

## CHAPTER 14

# AIRCRAFT LOADING AND UNLOADING PROCEDURES

After aircraft ordnance and ordnance accessories have been tested, they are approved for carriage and for release by a particular model aircraft. Information about ordnance and ordnance accessories can be found in the aircraft's Naval Air Training and Operating Procedures Standardization (NATOPS) flight/tactical manual. This manual is the basic authority for the types of ordnance and ordnance load combinations on each model aircraft. Deviation (change) from the basic authority must be approved before it can be made. The authority that approves deviations is the Naval Air Systems Command (NAVAIR).

The types of aircraft ammunition and armament equipment were covered in previous chapters. In this chapter, you will learn about loading and unloading ammunition and other armament equipment onto the aircraft.

### AIRBORNE WEAPONS/STORES LOADING MANUAL

**LEARNING OBJECTIVE:** *Identify requirements in airborne weapons/stores loading manuals as they pertain to loading and unloading aircraft ashore and afloat.*

The *Airborne Weapons/Stores Loading Manual*, known as the *Loading Manual*, standardizes loading procedures used throughout the Navy and Marine Corps. It improves safety and reliability in the loading of conventional weapons and airborne stores. You must follow the loading procedures in the *Loading Manual*. If there is a conflict between the *Loading Manual* and another publication, follow the procedures in the *Loading Manual* until NAVAIRSYSCOM solves the conflict.

The procedures in the *Loading Manual* are followed during aircraft loading. However, the physical size of the manual makes it impractical for use on the flight line. Therefore, the actual aircraft loading procedures for a weapon/store are condensed into an airborne weapons/stores checklist. An individual checklist is provided for each type of weapon/store to be loaded. This includes release and control system checks, retarded/nonretarded bombs, fire bombs,

pyrotechnics, and laser-guided bombs. Each member of the loading crew does **not** need a copy of a checklist during loading operations. However, crew leaders **MUST** use a checklist for the particular weapon/store being loaded. **Checklists are not complete guides. Only experienced crew leaders that have thorough knowledge and understanding of the loading manual need to use them.** Each checklist contains a required reading section that each member of the loading crew must understand before starting loading operations. To keep these loading manuals and checklists current, you should use the *Airborne Weapons/Stores Publication Index*, NAVAIR 01-700. This index provides activities with a guide that lists all existing changes or revisions for aircraft conventional weapons loading, release and control, airborne weapons support equipment (AWSE), chemical, and weapon assembly or disassembly checklists and manuals on hand. This publication index is updated quarterly.

### ASHORE, LPH, LHA, LHD, AND CV NATOPS MANUALS

**LEARNING OBJECTIVE:** *Identify the requirements in airborne weapons/stores loading manuals and the NATOPS manuals.*

The NATOPS manuals are issued by the authority of the Chief of Naval Operations (CNO) in conjunction with the Naval Air Training and Operating Procedures Standardization (NATOPS) program. The NATOPS manuals contain the best available operating instructions for most circumstances. The NATOPS is regulatory in nature; however, operational necessity may require modification of the procedures contained in it.

### TERMS

When you are involved in weapons loading and flight deck or flight line operations, there are certain weapons terms that you must know. Some of the more common terms are contained in Appendix I of this training manual.

## WEAPONS HANDLING PROCEDURES

Airborne weapons handling evolutions (loading/unloading) introduce a degree of risk into shore based and carrier based operations. They require careful planning and preparation. The necessity to train for and conduct combat operations creates risks that cannot be avoided when explosive weapons are handled.

### Weapons Loading and Downloading

The flight deck of an aircraft carrier is the preferred area to load or download an aircraft. Normally, the rearming area is adjacent to and aft of the island structure on the flight deck. When operationally necessary, however, the ship's commanding officer (CO) may authorize loading or downloading on the ship's bow while cyclic flight operations are in progress. Only a minimum quantity of weapons should be moved toward the ship's bow.

The CO may authorize loading limited amounts of weapons on the hangar deck when operationally necessary. However, this adds an additional risk of fire because there is both fuel and explosives in a confined area. Only aircraft scheduled for the next launch or an alert condition are authorized for loading on the hangar deck. Authorization is also restricted to the particular weapons shown in table 14-1.

According to the *CV NATOPS Manual*, fueling, loading and downloading weapons, and installing fuzes and arming wires simultaneously are authorized. However, you **can't** load forward-firing ordnance that requires simultaneous and/or prior electrical connections for loading while aircraft fueling is in progress. **Don't** make other electrical connections to weapons or remove/install impulse cartridges while aircraft are being fueled. **Don't** position the fuel hoses under the weapons/stores being loaded/downloaded.

When required, you may apply electrical power to the aircraft during a loading/downloading evolution. However, it should be held to a minimum, and it should be consistent with operational requirements. **Don't** apply electrical power to the armament or weapon release-and-control circuitry while weapons are being loaded/downloaded. Conduct loading/downloading weapons and oxygen servicing (other than the converter replacement at the aircraft) as separate evolutions.

## Arming and Dearming

Arm airborne weapons in the designated rearming area or the arming area. Generally, all weapons (except for forward-firing ordnance) are armed in the rearming area. This is done after engine turn up but before the aircraft is taxied. Weapons that are armed in the rearming area include retard/non-retard bombs, CBU's, and fire bombs. These arming functions are normally performed by the squadron's ordnance loading crew.

Aircraft loaded with forward-firing ordnance, such as aircraft guns, rockets, and missiles, are positioned in the arming area to arm the weapons. When the aircraft is located in the arming area, optimum safety is provided because the area directly in front of the aircraft is unobstructed by structures or personnel.

Arming functions are normally performed by the carrier air wing (CVW) arm and dearm crew (or MAG personnel on LFORM class ships) in the arming area under the supervision of the CVW ordnance officer. The crew is composed of ordnancemen from each squadron within the CVW. They are cross-trained and certified to arm and dearm all types of aircraft aboard the ship. The crewmembers work in their respective squadrons except during actual aircraft launch and recovery operations.

Airborne weapons are dearmed in the designated dearming area before or immediately after engine shutdown. All forward-firing ordnance is dearmed by the CVW arm and dearm crew before engine shutdown. All other ordnance is safed or dearmed by squadron ordnancemen in the dearming or rearming area after engine shutdown.

When arming or dearming an aircraft, aircraft arming and safing signals (tables 14-2 and 14-3) are used when crewmembers perform the arm and dearm procedures. These signals are used by both the squadron and CVW arm and dearm crews. Arming or dearming aircraft is conducted only when the aircraft is at a complete stop and control of the aircraft has been turned over to the arming crew supervisor.

### Hung or Unexpended Weapons

The CVW aircraft-dearming supervisor is always on the flight deck during recovery operations. By being there, he makes sure that the aircraft directors and the dearming crew coordinate their actions. The dearming supervisor tells the aircraft director which aircraft requires safing before it is taxied to the recovery spot.

Table 14-1.—Weapons Loading, Strikedown, Downloading, and Recovery Guide

WEAPON	HANGAR DECK		RECOVERY (8)	
	LOAD	STRIKEDOWN/ DOWNLOAD	UNEXPENDED	HUNG
General Purpose Bombs/LGB/JSOW/ AGM-154/JDAM	YES (1) (4)	YES (5)	YES (2)	YES (2)
2.75/5.00-inch Rocket Launchers (all)	NO	NO	YES	NO
Aircraft Parachute Flare (LUU-2B/B)	YES (10)	YES (10)	YES	YES
Tube Loaded Flare dispenser (loaded with LUU-2 flare)	YES (10)	YES (10)	YES	YES
20-MM Guns	YES	YES (6) (11)	YES	YES
25-MM Gun GAU-12	YES	YES (11)	YES	YES
Rockeye II/Gator	YES (4)	YES (5)	YES	YES
Sidewinders (all)	NO (3)	YES	YES	YES
HARM AGM-88A	NO (3)	YES (5)	YES	YES
Maverick AGM-65E/F	NO (3)	YES (5)	YES	YES
Harpoon AGM-84/SLAM AGM-84E	NO (3) (4)	YES (5) (12) (13)	YES (12)	YES (14)
Decoy Flare (all)	NO	NO	YES	YES
Torpedoes (all)	YES (4)	YES (5)	YES	YES
SUS (Mk 64)	YES	YES	YES	YES
TALD	YES	YES	YES	YES
Marine Marker (all)	YES	YES	YES	YES
Practice Bombs (all)	YES (4)	YES (5)	YES	YES
JAU-22/B and JAU-22/B Cartridge	YES	YES (8) (9)	YES	YES
Sparrow III	NO (3) (4)	YES (5)	YES	YES
Walleye Weapon (all)	YES (4)	YES (5)	YES (15)	YES (15)
Phoenix AIM-54 (all)	NO (3)	YES (5)	YES	YES
Mines (all)	YES (4)	YES (5)	YES	YES
GBU-24	YES (4)	YES (5)	NO (7)	NO (7)
Chaff (w/cartridges)	YES	YES	YES	YES

**Table 14-1.—Weapons Loading, Strikedown, Downloading, and Recovery Guide—Continued**

Notes:

1. No mechanical nose fuzes shall be installed on the hangar deck.
2. Arming wires/safety clips intact.
3. Air launched missiles shall not normally be loaded on the hangar deck except when operational commitments so dictate. Commanding officers may authorize loading of missiles on the hangar deck only up to the point of mechanical attachment of the weapon to the launcher/rack in accordance with the procedures prescribed in the appropriate NAVAIR weapon/store loading checklists.
4. Ejector cartridges shall not be installed on the hangar deck. Installation of ejector/jettison cartridges in the BRU-9/-10/-11 ejector bomb rack is authorized provided the rack is electrically disconnected and either the mechanical safety pin is installed or the IFOBRL mechanism is locked.
5. In the event of strikedown of a loaded aircraft to the hangar deck, the nose fuzes (as applicable) and ejector/jettison cartridges shall be removed immediately after the aircraft is in spot and tied down. Ejector/jettison cartridges may remain in the BRU-9/-10/-11 ejector bomb rack is authorized provided the rack is electrically disconnected and either the mechanical safety pin is installed or the IFOBRL mechanism is locked.
6. The M61A1 gun ammunition is exempt from downloading requirements for up aircraft temporarily spotted in the hangar decks and aircraft undergoing limited maintenance; that is, turnaround maintenance, providing compliance with all gun dearm procedures of the airborne weapon/store loading manual, associated check-lists, and store reliability card has been accomplished.
7. Guidance provided in this figure is subjected to individual aircraft tactical manual limitations.
8. Maintenance on-loaded aircraft (Chapter 6 of NAVAIR 00-80T-105) applies.
9. Sonobuoy chutes P-2 shall be downloaded immediately after aircraft is in spot and tied down.
10. Impulse cartridges must be removed for LUU-2 and dispenser with LUU-2.
11. Strikedown/download of aircraft jammed 20-MM/25-MM guns and gun pods is prohibited.
12. If an ITL signal has been initiated for a Harpoon/SLAM weapon, that weapon shall be treated as a hung weapon during recovery, downloading, and strikedown aboard ship.
13. An aircraft with ITL weapons aboard shall not be removed from the flight deck to the hangar deck until all ITL weapons have been downloaded.
14. When operationally feasible, aircraft shall be kept airborne for 35 minutes following an ITL abort/failure. Respot of an ITL aircraft is prohibited during peacetime operations until 2.5 hours have elapsed after the ITL abort/failure. Down load prior to completion of the 2.5 hour waiting period is authorized provided that the missile is moved to a safe area on the flight deck with the nose oriented outboard over the deck edge.

**WARNING**

Initiation of the ITL signal activates a battery within Harpoon/SLAM. With battery power available within the missile, electrical shorts occurring during aircraft recovery and /or while disconnecting the missile umbilical from the aircraft may actuate the missile engine/pyrotechnics. Battery voltage will remain sufficiently high to allow engine start for up to 35 minutes following ITL and to fire missile launch squibs within Harpoon/SLAM for up to 2.5 hours following ITL.

15. Walleye II loaded on F/A-18 is non-recoverable.

Table 14-2.—Aircraft Arming Signals

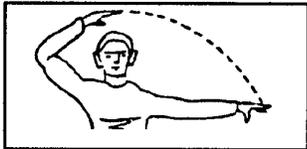
SIGNAL		MEANING	RESPONSE
DAY	NIGHT		
<p>1 ARMING SUPERVISOR: HANDS OVER HEAD WITH FINGER TIPS TOUCHING.</p> 	<p>RED BANDED WANDS OVERHEAD WITH TIPS TOUCHING.</p>	<p>PILOT/COPILOT/NFO: CHECK ALL ARMAMENT SWITCHES OFF OR SAFE.</p>	<p>PILOT/COPILOT/NFO: RAISE BOTH HANDS INTO VIEW OF ARMING SUPERVISOR AFTER CHECKING SWITCH POSITIONS. (HANDS REMAIN IN VIEW DURING CHECK AND HOOKUP).</p>
<p>2 ARMING SUPERVISOR: ONE HAND OVER HEAD; POINT TO ARMING CREWMEMBERS WITH OTHER HAND.</p> 	<p>SAME AS DAY BUT WITH RED BANDED WANDS.</p>	<p>ARMING CREW: PERFORM STRAY VOLTAGE CHECKS.</p>	<p>ARMING CREW: GIVE "THUMBS UP" TO ARMING SUPERVISOR IF NO STRAY VOLTAGE EXISTS. "THUMBS DOWN" INDICATES STRAY VOLTAGE PROBLEMS.</p> <p>NIGHT: VERTICAL SWEEP WITH FLASHLIGHT INDICATES NO STRAY VOLTAGE. HORIZONTAL SWEEP INDICATES STRAY VOLTAGE.</p>
<p>3 ARMING SUPERVISOR: RAISE FIST, EXTENDED UPWARD TO MEET HORIZONTAL PALM OF OTHER HAND.</p> 	<p>FORM A TEE RED BANDED WANDS.</p>	<p>ARMING CREW: ARM WEAPONS (AS APPLICABLE).</p>	<p>ARMING CREW: GIVE ARMING SUPERVISOR "THUMBS UP" WHEN ARMING COMPLETED AND CLEAR IMMEDIATE AREA. "THUMBS DOWN" IF MALFUNCTION EXISTS.</p> <p>NIGHT: VERTICAL SWEEP WITH FLASHLIGHT INDICATES ARMING COMPLETED. HORIZONTAL SWEEP INDICATES MALFUNCTION.</p>
<p>4 ARMING SUPERVISOR: RAISE BOTH HANDS WITH FINGERS POINTING TO SOUND ATTENUATORS.</p> 	<p>SAME AS DAY. TIPS OF RED BANDED WANDS TOUCHING SOUND ATTENUATORS.</p>	<p>ARMING CREW: PERFORM MISSILE CHECK.</p>	<p>PILOT: GIVE ARMING SUPERVISOR "THUMBS UP" IF TONE IS HEARD. "THUMBS DOWN" IF NO TONE.</p> <p>NIGHT: SAME AS SIGNAL 3 ABOVE.</p>

Table 14-2.—Aircraft Arming Signals—Continued

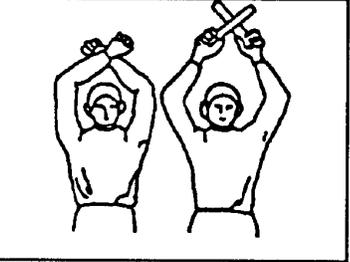
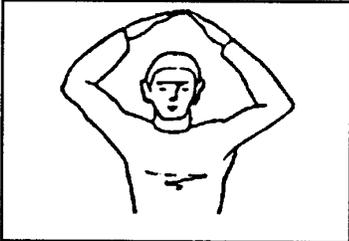
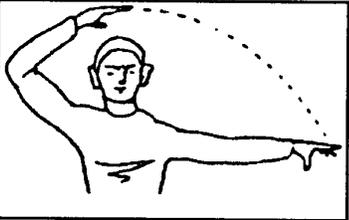
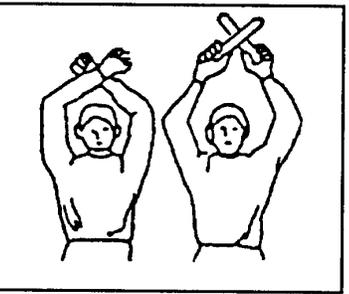
SIGNAL		MEANING	RESPONSE
DAY	NIGHT		
<p>5 ARMING SUPERVISOR: INSERT FINGER OF ONE HAND INTO CLENCHED FIST OF OTHER HAND AND GIVE EXTRACTING MOTION.</p> 	<p>TOUCH TIPS OF RED BANDED WANDS IN FRONT OF BODY. THEN MOVE ONE WAND LATERALLY IN A SWEEPING MOTION.</p>	<p>ARMING CREW: REMOVE BOMB RACK/PYLON SAFETY PINS.</p>	<p>ARMING CREW: SHOWS PINS TO ARMING SUPERVISOR AND CLEAR IMMEDIATE AREA.</p> <p>NIGHT: SAME AS SIGNAL 3 ABOVE.</p>
<p>6 ARMING SUPERVISOR: GIVE PILOT (A) THUMBS UP.</p>  <p>(B) THUMBS DOWN.</p> 	<p>(A) VERTICAL SWEEP WITH RED BANDED WAND.</p> <p>(B) HORIZONTAL SWEEP WITH RED BANDED WAND.</p>	<p>PILOT: (A) AIRCRAFT ARMED AND ALL PERSONNEL AND EQUIPMENT CLEAR.</p> <p>(B) AIRCRAFT DOWN FOR WEAPONS.</p>	<p>PILOT: (A) ACKNOWLEDGE WITH SIMILAR SIGNAL.</p> <p>(B) ACKNOWLEDGE WITH SIMILAR SIGNAL.</p>
<p>7 ARMING SUPERVISOR/ OBSERVER: CROSSED ARMS OVERHEAD, FISTS CLENCHED.</p> 	<p>CROSSED STANDARD RED WANDS HELD OVERHEAD.</p>	<p>SUSPEND ALL ARMING/ SAFETY OPERATIONS ON AIRCRAFT.</p>	<p>SUSPEND ARMING AND AWAIT FURTHER INSTRUCTIONS.</p>

Table 14-3.—Aircraft Safing Signals

SIGNAL		MEANING	RESPONSE
DAY	NIGHT		
<p>1 SAFING SUPERVISOR: HANDS OVER HEAD WITH FINGER TIPS TOUCHING.</p> 	<p>RED BANDED WANDS OVERHEAD WITH TIPS TOUCHING.</p>	<p>PILOT/COPILOT/NFO: CHECK ALL ARMAMENT SWITCHES OFF OR SAFE.</p>	<p>PILOT/COPILOT/NFO: RAISE BOTH HANDS INTO VIEW OF SAFING SUPERVISOR AFTER CHECKING SWITCH POSITION. (HANDS REMAIN IN VIEW DURING SAFING.)</p>
<p>2 SAFING SUPERVISOR: ONE HAND OVER HEAD, POINT TO SAFING CREWMEMBER WITH OTHER HAND.</p> 	<p>SAME AS DAY BUT WITH RED BANDED WANDS.</p>	<p>SAFING CREW: SAFE WEAPONS (AS APPLICABLE).</p>	<p>SAFING CREW: AFTER SAFING, GIVE SAFING SUPERVISOR "THUMBS UP" AND MOVE CLEAR OF AIRCRAFT.</p> <p>NIGHT: VERTICAL SWEEP WITH FLASHLIGHT WHEN SAFING IS COMPLETE.</p>
<p>3 SAFING SUPERVISOR/ OBSERVER: CROSSED ARMS OVERHEAD, FISTS CLENCHED.</p> 	<p>CROSSED STANDARD RED WANDS HELD OVERHEAD.</p>	<p>SUSPEND ALL ARMING/ SAFETY OPERATIONS ON AIRCRAFT.</p>	<p>SUSPEND SAFING AND AWAIT FURTHER INSTRUCTIONS.</p>

At times, aircraft return to the ship with hung or unexpended weapons. When this happens, the flight leader advises cognizant personnel aboard ship of the total quantity and type of hung or unexpended weapons on aircraft in that flight. As each of these aircraft approaches the ship, the air officer (air boss) announces the model and type of weapon problem over the flight deck announcing system.

After landing with hung weapons and/or forward-firing weapons, the aircraft is normally safed after taxiing clear of the landing area. However, at the discretion of the air officer, it may be safed in the landing area. Aircraft returning with unexpended weapons should be safed according to normal procedures.

### REVIEW NUMBER 1

- Q1. *If you want to find information on aircraft ordnance and ordnance accessories, you should \_\_\_\_\_ refer \_\_\_\_\_ to \_\_\_\_\_.*
- Q2. *To what authority should you submit a change to or request a deviation from a NATOPS flight or tactical manual?*
- Q3. *What command resolves conflicts between weapons/stores loading manuals and other publications?*
- Q4. *NATOPS manuals are issued by the \_\_\_\_\_.*
- Q5. *At sea, the responsibility for dearming forward-firing ordnance belongs to the \_\_\_\_\_.*

### BOMB LOADING AND UNLOADING PROCEDURES

LEARNING OBJECTIVE: *Identify the procedures used to load and unload bombs.*

As an AO, you will load ammunition on many different models of aircraft. However, the general loading and unloading procedures for most aircraft are similar. The procedures contained in this chapter don't cover every step of weapon preparation and loading. These procedures will give you basic information about representative types of ordnance that you might load in an operating squadron. The aircraft loading and unloading procedures covered in this section are

general, and they are limited to aircraft bombs. When loading practice bombs, you should handle them just like live ordnance, and you must use the appropriate checklist.

Before loading bombs onto an aircraft, you must prepare and inspect the aircraft. Step-by-step procedures must be carefully followed. These procedures are found in the applicable manuals.

### AIRCRAFT PREPARATION AND INSPECTION

The first step you should take when loading bombs onto parent racks and improved multiple ejector racks/improved triple ejector racks (IMERS/ITERS) is to make sure that the preloading release and control checks have been performed. Then make sure the aircraft is in the rearming area, and stations you are to load are accessible. You need to make sure that the aircraft is properly grounded.

**NOTE:** Electrical power may be applied to the aircraft during loading/unloading evolutions, but power is to be held to a minimum. The step "if applicable, power removed" may be omitted when operational requirements dictate that a power requirement is necessary. However, unless a step procedure in the checklist calls for power, don't energize the armament circuits. Remove power from the aircraft if the step "power removed" is not preceded by "if applicable."

If applicable, make sure that electrical power is removed from the aircraft. Also, make sure the aircraft is properly grounded. Ground the aircraft by using an authorized ground cable connected to a certified ground eyelet or a common static ground. Next, connect the cable to an authorized ground receptacle or unpainted surface of the aircraft. You should refer to *Electrical Grounding for Aircraft Safety, MIL-HDBK-247 (AS)*, for further information on aircraft grounding.

Ensure, if applicable, that safety pins are installed in all loaded parent racks, and verify that all cockpit armament selectors are in the OFF or SAFE position.

Next, open the pylon access doors on all parent stations to be loaded. Verify that the cartridges are removed from the breech chambers and the auxiliary release unit. Retract the sway braces to the full up position, retract the ejector foot to the full up position, and open all suspension hooks.

## REVIEW NUMBER 1 ANSWERS

- A1. *To find information on aircraft ordnance and ordnance accessories, you should refer to the applicable NATOPS flight/tactical manuals.*
- A2. *A change to or request for a deviation from a NATOPS flight or tactical manual should be submitted to the Naval Air Systems Command (NAVAIR).*
- A3. *NAVAIRSYSCOM resolves conflicts between weapons/stores loading manuals and other publications.*
- A4. *The Chief of Naval Operations (CNO) issues NATOPS manuals.*
- A5. *At sea, the responsibility for dearming forward-firing ordnance belongs to the CVW arm/dearm crew.*

If you are going to load an IMER/ITER, verify that an adapter connector and an electric fuze adapter harness (if applicable) are installed. Also, make sure the pullout bails are attached to the bail bar.

The following information will give you some idea of the steps you would follow to prepare or inspect an IMER/ITER for loading. Visually inspect the parent rack to ensure a safety pin is installed and the rack is locked. Make sure the parent rack breech caps are removed, the cartridges are not installed, and the parent rack sway braces and ejector foot are properly adjusted and positioned. Also, there should be an adapter connector installed in the aircraft and connected to the IMER/ITER with the pullout bail attached to the bail bar.

If electric fuzing is used, you need to check that an electric fuze adapter harness is installed and connected to the IMER/ITER. If applicable, make sure the pullout bail is attached to the bail bar. Then, disconnect the breech caps and verify that the cartridges are removed from all ejector units. Make sure the breech caps are positioned to prevent damage during weapons loading. Then, open all suspension hooks. Adjust the inboard sway braces to the diameter of the weapon. Adjust all other sway braces to the full up position. Finally, retract the ejector feet to the full up position.

## WEAPON INSPECTION

All weapons must be inspected before you can load them. If they don't meet the inspection criteria, you must reject them and notify the proper authority.

## WEAPONS LOADING

The method you use to load retard or non-retard bombs depend on the weight and configuration of the bombs and the operational commitments. For example, you can load a 500-pound bomb onto the rack of an IMER/ITER by using the HLU-196/E bomb-hoisting unit. But remember you are authorized to manually load most weapons or stores weighing 1,000 pounds or less with manual hoisting bars. To meet rearming requirements of high-tempo cyclic operations, you would normally use manual hoisting bars to load individual retard or non-retard bombs that weigh 1,000 pounds or less. Weapons weighing over 1,000 pounds are normally loaded with the HLU-196/E bomb-hoisting unit.

When the rack is ready to be loaded, position the weapon and the handling and loading equipment under the loading station. If applicable, prepare the weapon for bomb hoist loading by installing a hoisting sling on the bomb for single store hoisting. Then, you can install the bomb hoist on the rack and attach the hoist cable to the hoisting sling. Remove slack from the cable by operating the hoist. (Remember that one person is positioned at the front and one at the tail of the weapon to steady it while it is being hoisted.) Remove the tie-down straps that secure the weapon to the handling equipment.

If applicable, install a manual hoisting bar for manual loading by installing the HLU-256/E manual hoisting bar in the fuze well. Then, remove the weapon tie-down straps that secure the weapon to the handling equipment.

Now, the bomb hoist can be used to load the weapon.

If you use an electric fuze, hoist the weapon to about 10 inches below the rack. Connect the Mk 122 arming safety switch quick-disconnect connector (fig. 14-1) to the racks arming receptacle. Then, continue to hoist the weapon until both suspension lugs enter the suspension hooks, and the hooks latch. Visually inspect the hook lock indicators on parent racks for a hook locked indication on each set of hooks being used. Slack the hoist cable and shake the weapon gently to make sure the suspension hooks on the IMER/ITERs lock safety stop levers support it.

When you have finished loading the weapon on the rack, remove the manual hoisting bar or the bomb-hoisting unit. Then you can adjust the sway braces by taking the following actions:

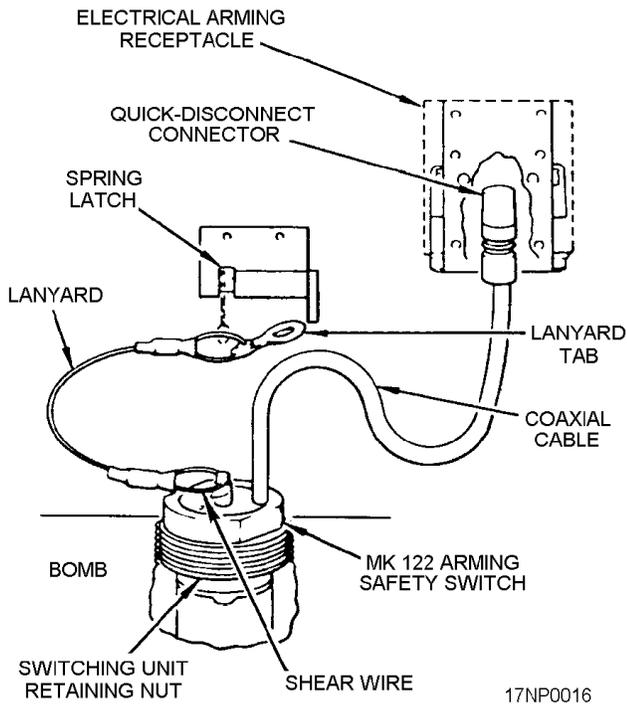


Figure 14-1.—Mk 122 arming safety switch.

**NOTE:** Unused sway braces should remain in the full up position with the jam nuts tightened.

- Adjust the sway brace adjusting screws until the sway brace pads contact the weapon.
- Simultaneously tighten the forward right and aft left sway brace screws one-quarter turn with a suitable wrench.
- Simultaneously tighten the forward left and aft right sway brace screws one-quarter turn.

**NOTE:** If all sway brace screws cannot be tightened one-quarter turn on final tightening, ensure the same amount of turn is applied to each sway brace screw. The total tightening of each sway brace screw should not exceed one-half turn.

- Tighten the jam nuts with a suitable wrench.

Next, you should adjust the ejector foot down until it makes contact with the weapon. Then back off to the first detent.

Then, if applicable, install the nose fuze or TDD.

Once fuzes are installed, you can install cartridges in all loaded IMER/ITER breech chambers. Screw the breech caps on all IMER/ITER breech chambers and hand tighten the breech caps. Verify that unloaded

IMER/ITER suspension hooks are open. Place a WEAPON LOADED sign in the cockpit. Remove tools and handling or loading equipment from the area.

Weapons are loaded on an IMER/ITER in much the same way as on a parent station. The major differences are as follows:

- After the weapon lugs have engaged the rack suspension hooks, the safety stop lever must be locked.
- The ejector foot must be positioned down against the weapon.

## POSTLOADING QUALITY ASSURANCE INSPECTION

A certified quality assurance inspector (QAR) performs the postloading quality assurance inspection after loading and fuzing is complete. A postloading quality assurance inspection makes sure that weapons are properly loaded and no procedural steps were omitted.

## REARMING AREA (BEFORE ENGINE TURN UP)

There aren't many procedures for you to carry out in the rearming area (before engine turn up). You will remove the WEAPON LOADED sign from the cockpit, and close and secure access doors. Normally, these procedures are performed at the same time as the pilot's aircraft walk around inspection before manning the aircraft.

## REARMING OR ARMING AREA (AFTER ENGINE TURN UP)

The procedures performed in the rearming area or arming area (after engine turn up) are done after the engine start and normally after the plane captain completes the pretaxi signals. Stations loaded with bomb-type ammunition and other stores are normally armed in the arming area. All forward-firing ordnance **must** be armed in the arming area. Final arming of bomb-type ammunition requires that a safety person be positioned in view of the pilot. The safety person notifies the pilot of the intention to remove safety pins, and ensures that the pilot places his hands in full view. When this is done, a member of the arming crew removes the safety pins from the racks. Finally, a crewmember unlocks the IMER/ITER safety stop levers.

## **DEARMING OR REARMING AREA (IMMEDIATELY AFTER ENGINE SHUT DOWN)**

Dearming procedures are performed after aircraft landing or ground abort. Aircraft bombs are normally dearmed in the rearming area. However, if the aircraft has missiles or rockets aboard, they are safed in the designated dearming area.

### **WARNING**

**Do not attempt to disarm a partially or fully armed fuze. Notify the proper authority (EOD). If any component is missing, loose, or damaged, notify the proper authority. If an arming wire is not installed in the fuze or arming device, the fuze or arming device may be armed. You should notify the proper authority.**

The first step you take when dearming an aircraft is to make sure the fuzes or arming devices or firing mechanisms are safe and arming wires are installed through fuze vanes and pop-out pins, as applicable. Then, inspect the weapons for missing, loose, or damaged components. If an IMER/ITER is involved, position the safety stop levers to lock on loaded racks. Install the safety pins in loaded stations.

**NOTE:** If an aircraft returns with unexpended ordnance, a WEAPON LOADED sign must be placed in the cockpit.

Check that all cockpit armament switches are OFF, SAFE, or NORM. As applicable, remove arming wires, lanyards, or lanyard tabs from empty stations. Finally, report the status of the aircraft to the proper authority.

## **UNLOADING PROCEDURES**

Before you unload a weapon from the rack, the aircraft should be in the rearming area. Make sure that electrical power to the aircraft is removed, and the aircraft is properly grounded. Verify the following: all cockpit armament switches are OFF or SAFE; that safety pins are installed in all loaded racks. Finally, if an IMER/ITER is being unloaded, verify that the safety stop lever is locked on each loaded ejector unit.

Now you can open the pylon access doors. If unloading an IMER/ITER (with a weapon) from the rack, remove the breech caps from the breech chambers, the cartridges from the breech chambers, position the breech caps to prevent damage during

unloading, and disconnect the adapter connector, and, if applicable, the electric fuze adapter harness from the IMER/ITER.

### **WARNING**

**Do not remove a fuze or arming wire that was not installed during loading procedures. Do not remove an arming wire unless the fuze safety pin or device is installed.**

Ensure that the M904E3/E4 fuze is safe by verifying the installation of the arming wire in the arming wire guide and the arming vane. Make sure you can't see a black letter A against a red background in the upper (external) window. If the arming delay isn't set on 6 or 18 seconds, the upper (external) window should be vacant. If the arming delay is set on 6 or 18, you should see matching numbers on a green background in the window. Then, you can install a safety wire through the arming wire guide and the arming vane.

### **WARNING**

**If the arming wire is not in place or if the upper (external) window indication is a black letter A against a red background, the fuze is armed. Do not attempt to change the arming delay settings to disarm the fuze, or to remove the fuze from the bomb. Notify the proper authority (EOD) when an armed or partially armed condition is indicated.**

### **WARNING**

**If a green background without the number 6 or 18 appears in the upper (external) window when the arming delay is set on 6 or 18, or if the number in the upper (external) window does not match the arming delay setting number, the fuze is partially armed. Notify the proper authority.**

Other actions you should take when unloading weapons include checking to see that the arming wire is installed in the pop-out pin for electric fuzes. If an electric fuze was used, you need to disconnect the Mk 122 arming safety switch lanyard tab from the spring latch. Then, if applicable, install the fin release band safety (cotter) pin. Disconnect the fin release wires, lanyards, and arming wires from the aircraft.

If applicable, you can remove the M904E3/E4 fuzes by installing a safety wire, and then removing the

arming wire and removing the fuze from the bomb. After you have removed the fuze, make sure the lower window is vacant or dark colored. Set the arming delay to 6 or 18 seconds. Then, make sure a green background with a white number 6 or 18, depending on the arming delay setting, appear in the upper window. The lower window must remain vacant or dark colored.

### WARNING

**If the lower window is red or has a black letter A against a red background, the fuze is armed. Notify the proper authority (EOD).**

**NOTE:** Each fuze must be checked for safety on the 6- or 18-second arming delay setting before it is returned to the weapons division.

Now you're ready to position the handling or loading equipment under the station you want to unload. As applicable, install a manual hoisting bar or a bomb-hoisting unit. Retract the ejector foot to the full up position. Then, retract the sway braces to the full up position. Position the required number of personnel at the front and at the tail of the weapon to steady and guide the weapon onto the bomb handling equipment. Raise the weapon until the suspension lugs float in the hooks. Remove the rack safety pin, or move the IMER/ITER safety lock lever from lock to unlock, as appropriate. Operate the manual release to open the suspension hooks and lower the weapon onto the handling or loading equipment. If an electrically fuzed bomb is being unloaded, lower the weapon approximately 4 inches, and then disconnect the Mk 122 arming safety switch quick-disconnect connector from the rack. Then, you can lower the weapon to the handling or loading equipment. Properly secure the weapon to the handling or loading equipment.

When all weapons have been unloaded, remove the WEAPON LOADED sign from the cockpit. Then, remove all weapons and handling or loading equipment from the area. Finally, report the status of the aircraft to the proper authority.

### REVIEW NUMBER 2

- Q1. *During a weapons inspection, you find a weapon or component that doesn't meet inspection criteria. What is the first step you should take?*
- Q2. *What is the maximum weight you are authorized to manually load/download?*

- Q3. *When manually loading GP bombs, what hoisting bar should you use?*
- Q4. *If a sway brace on a bomb rack isn't being used, it should remain in what position?*
- Q5. *What is the maximum tightening range of a sway brace screw?*
- Q6. *When you begin dearming an aircraft, what is the first step you should take?*

### SAFETY PRECAUTIONS

**LEARNING OBJECTIVE:** *Recognize the safety precautions to follow when loading or unloading aircraft.*

Safety precautions were given in this chapter as WARNINGS, CAUTIONS, and NOTES. However, there is other safety precautions that you should observe when loading or handling aircraft bombs and practice bombs. A few of these safety precautions are as follows:

- Before removing aircraft bombs from the weapons staging area, verify that the bombs are properly secured to the handling equipment.
- Aboard ship, when the bombs are delivered to the aircraft for loading, they must be positioned fore and aft to help prevent inadvertent movement of the handling equipment by the side-to-side roll of the ship.
- Once bombs have been delivered to the aircraft, a person must remain in the immediate area. Bombs must not be left on the flight deck unattended.
- Never attempt to load/download bombs without sufficient personnel.
- When installing signal cartridges in practice bombs, never assemble more bombs than are needed for the next event. When the day's flight schedule has been completed, practice bomb signals must be removed from practice bombs before returning them to storage.
- Because of the nonexplosive nature of practice bombs, AOs have a tendency to be lax when handling and loading practice bombs. Remember, a Mk 76 practice bomb weighs 25 pounds and could cause severe injury if dropped on a person's foot or hand. Additionally, when a practice bomb signal is installed and the bomb is accidentally dropped, sufficient fire and metal

fragments can be ejected from the tube to cause severe personal injury.

For further information concerning flight deck operational procedures, you should refer to the *NATOPS Manual*, NAVAIR 00-80T-105, and the *LHA, LPH, LHD NATOPS Manual*, NAVAIR 00-80T-106.

### REVIEW NUMBER 3

- Q1. What maximum amount of subcaliber practice bombs should be assembled at any one time?*
- Q2. When loading certain bombs, AOs tend to be careless and get injured. What type of bombs usually causes this attitude?*

### REVIEW NUMBER 2 ANSWERS

- A1. During a weapons inspection, you find a weapon or component that doesn't meet inspection criteria. You should reject the weapon, and notify the proper authority.*

- A2. You are authorized to manually load up to 1,000 pounds.*
- A3. When manually loading GP bombs, you should use the HLU-256/E hoisting bar.*
- A4. If a sway brace on a bomb rack isn't being used, it should remain in the fully up position with the jam nuts tightened.*
- A5. The maximum tightening range of a sway brace screw is not to exceed one-half turn.*
- A6. When you begin dearming an aircraft, the first step you should take is to make sure fuzes or arming devices or firing mechanisms are in a safe condition. Also, install arming wires through the fuze vanes and pop-out pins.*

### REVIEW NUMBER 3 ANSWERS

- A1. Only assemble the amount of practice bombs needed for the next event at any one time.*
- A2. When loading certain bombs, AOs tend to be careless and get injured. Practice bombs usually cause this attitude.*

