CHAPTER 14

AIRCRAFT LOADING AND UNLOADING PROCEDURES

After aircraft ordnance and ordnance accessories have been tested, they are approved for carriage and 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 provides basic information 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. Commander, Naval Air Systems Command (NAVAIR) is the approval authority for deviations.

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

LEARNING OBJECTIVES

When you have completed this chapter, you will be able to do the following:

1. Identify requirements in airborne weapons/stores loading manuals as they pertain to loading and unloading aircraft ashore and afloat.
2. Identify the requirements in the NATOPS manual as they pertain to loading and unloading aircraft ashore and afloat.
3. Identify the procedures used to load and unload bombs.
4. Identify the procedures used to load and unload missiles.
5. Recognize the safety precautions to follow while loading or unloading aircraft.

AIRBORNE WEAPONS/STORES LOADING MANUAL

The Airborne Weapons/Stores Loading Manual, known as the loading manual, standardizes loading procedures used throughout the Navy and Marine Corps. The manual improves safety and reliability in the loading of conventional weapons and airborne stores. The loading procedures in the loading manual must be followed. If there is a conflict between the loading manual and another publication, the procedures in the loading manual should be followed until NAVAIR 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. The checklist includes release and control system checks, retarded/nonretarded bombs, fire bombs, pyrotechnics, guided bomb units, air-launched missiles, aircraft guns, practice bombs, and inert dummy ammunition. Each member of the loading crew does not need a copy of a checklist during loading operations. However, team leaders MUST use a checklist for the particular weapon/store being loaded. Checklists are not complete guides. Only ordnance certified team leaders that have thorough knowledge and understanding of the loading manual should 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, the Airborne Weapons/Stores Publication Index, NAVAIR-01-700 should be used. The 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); chemicals; weapon assembly or disassembly checklists; and manuals on hand. The publication index is updated quarterly.

**NATOPS Manuals**

The Ashore, Amphibious Assault Ship General Purpose (LHA)/Amphibious Assault Ship Multipurpose (LHD) manual, NAVAIR 00-80T-106, and Aircraft Carriers Nuclear (CVN) NATOPS manual, NAVAIR 00-80T-120, are issued by the authority of the Chief of Naval Operations (CNO) and under the direction of the NAVAIR in conjunction with the NATOPS program. The NATOPS publications provide the best available operating instructions for most circumstances. However, no manual can cover every situation or be a substitute for sound judgment; operational situations may require modification of the procedures contained in it. These publications should be read from cover to cover. It is the users’ responsibility to have a complete knowledge of their contents.

**Terms**

When involved in weapons loading and flight deck or flight line operations, there are certain weapons terms that must be known. Some of the more common terms are contained in the appendix section 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. The weapons 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.

Compliance with the weapon requirements contained in the ordnance load plan demands close coordination between the aircraft handling group, ships ordnance group, and air wing ordnance personnel.

**Weapons Loading and Downloading**

The flight deck of air-capable ships such as CVNs, LHAs, and LHDs is the preferred area to load or download an aircraft.

Loading is permitted while recovery of aircraft is in progress. However, all efforts should be made to ensure the movement of ordnance does not impede the safe and efficient recovery and movement of aircraft. Only a minimum quantity of weapons should be moved toward the ship’s bow during recovery operations.

The commanding officer (CO) may authorize loading limited amounts of weapons on the hangar deck when operationally necessary. However, hangar deck loading 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.
<table>
<thead>
<tr>
<th>WEAPON</th>
<th>HANGAR DECK</th>
<th>RECOVERY (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LOAD</td>
<td>STRIKEDOWN/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DOWNLOAD/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DOWNLOAD</td>
</tr>
<tr>
<td>General Purpose</td>
<td>Yes (1) (3)</td>
<td>Yes (1)(3)</td>
</tr>
<tr>
<td>Bombs/Precision Guided Munitions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guided bomb Unit (GBU)-24 B/B: E/B</td>
<td>Yes (1) (3)</td>
<td>Yes (1) (3)</td>
</tr>
<tr>
<td>Air-Launched Surface Attack Missile (AGM)-154(series) Joint Standoff</td>
<td>Yes (3)</td>
<td>Yes (3)</td>
</tr>
<tr>
<td>Weapon (JSOW)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocket Launchers: 2.75 Mod 4/5.0</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Practice Bomb: Mark (Mk) 76/Bomb Dummy Unit (BDU) 48/BDU-33</td>
<td>Yes (3)</td>
<td>Yes (3)</td>
</tr>
<tr>
<td>Aircraft Parachute Flare (illumination unit (LUU)-2B/B)</td>
<td>Yes (3) (6)</td>
<td>Yes (3) (6)</td>
</tr>
<tr>
<td>20-millimeter (mm) Guns</td>
<td>Yes (4) (7)</td>
<td>Yes (4) (7) (11)</td>
</tr>
<tr>
<td>Gun Aircraft Unit (GAU)-16 .50 Cal/M240: 7.63 MM</td>
<td>Yes (7)</td>
<td>Yes (7)</td>
</tr>
<tr>
<td>Rockeye: Cluster Bomb Unit (CBU)-100/Leaflet Bomb/PDU-5</td>
<td>Yes (1) (3)</td>
<td>Yes (1) (3)</td>
</tr>
<tr>
<td>Sidewinder: Aerial Intercept Missile (AIM)-9(series)</td>
<td>No (2)</td>
<td>No (2)</td>
</tr>
<tr>
<td>Sparrow: AIM-7(series)</td>
<td>No (2)</td>
<td>No (2)</td>
</tr>
<tr>
<td>Maverick AGM-65(series)</td>
<td>No (2)</td>
<td>No (2)</td>
</tr>
<tr>
<td>Harpoon AGM-84(series)/Standoff Land Attack Missile-Expanded Response</td>
<td>No (2)</td>
<td>Yes (2) (9)</td>
</tr>
<tr>
<td>(SLAM-ER) AGM-84H/K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-speed Anti-Radiation Missile (HARM) AGM-88(series)</td>
<td>No (2)</td>
<td>Yes (2)</td>
</tr>
<tr>
<td>Hellfire AGM-114(series)</td>
<td>No (2)</td>
<td>No (2)</td>
</tr>
<tr>
<td>Mines Mk 62 and Mk 63</td>
<td>Yes (1) (3)</td>
<td>Yes (1) (3)</td>
</tr>
<tr>
<td>Torpedoes Mk 46, Mk 50, and Mk 54</td>
<td>Yes (1) (3)</td>
<td>Yes (1) (3)</td>
</tr>
</tbody>
</table>
### Table 14-1 — Weapons Loading, Strikedown, Downloading, and Recovery Guide (continued)

| Marine Location Marker Mk 25 and Mk 58 | Yes (3) | Yes (3) | Yes | Yes |
| JAU-22/B Cartridge | No (3) | No (3) | Yes | Yes |
| Decoy Flares (all) | No | No | Yes | Yes |
| Chaff (with cartridges) | No (3) | No (3) | Yes | Yes |
| Tactical Air-Launched Decoy (TALD) | Yes (3) | Yes (3) | Yes | Yes |
| Improved Tactical Air-Launched Decoy (I-TALD) | No (2) | No (2) | Yes (8) (9) | Yes (8) (9) |

Notes:

1. All applicable arming wires/safety clips/extractors/swivels intact.
2. Air-launched missiles shall not normally be loaded on the hangar deck except when operational necessity so dictate. Commanding officers may authorize loading of missiles on the hangar deck only up to the point of the mechanical attachment of the weapon to the launcher/rack in accordance with the procedures prescribed in the appropriate NAVAIR weapons/store loading checklists.
3. Ejector rack/jettison cartridges and/or nose fuzes shall not be installed on the hangar deck.
4. The M61A1 gun ammunition is exempt from downloading requirement for up aircraft temporarily spotted in hangar decks and aircraft undergoing limited maintenance as defined in the CVN NATOPS Manual; that is, turnaround maintenance, providing compliance with all gun dearm procedures of the applicable airborne weapon/store loading manual and associated checklists have been accomplished.
5. Guidance provided in the CVN NATOPS Manual is subject to the individual Navy Aircraft Tactical Manual (NATIP) limitations. In case of conflict between the CVN NATOPS Manual and a specific aircraft NATIP, the NATIP shall take precedence.
6. The M16A1 and M61A2 gun may be exempted from complete downloading when operations dictate that aircraft considered up and readily available for flight may be temporarily spotted in the hangar deck (not to exceed seven days); and/or for aircraft undergoing minor maintenance or servicing as defined in the CVN NATOPS Manual, provided the following conditions are met:
   a. All gun dearm procedures of the applicable airborne weapon/stores loading manual and checklists have been accomplished.
   b. Ammunition shall be cycled into the drum clear of feed chutes and feed mechanisms of the gun system. If the quantity of rounds in the system exceed the capacity of the ammunition drum, a minimum number of rounds may be present in the return chute completely clear of the gun.
   c. The aircraft gun access door shall be labeled with the upload date, quantity and type of ammunition loaded (i.e., 01JAN00/50 RDS/20MM HEI).
7. Strikedown of aircraft with jammed 20MM/GAU-16/M-240 guns is prohibited.
8. If an intent to launch (ITL) signal has been initiated for a Harpoon/SLAM/JSOW, treat the weapon as a hung ordnance during recovery, downloading, and strikedown.
Table 14-1 — Weapons Loading, Strikedown, Downloading, and Recovery Guide
(continued)

| 9. | An aircraft with ITL weapons shall not be removed from the flight deck to the hangar deck until all ITL weapons have been downloaded. |
| 10. | 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 for Harpoon/SLAM and 3 hours for JSOW have elapsed from initial ITL abort/failure. Download prior to completion of the 2.5 hours for Harpoon/SLAM and 3 hours for JSOW 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 deckedge. |

**WARNING**

Initiation of the ITL signal activates a battery within the Harpoon/SLAM weapon. 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 for engine start for up to 35 minutes following ITL and to fire missiles launch squibs within Harpoon/SLAM for up to 2.5 hours following ITL.

If an ITALD ITL is verified, do not remove the launch adapter umbilical connector from the weapon. Move the aircraft to a safe area, download the missile, and move it to the missile to a safe area until 2.5 hours have elapsed from the time of ITL. Remain clear of the aft end of the missile.

| 11. | The A/A49E-27 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 that compliance with all gun dearm procedures of the airborne weapon/store loading manual, associated checklists, and ammunition removal from the feed chute (ammunition in ammunition container only) has been accomplished. |
| 12. | Helicopters with unexpended or hung ordnance shall fly shipboard recovery patterns with weapons pointed away from the ship to the maximum extent practicable and land in an off-set approach. Aircraft shall be dearmed in HERO-safe conditions with weapons pointed clear of aircraft, personnel, and equipment during dearming process. Helicopters with hung/misfired forward firing ordnance shall not launch/recover on Spot 7. |
| 13. | Fixed wing aircraft are authorized for recovery with hung rockets. Prior to taxiing out of the landing area, aircraft recovering with hung rockets shall have the launcher safing pin installed and the firing connector umbilical disconnected. If it is apparent that a rocket fired but failed to exit the launcher and/or damage to the rocket pod is visible, recovery is not authorized and the pod must be jettisoned. |

According to the CVN NATOPS Manual, fueling, loading and downloading weapons, and installing fuzes and arming wires simultaneously are authorized. However, loading forward-firing ordnance that
requires simultaneous and/or prior electrical connections for loading is NOT authorized while aircraft fueling is in progress. Electrical connections to weapons or removal/installation of impulse cartridges should NOT be done while aircraft are being fueled. The fuel hoses should NOT be positioned under the weapons/stores being loaded/downloaded.

When it is required, electrical power may be applied to the aircraft during a loading/downloading evolution. However, power application should be held to a minimum, and should be consistent with operational requirements. Electrical power should NOT be applied to the armament or weapon release-and-control circuitry while weapons are being loaded/downloaded. Loading/downloading weapons and oxygen servicing (other than the converter replacement at the aircraft) should be conducted as separate evolutions.

According to the LHA/LHD NATOPS Manual simultaneous fueling, loading, and downloading of weapons, preloaded improved triple ejector racks (ITERs) and installation of fuzes and arming wires on the same aircraft is NOT authorized.

**Arming and Dearming**

Weapons/bomb racks/launcher arming functions to be performed after engine turn up are defined in the individual weapons/store loading manual/checklists.

Final arming of forward-firing weapons should be conducted in the arming area just prior to launch. All evolutions authorized in the rearming area may be accomplished after engine turn up and prior to taxi.

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 Marine aircraft group (MAG) personnel on LHA-/LHD-class ships) in the arming area under the supervision of the CVW ordnance officer or designated air gunner. The crew is composed of ordnance personnel 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.

All forward-firing ordnance is dearmed by the CVW arm and dearm team at the dearming area immediately after recovery of aircraft and prior to taxiing to rearming area or before engine shutdown. All other ordnance is safed or dearmed by squadron ordnancemen in the rearming area before or after engine shutdown.

When arming or dearming an aircraft, aircraft arming and safing signals (*Figure 14-1, Figure 14-2, and Figure 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 safety supervisor.
<table>
<thead>
<tr>
<th>Signal</th>
<th>Day</th>
<th>Night</th>
<th>Meaning</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Arming Supervisor: Hands over head with fingertips touching.</td>
<td>RED banded wands over head with tips touching.</td>
<td>Pilot/Aircrew: Check all armament switches OFF or SAFE</td>
<td>Pilot/Aircrew: Raise both hands into view of arming supervisor after checking switch positions. (Hands remain in view during check and hookup.)</td>
<td></td>
</tr>
<tr>
<td>2. Arming Supervisor: One hand over head, point arming crew members with other hand.</td>
<td>Same as day, but with RED banded wands.</td>
<td>Arming Crew: Perform stray voltage checks.</td>
<td>Arming Crew: Give &quot;thumbs up&quot; to arming supervisor if no stray voltage exists. &quot;Thumbs down&quot; indicates stray voltage problems.</td>
<td></td>
</tr>
<tr>
<td>3. Arming Supervisor: Raise fist, extended upward to meet horizontal palm of other hand.</td>
<td>Form a tee with RED banded wands.</td>
<td>Arming Crew: Arm weapons (as applicable).</td>
<td>Arming Crew: Give arming supervisor &quot;Thumbs up&quot; when arming completed and clear immediate area. &quot;Thumbs down&quot; if malfunction exists.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 14-1 — Aircraft arming signals.
<table>
<thead>
<tr>
<th>Signal</th>
<th>Day</th>
<th>Night</th>
<th>Meaning</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Arming Supervisor: Insert finger of one hand into clenched fist of other hand and give extracting motion.</td>
<td>Touch tips of RED banded wands in front of body. Then move one wand laterally in a sweeping motion.</td>
<td>Arming Crew: Remove bomb rack/ pylon safety pins.</td>
<td>Arming Crew: Show pins to arming supervisor and clear immediate area. Night: Same as signal 3 above.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Horizontal sweep with RED banded wand.</td>
<td>a. Aircraft armed and all personnel and equipment clear. b. Aircraft down for weapons.</td>
<td>a. Acknowledge with similar signal. b. Acknowledge with similar signal.</td>
<td></td>
</tr>
<tr>
<td>7. Arming Supervisor Observer: Crossed arms over head, fists clenched.</td>
<td>Crossed standard RED banded wands held over head.</td>
<td>Suspend all arming safety operations on aircraft.</td>
<td>Suspend arming and await further instructions.</td>
<td></td>
</tr>
<tr>
<td>Signal</td>
<td>Day</td>
<td>Night</td>
<td>Meaning</td>
<td>Response</td>
</tr>
<tr>
<td>--------</td>
<td>-----</td>
<td>-------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>1. Safing Supervisor: Head over head with fingertips touching.</td>
<td>RED banded wands over head with tips touching.</td>
<td>Pilot/Aircraew: Check all armament switches OFF or SAFE</td>
<td>Pilot/Aircraew: Raise both hands into view of safing supervisor after checking switch positions. (Hands remain in view during safing.)</td>
<td></td>
</tr>
<tr>
<td>2. Safing Supervisor: One hand over head, point to safing crewmember with other hand.</td>
<td>Same as day, but with RED banded wands.</td>
<td>Safing Crew: Safe weapons (as applicable).</td>
<td>Safing Crew: After safing, give safing supervisor “Thumbs up” and move clear of aircraft. Night: Vertical sweep with flashlight when safing is complete.</td>
<td></td>
</tr>
<tr>
<td>3. Arming Supervisor Observer: Crossed arms over head, fists clenched.</td>
<td>Crossed standard RED banded wands held over head.</td>
<td>Suspend all arming safety operations on aircraft.</td>
<td>Suspend arming and await further instructions.</td>
<td></td>
</tr>
<tr>
<td>4. Safing Supervisor: Give pilot “Thumbs up”.</td>
<td>Vertical sweep with RED banded wand.</td>
<td>Pilot: Aircraft is safed and crew and equipment are clear.</td>
<td>Pilot: Acknowledge with similar signal.</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 14-3 — Aircraft safing signals.**
Hung or Unexpended Weapons

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

At times, aircraft return to the ship with hung or unexpended weapons. When an aircraft returns with hung or unexpended weapons, the flight leader advises cognizant personnel aboard ship as early as possible of the amount and type and, when applicable, the Harpoon/SLAM/JSOW abort/failure elapsed time of hung or unexpended weapons in the 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.

When aircraft are landing with hung weapons, only required personnel are allowed to remain in the vicinity of the landing area. All other personnel must take cover.

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, the weapons may be safed in the landing area. Aircraft returning with unexpended weapons should be safed according to normal procedures.

BOMB LOADING AND UNLOADING PROCEDURES

As an aviation ordnanceman (AO), ammunition will be loaded on many different models of aircraft. However, the general loading and unloading procedures for most aircraft are similar. The procedures contained in this chapter do not cover every step of weapon preparation and loading. Instead, the procedures will give basic information about representative types of ordnance that might be loaded in an operating squadron.

When loading practice bombs, they should be handled just like live ordnance, and the appropriate checklist must be used.

Before loading weapons onto an aircraft, the aircraft must be prepared and inspected. Step-by-step procedures must be carefully followed. These procedures are found in the applicable type, model, and series aircraft airborne weapons/stores loading manual.

AIRCRAFT PREPARATION AND INSPECTION

Preparation/Inspection of aircraft for loading is as follows:

1. Verify aircraft preflight inspection has been completed and ensure all required safety devices are installed.
2. Position the aircraft in designated rearming area and ensure aircraft is accessible for loading.
3. Verify armament preloading checks have been performed and that applicable systems are in the UP status.
4. Ground aircraft and, if applicable, remove power and position all armament switches in accordance with applicable loading manual.
5. Verify all loaded stations are safe as follows:
   a. For BRU-32, BRU-33, and BRU-55, ground safety handles in LOCKED position.
   b. For BRU-41/BRU-42, safety stop levers in LOCKED position.
c. Gun electrical safety switch extended, manual clearing handle in CLEARED position, and gun electrical cannon plug disconnected and stowed.
d. On the Fighter/Attack (F/A)-18(variants), verify the integrated countermeasures (ICM) electrical safety switch is extended.
e. Launch adapter unit (LAU)-7 detent wrench safety pin installed.
f. LAU-115 and LAU-116 indicator in GREEN locked position.
g. LAU-117 launcher restraint pin engaged in missile.
h. LAU-118 launcher detent handle is fully seated and the retention mechanism is locked.
i. LAU-127 launcher in-flight lock (IFL) in LOCKED position.
6. Verify pylons, racks, and launchers are properly configured.
7. Remove cartridge retainers, auxiliary cartridge cap, and BRU-41/BRU-42 breech caps. Verify that cartridges are removed from all stations to be loaded. Stow cartridge retainers to prevent damage to the retainers during loading.
8. Verify that adapter cables are installed.
9. Open suspension hooks on empty pylons not to be loaded and stations to be loaded.

**GROUNDING AND APPLICATION OF ELECTRICAL POWER**

Ground and apply electrical power to the aircraft as follows:

1. Verify the electrical power is removed from aircraft.

**NOTE**

The proper grounding of the aircraft requires use of an authorized grounding cable. The grounding cable must be attached to a certified ground outlet or a common static earth ground, then to an authorized grounding point on the aircraft.

2. Attach the grounding cable to the certified ground outlet and authorized grounding point on the aircraft.
3. Position all armament switches in accordance with loading manual. Set all other switches to OFF, SAFE, or NORMAL.

**WARNING**

Prior to applying power, cockpit switches and controls must be ready to receive power.
WEAPON INSPECTION
All weapons must be inspected before they can be loaded. If they do not meet the inspection criteria, they must be rejected and the proper authority notified.

WEAPONS LOADING

General-Purpose (GP) Bombs
The Mk 80(series) and bomb live unit (BLU)-100(series) bombs are general purpose bomb bodies used in a variety of configurations. The method used to load retard or non-retard bombs depends on the weight and configuration of the bombs and the operational commitments. For example, a 500-pound bomb can be loaded onto the rack of a BRU-32 on the F/A-18(variant) aircraft by using the HLU-196D/E bomb-hoisting unit or the HLU-288/E bomb hoist. As previously mentioned, personnel are authorized to manually load most weapons or stores weighing 1,000 pounds or less with the HLU-256/E manual hoisting bars. To meet rearming requirements of high-tempo cyclic operations, manual hoisting bars would normally be used to load individual retarded or non-retarded bombs that weigh 1,000 pounds or less.

Weapons weighing over 1,000 pounds are normally loaded with the HLU-196D/E bomb hoisting unit or HLU-288/E bomb hoist using the applicable loading hoist adapters and the prescribed hoisting bands with anchor fittings or trolley adapters.

Manual Hoisting Bar Loading
Use the HLU-256/E manual hoisting bars as follows:

1. A manual hoisting bar should be installed for manual loading by installing the HLU-256/E manual hoisting bar in the nose fuze well and in the tail fin. The solid nose plug or nose fuze/proximity sensors must be removed, if authorized, to be able to install the manual hoisting bar in the nose fuze well.

   ! CAUTION !
   Do not use excessive force when seating/latching lugs in suspension hooks.

2. Remove the weapon tie-down straps that secure the weapon to the handling equipment.
3. Raise the weapon (Figure 14-4) (if applicable) to approximately 4 inches below the bomb rack, and connect the fusing cable. Continue to raise the weapon until both suspension lugs enter the bomb rack suspension hooks and the hooks latch.

![Image of manual loading by HLU-256/E.](image)

**Figure 14-4 — Manual loading by HLU-256/E.**

4. Visually inspect the rack to ensure LATCHED is indicated.

5. Ease the lifting pressure sufficiently to verify the weapon is supported by the bomb rack suspension hooks.

![WARNING]

Maintain lifting pressure in weapon until it has been verified that the weapon is supported by suspension hooks.

6. Gently shake the weapon to ensure it is supported by the bomb rack suspension hooks and that the sway braces are properly seated.

7. Rotate the ground safety handle to the LOCKED position.

8. When the weapon has been loaded on the rack, the manual hoisting bar should be removed and all support equipment should be removed from the station being loaded.

**Bomb Hoist Loading**

When the BRU-32/BRU-33/BRU-55 bomb rack is ready to be loaded, the hoist adapter and bomb hoist should be installed on station to be loaded. Then the handling and loading equipment with weapon would be positioned under station to be loaded and secure. The prescribed hoisting band and single store trolleys must be installed on the weapon. Then, the hoist should be operated and the slack removed from the cable. One person should be positioned at the nose and one person at the tail of the weapon to steady the weapon while hoisting. Remove the AWSE straps securing the weapon to the handling equipment.
Use the bomb hoist loading procedures as follows:

1. The weapon (if applicable) should be raised approximately 4 inches below the bomb rack and the Mk 122 switch connected (*Figure 14-5*); continue raising the weapon until both suspension lugs enter the bomb rack suspension hooks and the hooks latch.

2. The rack should be inspected to make sure it indicates LATCHED and the hoist should be eased until the weapon weight is supported by the bomb rack suspension hooks.

3. Gently shake the weapon to ensure it is supported by the bomb rack suspension hooks and that the sway braces are properly seated.

4. Rotate the ground safety handle to the LOCKED position.

5. When the weapon is loaded on the rack, the hoisting band and single store trolleys should be removed from the weapon and then the bomb-hoisting unit removed.

6. If applicable, the Mk 122 arming safety switch cable should be electrically connected and the safety switch lanyard attached to the positive arming latch. When connecting Mk 122 coaxial cable to the bomb rack, the excess coaxial cable should be positioned opposite the ground safety handle on the bomb rack.

7. If applicable, the solid nose plug should be installed as described in the weapons loading manual.

8. Install the fuze/proximity sensors by screwing the sensor into the nose fuze well hand tight and tightening the nose setscrew: (Primary) Torque set screw tightened to 30 to 35 inch-pounds. (Alternate) Tightened one-half to one turn after contact with sensor.

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**Figure 14-5 — Mk 122 arming safety switch.**

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![Diagram of Mk 122 arming safety switch.]

**CAUTION**

Do not use excessive force when seating/latching lugs in suspension hooks.
9. Install/connect the arming wires/lanyards to the aircraft.
10. Perform the weapon inventory/built-in-test (BIT) check.
11. Install the required cartridges in all loaded stations and tighten the cartridge retainers and auxiliary cartridge caps.
12. Place the WEAPON LOADED sign in the cockpit and remove any tools and handling/loading equipment from the area.

Practice Bombs

The next paragraphs briefly describe the preparation, inspection, and loading procedures for the Mk 76/bomb dummy unit (BDU)-48 practice bombs and the laser guided training round (LGTR) on the F/A-18(variants) aircraft. Practice bombs and LGTRs are carried by the BRU-41.

Before loading, the aircraft should be prepared/inspected as outlined in the loading manual. Ensure the following items have been verified:

- The BRU-32 sway braces are properly seated against the BRU-41
- The adapter cable is installed
- All suspension hooks must be open on stations to be loaded
- The restrictor and sway brace adapter brackets are properly installed and (as applicable) the sway braces are preset
- The sway braces are retracted and the jamnuts wrenched tight on stations not being loaded

BRU-41 Preparation/Weapon Loading

The BRU-41 should be prepared for loading as follows:

1. Verify aircraft preparation/inspection and weapon inspections have been completed and, if applicable, verify power is removed from aircraft and aircraft is grounded.
2. Position all armament switches in accordance with loading manual.
3. Position handling equipment with practice bombs/LGTR near station to be loaded and secure.
4. Set proper code inputs in the weapons insertion panel for weapons/fuzes on stations being loaded.

WARNING

Do not drop practice bomb/LGTR during loading, since the signal cartridge can be detonated.

NOTE

Practice bombs utilize the forward latch; the LGTR utilizes the aft hook; unused hook must be latched.

The BRU-41 should be loaded as follows:

1. Latch the unused suspension hook.
2. (Practice bomb) Manually position the suspension lug in the forward suspension hook and latch the hook.

3. (LGTR) Manually position the suspension lug in the aft suspension hook and latch the hook.

4. Gently shake the practice bomb/LGTR to ensure the weapon is supported by the suspension hook.

5. Position the safety stop lever to the LOCKED position.

6. Position the suspension lug fully forward in the suspension hook.

    **NOTE**
    Improper tightening of sway brace screws may result in hung ordnance.

The sway brace screws should be adjusted until the adapter brackets contact the weapon; adjust the centerline and outboard shoulder station swaybraces as follows:

- **Mk 76/BDU-33/BDU-48 (centerline)**–three half turns of each forward sway brace screw with the aft sway brace screws fully retracted
- **Mk 76/BDU-33/BDU-48 (shoulder station)**–six half turns of forward outboard swaybrace screw with aft outboard sway brace screw fully retracted
- **LGTR (centerline only)**–three half turns of each sway brace screw (aft braces first), ensuring LGTR is level with rack

All sway brace screws should be retracted on empty stations and all the jamnuts tightened to prevent sway brace screw loss.

For LGTRs, the ejector rod cotter pin and wing nut must be removed and the ejector rod must be positioned against the restrictor.

    **NOTE**
    The ejector rod wing nut requires considerable force to remove. The ejector rod must contact the restrictor; the ejector rod O-ring may extend no more than 1/4 inch above the LGTR body.

Verify that the suspension hooks are open on unloaded BRU-32 and BRU-41 stations.

The weapon inventory/BIT check should be performed as required.

    **NOTE**
    Do not install auxiliary cartridge.

Cartridges should be installed in all loaded bomb racks and cartridge retainers; auxiliary cartridge cap and BRU-41 breech caps should be tightened. Auxiliary cartridge should not be installed.

Place the WEAPON LOADED sign in the cockpit and remove any tools and handling equipment from the area.
Weapons are loaded on a BRU-41/BRU-42 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
- You must adjust the swaybrace screws and tighten the jam nuts as prescribed in the loading manual
- The ejector foot must be positioned down against the weapon

**Air-Launched Missile Loading**

Air-launched guided missiles and guided missile launchers that are used in the Navy today were discussed previously in this manual. The loading/unloading of each specific type of missile and launcher cannot be covered in this chapter. The following paragraphs provide only an overview of air-launched missile loading, preloaded accessory suspension equipment (PASE), and the brief loading procedure for the Advanced Medium Range Air to Air Missile (AMRAAM) AIM-120(series) missile carried on the F/A-18(variant) aircraft.

To facilitate loading and downloading, many air-launched missiles require wings and fins to be installed after the missile is mounted on the suspension and release equipment and removed prior to commencing the downloading evolution. These procedures are given as specific steps in the loading checklists for each applicable missile. In other applications, I-level maintenance personnel install some or all of the missile wings and fins prior to delivery to the user activities.

Some air-launched missiles are physically loaded by a crew/team working together to handle the missile from the support equipment to the launcher and positioning the missile into the launcher.

**Common PASE Weapons**

The aircraft loading procedures for the HARM AGM-88(series) and the AGM-65(series) Maverick missile require the missile launcher (LAU-117A(V)2/A and LAU-118(V)2/A) to be mated to the missile by qualified weapon assembly personnel prior to delivery to the squadron personnel. The assembled missile and launcher combination is loaded directly to the aircraft bomb rack (*Figure 14-6*). When loading the PASE combination, the weapon loading hoist adapter must be used.

The weapon loading hoist adapter consists of two assemblies—the left adapter, which is installed on the left side of the pylon, and the right adapter, which is installed on the right side of the pylon. The adapters are installed on the pylon during loading and unloading operations when a hoist is used. The adapter provides support for the boom of various bomb hoists for loading and unloading. For loading and unloading the PASE combination, the applicable trolley adapters that are installed directly on to the launchers ground support equipment (GSE) fitting should be used. The missile is then loaded by hoisting the launcher and the weapon to the bomb rack following the same procedures described previously for bomb hoist loading.
AIM-120 AMRAAM Weapon Loading

The launchers must be prepared for loading.

Verify that the aircraft preparation/inspection and weapon inspection have been completed. Verify that the aircraft is grounded, and if applicable, the power is removed from the aircraft. In addition, verify that all armament switches are positioned in accordance with the loading manual. Place the WEAPON LOADED sign in the cockpit.

LAU-115(Series) Launcher

For the LAU-115(series) launcher, verify that the launcher is electrically connected and the launcher and adapter are properly configured and secure.

LAU-116(Series) Launcher

Rotate the LAU-116(series) launcher safety release counterclockwise until yellow/black striping is visible in the indicator window, the trigger is locked, and the missile stop pin is up (Figure 14-7 and Figure 14-8). Verify the safety release indicator is in the SAFE position; the indicator will show green. Verify that the serviceable AMRAAM buffer connector is installed and that the umbilical is retracted.

Manual loading—the handling equipment and weapon should be positioned under the station to be loaded and secured, and the AWSE straps securing missile to handling/loading equipment removed.

The proper code inputs in the weapon insertion panel for weapons/fuzes should be set on stations being loaded.
Figure 14-7 — LAU-116 launcher inspection.
LAU-127(Series) Launcher

Check the LAU-127(series) launcher to ensure the IFL is in the LOCKED position (Figure 14-9) and verify the forward detent is in the ENGAGED position. Ensure the AIM-9 striker, aft detent, aft dampener, and aft missile stop are retracted (Figure 14-10).
The serviceable AMRAAM buffer connector (*Figure 14-11*) should be installed and the AIM-120 umbilical should be retracted.

The nitrogen receiver cover on the LAU-127 should be opened and the nitrogen receiver assembly must be installed, properly serviced, and secured. Then, the nitrogen receiver cover should be closed.

*Figure 14-9 — LAU-127 launcher IFL indicator position.*
Figure 14-10 — LAU-127 launcher inspection.

Figure 14-11 — AIM-120 buffer connector.
Launcher Loading on the LAU-116(Series)

Missiles should be loaded on the LAU-116(series) launcher as follows:

1. Raise the missile and stabilize it on the main landing gear.
2. Remove the missile umbilical dust cover.

3. Hold the umbilical handle in the fully retracted position.

4. Position the missile so that the missile umbilical and hooks align with the launcher cavities.

5. Slide the missile forward until the inboard missile hook bears against the forward launcher stop and the aft missile indicator returns flush with the launcher skin.

6. Verify the trigger is locked and the aft missile stop indicator is flush with the launcher skin.
7. Ensure the missile hooks are engaged and the forward and aft snubbers are pressing against the missile launch hooks.
8. Verify the safety indicator shows GREEN.
9. Gently shake the missile to seat the snubbers and ensure the missile is supported by the suspension hooks.
10. Verify no roll or pitch motion occurs.

CAUTION
Observe the NO LIFT areas on the missile.

CAUTION
Use extreme care during loading to prevent damage to the buffer connector.

NOTE
Prior to raising the missile into position, rotate missile so that the umbilical and launch hooks are at 45 degrees inboard.

NOTE
The aft missile stop indicator must be flush with the launcher skin and the trigger locked or missile loss will occur.

NOTE
To verify the trigger is locked, grasp the trigger and pull outboard. The aft missile stop indicator should remain flush with launcher skin.
11. Engage the buffer connector in the missile by closing the umbilical handle.

Install the missile wings as follows:

**CAUTION**
The buffer connector must be aligned with the missile umbilical receptacle to prevent damage to pins.

**CAUTION**
AIM-120C wings and fins are marked USE ONLY WITH AIM-120C MISSILE. AIM-120C wings and fins are not interchangeable with AIM-120A or AIM-120B missiles.

1. Depress the pin in the wing slot and push the wing post into the missile until seated; release the wing slot pin (*Figure 14-12*).

2. Verify the wing is secure by pulling outward; the green indicator should be visible in the wing slot.

*Figure 14-12 — AIM-120 wing.*
Missile fins should be installed as follows:

**CAUTION**

AIM-120C wings and fins are marked with USE ONLY WITH AIM-120C MISSILE. AIM-120C wings and fins are not interchangeable with AIM-120A or AIM-120B missiles.

Captive carry air-launched training missile (CATM)-120C wings and fins are marked with USE ONLY WITH CATM-120C MISSILE and are not interchangeable with CATM-120A or CATM-120B missiles.

1. Unlock the fin locking release lever.
2. Align and install the fin in the fin mount (Figure 14-13).
3. Gently shake the fin side to side while rotating the engagement nut finger tight.

**CAUTION**

Rotating the engagement nut clockwise with lock release lever in LOCKED position will damage locking pin.

![Figure 14-13 — AIM-120 fin.](image-url)
4. Using the fin installation/removal tool, rotate the engagement nut one-quarter to one-half turn to fully engage the pin.

5. Rotate the fin lock release lever to LOCKED.

6. Verify the locking pin is engaged into the engagement nut slot.

**Launcher Loading on the LAU-127(Series)**

Missiles should be loaded on the LAU-127(series) launcher as follows:

1. Remove the umbilical dust cover.

2. Raise the missile until the missile hooks enter the loading slots in the launcher rail and slide the missile forward until the missile hook contacts the forward launcher detent.

3. Maintain forward pressure on the missile and rotate the aft detent to ENGAGE.

4. Gently shake the missile and rotate the aft dampener to ENGAGE; ensure the missile is secure.

5. Rotate the AIM-120 umbilical to ENGAGE position.

6. Install the missile fins and wings as previously described.

After loading the missile on the launcher, the AMRAAM BIT and the data link test (AM TEST) check must be performed on the missiles. After successful completion of the required test on the aircraft, the electrical power must be removed from aircraft and the cooling air also removed, if applicable.

The required cartridges must now be installed in all loaded stations and the cartridge retainers and (as applicable) the auxiliary cartridge caps must be tightened.

The WEAPON LOADED sign should be placed in the cockpit and any tools and handling/loading equipment should be removed from the area.
Aircraft Gun Loading 20 mm

Previously in this manual, the Linkless Ammunition Loading System (LALS) components, a brief explanation of the function, the interrelationship of the components, and the system operation were discussed.

The ammunition loader interfaces with the F/A-18(variants) aircraft M61A1 and M61A2 gun systems and simultaneously loads and downloads 20 mm ammunition spent cases and unfired rounds.

The following paragraphs provide an overview on the ammunition loader and how it is used at the organizational level.

LALS III Loading Preparation

Prepare the GFK-21A/E32K-7 (LALS III) as follows:

1. Position the loader near the aircraft, unlatch the forward housing multiple door assembly latches, and fold doors up, back, and open.

2. Remove retaining strap from the stowed position, place over the forward multiple door, and snap to aft housing.

3. Verify no rounds are in the chute in order to properly tension chute.

4. Release and remove the aircraft interface unit (AIU) from the stowage position.

5. Depress the AIU declutch button and extend the conveyor assembly to its fullest length.

6. Release the declutch button.

WARNING

20 mm ammunition is susceptible to the hazards of electromagnetic radiation to ordnance (HERO). Refer to Naval Sea Systems Command (NAVSEA) Ordnance Publication (OP) 3565/NAVAIR 16-1-529 for specific HERO restrictions.

NOTE

To properly tension chute, 20 mm ammunition shall not be in the chute.

WARNING

Remain clear of the gears and rotors while cycling the AIU.

CAUTION

The declutch button must be depressed and held while extending conveyor assembly. Excessive force when extending conveyor assembly may damage chute assembly.
7. Ensure that the AIU shift lever is in the BYPASS (down) position, and then manually cycle the system until the shift gate shifts to BYPASS position.

8. Rotate the manual drive knob on the right side of the AIU to align the timing holes. Press the timing pin into the locked position and stow the AIU.

**GFK-21A/E32K-7 (LALS III) Loading, Hand Crank/Power Drive Tool**

The LALS III should be positioned for loading.

1. Lower the work platform for the munitions handling unit (MHU)-191/M and lock the stabilization strut into position.

   **WARNING**

   When the LALS III unit is mounted on the MHU-191/M transport, work platform stabilization struts must be deployed for aircraft servicing.

   **NOTE**

   (LALS III) Latch pins on the aircraft transfer unit/adapter must be in the IN position.

2. On the transfer unit, unlock and lower gate to the open position. Ensure the gate extends below the loading tray.

3. Press, turn, and lock upper latching pins to the IN position.

4. Verify that the gun is in the timed position. Remove the AIU from the stowed position and ensure the unit is timed and in the BYPASS position.
5. Connect the AIU by positioning the lower lugs over the lower mounting points on the aircraft transfer unit and rotate the AIU upward until the gears engage.

6. Ensure the latching levers are OUT.

7. Verify that the gun and the AIU are timed.

8. Release the AIU and gun timing pins.

9. Press and hold the AIU declutch button.

10. Stow the LALS work platforms and stabilization struts.

11. Slowly reposition the loader to apply tension to the conveyor assembly. Slight element play in both chutes, up to 1/16 inch, is acceptable.

12. Release the declutch button.

13. Lower the LALS work platforms and stabilization struts. For the MHU-191/M, lock the stabilization strut into position.

CAUTION
During AIU installation, if the drive gear of the AIU does not mesh properly with the gears of the gun transfer unit, rotate the manual drive knob slightly in the SHIFT direction (while both the AIU and gun system timing pins are still engaged) to facilitate gear engagement.

CAUTION
Do not over tension the chute. Over tensioning of the conveyor elements can lead to premature chute failure. Tension should be equal in both chutes.

NOTE
The declutch button must be pressed and held while extending the conveyor to ensure the proper tensioning of the conveyor elements.

CAUTION
Prior to repositioning the LALS, stow the work platform and stabilization struts.

CAUTION
Do not attempt to rotate the gun system by hand or power drive tool if the aircraft hydraulic system is pressurized.
14. Shift the AIU shift lever handle to LOAD.

![CAUTION]

The handcrank must be rotated clockwise. Reverse rotation of the gun system can cause damage to the system and should not be attempted.

The handcrank must be used to start rounds into the gun system to ensure the proper feeding/transfer of ammunition.

![NOTE]

Shift cycle should occur within one revolution of the handcrank.

15. Manually cycle the system until the shifting gate shifts to the LOAD (up) position.

![WARNING]

If the gun system jams during loading or unloading, refer to A1-F18AE-GJC-100, Gun Jam Clearing Checklist.

![CAUTION]

The torque limiter tool is required to be set to 25 foot-pounds when using power drive tools to load/unload the gun system. The torque limiter tool is optional when using a handcrank to cycle the gun system.

The antijam pin must be pulled and locked when simultaneously loading and unloading the gun.

16. Handcrank 25 rounds into the transfer unit to ensure proper transfer of ammunition occurs between the LALS III and the gun system.

17. (If applicable) Pull the antijam pin, and using the power drive tool with torque limiter tool installed or the handcrank, continue to cycle the system until the desired quantity of ammunition is loaded and (if applicable) the spent cases/unfired rounds are removed from the gun system.

18. Remove the torque limiter tool and power drive tool and reinstall the handcrank.

19. Shift the AIU shift lever handle to BYPASS.

20. Manually cycle the system slowly until the shifting gate shifts to BYPASS.

21. Remove the handcrank.
22. Stow the LALS III work platform stabilization strut.
23. Slowly reposition the loader to release tension on the conveyor assembly.
24. Lower the work platform and, for MHU-191/M, lock the stabilization strut into position.

**WARNING**

20 mm ammunition is HERO susceptible. Refer to NAVSEA OP 3565/NAVAIR 16-1-529.
When removing the AIU, rounds may fall from the exposed transfer unit.

25. Disconnect the AIU from the gun system by unlocking the latching pins; rotate the AIU downward and lift it free from the lower mounting points on the aircraft transfer unit.

**CAUTION**

Use caution when placing AIU on to the storage mount to prevent damage to AIU.

26. Stow the AIU on the storage mount.
27. Raise and lock the gate. Raise and lock the loading tray.
28. (If applicable) Using the handcrank, cycle the system until the first rounds appear in the feed chute at the transfer unit entrance.
29. Set the rounds limiter switch as required.
30. Verify that the manual clearing handle is in the CLEARED position and (if applicable) position the antijam pin to the UNLOCKED position.
31. Stow and lock the struts and work platforms. Unsnap the restraining strap from the aft housing.
32. Fold the retaining strap over the conveyor chute assembly and snap it to the forward housing.
33. Unfold the forward housing multiple door assembly forward and down to the closed position.
34. Secure the forward housing multiple door assembly latches in pairs.

Place the WEAPON LOADED sign in the cockpit and remove any tools and handling/loading equipment from the area.

**POSTLOADING QUALITY ASSURANCE INSPECTION**

A qualified and 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 are not many procedures to carry out in the rearming area (before engine turn up). The WEAPON LOADED sign should be removed from the cockpit and the access doors closed and secured. 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 accomplished 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 certain weapons 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 (if applicable), and ensures that the pilot places his or her hands in full view. When the pilot’s hands are in view, a member of the arming crew removes the safety pins. Finally, a crewmember unlocks the improved multiple ejector rack (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 forward-firing ordnance such as missiles, rockets, or loaded 20 mm guns aboard, they are safed in the designated dearming area.

⚠️ WARNING ⚠️

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

NOTE

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

1. Verify the fuzes are safe and arming wires/safety clips are installed.
2. Verify the fuze munition unit (FMU)-139(series) fuze pop out pin (gag rod) is not extended and no red/black striping is visible.
3. If a BRU-41 or BRU-42 is involved, position the safety stop levers to the LOCK position on loaded racks.
4. Inspect the weapons for missing, loose, or damaged components.
5. Verify the safety pins are installed on loaded stations, if applicable.
6. Verify the armament switches are in the OFF, SAFE, or NORM positions.
7. Remove arming wires/lanyards from empty stations.
8. Report the status of the aircraft to proper authority.

UNLOADING PROCEDURES

Before a weapon is unloaded from the rack, the aircraft should be in the rearming area. Electrical power to the aircraft must be removed, and the aircraft should be properly grounded. The following must be verified: all cockpit armament switches are OFF, SAFE, or NORM; and safety pins are installed as applicable.

If a BRU-41/BRU-42 is being unloaded, verify the safety stop lever is locked on each loaded ejector unit. If a BRU-41/BRU-42 (with a weapon) is unloaded from the rack, all breech caps must be disconnected from the breech chambers and the cartridges removed from the breech chambers. The breech caps should be positioned so as to prevent damage during unloading.

Another action that should be taken when unloading weapons includes checking to see that the arming wire is installed in the pop-out pin for applicable fuzes. If an electric fuze was used, the Mk 122 arming safety switch lanyard tab needs to be disconnected from the spring latch. The fin release wires, lanyards, and arming wires should be disconnected from the aircraft.

If an electrically fuzed bomb is being unloaded, disconnect the Mk 122 arming safety switch quick-disconnect connector from the rack.

Position the handling or loading equipment under the station to be unloaded. As applicable, a manual hoisting bar or a bomb-hoisting unit should be installed.

On BRU-41/BRU-42, the ejector foot should be retracted to the full up position. Then, the swaybraces should be retracted to the full up position. The required number of personnel should be positioned at the front and at the tail of the weapon to steady and guide the weapon onto the bomb handling equipment. To download a weapon, the weapon must be raised until the suspension lugs float in the hooks. The BRU-41/BRU-42 safety lock lever should be moved from LOCK to UNLOCK, as appropriate. The manual release should be operated to open the suspension hooks and the weapon lowered onto the handling or loading equipment.
When unloading the PASE combination, the weapon loading hoist adapter (left adapter/right adapter) must be installed on the pylon and the applicable trolley adapters should be installed on the launcher. The missile is then unloaded by hoist on to the appropriate handling equipment and secured.

The weapon can be lowered to the handling or loading equipment. The weapon should be properly secured to the handling or loading equipment. When all weapons have been unloaded, the WEAPON LOADED sign should be removed from the cockpit. Then, all weapons and handling or loading equipment should be removed from the area. Report the status of the aircraft to the proper authority.

SAFETY PRECAUTIONS

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

- Weapon tiedown straps shall be maintained on the weapon as long as possible when loading, and installed on the weapon as soon as possible when unloading
- The mechanical latching of weapons on aircraft racks/launchers shall be completed before the engine(s) on that aircraft is/are started unless otherwise specified in loading publications
- Fuzes must not be disassembled or tested for proper functioning. No attempt shall be made to repair any fuze or render any fuze inert
- Aboard ship, when the bombs and missiles 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 and missiles have been delivered to the aircraft, a person must remain in the immediate area. Bombs and missiles must not be left on the flight deck unattended
- Never attempt to load/download bombs or missiles 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, an 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, consult the CVN NATOPS Manual, NAVAIR 00-80T-120, and the LHA/LHD NATOPS Manual, NAVAIR 00-80T-106.
End of Chapter 14

Aircraft Loading and Unloading Procedures

Review Questions

14-1. Deviations to the Naval Air Training and Operating Procedures Standardization flight/tactical manual must be approved by which of the following personnel?

A. Chief of Naval Operations
B. Commander in Charge Atlantic Fleet
C. Commander, Naval Air Systems Command
D. Commander, Naval Sea Systems Command

14-2. What manual standardizes aircraft loading procedures throughout the Navy and Marine Corps?

A. Airborne Weapons/Stores Loading Manual
B. CVN NATOPS Manual
C. Maintenance Instructions Manual
D. NATOPS Flight/Tactical Manual

14-3. At what interval is the Airborne Weapons/Stores Publication Index, Naval Air Systems Command (NAVAIR)-01-700, updated?

A. Monthly
B. Quarterly
C. Biannually
D. Annually

14-4. For most ordnance handling circumstances, what manual contains the best available operating instructions?

A. Illustrated Parts Breakdown
B. Maintenance Instruction Manual
C. Naval Air Training and Operating Procedures Standardization
D. Naval Aviation Maintenance Program

14-5. A team leader must use an aircraft weapons checklist at which of the following times?

A. When the team leader is not qualified or certified for the particular weapons or store being loaded
B. When the team leader is not familiar with the particular weapon or store being loaded
C. When the team is loading all ordnance
D. When the team leader has a thorough understanding of the loading manual
14-6. On aviation capable ships, what location is the preferred area to load or download an aircraft?

A. Hangar deck  
B. Main deck  
C. Flight deck  
D. Aircraft elevator

14-7. Which of the following steps should be performed first when preparing and inspecting an aircraft for weapon loading?

A. Ensure all loaded stations are safe  
B. Ensure the aircraft is in the rearming area  
C. Verify that preloading release and control system checks have been completed  
D. Verify the aircraft preflight inspection has been completed

14-8. When manually lifting a weapon, the weapon should be lifted to what minimum distance, in inches, below the rack to connect the Mark 122 arming safety switch?

A.  4  
B.  8  
C.  12  
D.  16

14-9. After both suspension lugs enter the bomb rack suspension hooks and the hooks latch, what condition should you look for when loading a weapon on to the bomb rack unit (BRU)-32 bomb rack?

A. Bomb fins are aligned  
B. Bomb nose is parallel to the ground  
C. Rack indicates LATCHED  
D. Weight is supported by bomb rack suspension hooks

14-10. What term describes the condition of a missile launcher mated to the missile combination?

A. Partial loaded suspension equipment  
B. Preferred aircraft suspension equipment  
C. Preloaded accessory suspension equipment  
D. Preloaded armament equipment

14-11. To facilitate loading and downloading, what action do most air-launched missiles require after the missile is mounted on the suspension and release equipment?

A. Installation of the radome  
B. Installation of the rocket motor pin  
C. Installation of the wings and fins  
D. Torqueing of the screws
14-12. When preparing the launcher unit (LAU)-127 launcher for loading an air-launched aerial intercept guided missile (AIM)-120 missile, what item must be retracted?

A. AIM-7 striker  
B. Aft detent  
C. Forward detent  
D. Mid body dampener

14-13. Aboard ship, when the bombs are delivered to the aircraft for loading, they must be positioned in what direction to prevent inadvertent movement of the handling equipment by the side-to-side roll of the ship?

A. Forward and aft  
B. Port and aft  
C. Port and starboard  
D. Starboard and forward

14-14. What action must be done to the practice bomb signal cartridges when the flight schedule has been completed?

A. Retained in the practice bombs but must be used first on the next day  
B. Retained in the practice bombs until they are expended  
C. Removed from the practice bombs before returning them to storage  
D. Retained in the practice bombs to prevent accidental firing

14-15. What type of bombs can cause aviation ordnanceman to be lax during handling and loading evolutions?

A. BLU-100 series  
B. Cluster bombs  
C. Mk 80 series  
D. Practice bombs
**RATE TRAINING MANUAL – USER UPDATE**

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