



INSTALLATION MANUAL

FOR GEARBOX V2

Leviathan - V2 parameters

- It is processor controlled mosfet with wireless communication.
- Device is fully integrated inside the gearbox version 2 instead of the original trigger contacts, compatible with Tokyo Marui standard.
- Completely made wires with mini fuse and dean T connector.
- It adds new shooting modes, controls RoF, pre-cocking, active braking, electronic fuse, low battery indication, statistics...
- Controls via app in the smartphone.
- 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 - V2.

Package contents

- Leviathan - V2 drop-in module with wiring
- Screw to secure it in the gearbox
- CNC trigger with hair trigger feature
- Leviathan black 40mm round sticker
- Foam to keep device in place
- Sticker „REMOVE“ for protection micro switches during transport
 - Installation manual

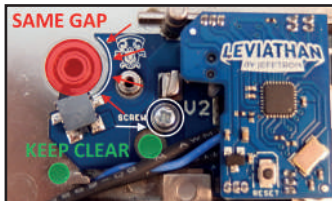


Insertion procedure of Leviathan-V2 into the gearbox

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. Check the gearbox for edges. Grind for smooth surface to prevent Leviathan damage.

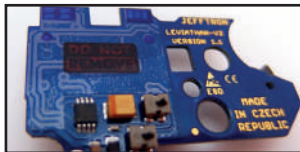


4. Take out these parts out of the gearbox (not used with Leviathan - V2).

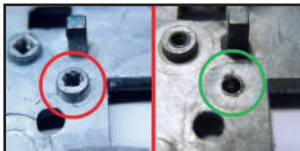


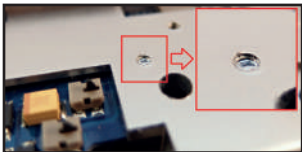
6. Insert Leviathan-V2 instead of the original contacts:

- Check if Leviathan-V2 is laid flat on the gearbox shell.
- Adjust the position of the Leviathan to same distance from bearing (red arrows).
- Use screw from package and screw the device to the gearbox (white circle).
- Make sure the green areas are not covered by board or wires.
- Do not place the screw in place for the cut off lever, the gearbox stump is too high.



5. Detach white sticker „REMOVE“.
Do not remove this transparent foil.

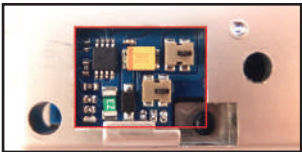




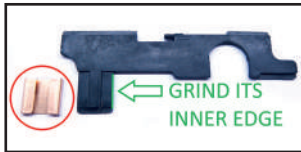
8. Make sure the screw doesn't stick out outside of the gearbox. If yes grind it.



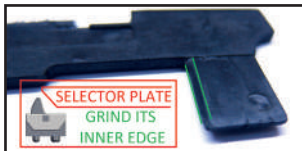
9. In the ICS gearbox grind edge in red circle to not interfere with contacts.



10. Check if there are any short circuits with the gearbox around red area.

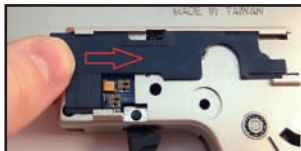


11. Remove metal plate from the selector plate (if it has the metal plate).



12. Grind selector plate **inner edge** to make smooth micro switch lever press.

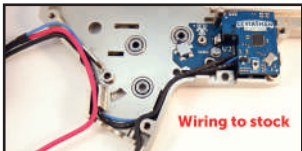
Any edge will cause switch break



13. Gently insert selector plate from front to back to cover micro switches. It has to move freely above them.



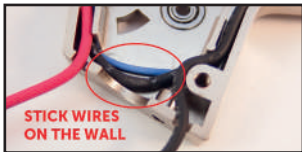
14. Grind pins in red circles to fit wires into the gearbox.



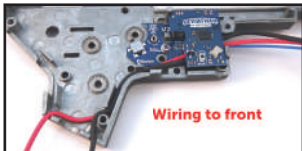
16. Place wires to stock in order: blue, -battery, -motor.



18. Use trigger from package. If you want use your trigger, grind it by the red line on the picture.



15. Wires under motor have to stick on the wall. Use super glue to fix position.



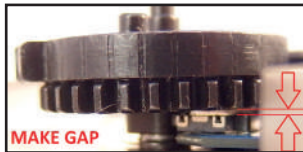
17. Wires to front. Red motor lead to left hole and to battery lead to front, it could be disconnected in the middle.



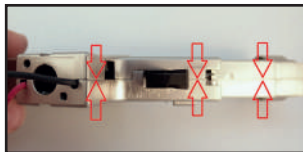
19. If you want shorter trigger path, insert screw into the trigger. After testing secure its position by super glue.



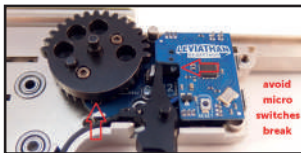
20. Carefully insert the trigger into the gearbox, do not break the microswitch. Trigger spring must rest on gearbox.



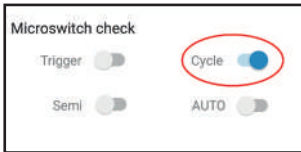
22. Make sure the gear does not touch micro switch body. Spin the gear slowly to check right Cycle detection in the app



24. Put together the gearbox shell. Check if it fit together perfectly.



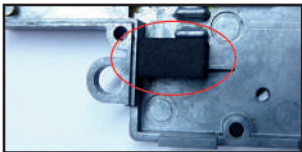
21. Insert into the gearbox sector gear, avoid micro switch break.



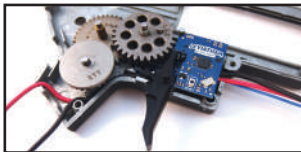
23. When is turning sector gear, the "Cycle" icon must be flashing blue. See the connection procedure on page 7.



25. Check if the top board fits in the gearbox without any problems.



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



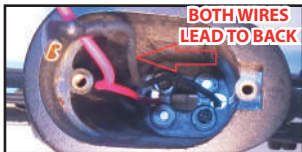
27. Insert the remaining gears into the gearbox and screw gearbox together.



28. Put the gearbox into lower receiver, secure its position by pins and screws.



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



30. Black wire bends back at the bottom and lead both wires back in the grip.

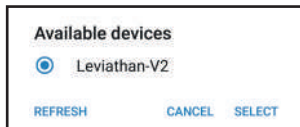


31. Connect the black wire first. Keep in mind right motor polarity.

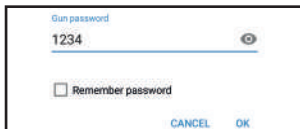
Testing micro switches

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

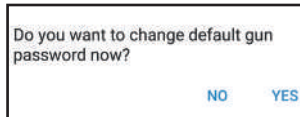
Or use link <https://www.jefftron.net/application> (QR code).



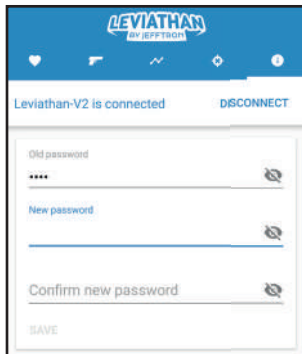
2. Connect battery to Leviathan - V2 and pair smartphone.



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

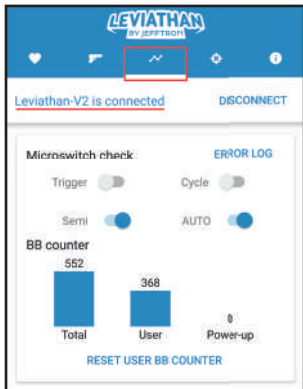


4. Change password to your 4 digit.



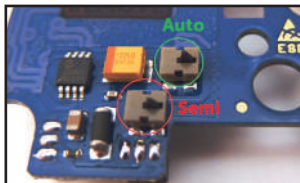
5. Set 2x new password and push SAVE.
Don't tell the password to anybody!

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

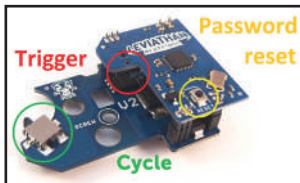


6. Check if every micro switch responding in the app.

- Grey color is OFF, blue is ON.
- There is slight delay in status change because of BT communication.
- Micro switches positions are displayed on picture 7 and 8 at page 8.
- With selector on auto are semi and auto detection ON (as on this picture).
- SAFE position is when micro switch SEMI and AUTO are in OFF state.



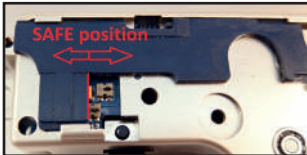
7. Micro switch SEMI position is in the red circle and AUTO position is in the green circle.



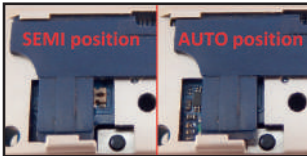
8. Trigger micro switch position is in the red circle and cycle position is in the green circle.

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

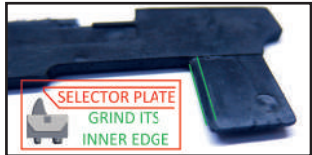
Microswitch troubleshooting



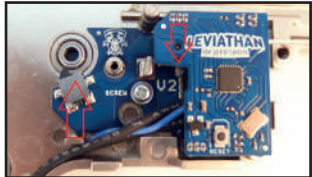
9. There is correctly shown SAFE position -> none of the switches are pressed.
- If it fires semi on SAFE position or auto on SEMI position, then move Leviathan-V2 to the right or grind selector plate on the red line (follow 11. picture).



10. There is shown SEMI position -> only bottom micro switch is pressed.
- on AUTO are both switches pressed.
- If on SEMI is not pressed any micro switch or on AUTO is pressed only semi switch -> move Leviathan-V2 to the left.
Or add material to the selector plate.



11. Grind selector plate **inner edge** to make smooth micro switch lever press.
Any edge will cause microswitch break



12. If cycle is not detected move Leviathan-V2 slightly higher to be cycle micro switch closer to sector gear.
- If trigger doesn't press micro switch move Leviathan-V2 front slightly lower or left to be closer to the trigger.
- When everything works right, then it is finished and you can assemble the gun.

First time shooting

1. Connect battery, after 1s you will feel a short vibration. This means that the power-up self-test is complete and OK.
2. Put the gun into SAFE - nothing happen when is trigger pulled.
3. Put the gun into SEMI and it will fire once.
4. Put the gun into AUTO and pull the trigger shortly. Gun should fire a burst of 3 rounds. If you held down the trigger longer the gun will go to auto fire.
5. If everything works as described, congratulations for the correct installation the Leviathan-V2. If not, check what is written in the error log and the **16-18 pages in this manual**
6. Pair with the leviathan - V2 and update firmware to the newest version. Your smartphone has to be connected to the internet.

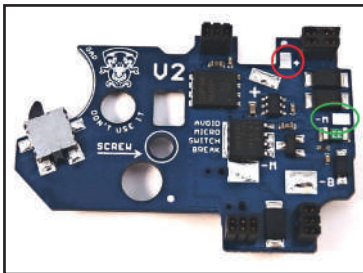
Keep your app and firmware always up to date!

WARNING

Disconnect the battery, when the gun is not in use! Leviathan - V2 drains small amount of current from the battery all the time so it will cause damage to your battery.

Additional equipment

- There are pads on the bottom board of the Leviathan - V2 for powering Maxx hop-up LED illumination or to power the electrical magazine while gun shooting.
- Plus battery pole is in the red circle.
- Negative pole from the motor is in the green circle, so the power supply will work only when the motor is running.
- The wires can't touch other tabs and components on the Leviathan-V2 board.



Change parameters page 1/2

Orange stripe = not paired, **green stripe** = paired
Paired = loads parameters from Leviathan - V2.

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

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

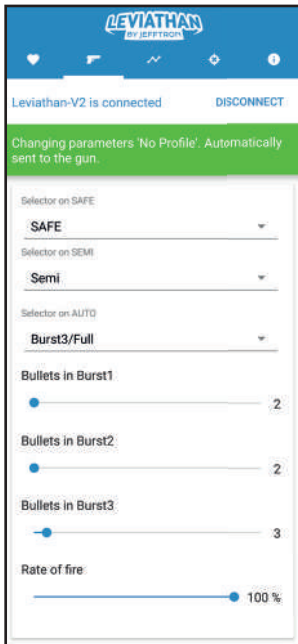
- **SAFE**: no responding on the trigger pull.
- **Semi**: it fires single shot per trigger pull.
- **Semi/BurstX**: short trigger pull fires single shot, long trigger pull fires burst.
- **Binary trigger**: fire semi when trigger is pulled and semi again when it is released in less than 3s.
- **BurstX**: 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 pull press fires burstX, long trigger press makes auto fire.
- **Full**: gun makes auto fire until trigger is released.

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.



Change parameters page 2/2

Active Brake:

It uses the excess energy from the motor to stop it. Lower braking intensity spares the motor coils. 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.

Pre-cocking:

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 shoots again with de-cocked piston - use it for storing the gun. Note: it increases wear and tear on the gearbox.

Delay between shots:

It is for simulation the delay from gun reload or recoil. In this time is not possible to shoot again. Motor vibrates shortly after pass time delay to notify the gun is ready for shooting.

Electronic fuse:

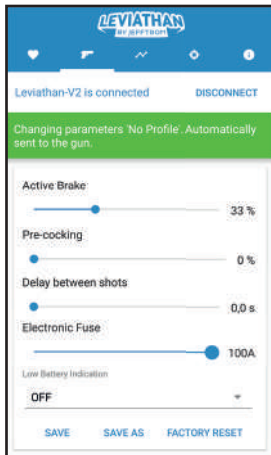
Set sensitivity for high current detection to avoid any damage if something goes wrong.

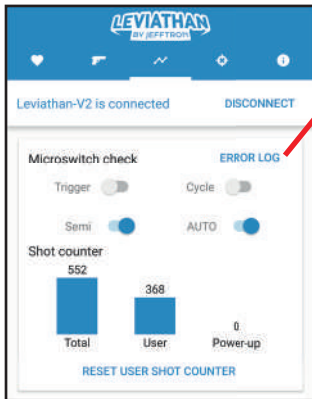
Low Battery Indication:

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.

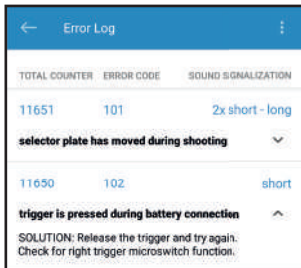
FACTORY RESET: It restores parameters to factory state (password is unchanged).



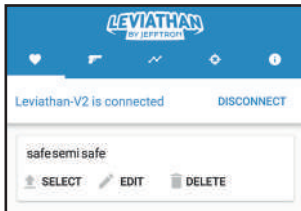


Microswitch check: Shows micro switch responding. Grey color is OFF, blue is ON. Micro switches are displayed on picture 7 and 8 at page 8. With selector on auto are semi and auto detection ON (as on this picture).

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.

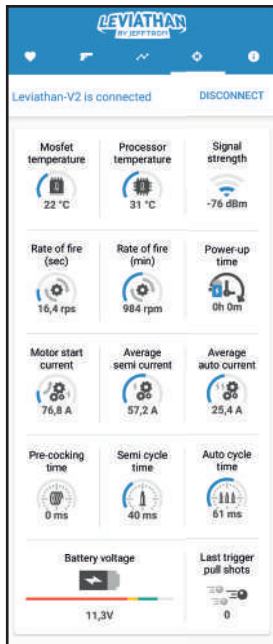
Pre-cocking time: time to move piston to compressed position (this will reduce Semi cycle time).

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.

Temperature: change mosfet and processor temperature unit from °C to °F.

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).

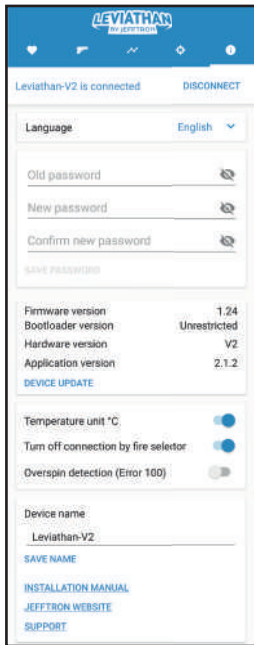
Device name: is visible on the list with available devices (max. 12 characters). After you save the name, Leviathan - V2 will be disconnected from phone.

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

Update: fixes bugs and adds new features. It takes about 1minute to complete. It will end with successful message and short 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 - V2 does a power up self check, which lasts a 1s. It results the motor vibration or error beeps with the error log record:

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 con. OFF, **Increasing melody** = Wireless con. ON

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-V2 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-V2. 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 - V2 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-V2. Enable wireless and GPS in your phone. Restart mobile app.

ISSUE: You programmed Leviathan - V2, 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 6.20

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

