TAGER

GLOCK 19

Operating Instructions
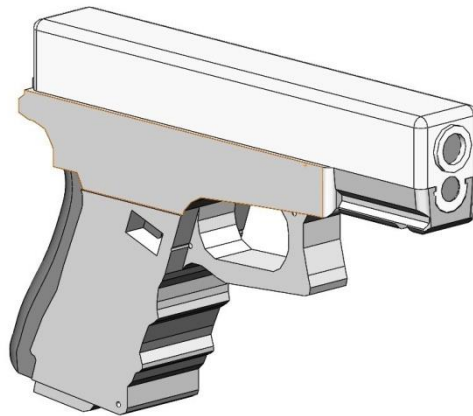
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The tager model "Glock 19" (hereinafter referred to as a tager or Glock) is based on the airsoft replica of the Glock 19 pistol and is designed for laser tag – an engaging real-time and real-space sport and entertainment game.

The game develops players' mobility, speed, physical endurance, quick thinking, tactical ingenuity, and team spirit.

The objective of teams is to complete a mission (depending on the scenario) before the opposing team, while hitting the opposing team's sensors with the laser beam from their tager and avoiding getting hit themselves.

Each player is provided with a wireless kit – a tager and a headband (and/or vest).

To configure and control the game, a remote control is used in conjunction with the Lasertag Operator app installed on a tablet or smartphone. This app also captures, processes, and displays the statistics of game events.

> **Do not use tagers for games outside of designated laser tag arenas! The reactions of passersby and law enforcement agencies could lead to irreversible consequences.**

1 General Specifications

The tager "Glock 19" is a device that emits focused pulses of safe infrared rays. Signal encoding is performed at the carrier frequency of 56 kHz and a wavelength of 940 nm.

The communication between the tager and the hit fixation devices (hereinafter referred to as HFD) is wireless and operates on the radio channel with an operating frequency of 868 MHz. The Wi-fi channel (2.4 GHz frequency) is used for configuration, control, and data retrieval, using a server and Lasertag Operator software.

The weight of the tager is 0,5 kg, and its length is 18,6 cm.

The protection class of the tager is IP54, which means it can be used in environments with increased humidity as well as outdoors since it's designed to resist water seepage.

The body is constructed from the following materials:

- steel;
- ABS plastic;
- impact-resistant heat-resistant plastic.

The power source used is a Li-ion battery with an autonomous operating duration of up to 24 hours (depending on the operating mode).

Voltage range: 5,5 V – 8,4 V.

Current consumption:

- Shot mode – 200 mA;
- Standby mode – <20 mA.

Optimal/maximum firing range – 25/50 meters (on a bright sunny day, with direct sunlight hitting the sensors or the barrel of the tager, the target hit distance might decrease by up to 50 %).

2 Design and operation

The appearance and placement of the main elements of the tager are shown in the figure.
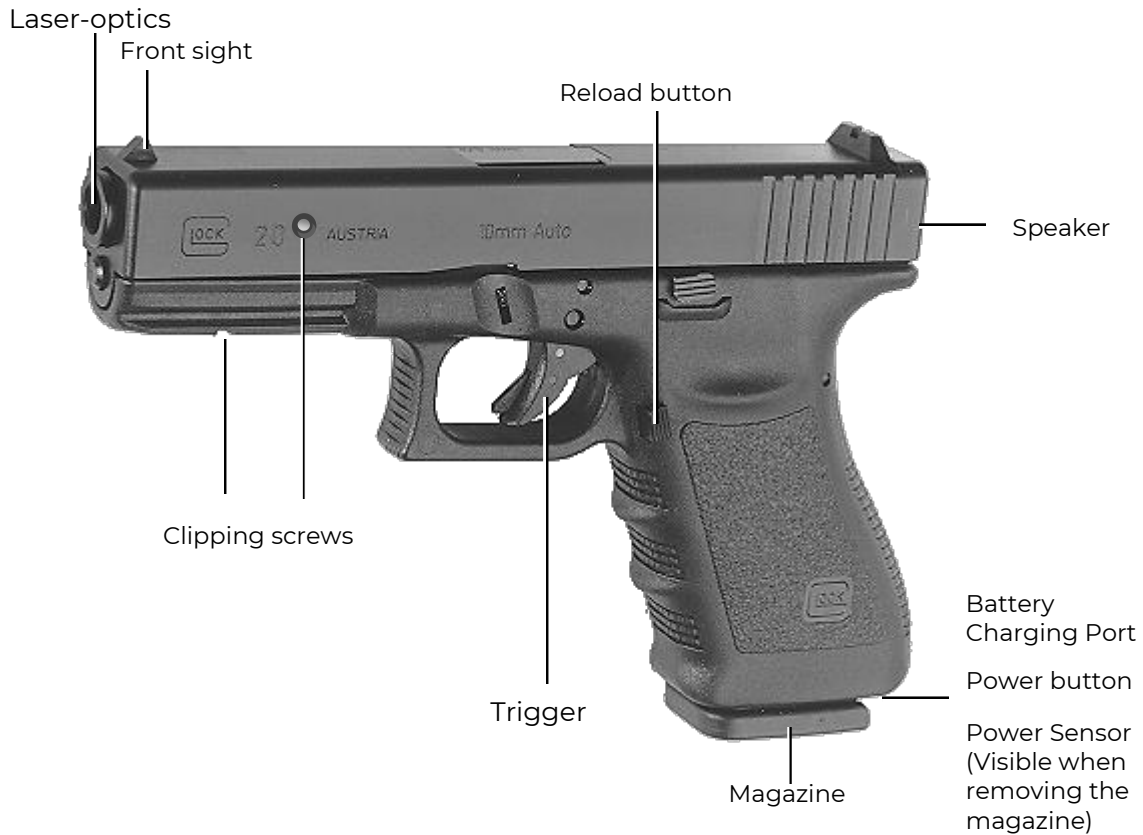
The appearance and arrangement of the main elements of the "Glock 19" tager

The power button, LED indicator, and battery charging port are located beneath the magazine at the lower part of the tager's grip. To remove the magazine, press the reload button.

Bottom view

2.1 Turning On and Off the tager

To turn on the tager, press and hold the power button for 4 seconds until the system emits an audible signal.

To turn off the tager, press and hold the power button for 4 seconds until the system emits an audible signal.

To turn off the tager while in game mode press and hold the power button for 10 seconds.

2.2 Control of the tager using the Lasertag Operator server

In order to connect the tager to the Lasertag Operator application, the tablet/smartphone on which the app is installed and the tager should be connected to the same wifi network. By default, the access point "LASERTAG" is set up.

After connecting the tager with the associated the HFD, it is possible to modify the following game parameters for the set within the Lasertag Operator app:

- Number of lives;
- Number of bullets and magazines;
- Respawn;
- Team color;
- IR laser power;
- Volume level.

Additionally, the "Game Statistics" menu contains statistical data that allows for evaluating the player's effectiveness.

2.2.1 Changing tager Settings

To modify settings, you need to:

1) Open the Lasertag Operator app on your smartphone/tablet.
2) Tap on the menu icon ☰ located in the upper left corner of the screen.
3) In the side menu, select "Scenarios." This will open a window with a list of scenarios displayed as tiles.
4) Click on the button with the gear icon ⚙ located to the right of the chosen scenario.
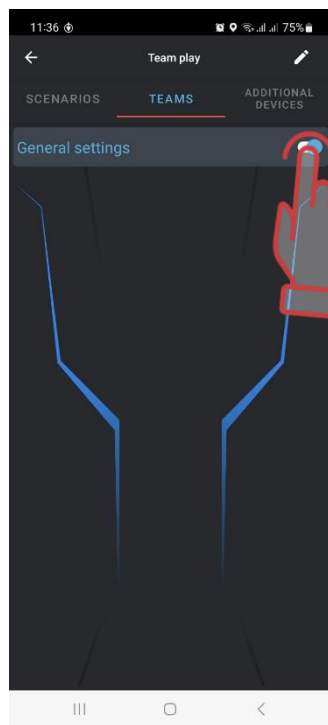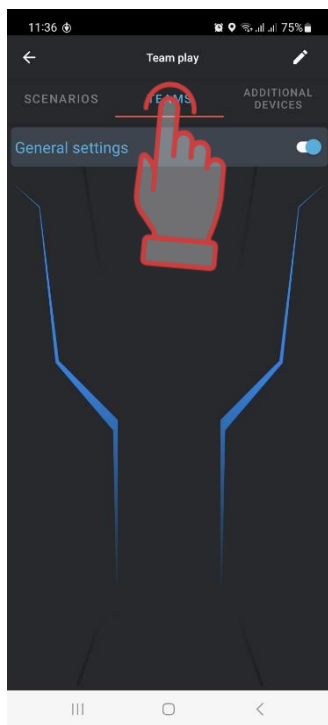
The window has 3 tabs: "Scenarios," "Teams," and "Additional Devices."
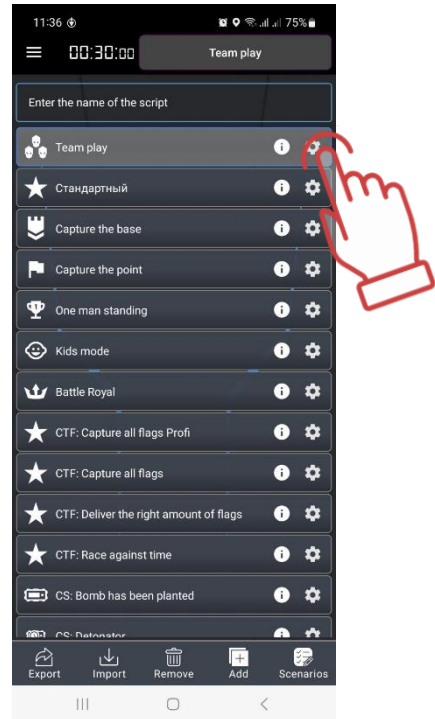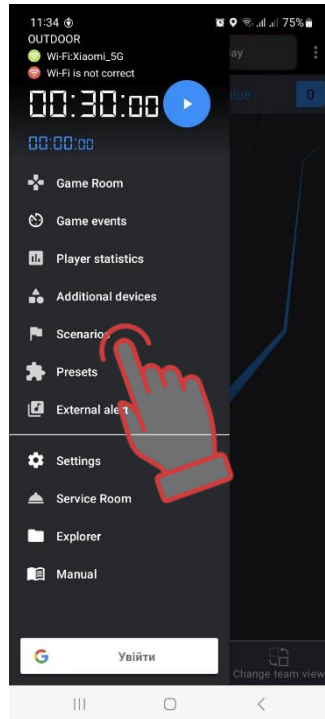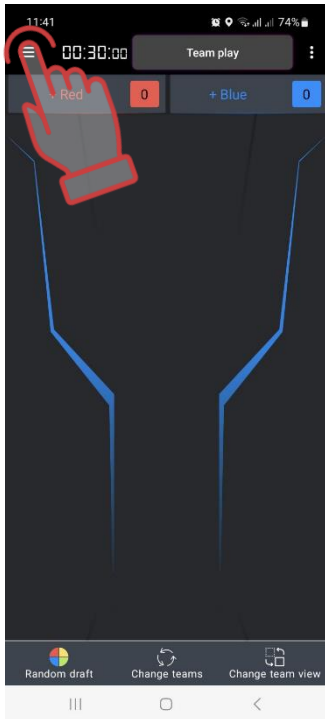
5) Go to the "Teams" tab. On this tab, you can configure general parameters for all of the teams or for individual teams.

6) Click on "General Settings.

On this tab, by sliding the slider to the right or simply tapping on it, you can select the number and colors of teams participating in the scenario.
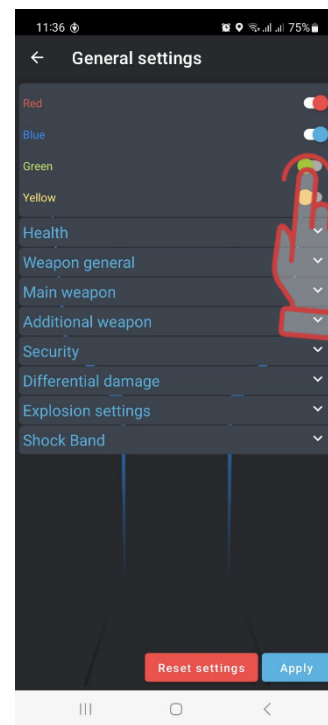
Each tab expands into sub-items when you tap the white checkmark next to its name. To modify each specific parameter within the tabs, you need to tap its name – this will bring up the corresponding window, where you can make changes directly or toggle its position . To confirm the changes, press the "Apply" button at the bottom of the screen.
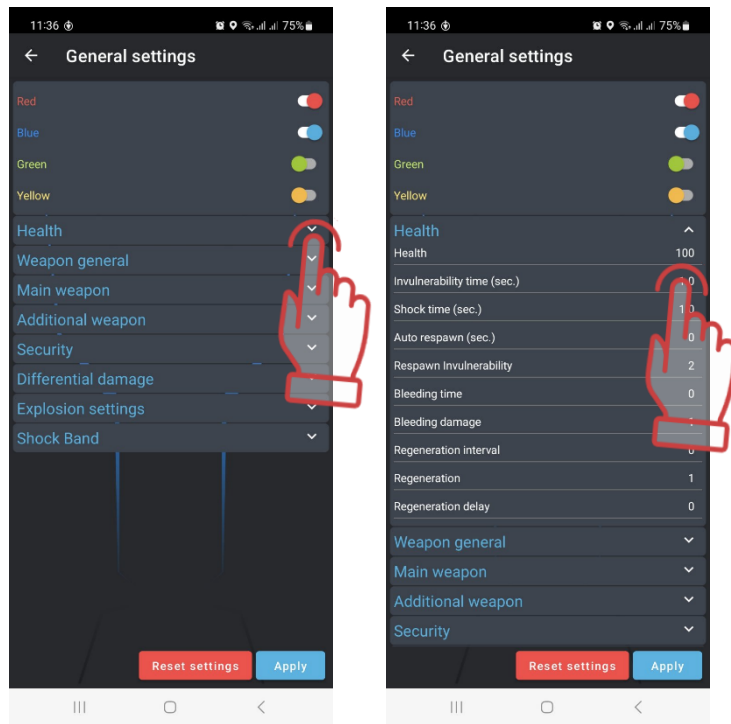
On the "Health" tab, the following Glock parameters can be adjusted: "Health" (Number of lives) and "Auto Respawn (sec)."
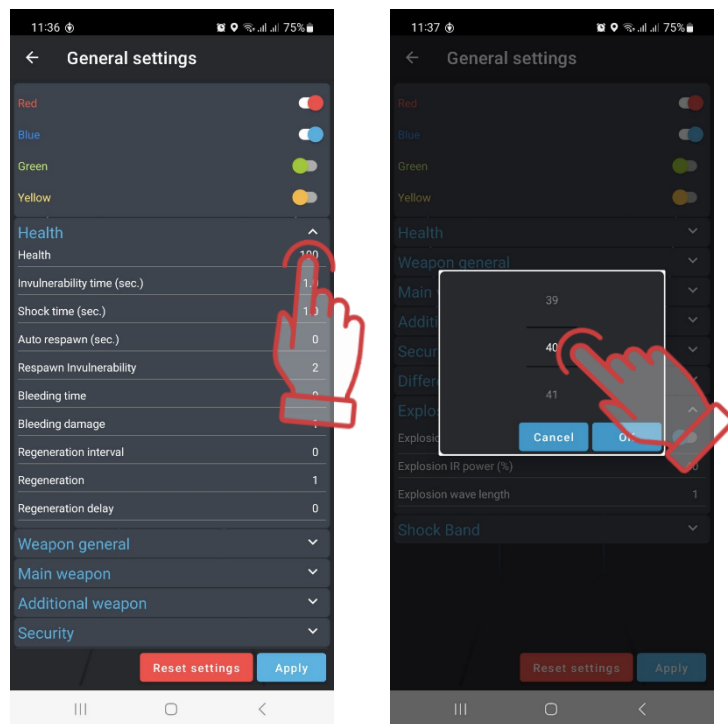
The number of bullets and magazines can be set on the "Main weapon" tab in the "Number of Magazines" sections.
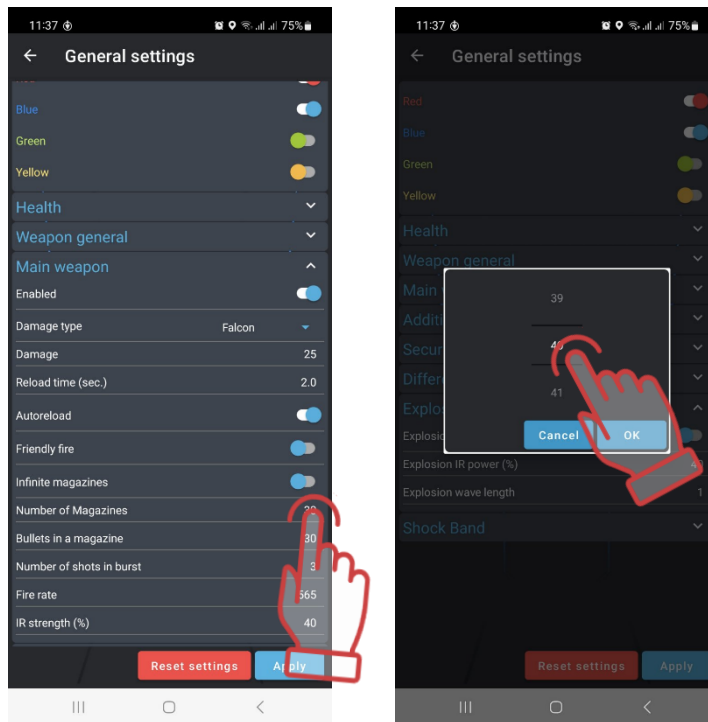
Additionally, in the "Main weapon" menu, there is an option to adjust the power of the Glock's IR laser. To do this, select the "IR strength (%)" item and change the value from the dropdown list.
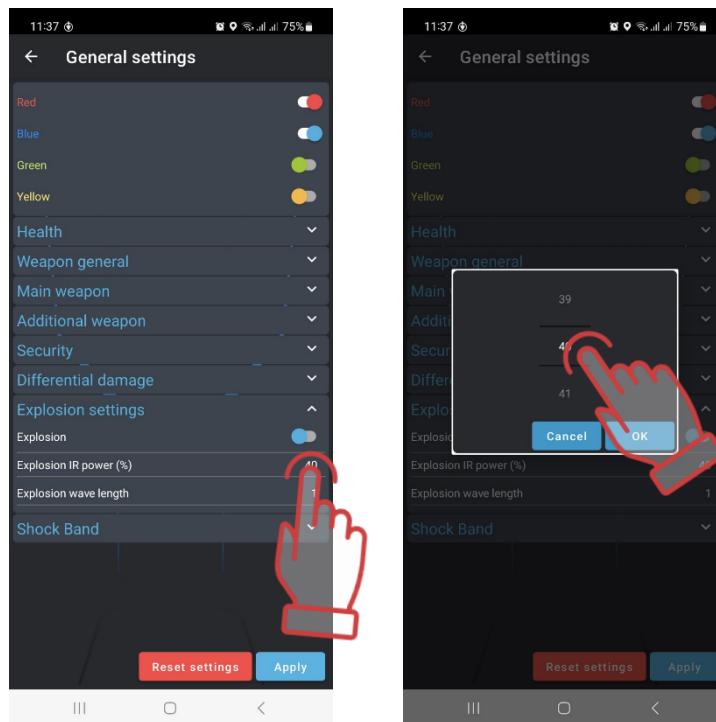
2.2.2   Adjusting the Volume Level

To adjust the volume level of the played sounds, follow these steps:

1) Tap on the menu icon ▤ located in the upper left corner of the screen.

2) In the side menu, select "External alert".

3) In the "Music Volume" section, slide the slider to the desired volume level.
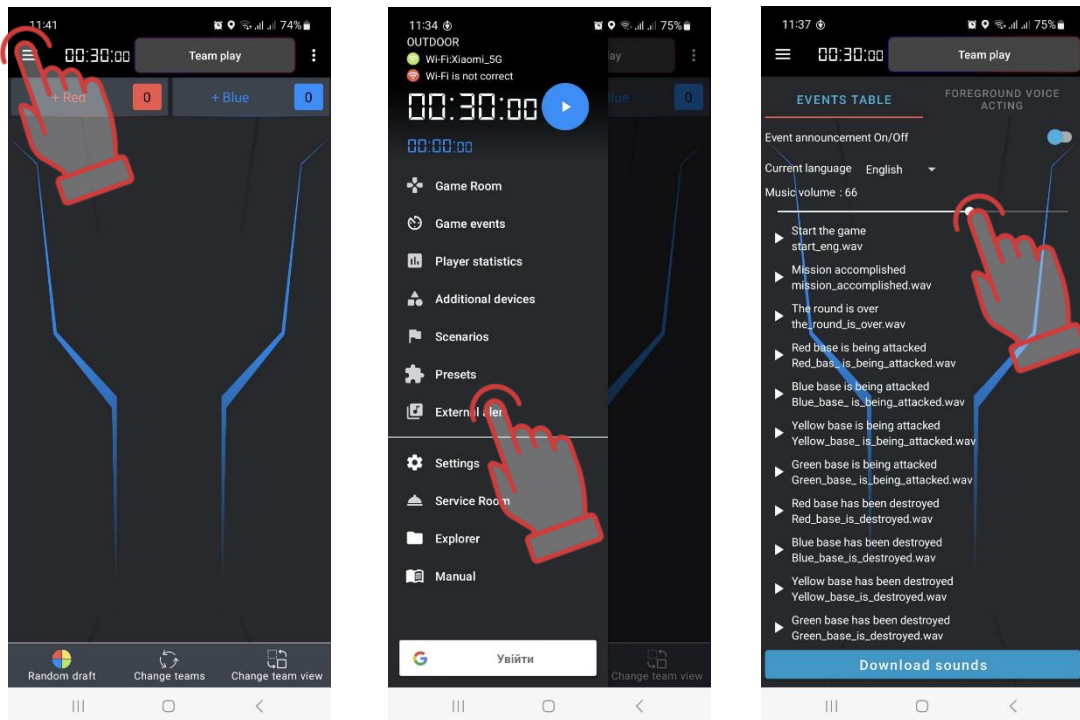
2.2.3 Distributing Players into Teams

For automatic distribution of players into teams, you need to press the "Random draft" button on the main page of the Lasertag Operator application, located in the lower left corner of the screen.

There is also an option to assign specific players to corresponding teams.

To do this, on the main page of the application, click on the button with the name of the desired team, and in the opened menu, select players from the list. Confirm the selection by pressing the "OK" button.
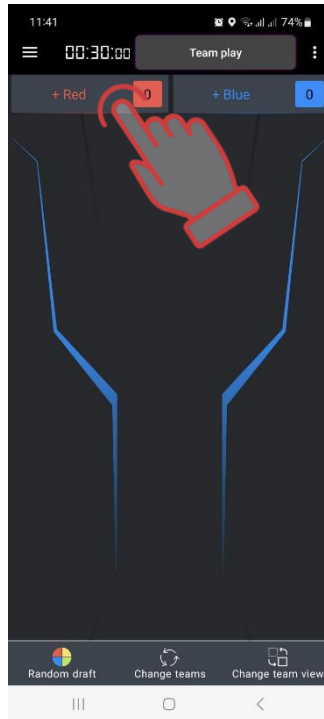
2.3 Operating Modes

The tager can operate in the following modes:

- Service Mode;
- Game Mode.

2.3.1 Service Mode

The Service Mode is designed for binding the HFD. The HFD include:

- Headband;
- Vest;
- Shock band SCORPION.

To enter the Service Mode, you need to completely remove the magazine and hold down the power button for 10 seconds. Once you hear a double beep system sound, you can release the power button.

Exiting the Service Mode is done by turning off the tager. The process of turning off the Glock is described in section 2.1.

2.3.2 Game Mode

The tager enters the game mode when launched from the Lasertag Operator application or from the remote control .

2.3.2.1 Initiating Game Mode Using the Lasertag Operator Application

To initiate the game mode in the Lasertag Operator application, you need to:

1) Open the Lasertag Operator application on your smartphone/tablet.

2) Tap on the menu icon ▤ located in the upper left corner of the screen. This will open the side menu.

3) Press the "Start Game" button 🔵 located at the top of the side menu.

2.3.2.2 Initiating Game Mode Using the Remote Control

To control the tager using the remote control, the HFD needs to be bound to it, which will transmit IR commands between them. The process of binding the tager to the HFD is described in section 2.4.

To enter game mode, simply point the remote control at any of the HFD sensors and press the "Start Game" button. .

2.3.2.3 Reloading the Magazine

If you run out of bullets in the game mode, you need to:

1) Press the reload button on the tager;

2) Remove the magazine;

3) Insert the magazine back in place.

2.4 Binding the tager to HFD

To bind any of the HFDs to the tager, you need to enter the service mode (see 2.3.1), bring the Glock's barrel close to any of the HFD sensors, and press the trigger. The HFD will stop emitting an audible signal, and the sensor will light up in the color of the team assigned to the tager.

2.5 Changing Device ID

To change the ID in service mode, you should hold down the reload button and press the trigger.

This action will reset the ID to one, and all subsequent presses of the power button will increment the tager's ID by one.

This function is only disabled when the tager is turned off (see 2.1).

When changing the ID from the Lasertag Operator server, not only the tager's ID changes, but also the IDs of all HFD connected to it at that moment.

2.6 Checking the Battery Level

Beneath the magazine, there is an LED indicator that displays the current battery charge level.

The LED is continuously green when the charge is between 100 % and 70 %, red when between 69 % and 10 %, and blinking red when the charge is below 10 %.

2.7 Battery Charging

When charging the built-in batteries, you should follow the general rules of electrical safety.

The devices are charged by a standard charger supplied by the company for laser tag equipment (rated output voltage DC– 8.4 V. The maximum output current value is 1 A).

Only use the standard charger provided and the original batteries. Violation of this condition may damage the batteries and equipment, cause an electrical short, fire, create an explosion hazard, etc.

🛈 **Do not leave equipment unattended while charging!**

3 Safety procedures

The components of the laser tag equipment supplied by the company are complex devices that require careful and cautious handling.

Do not expose the device to water. If nevertheless it happened – quickly turn off the equipment and dry it for 4-5 hours at room temperature.

Protect <u>plastic equipment enclosures</u> from excessive mechanical load. If the equipment was stored in a room with sub zero temperatures, keep it warm for at least 2 hours before turning it on and use it in heated rooms. This measure is necessary to avoid damage to the electronic components due to condensation.

When using equipment with a built-in battery, observe the safety precautions for handling lithium-ion batteries.

The lithium-ion batteries used in our equipment have a number of advantages over traditional batteries. They are light in weight, have a long service life and a large specific capacity per unit mass and volume. Storage and operation batteries do not pollute the environment; they comply with all international environmental standards.

However, lithium-ion batteries also have disadvantages. One of the main ones is sensitivity to overcharging and overdischarging. However, lithium-ion batteries also have disadvantages. One of the main ones is sensitivity to overcharges and overdischarges. Recharge is usually accompanied by increased heating and bloating of the battery case and, as a result, its irreversible failure. The deep discharge of the device leads to the same result. To prevent negative consequences, each battery supplied by our company is equipped with an internal circuit protection against overcharging and deep discharge, as well as against exceeding the permissible temperature (above +90 °C).

However, the safe handling of Li-ion batteries should be payed serious attention.

Do not use the battery at high temperatures (for example, in direct sunlight, near a heat source or open flame) - overheating increases the gas pressure inside the battery, and this can lead to an explosion or at least shorten its service life. When the battery cools below 0 °C, the power decreases to 40-50 %. Maximum allowable temperatures at which lithium-ion batteries can be used: from -40 °C to +50 °C.

Do not use the battery under static electricity conditions - protection devices may fail and problems may arise in the safe use of the battery.

Do not squeeze, throw, pierce with sharp objects or expose the battery to other mechanical actions!

Do not short-circuit the positive and negative terminals of the battery with metal objects or wires.

When connecting multiple lithium batteries, use batteries from the same manufacturer - of the same rating, in the same technical condition.

Do not use the battery without an electronic protection circuit.

Do not reverse the polarity of the battery leads.

Do not connect the battery to devices that are not designed to be powered by it.

Do not use bloated batteries - they must be replaced.

Do not disassemble the battery - it may become depressurized, overheat and ignite.

Do not immerse the battery in water, do not throw it in a fire - it may explode!

Do not solder the battery directly to the plane.

Do not bring the battery to a minimum charge. Frequent recharging is preferable – this does not harm the battery.