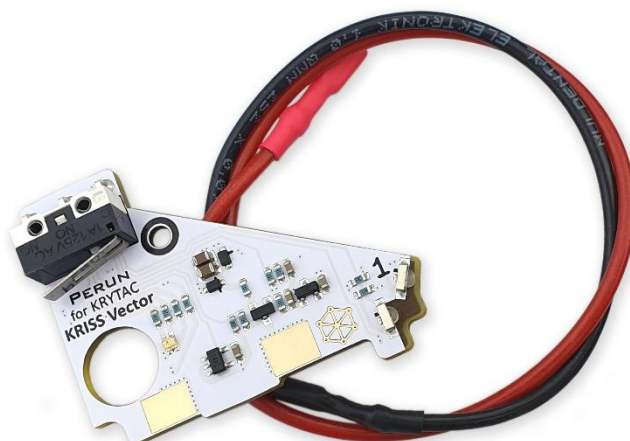# Perun for Krytac Kriss Vector

Manual

Perun for Krytac Kriss Vector replaces stock electronics in Kriss Vector airsoft replicas made by Krytac company. It provides lots of additional features, including active braking and full cycle control. Reading this manual will help you fully exploit this unit's potential and in case of encountering any problems, you can look here for solutions.

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1. Technical data

Recommended power sources

Perun for Krytac Kriss Vector 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 for Krytac Kriss Vector can work with even the most demanding setups, both regarding rate of fire and muzzle velocity.

Electronic fuse

Perun for Krytac Kriss Vector 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 onboard electronic fuse does not wear out or need to be replaced.

Additionally, 30A mini fuse is added to the package as a replacement for stock standard fuse, which has lower rating. We recommend that both fuses be used together.

Battery connector type

Perun for Krytac Kriss Vector uses a part of the stock electric system for power transmission. Therefore, the battery connector you have used so far, will remain unchanged.

Power consumption when idle

When on "SAFE", Perun from Krytac Kriss Vector is electrically disconnected from the battery. Therefore, when on "SAFE", the idle power consumption is none. Nevertheless, do not leave the battery connected to the replica when you are not using it! When not on "SAFE", Perun for Krytac Kriss Vector consumes 1 mA. To put it in context, this would completely drain and damage a half-laden 1200 mAh battery in around a month, if you stored the replica with battery connected and not on "SAFE". Even if the replica was on "SAFE" during storage, it is recommended to store the battery outside.

Brushless motors

Perun for Krytac Kriss Vectors works with BLDC motors like Option No. 1 or Warhead. However, a few cases were reported where a BLDC motor was not properly detected by the unit.

⚠️ *RoF reduction feature must not be activated when these motors are used!*

2. Installation

Installation of Perun for Krytac Kriss Vector is relatively easy and doesn't demand opening the gearbox, though it must be taken out of the replica body.
1. Remove all the pins to break the replica down into two main halves.
2. Remove the gearbox from the plastic front cover, to gain access to the wires going from the unit to the motor.

3. Remove the motor bracket and disconnect the wires from the motor.
4. Remove the motor. It can cause problems when you will be trying to screw the electronic board back to the gearbox – its magnet will be attracting the screw, when you will be trying to screw the new unit in place.
5. Disconnect cut-off signal wires from the mosfet.
6. Use a hole on the left side of the gearbox to remove the screw holding the electronic board in place.
7. Remove the stock electronic board.
8. Put Perun for Krytac Kriss Vector in place and screw it to the gearbox.
9. Connect the cut-off signal wires. Please note, that the socket in Perun is rotated (upside down) compared to the original mosfet. Therefore, when plugging the wires in, make sure it is the correct way and do not use excessive force.
10. Place the motor back in place, connect the wires.
11. In the other half of the replica, the one containing the trigger and selector controls, unscrew and remove all selector levers.
12. Slide of the top rail. It is held in place only by friction, but quite firmly. Cautious use of a rubber hammer or similar tool might be helpful.
13. Remove screws that were covered by the top rail.
14. Slide out the trigger housing assembly.
15. Stick the selector stickers on the selector cam, as shown on the photos below.
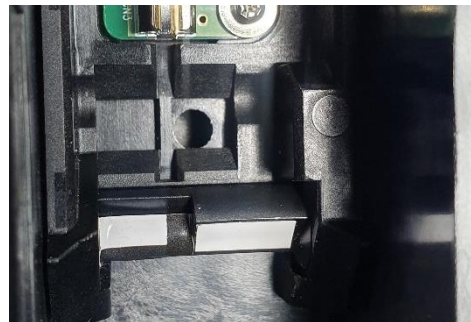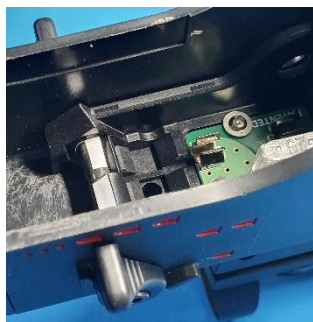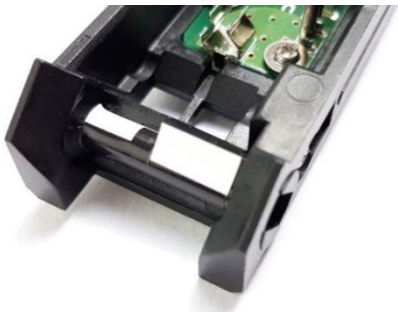
16. Assemble the whole replica.

3. Selector calibration

The selector position detection in most cases should work fine from the start, without need for calibration. However, in some cases the detection might not be perfect and then it would be recommended to perform calibration. To calibrate the selector:

1. Enter the diagnostic mode by disconnecting the motor and connecting the battery.
2. Hold the trigger for 5 seconds (LED will glow purple when the trigger is pressed).
3. Successful entry into calibration will be signaled by LED quickly transitioning from red to cyan and blue.
4. The LED will start blinking red. Switch the selector to "AUTO" and hold the trigger (LED will start glowing red steadily) until LED starts glowing cyan.
5. Switch the selector to "BURST" and hold the trigger (LED will start glowing cyan steadily) until LED starts glowing blue.
6. Switch to "SEMI" and hold the trigger (LED will start glowing blue steadily). If three green flashes followed, the calibration was successful. Three red flashes mean, that the calibration did not succeed and has to be repeated and default thresholds are being restored (possibly the sticker position has to be corrected).

You can also watch the procedure here: https://youtu.be/CnkPUHC2QlQ

4. Features and programming

Before you enter the programming mode, remove one of the main pins to reveal the LED diode. This will be needed to observe color signals emitted by the unit. The location of the pin is shown on the photo to the right.

To enter the programming mode, make sure that the safety is not engaged. When the replica is on "SAFE", the mosfet is disconnected from the battery and thus disabled.

To start, keep the selector on "AUTO" for a couple of seconds, then go to "BURST" and back, twice. ("AUTO" → "BURST" → "AUTO" → "BURST" → "AUTO")

Successful entry into the programming mode will be confirmed by **a sound signal and a green LED light.**

Switching the selector between "AUTO" and "BURST" and back allows to move between the modes. Pulling the trigger allows to enable, disable, or set levels for the modes.

Full feature description

Function and LED color	Description
Firing mode for "SEMI" selector position 🟢 Green	Choose one of the firing modes for any selector position: safe, semi, binary, 2-5 shot burst and auto: • No sound signal, steady green light – safe • 1 short single signal and blink – semi
Firing mode for "BURST" selector position 🟢🔵 Green and cyan	• 2 long signals and blinks – binary trigger (similar to semi, but shot is taken also when the trigger is being released) • 2-5 short signals and blinks – 2-5 round burst
Firing mode for "AUTO" selector position 🟢🔴 Green and red	• 1 long signal and blink - auto
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 replicas with a 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 all the time, if not necessary, or to use it on the lowest possible level, because strong braking 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 the strongest AB setting to be fired after 2 seconds, making sure the main spring remains uncompressed. It is advised to do that when you finish shooting for the day.* 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). ⚠️ *While precocking is on, the AB setting becomes irrelevant. However, any programmed AB setting will be stored in memory and will become effective as soon as precocking is disabled.*

Function and LED color	Description
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 an advantage in CQB fights. 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 AB setting to be fired after 2 seconds, making sure your spring remains uncompressed. It is advised to do that when you finish shooting for the day.* 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). ⚠️ *The AB setting does not affect the functioning of precocking, it is ignored if precocking is enabled.*
ROF reduction ⚪ White	This function allows to lower the rate of automatic fire. 5 reduction levels are available: 1 – 6% ROF reduction 2 – 12% ROF reduction 3 – 18% ROF reduction 4 – 24% ROF reduction 5 – 30% ROF reduction ⚠️ *Those are approximate values and may vary depending on replica configuration.* 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). ⚠️ *Semi-automatic shots and the first shot in burst are always fired without any power reduction to retain good trigger response.*
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. The unit automatically detects the number of cells in the battery and determines a safe voltage range. The need for battery replacement is signaled by short sound signals every one minute. Disable this function if you are using batteries other than Li-Po or Li-Ion. No sound signal while LED glows white 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 precocking 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. A long sound signal confirms return to factory settings.

5. Factory settings

New units and units, where master reset was activated, will have modes set in a following way:

- Firing modes:
    - semi on "SEMI"
    - 2 round burst on "BURST"
    - auto on "AUTO"
- AB – level 3
- Precocking – disabled
- ROF reduction – disabled
- Li-Po and Li-Ion alarm – enabled
- DSG mode - disabled

6. Diagnostic system

Perun for Krytac Kriss Vector 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 the 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 / Switch check 🟡 Yellow, blinking	This not only provides information about the disconnection of the motor, but it is also a switch check mode for the trigger, selector, and sector gear switches. With the motor disconnected, engaging the switches will cause the LED to glow purple (trigger), white, blue, cyan, red (selector), or green (sector gear) for a moment. This can be used for troubleshooting problems with the switchboard in the gearbox. Reconnecting the motor will restore normal function. ⚠️ *Motor check only takes place at start-up. A disconnection after the start-up will not be signaled!*
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. 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.
Trigger pull detected during start-up 🟡🟣 Yellow and purple blinking alternately	The unit detected that the trigger was being held during start-up of the electronic board – during battery connection or when switching from "SAFE" to "FIRE". This can also indicate a malfunction of the trigger switch. The unit will start functioning normally after the trigger is released.
Gearbox cycle detection failure 🟡🟢 Yellow and green blinking alternately	The unit did not receive information about cycle end from the sector gear switch and stopped firing only after safety time limit was exceeded. This may indicate a problem with the switch, cut-off lever, or damaged wire.

Problem and LED color	Description
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	The battery with a 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	⚠️ **The battery with a voltage over 17 V is connected. The battery must be immediately disconnected, as it can cause permanent damage!** Change the battery to one with a voltage between 7 V and 17 V.
Main transistor or driver damage 🔴🟡 Red and yellow blinking alternately	Main transistor or driver is damaged. Unit needs to be sent back for repair.
Battery voltage sensing malfunction 🔴⚪ Red and white blinking alternately	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 overspin.	Enable AB or precocking.
	Too high precocking level.	Set precocking to a lower level.
	Cut-off mechanism malfunction.	Check the cut-off switch and wires connecting it with the mosfet, 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 a different manufacturer.
	Safety is on.	Switch from "SAFE" to "FIRE".
	The mini car fuse has snapped.	Replace the fuse.

Battery and/or the motor heat up very much.	The battery has a too low capacity (mAh) and/or the "C" parameter.	Use a battery with higher capacity and/or the "C" parameter.
	The motor is too weak.	Use a stronger motor, possibly with neodymium magnets.
	Increased motor load caused by excessive friction, for example caused by: - improper shimming, - motor positioned askew in the pistol grip.	Remove the cause of the friction.
The same battery and/or motor did not heat up earlier.	Low-resistance MOSFET transistor and wiring used in Perun for Krytac Kriss Vector provide resistance much lower than mechanical contacts and some other MOSFET circuits. According to Ohm's law, that allows more current to be drawn from the battery and directed to the motor. This makes the trigger response and rate of fire faster, but a higher current draw also leads to increased heating of electronic elements. This may become too demanding for the previous battery and/or motor and a need to change to new ones may arise.	

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

7. Switch check

You can easily check the switch set in the gearbox by disconnecting the motor. When for Krytac Kriss Vector 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 switch will be closed, the unit will signal that by changing the LED color for a moment. After you enter the switch 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	Switch
Disconnected motor / Switch check 🟡 Yellow, blinking	No switch activation is being detected at this moment
Selector set to "SEMI" 🔵 Blue	This should happen after the selector is switched to "SEMI" from any other position.
Selector set to "BURST" 🔵 Cyan	This should happen after the selector is switched to "BURST" from any other position.
Selector set to "AUTO" 🔴 Red	This should happen after the selector is switched to "AUTO" from any other position.
Trigger 🟣 Purple	The trigger switch was closed.
Sector gear 🟢 Green	The sector gear switch was closed.