The 2003-2004 updated Weapons File is published in response to requests from our “Warfighter” customers, and is an item that you indicated had high utility. This is the sixth edition published by the office of the Armament Product Directorate (APD), established 1 September 1995 at Eglin AFB, FL. for the Air Armament Center, Eglin AFB, FL. Although it retains much of the information and format of the previous versions (2001-2002), this edition has been revised and updated to reflect the latest armament information available. The information for each weapon system is a snapshot of current information, and will be updated periodically when a new edition is published. The Weapons File is now available online and can be found at https://wmnet.e格林.af.mil/weapons.

The file is designed to be used by munitions managers and key personnel as a quick reference for information purposes only. It is not intended to be used as a procedural or technical manual in accomplishing mission planning or munitions maintenance operations. It focuses on currently fielded Air Force stocklisted, as well as developmental airborne delivered munitions, tactical missiles, weapons, gun systems and stores support equipment, and is not intended to be a complete Department of Defense guide to weapon systems.

This is YOUR weapons file to be used as a quick reference guide and familiarization tool. Your help is needed to insure only the most current and correct information is published. Therefore, we solicit any suggestions for improvements from the reader in the form of additions, deletions, updates and corrections. Send them to: APD, AAC/WM, 207 West Avenue D, Suite 308, Eglin AFB, FL 32542-6844. To order additional Weapons Files visit; https://wmnet.e格林.af.mil/weapons/order.htm
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CHAPTER ONE

AIR INTERCEPT MISSILES

(AIM)
**Nomenclature: AIM-7 (AUR)  Name: SPARROW**

**Description**
The AIM-7 Sparrow is a radar-guided air-to-air missile with a high-explosive warhead. The versatile Sparrow has all-weather, all altitude operational capability and can attack high-performance aircraft and missiles from any direction. It is a widely deployed missile used by U.S and North Atlantic Treaty Organization forces.

**Features**
The missile has four major sections: guidance section, warhead, control and rocket motor. It has a cylindrical body with four wings at mid-body and four tail fins. Although external dimensions of the Sparrow remained relatively unchanged from model to model, the internal components of newer missiles represent major improvements with vastly increased capabilities.

**Weapon Characteristics**
AIM-7M
CRD Weapons Code

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Guidance - Semi-Active RADAR & Home-On-Jam (HOJ) (H Build)
Control - Wing, Hydraulic
Autopilot - Roll Rate
Class - Air Intercept Missile
Weight (lbs.)
- AIM-7M - 510
Length (in.)
- AIM-7M - 147
Diameter (in.) 8
Warhead
- AIM-7M 86lbs; Continuous Rod (WAU-10); Blast/Frag (WAU-17)
Explosive (NEW)
- AIM-7M - PBXN-3, 26lbs (WAU-10); 36lbs (WAU-17)
Fuze - Proximity RF and Contact
Propulsion
AIM-7/M – Rocket Motor, MK 58

**Carriage Options**
AIM-7M

Aircraft: F-15A-E, F-16
Launcher: LAU-106/A, 16S1501

Status / Schedule / Improvements
Contractor - General Dynamics & Raytheon
Status - Inventory
OPR - NAVAIRSYSCOM PMA-259
Mgmt/Eng (AF) - WR-ALC/LKG
Notes - Joint Navy/Air Force (Navy lead)
Tech Data - 21M-AIM7M-2
Special Equipment – DSM-162 Field Test Set
   TO 33D9-30-36-1
Support Equipment
   TO 33D9-1-392
**Nomenclature:** AIM-9 (AUR)  

**Name:** SIDEWINDER

**Description**
The sidewinder is a supersonic, air-launched, guided missile employing passive infrared (IR) target detection, proportional navigational guidance, a torque balance control system, and an active optical target detector. The missile is comprised of five major components: the Guidance Control Section (GCS), Target Detector (TD), Safety Arming Device (S-A), Warhead and Rocket Motor. Four fin assemblies attach to the GCS and four wings assemblies attach to the Rocket Motor. A TMU-72 Coolant Tank provides on-board source of coolant (argon) used to cool the Refrigerated Detector Unit (RDU) in the GCS during captive carriage phase of flight.

**Weapon Characteristics**
AIM-9M

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Guidance
   AIM-9M – Passive Infrared Homing
Control - 4 Stabilizing Wing & Rolleron Assemblies and 4 Movable Canards with Servo Assembly
Class – Air Intercept Missile
   Weight (lbs.)
      AIM-9M – 191.7
Length (in.)
   AIM-9M – 113
Diameter (in.) 5
Warhead
   AIM-9M - 20.8 lbs. Annular Blast / Fragmentation
Explosive (NEW) - 7.9lbs PBXN-3
Fuze
   AIM-9M - Contact and Active Optical (DSU-15A/B, B, B/B
Propulsion
   AIM-9M - MK 36 Solid Rocket Motor
Special Equipment – AN/ASM-447 Field Test Set

Carriage Options
AIM-9M
Aircraft:   Launcher:
F-15A-E       LAU-114, LAU-128
F-16A-D       LAU-129, 16S-200 Series
A-10A         LAU-105
ADF (F-16)    16S-200 Series

Status / Schedule / Improvements
Contractor
   AIM-9M – Loral Martin & Raytheon
Status – FMS/Inventory (30+ Countries)
OPR
   AIM-9M – NAVAIRSYSCOM PMA 259
   Mgmt/Eng (AF) - WR-ALC/LKG
Tech Data - 21M-AIM9M-2
Special Equipment – GCU-30 Recharging Unit and TS 4044 Test Set
Nomenclature: AIM-9X  Name: Follow-on Sidewinder

Description
The AIM-9X Sidewinder is a supersonic, air-to-air, guided missile which employs a passive infrared (IR) target acquisition system, proportional navigational guidance, a closed-loop position servo Fin Actuator Unit (FAU), and a Target Detector (TD). A solid-propellant Rocket Motor (RM) propels the missile and incorporates a manual SAFE-ARM selector assembly. The AIM-9X is configured with an Annular Blast Fragmentation (ABF) warhead controlled by an Electronic Safe-Arm Device (ESAD). Four forward mounted fixed wings provide aerodynamic lift and stability. Airframe maneuvering is accomplished by four control fins, mounted in line with the fixed wings, and activated by the FAU. The Jet Vane Control (JVC) provides enhanced maneuverability by deflecting rocket motor thrust to aid in turning.

Characteristics
AIM-9X
CRD Weapons Code – Not Yet Assigned
Guidance – Imaging Focal Plane Array (FPA) Infrared (IR) sensor with improved countermeasure capability
Control – Fixed forward wings and Jet Vane Control (JVC) incorporated within new Control Actuation Section (CAS)
Class - Air Intercept Missile
Weight (lbs.) - ~188
Length (in.) - 119
Diameter (in.) - 5.0
Wing Span (in) – 13.9
Fin Span (in) – 17.5
Warhead - 20.8lbs Blast/Fragmentation
Explosive - 7.4lbs PBXN-3
Fuze - Contact and Active Optical
Propulsion - MK36 Solid Rocket or Composite Case
Special Equipment –

Carriage Options
Aircraft: F-16C, F-15C, F-22 (Internal) Launcher: Modified Eject Launcher
LAU-128/129/141 Rail Launcher

Status / Schedule / Improvements
Contractor – Raytheon Missile Systems Company
Status – Engineering and Manufacturing Development
IOC Date - 2004
OPR - NAVAIRSYSCOM PMA-259C and WR-ALC/LKG
Technical Order – 21M-AIM9X-2
Special Equipment – TTU-574 Test Program Set and GYQ-79 Common Munitions Bit Reprogramming Equipment (CMBRE)
Nomenclature: AIM-120 (AUR)
Name: AMRAAM (Advanced Medium Range Air-to-Air Missile)
Series

Description
The AIM-120 missile is a radar guided air-to-air missile which is divided into four sections: guidance, armament, propulsion, and control. The missile has four fixed wings and four moveable rear fins. A buffer connector electrically connects the missile to the aircraft while the missile is loaded on the aircraft launcher.

The guidance section includes the hardware and software necessary to perform the functions of acquisition and track, navigation, data link processing, and section secondary power. The guidance section contains: seeker/servo electronics, transmitter/electrical conversion unit (ECU), electronics unit, inertial reference unit (IRU), and Quad/target detection device (Q/TDD). The TDD antennas are mounted in the aft portion of the guidance section and are covered with a glass wrap. Alpha codes located after section part numbers define software of section for AIM-120A missiles. AIM-120B, C guidance sections are reprogrammable and do not have alpha codes.

The armament section includes a warhead assembly and a MK44 MOD 1 booster threaded onto a safety, arming, and fuze (SAF) device

The high performance rocket motor uses a single, reduced-smoke HTPB propellant in a boost-sustain configuration. It has an asbestos-free insulated steel case (an integral part of the airframe). It also is equipped with an integral aft closure/blast tube/nozzle assembly with a removable exit cone. Rocket motor PN G672798-1 is an enhanced version with additional 5 inches of propellant. It is commonly referred to as the +5 rocket motor.

The control section consists of control electronics, actuator batteries, and four independently controlled servoactuators. Control section PN G725818 is a shortened (by 5 inches) version to be used with the +5 rocket motor.

Weapon Characteristics
AIM-120
CRD Weapons Code
M12AA MISSILE AIM-120A AUR
M12BA MISSILE AIM-120B AUR
M12CA MISSILE AIM-120C AUR
M12CB MISSILE AIM-120C AUR
M12CC MISSILE AIM-120C-5/6 AUR
SZRBB STAMP AIM-120
SZRBB STAMP AIM-120

Guidance – Inertial/Command Inertial and Active RADAR
Control – Fixed mid-body mounted wings with electric motor driven tail fins affixed to Control Actuation Section (CAS)
Class – Air Intercept Missile
AIM-120A – Lots 1-5. Baseline missile, Non-reprogrammable
AIM-120B – Lots 6-7. Implements Electrically Erasable Programmable Read Only Memory (EEPROM) for software updates via Field Level Reprogramming
AIM-120C – Lots 8-10. Implements clipped wing and fin design for compatibility with F-22 Internal Carriage
AIM-120C-4 – Lot 11. Implements improved warhead
AIM-120C-5 – Lot 12. Implements 5 inch longer enhanced Rocket Motor and shortened control section
AIM-120C-6 – Lots 13 and up. Implements improved fuzing via new Quadrant Target Detection Device (QTDD)

**Weight**  
≅ 345 lbs

**Length**  
≅ 144 inches

**Diameter**  
≅ 7 inches

**Wing Span**  
AIM-120A/B - 21 inches  
AIM-120C - 17.5 inches (C)

**Control Fin Span**  
AIM-120A/B - 25 inches  
AIM-120C - 17.5 inches (C)

**CG (Nom)**  
≅ 79.6 inches

**Warhead**  
≅ 45 lbs. Blast/Fragmentation

**Propulsion** – Boost/Sustain, Reduced Smoke

**Fuze** – Active RADAR Target Detection Device (TDD)

### Carrier Options

**Aircraft:**
- F-15 A/B/C/D/E  
  Launcher: LAU-106 (F-15 eject)
- F-16 C/D  
  LAU-116 (F-18 eject)
- F-18 C/D/E/F  
  LAU-127 (F-18 rail)
- F-4F  
  LAU-128 (F-15 rail)
- Harrier  
  LAU-129 (F-16 rail)
- JAS 37 Viggen
- JAS 39 Gripen

### Status/Schedule/Improvement

**Contractor** – Raytheon Missile Systems Company, Tucson AZ

**Status** – Inventory/Rate Production for USAF/USN/FMS. Ongoing improvements via a PrePlanned Product Improvement (P3I) Program.

**OPR** – AAC/YA (AF)/PMA-268 (USN) (Joint USAF/USN Program, USAF Lead Service)

**Support Activities** – WR-ALC/LKG (USAF) – NAWCWPNS – Pt Mugu (USN)

**Technical Order** – 21-AI120A-2 (USAF), NAVAIR 01-120-2 (USN)

**Special Equipment** – Test Set, Guided Missile Circuitry, TS-4108/G (MBTS) (USAF), Common Field-Level Memory Reprogramming Equipment AN/GYQ-75A (V) (CFMRE) (USAF) and (USN)
CHAPTER TWO

AIR - TO - GROUND

MISSILES

(AGM)
Nomenclature: AGM-65 Series  
Name: Maverick

Description
The missile’s autonomous guidance systems give aircrews launch-and-leave capability at a wide range of distances and speeds. Because of its accuracy and lethal warhead, Maverick provides a high single-pass kill probability. Mavericks can be fired from a number of aircraft against a variety of targets such as field fortifications, bunkers, hangarettes, tanks, armored personnel carriers, parked aircraft, radar or missile sites, port facilities, and ships, including high-speed patrol craft.

Weapon Characteristics
AGM-65
CRD Weapons Code
M65AA MISSILE AGM-65A
M65BA MISSILE AGM-65B
M65DA MISSILE AGM-65D
M65GB AGM-65 G-2
M65GA AGM-65/G
M65KA AGM-65/K
SZKCA AGM-65G-2
SZKDA AGM-65H
M65HA AGM-65H AUR
SZKEA AGM-65K
Z65AA MISSILE TGM-65A CAPTIVE
Z65DA MISSILE TGM-65D CAPTIVE
Z65TD MISSILE TGM-65D LOAD TRAINER
Z65TE MISSILE TGM-65D MAINT TRAINER
Z65GA MISSILE TGM-65G CAPTIVE
P65DA PREPO ISO AGM-65/D
P65DB PREPO ISO AGM-65/D
P65GA PREPO ISO AGM-65/G
P65GB PREPO ISO AGM-65/G2
SZKAA STAMP AGM-65D
SZKBA STAMP AGM-65G

Guidance - TV (A, B,H,K); IR (D, F, G2); Laser (E); Charged Coupled Device (CCD) Imaging TV (H,K)
Control - Tail, Hydraulic Pneumatic Actuators
Autopilot - Proportional Navigation
Class – Anti-armor / Penetration Missile
AGM-65 A/B (TV)
Weight (full) 464.0 lbs +/- 15
cg (x) 52.40 in. +/- 0.50 in.
cg (y) unk +/- 0.50 in.
cg (z) unk +/- 0.50 in.
<table>
<thead>
<tr>
<th>AGM-65 D (IR)</th>
<th>AGM-65 G2/G2 (IR)</th>
<th>AGM-65 H</th>
<th>AGM-65 K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>97.70 in.</td>
<td>97.70 in.</td>
<td>97.70 in.</td>
</tr>
<tr>
<td>Diameter</td>
<td>12.00 in.</td>
<td>12.00 in.</td>
<td>12.00 in.</td>
</tr>
<tr>
<td>Inertia (roll)</td>
<td>2.20 +/- 10%</td>
<td>2.39 +/- 10%</td>
<td>2.35 +/- 10%</td>
</tr>
<tr>
<td>Inertia (pitch)</td>
<td>64.00 +/- 10%</td>
<td>72.20 +/- 10%</td>
<td>64.40 +/- 10%</td>
</tr>
<tr>
<td>Inertia (yaw)</td>
<td>64.00 +/- 10%</td>
<td>72.07 +/- 10%</td>
<td>64.30 +/- 10%</td>
</tr>
<tr>
<td>Weight (full)</td>
<td>484.47 lbs +/- 15 lbs</td>
<td>664.80 lbs +/- 5%</td>
<td>461 lbs +/- 15</td>
</tr>
<tr>
<td>cg (x)</td>
<td>51.38 +/- 0.50 in.</td>
<td>47.64 +/- 0.50 in.</td>
<td>52.17 +/- 0.50 in.</td>
</tr>
<tr>
<td>cg (y)</td>
<td>0.01 +/- 0.50 in.</td>
<td>-0.04 +/- 0.50 in.</td>
<td>0.00 +/- 0.50 in.</td>
</tr>
<tr>
<td>cg (z)</td>
<td>0.20 +/- 0.50 in.</td>
<td>0.16 +/- 0.50 in.</td>
<td>0.20 +/- 0.50 in.</td>
</tr>
<tr>
<td>Length</td>
<td>97.70 in.</td>
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</tr>
<tr>
<td>Inertia (roll)</td>
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<td>2.95 +/- 10%</td>
<td>2.35 +/- 10%</td>
</tr>
<tr>
<td>Inertia (pitch)</td>
<td>72.20 +/- 10%</td>
<td>79.91 +/- 10%</td>
<td>64.40 +/- 10%</td>
</tr>
<tr>
<td>Inertia (yaw)</td>
<td>72.07 +/- 10%</td>
<td>79.65 +/- 10%</td>
<td>64.30 +/- 10%</td>
</tr>
<tr>
<td>Weight (full)</td>
<td>664.80 lbs +/- 5%</td>
<td>672 lbs +/- 15</td>
<td>461 lbs +/- 15</td>
</tr>
<tr>
<td>cg (x)</td>
<td>47.64 +/- 0.50 in.</td>
<td>48.55 +/- 0.50 in.</td>
<td>52.17 +/- 0.50 in.</td>
</tr>
<tr>
<td>cg (y)</td>
<td>-0.04 +/- 0.50 in.</td>
<td>0.00 +/- 0.50 in.</td>
<td>0.00 +/- 0.50 in.</td>
</tr>
<tr>
<td>cg (z)</td>
<td>0.16 +/- 0.50 in.</td>
<td>0.20 +/- 0.50 in.</td>
<td>0.20 +/- 0.50 in.</td>
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<tr>
<td>Inertia (roll)</td>
<td>2.95 +/- 10%</td>
<td>2.35 +/- 10%</td>
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<td>79.91 +/- 10%</td>
<td>64.40 +/- 10%</td>
<td>64.40 +/- 10%</td>
</tr>
<tr>
<td>Inertia (yaw)</td>
<td>79.65 +/- 10%</td>
<td>64.30 +/- 10%</td>
<td>64.30 +/- 10%</td>
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<td>Weight (full)</td>
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<td>cg (x)</td>
<td>48.55 +/- 0.50 in.</td>
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</tr>
<tr>
<td>cg (y)</td>
<td>0.00 +/- 0.50 in.</td>
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<td>0.00 +/- 0.50 in.</td>
</tr>
<tr>
<td>cg (z)</td>
<td>0.15 +/- 0.50 in.</td>
<td>0.15 +/- 0.50 in.</td>
<td>0.20 +/- 0.50 in.</td>
</tr>
<tr>
<td>Length</td>
<td>97.70 in.</td>
<td>97.70 in.</td>
<td>97.70 in.</td>
</tr>
<tr>
<td>Diameter</td>
<td>12.00 in.</td>
<td>12.00 in.</td>
<td>12.00 in.</td>
</tr>
</tbody>
</table>
Inertia (roll)  3.0  +/- 10%
Inertia (pitch)  75.90  +/- 10%
Inertia (yaw)  75.90  +/- 10%

Warhead -  125 lbs. Shaped Charge Jet and Blast (A, B, D,H)
           300 lbs. Penetrator/Blast-Frag (E, F,G,K)
Explosive -  86 lbs Comp B / 80 lbs PBX(AF)-108
Fuze -  SAF (A, B, D,H); FMU-135/B (E, F, G,K)
Stabilizer - Wings / Control Surfaces
Propulsion - Boost Sustain

Carriage Options
Aircraft:        Launcher:
A-10A            LAU-88A (3ea)
F-16A-D
F-15E            LAU-117 (1ea)

Status / Schedule / Improvements
Contractor – Raytheon Missile Company
Status – AGM-65A,B,D,F,G,E,H,K Inventory
OPR – AAC/WMGM
Special Equipment - AN/DSM-157 Guided Missile Test Set (A,B,D,G,H,K); AN/DSM-129
Guided Weapon Test Set (A,B,H,K); SM-787/DSM Test Set (D,G); For a complete list of AGM-
Tech Data - 21M-AGM65A-2 (A & B)
21M-AGM65D-2 (D & G)
21M-AGM65K-2 (H&K)
Nomenclature: AGM-84

Name: Harpoon

Description
The Harpoon missile is designed as an anti-ship cruise missile. It cruises just above the water surface toward its target and, just before impact, does a terminal pop-up maneuver to counter close-in defenses and enhance warhead penetration. There are 4 variants in use today. AGM-84A & C variants have pop-up maneuver, B & D variants do not pop-up. Harpoons are also carried by B-52Gs in the sea-control role.

Weapon Characteristics
AGM-84C(I)
CRD Weapons Code
   ZC61C
Guidance - INS Mid-course, Active RADAR Terminal
Control - Tail
Autopilot - INS
Class – Air to Ground Missile
Weight (lbs.) - 1,160
Length (in.) - 151
Diameter (in.) - 13.5
Warhead - 500 lbs.
Explosive - Destex
Fuze - Contact
Propulsion - Turbojet Sustainer Engine

Carriage Options
Aircraft: Launcher: None (30 in Lugs)
F-16C-D
B-52H

Status / Schedule / Improvements
Contractor – Boeing, IBM and Raytheon
Status - Inventory
OPR - OC-ALC/LAM
Tech Data - NAVAIR 01-AGM84A-2-1
Nomenclature: AGM-86/B  Name: Air Launched Cruise Missile (ALCM)

Weapons Characteristics
AGM-86
CRD Weapons Code - None
Guidance - Inertial Navigation
Control - Operational Flight Program Software
Autopilot - N/A
Class - Air to Ground Missile
Weight (lbs.) - 2850
Length (in.) - 249
Diameter (in.) - 25
Warhead - W80
Fuze - Impact Sensors or Commanded Air Burst
Propulsion - F112-WR-100

Carriage Options
Aircraft - B-52H

Status / Schedule / Improvements
Contractor - Boeing Defense and Space Group
Status - Inventory
OPR - OC-ALC/PSM
Tech Order - 21M-AGM86-1
Nomenclature: AGM-86/C&D  Name: Conventional Air Launched Cruise Missile (CALCM)

**Weapons Characteristics**
CRD Weapons Code - None

Guidance - Inertial Navigation integrated with GPS
Control - Operational Flight Program Software
Autopilot - N/A
Class - Air to Ground Missile
Weight (lbs.) – 3250(C) 3280(D)
Length (in.) - 249
Diameter (in.) - 24.5
Warhead - 2000lb class blast fragmentation(C) 1000lb Class Advanced Unitary Penetrator (AUP-3M)
Explosive – PBXN-109(D)
Block 0 - AFX-760(C)
Block I - PBXN-111(C)
Fuze - FMU-139 A/B (2)(C) FMU-159/B(D)
Detonation - Impact or Proximity(C) Programmable Burst Point Control(D)
Propulsion - F107-WR-100

**Carriage Options**
Aircraft - B-52H (20)

**Status / Schedule / Improvements**
Contractor - Boeing Defense and Space Group
Status - Inventory / Production(C) Engineering Manufacturing and Development
OPR - OC-ALC/PSM
Tech Order - 21M-AGM86-2-3(C), 21-AGM-86-2-4 (D)
**Nomenclature: AGM-88 B & C**  
**Name: HARM (High Speed Anti-Radiation Missile)**

**Description**
The AGM-88 HARM is a supersonic air-to-surface missile designed to seek and destroy enemy radar equipped air defense systems. HARM has a proportional guidance system that homes in on enemy radar emissions through a fixed antenna and seeker head in the missile nose. The missile consists of four sections: guidance section, warhead, control section and rocket motor.

**Characteristics**
AGM-88  
CRD Weapons Code
- Z88AB MISSILE AGM-88(HARM)CAPTIVE
- Z88AD MISSILE AGM-88(HARM)CAPTIVE
- M88AB MISSILE AGM-88B AUR (HARM)
- M88AA MISSILE AGM-88C AUR
- P88AA PREPO ISO AGM-88/B
- P88CA PREPO ISO AGM-88/C
- SZM AA STAMP AGM-88C

Guidance – Passive Broadband Radio Frequency  
Control - Wing, Electro-Mechanical  
Autopilot - 3 Axis Rate Gyros  
Class - Air to Ground Missile  
Weight (lbs.) – 780 - 810  
Length (in.) - 164  
Diameter (in.) - 10  
Warhead
- WAU-27/B (AGM-88C)
- WAU-7/B (AGM-88/B)
- Weight 143.5 lbs  
  Type: Direct fragmentation, variable charge-to-metal concept  
  Explosive: PBXN-107  
  NEW: 45.2 lds.

Fuze – FMU-111/B Proximity/Contact  
Control Section: WCU-2/B  
Target Detector: DSU-19A/B Electro-optical  
Rocket Motor: YSR-113-TC-1, smokeless, solid-propellant, dual thrust

**Carriage Options**
Aircraft: Launcher -  
F-16C-D LAU-118A (V) 4/A

**Status / Schedule / Improvements**
Contractor – Raytheon Company
Status - Inventory
OPR - WR-ALC/LKG
Special Equipment – MSU-170A/E
Technical Orders - 21M-AGM88C-2 (Missile)
33D9-45-1 (Test Set)
Nomenclature: AGM-129A

Name: Advanced Cruise Missile

Weapons Characteristics
AGM-129
CRD Weapons Code - None

Guidance - Inertial Navigation
Control - Operational Flight Software
Autopilot - N/A
Weight (lbs.) - 3600
Length (in.) - 250
Warhead - W80
Fuze - N/A
Propulsion - F112-WR-100 Turbofan
Range – 2000 Nautical Miles

Carriage Options
Aircraft - B-52H
Launcher – 30 inch lugs

Status / Schedule / Improvements
Contractor – (Prime) Ratheon Co
(Second) McDonnell Douglas missile Systems (Boeing) MO
Status -Inventory
RAA: - 1 Oct 1992
OPR - OC-ALC/PSM
Tech Data – 21-AG129-2-1
**Nomenclature:** AGM-130  
**Name:** Powered Standoff Weapon

**Description**
Derived from the GBU-15, it has since been extensively modified to an advanced, precision guided weapon used against high value fixed targets. It features Inertial Navigation System/Global Positioning System (INS/GPS), man-in-the-loop capabilities and has a propulsion section enabling enhanced standoff capability. There are two versions of the weapon; the AGM-130A model utilizes the MK-84 warhead and the AGM-130C model utilizes the BLU-109 penetration warhead. Both versions have advanced control sections and new Switchable Data Links (SDL) for horizontal target attack profiles. There are two improved guidance sections for day and night extended capability; Television Guided Section (TVGS) and Improved Modular Infraed Sensor (IMIRS). A new test system, AN/GJM-64 tests all GBU-15 and AGM 130 configurations completely menu driven featuring minimal manual operator intervention. The software can be readily modified to facilitate testing/updating of new weapon versions, enhancements, improvements and modifications.

**Weapons Characteristics**

**AGM-130**  
**CRD Weapons Code**  
**ZMG**

- **SC**  AGM-130 LC&FTD INRT IMIRS SDL  
- **M309G**  AGM-130 TAC, BLU-109, IMIRS, SDL  
- **M309H**  AGM-130 TAC, BLU-109, TVGS, SDL  
- **M306A**  AGM-130 TAC, INERT, IMIRS, SDL  
- **M306B**  AGM-130 TAC, INERT, TVGS, SDL  
- **M304G**  AGM-130 TAC, MK-84, IMIRS, SDL  
- **M304H**  AGM-130 TAC, MK-84, TVGS, SDL  
- **M304A**  AGM-130 TAC/INRT IMIRS SDL  
- **M304B**  AGM-130 TAC/INRT TVGS SDL  
- **ZMGMB**  AGM-130(I) A-1 DATM DUMMY TRN TV  
- **M304E**  AGM-130A-11 TAC MK-84 SDL  
- **M304F**  AGM-130A-12 TAC MK-84 IR SDL  
- **M309E**  AGM-130C-11 TAC BLU-109 TV SDL  
- **M309F**  AGM-130C-12 TAC BLU-109 IR SDL  
- **SZTMS**  STAMP AC-130H/U 25MM  
- **SZNBA**  STAMP AGM-130A-12  
- **SZNDA**  STAMP AGM-130C-12  
- **ZM45A**  CATM-130-109 TVGS L/W F-15E  
- **ZMG5A**  CATM-130A-109 TVGS F-15E  
- **ZMG5B**  CATM-130A-110 IMIRS F-15E  
- **ZM45B**  CATM-130A-110 IMIRS L/W F-15E
Guidance – Autonomous GPS/INS
    TVGS or IMIR Seeker
    Precise Adverse Weather, day or night
    Accurate All Weather
    Vertical Horizontal Targets
Control – Automatic or manual (WSO with AXQ-14 or ZSW-1 Data Link System
Autopilot - Digital
Class - 3000 lb Standoff Weapon

AGM-130A-11 AUR
Weight - AGM-130A-11 (MK-84, TV) 2978 lbs
    - AGM-130A-12 (MK-84, IR) 3001 lbs
    - AGM-130C-11 (BLU-109, TV) 3064 lbs
    - AGM-130C-12 (BLU-109, IR) 3087 lbs
Length - 158.8 in
Diameter - MK-84 Warhead 18.0 in
    - BLU-109 Warhead 16.0 in
    - Rocket Motor 9.0 in
    - Guidance Section 15.0 in
    - Control Section 16.0 in
    - Tail Section (Wings) 59.0 in
Warhead - BLU-109 or MK-84
Explosive - Tritonal - 945 lbs (MK-84); 535 lbs (BLU-109)
Fuze - FMU-124A/B (MK-84); FMU-143 (BLU-109) Integrating FMU-152
Stabilizer – Strakes (canards), Wings, and Control Surfaces
Propulsion - Solid Propellant Rocket Motor
Range - 15 – 30+ NM

Carriage Options
Aircraft: F-15E
Rack/Pylon: 30 in. Lug Spacing Compatible

Status / Schedule / Improvements
Contractor – Boeing Company
Status – Inventory (AGM-130-9/-10 replaced by -11/-12 Apr.99)
OPR - AAC/WMG; Eglin AFB, FL DSN 872-9514
Improvements – Potential Integration of FMU-152 (JPF) Fuze
Special Equipment - GJM-65 Field Test Set
T.O – 21M-AGM130-2
**Nomenclature:** AGM-142

**Name:** HAVE NAP

**Description**
The missile is in the production phase. It is an Israeli designed standoff cruise missile designed to provide long-range bombers and other aircraft with a conventional precision strike capability. The missile is jointly produced in the U.S. and Israel. It has a range in excess of 50 miles and is inertially guided, with EO or IIR homing.

**Weapons Characteristics**

**AGM-142**

CRD Weapons Code

- Z42AA AGM-142 CATM
- Z42BA AGM-142 DATM
- M42FS AGM-142B-1
- M42PS AGM-142D-1
- M42FR AGM 142 BLAST FRAG IR SEEKER
- M42PR AGM 142 IR PENETRATOR
- M42PT AGM 142 PENETRATOR TV SEEKER
- M42FT AGM 142 TV FRAG

Guidance - Electro-Optical TV or IIR Seeker
Control - Automatic and Manual w/ RF Data Link
Autopilot - Inertial Navigation Capability
Class - 3000 lb Standoff Missile
Weight (lbs.) - 3,000
Length (in.) - 191
Diameter (in.) - 21
Warhead - 750 lb, Blast / Fragmentation or 770 lbs Penetrator (I-800)
Explosive - 330 lbs (BF) or 170 lbs (I-800)
Fuze - FMU-124C/B (BF) or FMU-143 (I-800)
Stabilizer - Canards, Wings, Fins
Propulsion - Solid Propellant Rocket Motor

**Carriage Options**

- **Aircraft:**
  - B-52H

- **Rack/Pylon:**
  - 30 in. Lug Spacing Compatible

**FMS Aircraft Carriage**

**Status / Schedule / Improvements**

Contractor - Rafael, Haifa, Israel and Lockheed Martin
Status - Production
IOC Date - March 95 at Barksdale AFB, LA
OPR - AAC/WMGA
Tech Data – 33D9-61-115-1, 33D9-3-285-1
Special Equipment – AN/GJM-62A Missile Test Station, AN/ASW-55 Weapons Control Data Link Pod Test Set and ADU-813/E Test Set Adapter
**AGM-154**

**JSOW (Joint Stand-Off Weapon)**

**Description**
The JSOW is a low observable 1000lb class INS/GPS guided, family of air-to-ground glide weapons. JSOW consists of a common airframe and avionics that provides for a modular payload assembly to attack stationary and moving massed light-armored and armored vehicle columns, surface-to-air targets and personnel. JSOW provides combat forces with an all weather, day/night, multiple kills per pass, launch and leave, and standoff capability.

**Weapons Characteristics**
AGM-154
CRD Weapons Code
- M541A AGM-154A JSOW
- SZPAA AGM-154A JSOW
- SZPBA AGM-154B JSOW
- Z54BA DATM-154

Guidance – AGM-154A&B INS/GPS; AGM-154C (Navy Only)-INS/GPS w/1²R Seeker
Class - Standoff Outside Point Defense (SOPD) Missile
Weight (lbs.) - 1,065 max
Length (in.) - 160
Diameter (in.) - 16 x 22; Wings Extended-106
Warhead – AGM-154A –145 BLU-97 Bomblets;
- AGM-154B –6 BLU-108s (24 Skeets) Note: Production halted
- AGM-154C (Navy Only) – BROACH Penetrator Warhead
Propulsion – None, Glide Weapon (~12:1 glide ratio)
Range – 15nm at low altitude; >40nm at High Altitude

**Carriage Options**
AF Aircraft: F-16(2) with BRU-57(4); B-1B(12); B-2A(16); F-15E(5); B-52H(12); JSF(TBD)
Navy Aircraft: F/A-18C/D and E/F(4) with BRU-57(6)
Pylon/Rack – 14 in and 30 in Lug Spacing

**Status / Schedule / Improvements**
Contractor - Raytheon
Status – AGM-154A – Prod; AGM-154B – LRIP (No future production by USAF)
- AGM-154C – E&MD
AF IOC Date - TBD
OPR - NAVAIRESYSCOM PMA-201
Mgmt/Eng (AF) - AAC/YH
Notes - Joint USAF/USN program (USN Lead Service)
Reference - JMEM
Special Equipment – AN/GYQ-79 Oommon Munition Bit Reprogramable Equipment (CMBRE)
Technical Order – 21-AGM154-2-2
**Nomenclature:** AGM-158A

**Name:** JASSM - (Joint Air-to-Surface Stand-Off Missile)

**Description**

JASSM is a precision cruise missile designed for launch from outside area defenses to kill hard, medium-hardened, soft and area type targets. The weapon is required to attack both fixed and relocatable targets at ranges beyond enemy air defenses.

**Weapons Characteristics**

AGM-158

CRD Weapons Code

M58HA AGM-158A (JASSM)

Z58HA DATM-158A (JASSM)

Guidance – Imaging, Infared Radar

Class - 2000 lb Standoff Missile

Weight (lbs.) - < 2250

Length (in.) - < 168

Height (in) - < 21 (wings Closed)

Width (in) - < 25 (Wings closed)

Warhead - Unitary

Explosive – AFX-757 (Insensitive Munition)

Propulsion – Teledyne Model 370-9-2 Engine

**Special Equipment**

**Carriage Options**

Aircraft: Launcher – None 30 inch lugs (no lanyard)

F-16  F-117

F-15  B-1

B-2  B-52

F-18  S-3

P-3

**Status / Schedule / Improvements**

Contractor – Lockheed Martin

Status – Low Rate Initial Production (LRIP)

RAA Date - 2003(B-52)

OPR - AAC/YV

Reference – JASSM Program Office
CHAPTER THREE

SURFACE - TO - AIR

MISSILES

(SAM)
Nomenclature: FIM-92A  Name: STINGER

Description:
The Stinger is a man-portable, shoulder-fired guided missile system which enables personnel to effectively engage low-altitude jet, propeller-driven and helicopter aircraft.

Weapon Characteristics
CRD Weapon Code - M092A
Weight (lbs.) - 34.5
Length (in.) - 60
Diameter (in.) - 2.75
Control - Canard
Autopilot - Proportional
Propulsion - Dual Thrust 2,370 lbs.-sec.; Launch Motor 841 lbs.-sec.
Warhead - Blast Fragmentation
Fuze - Impact

Employment Options
Targets - Aircraft

Status/Schedule/Improvements
Contractor - Raytheon
Status - Inventory
OPR - Army (Redstone Arsenal)
**Nomenclature: The Rapier FSC System**

**Name:** RAPIER

**Description:**
The Rapier FSC system provides a Low Level Air Defence (LLAD) capability over the battlefield. It consists of a launcher with 8 ready to fire missiles and an electro-optical tracker (shown). Each fire unit can cover an Air Defence Area (ADA) of approximately 100 square kms.

**Weapon Characteristics**
- CRD Code - None
- Weight (lbs.) - 95
- Length (in.) - 88
- Diameter (in.) - 5
- Guidance - Semi-Automatic Command to Line-of-Sight
- Control - Tail
- Autopilot - Lateral Accelerometer/3 Axis Gyro
- Propulsion - Boost 1.5 sec./Sustain 6.0 sec.
- Warhead - 6 lbs. HE Blast Fragmentation
- Fuze - Impact

**Employment Options**
- Targets - Aircraft

**Status/Schedule/Improvements**
- Contractor - British Aerospace
- Status - Inventory
- OPR - United Kingdom
- Reference: JMEM
CHAPTER FOUR

UN GUIDED

MUNITIONS
Nomenclature: M129 / MJU-1 Name: Leaflet / Chaff Bomb

Description
The M129 Leaflet Bomb is a fiberglass reinforced container split longitudinally into two sections and held together by four latch assemblies on each side. When joined the halves form a cylindrical body with an ogival shaped nose. When the bomb is released from the aircraft the fuze is armed permitting the timing mechanism to start. The fuze functions at a preset time detonating an adapter booster which initiates detonating cord. The detonating cord separates the two bomb halves dispersing the load (leaflets).

Characteristics
M129
CRD Weapons Code
L29AH M129 LEAFLET 107/B
L29AE M129 LEAFLET M147
L29AF M129 LEAFLET M909
L29AG M129 LEAFLET MK339
SZVMA M129 LEAFLET BOMB
ZLBAA M129 LEAFLET M147
ZLBAB M129 LEAFLET M339

Guidance - Ballistic
Class - 200 lb. Canister
Weight (lbs.) - 92 empty, 203 full (depends on paper weight)
Length (in.) - 90.0
Diameter (in.) - 16 (22 W/Fin Installed)
Payload (lbs.) - 110 paper rolls or chaff bundles
Explosive - fuze booster ignited detonating cord which cuts canister
Fuze - Timer: FMU-107, M909, Mk 339
Stabilizer - Fins, M148

Carriage Options
Aircraft: Launcher/Rack - Multiple
A-10A (14 in. Lug Spacing)
B-52H F-111D-F
F-16A-D F-15E

Status / Schedule / Cost / Improvements
Contractor - TBD
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11A1-2-7/TO 1-1M-34

SUSPENSION LUGS
Nomenclature: BDU-33D/B   Name: Practice Bomb

Description
The BDU-33 is a teardropped shaped practice bomb that utilizes a spotting charge to display target marking. When the bomb is released from the aircraft it free falls until impact. Upon impact the bomb drives a firing pin assembly against a primer activating the signal charge. The resulting flash and puff of smoke permits visual evaluation of accuracy.

Characteristics
BDU-33
CRD Weapons Code
ZP61A  BDU 33 D/B W/MK4
ZP61B  BDU 33D/B CXU3/B
ZP61C  BDU 33D/B W/LUGS/MK 4 SPOT
ZP61D  BDU33/W LUG/CXU3/B

Class - 25 lb Practice Bomb
Weight - 25 lbs
Length - 22.9 in
Diameter - 4 in

Aircraft: A-10, B-1 F-4, F-15, F-16, F-111

Management/Engineering: OO-ALC/WM

Technical Order: 11A3-3-7 (Bomb); 11A4-4-7 (CXU-3A/B)
Nomenclature: **BDU-38**  
Name: **Practice Bomb**

**Description**
The BDU-38 consists of a nose section, center section and aft section. The nose section is a cylinder of sand-cast iron tapered to a point at the forward end. The center section is a cylinder rolled and welded aluminum with a cast iron ballast. Suspension lugs are attached to this section. The aft section consists of the aft section, rear extension and parachute assembly. The BDU-38 is used to provide a practice shape like the parent weapon system to train air crews on delivery. The BDU-38 is designed to be reusable.

**Characteristics**
**BDU-33**
**CRD Weapons Code**
Z38AA  PRACTICE BOMB BDU-38 (RETARDED)
Z38AB  PRACTICE BOMB BDU-38 (SLICK)

Class - Practice Bomb  
Weight – 715.00 lbs (+-15)  
Length – 141.642 in  
Diameter – 13.3 in

**Aircraft:**  F-15, F-16

**Management/Engineering:**  OO-ALC/WM

**Technical Order:**  11A3-8-7
**Nomenclature:** BDU-48A  
**Name:** Practice Bomb (Retard)

**Description**
The BDU-46 is a cylindrical shaped practice bomb that utilizes a spotting charge to display target marking. When the bomb is released from the aircraft it freely falls until impact. Upon impact the bomb drives a firing pin assembly against a primer activating the signal charge. The resulting flash and puff of smoke permits visual evaluation of accuracy.

**Characteristics:**
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<th>BDU-48</th>
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<td>ZP91B</td>
<td>48/CXU3</td>
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<td>ZP91A</td>
<td>PRACTICE BOMB RETARD,BDU 48/MK 4</td>
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</table>

Class - 10lb Practice Bomb  
Weight - 10 lbs  
Length - 21 in  
Diameter - 3.875 in

**Aircraft:** B-52H

**Management/Engineering:** OO-ALC/WMG

**Technical Order:** 11A3-3-7 (Bomb); 11A4-4-7 (CXU-3A/B)
**Nomenclature:** BLU-82  

**Name:** 15,000 lb. GP Bomb

**Description**
The BLU-82/B bomb is a 15,000 pound, slurry-filled weapon mounted on a wooden cradle intended primarily for internal carriage and delivery by cargo-type aircraft. The bomb has a conical nose and a cylindrical body closed by a standard tank pressure head at the aft end. The forward end of the bomb body includes a fuze and booster well for installation of M904E2 fuze, BBU-23/B auxiliary booster.

**Characteristics:**
BLU-82  
CRD Weapons Code - None

Guidance - Ballistic  
Class - 15,000 lb Blast/Fragmentation  
Weight (lb) - 15,000  
Length (in) - 141.6  
Diameter (in) - 54  
Warhead (lbs) - 15,000  
Explosive (NEW) - Aluminum Powder (12,600 lbs)  
Fuze - M904 (Nose); M905 (Tail) (See Appendix A)

**Carriage Options:**
MC-130

**Status/Schedule/Cost/Improvements**
Status - Inventory  
OPR - OO-ALC/WM   DSN 777-7679  
Tech Data - 11A1-9-7
BLU-82 (A/C Pallet Configuration)
**Nomenclature: BLU-109/B**  
**Name: Hard Target Warhead**

**Description**
I-2000 is the warhead for the GBU-24A/B. It is a penetration weapon used for bunkers, A/C shelters and reinforced concrete structures.

**Characteristics**
BLU-109  
CRD Weapons Code  
BC91A  BLU-109  FMU-143  
SZBCA  STAMP BLU-109 BOMB

Guidance - Ballistic  
Control - Low Drag Fins/Air Foil Groups  
Class - 2,000 lb. Penetrator, Blast / Fragmentation

BLU-109 (LDGP)  
Weight (full)  2,011.93 lbs  +/- 5%  
cg (x)  13.61 in.  +/- 0.05 in.  Inertia (roll)  unk  +/- 10%  
cg (y)  0.0 in.  +/- 0.05 in.  Inertia (pitch)  401.77  +/- 10%  
cg (z)  0.03 in.  +/- 0.05 in.  Inertia (yaw)  401.67  +/- 10%  
Length  147.00 in.  
Diameter  14.50 in.  
Drawings  8394794, DL8394794, DL8394794, DL 8463243, DL8463213  
Interface Control Drawings  8463195, 8463196, 837849, 837901, 8463324  
Employment Limits  PIDS SP8394794A, para 3.2.1  
Environmental Limits  PIDS SP8394794A, para 3.2.6  
Warhead (lbs.) – 1950  
Explosive (NEW) - 535 lbs. Tritonal  
Fuze - FMU-143 Series (See Appendix A)  
Stabilizer - Fins and Airfoil Groups (Laser Guided Bombs)

**Employment Options**
Aircraft: Launcher/Rack - (30in. Lug Spacing)  
F-117  MAU-12  
F-15E  BRU-47  
F-16A-D

**Status / Schedule / Cost / Improvements**
Contractor - National Forge Co.  
Status - Inventory  
OPR - OO-ALC/WM  
Tech Data - 11A1-11-7
**Nomenclature:** BLU-113/B, A/B Penetrator Warhead

**Name:** Desert Storm Special

**Description**
The BLU-113 is a 4000 pound class penetrator. The case is made from HP9420 alloy steel to provide target penetration capabilities. The bomb body is loaded with 80/20 tritonal explosives and utilizes a single fuze.

**Characteristics**
BLU-113  
CRD Weapons Code – See Chapter 5  
Guidance - Warhead only-Part of GBU-28 A/B Laser Guided Bomb  
Control - See GBU 28 A/B  
Class - 4,000 lb. Penetrator, Blast / Fragmentation  
Weight: 4,444 lbs;  
Explosive: 670 lbs Tritonal  
Tolerances: PIFS SP9331411A, para 3.2.1.2

cg (x): 19.28 in.  
For additional information, see PIFS SP9331411A, para 3.2.1.3  
Tolerances: +/- 0.50 in.

cg (y): 15.28 in.  
For additional information, see PIFS SP9331411A, para 3.2.1.3  
Tolerances: +/- 0.50 in.

cg (z): 6.04 in.  
For additional information, see PIFS SP9331411A, para 3.2.1.3  
Tolerances: +/- 0.50 in.

Length: 153.0 in.  
Diameter: 14.5 in.  
Drawings: 9331411, DL9331411  
Interface Control Drawings: 9331420  
Warhead (lbs.) - 4,414  
Explosive - 647lbs. Tritonal  
Fuze - FMU-143 Series (See Appendix A)  
Stabilizer - Air Foil Group (Fins)

**Carriage Options**
Aircraft: Launcher/Rack - (30 in. Lug Spacing)  
F-15E Pylon, BRU-47 (F15E)  
F-111F MAU-12 (F111F)

**Status / Schedule / Cost / Improvements**
Contractor - Lockheed (BLU-113/B), National Forge (BLU-113A/B),
Status - Inventory
OPR - OO-ALC/WM
Tech Data - N/A
Nomenclature: M-117  
Name: 750 lb GP Bomb

Description
M-117: The M117, a 750lb class bomb, is used primarily in the same way as a MK-82. This weapon was designed primarily for the B-52 to allow more weapons to be carried inside the aircraft.

M-117 W/RETARD: The M-117R is the high drag variant of the original M-117. It uses the MAU-91 retarding tail fin.

Characteristics
M-117
CRD Weapons Code
ZR74H M117 AIR B-52
ZC74B M117 CONICAL B-52
BC77B M117 W/FMU-139A/B (T)  B-2
BC77A M117 W/M904/905  B-2
BR74J M117/MAU-91 FMU-139 (T)  B-52
BR71J M117/MAU-91 FMU139A/B(T)
BR77A M117/MAU-91 W/FMU-139A/B (T)  B-2
BC71A M117C 113 NS
BC74D M117C 904 NS  B-52 INT
BC71F M117C 904/905
BC74F M117C 904/905  B-52 INT
BC71D M117C FMU 139A/B (T)
ZC71B M117C 113 NS
ZC74A M117C 904/905 N/T  B52
BC71R M117C DSU-33A/B FMU139
BC71S M117C DSU33B/B FMU139
BC71P M117C FMU-113/M905
BC74C M117C FMU-113/M905  B-52
BC74B M117C MAU-103 904/905  B-52-INTER
BC74G M117C/FMU-113/M905  B-52
BR74I M117R/BSU-93 FMU-139 T  B-52
BR74Q M117R/BSU-93 FMU139 TL  B52
BR74S M117R/BSU-93 M904  B52
ZR71H M117R/BSU93B/FMU139
BR71E M117R/MAU-91 M904 NS
BR74G M117R/MAU-91 M904 NS  B52
ZR74E M117R/MAU91 904 54/B N/T  B52
BC71B BMB GP M117A2  FMU 139A/B (N)

Guidance - Ballistic
Class - 750 lb. Blast / Fragmentation
Weight (lbs.) - 737
Length (in.) - 51.5
Diameter (in.) - 16 (22 W/Fin Installed)
Warhead (lbs.) - 737
Explosive - 386 lbs. Tritonal, 383 lbs. Minol II
Fuze - Mechanical or Electrical (See Appendix A)
Stabilizer - Fins, M131 or MAU-103 (Conical); MAU-91 or BSU-93/B (Retard)

**Carriage Options**
Aircraft: Launchers/Rack - Multiple
A-10A (14 in. Lug Spacing)
B-52H

**Status / Schedule / Cost / Improvements**
Contractor - Pacific Missile Test Center, Point Mugu, CA
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11A1-2-7
**Nomenclature: MK-81**

**Name: 250 lb. GP Bomb**

**Description**
MK-81 GP BOMB: The MK-81 is designed for soft, fragment sensitive targets such as troops, POL, and radars. This bomb is relatively thin cased with a slender body design for improved ballistics. Approximately 40 percent of assembled weight of bomb is an explosive charge. This weapon is not intended for hard targets or penetrations.

**Characteristics**
MK-81

CRD Weapons Code
- ZC11H MK81/CONICAL FIN
- BC11E MK81C 905 T
- BC11D MK81C 113 NS
- BC11C MK81C 904 NS
- BC11B MK81C 904/905 N/T
- BC14A MK81C 904/905 N/T B52
- ZC14A MK81C 904/905 N/T B52
- BC11H MK81C DSU33A/B FMU139
- BC11K MK81C DSU-33B/B FMU-139

Guidance - Ballistic
Class - 250 lb. General Purpose Bomb, Blast / Fragmentation

Mk-81 Low Drag
Weight (full) 250 lbs +/- 5%
Length 49.30 in.
Warhead (lbs.) - 250
Explosive(NEW) - 100lbs Tritonal, or H-6
Fuze - Variety for nose and tail. (See Appendix A)
Stabilizer – Conical Fin

**Carriage Options**
Aircraft: Launcher/Rack - Multiple
- A-10A (14 in. Lug Spacing)
- B-1B; B-52H
- F-16A-D
- F-117A

**Status / Schedule / Cost / Improvements**
Contractor - Nad Crane
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11A1-4-7
Nomenclature: MK-82

Name: 500 lb. GP Bomb

Description
MK-82 GP BOMB: The MK-82 is designed for soft, fragment sensitive targets such as troops, POL, and radars. The Air Force is the primary user. This weapon is not intended for hard targets or penetrations.

MK-82 (BSU-49): The MK-82(A) is the high drag version of the original MK-82. It is used against soft targets and is used primarily for low level attacks. The targets will include troops, aircraft in the open, etc.

Characteristics
MK-82
CRD Weapons Code

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BR26D MK82R DSU33B/B FMU139 B-1
ZRE1E MK82R(I) BSU-49 M904 NS
ZBE4A MK82R(I)/MK15 54/B TL B-52 INTER
BR26A MK82R/BSU-49 139 TL B-1
BR21A MK82R/BSU-49 904 NS
BR21B MK82R/BSU-49 904 T
BR24E MK82R/BSU-49 904 NS B52-INTERNAL
BR24K MK82R/BSU-49 904/905 B52-INTERNAL
BR21L MK82R/BSU-49 904/905 N/T
BR24J MK82R/BSU-49 905 TL B52-INTERNAL
BR21E MK82R/BSU-49 904 NS FMU-139 T
BB23D MK82R/MK-15 M904 A10
BB25G MK82R/MK-15 139A/B T F-15E
BB24G MK82R/MK-15 904 NS B52-INTERNAL
BB23L MK82R/MK-15 FMU-139 A/B A10
BB21R MK82R/MK-15 FMU139A/B (T)
BB24H MK82R/MK-15 FMU139A/B B-52-INTERNAL
BB21K MK82R/MK-15 M904
BB25F MK82R/MK-15 M904 NS F-15E
PR21A PREPO ISO MK-82 HD W/FMU-139 T
PR21B PREPO ISO MK-82 HD W/M904/M905 NT
SZBDA STAMP MK-82 AIR KIT
SZBAA STAMP MK-82 BOMB
SZBFA STAMP MK-82 LOW DRAG KIT
SZVGB STAMP B-1/B MK-82 HIGH DRAG KIT

Guidance - Ballistic
Class - 500 lb. General Purpose Bomb, Blast / Fragmentation

Mk-82 AIR
Weight (full) 533.10 lbs +/- 5%
cg (x) 8.95 in. +/- 0.50%
cg (y) -0.06 in. +/- 0.50%
cg (z) -0.06 in. +/- 0.50%
Length 85.86 in.
Length with nose fuze 89.66 in.
Length with nose plug 91.16 in.
Diameter 10.80 in.
Inertia (pitch) 1.50 +/- 10%
Inertia (roll) 49.93 +/- 10%
Inertia (yaw) 49.89 +/- 10%

Mk-82 LDGP Mdl 0, 1
Weight (full) 502.0 lbs +/- 5%
cg (x)       6.48 in.   +/- 0.50%
cg (y)       -0.04 in.  +/- 0.50%
cg (z)       -0.06 in.  +/- 0.50%
Length      89.44 in.
Length with M904 fuze  93.24 in.
Diameter     10.80 in.
Inertia (pitch)    unk    +/- 10%
Inertia (roll)     38.17   +/- 10%
Inertia (yaw)    38.22   +/- 10%

Mk-82 Snakeye I Mdl 0, 1
Weight (full)    550.0 lbs  +/- 5%
cg (x)       9.30 in.    +/- 0.50%
cg (y)       unk     +/- 0.50%
cg (z)       unk     +/- 0.50%
Length      85.50 in.
Diameter     10.80 in.
Inertia (pitch)    2.10    +/- 10%
Inertia (roll)     48.00   +/- 10%
Inertia (yaw)    48.00   +/- 10%
Inertia (pitch) wings deployed  53.0  +/- 10%
Inertia (roll) wings deployed    unk          +/- 10%
Inertia (roll) wings deployed  53.0  +/- 10%
Drawings     1380543

Mk-82 (BSU-49B)
Weight (full)    NGT 70 lbs
cg (x)       7.0 in.    +/- 2.0 in. aft of forward lug prior to deployment
cg (y)       unk     +/- 0.50%
cg (z)       unk     +/- 0.50%
Length      0.66 m
Diameter     222 mm
Drawings     809194, DL809194-10
Interface Control Drawings 4902393, 1380901, 3823738-503
Employment Limits PIDS SP809194 para 3.2.1
Environmental Limits PIDS SP809194 para 3.2.5
Warhead (lbs.) - 500
Explosive(NEW) - 192lbs Tritonal, Minol II, or H-6
Fuze - Variety for nose and tail. (See Appendix A)

**Carriage Options**
Aircraft: Launcher/Rack - Multiple
A-10A (14 in. Lug Spacing)
B-1B; B-52H
F-15A-E
F-16A-D; F-111D-F
F-117A

**Status / Schedule / Cost / Improvements**
Contractor - Nad Crane
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11A1-5-7
**Nomenclature: MK-83**

**Name: 1000 lb. GP Bomb**

**Description**
MK-83 GP BOMB: The MK-83 is designed for soft, fragment sensitive targets such as troops, POL, and radars. The US Navy is the primary user. This weapon is not intended for hard targets or penetrations.

**Characteristics**
MK-83
CRD Weapons Code
BC31A MK83C 904/905 N/T
ZC31B MK83C 904/905 N/T

Guidance - Ballistic
Control - Low and High Drag Fins; Airfoil Groups (Laser Guided Bombs)
Class - 1,000 lb. General Purpose Bomb
Weight (lbs.) - 1000
Length (in.) - 115
Diameter (in.) - 14
Warhead (lb.) - 1000, Blast / Fragmentation
Explosive(NEW) - 445 lbs H-6, Tritonal, or PBXN-109
Fuze - Variety of mechanical and electrical (See Appendix A)
Stabilizer - Mk 83 Mod 0, BSU-85/B AIR

**Carriage Options**
Aircraft: Launcher/Rack - Multiple
A-10A (14 in. Lug Spacing)
F-15E
F-16A-D

**Status / Schedule / Cost / Improvements**
Manufacturer/Contractor -
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11A1-6-7
**Description**

**MK-84 BOMB**

The MK-84 is designed to attack soft and intermediately protected targets. The destruction mechanism of the MK-84 is blast. Ideal targets for this weapon are buildings, rail yards, and lines of communication. The Navy and the Air Force both use it intensively.

**MK-82 (BSU-50)**

The MK-82(A) is a high drag variant used in low level attacks to achieve a higher impact angle. Blast sensitive targets, such as POL, motor pools, and troop concentrations, are the primary targets for this weapon.

**Characteristics**

**MK-84**

**CRD Weapons Code**

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<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<td>ZRG1L</td>
<td>MK84 AIR (I) W/F268</td>
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<td>SZBGA</td>
<td>MK84 LOW DRAG KIT</td>
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<td>MK84 R/BSU-50 904 N</td>
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<tr>
<td>ZRG1B</td>
<td>MK84R (I) BSU-50 54/B TL</td>
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</tbody>
</table>
Guidance - Ballistic
Class - 2,000 lb. General Purpose Bomb, Blast/Fragmentation

Mk-84 LDGP
Weight (full) 1,997.22 lbs +/- 5%
cg (x) 14.59 in. +/- 0.50 in.
cg (y) 0.01 in. +/- 0.50 in.
cg (z) -0.10 in. +/- 0.50 in.
Length (with nose fuze) 149.27 in.
Length (without nose fuze) 145.37 in.
Diameter 18.00
Inertia (roll) 18.30 +/- 10%
Inertia (pitch) 380.23 +/- 10%
Inertia (yaw) 379.91 +/- 10%
Drawings 2519694, 1380522, 1380523, DL1380911,
Navy DL2519693, general requirements 1211685

Mk-84 (BSU-50/C)
Weight NGT 110 lbs
cg (x) 15.0 in. +/- 3.0 in. aft of forward lug prior to deployment
cg (y) unk
cg (z) unk
Length 0.78 m
Diameter 403 mm
Drawings 809245, DL809245-10
Interface Control Drawings 1380911, 1380540
Employment Limits PIDS SP809245, para 3.2.1
Environmental Limits PIDS SP809245, para 3.2.5
Warhead (lbs.) - 2000 Blast/Fragmentation
Explosive (NEW) - 945 lbs H-6 or Tritonal
Fuze - Variety of mechanical or electrical (See Appendix A)
Stabilizer - BSU-50 AIR; MK-84 Conical Fin

Carriage Options
Aircraft: Launcher/Rack - Multiple
A-10A (30 In. Lug Spacing)
B-52H
F-16A-D
F-15A-E
F-117A

**Status / Schedule / Cost / Improvements**
Contractor/Manufacturer -
Status - Inventory
OPR -OO-ALC/WM
Tech Data - 11A1-7-7
Nomenclature: MK-106

Name: Practice Bomb

Description
The Mk106 is a cylindrical shaped practice bomb that utilizes a spotting charge to display target marking. When the bomb is released from the aircraft it free falls until impact. Upon impact the bomb drives a firing pin assembly against a primer activating the signal charge. The resulting flash and puff of smoke permits visual evaluation of accuracy.

Characteristics:
MK-106
CRD Weapons Code

ZP81B MK 106 PRACTICE BOMB/CXU3/B
ZP81A MK 106 PRACTICE BOMB/MK 4

Class - 5 lb Practice Bomb
Weight - 5 lbs
Length - 21 in
Diameter - 3.88 in

Aircraft:
F-4, F-15, F-16, F-111

Management/Engineering:
OO-ALC/WM

Technical Order:
11A3-3-7 (Bomb); 11A4-4-7 (CXU-3A/B)
**Nomenclature: MK4 and MK40**  
**Name: 2.75-Inch Rocket**

**Description**  
The Mk4 and Mk40 2.75-inch rocket motors are comprised of an aluminum alloy motor tube. The motor utilized a folding fin low spin stabilizing configuration. The motor is designed to accept a variety of different warheads to include; high explosive, white phosphorus, and target practice.

**Weapon Characteristics**  
CRD Weapons Code - None

Guidance – None  
Class – Air Launched Folding Fin Rocket

WDU-4A/A Red Dye Flechette  
Weight (lbs) – 9.3  
Length (in) – 17.76  
Diameter (in) – 2.79

M257 Illuminator  
Weight (lbs) – 10.8  
Length (in) – 31.12  
Diameter (in) – 2.75

M274 Smoke  
Weight (lbs) – 9.3  
Length (in) – 16.04  
Diameter (in) – 2.75

M278 Flare  
Weight (lbs) – 10.8  
Length (in) – 31.64  
Diameter (in) – 2.75  
Propulsion – Rocket Motor

**Carriage Options**  
Aircraft:  
A-10

**Status/Schedule/Improvements**  
Status – Inventory  
OPR – Navy  
Mgmt/Eng – OO-ALC/WM  
Tech Data – 11A11-24-7
MK 4 and MK 44  2.75 Inch Rocket
**Nomenclature: MK66**

**Name: 2.75-Inch Rocket**

**Description**
The Mk66 2.75 inch rocket motor was designed to provide a common 2.75-inch motor for helicopters and high performance aircraft. The motor tube is impact extruded from aluminum stock and has an integral forward bulkhead. Fins are spring-activated to open and lock on launch. The rocket motor will accept a variety of warheads to include; high explosive, white phosphorus and target practice.

**Weapon Characteristics**

**MK66**

**CRD Weapons Code**

- **R21AA**  
  ROCKET 2.75 HE HEAVY W/MK66
- **R41AA**  
  ROCKET 2.75 ILLUM W/MK66
- **R41BA**  
  ROCKET 2.75 IR ILLUM W/MK66
- **Z75TB**  
  ROCKET 2.75 SIGNATURE PRACTICE
- **Z75TA**  
  ROCKET 2.75 TRAINING
- **R31AA**  
  ROCKET 2.75 WP W/MK66
- **Z75PA**  
  ROCKET, DUMMY 2.75
- **SZTCA**  
  STAMP FAC ROCKETS

**Guidance** – None

**Class** – Air Launched Rocket

**WDU-4A/A Red Dye Flechette**

- Weight (lbs) – 9.3
- Length (in) – 17.76
- Diameter (in) – 2.79

**M257 Illuminator**

- Weight (lbs) – 10.8
- Length (in) – 31.12
- Diameter (in) – 2.75

**M274 Smoke**

- Weight (lbs) – 9.3
- Length (in) – 16.04
- Diameter (in) – 2.75

**M278 Flare**

- Weight (lbs) – 10.8
- Length (in) – 31.64
- Diameter (in) – 2.75

**Propulsion** – Rocket Motor
Carriage Options
Aircraft:
A-10

Status/Schedule/Improvements
Status – Inventory
OPR – Navy
Mgmt/Eng – OO-ALC/WM
Tech Data – 11A11-24-7

MK 66 2.75 Inch Rocket
CHAPTER FIVE

GUIDED MUNITIONS (GBU)
GBU-10 Series  

Name: Laser Guided Bomb (LGB)

Description
The GBU-10 C/D is a 2000lb class laser guided bomb which uses the MK-84 warhead. The PAVEWAY II system has folding wings which open upon release for increased aircraft payload and maneuverability. This weapon is primarily used for precision bombing against non-hardened targets.

Characteristics
GBU-10
CRD Weapons Code

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<tr>
<th>Code</th>
<th>Description</th>
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<td>BL4SA</td>
<td>GBU 10 PW-II FOR F-117</td>
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<tr>
<td>ZLGCQ</td>
<td>GBU-10 (I) PWII W/ F268</td>
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<td>GBU-10 (I) PW-II 81/81 N/T</td>
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<td>ZLGC1P</td>
<td>GBU-10 (I) PW-II FMU139 T</td>
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<td>ZLGCN</td>
<td>GBU-10 (I) PW-II NO FUZE</td>
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<td>ZL9CA</td>
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<td>BL9CC</td>
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<td>PL4CA</td>
<td>PREPO ISO GBU-10 PW-II/FMU-139 T</td>
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<tr>
<td>SZDBA</td>
<td>STAMP GBU-10E/B KIT</td>
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Guidance - Semi-active Laser
Control - MAU-157 Series (Paveway I); MAU-169 Series (Paveway II)
Autopilot - Bang-Bang Mode
Class - 2000 lb Paveway I & II Laser Guided Weapons
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<tr>
<th>Aircraft Model</th>
<th>Weight (full)</th>
<th>cg (x)</th>
<th>cg (y)</th>
<th>cg (z)</th>
<th>Length</th>
<th>Diameter</th>
<th>Inertia (roll)</th>
<th>Inertia (pitch)</th>
<th>Inertia (yaw)</th>
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<td>GBU-10 Model A/B</td>
<td>2,077.47 lbs</td>
<td>+/- 5%</td>
<td>12.34 in.</td>
<td>+/- 0.50 in.</td>
<td>168.30 in.</td>
<td>18.00 in.</td>
<td>24.00 +/- 10%</td>
<td>428.88 +/- 10%</td>
<td>428.78 +/- 10%</td>
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<td>GBU-10 Model B, A/B</td>
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<td>169.90 in.</td>
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<td>24.00 +/- 10%</td>
<td>436.75 +/- 10%</td>
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<td>18.55 +/- 10%</td>
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Warhead - BLU-109/MK-84; Blast/Fragmentation
Explosive (NEW) - 535/945 lbs Tritonal
Fuze - FMU-81 N/T (See Appendix A)
Stabilizer - MXU-600 (Paveway I); MXU-651 (Paveway II)
Carriage Options
Aircraft: Launcher/Rack - Multiple
A-10A (30 in. Lug Spacing)
F-15E
F-16A-D
B-52H

Status / Schedule / Improvements
Contractor - Raytheon
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11K10-2-7
# GBU-10 Component Matrix

## MK-84

<table>
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<tr>
<th>GBU-10/24 Guided Bomb Component Matrix (MK-84)</th>
<th>Major Component Required</th>
<th>Major Component Model No.</th>
<th>Subcomponents Required</th>
<th>Subcomponent Model Number (Notes)</th>
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<td>Suspension Lugs</td>
<td>MK3 Mod 0 (1)</td>
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<td>Computer Control Group</td>
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<td>Laynard Pack (f-117, GBU-10 only)</td>
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<td>Airfoil Group</td>
<td>Fuze, Bomb Nose</td>
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<td>Booster and Tape Swivel and Link</td>
<td>FZU-2/B (3) MAU-166/A</td>
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<td>Shaft Flexible</td>
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<td>Clip Arming Wire</td>
<td>FZU-18/B</td>
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<td>Booster and Tape Swivel and Link</td>
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<td>Initiator</td>
<td>FZU-32/B/B</td>
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Note 1: Suspension lugs are provided with bomb.

Note 2: Model No CCG Airfoil Group

<p>| GBU-10C/B | MAU-169/B | MXU-651/B |</p>
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<td>WGU-12/B, B/B</td>
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<td>WGU-39/B</td>
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</table>

Note 3: Required fuze components are provided with the fuze.

Note 4: M9 delay elements are available with functioning delays of instantaneous, 0.01, 0.025, 0.05, 0.10 or 0.25 second.

Note 5: (F-15E, GBU-24) On LC-1,2,3 use three each swivel and clip assemblies (two each for FZU-48, one for fin release).

Note 6: Bomb must be prefuzed before installing wing assembly.

Note 7: When nose fuze is not installed, requisition nose support cup, DODIC FW26.

Note 8: (F-15E, GBU-10, LC-1,2,3/GBU-24, LC-2) When the FMU-139 fuze is installed with the FZU-48 initiator, two each swivel and clip assembly for wing release laynard are required.

Note 9: (F-16) Regardless of fuzing requirements, one each MAU-166/A, swivel and link, for CCG/GCU is required.

Note 10: (F-16) Regardless of fuzing requirements, one each MAU-166/A swivel and link for CCG/GCU is required.

Note 11: When used as a nose fuze, bomb requires four FZU-2/B.

**BLU-109**

<table>
<thead>
<tr>
<th>GBU-10 Guided Bomb Component Matrix</th>
<th>Major Component Required</th>
<th>Major Component Model No.</th>
<th>Subcomponents Required</th>
<th>Subcomponent Model Number (Notes)</th>
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</thead>
<tbody>
<tr>
<td>Bomb, Guided Laser GBU-10, GBU-24A/B, GBU-27 Series</td>
<td>Bomb, General Purpose 2,000-Pound</td>
<td>BLU-109</td>
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<td></td>
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<tr>
<td>Computer Control Group</td>
<td>Swivel and Links</td>
<td>MAU-166/A</td>
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<tr>
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<td></td>
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</tr>
<tr>
<td>Airfoil Group</td>
<td>Laynard Pack (F-117, GBU-27 only)</td>
<td>(1)</td>
<td></td>
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<tr>
<td>Adapter Group</td>
<td>ADU-548/B</td>
<td>(6)</td>
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<tr>
<td></td>
<td>ADG-769/B</td>
<td>(6,7)</td>
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<tr>
<td>Fuze, Bomb Tail</td>
<td>FMU-81/B (GBU-10/24 only)</td>
<td>(2,4)</td>
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<tr>
<td></td>
<td>FMU-124A/B Initiator</td>
<td>FZU-32/B (2,4,5)</td>
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<tr>
<td></td>
<td>FMU-139A/B (GBU-10/24 only)</td>
<td>(2,3,4)</td>
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<tr>
<td></td>
<td>FMU-143/B, B/B (GBU-24/27 only)</td>
<td>Initiator</td>
<td>FZU-32B/B (2,3,8,9)</td>
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**Note 1:**

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<th>Model No</th>
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<th>Airfoil Group</th>
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<td>GBU-10G/B</td>
<td>MAU-169/B</td>
<td>MAU-169/B, D/B, EE</td>
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<tr>
<td>GBU-10H/B</td>
<td>MAU-169A/B</td>
<td>MXU-651/B</td>
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<td>GBU-10J/B</td>
<td>MAU-169B/B, D/B, EE</td>
<td>MXU-651/B</td>
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<tr>
<td>GBU-24A/B</td>
<td>WGU-12/B, B/B</td>
<td>BSU-84/B, A/B</td>
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<td>GBU-24A/B</td>
<td>WGU-39/B</td>
<td>BSU-84/B, BSU-84/A/B</td>
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<tr>
<td>GBU-27/B</td>
<td>WGU-25/B, A/B</td>
<td>BSU-88/B</td>
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<td>GBU-27/B</td>
<td>WGU-39/B</td>
<td>BSU-88/B</td>
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</table>

**Note 2:** Bomb must be prefuzed before installing wing assembly.

**Note 3:** Required fuze components are provided with the fuze.

**Note 4:** (GBU-27) F-117 Aircraft Only
| Note 5: FZU-32/B, must be ordered separately for use with the FMU-124A/B |
| Note 6: GBU-24 Only |
| Note 7: Adapter Group ADU-548 is modified to include suspension lugs and becomes ADG-769/B |
| Note 8: When the FMU-143 fuze is installed with the FZU-32 initiator on station LC-2 (F-15E), two swivel and clip assemblies are required. |
| Note 9: (F-15E, GBU-10) When the FMU-143 Fuze is installed with the FZU-32 initiator on station LCFT, one each swivel and clip assembly is required |
| Note 10: One each as required |
GBU-12 Series

Name: Laser Guided Bomb (LGB)

Description
The GBU-12 B/B is a 500lb class laser guided bomb which uses the MK-82 warhead. The PAVEWAY II system has folding wings which open upon release for increased aircraft payload and maneuverability. This weapon is primarily used for precision bombing against non-hardened targets.

Characteristics
GBU-12
CRD Weapons Code

<table>
<thead>
<tr>
<th>CRD Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>ZLECC</td>
<td>GBU-12 (I) 905 T</td>
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<tr>
<td>ZLECB</td>
<td>GBU-12 (I) PW-II 81 N/T</td>
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<tr>
<td>ZLECF</td>
<td>GBU-12 (I) PW-II 81/905 N/T</td>
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<td>ZLECA</td>
<td>GBU-12 (I) PW-II FMU-139 T</td>
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<td>GBU-12 PW-I/B BDU 50</td>
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<tr>
<td>BL2CI</td>
<td>LGB GBU-12 PW-II 81 TL</td>
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<td>BL2CD</td>
<td>LGB GBU-12 PW-II 81/905 N/T</td>
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<tr>
<td>BL2EG</td>
<td>LGB GBU-12 PW-II 139 (N) F-15E</td>
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<td>BL2CR</td>
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<td>SZEBA</td>
<td>STAMP GBU-12E/B KIT</td>
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<tr>
<td>PL2CA</td>
<td>PREPO ISO LGB GBU-12/FMU-139 T</td>
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</tbody>
</table>

Guidance - Semi-Active Laser
Control - MAU-157 Series (Paveway I); MAU-169 Series (Paveway II)
Autopilot - Bang-Bang Mode
Class - 500 lb Paveway I & II Guided Weapon
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Tolerance</th>
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</thead>
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<tr>
<td>Weight (full)</td>
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<tr>
<td>cg (x)</td>
<td>5.33 in.</td>
<td>+/- 0.50 in.</td>
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<tr>
<td>cg (y)</td>
<td>-0.02 in.</td>
<td>+/- 0.50 in.</td>
</tr>
<tr>
<td>cg (z)</td>
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<td>+/- 0.50 in.</td>
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<tr>
<td>Length</td>
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<tr>
<td>Diameter (Warhead)</td>
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<td>Diameter (Airfoil)</td>
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<tr>
<td>Inertia (roll)</td>
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<td>Inertia (pitch)</td>
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<td>+/- 10%</td>
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<tr>
<td>Inertia (yaw)</td>
<td>77.00</td>
<td>+/- 10%</td>
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</tbody>
</table>

**Warhead - MK-82 Blast/Fragmentation**

Explosive (NEW) - Tritonal, PBXN-109 (192 lbs)

Fuze - FMU-81 Tail (See Appendix A)

Stabilizer - MXU-602 Series (Paveway I); MXU-650 Series (Paveway II)

**Carriage Options**

**Aircraft:**
- A-10A
- F-117A
- F-15E B-52
- F-16A-D

**Launcher/Rack - Multiple** (14 in. Lug Spacing)

**Status / Schedule / Improvements**

Contractor - Raytheon

Status - Inventory

OPR - OO-ALC/WM

Tech Data - 11K10-2-7
## GBU-12 Component Matrix

<table>
<thead>
<tr>
<th>GBU-12 Guided Bomb Component Matrix</th>
<th>Major Component Required</th>
<th>Major Component Model No.</th>
<th>Subcomponents Required</th>
<th>Subcomponent Model Number (Notes)</th>
</tr>
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<tbody>
<tr>
<td>Bomb, Guided Laser GBU-12 Series</td>
<td>Bomb, General Purpose 500-Pound</td>
<td>MK-82</td>
<td>Suspension Lugs</td>
<td>MS3314(1), MAU-76, MK-6 Mod O</td>
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<tr>
<td></td>
<td>Computer Control Group</td>
<td>MAU-169 Series</td>
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<td></td>
<td>Airfoil Group</td>
<td>MXU-650/B</td>
<td>Laynard Pack</td>
<td>PN 1173-149-2 (F-117)</td>
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<td></td>
<td>Fuze, Bomb Nose</td>
<td>FMU-26B/B</td>
<td>Booster and Tape Swivel and Link</td>
<td>FZU-2/B (3), MAU-166/A</td>
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<tr>
<td></td>
<td>Fuze, Bomb Tail</td>
<td>FMU-81/B</td>
<td>Booster and Tape Swivel and Link</td>
<td>FZU-2/B (5)</td>
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<td>Fuze, Bomb Tail</td>
<td>FMU-139A/B</td>
<td>Delay Element</td>
<td>(4,8)</td>
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<td>Adapter Booster</td>
<td>T46</td>
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<td>Drive Assembly</td>
<td>ATU-35</td>
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<td>Arming Wire</td>
<td>Single FZU-20A/B</td>
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<td>Shaft Flexible</td>
<td>MAU-86/B</td>
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<td>Coupler Drive</td>
<td>MAU-87 Series</td>
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<td>Swivel and Link</td>
<td>MAU-166/A</td>
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<td></td>
<td>FMU-26B/B</td>
<td>Booster and Tape Swivel and Link</td>
<td>FZU-2/B (3,8), MAU-166/A</td>
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<td>FMU-81/B</td>
<td>Booster and Tape</td>
<td>FZU-2B (6,8)</td>
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<td>FMU-139A/B</td>
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<td>(7,8)</td>
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</table>

Note 1: Suspension lugs are provided with bomb.

Note 2: Model No CCG Airfoil Group

- GBU-12B/B MAU-169/B MXU-650/B
- GBU-12C/B MAU-169A/B MXU-650/B
- GBU-12D/B MAU-169B/C/B, E/B MXU-650/B

Note 3: Required fuze components are provided with the fuze

Note 4: M9 delay elements are available with functioning delays of instantaneous, 0.01, 0.025, 0.05, 0.10 or 0.25 second
| Note 5: Can only be installed in GBU-12B/B, C/B and D/B bombs. When used as a nose fuze, bomb requires four FZU-2/B boosters. |
| Note 6: Bomb must be prefuzed before installing wing assembly |
| Note 7: (F-15E stations LC-1,2,3) When the FMU-139 fuze is installed with the FZU-48 initiator, use the improved initiator laynard. |
| Note 8: When nose fuze is not installed, requisition nose support cup, DODIC FW26 |
| Note 9: (F-16) Regardless of fuzing requirements, one each MAU-166/A, swivel and link, for CCG/GCU is required. |
**Nomenclature: GBU-15**

**Name: Guided Standoff Weapon**

**Description**
The GBU-15 is a MK-84 blast fragment or a BLU-109 penetrating bomb fitted with a set of aerodynamic lifting and control surfaces and either a TV seeker or an IR seeker. The enhanced versions also include an Global Positioning System/Internal Navigation System (GPS/INS) guidance and navigation capability. The primary purpose of the GPS/INS is to provide enhanced capability in weather. The GBU-15 is normally deployed in the indirect mode where a weapon is launched towards the target without lock on. The GBU-15 can be used in the buddy mode where one A/C launches the weapon and the other A/C performs the control functions.

**Characteristics**

**GBU-15**

**CRD Weapons Code**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ZG9GB</td>
<td>GBU-15 (T-1)/B IR CAPTIVE CARRY</td>
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<tr>
<td>ZE65B</td>
<td>GBU-15 BDU-56 GPS IR CAP F-15E</td>
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<td>BE65B</td>
<td>GBU-15 BDU56 GPS IR TAC INRT F15</td>
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<td>GBU-15 BLU109 GPS IR LD/TRN F-15</td>
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<td>BG4TC</td>
<td>GBU-15 TV/SC/SFOV/MK84</td>
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</table>

Guidance - Electro Optical TV; Imaging IR
GPS/INS
Precise Adverse Weather, day or night
Accurate all Weather
Vertical Targets

Control – Automatic or Manual (Weapon System Operator via w/ ACQ-14 or ZSW-1 Data Link Pod)

Autopilot - Analog

Class – 2,500 lb. Standoff

Warhead – MK-84 or BLU-109 (adapter kit required)
Explosive – Tritonal – 945 lbs (MK-84); 535 lbs (BLU-109)
Fuze – FMU-124A/B (MK-84, nose and tail); FMU-143 (BLU-109, tail only); Integrating FMU 152 (JPF) tail only with BLU-109

Stabilizer – Strakes/Canards, Wings; the Original Long Chord (LCW) or the Newer Short Chord (SCW) and Control; Surfaces
Data Link – OA-8921D/AXQ-14 (weapon terminal)

Range - -5-15+ NM

Diameter - (guidance section) 15.0 in.
Diameter – (control section) 16.0 in.
Diameter – (wing) 59.0 in.

**GBU-15(V) 1/B (MK-84, TV, LCW)**
- Weight (full) 2,476.00 lbs
- Length 156.0 in.
- Diameter (warhead) 18.00 in.

**GBU-15(V) 1/B (MK-84, TV, SCW)**
- Weight (full) 2,410.00 lbs
- Length 156.0 in.
- Diameter (warhead) 18.00 in.

**GBU-15(V) 2/B (MK-84, IR, LCW)**
- Weight (full) 2,515.00 lbs
- Length 159.0 in.
- Diameter (warhead) 18.00 in.

**GBU-15 (V) 2/B (MK-84, IR, SCW)**
- Weight (full) 2,449.00 lbs
- Length 159.00 in.
Diameter (warhead) 18.00 in.

**GBU-15(V) 31B (BLU-109, TV, SCW)**
- Weight (full) 2,486.00 lbs
- Length 156.00 in.
- Diameter (warhead) 16.00 in.

**GBU-15 (V) 1C/B (MK-84, TV, GPS/INS, SCW)**
- Weight (full) 2,430.00 lbs
- Length 156.00 in.
- Diameter 18.00 in.

**GBU-15(V) 2c/B (MK-84, IR, GPS/INS, SCW)**
- Weight (full) 2,469.00 lbs
- Length 159.00 in.
- Diameter (warhead) 18.0 in.

**GBU-15(V) 31A/B (BLU-109, TV, GPS/INS, SCW)**
- Weight (full) 2,506.00 lbs
- Length 156.00 in.
- Diameter (warhead) 16.0 in.

**GBU-15(V) 32A/B (BLU-109, IR, GPS/INS, SCW)**
- Weight (full) 2,545.00 lbs
- Length 159.00 in.
- Diameter (warhead) 16.0 in.

**Carriage Options**
- Aircraft: Launcher/Rack
- F-15E (30 in. Lug Spacing)

**Status / Schedule / Improvements**
- Contractor – Boeing
- Status - Inventory
- OPR - AAC/WMG; Eglin AFB, FL  DSN 872-9514
- Improvements – Potential Integration of FMU-152 (JPF) Fuze
  - Real Time Information in Cockpit (RTIC) via Goldstrike POD
- Special Equipment - GJM-65 Field Test Set
- Tech Data – 11K15-2-7
Description
Designed as a precision guided penetration bomb, the GBU-24 A/B is basically a BLU-109 warhead fitted with a nose mounted laser guidance and control unit and the new Paveway III tail assembly. This weapon can be released at low, medium or high altitudes. Low altitude can mean “tree top” height if deemed necessary.

Characteristics
GBU-24/B
CRD Weapons Code

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
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<td>ZL9BD</td>
<td>GBU-24 A/B</td>
</tr>
<tr>
<td>BL4HP</td>
<td>GBU-24 PW-III 139 N WGU-39 F-15E</td>
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<td>GBU-24 PW-III 139 T WGU-39 F-15E</td>
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<td>BL4HR</td>
<td>GBU-24 PW-III 81 NS WGU-39 F-15E</td>
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<td>GBU-24 PW-III FMU-81 N/T WGU-39</td>
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<td>GBU-24 PW-III FMU-81(N/T) WGU-12</td>
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<td>GBU-24 PW-III WGU-12/FMU-143</td>
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ZL6HA  GBU-24/B WGU-39/B NO FUZE  F-15  
ZL9BB  GBU-24A/B (I) FMU-143 T  
ZL9BF  GBU-24A/B WGU-39(D-2)/B FMU-143  
ZL9DC  GBU-24A/B WGU-39/B  
ZL9HA  GBU-24A/B WGU-39/B FMU-143  F-15  
PL4HA  PREPO ISO GBU-24/FMU-139/WGU-39  
PL9DA  PREPO ISO GBU-24/WGU-39/FMU-143  
SZFDA  STAMP GBU-24/B SUPER BOLT KIT  
SZFBA  STAMP GBU-24A/B SUPER BOLT KIT  

Guidance - Semi-Active Laser (WGU-12 or WGU-39 Guidance Unit)  
Control - Nose Canards  
Autopilot - Proportional Guidance  
Class -  
Weight (full)  2,256.75 lbs +/- 5%  
cg (x) wings stowed  13.18 in. +/- 0.50 in.  
cg (x) wings deployed  13.04 in. +/- 0.50 in.  
cg (y)  unk +/- 0.50 in.  
cg (z)  unk +/- 0.50 in.  
Length  172.76 in.  
Diameter  18.00 in.  
Fin. Span (Canard)  39.25 in.  
Fin. Span (wings stowed)  36.0 in.  
Fin. Span (wings deployed)  81.6 in.  
Inertia (roll) wings stowed  26.32 +/- 10%  
Inertia (pitch) wings stowed  570.31 +/- 10%  
Inertia (yaw) wings stowed  570.03 +/- 10%  
Inertia (roll) wings deployed  32.69 +/- 10%  
Inertia (pitch) wings deployed  585 +/- 10%  
Inertia (yaw) wings deployed  585.2 +/- 10%  
Drawings  2711693  
Warhead - Mk-84 Blast/Fragmentation  
Explosive (NEW) - 945 lbs Tritonal  
Fuze - FMU-81 Nose & Tail (See Appendix A)  
Stabilizer - BSU-84 Fin Assembly  

Carriage Options  
Aircraft:  Rack/Pylon - Multiple  
F-16A-D  (30 in. Lug Spacing)  
F-15E  

Status / Schedule / Improvements
Contractor - Raytheon
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11K20-2-7
# GBU-24 Component Matrix

## MK-84

<table>
<thead>
<tr>
<th>GBU-10/24 Guided Bomb Component Matrix</th>
<th>Major Component Required</th>
<th>Major Component Model No.</th>
<th>Subcomponents Required</th>
<th>Subcomponent Model Number (Notes)</th>
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<tbody>
<tr>
<td>Bomb, Guided Laser GBU-10 Series and GBU-24/B</td>
<td>Bomb, General Purpose 2,000-Pound</td>
<td>MK-84</td>
<td>Suspension Lugs</td>
<td>MK3 Mod 0 (1)</td>
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<td>Computer Control Group</td>
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<td>Airfoil Group</td>
<td>Laynard Pack (f-117, GBU-10 only)</td>
<td>PN 1173-149-2</td>
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<tr>
<td>Fuze, Bomb Nose</td>
<td>FMU-26B/B</td>
<td>Booster and Tape Swivel and Link</td>
<td>FZU-2/B (3)</td>
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<td>FMU-81/B</td>
<td>Booster and Tape Swivel and Link</td>
<td>FZU-2/B (11)</td>
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<td>Delay Element</td>
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<td>Arming Wire</td>
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<td>MAU-86/B4</td>
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<td>Coupler Drive</td>
<td>MAU-87 Series</td>
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<td>Ferrule</td>
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<td>Swivel and Link</td>
<td>MAU-166/A</td>
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<td></td>
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<td>Clip Arming Wire</td>
<td>FZU-18/B</td>
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<td></td>
<td>FMU-26B/B (GBU-10 Only)</td>
<td>Booster and Tape Swivel and Link</td>
<td>FZU-2/B (3,7)</td>
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<td>FMU-81/B</td>
<td>Booster and Tape</td>
<td>FZU-2B (6,7)</td>
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<td>(5,7,8)</td>
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<td></td>
<td></td>
<td>FMU-143B, B/B</td>
<td>Initiator</td>
<td>FZU-32B/B</td>
</tr>
</tbody>
</table>

Note 1: Suspension lugs are provided with bomb.

Note 2: Model No | CCG | Airfoil Group
--- | --- | ---
GBU-10C/B | MAU-169/B | MXU-651/B
GBU-10D/B | MAU-169A/B | MXU-651/B
<table>
<thead>
<tr>
<th>Major Component Model Number</th>
<th>Major Component Required</th>
<th>Subcomponents Required</th>
<th>Subcomponent Model Number (Notes)</th>
</tr>
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<tbody>
<tr>
<td>Bomb, Guided Laser GBU-10, GBU-24A/B, GBU-27 Series</td>
<td>Bomb, General Purpose 2,000-Pound</td>
<td>Swivel and Links</td>
<td>MAU-166/A (1,10)</td>
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</table>

**GBU-10/24/27**

<table>
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<tr>
<th>Guided Bomb Component Matrix</th>
<th>Major Component Required</th>
<th>Major Component Model No.</th>
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<td>BLU-109</td>
<td></td>
<td>BLU-109</td>
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</tbody>
</table>

BLU-109

**Guided Bomb Component Matrix**

- **Note 3:** Required fuze components are provided with the fuze
- **Note 4:** M9 delay elements are available with functioning delays of instantaneous, 0.01, 0.025, 0.05, 0.10 or 0.25 second
- **Note 5:** (F-15E, GBU-24) On LC-1,2,3 use three each swivel and clip assemblies (two each for FZU-48, one for fin release)
- **Note 6:** Bomb must be prefuzed before installing wing assembly
- **Note 7:** When nose fuze is not installed, requisition nose support cup, DODIC FW26
- **Note 8:** (F-15E, GBU-10, LC-1,2,3/GBU-24, LC-2) When the FMU-139 fuze is installed with the FZU-48 initiator, two each swivel and clip assembly for wing release laynard are required.
- **Note 9:** (F-16) Regardless of fuzing requirements, one each MAU-166/A, swivel and link, for CCG/GCU is required.
- **Note 10:** (F-16) Regardless of fuzing requirements, one each MAU-166/A swivel and link for CCG/GCU is required
- **Note 11:** When used as a nose fuze, bomb requires four FZU-2/B
<table>
<thead>
<tr>
<th>Airfoil Group</th>
<th>Laynard Pack (F-117, GBU-27 only)</th>
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</thead>
<tbody>
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<td>Adapter Group</td>
<td>ADU-548/B</td>
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<td></td>
<td>ADG-769/B</td>
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<tr>
<td>Fuze, Bomb Tail</td>
<td>FMU-81/B (GBU-10/24 only)</td>
</tr>
<tr>
<td></td>
<td>FMU-124A/B</td>
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<td></td>
<td>FMU-139A/B (GBU-10/24 only)</td>
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<tr>
<td></td>
<td>FMU-143/B, B/B (GBU-24/27 only)</td>
</tr>
<tr>
<td>Note 1:</td>
<td>Model No</td>
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<td>GBU-10G/B</td>
<td>MAU-169/B</td>
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<td>GBU-10H/B</td>
<td>MAU-169A/B</td>
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<td>GBU-10J/B</td>
<td>MAU-169B/B, D/B, EE</td>
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<td>GBU-24A/B</td>
<td>WGU-12/B, B/B</td>
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<td>GBU-24A/B</td>
<td>WGU-39/B</td>
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<td>GBU-27/B</td>
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<td>GBU-27/B</td>
<td>WGU-39/B</td>
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</table>

Note 2: Bomb must be prefuzed before installing wing assembly.
Note 3: Required fuze components are provided with the fuze
Note 4: (GBU-27) F-117 Aircraft Only
Note 5: FZU-32/B, must be ordered separately for use with the FMU-124A/B
<table>
<thead>
<tr>
<th>Note 6: GBU-24 Only</th>
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</thead>
<tbody>
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<td>Note 7: Adapter Group ADU-548 is modified to include suspension lugs and becomes ADG-769/B</td>
</tr>
<tr>
<td>Note 8: When the FMU-143 fuze is installed with the FZU-32 initiator on station LC-2 (F-15E), two swivel and clip assemblies are required.</td>
</tr>
<tr>
<td>Note 9: (F-15E, GBU-10) When the FMU-143 Fuze is installed with the FZU-32 initiator on station LCFT, one each swivel and clip assembly is required</td>
</tr>
<tr>
<td>Note 10: One each as required</td>
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</table>
**Nomenclature:** GBU-24A/B  
**Name:** Low Level LGB

**Description**
Designed as a precision guided penetration bomb, the GBU-24 A/B is basically a BLU-109 warhead fitted with a nose mounted laser guidance and control unit and the new Paveway III tail assembly. This weapon can be released at low, medium or high altitudes. Low altitude can mean “tree top” height if deemed necessary.

**Characteristics**

**GBU-24A/B**

CRD Weapons Code  
See GBU-24/B

Control - Nose Canards  
Autopilot - Proportional Guidance

Class -

Weight (full) 2,372.75 lbs +/- 5%

cg (x) wings stowed 12.92 in. +/- 0.50 in.

cg (x) wings deployed 12.95 in. +/- 0.50 in.

cg (y) 0.10 in. +/- 0.50 in.

cg (z) 0.12 in. +/- 0.50 in.

Length 169.69 in.

Diameter 14.50 in.

Fin. Span (Canards) 39.25 in.

Fin. Span (wings stowed) 36.0 in.

Fin. Span (wings deployed) 81.6 in.

Inertia (roll) wings stowed 22.14 +/- 10%

Inertia (pitch) wings stowed 597.05 +/- 10%

Inertia (yaw) wings stowed 596.12 +/- 10%

Inertia (roll) wings deployed 31.237 +/- 10%

Inertia (pitch) wings deployed 601.606 +/- 10%

Inertia (yaw) wings deployed 601.606 +/- 10%

Drawings 2898429, DL2898429

Warhead - BLU-109/B Hard Target Penetrator

Explosive (NEW) - 535 lbs Tritonal

Fuze - FMU-143 Series (Tail); (See Appendix A)

Stabilizer - BSU-84 Fin Assembly

**Carriage Options**

Aircraft: Rack/Pylon - Multiple

F-4G (30 in. Lug Spacing)

F-15E

F-16A-D

F-111D-F

**Status / Schedule / Improvements**
Contractor - Raytheon
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11K20-2-7
Nomenclature: GBU-27

Name: Laser Guided Bomb (LGB)

Characteristics

GBU-27
CRD Weapons Code

ZL9SD  GBU-27 PW-III INERT W/O FUZ F117
ZL9DB  GBU-27 PW-III INERT W/O FUZE
ZL9DA  GBU-27 PW-III W/FUZE F117
BL9SH  GBU-27 PW-III WGU25/FMU143 F117
BL9SF  GBU-27 PW-III WGU-39/FMU-143
BL9SA  GBU-27 PW-III WGU-39/FMU143 F117
ZL9SC  GBU-27 W/O FUZE F117
BL9DA  GBU-27/B FMU-157/B
BL9DB  GBU-27/B, FMU-157/B
BL9SC  GBU-27A/B FMU-143 WGU-39A/B F117
BL9SB  GBU27A/B FMU143B/B WGU39A/B F117
BL9DD  GBU-27A/B FMU-157
BL9SD  GBU-27A/B FMU-157/B F-117
SZGBA  STAMP GBU-27 KIT (F-117)
PL9SA  PREPO ISO GBU-27/WGU-39/FMU-143
SZGDA  STAMP ENHANCED GBU-27 KIT

Guidance - Laser (WGU-25/B Guidance Section)

Control - Nose Canards

Autopilot - None

Class - 2000 lb GBU

Weight (full)  2,185.00 lbs +/- 5%
cg (x)        10.65 in. +/- 0.50 in.
cg (y)        -0.02 in. +/- 0.50 in.
cg (z)        -0.05 in. +/- 0.50 in.
Length        166.77 in.
Diameter      14.50 in.
Inertia (roll) unk +/- 10%
Inertia (pitch) 510.34 +/- 10%
Inertia (yaw)  510.32 +/- 10%

Drawings- 2898297, 3162743, 3162744

Warhead - BLU-109/B Hard Target Penetrator

Explosive (NEW) - 535 lbs Tritonal

Fuze - FMU-143 Series (See Appendix A)

Stabilizer - BSU-88/B Fin Assembly

Carriage Options

Aircraft: Rack/Pylon - N/A
F-117 (30 in Lug Spacing)
**Status / Schedule / Improvements**
Contractor - N/A
Status - Inventory
OPR - OO-ALC/WM (Hill AFB, UT)
Tech Data - 11K25-2-7
## GBU-27 Matrix

<table>
<thead>
<tr>
<th>GBU-10/24/27 Guided Bomb Component Matrix</th>
<th>Major Component Required</th>
<th>Major Component Model No.</th>
<th>Subcomponents Required</th>
<th>Subcomponent Model Number (Notes)</th>
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<td>BLU-109</td>
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<tr>
<td>Computer Control Group</td>
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<td>Swivel and Links</td>
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<td>Airfoil Group</td>
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<td>Laynard Pack (F-117, GBU-27 only)</td>
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<td>Adapter Group</td>
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<td>ADG-769/B</td>
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<tr>
<td>Fuze, Bomb Tail</td>
<td>FMU-81/B (GBU-10/24 only)</td>
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<td>FMU-124A/B</td>
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**Note 1:**

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<td>MAU-169B/B, D/B, EE</td>
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<td>GBU-27/B</td>
<td>WGU-25/B, A/B</td>
</tr>
<tr>
<td></td>
<td>GBU-27/B</td>
<td>WGU-39/B</td>
</tr>
</tbody>
</table>

Note 2: Bomb must be prefuzed before installing wing assembly.

Note 3: Required fuze components are provided with the fuze.

Note 4: (GBU-27) F-117 Aircraft Only

Note 5: FZU-32/B, must be ordered separately for use with the FMU-124A/B

Note 6: GBU-24 Only

Note 7: Adapter Group ADU-548 is modified to include suspension lugs and becomes ADG-769/B

Note 8: When the FMU-143 fuze is installed with the FZU-32 initiator on station LC-2 (F-15E), two swivel and clip assemblies are required.

Note 9: (F-15E, GBU-10) When the FMU-143 Fuze is installed with the FZU-32 initiator on station LCFT, one each swivel and clip assembly is required

Note 10: One each as required
Nomenclature: GBU-28A/B  Name: Laser Guided Bomb

Characteristics
GBU-28A/B
CRD Weapons Code
ZLH5A GBU-28 INERT F-15E
BL5DD GBU-28 W/FMU-143/F
BL5DE GBU-28 W/FMU-143/G
BL5DF GBU-28 W/FMU-143/H
SZHAA STAMP GBU-28F/B
SZHBA STAMP GBU-28G/B
SZHCA STAMP GBU-28H/B

Guidance - WGU-36 A/B Laser guidance unit
Control - Nose Canards
Autopilot - None
Class - 5000lb Penetrator
Weight (full) 4,576.00 lbs +/- 5%
cg (x) 15.20 in. +/- 0.50 in.
cg (y) 0.01 in. +/- 0.5. in.
cg (z) 0.01 in. +/- 0.5. in.
Length 229.31 in.
Diameter 14.50 in.
Inertia (roll) 24.70 in. +/- 10%
Inertia (pitch) 2,179.91 +/- 10%
Inertia (yaw) 2,179.52 +/- 10%
Warhead - BLU-113/B or BLU-113A/B, Blast/Fragmentation
Explosive (NEW) - Tritonal 600 lbs
Fuze - FMU-143 Series (Tail) (See Appendix A)
Stabilizer - BSU-92/B Fin Assembly

Carriage Options
Aircraft: Launcher/Rack - Multiple
F-15E (30 in Lug Spacing)
F-111F

Status / Schedule / Improvements
Contractor - Raytheon (guidance), National Forge (Warhead),
Dayron (Fuze), UNICOR (shipping pallets), McAlester Army
Ammunition Plant (Explosive load)
Status - Inventory
IOC Date - February 1991 (Desert Storm)
OPR - AAC/LIW-A
OO-ALC/WM
Tech Data - 11K28-2-7
**Nomenclature: GBU-31**  **Name: JDAM (Joint Direct Attack Munition)**

**Description**
The Joint Attack Munition (JDAM) GBU-31 is a tailkit under development to produce a weapon with high accuracy, all weather, autonomous, conventional bombing capability. JDAM will upgrade the existing inventory of general purpose and penetrator unitary bombs, and a product improvement may add a terminal seeker to improve accuracy.

**Characteristics**
GBU-31

CRD Weapons Code

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>ZJ91E</td>
<td>GBU-31 V3 W/FMU-152/B</td>
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<tr>
<td>ZJ61A</td>
<td>GBU-31(V)1/B BDU-56</td>
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<tr>
<td>BJ41H</td>
<td>GBU-31(V)1/B DSU33A/B FMU139</td>
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<td>BJ47K</td>
<td>GBU-31(V)1/B DSU33A/B FMU139 B-2</td>
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<tr>
<td>BJ41E</td>
<td>GBU-31(V)1/B DSU-33A/B FMU152</td>
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<tr>
<td>BJ46D</td>
<td>GBU-31(V)1/B DSU33A/B FMU152 B1</td>
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<tr>
<td>BJ41A</td>
<td>GBU-31(V)1/B W/FMU-152/B</td>
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<tr>
<td>BJ46E</td>
<td>GBU-31(V)1/B W/FMU-152/B B-1</td>
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<td>GBU-31(V)1/B W/DSU-33B/B/FMU139</td>
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<td>GBU-31(V)1/B W/DSU-33B/B/FMU-152</td>
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<td>GBU-31(V)1/B W/FMU-139 INERT N</td>
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<td>GBU-31(V)1/B W/FMU-139 INERT T</td>
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<td>GBU-31(V)1/B W/FMU-139A/B (N/T)</td>
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<td>GBU-31(V)1/B W/FMU-139A/B (T)</td>
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<td>BJ47B</td>
<td>GBU-31(V)1/B W/FMU-139A/B (T) B2</td>
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<td>GBU-31(V)1/B W/FMU-139A/B N/T B1</td>
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<td>ZJ61E</td>
<td>GBU-31(V)1/B W/FMU-152 INERT T</td>
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<td>BJ47E</td>
<td>GBU-31(V)1/BW/FMU-152/B B2</td>
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<td>BJ97E</td>
<td>GBU-31(V)3/B FMU-143F/B B-2</td>
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<tr>
<td>BJ97D</td>
<td>GBU-31(V)3/B FMU-143G/B B-2</td>
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<tr>
<td>BJ97C</td>
<td>GBU-31(V)3/B FMU-143H/B B-2</td>
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<td>ZJ91D</td>
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<td>GBU-31(V)3/B W/FMU-139 A/B</td>
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<td>GBU-31(V)3/B W/FMU-139A/B B-2</td>
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<td>GBU-31(V)3/B W/FMU-143B/B</td>
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<td>BJ91Z</td>
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<td>BJ96A</td>
<td>GBU-31(V)3/B W/FMU-143B/B B-1</td>
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JDAM 2,000 LB NOMENCLATURE/ GBU 31

<table>
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<tr>
<th>MK-84</th>
<th>BLU-109</th>
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<tbody>
<tr>
<td>USAF</td>
<td>(v) 1/B</td>
</tr>
<tr>
<td>Navy</td>
<td>(v) 2/B</td>
</tr>
<tr>
<td></td>
<td>(v) 3/B</td>
</tr>
<tr>
<td></td>
<td>(v) 4/B</td>
</tr>
</tbody>
</table>

**Carriage Options**

Aircraft / Loadout / Launcher -

- B-1B / 24/ MPRL
- B-2 / 16 / RLA
- B-52H / 12 / HSAB
- F-15E / 5 / BRU-47
- F-16C/D / 2 / MAU-12
- F-14D/4/BRU-32
- F/A-18C/D/4/BRU-32
- S-3/ 2 /BRU-11
- P-3 /9 / AERO-65, BRU-14, BRU-15 (W/AERO-1A)

**Status / Schedule / Improvements**

Contractor - Boeing

Status – Low Rate Production

IOC Date – B-2 EOC 4QFY97, F/A-18 4QFY99, B-52/FY 99

OPR - AAC/YU

Reference - JMEM
JDAM MK 84
GBU-31(V)1/B (USAF)
GBU-31(V)2/B (USN)

JDAM BLU-109
GBU-31(V)3/B (USAF)
GBU-31(V)4/B (USN)
Nomenclature: GBU-32  Name: JDAM (Joint Direct Attack Munition)

Description
The Joint Attack Munition (JDAM) GBU-32 is a tailkit under development to produce a weapon with high accuracy, all weather, autonomous, conventional bombing capability. JDAM will upgrade the existing inventory of general purpose and penetrator unitary bombs, and a product improvement may add a terminal seeker to improve accuracy.

Characteristics
GBU-32
CRD Weapons Code
None
Guidance - INS/GPS
Control - Tail Aerodynamic
Autopilot - Proportional Guidance
Class - 1000 lb Guided Munition
Weight (lbs.) – AF-1,014; Navy-1,029
Length (m) - 3.0
Diameter (mm) - 350
Warhead - MK-83 and BLU-110
Explosive - 416 lbs
Fuze - FMU-152/B (JPF) or FMU-139A/B

JDAM 1,000 LB NOMENCLATURE/ GBU 32/35

MK83        BLU-110
USAF (v) 1/B   N/A
NAVY (v) 2/B (v)2/B

Carriage Options
Aircraft / Loadout / Launcher
F-22 / 2/ BRU-46
AV-8B / 4 / BRU-36

Status / Schedule / Improvements
Contractor - Boeing
Status - EMD
IOC Date – FA-18C/D – 3QFY01, F-22 – FY05
OPR - AAC/YU
Reference - JMEM
JDAM MK 83 GBU-32(V)1/B (USAf)
GBU-32(V)2/B (USN)
JDAM BLU-110 GBU-35(V)1/B (USN)
**Nomenclature: GBU-38/B**  
**Name: JDAM (Joint Direct Attack Munition)**

**Description**
The Joint Attack Munition (JDAM) GBU-38 is a tailkit under development to produce a weapon with high accuracy, all weather, and autonomous, conventional bombing capability. JDAM will upgrade the existing inventory of general purpose and penetrator unitary bombs, and a product improvement may add a terminal seeker to improve accuracy.

**Characteristics**
GBU-38  
CRD Weapons Code  
None  
Guidance - INS/GPS  
Control - Tail Aerodynamic  
Autopilot - Proportional Guidance  
Class - 500 lb Guided Munitions  
Weight (lbs.) – AF-552; Navy-558  
Length (m) – 2.29m  
Diameter (mm) – 273 mm  
Warhead - MK-82 and BLU-111  
Explosive - 192 lbs  
Fuze - FMU-152/B (JPF) or FMU-139A/B

**Carriage Options**
Aircraft / Loadout / Launcher  
F-18 /8/ BRU-55  
B-2/80/SBRA

**Status / Schedule / Improvements**
Contractor - Boeing  
Status - SDD  
IOC Date – FA-18C/D – 3QFY04, B-2 – 4Q FY 04  
OPR - AAC/YU
CHAPTER SIX

CLUSTER MUNITIONS (CBU)
Nomenclature: CBU-87/B

Combined Effects Munition

Description
The CBU-87 is an excellant weapon against armor, personnel, artillery, etc. The weapon dispenses 202 BLU-97 munitions in a rectangular pattern with density and sizes of the area covered depending on release parameters and spin rates.

Characteristics
CRD Weapons Code

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>C875A</td>
<td>CBU-87B/B DISP. AND BOMB F-15E</td>
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<tr>
<td>C871A</td>
<td>CBU-87B/B DISPENSER AND BOMB</td>
</tr>
<tr>
<td>C878A</td>
<td>CBU-87B/B DISPENSER AND BOMB B-2</td>
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<tr>
<td>C876B</td>
<td>CBU-87B/B DISPENSOR AND BOMB B-1</td>
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<td>C875B</td>
<td>CBU-87M/B DISPENSER F-15E</td>
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<td>CBU-87M/B DISPENSER &amp; BOMB B-1</td>
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<td>C871B</td>
<td>CBU-87M/B DISPENSER AND BOMB</td>
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<td>CBU-87M/B DISPENSOR B-2</td>
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<td>SZCAB</td>
<td>STAMP CBU-87/B</td>
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<td>CBU-87(T-1)/B</td>
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<td>CBU-97 SFW</td>
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<td>C971A</td>
<td>CBU-97/B (SFW) B-1</td>
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<tr>
<td>C976A</td>
<td>CBU-97/B (SFW) B-1</td>
</tr>
<tr>
<td>C978A</td>
<td>CBU-97/B (SFW) B-2</td>
</tr>
<tr>
<td>C975A</td>
<td>CBU-97/B (SFW) F-15E</td>
</tr>
</tbody>
</table>

Control - Spin (6 Selections)
Autopilot - None
Class - Anti-Personnel/Anti-Material

Weight (full)   949.36 lbs    +/- 5%
cg (x)          6.92 in.      +/- 0.50 in.
cg (y)          0.01 in.      +/- 0.50 in.
cg (z)          0.01 in.      +/- 0.50 in.
Length          92.00 in.
Diameter        15.60 in.
Inertia (roll)  5.74          +/- 10%
Inertia (pitch) 97.97         +/- 10%
Inertia (yaw)   98.12         +/- 10%

Drawings        809410, DL809410, 8661753, DL 8661753
Interface Control Drawings 777044, 777111, 777108, 777109
Tech Data       11A9-29-7
Employment Limits PIDS SP809410, para 3.2.2
Warhead - 202ea CEB - BLU-97/B AP/AM Shaped Charge/Frag/Incendiary
Bomblets
Fuze - Integral Part of Dispenser (12 Time Selections)
FZU-39/B Proximity Sensor (10 Height of Burst Selections)

**Employment Options**
Aircraft:
- A-10A  F-111D-F  Limitations - A/C Launch Environment
- B-52H  F-15E  Rack/Pylon: 14 in. Lug Spacing
- F-4G  F-117A
- F-16A-D  B-2

**Status / Schedule / Improvements**
Contractor - Aero General/Honeywell, Inc./Alliant Tech.
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11A9-29-7
Nomenclature: CBU-89/B  
Name: Gator

Description
The CBU-89/B has 94 total mines. Seventy-two (72) mines are anti-tank and the remaining 22 are anti-personnel mines. The weapons are dispensed in a rectangular pattern, and the anti-tank mines can be fuzed for delayed self destruct for up to 72 hours.

Characteristics
CRD Weapons Code
C898A CBU89 B2
Z891A CBU-89(T-1)/B
C896A CBU-89A/B GATOR HIGH ALT B-1
C897A CBU-89A/B GATOR HIGH ALT. F-117
C895B CBU-89A/B HIGH ALT. F-15E
SZCBA STAMP CBU-89/B
C891B CBU 89A/B GATOR HIGH ALTITUDE
C891B CBU 89A/B GATOR HIGH ALTITUDE
C898A CBU89 B2
Z891A CBU-89(T-1)/B
C896A CBU-89A/B GATOR HIGH ALT B-1
C897A CBU-89A/B GATOR HIGH ALT. F-117
C895B CBU-89A/B HIGH ALT. F-15E
SZCBA STAMP CBU-89/B

Class - Antitank / Antipersonnel
Weight (full) 705.29 lbs +/- 5%
cg (x) 7.84 in. +/- 0.50 in..
cg (y) 0.04 in. +/- 0.50 in.
cg (z) 0.26 in. +/- 0.50 in.
Length 91.75 in.
Diameter 15.60 in.
Inertia (roll) unk +/- 10%
Inertia (pitch) 83.29 +/- 10%
Inertia (yaw) 83.29 +/- 10%
Drawings 777340
Interface Control Drawings 777109
Tech Data 11A9-30-7
Employment Limits PIDS SP777340, para 3.2.1
Environmental Limits PIDS SP777340, para 3.2.4
Warhead - 72ea BLU-91/B Anti-Tank Bomblets (4.31 lbs. ea)
- 22ea BLU-92/B Anti-Personnel Bomblets (3.75 lbs. ea)
Dispenser - SUU-64/B
Fuze - Integral Part of Dispenser
- FZU-39/B Proximity Sensor

Employment Options
Aircraft: Limitations: Delivery Envelope
B-52H A-10A 200-40,000 ft. Alt.
F-4G F-117A 200-700 KIAS
F-16A-D B-2
F-111D-F F-15E Rack/Pylon: 14in Lug Spacing

Status/Schedule/Improvements
Contractor - Honeywell/Aerojet/Olin/Alliant
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11A9-30-7

BLU-91/B
BLU-92/B
Nomenclature: CBU-97/B       Name: Sensor Fuzed Weapon (SFW)

Description
The CBU-97 is an anti-armor weapon. This cluster weapon is propped over an area with armor. The fuze sensors detect heat and will fire down at the engine of the armored vehicle.

Weapon Characteristics
CRD Weapons Code
SZCCA CBU-97 SFW
C971A CBU-97/B (SFW)
C976A CBU-97/B (SFW) B-1
C978A CBU-97/B (SFW) B-2
C975A CBU-97/B (SFW) F-15E

Weight (full)         919.84 lbs   +/- 5%
cg (x)                      7.8       +/- 0.5. in.
cg (y)                  unk           +/- 0.5. in.
cg (z)                   0.20                +/- 0.5. in.
Length                  92.00 in.
Diameter                15.60 in.
Inertia (roll)          6.00   +/- 10%
Inertia (pitch)        97.60   +/- 10%
Inertia (yaw)          97.69                   +/- 10%
Drawings               8562831
Interface Control Drawings 777944, 777111, 8563586, 8562844
Employment Limits      PIDS   SP8562831, para 3.2.1
Environmental Limits    PIDS   SP8562831, para 3.2.6
Supportability           PIDS   SP8562831, para 3.5 (Logistics)
Dispenser - SUU-66/B
Submunition - 10ea BLU-108/B w/ 4 Warheads Each
Weight - BLU - 63 lbs    Projectile - 8 lbs
Length - BLU - 31 in     Projectile - 3.75 in
Diameter - BLU - 5.25 in Projectile - 5.25 in
Fuze                   - Integral Part of Dispenser - FZU-39/B Proximity Sensor

Employment Options
Aircraft:               Limitations:  Delivery Envelope
F-16A-D; F-15E;         3,000 - 30,000 ft. Alt. w/WCMD
A-10; B-1;              250-650 Knots
B-2; B-52              Targets - Tanks, Armored and Support Vehicles
                        Engagement Systems - Bombing Computer
                        Rack/Pylon: 14 in. Lug Spacing

Status/Schedule/Improvements
Contractor - Textron Defense Systems, Wilmington, MA
Status - Production
SUU-66/B Dispenser

SKEET WARHEAD

SUBMUNITION (BLU-108/B)
**Nomeclature: CBU-103 to 105**

**Name: WCMD (Wind Corrected Munitions Dispenser)**

**Description**
The Wind Corrected Munitions Dispenser’s (WCMD) high speed laydown deliveries are consistent with tactics used against heavily defended target sets. The tail kit inertially steers the munition from a known release point to precise target coordinates while compensating for launch transients, winds aloft, surface winds and adverse weather.

**Nomeclature: CBU-103 to 105**

Dispenser: Lockheed Martin

- CBU-87A/B: CBU-103A/B
- CBU-87B/B: CBU-103B/B
- CBU-89A/B: CBU-104A/B
- CBU-97/B: CBU-105/B
- CBU-97A/B: CBU-105B/B

**Characteristics**

**CRD Weapons Code**

- C031A: CBU-103 WCMD
- C036A: CBU-103 WCMD
- C038A: CBU-103 WCMD
- C035A: CBU-103 WCMD
- C041A: CBU-104 WCMD
- C046A: CBU-104 WCMD
- C048A: CBU-104 WCMD
- C047A: CBU-104 WCMD
- C045A: CBU-104 WCMD
- C051A: CBU-105 WCMD
- C056A: CBU-105 WCMD
- C058A: CBU-105 WCMD
- C055A: CBU-105 WCMD
- P103A: PREPO ISO CBU-103
- S0CDA: STAMP CBU-103 CEM WCMD
- S0CFA: STAMP CBU-105 SFW WCMD
- C031A: CBU-103 WCMD
- C036A: CBU-103 WCMD
- C038A: CBU-103 WCMD
- C035A: CBU-103 WCMD
- C041A: CBU-104 WCMD
- C046A: CBU-104 WCMD
- C048A: CBU-104 WCMD

**P103A:** PREPO ISO CBU-103

**SZCDA:** STAMP CBU-103 CEM WCMD

**SZCFA:** STAMP CBU-105 SFW WCMD

**C031A:** CBU-103 WCMD

**C036A:** CBU-103 WCMD

**C038A:** CBU-103 WCMD

**C035A:** CBU-103 WCMD

**C041A:** CBU-104 WCMD

**C046A:** CBU-104 WCMD

**C048A:** CBU-104 WCMD
Guidance - INS
Class - Tactical Munitions Dispenser (TMD) Guidance Kit modification for CBU-87/89/97

Weight (full) 934.00 lbs +/- 5%
  cg (x) 6.35 in. +/- 0.5 in.
  cg (y) 0.01 in. +/- 0.5 in.
  cg (z) 0.00 in. +/- 0.5 in.
Length 92.00 in.
Diameter 15.60 in.
Inertia (roll) unk +/- 10%
Inertia (pitch) 88.59 +/- 10%
Inertia (yaw) 88.92 +/- 10%

Dispenser - SUU-64/B, SUU-65/B, SUU-66/B TMDs
Explosive - BLU-91/B, BLU-92/B, BLU-97/B, BLU-108/B,
Fuze - Integral Part of Dispenser / FZU-39/B Proximity Sensor
Propulsion – None

Employment Options
Aircraft: Rack/Pylon: 14in. Lug Spacing
B-1B, B-52, F-15, F-16

Status / Schedule / Improvements
Contractor - Lockheed Martin
Status - EMD
IOC Date - 1999
OPR - AAC/YH
Reference - JMEM
CHAPTER SEVEN

NUCLEAR

WEAPONS
Nomenclature: Nuclear Bomb B61

Characteristics:

**B-61 Mod -3, -4, -10**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CG(x)</td>
<td>60.5 +/- 0.75 in (14.96 in. aft of front lug)</td>
</tr>
<tr>
<td>Weight(full)</td>
<td>751.00 lbs +/- 15.0 lbs</td>
</tr>
<tr>
<td>MI Pitch</td>
<td>795K +/- 25K lb-in2</td>
</tr>
<tr>
<td>MI YAW</td>
<td>795 +/- 25K lb-in2</td>
</tr>
<tr>
<td>MI Roll</td>
<td>17.2K +/- 500 lb-in2</td>
</tr>
<tr>
<td>Length</td>
<td>141.64 in.</td>
</tr>
<tr>
<td>Diameter</td>
<td>13.30 in.</td>
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**B-61 Mod 7**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>CG(x)</td>
<td>60.5 +/- 0.75 in (14.96 in. aft of front lug)</td>
</tr>
<tr>
<td>Weight(full)</td>
<td>763.00 lbs +/- 15.0 lbs</td>
</tr>
<tr>
<td>MI Pitch</td>
<td>819K +/- 25K lb-in2</td>
</tr>
<tr>
<td>MI YAW</td>
<td>8129 +/- 25K lb-in2</td>
</tr>
<tr>
<td>MI Roll</td>
<td>15K +/- 200 lb-in2</td>
</tr>
<tr>
<td>Length</td>
<td>141.64 in.</td>
</tr>
<tr>
<td>Diameter</td>
<td>13.30 in.</td>
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**B-61 Mod 11**

<table>
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<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>CG(x)</td>
<td>57.81 +/- 0.75 in (14.96 in. aft of front lug)</td>
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<tr>
<td>Weight(full)</td>
<td>1,24500 lbs +/- 15.0 lbs</td>
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<tr>
<td>MI Pitch</td>
<td>1,690K +/- 25K lb-in2</td>
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<tr>
<td>MI YAW</td>
<td>1,690 +/- 25K lb-in2</td>
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<tr>
<td>MI Roll</td>
<td>27,270 +/- 200 lb-in2</td>
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<tr>
<td>Length</td>
<td>145.01 in.</td>
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<tr>
<td>Diameter</td>
<td>13.30 in.</td>
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</table>

**Aircraft:**

B-2A, B-52H, F-15E, F-15E, F-16A/B/C/D, PA-200
(MOD 11: B-2A)

**Management/Engineering:** AAC/NWL

**Technical Order:** 11N-B61-1

**Status:** Inventory
Nomenclature: Nuclear Bomb B83 Mod –0 and -1

Characteristics:
Weight: 2,461 lbs
Length: 144.21 in (3.66 m)
Diameter: 18 in (460 mm)

Aircraft: B-2A, B-52H

Management/Engineering: AAC/NWL

Technical Order: 11N-B83-1

Status: Inventory
Nomenclature: Nuclear Warhead W62

Characteristics: Classified

Reentry System: MK12, Minuteman III

Management/Engineering: AAC/NWL

Technical Order: 11N-W62-1

Status: Inventory
**Nomenclature:** Nuclear Warhead W78

**Characteristics:** Classified

**Reentry System:** MK12A, Peacekeeper

**Management/Engineering:** AAC/NWL

**Technical Order:** 11N-W78-1
Nomenclature: Nuclear Warhead W80-1

Characteristics:
Weight: 300lbs
Length: 31.4 in.
Diameter: 14.5in.

Carriage Options:
AGM-86B (ALCM)
AGM-129A (ACM)

Management/Engineering: AAC/NWL

Technical Order: 11N-W80-1
Nomenclature: Nuclear Warhead W87

Characteristics: Classified

Reentry System: MK21, Peacekeeper

Management/Engineering: AAC/NWL

Technical Order: 11N-W87-1
CHAPTER EIGHT

AIRCRAFT GUN

SYSTEMS

(GBU)
**Nomenclature: M61A1**  
**Name: 20mm Automatic Gun**

**Description**
The M61A1 Vulcan gun is an air cooled, externally powered, six-barrel weapon. The power used to drive the weapon can be either hydraulic or electric. It is designed to provide peak saturation firepower for various airframe weapon systems used for attack on aircraft, APCs, and surface craft.

**Weapon Characteristics**
- Gun Type - Six-barrel Gatling
- Weight (lbs.) - 255
- Length (in.) – 72
- System Weight (lbs) - 935
- Rate of Fire (shots/min) - 2,500 - 6,000
- Ammo Type - Cartridge, API, M53
  - Cartridge, HEI, M56
  - Cartridge, SAPHEI, PGU-28
  - Cartridge, HEIT, M242
  - Cartridge, TP, M55 & PGU-27
  - Cartridge, TPT, M220 & PGU-30
- Dispersion (80% dia) - 5 mils

**Aircraft** - F-15A-E, F-16A-D

**Status/Schedule/Cost/Improvements**
- Contractor - General Dynamics Armament & Technical Products
- Status - Inventory
- OPR - WR-ALC/LKJ (Gun); OO-ALC/WM (Ammo)
- Tech Data - 11A13-4-7 (Ammo); 11W1-12-4-32 (Gun)
Nomenclature: M61A2
Name: 20mm Automatic Gun (Lightweight)

Weapon Characteristics
Gun Type - Six-barrel Gatling
Weight (lbs.) - 200
Length (in.) - 71.93
System Weight (lbs.) - 860
Rate of Fire - 4,000 or 6,000 rds/min selectable; also 7,200 rds/min. depending on aircraft
Muzzle Velocity - 1030 m/s
Ammo Type - Cartridge, SAPHEI, PGU-28/B
   Cartridge, TP, M50 Series & PGU-27
   Cartridge, TPT, M220 & PGU-30
Dispersion (80% dia) - 5 mils

Aircraft – F-18 (Navy), F-22

Status/Schedule/Cost/Improvements
Contractor - General Dynamics Armament & Technical Products
Status - Inventory
OPR - WR-ALC/LKJ (Gun); OO-ALC/WM (Ammo)
Tech Data - 11A13-4-7 (Ammo); 11W1-12-4-32 (Gun)
Nomenclature: GAU-8A  Name: 30mm Automatic Gun

**Description**
The GAU-8/A gun system consists of a 7 barrel hydraulically powered gun and ammunition storage system, mounted in an A/OA-10 aircraft. Total storage capacity is 1,350 rounds. The entire system is approximately 20 feet long and weighs about 3,900 pounds.

**Weapon Characteristics**
Gun Type - Seven-barrel Gatling  
Weight (lbs.) - 661  
Length (in.) - 112.83  
Diameter (in) - 12  
Barrel Length (in.) - 93.1  
System Weight (lbs.) With TP Ammunition - 3,867; Empty - 1,861  
Drum Weight (lbs.) - 780  
Drum Size (in.)  
Diameter - 37.75  
Length - 71.10  
Ammunition Capacity, Rounds  
Drum (Approx.) - 1,200  
Total System (Approx.) - 1,350  
Rate of Fire (shots/min)  
Nominal – 3,850 (+100, -300)  
Drive System - Hydraulic  
Maximum Recoil Travel (in.) - 0.633  
Feed System Type - Linkless, Double-Ended  
Ammo Type - Cartridge, HEI, PGU-13/B  
Cartridge, API, PGU-14/B  
Cartridge, TP, PGU-15/B  

**Aircraft** - A-10A

**Status/Schedule/Cost/Improvements**
Contractor - General Dynamics  
Status - Inventory  
OPR - WR-ALC/LKJ (Gun); OO-ALC/WM (Ammo)  
Tech Data - 11A13-14-7 (Ammo); 11W1-12-10-2 (Gun)
Nomenclature: GAU-12/U  Name: 25mm Automatic Gun

Description
The GAU-12/U is part of the AV-8B aircraft gun system. It is an externally powered five barrel, automatic gun which fires at a rate of 3,600 rounds per minute, with 45 shots fired in the first second. A modification of this gun has been developed for the AC-130U gunship. The gun was recently chosen for the Joint Strike Fighter (F-35).

Weapon Characteristics
Gun Type - Five-barrel Gatling
Weight (lbs.) - 330
Length (in.) - 86
Diameter (in) - 11
Rate of Fire (shots/min) - 3,600 (4200 Max)
Ammo Type - Cartridge, HEI, PGU-25/U
Cartridge, HEI, PGU-38/U
Cartridge, TP, PGU-23/U
Dispersion (80% dia) - 3.6 mils

Aircraft – AC-130U
F-35

Status/Schedule/Cost/Improvements
Contractor - General Dynamics Armament & Technical Programs
OO-ALC/WM (Ammo)
Notes - Feed System Unique to AC-130U & F-35
Tech Data - 11A13-16-7 (Ammo); 11W1-12-12-2 (Gun)
**Nomenclature: M2A1**

**Name: 40mm Automatic Gun**

**Description**
The 40mm M2A1 is a clip fed, recoil operated, air cooled, single barrel cannon designed as an anti-aircraft gun, but modified by the USAF for air to surface use on AC-130 aircraft. It can fire in either rapid or single fire mode. Each clip holds 4 rounds that are hand fed to the gun.

**Weapon Characteristics**
- **Gun Type**: Single Barrel
- **Weight (lbs.)**: 1,000
- **Length (ft.)**: 12
- **Rate of Fire (shots/min)**: 120, crew served
- **Ammo Type**:
  - Cartridge, HEI (Zirconium), PGU-9A/B, PGU-9B/B, PGU-9C/B, PGU-37/B
  - Cartridge, HEIP (Misch Metal), MK-2 & PGU-9B
  - Cartridge, HEIP/HEP, MK-2
  - Cartridge, HEIT-NSD, MK-2 & MK-11
  - Cartridge, AP/APT, M81A1
  - Cartridge, TPT, M-91
- **Dispersion (80% dia)**: 0.6 mils

**Aircraft** - AC-130H (1 ea.); AC-130U (1 ea.)

**Status/Schedule/Cost/Improvements**
- **Contractor**: None
- **Status**: Inventory
- **OPR**: WR-ALC/LKJ (Gun); OO-ALC/WM (Ammo)
- **Tech Data**: 11A13-11-7 (Ammo); 11W2-5-2-62 (Gun)
**Nomenclature:** M-137  
**Name:** 105mm Howitzer

**Description**
The M-137 is a 105mm aerial cannon which is a modified 105mm howitzer used with the 105mm trainable gun mount system in the left side of the AC-130 gunship.

**Weapon Characteristics**
- Gun Type - Single Barrel  
- System Weight (lbs.) - 1,000  
- Length(ft) - 14  
- Rate of Fire (shots/min) - 3-5, crew served  
- Maximum Recoil Stroke (in.) - 49  
- Ammo Type – HE, and Clearing Round  
- Ammo Dispersion (80% dia) - 0.3 mils

**Aircraft** - AC-130H (1 ea.); AC-130U (1 ea.)

**Status/Schedule/Cost/Improvements**
- Contractor - N/A  
- Status - Inventory  
- OPR - WR-ALC/LKJ (Gun); OO-ALC/WM (Ammo)  
- Tech Data - 11A13-13-7 (Ammo); 11W1-33-7-2 (Gun)
Nomenclature: GAU-2B/A

Name: 7.62MM Automatic Gun

Weapons Characteristics
Gun Type – Six -barrel Gatling
Weight (lbs) – 35
Length (in) – 31.5
Rate of Fire – 2,000 – 6,000 rds/min
Ammo Type – Cartridge, 7.62MM (Ball/Tracer)

Aircraft – MH-53, MH-60, HH-60

Status/Schedule/Improvements
Contractor – General Dynamics Armament & Technical Products
Status – Inventory
OPR – WR-ALC/LKJ (Gun); OO-ALC/WM (Ammo)
Tech Data – 11W-1-13-5-2 (Gun)/ 11A13-10-7 (Ammo)
Nomenclature: GAU-18/A  Name: .50 Caliber Machine Gun

Weapons Characteristics
Gun Type – Single Barrel air-cooled belt fed
Weight (lbs) – 65
Length (in) – 56.25
Rate of Fire – 750 – 850 Shots Per Minute (SPM)
Ammo Type – Cartridge, .50 caliber (Ball/AP/API/APIT)

Aircraft – MH-60G, MH-53

Status/Schedule/Improvements
Contractor – CAAA
Status – Inventory
OPR – WR-ALC/LKJ (Gun); OO-ALC/WM (Ammo)
Tech Data – 11W-1-33-6-2 (Gun)
CHAPTER NINE

IMPULSE CARTS
BOMB RACKS

&

LAUNCHERS
Nomenclature: ARD 446-1A1W IMPULSE CARTRIDGE

Description:
The general function of this cartridge is to use gas pressure to eject stores from aircraft weapons pylons, racks, launchers, etc. It is electrically fired from aircraft power and has a defined shelf and service life.

Dimensions:    Length (in): 1.812
                Diameter (in): 1.075
                Weight (lb): 0.075

Aircraft: Various

Management/Engineering: OO-ALC/WMBA

Technical Order: 11A18-7-7
**Nomenclature:** ARD 863-1A1W IMPULSE CARTRIDGE

**Description:**
The general function of this cartridge is to use gas pressure to eject stores from aircraft weapons pylons, racks, launchers, etc. It is electrically fired from aircraft power and has a defined shelf and service life.

**Dimensions:**
- Length (in): 1.030
- Diameter (in): 1.075
- Weight (lb): 0.053

**Aircraft:** Various

**Management/Engineering:** OO-ALC/WMBA

**Technical Order:** 11A18-7-7
Nomenclature: BBU-35/B IMPULSE CARTRIDGE

**Description:**
The general function of this cartridge is to use gas pressure to push the chaff cartridge piston and payload out of chaff cartridge. This will disperse several thousand various frequency reflective dipole elements into the aircraft slipstream. It is electrically fired from aircraft power and has a defined shelf and service life.

**Dimensions:**
- Length (in): 0.50
- Diameter (in): 0.625 (flange) 0.49 (body)
- Weight (lb): 0.0103

**Aircraft:** Various

**Dispenser:** All ALE-40 Series

**Countermeasure:** RR-170 and RR-180 Chaff, MJU-48/B IR Flares

**Management/Engineering:** OO-ALC/WMBA

**Technical Order:** 11A16-39-7 and 11A16-40-7
Nomenclature: BBU-36/B IMPULSE CARTRIDGE

Description:
The general function of this cartridge is to use gas pressure to push the flare ejection piston and payload our of flare case. This will disperse incendiary pellets into the aircraft slipstream. It is electrically fired from aircraft power and has a defined shelf and service life.

Dimensions:
Length (in): 0.55
Diameter (in): 0.805 (flange) 0.740 (body)
Weight (lb): 0.0209

Aircraft: Various

Dispenser: ALE-40 Series

Countermeasure: MJU-7, MJU-10/B, MJU-40/B, and MJU-47/B IR Flares

Management/Engineering: OO-ALC/WMBA

Technical Order: 11A16-40-7 and 11A16-43-7
**Nomenclature:** BBU-46/B & A/B IMPULSE CARTRIDGE

**Description:**
The general function of cartridge BBU-46/B is to use gas pressure to push the flare’s piston and the flare pellet out of the ejector tube into the aircraft's slipstream for ignition of the flare pellet. The BBU-46A/B impulse cartridge functions in a similar manner. The main difference is it provides hot gas for ignition of the flare pellet after ejection from the ejector tube. It is electrically fired from aircraft power and has a defined shelf and service life.

**Dimensions:**
- Height (in): 0.47 (BBU-46/B) 0.52 in (BBU-46A/B)
- Diameter (in): 1.80
- Weight (lb): 0.075

**Aircraft:** B-1B Only

**Dispenser:** All ALE-49 Series

**Countermeasure:** MJU-23/B and MJU-23A/B IR Flares (B-1B Only)

**Management/Engineering:** OO-ALC/WMBA

**Technical Order:** 11A16-46-7
Nomenclature: BBU-48/B IMPULSE CARTRIDGE

Description:
The general function of this cartridge is to use gas pressure to push the chaff cartridge piston and payload out of the chaff cartridge. This will disperse chaff dipole elements into the aircraft slipstream. It is electrically fired from aircraft power and has a defined shelf and service life.

Dimensions:
- Length (in): 0.65
- Diameter (in): 0.975
- Weight (lb): 0.0159

Aircraft: Various

Dispenser: All ALE-40 Series

Countermeasure: RR-180/AL Chaff

Management/Engineering: OO-ALC/WMBA

Technical Order: 11A16-45-7
Nomenclature: M796 IMPULSE CARTRIDGE

Description:
The general function of this cartridge is to use gas pressure to push the flare ejection and payload out of flare case. This will disperse flare into the aircraft slipstream. It is electrically fired from aircraft power and has a defined shelf and service life.

Dimensions:
- Length (in): 0.50
- Diameter (in): 0.625 (flange) 0.49 (body)
- Weight (lb): 0.0110

Aircraft: Various

Dispenser: All ALE-40 Series

Countermeasure: M206 IR Flare

Management/Engineering: OO-ALC/WMB

Technical Order: 11A16-41-7
Nomenclature: Advanced Application Rotary Launcher  
(A.K.A. Rotary Launcher Assembly (RLA))

Description:
The B-2 can carry two Advanced Application Rotary Launchers. The launcher will suspend and forcibly eject, or free fall, eight conventional or nuclear stores up to and including 5000 pound weight class. The launchers eight stand-alone BRU-44B/A bomb racks incorporate 4 hooks in tandem providing 14 and 30 inch suspension capability. This configuration provides a total payload in excess of 20,000 lbs.

Dimensions:  
- Length (in): 264.73
- Width (in): 35.83
- Height (in): 32.14
- Weight (lbs): 2,160.00

Aircraft:  B-2

Management/Engineering:  OC-ALC/PSM  
(BRU-44B/A managed by WR-ALC/LKGW)

Technical Order:  11N-L5006-2
**Nomenclature:** Aircraft Guided Missile and Bomb Rotary Launcher (AGMBRL)

**Description:**
The B-52H can carry one Aircraft Guided Missile and Bomb Rotary Launcher. The launcher will suspend and forcibly release eight conventional or nuclear stores. The launchers eight stand-alone MAU-12 bomb racks incorporate 4 hooks in tandem providing 14 and 30 inch suspension capability. This configuration provides a total payload in excess of 20,000 lbs.

**Dimensions:**
- Length (in): 267.00
- Diameter (in): 15.00 (Launcher shaft)
- Diameter (in): 40.00 (Cable reel)
- Weight (lbs): 2,616.00 (Basic launcher)

**Aircraft:** B-52H

**Management/Engineering:** OC-ALC/PSM

**Technical Order:** 11N-L5001-2
Nomenclature: Bomb Rack Assembly

Description:
The bomb rack assembly will suspend and release stores in two configurations. One configuration is up to nine Cluster Comb Units CBU-87/B, CBU-89/B, CBU-97/B, M117 GP, M117 retarded, or M117 destructor weapons. Second configuration is up to 20ea MK-82 Air Inflatable Retarder (AIR) bombs, MK82 Low Drag General Purpose (LDGP), MK36D or MK62 MOD 0 weapons. The bomb rack assembly provides the mechanical interface between the aircraft and conventional weapons. The BRA’s BRU-52 racks incorporate 2 hooks in tandem with a 14 inch suspension capability.

Dimensions:
Length (in): 72.80
Width (in): 65.30
Height (in): 71.40
Weight (lbs): 1,347.00 to 1,462.00 (Depending on configuration)

Aircraft: B-2

Management/Engineering: WR-ALC/LKGW

Technical Order: 11B29-3-66-1
**Nomenclature:** B-11 Bomb Shackle

**Description:**
The B-11 shackle uses a mechanical interface system with the cluster bomb rack assembly to operate the release mechanism of the shackle. Upon actuation, the shackle releases stores between 100 and 1,600 lbs. The B-11 shackle incorporates 2 hooks in tandem with a 14 inch suspension capability.

**Dimensions:**
- Length (in): 16.00
- Width (in): 0.625
- Height (in): 4.125
- Weight (lbs): 5.00

**Aircraft:** B-52H

**Management/Engineering:** WR-ALC/LKGW

**Technical Order:** 11B40-2-4-3
Nomenclature:  BRU-46/A Bomb Rack

Description:
The BRU-46/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) up to and including 500 lb weight class. The BRU-46/A rack incorporates 2 hooks in tandem providing 14 inch suspension capability (not 30 inch suspension capable). Each sway brace arm pivots and locks independently of the others to engage the store.

Dimensions:  
- Length (in): 26.90
- Width (in): 2.00
- Height (in): 6.00
- Weight (lbs): 41.90

Aircraft:  F-15E and BR-57/A Smart Rack

Management/Engineering:  WR-ALC/LKGW

Technical Order:  11B29-3-60-2
Nomenclature: BRU-47/A Bomb Rack

Description:
The BRU-47/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional and special stores up to and including 5000 lb weight class. The BRU-47/A rack incorporates 4 hooks in tandem providing 14 and 30 inch suspension capability. Each sway brace arm pivots and locks independently of the others to engage the store.

Dimensions:
- Length (in): 35.70
- Width (in): 3.00
- Height (in): 6.70
- Weight (lbs): 87.50

Aircraft: F-15E

Management/Engineering: WR-ALC/LKGW

Technical Order: 11B29-3-61-2
**Nomenclature: BRU-57/A Smart Rack**

**Description:**

The BRU-57/A allows carriage of 2 smart weapons (up to 1,000 lb class) on a single aircraft station. The rack uses MIL-STD-1760 for aircraft-to-rack and rack-to-weapon interface. The rack is currently used with the Joint Stand-Off Weapon (JSOW), Wind Corrected Munitions Dispenser (WCMD) configured munitions, and JDAM (1,000 lb weight class) weapon systems. Future expansion is planned for other MIL-STD-1760 compatible aircraft and weapon systems. The BRU-57/A strongback attaches to aircraft with 30 inch suspension and both BRU-46/A racks have 2 hooks in tandem providing 14 inch suspension capability. Each sway brace arm pivots and locks independently of the others to engage the store.

**Configuration Specifics:**

**BRU-57/A (Air Force)**
- BRU-33 vertical ejector rack strongback, 2 BRU-46 ejector units

**Dimensions:**
- Length (in): 69.80
- Width (in): 29.00
- Height (in): 7.10
- Weight (lbs): Approximately 250.00

**Aircraft:** F-16 (2 Precision Guided Munition (PGM) carriage)

**Management/Engineering:**
- Current Manager: AAC/YHJ
- Future Manager: WR-ALC/LKGW

**Technical Order:** Preliminary T.O. 11B29-3-60-2
**Nomenclature:** BRU-56/A, Aircraft Ejector Bomb Rack  
(A.K.A. 30 Inch Ejector Rack)

**Description:**  
The BRU-56/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the rack's release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects conventional and nuclear stores up to 4000 lbs. The BRU-56/A rack incorporates 2 hooks in tandem providing 30 inch suspension capability. Each sway brace arm must be manually adjusted to engage the store.

**Dimensions:**  
Length (in): 38.00  
Width (in): 7.952 (w/o sway braces)  
Height (in): 5.75 (rack only)  
13.25 (rack with pistons)  
Weight (lbs): 90.00

**Aircraft:** B-52H

**Management/Engineering:** OC-ALC/PSM

**Technical Order:** 11N-H5086-2
Nomenclature: General Purpose Bomb Module

Description:
The general purpose bomb module will suspend and forcibly eject up to 28ea MK-82 Air Inflatable Retarder (AIR) bombs, 28ea MK36 Destructors, or 10ea Cluster Comb Units (CBU). When the module is installed in any of the three aircraft weapons bays, the rotary launcher drive subsystem is mechanically locked and electronically disabled by the aircraft avionics control unit (ACU) software. The general purpose bomb module incorporates 2 hooks in tandem with a 14 inch suspension capability.

Dimensions:
Length (in): 178.00
Width (in): 69.96
Height (in): 57.66
Weight (lbs): 2,816.00 to 3,513.00 (Depending on configuration)

Aircraft: B-1B

Management/Engineering: WR-ALC/LKGW

Technical Order: 11B29-3-55-1
Nomenclature: LAU-68/LAU-131 Airborne Rocket Launcher

Description:
The LAU-68/LAU-131 launcher can be used on high and low speed aircraft to include helicopters. It attaches to aircraft with 14 inch lug suspension and is capable of launching seven 2.75 inch diameter MK4 or MK40 Folding Fin Aircraft Rocket (FFAR). The LAU-131 has additional capability to fire MK66 Wrap-Around Folding Fin Aircraft Rockets (WAFFAR). Stores fired from this launcher are ignited and rocket thrust propels store to slide forward, disengaging from launcher and flying to target. The forward frangible fairing disintegrates on rocket impact and the rear fairing acts as a funnel to direct debris away from the launch aircraft. Rockets can be fired in single or ripple mode. The LAU-68/LAU-131 launcher provides mechanical and electrical interface between rocket and aircraft.

Dimensions:  
Length (in): 61.29  
Diameter (in): 9.80  
Weight (lbs): 86.00 (LAU-68)  
97.00 (LAU-131)

Aircraft: Various

Management/Engineering: OO-ALC/WMBA

Technical Order: 11L1-3-27-1
**Nomenclature: LAU-88 Launcher**

**Description:**
The LAU-88A/A launcher attaches to aircraft with 30 inch lug suspension and is capable of launching up to three AGM-65A, B, or D model Maverick missiles. The LAU-88A/A launcher provides mechanical and electrical interface between missile and aircraft. Stores are fired independently with a firing order of outboard, bottom and inboard. Stores fired from this launcher are ignited and missile thrust propels store to slide forward, disengaging from launcher, and flying to target.

**Dimensions:**
- Length (in): 93.43
- Width (in): 27.80
- Height (in): 17.54
- Weight (lbs): 469.00

**Aircraft:** A-10, F-15E (requires ADU-578 Missile Launcher Adapter), and F-16

**Management/Engineering:** OO-ALC/WMMM

**Technical Order:** 11L1-2-22-1
Nomenclature: LAU-105/A Guided Missile Launcher

Description:
The LAU-105/A launcher attaches directly to aircraft pylon/adapter and is capable of launching a single AIM-9 Sidewinder missile. The LAU-105/A launcher provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are ignited and missile thrust propels store to slide forward, disengaging from launcher, and flying to target.

Dimensions:
- Length (in): 90.90
- Width (in): 2.80
- Height (in): 5.20
- Weight (lbs): 53.00

Aircraft: A-10

Management/Engineering: WR-ALC/LKGT

Technical Order: 11L1-2-29-2
Nomenclature: LAU-106 A/A Guided Missile Launcher

Description:
The LAU-106A/A launcher attaches directly to the aircraft fuselage and is capable of suspending and launching/ejecting a single AIM-7 or AIM 120 missile. The LAU-106A/A launcher uses electrically fired dual impulse cartridges to generate gas pressure to operate the release and eject mechanisms. The LAU-106A/A launcher also provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are first jettisoned away from the aircraft, then ignite and fly to their target.

Dimensions:  
- Length (in): 54.30
- Width (in): 4.00
- Height (in): 8.00
- Weight (lbs): 52.00

Aircraft: F-15A-E

Management/Engineering: WR-ALC/LKGT

Technical Order: 11L1-3-29-2
Nomenclature: LAU-117A(V)3/A Guided Missile Launcher

Description:
The LAU-117A(V)3/A launcher attaches to aircraft with 14 inch or 30 inch lug suspension and is capable of launching a single AGM-65 Maverick missile (all models). The LAU-117A(V)3/A launcher provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are ignited and missile thrust propels store to slide forward, disengaging from launcher, and flying to target.

**Dimensions:**
- Length (in): 94.00
- Width (in): 11.00
- Height (in): 11.00
- Weight (lbs): 125.00 to 145.00 (depending on configuration)

**Aircraft:** A-10, F-15E, and F-16

**Management/Engineering:** OO-ALC/WMMM

**Technical Order:** 11L1-2-15-1
**Nomenclature:** LAU-118(V)4/A Guided Missile Launcher

**Description:**
The LAU-118(V)4/A launcher attaches to aircraft with 30 inch lug suspension and is capable of launching a single AGM-88 High-Speed Anti-Radiation Missile (HARM). The LAU-118(V)4/A launcher provides mechanical and electrical interface between missile and aircraft. Electrical interface is provided thru the Aircraft Launcher Interface Computer (ALIC) (enables launcher to be used on F-16’s). Stores fired from this launcher are ignited and missile thrust propels store to slide forward, disengaging from launcher, and flying to target.

**Dimensions:**
- Length (in): 79.00
- Width (in): 11.65 (across top of housing assembly)
- Height (in): 8.00 (excluding attach lugs)
- Weight (lbs): 120.00

**Aircraft:** F-16

**Management/Engineering:** WR-ALC/LKGL

**Technical Order:** 11L1-2-20-1
**Nomenclature:** LAU-128A/A Guided Missile Launcher

**Description:**
The LAU-128A/A launcher requires the use of an ADU-552, Missile Launcher Adapter, to provide ample missile stabilizer wing clearance for launch. This adapter is hard-mounted to the pylon and the launcher is hard-mounted to the adapter with two external attachment bolts. The LAU-128A/A is capable of launching a single AIM-9 (Sidewinder) or AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM). The LAU-128A/A launcher provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are ignited and missile thrust propels store to slide forward, disengaging from launcher, and flying to target.

**Dimensions:**
- Length (in): 103.14
- Width (in): 3.71
- Height (in): 6.09
- Weight (lbs): 87.00

**Aircraft:** F-15A, B, C, D (MSIP) and F-15E

**Management/Engineering:** WR-ALC/LKGA

**Technical Order:** 11L1-2-24-2
Nomenclature: LAU-129A/A Guided Missile Launcher

Description:
The LAU-129A/A launcher attaches to aircraft with three external attachment bolts. The LAU-129A/A is capable of launching a single AIM-9 (Sidewinder) family of missile or AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM). The LAU-129A/A launcher provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are ignited and missile thrust propels store to slide forward, disengaging from launcher, and flying to target.

Dimensions:  
Length (in): 102.98  
Width (in): 3.62  
Height (in): 6.00  
Weight (lbs): 90.00

Aircraft: F-16

Management/Engineering: WR-ALC/LKGA

Technical Order: 11L1-2-30-1
Nomenclature: LAU-144/A Munitions Launcher Assembly (A.K.A. Multi-purpose Rotary Launcher (MPRL) or 180 Inch Rotary Launcher)

Description:
The B-1B can carry up to three Munitions Launcher Assemblies in three weapons bays. Each launcher will suspend and release eight GBU-31 or MK-84 conventional stores or eight B61 or B83 nuclear stores. The Munitions Launcher Assembly provides the electrical, mechanical, and pneumatic interface between aircraft and stores. It incorporates 2 hooks in tandem with a 30 inch suspension capability.

Dimensions: Length (in): 178.00
Diameter (in) (w/o stores): Approximately 41.00
Weight (lbs) w/ejectors (w/o stores): 1,300.00 to 2,023.00 (Depending on configuration)

Aircraft: B-1B

Management/Engineering: OC-ALC/PSM

Technical Order: 11N-L5002-2
Nomenclature: MAU-12 Bomb Rack

Description:
The MAU-12 rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional or nuclear stores up to and including 5000 lb weight class or external fuel tanks. The MAU-12 rack incorporates 4 hooks in tandem providing 14 and 30 inch suspension capability. Each sway brace arm must be manually adjusted to engage the store.

Dimensions:
- Length (in): 32.00
- Width (in): 3.00
- Height (in): 6.26
- Weight (lbs): Approximately 70.00


Management/Engineering: WR-ALC/LKGW

Technical Order: 11B29-3-25-2
Nomenclature: MAU-40/A Bomb Rack

Description:
The MAU-40/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) up to and including 5000 lb weight class or external fuel tanks. The MAU-40/A rack incorporates 4 hooks in tandem providing 14 and 30 inch suspension capability. The MAU-40A is essentially a MAU-12 except it does not contain the safety wiring and in-flight safety lock for nuclear munitions. Each sway brace arm must be manually adjusted to engage the store.

Dimensions:  
- Length (in): 32.00
- Width (in): 3.00
- Height (in): 6.26
- Weight (lbs): Approximately 65.00

Aircraft: AC-130H, AC-130U, MC-130H Talon II, A-10 and OA-10

Management/Engineering: WR-ALC/LKGW

Technical Order: 11B29-3-39-2
Nomenclature: MAU-50/A Bomb Rack

Description:
The MAU-50/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) and/or external fuel tanks up to 2000 lbs with a diameter between 9 and 30 inches. The MAU-50/A rack incorporates 2 hooks in tandem providing 14 inch suspension capability (not 30 inch suspension capable). Each sway brace arm must be manually adjusted to engage the store.

Dimensions:
- Length (in): 27.75
- Width (in): 3.00
- Height (in): 6.125
- Weight (lbs): 45.00

Aircraft: A-10

Management/Engineering: WR-ALC/LKGW

Technical Order: 11B29-3-40-2
Nomenclature: MHU-20A/C Clip-in Assembly

Description:
The B-52 aircraft can carry two clip-in assemblies. The clip-in is a quick loading, four weapon carrier capable of carrying conventional munitions suspended from four MB-3A/A electrically operated bomb racks, providing a total payload of approximately 12,000 lbs.

Dimensions:
- Length (in): 52.00
- Width (in): 54.00
- Height (in): 44.00
- Weight (lbs): 550.00

Aircraft: B-52H

Management/Engineering: OC-ALC/PSM
(MB-3A/A managed by WR-ALC/LKGW)

Technical Order: 11N-H5034-2
**Nomenclature:** SUU-20 Bomb Dispenser

**Description:**
The SUU-20/A dispenser attaches to aircraft with 14 and 30 inch lug suspension and is capable of launching four 2.75 inch diameter Folding Fin Aircraft Rocket (FFAR) and six practice bombs. Stores fired from this launcher are ignited and rocket thrust propels store to slide forward, disengaging from launcher, and flying to target. Practice bombs are ejected by a gas-driven piston ram and free-fall to target. Both rockets and bombs can be fired in a single mode or a ripple mode. The SUU-20/A dispenser provides mechanical and electrical interface between rocket/bomb and aircraft.

**Dimensions:**
- Length (in): 122.00
- Height/Width (in): 19.30 X 12.25 (Elliptical Shape)
- Weight (lbs): 241.00 to 330.00 (Depending on configuration)

**Aircraft:** F-15 and F-16

**Management/Engineering:** WR-ALC/LKGW

**Technical Order:** 11B29-3-28-1
Nomenclature: SUU-59B/A Inboard Aircraft Pylon

Description:
The inboard aircraft pylon provides the F-15A-D aircraft with carriage and jettison capabilities of external fuel tank and conventional air-to-air armament. The SUU-59B/A contains one MAU-12 bomb rack. The SUU-59B/A and MAU-12 combination provides electrical, mechanical and fuel delivery interface between the attached store/external fuel tank and various aircraft systems. This entire pylon can be jettisoned from the aircraft just as stores are jettisoned from the MAU-12.

Dimensions:
Length (in): 159.00
Width (in): 5.00
Height (in): 18.00
Weight (lbs): 335.00

Aircraft: F-15 A-D

Management/Engineering: WR-ALC/LFMS

Technical Order: 16W6-25-12
Nomenclature: SUU-59C/A Inboard Aircraft Pylon

Description:
The inboard aircraft pylon provides the F-15E aircraft with carriage and jettison capabilities of external fuel tank, conventional air-to-air missiles and conventional/nuclear air-to-ground armament. The SUU-59C/A contains one BRU-47/A bomb rack. The SUU-59C/A and BRU-47/A combination provides electrical, mechanical and fuel delivery interface between the attached store/external fuel tank and various aircraft systems. This entire pylon can be jettisoned from the aircraft just as stores are jettisoned from the BRU-47/A.

Dimensions:
- Length (in): 159.00
- Width (in): 5.00
- Height (in): 18.00
- Weight (lbs): 371.00

Aircraft: F-15E

Management/Engineering: WR-ALC/LFMS

Technical Order: 16W6-25-12
Nomenclature: SUU-60B/A Centerline Aircraft Pylon

Description:
The centerline aircraft pylon provides the F-15A-D aircraft with carriage and jettison capabilities of external fuel tank and special equipment. The SUU-60B/A contains one MAU-12 bomb rack. The SUU-60B/A and MAU-12 combination provides electrical, mechanical and fuel delivery interface between the attached store/external fuel tank and various aircraft systems. This entire pylon can be jettisoned from the aircraft just as stores are jettisoned from the MAU-12.

Dimensions:  
Length (in): 148.00  
Width (in): 5.00  
Height (in): 15.00  
Weight (lbs): 285.00

Aircraft: F-15A-D

Management/Engineering: WR-ALC/LFMS

Technical Order: 16W6-25-2
Nomenclature: SUU-73/A Centerline Aircraft Pylon

Description:
The centerline aircraft pylon provides the F-15E aircraft with carriage and jettison capabilities of external fuel tank, special equipment and conventional/nuclear air-to-ground armament. The SUU-73/A contains one BRU-47/A bomb rack. The SUU-73/A and BRU-47/A combination provides electrical, mechanical and fuel delivery interface between the attached store/external fuel tank and various aircraft systems. The SUU-73/A pylon has additional electrical interface provision for special weapon carriages. This entire pylon can be jettisoned from the aircraft just as stores are jettisoned from the BRU-47/A.

Dimensions: Length (in): 148.00  
Width (in): 5.00  
Height (in): 15.00  
Weight (lbs): 316.00

Aircraft: F-15E

Management/Engineering: WR-ALC/LFMS

Technical Order: 16W6-25-
Nomenclature: TER-9A Bomb Rack

Description:
The TER-9A uses electrically fired impulse cartridges (three total, one per rack) to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) up to 1000 lbs each. Each rack can carry stores with a diameter between 9 and 16 inches (max diameter of 18.6 when loaded single). Stores can be fired independently, or simultaneously with ripple delay, and a firing order of center, left, and right. The TER-9A bomb rack strongback attaches to aircraft with 30 inch suspension and each of the three stores racks have 2 hooks in tandem providing 14 inch suspension capability only. Each sway brace arm must be manually adjusted to engage the store.

Dimensions: 
- Length (in): 67.00
- Width (in): 15.00
- Height (in): 16.00
- Weight (lbs): 93.00

Aircraft: A-10 and F-16

Management/Engineering: WR-ALC/LKGW

Technical Order: 11B29-3-35-2
**Nomenclature: TER-9/A MOD Bomb Rack (HIGH SPEED)**

**Description:**
The MODIFIED TER-9A uses electrically fired impulse cartridges (three total, one per rack) to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) up to 1000 lbs each. Each rack can carry stores with a diameter between 9 and 16 inches (max diameter of 18.6 when loaded single). Stores can be fired independently, or simultaneously with ripple delay, and a firing order of center, left, and right. The MODIFIED TER-9A bomb rack strongback attaches to aircraft with 30 inch suspension and each of the three stores racks have 2 hooks in tandem providing 14 inch suspension capability only. Each sway brace arm must be manually adjusted to engage the store. The skin of the MODIFIED TER-9A is aerodynamically shaped to enhance drag coefficient and covered with spray-on radar absorbent material.

**Dimensions:**
- Length (in): 67.00
- Width (in): 15.00
- Height (in): 16.00
- Weight (lbs): 105.00

**Aircraft:** F-16

**Management/Engineering:** WR-ALC/LKGW

**Technical Order:** 11B29-3-35-2
**Nomenclature:** 16S-200 Launcher

**Description:**
The 16S-210 launcher is hard bolted to the aircraft and is capable of launching a single AIM-9 (Sidewinder) missile. The 16S-210 launcher provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are ignited and missile thrust propels store to slide forward, disengaging from launcher, and flying to target.

**Dimensions:**
- Length (in): 105.00
- Width (in): 3.00
- Height (in): 5.00
- Weight (lbs): Approximately 70.00

**Aircraft:** F-16

**Management/Engineering:** WR-ALC/LKGW

**Technical Order:** 11L1-2-16-2
**Nomenclature: Wing Weapon Pylon Assembly**

**Description:**
The wing weapon pylon assembly is hard-mounted to the F-16 aircraft. The pylon uses a MAU-12 bomb rack to carry conventional and nuclear stores. The pylon provides electrical and mechanical interface between the attached store and various aircraft systems. The exterior surface of the pylon is covered with spray-on radar absorbent material.

**Dimensions:**
- Length (in): 80.00
- Width (in): 20.00
- Height (in): 17.00
- Weight (lbs): 220.00 to 322.00 (Depending on configuration)

**Aircraft:** F-16

**Management/Engineering:** OO-ALC/LGFAD

**Technical Order:** 16W6-51-2
CHAPTER TEN

Countermeasures
Nomenclature: ALA-17/B Flare Cartridge
(CRD Weapon Code - F171A)

Characteristics
CRD Weapons Code
F171A ALA-17 FLARE
D171A FLARE RACK ALA-17

Weight: 4.25 lbs
Length: 12 in
Diameter: 3 in
Aircraft: B-52, AC-130
Dispenser: ALE-20
Squib/Cart: Electric-Preinstalled
Management/Engineering: OO-ALC/WM
Technical Order: 11A16-7-7
Nomenclature: AN/ALE-48 CHAFF DISPENSER

Characteristics:
Weight: 45 lbs
Length: 20 in
Width: 13.2 in
Height: 13.6 in

Aircraft: B-1B

Capacity: 120ea RR-170/188 Chaff Cartridges

Management/Engineering: WR-ALC/LNRA

Technical Order: 12P3-4-88-2
Nomenclature: AN/ALE-49 FLARE DISPENSER

Characteristics:
Weight: 65.2 lbs
Length: 20 in
Width: 13.2 in
Height: 13.6 in

Aircraft: B-1B

Capacity: 12ea MJU-23A/B Flare Cartridges

Management/Engineering: WR-ALC/LNRA

Technical Order: 12P3-4-89-2
Nomenclature: ALE-50(V) 1 COUNTERMEASURES DECOY DISPENSING SET (CMDDS)

**Aircraft:** B-1B

**Capacity:**
4ea Decoys

**Squib/Cart:** BBU-52/B, CCU-41/B Impluse Carts

**Management/Engineering:** WR-ALC/LNXA

**Technical Order:** 12P3-2ALE50-2
Nomenclature: ALE-50(V) 2 COUNTERMEASURES DECOY DISPENSING SET (CMDDS)

Aircraft: F-16

Capacity: 2ea Decoys

Squib/Cart: BBU-52/B, CCU-41/B Impluse Carts

Management/Engineering: WR-ALC/LNXA

Technical Order: 12P3-2ALE50-2
Nomenclature: LAU-74 FLARE LAUNCHER SYSTEM

Characteristics:
Weight: 395 lbs
Length: 57 in
Width: 31 in
Height: 43 in

Aircraft: C-130

Capacity:
24ea MK 24 Mod 4 Flares or
24ea LUU-2/B Flares or
24ea LUU-1/B Target Markers or
24ea LUU-5/B Target Markers or
24ea MJU-6/B Chaff Cartridges

Management/Engineering: WR-ALC/LNXB

Technical Order: 11L1-5-4-2
Nomenclature: LUU-1, -5 TARGET MARKERS

Characteristics
CRD Weapons Code
F011A LUU-1 MARKER
F011B LUU-1 MARKER
F011D LUU-1 MARKER TARGET
F011C LUU-1 TARGET MARKER
SZTDS STAMP LUU FLARES

Weight:  26 lbs
Length:  36 in
Diameter:  5 in

Aircraft: A-10, F-15, F-16, C-17, C-130, C-141

Dispenser: SUU-25 Dispenser or LAU-74 Launcher or Hand Dispensed or Single Carriage Bomb Rack

Squib/Cart: None

Management/Engineering: OO-ALC/WM

Technical Order: 11A10-33-7
Nomenclature: LUU-2B/B FLARE
(CRD Weapon Code - F021B)

Characteristics
CRD Weapons Code
LUU-2 FLARE LAU-74
LUU-2 FLARE, SERIES
LUU-2 FLARE, SERIES
SZTDS STAMP LUU FLARES

Weight: 29 lbs
Length: 36 in
Diameter: 5 in

Aircraft: A-10, F-15, F-16, C-17, C-130, C-141

Dispenser: SUU-25 Dispenser or LAU-74 Launcher or Hand Dispensed or Single Carriage Bomb Rack

Squib/Cart: None

Management/Engineering: OO-ALC/WM

Technical Order: 11A10-24-7
Nomenclature: M206 Flare
(CRD Weapon Code - F061A)

Characteristics
CRD Weapons Code
F061A M206 FLARE
F061B M206 FLARE W/BBU-35/B
SZUEA STAMP M206 FLARES
PREPO ISO M206
PF06A FLARE/BBU36 SQUIB

Weight: .43 lbs
Length: 8 in
Width: 1 in
Height: 1 in

Aircraft: A-10, AC-130, F-16, C-17

Dispenser: ALE-40/45/47

Squib/Cart: M796 Impulse Cartridge, BBU-35/B

Management/Engineering: OO-ALC/WM

Technical Order: 11A16-41-7
Nomenclature:  M206 (T-2)/B Flare Simulator

Characteristics:
Weight:  .3 lbs
Length:  8 in
Width:   1 in
Height:  1 in

Aircraft:   A-10, AC-130, F-16

Dispenser:  ALE-40/45/47

Squib/Cart:  M796 Impulse Cartridge , BBU-35/B

Management/Engineering:  OO-ALC/WM

Technical Order:  11A16-41-7
Nomenclature: MJU-7 A/B IR Flare
(CRD Weapon Code - F071A)

Characteristics
CRD Weapons Code
SZUCA STAMP MJU-7 FLARE
PREPO ISO MJU7
PF07A FLARE/BBU36 SQUIB
F071A MJU-7A/B IR FLARE

Weight: .7 lbs
Length: 8 in
Width: 2 in
Height: 1 in

Aircraft: F-15, F-16

Dispenser: ALE-40, ALE-45, ALE-47

Squib/Cart: BBU-36/B Impulse Cartridge

Management/Engineering: OO-ALC/WM

Technical Order: 11A16-40-7
Nomenclature: MJU-7(T-2)/B Flare Simulator

Characteristics:
Weight: .9 lbs
Length: 8 in
Width: 2 in
Height: 1 in

Aircraft: F-15, F-16

Dispenser: ALE-40, ALE-45, ALE-47

Squib/Cart: M796 Impulse Cartridge, BBU-35/B

Management/Engineering: OO-ALC/WM

Technical Order: 11A16-40-7
Nomenclature: MJU-10/B Flare

Characteristics
CRD Weapons Code
F10AA  FLARE, A/C MJU10/B
        PREPO ISO MJU10
PF10A  FLARE/BBU36SQUIB
SZUDA  STAMP MJU-10 FLARE

Weight:  2.5 lbs
Length:  8 in
Width:   2 in
Height:  2 in

Aircraft: F-15

Dispenser: ALE-45, ALE-47

Squib/Cart: BBU-36/B Impulse Cartridge

Management/Engineering: O-ALC/LIW

Technical Order: 11A16-43-7
Nomenclature: MJU-10(T-1)/B Flare Simulator

Characteristics:
Weight: .45 lbs
Length: 8 in
Width: 2 in
Height: 2 in

Aircraft: F-15

Dispenser: ALE-45, ALE-47

Squib/Cart: M796 Cartridge, BBU-35/B

Management/Engineering: OO-ALC/WM

Technical Order: 11A16-43-7
**Nomenclature:** MJU-11 CHAFF/FLARE MAGAZINE

**Characteristics:**
- **Weight:** 6.6 lbs
- **Length:** 7.5 in
- **Width:** 5.7 in
- **Height:** 8.1 in

**Aircraft:** A-10, C-141, C-17, C-130, F-15, F-16, MH-53J

**Capacity:**
- 30ea RR-170 or RR-188 Chaff Cartridges or
- 30ea M-206 Flares or
- 30ea M206(T-2) Flare Simulators

**Management/Engineering:** WR-ALC/LNXB

**Technical Order:** 12P3-ALE40-3
Nomenclature: MJU-12 FLARE MAGAZINE

Characteristics:
Weight: 7.5 lbs
Length: 7.5 in
Width: 5.7 in
Height: 8.1 in

Aircraft: A-10, C-130, C-141, C-17, F-15, F-16, MH-53J

Capacity:
15ea MJU-7/B Flares or
15ea MJU-7A/B Flares or
15ea MJU-7(T-2)B Flare Simulators

Management/Engineering: WR-ALC/LNXB

Technical Order: 12P3-2ALE40-3
**Nomenclature:** MJU-17 FLARE MAGAZINE

**Characteristics:**
- Weight: 7.5 lbs
- Length: 7.5 in
- Width: 7.5 in
- Height: 8.11 in

**Aircraft:** F-15

**Capacity:** 6ea MJU-10 Flare Cartridges

**Management/Engineering:** S9E (Defense Logistics Agency)

**Technical Order:** 12P3-2ALE45-2
**Nomenclature:** MJU-23/B & A/B  
**Name:** IR Countermeasure Flare  

**Characteristics**  
CRD Weapons Code  
SZUFA STAMP MJU-23 FLARE  
F231B MJU-23 AIRCRAFT FLARE  

- Length (in.): 10.6  
- Diameter (in.): 2.85  
- Weight (lbs): 3.9  

**Management/Engineering:** OO-ALC/WM  

**Aircraft:** B1B  

**Dispenser:** ALE-49  

**Impluse Cartridge:** BBU-46  

**Technical Order:** 11A16-45-7
Nomenclature: RR-136 Chaff Cartridge
(CRD Weapon Code - E361A)

Characteristics:
Weight: .9 lbs
Length: 8 in
Diameter: 2 in

Aircraft: RF-4

Dispenser: LAU-308

Squib/Cart: BBU-52 Cart

Management/Engineering: OO-ALC/WM

Technical Order: 11A16-38-7
Nomenclature: RR-170 Chaff Cartridge
(CRD Weapon Code - E701A)

Characteristics
CRD Weapons Code
E701A  CHAFF PKG RR170
       PREPO ISO
PC70A  RR170CHAFF/BBU35 SQUIB
SZUAA  STAMP RR-170 CHAFF

Weight:  .4 lbs
Length:  8 in
Width:   1 in
Height:  1 in

Aircraft:  A-10, F-4, F-15, F-16, AC-130, C-17, B-1, C-141, C-5

Dispenser:  ALE-40, ALE-45, ALE-47

Squib/Cart:  BBU-35/B Impulse Cartridge

Management/Engineering:  OO-ALC/WM

Technical Order:  11A16-39-7
Nomenclature: RR-180 Chaff Cartridge
(CRD Weapon Code - E181A)

Characteristics

CRD Weapons Code
E181A RR-180 CHAFF
PREPO ISO
PC80A RR180CHAFF/BBU48SQUIB
SZUBA STAMP RR-180 CHAFF

Weight: .4 lbs
Length: 8 in
Width: 1 in
Height: 1 in

Aircraft: A-10, F-15, F-16, C-130

Dispenser: ALE-45, ALE-47

Squib/Cart: BBU-48/B Cartridge

Management/Engineering: OO-ALC/WM

Technical Order: 11A16-45-7
Nomenclature: SUU-25 FLARE DISPENSER

Characteristics:
Weight: 260 lbs
Length: 96 in
Diameter: 14 in

Aircraft: A-10, F-15, F-16

Capacity:
8ea Illumination Flares or
8ea Target Markers

Squib/Cart: ARD-863, CCU-107 Impluse Carts

Management/Engineering: OO-ALC/WMCA

Technical Order: 11A21-7-7

Required Parts: ADU-381 Adapter Kit, Shear Pins
CHAPTER ELEVEN

FUZES

&

SENSORS
**Nomenclature:** DSU-33A/B  
**Name:** Proximity Sensor  
DSU-33A/B General Purpose  
DSU-33B/B JDAM Upgrade

**Weapon Characteristics**  
Fuzing - FMU-139, FMU-152  
Interface – JDAM, GP Bombs  
Power/Safety - FZU-48 Air Turbine (AF), Fuze Function Control Set (N), and Thermal Battery / Fuzing

**Employment Options**  
Weapons Used On -  
M-117, Mk-80 Series General Purpose Bombs and JDAM (DSU-33A/B Limited Usage)

**Status/Schedule/Improvements**  
DSU-33A/B  
Manufacturer – Motorola Inc, Scottsdale AX  
Contractor – Motorola Inc  
Status - Inventory  
DSU 33-B/B  
Manufacturer - Alliant PF Co. LLC, Janesville WI  
Contractor – Alliant Precision Fuze Company LLC  
Status – Production USAF/Navy /FMS  
OPR – AAC/WMG  
Notes - Joint Program with the Navy, USAF Lead Service
Nomenclature: DTU-31/B, Timer-Actuator  Name: Bomb Adapter

Weapon Characteristics
Weight - 2.5 lbs.
Length - 14.125 in.
Delay Time – 0.65 +or- 0.05 sec
Interface - B1-B Bomber

Employment Options
Weapons Used On -
Mk-82     A1R
Mk-36

Delivery Speed - 350 to 600 kt. or 0.9 M

Status/Schedule/Improvements
Manufacturer – Chamberlain Amptec Corporation
Status - Inventory
OPR - OO-ALC/WM
Notes -
Nomenclature: FMU-26  Name: Bomb
Impact/Airburst Fuze

Weapons Characteristics
Fuze type – Impact  short delay or airburst for general purpose
Interface – Standard Bomb
Power/Safety – Out-of-line explosive train

Employment Options
Weapons Used On –
Mk-82  M-117
Mk-83  Mk-84

Explosive Components
Primer – None
Detonator – M36A1
Lead – None
Booster – FZU-1/B or FZU-2/B
Other – Two bellows actuators used to turn rotor

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM
Nomenclature: FMU-54A/B

Name: Impact Bomb Fuze

Weapons Characteristics
- Fuze type: Impact for general purpose bombs
- Interface: Standard Bomb
- Power/Safety: Out-of-line explosive train

Employment Options
- Weapons Used On:
  - Mk-82  M-117
  - Mk-83  Mk-84

Explosive Components
- Primer: None
- Detonator: M9 Stab  T75 Elec for Prox mode
- Lead:
  - Long: Tetryl 350 mg (two)
  - Short: Tetryl 60 mg (two)
- Booster: 162 g Tetryl

Status/Schedule/Improvements
- Status: Inventory
- OPR: OO-ALC/WM
**Nomenclature:** FMU-56

**Name:** Bomb Proximity Fuze

**Weapons Characteristics**
Fuze type – Proximity Fuze for Cluster Bombs
Interface – Cluster Bomb
Power/Safety – thermal Battery/Out-of-line explosive train

**Employment Options**
Weapons Used On –
CBU-24/B
CBU-29/B

**Explosive Components**
Primer – In Thermal Battery
Detonator – D74B1
Lead – None
Booster – FZU-1/B
Other – two explosive bellows drivers operate rotor

**Status/Schedule/Improvements**
Status – Inventory
OPR – OO-ALC/WM

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![FMU-56 Fuze Diagram](image-url)
Nomenclature: FMU-72

Name: Impact Bomb

Fuze

Weapons Characteristics
Fuze type – Impact for general purpose bombs
Interface – Standard Bomb
Power/Safety – Battery firing device and Liquid Ammonia (unlocks Battery), Out-of-line explosive train

Employment Options
Weapons Used On –
Mk-82 M-117
Mk-83 Mk-84

Explosive Components
Primer – percussion Cap (Battery)
Detonator – M36A1
Lead – None
Booster – FZU-2/B 9Separate Item)
Other – two bellows Drivers operate rotor

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM
Nomenclature: FMU-81

Name: Bomb Impact

**Fuze**

**Weapons Characteristics**
Fuze type – Impact for laser guided bombs
Interface – Laser Guided Bomb
Power/Safety – Thermal Battery/Out-of-line explosive train

**Employment Options**
Weapons Used On –
GBU-10
GBU-12

**Explosive Components**
Primer – None
Detonator – M36A!
Lead – none
Booster – FZU-2/B
Other – Two bellows drivers for arm enable and mechanical arming

**Status/Schedule/Improvements**
Status – Inventory
OPR – OO-ALC/WM
Nomenclature: FMU-110

Name: Proximity Fuze

Weapons Characteristics
Fuze type – Proximity for Cluster Munitions
Interface – Cluster Munitions
Power/Safety – In Thermal Battery/Out-of-line explosive train

Employment Options
Weapons Used On –
SUU-30 Dispenser

Explosive Components
Primer – In Thermal Battery
Detonator – D74B1
Lead – None
Booster – FZU-1/B
Other – Arming bellows, locked rod bellows; less 1 g explosives each

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM
Nomenclature: FMU-113

Name: Proximity Fuze

Weapons Characteristics
Fuze type – Proximity Fuze
Interface – Standard Bomb (low drag)
Power/Safety – Alternator/Out-of-line explosive train

Employment Options
Weapons Used On –
Mk-82 M-117
Mk-83 Mk-84

Explosive Components
Primer – None
Detonator – Mk 44
Lead – 466 mg CH-6
Booster – FZU-2/B
Other – Electric and Stab Actuators

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM
Nomenclature: FMU-124
Name: Guided Bomb Impact Fuze

Weapons Characteristics
Fuze type – Impact delay for Guided Bomb
Interface – Guided Bomb

Employment Options
Weapons Used On –
GBU-15

Explosive Components
Primer – None
Detonator – Mk 100-0
Lead – 160 mg Tetryl
Booster – 123 g Tetryl
Other – Mk 20-0 bellows Drivers (Two)

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM

![FMU 124 Fuze diagram](image)
Nomenclature: FMU-139A/B  Name: Electronic Bomb

Fuze

Weapon Characteristics
Fuze Type - Impact, Impact Delay, and Proximity (w/ external prox. sensors)
Interface - Standard Bomb
Power/Safety - FZU-48/B Air Turbine

Employment Options
Weapons Used On -
Mk-82  Mk-84
M-117  GBU-10
GBU-12  GBU-22
GBU-24  GBU-31/32

Status/Schedule/Improvements
Manufacturer – Alliant Precision Fuze Company LLC
Status - Inventory
OPR - OO-ALC / LIW
Nomenclature: FMU-143A-H/B  Name: Electronic Bomb Fuze

Weapon Characteristics
Fuze Type - Impact delay for penetrating warheads (single 0.060 sec. delay)
Interface - BLU-109, BLU-113, AGM-142 I-800
Power/Safety - FZU-32B/B Bomb Fuze Initiator, GBU-15/AGM-130 Battery

Employment Options
Weapons Used On -
GBU-10   GBU-24   GBU-27   GBU-28   GBU-31   AGM-142   AGM-130
(With BLU-109 or BLU-113 w/hs)

Status/Schedule/Improvements
Manufacturer - Dayron Inc., Orlando Fl.
Contractor - Dayron
Status - Production
OPR - OO-ALC/WM
Notes - Joint Program with Navy, FMU-143E/B version for Navy GBU-24A/B,-
FMU-143D/B version for AGM-142, FMU-143F/B G/B H/B versions are for the
GBU-28 A/B with impact delays of 0.030, 0.060, 0.120 seconds respectively.
**Nomenclature: FMU-152/B**

**Name: Electronic Bomb Fuze**

**Weapon Characteristics**
Fuze Type - Multi-Impact Delay, Multi-Arm and Proximity Sensor Compatible, and Cockpit Selectable in General Purpose Blast-Frag and Hardened-Target Penetrator Warheads.
Interface - MK-82, MK-83, MK-84, BLU-109, BLU-110, BLU-113
Power/Safety - FZU-55/B Bomb Fuze Initiator, GBU-15/AGM-130 Battery, Navy FFCS.

**Employment Options**
Weapons Used On - GBU-10, GBU-12, GBU-24, GBU-27, GBU-28, GBU-31, GBU-32, and AGM-130

**Status/Schedule/Improvements**
Manufacturer – Dayron, division of Dae Shin, Inc, Orlando, FL
Contractor - Dayron
Status - EMD
OPR - ASC/LIW
Notes - Joint Program with Navy, Air Force Lead Service
Nomenclature: FMU-159/B  Name: Hard Target Smart Fuze

Weapons Characteristics
Fuze type – Penetrator fuze with “smart” modes to include programmable Void Sensing, Layer Counting and Depth of Burial, as well as traditional Time Delay after impact. The fuze is cockpit programmable via a joint direct Attact munitions (JDAM) type weapon communications interface.

Interface – BLU-109, BLU-116, BLU-113
Power/Safety – FZU-60 Bomb Fuze initiator, GBU-15/AGM-130 Battery, Missile Fuze Interface Unit (FIU).

Employment Options

Status/Schedule/Improvements
Manufacturer – Alliant P Fuze Co. LTD, Minneapolis, MN
Contractor- Alliant Precision Fuze Company LTD
Ststus-EMD
OPR- AAC/WMGH
Notes-Joint Program with Navy, USAF Lead
Nomenclature: FZU-39/B
Name: Proximity Fuze Sensor

Weapons Characteristics
Type – Proximity Sensor used with dispenser fuze for cluster bombs
Interface – Cluster Bombs
Power/Safety – Powered by Thermal Battery

Employment Options
Weapons Used On –
SUU-64/B
SUU-65/B

Explosive Components
Primer – N/A
Detonator – N/A
Lead – N/A
Booster – N/A

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM
Nomenclature: M904E4  Name: Mechanical Bomb Fuze, Nose

Weapons Characteristics
Fuze type – Impact delay for general purpose bombs (0.00, 0.01, 0.25, 0.05, 0.1 or 0.25 delay)
Interface – Standard Bomb
Power/Safety – Mechanical Arming upon release (arming vane). Spring-driven out-of-line explosive train

Employment Options
Weapons Used On –
Mk-82    M-117
Mk-83    Mk-84

Explosive Components
Primer – None
Detonator – M35
Lead – 100 mg Tetryl
Booster – 72.3 g Tetryl

Requires use of M-9 delay and M148 Nose Adapter Booster (Separate Components)

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM

M904 Nose Fuze
Nomenclature: M905  Name: Mechanical Bomb Fuze, Tail

Weapons Characteristics
Fuze type – Impact delay for general purpose bombs (0.00, 0.01, 0.25, 0.05, 0.1 or 0.25 delay)
Interface – Standard Bomb
Power/Safety – Mechanical Arming upon release (arming vane). Spring-driven out-of-line explosive train

Employment Options
Weapons Used On –
Mk-82    M-117
Mk-83    Mk-84
GBU-10   GBU-12

Explosive Components
Primer – M42
Detonator – M35
Lead – None

Requires use of M-9 delay and M147 Tail Adapter Booster and ATU-35/B Vane Drive Assembly (Separate Components)

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM

M905 Tail Fuze
Nomenclature: M907  
Name: Mechanical Fuze, Airburst

Weapons Characteristics
Fuze type – Mechanical Airburst for Cluster Bombs
Interface – Cluster Bombs
Power/Safety – Mechanical Arming upon release (arming vane).

Employment Options
Weapons Used On –
CBU-24  CBU-49
CBU-62  M120 Photoflash Bomb

Explosive Components
Primer – M72
Detonator – None
Lead – Nonel
Booster – 6.18 g Black Powder

Status/Schedule/Improvements
Status – Inventory
OPR – OO-ALC/WM
**Nomenclature:** MK 43  
**Name:** Bomb Proximity Sensor

**Weapons Characteristics**
Type – Proximity for general purpose, Airburst (Pulse Doppler)  
Interface – Standard Bomb  
Power/Safety – Mechanical Arming upon release (Mk 93 Thermal battery).

**Employment Options**
Weapons Used On –  
Mk-82 M-117  
Mk-83 Mk-84

**Explosive Components**
Primer – N/A  
Detonator – N/A  
Lead – N/A  
Booster – N/A

**Status/Schedule/Improvements**
Status – Inventory  
OPR – OO-ALC/WM

*Mk-43 Proximity Sensor*
**Nomenclature:** MK 339 Mod 1  
**Name:** Proximity Fuze

**Weapons Characteristics**
Fuze type – Proximity Fuze for Cluster Munition  
Interface – Cluster Munition  
Power/Safety – Out-of-line explosive train

**Employment Options**
Weapons Used On –  
Mk-20  
CBU-59/B  
CBU-72

**Explosive Components**
Primer – None  
Detonator – Mk 43 Mod 2  
Lead – none  
Booster – None

**Status/Schedule/Improvements**
Status – Inventory  
OPR – OO-ALC/WM
CHAPTER TWELVE

MUNITIONS

MATERIAL HANDLING EQUIPMENT

(MMHE)

Note: For more information visit the MMHE Web Page (https://wmnet.eglin.af.mil/mmhe) for approved local manufactured equipment and drawing packages
**Nomenclature:** LOADER, AMMUNITION, GFU-7/E

**Description:**
The purpose of the loader is to load 30-mm ammunition from shipping and storage containers into an aircraft within a specific time and to simultaneously unload and deposit spent and/or live rounds of ammunition from the aircraft gun system into Ammunition and Storage containers.

**Characteristics**
- Weight (lbs.) – 2,800 (Loaded with Tubes)
- Height (in.) – 92
- Width (in.) – 69
- Length (in) – 194

**Status/Schedule/Improvements**
- Status - Inventory
- OPR – WR/ALC
- T.O. – 35D30-4-12-2
Nomenclature: MHU-110/M  Name: Munitions Handling Trailer

Description:
The trailer is a ten-wheel flatbed carrier capable of transporting any munitions within the load, dimensional and stability limitations. The accessories furnished with the trailer are general-purpose items. The MHU-110 is equipped to be attached to a tow vehicle having a pintle hook and safety pin, and electrical connections for running lights. Special adapters/accessories required during loading/transportation of a munition will be listed in the applicable munition or aircraft manual. The trailer is typically used to transport GP bombs, GBU’s, CBU’s and missiles in containers only.
Note: For more information contact the MMHE World Wide web page

Characteristics
Weight (lbs.) – 4,200
Height (in.) - 30
Width (in.) - 87
Deck Length (in) - 180
Wheel Base (in) - 110
Ground Clearance (in) - 10
Tongue Length (in) - 74
Brakes:
Service – 6 Wheel Hydraulic
Parking – 4 Wheel Mechanical Hand Lever
Turning Angle – 45 Degrees

CAPACITY
Capacity (net pounds) – 15,000
Restraint Capacity
Main Deck Rings (pounds) – 10,000
Side Deck Rings (pounds) – 25,000

Status/Schedule/Improvements
Status - Inventory
OPR – WR/ALC
T.O. 35D3-2-26-1
**Nomenclature:** MHU-141/M  
**Name:** Munitions Handling Trailer

**Description:**
The Munitions Trailer is a four-wheeled automotive steering vehicle capable of transporting loads of up to 5700 pounds. The trailer is designed for temporary storage and transportation of a variety of munitions and other stores. The MHU-141 is equipped to be attached to a tow vehicle having a pintle hook and safety pin, and electrical connections for running lights. The center section of the deck is hinged and can be lifted open to provide a hatchway across the full width of the trailer. One large toolbox at the rear of the trailer is provided for storage of accessories. Side toolboxes are no longer required. The trailer is generally used to transport GP bombs, GBU's, CBU's and missiles in and out of containers.

**Characteristics**
- **Weight (lbs.)** – 2900
- **Height (in.)** - 32
- **Width (in.)** - 84
- **Deck Length (in)** - 126
- **Wheel Base (in)** - 89
- **Ground Clearance (in)** - 8
- **Tongue Length (in)** - 88
- **Brakes:**
  - Service – 4 Wheel Hydraulic
  - Parking – 2 Wheel Mechanical Hand Lever
  - Turning Angle – 40 Degrees

**CAPACITY**
- **Capacity (net pounds)** – 5,700
- **Restraint Capacity**
  - Main Deck Rings (pounds) – 10,000
  - Side Deck Rings (pounds) – 25,000
  - Main Deck Link/Pin Assembly (pounds) – 1,350

**Status/Schedule/Improvements**
- **Status - Inventory**
- **OPR – WR/ALC**
- **T.O. 35D3-2-27-1**
Nomenclature: MHU-194/E  Name: Manually Operated Lift Truck (MOLT)

Description:
The MOLT is a towable, manual approach to munitions handling capable of loading/unloading external stores on aircraft and munitions handling equipment.

Characteristics
Weight (lbs.) – 1,900
Height (in.) – 62 (Tow Bar in up Position)
Width (in.) - 59
Length (in) - 136

CAPACITY
Lifting Capacity (net pounds)
Using Top Hole in Outer Arm Assembly – 2,450
Using Lower Hole in Outer Arm Assembly – 1,200
With Extension Lift Arms Adapter – 1,000
With Fork Adapter – 1,000

Status/Schedule/Improvements
Status - Inventory
OPR – WR/ALC
T.O. 35D3-9-23-1
Nomenclature: MHU-173  Name: Munitions Lift Truck (MLT)

Description:
The MLT is a heavy-duty, U-type frame vehicle used for transporting munitions. The MLT is equipped to be attached to a tow vehicle having a pintle hook and safety pin, air connections for brakes, and electrical connections for running lights. The MLT frame width is adjustable to accept various widths of weapon adapters.

Characteristics
Weight (lbs.) – 29,500
Height - 4 feet 2 inches
Width – 9 feet 3 inches to 12 feet 8 inches, adjustable
Tongue Length – 10 feet 4 ½ inches

CAPACITY
Capacity (net pounds) – 40,000

Status/Schedule/Improvements
Status - Inventory
OPR – WR/ALC
T.O. – 11N-H5052-2
Nomenclature: 20-MM AMMUNITION LOADING SYSTEM LOADER ASSEMBLY  Name: ALS

Description:
The 20-mm ammunition loading system loader assembly is used to transfer 20-mm series ammunition into an aircraft gun system on the flight line. While performing this loading function, the loader assembly simultaneously downloads cleared rounds and/or spent cases from the gun system.

Characteristics
Weight (lbs.) – 2558 (full)
Height (in.) – 37.50
Width (in.) - 68
Length (in) – 181.38

Status/Schedule/Improvements
Status - Inventory
OPR – WR/ALC
T.O. – 35D30-4-10-1
**Nomenclature:** 20-MM Universal Ammunition Loading System  
**LOADER ASSEMBLY** Name: UALS

**Description:**  
The 20-mm ammunition loading system loader assembly is used to transfer 20-mm series ammunition into an aircraft gun system on the flight line. While performing this loading function, the loader assembly simultaneously downloads cleared rounds and/or spent cases from the gun system.

**Characteristics**  
Weight (lbs.) – 3,100 (full)  
Height (in.) – 37.50  
Width (in.) - 68  
Length (in) – 189.38

**Status/Schedule/Improvements**  
Status - Inventory  
OPR – WR/ALC  
T.O. – 35D30-4-15-1
Nomenclature: 20-MM AMMUNITION LOADING SYSTEM REPLENISHER ASSEMBLY

Description:
The 20-mm ammunition loading system replenisher assembly is used to transfer 20-mm ammunition from storage into the mobile loader loader assembly for transportation to the flight line. While performing this function, it simultaneously and independently receives spent cases and/or unfired ammunition from the loader assembly. The replenisher will function when supplied with either built (loose) or linked ammunition.

Characteristics
Weight (lbs.) – 330
Height (in.) – 39.3
Width (in.) – 30.7
Length (in) – 79.4

Status/Schedule/Improvements
Status - Inventory
OPR – WR/ALC
T.O. – 35D30-4-11-1
**Nomenclature:** 30-MM AMMUNITION LOADING SYSTEM  
**Name:** GFU-10/E

**Description:**
The purpose of the Ammunition loading System is to transfer 30-mm ammunition from storage containers into Transporter Assemblies and move ammunition to the aircraft and load the GPU-5/A Gun Pod. The ALS will simultaneously unload and deposit spent cases/live rounds from the Gun Pod into the Transporter Assembly and transfer spent cases/live rounds into the ammunition storage container.

**Characteristics**
- Weight (lbs.) – 29,500
- Height (in) - 47
- Width (in) – 32
- Length (in) – 154

**Status/Schedule/Improvements**
- Status - Inventory
- OPR – WR/ALC
- T.O. – 35D30-4-13-1
**Nomenclature: Truck, Lift, Aerial Stores**  
**Name:** MHU-40

**Description:**  
The MJ-40 is a 10,000 pound capacity, self-propelled hydraulically operated lifting and positioning device used to lift and attach aerial stores. It consists of a main structural frame on which is mounted a cantilevered lift boom, extendable outriggers and auxiliary frames for sheet metal.

**Characteristics**  
Weight (lbs.) – 7,230  
Width (in) – 73 ½ front 52 rear  
Length (in) – 185

**CAPACITY**  
Capacity (net pounds) –  
Load on Forks – 6,000  
Load on Head – 7,230

**Status/Schedule/Improvements**  
Status - Inventory  
OPR – WR/ALC  
T.O. – 35D3-9-21-1
Nomenclature: Truck, Lift, Aerial Stores  Name: MJ-1

Description:
The MJ-1 Lift Truck is a self-propelled, hydraulic operated Lift Truck. The rear wheels are driven by a 27.5 HP gasoline/diesel engine connected to a conventional differential by a hydraulically operated and controlled steering.

Characteristics
Weight (lbs.) – 3,800
Width (in) – 52.25
Length (in) – 144.75

CAPACITY
Lift Capacity (net pounds) – 3,000

Status/Schedule/Improvements
Status - Inventory
OPR – SA/ALC
T.O. – 35D3-2-25-1
**Nomenclature:** Truck, Lift, Aerial Stores  
**Name:** MHU-83

**Description:**
The MHU-83 Lift Truck is a self-propelled, hydraulic operated lift truck. The rear wheels are driven by a 27.5 HP gasoline/diesel engine connected to a conventional limited-slip differential by a hydrostatic drive system.

**Characteristics**
- Weight (lbs.) – 6,380
- Width (in) – 53- 5/8 (rear)  69- ½ (front)

**CAPACITY**
- Capacity (net pounds) –
- Load on Forks – 6,000
- Load on cradle – 7,000

**Status/Schedule/Improvements**
- Status - Inventory
- OPR – SA/ALC
- T.O. – 35D5-3-8-31
Nomenclature: MHU-196/M Name: Munitions Handling Truck (MHT)

Description:
The MHT is a heavy-duty, U-type frame vehicle used for transporting munitions. The MHT is equipped to be attached to a tow vehicle having a pintle hook and safety pin, air connections for brakes, and electrical connections for running lights and hydraulic fluid circulation.

Characteristics
Weight (lbs.) – 39,100
Height - 4 feet 2 inches
Width – 9 feet 8 inches to 13 feet 1 inches, adjustable
Length – 30 feet

CAPACITY
Capacity (net pounds) – 40,000

Status/Schedule/Improvements
Status - Inventory
OPR – SA/ALC
T.O. – 11N-H5083-2
Nomenclature: USAF Linkless Ammunition Loading System
Name: LALS

Description:
The LALS loader assembly is used to transfer 20-mm series ammunition into an aircraft gun system on the flightily. While performing this loading function, the loader assembly simultaneously downloads cleared rounds and/or spent cases from the gun system.

Characteristics
Weight (lbs.) – 3,275 (loaded with 1800 rounds)
Height (in) – 37.50
Width (in) – 68
Length (in) – 189

Status/Schedule/Improvements
Status – Development/Procurement
OPR – WR/ALC
T.O. – TBD
Nomenclature: Aluminum Rail Set  Name: ARS

Description:
The ARS is a trolley type rail set for 40-foot and MHU-110 trailers. It will replace the wooden rails that are currently used on these trailers. It will increase utility and R, M & D in combat generation of current and future conventional munitions.

Characteristics
Quantities of munitions ARS will accommodate
40' Trailer Longitudinal with trolley's 30 CBUs or Mk-82s
40' trailer Lateral Configuration 12 MK-84s
MHU-110 Longitudinal with trolley's 10 MK-82s
MHU-110 Lateral 4 MK-84s

Status/Schedule/Improvements
Status – Development/Procurement
OPR – WR/ALC
T.O. TBD
Nomenclature: BDU-33/MK-106 Practice Bomb Transport Module
Name: 40 Round Version

Description:
The BDU-33/MK-106 Practice Bomb Transport Module protects training munitions from the elements during delivery to and from the flight line or loading area. Each module has the capacity to carry 40 practice bombs. Replaces all existing local manufactured transport modules.

Characteristics
Height (in) – 35
Width (in) – 25
Length (in) – 57

Status/Schedule/Improvements
Status – Procurement/Inventory
OPR – WR/ALC
Nomenclature: BDU-33/MK-106 Practice Bomb Transport Module
Name: 80 Round Version

Description:
The BDU-33/MK-106 Practice Bomb Transport Module protects training munitions from the elements during delivery to and from the flight line or loading area. Each module has the capacity to carry 80 practice bombs. Replaces all existing local manufactured transport modules.

Characteristics
Height (in) – 34
Width (in) – 28
Length (in) – 108

Status/Schedule/Improvements
Status – Procurement/Inventory
OPR – WR/ALC
**Nomenclature:** ALE-40 Series Chaff/Flare Transport Module  
**Name:** Chaff/Flare Module

**Description:**  
Transports ALE-40 chaff and flare magazines from the munitions storage area to the flightline. The maximum capacity per module is 40 magazines. Secures to either the MHU-141 or MHU-110 trailer. Replaces all existing local manufactured transport modules.

**Characteristics**  
Height (in) – 42  
Width (in) – 18  
Length (in) – 73

**Status/Schedule/Improvements**  
Status – Procurement/Inventory  
OPR – WR/ALC
**Nomenclature: ALE- 50 Transport Module**

**Name:** ALE- 50 Module

**Description:**
Transports ALE-50 decoy magazines from the munitions storage area to the flightline. The maximum capacity per module is 30 magazines. Secures to either the MHU-141 or MHU-110 trailer. Replaces all existing local manufactured transport modules.

**Characteristics**
- Height (in) – 35
- Width (in) – 34
- Length (in) – 56

**Status/Schedule/Improvements**
- Status – Procurement/Inventory
- OPR – WR/ALC
**Nomenclature:** Mechanical Ram Assembly  **Name:** MRA

**Description:**
The Mechanical Ram Assembly is a multiple sleeve, hydro-mechanical lifting device. Its primary purpose is to increase the lift height capability of the MJ-40 and MHU-83D/E bomb lift trucks in support of the B-1B/B-2 aircraft.

**Characteristics**
- Weight (lbs.) – 500
- Retracted Height (in) – 37
- Extended Height (in) – 83
- Lift Capacity – 5000

**Status/Schedule/Improvements**
- Status – Inventory
- OPR – WR/ALC
- T.O. 35D3-9-29-1
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<td>LAU-105 (AIM-9)</td>
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<tr>
<td>LAU-106 (AIM-7 &amp; AIM-120)</td>
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<td>LAU-114 (AIM-9)</td>
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<td>LAU-117 (AGM-65)</td>
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<td>LAU-118 (AGM-88)</td>
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<tr>
<td>LAU-128 (AIM-9 &amp; AMRAAM)</td>
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<tr>
<td>LAU-129 (AIM-9 &amp; AMRAAM)</td>
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<tr>
<td>16S-210 (AIM-9)</td>
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<tr>
<td>COMMON ROTARY LAUNCHER</td>
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</tr>
</tbody>
</table>

A-2
MISSILE DESIGNATIONS

Rockets and guided missiles make use of the following designation symbols:

- **Status Prefix (Prototype)**
- **Launch Environment (Air Launched)**
- **Mission Symbol (Intercept)**
- **Vehicle Type Symbol (Guided Missile)**
- **Design Number (7th Missile)**
- **Series Symbol (6th Version of AIM-7)**

<table>
<thead>
<tr>
<th>Status</th>
<th>Vehicle Type</th>
<th>Launch Environment</th>
<th>Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>Special Test,</td>
<td>A</td>
<td>D Decoy</td>
</tr>
<tr>
<td></td>
<td>Guided Missile/</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temporary Drone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>Special Test,</td>
<td>B</td>
<td>E Special</td>
</tr>
<tr>
<td></td>
<td>Probe</td>
<td></td>
<td>Electronics</td>
</tr>
<tr>
<td></td>
<td>Permanent Rocket</td>
<td>C</td>
<td>Installation</td>
</tr>
<tr>
<td>X</td>
<td>Experimental</td>
<td>F</td>
<td>G Surface Attack</td>
</tr>
<tr>
<td>Y</td>
<td>Prototype</td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>Z</td>
<td>Planning</td>
<td></td>
<td>I Intercept, Aerial</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Q Drone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>T Training</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>U Underwater Attack</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>W Weather</td>
</tr>
</tbody>
</table>

**Example:**

Y A I M - 7 F

- **Y** Status Prefix
- **A** Air Launch Environment
- **I** Intercept Mission
- **M** Mobile Vehicle Type
- **7** Design Number
- **F** Series Symbol
MUNITIONS DESIGNATIONS

Munitions make use of the following designation symbols:

Item Identification (Cluster Bomb)
"U" for Unit
Serial Number (87th Cluster Bomb)
Model (1st version of CBU-87)
Installation (Aircraft installed, expended)

**Identification Designator**

<table>
<thead>
<tr>
<th>AD</th>
<th>Certain adapting items</th>
<th>LK</th>
<th>Ammunition links</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG</td>
<td>Air to ground</td>
<td>LM</td>
<td>Ground-based launchers</td>
</tr>
<tr>
<td>BB</td>
<td>Explosive items</td>
<td>LU</td>
<td>Illuminating units</td>
</tr>
<tr>
<td>BD</td>
<td>Simulated bombs</td>
<td>MA</td>
<td>Miscellaneous armament</td>
</tr>
<tr>
<td>BL</td>
<td>Bombs and mines</td>
<td>MD</td>
<td>Miscellaneous simulated</td>
</tr>
<tr>
<td>BR</td>
<td>Bomb racks and shackles</td>
<td>MH</td>
<td>Munitions handling</td>
</tr>
<tr>
<td>BS</td>
<td>Stabilizing &amp; retarding device</td>
<td>MJ</td>
<td>Munitions countermeasures</td>
</tr>
<tr>
<td>CB</td>
<td>Cluster bomb</td>
<td>ML</td>
<td>Miscellaneous munitions</td>
</tr>
<tr>
<td>CC</td>
<td>Actuator cartridges</td>
<td>MT</td>
<td>Mounts</td>
</tr>
<tr>
<td>CD</td>
<td>Clustered munitions, not end item</td>
<td>PA</td>
<td>External munitions</td>
</tr>
<tr>
<td>CN</td>
<td>Miscellaneous containers</td>
<td>PD</td>
<td>Leaflet dispenser</td>
</tr>
<tr>
<td>DS</td>
<td>Target directing device</td>
<td>PG</td>
<td>Ammunition</td>
</tr>
<tr>
<td>FM</td>
<td>Fuzes</td>
<td>PW</td>
<td>Internal dispenser</td>
</tr>
<tr>
<td>FS</td>
<td>Fuze safety-arming device</td>
<td>RD</td>
<td>Dummy rockets</td>
</tr>
<tr>
<td>FZ</td>
<td>Fuze-related item</td>
<td>RL</td>
<td>Rockets</td>
</tr>
<tr>
<td>GA</td>
<td>Aircraft gun</td>
<td>SA</td>
<td>Gun/bomb/rocket sights</td>
</tr>
<tr>
<td>GB</td>
<td>Guided bombs</td>
<td>SU</td>
<td>Stores suspension and release</td>
</tr>
<tr>
<td>GF</td>
<td>Gun related items</td>
<td></td>
<td>(dispenser containers)</td>
</tr>
<tr>
<td>GP</td>
<td>Poded guns</td>
<td>TM</td>
<td>Miscellaneous tanks</td>
</tr>
<tr>
<td>GU</td>
<td>Miscellaneous guns</td>
<td>TT</td>
<td>Test items</td>
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<tr>
<td>KM</td>
<td>Kits</td>
<td>WD</td>
<td>Warheads</td>
</tr>
<tr>
<td>LA</td>
<td>Aircraft installed launchers</td>
<td>WT</td>
<td>Training warheads</td>
</tr>
<tr>
<td>MK</td>
<td>Navy designation for bombs</td>
<td>M</td>
<td>Army designation for</td>
</tr>
</tbody>
</table>

**Installation Designator**

A  Aircraft Installed, Fixed
B  Aircraft installed, Expendable
E  Ground Item, Moveable, not a Vehicle (Box for Munitions)