WEAPONS FILE

2003 2004

Transforming the Sword

DISTRIBUTION STATEMENT A
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

PREFACE

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.eglin.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.eglin.af.mil/weapons/order.htm

TABLE OF CONTENTS

CHAPTER NINE - Bomb Racks and Launchers

CHAPTER TEN - Chaff & Flare

CHAPTER 11 - Fuzes and Sensors

CHAPTER 12 – Munitions Material Handling Equipment

APPENDIXES

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

Z07FC	MISSILE AIM 7 F TRAINER
Z07FB	MISSILE AIM 7 F CAPTIVE
Z07FD	MISSILE AIM 7 F/M LOAD TRAINER
Z07MA	MISSILE AIM 7 M TRAIN/CAP
M07FA	MISSILE AIM-7M-F1 WAU-10 AUR
M07FB	MISSILE AIM-7M-F1 WAU-17 AUR
M07HA	MISSILE AIM-7M-H WAU-10 AUR
M07HB	MISSILE AIM-7M-H WAU-17 AUR

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

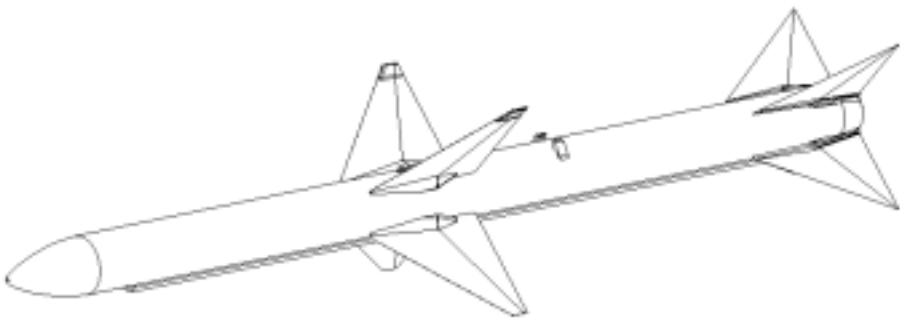
Carriage Options

AIM-7M

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

Desciption

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

CRD Weapon Code

M09MA	MISSILE AIM-9M-1 AUR
M09MB	MISSILE AIM-9M-7 AUR
Z09WA	AIM-9M AUR WSEP
M09MC	AIM-9M-9 AUR
Z09LD	CATM-9L-10 (AUR)
Z09LE	CATM-9L-10 (MBA)
Z09LC	CATM-9L-3 (AUR)
Z09LF	CATM-9L-7 (AUR)
Z09LA	CATM-9L-9 (AUR)
Z09LB	CATM-9L-9 (MBA)
Z09MD	CATM-9M-10
Z09ME	CATM-9M-10 (MBA)
Z09MC	CATM-9M-3 (AUR)
Z09MB	CATM-9M-3 (MBA)
Z09MF	CATM-9M-7 (AUR)
Z09MA	CATM-9M-9(AUR)
SZRAA	STAMP AIM-9-9
Z09LD	CATM-9L-10 (AUR)
Z09LE	CATM-9L-10 (MBA)
Z09LC	CATM-9L-3 (AUR)
Z09LF	CATM-9L-7 (AUR)
Z09LA	CATM-9L-9 (AUR)
Z09LB	CATM-9L-9 (MBA)
Z09MD	CATM-9M-10
Z09ME	CATM-9M-10 (MBA)
Z09MC	CATM-9M-3 (AUR)
Z09MB	CATM-9M-3 (MBA)
Z09MF	CATM-9M-7 (AUR)
Z09MA	CATM-9M-9(AUR)

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

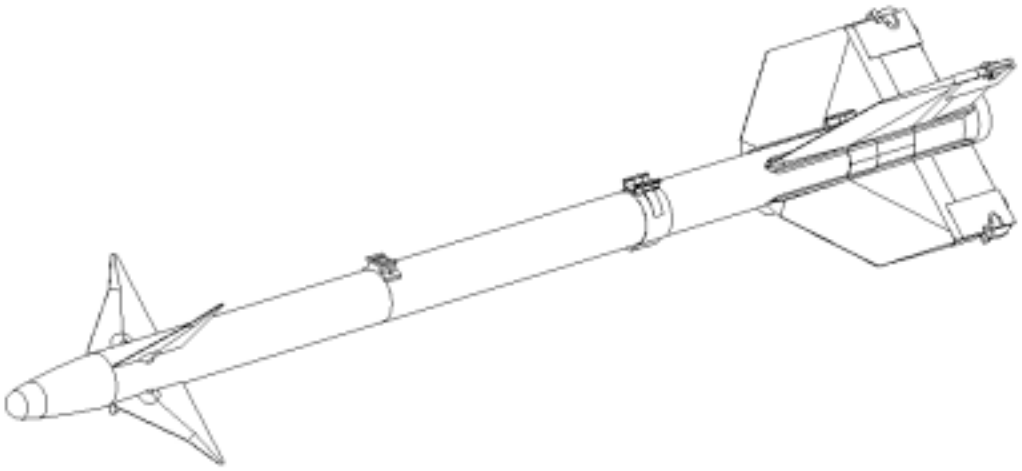
Carriage Options

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 counter measure capability
Control – Fixed forward wings and Jet Vave 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 –

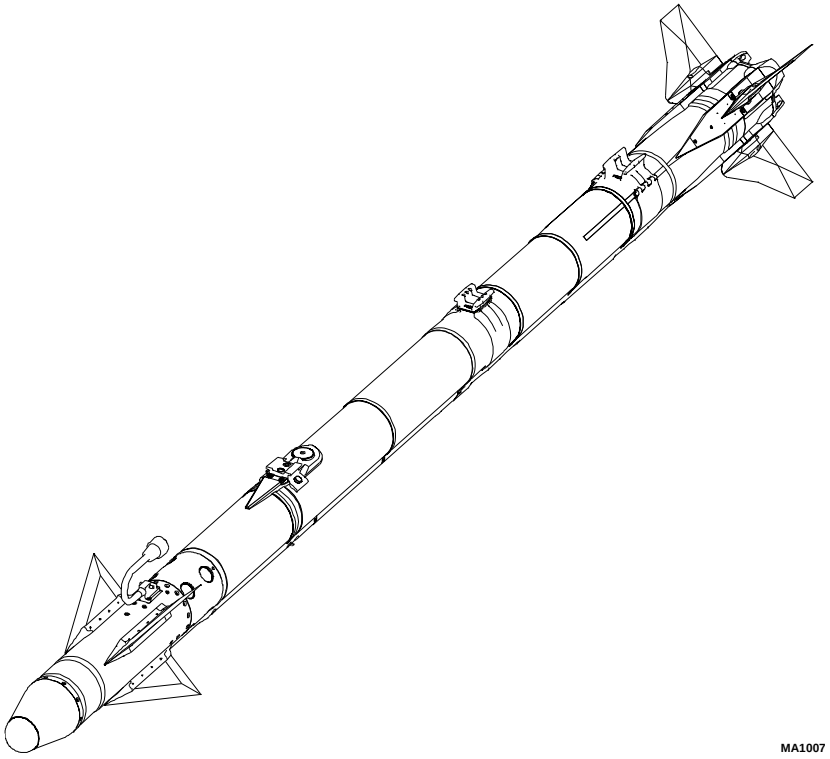
Carriage Options

Aircraft:	Launcher:
F-16C, F-15C, F-22 (Internal)	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 verision 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)

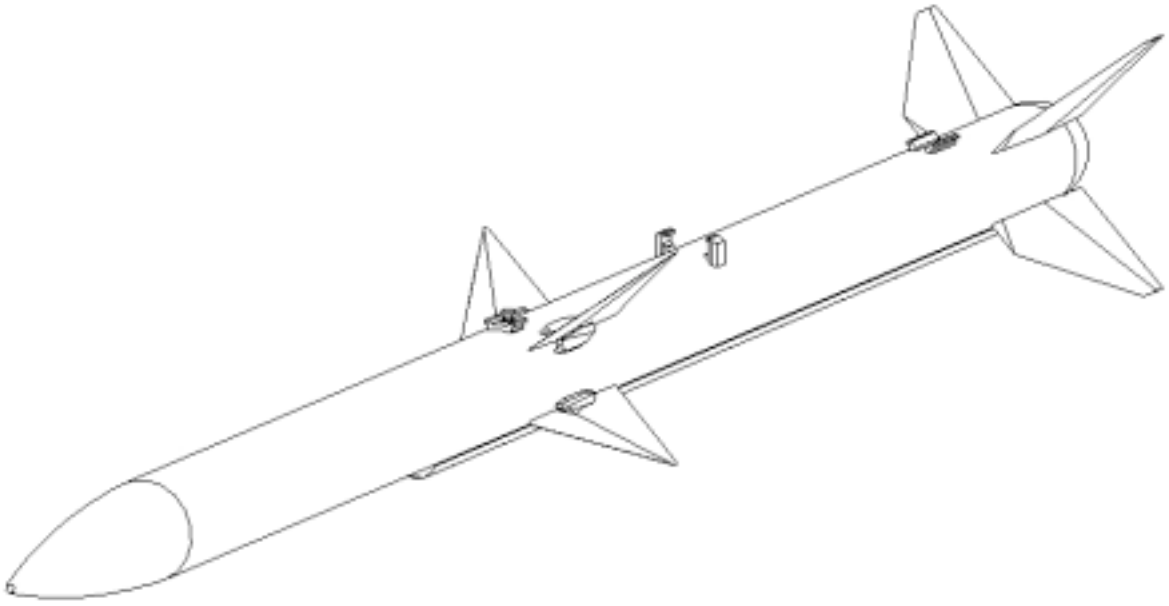
CG (Nom) ≅ 79.6 inches
Warhead ≅ 45 lbs. Blast/Fragmentation
Propulsion – Boost/Sustain, Reduced Smoke
Fuze – Active RADAR Target Detection Device (TDD)

Carrier Options

Aircraft:	Launcher:
F-15 A/B/C/D/E	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.

Length	97.70 in.	
Diameter	12.00 in.	
Inertia (roll)	2.20	+/- 10%
Inertia (pitch)	64.00	+/- 10%
Inertia (yaw)	64.00	+/- 10%

AGM-65 D (IR)

Weight (full)	484.47 lbs	+/- 15 lbs
cg (x)	51.38 in.	+/- 0.50 in.
cg (y)	0.01 in.	+/- 0.50 in.
cg (z)	0.20 in.	+/- 0.50 in.
Length	97.70 in.	
Diameter	12.00 in.	
Inertia (roll)	2.39	+/- 10%
Inertia (pitch)	72.20	+/- 10%
Inertia (yaw)	72.07	+/- 10%

AGM-65 G2/G2 (IR)

Weight (full)	664.80 lbs	+/- 5%
cg (x)	47.64 in.	+/- 0.50 in.
cg (y)	-0.04 in.	+/- 0.50 in.
cg (z)	0.16 in.	+/- 0.50 in.
Length	97.70 in.	
Diameter	12.00 in.	
Inertia (roll)	2.95	+/- 10%
Inertia (pitch)	79.91	+/- 10%
Inertia (yaw)	79.65	+/- 10%

AGM-65 H

Weight (full)	461 lbs	+/- 15
cg (x)	52.17 in.	+/- 0.50 in.
cg (y)	0.00 in.	+/- 0.50 in.
cg (z)	0.20 in.	+/- 0.50 in.
Length	97.70 in.	
Diameter	12.00 in.	
Inertia (roll)	2.35	+/- 10%
Inertia (pitch)	64.40	+/- 10%
Inertia (yaw)	64.30	+/- 10%

AGM-65 K

Weight (full)	672 lbs	+/- 15
cg (x)	48.55 in.	+/- 0.50 in.
cg (y)	0.00 in.	+/- 0.50 in.
cg (z)	0.15 in.	+/- 0.50 in.
Length	97.70 in.	
Diameter	12.00 in.	

Inertia (roll)	3.0	+/- 10%
Inertia (pitch)	75.90	+/- 10%
Inertia (yaw)	75.90	+/- 10%

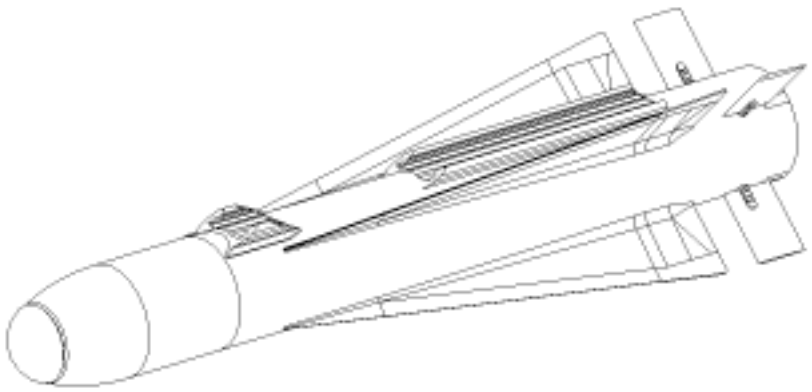
Warhead - 125 lbs. Shaped Charge Jet and Blast (A, B, D,H)
300 lbs. Penetrator/Blast-Frag (E, F,G,K)
Explosive - 86 lbs Comp B / 80 lbs PBX(AF)-108
Fuze - SAF (A, B, D,H); FMU-135/B (E, F, G,K)
Stabilizer - Wings / Control Surfaces
Propulsion - Boost Sustain

Carriage Options

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

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-65 Guided Missile Ground Equipment, refer to T.O. 35D-1-281.
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 manuever to counter close-in defenses and enhance warhead penetration. There are 4 variants in use today. AGM-84A & C variants have pop-up manuever, B & D variants do not pop-up. Harpoons are also carried by B-52Gs in the sea-control role.

Weapon Characteristics

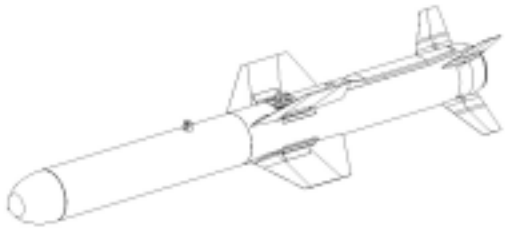
AGM-84C(I)
CRD Weapons Code
ZC61C
Guidance - INS Mid-course, Active RADAR Terminal
Control - Tail
Autopilot - INS
Class – Air to Ground Missile
Weight (lbs.) - 1,160
Length (in.) - 151
Diameter (in.) - 13.5
Warhead - 500 lbs.
Explosive - Destex
Fuze - Contact
Propulsion - Turbojet Sustainer Engine

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

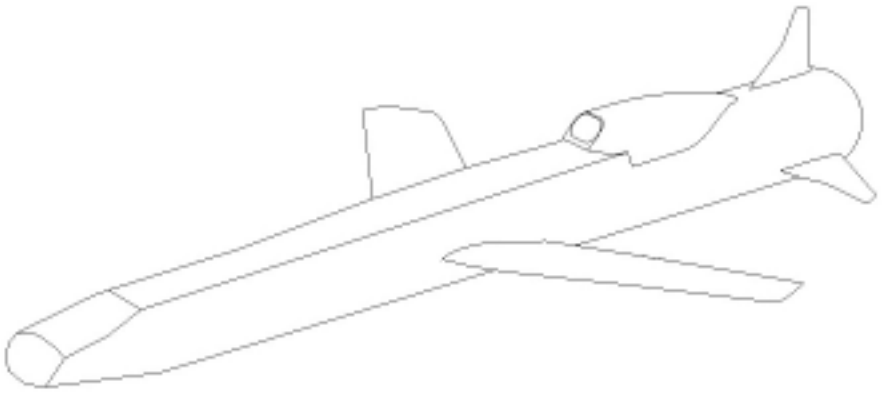


Nomenclature: AGM-86/B Name: Air Launched Cruise Missile (ALCM)

Weapons Characteristics
AGM-86
CRD Weapons Code - None
Guidance - Inertial Navagation
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



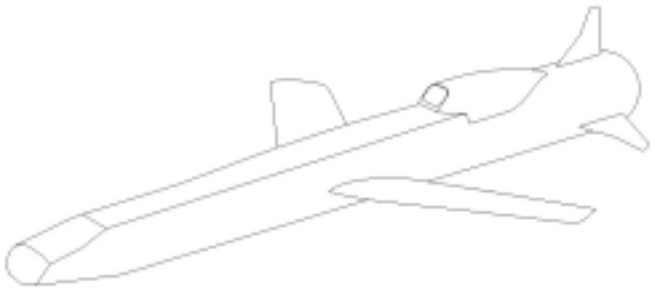
Nomenclature: AGM-86/C&D Name: Conventional Air Launched Cruise Missile (CALCM)

Weapons Characteristics
CRD Weapons Code - None

Guidance - Inertial Navagation 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 - Boeingt 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
SZMAA	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)

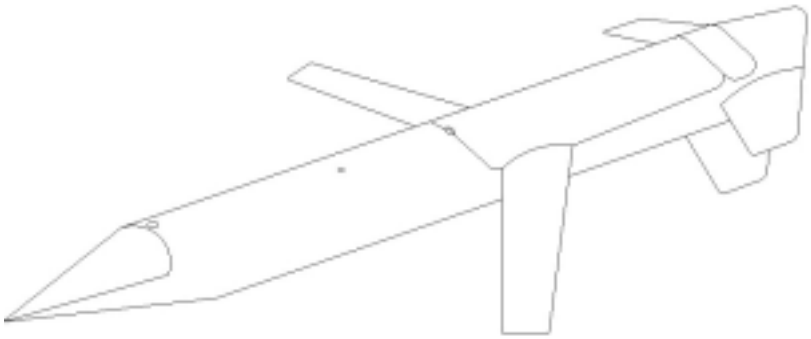
Nomenclature: AGM-129A Name: Advanced Cruise Missile

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 Navigations System/Global Positioning System (INS/GPS), man-in-the-loop capabilities and has a propulsion section enabling enhanched 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 Infared 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	
5C	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
M30GA	AGM-130 TAC/INRT IMIRS SDL
M30GB	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

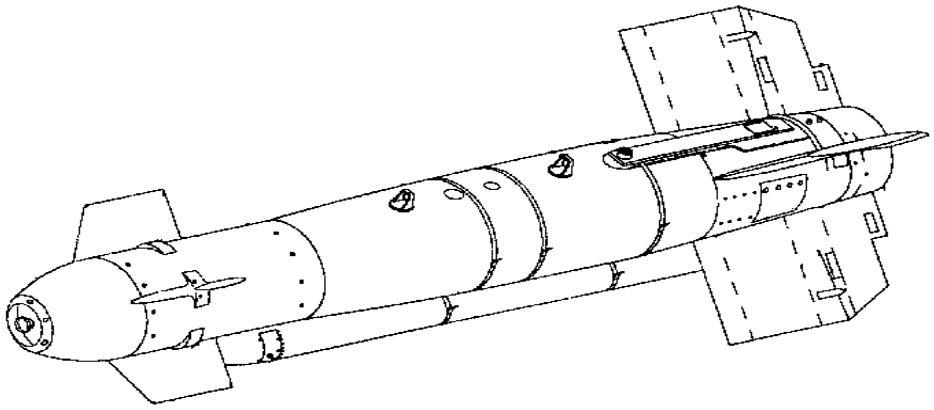
Guidance – Autonamous GPS/INS
TVGS or IMIR Seeker
Precise Adverse Weather, day or night
Acurate All Weather
Vertical Horixontal Targets
Control – Automatic or manual (WSO with AXQ-14 or ZSW-1 Data Link System
Autopilot - Digital
Class - 3000 lb Standoff Weapon

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:	Rack/Pylon:
F-15E	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

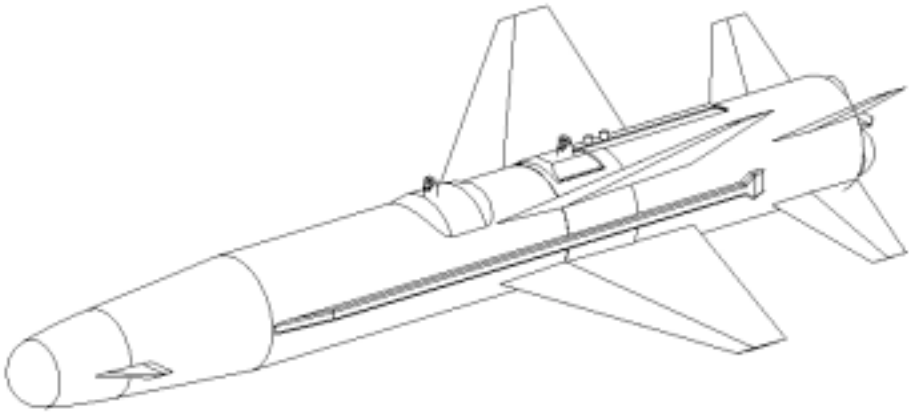
Aircraft:	Rack/Pylon:
B-52H	30 in. Lug Spacing Compatible

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/1^2R 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

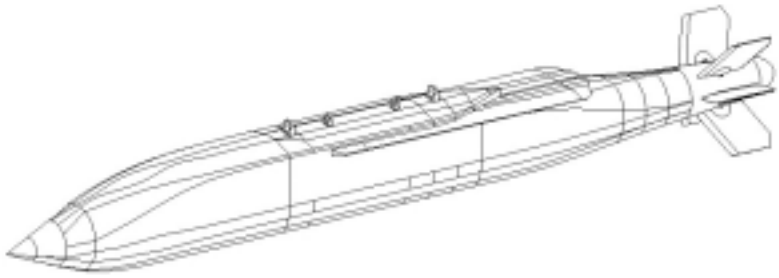
Carriage Options

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 - NAVAIRSYSCOM 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-hardended, 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

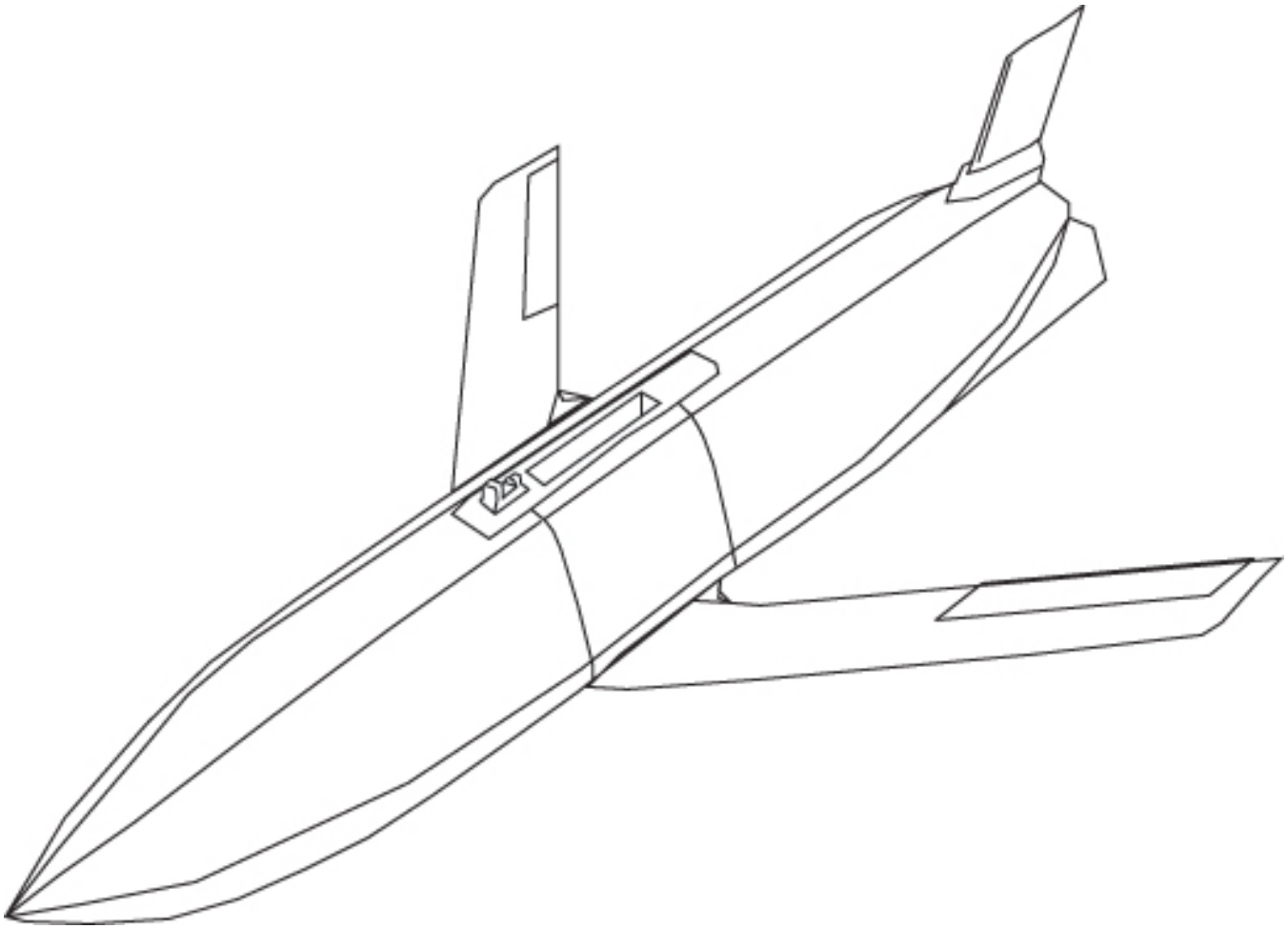
Aircraft:

F-16	F-117
F-15	B-1
B-2	B-52
F-18	S-3
P-3	

Launcher – None 30 inch lugs (no lanyard)

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

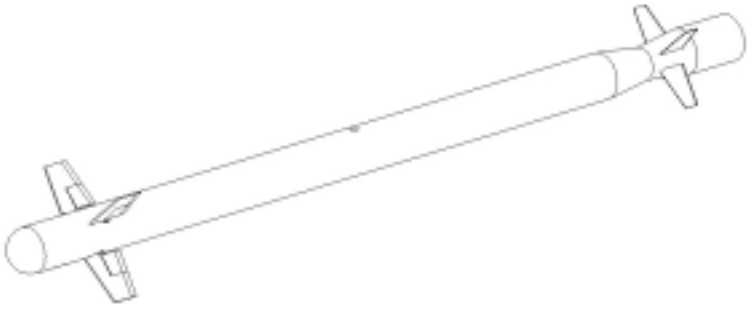
CRD Weapon Code - M092A
Weight (lbs.) - 34.5
Length (in.) - 60
Diameter (in.) - 2.75
Control - Canard
Autopilot - Proportional
Propulsion - Dual Thrust 2,370 lbs.-sec.; Launch Motor 841 lbs.-sec.
Warhead - Blast Fragmentation
Fuze - Impact

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

UNGUIDED

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 disperseing 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

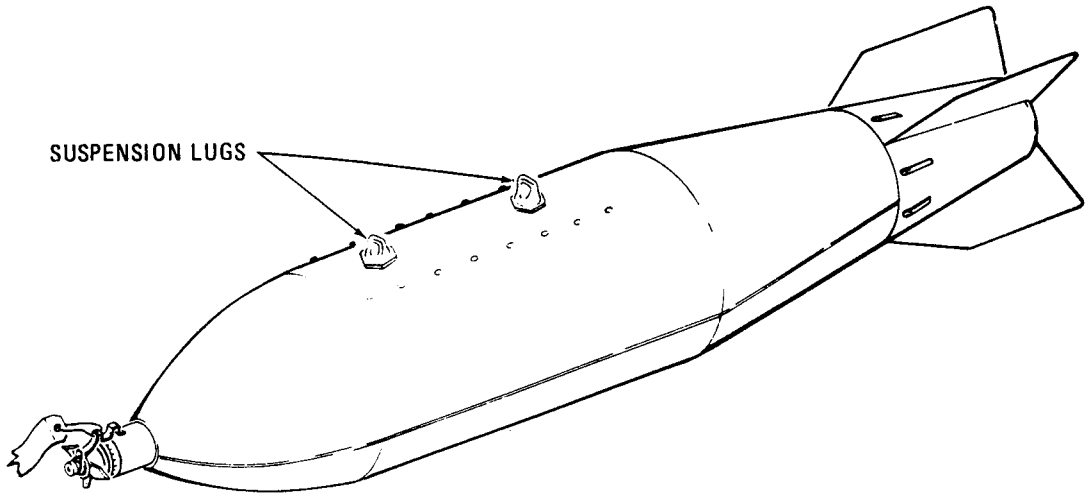
Guidance - Ballistic
Class - 200 lb. Canister
Weight (lbs.) - 92 empty, 203 full (depends on paper weight)
Length (in.) - 90.0
Diameter (in.) - 16 (22 W/Fin Installed)
Payload (lbs.) - 110 paper rolls or chaff bundles
Explosive - fuze booster ignited detonating cord which cuts canister
Fuze - Timer: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


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 diplay target marking. When the bomb is released from the aircraft it fre falls until impact. Upon impact the bomb drives a firing pin assembly against a primer activating the signial charge. The resulting flash and puff of smoke permits visual evaluation of accuracy.

Characteristics

BDU-33
CRD Weapons Code

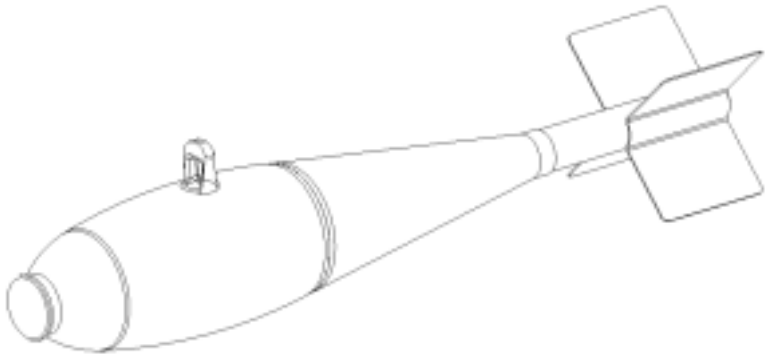
ZP61A	BDU 33 D/B W/MK4
ZP61B	BDU 33D/B CXU3/B
ZP61C	BDU 33D/B W/LUGS/MK 4 SPOT
ZP61D	BDU33/W LUG/CXU3/B

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 alumunum 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 reuseable.

Characteristics

BDU-33
CRD Weapons Code

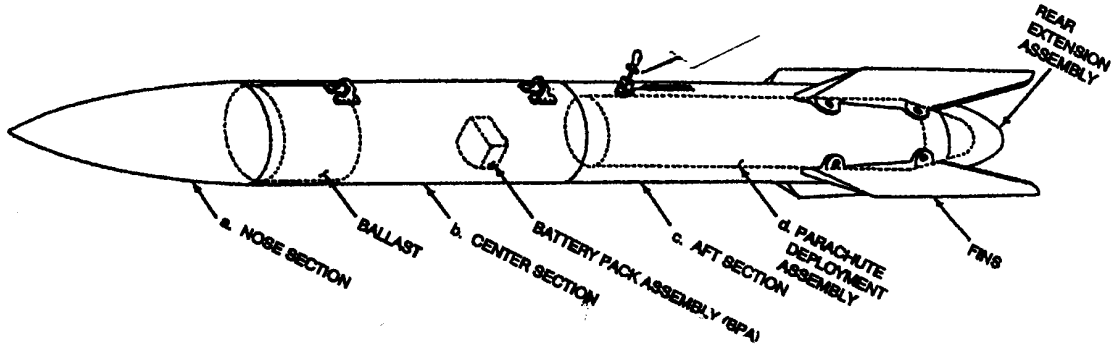
Z38AA	PRACTICE BOMB BDU-38 (RETARDED)
Z38AB	PRACTICE BOMB BDU-38 (SLICK)

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

Characteristics:

BDU-48
CRD Weapons Code

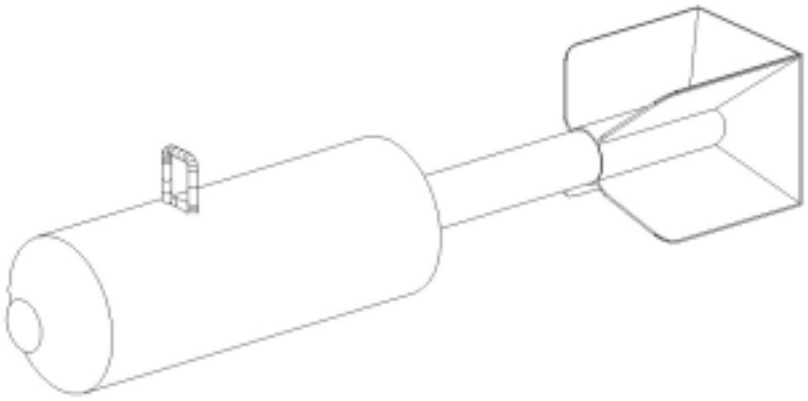
ZP91B	PRACTICE BOMB RETARD,BDU 48/CXU3
ZP91A	PRACTICE BOMB RETARD,BDU 48/MK 4

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

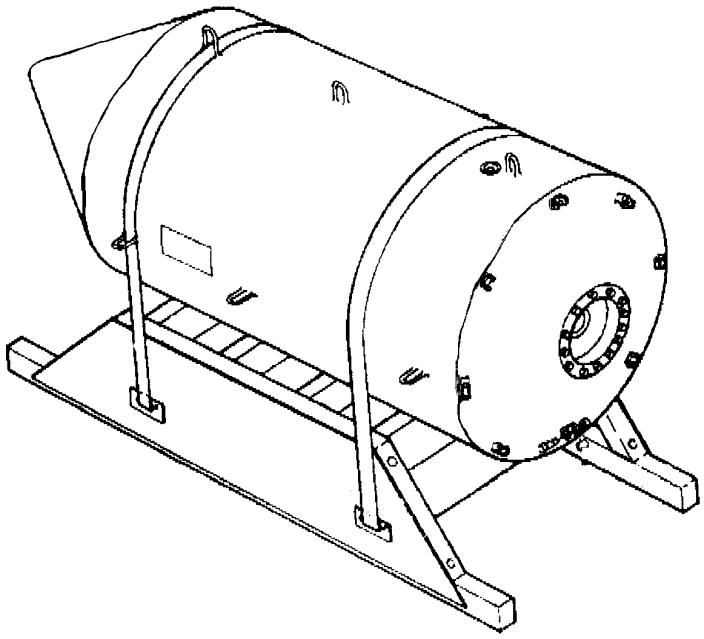
Guidance - Ballistic
Class - 15,000 lb Blast/Fragmentation
Weight (lb) - 15,000
Length (in) - 141.6
Diameter (in) - 54
Warhead (lbs) - 15,000
Explosive (NEW) - Aluminum Powder (12,600 lbs)
Fuze - M904 (Nose); M905 (Tail) (See Appendix A)

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.				

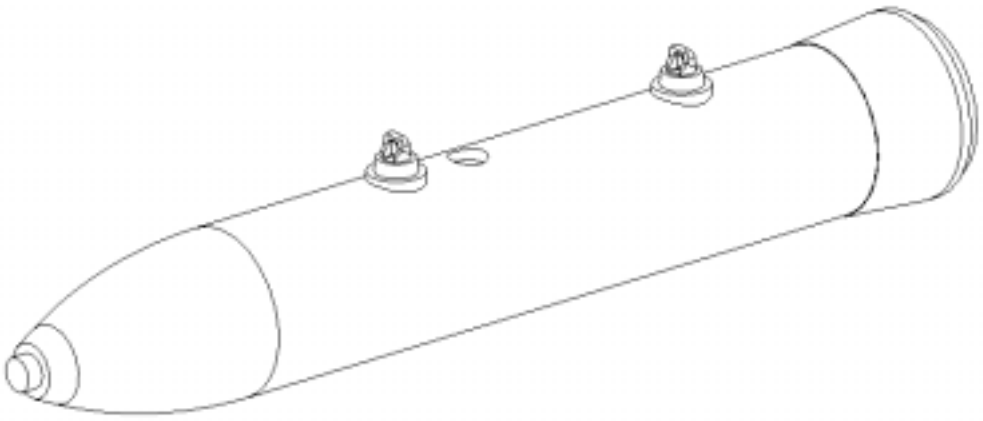
Drawings 8394794, DL8394794, DL8394794, DL 8463243, DL8463213
Interface Control Drawings 8463195, 8463196, 837849, 837901, 8463324
Employment Limits PIDS SP8394794A, para 3.2.1
Environmental Limits PIDS SP8394794A, para 3.2.6
Warhead (lbs.) – 1950
Explosive (NEW) - 535 lbs. Tritonal
Fuze - FMU-143 Series (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
Tolorances: +/- 0.50 in.

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

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

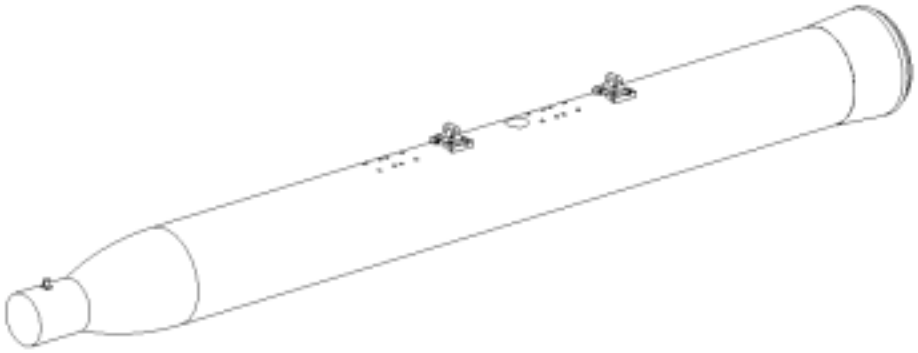
Carriage Options

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

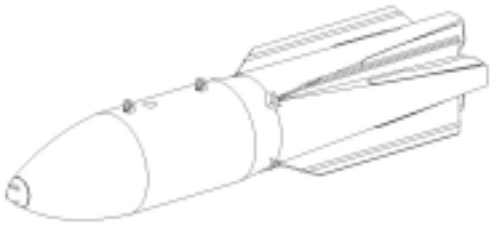
Diameter (in.) - 16 (22 W/Fin Installed)
Warhead (lbs.) - 737
Explosive - 386 lbs. Tritonal, 383 lbs. Minol II
Fuze - Mechanical or Electrical (See Appendix A)
Stabilizer - Fins, M131 or MAU-103 (Conical); MAU-91 or BSU-93/B (Retard)

Carriage Options

Aircraft:	Launcher/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 realatively 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%0
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

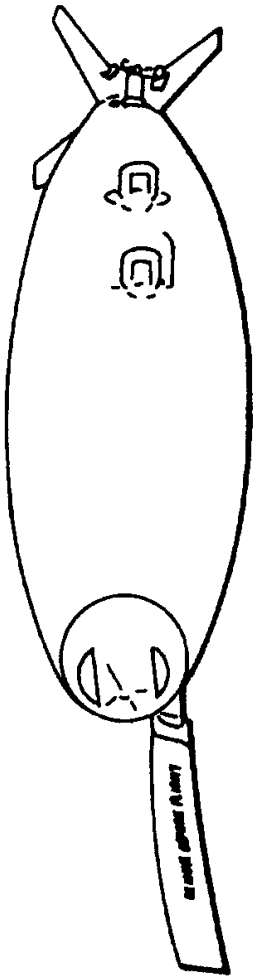
Carriage Options

Aircraft:
A-10A
B-1B; B-52H
F-16A-D
F-117A

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

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

BC27D	MK82 DSU33B/B FMU139 B-2
BC27A	MK-82 FMU-139 B-2
BC27C	MK-82 W/DSU-33A/B FMU139 B-2
BC27B	MK-82 W/M904/905 B-2
BR27A	MK-82/BSU-49 FMU-139 B-2
BR21W	MK82/BSU-49 FMU139A/B (T)
BR24G	MK82/BSU-49 FMU139A/B TL B52 INT
BR27B	MK-82/BSU-49 W/FMU-113 (N) B-2
BR26B	MK-82/BSU-49 W/FMU-139 (N) B-1
BC24B	MK82C 904/905 B-52
BC24A	MK82C 904/905 B-52
BC21L	MK82C 113 NS
BC21H	MK82C 904/905 N/T
BC21B	MK82C 113/905
BC21I	MK82C 26/26
ZCE1F	MK82C (I) 904 NS
ZCE1J	MK82C (I) FMU139 TL
ZCE1C	MK82C DSU33/FMU139 N/T
BC21T	MK82C DSU33A/B FMU139
BC21V	MK82C DSU33B/B FMU139
BC21P	MK82C FMU 139A/B (T)
ZCE1B	MK82C FMU-113/M905 N/T
BC21S	MK82C FMU139A/B (N)
ZCE1E	MK82C(I) 904/905 N/T
ZCE4A	MK82C(I) 904/905 N/T B-52
ZRE1L	MK82R FMU-139
ZBE4E	MK82R (I) / MK15 FMU139 B-52 INT
ZRE4H	MK82R (I) BSU-49 FMU-139 B52
ZRE1G	MK82R (I) BSU49 904/905 N/T
ZBE1A	MK82R (I)/MK15 54A/B TL
ZBE1D	MK82R (I)/MK15 904/54AB N/T

BR21X	MK82R DSU33A/B FMU139
BR26C	MK82R DSU33A/B FMU139 B-1
BR21Y	MK82R DSU33B/B FMU139
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-49 905 T
BR24E	MK82R/BSU-49 904 NS B52-INTERNAL
BR24K	MK82R/BSU-49 904/905 B52-INTERNA
BR21L	MK82R/BSU-49 904/905 N/T
BR24J	MK82R/BSU-49 905 TL B52-INTERNAL
BR21E	MK82R/BSU-49 M904 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-INTER
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 MK82 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%0
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%0

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%0
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	

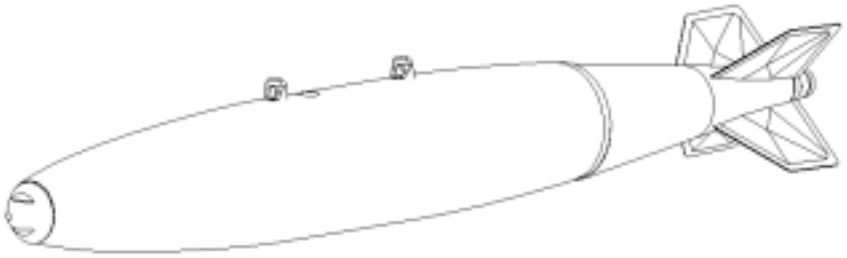
Warhead (lbs.) - 500
Explosive(NEW) - 192lbs Tritonal, Minol II, or H-6
Fuze - Variety for nose and tail. (See Appendix A)
Stabilizer -MAU-93/B, BSU-49/B AIR, MK-15 Snakeye.

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

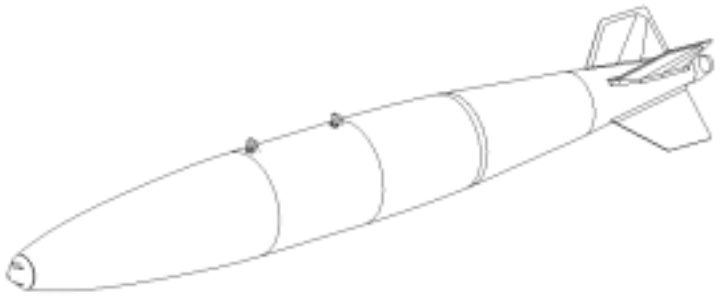
Carriage Options

Aircraft:
A-10A
F-15E
F-16A-D

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

Status / Schedule / Cost / Improvements

Manufacturer/Contractor -
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11A1-6-7



Nomenclature: MK-84 Name: 2000 lb. GP Bomb

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

ZCG1B	MK84 (I) W/O FUZE
ZRG1L	MK84 AIR (I) W/ F268
BC47A	MK-84 DSU33A/B FMU139 B-2
BC47C	MK84 DSU33B/B FMU139
SZBGA	MK84 LOW DRAG KIT
BR41A	MK84 R/BSU-50 904 N
BR41B	MK84 R/BSU-50 905 T
BC46B	MK-84 W/FMU-139 (T) B-1
BC46A	MK-84 W/FMU-139A/B (N) B-1
BC47B	MK-84 W/M904/905 B-2
BR41M	MK84/BSU-50 FMU 139A/B (T)
BC41C	MK84C 904 NS
BC41A	MK84C 904/905 N/T
BC41B	MK84C 905 TL
BC41P	MK84C 113/905
ZCG1C	MK84C (I) FMU139 TL
ZCG1L	MK84C DSU33/FMU139
BC41R	MK84C DSU-33A/B FMU139
BC41S	MK84C DSU33B/B FMU139
BC41L	MK84C FMU 113/B (N)
ZCG1K	MK84C FMU113/M905 N/T
BC41G	MK84C FMU139A/B (N)
BC41H	MK84C FMU139A/B (T)
BC47H	MK84C FMU-139A/B (T) B-2
BC46C	MK-84C W/DSU-33A/B FMU-139
BC46D	MK-84C W/DSU33B/B FMU-139
ZC61C	MK84C(I)
ZCG1G	MK84C(I) 904/905 N/T
ZRG1B	MK84R (I) BSU-50 54/B TL

ZRG1G	MK84R (I) 904/905 N/T
BR41N	MK84R DSU33A/B FMU139
BR41P	MK84R DSU33B/B FMU139
ZRG1E	MK84R(I) BSU-50 M904 NS
BR41H	MK84R/BSU-50 904/905 N/T
BR41I	MK84R/BSU-50 M904 NS FMU-139 T
PR41A	PREPO ISO MK84/BSU-50/FMU-139 T
PR41B	PREPO ISO MK84/BSU50/FMU139 T
PR41C	PREPO ISO MK84/BSU-50/M904/M905

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

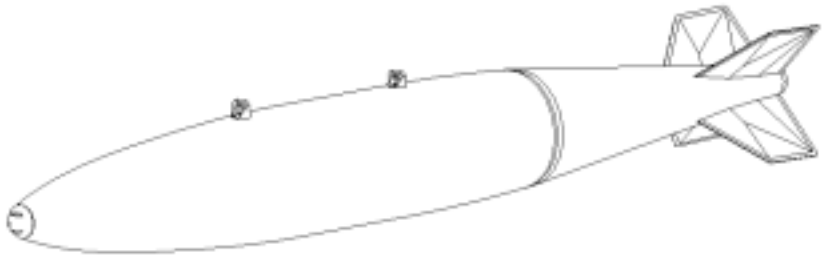
Warhead (lbs.) - 2000 Blast/Fragmentation
Explosive (NEW) - 945 lbs H-6 or Tritonal
Fuze - Variety of mechanical or electrical (See Appendix A)
Stabilizer - BSU-50 AIR; MK-84 Conical Fin

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 diplay target marking. When the bomb is released from the aircraft it fre falls until impact. Upon impact the bomb drives a firing pin assembly against a primer activating the signial charge. The resulting flash and puff of smoke permits visual evaluation of accuracy.

Characteristics:
MK-106
CRD Weapons Code

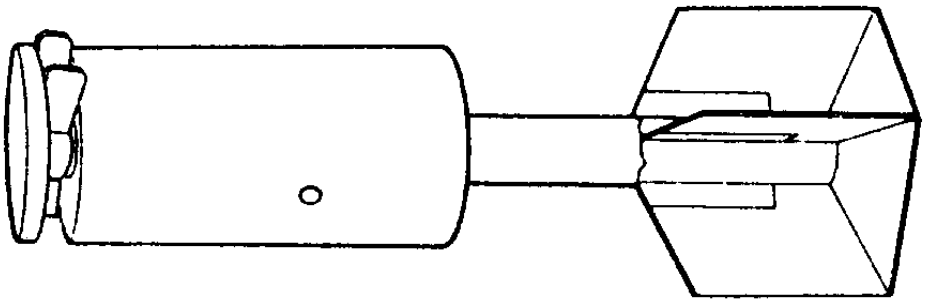
ZP81B	MK 106 PRACTICE BOMB/CXU3/B
ZP81A	MK 106 PRACTICE BOMB/MK 4

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

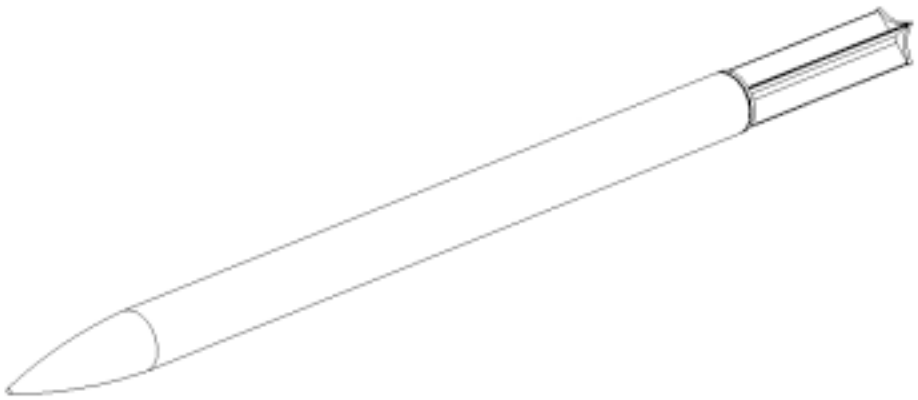
M278 Flare
Weight (lbs) – 10.8
Length (in) – 31.64
Diameter (in) – 2.75
Propulsion – Rocket Motor

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 lainch. 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

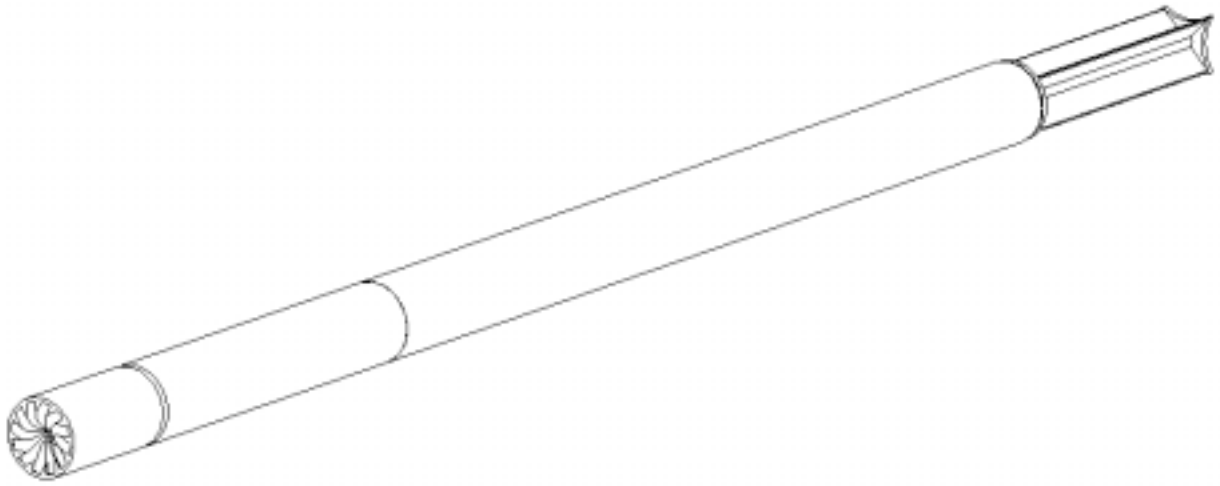
M257 Illuminator
Weight (lbs) – 10.8
Length (in) – 31.12
Diameter (in) – 2.75

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

BL4SA	GBU 10 PW-II FOR F-117
ZLGCD	GBU-10 (I) PW-II 81/905
ZLGCQ	GBU-10 (I) PWII W/ F268
ZLGCI	GBU-10 (I) PW-II 81/81 N/T
ZLGCP	GBU-10 (I) PW-II FMU139 T
ZLGCN	GBU-10 (I) PW-II NO FUZE
ZL9CA	GBU-10 BLU-109
BL9CC	GBU-10 PW-II FMU-143
BL4EB	LGB GBU-10 PW-II 139 TL F-15E
BL4EK	LGB GBU-10 PW-II 139 NS F-15E
BL4CB	LGB GBU-10 PW-II 81 NS
BL4EA	LGB GBU-10 PW-II 81 NS F-15E
BL4CI	LGB GBU-10 PW-II 81 TL
BL4EG	LGB GBU-10 PW-II 81 TL F-15E
BL4CN	LGB GBU-10 PW-II 81/81 N/T
BL4EC	LGB GBU-10 PW-II 81/81 N/T F-15E
BL4EH	LGB GBU-10 PW-II 81/905 F-15E
BL4CD	LGB GBU-10 PW-II 81/905 N/T
BL4CA	LGB GBU-10 PW-II 905 TL
ZL6CB	LGB GBU-10 PW-II BDU-56
ZL6CA	LGB GBU-10 PW-II BDU-56 F117
BL4CO	LGB GBU-10 PW-II FMU139A/B (T)
BL9EC	LGB GBU-10 PW-II FMU-143 F-15E
ZL6BF	LGB GBU-10 PW-1 /B BDU-56
ZL6BE	LGB GBU-10 PW-1 A/B BDU-56
BL4CF	LGB GBU-10 PW-II 139 NS
PL4CA	PREPO ISO GBU-10 PW-II/FMU-139 T
SZDBA	STAMP GBU-10E/B KIT

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

GBU-10 Model A/B

Weight (full)	2,077.47 lbs	+/- 5%
cg (x)	12.34 in.	+/- 0.50 in.
cg (y)	0.00 in.	+/- 0.50 in.
cg (z)	0.01 in.	+/- 0.50 in.
Length	168.30 in.	
Diameter	18.00 in.	
Inertia (roll)	24.00	+/- 10%
Inertia (pitch)	428.88	+/- 10%
Inertia (yaw)	428.78	+/- 10%

GBU-10 Model /B, A/B

Weight (full)	2,088.80 lbs	+/- 5%
cg (x)	12.52 in.	+/- 0.50 in.
cg (y)	0.04 in.	+/- 0.50 in.
cg (z)	-0.09 in.	+/- 0.50 in.
Length	168.30 in.	
Diameter	18.00 in.	
Inertia (roll)	24.00	+/- 10%
Inertia (pitch)	436.40	+/- 10%
Inertia (yaw)	436.20	+/- 10%

GBU-10 Model C/B, D/B, E/B

Weight (full)	2,110.25 lbs	+/- 5%
cg (x)	13.12 in.	+/- 0.50 in.
cg (y)	0.01 in.	+/- 0.50 in.
cg (z)	-0.08 in.	+/- 0.50 in.
Length	169.90 in.	
Diameter	18.00 in.	
Inertia (roll)	24.00	+/- 10%
Inertia (pitch)	436.75	+/- 10%
Inertia (yaw)	435.56	+/- 10%

GBU-10 Model G/B, H/B, J/B

Weight (full)	2,129.58 lbs	+/- 5%
cg (x)	12.79 in.	+/- 0.50 in.
cg (y)	0.03 in.	+/- 0.50 in.
cg (z)	0.01 in.	+/- 0.50 in.
Length	166.77 in.	
Diameter	14.50 in.	
Inertia (roll)	18.55	+/- 10%
Inertia (pitch)	455.20	+/- 10%
Inertia (yaw)	455.14	+/- 10%

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)

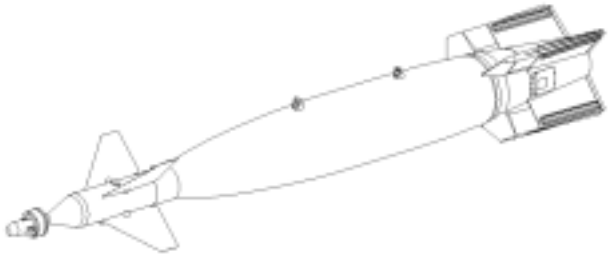
Carriage Options

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

Launcher/Rack - Multiple
(30 in. Lug Spacing)

Status / Schedule / Improvements

Contractor - Raytheon
Status - Inventory
OPR - OO-ALC/WM
Tech Data - 11K10-2-7



GBU-10 Component Matrix

MK-84

GBU-10/24 Guided Bomb Component Matrix (MK-84)	Major Component Required	Major Component Model No.	Subcomponents Required	Subcomponent Model Number (Notes)
Bomb, Guided Laser GBU-10 Series and GBU-24/B	Bomb, General Purpose 2,000-Pound	MK-84	Suspension Lugs	MK3 Mod 0 (1)
	Computer Control Group			(2,10)
	Airfoil Group		Laynard Pack (f-117, GBU-10 only)	PN 1173-149-2
	Fuze, Bomb Nose	FMU-26B/B	Booster and Tape Swivel and Link	FZU-2/B (3) MAU-166/A
		FMU-81/B	Booster and Tape Swivel and Link	FZU-2/B (11)
		FMU-139A/B		(5)
	Fuze, Bomb Tail	M905	Delay Element	(4,7)
			Adapter Booster	T46
			Drive Assembly	ATU-35
			Arming Wire	Single FZU-20A/B
			Shaft Flexible	MAU-86/B4
			Coupler Drive	MAU-87 Series
			Ferrule	
			Swivel and Link	MAU-166/A
			Clip Arming Wire	FZU-18/B
		FMU-26B/B (GBU-10 Only)	Booster and Tape Swivel and Link	FZU-2/B (3,7) MAU-166/A
		FMU-81/B	Booster and Tape	FZU-2B (6,7)
		FMU-139A/B		(5,7,8)
		FMU-143B, B/B	Initiator	FZU-32B/B
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	
	GBU-10E/B	MAU-169B/B, D/B,	MXU-651/B	
	GBU-24/B	WGU-12/B, B/B	BSU-84/B, A/B	
	GBU-24/B	WGU-39/B	BSU-84/B, BSU-84A/B	
Note 3: Required fuze components are provided with the fuze				
Note 4: M9 delay elemants 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 brfore 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.				
Note10: (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

GBU-10 Guided Bomb Component Matrix	Major Component Required	Major Component Model No.	Subcomponents Required	Subcomponent Model Number (Notes)
Bomb, Guided Laser GBU-10, GBU-24A/B, GBU-27 Series	Bomb, General Purpose 2,000-Pound	BLU-109		

	Computer Control Group		Swivel and Links	MAU-166/A (1,10)
	Airfoil Group		Laynard Pack (F-117, GBU-27 only)	(1)
	Adapter Group	ADU-548/B		(6)
		ADG-769/B		(6,7)
	Fuze, Bomb Tail	FMU-81/B (GBU-10/24 only)		(2,4)
		FMU-124A/B	Initiator	FZU-32/B (2,4,5)
		FMU-139A/B (GBU-10/24 only)		(2,3,4)
		FMU-143/B, B/B (GBU-24/27 only)	Initiator	FZU-32B/B (2,3,8,9)
Note 1:	**Model No**	**CCG**	**Airfoil Group**	
	GBU-10G/B	MAU-169/B	MXU-651/B	
	GBU-10H/B	MAU-169A/B	MXU-651/B	
	GBU-10J/B	MAU-169B/B, D/B, EE	MXU-651/B	
	GBU-24A/B	WGU-12/B, B/B	BSU-84/B, A/B	
	GBU-24A/B	WGU-39/B	BSU-84/B, BSU-84A/B	
	GBU-27/B	WGU-25/B, A/B	BSU-88/B	
	GBU-27/B	WGU-39/B	BSU-88/B	
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 separetely 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

ZLECC	GBU-12 (I) 905 T
ZLECB	GBU-12 (I) PW-II 81 N/T
ZLECF	GBU-12 (I) PW-II 81/905 N/T
ZLECA	GBU-12 (I) PW-II FMU-139 T
ZL5BE	GBU-12 PW-I /B BDU 50
ZL5BG	GBU-12 PW-I A/B BDU-50
BL2CI	LGB GBU-12 PW-II 81 TL
BL2CD	LGB GBU-12 PW-II 81/905 N/T
BL2EG	LGB GBU-12 PW-II 139 (N) F-15E
BL2CK	LGB GBU-12 PW-II 81 NS
BL2EE	LGB GBU-12 PW-II 81 NS F-15E
BL2CR	LGB GBU-12 PW-II 81 NS F117
BL2ED	LGB GBU-12 PW-II 81 TL F-15E
BL2CP	LGB GBU-12 PW-II 81 TL F117
BL2CL	LGB GBU-12 PW-II 81/81 N/T
BL2CS	LGB GBU-12 PW-II 81/81 N/T F117
BL2EK	LGB GBU-12 PW-II 81/81 N/T F-15E
BL2EL	LGB GBU-12 PW-II 81/905 F-15E
BL2CC	LGB GBU-12 PW-II 81/905 NT F117
BL2CA	LGB GBU-12 PW-II 905 TL
BL2EA	LGB GBU-12 PW-II 905 TL F-15E
ZL5CB	LGB GBU-12 PW-II BDU-50
ZL5CA	LGB GBU-12 PW-II BDU-50 F117
BL2CM	LGB GBU-12 PW-II FMU139A/B (T)
BL2CT	LGB GBU-12 PW-II FMU-139A/B F117
BL2EI	LGB GBU-12 PW-II FMU-139T F-15E
BL2CB	LGB GBU-12 PW-II TL F117
SZEBA	STAMP GBU-12E/B KIT
PL2CA	PREPO ISO LGB GBU-12/FMU-139 T

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

Weight (full)	606.67 lbs	+/- 5%
cg (x)	5.33 in.	+/- 0.50 in.
cg (y)	-0.02 in.	+/- 0.50 in.
cg (z)	-0.05 in.	+/- 0.50 in.
Length	131.15 in.	
Diameter	10.75 in. (Warhead); 18 in. (Airfoil Group)	
Inertia (roll)	2.07	+/- 10%
Inertia (pitch)	77.00	+/- 10%
Inertia (yaw)	77.00	+/- 10%

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)

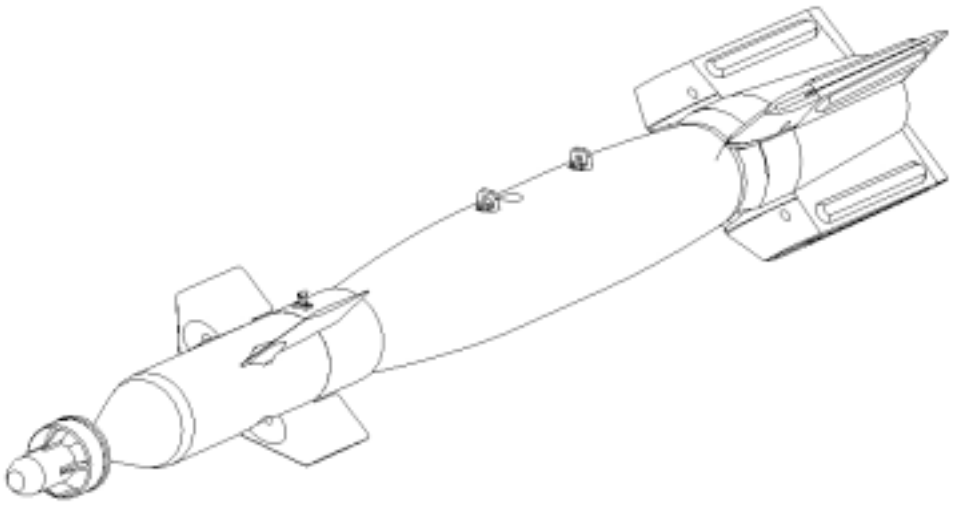
Carriage Options

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

GBU-12 Guided Bomb Component Matrix	Major Component Required	Major Component Model No.	Subcomponents Required	Subcomponent Model Number (Notes)
Bomb, Guided Laser GBU-12 Series	Bomb, General Purpose 500-Pound	MK-82	Suspension Lugs	MS3314(1) MAU-76 MK-6 Mod O
	Computer Control Group	MAU-169 Series		(2,9)
	Airfoil Group	MXU-650/B	Laynard Pack	PN 1173-149-2 (F-117)
	Fuze, Bomb Nose	FMU-26B/B	Booster and Tape Swivel and Link	FZU-2/B (3) MAU-166/A
		FMU-81/B	Booster and Tape Swivel and Link	FZU-2/B (5)
		FMU-139A/B		(7)
	Fuze, Bomb Tail	M905	Delay Element	(4,8)
			Adapter Booster	T46
			Drive Assembly	ATU-35
			Arming Wire	Single FZU-20A/B
			Shaft Flexible	MAU-86/B4
			Coupler Drive	MAU-87 Series
			Ferrule	
			Swivel and Link	MAU-166/A
		FMU-26B/B	Booster and Tape Swivel and Link	FZU-2/B (3,8) MAU-166/A
		FMU-81/B	Booster and Tape	FZU-2B (6,8)
		FMU-139A/B		(7,8)
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/B, C/B, E/B	MXU-650/B	
Note 3: Required fuze components are provided with the fuze				
Note 4: M9 delay elemants 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 brfore 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

ZG9GB	GBU-15 (T-1)/B IR CAPTIVE CARRY
ZE65B	GBU-15 BDU-56 GPS IR CAP F-15E
BE65B	GBU-15 BDU56 GPS IR TAC INRT F15
ZE65A	GBU-15 BDU-56 GPS TV CAPT F-15E
BE65A	GBU-15 BDU56 GPS TV TAC INRT F15
ZE95B	GBU-15 BLU109 GPS IR LD/TRN F-15
BE95B	GBU-15 BLU-109 GPS IR TACT F-15E
ZE95A	GBU-15 BLU109 GPS TV LD/TRN F-15
BE95A	GBU-15 BLU-109 GPS TV TACT F-15E
BG6GA	GBU-15 IR BDU-56/TAC/INERT
BGHGA	GBU-15 IR BLU109(I)/TAC/INERT
BG6GB	GBU-15 IR/BDU-56/TAC/INERT
BG4GA	GBU-15 IR/LONG CHORD/MK84
BGGGA	GBU-15 IR/MK-84(I)/TAC/INERT
BGGGB	GBU-15 IR/MK-84(I)/TAC/INERT
BG9GB	GBU-15 IR/SHORT CHORD/BLU109
BG4GB	GBU-15 IR/SHORT CHORD/MK84
ZEG5B	GBU-15 MK84 GPS IR LD/TRNR F-15E
BEG5B	GBU-15 MK84 GPS IR TAC/INRT F-15
BE45B	GBU-15 MK84 GPS IR TACT F-15E
ZEG5A	GBU-15 MK84 GPS TV LD/TRNR F-15E
BEG5A	GBU-15 MK84 GPS TV TAC/INRT F-15
BE45A	GBU-15 MK84 GPS TV TACT F-15E
ZE45B	GBU-15 MK84(EMPTY) GPS IR F-15E
ZE45A	GBU-15 MK84(EMPTY) GPS TV F-15E
BG6TA	GBU-15 TV/BDU-56/TAC/INERT
BG6TB	GBU-15 TV/BDU-56/TAC/INERT
BG6TC	GBU-15 TV/BDU-56/TAC/INERT
BG6TD	GBU-15 TV/BDU-56/TAC/INERT
BGHTA	GBU-15 TV/BLU-109(I)/TAC/INERT
BGHTB	GBU-15 TV/BLU-109(I)/TAC/INERT

BG4TD	GBU-15 TV/LC/SFOV/MK84
BG4TA	GBU-15 TV/LONG CHORD/MK84
BGGTA	GBU-15 TV/MK84(I)/TAC/INERT
BG4TB	GBU-15 TV/SC/SFOV MK84
BG9TB	GBU-15 TV/SC/SFOV/BLU109
BG9TA	GBU-15 TV/SC/SFOV/BLU-109
BG4TC	GBU-15 TV/SC/SFOV/MK84

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)

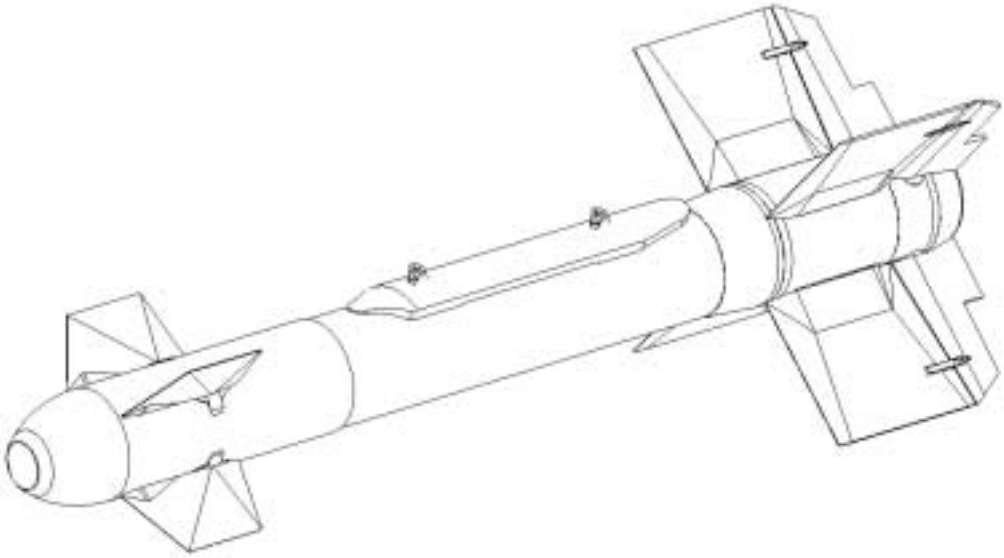
Weight (full)	2,545.00 lbs
Length	159.00 in.
Diameter (warhead)	16.0 in.

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



Nomenclature: GBU-24/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-24/B
CRD Weapons Code

ZL9BD	GBU-24 A/B
BL4HP	GBU-24 PW-III 139 N WGU-39 F-15E
BL4HB	GBU-24 PW-III 139 T WGU-39 F-15E
BL4HR	GBU-24 PW-III 81 NS WGU-39 F-15E
BL4HI	GBU-24 PW-III 81 NT WGU-12 F-15E
BL4HA	GBU-24 PW-III 81 NT WGU-39 F-15E
BL4HS	GBU-24 PW-III 81 TL WGU-39 F-15E
BL4DI	GBU-24 PW-III FMU-139 NS
BL4HL	GBU-24 PW-III FMU-139 NS F-15E
BL4DN	GBU-24 PW-III FMU-139 NS WGU39/B
BL4DL	GBU-24 PW-III FMU-139 TL
BL4HM	GBU-24 PW-III FMU-139 TL F-15E
BL4DO	GBU-24 PW-III FMU-139 TL WGU-39
BL4DQ	GBU-24 PW-III FMU-139 TL WGU-39
BL9HD	GBU-24 PW-III FMU-143 F-15E
BL9HE	GBU-24 PW-III FMU-143 F-15E
BL4DP	GBU-24 PW-III FMU-81 N/T WGU-39
BL4DB	GBU-24 PW-III FMU-81 NS
BL4HN	GBU-24 PW-III FMU-81 NS F-15E
BL4DD	GBU-24 PW-III FMU-81 NS WGU-39
BL4DC	GBU-24 PW-III FMU-81 TL
BL4HO	GBU-24 PW-III FMU-81 TL F-15E
BL4DG	GBU-24 PW-III FMU-81 TL WGU-39
BL4DA	GBU-24 PW-III FMU-81(N/T) WGU-12
BL9DC	GBU-24 PW-III WGU-12/FMU-143
BL9DE	GBU-24 PW-III WGU-39/FMU-143
ZLG1N	GBU-24 WGU-12 NO FUZE
ZLG1I	GBU-24/B (I)
ZLG1G	GBU-24/B WGU12 FMU139
ZLG1F	GBU-24/B WGU12 FMU81 TL
ZLG1K	GBU-24/B WGU-12 NO FUZE
ZL6DB	GBU-24/B WGU-12(D-2)/B NO FUZE

ZL6DD	GBU-24/B WGU-12B/B NO FUZE
ZLGDA	GBU-24/B WGU-39 NO FUZE
ZL6DE	GBU-24/B WGU-39/B NO FUZE
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	13.04in. +/- 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 sto	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

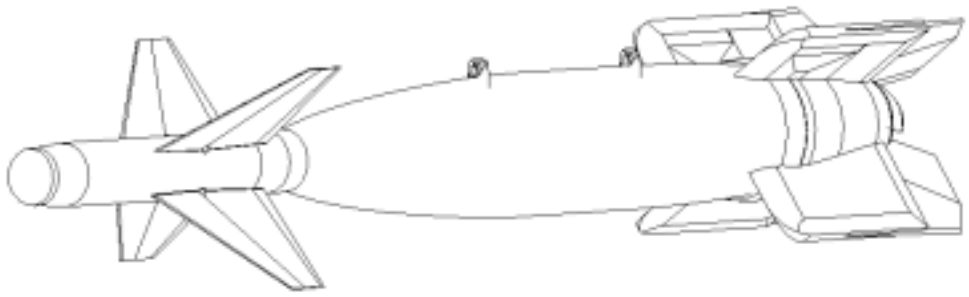
Warhead - Mk-84 Blast/Fragmentation
Explosive (NEW) - 945 lbs Tritonal
Fuze - FMU-81 Nose & Tail (See Appendix A)
Stabilizer - BSU-84 Fin Assembly

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

GBU-10/24 Guided Bomb Component Matrix	Major Component Required	Major Component Model No.	Subcomponents Required	Subcomponent Model Number (Notes)
Bomb, Guided Laser GBU-10 Series and GBU-24/B	Bomb, General Purpose 2,000-Pound	MK-84	Suspension Lugs	MK3 Mod 0 (1)
	Computer Control Group			(2,10)
	Airfoil Group		Laynard Pack (f-117, GBU-10 only)	PN 1173-149-2
	Fuze, Bomb Nose	FMU-26B/B	Booster and Tape Swivel and Link	FZU-2/B (3) MAU-166/A
		FMU-81/B	Booster and Tape Swivel and Link	FZU-2/B (11)
		FMU-139A/B		(5)
	Fuze, Bomb Tail	M905	Delay Element	(4,7)
			Adapter Booster	T46
			Drive Assembly	ATU-35
			Arming Wire	Single FZU-20A/B
			Shaft Flexible	MAU-86/B4
			Coupler Drive	MAU-87 Series
			Ferrule	
			Swivel and Link	MAU-166/A
			Clip Arming Wire	FZU-18/B
		FMU-26B/B (GBU-10 Only)	Booster and Tape Swivel and Link	FZU-2/B (3,7) MAU-166/A
		FMU-81/B	Booster and Tape	FZU-2B (6,7)
		FMU-139A/B		(5,7,8)
		FMU-143B, B/B	Initiator	FZU-32B/B
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	

	GBU-10E/B	MAU-169B/B, D/B,	MXU-651/B	
	GBU-24/B	WGU-12/B, B/B	BSU-84/B, A/B	
	GBU-24/B	WGU-39/B	BSU-84/B, BSU-84A/B	
Note 3: Required fuze components are provided with the fuze				
Note 4: M9 delay elemants 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 brfore 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.				
Note10: (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

GBU-10/24/27 Guided Bomb Component Matrix	**Major Component Required**	**Major Component Model No.**	**Subcomponents Required**	**Subcomponent Model Number (Notes)**
Bomb, Guided Laser GBU-10, GBU-24A/B, GBU-27 Series	Bomb, General Purpose 2,000-Pound	BLU-109		
	Computer Control Group		Swivel and Links	MAU-166/A (1,10)

	Airfoil Group		Laynard Pack (F-117, GBU-27 only)	(1)
	Adapter Group	ADU-548/B		(6)
		ADG-769/B		(6,7)
	Fuze, Bomb Tail	FMU-81/B (GBU-10/24 only)		(2,4)
		FMU-124A/B	Initiator	FZU-32/B (2,4,5)
		FMU-139A/B (GBU-10/24 only)		(2,3,4)
		FMU-143/B, B/B (GBU-24/27 only)	Initiator	FZU-32B/B (2,3,8,9)
Note 1:	**Model No**	**CCG**	**Airfoil Group**	
	GBU-10G/B	MAU-169/B	MXU-651/B	
	GBU-10H/B	MAU-169A/B	MXU-651/B	
	GBU-10J/B	MAU-169B/B, D/B, EE	MXU-651/B	
	GBU-24A/B	WGU-12/B, B/B	BSU-84/B, A/B	
	GBU-24A/B	WGU-39/B	BSU-84/B, BSU-84A/B	
	GBU-27/B	WGU-25/B, A/B	BSU-88/B	
	GBU-27/B	WGU-39/B	BSU-88/B	
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 separetely 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-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%

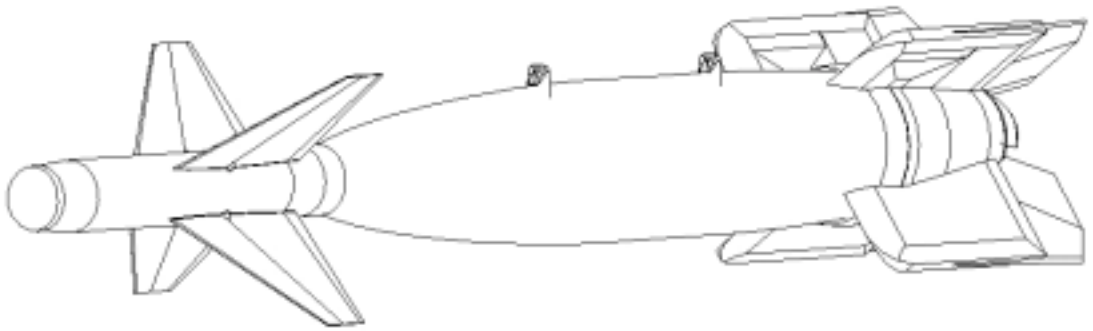
Drawings 2898429, DL2898429
Warhead - BLU-109/B Hard Target Penetrator
Explosive (NEW) - 535 lbs Tritonal
Fuze - FMU-143 Series (Tail); (See Appendix A)
Stabilizer - BSU-84 Fin Assembly

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
ZL9SA	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

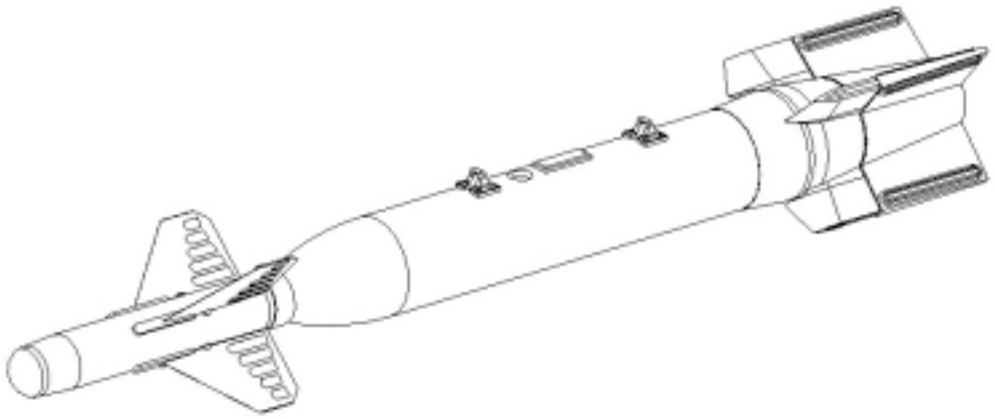
Weight (full)	2,185.00 lbs	+/- 5%
cg (x)	10.65 in.	+/- 0.50 in.
cg (y)	-0.02 in.	+/- 0.50 in.
cg (z)	-0.05 in.	+/- 0.50 in.
Length	166.77 in.	
Diameter	14.50 in.	
Inertia (roll)	unk	+/- 10%
Inertia (pitch)	510.34	+/- 10%
Inertia (yaw)	510.32	+/- 10%
Drawings-	2898297, 3162743, 3162744	

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

GBU-10/24/27 Guided Bomb Component Matrix	Major Component Required	Major Component Model No.	Subcomponents Required	Subcomponent Model Number (Notes)
Bomb, Guided Laser GBU-10, GBU-24A/B, GBU-27 Series	Bomb, General Purpose 2,000-Pound	BLU-109		
	Computer Control Group		Swivel and Links	MAU-166/A (1,10)
	Airfoil Group		Laynard Pack (F-117, GBU-27 only)	(1)
	Adapter Group	ADU-548/B		(6)
		ADG-769/B		(6,7)
	Fuze, Bomb Tail	FMU-81/B (GBU-10/24 only)		(2,4)
		FMU-124A/B	Initiator	FZU-32/B (2,4,5)
		FMU-139A/B (GBU-10/24 only)		(2,3,4)
		FMU-143/B, B/B (GBU-24/27 only)	Initiator	FZU-32B/B (2,3,8,9)
Note 1:	**Model No**	**CCG**	**Airfoil Group**	
	GBU-10G/B	MAU-169/B	MXU-651/B	
	GBU-10H/B	MAU-169A/B	MXU-651/B	
	GBU-10J/B	MAU-169B/B, D/B, EE	MXU-651/B	

	GBU-24A/B	WGU-12/B, B/B	BSU-84/B, A/B	
	GBU-24A/B	WGU-39/B	BSU-84/B, BSU-84A/B	
	GBU-27/B	WGU-25/B, A/B	BSU-88/B	
	GBU-27/B	WGU-39/B	BSU-88/B	
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 separetely 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%

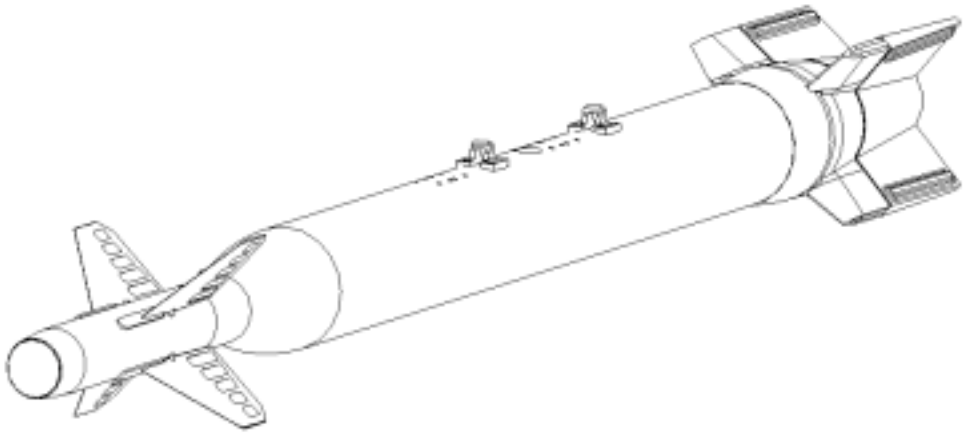
Warhead - BLU-113/B or BLU-113A/B, Blast/Fragmentation
Explosive (NEW) - Tritonal 600 lbs
Fuze - FMU-143 Series (Tail) (See Appendix A)
Stabilizer - BSU-92/B Fin Assembly

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 - Febuary 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

ZJ91E	GBU-31 V3 W/FMU-152/B
ZJ61A	GBU-31(V)1/B BDU-56
BJ41H	GBU-31(V)1/B DSU33A/B FMU139
BJ47K	GBU-31(V)1/B DSU33A/B FMU139 B-2
BJ41E	GBU-31(V)1/B DSU-33A/B FMU152
BJ46D	GBU-31(V)1/B DSU33A/B FMU152 B1
BJ41A	GBU-31(V)1/B W/ FMU-152/B
BJ46E	GBU-31(V)1/B W/ FMU-152/B B-1
BJ47H	GBU-31(V)1/B W/DSU-33B/B/FMU139
BJ41G	GBU-31(V)1/B W/DSU-33B/B/FMU-139
BJ41F	GBU-31(V)1/B W/DSU-33B/B/FMU-152
ZJ61C	GBU-31(V)1/B W/FMU-139 INERT N
ZJG1A	GBU-31(V)1/B W/FMU-139 INERT T
ZJ61D	GBU-31(V)1/B W/FMU-139 INERT N/T
BJ41D	GBU-31(V)1/B W/FMU-139A/B (N/T)
BJ41C	GBU-31(V)1/B W/FMU-139A/B (T)
BJ47B	GBU-31(V)1/B W/FMU-139A/B (T) B2
BJ46A	GBU-31(V)1/B W/FMU-139A/B N/T B1
BJ47C	GBU-31(V)1/B W/FMU-139A/B(N/T)B2
ZJ61E	GBU-31(V)1/B W/FMU-152 INERT T
BJ47E	GBU-31(V)1/BW/FMU-152/B B2
BJ97E	GBU-31(V)3/B FMU-143F/B B-2
BJ97D	GBU-31(V)3/B FMU-143G/B B-2
BJ97C	GBU-31(V)3/B FMU-143H/B B-2
ZJ91D	GBU-31(V)3/B NO FUZE
ZJ91A	GBU-31(V)3/B W/FMU-139 A/B
ZJ96A	GBU-31(V)3/B W/FMU-139A/B B-1
ZJ97A	GBU-31(V)3/B W/FMU-139A/B B-2
ZJ97B	GBU-31(V)3/B W/FMU-143/B B-2
BJ91A	GBU-31(V)3/B W/FMU-143B/B
BJ91Z	GBU-31(V)3/B W/FMU-143B/B
ZJ91C	GBU-31(V)3/B W/FMU-143B/B
BJ97A	GBU-31(V)3/B W/FMU-143B/B B2
BJ96A	GBU-31(V)3/B W/FMU-143B/B B-1

ZJ96B	GBU-31(V)3/B W/FMU-143B/B B-1
BJ91B	GBU-31(V)3/B W/FMU-152/B
ZJ91B	GBU-31(V)3/B W/FMU-152/B
BJ97B	GBU-31(V)3/B W/FMU-152/B B2
BJ96B	GBU-31(V)3/B W/FMU-152/B B-1
ZJ96C	GBU-31(V)3/B W/FMU-152/B B-1
ZJ97C	GBU-31(V)3/B W/FMU-152/B B-2
ZJ97E	GBU-31(V3) KMU-556/INERT FMU-152
ZJ61F	GBU-31,KMU-556(D-2), FMU-139
BJ46B	GBU-319V)1/B W/FMU-139A/B (T) B1
BJ46J	GBU-31V1/B DSU-33A/B FMU139 B-1
BJ46F	GBU-31V1/B W/DSU-33B/B/FMU139 B1
BJ46G	GBU-31V1/B W/DSU-33B/B/FMU152 B1
PJ41B	PREPO ISO GBU-31(V)1/B/FMU-139
PJ41A	PREPO ISO GBU-31(V)1/B/FMU-139 T
PJ91A	PREPO ISO GBU-31(V)3/B/FMU-143

Guidance - INS/GPS
Control - Tail Aerodynamic
Autopilot - Proportional Guidance
Class - 2000 lb Guided Munition
Weight (lbs.) – MK-84 (AF 2039; Navy 2059), BLU-109 (AF 2118; Navy 2138)
Length (m) – MK-84 – 3.87; BLU-109 – 3.76
Diameter (mm) - 460
Warhead - MK-84 or BLU-109
Explosive - 945lbs or 535lbs
Fuze - FMU-139A/B or FMU-143B/B or FMU-152/B (JPF)

JDAM 2,000 LB NOMENCLATURE/ GBU 31

	MK-84	BLU-109
USAF	(v) 1/B	(v) 3/B
Navy	(v) 2/B	(v) 4/B

Carriage Options

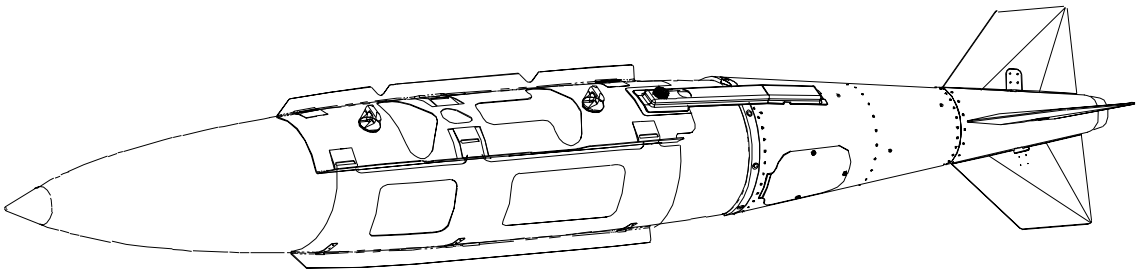
Aircraft / Loadout / Launcher -

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	

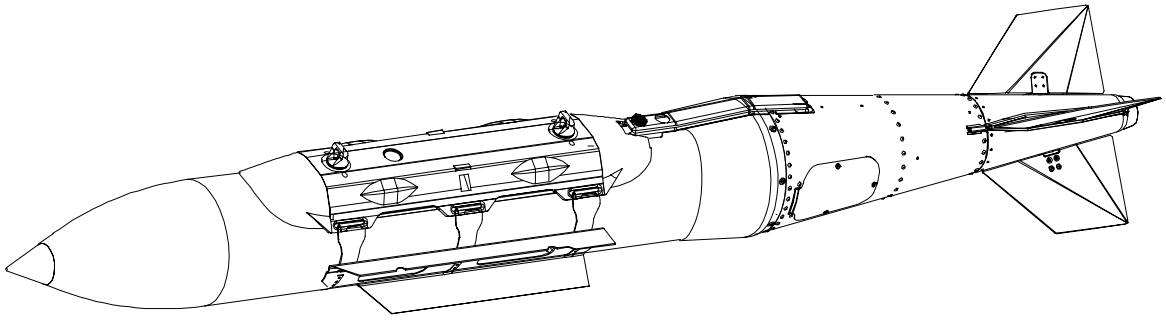
P-3 /9 / AERO-65, BRU-14, BRU-15 (W/AERO-1A)

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.

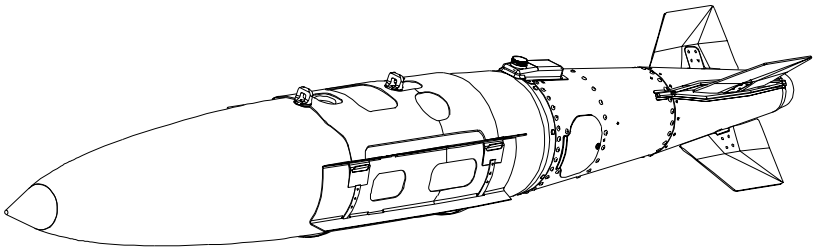
Characteristics
GBU-32
CRD Weapons Code
None
Guidance - INS/GPS
Control - Tail Aerodynamic
Autopilot - Proportional Guidance
Class - 1000 lb Guided Munition
Weight (lbs.) – AF-1,014; Navy-1,029
Length (m) - 3.0
Diameter (mm) - 350
Warhead - MK-83 and BLU-110
Explosive - 416 lbs
Fuze - FMU-152/B (JPF)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

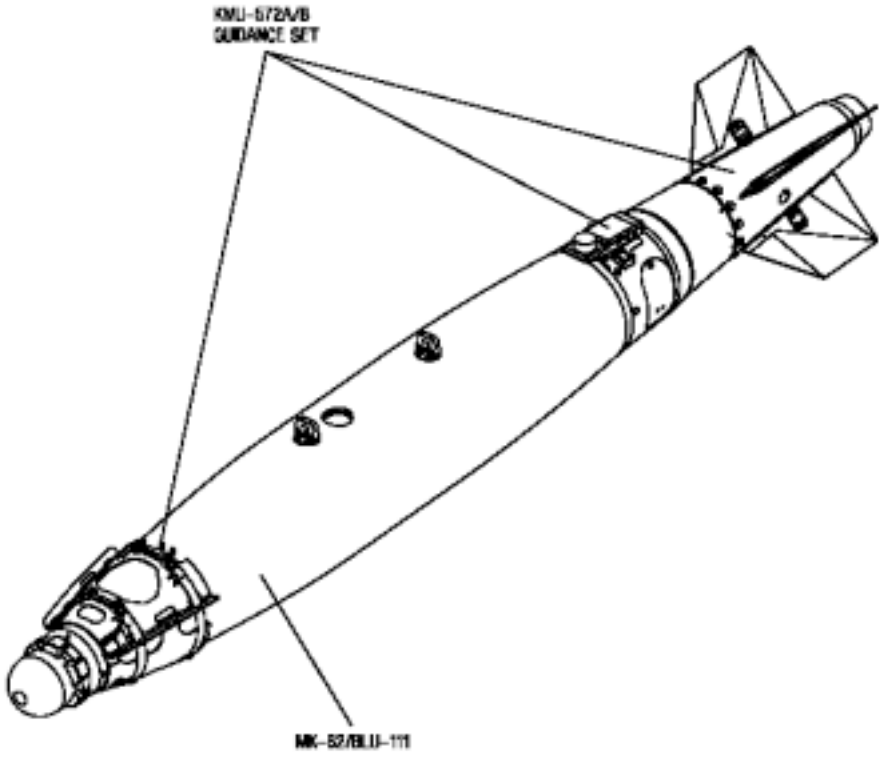
GBU-38
CRD Weapons Code
None
Guidance - INS/GPS
Control - Tail Aerodynamic
Autopilot - Proportional Guidance
Class - 500 lb Guided Munitions
Weight (lbs.) – AF-552; Navy-558
Length (m) – 2.29m
Diameter (mm) – 273 mm
Warhead - MK-82 and BLU-111
Explosive - 192 lbs
Fuze - FMU-152/B (JPF) or FMU-139A/B

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



GBU-38/B

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 rectanglular pattern with density and sizes of the are covered depending on release parameters and spin rates.

Characteristics

CRD Weapons Code

C875A	CBU-87B/B DISP. AND BOMB	F-15E
C871A	CBU-87B/B DISPENSER AND BOMB	
C878A	CBU-87B/B DISPENSER AND BOMB	B-2
C876B	CBU-87B/B DISPENSOR AND BOMB	B-1
C875B	CBU-87M/B DISPENSER	F-15E
C876A	CBU-87M/B DISPENSER & BOMB	B-1
C871B	CBU-87M/B DISPENSER AND BOMB	
C878B	CBU-87M/B DISPENSOR	B-2
P871A	PREPO ISO CBU-87	
SZCAB	STAMP CBU-87B/B	
Z871A	CBU-87(T-1)/B	
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

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)

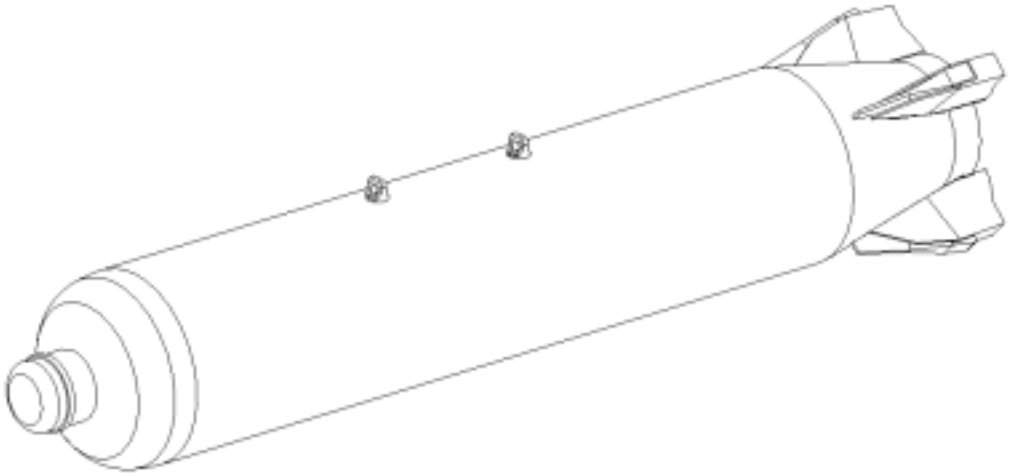
Employment Options

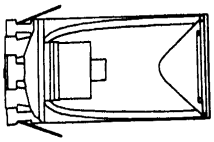
Aircraft:

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





BLU-97/B Bomblet

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 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%

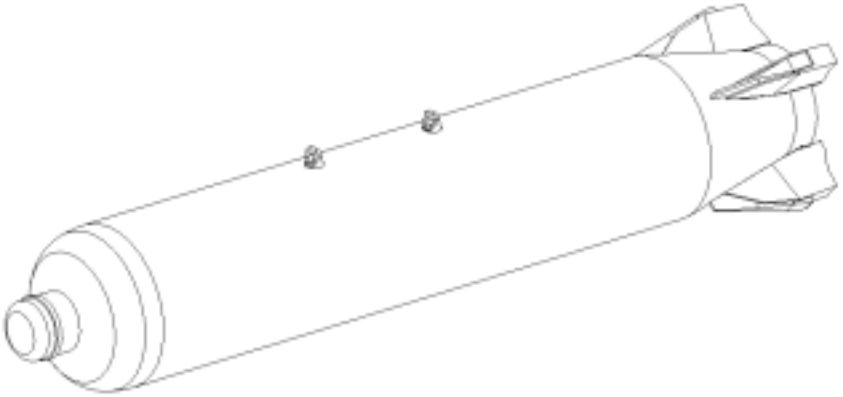
Drawings 777340
Interface Control Drawings 777109
Tech Data 11A9-30-7
Employment Limits PIDS SP777340, para 3.2.1
Environmental Limits PIDS SP777340, para 3.2.4
Warhead - 72ea BLU-91/B Anti-Tank Bomblets (4.31 lbs. ea)
- 22ea BLU-92/B Anti-Personnel Bomblets (3.75 lbs. ea)
Dispenser - SUU-64/B
Fuze - Integral Part of Dispenser
- FZU-39/B Proximity Sensor

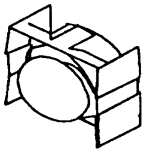
Employment Options

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

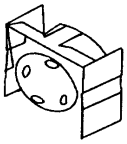
Status/Schedule/Improvements

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

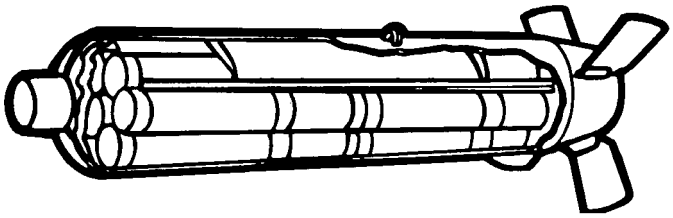
Fuze - Integral Part of Dispenser - FZU-39/B Proximity Sensor

Employment Options

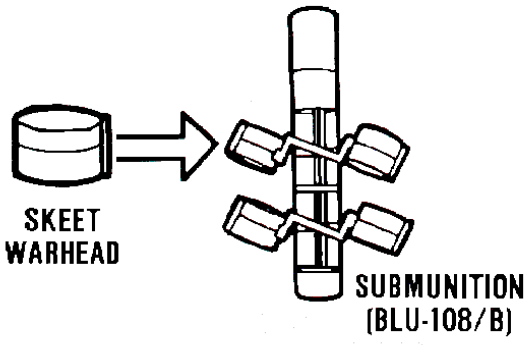
Aircraft:	Limitations: Delivery Envelope
F-16A-D; F-15E;	3,000 - 30,000 ft. Alt. w/WCMD
A-10; B-1;	250-650 Knots
B-2; B-52	Targets - Tanks, Armored and Support Vehicles
	Engagement Systems - Bombing Computer
	Rack/Pylon: 14 in. Lug Spacing

Status/Schedule/Improvements

Contractor - Textron Defense Systems, Wilmington, MA
Status - Production



SUU-66/B Dispenser



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.

Nomenclature: 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
	CBU-105B/B
	CBU-105C/B

Characteristics

CRD Weapons Code

C031A	CBU-103 WCMD	
C036A	CBU-103 WCMD	B-1
C038A	CBU-103 WCMD	B-2
C035A	CBU-103 WCMD	F-15E
C041A	CBU-104 WCMD	
C046A	CBU-104 WCMD	B-1
C048A	CBU-104 WCMD	B-2
C047A	CBU-104 WCMD	F-117
C045A	CBU-104 WCMD	F-15E
C051A	CBU-105 WCMD	
C056A	CBU-105 WCMD	B-1
C058A	CBU-105 WCMD	B-2
C055A	CBU-105 WCMD	F-15E
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	B-1
C038A	CBU-103 WCMD	B-2
C035A	CBU-103 WCMD	F-15E
C041A	CBU-104 WCMD	
C046A	CBU-104 WCMD	B-1
C048A	CBU-104 WCMD	B-2

C047A	CBU-104 WCMD	F-117
C045A	CBU-104 WCMD	F-15E
C051A	CBU-105 WCMD	
C056A	CBU-105 WCMD	B-1
C058A	CBU-105 WCMD	B-2
C055A	CBU-105 WCMD	F-15E
P103A	PREPO ISO CBU-103	
SZCDA	STAMP CBU-103 CEM WCMD	
SZCFA	STAMP CBU-105 SFW 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

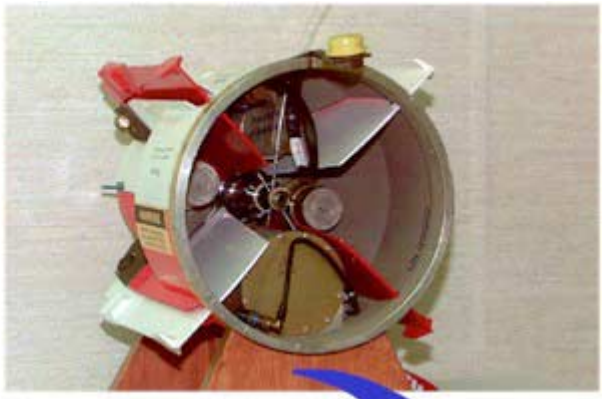
Employment Options

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

WCMD - Tail Kit



CHAPTER SEVEN

NUCLEAR

WEAPONS

Nomenclature: Nuclear Bomb B61

Characteristics:

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

CG(x)	60.5 +/ - 0.75 in (14.96 in. aft of front lug)
Weight(full)	751.00 lbs +/- 15.0 lbs
MI Pitch	795K +/- 25K lb-in2
MI YAW	795 +/- 25K lb-in2
MI Roll	17.2K +/- 500 lb-in2
Length	141.64 in.
Diameter	13.30 in.

B-61 Mod 7

CG(x)	60.5 +/ - 0.75 in (14.96 in. aft of front lug)
Weight(full)	763.00 lbs +/- 15.0 lbs
MI Pitch	819K +/- 25K lb-in2
MI YAW	8129 +/- 25K lb-in2
MI Roll	15K +/- 200 lb-in2
Length	141.64 in.
Diameter	13.30 in.

B-61 Mod 11

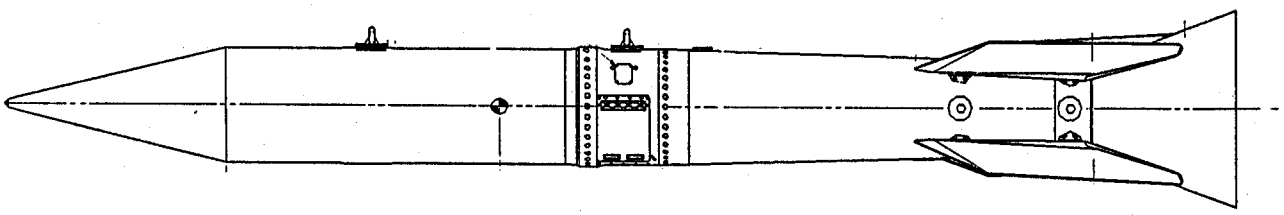
CG(x)	57.81 +/ - 0.75 in (14.96 in. aft of front lug)
Weight(full)	1,24500 lbs +/- 15.0 lbs
MI Pitch	1,690K +/- 25K lb-in2
MI YAW	1,690 +/- 25K lb-in2
MI Roll	27,270 +/- 200 lb-in2
Length	145.01in.
Diameter	13.30 in.

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

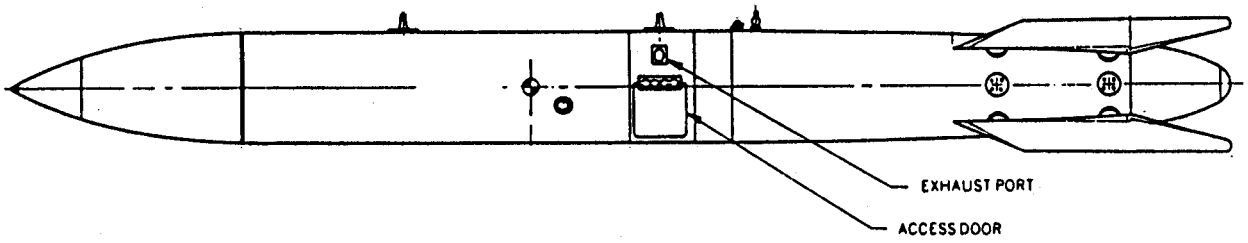
Management/Engineering: AAC/NWL

Technical Order: 11N-B61-1

Status: Inventory



B61-11



B61-3,4,7,10

Nomenclature: Nuclear Bomb B83 Mod –0 and -1

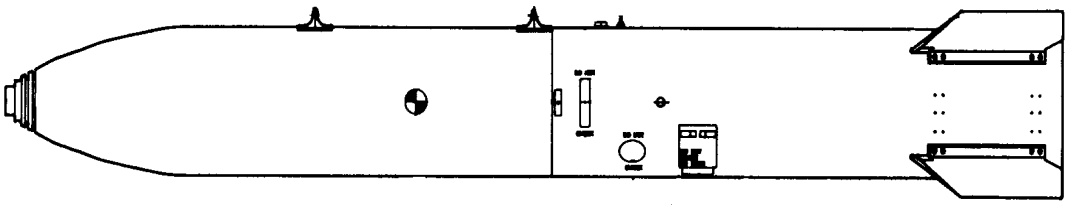
Characteristics:
Weight: 2,461 lbs
Length: 144.21 in (3.66 m)
Diameter: 18 in (460 mm)

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

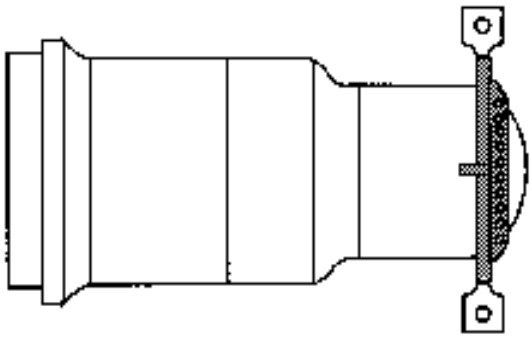
Nomenclature: Nuclear Warhead W80-1

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.

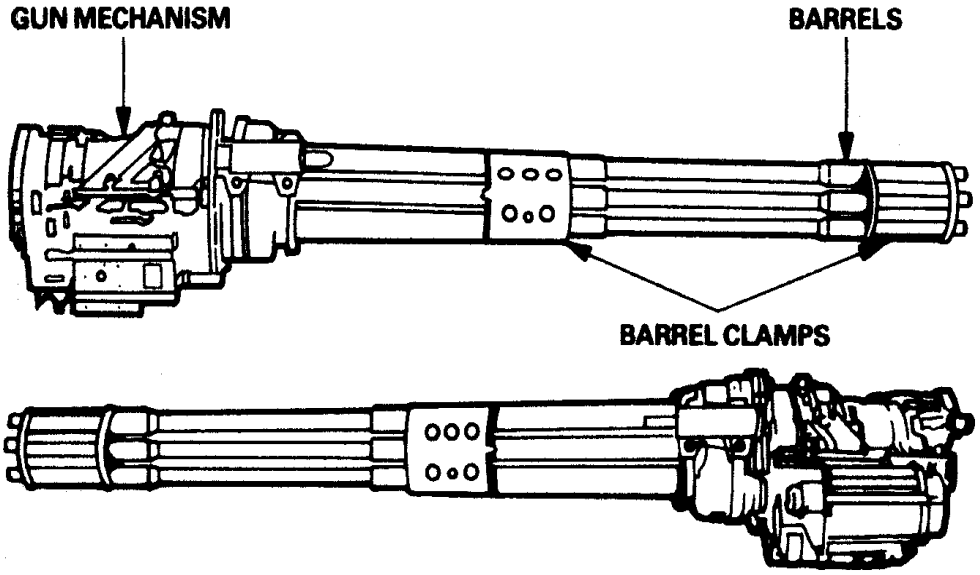
Weapon Characteristics

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)


GUN MECHANISM
BARRELS
BARREL CLAMPS

Nomenclature: M61A2 **Name: 20mm Automatic Gun (Lightweight)**

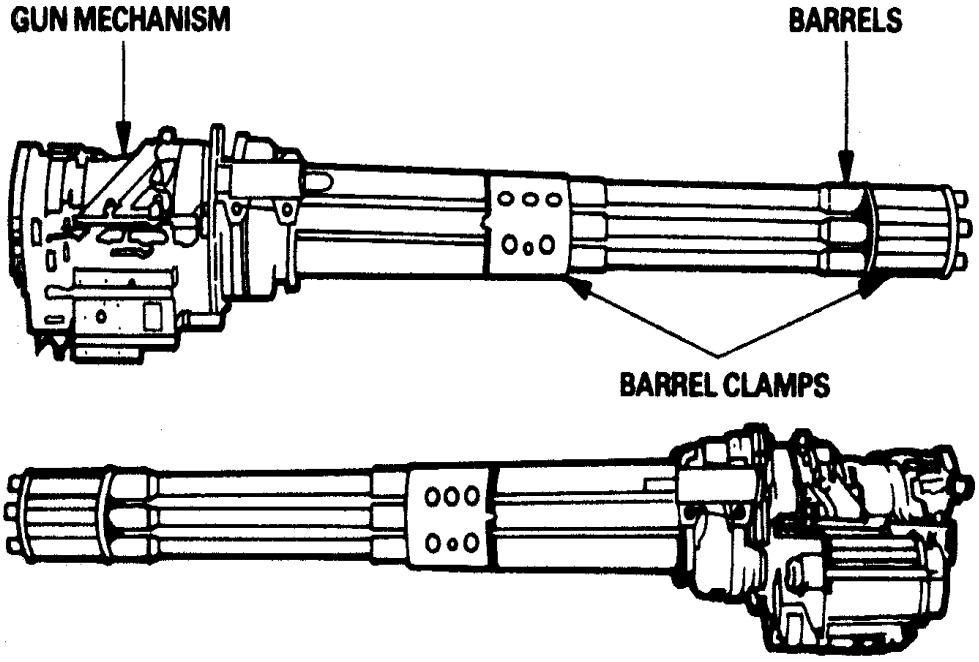
Weapon Characteristics

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 barrell 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.

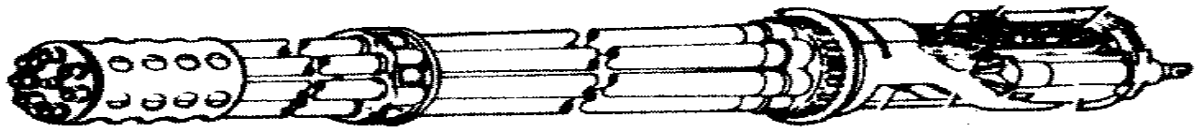
Weapon Characteristics

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 (Appox.) - 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-130Ugunship. The gun was recently chosen for the Joint Strike Fighter (F-35).

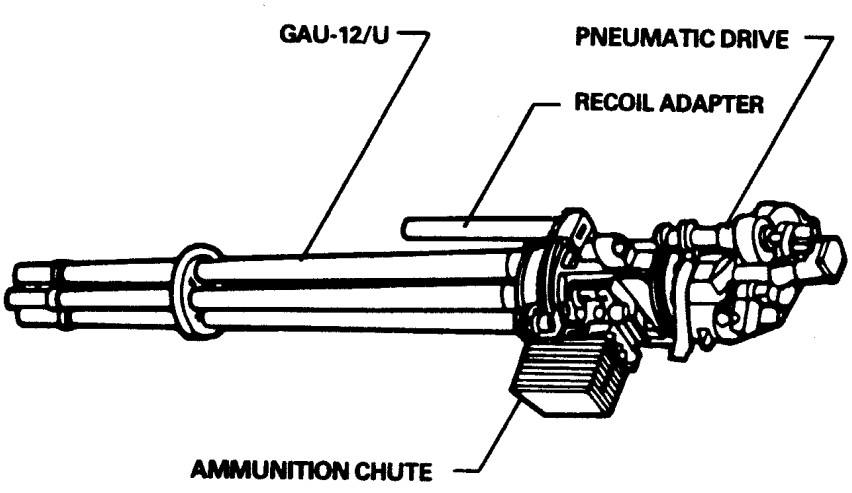
Weapon Characteristics

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.

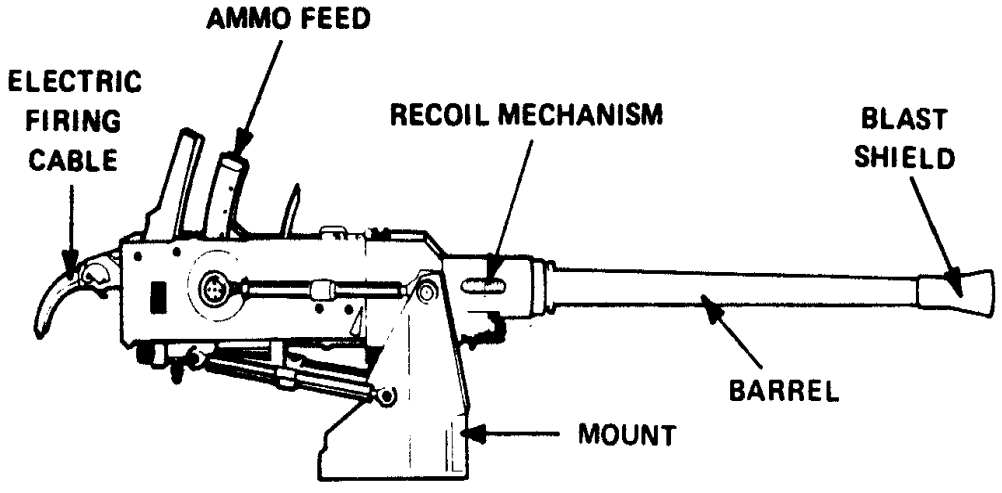
Weapon Characteristics

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 whiich is a modified 105mm howitzer used with the 105mm trainable gun mount system in the left side of the AC-130 gunship.

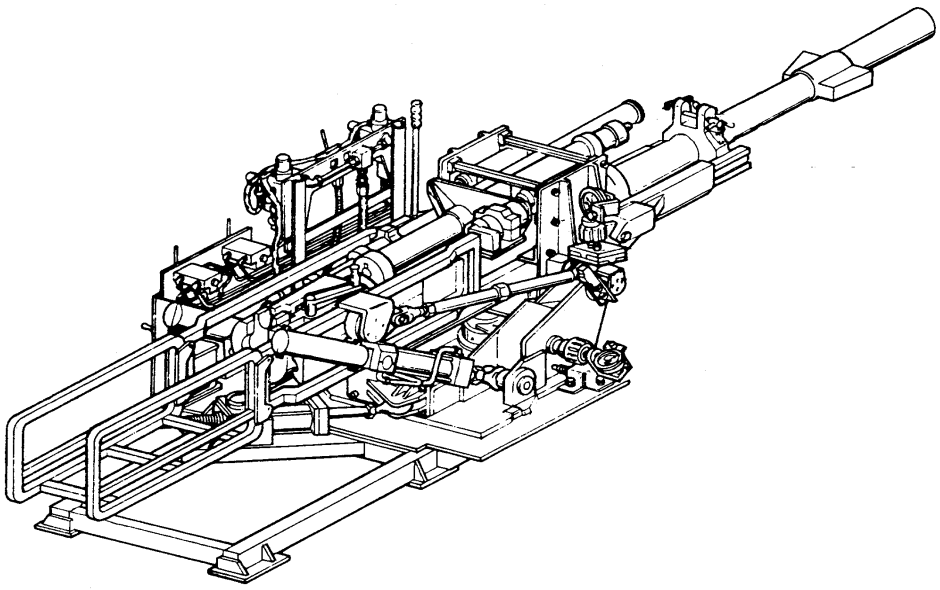
Weapon Characteristics

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)

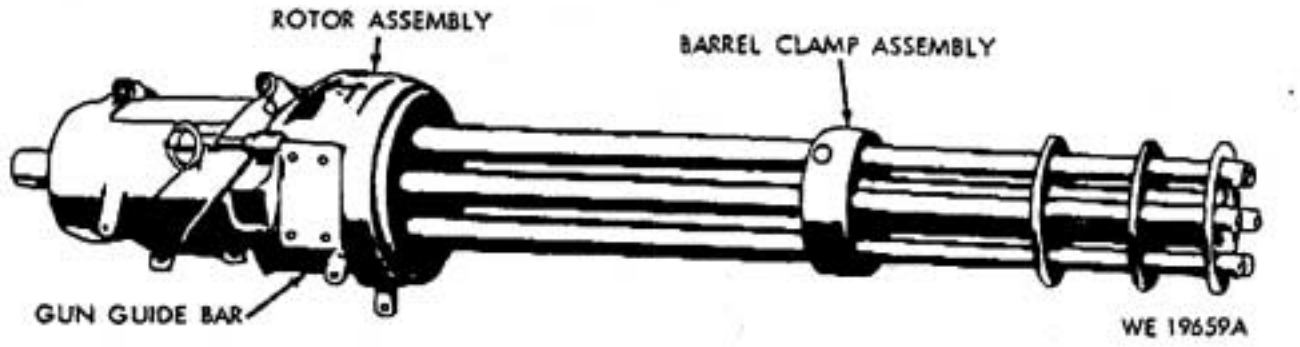


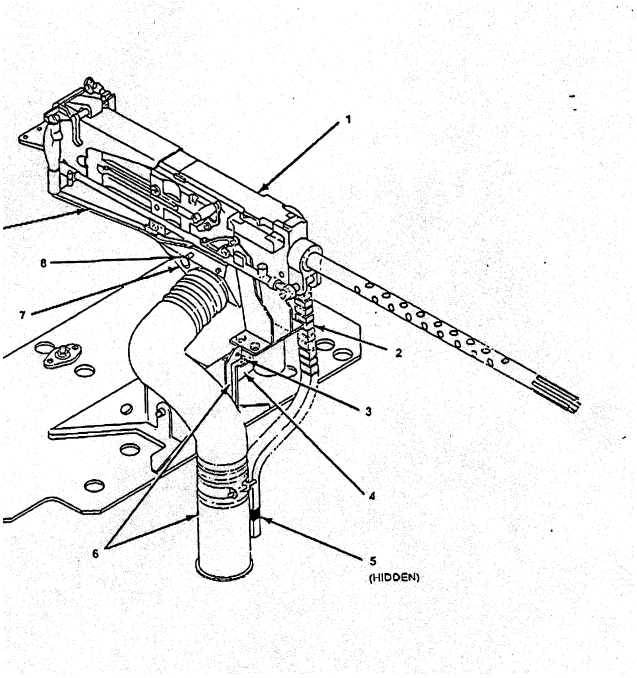
Figure 1-1. 7.62MM Automatic Gun GAU-2B/A

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:

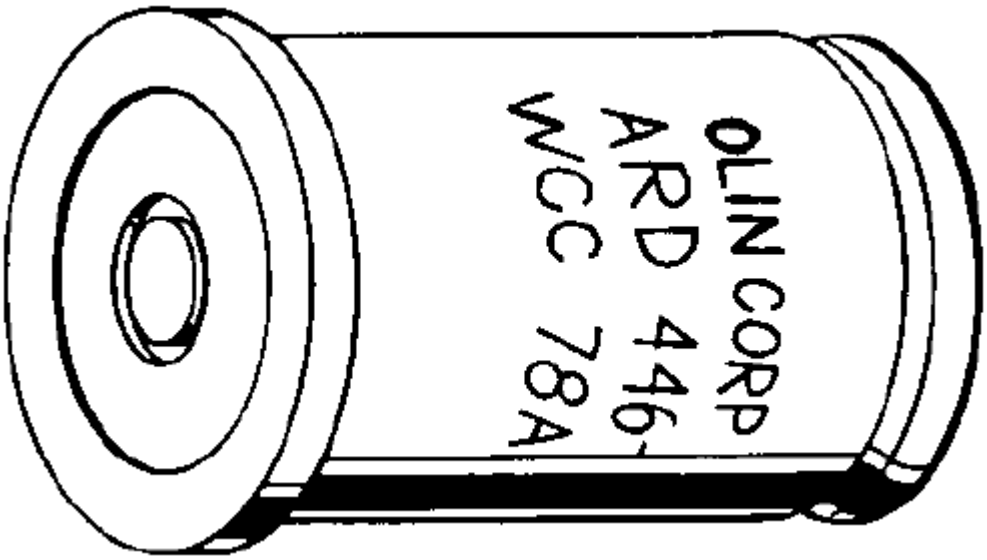
The general function of this cartridge is to use gas pressure to eject stores from aircraft weapons pylons, racks, launchers, etc. It is electrically fired from aircraft power and has a defined shelf and service life.

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:

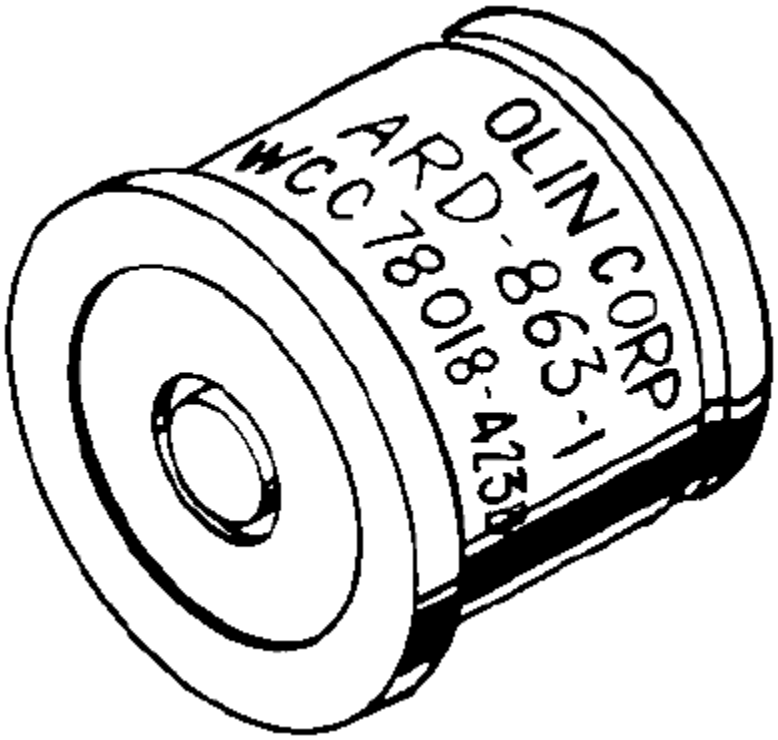
The general function of this cartridge is to use gas pressure to eject stores from aircraft weapons pylons, racks, launchers, etc. It is electrically fired from aircraft power and has a defined shelf and service life.

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

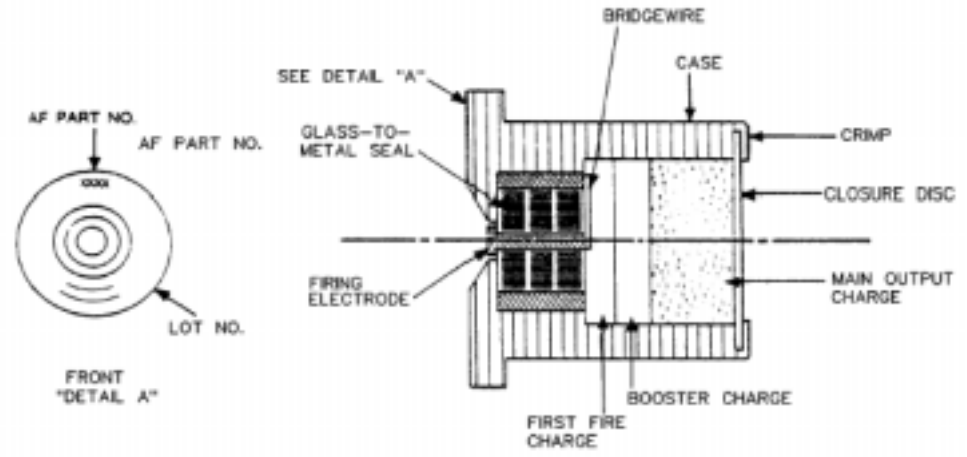
Aircraft: Various

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

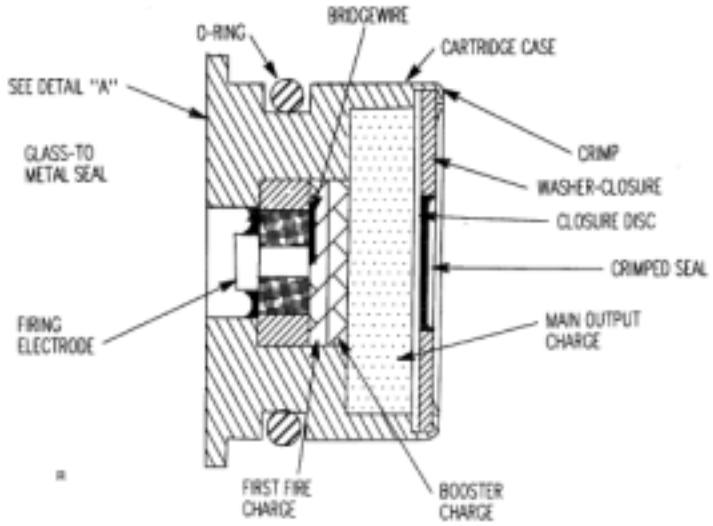
Aircraft: Various

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

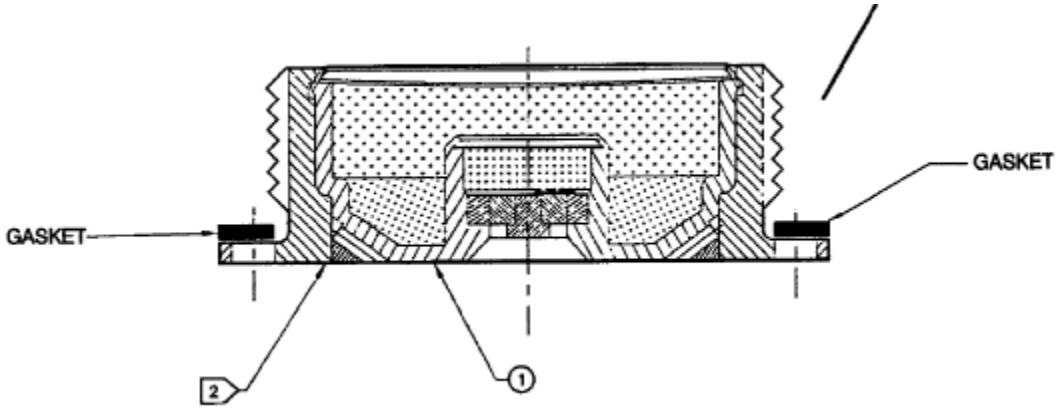
Aircraft: B-1B Only

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

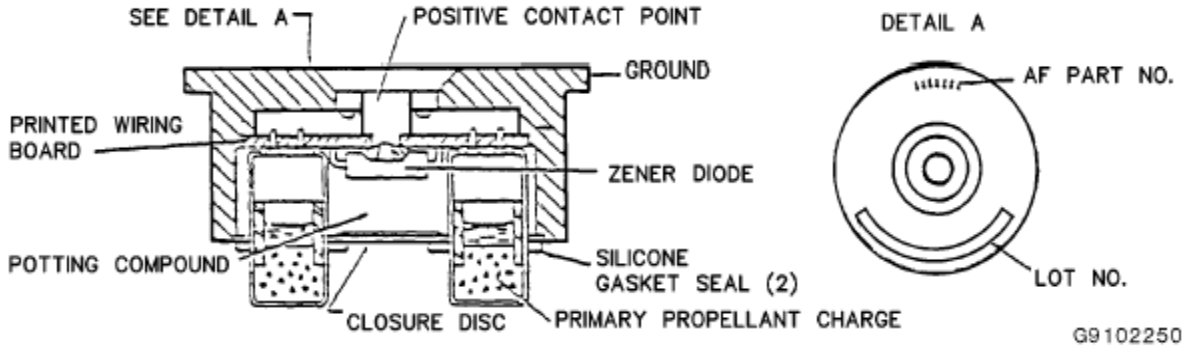
Aircraft: Various

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

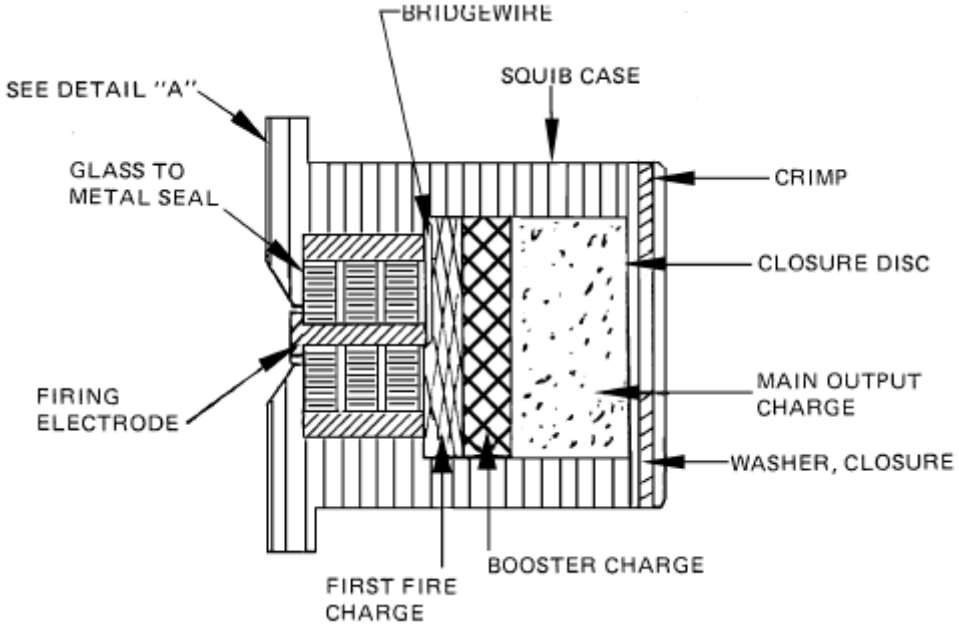
Aircraft: Various

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:

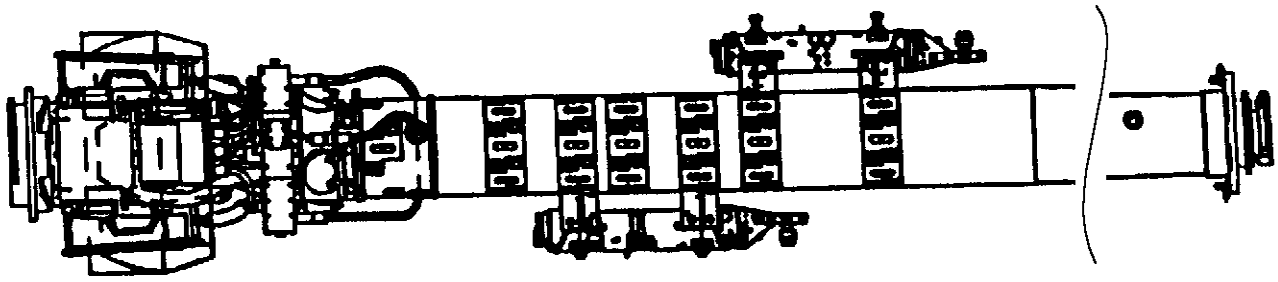
The B-2 can carry two Advanced Application Rotary Launchers. The launcher will suspend and forcibly eject, or free fall, eight conventional or nuclear stores up to and including 5000 pound weight class. The launchers eight stand-alone BRU-44B/A bomb racks incorporate 4 hooks in tandem providing 14 and 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:

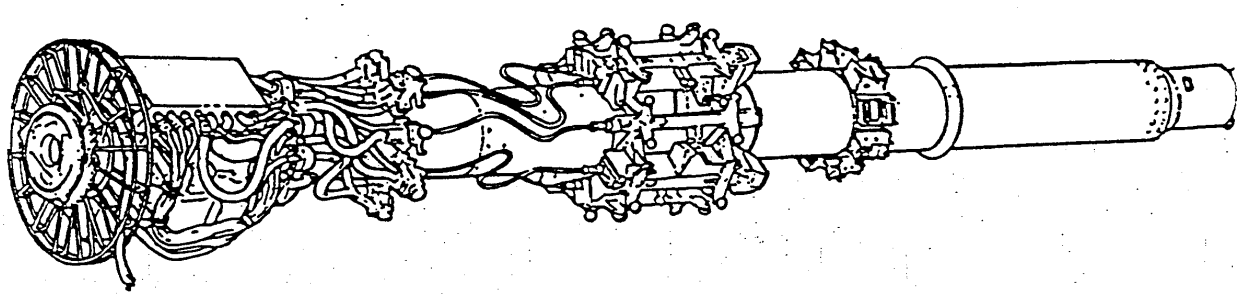
The B-52H can carry one Aircraft Guided Missile and Bomb Rotary Launcher. The launcher will suspend and forcibly release eight conventional or nuclear stores. The launchers eight stand-alone MAU-12 bomb racks incorporate 4 hooks in tandem providing 14 and 30 inch suspension capability. This configuration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

Dimensions: Length (in): 267.00
Diameter (in): 15.00 (Launcher shaft)
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:

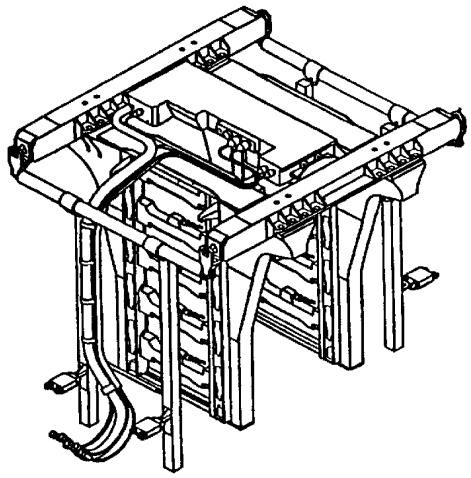
The bomb rack assembly will suspend and release stores in two configurations. One configuration is up to nine Cluster Comb Units CBU-87/B, CBU-89/B, CBU-97/B, M117 GP, M117 retarded, or M117 destructor weapons. Second configuration is up to 20ea MK-82 Air Inflatable Retarder (AIR) bombs, MK82 Low Drag 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:

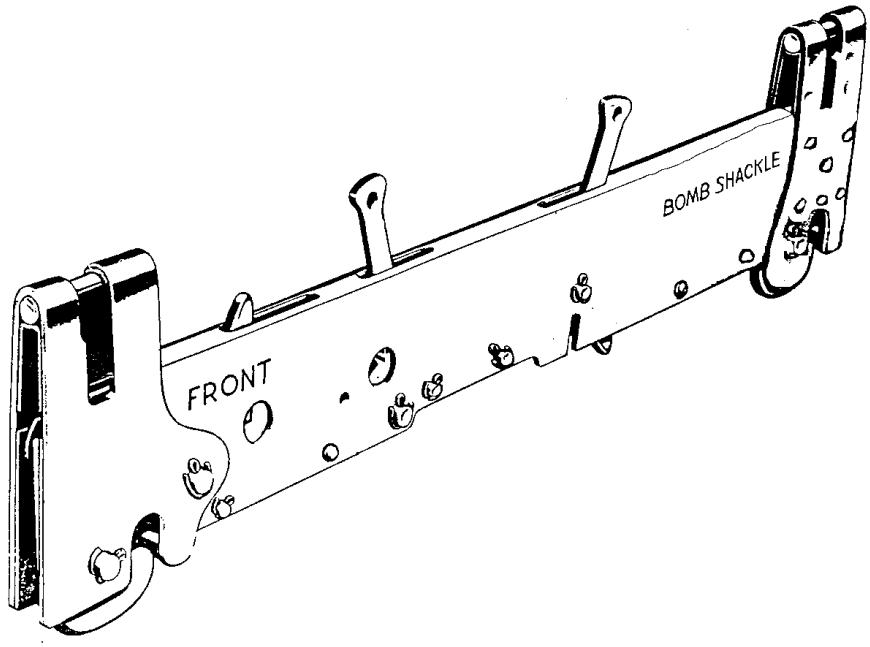
The B-11 shackle uses a mechanical interface system with the cluster bomb rack assembly to operate the release mechanism of the shackle. Upon actuation, the shackle releases stores between 100 and 1,600 lbs. The B-11 shackle incorporates 2 hooks in tandem with a 14 inch suspension capability.

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:

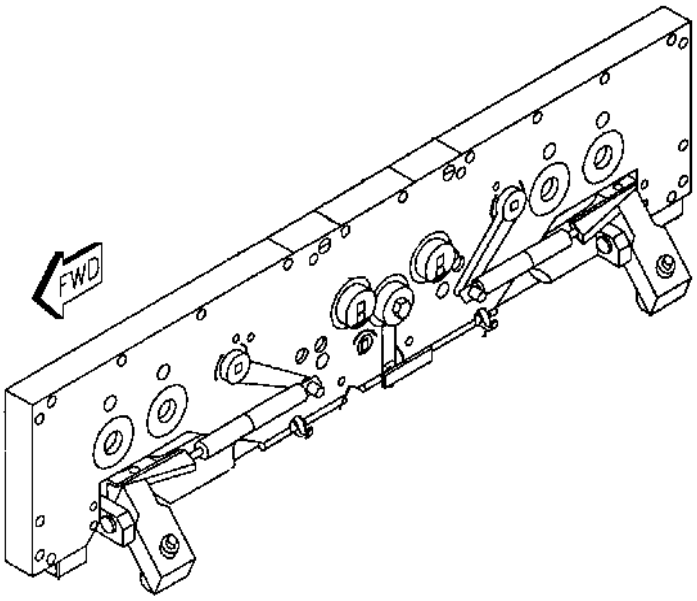
The BRU-46/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) up to and including 500 lb weight 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:

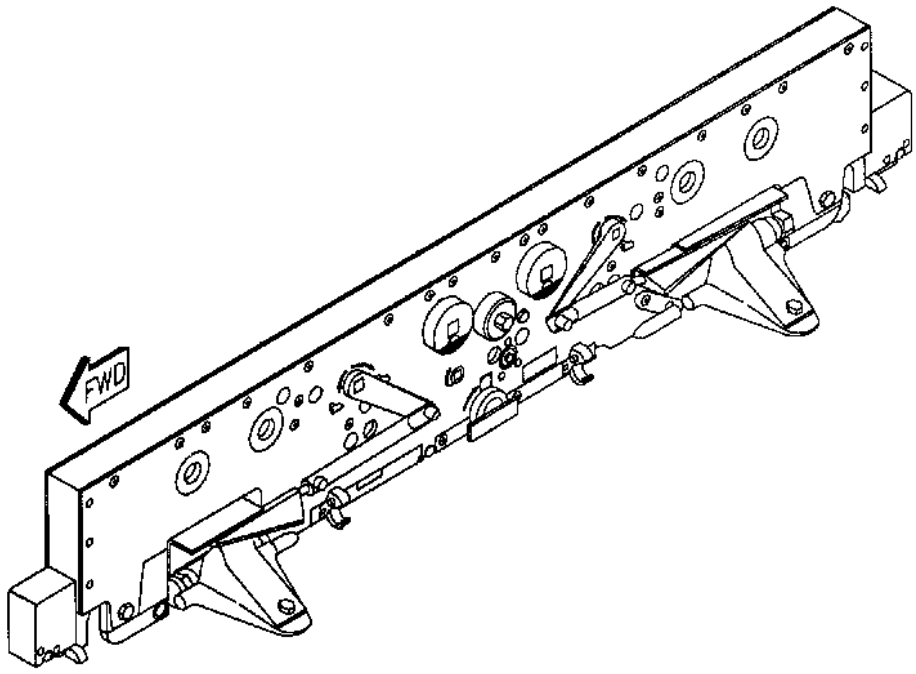
The BRU-47/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional and special stores up to and including 5000 lb weight class. 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)

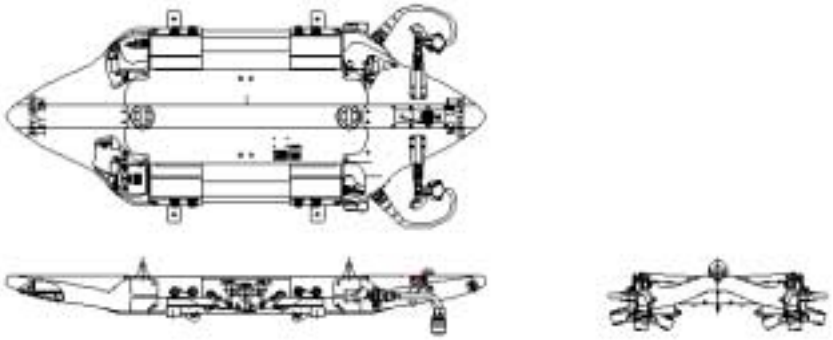
BRU-33 vertical ejector rack strongback, 2 BRU-46 ejector units

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:

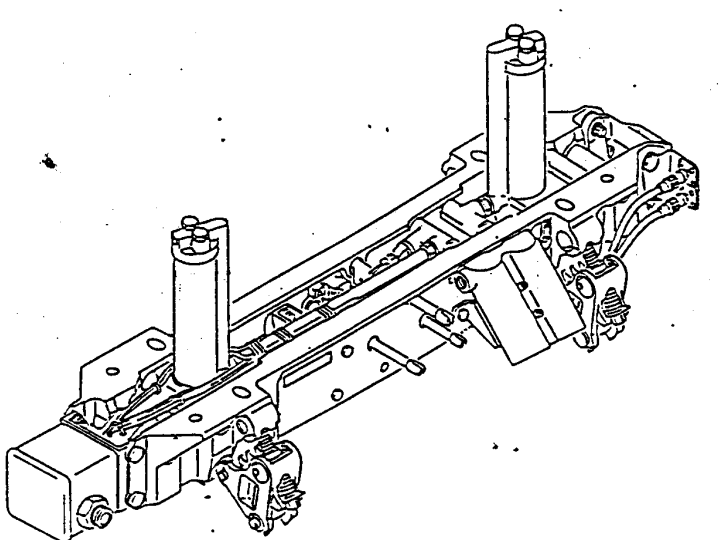
The BRU-56/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects conventional and nuclear stores up to 4000 lbs. The BRU-56/A rack incorporates 2 hooks in tandem 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:

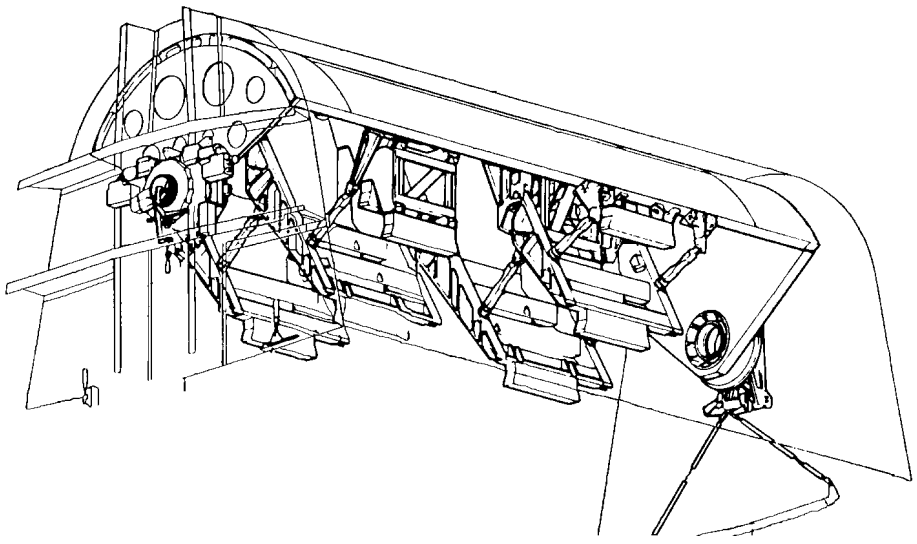
The general purpose bomb module will suspend and forcibly eject up to 28ea MK-82 Air Inflatable Retarder (AIR) bombs, 28ea MK36 Destructors, or 10ea Cluster Comb Units (CBU). When the module is installed in any of the three aircraft weapons bays, the rotary launcher drive subsystem is mechanically locked 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:

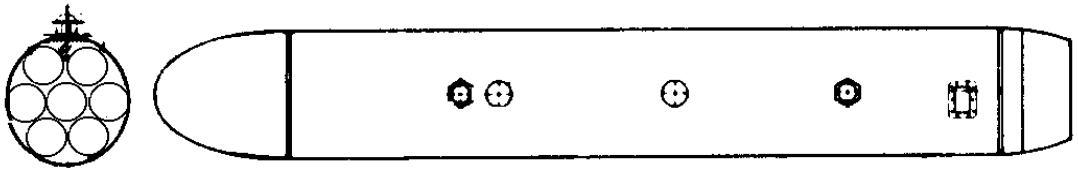
The LAU-68/LAU-131 launcher can be used on high and low speed aircraft to include helicopters. It attaches to aircraft with 14 inch lug suspension and is capable of launching seven 2.75 inch diameter MK4 or MK40 Folding Fin Aircraft Rocket (FFAR). The LAU-131 has additional capability to fire MK66 Wrap-Around 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:

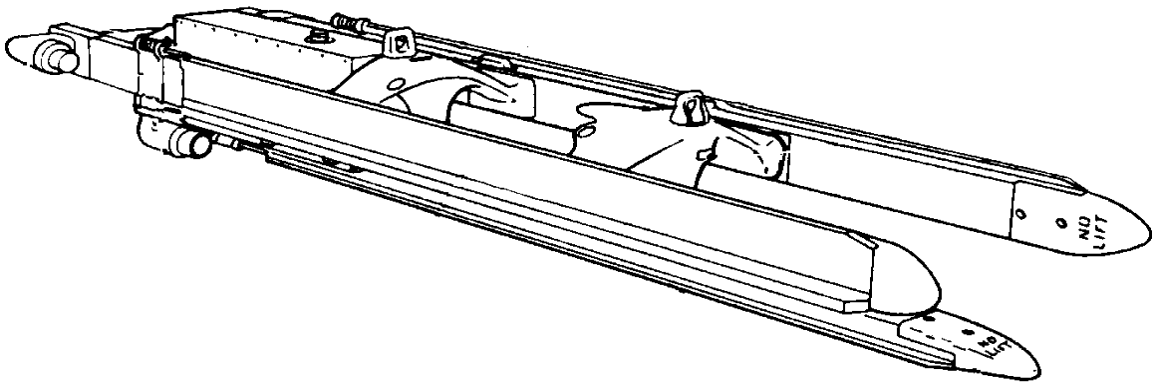
The LAU-88A/A launcher attaches to aircraft with 30 inch lug suspension and is capable of launching up to three AGM-65A, B, or D model Maverick missiles. The LAU-88A/A launcher provides mechanical and electrical interface between missile and aircraft. Stores are fired independently with a firing order 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:

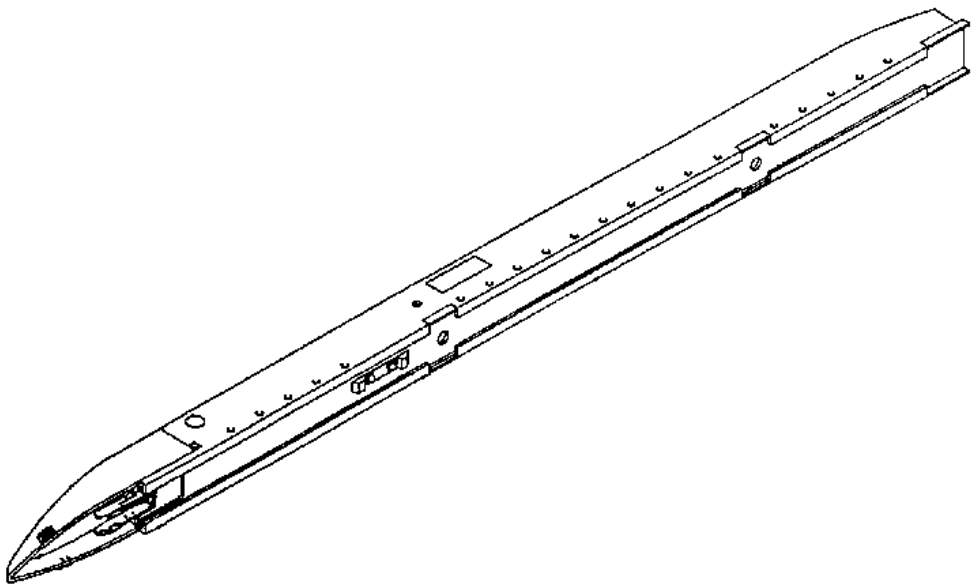
The LAU-105/A launcher attaches directly to aircraft pylon/adapter and is capable of launching a single AIM-9 Sidewinder missile. The LAU-105/A launcher provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are ignited and missile thrust propels store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

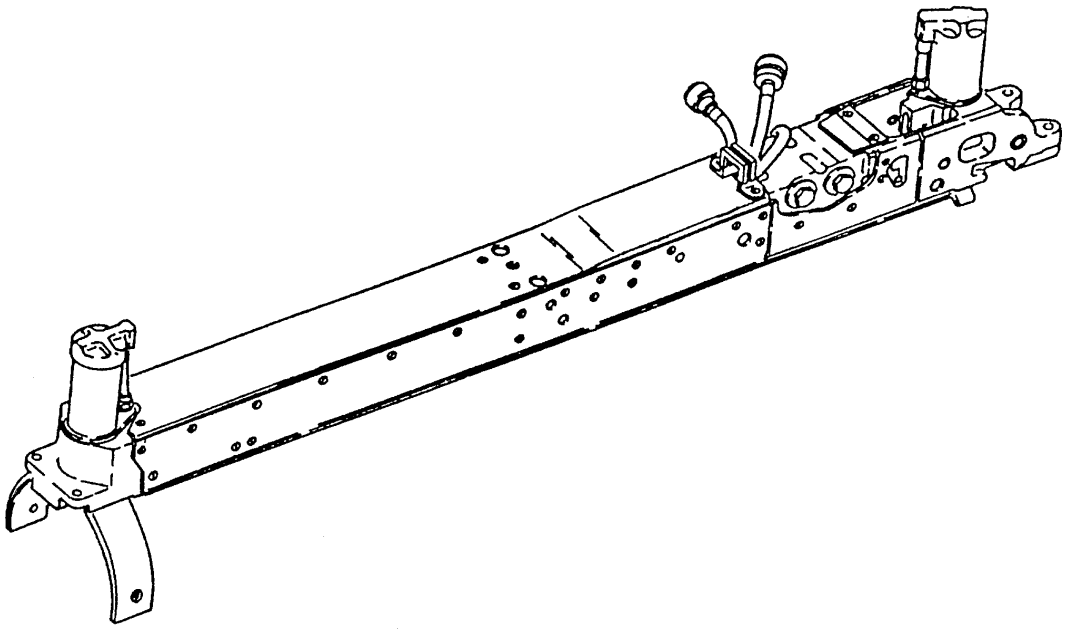
The LAU-106A/A launcher attaches directly to the aircraft fuselage and is capable of suspending and launching/ejecting a single AIM-7 or AIM 120 missile. The
LAU-106A/A launcher uses electrically fired dual impulse cartridges to generate gas pressure to operate the release and eject mechanisms. The LAU-106A/A 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:

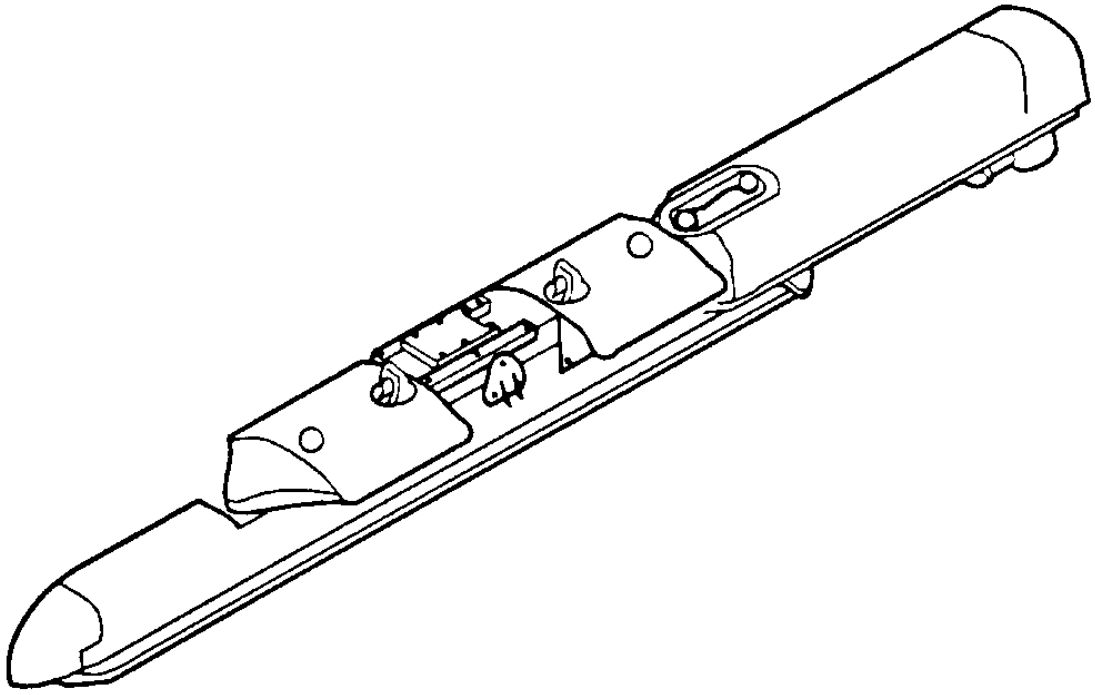
The LAU-117A(V)3/A launcher attaches to aircraft with 14 inch or 30 inch lug suspension and is capable of launching a single AGM-65 Maverick missile (all models). The LAU-117A(V)3/A launcher provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are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

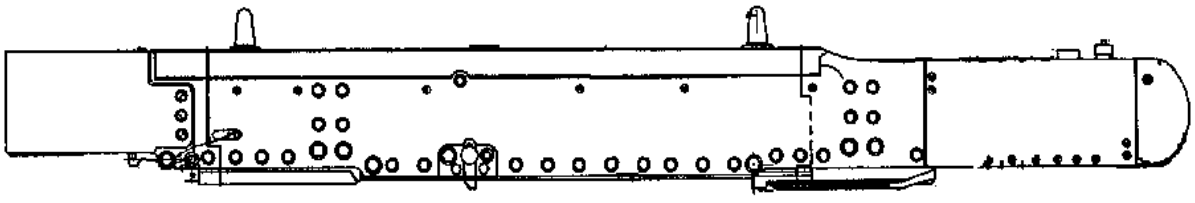
The LAU-118(V)4/A launcher attaches to aircraft with 30 inch lug suspension and is capable of launching a single AGM-88 High-Speed Anti-Radiation Missile (HARM). The LAU-118(V)4/A launcher provides mechanical and electrical interface between missile and aircraft. Electrical interface is provided thru 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:

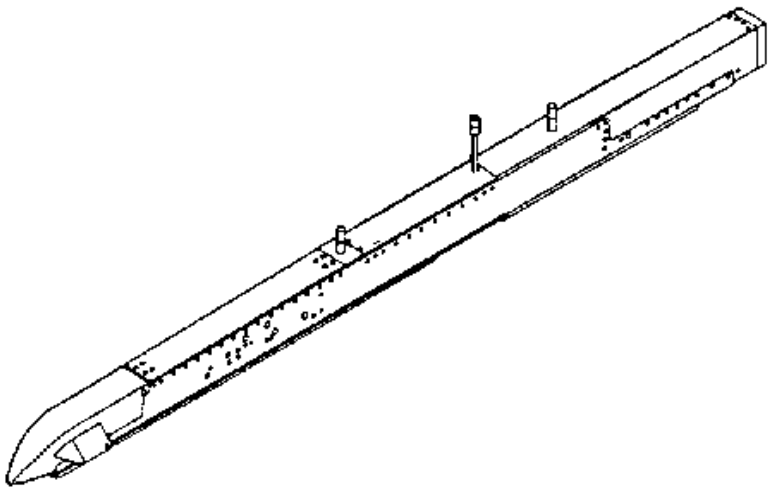
The LAU-128A/A launcher requires the use of an ADU-552, Missile Launcher Adapter, to provide ample missile stabilizer wing clearance for launch. This adapter is hard-mounted to the pylon and the launcher is hard-mounted to the adapter with two external attachment bolts. The LAU-128A/A is capable of launching 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:

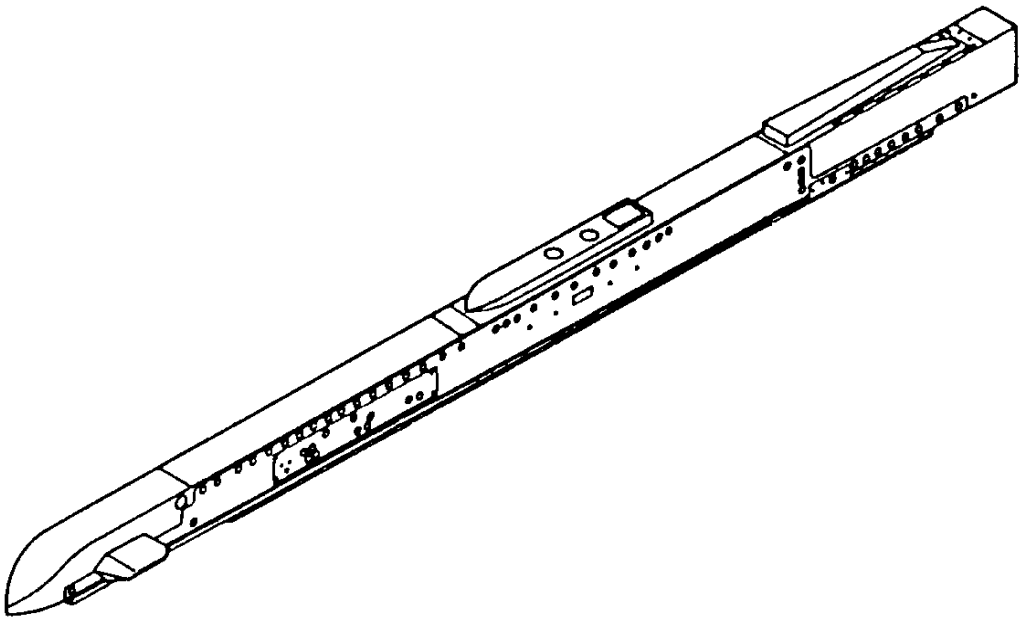
The LAU-129A/A launcher attaches to aircraft with three external attachment bolts. The LAU-129A/A is capable of launching a single AIM-9 (Sidewinder) family of missile or AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM). The
LAU-129A/A launcher provides mechanical and electrical interface between 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:

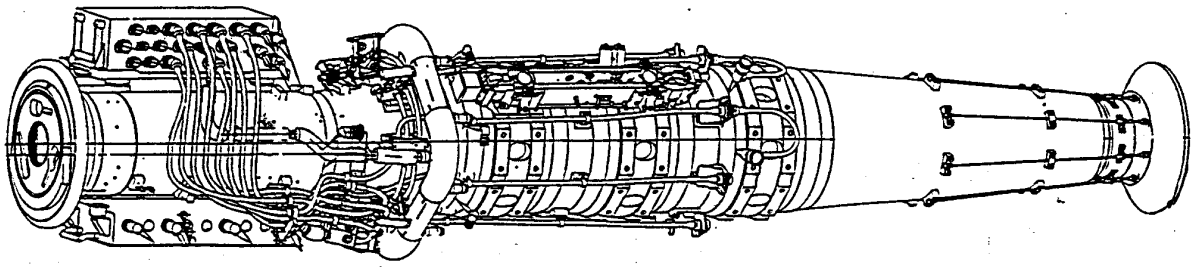
The B-1B can carry up to three Munitions Launcher Assemblies in three weapons bays. Each launcher will suspend and release eight GBU-31 or MK-84 conventional stores or eight B61 or B83 nuclear stores. The Munitions Launcher Assembly provides the electrical, mechanical, and pneumatic interface between 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:

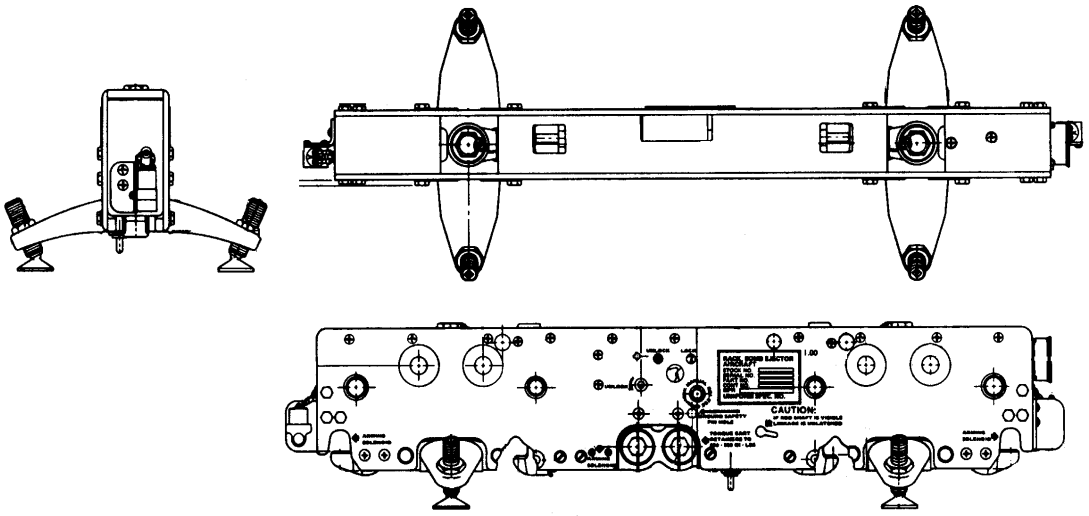
The MAU-12 rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional or nuclear stores up to and including 5000 lb weight class or 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

Aircraft: AC-130H, AC-130U, B-52H, F-15, F-16, F-117, and MC-30H Talon II

Management/Engineering: WR-ALC/LKGW

Technical Order: 11B29-3-25-2



Nomenclature: MAU-40/A Bomb Rack

Description:

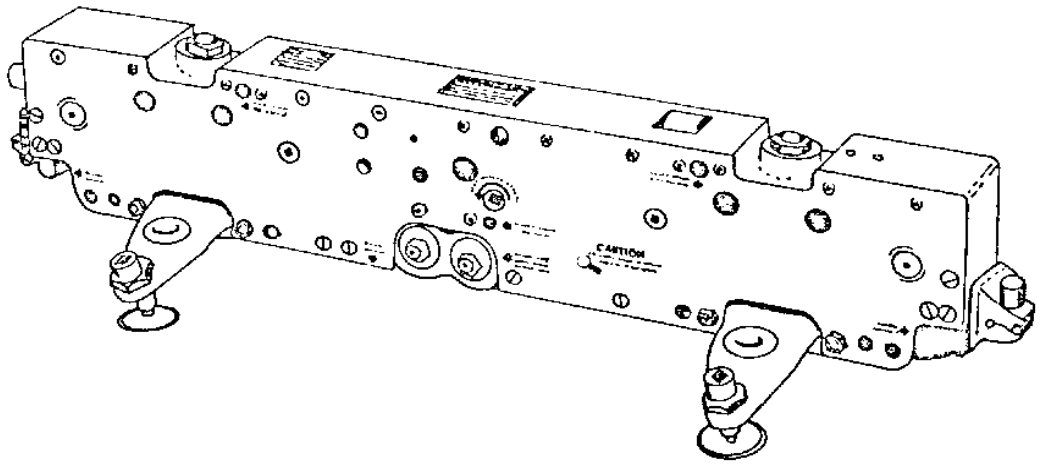
The MAU-40/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) up to and including 5000 lb weight 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:

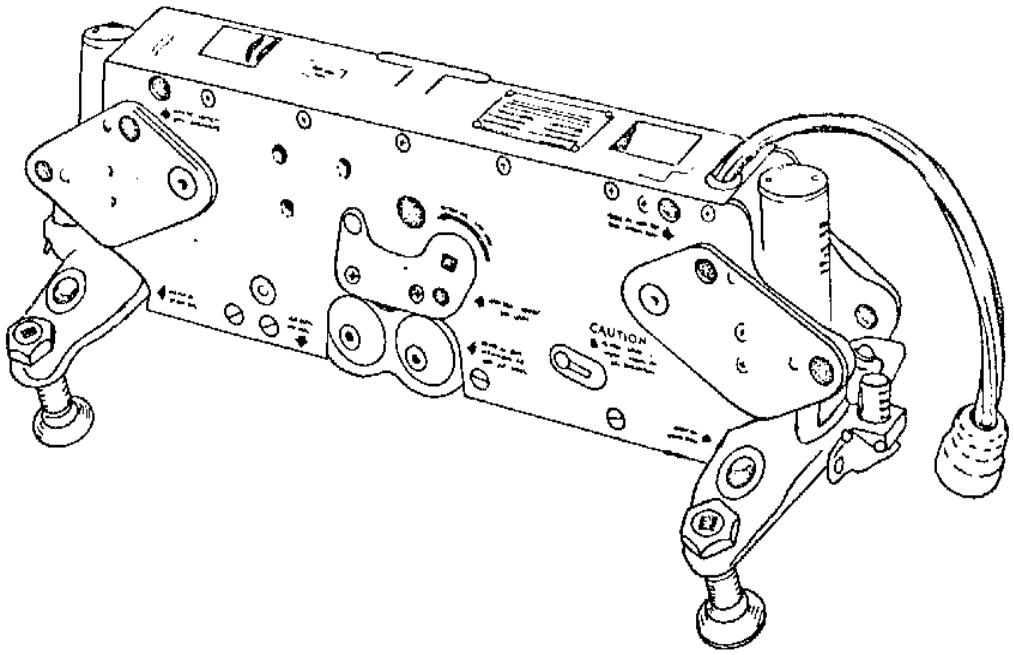
The MAU-50/A rack uses electrically fired dual impulse cartridges to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) and/or external fuel tanks up 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:

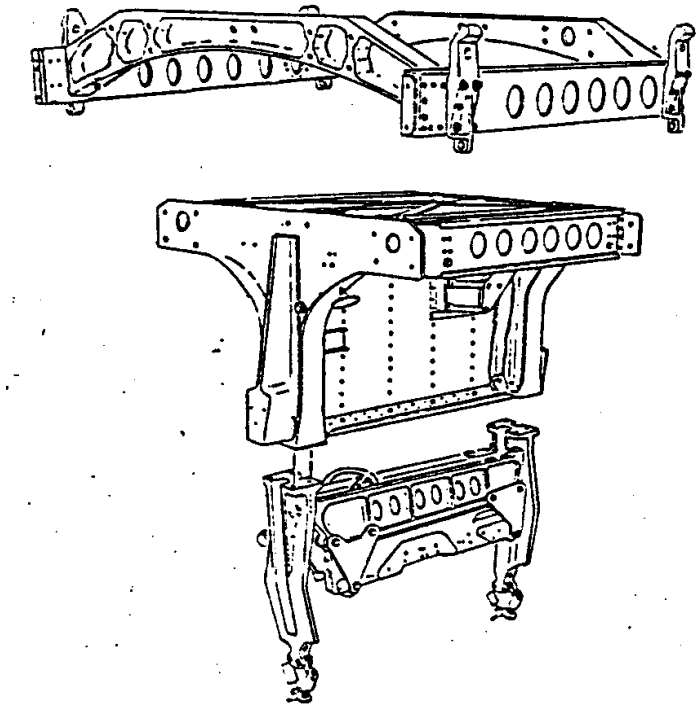
The B-52 aircraft can carry two clip-in assemblies. The clip-in is a quick loading, four weapon carrier capable of carrying conventional munitions suspended from four MB-3A/A electrically operated bomb racks, providing a total payload of approximately 12,000 lbs.

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:

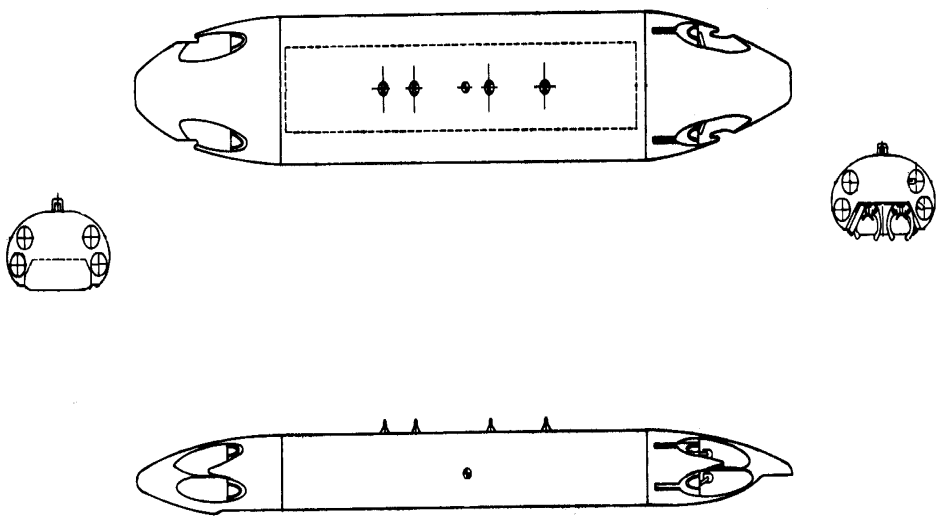
The SUU-20/A dispenser attaches to aircraft with 14 and 30 inch lug suspension and is capable of launching four 2.75 inch diameter Folding Fin Aircraft Rocket (FFAR) and six practice bombs. Stores fired from this launcher are ignited and rocket thrust propels store to slide forward, disengaging from 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:

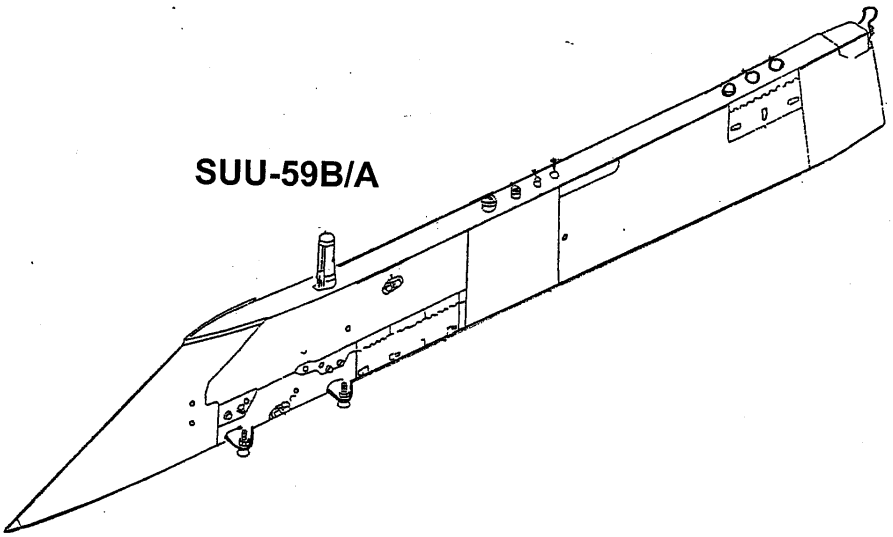
The inboard aircraft pylon provides the F-15A-D aircraft with carriage and jettison capabilities of external fuel tank and conventional air-to-air armament. The SUU-59B/A contains one MAU-12 bomb rack. The SUU-59B/A and MAU-12 combination provides electrical, mechanical and fuel delivery interface between 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:

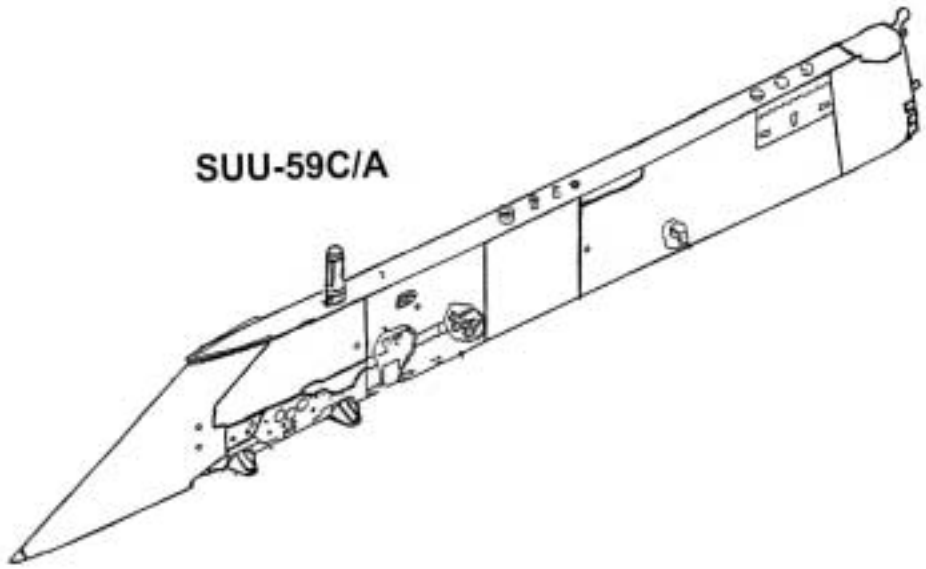
The inboard aircraft pylon provides the F-15E aircraft with carriage and jettison capabilities of external fuel tank, conventional air-to-air missiles and conventional/nuclear air-to-ground armament. The SUU-59C/A contains one BRU-47/A bomb rack. The SUU-59C/A and BRU-47/A combination provides electrical, 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:

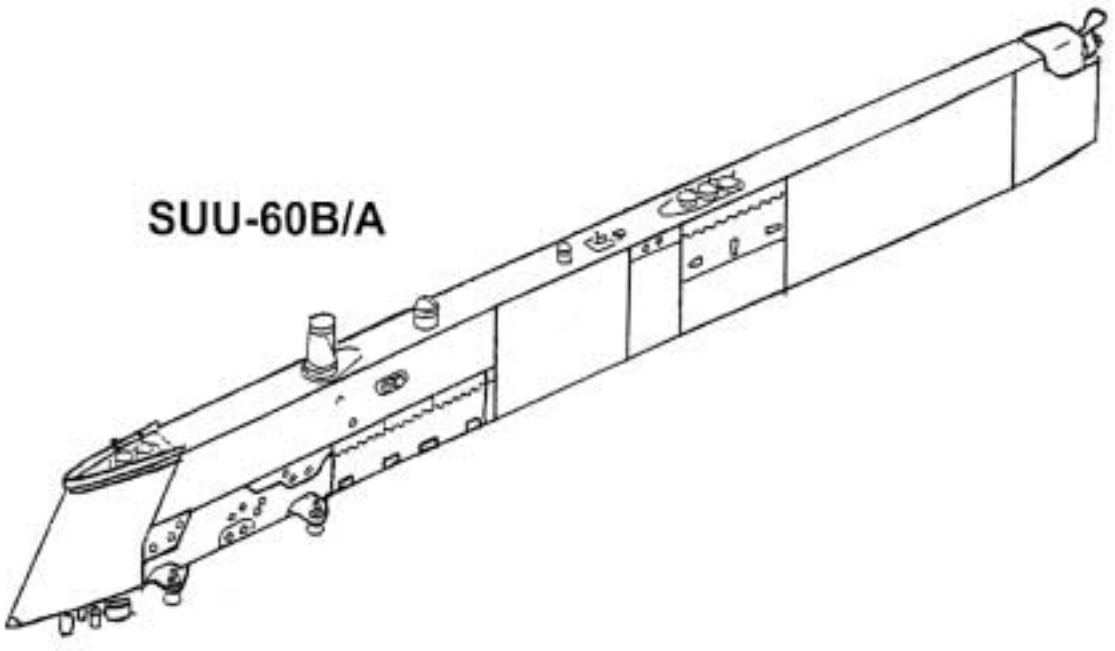
The centerline aircraft pylon provides the F-15A-D aircraft with carriage and jettison capabilities of external fuel tank and special equipment. The SUU-60B/A contains one MAU-12 bomb rack. The SUU-60B/A and MAU-12 combination provides electrical, mechanical and fuel delivery interface between the attached 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:

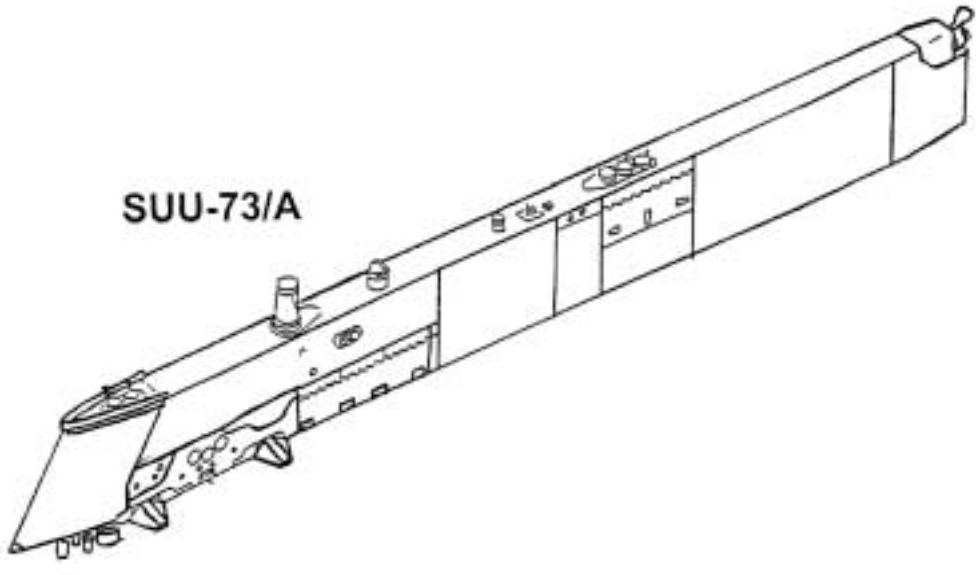
The centerline aircraft pylon provides the F-15E aircraft with carriage and jettison capabilities of external fuel tank, special equipment and conventional/nuclear air-to-ground armament. The SUU-73/A contains one BRU-47/A bomb rack. The SUU-73/A and BRU-47/A combination provides electrical, mechanical 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-



2

Nomenclature: TER-9A Bomb Rack

Description:

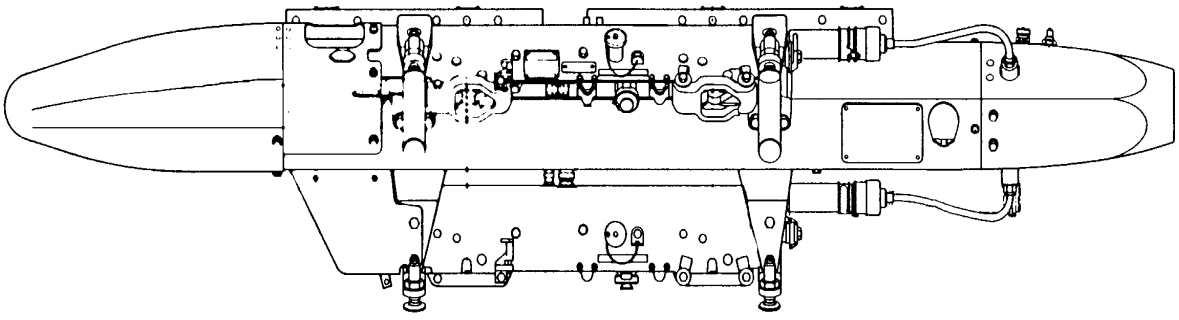
The TER-9A uses electrically fired impulse cartridges (three total, one per rack) to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) up to 1000 lbs 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:

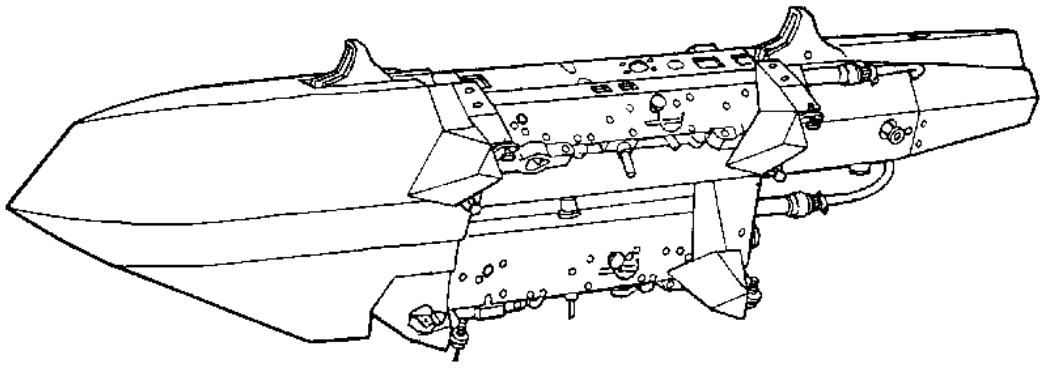
The MODIFIED TER-9A uses electrically fired impulse cartridges (three total, one per rack) to generate gas pressure to operate the racks release and eject mechanism. Upon actuation, the rack release/eject mechanism forcibly ejects, or free fall releases, conventional stores (not nuclear capable) up to 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:

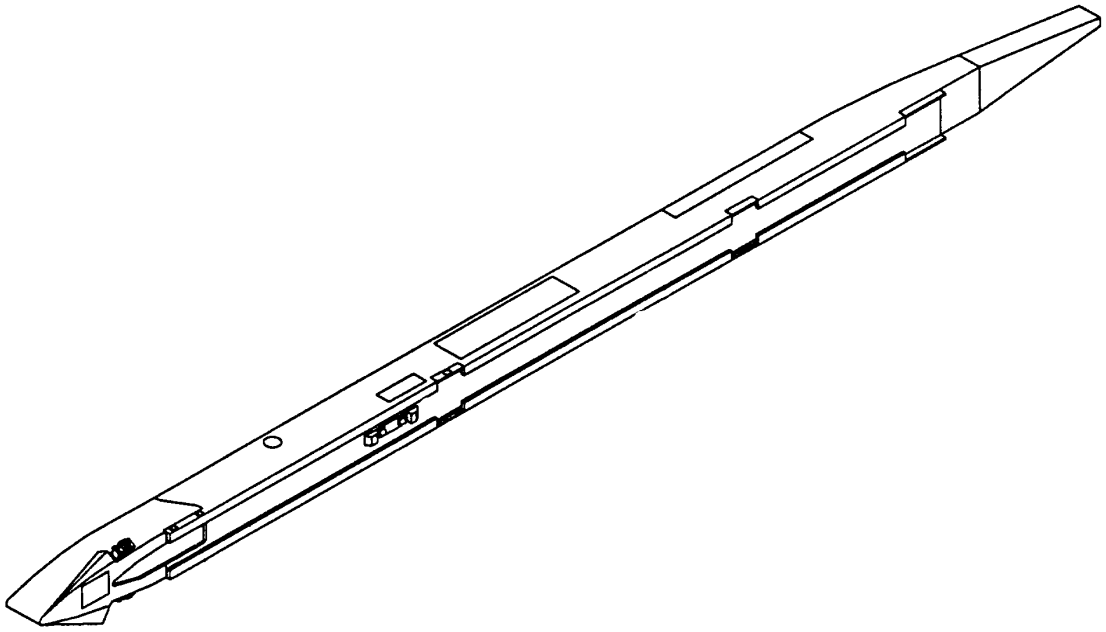
The 16S-210 launcher is hard bolted to the aircraft and is capable of launching a single AIM-9 (Sidewinder) missile. The 16S-210 launcher provides mechanical and electrical interface between missile and aircraft. Stores fired from this launcher are ignited and missile thrust propels store to slide forward,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

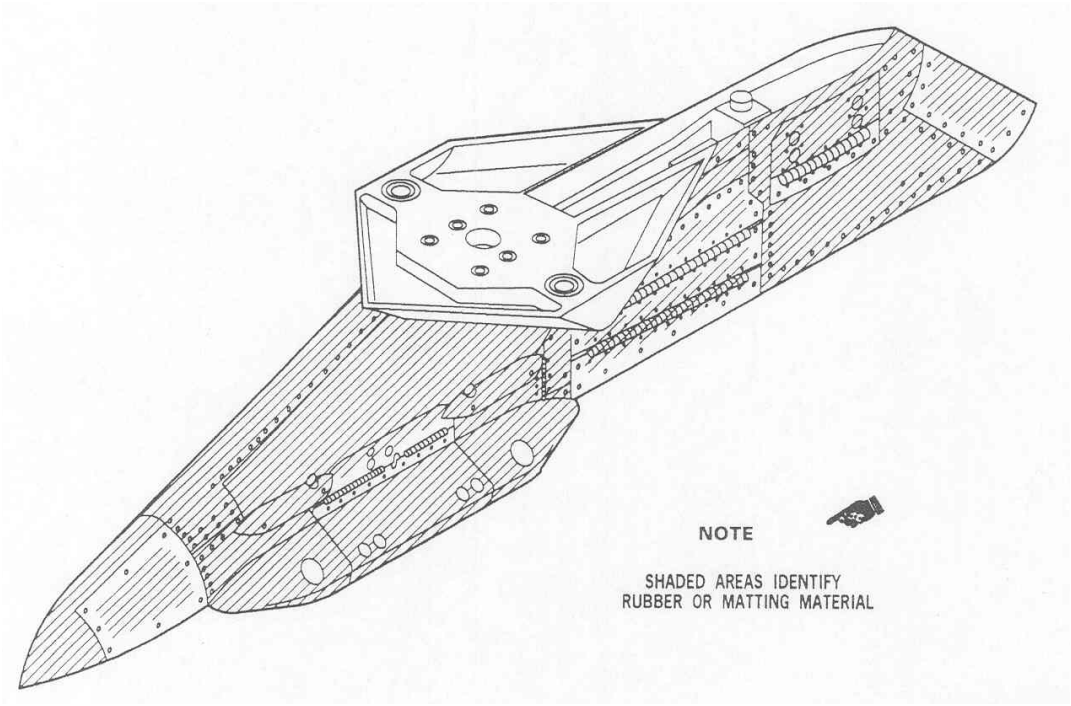
The wing weapon pylon assembly is hard-mounted to the F-16 aircraft. The pylon uses a MAU-12 bomb rack to carry conventional and nuclear stores. The pylon provides electrical and mechanical interface between the attached store and various aircraft systems. The exterior surface of the pylon is covered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

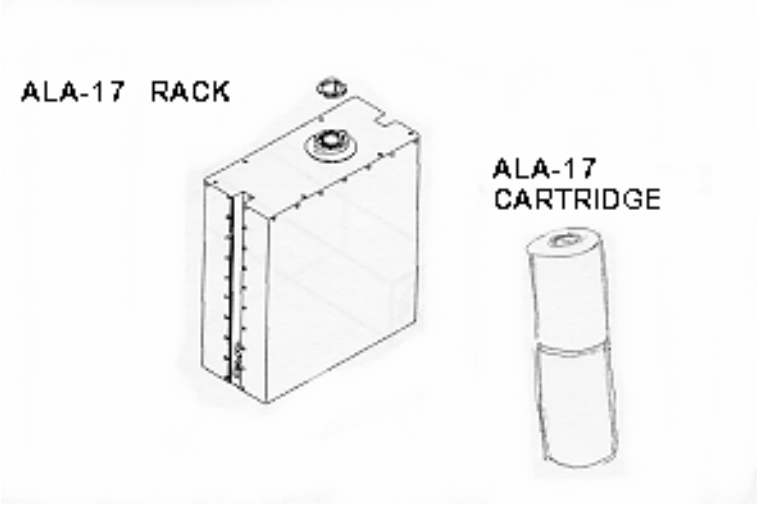
Weight: 4.25 lbs
Length: 12 in
Diameter: 3 in
Aircraft: B-52, AC-130

Dispenser: ALE-20

Squib/Cart: Electric-Preinstalled

Management/Engineering: OO-ALC/WM

Technical Order: 11A16-7-7



Nomenclature: AN/ALE-48 CHAFF DISPENSER

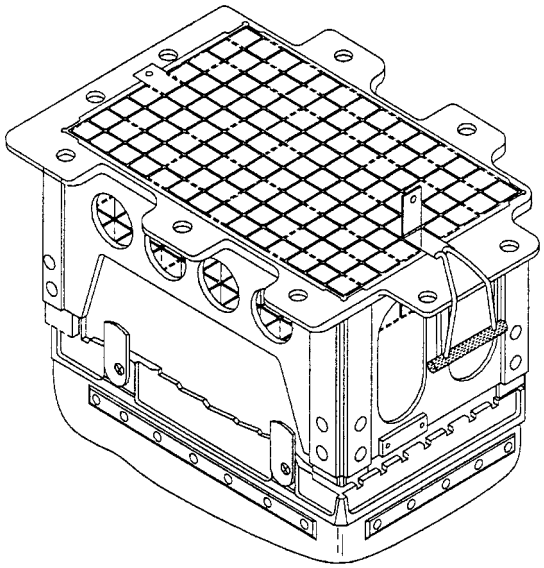
Characteristics:
Weight: 45 lbs
Length: 20 in
Width: 13.2 in
Height: 13.6 in

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

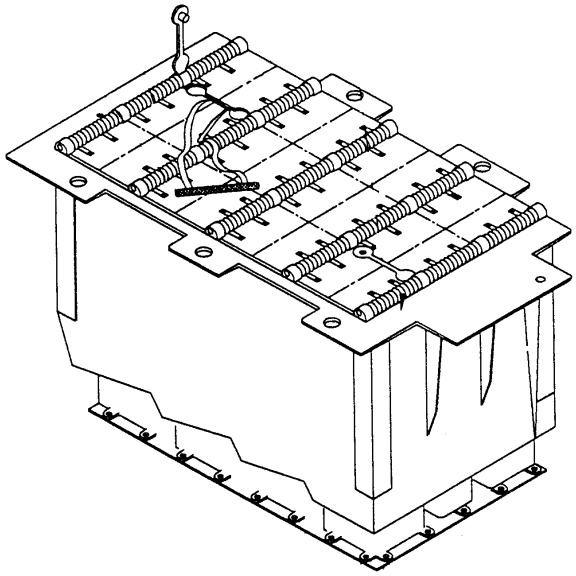
Characteristics:
Weight: 65.2 lbs
Length: 20 in
Width: 13.2 in
Height: 13.6 in

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)

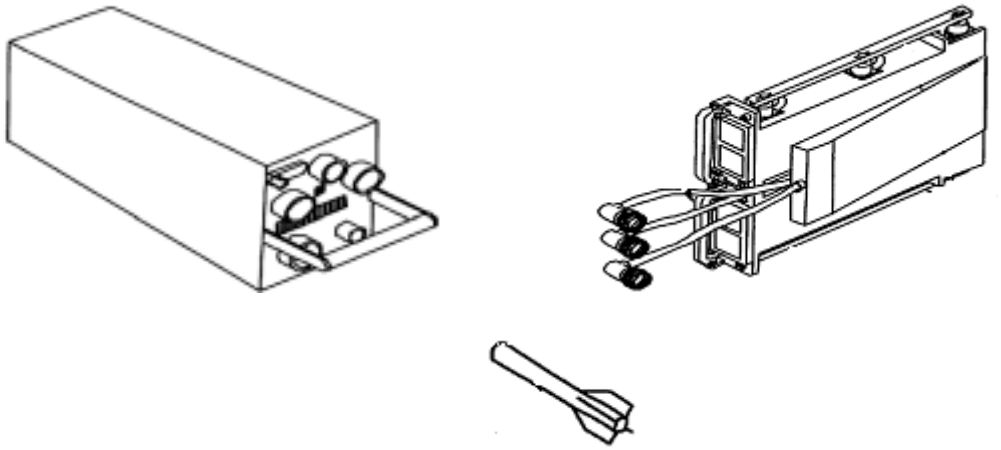
Aircraft: B-1B

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)

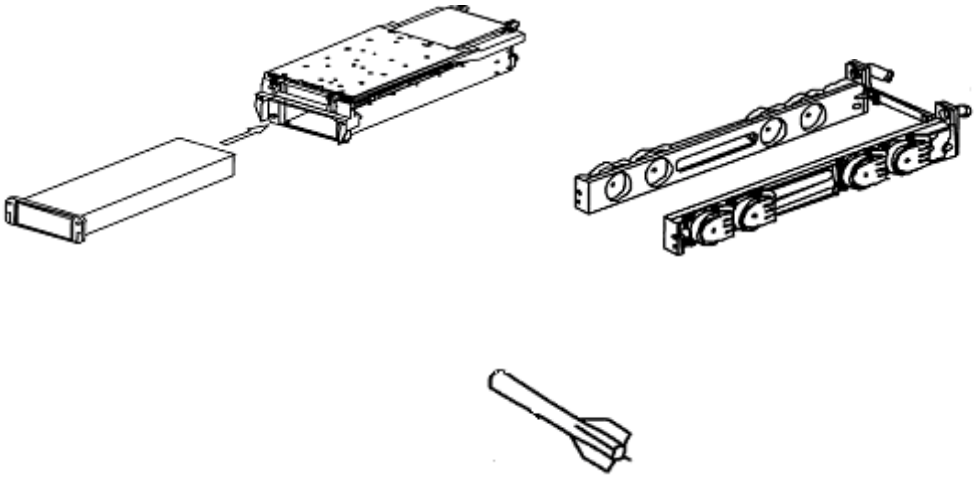
Aircraft: F-16

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

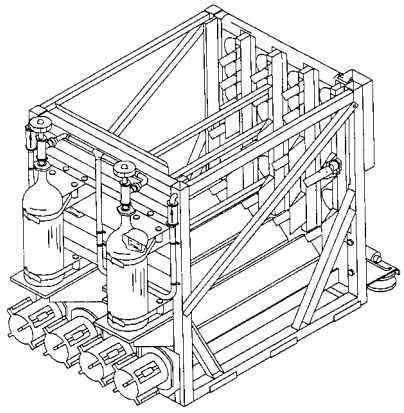
Characteristics:
Weight: 395 lbs
Length: 57 in
Width: 31 in
Height: 43 in

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

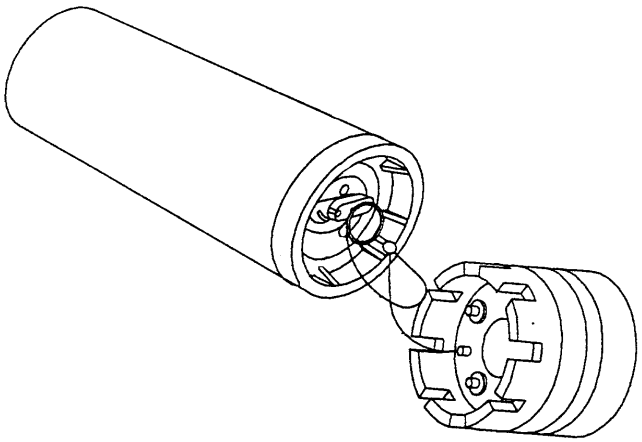
Aircraft: A-10, F-15, F-16, C-17, C-130, C-141

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

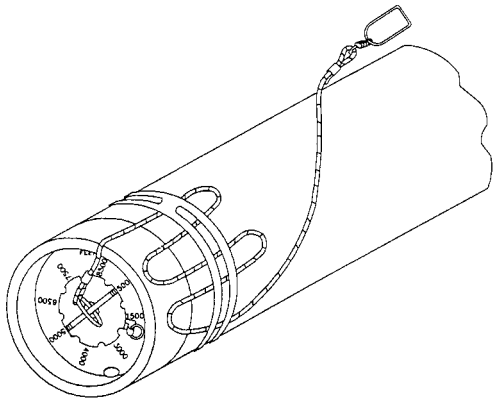
Aircraft: A-10, F-15, F-16, C-17, C-130, C-141

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

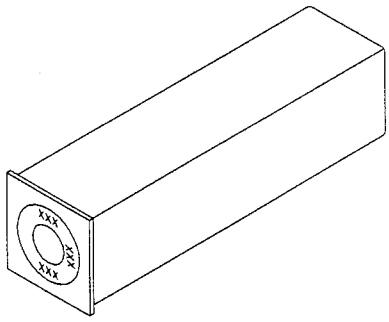
Aircraft: A-10, AC-130, F-16, C-17

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

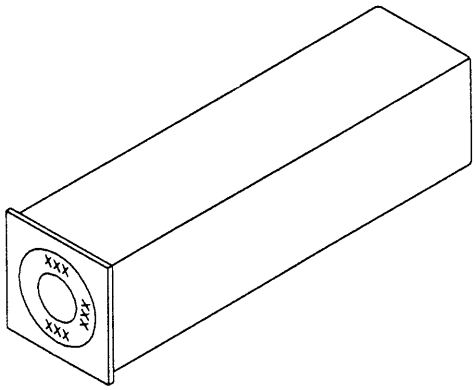
Aircraft: A-10, AC-130, F-16

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

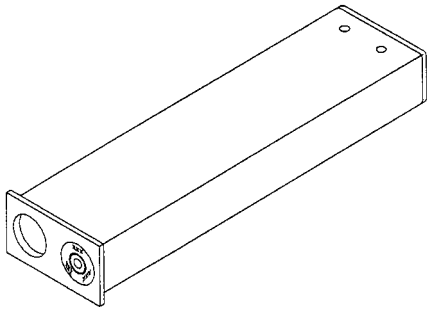
Aircraft: F-15, F-16

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

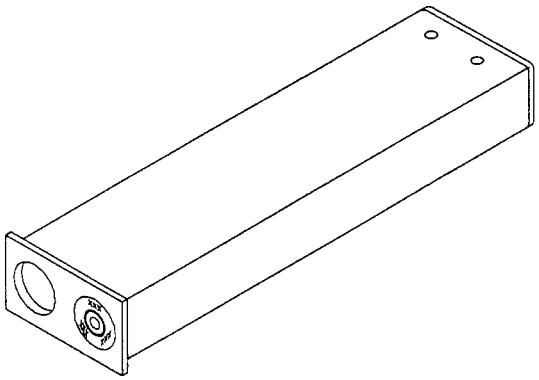
Aircraft: F-15, F-16

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

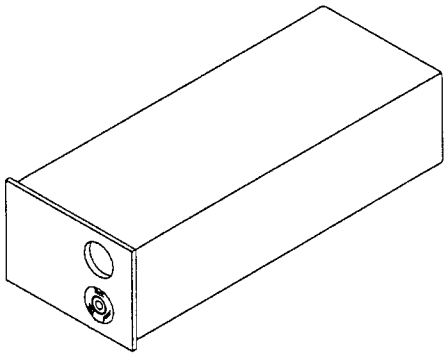
Aircraft: F-15

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

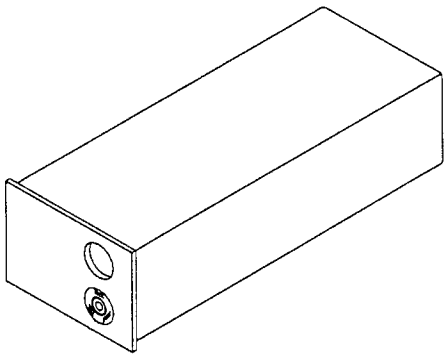
Aircraft: F-15

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

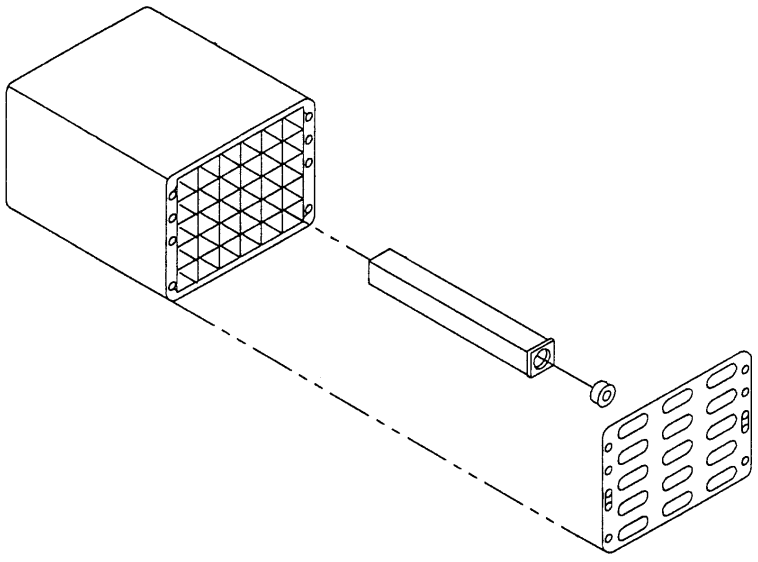
Characteristics:
Weight: 6.6 lbs
Length: 7.5 in
Width: 5.7 in
Height: 8.1 in

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 Simluators

Management/Engineering: WR-ALC/LNXB

Technical Order: 12P3-ALE40-3



Nomenclature: MJU-12 FLARE MAGAZINE

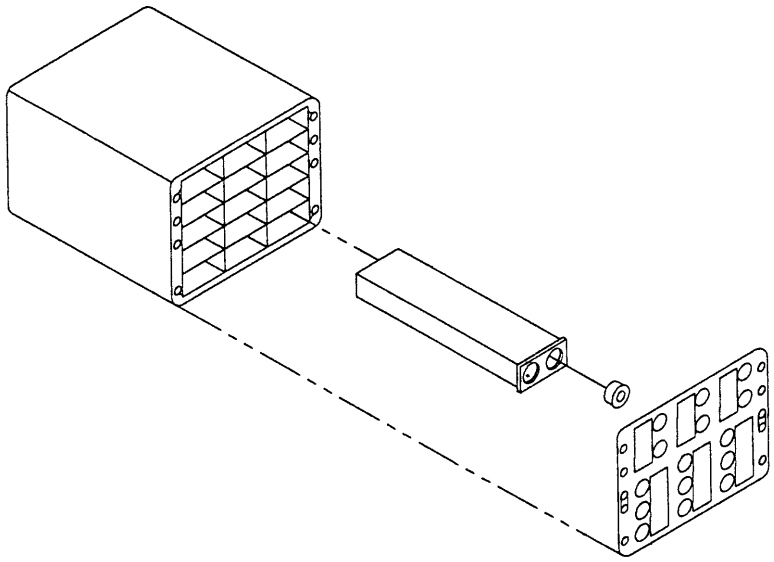
Characteristics:
Weight: 7.5 lbs
Length: 7.5 in
Width: 5.7 in
Height: 8.1 in

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

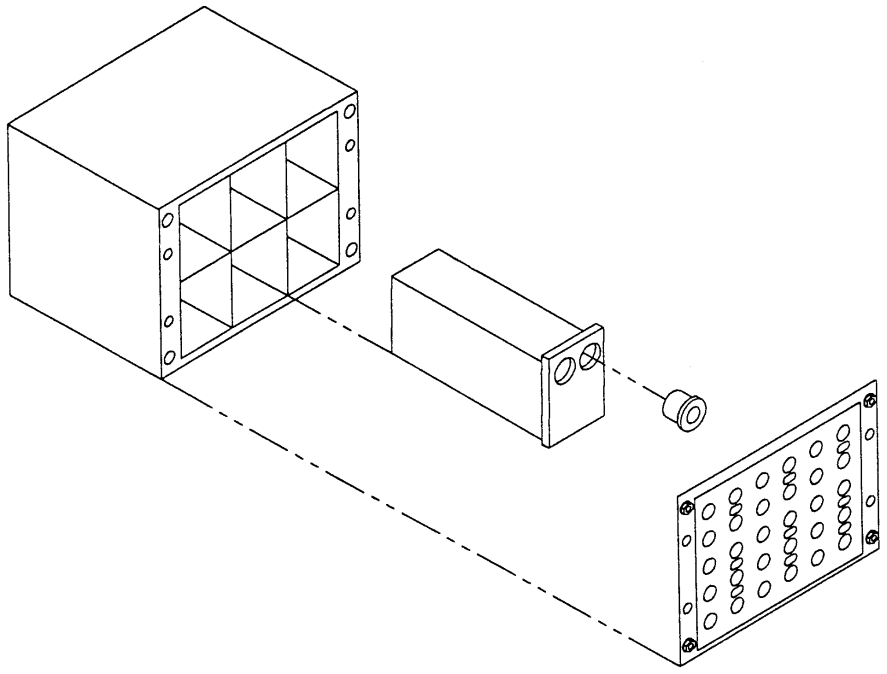
Characteristics:
Weight: 7.5 lbs
Length: 7.5 in
Width: 7.5 in
Height: 8.11 in

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/BName: 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

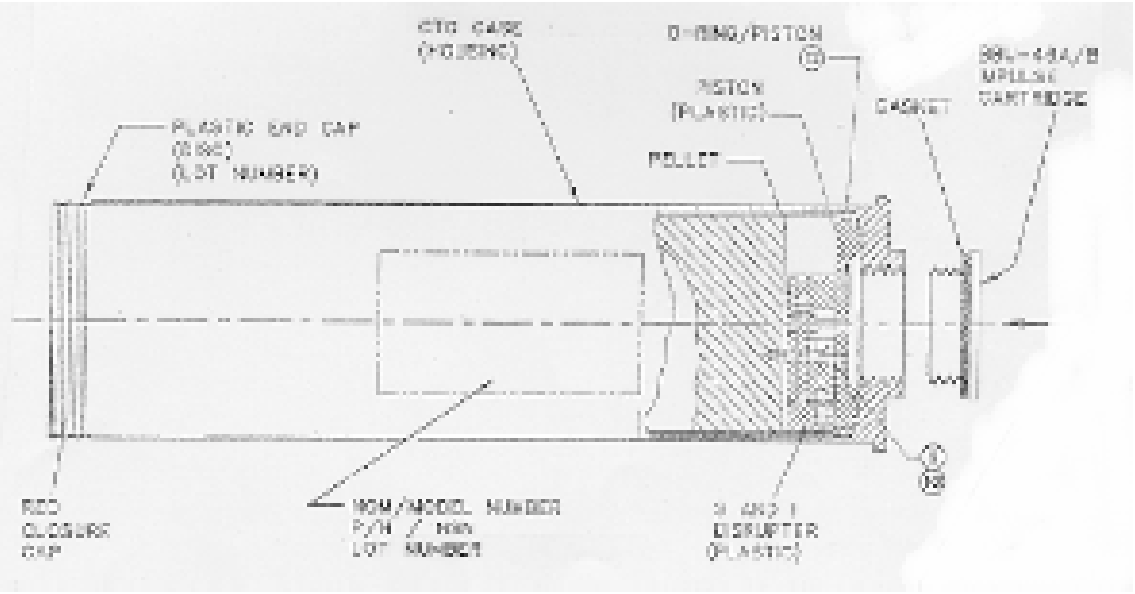
Management/Engineering: OO-ALC/WM

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

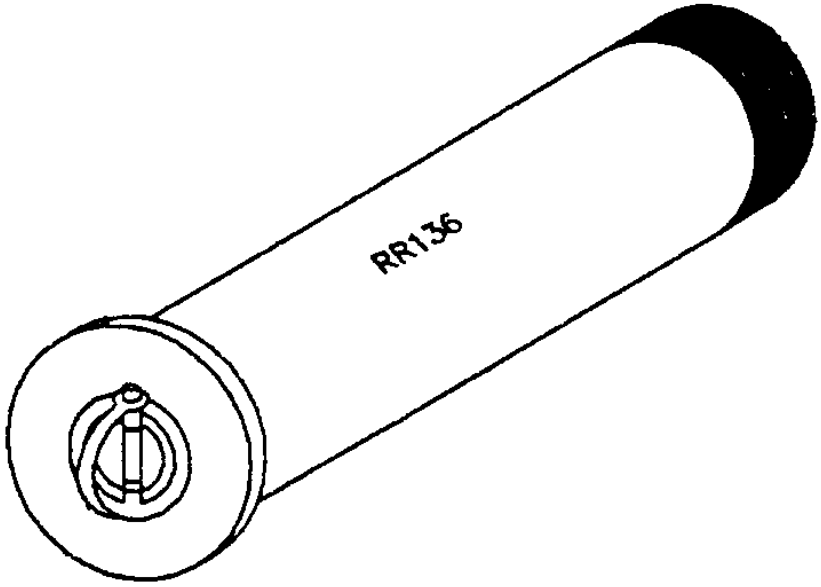
Aircraft: RF-4

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

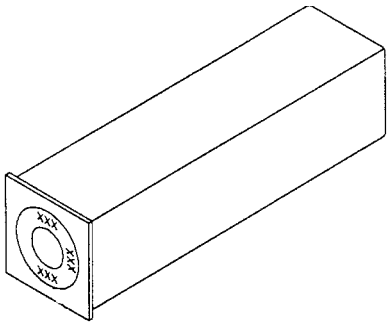
Aircraft: A-10, F-4, F-15, F-16, AC-130, C-17, B-1, C-141, C-5

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

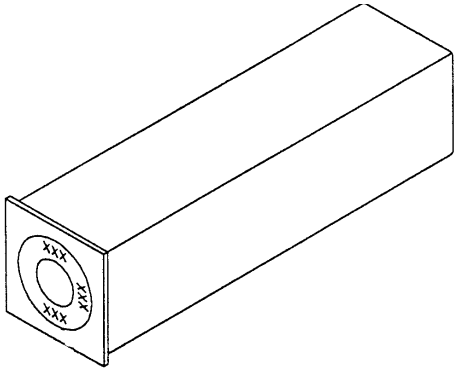
Aircraft: A-10, F-15, F-16, C-130

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

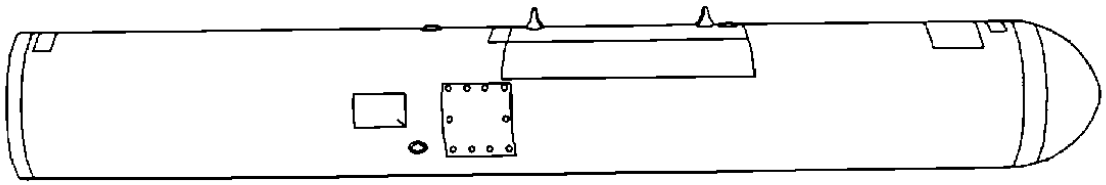
Capacity:
8ea Illumination Flares **or**
8ea Target Markers

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

DSU-33B/B

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

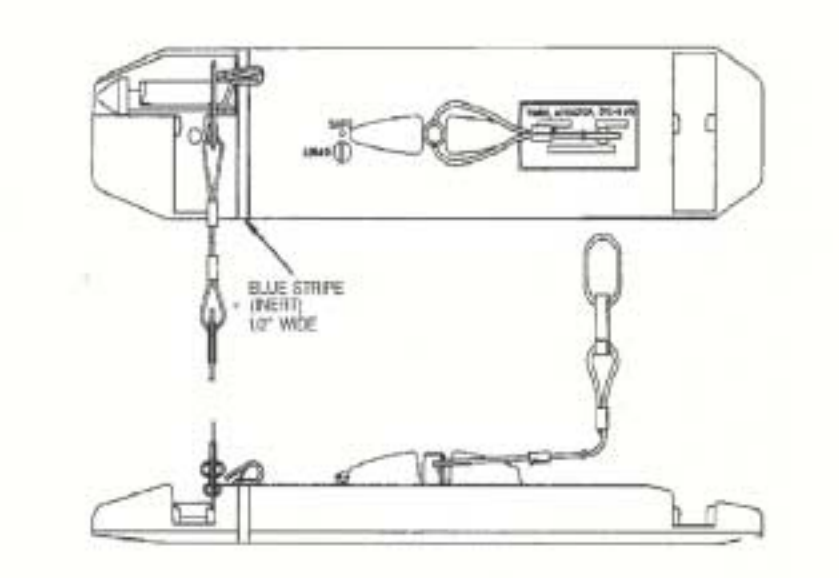
Employment Options

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 -



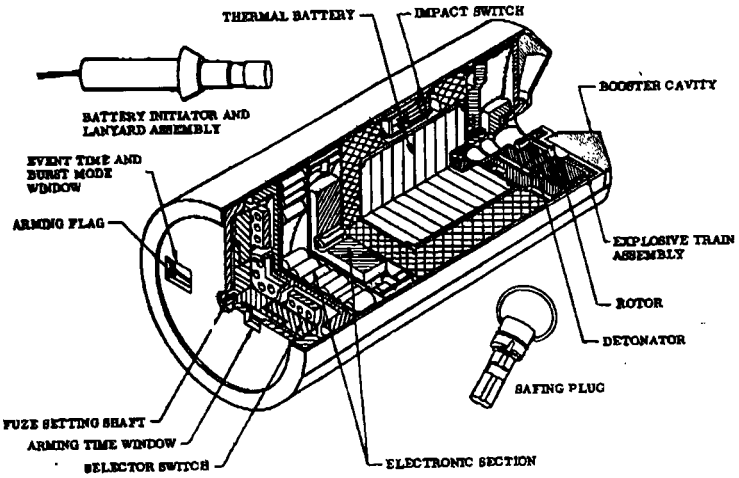
Nomenclature: FMU-26 Name: Bomb Impact/Airburst Fuze

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



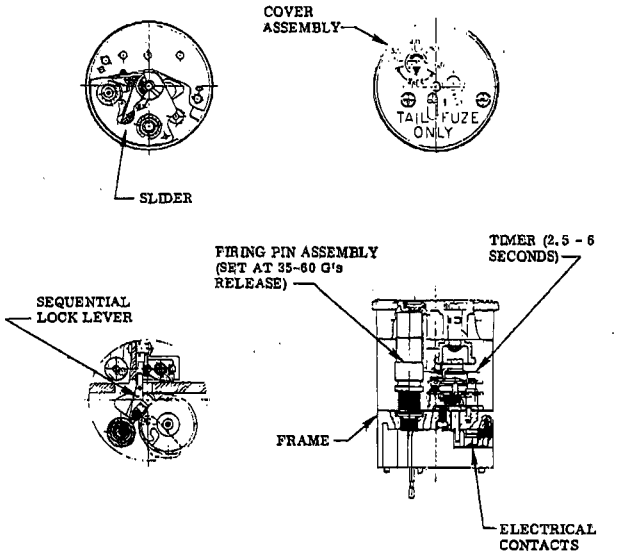
Nomenclature: FMU-54A/B Name: Impact Bomb Fuze

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 Fuze

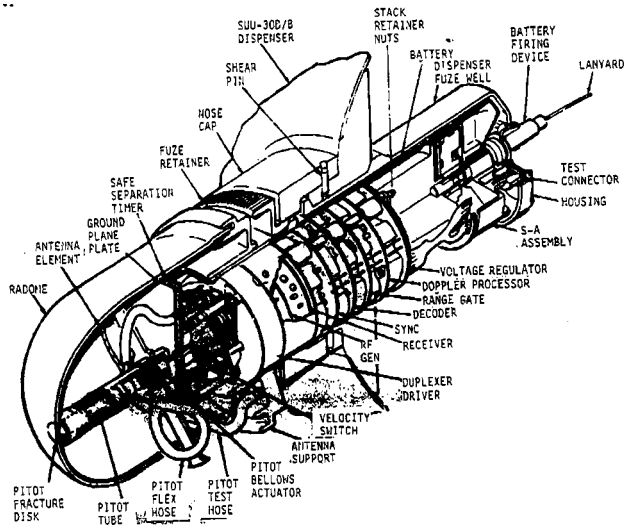
Name: Bomb Proximity

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



FMU-56 Fuze

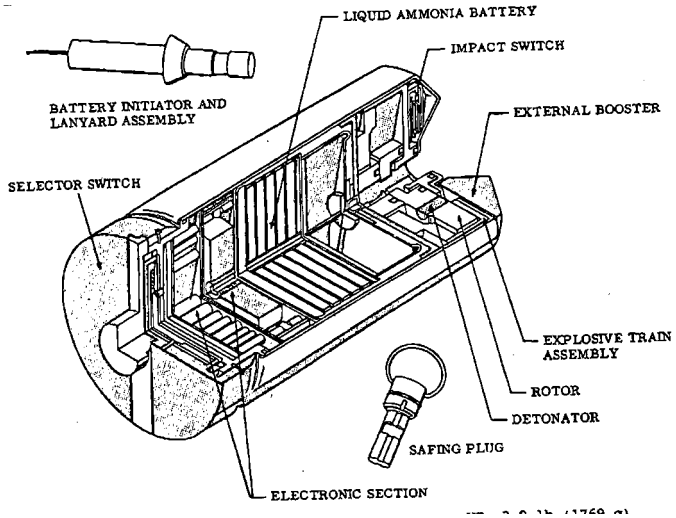
Nomenclature: FMU-72 Name: Impact Bomb Fuze

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



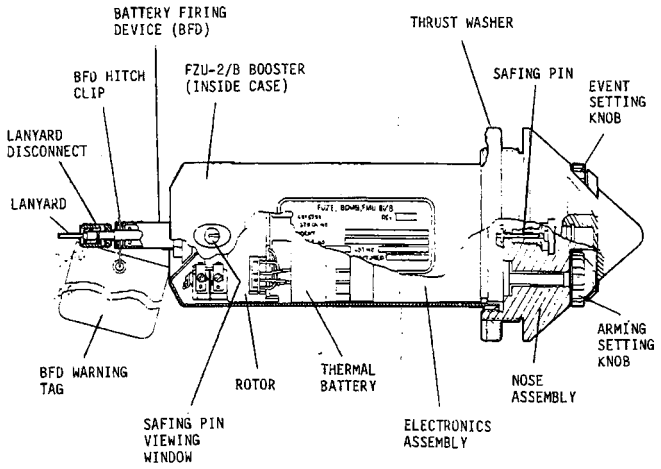
Nomenclature: FMU-81 Name: Bomb Impact Fuze

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 mechancial arming

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



FMU-81

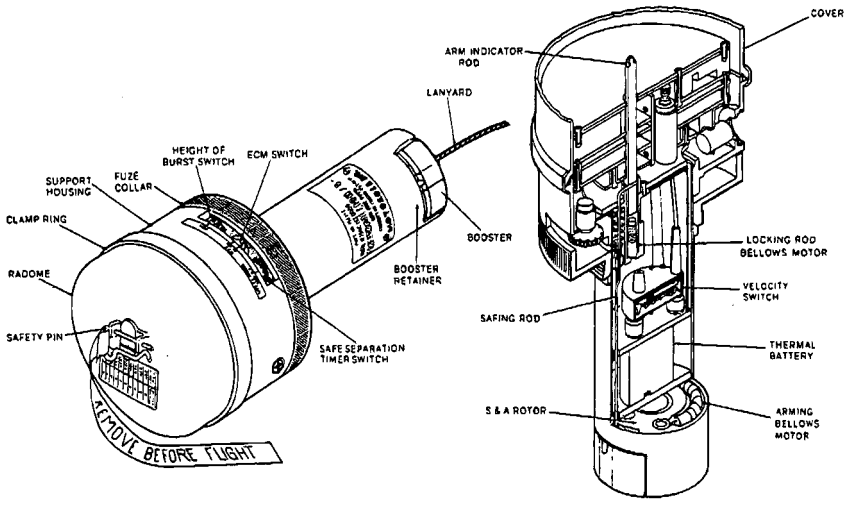
Nomenclature: FMU-110 Name: Proximity Fuze

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

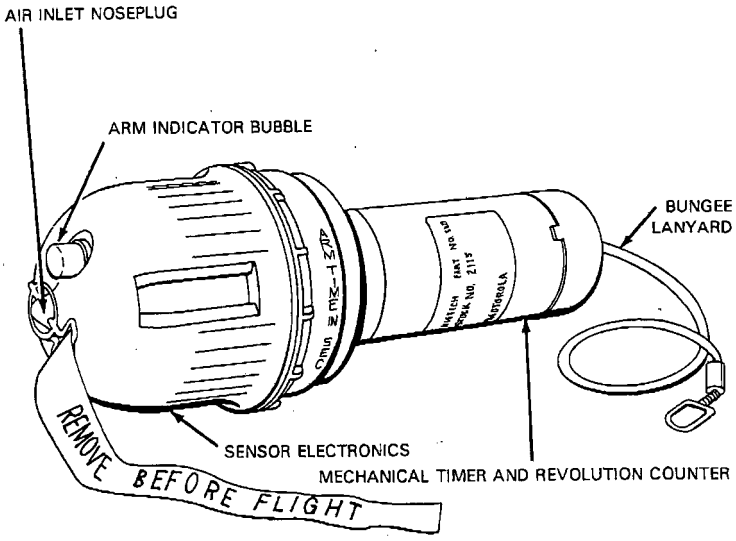
Weapons Characteristics
Fuze type – Proximity Fuze
Interface – Standard Bomb (low drag)
Power/Safety – Alternator/Out-of-line explosive train

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



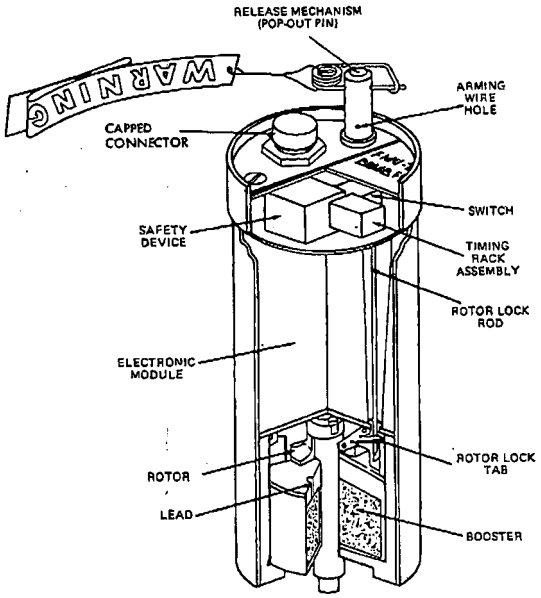
Nomenclature: FMU-124 Name: Guided Bomb Impact Fuze

Weapons Characteristics
Fuze type – Impact delay for Guided Bomb
Interface – Guided Bomb
Power/Safety – FZU-32 Bomb Fuze Initiator (Navy) GBU-15 Guided Bomb Power Supply (Air Force)/ out-of-line explosive train

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

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

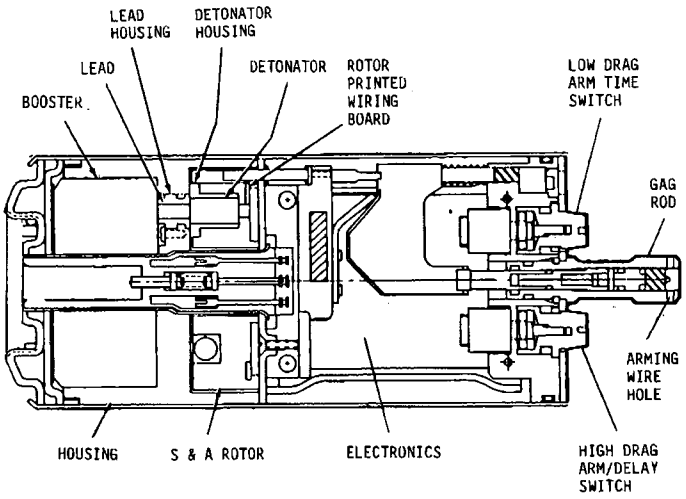
Employment Options

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

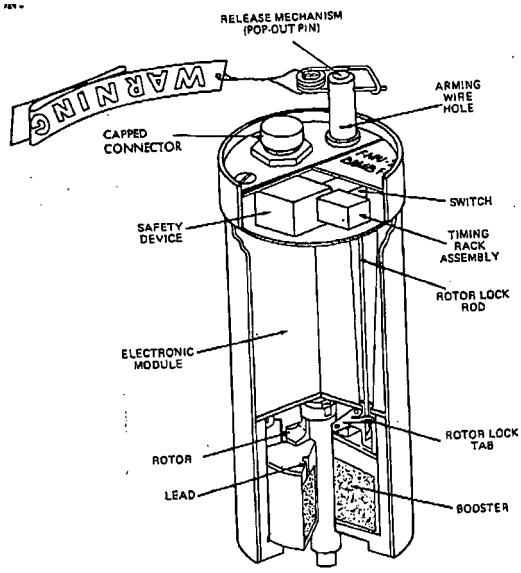
Fuze Type - Impact delay for penetrating warheads (single 0.060 sec. delay)
Interface - BLU-109, BLU-113, AGM-142 I-800
Power/Safety - FZU-32B/B Bomb Fuze Initiator, GBU-15/AGM-130 Battery

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.



FMU-143B/B

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

FMU-152/B

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

Weapons Used On – BLU-109/116/113 for GBU-24/27/28, AGM-130, GBU-15, CALCM, AGM-86D, Tactical tomahawk Penetration Variant and Future Hard Target/Counter Proliferation Weapons.

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 Sensor

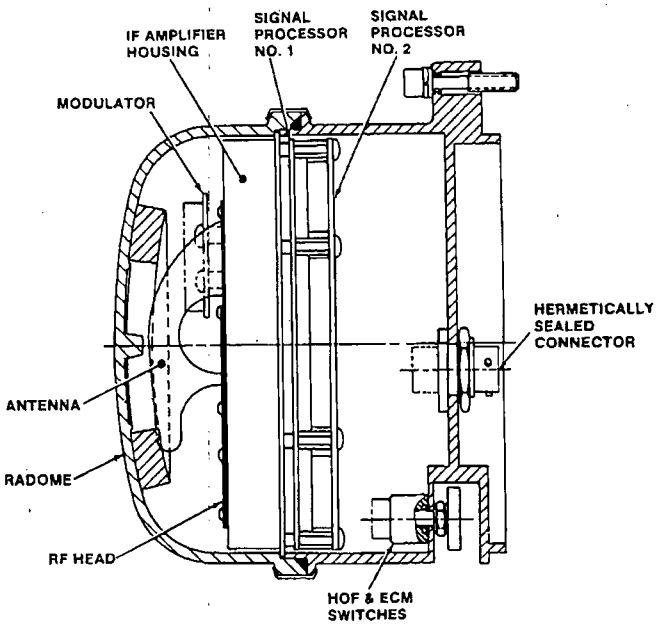
Name: Proximity Fuze

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



FZU-39/B Proximity Sensor

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

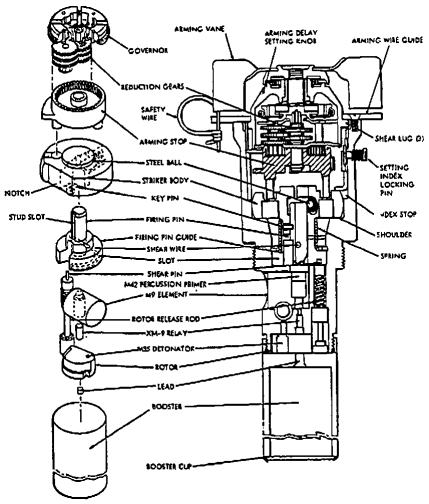
Primer – None
Detonator – M35
Lead – 100 mg Tetryl
Booster – 72.3 g Tetryl

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

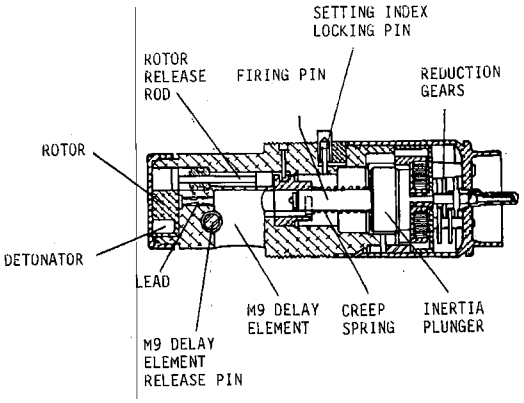
Explosive Components

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

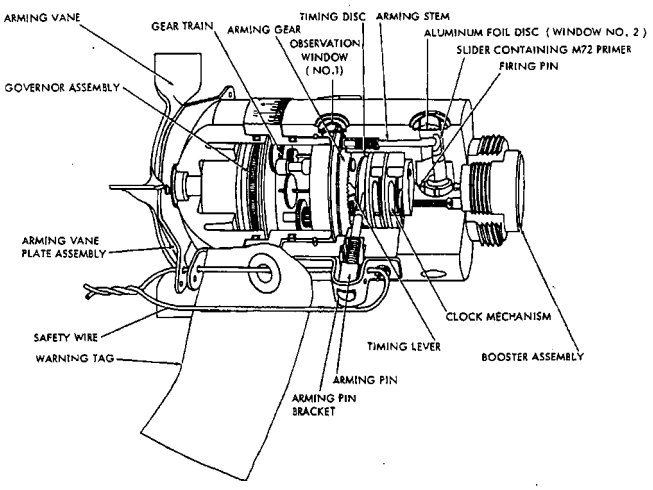
Nomenclature: M907 Name: Mechanical Fuze, Airburst

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



M907 Fuze

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 –

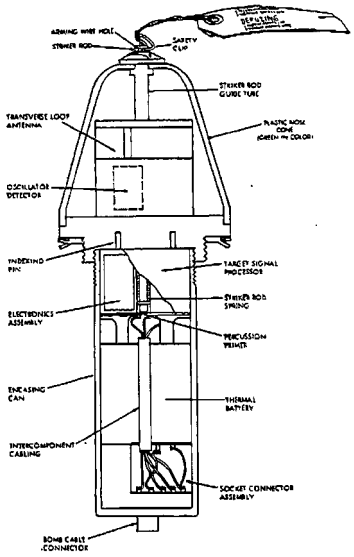
Mk-82	M-117
Mk-83	Mk-84

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

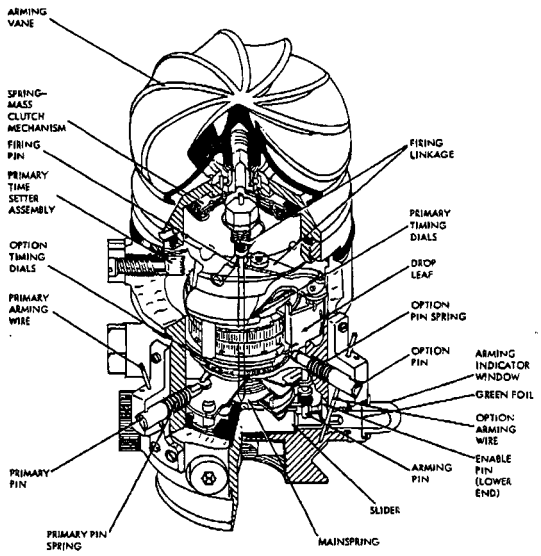
Nomenclature: MK 339 Mod 1 Name: Proximity Fuze

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:

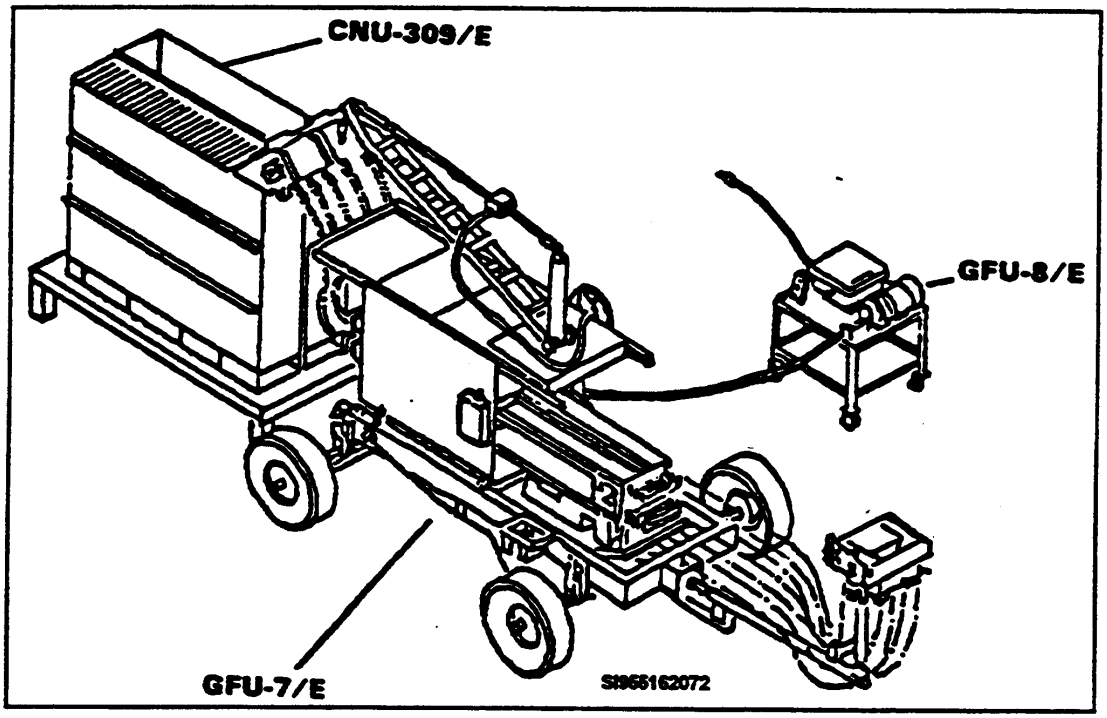
The purpose of the loader is to load 30-mm ammunition from shipping and storage containers into an aircraft within a specific time and to simultaneously unload and deposit spent and/or live rounds of ammunition from the aircraft gun system into Ammunition and Storage containers

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 Trailer

Name: Munitions Handling

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

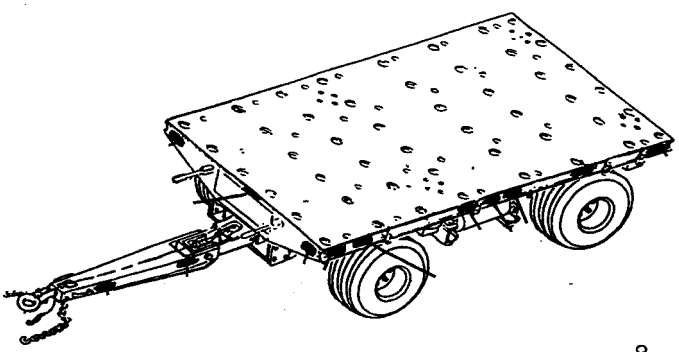
Weight (lbs.) – 4,200
Height (in.) - 30
Width (in.) - 87
Deck Length (in) - 180
Wheel Base (in) - 110
Ground Clearance (in) - 10
Tongue Length (in) - 74
Brakes:
Service – 6 Wheel Hydraulic
Parking – 4 Wheel Mechanical Hand Lever
Turning Angle – 45 Degrees

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 Trailer

Name: Munitions Handling

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

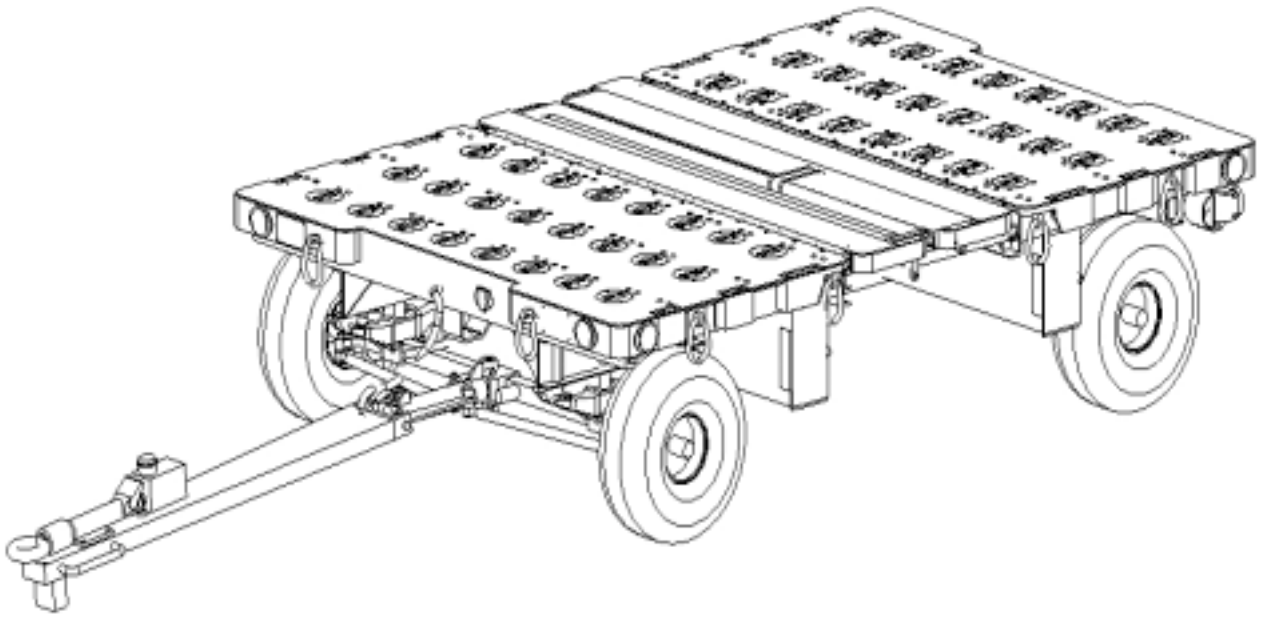
Weight (lbs.) – 2900
Height (in.) - 32
Width (in.) - 84
Deck Length (in) - 126
Wheel Base (in) - 89
Ground Clearance (in) - 8
Tongue Length (in) - 88
Brakes:
Service – 4 Wheel Hydraulic
Parking – 2 Wheel Mechanical Hand Lever
Turning Angle – 40 Degrees

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

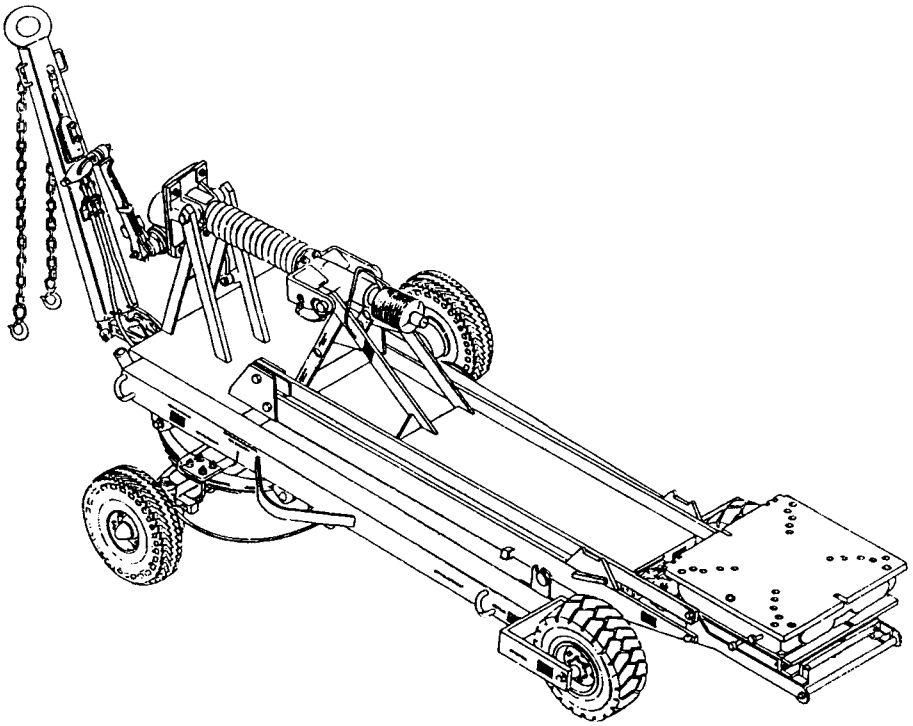
Weight (lbs.) – 1,900
Height (in.) – 62 (Tow Bar in up Position)
Width (in.) - 59
Length (in) - 136

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

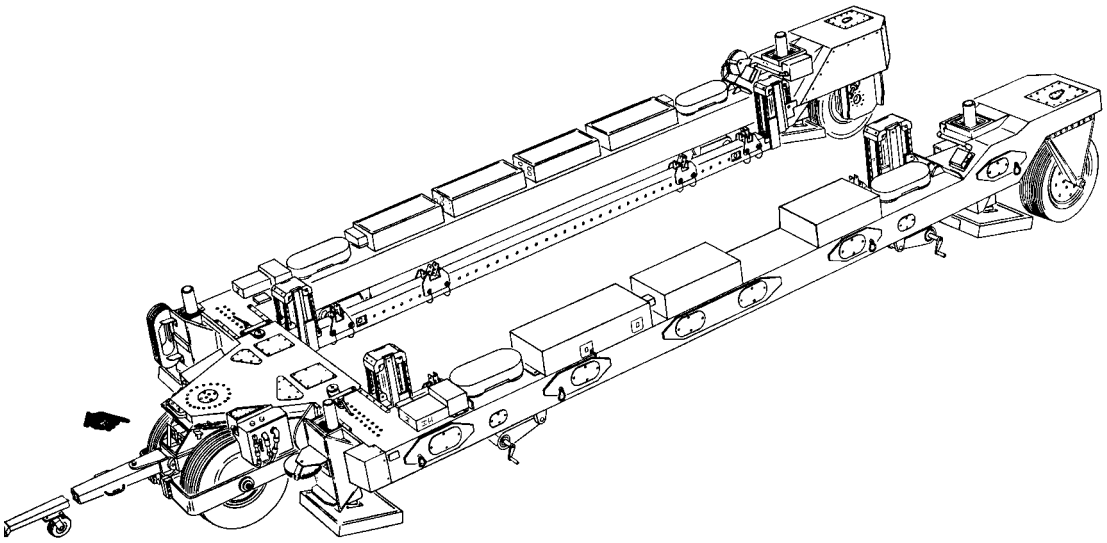
Weight (lbs.) – 29,500
Height - 4 feet 2 inches
Width – 9 feet 3 inches to 12 feet 8 inches, adjustable
Tongue Length – 10 feet 4 ½ inches

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:

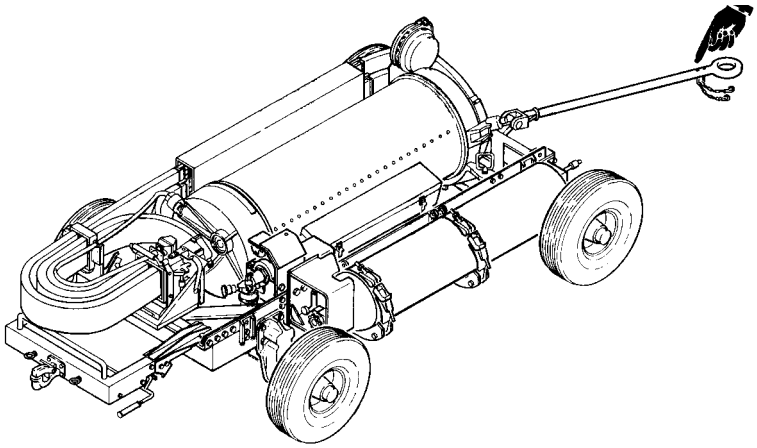
The 20-mm ammunition loading system loader assembly is used to transfer 20-mm series ammunition into an aircraft gun system on the flight line. While performing this loading function, the loader assembly simultaneously downloads cleared rounds and/or spent cases from the gun system.

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:

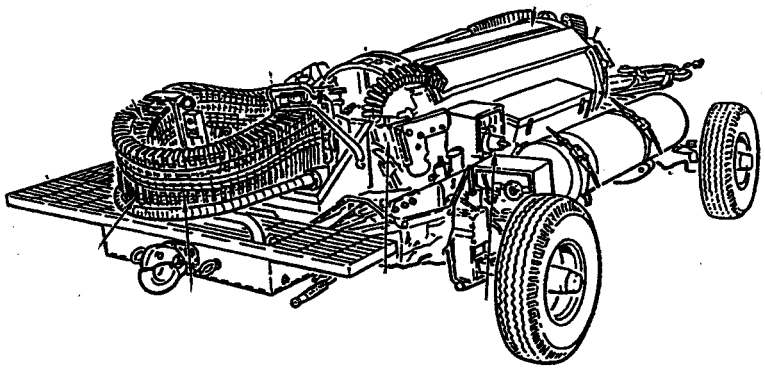
The 20-mm ammunition loading system loader assembly is used to transfer 20-mm series ammunition into an aircraft gun system on the flight line. While performing this loading function, the loader assembly simultaneously downloads cleared rounds and/or spent cases from the gun system.

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:

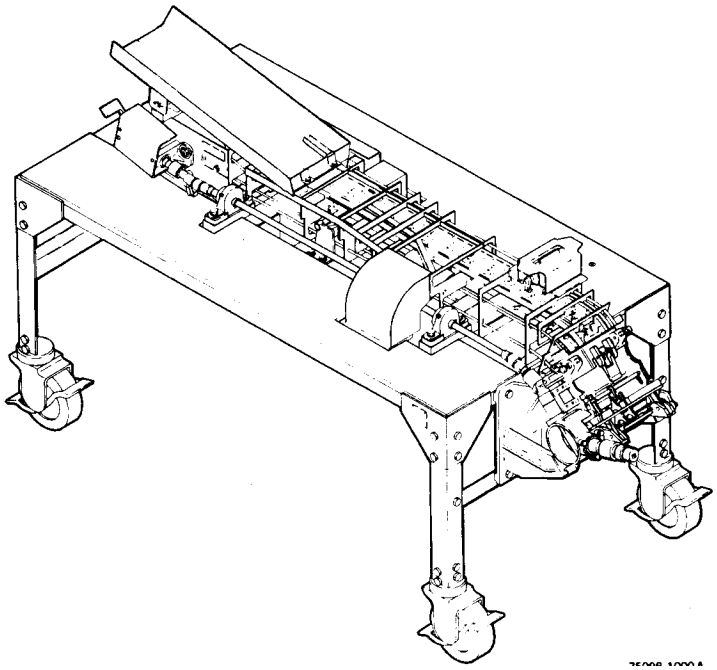
The 20-mm ammunition loading system replenisher assembly is used to transfer 20-mm ammunition from storage into the mobile loader loader assembly for transportation to the flight line. While performing this function, it simultaneously and independently receives spent cases and/or unfired ammunition from the loader assembly. The replensher 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:

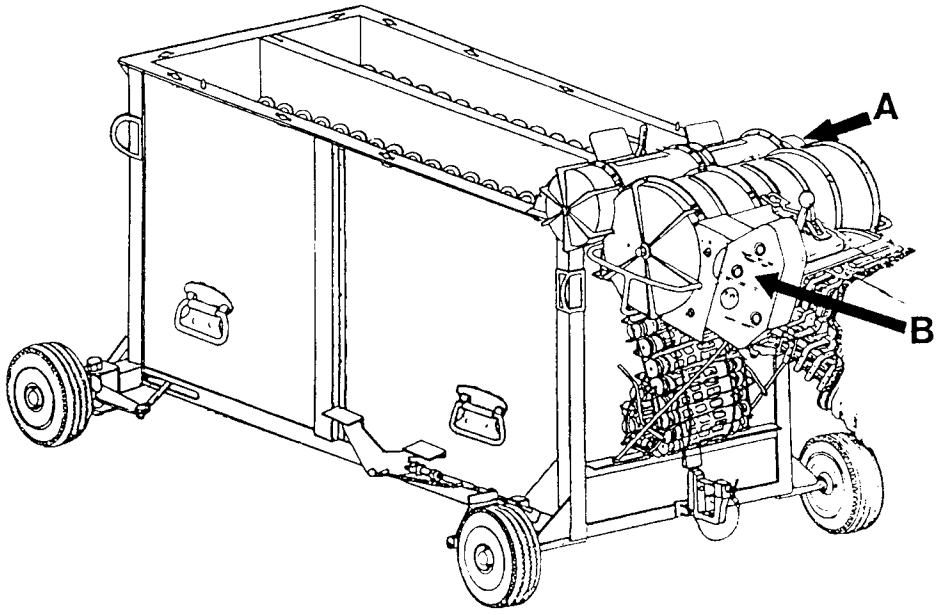
The purpose of the Ammunition loading System is to transfer 30-mm ammunition from storage containers into Transporter Assemblies and move ammunition to the aircraft and load the GPU-5/A Gun Pod. The ALS will simultaneously unload and deposit spent cases/live rounds from the Gun Pod into the Transporter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

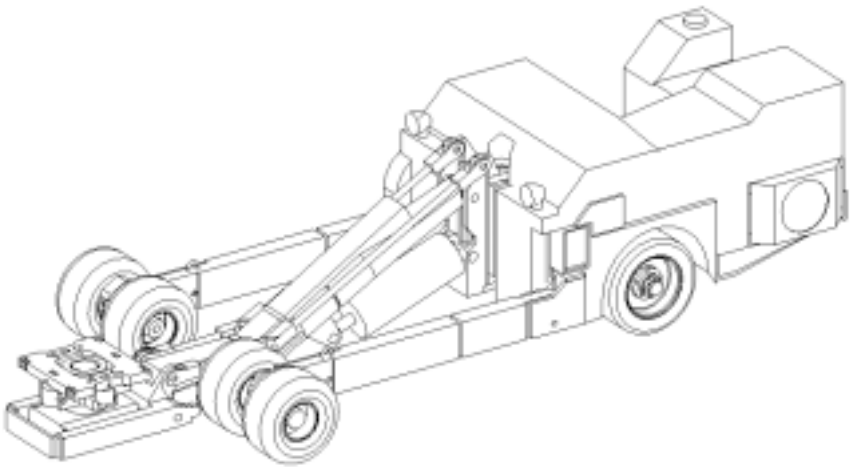
Weight (lbs.) – 7,230
Width (in) – 73 ½ front 52 rear
Length (in) – 185

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

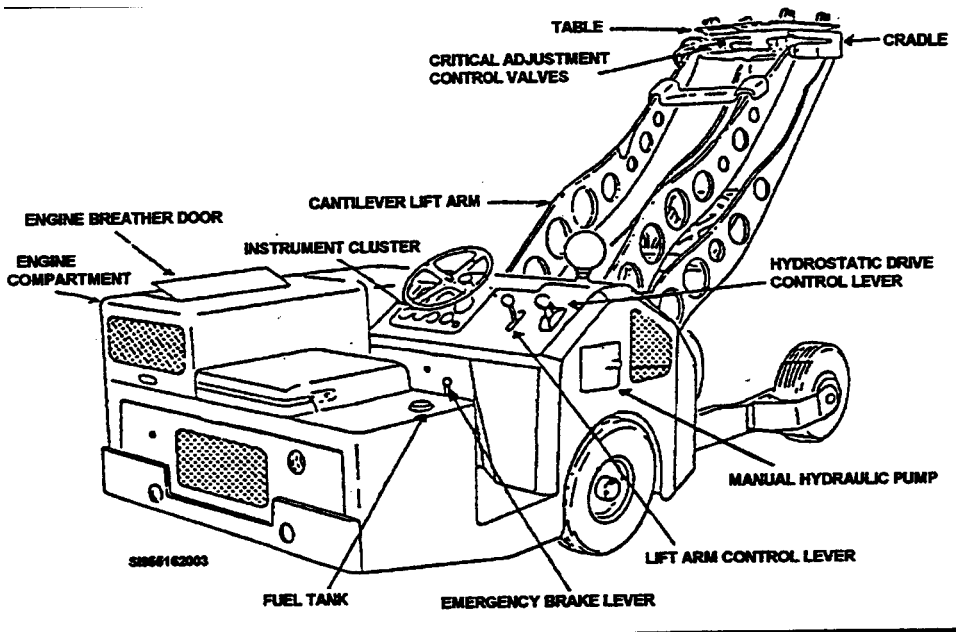
Weight (lbs.) – 3,800
Width (in) – 52.25
Length (in) – 144.75

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

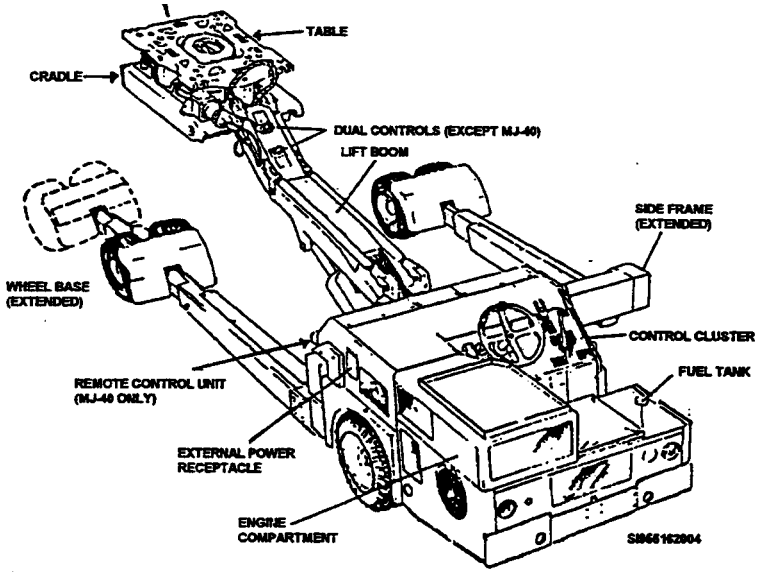
Weight (lbs.) – 6,380
Width (in) – 53- 5/8 (rear) 69- ½ (front)

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

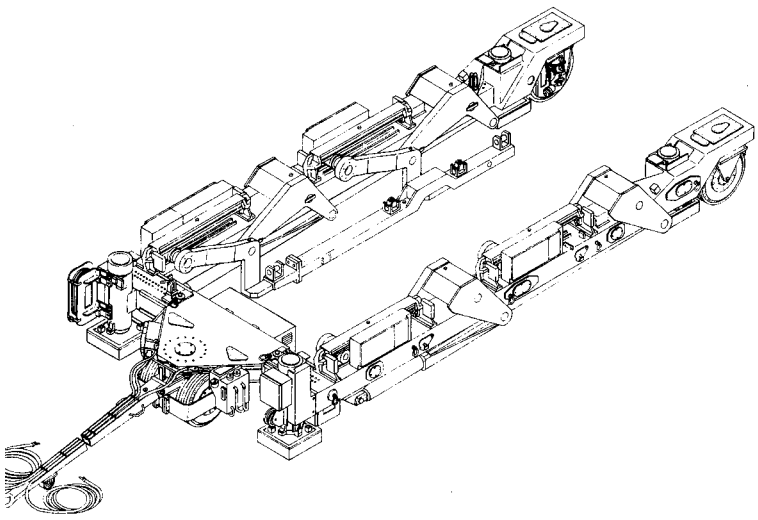
Weight (lbs.) – 39,100
Height - 4 feet 2 inches
Width – 9 feet 8 inches to 13 feet 1 inches, adjustable
Length – 30 feet

CAPACITY

Capacity (net pounds) – 40,000

Status/Schedule/Improvements

Status - Inventory
OPR – SA/ALC
T.O. – 11N-H5083-2

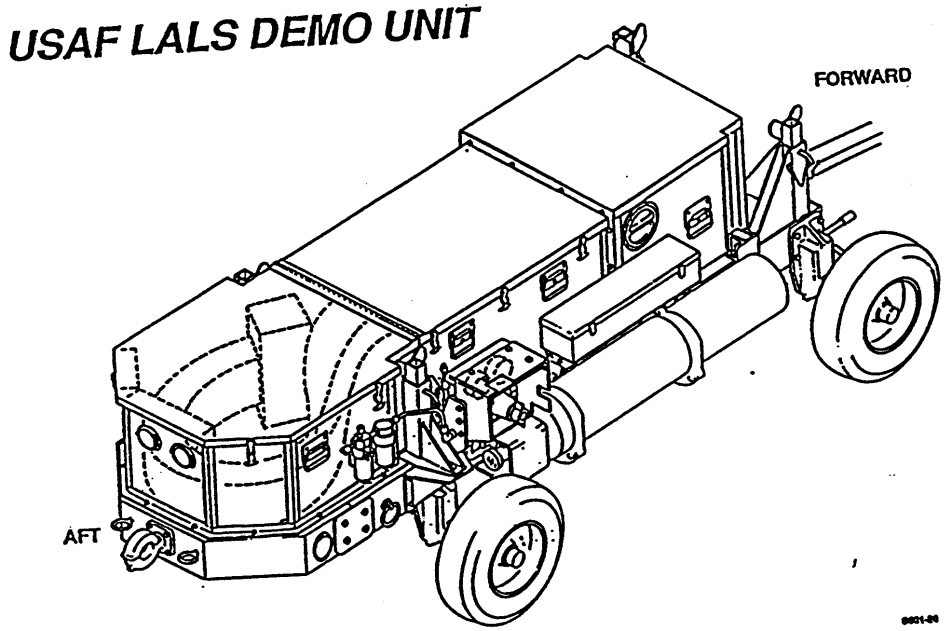


Nomenclature: USAF Linkless Ammunition Loading System
Name: LALS

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

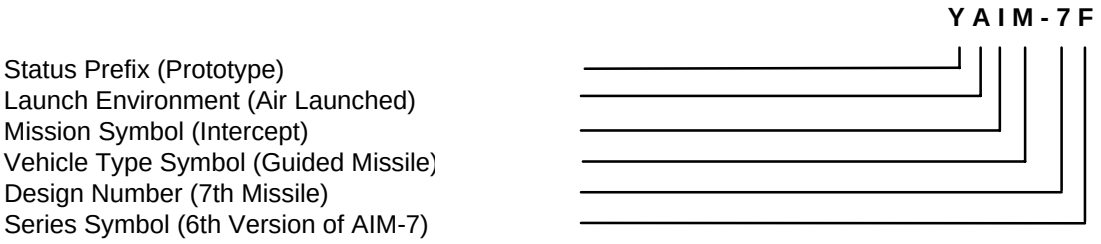
Status – Inventory
OPR – WR/ALC
T.O. 35D3-9-29-1

AIRCRAFT AND WEAPONS MATRIX	A-10A	F-15	F-16	F-22	F-117	B-1B	B-2A	B-52H	AC-130H	AC-130U	MC-130	HH-53	H-60	UH-1N
MK-82 CONICAL (500 LB)	X	X	X	X	X			X						
MK-82 AIR INFLATABLE RETARDER (AIR)	X	X	X			X		X						
MK-84 CONICAL (2000 LB)	X	X	X		X		X	X						
MK-84 AIR			X			X								
BLU-109 HARD TARGET PENETRATOR (2000 LB)		X	X		X									
M117 CONICAL (750 LB)	X		X					X						
M117 RETARDED								X						
M-129 LEAFLET BOMB								X						
BLU-82 (15000 LB)											X			
BDU-33 PRACTICE BOMB (25 LB)	X	X	X		X	X	X	X						
BDU-38 PRACTICE BOMB (SHAPE)		X	X				X							
BDU-48 PRACTICE BOMB (10 LB)								X						
MK-106 PRACTICE BOMB (5 LB)	X	X	X											
GBU-12 LASER GUIDED BOMB (500 LB)	X	X	X	X	X			X						
GBU-10 (2000 LB)	X	X	X		X			X						
GBU-15 TV/IIR/GPS GUIDED BOMB (2000 LB)		X												
GBU-24 LL LASER GUIDED BOMB (2000 LB)		X	X											
GBU-27 LASER GUIDED BOMB					X									
GBU-28 LASER GUIDED BOMB (4000 LB)		X												
CBU-87 COMBINED EFFECTS MUNITION (CEM)	X	X	X					X						
CBU-89 (GATOR)	X	X	X					X						
CBU-97 SENSOR FUZED WEAPON (SFW)			X											
AGM-65 (MAVERICK)	X	X	X											
AGM-84 (HARPOON)			X					X						
AGM-86 (CALCM)								X						
AGM-88 (HARM)			X											
AGM-129 (ADV CRUISE MISSILE)								X						
AGM-130 (POWERED GBU-15)		X												
AGM-142 (HAVE NAP)								X						
AIM -7 (SPARROW)		X	X											
AIM-9 (SIDEWINDER)	X	X	X											
AIM-9X (FOLLOW-ON SIDEWINDER)		X	X		X									
AIM-120 (AMRAAM)		X	X		X									
7.62												X	X	X
20MM		X	X		X				X					
25MM										X				
30MM	X													
40MM									X	X				
105MM									X	X				
.50 CAL												X	X	
B-53							X	X						
B-61		X	X				X	X						
B-83							X	X						

GUNS/RACKS/LAUNCHERS MATRIX	A-OA-10	F-15	F-16	F-22	F-35	F-117	B-1	B-2	B-52	AC-130H	AC-130U	HH-53	H-60	UH-1N
GAU-2/A (7.62mm MINI GUN)												X	X	X
GPU-5/A (30mm GUN POD)			X											
GAU-8/A (30mm AUTOMATIC GUN)	X													
GAU-12/U (25mm AUTOMATIC GUN)											X			
M218 (.50 Cal MACHINE GUN)													X	X
M2A1 (40mm AUTOMATIC GUN)										X	X			
M61A1 (20mm AUTOMATIC GUN)		X	X											
M61A2 (20mm LIGHTWEIGHT GUN)		X	X	X						X				
M37A1 (105mm HOWITZER)										X	X			
MAU-12 BOMB RACK		X	X			X			X					X
MAU-40 BOMB RACK	X													
MAU-50 BOMB RACK	X													
BRU-46 BOMB RACK		X												
BRU-47 BOMB RACK		X												
BRU-57 SMART RACK			X											
TER 9/A TRIPLE EJECTOR RACK	X		X											
MER 1-6A MULTIPLE EJECTOR RACK									X					
GENERAL PURPOSE BOMB MODULE							X							
B-11 BOMB SHACKLE									X					
SUU-20 BOMB DISPENSER	X	X	X											
BOMB RACK ASSEMBLY								X						
LAU-68/131 (2.75 FFAR)	X		X										X	X
LAU-88 (AGM-65)	X	X	X											
LAU-105 (AIM-9)	X													
LAU-106 (AIM-7 & AIM-120)		X												
LAU-114 (AIM-9)		X												
LAU-117 (AGM-65)	X	X	X											
LAU-118 (AGM-88)			X											
LAU-128 (AIM-9 & AMRAAM)		X												
LAU-129 (AIM-9 & AMRAAM)			X											
16S-210 (AIM-9)			X											
COMMON ROTARY LAUNCHER									X					

MISSILE DESIGNATIONS

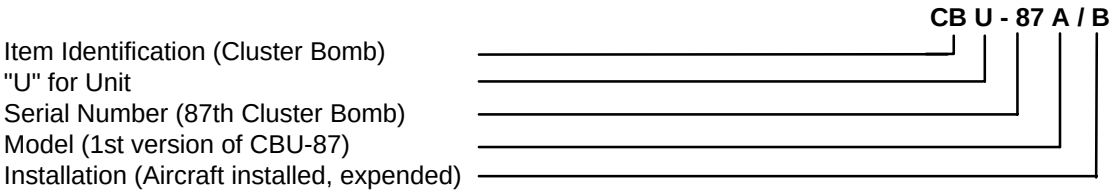
Rockets and guided missiles make use of the following designation symbols:



Status / Vehicle Type	Launch Environment	Mission	
J Special Test, Guided Missile/ Temporary Drone	**A** Air	**D** Decoy	**M**
N Special Test, Probe Permanent Rocket	**B** Multiple	**E** Special Electronics Installation	**N**
X Experimental	**C** Coffin	**G** Surface Attack	**R**
Y Prototype	**F** Individual	**I** Intercept, Aerial	
Z Planning	**G** Runway	**Q** Drone	
	H Silo Stored	**T** Training	
	L Silo Launched	**U** Underwater Attack	
	M Mobile	**W** Weather	
	P Soft Pad		
	R Ship		
	S Underwater		

MUNITIONS DESIGNATIONS

Munitions make use of the following designation symbols:



Identification Designator

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

Installation Designator

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


ARMAMENT PRODUCT GROUP MANAGER