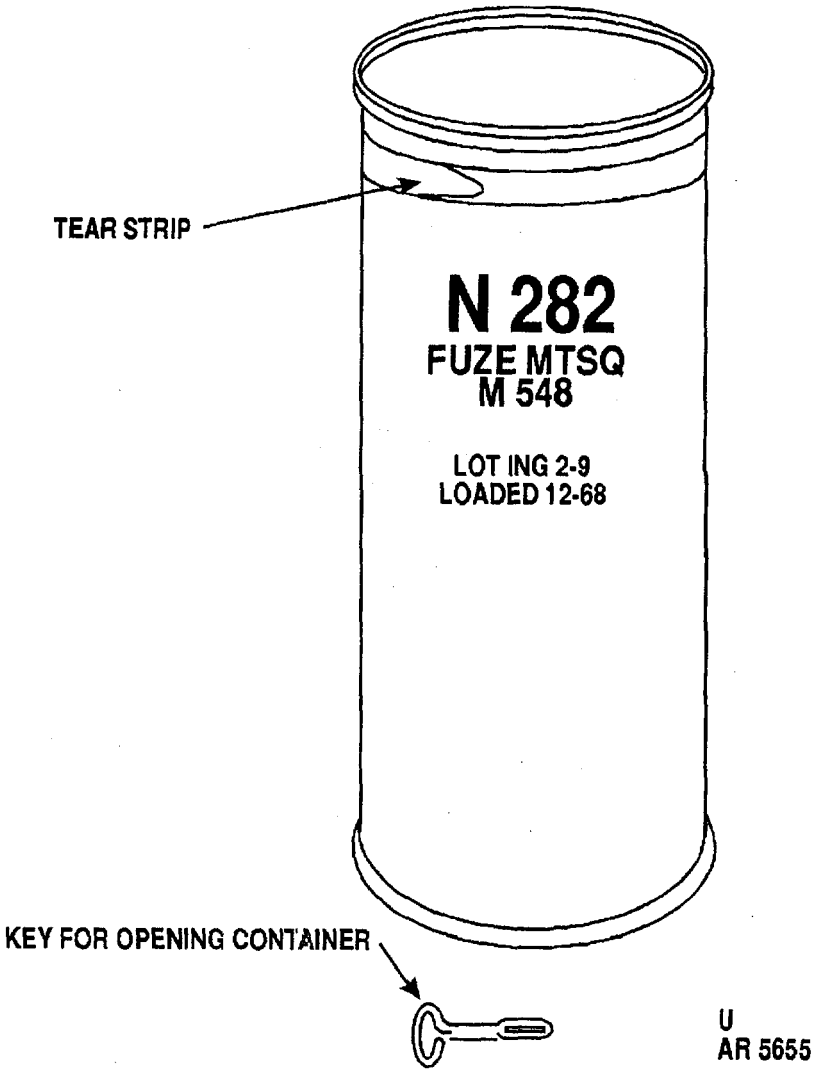


Figure 3-9. Ammunition metal container.

n. Metal Container (PA64) for 152mm Ammunition (fig. 3-10).

(1) Cut wire and remove metallic seal from container.

(2) Loosen and turn locking bar counterclockwise to loosen end cap.

(3) Twist and pull container end cap to remove it.

(4) Carefully slide cushioned cartridge out of container.

(5) Cut tape (do not pull it off) from cushion to permit removal of cartridge. Remove cartridge from cushions. Remove fillers, spacers, desiccant, initiator ring and nose support from cartridge. Remove nose plug from M625 series cartridges.

(6) Replace all packaging materials, except desiccant, in metal container. Insert and twist end cap into place and secure by turning locking bar clockwise until it is hand-tight.

(7) If more than five cartridges are unpacked, collect all desiccant bags in one of the metal containers and immediately secure end cap (refer to (6) above). Tag or mark container to note that it contains used and immediately-resealed desiccant. Discard desiccant bags in quantities of five or less. Only desiccant which has been bulk resealed in a metal container (as above) may be reused without being reprocessed by an ammunition depot.

o. Metal container for Copperhead Ammunition (fig. 3-11).

NOTE

Repackage all unfired M712 projectiles within three days. Unpackaged projectiles must be protected to prevent water, dirt, and other materials from entering the fin and wing slots of the projectile and to prevent physical damage. Exposure of the projectile to sunlight or other elements will cause degradation in reliability.

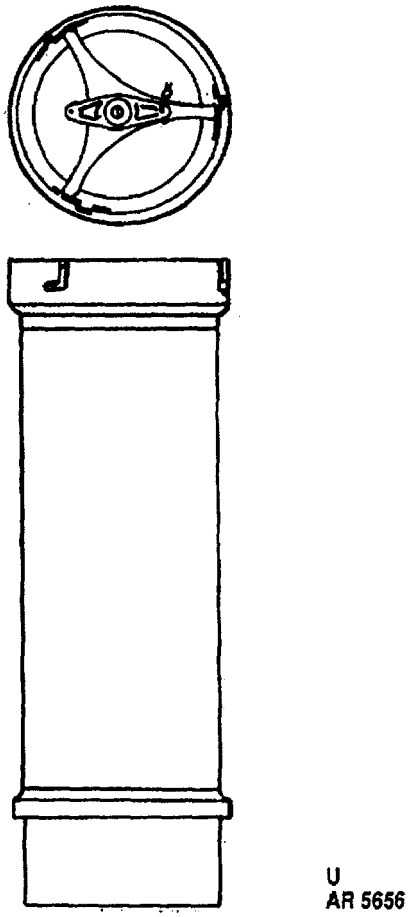


Figure 3-10. Metal container (PA 64) for 152m ammunition.

(1) Cut lead seal with pliers and remove.

(2) Depress manual relief valve (breather valve) to equalize pressure.

(3) Release container latches starting at the manual relief end. Lift latch all the way up, remove barrel nut from recess in cover, and then push all the way down.

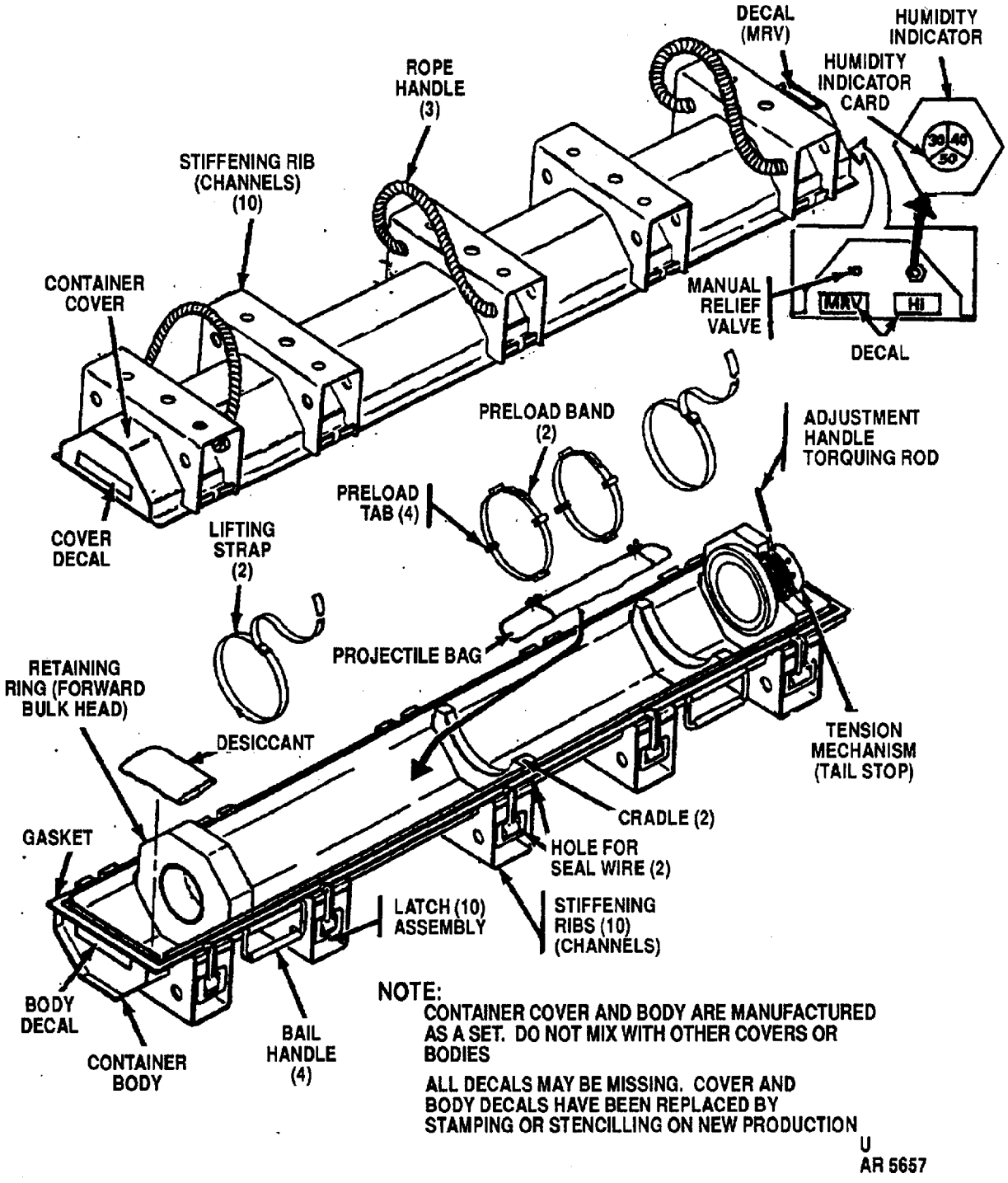


Figure 3-11. Metal container for Copperhead projectiles.

(4) Separate cover from body of container and place alongside, upside down.

(5) Partially pull torquing rod (adjustment handle) from aft end of the tension mechanism (tail stock). Use this rod to release the tension by turning counterclockwise, then spin the tension mechanism by hand until it stops.

WARNING

IN ORDER TO PREVENT INJURY TO PERSONNEL, USE PROPER LIFTING TECHNIQUE. THE PROJECTILE WEIGHS 138 POUNDS.

(6) Using two people and lifting straps provided on projectile, remove projectile from container by lifting it up and to the rear (fig. 3-12). The projectile may be placed on top of the open container and cover at a 90° angle to the container length.

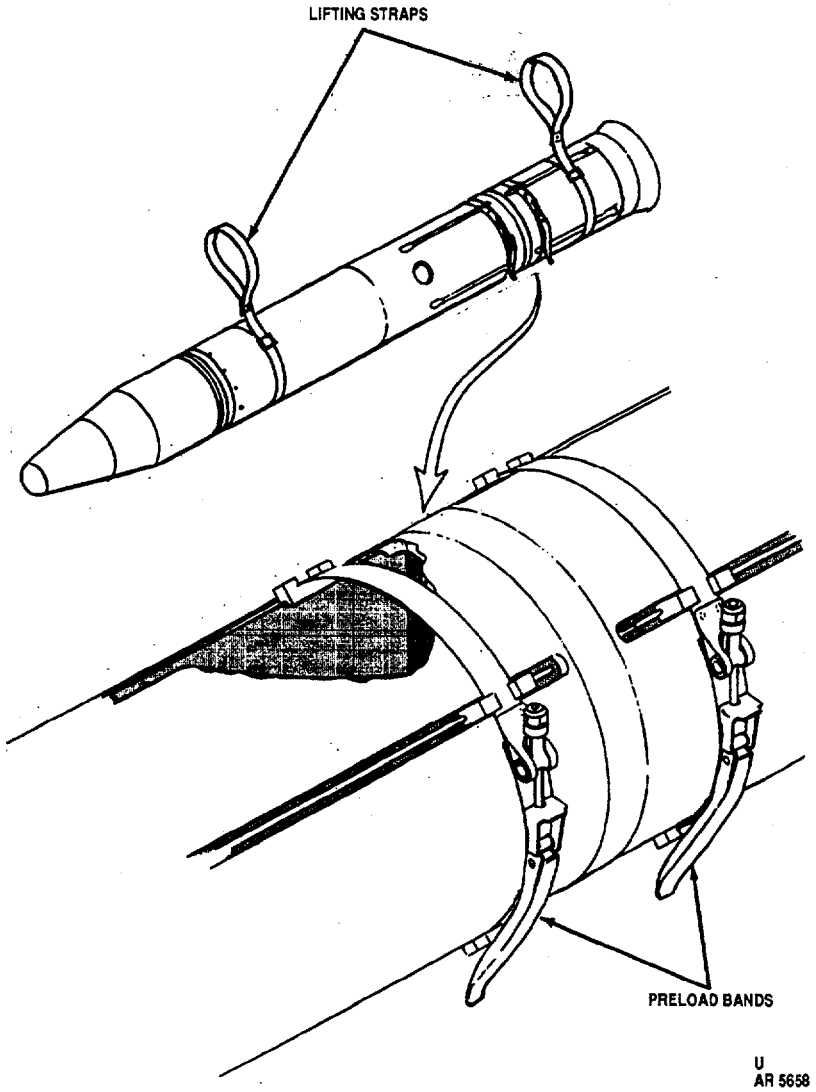


Figure 3-12. Preload bands and lifting straps.

CAUTION

DO NOT PERMIT PROJECTILE TO TOUCH THE GROUND SINCE WATER OR DIRT IN THE FIN OR WING SLOTS COULD DEGRADE PERFORMANCE. AVOID ALL CONTACT WITH NOSE CONE (PROJECTILE OGIVE) TO PREVENT DAMAGE. SHIELD THE PROJECTILE FROM SUNLIGHT, RAIN, DIRT, AND OTHER DEBRIS.

(7) If projectile is to be cleaned or touched up, release and remove the preload bands from over the wing and fin slots. Remove lifting straps.

(8) Retain container including all packing materials and pallet for subsequent reuse or forward to Direct Support Maintenance for storage.

NOTE

Covers and bodies of containers form a set. Do not separate or mix covers and bodies.

p. *Metal container for Cartridge APDS-T, DM 13B1 (GE*). (fig. 3-13). To open container, loosen air vent (knob) before removing the cover in order to equalize vacuum. Remove cover and cartridge; replace container cover. Close air vent, finger tight (no tools required).

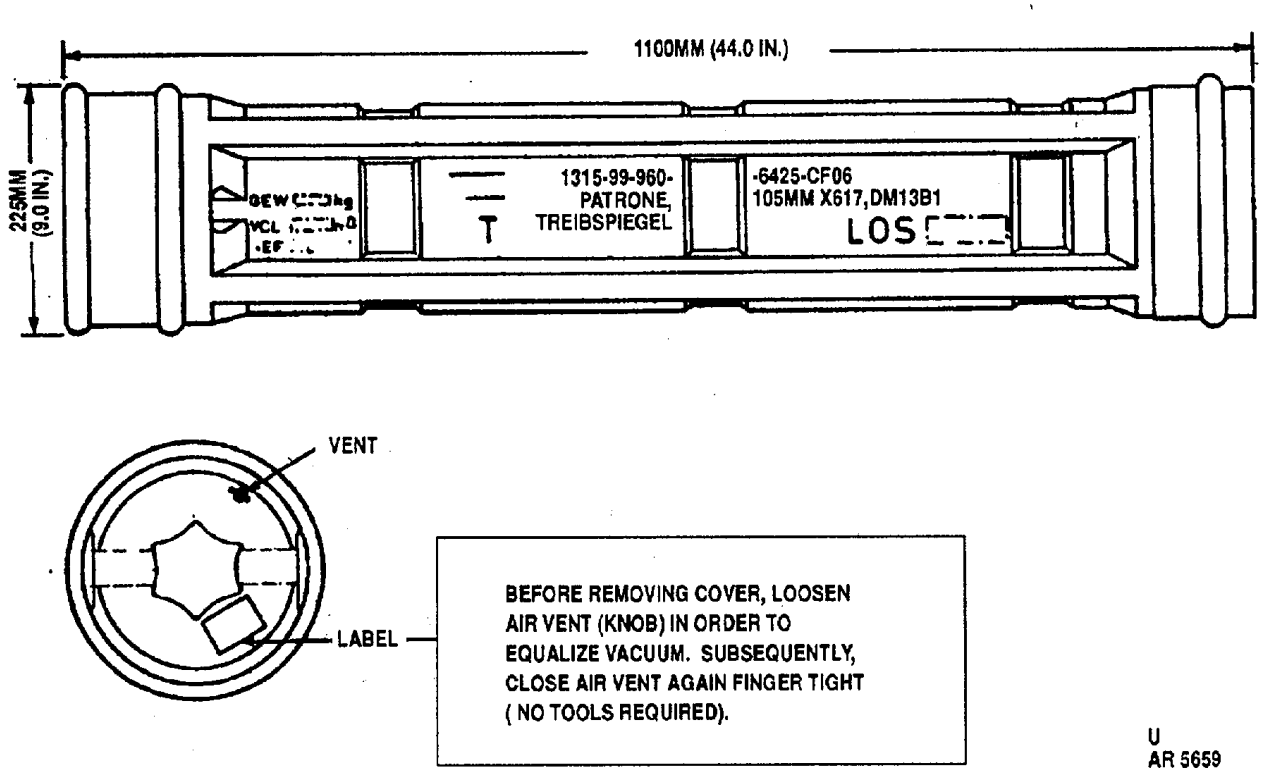


Figure 3-13. Metal container for Cartridge APDS-T, DM13B1 (GE).

q. Metal Container, 105mm Tank Ammunition.

(1) Cut lead seal wire with pliers and remove.

(2) Flip latch 180 degrees to unseal cover assembly. Rotate cover assembly counterclockwise to disengage the assembly shaft from the container notches.

(3) Remove cover assembly and spacer material from the container and place them on top of the pallet.

NOTE

Do not misplace cover assembly and spacer material. Cover assembly and spacer material must be replaced after all cartridges have been removed from the container.

(4) Grasp and pull cloth lifting collar strap. Allow cartridge to come out of container approximately 8 inches.

(5) Remove cloth lifting collar from cartridge case. Grasp rim of cartridge case and pull out round.

NOTE

• APFSDS-T and training ammunition must be grasped by the sabot NOT THE WINDSHIELD.

• HEAT-MP-T and training ammunition must be grasped by the body NOT THE SPIKE.

• Do not bang, use as a resting point, or step on the penetrator and spike.

(6) Place cloth lifting collar into container.

(7) Place all packaging material into container, position cover assembly on container opening, and fully rotate cover assembly clockwise.

(8) Flip cover assembly latch to lock.

NOTE

• Keep the interior of the container clean of debris and dirt.

• Do not leave the containers open overnight or for an extensive period of time.

r. Metal Containers, 120mm Tank Ammunition.

NOTE

When removing ammunition from the palletized metal containers, it is advisable to begin unpacking the ammunition from the bottom of the pallet proceeding to the top. This will permit removal of the cartridges from the palletized metal can to move without hindrance from the nylon strap loop.

(1) Cut lead seal wire with pliers and remove.

(2) Flip latch 180 degrees to unseal cover assembly. Rotate cover assembly counterclockwise to disengage the assembly shaft from the container notches.

(3) Remove cover assembly and spacer material from the container and place them on top of pallet.

NOTE

Do not misplace cover assembly and spacer material. Cover assembly and spacer material must be replaced after all cartridges have been removed from the containers.

(4) Grasp and pull nylon strap loop until internal stop is engaged. (Round and foam sleeve will move out of container approximately 4 inches.)

NOTE

Do not use an excessive amount of force when pulling nylon loop strap. If cartridge and foam sleeve will not move, place nylon strap loop in container, perform steps (9) and (10) below, and tag or mark container "Stuck Round".

(5) Release the nylon strap loop from grasp, loop must hang clear of container rim.

WARNING

THE CARTRIDGE CASE OF THE 120MM AMMUNITION IS MADE OF A COMBUSTIBLE (CELLULOSE FIBER) MATERIAL AND AS SUCH, CARE SHOULD BE EXERCISED SO AS NOT TO DAMAGE OR SCRATCH THE CARTRIDGE CASE.

(6) Grasp rim of cartridge case base and pull round out of container.

NOTE

- **The combustible cartridge case must be grasped by its metal base.**
- **APFSDS-T and training ammunition must be grasped by the sabot NOT THE WINDSHIELD.**
- **HEAT-MP-T and training ammunition must be grasped by the body NOT THE SPIKE.**
- **Do not bang, use as a resting point, or step on the penetrator and spike.**

(7) Place the nylon strap within the foam sleeve. Return the APFSDS-T nose cover to the APFSDS-T container for future use. (The nose cover should not be removed from the APFSDS-T round until just prior to placing the round in the tank's ammunition rack.)

(8) Push the foam sleeve fully into the container.

(9) Obtain the cover assembly and spacer material from the top of the pallet and position the cover in the container opening fully rotating the cover clockwise to engage the container notches.

(10) Lock the cover assembly latch.

NOTE

- **Keep the interior of the container clean of debris and dirt.**
- **Do not leave the containers open overnight or for an extensive period of time.**

SECTION II. TOOLS AND EQUIPMENT

3-4. Common Tools and Equipment

Standard and commonly used tools and equipment having general application to this ammunition are authorized for issue by tables of organization and equipment (TOE).

3-5. Repair Parts and Special Tools

Repair parts and special tools required at organizational level are listed in appendix C.

SECTION III. MAINTENANCE

3-6. General

a. Maintenance at the organizational level is performed by designated personnel in using units. Its purpose is to prevent further deterioration of ammunition which has been exposed to rough handling or adverse weather conditions. Direct support units may be called upon to provide technical assistance and packaging materials.

b. Responsibilities for maintenance are limited to those functions specified in appendix B, Maintenance Allocation Chart (MAC). Only maintenance operations for which procedures are given in this manual or in the weapon operator's manual are authorized.

c. Maintenance shall be performed at least 90 feet from any ammunition magazine or storage shelter.

d. Ammunition is to be removed from packaging before performing maintenance on packaging materials except when just re-marking outer packing or restrapping.

3-7. Expendable Materials

a. Touchup painting must be done using the correct paint color and correct paint specification. Paint, cleaning compounds, and other expendable materials authorized for use by organizational maintenance personnel are listed in appendix D.

b. Expendable materials should be requisitioned through normal channels on an as-required basis.

3-8. Inspection of Packaging

If receipt inspection or storage inspection of packaging reveals damage or deterioration to the extent that serviceability of the ammunition is questionable, unpack ammunition (using procedures in paragraph 3-3) and visually inspect inner packs and/or items. Unpack only as far as necessary to determine serviceability.

a. Packaging Defects. Specific inspection criteria and identification of defects (as acceptable, reparable, or irreparable) are outlined in table 3-1. The most commonly encountered packaging defects are listed below:

(1) Outer container (boxes) damaged, weathered, or rotted to the extent contents are not protected.

(2) Inner container damaged to the extent contents are not protected or cannot be readily removed.

(3) Container cap or closure insecure to the extent contents are not protected.

(4) Inner container wet (except metal), rusted, moldy, or mildewed.

(5) Hardware or banding loose, missing, broken, or ineffective.

(6) Handle or cleat missing or broken.

(7) Contents loose to the extent item may be damaged in handling.

(8) Copperhead container-cracks or holes in the container; humidity readings 40% or over; unsafe rope handles, lifting straps or projectile preload bands missing or unserviceable.

Table 3-1. Inspection Criteria for Packaging

Pallets, wooden-boxes- and- crates			
Component	**Acceptable**	**Reparable**	**Irreparable at organizational level**
Hardware	Operative and tight.	Inoperative or loose.	None
	Nails, screws, and fasteners present and in good condition.	Nails, screws, and fasteners which can be replaced or properly sealed.	None
Ends	Free from damage.	Broken or missing cleats and handles.	Damage which requires disassembly of box.
Wood	Splits less than 3-inches long no closer than 1 inch to edge of board or adjoining split. The board must be secured by at least one nail on each side of the split when it extends to the end of the board.	Splits over 3 inches but no closer than 1 inch to edge of board or adjoining split, or 1/8-inch wide, which can be repaired by use of corrugated fasteners.	Splits closer than 1 inch to edge of board or adjoining split or over 1/8-inch wide.
	Warping which does not prevent sealing of box or insertion - of required ammunition.	None	Warping which prevents insertion or removal of rounds and/or sealing of the box.
	Light mold which can be brushed off. Mildew stains which do not effect legibility of markings.	None	Excessive mildew and mold which cannot be removed and which render markings illegible.
	Sound tight knots the diameter of which do not exceed ½ the width of board.	None	Holes or loose knots which exceed 1-1/2 inches in largest diameter or 1/3 width of board.
	Skids securely attached to box or crate. Knots no greater than 1/4 the width of skid.	Loose skids.	Knots greater than 1/4 the width of skid.
Strapping	Present and unweakened by rust or distortion.	Missing, rusted, or distorted.	None
Nailing (Pallets)	Nails secured to boards.	Missing, bent, or loose nails.	None
Fiber Containers			
Metal ends	Minor rust, cracks, indentations or splits which would not impair water proofing or serviceability of container.	None	Perforations, excessive rust or ends which are crushed or not securely crimped to body.

See footnotes at end of this table.

Table 3-1. Inspection Criteria for Packaging - Continued

Component	Acceptable	Reparable	Irreparable at organizational level
Fiber containers - Continued			
Body and cap	No tears, cuts, or gouges.	Cuts, tears, or gouges not closer than 1 inch to closure, less than ½ square inch in area and unpenetrated layers which can be spot painted.	Cuts, tears, or gouges closer than 1 inch to closure, more than 1/2 square inch in area, or through all impregnated layers.
	No mold, mildew, or rot.	None	Molded, mildewed, or rotted.
	Free from wrinkles caused by looseness between layers.	None	Wrinkled or peeling.
	Blisters with combined area totaling less than 1/2 square inch.	None	Blisters with combined area of more than 1/2 square inch.
	No moisture absorption.	None	Wet or soft containers.
Metal containers			
Body	Dents less than 1/4 inch deep.	Dents deeper than 1/4 inch which may be removed without weakening structure of container.	Dents which impair the structural integrity of the material or prevent removal of contents.
	Flanges which are bent but do not prevent placement or removal of cover with normal hand pressure.	Flanges which can be straightened to allow placement and removal of cover with normal hand pressure.'	Flanges which cannot be straightened.'
	Tight seams which prevent entrance of moisture.	None	Loose or leaking seams.
	Free from rust.	Minor rust which can be removed.	Rust which has caused pitting and perforations.
	Free from perforations.	None	Perforated.
	Supports which are integral to container present and in serviceable condition.	Supports which can be replaced.2 are integral to containers.	Damaged supports which
Caps and covers	Dents which do not prevent cover from closing.	Dents which can be removed.	Dents which cannot be removed and/or prevent assembly to body.
	Free from rust.	Minor rust which can be removed.	Rust which has caused pitting and perforations.

See footnotes at end of this table.

Table 3-1. Inspection Criteria for Packaging - Continued

Metal containers - Continued			
Component	**Acceptable**	**Reparable**	**Irreparable at organizational level**
Caps and	Free from perforations.	None	Perforated.
Covers Continued	Gaskets present and sufficiently serviceable to make container air tight in single round metal containers and to make metal containers for propelling charges air tight.	Missing or damaged gaskets.	None
	Operative spiders, air test holes, and threads.	None	Irreparable spiders, air test holes thread.
Metal boxes			
Hardware	**Operative.**	**Inoperative.**	**Broken or missing.**
Body and cover	Free from rust.	Minor rust which can be removed.	Extensive, pitting and rust.
	Tight seams.	Repair not practical.	Split seams.
	Dents less than 1/4 inch deep.	Dents deeper than ¼ inch which may be removed without weakening structure of container.	Dents which impair the structural integrity of the material.
	Unperforated.	None	Perforated.
	Separators integral to container serviceable, allowing easy insertion and removal of contents.	None	Missing or broken separators.
	Gaskets present and sufficiently serviceable to insure moistureproof pack.	Damaged or missing gaskets.	Not applicable.
Grommets			
Metal body	Light rust.	Heavy rust.	None
	No dents.	Dents.	None
	Free of cuts, dents, or tears.	Minor dents less than 1/4 inch deep.	Dents larger than 1/4 inch, cuts, and/or tears.
Pads	Free of cuts, tears, and moisture.	None	Cuts, tears, or wet.
Tie wires	Light rust, removable with fine sandpaper.	None	Broken, heavy rust.

See footnotes at end of the table.

Table 3-1. Inspection Criteria for Packaging - Continued

Component	Acceptable	Reparable	Irreparable at organizational level
Grommets - Continued			
Fiberglass body	Free of cracks.	None	Cracked or broken.
Plastic body	Free of cracks.	None	Cracked or broken.
Locking bail	Free of rust.	Light rust.	Broken or sprung.
Metal Container for Copperhead			
Container	Marking correct and legible.	Missing, illegible, or incorrect (correct data is available for re-marking).	Correct data cannot be determined.
	Dents which do not prevent cover from being opened or closed.	None	Dents which prevent cover from opening or closing in the usual manner.
	Dents less than 1/4-inch deep.	Dents which can be easily removed.	Dents which could prevent removal of the projectile in the usual manner. Dents which impair structural integrity.
	Rope handle intact.	Missing or broken rope handle.	None
	40° dot on humidity indicator is blue.	40° dot is not blue.	None
Lifting straps	Present, unripped.	None	Straps ripped.
	Stitching intact.	None	Stitching ripped.
Preload	Present. Plastic inserts (preload tabs).	None	Plastic inserts (preload tabs) missing.
	Latch functioning.	None	Latch not functioning.
Pallet for Copperhead	All components intact.	Minor splits in wood.	Wood assemblies broken off or missing.
		Nails loose or missing.	None
		Steel strapping missing or loose.	None

[1] Applicable to metal containers for propelling charges only.

[2] Applicable to single round metal containers for artillery ammunition only.

b. Corrective Action.

(1) Replace unserviceable containers using procedures in paragraph 3-6.

(2) Repair broken or damaged pallets and boxes using procedures in paragraph 3-12.

(3) Tighten or replace hardware or banding using procedures in paragraph 3-11.

(4) Replace unserviceable grommets using procedures in paragraph 3-16.

(5) Forward Copperhead containers irreparable at organizational level to Depot. Perform minor maintenance as indicated in paragraph 3-12f.

(6) Forward unserviceable Copperhead pallets to Direct Support Maintenance. Forward serviceable pallets to Direct Maintenance for storage.

3-9. Inspection of Ammunition

a. Materiel Defects. Specific defects (identified as acceptable, reparable, or irreparable) and inspection criteria are outlined in table 3-2. The most commonly encountered types of materiel defects are listed and illustrated below.

(1) Peeling, blistered, or scratched protective coating on painted surfaces.

(2) Projectile rust and deterioration (fig. 3-14).

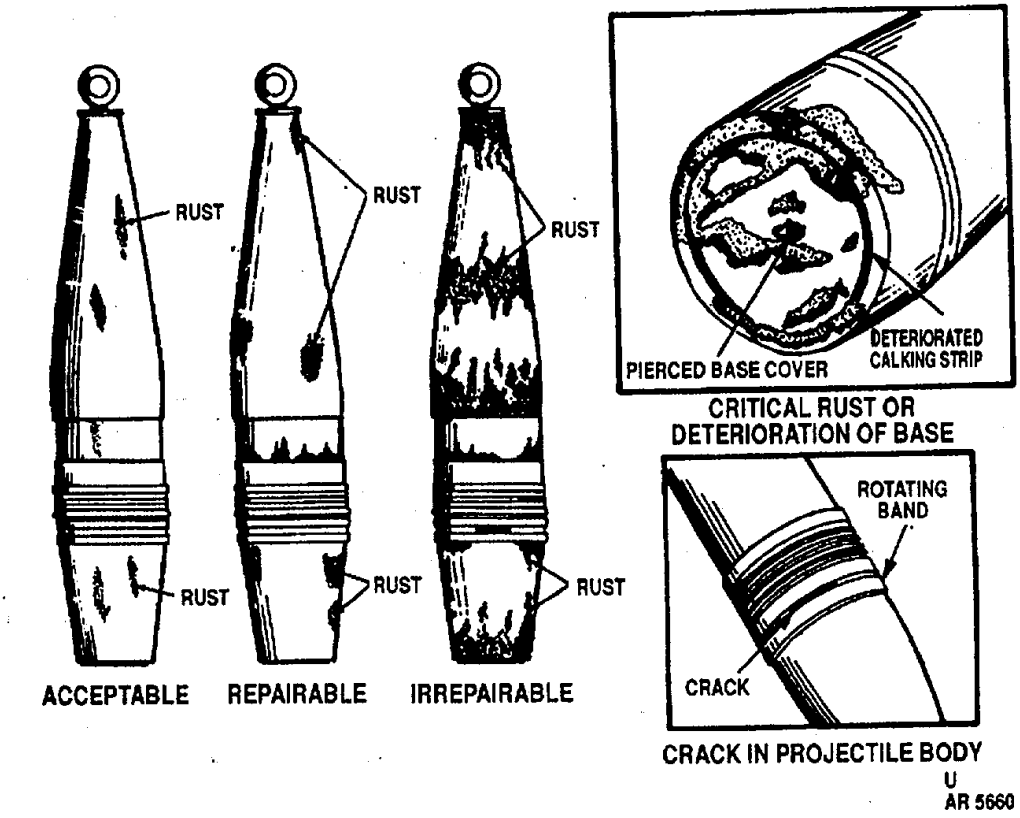


Figure 3-14. Projectile rust and deterioration.

(3) Rotating band damage (fig. 3-15).

(4) Missing or upside-down supplementary charge (fig. 3-16).

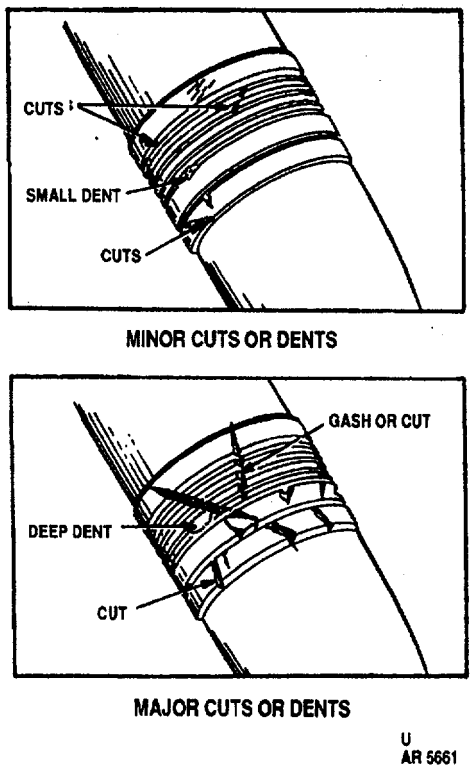


Figure 3-15. Rotating band damage.

(5) Corroded supplementary charge and/or fuze well liner (fig. 3-17).

(6) Exudation of explosive filler in fuze well (para. 3-10).

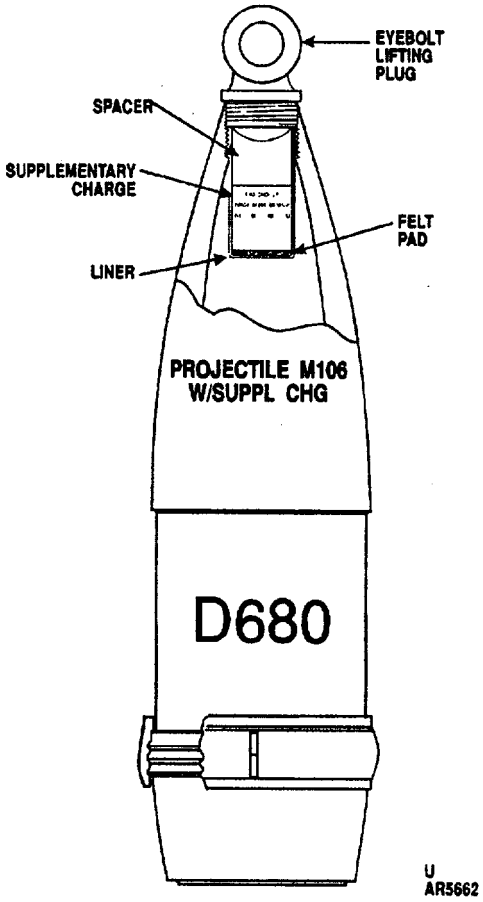


Figure 3-16. Proper supplementary charge position.

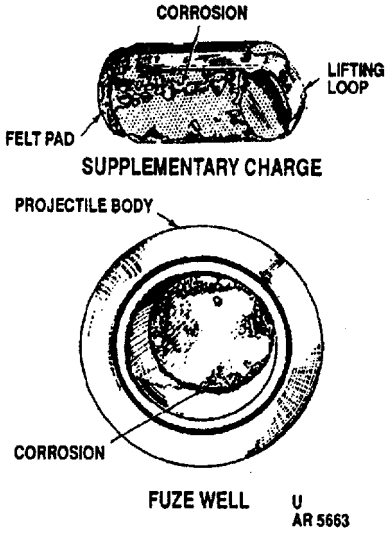


Figure 3-17. Corrosion in fuze well and on supplementary charge.

NOTE

Yellow discoloration of charge bags is not a defect. All M188A1 charges containing stabilizer 2NDPA will discolor. A small amount of stabilizer leaching will normally occur and discolor the cloth. The loss of stabilizer content in this process is insignificant.

(7) Torn, discolored, or mildewed propellant bags.

(8) Absorption of moisture by igniter pads (indicated by dampness or caked/lumped powder).

(9) Rust or corrosion on primers and cartridge case (fig. 3-18).

(10) Cracks, dents, and other obvious damage to metal components.

(11) Missing, illegible, incorrect, or misleading markings.

(12) Mixed types and lots of ammunition, such as HE with practice, WP with other smokes, etc.

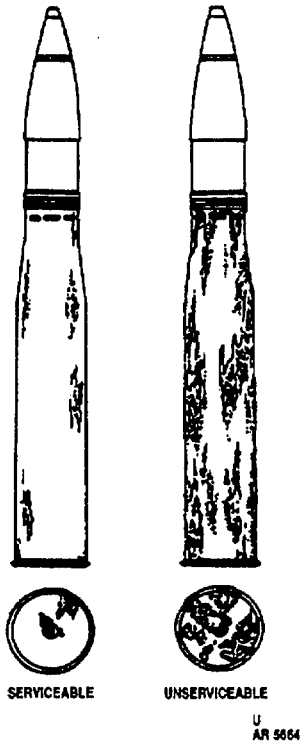


Figure 3-18. Corrosion on primers and cartridge case.

Table 3-2. Inspection Criteria for Ammunition

Projectiles			
Item	**Acceptable**	**Reparable**	**Irreparable at organizational level**
Markings	Legible and correct.	Illegible. Correct data available for re-marking.	Correct data cannot be determined.
Paint or coat protection	No scratches, peeling, or blistering.	Scratches, peeling, or blistering in spots.	Scratches, peeling, or blistering requiring complete repaint.
Body, HEAT-MP-T, (M830 and M831)	Free from rust and/or corrosion.	Minor rust or corrosion which can be removed w/fine sandpaper or steel wool.	Rust or corrosion which cannot be removed w/fine sandpaper or steel wool.
Spike (Body) (M456 Series)	Free from rust and/or corrosion.	Minor rust or corrosion which can be removed w/fine sandpaper.	Damaged (bent).
Spoiler (M456 Series)	Free from rust and adequately fastened (positioned).	Minor rust which can be removed w/fine sandpaper.	Missing, bent, or damaged.

Table 3-2. Inspection Criteria for Ammunition- Continued

Projectiles - Continued			
Item	**Acceptable**	**Reparable**	**Irreparable at organizational level**
Body (except HEP-T cartridges)	Free from rust. w/wire brush or sandpaper. or sandpaper.	Minor rust which can be removed removed with wire brush	Extensive rust cannot be
Body HEP-T cartridges	Free from rust and/or corrosion. or steel wool.	Minor rust or corrosion which can be removed w/fine sandpaper sandpaper or steel wool.	Rust or corrosion which cannot be removed w/fine
Body APFSDS-T cartridges	Free from yellow corrosion in sabot gaps and/or sabot/ windshield interfaces.	None	Presence of yellow corrosion in sabot gaps and/or sabot/ windshield interfaces.
Rotating band	Rotating band stained and discolored.	Minor corrosion which can be removed w/fine sandpaper or steel wool.	Extensive corrosion and etching which cannot be removed w/fine sandpaper or steel wool.
	Rotating band or disc with minor dents or cuts.	None	Dents or cuts which prevent obturation or cuts through band.
Base cover (where used)	Base cover undamaged.	Minor rust or stain which can be removed.	Major rust which cannot be removed w/sandpaper or penetrations in cover plate.
Fins	Free from corrosion.	Minor corrosion which can be removed w/fine sandpaper.	Severe corrosion or etching of metal which cannot be removed w/fine sandpaper.
	Free from cracks.	None	Cracked or broken.
Supple-mentary charge	Supplementary charge in proper position with felt pad down.	Felt pad missing or improperly positioned.	Supplementary charge cannot be removed.
	Light corrosion on supple-mentary charge.	Minor corrosion which can be removed w/fine sandpaper.	Extensive corrosion and etching which cannot be removed w/fine sandpaper.
		Missing (obtain replacement)	
Fuze well	Light corrosion on liner.	Minor corrosion which can be removed.	Beyond repair due to exten-sive corrosion and etching.
	Clean, undamaged threads free from dust.	Light rust which can be removed.	Damaged threads. Heavy rust on threads.
	No exudation (loose or adhering) secure fuzewell line.	Exudation which can be removed with rags.	Missing liner. Exudation which cannot be removed. Loose fuze well liner.

Table 3-2. Inspection Criteria for Ammunition- Continued

Item	Acceptable	Reparable	Irreparable at organizational level
Projectiles - Continued			
Body (warhead, warhead/-motor)	No damage, dents, or evidence of rough handling.	None	Distorted out of round or damaged.
Threaded joints warhead-rocket motor	No evidence of looseness or excessive gap at joint.	None	Looseness or excessive gap at joint (0.0002 x 1/8-inch deep/feeler gage).
Smoke canister (practice projectiles)	Smoke canister in proper position with felt pad down. Light corrosion/oxidation on smoke canister.	Felt pad improperly positioned.	Corrosion through canister to extent smoke charge is leading.
Operator	Minor cuts or abrasion and in proper position.	None	Major cuts or cracks; out of position or missing.
Rocket motor cap	Securely in place.	Loose so that cap can be tightened.	Missing or damaged so that cannot be tightened.
		Minor corrosion.	Major corrosion.
Lifting plug	Securely in place w/gasket, no rust, threads not damaged.	Minor rust that can be removed with wire brush or paper.	Major rust that cannot be removed with wire brush. Damaged threads.
Projectiles (Copperhead)			
Markings for re-marking.	Legible and correct. determined.	Illegible, correct data available	Correct data cannot be
Paint or protective coat	No scratches, peeling, or blistering.	Scratches, peeling, or blistering in spots.	Scratching, peeling, or blistering requiring complete repaint.
Obturator	Minor cuts or abrasions.	None	Major cuts or cracks.
Projectile ogive (nose cone) (M712 only)	No smudges or abrasions on window portion.	None	Any damage.
Projectile ogive (nose cone) (M823 only)	Major smudges or abrasions on window portion.	None	Gouged, broken, cracked, or missing.

Table 3-2. Inspection Criteria for Ammunition- Continued

Projectiles (Copperhead) - Continued			
Item	**Acceptable**	**Reparable**	**Irreparable at organizational level**
Wings or fins (M712 only)	Retracted. can be retracted.	Fins in extended position, but	Fins or wings loose or broken.
			Fins cannot be retracted.
Code/Time switches	Switch dials clean. Switches functioning.	Switch dials dirty, but can be cleaned to make markings legible.	Switch dials missing, broken, or cannot be cleaned to make markings legible. Switches cannot be rotated freely to set code.
			Switches unusually loose when rotated.
Base (M823 only)	Aft closure and groove inside base not badly damaged or worn.	None	Aft closure or groove inside base damaged or worn to extent that extractor cannot engage it.
Body (M712 only)	No cracks or dents.	None	Cracks or dents.
	Wing and fin slots clean.	Dirt, debris or other foreign matter that can be removed in	Foreign matter that cannot be removed from wing or wing or fin slots. fin slots.
Fuze			
Marking	Correct and legible.	Missing, illegible, incorrect, or misleading; correct data is available for re-marking.	Correct data cannot be determined.
Ogive (windshield)	Tight assembly.	None	Loose ogive.
	Minor scratches.	None	Dents and cuts.
Body	Light corrosion	None	Extensively corroded.
	Free from corrosion.	None	Extensively corroded.
	Free from cracks.	None	Cracks in metal parts.
Safety pin & pull wire (when used) corroded.	Threads undamaged.	None	Threads damaged.
	Safety pins in position.	None	Safety pins not in position.
	Pull wire with light corrosion.	None	Pull wire broken or heavily

Table 3-2. Inspection Criteria for Ammunition- Continued

Metallic Cartridge Case (Including Spiral Wrapped)			
Item	**Acceptable**	**Reparable**	**Irreparable at organizational level**
Marking	Legible.	Missing, illegible, incorrect, or misleading; correct data is available for re-marking.	Correct data cannot be determined.
Body	Light corrosion.	Minor scratches, rust or corrosion which can be removed w/fine sand-paper or steel wool.	Severe corrosion, rust, or scratches which cannot be removed w/sandpaper or steel wool.
	Minor scratches in coating. Minor dents.		
Body & base	Minor cuts, scratches, and dents. As long as cartridge can be chambered normally and there is no evidence of propellant leakage.	None	Severe cuts, tear, and dents where propellant is exposed or where distortion of case will preclude proper chambering.
			Oil & water damage.
Nonmetallic Cartridge Cases			
Item	**Acceptable**	**Reparable**	**Irreparable**
All 120mm cartridge cases	Side wall of case scratched, exposing combustible case (yellowish-white), no more than 6 pinstripe scratches per case.	Superficial scrapes/marks pene-trating outer polyurethane coating but exposing white case surface. Side wall of case with 7 or more pinstrip scratches or combustible casing (to include shoulder) with scrapes, abrasions, or surface coating voided revealing yellowish/ white case material. Damage area(s) reveal yellowish/white case material totaling less than 10% (30 in.2/194 cm2) of the cartridge case area.	Abrasions, scrapes exposing yellowish/white case mater-ial totaling 10% (30 $in.^2$/194 cm2) or more of total car-tridge case area. Cracked, split, punctured, or dented cartridge case. Glue joint or case base separated, loose, or showing a gap. Combustible cartridge case/ case adapter material is soft to the touch, and swollen.
Increment(s) (Mortar)	All present.	None	Missing increment(s).
	Ignition pad dry and increments flexible.	None	Damp or wet and increments brittle. Damp igniter pad or with caked/lumpy powder.

Table 3-2. Inspection Criteria for Ammunition- Continued

Metallic Cartridge Case (Including Spiral Wrapped)			
Item	**Acceptable**	**Reparable**	**Irreparable at organizational level**
Bag(s)	Free from mildew or stain.	None	Any mildew or stain.
	Blue and not weak.	None	Blue and weakened.
	Free from tears.	None	Torn bag(s).
	*Yellow discoloration.	None	None
All 152mm cartridge cases	Small scratches, abrasions, etc., on rubber bag.	None	Crushed or otherwise distorted case.
Propelling Charge			
Marking	Legible and correct.	None	Markings missing, illegible, incorrect, or misleading.
Increment(s) (Mortar)	All present.	None	Missing increment(s).
	Ignition pad dry and increments flexible.	None	Damp igniter pad or with caked/lumpy powder.
Bag(s)	Free from mildew or stain.	None	Any mildew or stain.
	Blue and not weak.	None	Blue and weakened.
	Free from tears.	None	Torn bag(s).
	*Yellowish discoloration.	None	None
Flash reducer	Dry.	None	Moisture absorption; caked or lumpy powder.
Spacer for M124 charge	Dry, undamaged.	None	Wet, any damage to structure.
Additive jacket (M86 charge only)	Additive mixture cracked, plastic sheet ripped or split open.	None	Jacket torn completely in half cannot stay in place over zone 3.
Primer			
Body	Free from corrosion.	None	Corroded.

*Yellowish discoloration of charge bags is not a defect as all charges containing stabilizer 2NDPA will discolor.

b. Serviceable Unserviceable Criteria for Damaged 120mm Cartridge Cases.

(1) Side wall of combustible cartridge case (CCC) is scratched, exposing combustible case (yellowish-white). No more than 6 pinstripe scratches per case are considered serviceable ammunition.

(2) Cartridge cases which can be considered unserviceable and reparable (per par. 4-16.1 of TM 9-1300-251-34) are as follows:

(a) Cases that have superficial scrapes/marks penetrating outer polyurethane coating, but exposes white case surface.

(b) Side wall of case with 7 or more pinstripe scratches.

(c) CCC (to include shoulder) with scrapes, abrasions, or surface coating voided revealing yellowish/ white case material.

(d) Damage area(s) reveal yellowish/ white case material totaling less than 10% (30 $in.^2$/194 cm^2) of cartridge case area.

(3) Cartridge cases which are deemed unserviceable and irreparable at organizational level are as follows:

(a) CCC having abrasions or scrapes exposing yellowish/white case material totaling 10% (30 $in.^2$/194 cm^2) or more of total cartridge case area.

(b) Cracked, split, punctured, or dented cartridge case.

(c) Glue joint or case base separated, loose, or showing a gap.

c. Corrective Action.

(1) Package acceptable material using procedures in paragraph 3-16.

(2) Clean reparable items. Clean flaked or blistered coating and touchup paint and marking following procedures in paragraph 3-10.

(3) Re-mark, using procedures in paragraph 3-10.

(4) Clean or touchup the Copperhead M712 following procedures in paragraphs 3-10a(8) and 5-10b. Only clean or touchup is permitted.

(5) Repair the Copperhead M823 following procedures in paragraph 3-18 through 3-20.

d. Disposition of Irreparable Items. The next higher maintenance level is to be contacted for disposition of irreparable ammunition. EOD personnel is to be contacted for disposition of ammunition items considered to be hazardous.

3-10. Cleaning, Touch-up, and Marking of Ammunition (fig. 3-19).

WARNING

PRIMERS SHALL BE CLEANED ONLY WITH RAGS DIPPED IN ALCOHOL OR ACETONE. PRIMERS SHALL BE COVERED WITH FIBER CONTAINER CAP DURING CLEANING, TOUCH-UP, AND MARKING OF AMMUNITION.

NOTE

To the extent allowed by the available facilities, the safety criteria for handling and maintenance of ammunition as given in TM 9-1300-206 must be followed.

a. Cleaning.

NOTE

Rags shall be sorted in non-combustible self-closing containers. Wastes or used rags shall be placed in water filled containers. Areas will be well ventilated where solvents and paints are used.

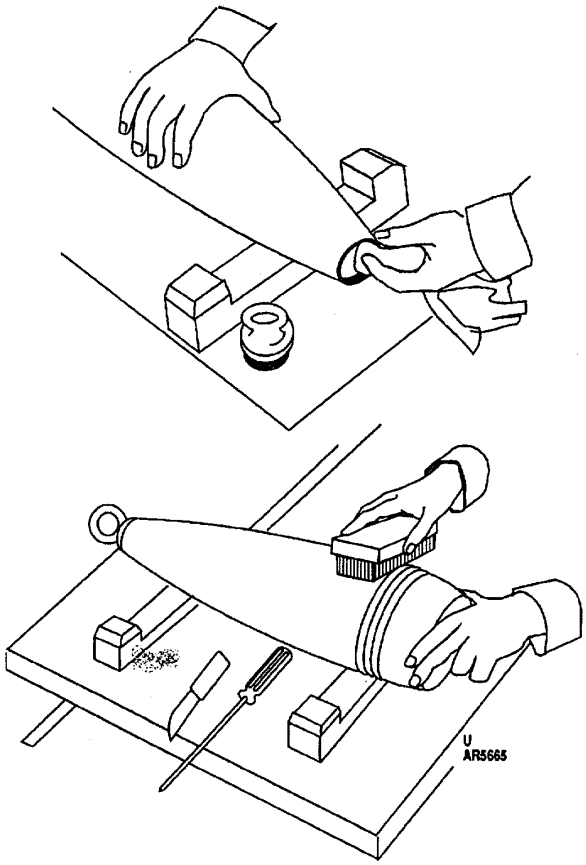


Figure 3-19. Cleaning rust and corrosion from fuze well and projectile body.

(1) Remove dirt, mud, and other foreign material using rags or brushes. Use rags dampened with alcohol or acetone to remove grease.

(2) Using nonferrous brush, remove flaked, chipped, blistered, or peeling paint.

(3) Remove rust using nonferrous brush or sandpaper.

WARNING

FUZE CAVITY LINER MUST BE IN PLACE PRIOR TO CLEANING FUZE WELL OR THREADS.

(4) Prior to cleaning fuze well and threads, thoroughly inspect fuze well for explosive filler exudation around the top of the fuze liner. Remove exudation before undertaking any other cleaning operation such as cleaning threads. Remove exudation using acetone dampened rag wrapped around a wooden stick. (Rag should be tied around end of stick to make a swab.) Swab the area around the top of the fuze well liner several times using fresh pieces of rag dampened with acetone until exudation is removed. Then clean fuze well threads with small stainless steel brush and rags dampened with alcohol or acetone.

CAUTION

DO NOT CLEAN THE PROJECTILES, ESPECIALLY THE PLASTIC COMPONENTS, WITH ANY CLEANING SOLUTION OTHER THAN SOAP AND TM 9-1300-251-20&P WATER OR ALCOHOL. CLEANING AGENTS, PAINT THINNERS, ACETONE, AND SIMILAR AGENTS WILL DAMAGE THE PLASTIC COMPONENTS.

NOTE

- **Use of Corrosive Removing Compound (CRC) (NSN 6850-00-174-9672) will not be permitted on main tank gun ammunition unless authorization is granted by the National Maintenance Point (NMP), HQ, AMCCOM, ATTN: AMSMC-DSM, Rock Island, IL 612996000.**

- **CRC is for use on only bare aluminum/copper based metal ammunition components.**

- **Do not partially or completely submerge ammunition items into solutions containing CRC or any other form of cleaning agent.**

- **Do not allow CRC solution or any other agent to enter the cartridge case via cartridge case/projectile interface area.**

(5) Clean corrosion from aluminum or copper-based metals by first, brushing with a nonsparking brush and then removing residue by wiping effected area with a rag dampened sparingly with an approved corrosive cleaning compound.

(6) Inspect cleansed item for cracks or other damage or deterioration.

(7) Allow solvent-cleaned surfaces to dry thoroughly before painting.

(8) Clean Copperhead projectiles with a solution of soap and water or alcohol.

NOTE

To prevent chips, rust particles, cleaning solutions, and other foreign matter from entering the wing and fin slots on the M712 projectile (or from getting under the loose fitting obturator and the codetime switches) use masking tape, rags, or other material.

b. Touchup (fig. 3-20). Touchup painting must be done using the correct paint color and correct paint specification.

(1) Use masking tape to cover existing markings which are in good condition and parts such as rotating bands, primers, fuze threads, etc., which should not be painted.

(2) Using a spray can or brush, cover bare metal with primer and allow to dry. Use clear lacquer to lightly cover areas of metallic cartridge cases which have had corrosion removed.

(3) Using a spray can or brush, paint primed area with two coats, allowing first coat to dry before applying second.

(4) After paint has dried, remove masking tape.

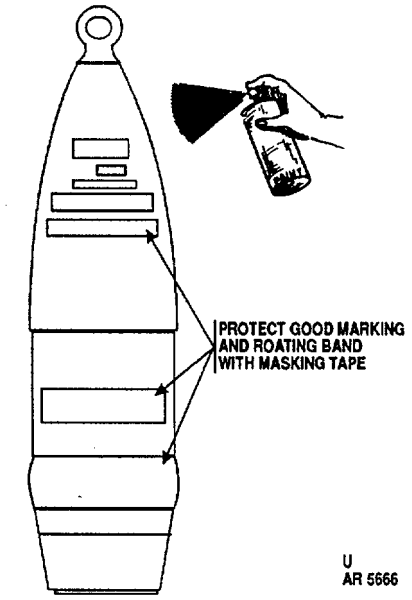


Figure 3-20. Using spray paint for touch-up.

(5) Minor touchup procedures for Copperhead projectiles are as follows:

NOTE

Procedures apply only to minor touchup. If extensive areas are bare or have flaked, chipped, blistered or peeling paint, forward the projectile in container to Direct Support Maintenance.

(a) Feather edges of bare spots using fine abrasive (320 grit) cloth. Mask entire ogive (nose cone), bourrelets, obturator, and code-time switches with masking tape. Touchup paint must not be applied to the bourrelet area because it could result in improper chambering in the weapon. Mask existing markings which are in good condition if touchup is to be done nearby.

(b) Prime and paint as in steps (2) and (3) above. After paint has dried, remove masking tape from nose cone, obturator, and bourrelets. Leave tape on code-time switches.

(c) Using a brush, apply a film of corrosion preventive compound to bourrelets. Remove masking tape from code-time switches after applying compound.

(d) Remove tape and clean nose cone with a cloth dampened with alcohol, if required.

c. Remarking.

(1) Observe markings on a like item for correct positioning of data.

(2) Using a felt marker or small brush and paint, restore any illegible or missing markings. (See tabulated data in chapter 2 for color identification.) In instances where the markings on the cartridge case have experienced wear, caused by ready racks in tactical vehicles, it is permissible to relocate the circumferential marking three inches above the case flange using felt marker.

(3) Allow markings to dry before handling or repacking.

3-11. Maintenance of Packaging Hardware

a. Repair of Damaged Hardware. Hardware which has been damaged to the point that it is inoperable is usually irreparable; however, minor damage can usually be corrected by straightening, as follows:

(1) Using pliers carefully, bend damaged item until its configuration is the same as the serviceable item.

(2) Test repaired hardware for proper functioning.

b. Replacement of Irreparable Hardware. Hardware which cannot be repaired can be replaced with a serviceable item cannibalized from an unserviceable container, as follows:

(1) Using a screwdriver, remove unserviceable hardware.

(2) Attempt to reinstall serviceable hardware in existing holes. Secure with screws.

(3) If screws are missing or cannot be tightened in existing holes, proceed as follows:

(a) Replace missing screws with others obtained from an unserviceable box.

(b) If screws cannot be tightened, move hardware (with box top in place) to a different location where screws can be secured. If necessary, carve notch to accommodate hinge pin.

(c) Mark location for attaching screws and remove hardware.

(d) Drive and remove a small nail at each location to provide a pilot hole.

(e) Place hardware and screws in position and secure.

c. Removing Rust or Corrosion from Hardware.

(1) Remove rust and corrosion from hardware by first brushing with a wire brush.

(2) Cover with primer or paint.

d. Replacing Broken, Loose, or Deteriorated Strapping.

(1) Cut pieces of 5/8-inch banding of sufficient length to go around box plus about 6to 8inches.

(2) Position strap(s) under box.

(3) Insert one strap end into strap stretcher so that strap is held firmly by stretcher with about 3 inches of strap protruding.

(4) Place clip over strap end.

(5) Thread loose end of strap through clip and into stretcher head.

(6) Tighten strap by repeated movement of ratchet lever until edges begin to cut into box.

(7) Using banding crimper, crimp clip in two places.

(8) Release locking pawl on stretcher and slide stretcher out.

(9) Cut off excess strapping.

(10) Repeat (3) through (9) above for each strap.

3-12. Maintenance of Packaging Containers and Materials

a. Repair of Cracks and Splits in Wood.

(1) Hold board tight so that the crack or split is closed.

(2) Hammer corrugated fasteners into wood at 4to 6-inch intervals. Fastener should be centered across crack.

b. Repair of Broken Cleats or Wood Handles.

(1) Remove broken cleat with claw hammer or pry bar.

(2) Remove serviceable cleat with claw hammer or pry bar from an otherwise unserviceable box.

(3) Position serviceable cleat on box and secure with 3 to 5 small nails.

(4) Bend nails over inside of box with hammer.

c. Repair of Rope or Strap Handles.

(1) Remove cleats holding handle with claw hammer or pry bar.

(2) Remove serviceable handle from an otherwise unserviceable box by removing the holding cleats with claw hammer or pry bar.

NOTE

Do not remove nails or staples attaching handle to cleats.

(3) Position serviceable handle and cleats and attach to box with 3 to 5 nails in each cleat.

(4) Bend nails over inside of box with hammer.

d. Painting of Wood Boxes. Normally, used boxes will not be painted except to obliterate previous markings or to indicate less than full pack (par. 3-17).

e. Painting of Metal Boxes.

(1) Remove dirt, mud, and other foreign material from boxes using wire brush and/or rags dipped in detergent-water solution. Use rags dipped in alcohol to remove grease.

(2) Using wire brush, remove flaked, chipped, blistered, or peeling paint.

(3) Remove rust and corrosion using a wire brush and sandpaper or rags and corrosion removing compound.

(4) Allow cleaned surfaces to be dry thoroughly before painting.

(5) Cover existing markings, if applicable, with masking tape.

(6) Using spray can or brush, cover bare metal with primer and allow to dry.

(7) Using spray can or brush, paint primed area with two coats, allowing first coat to dry before applying second.

(8) Remove masking tape, where applied.

(9) Mark box as required following procedures in paragraph 3-13.

f. Touchup of Copperhead Container (fig. 3-11).

(1) Remove dirt, mud, and other foreign material using rags or brushes. Use rags dampened with alcohol or acetone to remove grease.

WARNING

ACETONE IS EXTREMELY FLAMMABLE; KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAMES; KEEP CONTAINER CLOSED; USE ADEQUATE VENTILATION; AND AVOID PROLONGED OR REPEATED CONTACT WITH THE SKIN. THE VAPOR IS HEAVIER THAN AIR AND MAY TRAVEL CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASHBACK. ACETONE CAN REACT VIGOROUSLY WITH OXIDIZING MATERIALS.

CAUTION

CONTAINER RECONDITIONING OPERATIONS SHALL NOT BE PERFORMED IN THE SAME AREA WHERE COPPERHEAD M712 PROJECTILES ARE EXPOSED.

(2) Using nonferrous brush or 220 grit abrasive cloth, remove flaked, chipped, blistered or peeling paint, and aluminum corrosion.

(3) Inspect cleaned item for cracks and other damage or deterioration.

(4) Allow cleaned surfaces to dry thoroughly before painting.

(5) Mask existing nearby markings that are in good condition with masking tape. Mask the humidity indicator, warning labels, rope carrying handles, and latches that must remain unpainted.

(6) Using a spray can or brush, cover bare metal with zinc chromate primer, TT-P1757. Allow primer to dry.

(7) Using a spray can or brush, paint primed area with two coats of olive drab paint TTE-516. Allow first coat to dry before applying second coat.

(8) Remove masking tape.

(9) Mark container per procedures in paragraph 3-13c, and refer to figure 4-5 of TM 9-1300-251-34, if required.

g. Humidity Indicator Check. Humidity indicator card is to be checked every 90 days.

(1) If 40% humidity dot card is blue, no corrective action is required.

(2) If 40% humidity dot is not blue, desiccant and humidity indicator card is to be checked following the procedures in paragraph 3-3(1) through (4) and paragraph 3-16r(2)(i) through (1).

3-13. Marking of Packaging Materials

a. Markings on Outer Box. The following information must be legible on each box:

Title	Example
Nomenclature	Cartridge, 105MM: HE, M1 Dualgran with Fuze, PD M557, 05 Sec Delay for How M2A1, M2A2, M4, M4A1 & T96.
National stock number (Including DODIC)	NSN 1315-00-028-4720 C444
Lot number	Lot KN 123-32X
Date of manufacture	7-66
Quantity	2 (usually precedes nomenclature)

NOTE

Ends of box will have DODIC and Lot Number.

b. Markings on Inner Container. The following information must be legible on each container:

Title	Example
Nomenclature	Cartridge, 105MM: HE, M1, Dualgran with Fuze, PD M557, 05 Sec Delay for How M2A1, M2A2, M4, M4A1, & T96.
DODIC	C444
Lot number	KN 123-324
Quantity	1
Weight Zone	2-1/2

c. Markings on Metal Container

(1) Markings on Metal Container for 105mm: Howitzer Ammunition (fig. 3-21). The following are typical markings which must be legible on each container.

(2) UN Performance Orientated Packaging markings are required on opposite side of container from markings shown.

(3) Lot Number and DODIC markings are on inside rim of container opening.

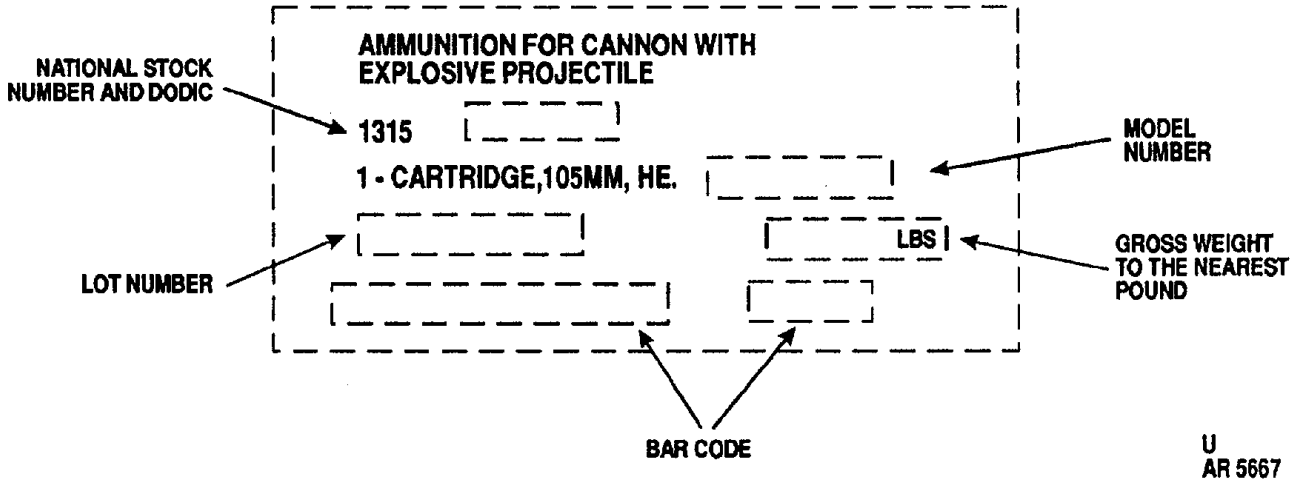


Figure 3-21. Markings on Metal Container for 105mnm.

d. Restoration of Markings.

(1) Carefully observe information and location of markings on packaging of like item.

(2) Using waterproof ink marker, china marking pencil or small brush and paint, restore markings which are faded, obliterated during cleaning, or painted over.

(3) Check markings for accuracy and allow to dry.

(4) Repack ammunition following procedures in paragraph 3-16.

3-14. Nose Fuze Removal and Installation

a. Removal of Nose Fuzes.

(1) Place fuze wrench M18 on fuze so that edges of wrench solidly engage wrench slots on fuze.

(2) Holding projectile firmly, (use strap wrench if available) turn wrench counterclockwise to loosen fuze.

(3) Remove fuze by hand.

(4) For fuzes with separate booster, use fuze wrench to loosen and unscrew booster (applies to M78 series fuzes only).

(5) Install new fuze in accordance with b, below.

(6) Package fuzes removed following procedures in paragraph 3-16.

b. Installation of Fuzes with Attached Booster.

(1) Assure fuze and fuze well threads are clean and undamaged (use dry rag to wipe off, if necessary).

(2) Assuring that threads engage properly, screw fuze clockwise into nose of projectile until fuze shoulder seats flush on nose of projectile.

(3) Engage M18 fuze wrench in fuze slots and unscrew fuze one-quarter turn.

(4) Holding projectile firmly (using strap wrench if available) tighten fuze into nose of projectile with one sharp stroke of the wrench.

NOTE

Reject any fuze or projectile which will not allow proper seating of the fuze.

c. Installation of Fuzes with Separate Boosters.

(1) Screw booster in fuze well clockwise assuring that threads are properly engaged.

(2) Place fuze wrench so that edges of wrench engage slots on booster.

(3) Holding projectile firmly, (using strap wrench, if available) turn wrench clockwise to tighten booster.

(4) Install fuze following procedures in b, above.

d. Installation of Lifting Plugs.

(1) Assure lifting plug gasket is in place, intact, and clean. Assure plug threads are undamaged and clean. Assure fuze well threads are clean. Wipe off gasket and/or threads with dry rag, as necessary.

(2) Thread plug into fuze well and screw it in clockwise until hand-tight against nose of projectile.

(3) Unscrew plug a quarter-turn.

(4) While holding projectile securely, (use a strap wrench if available) insert a bar or handle of fuze wrench through loop in lifting plug and tighten plug with one smooth, easy stroke. One easy stroke is sufficient; over-tightening can damage gasket which, in turn, could allow moisture damage to fuze well area.

e. Installation of Closing Plugs.

NOTE

Neither metal nor plastic closing plugs offer positive moisture seals. Items equipped with these plugs should be repacked in original manner to give them moisture protection.

(1) With metal plugs, make sure cardboard spacer is in place to immobilize supplementary charge.

(2) Screw metal plug in clockwise direction until finger-tight.

(3) With plastic plugs, assure there is no cardboard spacer in fuze well.

(4) Assure plastic plug is secure and will not fall out due to normal handling of projectile. If necessary, replace with tighter plug or tape in place.

(5) The plastic closing plug is a press-fit tear-tab configuration which, upon proper removal, results in separation from the side wall of the plug along a designated area so the plug can be removed. It does not unscrew like the metal plug. Therefore, to remove:

(a) Hold projectile securely and pull tab up, breaking its sides loose from the plug.

(b) Push the tab into the center of the plug.

(c) Squeezing the plug, withdraw it from the fuze well.

(6) The plastic closing plug was designed for one time use. However, it can be reinserted for short term storage at the user level. To reinsert the plastic plug:

(a) Assure there is no cardboard spacer in the fuze well.

(b) Insert plug in nose of projectile and tap with hand.

(c) Assure plug is secure and will not fall out with normal handling. If necessary, tape plug in place.

(7) Rounds that have been fuze-cavity inspected or rounds encountered with damaged plastic closing plugs will be reassembled with the following items:

(a) Plug, Closing for 105MM cartridges, P/N 8785283, NSN 1315-00-077-2185.

(b) Spacer, Deep Cavity, NSN 1390-00-077-2141, or spacer portion of the plastic closing plug.

(8) The procedure for inserting the metal closing plug is as follows:

(a) Assure spacer is in place to immobilize supplementary charge.

(b) Screw metal plug in clockwise direction until finger-tight.

3-15. Loading 40-MM Charge Clips

a. Unpack ammunition following procedures in paragraph 3-3.

b. Inspect ammunition following procedures in paragraph 3-9.

c. Prior to loading into charge slips, clean and touchup ammunition and clips as necessary, following procedures in paragraph 3-10.

d. Holding clip in one hand, press pin and lock (fig. 3-22) outward with finger.

e. Insert rim of cartridge into one of the four concave depressions.

f. Release pin to permit hook to engage groove in cartridge base, clamping the cartridge in place.

g. Repeat operation until clip is filled.

h. Pack 4 clips (16 rounds) per metal box. (See par. 3-16.)

3-16. Repacking Procedures

NOTE

•Boxes and packaging materials are normally available for reuse after ammunition is fired. If not available in using organization, requisition required items.

•Refer to appendix C (Repair Parts and Special Tools List) for most recent packaging information and appendix E for packing and marking data.

a. *General.*

(1) Always repack ammunition in serviceable packaging containers.

(2) Select packaging components from those for similar ammunition items.

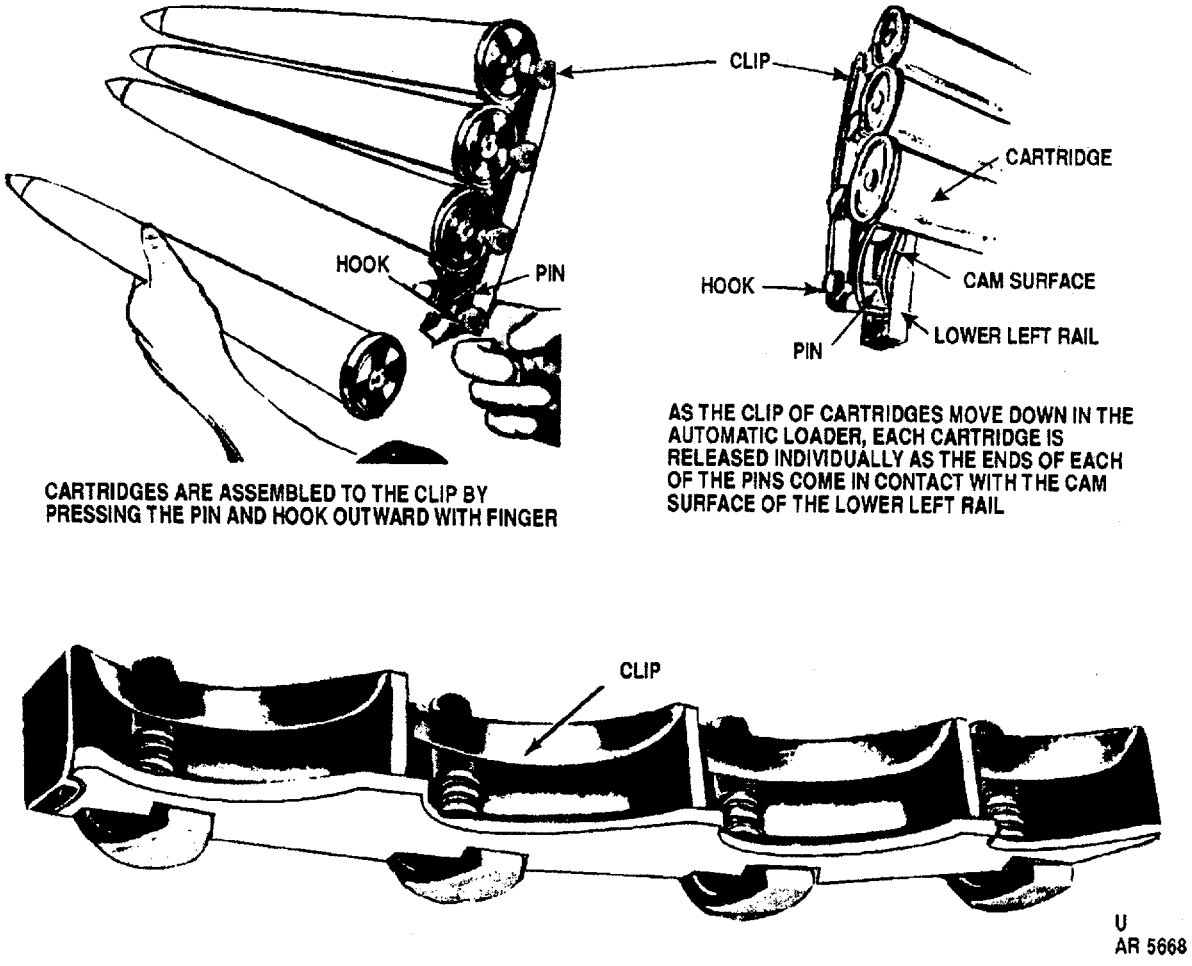


Figure 3-22. Loading 40-mm cartridges in charger clips.

(3) Use filler pads as required for a tight pack.

(4) Re-mark package as necessary to assure proper markings.

(5) Assure that neoprene or elastomeric barrier bag is present, properly positioned, and undamaged before repacking 152-mm ammunition.

b. *Metal Container.*

(1) Place item in container so that it is firmly seated in filler materials.

(2) Cover any sensitive parts such as primers with padding.

(3) Place top on container.

(4) Seal with plastic filament tape or black nylon tape by wrapping joint in a double layer and folding edges over top.

c. *Metal Box (M2A1, etc.).*

(1) Inspect gasket on top of box to assure a good seal.

(2) Place lower filler materials into box.

(3) Insert item(s) in space(s) provided.

(4) Add other filler materials as required.

(5) If top has been completely removed, line up hinge slots on top with hinge pins on box and slide top onto box.

(6) Close top firmly.

(7) Place short end of locking lever under lock lip.

(8) Push down and in on locking lever until it snaps against box.

d. *Metal Container (PA-64) for 152-mm Ammunition.*

(1) Replace protective neoprene or elastomeric bag over cartridge case, if previously removed.

(2) If fresh desiccant bags or desiccant bags which have been resealed as per paragraph 3-3*n*(7) are available, secure desiccant bag to projectile nose in original manner.

(3) Replace nose plug on M625 series cartridges.

(4) Fit nose support to cartridge and place cartridge in half cushion cavity.

(5) Place initiator ring between base of cartridge and cushion.

(6) Insert forward spacer between nose support and cushion.

(7) Place inner fillers between forward spacer, as required, to provide a tight pack.

(8) Place remaining cushion half over cartridge.

(9) Secure cushion halves together with one complete wrap of any available tape six to seven inches from each end. Be sure tape is long enough to overlap itself and form a pull tab of approximately 3-inch length. Form tab by folding free end of tape back on itself, adhesive to adhesive.

(10) Place cushioned cartridge into metal container, nose end first. Cushion and container are both marked to assure proper orientation.

(11) Use end fillers as required to provide a tight pack when end cap is secured.

(12) Insert and twist end cap into place. Secure cap end by turning locking bar clockwise until it is handtight. Secure locking bar with a piece of scrap wire.

e. *Vapor-Barrier Bag*.

(1) Place protective materials around sensitive parts (primer, etc.) of item.

(2) Place the item(s) into paperboard box.

(3) Close paperboard box and seal with tape.

(4) Insert box in barrier bag.

(5) Exhaust air from bag, fold edges over and seal with tape.

f. *Wax-Dipped Container (Jungle-Wrap).*

NOTE

Wax-dipped outer wrap may be discarded after it has been opened. Inner fiber containers may be repacked to safely ship mortar cartridges to depot. Any jungle wrapped mortar cartridges whose packaging has been opened is considered compromised to moisture degradation and must be used immediately or shipped to depot for renovation.

(1) Replace the packing stop ("horseshow" ring or full-cylinder ring), if used, in fuze or nose plug slots.

(2) Holding container at a slight angle (30° - 60°), insert item, nose first, into container and seat firmly.

(3) Place padding over end of item. Secure with tape if necessary.

(4) Slide on end cap.

(5) Seal end cap with a double layer of black plastic filament-reinforced tape.

g. *Single End Fiber Container*.

(1) Replace packing stop, if used, in fuze or nose plug slots.

(2) Holding container at a slight angle (30° - 60°), insert item, projectile end first, into the container and seat firmly.

(3) Place padding on item as required. Secure with tape if necessary.

(4) Slide on end cap.

(5) Seal end cap by covering joint with two layers of black plastic filament-reinforced tape.

h. *Double-End Fiber Container*.

(1) Determine which end of container should contain projectile.

(2) Replace packing stop, if used, in fuze or nose plug slots.

(3) Holding container at a slight angle (30° - 60°), insert projectile, nose first, into container and seat firmly.

(4) Use filler material if necessary and slide on first end cap.

(5) Place felt or other padding in second end cap.

(6) Place cartridge case, base first, in second end cap so that primer is protected by padding material.

(7) Insert cardboard cup over propellant charge.

(8) Slide fiber container over cartridge case and seat in end cap.

(9) Seal end caps with two layers of black plastic filament-reinforced tape over joints.

i. *Metal Box with Screw Locks*.

(1) Inspect gasket in top of box to assure good seal.

(2) Place filler material in bottom of box as necessary.

(3) Place inner pack(s) in box.

(4) Place padding or filler material over inner pack(s).

(5) Position top on box.

(6) Turn locking bar clockwise to tighten latches.

(7) Turn the four locking thumbscrews clockwise to lock latches.

(8) Secure locking bar and thumbscrews with wire.

j. *Metal Box with Latches*.

(1) Inspect gasket in top of box to assure good seal.

(2) Place filler material in bottom of box as necessary.

(3) Place inner pack(s) in box. Use filler material or empty containers when box is not full.

(4) Place padding or filler material over inner pack(s).

(5) Position top on box.

(6) Snap latches shut to secure top.

(7) Secure latches with wire.

k. *Projectile Grommet.*

(1) Type A: wire-tied metal.

(a) Place padding inside grommet.
(b) Spread grommet ends and slide grommet and padding over projectile rotating band.
(c) Secure grommet with wire ties through holes provided. Tighten wires with pliers and cut off excess.

(2) Type B: wound fiberglass.
(a) Spread grommet ends by pulling outward on aluminum tabs.
(b) Slide grommet into place under projectile rotating band and release.

(3) Type C: high-impact plastic.
(a) Spread grommet ends and slide grommet into place over projectile rotating band and release.
(b) Pull locking wire out and back to cam the ends open; lock by returning wire to closed position. Move grommet ends slightly to assure lock.
(c) Snap locking wire into holding tabs.

l. *Metal Container (Self-Locking).*

(1) Insert base padding or filler as necessary.
(2) For propelling charges:
(a) Assure charge is properly assembled with all increments in order and securely tied together.
(b) Install igniter protector cap over igniter on end of propelling charge.
(c) Insert M86 charge in black plastic bag and secure open end with tape, if available.
(3) Replace inner pack(s).
(4) Position container end cover and push in to seat it.
(5) Replace top cushions on propelling charges and insert separate primer (if present) between cushions.
(6) Place end cover on container and seat firmly by pushing in.
(7) Twist end cover clockwise to engage locking tabs.
(8) Tighten locking bar clockwise to seal.
(9) Secure locking bar with wire.

m. *Wing-nut Fastener Box.*

(1) Place inner pack(s) in box. Position items to balance load for carrying.
(2) Use padding or empty containers as filler material if box is not full.
(3) Place end cover over tie rod(s) and push into place.
(4) Place a large washer over each tie rod.
(5) Screw wingnut onto tie rod and tighten firmly.

n. *Spring-Latch Box.*

(1) Place inner pack(s) in box. Position items to balance load for carrying.
(2) Use padding or empty containers as filler material if box is not full.
(3) Position top so that hinge fits into hinge slot on box.
(4) Close top.
(5) Hook latch onto latch tab.
(6) Press down on latch until it snaps tight.
(7) Secure latch with wire.

o. *Hasp and Hinge Box.*

(1) Place inner pack(s) in box. Position items to balance load for carrying.
(2) Use filler material or empty inner containers when box is not full. Place padding on top of items.
(3) Close box top.
(4) Close hasp.
(5) Rotate hasp catch to latch position.

p. *Wirebound Box.*

(1) Position inner pack(s) on bottom of box (fig. 3-23). Position items to balance load for carrying.

(2) Place box ends in position with enough filler material to make a tight pack.

(3) Raise box front into position and hold.

(4) Raise box back into position and hold.

(5) Close top, being careful to fit wire loops on top over wire loops on front.

(6) Bend wire loops flat against box using a sallee closer (fig. 3-24).

q. *Pallet*.

(1) Arrange boxes, containers, projectiles, etc. n pallet in the same configuration as the original load, if possible. Distribute load for balance.

(2) Place separators between rows of metal tube containers.

(3) Place top (projectile pallet) in position.

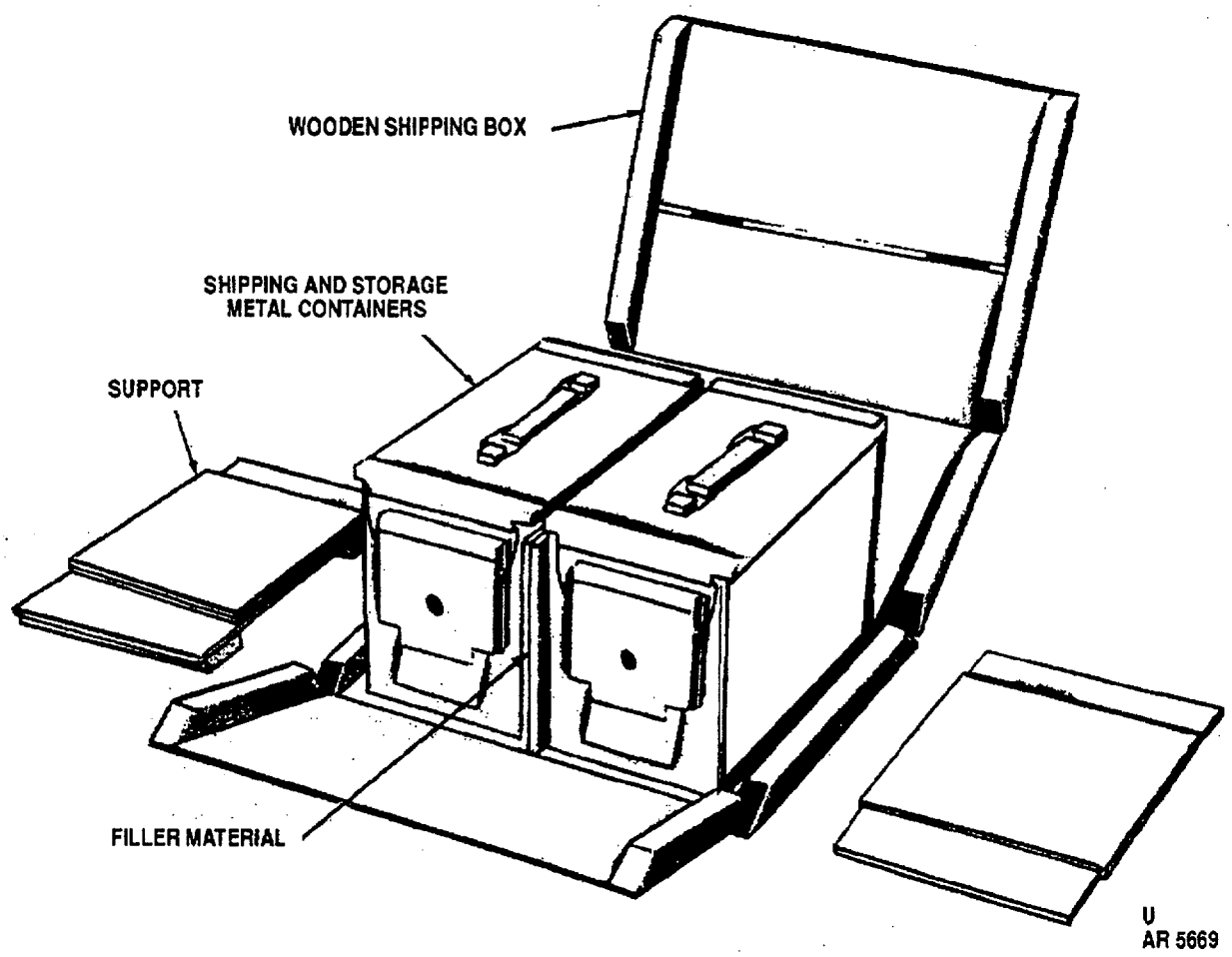


Figure 3-23. Packing wirebound boxes.

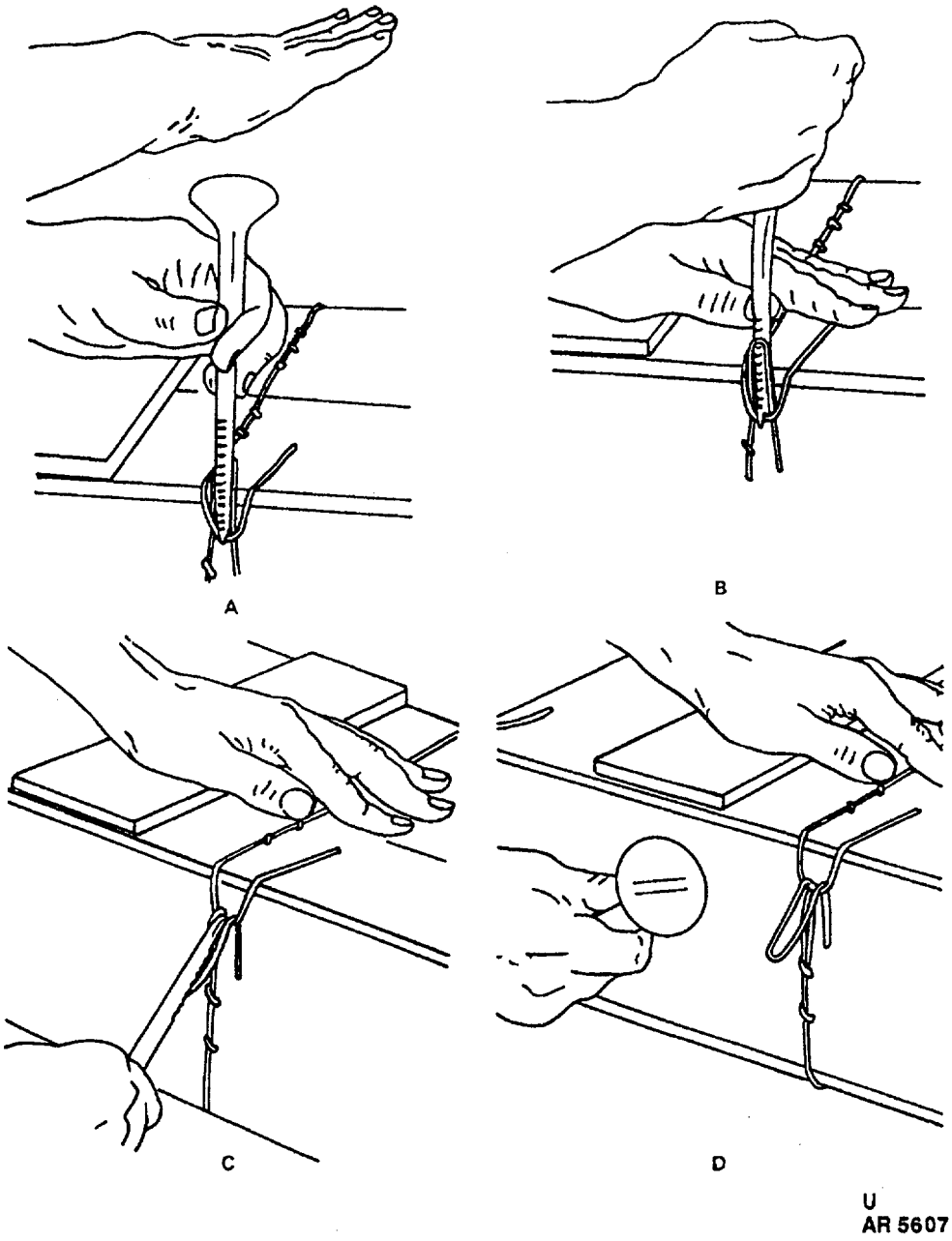


Figure 3-24. Closing wirebound box.

(4) Cut 1 1/4-inch banding pieces about two feet longer than pallet girth.

(5) Position straps under upper part of pallet bottom.

(6) Position wood strips under straps to protect ammunition packaging.

(7) Insert one strap end from rear into strap stretcher so that strap is held firmly by stretcher and about 4 to 6 inches of strap protrudes.

(8) Place clip over strap end.

(9) Thread loose end of that strap through clip and into stretcher head.

(10) Tighten strap by repeated movement of ratchet lever until edges begin to cut into wood.

(11) Using banding crimper, crimp clip in two places.

(12) Release locking pawl on stretcher and slide stretcher out.

(13) Cut off excess strapping.

(14) Repeat (7) through (13), above, for each strap.

r. *Metal Container Copperhead* (fig. 3-11).

(1) Receive temporarily repackaged projectile from firing battery. Check for white stripe and numeral on body of container at the end below the humidity indicator and manual relief valve. White stripe marking indicates projectile was previously repackaged. If stripe and numeral are there, conceal markings by painting over with forest green paint.

(2) Check tag on container indicating the amount of time the projectile was removed from container. When 30 days or more, forward container with projectile to Direct Support Maintenance. When under 30 days, repackage following steps (a) through (m) below.

(a) Open container and remove projectile, as prescribed in paragraph 3-3o.

(b) Remove loose dirt, paint chips, rust, and other foreign matter from interior of container cover and lower half. Goggles or eye shields should be worn.

(c) Check flange gasket. If missing or damaged, forward container with projectile to depot for replacement of the flange gasket.

(d) Using a soft dry cloth, wipe window of projectile ogive (nose cone). Dampen cloth with isopropyl alcohol to remove smudges, if necessary.

(e) Clean, touchup, or re-mark projectile as required. On the M823 training projectile, replace ogive (nose cone), obturator, or code-time switches, if required.

(f) To replace projectile into container, re-install wind and fin preload bands, making sure each of the four preload tabs on each of the bands securely engages fin/wings. Using two people and lifting straps, lift projectile up and position it over the container.

CAUTION

DO NOT PERMIT PROJECTILE TO TOUCH THE GROUND. AVOID ALL CONTACT OF OGIVE TO PREVENT DAMAGE.

(g) Carefully lower the projectile, guiding the ogive into the retaining ring (forward bulkhead) first; gently lower the projectile into place on the two cradles. Tighten tension mechanism handtight. Do not overtighten the tension mechanism, as this could damage the nose cone or the torquing rod.

(h) Check internal components of the container for completeness and replace missing items.

(i) Remove desiccant and replace with fresh supply.

(j) Assuring inside cradles are aligned, carefully swing container cover back onto the body.

(k) Close container latches in pairs starting at the end opposite the humidity indicator. Lift up latch handle, place T-bolt in cover recess, and push down on handle to close.

(l) Check humidity indicator. If 40 percent humidity sector on indicator card is blue, proceed to step (m). If not blue, open container and change desiccant and humidity indicator card as follows:

1. Using slip-joint pliers, unscrew humidity indicator from the container, turning counterclockwise.
2. Use 1/2-inch socket screw key (Allen wrench) or torque wrench with 1/2-inch drive to unscrew plug from inside of humidity indicator, turning counterclockwise.
3. Remove preformed packing from inside of humidity indicator.
4. Remove used indicator card. Insert new indicator card.
5. Reinstall preformed packing inside humidity indicator.

NOTE

If preformed packing is not reusable, return container, with projectile, to depot for replacement.

6. Reinstall plug on inside of humidity indicator using a 1/2-inch socket head key. Turn key clockwise until handtight.
7. Reinstall humidity indicator into threaded hole in the container using slip-joint pliers. Tighten by turning clockwise until handtight.
8. After a 120 hour period, observe humidity indicator card. If the 40 percent humidity sector is not blue, open container, change card and desiccant again, then close container. If after a second 120-hour period the sector is not blue, take the projectile out, put the projectile in a different container, and re-mark the container. Tools used in replacement of humidity indicator card are key, socket head-screw (1/2inch) NSN 5120-00-198-5391 and pliers, slip-joint (10-inch) NSN 5120-00-278-0352. These tools are available in Tool Kit, Artillery, Mechanics: Ordnance.

(m) Check rope handles and replace, if necessary, as follows:

1. Fabricate replacement handles by cutting a 24-inch length of rope, T-R-605, from bulk stock. Wrap both ends of handles with tape, MIL-T-43435. The wrapped area shall not be longer than 1-1/2 inches.
2. Pass both ends of the new rope handle through holes in container stiffening rib using another rope handle as a guide.
3. Tie a single overhand knot on each end of the rope handle.
4. Pull firmly on rope to set knots. Assure handle is properly secured.

s. *Pallet for Copperhead Clamshell Container* (fig. 3-25).

(1) Arrange container (dunnage sections and wood-filler assemblies, if used) on the pallet in the same configuration as the original load, if possible.

(2) Place six dunnage assemblies in place.

(3) Cut 3/4-inch wide banding pieces approximately 11-feet long. Banding pieces must be at least 6 inches longer than pallet girth. As an alternate, use 5/8-inch or 1-1/4-inch banding.

(4) Follow procedures in paragraphs 3-16q(5) through (14).

(5) Staple straps to pallet assembly.

t. *Metal Container, 105mm Tank Ammunition*.

NOTE

Repack HEAT, TP-T, APFSDS-T, and TPCSDS-T Ammunition into their respective containers.

(1) Flip latch 180 degrees to unseal cover assembly.

(2) Rotate cover assembly counterclockwise to disengage the assembly shaft from container notches.

(3) Remove the cover assembly and the spacer material from the container and place them on top of the pallet.

NOTE

Do not misplace cover assembly and spacer material. Cover assembly and spacer material must be replaced after the cartridge has been placed in container.

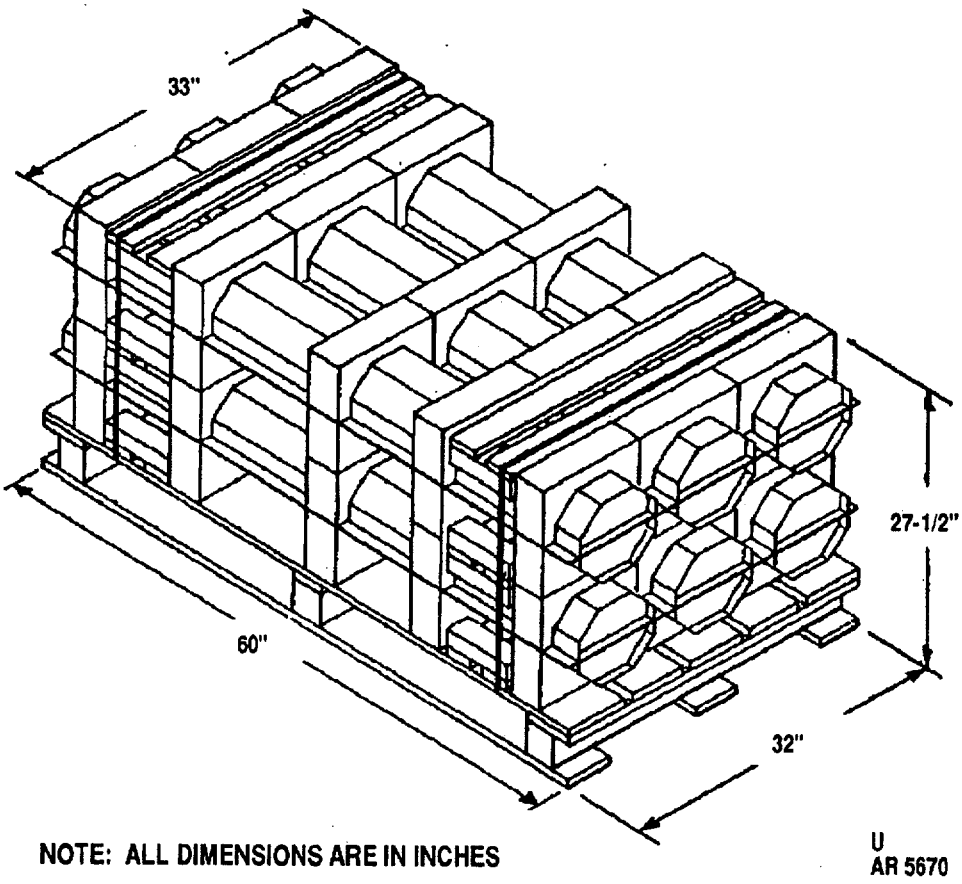


Figure 3-25. Pallet for Copperhead projectiles.

(4) Remove cloth lifting collar from container.

(5) Visually inspect (use flashlight) interior of container for debris. If debris is present, remove by using broom handle, shovel handle, etc. (If container is not palletized, face open end of container downward until debris falls out.) If debris cannot be removed from container, place cloth lifting collar, foam, and cardboard cover spacer into container. Place and secure cover assembly to container, and tag or mark the container "Debris".

(6) Insert cartridge (nose first) approximately three quarters into container.

(7) Obtain and secure cloth lifting collar to cartridge case base.

(8) Obtain the cover assembly and spacer material from the top of the pallet. Perform trial fit of cover and spacer material on container. Add foam and/or cardboard spacer material into container until cover does not readily latch. Remove cover and remove the thinnest spacer in the container. Replace cover assembly and lock latch.

u. *Metal Container, 120mm Tank Ammunition* (figs. 3-26 thru 3-28)

NOTE

•When placing 120mm ammunition into palletized containers, it is advisable to begin packing from the top of the pallet down. This will permit the packing of the cartridges on the pallet without hindrance from the nylon strap loops.

•Repack HEAT ammunition in HEAT containers and APFSDS in APFSDS containers. The interior foam liners differ for each type of ammuntion.

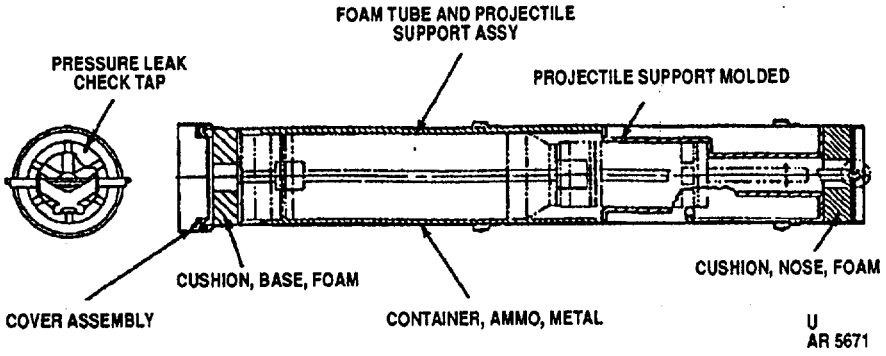


Figure 3-26. Metal container for cartridge, 120mm: HEAT-MP-T, M830 and cartridge, 120mm: TP-T, M831 series.

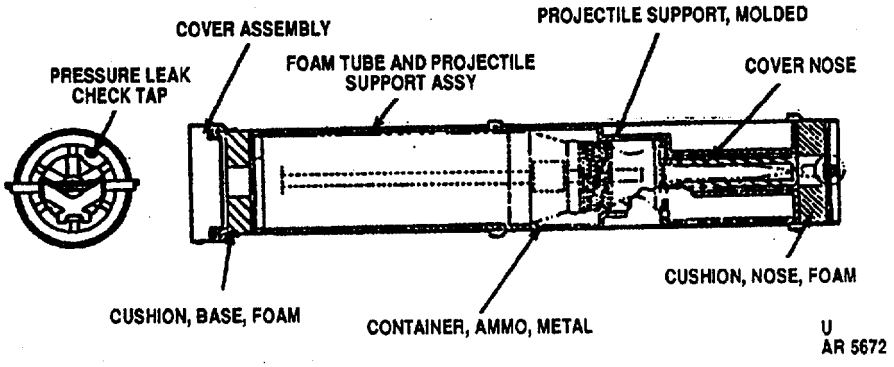


Figure 3-27. Metal container for cartridge, 120mm: APFSDS-T, M829 series and cartridge, 120mm: TPCSDS-T, M865.

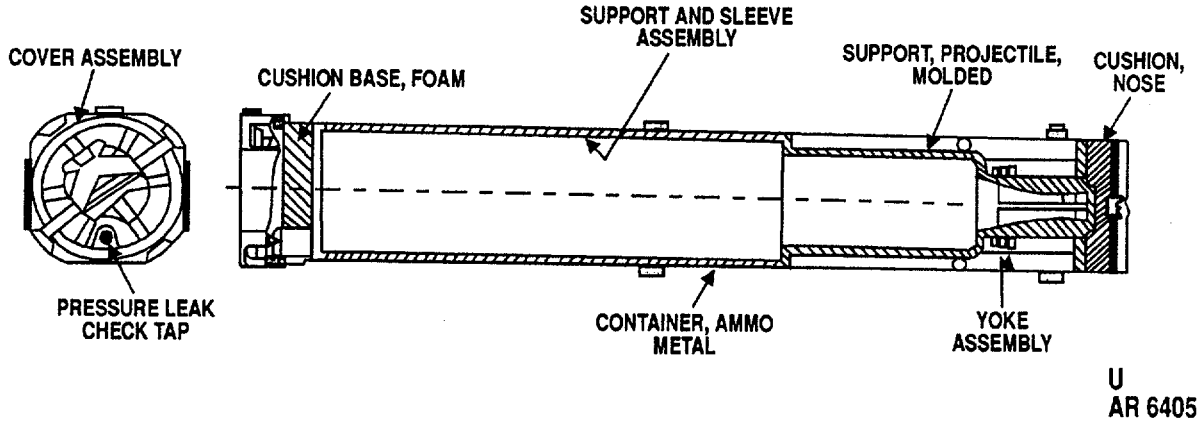


Figure 3-28. Metal container for cartridge, 120mm: HEAT-MP-T, M830A1.

(1) Flip latch 180 degrees to unseal cover assembly.

(2) Rotate cover assembly counterclockwise to disengage the assembly shaft from the container notches.

(3) Remove the cover assembly and the spacer material from the container and place them on top of the pallet.

NOTE

Do not misplace cover assembly and spacer material. Cover assembly and spacer material must be replaced after the cartridge has been place in container.

(4) Grasp and pull the nylon strap loop until the internal stop is engaged. Foam sleeve will move out of container approximately 4 inches.

NOTE

Do not use an excessive amount of force when pulling the nylon strap. If the foam sleeve will not move, place the nylon strap loop, foam, and cardboard spacer in the container. Place and secure the cover assembly to the container, and tag or mark the container "Stuck Sleeve".

(5) Release the nylon strap loop from grasp, loop must hang clear of container rim.

(a) Remove the projectile protective nose cover from the container (APFSDS-T round only).

(b) Place the nose cover over the APFSDS-T round's projectile tip.

(6) Visually inspect (use flashlight) interior of container for debris. If debris is present, remove by using broom handle, shovel handle, etc. (If container is not palletized, face open end of container downward until debris falls out.) If debris cannot be removed from container, place nylon strap loop into foam sleeve, push sleeve fully

into container, place foam and cardboard cover spacer into container, place and secure cover assembly to container, and tag or mark the container "Debris".

WARNING

THE CARTRIDGE CASE OF THE 120MM AMMJNITION IS MADE OF A COMBUSTIBLE (CARDBOARD) MATERIAL AND AS SUCH CARE SHOULD BE EXERCISED SO AS NOT TO DAMAGE OR SCRATCH THE CARTRIDGE CASE.

(7) Insert cartridge (nose first) approximately halfway into foam sleeve/containers.

(8) Grasp the nylon strap loop and hold; insert cartridge fully into the foam sleeve. The cartridge case base should protrude by approximately 1/2 inch from the foam sleeve.

(9) Release nylon strap loop; push cartridge and foam sleeve fully into container.

(10) Place the nylon strap loop into the container.

(11) Obtain the cover assembly and spacer material from the top of the pallet. Perform trial fit of cover and spacer material on container. Add foam and/or cardboard spacer material into container until cover does not readily latch. Remove cover and remove the thinnest spacer in the container. Replace cover assembly and lock latch.

v. *Metal Container, 105MM Howitzer Ammunition.*

(1) Remove container cover by releasing spring clip, rotating locking tab downward and twisting cover counterclockwise.

(2) Remove packing materials.

(3) Insert primed and charged cartridge case into fiber container so that open end meets protector cup. Add spacers over base, as required, for a tight pack.

(4) Place cover onto container end and apply tape over seam.

(5) Insert projectile into fiber container so that nose fits against nose block. Add spacers, as required, for a tight pack.

(6) Place cover onto container end and apply tape over seam.

(7) Insert fiber container into metal container (projectile end first). Add spacers, as required, for a tight pack.

(8) Install container cover. Fit securing rod of cover into slotted holes in container. Twist cover clockwise. Rotate locking tab on the securing rod upward and fasten locking tab with the spring clip.

3-17. Painting and Marking of Boxes with Light Loads

NOTE

Organizations will apply this procedure only when boxes with less than full contents are to be returned to storage area or transported to new location. When painting of boxes is required, re-marking (except quantity) may be avoided by applying masking tape on markings prior to painting.

Boxes with less than full contents will be painted orange as follows:

a. Check contents with markings on box to verify that nomenclature and lot number are correct.

b. Make diagram of markings on box and record all markings except quantity figure.

c. Apply orange enamel to all outer surfaces of box. If enamel is not available, use orange lacquer.

d. When box is dry, re-mark box with correct markings (b, above).

e. Count quantity of items in box and mark number on box in the same position as the original quantity figure.

f. Mark the words "LIGHT BOX" on each side of box using approximately the same letters as original markings.

3-18. Replacement of Switches for M823 Copperhead Training Projectile (figs. 3-29 and 3-30)

NOTE

When reusable switches are not available to replace defective switches on the M823 projectile, remove entire switch housing, salvage reusable switches, and transport switch housing (minus switches) to depot for replacement of switches.

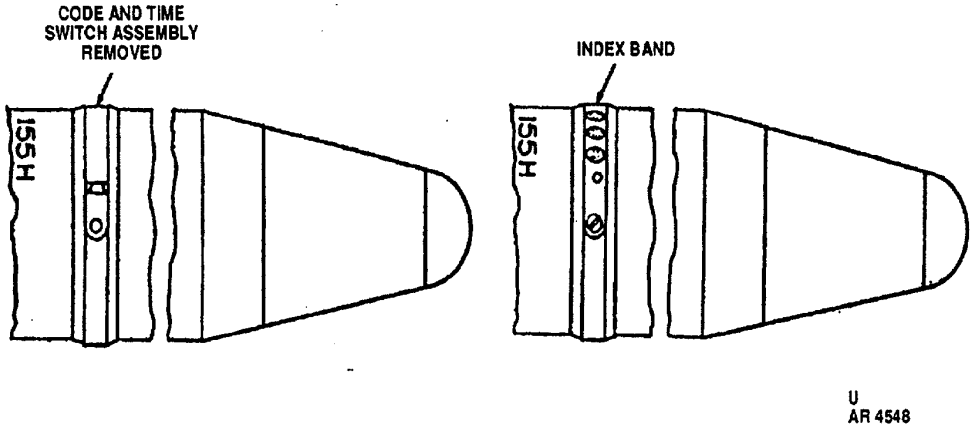


Figure 3-29. Location of code and time switch assembly.

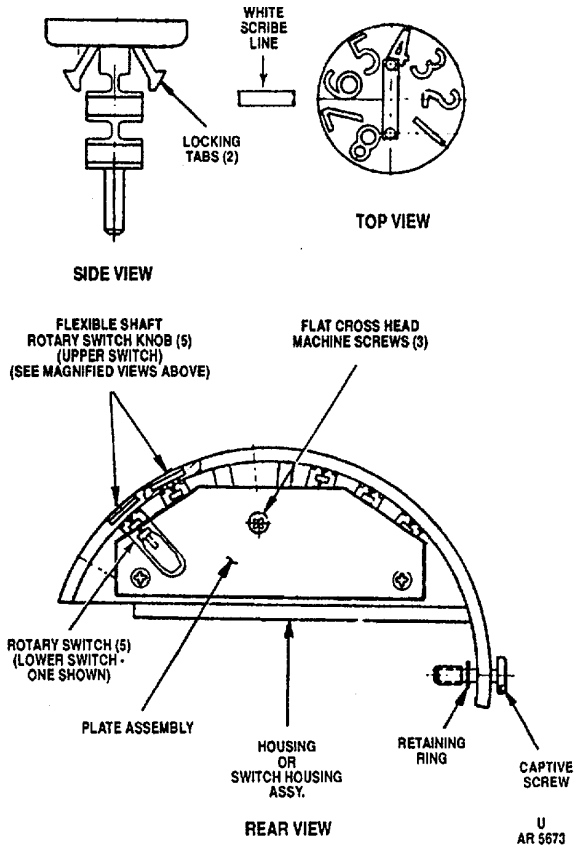


Figure 3-30. Switch assembly.

a. *Procedures for salvage of good switches and switch knobs*.

(1) Remove captive screw holding switch assembly using 1/4-inch flat-tip screwdriver.

(2) Slide switch assembly out from groove in projectile.

(3) Remove 3 screws holding plate assembly to switch assembly using cross-tip screwdriver. Remove plate assembly.

(4) Remove flexible shaft rotary switch knobs (upper switches).

(a) Push in on locking tabs with flattip screwdriver and index finger. At the same time, push upwards on bottom of rotary switch until tabs release. Lift flexible shaft rotary switch knob out of switch assembly. Retain knob if good; discard if defective.

(b) Repeat for remaining four knobs.

(5) Remove rotary (lower) switches by turning switch assembly over so that the side which had the plate assembly faces down. Gently tap assembly, as required, to dislodge rotary switch. Retain good switches; discard if defective.

(6) Re-attach plate assembly to switch assembly using cross-tip screwdriver to reinsert screws.

(7) Forward switch assembly (minus switches) to Anniston Army Depot for switch replacement. Retain good switches and knobs to repair other M823 projectiles.

b. *Procedure for replacement of defective switches and knobs when spares are available.*

(1) Remove plate assembly from switch assembly following procedures in a(l) through (3) above.

(2) Remove any defective flexible shaft rotary switch knobs following procedures in a(4) above. Replace with good knobs previously removed from another switch assembly.

(3) Remove any defective rotary switches following procedures in a (5) above. Replace with good rotary switches previously removed from another switch assembly.

(4) Re-attach plate assembly to switch assembly using cross-tip screwdriver.

(5) Slide switch assembly back into groove in projectile.

(6) Replace captive screw to hold switch assembly in projectile using 1/4-inch flat-tip screwdriver.

c. If switch assembly is found to be unserviceable, forward to depot for replacement. Tag or mark container to note that it contains projectile without switch assembly. Set tagged container aside until replacement assembly is available.

3-19. Replacement of Projectile Ogive (Nose Cone) for M823 Copperhead Training Projectile

a. Place projectile on a dry, clean, flat surface.

b. Hold projectile with both hands to prevent it from turning.

c. A second person is to remove the damaged nose cone by turning it counterclockwise by hand. If nose cone cannot be removed by hand, a strap wrench may be used.

d. Install new nose cone by turning it clockwise into the nose of the projectile taking care that threads engage properly.

3-20. Replacement of Obturator and/or Base for M823 Copperhead Training Projectile

a. Place projectile on side, then place on wooden saddles or other support.

b. One person is to hold the projectile with both hands to prevent it from turning.

c. A second person is to use the extractor drive ratchet (or other ratchet with a 3/4inch square drive) to engage the opening in the center bottom of the base. Turn ratchet counterclockwise to unscrew base from projectile.

d. Remove obturator from base.

e. If obturator is being replaced, install replacement obturator onto base, making sure the higher part of obturator is toward the rear.

f. If base is being replaced, re-install obturator on new base making sure the higher part of obturator is toward the rear.

g. Screw base back onto projectile, turning clockwise, using extractor drive ratchet or other ratchet with 3/4-inch square drive, until handtight.

3-21. Moving of Projectile, M712 (Copperhead) Pallet Within the Battalion Area (figs. 3-31 and 3-32)

A new lifting device has been tested and approved to move the M712 Projectile (Copperhead) pallet within the battalion area of an artillery unit using existing 5-ton wrecker lifting capabilities. This lifting device, using a wire rope type sling, can be locally assembled in accordance with the sketch (fig. 3-31) and has performed well for use with Projectile, M712 pallet. The two straps will form a basket sling around the pallet and then could be attached to the wrecker hook through the four end loops (fig. 3-31). The required equipment is wrecker, 5-ton rope, wire stranded, NSN 4010-00-222-5344, and clamp U-bolt, wire rope, NSN 4030-01-119-5984. This equipment is available within the Army Supply System.

3-22. Handling Equipment for Projectile

A new family of special lifting slings and beams for palletized heavy artillery projectiles is now available. They are issued in quantity as part of the IDS and IGS Ammunition Company Tool Sets and two of the special slings are authorized for each M977 HEMTT Crane. Additionally, 36 slings and 3 beams of each type are authorized for Organizational Maintenance use by the Special Tools List of this TM, Appendix C. Details of these items and their use are given in Appendix F of this TM.

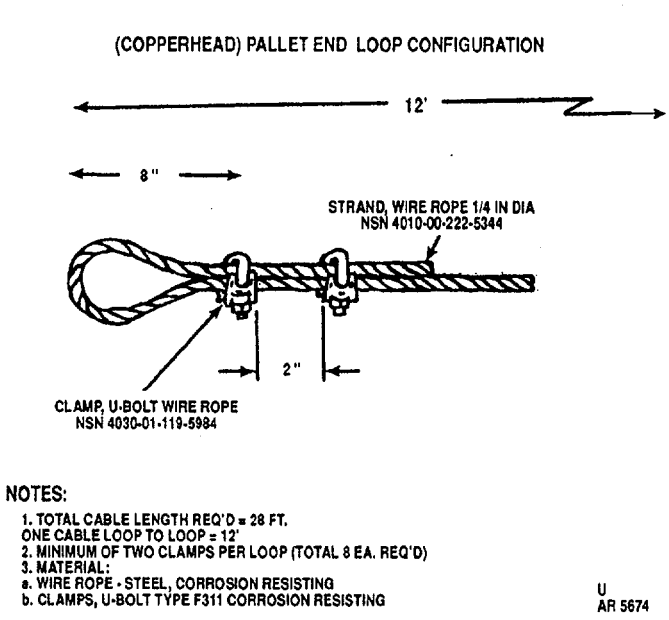


Figure 3-31. Lifting sling for use on Projectile M712 (Copperhead) pallet end loop configuration.

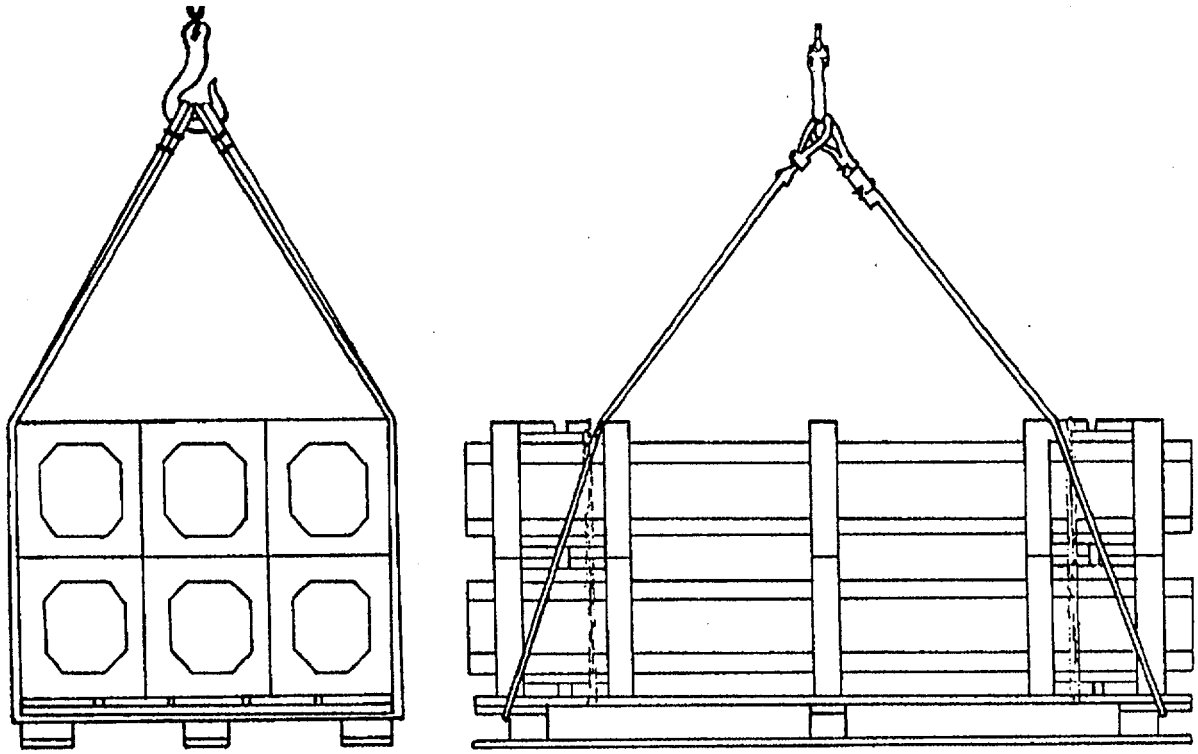


Figure 3-32. Sling configuration.

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CHAPTER 4
SHIPMENT AND STORAGE

SECTION I. SHIPMENT

4-1. Precautions

Damaged, contaminated or otherwise degraded material may be dangerous and/or its usefulness may be impaired.

4-2. Transportation

WARNING

DO NOT ROLL, DROP, THROW, OR SUBJECT AMMUNITION TO ROUGH HANDLING.

a. Block and brace ammunition packages being transported in trucks, jeeps and other tactical vehicles. (Blocking and bracing must be adequate to withstand sudden stops and starts, as well as offroad operations.)

b. Stack ammunition in an attitude which prevents shifting.

c. Assure packaging provides adequate protection for ammunition during transportation.

NOTE

Certain NATO nation's munitions are, by agreement, interoperable in training. At the conclusion of any training exercise, any ammunition drawn from a NATO nation should be returned to the troops of the NATO nation from whom it was obtained. However, it is possible that some NATO nation munitions may be turned into a US Army ASP For that reason, the following is included in this note: Any NATO munitions received at an ASP shall be returned to troops of the appropriate NATO nation.

SECTION II. STORAGE

4-3. Precautions

a. Select storage site carefully to avoid exposure to power lines and electric cables.

b. Assure that exposure to radio frequency (RF) energies and electromagnetic radiation is kept to a minimum in storage areas.

c. Do not store ammunition adjacent to reservoirs, water mains, or sewer lines.

d. Select level, well drained sites free from readily ignitable and flammable materials.

e. Do not store ammunition under trees or adjacent to towers or other structures that attract lightening.

f. Provide nonflammable or fire-resistant overhead covers (e.g., tarpaulin) for all ammunition. Maintain overhead air space of approximately 18 inches between cover and ammunition. Keep cover at least 6 inches from stack on ends and at sides to permit circulation of air.

g. Store or transport ammunition containing white phosphorus with projectiles in a vertical position.

4-4. Storage Data

a. *Field Storage Categories*.

(1) General. Storage categories are the primary groups into which ammunition is segregated for storage in the field.

The groupings are based on consideration of the desirability of storing components of complete rounds in adjacent stacks and on consideration of the hazards of propagation of explosion, range of fragments, spread of fires, and chemical contamination. Safety procedures covering storage are based on the following factors:

(a) Items having comparable storage risks are grouped together in the same category.

(b) A Field Storage Unit (FSU) is composed of a group of stacks. The maximum quantity of items stored in each stack within each storage category and the minimum distances between categories and FSU are specified in quantity-distance tables (table 4-1 and 4-2).

(c) Normally, only one kind of materiel is stored in a stack. Items should be arranged in stacks in the best manner to facilitate inventory and inspection. Where camouflage is a consideration, stacks may be stepped in toward the top (terraced or pyramid stacking) to decrease shadows. Whenever desirable, components of complete rounds may be stored within the same FSU.

(2) *Categories for storage of conventional ammunition*. For storage purposes, conventional ammunition is divided into alphabetical categories. The ammunition covered in this manual falls into categories A through D as follows:

(a) *Category A*. Fixed and semifixed artillery ammunition, except incendiary and chemical.

(b) *Category B.* Propelling charges, fuzes, primers, flash reducers, and separate loading projectiles including HE and ARI, but excluding incendiary and chemical projectiles.

(c) *Category C*. Mortar ammunition and hand grenades except incendiary and chemical.

(d) *Category D*. Pyrotechnics and chemical agents of all types.

b. *Quantity-Distance Tables for Field Storage Categories* Procedures set forth in quantity-distance table 4-1 and 4-2 are to be used as a guide in the storage of ammunition in the field only. These procedures are based upon the necessities incident to field storage. It must be emphasized that any reduction of distances or increase in tonnage to those prescribed increases the probability of loss of life and ammunition. Quantity-distance classes and storage compatibility groups are covered in TM 91300-206. Field storage categories, explosive weight, and additional storage and packing data are covered in appendix E of this TM.

c. *Permanent Installation Storage*. For permanent installation storage, standard quantity distance classes and storage compatibility groups given in TM 9-1300-206 apply.

4-5. Procedures

a. Store ammunition in a dry, cool place; never in the direct rays of the sun or where temperatures exceed limits marked on containers.

b. Use heavy, well supported dunnage to prevent stack from sinking and to keep bottom tier off ground.

c. Use hard stand of gravel and sand rather than excessive dunnage.

d. Allow at least 6-inch clearance beneath stacks for air circulation.

e. Dig suitable trenches to prevent water from flowing under stack.

Table 4-1. Quantity-Distance Data for Field Storage Categories A, B, and D.

GROSS TONS PER STACK	GROSS TONS PER FSU	MINIMUM DISTANCE IN FEET BETWEEN			
		STACKS UNBARRICADED	STACKS BARRICADED	FSU UNBARRICADED	CATEGORIES
Less than 10	400	40	30	300	750
10-20 maximum	400	50	40	300	750

NOTE

- **If desirable, fixed and semifixed smoke ammunition, except WP, may be stored in Category A.**
- **The minimum distance between a stack of propelling charges and any other stack must be 100 feet whether barricaded or unbarricaded.**

Table 4-2. Quantity-Distance Data for Field Storage Category C.

GROSS TONS PER STACK	GROSS TONS PER FSU	MINIMUM DISTANCE IN FEET BETWEEN			
		STACKS UNBARRICADED	STACKS BARRICADED	FSU UNBARRICADED	CATEGORIES
Less than 10	300	75	60	300	900
10-30 maximum	300	105	75	300	900

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APPENDIX A
REFERENCES

A-1. Administrative Publications

a. *Army Regulations.*

Reporting of Transportation Discrepancies in Shipments ..... AR 55-38
Malfunctions Involving Ammunition and Explosives ..... AR 75-1
Accident Reporting and Records ..... AR 385-40
Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat ..... AR 385-63
Fire Prevention and Protection ..... AR 420-90
Reporting of Item and Packaging Discrepancies ..... AR 785-11-2

b. *DA Pamphlets.*

Consolidated Index of Army Publications and Blank Forms ..... DA Pam 25-30
The Army Maintenance Management System (TAMMS) ..... DA Pam 738-750

A-2. Blank Forms

Functional Users Manual for Transportation Discrepancy Report ..... SF 361
US Army Accident Investigation Report ..... DA Form 285
Recommended Changes to Publications and Blank Forms ..... DA Form 2028
Maintenance Request ..... DA Form 2407
Ammunition Condition Report ..... DA Form 2415
Fire Emergency Report ..... DA Form 2324-1

A-3. Doctrinal, Training, and Organizational Publications

Conventional Ammunition Unit Operations ..... FM 9-38
Explosives and Demolitions ..... FM 5-25

A-4. Equipment Manuals

a. *Technical Manuals*.

Ammunition, General ..... TM 9-1300-200
Ammunition and Explosive Standards ..... TM 9-1300-206
Data Sheets for Ordnance Type Materiel ..... TM 9-500
Military Explosives ..... TM 9-1300-214
Army Ammunition Data Sheets for Artillery Ammunition for Guns, Howitzers, Mortars and Recoilless Rifles, Grenade Launchers and Artillery Fuzes ..... TM 43-0001-28
Destruction of Conventional Ammunition and Improved Conventional Munitions to Prevent Enemy Use ..... TM 43-0002-33
Operator's and Organizational Maintenance Manual for Rifle, Recoilless, 106MM: M40A2 and M40A4 ..... TM 9-1000-205-12
Operator and Organizational Maintenance for Howitzer, Light: Towed, 105-MM M101A1 (1015-00-332-9752) (1015-322-9752) ..... TM 9-1015-203-12

Operator's and Organizational Maintenance Manual for Howitzer, Medium, 155MM: M114, M114A1, and M114A2 (Incl RPSTL) ..... TM 9-1025-200-12&P
Operator's Manual for Howitzer, Medium, Towed: 155MM, M198 (NSN 1025-01-026-6646) ..... TM 9-1025-211-10
Organizational and Direct Support Maintenance Manual Including Repair Parts and Special Tools List for Extractor Assembly (NSN 1025-01-082-3586) (For Projectile, 155-MM: M712 Cannon-Launched Guided Projectile and M823 Training Projectile) ..... TM 9-1025-212-23&P
Operator's Manual for Howitzer, Medium, Self-Propelled, 155MM, M109A2 (NSN 2350-01-031-0586), M155MM, M109A3 (NSN 2350-01-031-8851), M155MM, M109A4 (NSN 2350-01-277-5770) and 155MM, M109A5 (NSN 2350-01-281-1719) ..... TM 9-2350-311-10
Operator's Manual for Vehicle, Combat Engineer, Full-Tracked: M728 ..... TM 9-2350-222-10
Operator's Manual for Operator's Controls Preventive Maintenance Check Sheet for Vehicle, Combat Engineer, Full Tracked: M728 (NSN 2350-00-795-1797) ..... TM 9-2350-222-10-1
Operator's Manual for Operation Under Usual and Unusual Conditions for Vehicle, Combat Engineer, Full Tracked: M728 (NSN 2350-00-795-1797) ..... TM 9-2350-222-10-2
Operator's Manual for Troubleshooting and Maintenance for Vehicle Combat Engineer, Full Tracked: M728 (NSN 2350-00-795-1797) ..... TM 9-2350-222-10-3
Operator's and Organizational Maintenance Manual: Armored Reconnaissance/Airborne Assault, Vehicle: Full-Tracked, 152MM Gun/Launcher, M155A1 (FSN 2350-140-5151) ..... TM 9-2350-230-12
Operator's Manual for Tank, Combat, Full Tracked: 152MM Gun/ Launcher M60A2 W/E (NSN 2350-00-930-3590) ..... TM 9-2350-232-10
Operator's Manual for Operation Under Usual and Unusual Conditions for Tank, Combat, Full-Tracked: 105MM Gun M60A1 (RISE) (NSN 2350-00-116-9765) and M60A1 (RISE PASSIVE) (NSN 2350-01-059-1503) ..... TM 9-2350-257-10-2

b. *Technical Bulletins and Supply Bulletins*.

Munitions, Restricted or Suspended ..... TB 9-1300-385
Federal Item Name Directory for Supply Cataloging (Cataloging Handbook H6 A & B) ..... SB 708-6B
Department of Defense Ammunition Code (Cataloging Handbook H3) ..... SB 708-3

A-5. Supply Catalogs

FSC 1305 Ammunition thru 30MM; FSC 1310 - Ammunition Over 30MM up to 75MM thru 125MM; FSC 1320 - Ammunition, Over 125MM; FSC 1325MM - Bombs and FSC 1330 Grenades (Classes 1305-1330) ..... SC 1305/30-IL
FSC Group 13 Ammunition and Explosives (Classes 1340-1398) ..... SC 1340/98-IL

APPENDIX B
MAINTENANCE ALLOCATION CHART

SECTION I. INTRODUCTION

NOTE

Maintenance operations authorized in the Maintenance Allocation Charts below depot level do not apply to munitions filled with lethal agents.

B-1. General

a. The Maintenance Allocation Chart designates responsibility for the performance of maintenance functions.

b. Only the lowest level of maintenance authorized to perform a maintenance function is indicated.

c. A maintenance function assigned a maintenance level will automatically be authorized to be performed at any higher maintenance level.

d. A maintenance function that cannot be performed at the assigned level of maintenance for any reason may be evacuated to the next higher maintenance organization. Higher maintenance levels will perform the maintenance functions of lower maintenance levels when required or directed by the appropriate commander.

NOTE

Since the depot level of maintenance is the only level of maintenance capable of replacing most of the components listed in the Maintenance Allocation Charts, they will normally never be seen as unassembled components by maintenance personnel below depot level.

e. The functional group, Cartridge (Complete Round) for any given type of artillery ammunition is the only grouping which applies to a completely assembled, ready to fire (except semifixed and separate loading) round of ammunition. All other functional groups for any given type of ammunition refer to the listed components in an unassembled condition (i.e. a quantity of tracers or fuze well liners shipped as separate components to be used in a renovation operation).

f. The unpack and repack maintenance functions of packaging for cartridge for each type of ammunition are specified to be performed at the direct support levels of maintenance. This refers to unpacking and repacking of bulk packaging material only. Direct support is the lowest level of maintenance that will normally receive the bulk packaging materials (lower levels use salvage cannibalization). The unpacking and repacking of the complete round is included in the maintenance function for Cartridge (Complete Round).

B-2. Maintenance Functions

The implementation of maintenance tasks will be consistent with the assigned maintenance in accordance with the following definitions:

a. *Inspect*. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. *Test*. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service*. Operations required periodically to keep an item in proper operating condition.

(1) *Unpack*. To remove from packing box for service or for the performance of other maintenance operations.

(2) *Repack*. To return item to packing box after service or other maintenance operations.

(3) *Clean*. To rid the item of contamination.

(4) *Touch up*. To spot paint scratched or blistered surfaces.

(5) *Mark*. To restore obliterated identification.

d. *Install*. To emplace, seat, or fix into position an item in a manner to allow the proper functioning of the equipment; also to assemble one component of an end item with another.

e. *Adjust*. To maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specific parameters.

f. *Renovate*. To restore item to serviceable condition.

(1) *Paint*. To repaint the entire item.

(2) *Repair*. To restore serviceability to an item by correcting specific damage, fault, malfunction, or failure through the application of maintenance services or other maintenance actions.

(3) *Replace*. To substitute a serviceable component in a manner to allow the proper functioning of equipment.

B-3. Explanation of Format

a. *Group Number*. Column 1 lists the group numbers, the purpose of which is to identify components and assemblies with the next higher assembly.

b. *Functional Group.* Column 2 lists the item names of parts and assemblies on which maintenance is authorized.

c. *Maintenance Function*. Column 3 lists the twelve maintenance functions defined in B-2 above. Capital letters are inserted under appropriate maintenance functions and on line with each functional group to indicate the lowest level of maintenance authorized to perform that function. Symbols used and the maintenance category each represents are as follows:

Symbol	*Explanation*
C	Operator/Crew
O	Organizational
F	Direct Support
H	General Support
D	Depot

d. *Tools and Equipment*. Column 4 lists the special tools by item number specified in Appendix C, Section III required to perform the maintenance function.

e. *Remarks*. Column 5 is self-explanatory

f. *Footnotes*. Explanations are at end of Section II.

SECTION II. MAINTENANCE ALLOCATION CHART

NOTE

Refer to Chapter 2 by group number for the specific item applicable to each maintenance function.

(1) GROUP NUMBER	(2) Functional group	(3) Maintenance functions												(4) Tools and equipment	(5) Remarks
				SERVICE							RENOVATE				
		INSPECT	TEST	UNPACK	REPACK	CLEAN	TOUCH UP	MARK	INSTALL	ADJUST	PAINT	REPAIR	REPLACE		
	01, GROUP FIXED MMUNITION (EXCEPT 152-MM)														
0101	a. Cartridge (Complete Round)	C	D	C	C	C	O	F	C	-	F	D	-		
	b. Cartridge (Complete Round)	C	D	C	C	C	D	F	C	-	F	-	-		
	c. Packaging for Cartridge	O	-	F	F	O	O	O	-	-	O	O	O	1, 2, 3	
0102	Projectile Assembly														
	a. Projectile	D	D	-	-	D	D	D	-	-	D	D	-		
	b. Projectile	D	D	-	-	D	D	D	-	-	D	-	-		
	c. Supplementary Charge	C	D	F	F	C	-	F	C	-	-	-	F		
	d. Tracer	D	D	D	D	D	-	-	-	-	-	-	D		
	e. Fin assembly	D	D	D	D	D	-	-	-	-	-	D	D		
	f. Burster w/Nose Fuze	H	D	H	H	H	-	H	H	-	-	D	H		
	g. Burster w/Base Fuze	D	D	-	-	-	-	-	-	-	-	D	D		
	h. Fuze Well Liner	D	-	D	D	-	-	-	-	-	-	-	D		
0103	Propulsion System														
	a. Cartridge Case	D	D	D	D	D	D	O	-	-	-	D	D		
	b. Cartridge Case	D	D	-	-	D	D	O	-	-	-	-	-		
	c. Propelling Charge	D	D	D	D	-	-	-	-	D	-	-	D		
	d. Propelling Charge	D	D	-	-	-	-	-	-	-	-	-	-		
	e. Primer	D	D	D	D	D	-	-	-	-	-	-	D		
	f. Primer	D	D	-	-	D	-	-	-	-	-	-	-		
	g. Case Liner	D	-	D	D	-	-	-	-	-	-	D	D		
	h. Handle Assembly	D	-	D	D	-	-	-	-	-	-	-	D		
	i. Cartridge Case, Combustible	F	-	F	F	F	F	O	-	-	F	-	-		
0104	Fuze														
	a. Nose Fuze2	C	D	F	F	C	-	D	-	C	-	D	F		
	b. NoseFuze	C	D	-	-	C	-	-	-	-	-	-	-		
	c. Nose Fuze, Mk 27	C	D	D	D	C	D	D	-	-	-	-	D		
	d. BaseFuze	D	D	D	D	D	-	-	-	-	-	-	D		
	e. Base Fuze	-	-	-	-	-	-	-	-	-	-	-	-		
	f. PIBD Fuze	D	-	-	-	D	-	-	-	-	-	D	-		
	g. NoseFuze	C	D	D	D	C	-	D	-	C	-	-	D		
	h. Impact Switch Assembly	D		D	D	D	-	-	D	-	-	-	D		
	i. Proximity Switch Assembly	D		D	D	D	-	-	D	-	-	-	D		
	02 GROUP, FIXED AMMUNITION (152-MM ONLY)														
0201	a. Cartridge(Complete Round)	C	D	C	C	C	O	O	C	-	F	D	-		
	b. Packaging for Cartridge	O	-	F	F	O	O	O	-	-	O	O	O	1, 2, 3	

SECTION II. MAINTENANCE ALLOCATION CHART - Continued

(1) GROUP NUMBER	(2) Functional group	(3) Maintenance functions												(4) Tools and equipment	(5) Remarks
				SERVICE							RENOVATE				
		INSPECT	TEST	UNPACK	REPACK	CLEAN	TOUCH UP	MARK	INSTALL	ADJUST	PAINT	REPAIR	REPLACE		
	02 GROUP, FIXED AMMUNITION (152-MM ONLY)-Continued														
0202	Projectile Assembly														
	a. Projectile	D	D	D	D	-	D	D	-	-	D	D	-		
	b. Tracer	D	D	D	D	-	-	-	-	-	-	-	D		
	c. Fuze Well Liner	D	-	D	D	-	-	-	-	-	-	-	D		
0203	Propelling System														
	a. Cartridge Case	D	D	D	D	-	-	D	-	D	-	-	D		
	b. Propelling Charge	D	D	D	D	-	-	D	-	D	-	D	D		
	c. Barrier Bag (Neoprene or Elastomeric)	C	D	D	D	C	-	-	C	C	-	-	D		
0204	Fuze														
	a. Nose Fuze	C	D	D	D	C	-	D	-	-	-	--	D		
	b. PIBD Fuze	D	-	-	-	-	-	-	-	-	-	D	-		
	c. Nose Fuze	-	-	-	-	-	-	-	-	-	-	-	-		
	03 GROUP, SEMIFIXED AMMUNITION (EXCEPT MORTAR)														*Parts salvaged from expended amnmunition
0301	a. Cartridge (Complete Round)	C	D	C	C	C	O	O	C	-	F	D	-		
	b. Packaging	O	-	F	F	O	O	O	-	-	O	O	O	1, 2, 3	
0302	Projectile Assembly														
	a. Projectile	C	D	C	C	C	O	O	C	-	F	D	-		**Applicable only to Cartridges 105-MM: HE, M413 and M444
	b. Supplementary Charge	C	D	F	F	C	-	O	C	-	-	D	F		
	c. Tracer	D	D	D	D	-	-	-	-	-	-	-	D		
	d. Closing Plug	C	-	D	O	C	-	-	C	-	-	-	O*		
	e. Base Plug (except leaflet)	D	-	D	D	D	-	-	-	-	D	D	D		
	f. Base Plug**	-	-	-	-	-	-	-	-	-	-	-	-		
	g. Base Plug (leaflet)	C	-	-	-	C	O	-	C	-	-	-	D		
	h. Canister	D	D	D	D	D	D	D	-	-	D	D	D		
	i. Canister(s)	-	-	-	-	-	-	-	-	-	-	-	-		
	j. Parachute Assembly	D	D	-	-	-	-	D	-	-	-	D	D		
	k. Expelling Charge	D	D	D	D	D	-	D	-	-	-	-	D		
	l. Fuze Adapter Assembly	-	D	D	D	-	D	-	-	-	D	-	D		
	m. Base Charge	D	D	D	D	-	-	-	-	-	-	-	D		
	n. Burster	H	D	H	H	H	-	H	-	-	-	D	H		
	o. Fuze Well Liner	D	-	D	D	-	-	-	-	-	-	-	D		
	p. Rocket Motor	D	D	D	D	-	-	D	-	-	D	D	D		
	q. Rocket Grain	D	D	D	D	-	-	-	-	-	-	-	D		
0303	Propelling System														
	a. Cartridge Case	C	D	C	C	C	O	O	C	-	D	D	D		
	b. Propelling Charge	C	D	F	F	-	-	-	-	C	D	-	F		
	c. Propelling Charge	C	D	C	C	-	-	D	-	-	-	D	F		
	d. Primer	C	D	D	D	-	-	-	-	-	-	-	D		

SECTION II. MAINTENANCE ALLOCATION CHART - Continued

(1) GROUP NUMBER	(2) Functional group	(3) Maintenance functions												(4) Tools and equipment	(5) Remarks
				SERVICE							RENOVATE				
		INSPECT	TEST	UNPACK	REPACK	CLEAN	TOUCH UP	MARK	INSTALL	ADJUST	PAINT	REPAIR	REPLACE		
0304	Fuze														
	a. Nose Fuzes	C	D	C	C	C	-	D	C	C	-	D	-		
	b. NoseFuze	C	D	D	D	C	-	D	D	D	-	D	D		
	c. BaseFuze	D	D	D	D	D	-	D	-	-	-	D	D		
	d. Packaging	F	-	F	F	F	F	F	-	-	F	F	F	1, 2, 3	
	e. Packaging	D	-	D	D	D	D	D	-	-	D	D	D		
	f. Nose Fuze, PD, M557	C	D	F	F	C	D	D	-	-	-	D	F		
	04 GROUP, SEMIFIXED AMMUNITION (MORTAR ONLY)														
0401	a. Cartridge (Complete Round).	C	D	C	C	C	D	D							
	b. Packaging Material	O	-	F	F	O	O	O	C	C	D	D	-		
0402	Projectile Assembly								-	-	F	F	F	1, 2, 3	
	a. Projectile	D	D	D	D	D	D	D							
	b. Supplementary Charge	C	D	D	D	C	-	D	-	-	D	-	-		
	c. Fuze Well Liner	D	-	D	D	D	-	-	C	-	-	-	D		
	d. Closing Plug	C	-	D	D	D	-	-	-	-	-	-	D		
	e. Burster	D	D	D	D	D	-	D	C	-	-	-	C		
	f. Parachute Assembly	D	D	D	D	-	-	-	-	-	-	D	D		
	g. Illuminant Charge Assembly	D	D	D	D	-	-	D	-	-	-	-	D		
	h. Canister	D	D	D	D	D	-	D	-	-	-	-	D		
	i. Expelling Charge	D	D	D	D	D	-	-	-	-	-	-	D		
	j. Fin Assembly, Painted Steel	D	D	D	D	D	-	D	-	-	D	-	D		
	k. Fin Assembly, Aluminum	D	D	D	D	D	-	-	-	-	-	-	D		
	l. Fin Assembly, Training	C	-	C	C	C	-	-	C	-	-	-	C		
	m. Rotating Disc & Pressure Plate	D	-	D	D	D	-	-	-	-	-	-	D		
	n. Spotting Charge	D	D	D	D	-	-	-	D	-	-	-	D		
0403	Propulsion System														
	a. Ignition Cartridge	D	D	D	D	D	-	-	-	-	-	-	D		
	b. Ignition Cartridge, Training	C	-	C	C	C	-	-	C	-	-	-	C		
	c. Propelling Charge	C	D	D	D	-	-	-	-	C	-	-	D		
	d. Primer	D	D	D	D	D	-	-	-	-	-	-	D		
	e. Primer (For Training Rounds)	C	-	C	C	C	-	C	-	-	-	-	C		
	f. Striker Nut & Extension	C	-	D	D	-	-	-	-	C	-	-	D		
0404	Fuze														
	a. Fuze	C	D	C	C	C	-	D	C	C	-	D	C		
	b. Fuze	C	D	D	D	C	-	D	-	C	-	D	D		
	05 GROUP, SEPARATE-LOADING AMMUNITION														
0501	Projectile Assembly														
	a. Projectile	C	D	C	O	C	O	O	C	-	F	D	-		
	b. Projectile	D	D	-	-	D	D	D	-	-	D	-	-		
	c. Supplementary Charge	C	-	F	F	C	-	-	C	-	-	-	F		
	d. Lifting Plug	C	-	F	O	C	O	-	C	-	F	F	F		
	e. Lifting Plug (Fusible)	C	D	F	O	C	O	-	C	-	F	F	F		
	f. Base Plug	D	-	D	D	D	-	-	-	-	D	D	D		

SECTION II. MAINTENANCE ALLOCATION CHART - Continued

(1) GROUP NUMBER	(2) Functional group	(3) Maintenance functions												(4) Tools and equipment	(5) Remarks
				SERVICE							RENOVATE				
		INSPECT	TEST	UNPACK	REPACK	CLEAN	TOUCH UP	MARK	INSTALL	ADJUST	PAINT	REPAIR	REPLACE		
	05 GROUP, SEPARATE-LOADING AMMUNITION-Continued														
	g. Base Plug	D	-	-	-	-	-	-	-	-	-	-	-		
	h. Expelling Charge	C	D	D	D	D	-	-	-	-	-	-	D		
	i. Expelling Charge (For Late Model Base Eject Smoke Proj)	D	D	D	D	D	-	D	-	-	-	-	D		
	j. Burster	H	D	H	H	H	-	H	-	-	-	D	H		
	k. Fuze Well Liner	D	-	D	D	-	-	-	-	-	-	-	D		
	l. Pallet	C	-	F	F	O	-	O	-	-	F	F	O		
	m. Lifting Plug Gasket	F	-	F	F	F	-	-	-	-	-	-	F		
	n. Projectile Grommet	C	-	F	F	C	F***	-	-	-	F***	-	C****		***Metal type only
	o. Obturating Band	D	-	D	D	C	-	-	-	-	-	-	D		
	p. Rocket Cap	C	-	C	C	C	-	-	C	C	-	-	C		
	q. Illuminant Charge Assembly	C	D	D	D	-	-	-	D	-	-	-	D		****Parts salvaged from expended
	r. Smoke Canister	C	-	-	-	C	-	-	C	-	-	-	-		
	s. Base Plug (M687)	F	-	F	F	F	F	-	F	F	F	-	F		
	t. Canister (M687)	F	F	F	F	F	-	F	F	-	-	-	F		
	u. Lifting Plug (Universal)	C	D	F	O	C	O	-	C	-	F	F	F		
	v. Preformed Packing	F	-	F	F	F	-	-	-	-	-	-	F		
	w. Base Burner Assembly	D	-	-	-	-	-	-	-	-	-	-	-		
	y. Warhead/Rocket Motor Joint Gap	F	-	-	-	-	-	-	-	-	-	-	-		
0502	Propelling System														
	a. Propelling Charge	C	D	C	C	-	-	D	C	C	-	F	D		
	b. Flash Reducer	C	-	C	C	-	-	-	C	-	-	-	-		
	c. Additive Jacket	C	-	C	C	-	-	-	C	-	-	-	-		
	d. Primer	C	D	C	C	C	-	-	C	-	-	-	C		
	e. Packaging	C	D	F	F	C	O	O	-	-	F	F	F		
	f. Igniter Tube(s)	D	-	D	D	-	-	-	-	-	-	-	D		
	g. Igniter Core	D	-	D	D	-	-	-	-	-	-	-	D		
	h. Lacing Jacket	D	-	D	D	-	-	-	-	-	-	-	D		
	i. Spacer, M124 Charge	C	-	C	C	-	-	-	C	-	-	-	-		
	j. Igniter Pads	C	D	D	D	D	D	D	D	D	D	D	D		
0503	Fuze														
	a . Nose Fuze	C	D	C	C	C	-	D	C	C	-	D	F		
	b. Packaging	F	-	F	F	O	O	O	O	-	F	F	H	1, 2, 3	
0504	Container Assembly (Copperhead)														
	a. Container (Copperhead)	C	-	-	-	C	O	O	-	-	O	O	F		
	b. Humidity Indicator Card	C	-	-	-	-	-	-	-	-	-	-	O	5	
	c. Desiccant	O	-	-	-	-	-	-	-	-	-	-	O	5	
	d. Rope Handle	O	-	-	-	-	-	-	-	-	-	-	O		
	e. Gasket	O	-	-	-	-	-	-	-	-	-	-	D		
	f. Pad	F	-	-	-	-	-	-	-	-	-	-	D		
	g. Lifting Strap	C	-	-	-	-	-	-	-	-	-	-	F		
	h. Preload Band	C	-	-	-	-	-	-	-	-	-	-	F		
	i. Torque Rod	O	-	-	-	-	-	-	-	-	-	-	D		
	j. Humidity Indicator	C	-	-	-	-	-	-	-	-	-	-	D		

SECTION II. MAINTENANCE ALLOCATION CHART - Continued

(1) GROUP NUMBER	(2) Functional group	(3) Maintenance functions												(4) Tools and equipment	(5) Remarks
				SERVICE							RENOVATE				
		INSPECT	TEST	UNPACK	REPACK	CLEAN	TOUCH UP	MARK	INSTALL	ADJUST	PAINT	REPAIR	REPLACE		
	05 GROUP, SEPARATE-LOADING AMMUNITION-Continued														
	k. Latches	C	-	-	-	-	-	-	-	-	-	-	D		
	l. Manual Relief Valve	C	-	-	-	-	-	-	-	-	-	-	D		
	m. Cradle Liner, Forward	O	-	-	-	-	-	-	-	-	-	-	D		
	n. Cradle Liner, Aft	O	-	-	-	-	-	-	-	-	-	-	D		
	o. Pallet	O	-	-	-	-	-	-	-	-	-	F	F		
	p. Tail Stop	O	-	-	-	-	-	-	-	-	-	-	D		
	q. Humidity Indicator Card, Dummy	O	-	-	-	-	-	-	-	-	-	-	D		
	r. Projectile, M712 (Copperhead)	C	-	C	C	C	O	O	-	C	F	-	F		NOTE:
	s. Projectile, M823 training (Copperhead)	C	-	C	C	C	O	O	-	C	F	O	F		See TM 9-1095-212-23&P for extractor Mainte-nance
	t. Projectile Ogive (Nose Cone)	C	-	-	-	C	-	-	-	-	-	-	O	4	
	u. Obturator	C	-	-	-	C	-	-	-	-	-	-	O	4	
	v. Switch Assembly	C	-	-	-	C	-	-	-	-	-	O	O	4	
	w. Flexible Shaft Rotary Switch	C	-	O	O	-	-	-	-	-	-	-	O	4	
	x. Rotary Switch	C	-	O	O	-	-	-	-	-	-	-	O	4	
	y. Base	C	-	-	-	-	-	-	-	-	-	-	O	4	
	z. Insert	C	-	-	-	-	-	-	-	-	-	-	D	4	

[1] Refer to appendix C.
[2] Replacement of nose fuze not authorized for cartridges: Mk 2, M580, M494 and M581.
[3] Installment and replacement of nose fuze not authorized for cartridges: XM546, M413 and M444.
[4] Applies to M823 projectile only.
[5] Applies to M712 projectile only.

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APPENDIX C
UNIT SUPPORT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LISTS
SECTION I. INTRODUCTION

C.1 SCOPE.

This RPSTL lists and authorizes spare and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of unit support maintenance of Artillery Ammunition. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

C.2 GENERAL.

C.2.1 In addition to Section I. Introduction, this Repair Parts and Special Tools List is divided into the following sections:

C.2.2 Section II. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. This list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the Repair Parts List. Repair parts kits are listed separately in their own functional group within section II. Repair parts for reparable special tools are also listed in the section listed in the section. Items listed are shown on the associated illustration(s)/figure(s).

C.2.3 Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or Class VII are not listed.

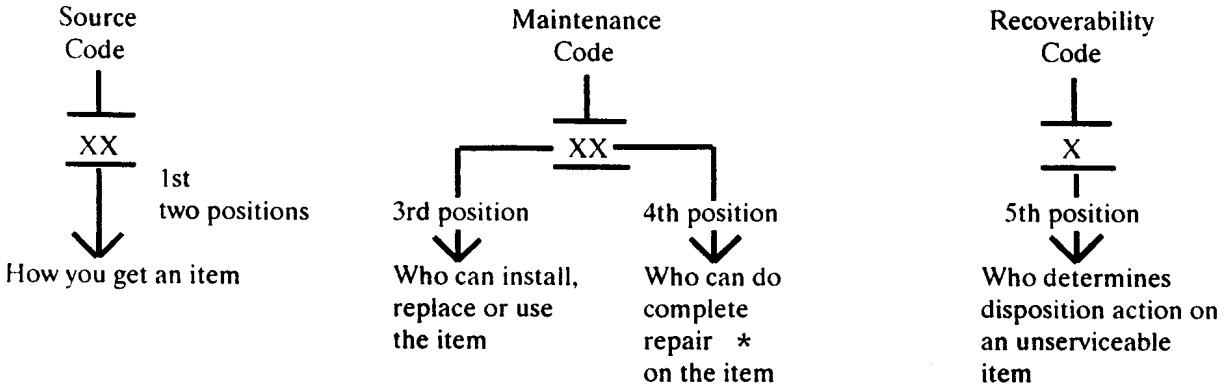
C.2.4 Cross-reference Indexes. There are two cross-reference indexes in this RPSTL: The National Stock Number (NSN) Index, and the Part Number (P/N) Index. The National Stock Number Index refers you to figure and item number. The Part Number index refers you to the figure and item number..

C.3 EXPLANATION OF COLUMNS (SECTION II AND III).

C.3.1 ITEM No. (Column (1)). Indicates the number used to identify items called out in the illustration.

C.3.2 SMR CODE (Column (2)). The SMR code contains supply/requisitioning information, maintenance level authorization criteria and disposition instructions, as shown in the following breakout:

C.3.2.1 Source Code. The source code tells you how you get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:



*Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

AR 8074

Code	Application/Explanation
PA PB PC PD PE PF PG	Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the level indicated by the code entered in 3rd position of the SMR code. **NOTE** Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is autho rized to the maintenance level indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.
MO-Made at unit/ AVUM level MF-(Made at DS/ AVIM Level) MH-Made at GS level ML-Made at SRA MD-Made at depot	Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the P/N in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the RPSTL. If the item is authorized to you by the 3rd position code of the SMR code, but the source code indicates it is made at higher level, order the item from the higher level of maintenance.
AO-Assembled by unit/AVUM level AF-Assembled by DS/AVIM level AH-Assembled by GS level AL-Assembled by SRA AD-Assembled by Depot	Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3rd position of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA -	Do not requisition an “XA” coded item. Order the next higher assembly. (Refer to the NOTE below.)

XB -	If an item is not available from salvage, order it using the CAGEC and P/N.
XC -	Installation drawings, diagrams, instruction sheets, field service drawings; identified by manufacturer's P/N.
XD -	Item is not stocked. Order an "XD" coded item through normal supply channels using the CAGEC and P/N given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

C.3.2.2 Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items. The maintenance codes are entered in the third and fourth positions of the SMR Code as follows:

C.3.2.3 Third Position. The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to the following levels of maintenance.

Maintenance Code	Application/Explanation
C-	Crew or Operator maintenance done within unit/Avum maintenance.
O-	Unit level/AVUM maintenance can remove, replace, and use the item.
F-	Direct support/AVIM maintenance can remove, replace, and use the item.
H-	General support maintenance can remove, replace, and use the item.
L-	Specialized repair activity can remove, replace, and use the item.
D-	Depot can remove, replace, and use the item.

C.3.2.4 Fourth Position. The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Maintenance Code	Application/Explanation
O-	Unit/AVUM is the lowest level that can do complete repair of the item.
F-	Direct support/AVIM is the lowest level that can do complete repair of the item.
H-	General support is the lowest level that can do complete repair of the item.

L-	Specialized repair activity is the lowest level that can do complete repair of the item.
D-	Depot is the lowest level that can do complete repair of the item.
Z-	Nonreparable. No repair is authorized.
B-	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubri cating, etc., at the user level.

C.3.3 Recoverability Code. Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR Codes as follows:

Recoverability Code	Application/Explanation
Z-	Nonreparable item. When unservice able, condemn and dispose of the item at the level of maintenance shown in 3rd position of SMR Code.
O-	Reparable item. When uneconomically reparable, condemn and dispose of the item at unit level.
F-	Reparable item. When uneconomically reparable, condemn and dispose of the item at direct support level.
H-	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D-	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.
L-	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A-	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

C.3.4 NSN (Column (3)). The NSN for the item is listed in this column.

C.3.5 CAGEC (Column (4)). The Commercial And Government Entity Code (CAGE) is a 5-digit code which is used to identify the manufacturer, distributor or Government agency/activity, that supplies the item.

C.3.6 PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item, the item you receive may have a different P/N from the part ordered.

C.3.7 DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

C.3.7.1 The Federal item name, and when required, a minimum description to identify the item.

C.3.7.2 Items that are included in kits and sets are listed below the name of the kit or set on Figure KIT.

C.3.7.3 P/Ns of bulk materials are referenced in this column in the line item entry for the item to be manufactured or fabricated.

C.3.7.4 Hardness Critical Item (HCI). A support item that provides the equipment with special protection from electromagnetic pulse (EMP) damage during a nuclear attack.

C.3.7.5 The usable on code, where applicable (see Special Information).

C.3.7.6 The statement "END OF FIGURE" appears just below the last item description in Column (6) for a given figure in both Section II and Section III.

C.3.8 QTY (Column 7)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column instead of a quantity indicates that the quantity is variable and the quantity may change from application to application.

C.4 EXPLANATION OF CROSS-REFERENCE INDEXES (Section IV).

C.4.1 National Stock Number (NSN) Index

C.4.1.1 STOCK NUMBER Column. This column lists the NSN in National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN

NSN
(e.g., 5305-01-674-1467)
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

C.4.1.2 FIG. Column. This column lists the number of the Figure where the item is identified/located. The figures are in numerical order in Sections II and III.

C.4.1.3 ITEM Column. The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

C.4.2 PART NUMBER (P/N) INDEX. P/Ns in this index are listed in ascending alphanumeric sequence (vertical arrangement of letters and number combinations which place the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

C.4.2.1 PART NUMBER Column. Indicates the P/N assigned to the item.

C.4.2.2 FIG. Column. This column lists the number of the figure where the item is identified/located in Sections II and III.

C.4.2.3 ITEM Column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

C.5 SPECIAL INFORMATION.

Use the following subparagraphs as applicable:

C.5.1 UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as "UOC:..." in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models.

Code	Used On
CHA	Projectile, 155MM: M712
CHB	Projectile, 155MM: M549A1
CHC	Container, Ammunition:

C.5.2 Fabrication Instructions. Not Applicable.

C.5.3 Index Numbers. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/part Number Index and the bulk material is in Section II.

NOTE

For a combined narrative RPSTL manual associated publications shall not be included.

C.5.4 Associated Publications. Not Applicable.

C.5.5 Illustrations: AR6302-A and AR6303-A.

C.6 HOW TO LOCATE REPAIR PARTS.

C.6.1 When NSNs or P/Ns are Not Known:

C.6.1.1 First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups, and listings are divided into the same groups.

C.6.1.2 Second. Find the figure covering the functional group or subfunctional group to which the item belongs.

C.6.1.3 Third. Identify the item on the figure and note the number(s).

C.6.1.4 Fourth. Look in the repair parts list for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

C.6.2 When NSN is Known:

C.6.2.1 First. If you have the NSN, look in the STOCK NUMBER column of the NSN index list. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

C.6.2.2 Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

C.6.3 When P/N is Known.

C.6.3.1 First. If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index. Identify the figure and item number.

C.6.3.2 Second. Look up the item on the figure in the applicable repair parts listing.

C.7 ABBREVIATIONS. Not applicable.

NOTE

For standard abbreviations and acronyms see ASME Y14.38-1999, American Society of Mechanical Engineers for use nn Drawings, Specifications, Standards and In Technical Documents.

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SECTION II
REPAIR PARTS LIST

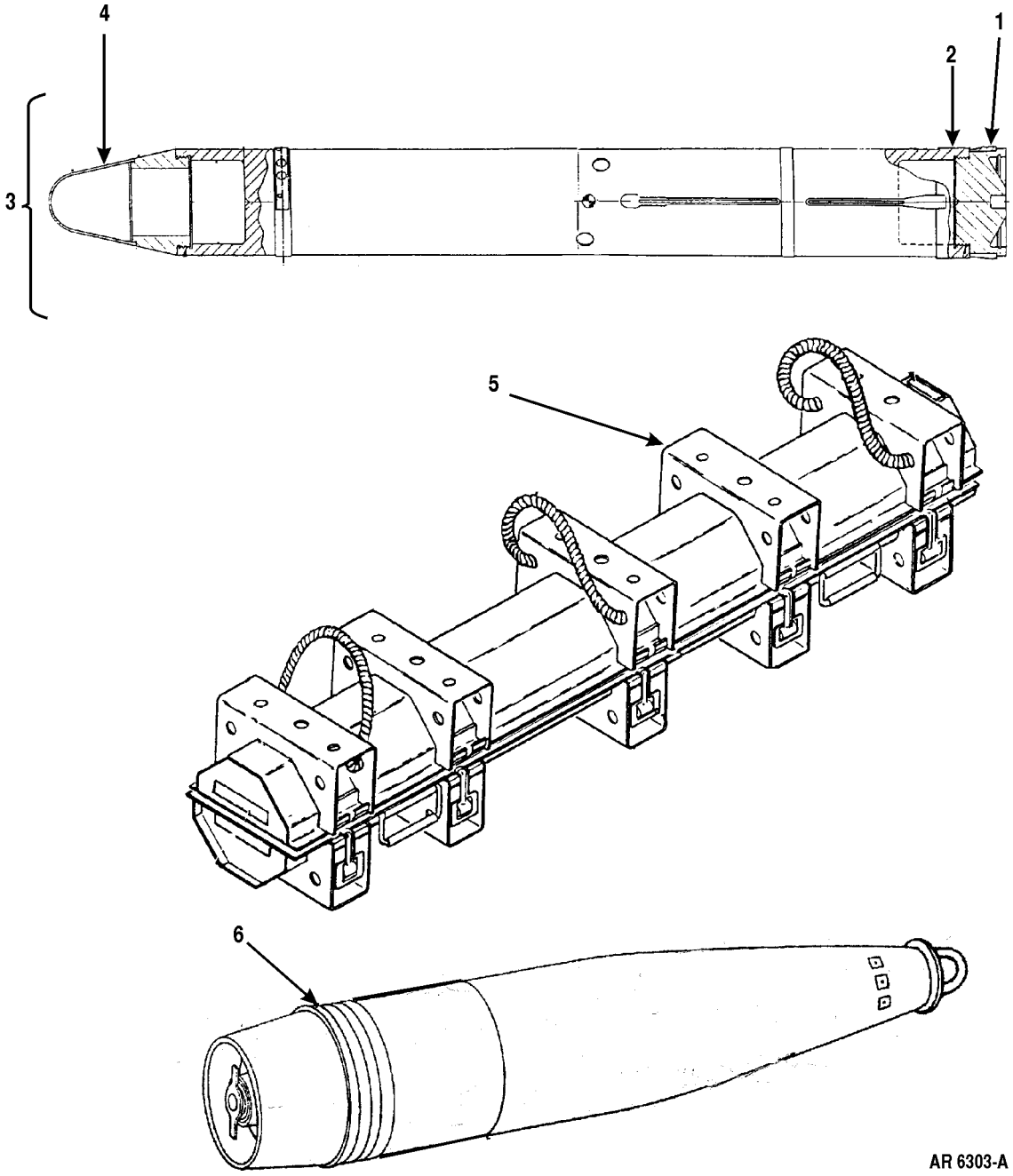
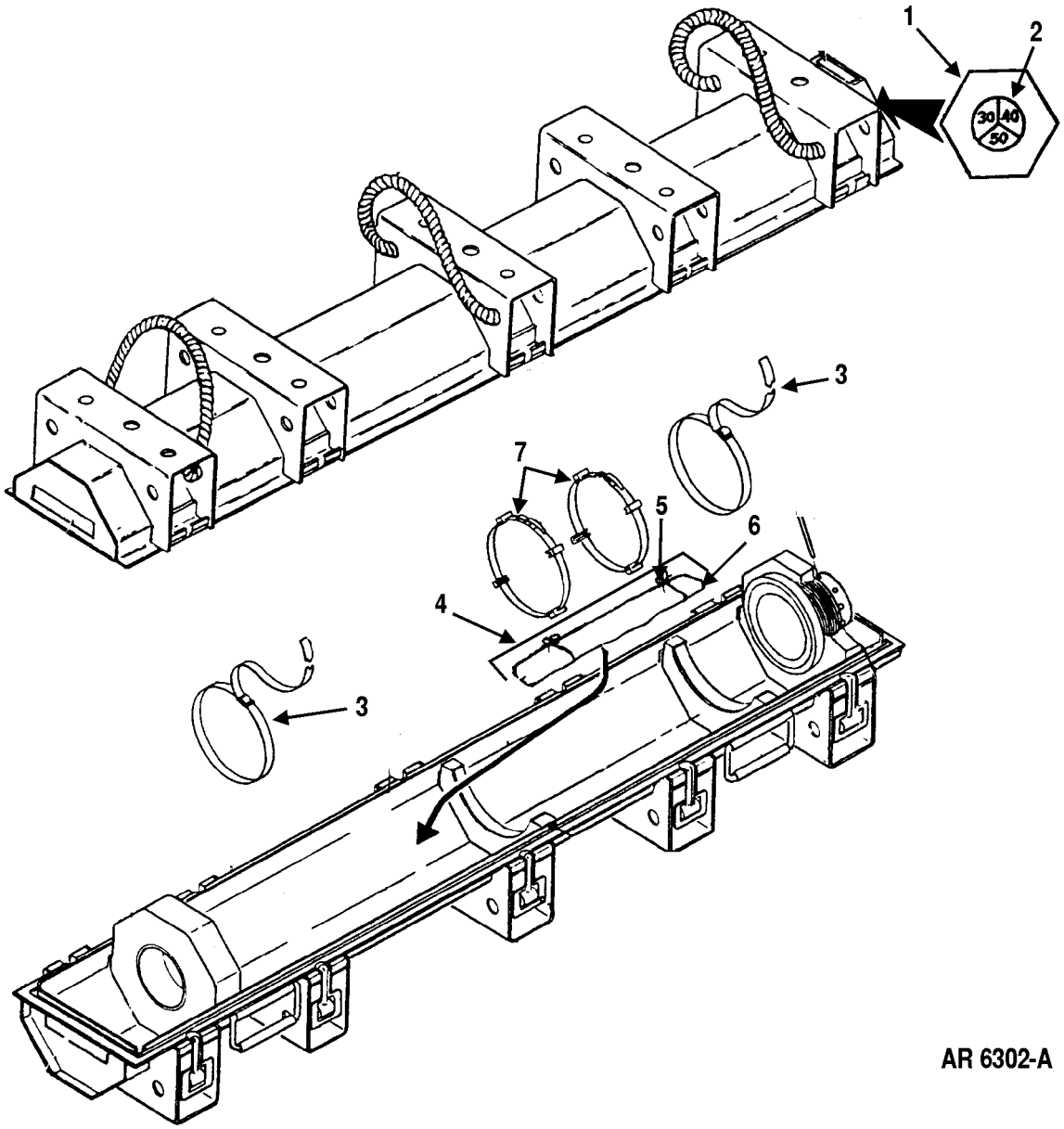


FIG. C-1 PROJECTILE, 155MM: M712 AND PROJECTILE, 155MM: M549A1

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 00	
					FIG. C-1 PROJECTILE,155MM: M712 AND PROJECTILE, 155MM: M549A1	
					(19200) 9329721 CHA (19200) 9235999 CHB	
1	PAOZZ	1320-01-095-9149	19200	9331769	BASE, PROJECTILE: STL, ANSI/ ..... ASTM A108 OR A576, 5.980 IN. OA DIA UOC: CHA	1
2	PAOZZ	1320-01-110-4848	19200	9332456	OBTURATOR: 6.300 IN. DIA, 1.424 ..... IN. L, NYLON PLASTIC MOLDING AND EXTRUSION UOC: CHA	5
3	XBODD		19200	9331967	TRAINER ASSEMBLY: FOR ..... PROJECTILE, TRAINING, M823 UOC: CHA	1
4	PAOZZ	1320-01-108-0266	19200	9332455	OGIVE, PROJECTILE: PLASTIC, ... 5.09 IN. NOM OA LG, 4.918 IN. NOM OA DIA UOC: CHA	5
5	PAODD	8140-01-111-3906	19200	9300440	CONTAINER, AMMUNITION: 5.080 ..... FT NOM OA LG, 0.910 FT NOM OA W, ALUMINUM UOC: CHA	1
6	PAOZZ	1320-01-278-6897	19200	9235994	OBTURATOR: FOR PROJECTILE, ... 155MM, M549A1 UOC: CHB	1

END OF FIGURE



GROUP 01 FIG. C-2 CONTAINER,AMMUNITION: FOR PROJECTILE, 155MM, M712 - 9300440

(1) ITEM NO	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UOC)	(7) QTY
					GROUP 01	
					FIG. C-2 CONTAINER, AMMUNITION: FOR PROJECTILE, 155MM, M712	
					(19200) 9300440 CHC	
1	PAOZZ	6685-01-038-6868	19200	9301821	INDICATOR, HUMIDITY, PLUG: ..... TYPE II. 0.625 IN. NOM OA H, 30 PCT, 40 PCT, 50 PCT UOC: CHC	1
2	PAOZZ	6685-01-192-8759	19200	9349696	INDICATOR, HUMIDITY, CARD: ..... A2 CIRCULAR, 0.810 IN. NOM OA DIA, 30 PCT, 40 PCT, 50 PCT MARKINGS UOC: CHC	1
3	PAOZZ	5340-01-110-3897	19200	9301825	STRAP, WEBBING: RAYON, 56.75 ..... IN. NOM LG, 1.0 IN. NOM W, SLIDE LOOP ATTACHMENT, FOREST GREEN UOC: CHC	2
4	PAOZZ	8140-01-158-0517	19200	9300446	BAG ASSEMBLY, STORAGE: ..... UOC: CHC	1
5	XAOZZ		19200	9300444	TIE WRAP: ..... UOC: CHC	2
6	XAOZZ		19200	9300443	BAG, STORAGE, PROJECTILE: ..... UOC: CHC	1
7	PAOZZ	5340-01-251-8682	19200	9301827	CLAMP, LOOP: STL, 0.275 IN. NOM ..... OA W UOC: CHC	2
					END OF FIGURE	

SECTION III
SPECIAL TOOLS LIST

Section III. Not Required.

SECTION IV
CROSS-REFERENCE INDEXES
NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
6685-01-038-6868	C-2	1	8140-01-111-3906	C-1	5
1320-01-095-9149	C-1	1	8140-01-158-0517	C-2	4
1320-01-108-0266	C-1	4	6685-01-192-8759	C-2	2
5340-01-110-3897	C-2	3	5340-01-251-8682	C-2	7
1320-01-110-4848	C-1	2	1320-01-278-6897	C-1	6

CROSS-REFERENCE INDEXES
PART NUMBER INDEX

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
9235994	C-1	6	9301827	C-2	7
9300440	C-1	5	9331769	C-1	1
9300443	C-2	6	9331967	C-1	3
9300444	C-2	5	9332455	C-1	4
9300446	C-2	4	9332456	C-1	2
9301821	C-2	1	9349696	C-2	2
9301825	C-2	3			

APPENDIX D
PACKING MATERIALS, ACCESSORIES, AND TOOLS

SECTION I INTRODUCTION

D.1 SCOPE.

This appendix lists packing materials, accessories, and tools required for the performance of unit maintenance of Artillery Ammunition for Guns, Howizters, Mortars, Recoilless Rifles, and 40mm Grenade Launchers.

D.2 GENERAL.

This appendix is divided into the following sections:

D.2.1 Section II - Packing Materials and Accessories. A list of packing materials and accessories authorized for the performance of maintenance at the unit level.

D.2.2 Section III - Special Packing Tools List. A list of special tools authorized for the performance at the unit level.

D.3 EXPLANATION OF COLUMNS.

The following provides an explanation of columns in sections II and III.

D.3.1 Column (1) - Part Number/Drawing Number. The primary number used by the manufacturer which controls and design and characteristics of the item. Drawings can be obtained from originating source (see CAGEC).

D.3.2 Column (2) - Contractor and Government Entity Code (CAGEC). (Formerly known as Federal Supply Code for Manufacturers (FSCM).) A five-digit code used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

D.3.3 Column (3) - Figure Number. The number of the figure where the item is identified/located if applicable.

D.3.4 Column (4) - Description. The federal item name and any additional description of the item required.

SECTION II PACKING MATERIALS AND ACCESSORIES

Packing Materials and Accessories

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			FIXED AMMUNITION (EXCEPT 152MM) CARTRIDGE (COMPLETE ROUND)
			40MM
9209204	19203		BOX, AMMUNITION: Steel, M2A1 for Cartridges, 40MM, M583, M583A1, M585, M661, M662, M713, M715, M716, XM992, M1001, M1029
9362531	19200		BOX, AMMUNITION: M2A1 for Cartridges, 40MM, M922, M922A1
8325894	19203		BOX, FIBER, PACKING, AMMUNITION: for Cartridge, 40MM, M781
12597938	19200		BOX, FIBERBOARD: for Cartridge, 40MM, M918
8835104	19203		BOX, PACKING, AMMUNITION: for Cartridges, 40MM, M381, M382, M386, M406, M407, M433, M407A1, M441, M576
8882362	19203	4-1	BOX, PACKING, AMMUNITION: for Cartridges, 40MM, M397, M397E1, M433
9209205	19203		BOX, PACKING, AMMUNTION: for Cartridges, 40MM, M583, M583A1, M585, M661, M662, M713, M715, M716
9362530	19200		BOX, PACKING, AMMUNITION: for Cartridges, 40MM, M922, M922A1
9251995	19203		BOX, PACKING, AMMUNITION: for Cartridges, 40MM, M383, M384, M385
9251996	19203		BOX, PACKING, AMMUNITION: for Cartridges, 40MM, M383, M384, M385, M430
12597941	19200		BOX, PACKING, AMMUNITION: wood for Cartridge, 40MM, M918
5581378	19200	4-1	BOX, PACKING, AMMUNITION: for Cartridges, 40MM, M674, M675
8835105	19203		BOX, PACKING, AMMUNITION: for Cartridges, 40MM, M381, M382, M386, M406, M407A1, M433, M441, M576
12619468	19203		BOX, PACKING, AMMUNITION: Metal for Cartridges 40MM, M811, M813, M922, M851 (Sgt. York)
9325896	19203		BOX, PACKING AND MARKING FOR BOX, PACKING: for Cartridge, 40MM, M781
8796464	19203		BOX, PACKING, ASSEMBLY: for Container, M66A1 for Cartridges 40MM, MK2, M81 Series and M91
8882363	19203		BOX, WIREBOUND, PACKING, AMMUNITION: for Cartridges, 40MM, M397, M397E1, M433, M407A2
7553315	19203		CHEST, AMMUNITION: Steel, M19A1 for Cartridges, 40MM, M674, M675
76-1-1112	19203		CONTAINER, AMMUNITION: M66A1 for Cartridges, 40MM, MK2, M91, M81A1, MK11, M17, M17A1, M25 Series

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			FIXED AMMUNITION (EXCEPT 152MM) CARTRIDGE (COMPLETE ROUND) - Continued
			40MM - Continued
12564414	19200		SHIPPING AND STORAGE CONTAINER, CARTRIDGE: PA-120 for Cartridges, 40MM, M385A1, M430, M430A1, M918, M922, M922A1, M1001, XM1023
7258943	19201		SHIPPING AND STORAGE CONTAINER, CARTRIDGE: M548 for Cartridges, 40MM, M385, M385A1, M430, M430A1, M918, M922, M922A1
			75MM
7549268	19203		BOX, PACKING, AMMUNITION: for Cartridge, 75MM, Blank, M337A2
7549269	19203		CONTAINER, AMMUNITION: M27A2 fiber for Cartridges, 75MM, Blank, M337, M337A1, M337A1E1
			90MM
7548476	19203		BOX, PACKING, AMMUNTION: for Cartridges, 90MM, M381 Series, M353 Series
7549249	19203		BOX, PACKING, AMMUNITION: for Cartridge, 90MM, Blank, M394
8796716	19203		BOX, PACKING, AMMUNITION: for Cartridge, 90MM, M371A1, M371 (M739)
8798641	19203		BOX, PACKING, AMMUNITION: for Cartridge, 90MM Canister, M377
8800077	19203		BOX, PACKING, AMMUNITION: for Cartridge, 90MM, M431 Series
8887602	19203		BOX, PACKING, AMMUNITION: for Cartridge, 76MM, HEAT-T M496, for Gun, M32 in fiber container, M446
9213612	19203		BOX, PACKING, AMMUNITION: for Cartridge, 90MM Canister, M590E1, for 90MM, Rifle, M67
9213661	19203		BOX, PACKING, AMMUNITION: for Cartridge, 90MM, M580, for Guns M36, M41, M54
9215118	19203		BOX, PACKING, AMMUNITION: for Cartridge, 90MM Canister, M336, for Guns M1A2, M2A1, M1A3, M3, M36
7548306	19203		BOX, PACKING, AMMUNITION: for Cartridges, 90MM, M12 Series, M71 Series, M313 Series
76-1-1236	19203		BOX, PACKING, ASSEMBLY: for Cartridge, 90MM, gun ammo in fiber container, M96A2, consists of Bolt, Carriage, Connector, Filler, and Handle
76-1-1237	19203		BOX, PACKING, ASSEMBLY: Cartridge, 90MM, M184A2, consists of Bolt, Carriage, Connector, Handle, Filler, End, Side, and Top
7548301	19203		CONTAINER, AMMUNITION: M53A4 for Cartridges, 90MM, M71, M313, M12B2, T94, T91, T92, M71A1, M7364

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			FIXED AMMUNITION (EXCEPT 152MM) CARTRIDGE (COMPLETE ROUND) - Continued
			90MM - Continued
7548467	19203		CONTAINER, AMMUNITION: M180A1 for Cartridges, 90MM, M318A1, M353A1
7549250	19203		CONTAINER, AMMUNITION: M125A1 for Cartridge, 90MM, Blank, M394
76-1-1105	19203		CONTAINER, AMMUNITION: M96A2 for Cartridge, 90MM, M82
76-1-1106	19203		CONTAINER, AMMUNITION: M184A2 for Cartridges, 90MM, M317A2, M304, M332B1A1, M332A1, M33 Series
8796717	19203		CONTAINER, AMMUNITION: PA56 for Cartridges, 90MM, M371A1, M371, for M67 Rifle
8800078	19203		CONTAINER, AMMUNITION: M411 for Cartridge, 90MM, M431 Series, for Guns M38, M54, M41
8887601	19203		CONTAINER, AMMUNITION: T73E1 for Cartridges, 90MM, M384, M348A1
9213611	19203		CONTAINER, AMMUNITION: M572 for Cartridge, 90MM Canister, XM590E1, for 90MM, Rifle, M67
9213660	19203		CONTAINER, AMMUNITION: M565 for Cartridge, 90MM, APERS-T, XM580E1
9215119	19203		CONTAINER, AMMUNITION: M278 for Cartridge, 90MM Canister, M336
8798640	19203		CONTAINER, AMMUNITION: M403 for Cartridge, 90MM, M377
			105MM - TANK
8835039	19203		BOX, PACKING, AMMUNITION: for Cartridges, 105MM, M392 Series, M724, M28
8836004	19203		BOX, PACKING, AMMUNITION: for Cartridges, 105MM, M393 Series, M416, M467, M457
8837831	19203		BOX, PACKING, AMMUNITION: for Cartridges, 105MM, M456, M456E1, M490, M456A1, M456E3, M456A1E2, for Gun, M68 in fiber container, M435, for inert and explosive projectiles
9204454	19203		BOX, PACKING, AMMUNITION: for Cartridge, 105MM, M494
9293479	19203		BOX, WIREBOUND: for Cartridges, 105MM, M735, M774
12576282	19203		CONTAINER, AMMUNITION: PA117 for Cartridge, 105MM, APFSDS-T, M833
9293481	19203		CONTAINER, AMMUNITION: Fiber for Cartridge, 105MM, APFSDS-T, M735, M774
12551938	19203		CONTAINER, AMMUNITION: Metal, for Cartridge, 105MM, M456A2

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			FIXED AMMUNITION (EXCEPT 152MM) CARTRIDGE (COMPLETE ROUND) - Continued
			105MM - TANK - Continued
8835040	19203		CONTAINER, AMMUNITION: M431 for Cartridges, 105MM, M392 Series, M728
8836005	19203		CONTAINER, AMMUNITION: M451 for Cartridges, 105MM, M393 Series, M416, M467, M457
8837832	19203		CONTAINER, AMMUNITION: M435 for Cartridges, 105MM, M456 Series, M490
9278416	19203		CONTAINER, AMMUNITION: Fiber, PA72 for Cartridge, 105MM, TPDS-T, M724 Series
9294889	19203		CONTAINER, AMMUNITION: for Cartridge, 105MM, XM494E3, for Gun M68, packed as required
12561500	19200		CONTAINER, AMMUNITION: Metal, PA117 for Cartridge, 105MM, APFSDS-T, M900
9349242	19200		CUSHION, WINDSHIELD: for Cartridge, 105MM, APFSDS-T, M833
			106MM
7548963	19203		BOX, PACKING, AMMUNITION: for Cartridge, 106MM, M344A1
7549070	19203		BOX, PACKING, AMMUNITION: for Cartridges, 106MM, M346A1, M368
9212554	19203		BOX, PACKING, AMMUNITION: for Cartridge, 106MM, APERS-T, M581 for Rifle M40A1
7548962	19203		CONTAINER, AMMUNITION: M316 for Cartridge, 106MM, M344A1
7549071	19203		CONTAINER, AMMUNITION: M314 for Cartridges, 106MM, M346 Series, M386
9212553	19203		CONTAINER, AMMUNITION: M564 for Cartridge, 106MM, APERS-T, M581 for Rifle M40A1
			120MM - TANK
12527240	19200		BOX, AMMUNITION: for Cartridges, 120MM, M831, M865
12944282	19203		CONTAINER, AMMUNITION: PA116 for Cartridge, 120MM, APFSDS-T, M829A2
12527220	19200		CONTAINER, AMMUNITION: fiber for Cartridges, 120MM, M831, M865
12913178	19200		CONTAINER, AMMUNITION: PA116 metal for Cartridge, 120MM, TPCSDS-T, M865 with Short Sabot
9386832	19200		CONTAINER, AMMUNITION: PA116 metal for Cartridge, 120MM, APFSDS-T, M829

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			FIXED AMMUNITION (EXCEPT 152MM) CARTRIDGE (COMPLETE ROUND) - Continued
			120MM - TANK - Continued
12527436	19200		CONTAINER, AMMUNITION: PA116 metal for Cartridge, 120MM, APFSDS-T, M829E1
12912369	19200		CONTAINER, AMMUNITION: PA116 metal for Cartridges, 120MM, HEAT-MP-T, M830A1, M830E1
9386833	19200		CONTAINER, AMMUNITION: PA116 metal for Cartridge, 120MM, HEAT-MP-T, M830, M831, M831A1
			165MM
8796482	19203		BOX, PACKING, AMMUNITION: for Cartridge, 165MM, M123A1 Series, with Fuze, BD, M62A2 or TP, M623 in fiber container M387A1
8796483	19203		CONTAINER, AMMUNITION: M387A1 for Cartridges, 165MM, M123A1, M623
			FIXED AMMUNITION (152MM ONLY) CARTRIDGE (COMPLETE ROUND)
9260119	19203		BAG, BARRIER, AMMUNITION:
9212118	19203		BOX, PACKING, AMMUNITION: for Cartridges, 152MM, HEAT-T-UP, M409 Series, TP-T, M411 Series, APERS-T, XM617
9224909	19203		BOX, PACKING, AMMUNITION: for Cartridge, 152MM, M625 for Gun M81, Slug-Proofing P/N 9223170-1, HE-T Model M657 for Gun M81, Slug-Proofing P/N 9223170-2, Canister M625 for Gun M81
9229158	19203		BOX, PACKING, AMMUNITION: for Dummy Cartridge, 152MM, M596
9224908	19203		CONTAINER, AMMUNITION: PA33 for Cartridge, 152MM, HE-T, M657 (XM657E2)
9212119	19203		CONTAINER, AMMUNITION: M556A1 for Cartridges, 152MM, M409, M411
9221407	19203		CONTAINER, AMMUNITION: M580A1 for Cartridge, 152MM, Canister, M625
9261646	19203		CONTAINER, AMMUNITION: PA57 for Cartridge, 152MM, HEAT-T-MP, M409A1 and TP-T-411A3
9271646	19203		CONTAINER, AMMUNITION: PA64
9248417	19203		CUSHIONING MATERIAL PACKAGING: Plastic, polystyrene, 31.9 in. nom oa lg, 4.398 in. nom oa thk, 8.796 in. nom oa w
9271067	19203		SUPPORT, NOSE:

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			SEMIFIXED AMMUNITION (EXCEPT MORTAR) CARTRIDGE (COMPLETE ROUND)
			105MM - HOWITZER
9213637	19203		BOX, PACKING, AMMUNITION: for Cartridge, 105MM, M548E1
9271047	19203		BOX, PACKING, AMMUNTION: for 105MM, Howitzer, Ammunition, M760
9271849	19203		BOX, PACKING, AMMUNITION: for 105MM, Howitzer, Ammunition, M760
7549073	19203		CONTAINER, AMMUNITION: M105A3 for Cartridges, 105MM, M1, M60, M84, M314, M360, M413, M444
7549255	19203		CONTAINER, AMMUNITION: M34A1 for Cartridge, 105MM, Blank, M395, for Howitzers, M2A1, M2A2, M4, M4A1, M49
8862348	19203		CONTAINER, AMMUNITION: M431 for Cartridge, 105MM, APERS-T, M546
9213636	19203		CONTAINER, AMMUNITION: M547A1 for Cartridge, 105MM, HERA, M548, XM548E1
9271050	19203		CONTAINER, AMMUNITION: PA55 for 105MM, M1, M44, M60
12624495	19203		CONTAINER, AMMUNITION: PA111, for Cartridge, 105MM, HERA, M913, M927
9378166	19200		CONTAINER, AMMUNITION: PA117 metal for Cartridge, 105MM, HERA, M913, M927, M314A3
7549254	19203		BOX, PACKING, AMMUNITION: for Cartridge, 105MM, Blank M395
8862347	19203		BOX, PACKING, AMMUNITION: for Cartridge, 105MM, M546, Packed in Container, Fiber, M472
9213637	19203		BOX, PACKING, AMMUNITION: for Cartridge, 105MM, M548E1
7549073	19203		CONTAINER, AMMUNITION: M105A3 for Cartridge, 105MM, M1, M60, M84, M314, M360, M413, M444
8862348	19203		CONTAINER, AMMUNITION: M472 for Cartridge, APERS-T, M546
			4.2 INCH
7549248	19203		BOX, PACKING, AMMUNITION: for Cartridges 4.2 Inch, M3 Series, M328 Series, M329 Series, M335 Series, M630
76-1-1188	19203		BOX, PACKING, ASSEMBLY: for Cartridges, 4.2 Inch, M243 Series, Gas and Smoke
7549247	19203		CONTAINER, AMMUNITION: M251A1 for Cartridges, 4.2 Inch, M3 Series, M328A1, M329 Series, M335A2, M360
76-1-1189	19203		CONTAINER, AMMUNITION: M243 for Cartridges, 4.2 Inch, M2 Series, Gas and Smoke

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			SEMIFIXED AMMUNITION (EXCEPT MORTAR) CARTRIDGE (COMPLETE ROUND)
			22MM
9322201	19203		BOX, WIREBOUND, PACKING, AMMUNITION: for Cartridge, Subcaliber, 22MM Practice
9322198	19203		TRAY, ASSEMBLY: for Cartridge, Subcaliber, 22MM Practice
			60MM
9220015	19203		BOX, PACKING, AMMUNITION: for Cartridges, 60MM, M49 Series, M50A3
9223900	19203		BOX, PACKING, AMMUNITION: for Projectile, 60MM, M69
9242066	19203		BOX, PACKING, AMMUNITION: for Cartridge, 60MM, M83A3, with Fuze, Time, M65A1 in Fiber Container, PA44 in Junglewrap
9317918	19200		BOX, PACKING, AMMUNITION: for Cartridge, 60MM, HE, M720, with Fuze M734 for M224
9329480	19203		BOX, PACKING, AMMUNITION: for Sabot 60MM Practice, M3 and Sabot 81MM Practice, M1
8835933	19203		BOX, PACKING, AMMUNITION: for Fuzes, PD, M525 Series and M527 Series
9354467	19203		BOX, WIREBOUND: for Cartridge, 60MM, Illuminating, M721
9215576	19203	4-1	CONTAINER, AMMUNITION: M567 for Cartridge, 60MM, Smoke WP B630
9220014	19203	4-1	CONTAINER, AMMUNITION: M576 for Cartridges, 60MM, M49A4, M50A3
9242065	19203	4-1	CONTAINER, AMMUNITION: PA44 for Cartridge, 60MM, M83A3 in Junglewrap
9349695	19203	4-1	CONTAINER, AMMUNITION: for Cartridge, 60MM, Illuminating, M721
9293286	19203	4-1	CONTAINER, AMMUNITION: fiber for Cartridge, 60MM, HE, M720 and Cartridge, 60MM Smoke (WP) M722
9354466	19203		CONTAINER, AMMUNITION: PA124 metal for Cartridge, 60MM, Illuminating, M721
9252724	19203		CONTAINER, ASSEMBLY, AMMUNITION: PA70 for Cartridge, 60MM, HE, M720 and Cartridge, 60MM Smoke (WP) M722
8835934	19203		SHIPPING AND STORAGE CONTAINER, AMMUNITION: Fiber for Fuzes, PD, M525 Series and M527 Series (for 60MM)
			81MM
7548995	19203		BOX, PACKING, AMMUNITION: for Cartridge, 81MM, M56 Series, M57 Series
7691562	19203		BOX, PACKING, AMMUNITION: for Projectile, 81MM, M68

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			SEMIFIXED AMMUNITION (EXCEPT MORTAR) CARTRIDGE (COMPLETE ROUND) - Continued
			81MM - Continued
8858642	19203		BOX, PACKING, AMMUNITION: for Cartridges, 81MM Mortar HE, M43 Series TP, M43A1, M36A5
9230176	19203		BOX, PACKING, AMMUNITION: for Cartridges, 81MM, M362 Series, M374 Series, M375 Series
9241849	19203		BOX, PACKING, AMMUNITION: for Cartridge, 81MM, M301 Series
8835933	19203		BOX, PACKING, AMMUNITION: for Fuzes, PD, M525 Series and M527 Series
7548994	19203		CONTAINER, AMMUNTION: M37A5 for Cartridge, 81MM, M57 Series
8858643	19203		CONTAINER, AMMUNITION: M36A5 for Cartridges, 81MM, HE, M43 Series and TP, M43A1
9230175	19203		CONTAINER, AMMUNITION: M252A5 for Cartridges, 81MM, M362 Series, M374 Series, M375 Series
9241848	19203		CONTAINER, AMMUNITION: PA43 for Cartridge, 81MM, M301A3
8835934	19203		SHIPPING AND STORAGE CONTAINER, AMMUNITION: Fiber for Fuzes, PD, M525 Series and M527 Series (for 81MM)
			120MM
512-5015-00	28260		BOX, PACKING, AMMUNTION: for Cartridges, 120MM, M57, M68, M91
512-3007-01	28260		CONTAINER, AMMUNITION: for Cartridges, 120MM, M57, M68, M91
12577551	19200		PACKING AND MARKING FOR CONTAINER: PA153 fiber for Cartridges, 120MM, M929, M930, M933, M934
12577570	19200		PACKING AND MARKING FOR CONTAINER: PA154 metal for Cartridges, 120MM, M929, M930, M933, M934
			SEPARATE-LOADING AMMUNITION PROJECTILE ASSEMBLY
			155MM
9362570	19200		BASE, PALLET: for Projectile, 155MM, M107
76-3-9	19203		BOX, PACKING, AMMUNITION: for Dummy Projectile, 155MM, M7
880527	19203		CONTAINER, AMMUNITION: M13A2 for Charge Propelling 155MM, M4
9234357	19203		CONTAINER, AMMUNITION: PA37A1 for Charge Propelling, 155MM, M119, M119A1, M119A2
9349398	19200		CONTAINER, AMMUNITION: PA103 for Charge Propelling, 155MM, M203A1

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			SEPARATE-LOADING AMMUNITION PROJECTILE ASSEMBLY - Continued
			155MM - Continued
12972583	19200		CONTAINER, AMMUNITION, METAL: PA161 for Charge, Propelling, 155MM, M231 (MACS)
12910080	19200		CONTAINER, AMMUNITION, METAL: PA103E2 for Charge, Propelling, 155MM, M232 (MACS)
9331805	19203		COVER, ASSEMBLY: for Projectile, 155MM, M804
9327881	19203		COVER, ASSEMBLY: for Projectile, 155MM, HERA, M49/M49A1
12961016	19200		COVER, ROTATING BAND, FLEXIBLE: for 155MM Projectiles
9369660	19203		COVER, SUPPORT, RUBBER FOR LIFTING PLUG: for Projectile, 155MM Practice, M804A1
10520044	19203		GROMMET, ROTATING BAND: for Projectile, 155MM, Models M101 Series, M104 Series, M470, M449E2, M112 Series, M122, XM402E2, M485A2
9331806	19200		PALLET, BASE ASSEMBLY: for Projectile, 155MM, M804
9362571	19200		PALLET, COVER, ASSEMBLY: for Projectiles, 155MM, M107 Practice, M804A1
9327882	19200		PALLET, FRAME, BOTTOM BOMB: for Projectiles, 155MM, M549, M549A1
76-18-28-1	19203		PALLET PROJECTILE: 155MM, M118 Series
7549275-3	19203		PALLET, PROJECTILE: for Projectiles, 155MM, M107, M110, M116, M121 Series, M485
7549275-4	19203		PALLET PROJECTILE: 155MM, M107, M110, M116, M121 Series, M485
8837839	19203		PALLET, PROJECTILE: for Projectiles, 155MM, M549A1, M483A1, M692, M718, M718A1, M731, M741, M741A1, M825, M825A1, M864
9327883	19203		PALLET, PROJECTILE: for 155MM, HERA, M470, M483, M549
9235993	19203		RING, SEAL: M549A1 Projectile
			8 INCH
9204223	19203		BOX, PACKING, AMMUNITION: Fuze for Fuzes, Proximity, M513B1, M514, T368E2, M728
8796679	19203		BOX, PACKING, AMMUNITION: for Primer Percussion, M82, Percussion-Electronic, M75, Percussion, XM119

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			SEPARATE-LOADING AMMUNITION PROJECTILE ASSEMBLY - Continued
			8 INCH - Continued
8796678	19203		BOX, PACKING, AMMUNITION: for Primer Percussion, M82, Percussion-Electronic, M75
8864492	19203		BOX, AMMUNITION, STOWAGE: Metal, designed for Artillery Type and Rocket Fuzes, M78, M501, M524, M557, M572, M565, M564, M577, M739, M732 Series, M762 Series, M767 Series, M782
8860560	19203		BOX, PACKING, AMMUNITION: Wirebound Markings, Cannon-Primers-Handle Carefully
8865546	19203		BOX, PACKING, AMMUNITION: Wood, for Fuzes, Proximity M513, M514, M532
8861213	19203		BOX, PACKING, AMMUNTION: Wood, for Fuzes, M78, M524, M557, M572, M565, M501, M564, M582 Series, M767 Series, M762 Series, MK399 MOD 1, M782
8880530	19203		CONTAINER, AMMUNITION: M18A2 for Charge Propelling, 8-Inch, M1
9275845	19203		CONTAINER, AMMUNITION: PA66 for Charge Propelling, 8-Inch, M188, M188A1
8880531	19203		CONTAINER, AMMUNITION: M19A2 for Charges Propelling, 8-Inch, M2 and M4
76-3-9	19203		DUMMY PROJECTILE, 8-INCH: M14, wood crate
9270723	19203		GROMMET, ROTATING BAND: for Projectile, 8-Inch, HERA, M650 or M509E1
9280103	19203		PALLET: Wood, Ammunition, for Projectile, 8-Inch, HERA, M650
9229039	19203		PALLET BASE AND COVER: for Projectile, 8-Inch, M509A1
76-18-16-2	19203		PALLET PROJECTILE: 8-Inch, M106, M404, M426
76-18-16-1	19203		PALLET, PROJECTILE: for Projectiles, 8-Inch, M106, M404, M426
9287960	19203		ROCKET MOTOR-OFF CAP: for Projectile, 8-Inch, HERA, M650
9217658	19203		SHIPPING AND STORAGE CONTAINER ASSEMBLY: for Primer, Percussion, MK24A
76-4-56A	19203		SHIPPING AND STORAGE CONTAINER PROPELLANT POWDER: Wood, for Reducer, Flash, Propelling Charge, M3
			PROPELLING SYSTEM
			175MM
9212310	19203		BOX, PACKING, AMMUNTION: Fiberboard, for XM5 flash reducer, for M86A1 propelling charge for 175MM Gun

Packing Materials and Accessories - Continued

(1) Part Number/ Drawing Number	(2) CAGEC	(3) Figure Number	(4) Description
			PROPELLING SYSTEM - Continued
			175MM - Continued
9211780	19203		BOX, PACKING, AMMUNTION: for Additive, Jacket, M1 for 175MM Gun, M113
9211781	19203		BOX, PACKING, AMMUNTION: for Additive Jacket, M1 for 175MM Gun, M113
9212311	19203		BOX, PACKING, AMMUNTION: for XM5 Flash, Reducer for M86A1 Propelling Charge for 175MM Gun
8880532	19203		CONTAINER, AMMUNITION: M460A2 for Charge Propelling, 175MM, M86, M98
8857344-2	19203		PALLET, PROJECTILE: for 175MM, HE, M437A1

SECTION III SPECIAL PACKING TOOLS LIST

Not applicable.

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APPENDIX E
EXPENDABLE AND DURABLE ITEMS LIST

Section I. INTRODUCTION

E.1. SCOPE

This appendix lists expendable and durable items that you will need to operate and maintain the Artillery Ammunition for Guns, Howitzers, Mortars, Recoilless Rifles, and 40MM Grenade Launchers. This list is for information purposes only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-700, Army Medical Department Expendable/Durable Items.

E.2. EXPLANATION OF COLUMNS IN THE EXPENDABLE/DURABLE ITEMS LIST

E.2.1 Column 1. Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., Use brake fluid (item 5, figure 1).).

E.2.2 Column 2. Level. This column identifies the lowest level of maintenance that requires the listed item.

(C = Operator/Crew
O = Unit/AVUM
F = Direct Support/AVIM
H = General Support
D = Depot)

E.2.3 Column 3. National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

E.2.4 Column 4. Item Name, Description, Commercial and Government Entity Code (CAGEC), and Part Number (P/N). This column provides the other information you need to identify the item.

E.2.5 Column 5. Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST

(1) Item No.	(2) Level	(3) National Stock Number	(4) Description	(5) (U/M/ U/I)
1	O	6810-00-184-4796	ACETONE, TECHNICAL: 5 gal can, liquid (81346) ASTM D329	CN
2	O	6810-00-583-7415	ALCOHOL, DENATURED: grade III, liquid (OMUS3) 27 CFR21.35	GL
3	O	8135-00-282-0565	BARRIER MATERIAL, WATERVAPOR PROOFED, FLEXIBLE: 200-yd roll, 36 in. w, class I (19203) 801560	RO
4	O	7920-00-900-3577	BRUSH: (Fuzewell) 3/8 in. x 1-3/8 in. (17987) 3577	EA
5	O	8020-00-240-6361	BRUSH, ARTIST'S: A7 flat, chisel edge, 1/8 in. w (80244) GSAPD 8020-00-224-8010	EA
6	O	8020-00-246-8504	BRUSH, ARTIST'S: A1 round, flat edge, 1/8 in. w (80244) GSAPD 8020-00-224-8010	EA
7	O	8020-00-597-4768	BRUSH, ARTIST'S: A6 flat edge, 7/8 in. x 1 in. (80244) GSAPD 8020-00-224-8010	EA
8	O	8020-00-245-4522	BRUSH, PAINT: flat, square edge, 2-1/2 in. w, 1-1/4 in. lg (81348) H-B-391	EA
9	O	8020-00-245-4516	BRUSH, PAINT: flat, square edge, 4 in. w, 4 in. lg (80244) GSAPD 8020-00-245-4517	EA
10	O	8020-00-597-5301	BRUSH, PAINT: oval style, chisel edge, 7/8 in. w x 2-1/8 in. lg (81348) H-B-491	EA
11	O	8020-00-889-7919	BRUSH, PAINT: flat, square edge, 1-1/2 in. w (80244) GASPD 8020-00-245-4517	EA
12	O	8020-00-205-6505	BRUSH, PAINT: flat, chisel edge, 1-1/2 in. w, 11/16 in. thk, 2-9/16 in. lg, type I, grade A (80244) GSAPD 8020-00-245-4517	EA
13	O	7520-00-248-9285	BRUSH, STENCIL: fountain style, 1-3/8 in. dia, type F (58536) A-A-2903	EA
14	O	7520-00-223-8000	BRUSH, STENCIL: long handle style, type L, 0.813 dia of bristles (58536) A-A-2903	EA
15	O	8020-00-262-9084	BRUSH, VARNISH: flat, square edge, 1/2 in. w, 1/4 in thk, 1-1/4 in. lg (45092) 608-1	EA

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (Continued)

(1) Item No.	(2) Level	(3) National Stock Number	(4) Description	(5) (U/M/ U/I)
16	O	7920-00-255-5135	BRUSH, WIRE, SCRATCH: beryllium copper alloy, D7 curved handle 13-3/4 in. min and 14-1/4 in. max oa lg (83421) 7920-00-255-5135	EA
17	O	7920-00-269-0933	BRUSH, WIRE, SCRATCH: beryllium copper alloy, D4 block straight handle, 7 in. min and 7-1/2 in. max lg, 2-1/4 in. min and 2-3/8 in. max w, type IV, class III (61452) B-80-2015	EA
18	O	DWG 12977242	CARC PAINT: M795 Projectile	GL
19	O	5999-00-501-8369	CLIP, ELECTRICAL: PCL2 A79 battery clip, 200.0 amps, copper body, 1-1/4 in. oa h, 6-1/4 oa lg, 1-1/4 in. oa w (81348) WC440	EA
20	O	5350-00-192-5051	CLOTH, ABRASIVE: 180 grit, 9 in. w (81348) PC451	PG
21	O	5350-00-192-9316	CLOTH, ABRASIVE: 220 grit, 9 in. w, 11 in. lg (58536) A-A-1048	PG
22	O	5350-00-246-0330	CLOTH, ABRASIVE: 320 grit, 9 in. w, 11 in. lg (80204) ANSI B74.18	PG
23	O	8030-00-664-7105	COATING, COMPOUND, BITUMINOUS, SOLVENT TYPE: type I and L composition, 36.0 solid content percentage (81349) MIL-C-450	GL
24	O	8030-00-290-5141	COATING, COMPOUND, BITUMINOUS, SOLVENT TYPE: type II and L composition, 45.0 solid content percentage (81349) MIL-C-450	GL
25	O	8030-00-231-2345	CORROSION PREVENTATIVE COMPOUND: cold application type, grade I, class I (19203) 945011	GL
26	O	6850-00-174-9672	CORROSION, REMOVING COMPOUND: liquid, type II (81349) MILC10578	GL
27	O	6850-00-264-6573	DESSICANT, ACTIVATED: type I, 5 gl can (81349) MIL-D-3464	CN
28	O	6850-00-935-9794	DESSICANT, ACTIVATED: 8 unit bag, 240 bags/drum, type II (81349) MIL-D-3464	DR
29	O	7930-00-249-8036	DETERGENT, GENERAL PURPOSE: flake or powder, class II (80244) 7930-00-249-8036	CO
30	O	8010-00-297-2122	ENAMEL: black, No. 37038, lusterless (96906) MS35527-2	GL

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (Continued)

(1) Item No.	(2) Level	(3) National Stock Number	(4) Description	(5) (U/M/ U/I)
31	O	8010-00-910-8154	ENAMEL: black, No. 37038, lusterless (83421) 8010-00-910-8154	PT
32	O	8010-00-297-2119	ENAMEL: blue, No. 35109, lusterless (96906) MS35527-3	GL
33	O	8010-00-079-2750	ENAMEL: brass, No. 17043, full gloss (70785) PSP1	PT
34	O	8010-00-598-5465	ENAMEL: brown, No. 30117, lusterless (58536) A-A-2962A	GL
35	O	8010-00-067-5436	ENAMEL: clear, can, aerosol, full gloss (83421) 8010-00-067-5436	PT
36	O	8010-00-598-5939	ENAMEL: green, No. 34108, lusterless (81348) TT-E-515	GL
37	O	8010-00-828-3193	ENAMEL: green, No. 34558, lusterless (81348) TT-E-516	GL
38	O	8010-00-297-2116	ENAMEL: olive drab, No. 34088, lusterless (96906) MS35527-8	GL
39	O	8010-00-848-9272	ENAMEL: olive drab, No. 34088, lusterless (83421) 8010-00-848-9272	PT
40	O	8010-01-088-0096	ENAMEL: orange, No. 32246, lusterless (81348) TT-E-515	QT
41	O	8010-00-297-0563	ENAMEL: orange, No. 32246, lusterless (96906) MS35524-13	GL
42	O	8010-00-297-0809	ENAMEL: red, No. 31136, lusterless (81348) TT-E-515	GL
43	O	8010-00-087-0107	ENAMEL: white, No. 27875, semi-gloss (58536) A-A-2962A	QT
44	O	8010-00-878-5761	ENAMEL: white, No. 37875, lusterless (83421) 8010-00-878-5761	PT
45	O	8010-00-297-2111	ENAMEL: white, No. 37875, lusterless (81348) TT-E-516	GL
46	O	8010-00-297-2112	ENAMEL: yellow, No. 33538, lusterless (96906) MS35527-12	GL
47	O	8010-00-848-6424	ENAMEL: yellow, No. 33538, lusterless (81348) TT-E-516	QT

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (Continued)

(1) Item No.	(2) Level	(3) National Stock Number	(4) Description	(5) (U/M/ U/I)
48	O	8010-00-851-5525	ENAMEL: yellow, No. 23538, semi-gloss (09786) SW101-43	BX
49	O	5315-00-597-9766	FASTENER, CORRUGATED, WOOD JOINT: steel, sawtooth edge, 1/2 in. w, 1 in. lg (58536) A-A-1957	HD
50	O	8415-00-682-6786	GLOVES, DISPOSABLE: plastic, light weight, men's and women's NO CAGEC P/N listed	PR
51	O	9150-01-197-7690	GREASE, AUTOMOTIVE AND ARTILLERY: 1.750 pounds (81349) M-10924-C	CN
52	O	8520-00-782-3509	HAND CLEANER: class 2 paste, grade A (10266) DD10	CN
53	O	7510-00-161-0811	INK, MARKING, STENCIL: black, No. 37038, opaque, type II, liquid (58536) A-A-208	GL
54	O	7510-00-161-0813	INK, MARKING STENCIL: black, No. 37038, opaque, type II, liquid (18876) 805600	QT
55	O	7510-00-161-0815	INK, MARKING STENCIL: white, No. 37875, opaque, type I, liquid (58536) A-A-208	GL
56	O	7510-00-161-0816	INK, MARKING STENCIL: yellow, No. 33538, opaque, type II, liquid (58536) A-A-208	GL
57	O	6810-00-753-4993	ISOPROPYL ALCOHOL, TECHNICAL: grade A, liquid (89264) 2200200	CN
58	O	8010-00-515-2487	LACQUER: clear, spray, 16 oz (83421) 8010-00-515-2487	PT
59	O	8010-00-721-9752	LACQUER: gold, No. 17043, spray, 16 oz, full gloss (83421) 8010-00-721-9752	PT
60	O	8010-00-068-8779	LACQUER: green, No. 34079, lusterless (81349) M81352-1-1G-34079	GL
61	O	8010-00-584-3148	LACQUER: orange, No. 12197, spray can, full gloss (83421) 8010-00-584-3148	PT
62	O	9150-00-231-6689	LUBRICATING OIL, GENERAL PURPOSE: (81348) VV-L-800	QT
63	O	7520-00-973-1059	MARKER, TUBE TYPE: black, pocket clip, felt chisel tip (04457) 6003	DZ

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (Continued)

(1) Item No.	(2) Level	(3) National Stock Number	(4) Description	(5) (U/M/ U/I)
64	O	7520-00-973-1062	MARKER, TUBE TYPE: red, pocket clip, felt chisel tip (03042) MARKSALOTRED	DZ
65	O	7520-00-079-0288	MARKER, TUBE TYPE: yellow, pocket clip, felt chisel tip (83421) 7520-00-079-0288	DZ
66	O	5315-00-889-2743	NAIL: steel head 19 flat, type II, size 4, 1.5 in. fastener lg (81346) ASTM F1667	PG
67	O	5315-00-889-2744	NAIL: steel head 19 flat, 2 in. fastener lg (81346) ASTM F1667	PG
68	O	5315-00-889-2745	NAIL: steel 8d, 2.5 in. (81348) FF-N-105	PG
69	O	8010-00-159-4513	PAINT, RUBBER: black, No. 27038 (81349) MIL-P-9503	GL
70	O	8010-00-285-4917	PAINT, STENCIL: black, No. 37038, class I (58536) A-A-1558	QT
71	O	8010-00-226-3906	PAINT, STENCIL: sand, No. 30277 (6F266) X6968	GL
72	O	8010-00-285-4933	PAINT, STENCIL: white, No. 37875, class I (58536) A-A-1558	GL
73	O	8010-00-285-4935	PAINT, STENCIL: yellow, No. 33538, class I (96906) MS35595-17	QT
74	O	5350-00-271-7930	PAPER, ABRASIVE: garnet, 11 in. lg, 9 in. w (0W360) ANSI B74.18	PG
75	O	8135-00-160-7757	PAPER, KRAFT, UNTREATED: chemical treatment unbleached (58536) A-A-203	RO
76	O	8010-01-229-7546	POLYURETHANE COATING: (81349) MIL-C-53039	QT
77	O	8010-00-515-2208	PRIMER COATING: yellow, type I (58536) TTP175B-ICY-001G	GL
78	O	7920-00-205-1711	RAG, WIPING: cotton, unbleached, grade B, mixed colors (64067) 7920-00-205-1711	BE
79	O	5975-00-296-5324	ROD, GROUND: steel, copper-covered, 5/8 in. dia, 8 ft lg (81348) W-R-550	EA
80	O	5330-00-729-5103	RUBBER, SHEET, SOLID: 1/8 in. thk, 36 in. w, oil resistant (58536) A-A-1719	EA

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (Continued)

(1) Item No.	(2) Level	(3) National Stock Number	(4) Description	(5) (U/M/ U/I)
81	O	5340-00-491-7632	SEAL, ANTIPILFERAGE, METALLIC: 1/2 in. dia, 1/8 in. thk (80244) F2738-A01-2-1-24	HD
82	O	8135-00-239-5291	SEAL, STRAPPING: steel for 5/8 in. w steel strapping, type D, style II, class R, grade II, finish B (81346) ASTM D 3953-87	BX
83	O	8135-00-239-5288	SEAL, STRAPPING: steel for 3/4 in. w steel strapping, type D, style I, class R, grade II, finish B (81346) ASTM D 3953-87	BX
84	O	8135-00-239-5294	SEAL, STRAPPING: steel, for 1-1/4 in. steel strapping, class H, finish B, Grade II, style II (81346) ASTM D 3953-87	BX
85	O	8030-00-245-7032	SEALING COMPOUND: iron oxide, type A, semisolid (80204) PETTMAN CEMENT-TYA	GL
86	O	5315-00-664-7035	STAPLE: steel, 5/8 in fastener lg. 30 indented head style, 9 side point style (81346) ASTM F1667	BX
87	O	9310-00-240-4737	STENCILBOARD: 18-1/2 in. lg x 18-1/2 in. w, type I (58536) A-A-1733	SH
88	O	8135-00-281-4071	STRAPPING: steel, 5/8 in. w, nailless, reg duty, type I (81346) ASTM D 3953-87	CL
89	O	8135-00-281-4069	STRAPPING: steel, 3/4 in. wide, nailless, reg duty, type I (81346) ASTM D 3953-87	CL
90	O	8135-00-283-0671	STRAPPING: steel, 1-1/4 in. w, nailless, heavy duty, type I, grade II (81346) ASTM D 3953-87	CL
91	O	4020-00-033-7695	TAPE, LACING AND TYING: plastic, white, 250 yds lg, type II, finish B, size II (18876) 9110503	SL
92	O	7510-00-266-6711	TAPE, PRESSURE SENSITIVE ADHESIVE: masking, tan, one side adhesive, 3/4 in. w, 60 yd roll (58536) A-A-883	RO
93	O	7510-00-266-6712	TAPE, PRESSURE SENSITIVE ADHESIVE: masking, tan, one side adhesive, 1 in. w, 60 yd roll (19203) 8783476	RO
94	O	7510-00-266-6710	TAPE, PRESSURE SENSITIVE ADHESIVE: masking, tan, one side adhesive, 2 in. w, 60 yd roll (18876) 802563	RO

SECTION II. EXPENDABLE AND DURABLE ITEMS LIST (Continued)

(1) Item No.	(2) Level	(3) National Stock Number	(4) Description	(5) (U/M/ U/I)
95	O	7510-00-266-6715	TAPE, PRESSURE SENSITIVE ADHESIVE: clear, one side adhesive, 2 in. w, 60 yard roll, type I, class II (52170) 351	RO
96	O	8010-00-242-2089	THINNER, PAINT, PRODUCTS: Type I (58536) A-A-2904	GL
97	O	8010-00-160-5794	THINNER, PAINT, PRODUCTS: (81348) TT-T-306	GL
98	O	8010-00-221-2809	VARNISH, OIL: (96906) MS35636-1	QT
99	O	6415-00-990-2999	WIRE, ELECTRICAL: black, single stranded (81348) J-C	FT
100	O	9505-00-294-7373	WIRE, NONELECTRICAL: D7 round, zinc coated (81346) ASTM A641 **** AAC = Y, when exhausted use, NSN 9505-00-248-9851	CL
101	O	9505-00-248-9851	WIRE, NONELECTRICAL: D7 round, zinc coated (81346) ASTM A641	LB

APPENDIX F
PACKING, MARKING AND STORAGE

Section I. INTRODUCTION

F-1. SCOPE

This appendix contains information required by organizational level of maintenance for repacking of artillery munitions.

F-2. EXPLANATION OF COLUMNS

a. Item. Column 1 indicates the nomenclature of the munition.

b. Outer Pack. Column 2 indicates the type of package.

c. Inner Pack. Column 3 indicates the type of pack.

d. Number of Items in Package. Column 4 indicates the quantity of munitions in the outer pack.

e. Number of Items per Inner Pack. Column 5 indicates the quantity of munitions in the inner pack.

f. Total Weight (lbs). Column 6 indicates total weight of the outer and inner pack and contents.

g. Total Explosives Weight (lbs). Column 7 indicates the total weight of explosives of the packaged munitions.

h. Cube. Column 8 indicates result of the length, multiplied by the width, multiplied by height of the outer pack.

i. Field Storage Compatibility. Column 9 indicates the primary groups into which ammunition is segregated for storage in the field.

Section II. PACKING, MARKING AND STORAGE DATA

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. items in package	(5) No. items per inner pack	(6)[1] Total Weight (lb)	(7)[1] Total explosive weight (lb)	(8) Cube	(9)[2] Field Storage category
ADDITIVE JACKET, BOREWEAR	Wood box	Carton	40	20	80	None	2.72	1
CARTRIDGE, 37MM: TP, M63 MOD 1 (Subcaliber)	Wood Box	Fiber container	40	1	117	3.44	2.07	A
CARTRIDGE, 40MM: AP-T, M81,M81A1	Metal box	Charger clip	16	4	110	None	1.70	D
	Wood box	Fiber container	6 24	1 1	42 158	None None	1.00 3.09	D D
Cartridge, 40MM: Chemical Agent CS, M674	Wirebound box	Metal box	32	8	55	6.8	1	D

Section II. PACKING, MARKING AND STORAGE DATA - Continued

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. items in package	(5) No. items per inner pack	(6)[1] Total Weight (lb)	(7)[1] Total explosive weight (lb)	(8) Cube	(9)[2] Field Storage category
CARTRIDGE,40MM: HE, Linked, M383, M384, and M430	Wirebound box	Barrier bag Fiber box	50	50	56	5.8	1.7	A
CARTRIDGE, 40MM: HE, M381, M386 and M406	Wood box	Bandoleer Fiber board box w/barrier bag	72	6	53	4.96	1.5	A
CARTRIDGE, 40MM: HE, M397	Wood box	Bandoleer Fiber box Barrier bag	72	6	58	5.08	1.7	A
CARTRIDGE,40MM: HEDP, Linked, M430, M430A1	Metal box	Packing fillers	48 32	48 32	60 42	4.0 2.7	1.3 0.7	A A
	Wirebound box (M430 only)	Barrier bag Fiber box	50	50	56	4.2	1.7	A
CARTRIDGE, 40MM: HEDP, M433	Wirebound box	Bandoleer Fiber box Barrier bag	72	6	53.5	7.2	1.3	A
CARTRIDGE,40MM:HE-T, HEI-T, MK 2	Metal box	Charger clip	16	4	110	3.2	1.7	D
	Wood box	Fiber container	6 9 12 24	1 1 1 1	47 61 89 158	1.2 1.6 2.4 4.8	1 1.3 1.71 3.06	D D D D
CARTRIDGE,40MM: Multiple Projectile, ADMP, M576	Wirebound box	Bandoleer Fiber box Barrier bag	72	6	40	None	1.3	A
CARTRIDGE,40MM: Practice, M382, M407A1	Wirebound box	Bandoleer Fiber box Barrier bag	72	6	53	None	1.3	A
CARTRIDGE,40MM: Dummy, M922, M922A1	Metal box	Packing Fillers	48 32	48 32	60 42	None None	1.3 0.7	A
	Wirebound Box	Metal box	20	10	29	None	1	A
CARTRIDGE, 40-MM: Canister, M1001	Metal box	Packing fillers	32	32	42	0.01	0.7	A
CARTRIDGE, 40-MM: Low Cost Training, XM1023	Metal box	Packing fillers	32	32	42	None	0.7	A

Section II. PACKING, MARKING AND STORAGE DATA - Continued

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) Number Items in Package	(5) Number Items per Inner Pack	(6)[1] Total Weight (lb)	(7)[1] Total Explosive Weight (lb)	(8) Cube	(9)[2] Field Storage Category
CARTRIDGE, 40MM: Practice, M385	Metal box	Packing fillers	48	48	60	None	1.3	A
	Wirebound box	Barrier box Fiber box	50	50	56	None	1.7	A
CARTRIDGE, 40MM: Practice, M385A1	Metal box	Packing filler	48 32	48 32	60 42	None	1.3 0.7	A
CARTRIDGE, 40MM: Practice M781	Wood box	Fiber box Barrier bag	100	25	64	None	1.7	A
CARTRIDGE, 40MM: Practice M918, Linked	Wirebound box	Barrier bag Fiber box	50	50	53	0 5G	1.5	A
	Metal box	Packing fillers	48 32	48 32	60 42	0 54 0.36	1.3 0.7	A
CARTRIDGE, 40MM: Practice, M918, Unlinked	Wood box	Fiber box Barrier bag	60	60	66	68	1.4	A
CARTRIDGES, 40MM: Red Smoke Ground Marker M713, Green Smoke Ground Marker M715, Yellow Smoke, Ground Marker M716	Wirebound box	Metal box	44	22	46	None	1	D
CARTRIDGE, 40MM: Red Smoke, M675	Wirebound	Metal box	32	8	55	6 8	1	D
CARTRIDGE, 40MM: Tactical CS, M651	Wood box	Bandoleer	24	6	26	2.88	0.7	D
CARTRIDGES, 40MM: White Star Parachute, M583, M583A1 and White Star Cluster, M585, Green Star Parachute M661, Red Star Parachute M662 Non-Lethal, M1006 Crowd Dispersal, M1029	Wirebound box	Metal box	44	22	46 32 46	0.1 0.013 0.06	1 0.85	D
CARTRIDGE, 40MM: TP-T, M91	Metal box	Charger clip	16	4	111	None	1.7	A
CARTRIDGE, 60MM: HE, M49A2, M49A3, M49A4 (M49A2E2)	Wirebound box	Fiber container Metal box	16	811	42	3.4	0.69	C
	Plywood box	Fiber container	12	1	50	5	1	C
	Wood box	Fiber container	10 10 11 12 19	1 1 1 1 1	49 50 52 55 5 89	4 2 42 46 5 8	1.02 1 17 14 1.67 1.83	C C C C C

SECTION II. PACKING, MARKING AND STORAGE DATA - Continued

(1) Item	(2) Outer pack	(3) Inner pack	(4) No. Items in package	(5) No items per inner pack	(6)[1] Total weight (lb)	(7)[1] Total explosive weight (lb)	(8) Cube	(9)[2] Field storage category
CARTRIDGE. 60-MM: HE, M49A2, M49A3, M49A4 (M49A2E2) - Continued	Wood box	Wax wrapped fiber container	8 9 12 16	1 1 1 1	44.1 46 3 55.5 86	3 4 3 8 5 6.7	1.17 13 1 67 16	C C C C
CARTRIDGE, 60-MM: HE, M720	Wirebound box fiber container	Metal box/	16	8	112	12.64	2 1	C
CARTRIDGE, 60-MM: Illuminating, M83A1, M83A2, M83A3	Wood box	Fiber container	8 9	1 1	50 8 62	4 21 4.73	1 14 1.17	D D
	Wood box	Wax wrapped fiber container	9	1	57		1.86	D
	Wood box	Metal can	9	1	62	4.73	1.26	D
CARTRIDGE, 60-MM: Illuminating, M721	Wood box container	Metal box/fiber	16	8/1	116	N/A	2 3	C
CARTRIDGE, 60-MM Smoke, WP, M302, M302A1, M302A2	Wood box	Fiber container	8 9 10	1 1 1	52.4 55 2 65 5	0.14 0.15 0.17	0 94 122 101	D D D
	Wood box	Wax wrapped fiber container	9	1	56.6	0.15	144	D
	Wirebound box	Metal box/ fiber container	16	8/1	101	0 28	2	D
CARTRIDGE, 60-MM: Smoke, WP, M722	Wirebound box container	Metal box/fiber	16	8/1	112	0 4	2 0	D
CARTRIDGE, 60-MM. TP, M50A2, M50A2E1, M50A3	Wood box	Fiber container	10 11 14 16 19	1 1 1 1 1	50 54 73.2 71 89	0 5 0.55 0 7 0 8 0 95	1.02 1.15 1.4 1.4 1.82	C C C C C
	Wood box	Wax wrapped fiber container	8 12	1 1	55.5	1.17	1.3 1.67	C C
CARTRIDGE, 75-MM BLANK: M337, M337A1E1, M337A2	Wood box	Fiber container	15	1	81.2	15	1.92	A
CARTRIDGE, 81-MM: HE, M43A1, M43A1B1	Wood box	Fiber container	4	1	50	4.92	1.05	C
	Metal box	Fiber container	4	1	53	4.92	0.71	C
CARTRIDGE, 81-MM: HE, M362, M362A1	Wood box	Fiber container	3	1	53.5	6.78	1.33	C
	Wood box	Fiber container w/barrier beg	3	1	53 5	6.78	1.33	C

SECTION II. PACKING, MARKING AND STORAGE DATA-Continued

(1) ITEM	(2) OUTER PACK	(3) INNER PACK	(4) NO. ITEMS IN PACKAGE	(5) NO. ITEMS PER INNER PACK	(6)[1] TOTAL WEIGHT (LB)	(7)[1] TOTAL EXPLOSIVE WEIGHT (LB)	(8) CUBE	(9)[2] FIELD STORAGE CATEGORY
CARTRIDGE, 81-MM: HE, M362, M362A1-Continued	Wood box	Plastic container w/barrier bag	3	1	49.5	6.78	1.3	C
CARTRIDGE, 81-MM: HE, M374, M374A1, M374A2	Wirebound crate	Plastic container	4	1	46	8.4	1	C
	Wood box	Plastic container w/barrier bag	3	1	46	6.3	1.55	C
	Wood box	Fiber container w/barrier bag	3	1	46	6.3	1.55	C
	Wood box	Wax wrapped fiber container	3	1	45	6.3	1.47	C
CARTRIDGE, 81-MM: HE, M821, M889	Steel box	Plastic container	3	1	57	4.8	1.6	C
CARTRIDGE, 81-MM: HE, M821E1, M889E1	Wood box	Fiber container	3	1	57	4.8	1.6	C
CARTRIDGE, 81-MM: Illuminating, M301A2, M301A3	Wood box	Wax wrapped fiber container	3	1	53.6	4.35	1.9	D
	Wood box	Metal or fiber container	3	1	55	4.35	1.4	D
CARTRIDGE 81-MM: Illuminating, M853A1	Wood box	Wax impregnated container	3	1	57	4.35	1.65	D
CARTRIDGE, 81-MM: Smoke, RP, M819	Wood box	Wax impregnated container	3	1	46	8.0	1.65	D
CARTRIDGE, 81-MM: Smoke, WP, M57, M57A1	Metal container	Fiber container	1	1	27.3	0.08	0.42	D
	Wood box	Fiber container	2	1	43.4	0.16	1.02	D
	Wood box	Fiber container	1	1	30	0.08	0.42	D
CARTRIDGE, 81-MM: Smoke, WP, M375, M375A1, M375A2	Wirebound crate	Plastic container	4	1	48.8	0.1	1	D
	Wood box	Plastic container w/barrier bag	3	1	46	0.08	1.47	D
	Wood box	Wax wrapped fiber container	3	1	46	0.08	1.47	D
CARTRIDGE, 81-MM: TP, M43A1	Wood box	Fiber container	4	1	49.8	0.64	1	C
CARTRIDGE, 90-MM: APC-T, M82	Wood box	Fiber container	2	1	131	0.62	2.48	A
	Metal container	N/A	1	N/A	69.6	0.31	0.94	A

SECTION II. PACKING, MARKING AND STORAGE DATA-Continued

(1) ITEM	(2) OUTER PACK	(3) INNER PACK	(4) NO. ITEMS IN PACKAGE	(5) NO. ITEMS PER INNER PACK	(6)[1] TOTAL WEIGHT (LB)	(7)[1] TOTAL EXPLOSIVE WEIGHT (LB)	(8) CUBE	(9)[2] FIELD STORAGE CATEGORY
CARTRIDGE, 90-MM: APERS-T, M580	Wood box	Fiber container	2	1	128	0.013	2.43	A
	Wood box	Fiber container w/barrier bag	2	1	129	0.013	2.43	A
CARTRIDGE, 90-MM: AP-T, M318, M318A1	Wood box	Fiber container	2	1	130	None	2.65	A
CARTRIDGE, 90-MM, BLANK: M394	Wood box	Fiber container	8	1	98.6	12.1	2.12	A
CARTRIDGE, 90-MM, CANISTER: APERS, M377	Wood box	Fiber container	2	1	118	None	2.61	A
CARTRIDGE, 90-MM, CANISTER: M336	Wood box	Fiber container	2	1	111	None	2.36	A
CARTRIDGE, 90-MM, CANISTER: M590	Wood box	Fiber container	6	1	58	None	1.8	A
	Wirebound box	Plastic container	6	1	58	None	1.8	A
CARTRIDGE, 90-MM: HE, M71	Wood box	Fiber container	4	1	236	8.2	4.27	A
			2	1	118	4.1	2.43	A
	Metal container		1		67.3	2	0.94	A
CARTRIDGE, 90-MM: HEAT, M348, M348A1	Wood box	Fiber container	2	1	115.7	3.12	2.4	A
CARTRIDGE, 90-MM: HEAT, M371A1	Wood box	Fiber container	2	1	47	3.44	1.3	A
CARTRIDGE, 90-MM: HEAT-T, M431, M431A1, M431A2	Wood box	Fiber container	2	1	109	2.4	2.59	A
CARTRIDGE, 90-MM: HE-T, M71A1	Wood box	Fiber container	2	1	128	3.82	2.65	A
CARTRIDGE, 90-MM: HVAP-T, M332, M332A1, M332B1	Wood box	Fiber container	2	1	104	None	2.33	A
CARTRIDGE, 90-MM: Practice, M371 (M739)	Wood box	Fiber container	2	1	47	0.06	1.3	A
CARTRIDGE, 90-MM: Smoke, WP, M313	Wood box	Fiber container	2	1	130	0.32	2.42	D
	Metal container	N/A	1		67.5	0.33	0.94	D
CARTRIDGE, 90-MM: Smoke, WEV M313C	Wood box	Fiber container	2	1	131	0.62	2.43	D
CARTRIDGE, 90-MM: TP-T, M353, M353A1	Wood box	Fiber container	2	1	129	None	2.64	A

SECTION II. PACKING, MARKING AND STORAGE DATA-Continued

(1) ITEM	(2) OUTER PACK	(3) INNER PACK	(4) NO. ITEMS IN PACKAGE	(5) NO. ITEMS PER INNER PACK	(6)[1] TOTAL WEIGHT (LB)	(7)[1] TOTAL EXPLOSIVE WEIGHT (LB)	(8) CUBE	(9)[2] FIELD STORAGE CATEGORY
CARTRIDGE, 105K: UEB-T, DM128	Wood box	Fiber container	2	1	130	13.23	4.3	A
CARTRIDGE, 105-MM: APDS-T, L36A1 (M392),	Wood box	Fiber container	2	1	122	None	2.85	A
M392A1, M392A2, M392A3, M724	Metal container	N/A	1	N/A	80	None	2.57	A
CARTRIDGE, 105-MM: APERS-T, M494	Wood box	Fiber container w/barrier bag	2	1	140	0.013	3.5	A
CARTRIDGE, 105-MM: APERS-T, XM546	Wood box	Fiber container w/barrier bag	2	1	122	0.08	2.47	A
	Wood box	Fiber container	2	1	117	0.08	2.63	A
CARTRIDGE, 105-MM: APFSDS-T, M735,	Wooden box	Fiber container	2	1	124	12.6	3.4	A
M774, M833	Metal container	N/A	1	1	N/A	(propel-lant only)	0.9	A
CARTRIDGE, 105-MM:	Metal container APFSDS-T, M833	N/A	1	1	57	12.6 (propel-lant only)	1.2	A
CARTRIDGE, 105-MM: APFSDS-T, M900	Metal container	N/A	1	1	N/A 57.8	13.5 (propel-lant only)	1.2	A
CARTRIDGE, 105-MM, Blank: M395	Wood box	Fiber container	10	1	96	17	1.9	A
CARTRIDGE, 105-MM: Gas, Nonpersistent, GB, M360	Wood box	Fiber container	2	1	120	2.24	2.02	D
CARTRIDGE, 105-MM: Gas, Persistent, H, M60	Wood box	Fiber container	2	1	120	0.38	1.81	D
CARTRIDGE, 105-MM: Gas, Persistent, HD, M60	Wood box	Fiber container	2	1	120	0.38	1.81	D
CARTRIDGE, 105-MM: HE, M1 w/Fuze	Wood box	Fiber container	2	1	119	9.5	1.75	A
CARTRIDGE, 105-MM: HE, M1 w/o Fuze	Wood box	Fiber container	2	1	114	9.4	1.75	A
	Wirebound crate	Fiber container	2	1	102	9.4	2.06	A
	Metal container	Fiber container	1	1	67	4.2	0.81	A
CARTRIDGE, 105-MM: HE, M413	Wood box	Fiber container	2	1	120	2.2	2	A
CARTRIDGE, 105-MM: HE, M444	Wood box	Fiber container	2	1	120	1.83	2	A

Section II. PACKING, MARKING AND STORAGE DATA - Continued

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. items in package	(5) No. items per inner pack	(6)[1] Total Weight (lb)	(7)[1] Total explosive weight (lb)	(8) Cube	(9)[2] Field Storage category
CARTRIDGE, 105-MM: HEAT-T, M456, M456A1, M456E1	Wood box	Fiber container	2	1	132	4.28	3.3	A
CARTRIDGE, 105MM: HEAT-T, M456A2	Metal container	N/A	1	1	79	4.28	1.3	A
CARTRIDGE, 105MM: HEP, HEP-T, M327	Wood box	Fiber container	2	1	105	14.4	2.09	A
	Metal container	Fiber container	1	1	65	7.6	0.8	A
CARTRIDGE, 105MM: HEP-T, M393A1	Wood box	Fiber container	2	1	147	12.8	3.17	A
CARTRIDGE, 105MM: HEP-T, M393A2, (M393A1E1)	Wood box	Fiber container	2	1	137	12.8	3.17	A
CARTRIDGE, 105MM: HERA, M548 (XM548E1)	Wood box	Fiber container	2	1	122	11	2.3	A
CARTRIDGE, 105MM: HERA, M913, M927	Metal container	Fiber container	1	1	66	8.00	1.2	A
CARTRIDGE, 105MM: DPICM, M915	Metal container	Fiber container	1	1	70.2	7.15	1.2	A
CARTRIDGE, 105MM: DPICM, M916	Metal container	Fiber container	1	1	68.1	5.73	1.2	A
CARTRIDGE, 105MM: Illuminating, M314, M314A1, M314A2, M314A3 (M314A2E1)	Wood box	Fiber container	2	1	120	3.88	2.02	D
CARTRIDGE, 105MM: Illuminating, M314A3	Metal container	Fiber container	1	1	67.5	1.94	1.2	D
CARTRIDGE, 105MM: Leaflet, BE, M84, M84B1	Wood box	Fiber container	2	1	105	0.28	1.81	A
CARTRIDGE, 105MM: Smoke, BE, Green, M84, M84B1	Wood box	Fiber container	2	1	115	0.28	1.21	D
	Metal container	Fiber container	1	1	71	0.14	0.81	D
CARTRIDGE, 105MM: Smoke, BE, HC, M84, M84A1, M84B1	Wood box	Fiber container	2	1	120	0.28	1.21	D
	Metal container	Fiber container	1	1	71	0.14	0.81	D
CARTRIDGE, 105MM: Smoke, BE, Red, M84, M84B1	Wood box	Fiber container	2	1	119	0.28	1.21	D
	Metal container	Fiber container	1	1	68.2	0.28	0.81	D
CARTRIDGE, 105MM: Smoke, BE, Yellow, M84, M84B1	Wood box	Fiber container	2	1	115	0.28	1.21	D
CARTRIDGE, 105MM: Smoke, WP, M60, M60A1, M60A2	Wood box	Fiber container	2	1	120	0.38	1.79	D
	Metal container	Fiber container	1	1	69	0.19	0.81	D
CARTRIDGE, 105MM: Tactical, CS, XM629	Wood box	Fiber container	2	1	120	0.16	2	D

PACKING, MARKING AND STORAGE DATA-Continued

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. Items in Package	(5) No. Items per Inner Pack	(6)[1] Total Weight (Lb)	(7)[1] Total Explosive Weight (Lb)	(8) Cube	(9)[2] Field Storage Category
CARTRIDGE, 105-MM: TP, DS-T, M724	Wood box	Fiber container	2	1	126	8.75	2.6	A
CARTRIDGE, 105-MM: TP-T, M67	Wood box	Fiber container	2	1	110	None	1.79	A
CARTRIDGE, 105-MM: TP-T, M393A1, M467	Wood box	Fiber container	2	1	143	None	3.16	A
CARTRIDGE, 106-MM: APERS-T, M581	Wood box Wood box	Fiber cont. w/barrier bag Fiber cont.	2 2	1 1	134 134	None None	3.1 3.1	A A
CARTRIDGE, 106-MM: HEAT, M344A1	Wood box	Fiber container	2	1	119	5.58	2.73	A
CARTRIDGE, 106-MM: HEP-T, M346, M346A1, M346B1	Wood box	Fiber container	2	1	119	15.4	2.59	A
CARTRIDGE, 120-MM: APFSDS-T, M829	Metal cont.	N/A	1	1	63.2	17.95	1.5	A
CARTRIDGE, 120-MM: APFSDS-T, M829A1	Metal cont.	N/A	1	1	67.44	17.5	1.5	A
CARTRIDGE, 120-MM: APFSDS-T, M829A2	Metal cont.	N/A	1	1	66.1	16-20	1.5	A
CARTRIDGE, 120-MM: M933 and M934	Metal cont.	Fiber container	2	1	97	7.115	X	C
CARTRIDGE, 120-MM: HEAT-MP-T, M830	Metal cont	N/A	1	1	75.4	17.0	1.5	A
CARTRIDGE, 120-MM: HEAT-MP-T, M830A1	Metal cont	N/A	1	1	72.1	18.69	1.5	A
CARTRIDGE, 120-MM: Illuminating, XM930	Metal cont	Fiber container	2	1	97	4366	X	C
CARTRIDGE, 120-MM: Smoke, XM929 and M929	Metal cont	Fiber container	2	1	97	694	X	C
CARTRIDGE, 120-MM: TP-T, M831	Wood box Metal cont.	Fiber container N/A	1 1	1 1	89.4 75.4	13.93 13.93	2.4 1.5	A A
CARTRIDGE, 120-MM: TP-T, M831A1	Metal cont.	N/A	1	1	73	15.5	1.5	A
CARTRIDGE, 120-MM: TP-T, M865	Wood box Metal cont.	Fiber cont. N/A	1 1	1 1	77.95 63.2	19.03 19.03	2.4 1.5	A A
CARTRIDGE, 120-MM: Full Range Practice, M931	Wire-bound box	Fiber container	2	1	88	1.34	1.5	C

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. Items in Package	(5) No. Items per Inner Pack	(6)[1] Total Weight (Lb)	(7)[1] Total Explosive Weight (Lb)	(8) Cube	(9)[2] Field Storage Category
CARTRIDGE, 152-MM CANISTER: M625 and M625A1	Wood box	Fiber container w/barrier bag	1	1	90.5	N/A	4	A
CARTRIDGE, 152-MM: HE-T, M657 (XM657E2)	Wood box	Fiber container w/barrier bag	!	1	97.5	10	4	A
CARTRIDGE, 152-MM: HEAT-T-MP, M409A1 (XM409E6) and M409 (XM409E5)	Wood box	Fiber container w/barrier bag	1	1	97.5	6.3	4.2	A
CARTRIDGE, 152-MM: TP-T, M411 (XM411E3), M411A1 (XM411E4), M411A2 (M411E5) and M411A3 (XM411E7)	Wood box	Fiber container w/barrier bag	1	1	97.5	0.34 (M411 only)	4.2	A
CARTRIDGE, 165MM: HEP, M123, M123A1	Wood box	Fiber container	1	1	92.4	34.4	1.87	A
CARTRIDGE, 165MM: TP, M623	Wood box	Fiber container	1	1	94	None	1.7	A
CARTRIDGE, 4.2 INCH: Gas, Persistent, HD or HT, M2, M2A1	Wood box	Fiber container	2	1	63	0.29	1.14	D
CARTRIDGE, 4.2 INCH: HE, M3	Wood box	Fiber container	2	1	68.6	17.1	1.27	C
CARTRIDGE, 4.2 INCH: HE, M3A1	Wood box	Fiber container	2	1	78.2	16.3	1.52	C
CARTRIDGE, 4.2 INCH:	Wood box	Fiber container	2	1	78.2	16.3	1.52	C
HE, M329, M329A1, M329A2	Wood box	Wax wrapped fiber container	2	1	81.7	16.3	1.52	C
CARTRIDGE, 4.2 INCH:	Wood box	Fiber container	2	1	76	5	1.52	D
Illuminating, M335, M335A1, M335A2	Wood box	Wax wrapped fiber container	2	1	84.2	5	1.52	D
CARTRIDGE, 4.2 INCH: Smoke, WE: M2, M2A1	Wood box	Fiber container	2	1	75	0.29	1.13	D
CARTRIDGE, 4.2 INCH:	Wood box	Fiber container	2	1	86	0.42	1.52	D
Smoke, WE: M328, M328A1	Wood box	Wax wrapped fiber container	2	1	76	0.42	1.52	D

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. Items in Package	(5) No. Items per Inner Pack	(6)[1] Total Weight (Lb)	(7)[1] Total Explosive Weight (Lb)	(8) Cube	(9)[2] Field Storage Category
CARTRIDGE, 4.2 INCH:								
Tactical, CS, M630	Wood box	Fiber container	2	1	76	7	1.67	D
	Wood box	Wax wrapped fiber container	2	1	76	7	1.67	D

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Section II. PACKING, MARKING AND STORAGE DATA - Continued

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. items in package	(5) No. items per inner pack	(6)[1] Total Weight (lb)	(7)[1] Total explosive weight (lb)	(8) Cube	(9)[2] Field Storage category
CHARGE, PROPELLING, 155-MM: Green Bag, M3, M3A1	Metal container	None	2	N/A	28.5	11.5	0.89	B
CHARGE, PROPELLING, 155-MM: Green Bag, M3, M3A1, w/primer, Mk 24A	Metal container	None	2	N/A	29	11.5	0.89	B
CHARGE, PROPELLING, 155MM: M203A1	Metal container	None	1	N/A	48.0	28.0	1.55	B
CHARGE, PROPELLING, 155MM: M231 (MACS)	Metal container	None	4	N/A	35.9	14.0	1.02	B
CHARGE, PROPELLING, 155MM: M232 (MACS)	Metal container	None	5	N/A	49.75	24.75	1.23	B
CHARGE, PROPELLING, 155MM: Red Bag, M119A2	Metal container	None	1	N/A	44	22	1.3	B
CHARGE, PROPELLING, 155-MM: Red Bag, M203	Metal container	None	1	N/A	50.0	26.4	1.55	B
CHARGE, PROPELLING, 155MM: White Bag, M4, M4A1, M4A2	Metal container	None	1	N/A	30.5	13.6	0.87	B
CHARGE, PROPELLING, 155MM: White Bag, M4, M4A1, M4A2, w/Primer, Mk 2A4	Metal container	None	1	N/A	30.5	13.6	0.87	B
CHARGE, PROPELLING, 155MM: White Bag, M119 Series	Metal container	None	1	N/A	42.5	20.5	1.2	B
CHARGE, PROPELLING, 155MM: White Bag, M119A1 (M119)	Metal container	None	1	N/A	44	22.21	1.3	B
CHARGE, PROPELLING, 175MM: M86, M86A1 and M86A2 w/Primer, M82	Metal container	None	1	N/A	99	58	3.1	B
CHARGE, PROPELLING, 175MM: M86A2, w/Additive Jacket	Pallet Metal container		16	1	1992	928	57.3	B
CHARGE, PROPELLING, 175MM: M124	Metal container	None	3	N/A	95	51	3.1	B
CHARGE, PROPELLING, 8-INCH: Green Bag, M1	Metal container	None	1	N/A	31.2	13.7	1	B
CHARGE, PROPELLING, 8-INCH: Green Bag, M1 w/Primer, Mk2A4	Metal container	None	1	N/A	31.2	13.7	1.5	B

SECTION II. PACKING, MARKING AND STORAGE DATA-Continued

(1) ITEM	(2) OUTER PACK	(3) INNER PACK	(4) NO. ITEMS IN PACKAGE	(5) NO. ITEMS PER INNER PACK	(6)[1] TOTAL WEIGHT (LB)	(7)[1] TOTAL EXPLOSIVE WEIGHT (LB)	(8) CUBE	(9)[2] FIELD STORAGE CATEGORY
CHARGE, PROPELLING, 8-INCH: M188	Metal container	None	1	N/A	75	38.5	2.4	B
	Pallet	Metal container	20	1	1700	770	61.3	B
CHARGE, PROPELLING, 8-INCH: M188A1	Metal container	None	1	N/A	76	48.06	2.4	B
	Pallet	None	20	N/A	1730	961.20	61.3	B
CHARGE, PROPELLING, 8-INCH: White Bag, M2	Metal container	None	1	N/A	51.9	28.6	1.6	B
			2	N/A	99.6	57.1	3.5	B
CHARGE, PROPELLING, 8-INCH: White Bag, M2 w/Primer, Mk2A4	Metal container	None	1	N/A	53.2	28.6	1.53	B
CHARGE, SPOTTING, PROJECTILE	Wood box	Metal box	72	36	35.4	7.22	1.3	B
CONTAINER, 105-MM: Smoke, WP-T, M416	Wood box	Fiber container	2	1	137	0.22	3.22	D
DUMMY CARTRIDGE, 40-MM, M25	Wood box	Fiber container	8	1	65	None	1.27	N/A
			12	1	93	None	1.28	N/A
DUMMY CARTRIDGE, 40-MM: M922	Metal box	Packing fillers	48	48	60	None	1.3	A
			32	32	42		0.7	
	Wirebound box	Metal box	20	10	29	None	1	A
DUMMY CARTRIDGE, 90-MM: M12, M12B1, M12B2	Wood box	Fiber container	2	1	125	None	2.43	1
DUMMY CARTRIDGE, 105-MM: M14	Wood box	Fiber container	2	1	120	None	1.81	1
	Bundle	Fiber container	3	1	149	None	2.04	1
DUMMY CARTRIDGE, 105-MM: M457	Wood box	Fiber container	2	1	137	None	3	1
DUMMY CARTRIDGE, 106-MM: M368	Wood box	Fiber container	2	1	127	None	2.59	1
DUMMY CARTRIDGE, 152-MM: M596	Wood box		1	N/A	69	None	1.3	1
DUMMY PROPELLING CHARGE, 155MM: M2	As required		N/A		29	None	0.89	1
DUMMY PROJECTILE, 155MM: M7	Wooden crate	N/A		N/A	106	N/A	1.98	1

Section II. PACKING, MARKING AND STORAGE DATA - Continued

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. items in package	(5) No. items per inner pack	(6)[1] Total Weight (lb)	(7)[1] Total explosive weight (lb)	(8) Cube	(9)[2] Field Storage category
DUMMY PROPELLING CHARGE, 175MM: M98	Metal container	None	1	N/A	99	None	3.1	N/A
DUMMY PROPELLING, 8-INCH: M4	As required		N/A	N/A	N/A	None	N/A	1
DUMMY PROJECTILE, 8-INCH: M14	Wood crate	None	1	N/A	223	None	2.99	1
FUZE, CONCRETE PIERCING: M78A1	Wirebound	Metal box	16	8	67	0.8	1.01	B
FUZE, ELECTRONIC TIME: M762 Series	Wirebound box	Metal can	16	8	41.3	0.009	1	B
FUZE, ELECTRONIC TIME: M767 Series	Wirebound box	Metal can	16	8	46.5	0.96	1	B
FUZE, MECHANICAL TIME: M565	Wood box	Metal can	15	1	46	0.17	0.84	B
	Wirebound box	Metal box	16	8	54	0.18	1	B
FUZE, MECHANICAL TIME AND SUPER QUICK: M501, M501A1	Wood box	Metal can	20 26 40	1 1 1	49.2 62 82	0.02 0.03 0.05	0.97 1.92 1.5	B B B
	Wood box	Fiber container	25 27 40	1 1 1	60 84 85	0.03 0.03 0.05	1.51 1.5 1.92	B B B
	Wirebound box	Metal box	16	8	53	0.02	1	B
FUZE, MECHANICAL TIME AND SUPER QUICK: M548	Wood box	Metal can	15	1	50	0.17	0.8	B
	Wirebound box	Metal box	16	8	54.6	0.18	1	B
FUZE, MECHANICAL TIME AND SUPER QUICK: M564	Wirebound box	Metal box	16	8	55.4	0.86	1.04	B
FUZE, MECHANICAL TIME AND SUPER QUICK: M577 Series	Wirebound box	Metal box	16	8	55.8	0.42	1	B
FUZE, POINT DETONATING: M524 Series	Wirebound box	Metal box	16	8	41.8	1.27	1	B
FUZE, POINT DETONATING: M525 Series	Wood box	Polystyrene w/barrier gab	96	16	70	3.65	2.48	B
FUZE, POINT DETONATING: M527	Wood box	Polystyrene w/barrier gab	96	16	70	0.26	2.48	B
FUZE, POINT DETONATING: M557	Wirebound box	Metal box	16	8	55.8	0.81	1	B
FUZE, MULTI-OPTION: M782	Wirebound box	Metal can	16	8	35	0.73	1	B

SECTION II. PACKING, MARKING AND STORAGE DATA-Continued

(1) ITEM	(2) OUTER PACK	(3) INNER PACK	(4) NO. ITEMS IN PACKAGE	(5) NO. ITEMS PER INNER PACK	(6)[1] TOTAL WEIGHT (LB)	(7)[1] TOTAL EXPLOSIVE WEIGHT (LB)	(8) CUBE	(9)[2] FIELD STORAGE CATEGORY
FUZE, POINT DETONA-TING: M572	Wirebound box	Metal box	16	8	55.8	0.83	1	B
FUZE, POINT DETONA-TING: M739 Series	Wirebound box	Metal box	16	8	45.72	0.81	1	B
FUZE, POINT DETONA-TING: MK399 MOD 1	Wirebound box	Metal box	16	8	67.4	0.43	1	B
FUZE, PROXIMITY:	Metal box	Metal can	12	1	62	0.66	1.52	B
M513 Series		Shipping and storage container	25	1	97	1.38	1.55	B
	Wirebound box	Shipping and storage container	16	8	63	0.88	1.31	B
FUZE, PROXIMITY: M514 Series	Wirebound box	Shipping and storage container	16		63	0.88	1.31	B
FUZE, PROXIMITY: M517	Wood box	Metal can	20	1	47.8	0.004	1	B
FUZE, PROXIMITY: M532	Wirebound box storage container	Shipping and	16	8	63	0.3	1.3	B
FUZE, PROXIMITY: M732 Series	Wirebound box	Metal box	16	8	49.4	0.88	1	B
FUZE, TIME: M84	As required							
IGNITER, ELECTRIC, M63	Cardboard box	Cardboard container	9	50	75	5.85	0.70	A
LAUNCHER AND CARTRIDGE, 84-MM: M136 (AT4)	Plywood box	Barrier bag	5	1	113	9.2	7.63	E
MORTAR TRAINING DEVICE, 60-MM: Sabot, M3	Wood box	N/A	3	N/A	39	None	0.94	1
MORTAR TRAINING DEVICE, 81-MM: Sabot (Insert), M1	Metal box	N/A	3	N/A	50	None	2.7	1
PRIMER, ELECTRIC AND PERCUSSION: Mk 15, MODS 1 and 3	Wood box	Metal container	912	38	84	3.83	1.51	B
PRIMER, PERCUSSION: M82	Wood box	Barrier bag and fiberboard box	500	25	49	1.57	1.8	B
PRIMER, PERCUSSION: Mk2A4	Wirebound	Barrier bag and metal container	500	250	37	1.35	1	B
PROJECTILE, 60-MM:	Wood box		20	88	None	0.65	1	
Training, M69 w/o fin			25	N/A	109	None	1.15	1

SECTION II. PACKING, MARKING AND STORAGE DATA-Continued

(1) ITEM	(2) OUTER PACK	(3) INNER PACK	(4) NO. ITEMS IN PACKAGE	(5) NO. ITEMS PER INNER PACK	(6)[1] TOTAL WEIGHT (LB)	(7)[1] TOTAL EXPLOSIVE WEIGHT (LB)	(8) CUBE	(9)[2] FIELD STORAGE CATEGORY
PROJECTILE, 81-MM: Training, M68 w/o fin	Wood box	N/A	8	N/A	N/A	None	N/A	1
	Fiber box	N/A	12	N/A	N/A	None	N/A	1
PROJECTILES, 155MM: AT M718/M718A1, M741/M741A1	Pallet	None	8	N/A	882	96.8	9.7	B
PROJECTILE, 155MM: Extended Range, DP, M864	Pallet	None	8	N/A	870	59.2	9.7	B
PROJECTILE, 155MM: Gas, Non-persistent, GB, M121, M121A1	Pallet		8	N/A	831	19.6	6.8	D
PROJECTILE, 155MM: Gas, Persistent, H or HD, Ml10	Pallet		8	N/A	797	6.84	6.8	D
PROJECTILE, 155MM: Gas, Persistent, VX, M121A1	Pallet		8	N/A	831	22	6.8	D
PROJECTILE, 155MM: GB2, M687	Pallet	None	8	N/A	784	18.16	16.7	D
PROJECTILE, 155MM: HE, M107, M107B2	Pallet		8	N/A	797	120	6.8	B
PROJECTILE, 155MM: HE, M449, M449A1 (M449E2), M449E1	Pallet		8	N/A	804	22.4	6.8	B
PROJECTILE, 155MM: HE, M483	Pallet		8	N/A	874	48	10	B
PROJECTILE, 155MM: HE, M483A1	Pallet	None	8	N/A	874	48	9.7	B
PROJECTILE, 155MM: HE, M692	Pallet	None	8	N/A	874	13.5	9.7	B
PROJECTILE, 155MM: HE, M731	Pallet	None	8	N/A	874	13.5	9.7	B
PROJECTILE, 155MM: HE, XM795	Pallet		8	N/A	866	190.4	9.0	D
PROJECTILE, 155MM: HEAT, CLGP, M712 (Copperhead)	Metal container	None	1	N/A	205.5	14.75	4.4	B
PROJECTILE, 155MM: HERA, M549	Pallet		8	N/A	830	128	9.5	B

SECTION II. PACKING, MARKING AND STORAGE DATA

(1) ITEM	(2) OUTER PACK	(3) INNER PACK	(4) NO. ITEMS IN PACKAGE	(5) NO. ITEMS PER INNER PACK	(6)[1] TOTAL WEIGHT (LB)	(7)[1] TOTAL EXPLOSIVE WEIGHT (LB)	(8) CUBE	(9)[2] FIELD STORAGE CATEGORY
PROJECTILE, 155MM: HERA, M549A1	Pallet	None	8	N/A	830	120	9.5	B
PROJECTILE, 155MM: Illuminating, M118, M118A1, M118A2, M118B1, M118AlB1, M118A2B1	Pallet		8	N/A	824	0.944	6.8	D
PROJECTILE, 155MM: Illuminating, M485, M485A2, M485E1	Pallet		8	N/A	782	19.12	6.8	D
PROJECTILE, 155MM: Practice, M804, M804A1	Pallet		8	N/A	780	3.4	6.8	B
PROJECTILE, 155MM: Smoke, BE, M116, M116E1	Pallet		8	N/A	727	2.24	6.8	D
PROJECTILE, 155MM: Smoke, HC, BE, M116, M116E1	Pallet		8	N/A	733	2.24	6.8	D
PROJECTILE, 155MM: Smoke, HC, M116A1	Pallet	None	8	N/A	727	2.72	1.7	D
PROJECTILE, 155MM: Smoke, Red, BE, M116, M116E1	Pallet		8	N/A	727	2.24	6.55	D
PROJECTILE, 155MM: Smoke, WP, M110, Ml10A1, MllOA2, Ml10E1	Pallet		8	N/A	825	3.68	6.63	D
PROJECTILE, 155MM: Smoke, WP, M825, M825A1	Pallet	None	8	N/A	874	1.26	9.7	D
PROJECTILE, 155MM: Smoke, Yellow, BE, M116, M116E1	Pallet		8	N/A	727	2.24	6.55	D
PROJECTILE, 155MM: Training M823 (Copperhead)	Metal container	None	1	N/A	205.5	N/A	4.4	1
PROJECTILE, 175MM: HE, M437A1 (M437E1), M437A2 (M437E2)	Pallet		6	N/A	948	190.4	10.6	B
PROJECTILE, 175MM: HE, M437A2 (Shallow Cavity)	Pallet		6	N/A	948	191	10.6	B

SECTION II. PACKING, MARKING AND STORAGE DATA-Continued

(1) ITEM	(2) OUTER PACK	(3) INNER PACK	(4) NO. ITEMS IN PACKAGE	(5) NO. ITEMS PER INNER PACK	(6)[1] TOTAL WEIGHT (LB)	(7)[1] TOTAL EXPLOSIVE WEIGHT (LB)	(8) CUBE	(9)[2] FIELD STORAGE CATEGORY
PROJECTILE, 8-INCH: Gas, Nonpersistent, GB, M426	Pallet		6	N/A	1209	None	12.4	D
PROJECTILE, 8-INCH: Gas, Nonpersistent, GB, M426, w/Burster	Pallet		6	N/A	1250	43.8	12.4	D
PROJECTILE, 8-INCH: Gas, Persistent, VX, M426, w/Burster	Pallet		6	N/A	1250	53.8	12.5	D
PROJECTILE, 8-INCH: Gas Persistent, VX, M426, w/o Burster	Pallet		6	N/A	1209	None	12.5	D
PROJECTILE, 8-INCH: HE, M106	Pallet		3	1	628	109	6.06	B
			6		1253	220	12.4	B
PROJECTILE, 8-INCH: HE, M404	Pallet		6	N/A	1253	29.4	12.4	B
PROJECTILE, 8-INCH: HE, M509A1	Pallet	None	6	N/A	1246	12	19.8	B
PROJECTILE, 8-INCH: HERA, M650	Pallet	None	6	N/A	1260	222	20	B
REDUCER, FLASH, PROPELLING CHARGE: M2	Wood box container	Fiberboard	700	175	68.2	56	2.37	B
REDUCER, FLASH, PROPELLING CHARGE: M3	Metal lined wood box	Waterproof bag	100	5	130	25	3.63	B
	Wood box	Carton w/barrier bag	40	10	58	10	1.5	B
REDUCER, FLASH, PROPELLING CHARGE: XM5	Wooden box	Fiber box w/ waterproof bag	40	10	57	3.6	1.73	B
SPACER, CHARGE, PROPELLING, 175MM: M124	Wirebound box	Barrier bag	1	48	111	0	16.2	N/A
SUBCALIBER PRACTICE CARTRIDGES 22-MM:								
M744	Wood box	Polystyrene compartment	100	1	120	18	3.9	C
M745	Wood box	Polystyrene compartment	100	1	120	25	3.9	C

Section II. PACKING, MARKING AND STORAGE DATA - Continued

(1) Item	(2) Outer Pack	(3) Inner Pack	(4) No. items in package	(5) No. items per inner pack	(6)[1] Total Weight (lb)	(7)[1] Total explosive weight (lb)	(8) Cube	(9)[2] Field Storage category
SUBCALIBER PRACTICE CARTRIDGES 22-MM: Continued M746	Wood box	Polystyrene compartment	100	1	120	36	3.9	C
M747	Wood box	Polystyrene compartment	100	1	120	50	3.9	C

[1]Length and weight reflect the latest production model.
[2]Values are nominal.

APPENDIX G
SPECIAL HANDLING EQUIPMENT FOR AMMUNITION

G-1. Introduction

a. A new series of slings and beams specifically designed to handle palletized heavy projectiles has been added (1987) to the IDS, IGS, Ammunition Tool Set (NSN 4940-00-322-6058). These items, which have been added to SC 4940-95-All, are detailed in Appendix C (see d below) and illustrated in figures G-1 through G-6.

b. Twice the number of slings to equip the beams authorized are provided to-allow the operating unit to be rigging one set of pallets while another set is being lifted.

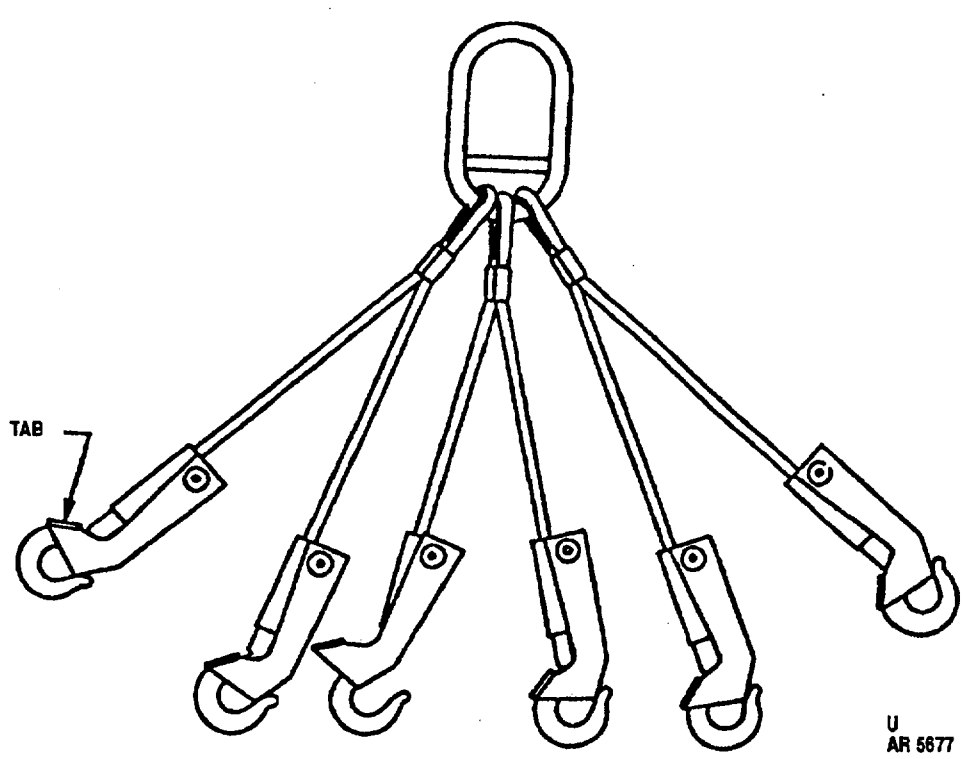


Figure G-1. Six legged sling, palletized projectile.

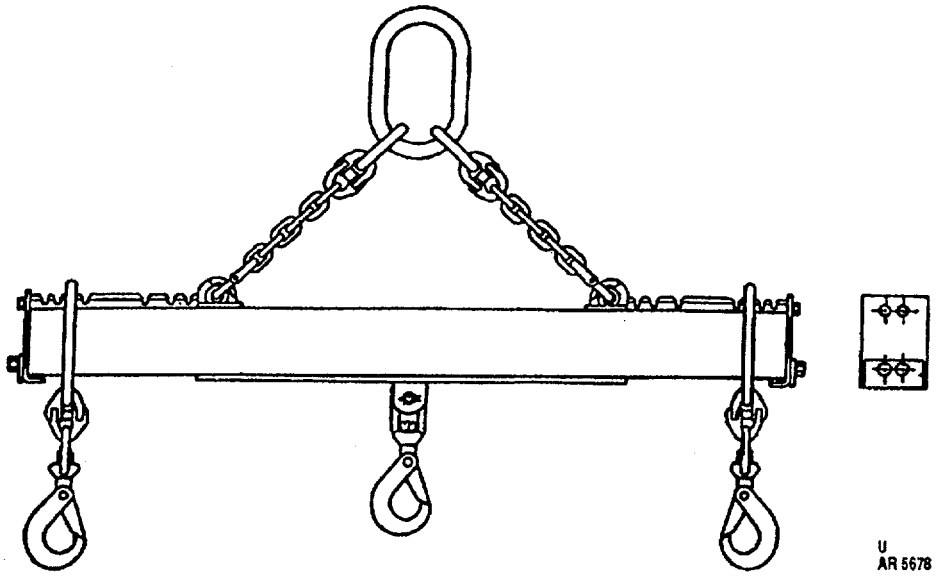


Figure G-2. Single beam, palletized projectile.

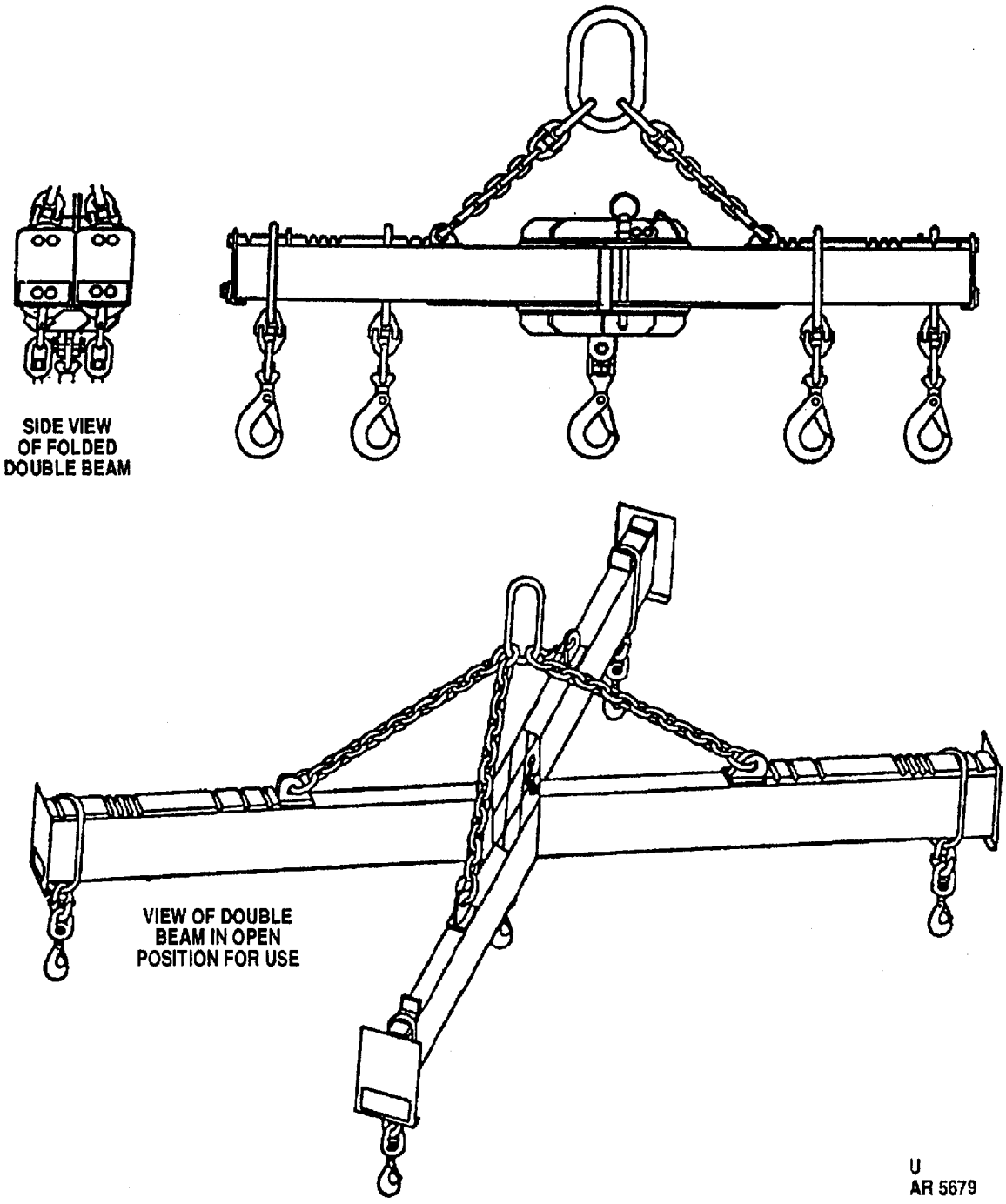
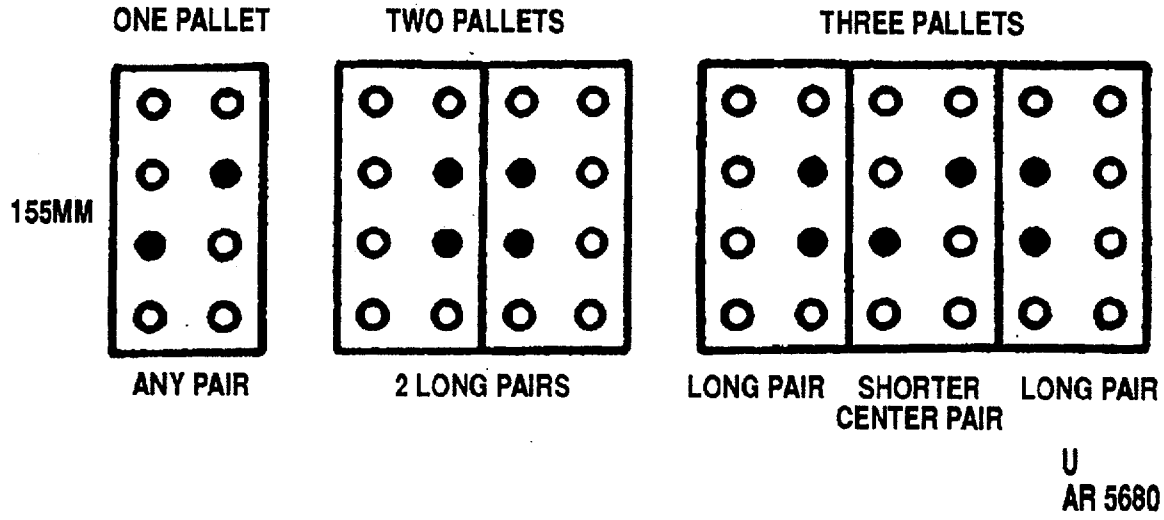
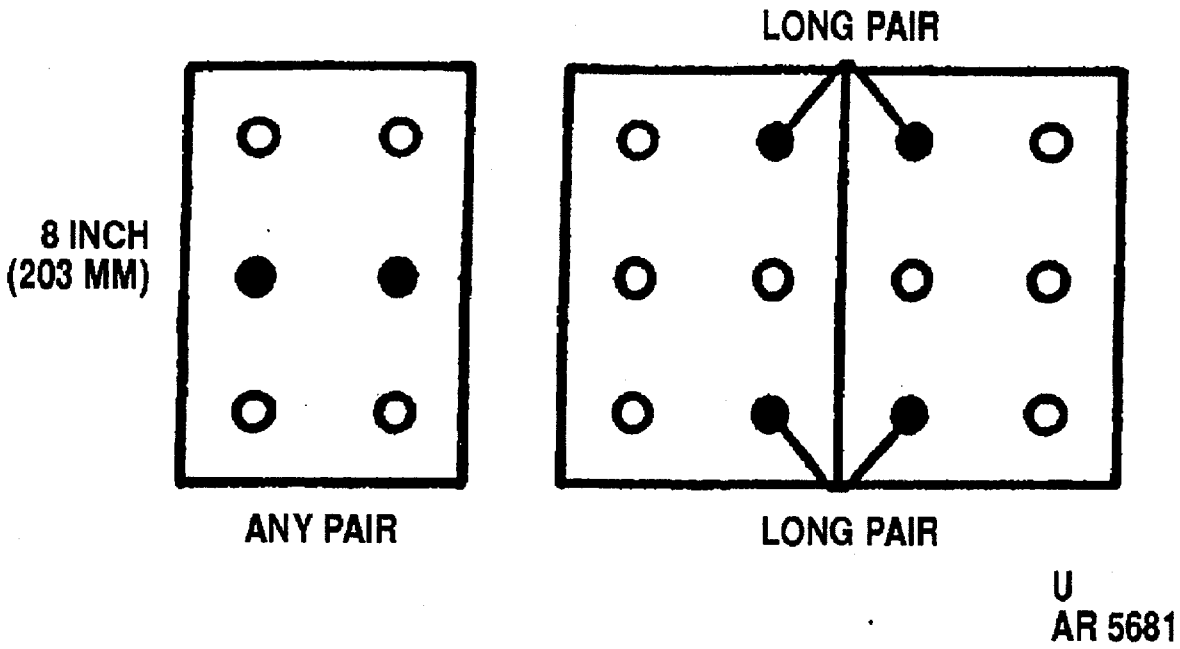


Figure G-3. Double beam, palletized projectile.



Note: Projectiles to be hooked are indicated by darkened circles.

Figure G-4. Rigging of 155mm palletized projectiles.



Note: Projectiles to be hooked are indicated by darkened circles.

Figure G-5. Rigging of 8-inch palletized projectiles.

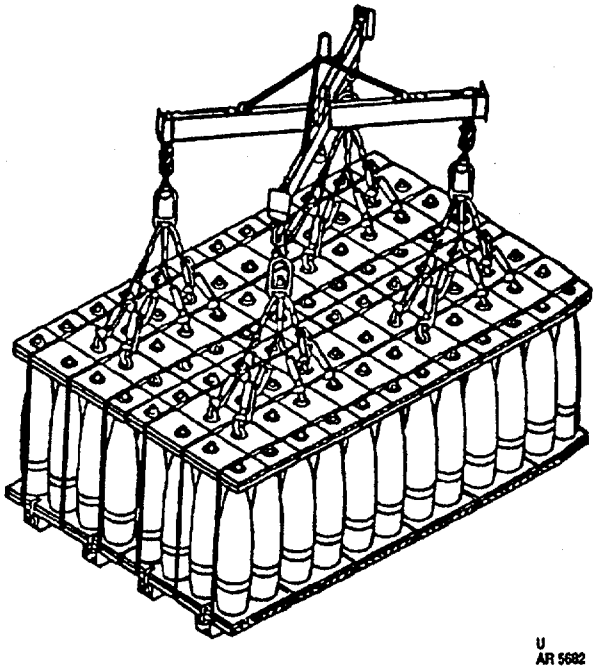


Figure G-6. Double beam rigged to lift 12 pallets of 155mm projectiles.

c. The slings and beams covered in this appendix are designed specifically for lifting of palletized projectiles. A sufficient quantity has been authorized (1987) to equip all lifting equipment available in the standard AMMUNITION COMPANY TOE and (by appendix C) the lifting equipment available at most organizational support units.

d. Additional slings and beams are authorized in the Special Tools List (appendix C) of this TM for organizational level use until they are authorized in individual TOEs. The numbers given are the maximum authorized the actual numbers needed and kept on hand should be determined by the unit commander. When a unit's TOE is changed to include this equipment, the quantities authorized will supersede those authorized in appendix C.

G-2. Operation

a. Operate the slings and beams in accordance with standard Army Materials Handling practice. Observe cautions and warnings at all times when using this equipment it is designed to handle VERY HEAVY LOADS. Heavy loads must be treated with respect.

CAUTION

THE SIX LEGGED SLING IS DESIGNED TO LIFT NO MORE THAN TWO PALLETS OF 8-INCH OR THREE PALLETS OF 155MM PROJECTILES. NEVER EXCEED THESE LIMITS AND ALWAYS HOOK THE SLING TO TWO PROJECTILE NOSE RINGS IN EACH PALLET AS SHOWN IN FIGURES G-4 AND G-5.

b. The maximum rated lifting capacities are given in table G-1 both in pounds and number of pallets. Do not exceed these limits because of potential damage to the equipment and safety of operating personnel.

CAUTION

RIG THE SLING TO PALLETS ONLY IN THE MANNER SHOWN IN FIGURES G-4 AND G-5.

Table G-1. Slings and Beams for Ammunition Handling (Lifting Capacity)

Maximum Lifting Capacity		Maximum	Maximum Number Pallets	
Hook (lb)	Total (lb)	Number Slings	155mm	8 inch
900	5400	N/A	3	2
2750	5500	2	6	4
2750	11,000	4	12	8

c. Rig sling to pallet of projectiles before connecting the sling to the lifting hook. Rig the sling in accordance with figure G-4 (155mm projectiles) or G-5 (8-inch projectiles). Always assure that sling cables are not kinked such that they will loop when lifted.

d. Assure that quick release pin is securely in position before using the double beam. Suspend beam across bed of transport vehicle when hooking a load.

e. When hooking beam to crane, assure the chains are not twisted so that they will not loop when the beam is lifted.

WARNING

ALWAYS USE A GUIDE LINE TO MANEUVER THE BEAMS. NEVER MANEUVER THE BEAMS BY HAND --- SEVERE PERSONNEL DAMAGE OR EVEN DEATH COULD RESULT.

CAUTION

• ALWAYS ASSURE THAT AN EQUAL NUMBER OF THE SAME SIZE PALLETS ARE SECURED TO THE OPPOSITE ENDS OF THE BEAMS. AN UNBALANCED LOAD CAN CAUSE A GREAT DEAL OF DAMAGE WHEN LIFTED.

• EACH PALLET TO BE LIFTED SHOULD HAVE THREE TIGHT 11/4-INCH STEEL BANDS IN GOOD CONDITION; DO NOT TOP LIFT IF LESS THAN TWO BANDS ARE IN GOOD SHAPE.

NOTE

The sling lifts two projectiles; the wood top and steel banding lift the rest.

f. Slings must be attached to the beams in a balanced manner, for example, see figure G-6. Always assure that each one of a pair of lifting hooks is positioned equally from the center of the beam, and that each of the pair has an identical load. This will assure a level, controllable lift of the load. A guide line must be attached to one end of the beam to facilitate maneuvering of the load. The center hook on the beams is to be used only when an odd number of pallets is to be lifted. Be especially careful not to exceed the maximum loads allowed when using the center hook.

g. Maintenance of this equipment is primarily the responsibility of the using unit. No formal PMCS is required. However, each piece should be visually inspected and checked to assure it is securely assembled and undamaged. Do not use sling leg with a broken or severely rusted cable strand. Obtain a replacement sling as soon as possible.

h. Nut and bolt type component replacement is authorized on both the single and double beams to the extent allowed by the parts given in table G-2. Table G2 is given in lieu of a RPSTL which will be issued when the beams are Type Classified Standard as separately issued items.

Table G-2. Replacement Parts for Ammunition Handling Equipment

NSN	Item	Quantity Single Beam	Quantity Double Beam
3940-01-248-6454	Link, Hoisting	1	1
4010-01-113-2106	Link, Chain Detachable	6	12
4010-00-824-1404	Chain, Welded	2	4
5305-00-942-2196	Screw, Cap, Hexagon H	4	8
5305-00-044-4153	Screw, Cap, Hexagon H	4	8
5310-00-637-9541	Washer, Lock	4	8
5310-00-584-5272	Washer, Lock	4	8
4010-01-242-8777	Link, Chain, End	2	4
5305-01-240-4024	Screw, Cap, Hexagon H	1	1
5310-01-077-9743	Nut, Plain, Slotted, H	1	1
5315-00-298-1481	Pin, Cotter	1	1
4030-01-241-7269	Hook, Hoist	3	5
5305-01-245-0706	Screw, Cap, Hexagon		1
5310-00-823-8803	Washer, Flat		1
5340-01-247-5481	Pin, Quick Release		1
3940-01-247-7400	Sling, Multiple Leg		1*

*Spare kept on hand at using unit.

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By the Order of the Secretary of the Army:

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

Official: *Milton H. Hamilton*

MILTON H. HAMILTON
Administrative Assistant to the
Secretary of the Army
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The Metric System and Equivalents

Linear Measure

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

Weights

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

Liquid Measure

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

Square Measure

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

Cubic Measure

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

Approximate Conversion Factors

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

Temperature (Exact)

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

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