



INSTALLATION MANUAL

FOR GEARBOX EVO3

Leviathan-EVO3 parameters

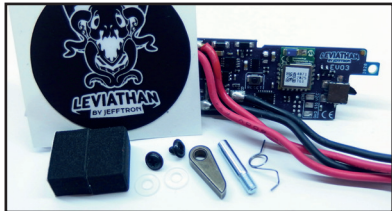
- It is processor controlled mosfet with wireless communication.
- Device is fully integrated inside the gearbox Scorpion EVO3 A1 from ASG manufacturer instead of the original electronics.
- Completely made wires with dean T connector.
- It adds new shooting modes, controls RoF, pre-cocking, active braking, electronic fuse, low battery indication, statistics, bolt catch disable, empty magazine sound indication ...
- Controls via app in the smartphone (Android and iOS operating system).
- Usable for battery with max. 17 volts (max. lipol 4S 14,8V).

Safety warning

- Installation of this device into the gearbox requires advanced technician skills!
- Please read these informations before installing your device to prevent any damage.
- Short circuit or incorrectly connected battery will cause immediate damage to the device which is not covered by the warranty. It can lead to fire or even battery explosion.
- Disconnect battery, when you aren't using the gun! Otherwise you will fully discharge the battery. Because the device drains small amount of current from it all the time.
- Don't connect battery when gun pointing towards you, another person or an animal.
- Don't modify, repair, put into any kind of liquids or thermal shock the Leviathan-EVO3.

Package contents

- Leviathan-EVO3 drop-in module with wiring
- Two washers with screws to secure Leviathan-EVO3 in the gearbox
- Set for installation anti reverse latch
- Leviathan black 40mm round sticker
- Foam to keep device in place
- Installation manual



The gearbox preparation

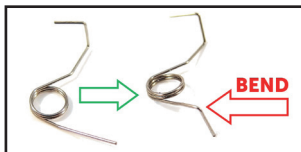
1. Remove and open the gearbox according to the normal gun disassembly procedure.
2. Take out all the internals from the gearbox and clean the vaseline, oils after them.
3. Remove electronics and cut off lever from the gearbox, not used with Leviathan-EVO3.
4. Check the gearbox for edges. Grind for smooth surface to prevent Leviathan damage.

Anti-reverse latch modification (ARL mode)

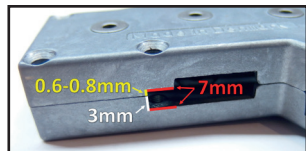
ARL mode allows to use pre-cocking, lower level active braking and DSG gears, because anti-reverse latch holds gears in the position, when is piston partly stretched.



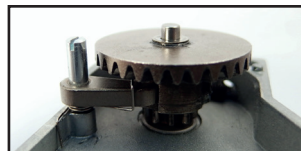
1. Parts used for ARL mode are included in package with Leviathan-EVO3.



2. Bend in the middle the spring for ARL approximately 45° down.

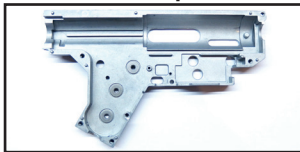


3. Grind hole in both gearbox halves for ARL. Don't make it too big, continuously check ARL fitment in the hole.

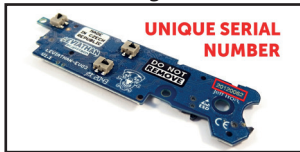


4. Use glue to hold screw in place. Test if ARL holds gear to not spin clockwise. ARL mode is finished now.

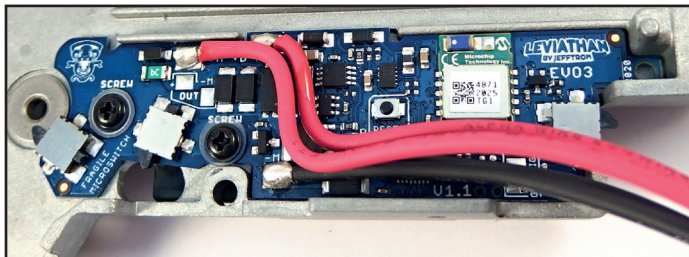
Insertion procedure of Leviathan-EVO3 into the gearbox



1. Prepared gearbox for installation.

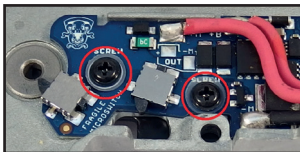


2. Do not remove this transparent foil.



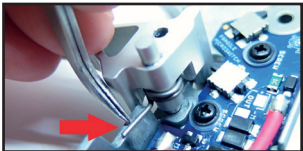
3. Insert Leviathan-EVO3 instead of the original electronics:

- Check if it is laid flat on the gearbox shell.
- Adjust the position of the Leviathan-EVO3 to same distance from sector gear bushing.
- Use screws with pads from package and screw the Leviathan-EVO3 to the gearbox (red circles).
- Bend wires according the picture.

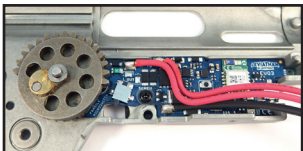




4. Check other side if all 3 micro switches are in the center of the holes.



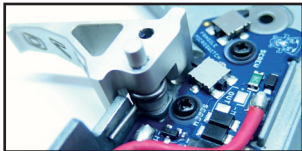
6. Push trigger spring into the gearbox by screwdriver.



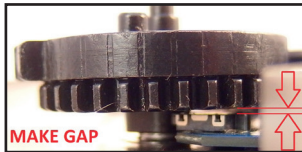
8. Insert into the gearbox sector gear with piston teeth in up position. Use shims with small outer diameter.



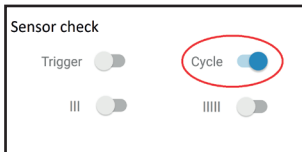
5. Carefully insert the trigger into the gearbox in rest position. Trigger spring must be outside the gearbox.



7. Final trigger assembly.



9. Make sure the gear does not touch micro switch body. Spin the gear slowly to check right Cycle detection in the app



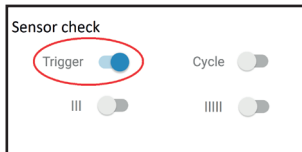
10. When is turning sector gear, the “Cycle” icon must be flashing blue. See the connection procedure on page 7.



12. Stick the foam to the right gearbox shell (included in the package).



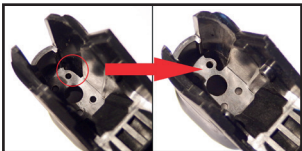
14. Overall look to the wiring.



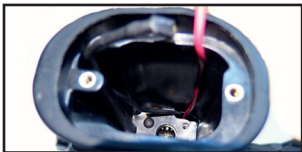
11. When is trigger pressed, the “Trigger” icon must be flashing blue.



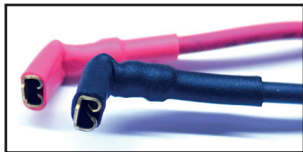
13. Insert all internals into the gearbox, screw gearbox together and place wires to the holders on the picture.



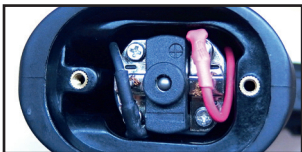
15. Grind hole to the pistol grip for better pull wires through it.



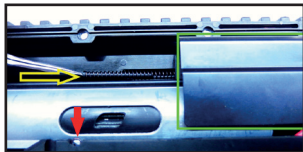
16. Black wire bends back at the bottom of the grip and red wire lead to the front.



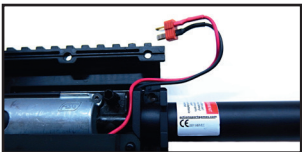
17. Bend both motor connectors exactly like on the picture.
Do not bend it to other site!



18. Connect wires to the motor. Keep in mind right motor polarity.



19. Red arrow - push spring inside the hole.
Green frame - put the metal slide on gearbox and then into the gun body.
Yellow arrow - push the spring into the groove.



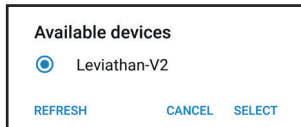
20. Wires to the battery lead in the groove in the hop-up chamber.

21. Finish rest according to the normal gun reassembly procedure.

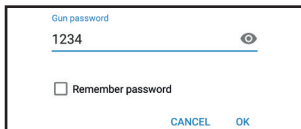
Testing micro switches

1. Install „**Leviathan by JeffTron**“ app from iOS store or Google play into your smartphone.

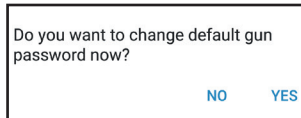
Or use link <https://www.jefftron.net/application> (QR code).



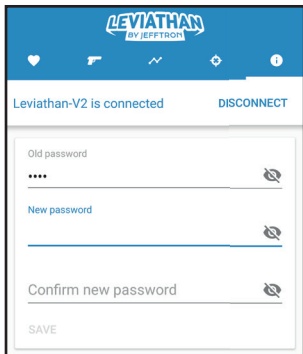
2. Connect battery to Leviathan - V2 and pair smartphone.



3. Use password „1234“. You can remember it by checking the box “Remember password”.

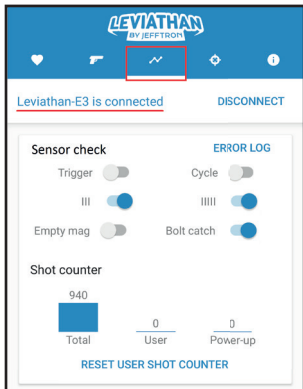


4. Change password to your 4 digit.



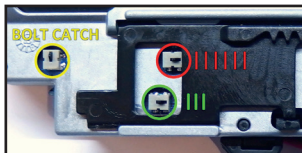
5. Set 2x new password and push SAVE.
Don't tell the password to anybody!

If you forgot your password, restore it by holding RESET button - see pic. 8 at page 8. Battery has to be connected.

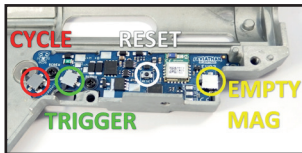


6. Check if every micro switch responding in the app.

- Grey color is OFF, blue is ON.
- Micro switches positions are displayed on picture 7 and 8 at page 8.
- With selector on **IIII** are micro switches „III” and „IIII” ON (as on this pic.).
- **I** position is when micro switch „III” and „IIII” are in OFF state.
- Bolt catch is ON, when is switch in rest position.



7. Micro switch „III” is in the green circle and „IIII” is in the red circle. In yellow circle is Bolt catch, which has to be pressed after battery connection and when is magazine changed.



8. Trigger micro switch position is in the green circle and cycle micro switch position is in the red circle.

- When is turning the sector gear, the “Cycle” icon must be flashing blue.
- Yellow is detecting empty magazine.
- White reset button hold for 2s, password is reset to **1234** after vibration from motor (settings are reset too).

First time shooting

1. Connect battery, after 1s you will feel a short vibration. The power-up self-test is OK.
2. Pull bolt catch to load the gun.
3. Put the gun into **O** - trigger is blocked for pull.
4. Put the gun into **I** to fire once.

If you hear **2 short fast beeps**, you didn't pull bolt catch or the magazine is empty.

5. Put the gun into **III** and the gun should fire a burst of 3 rounds.
6. Put the gun into **IIII** and the gun will go to auto fire.
7. If everything works as described, congratulations for the correct installation the Leviathan-EVO3. If not, check what is in the error log and **16-18 pages in this manual**.
8. Pair the leviathan-EVO3 and update firmware to the newest version. Your smartphone has to be connected to the internet. **Keep your app and firmware always up to date!**

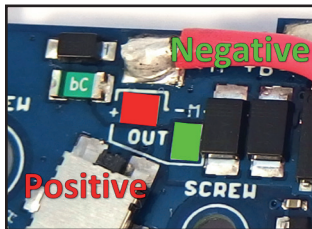


WARNING

Disconnect the battery, when the gun is not in use! Leviathan - EVO3 drains small amount of current from the battery all the time so it will cause damage to your battery.

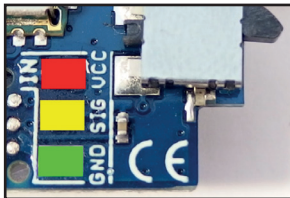
OUT terminal

- Leviathan-EVO3 v1.1 has 2 pads on the board for powering Maxx hop-up LED illumination or flashlight or laser etc. while gun is shooting.
- Positive has battery voltage (in the red area).
- Negative pad from the motor is in the green area, the power supply will work only when the motor is running.
- Wires can't touch other pads and components on the Leviathan-EVO3 board.



IN terminal

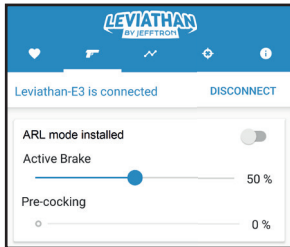
- Leviathan-EVO3 v1.1 has 3 pads for connecting external button, virtual reload or sensor.
- 3,1V is in the red area (for sensor only).
- Signal is in the yellow area.
- Negative pole is in the green area.
- External button connects on SIG and GND pad.
- In the app set the function in „External input“
- Wires can't touch other pads on the board!



ARL mode

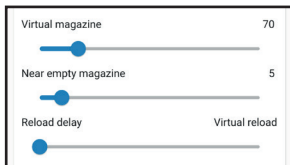
- In the gun has to be installed anti reverse latch to unlock Active brake and Pre-cocking features, which works **only** with **ARL mode** - see **page 2**.
- **ARL mode is grey (OFF):** Active brake is limited to 50-100% range and Pre-cocking is disabled.
- **ARL mode is blue (ON):** it has full access to Active brake and Pre-cocking function.

WARNING: Without ARL mode you risk damaging your gear box which will void warranty!



Virtual magazine

- **Virtual magazine** value sets number of shots (70 shots here) when it detects empty magazine.
- **Near empty magazine** makes 2 short beeps after each shot before it is empty (5 shots here).
- **Reload delay** is time when gun can't shoot after empty mag. or it is triggered by „Virtual reload“.



Change parameters page 1/2

Orange stripe = not paired, **green stripe** = paired
Paired = loads parameters from Leviathan.

Change parameter -> shows „writing...“ in the green stripe. **Text disappear** -> parameter is saved

Fire modes with **Selector on safe/semi/auto:**

- **SAFE:** no responding to the trigger pull.
- **Semi:** it fires single shot per trigger pull.
- **Semi/BurstX:** short trigger pull fires single shot, long trigger pull fires burst.
- **Binary trigger:** fire semi when trigger is pulled and semi again when it is released in less than 3s.
- **BurstX:** gun shoot burst per trigger pull.
- **BurstX+BurstY:** short trigger pull fire burstX, long trigger pull fire burstX plus burstY bullets.
- **BurstX/Full:** short trigger press fires burstX, long trigger press makes auto fire.
- **Full:** gun makes auto fire until trigger is released.
- **Virtual reload:** pull trigger to reload virtual mag.

Burst functions:

It enables you to shoot a set number of BBs on one trigger pull. It will always complete the burst. Every selector has its own burst settings.

Rate of fire:

It is useful for solving problems with too high gun RoF. This function makes breaks between shots to reduce RoF. It gives you fast trigger response even with very low rate of fire, just like in a real gun.

The screenshot shows the Leviathan app interface. At the top, there is a blue header with the Leviathan logo and navigation icons. Below the header, a status bar indicates "Leviathan-E3 is connected" and a "DISCONNECT" button. A green banner below the status bar reads "Changing parameters 'No Profile': Automatically sent to the gun." The main content area displays several settings:

- Selector on I:** Set to "Semi" (dropdown menu).
- Selector on III:** Set to "Burst2" (dropdown menu).
- Selector on IIII:** Set to "Full" (dropdown menu).
- Bullets in Burst1:** Slider set to 3.
- Bullets in Burst2:** Slider set to 3.
- Bullets in Burst3:** Slider set to 3.
- Rate of fire:** Slider set to 100%.

Change parameters page 2/2

Active Brake: *ARL mode has to be activated (0-100%)*

It uses the excess energy from the motor to stop it. Spring is fully released, parts in gearbox aren't under strain. Higher braking is for weapons with high RoF. Braking effect is more powerful with torque motor. *Note: Lower braking intensity spares the motor coils.*

Pre-cocking: *ARL mode has to be activated*

The piston is partly compressed after SEMI fire. There isn't almost any delay between trigger pull and shot. Recommended compression is about 70%. Holding the trigger for 3 seconds, gun shots again with decocked piston - use it for storing the gun after game. *Note: it increases wear and tear on the gearbox.*

Delay between shots:

It is for simulation the delay from gun reload or recoil. During delay gun can't shoot. After delay gun vibrates shortly to notify the gun is ready for shooting.

Electronic fuse:

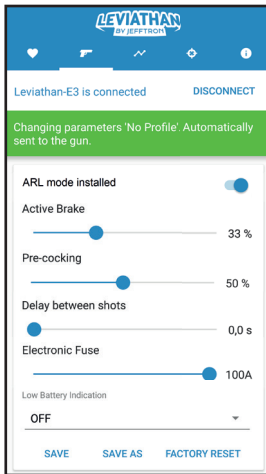
Set sensitivity for high current detection to avoid any damage if something goes wrong. We recommend to set 10A above average auto current.

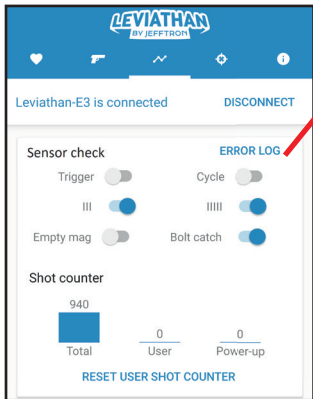
Low Battery Indication:

It is used for only Li-xx batteries. When is low battery voltage detected, gun vibrates after each shot. It is time to replace the battery at the nearest opportunity. When the battery is discharged the gun vibrates instead of fire. **WARNING:** *battery is still slowly discharged.*

SAVE: You can save these parameters under custom name into your smartphone.

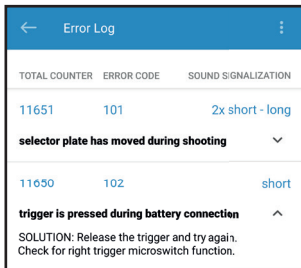
FACTORY RESET: It restores parameters to factory state (password is unchanged).



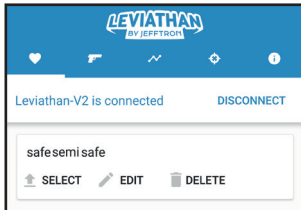


Microswitch check: Shows micro switch responding. Grey color = OFF, blue = ON. Micro switches are displayed on pic. 7 and 8 at page 8. With selector on IIIII are micro switches „III” and „IIIII” ON. Bolt catch is ON in rest position.

Shot counter: records full gear spin
 Total - count every shot during lifetime
 User - can be reset by user anytime
 Power-up - battery connection reset it



Error log: shows errors made during the device life. Total shot counter value is saved when error happen. Error expansion shows possible solution. 3 dots at top corner will reset all errors.



Profiles: At this page are saved profiles. „Select” will upload settings to device.

Statistics

Mosfet temperature: actual mosfet temperature, the cut-off temperature is 75 °C.

Processor temperature: actual processor temperature, the cut-off temperature is 75 °C.

Signal strenght: shows the signal strength, the smaller the dBm drop, the stronger the signal.

Rate of fire (sec): gun rate of fire per second.

Rate of fire (min): gun rate of fire per minute.

Power up time: how long is the battery connected.

Motor start current: peak current when motor starts spinning.

Average semi current: current during first shot.

Average auto current: current during burst fire.

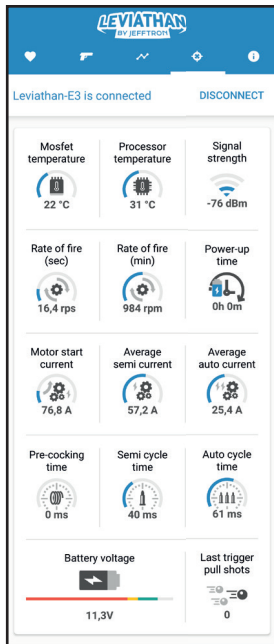
Pre-cocking time: time to move piston to compressed position (this will reduce Semi cycle time).

Semi cycle time: time between motor start and piston release.

Auto cycle time: time between shots in a burst where the RoF has already reached its maximum value.

Battery voltage: It shows actual voltage value. Red color line indicates when gun won't shoot. In yellow it will shoot with warning vibration. In green is everything OK and grey is discharge from 100% charge.

Last trigger pull shots: the number of BBs fired at the last trigger pull.



Settings

Language: text translation in the app to different language. Tacticool is made up transformation for fun.

Password: write to the first row old password and to other two new password and push SAVE.

Version: info about app and firmware version. Bootloader and Hardware version is constant.

Temperature: mosfet and processor temperature unit.

Turn off connection by fire selector: if it is ON, then wireless connection will be turned OFF/ON by fast change selector from I to IIII and back. It is good for gun security. It always turns ON when the battery is plug-in. When this function is disabled you can always make connection.

Overspin detection (Error 100): will turn off the beep at error 100 (over spinning - double shot).

Functional bolt catch: Bolt catch lever can be disabled for faster magazine reload.

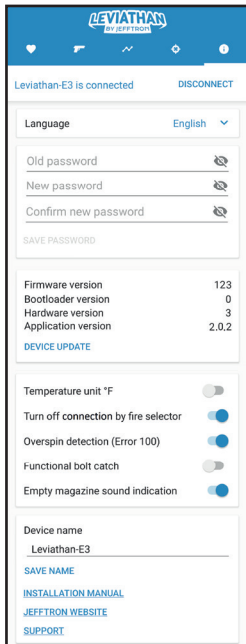
Empty magazine sound indication: there is 2 fast beeps when is magazine empty. Grey button disable sound.

Device name: is visible on the list with devices (max. 12 characters). It disconnects from phone after saved name.

Update: fixes bugs and adds new features. It takes about 1min to complete with successful message + vibration.

Installation manual: link to the latest device installation manual in English (.pdf format).

Support: if you have any questions or problems, please contact us at email: support@jefftron.cz



Startup codes

After connecting battery Leviathan-EVO3 does a power up self check, which lasts a 1s:

1 short vibration - All systems are OK. This vibration is about half second long.

1 short beep - Trigger is pressed during battery connection (102)

2 short beeps - High current flow the mosfet (106)

3 short beeps - High temperature on the mosfet (104)

1 long beep - Battery voltage is less than 5.5 volts (107)

2 long beeps - Battery voltage is more than 17.0 volts (105)

3 long beeps - High processor temperature (108)

short-long-short beep - Motor is disconnected (109)

long-short-long beep - Nonfunctional application (200)

Post firing codes

If any problem occurs during firing, it will be signaled by beeps with the error log record:

1 short beep - Micro switch for sector gear is pressed after the motor stop (100)

short-long beep - Micro switch for sector gear isn't pressed after the trigger pull (103)

2 short and long beep - Selector plate has moved during shooting (101)

2 short beeps - High current flow the mosfet (106)

3 short beeps - High temperature on the mosfet (104)

1 long beep - Battery voltage is less than 5.5 volts (107)

3 long beeps - High processor temperature (108)

1 vibration after shot - Battery voltage is low. If the battery drops much further, the gun will vibrate instead firing. Now it is a good time to change your battery for new one.

1 vibration instead of fire - Battery is discharged. The gun vibrates on every trigger pull. change your battery for new one. **WARNING: battery still slowly discharging.**

1 vibration after some time - When is delay between shot activated, it vibrates after the delay time ends. It is for notification the gun is ready for shooting.

Decreasing melody = Wireless connect. OFF, **Increasing melody** = Wireless connect. ON

2 short fast beeps - Empty magazine or not pressed bolt catch to load the gun.

Troubleshooting

ISSUE: Weapon doesn't react at all after battery connection.

SOLUTION: Check if the battery is properly connected and charged. Also check motor contacts and motor functionality. Check if the safety fuse hasn't been blown.

ISSUE: Weapon doesn't make shots after trigger pull (start-up vibration was made).

SOLUTION: Damaged or misplaced micro switch for trigger, check it's proper function.

ISSUE: Selector is set to semi but act like on SAFE or AUTO (or any other combination).

SOLUTION: Damaged or misplaced micro switch for selector plate, check its proper function through micro switch check page in the app and correct selector plate shape according page 7 in this manual.

ISSUE: Micro switch for sector gear is pressed after motor stop (Error 100).

SOLUTION: Gun have too high rate of fire and piston make over spinning. Solve it by increasing active brake or reducing pre-cocking (if used) or reducing rate of fire or use battery with lower voltage or change gear ratio or use low speed high torque motor.

ISSUE: Selector plate has moved during shooting (Error 101).

SOLUTION: You have changed by mistake fire selector during shooting or it was changed by vibrations from shooting. Check microswitches through app, if they change state too close the selector position, modify selector plate shape to change it further.

ISSUE: Trigger is pressed during battery connection (Error 102).

SOLUTION: Release the trigger and try again. Check for right trigger microswitch function.

ISSUE: The gun always shoots BURST with short-long beep after fire (Error 103).

SOLUTION: Cycle micro switch doesn't detect sector gear motion. Use micro switch check function to move cycle micro switch to the right position detecting edge at the gear.

ISSUE: High temperature on the mosfet (Error 104).

SOLUTION: Wait until temperature will be dropped down. If it repeats, mosfet is overloaded by too high Amps. Change gearbox internals to drain less amperage.

Troubleshooting

ISSUE: Battery voltage is too high (Error 105).

SOLUTION: Change battery with less voltage than 17.0 volts.

ISSUE: High current flow the mosfet (Error 106).

SOLUTION: Check if motor or gears is damaged or jammed. Also check wires to motor for short circuits or exposed connections.

ISSUE: Battery voltage is too low (Error 107).

SOLUTION: Change or charge battery to have more voltage than 5.5 volts.

ISSUE: High temperature on the processor (Error 108).

SOLUTION: check for short circuits on the leviathan-EVO3 through the gearbox.

ISSUE: Motor is disconnected (Error 109).

SOLUTION: Check contacts for the motor, if they aren't damaged or disconnected.

ISSUE: Nonfunctional application (Error 200).

SOLUTION: Program error in the Leviathan-EVO3. Update firmware to the newest version.

ISSUE: Gun suddenly stopped firing.

SOLUTION: Protection could be activated - check error log. Check battery charge. Check motor contacts and motor functionality. Check if the safety fuse hasn't been blown.

ISSUE: Leviathan is not visible in the device list in the application.

SOLUTION: Click to refresh button in the app. Check if it is charged and connected battery into the Leviathan. Enable wireless BLE and GPS in your phone. Restart mobile app.

ISSUE: You programmed Leviathan - EVO3, now it doesn't do what you wanted.

SOLUTION: Best way is to do **FACTORY RESET** and start again.

ISSUE: The gun does something strange or nothing.

SOLUTION: STOP! Release trigger, disconnect battery and search for the problem before something will be irreversibly damaged! Contact us at email support@jefftron.cz.

MANUFACTURER

Ing. Filip Němec
Zahradní 599, 538 03 Heřmanův Městec
ID: 87936062, TAX ID: CZ8503013475
Made in Czech Republic



VERSION 1.21

www.JeffTron.net



Warranty does not cover: water immersion, defects or damage from accident, misuse, opposite battery polarity, abuse, damaged wires, wrong installation, bad handling, any modification by user, unusual physical, electrical or electromechanical stress.

Exclusion of liability: Manufacturer Ing. Filip Němec is not liable for any damages, injuries or accidents of any kind resulting from the use of this product in the airsoft gun.



For technical support or
reclamation use email:
support@jefftron.cz

