

Arm-V

Desire V2

MANUAL

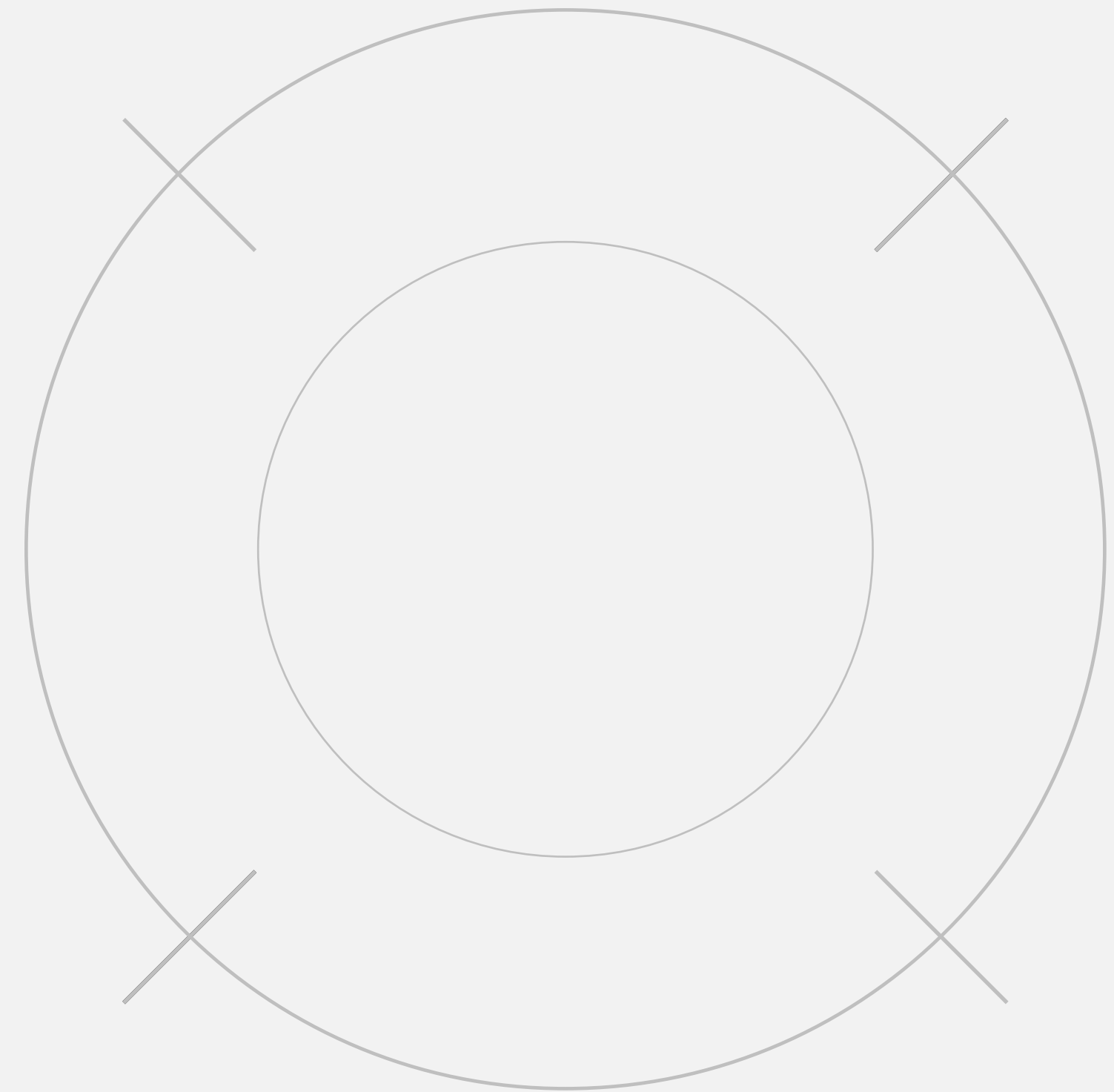


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NEW FUNCTION

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Arm-V
Desire V2

IMPORTANT TO KNOW

1. Desire V2 has its own power consumption unlike the classic contact group. Always disconnect the battery after use. Prolonged storage with the battery connected will lead to its complete discharge
2. Desire V2 features built-in short-circuit protection and does not require the installation of additional fuses.
3. Desire V2 has a water-resistant coating and maintains its functionality in conditions of minor moisture exposure (such as splashes in weather conditions or condensation), but full immersion in water does not guarantee its functionality.
4. The stickers applied to the Desire V2 board are necessary as dielectric material between the gearbox and the board, do not remove them.

DESIRE V2 CHECK

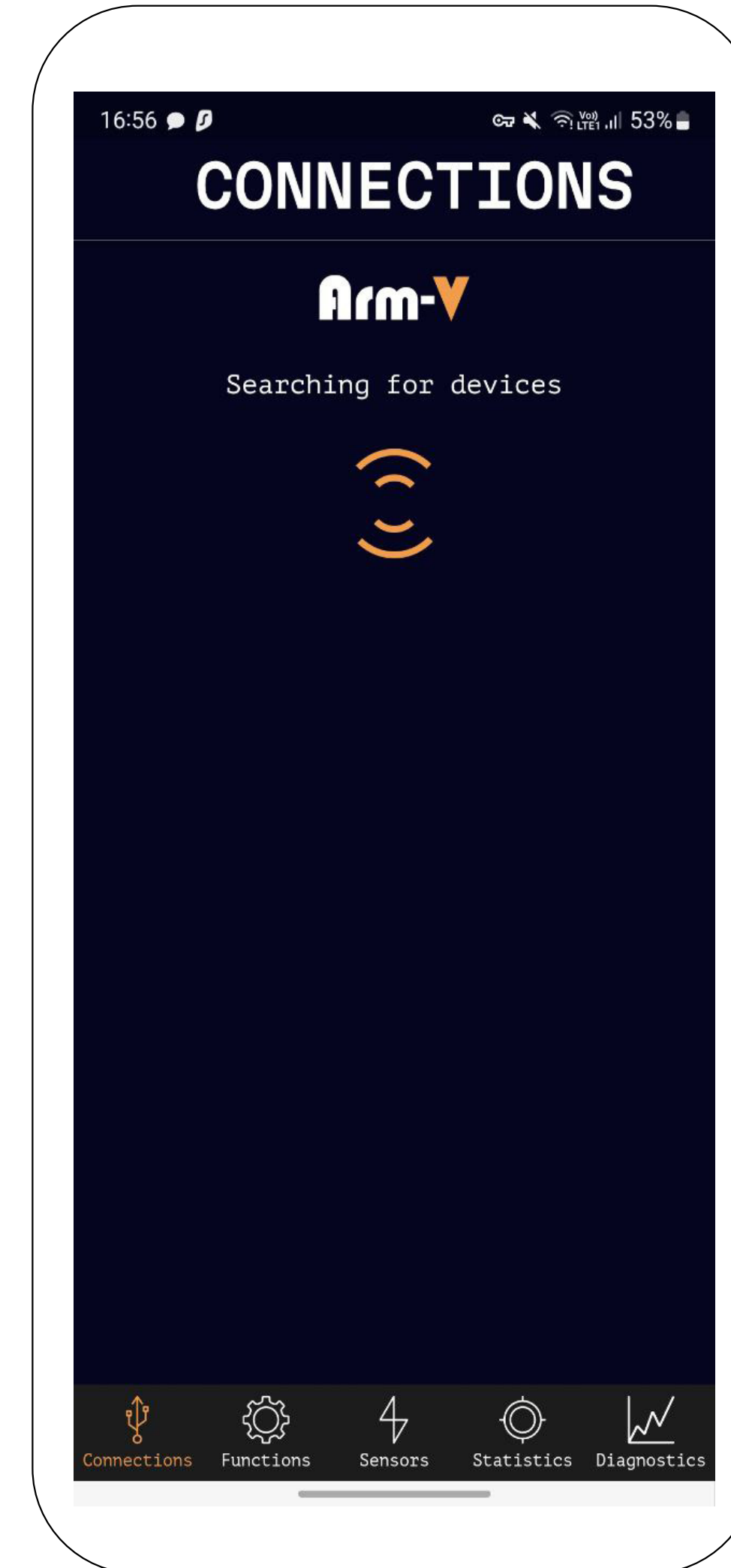
INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

Before beginning the installation, let's learn how Desire V2 works and ensure that it is functional. Download the 'Arm-V' app from [Google Play](https://play.google.com/store/apps/details?id=com.arm.v) or the arm-v.ru website and launch it.



DESIRE V2 CHECK

INSTALLATION OF DESIRE V2 INTO GEARBOX

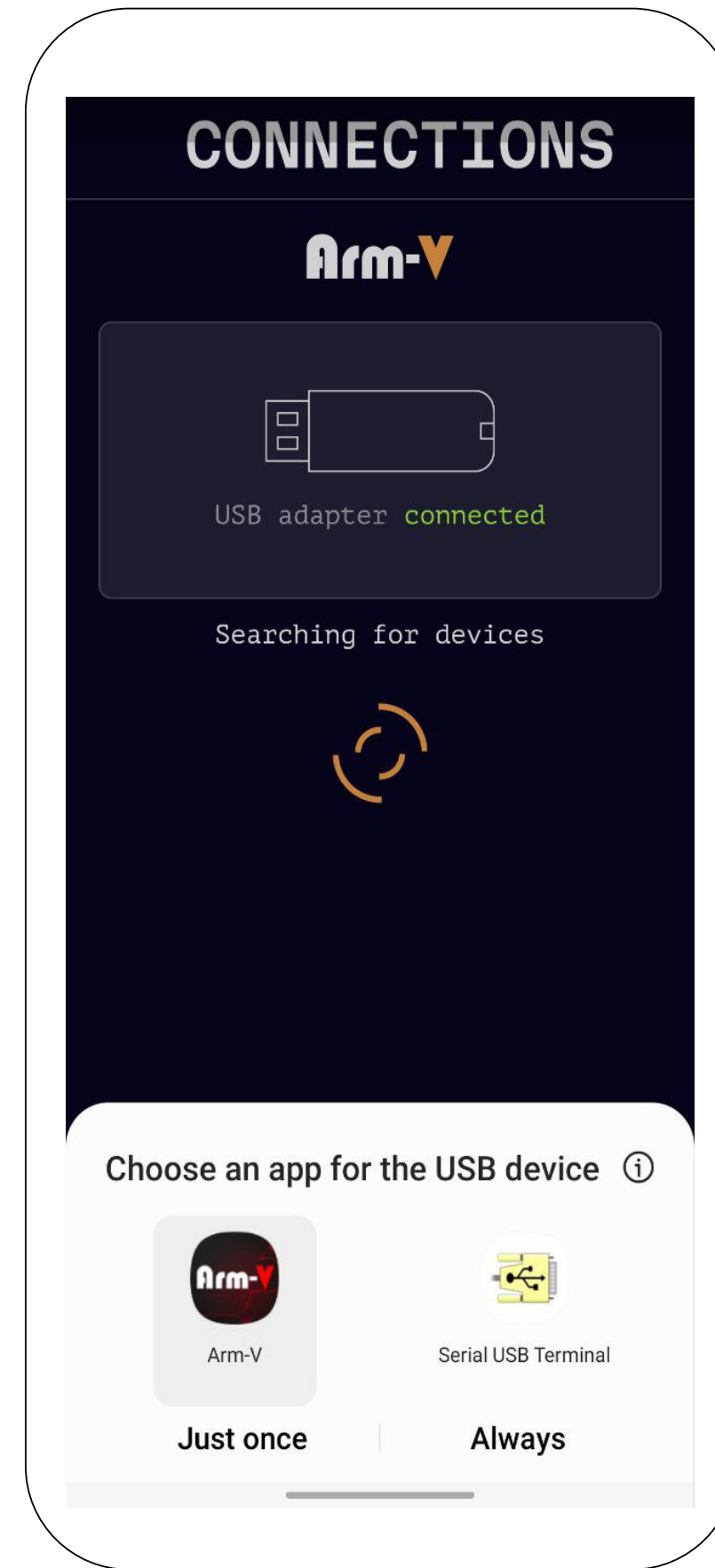
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

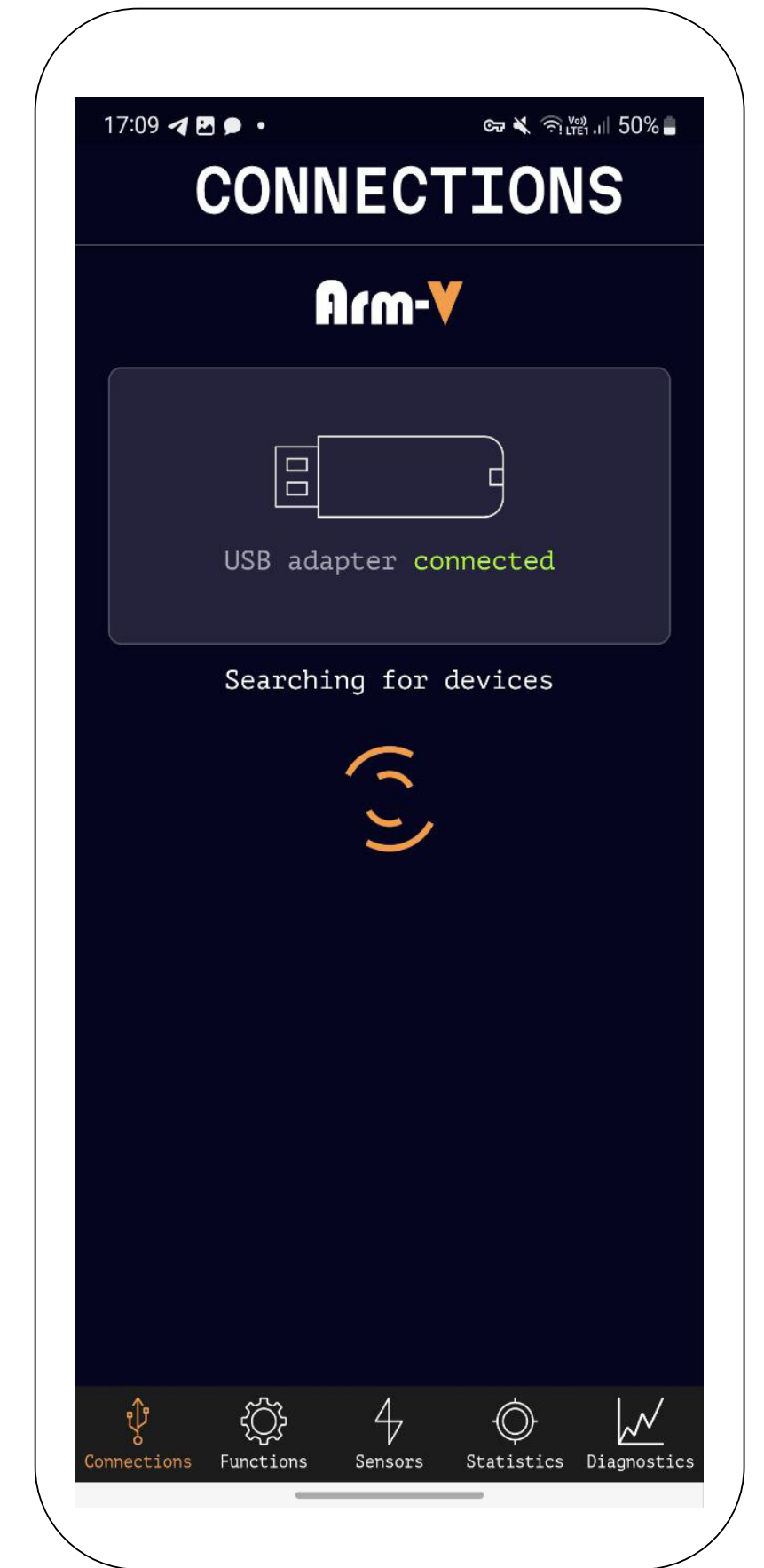
2

Connect the Arm-V USB adapter to your smartphone. When connecting, the smartphone will request permission; you need to allow the Arm-V application to use the Arm-V USB adapter at all times.



3

You should see in the program that the Arm-V USB adapter is connected.



DESIRE V2 CHECK

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

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Arm-V Desire V2

4

Take out Desire V2 from the box and place it on a non-metallic surface (such as a sheet of paper), connect it to any battery from 7V to 14V, and connect it to the Arm-V USB adapter.



5

Information about the connected device will appear in the application. If the application suggests updating the device, press the 'Update' button. The update process takes less than 1 minute.



DESIRE V2 CHECK

INSTALLATION OF DESIRE V2 INTO GEARBOX

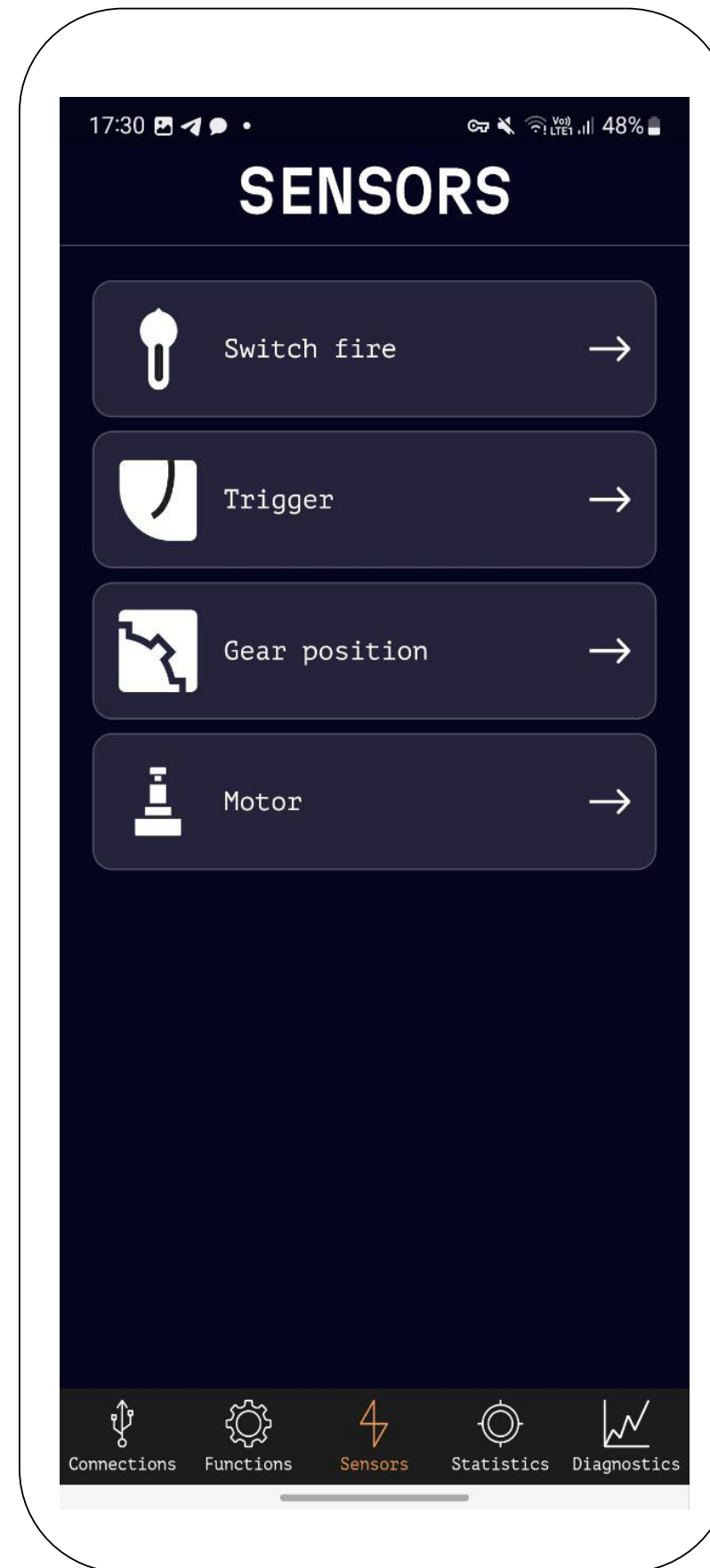
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

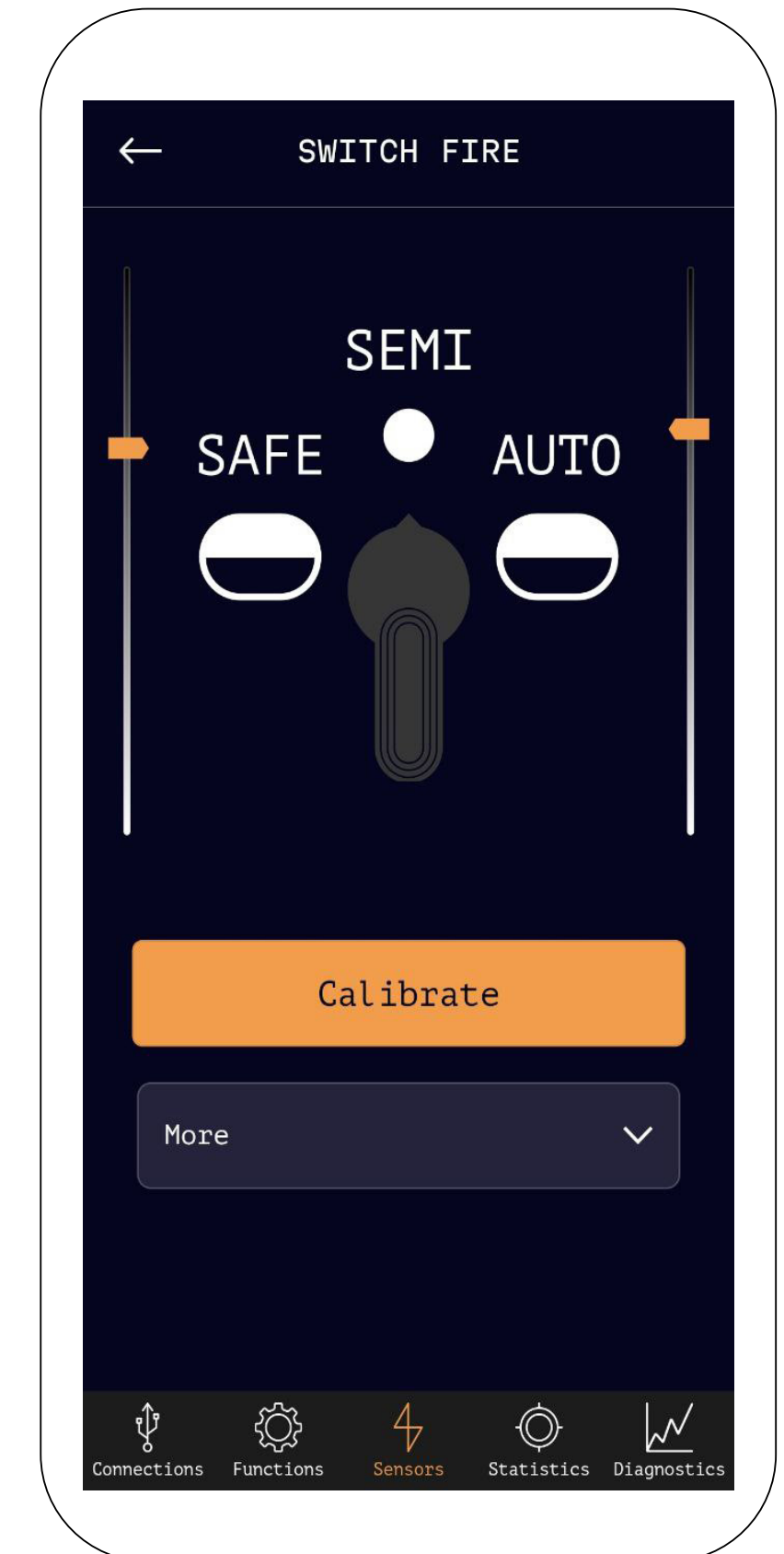
6

Go to the sensors
screen...



7

...and open the Switch
fire.



DESIRE V2 CHECK

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

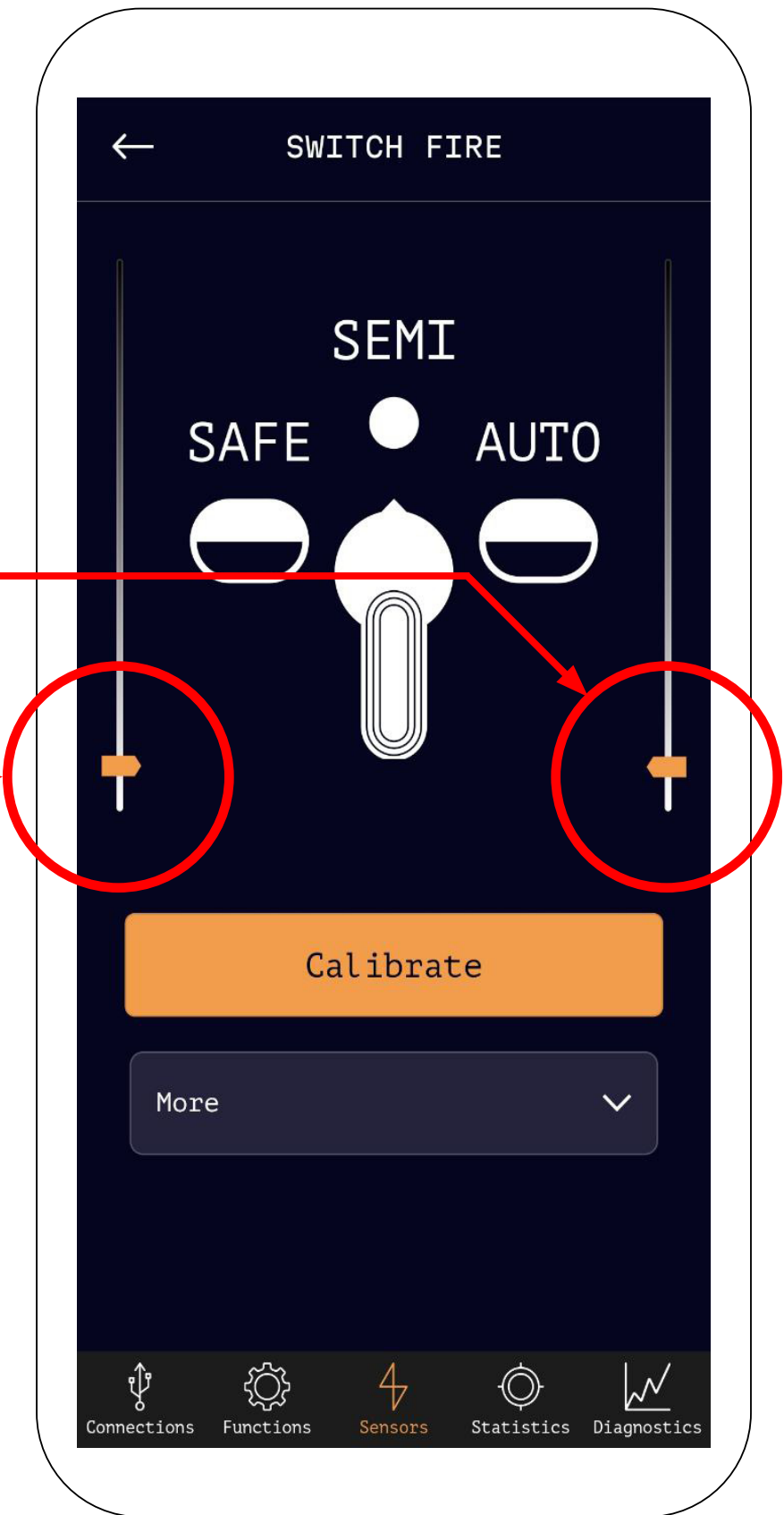
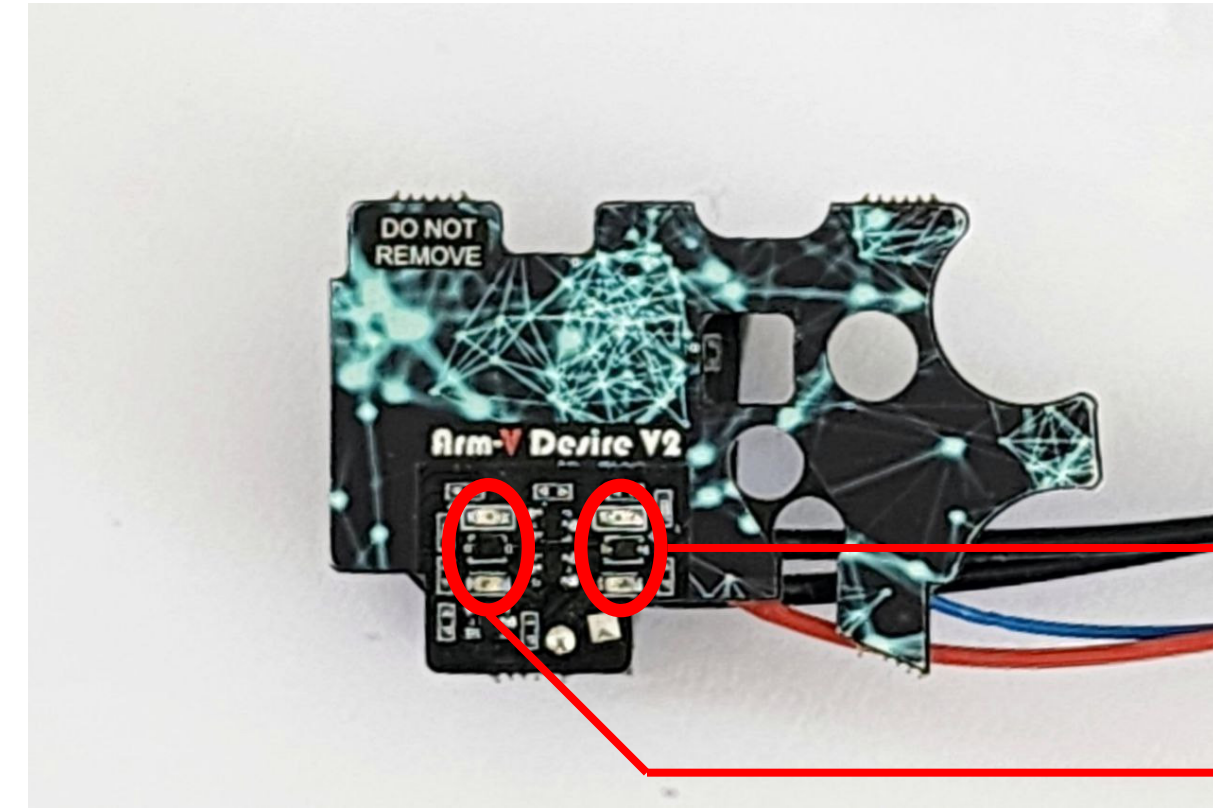
WARRANTY

Arm-V
Desire V2

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The location of the sensors for switching fire modes is shown in the photo, and the principle of its operation involves measuring the intensity of reflected light.

The sensor readings are displayed on a scale in the program.



**DESIRE V2
CHECK**

**INSTALLATION OF
DESIRE V2 INTO
GEARBOX**

NEW FUNCTION

WARRANTY

**Arm-V
Desire V2**

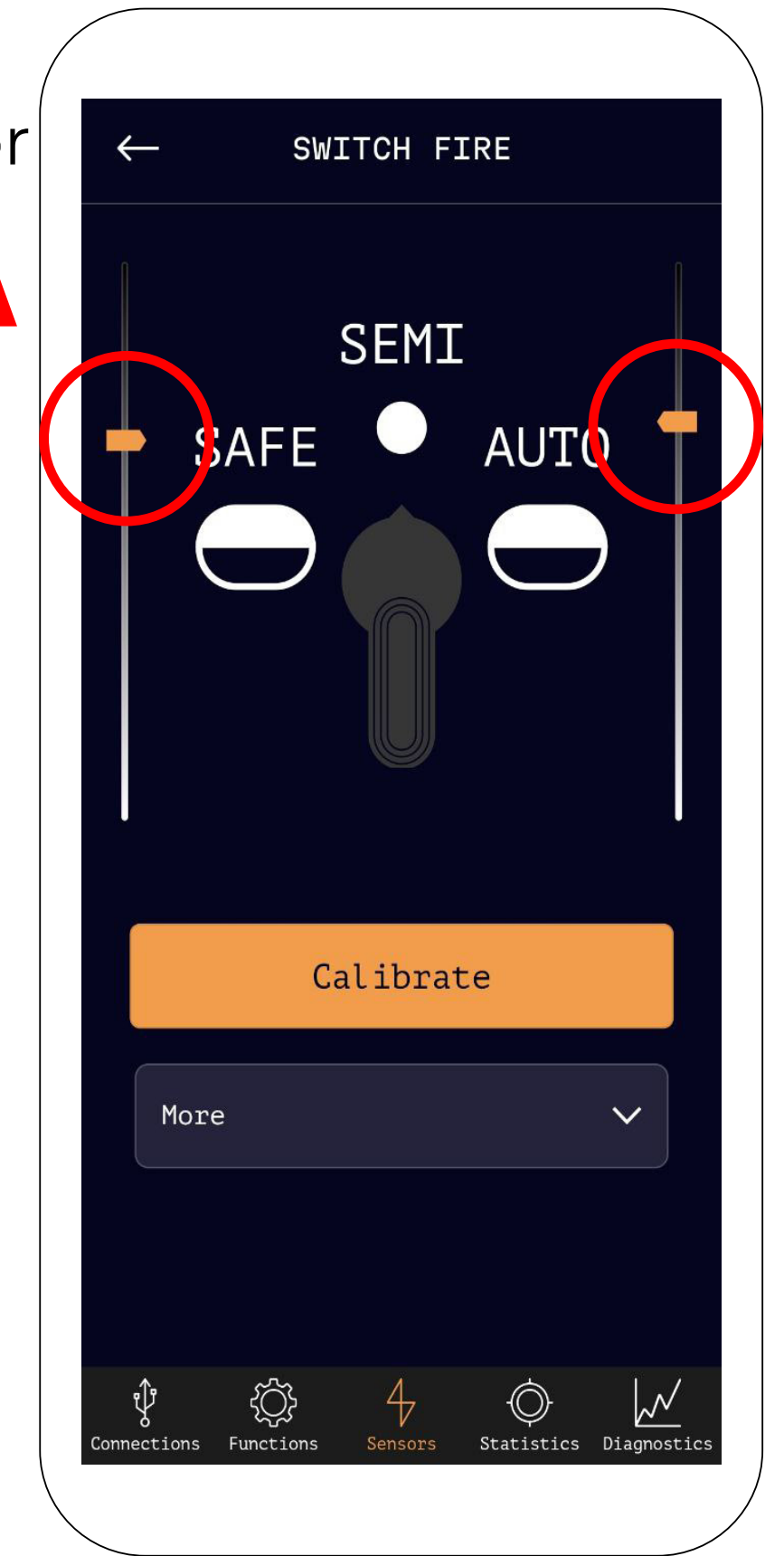
9

Cover the area where the external light sensor is located. If you place a black sheet of paper over the sensor...



10

...you will see the sensor readings rise to the upper end, into the 'black' range.



DESIRE V2 CHECK

INSTALLATION OF DESIRE V2 INTO GEARBOX

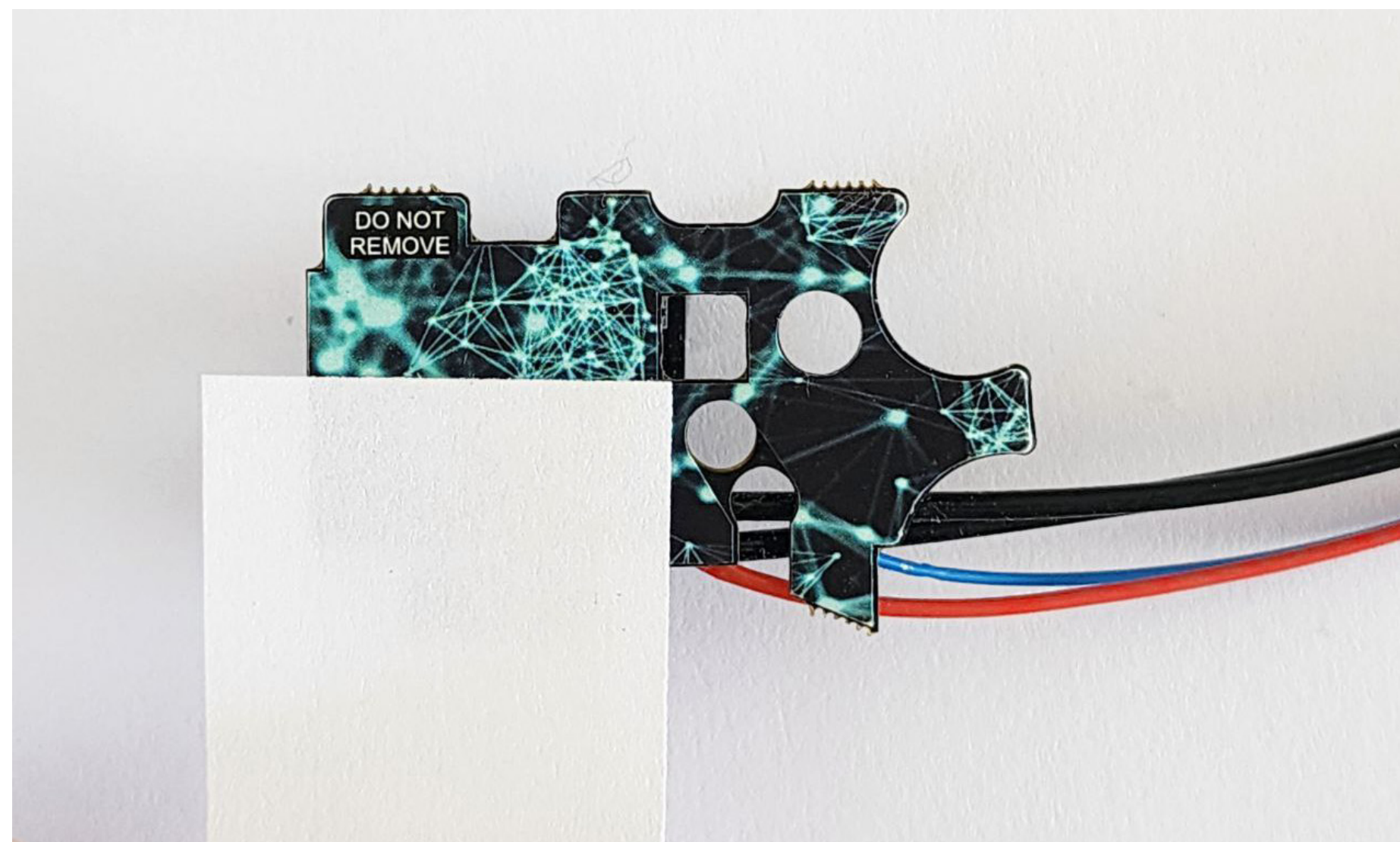
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

11

If you place a white sheet of paper over the sensor...



12

..the readings will drop down, into the 'white' range.



DESIRE V2 CHECK

INSTALLATION OF DESIRE V2 INTO GEARBOX

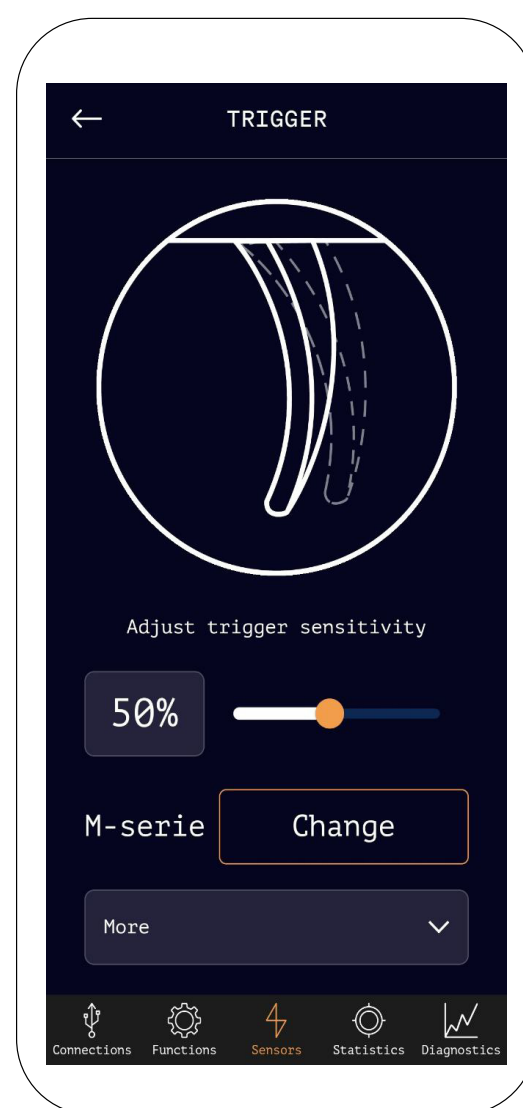
NEW FUNCTION

WARRANTY



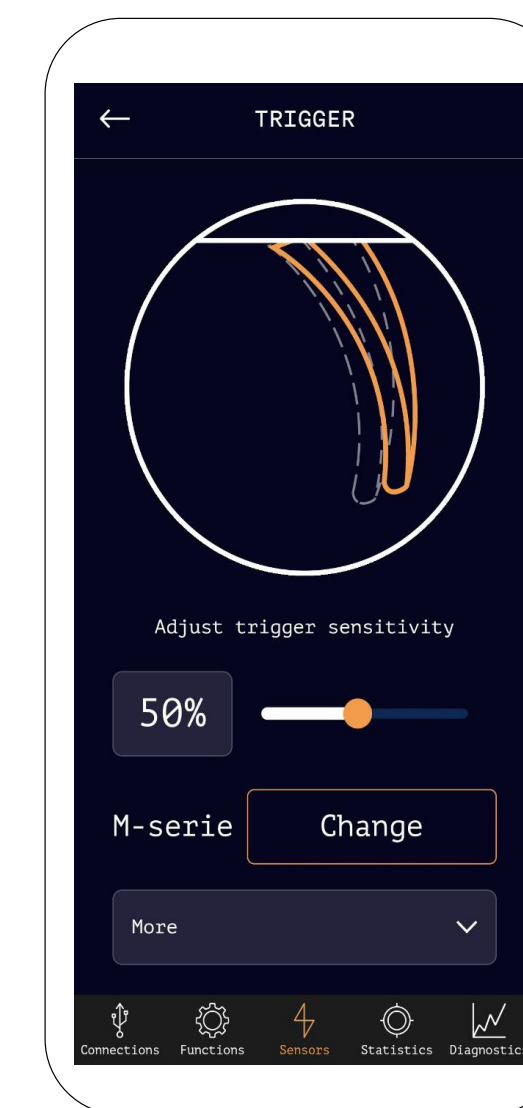
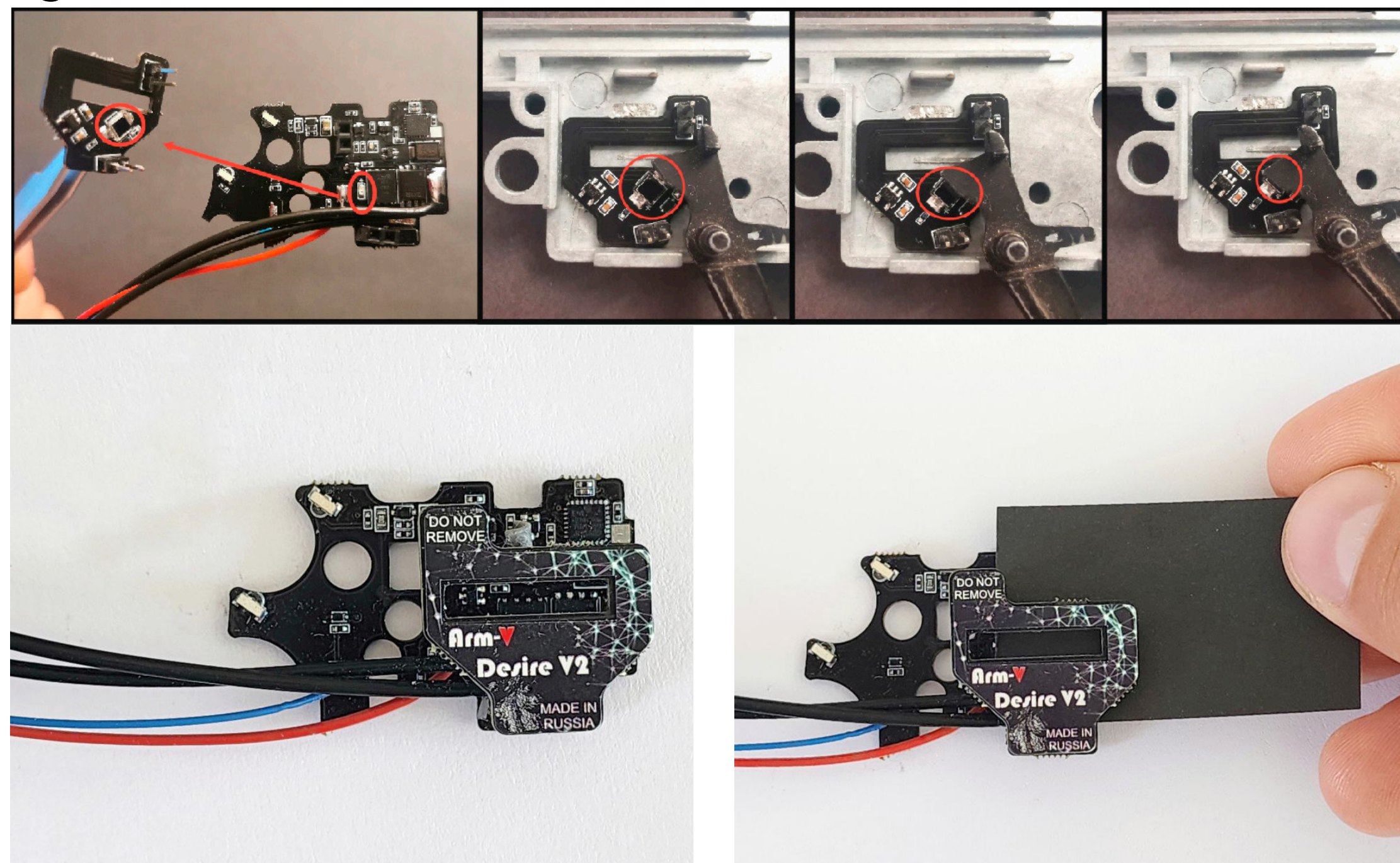
13

Go back to the sensors screen and select the trigger hook sensor



14

The trigger sensor on Desire V2 operates based on the principle of light measurement. An infrared LED (invisible to the human eye) is installed on the bottom board, a large blue photosensitive element is mounted on the top board. When the trigger is pulled, it creates a shadow and this fixes Desire V2. During the test, it's necessary to shield the sensor from external light.



DESIRE V2 CHECK

INSTALLATION OF DESIRE V2 INTO GEARBOX

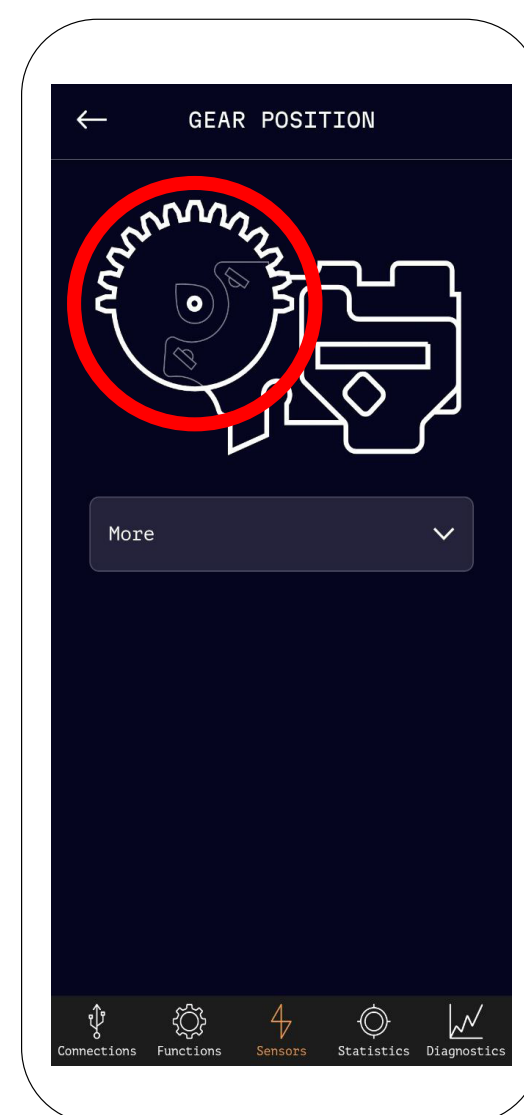
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

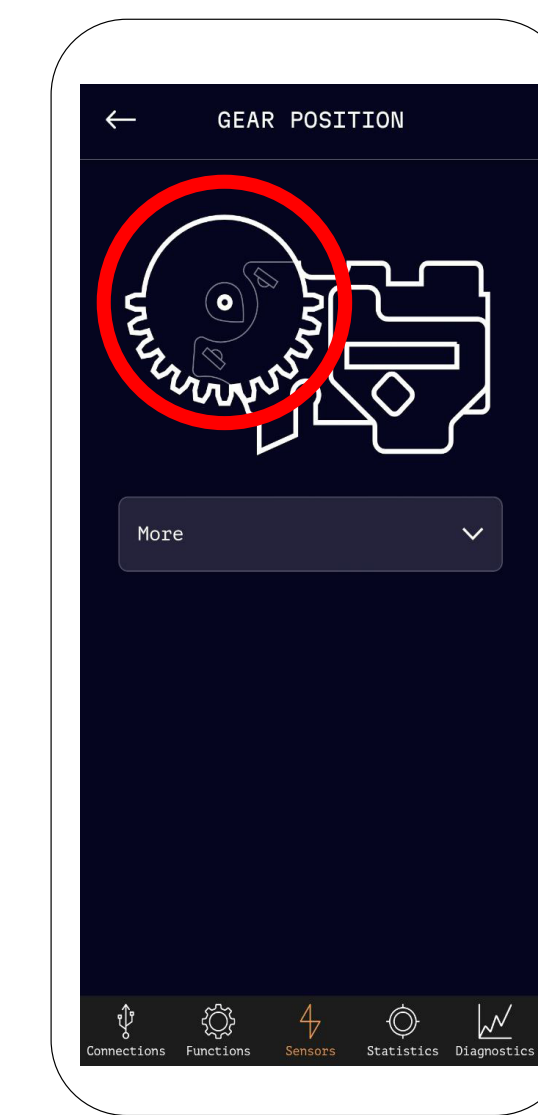
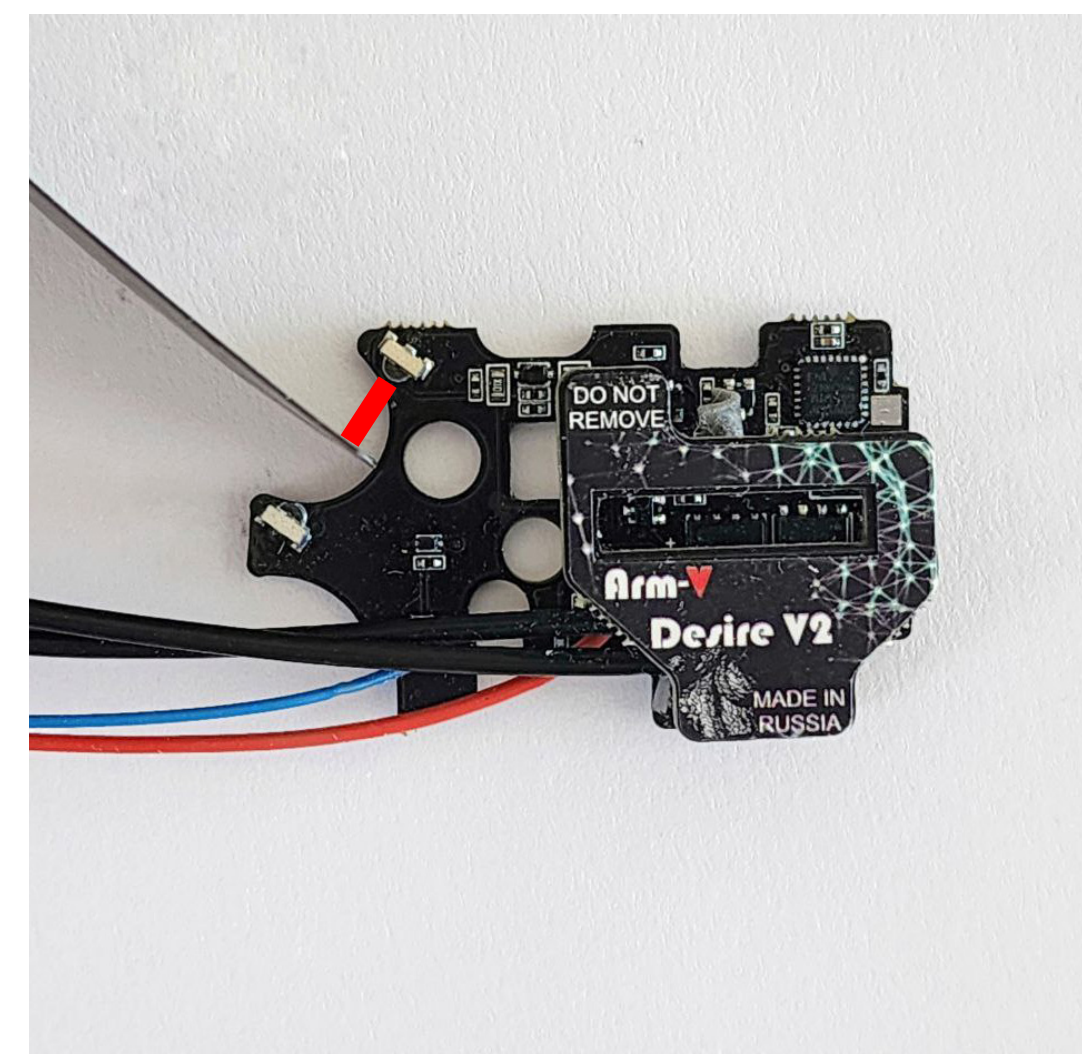
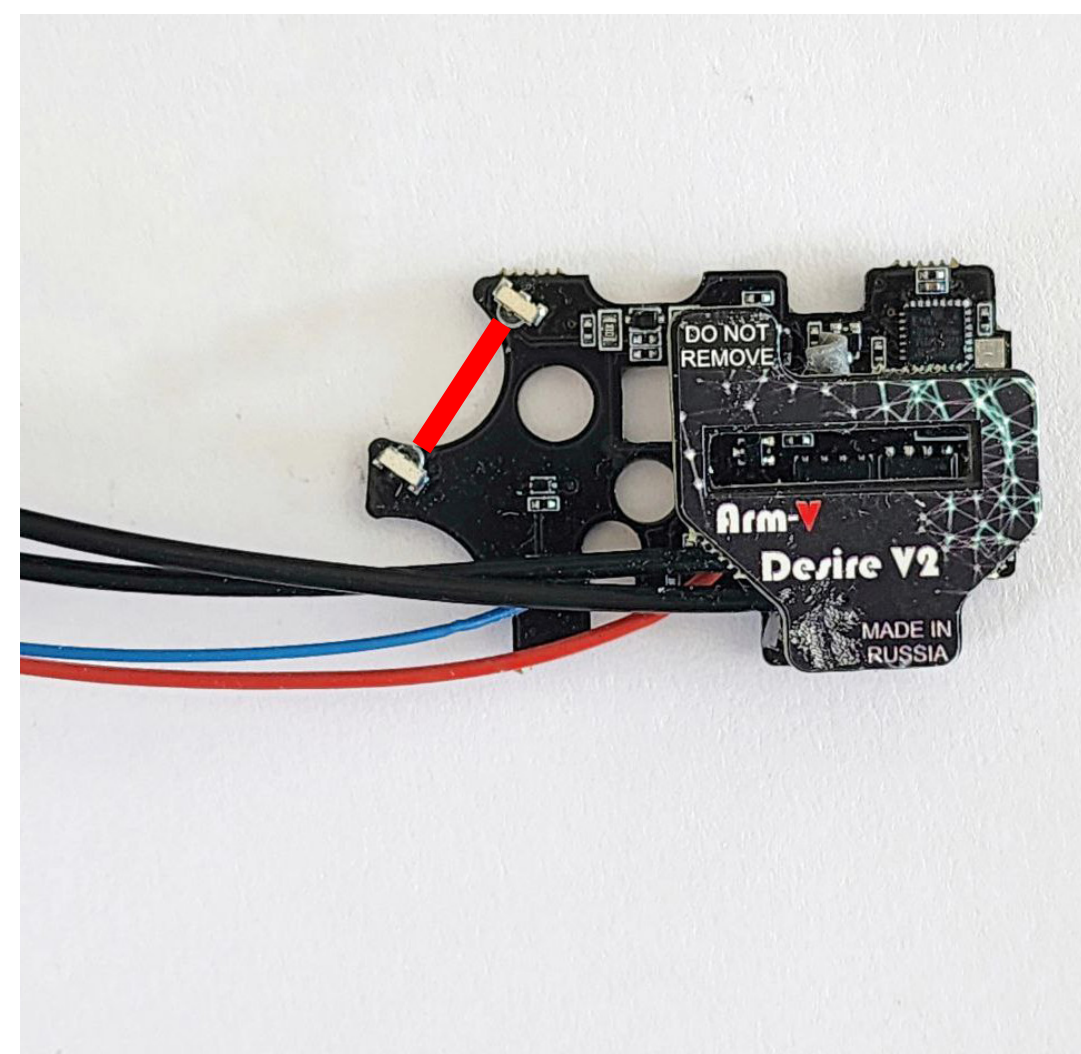
15

Go back to the sensors screen and navigate to the gear sensor



16

The gear sensor on Desire V2 operates based on a beam interruption principle. This means that between two optical elements on the board, an infrared (IR) beam passes (invisible to the human eye). When the sector gear rotates and the eccentric that previously pressed against the single shot cut-off lever no longer does so, it now interrupts the IR beam, which is then detected by Desire V2. During the test, it's necessary to shield the sensor from external light.



**DESIRE V2
CHECK**

**INSTALLATION OF
DESIRE V2 INTO
GEARBOX**

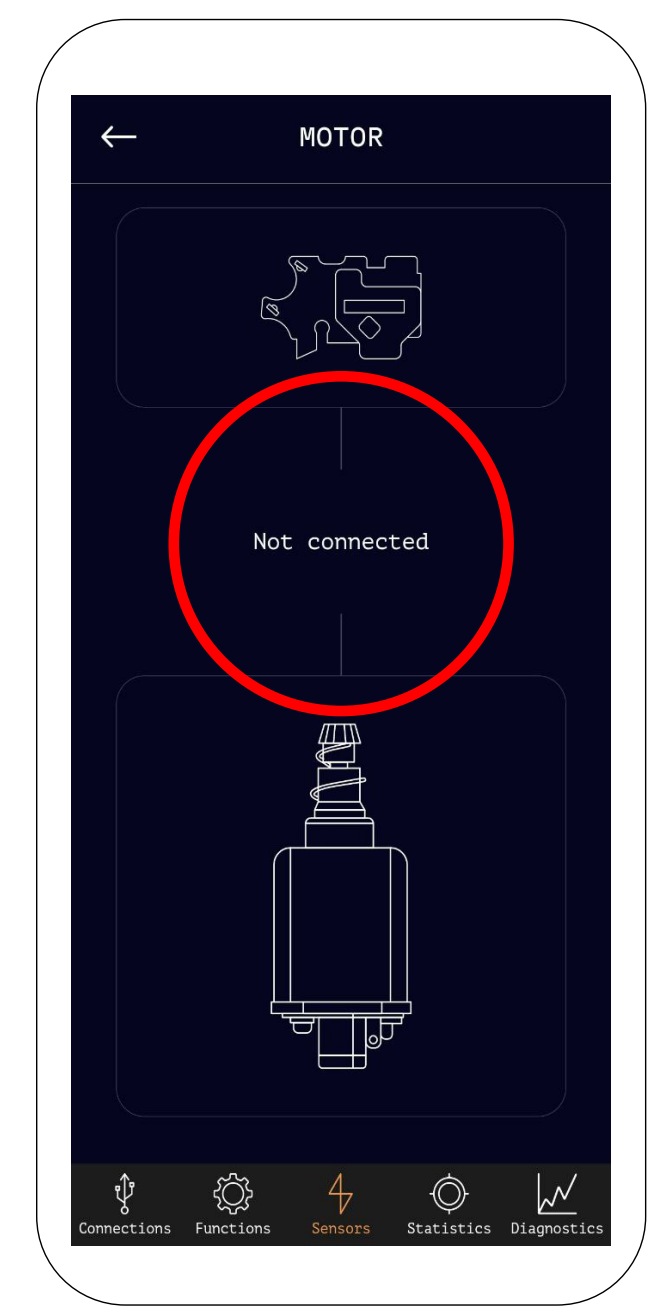
NEW FUNCTION

WARRANTY



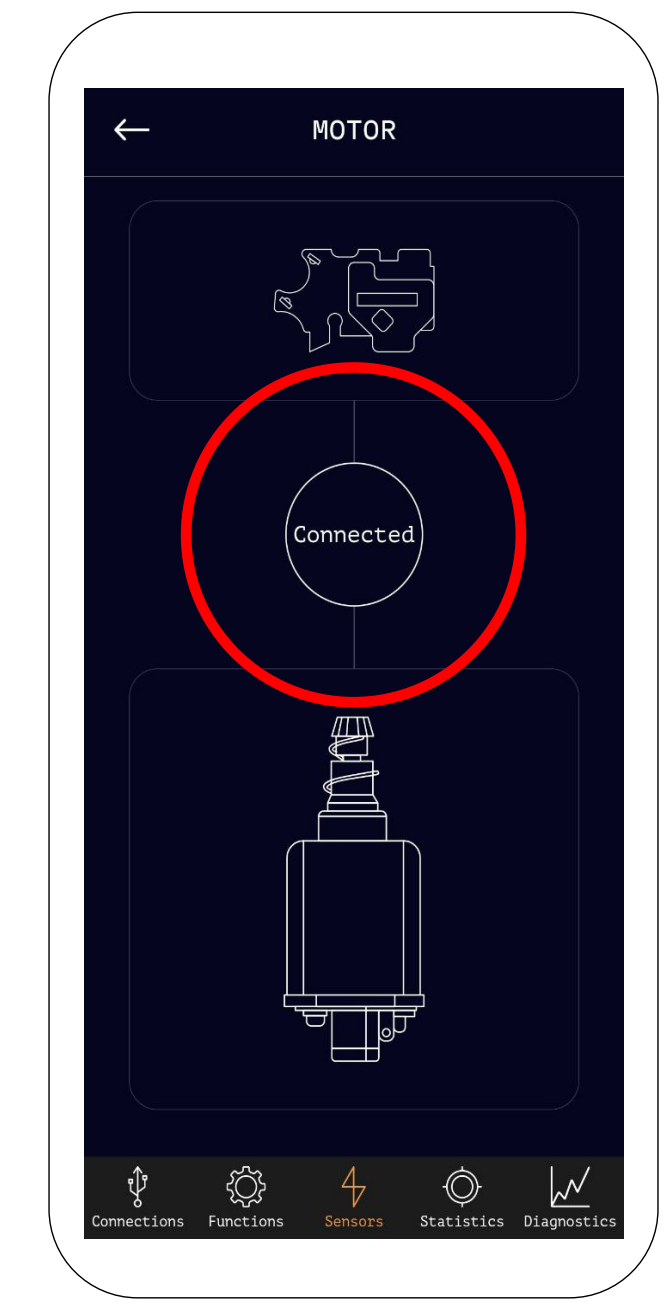
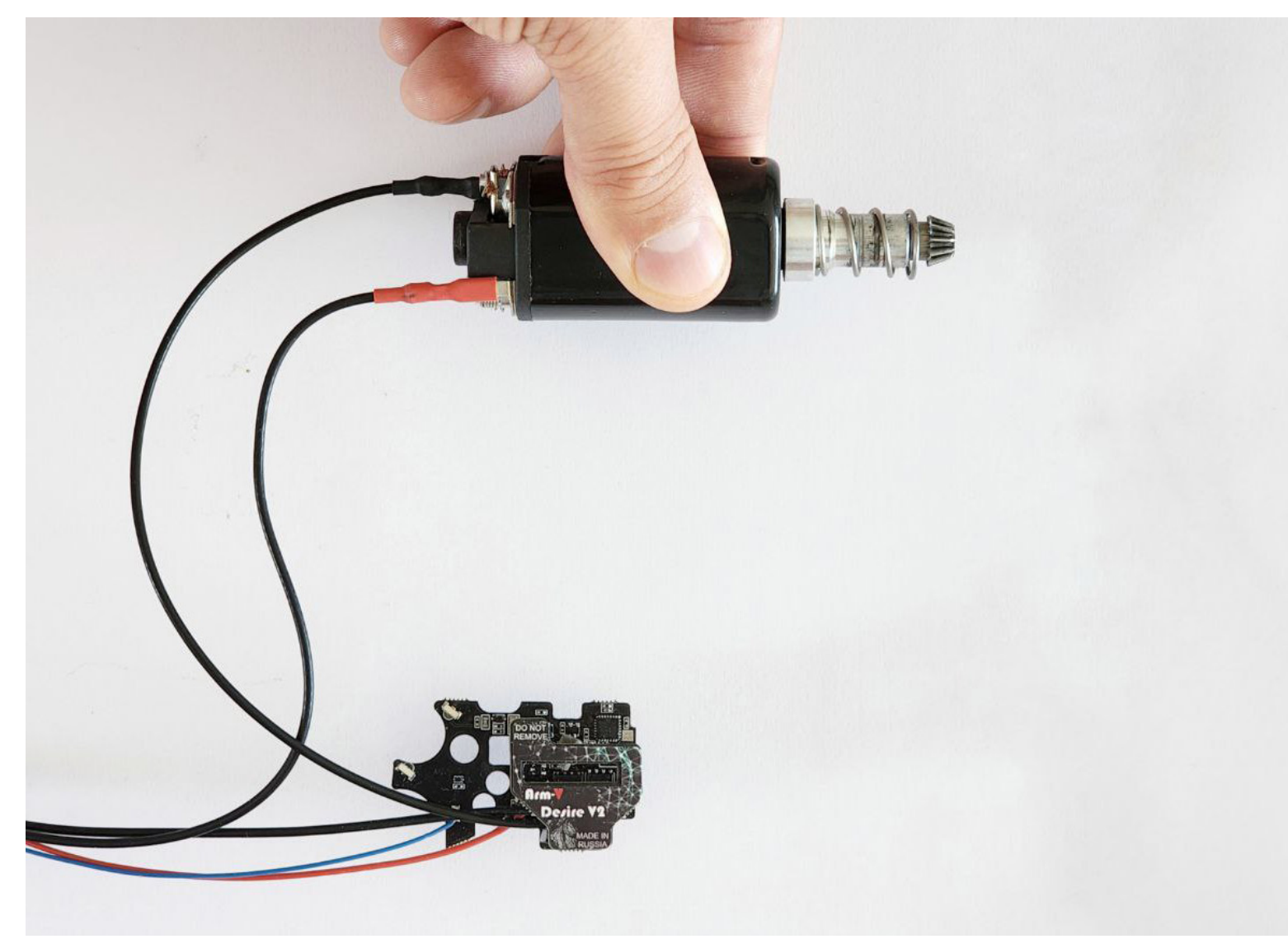
17

Go back to the sensors screen and navigate to the motor sensor. It will indicate that the motor is disconnected.



18

Connect the motor to Desire V2 and hold it by the casing. The sensor in the application will indicate that the motor is connected.



DESIRE V2 CHECK

INSTALLATION OF DESIRE V2 INTO GEARBOX

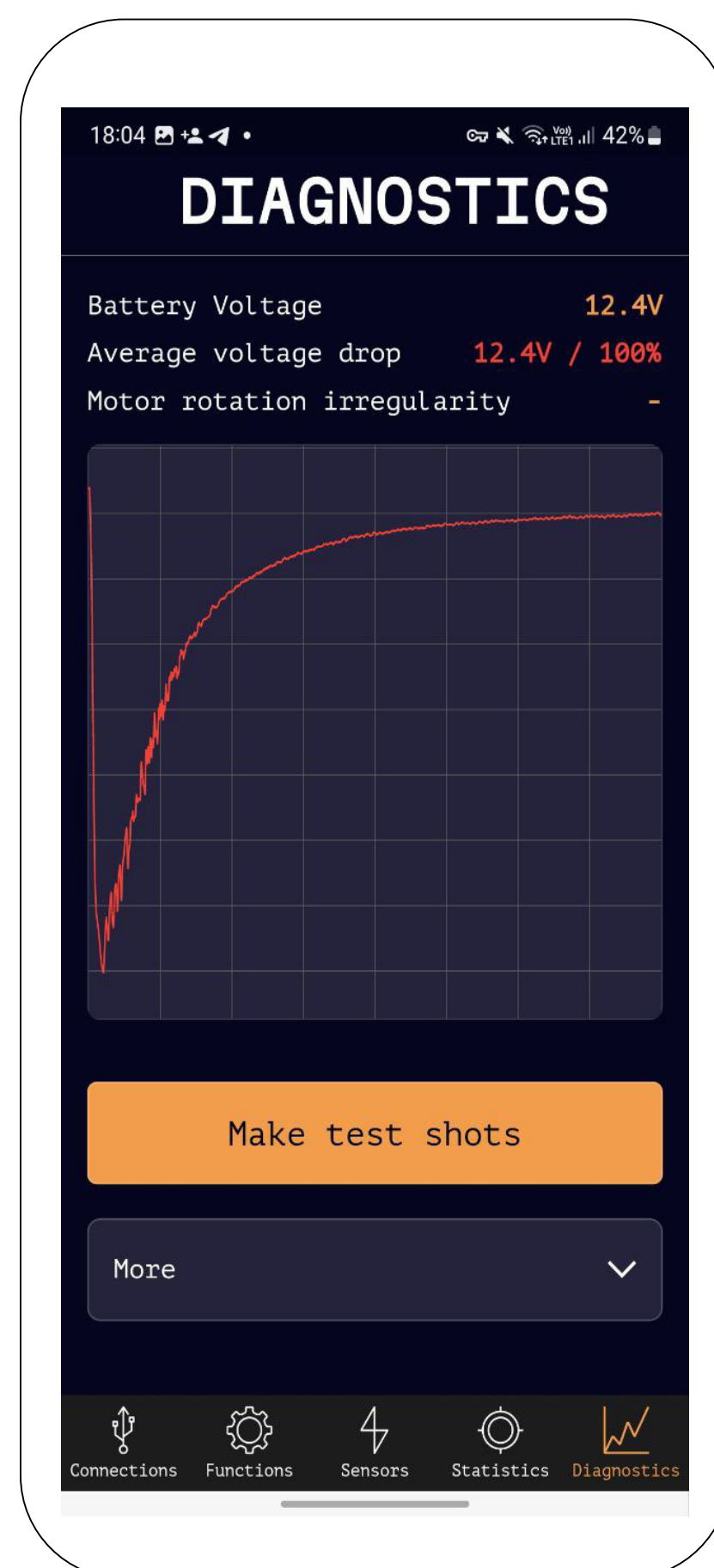
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

19

Navigate to the diagnostics screen and while holding the motor by its casing, press the 'Make test shots' button. The motor will run for just about 1 second, and then a graph similar to the one shown in the image will be generated.



20

Disconnect the motor, turn off Desire from the battery, and disconnect the Arm-V USB adapter.

We've understood how all the sensors of Desire V2 work and verified that they function correctly. We also checked the mosfet by starting the motor. Now, we can proceed with installing Desire V2 into the gearbox.

ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

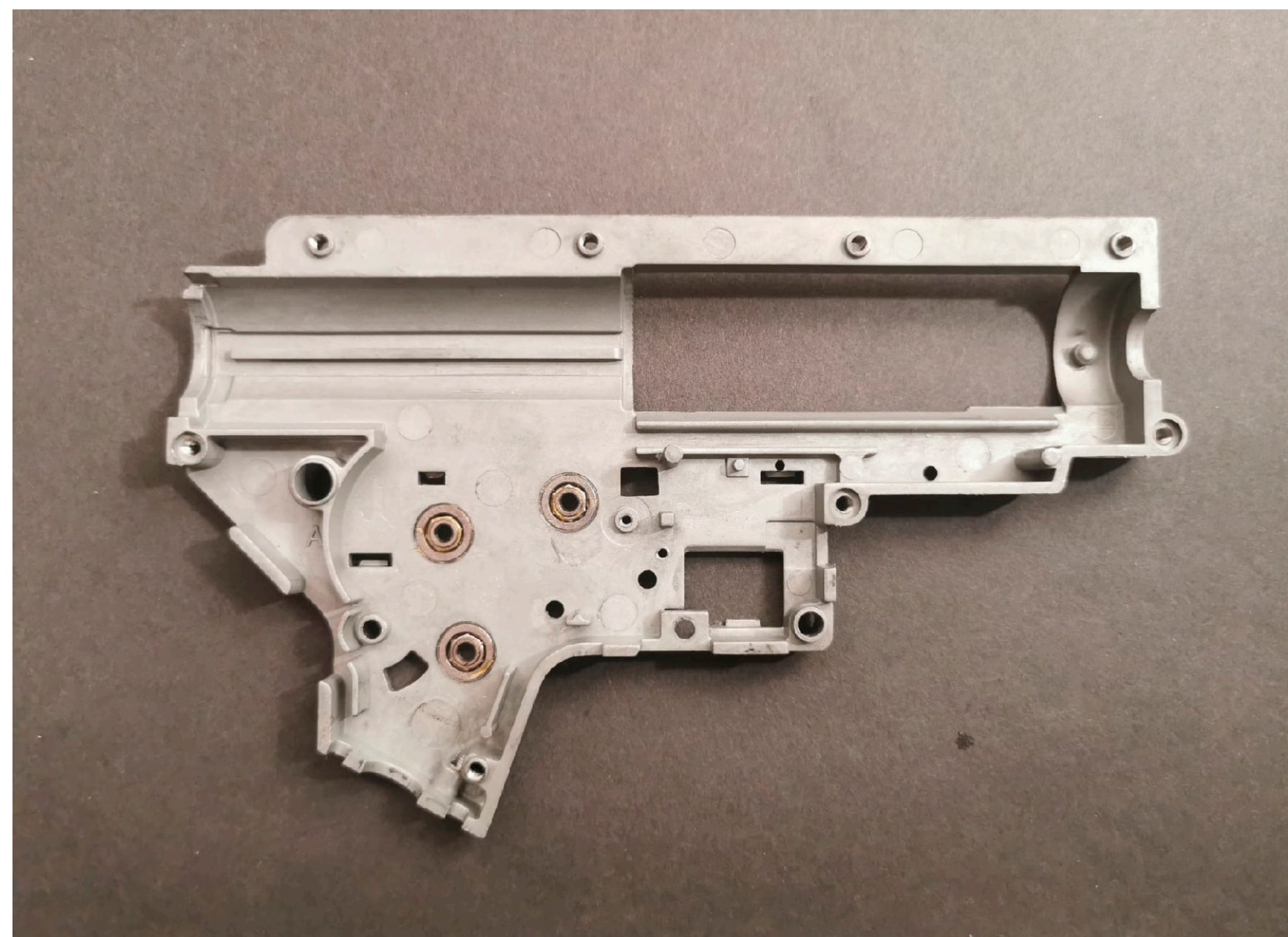
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

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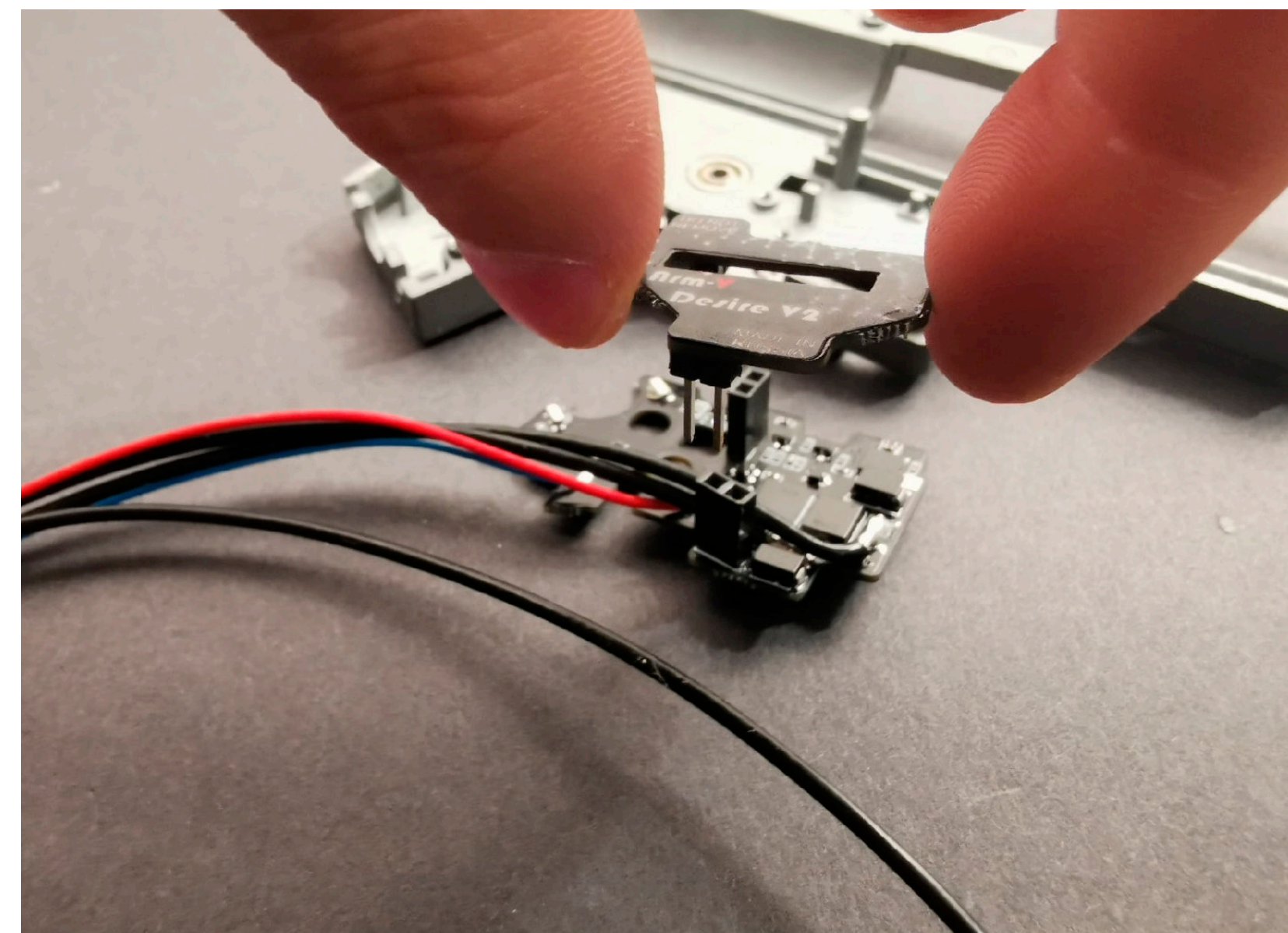
Desire V2 is installed inside the gearbox Version 2. Before installation, you will need to remove the gearbox from your AEG, disassemble it, extract all internal parts, and clean them.



22

Remove the top Desire V2 board by pulling it upwards.

«ATTENTION: Do not attempt to unplug and plug in the Desire V2 top board with the battery connected!»



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

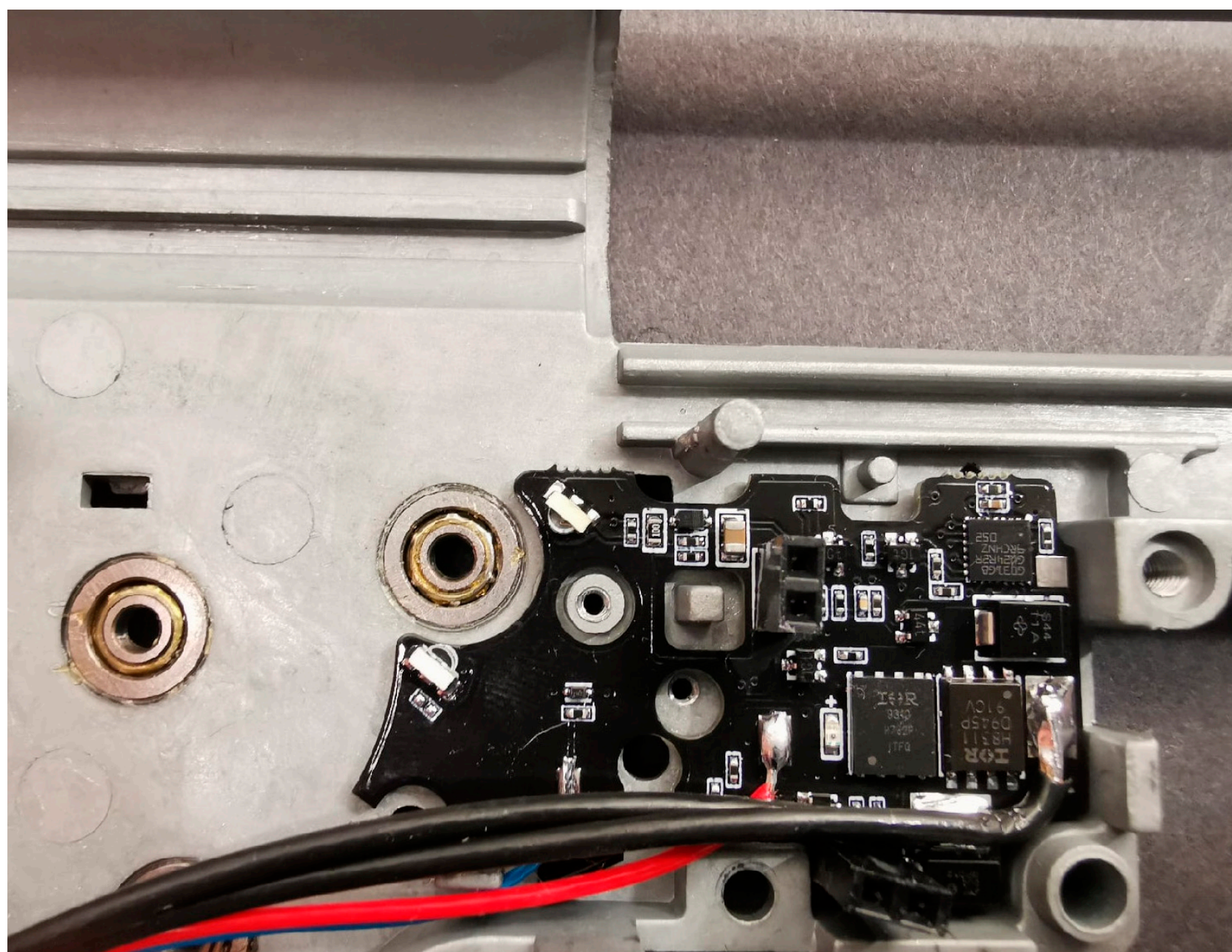
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

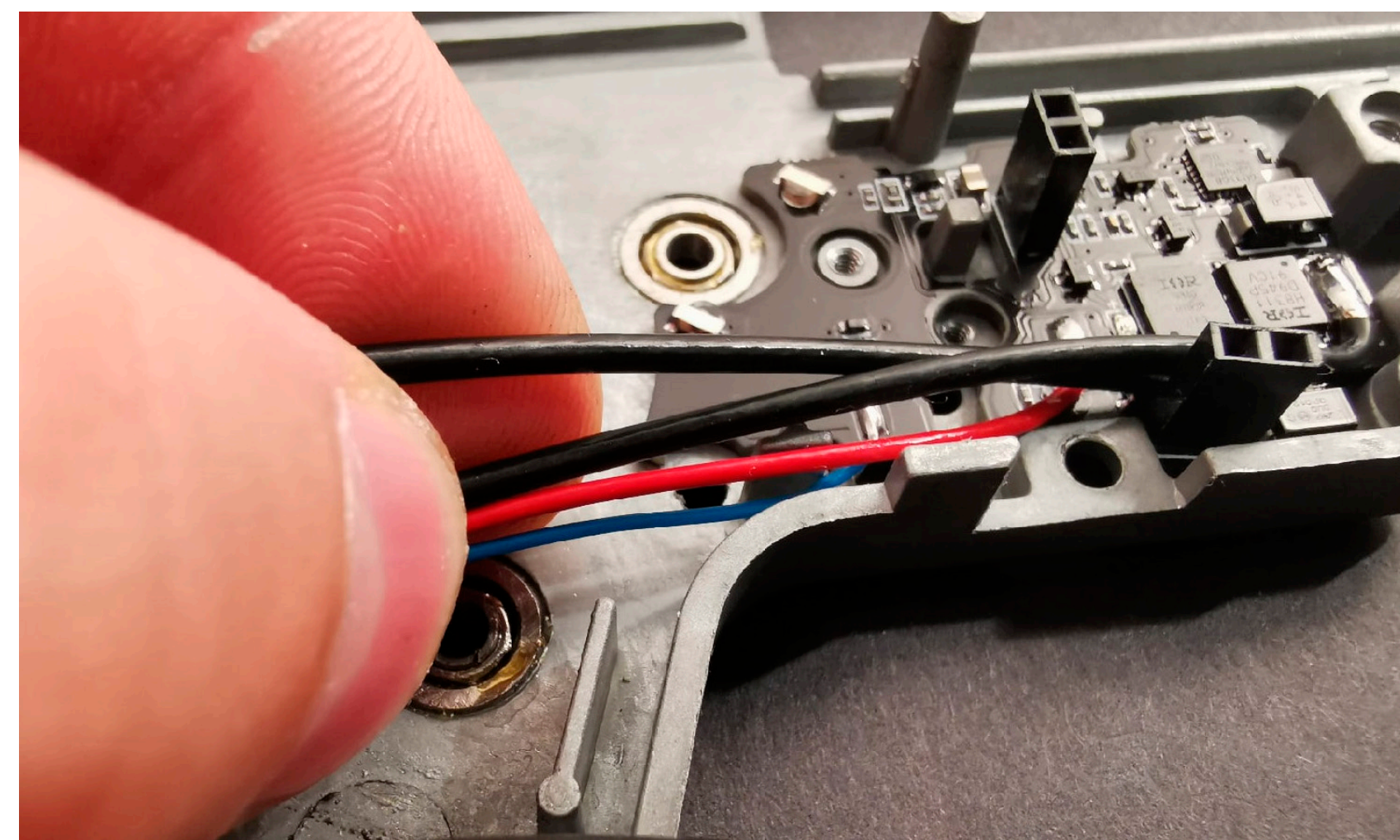
23

Install the Desire V2 bottom board where the wires fit. Make sure it fits against the wall of the gearbox and is not in the way. Wiring in the next paragraph of the instructions.



24

Lay down the wires in the following sequence: start with the blue wire, followed by the red one, then the wire connecting from the battery to the board. Place the wires leading to the motor on top of these. Bend the wires manually, avoiding bending them against the gearbox supports to prevent damaging the wire insulation. In the area where the motor will be positioned... (next photo).



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

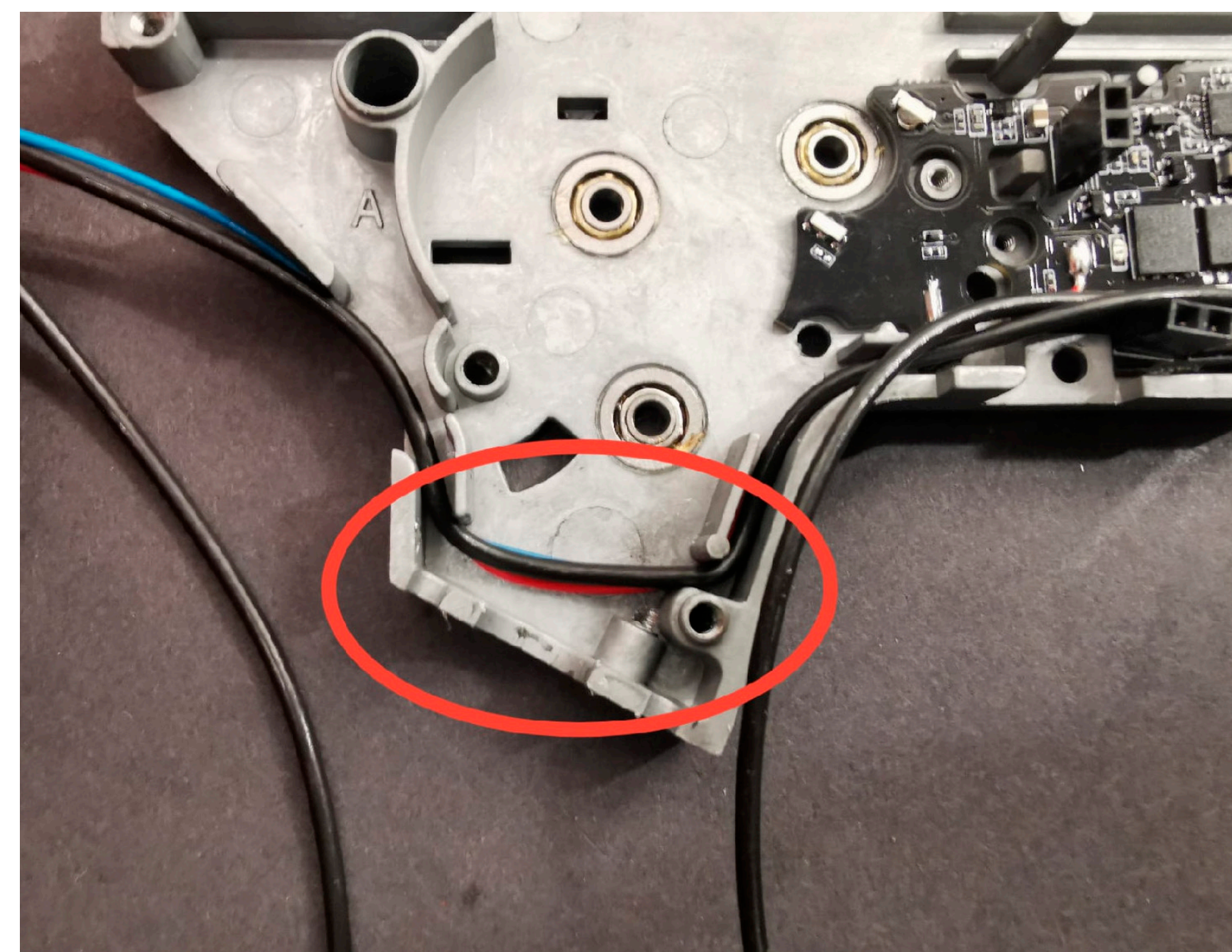
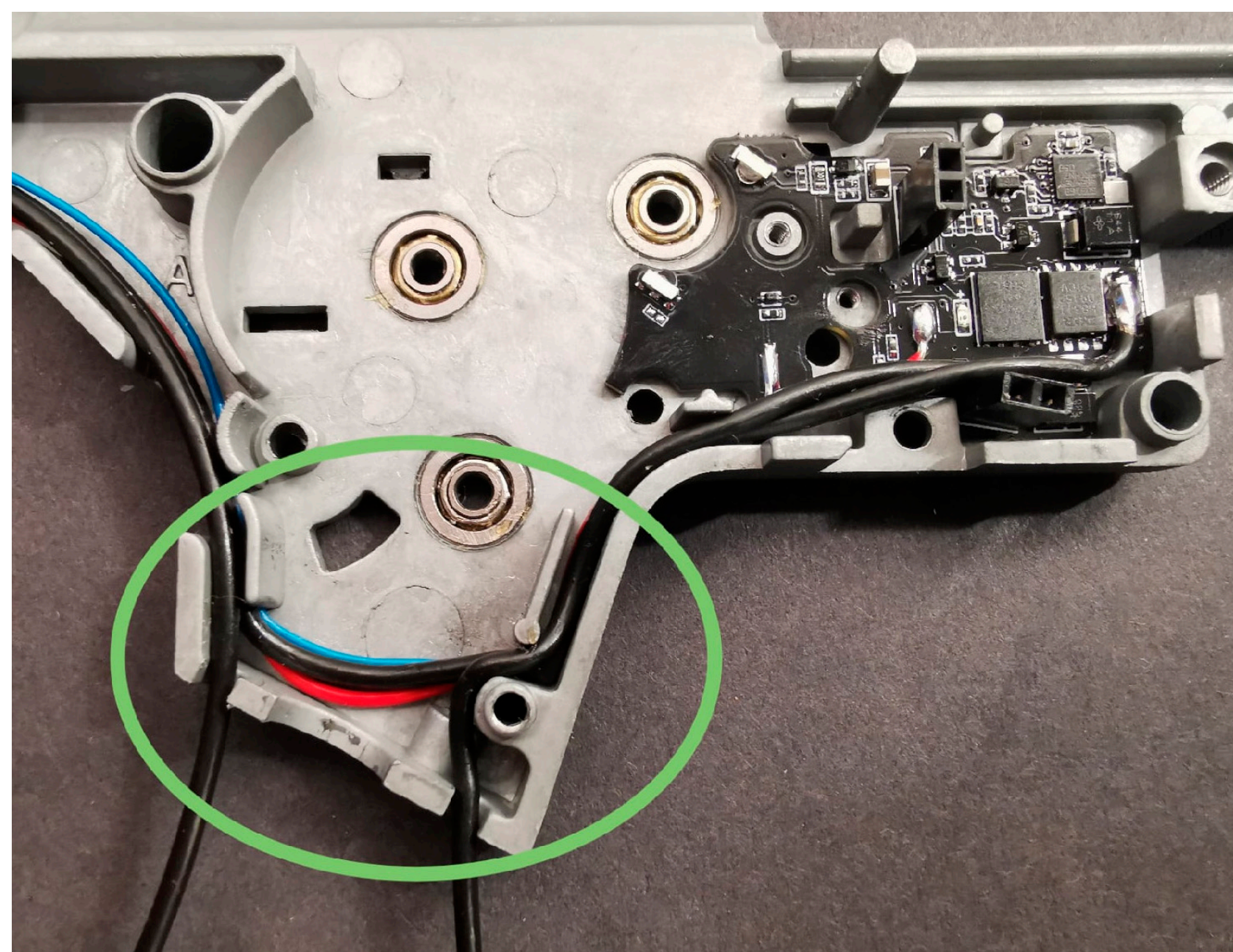
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

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do not stretch the wires, lay them there with as much slack as possible. In this way, they will naturally bend and press against the gearbox wall.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

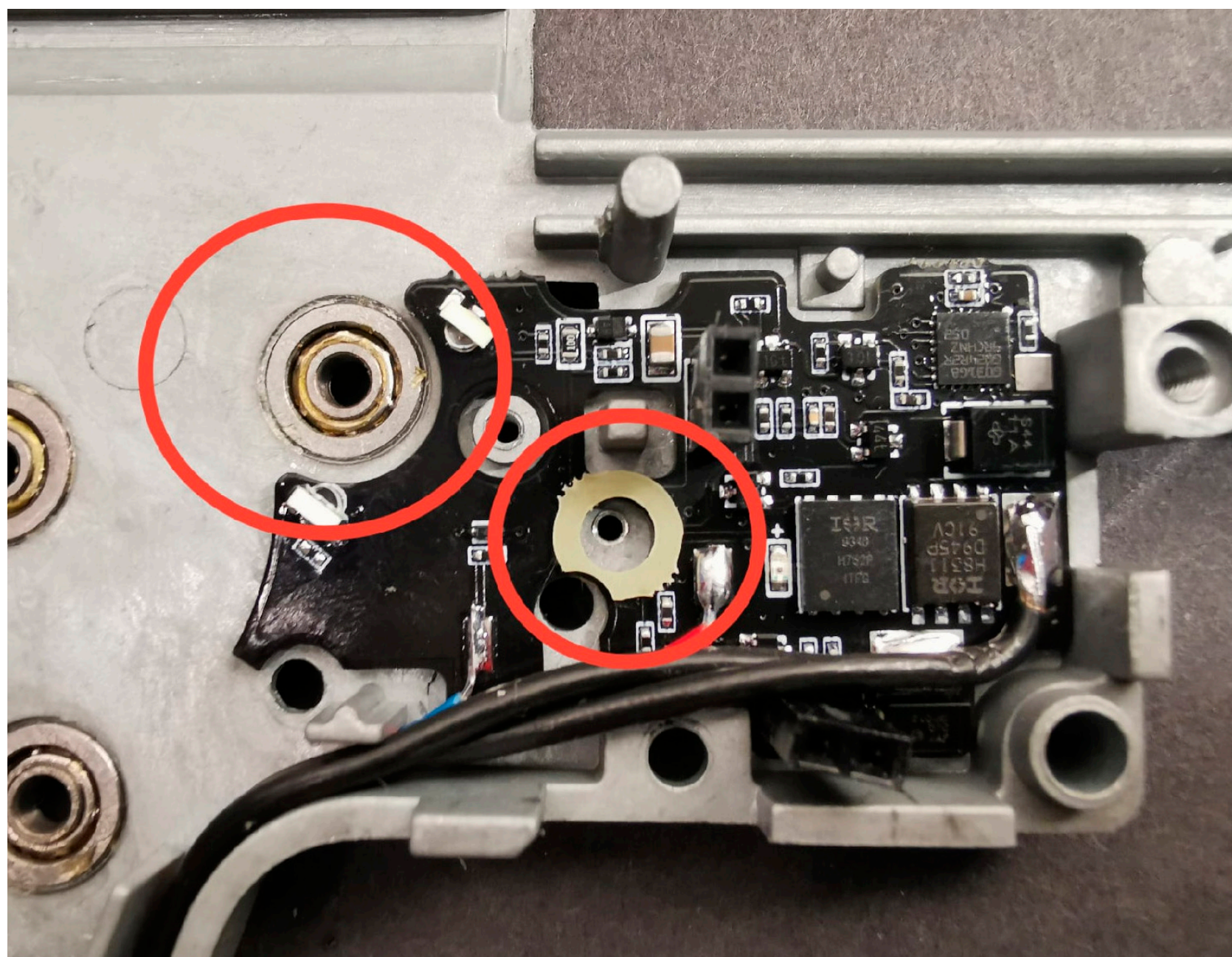
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

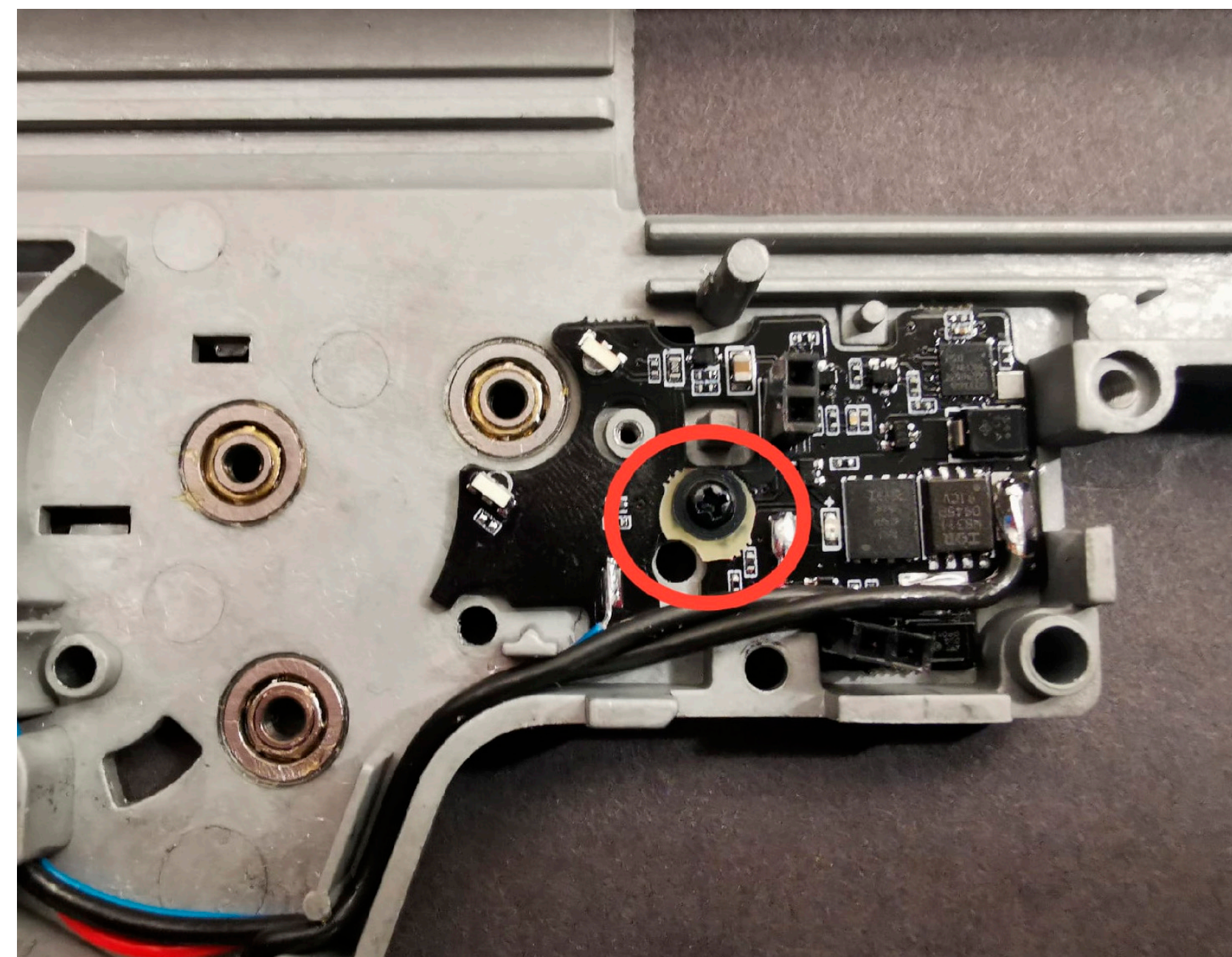
26

Install the included insulating washer.
Align the board with the seating position of
the sector gear.



27

Secure the board with the contact group
attachment screw. Ensure that the screw
doesn't protrude from the opposite side
and won't obstruct the movement of the
selector plate.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

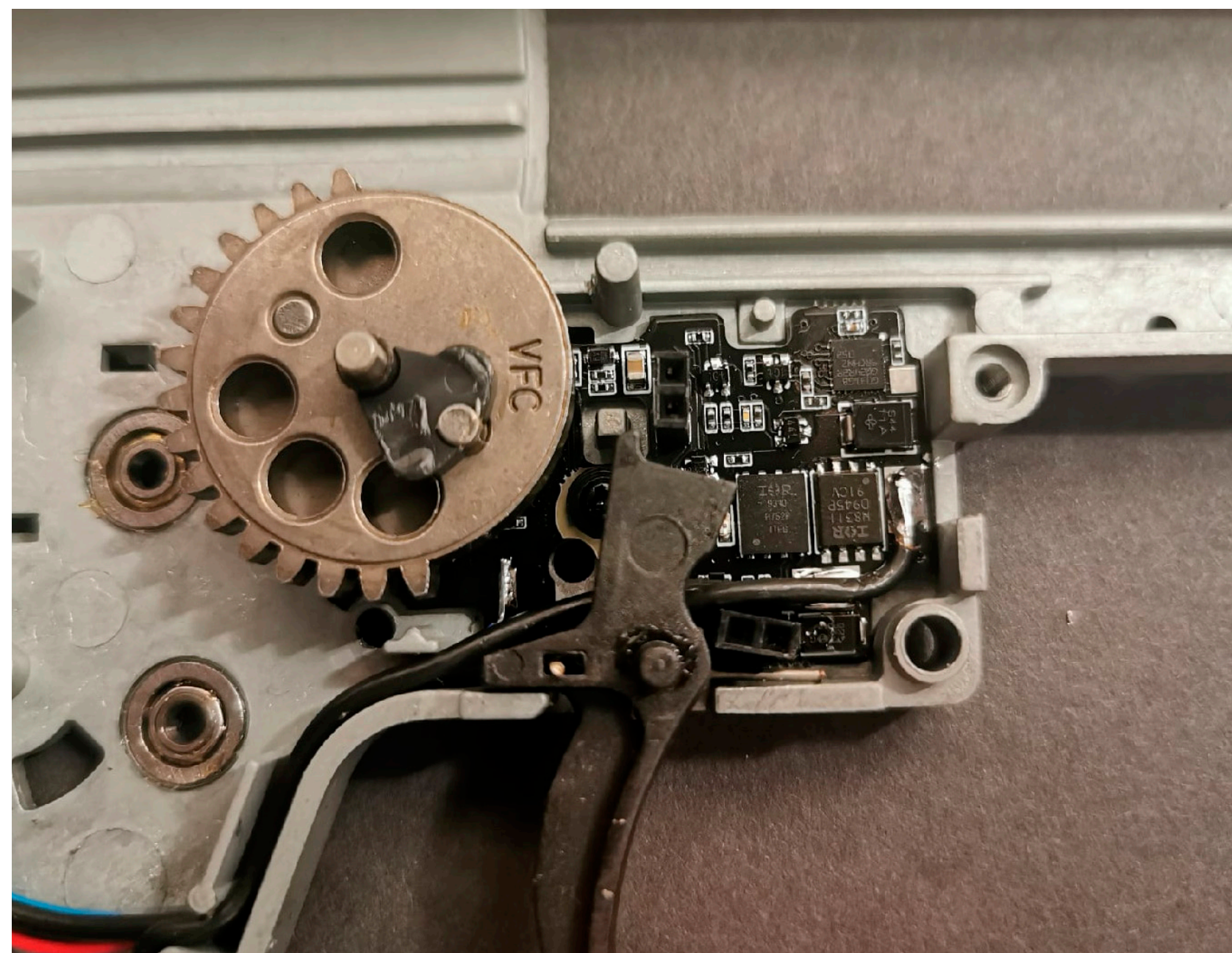
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

28

Install the sector gear and trigger lever into the gearbox.



29

Some gearboxes require modification. Check if you have the pegs on the second gearbox wall, as indicated in the photo. If they are present, they need to be removed



ПРОБЕРКА DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

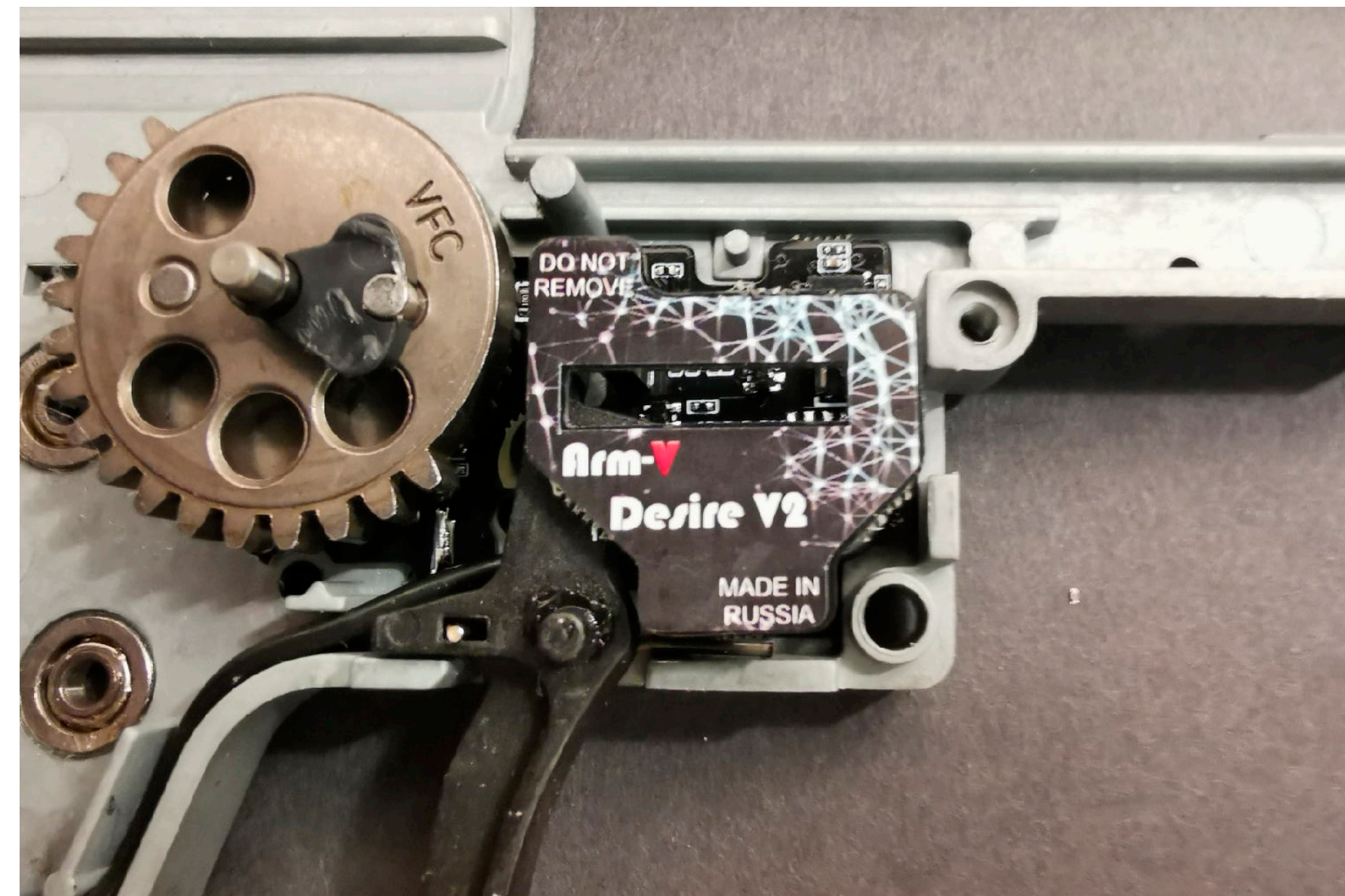
30

In some models, usually those with milled design, there might be a cutout on the top of the trigger hook which, when pressed, would activate the sensor. This cutout needs to be covered for the sensor to function correctly. To do this, you can attach a piece cut from the packaging foam of the Desire V2 box.



31

Install the top board of the Desire V2.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

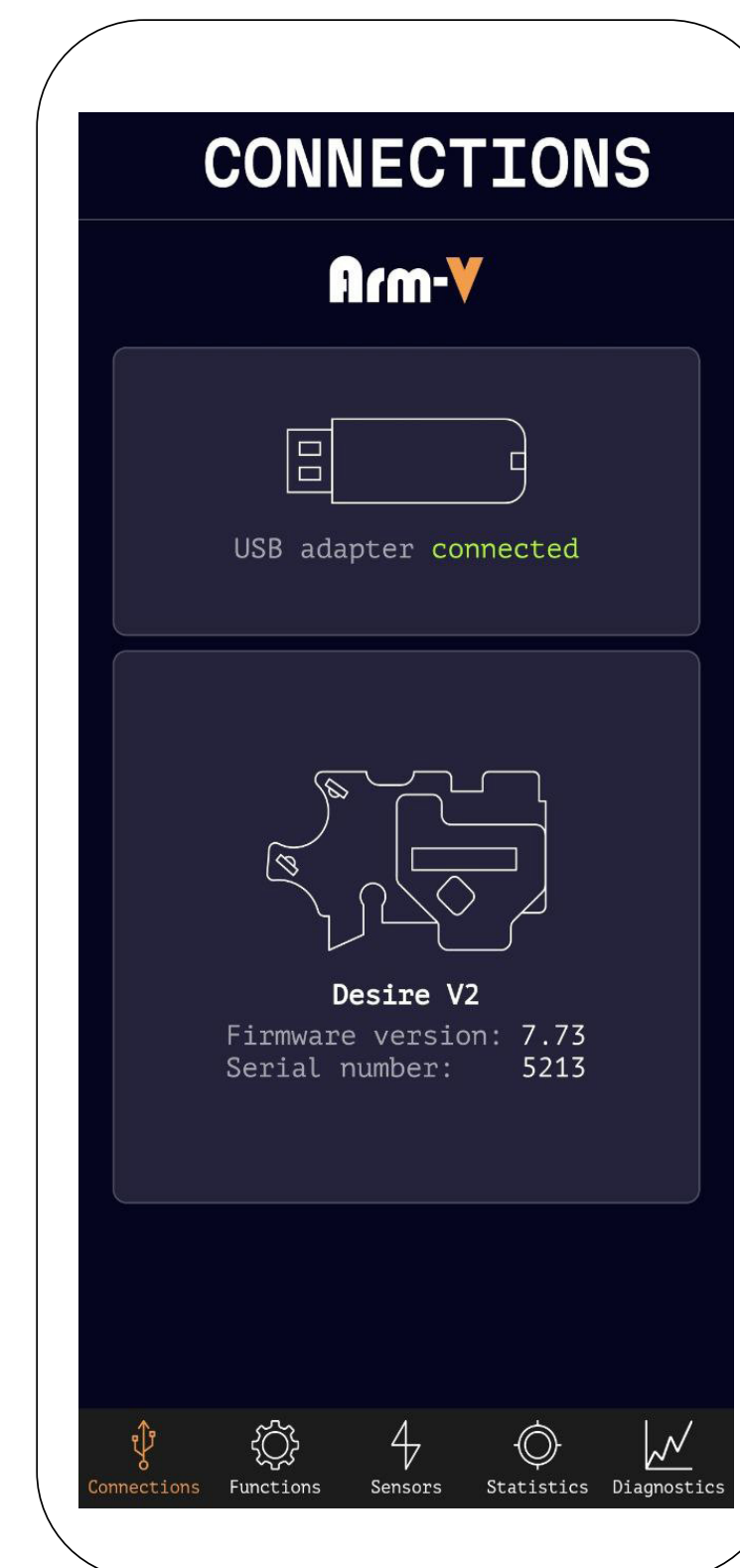
31

Install the right side of the gearbox, making sure it fits smoothly without any obstruction against the top board of the Desire V2. Tighten the 3 screws.



32

Connect the Desire V2 to the battery and your phone, then launch the application.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

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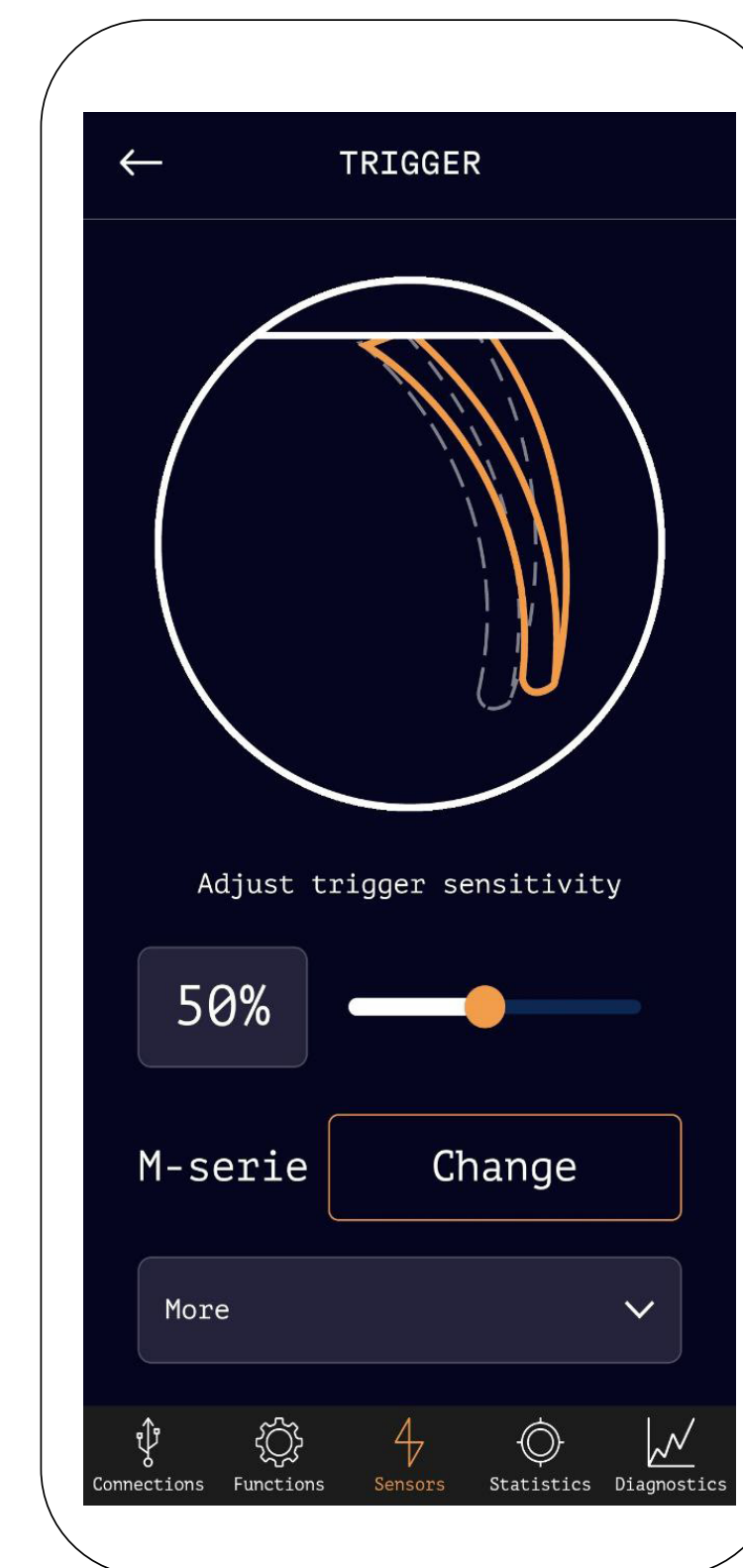
Go to the sensors screen and navigate to the trigger sensor.

Press the trigger lever...



34

...and make sure that it's reflected in the program.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

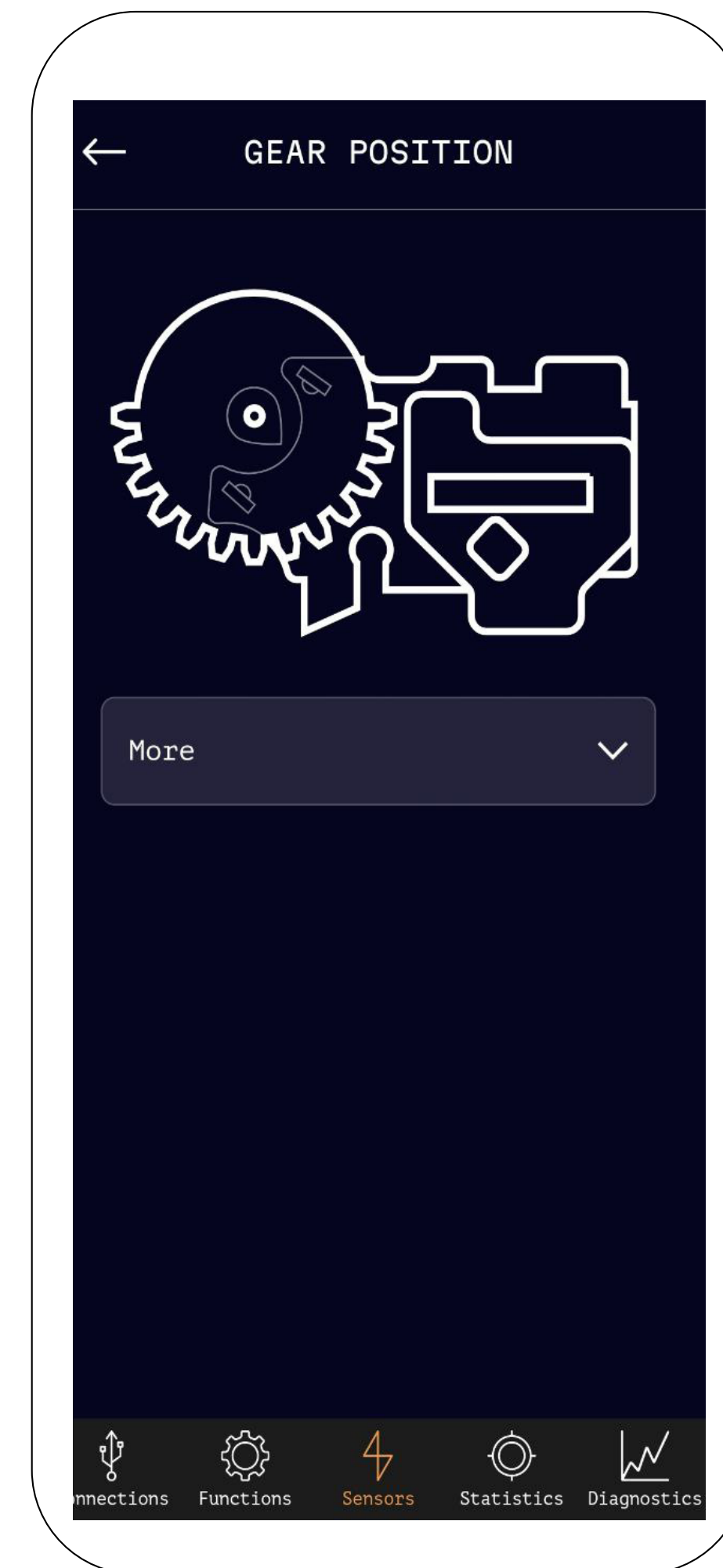
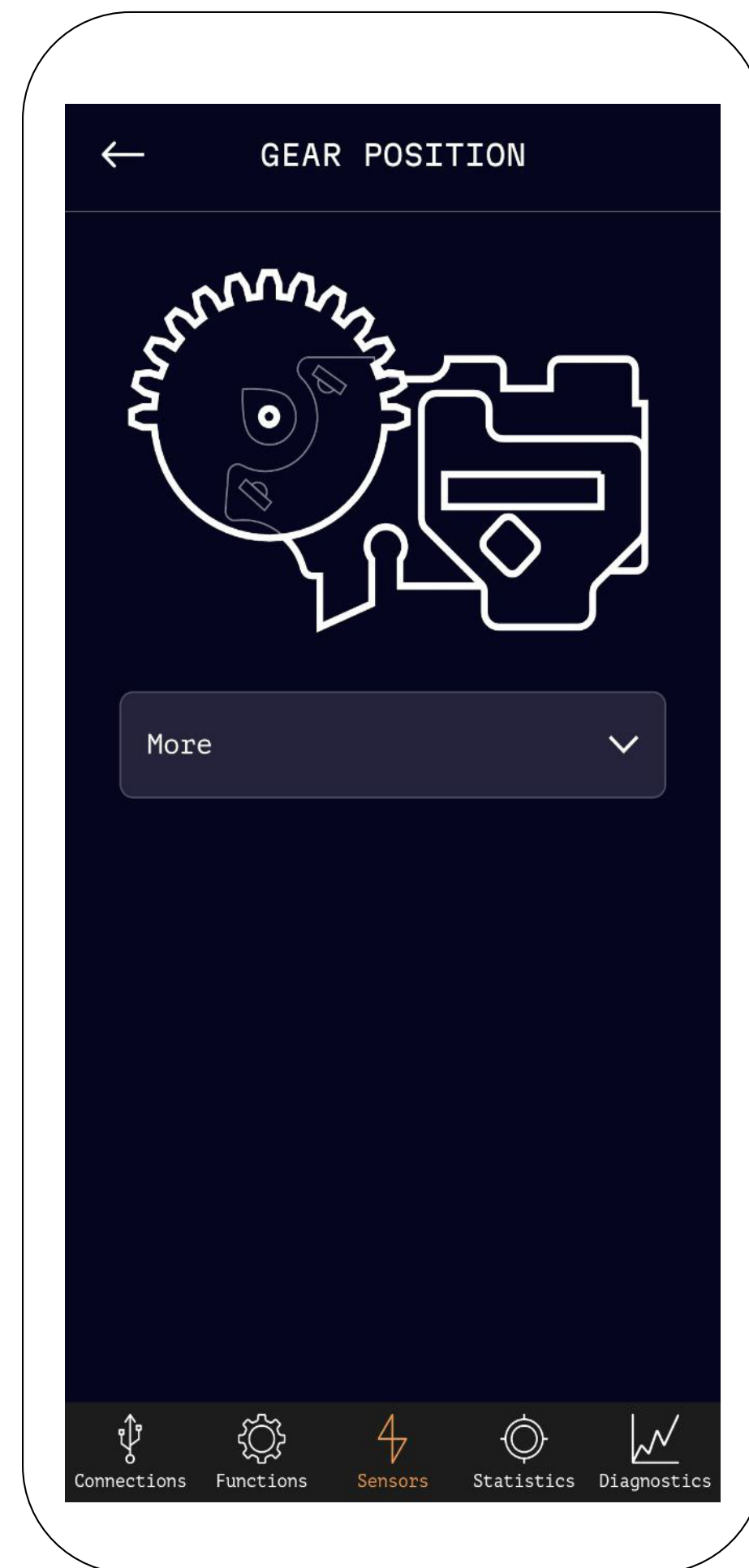
Arm-V
Desire V2

35

Go back to the sensors screen and navigate to the «Gear position».

Rotate the sector gear through the cylinder window and ensure that the sensor registers in the program (the sensor might have only 2 positions, it won't display smooth rotation).

Disconnect the Desire V2 from the battery and phone.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

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Arm-V
Desire V2

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You need to degrease the selector plate before applying the sticker. Thoroughly clean it with a cleaning agent and let it dry.



37

Place the selector plate as indicated in the picture.



ПРОВЕРКА DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

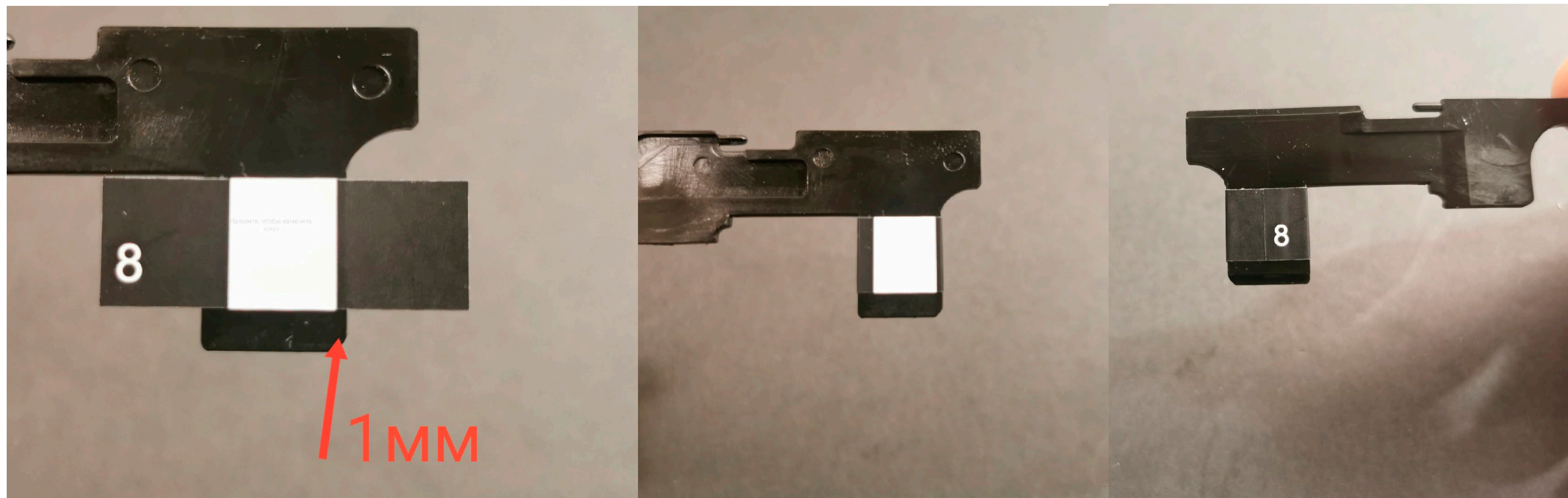
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

38

Take the sticker with the number 8.
Apply the sticker to the selector so that
there's approximately 1 mm of black
stripe from the right edge. Fold the
sticker from both sides.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

39

Install the selector plate onto the gearbox.



40

Install the gearbox into the body and secure it with the central and rear pins.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

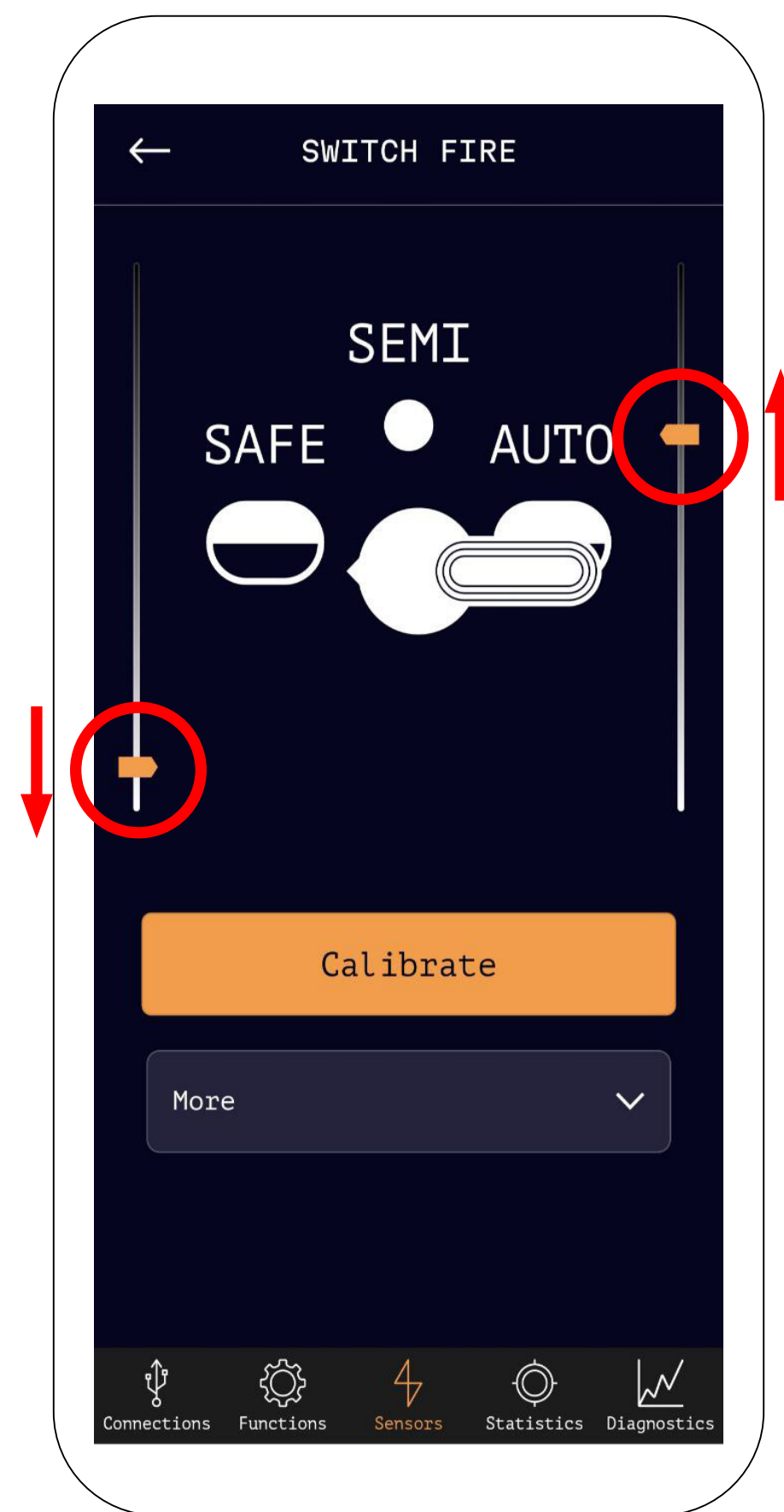
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

41

Connect the Desire V2 to the battery and your phone, then launch the application. Go to the sensors screen and navigate to the switch fire.



42

Set your gun to the Safe mode. Pay attention to the sensor positions in the program. The left sensor should be positioned at the bottom, meaning the white part of the sticker is above it. The right sensor should be positioned at the top, not below half of the scale, meaning the black part of the sticker is above it. If the readings from the right sensor are insufficient, you need to adjust the sticker on the selector plate towards the front.

ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

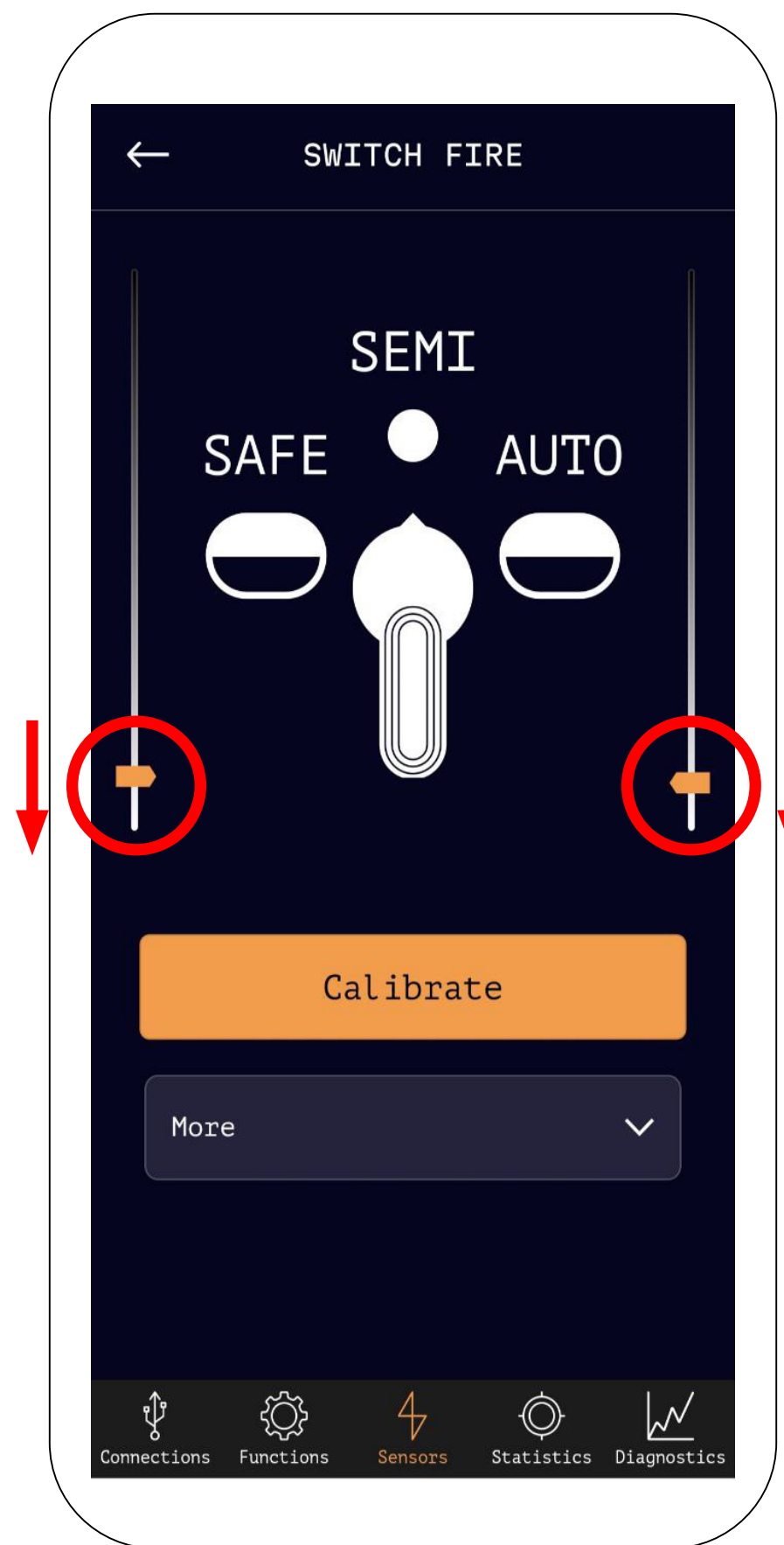
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

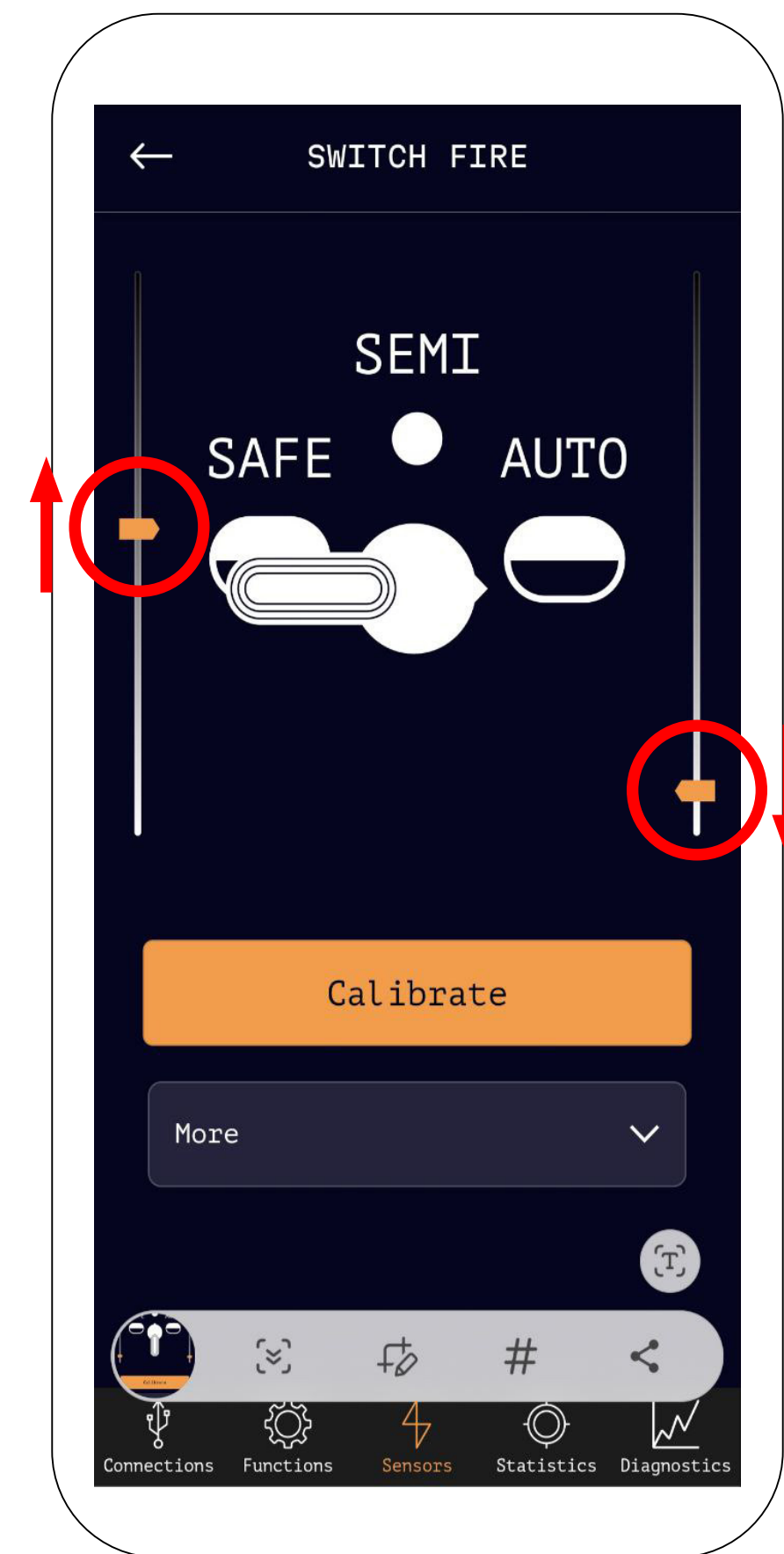
43

Switch your gun to semi mode. The readings from both sensors should decrease. The white part of the sticker should be above both sensors. If the readings from the left sensor haven't decreased, you need to adjust the sticker towards to front. If the readings from the right sensor haven't decreased, you need to adjust the sticker towards the stock.



44

Switch your gun to auto mode. The left sensor should be positioned at the top, not below half of the scale, meaning the black part of the sticker is above it. The right sensor should be positioned at the bottom, meaning the white part of the sticker is above it. If the readings from the left sensor are insufficient, you need to adjust the sticker on the selector plate towards the stock.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

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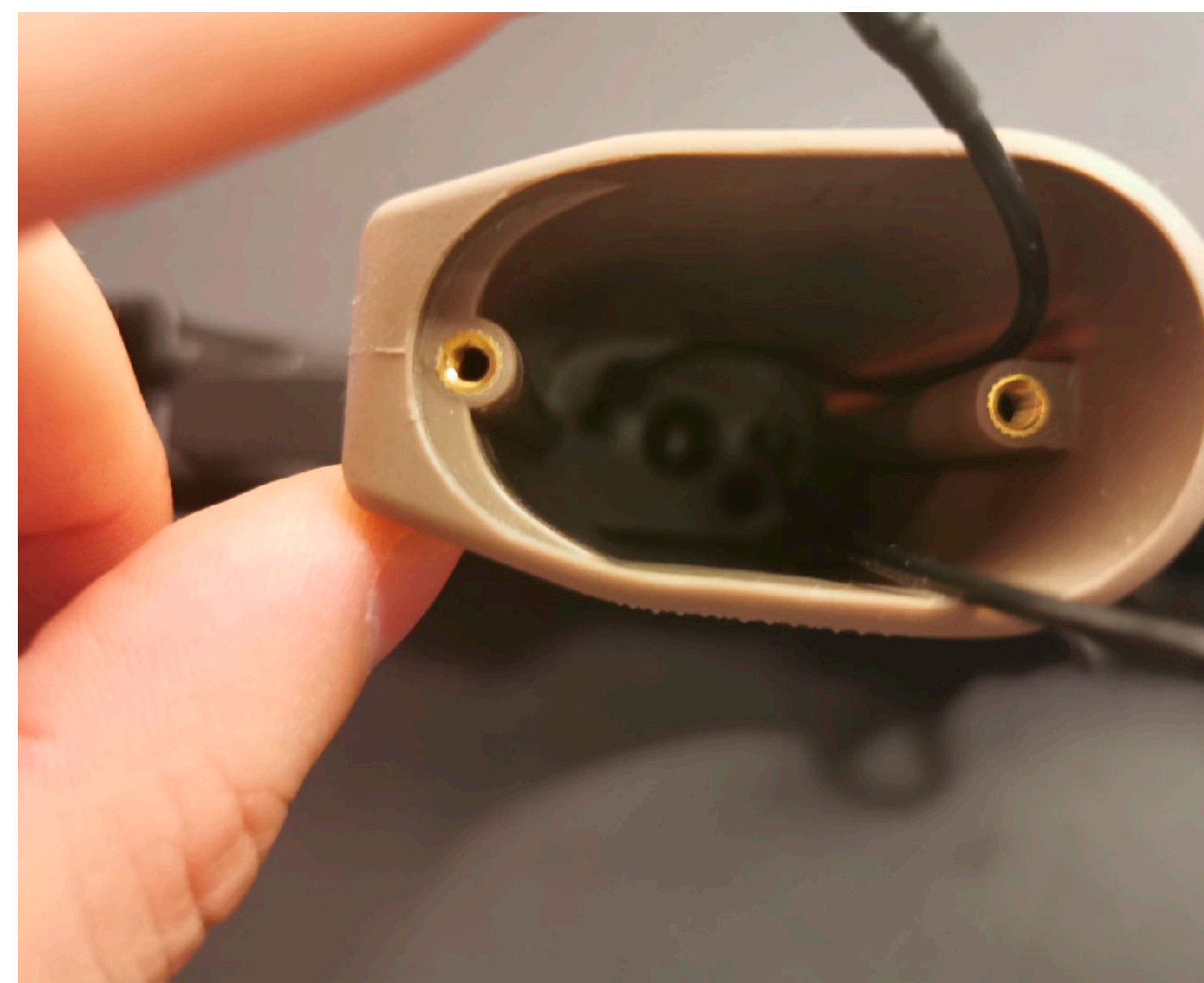
Disconnect the Desire V2 from the battery and phone.

Install the pistol grip and the buttstock tube.



46

The wiring of the Desire V2 is designed so that the negative terminal of the motor is on the side of the buttstock. Check on your motor, with this orientation, which side the negative terminal is on: the right or the left. Lay both wires along the back wall of the pistol grip. If the negative terminal is on the right side, then the wire with the black terminal should go along the left side, and vice versa.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

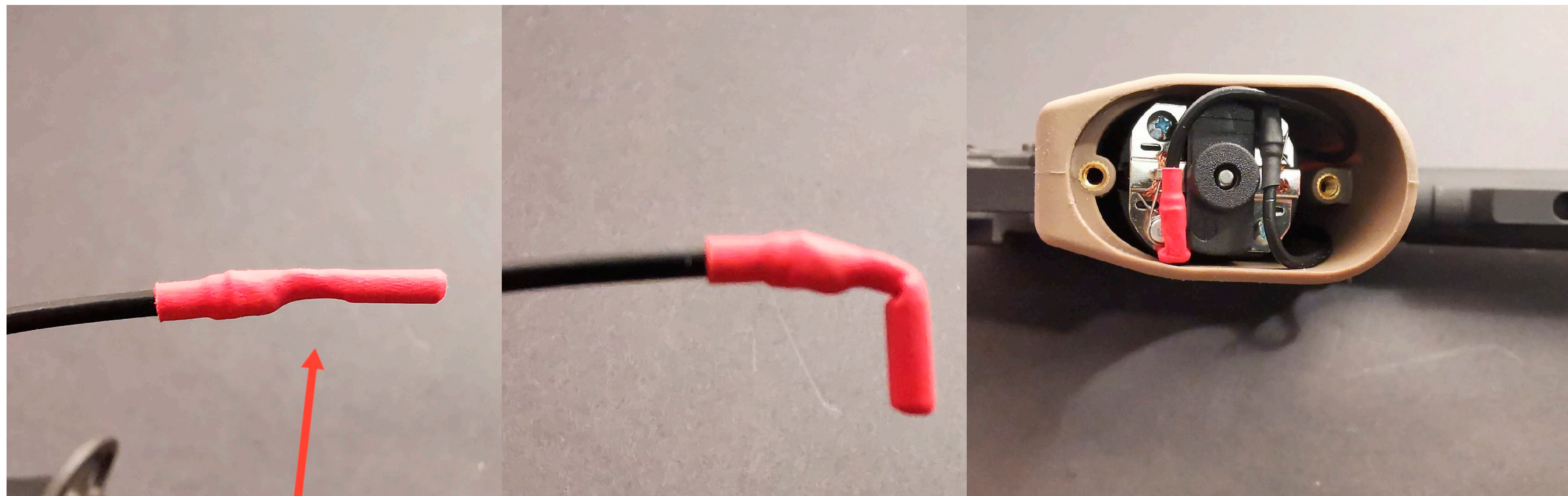
NEW FUNCTION

WARRANTY

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Attention! The terminals should be bent towards the «uneven» side, bending them towards the «even» side will cause them to break. Bend the terminals as shown in the picture and connect them to the motor.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

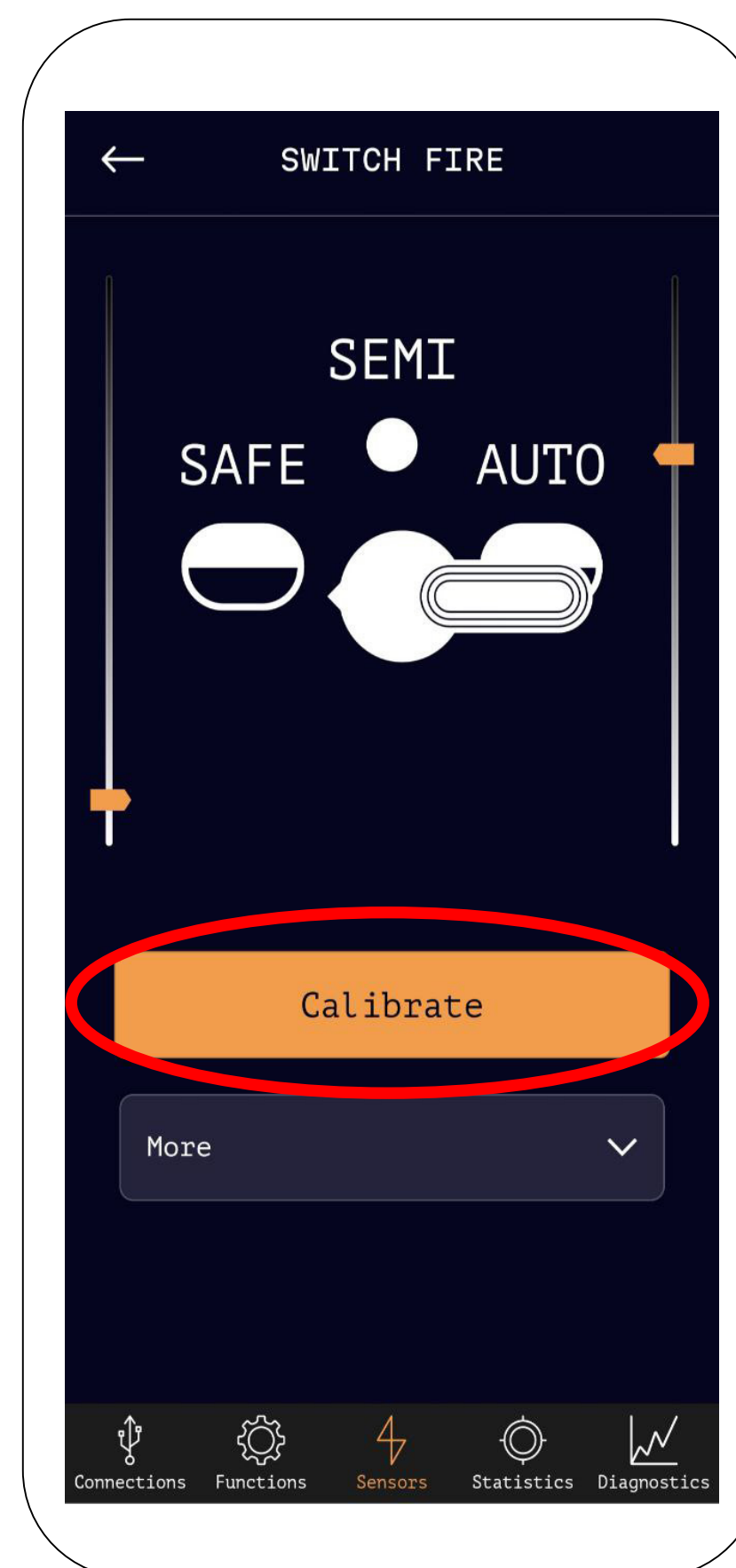
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

48

Connect the Desire V2 to the battery and your phone, then launch the application. Go to the sensors screen and navigate to the switch fire. Press the «Calibrate» button and follow the instructions in the program.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

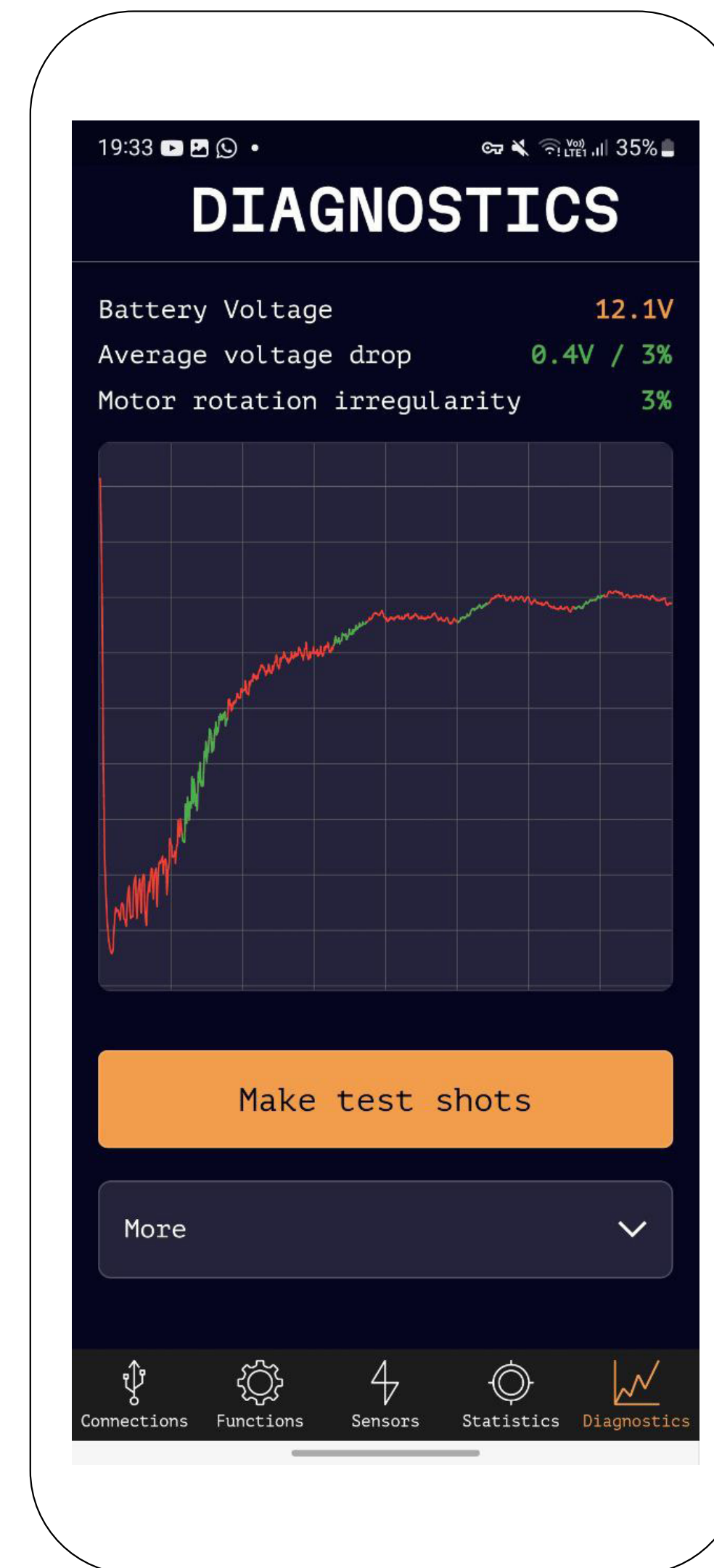
Arm-V
Desire V2

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Navigate to the diagnostics screen and press the 'Make test shots' button. A graph will be generated.

This graph represents the voltage of your battery during motor operation. When the spring is being compressed, the load increases, causing the voltage to drop. After the shot, the load on the motor decreases, and the voltage will rise again. Changes in load should be smooth. If you see significant jumps on the graph, it's recommended to check the positions of your gears and motor.

The green segments on the graph represent the moments when the gear sensor activates. They should resemble the example provided.



ПРОБЕРКА DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

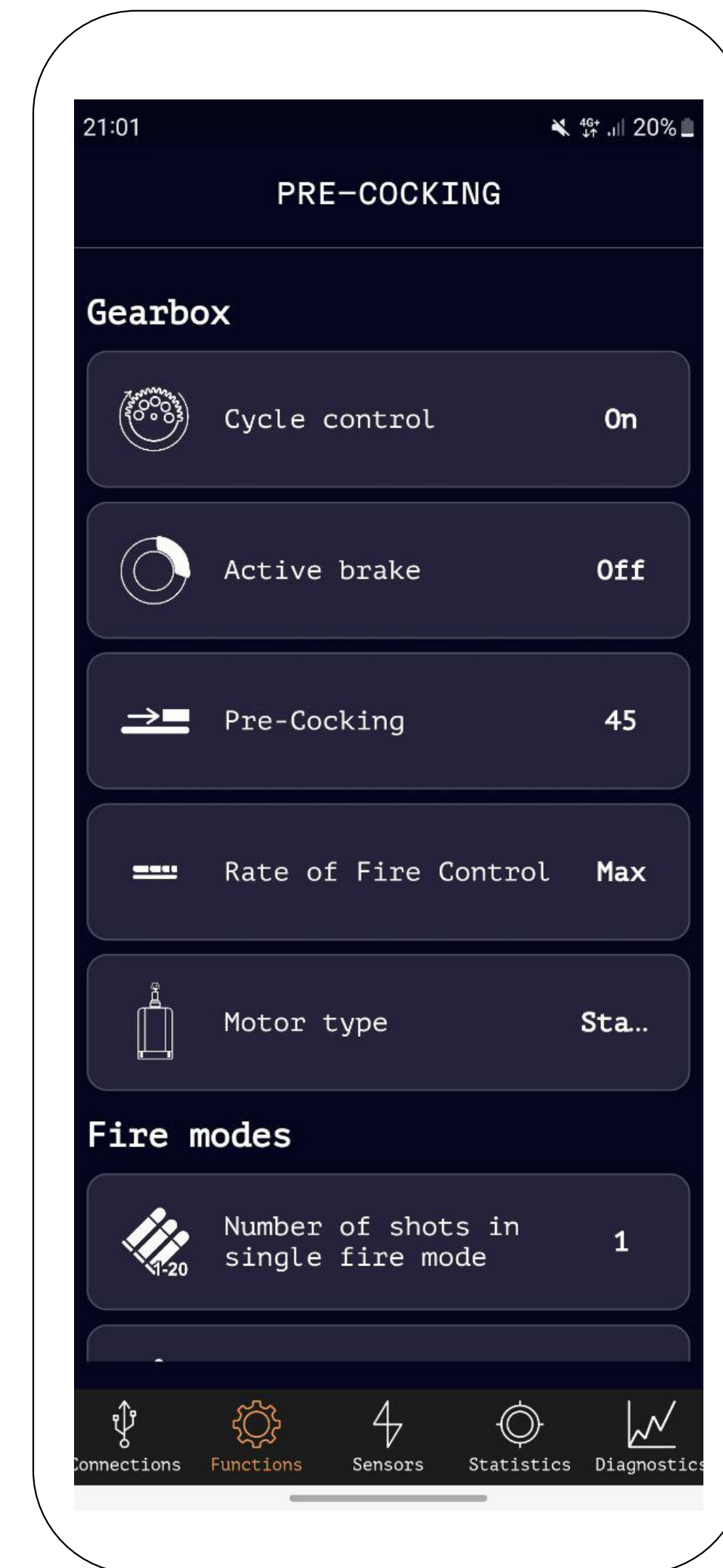
WARRANTY

Arm-V
Desire V2

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After the gearbox is fully assembled and tested, you can proceed to configure the new features that have been added to your gearbox. The first few functions are aimed at optimizing the gearbox performance by minimizing the delay between trigger pull and shot, as well as ensuring maximum stability. For visual guidance, follow these steps:

Open the 'Functions' screen.



ПРОВЕРКА DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

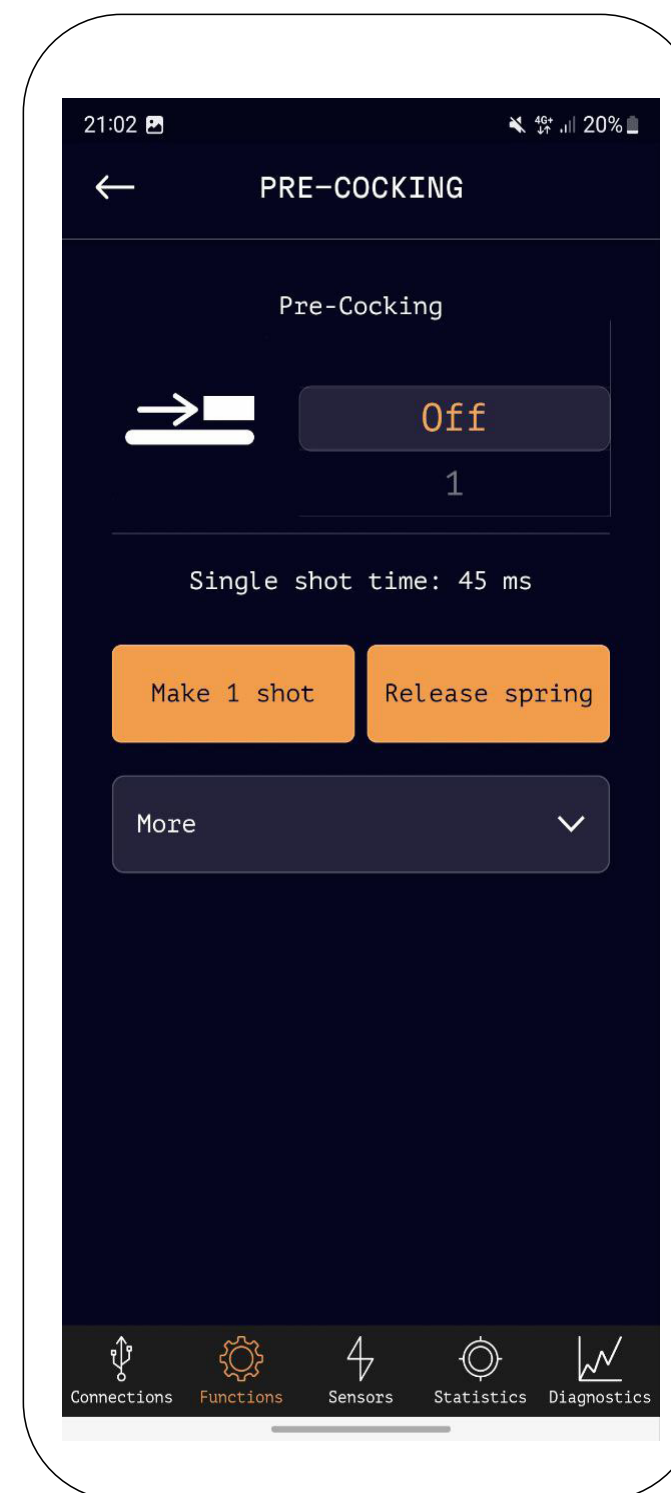
Arm-V
Desire V2

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Navigate to the 'Pre-cocking' screen and set it to 'Off'.

Press the 'Make 1 shot' button several times and observe the delay time for the first shot.

Because motor inertia is variable (the number of rotations it makes after voltage is removed), the delay time for the first shot will differ significantly from shot to shot.

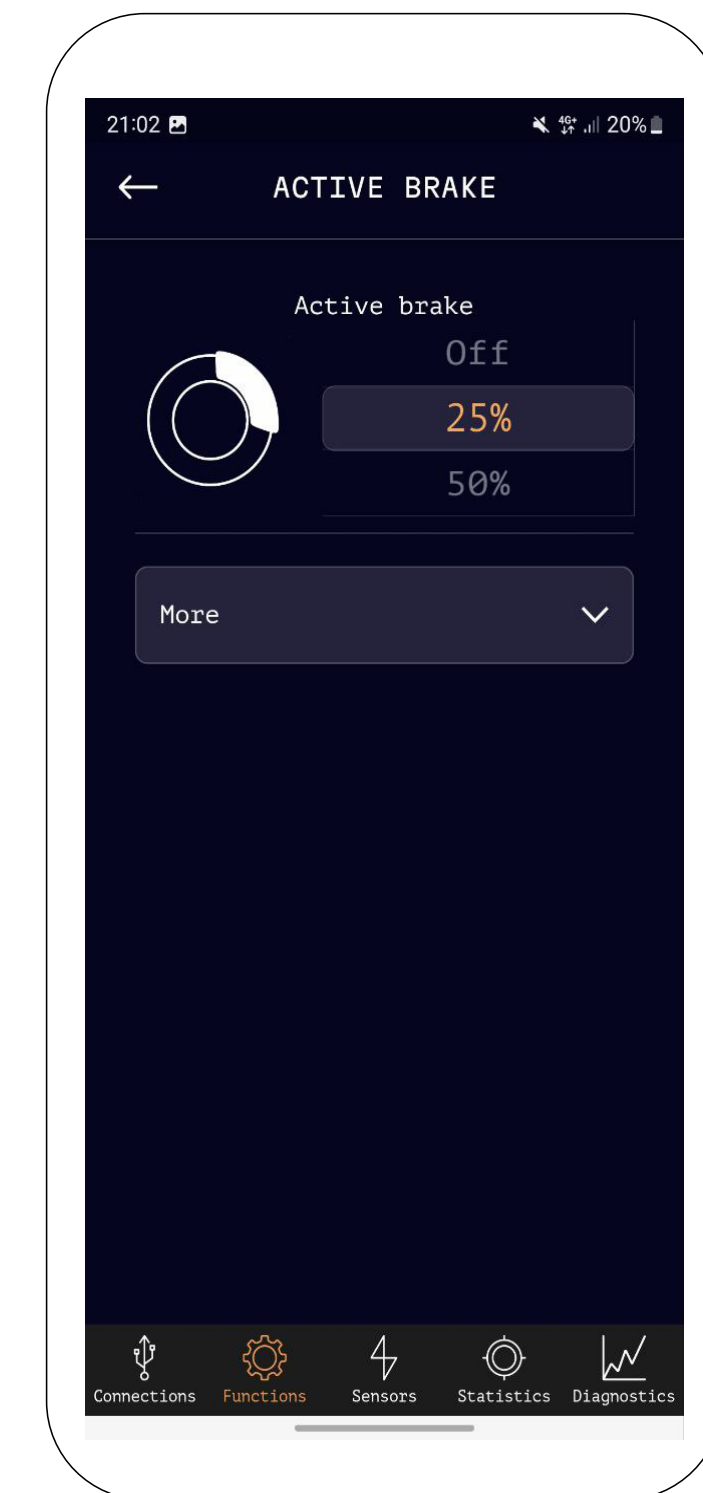


51

Now, go back to the 'Functions' screen and enter the '**Active Brake**' setting. Enable it at 25%.

This function eliminates motor inertia. If you experienced more than 1 shot in the previous step, you might want to set a higher value for the active brake, but keep in mind that active brake adds heat to the motor.

If your playing style involves around 300-400 single shots in 2 minutes, it's better to disable the active brake.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

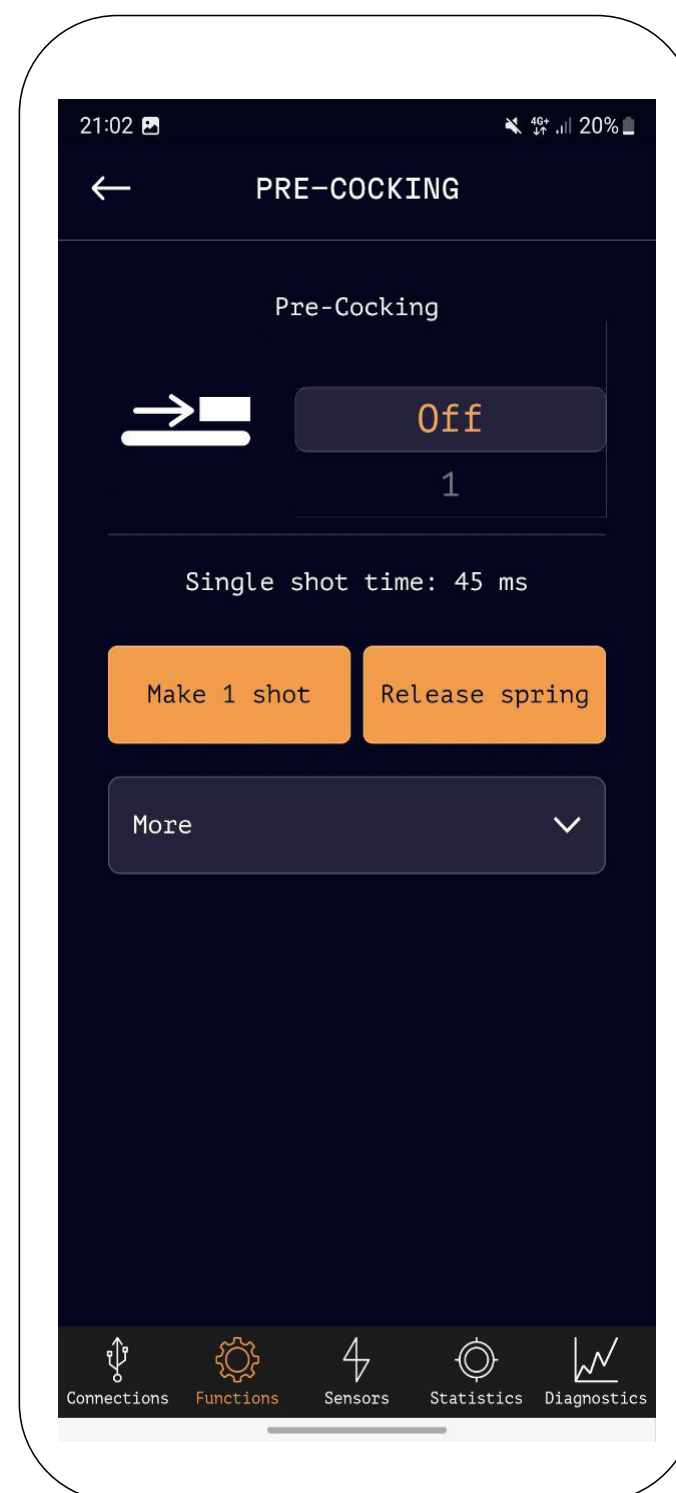
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

52

Go back to the 'Pre-cocking' settings and once again press the 'Make 1 shot' button several times. Observe the delay time for the first shot. It has increased but should now be stable.

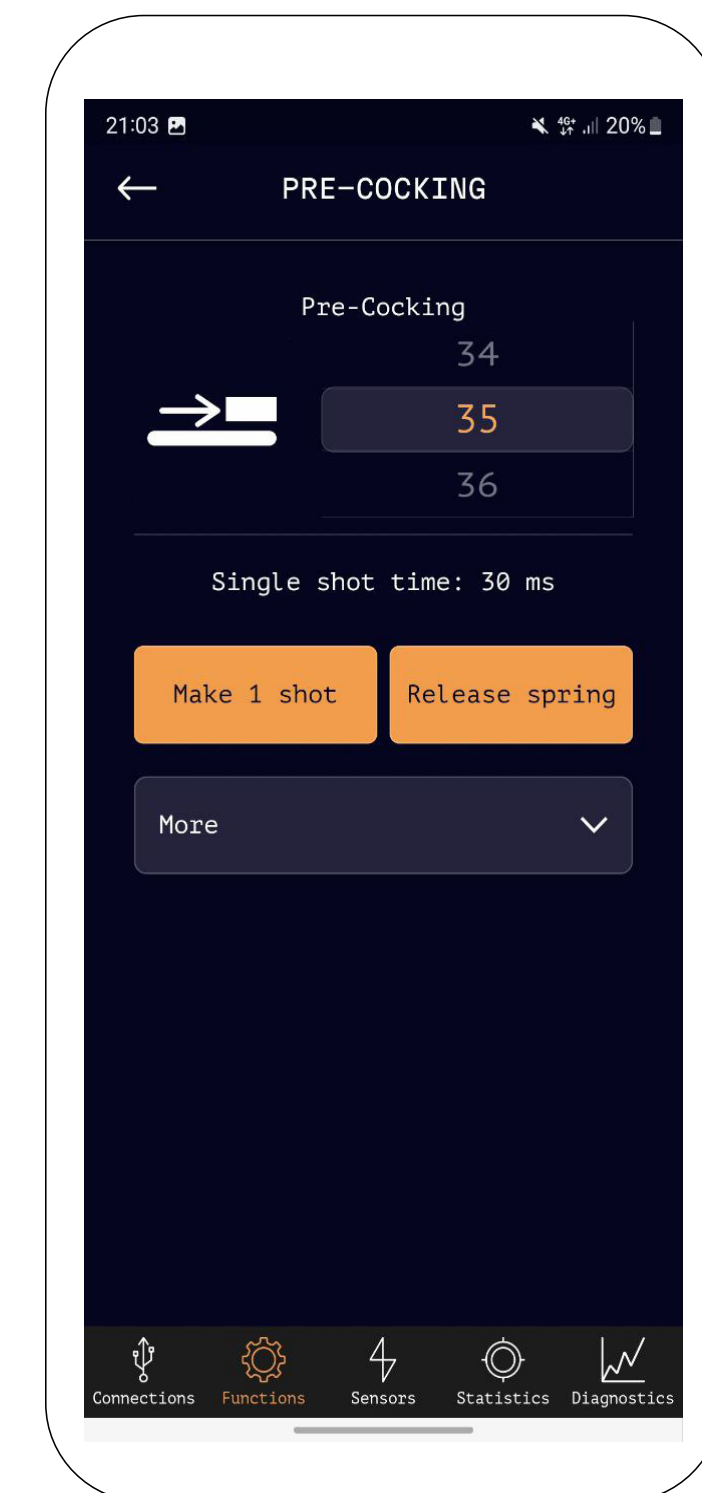


53

Now gradually increase the **pre-cocking** value and test by pressing the 'Make 1 shot' button. Observe how the delay time for the first shot decreases.

If the precocking value becomes too high, you might experience double shots. Desire V2 will automatically reduce the precocking value with each shot until single shots are achieved.

If you were getting double shots at the beginning when active brake was off, you don't need to enable precocking.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

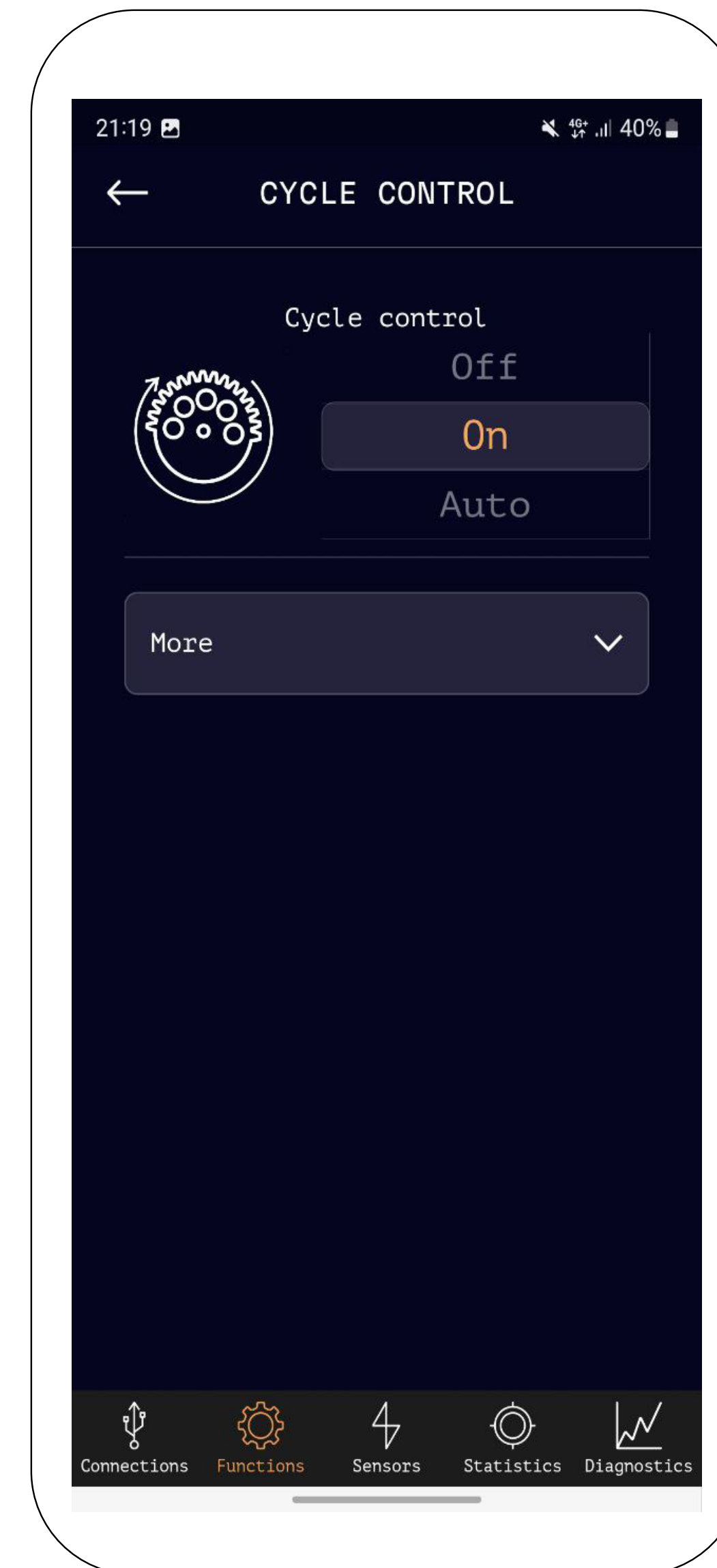
54

Once you understand the purpose of active brake and pre-cocking, you can proceed to configuring the **Cycle Control** function.

If Cycle Control is turned off, the motor will stop immediately after releasing the trigger, resulting in an arbitrary firing cycle state.

If Cycle Control is turned on, after releasing the trigger, Desire V2 will complete the firing cycle and stop the piston exactly at the desired position. If in single-fire mode there are more than one shot due to motor inertia, Desire V2 will automatically reduce the precocking value and then increase the active brake power to achieve stable single shots.

If Cycle Control is set to Auto, Desire V2 will adjust the active brake and precocking settings on each trigger pull to achieve the fastest response time. In this case, there might be a few double shots in the first 5 shots after turning on the system.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

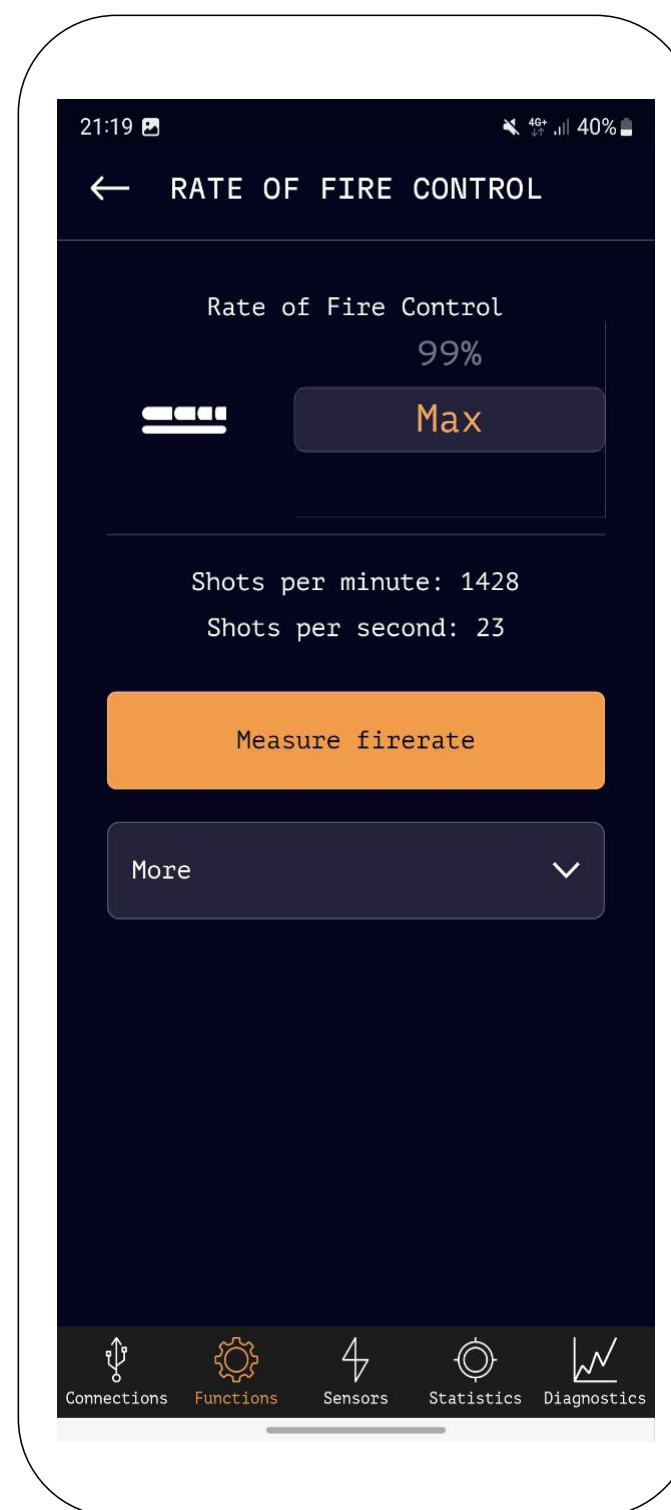
Arm-V
Desire V2

55

The last function that affects gearbox performance is **Rate of Fire Control**.

The maximum rate of fire is determined by the mechanics of your gearbox. By pressing the 'Measure Firerate' button, the gearbox will perform 10 shots and provide you with the results. If this value is higher than what you need, you can lower it.

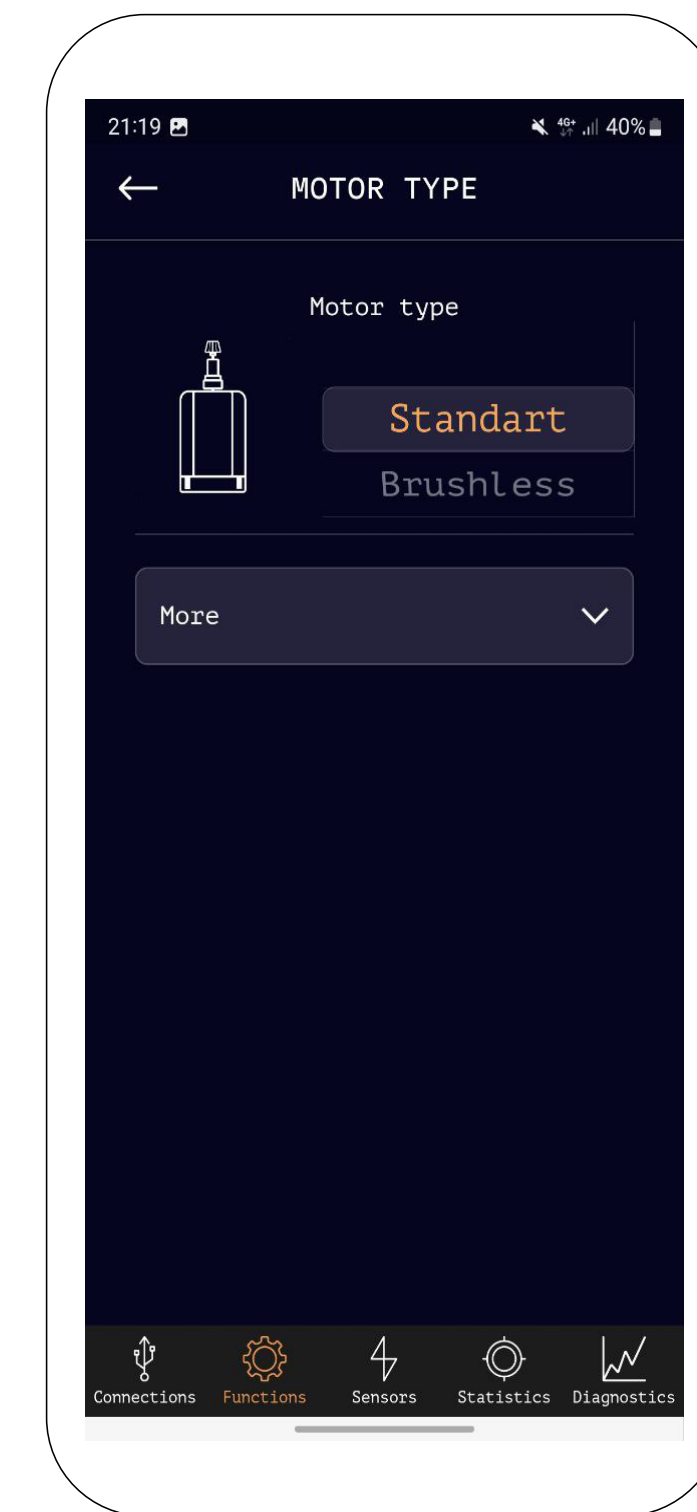
It's not recommended to use this function with high-speed motors due to their inherent overload and increased heating.



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If you are using a **brushless motor**, you must select this motor type in the corresponding function.

This will disable certain Desire functions that are not supported by the motor's own electronics.



ПРОБЕРКА DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

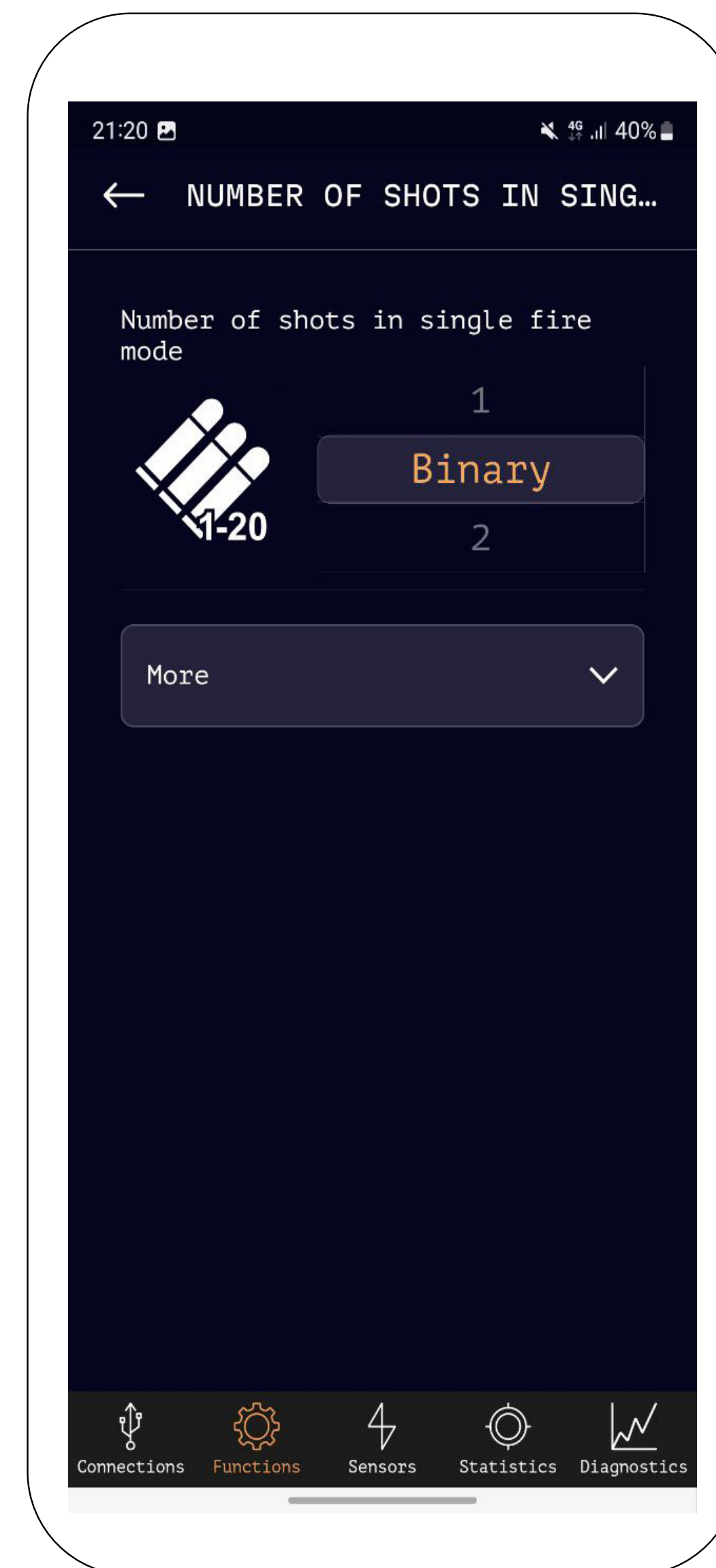
57

The next functions control the **firing modes**.

Previously, your gearbox had the safety mode, single-fire mode, and full-auto mode. Now you can replace any of them with a short burst, completely disable burst mode, or limit it to just one shot. You can also set up two burst values and switch between them by holding the trigger for a few seconds after the cutoff is triggered.

You can activate Burst mode and set, for example, a value of 3. Go to the sensors screen, open the fire mode switch sensor, switch the fire mode switch from single-fire to full-auto and back quickly. Instead of single-fire mode, Burst mode will activate.

The Binary value means that the gearbox will fire one shot upon pressing the trigger and another shot upon releasing it, effectively doubling your perceived rate of fire.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

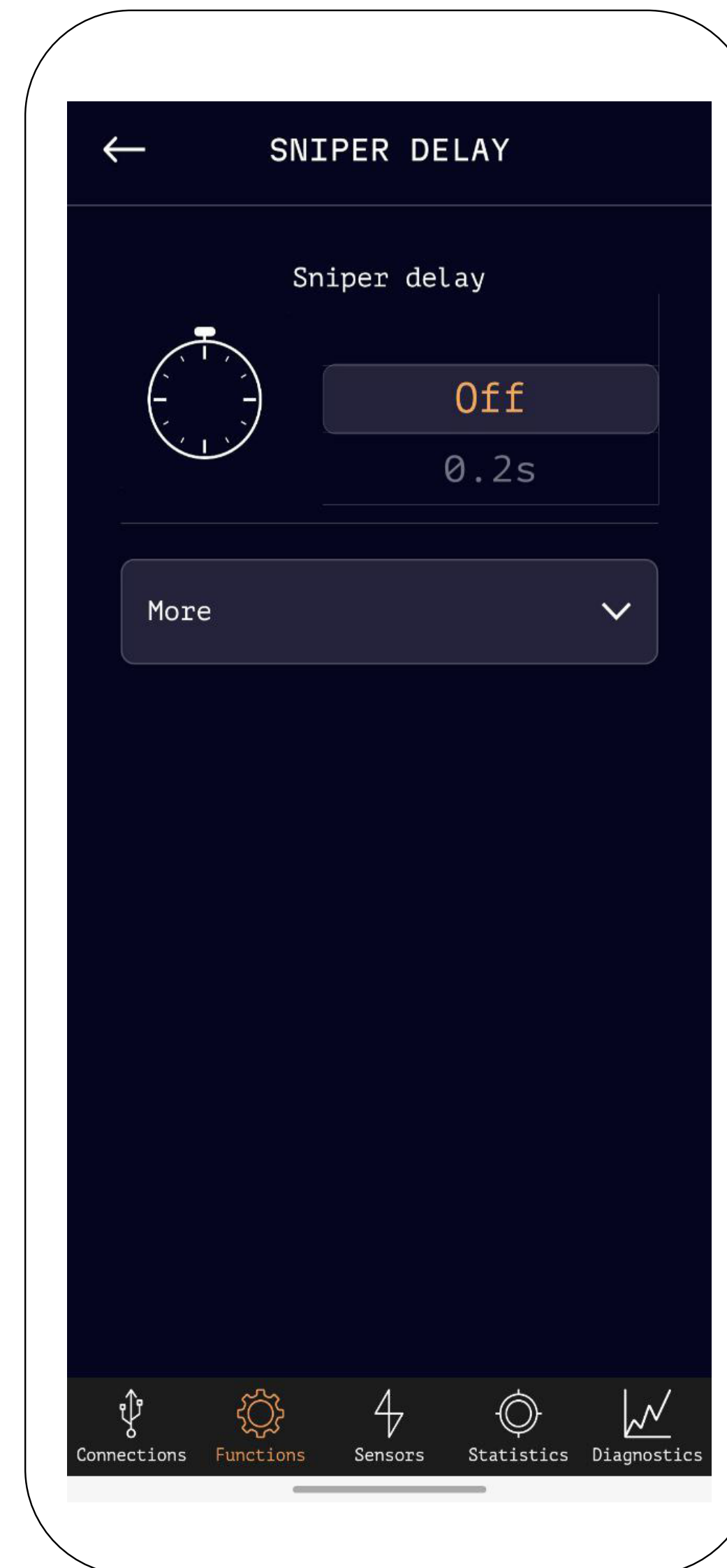
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

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Sniper delay is necessary for artificially reducing the maximum rate of fire with single shots, simulating manual bolt action on rifles. This function is often required to meet regulations in certain games where high muzzle velocity is present.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

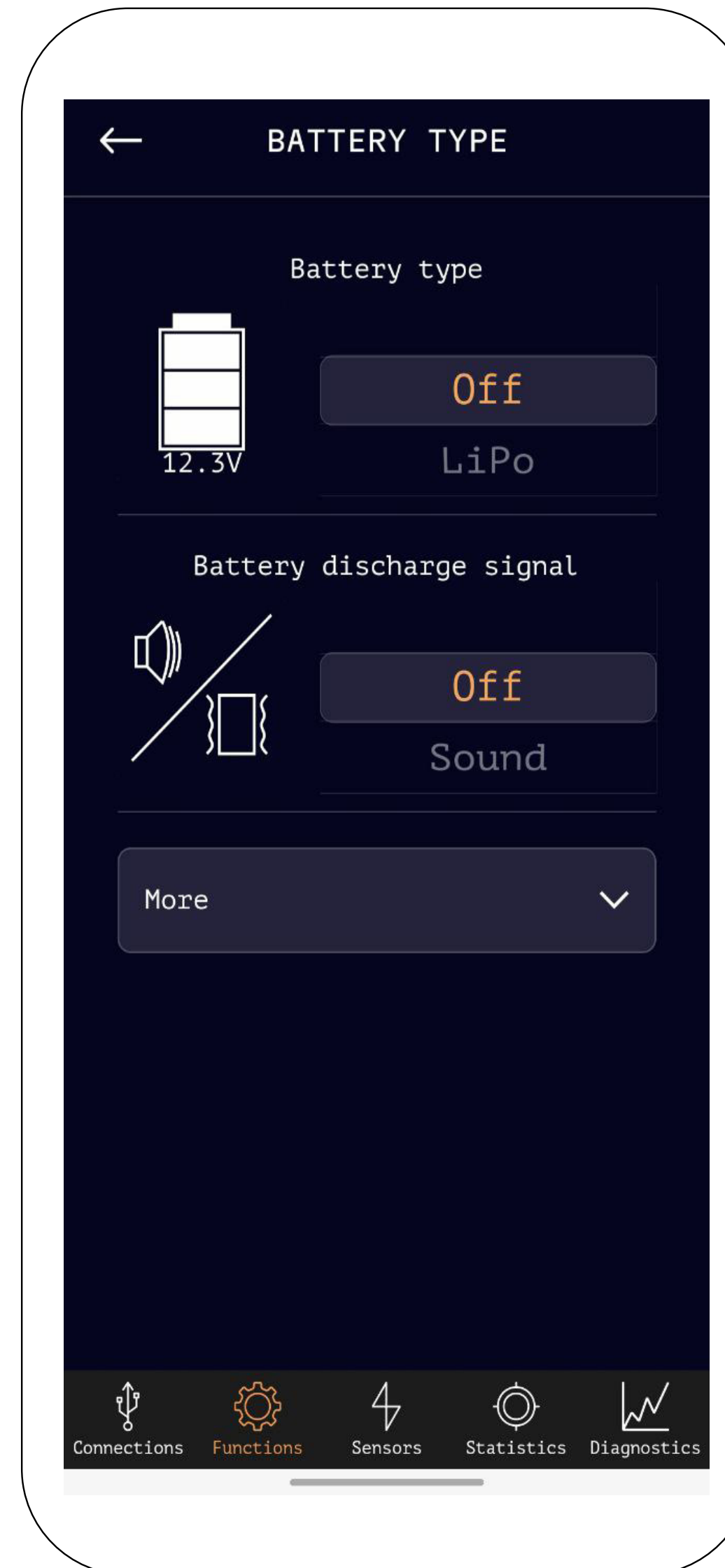
WARRANTY

Arm-V
Desire V2

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Choose the **battery type** so that Desire can monitor its charge, provide warnings when the charge level is nearing critical, and prevent firing when the charge becomes critically low to avoid battery degradation.

Please note that this function doesn't negate Desire's own power consumption. Remember to disconnect Desire from the battery after use to prevent complete battery discharge.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

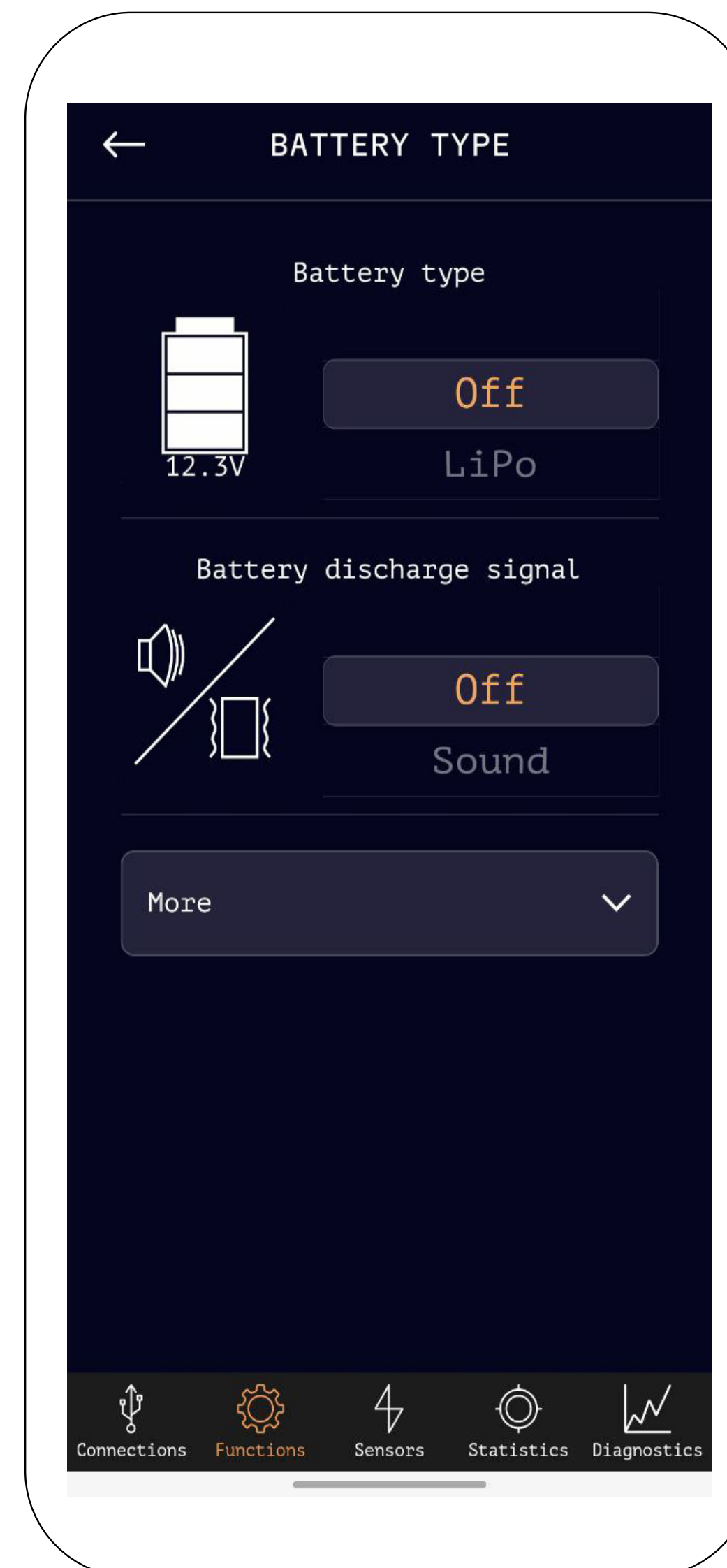
NEW FUNCTION

WARRANTY

Arm-V
Desire V2

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Select the **battery type** so that Desire can monitor its charge, warn you when the charge level approaches critical, and prevent firing when the charge becomes critically low, preventing battery degradation. Please note that this function doesn't negate Desire's own power consumption. Remember to disconnect it from the battery after use to prevent complete battery discharge.



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

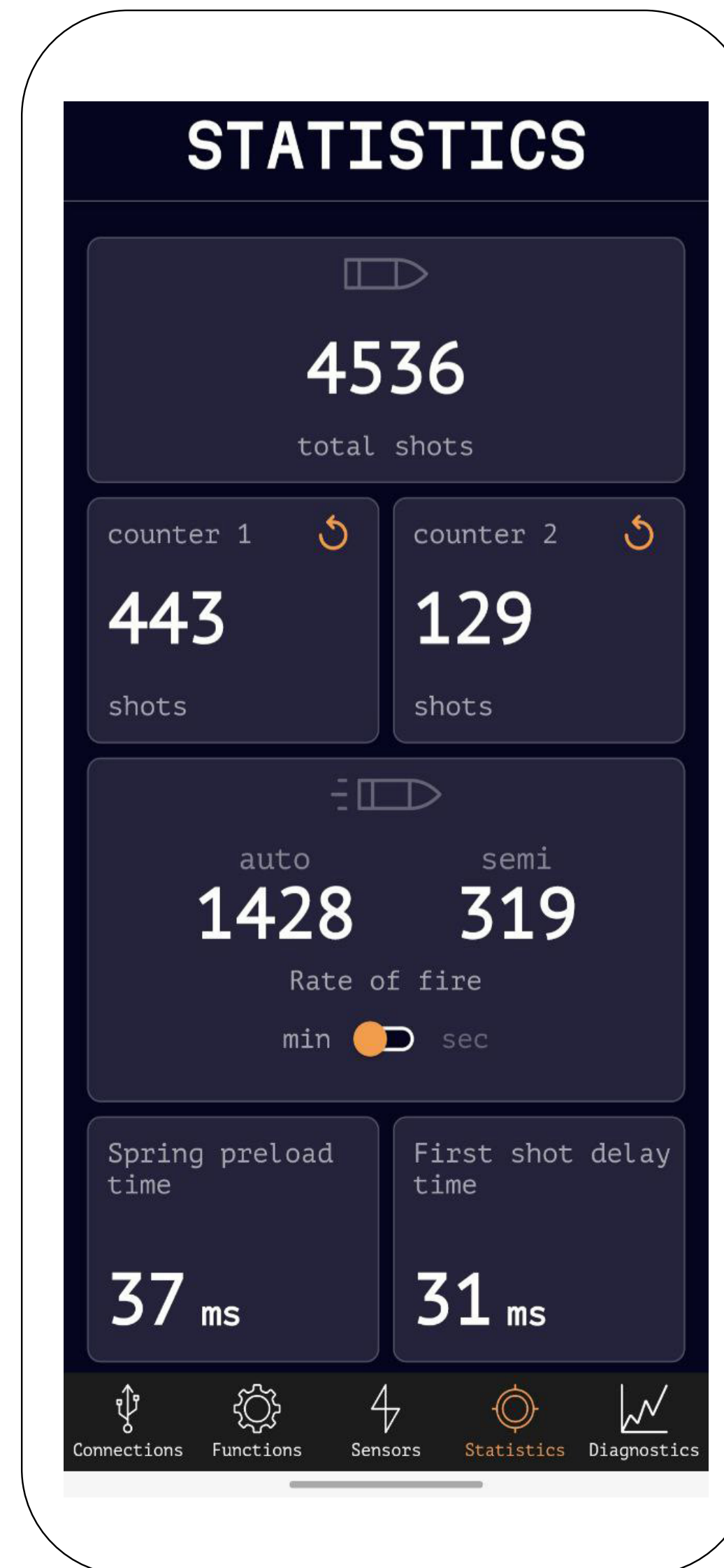
WARRANTY

Arm-V
Desire V2

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On the statistics screen, you will find 3 shot counters.

The first one is cumulative and cannot be reset. You can reset the readings of the next two, for instance, at the beginning of a season and before each game.



ПРОБЕРКА DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

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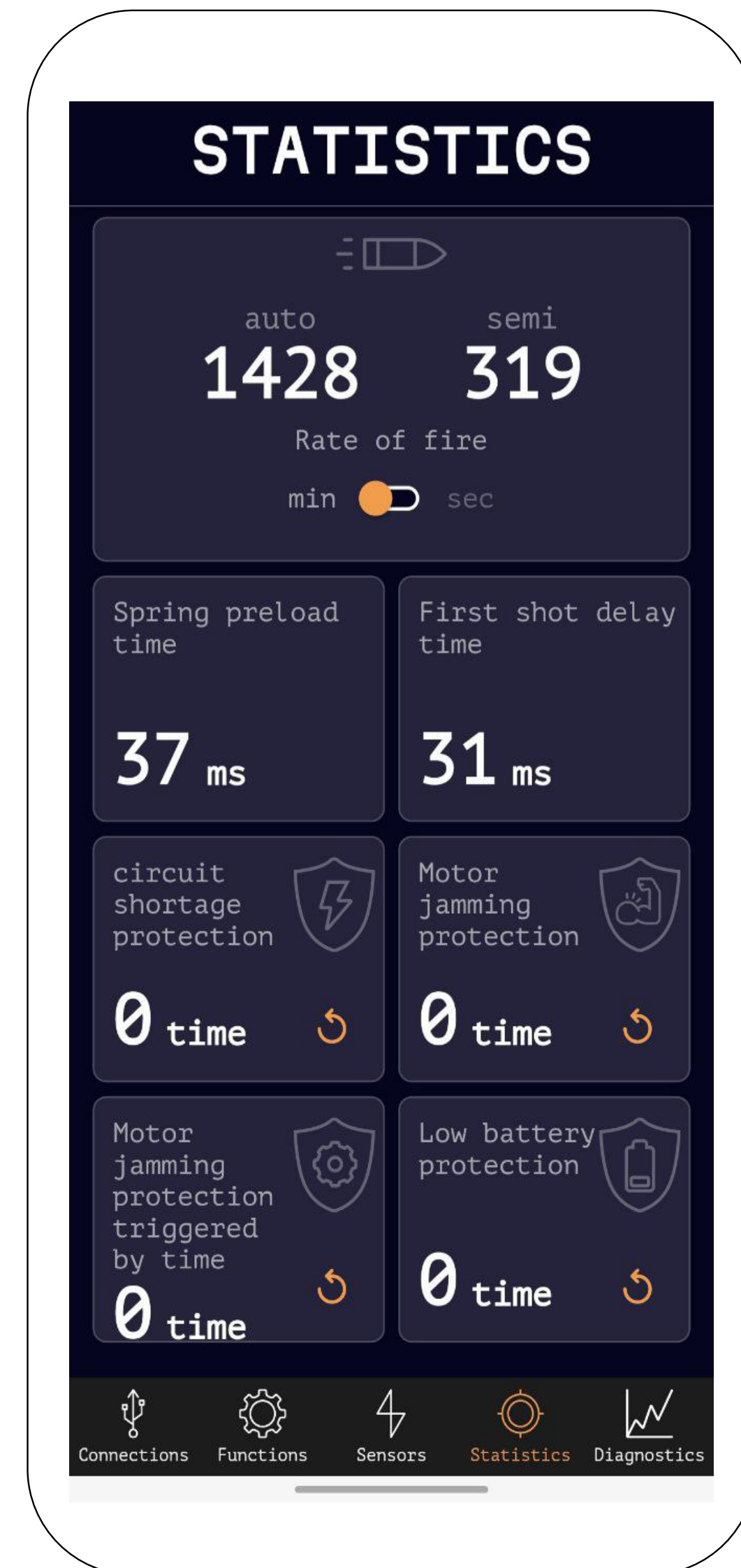
Next, in the statistics section, you will find information about the rate of fire. You can measure it both in automatic firing mode by making a burst longer than 10 shots, and in single-shot mode by firing more than 5 single shots. After the rate of fire, you will see values for pre-cocking spring, first-shot delay time, and 4 protection counters:

Short-circuit protection replaces the fuse. It triggers when the current exceeds 200A. The protection is analog and cannot be disabled.

Motor jamming protection monitors whether the motor starts rotating. If the load on the motor does not decrease during the time required for the gearbox to complete a full cycle, the motor will be turned off to prevent overheating of the motor and battery.

Time-based motor jamming protection monitors whether the gears are rotating. If, within the time required for about ± 3 shots, the gear sensor does not detect any gear rotation, the motor will be turned off.

Low battery protection triggers when attempting to fire with a critically low battery level (only if the battery type is selected).



ΠΡΟΒΕΡΚΑ DESIRE V2

INSTALLATION OF DESIRE V2 INTO GEARBOX

NEW FUNCTION

WARRANTY

Arm-V
Desire V2

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If less than 2 weeks have passed since the purchase and a defect was discovered during the product inspection before installation into the gearbox (i.e., the product is new and shows no signs of installation), you can contact the store where the product was purchased for a replacement.

If the defect arises within 12 months from the purchase date (with a receipt) or within 12 months from the manufacturing date (without a receipt), you can contact Arm-V for warranty repair. Contact information is provided on the arm-v.ru website.