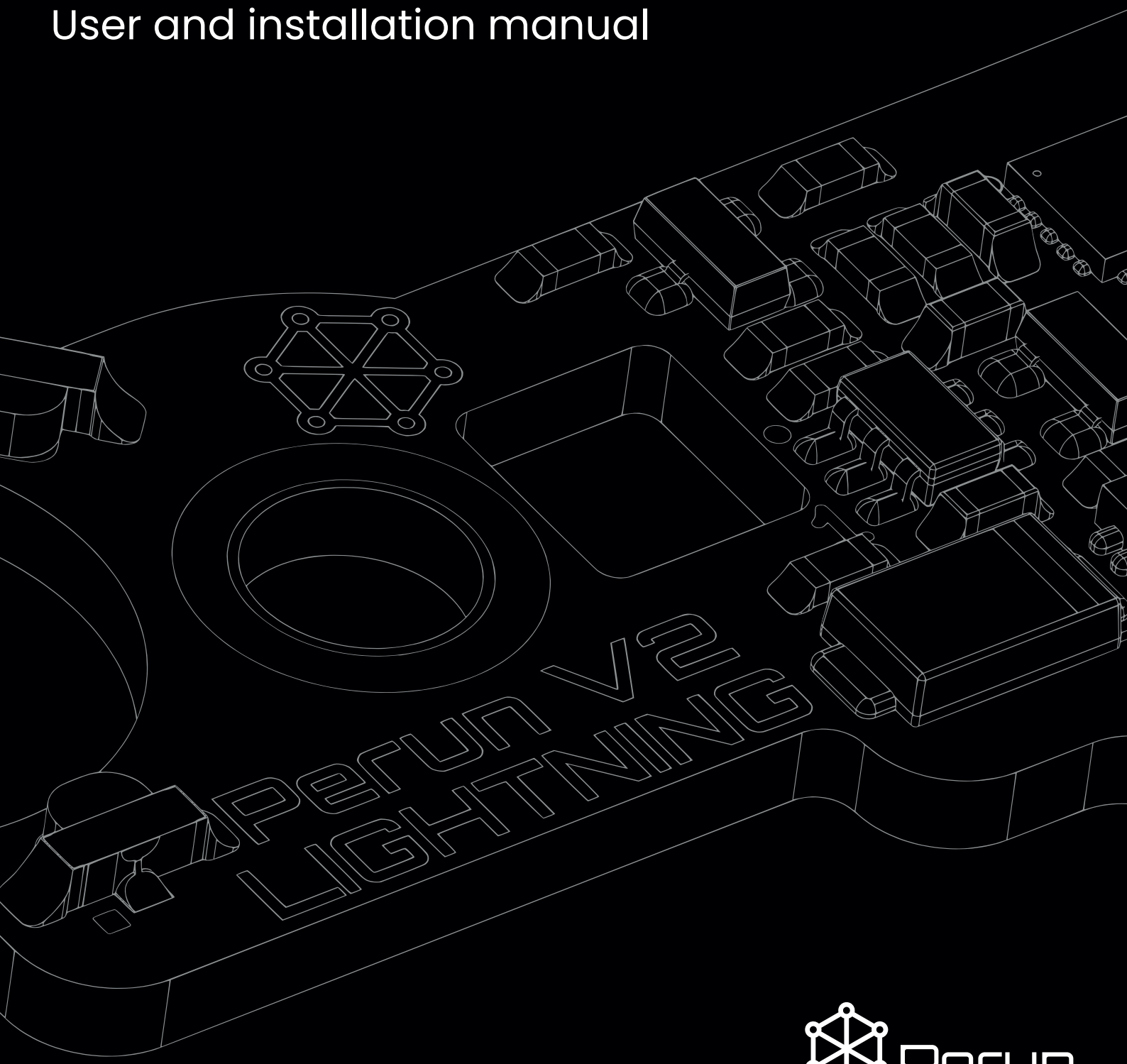
Perun V2 Lightning

User and installation manual



Perun

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1. Technical data

Recommended power sources

Perun V2 Lightning works with any power source that provides a voltage between 7 and 17 volts and can deliver enough current to ensure smooth cycling of the replica. Li-Po and Li-Ion batteries with a nominal voltage of 7.4, 11.1 or 14.8 volts are recommended. It is also advised to use batteries with possibly high „C" parameter and capacity. This is safer for the battery, as it should not be working on the edge of its capability. In this video, we are showing why:

https://www.youtube.com/watch?v=s8RKcIy810A

Capacity and the „C" parameter also influence the rate of fire of the replica:

https://www.youtube.com/watch?v=5hO25aPvHcU

Compatibility with high-ROF and high-power builds

Perun V2 Lightning can work with any replica, including highly tuned.

Compatible gearboxes, gears, and triggers

Perun V2 Lightning works both in airsoft electric replica and gel blasters. It is designed to fit version 2 gearboxes to the Tokyo Marui standard. Examples of incompatible replica are ECS series by Classic Army, EFCS by Ares, or ERG by KWA.

Perun V2 Lightning was successfully tested in and should fit **without the need for any modification** in gearboxes made by the following manufacturers:

- **APS Silver Edge,**
- **A&K, Bolt,**
- **Classic Army (except for ECS series),**
- **Delta Armory,**
- **Double Bell,**
- **Double Eagle,**
- **E&C,**
- **Evolution Airsoft,**
- **G&G,**
- **G&P,**
- **Golden Eagle,**
- **ICS,**
- **JG,**
- **King Arms,**
- **KWA (gen 2.0),**
- **LCT,**
- **Lonex,**
- **Mancraft,**
- **Retro Arms,**
- **S&T,**
- **Specna Arms (including Orion, One, Aether, Core),**
- **Tokyo Marui,**
- **Ultimate**
- **Valken**
- **VFC**.

Some grinding of the contacts area is needed in certain Cyma gearboxes. These are gearboxes that we have tested for compatibility during the design process. Please be advised that despite our best efforts to provide reliable information, we cannot guarantee full compatibility for all the gearbox shells mentioned above. Replica manufacturers sometimes slightly change dimensions of their parts from batch to batch, bringing need for some adjustment or in extreme cases, making them incompatible with Perun V2 Lightning.

Gear and gearbox shell color, or its "shininess", has no effect on the operation of Perun V2 Lightning.

Perun V2 Lightning works with any gearset, including DSG, TSG, short stroked, helical, non-helical and with any

ratio (including 32:1 “max/infinite torque”).

Stock and aftermarket triggers to the Tokyo Marui standard can be used with Perun V2 Lightning. Trigger color does not affect the operation. Some ICS triggers might require dremeling before magnet holder can be placed on them. G&G ETU triggers are incompatible and should be replaced with standard V2 triggers.

Electronic fuse

Perun V2 Lightning has an integrated electronic fuse, which will automatically cut the power off in case of a short circuit or when a gearbox jam is detected. The fuse does not wear out when it is activated.

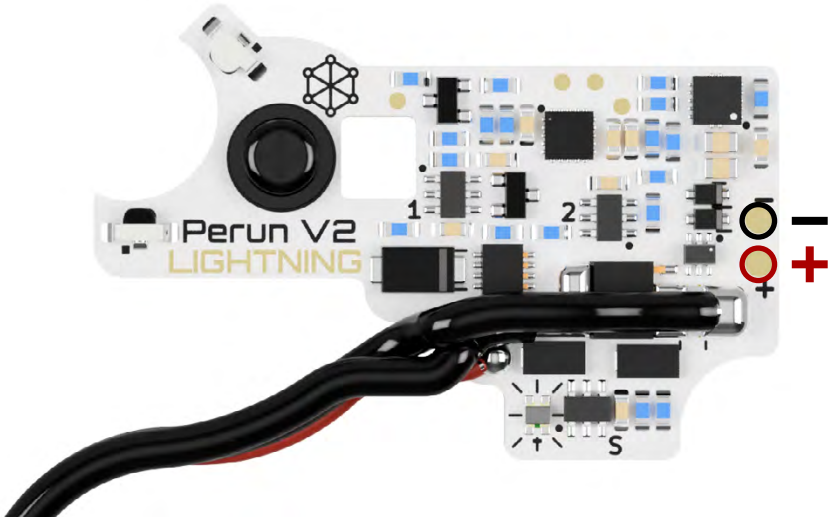
Battery connector type

Perun V2 Lightning comes with an already soldered T-Plug connector (T-Deans).

Soldering pads for gel blasters and tracer hop-up chambers

There are two soldering pads on Perun’s electronic board (Fig. 1), designed especially for soldering the mag terminals’ wires or tracer hop-up chamber wires to them. The pads are simply connected in parallel with the motor. They do not provide current or voltage control and are only meant to make wiring easier, avoiding the need to channel the tracer wires all the way down to the motor.

> **!** In front wired version of the mosfet there is no access to the soldering pads. Solder the tracer wires to the negative motor wire and the positive wire.



Soldering pads for gel blasters and tracer hop-up chambers

Stand-by current consumption

Selector position	Current consumption
SAFE	0.4 mA
SEMI	0.6 mA
AUTO	0.6 mA

> **!** Remember to disconnect the battery after use.

Brushless motors (BLDC)

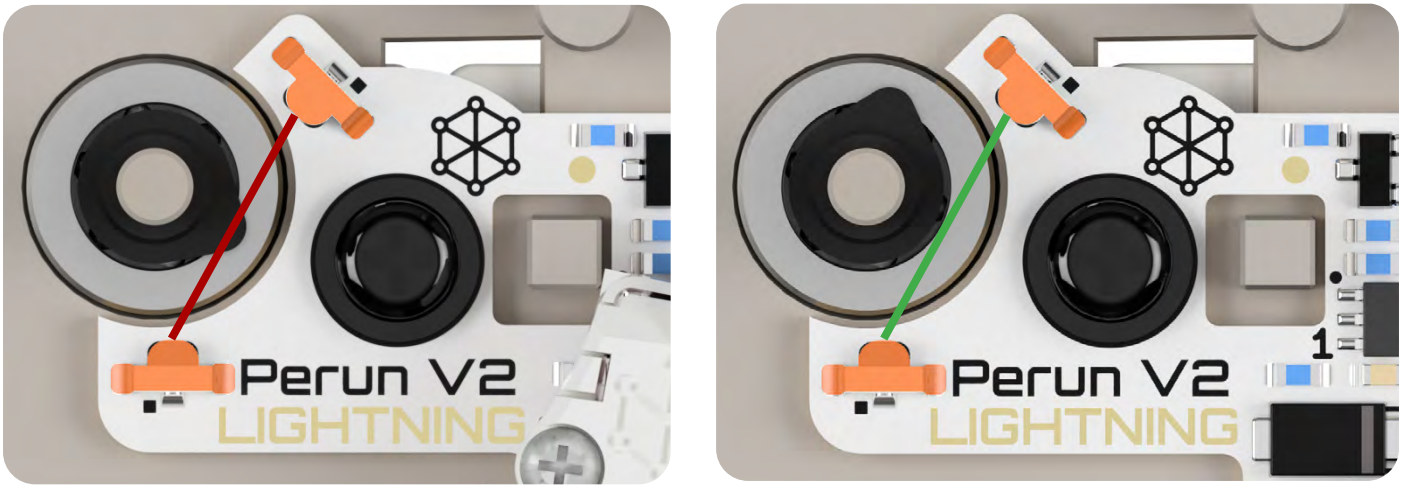
Perun V2 Lightning works with both traditional brushed and brushless (BLDC) motors. When using a brushless motor, adhere to motor manufacturer's guidelines regarding the use of active brake or rate of fire reduction based on PWM (pulse width modulation), which is the reduction method used in Perun.

2. How does it work?

Perun V2 Lightning uses optical and magnetic sensors for the detection of sector gear, trigger, and selector plate position. It has no moving parts at all. That provides not only great reliability but also flexibility, thanks to which Perun V2 Lightning will work without problems in almost any combination of gearbox shells, triggers, selector plates and sector gears.

Sector gear detection

Sector gear phototransistor (sensor) and IR LED diode work as a pair as a barrier switch. When sensor and diode cannot "see" each other, it means that the sector gear cut-off cam is between them. Perun V2 Lightning uses information about whether the cam is cutting the view or not, to determine which gearbox cycle phase is currently taking place. Pictures below show the line between the sensor and the diode, obstructed by the sector gear's cam (left) and not (right).



Sector gear detection

Selector sensor

A 3-axis Hall effect sensor is used for selector plate detection in Perun V2 Lightning. It detects the position of a small magnet glued to the selector plate to resolve current position of the fire selector. Selector sensor and the magnet are marked orange on picture below.

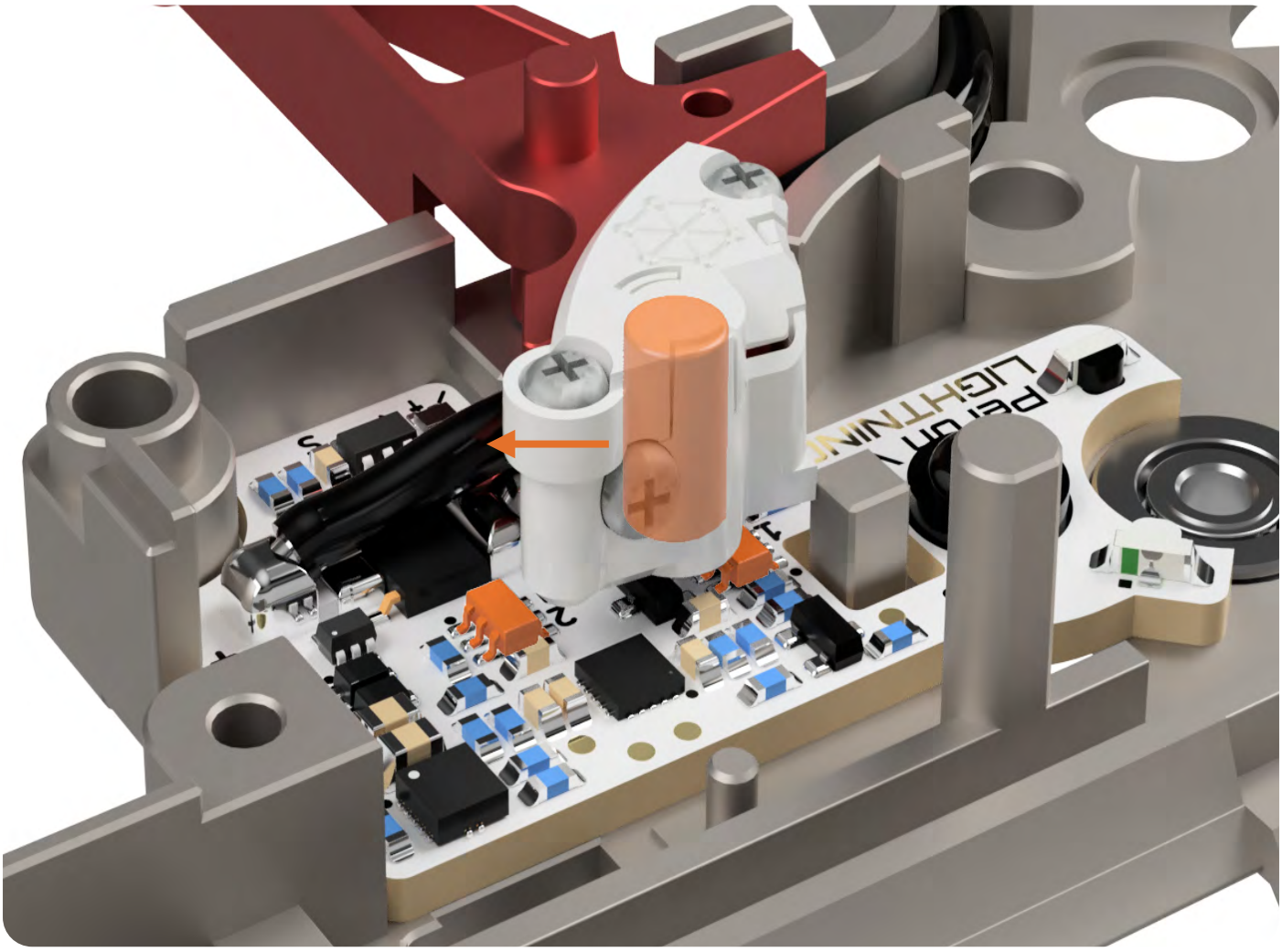
Do not worry about trigger and selector sensors both being magnetic. Magnetic fields diminish very quickly with distance, and separation between trigger and selector magnets and sensors is more than enough to avoid any interference.

Selector plate position sensing

Trigger

Hall-effect sensors are monitoring the magnetic field generated by the magnet in the magnet holder installed on the trigger. These readings are then conveyed to the microcontroller of the unit, which depending on the sensitivity setting and trigger position, may trigger a shot. The magnetic sensors are also able to detect whether an external magnetic object is present near the replica and, in such cases, will activate external magnetic field alarm to prevent an unintended shot.

Magnet and sensors used for trigger movement detection are highlighted in orange in the picture below.



Trigger position sensing

Note that when used with Clicker V2, Clicker V2 PRO or Speeder V2, the magnet configuration will be different to that shown on picture above.

3. Optional trigger accessories

Perun V2 Lightning works with following Perun trigger accessories for the V2 gearbox:

Clicker V2

The Clicker V2 adds up to 1.5 kg (3 lbs) of trigger resistance to the trigger pull. This resistance must be overcome to fire a shot. It is somewhat similar to how the trigger of a real firearm works.

Manual: https://www.perunairsoft.pl/clicker.pdf

Clicker V2 PRO

Clicker V2 PRO provides up to 3 kg (6 lbs.) break to the trigger action, which needs to be overcome to fire a shot, providing much more realistic experience. Clicker V2 PRO is meant mainly for realism enthusiasts who are looking to emulate a real trigger as closely as possible. It has five different adjustments to help reach that goal.

Manual: https://www.perunairsoft.pl/clickerv2pro.pdf

Speeder V2 gen. 2

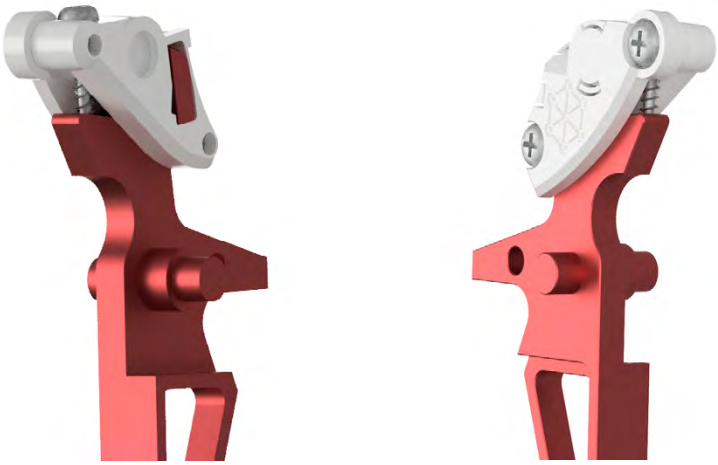
Speeder V2 is thought for speedsoft and CQB players, as well as any other airsoft enthusiast who wants to set his trigger exactly according to his taste thanks to adjustable overtravel, pretravel, spring tension, and break (including no break at all). It also makes the trigger more sensitive.

Manual: https://www.perunairsoft.pl/speederv2gen2.pdf

! Using Perun V2 Lightning with first generation Speeder V2 (model without ball bearings) can cause unwanted double shots when highest trigger sensitivity is set.

4. Installation

1. Disassemble the replica and the gearbox. Remove everything from the gearbox.
2. Screw Perun in place. Make sure it is held firmly by the screw and **does not wobble**.
3. Install the plastic magnet holder on the trigger, as shown in the pictures below. When screwing the two halves of the holder together, **use only a small amount of force**, not to damage the threading. Depending on the trigger model you are using, **there may be a gap between the two halves**. If the magnet holder still wobbles, use the top screw to remove any remaining slack (also **be careful** and do not use excessive force on the screw).



Magnet holder mounted on the trigger

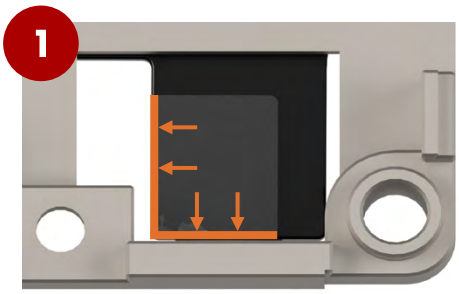
4. Make sure that the trigger is resting on the trigger stopper marked on the picture below. If contact stopper is not present, it is acceptable for magnet holder to rest on the middle pin that goes through the gearbox right behind the magnet holder.

Magnet holder has to rest on the contact stopper

5. Install our proprietary selector plate or glue the additional magnet that sticks to the original selector plate, if your replica is not AR-type or has otherwise non-standard V2 selector.

Our proprietary selector plate should fit most AR-type replica. In G&G replica it might be necessary to cut the plate short by a few millimeters in its area closest to the stock, otherwise it will be impossible to set the selector to AUTO.

If our selector plate does not fit in your replica, glue additional magnet included in the package (clung to the selector plate magnet) to the original selector plate. For this purpose:

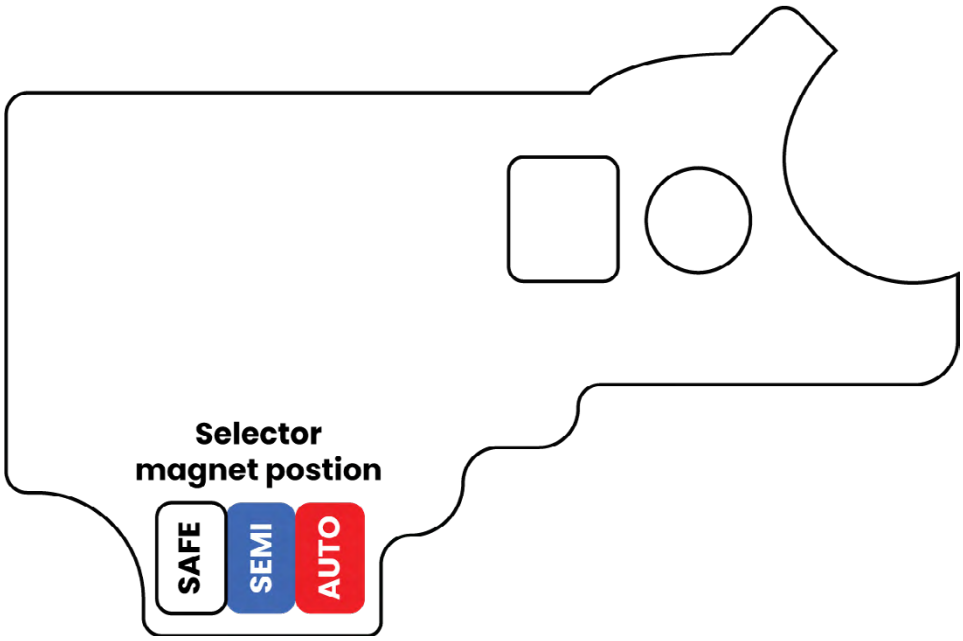


Align attached piece of double-sided tape with the bottom-left edge of the selector plate's area visible through the gearbox cut-out as shown on the picture.

Stick the plastic positioner to the tape as shown on the picture.

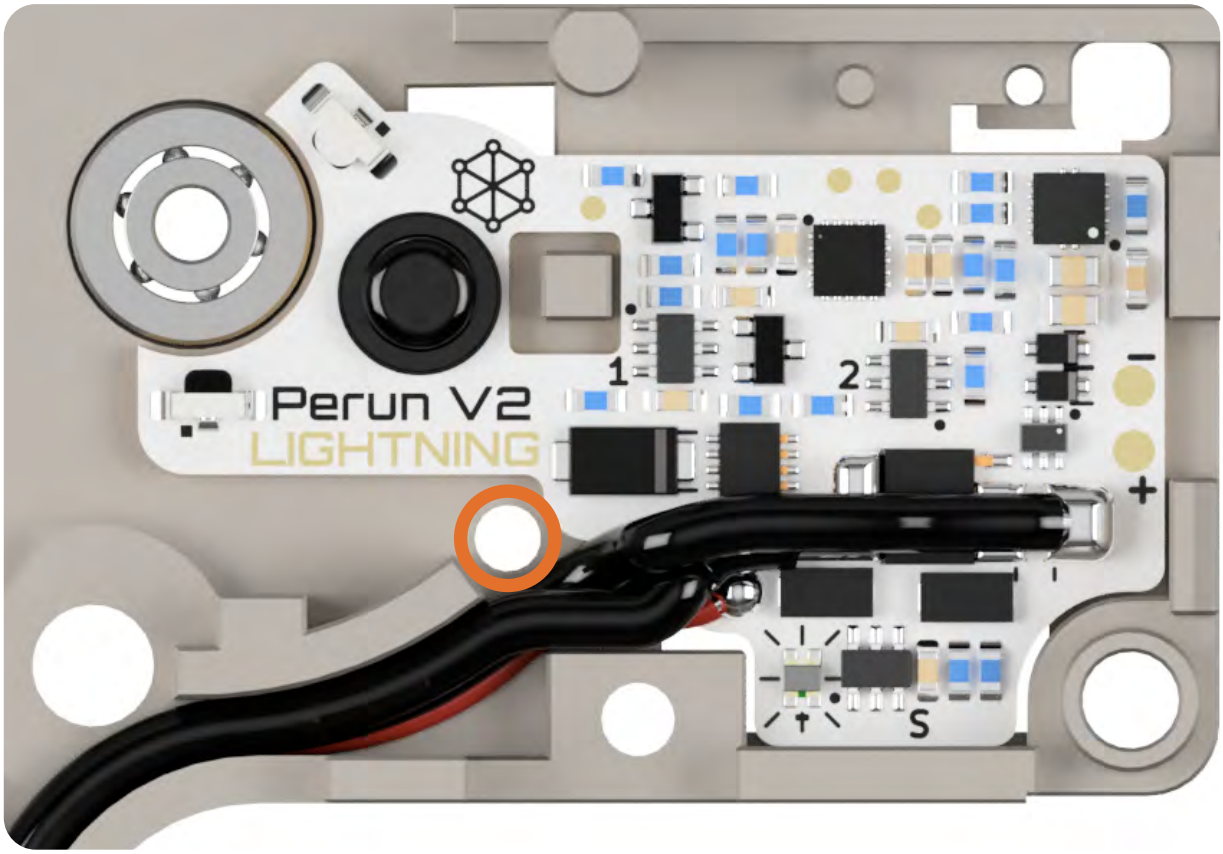
Stick the magnet in the cut-out in the plastic positioner.

If there is any problem with the magnet detection because the selector plate is very different from the standard, there are cues for a more precise positioning of the magnet on the back sticker of the electronic board. Magnet should be in corresponding positions marked on the back sticker when selector is set to SAFE, SEMI and AUTO.

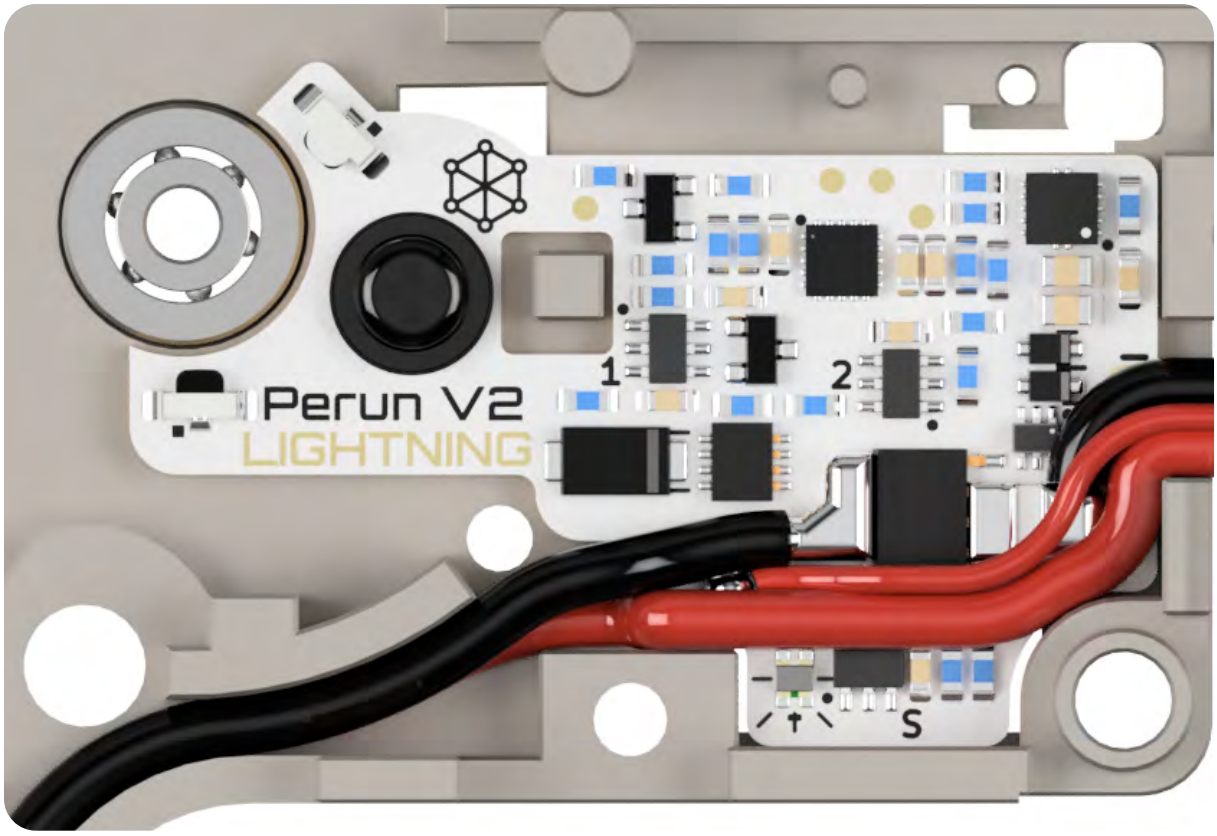


Correct selector magnet positions for SAFE, SEMI and AUTO

6. Channel the wires as shown on the picture below. Make sure that wires are not obstructing the hole for the middle pin, so that wires are not damaged during insertion of the pin!



Correct wire channeling in the back wired variant. Make sure wires do not cover the hole for the middle pin!



Correct wire channeling in the front wired variant.

7. Assemble the gearbox only with the selector plate, sector gear, Perun, and the trigger inside. Before you do it, you can shim the trigger (standard gear shims can be used for this purpose), so that it can only move back and forth, not sideways, if it is really wobbly. This way you can reduce the risk of having "external magnetic field" errors showing up. On the other hand, if you do not shim the trigger, you might be able to trigger shots by moving it from the side on highest sensitivity settings, and the error might not necessarily be signaled. It is a matter of experimentation as various combinations of gearbox shells and triggers will give different results.

8. Put the gearbox in the lower receiver and insert the rear and middle pins. While inserting the middle pin, you might need to pull and hold the trigger, to let the middle pin go through.

9. Connect the battery to the mosfet (with the motor still disconnected) and use the **Sensor check feature** to check, whether all the sensors work properly. Should they not, consult the troubleshooting section in the **Diagnostic mode chapter** of this manual.

10. If everything works correctly, remove the gearbox from the lower receiver.

11. Open the gearbox again and put the rest of the components inside. If you are installing Perun in a gel blaster or using a tracer hop-up unit, use the soldering pads on Perun's electronic board marked with "+" and "-" to solder the mag terminals' wires or tracer wires. Be careful not to accidentally solder the pads together with the adjacent components!

In front wired version of the mosfet there is no access to the soldering pads. Solder the tracer wires to the negative motor wire and the positive wire.

Location of the tracer/mag soldering pads

Note that you can leave the mechanical safety mechanism, if you like. It is not necessary, though.
It is a matter of your preference.

The safety lever might have to be shortened, to allow the selector to be set to "SAFE".

12. Assemble the gearbox. Put the whole replica together, **except for the motor**. Watch out for the wires, make sure that the insulation does not get damaged during the assembly!

13. It is recommended to check for any short circuits between the plugs, gearbox and body using a multimeter.

14. Perform selector calibration.

5. Selector calibration

There are two modes for the selector plate detection – **default** and **calibrated**. **Default is the factory setting** and relies on correct placement of the selector plate magnet and may not always be perfect. It is recommended to perform selector calibration in all cases. After successful calibration, selector will be in the **calibrated** mode. **After each unsuccessful calibration selector will return to default mode.**

To perform the selector calibration, have the replica wholly assembled **except for the motor, which should still be disconnected**. It should only be done now, after installation, once all the components are in place.

1. **Enter Sensor Check Mode**
   Connect the battery with the motor still disconnected.
   A slow blinking yellow LED means sensor check mode is active.
2. **Start Calibration**
   Pull and hold the trigger. The LED should turn solid violet while the trigger is held.
   After a few seconds, the LED will start rapidly blinking white – calibration has started.
3. **SAFE Position Calibration**
   Set the selector to SAFE. Hold the trigger until the LED turns green, then release.
   The LED should now blink blue rapidly.
4. **SEMI Position Calibration**
   Set the selector to SEMI. Hold the trigger until the LED turns green, then release.
   If all went well, the LED should now blink red rapidly.

> ! If instead of seeing green LED and then red, you immediately see red and then it returns to blinking yellow, it means that system did not detect a change between SAFE and SEMI and you are back in the sensor check mode. Refer to Unsuccessful Calibration below.

5. **AUTO Position Calibration**
   Set the selector to AUTO. Hold the trigger until the LED turns green, then release.
   If you see a red LED, go to Unsuccessful Calibration.
   The LED should now blink blue rapidly.

> ! If instead of seeing green LED and then blue, you immediately see red and then it returns to blinking yellow, it means that system did not detect a change between AUTO and SEMI and you are back in the sensor check mode. Refer to Unsuccessful Calibration below.

6. **Final SEMI Confirmation**
   Set the selector back to SEMI. Hold the trigger until the LED turns green, then release.
   Red LED? See Unsuccessful Calibration.
7. **Verify Calibration**
   Stay in sensor check mode.
   Switch through the selector positions and check if the LED colors match:

   SAFE > White

   SEMI > Blue

   AUTO > Red

Unsuccessful calibration

If the calibration was unsuccessful, this could be due to following problems:

1. Improper positioning of the selector magnet if it was glued to the original selector plate.
2. Problems with the selector plate. Make sure that it does not have too much slack and is not blocked.

6. During the start-up

Unless the selector calibration was performed, every time **when connecting the battery to the replica, make sure that the selector is set to "SAFE"**. This is a safety concern, but it also helps Perun find out, where the "SAFE" position is, if it was not calibrated. If you will connect the battery with the selector on "SEMI" or "AUTO", the replica may not shoot unless you switch to "SAFE" first or even if it does, the unit may sometimes function abnormally until the "SAFE" position is reached at least once.

During successful initialization procedure, if the motor is correctly detected and no faults were recognized, Perun will beep once, LED will glow green for a second and then the unit will go silent and dark unless shots are fired or programming mode is activated.

7. Features and programming

Video manual showing the general way of programming Perun products is available here:

https://www.youtube.com/watch?v=2o4eWEYyw7c

The details for Perun V2 Lightning are available in this document.

To enter the programming mode:

For "SEMI" – keep the selector on "SEMI" for a couple of seconds, then go to "AUTO" and back, twice, fast! ("SEMI" > "AUTO" > "SEMI" > "AUTO" > "SEMI")

Successful entry into the programming mode for "SEMI" will be confirmed by **one sound signal and a blue LED light.**

For "AUTO" – keep the selector on "AUTO" for a couple of seconds, then go to "SEMI" and back, twice, fast! ("AUTO" > "SEMI" > "AUTO" > "SEMI" > "AUTO")

Successful entry into the programming mode for "AUTO" will be confirmed by **three sound signals and red LED light.** Switching the selector between "AUTO" and "SEMI" and back allows to move between the modes. Pulling the trigger allows to enable, disable, or set levels for the modes.

Programming is only possible within 5 minutes after connecting the battery or after the last time the programming mode was active.

Full feature description

All the settings are set independently for "SEMI" and "AUTO" selector positions, except for Li-Po alarm and Master reset, which work for both selector positions.

Function and LED color	Description
Firing mode Green	Choose firing modes for each selector position: SAFE, SEMI, burst, auto and binary. No sound signal, steady green light – SAFE 1 short single signal and blink – SEMI 3 short signals and blinks - Burst 1 long signal and blink – Auto 2 long signals and blinks – binary (SEMI, but shots are fired when the trigger is both pulled and released) In binary trigger mode, hold the trigger for 2 seconds to cancel the second shot.
Burst count Green and white blinking alternately	Define number of shots in a burst. It will become relevant if a firing mode using burst will be activated. 2-5 short signals and blinks – 2-5 round burst
AB Blue	Active brake (AB) stops the motor after the shot, preventing the spring from remaining in a compressed state and eliminates double shots on SEMI in replica with high rate of fire ("overspin"). 5 levels of braking strength are available – from 1 (weakest braking) to 5 (the strongest). Braking can be also completely disabled. It is advised not to use braking or use it on the lowest level, if stronger braking is not necessary, as it negatively impacts the service life of motor brushes and causes increased heating. Tip: Switch to SEMI, fire a single shot, and hold the trigger after the shot. This will cause a second single shot with strongest AB setting to be fired after 3 seconds, making sure the spring remains uncompressed. It is advised to do that when you finish shooting. In Perun V2 Lightning, active brake is independent of precocking settings! No sound signal while LED glows blue means, that the active brake is disabled. 1 to 5 signals indicate braking levels from 1 (the weakest) to 5 (the strongest).
Precocking Yellow	When shooting on SEMI, precocking keeps the piston in the rear position, ready for the shot. This decreases the time between pulling the trigger and the actual shot, increasing realism, and giving advantage in CQB fights. Correct precocking level must be set individually to each replica and according to user preferences. Precocking power is automatically adjusted to battery voltage and SEMI or automatic shots. Tip: To release the spring after using precocking, switch to SEMI, fire a single shot, and hold the trigger after the shot. This will cause a second single shot with the strongest active brake setting to be fired after 3 seconds, making sure the spring remains uncompressed. It is advised to do that when you finish shooting. In Perun V2 Lightning, precocking is independent of active brake settings. No sound signal while LED glows yellow means, that the precocking is disabled. 1 to 8 signals indicate precocking levels from 1 (the weakest) to 8 (the strongest).

Function and LED color	Description
Two-stage trigger  Violet and green blinking alternately	The two-stage trigger allows firing in one mode after pulling the trigger slightly, and another when the trigger is pulled further. Following modes are possible: SEMI > Burst SEMI > Auto Burst > Auto Burst count is set to 3 by default, but if burst of 2, 4 or 5 will be set in the “Firing mode”, such burst count will become active in the Two-stage trigger accordingly. Does not work with the binary trigger. When the two-stage trigger is enabled, the binary trigger is automatically disabled. No sound signal while the LED blinks purple and green alternately means, that the two-stage trigger is disabled. When it is enabled, sound signals resembling the active setting can be heard.
Trigger sensitivity  Violet and yellow blinking alternately	This parameter decides how sensitive is the trigger. 8 levels are available, which result with a shot after the lower tip of the trigger travels roughly: 1 – 6 mm 2 – 5 mm 3 – 4 mm 4 – 3 mm 5 – 2 mm 6 – 1 mm 7 – 0.5 mm 8 – 0.25 mm Those are approximate values and may vary depending on parts used. 1 to 8 signals while the LED blinks violet and yellow alternately indicate sensitivity levels from 1 (the lowest) to 8 (the highest).
ROF reduction White	This function allows to lower the rate of automatic fire. 5 reduction levels are available: 1 – 6% 2 – 12% 3 – 18% 4 – 24% 5 – 30% Those are approximate values and may vary depending on replica configuration. SEMI-automatic shots and the first shot in burst are always fired without any power reduction to retain good trigger response. No sound signal while LED glows white means, that the ROF reduction is disabled. 1 to 5 signals indicate reduction levels from 1 (the smallest) to 5 (the greatest).

Function and LED color	Description
DMR mode Purple	DMR mode allows only semiautomatic shots and limits their frequency as well. Its main use is for high power DMR-styled replica on fields, which demand such limitations. 0.25s, 0.5s, 1s, 2s and 3s intervals are available. No sound signal while the LED glows purple means, that the DMR mode is disabled. 1 to 5 signals indicate interval levels from 1 (the shortest) to 5 (the longest).
Li-Po and Li-Ion alarm Teal	Li-Po and Li-Ion alarm informs the user that battery voltage has fallen below 3.7V per cell, at which the battery should not be further used and must be recharged. Unit automatically detects number of cells in the battery and determines safe voltage range. The need for battery replacement is signaled by short sound signals every 30s. Disable this function if you are using batteries other than Li-Po or Li-Ion. No sound signal while the LED glows teal means, that the alarm is disabled. 1 signal indicates activation of the alarm.
DSG Green and blue blinking alternately	This function can be enabled when dual sector gear is used, to provide better cycle control. No sound signal while LED glows green and blue alternately means, that DSG is disabled. 1 signal indicates activation of the DSG mode.
Master reset Red	Master reset returns the unit to the factory settings. To reset, pull and hold the trigger for 2 seconds or simply wait 10 seconds while the LED glows red and until the reset takes place without using the trigger. A long sound signal confirms return to factory settings.

8. Factory settings

New units and units where master reset was activated will have modes set in a following way for both selector positions:

	Firing mode	semi on “SEMI” and auto on “AUTO”
	Burst count	3 round burst
	AB	level 2
	Precocking	disabled
	Two-stage trigger	disabled
	Trigger sensitivity	level 4
	DMR mode	disabled
	ROF reduction	disabled
	Li-Po and Li-Ion alarm	enabled
	DSG	disabled

9. Diagnostic system

Perun V2 Lightning has a diagnostic system that will help you find the source, should you encounter a problem. After the battery is connected, the unit undergoes a start-up check, to make sure replica is ready to work. Successful completion of this check is indicated by a short green blink of the LED.

Problem and LED color	Description
Disconnected motor/ Diagnostic mode Yellow, blinking	This not only provides information about the disconnection of the motor, but it is also a diagnostic mode for the trigger, selector, and sector gear sensors. With the motor disconnected, engaging the sensors will cause the LED to glow purple (trigger), white, blue and red (selector), or green (sector gear) for a moment. This can be used for troubleshooting. Reconnecting the motor will restore normal function. **!** Motor check only takes place at start-up.
Fuse activation Red, continuous, or blinking	Activation of the fuse with a distinction between a short circuit (continuous red) and gearbox jam (blinking red). In some situations, this distinction may not be correct, for instance, a gearbox jam may be incorrectly read as a short circuit and vice versa. Electronic fuse might as well be activated by parts combination, which draws too much current (e.g., high speed motor and gears). The unit will start functioning normally after the battery is reconnected unless there still is a short circuit that will be detected at the next start-up.
Gearbox cycle detection failure Yellow and green blinking alternately	The gear sensor did not detect gearbox cycle. If you are getting unwanted burst on SEMI, check whether the gears or the sensors are not damaged and whether the sensors are properly engaged by the gears. If the replica does not shoot at all, it probably is a faulty motor, motor is starting to wear out, or the connection is unreliable.
Unit temperature is too high Yellow and white blinking alternately	Too high temperature of the unit (electronic board) was detected. It will not function again until it cools down, after which it will operate normally.
Battery with too low voltage is connected Yellow and teal blinking alternately	Battery with voltage below 7 V is connected. Change the battery to one with voltage between 7 V and 17 V.
Battery with too high voltage is connected Red and teal blinking alternately	**!** Battery with voltage over 17 V is connected. The battery must be immediately disconnected, as it can cause permanent damage! Change the battery to one with voltage between 7 V and 17 V.

An external magnetic field was detected  Red and violet blinking alternately	External magnetic field (originating not from the trigger magnet) was detected by the trigger sensors. The unit will be blocked until the source of the magnetic field is removed.
Main transistor or driver damage  Red and yellow blinking alternately	The main transistor or driver is damaged. The unit needs to be sent back for repair.
Battery voltage sensing malfunction  Red and white blinking alternately	The battery detection system is malfunctioning. The unit needs to be sent back for repair.

Other known problems:

Problem	Cause	Solution
Replica fires a 2-round burst in semi-auto mode.	Motor and battery are too strong for the main spring, which causes an overspin.	Enable AB or precocking.
	Too high precocking level	Set precocking to a lower level.
	Trigger mechanism malfunction.	Check the cut-off lever and contacts, replace if needed.
Replica does not shoot; the unit does not emit any light or sound.	Incompatible T-Deans battery connector.	T-Deans plugs and sockets from various manufacturers may sometimes not work together reliably. Although the plug may seem to fit the socket nicely, the conductive surfaces may not contact each other, cutting the power off. In that case try with another battery, most preferably with a T-Deans socket made by different manufacturer.
Battery and/or the motor heat up very much.	The battery has too low capacity (mAh) and/or "C" parameter.	Use a battery with higher capacity and/or "C" parameter.
	The motor is too weak.	Use a stronger motor, possibly with neodymium magnets.
	Increased motor load caused by an excessive friction, for example caused by: - improper shimming, - motor positioned askew in the pistol grip.	Remove the cause of the friction.
	The motor/gear ratio/spring combination draws too much current (for instance – high speed motor, high speed gears and M120 spring).	Change the replica configuration by using a softer spring, gears with higher ratio (lower speed, higher torque) or motor with higher TPA number (or lower revolution speed).

When trying to shoot, replica remains silent or shortly vibrates, after which green LED appears and one beep is heard	A gearbox jam or a short circuit is present but because of low battery power or bad connection with the battery, the unit resets due to voltage drop instead of the electronic fuse properly activating.	Remove the cause of the gearbox jam or short circuit.
	The build is too power demanding for the battery use and the unit resets due to voltage drop.	Use a higher-powered battery.
There are too many or too few shots compared to what was programmed and the cycle detection error code does not appear	The sector gear is too close to the sensor line, or the gear is too dirty and prevents proper readings.	Unscrew the unit, move it to the right as far as possible and screw it back again.
		Clear the sector gear of excess grease.
External magnetic field error appears, despite no external magnet being close to the replica	Trigger was being held at startup.	Reconnect the battery and do not hold the trigger during the startup.
	The trigger has too much slack and can move sideways, which can activate the error.	Shim the trigger so that it cannot move sideways, only back and forth.
	The triggers movement is obstructed and when it is released, it may end up in slightly different positions. If at some moment the trigger will move further back than it was at startup, this can activate the error.	Make sure the trigger can move freely and completely unobstructed.
		Use stronger trigger spring.
When RoF reduction is enabled, electronic fuse activates, or the replica just does not shoot	The RoF reduction is too great, and the motor is not able to cycle the gearbox.	Reduce RoF reduction or disable it completely.
In SR25 with 19-teeth gears, active brake and/ or spring drop does not work properly (the piston remains precocked)	Due to additional teeth, the cycle is detected too early. Perun brakes the gears fast enough to stop the sector gear just before it can release the piston to make a shot.	Enable precocking on a low level and check, whether the cycle ends where it should – with the piston in front position. Spring drop may still not work, and this method should be used instead to release the spring. If you want to have precocking during play, we advise to set high precocking for the game on SEMI, and low precocking on auto only for dropping the spring.
Motor beeps from time to time	Li-Po alarm has activated.	Replace the battery (if you're not using a Li-Po or Li-Ion, disable the Li-Po alarm).
Safe mode doesn't work	Selector position detection error.	If part of the receiver wall directly in front of the selector sensors is not black, put a black sticker or tape on the selector wall directly in front of the sensors, or paint this area black. Remove metal brace from selector plate, if present.

In case of any technical questions, please contact us at: info@perunairsoft.pl

10. Sensor check

You can easily check the sensor readings by disconnecting the motor. When Perun V2 Lightning is connected to the battery, but disconnected from the motor, it informs about this by yellow, flashing light. If during that flashing a properly working and connected sensor will be engaged, the unit will signal that by changing the LED color for a moment. After you enter the sensor check mode, it will be active for 5 minutes, after which the unit will shut down. To restart it, simply reconnect the battery.

To enter this mode, the motor must be disconnected first, only then connect the battery!

LED color	Sensor
Disconnected motor / Sensor check Yellow, blinking	None of the sensors detects any change at this moment.
Selector switched to "AUTO" Red	This should happen after the selector is switched to "AUTO".
Selector switched to "SEMI" Blue	This should happen after the selector is switched to "SEMI".
Selector switched to "SAFE" White	This should happen after the selector is switched to "SAFE".
Trigger Purple	Trigger pull detected.
Sector gear Green	Sector gear movement detected.

Checking the trigger and selector sensor can be done by simply pulling the trigger or switching the selector between "SAFE", "SEMI" and "AUTO" positions. This can be done without disassembling the whole replica.

To check the sector gear sensor, it is best to open the gearbox and remove everything out of it, except for Perun and the sector gear (make sure to keep the shimming the same as in assembled replica, it can influence whether the sensor would work or not). Then spin the sector gear by hand and see, whether the color of the light changes to green.

11. Warranty and liability limitations

Warranty

We offer a 24-month warranty on this electronic trigger unit from the date of retail purchase. This warranty covers defects in materials or workmanship under normal use conditions. The warranty does not cover:

- Damage caused by improper installation, misuse, or neglect.
- Any alterations, modifications, or repairs made by unauthorized persons or third-party services.
- Damage resulting from the use of third-party components or accessories not approved by the manufacturer.
- Wear and tear due to regular use or external factors such as extreme conditions.
- Any incidental, consequential, or punitive damages, including damage to the airsoft replica or any other parts such as the gearbox, motor, or batteries, arising from improper use of the trigger unit.

Claims Process

To submit a warranty claim, contact our customer service team at info@perunairsoft.pl with a detailed description of the defect. If your claim is approved, we will repair or replace the unit at our discretion. This warranty does not cover shipping costs for returning the product. This warranty gives you specific legal rights, and you may have other rights which vary depending on your region.

Limitation of Liability

The manufacturer and its affiliates are not liable for any personal injury, damage, or loss of property arising from:

- Improper installation or use of this product.
- Failure to follow the instructions provided in this manual.
- Use of the product in a manner not intended or recommended by the manufacturer.

Manufacturer:

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