FIELD MANUAL

AIR TRANSPORT PROCEDURES

TRANSPORT OF XM753 NUCLEAR PROJECTILE BY US ARMY HELICOPTERS

TRANSPORT OF XM753 NUCLEAR PROJECTILE COMPLETE MISSION LOADS BY US ARMY CH-47 HELICOPTER

HEADQUARTERS, DEPARTMENT OF THE ARMY
AUGUST 1983

FIELD MANUAL
NO. 55-220

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WASHINGTON DC, *29 August 1983*

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(Front cover) UH-1 helicopter carrying external load of three M613 containers.

*This manual supersedes FM 55–220, 15 January 1981.

CHAPTER 1

INTRODUCTION

1-1. Purpose and Scope

a. This manual presents Department of the Army-approved procedures for transport of the XM753 nuclear projectile (8-inch) alone and with complete mission loads. It prescribes materials and personnel needed to prepare, load, tie down, and unload, or to rig and derig, the loads. Additional responsibilities of the consignor, consignee, and unit providing transportation are shown in chapter 4, AR 50-5.

b. The procedures in this manual provide for:

(1) Internal transport of the XM753 Projectile by UH-1, CH-47, CH-54, and UH-60 helicopters.

(2) Internal transport of the XM753 projectile complete mission loads by CH-47 helicopter.

(3) External transport of the XM753 projectile by UH-1, CH-47, CH-54, and UH-60 helicopters.

c. The above-described loads are not maximum helicopter loads. Additional internal cargo, including different types of nuclear weapons and/or personnel within allowable load limits and restrictions prescribed by AR 50-5 and pertinent safety regulations (app), may be transported.

d. This manual also provides for emergency internal and external movement, by helicopter, of the XM753 projectile, for military contingency, logistic supply, and evacuation.

e. Times given to prepare, load, tie down, and unload, or to rig and derig, the loads described in this manual may vary, depending upon existing conditions and the training of personnel involved.

1-2. Reporting of Publication Improvements

Users of this publication are encouraged to offer comments or to recommend changes for its improvement. Comments or recommendations should be prepared on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded to Director, Military Traffic Management Command Transportation Engineering Agency, ATTN: MTT-TRC, PO Box 6276, Newport News, VA 23606. (Electrically transmitted messages should be addressed to: DIRMTMCTEA FT EUSTIS VA//MTT-TRC//.)

1-3. Definitions of Warnings, Cautions, and Notes

a. Warning. Instructions that, if not followed, could result in injury to or death of personnel.

b. Caution. Instructions that, if not strictly observed, could result in damage to or destruction of equipment.

c. Note. A brief statement for use as necessary to emphasize a particular operating procedure, condition, and so forth.

CHAPTER 2

GENERAL SAFETY AND SECURITY MATTERS

WARNING

During a logistical movement of nuclear weapons by US Army aircraft, jettisoning is not authorized. During emergency movements (external transport by helicopter, chaps. 5 and 6), the inflight emergency procedures prescribed by the appropriate aircraft operator's manual will apply (para 4-3*i* and 4-3*l*, AR 50-5).

2-1. Warnings

The following warnings will be observed by personnel performing operations, procedures, and practices that are included or implied in this manual. Disregard for these warnings could result in personal injury or death.

a. Before each nuclear cargo mission, the aircraft commander will be familiar with, and will insure compliance with, AR 50-5, AR 50-5-1, and AR 95-27. Also, the commander will be familiar with the security, safety, and technical peculiarities of the cargo that may affect air transport. Flight plans will include provisions for avoiding built-up and heavily populated areas. When the XM753 projectile is transported in the universal military pod by CH-54 helicopter, the pod must be secured to the helicopter to preclude jettisoning the pod deliberately or inadvertently. Procedures for securing the pod to preclude jettisoning are prescribed in TM 55-1520-217-10-1 and TM 55-1520-217-10-2.

b. To determine compatibility of any other nuclear weapons or other cargo authorized by chapter 4, AR 50-5, and chapter 1, AR 55-203 for transport with the XM753 projectile, ordnance support channels must be consulted. Information on compatibility is contained in TM 39-45-51C and TM 38-250, which are distributed to major headquarters and to direct support and general support levels. Restrictions listed in TM 39-20-7 will not be exceeded when other types of nuclear weapons are transported with the projectile. Procedures for units with a nuclear mission and operating under combat conditions are prescribed in FM 100-50.

c. A maximum of four M753 projectiles may be transported in a single group without waiver (TM 39-20-7, TM 39-45-51A, and TM 39-45-51C). This maximum may be reduced by existing conditions and the allowable cargo load (ACL).

d. Emergency destruction procedures for the XM753 projectile are shown in TM 39-50-8. Normally, emergency-destruct materials will not be carried on the aircraft with nuclear weapons. However, the operational commander may authorize transport of emergency-destruct materials (including blasting caps or pre-capped charge lines) in the load-carrying aircraft. Such materials will be in packagings authorized for transportation, isolated from weapons as far as possible, and tied down to prevent movement. Only the number of destruct charges necessary to destroy the projectile will be carried aboard. Blasting caps or pre-capped chargelines, in their container, will be tied down separately and surrounded by a restrained sandbag barrier. M2- and M19-series ammunition boxes are recommended as shipping containers for the blasting caps or pre-capped charge lines. Transport of electric blasting caps or pre-capped charge lines in helicopters is governed by paragraph C-26, TM 9-1300-206.

e. Containers will be loaded and tied down in accordance with the procedures described in this manual except when they are repositioned for helicopter operational reasons or when other nuclear weapons or other cargo and/or personnel are loaded. Minimum spacing, numerical limits, and array-type requirements for transport of the projectile are prescribed by TM 39-20-7 and TM 39-45-51A. If a location other than that shown in the applicable tiedown diagram is used, the aircraft commander must insure that:

(1) The number and load capacity of the tiedown devices are as prescribed in this manual.

(2) Container tiedown devices are secured to tiedown fittings in the same pattern, relative to the containers, as those fittings shown in the pertinent tiedown diagram. Required restraint will be provided when the depicted tiedown pattern is maintained.

(3) The requirements prescribed by TM 39-20-7 and TM 39-45-51A are fulfilled.

2-2. Operational Precautions

The following operational precautions apply during loading, rigging, tiedown, transport, and unloading of the containers.

a. The web-strap tiedown assemblies, when used to

secure the items described in this manual, have a maximum useful lifespan of 36 months. The useful lifespan will start when the tiedowns are unpackaged for use by the using organization. At that time, the straps will be marked, using stencil ink TT-I-1795 (any contrasting color), with the unpackaging date (month and year) in at least 1/2-inch-high letters near the hook end of the strap. After 36 months, the tiedowns will be marked with a 2-inchwide band on both sides of the strap, near the previously marked date, using yellow number 33538 stencil ink TT-I-1795 or enamel TT-E-516.

b. Before each use, tiedowns and external cargo-carrying devices will be inspected for burns, tears, punctures, or cuts. Also, their metal components will be inspected for malfunction, corrosion, cracks, or distortion. If any of these conditions are found, the tiedowns or external cargo-carrying devices must be replaced. No strength testing will be made. Other storage, inspection, and maintenance criteria are discussed in 55-450-series technical manuals (app).

c. After 36 months' use, serviceable web-strap tiedown assemblies may be used to secure nuclear weapons trainers and training devices and other cargo (para 4-3*h*, AR 50-5). However, when the aircraft or pod is transporting the XM753 projectile or other nuclear weapons or components, all tiedowns (including those used to secure weapons trainers, training devices, and other cargo) must meet the 36-month-useful-lifespan criterion.

d. When tiedown devices are attached to cargo and to tiedown fittings, about equal tension must be kept throughout tiedown arrangements. The tiedowns must be tightened to prevent movement of cargo, and loose ends of straps must be secured. Tiedowns must be checked during flight and tightened as necessary.

NOTE

The strap, web, universal tiedown (NSN 5340-00-980-9277) or the strap, web, tiedown (NSN 5340-01-089-4997) may be used in place of the CGU-1/B tiedown device (NSN 1670-00-725-1437). Each identified tiedown has a rated strength of 5,000 pounds.

e. Security and safety measures relative to guards, fire, or emergency destruction procedures, as established by pertinent publication (app), apply during all phases of air transport. All operations described here will be in strict compliance with AR 50-5, AR 50-5-1, AR 50-112, TM 9-1300-206, TM 9-1110-220-10, TM 9-1110-220-20, and FM 100-50.

f. Passenger seats must be available for the minimum essential security personnel (courier officer and guard) during either internal or external transport operations.

g. The high noise level of helicopter engines and helicopter auxiliary power unit can cause permanent damage to hearing. All personnel working in the vicinity will wear hearing protectors and avoid entering engine noise danger area. Also, external-cargo hookup personnel will wear goggles and protective headgear (hard hat, steel helmet, or flight helmet), and will use static electricity discharge probe, NSN 1670-00-574-8044, or a locally made probe.

h. Aircraft will be searched for unauthorized personnel, and equipment will be inspected for possible sabotage. Entry controls will be set up, by the courier officer, to maintain security integrity until completion of the nuclear mission.

CHAPTER 3

AIR TRANSPORTABILITY AND HANDLING DATA

3-1. General

a. This chapter discusses the M613 shipping and storage container (with the XM753 projectile) and the items comprising the XM753 projectile mission loads. It also specifies limitations for internal and external transport of the items by aircraft.

NOTE

In this manual all instructions for transporting the M613 container refer to containers that contain the XM753 nuclear projectile.

b. Items comprising the various loads must be inspected for damage other than minor scratches and abrasions. If any item is damaged to such an extent that its contents or functions might be affected, the support unit must be notified and a report submitted in accordance with chapter 5, AR 50-5.

c. Covers or lids on all containers must be secured.

d. The center of balance for the M613 container is approximately 25 inches from the rear end of the container. The rear is the end with the main compartment cover; the front is the end with the small compartment covers. The container must be positioned with its front end facing either forward or aft in the helicopter. The M613 container is shown in figure 3-1.

e. The M613 container has six carrying handles and normally will be carried by six persons.

f. One, two, or three M613 containers make up a typical internal or external load. See paragraph 2-1c regarding single-group limitation.

g. Six persons can prepare load, and tie down each M613 container in the respective aircraft or the universal military pod in about 5 minutes.

h. Six persons can unload each M613 container from the respective aircraft or pod in about 5 minutes.

i. The helicopter weight and balance must be computed for each load. The calculation must include shoring and number and location of nuclear weapons security personnel (two-person concept).

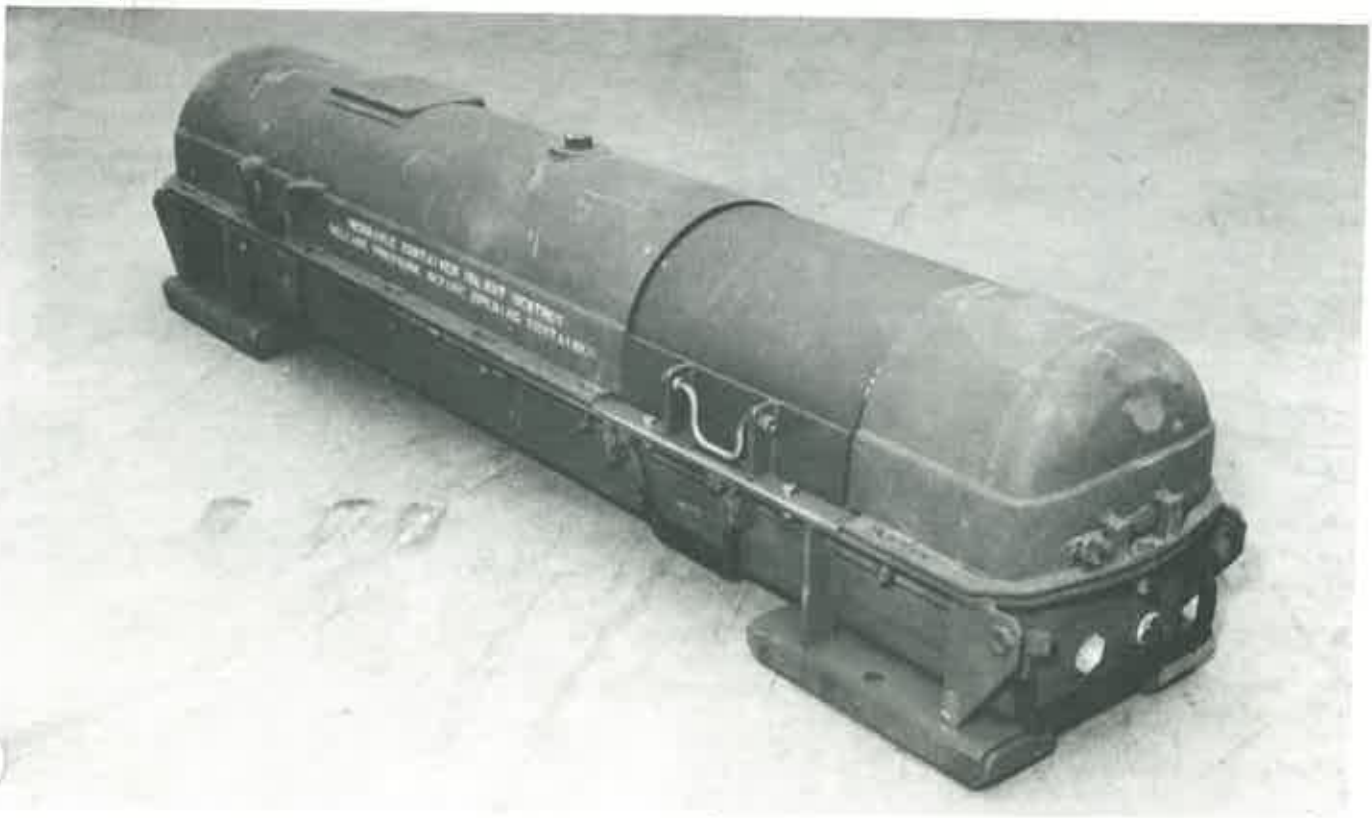


Figure 3-1. M613 container for XM753 projectile.

3-2. Dimensions and Weights

a. The M613 container for the XM753 projectile positioned and tied down in a CH-47 helicopter is shown in figure 3-2.

b. Identification, dimensions, and approximate weight of items that make up the XM753 projectile complete mission loads are shown in table 3-1.

c. Items that make up each of the XM753 projectile complete mission loads A through F, with weight of each load, are shown in table 3-2.

d. Diagrams for stacking propelling-charge containers for the XM753 projectile complete mission loads A through F are shown in figure 3-3.

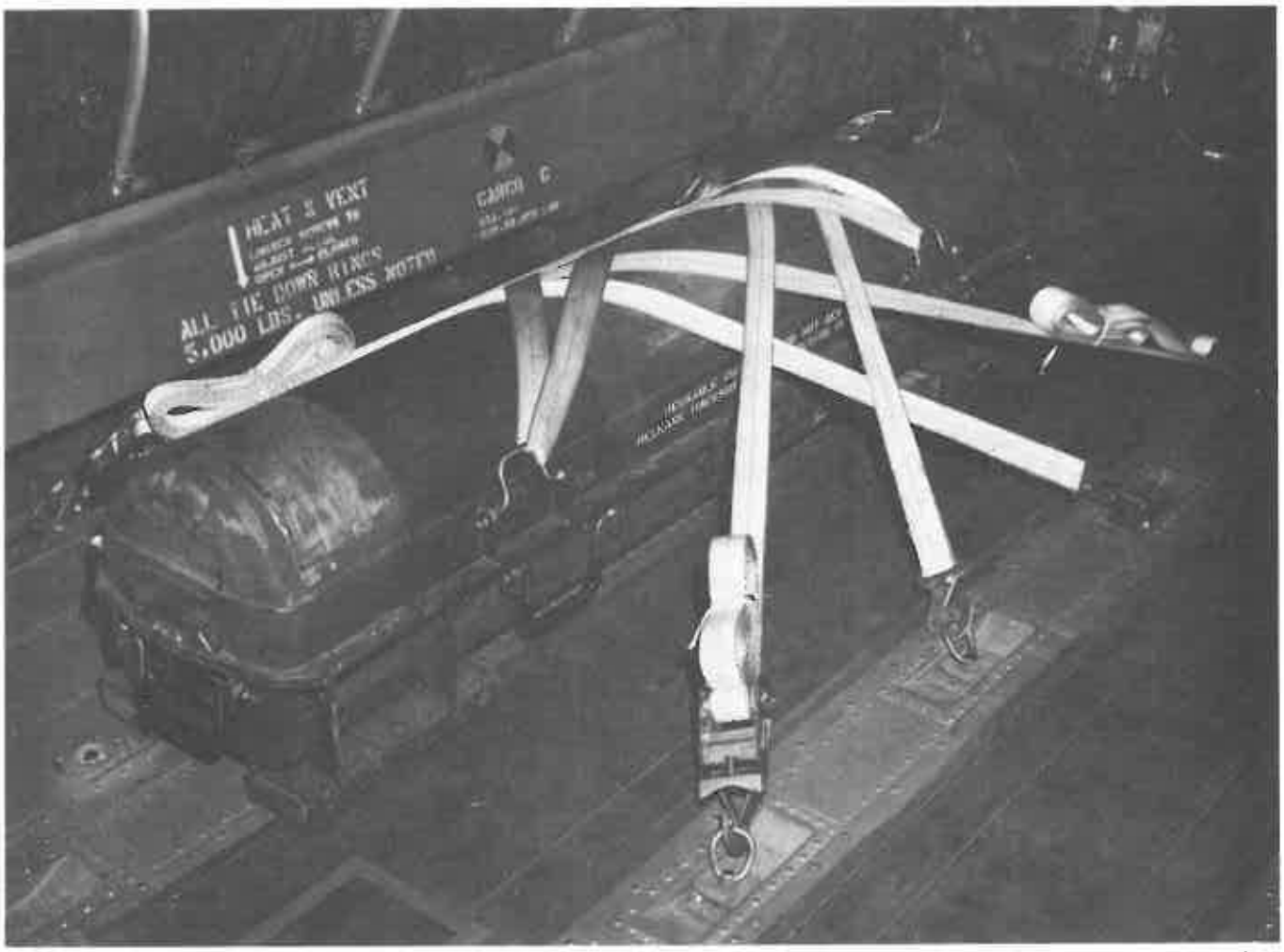
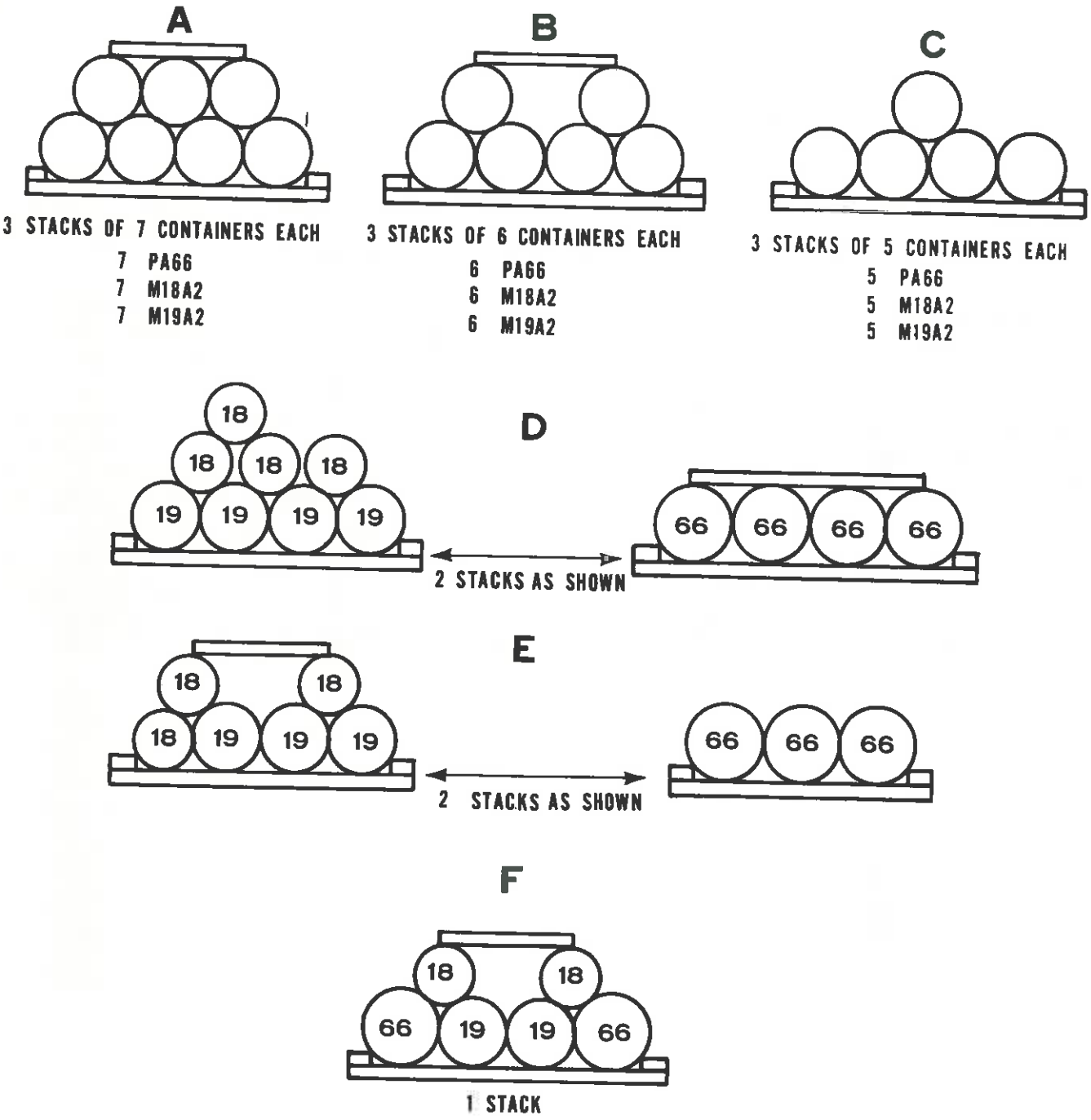


Figure 3-2. M613 container with XM753 projectile positioned and tied down in CH-47 helicopter. Note that required shoring must be placed beneath container skids.

Table 3-1. Identification, Dimensions, and Approximate Weight of Items That Make up the XM753 Complete Mission Loads

Item	Length	Width	Height	Diameter	Weight
M613 container with XM753 projectile	65.4 in. (1.66 m)	13.5 in. (0.34 m)	14.8 in. (0.38 m)		420 lb (191 kg)
XM650 spotting projectile (when palletized)	31.5 in. (0.80 m)	22.4 in. (0.57 m)	45.8 in. (1.16 m)		253 lb (115 kg)
NOTE: The projectile weighs 200 lb (91 kg) and the two-section pallet weighs 53 lb (24 kg).					
M188 propelling charge in PA 66 container	38.0 in. (0.97 m)			10.5 in. (0.27 m)	75 lb (34 kg)
M1 propelling charge in M18A2 container	26.5 in. (0.67 m)			8.5 in (0.22 m)	46 lb (21 kg)
M2 propelling charge in M19A2 container	29.3 in. (0.74 m)			9.8 in (0.25 m)	82 lb (37 kg)



LEGEND

18 M1 PROPELLING CHARGE IN M18A2 CONTAINER
19 M2 PROPELLING CHARGE IN M19A2 CONTAINER
66 M188 PROPELLING CHARGE IN PA66 CONTAINER

Figure 3-3. Diagrams for stacking propelling-charge containers for the XM753 projectile complete mission loads A through F.

Table 3-2. Items Required for, and Weight of, Each of the XM753 Projectile Complete Mission Loads A Through F.

Item	Mission loads and weight of each load:					
	A	B	C	D	E	F
M613 container with XM753 projectile	1	1	1	1	1	1
XM650 spotting projectile	6	5	4	3	2	1
M188 propelling charge in PA66 container	7	6	5	4	3	2
M1 propelling charge in M18A2 container	7	6	5	4	3	2
M2 propelling charge in M19A2 container	7	6	5	4	3	2
Weight	3,094 lb (1403 kg)	2,691 lb (1221 kg)	2,288 lb (1038 kg)	1,885 lb (855 kg)	1,482 lb (672 kg)	1,079 lb (489 kg)

Note: Each complete mission load weight includes weight of two-section pallet (53 lb) for XM650 spotting projectiles; however, when only one projectile is transported, it may be palletized on the base section of the pallet (27 lb) or equivalent shoring.

3-3. Air Transport Limitations

a. The XM753 projectile normally will be transported as an internal load (chap 4). However, under emergency conditions, the projectile may also be transported as an external load (chap 5). External transport will be approved by the commander authorizing the emergency movement.

NOTE

The XM753 and M422 nuclear projectiles, with items comprising their respective complete mission loads, may be transported as a mixed load by Army helicopters. FM 55-218 prescribes procedures for transport of the M422 projectile by Army helicopters, and for transport of the M422 projectile complete mission load by CH-47 helicopter.

b. The XM753 projectile, complete mission load, must be transported as an internal load by a CH-47 helicopter when directed by a commander during ACTUAL TACTICAL MISSIONS ONLY. Training missions do not constitute tactical operations.

c. Transport of the XM753 projectile in a single group, when exceeding the limitations shown in paragraph 2-1c, must be accompanied by waiver under the provisions of TM 39-20-7 and TM 39-45-51A.

CHAPTER 4

INTERNAL TRANSPORT BY HELICOPTER

WARNING

Insure that the universal military pod is secured to the CH-54 helicopter to preclude jettisoning the pod either deliberately or inadvertently.

4-1. Transport of XM753 Nuclear Projectile in M613 Shipping and Storage Container

WARNING

Internal transport of three XM753 projectiles (fig 4-3 and table 4-3) by UH-ID/H helicopter, with the required security personnel and shoring, must not be attempted without a careful and complete weight and balance computation. The ability of the aircraft to carry this load depends upon the aircraft basic weight, fuel load, density altitude at takeoff and landing points, and other variables. The M613 containers *must* be faced forward so that the heavy end (rear) is toward the rear of the aircraft. Consult the aircraft performance charts.

a. Parking Shoring. Two pieces plywood, 3/4- by 14- by 16-inch or equivalent, for use beneath skids of each M613 container.

b. Loading.

(1) Handcarry container(s) (fig 3-1) into helicopter and position on parking shoring at tiedown location so that shoring extends 1 inch beyond container skids on all sides.

(2) Tie down the container(s) in accordance with the following figures and tables:

Helicopter	*No. of Containers*	*Figure No.*	*Table No.*
UH-1D/H	1	4-1	4-1
UH-1D/H	2	4-2	4-2
UH-1D/H	3	4-3	4-3
UH-60A	1	4-4	4-4
UH-60A	2	4-5	4-5
CH-47	4	4-6	4-6
CH-54 (universal mil pod)	4	4-7	4-7

NOTE

In UH-1H helicopter serial number 68-15325 and subsequent UH-1H helicopters, the map case attached to the rear of the center console must be removed before an M613 container is loaded in the center tiedown position.

NOTE

A single M613 container may be transported in either of the two tiedown locations shown in figure 4-2. The container should be located as near to the helicopter centerline as the depicted tiedown pattern and other cargo will permit.

4-2. Transport of XM753 Nuclear Projectile Complete Mission Loads A through F (table 3-2) by CH-47 helicopter.

NOTE

A complete mission load may be transported in one helicopter during actual tactical situations only.

a. Complete Mission Load A.

(1) *Parking shoring.* Unless plywood is specified, the wood used for parking and blocking shoring is lumber of any kind, in sizes as indicated.

(*a*) One piece plywood, 1/2- by 30- by 30-inch, to form top of parking shoring beneath unitized projectile package.

(*b*) Ten pieces, 2- by 6- by 30-inch, for use beneath unitized projectile package. The wood required beneath the plywood may be of any size to attain a 4- by 30- by 30-inch parking shoring.

(*c*) Six pieces, 2- by 6- by 48-inch, for use beneath stacked propelling-charge containers (3 stacks).

(*d*) Two pieces plywood, 3/4- by 14- by 16-inch or equivalent, for use beneath skids of M613 container.

(2) *Blocking shoring.*

(*a*) Two pieces, 2- by 6- by 18-inch (notched at ends to accommodate tiedown devices), for use on top of stacked propelling charges in M18A2 containers.

(*b*) Four pieces, 2- by 6- by 22-inch (notched at ends to accommodate tiedown devices), for use on top of stacked propelling charges in PA66 and M19A2 containers.

(*c*) Two pieces, 2- by 4- by 18-inch, nailed to parking shoring to provide end blocking for stacked propelling charges in M18A2 containers (fig 4-8).

(*d*) Two pieces, 2- by 4- by 28-inch, nailed to

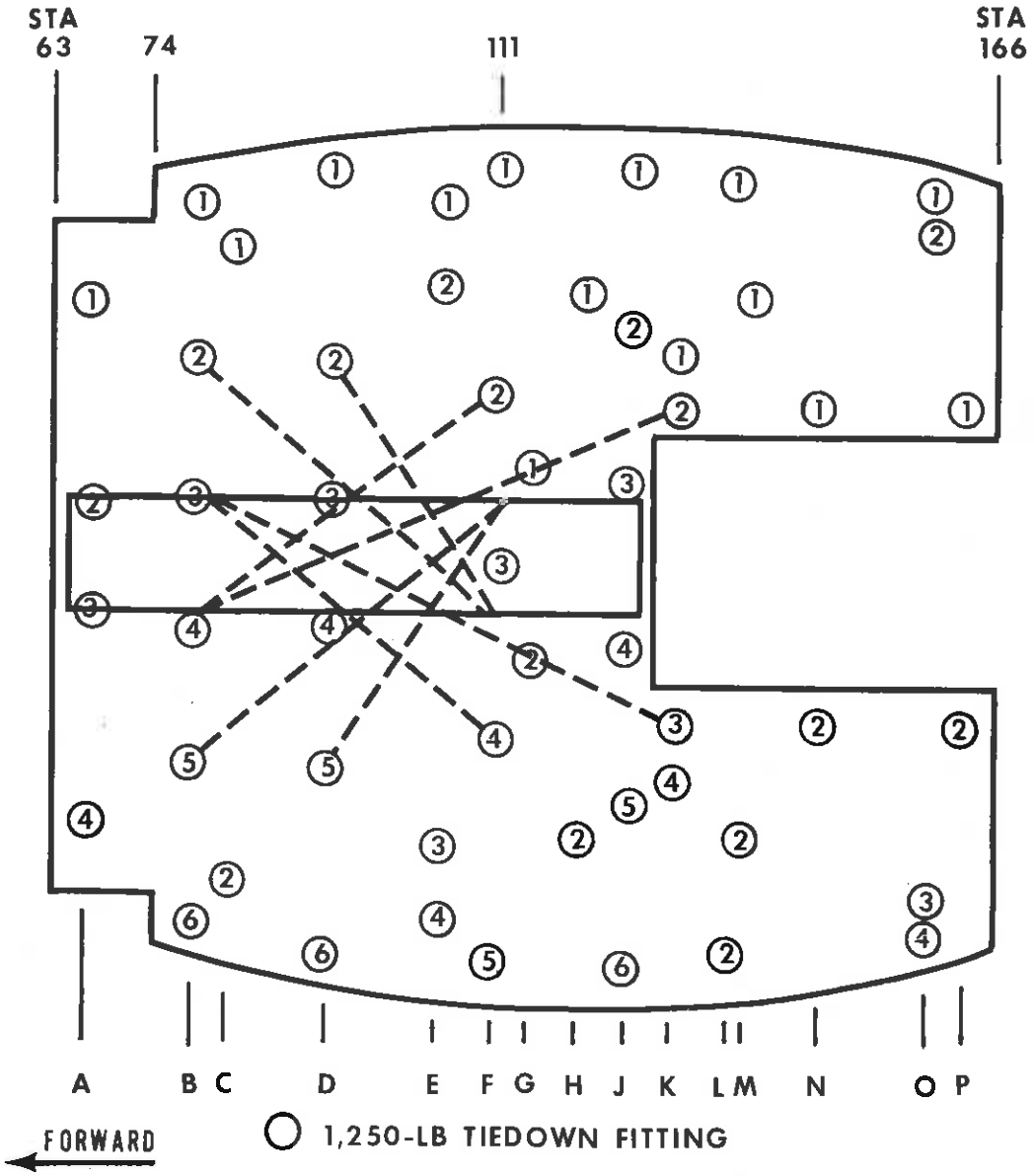


Figure 4-1. Tiedown diagram for one M613 container (with XM753 projectile) in UH-1D/H helicopters.

Table 4-1. Tiedown Data for One M613 Container (With XM753 Projectile) in UH-1D/H Helicopters

Tiedown fitting		*Tiedown device*		
designation	capacity in 1,000 lb	type	capacity in 1,000 lb	Attach to item
B2/D2	1.25	CGU-1/B	5	Through left rear tiedown handle.
F2/K2	1.25	CGU-1/B	5	Through left front tiedown handle.
B5/D5	1.25	CGU-1/B	5	Through right rear tiedown handle.
F4/K3	1.25	CGU-1/B	5	Through right front tiedown handle.

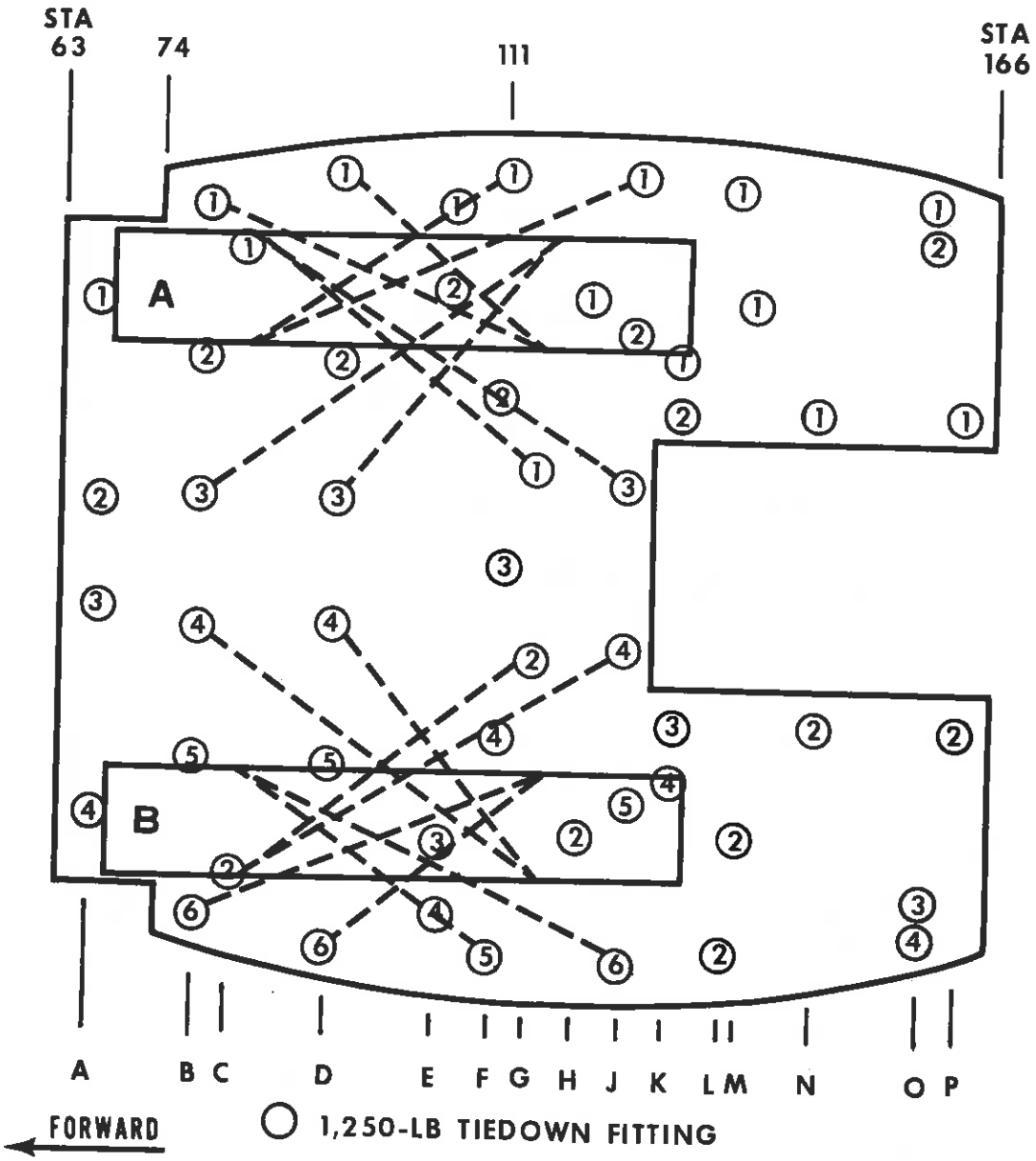


Figure 4-2. Tiedown diagram for two M613 containers (with XM753 projectiles) in UH-1D/H helicopters.

Table 4-2. Tiedown Data for Two M613 Containers (With XM753 Projectiles) in UH-1D/H Helicopters

Item	Tiedown fitting designation	Tiedown fitting capacity in 1,000 lb	Tiedown device type	Tiedown device capacity in 1,000 lb	Attach to item
A	B1/D1	1.25	CGU-1/B	5	Through left rear tiedown handle.
	F1/J1	1.25	CGU-1/B	5	Through left front tiedown handle.
	B3/D3	1.25	CGU-1/B	5	Through right rear tiedown handle.
	G1/J3	1.25	CGU-1/B	5	Through right front tiedown handle.
B	B4/D4	1.25	CGU-1/B	5	Through left rear tiedown handle.
	G2/J4	1.25	CGU-1/B	5	Through left front tiedown handle.
	B6/D6	1.25	CGU-1/B	5	Through right rear tiedown handle.
	F5/J6	1.25	CGU-1/B	5	Through right front tiedown handle.

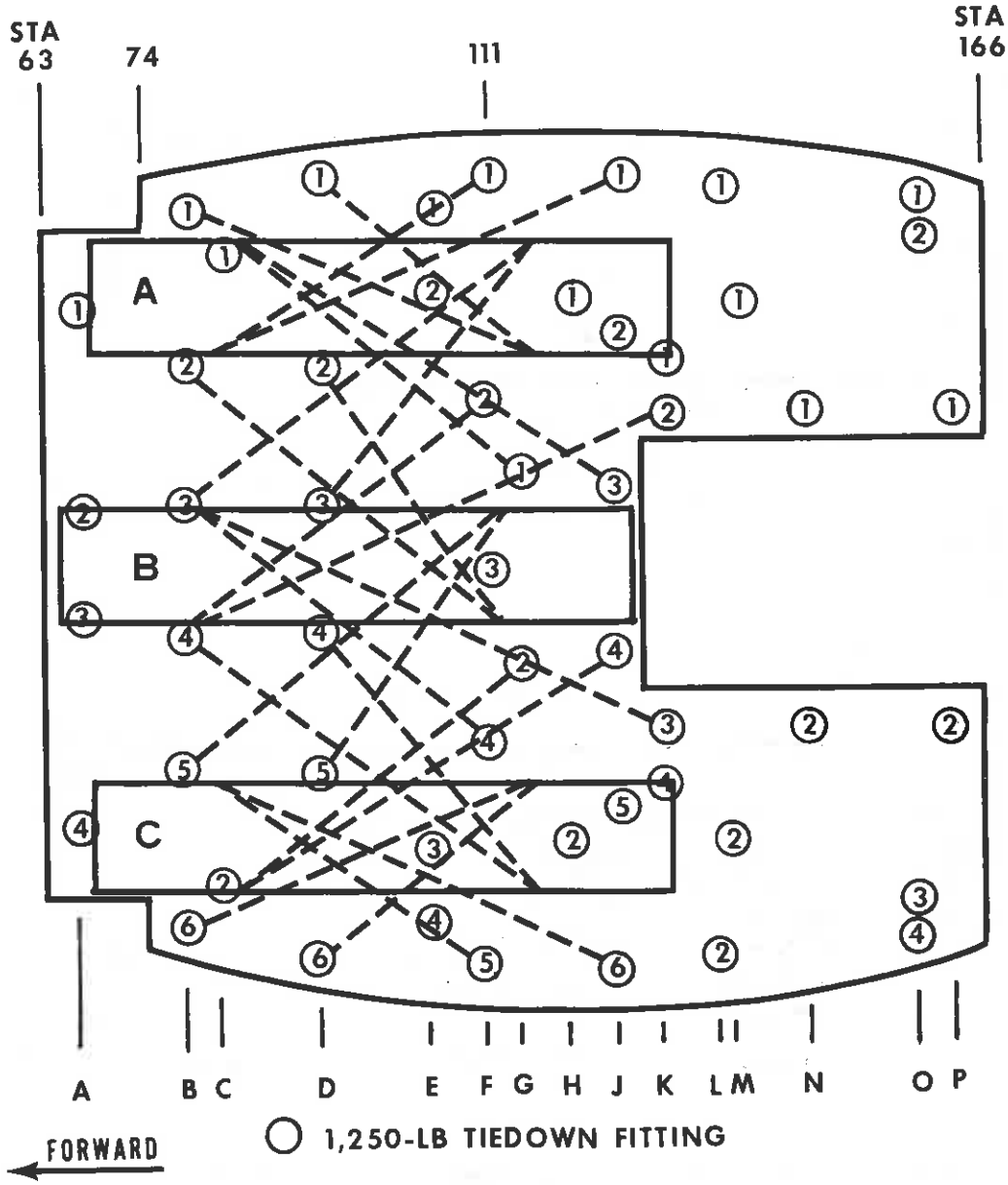
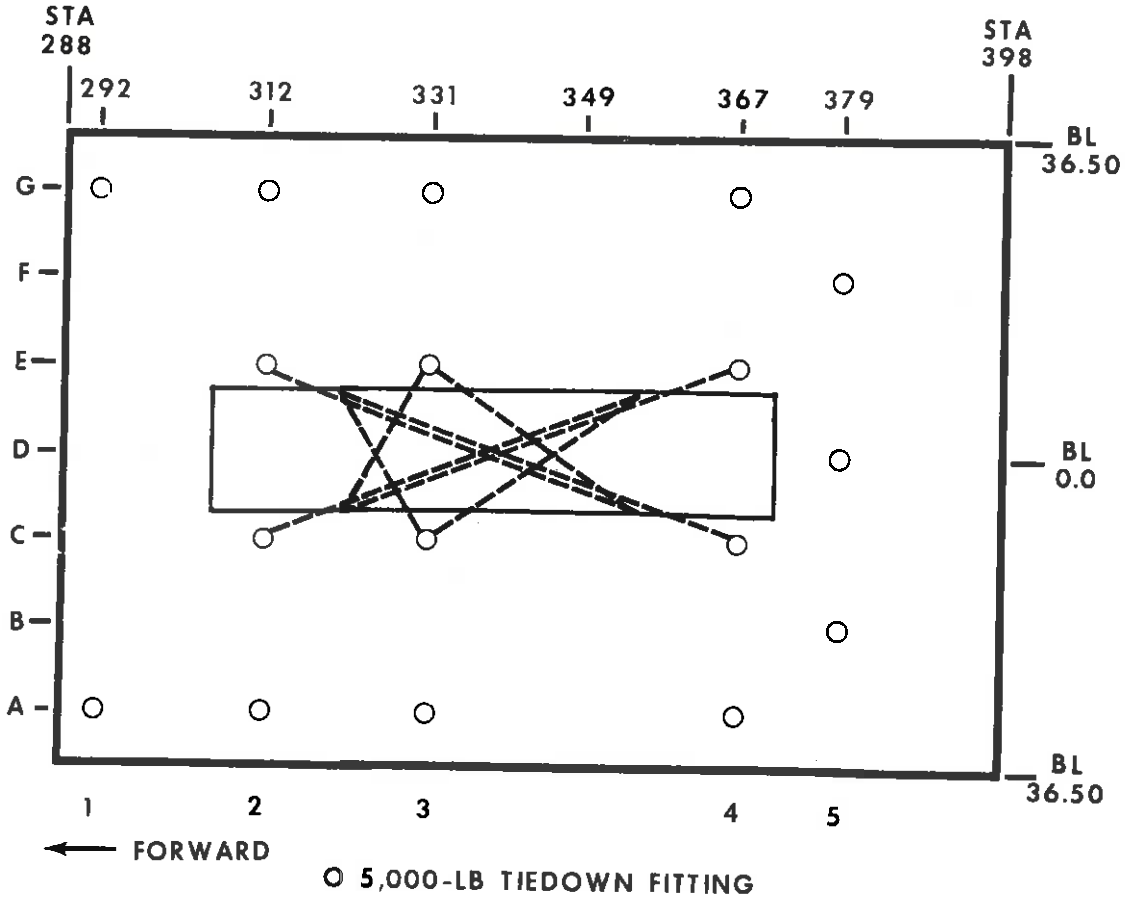


Figure 4-3. Tiedown diagram for three M613 containers (with XM753 projectiles) in UH-1D/H helicopters.

Table 4-3. Tiedown Data for Three M613 Containers (With XM753 Projectiles) in UH-1D/H Helicopters

Item	Tiedown fitting designation	Tiedown fitting capacity in 1,000 lb	Tiedown device type	Tiedown device capacity in 1,000 lb	Attach to item
A	B1/D1	1.25	CGU-1/B	5	Through left rear tiedown handle.
	F1/J1	1.25	CGU-1/B	5	Through left front tiedown handle.
	B3/D3	1.25	CGU-1/B	5	Through right rear tiedown handle.
	G1/J3	1.25	CGU-1/B	5	Through right front tiedown handle.
B	B2/D2	1.25	CGU-1/B	5	Through left rear tiedown handle.
	F2/K2	1.25	CGU-1/B	5	Through left front tiedown handle.
	B5/D5	1.25	CGU-1/B	5	Through right rear tiedown handle.
	F4/K3	1.25	CGU-1/B	5	Through right front tiedown handle.
C	B4/D4	1.25	CGU-1/B	5	Through left rear tiedown handle.
	G2/J4	1.25	CGU-1/B	5	Through left front tiedown handle.
	B6/D6	1.25	CGU-1/B	5	Through right rear tiedown handle.
	F5/J6	1.25	CGU-1/B	5	Through right front tiedown handle.

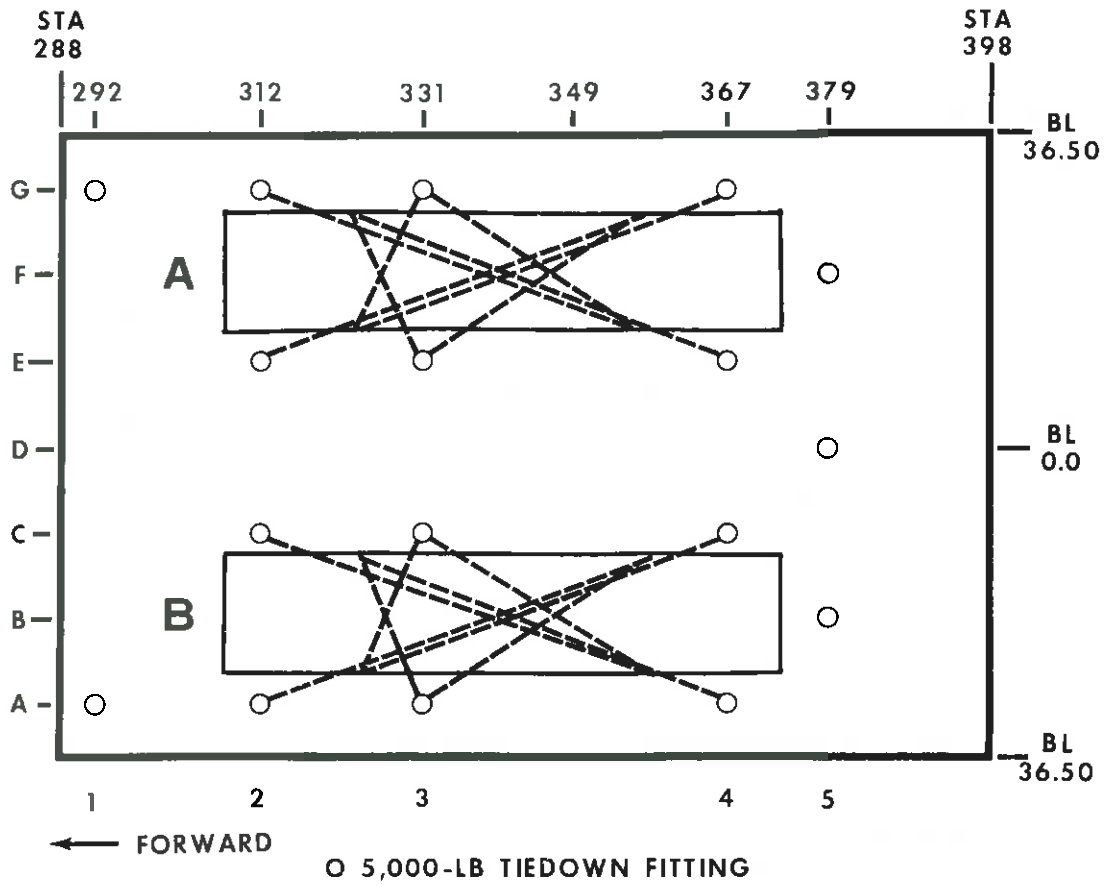


NOTE: CARGO HOOK ACCESS DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 343 AND 363

Figure 4-4. Tiedown diagram for one M613 container (with XM753 projectile) in UH-60A helicopter.

Table 4-4. Tiedown Data for One M613 Container (With XM753 Projectile) in UH-60A Helicopter.

Tiedown fitting		*Tiedown device*		
designation	capacity in 1,000 lb	type	capacity in 1,000 lb	Attach to item
C2/C3	5	CGU-1/B	5	Through right rear tiedown handle.
E2/E3	5	CGU-1/B	5	Through left rear tiedown handle.
C3/C4	5	CGU-1/B	5	Through right front tiedown handle.
E3/E4	5	CGU-1/B	5	Through left front tiedown handle.

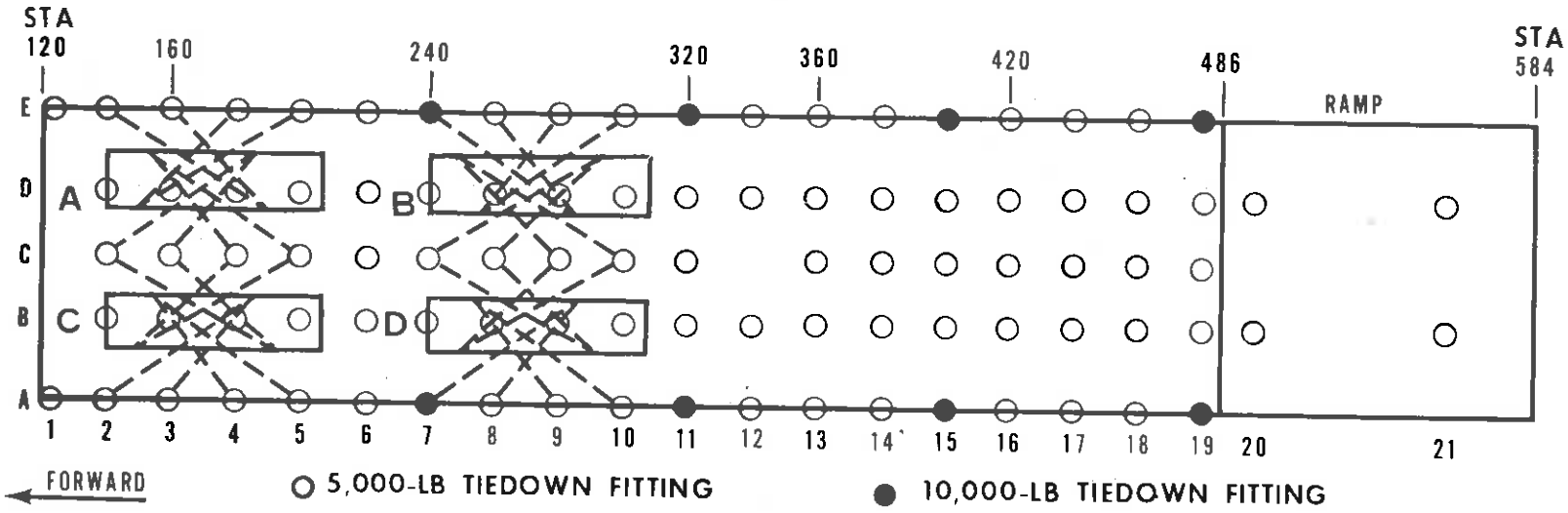


NOTE: CARGO HOOK ACCESS DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 343 AND 363

Figure 4-5. Tiedown diagram for two M613 containers (with XM753 projectiles) in UH-60A helicopter.

Table 4-5. Tiedown Data for Two M613 Containers (With XM753 Projectiles) in UH-60A Helicopter.

	Tiedown fitting		*Tiedown device*		
Item	designation	capacity in 1,000 lb	type	capacity in 1,000 lb	Attach to item
A	E2/E3	5	CGU-1/B	5	Through right rear tiedown handle.
	G2/G3	5	CGU-1/B	5	Through left rear tiedown handle.
	E3/E4	5	CGU-1/B	5	Through right front tiedown handle.
	G3/G4	5	CGU-1/B	5	Through left front tiedown handle.
B	A2/A3	5	CGU-1/B	5	Through right rear tiedown handle.
	C2/C3	5	CGU-1/B	5	Through left rear tiedown handle.
	A3/A4	5	CGU-1/B	5	Through right front tiedown handle.
	C3/C4	5	CGU-1/B	5	Through left front tiedown handle.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

Figure 4–6. Tiedown diagram for four M613 containers (with XM753 projectiles) in CH–47 helicopter.

Table 4-6. Tiedown Data for Four M613 Containers (With XM753 Projectiles) in CH-47 Helicopter

Item	Tiedown fitting designation	Tiedown fitting capacity in 1,000 lb	Tiedown device type	Tiedown device capacity in 1,000 lb	Attach to item
A	E2/E3	5	CGU-1/B	5	Through left rear tiedown handle.
	E4/E5	5	CGU-1/B	5	Through left front tiedown handle.
	C2/C3	5	CGU-1/B	5	Through right rear tiedown handle.
	C4/C5	5	CGU-1/B	5	Through right front tiedown handle.
B, C, and D	Restrain items in positions shown in figure 4-6 and in manner prescribed for item A above.				

parking shoring to provide end blocking for stacked propelling charges in PA66 containers (fig 4-8).

(*e*) Two pieces, 2- by 4- by 22-inch, nailed to parking shoring to provide end blocking for stacked propelling charges in M19A2 containers (fig 4-8).

(*f*) Two pieces plywood, 3/4- by 16- by 32-inch (notched at center of 16-inch sides to accommodate tiedown devices), for use as lateral blocking for stacked propelling charges in M18A2 containers.

(*g*) Two pieces plywood, 3/4- by 20- by 40-inch (notched at center of 20-inch sides to accommodate tiedown devices), for use as lateral blocking for stacked propelling charges in PA66 containers.

(*h*) Two pieces plywood, 3/4- by 18- by 38-inch (notched at center of 18-inch sides to accommodate tiedown devices), for use as lateral blocking for stacked propelling charges in M19A2 containers.

(*i*) Twenty-four nails, 8d (2-1/2-inch), two at each joint to secure end blocks to shoring for stacked propelling-charge containers. Construct shoring (outside helicopter) for containers (fig 4-8).

(3) *Tiedowns*. Twenty-four CGU-1/B tiedown devices, four on M613 container, eight on XM650 projectile package (including two used to unitize package), and four on each of three stacks of seven propelling-charge containers.

(4) *Loading*.

(*a*) Handcarry M613 container to tiedown position shown in figure 4-9 and place on parking shoring so that shoring extends at least 1 inch beyond skids on all sides.

(*b*) Position parking shoring and bottom section of pallet at tiedown location for XM650 spotting projectiles (fig 4-9). Disassemble projectile package outside helicopter, and handcarry individual projectiles to tiedown location. Position top section of pallet on projectiles, then unitize projectile package by placing a CGU-1/B tiedown device inside each skid (bottom) and each outboard row of projectiles (top).

(*c*) Position parking shoring at tiedown locations for propelling-charge containers (fig 4-9). Handcarry the containers to tiedown locations. Stack containers, with cap ends facing outboard, into three stacks of seven containers, each (four on bottom and three on top) as shown in fig 3-3(A).

(*d*) Position blocking shoring for each stack of propelling-charge containers as shown in figure 4-10.

(*e*) Tie down the complete mission load A in accordance with figure 4-9 and table 4-8.

(*f*) Six persons can prepare, load, and tie down the complete mission load A in about 60 minutes.

(5) *Unloading*. Unloading procedures are essentially the reverse of the loading procedures. Six persons can unload the complete mission load A in about 15 minutes.

b. Complete Mission Load B.

(1) *Parking shoring*. Items shown in paragraph 4-2*a*(1).

(2) *Blocking shoring*. Items shown in paragraph 4-2*a*(2).

(3) *Tiedowns*. Items shown in paragraph 4-2*a*(3).

(4) *Loading*.

(*a*) Follow procedures described in paragraph 4-2*a*(4)(*a*) and 4-2*a*(4)(*b*).

(*b*) Position parking shoring at tiedown locations for propelling-charge containers (fig 4-9). Handcarry containers to tiedown locations. Stack containers, with cap ends facing outboard, into three stacks of six containers each (four on bottom and two on top as shown in figures 3-3(B) and 4-11).

(*c*) Tie down the complete mission load B in accordance with figure 4-9 and table 4-8.

(*d*) Six persons can prepare, load, and tie down the complete mission load B in about 60 minutes.

(5) *Unloading*. Unloading procedures are essentially the reverse of the loading procedures. Six persons can unload the complete mission load B in about 15 minutes.

c. Complete Mission Load C.

(1) *Parking shoring*. Items shown in paragraph 4-2*a*(1).

(2) *Blocking shoring*. Items shown in paragraph 4-2*a*(2).

(3) *Tiedowns*. Twenty-five CGU-1/B tiedown devices as shown in paragraphs 4-2*a*(3) and 4-2*c*(4)(*c*).

(4) *Loading*.

(*a*) Follow procedures shown in paragraphs 4-2*a*(4)(*a*) and 4-2*a*(4)(*b*).

(*b*) Position parking shoring at tiedown loca-

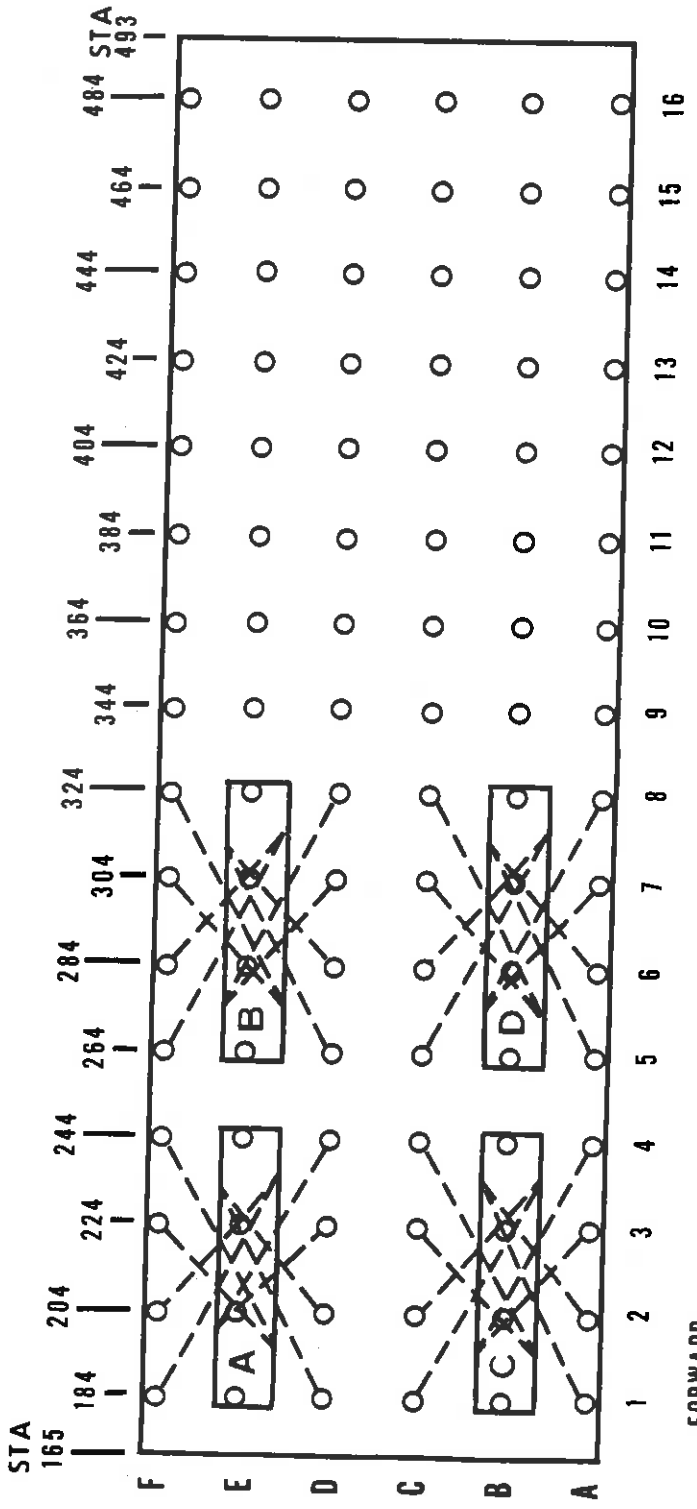


Figure 4-7. Tiedown diagram for four M613 containers (with XM753 projectiles) in CH-54 helicopter universal military pod.

Table 4-7. Tiedown Data for Four M613 Containers (With XM753 Projectiles) in CH-54 Helicopter Universal Military Pod.

Item	Tiedown fitting designation	Tiedown fitting capacity in 1,000 lb	Tiedown device type	Tiedown device capacity in 1,000 lb	Attach to item
A	F1/F2	5	CGU-1/B	5	Through left rear tiedown handle.
	F3/F4	5	CGU-1/B	5	Through left front tiedown handle.
	D1/D2	5	CGU-1/B	5	Through right rear tiedown handle.
	D3/D4	5	CGU-1/B	5	Through right front tiedown handle.
B, C, and D	Restrain items in positions shown in figure 4-7 and in manner prescribed for item A above.				

Table 4-8. Tiedown Data for XM753 Projectile Complete Mission Loads A, B, and C in CH-47 Helicopter.

Item	Tiedown fitting designation	Tiedown fitting capacity in 1,000 lb	Tiedown device type	Tiedown device capacity in 1,000 lb	Attach to item
A	A3/A4	5	CGU-1/B	5	Through right rear tiedown handle.
	C3/C4	5	CGU-1/B	5	Through left rear tiedown handle.
	A5/A6	5	CGU-1/B	5	Through right front tiedown handle.
	C5/C6	5	CGU-1/B	5	Through left front tiedown handle.
B	C7/C11	5	CGU-1/B	5	Around top of both projectiles on left side under top pallet.
	D7/D11	5	CGU-1/B	5	Around top of both projectiles on right side under top pallet.
	B8/B10*	5	CGU-1/B	5	Over top pallet, under right end, and over top pallet.
	E8/E10*	5	CGU-1/B	5	Over top pallet, under left end, and over top pallet.
	C8/D8	5	CGU-1/B	5	Around aft projectiles, above bourrelets.
	C10/D10	5	CGU-1/B	5	Around forward projectiles, above bourrelets.
C	D12/D15	5	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	E12/E15	5/10	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	D12/D15	5	CGU-1/B	5	Around plywood at outboard ends of stacked propelling-charge containers.
	E12/E15	5/10	CGU-1/B	5	Around plywood at inboard ends of stacked propelling-charge containers.
D	A12/A15	5/10	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	B12/B15	5	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	A12/A15	5/10	CGU-1/B	5	Around plywood at inboard ends of stacked propelling-charge containers.
	B12/B15	5	CGU-1/B	5	Around plywood at outboard ends of stacked propelling-charge containers.
E	D16/D19	5	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	E16/E19	5/10	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	D16/D19	5	CGU-1/B	5	Around plywood at outboard ends of stacked propelling-charge containers.
	E16/E19	5/10	CGU-1/B	5	Around plywood at inboard ends of stacked propelling-charge containers.

*Straps may bind preventing uniform tension.

tions for propelling-charge containers (fig 4-9). Hand-carry containers to tiedown locations. Stack containers, with cap ends facing outboard, into three stacks of five containers each (with four on bottom and one on top) as shown in figures 3-3(C) and 4-12.

(*c*) Tie down the complete mission load C in accordance with figure 4-9 and table 4-8. Exceptions: Notched blocking shoring is not used on top of stacked propelling-charge containers, but an additional CGU-1/B tiedown device is used to unitize the bottom containers of each stack.

(*d*) Six persons can prepare, load, and tie down the complete mission load C in about 60 minutes.

(5) *Unloading.* Unloading procedures are essentially the reverse of the loading procedures. Six persons can unload the complete mission load C in about 15 minutes.

d. Complete Mission Load D.

(1) *Parking shoring.*

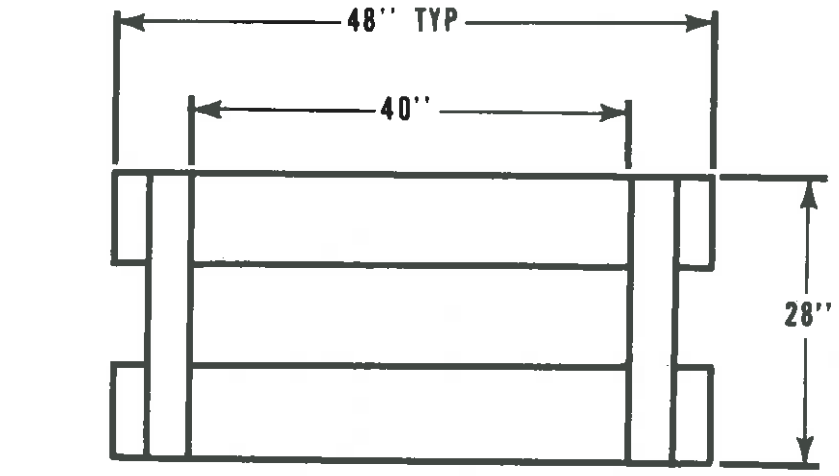
(*a*) Items shown in paragraphs 4-2*a*(1)(*a*), 4-2*a*(1)(*b*), and 4-2*a*(1)(*d*).

(*b*) Four pieces, 2- by 6- by 48-inch, for use beneath propelling-charge containers (two stacks).

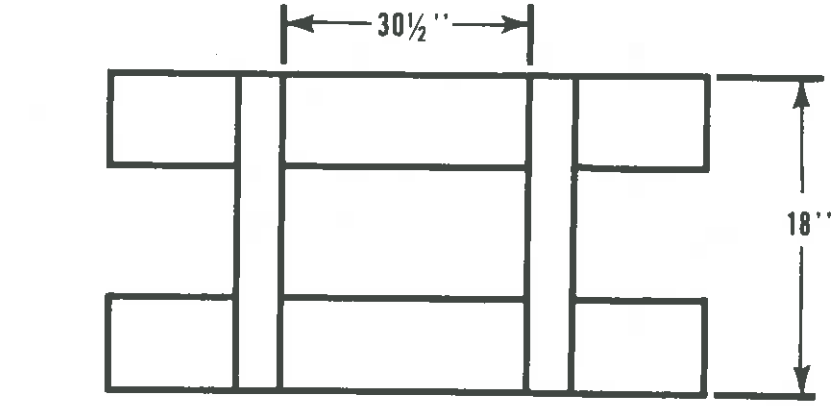
(2) *Blocking shoring.*

(*a*) One piece, 2- by 6- by 22-inch (notched at ends to accommodate tiedown devices), for use on top of PA66 containers.

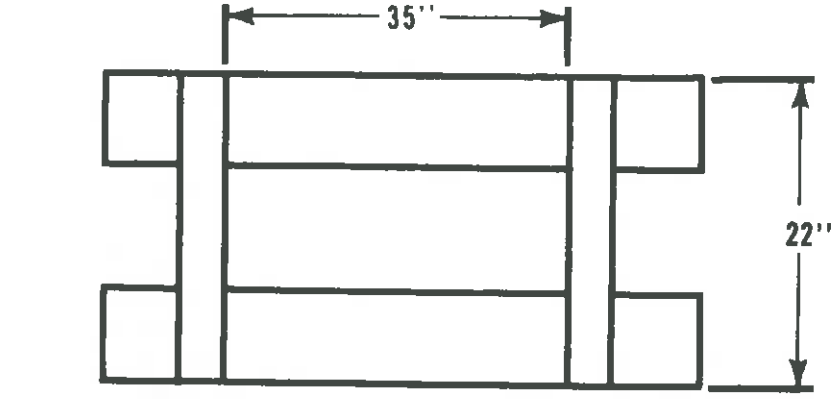
(*b*) Two pieces, 2- by 4- by 28-inch, nailed to parking shoring to provide end blocking for stacked PA66 containers.



FOR M188 PROPELLING CHARGES IN PA66 CONTAINERS

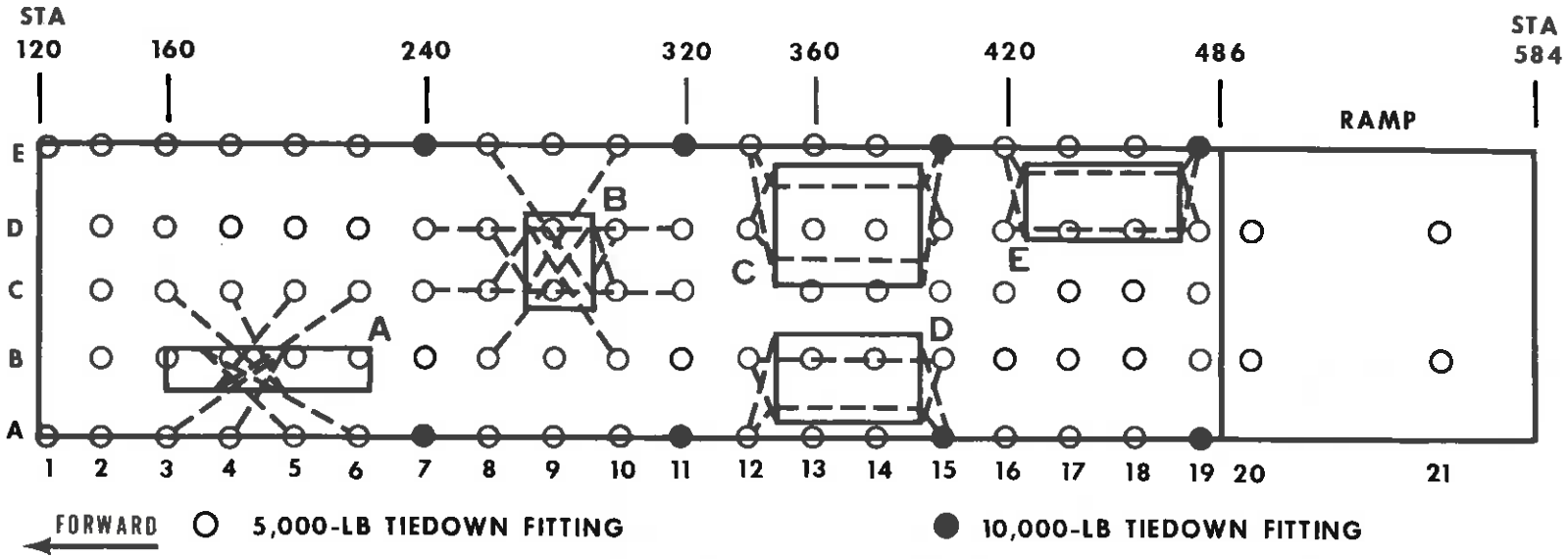


FOR M1 PROPELLING CHARGES IN M18A2 CONTAINERS



FOR M2 PROPELLING CHARGES IN M19A2 CONTAINERS

Figure 4–8. Shoring for stacked propelling-charge containers.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG(STA)	APPROX WT(LB)
			REFERENCE POINT	STATION		
A	M613 CONTAINER WITH XM753 PROJECTILE	FORWARD	FORWARD EDGE	158	198	420
B	UNITIZED PACKAGE OF SIX XM650 PROJECTILES	UPRIGHT	FORWARD EDGE	270	282	1,253
C	SEVEN M188 PROPELLING CHARGES IN PA66 CONTAINERS	LATERAL	FORWARD EDGE	346	370	525
D	SEVEN M2 PROPELLING CHARGES IN M19A2 CONTAINERS	LATERAL	FORWARD EDGE	346	370	574
E	SEVEN M1 PROPELLING CHARGES IN M18A2 CONTAINERS	LATERAL	FORWARD EDGE	423	447	322
					TOTAL	3,094

Figure 4-9. Tiedown diagram for XM753 projectile complete mission load A, in CH-47 helicopter.

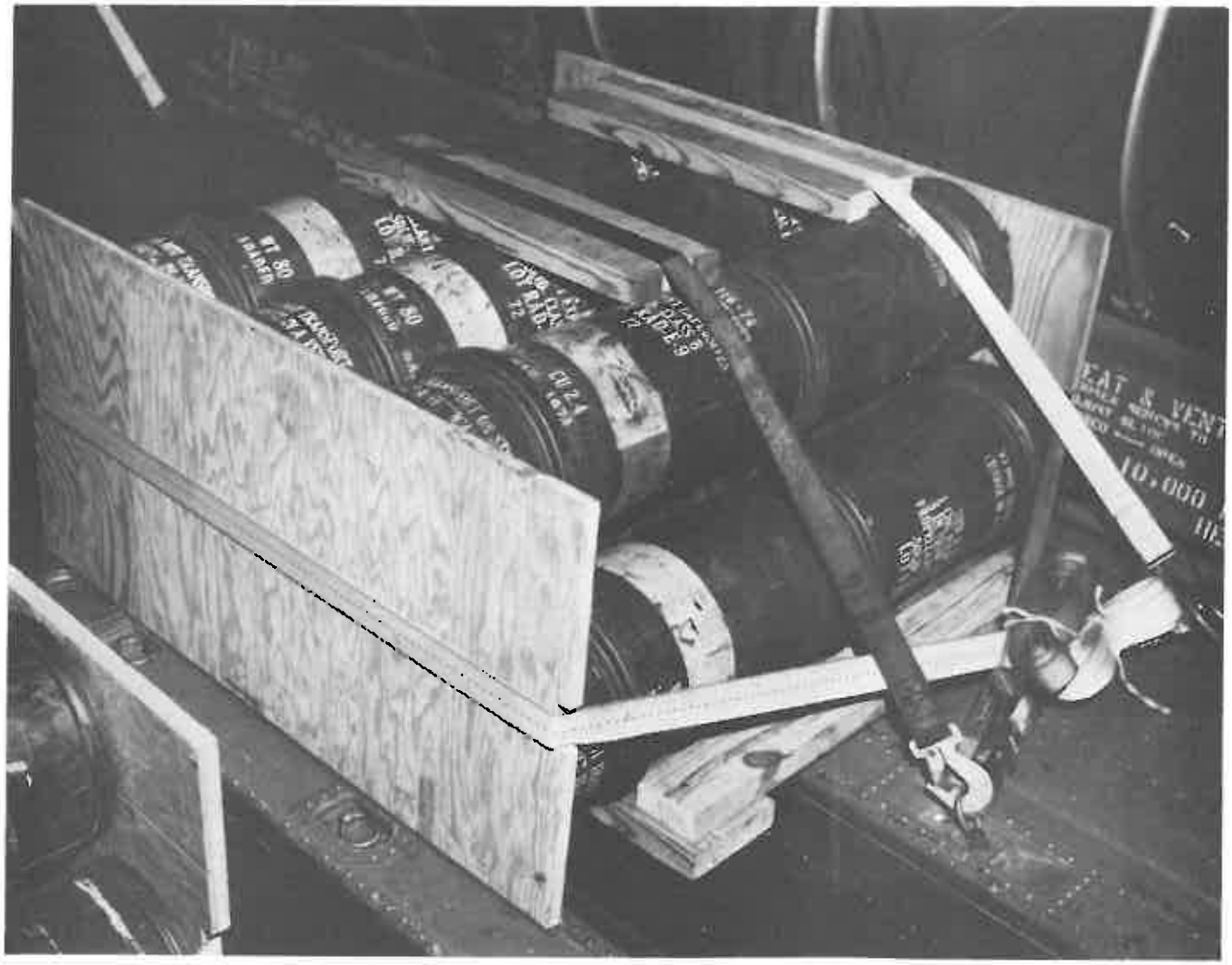


Figure 4-10. Seven PA66 containers positioned on shoring and tied down in CH-47 helicopter.

(*c*) Two pieces, 2- by 4- by 22-inch, nailed to parking shoring to provide end blocking for stacked M18A2 and M19A2 containers.

(*d*) Two pieces plywood, 3/4- by 18- by 38-inch, (notched at center of 18-inch sides to accommodate tiedown devices), for use as lateral blocking for stacked M18A2 and M19A2 containers.

(*e*) Two pieces plywood, 3/4- by 20- by 40-inch (notched at center of 20-inch sides to accommodate tiedown devices), for use as lateral blocking for PA66 containers.

(*f*) Sixteen nails, 8d (2 1/2-inch), two at each joint to secure end blocks to shoring for propelling-charge containers. Construct shoring outside helicopter in accordance with diagrams for PA66 and M19A2 containers (fig 4-8).

(3) Tiedowns. Twenty CGU-1/B tiedown devices, four on M613 container, eight on XM650 projectile package (including two to unitize package), three on PA66 containers (including one to unitize two bottom layers of the stack).

(4) *Loading.*

(*a*) Follow procedures shown in paragraph 4-2*a*(4)(*a*).

(*b*) Position parking shoring and bottom section of pallet at tiedown location for XM650 spotting projectiles (fig 4-13). Disassemble projectile package outside helicopter, and handcarry three projectiles to tiedown location. Position top section of pallet on projectiles, then unitize projectile package by placing a CGU-1/B tiedown device inside each skid (bottom) and on the inner side of each outboard projectile (top) (figure 4-14).

(*c*) Position parking shoring at tiedown locations for propelling-charge containers (fig. 4-13). Handcarry containers to tiedown locations. Stack containers, with cap ends facing outboard, into two stacks as shown in fig 3-3 (D).

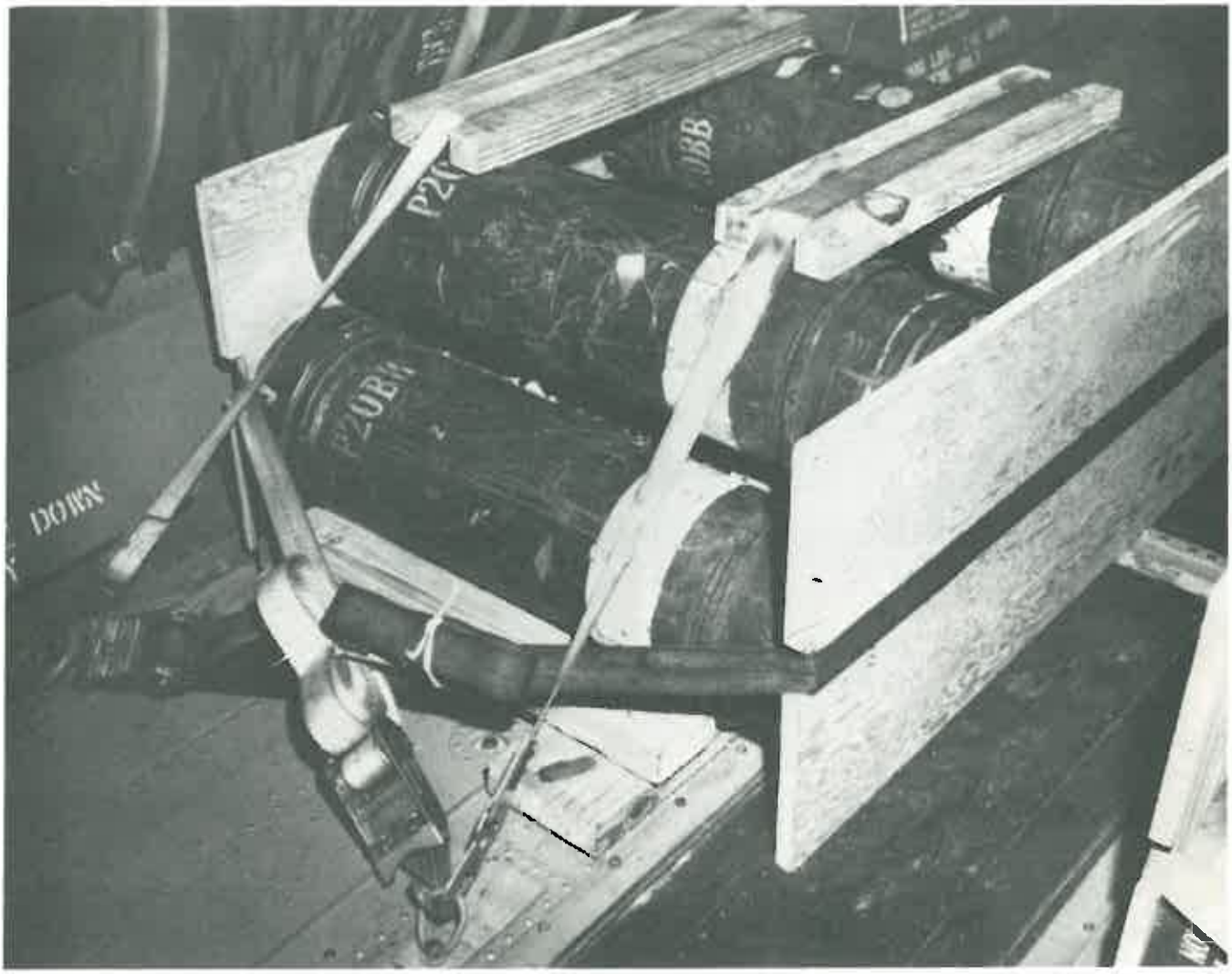


Figure 4-11. Six M19A2 containers positioned on shoring and tied down in CH-47 helicopter.

(*d*) Tie down the complete mission load D in accordance with figure 4-13 and table 4-9.

(*e*) Six persons can prepare, load, and tie down the complete mission load D in about 50 minutes.

(5) *Unloading.* Unloading procedures are essentially the reverse of the loading procedures. Six persons can unload the complete mission load D in about 10 minutes.

e. Complete Mission Load E.

(1) *Parking shoring.*

(*a*) Items shown in paragraphs 4-2*a*(1)(*a*), 4-2*a*(1)(*b*), and 4-2*a*(1)(*d*).

(*b*) Four pieces, 2- by 6- by 48-inch, for use beneath propelling-charge containers (2 stacks).

(2) *Blocking shoring.*

(*a*) Two pieces, 2- by 6- by 22-inch (notched at ends to accommodate tiedown devices), for use on top of stacked M18A2 and M19A2 containers.

(*b*) Items shown in paragraphs 4-2*d*(2)(*b*) through 4-2*d*(2)(*f*).

(3) *Tiedowns.* Nineteen CGU-1/B tiedown devices, four on M613 container, six on XM650 projectile package (including two to unitize package (fig. 4-15)), five on PA66 containers (fig. 4-16), and four on M18A2 and M19A2 stacked containers.

(4) *Loading.*

(*a*) Follow procedures shown in paragraph 4-2*a*(4)(*a*).

(*b*) Position parking shoring and bottom section of pallet at tiedown location for XM650 spotting projectiles (fig 4-17). Disassemble projectile package outside helicopter and handcarry two projectiles to tiedown location. Position top section of pallet on projectiles, then unitize projectile package by placing a CGU-1/B tiedown device inside each skid (bottom) and outside each projectile (top) (figure 4-15).

(*c*) Position parking shoring at tiedown locations for propelling-charge containers (fig 4-17). Handcarry containers to tiedown locations. Stack con-

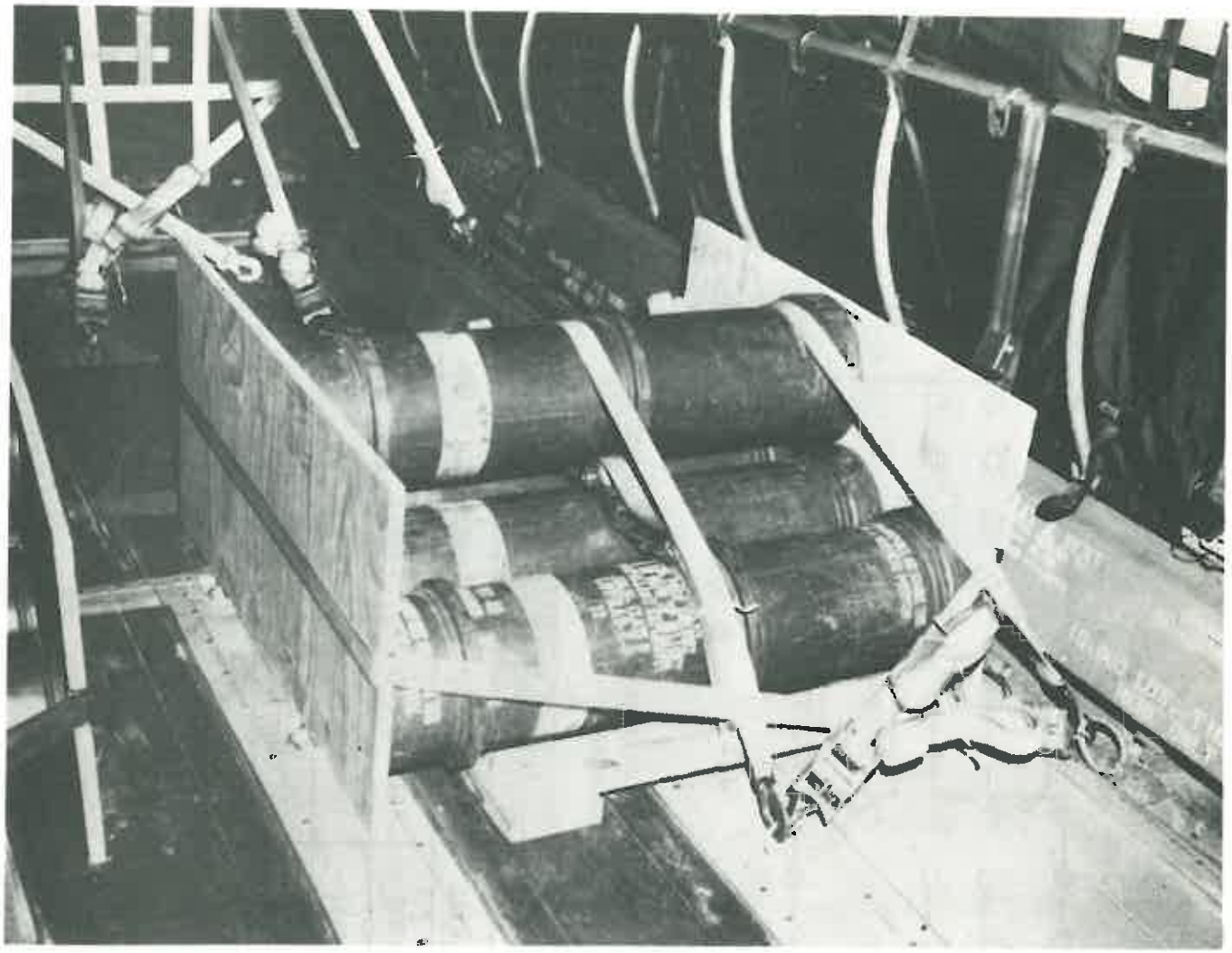


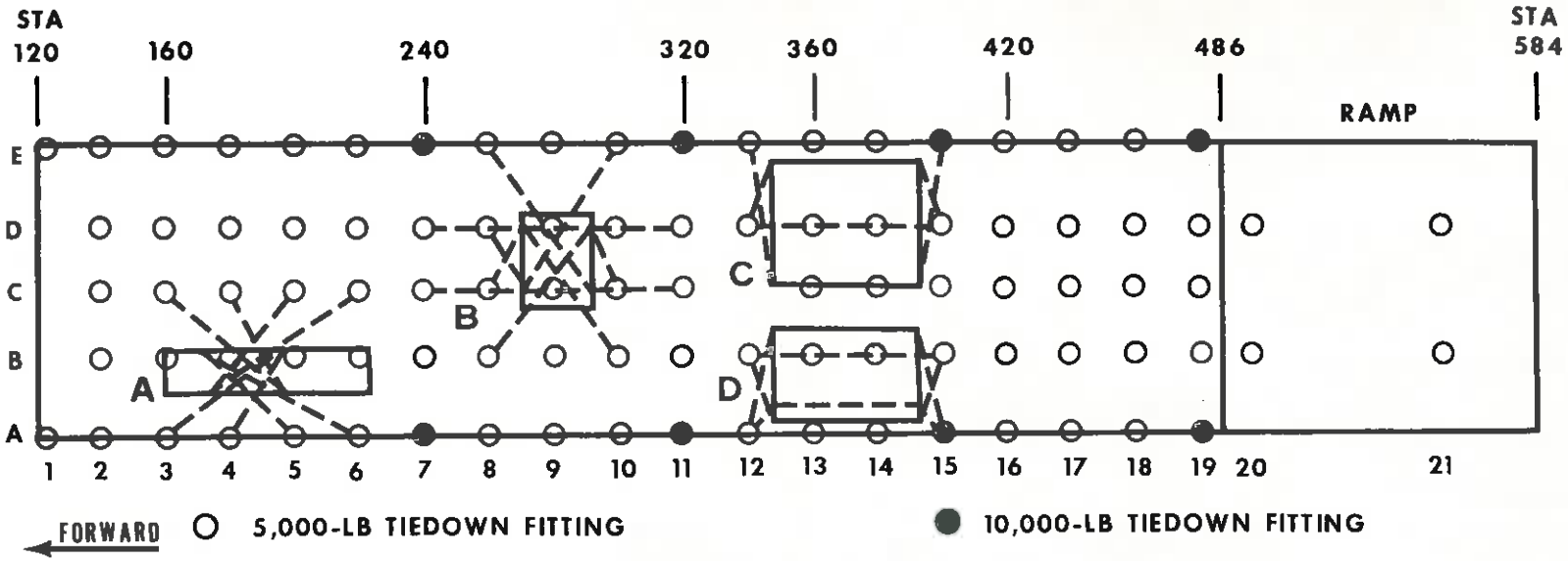
Figure 4-12. Five PA66 containers positioned on shoring and tied down in CH-47 helicopter.

Table 4-9. Tiedown Data for XM753 Projectile Complete Mission Load D in CH-47 Helicopter

	Tiedown fitting		*Tiedown device*		
Item	designation	capacity in 1,000 lb	type	capacity in 1,000 lb	Attach to item
A	A3/A4	5	CGU-1/B	5	Through right rear tiedown handle.
	C3/C4	5	CGU-1/B	5	Through left rear tiedown handle.
	A5/A6	5	CGU-1/B	5	Through right front tiedown handle.
	C5/C6	5	CGU-1/B	5	Through left front tiedown handle.
B	C7/C11	5	CGU-1/B	5	Around top of projectile on left side under top pallet.
	D7/D11	5	CGU-1/B	5	Around top of projectile on right side under top pallet.
	B8/B10*	5	CGU-1/B	5	Over top pallet, under right end, and over top pallet.
	E8/E10*	5	CGU-1/B	5	Over top pallet, under left end, and over top pallet.
	C8/D8	5	CGU-1/B	5	Around aft projectile, above bourrelets.
	C10/D10	5	CGU-1/B	5	Around forward projectiles, above bourrelets.
C	D12/D15	5	CGU-1/B	5	Over top of propelling-charge containers.
	D12/D15	5	CGU-1/B	5	Around plywood at outboard ends of propelling-charge containers.
	E12/E15	5/10	CGU-1/B	5	Around plywood at inboards ends of propelling-charge containers.
D**	A12/A15	5/10	CGU-1/B	5	Over top of stacked propelling-charge containers.
	B12/B15	5	CGU-1/B	5	Over top of stacked propelling-charge containers.
	A12/A15	5/10	CGU-1/B	5	Around plywood at inboard ends of stacked propelling-charge containers.
	B12/B15	5	CGU-1/B	5	Around plywood at outboard ends of stacked propelling-charge containers.

*Straps may bind preventing uniform tension.

**Use one CGU-1/B tiedown device around two bottom layers of containers and end blocks of shoring to provide additional vertical restraint.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG(STA)	APPROX WT(LB)
			REFERENCE POINT	STATION		
A	M613 CONTAINER WITH XM753 PROJECTILE	FORWARD	FORWARD EDGE	158	198	420
B	UNITIZED PACKAGE OF THREE XM650 PROJECTILES	UPRIGHT	FORWARD EDGE	270	282	653
C	FOUR M188 PROPELLING CHARGES IN PA66 CONTAINERS(ONE LAYER)	LATERAL	FORWARD EDGE	346	370	300
D	FOUR M1 PROPELLING CHARGES IN M18A2 CONTIANERS AND FOUR M2 PROPELLING CHARGES IN M19A2 CONTAINERS(FOUR M19A2 ON BOTTOM LAYER, THREE M18A2 IN MIDDLE, AND ONE M18A2 ON TOP).	LATERAL	FORWARD EDGE	346	370	512
					TOTAL	1,885

Figure 4-13. Tiedown diagram for XM753 projectile complete mission load D in CH-47 helicopter.

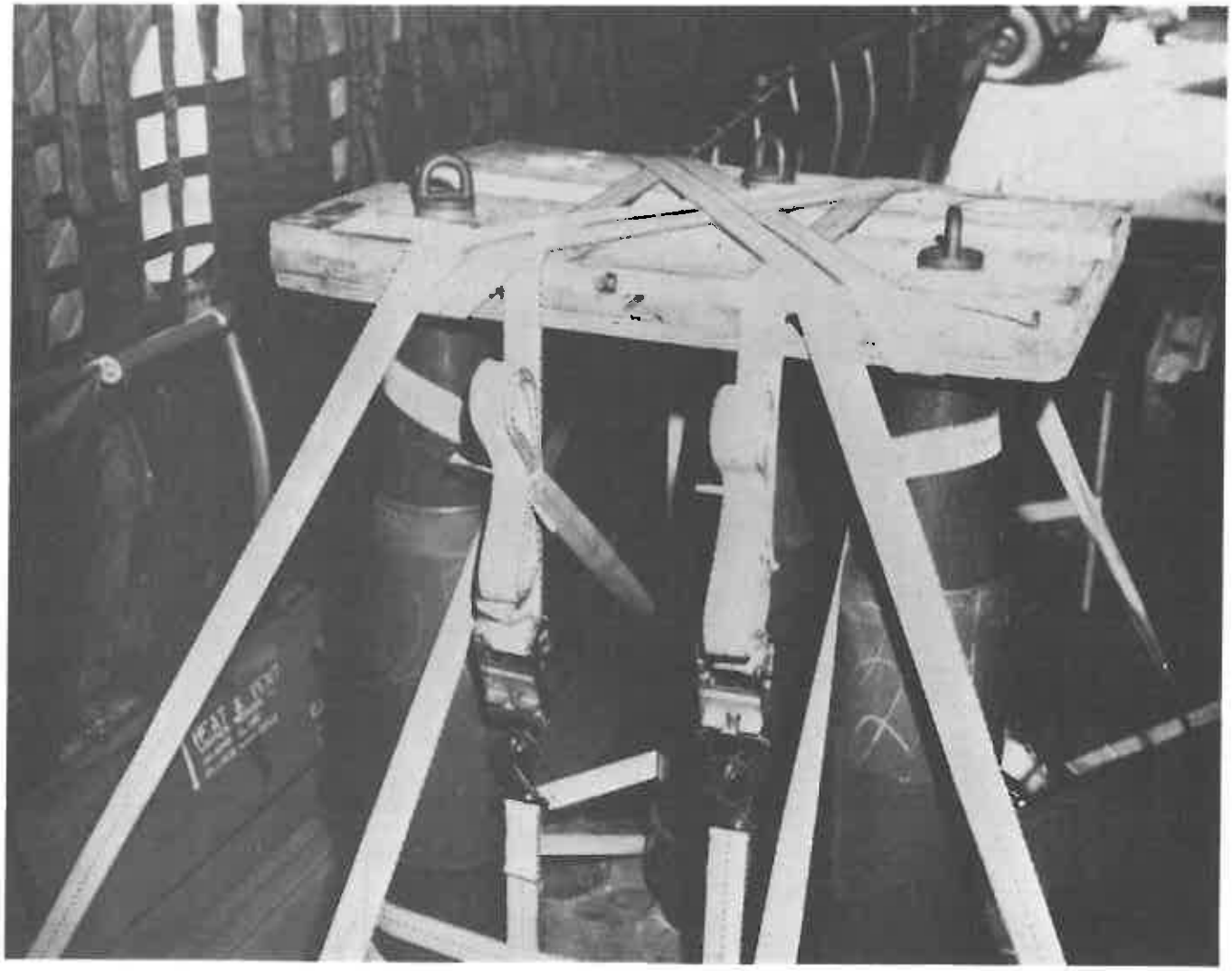


Figure 4-14. XM650 projectiles for XM753 complete mission load D tied down in CH-47 helicopter.

tainers, with cap ends facing outboard, into two stacks as shown in fig 3-3(E).

(*d*) Tie down the complete mission load E in accordance with figure 4-17 and table 4-10. Use one CGU-1/B tiedown device to unitize the one layer of three PA66 containers with the shoring after two forward and aft tiedowns are tightened.

(*e*) Six persons can prepare, load, and tie down the complete mission load E in about 50 minutes.

(5) *Unloading.* Unloading procedures are essentially the reverse of the loading procedures. Six persons can unload the complete mission load E in about 10 minutes.

f. Complete Mission Load F.

(1) *Parking shoring.*

(*a*) Two pieces plywood, 3/4- by 14- by 16-inch or equivalent shoring, for use beneath skids of M613 container.

(*b*) Bottom section of two-section pallet or equivalent shoring, for the single XM650 projectile.

(*c*) Two pieces, 2- by 6- by 48-inch, for use beneath stacked propelling-charge containers (one stack).

(2) *Blocking shoring.*

(*a*) Two pieces, 1- by 4- by 28-inch, nailed to parking shoring to provide end blocking for stacked propelling-charge containers.

(*b*) Two pieces 2- by 6- by 30-inch pieces to use as filler blocks between XM650 projectile and pallet skids.

(*c*) Three pieces, 2- by 6- by 22-inch (notched at ends to accommodate tiedown devices), for use on top of and ends of stacked propelling-charge containers.

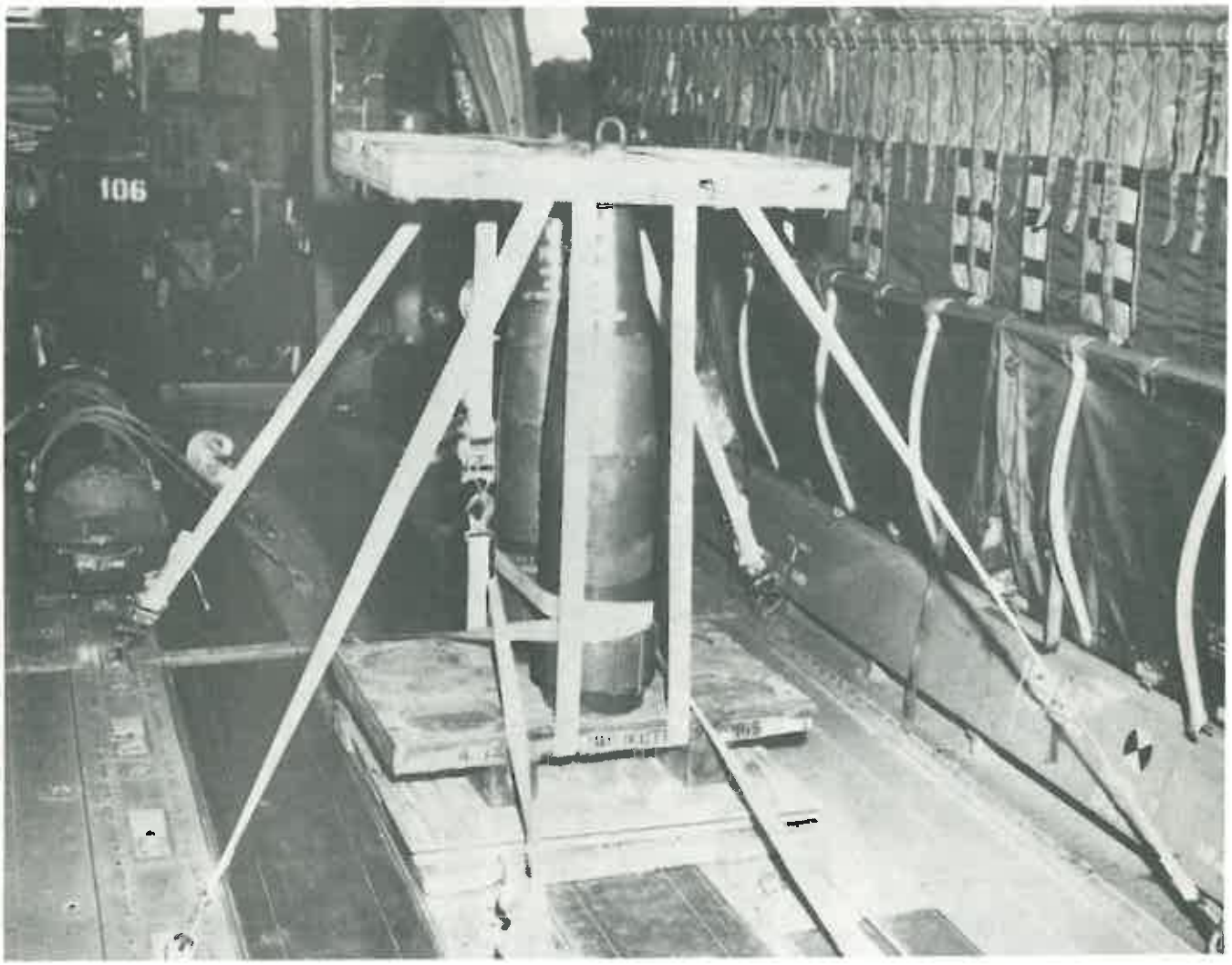


Figure 4-15. XM650 projectiles for XM753 complete mission load E tied down in CH-47 helicopter.

Table 4-10. Tiedown Data for XM753 Projectile Complete Mission Load E in CH-47 Helicopter.

Item	Tiedown fitting designation	Tiedown fitting capacity in 1,000 lb	Tiedown device type	Tiedown device capacity in 1,000 lb	Attach to item
A	A3/A4	5	CGU-1/B	5	Through right rear tie down handle.
	C3/C4	5	CGU-1/B	5	Through left rear tiedown handle.
	A5/A6	5	CGU-1/B	5	Through right front tiedown handle.
	C5/C6	5	CGU-1/B	5	Through left front tiedown handle.
A	B8/E10*	5	CGU-1/B	5	Around top of pallet between projectiles.
	E8/B10*	5	CGU-1/B	5	Around top of pallet between projectiles.
	C8/D8	5	CGU-1/B	5	Around both projectiles above bourrelets.
	C10/D10	5	CGU-1/B	5	Around both projectiles above bourrelets.
C	D12/D15	5	CGU-1/B	5	Over top of propelling-charge containers.
	E12/E15	5/10	CGU-1/B	5	Over top of propelling-charge containers.
	D12/D15	5	CGU-1/B	5	Around plywood at outboard end of propelling-charge containers.
	E12/E15	5/10	CGU-1/B	5	Around plywood at inboard end of propelling-charge containers.
D**	A12/A15	5/10	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	B12/B15	5/10	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	A12/A15	5/10	CGU-1/B	5	Around plywood at inboard ends of stacked propelling-charge containers.
	B12/B15	5	CGU-1/B	5	Around plywood at outboard ends of stacked propelling-charge containers.

*Straps may bind preventing uniform tension.

**Use one CGU-1/B tiedown device around containers and end blocks of shoring to provide additional vertical and fore/aft restraint.

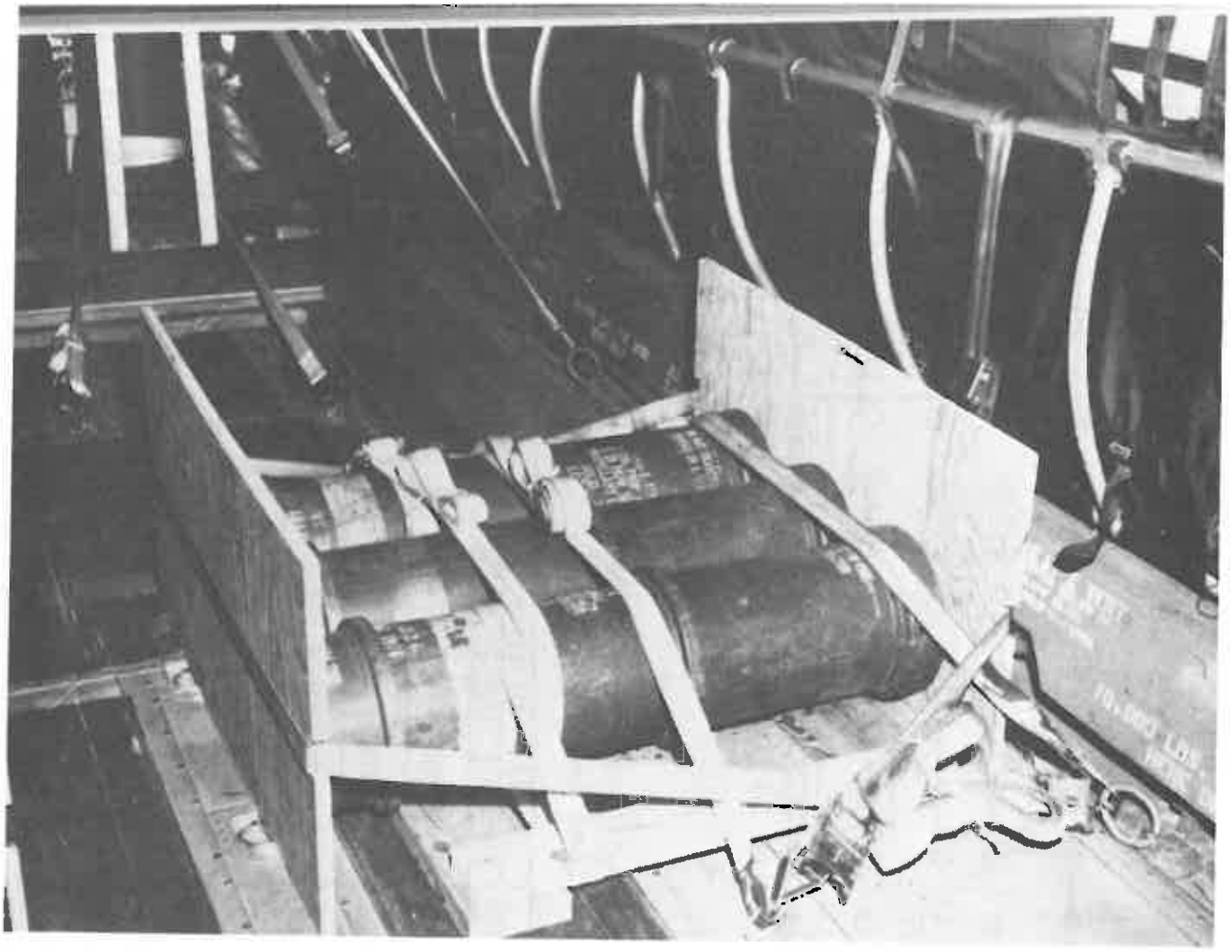


Figure 4-16. Three PA66 propelling charge containers positioned on shoring and tied down in CH-47 helicopter.

(*d*) Two pieces plywood, 3/4- by 18- by 38-inch (notched at center of 18-inch sides to accommodate tiedown devices), for use as lateral blocking for stacked propelling-charge containers.

(*e*) Eight nails, 8d (2 1/2-inch), two at each joint to secure end blocks to shoring for propelling-charge containers. Construct shoring outside helicopter in accordance with diagram for PA66 containers (fig. 4-8).

(3) *Tiedowns.* Twelve CGU-1/B tiedown devices, four on M613 container, three on XM650 projectile (including one to unitize projectile with shoring), and five on stacked propelling-charge containers (fig 4-18).

(4) *Loading.*

(*a*) Follow procedures shown in paragraph 4-2*a*(4)(*a*).

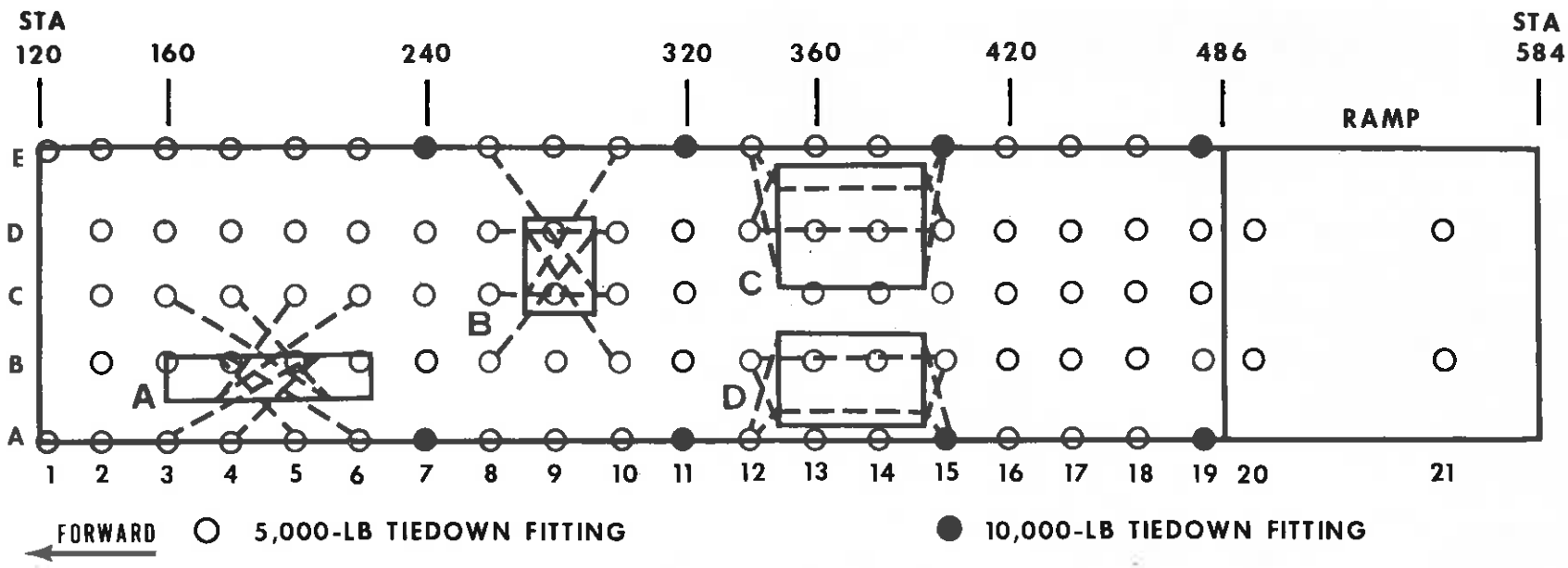
(*b*) Position parking shoring at tiedown location for XM650 projectile (fig 4-19). Handcarry single projectile to tiedown location.

(*c*) Position parking shoring at tiedown location for propelling-charge containers (fig. 4-19). Handcarry containers to tiedown location. Stack containers, with cap ends facing outboard, into one stack as shown in fig. 3-3 (F).

(*d*) Tie down the complete mission load F in accordance with figure 4-19 and table 4-11.

(*e*) Six persons can prepare, load, and tie down the complete mission load F in about 40 minutes.

(5) *Unloading.* Unloading procedures are essentially the reverse of the loading procedures. Six persons can unload the complete mission load F in about 5 minutes.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG(STA)	APPROX WT(LB)
			REFERENCE POINT	STATION		
A	M613 CONTAINER WITH XM753 PROJECTILE	FORWARD	FORWARD EDGE	158	198	420
B	UNITIZED PACKAGE OF TWO XM650 PROJECTILES	UPRIGHT	FORWARD EDGE	270	282	453
C	THREE M188 PROPELLING CHARGES IN PA66 CONTAINERS	LATERAL	FORWARD EDGE	346	370	225
D	THREE M1 PROPELLING CHARGES IN M18A2 CONTAINERS AND THREE M2 PROPELLING CHARGES IN M19A2 CONTAINERS (THREE M19A2 AND ONE M18A2 ON BOTTOM, AND TWO M18A2 ON TOP)	LATERAL	FORWARD EDGE	346	370	384
					TOTAL	1,482

Figure 4-17. Tiedown diagram for XM753 projectile complete mission load E in CH-47 helicopter.

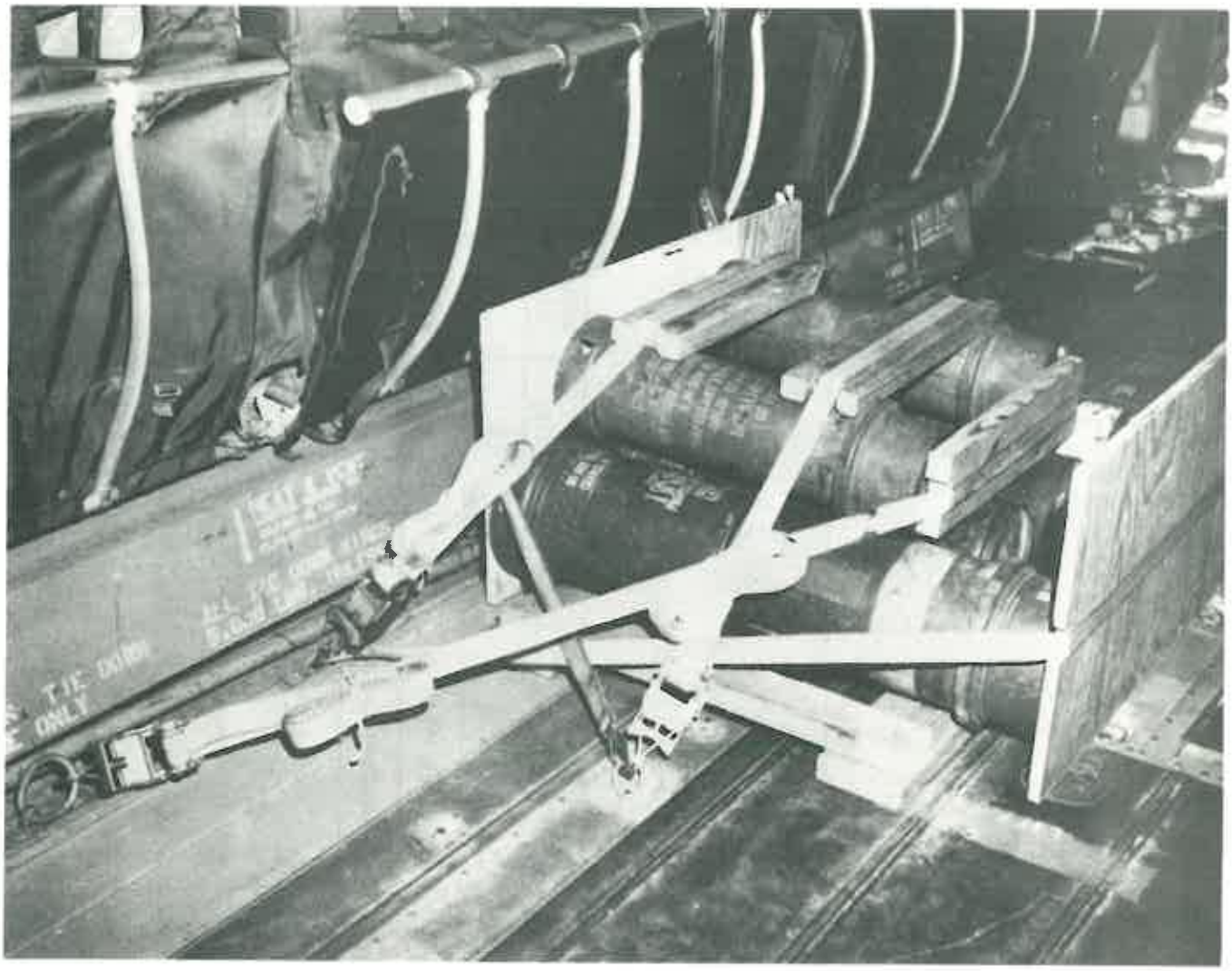
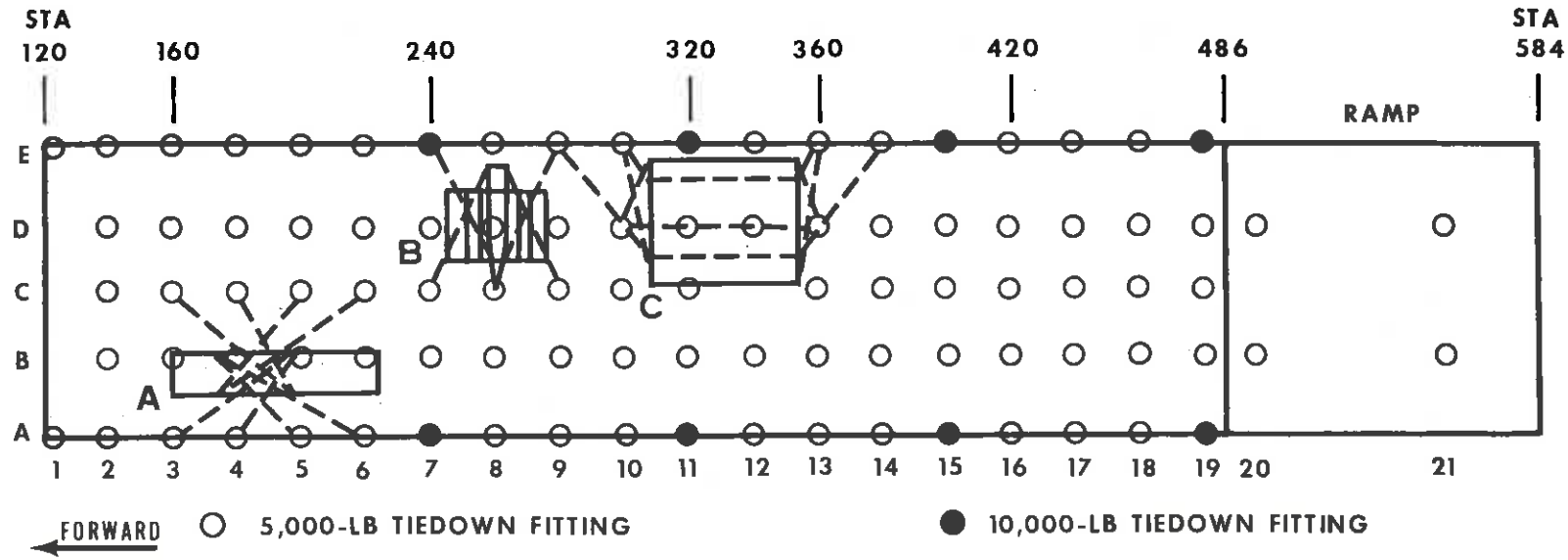


Figure 4-18. Two each PA66, M19A2, and M18A2 propelling-charge containers positioned on shoring and tied down in CH-47 helicopter.

Table 4-11. Tiedown Data for XM753 Projectile Complete Mission Load F in CH-47 Helicopter

Item	*Tiedown fitting* designation	capacity in 1,000 lb	*Tiedown device* type	capacity in 1,000 lb	Attach to item
A	A3/A4	5	CGU-1/B	5	Through right rear tiedown handle.
	C3/C4	5	CGU-1/B	5	Through left rear tiedown handle.
	A5/A6	5	CGU-1/B	5	Through right front tiedown handle.
	C5/C6	5	CGU-1/B	5	Through left front tiedown handle.
B	C7/C9	5	CGU-1/B	5	Around projectile base end (rear of bourrelet).
	E7/E9	10/5	CGU-1/B	5	Around projectile forward end (aft of ring plug).
C	D10/D13	5	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	E10/E13	5	CGU-1/B	5	Over notched block on top of stacked propelling-charge containers.
	D10/D13	5	CGU-1/B	5	Around plywood at outboard ends of stacked propelling-charge containers.
	E10/E13	5	CGU-1/B	5	Around plywood at inboard ends of stacked propelling-charge containers.
	E9/E14	5	CGU-1/B	5	Around notched block at end of two M18A2 containers (top layer) to provide lateral restraint.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

ITEM	DESCRIPTION OF ITEM	ITEM FACING	LOCATION OF REFERENCE POINT		LOCATION OF CG(STA)	APPROX WT(LB)
			REFERENCE POINT	STATION		
A	M613 CONTAINER WITH XM753 PROJECTILE	FORWARD	FORWARD EDGE	158	198	420
B	XM650 SPOTTING PROJECTILE (ON PALLET)	LATERAL	FORWARD EDGE	244	260	227
C	TWO M1 PROPELLING CHARGES IN M18A2 CONTAINERS CONTAINERS, TWO M2 PROPELLING CHARGES IN M19A2 CONTAINERS, AND TWO M188 PROPELLING CHARGES IN PA66 CONTAINERS (TWO PA66 AND TWO M19A2 ON BOTTOM LAYER AND TWO M18A2 ON TOP).	LATERAL	FORWARD EDGE	306	330	406
					TOTAL	1,053

Figure 4-19. Tiedown diagram for XM753 projectile complete mission load F in CH-47 helicopter.

CHAPTER 5

EXTERNAL TRANSPORT BY HELICOPTER (EMERGENCY PROCEDURE)

5-1. General

This chapter prescribes procedures for external transport of the M613 container with XM753 atomic projectile in cargo nets and cargo bag. Information pertaining to the container with projectile is shown in chapter 3.

WARNING

The contents of chapter 5 are for information and training purposes only and are not to be construed as authority for external transport by helicopter of the M613 container with XM753 projectile. Only dummy loads may be used for practice and/or training exercises. *Nuclear weapons will not be moved by external helicopter transport except in emergency conditions (such as emergency evacuation ordered to miantain US custody or to prevent loss because of fire or flood) and only when the situation does not allow time to prepare and move the nuclear weapons by internal transport (chap 4).*

WARNING

Always assume that a charge of static electricity is present on the helicopter. It is necessary to use some type of discharge apparatus (static probe) (fig 2-3, FM 55-413) to ground the hook and discharge electricity to prevent shock when the hook is touched. After discharge of electricity, the hook is grasped quickly and firmly and held, if possible, until the hookup is completed. If contact with the hook is lost after initial grounding, the hook must be grounded again before it is touched. Do not use the load as a ground contact. After air delivery and before handling, ground the load again to discharge any accumulated/retained static electricity.

CAUTION

When performing external air transport by CH-54 helicopter, use a metal apex fitting or a large metal clevis to attach the load to the cargo hook because a nylon sling ring will tend to adhere to the cargo hook beam and prevent release of the load.

CAUTION

Multiple M613 containers with XM753 projectiles, within limitations (para 2-1c), may be transported externally. Loads must not exceed the restrictions shown in TM 39-20-7 and TM 39-45-51A.

5-2. Transport of One, Two, or Three M613 Containers, Using the 5,000-Pound-Capacity Nylon Cargo Net

a. Materials.

(1) Net, cargo, nylon, 5,000-pound-capacity (NSN 1670-01-058-3811).

(2) Cord, nylon, 1/16-inch nominal diameter, 300-pound breaking strength (NSN 4020-00-903-8594), or equivalent.

b. Preparation and Rigging.

(1) Spread cargo net and center container(s) on net inside area marked by gold cord. Six persons can prepare the load and rig the net for external transport in about 10 minutes.

(2) Draw the net up around the load (figs 5-1 and 5-2), and secure the four corner hooks in net apex stirrup.

(3) Lace nylon cord through the net above the load.

(4) Attach the cargo net apex stirrup to the helicopter cargo hook. Helicopter must be centered over the load before tension is placed on the net.

c. Derigging. Six persons can derig the load in about 5 minutes.

5-3. Transport of One, Two, or Three M613 Containers, Using the 10,000-Pound-Capacity Nylon Cargo Net.

a. Materials.

(1) One net, cargo, nylon, 10,000-pound capacity (NSN 1670-01-058-3810) (for use in combination with slings described below in (2); or (4); or in (5); or in (6)).

(2) Two slings, cargo, 16-foot, two-loop, air-delivery (NSN 1670-00-753-3793); each has rated capacity of 6,500 pounds.

(3) One sling ring, cargo, 3-foot, three-loop, air-delivery (NSN 1670-00-753-3788) (has rated capac-

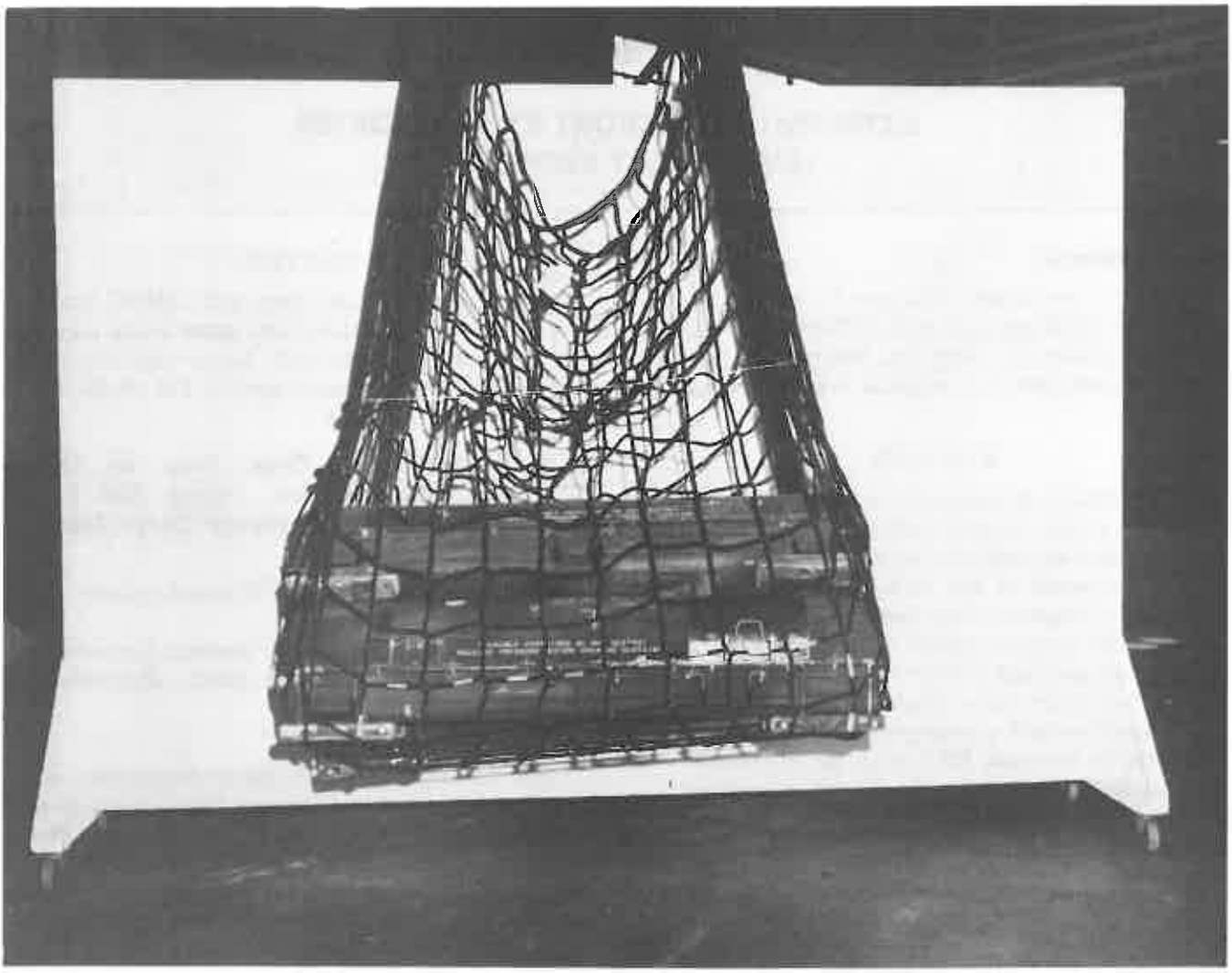


Figure 5-1. Test lift of three M613 containers in 5,000-pound-capacity nylon cargo net (side view).

ity of 10,000 pounds), with link assembly, type IV (NSN 1670-00-783-5988).

(4) One sling, four-leg, 23-foot, nylon and chain (NSN 1670-00-902-3080) (has rated capacity of 15,000 pounds).

(5) One sling, helicopter, cargo-carrying external, four-leg (NSN 1670-01-027-2902) (has rated capacity of 10,000 pounds).

(6) One sling, helicopter, cargo-carrying external, four-leg (NSN 1670-01-027-2900) (has rated capacity of 25,000 pounds).

(7) Cord, nylon, 1/16-inch nominal diameter, 330-pound breaking strength (NSN 4020-00-903-8594), or equivalent.

(8) Tape, adhesive, 2-inch wide (NSN 7510-00-266-5016), or equivalent.

NOTE

Each leg of the sling, four-leg, nylon and chain, is constructed of a 15-foot nylon web sling with a metal grab link on its lower end. The grab link is about 10 inches long and is equipped with a spring-loaded keeper. Attached to the lower or small end of the grab link is a hammer lock, which connect the chain leg to the grab link. The chain leg is about 6 feet long and has 64 links. The link at the free end is referred to as link number 1.

NOTE

Each leg of the sling, helicopter, cargo-carrying external, four-leg, either 10,000- or 25,000-pound capacity, is constructed of a 12-foot antiabrasive-nylon braided rope and an 8-foot chain. The rope and chain are connected by a grab hook that is equipped with a spring-loaded keeper. The chain leg of the 10,000-pound-capacity sling consists of about 111 links. The chain leg of the 25,000-pound-capacity sling consists of about 88 links. On

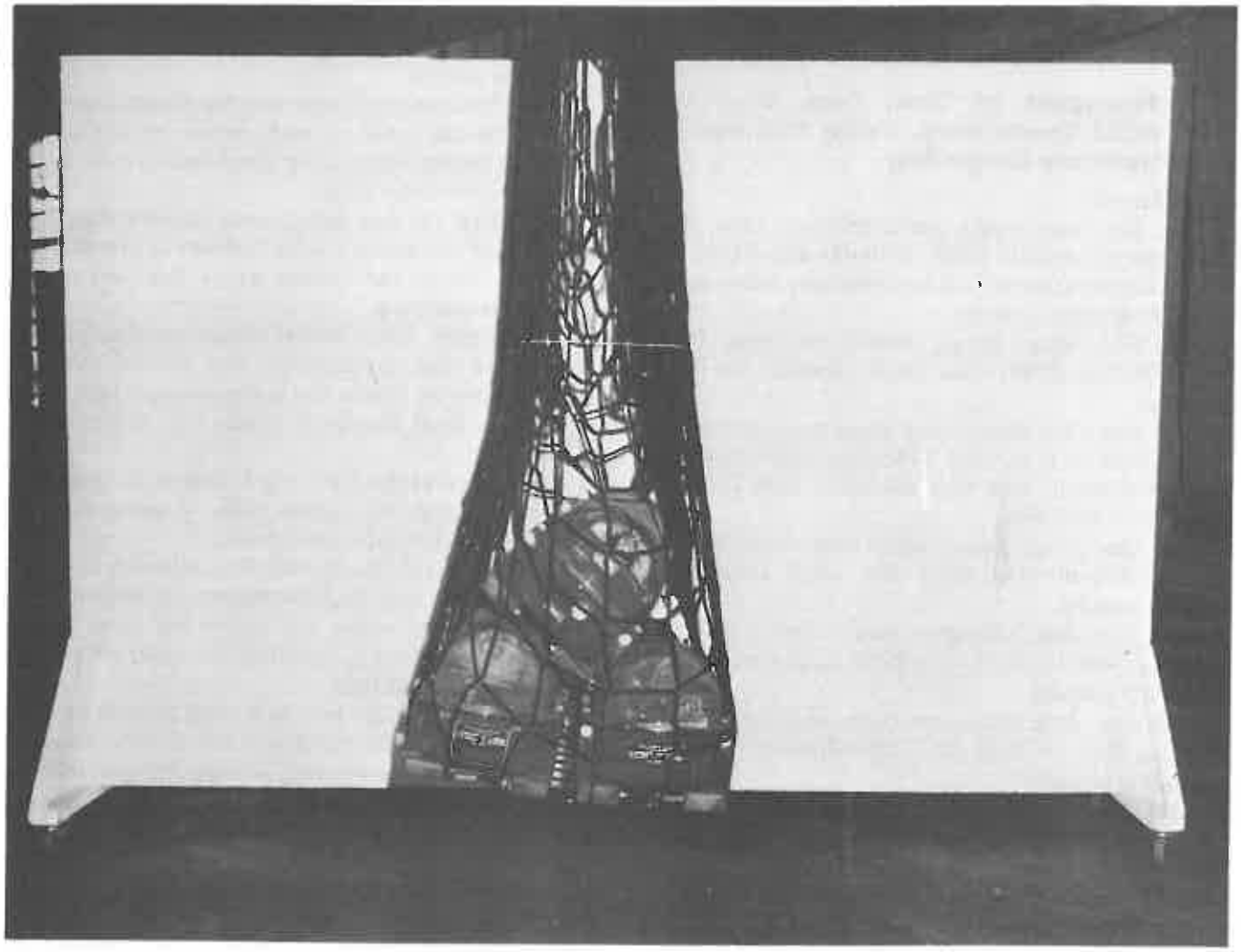


Figure 5-2. Test lift of three M613 containers in 5,000-pound-capacity nylon cargo net (end view).

each sling, the link at the free end of the chain is referred to as link number 1.

b. Preparation and Rigging When Using Two 16-Foot Air-Delivery Cargo Slings to Rig Nylon Cargo Net.

(1) Spread cargo net and center container(s) on net. Six persons can prepare the containers and rig the net for external transport in about 10 minutes.

(2) Pass the first cargo-sling end through two adjoining hoist links on cargo net. Pass the second cargo-sling end through the other two hoist links on cargo net.

(3) Combine the four ends of the cargo slings to form a single loop, and attach loop to the 3-foot sling. Connect free ends of the 3-foot sling with the link assembly. The 3-foot sling forms the apex for attachment to the helicopter cargo hook.

(4) Lace nylon cord through the cargo net above the load.

(5) Cluster and tape or tie sling legs (breakaway technique) to prevent fouling during lift-off.

(6) Attach apex to the helicopter cargo hook. Helicopter must be centered over load before tension is placed on the net.

c. Preparation and Rigging When Using the Sling, Four-Leg, 23-Foot, Nylon and Chain; or the Sling, Helicopter, Cargo-Carrying External, Four-Leg (either the 10,000- or 25,000-pound-capacity) to Rig Nylon Cargo Net.

(1) Spread cargo net and center container(s) on net. Six persons can prepare the containers and rig the net for external transport in about 10 minutes.

(2) Pass each of the sling chain legs through a single hoist link on cargo net, then insert link number 3 of each chain into the grab link or hook to form hitch.

(3) The 12-inch ring of the nylon and chain, four-leg sling forms the apex for attachment to the helicopter cargo hook.

(4) The metal clevis of the sling, helicopter, cargo-carrying external, four-leg, forms the apex for attachment to the helicopter cargo hook.

(5) Observe procedures in *b*(4) through *b*(6) above.

d. Derigging. Six persons can derig the cargo net in about 5 minutes.

5-4. Transport of One, Two, or Three M613 Containers, Using the Aerial-Delivery Cargo Bag

a. Materials.

(1) One bag, cargo, aerial-delivery, type A22, 2,200-pound-capacity (NSN 1670-00-242-9169), for use in combination with slings described below in (2); or in (4); or in (5); or in (6).

(2) One sling, cargo, 8-foot, two-loop, (NSN 1670-00-753-3789) (has rated capacity of 6,500 pounds).

(3) One sling ring, 3-foot, three-loop, air-delivery cargo (NSN 1670-00-753-3788) (has rated capacity of 10,000 pounds), with link assembly, type IV (NSN 1670-00-783-5988).

(4) One sling 23-foot, nylon and chain, four-leg (NSN 1670-00-902-3080) (has rated capacity of 15,000 pounds).

(5) One sling, helicopter, cargo-carrying external, four-leg (NSN 1670-01-027-2902) (has rated capacity of 10,000 pounds).

(6) One sling, helicopter, cargo-carrying external, four-leg (NSN 1670-01-027-2900) (has rated capacity of 25,000 pounds).

(7) Cord, nylon, 1/16-inch nominal diameter, 330-pound breaking strength (NSN 4020-00-903-8594), or equivalent.

(8) Tape, adhesive, 2-inch wide (NSN 7510-00-226-5016), or equivalent.

(9) One medium clevis assembly, air-delivery, (NSN 1670-00-678-8562).

(10) One large clevis assembly, air-delivery, type I (NSN 1670-00-090-5354) (for use when attaching items described above in (2) and (3), or in (4) to the CH-54 helicopter cargo hook).

(11) One wood pallet 42- by 66-inch.

b. Preparation and Rigging When Using the 8-Foot, Two-Loop, Cargo Sling to Rig Cargo Bag. Preparation and rigging procedures for the cargo bag are described in detail in chapter 11, TM 55-450-19.

(1) Center cargo bag cover, outside down, on sling assembly with long panel of cover over long axis of sling assembly. Center pallet on cover.

(2) Center container(s) side-by-side on pallet, parallel to top pallet boards.

(*a*) When loading one M613 container, secure container to pallet by routing nylon cord through both tiedown handles at one end of container, over top of container, and around top boards of pallet. Secure other end of container in the same manner.

(*b*) When loading two or three M613 containers, secure containers to pallet by routing nylon cord through outside tiedown handles at one end of each outside container, over top of containers, and around top boards of pallet. Secure other end of containers in the same manner.

(3) Fold panels of cover over top of containers.

(4) Secure cover at each corner by lacing cord through lacing loops. If original lacing cord is not available, use nylon cord.

(5) Pass the free end of each tiedown strap over top of load and across a strap fastener on opposite end of strap. Fasten and tighten straps. Fold and tape or tie excess strapping.

(6) Fasten lower lateral straps together, around corners of load, by attaching free ends of straps to strap fasteners. Fasten the upper lateral straps (those above the load) diagonally across top corners of the load.

(7) Connect the four snap fasteners of suspension webs to D-rings on support webs, insuring that the open side of the snaps face inward.

(8) Adjust all straps until sling assembly fits snugly around the load. Pull the suspension webs to their full height, and adjust and secure the upper lateral straps so that they do not bind the upper part of the support web to the load.

(9) Basket-hitch the 8-foot cargo sling to medium clevis assembly, and attach bolt end of clevis assembly to cargo bag suspension web D-rings. Tighten clevis assembly bolt.

(10) Combine free ends of the cargo sling to form a single loop, and attach loop to 3-foot sling. Connect free ends of the 3-foot sling with the link assembly. The 3-foot sling forms the apex for attachment to the cargo hook of the UH-1-series, CH-47, or UH-60 helicopter. Use large clevis to attach the 3-foot sling to the CH-54 helicopter cargo hook.

c. Preparation and Rigging When Using the Sling, Four-Leg, 23-Foot, Nylon and Chain; or the Sling Helicopter, Cargo Carrying External, Four-Leg Sling (Either the 10,000- or 25,000-Pound Capacity) to Rig Cargo Bag.

(1) Follow procedures in *b*(1) through *b*(8) above.

(2) When using any one of the described four-leg slings, three sling legs may be removed or taped together to prevent interference with the one leg that will be attached to the cargo bag.

(3) Clustered cargo bags may be transported using one sling leg attached to each cargo bag. When clustering, all sling legs must be the same length.

(4) Attach bolt end of medium clevis assembly to cargo bag suspension web D-rings. Tighten clevis assembly bolt.

(5) Pass the chain of one sling leg through the bell end of the clevis assembly. Adjust chain length by forcing the selected link in to the grab link or hook to form hitch.

(6) The 12-inch ring of the nylon and chain, four-

leg sling forms the apex for attachment to the helicopter cargo hook of the UH-1-series, CH-47, or UH-60 helicopters. Use large clevis to attach the 12-inch ring to the CH-54 helicopter cargo hook.

(7) The metal clevis of the sling, helicopter, cargo-carrying external, four-leg, forms the apex for attachment to cargo hooks on UH-1-series, CH-47, UH-60, or CH-54 helicopters. The helicopter must be centered over the load before tension is applied to load.

d. Time Required. Six persons can rig the load in approximately 15 minutes, using any of the described slings.

e. Derigging. Six persons can derig the load in approximately 5 minutes.

CHAPTER 6

EMERGENCY MOVEMENT BY HELICOPTER

6-1. General

a. This chapter provides procedures for emergency logistical movement (para 2-11, TM 34-45-51C) of the XM753 projectile, in M613 shipping and storage container, for military contingency or for logistic supply during periods of tension. It also provides for emergency evacuation of the weapon under political or military conditions of such nature hat noncompliance with portions of the nuclear and flight safety regulations is the only alternative to destruction of the weapon.

b. Emergency movement is authorized only in situations wherein the security of nuclear assets is endangered or emergency logistic movement is dictated by a pending regional or world crisis. Emergency movement will be approved and ordered by the theater commander.

c. Minimum spacing and numerical limits for nuclear weapons and class II nuclear components are necessary to prevent the possibility of nuclear material interaction and to minimize sympathetic detonation of high explosive components in the event of an accident. The requirements for minimum spacing between nuclear weapons and/or class II nuclear components, provided in section 4, TM 39-45-51A, must be scrupulously observed to prevent the possibility of nuclear material interaction.

d. If emergency logistic movement is directed, there may be an operational necessity to airlift dangerous items that should not be mixed, as indicated in table 2-1, TM 39-45-51C. Should this occur, the commander who ordered the emergency movement may waive the requirements of table 2-1.

NOTE

Tables and tiedown diagrams have not been developed for mixed loads of nuclear weapons or class II nuclear components. This, however, does not prevent the shipment of mixed loads if the limitations specified in TM 39-45-51A and TM 39-20-7 are adhred to.

6-2. Emergency Movement of M613 Containers as Helicopter Internal Loads

a. Materials and procedures for transport of the containers with projectiles are prescribed by paragraph 4-1.

b. A waiver is required (TM 39-20-7 and TM 39-45-51A) before more than four XM753 projectiles may be transported in a single group.

c. Tie down the M613 containers in accordance with the following figures and tables:

Helicopter	*Figure No.*	*Table No.*
CH-47	6-1	6-1
CH-54 universal military pod	6-2	6-2

Table 6-1. Tiedown Data for Maximum Load of Seven M613 Containers in CH-47 Helicopter

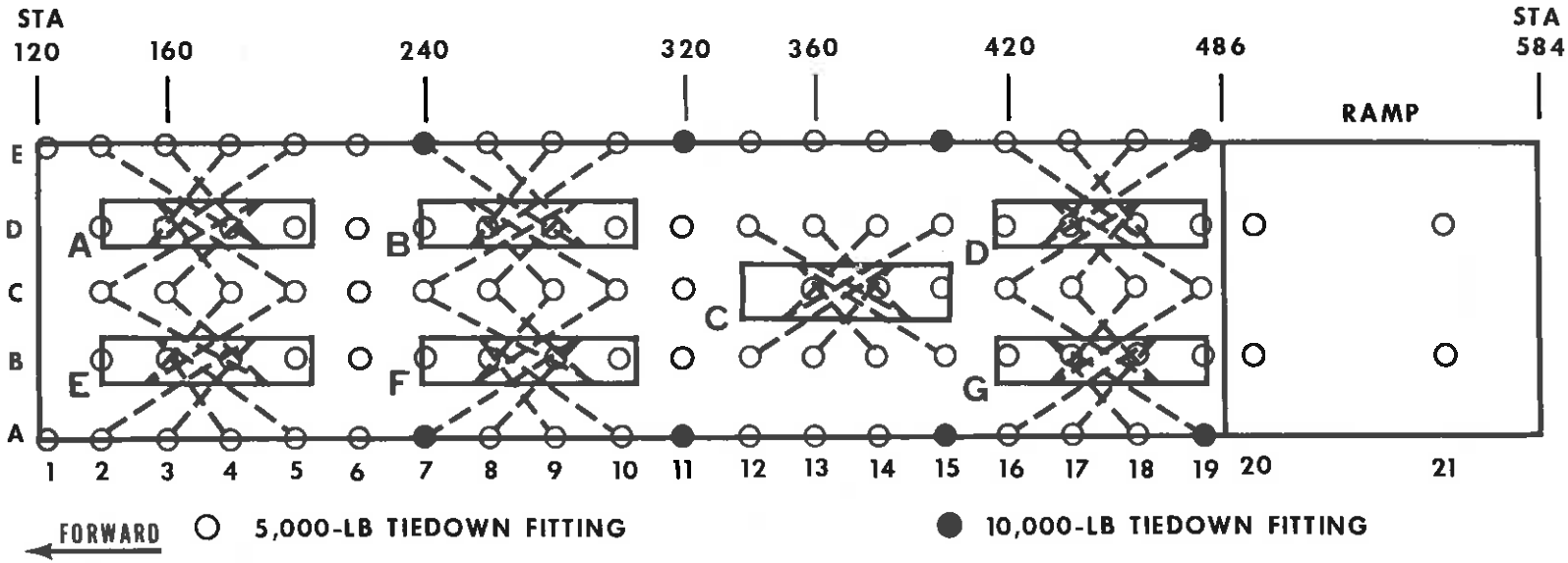
Item	*Tiedown fitting* designation	capacity in 1,000 lb	*Tiedown device** type	capacity in 1,000 lb	Attach to item
A	C2/C3	5	CGU-1/B	5	Through right rear tiedown handle.
	E2/E3	5	CGU-1/B	5	Through left rear tiedown handle.
	C4/C5	5	CGU-1/B	5	Through right front tiedown handle.
	E4/E5	5	CGU-1/B	5	Through left front tiedown handle.
B through G	Restrain each item in position shown in figure 6-1 and in manner prescribed for item A above.				

*MC-1 tiedown device may be used.

Table 6-2. Tiedown Data for Maximum Load of Eight M613 Containers in CH-54 Helicopter Universal Military Pod

Item	*Tiedown fitting* designation	capacity in 1,000 lb	*Tiedown device** type	capacity in 1,000 lb	Attach to item
A	D1/D2	5	CGU-1/B	5	Through right rear tiedown handle.
	F1/F2	5	CGU-1/B	5	Through left rear tiedown handle.
	D3/D4	5	CGU-1/B	5	Through right front tiedown handle.
	F3/F4	5	CGU-1/B	5	Through left front tiedown handle.
B through H	Restrain each item in position shown in figure 6-2 and in manner prescribed for item A above.				

*MC-1 tiedown device may be used.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

Figure 6-1. Tiedown diagram for maximum load of seven M613 containers in CH-47 helicopter.

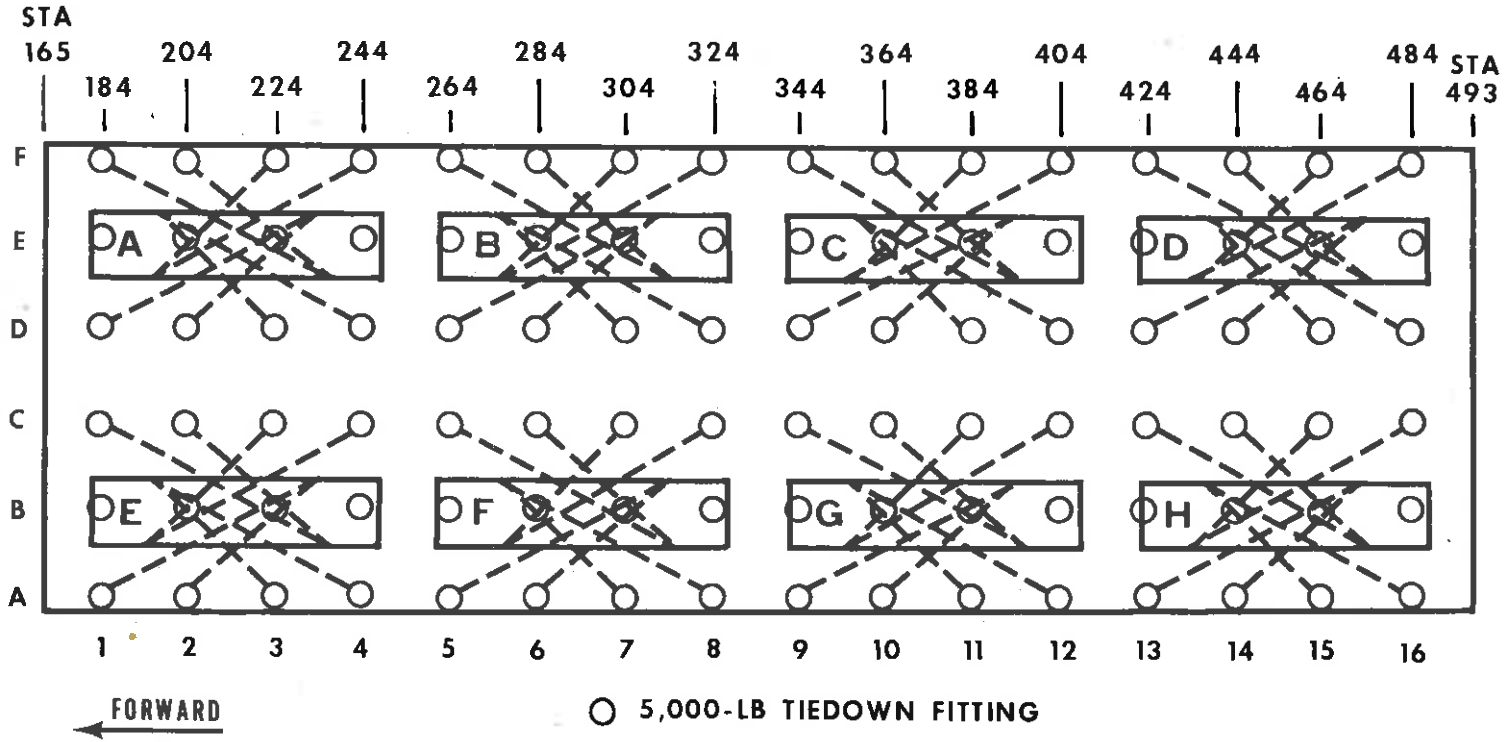


Figure 6–2. Tiedown diagram for maximum load of eight M613 containers in CH–54 helicopter universal military pod.

6-3. Emergency Movement of M613 Containers as Helicopter External Loads

NOTE

External loads have not been developed for maximum nuclear weapons or class II nuclear components. This, however, does not prevent such external loads if the limitations specified in TM 39-45-51A and TM 39-20-7 are adhered to and if the loads are justifiable and directed. Also applicable are the limitations for external transport by helicopter (chap 5).

a. Materials and procedures for transport of the XM753 projectile are prescribed by paragraphs 5-2 through 5-4.

b. External loads of the XM753 projectile must not exceed the rigging material capacities shown in chapter 5 or the helicopter capability.

c. A waiver is required (TM 39-20-7 and TM 39-45-51A) for the transport of more than three XM753 projectiles in a single group.

APPENDIX

REFERENCES

1. Publication Indexes

Department of the Army pamphlets of the 310-series should be consulted frequently for the latest changes or revisions of references given in this appendix and for new publications relating to material covered in this manual.

2. Army Regulations (AR)

10-16	US Army Nuclear and Chemical Agency
40-14	Control and Recording Procedures: Occupational Exposure to Ionizing Radiation
50-5	Nuclear and Chemical Weapons and Materiel: Nuclear Surety
(C)50-5-1	Nuclear and Chemical Weapons and Materiel: Nuclear Surety (U)
50-112	Safety Rules for Operations with the M753 Projectile
55-203	Movement of Nuclear Weapons, Nuclear Components, and Related Classified Non-nuclear Materiel
95-1	Army Aviation: General Provisions and Flight Regulations
95-27	Operational Procedures for Aircraft Carrying Dangerous Materials
360-5	Army Information: Public Information Policies
385-40	Accident Reporting and Records
700-65	Nuclear Weapons and Nuclear Weapons Materiel
740-1	Storage and Supply Activity Operations

3. Army Field Manuals (FM)

55-9	Unit Air Movement Plan
55-413	Aerial Recovery of US Army and Air Force Aircraft
55-450-1	Army Helicopter External Load Operations
100-50	Operations for Nuclear-Capable Units
101-20	US Army Aviation Planning Manual

4. Army Technical Bulletins (TB)

(SRD)9-1100-811-40	Security Classification of Nuclear Weapons Information (U)
385-2	Nuclear Weapons Firefighting Procedures

5. Army Technical Manuals (TM)

5-315	Fire Fighting and Rescue Procedures in Theaters of Operations
9-1110-220-10	Operator's Manual: XM753 Nuclear Projectile
9-1110-220-20	Organizational Maintenance, Including Repair Parts and Special Tools Lists, XM753 Nuclear Projectile; M754 Nuclear Projectile
9-1300-206	Ammunition and Explosives Standards
38-250	Packaging and Materials Handling: Preparation of Hazardous Materials for Military Air Shipment
39-0-1A	Numerical Index to Joint Nuclear Weapons Publications (Including Related Publications) (Army Supplement)
(SRD)39-20-7	Nuclear Safety Criteria (U)
(C)39-20-11	General Firefighting Guidance (U)
39-45-51	Transportation of Nuclear Weapons Materiel
(SRD)39-45-51A	Transportation of Nuclear Weapons Materiel (Supplement): Shipping and Identification Data for Stockpile Major Assemblies (U)

39-45-51C	Transportation of Nuclear Weapons Materiel (Supplement): Military Criteria for Shipment
(CRD)39-50-8	Emergency Destruction of Nuclear Weapons (U)
55-450-8	Air Transport of Supplies and Equipment: External Transport Procedures
55-450-11	Air Transport of Supplies and Equipment: Helicopter External Loads Rigged with Air-Delivery Equipment
55-450-12	Air Transport of Supplies and Equipment: Helicopter External Loads for Sling, Nylon and Chain, Multiple Leg
55-450-18	Air Transport of Supplies and Equipment: Internal and External Loads, CH-47 Helicopter
55-450-19	Air Transport of Supplies and Equipment: Helicopter External Lift Rigging Materiel, Techniques and Procedures
55-1520-209-10	Operator's Manual: Army Model CH-47A Helicopter
55-1520-210-10	Operator's Manual: Army Model, UH-1D/H and EH-1H Helicopters
55-1520-217-10-1	Operator's Manual: Army Model CH-54A Helicopters
55-1520-217-10-2	Operator's Manual: Army Model, CH-54B Helicopters
55-1520-227-10-1	Operator's Manual: Army Model CH-47B Helicopter
55-1520-227-10-2	Operator's Manual: Army Model CH-47C Helicopter
55-1520-237-10	Operator's Manual: UH-60A Helicopter

By Order of the Secretary of the Army:

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Major General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-31, requirements for UH-1D/H; CH-54A; CH-54B; CH-47B/C & D; UH-60A and DA Form 12-35, Section III, Weapon System requirements for Projectile M753 and DA Form 12-34B requirements for Air Transport Procedures: Nuclear Warheads and Projectiles.

* U.S. GOVERNMENT PRINTING OFFICE: 1983-605-040:289