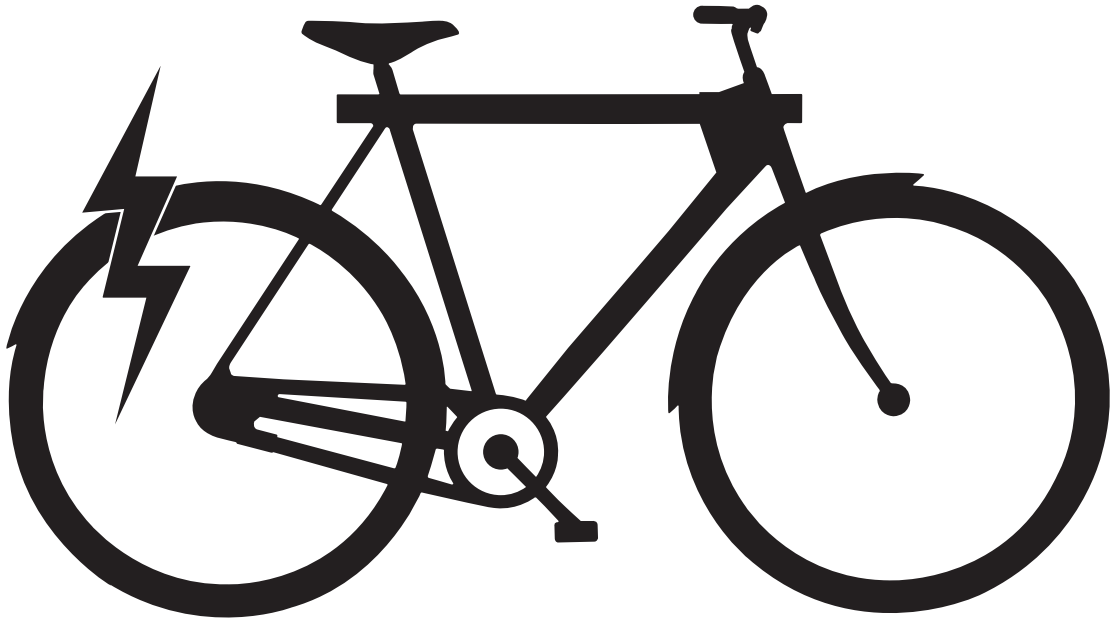
VANMOOF | ELECTRIFIED

2014

REPAIR MANUAL



CLICK ME

Contents

Version 1.2

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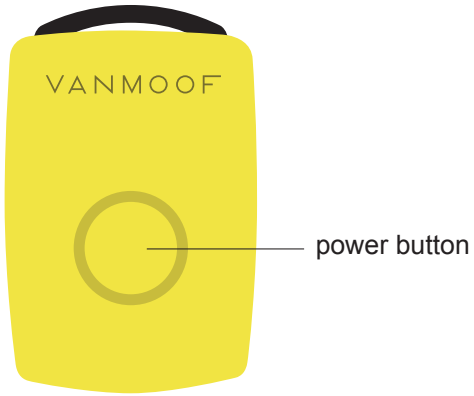
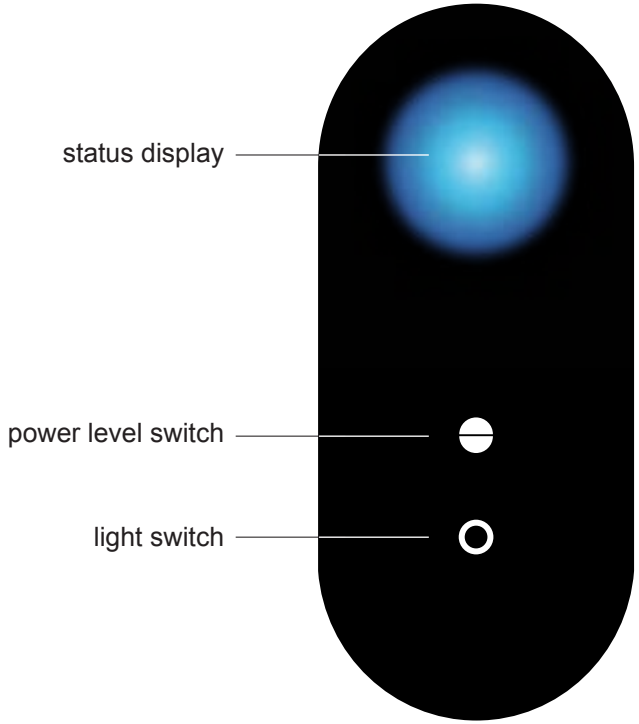
Remote control



Dashboard



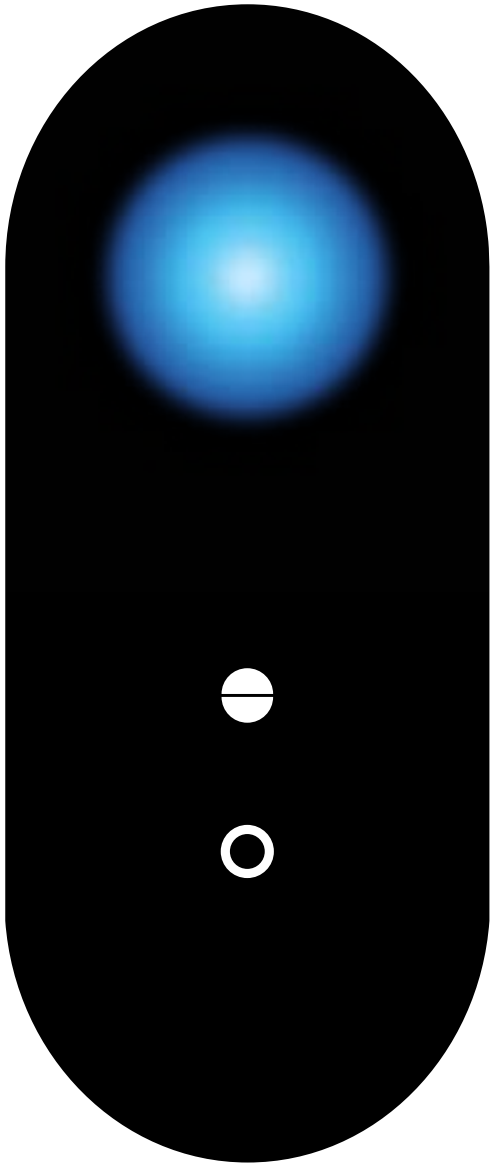
POWER ON/OFF

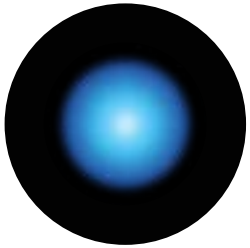
Press the power button for 3 seconds to turn on/off the power.

NOTE: The system turns off automatically while the bike is idle for 10 minutes.

TOUCH PAD

Users can select different power levels and turn the light on/off by operating the touch pad.

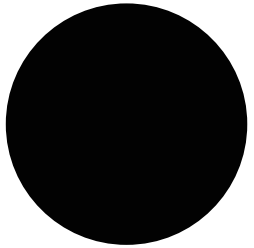




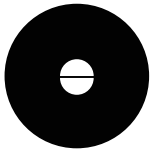
Blue light:
20-100% battery capacity remaining

Red light:
0-20% battery capacity remaining (flashing = error code)

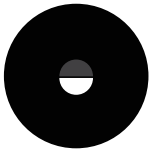
Purple light:
Sensor calibration mode



No light:
Bicycle is off or battery needs recharging



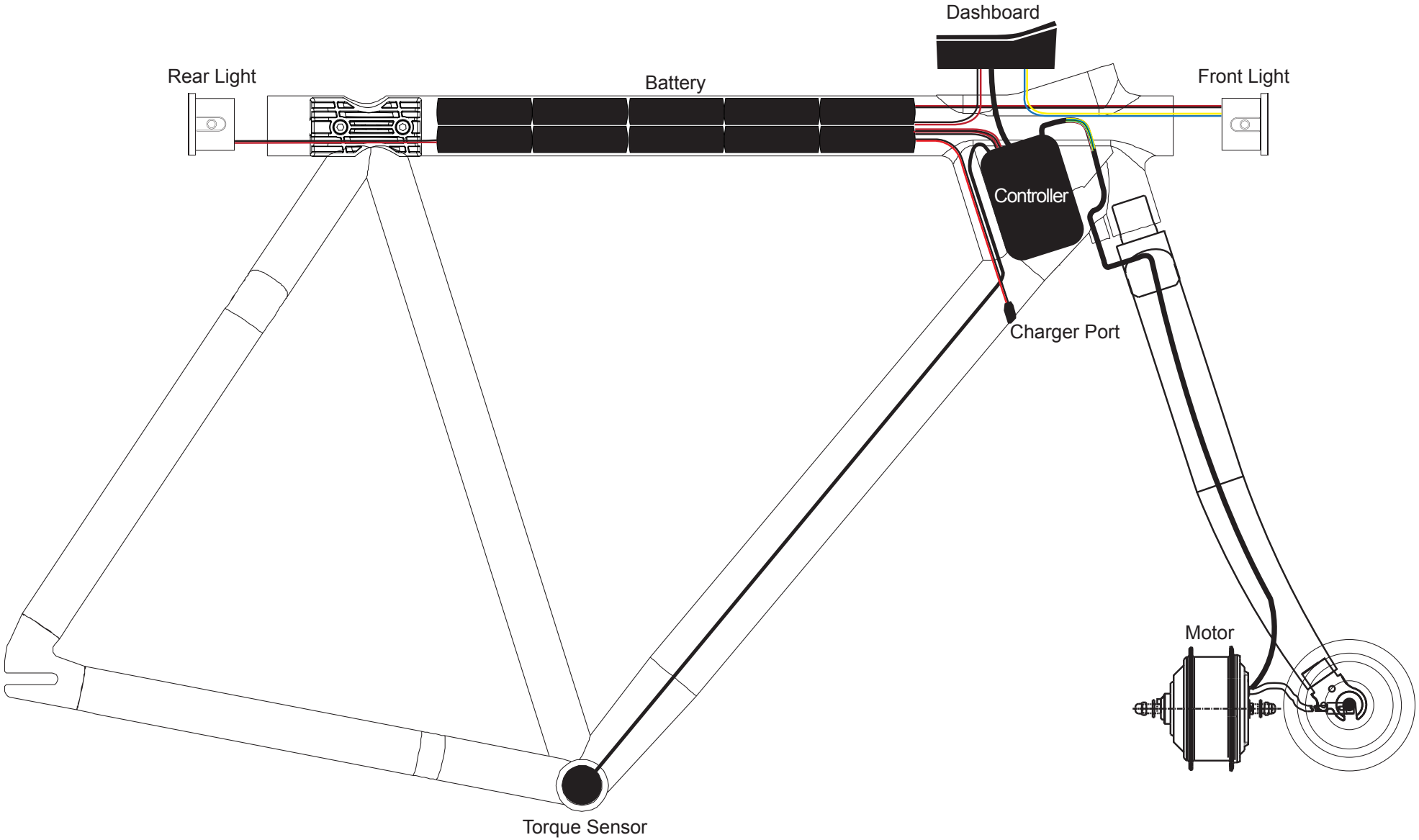
Full Moon:
Full power

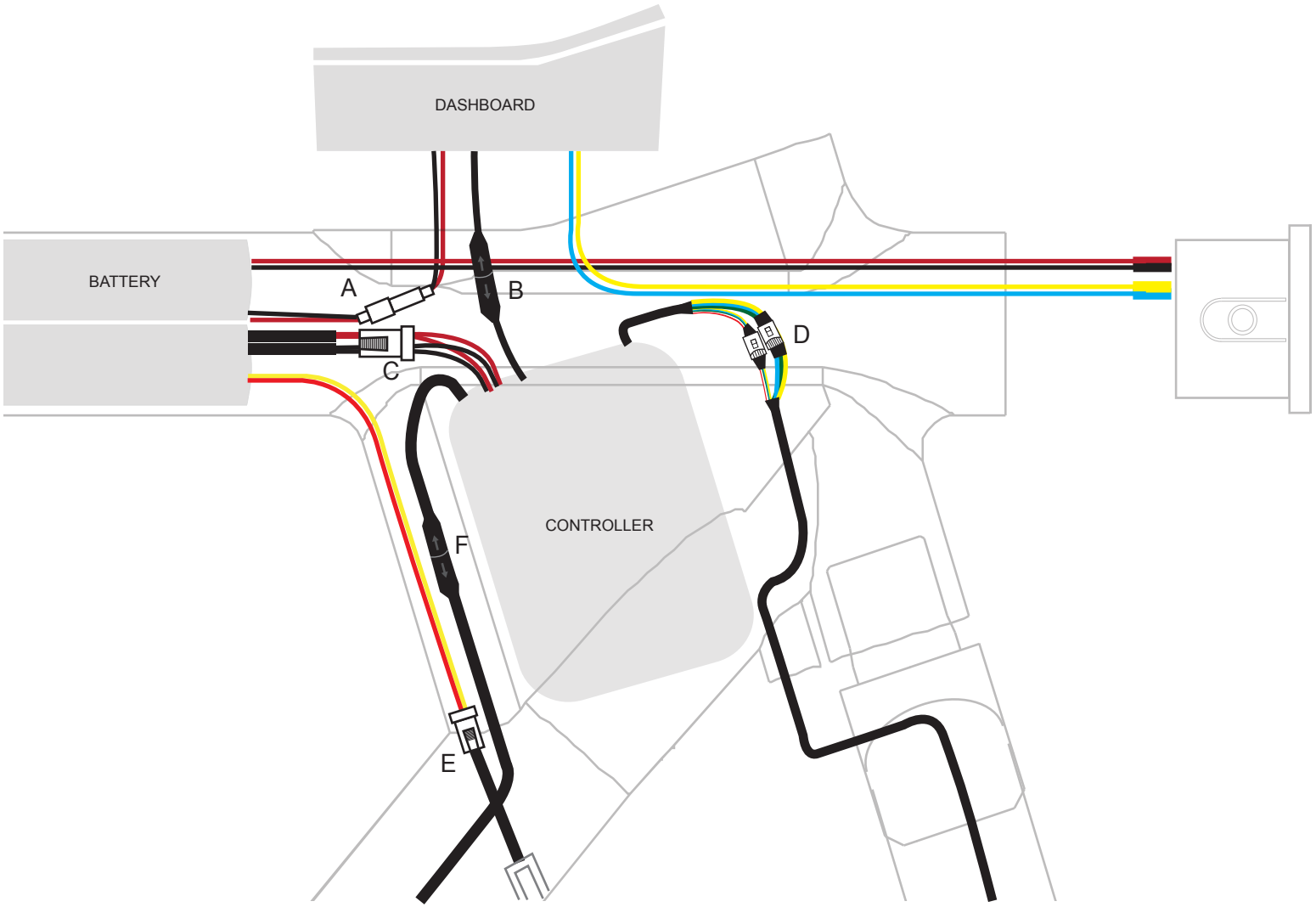


Half Moon:
Half power

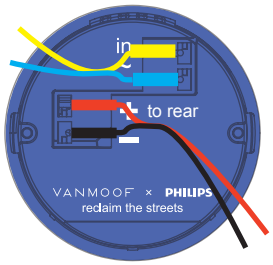
Lights are turned on

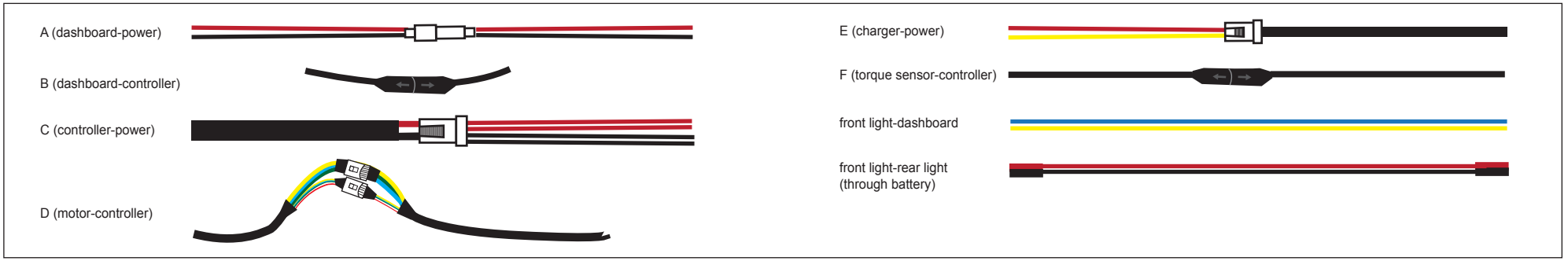
Lights are turned off


Dashboard
Rear Light
Battery
Front Light
Controller
Charger Port
Motor
Torque Sensor

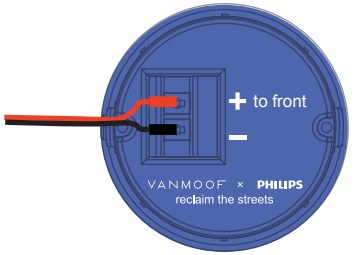

DASHBOARD
BATTERY
A
B
C
D
CONTROLLER
F
E

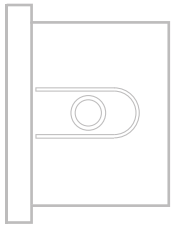
FRONT LIGHT

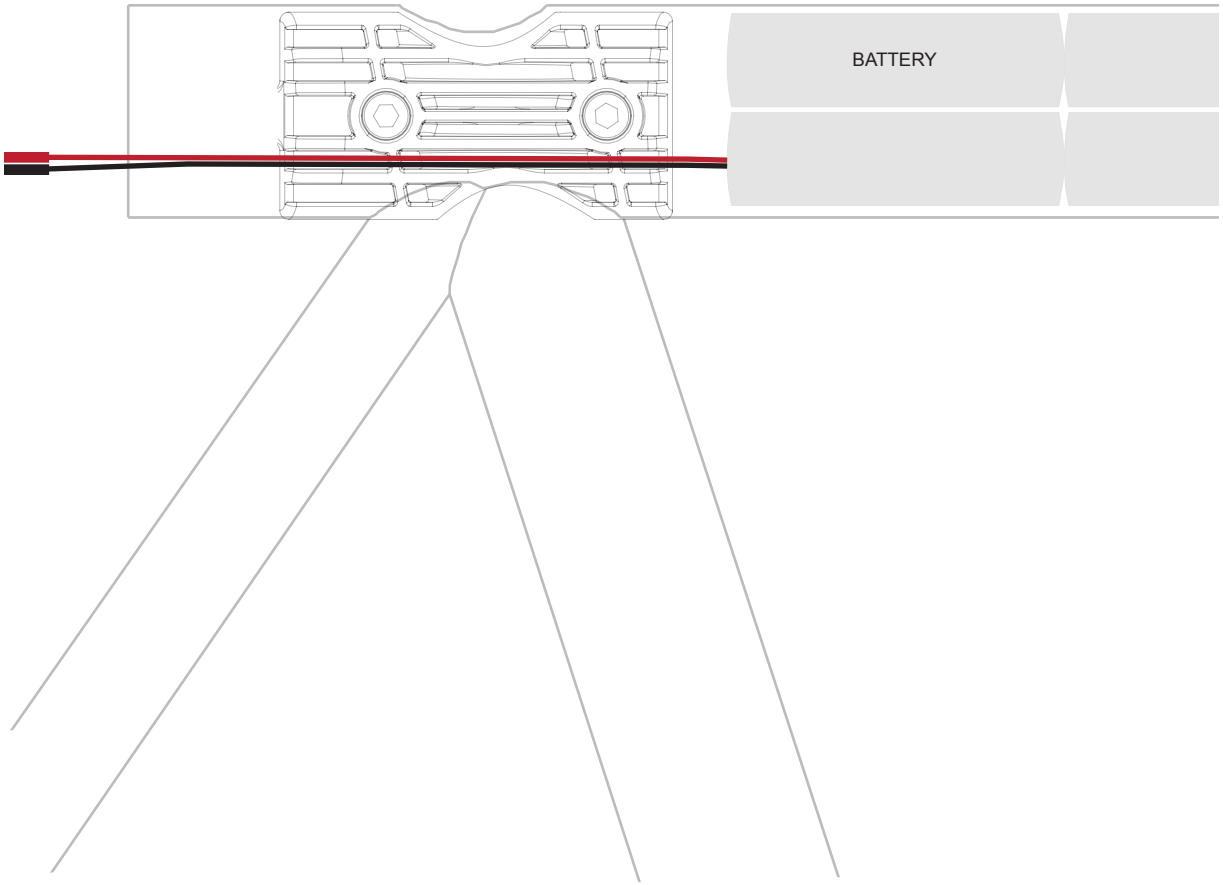

in
to rear
VANMOOF × PHILIPS
reclaim the streets

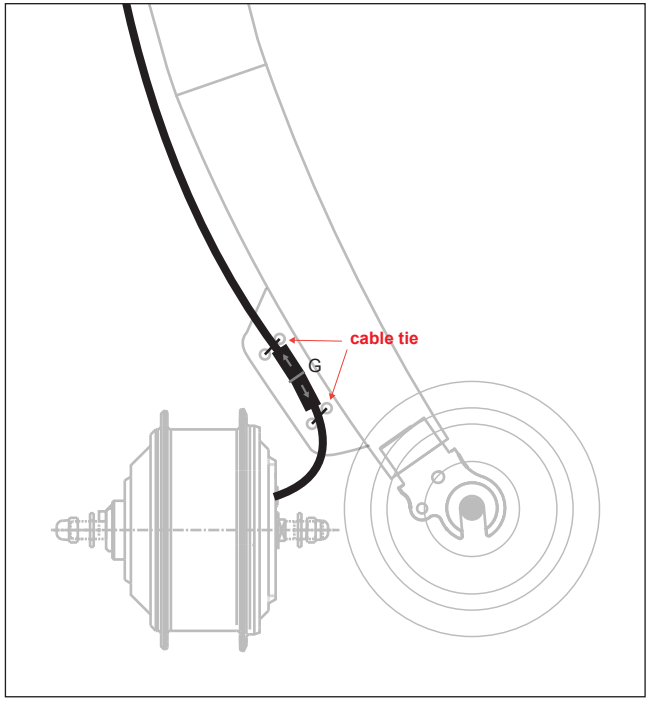

A (dashboard-power)
B (dashboard-controller)
C (controller-power)
D (motor-controller)
E (charger-power)
F (torque sensor-controller)
front light-dashboard
front light-rear light
(through battery)

REAR LIGHT









front light-rear light
(through battery)

G (motor-controller)

1. No sign of life when pressing the remote button.

1.1 Be sure that you are within 10 meters of the bicycle and check again.

1.2 Check if the bicycle battery is not completely empty, connect the charger, wait 30 minutes and try again.

1.3 Remove the yellow silicon housing from the remote control and check if the blue LED on the remote lights up when you press the button.

1.4 No LED: There is no communication between the bike and remote. Go to 1.6

1.5 LED flashes: The bike receives the signal, there is communication between the bike and remote but the bike does not turn on. Go to 1.7
Note: In some cases when the remote has a low battery, the LED still lights up, but does not turn on the bike.

1.6 Try again with spare remote control OR replace the battery of the remote control and try again. (Remote Control Battery Type = *A23 12V*)

1.7 Reset the controller and dashboard of the bike by disconnecting and reconnecting connector A & C. See page 13 for directions on removing the dashboard.

1.8 Test the battery voltage. See page 11, #5.

1.9 Replace the dashboard. See page 13.

1.10 Replace the controller. See page 14.

2. Only the front and rear lights are working and there is no power from the motor.

2.1 The bike battery is too low to operate the power system. Connect the charger.

2.2 If charging does not help, go to step 3.1

3. The LED on the dashboard is red and not blinking. Indicates a system failure.

3.1 Reset the controller and dashboard of the bike by disconnecting and reconnecting connector A & C. Verify that the pins inside the connectors are straight and connected properly. See page 13 for directions on removing the dashboard.

3.2 Test the battery voltage. See page 11, #5.

3.3 Replace the dashboard. See page 13.

3.4 Replace the controller. See page 14.

4. The LED on the dashboard is red and blinking. Indicates an error.

4.1 Verify the Error Code chart. See pages 10-11.

5. No motor power, but dashboard function seems normal.

5.1 Reset the controller and dashboard of the bike by disconnecting and reconnecting connector A & C. Verify that the pins inside the connectors are straight and connected properly. See page 13 for directions on removing the dashboard.

5.2 Check the connectors and cable of the motor cable for damage. See page 16.

5.3 Replace the front wheel motor. See page 18.

5.4 Replace the controller. See page 14.

6. Unstable motor power, not enough motor power or too much motor power.

6.1 Reset the torque sensor. See page 19.

6.3 Upload the latest software to the controller. See page 24.

6.2 Check the connectors and cable of the motor cable for damage. See page 16.

6.4 Replace the torque sensor. See page 17.

6.5 Replace the front wheel motor. See page 18.

7. The bike does not seem to charge.

7.1 Plug in the charger and wait for 30 minutes. Verify that the light on the charger is red when plugged in, this means that the bike is charging. When the light turns green it means that the battery is fully charged. Try unplugging and plugging the charger if the light always stays green.

7.2 The battery may be completely discharged. Connect the charger and wait one hour. Quickly disconnect and reconnect the charger again (disconnect and reconnect in under 1 second). This may take a few more times until the charger detects the battery voltage.

7.3 Go to Battery/Charger Test page 12.

7.4 If there is still no sign of life, please contact VANMOOF for further assistance.

8. During charging, the front and rear lights flash quickly.

8.1 The battery voltage has dropped to 0% and the voltage is too low for the charger to detect. Unplug the charger from the bike and plug it back in quickly (under 1 second). If it still does not charge, disconnect all connectors from the battery and try again.
WARNING: Do not let the battery drop to this level for fear of irreversible damage. Always keep your battery replenished.

8.2 Attempt a battery reboot. See page 12. If there is still no sign of life, please contact VANMOOF for further assistance.

9. The front wheel makes an abnormal sound.

9.1 Put the bike on a stand so that the wheels do not touch the ground. Try turning the front wheel while listening for noise. Verify the front brake adjustment, the disc brake may be touching the brake pads.

9.2 Verify that the front mudguard is not loose. Make sure all the nuts and bolts are tightened properly. Bend the fender stays (metal rods) inwards a little to prevent vibrations on the mudguard.

9.3 If brake adjustment and fender are ok, turn on the bike and turn the pedals to activate the front motor. If you still hear the noise coming from the motor please contact VANMOOF for further assistance.

9.4 Replace the front motor. See page 18.

10. Account and GPS troubleshooting.

10.1 When registering your account, the website says "Your IMEI number is not registered yet".

10.1.1 Please contact VANMOOF at janwillem@vanmoof.com and send us your Frame #, IMEI # and name.

10.1.2 If you still cannot register, it means the GPS is not connected to our VANMOOF server. Press the small reset button inside the dashboard. See page 20.

10.1.3 Replace the dashboard. See page 13.

10.2 When registering the account, the website says "Your IMEI number is already registered".

10.2.1 Someone else has already registered the account. Please contact VANMOOF at janwillem@vanmoof.com and send us your Frame #, IMEI # and name.

10.3 When registering the account, the website says "Your IMEI number does not exist".

10.3.1 Please contact VANMOOF at janwillem@vanmoof.com and send us your Frame #, IMEI # and name.

10.4 The location on the map is incorrect.

10.4.1 The GPS does not have a fixed location yet. Bring the bike outside to an open area which isn't surrounded by buildings. It may take up to 30 minutes for the GPS satellite signals to be detected the first time.

10.4.2 Verify that the SIM card is properly inserted and reset the GPS. See page 20.

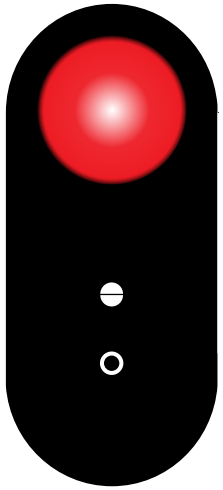
10.4.3 Replace the dashboard. See page 13.

11. The front or rear light does not work.

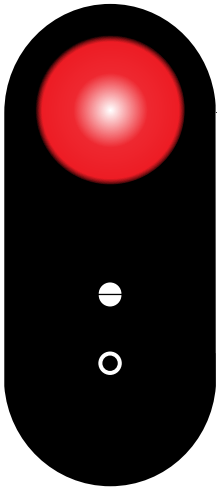
11.1 Verify that the terminals are properly plugged into the lights.

11.2 Check for wire damage. Notably, the rear wire can be damaged by the seat post clamp if it is not assembled properly.

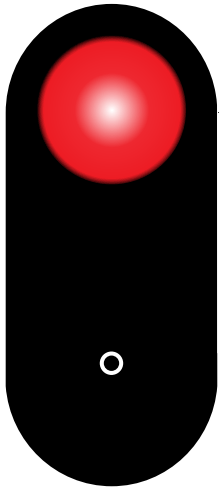
11.3 Replace the dashboard. See page 13.



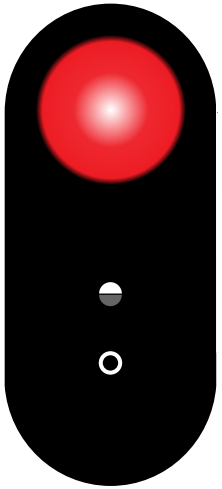
1. Connection Fail (Scrolling Lights)



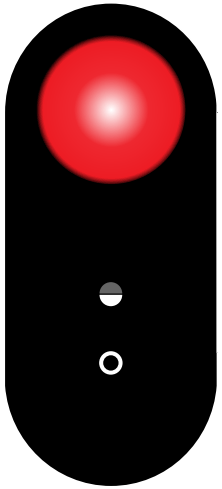
2. Controller 5V Down



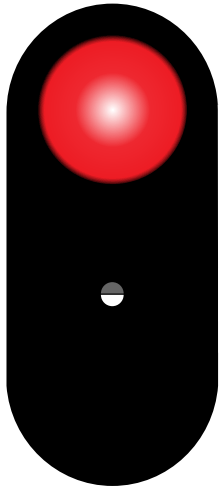
3. Motor Stall



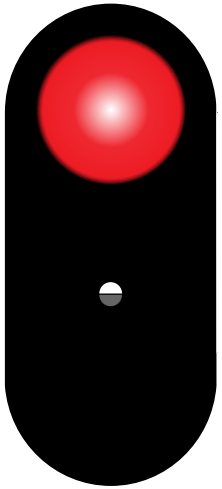
4. Hall Error



5. Short Dead Voltage



6. Over Dead Voltage



7. Motor Protection

See next page for troubleshooting.

1. Connection Fail (Lights scroll from top to bottom)

1.1 Verify that the communication connector (B: Dashboard-Controller) is plugged in correctly and that the metal pins inside are not bent.

1.2 Verify that the communication cable (B: Dashboard-Controller) is not damaged.

1.3 Reset the dashboard by disconnecting the dashboard power cable (A: dashboard-power) and reconnecting it.

1.4 Replace the dashboard. See page 13.

1.5 Replace the controller. See page 14.

2. Controller 5V Down

2.1 Verify that the communication connector (B: Dashboard-Controller) is plugged in correctly and that the metal pins inside are not bent.

2.2 Verify that the communication cable (B: Dashboard-Controller) is not damaged.

2.3 Verify that the controller power connector (C: Controller-Power) is plugged in correctly and that the metal pins inside are not bent.

2.4 Verify that the controller power cable (C: Controller-Power) is not damaged.

2.5 Replace the controller. See page 14.

2.6 Replace the dashboard. See page 13.

3. Motor Stall

3.1 When turning the front wheel, there should be no resistance (go to step 3.4). If there is resistance, continue to step 3.2.

3.2 Verify that the screws which are holding the brake disc in place are not too long. Remove all six screws and try turning the front wheel again, if the problem disappears then replace the screws with shorter ones.

3.3 If there continues to be resistance, replace the motor. See page 18.

3.4 Verify the motor cable and connectors for damage (D & G; Motor-Controller). Use a multimeter to check for continuity between the wires and if there is a short circuit between the wires and the frame. Replace motor cable. See page 16.

4. Hall Error

4.1 Verify the motor cable and connectors for damage (D & G; Motor-Controller). Use a multimeter to check for continuity between the wires and if there is a short circuit between the wires and the frame.

4.2 Replace the controller. See page 14.

4.3 Replace the motor. See page 18.

5. Short Dead Voltage

5.1 After disconnecting connector C (Controller-Power), measure the battery voltage on the battery side of connector C. Then disconnect connector A (Dashboard-Power) and measure the voltage on the battery side of connector A. The voltage must be between 28-42V on each connector. If abnormal, replace the battery. See page 15.

5.2 If the voltage is normal, replace the controller. See page 14.

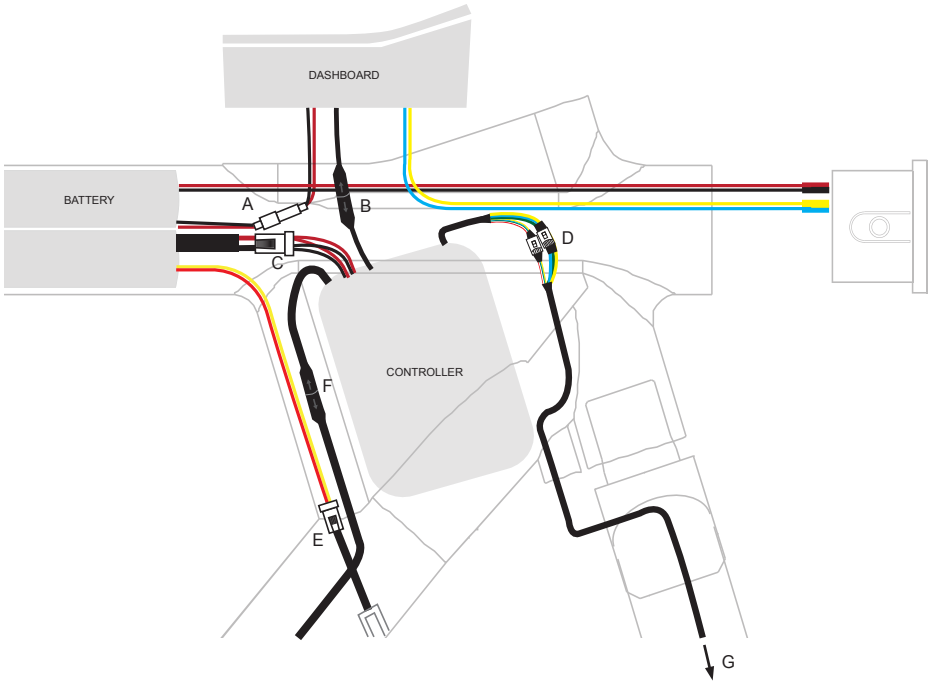
6. Over Dead Voltage

6.1 Measure the battery voltage on the battery side of connector C (Controller-Power). Also measure the voltage on the battery side of connector A (Dashboard-Power). The voltage must be between 28-42V. If abnormal, replace the battery. See page 15.

6.2 If the voltage is normal, replace the controller. See page 14.

7. Motor Protection

7.1 The bicycle may go into motor protection mode for several seconds if the motor is active while the brakes are applied. This is to prevent damage to the motor. The computer should reset itself automatically after a few seconds.



Battery/Charger Test

Battery will not charge or/and charger light is red and flashing.

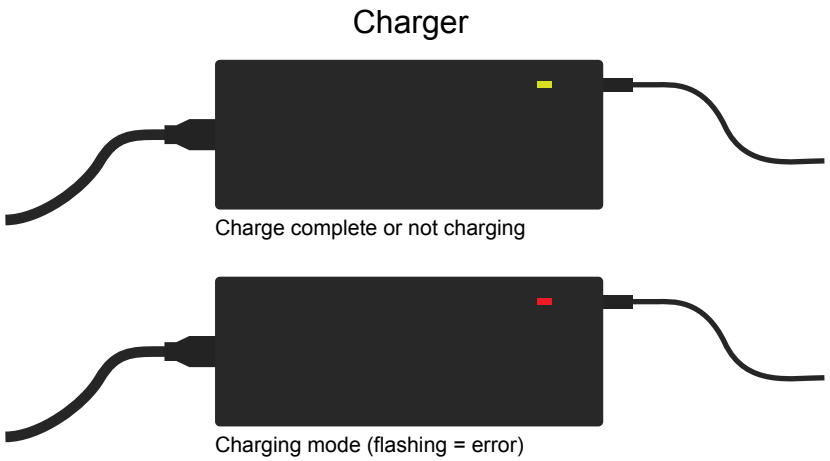
1. Disconnect and reconnect the charger from the bike in under 1 second. LED on charger should become red (without flashing). If not, replace the charger. If the problem still occurs after replacing the charger, go to step 2.

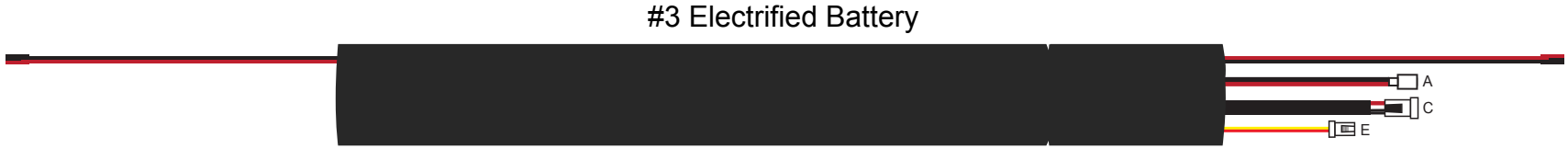
2. Disconnect all connectors from the battery, the front light and try step 1 again. If the charger red light is still flashing then replace the battery. If the flashing red light stops, go to step 3.

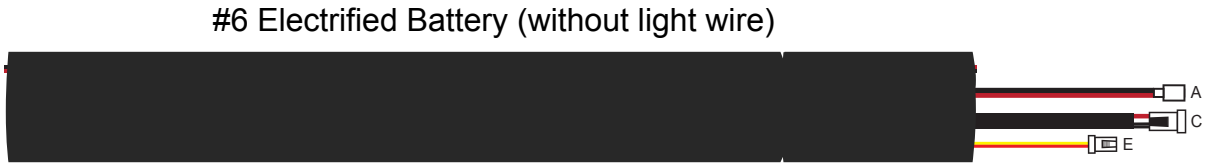
3. Connect the dashboard to the battery and try step 1 again. If the charger red light is flashing then replace the dashboard. If the flashing red light stops, go to step 4.

4. Connect the front light to the dashboard and try step 1 again. If the charger red light is flashing then verify the wire connection between the light and dashboard. Repeat this step for the rear light. If the flashing red light stops, go to step 5.

5. Connect the controller to the battery and try step 1 again. If the charger red light is flashing then replace the controller.







Dashboard Replacement

1. Take out the front light and disconnect the yellow and blue wires attached. Attach an *extra wire* to these wire ends.
   NOTE: The attached wire will be a guidance for the new cable going through the tube. So you'll need at least 0.5 meters long.

2. Use the security key and a screwdriver to unscrew the screws from the top of the dashboard.

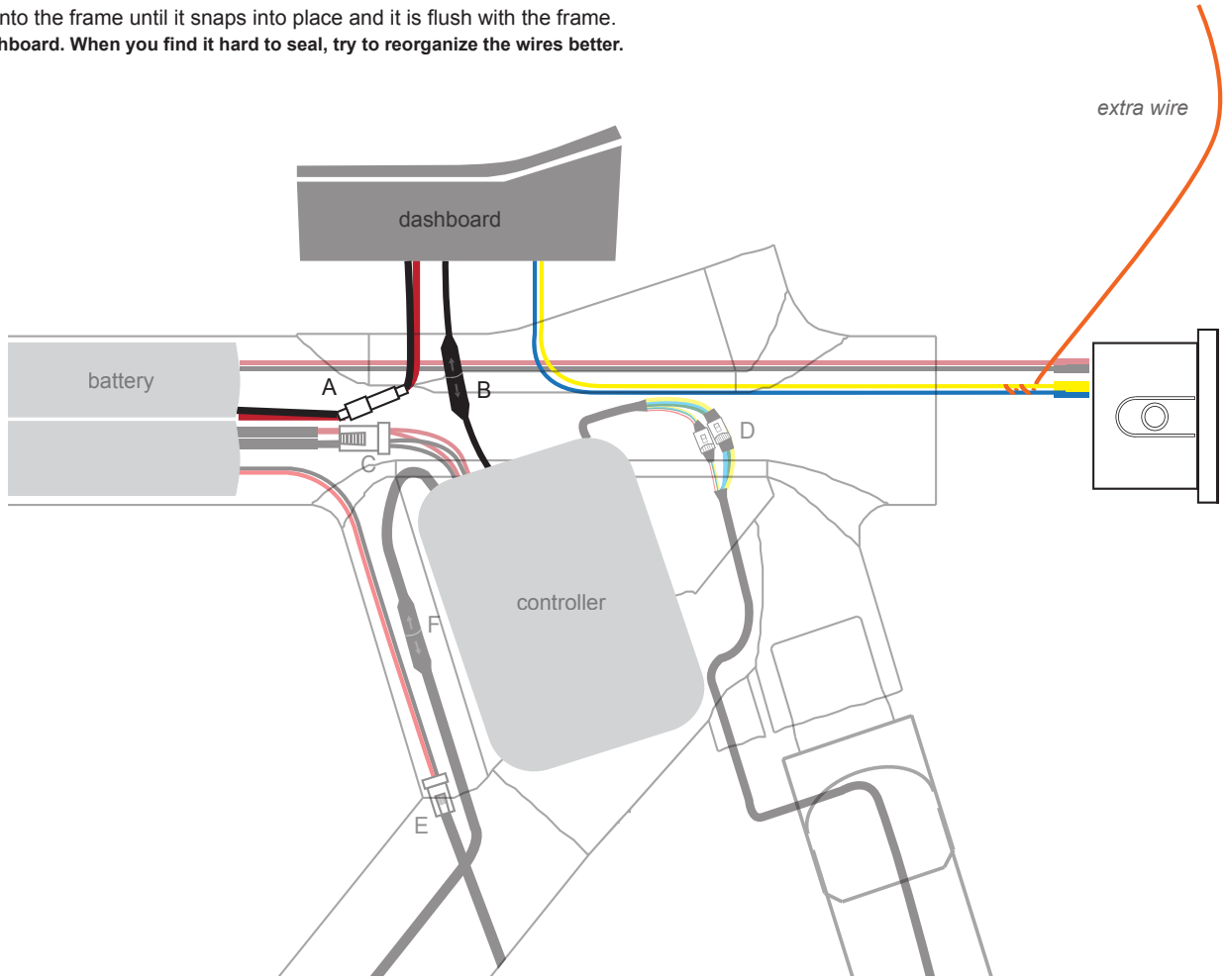
3. Pull from the top part of the dashboard to pry it out, then also pull from the bottom to remove it completely.
   NOTE: When the front light wires come out with the dashboard housing, leave the attached wire inside the frame.

4. Disconnect the connectors A, B and replace with a new dashboard.

5. Use the *extra wire* still inside the frame to guide the new front light wires.

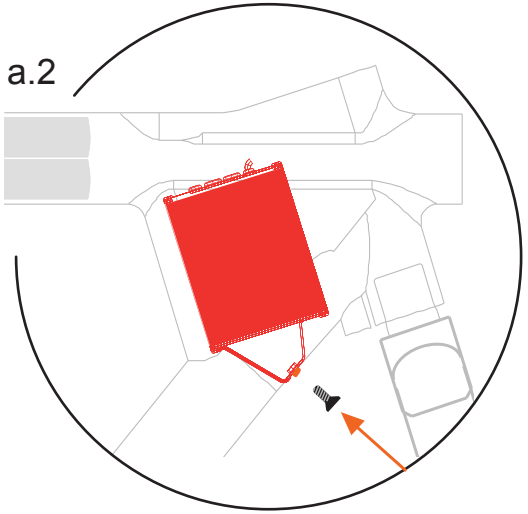
6. Reconnect the connector A, B and the light wire.
   NOTE: Don't put the wires on the top of each other, otherwise it will be hard to cover with the dashboard

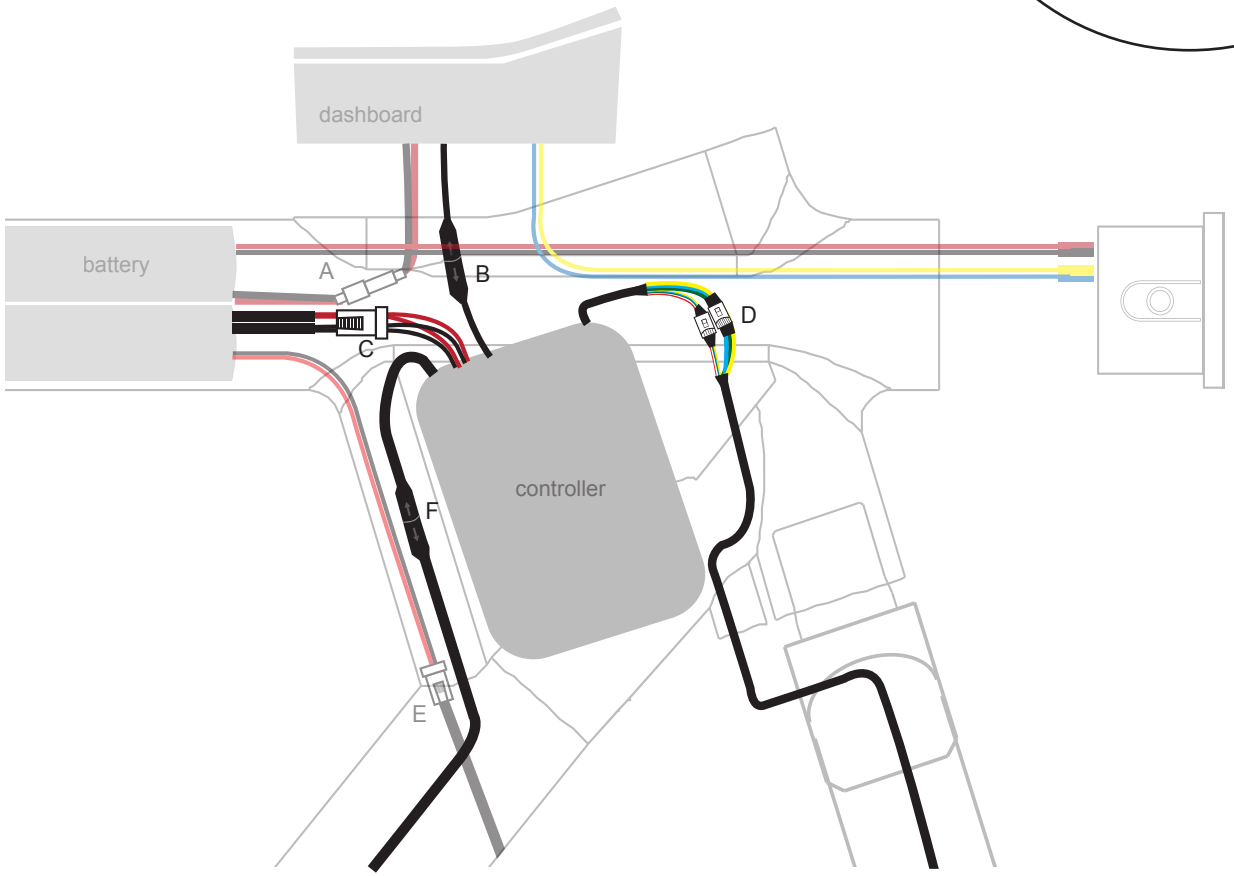
7. Gently push the new dashboard into the frame until it snaps into place and it is flush with the frame.
   NOTE: Don't force to press the dashboard. When you find it hard to seal, try to reorganize the wires better.



Controller Replacement

1. Remove the dashboard
2. Disconnect the connection C, B, D & F (In this order).
3. Unscrew the screw on the outside of the downtube near the front fork. (picture a.2)
4. Gently take out the controller.
5. Replace it with a new controller in reverse order of removal.
   NOTE: Be aware of the directionality. (see picture a.2)
6. Reconnect the connection B, D, F & C (In this order)
7. Reinstall the dashboard in reverse order of removal.

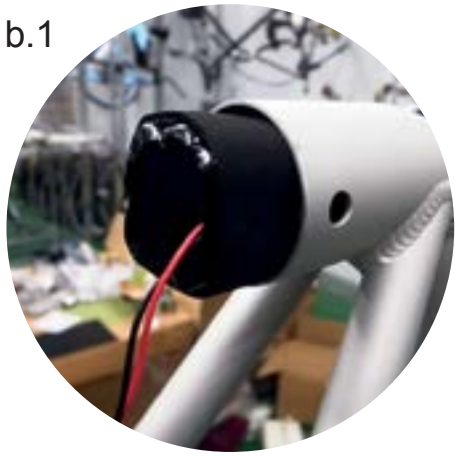


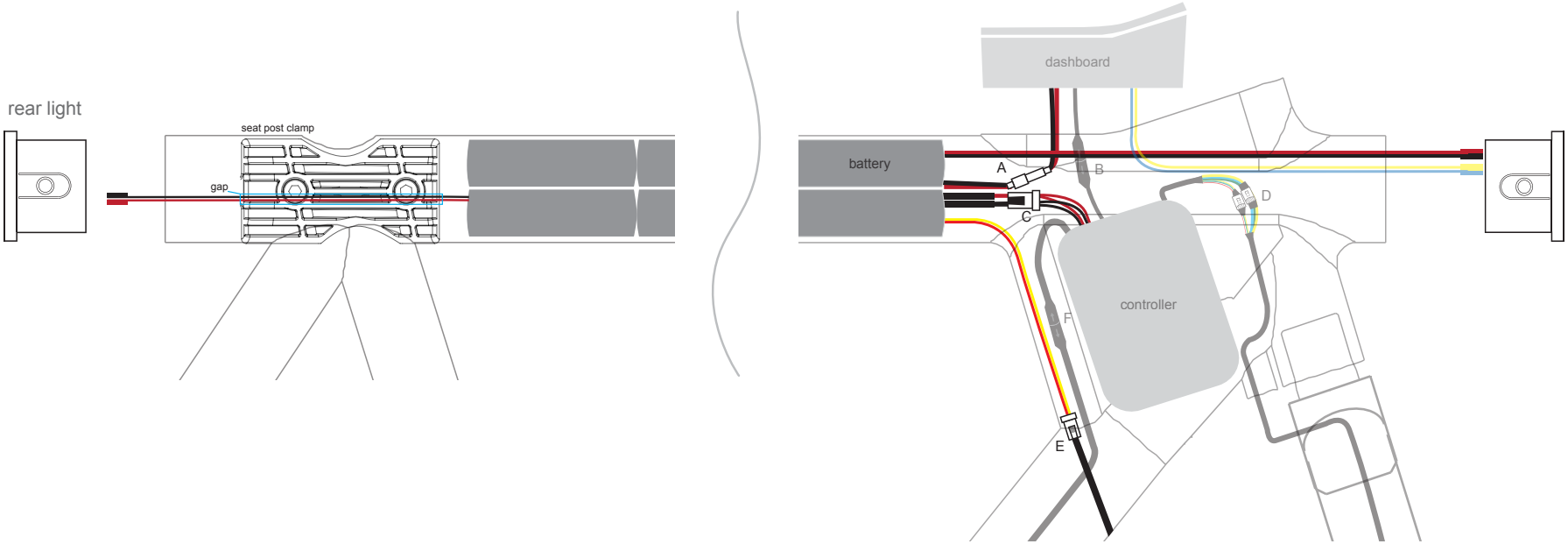


Battery Replacement

1. Remove the dashboard, the front light and the rear light.
2. Disconnect the connection A, C, E and the red/black light wires.
3. Remove the seatpost and take out the seatpost clamp. Push the battery from the front end and then remove it from the rear.
4. Slide in a new battery from the rear.
   NOTE: Keep the red/black rear light wiring, which comes out from the battery, on the right side to avoid damage while later mounting the seat post clamp. (picture b.1)
5. Install the seatpost clamp and make sure the rear light wiring comes out along the gap on the seatpost clamp. Be extra careful not to damage the wire while installing the seatpost clamp.
6. Reconnect the connections A, C, E and the red/black light wires.
7. Reinstall the remaining parts in reverse order of removal.

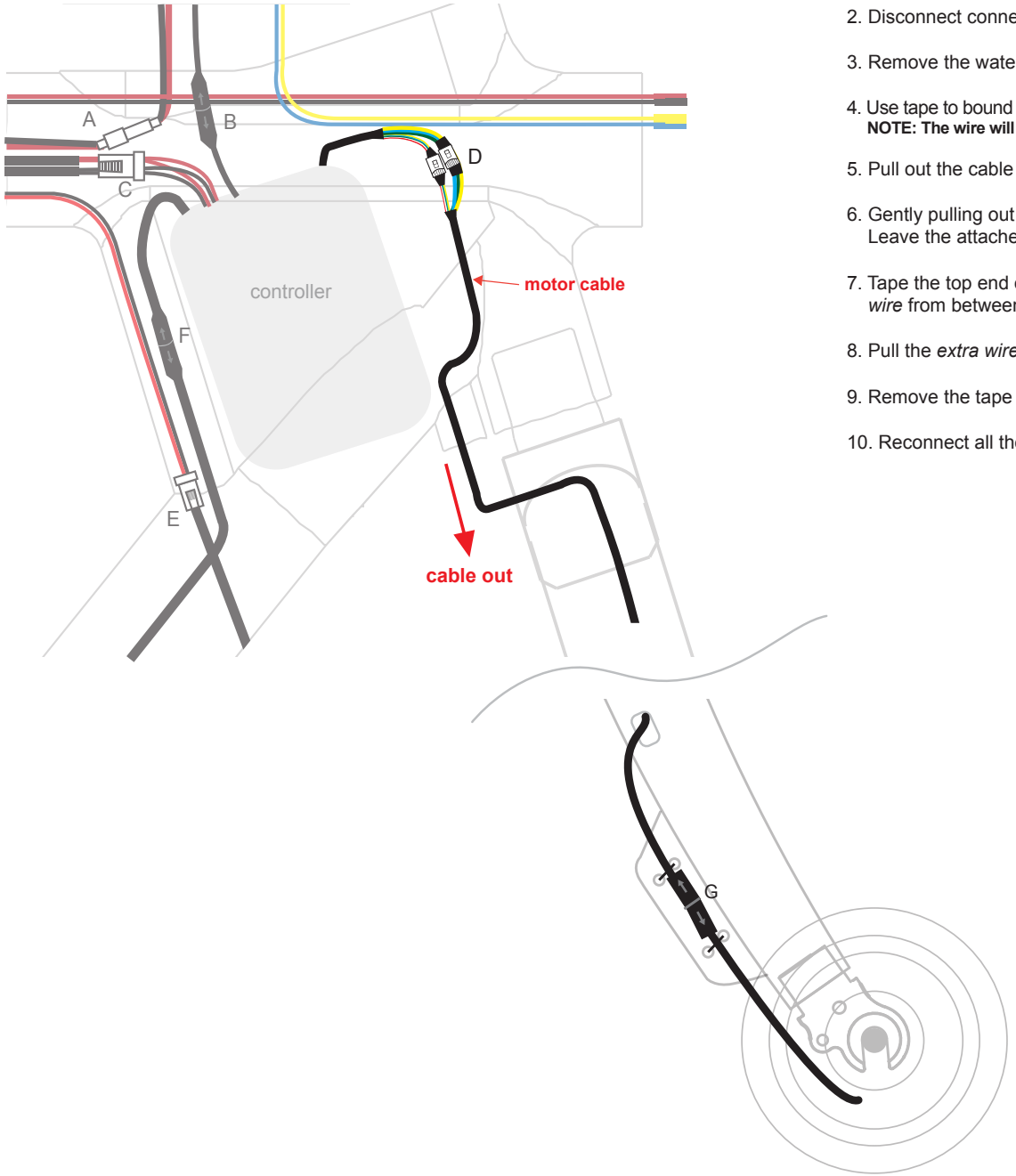
b.1

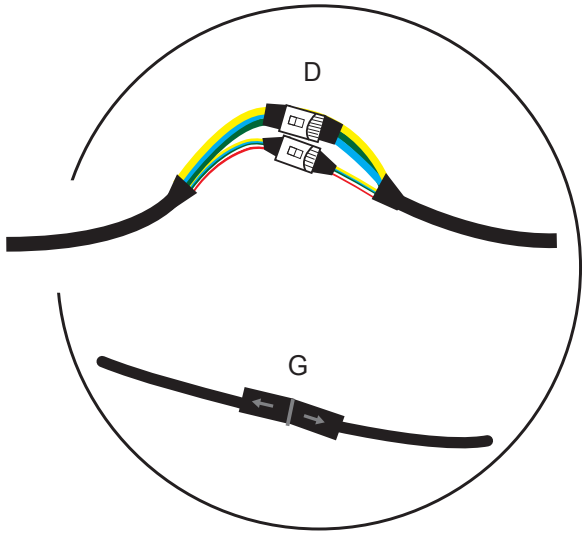


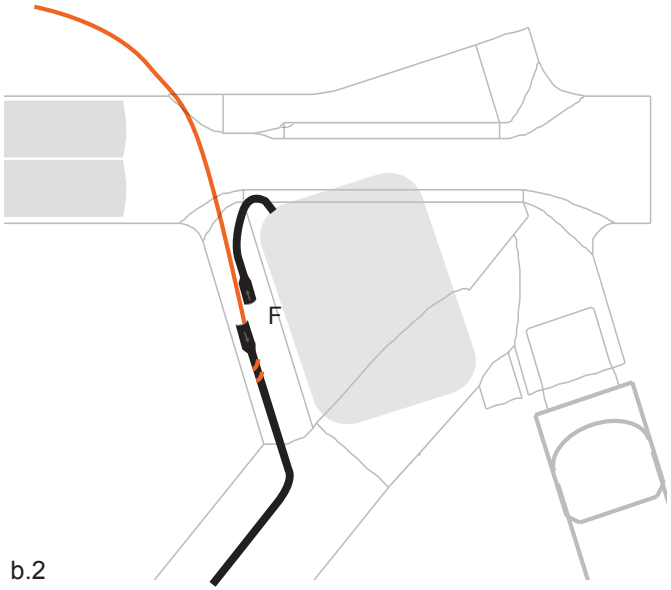


Motor Cable Replacement

1. Remove the dashboard, front wheel and the controller.
2. Disconnect connectors D and G.
3. Remove the waterproof connectors D (plastic housing) from the wiring harness.
4. Use tape to bound the wire ends together to protect them from falling apart and attach an *extra wire* to it.
   NOTE: The wire will be a guidance for the new cable going through the tube. You will need at least 1 meter in length.
5. Pull out the cable with the attached *extra wire* from the hole between the down tube and the fork.
6. Gently pulling out the cable from the motor end by pushing it from the hole on the top of the front fork. Leave the attached *extra wire* inside the frame.
7. Tape the top end of the new motor cable with the *extra wire* which is already in the frame. Pull the *extra wire* from between the frame and fork until the motor connector is at its correct distance.
8. Pull the *extra wire* from the dashboard opening to guide the rest of the motor cable through the frame.
9. Remove the tape and the wire attached. Reinstall the waterproof connectors D.
10. Reconnect all the wires and install the components in the reverse order of removal.







b.2

Torque Sensor Replacement

1. Remove the dashboard.

2. Disconnect the connection F.

3. Attach a wire on the cable, which connects to the torque sensor. (picture b.2)
   NOTE: The wire will be a guidance for the new cable going through the tube. You will need at least 1.5 meters long.

4. Disassemble the crank set.

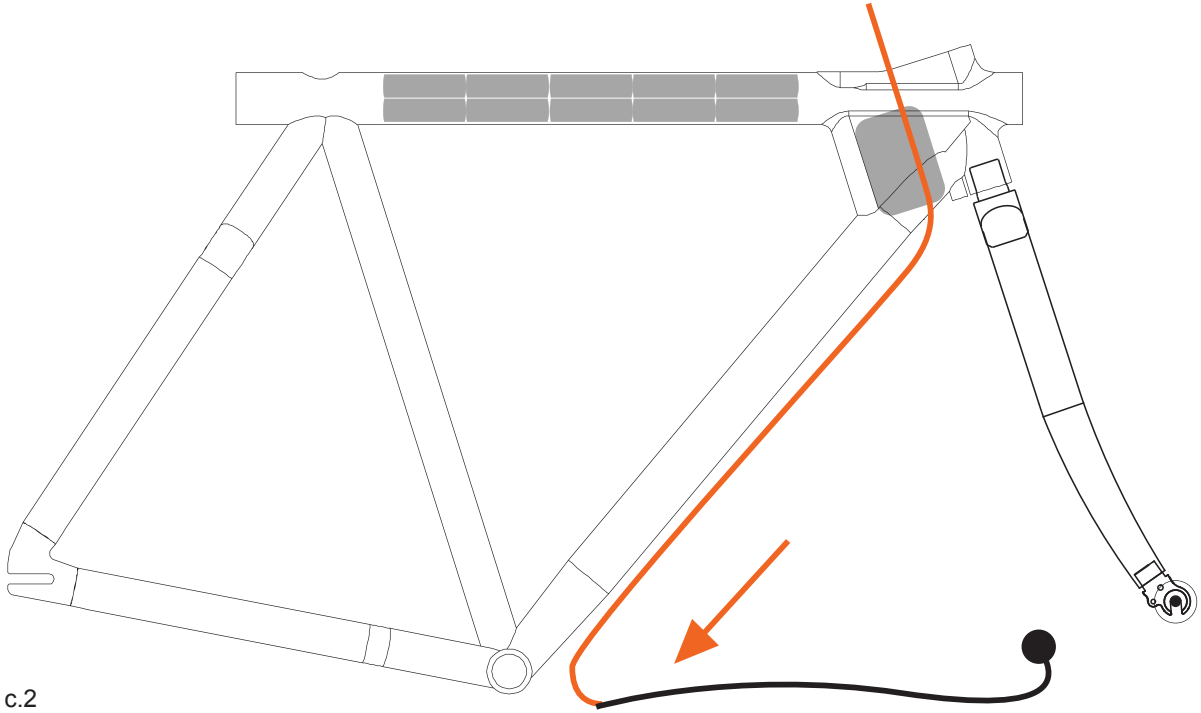
5. Remove the bottom bracket cap on the right side first and then remove the left side.

6. Gently take out the torque sensor with the attached cable through the tube from BB. (picture c.2)
   NOTE: When you meet the end of the torque sensor cable, stop pulling and keep the attached wire in the frame.

7. Attach the cable on the new torque sensor wire with the extra wire that you left in the frame.

8. Pull the wire from the dashboard opening, so the torque sensor cable can go all the way to the top to connect with the controller. Reconnect the connector F and install the dashboard.

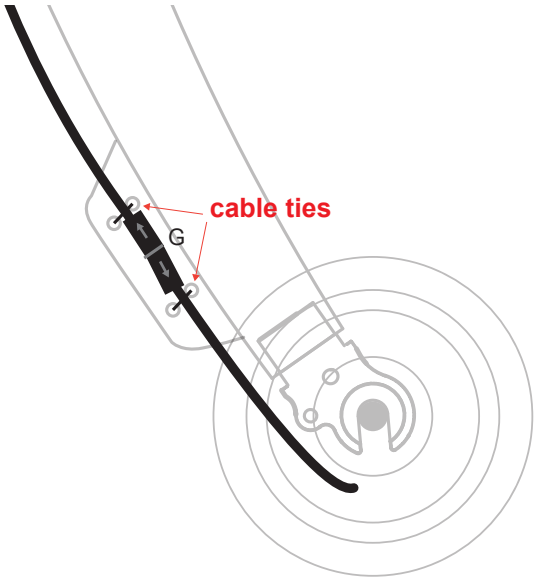
9. Install the BB cap on the left side first and then install the cap on the right side with a force of 25-30Nm using a torque wrench.

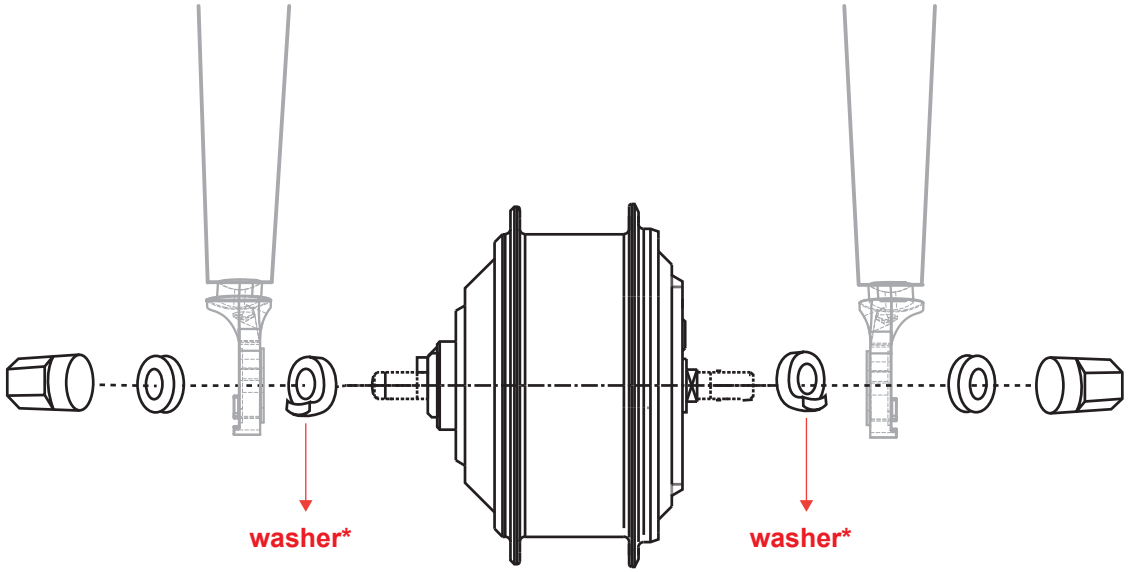


c.2

Front Wheel Replacement

1. Cut off the cable ties on the front fork.
2. Disconnect the connector G.
3. Take off the front wheel and replace with a new one.
4. Follow the picture below to mount the washers in the correct order.
   NOTE: Keep the notched side of the washer* downward to fit in the hook of the fork. Do not force to fit in the fork.
5. Secure the nuts with the front wheel and reconnect the connector G.
6. Align the brake caliper with the brake disc if needed.
7. Attach new cable ties.

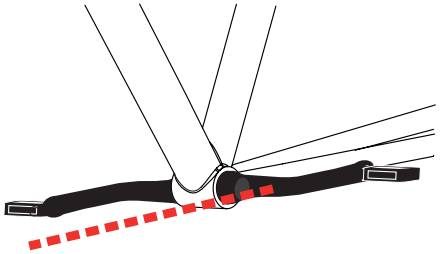




Torque Sensor Calibration

1. Turn on your bicycle.

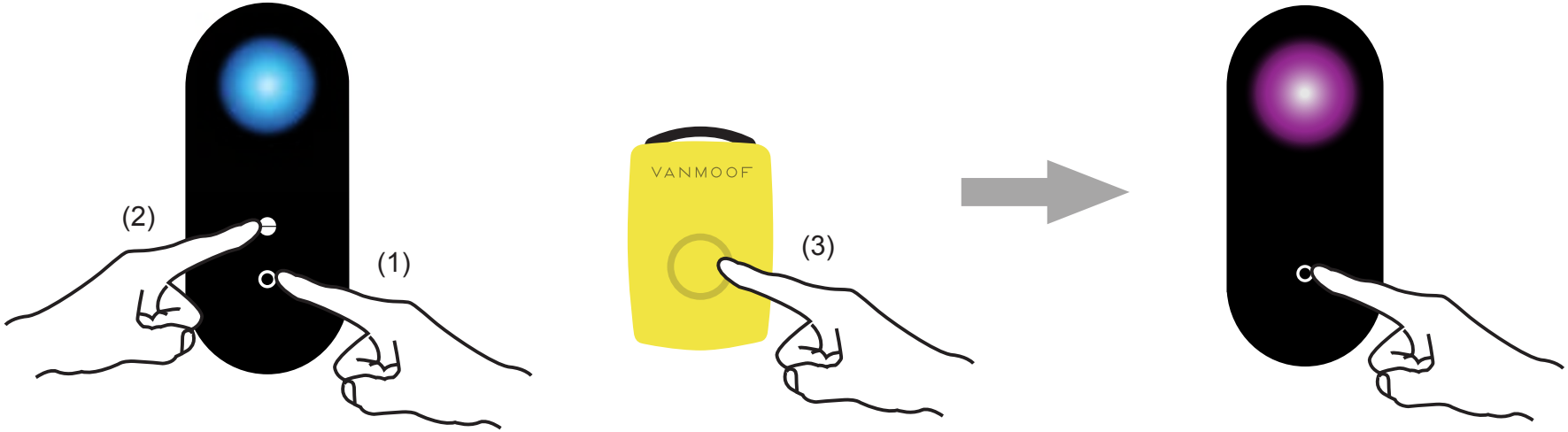
2. Adjust the pedals so that they are horizontal.



3. Press the light button (1), power level switch (2) and the power button (3) on the remote control at the same time.

4. When the dashboard becomes purple, the light button (1) should be illuminated. If it is not, then press the light button (1) until the button lights up. Press the power level switch (2) to activate the torque calibration. The purple light will flash for several seconds and the torque sensor will automatically calibrate itself.
NOTE: During calibration, keep the pedals horizontal.

5. After a few seconds, the dashboard will turn back to blue, indicating that the calibration is finished.



Dashboard Firmware Version

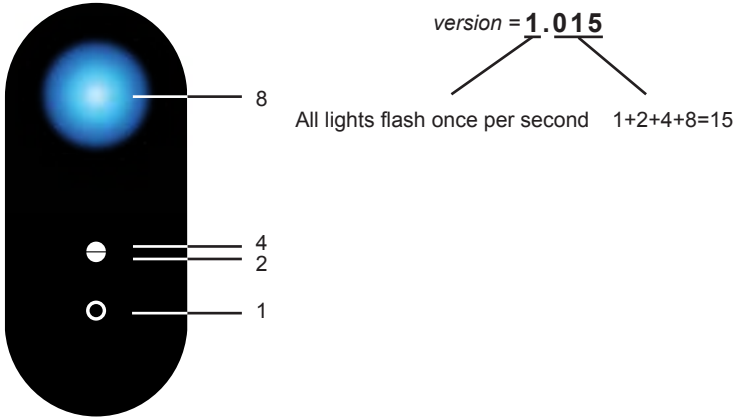
1. Press the light button (1), power level switch (2) and the power button (3) on the remote control at the same time.

2. When the dashboard becomes purple, press the light button to switch to the firmware version mode (***lower*** half moon (4) is illuminated). Then press the power level switch (1) to enter.
   Note: If the dashboard stays idle for more than 5 seconds, it turns back to the normal display automatically.

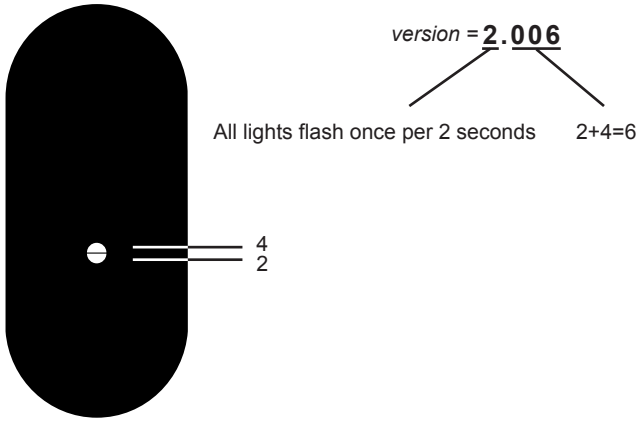
3. The firmware version is composed of 4 numbers (X.XXX). The first number is indicated by the number of seconds it takes for the lights to flash. If the lights flash once every 1 second, then the number is 1 (1.XXX). If they flash once every 2 seconds, then the number is 2 (2.XXX), and so on.

4. To know the last 3 numbers (X.XXX), you must verify which light is active. Each light represents a number, the sum of these numbers indicates the final number. Please see examples below.

Example 1



Example 2



Controller Firmware Version

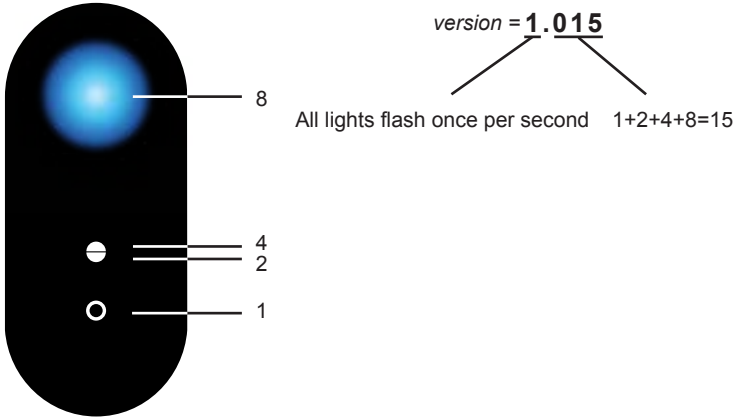
1. Press the light button (1), power level switch (2) and the power button (3) on the remote control at the same time.

2. When the dashboard becomes purple, press the light button to switch to the firmware version mode (***upper*** half moon (4) is illuminated). Then press the power level switch (1) to enter.
   Note: If the dashboard stays idle for more than 5 seconds, it turns back to the normal display automatically.

3. The firmware version is composed of 4 numbers (X.XXX). The first number is indicated by the number of seconds it takes for the lights to flash. If the lights flash once every 1 second, then the number is 1 (1.XXX). If they flash once every 2 seconds, then the number is 2 (2.XXX), and so on.

4. To know the last 3 numbers (X.XXX), you must verify which light is active. Each light represents a number, the sum of these numbers indicates the final number. Please see examples below.

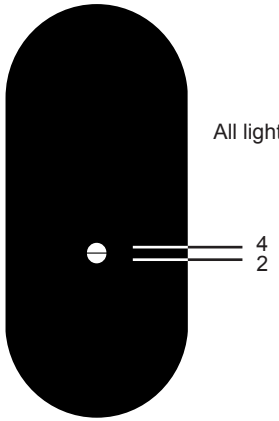
Example 1



version = **1.015**

All lights flash once per second 1+2+4+8=15

Example 2



version = **2.006**

All lights flash once per 2 seconds 2+4=6