AB 481 Military Equipment Annual Report

(September 12, 2025 – September 11, 2026)

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Military Equipment Use AB 481 Compliance Requirements:

- Approval of the Military Use Policy
- Approval of the Police Acquisition and Use of Military Equipment Ordinance
- Police Sub-Committee Community Meeting – 10/28/26
- City Council Meeting – 11/9/26
- Current Military Equipment Inventory
- Annual Report (see below)

Annual Report Description:

Assembly Bill 481 (codified as Government Code Sections 7070-7075) requires the Culver City Police Department to report annually on the inventory, procurement, use and misuse of military equipment items. The annual report includes a description of new and existing military equipment for which the Police Department seeks City Council approval for acquisition and funding.

The annual military equipment report will include the following information for each type of military equipment:

- A summary of how the military equipment was used and the purpose of its use;
- A summary of any complaints or concerns received concerning the military equipment;
- The results of any internal audits, any information about violations of the military equipment use policy, and any actions taken in response;
- The total annual costs for each type of military equipment, including acquisition, personnel, training, transportation, maintenance, storage, upgrade, and other ongoing costs, and from what source funds will be provided for the military equipment in the calendar year following submission of the annual military equipment report;
- The quantity possessed for each type of military equipment; and
- If the law enforcement agency intends to acquire additional military equipment in the next year, the quantity sought for each type of military equipment.

Culver City Municipal Code Subchapter 3.04.400 / Military Equipment Policy

On September 12, 2022, the City Council adopted Ordinance No. 2022-005 adding Subchapter 3.04.400 to Chapter 3.04 of the Culver City Municipal Code, governing the use of Military Equipment by the Culver City Police Department and approving the Military Equipment Funding, Acquisition and Use Policy Pursuant to Assembly Bill 481. The Ordinance became effective October 12, 2022.

On November 10, 2025, the City Council approved the continued use of Military Equipment by the Culver City Police Department. The City Council may, by resolution, make amendments,

modifications, or revisions to the military equipment use policy adopted by the Culver City Police Department.

Military Equipment Inventory & Use (25-26)

1. Unmanned ground vehicle (Category 1):
   a. **Description, quantity, capabilities, and purchase cost:**
   The Transcend Tactical Vantage F3 Robot is a remotely controlled unmanned machine that operates on the ground, which is utilized to enhance the safety of the community and officers. This device can be remotely operated from many hundred meters away, providing protection and safety to their operators. The utilization of this Robot allows for de-escalation and the peaceful surrender and arrest of a violent suspect while reducing the potential of an armed confrontation with officers that may lead to a lethal conclusion. Quantity: 1.

   b. **Purpose:**
   To be used as a de-escalation tool and to remotely gain visual/audio data, deliver CNT phone, open doors, disrupt packages, clear buildings, and administer tear gas during a barricaded suspect incident (with explicit direction form Bureau Commander or Police Chief). While remote observation is the primary function of the Robot, these auxiliary roles of transporting communication devices or other resources (such as food or water) into an inherently unstable situation, will help promote a peaceful conclusion.

   c. **Authorized Use:**
      I. Can be operated after supervisor approval and only by trained officers during critical incidents or pre-planned tactical operations.
      II. During Department-approved training exercises.
      III. The Gas Deployment Accessory can only be used after approval from a Bureau Commander or Chief of Police.
      IV. In compliance with Department policy and procedures, as well as federal, state, and local laws and ordinances.

   d. **Expected Lifespan:**
   N/A

   e. **Fiscal Impact:**
   Robot with Gas Deployment Accessory: $32,941.06 **(purchased in 6/2022)**
   NOTE: Robot and Accessory was fully funded by Urban Areas Security Initiative (UASI) program grant.

Reason for Use	Military Equipment	Quantity	Date
ERT Arrest Warrant	Unmanned Ground Vehicle	1	10/3/25
ERT Training	Unmanned Ground Vehicle	1	3/11/26

2. Unmanned Aerial Vehicles (Category 1)

a. **Description, quantity, capabilities, and purchase cost:**

1. DJI Matrice 210 unmanned aerial vehicle (UAV); Quantity: 2. The DJI Matrice 210 is a commercial-grade UAV. This UAV is a battery-powered, remote-operated device. Controller: GL800A Cendence controller with tablet holder attachment. The controller allows operators to control UAV and view a live feed from UAV-mounted cameras through an attached and connected tablet. Cameras (2): Zenmuse Z30 RGB camera and Zenmuse XT camera with FLIR capabilities. The cameras allow operators to switch between standard RGB cameras and views based on the heat of objects within the frame. Flight time of approximately 15-25 minutes per battery, depending on weather and flight conditions. Capabilities: Commonly used by construction and utility companies for the inspection of buildings, powerlines, windmills, and other infrastructure. This UAV has also proven to be useful to public safety agencies in firefighting, search and rescue, pre-operational intelligence, and other tactical situations where aerial views enhance the safety and efficiency of law enforcement and fire personnel.

2. DJI Mavic 2 Enterprise Advanced unmanned aerial vehicle (UAV); Quantity: 4. The DJI Mavic 2 Enterprise Advanced is a commercial-grade UAV. This UAV is a battery-powered, remote-operated device. Controller: DJI Smart Controller All-in-one controller with 5.5- inch integrated screen. The controller allows operators to control UAV and view a live feed from UAV-mounted cameras. Cameras: Integrated M2EA camera with dual RGB and FLIR capabilities. The camera provides operators with the ability to switch between standard RGB camera and views based on the heat of objects within frame. Flight time of approximately 25-30 minutes per battery, depending on weather and flight conditions. Commonly used by construction and utility companies for the inspection of buildings, powerlines, windmills, and other infrastructure. This UAV has also proven to be useful to public safety agencies in firefighting, search and rescue, pre-operational intelligence, and other tactical situations where aerial views enhance the safety and efficiency of law enforcement and fire personnel.

3. Sky-Hero Loki Mk2 unmanned aerial vehicle (UAV); Quantity: 2. The Sky-Hero Loki Mk2 is a commercial-grade UAV. This UAV is a battery-powered, remote-operated device. Controller: Sky-Hero controller with 5- inch integrated screen. The controller allows operators to control UAV and view a live feed from UAV-mounted cameras. Cameras: Integrated camera with dual RGB and IR capabilities. The cameras provide operators with the ability to see in low-light indoor environments. Flight time of approximately 15 minutes per battery. This UAV is a specialized indoor tactical reconnaissance vehicle. Intended use is for public safety agencies in indoor tactical operations, where the view from an unmanned vehicle will significantly enhance the safety of law enforcement personnel and others within the operational area.

4. DJI Mavic 3 Pro Drone (UAV); Quantity: 2. This UAV is battery-powered, remote-operated, with an increased max flight time of 43 minutes. The Mavic 3 has a 4/3 CMOS sensor, and 4K drone camera. This device ensures the operator flies safely with eight vision sensors working with a computing engine to sense obstacles. The device has a transmission distance of up to 15 km with stable signals, presenting a more coherent camera view for the operator.

5. DJI Matrice 4T unmanned aerial vehicle (UAV); Quantity: 4. The DJI Matrice 4T is a commercial-grade UAV. This UAV is a battery-powered, remote-operated device. Controller: DJI RC Plus 2 Enterprise. The controller allows operators to control the UAV and view a live feed on a 7.02-inch screen with a maximum range of 25 kilometers. The Matrice 4T features a quad-sensor camera system including a wide, medium, telephoto, and thermal lenses. Flight time is approximately 49 minutes per battery, depending on weather and flight conditions. Built for public safety, inspection, and search-and-rescue operations.

***(4) DJI Matrice 4T UAVs were purchased to replace (2) DJI Mavic 2 UAVs and (2) DJI Matrice 210 UAVs, which had become ineffective due to diminished battery life and discontinued replacement components.

b. **Purpose:**

To be deployed when its view would assist officers or incident commanders with the following situations, which include:

I. Barricaded Suspects
II. Active Shooter/ Mass Casualty Incidents
III. Hostage Situations
IV. Crime Scene Investigations
V. Search & Rescue Operations
VI. Fires
VII. Disaster Management
VIII. CBRNE Incident (chemical, biological, radiological, nuclear, and/or explosive)
IX. Supporting Search and Arrest Warrant Operations
X. Perimeter Searches for Armed and/or Felony Suspects
XI. Routine Training (public places)

c. **Authorized Use:**

I. Only assigned operators who have completed the required FAA training and have a current FAA Part 107 Remote Pilot Certificate shall be permitted to operate the above-listed UAVs during approved missions.
II. Requests to deploy the UAV shall be approved by the on-duty Watch Commander, supervisor on scene, or the UAV Manager prior to accepting the mission.
III. In compliance with Department Policy 349 (Unmanned Aerial Vehicle Operations), as well as federal, state, and local laws and ordinances.

d. **Expected Lifespan:**
10 years

e. **Fiscal Impact:**

I. DJI Matrice 210 unmanned aerial vehicle (UAV): $7,422.80 each **(purchased in 10/2018)**
II. DJI Mavic 2 Enterprise Advanced unmanned aerial vehicle (UAV):

$6,240.00 **(purchased in 10/2018)**

III. Sky-Hero Loki Mk2 unmanned aerial vehicle (UAV): $9,750.00 **(purchased in 10/2018).** Sold as a set of two aircraft, with one controller.

IV. DJI Mavic 3 Pro Drone (UAV): $2,999.00 each **(purchased in 10/2018)**

V. DJI Matrice 4T unmanned aerial vehicle (UAV): $9,250.04 each **(purchased in 6/2026)**

Reason for Use	Military Equipment	Quantity	Date
ERT Arrest Warrant	CCPD Drone	1	10/3/25
Felony Suspect	CCPD Drone	1	10/24/25
Homicide Crime Scene	CCPD Drone	1	2/13/26
Burglary Suspect	CCPD Drone	1	3/20/26
Felony Suspect	CCPD Drone	1	4/18/26
Burglary Suspect	CCPD Drone	1	4/20/26
CCFD Assist w/ Fire/Arson	CCPD Drone	1	4/28/26
Burglary Suspect	CCPD Drone	1	5/4/26
Attempted Murder Suspect	CCPD Drone	1	6/24/26
Burglary Suspect	CCPD Drone	1	7/2/26
CCFD Assist w/ Explosion	CCPD Drone	1	7/29/26

3. Armored Personnel Carrier (Categories 2 & 3)

   a. **Description, quantity, capabilities, and purchase cost:**
   Two (2) Ford Transit Vans 350HD, extended roof, V6, 6-speed automatic, identified as an Armored Vehicle (AV) is outfitted and equipped with the following: NIJ III level vehicle armoring, 360-degree exterior camera system, upgraded HD hinges, breaching tool storage, rear bench seating with seatbelts, interior grab rails, automatic door opening system, rear compartment A/C and heater, medical supplies and equipment, HD tires with run-flat tire inserts, HD removable side, and rear steps, front push-bars, custom exterior side grab rails, emergency roof escape hatch, police lights and siren packages, police communication radios (front & rear) and ATF approved bench storages. Quantity: 2.

   Both armored vans seat 10-12 people with an open floor plan that allows for the rescue of down personnel. In addition, the vans can stop various projectiles, which provides greater safety to citizens, officers, and EMS personnel beyond the protection level of a shield and/or personal body armor.

   b. **Purpose:**
   To be deployed when it would assist officers, EMS personnel, or the Incident Commander with the following situations, which include:

      I. Active shooter/mass casualty Incidents

II. Rescue operations
III. Supporting search and arrest warrant operations
IV. Barricaded suspect operations
V. Hostage operations
VI. During encounters with self-destructive, violent, dangerous, and/or combative subjects.
VII. During department-approved training exercise.
VIII. Perimeter Searches for Armed and/or Felony Suspects
IX. Routine Training (public places)

c. **Authorized Use:**
   I. Armored vans will be deployed by officers who have received department training in the vans' operation.
   II. The driver of the vehicle shall have a valid California driver's license (class C)
   III. The on-duty Watch Commander shall approve requests to deploy the Armored Rescue Vehicle (ARV).

d. **Expected Lifespan:**
7-10 years (*depending on usage and normal wear and tear*)

e. **Fiscal Impact:**
f. Two (2) Ford Transit Vans 350HD cost: $394,547.26 **(purchased with asset forfeiture funds in 2/2024)**. Annual maintenance costs approximately $6,000 each.

Reason for Use	Military Equipment	Quantity	Date
ERT Arrest Warrant	Armored Van	2	10/3/25
ERT Training	Armored Van	2	1/2/26
ERT Training (Castaic)	Armored Van	1	1/28/26
ERT Arrest Warrant	Armored Van	2	7/16/26
ERT Training (Castaic)	Armored Van	1	7/22/26

4. Tracked Armored Vehicles (Category 4)
   a. **Description, quantity, capabilities, and purchase cost:**
   NONE
   b. **Purpose:**
   N/A
   c. **Authorized Use:**
   N/A
   d. **Expected Lifespan:**
   N/A
   e. **Fiscal Impact:**
   N/A

5. Command and Control Vehicles (Category 5)

a. **Description, quantity, capabilities, and purchase cost:**
Command Post Mobile Trailer: 2020 Forest River 30ft trailer w/ 2 Axles. The trailer will be equipped with 3 monitors (2 interior/1 exterior), desks, chairs, IP phones, exterior spotlight, soundproof room, and initial wiring for a computer setup. Quantity: 1.

b. **Purpose:**
To be utilized during critical incidents, major disasters, pre-planned high-risk warrant operations, large-scale pre-planned events, natural disasters, and public relations/community outreach events.

c. **Authorized Use:**
IV. The Command Post Mobile trailer will be deployed by officers and staff who have received department training in pulling/deploying trailers.
V. The driver of the vehicle shall have a valid California driver's license (class C)
VI. In compliance with Department Policy 703 (Vehicle Use), as well as federal, state, and local laws and ordinances.

d. **Expected Lifespan:**
30-year life span

e. **Fiscal Impact:**
Donated by the State of California in **6/2020**. Retrofitted to Mobile Command Center in **2/2022**. Cost: $15,894.15.

Reason for Use	Military Equipment	Quantity	Date
ERT Arrest Warrant	Mobile Command Center	1	10/3/25
ERT/CNT Training	Mobile Command Center	1	2/2/26
ERT Arrest Warrant	Mobile Command Center	1	7/16/26

6. Weaponized aircraft or vessel (Category 6)
   a. **Description, quantity, capabilities, and purchase cost:**
   NONE
   b. **Purpose:**
   N/A
   c. **Authorized Use:**
   N/A
   d. **Expected Lifespan:**
   N/A
   e. **Fiscal Impact:**
   N/A

7. Breaching Apparatus: Slugs, Energetic Breaching Program (Category 7)
   a. **Description, quantity, capabilities, and purchase cost:**
   NONE
   b. **Purpose:**
   N/A
   c. **Authorized Use:**

N/A

d. **Expected Lifespan:**
N/A

e. **Fiscal Impact**
N/A

8. Firearms and ammunition of .50 caliber or greater, excluding standard-issue shotguns and standard-issue shotgun ammunition (Category 8):
   a. **Description, quantity, capabilities, and purchase cost:**
   NONE
   b. **Purpose:**
   N/A
   c. **Authorized Use:**
   N/A
   d. **Expected Lifespan:**
   N/A
   e. **Fiscal Impact:**
   N/A

9. Specialized Firearms and Ammunition (Category 9)
   a. **Description, quantity, capabilities, and purchase cost**:
      I. The Carbine Rifle is a firearm capable of accurately stopping an armed subject at various distances. The Carbine Rifle is a lightweight, air-cooled, magazine-fed, shoulder-fired weapon designed for semi-automatic fire. The .223 / 5.56 cartridge is used as a lethal option designed to stop a violent encounter. The projectile is capable of penetrating soft body armor being worn by armed subjects. Total Quantity: 125 (LWRCI M6IC-DI, quantity: 99; LWRCI M6IC-G, quantity: 15; Colt Commando, quantity. 1; Colt M4 Carbine, quantity: 4; Colt Sporter Lightweight, quantity: 1; Bushmaster XM15-E2S, quantity: 2; Double Star 15, quantity: 1). The Sniper Rifle is a firearm used by ERT operators who are supplementally trained to engage armed suspects from a safe distance. Daniel Defense DD5V4; Caliber: 7.62 x 51mm. Quantity: 2.
      II. The Hornady 5.56 NATO, 75 grain, BTHP TAP Precision cartridge is the primary duty ammunition deployed during potential lethal encounters. Quantity: 3,500
      III. The Hornady 5.56 NATO, 75 grain, TAP SBR cartridge is te primary training ammunition for the department. Quantity: 4,000.
      IV. Winchester 5.56mm 50 grain Jacketed Frangible. Quantity: 0.
      V. Winchester 5.56mm 55 grain FMJ USA LC Value. Quantity: 0.
      VI. The Winchester .223 Remington, 55 grain, Ranger RA223SF cartridge is a secondary training ammunition for the department, designated for indoor shooting. Quantity: 500 rounds
      VII. The Hornady 5.56mm 55 grain FMJ TAP cartridge is a secondary training ammunition for the department. Quantity: 0
      VIII. The Hornady .308 WIN, 168 grain, ELD TAP match is the primary ammunition for the Sniper Rifle. Quantity: 80.

   b. **Purpose:**

To be used as precision weapons to address a deadly threat with more precision and/or greater distances than a handgun, if present and feasible. Guns that are fired from shoulder level have a longer, grooved barrel intended to make bullets spin and thereby have greater accuracy over a long distance. Potential applications include hostage situations and an active shooter.

c. **Authorized Use:**
   I. Only members that have completed a POST-certified rifle course.
   II. Having completed the department-approved range qualification with the department's range staff are authorized to deploy a rifle.
   III. In compliance with Department Policies 307 (Firearms), 416 (Rifles), and 300 (Use of Force), as well as federal, state, and local laws and ordinances.

d. **Expected Lifespan**:
   I. Carbine Rifle- No expiration (serviced or replaced when it fails or breaks)
   II. The Hornady 556 NATO, 75 grain, BTHP Tap Precision cartridge-15 years
   III. The Hornady 556 NATO, 75 grain, Tap SBR cartridge- 15 years
   IV. The Winchester .223 Remington, 55 grain, Ranger RA223SF cartridge-15 years
   V. Sniper Rifle- No expiration (service or replaced when it fails or breaks)

e. **Fiscal Impact:**
   I. Carbine Rifle – No annual cost unless replacement purchases are necessary (Purchase price: $1,554.96 each) **(purchased in 2017)** Sniper Rifle - No annual cost unless replacement purchases are necessary (Purchase price: $1,949.22 each) **(purchased in 2/2020)**
   II. Hornady 556 NATO, 75 grain, BTHP TAP Precision cartridge - Annual cost approximately $6,250.00
   III. Hornady 556 NATO, 75 grain, TAP SBR cartridge - Annual cost approximately $2,954.00
   IV. Winchester .223 Remington, 55 grain, Ranger RA223SF cartridge - Annual cost approximately $6,810.00
   V. Winchester 5.56mm 50gr. Jacketed Frangible – Annual cost approximately $7,920.00.
   VI. Winchester 5.56mm 55 grain FMJ USA LC – Annual cost approximately $6,795.00.
   VII. Hornady 5.56mm 55 grain FMJ TAP **(10,000 rounds purchased in 2/2026; used for training)**
   VIII. Hornady .308 WIN, 168 grain, ELD TAP match - No annual cost unless replacement purchases are necessary

Reason for Use	Military Equipment	Quantity	Date
ERT Arrest Warrant	Carbine Rifle	1	10/3/25
High Risk Felony Traffic Stop	Carbine Rifle	2	11/8/25
High Risk Felony Traffic Stop	Carbine Rifle	2	1/9/26
High Risk Felony Traffic Stop	Carbine Rifle	1	2/5/26

Armed Suspect	Carbine Rifle	1	2/12/26
High Risk Felony Traffic Stop	Carbine Rifle	1	5/17/26
High Risk Felony Traffic Stop	Carbine Rifle	1	5/18/26
ERT Arrest Warrant	Carbine Rifle	3	7/16/26
High Risk Felony Traffic Stop	Carbine Rifle	2	8/21/26

10. Any firearm or firearm accessory designed to launch explosives (Category 11)
    a. **Description, quantity, capabilities, and purchase cost:**
    NONE
    b. **Purpose:**
    N/A
    c. **Authorized Use:**
    N/A
    d. **Expected Lifespan:**
    N/A
    e. **Fiscal Impact:**
    N/A

11. Noise Flash Diversionary Device (Flashbangs) (Category 11)
    a. **Description, quantity, capabilities, and purchase cost:**
    A Noise Flash Diversionary Device (NFDD) is a device that creates a bright flash and loud sound to temporarily divert the attention of subjects in the immediate area. NFDDs are used to distract and temporarily disorient dangerous suspects by overwhelming their senses of vision and hearing. The distraction allows officers to seize a moment of opportunity to take control of high-risk situations.

        I. NFDD Defense Technology 8901SC emits a loud "bang" and a flash of light. Quantity: 44

    b. **Purpose:**

    A distraction device is ideal for distracting dangerous suspects during assaults, hostage rescue, room entry or other high-risk arrest situations. To produce atmospheric over-pressure and brilliant white light and, as a result, can cause short-term (6 - 8 seconds) physiological/psychological, sensory deprivation to give officers a tactical advantage.

    c. **Authorized Use:**
    Diversionary Devices shall only be used:

        i. During encounters with self-destructive, violent, dangerous and/or combative subjects.
        ii. By ERT officers who have been trained in their proper use in accordance with POST guidelines and received annual training by a POST-certified instructor.
        iii. Circumstances where the Emergency Response Team members can obtain tactical advantage during the following critical incidents: Barricaded violent felony suspect, vehicle barricade of a felony suspect, active shooter, or a hostage rescue operation.

iv. During department-approved training exercises.
v. NFDDs shall not be used for crowd dispersal.
vi. All uses of NFDDs must first be approved by a Bureau Captain.
vii. In compliance with department policy (705 Noise Flash Diversionary Devices) as well as federal, state, and local laws and ordinances.

d. **Expected Lifespan:**
NFDD Defense Technology 8901SC - 5 years

e. **Fiscal Impact:**
NFDD Defense Technology 8901SC; Quantity: 48; Total Cost: $5,070.09
(purchased in 1/2026)

Reason for Use	Military Equipment	Quantity	Date
ERT Training	NFDD	24	7/22/26

12. Tear Gas (Category 12)

a. **Description, quantity, capabilities, and purchase cost:**
Chemical agent munitions, which are commonly referred to as "tear gas," are used by the Culver City Police Department as a non-lethal tool to disperse violent suspect(s) and/or on a felony barricaded suspect(s) to cause barricaded suspects to exit the barricaded structure/location. All chemical agents will be used only in compliance with Penal Code section 13652 and Government Code Section 12525.2.

The Culver City Police Department uses chemical agents which are used by law enforcement across the United States: CS (2-Chlorobenzylidenemalononitrile) and OC (Oleoresin Capsicum).

CS is an irritating agent and lachrymator that irritates the eyes. CS has been medically tested in the U.K. and U.S., specifically by the U.S. Army. There are no known allergic reactions to CS.

OC was de-regulated in California in 1996, is endorsed by the FBI, and is available to civilians to legally possess (2.5oz or less). OC is an inflammatory agent which causes involuntary closure of eyes for a duration of 2 to 5 minutes and respiratory inflammation, which subsides in approximately 2 minutes.

I. CTS Combined Tactical Systems 5230B - Pyrotechnic grenade designed for indoor use delivering a maximum amount of irritant smoke throughout multiple rooms with minimal risk of fire. Quantity: 19.
II. Defense Technology Spede-Heat™ - 40mm short-range CS round incorporates an aluminum shell and utilizes black powder as the propellant. The Spede- Heat™ 40mm short-range round is designed to deliver one dual-ported chemical canister to the intended target zone. Quantity: 18.

b. **Purpose:**
To act as, and shall be limited to, a de-escalation and less lethal option during the following situations:

I. Self-destructive, dangerous, violent, and/or physically combative individuals.
II. Violent riotous crowd control incidents when such weapons are necessary to defend against a threat to life or serious bodily injury to any individual, including a peace officer, or to bring a violent, dangerous and unlawful situation safely and effectively under control. Tear gas shall not be used against individuals or groups who merely fail to disperse or do not reasonably appear to present a risk to the safety of officers or the public.
III. Circumstances where members of the Emergency Response Team can obtain a tactical advantage during the following critical incidents: Barricaded violent felony suspect, vehicle barricade of a felony suspect, active shooter, or a hostage rescue operation.
IV. Potentially vicious animals.
V. Department-approved training exercises

c. **Authorized Use:**
I. Chemical Agents shall only be used by officers who have received POST certification in the use of chemical agents and in a manner consistent with Department policy.
II. Use of chemical agents for the dispersal of riotous crowds must first be approved by the Chief of Police.
III. All other approved use of tear gas must first be approved by a Bureau Captain.
IV. During department-approved training exercises
V. In compliance with Department Policies 350, (Control Devices/Chemical Agents) and 300 (Use of Force) as well as federal, state, and local laws and ordinances.

d. **Expected Lifespan:**
I. CTS Combined Tactical Systems 5230B - 5 years
II. Defense Technology Spede-Heat™ - 5 years

e. **Fiscal Impact:**
i. CTS Combined Tactical Systems 5230B - annual cost between $0 and $360.00
ii. Defense Technology Spede-Heat™ - annual cost between $0 and $346.00

*****There were no tear gas deployments during this timeframe*****

13. Pepper Ball Launcher (Category 12)
a. **Description, quantity, capabilities, and purchase cost:**
A system that uses high-pressure air to deliver PAVA powder projectiles (similar to a paintball delivery system). This system can launch projectiles at a subject upto 60'. In addition, the system is capable of area saturation up to 150'. Non-lethal option which allows law enforcement officers to deliver chemical agents and kinetic energy impacts to subjects in a potentially violent encounter. De-Escalation tools are used to avoid further injuries or lethal options on a subject.

I. PepperBall TAC-SA™ Launcher – a semi-automatic platform that can fire multiple projectiles over expansive areas. Quantity: 4
II. Byrna SD Pepper Ball Launcher – semi-automatic (pistol-style) platform that can fire multiple projectiles. Quantity: 3
III. PepperBall Live Projectile - designed for direct impact and area saturation, especially in confined, interior spaces. The projectile has a direct impact of 30 ft and an area of saturation of 150+ft. The projectile contains 0.5% PAVA Powder. Quantity: 1298.
IV. PepperBall Live-X Projectile - contains approximately 10x the PAVA of the Live projectile. This projectile is designed for direct impact or area saturation. The projectile has a direct impact of 60 ft and an area of saturation of 150+ft. The projectile contains 5% PAVA powder. Quantity: 3000.

b. **Purpose:**
To act as, and shall be limited to, a de-escalation and less lethal option during the following situations:
I. Self-destructive, violent, dangerous and/or combative individuals.
II. Riot/crowd control and civil unrest incidents when such weapons are deemed necessary to defend against a threat to life or serious bodily injury to any individual, including a peace officer, or to bring an objectively dangerous and unlawful situation safely and effectively under control.
III. Potentially vicious animals.
IV. Department-approved training exercises.

c. **Authorized Use:**
I. Only by officers who have been trained in the use of PepperBall Launchers, in a manner consistent with Department policy, are authorized to use PepperBall Launchers.
II. Deployment and use of the PepperBall launcher must first be approved by the on-duty Watch Commander or the on-scene Field Supervisor.
III. Use of the PepperBall launcher for dispersal of riotous crowds must first be approved by the Chief of Police.
VI. In compliance with Department Policies 304, (Control Devices-Impact Weapons), 350 (Control Devices -Chemical Agents), and 300 (Use of Force) as well as federal, state, and local laws and ordinances.

d. **Expected Lifespan:**
i. PepperBall TAC-SA™ Launcher - No expiration
ii. Byrna SD Pepper Ball Launcher - No expiration
iii. Live Projectile - 1 year
iv. Live-X Projectile - 1 year

e. **Fiscal Impact:**
I. PepperBall TAC-SA™ Launcher - No annual cost unless replacement purchases are necessary. Cost: $1,599.95 each. **(purchased in 5/2021)**
II. Byrna SD Pepper Ball Launcher – No annual cost unless replacement purchases are necessary (Cost: $349.00 each.
III. Live Projectile – annual cost approximately $1,928.00
IV. Live-X Projectile – annual cost approximately $1,928.00

Reason for Use	Military Equipment	Quantity	Date
Barricaded Burglary Suspect	Pepperball Launcher (discharged)	2	7/6/26

14. Taser Shockwave, microwave weapons, water cannons, and the Long-Range Acoustic Device (LRAD) (Category 13)
    a. **Description, quantity, capabilities, and purchase cost:**
       NONE
    b. **Purpose:**
       N/A
    c. **Authorized Use:**
       N/A
    d. **Expected Lifespan:**
       N/A
    e. **Fiscal Impact:**
       N/A

15. Projectile Launch platforms and associated munitions (Category 14)
    a. **Description, quantity, capabilities, and purchase cost:**
       The Projectile Launcher is not a firearm, but a Less-Lethal system that uses smokeless powder to deliver 40MM projectiles from a safe distance. The Less-Lethal launcher is capable of launching 40MM munitions at a subject up to 25 yards.
       I. B&T GL06 40MM Launcher, Quantity: 8.
       II. Defense Technology 6325 (Sponge Round) Projectile - 40mm direct-fire round has a plastic body and sponge nose designed for crowd control, patrol, and tactical applications. Quantity 182.
       III. Defense Technology OC Crushable Projectile – 40 mm short-range round is a direct-fire munition that is designed to emit an irritant powder upon impact. Quantity: 26.
       IV. Defense Technology 2262 CS 40MM Liquid Projectile – 40mm is non-burning and suitable for indoor use. Used to dislodge barricaded subjects from confined areas. Quantity: 21.

    b. **Purpose:**
       To act as, and shall be limited to, a de-escalation and less lethal option during the following situations:

       I. Self-destructive, violent, dangerous and/or combative individuals.
       II. Riot/crowd control and civil unrest incidents when such weapons are deemed necessary to defend against a threat to life or serious bodily injury to any individual, including a peace officer, or to bring an objectively dangerous and unlawful situation safely and effectively under control.
       III. Potentially vicious animals.
       IV. Department-approved training exercises.

    c. **Authorized Use:**

I. Only those officers who have been trained in the use of Projectile Launchers are authorized to use the Projectile Launchers, in a manner consistent with Department policy.
II. Use for dispersal of riotous crowds must first be approved by the Chief of Police
III. All other use of Projectile Launchers must first be approved by the on-duty Watch Commander or the on-scene Field Supervisor.
IV. In compliance with Department Policies 304, (Control Devices-Impact Weapons) and 300 (Use of Force) as well as federal, state, and local laws and ordinances.

d. **Expected Lifespan:**
   i. B&T GL06 40MM Launcher - No expiration
   ii. Defense Technology 6325 (Sponge Round) Projectile – 5 years
   iii. Defense Technology OC Crushable Projectile - 5 years
   iv. Defense Technology CS 40MM liquid Projectile – 5 years

e. **Fiscal Impact:**
   i. B&T GL06 40MM Launcher – No annual cost unless replacement purchases are necessary; Cost: $1,375.00 each. **(2 purchased in 2022; 6 purchased in 2024)**
   ii. Defense Technology 6325 (Sponge Round) Projectile – annual cost approximately $24.77 (per round).
   iii. Defense Technology OC Crushable Projectile – annual cost approximately $24.77 (per round).
   iv. Defense Technology 2262 CS 40MM Liquid Projectile – annual cost approximately $27.24 (per round).

Reason for Use	Military Equipment	Quantity	Date
Armed Suspect	40mm (directed)	1	5/17/26
Robbery Suspect	40mm (discharged)	4	7/7/26

Summary of Complaints:

The Culver City Police Department did not receive any complaints regarding the use of AB 481 equipment during this timeframe.

Violations of CCPD Policy 704:

An internal review revealed no violations of CCPD personnel unlawfully deploying or discharging military equipment (pursuant to Government Code Section 7070).

Total Annual Cost (9/12/25 – 9/11/26):

The fiscal impact on military equipment maintenance/replacement is detailed below:

Training/Replacement Type	# of Personnel/ Quantity	Date (Month/Year)	Cost
POST Rifle Training	5	11/25	$1,852.40
NFDD	48	1/26	$5,070.09
Less Lethal Instructor	1	4/26	$2,079.75
POST Rifle Training	3	5/26	$1,035.00
DJI Matice 4T UAV (Replacement)	4	6/26	$37,000.16
Ammunition Replacement	10,000 rounds	2/26	$5,031.86
		Total Budget Cost	$52,069.26

Future Acquisitions

CCPD does not intend to purchase any new equipment (not currently within its inventory) but will replenish existing ammunition and munition supplies, as needed. Any such replacement of equipment will be purchased using funds from the allocated police budget general fund or asset forfeiture funds.

Military Equipment Funding, Acquisition and Use Policy

704.1 PURPOSE AND SCOPE

The purpose of this policy is to provide guidelines for the approval, acquisition, and reporting requirements of "military equipment" as defined in the California Government Code. (See Government Code §§ 7070- 7072). The Culver City Police Department does not possess any tactical equipment that it has obtained from the military, nor does it possess any equipment that is designed solely for military use.

704.2 PHILOSOPHY

The acquisition of military equipment and its deployment in our communities may impact the public's safety and welfare. The public has a right to know about any funding, acquisition, or use of military equipment by local government officials, as well as a right to participate in any government agency's decision to fund, acquire, or use such equipment. Decisions on whether and how to fund, acquire, or use military equipment will be made with strong consideration for the public's welfare, safety, civil rights, and civil liberties and also account for the public's input.

Members of the Culver City Police Department will only use military equipment in compliance with federal and state legal authorities, including the Fourth and Fifth Amendments of the U.S. Constitution; Article 1, Section 1 of the California Constitution; Government Codes § 7286 and 12525.2; and California Penal Codes §§ 835a and 13652 as well as the Culver City Police Department's Duty Manual and General Orders. Members of the Culver City Police Department will only use military equipment consistent with applicable Department rules and regulations, including the Use of Force Policy (Section 300) contained in the Culver City Police Department Duty Manual.

704.3 APPROVAL OF THE GOVERNING BODY

The Chief of Police or his/her authorized designee shall seek approval for this policy from the governing body in the form of an ordinance adopting the policy. As part of the approval-seeking process, the Chief of Police, or his/her authorized designee, will submit the proposed military equipment policy to the governing body and make it available on the Department website at least 30 days prior to any public hearing concerning the military equipment at issue (Government Code § 7071).

The governing body must approve the policy prior to the Department or its members engaging in any of the following (Government Code § 7071):

(a) Requesting military equipment made available by the U.S. Department of Defense pursuant to 10 USC § 2576a.

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(b) Seeking funds for military equipment, including but not limited to applying for a grant, soliciting, or accepting private, local, state, or federal funds, in-kind donations, or other donations or transfers.

(c) Acquiring military equipment either permanently or temporarily, including by borrowing or leasing.

(d) Collaborating with another law enforcement agency in the deployment or other use of military equipment within the jurisdiction of this department.

(e) Using any new or existing military equipment for a purpose, in a manner, or by a person not previously approved by the governing body.

(f) Soliciting or responding to a proposal for, or entering into an agreement with, any other person or entity to seek funds for, apply to receive, acquire, use, or collaborate in the use of military equipment.

(g) Acquiring military equipment through any means not provided above.

704.4 DEFINITIONS

Definitions related to this policy include (Government Code § 7070):

Governing body – The City Council of Culver City.

Military equipment categories– Includes the following:

- Unmanned, remotely piloted, powered aerial or ground vehicles.
- Mine-resistant ambush-protected (MRAP) vehicles or armored personnel carriers.
- High mobility multipurpose wheeled vehicles (HMMWV), two-and-one-half-ton trucks, five-ton trucks, or wheeled vehicles that have a breaching or entry apparatus attached.
- Tracked armored vehicles that provide ballistic protection to their occupants
- Command and control vehicles that are either built or modified to facilitate the operational control and direction of public safety units.
- Weaponized aircraft, vessels, or vehicles of any kind.
- Battering rams, slugs, and breaching apparatuses that are explosive in nature. This does not include a handheld, one-person ram.
- Firearms and ammunition of.50 caliber or greater, excluding standard-issue shotguns and standard-issue shotgun ammunition.
- Specialized firearms and ammunition of less than.50 caliber, including firearms and accessories identified as assault weapons in Penal Code § 30510 and Penal Code § 30515, with the exception of standard-issue handguns.
- Any firearm or firearm accessory that is designed to launch explosive projectiles.
- Noise-flash diversionary devices and explosive breaching tools.
- Munitions containing tear gas or OC, excluding standard, service-issued handheld pepper spray.

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- TASER® Shockwave, microwave weapons, water cannons, and long-range acoustic devices (LRADs).
- Kinetic energy weapons and munitions.
- Any other equipment as determined by a governing body or a state agency to require additional oversight.

704.5 POLICY

It is the policy of the Culver City Police Department that there are legally enforceable safeguards, including transparency, oversight, and accountability measures in place to protect the public's welfare, safety, civil rights, and civil liberties before military equipment is funded, acquired, or used.

The Department, through the designated Military Equipment Coordinator, will train members of the Department to use military equipment only in accordance with this Policy, the Culver City Police Department Duty Manual, as well as federal, state, and local laws and ordinances. Members using military equipment for uses not identified as approved uses in the Military Equipment Inventory are subject to discipline, up to and including termination. All instances of non-compliance will be reported to City Council via the annual military equipment report.

The City Council has independent oversight of the Department's compliance with this Policy.

704.6 MILITARY EQUIPMENT COORDINATOR

The Chief of Police will designate a member of this Department to act as the Military EquipmentCoordinator ("Coordinator"). The responsibilities of the Coordinator include:

(a) Acting as a liaison to the governing body for matters related to the requirements of this policy.

(b) Identifying Department equipment that qualifies as "military equipment" as defined in Government Code § 7070, in the current possession of the Department, or the equipment the Department intends to acquire, that requires approval by the governing body.

(c) Conducting an inventory of all military equipment at least annually.

(d) Collaborating with any allied agency that may use military equipment within the jurisdiction of Culver City Police Department (Government Code § 7071).

(e) Preparing for, scheduling, and coordinating the annual community engagement meeting to include:

1. Publicizing the details of the meeting.
2. Preparing for public questions regarding the department's funding, acquisition, and use of equipment.

(f) Preparing the annual military equipment report for submission to the Chief of Police Use of force and ensuring that the report is made available on the department website (Government Code § 7072).

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(g) Receive and timely response to public concerns, complaints, or questions regarding the use of military equipment.

704.7 PUBLIC COMPLAINTS, CONCERNS, AND QUESTIONS

Concerns, complaints, and questions regarding the use of military equipment may be submitted in writing to:

Attn: Military Equipment Coordinator

4040 Duquesne Ave, Culver City, CA 90232

Email: Chief.police@culvercity.org

Telephonic complaints regarding the use of military equipment may be made by calling the Culver City Police Department Professional Standards Unit at (310) 253-6211.

Whenever practical, the Coordinator will respond to concerns, complaints, and questions within 30 calendar days of receipt. As outlined in Culver City Duty Manual Section 1008, all complaints will be thoroughly investigated in accordance with federal, state, local laws, and ordinances.

The Coordinator will track complaints, concerns, questions received, and the responses provided, in order to be able to include the information in the Annual Report described below.

704.8 MILITARY EQUIPMENT INVENTORY

The following constitutes a list of qualifying equipment in the possession of the Department:

See the section labeled: MILITARY EQUIPMENT INVENTORY.

704.9 COORDINATION WITH OTHER JURISDICTIONS

Culver City Police Department will not collaborate with other law enforcement agencies to use military equipment in this jurisdiction unless the military equipment is approved for use and used in accordance with this policy. The following constitutes a list of qualifying equipment in the Department's possession that may be used in collaboration with another Department:

See attachment: MILITARY EQUIPMENT NOT OWNED BY DEPARTMENT SUBJECT TO COLLABORATIVE USE.pdf

704.10 ANNUAL REPORT

Upon approval of the military equipment policy, the Chief of Police or their authorized designee will submit a military equipment report to the governing body for each type of military equipment approved within one year of approval and annually thereafter, for as long as the military equipment is available for use (Government Code § 7072).

The annual military use equipment report will include, for each type of military equipment:

(a) A summary of how the military equipment was used and the purpose of its use.

(b) A summary of any complaints or concerns received concerning the military equipment.

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(c) The results of any internal audits, any information about violations of the military equipment use policy, and any actions taken in response.

(d) The total annual costs for each type of military equipment, including acquisition, personnel, training, transportation, maintenance, storage, upgrade, and other ongoing costs, and from what source funds will be provided for the military equipment in the calendar year following submission of the annual military equipment report.

(e) The quantity possessed for each type of military equipment.

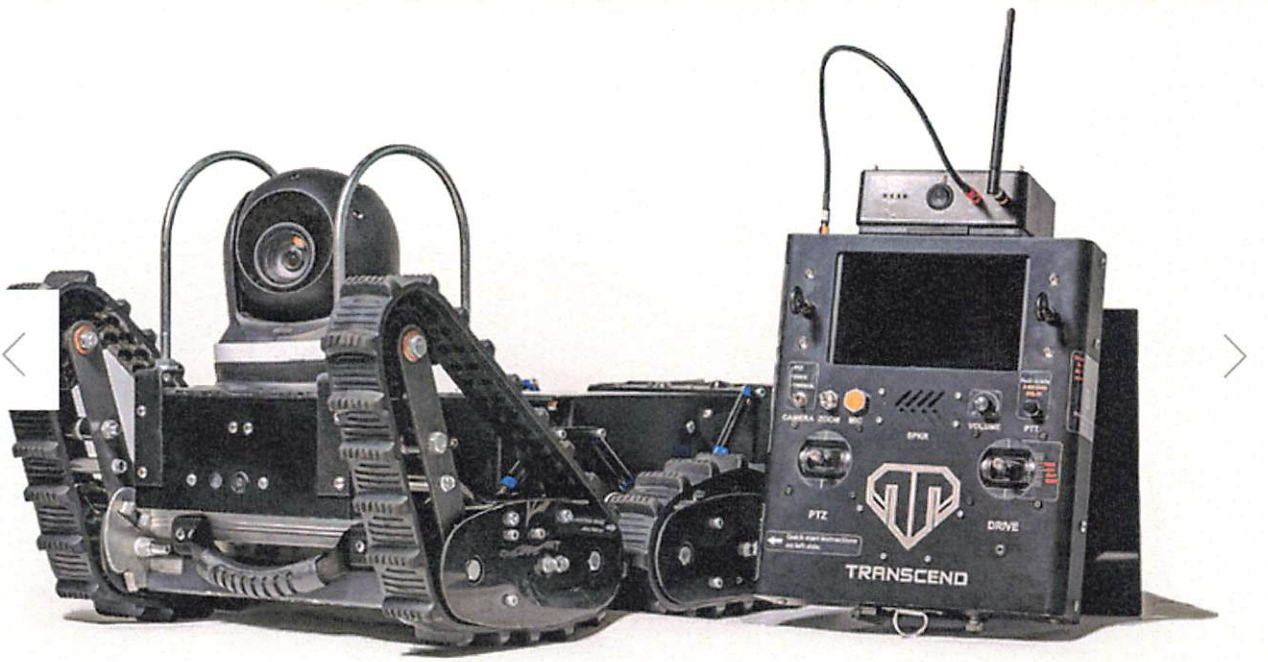
(f) If the law enforcement agency intends to acquire additional military equipment in the next year, the quantity sought for each type of military equipment.

The Chief of Police or the authorized designee will make each annual military equipment report publicly available on the department website for as long as the military equipment is available for use. The report shall include all information required by Government Code § 7072 for the preceding calendar year for each type of military equipment in department inventory.

704.11 COMMUNITY ENGAGEMENT

Within 30 days of submitting and publicly releasing the annual report, the Department will hold at least one well-publicized and conveniently located community engagement meeting, at which the Department will discuss the report and respond to public questions regarding the funding, acquisition, or use of military equipment. See attachment: Military Equipment Attachments.pdf

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02 **Our robots do the stair and obstacle climbing for you based on double patented mobility technology.**

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Force subjects out of hiding by safely deploying hot OC\CS gas remotely from the Vantage (Gas

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Use the push-to-talk two-way audio to de-escalate tense situations through dialogue

Hazmat

Mount CBRNE\HAZMAT sensors to learn critical information about a scene from a safe distance

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Manipulate

Under the Influence

Unknown Situations

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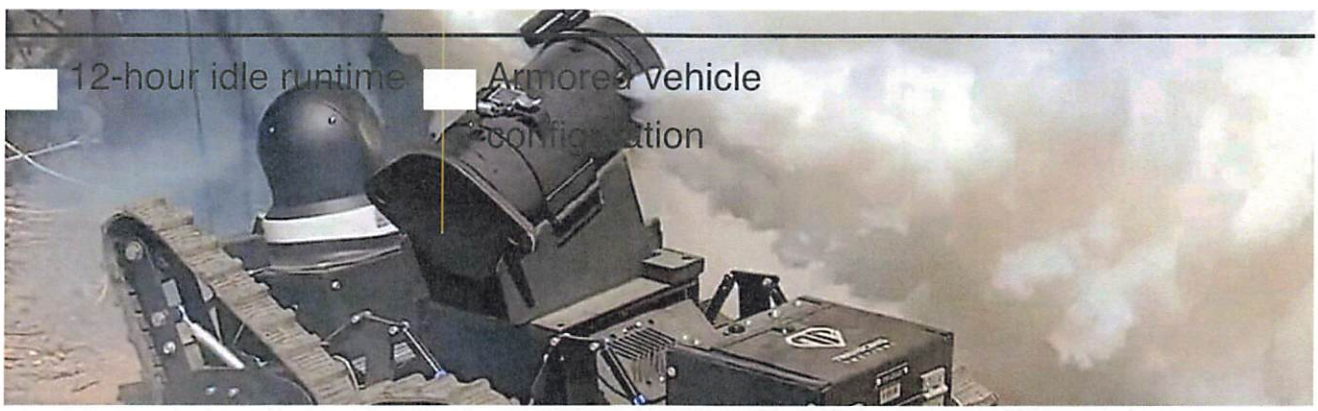
Specifications

Automatically climb International stairs, and obstacles up to 12 inches with the push of a joy stick

Maneuvers easily on tight staircase landings

Up to 600 ft. NLOS / 2,500 ft. LOS

Excels at traversing clothes such as underwear and sheets	Look on top of beds, tables, and down into bathtubs without an arm	Camera Suite: 2-drive camera, pan tilt zoom (25x zoom), FLIR thermal and auto IR night vision
Push To Talk 2-Way Audio	Carries up to 200 pounds. Hauls an additional 200 pounds (400 pound total capability)	Sensitive robot microphone can listen from up to 20 ft. away
Mounting holes for bungie cords and other payloads of choice	Water and dust resistant	3-hour continuous runtime
12-hour idle runtime	Armored vehicle configuration	



Hot Gas Delivery System

Designed and tested with Los Angeles Sheriff Special Enforcement Bureau the Remote Burn Safe System ~~effective hot pyro OC/CS gas deep within a structure to force a subject out of~~ rs to safely deploy highly hiding.

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Breacher Robot

The Breacher Robot is the first robot capable of remotely breaching bolt-locked doors without explosives or projectiles. This game-changing tool can breach up to 10 doors on a single charge removing the need to send officers behind a door or into an interior hallway “death alley”.

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Multi-Mission Arm

The Vantage with the Multi-Mission Arm by HDT Global enables your Vantage to open doors, closets and manipulate objects. It's the most dexterous, compact and mobile robot-arm combination available.

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MATRICE 200 SERIES SPECS

Home

M200

AIRCRAFT

Model	M200
Package Dimensions	31.1×15.4×11.4 inch (790×390×290mm)
Dimensions (Unfolded)	34.9×34.6×14.9 inch (887×880×378 mm)
Dimensions (Folded)	28.2×8.7×9.3 inch (716×220×236 mm)
Folding Method	Folded Inward
Diagonal Wheelbase	25.3 inch (643 mm)
Number of Propellers	2
Weight (w/o battery)	Approx. 3.80 kg
Weight (TB55)	Approx. 4.53 kg
Max Takeoff Weight	6.14KG
Max Payload (TB55)	Approx.2.34kg (with two standard batteries)
Max Payload (TB55)	Approx.1.61kg (with two standard batteries)
Hovering Accuracy Range (P-mode with GPS)	Vertical: ±1.64 feet (0.5m) or ±0.33 feet (0.1m, Downward Vision System enabled) Horizontal: ±4.92 feet (1.5m) or ±0.98 feet (0.3m, Downward Vision System enabled)
Max Angular Velocity	Pitch: 300°/s ; Yaw: 150°/s
Max Tilt Angle	P Mode: 30° (Forward Vision System enabled: 25°) ; A Mode: 35° ; S Mode: 35°
Max Ascent Speed	16.4 ft/s (5 m/s)
Max Descent Speed	Vertical: 9.8 ft/s (3 m/s)
Max Speed	

GIMBAL

Compatible Gimbals	Zenmuse X4S Zenmuse X5S Zenmuse Z30 Zenmuse XT

REMOTE CONTROLLER

Model	GL6D10A
Operating Frequency	2.400-2.483 GHz 5.725-5.850 GHz
Max Transmitting Distance (Unobstructed, free of interference)	2.4 GHz: 4.3 miles (7 km, FCC); 2.2 miles (3.5 km, CE); 2.5 miles (4 km, SRRC) 5.8 GHz: 4.3 miles (7 km, FCC); 1.2 miles (2 km, CE); 3.1 miles (5 km, SRRC)
EIRP	2.4 GHz: 26 dBm (FCC); 17 dBm (CE); 20 dBm (SRRC) 5.8 GHz: 28 dBm (FCC); 14 dBm (CE); 20 dBm (SRRC)
Video Output Ports	USB, HDMI
Power Supply	Built-in battery
Charging	DJI charger
Dual-User Capability	Host-and-Slave connection
Mobile Device Holder	Tablet or Smart Phone
Max Mobile Device Height	170 mm
USB Port Power	5 W (Without supplying power to smart device)

	S Mode: 51.4mph (82.8kph) P Mode: 38mph (61.2kph) A Mode: 51.4mph (82.8kph)
Max Service Ceiling Above Sea Level	1.86 mi (3000 m)
Max Wind Resistance	33.4 ft/s (12 m/s)
Max Flight Time (No Payload, with TB50)	27min
Max Flight Time (No Payload, with TB55)	38min
Max Flight Time (Full Payload, with TB50)	12min
Max Flight Time (Full Payload, with TB55)	24min
Motor Model	DJI 3515
Propeller Model	1760S
Operating Temperature	-4° to 113° F (-20° to 45° C)
IP Rating	IP43

GIMBAL INSTALLATION

Downward Gimbal Mount	Supported
Upward Gimbal Mount	Not Supported
Downward Dual Gimbal	Not Supported

BATTERY (STANDARD)

Model	TB50
Capacity	4280 mAh
Voltage	22.8V
Battery Type	LiPo 6S
Energy	97.58 Wh
Net Weight	Approx. 520g
Operating Temperature	-4° to 113° F (-20° to 45° C)
Storage Temperature	Less than 3 months: -4° to 113° F (-20° to 45° C) More than 3 months: 72° to 82° F (22° to 28° C)
Charging Temperature	41° to 104° F (5° to 40° C)
Max Charging Power	180 W

CHARGER

Model	IN2C180
Voltage	26.1 V
Rated Power	180 W

FORWARD VISION SYSTEM

Obstacle Sensing Range	2.3-98.4 feet (0.7-30 m)
FOV	Horizontal 60° , Vertical 54°
Operating Environment	Surfaces with clear patterns and adequate lighting (> 15 lux)

DOWNWARD VISION SYSTEM

Velocity Range	<32.8 ft/s (10 m/s) at the height of 5.56 feet (2 m)
Altitude Range	<32.8 feet (10 m)
Operating Range	<32.8 feet (10 m)
Operating Environment	Surfaces with clear patterns and adequate lighting (> 15 lux)
Ultrasonic Sensor Operating Range	0.33-16.4 feet (10-500 cm)
Ultrasonic Sensor Operating Environment	Non-absorbing material, rigid surface (thick indoor carpeting will reduce performance)

M210

AIRCRAFT

Model	M210
Package Dimensions	31.1×15.4×11.4inch (790×390×290mm)
Carton Dimensions (w/ Packed)	34.9×34.6×14.9 inch (887×880×378 mm)
Operating Temperature	-4° to 104° F (-20° to 45° C)
Storage Temperature	Less than 3 months: -4° to 113° F (-20° to 45° C) More than 3 months: 72° to 82° F (22° to 28° C)
Charging Temperature	32° to 104° F (0° to 40° C)
Battery	6000mAh 2S LiPo
USB Supply Power	iOS: 1 A @ 5.2 V (Max); Android: 1.5 A @ 5.2 V (Max)

BATTERY (OPTIONAL)

Model	TB55
Capacity	7660 mAh
Voltage	22.8V
Battery Type	LiPo 6S
Energy	176.53Wh
Net Weight	Approx. 885g
Operating Temperature	-4° to 113° F (-20° to 45° C)
Storage Temperature	Less than 3 months: -20° C to 45° C More than 3 months: 22° C to 28° C
Charging Temperature	41° to 104° F (5° to 40° C)
Max Charging Power	180 W

DJI GO 4 APP

Name	DJI GO 4
Mobile Device System Requirements	iOS 9.0 or later, Android 4.4.0 or later
Supported Mobile Devices	iOS: iPhone 5s, iPhone SE, iPhone 6, iPhone 6 Plus, iPhone 6s, iPhone 6s Plus, iPhone 7, iPhone 7 Plus, iPad Air, iPad Air Wi-Fi + Cellular, iPad mini 2, iPad mini 2 Wi-Fi + Cellular, iPad Air 2, iPad Air 2 Wi-Fi + Cellular, iPad mini 3, iPad mini 3 Wi-Fi + Cellular, iPad mini 4 and iPad mini 4 Wi-Fi + Cellular. This app is optimized for iPhone 7, iPhone 7 Plus. Android: Samsung tabs 705c, Samsung S5, Samsung S6, Samsung NOTE4, Samsung NOTE3, Google Nexus 6p, Nexus 9, Google Nexus 7 II, Ascend Mate7, Huawei P8 Max, Huawei Mate 8, LG V20, Nubia Z7 mini, Sony Xperia Z3, MI 3, MI PAD, Smartisan T1. *Support for additional devices available as testing and development continues.

UPWARD INFRARED SENSOR

Obstacle Sensing Range	0-16.4 feet (0-5 m)
FOV	±5°
Operating Environment	Large-sized object with diffuse reflecting surface or High reflective rate (>10%)

GIMBALS

Compatible Gimbals	Zenmuse X4S Zenmuse X5S Zenmuse Z30 Zenmuse XT

Dimensions (Folded)	28.2×8.7×9.3 inch (716×220×236 mm)
Folding Method	Folded inward
Diagonal Wheelbase	25.3 inch (643 mm)
Number of Batteries	2
Weight (TB50)	Approx.3.84kg (with two standard batteries)
Weight (TB55)	Approx.4.57kg (with two standard batteries)
Max Takeoff Weight	6.14KG
Max Payload (TB50)	Approx.2.3kg (with two standard batteries)
Max Payload (TB55)	Approx.1.57kg (with two standard batteries)
Hovering Accuracy (during safe flights)	Vertical: ±0.5 , Downward Vision System enabled: ±0.1 Horizontal: ±1.5 , Downward Vision System enabled: ±0.3
Max Angular Velocity	Pitch: 300° /s ; Yaw: 150° /s
Max Pitch Angle (For Downward Gimbal)	P Mode: 25° (Forward Vision System enabled: 25°) ; A Mode: 25° ; S Mode: 30°
Max Pitch Angle (For Upward & Downward Gimbal)	P Mode: 30° (Forward Vision System enabled: 25°) ; A Mode: 30° ; S Mode: 35°
Max Ascent Speed	16.4 ft/s (5 m/s)
Max Descent Speed	Vertical: 9.8 ft/s (3 m/s)
Max Speed (For Downward Gimbal)	S Mode: 40.3mph (64.8kph) P Mode: 38mph (61.2kph) A Mode: 38mph (61.2kph)
Max Speed (For Upward/Downward Gimbal)	S Mode: 51.4mph (82.8kph) P Mode: 38mph (61.2kph) A Mode: 51.4mph (82.8kph)
Max Service Ceiling Above Sea Level	1.86 miles (3000 m)
Max Wind Resistance	39.4 ft/s (12 m/s)
Max Flight Time (No Payload with TB50)	27min
Max Flight Time (No Payload with TB55)	28min
Max Flight Time (Full Payload with TB50)	13min
Max Flight Time (Full Payload with TB55)	24min
Motor Model	DJI 3515
Propeller Model	1760S
Operating Temperature	-4° to 113° F (-20° to 45° C)
IP Rating	IP43

GIMBAL INSTALLATION

Downward Gimbal Mount	Supported
Upward Gimbal Mount	Supported
Downward Dual Gimbal	Supported

CHARGER

Model	IN2C180
Voltage	26.1 V
Rated Power	180 W

FORWARD VISION SYSTEM

Obstacle Sensing Range	2.3-98.4 feet (0.7-30 m)
FOV	Horizontal 60° , Vertical 54°
Operating Environment	Surfaces with clear patterns and adequate lighting (> 15 lux)

DOWNWARD VISION SYSTEM

Velocity Range	<32.8 ft/s (10 m/s) at height of 6.56 feet (2 m)
Altitude Range	<32.8 feet (10 m)
Operating Range	<32.8 feet (10 m)
Operating Environment	Surfaces with clear patterns and adequate lighting (> 15 lux)
Ultrasonic Sensor Sensing Range	0.33-16.4 feet (10-500 cm)
Ultrasonic Sensor Operating Environment	Non-absorbing material, rigid surface (thick indoor carpeting will reduce performance)

BATTERY

Model	TB50
Capacity	4280 mAh
Voltage	22.8V
Battery Type	LiPo 6S
Energy	97.58 Wh
Net Weight	Approx. 520 g
Operating Temperature	-20°C to 45°C
Storage Temperature	Storage Temperature Less than 3 months: -4° to 113° F (-20° to 45° C) More than 3 months: 72° to 82° F (22° to 28° C)
Charging Temperature	41° to 104° F (5° to 40° C)
Max Charging Power	180 W
Model	TB55
Capacity	7660 mAh
Voltage	22.8V
Battery Type	LiPo 6S
Energy	176.93Wh
Net Weight	Approx. 885 g
Operating Temperature	-4° to 113° F (-20° to 45° C)
Storage Temperature	Less than 3 months: -20° C to 45° C More than 3 months: 22° C to 28° C
Charging Temperature	41° to 104° F (5° to 40° C)
Max Charging Power	180 W

DJI GO 4 APP

Name	DJI GO 4
Mobile Device System Requirements	IOS 9.0 or later, Android 4.4.0 or later
Supported Mobile Devices	IOS: iPhone 5s, iPhone SE, iPhone 6, iPhone 6 Plus, iPhone 6s, iPhone 6s Plus, iPhone 7, iPhone 7 Plus, iPad Air, iPad Air Wi-Fi + Cellular, iPad mini 2, iPad mini 2 Wi-Fi + Cellular, iPad Air 2, iPad Air 2 Wi-Fi + Cellular, iPad mini 3, iPad mini 3 Wi-Fi + Cellular, iPad mini 4 and iPad mini 4 Wi-Fi + Cellular. This app is optimized for iPhone 7, iPhone 7 Plus. Android: Samsung tabs 705c, Samsung S6, Samsung S5, Samsung NOTE4, Samsung NOTE3, Google Nexus 6p, Nexus 9, Google Nexus 7 II, Ascend Mate7, Huawei P8 Max, Huawei Mate 8, LG V20, Nubia Z7 mini, Sony Xperia Z3, MI3, MIPAD, Smartisan T1. *Support for additional devices available as testing and development continues.

UPWARD INFRARED SENSOR

Obstacle Sensing Range	0-16.4 feet (0-5 m)
FOV	±5°
Operating Environment	Large, diffuse and reflective obstacles (reflectivity>10%)

CENDENCE

Type	GL800A
Operating Frequency	2.400-2.483 GHz; 5.725-5.825 GHz
Max Transmitting Distance (Unobstructed, Free of Interference)	2.4 GHz: 4.3 miles (7 km, FCC); 2.2 miles (3.5 km, CE); 2.5 miles (4 km, SRRC) 5.8 GHz: 4.3 miles (7 km, FCC); 1.2 miles (2 km, CE); 3.1 miles (5 km, SRRC)
EIRP	2.4 GHz: 26 dBm (FCC); 17 dBm (CE); 20 dBm (SRRC) 5.8 GHz: 28 dBm (FCC); 14 dBm (CE); 20 dBm (SRRC)
Power Supply	Extended Intelligent Battery (Model: WB37-4920mAh-7.6V)
Intelligent Battery	4923 mAh LiPo
Charger	DJI charger
Output Power	20 W (supplying power to DJI CS550 monitor) 12 W (without supplying power to monitor)
Video Output Ports	USB, HDMI, SDI
USB Supply Power	IOS: 1 A, 5.2 V (Max); Android: 1.5 A, 5.2 V (Max)
Daisy-chain Capability	Master-and-Slave connection
Operating Temperature	-4 °to 104 °F (-20 °to 40 °C)
Storage Temperature	Less than 3 months: -4 °to 113 °F (-20 °to 45 °C) More than 3 months: 72 °to 82 °F (22 °to 28 °C)

Charging Temperature	32° to 104 °F (0° to 40 °C)
Charging Time	About 2 hours and 24 minutes (using a 180 W charger)
Supply Power Time	About 4 hours (only Master remote controller function enabled and without supplying power to monitor)
Weight	1041 g

M210 RTK

AIRCRAFT

Model	M210 RTK
Package Dimensions	31.1×15.4×11.4 inch (790×390×290 mm)
Extended Size (Unfolded)	34.9×34.6×16.1 inch (Unfolded, 887×880×408 mm)
Dimensions (Folded)	28.2×11.3×9.3 inch (Folded, 716×287×236 mm)
Folding Method	Folded Inward
Diagonal Wheelbase	25.3 inch (643 mm)
Number of Batteries	2
Weight (TB50)	Approx. 4.42 kg
Weight (TB55)	Approx. 5.51 kg
Max Takeoff Weight	6.14 kg
Max Payload (2 TB50)	Approx. 1.72 kg (with two standard batteries)
Max Payload (2 TB55)	Approx. 0.99 kg (with two optional batteries)
Hovering Accuracy (P Mode with GPS)	Vertical: ±1.64 feet (0.5 m) or ±0.33 feet (0.1 m, Downward Vision System enabled) or ±0.33 feet (0.1 m, RTK enabled) Horizontal: ±4.92 feet (1.5 m) or ±0.98 feet (0.3 m, Downward Vision System enabled) or ±0.33 feet (0.1 m, RTK enabled)
Max Angular Velocity	Pitch: 300°/s, Yaw: 150°/s
Max Pitch Angle (Dual Downward Gimbals)	P Mode: 25° (Forward Vision System enabled: 25°) ; A Mode: 25° ; S Mode: 30°
Max Pitch Angle (Single Upward/Downward Gimbal)	P Mode: 30° (Forward Vision System enabled: 25°) ; A Mode: 30° ; S Mode: 35°
Max Ascent Speed	16.4 ft/s (5 m/s)
Max Descent Speed	Vertical: 9.8 ft/s (3 m/s)
Max Speed (Dual Downward Gimbals)	S Mode: 40.3mph (64.8kph) P Mode: 38mph (61.2kph) A Mode: 38mph (61.2kph)
Max Speed (Single Upward/Downward Gimbal)	S Mode: 51.4mph (82.8kph) P Mode: 38mph (61.2kph) A Mode: 51.4mph (82.8kph)
Max Service Ceiling Above Sea Level	1.86 miles (3000 m)
Max Wind Resistance	39.4 ft/s (12 m/s)
Max Flight Time (No Payload with TB50)	23min
Max Flight Time (No Payload with TB55)	32min
Max Flight Time (Full Payload with TB50)	13min
Max Flight Time (Full Payload with TB55)	24min
Motor Model	DJI 3515
Propeller Model	1760S
Operating Temperature	-4° to 113° F (-20° to 45° C)
IP Rating	IP43

GIMBAL INSTALLATION

Downward Gimbal Mount	Supported
Upward Gimbal Mount	Supported
Downward Dual Gimbal	Supported

CHARGER

Model	IN2C180
Voltage	26.1 V
Rated Power	180 W

FORWARD VISION SYSTEM

Obstacle Sensing Range	0.7-30 m ;
FOV	Horizontal 60° , Vertical 54°

GIMBALS

Compatible Gimbals	Zenmuse X4S Zenmuse X5S Zenmuse Z30 Zenmuse XT

BATTERY

Model	TB50
Capacity	4280 mAh
Voltage	22.8V
Battery Type	LiPo 6S
Energy	97.58 Wh
Net Weight	Approx. 520g
Operating Temperature	-4° to 113° F (-20° to 45° C)
Storage Temperature	Less than 3 months: -4° to 113° F (-20° to 45° C) More than 3 months: 72° to 82° F (22° to 28° C)
Charging Temperature	41° to 104° F (5° to 40° C)
Max Charging Power	180 W
Model	TB55
Capacity	7660 mAh
Voltage	22.8V
Battery Type	LiPo 6S
Energy	176.93Wh
Net Weight	885g
Operating Temperature	-20°C to 45° C
Storage Temperature	Less than 3 months: -20° C to 45° C More than 3 months: 22° C to 28° C
Charging Temperature	41° to 104° F (5° to 40° C)
Max Charging Power	180 W

DJI GO 4 APP

Name	DJI GO 4
Mobile Device System Requirements	IOS 9.0 or later, Android 4.4.0 or later
Supported Mobile Devices	IOS: iPhone 5s, iPhone SE, iPhone 6, iPhone 6 Plus, iPhone 6s, iPhone 6s Plus, iPhone 7, iPhone 7 Plus, iPad Air, iPad Air Wi-Fi + Cellular, iPad mini 2, iPad mini 2 Wi-Fi + Cellular, iPad Air 2, iPad Air 2 Wi-Fi + Cellular, iPad mini 3, iPad mini 3 Wi-Fi + Cellular, iPad mini 4 and iPad mini 4 Wi-Fi + Cellular. This app is optimized for iPhone 7, iPhone 7 Plus. Android: Samsung tabs 705C, Samsung S6, Samsung S5, Samsung NOTE4, Samsung NOTE3, Google Nexus 6p, Nexus 9, Google Nexus 7 II, Ascend Mate7, Huawei P8 Max, Huawei Mate 8, LG V20, Nubia Z7 mini, Sony Xperia Z3, MI 3, MI PAD, Smartisan T1. *Support for additional devices available as testing and development continues.

UPWARD INFRARED SENSOR

Obstacle Sensing Range	0-16.4 feet (0-5 m)
FOV	±5°
Operating Environment	Large-sized object with diffuse reflecting surface or high reflective rate (>10%)

CENDENCE

Type	GL800A
Operating Frequency	2.400-2.483 GHz; 5.725-5.825 GHz

Operating Environment	Surfaces with clear patterns and adequate lighting (> 15 lux)

DOWNWARD VISION SYSTEM

Velocity Range	<32.8 ft/s (10 m/s) at height of 6.56 feet (2 m)
Altitude Range	<32.8 feet (10 m)
Operating Range	<32.8 feet (10 m)
Operating Environment	Surfaces with clear patterns and adequate lighting (> 15 lux)
Surfaces with clear patterns and adequate lighting (> 15 lux)	0.33-16.4 feet (10-500 cm)
Ultrasonic Sensor Operating Environment	Non-absorbing material, rigid surface (thick indoor carpeting will reduce performance)

Max Transmitting Distance (unobstructed, free of interference)	2.4 GHz: 4.3 miles (7 km, FCC); 2.2 miles (3.5 km, CE); 2.5 miles (4 km, SRRC) 5.8 GHz: 4.3 miles (7 km, FCC); 1.2 miles (2 km, CE); 3.1 miles (5 km, SRRC)
EIRP	2.4 GHz: 26 dBm (FCC); 17 dBm (CE); 20 dBm (SRRC) 5.8 GHz: 28 dBm (FCC); 14 dBm (CE); 20 dBm (SRRC)
Power Supply	Extended Intelligent Battery (Model: WB37-4920mAh-7.6V)
Intelligent Battery	4923 mAh LiPo
Charging	DJI charger
Output Power	20 W (supplying power to DJI CS550 monitor) 12 W (without supplying power to monitor)
Video Output Ports	USB, HDMI, SDI
USB Supply Power	iOS: 1 A, 5.2 V (Max); Android: 1.5 A, 5.2 V (Max)
Data/User Capability	Master-and-Slave connection
Operating Temperature	-4 °to 104 °F (-20 °to 40 °C)
Storage Temperature	Less than 3 months: -4 °to 113 °F (-20 °to 45 °C) More than 3 months: 72 °to 82 °F (22 °to 28 °C)
Charging Temperature	32 °to 104 °F (0 °to 40 °C)
Charging Time	About 2 hours and 24 minutes (using a 180 W charger)
Supply Power Time	About 4 hours (only Master remote controller function enabled and without supplying power to monitor)
Weight	1041 g

MATRICE 200 SERIES VIDEOS

Home / [illegible] Matrice 200 Series [illegible]

TUTORIALS



All Matrice 200 remote controllers are linked to the aircraft at the factory.

DJI Matrice 200 – Linking the Aircraft and the Remote Controller

2017-07-24

INTRO



DJI - M200 - Powerline Inspection Tool

2017-07-19



DJI - M200 - Search and Rescue in Extreme Environments

2017-07-19



DJI - Introducing the Matrice 200 Series (Extended Version)

2017-04-01



DJI Matrice 200 Series - Updating the Remote Controller Firmware

2017-07-24



DJI Matrice 200 - Activating the Aircraft

2017-07-24

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SOFTWARE

DJI Assistant 2 Release Notes
2017-12-29 — ZIP PDF

DJI Assistant 2 v1.2.0
2017-12-29 — ZIP EXE

DJI Assistant 2 v1.2.0
2017-12-29 — DMG

CAMERA FIRMWARE

Zenmuse Z30 Firmware
2017-06-29 — ZIP

Zenmuse XT Firmware for Matrice 200 Series
2017-06-28 — ZIP

DOCUMENTS & MANUALS

Matrice 200 series Release Notes
2017-12-29 — ZIP PDF

Matrice 210/Matrice 210 RTK User Manual v1.0
2017-09-19 — ZIP PDF

Matrice 210/Matrice 210 RTK Quick Start Guide v1.0
2017-08-01 — ZIP PDF

Matrice 210/Matrice 210 RTK In the Box
2017-08-01 — ZIP PDF

Matrice 200 User Manual v1.2
2017-09-19 — ZIP PDF

Matrice 200 Quick Start Guide v1.0
2017-06-21 — ZIP PDF

Matrice 200 In the Box
2017-06-21 — ZIP PDF

Matrice 200 series Safety Guidelines and Disclaimer v1.2
2017-09-26 — ZIP PDF

Matrice 200 series Intelligent Flight Battery Safety Guidelines v1.0
2017-06-21 — ZIP PDF

CrystalSky User Guide
2017-08-17 — ZIP PDF

M210/M210 RTK Dimensions — ZIP PDF

2017-09-13

Matrice 200 series Multi-rotor Guide ZIP PDF

2017-12-28

APP / DJI PILOT

MATRICE 200 SERIES FAQ

Home / Products / Matrice 200 Series / FAQ

AIRCRAFT

1.What cameras and gimbals is the M200 series compatible with?

2.Does the M200 series have an obstacle Avoidance/Flight Autonomy system?

3.What is the difference between the M100, M200 and M600?

4.Is a case included with my M200 Series drone?

5.What is IP43 protection rating, and in what scenarios can the Matrice 200 series be protected under this rating?

6.Can I use the Matrice 200 series on rainy days? And what are some factors to consider when flying in rainy weather?

7.Will the covered IFlow aircraft incure water damage?

8.Does my M200 Series drone to be regularly checked when flying in sandy environments?

9.Can I carry the M200 batteries on a commercial airplane?

10.What happens if one battery fails?

11.For the M210 RTK model, is there any extra setup required for this unit?

APPLICATIONS

1.I'm a filmmaker, is this the best option for me?

2.I'm a power line or wind tower inspector and worry about interference affecting the safety of my inspection. Will the M200 Series model and payload help me operate more safely?

3.My business is interested in integrating drones into our business, where can we learn more?

PAYLOADS

1.What cameras are compatible with the M200 series?

2.What dual gimbal configurations are supported by the M210 and M2...?

3.How do I mount an upward payload?

4.Can you fly with both the X7 and Z30 at the same time?

5.Can you mount a camera upwards and downwards at the same time?

6.Can the Zenmuse XT camera be used with the M200 Series platform?

SOFTWARE

1.What mobile software programs are compatible with the M200 series?

2.What's new in the DJI Pilot app?

3.What programs can I use for creating reproducible flight plans for automated flight?

4.Where can I learn more about DJI FlightHub?

OTHER

1.How long does it take to charge a remote controller? How long does it last on a full charge?

2.Does my M200 Series drone come with a Micro SD card?

3.What is the latency of the transmission system?

4.Can you use batteries charged at different levels?

5.Do I need to pair the batteries?

6.Does the M200 Series support the Adobe CinemaDNG and Apple ProRes?

7.Does the M200 have a IR Emitter built in?

8.How do I enable autofocus?

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Professional
Enterprise

Where to Buy
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Retail Store

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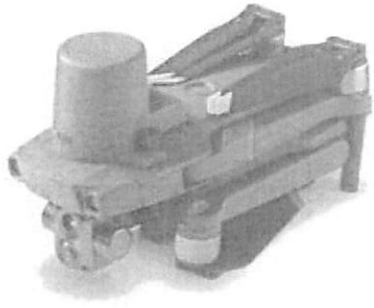
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Specs

Mavic 2 Enterprise Advanced

Aircraft

Takeoff Weight (Without Accessories)	909g
Max Takeoff Weight	1100g
Dimensions (L×W×H)	Folded: 214×91×84mm Unfolded: 322×242×84mm Unfolded+Spotlight: 322×242×114mm Unfolded+Beacon: 322×242×101mm Unfolded+Speaker: 322×242×140mm Unfolded+RTK Module: 322x242x125mm
Diagonal Distance	354 mm
Max Ascent Speed	6 m/s (S-mode) 5 m/s (P-mode) 4 m/s (S-mode with accessories) 4 m/s (P-mode with accessories)
Max Descent Speed	Descend Vertically 5 m/s (S-mode) 4 m/s (P-mode) Tilt 7 m/s (S-mode) 4 m/s (P-mode)
Max Speed	72 kph (S-mode, without wind) 50 kph (P-mode, without wind)
Max Service Ceiling Above Sea Level	6000 m
Max Flight Time	31 min (measured while flying at 25 kph in windless conditions) 28 min (RTK module attached) 29 min (with beacon turned on) 30 min (with beacon turned off) 24 min (with spotlight turned on) 28 min (with spotlight turned off) 27 min (with speaker turned on) 28 min (with speaker turned off)
Max Wind Speed Resistance	10 m/s (scale 5)
Max Tilt Angle	35°(S-mode, with remote controller) 25°(P-mode)
Max Angular Velocity	200°/s (S-mode) 100°/s (P-mode)
Operating Temperature	-10° to 40° C
GNSS	GPS+GLONASS
Hovering Accuracy Range	Vertical: ±0.1 m (with RTK) ±0.1 m (with Vision Positioning) ±0.5 m (with GPS Positioning) Horizontal: ±0.1 m (with RTK) ±0.3 m (with Vision Positioning) ±1.5 m (with GPS Positioning)

Operating Frequency	2.400-2.4835 GHz; 5.725-5.850 GHz
Transmitter Power (EIRP)	2.400 - 2.4835 GHz FCC: ≤26 dBm ; CE: ≤20 dBm ; SRRC: ≤20 dBm; MIC: ≤20 dBm 5.725 - 5.850 GHz FCC: ≤26 dBm; CE: ≤14 dBm; SRRC: ≤26 dBm
Internal Storage	24 GB

M2EA Thermal Camera

Sensor	Uncooled VOx Microbolometer
Focal Length	Approx. 9mm 35 mm format equivalent: Approx. 38mm
Sensor Resolution	640×512 @30Hz
Accuracy of Thermal Temperature	Measurement: ±2℃ or ±2%, whichever is greater.
Scene Range	-40 °C to 150 °C (High Gain) -40 °C to 550 °C (Low Gain)
Digital Zoom	16×
Pixel Pitch	12 μm
Spectral Band	8-14 μm
Photo Format	R-JPEG
Video Format	MP4
Metering Method	Spot Meter, Area Measurement
FFC	Auto/Manual

M2EA Visual Camera

Sensor	1/2" CMOS, Effective Pixels: 48 M
Lens	FOV: 84° 35 mm format equivalent: 24 mm Aperture: f/2.8 Focus: 1 m to ∞
ISO Range	Video: 100-12800 (auto) Photos: 100-1600 (auto)
Digital Zoom	32×
Max Image Size	8000×6000
Still Photography Modes	Single shotInterval: 2/3/5/7/10/15/20/30/60 s Panorama: Sphere
Video Resolution	3840×2160@30fps 1920×1080@30fps
Photo Format	JPEG
Video Format	MP4

Gimbal

Mechanical Range	Tilt: -135°- +45° Pan: -100°- +100°
Controllable Range	Tilt: -90°- +30° Pan: -75°- +75°
Stabilization	3-axis (tilt, roll, pan)
Max control speed	120°/s
Angular Vibration Range	±0.005°

Sensing System

Sensing System	Omnidirectional Obstacle Sensing[2]
Forward	Precision Measurement Range: 0.5 - 20 m Detectable Range: 20 - 40 m Effective Sensing Speed: ≤ 14m/s FOV: Horizontal: 40°, Vertical: 70°
Backward	Precision Measurement Range: 0.5 - 16 m Detectable Range: 16 - 32 m Effective Sensing Speed: ≤ 12m/s FOV: Horizontal: 60°, Vertical: 77°
Upward	Precision Measurement Range: 0.1-8 m
Downward	Precision Measurement Range: 0.5 -11m Detectable Range: 11-22 m
Sides	Precision Measurement Range: 0.5 - 10 m Effective Sensing Speed: ≤ 8m/s FOV: Horizontal: 80°, Vertical: 65°
Operating Environment	Forward, Backward and Sides: Surface with clear pattern and adequate lighting (lux > 15) Upward: Detects diffuse reflective surfaces(>20%) (walls, trees, people, etc.) Downward: Surface with clear pattern and adequate lighting (lux > 15)Detects diffuse reflective surfaces (>20%) (walls, trees, people, etc.)

Remote Controller

Operating Frequency	2.400 - 2.483 GHz; 5.725 - 5.850 GHz
Max Transmission Distance (unobstructed, free of interference)	2.400 - 2.483 GHz; 5.725 - 5.850 GHz FCC: 10000m CE: 6000m SRRC: 6000m MIC: 6000m
Transmission Power (EIRP)	2.400-2.4835 GHz : 25.5 dBm (FCC) ; 18.5 dBm (CE) 19 dBm (SRRC) ; 18.5 dBm (MIC) 5.725-5.850 GHz : 25.5 dBm (FCC) ; 12.5 dBm (CE) 18.5 dBm (SRRC)
Storage	ROM 16GB + microSD Extensible Storage
Video Output Port	HDMI Port
Built-in Battery	Type: 18650 Li-Po (5000 mAh @ 7.2 V) Charging Mode: Charged with USB charger at 12V/2A Rated Power 15 W Charging time: 2 hr (with a USB charger at 12V/2A)
Operating Current/Voltage	1800mA – 3.83V
Battery Life	Built-in Battery Approx. 2.5 hr

Operating Temperature	-20° C - 40° C
RC Size	Folded without Joystick: 177.5 x 121.3 x 40 mm Unfolded with Joystick: 177.5 x 181 x 60 mm
Weight	Approx. 630 g
Intelligent Flight Battery	Main Link: 17.6V ⎓ 3.41A or 17.0V⎓3.53A USB: 5.0 V ⎓ 2.0 A

Intelligent Flight Battery

Capacity	3850 mAh
Voltage	15.4V
Max Charging Voltage	17.6V
Battery Type	LiPo
Energy	59.29 Wh
Net Weight	297g
Charging Temperature	5℃ - 40℃
Operating Temperature Range:	-10℃ - 40℃
Heating Methods:	Manual Heating, Auto Heating
Heating Temperature	-20℃ - 6℃
Heating duration	500s (Max)
Heating Power	55W (Max)
Charging Time	90 mins
Max Charging Power	80W

RTK Module

Dimensions	69 mm x 69 mm x 59mm
Connections	Micro USB Port
RTK Positioning Precision	In RTK FIX 1cm+1ppm (Horizontal) 1.5cm+1 ppm (Vertical)

M2EA Spotlight

Dimensions	68×60×41mm
Connections	Micro USB Port
Operating Range	30 m
Power	Max 26W
Illuminance	FOV17°, Max: 11lux @ 30m Straight

M2EA Beacon

Dimensions	68mm×40mm×27.8mm
Connections	Micro USB Port
Power	Avg. 1.6W

Controllable Range	5000 m
Light Intensity	Min Angle: 55 cd; Light Intensity: 157cd

M2EA Speaker

Dimensions	68×55×65 mm
Connections	Micro USB Port
Power	Max 10W
Decibel	100 db @ 1 meter distance
Max Bitrate	16kbps

SD Cards

Supported SD Cards	Micro SD™ Supports a microSD with capacity of up to 128 GB. A UHS-I Speed Grade 3 rating microSD card is required.

APP / Live View

Video Transmission System	OcuSync 2.0
Mobile App	DJI PILOT(Android Version)
Live View Quality	Remote Controller: 720p@30fps / 1080p@30fps
Max Live View Bitrate	40Mbps
Latency	120 - 130 ms
Required Operating System	Ios 10.0 or later Android 5.0 or later

Others

Footnotes	[1] The accuracy of the temperature measurement is measured at a distance of 5m against a blackbody with an emissivity of 0.95 under ideal conditions. The actual accuracy is also affected by various environmental factors such as temperature and humidity, and needs to be corrected by post-processing software. Under ideal conditions, the temperature accuracy can reach ±2°C or ±2%, whichever is greater. [2] Omnidirectional Obstacle Sensing includes left/right, up/down, and forward/backward obstacle sensing. Sensing for left/right directions is only available in Tripod Mode. Omnidirectional Obstacle Sensing does not fully cover the circumference of a 360-degree arc. And left and right obstacle sensing system only works in specific modes and environments. DJI warranty does not cover any loss caused by crashing when flying left or right, even when Tripod mode is activated. Please be aware of your surroundings and App notifications when operating the Mavic 2 to ensure safety.

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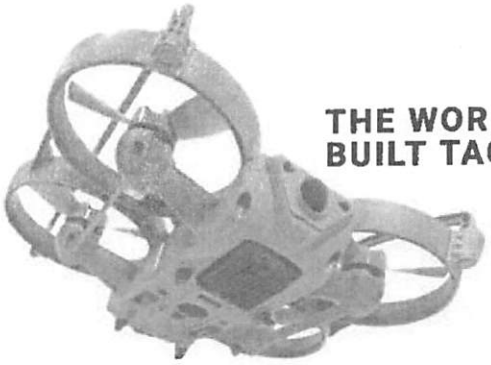
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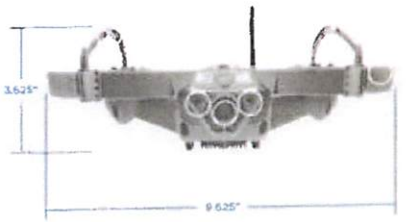
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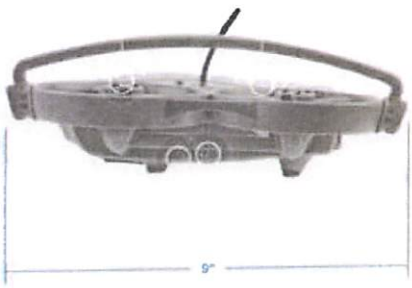
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Purpose built for close quarter indoor tactical scouting missions, LOKI Mk2 features a highly sensitive Day-Night + IR sensor camera giving it the ability to fly and see in complete darkness.

Mk2 Features

- Forward-facing, .0008 lux day/night camera with 150° wide angle field of view
- On board extremely sensitive HD microphone
- Integrated flight stability/hover system using only onboard sensors
- Front and bottom selectable and dimmable IR LED's
- Turtle mode allowing the drone to automatically self-right in the event of a crash
- Integrated connector for additional payloads, sensors and actuators
- Ruggedized, user repairable cloverleaf body design





GCS Features

- Purpose-built flight controller requiring no internet service, GPS, cellular-phone or tablet
- No forced software or firmware updates providing 100% readiness
- Analog video and flight controls preventing lag and screen freezes
- AE256 control signal and scrambled video signal/relay
- Controls up to four LOKI UAS simultaneously from a single GCS
- Ergonomic and compact design for intuitive flight control
- No flight training required



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What end-users are saying about the LOKI Mk2

LOKI 2.0 alone is a game changer for interior deployments. LOKI 2.0 plus a canine takes it to another level of effectiveness.

Tactical Team Leader
Los Angeles County, CA

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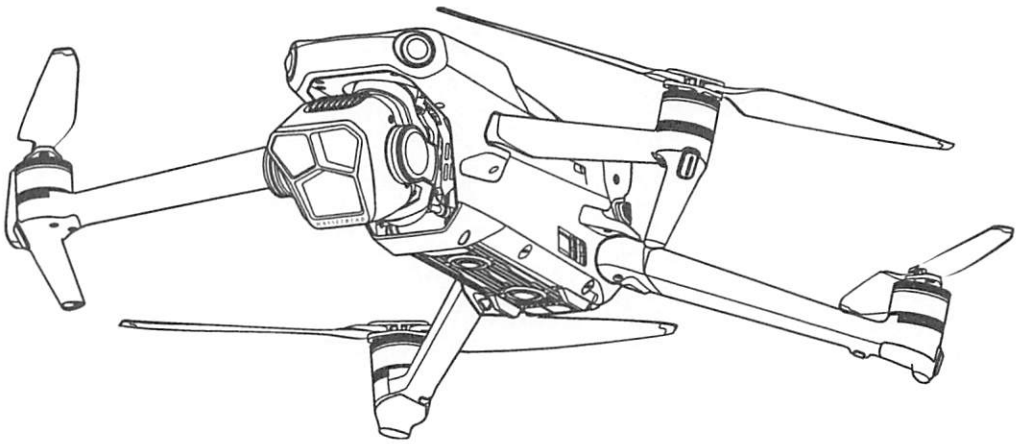
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DJI MAVIC 3 PRO

User Manual

v1.0 2023.04



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Using this Manual

Legend

⚠ Important Hints and Tips Reference

Read Before the First Flight

DJI™ provides users with tutorial videos and the following documents:

1. Safety Guidelines
2. Quick Start Guide
3. User Manual

It is recommended to watch all tutorial videos and read the safety guidelines before using for the first time. Prepare for your first flight by reviewing the Quick Start Guide and refer to this User Manual for more information.

Video Tutorials

According to the corresponding aircraft, visit the link or scan the QR code below to watch the tutorial videos, which demonstrate how to use DJI MAVIC™ 3 Pro safely:

MAVIC 3 PRO CINE

https://s.dji.com/guide57

MAVIC 3 PRO

https://s.dji.com/guide56

Download the DJI Fly App

Make sure to use DJI Fly during flight. Scan the QR code above to download the latest version.

⚠
- The DJI RC Pro and DJI RC remote controllers have the DJI Fly app already installed. Users are required to download the DJI Fly app to their mobile device when using the DJI RC-N1 remote controller.
- The Android version of DJI Fly is compatible with Android v7.0 and later. The iOS version of DJI Fly is compatible with iOS v11.0 and later.

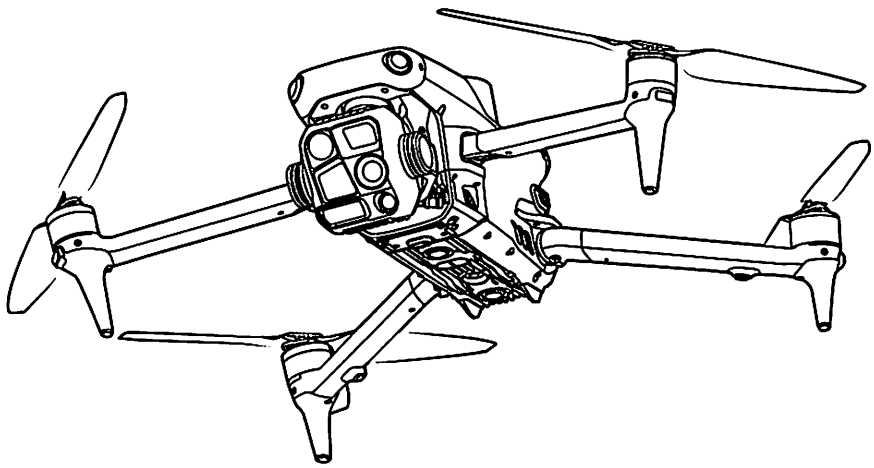
* For increased safety, flight is restricted to a height of 98.4 ft (30 m) and a range of 164 ft (50 m) when not connected or logged into the app during flight. This applies to DJI Fly and all apps compatible with DJI aircraft.

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MATRICE 4 SERIES

User Manual

v1.2 2025.04



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In the event of divergence among different versions, the English version shall prevail.

Searching for Keywords

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⚠ • The operating temperature of this product is -10° to 40° C. It does not meet the standard operating temperature for military-grade application (-55° to 125° C), which is required to endure greater environmental variability. Operate the product appropriately and only for applications that meet the operating temperature range requirements of that grade.

Legend

⚠ Important Hints and Tips Reference

Read Before Use

DJI™ provides you with tutorial videos and the following documents:

1. *Safety Guidelines*
2. *Quick Start Guide*
3. *User Manual*

It is recommended to watch all the tutorial videos and read the *Safety Guidelines* before using for the first time. Make sure to review the *Quick Start Guide* before using for the first time and refer to this *User Manual* for more information.

Video Tutorials

Go to the address below or scan the QR code to watch the tutorial videos, which demonstrate how to use the product safely:

https://enterprise.dji.com/matrice-4-series/video

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Download DJI Assistant 2

Download and install DJI ASSISTANT™ 2 (Enterprise Series) using the link below:

https://www.dji.com/downloads/softwares/assistant-dji-2-for-matrice

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Specs

Aircraft

Takeoff Weight (with propellers)	1219 g* * The standard weight of the aircraft (including the battery, propellers, and a microSD card). The actual product weight may vary due to differer materials and external factors.
Takeoff Weight (with Low-Noise propellers)	1229 g* * The standard weight of the aircraft (including the battery, propellers, and a microSD card). The actual product weight may vary due to differer materials and external factors.
Max Takeoff Weight	Standard Propellers: 1420 g Low-Noise Propellers: 1430 g
Dimensions	Folded: 260.6×113.7×138.4 mm (L×W×H) Unfolded: 307.0×387.5×149.5 mm (L×W×H) Maximum dimensions excluding propellers.
Max Payload	200 g
Propeller Size	10.8 in
Diagonal Wheelbase	438.8 mm
Max Ascent Speed	10 m/s
Maximum Ascent Speed With Accessories	6 m/s
Max Descent Speed	8 m/s
Max Descent Speed With Accessories	6 m/s
Max Horizontal Speed (at sea level, no wind)	21 m/s 21 m/s flying forward, 18 m/s flying backward, 19 m/s flying sideways
Max Altitude	6000 m
Max Operating Altitude with Payload	4000 m
Max Flight Time (without wind)	49 min (standard propellers) 46 min (low-noise propellers)

	Measured with the aircraft flying at approximately 9 m/s without payloads in a windless environment until the battery level reached 0%. Data is reference only. Actual usage time may vary depending on the flight mode, accessories, and environment. Please pay attention to reminders in t
Max Hover Time (without wind)	42 min (standard propellers) 39 min (low-noise propellers) Measured by the aircraft hovering in a windless environment at sea level, from 100% battery level until 0%.
Max Flight Distance (no wind)	35 km (standard propellers) 32 km (low-noise propellers) Measured with the aircraft flying at approximately 14 m/s without payloads in a windless environment until the battery level reached 0%. Data i reference only. Actual usage time may vary depending on the flight mode, accessories, and environment. Please pay attention to reminders in t
Max Wind Speed Resistance	12 m/s* * Max wind speed resistance during takeoff and landing.
Max Pitch Angle	35°
Operating Temperature	-10°C to 40°C (14°F to 104°F)
GNSS	GPS + Galileo + BeiDou + GLONASS* * GLONASS is supported only when the RTK module is enabled.
Hovering Accuracy Range (windless or breezy)	±0.1 m (with Vision System); ±0.5 m (with GNSS); ±0.1 m (with RTK)
RTK GNSS Accuracy	RTK Fix: 1 cm + 1 ppm (horizontal), 1.5 cm + 1 ppm (vertical)
Internal Storage	N/A
Ports	E-Port interface × 1: Supports official accessories and third-party PSDK devices (hot-swapping is not support E-Port Lite interface × 1: supports USB connection to DJI tuning software and some third-party PSDK devices Accessories or expansion modules must be installed before powering on.
Propeller Model	1157F (standard propellers) 1154F (low noise propeller)
Beacon	Built into the aircraft

Camera

Image Sensor	DJI Matrice 4T Wide: 1/1.3-inch CMOS, Effective Pixels: 48 MP Medium Tele Camera: 1/1.3-inch CMOS, Effective Pixels: 48 MP Telephoto: 1/1.5-inch CMOS, Effective Pixels: 48 MP DJI Matrice 4E Wide: 4/3-inch CMOS Effective Pixels: 20 MP Medium Tele Camera: 1/1.3-inch CMOS, Effective Pixels: 48 MP

	Telephoto: 1/1.5-inch CMOS, Effective Pixels: 48 MP
Lens	DJI Matrice 4T FOV: 82° Equivalent Focal Length: 24 mm Aperture: f/1.7 Focus: 1 m to ∞ DJI Matrice 4E FOV: 84° Equivalent Focal Length: 24 mm Aperture: f/2.8-f/11 Focus: 1 m to ∞ Medium Tele Camera FOV: 35° Equivalent Focal Length: 70 mm Aperture: f/2.8 Focus: 3 m to ∞ Tele camera FOV: 15° Equivalent Focal Length: 168 mm Aperture: f/2.8 Focus: 3 m to ∞
ISO Range	Normal Mode: ISO 100 to ISO 25600 Night Scene Mode: Matrice 4T: Wide Camera: ISO 100 to ISO 409600 Midum Tele Camera: ISO 100 to ISO 409600 Tele Camera: ISO 100 to ISO 819200 Matrice 4E: Wide Camera: ISO 100 to ISO 204800 Midum Tele Camera: ISO 100 to ISO 409600 Tele Camera: ISO 100 to ISO 409600
Shutter Speed	DJI Matrice 4T 2-1/8000 s DJI Matrice 4E Wide: Electronic Shutter: 2-1/8000 s Mechanical Shutter: 2-1/2000 s Medium Telephoto: 2-1/8000 s Telephoto: 2-1/8000 s
Max Photo Size	DJI Matrice 4T Wide: 8064 × 6048 Medium Telephoto: 8064 × 6048 Telephoto: 8192 × 6144 DJI Matrice 4E Wide: 5280 × 3956 Medium Telephoto: 8064 × 6048 Telephoto: 8192 × 6144

Minimum Photo Interval	DJI Matrice 4T: 0.7 s DJI Matrice 4E: 0.5 s
Still Photography Modes	DJI Matrice 4T: Wide: Single: 12 MP/48 MP Interval: 12 MP/48 MP JPEG: 0.7/1/2/3/5/7/10/15/20/30/60 s Smart Shooting:12MP Panorama: 12 MP (raw image);100 MP (stitched image) Medium Tele Camera: Single: 12 MP and 48 MP Interval: 12 MP/48 MP JPEG: 0.7/1/2/3/5/7/10/15/20/30/60 s Smart Shooting: 12MP Telephoto: Single: 12 MP and 48 MP Interval: 12 MP/48 MP JPEG: 0.7/1/2/3/5/7/10/15/20/30/60 s Smart Shooting: 12MP DJI Matrice 4E: Single: 20 MP Interval: 20 MP JPEG: 0.5/0.7/1/2/3/5/7/10/15/20/30/60 s JPEG + RAW: 2/3/5/7/10/15/20/30/60 s Smart Shooting: 20 MP Panorama: 20 MP (raw image);100 MP (stitched image) Medium Tele Camera: Single: 12 MP and 48 MP Interval: 12 MP/48 MP JPEG: 0.5/0.7/1/2/3/5/7/10/15/20/30/60 s Smart Shooting: 12 MP Telephoto: Single: 12 MP and 48 MP Interval: 12 MP/48 MP JPEG: 0.5/0.7/1/2/3/5/7/10/15/20/30/60 s Smart Shooting: 12 MP
Video Codec and Resolution	Video Coding Format: H.264/H.265 Coding Strategy: CBR, VBR Resolution: 4K: 3840 × 2160@30fps FHD: 1920 × 1080@30fps
Max Video Bitrate	H.264: 60Mbps H.265: 40Mbps
Supported File System	exFAT
Photo Format	DJI Matrice 4T: JPEG DJI Matrice 4E: Wide: JPEG/DNG (RAW)

	Medium Tele Camera: JPEG Telephoto: JPEG
Video Format	MP4 (MPEG-4 AVC/H.264)
Digital Zoom	Telephoto: 16x (112x hybrid zoom)

NIR Auxiliary Light

Infrared Illumination	DJI Matrice 4T: FOV: 5.7°±0.3°

Laser Module

Laser Rangefinding	Measurement Range: 1800 m (1 Hz) @20% reflectivity target* Oblique Incidence Range (1:5 Oblique Distance): 600 m (1 Hz) Blind Zone: 1 m Distance Measurement Accuracy: 1-3 m: System Error <0.3 m, Random Error <0.1 meters @1σ Other Distances: ±(0.2+0.0015D) (D represents the measurement distance in meters) * Performance degradation may occur in rainy or foggy conditions

Infrared Thermal Camera

Thermal Imager	DJI Matrice 4T: uncooled vanadium oxide (VOx) DO NOT expose the infrared camera lenses to strong sources of energy such as the sun, lava, or a laser beam. Otherwise, the camera sensor m burned leading to permanent damage.
Resolution	DJI Matrice 4T: 640 × 512
Pixel Pitch	DJI Matrice 4T: 12 μm
Frame Rate	DJI Matrice 4T: 30 Hz
Lens	DJI Matrice 4T DFOV: 45°±0.3° DJI Matrice 4T equivalent focal length: 53 mm DJI Matrice 4T Aperture: f/1.0 DJI Matrice 4T Focus: 5 m to ∞
Sensitivity	DJI Matrice 4T: ≤50mk@F1.0
Temperature Measurement Method	DJI Matrice 4T: Spot Meter, Area Measurement
Temperature Measurement Range	DJI Matrice 4T: High Gain Mode: -20°C to 150°C (-4°F to 302°F) () Low Gain Mode: 0°C to 550°C (32°F to 1022°F)
Palette	DJI Matrice 4T: White Hot/Black Hot/Tint/Iron Red/Hot Iron/Arctic/Medical/Fulgurite/Rainbow 1/Rainbow 2
Photo Format	DJI Matrice 4T: JPEG (8bit)、R-JPEG (16bit)

Video Resolution	DJI Matrice 4T: 1280 × 1024@30fps (Super Resolution enabled, Night Mode not activated) Other conditions: 640 × 512@30fps
Video Bitrate	DJI Matrice 4T: 6.5Mbps (H.264 640 × 512@30fps) 5Mbps (H.265 640 × 512@30fps) 12Mbps (H.264 1280 × 1024@30fps) 8Mbps (H.265 1280 × 1024@30fps)
Video Format	DJI Matrice 4T: MP4
Still Photography Modes	DJI Matrice 4T: Single: 1280 × 1024/640 × 512 Interval: 1280 × 1024/640 × 512 JPEG: 0.7/1/2/3/5/7/10/15/20/30/60 s
Photo Resolution	DJI Matrice 4T: Infrared: 1280 × 1024 (Super Resolution on) 640 × 512 (Super Resolution off)
Digital Zoom	DJI Matrice 4T: 28x
Infrared Wavelength	DJI Matrice 4T: 8um to 14um
Infrared Temperature Measurement Accuracy	DJI Matrice 4T: High Gain: ±2°C or ±2%, whichever is greater DJI Matrice 4T: Low Gain: ±5°C or ±3%, whichever is greater

Gimbal

Stabilization System	DJI Matrice 4T: 3-axis (tilt, roll, pan) DJI Matrice 4E: 3-axis (tilt, roll, pan)
Mechanical Range	DJI Matrice 4T Gimbal Mechanical Limits: Tilt: -140° to 113° Roll: -52° to 52° Pan: -65° to 65° Soft Limits: Tilt: -90° to 35° Roll: -47° to 47° Pan: -60° to 60° DJI Matrice 4E Gimbal Mechanical Limits: Tilt: -140° to 50° Roll: -52° to 52° Pan: -65° to 65° Soft Limits: Tilt: -90° to 35° Roll: -47° to 47° Pan: -60° to 60°
Controllable Rotation Range	DJI Matrice 4T Tilt: -90° to 70° Pan: Not controllable DJI Matrice 4E

	Tilt: -90° to 35° Pan: Not controllable
Max Control Speed (tilt)	100°/s
Angular Vibration Range	±0.007°
Yaw Axis	Manual operation is uncontrollable The MSDK interface program is controllable.
Ingress Protection Rating	No Standard Protection Level
Operating Temperature	Standard: -10°C to 40°C (14°F to 104°F)

Sensing

Sensing Type	Omnidirectional binocular vision system, supplemented with a 3D infrared sensor at the bottom of the aircr
Forward	Binocular Measurement Range: 0.4-22.5 m Measurement Range: 0.4-200 m Obstacle Avoidance Speed: Flight Speed ≤21 m/s FOV: 90° (horizontal), 135° (vertical)
Backward	Measurement Range: 0.4-22.5 m Measurement Range: 0.4-200 m Obstacle Avoidance Speed: Flight Speed ≤21 m/sField of View (FOV)-90° (horizontal), 135° (vertical)
Lateral	Measurement Range: 0.5-32 m Measurement Range: 0.5-200 m Obstacle Avoidance Speed: Flight Speed ≤21 m/s FOV: 90° (horizontal), 90° (vertical)
Downward	Measurement Range: 0.3-18.8 m Obstacle Avoidance Speed: Flight Speed ≤10 m/s The FOV to the front and rear is 160° and 160° to the right and left.
Operating Environment	Forward, Backward, Left, Right, and Upward: Delicate texture on the surface, adequate light. Downward: The ground has rich textures and sufficient lighting conditions*, with a diffuse reflection surface and a refle greater than 20% (such as walls, trees, people, etc.).

* Sufficient lighting conditions refer to an illuminance not lower than that of a nighttime city light scene.

Video Transmission

Video Transmission System	O4 Enterprise
Live View Quality	Remote Controller: 1080p/30fps
Operating Frequency	2.400-2.4835 GHz 2.400-2.4835 GHz 5.725-5.850 GHz 5.150-5.250 GHz (CE)

Operating frequency allowed varies among countries and regions. Refer to local laws and regulations for more information.

Transmitter Power (EIRP)	2.4 GHz: ≤33 dBm (FCC), ≤20 dBm (CE/SRRC/MIC) 5.8 GHz: <33 dBm (FCC), <30 dB (SRRC) , <14 dBm (CE) 5.15-5.25: < 23 dBm (FCC/CE)
Max Transmission Distance (unobstructed, free of interference)	25 km (FCC) 12 km (CE) 12 km (SRRC) 12 km (MIC) Measured in an unobstructed environment free of interference. The above data shows the farthest communication range for one-way, non-retu under each standard. During your flight, please pay attention to RTH reminder on the DJI Pilot 2 app.
Max Transmission Distance (with interference)	Strong Interference - City Centers (approx. 1.5-5 km) Medium Interference - Suburban Areas (approx. 5-15 km) Micro interference: Suburbs/Seasides (approx. 15-25 km) * Data is tested under FCC standards in unobstructed environments of typical interference. Only to serve as a reference and provides no guara the actual flight distance.
Max Download Speed	20 MB/s The above data was measured under conditions where the aircraft and remote controller were in close proximity without interference.
Latency (depending on environmental conditions and mobile device)	130 ms Under near-field interference-free conditions, the Latency performance when shooting with a 1x lens.
Antenna	8 antennas, 2T4R
Others	Cellular Dongle Compartment

Memory Card

Supported SD Cards	U3/Class10/V30 or above is required, or use a memory card from the recommended list.
Recommended microSD Cards	Lexar 1066x 64GB U3 A2 V30 microSDXC Lexar 1066x 128GB U3 A2 V30 microSDXC Lexar 1066x 256GB U3 A2 V30 microSDXC Lexar 1066x 512GB U3 A2 V30 microSDXC Kingston Canvas GO! Plus 64GB U3 A2 V30 microSDXC Kingston Canvas GO! Plus 128GB U3 A2 V30 microSDXC Kingston Canvas GO! Plus 256GB U3 A2 V30 microSDXC Kingston Canvas GO! Plus 512GB U3 A2 V30 microSDXC

Intelligent Flight Battery

Capacity	6741 mAh
Standard Voltage	14.76 V
Max Charging Voltage	17.0 V
Cell Type	Li-ion 4S
Energy	99.5 Wh

Weight	401 g
Recharging Temperature	5°C to 40°C (41°F to 104°F)
Discharge Rate	4C
Max Charging Power	1.8C
Supports low-temperature charging	Not supported
Cycle Count	200

Power Adapter (100W)

Input	100-240 V (AC), 50-60 Hz, 2.5 A
Output	Max. 100 W (total) When both ports are used, the max output power of one port is 82 W, and the charger will dynamically allocate the output power of the two po to the power load.
Rated Power	100 W

Charging Hub

Input	USB-C: 5-20 V, max 5 A
Output	Battery Interface: 11.2 V to 17 V
Rated Power	100 W
Recharging Type	4 batteries charging in sequence Support Standard Mode (100% SOC) and Standby Mode (90% SOC)
Compatible Battery	DJI Matrice 4E/T Series Intelligent Flight Battery
Charging Temperature	5° to 40° C (41°F to 104°F)

DJI RC Plus 2 Enterprise

Video Transmission System	O4 Enterprise
Max Transmission Distance (unobstructed, free of interference)	25 km (FCC) 12 km (CE) 12 km (SRRC) 12 km (MIC) Measured in an unobstructed environment free of interference. The above data shows the farthest communication range for o… …y, non-reti under each standard. During your flight, please pay attention to RTH reminder on the DJI Pilot 2 app.
Operating Band of Image Transmission	2.4000-2.4835 GHz 5.725 - 5.850 GHz 5.1GHz (receive only)

	Operating frequency allowed varies among countries and regions. Refer to local laws and regulations for more information.
Antenna	2T4R, built-in multi-beam high-gain antenna
Video Transmission Transmitter Power (EIRP)	2.4 GHz: < 33 dBm (FCC), < 20 dBm (CE/SRRC/MIC) 5.1 GHz: <23 dBm (CE) 5.8 GHz: <33 dBm (FCC), <14 dBm (CE), <30 dBm (SRRC)
4G Transmission	DJI Cellular Dongle 2
Wi-Fi Protocol	Wi-Fi Direct, Wireless Display, IEEE 802.11a/b/g/n/ac/ax Support 2 × 2 MIMO Wi-Fi, Dual Band Simultaneous (DBS) with dual MAC, up to 1774.5 Mbps data rate (2 × 2 11ax DBS)
Wi-Fi Operating Band	2.4000-2.4835 GHz 5.150-5.250 GHz 5.725-5.850 GHz 5.8 and 5.2GHz frequencies are prohibited in some countries. In some countries, the 5.2GHz frequency is only allowed for use in indoor.
Wi-Fi Transmitter Power (EIRP)	2.4 GHz: < 26 dBm (FCC), < 20 dBm (CE/SRRC/ MIC) 5.1 GHz: <23 dBm (FCC) 5.8 GHz < 23 dBm (FCC/SRRC), < 14 dBm (CE)
Bluetooth Protocol	Bluetooth 5.2
Bluetooth Operating Frequency	2.400-2.4835 GHz
Bluetooth Transmitter Power (EIRP)	<10 dBm
Screen Resolution	1920 × 1200
Screen Size	7.02 inches
Screen Frame Rate	60 fps
Brightness	1400 nits
Touchscreen Control	10 Points Multi-touch
Built-in Battery	2S2P High Energy Density 18650 Lithium-ion Battery (6500 mAh @ 7.2 V) 46.8 Wh
External Battery	Optional, WB37 (4920 mAh @ 7.6 V) 37 Wh
Recharging Type	Supports PD fast charging, with a maximum specification of 20 V/3.25 A USB Type-C charger.
Storage Capacity	ROM 128 G + expandable storage via microSD card
Charging Time	2 hrs for internal battery or internal and external battery. When remote controller is powered off and using a standard DJI charger.
Internal Battery Runtime	3.8 hrs
External Battery Runtime	3.2 hrs
Output Port	HDMI 1.4

Indicators	Status light & power light & permission light, three-color light, brightness can be adjusted according to amb brightness.
Speaker	Supports buzzer
Audio	Array MIC
Operating Temperature	-20° to 50° C (D228 (-4°F to 122°F)
Storage Temperature	Within one month: -30° to 45° C (-22°F to 113°F) One to three months: -30° to 35° C (-22°F to 95°F) Three months to one year: -30° to 30° C (-22°F to 86°F)
Recharging Temperature	5° to 40° C (41°F to 104°F)
Supported Aircraft Models	Support for Matrice 4T/4E
GNSS	GPS, Galileo, and BeiDou triple-mode, supports dynamic Home Point refresh.
Dimensions	268×163×94.5 mm (L×W×H) Width including external antenna folded, thickness including handle and controller sticks.
Weight	1.15 kg (without external battery)
Model	TKPL 2
System Version	Android 11
External Interfaces	HDMI 1.4, SD3.0, Type-C supports OTG, supports PD charging, maximum power 65W, USB-A supports USB 2 interface.
Accessory	Optional strap/waist support

AL1 Spotlight

Weight	99 g (including bracket) Approx. 91 g (excluding bracket)
Dimensions	95×164×30 mm (L×W×H,including bracket) 79×164×28 mm (L×W×H, without bracket)
Max. Power	32 W
Illuminance	4.3±0.2 lux @ 100 meters, 17±0.2 lux @ 50 meters The data was measured in a laboratory environment with the spotlight installed separately on the aircraft at an ambient temperature of 25°C.
Effective Illumination Angle	23° (10% relative illumination)
Effective Illumination Area	1,300 square meters @ 100 meters (10% relative illumination, Normal Mode) 2,200 square meters @ 100 meters (10% central illuminance, Wide fov Mode)
Operating Mode	Supports always-on and strobe modes.
Gimbal Structural Design Range	Tilt: -140° to 50°
Controllable Range:	Tilt: -90° to 35°

Max Control Speed (tilt)	120°/s
Gimbal Alignment Accuracy	±0.1°
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Mounting	Quick-release hand-tightened screws

AS1 Speaker

Weight	92.5 g (including bracket) Approx. 90 g (excluding bracket)
Dimensions	73×70×52 mm (L×W×H,including bracket) 73×70×47 mm (L×W×H, without bracket)
Max. Power	15 W
Max. Volume	At 1 meter, it can reach 114 decibels (114dB@1m). Data measured in a laboratory environment at 25℃. Actual conditions may vary slightly due to software version, audio source, specific environ other factors. The final effect is subject to actual use.
Effective Broadcast Distance	300 m Data measured in a laboratory environment at 25℃. Actual conditions may vary slightly due to software version, audio source, specific environ other factors. The final effect is subject to actual use.
Broadcast Mode	Real-time broadcasting (supports echo suppression*), recorded broadcasting, media import (supports simu transmission and playback), text-to-speech** * Need to upgrade to the latest firmware. ** Currently only supports Chinese and English.
Operating Temperature	-20°C to 50°C (-4°F to 122°F)
Mounting	Quick-release hand-tightened screws

Footnotes

The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI Trade dress and the HDMI Logos are tra or registered trademarks of HDMI Licensing Administrator, Inc.

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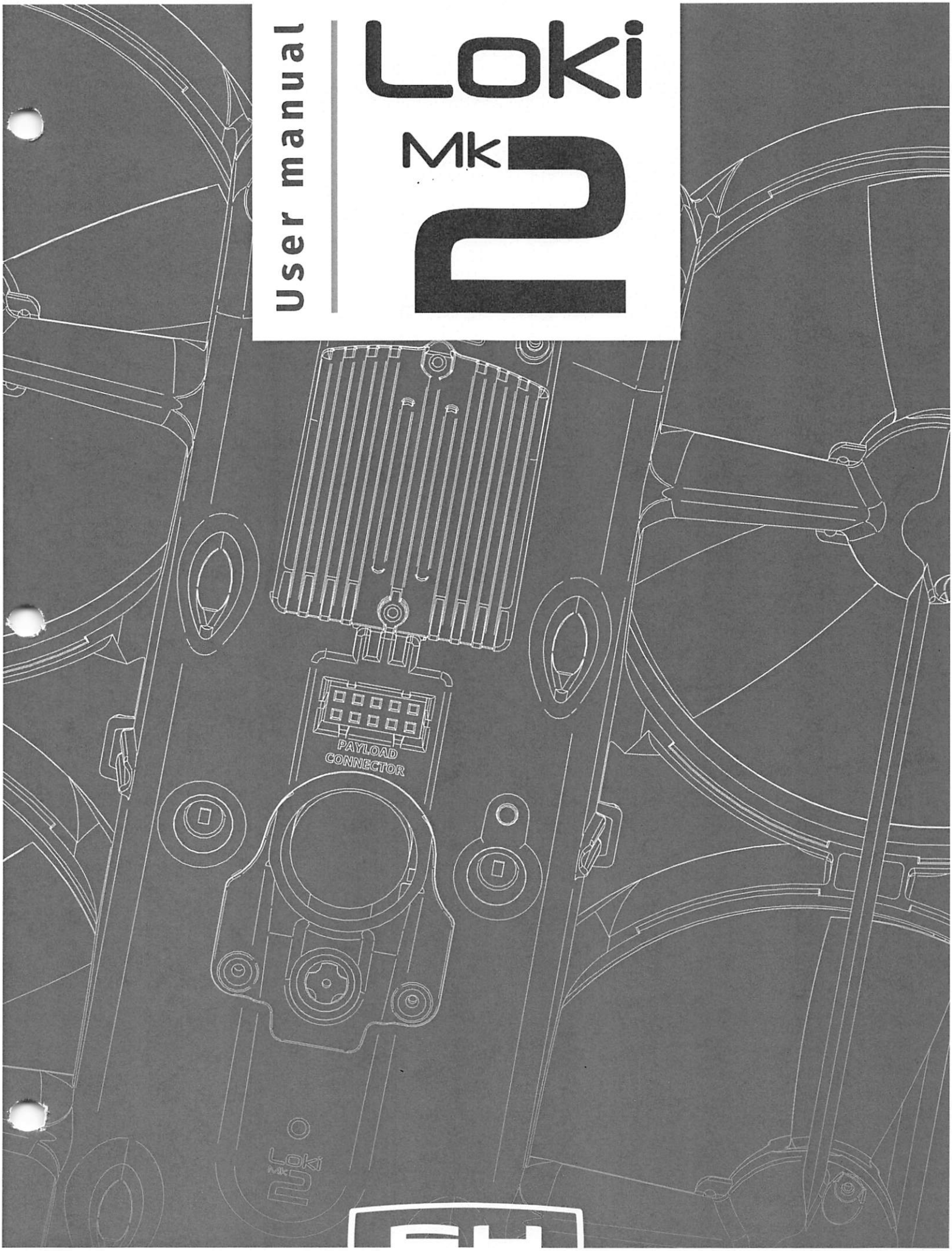
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User manual

Loki Mk2



User manual Loki MkII System

GCS VERSION : 2.10.1

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1. FIRST USE

With the success of the first Loki system, we are proud to introduce the completely new Loki MK2, which offer a broad array of possibilities when flying the UAV indoors or outdoors.

To ensure functionality in most situations, the Loki MK2 does not require GPS, WiFi, cellular, or other networks and will work as a standalone system. The Loki MK2 relies on embedded video captors and distance sensors to understand its position and movements. This not only improves the system's general capabilities and maximizes its resilience when flying indoors, but also strongly increases the ease of use. However, some limitations are explained in our additionnal guide : Precautions, good practices & maintenance

a. Disclaimer

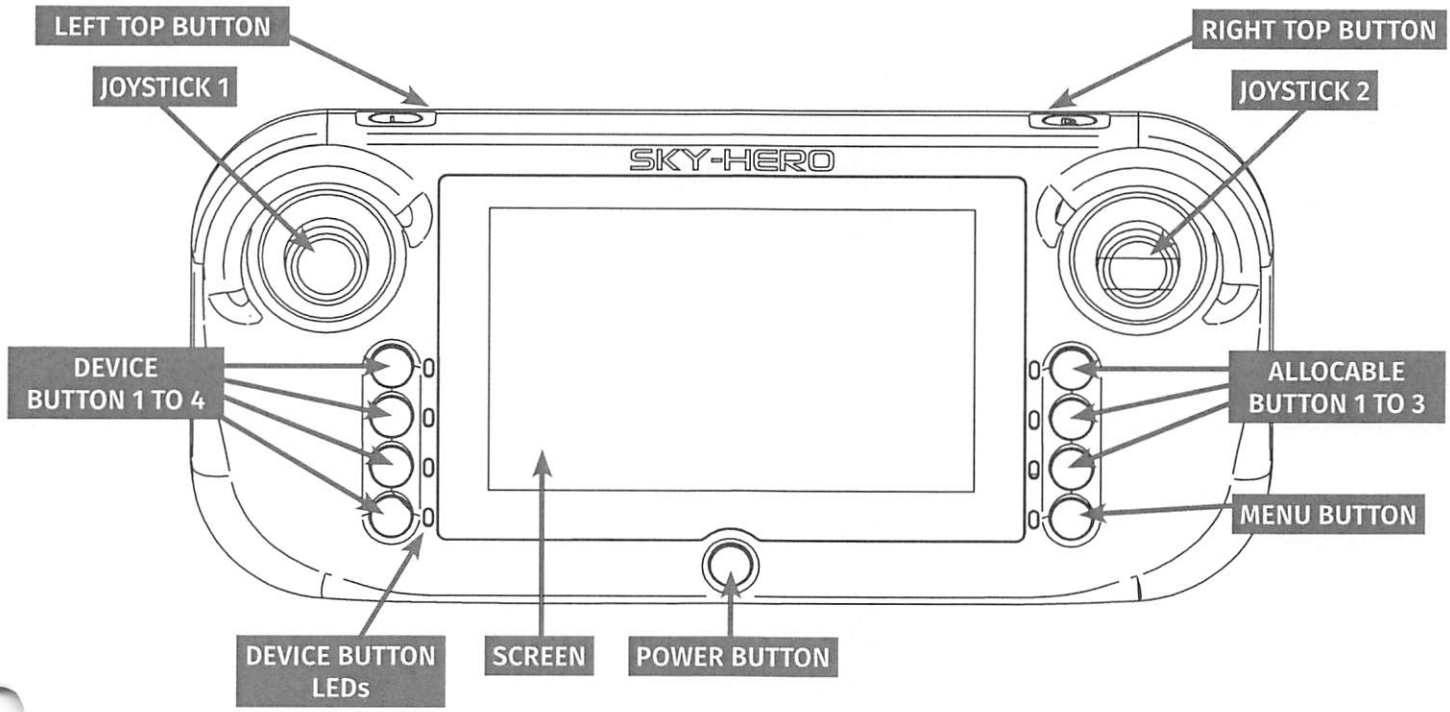
1. THE LOKI MK2 SYSTEM IS NOT A TOY AND SHOULD NOT BE USED OR HANDLED BY A PERSON UNDER 18 YEARS OF AGE.

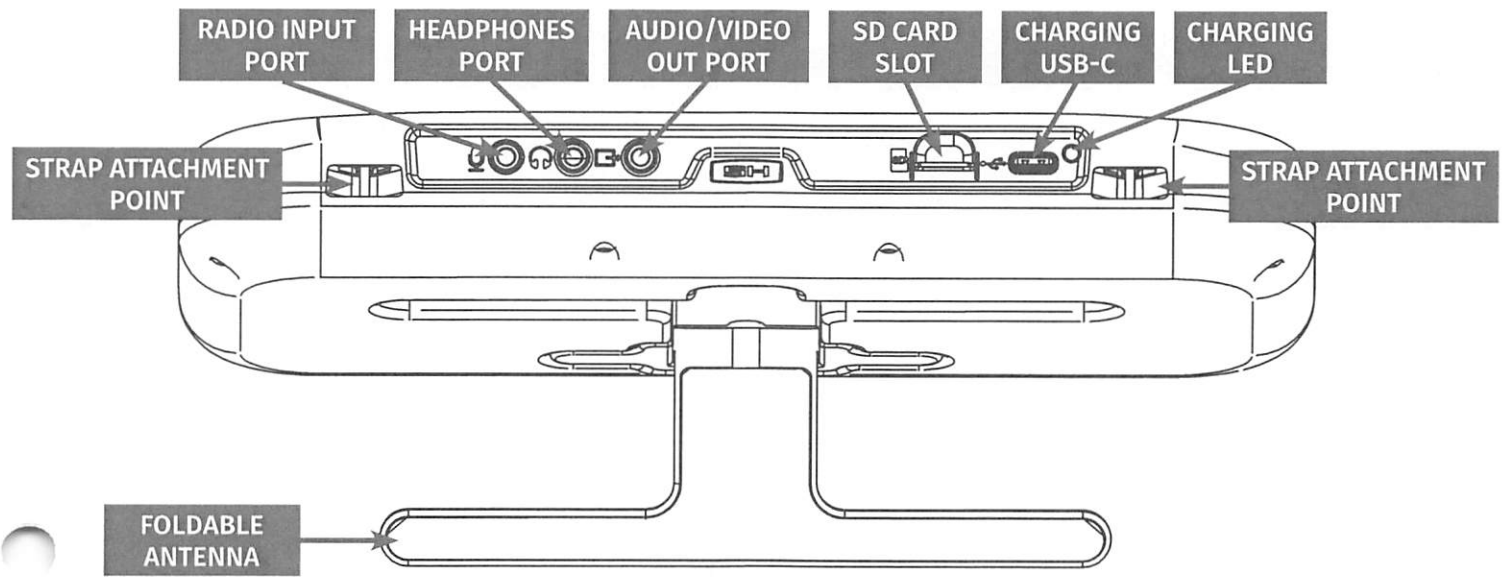
2. BEFORE USING THE LOKI MK2 SYSTEM :
- CAREFULLY READ THE USER MANUAL, THE PRECAUTIONS & GOOD PRACTICES AND ALL INFORMATION AND DOCUMENTATION AVAILABLE ON www.sky-hero.com, WHICH MAY BE UPDATED AT ANY TIME WITHOUT PRIOR NOTICE;
- SPECIAL ATTENTION SHOULD BE GIVEN TO THE PARAGRAPHS MARKED "CAUTION";
- ENSURE YOU ARE AWARE OF THE LOCAL REGULATIONS APPLICABLE TO THE USE OF UAVs AND THEIR ACCESSORIES;
- REMEMBER THAT THE LOKI MK2 SYSTEM MAY EXPOSE YOU OR OTHERS TO EQUIPMENT DAMAGE, PERSONAL INJURY, OR BOTH, WHICH COULD RESULT IN SERIOUS HARM OR DEATH.

3. BE AWARE THAT VIDEOS AND PHOTOS THAT ARE PROMOTED AND ADVERTISED BY SKY-HERO AND ITS AFFILIATES HAVE BEEN MADE BY EXPERIENCED PROFESSIONALS AND DRONE PILOTS. IN THE EVENT OF ANY UNCERTAINTY OPERATING YOUR LOKI MK2 SYSTEM AND ITS ACCESSORIES, ALWAYS REFER TO THE MOST RECENT VERSION OF THE SKY-HERO DOCUMENTATION.

4. TO THE EXTENT PERMITTED BY APPLICABLE LAW, SKY-HERO SA, ITS SUBSIDIARIES, AND THEIR RESPECTIVE DISTRIBUTORS AND RETAILERS SHALL NOT BE HELD LIABLE FOR ANY DAMAGES ARISING FROM, OR IN CONNECTION WITH, NON-COMPLIANCE WITH THE DOCUMENTATION OR THE APPLICABLE REGULATIONS BY YOU OR ANY PERSON USING YOUR LOKI MK2 SYSTEM..

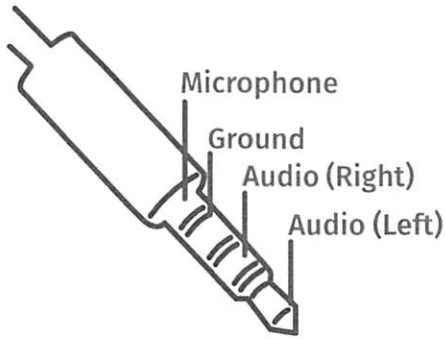
b. UAV and GCS Schematics





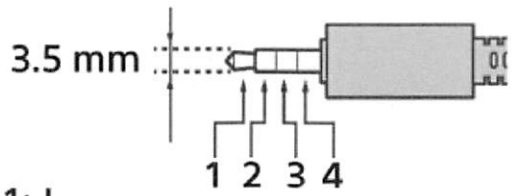
Radio input

The radio input and headphones output follow the CTIA standard. The pinout on the jack is as follows:

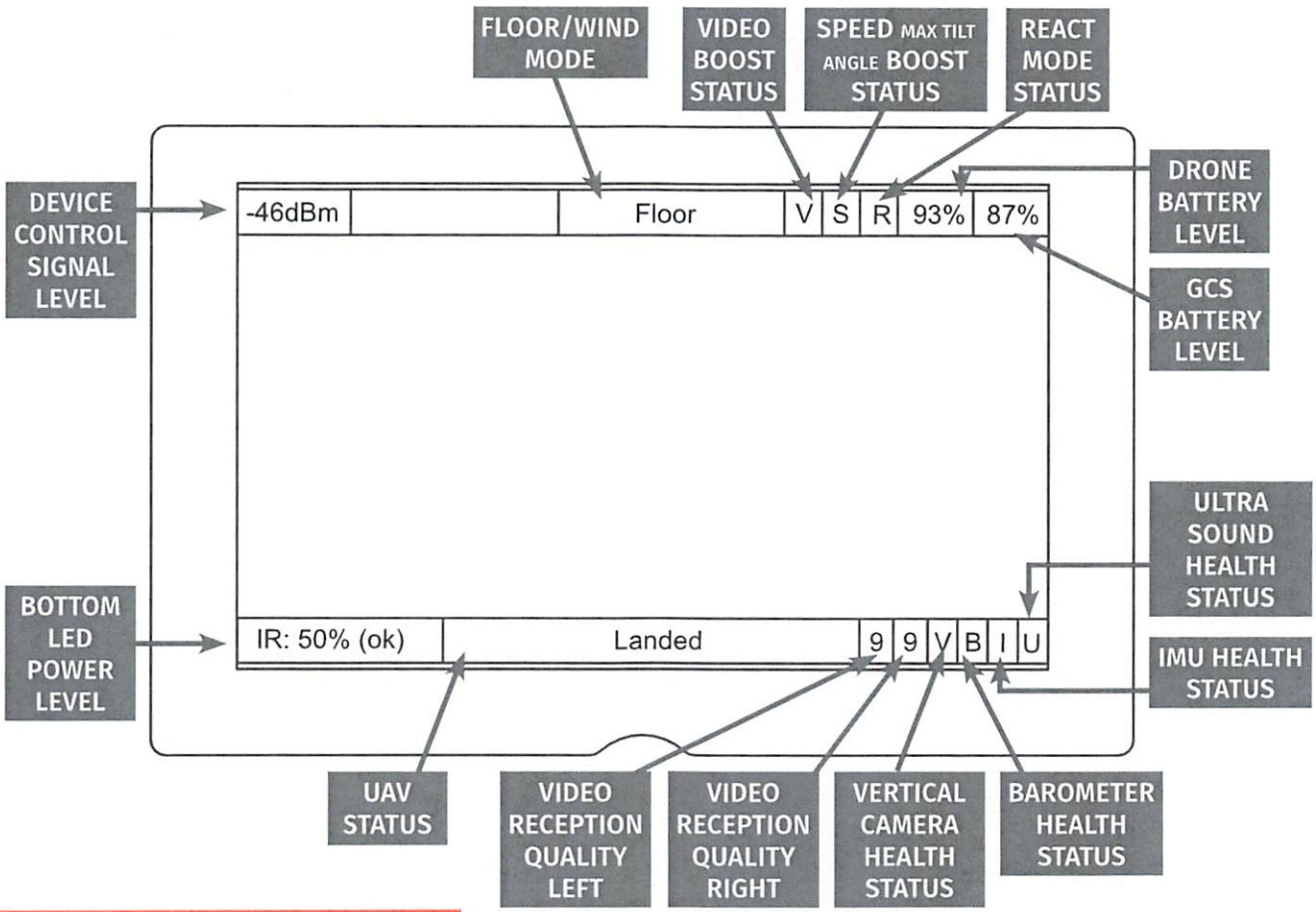


Audio/video

The AV Line out follows the Sony convention:



1: L
2: Video
3: Ground
4: R

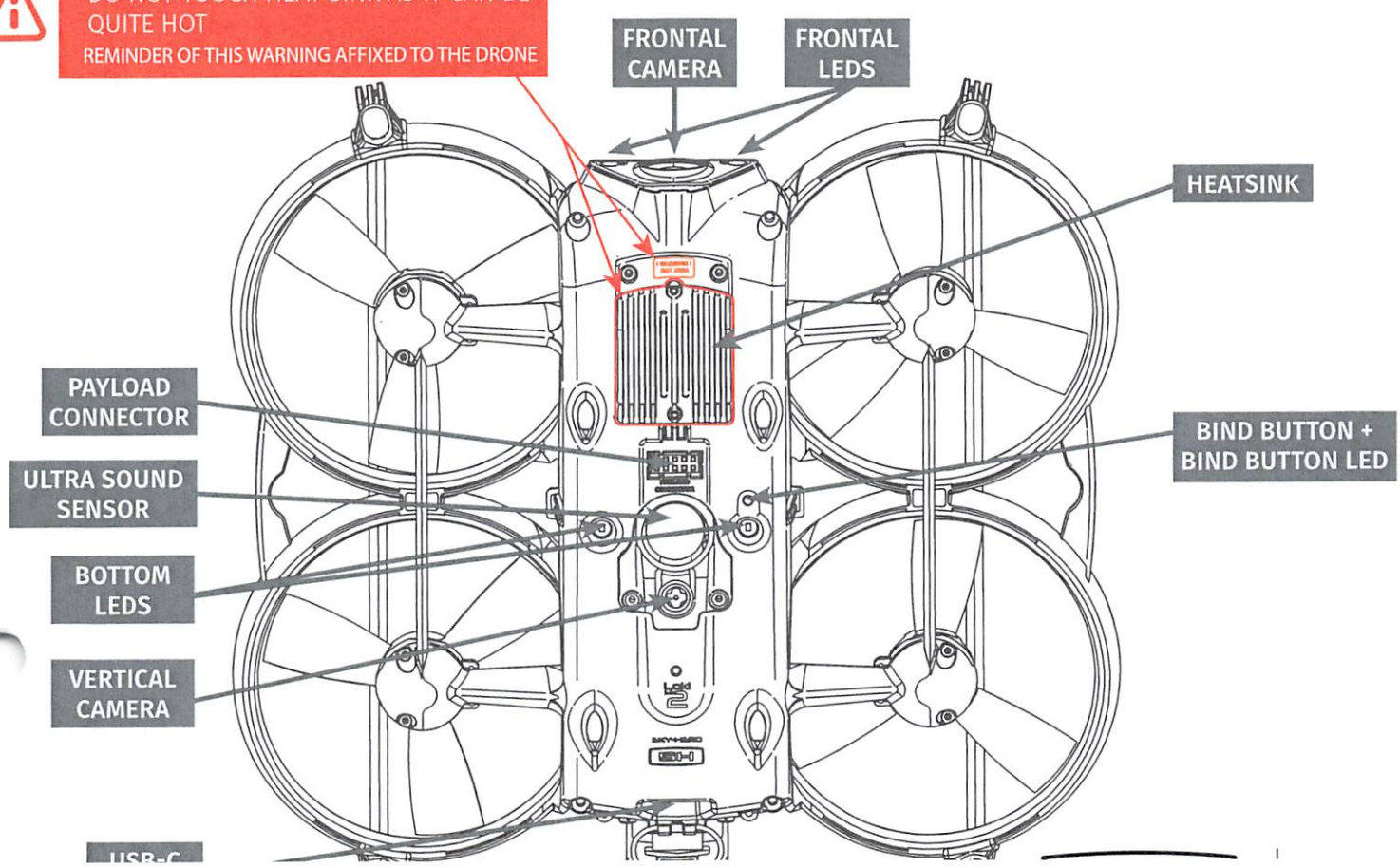


CAUTION :

- DO NOT COVER VERTICAL CAMERA, LEDs, OR ULTRA SOUND SENSOR.

- DO NOT TOUCH HEAT SINK AS IT CAN BE QUITE HOT

REMINDER OF THIS WARNING AFFIXED TO THE DRONE



c. GCS Menu Navigation

Navigating the menu is accomplished using the Menu Button and the Joystick 2 only.

- (ENTER MENU) : Press the Menu Button, which enables you to enter/exit the menu at any time
- (SCROLL) : Use Joystick 2 to move up or down, which enables you to select the submenus
- (ENTER) : Push Joystick 2 to the right to enter the submenu
- (CONFIRM) : Push Joystick 2 to the right to confirm a choice in the menu/submenu
- (BACK) : Push Joystick 2 to the left to exit the current submenu and go back one level

d. Before First Flight

CAUTION: YOUR LOKI MK2 SYSTEM COMES READY TO USE AND HAS BEEN TEST-FLOWN IN OUR FACILITY. HOWEVER, SOME SETTINGS MIGHT NEED TO BE ADJUSTED TO GUARANTEE THE BEST PERFORMANCES FOR YOUR USER CASES.

I. Compliance

These settings allow adjustement of the power levels of both UAV control and video signal. By default, FCC or CE compliant mode is used (depending on your region). However, you may want to change these settings to «OPEN» in order to increase the general performances of your system. When switching to «OPEN», the Control will automatically be adjusted up to 250 mW; while the Video Power will need to be adjusted in the Video Power sub menu. Please refer to your local regulations before applying these changes.

a. Control

Mode	Max Power	Frequencies
FCC	100 mW	915 MHz
CE	25 mW LBT	868 MHz
Open	250 mW	868/915 MHz

b. Video

Mode	Max Power	Number of channels
FCC / CE	25 mW	8
Open	350 mW	37

II. Video Channel

Select the frequency you want to use for your audio video transmission. Be sure to use different frequencies when several devices are used during a same mission to avoid interference between devices. The UAV paired on Device Button 1 will be listed as Device 1, the UAV paired on Device Button 2 listed as Device 2, etc. By default, the system is limited to 8 channels (5725 MHz to 5865 MHz) and to Video Power 1 (=25 mW). However, when switching to «OPEN» in the Compliance menu, more frequencies and higher power levels are accessible. This mode is accessible via the "Compliance \ Video" menu. As those additional frequencies and power levels could be subject to special authorizations or licenses, please refer to the local regulation body for accurate information.

FCC settings	
Name	Frequency (MHz)
A1	5865
A2	5845
A3	5825
A4	5805
A5	5785
A6	5765
A7	5745
A8	5725

Open settings									
Name	Frequency (MHz)	Name	Frequency (MHz)	Name	Frequency (MHz)	Name	Frequency (MHz)	Name	Frequency (MHz)
A1	5865	E1	5705	SH10	5251	SH18	5547	SH26	5843
A2	5845	E2	5685	SH11	5288	SH19	5584	SH27	5880
A3	5825	E3	5665	SH12	5325	SH20	5621	SH28	5917
A4	5805	E4	5645	SH13	5362	SH21	5658	SH29	5954
A5	5785	E5	5885	SH14	5399	SH22	5695	SH30	5991
A6	5765	E6	5905	SH15	5436	SH23	5732		
A7	5745	E7	5925	SH16	5473	SH24	5769		
A8	5725	E8	5945	SH17	5510	SH25	5806		

III. Video power

The Loki MK2 system uses an analog video transmission which offers greater reliability while eliminating screen freezing, latency, and reboot time. The system broadcasts around the 5.8 GHz frequency band, producing good performance even when multiple devices are connected.

You can select a specific value for each device used. Please note that Video Power 0 is used for ultra short range to control functions without disturbing other users.

Level	Video power
0	1 mW
1	25 mW
2	250 mW ("OPEN" mode only)
3	350 mW ("OPEN" mode only)

IV. Video Scrambling

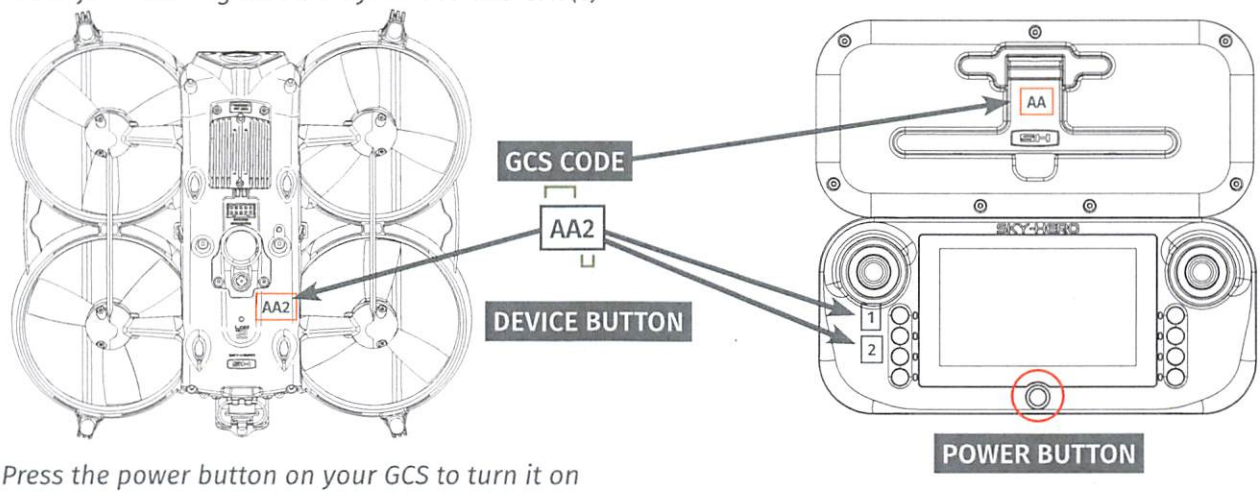
CAUTION: USING SCRAMBLING WILL LIMIT THE MAXIMUM RANGE YOU CAN REACH WITH YOUR VIDEO SYSTEM AS THE GLITCHES FROM THE ANALOG SIGNAL WILL HAVE AN INFLUENCE ON THE WHOLE PICTURE'S QUALITY.

This setting is common to all connected devices
Turning scrambling ON will enable you to make your video signal unreadable by non-Loki MK2 users.

e. Take off

CAUTION: BEFORE USING THE LOKI MK2 SYSTEM, PLEASE READ THE USER MANUAL AS WELL AS PRECAUTIONS & GOOD PRACTICES TO UNDERSTAND ALL FUNCTIONNALITY AND REQUIRED PRECAUTIONS.

STEP 1 : *Check for matching labels on your GCS and UAV(s)*

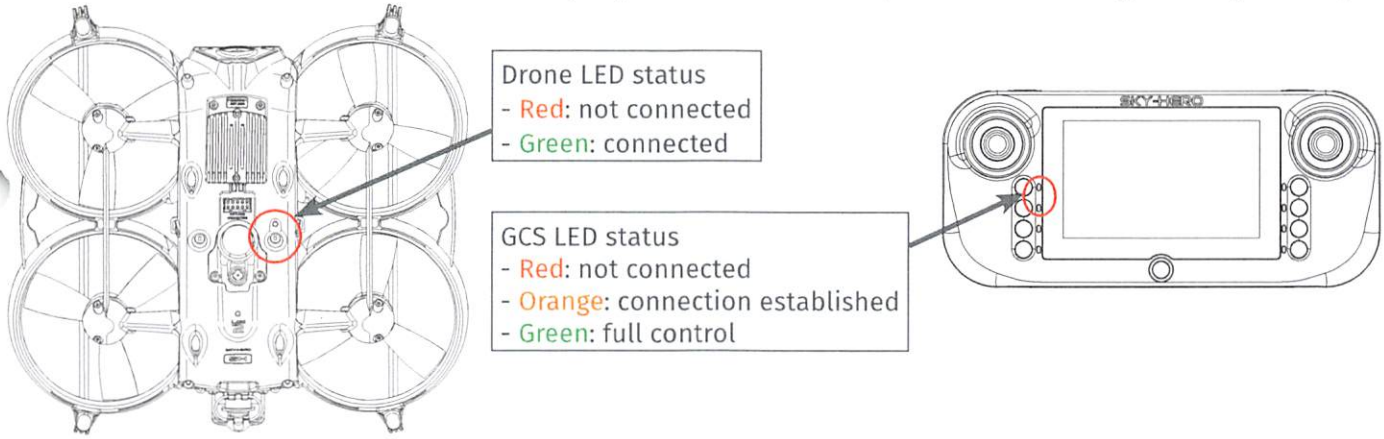


STEP 2 : *Press the power button on your GCS to turn it on*

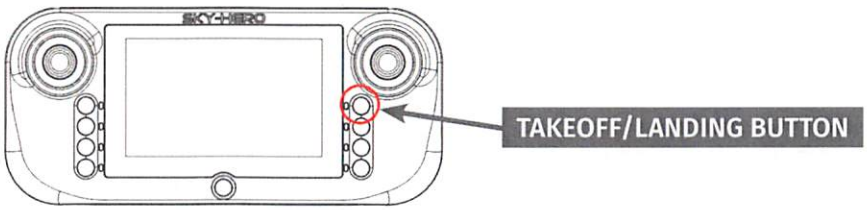
STEP 3 : *Plug a fully charged battery in your UAV(s)*

STEP 4 : *Select the drone by pressing the matching device button on your GCS*

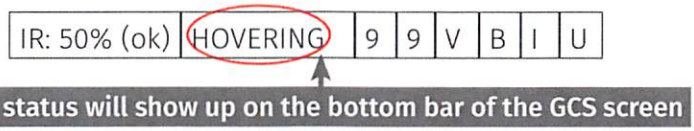
STEP 5 : *Wait until a connection is established (the first time it can take up to 30s due to encryption negotiation)*



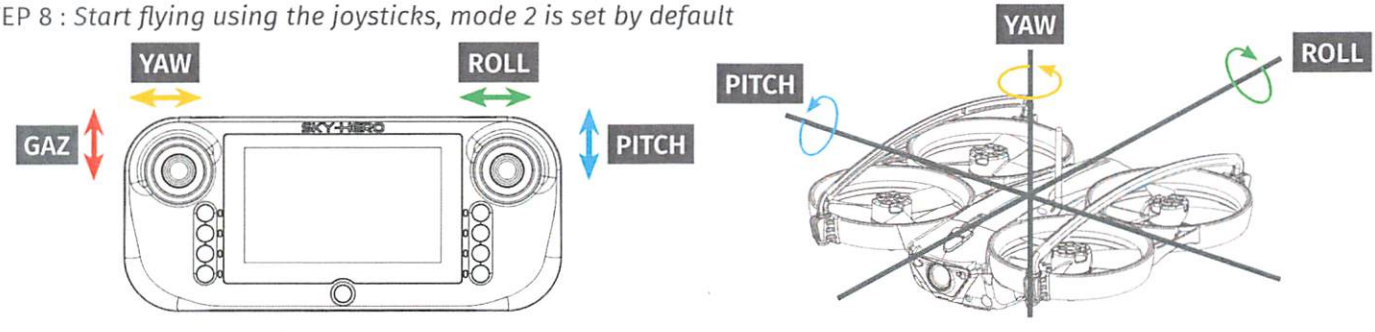
STEP 6 : *Press the takeoff/landing button*



STEP 7 : *Wait until hovering*



STEP 8 : *Start flying using the joysticks, mode 2 is set by default*



STEP 9 : *Press the takeoff/landing button to land your UAV*

f. Switching to another device

When two or more UAVs are ready to fly (the process described in the previous section has been completed for all devices), you can easily switch between devices by pressing the matching device button on your GCS. This will stop the link with your actual device and create a link with the new device you want to control.

It is recommended to land the UAV before switching to another as the UAV will not be controlled anymore and will only refer to embedded sensors to hold its position, switching between devices can take up to 5 seconds, because of the encryption process.

The GCS is equipped with a failsafe. As such, all devices will have the following behavior when switching to another device :

If flying: they will try to hover

If flying below 50cm: they will try to hover but after a couple of seconds without reaching any position hold, they will initiate a landing

If on Floor Mode: they will cut their motors

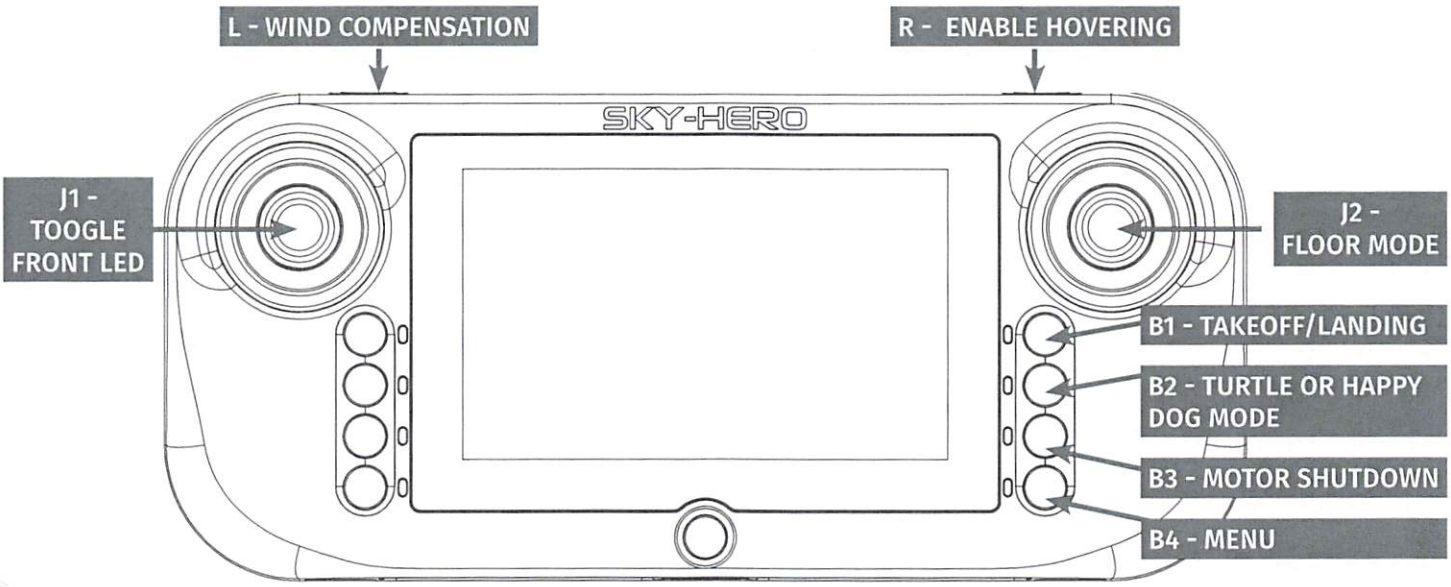
If standing still: they will keep their state

In the case where there is an unintentional loss of communication between the GCS and the UAV (extensive range, or GCS turned off), the actively controlled UAV will automatically land. Any other connected, but non-communicating UAV will keep its state.

In all cases, the devices will keep broadcasting audio-video on the set video channel and power. Settings changes done in the GCS regarding any non-communicating device will only be effective when communicating again to those devices.

a. Default GCS button allocation.

B1 – Takeoff /Landing
B2 – Turtle or Happy Dog mode
B3 – Motor Shutdown
B4 - Menu
L – Wind compensation
R – Enable hovering
J1 – Toogle Front LED
J2 – Floor mode



b. B1 – Takeoff /Landing

CAUTION: PRESSING THE TAKEOFF BUTTON WILL START THE MOTORS AND SPIN THE PROPELLERS AT HIGH SPEED. TAKE ALL THE PRECAUTIONS NEEDED TO AVOID ANY POSSIBLE CONTACT WITH THEM, AS ROTATING PROPELLERS CAN CAUSE SEVERE INJURIES.

I. Takeoff

Automatic takeoff of the UAV, with a smooth acceleration of the propellers' spinning speed. The UAV will automatically reach a hovering position, about 1 meter from the ground, joysticks should not be moved during the takeoff process. Motors and propellers must be able to rotate freely or your Loki MK2 will stop the process to avoid damage; in this case, "Emergency" will appear on the bottom of the GCS screen.

The pilot can always decide to cancel the automatic hovering process and altitude gain by moving its joysticks as soon as the UAV leaves the ground. In that case, it is advised to press the Hovering button ("R") as soon as possible to achieve the best UAV performances. At least 1 hovering process is needed every time a new battery is connected, as this allows your UAV's computer to calibrate its sensors.

The takeoff procedure can be cancelled at any time by pressing the allocated button again.

II. Landing

CAUTION: THE BEST WAY TO ACHIEVE A PERFECT SMOOTH LANDING IS TO FIRST ASK FOR A HOVERING, WAIT FOR SYNCRONIZATION, AND THEN PERFORM THE LANDING.

Automatic landing of the UAV, with a smooth deceleration of the propellers' spinning speed.
The UAV will remain controllable during the landing, as to allow the pilot to adjust the landing area; the whole procedure can be cancelled at any moment by pressing the takeoff landing button again.

c. B2 – Turtle or Happy Dog mode

I. Turtle

If for any reason your Loki MK2 should arrive on the floor upside down, the Turtle function allows you to flip it back to the correct position. A pop-up message will light up on your GCS when the UAV is inverted. As the Loki MK2 understands its position, it will flip over in the most favorable direction.

II. Happy Dog

The Loki MK2 can be used as a high-power IR light generator; just land the UAV in the space you want to lighten and engage the Happy Dog function. This function will turn the drone upside down and switch all IR LED on full power. To exit, press the button again and it will flip back to normal position and recover the previous LED settings.

This function can also be used to get your UAV out of a trapped situation. For example, partially locked under an obstacle.

d. B3 – Motor Shutdown

Also called as emergency shutdown, this function will immediately cut all four motors, regardless of the UAV's current situation or position, leading to instant UAV crash down. This can be used if the UAV starts to exhibit abnormal flight behaviour and cannot be recovered by the operator.
After this emergency, the UAV can be flown again by pressing takeoff landing (B1) but it is recommended to first proceed to a closer mechanical inspection after the crash of the UAV.

e. L – Wind compensation

CAUTION: WIND COMPENSATION SHOULD ONLY BE USED OUTDOOR AND AS FAR AWAY AS POSSIBLE FROM WALLS, WINDOWS OR OBSTACLES

In Wind Mode, the drone will automatically adjust its angle to "fight" the wind. As a result, the max tilt angle of your drone will be increased by the additional angle needed to fight the wind.
The Wind Mode can be activated at any time, except in conjunction with Floor Mode, by pressing the appropriate allocated button (L) or via the Command Action Menu. "Wind" will appear on your GCS.
It is strongly advised not to enter Wind Mode indoors. Since this will make max tilt angle relative, your UAV may interpret a wall, a window or obstacle, as very strong wind, and as a result will compensate by adding more and more angle to generate movement, which could result in a crash.

f. R – Enable hovering

CAUTION: HOVERING (= 3D POSITION HOLD) IS AUTOMATICALLY ACTIVATED AFTER TAKEOFF SO TRY NOT TO TAKE OFF TOO CLOSE FROM WALLS OR UNDER LESS THAN 1M HIGH CEILINGS. HOVERING AND ALTITUDE GAIN WILL BE ABORTED IF THE OPERATOR MOVES THE JOYSTICKS DURING THE TAKEOFF PROCESS. **SKY-HERO STRONGLY RECOMMENDS THAT YOU LET THE UAV PERFORM AT LEAST 1 STABLE HOVERING AFTER EACH BATTERY CONNECTION** AS THIS ALLOWS THE COMPUTER TO UNDERSTAND THE PHYSICS OF THE UAV AND GUARANTEE OPTIMAL UAV PERFORMANCES WHILE FLYING. IT IS ALSO RECOMMENDED TO ACTIVATE HOVERING OCCASSIONALLY DURING FLIGHT (EVEN FOR MORE EXPERIENCED USERS), ESPECIALLY AFTER STRONG IMPACTS TO THE UAV, TO RESET THE GYROSCOPES ESTIMATED VALUES.

I. Hovering-Altitude-Gaz

When actively flying, your UAV will perform in "GAZ" mode, entailing a potential drift against walls, ceilings, floors, etc... but you can ask for a hovering (3D position hold) performed by the embedded sensors: simply press your GCS «R» button.

When activated, the "Hovering" mode will hold the UAV's 3D position in space. This position holding feature relies on all embedded sensors, therefore the position holding has a few limitations:

- Minimum focus distance of the Vertical Camera is 50cm from the ground; no hovering can be achieved below this height.
- Maximum accurate distance sensing is 25 meters; no hovering can be achieved above this height in day light.
- Maximum focus distance of the Vertical Camera is affected by ambient light; if light is getting low, the Vertical Camera will not be able to focus on objects. The embedded vertical IR lights will then power on and generate light in total darkness to provide confortable IR illumination for the frontal camera but will not be suffisant to guarantee a stable hovering.
- The Vertical Camera cannot isolate its own shadow. In low contrast environment, where the UAV's shadow is the most contrasting feature on the ground, the UAV might start to follow its own shadow and will not be able to achieve position holding. In those cases, it is advised to fly a bit further from the ground to diminish the contrast of the shadow.
- In very low contrast or reflecting environment (such as reflective flooring, snow, water, etc.) hovering will also tend to be difficult, as the UAV will not be able to isolate any anchoring feature on the ground.

While hovering, changing the Throttle or Yaw (J1 for Mode 2 users) will keep the UAV position hold. This allows the pilot to modify the orientation or altitude of the UAV while still hovering.

Please note: The UAV status on the screen might show "Flying" which indicates that the UAV is looking to reach a position hold following a request from the pilot, but has not yet managed to do so. Once enabled, "hovering" will show up on your GCS status bar.

II. Altitude

Once in Hovering Mode, you can switch to Altitude Mode by altering the Roll or Pitch of the UAV (J2 for Mode 2 users). Your UAV is now capable of holding its absolute altitude using barometric pressure and distance sensing and will maintain the altitude as long as you don't increase or decrease the throttle.

Since the UAV will maintain its altitude, the pilot can focus on the orientation of the UAV without any need to adjust the vertical position (altitude). In addition, flying over an object will not cause the UAV to increase its altitude. However, if that object is close to the UAV, a slight altitude increase may be experienced as a result of the pressure generated by the nearby object.

III. Gaz

Once in Altitude Mode, you can switch to Gaz Mode by altering the Throttle of the UAV (J1 for Mode 2 users). Since Gaz Mode only requires limited use of the embedded sensors, there are no minimum or maximum altitude limits (you can fly below 50cm or above 25m) and the pilot has more direct control the UAV.
Even if the altitude is not locked, the embedded computer will control the optimal up and down speed to help you fly more smoothly.
While in Gaz mode, your UAV will drift slightly with the movement of the air. If you experience constant drifting, please perform a "flat trim," explained in a dedicated section of the manual, on the connected UAV. If all UAVs connected to the GCS are drifting in same direction, perform a GCS Joystick calibration as explained in the Advanced Settings User Manual.

g. J1 – Toogle Front LED

CAUTION : 840nM IR LIGHT USED IN THE LOKI MK2 CAN BE HARMFUL TO YOUR EYES. TAKE ALL PRECAUTIONS NECESSARY TO AVOID ANY DIRECT IR BEAM CONTACT WITH YOUR EYES, SUCH AS IR BLOCKING GLASSES.

This function will power the front LEDs to the preset brightness level set in the corresponding menu in the GCS (refer to "ADVANCED SETTINGS USER MANUAL"). Toggle again to power off.

h. J2 – Floor mode

I. Floor

Floor Mode offers a lot of additional operational capacities as it transforms your UAV into a rover with a jumping option. This mode will allow pilots of any experience level to cover large areas with minimal crash risks and increased flight time.
Floor Mode is commonly used to fly under objects like beds and cars, or to move in a confined environment with little to no space above the UAV (false ceilings, small pipes, etc.)

II. Access During flight

You can enter Floor Mode at any time by pressing the appropriate allocated button (J2) or via the Command Action Menu. The UAV will start to descend until it reaches the floor, and "Floor" will appear on your GCS. You can exit the mode at any time with the same button or via Command Action, and the UAV will automatically regain altitude.
It is strongly advised to hover after exiting Floor Mode to reset the gyroscopes estimated values. Please remember to reach the 50cm threshold before attempting to enter hovering.

III. Access From Takeoff

You can also takeoff (and land) in Floor Mode, which allows for a low altitude takeoff if doing so from under objects or close to a ceiling. Activate the mode before takeoff by pressing the appropriate allocated button or via Command Action Menu and then perform a standard takeoff.

3. ADDITIONAL GCS MENU FEATURES

a. Video Brightness

Lets you adjust the brightness of the video display on the screen (0 to 240), default value is 128.

b. Device Microphone level

This setting is common to all connected devices

This value will set the UAV's embedded HD microphone level. By default, the level is set to 15%. It can be changed at any time if higher levels are required.

c. Observe Device

This mode allows the use of the GCS as an image reception device. Users can navigate using the 4 Device Buttons (Device Button LEDs will be powered on blue) and, thus, capture the image of nearby devices (whether Sky-Hero devices or not) broadcasting in the frequencies set for each Device in the Video Channel menu. In addition, the user can navigate all frequencies using the (SCROLL) of Joystick 2.

The status of the Scrambled Mode will affect the Observer Mode; if Scrambling is ON, the Observer Mode will not be able to display unscrambled images, and vice-versa.

The GCS audio-video output will stream the selected channel.

d. Version

This submenu informs the GCS user about the current GCS (= "Remote") version, the current communicating UAV (= "Drone") version and the Crossfire (embedded UHF transmitter) version.

e. Command action

This menu lets you activate functions/flight modes that are not allocated to any Allocable Button. Once in the menu, (SCROLL) through the list and (CONFIRM) when the desired function is highlighted.

To make access as fast as possible, the Command Action submenu is the first one in the GCS menu. This enables you to press MENU BUTTON and then immediately (ENTER) the Command Action submenu without the need to (SCROLL).

Motor Shutdown is listed last in the Command Action menu to enable quick access if this function is not already allocated to a button; (SCROLL) up once when in the Command Action menu to highlight the Motor Shutdown function.

Only Takeoff/Landing will require a further confirmation; the user needs to exit the menu after (CONFIRM).

I. Thrown takeoff

CAUTION: THIS FUNCTION WILL ACTIVATE THE MOTORS AND START TO SPIN THE PROPELLERS. EXTENSIVE CAUTION MUST BE TAKEN AS SPINNING PROPELLERS CAN CAUSE SEVERE INJURIES. WEARING GLOVES IS A MUST. NEVER THROW THE UAV TOWARD A PERSON OR AN ANIMAL.
DO NOT THROW THE UAV BEFORE THE MOTORS HAVE REACHED A REGULATED CONSTANT RPM.
TRY TO THROW THE UAV AS FLAT AS POSSIBLE, AVOIDING SPIN AND ERRATIC ROTATIONS.

This function enables you to takeoff without starting from the ground. This should be used in dusty environments, high grass, watery or snowy environments, or any other situations where taking off from the ground is not viable.

Hold the UAV in one hand, making sure that your fingers are clear of the propellers, and engage the function on the GCS with the other hand. Wait for the propellers to accelerate and reach the optimal continuous rotation speed, which is indicated by a constant propeller sound; this should take a couple of seconds. Once the propellers are spinning at the appropriate speed, you can throw the UAV in the air, preferably with an upward movement, without any UAV rotation.

II. Turtle or Happy Dog mode

II. I. Turtle

If for any reason your Loki MK2 should arrive on the floor upside down, the Turtle function allows you to flip it back to the correct position. A pop-up message will light up on your GCS when the UAV is inverted. As the Loki MK2 understands its position, it will flip over in the most favorable direction.

II. II. Happy Dog

The Loki MK2 can be used as a high-power IR light generator; just land the UAV in the space you want to lighten and engage the Happy Dog function. This function will turn the drone upside down and switch all IR LED on full power. To exit, press the button again and it will flip back to normal position and recover the previous LED settings.

This function can also be used to get your UAV out of a trapped situation. For example, partially locked under an obstacle.

III. Toggle Front LED

CAUTION : 840nM IR LIGHT USED IN THE LOKI MK2 CAN BE HARMFUL TO YOUR EYES. TAKE ALL PRECAUTIONS NECESSARY TO AVOID ANY DIRECT IR BEAM CONTACT WITH YOUR EYES, SUCH AS IR BLOCKING GLASSES.

This function will power the front LEDs to the preset brightness level set in the corresponding menu in the GCS (refer to "ADVANCED SETTINGS USER MANUAL"). Toggle again to power off.

IV. Toogle Bottom LED

CAUTION : 840nM IR LIGHT USED IN THE LOKI MK2 CAN BE HARMFUL TO YOUR EYES. TAKE ALL PRECAUTIONS NECESSARY TO AVOID ANY DIRECT IR BEAM CONTACT WITH YOUR EYES, SUCH AS IR BLOCKING GLASSES.

This function will power the bottom LEDs to the preset brightness level set in the corresponding menu in the GCS (see «ADVANCED SETTINGS USER MANUAL»). Toggle again to power off.

V. Flat Trim

CAUTION: THE FLAT TRIM CAN ONLY BE DONE WHEN THE UAV IS LAYING PERFECTLY FLAT AND NOT MOVING. ONLY USE THIS FUNCTION WHEN YOU HAVE YOUR UAV IN SIGHT OR ARE 100% SURE THAT IT IS PERFECTLY FLAT AS THE NEW RECORDED VALUE WILL BE USED AS THE HORIZONTAL ABSOLUTE REFERENCE.

The Flat Trim will reset the UAV's gyroscope flat value. It is advised to use a Flat Trim before first use, or after big impacts to reset the gyroscope.

If you observe completely erratic UAV movements, or a constant strong drifting, it is usually helpful for the UAV to undergo a Flat Trim.

VI. Floor mode

VI.I Floor

Floor Mode offers a lot of additional operational capacities as it transforms your UAV into a rover with a jumping option. This mode will allow pilots of any experience level to cover large areas with minimal crash risks and increased flight time.
Floor Mode is commonly used to fly under objects like beds and cars, or to move in a confined environment with little to no space above the UAV (false ceilings, small pipes, etc.)

VI.II Access During flight

You can enter Floor Mode at any time by pressing the appropriate allocated button (J2) or via the Command Action Menu. The UAV will start to descend until it reaches the floor, and "Floor" will appear on your GCS. You can exit the mode at any time with the same button or via Command Action, and the UAV will automatically regain altitude.
It is strongly advised to hover after exiting Floor Mode to reset the gyroscopes estimated values. Please remember to reach the 50cm threshold before attempting to enter hovering.

VI.III Access From Takeoff

You can also takeoff (and land) in Floor Mode, which allows for a low altitude takeoff if doing so from under objects or close to a ceiling. Activate the mode before takeoff by pressing the appropriate allocated button or via Command Action Menu and then perform a standard takeoff.

VII. Enable hovering

CAUTION: HOVERING (= 3D POSITION HOLD) IS AUTOMATICALLY ACTIVATED AFTER TAKEOFF SO TRY NOT TO TAKE OFF TOO CLOSE FROM WALLS OR UNDER LESS THAN 1M HIGH CEILINGS. HOVERING AND ALTITUDE GAIN WILL BE ABORTED IF THE OPERATOR MOVES THE JOYSTICKS DURING THE TAKEOFF PROCESS. **SKY-HERO STRONGLY RECOMMENDS THAT YOU LET THE UAV PERFORM AT LEAST 1 STABLE HOVERING AFTER EACH BATTERY CONNECTION** AS THIS ALLOWS THE COMPUTER TO UNDERSTAND THE PHYSICS OF THE UAV AND GUARANTEE OPTIMAL UAV PERFORMANCES WHILE FLYING. IT IS ALSO RECOMMENDED TO ACTIVATE HOVERING OCCASSIONALLY DURING FLIGHT (EVEN FOR MORE EXPERIENCED USERS), ESPECIALLY AFTER STRONG IMPACTS TO THE UAV, TO RESET THE GYROSCOPES ESTIMATED VALUES.

VII.I Hovering-Altitude-Gaz

When actively flying, your UAV will perform in "GAZ" mode, entailing a potential drift against walls, ceilings, floors, etc... but you can ask for a hovering (3D position hold) performed by the embedded sensors: simply press your GCS «R» button.

When activated, the "Hovering" mode will hold the UAV's 3D position in space. This position holding feature relies on all embedded sensors, therefore the position holding has a few limitations:

- Minimum focus distance of the Vertical Camera is 50cm from the ground; no hovering can be achieved below this height.
- Maximum accurate distance sensing is 25 meters; no hovering can be achieved above this height in day light.
- Maximum focus distance of the Vertical Camera is affected by ambient light; if light is getting low, the Vertical Camera will not be able to focus on objects. The embedded vertical IR lights will then power on and generate light in total darkness to provide confortable IR illumination for the frontal camera but will not be suffisant to guarantee a stable hovering.
- The Vertical Camera cannot isolate its own shadow. In low contrast environment, where the UAV's shadow is the most contrasting feature on the ground, the UAV might start to follow its own shadow and will not be able to achieve position holding. In those cases, it is advised to fly a bit further from the ground to diminish the contrast of the shadow.
- In very low contrast or reflecting environment (such as reflective flooring, snow, water, etc.) hovering will also tend to be difficult, as the UAV will not be able to isolate any anchoring feature on the ground.

While hovering, changing the Throttle or Yaw (J1 for Mode 2 users) will keep the UAV position hold. This allows the pilot to modify the orientation or altitude of the UAV while still hovering.

Please note: The UAV status on the screen might show "Flying" which indicates that the UAV is looking to reach a position hold following a request from the pilot, but has not yet managed to do so. Once enabled, "hovering" will show up on your GCS status bar.

VII.II Altitude

Once in Hovering Mode, you can switch to Altitude Mode by altering the Roll or Pitch of the UAV (J2 for Mode 2 users). Your UAV is now capable of holding its absolute altitude using barometric pressure and distance sensing and will maintain the altitude as long as you don't increase or decrease the throttle.

Since the UAV will maintain its altitude, the pilot can focus on the orientation of the UAV without any need to adjust the vertical position (altitude). In addition, flying over an object will not cause the UAV to increase its altitude. However, if that object is close to the UAV, a slight altitude increase may be experienced as a result of the pressure generated by the nearby object.

VII.III Gaz

Once in Altitude Mode, you can switch to Gaz Mode by altering the Throttle of the UAV (J1 for Mode 2 users). Since Gaz Mode only requires limited use of the embedded sensors, there are no minimum or maximum altitude limits (you can fly below 50cm or above 25m) and the pilot has more direct control the UAV.
Even if the altitude is not locked, the embedded computer will control the optimal up and down speed to help you fly more smoothly.
While in Gaz mode, your UAV will drift slightly with the movement of the air. If you experience constant drifting, please perform a "flat trim," explained in a dedicated section of the manual, on the connected UAV. If all UAVs connected to the GCS are drifting in same direction, perform a GCS Joystick calibration as explained in the Advanced Settings User Manual.

VIII. Takeoff / Landing

CAUTION: PRESSING THE TAKEOFF BUTTON WILL START THE MOTORS AND SPIN THE PROPELLERS AT HIGH SPEED. TAKE ALL THE PRECAUTIONS NEEDED TO AVOID ANY POSSIBLE CONTACT WITH THEM, AS ROTATING PROPELLERS CAN CAUSE SEVERE INJURIES.

VIII.I Takeoff

Automatic takeoff of the UAV, with a smooth acceleration of the propellers' spinning speed. The UAV will automatically reach a hovering position, about 1 meter from the ground, joysticks should not be moved during the takeoff process. Motors and propellers must be able to rotate freely or your Loki MK2 will stop the process to avoid damage; in this case, "Emergency" will appear on the bottom of the GCS screen.

The pilot can always decide to cancel the automatic hovering process and altitude gain by moving its joysticks as soon as the UAV leaves the ground. In that case, it is advised to press the Hovering button ("R") as soon as possible to achieve the best UAV performances. At least 1 hovering process is needed every time a new battery is connected, as this allows your UAV's computer to calibrate its sensors.

The takeoff procedure can be cancelled at any time by pressing the allocated button again.

VIII.II Landing

CAUTION: THE BEST WAY TO ACHIEVE A PERFECT SMOOTH LANDING IS TO FIRST ASK FOR A HOVERING, WAIT FOR SYNCRONIZATION, AND THEN PERFORM THE LANDING.

Automatic landing of the UAV, with a smooth deceleration of the propellers' spinning speed.
The UAV will remain controllable during the landing, as to allow the pilot to adjust the landing area; the whole procedure can be cancelled at any moment by pressing the takeoff landing button again.

IX. Wind compensation

CAUTION: WIND COMPENSATION SHOULD ONLY BE USED OUTDOOR AND AS FAR AWAY AS POSSIBLE FROM WALLS, WINDOWS OR OBSTACLES

In Wind Mode, the drone will automatically adjust its angle to "fight" the wind. As a result, the max tilt angle of your drone will be increased by the additional angle needed to fight the wind.
The Wind Mode can be activated at any time, except in conjunction with Floor Mode, by pressing the appropriate allocated button (L) or via the Command Action Menu. "Wind" will appear on your GCS.
It is strongly advised not to enter Wind Mode indoors. Since this will make max tilt angle relative, your UAV may interpret a wall, a window or obstacle, as very strong wind, and as a result will compensate by adding more and more angle to generate movement, which could result in a crash.

X. Toggle video boost

Using the Video Boost will enable you to increase the Video Power setting by 1 power level, without having to go into the dedicated menu. When active, a "V" will appear on top of your GCS screen, indicating your device is now flying with the boosted value. Deactivating the Video Boost will revert the video power setting back to the original value. This boost will not be affected by your compliance setting.

XI. Toggle angle boost

For each device you can select a max angle boost. When used, an "S" for Speed will appear on top of your GCS screen, indicating your device is now flying with the boosted value of your max tilt angle. This is very useful when you need to be able to quickly increase the max speed of the UAV.

By default, this value is set to 15 degrees and non boosted value to 9 degrees. This setting can be further adjusted please refer to «ADVANCED SETTINGS USER MANUAL».

XII. Toggle drone sleep

This function allows to put the current connected device into a sleep mode, generating a lower power drain and increasing the device's battery lifetime. No audio-video signal is emitted and all LED are turned off. You can recover normal operation by reconnecting to the drone (by pressing the corresponding device button) or by toggling the function again. Your GCS remains fully functional.

XIII. Toggle push-to-talk

This function enables the use of one the GCS' Allocatable Button as a PTT. The use of a dedicate cable for your radio system might be necessary. Please contact our customer service for detailed information : support@sky-hero.com

XIV. Motor shutdown

Also called as emergency shutdown, this function will immediately cut all four motors, regardless of the UAV's current situation or position, leading to instant UAV crash down. This can be used if the UAV starts to exhibit abnormal flight behaviour and cannot be recovered by the operator.
After this emergency, the UAV can be flown again by pressing takeoff landing (B1) but it is recommended to first proceed to a closer mechanical inspection after the crash of the UAV.

f. System sleep mode

CAUTION : BE AWARE THAT ONLY THE COMMUNICATING DEVICE AND THE GCS WILL GO INTO SLEEP MODE; ALL OTHER NON COMMUNICATING DEVICE WILL REMAIN AWAKE. IF NEEDED, YOU WILL HAVE TO PUT THOSE MANUALLY INTO SLEEP VIA 'TOGGLE DRONE SLEEP' BEFORE SWITCHING TO YOUR LAST DEVICE AND SETTING IT INTO SLEEP MODE WITH THE GCS.

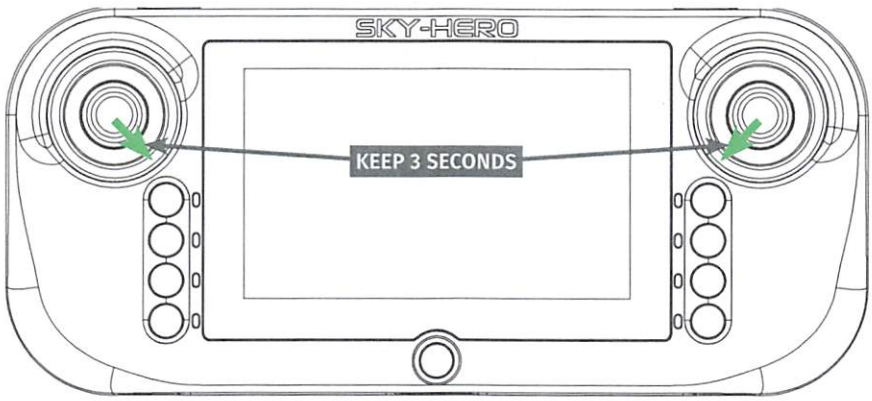
At any time, you can set your system (GCS + 1 device) into «SLEEP MODE» and be able to quickly reactivate it when needed in no more than 3 seconds.

Start your system normally, select one device, wait for connection.

Hold the two joysticks in down inward position for 3 seconds, until your system has entered « SLEEP MODE » with minimal power consumption for both the UAV and the GCS (1 hour sleep = 25% UAV battery drain, 10% GCS battery drain).

The B4 and device LED will show orange, GCS screen will turn off.

To recover normal operation and reconnect immediately to your device, hold the two joysticks in down inward position for 3 seconds.



4. ADVANCED SETTINGS

This submenu is locked by default and should only be used by experienced users, please refer to the ADVANCED SETTINGS user manual.

5. WARNINGS

a. Warnings | Loki MkII sUAV

- Loki MkII is tested for how much electrical energy it use during typical use : 11.1V ; 20A
- Loki MkII is not weatherproof – don't fly in rain, snow, puddles, etc. Do not immerse this product in any liquid. This can lead to a complete malfunction of the device.
- Also avoid operating the Loki MkII in environments where small particles could enter the device body, such as sand, dust, etc. This can lead to a complete malfunction of the device. This can lead to partial or complete blocking of the wheels, poor visibility due to particles accumulating on the camera lenses, etc.
- Keep away from fire.
- To clean or dust your device, use only a soft dry cloth. Do not apply any liquids of any kind (detergents, solvents, etc.) which could weaken the various parts of the appliance. Also do not apply any kind of lubricant or grease to the moving parts of the vehicle, especially the wheel bearings.
- Do not fly in extremely hot temperatures above 50°C | 122°F. Do not operate it in extremely cold temperatures below -20°C | -4°F
- When not in use, first remove the LiPo battery from the device. Then store the Loki MkII and the removed battery in a cool, dry place with a relative humidity of less than 75%.
- The operator in command is responsible for managing directions, range, and battery level and monitoring messages and alerts displayed by the associated controller.
- Exclusively use accessories such as battery chargers authorized by Sky-Hero. Using unapproved accessories will void warranty coverage.

b. Warnings | GCS MkII Controller

- Keep away from fire, wet and dusty environments.
- To clean or dust your controller, use only a dry cloth. Do not apply any liquids of any kind (detergents, solvents, etc.) which could weaken the various parts of the appliance.
- Store the GCS MkII in a cool, dry place with a relative humidity of less than 75%. Do not leave your GCS MkII for more than 3 months without charging it.

c. Warnings | LiPo Battery

- Loki MkII uses removable, lightweight, rechargeable Lithium-Polymer (LiPo) battery and GCS MkII uses also a built-in Lithium-Polymer (LiPo) battery, which provides higher specific energy than other traditional batteries. The user must have an appropriate understanding of lithium-polymer batteries before purchase.
- The batteries are foreseen for the use of system integrations with proper protection circuitry or battery packs with a battery management system or PCB (circuit board/module).
- Use caution when working with and using lithium-polymer batteries as they are very sensitive to charging characteristics and may explode, burn, or cause a fire if misused or mishandled.
- The operator is responsible for any damage or injury caused by the misuse or mishandling of lithium-polymer batteries and chargers.

- Charge only with the provided charger designed for this specific type of lithium-ion battery.
- Charging should be completed in an open area. Always charge in or on a fire-proof surface. Never leave batteries charging unattended.
- Please note that the Loki MkII and GCS MkI LiPo batteries cannot be charged at temperatures above 45°C (113°F). The temperature range for charging the LiPo battery is 10°C to 45°C. Do not disassemble the batteries or dual charging dock. Do not insert any foreign material into the battery terminal.
- Do not attempt to use batteries that are damaged, dented, or ruptured after a crash or drop. Avoid dropping or striking the batteries.
- Do not immerse the batteries or charging dock in water or other liquids
- If substances leak from the battery pack and get in your eyes, do not rub them. Seek emergency medical attention promptly.
- In storage as in operation, it's important not to allow the battery to come in close contact with moisture or heat sources. Store the battery in a dry and well-ventilated area at room temperature, ideally 20°C | 68°F to 28°C | 82°F.
- Do not store the battery in direct sunlight or near sharp items, moisture, metal, or reactive chemicals.
- Over time, some reduction in battery life is expected.

6. STORAGE

Knowing how to store your ground robot properly can extend its useful life. Keep in mind these tips for best storage practices:

a. Perform Visual Inspection

Before you ever put up your Loki MkII after an operation, you should always check it over for signs of wear. This is a simple, visual once-over, that takes a matter of seconds, but can help you catch minor issues before they become major ones. Look over the outer shell for cracks or any other signs of damage. Check the propellers for any damage or debris, and inspect the camera lenses for dust and dirt. Also, check the battery bay.

b. Clean the device

Cleaning your aerial robot includes removing any visible dirt from the shell and cameras. If you are planning to put your drone into storage for an extended length of time, make sure you do this beforehand.

c. Update firmware

Make sure you do any firmware updates on both sUAV and controller before putting your Loki MkII away, whether it's for a short break. If you're going to be back operating it in a week or two, then you'll be ready to deploy it for the next mission. If you're planning on a longer break, you may need to perform another update when you bring your drone out again. However, the updating process will be faster if you're not two or three versions behind.

d. Remove and discharge batteries

Proper care of your batteries will give them a much longer lifespan. Batteries should be discharged between 40% to 65% percent. This is extremely important, as batteries that are stored while fully charged, or with too low of a charge, may be permanently damaged. And be sure to unplug the batteries – never store batteries in the charger.

e. Store batteries separately

For safety's sake, your Loki MkII should never be stored with the batteries installed. Always store your batteries away from direct sunlight, ideally at around 25°C | 77°F. Also, make sure that the battery charger does not come into contact with other conductive materials.

f. Store Loki MkII in a cool, dry, non-magnetic area

Once all the prep work has been done to prepare your device for storage, make sure to store it in suitable conditions. Your Loki MkII, as well as batteries, GCS MkII controller, and any other attachments, should be stored in a climate-controlled setting. The ideal temperature for storage is between 20°C | 68°F to 28°C | 82°F. Extreme cold or heat can lead to permanent damage to batteries, and also to the electrical elements of the sUGV and the controller.

Your devices should be stored in a dry place away from humidity, as a humid environment can lead to corrosion of metal elements and mildew on plastic parts or packaging materials. In practical terms, this means that your drone should not be stored in a damp basement, an uninsulated attic, in a car, or in a non-climate-controlled storage unit. Also keep in mind that your drone should be stored away from any sources of magnetism, to avoid any scrambling of the computer or electrical components.

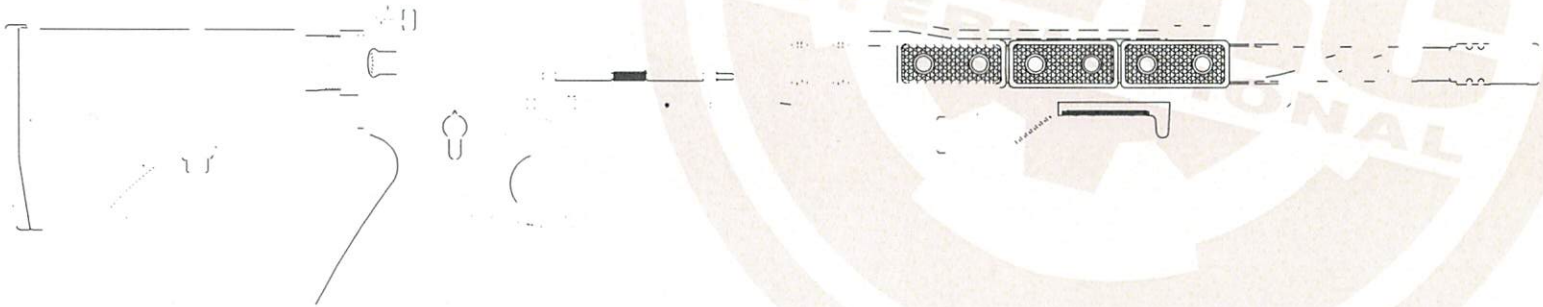

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Culver CITY
POLICE
MOBILE COMMAND CENTER

DIRECT IMPINGEMENT RIFLE

OPERATOR'S MANUAL

LWRCI-DI



LWRCI™ | HIGH-PERFORMANCE FIREARMS | LWRCI.COM

Made in the USA

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SMART ARMOR™ TECHNOLOGY.

Base Vehicle Specifications

Engine	3.5L Petrol 3.7L Petrol 3.2L Diesel
Transmission	6-speed auto
Powertrain	185-310 HP 260-400 lb-ft
Length	264"
Width	81"
Height	108"
Wheelbase	148"
Interior Vol	550 cubic ft
Seating	Up to 12

Features

- Fully armored up to NIJ Level III (7.62 x 51, .308)
- Full 360° door overlaps with bullet catchers
- Ease of entry/exit
- Covert appearance
- 360° view camera package
- Automatic door opening system
- Customized seating configurations
- Grab rail system
- Removable side steps
- Additional equipment available

Armored Ford Transit Tactical Van

International Armored Group's armored Ford Transit van offers the most interior volume in its class and has more interior room than many of the larger style SWAT vehicles. The interior configuration can accommodate various set-ups including a built-in command center that allows the vehicle to link to other departmental assets and provide live video feeds.

With many departments looking for a discrete approach to an armored vehicle, the armored Ford Transit van provides departments with safety and the payload capacity they need for personnel and equipment, as well as, the space required to effectively perform their jobs.









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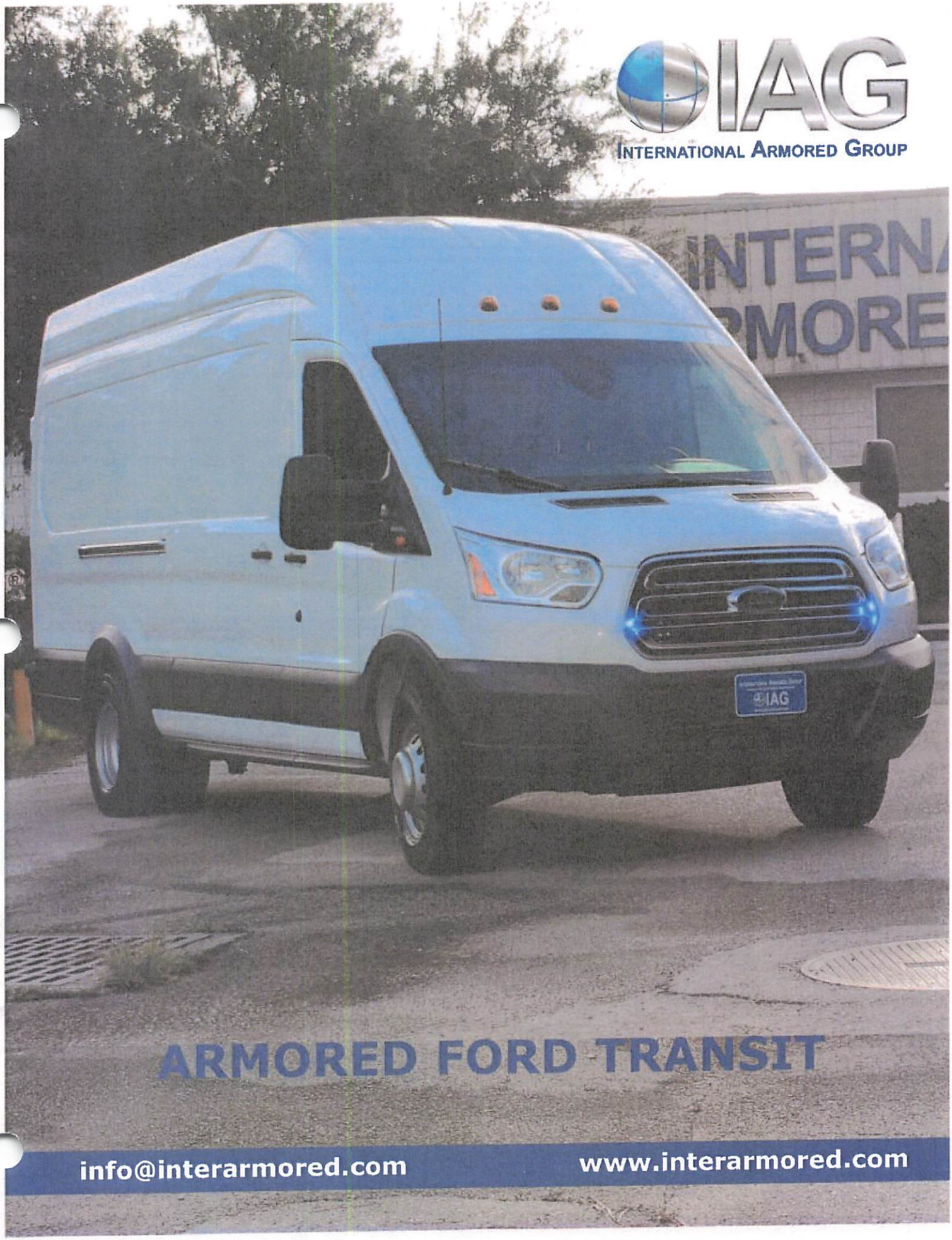
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DIRECTLY DESCENDED FROM THE RIFLES DEVELOPED BY LWRCI™ TO MEET THE REQUIREMENTS OF THE U.S. ARMY INDIVIDUAL CARBINE PROGRAM, THE LWRCI-DI IS ENGINEERED FOR OPTIMAL PERFORMANCE. BUILT FROM THE GROUND UP TO BE MORE THAN JUST ANOTHER DIRECT IMPINGEMENT RIFLE, THE LWRCI-DI DELIVERS THE QUALITY FEATURES AND DESIGN INNOVATIONS YOU EXPECT FROM LWRCI.

LWRCI-DI ELEVATED. IMPROVED. ENHANCED.

1.0 WEAPON SAFETY

CONGRATULATIONS ON YOUR PURCHASE OF AN LWRCI-DI HIGH-PERFORMANCE FIREARM. OUR RIFLES ARE DESIGNED AND MANUFACTURED WITH THE HIGHEST QUALITY COMPONENTS FOR OPTIMAL PERFORMANCE FOR OPERATORS AND SHOOTERS. OWNERSHIP AND OPERATION OF THIS FIREARM TAKES A HIGH LEVEL OF PERSONAL RESPONSIBILITY. COMPLETELY READ AND THOROUGHLY UNDERSTAND THIS MANUAL PRIOR TO OPERATING YOUR LWRCI- DI RIFLE.

CAUTION: THIS IC IS A FIREARM. WHEN HANDLED CARELESSLY OR IMPROPERLY, NEGLIGENT DISCHARGES CAN OCCUR, CAUSING INJURY, DEATH, OR DAMAGE TO PROPERTY.

NOTICE: LWRC International, LLC shall not be responsible for injury, death, or damage from either intentional or negligent discharge of this firearm or from its function when used in a manner other than designed.

IMPORTANT: Careless or improper handling, unauthorized adjustment or parts replacement, neglect, poor storage and the use of wrong caliber or any ammunition other than recommended will prejudice any warranties extended by LWRC International on this Firearm.

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1.1 GENERAL SAFETY PROCEDURES

When handling any type of firearm, the shooter must, at all times, keep in mind the cardinal safety rules of weapons handling:

THE FOUR FIREARMS SAFETY RULES

1. Treat every weapon as if it were loaded at all times.

2. Never point your weapon at anything that you do not intend to destroy.

3. Keep your finger off of the trigger until you intend to fire.

4. Keep the weapon's safety on until you intend to fire.

An important part of safe handling, especially around other people, is to frequently ensure that the weapon is clear when it is not being actively shot. For example, when handing your weapon to another person, clear the weapon and lock the bolt carrier to the rear using the bolt catch. When the receiving person takes the weapon, the new holder should follow the clearing procedure (including visual inspection of the chamber). Please consult section 3 of this manual for instructions on how to clear your IC.

Always ensure that you are firing the correct caliber ammunition through your weapon. To ensure proper function and safety, LWRCI recommends using factory-loaded ammunition that complies with SAAMI, NATO, or CIP published standards. LWRCI does not guarantee your weapon's safety or performance when using reloaded, hand loaded, or surplus ammunition.

Every LWRCI weapon is shipped with a chamber safety flag. It is recommended that the bolt NOT be slammed on the safety flag to increase the life of your flag. When checking your weapon's bore, remove the flag and make certain that it is free from any obstruction before loading and firing.

Check your weapon's bore to ensure that it is free from any obstructions before loading and firing the weapon, especially for the initial firing after a period of inactivity (storage, cleaning, etc.). In the event that the weapon is dropped or the muzzle touches the ground, clear the weapon before checking for a bore obstruction.

Prior to firing, know your intended target and what lies beyond it. Be sure that there is an adequate backstop or open space free of persons and other unintended targets. Keep in mind that hard objects behind your target can cause ricochets, posing a safety hazard to property, persons in the vicinity, and the shooter.

Be aware of where your muzzle points at all times and, regardless of the status of the weapon, never point the weapon's muzzle at any person or unintended target. When not being carried by a shooter, the weapon should be placed in a 'Range Safe' condition: the magazine is removed, the muzzle faces downrange, the ejection port is open and faces up, the bolt carrier is locked to the rear, and the selector is set to SAFE.

Weapons should be stored unloaded, either in a locked case or in a secure area, such as an armory. Always remember to return the chamber safety flag to the empty chamber to give yourself and others around a visual indicator that your weapon is in a safe condition.

Always use eye and ear protection when shooting any firearm.

Familiarize yourself with the weapon, its controls, features and operating procedures prior to shooting.

1.2 WEAPON CONDITIONS

Throughout this manual and in some training courses, various "conditions" are used to describe how the LWRCI-DI's controls and components are oriented. These conditions allow for common starting points in describing how to manipulate the weapon. The conditions for the LWRCI-DI (and other AR-style weapons) are an extension of the commonly taught Handgun Readiness Conditions, and the condition descriptions are as follows:

CONDITION 4: Bolt forward on an empty chamber, no magazine inserted, hammer down, and selector on FIRE. (The selector is not able to turn to SAFE).

CONDITION 3: Bolt forward on an empty chamber, magazine inserted, hammer down, and selector on FIRE. (The selector is not able to turn to SAFE).

CONDITION 2: Not applicable for the LWRCI-DI.

CONDITION 1: Bolt forward with round chambered, magazine inserted, hammer cocked, and selector on SAFE.

CONDITION 0: Bolt forward with a round chambered, magazine inserted, hammer cocked, and selector on FIRE.

In addition to these traditional conditions, the 'Range Safe' condition was described earlier as: bolt locked to rear, ejection port cover open, no magazine inserted, and selector on SAFE.

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2.0 LWRCI-DI CARBINE SERIES OVERVIEW

The IC-DI line shares many of the same features as LWRCI's piston-driven rifles. The controls and aesthetics are directly descended from the rifles designed by LWRCI to meet the requirements of the US Army Individual Carbine Program.

Built from the ground up to be more than just another direct impingement rifle, the LWRCI-DI delivers the quality features and innovative design LWRCI is known for.

DI Elevated. Improved. Enhanced.

CALIBER
5.56mm NATO

MUZZLE THREADS
½ x 28 TPI

RIFLING
1/7" RH

MAGAZINE CAPACITY
10/30

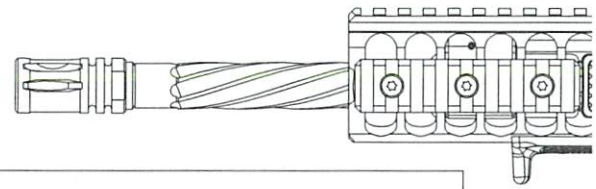
TRIGGER PULL
5.5-8.5 lbs.

CYCLIC RATE
750-900

SUSTAINABLE RATE OF FIRE
70 RPM

2.1 TECHNICAL DATA

	LWRC-DI 16.1"
OVERALL LENGTH	31.9" - 34.5"
WEIGHT	6.7 lbs
MAX EFFECTIVE RANGE	500 yards



BARREL:
6-groove rifling, 1-in-7 RH twist, 41v45 CMV Steel, NiCorr-coated, cold hammer-forged, including Rifling and Chamber, M4 Barrel Extension with Extended Feed Ramps, Nickel-Boron Coated

MID-LENGTH DIRECT IMPINGEMENT OPERATING SYSTEM:
NiCorr-coated Gas Block and Gas Tube

MONOFORGE UPPER RECEIVER:
Type III Anodize or Cerakote

FULLY AMBIDEXTROUS LOWER RECEIVER:
Type III Anodize or Cerakote

MODULAR RAIL SYSTEM:
Type III Anodize or Cerakote
Rail length changes with barrel length and varies from 7" to 12" depending on model

LWRCI AMBI CHARGING HANDLE

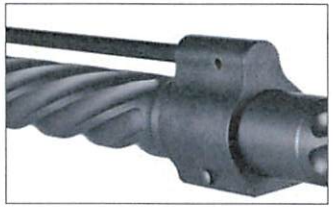
LWRCI DI BOLT CARRIER:
Integrated Linear Gas Key, Nickel-Boron Coated

MIL-SPEC BUFFER TUBE, H2 BUFFER, MIL-SPEC BUFFER SPRING

LWRCI COMPACT STOCK

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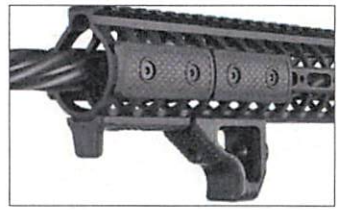
NICORR-COATED GAS BLOCK AND GAS TUBE

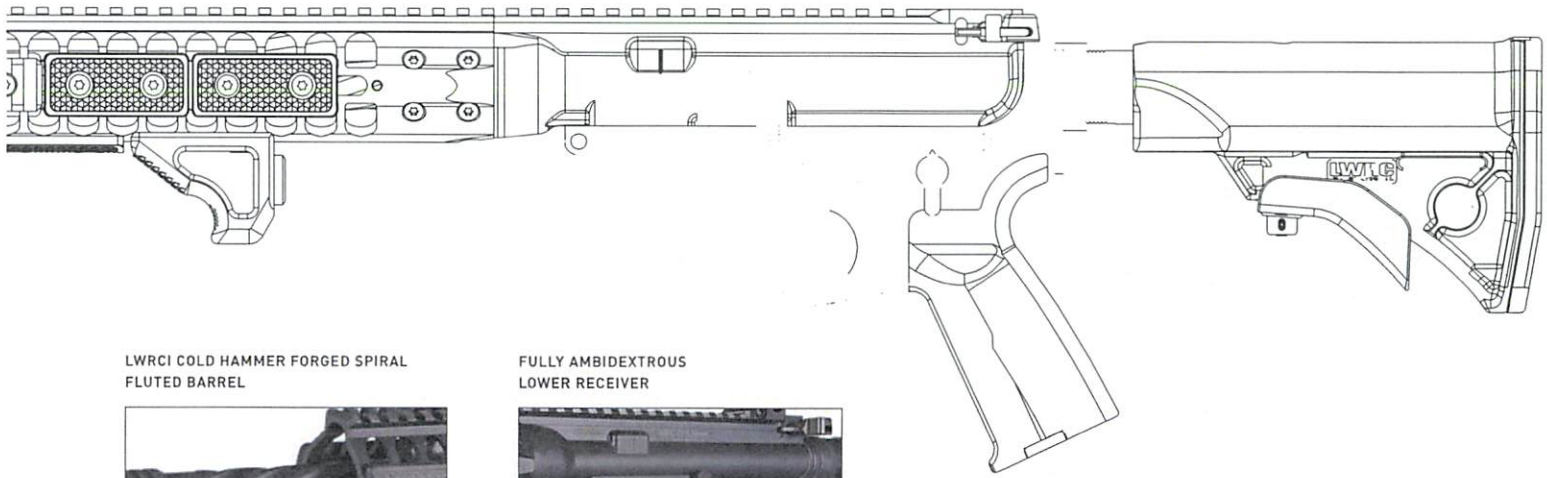


LWRCI ADVANCED DI BOLT CARRIER GROUP



LWRCI ANGLED ERGONOMIC FORE GRIP WITH QD SLING POINT





LWRCI COLD HAMMER FORGED SPIRAL FLUTED BARREL



FULLY AMBIDEXTROUS LOWER RECEIVER



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2.2 WEAPON NOMENCLATURE

This section identifies the primary parts and features of the DI Series.

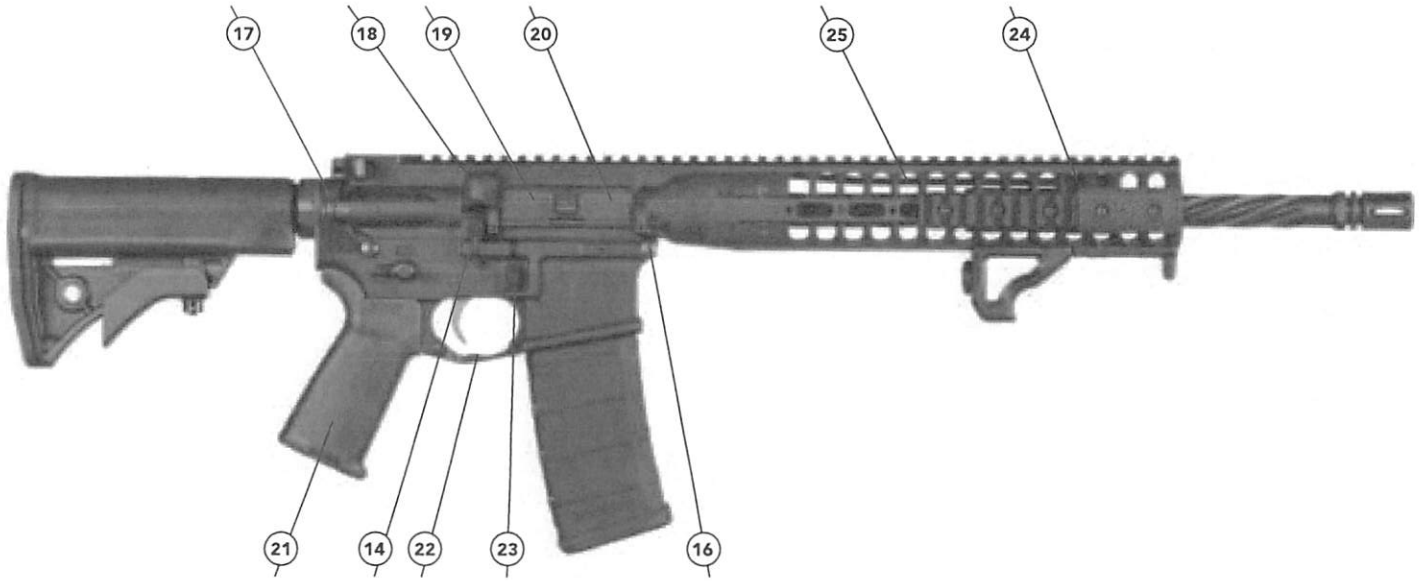
LEFT SIDE VIEW



1. Flash Hider
2. LWRCI Hand Stop
3. LWRCI Barrel
4. LWRCI Rail Panels
5. LWRCI DI Modular Rail
6. Monoforge Upper Receiver
7. LWRCI Angled Ergonomic Fore Grip
8. Ambi Charging Handle
9. LWRCI Compact Stock
10. Rear Take-Down Pin
11. Ambi Selector
12. Ambi Mag Release
13. Trigger
14. Ambi Bolt Catch & Release

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RIGHT SIDE VIEW



15. Magazine
16. Front Take-Down Pin (Pivot Pin)
17. Forward Assist
18. Brass Deflector
19. Ejection Port Cover
20. Bolt Carrier (Inside)
21. Magpul MOE+ Grip
22. LWRCI Enhanced Trigger Guard
23. Ambi Mag Release
24. LWRC DI Gas Block
25. Gas Lube

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2.3 OPERATING CONTROLS

This section details the function of the parts of the weapon that the shooter will manipulate during firing.

2.3.1 AMBI SELECTOR (ITEM 11)

Located on both sides of the LWRCI-DI rifle, the Ambidextrous Selector functions as both the manual safety and the fire mode selector. The receiver is marked with pictograms for all three modes:



SAFE Prevents the trigger from releasing the hammer.



SEMI-AUTOMATIC Allows for one shot per pull of the trigger.



AUTOMATIC Allows for continuous firing for as long as the trigger is pulled.

All LWRCI rifles are marked with the AUTOMATIC pictogram, but the AUTOMATIC setting is only functional in a select-fire weapon. The AUTOMATIC setting cannot be engaged in a semi-automatic weapon.

Note that the selector can only be set to SAFE when the hammer is cocked.

2.3.2 TRIGGER (13)

The trigger is used to fire the weapon. The area in which the trigger is located is called the trigger well. The trigger well is enclosed on the bottom by the trigger guard (item 23). The LWRCI-DI comes equipped with the LWRCI Enhanced Fire Control Group (EFCG), a single stage trigger with pull weight of 5.5-8.5 lbs. Geissele fire control groups are available as factory upgrades. The Geissele fire control group can improve the crispness and reduce the pull weight to as low as 2.8 lbs.

CAUTION: Although numerous aftermarket fire control groups are available, LWRCI can only warranty the use of the fire control group supplied with your weapon.

CAUTION: Installation of aftermarket accessories that extend into the trigger guard area of the weapon are discouraged. They could result in a negligent discharge and void of warranty.

2.3.3 AMBI CHARGING HANDLE (8)

The LWRCI-DI is equipped with an LWRCI Ambi Charging Handle. Pulling on the latches of the charging handle will unlock the charging handle and allow the user to draw the bolt carrier group to the rear. The carrier group is drawn to the rear in order to either lock the carrier group back using the bolt catch or (more commonly) to charge the rifle with a new round from the magazine.

When charging the rifle, always use a sharp tug directly backwards to avoid binding, and allow the charging handle to travel back to its home position with the momentum of the carrier. Holding on to the charging handle as it moves forward will impede the consistent feeding process, resulting in stoppages. The only time you should "ride" the carrier home is when you are placing the chamber flag in the bore. Riding the carrier home will prevent damage or breaking the chamber flag.

The contemporary method of charging the rifle is to use the support side hand to manipulate the charging handle while the strong hand retains control of the grip and firearm.

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2.3.4 AMBI BOLT CATCH AND RELEASE (14)

The IC has controls for the bolt catch and release on either side of the lower receiver.

To lock the bolt carrier back, use the charging handle to pull the bolt carrier group back until the leading face of the bolt passes the bolt catch. Once the bolt face has cleared the bolt catch, press the lower section of either of the bolt catch paddles. The carrier should now be locked back and the charging handle can be returned to the home position manually.

To release the bolt carrier group from its locked back position, press the top half of either bolt catch paddle. The carrier will be released and return to its home position.

2.3.5 AMBI MAGAZINE RELEASE (12) (23)

Magazines that are properly inserted into the LWRCI-DI's magazine well will automatically be caught and locked in place. Usually an audible click can be heard when the magazine is fully seated, but tugging on the magazine will verify that it is locked in place.

The magazine is released by depressing the magazine releases located on either side of the lower. On the left side of the receiver, the magazine release is in the form of a paddle; the right side release is the more traditional button. Magazines may or may not drop free. A tug on the magazine while depressing the mag release will ensure removal.

CAUTION: Remember that removing the magazine does not mean that the weapon is unloaded; there may still be a round in the chamber. The chamber can be checked by clearing the weapon (several pulls of the charging handle is standard) before visually inspecting the chamber. Devices such as chamber flags can be used to further ensure that the chamber is clear in a low-visibility scenario.

2.3.6 FORWARD ASSIST (17)

The forward assist is used to ensure that a cartridge is fully seated into the chamber. Repeatedly tapping on the forward assist button forces a not-fully-seated carrier to move forward in small increments. One or two firm taps with the palm of the hand is recommended if deemed necessary, but excessive force should not be required to fully seat a new round. DO NOT force a round into the chamber. If several firm taps do not fully seat the round, follow the clearing procedure and inspect the round, the magazine, the chamber, and the bore of the weapon. The forward assist is more commonly used in situations where regular cleaning is not possible, or when debris is introduced into the action of the rifle (desert conditions, dropped weapon, etc.). Normal "range" firing will very, very rarely require the use of the forward assist.

2.3.7 EJECTION PORT COVER (19)

The spring-loaded ejection port cover is used to keep debris and foreign matter from entering the upper receiver through the ejection port. It opens automatically when the weapon is cycled, either by hand or by firing. The ejection port cover should always be closed when

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the weapon is no longer firing with the exception of the 'Range Safe' condition. To close it, simply push the cover up until it engages the upper receiver.

2.3.8 LWRCI COMPACT STOCK (9)

The standard LWRCI-DI comes equipped with an LWRCI Compact Stock fitted to a 6-position buffer tube. To adjust the length of pull of either stock, hold down the back of the stock release lever and slide the stock forwards or backwards to the desired position. Release the lever and rock the stock forward and back until you hear a click, ensuring that the stock is locked in place.

3.0 PRE-OPERATING PROCEDURES

Several measures should be taken before firing your LWRCI-DI. These pre-operating procedures can be taken as often as the shooter wishes, but they should at the least be completed before every firing session to ensure proper function of the firearm.

3.1 CLEARING YOUR WEAPON

Clearing your weapon is an important starting and stopping point for many weapon operations. Clear the weapon upon receiving it from someone, when you pass it along to someone, and when it is being set down on the range or for storage. Clearing is also the easiest way to put the weapon into conditions 3-4.

The process for clearing your rifle is as follows:

1. While pointing the muzzle in a safe direction, remove the magazine (if present) by depressing the magazine release and pulling the magazine out.
2. Press and hold the bottom half of either bolt catch lever. The traditionally taught method is to turn the rifle onto its side and hold the bolt catch with the support hand, but the ambi controls of the IC allow for the firing hand to hold open the bolt catch as well.
3. Using the hand that is not holding the bolt catch lever, grasp the charging handle, depress the latch(es) and firmly pull the charging handle and carrier group all the way to the rear. If a round was chambered, it should have been ejected as the bolt carrier moved to the rear. As it moves all of the way to the rear, the bolt carrier

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group will become trapped by the bolt catch and will not be able to return to the home position. Note that if the carrier group is not pulled completely to the rear, the bolt catch can catch on the front face of the carrier instead of the bolt.

4. Return the charging handle to the closed and latched position.

5. Roll the weapon counter-clockwise until you have a clear view of the bolt and chamber through the ejection port. Visually check to make sure that the chamber is clear and that the bolt is locked to the rear. In low light conditions, perform a tactile check.

CAUTION: Step 5 is a crucial part of the clearing process. Do not depend on the fact that no casing was ejected on clearing. There could still be a live round in the chamber for any number of reasons. Make certain that you inspect the chamber to make sure that it is clear.

3.2 PRE-FIRE INSPECTION (PFI)

A pre-fire inspection should be performed before each firing session.

1. Clear the weapon before placing it into Condition 4.

2. Break the weapon down 'shotgun style' by pulling out the rear takedown pin and pivoting the upper and lower receivers apart.

3. Inspect the bolt carrier group. Remove the bolt carrier group by pulling the charging handle back halfway and sliding the bolt carrier group free of the upper receiver. Check to make sure that the bolt is fully captive in the carrier. Make sure that the cam pin is captive and that it rides in its track smoothly when the bolt is moved in or out. Check for damage on the bolt face and the bolt lugs. Ensure that the firing pin retainer is fully seated in its hole. Ensure that the firing pin hole in the bolt face is not obstructed. Tap the bottom of the bolt carrier firmly against the palm of your hand to ensure that the firing pin is fully captured. A light coating of lubricant is recommended for the body of the carrier and/or the inside of the upper receiver; ensure that the lubricant has not dissipated.

4. Visually inspect the bore for obstructions. In low light conditions, physically inspect the bore by passing a cleaning rod through it. Do not check for bore obstructions using a flexible barrel cleaner Flexible cleaners, especially worn or used ones, can snag on small obstructions and break, leading to even larger obstructions.

5. Reassemble the weapon by inserting the bolt carrier group into the upper receiver, close up the upper and lower receivers, and re-insert the rear takedown pin. .

6. If applicable, ensure that the adjustment of the gas block is in the appropriate position for the current firing schedule.

7. Inspect your magazines. Ensure that they are clean and not dented or cracked. Pay special attention to the shape of the feed lips on metal magazines. Check that the magazine follower moves freely within the magazine body and returns home under its own spring tension. Do not oil or otherwise lubricate magazines.

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8. Inspect the ammunition. Ensure that the ammunition is the correct caliber for the weapon and is not damaged. Do not oil or otherwise lubricate ammunition.

   Once the inspection is completed, clear the weapon and return it to either Condition 4 or make it 'Range Safe'.

3.3 PRE-FIRE FUNCTION TEST

The shooter should complete a pre-fire function test of the action and fire control group after the weapon has been disassembled and reassembled. As the pre-fire inspection involves partially breaking the weapon down, a function test should always follow an inspection. Perform the following steps, watching closely for anything that impedes the movement of the carrier group or makes the weapon hard to cycle.

1. Clear the weapon before placing it into Condition 4.
2. Check the function of the magazine catch. Insert an empty magazine into the magazine well, tugging on it to ensure that it is fully seated and held in place by the magazine catch.
3. Check the function of the charging handle and the bolt catch. Grasp the charging handle and pull it to the rear. The bolt carrier group should lock to the rear because of the empty magazine. The charging handle should not return forward on its own accord. Push the charging handle until it is latched back into its home position.
4. Check the function of the magazine release. Release the magazine using the magazine release and remove it from the weapon. The carrier group should remain locked to the rear.
5. Check the bolt release. Press the large paddle on the upper portion of either bolt release. The carrier group should slam forward and lock into battery. Never slam the carrier group forward on your chamber flag. This may cause the flag to break and become stuck in your bore.
6. Check the function of the safety. With the selector on SAFE, pull the trigger. Nothing should happen; the hammer should not drop.
7. Check semi-auto function. Rotate the selector to "SEMI" and pull the trigger. The hammer should drop with a loud click. Repeat this test by charging the weapon (pull the charging handle firmly to the rear, then release).and pulling the trigger again. The hammer should drop.
8. Check the trigger reset. Hold down the trigger while charging the weapon again. Once the charging handle and carrier group have returned home, slowly release the trigger. Listen for a click as you release the trigger; that 'click' is the sound of the disconnector separating from the hammer. The hammer should remain cocked when the trigger is fully released.
9. Check full-auto function (if applicable). Set the selector to "AUTO". Pull and hold the trigger. The hammer should fall. Charge the weapon at least three times while holding the trigger down. The hammer should fall each time the carrier group goes into the home position.

   Once the function test is completed, clear the weapon and return it to either Condition 4 or make it 'Range Safe'.

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4.0 OPERATING THE DI

Your LWRCI-DI Carbine is engineered to perform right out of the box. Each rifle is quality checked and test fired to meet exact tolerances for high performance. This section outlines manufacturer recommendations required to ensure safe and optimal performance.

4.1 CHOICE OF AMMUNITION

To reiterate: always ensure that you are firing the correct caliber ammunition through your weapon. To ensure proper function and safety, LWRCI recommends using factory-loaded ammunition that complies with SAAMI, NATO, or CIP published standards. LWRCI does not guarantee your weapon's safety or performance when using reloaded, hand loaded, or surplus ammunition.

LWRCI does not recommend the use of steel-cased ammunition.

5.56/.223 bullets of less than 50gr should also be avoided.

Subsonic ammunition will not reliably cycle in the LWRCI-DI, even when fired with a suppressor.

The LWRCI-DI is designed to cycle with a broad spectrum of 5.56x45mm NATO and .223 Rem ammunition. The 1:7 twist rate of the rifling (one revolution of the rifling takes place every 7") will generally give the best accuracy results with heavier bullets, such as 69-77gr Match offerings. Factory accuracy testing is done with a variety of ammunition, but most rifles will shoot very well with MK262 77gr OTM. Function testing at the factory is completed using Federal XM193, but M855 and other similar rounds will also function reliably.

4.2 CHOICE OF MAGAZINES

The LWRCI-DI is designed to use AR-15/M-16 pattern magazines. LWRCI recommends the supplied Magpul PMag for use in its rifles. Magazines from other manufacturers can be used, but they should be thoroughly tested for function before operational use.

4.3 INITIAL LOADING OF THE WEAPON

1. Clear the weapon before placing it into Condition 4.
2. Insert a loaded magazine firmly into the magazine well. Ensure that it is properly seated by tugging on it.
3. Charge the weapon by firmly pulling the charging handle to the rear and releasing it. The bolt carrier group will slam forward, picking up the top round in the magazine and putting that round into the chamber.
4. Rotate the selector to SAFE. If you do not intend on firing immediately, close the ejection port cover. The weapon is now in Condition 1.

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4.4 FIRING IN SEMI-AUTOMATIC MODE

Starting with the weapon in Condition 1:

1 – Bring the weapon to the "Ready" position.

2 – Acquire and aim at the intended target.

3. Move the selector to "SEMI". The weapon is now in Condition 0.
4. Squeeze the trigger with strong, smooth pull to fire individual shots.
5. When you are finished firing, move the selector to SAFE to return the weapon the Condition 1.

If you have fired all of the rounds in the magazine, turn the weapon counter-clockwise and visually inspect the chamber to make sure that it is empty and the bolt carrier is locked back.

4.5 FIRING IN AUTOMATIC MODE

Starting with the Weapon in Condition 1:

1. Bring the weapon to the "Ready" position.
2. Acquire and aim at the intended target.
3. Move the selector to "AUTO". The weapon is now in Condition 0.
4. Squeeze and hold the trigger to fire multiple rounds. The weapon will fire until the trigger is released or the magazine runs out of rounds, but 3-5 round bursts are the recommended firing schedule.
5. When you are finished firing, move the selector to SAFE to return the weapon the Condition 1.

If you have fired all of the rounds in the magazine, turn the weapon counter-clockwise and visually inspect the chamber to make sure that it is empty and the bolt carrier is locked back.

4.6 RELOADING FROM BOLT LOCK

When the magazine is out of ammunition, the bolt catch is automatically engaged and the bolt carrier group is locked open.

1. Release and remove the magazine by pressing either of the mag releases.
2. Insert a loaded magazine into the magazine well. Ensure that the magazine is properly seated by tugging on it.
3. Press the large paddle of ether bolt catch, releasing the bolt carrier and chambering a round from the new magazine.

The weapon is now in Condition 1 if the selector was set to SAFE or Condition 0 if the selector was set to "SEMI" or "AUTO."

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4.7 OPERATING CYCLE

This section clearly describes the operating cycle of the DI series so that you better understand the function of your rifle.

Firing

When the trigger is pulled, the sear surface between the bottom of the hammer and the front of the trigger is separated. This separation allows the hammer, which is driven by the hammer spring, to "drop" and strike rear end of the firing pin. The head of the firing pin is driven through the bolt face and strikes the cartridge primer. The powder in the cartridge ignites, and the gas generated by the burning powder forces the projectile from the cartridge and down the barrel.

Unlocking

As the bullet travels down the barrel and passes the gas port, the propellant gases behind the bullet are siphoned off by the gas port. This gas travels through the gas block before flowing down the gas tube and into the nozzle on the carrier. The pressurized gas forces the carrier to start moving backwards. As the bolt carrier group moves in the upper receiver, the cam pin follows the path of the cam pin track in the upper receiver which, in conjunction with the gas working against the gas rings of the bolt, causes the bolt lugs unlock from the barrel extension. The rearward motion of the bolt carrier group is called the recoil stroke.

Extraction

As the bolt carrier group continues its recoil stroke, the extractor (the part of the bolt that grips the rim of the cartridge case) holds firmly to the cartridge, causing the empty cartridge to be withdrawn, or extracted, from the chamber.

Ejection

Once the empty cartridge is withdrawn to the ejection port, it is flung from the weapon by the spring loaded ejector, located on the bolt face.

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Cocking

In semi-automatic firing, as the bolt carrier recoils to the rear, it cocks the hammer. The hammer is initially retained by the disconnector. As the shooter lets go of the trigger, the disconnector releases the hammer. The hammer moves slightly before re-engaging the front face of the trigger. This re-engagement is called the reset.

In automatic firing, as the bolt carrier recoils to the rear, it cocks the hammer on the auto sear. As the carrier moves back forward after it has completed its recoil stroke, the front of the bolt will trip the auto sear, releasing the hammer and firing the round. When the shooter releases the trigger, the hammer is caught by the hammer/trigger engagement surface and the fire control group is reset.

Feeding

The recoil stroke concludes when the buffer halts the rearward motions of the bolt carrier group. The buffer spring, which was compressed during the recoil stroke, drives the bolt carrier group forward. This forward motion is called the counter-recoil or return stroke. As the bolt carrier moves forward, the next round is stripped from the top of the magazine and directed into the chamber by the magazine feed lips and the receiver feed ramps.

Chambering

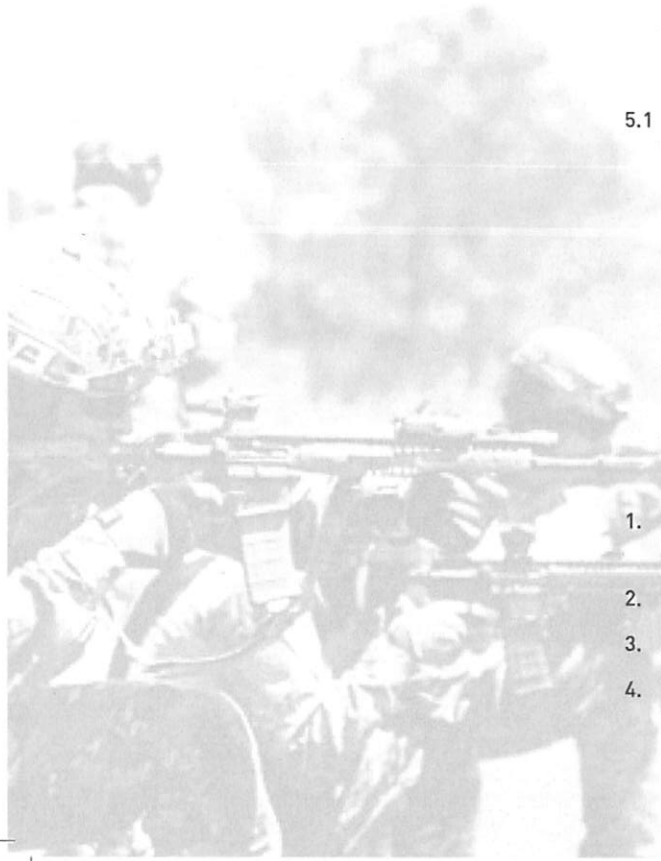
As the bolt carrier group continues the return stroke, the round is seated in the chamber.

Locking

The bolt carrier group completes the forward motion of the return stroke, the bolt locking lugs pass between the barrel extension lugs. During the last ½" of bolt carrier group travel, the cam pin moves from the guide channel into the cam pin recess, rotating the bolt counter-clockwise and locking the bolt lugs against the barrel extension lugs.



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5.0 MAINTENANCE

Proper maintenance of a weapon requires not only post-fire cleaning but also the timely replacement of worn parts to ensure full reliability and performance. An accurate log of rounds fired is ideal, but a rough daily round count is immensely useful for scheduled maintenance.

5.1 LUBRICANTS AND CLEANERS

The IC is compatible with all standard U.S. Military and NATO specified small arms lubricants and cleaners. For lubricants, LWRCI uses Slip 2000 EWL and Carbon Killer in the factory, but numerous CLP-style lubricants and cleaners have been successfully tested by IC operators all over the world.

Note that the use of water-based lubricants, such as WD-40, is not advised as the water content of the lubricant can actually aid corrosion.

When applying lubricant, use a moderate coat of lubricant on moving parts. A moderate coat should be just visible to the eye. Apply lubricant directly to the part and spread it with a brush, cloth, or finger.

Zones to lubricate include:

1. Bolt carrier body and cam pin, especially along the runners on the bottom of the carrier and the bosses on the rear. Place two drops of lubrication into cam pin slot.
2. Inside of the upper receiver
3. Outside of the long, thin section of the charging handle
4. Takedown pins

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5.2 FIELD STRIP

Field Stripping, or Basic Disassembly, is breaking the rifle down to its core components for the purpose of field-expedient maintenance (mainly cleaning and lubrication). Field Stripping can also shed light on the cause of common failures, such as a blocked bore or broken parts. The Field Stripping process requires no special tools. Caution should be taken to ensure that parts are not lost during this process.

Please note that rifles should not be broken down beyond the field strip unless in a controlled environment, such as the factory or in a gunsmith's shop.

To start the field strip, separate the upper and lower receivers:

1. Clear the rifle several times. Most negligent discharges occur during disassembly and cleaning operations.
2. From the left-hand side, press in the rear takedown pin. From the right-hand side, pull the rear takedown pin to the right until it stops. FIG 5.2.A
3. Repeat step 2 for the front pivot pin. FIG 5.2.B
4. Separate the upper and lower receiver groups. FIG 5.2.C



REAR TAKEDOWN PIN



FRONT TAKEDOWN PIN



SEPARATED UPPER & LOWER RECEIVER GROUP

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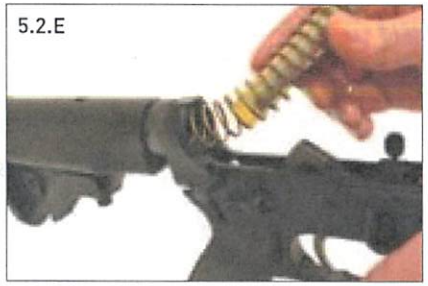
5.2.D



To complete the field strip of the lower receiver assembly, remove the buffer and spring from the buffer tube:

1. With the hammer cocked, depress the buffer retainer using a screwdriver, punch, or other suitable tool. The buffer should spring free. FIG 5.2.D
2. Pull on the buffer to remove the buffer and buffer spring from the lower receiver. FIG 5.2.E

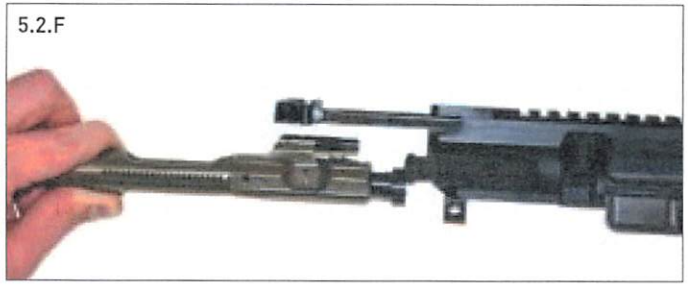
5.2.E



To complete the field strip of the upper receiver assembly, remove the bolt carrier group and charging handle from the upper:

1. Pull the charging handle to the rear about three-quarters of the way.
2. Remove the bolt carrier group from the upper receiver. FIG 5.2.F
3. Pull the charging handle fully towards the rear. Remove the charging handle by moving it downward so the expanded end of the charging handle passes through the cut-out in the guide track of the upper receiver.

5.2.F



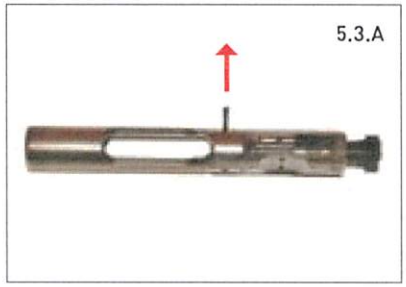
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5.2.G LWRCI-DI DISASSEMBLED

A. UPPER RECEIVER
B. BOLT CARRIER GROUP
C. CHARGING HANDLE
D. LOWER RECEIVER
E. BUFFER SPRING
F. BUFFER



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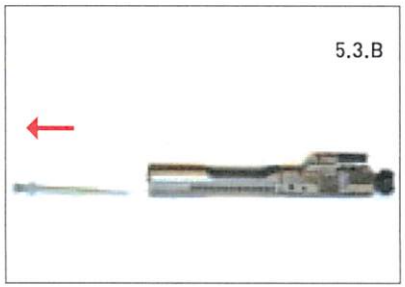


5.3 DETAILED DISASSEMBLY

Detailed disassembly is simply breaking down the rifle as much as is possible without specialized tools. This type of disassembly should be done routinely. For example, the detailed disassembly might be done after several thousand rounds of suppressed fire or before the rifle is put away for extended storage.

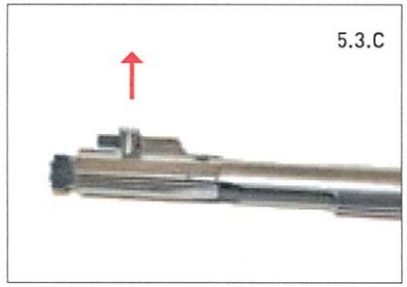
To complete the detailed disassembly of the lower receiver, simply remove the stock:

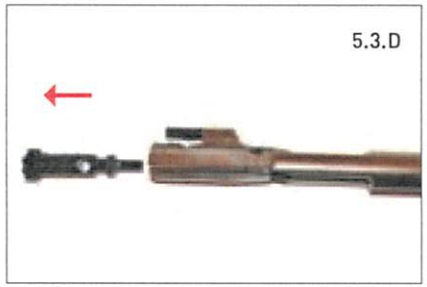
1. Grasp the adjustment lever on the underside of the buttstock. Pull the adjustment lever straight down to disengage the stock pin, and then slide the stock off of the end of the buffer tube.



To fully disassemble the bolt carrier group:

1. Cup the bolt carrier group in one hand and, with a suitable punch or the tip of a cartridge, push out the firing pin retainer in to your cupped hand. Do not twist the retainer during removal. FIG 5.3.A
2. Slide the firing pin out of the rear of the carrier. FIG 5.3.B
3. Rotate the cam pin to the side so that it is clear of the gas nozzle. Lift the cam pin out of the bolt carrier group. FIG 5.3.C
4. Remove the bolt from the front of the bolt carrier. FIG 5.3 D



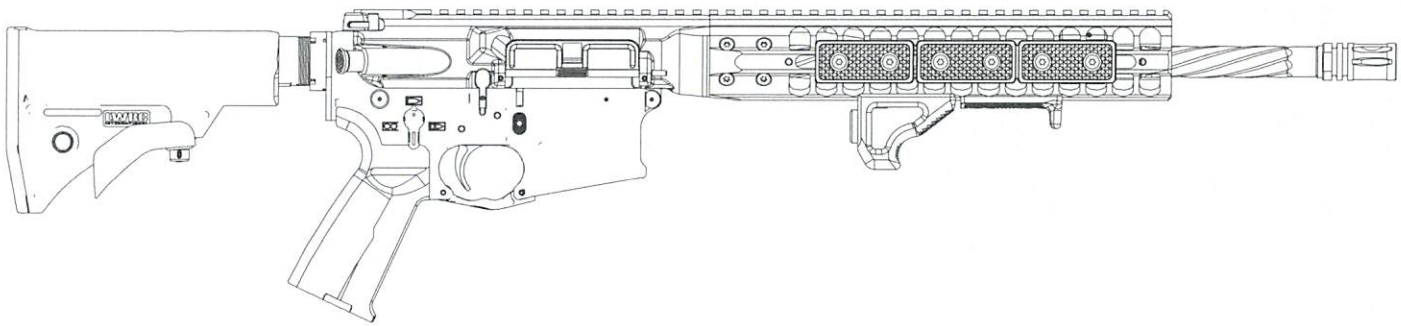


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5.4 REASSEMBLY

Reassembly of the LWRCI-DI is achieved by reversing the order of the disassembly steps. Some items to keep in mind during the reassembly are:

1. When reinstalling the buffer and buffer spring, push the buffer fully into the buffer tube, passing the buffer detent to ensure that it is fully captured by the detent.
2. Do not forget the cam pin. The rifle may chamber a round and fire without the cam pin, but that shot could lead to catastrophic failure of the weapon.
3. Some degree of looseness of fit between the upper and lower receiver may be present. While this is normal and has no effect on the function of the rifle, LWRC-DI's are equipped with a nylon-tipped tension screw which may be adjusted to address the looseness. The tension screw is located inside the lower's fire control group pocket positioned beneath the upper's rear take-down lug.



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5.5 ROUTINE MAINTENANCE

Routine maintenance is performed after each firing session or once daily while operating in normal field conditions. As always, clear the weapon before performing any maintenance.

1. Clear the weapon
2. Field strip the weapon as detailed in section 5.3.
3. Clean the bore of the barrel. Using a cleaning rod, push a bore patch soaked with solvent from the chamber end of the barrel to the muzzle end. Remove the bore patch and cleaning rod, then let the barrel sit for several minutes.
4. Using a cleaning rod with a bore brush, punch the bore several times to break buildup free.
5. Punch the bore with a dry patch to remove the residue and solvent. Repeat this step until the patches come through the bore clean.
6. Wipe the bolt carrier, charging handle, interior of upper receiver, buffer and buffer spring with a cloth slightly dampened with cleaning solvent if available.
7. Scrub the face of the bolt with a nylon brush dipped in cleaning solvent
8. Remove the solvent from the parts with a cloth or rag.
9. Apply a coat of lube to the interior of the upper receiver, buffer spring, charging handle, and bolt carrier. Do not lubricate the face of the bolt.
10. Apply point lubrication to the cam pin, hammer pin, trigger pin, and charging handle latch.
11. Reassemble the weapon and check to make sure that all moving parts are functioning correctly.

5.6 DETAILED MAINTENANCE

Detailed maintenance should be performed every 1,000 rounds or once weekly while operating in normal field conditions

1. Clear the weapon.
2. Complete the detailed disassembly as described in section 5. 3.
3. Complete all of the routine maintenance detailed in section 5.5.
4. Scrub the bolt (including the extractor) with a nylon brush dipped in solvent. Pay particular attention to removing build up of any type in the extractor groove. Wipe away any remaining solvent with a rag or cloth.
5. Scrub the bolt carrier, firing pin, and the interior of the upper receiver with a nylon brush dipped in cleaning solvent.
6. Clean the firing pin hole and firing pin cavity of the bolt with a pipe cleaner.
7. Wipe away any remaining solvent thoroughly with a rag.
8. Apply a moderate coat of lubricant to the cavity on the carrier into which the bolt is installed.
9. Reassemble the weapon and check to make sure that all moving parts are functioning correctly.

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5.7 MAINTENANCE PROCEDURES FOR ADVERSE CLIMATES

In blowing sand and snowy conditions, conduct frequent function checks of your weapon and take every opportunity to remove sand and snow from the weapon. Carrying a small brush is highly recommended. Compressed air can also be used to blow sand from the weapon.

Do not lubricate the interior of the upper receiver or any exterior parts of the rifle when operating in extremely sandy or snowy field conditions. Apply point lubrication as sparingly as possible.

When performing routine maintenance, remove the top rail and brush away any sand or snow from the piston components

For arctic environments:

- Use an arctic rated lubricant
- If the weapon is brought inside from a cold, dry area, allow the weapons to warm to room temperature before performing maintenance. Pay particular attention to removing condensation before moving back into cold temperatures
- If snow gets inside the weapon, break it down shotgun-style and remove snow from inside the upper receiver and bolt carrier. Check the bore for snow and remove the snow if necessary
- If the rifle freezes shut, do not attempt to un-jam it by firing it Warm the weapon using body heat or other source of heat until unjammed. If using an open flame, hold the weapon at least eight inches above the flame with the muzzle in a safe direction and with the magazine removed prior to warming until unjammed. Clear or fire the weapon immediately

5.8 SPR RAIL CONFIGURATION AND MAINTENANCE

The LWRCI-DI is equipped with user-configurable rails that allow for the direct attachment of rail segments and other shooting accessories.

To install a rail accessory, use the supplied T20 Torx-head screws that come with the accessory. Match the installation holes to the desired hole position on the rail and tighten until hand tight, or no more than 15 in-lbs. The screws come with a patch of thread locker pre-applied, but if a screw has to be removed and reinstalled, apply a drop of blue Loctite 242 to the screw before reinstallation.

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6.0 TROUBLESHOOTING

The following sections describe the various failures that can occur during operation of the LWRCI-DI. It is important to note that the cause of many failures lies with the magazine. The magazine is a disposable part of the weapon system and one that wears out quickly compared to the rest of the LWRCI-DI. It is good practice to mark and number magazines to allow for easy identification of old/worn/defective ones.

6.1 SUPPRESSOR USE

Suppressors can cause a weapon to exhibit overgassed signs. Simply put, suppressors increase the pressure present inside the weapon, leading to an overgassed situation. Without an adjustable gas block, there are limited options to remedy this situation:

- Use lower pressure ammo
- Consult the factory. LWRCI may be able to offer a previously discovered solution depending on the specific model in question. While using a suppressor on a non-adjustable gun does not always cause failure, suppressors will always lead to higher cyclic rates and increased blowback/fouling

6.2 FAILURE TO SEAT

Magazine will not lock into rifle

CAUSE	CORRECTIVE ACTION
Too many rounds in magazine	Remove rounds from magazine and do not exceed magazine capacity when reloading. (Recommended to download duty magazines by two rounds for highest reliability).
Bent/damaged magazine feed lips or locking recess cut out	Inspect magazine and replace as necessary.
Bent/broken magazine catch	Inspect magazine catch assembly and replace as necessary (armorer level repair).

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6.3 FAILURE TO LOAD

No round present in chamber after charging, releasing bolt

CAUSE	CORRECTIVE ACTION
Magazine not seated properly	Re-insert magazine, tap/tug to ensure locked in place, charge rifle or release bolt catch.
Rifle not fully charged	Ensure charging handle is pulled all the way to the rear before release.
Unable to fully charge rifle	Ensure correct buffer and spring are installed, check buffer roll pin is flush with outside of buffer body, inspect buffer tube for FOD (Foreign Object Detected).
Bent/damaged magazine feed lipsnot allowing rounds to sit at proper height to be loaded	Inspect Magazine and replace as necessary.
Worn/damaged bolt lugs causing bolt to skip over rounds	Replace bolt.
Object detected in magazine	Replace magazine spring and/or follower, clean magazine.

6.4 FAILURE TO FEED

Bolt lugs pushing on back of cartridge case, nose of round jammed into receiver ramps, barrel extension feed ramps or lugs.

CAUSE	CORRECTIVE ACTION
Worn out/incorrect Buffer Spring	Replace Buffer Spring. Do not try to stretch.
Too many rounds in magazine	Remove rounds from magazine and do not exceed magazine capacity when reloading. (Recommended to down-load duty magazines by two rounds for highest reliability).
Magazine not seated properly	Re-insert magazine, tap/tug to ensure locked in place, charge rifle or release bolt catch.
Bent/damaged magazine feed lips not allowing round to feed at correct angle	Inspect magazine and replace as necessary.
Worn/weak magazine spring not pushing rounds up to correct height in order to be fed properly	Replace magazine spring.
FOD (Foreign Objects Detected) in magazine	Disassemble and clean magazine.

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6.5 FAILURE TO CHAMBER

Round has pushed past feed ramps and failed to enter chamber at correct angle. *Do not attempt to reuse failed round.

CAUSE	CORRECTIVE ACTION
Magazine not seated properly	Remove magazine, lock bolt to rear, clear failed round, reinsert magazine and ensure it is seated properly.
FOD (Foreign Objected Detected) in receiver/barrel extension/ chamber.	Clear, field strip rifle, inspect and clean inside receiver/barrel extension/chamber.
Short Stroke	See Short Stroke section for remedies.

6.6 FAILURE TO LOCK

Round has entered chamber correctly but bolt has not fully locked into barrel extension or seated cartridge base properly onto bolt face. *Do not attempt to reuse failed round.

CAUSE	CORRECTIVE ACTION
Wrong ammunition for chamber	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.
FOD (Foreign Objected Detected) in receiver/barrel extension/bolt face/under extractor	Clear, field strip rifle, inspect and clean bolt face, under extractor, inside chamber and barrel extension.
Ammunition defective/damaged or out of specification	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.
Weak worn buffer spring	Replace buffer spring.

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6.7 FAILURE TO FIRE

LIVE round in chamber, trigger is pulled, NO shot is fired.

CAUSE	CORRECTIVE ACTION
Defective ammunition/dead primer	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.
Broken/weak hammer spring	Replace hammer spring.
Worn/broken firing pin	Replace firing pin.
FOD (Foreign Objected Detected) in receiver/barrel extension/bolt face/under extractor.	Clear, field strip rifle, inspect and clean bolt face, under extractor, inside chamber and barrel extension.
Carrier Bounce/ Bolt Bounce	See Carrier Bounce/ Bolt Bounce section for solutions.
	

6.8 FAILURE TO EXTRACT

Spent case remains in chamber after firing and carrier group has either short stroked and returned forward or fully cycled and attempted to load a new round into a now blocked chamber.

CAUSE	CORRECTIVE ACTION
Worn/broken extractor and/or extractor spring	Replace extractor and/or extractor spring.
Corroded/Out of specification ammunition	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.
Torn case rim	Defective ammunition or dirty chamber. Clean chamber and inspect ammunition.
FOD (Foreign Objected Detected) in receiver/barrel extension/bolt face/under extactor	Clear, field strip rifle, inspect and clean bolt face, under extractor, inside chamber and barrel extension.
Ammunition defective/damaged or out of specification	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.
Weak worn buffer spring	Replace buffer spring.

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6.9 FAILURE TO EJECT

Spent case has been pulled partially or completely from the chamber into the receiver but has failed to clear the ejection port. This is commonly confused with a double feed because the following round is usually jammed in with a spent case, resembling two LIVE rounds in the receiver. See Double Feed for more details.

CAUSE	CORRECTIVE ACTION
Worn/broken ejector spring	Replace ejector spring (armorer level repair).
FOD (Foreign Objected Detected) under extractor not allowing spent case to be released	Inspect, remove and clean extractor.
Gas regulator on wrong setting (A3 & A5 models)	Adjust regulator to correct setting.
FOD (Foreign Objected Detected) in receiver/barrel extension/bolt face/under extactor	Clear, field strip rifle, inspect and clean bolt face, under extractor, inside chamber and barrel extension.
Bound/broken ejector	Remove ejector, inspect, replace/ clean as needed.
Short stroke	See Short Stroke section for solutions.

6.10 CARRIER BOUNCE/BOLT BOUNCE

Spent case remains in chamber after firing and carrier group has either short stroked and returned forward or fully cycled and attempted to load a new round into a now blocked chamber.

CAUSE	CORRECTIVE ACTION
Worn/Incorrect buffer spring	Replace buffer spring. Use manufacturer recommended springs only.
Incorrect buffer (too light)	Use manufacturer recommended buffers only.
Worn/broken piston return spring	Replace piston return spring.
Gas regulator on wrong setting (A5 model)	Adjust regulator to correct setting.
Suppressor causing excessive back pressure in operating system and rifle has no regulator	Install heavier buffer and stronger buffer spring.
Over powered ammunition	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.

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6.11 SHORT STROKE

Insufficient amount of force or excessive drag in the operating system, not allowing the rifle to fully complete its operational cycle.

CAUSE	CORRECTIVE ACTION
Under powered ammunition	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.
Dirty, fouled and/or dry operating system	Clean bolt carrier group, inside of upper receiver, chamber and piston system. Apply point lubrication.
Receiver extension misaligned causing drag on carrier group	Re-install and realign receiver extension (armorer-level repair).
Gas block loose or cracked, resulting in a loss of pressure	Re-pin loose block, replace barrel assembly if cracked (armorer-level repair).
Incorrect buffer (too heavy) and/or buffer spring installed in rifle	Use only manufacturer recommended springs and buffers.
Under-powered ammunition	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.

6.12 STOVE PIPE

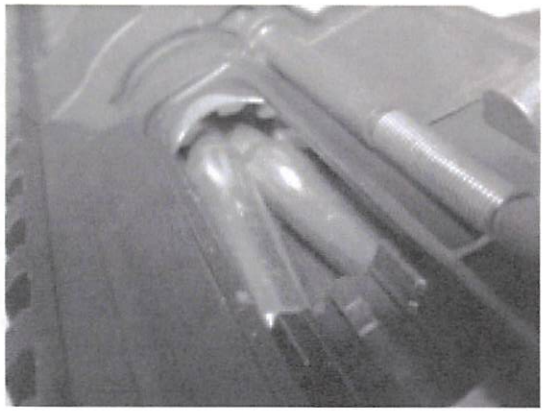
Spent casings are jammed sideways between bolt and ejection port, typically a result of the rifle operating system cycling too fast. *More common with fully automatic models and when equipped with suppressors.

CAUSE	CORRECTIVE ACTION
Broken/worn piston spring	Inspect piston spring and replace as necessary.
Worn/Incorrect buffer spring	Replace buffer spring. Do not try to stretch it back.
Incorrect buffer (too light)	Use manufacturer recommended buffers only.
Gas regulator on wrong setting (A5 model)	Adjust regulator to correct setting.
Suppressor causing excessive back pressure in operating system and rifle has no regulator	Install heavier buffer and stronger buffer spring.
Over powered ammunition	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.

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6.13 DOUBLE FEED

Two LIVE rounds being simultaneously fed into chamber. This is always a magazine or operator induced failure.

CAUSE	CORRECTIVE ACTION
Bent/damaged feed lips	Inspect magazine and replace as necessary.
	

6.14 ACCURACY ISSUES

Shots failing to group consistently.

CAUSE	CORRECTIVE ACTION
Ammunition defective/ damaged/low quality or out of specification	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant. Use match grade ammunition of good provenance for best results.
Sights/optics/optic mounts not torqued or installed properly	Ensure all Sights/optics/optic mounts are torqued down per manufacturer's specifications.
Bore fouled with carbon and/or copper causing rounds not to stabilize properly	Clean bore.
Loose gas block affecting the barrel's vibrational harmonics	Re-pin gas block (armorer-level repair).

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6.15 TUMBLING ROUNDS (KEYHOLING)

Rounds are failing to stabilize in bore, striking the target sideways, resembling a "keyhole" shape.

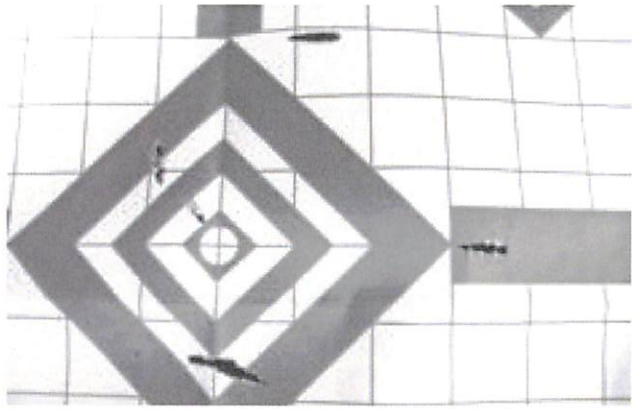
CAUSE	CORRECTIVE ACTION
Ammunition defective/damaged or out of specification	Inspect all ammunition prior to use and ensure it is the correct caliber and SAAMI/CIP/NATO compliant.
Bore fouled with copper causing rounds not to stabilize properly	Clean bore with copper solvent. Follow instructions provided with solvent.
Barrel has reached the end of its service life	Replace barrel assembly. (armorer-level repair).

NOTE: Barrel life can be significantly shortened by excessive rates of fire which heats the barrel and its NiCorr case surface conversion to a point where the metallurgical properties of the barrel changes.

Excessive heat also causes the bore diameter to expand to a point where it allows the propellant gasses to overtake the bullet travelling up the bore. These compressed high pressure jets can cut and erode the bore.

The use of projectiles that do not readily compress like sintered powdered metal frangible projectiles, solid metal (copper/brass) projectiles and jacketed projectiles with non-lead cores like M855A1 will result in shortened barrel life.

Shorter barrels generally also have a shorter barrel life as there is less barrel to stabilize the projectiles after throat and bore erosion which is concentrated on the chamber end.



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LWRCI-DI SERIES

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WARRANTY

LWRCI™ products are warranted to be free from defective materials and workmanship for the life of the original purchaser. LWRCI™'s obligation under this warranty shall be limited to (1) repairing or (2) replacing any product that, upon inspection at LWRCI™ and based on its discretion, is found to be defective in material or in workmanship.

This warranty is limited and does not extend to: careless handling, abuse and misuse, unauthorized adjustments or modifications, use of improper or remanufactured ammunition, excessive or unreasonable use, ordinary wear-and-tear, rust or corrosion, and damages due to non-factory barrel obstructions. Repairs and replacements are warranted for the duration of the original warranty. This warranty applies only to factory built products that have been purchased through an authorized LWRCI distributor or direct dealer.The warranty is only good for the original purchaser of the product.

Exclusive Remedy: The remedies in this section and in the warranty agreement constitute the sole and exclusive remedies of any authorized customer, as well as its successors and assigns, for any defect in the product.

Disclaimer: The warranty stated in this agreement is the sole and exclusive warranty pertaining to the product. LWRCI™ disclaims any warranty, express or implied, including, without limitation, any warranty of merchantability or fitness for a particular purpose. In no event shall LWRCI™ be responsible for any indirect, incidental, or consequential damages including, without limitations, lost profits or costs of delay, with respect to economic loss or injury to property or to third parties, whether as a result of breach of express or implied warranty, negligence or otherwise.

Prior to returning any LWRCI™ product for warranty work, you must receive return material authorization (RMA) from our customer service department. The contact information is available in this document. Items are return shipped using prepaid shipping. LWRCI™, LLC accepts no responsibility for items lost or damaged in shipping. Items that are returned and found to be Out-of-Warranty will be repaired at the customer's expense; however, no work will be performed without the customer's written authorization.

STEP UP TO LWRCI – HIGH-PERFORMANCE FIREARMS

LWRC INTERNATIONAL, LLC | CAMBRIDGE, MARYLAND 21613

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Made in the USA



XM15-E2S ™ MODEL SAFETY & OPERATING MANUAL

VOLUME I

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INTRODUCTION

Thank you for purchasing a firearm from Bushmaster Firearms International™. Here at BFI™, we take great honor in producing our Proven™ American-made firearms for you and the nation. We are proud to be a part of your journey, and with this safety and operating manual, we hope to provide the preliminary information necessary to safely own and operate your firearm. Bushmaster Firearms International™ has a long history of manufacturing quality firearms. We look forward to continuing the legacy with every firearm we ship!

Before operating your firearm, please do the following:

- Read the entire Safety & Operating Manual before using your weapon.
- Practice handling your weapon with zero ammunition
- If you have any questions or do not understand something written in this manual, seek professional support or call Bushmaster™ for clarification.
- **SAFETY IS YOUR RESPONSIBILITY!!!!!!**



MADE IN THE U.S.A.



Warnings Specified by State:

The following warnings and disclosures are required by the laws of the various states identified below. These warnings do not represent the entirety of laws regulating firearms in those states. It is your responsibility to know and understand the federal, state, and local laws and regulations that apply in your jurisdiction. If you do not know or understand the laws relating to firearms, we recommend that you contact a lawyer before acquiring, possessing, or handling any firearm.

California:



WARNING

Children are attracted to and can operate firearms that can cause severe injuries or death.
Prevent child access by always keeping guns locked away and unloaded when not in use. If you keep a loaded firearm where a child obtains and improperly uses it, you may be fined or sent to prison.



ADVERTENCIA

A los niños los atraen las armas de fuego y las pueden hacer funcionar. Ellos pueden causarses lesiones graves y la muerte.
Evite que los niños tengan acceso a las armas de fuego guardándolas siempre con llave y descargadas cuando no las esté utilizando. Si usted tiene un arma de fuego cargada en un lugar en que un niño tiene acceso a ella y la usa indebidamente, le pueden dar una multa o enviarlo a la carcel.

Warning:
This product can expose you to chemicals including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to—www.P65Warnings.ca.gov.

Connecticut:
"UNLAWFUL STORAGE OF A LOADED FIREARM MAY RESULT IN IMPRISONMENT OR FINE."

Florida:
"IT IS UNLAWFUL, AND PUNISHABLE BY IMPRISONMENT AND FINE, FOR ANY ADULT TO STORE OR LEAVE A FIREARM IN ANY PLACE WITHIN THE REACH OR EASY ACCESS OF A MINOR UNDER 18 YEARS OF AGE OR TO KNOWINGLY SELL OR OTHERWISE TRANSFER OWNERSHIP OR POSSESSION OF A FIREARM TO A MINOR OR A PERSON OF UNSOUND MIND."

Maine:
"ENDANGERING THE WELFARE OF A CHILD IS A CRIME IF YOU LEAVE A FIREARM AND AMMUNITION WITHIN EASY ACCESS OF A CHILD, YOU MAY BE SUBJECT TO FINE, IMPRISONMENT, OR BOTH. KEEP FIREARMS AND AMMUNITION SEPARATE. KEEP FIREARMS AND AMMUNITION LOCKED UP. USE TRIGGER LOCKS."

Maryland:
"WARNING: Children can operate firearms which may cause death or serious injury. It is a crime to store or leave a loaded firearm in any location where an individual knew or should have known that an unsupervised minor would gain access to the firearm. Store your firearms responsibly!"

Massachusetts:
"WARNING FROM THE MASSACHUSETTS ATTORNEY GENERAL: This handgun is not equipped with a device that fully blocks use by unauthorized users. More than 200,000 firearms like this one are stolen from their owners every year in the United States. In addition, there are more than a thousand suicides each year by younger children and teenagers who get access to firearms. Hundreds more die from accidental discharge. It is likely that many more children sustain serious wounds, or inflict such wounds accidentally on others. In order to limit the chance of such misuse, it is imperative that you keep this weapon locked in a secure place and take other steps necessary to limit the possibility of theft or accident. Failure to take reasonable preventive steps may result in innocent lives being lost, and in some circumstances may result in your liability for these deaths."

"IT IS UNLAWFUL TO STORE OR KEEP A FIREARM, RIFLE, SHOTGUN, OR MACHINE GUN IN ANY PLACE UNLESS THAT WEAPON IS EQUIPPED WITH A TAMPER-RESISTANT SAFETY DEVICE OR IS STORED OR KEPT IN A SECURELY LOCKED CONTAINER."

New Jersey:
"IT IS A CRIMINAL OFFENSE TO LEAVE A LOADED FIREARM WITHIN EASY ACCESS OF A MINOR."

New York City:
"THE USE OF A LOCKING DEVICE OR SAFETY LOCK IS ONLY ONE ASPECT OF RESPONSIBLE FIREARMS STORAGE. FOR INCREASED SAFETY, FIREARMS SHOULD BE STORED UNLOADED AND LOCKED IN A LOCATION THAT IS BOTH SEPARATE FROM THEIR AMMUNITION AND INACCESSIBLE TO CHILDREN AND OTHER UNAUTHORIZED PERSONS."

North Carolina:
"IT IS UNLAWFUL TO STORE OR LEAVE A FIREARM THAT CAN BE DISCHARGED IN A MANNER THAT A REASONABLE PERSON SHOULD KNOW IS ACCESSIBLE TO A MINOR."

Texas:
"IT IS UNLAWFUL TO STORE, TRANSPORT, OR ABANDON AN UNSECURED FIREARM IN A PLACE WHERE CHILDREN ARE LIKELY TO BE AND OBTAIN ACCESS TO THE FIREARM."

Wisconsin:
"IF YOU LEAVE A LOADED FIREARM WITHIN THE REACH OR EASY ACCESS OF A CHILD YOU MAY BE FINED OR IMPRISONED OR BOTH IF THE CHILD IMPROPERLY DISCHARGES, POSSESSES, OR EXHIBITS THE FIREARM."

BASIC RULES FIREARM SAFETY

1. Always handle your firearm as if it was loaded.
2. Always keep the muzzle pointed in a safe direction. Never point your firearm at anything you do not intend to destroy.
3. Learn the mechanical and handling characteristics of the firearm you are using.
4. Be sure that the barrel is clear of any obstructions before shooting. Even excess oil or a spider web can cause a problem. Never fire with water in the barrel.
5. Always make sure everyone in the vicinity is wearing eye and ear protection suitable for firearm use prior to shooting.
6. Never use alcohol or drugs when shooting. If you are using prescription medication, contact your doctor to determine your fitness prior to using the firearm.
7. Keep yourself, all persons, obstructions and flammables away from the ejection port when firing as hot shell cases will be ejected with significant force
8. Never place your fingers in the ejection port except when physically checking the chamber to determine if the firearm is loaded. CAUTION: The carrier may slide forward under spring pressure and injure you if the firearm is used improperly.
9. Never climb a tree or fence with a loaded firearm.
10. Do not store, carry, drop, drive a vehicle, bicycle, walk or run with a live round in the chamber. A gun that is dropped, bumped, or jarred with a live round in the chamber might accidentally discharge, even with the safety on, causing injury to you or someone else.

11. Never pull the trigger or place your finger inside the trigger guard until you have sighted your target and are ready to shoot.
12. Be sure of your target and what is beyond it before you shoot.
13. Never shoot over a ridge, or skyline as a bullet may travel 3 miles or more.
14. Make sure that your backstop is sufficient to prevent the bullet from over-penetrating.
15. Do not shoot at a hard surface or water; it may ricochet in an unsafe direction.
16. Never rely on your firearm's safety mechanism to justify careless handling.
17. Always keep your selector set to "safe" prior to target acquisition when the firearm is loaded.
18. Never discharge the weapon near flammable material. Muzzle flash may ignite a fire or cause gases or liquids to explode.
19. Never force a jammed action as the jammed round may explode. Use of the forward assist should take minimal pressure. If a jammed action is not resolved with application of minimal pressure placed on the forward assist, it is likely that the firearm is in need of inspection and cleaning before additional use.
20. If your firearm failed to fire after the trigger was pulled, wait at least 1 minute before clearing. Continue to keep the firearm pointed in a safe direction. Water, oil, or other contaminates in the ammunition can cause a delayed fire.
21. If you notice a difference in sound or recoil while firing, stop immediately and clear the firearm. A "squib" or sub-standard round may have fired, and the bullet may be stuck in the bore. If another shot is fired with the bore obstructed, the barrel may bulge or burst, causing injury or even death to yourself and/or others in the vicinity.
22. Sustained fire will heat up the barrel and receiver to the point that it may cause burns when touched. Never shoot your firearm to the point that it is too hot to touch as it may, in rare occasions, also create an accidental discharge by "cooking off" ammunition in a hot chamber even though the trigger was never pulled. In addition, excessive rapid fire may cause premature wear of the barrel.
23. This firearm may discharge accidentally if it is dropped or struck with sufficient force while a live cartridge is in the chamber.
24. Do not shoot your firearm around animals unless they are trained accordingly. They may react to the sound of the discharge and can cause an accident, injury or death to yourself or others.
25. Always unload the magazine and chamber, lock the bolt back, and physically & visually check the weapon is totally clear of ammunition prior to handing someone an unloaded firearm.
26. Always check that the status of the firearm upon handling any firearm. Check the status of the firearm even if the firearm is believed to be "unlocked" and even if you witnessed another person clear the firearm.

27. Firearms should be unloaded when not in use and secured from unauthorized access or use. Never leave a firearm unsecured where children or prohibited persons may gain access to it.
28. Be sure your firearm is unloaded before cleaning, transporting, or storing it.
29. Do not alter or modify any components of your firearm, and be sure to have it cleaned and serviced regularly. (Altering or modifying your firearm will void any warranty claim.)
30. Use of substandard ammunition will void the warranty and may damage your firearm. Only use quality, clean burning, commercial ammunition designed and specified for your firearm that meets Sporting Arms and Ammunition Manufacturers' Institute (SAAMI) specifications. Poor quality ammunition that generates excessive fouling may cause your XM15-E2S™ to malfunction and necessitate additional cleaning.
31. Always store your firearm and ammunition in separate locked vaults where children will not have access.
32. If you teach your children to shoot, teach them to respect firearms and use them properly and in accordance with all laws, regulations and safety standards. Supervise them closely.
33. Never abuse your firearm by using it for some purpose other than what it was designed to do.
34. Never dry fire when the upper receiver is not in place. This action may crack the lower receiver.
35. Discharging firearms in poorly ventilated areas, cleaning firearms, or handling ammunition may cause birth defects, reproductive harm, cancer, and other serious physical injury. Have adequate ventilation at all times. Wash hands thoroughly after exposure.
36. Be sure the Cam Pin is installed in the Bolt Group. The firearm can fire and may explode if it is not installed. Any claim of warranty will be void in the event that the firearm is fired without the Cam Pin properly installed.
37. If you do not understand any comments noted above, seek help from your licensed retailer or professional training prior to use.
38. Do not provide access, possession, custody or control of any firearm, even if only temporary,to any person known to be a felon or whom is otherwise prohibited from possessing any firearm.
39. Be mindful of those who have access, possession, custody or control of your firearm. Do not permit others whom you believe may intend to do harm to themselves or others, or whom have a history of mental health instability that may affect their judgment or ability to operate and use a firearm safely and lawfully from to access, possess, or control any firearm.
40. When firearms are present, always be mindful of how each firearm is being used or handled. If you witness someone mishandling or misusing any firearm, take all appropriate precautions to ensure your safety and the safety of others.

Manufacturer's Warning:

Please be sure to contact your local licensed firearms retailer, state department of justice, attorney general, local police or sheriff's office, and/or a licensed attorney to ascertain if there have been any additional changes in laws pertaining to ownership of firearms within your locality. Firearms laws change so rapidly and these changes may affect how you acquire, possess, use, store, and transfer your firearm lawfully. It is the user's responsibility to know all laws in their jurisdiction ***prior to purchasing or using this firearm.***

Manufacturer's Warning:

This is a semiautomatic firearm! Every time the firearm is fired, a new round will automatically be loaded into the chamber until all ammunition is depleted. Removing the magazine may not completely unload the firearm, and a cartridge may be left in the chamber even after the magazine has been removed. The user must also lock the bolt back and check that the chamber is clear. This firearm does not utilize a magazine disconnect. If a round is left in the chamber and the trigger is depressed, the ammunition will discharge even if the magazine is removed! Be aware that firearms equipped with a Binary Firing System® operate differently and users must follow the specific directions that accompany those products.

Manufacturer's Notice:

Bushmaster Firearms International™ will not be responsible for damage, injury, or death resulting from intentional or accidental discharge of this firearm due to improper handling, maintenance, alterations, or for any other reason.

Manufacturer's Notice:

This firearm was inspected, and quality checked multiple times prior to leaving the factory, however, we cannot guarantee that it has not been damaged or tampered with after it has left our facility. Therefore, it is important that the purchaser of this firearm inspect the firearm carefully prior to using it. If anything appears deficient, do not fire the weapon and contact your licensed retailer immediately.

Manufacturer's Notice:

This manual should always accompany the firearm. If the firearm is transferred or lent to someone else, be sure that the person is legally allowed to receive the firearm and make sure the person reads the manual prior to handling the firearm. Additional manuals are available and can be downloaded Online at: www.bushmaster.com

Manufacturer's Warning:

This product from Bushmaster Firearms International™ is defined by the Alcohol, Tobacco, and Firearms Division of the Federal Government as a firearm. By definition, this product is ***POTENTIALLY LETHAL!***

Manufacturer's Warning:

Any unusual force applied to the firearm through a use that is inconsistent with the intended design parameters of this firearm can possibly cause premature failure.

Manufacturer's Warning:

This firearm has an external safety device that can be toggled from "Safe" to "Fire." With the firearm on "Fire," never insert your finger or any other object within the trigger guard or depress the trigger unless you intend to fire the firearm. If the safety is ever found to be defective for any reason, immediately unload the firearm. DANGER of an unintentional discharge exists if the firearm remains loaded with an inoperable safety. If the safety is defective, do not use the firearm again (or allow anyone else to have access to it) until a qualified gunsmith or Bushmaster Firearms International™ armorer can properly repair the deficiency.

Manufacturer's Warning:
Never allow a finger to enter the ejection port while the bolt catch is depressed. The bolt carrier will slide forward with considerable force.

Your firearm may have also been equipped from the factory with a Binary Firing System®. If your firearm is so equipped, it will have a three position safety selector and a brightly colored selector indicator. (Red for BFS®) The BFS® can be toggled to "Safe," "Semi," or the third position labeled "Binary®" on model. Please be sure to read the supplementary directions for these accessories prior to using the firearm.

Lead Exposure Warning:

Ammunition used in this firearm often contains lead. The use of this ammunition may expose you to lead. Lead or lead compounds are known to the State of California to cause cancer, birth defects, reproductive toxicity, and other serious physical injury. Those who clean firearms should take protective measures to avoid contact or exposure to such chemicals.

FOR WARRANTY REPAIR PLEASE CONTACT CUSTOMER SERVICE AT:

800-883-6229

Warranty Notice:

Bushmaster Firearms International™ will provide service for defects in materials or workmanship at no charge to the purchaser for a period of one year from the date of sale of any BFI™ product. Be sure to retain your sales receipt in order to demonstrate the proof of purchase date.

Shipping Notice:

It is illegal to ship a firearm with ammunition in the same packaging. It is also illegal to ship a firearm with serial numbers that have been obliterated.

Exclusions From Warranty:

1. If this firearm has been disassembled further than what is necessary for basic "Field Strip" maintenance, and if damage has occurred as a result of improper disassembly, reassembly, or use, then the purchaser shall forfeit any claim. Further, the firearm owner must accept full responsibility for the correct reassembly and functioning of all parts, including replaced parts.
2. This firearm is intended to be used with expertly loaded ammunition adhering to specifications set by the Sporting Arms and Ammunition Manufacturers' Institute. (SAAMI) Bushmaster Firearms International™ can, at its sole discretion, void any obligation to service the firearm or any claim if any non-SAAMI specified ammunition is employed.
3. The following activities are ***not allowed:***
   (a) With the upper removed, the trigger should never be depressed so as to allow the hammer to strike the lower receiver.
   (b) Never apply excessive heat to the firearm or any component parts to the point that it may effect the hardening surface treatments.
   (c) Never apply and leave corrosive or abrasive agents on any surfaces.
   (d) Never use corrosive ammunition.
   (e) Never disable the safety.
   (f) Never fire the rifle without the Cam Pin properly installed.
   (g) Never use foam cleaning agents.

4. Any damages associated with the possession and/or use of any BFI™ product are limited to, and may not exceed, an amount equivalent to the Manufacturer's Suggested Retail Price (MSRP) of the firearm. Any consumer that intends to purchase a BFI™ product hereby agrees to this limitation as a precondition of the sale.
5. In no way shall BFI™ be responsible for incidental or consequential damages related to economic loss, injury, death, or property damage, even if such damages are as a result of a breach of this warranty, negligence or otherwise.

Model & Caliber Identification:

The Bushmaster™ Firearms name and model designation can be found on the left side of the lower receiver outside the magazine well. The serial number and caliber are also found at this location.

All BFI™ Firearms are marked "multi" caliber in case users switch upper receivers to different calibers such as 17 WSM, 204 Ruger, 5.56 NATO (.223 Remington,) 6.5 Grendel, 6.8 Remington Special, 300 Blackout, 7.62x39, and 450 Bushmaster™.

To eliminate confusion, users are instructed to look on the barrel of their firearm to ascertain the specific caliber designation.

Proper Ammunition:

Your firearm is designed to use ammunition specified by the Sporting Arms and Ammunition Manufacturers' Institute (SAAMI.) Only use SAAMI spec ammunition that your firearm is chambered in. If your firearm is chambered in 5.56 NATO, it will also accommodate the use of .223 Remington ammunition.





Unloading Your firearm:

1. Be sure to always point the firearm in a safe direction while performing this task.
2. Place the firearm on "**SAFE**" as shown in the picture. If it does not rotate into safe, then the hammer will need to be cocked.



- To cock the hammer, pull the charging handle all the way back and use the lower portion of the bolt catch to hold the carrier back.
- Next, push the charging handle forward until it snaps back into position.



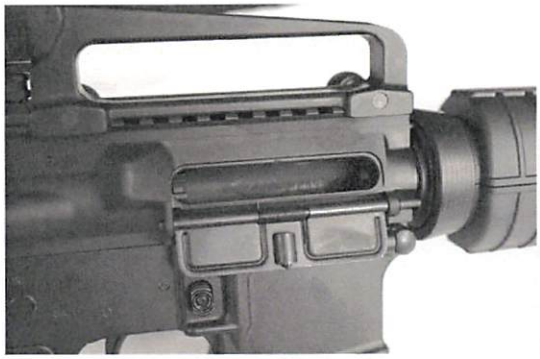
3. If you have not already done so, place the selector on **"SAFE"**

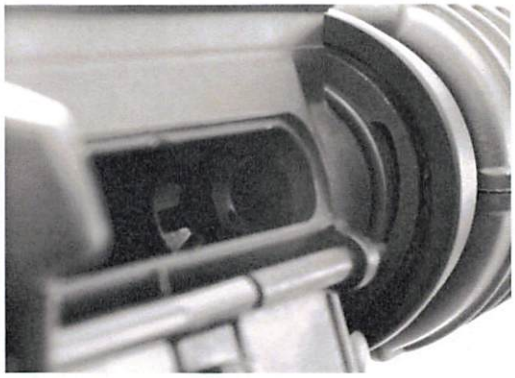




4. Remove the ammunition source by removing the magazine. To do so, depress the magazine release button and pull the magazine out the bottom of the magazine well.

5. Look through the ejection port to the inside of the chamber. Visually and physically verify with a tool, or if no tool is available, carefully use your finger, to ensure that there is not a round of ammunition in the chamber.





Field Stripping Your Firearm:

PRIOR TO FIELD STRIPPING THE FIREARM, FOLLOW THE DIRECTIONS ABOVE FOR "UNLOADING YOUR FIREARM."

Warning: Wear safety glasses when field stripping the firearm.

Warning: Never disassemble the rifle further than prescribed herein.

1. Place the safety selector lever on "Safe," and make certain that the firearm is unloaded

2. To field strip the handguard, rest the buttstock on a firm base while pointing the firearm straight up. Depress the delta ring in a downward motion with one hand and pivot the upper and/or lower handguard out and away. Note that some firearms are shipped with aluminum free float rails or picatinny railed forearms and are not meant to be field stripped.



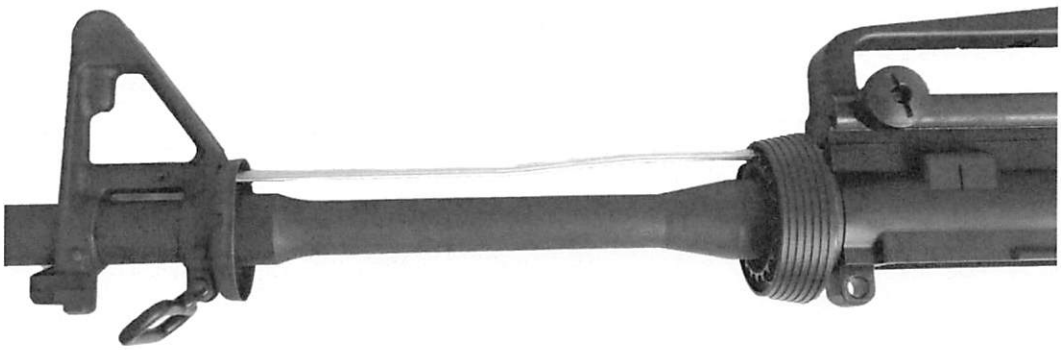


3. This procedure is often made easier by having an assistant hold down the delta ring while the other person removes the handguard. There are also several handguard removal tools available on the market that make it easier for one person to accomplish this task.



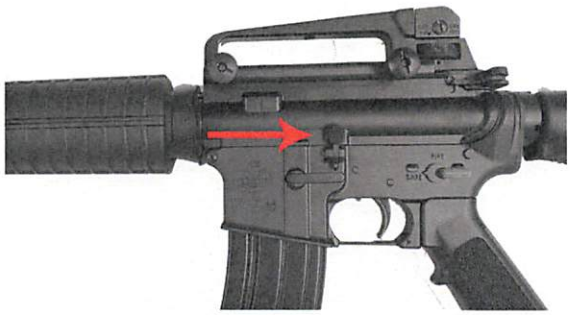
With the handguards out of the way, be certain not to distort or damage the gas tube.

(Note: The gas tube comes with a preset double bend from the factory.)



Push the top of the bolt catch firmly and ensure that the bolt is in the forward position.

Warning: Never allow a finger to enter the ejection port while the bolt catch is depressed. The bolt carrier will slide forward with considerable force.



4. Push the take down pin on the left side so that it will slide out to the right side. The pin is designed to stop its travel just short of falling completely out. This action, when completed, will allow the upper receiver to pivot forward.





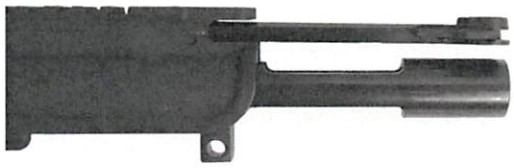
Warning:

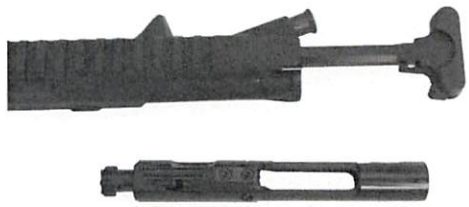
Never dry fire the firearm when the upper and lower are not fully assembled. The steel hammer will hit the rear of the aluminum magazine well and eventually cause it to crack.

5. For convenience, the pivot pin may be pushed from left to right (just like the take down pin) and the upper receiver will then be separated from the lower receiver.



6. Slowly pull the charging handle back and remove the bolt carrier assembly. Be careful not to drop the bolt out as the charging handle comes back.

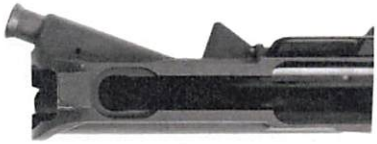




7. Remove the charging handle by sliding the charging handle to the point where the "ears" (or protruding tabs) on the charging handle can slip through the keyway on the upper receiver. When the charging handle is extended out approximately 4.4" from the upper receiver, the ears on the charging handle should be lined up and can slide up through the keyway.





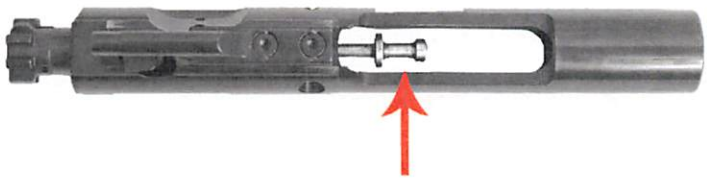


8. To field strip the bolt, make sure that the bolt is in the forward or extended position. Next remove the firing pin retaining pin. (It looks like a cotter pin and is designed to only go through one side of the bolt carrier.)

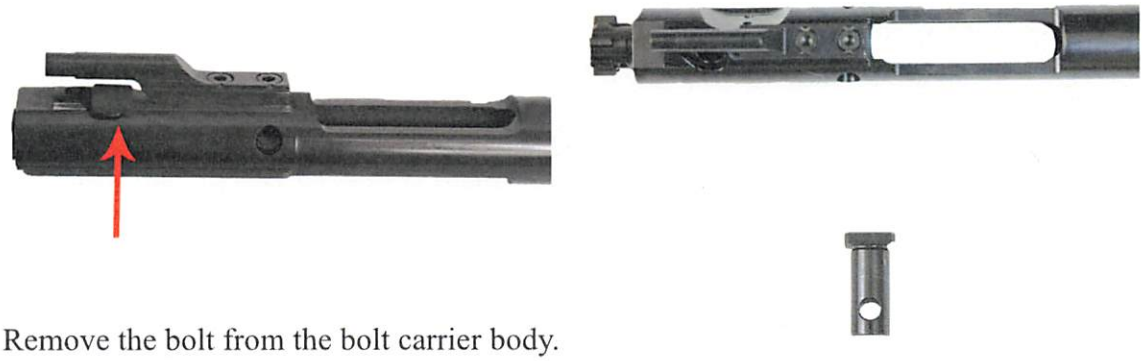


9. Push the bolt into the carrier body.

10. Remove the firing pin. It will slide out to the rear of the carrier.



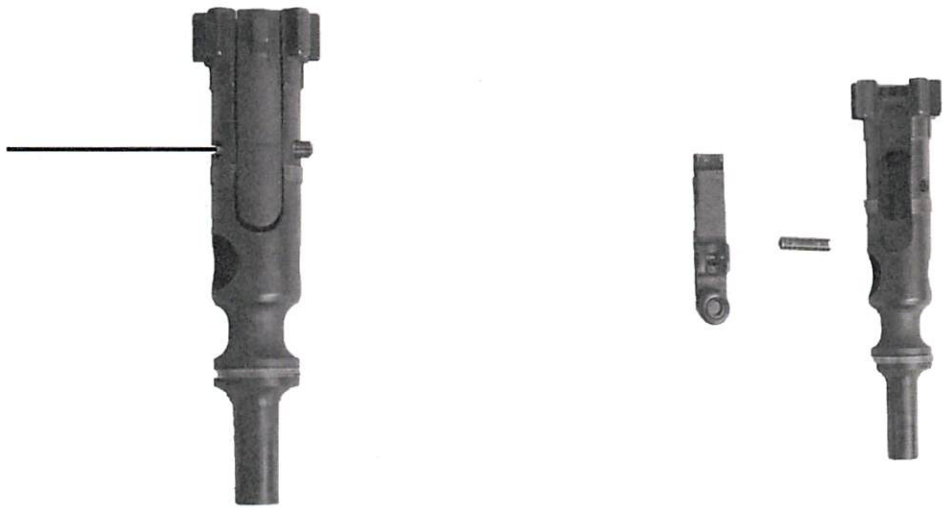
11. Turn the bolt cam pin 90 degrees and remove it from the carrier.



12. Remove the bolt from the bolt carrier body.



13. Push on the back of the extractor to relieve pressure off of the extractor roll pin. Use an appropriate sized punch to remove the roll pin.

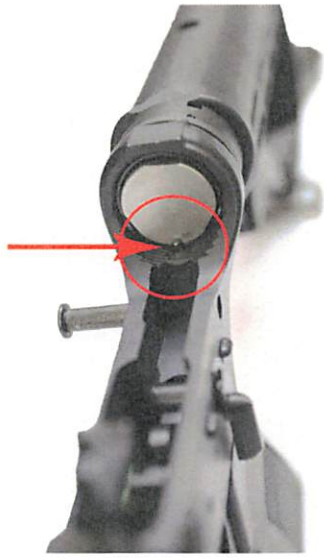


14. Do not attempt to remove the rubber grommet from the extractor spring.



15. To remove the buffer assembly and buffer spring from the receiver extension in the lower assembly, push in the buffer assembly slightly while depressing the buffer retainer. Note that the buffer assembly has three flats on it. It is easier to remove the assembly if one of the buffer assembly flats is positioned over the buffer retainer. Also, the hammer should be cocked so that it is not in the way. Slowly let the buffer and spring slide past the buffer retainer until it is fully removed.









16. In order to disassemble the magazine for cleaning, place a tool into the hole in the magazine floorplate. Carefully use the tool to leverage and slightly lift the edge of the magazine base so that it can slide off the rear of the magazine. (See Photos on Next Page)



17. You may now remove the spring and follower from the magazine.

Warning:
Never disassemble your firearm beyond what has been described herein. To do so will void the warranty. Seek out a qualified gunsmith or Bushmaster Firearms International™ armorer if your firearm is in need of further disassembly.

Cleaning and Lubricating Your Firearm:

Before cleaning or lubricating your firearm, follow the directions specified above for "Unloading" and "Field Stripping Your Firearm."

Be sure to clean the firearm arm prior to initial use. The reason for this is that the metals (including the bore and chamber) have been treated with special preservatives at the factory that protect the firearm during shipping and storage. These preservatives should be wiped clean with a flannel patch prior to initial use. While there are many quality products in the marketplace, Bushmaster Firearms International™ recommends Slip2000 products for cleaning, lubricating and maintaining your firearm. Gun Lube and EWL are very effective lubricants. Whatever you chose, be sure to use lubricants applicable for the intended environment. Some other oils may slow or halt the operation of the firearm in extremely cold environments. DO NOT USE FOAM CLEANERS!

Maintenance of your firearm is classified into two major categories. "Routine maintenance" is expected to be performed by the firearm owner. "Periodic maintenance" is expected to be performed by a gunsmith or Bushmaster™ Firearms armorer only. Routine maintenance is to be performed as prescribed below. Periodic maintenance must be performed every year or 10,000 rounds, whichever comes first.

Always perform routine maintenance on your firearm after it has been exposed to the elements such as water, dirt, sand, or extreme humidity. Routine maintenance of the firearm is essential to retain proper functioning of your firearm. The firearm should be thoroughly cleaned after each day that it is used. Most of our firearms utilize a standard "Direct Impingement Gas System" that was originally developed over 60 years ago and works very well. However, since the propellant gases are siphoned off of the barrel and forced into the upper receiver and bolt carrier key, carbon build up may occur in several places. Excessive carbon build up is the leading cause of malfunctions in any AR type rifle, so it is imperative that the firearm be maintained on a regular basis. We recommend that your firearm be field stripped, cleaned, and lubricated at least every 500 rounds for proper functioning. The quality of ammunition and propellant used may affect the need to clean more or less frequently. Some poor quality foreign ammunition may require thorough cleaning after just 100 rounds in order to maintain reliable functioning.

Warning:
Always have proper ventilation while cleaning the firearm. Cleaning a firearm in poorly ventilated areas, discharging firearms, or handling ammunition may result in exposure to lead and other substances known to cause birth defects, reproductive harm and other serious physical injury. Wash hands thoroughly after exposure.

Warning:
If improper solvents are used, damage to the firearm finish may occur. Use of strong ammonia or alkaline type solvents is not recommended your firearm. DO NOT USE FOAM CLEANERS!

1. Use a properly sized bore brush to remove fouling from the bore. Always run the brush in from the breach and not the muzzle.
2. Wipe away the fouling with a properly sized flannel bore patch.
3. Repeat steps one and two until all residue is removed.
4. Use a chamber brush specifically designed for the 5.56 NATO chamber to remove all fouling from the chamber.
5. Wipe away the fouling with a properly sized flannel chamber patch, or similar product.
6. Repeat steps four and five until all residue is removed.
7. After the barrel has been cleaned, use a very light coat of lubricant to protect the bore.
8. Remove all carbon residue from the extractor, bolt, bolt carrier key, firing pin, firing pin chamber, carrier, charging handle, and upper receiver. Specifically designed "pipe cleaners" and cue tips will aid in removing fouling from many of these areas.
9. Wipe down the firearm and component parts with a soft cloth.
10. After cleaning, use a high quality firearms specific lubricant to lightly coat the external parts. A quality "dry lube" is recommended for the exterior metal surfaces. In any case, do not leave any obvious finger prints on the metal surfaces as finger moisture may lead to corrosion.
11.

Reassembly of your firearm:

1. Reassemble your firearm in the reverse order that it was taken apart.
2. Prior to assembling the bolt into the bolt carrier assembly, ensure that the three gas ring gaps are staggered and NOT in alignment. The gaps must be staggered for proper functioning.

CORRECT



Correctly Staggered Gas Rings

INCORRECT



Incorrectly Staggered Gas Rings

3. Always make sure that the cam pin is installed correctly.

Warning:

The firearm can fire and may explode if the cam pin is not installed into the bolt carrier. Failure to reassemble the bolt carrier without the cam pin will result in damage to your firearm and may potentially injure you and others around you. It is your responsibility to make sure that the cam pin is installed correctly.



4. Lightly lubricate all metal parts during reassembly. Remove any excess oil.
5. Be sure to inspect the firearm for wear, cracks or any other deficiencies while reassembling the rifle. If any deficiencies are found, be sure to have the firearm inspected by a knowledgeable gunsmith or Bushmaster™ Firearms armorer prior to using the firearm again. Also, be sure to secure the firearm so that no one else uses it until the deficiency is resolved.

Warning:
Do not use any ammunition other than the ammunition your firearm is chambered in! (See barrel markings for specific chambering.)

Collapsible Stock:
Your firearm may be equipped with a six position collapsible stock. To change the position on the collapsible stock, depress the lever underneath the stock and slide the stock forward or aft on the receiver extension tube until it is placed at the desired location. Release the lever, and it should lock into place. If it does not lock into place, slide the stock further until it snaps into one of the six pre-positioned points.

This collapsible buttstock is designed to have tolerance to allow for operation if fouled by small amounts of sand or dirt. However, from time to time, the collapsible buttstock may require cleaning in order to function properly.



Sights:
Your firearm may be equipped with a front sight. After the rear sight is selected and properly installed per the directions of the rear sight manufacturer, the front sight may be adjusted for elevation only. Depress the front sight detent and rotate the post clockwise to lower the post (and raise the point of impact,) or rotate the post counterclockwise to raise the post (and lower the point of impact.)

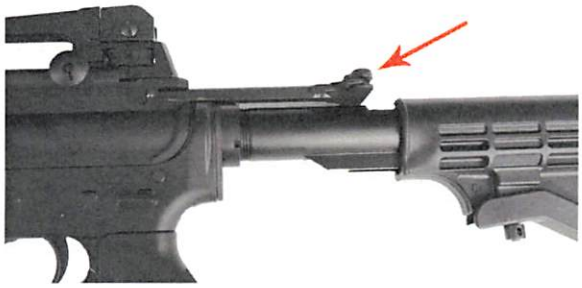


Loading Your Firearm:

Warning:
Follow the unloading procedures (above) to ensure that the firearm is unloaded before loading the firearm.

Warning:
Prior to loading your firearm, be sure to read, understand, and follow the "Basic Rules of Firearm Safety" listed above. Do not load the firearm until you are ready to use it. **Always point your muzzle in a safe direction.**

1. While starting with an unloaded firearm, pull the charging handle back. The empty fixed magazine should hold the bolt carrier back, but if for some reason it does not, pull the charging handle back again and simultaneously depress the lower portion of the bolt catch.





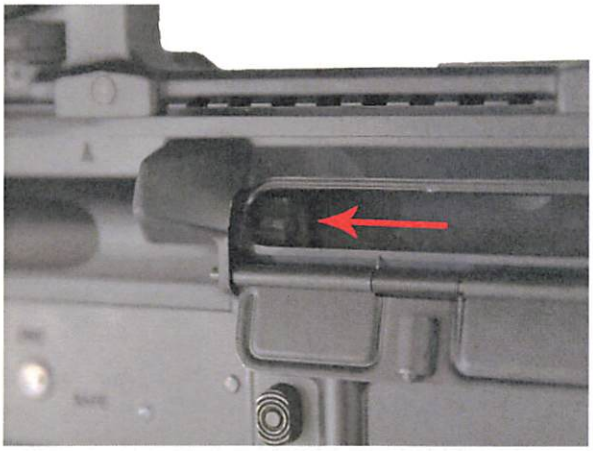
2. Push the charging handle forward until it snaps back into position.





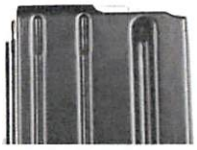
3. Place the safety selector lever on "Safe."

4. At this point, the bolt should be locked back. Remove the magazine by depressing the magazine release button.



Manufacturer's Warning:
California customers will receive their firearm equipped with a Drop-in Fixed Magazine that is not designed to be removed from the firearm. To load the magazine, make sure that the bolt carrier group is forward and in battery, push the takedown pin to the right, open the action by pivoting the upper receiver forward to access the Drop-in Fixed Magazine, load ten live rounds into the Drop-in Fixed Magazine, close the action, and secure the upper receiver to the lower receiver by pushing the takedown pin to the left. Next, pull the charging handle all the way back and proceed from Step 8.



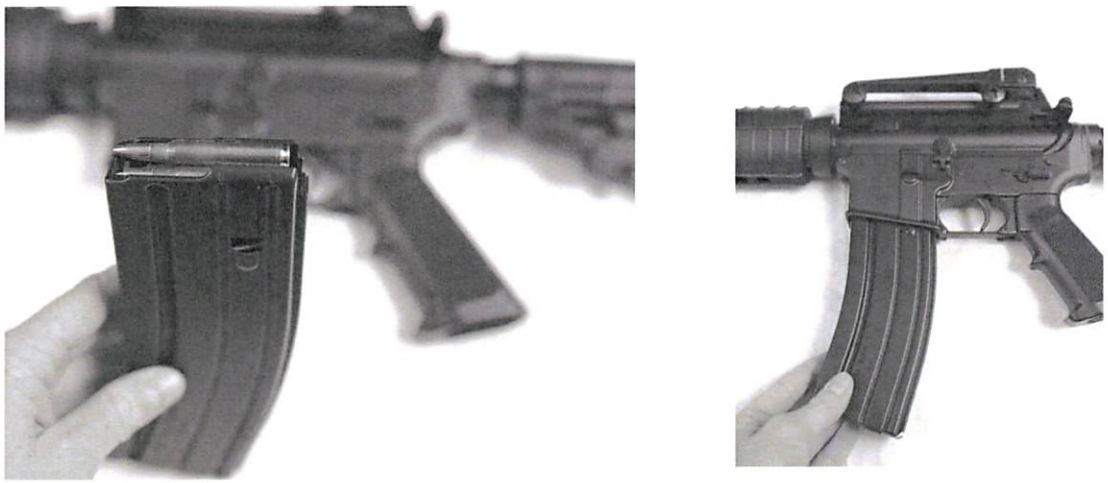


5. Now that the magazine has been removed from the magazine well, hold the magazine with your weak hand. With your strong hand, use your thumb to push a live round straight down against the feed lips and magazine follower. When the spring loaded magazine follower has been depressed far enough, you will be able to push the live round underneath the feed lips. Be sure to align the live rounds in the magazine so the bullets are pointing forward. The case heads should be positioned adjacent to the spine of the magazine.

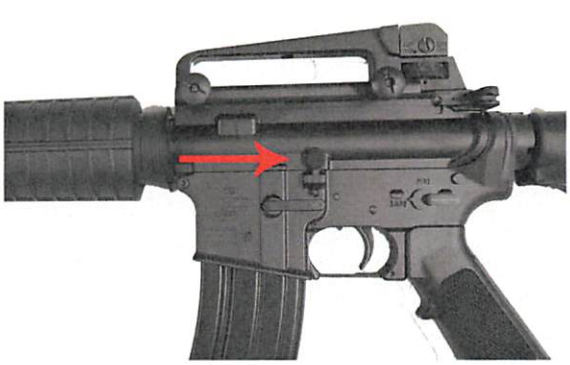


6. Repeat step five, placing additional rounds on top of each other in a staggered column, until the magazine is fully loaded.

7. Insert the magazine into the magazine well with the bullet end of the cartridges pointing forward until the magazine catch engages the magazine. Pull down on the bottom of the magazine to confirm that it is firmly seated.



8. Drop the bolt carrier by depressing the upper portion of the bolt catch while keeping the muzzle pointed in a safe direction. This activity will automatically strip the top live round off of the magazine and chamber the round. Keep the firearm safety selector lever on "Safe" until you are ready to fire.





Warning:
Do not carry your firearm with the bolt carrier locked back while a loaded magazine is locked into the magazine well. If the bolt carrier were to get jostled and slide forward, an accidental discharge may result, especially if the safety selector is not set on "Safe."

Warning:
Do not carry your firearm with a loaded round in the chamber if the firearm may be accidentally dropped or struck with significant force. Due to the fact that this firearm is equipped with a floating firing pin, it may accidentally discharge if dropped or struck hard enough even if the safety selector lever is set on "Safe."

9. If the bolt does not fully seat after the bolt carrier has slid forward, articulate the forward assist plunger so that the bolt goes into battery.

Warning: The force necessary to articulate the forward assist is slight. If it takes significant force to push the forward assist button, stop what you are doing and disassemble the firearm to diagnose why the firearm is not operating correctly. Often dirt, fouling, or improper ammunition may be the cause. Make sure that the chamber is not in any way encumbered before proceeding.

10. After the firearm is loaded, you may close the ejection port cover to reduce the likelihood of sand, dirt, or debris from entering the action.

Warning:
Always load the firearm from the magazine. Never attempt to load the firearm by inserting a live round through an open ejection port.

Firing your firearm:

Warning:

Before attempting to fire your Bushmaster™ firearm, it is critical that the trigger system be clearly identified. If your firearm is equipped with a brightly colored label around the three position safety selector, please read the instructions that shipped with that BFS® trigger. If your firearm has a two position selector, please follow the instructions herein.

1. Firmly hold the firearm pistol grip with one hand being sure to keep your finger out of the trigger area until you are ready to shoot.





2. Grab the handguard with your remaining hand.

3. Use both hands to bring the firearm up to a level position and firmly seat the buttstock to your shoulder high enough so that you do not have to crane your head over too far to see your sights.





4. Place the safety selector lever to "Fire" and maintain strict muzzle discipline.

5. Gently pull the trigger with your index finger until it fires.



Warning:
Like all semi-automatic firearms, your firearm will automatically feed another round into the chamber after it has fired and ejected the first round.

6. In order to fire a successive round, release and gently pull the trigger again. This activity can be repeated until the magazine is empty.

7. When done firing, place the safety selector lever to "Safe" and if the magazine is empty, the bolt will be held to the rear by the bolt catch.



Clearing a Misfire:

If for any reason there is any indication that your firearm is not performing properly, stop firing, point the muzzle in a safe direction, and unload the firearm. Do not use the firearm again until it has been evaluated by a knowledgeable gunsmith or Bushmaster Firearms International™ armorer.

If a cartridge does not fire when it should have....

1. Keep the muzzle pointed in a safe direction for at least one minute. The possibility of a delayed or "hang fire" may exist.

2. Place the safety selector lever in the "Safe" position while waiting.



3. After one minute, unload the firearm per the directions noted under "Unloading Your Firearm" and inspect the primer on the live round that did not fire. Evaluate whether it is just a bad primer or if the primer was adequately struck by the firing pin. A light firing pin strike on the primer may be a result of a damaged or worn firing pin, a dirty firing pin chamber, or a broken firing pin spring.

If a mis feed or "jam" occurs....

1. Keep the muzzle pointed in a safe direction.

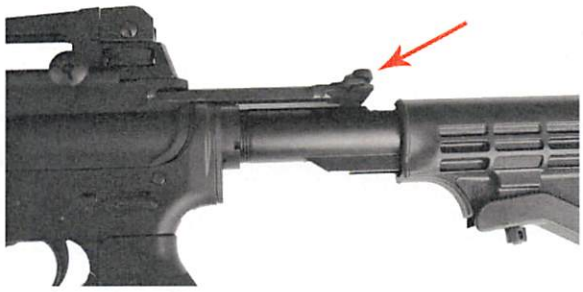
2. Place the safety selector lever in the "Safe" position.





3. Depress the magazine release button and remove the magazine.

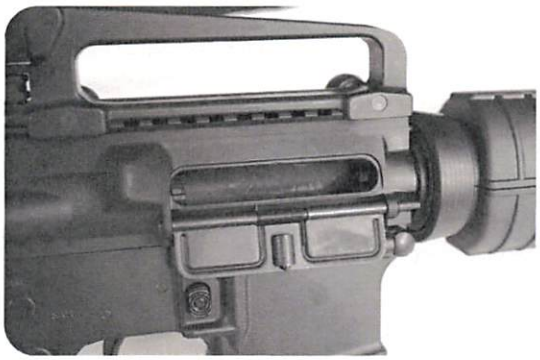
4. Pull the charging handle to the rear while depressing the lower portion of the bolt catch. This will hold the bolt back.

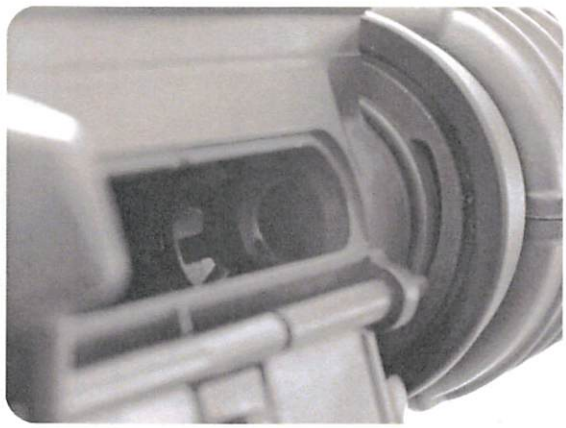




5. Remove any remaining ammunition.

6. Visually inspect the action and chamber to make sure there is not any ammunition or any other substance in the action.





Warning:
Do not closely peer into the ejection port when clearing a misfeed. If a cartridge primer were to be struck by a hard object such as another cartridge, the primer could ignite causing a case head rupture. A case head rupture could cause severe injury or death to you or others around you.

Warning:
Do not attempt to reuse damaged ammunition.

7. After you are certain that all ammunition is cleared, you may reload the firearm per the instructions under "Loading Your Firearm"

Locking Devices:

Every Bushmaster™ firearm is packaged with a cable lock certified by the California Department of Justice. Please follow the directions that accompany the lock for proper use.

Storage of Your Firearm:

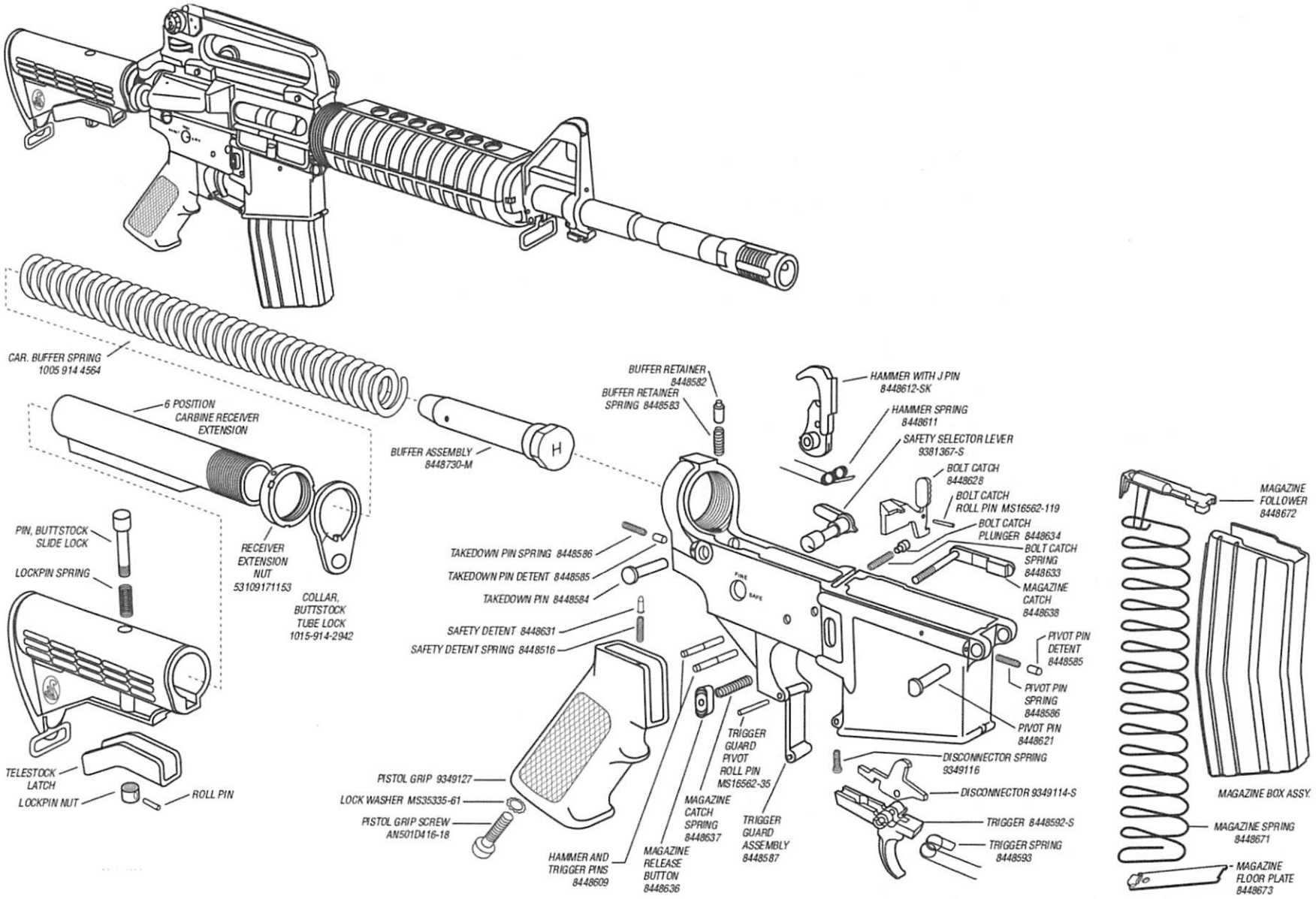
If your firearm is to be put in storage, be sure not to encase it in any container that will attract moisture, such as a leather case. Do not plug the barrel since this may cause moisture accumulation. If the firearm is to be stored for an extended period of time, a high quality anti-rust, preservative, lubricant should be liberally applied to all metal parts, inside and out. Be sure to remove these lubricants by cleaning the firearm prior to placing it in service again, and ensure that the firearm is stored in compliance with all state, federal, and local laws and regulations and that proper safety considerations have been given to ensure against unlawful, unsafe, or improper access while in storage.

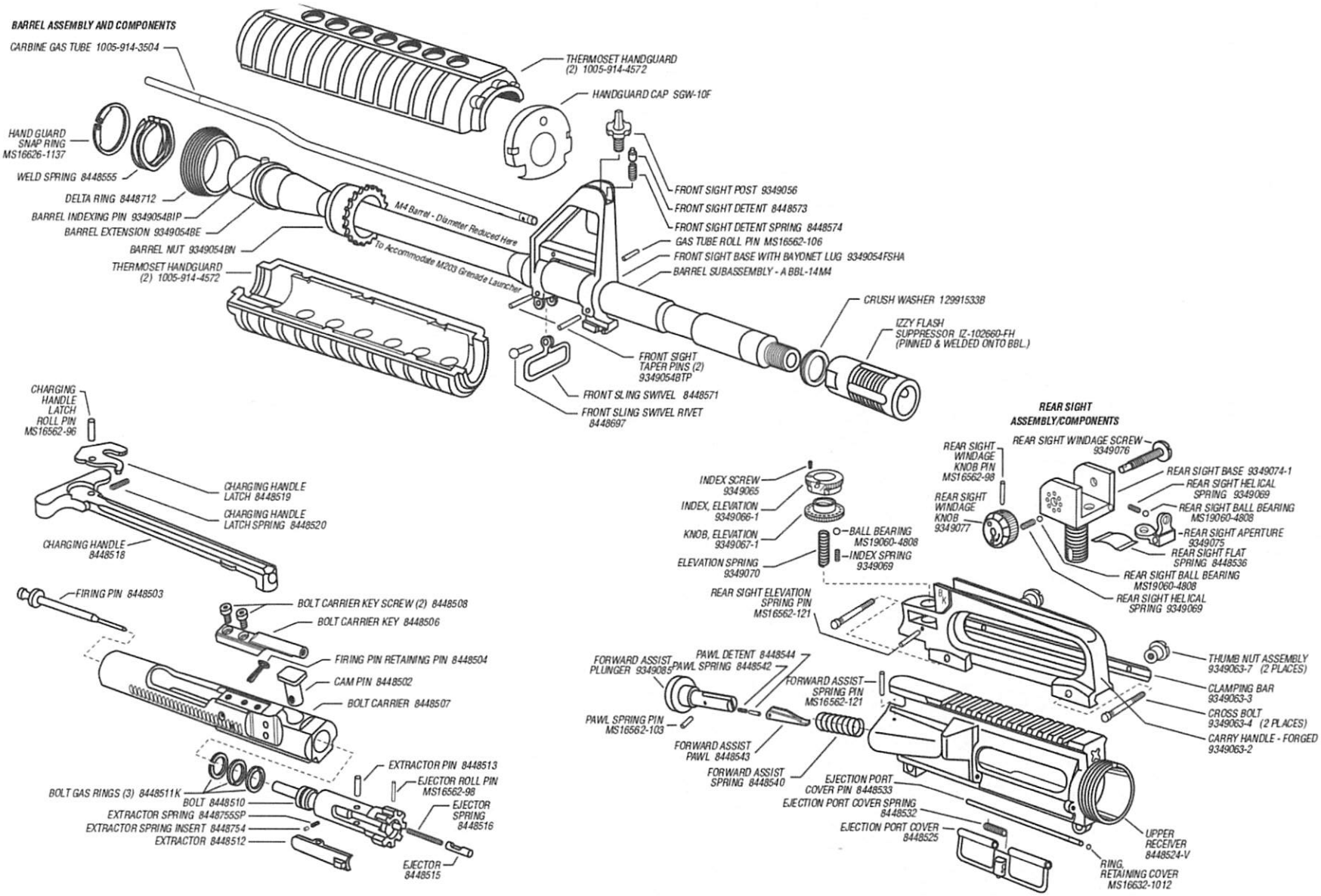
SUGGESTIONS OR CORRECTIONS TO THIS MANUAL SHOULD BE MAILED TO:

Bushmaster Firearms International™
3505 Arrowhead Dr
Carson City, NV 89706

Bushmaster Maintenance Log

Date	*Maintenance Preformed*


CAR. BUFFER SPRING
1005 914 4564
6 POSITION
CARBINE RECEIVER
EXTENSION
BUFFER ASSEMBLY
8448730-M
PIN, BUTTSTOCK
SLIDE LOCK
LOCKPIN SPRING
RECEIVER
EXTENSION
NUT
53109171153
COLLAR,
BUTTSTOCK
TUBE LOCK
1015-914-2942
TELESTOCK
LATCH
LOCKPIN NUT
ROLL PIN
BUFFER RETAINER
8448582
BUFFER RETAINER
SPRING 8448583
HAMMER WITH J PIN
8448612-SK
HAMMER SPRING
8448611
SAFETY SELECTOR LEVER
9381367-S
BOLT CATCH
8448628
BOLT CATCH
ROLL PIN MS16562-119
BOLT CATCH
PLUNGER 8448634
BOLT CATCH
SPRING
8448633
MAGAZINE
CATCH
8448638
TAKEDOWN PIN SPRING 8448586
TAKEDOWN PIN DETENT 8448585
TAKEDOWN PIN 8448584
SAFETY DETENT 8448631
SAFETY DETENT SPRING 8448516
PIVOT PIN
DETENT
8448585
PIVOT PIN
SPRING
8448586
PIVOT PIN
8448621
DISCONNECTOR SPRING
9349116
DISCONNECTOR 9349114-S
TRIGGER 8448592-S
TRIGGER SPRING
8448593
TRIGGER
GUARD
PIVOT
ROLL PIN
MS16562-35
TRIGGER
GUARD
ASSEMBLY
8448587
PISTOL GRIP 9349127
LOCK WASHER MS35335-61
PISTOL GRIP SCREW
AN501D416-18
HAMMER AND
TRIGGER PINS
8448609
MAGAZINE
RELEASE
BUTTON
8448636
MAGAZINE
CATCH
SPRING
8448637
MAGAZINE
FOLLOWER
8448672
MAGAZINE BOX ASSY.
MAGAZINE SPRING
8448671
MAGAZINE
FLOOR PLATE
8448673


BARREL ASSEMBLY AND COMPONENTS
CARBINE GAS TUBE 1005-914-3504
THERMOSET HANDGUARD (2) 1005-914-4572
HANDGUARD CAP SGW-10F
HAND GUARD SNAP RING MS16626-1137
WELD SPRING 8448555
DELTA RING 8448712
BARREL INDEXING PIN 9349054BIP
BARREL EXTENSION 9349054BE
BARREL NUT 9349054BN
THERMOSET HANDGUARD (2) 1005-914-4572
M4 Barrel - Diameter Reduced Here To Accommodate M203 Grenade Launcher
FRONT SIGHT POST 9349056
FRONT SIGHT DETENT 8448573
FRONT SIGHT DETENT SPRING 8448574
GAS TUBE ROLL PIN MS16562-106
FRONT SIGHT BASE WITH BAYONET LUG 9349054FSHA
BARREL SUBASSEMBLY - A BBL-14M4
CRUSH WASHER 129915338
IZZY FLASH SUPPRESSOR IZ-102660-FH (PINNED & WELDED ONTO BBL.)
FRONT SIGHT TAPER PINS (2) 9349054BTP
FRONT SLING SWIVEL 8448571
FRONT SLING SWIVEL RIVET 8448697
CHARGING HANDLE LATCH ROLL PIN MS16562-96
CHARGING HANDLE LATCH 8448519
CHARGING HANDLE LATCH SPRING 8448520
CHARGING HANDLE 8448518
FIRING PIN 8448503
BOLT CARRIER KEY SCREW (2) 8448508
BOLT CARRIER KEY 8448506
FIRING PIN RETAINING PIN 8448504
CAM PIN 8448502
BOLT CARRIER 8448507
EXTRACTOR PIN 8448513
EJECTOR ROLL PIN MS16562-98
BOLT GAS RINGS (3) 8448511K
BOLT 8448510
EJECTOR SPRING 8448516
EXTRACTOR SPRING 8448755SP
EXTRACTOR SPRING INSERT 8448754
EXTRACTOR 8448512
EJECTOR 8448515
REAR SIGHT ASSEMBLY/COMPONENTS
REAR SIGHT WINDAGE KNOB PIN MS16562-98
REAR SIGHT WINDAGE SCREW 9349076
REAR SIGHT BASE 9349074-1
REAR SIGHT HELICAL SPRING 9349069
REAR SIGHT WINDAGE KNOB 9349077
REAR SIGHT BALL BEARING MS19060-4808
REAR SIGHT APERTURE 9349075
REAR SIGHT FLAT SPRING 8448536
INDEX SCREW 9349065
INDEX, ELEVATION 9349066-1
KNOB, ELEVATION 9349067-1
BALL BEARING MS19060-4808
INDEX SPRING 9349069
ELEVATION SPRING 9349070
REAR SIGHT BALL BEARING MS19060-4808
REAR SIGHT HELICAL SPRING 9349069
REAR SIGHT ELEVATION SPRING PIN MS16562-121
THUMB NUT ASSEMBLY 9349063-7 (2 PLACES)
CLAMPING BAR 9349063-3
CROSS BOLT 9349063-4 (2 PLACES)
CARRY HANDLE - FORGED 9349063-2
FORWARD ASSIST PLUNGER 9349085
PAWL DETENT 8448544
PAWL SPRING 8448542
FORWARD ASSIST SPRING PIN MS16562-121
PAWL SPRING PIN MS16562-103
FORWARD ASSIST PAWL 8448543
FORWARD ASSIST SPRING 8448540
EJECTION PORT COVER PIN 8448533
EJECTION PORT COVER SPRING 8448532
EJECTION PORT COVER 8448525
UPPER RECEIVER 8448524-V
RING, RETAINING COVER MS16632-1012

PROVEN™

Info@bushmaster.com
(800)-883-6229
www.bushmaster.com

DD4™
DDM4®
DD5®

FIREARMS

OPERATION & SAFETY MANUAL

DANIEL DEFENSE®

» FREEDOM. PASSION. PRECISION.

Since selling our first AR in 2009, we work each day to deliver products unmatched in quality, precision, and world-class customer service. More than just a rifle manufacturer, Daniel Defense is represented by its employees, whose hard work and expertise add character to each and every firearm. Speaking for everyone at Daniel Defense, I cannot thank you enough for your business.

You will be satisfied with our products and service.
I guarantee it.



Marty Daniel
Founder, Executive Chairman

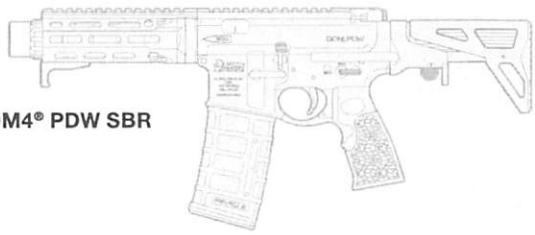
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NOTES

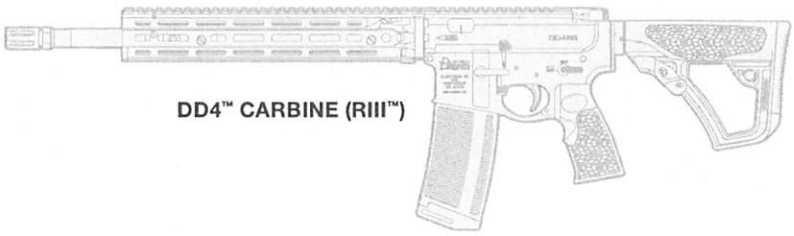
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1.0
DANIEL DEFENSE® FIREARMS



DDM4® PDW SBR



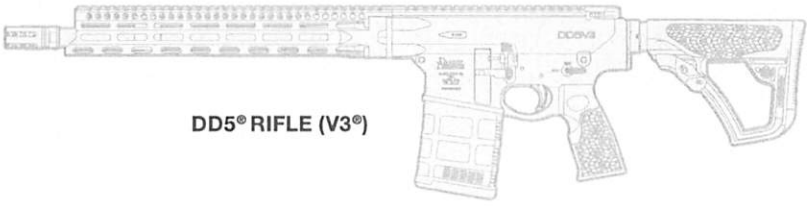
DD4™ CARBINE (RIII™)



DDM4® CARBINE (V7®)



DDM4ISR®



DD5® RIFLE (V3®)

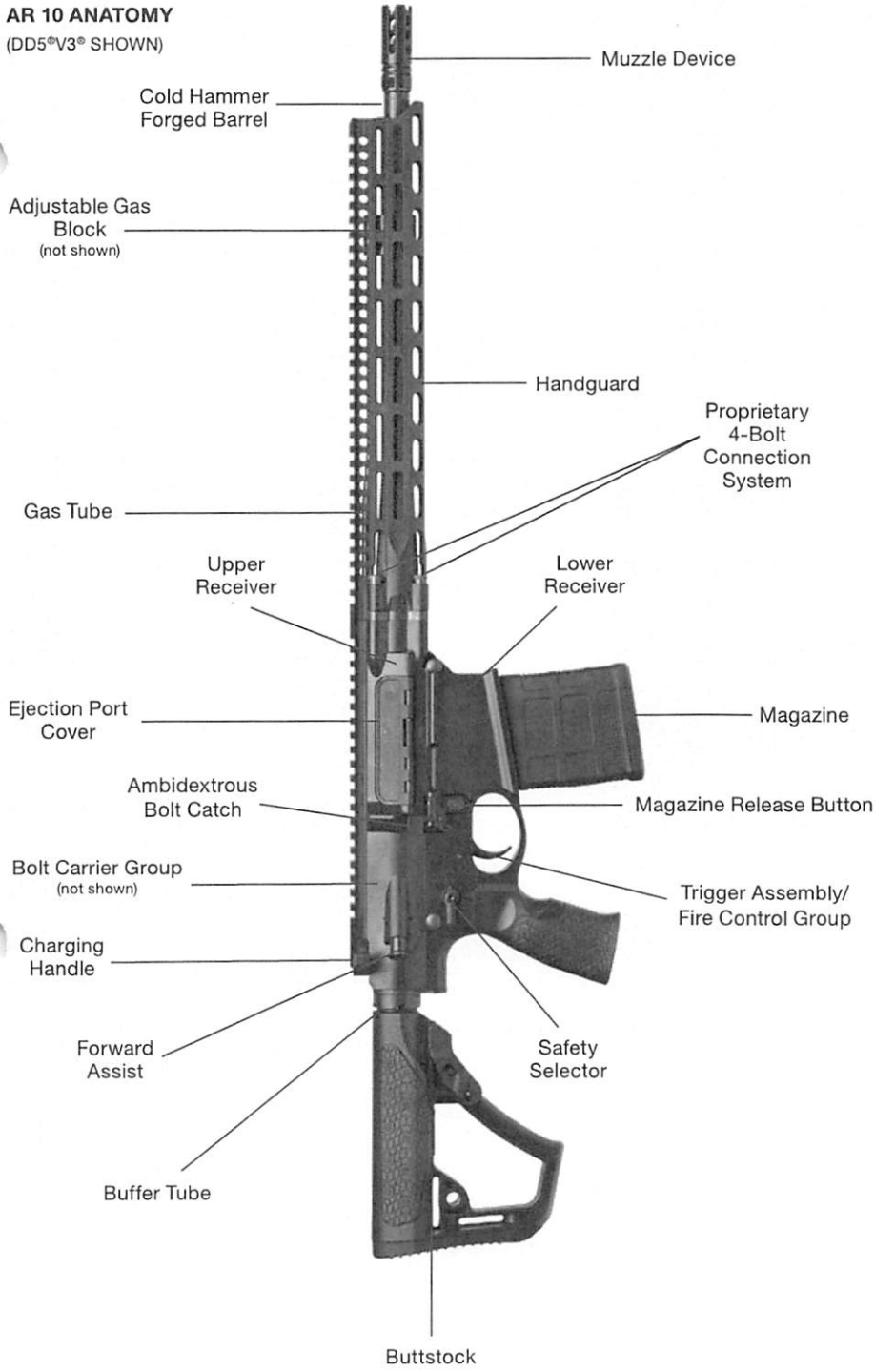
AR 15 ANATOMY

(DD4™ M4A1 RIII™ SHOWN)



*Ambi features come standard on all DD4 RIII firearms. DDM4 firearms are not equipped with the ambi features, except for the ambi charging handle.

AR 10 ANATOMY
(DD5®V3® SHOWN)



2.0
PRECAUTIONS

⚠ DANGER THIS DANIEL DEFENSE PRODUCT IS POTENTIALLY LETHAL! IT IS CLASSIFIED AS A FIREARM OR DANGEROUS WEAPON BY THE BUREAU OF ALCOHOL, TOBACCO, FIREARMS AND EXPLOSIVES.

NOTICE Read and understand the entire user manual before removing the firearm from its package. Your safety and the safety of others requires you to follow the basic instruction on the proper handling and functioning of this Daniel Defense firearm.

⚠WARNING IF THIS FIREARM IS CARELESSLY OR IMPROPERLY HANDLED, UNINTENTIONAL DISCHARGE MAY RESULT IN OR CAUSE INJURY, DEATH, AND/OR DAMAGE TO PROPERTY.

NOTICE Daniel Defense shall not be responsible for any injury, death, or damage to property resulting from any intentional, unintentional or accidental discharge of the firearm, or from any firearm function when used for any improper purpose for which it was not designed. Daniel Defense will not honor claims involving the firearm that resulted from careless or improper handling, unauthorized use and/or adjustment or unauthorized part(s) replacement, corrosion, neglect, or the use of improper-caliber ammunition, or the use of ammunition other than original, high-grade, commercially available ammunition in good condition, or any combination thereof.

NOTICE Before this firearm left the Daniel Defense facility, it was carefully inspected at every stage on the manufacturing process, built by hand by a trained Daniel Defense armorer, tested by a Daniel Defense quality-assurance inspector, and properly packaged. Daniel Defense cannot control the product after it leaves the Daniel Defense facility; as such, please carefully examine the firearm at the time of purchase to ensure it is unloaded and undamaged. The authorized dealer and/or distributor will assist you in any such examination and answer any question you may have. The user manual should always accompany the firearm. If you lend, give, or sell the firearm, ensure the manual goes with it. Be sure to comply with all relevant federal and local regulations governing the firearm's proper possession and use.

If unfamiliar with firearms, seek further advice through safe-handling courses run by your local gun clubs, NRA-approved instructor, or similar qualified organizations.

3.0
SAFETY INSTRUCTIONS

Regardless of your experience level, we urge you to read this entire instruction manual carefully.

BASIC RULES FOR FIREARM SAFETY

1. **ALWAYS** treat every firearm as if it is loaded.
   a. Never take anyone else's word that a firearm is unloaded.
   b. Always visually inspect the chamber yourself (and magazine, if equipped) to ensure that the firearm is completely unloaded even if you just witnessed someone else perform this safety check.
   c. Always remove the magazine and lock the action to the rear before laying a firearm down or handing someone a firearm.
   d. Do not load your firearm until you are ready to shoot.
2. **NEVER** point the muzzle of a firearm at anything you are not willing to destroy.
   a. Pay close attention to the direction of your muzzle at all times when carrying or handling a firearm.
   b. Always unload a firearm before navigating difficult terrain (i.e., fence crossings, hills, rocky or loose terrain, tree stands, etc.).
3. **ALWAYS** keep your finger off the trigger until your sights are on the target and you're ready to fire.
   a. Keep your finger on the receiver or trigger guard until you're ready to fire.
4. **ALWAYS** be sure of your target and what's beyond it before firing.
   a. Understand what is behind your target should the bullet pass through it.
   b. Understand where the bullet could go should you miss your target.
   c. Make sure your backstop is adequate to stop your bullets and large enough to block any misplaced shots.
   d. Never shoot at or near rocks, hard surfaces, water, or any other surfaces that may cause a ricochet or a bullet to veer off course and potentially cause injury, death, and/or damage.
5. **NEVER** leave a firearm unattended or unsecured.
   a. Someone, including a child, could improperly handle it and cause damage, injury, and/or death with an unattended or unsecured firearm.
   b. Always instruct children and others in your household to respect firearms and stress all aspects of firearm safety.
      - Refer to a qualified instructor for help in training, and supervise all activities closely.
   c. **YOU ARE RESPONSIBLE FOR YOUR FIREARM!**

⚠WARNING IF YOU PULL OR DEPRESS THE TRIGGER, INTENTIONALLY OR UNINTENTIONALLY, EXPECT THE FIREARM TO FIRE. YOUR CAREFUL ADHERENCE TO SAFETY RULES MAY HELP PREVENT AN ACCIDENTAL DISCHARGE AND ANY RESULTING ACCIDENTAL INJURY, PROPERTY DAMAGE, AND/OR DEATH. YOU ARE FULLY RESPONSIBLE FOR THE SAFE USE OF ANY FIREARM IN YOUR POSSESSION AND FOR ANY DAMAGE, INJURY, AND/OR DEATH CAUSED BY IT.

⚠WARNING THIS FIREARM MAY DISCHARGE WHEN A ROUND IS FED INTO THE CHAMBER OR IF IT IS DROPPED OR JARRED, REGARDLESS OF THE POSITION OF THE SAFETY SELECTOR AND WITHOUT THE TRIGGER BEING DEPRESSED OR PULLED. THEREFORE, EXTRA CARE AND STRICT ADHERENCE TO THE INSTRUCTIONS CONTAINED WITHIN THIS USER MANUAL BY THE FIREARM USER IS ESSENTIAL FOR MINIMIZING THE RISK OF ACCIDENTAL PROPERTY DAMAGE, INJURIES, AND/OR DEATH.

⚠WARNING WHEN THERE IS A ROUND IN THE CHAMBER, THE ROUND WILL DISCHARGE IF THE TRIGGER IS PRESSED. IT IS ABSOLUTELY ESSENTIAL FOR THE USER TO KNOW HOW TO COMPLETELY UNLOAD THE FIREARM. "COMPLETELY" MEANS EMPTYING THE MAGAZINE AND REMOVING A CHAMBERED ROUND. REMOVING THE MAGAZINE FROM THE FIREARM DOES NOT PREVENT IT FROM BEING FIRED. A FIREARM WILL FIRE A CHAMBERED ROUND EVEN WITH MAGAZINE REMOVED.

3.1
CAUTIONS

⚠ EQUIPMENT CAUTIONS

ALWAYS BE SURE THE CHAMBER, BORE, SUPPRESSOR (IF EQUIPPED), AND ACTION ARE CLEAN AND CLEAR OF OBSTRUCTIONS. Keep your firearm clean and well lubricated to ensure it will function correctly and safely.

1. **ALWAYS USE HIGH-QUALITY, COMMERCIALLY MANUFACTURED AMMUNITION THAT IS CLEAN, DRY, IN GOOD CONDITION, AND OF THE APPROPRIATE CALIBER FOR YOUR FIREARM.** Firearm and ammunition manufacturers design their products within exacting engineering safety limits. Hand-loaded and re-manufactured ammunition are sometimes outside those limits and can potentially cause malfunctions or damage to the firearm as well as cause injury, death, or damage to other property.
2. **ALWAYS CHECK THAT AMMUNITION IS CLEAN AND UNDAMAGED BEFORE USING THE FORWARD ASSIST.** Forcing damaged ammunition into the chamber could damage your firearm and could result in injury, death, or damage to property.

⚠ SHOOTING CAUTIONS

1. **NEVER** consume alcohol or take drugs when handling firearms.
   a. Seek the advice of a qualified doctor if you are taking medication to ensure you are fit to shoot and handle your firearm safely.
2. **ALWAYS** wear personal protective equipment (PPE), including but not limited to safety shooting glasses and ear protection, when shooting or near others who are shooting.
   a. Failure to use proper ear protection will cause permanent hearing damage.
   b. Failure to use protective shooting glasses can result in damage to eyes and blindness from flying particles, propellant gases, ricocheting fragments, and other debris.
   c. Always encourage spectators and others nearby to wear PPE.
3. **ALWAYS** keep your firearm's safety selector set to the "SAFE" position until your sights are on your target and you are ready to fire.
4. **ALWAYS** be careful of the direction your ejection port is pointed.
   a. Spent cartridges are ejected with enough force to cause injury to those standing near the shooter.
   b. If the ejection port is obstructed your firearm will malfunction, becoming jammed with spent cartridges.
   c. Never place fingers in ejection port as they could be burned by hot metal or injured by the bolt moving forward.
5. **NEVER** put your finger in the trigger guard until your sights are on the target and you are ready to shoot.
   a. Keep your trigger finger on the receiver, beneath the magazine button, when you are not ready to fire.
6. **ALWAYS** be sure of your target and what is beyond it.

a. Bullets can travel great distances and still cause great damage and even death.
b. If there is any doubt about your target or backstop or anything else, **DO NOT SHOOT!**

7. **NEVER** fire a firearm if you suspect water is in the barrel or gas tube.
   a. If your firearm is exposed to heavy rain, fog, or other sources of water, open the bolt and allow water to drain before firing.
   b. Be sure to clean and lubricate a wet firearm as soon as possible.
8. **NEVER** shoot your firearm near any flammable or explosive materials.
   a. Understand that flames may exit from your muzzle or ejection port.
9. **NEVER** fool around or act carelessly when handling or being around firearms.
   a. Your carelessness can result in severe damage, injury, or death.
10. **NEVER** follow another person when your firearm is loaded and ready to fire.
    a. Keep the safety selector set to "SAFE."
    b. Always pay attention to and control the direction of the muzzle.

⚠ MALFUNCTION CAUTIONS

IF YOU EXPERIENCE A FAILURE TO FIRE:

1. **ALWAYS** keep the firearm pointed in a safe direction.
2. Wait 30 seconds.
   a. If a hang fire (slow ignition) has occurred, the round will fire within 30 seconds. If round still does not fire after 30 seconds:
      - Cycle the bolt to eject the round.
      - Examine the primer.
        - If the firing pin indent on the primer is light, off center, or nonexistent, have your firearm examined by a competent gunsmith before continuing to fire.
        - If the firing pin indent on primer appears normal (in comparison with similar previously fired rounds), assume faulty ammunition; segregate the misfired round from all other live ammunition and empty cases, reload, and continue firing.

NOTE 1: It is normal for a light firing pin indent to appear on the primer of cartridges that have been fed into the chamber but not fired.

NOTE 2: Dispose of any misfired rounds in accordance with the ammunition manufacturer's instructions.

⚠ CLEANING AND STORAGE CAUTIONS

1. **ALWAYS** make sure your firearm is completely UNLOADED before you attempt to clean or store your firearm.
2. **ALWAYS** store your firearm and ammunition SEPARATELY and SECURELY out of reach of anyone who should not have access to them.
   a. Keep it out of reach of children and others who are not trained in the safe handling of firearms.
   b. Keep firearms and ammunition locked securely when not in use to prevent them entering the wrong hands.

⚠ FIREARM ABUSE CAUTIONS

1. **NEVER** abuse or mistreat your firearm.
   a. Keep, carry, and use it carefully.
2. **NEVER** use it for any purpose other than shooting.
3. **NEVER** dry fire when the upper is separated from the lower.
   a. The hammer can permanently damage the lower receiver.
4. **NEVER** alter parts.

⚠ SUPPRESSOR HANDLING CAUTIONS (DDM4ISR)

1. **ALWAYS ENSURE THAT THE MONOLITHIC BAFFLE IS SECURE IN THE SUPPRESSOR ASSEMBLY BEFORE SHOOTING.**
   a. Upon cleaning or performing maintenance on the suppressor assembly, always ensure that the baffle is securely tightened in place before firing (See Section 5.6 DDM4ISR Sound Suppressor Maintenance for more details).
   b. Serious injury may result from improper baffle installation.
2. **NEVER DISCHARGE THE FIREARM WITH ANY LIQUID INSIDE OF THE SUPPRESSOR ASSEMBLY.**
   a. The presence of liquid may induce dangerous pressure fluctuations upon firing.
   b. Doing so may result in damage to the firearm, serious injury, or both.
   c. Always carefully remove any liquid (oils, solvents, etc.) before shooting.
3. **SUPPRESSOR WILL GET EXTREMELY HOT.** The suppressor will become extremely hot when fired and can retain heat for a long time.
4. **ALWAYS** be cautious of hand placement and the proximity of the suppressor assembly to others and flammable objects.
5. **ALWAYS** be careful not to rest the hot suppressor against anything you don't want to damage, injure, or melt with heat.
6. **ANY MAINTENANCE REQUIRED PAST WHAT IS DESCRIBED IN THIS MANUAL SHOULD ONLY BE ATTEMPTED BY A QUALIFIED GUNSMITH.**
   a. Modifying or attempting to remove suppressor components other than the monolithic baffle may result in illegal modifications to the sound suppressor.
7. Contact Daniel Defense for any questions about repairing damaged components or further troubleshooting.

3.2
TRIGGER GUARD

The trigger guard is the strip below the trigger to protect it from damage and to help prevent accidental discharge. The integrated trigger guard on Daniel Defense firearms features radiused and beveled edges to accommodate shooters wearing gloves.

⚠WARNING KEEP YOUR FINGER OUT OF THE TRIGGER GUARD UNTIL YOU ARE READY TO SHOOT.

⚠WARNING USE EXTRA CAUTION WHEN USING GLOVES TO AVOID AN ACCIDENTAL/NEGLIGENT DISCHARGE.

3.3
SAFETY SELECTOR LEVER

DD4™/ DDM4® / DD5® Firearms

The safety selector lever is located on both sides of the lower receiver and has two positions: "SAFE" and "SEMI." When set to "SAFE", a cam bears upon the rear portion of the trigger, blocking the sear surface of the trigger and preventing the hammer from being released.

When set to "SEMI," the firearm will fire a single shot each time the trigger is squeezed without manually reloading.



SAFE (DD4/DDM4)



SEMI (DD4/DDM4)



SAFE (DD5)



SEMI (DD5)

Daniel Defense® Full Auto Firearm

Some law enforcement and military platforms feature a three-position safety selector, "SAFE," "SEMI," and a third position for fully automatic.

When set to "SAFE," a cam bears upon the rear portion of the trigger, blocking the sear surface of the trigger and preventing the hammer from being released.

When set to "SEMI," the firearm will fire a single shot each time the trigger is squeezed without manually reloading.

When set to the third position, "AUTO," the firearm will fire continuously until either the trigger is released or the magazine is empty.



SEMI



AUTO

NOTE: The safety featured on Daniel Defense firearms is a mechanical safeguard. As with all mechanical systems, failures within this system are possible and may not be visible to the operator. Activating the safety selector lever to the "SAFE" position does not mean the firearm is incapable of firing if mishandled or dropped.

3.4
BOLT-LOCKING SAFETY FEATURES

The firearm can fire only when the bolt is fully locked to the barrel extension. The bolt carrier is designed in such a way that the firing pin cannot come in contact with the primer of the cartridge when the bolt is not locked to the barrel extension. When chambering the round, the bolt carrier moves forward over the bolt, rotating it to the fully locked position within the barrel extension, allowing the firing pin to advance forward when struck by the hammer, igniting the cartridge primer. This prevents the cartridge from being fired before it is fully chambered and the bolt is fully rotated (locked) to the barrel extension. Even with the bolt locked, using improper ammunition or firing with the barrel obstructed, could lead to damage of your firearm and can result in injury, death, or damage to property.

3.5
DISCONNECTOR

The disconnector is part of the firing mechanism that prevents the firearm from firing more than one time per trigger pull. As the hammer is cocked after each shot by the rearward movement of the bolt carrier, the disconnector engages the hammer to hold it rearward until the trigger is released. When the trigger is released, you will hear a "click" as the retention of the hammer passes from the disconnector to the sear surface of the trigger, making the rifle ready to fire again with the next trigger pull.

3.6
FAIL-SAFE FIRING MECHANISM

In case of any failure of the firing mechanism, the top of the hammer and the underside of the carrier are machined in such a way that, if the hammer was not held rearward by the disconnector trigger sear surface, then the hammer would ride under the carrier and drop into engagement with the back of the firing pin to stop or prevent firing.

3.7
SEPARATION OF UPPER AND LOWER RECEIVERS

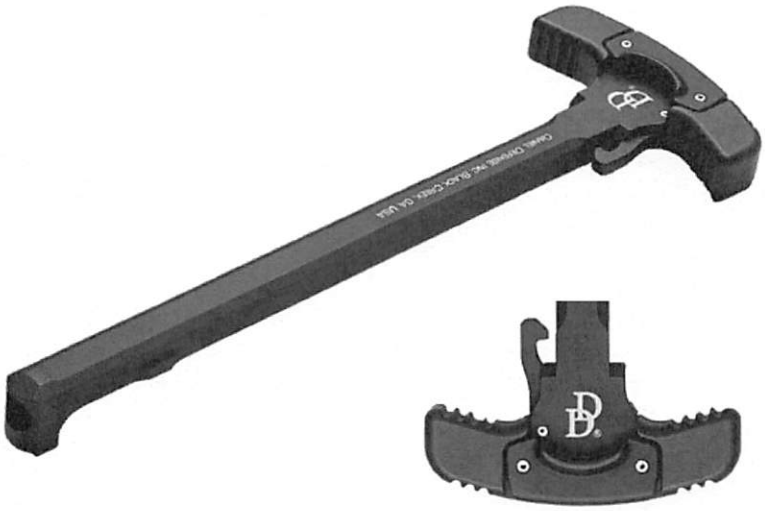
The lower receiver can be separated from the upper receiver by pushing in the takedown pin and pivot pin from left to right. If the pins are stiff, you can use the supplied chamber flag as a punch to push them in.

NOTE: The bolt carrier group must be in the full forward position in order to separate the upper receiver from the lower receiver.

3.8

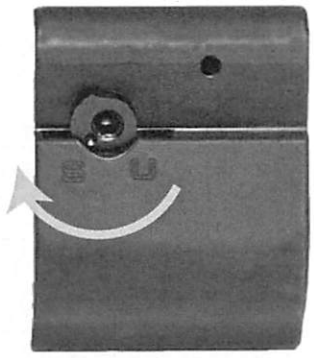
GRIP-N-RIP® AMBIDEXTROUS CHARGING HANDLE

DD4, DDM4 and DD5 platforms include an ambidextrous GRIP-N-RIP Charging Handle. Manipulating either handle moves only the latch giving an identical pull from both sides. The handle has been optimized for grip comfort without being overly bulky and getting in the way of obstacles or hazards. The GRIP-N-RIP charging handle will fit on any AR-15 pattern rifle, and the AR-10 version will fit on DPMS (Gen I) pattern rifles.



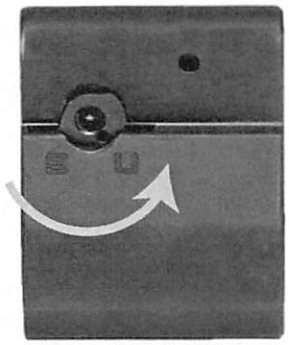
3.9
DD5® ADJUSTABLE GAS BLOCK

The DD5 Adjustable Gas Block is a two-position adjustable gas block designed with suppressors in mind. The gas block has a 90-degree throw between the unsuppressed and suppressed modes. A unique feature of the gas block is that it can be quickly adjusted through the side of the firearm's handguard by rotating the throw lever with the DD supplied Allen wrench.



SUPPRESSED

If firing Suppressed, turn the adjustment screw clockwise until the indicator is pointing at S.



UNSUPPRESSED

If firing Unsuppressed, turn the adjustment screw counterclockwise until the indicator is pointing at U.

Watch video instructions

4.0
FUNCTION

Daniel Defense firearms have semi-automatic actions. With the action cocked, chamber loaded, and selector lever set to "SEMI," the firearm may be fired by squeezing the trigger. The trigger pivots, disengaging the trigger sear surface from the hammer. The hammer spring drives the hammer forward to strike the firing pin, which in turn strikes the primer in the base of the cartridge, igniting the priming compound, which ignites the main powder charge. High-pressure gases produced by the powder charge push the bullet down the barrel, where rifling grooves impart a stabilizing spin to the bullet. As a bullet passes the gas port (a small hole in the top of the barrel below the gas block), gas escapes through the port, flows through the gas tube into the bolt carrier chamber, driving the bolt carrier group rearward. As the bolt carrier moves to the rear, the firing pin is withdrawn into the bolt while the cam track in the bolt carrier acts upon the bolt cam pin, causing the bolt to rotate until its locking lugs are no longer in engagement with the lugs of the barrel extension. The bolt is now unlocked and is carried rearward by the bolt carrier. The extractor extracts the spent case and holds it against the face or bolt until the ejector throws the spent case through the ejection port. The bolt carrier group continues rearward, compressing the action spring and returning the hammer to its cocked position until the buffer assembly strikes the bottom of the receiver extension and stops. The action spring then forces the bolt carrier group forward as the face of the bolt pushes the next round of ammunition from the magazine and thrusts it into the chamber. Simultaneously, the extractor snaps into the groove of a cartridge case and the bolt locks into the barrel. The hammer is now held rearward by the disconnector until the trigger is released, causing the disconnector to rotate back, releasing the hammer. Before the disconnector's hook actually releases the hammer, the trigger sear surface has rotated in front of the hammer notch so the hammer is held on the trigger sear surface, making the firearm ready for another shot. Upon cycling the last shot from the magazine, the bolt catch is pushed upward by the magazine's follower, catching the bolt before it travels forward, locking it to the rear. With the bolt now locked open, the user can remove the empty magazine, replace it with a loaded one, and press the bolt catch paddle to disengage the bolt catch and load a live round into the chamber (be sure to follow safe loading procedures).

⚠WARNING THIS IS A SEMI-AUTOMATIC FIREARM AND IS LOADED AND READY TO FIRE AFTER EACH SHOT UNTIL THE MAGAZINE IS EMPTY. TO UNLOAD THE FIREARM, THE MAGAZINE MUST BE REMOVED AND THE BOLT CARRIER GROUP MUST BE PULLED TO THE REAR BY THE CHARGING HANDLE TO EXTRACT ANY REMAINING ROUND FROM THE CHAMBER.

4.0.1
DDM4ISR® SOUND SUPPRESSOR FUNCTION

The DDM4ISR utilizes a specially designed Integral Sound Suppressor (or silencer) to reduce the noise signature, muzzle flash, and recoil of the discharging firearm. Upon exiting the muzzle, a fired projectile is followed by extremely hot propellant gases and unburned powder exiting at a very high velocity. This phenomenon is the cause for the loud muzzle blast associated with the discharge of a firearm. With the use of a sound suppressor, the muzzle blast is effectively contained and controlled, resulting in more gradual pressure reduction and a subsequently less violent muzzle blast. In addition, the design of the DDM4ISR fully integrates the suppressor with the barrel and gas system of the host firearm. By doing so, a larger interior volume can be exploited to reduce back pressure that would otherwise force more fouling back into the firearm's barrel and upper receiver. A proprietary gas block has also been incorporated to allow functioning of both supersonic and subsonic loads without any additional modifications to the action of the firearm.

4.1
AMMUNITION SELECTION

⚠WARNING NEVER USE AMMUNITION NOT SPECIFICALLY DESIGNATED FOR USE IN YOUR FIREARM. FAILURE TO USE THE SPECIFIC CARTRIDGE INTENDED FOR THIS FIREARM MAY CAUSE THE RIFLE TO JAM, FAIL TO FIRE, OR EVEN GENERATE EXCESSIVE GAS PRESSURE, WHICH MAY DAMAGE OR DESTROY THE RIFLE, CAUSING PERSONAL INJURY, DEATH, AND/OR PROPERTY DAMAGE.

Daniel Defense recommends that you only use high-quality, commercially available ammunition that is clean, dry, in good condition and of the appropriate caliber for your firearm. The use of re-manufactured or hand-loaded ammunition is not recommended. If you have any questions about the suitability of a particular type of ammunition, please contact the ammunition manufacturer or Daniel Defense Technical Support for more information.

All Daniel Defense firearms are designed to function with a variety of brands and types of factory-manufactured ammunition in the appropriate caliber. Ammunition, and in particular, the projectiles the ammunition is loaded with are designed for a particular task, such as long-range target shooting, frangible target shooting, personal/home defense, big-game hunting, varmint hunting, etc. It is important to choose ammunition that is appropriate for the application. Consult the information provided by the ammunition manufacturer when choosing the appropriate ammunition.

NOTICE It is very important to choose the appropriate ammunition (velocity and bullet design) for the intended application.

⚠WARNING **FORCING DAMAGED OR INCORRECT AMMUNITION INTO THE CHAMBER MAY DAMAGE YOUR FIREARM AND/OR RESULT IN INJURY, DEATH, OR DAMAGE TO PROPERTY.**

Daniel Defense recommends that after you read and understand this manual, you go to the range and fire different types of ammunition of the appropriate caliber and bullet design for your firearm and its intended use (target shooting, hunting, etc.). Once you find the ammunition that functions best for your application, keep using it. To protect you and others from danger, and your firearm from being severely damaged, Daniel Defense does not recommend the use of any hand-loaded or re-manufactured ammunition.

DD4™ / DDM4®

FIREARM	SUITABLE AMMUNITION				
CHAMBERED FOR	.223 Remington	5.56x45mm NATO	6.8 SPC (6.8x43mm)	300 AAC Blackout	.300 Whisper
5.56x45mm NATO	YES	YES	NO	NO	NO
300 AAC Blackout	NO	NO	NO	YES	YES
6.8 SPC II	NO	NO	YES	NO	NO

DD5®

FIREARM	SUITABLE AMMUNITION			
CHAMBERED FOR	7.62x51mm NATO	.308 Winchester	6.5 Creedmoor	.260 Remington
7.62x51mm NATO	YES	YES	NO	NO
6.5 Creedmoor	NO	NO	YES	NO
.260 Remington	NO	NO	NO	YES

4.1.1
300 AAC BLACKOUT FIREARMS

NOTICE **Not all ammunition will produce the same results.**

All Daniel Defense firearms chambered in 300 AAC BLACKOUT are designed to function with a variety of brands and types of factory-manufactured ammunition in the appropriate caliber. These platforms were designed to be shot suppressed and unsuppressed utilizing various types of supersonic and subsonic ammunitions. Many subsonic types of ammunition are designed to be fired in conjunction with a sound suppressor. Testing indicates firing certain types of subsonic ammo without a sound suppressor can lead to failure-to-cycle issues and is not recommended.

4.1.2
DDM4ISR® AMMUNITION SELECTION

RELEVANT TERMS:

SPEED OF SOUND: Approximately 1,126 feet per second (depending on altitude, temperature, humidity, etc.)

SUBSONIC AMMUNITION: Ammunition loaded to travel slower than the speed of sound

SUPERSONIC AMMUNITION: Ammunition loaded to travel faster than the speed of sound

MUZZLE FLASH: The visible light produced by the combustion of unburned gunpowder mixing with ambient air

MUZZLE BLAST: The sound of escaping gases after the bullet leaves the barrel, produced by the gunpowder, which causes the "report" of a gunshot

BULLET CRACK: The sound associated with the collision of the shockwaves created by an object traveling through the air faster than the speed of sound

The DDM4ISR chambered in 300 AAC Blackout is designed to function with a variety of brands and types of factory-manufactured ammunition in the appropriate caliber, loaded to both supersonic and subsonic velocities. The DDM4ISR's integral suppressor is very effective at reducing both muzzle blast and muzzle flash. The other sound component sometimes found in gun shots is the "crack" of a supersonic projectile, which cannot be reduced by any silencer or suppressor. Ammunition for the 300 AAC Blackout and .300 Whisper can be purchased, usually around 190-220 grains, which are loaded with a powder charge that accelerates the projectile to just under the speed of sound. Subsonic 300 AAC Blackout ammunition often produces the best reduction in perceived sound in the DDM4ISR platform. Supersonic 300 AAC Blackout ammunition generally utilizes projectiles from 110 grains and up, accelerated to speeds faster than that of sound. Supersonic ammunition often offers a flatter trajectory and delivers more energy to the target.

4.2
SIGHTS

Depending on the particular platform, your firearm may have a mechanical sighting system, which allows you to adjust for variations in windage (horizontal adjustment) and elevation (vertical adjustment). The rear sight is adjustable for windage and the front sight is adjustable for elevation. The firearm has indexing numbers (T-Marks) on the mounting rails of the upper receiver and handguard to show locations for mounting accessories such as sights and optics. These indexing numbers allow the user to safely place the accessory back in the same location where it was mounted before being removed.

If your Daniel Defense firearm does not include mechanical sights, you can purchase the Daniel Defense Fixed Front/Rear Sight combo (SKU 19-088-09116) from an authorized dealer or from **DanielDefense.com**.

4.2.1
FRONT SIGHT

The front sight post can be adjusted up or down for elevation to establish the point of bullet impact (zeroing). You may zero at any range (distance) you like, but after zeroing, the front sight post should not be moved again. The standard location for the Daniel Defense Rail Mounted Front Sight is the second-to-last T-Mark. The amount of change in elevation per click varies depending on the sight radius (distance between front and rear sight). **See adjustment table on SECTION 4.3.**

4.2.2
REAR SIGHT

If your firearm is equipped with a Daniel Defense A1.5 Rear Sight, the large aperture can be flipped back to bring the small aperture into use. A windage wheel on the right side of the sight can be turned to move the aperture to the right or left to adjust for windage (side to side). The standard location for the A1.5 Rear Sight is with the mounting screw on indexing mark T-1 of the upper receiver. The amount of change in windage per click varies depending on the sight radius (distance between front and rear sight).
See adjustment table on SECTION 4.3.

4.3
SIGHTING-IN/ZEROING THE FIREARM

RELEVANT TERMS:

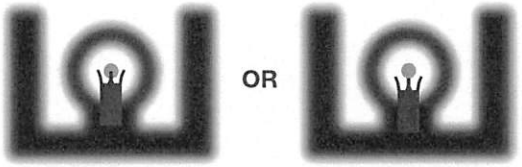
MINUTE OF ANGLE (MOA) = 1/60th of a degree = 1.047 Inches @ 100 yards
1 YARD = 0.91 Meters
1 METER = 1.09 Yards
1 INCH = 2.54 Centimeters
1 CENTIMETER = 0.39 Inches
TRAJECTORY: the path followed by a projectile
ZERO: the distance where the shooter's line of sight and the bullet's trajectory meet

The purpose of sighting-in or "zeroing" your firearm is to confirm that your rounds strike the target where you expect them to. The operator of the firearm must decide at which distance to zero the firearm, taking into consideration how the firearm is likely to be used.

NOTICE **The trajectories will vary depending on caliber, ammunition type, wind, temperature, altitude, angle to the target, and many other variables.**

If you are using any optics, please follow the sighting-in information provided by the manufacturer of the sighting system. The following is the procedure to sight in your Daniel Defense mechanical sights:

1. Be sure firearm is clean and properly maintained.
2. Confirm rear sight has small aperture in the up position.
3. Based on preference, decide whether to use "CENTER HOLD" or "6 O'CLOCK HOLD," and stick to it while sighting-in your firearm.



"CENTER HOLD" **"6 O'CLOCK HOLD"**



4. Carefully aim at the target, take your time, and fire five rounds.
5. If the middle of your shot group is not centered on the target in ELEVATION, measure the distance up or down from the center of the target. Adjust the FRONT sight post by depressing the sight plunger, then turn the number of clicks calculated from the following chart:

ELEVATION CHANGE IN POINT OF IMPACT (FRONT SIGHT ADJUSTMENT)			
VERTICAL CHANGE OF IMPACT PER CLICK			
MOA	INCHES @ 25Y	INCHES @ 50Y	INCHES @ 100Y
1.3	0.35"	0.7"	1.4"

DATA ASSUMES: Rear sight @ T1 and Front Sight @ T-51

Adjustment values will vary slightly based on sight radius

To move next shot group **UP**, turn front sight post **CLOCKWISE**

To move next shot group **DOWN**, turn front sight post **COUNTERCLOCKWISE**

6. If your shot group is not centered on the target in WINDAGE, measure the distance from the center of the target. Adjust the REAR sight by rotating the windage wheel on the right side the number of clicks you calculate from the following chart:



WINDAGE CHANGE IN POINT OF IMPACT (DD A1.5® REAR SIGHT)			
HORIZONTAL CHANGE OF IMPACT PER CLICK			
MOA	INCHES @ 25Y	INCHES @ 50Y	INCHES @ 100Y
1	0.25"	0.5"	1.0"

DATA ASSUMES: Rear sight @ T1 and Front Sight @ T-51

Adjustment values will vary slightly based on sight radius

To move next shot group **RIGHT**, turn front sight post **CLOCKWISE**

To move next shot group **LEFT**, turn front sight post **COUNTERCLOCKWISE**

7. Repeat firing groups of five rounds and adjust the sights as described above until you are satisfied that the group is where you want it on the target. Your sights are now zeroed.



4.3.1
CONFIRMING ZERO

You should confirm zero or re-zero your firearm if you change ammunition, you travel to areas with new climate or atmospheric conditions, drop your firearm (check for damage before firing), remove and reattach sights or barrel, or change other parts of your firearm. After making sure your firearm is clean and in good condition, carefully aim at the target, take your time and fire five rounds. If your shot group is not where you intended it to be, re-zero your firearm using the steps described in Section 4.3.

4.4
TIPS ON AIMING

1. Relax, hold steady, and don't hold your breath.
2. Keep firearm level and do not tilt it sideways.
3. Keep tip of front sight in center of rear sight aperture.
4. Focus on tip of front sight, not on target.
5. When sight picture is correct, carefully squeeze trigger.

4.5
FORWARD ASSIST

The forward assist allows you to help the bolt lock into the barrel, but it will only be useful on rare occasions when the bolt fails to lock automatically. When you must use the forward assist, it is usually time for you to clean your firearm, paying particular attention to the cleanliness of the chamber and bolt. Hunters may find the forward assist useful when trying to load their firearms more quietly in the field. This is done by releasing the bolt slowly with the charging handle and then pushing the forward assist, forcing the extractor to engage the cartridge rim and locking the bolt into the barrel extension.



4.6
ADJUSTABLE BUTTSTOCK

Daniel Defense rifles are equipped with a six-position collapsible buttstock, (seven-position for DD5 rifles). To extend or collapse the buttstock, press the front end of the release lever up against the buttstock and slide the buttstock forward or backward and release the lever to lock the buttstock at the desired position.



4.6.1
CHANGING BUTT PAD

The buttstock equipped on Daniel Defense rifles can be customized with two different butt pads or run with no butt pad at all. To change or remove the butt pad, use the following steps:

REMOVAL

1. Remove the two mounting screws from the butt pad with 1/8" hex wrench.
2. Remove the butt pad, bottom first, sliding down.



ATTACHING BUTT PAD

1. Slide the butt pad up, top first, ensuring its tab fits behind the top of buttstock.
2. Replace the two mounting screws and hand tighten with 1/8" hex wrench.



4.7
LOADING

⚠WARNING READ AND UNDERSTAND ALL SAFETY INSTRUCTIONS BEFORE LOADING YOUR FIREARM (SECTION 3) - KEEP YOUR FIREARM POINTING IN A SAFE DIRECTION AND DO NOT TOUCH THE TRIGGER UNTIL YOU KNOW YOUR TARGET AND ARE READY TO SHOOT.

⚠WARNING ALWAYS CHECK THAT AMMUNITION IS CLEAN, UNDAMAGED, AND THE CORRECT CALIBER IS MATCHED WITH THE SAME CALIBER THAT THE FIREARM IS CHAMBERED IN.

⚠WARNING FORCING DAMAGED OR INCORRECT AMMUNITION INTO THE CHAMBER MAY DAMAGE YOUR FIREARM AND/OR RESULT IN INJURY, DEATH, OR DAMAGE TO PROPERTY.

FIREARM CHAMBER	CORRECT MAGAZINE	MATCH AMMUNITION CALIBER
5.56x45mm NATO	DD Magazine marked 5.56 for AR15/M16 or equivalent magazines	5.56 NATO/.223 Rem
300 AAC Blackout	PMAG 300 BLK for AR15/M16 or equivalent magazines	300 AAC Blackout
6.8 SPC II, 6.8x43mm	PRI 6.8x43mm or equivalent magazines	6.8 SPC
7.62x51mm NATO	PMAG Gen M3 for LR/SR or equivalent magazines	7.62 NATO/.308 WIN
.308 Winchester	PMAG Gen M3 for LR/SR or equivalent magazines	7.62 NATO/.308 WIN
.260 Remington	PMAG Gen M3 for LR/SR or equivalent magazines	.260 Rem
6.5 Creedmoor	PMAG Gen M3 for LR/SR or equivalent magazines	6.5 Creedmoor

TO LOAD A MAGAZINE:

1. Use only ammunition recommended in this instruction manual as suitable for your firearm and application. The caliber your firearm is chambered in will be engraved on the barrel near the chamber.
2. Examine the ammunition, particularly on and around the primer. Look for dents, scratches, and other signs of damage. Do not load damaged ammunition.
3. With the short end of the magazine facing forward, place a round between the lips of the magazine with the bullet forward. Press the round down until it is held by the magazine lips. Place next round on top of previous round and repeat until desired number is loaded.



⚠WARNING **TO MINIMIZE RISK OF UNINTENTIONAL DAMAGE, LOAD LIVE AMMUNITION INTO YOUR MAGAZINE ONLY WHEN YOU ARE ABOUT TO SHOOT.**

TO LOAD THE FIREARM:

⚠WARNING **THE BOLT CARRIER GROUP BEING LATCHED OPEN IS NOT A SAFE CONDITION WHEN A LOADED MAGAZINE IS INSTALLED.**

1. Remove empty magazine by depressing magazine catch, which is located on the right side of the lower receiver (or on both sides of the DD4 or DD5), and extract magazine from the magazine well.



2. Press on the bottom part of the bolt catch while grasping and pulling back on the charging handle, leaving the bolt and carrier latched open to the rear.
3. Return charging handle fully forward until it locks and remove finger from bolt catch.
4. Set safety selector lever (located on both sides of the lower receiver) to "SAFE"; this will lock the trigger.



5. With bullet points facing forward, insert the loaded magazine into the magazine well and push upward until it stops and is locked by the magazine catch.

When the magazine is inserted, pull down on the magazine to ensure it is fully seated in the magazine well.

NOTE: Most common magazines loaded to full capacity cannot be seated in any AR15/M4/M16 platform if the bolt is forward. To seat a fully-loaded magazine, be sure the bolt is locked to rear with the bolt catch.

6. Keeping fingers away from the ejection port and muzzle pointed in a safe direction, press in on top of the thumb piece of the bolt catch. This will release the bolt carrier group to move forward and feed a round from the magazine into the chamber.

⚠ DANGER THE FIREARM IS NOW LOADED WITH A ROUND IN THE CHAMBER AND THE HAMMER IS COCKED.

7. You may now close the ejection port dust cover if you wish. The cover is located on the right-hand side of the upper receiver and will open automatically when the first round is fired.

⚠ DANGER NEVER LEAVE YOUR FIREARM COCKED AND READY TO FIRE WITHOUT THE SELECTOR LEVER SET TO "SAFE," AS THIS IS THE FIRE CONDITION AND IS EXTREMELY DANGEROUS. YOUR FIREARM CAN EASILY BE ACCIDENTALLY DISCHARGED, CAUSING INJURY, DEATH, OR DAMAGE TO PROPERTY.



⚠WARNING THIS FIREARM MAY DISCHARGE ACCIDENTALLY WHEN A ROUND IS FED INTO THE CHAMBER IF IT IS DROPPED OR RECEIVES A BLOW TO THE MUZZLE OR FRONT OF THE FIREARM (THIS CAN OCCUR REGARDLESS OF THE POSITION OF THE HAMMER OR ANY OF THE VARIOUS SAFETY DEVICES). THEREFORE, EXTRA CARE AND STRICT ADHERENCE TO THESE INSTRUCTIONS BY THE FIREARM'S USER IS MANDATORY FOR MINIMIZING THE RISK OF ACCIDENTS.

4.8
UNLOADING

⚠WARNING **ALWAYS UNLOAD YOUR FIREARM IMMEDIATELY AFTER USE AND PRIOR TO CLEANING AND STORAGE TO MINIMIZE THE RISK OF ACCIDENTAL DISCHARGE.**

TO UNLOAD:

NOTICE **Read safety instructions. Keep your firearm pointing in a safe direction. Do not touch the trigger and keep hands away from the ejection port.**

1. Set the safety selector lever to "SAFE."

   NOTE: The hammer must be cocked to place this firearm on "SAFE."

2. Press the magazine catch and remove the magazine.
3. Pull the charging handle to the rear and push in lower portion of bolt catch. If a round was in the chamber, it should have been ejected. If the last round was fired, the bolt carrier group should already be locked to the rear provided a magazine was in place.
4. Look into the chamber through the ejection port to make sure the chamber is empty.



5. When the magazine is removed and the chamber is empty, push the top portion of the bolt catch to allow the bolt carrier group to return forward.
6. Remove remaining live rounds by sliding them forward out of the magazine.
7. Collect live ammunition for safe storage and spent cartridge cases for disposal.

4.9
FIRING

Before firing, practice your stance, sight picture, and breathing for steady aim with your firearm UNLOADED. Practice firing on a range before using your firearm for any other type of shooting.

⚠WARNING ALWAYS WEAR AND ENCOURAGE OTHERS TO WEAR EAR PROTECTION WHEN SHOOTING, ESPECIALLY ON A RANGE. WITHOUT EAR PROTECTION, THE NOISE FROM YOUR FIREARM AND OTHER FIREARMS CLOSE TO YOU COULD LEAVE A "RINGING" IN YOUR EARS FOR SOME TIME AFTER FIRING, WHILE THE CUMULATIVE LONG-TERM EFFECT COULD BE PERMANENT HEARING LOSS.

⚠WARNING ALWAYS WEAR AND ENCOURAGE OTHERS TO WEAR PROTECTIVE SHOOTING GLASSES THAT MEET THE MINIMUM REQUIREMENTS OF THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) Z87.1. ANSI Z87.1-RATED GLASSES PROTECT YOUR EYES AGAINST HIGH-PRESSURE GAS, EJECTED MATERIAL, AND HIGH-SPEED DEBRIS NORMALLY ASSOCIATED WITH FIREARMS USAGE. FLYING PARTICLES MAY DAMAGE EYES AND CAUSE BLINDNESS; PROTECTIVE SHOOTING GLASSES SHOULD PREVENT SUCH INJURY.

⚠WARNING READ SAFETY INSTRUCTIONS (SECTION 3). KEEP YOUR FIREARM POINTING IN A SAFE DIRECTION. DO NOT TOUCH THE TRIGGER AND KEEP HANDS AWAY FROM THE EJECTION PORT.

1. Load the firearm as previously described.
2. Grasp firearm with one hand on handguard and other hand on pistol grip with index finger resting along outside of trigger guard. Raise firearm and pull buttstock firmly into shoulder; adjust buttstock as necessary.
3. Aim by aligning target with front and rear sights.
4. Move safety selector lever to "SEMI."
5. Keeping steady aim, place index finger on trigger and squeeze straight back until trigger releases hammer. Don't jerk the trigger as you will disturb your aim and ruin your accuracy. To fire the second and subsequent rounds, all that is necessary is to release the trigger and squeeze it again after every shot until you have completed firing or emptied the magazine.

⚠WARNING **THIS IS A SEMI-AUTOMATIC FIREARM AND IS IMMEDIATELY LOADED AND READY TO FIRE AFTER EACH SHOT UNTIL THE MAGAZINE IS EMPTY. TO UNLOAD THE FIREARM, THE MAGAZINE MUST BE REMOVED, AND THE BOLT CARRIER GROUP MUST BE PULLED TO THE REAR WITH THE CHARGING HANDLE TO EXTRACT ANY REMAINING ROUND FROM THE CHAMBER.**

⚠WARNING **THIS FIREARM CAN ALSO BE FIRED WITHOUT A MAGAZINE IN PLACE.**

6. Release trigger, remove finger from trigger, and set selector lever to "SAFE." If you have fired the last round from the magazine, the bolt will be held to the rear so that the firearm can quickly be reloaded by replacing the magazine, or the chamber can be inspected to make sure it is empty.

⚠WARNING **WHILE FIRING, IF YOU NOTICE A DIFFERENCE IN SOUND OR RECOIL, STOP FIRING. A BULLET COULD BE STUCK IN THE BARREL. IF YOU FIRE AGAIN BEFORE CLEARING THE BLOCKAGE, THE BARREL MAY BULGE OR BURST AND CAUSE INJURY. IF THIS OCCURS, RETRACT THE BOLT SLOWLY TO REMOVE AND IDENTIFY THE FIRED CARTRIDGE CASE. CLEAR THE FIREARM AND MAKE SURE THE BORE IS CLEAR. ANY UNBURNED PROPELLANT OR OBSTRUCTION IN THE BORE MUST BE REMOVED BEFORE FIRING AGAIN TO PREVENT RISK OF DAMAGE AND INJURY.**

⚠WARNING **IF YOUR FIREARM FAILS TO FIRE, HOLD IT, KEEPING IT POINTED TOWARD THE TARGET AND WAIT 30 SECONDS. IF A HANGFIRE (SLOW IGNITION) HAS OCCURRED, THE ROUND SHOULD FIRE WITHIN 30 SECONDS. IF THE ROUND DOES NOT FIRE, REMOVE THE MAGAZINE, EJECT THE ROUND AND EXAMINE THE PRIMER. IF THE FIRING PIN INDENT ON THE PRIMER IS LIGHT, MISALIGNED OR NONEXISTENT, HAVE YOUR FIREARM EXAMINED BY A COMPETENT GUNSMITH. IF THE FIRING PIN INDENT ON THE PRIMER APPEARS NORMAL (IN COMPARISON WITH PREVIOUSLY FIRED ROUNDS) ASSUME FAULTY AMMUNITION; SEGREGATE THE MISFIRED ROUND FROM OTHER LIVE AMMUNITION AND EMPTY CASES; RELOAD AND CARRY ON FIRING.**

NOTE: On Daniel Defense firearms (or any other AR platform), it is normal for a light firing pin indent to appear on cartridges which have been fed into the chamber, but not fired.

NOTE: Dispose of misfired rounds in accordance with ammunition manufacturer's instructions.

⚠WARNING ALWAYS KEEP YOUR FIREARM POINTING IN A SAFE DIRECTION.

⚠WARNING UNLOAD FIREARM AS DESCRIBED IN SECTION 4.8.

⚠WARNING IF YOU LOAD YOUR FIREARM BUT DO NOT FIRE IT, KEEP THE SAFETY SELECTOR LEVER SET TO "SAFE" UNTIL YOU ARE READY TO FIRE.

⚠ DANGER NEVER LEAVE YOUR FIREARM COCKED AND READY TO FIRE WITHOUT SELECTOR LEVER SET TO "SAFE," AS THIS IS THE FIRE CONDITION AND IS EXTREMELY DANGEROUS. YOUR FIREARM CAN EASILY BE ACCIDENTALLY DISCHARGED, CAUSING INJURY, DEATH, OR DAMAGE TO PROPERTY.

5.0
MAINTENANCE

Your Daniel Defense firearm will perform better, last longer and remain safer when it is properly maintained. Follow the instructions in this section to keep your firearm in good condition.

⚠WARNING **MAKE SURE THAT THE MAGAZINE IS REMOVED AND THAT THE FIREARM IS UNLOADED SO THAT IT CANNOT BE FIRED.**

⚠WARNING **ALLOW FIREARM TO COOL TO ROOM TEMPERATURE.**

⚠WARNING **ALWAYS WEAR SAFETY GLASSES TO PROTECT YOUR EYES FROM NOT ONLY SOLVENTS AND OILS, BUT ALSO PARTS THAT ARE UNDER SPRING TENSION, WHICH CAN BE PROPELLED WITH ENOUGH FORCE TO CAUSE SEVERE INJURY.**

5.1
STRIPPING FOR CLEANING

NOTICE **To prevent loss of small components during stripping and cleaning, lay them out in an orderly fashion. Make sure all stripped small components and parts are reinstalled properly after cleaning.**

1. Read and understand all safety instructions.
2. Press in the rear takedown pin from the left-hand side of lower receiver and pull the pin out on the right-hand side of the receiver until it comes to a positive stop.
3. Pivot the lower receiver down and away from the upper receiver.
4. If required for more convenience, completely separate the upper receiver from the lower receiver by pressing the front takedown pin from the left-hand side of the lower receiver and pulling out the pin on the right-hand side of the receiver until it comes to a positive stop.
5. Pull charging handle to the rear and remove the bolt carrier group.
6. Remove the charging handle by pulling it backward to the keyway and then down and out of the upper receiver.
7. Push in the firing pin retaining pin from right to left of the bolt carrier group and remove the pin by pulling it out to the left.
8. Tilt the bolt face up and remove the firing pin (and firing pin return spring—for DD5 only).
9. Push the bolt in toward the carrier until bolt rotates and comes to a stop, then turn the bolt cam pin through 90° (not necessary on DD5).
10. Remove the cam pin by lifting it out and away from the bolt and bolt carrier.
11. Pull the bolt forward and remove it from the bolt carrier.
12. Handguard maintenance:
    a. If dirt or debris has accumulated in and around the handguard, use compressed air for removal.
    b. Lubricate as needed.
    c. If removal of handguard is deemed necessary, please take firearm to a qualified and competent gunsmith.
    d. Removal/installation instructions and torque specifications are available from Daniel Defense.

    NOTE: Removal is not necessary unless dirt has accumulated in or around the handguard.

13. Remove the buttstock from lower receiver (if equipped):
    a. Push the release lever up and extend the buttstock fully.
    b. Pull tabs of buttstock latch, compressing spring completely, and slide buttstock off the receiver extension.
14. Depress the buffer, maintaining pressure as the buffer is under spring tension, to prevent it from being ejected when the buffer retainer pin is depressed. Depress the buffer retainer pin to permit the buffer and the action spring to move forward. Depress the hammer to allow the action spring and the buffer assembly to continue moving forward and be completely removed from the receiver extension.

NOTICE **Do not strip your firearm further than previously described. If additional maintenance is required, see "Servicing and Repairing" later in this instruction manual. Reassemble your firearm by reversing the stripping procedure already described, and make sure that the cam pin is properly installed.**

⚠WARNING IF YOU INSTALL THE FIRING PIN WITHOUT THE FIRING PIN RETURN SPRING AND LATER ATTEMPT TO FIRE THE FIREARM, DAMAGE TO THE FIREARM OR INJURY MAY RESULT (DD5 ONLY).

⚠WARNING IF YOU ATTEMPT TO FIRE WITHOUT THE BOLT CAM PIN INSTALLED, DAMAGE TO FIREARM OR INJURY MAY RESULT.

5.2
WHEN TO CLEAN

BEFORE FIRING, make sure that the barrel and the chamber are clean and dry. After firing, clean your firearm as soon as possible so that the job will be easier and there will be less opportunity for corrosion to start.

PERIODICALLY, when your firearm has not been fired, we suggest you clean it when necessary and at least once or twice a year in a temperate climate, or as often as once a week in a tropical climate.

IF YOU CARRY A LOADED FIREARM, UNLOAD it and clean when necessary and at least once a month. If you get your firearm wet, clean it as soon as possible.

5.3
HOW TO CLEAN

Materials:

- Personal Protective Equipment: chemical-resistant gloves, mask, and eye protection
- Good-quality cleaning rod (coated is preferable for protecting barrel)
- Brass jag or loop of correct caliber (5.56mm = .22 caliber, 6.8mm = .277 caliber, 300BLK = .30 caliber, .308 win = .30 caliber, 6.5 Creedmoor)
- Cotton bore-cleaning patches (cut to size to fit snuggly in bore)
- Nylon bore brush of correct caliber (see above for size)
- Nylon chamber brush of correct caliber (5.56, 300BLK, 6.8 = M16/AR-15 Brush, .308 = 308AR Brush, .260 and 6.5 = 308AR Brush)
- Nylon bristle all-purpose cleaning brush or toothbrush
- Firearm cleaning solution: Use only high-quality firearm cleaning solutions when cleaning your Daniel Defense firearm. There are many good options when it comes to cleaning your firearm. Check with the cleaning solution's manufacturer to see if it is correct for your application, and be sure to follow their directions carefully.

NOTICE **Be sure to remove or neutralize any ammonia-based cleaning solutions from the firearm as they can cause permanent damage.**

Optional but recommended equipment:

- Bore guide: this helps to prevent users from damaging the barrel by keeping cleaning rod in line with the bore.
- Bore light: inserted at muzzle, a bore light will help user inspect rifling from the rear of receiver while keeping firearm pointed in a safe direction.
- Chamber mop: helps clean chamber and more effectively than chamber brush alone.

Procedure:

⚠WARNING ENSURE THAT THE FIREARM IS NOT LOADED.

⚠WARNING ALLOW FIREARM TO COOL TO ROOM TEMPERATURE BEFORE ATTEMPTING CLEANING/MAINTENANCE.

⚠WARNING USE PROPER PROTECTIVE EQUIPMENT: GOGGLES, MASK, AND CHEMICAL GLOVES.

NOTICE Improper cleaning techniques can permanently damage the firearm and lead to degradation in accuracy and reduced reliability.

⚠WARNING CLEANING FIREARMS, DISCHARGING FIREARMS IN POORLY VENTILATED AREAS, OR HANDLING AMMUNITION MAY RESULT IN EXPOSURE TO LEAD AND OTHER HARMFUL SUBSTANCES WHICH ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS, REPRODUCTIVE HARM, AND OTHER SERIOUS PHYSICAL INJURY. HAVE ADEQUATE VENTILATION AT ALL TIMES. BE SURE TO ALWAYS WASH HANDS THOROUGHLY AFTER POSSIBLE EXPOSURE.

1. Strip for cleaning as previously described.

   NOTE: Avoid contact between the cleaning rod and the muzzle as resultant wear will greatly reduce accuracy.

2. Attach a cotton flannel patch to end of the cleaning rod, insert it in the chamber and pass the rod and patch down through the barrel and out the muzzle. Remove used patches at muzzle to avoid pulling it back through the bore. Repeat, changing patches with each pass through the barrel, until the last patch comes out clean.

   NOTE: Avoid pulling dirty patches back through the barrel.

3. Visually inspect the barrel; if it is clean, proceed directly with step 8, but if it remains dirty, continue with step 4.

   NOTE: Items 4 & 5 should be applicable only after firing.

4. Attach nylon wire-bristle bore-cleaning brush to cleaning rod and dip brush in firearm-cleaning solution. Thoroughly scrub out barrel, passing the brush all the way through before reversing the movement. If you try to change direction with the brush in barrel, the brush can get stuck and cause damage to barrel.

5. Attach the larger chamber-cleaning brush to the cleaning rod, dip the brush in bore-cleaning solution, and clean the chamber. Use a minimum of five plunge strokes and three 360° clockwise rotational strokes.
6. Repeat steps 2 and 3.
7. Use an all-purpose nylon cleaning brush and firearm-cleaning solution to clean all carbon and powder residue from around the gas tube in the upper receiver, bolt locking lugs, bolt rings, firing pin, bolt cam pin, lip of the extractor, and inside the bolt carrier group.

NOTICE Do not use a wire brush on aluminum surfaces such as the upper and lower receivers and the handguards. If cleaning is necessary, avoid scratches and wear by using a small nylon brush or flannel patch.

8. Wipe all components clean and dry and inspect them for excessive wear, corrosion or mechanical damage. If any of these conditions are discovered, have them corrected before firing again. (See Servicing and Repair later in this section.)
9. Lightly dampen a flannel patch with gun oil and pass it once through the barrel, leaving a thin film of oil on the inside surface. Leave this film of oil on the surface if firearm is to be stored. If it is not being stored, or if it is being removed from storage for use, pass the dry patch through the barrel and chamber to remove as much oil as possible.
10. Check that flannel or brush bristles have not become lodged in any part of firearm, then lightly lubricate (See Section 5.4).
11. Remove any gun-cleaning solution, oil, and fingerprints from the outside surfaces of the firearm. (Finger moisture, if left, could start a corrosion process.)
12. Reassemble the firearm:
    a. Insert the buffer/action spring and buffer into the receiver extension/ buffer tube on the rear of the lower receiver. The buffer retaining pin should prevent any forward movement of the buffer/action spring.
    b. Install the buttstock onto the lower receiver. Pull the release lever down and push the buttstock forward on the receiver extension/buffer tube.
    c. Insert the bolt into the bolt carrier. Take care to ensure the chamfered edge of the bolt body where the cam pin sits is facing downward. The cam pin should be inserted from the opposite side of the chamfered edge. Another way to ensure proper bolt installation is to verify that the extractor is oriented to the right side of the bolt carrier.
    d. Insert the cam pin into the bolt and bolt carrier.
    e. Rotate the cam pin 90 degrees to allow the firing pin to fully seat into the bolt (not necessary on DD5).
    f. Insert the firing pin (and the firing pin return spring – for DD5 only).
    g. Insert the firing pin retaining pin from the left to right of the bolt carrier.
    h. Install the charging handle into the upper receiver by pushing it forward approximately one inch (1.5" on DD5) into the keyway and then up into

the upper receiver. You will not insert the charging handle all of the way until it latches.

i. With the bolt fully extended forward, install bolt carrier group into the upper receiver. Orient the gas key so that it fits into the charging handle. Slide entire bolt carrier group forward and latch the charging handle into the upper receiver.

j. Attach the upper and lower receivers together by orienting the front upper receiver pivot-pin lug into the corresponding recess in the lower receiver. Push the pivot pin from right to left until fully seated.

k. Pivot the rear end of the receivers together and push the rear takedown pin from right to left until fully seated.

5.4
LUBRICATING/PRESERVATION

Use only high-quality gun oil when lubricating your Daniel Defense firearm. There are many good options when it comes to lubricating your firearm. Check with the lubricant's manufacturer to see if it is correct for your application.

Lubrication Points:

- Bolt Carrier Group:
  - Carrier Rails
  - Cam Pin
  - Bolt Lugs
  - Extractor Pin
  - Extractor
  - Gas Rings
  - Firing Pin
  - Retaining Pin
  - Ejector(s)
- Fire Control Group:
  - Hammer
  - Trigger
  - Pins
  - Disconnector
  - Selector
- Mag Catch
- Bolt Catch
- Bolt Release (DD5)
- Ejection Port Cover
- Forward Assist
- Takedown Pin
- Pivot Pin
- Buffer Retaining Pin
- Buffer Spring
- Buttstock Latch
- Charging Handle
- Sight Aperture Pivot Point
- Sight Adjustment Wheel
- Front Sight Detent

Preservation:

NOTICE **Areas with excessive humidity, salt (coastal areas), dust, etc., will require more aggressive preservation efforts.**

The use of quality preservatives/corrosion inhibitors can extend the life of the firearm and make cleaning easier. They provide a barrier between the firearm and contaminants (dirt, dust, fouling, etc.) and corrosives (moisture, salt, etc.). It is important to protect areas of your firearm with a high-quality gun oil/lubricant or preservative, especially the steel components, including the barrel, gas block, muzzle device, pins, forward assist, ejection port cover, etc. Many commercially available gun oil/lubricants are also designed to be preservatives. Check with the lubricant's manufacturer to see if it is suitable for use as a preservative/corrosion inhibitor.

5.5
CLEANING THE MAGAZINE

For all cleaning, maintenance, and care instruction, please refer to the magazine manufacturer.

5.6
CLEANING PROCEDURE FOR DDM4ISR® BARREL AND SUPPRESSOR

The DDM4ISR Suppressed Barrel assembly requires specific cleaning techniques due to the integral nature of the sound suppressor. While the baffle can be removed each time for cleaning of the barrel, it is NOT recommended unless absolutely necessary. During normal use, cleaning with a BoreSnake (Hoppe's BoreSnake .308 24015 or similar) and quality bore solvent will be all that is needed to maintain the barrel of the rifle. The DDM4ISR Sound Suppressor itself is designed to require minimum maintenance, and frequent cleaning of the internals is not required or recommended.

BARREL CLEANING PROCEDURE

1. Remove the magazine, place the firearm on safe, and make sure that the chamber is empty.
2. Remove the upper receiver from the lower receiver by pushing out the takedown and pivot pins.
3. Remove the bolt carrier group and charging handle from the upper receiver.
4. Apply a high-quality bore solvent (Kano Kroil recommended) to the Hoppe's BoreSnake forward of the brush.
5. Holding the upper receiver group vertical, muzzle down, take the weighted end of the BoreSnake and insert into the barrel from the breech. Allow it to pass through the baffle core of the sound suppressor and out the muzzle.
6. Pull the BoreSnake through the barrel, and repeat 2-3 times (or as necessary).
7. Apply a small amount of high-quality gun oil to the tail of the BoreSnake and pass through the barrel a final time.

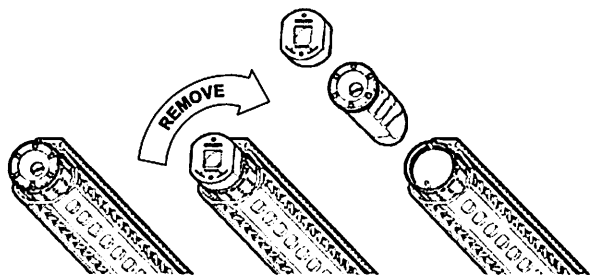
⚠WARNING DO NOT USE A CLEANING ROD AND PATCHES TO CLEAN THE BARREL WITH THE BAFFLE INSTALLED. YOU MAY DAMAGE THE BAFFLE CORE OR LEAVE PATCHES IN THE SUPPRESSOR ASSEMBLY. IF A CLEANING ROD MUST BE USED, REMOVE THE BAFFLE FROM THE SUPPRESSOR.

⚠WARNING **MAKE SURE THAT THE MAGAZINE IS REMOVED AND THAT THE FIREARM IS UNLOADED SO THAT IT CANNOT BE FIRED.**

⚠WARNING **WEAR SAFETY GLASSES AND CHEMICAL-RESISTANT GLOVES.**

5.7
BARREL CLEANING PROCEDURE (CLEANING ROD, BAFFLE REMOVED)

NOTICE **This procedure should only be used in the event that the boresnake cleaning method fails to adequately clean the barrel or there is an obstruction (dirt, debris) in the suppressor bore that cannot be easily removed. The DDM4ISR sound suppressor does not require regular cleaning and will function without degradation in sound reduction for many thousand rounds.**



1. Remove the magazine, place the firearm on safe, and make sure that the chamber is empty.
2. Remove the upper receiver from the lower receiver by pushing out the takedown and pivot pins.
3. Remove the bolt carrier group and charging handle from the upper receiver.
4. Remove the baffle from the sound suppressor/barrel assembly by using the provided removal tool by following the instructions in the manual. The baffle may have become stuck due to excessive carbon fouling, and, it is recommended that the following baffle removal procedure be followed:
    a. Immerse the muzzle half of suppressor in Kano Kroil overnight. This can be done by using a small container and by positioning the upper receiver group vertically so that only the muzzle end is submerged. This will reduce the amount of solvent needed to loosen the fouling around the baffle.
    b. Position the upper receiver in a bench vise utilizing an upper receiver bench block that supports the barrel extension lugs.

c. Using a torque limiting (preferred) or standard 1/2" square drive wrench and the provided tool, remove the baffle from the suppressor tube. The threads are left hand so turn clockwise to loosen.

d. Once the baffle is removed, the barrel can be cleaned with a cleaning rod, brush, jag, and patches as normal. The inside of the suppressor tube and the baffle core can also be cleaned using standard bore solvents and brushes. Carbon fouling on the internals of a sound suppressor is normal and does not affect function.

e. Re-install the baffle per the instructions provided in the manual, remembering that the threads are left-handed. Torque the baffle to 20-25 lb-ft. Excessive torque of the baffle can damage the suppressor, barrel, or both, increasing the likelihood of a baffle strike. It is recommended that this procedure be avoided unless absolutely necessary, and be performed by a qualified gunsmith.

⚠WARNING DO NOT OVER TIGHTEN PAST 25 LB-FT. THIS MAY DAMAGE THE SUPPRESSOR ASSEMBLY AND RESULT IN THE PROJECTILE STRIKING THE BAFFLE UPON FIRING.

BAFFLE CLEANING PROCEDURE

1. With the baffle removed as outlined in the previous section, soak the baffle in a quality solvent such as Kano Kroil, Hoppe's No. 9, or similar product until carbon begins to loosen. (Wear at the rear of the baffle—closest to the barrel muzzle—is normal and will not affect function. The DDM4ISR baffle is designed to withstand many thousand rounds without changes in sound reduction.)
2. With a nylon brush, gently scrub the loosened carbon from the baffle. Pay special attention to the threaded portion of the baffle.
3. Lightly oil the threads and re-install per instructions in previous section.

5.8
STORAGE

⚠WARNING ALWAYS UNLOAD YOUR FIREARM FOR STORAGE AND STORE AMMUNITION SEPARATELY!

Store your firearm and ammunition securely locked in separate locations out of the reach and sight of children. (Children are naturally curious and do not always believe or understand the real danger of firearms or the responsibilities of safely handling them.)

NOTE: Do not store your firearm in an airtight container, and do not seal or attempt to seal the barrel to exclude dust, as an internal steel surface is more likely to corrode.

5.9
SERVICING AND REPAIRING

Should your firearm require adjustment or repair, make sure it is NOT LOADED and call Daniel Defense for specific instructions on where to send the firearm. For spare parts, seek advice from your dealer, who should have up-to-date information on how to best obtain genuine Daniel Defense parts.

An illustration and list of part names are included in the next section of this instruction manual to help you identify the parts you need, but it is most important to note that all parts are not available for sale. Those parts that are available should be installed by Daniel Defense or by a competent gunsmith. When ordering parts, please provide the part name as it is given on the parts list along with the serial number of the firearm.

NOTICE If you make unauthorized adjustments or use unauthorized parts, Daniel Defense will not assume responsibility for the functioning of this firearm.

NOTE: This firearm is manufactured to perform properly with the original parts as designed. It is your duty to make sure any parts you buy are installed correctly and that neither replacements nor originals are altered or changed. This is why sending it back to the manufacturer is highly recommended. Your firearm is a complex tool with many parts that must relate correctly to other parts.

Putting a firearm together incorrectly or with modified parts can result in a damaged firearm and danger, injury, or death to you and others through malfunction. Always let a qualified gunsmith work on your firearm and check any work you think was not performed by a gunsmith. WE AT DANIEL DEFENSE THINK THIS IS A SMALL PRICE TO PAY FOR FIREARMS SAFETY.

Various Federal and State laws and local ordinances govern the transfer and transportation of firearms. Take the advice of the dealer in your state on how to send your firearm to Daniel Defense. Before shipping your firearm, take note of some important points to remember:

⚠WARNING **MAKE SURE THE MAGAZINE IS EMPTY AND THE FIREARM IS NOT LOADED. (See Section 4.8)**

1. Prior to sending a firearm to Daniel Defense, obtain an RMA (Return Merchandise Authorization) by contacting a Warranty Administrator at: **Danieldefense.com/contacts** or by calling **1-866-554-GUNS (4867).**

2. Do not send ammunition, accessories, presentation boxes, or explosive components.

3. Daniel Defense's address for receiving packages is:

DD CUSTOMER SUPPORT
1334 ORACAL PARKWAY
BLACK CREEK, GA 31308

NOTE: Do not indicate the contents or include "DANIEL DEFENSE" in the address on the package so that an inquisitive thief is not attracted to it by such information.

FIREARM RECORD

Daniel Defense Product: _____

Firearm Serial #: _____

Suppressor Serial #: _____

Caliber: _____

Purchased From: _____

Date Purchased: _____

Purchase Price: _____

6.0
PARTS ILLUSTRATIONS & LIST

6.1 **DDM4® UPPER RECEIVER GROUP** PARTS ILLUSTRATION

6.2 **DDM4® LOWER RECEIVER GROUP** PARTS ILLUSTRATION

6.3 **DD4™ LOWER RECEIVER GROUP** PARTS ILLUSTRATION

6.4 **DD5® UPPER RECEIVER GROUP** PARTS ILLUSTRATION

6.5 **DD5® LOWER RECEIVER GROUP** PARTS ILLUSTRATION

6.6 **DDM4ISR® LOWER RECEIVER GROUP** PARTS ILLUSTRATION

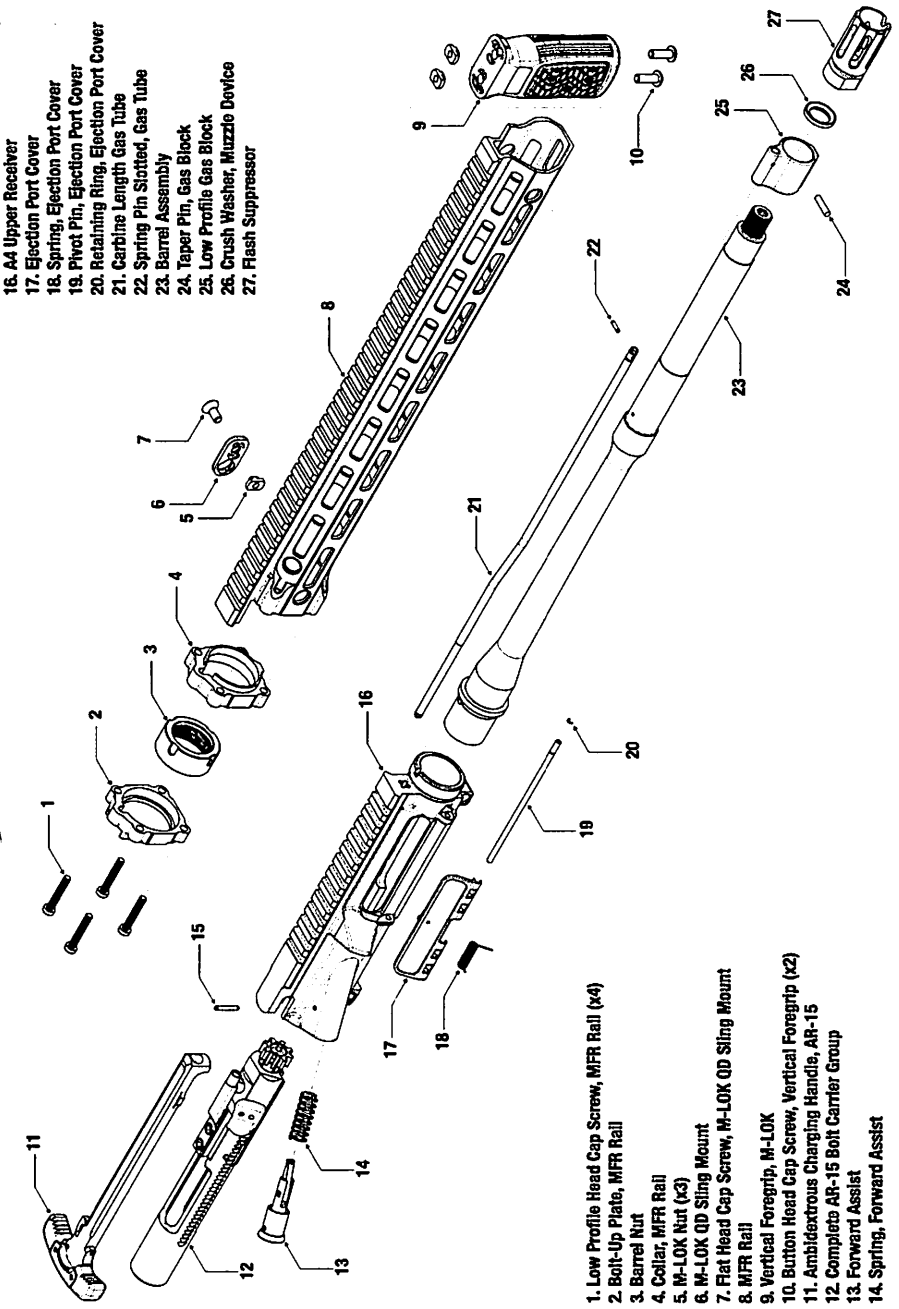
6.7 **DD4™ / DDM4® BOLT CARRIER GROUP** PARTS ILLUSTRATION

6.8 **DD5® BOLT CARRIER GROUP** PARTS ILLUSTRATION

6.1 DDM4® UPPER RECEIVER GROUP

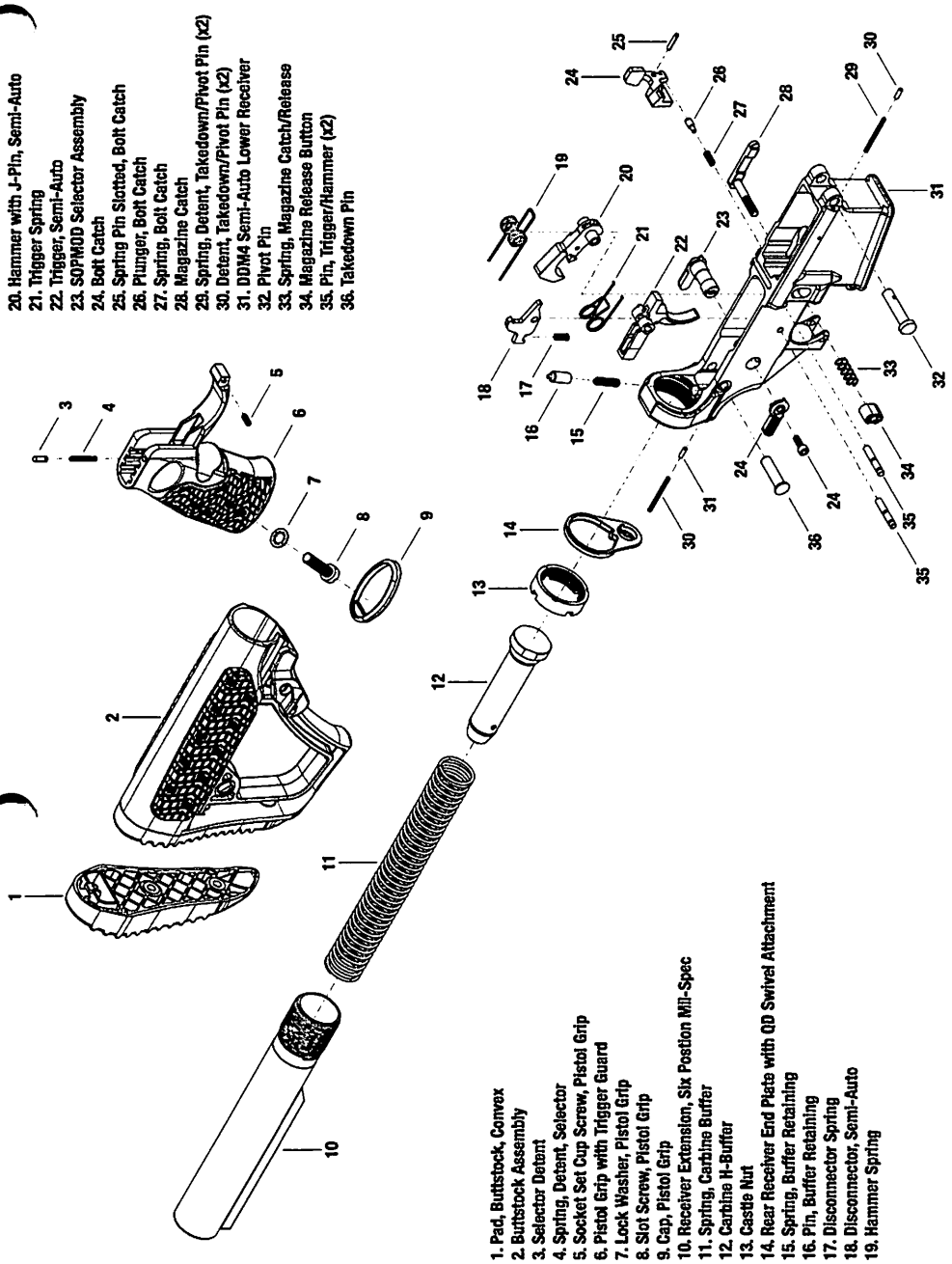
PARTS ILLUSTRATION

DDM4® V7® SHOWN. SOME PARTS VARY BY PRODUCT.



1. Low Profile Head Cap Screw, MFR Rail (x4)
2. Bolt-Up Plate, MFR Rail
3. Barrel Nut
4. Collar, MFR Rail
5. M-LOK Nut (x3)
6. M-LOK QD Sling Mount
7. Flat Head Cap Screw, M-LOK QD Sling Mount
8. MFR Rail
9. Vertical Foregrip, M-LOK
10. Button Head Cap Screw, Vertical Foregrip (x2)
11. Ambidextrous Charging Handle, AR-15
12. Complete AR-15 Bolt Carrier Group
13. Forward Assist
14. Spring, Forward Assist
15. Spring Pin Slotted, Forward Ass.
16. A4 Upper Receiver
17. Ejection Port Cover
18. Spring, Ejection Port Cover
19. Pivot Pin, Ejection Port Cover
20. Retaining Ring, Ejection Port Cover
21. Carbine Length Gas Tube
22. Spring Pin Slotted, Gas Tube
23. Barrel Assembly
24. Taper Pin, Gas Block
25. Low Profile Gas Block
26. Crush Washer, Muzzle Device
27. Flash Suppressor

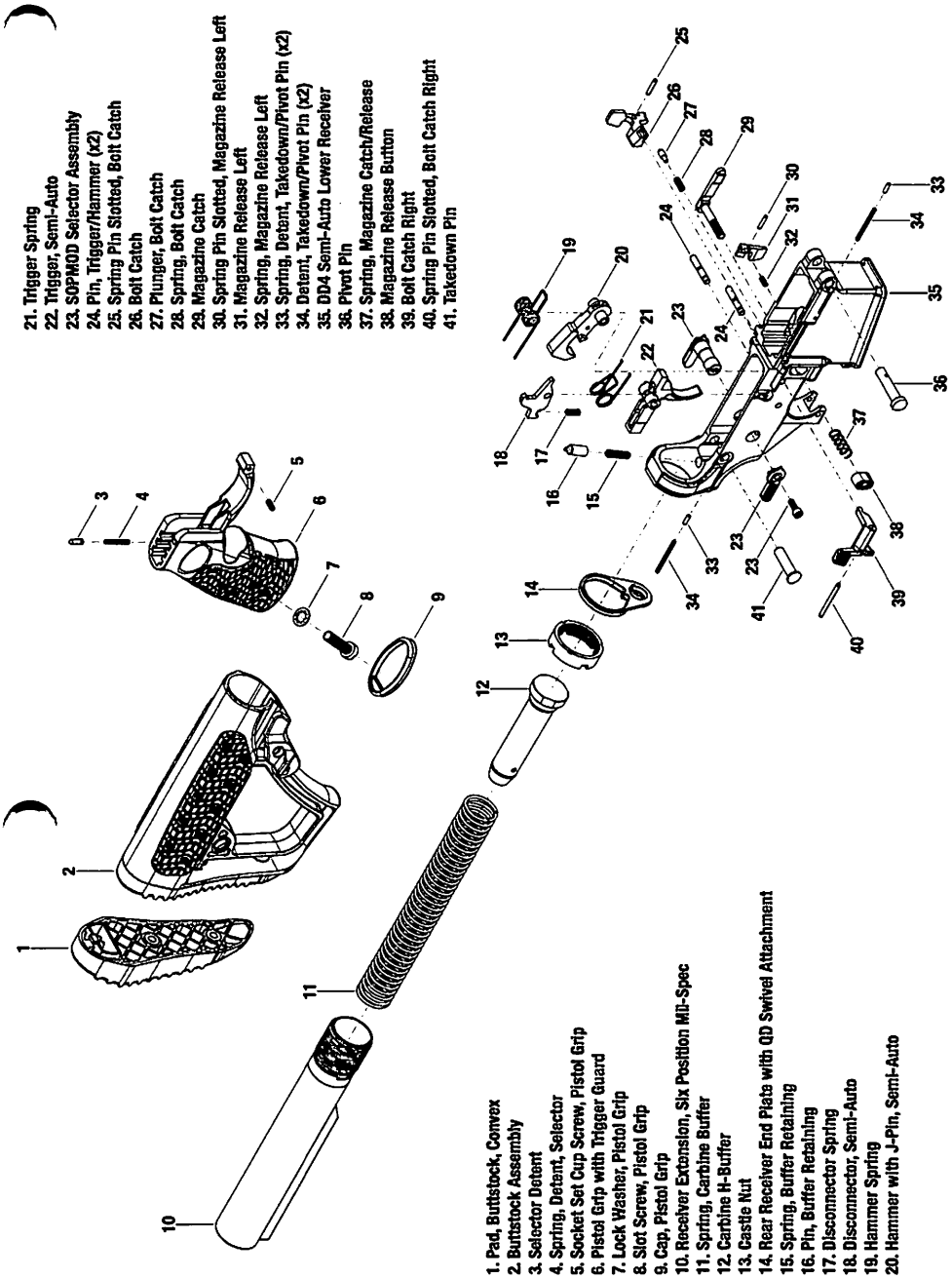
6.2 DDM4® LOWER RECEIVER GROUP
PARTS ILLUSTRATION



1. Pad, Buttstock, Convex
2. Buttstock Assembly
3. Selector Detent
4. Spring, Detent, Selector
5. Socket Set Cup Screw, Pistol Grip
6. Pistol Grip with Trigger Guard
7. Lock Washer, Pistol Grip
8. Slot Screw, Pistol Grip
9. Cap, Pistol Grip
10. Receiver Extension, Six Position Mil-Spec
11. Spring, Carbine Buffer
12. Carbine H-Buffer
13. Castle Nut
14. Rear Receiver End Plate with QD Swivel Attachment
15. Spring, Buffer Retaining
16. Pin, Buffer Retaining
17. Disconnector Spring
18. Disconnector, Semi-Auto
19. Hammer Spring
20. Hammer with J-Pin, Semi-Auto
21. Trigger Spring
22. Trigger, Semi-Auto
23. SOPMOD Selector Assembly
24. Bolt Catch
25. Spring Pin Slotted, Bolt Catch
26. Plunger, Bolt Catch
27. Spring, Bolt Catch
28. Magazine Catch
29. Spring, Detent, Takedown/Pivot Pin (x2)
30. Detent, Takedown/Pivot Pin (x2)
31. DDM4 Semi-Auto Lower Receiver
32. Pivot Pin
33. Spring, Magazine Catch/Release
34. Magazine Release Button
35. Pin, Trigger/Hammer (x2)
36. Takedown Pin

6.3 DD4™ LOWER RECEIVER GROUP

PARTS ILLUSTRATION

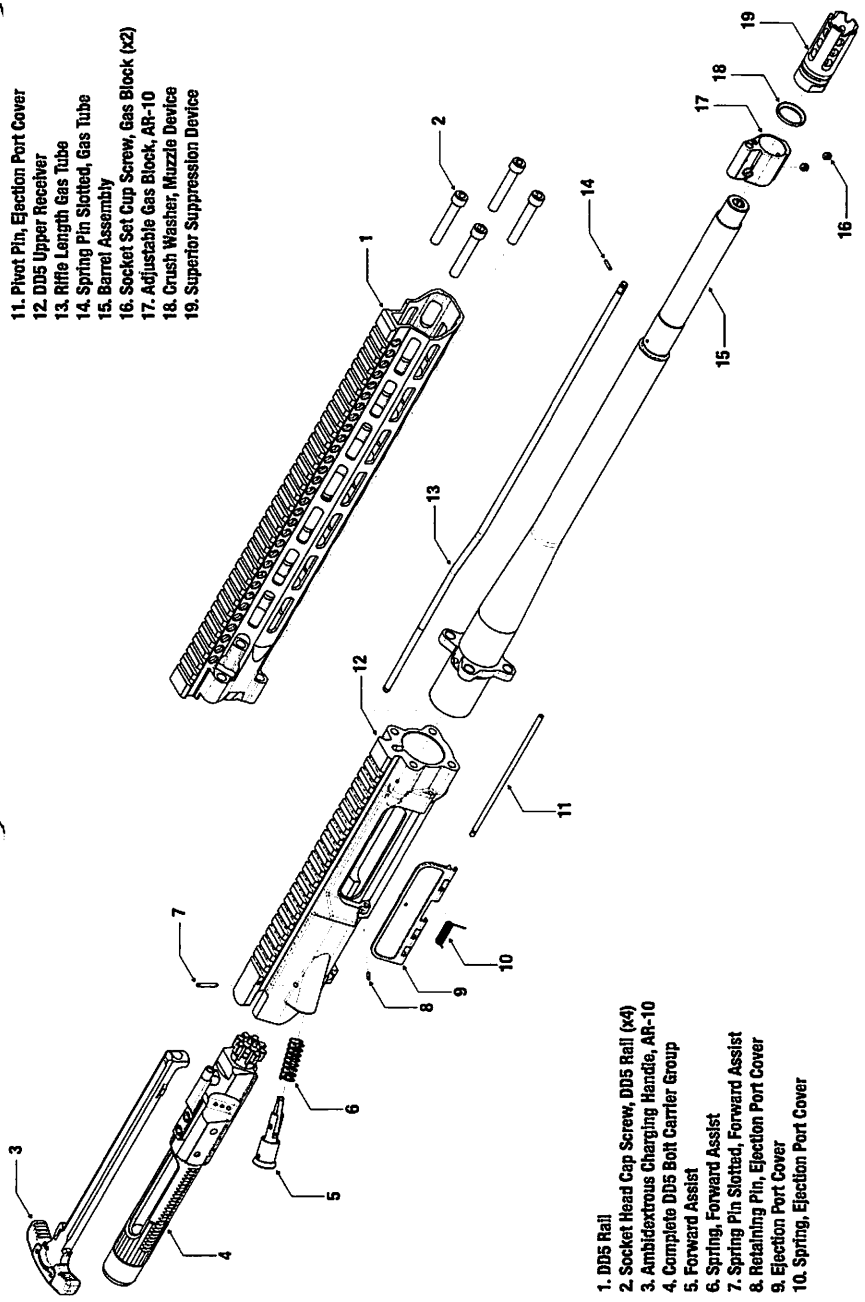


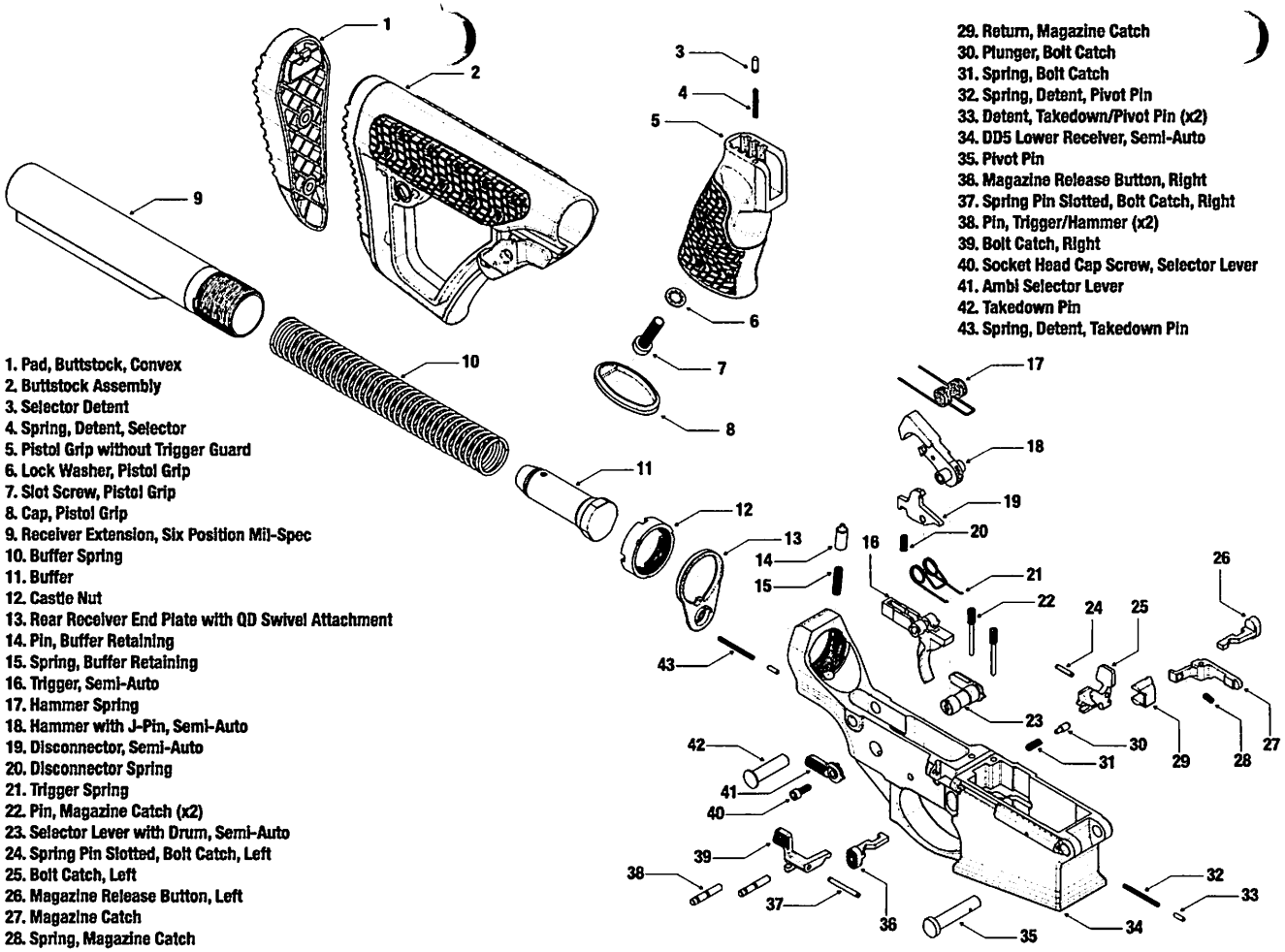
1. Pad, Buttstock, Convex
2. Buttstock Assembly
3. Selector Detent
4. Spring, Detent, Selector
5. Socket Set Cup Screw, Pistol Grip
6. Pistol Grip with Trigger Guard
7. Lock Washer, Pistol Grip
8. Slot Screw, Pistol Grip
9. Cap, Pistol Grip
10. Receiver Extension, Six Position Mil-Spec
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12. Carbine H-Buffer
13. Castle Nut
14. Rear Receiver End Plate with QD Swivel Attachment
15. Spring, Buffer Retaining
16. Pin, Buffer Retaining
17. Disconnector Spring
18. Disconnector, Semi-Auto
19. Hammer Spring
20. Hammer with J-Pin, Semi-Auto
21. Trigger Spring
22. Trigger, Semi-Auto
23. SOPMOD Selector Assembly
24. Pin, Trigger/Hammer (x2)
25. Spring Pin Slotted, Bolt Catch
26. Bolt Catch
27. Plunger, Bolt Catch
28. Spring, Bolt Catch
29. Magazine Catch
30. Spring Pin Slotted, Magazine Release Left
31. Magazine Release Left
32. Spring, Magazine Release Left
33. Spring, Detent, Takedown/Pivot Pin (x2)
34. Detent, Takedown/Pivot Pin (x2)
35. DD4 Semi-Auto Lower Receiver
36. Pivot Pin
37. Spring, Magazine Catch/Release
38. Magazine Release Button
39. Bolt Catch Right
40. Spring Pin Slotted, Bolt Catch Right
41. Takedown Pin

6.4 DD5® UPPER RECEIVER GROUP

PARTS ILLUSTRATION

DD5® V3® SHOWN. SOME PARTS VARY BY PRODUCT.

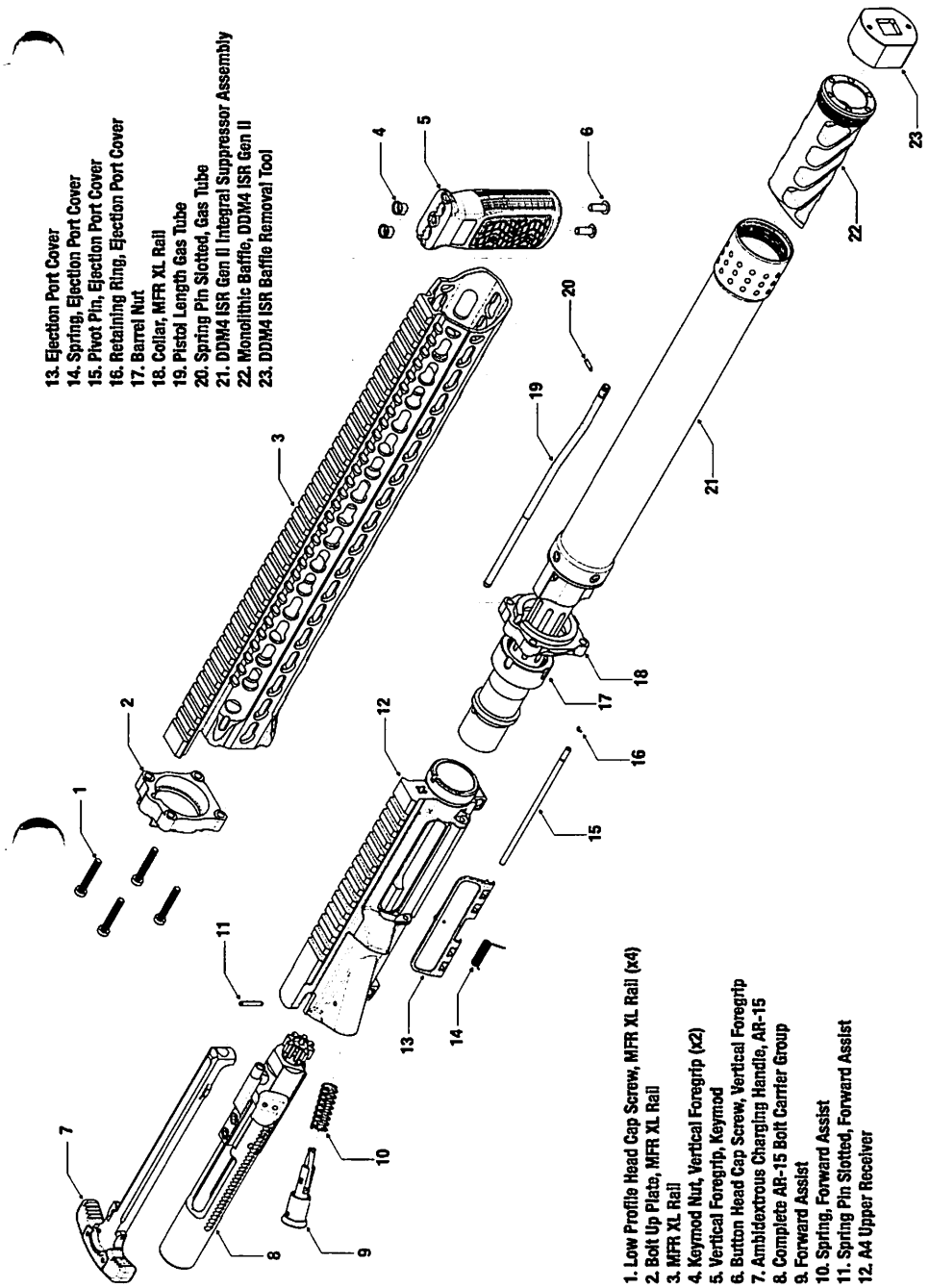




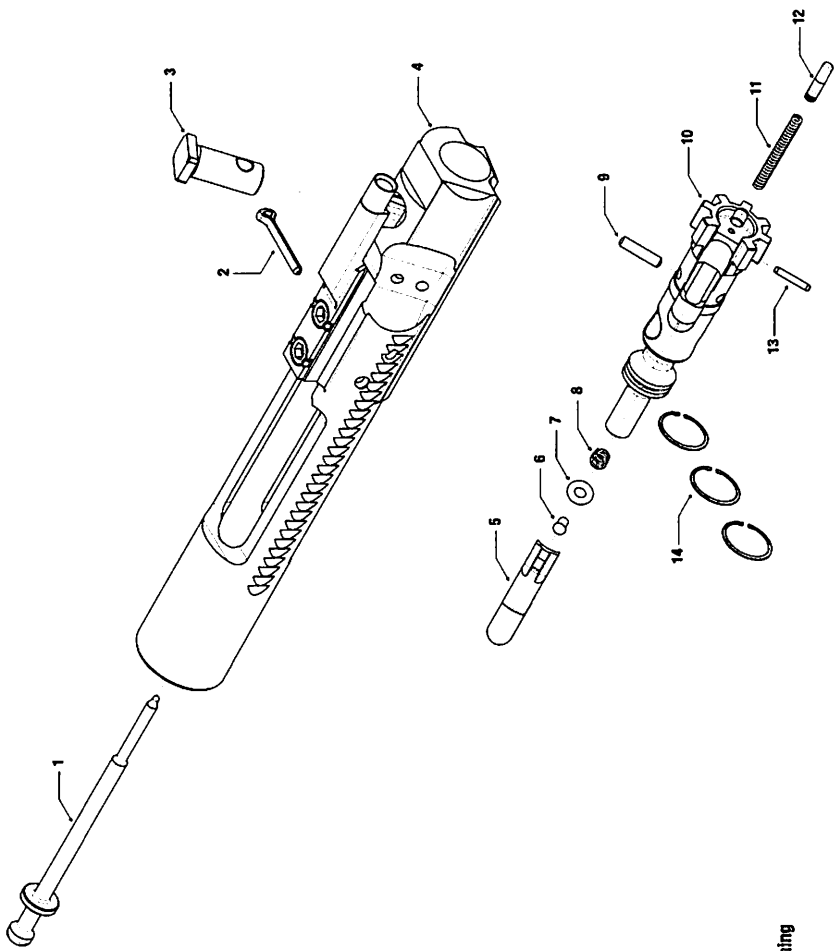
1. Pad, Buttstock, Convex
2. Buttstock Assembly
3. Selector Detent
4. Spring, Detent, Selector
5. Pistol Grip without Trigger Guard
6. Lock Washer, Pistol Grip
7. Slot Screw, Pistol Grip
8. Cap, Pistol Grip
9. Receiver Extension, Six Position Mil-Spec
10. Buffer Spring
11. Buffer
12. Castle Nut
13. Rear Receiver End Plate with QD Swivel Attachment
14. Pin, Buffer Retaining
15. Spring, Buffer Retaining
16. Trigger, Semi-Auto
17. Hammer Spring
18. Hammer with J-Pin, Semi-Auto
19. Disconnector, Semi-Auto
20. Disconnector Spring
21. Trigger Spring
22. Pin, Magazine Catch (x2)
23. Selector Lever with Drum, Semi-Auto
24. Spring Pin Slotted, Bolt Catch, Left
25. Bolt Catch, Left
26. Magazine Release Button, Left
27. Magazine Catch
28. Spring, Magazine Catch
29. Return, Magazine Catch
30. Plunger, Bolt Catch
31. Spring, Bolt Catch
32. Spring, Detent, Pivot Pin
33. Detent, Takedown/Pivot Pin (x2)
34. DD5 Lower Receiver, Semi-Auto
35. Pivot Pin
36. Magazine Release Button, Right
37. Spring Pin Slotted, Bolt Catch, Right
38. Pin, Trigger/Hammer (x2)
39. Bolt Catch, Right
40. Socket Head Cap Screw, Selector Lever
41. Ambi Selector Lever
42. Takedown Pin
43. Spring, Detent, Takedown Pin

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6.6 DDM4ISR® UPPER RECEIVER GROUP
PARTS ILLUSTRATION

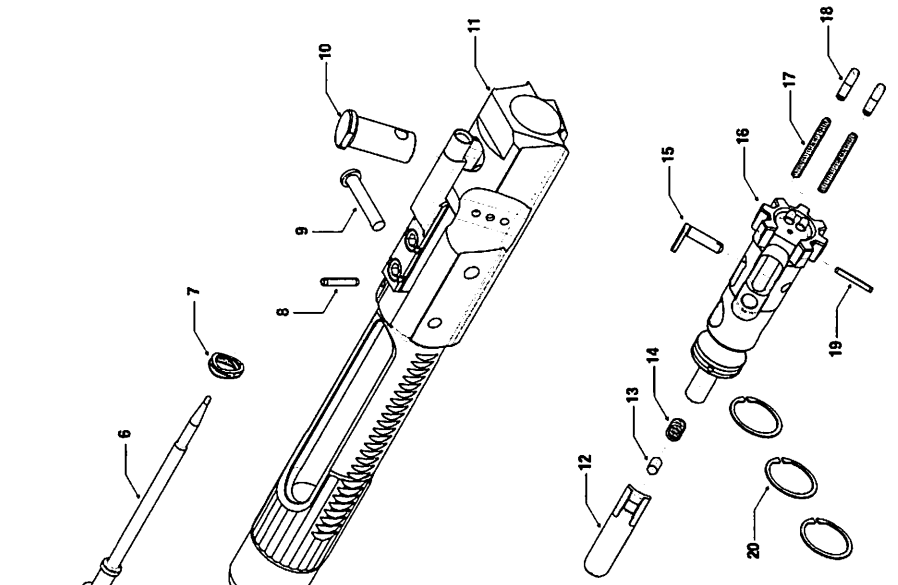


6.7 DD4™ / DDM4® BOLT CARRIER GROUP
PARTS ILLUSTRATION



1. Firing Pin
2. Retaining Pin, Firing Pin
3. Cam Pin
4. AR-15 Bolt Carrier
5. Extractor
6. Extractor Buffer
7. Extractor O-Ring
8. Extractor Spring
9. Retaining Pin, Extractor
10. AR-15 Bolt
11. Ejector Spring
12. Ejector
13. Spring Pin Slotted, Ejector Retaining
14. Gas Ring (x3)

6.8 DD5® BOLT CARRIER GROUP
PARTS ILLUSTRATION



1. Internal Retaining Ring, Carrier Buffer
2. Cap, Carrier Buffer
3. H-Buffer Spacer (x2)
4. Buffer Weight
5. Housing, Carrier Buffer
6. Firing Pin
7. Return Spring, Firing Pin
8. Spring Pin Slotted, Retaining, Firing Pin Retaining Pin
9. Retaining Pin, Firing Pin
10. Cam Pin
11. DD5 Bolt Carrier
12. Extractor
13. Extractor Buffer
14. Extractor Spring
15. Extractor Pin
16. DD5 Bolt
17. Ejector Spring (x2)
18. Ejector (x2)
19. Spring Pin Slotted, Ejector Retaining
20. Gas Ring (x3)

7.0
WARRANTY STATEMENT

All Daniel Defense products carry a 100% satisfaction guarantee against defects in original materials and workmanship. If your Daniel Defense product shows evidence of such defects, Daniel Defense will make every accommodation to fix, repair, or replace your product expeditiously. Daniel Defense does not warranty products or damage caused to our products by the correct or incorrect installation of other manufacturer's products. Be sure to retain your sales slip as proof of purchase date when making a claim.

8.0
HEALTH AND ENVIRONMENTAL WARNING

Discharging firearms in poorly ventilated areas, cleaning firearms, or handling ammunition may result in exposure to lead and other substances known to cause birth defects, reproductive harm, cancer, and other serious physical injury. Have adequate ventilation at all times. Wash hands thoroughly after exposure.

Rev 1.4 22-074-22216

» FREEDOM. PASSION. PRECISION. «

This instruction manual should always accompany this firearm.
When you lend, give, or sell this firearm, be sure that this manual goes with it.

If your instruction manual becomes lost or destroyed, obtain a replacement by calling 1-866-554-GUNS (4867), by downloading online at DanielDefense.com, or writing to the address below.

When requesting a manual, make a note of your address and provide the information located on the left side of your firearm, including the serial number.

PROUDLY AND EXCLUSIVELY MADE IN THE USA

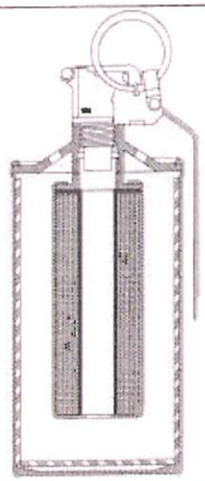
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CTS
COMBINED
TACTICAL SYSTEMS

PRODUCT SPECIFICATIONS

MODEL No.	DESCRIPTION:
5210B	Smoke Baffled Canister Grenade, Low Flame Potential
5220B	CN Baffled Canister Grenade, Low Flame Potential
5230B	CS Baffled Canister Grenade, Low Flame Potential
	Revision D 5/21



NOT TO SCALE

WARNING: CSI manufactures a variety of CTS less lethal products which are under pressure, pyrotechnic, incendiary, emit projectiles, generate smoke, or are explosive in nature. When used in accordance with CTS training guidelines and the individual agency's policy, they are intended to cause varying degrees of pain and injury, which are temporary. These products are restricted to law enforcement, corrections, and military personnel and are used to gain compliance, disperse crowds, restore order, or temporarily incapacitate dangerous persons. In rare circumstances, if used incorrectly, CTS less-lethal products may cause damage to property, serious bodily injury or death. Therefore, any person using the force option depicted on this page should receive proper training to ensure the safest and most effective use.

PHYSICAL & OPERATIONAL	
Type	Irritant & Smoke Pyrotechnic Grenades
Diameter	2.60" (66 mm)
Length	6.20 " (157 mm)
Fuze Type	Model 201
Fuze Delay	1.5 +/- 0.3 sec. average
Launchable	Yes
Discharge Time	20 - 40 Seconds
Emission Ports	4
Overall Weight	395 gm
Warranty	5 Years From Shipment Date

All specifications are average and are subject to change without notice.
All performance specifications are based on testing conducted in Jamestown, PA USA, At an elevation of 1,058 feet above sea level at ambient temperature conditions.

SHIPPING INFORMATION	
Proper Shipping Name	Ammunition, Smoke
UN Number	0303
Hazard Class	1.4G
Labels Required	Explosive 1.4G
Quantity Per Package	24 Grenades
Total Package Weight	31 lb.
Package Type	UN Specification 1A2/Y36/S Metal Drum with Lever Lock Lid
Package Dimensions	19x12 (7 gal. drum also used for overnight packages)

CSI COMBINED SYSTEMS

CTS COMBINED TACTICAL SYSTEMS · CTS TRAINING INSTITUTE · CTS · PENN ARMS

CTS is a Division of Combined Systems, Inc.
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EMAIL Sales@combinedsystems.com
www.combinedsystems.com

DISTRACTION DEVICE® RELOAD W/ SC 12-GRAM

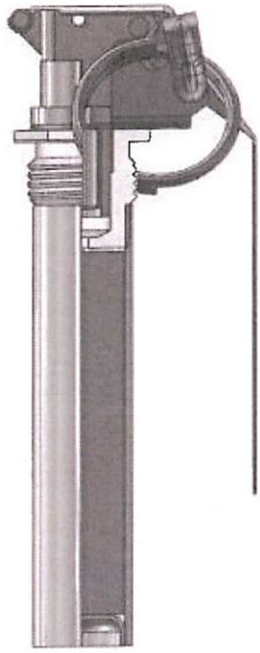
DEFENSE TECHNOLOGY®

PRODUCT SPECIFICATIONS	
Reload	Steel collar w/ cardboard tube
Diameter	0.78 in / 1.98 cm
Length	5.00 in / 12.7 cm
Canister	To be used with reloadable bodies
Fuze	M201A1 Type
Explosive Content	Flash Powder - 0.42 oz / 12 grams
Sound Level	175 dB at 5' (1.5m)
Light Level	6 – 8 million Candelas
Light Duration	10 milliseconds
Part No.	8901SC 8901SC-HH
Warranty	5 years from date of manufacture

ALL SPECIFICATIONS ARE AVERAGES AND SUBJECT TO CHANGE

The 12-Gram Distraction Device® Reload w/ Safety Clip utilizes an M201A1 type fuze that was designed for use with the Distraction Device reloadable steel body. The safety clip is designed to keep the pull-pin against the device body to prevent the pin from protruding and possibly snagging on other objects. The 12-Gram Distraction Device Reload w/ Safety Clip is only to be used when properly inserted and tightened into the Distraction Device body. **DO NOT** discharge the reload without the use of the steel body. The Distraction Device body should only be deployed in areas that have been visually observed to be clear of potential hazards. It is recommended that the immediate area for deployment be visually affirmed to be clear of personnel and that the device is delivered so that the ports are free from obstruction. If the bottom port is obstructed by an object or wall, the device body may move. The cleared area for deployment should be 5 - 6 feet around which the device is expected to come to rest.

A modified version of the 12-Gram Distraction Device Reload w/ Safety Clip is available for use in high humidity environments that incorporates a water resistant charge tube. These products are designated by 'HH' after the part number. The standard render safe practice involving 24 hour water submersion will no longer be effective for the high humidity devices, please consult the render safe procedure for incineration in the instructions.



⚠ WARNING

This product can expose you to chemicals including Lead Salts and Hexavalent Chromium, which are known to the State of California to cause cancer, and Lead Salts, which are known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

INDOORS/OUTDOORS

EXPLOSIVE

WARNING: TO BE USED BY TRAINED LAW ENFORCEMENT, CORRECTIONAL OR MILITARY PERSONNEL WHO HAVE SUCCESSFULLY COMPLETED A TRAINING PROGRAM FOR THE DEPLOYMENT OF DISTRACTION DEVICE® UNITS. **IMPROPER USE OF THE DISTRACTION DEVICE UNIT CAN RESULT IN DEATH OR SERIOUS BODILY INJURY.**

1855 South Loop Casper, WY 82601
www.defense-technology.com
800.347.1200
Safariland, LLC Rev. 06/20

SPEDE-HEAT™ GRENADE CONTINUOUS DISCHARGE OC, CN AND CS

DEFENSE TECHNOLOGY®

PRODUCT SPECIFICATIONS		
Diameter	2.62 in / 6.7 cm	
Length	6.12 in / 15.5 cm	
Fuze	M201A1 Type	
Active Agent	OC	1.09 oz / 31 g
	CN/CS	2.9 oz / 81.2 g
Discharge Time	20 – 40 Seconds	
Launchable	Yes	
Part No.	OC	1070
	CN	1071
	CS	1072
	Smoke	See Max. Smoke #1073
Warranty	5 years from date of manufacture	

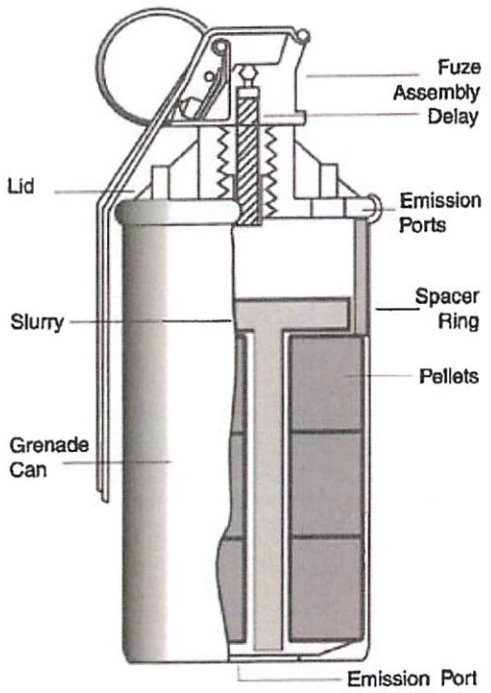
ALL SPECIFICATIONS ARE AVERAGES AND SUBJECT TO CHANGE

The Spede-Heat™ Grenade is a high volume, continuous discharge grenade available in OC, CN or CS.

In the OC, CN and CS configurations, pelletized chemical agent is discharged through four (4) gas ports located on top of the canister, three (3) on the side, and one (1) on the bottom.

Designed specifically for outdoor use in crowd control situations, the Spede-Heat™ Grenade is built on the old style larger canister. It is a high volume continuous burn device that expels its payload in approximately 20 - 40 seconds from a single source. The longer burn time may allow for throwback by individuals wearing burn protection such as a welder's mitt. The canisters may be protected from advancing individuals with the use of less lethal impact munitions. The device should be deployed utilizing wind advantage.

It should NOT be deployed onto rooftops, in crawl spaces, or indoors due to its fire-producing capability. Hand throw or launch. Launching of grenades will provide deploying officers additional stand-off distances. Affords very good coverage for large outdoor areas.



⚠ WARNING

This product can expose you to chemicals including Lead Salts and Hexavalent Chromium, which are known to the State of California to cause cancer, and Lead Salts, which are known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

CM

OUTDOORS

BURNING

PYROTECHNIC

WARNING: THIS PRODUCT IS TO BE USED ONLY BY AUTHORIZED AND TRAINED LAW ENFORCEMENT, CORRECTIONS, OR MILITARY PERSONNEL. THIS PRODUCT MAY CAUSE SERIOUS INJURY OR DEATH TO YOU OR OTHERS. THIS PRODUCT MAY CAUSE SERIOUS DAMAGE TO PROPERTY. HANDLE, STORE AND USE WITH EXTREME CARE AND CAUTION. USE ONLY AS INSTRUCTED.

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www.defense-technology.com
800.347.1200
Safariland, LLC Rev. 06/20

OC VAPOR AEROSOL GRENADE



OC DELIVERY IN CONFINED AREAS WITH SHORT TERM EFFECTS

OC VAPOR AEROSOL GRENADE

The Defense Technology® OC Vapor Aerosol Grenade delivers a very high concentration of Oleoresin Capsicum (OC) in a powerful mist. This inflames the mucous membranes and exposed skin, resulting in an intense burning sensation. Inhalation of the OC Vapor produces an immediate respiratory effect, which resolves within minutes when the subject is removed from the affected area to fresh air. Minimal decontamination of personnel or material is required after deployment. The OC Vapor Aerosol Grenade is ideal for cell extractions or barricade situations where the use of pyrotechnic, powder or liquid devices is not practical or desired.

FEATURES

- Delivers a very high concentration of OC in a powerful mist
- Immediate incapacitating effects
- Minimal decontamination
- Non-flammable
- For indoor use

⚠ **WARNING:** This product can expose you to chemicals including Lead Salts and Hexavalent Chromium, which are known to the State of California to cause cancer, and Lead Salts, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to http://www.P65Warnings.ca.gov.

PepperBall®



LAUNCHERS

TAC-SA™

The PepperBall TAC-SA semi-automatic launcher is the perfect tool for crowd management, riot-control scenarios or any other situation requiring high-intensity engagement. The TAC-SA quickly disperses PAVA across expansive areas making it a solid tool for operational teams.

Available Color Options:
Availability may be limited.

SPECIFICATIONS

Weight	Caliber	Length	Height	Action	Power	Capacity	Kinetic Impact
6.3lbs/2.8kg	.68 Caliber	28"/71.1cm	12"/30.4cm	Semi-Auto	HPA	180 Rounds	7.3-11ft lb/10-15J

FEATURES

- Uses Standard Round Projectiles
- 30ci High Pressure Air System
- Compatible with Gravity and EL-2 Hoppers
- Variable Universal ASA with ON/OFF Valve
- No Recoil
- Cross Bolt Safety
- SplitShot™ Compatible
- MIL-STD-1913 Rail Platform
- Maximum Range of 60' for Direct Impact and 150'+ for Area Saturation

U.S. Sales (877) 887-3773 | International sales + 1 (858) 228-1439 | PepperBall.com
PepperBall® is a registered trademark of United Tactical Systems, LLC, exclusive worldwide manufacturer and supplier of genuine PepperBall products.

byrnaHD™

SPECIFICATIONS

Model Number:	**HD68300**
Size:	**7.28" X 5.62" | 185mm X 143mm**
Loaded Weight:	1.3lb | 597g
Housing Materials:	Glass-filled Nylon
	Rubber Overmold Grip
Component Materials:	Aluminum and Stainless Steel
Caliber:	**.68**
Speed of Projectile:	220-300 FPS
Weight of Projectile:	3.2 Grams
Force at Muzzle Velocity:	13 Joules
Composition of Chemical Rounds:	**Byrna HD Max - 12% active ingredients: OC, CS, and PAVA**
	Byrna HD Pepper - 5% OC
Magazine Capacity:	**5 Rounds**
Propulsion:	One (1) 8 Gram CO_2 Cartridge
Puncture Mechanism:	Punctures CO_2 Cartridge and fires first projectile all with first trigger pull.
Temperature Range, Effective Use:	0° F - 120° F | -18° C - 49° C
Accessories:	Laser Pointers, Flashlights, Holsters (left and right hand carry)
Safety Lever:	**Ambidextrous**
Colors:	Safety Orange, Bright Yellow, Gray, Desert Tan, Black

Patents Pending

PepperBall®



PROJECTILES

LIVE™

The basic PepperBall® projectile, it contains 2% PAVA, and is excellent for direct impact and area saturation, especially in confined, interior spaces.

Available Color Options:

SPECIFICATIONS

Weight	Caliber	Payload	Shelf Life	Velocity	Direct Impact	Saturation	Kinetic Impact
3g	.68	2.5g	3 Years	280-300 FPS	60ft	150+ft	8.8-11ft lb/12-15J

FEATURES

- Ultrasonically Welded
- Shell Color Indicates Payload
- 100% Waterproof
- Non-flammable
- Operational Temperature of -30°F to 150°F

FORMULA

- 2% PAVA Powder

QUANTITIES

- **Jar:** 90/375
- **Case** 1500

MADE IN THE USA

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PepperBall®
SAFER OPTIONS



ROUND

LIVE-X™

Our most potent and powerful concentration of PAVA pepper powder. One round of LIVE-X™ contains the equivalent PAVA irritant chemical agent in 10 regular PepperBall® LIVE™ rounds.

SPECIFICATIONS:

CALIBER	68 Caliber
WEIGHT	3g
PAYLOAD	2.5g
SHELF LIFE	3 years
VELOCITY	280-320 FPS
KINETIC	10-15J
FORMULA	5% PAVA Powder

FEATURES

- Ultrasonically welded
- Shell color indicates payload
- 100% waterproof
- Operational temperature of -30°F to 150°F
- Non-flammable

QUANTITIES

JARS OF: 90 | 375

CARTON OF: 1500

MADE IN THE USA

PepperBall®

1-877-887-3773 | North America
+1 858-228-1439 | International

Sales@PepperBall.com
PEPPERBALL.COM

PepperBall® is a registered trademark of United Tactical Systems, LLC, exclusive worldwide manufacturer and supplier of genuine PepperBall® products

Technical Specifications

B&T GL-06

Single Shot Launcher cal. 40 x 46 mm
manufactured by B&T AG, Switzerland



B&T AG
P.O. Box 174 • 3608 Thun
Switzerland
Fon +41 33 334 67 00
Fax +41 33 334 67 01
info@bt-ag.ch
www.bt-ag.ch

TS-2889.17

Table of Contents:

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Related documents
TM-2889 Operator Manual
SM-2889 Armorer Manual
TR-2889-1 Qualification Test Report
PC-2889 Parts Catalogue

Abbreviations:
HE: High Explosive. Warhead grenades, working at high pressure level.
LL: Less lethal. Munitions working at pressure levels 4 to 5 times lower than HE grenades.

1. General description

The GL-06 grenade launcher is intended to serve as a supplemental or squad weapon with less lethal munitions for all types of crowd management and law enforcement tasks.
The GL-06 is designed as a single shot break down weapon. Due to its design and strength of materials, the launcher works with all kind of 40 x 46 mm ammunitions. The trigger is of double-action-only style with non-exposed hammer for safe and simple operation.
There are different stock configurations, integrated NATO accessory rails and the possibility to install more rails and accessories to optimize the launcher specifically to each mission.
The ergonomics are state of the art: red dot sight for fast and accurate target acquisition, left and right side sling attachment points, large ambidextrous operating elements and a wide trigger guard for easy operation even with heavy protective gloves.

2. Nomenclature and technical data

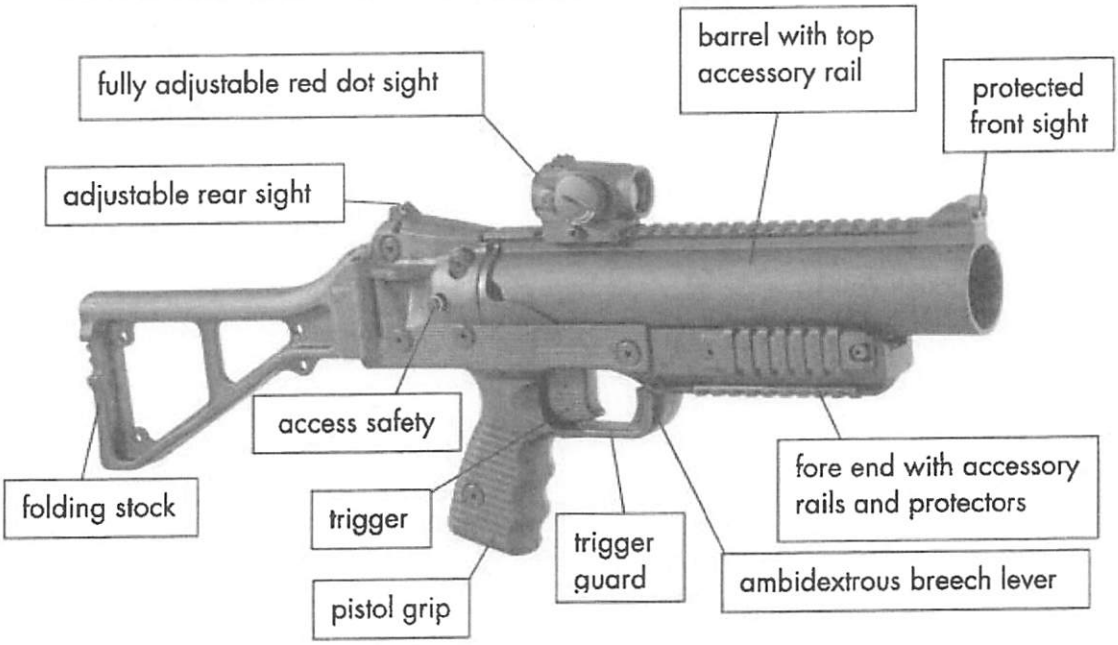


Fig. 2.1

Designation:	GL-06	
Manufacturer:	B&T AG, Switzerland	
Product ID:	BT-31000 black without access safety BT-31000-1 black with access safety BT-31000-2 yellow (RAL 1021) without access safety BT-31000-3 yellow (RAL 1021) with access safety	
NATO Stock Number:	1010-38-000-9860	
Caliber:	40 x 46 mm	
System:	Break-down single shot, double action only	
Barrel length [mm]:	280	
Twist rate [mm per turn]:	1200	
Rifling:	12 grooves, right hand	
Overall length [mm]:	590 (stock unfolded)	385 (stock folded)
Overall width [mm]:	60 (stock unfolded)	95 (stock folded)
Overall height [mm]:	200	
Weight [kg]:	2.15	
Sights:	Red dot sight Aimpoint Micro T-1 (dot size 4 MOA) Ghost ring iron sights (sight radius 339 mm), adj. in windage	
Interfaces:	4 NATO accessory rails STANAG 4694	
Standard supply:	Weapon complete with siderails, rail covers and carrying sling	

3. Operating principle

When the weapon is closed, the locking lug under the barrel is held in position by the two locking latches and the barrel is locked (ref. fig. 3.1). When pushing the breech lever forward, a rising wedge is spreading the two latches like a couple of shears, releasing the locking lug and thus unlocking the barrel (fig. 3.1). By the force of the barrel spring, the barrel snaps open and can be loaded manually.

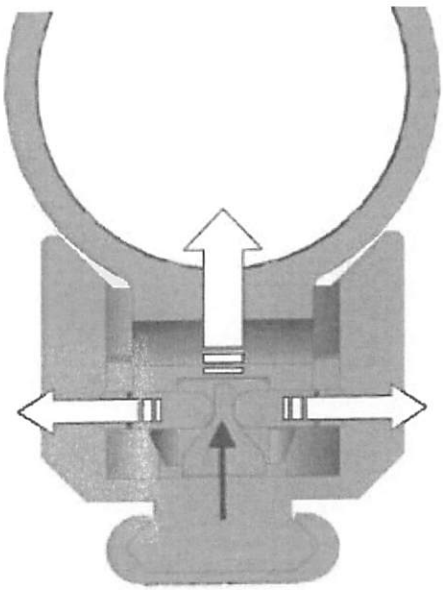




Fig. 3.1

When the launcher is loaded, the operator can release the shot simply by pulling the double action only trigger (fig. 3.2). The firing pin (part of the hammer) touches the primer of the cartridge only when the trigger releases the covert hammer, then it snaps immediately back in a safe position.

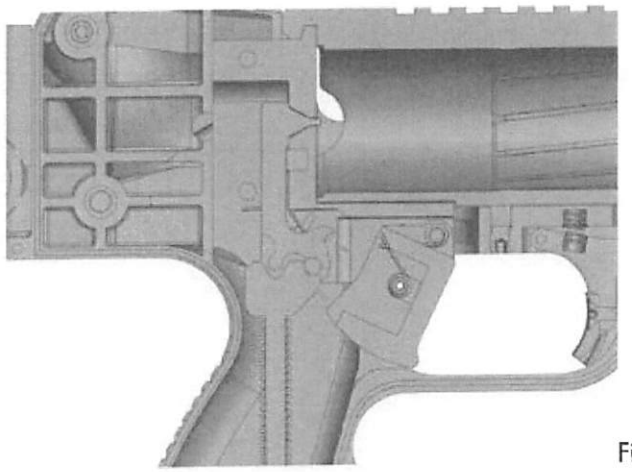


Fig. 3.2

In order to increase the operational safety of the launcher, a manual push-through safety is available which locks the hammer with the firing pin in safe distance of the primer.
Some comments about the operating principle of 40 x 46 mm grenades: Unlike conventional small arms cartridges, the case shows two chambers (see fig. 3.3). When the firing pin strikes on the primer, it ignites the propellant which is in the inner high pressure chamber. The combustion gases are then released by diffusors into the outer low pressure chamber. It is the force of the gases in the low pressure chamber which drive the projectile, which is set on top of this named chamber, through the barrel.

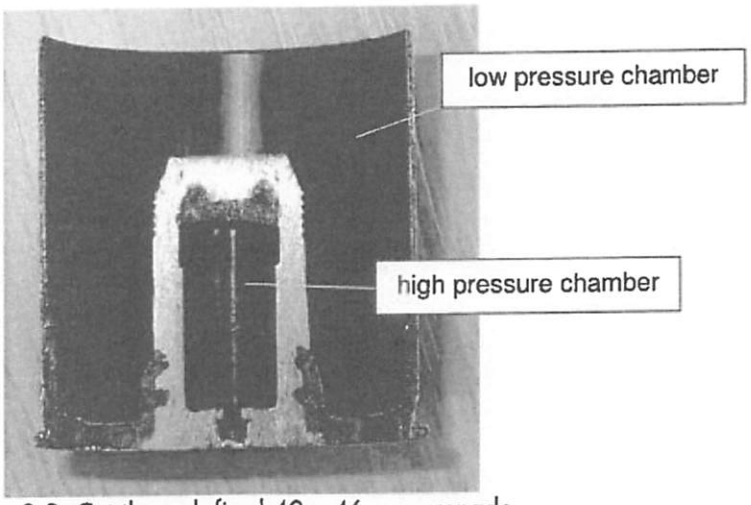


Fig. 3.3: Cut through fired 40 x 46 mm grenade

Concerning internal ballistics, recoil, mechanical stress on the weapon and quality control of the grenades, it is always the maximum pressure in the outer low pressure chamber to consider.
40 x 46 mm ammunitions exist in two distinctive qualities: One is warhead (HE) grenades with a payload of around 200 grams - typically an explosive projectile - and working with low chamber pressures of approx. 200 bar. The other is less lethal (LL) munitions with low mass kinetic energy projectiles or a chemical agent as payload; their working pressure is around four times lower than with HE grenades.
The GL-06 is designed for use with LL munitions but strong enough to withstand the pressure of a HE grenade.

4. Compatible ammunitions

Compatibility is limited by dimensions and maximum pressures.
The critical dimensions are outlined in fig. 4.1. Note that the cartridge overall length is of no importance: 40 x 46 mm munitions of any length can be loaded in the GL-06.

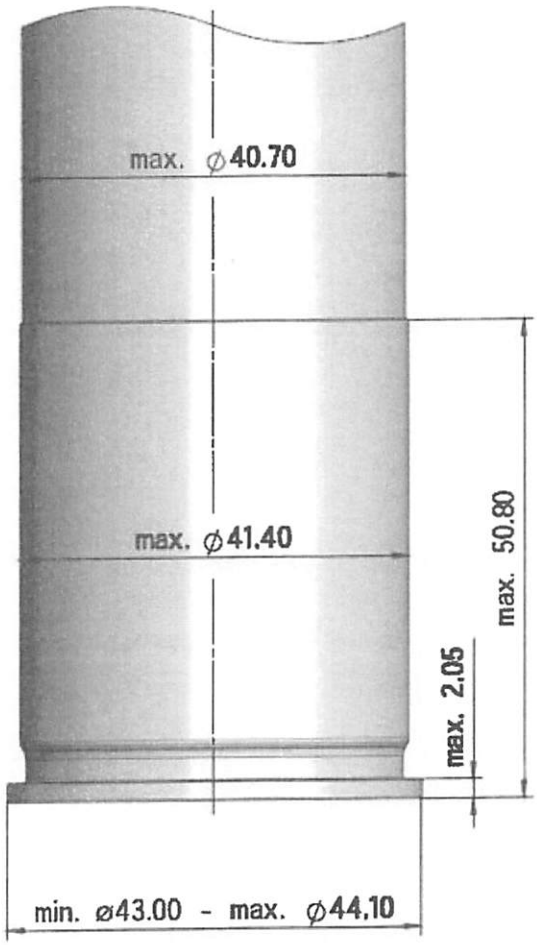


Fig. 4.1: Compatible dimensions

Regarding the pressure compatibility, the maximum pressure in the low pressure chamber at extreme service conditions (ESCP) is to consider. ESC is the most dangerous conform condition of ammunition (according to ammo manufacturer specs), e.g. after 24 h high temperature storage.
In an inspection lot of ten cartridges, the average (m) and the standard deviation (s) of ESCP must comply with

$$m_{ESCP} + 2.91 \bullet s_{ESCP} \leq 230 \text{ bar}$$

5. Ballistic data

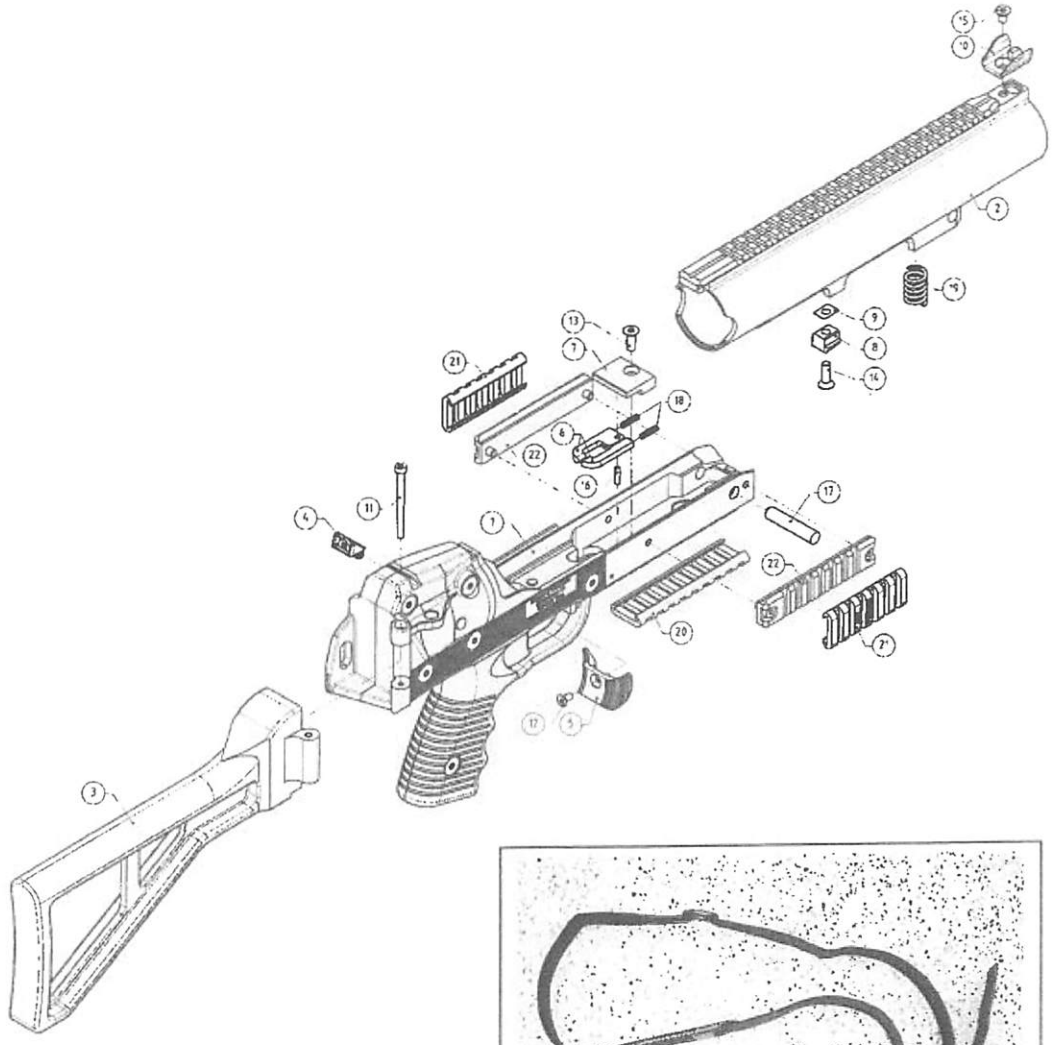
The sights of the GL-06 launcher are set point blank to 25 m with SIR 40 mm (B&T BT-23510); ballistic data below.

x [m]	v [m/s]	E [J]	ED [J/mm²]	t [s]	$dia_{0.99}$ [mm]
0	85	116	0.092	0.00	0
5	84	112	0.089	0.06	29
10	82	109	0.087	0.12	59
15	81	106	0.084	0.18	90
20	80	102	0.082	0.24	121
25	79	99	0.079	0.31	152
30	78	97	0.077	0.37	184
35	77	94	0.075	0.43	217
40	75	91	0.072	0.50	250
45	74	88	0.070	0.57	283
50	73	86	0.068	0.64	317

Table 5.1: Ballistic data of SIR impact round (projectile mass 32 grams)

x: Distance
v: Velocity
E: Kinetic energy
ED: Energy density
t: Flight time
$dia_{0.99}$: Diameter of circular target with hit probability of 99%

6. Exploded view and parts list



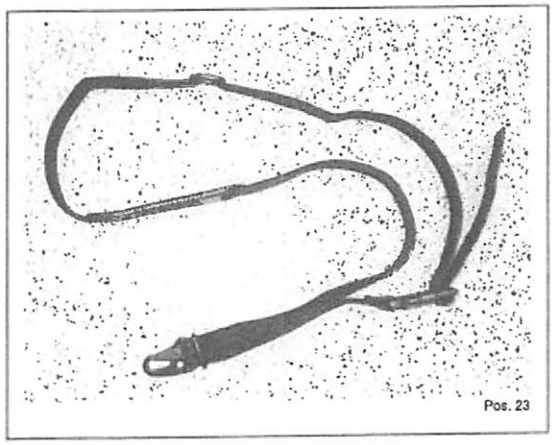


Fig. 6.1

Pos.	Designation	Part Number
1	Main assembly (for BT-31000 or BT-31000-1)	BT-31047
2	Barrel (only)	BT-31010
3	Folding stock complete	BT-20218
4	Rear sight assembly	BT-30223
5	Breech lever	BT-31012
6	Locking latches (left/right identical, two per weapon)	BT-31020
7	Locking latch retainer	BT-31022
8	Locking lug	BT-31013
9	Spacer (if necessary)	BT-31029
10	Front sight	BT-31008
11	Folding stock axle screw	BT-31031
12	Breech lever screw	BT-31032
13	Retainer screw	BT-31035
14	Locking lug screw	BT-31036
15	Front sight screw	BT-31033
16	Locking latch axle pin	BT-31040
17	Breech axle pin	BT-31043
18	Locking latch springs (two per weapon)	BT-31067
19	Barrel spring	BT-31049
20	Rail protector	BT-21204-3
21	Side rail protectors (two per weapon	BT-21204-4
22	Side rails with screws (two per weapon)	BT-21731
23	Sling	BT-400967-1

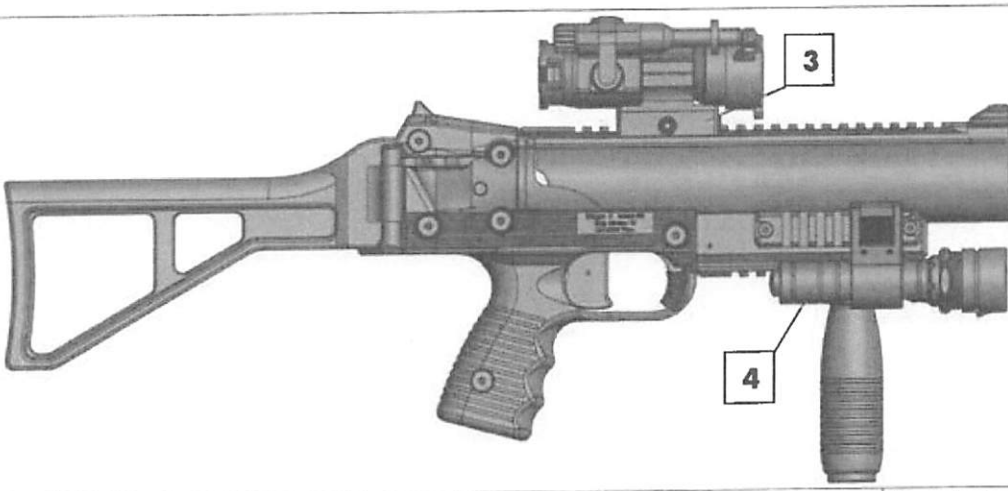
For more details refer to parts catalogue PC-2889.

7. Accessories

7.1 Tactical



Pos.	Description	Product ID
1	B&T quick detachable vertical handgrip	BT-21773
1a	B&T screw-on vertical handgrip NSN 1005-17-117-0959	BT-21203
2	B&T foldable ballistic helmet visor stock	BT-20222



Pos.	Description	Product ID
3	B&T quick detachable mounts for optical sights	various
4	B&T tactical light 6 V	BT-211017
	B&T tactical light 9 V	BT-211016
	B&T tactical light 6 V IR	BT-21803

B&T carrying bag for 1 launcher and 20 cartridges	tbd

GL06®

40mm launcher

Designed from the ground-up to be lightweight, mission configurable and supremely accurate; the GL06 launcher and SIR (Safe Impact Round) munitions are the pinnacle of point of aim/point of impact less-lethal systems. A specialized rifled bore contributes to the effective range and accuracy of the system, ensuring greater levels of munition accountability during public order, law enforcement and peacekeeping operations.

Black No Safety

BT-31000



Barrel Length (in)	Caliber	Twist Rate	Length (in)	Weight (lbs)
11	40x46mm	1:47	15.2 / 23.5	4.6

Yellow

BT-31000-2



Barrel Length (in)	Caliber	Twist Rate	Length (in)	Weight (lbs)
11	40x46mm	1:47	15.2 / 23.5	4.6

Munitions

40mmx46



From left to right:
SIR-X BT-23715,
SIR BT-23510



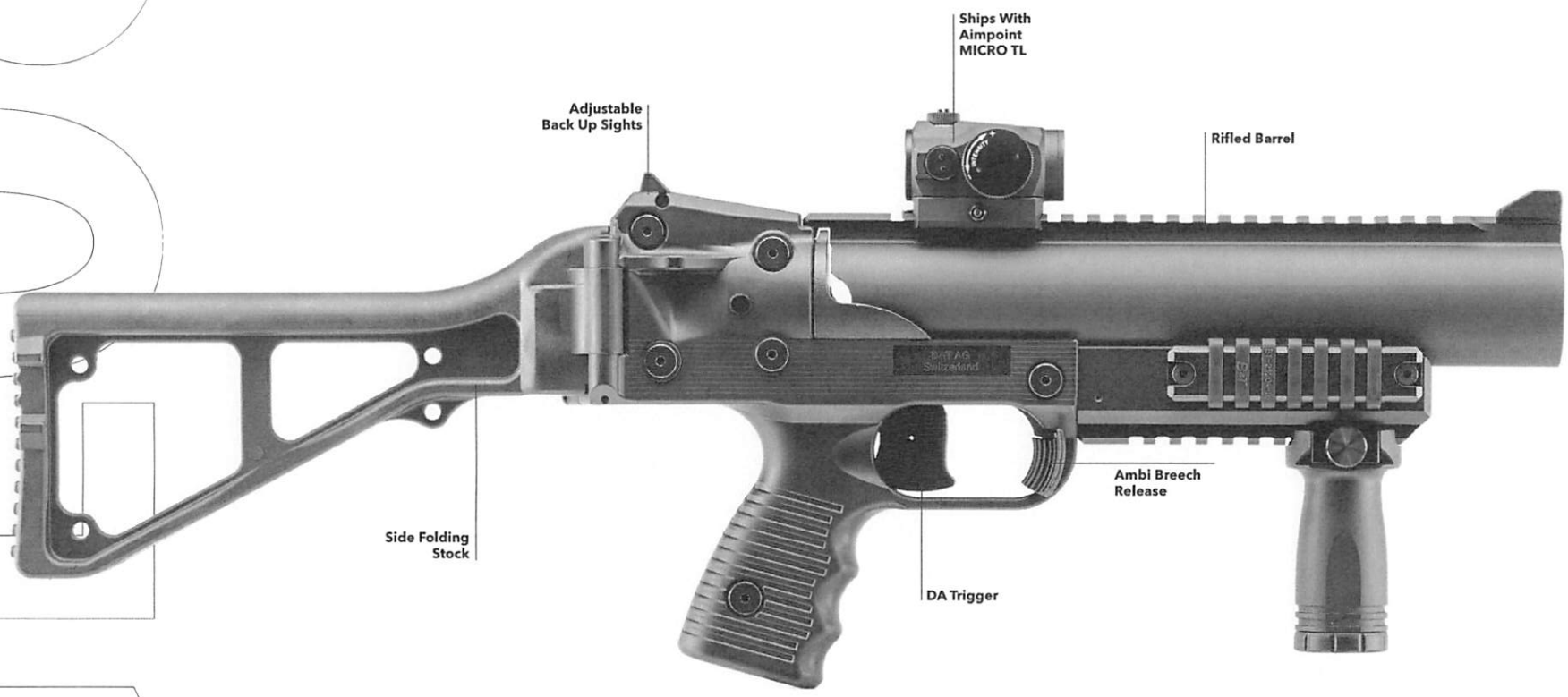
From left to right:
RUBBER SHOT BT-23584,
MUZZLE BLAST CS BT-23604,
MUZZLE BLAST OC BT-23604,
BALLISTIC CS BT-23574,
RUBBER SHOT BT-23584

ALTERNATE CONFIGURATIONS

Due to ATF ruling, this is a LE/MIL exclusive product

Full Specs Available Online

GL06





Folded Configuration
Specialty Munitions Available

GL06 LE/MIL Restricted **Full Specs Available Online**

Barrel Length (in)	Caliber	Twist Rate	Length (in)	Weight (lbs)
11	40x46mm	1:47	15.2 / 23.5	4.6

40MM MUNITIONS





MODEL: 6325 SKU: 1012225

EXACT IMPACT™ 40 MM STANDARD RANGE SPONGE ROUND

The eXact iMpact™ 40 mm Sponge Round is a point-of-aim, point-of-impact direct-fire round. This lightweight, high-speed projectile consisting of a plastic body and sponge nose that is spin stabilized

therefore, have velocities that are extremely consistent. Used for Crowd Control, Patrol, and Tactical Applications.

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Technical Specifications

RELATED PRODUCTS

40MM MUNITIONS



MODEL: 6320 SKU: 1012834

DIRECT IMPACT® 40 MM OC CRUSHABLE FOAM ROUND

The 40mm Direct Impact® munition is a point-of-aim, point-of-impact direct-fire round. An excellent solution whether you need to incapacitate a single subject or control a crowd. When loaded with

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PROP 65 WARNING

FEATURES STORAGE & DISPOSAL CHEMICAL COLOR IDS

- The 40mm Direct Impact® munition travels at an average velocity of 305 feet per second (89.9 mps) with an effective range of 5 ft – 120 ft (1.52m – 36.6m).
- This lightweight, high-speed projectile consists of a plastic body and a crushable foam nose.
- The orange foam nose indicates that the round contains an OC powder payload.
- This munition is a point-of-aim, point-of-impact direct fire round which has passed extensive human effects assessments for blunt impact and penetration.
- The 40 mm Direct Impact® Round is most commonly used by tactical teams in situations where greater accuracy and deliverable energy is desired for the incapacitation of an aggressive, non-compliant subject at longer distances.
- Defense Technology® Direct Impact® munitions are produced in an ISO rated manufacturing facility.

RESOURCES

40MM MUNITIONS



MODEL: 2262 SKU: 1318620

FERRET® 40 MM LIQUID BARRICADE PENETRATOR ROUND, CS

The Ferret® 40mm Round is non-burning and suitable for indoor use. Used primarily by tactical teams, it is designed to penetrate barriers, such as windows, hollow core doors, wallboard and thin plywood.

structure or vehicle.

In a tactical deployment situation, the 40mm Ferret is primarily used to dislodge barricaded subjects from confined areas. Its purpose is to minimize the risks to all parties through pain compliance, temporary discomfort and/or incapacitation of potentially violent or dangerous subjects.

FIND A DEALER

PROP 65 WARNING

FEATURES FIRST AID & DECONTAMINATION STORAGE & DISPOS

- Spin stabilization which affords maximum stand-off distance
- Smokeless propulsion system with new black barricade projectile
- Effective range of 50 meters
- Improved accuracy and penetration at the target
- Operable from both the Defense Technology® 1425 Single and 1440 4-Shot Launchers

RESOURCES

SDS