

Troubleshooting based on the Power Indicator Reaction

Troubleshooting for LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



Update Date: 2024/02

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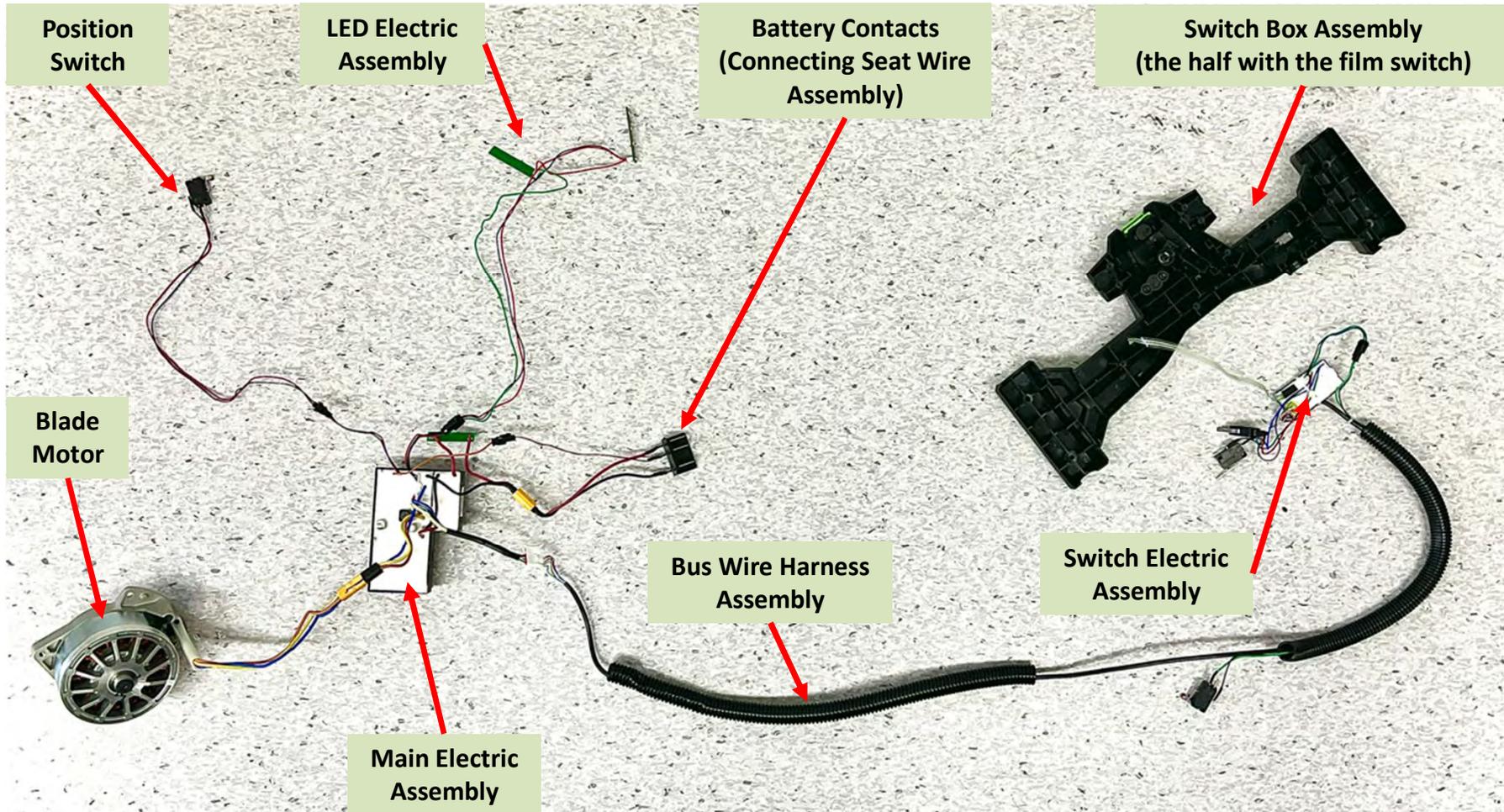
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Power Indicator Status according to the manual

Mower-status indicator	Meaning	Action
Solid green	Mower is working properly and the battery pack has at least 15% of its charge.	None required.
Flashing green	The side rails are not fully extended.	Stop the mower and make sure that the side rails are fully extended.
	The handle is not locked in an operating positions.	Stop the mower and make sure that the handle is locked in an operating positions.
Flashing red	Low battery.	Stop the mower and charge the battery pack.
Solid orange	The mower stops due to overheating.	Remove the battery from the mower, move them to the shade and cool them for at least 15 minutes.
Flashing orange	The mower is overloaded.	First, remove the battery pack, then check and clean if grass has collected beneath the deck. Slow down your pace when cutting. If this does not work, please contact EGO customer service center.
Flashing red/green alternately	Error.	Contact EGO customer service center.
Dark & LED on battery flashing	Battery overheat. (Please see " BATTERY HIGH-TEMPERATURE PROTECTION " in this manual)	Release the bail switch, wait until the battery pack cools down to approximately 152°F (67°C), then restart the mower.

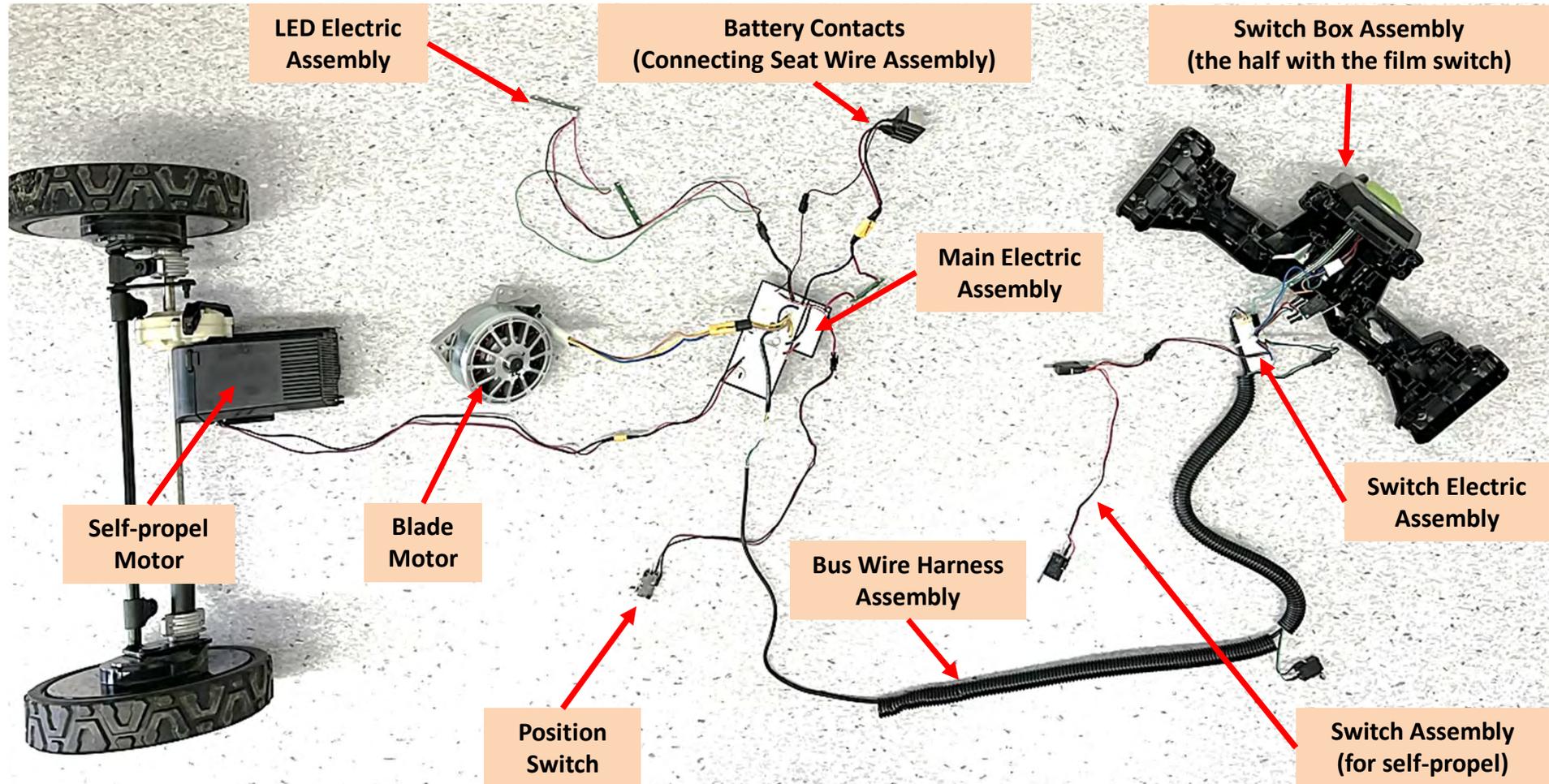
LM2110_Electrical Connection Layout

Here is the electrical connection layout of the LM2110 lawn mower for reference.



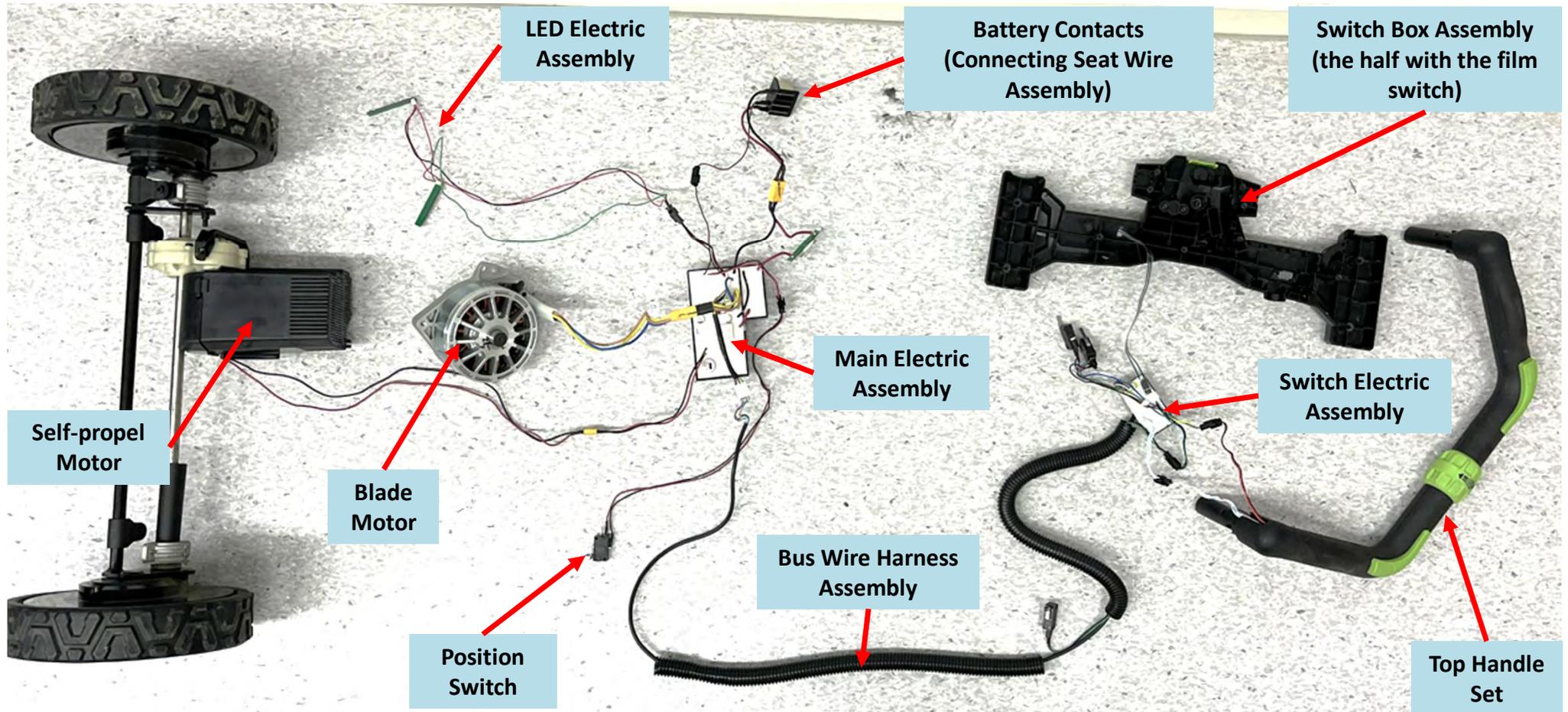
LM2110SP_Electrical Connection Layout

Here is the electrical connection layout of the LM2110SP lawn mower for reference.

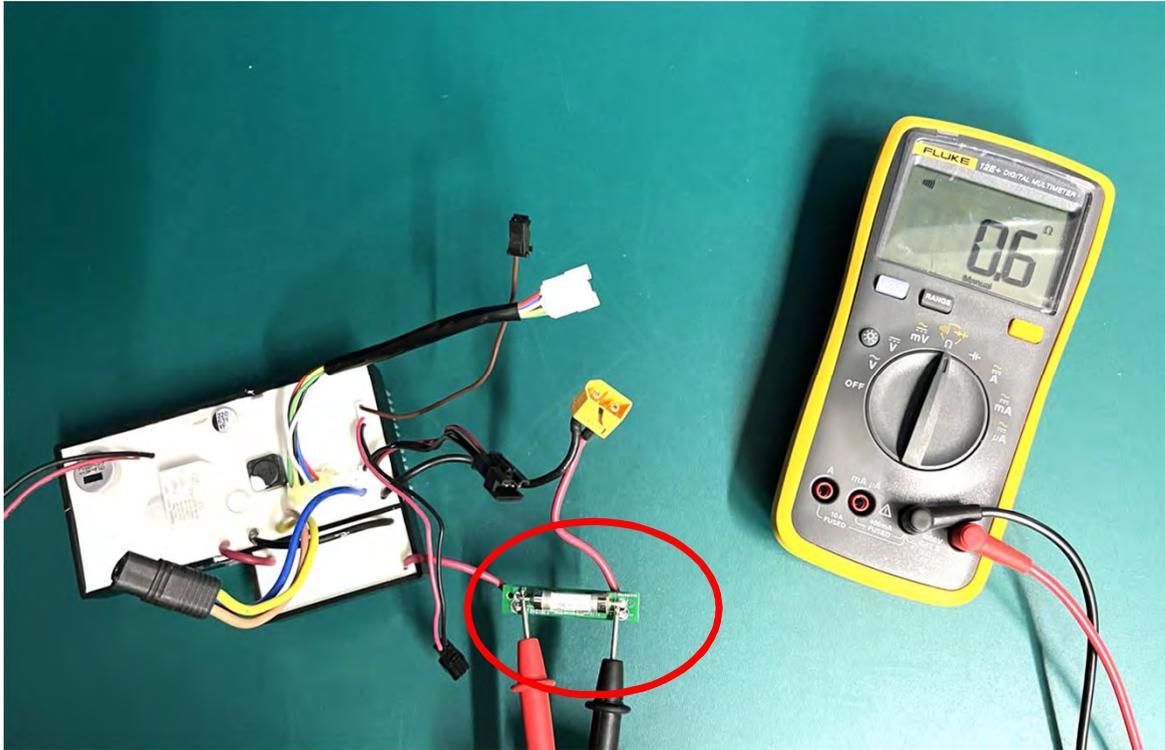


LM2120SP_Electrical Connection Layout

Here is the electrical connection layout of the LM2120SP lawn mower for reference.

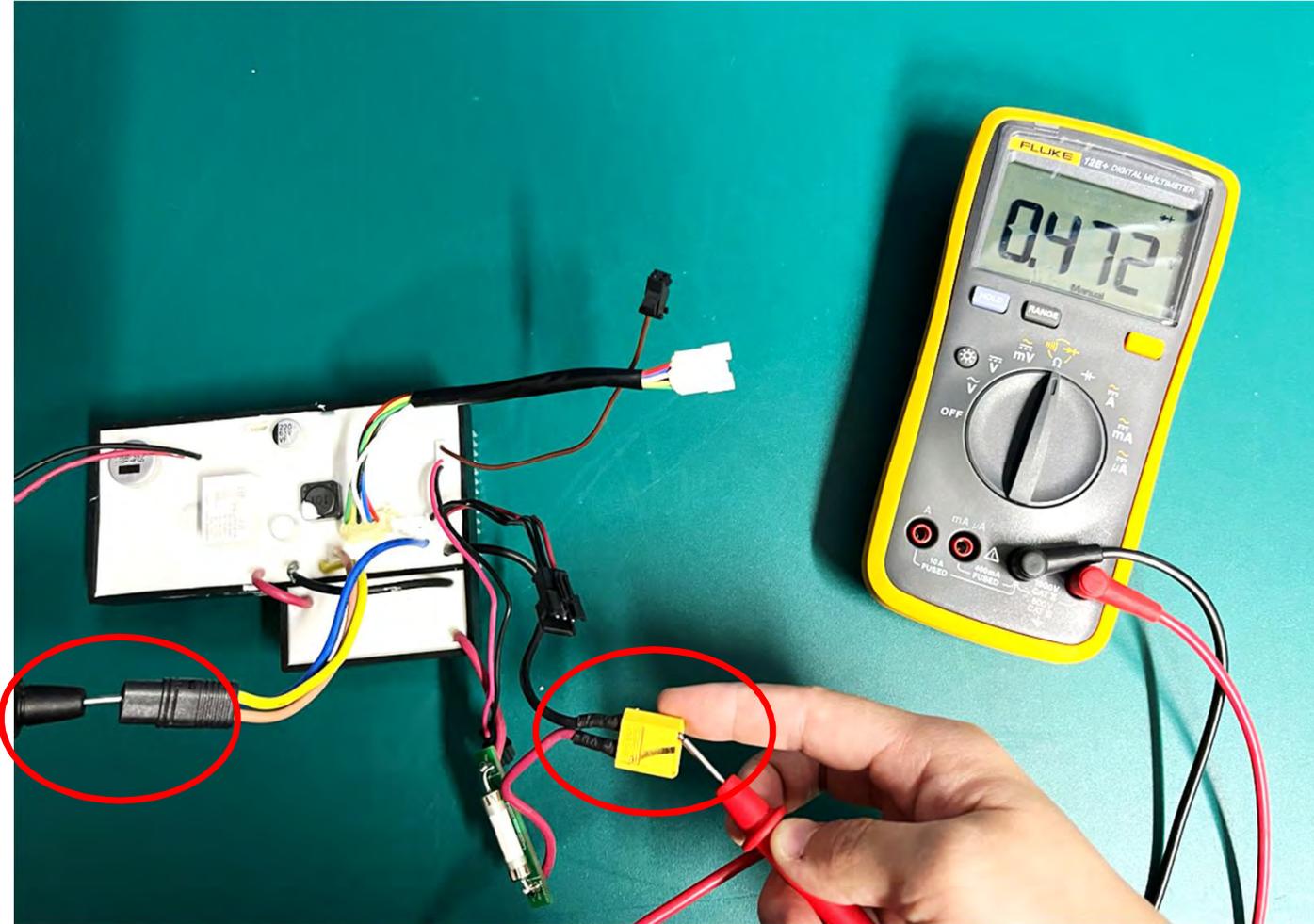


How to test the FUSE



- a) Set the Multimeter function to “Resistance measuring”.
- b) Contact one pen pin of the Multimeter with one end of the fuse, then contact the other pen pin with the other end of the fuse.
- c) If the resistance is not infinite, means a good fuse, otherwise means a blown fuse.

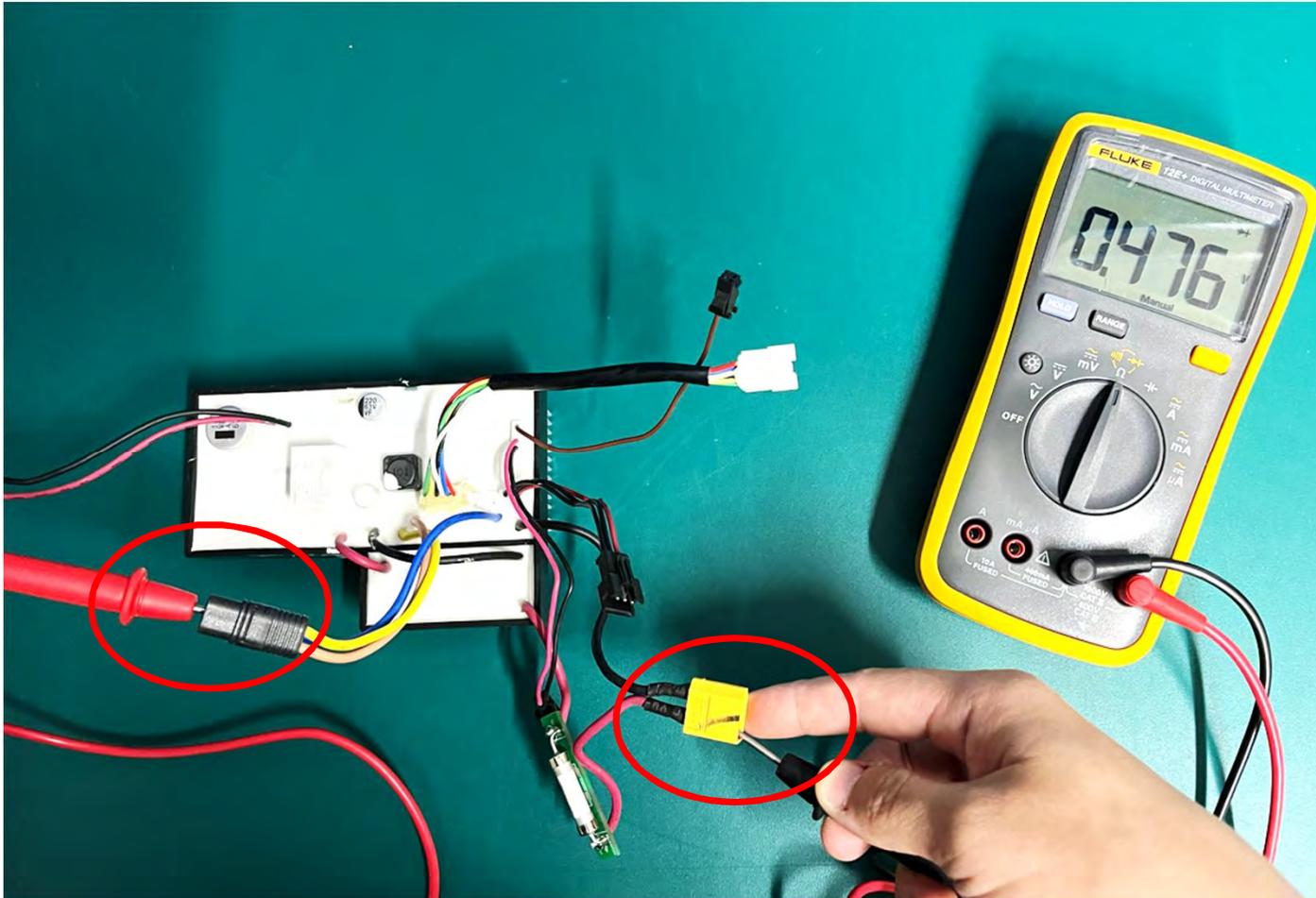
How to test the MOSFET in the main PCBA



Step 1:

- a) Set the Multimeter function to “Diode measuring” .
- b) Contact the red pen pin to the black electric contact of yellow connector.
- c) Contact the black pen pin to the three terminals of black connector separately and measure the voltage.
- d) If the LCD displays 0.45~0.55V for each measurement, go to the next testing step, otherwise means the main PCBA is broken.

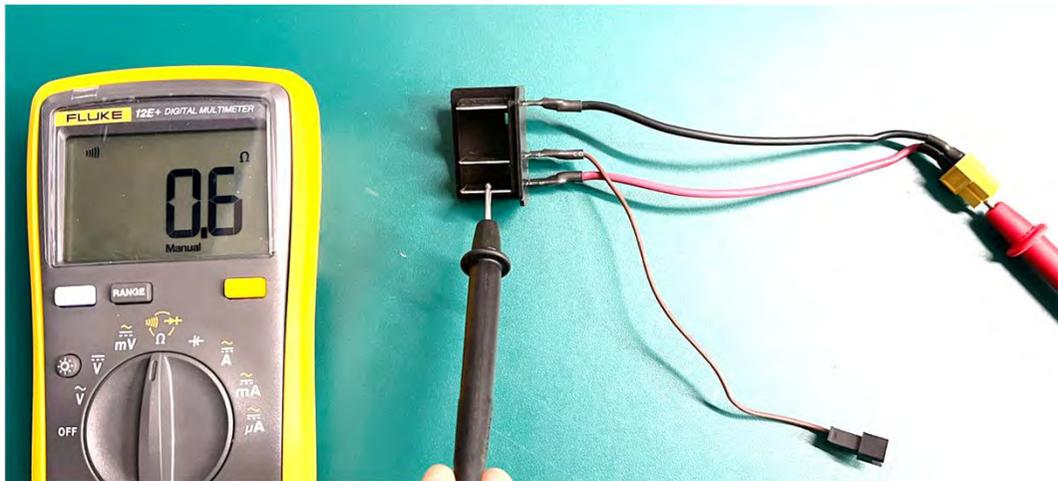
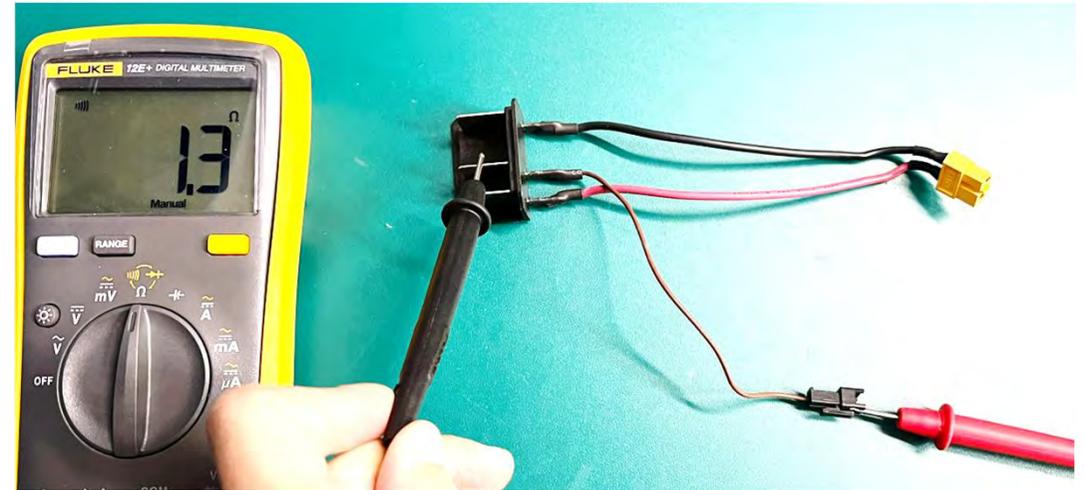
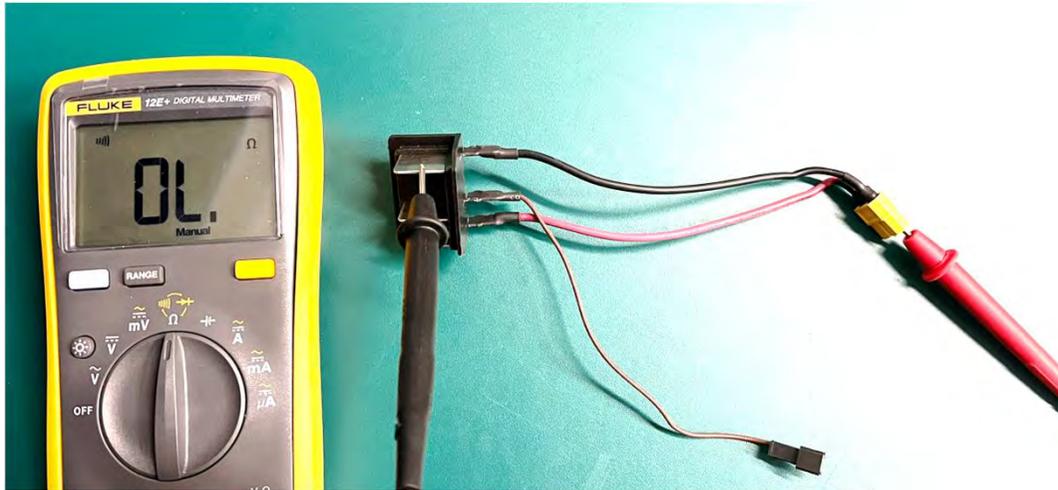
How to test the MOSFET in the main PCBA



Step 2:

- a) Keep the Multimeter function setting at “Diode measuring”.
- b) Contact the black pen pin to the red electric contact of yellow connector.
- c) Contact the red pen pin to the three terminals of black connector separately and measure the voltage.
- d) If the LCD displays 0.45~0.55V for each measurement, the main PCBA is good, otherwise means the PCBA is broken.

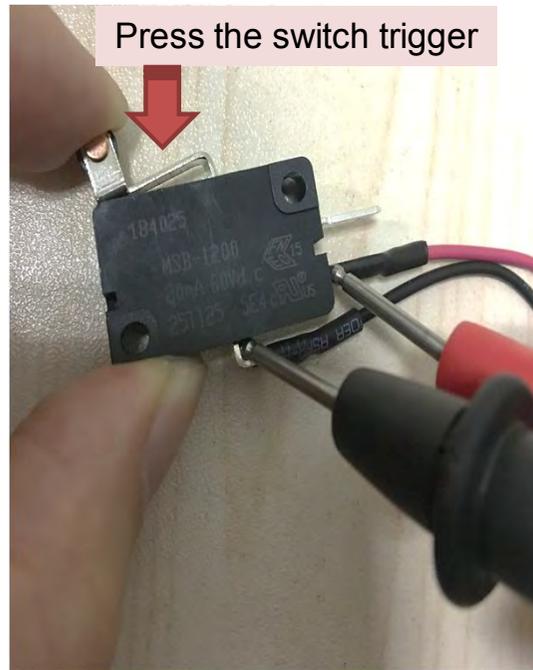
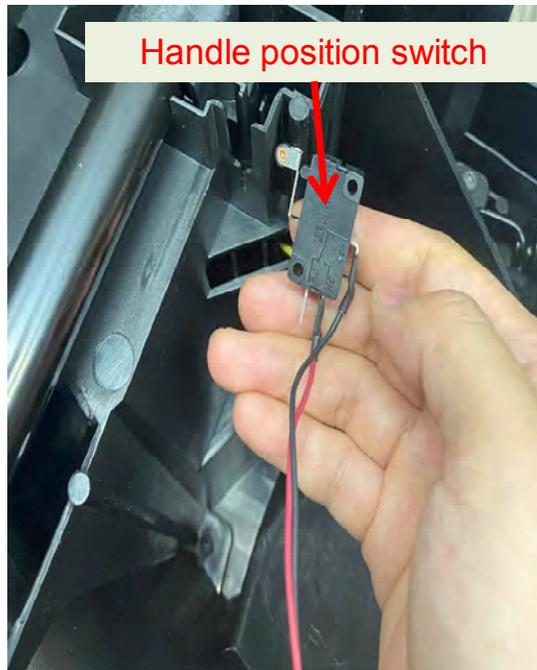
How to test the Battery Contacts



- Set the Multimeter function to “Resistance measuring”.
- Contact one pen pin of the Multimeter with one end of the wire (black/red/brown respectively), then contact the other pen pin with the other end of the wire.
- If the resistance is not infinite, means a good connection.

How to test the Handle Position Switch

- ① Set the Multimeter function to “Resistance measuring”.
- ② With the handle position switch trigger pressed, contact the black pen pin and red pen pin to the two wire terminals. **If the measurement is infinite, it means the handle position switch is in open circuit. Replace with a new one. If it displays as picture shown, the switch is OK.**



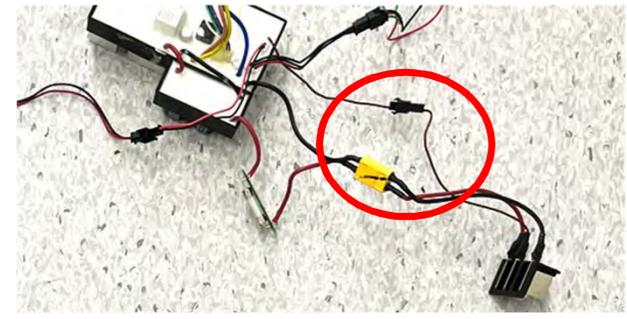
How to troubleshooting when the power indicator remains OFF



With a functional battery pack attached (excluding the battery pack fault),

► If the **battery indicator remains off** and **no reaction when engage the blade / LED headlights / self-propel**:

Possible Cause	How to troubleshoot
Blown Fuse	Check the fuse as instructed in “How to test the Fuse”
Poor connection of the battery contacts	Check the battery contacts as instructed in “How to test the Battery Contacts”.
Poor connection between the switch PCBA and the main PCBA	<p>There is a 6-pin Bus Wire Harness connecting the switch PCBA and the main PCBA. Poor connection could be caused by either of the three parts: main PCBA, switch PCBA and the bus wire harness assembly.</p> <p>We recommend to run a cross check with a functional main PCBA, switch PCBA / the bus wire harness assembly since the labor time of a detailed diagnose procedure is too long. Test the function first before completing the whole repair procedure.</p>



How to troubleshooting when the power indicator remains OFF



With a functional battery pack attached (excluding the battery pack fault),

- ▶ If the **battery indicator remains on** while blade & LED headlights has no reaction when engaged (the self-propel function could be good or bad):

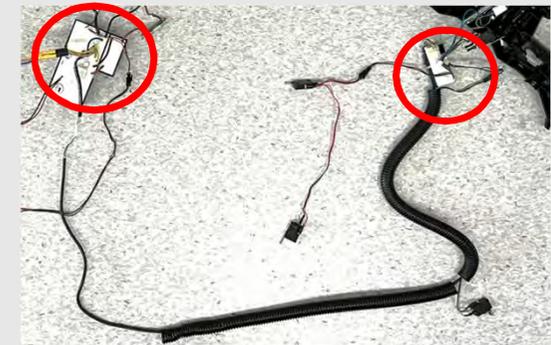
Possible Cause

How to troubleshoot

Poor connection between the switch PCBA and the main PCBA

There is a 6-pin Bus Wire Harness connecting the switch PCBA and the main PCBA. Poor connection could be caused by either of the three parts: main PCBA, switch PCBA and the bus wire harness assembly.

We recommend to run a cross check with a functional main PCBA, switch PCBA / the bus wire harness assembly since the labor time of a detailed diagnose procedure is too long. Test the function first before completing the whole repair procedure.



How to troubleshooting when the power indicator flash **Green**

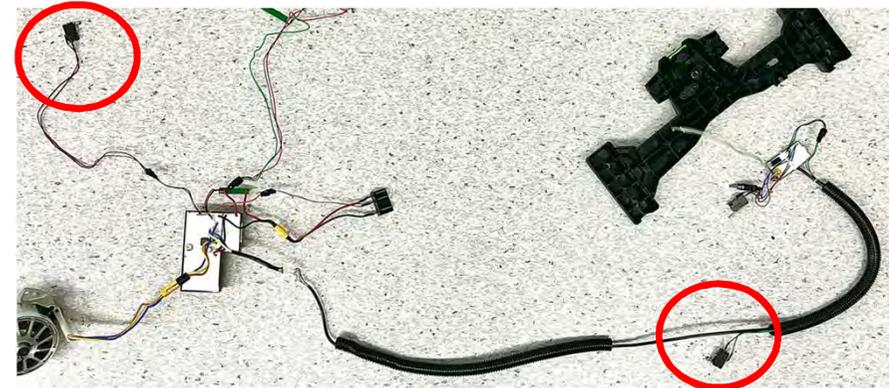


With a functional battery pack attached (excluding the battery pack fault),

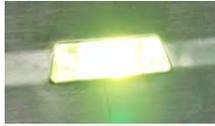
If the side rails are fully extended and the handle is locked in an operating position:

There are two position switches in the lawn mower, one is under the service cover (link to the main PCBA), the other is in the handle assembly (link to the switch PCBA) as shown below:

Possible Cause	How to troubleshoot
Switch is engaged or not?	Click sound can be heard when the position switch is engaged. So check if there is click sound when fully extend the side rails or lift the handle from the storage position.
Defective switch	<p>Check the position switch under the service cover as instructed in “How to test the Handle Position Switch”.</p> <p>If that switch is tested OK, replace the 6-pin Bus Wire Harness (the other switch is combined with it together.)</p>



How to troubleshooting when the power indicator shine **Orange**



With a functional battery pack attached (excluding the battery pack fault),

When engage the blade, get a solid Orange, and the LED headlights and the self-propel function well,

or, when only engage the self-propel, get a solid Orange, and the LED headlights and the blade motor function well:

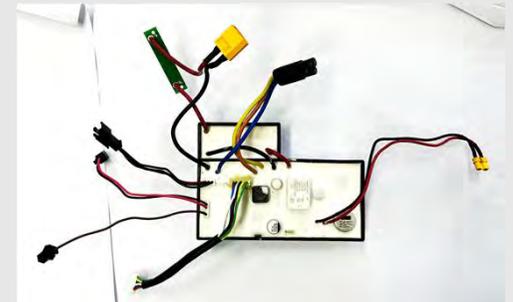
Possible Cause

How to troubleshoot

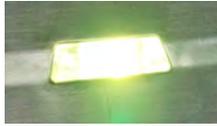
Main PCBA is broken.

Replace with a new main PCBA and test the tool for function.

(Note: There is no need to test the MOSFET in the main PCBA as instructed before because the problem is mainly due to the defective NTC thermistor in the main PCBA.)



How to troubleshooting when the power indicator flash **Orange**



With a functional battery pack attached (excluding the battery pack fault),

a) When just engage the blade, get a flash Orange, and when just engage the self-propel, self-propel works:

Possible Cause

How to troubleshoot

Blade motor is broken.

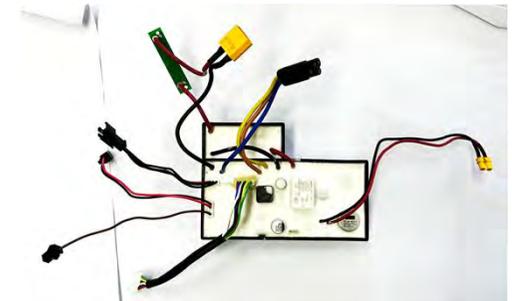
Check the blade motor as instructed in “How to troubleshoot Brushless Motor”. It is an article shared on the dealer portal.



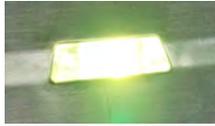
Main PCBA is broken.

If the blade motor is checked good, replace with a new main PCBA and test the tool for function.

(Note: You can check the main PCBA as instructed in “How to test the MOSFET in the main PCBA” first as a reference!!!)



How to troubleshooting when the power indicator flash **Orange**



With a functional battery pack attached (excluding the battery pack fault),

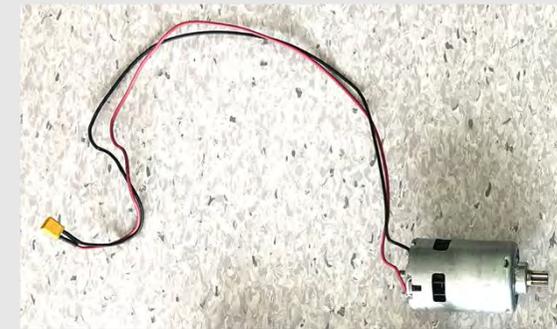
b) When just engage the blade, blade works, and when just engage the self-propel, get a flash Orange:

Possible Cause

How to troubleshoot

Self-propel motor is broken.

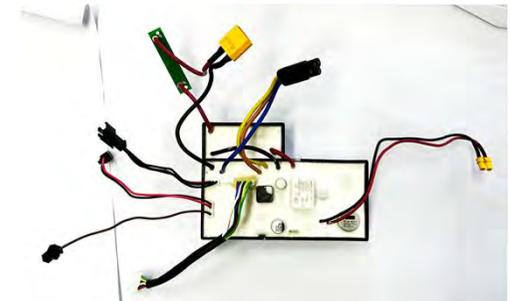
Run a cross check with a functional self-propel motor.



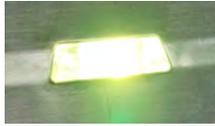
Main PCBA is broken.

If the self-propel motor is checked good, replace with a new main PCBA and test the tool for function.

(Note: You can check the main PCBA as instructed in “How to test the MOSFET in the main PCBA” first as a reference!!!)



How to troubleshooting when the power indicator flash **Orange**



With a functional battery pack attached (excluding the battery pack fault),

c) When just engage the blade, get a flash Orange, and when just engage the self-propel, also get a flash Orange:

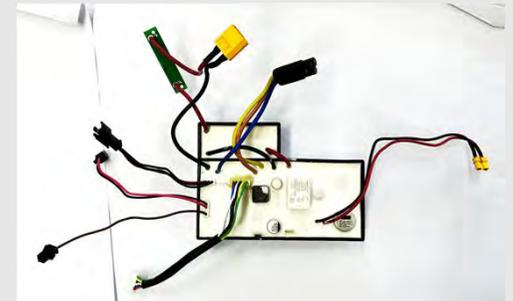
Possible Cause

How to troubleshoot

Main PCBA is broken.

Replace with a new main PCBA and test the tool for function.

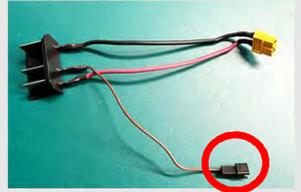
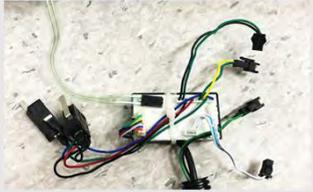
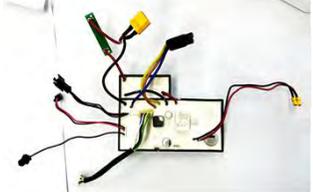
(Note: You can check the main PCBA as instructed in “How to test the MOSFET in the main PCBA” first as a reference!!!)



How to troubleshooting when the power indicator flash **Red** and **Green** alternately

With a functional battery pack attached (excluding the battery pack fault),

► When the power indicator flash red and green alternately, it means there is communication fault in the system.

Possible Cause	How to troubleshoot	
Poor continuity of the brown wire of the battery contacts	Check the continuity of the brown wire of the battery contacts as instructed in “How to test the Battery Contacts”.	
Poor continuity of the bus wire harness assembly in the handle assembly	Check the connection of the bus wire harness assembly or replace with a new one and test the tool for function.	
Switch PCBA is broken.	If the wires continuity are all checked good, replace with a new switch PCBA and test the tool for function.	
Main PCBA is broken.	If all parts are checked/replaced, the tool is still not working, replace with a new main PCBA.	

How to troubleshooting when the power indicator shine **Green**



The blade as well as the self-propel all function well,

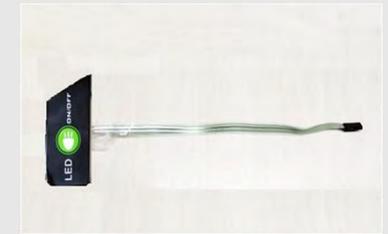
▶ just the LED headlights not react when depress the LED film switch:

Possible Cause

How to troubleshoot

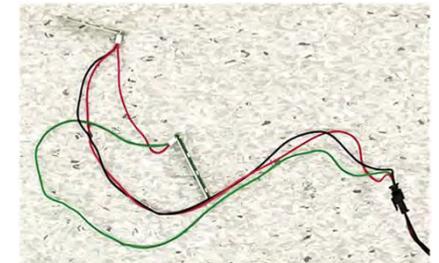
Defective LED film switch

Check the connection between the LED film switch and the switch PCBA. Or replace with a new LED film switch.



Defective headlights

Replace with a new LED headlight assembly (LED electric assembly).

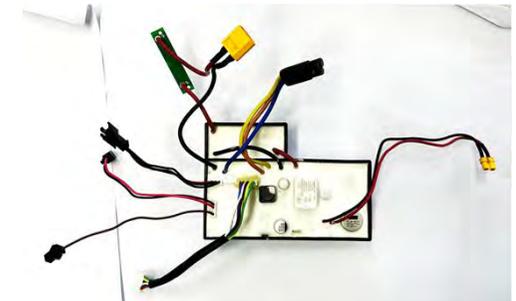
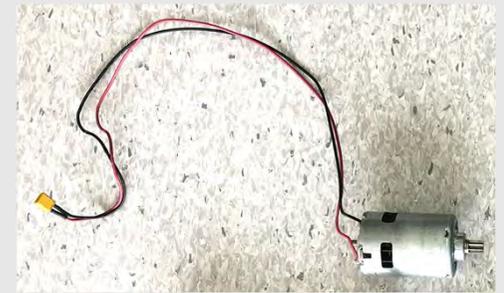


How to troubleshooting when the power indicator shine **Green**



When just engage the blade, blade works with a solid green indicator, and when just engage the self-propel, get a flash Orange:

Possible Cause	How to troubleshoot
Self-propel motor is broken.	Run a cross check with a functional self-propel motor.
Main PCBA is broken.	If the self-propel motor is checked good, replace with a new main PCBA and test the tool for function. (Note: You can check the main PCBA as instructed in “How to test the MOSFET in the main PCBA” first as a reference!!!)



How to troubleshooting when the power indicator shine **Green**



When just engage the blade, blade works with a solid green indicator, and when engage the self-propel, self-propel also works but the self-propel speed is stuck and can't be adjusted by the speed dial:

Possible Cause	How to troubleshoot
Defective speed adjusting dial switch	Replace with a new speed adjusting dial switch (it is combined in the switch cover)

For LM2110SP



For LM2120SP



THE END

REPAIR GUIDELINE

PART 1: Blade Replacement_LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



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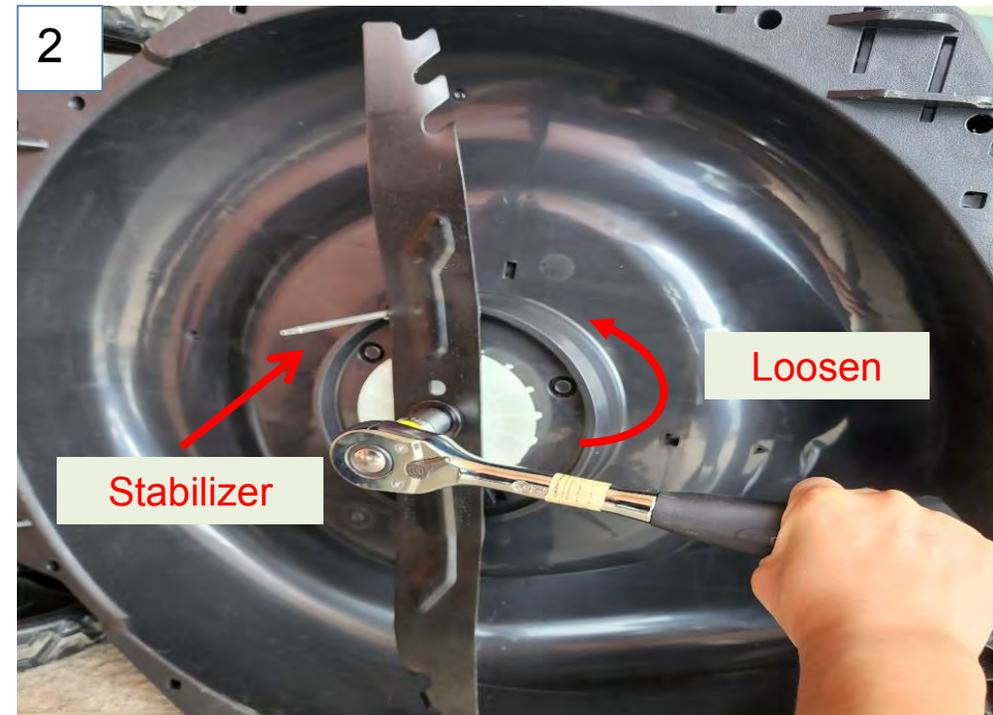
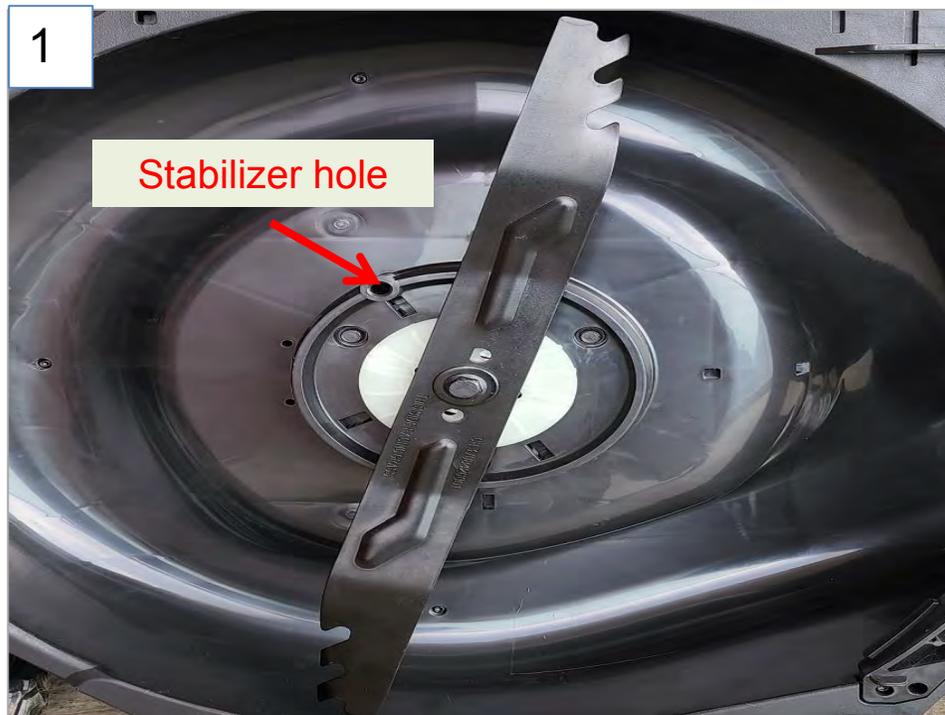
Note: Lawn mower LM2110, LM2110SP and LM2120SP share the same cutting blade structure.

Tool List For Repair

NO.	Tool List
1	9/16" (14mm) socket wrench
2	Manual screwdriver or metal rod 5/16" (8 mm) or less

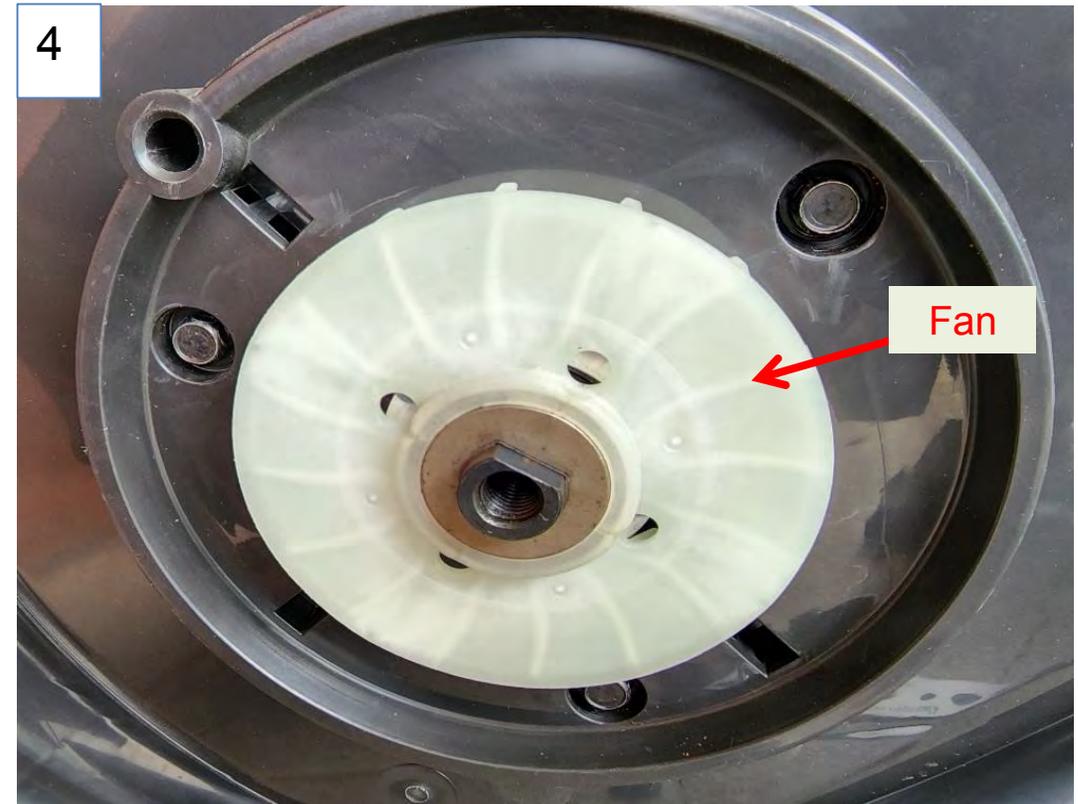
Blade Removal

1. Stop the motor; remove the battery pack from the mower.
2. Wear protective gloves, turn the mower on its side (Fig. 1).
3. Insert a manual screwdriver or a metal rod 5/16" (8 mm) or less in the stabilizer hole. This is to stop the blade from rotating while loosening the bolt.
4. Use an adjustable wrench or a 9/16" (14mm) socket wrench (impact wrench is recommended) to turn the blade bolt counterclockwise to loosen and remove the bolt (Fig. 2).



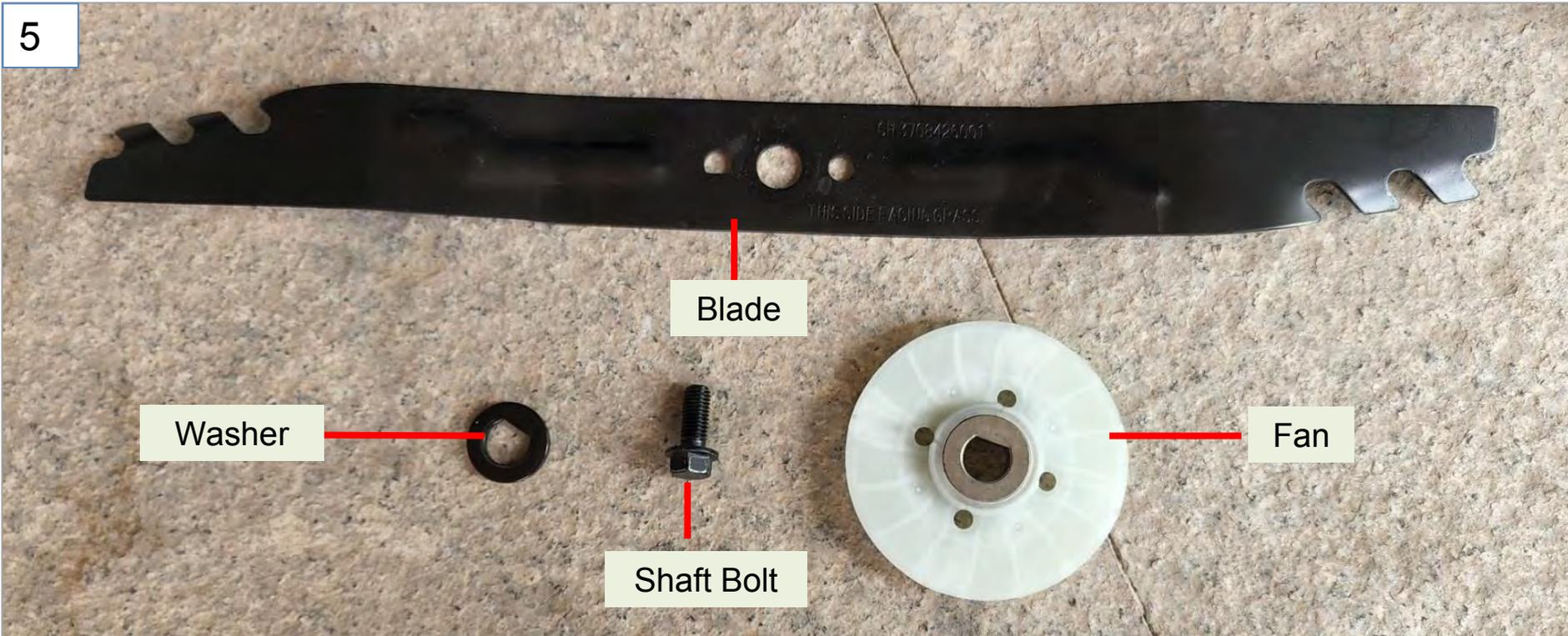
Blade Removal

5. Remove the washer and the blade from the motor shaft (Fig. 3).
6. Save the fan on the motor shaft. (Fig. 4).



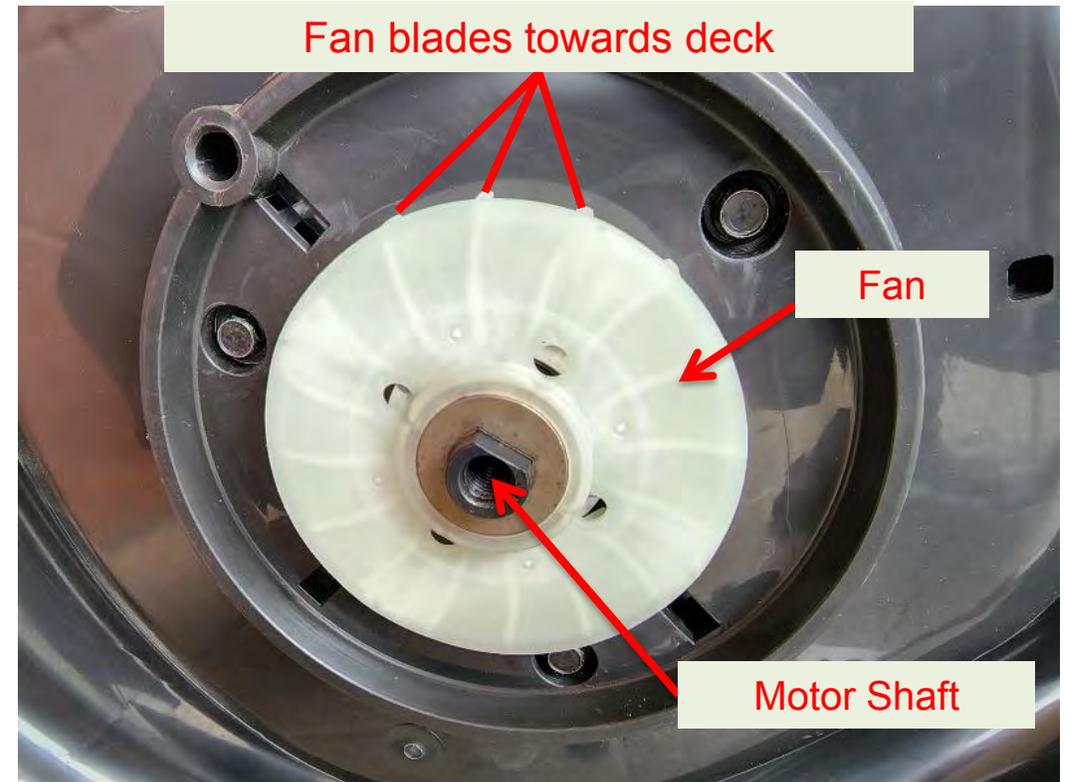
Blade Removal

7. Replace any part, if it is broken or worn.



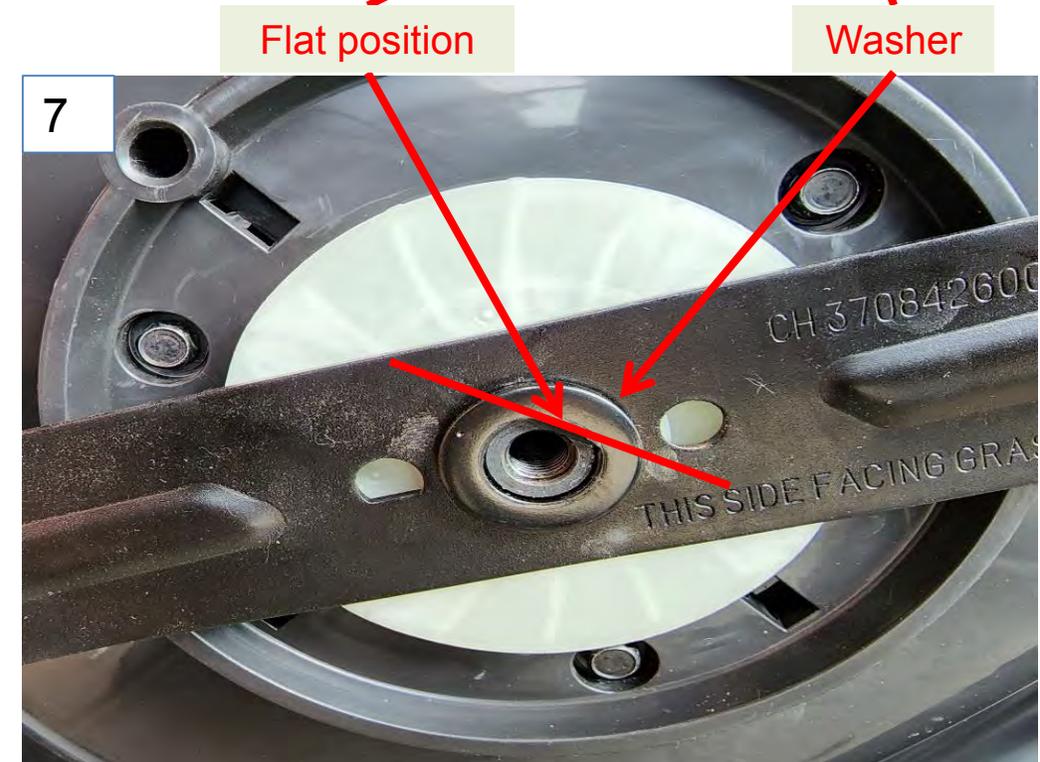
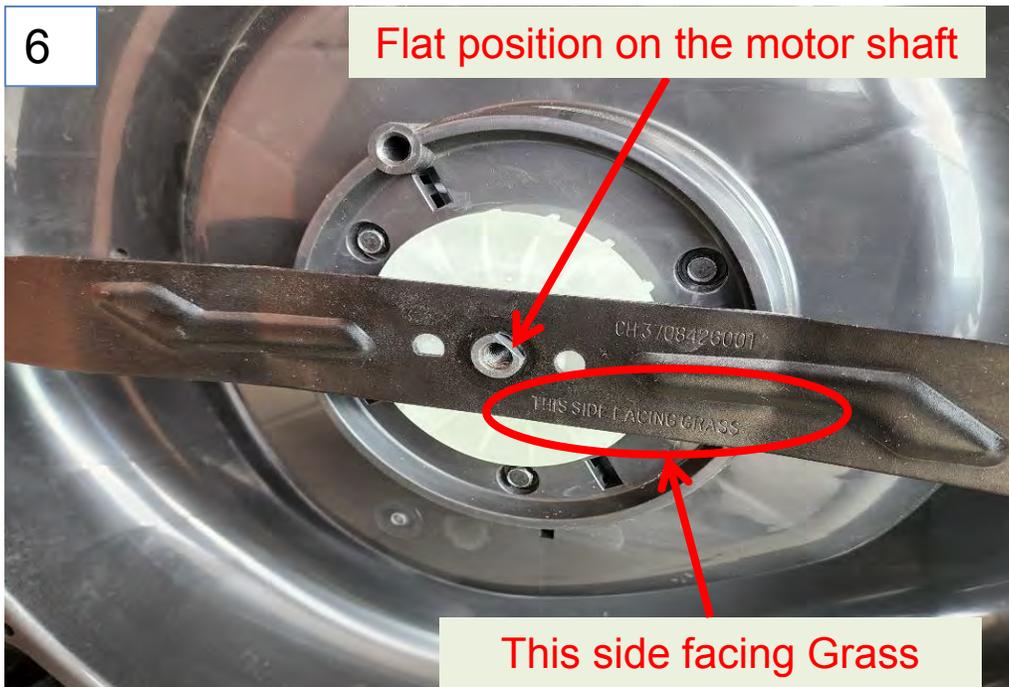
Blade Installation

1. Mount the fan onto the motor shaft with the fan blade towards the deck.



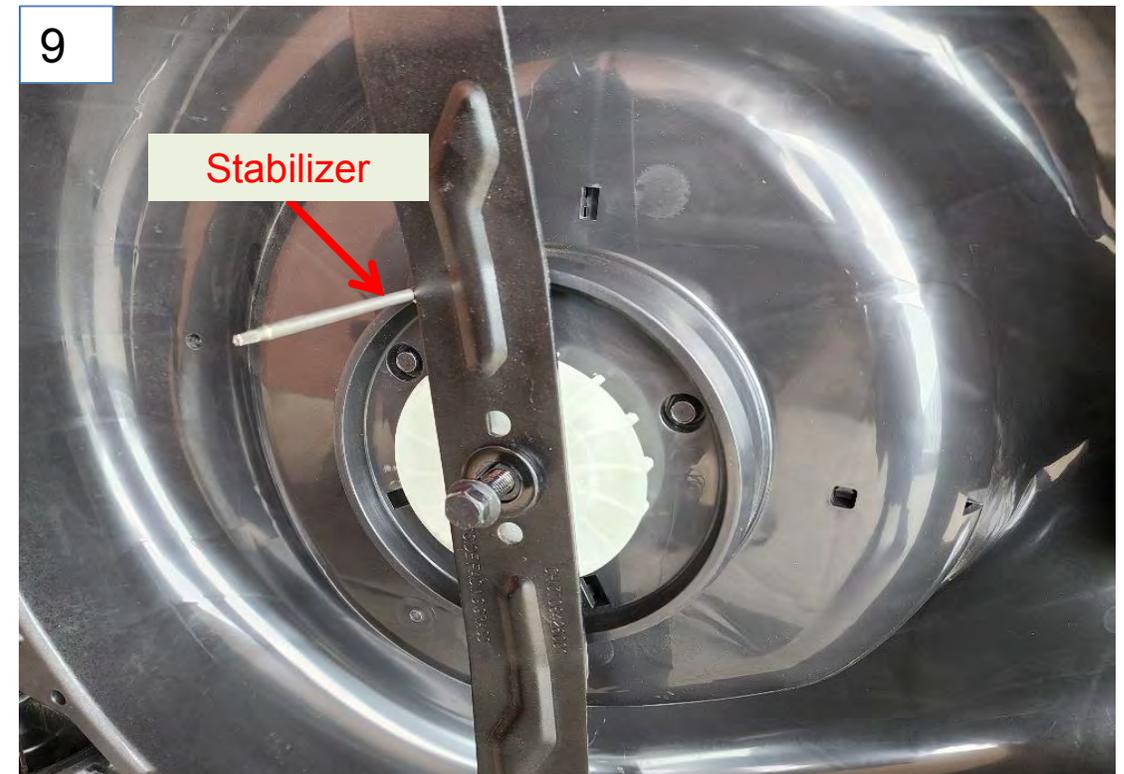
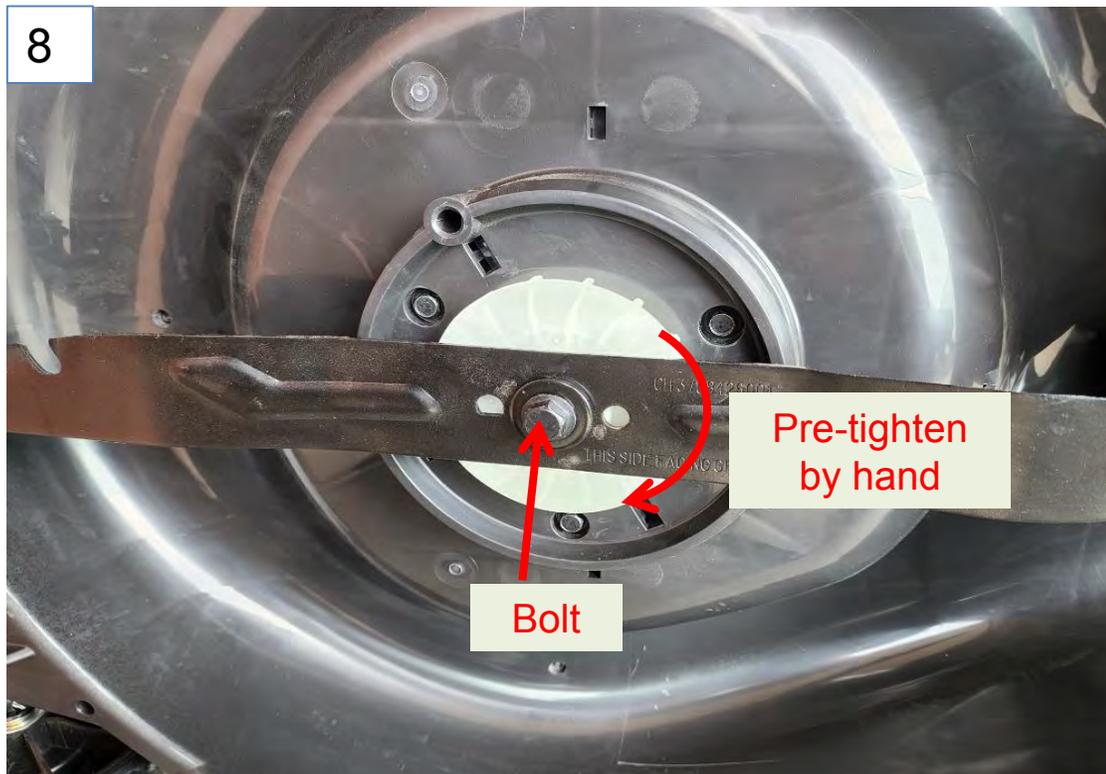
Blade Installation

2. Mount the blade onto the fan with the surface stating “**THIS SIDE FACING GRASS**” facing toward the outside (Fig. 6) .
3. Aligning the flat position of the washer with the corresponding flat position on the motor shaft, mount the washer into place (Fig. 7).



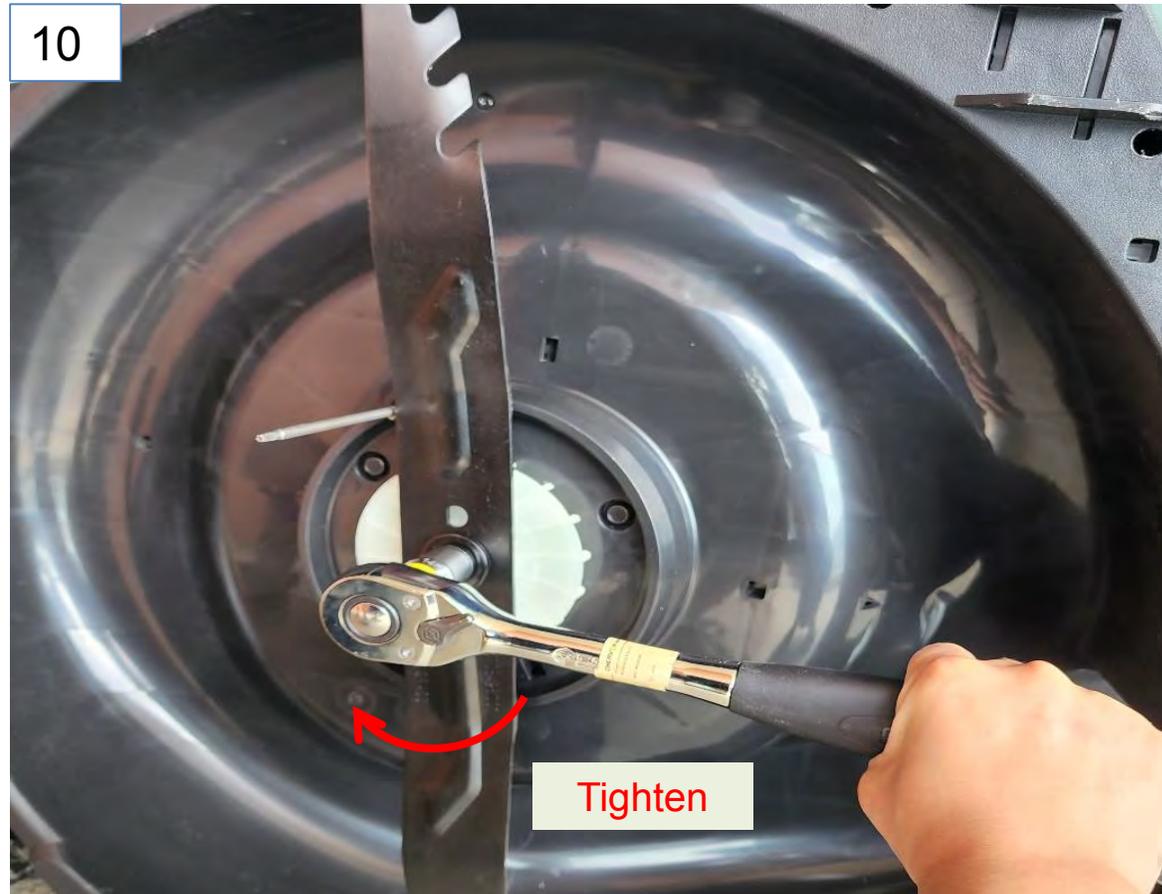
Blade Installation

4. Mount the bolt and pre-tighten by hand (Fig. 8).
5. Insert a manual screwdriver or a mental rod 5/16" (8 mm) or less in the stabilizer hole. This is to stop the blade from rotating while tightening the bolt (Fig. 9).



Blade Installation

- Use a 9/16" (14mm) torque wrench to tighten the shaft bolt clockwise. The recommend torque for the blade bolt is **36-43 ft-lb** (**49-59 Nm**).



THE END

REPAIR GUIDELINE

PART 2: Motor & Main PCBA Replacement_LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



Update Date: 2022/10/20

Tool List For Repair

NO.	Tool List
1	Socket wrench (10mm,14mm)
2	Manual screwdriver or metal rod 5/16" (8 mm) or less
3	Torx screwdriver (T20)
4	Straight screwdriver

Note:

>> LM2110, LM2110SP and LM2120SP share the same motor.

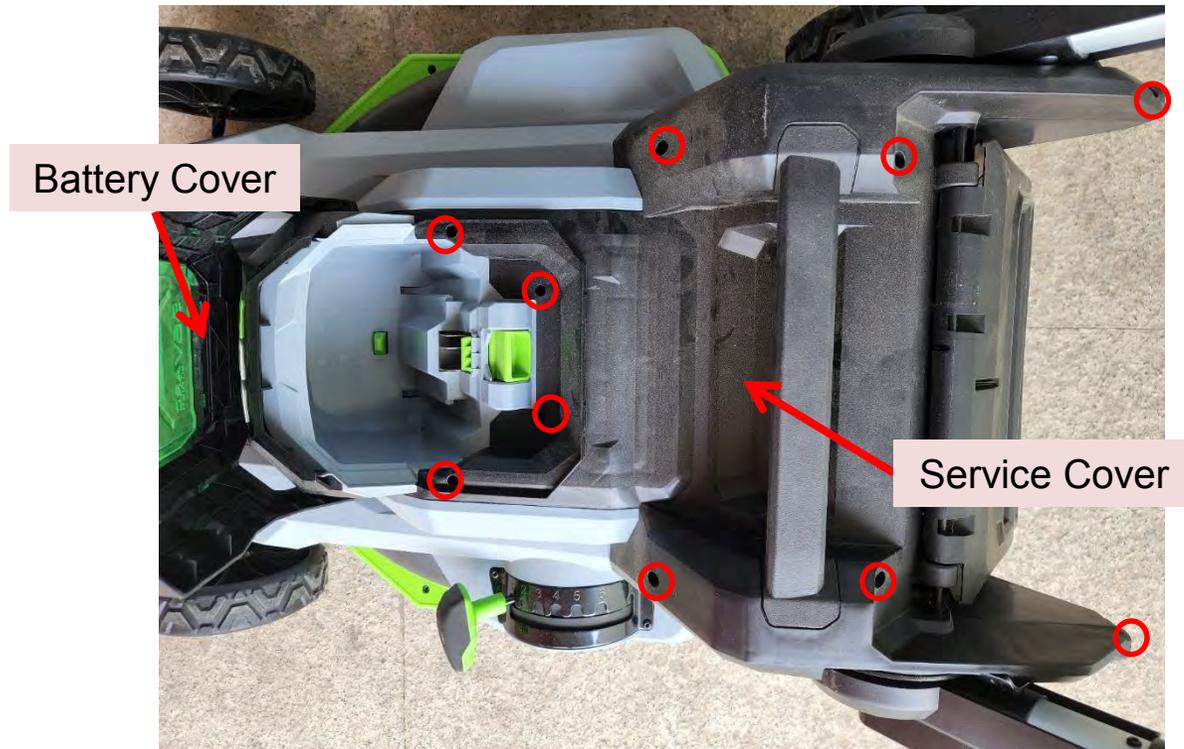
>> LM2110SP and LM2120SP share the same main PCBA. The major difference between LM2110 and LM2120SP main PCBA is that LM2110 main PCBA doesn't have the self-propel section.

Troubleshooting Notice

Follow the Measure guideline "**LM2110 & LM2110SP & LM2120SP Troubleshooting_How to diagnose the PCBA and motor**" for locate the failure.

DC Motor & Main PCBA Replacement

1. Before replacing or maintaining parts inside the mower, fold the handle to the operation position, open the battery cover and loosen the 10 screws to remove the service cover.



DC Motor & Main PCBA Replacement

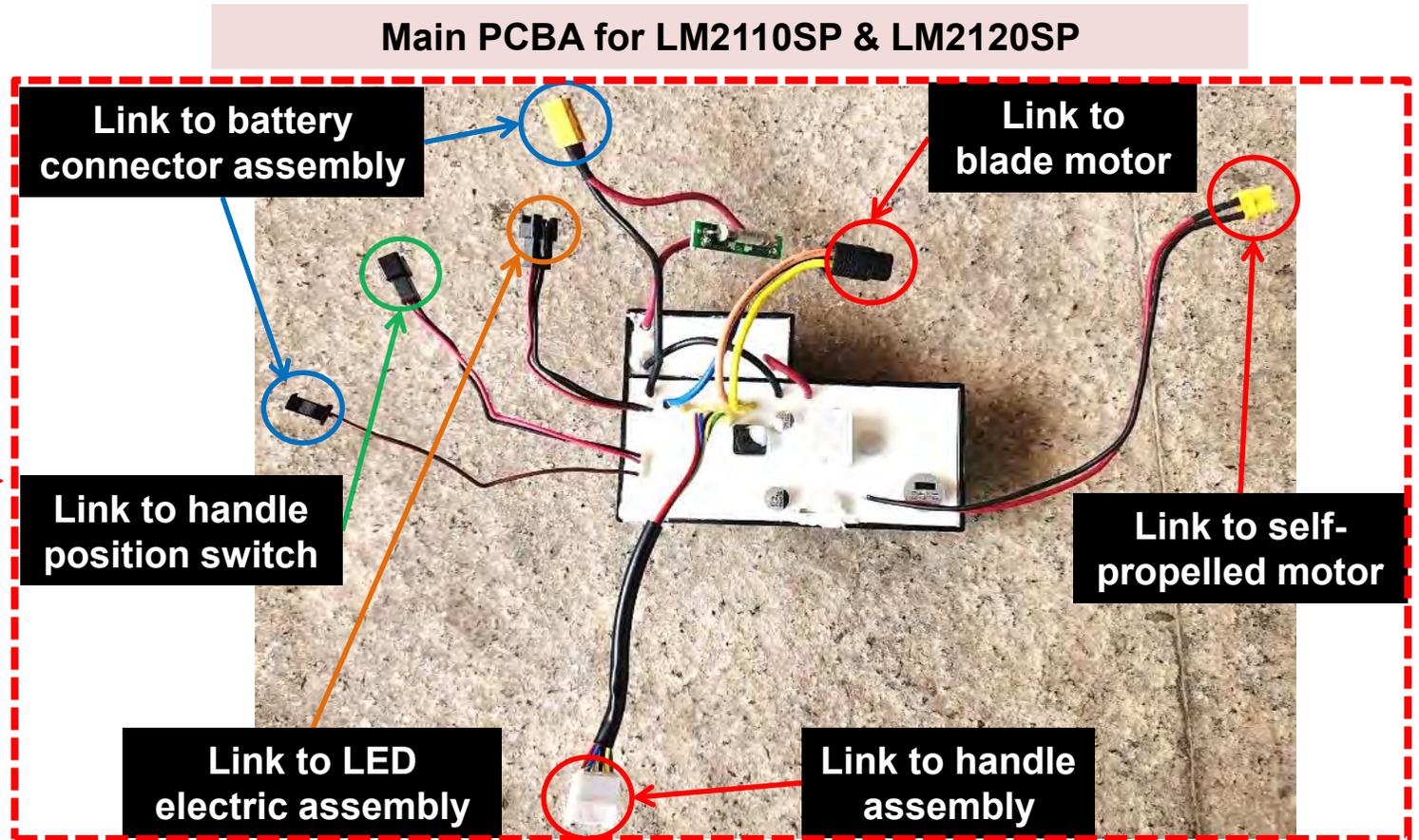
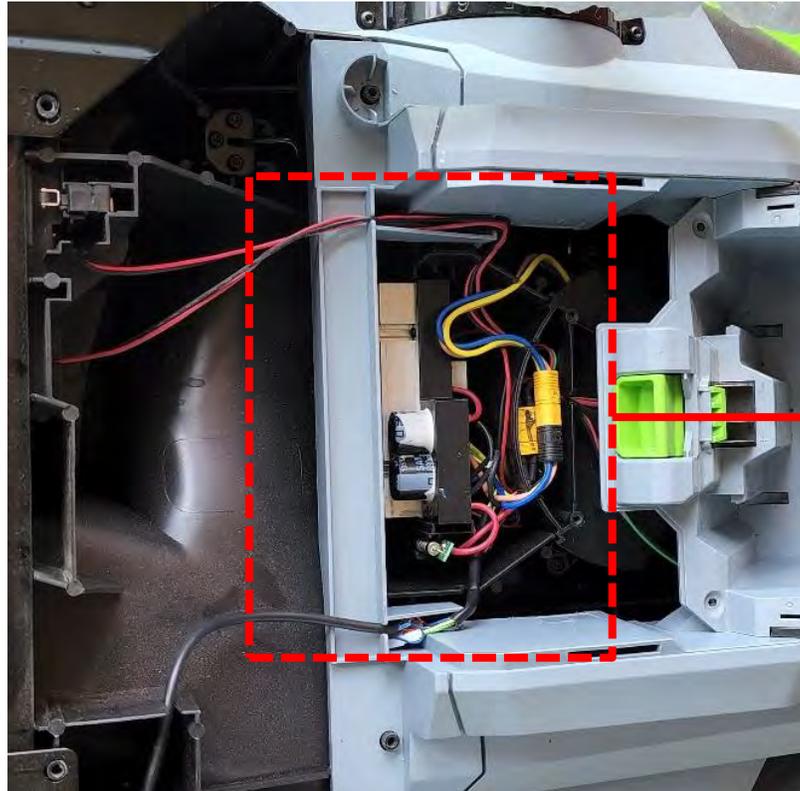
2. Remove the shaft bolt, washer, blade and the fan from the motor shaft as instructed in **“Part 1_Blade Replacement”**.



DC Motor & Main PCBA Replacement

3. Separate the main PCBA by disconnecting all the connectors. If the main PCBA is detected as defective, replace it with a new one.

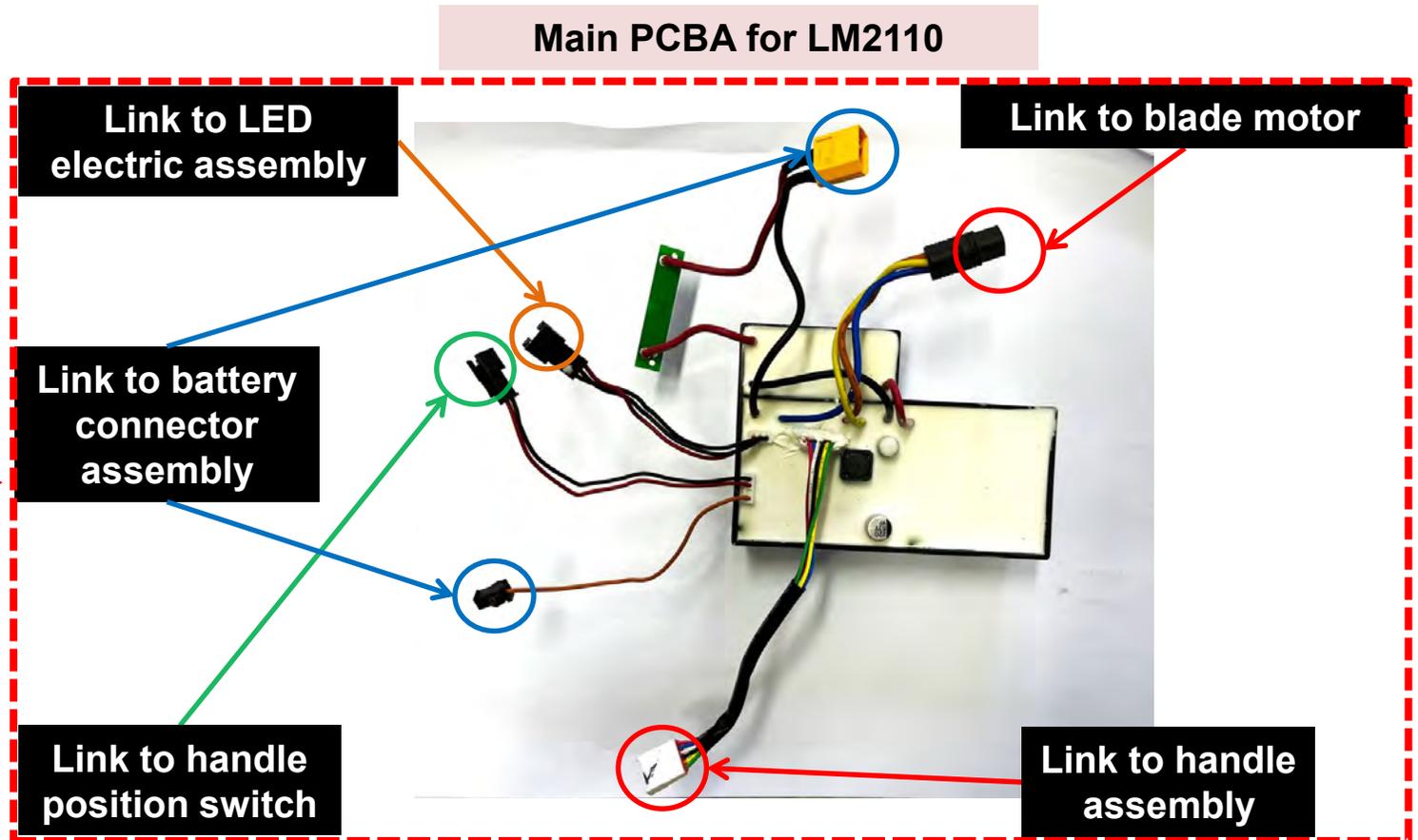
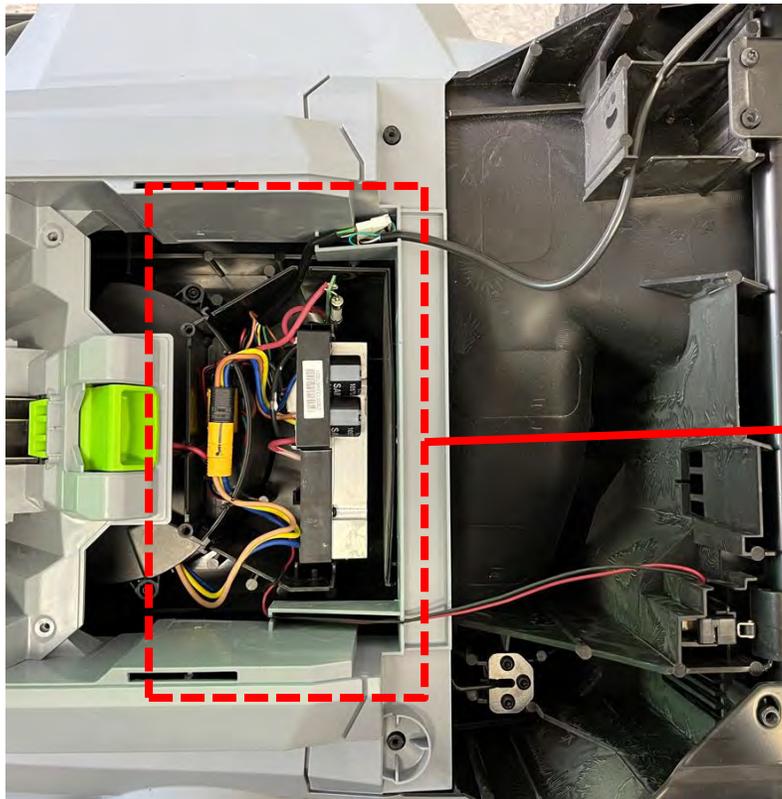
NOTICE: The major difference between LM2110 and LM2110SP/LM2120SP main PCBA is that LM2110 main PCBA doesn't have the self-propel section.



DC Motor & Main PCBA Replacement

3. Separate the main PCBA by disconnecting all the connectors. If the main PCBA is detected as defective, replace it with a new one.

NOTICE: The major difference between LM2110 and LM2110SP/LM2120SP main PCBA is that LM2110 main PCBA doesn't have the self-propel section.



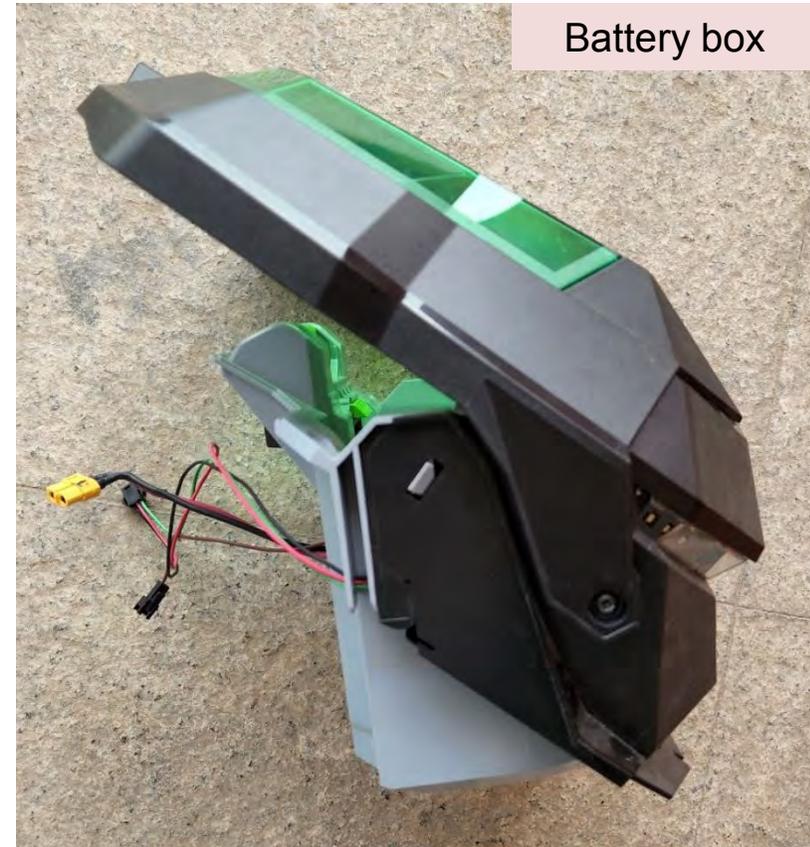
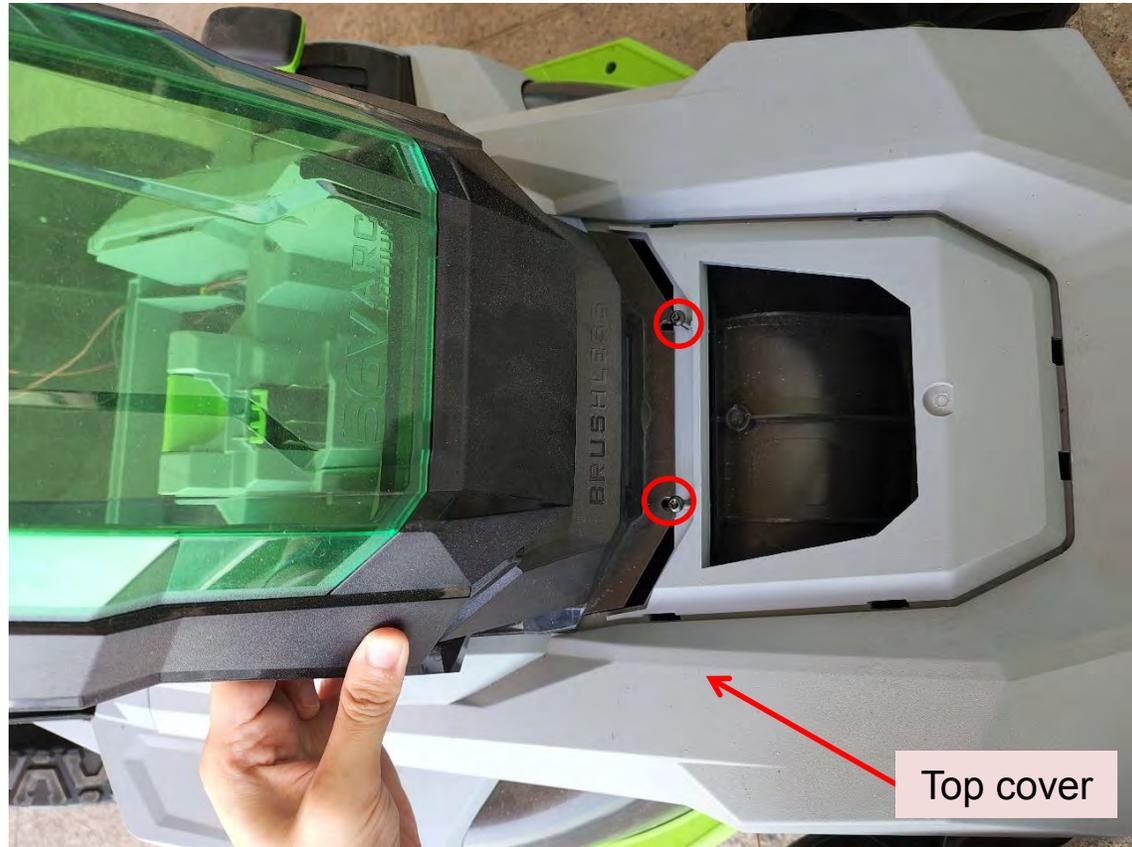
DC Motor & Main PCBA Replacement

4. Turn the mower on its side and remove the screw from the deck using a torx screwdriver (T20).
5. Pry the decorative cover by a straight screwdriver to remove it from the mower.



DC Motor & Main PCBA Replacement

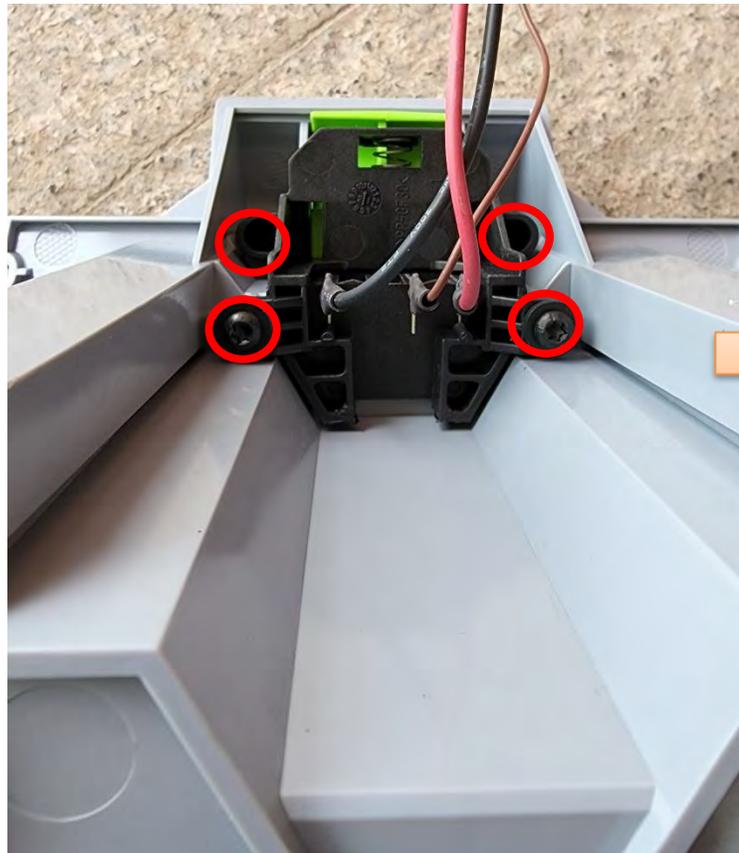
- Loosen the 2 screws to remove the battery box away from the top cover.



DC Motor & Main PCBA Replacement

If the battery connector assembly is detected as defective, follow below step 1 ~ 4 to have replacement.

- ① Remove the 4 screws to separate the seat wire assembly from the battery box. Save the battery latch assembly for reassembly.



Battery connector assembly



Battery latch assembly

DC Motor & Main PCBA Replacement

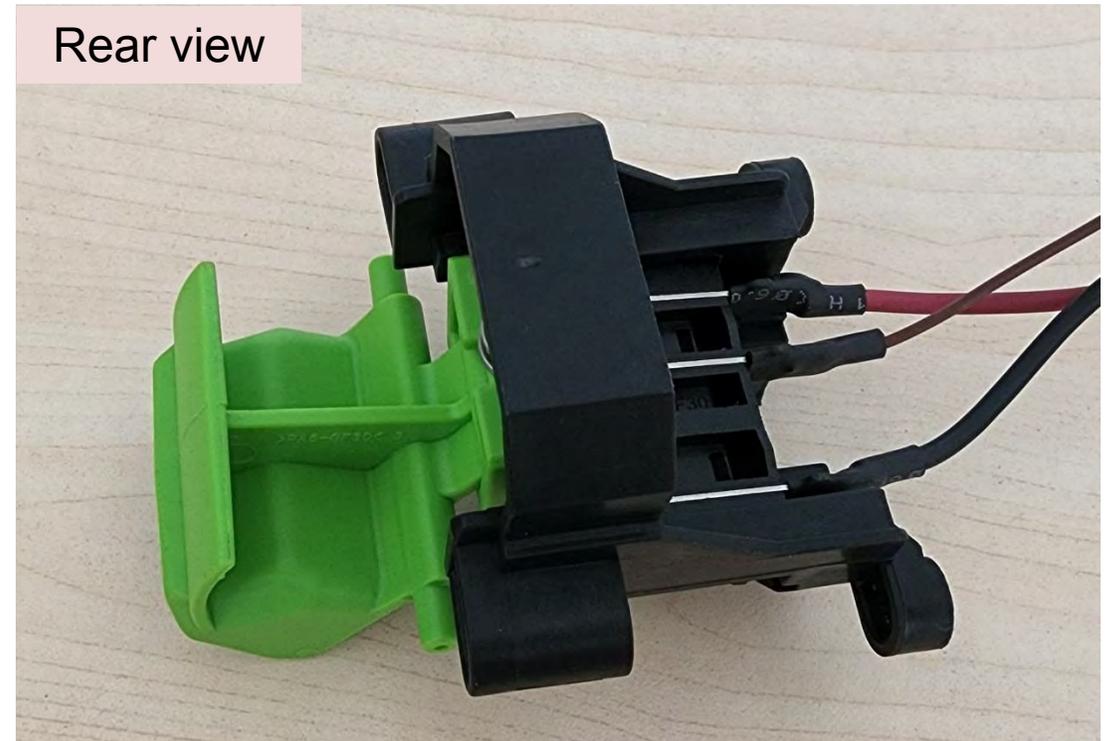
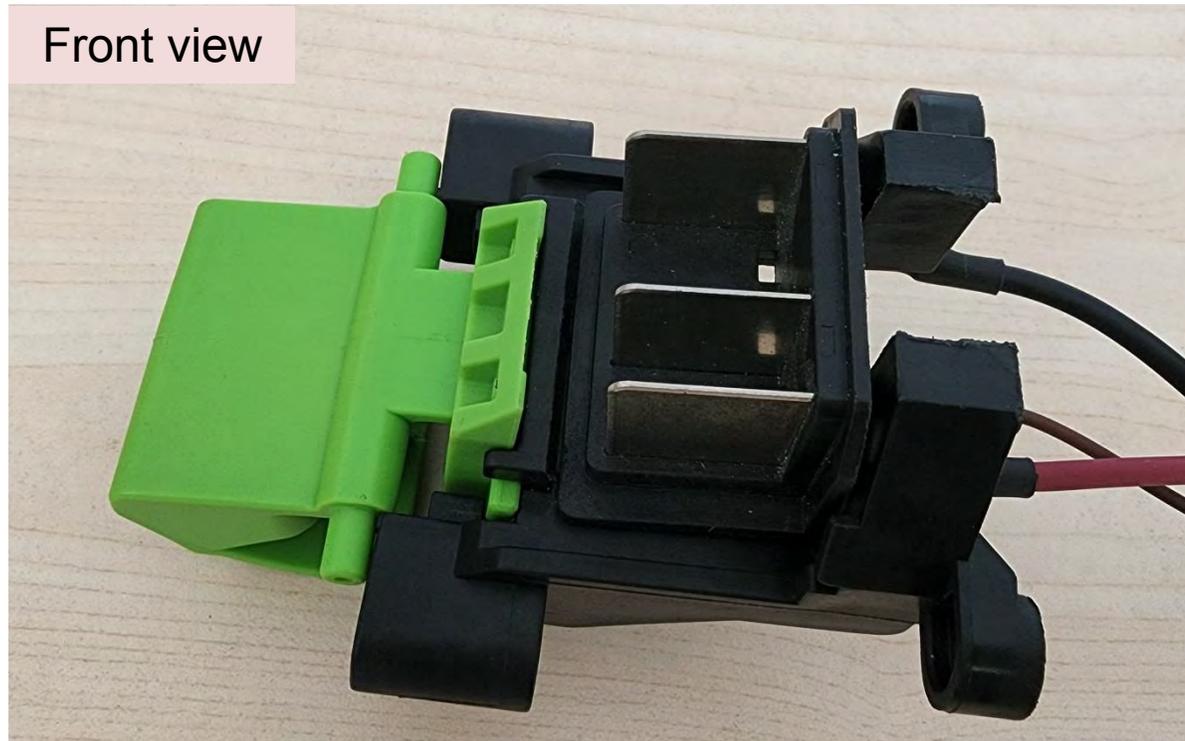
② Reassembly the battery latch assembly as below steps indicated.



DC Motor & Main PCBA Replacement

- ③ Mount the new seat wire assembly into the battery latch assembly.

NOTICE: Hold the battery connector assembly tightly to stabilize them until reassemble them onto the battery box.



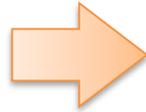
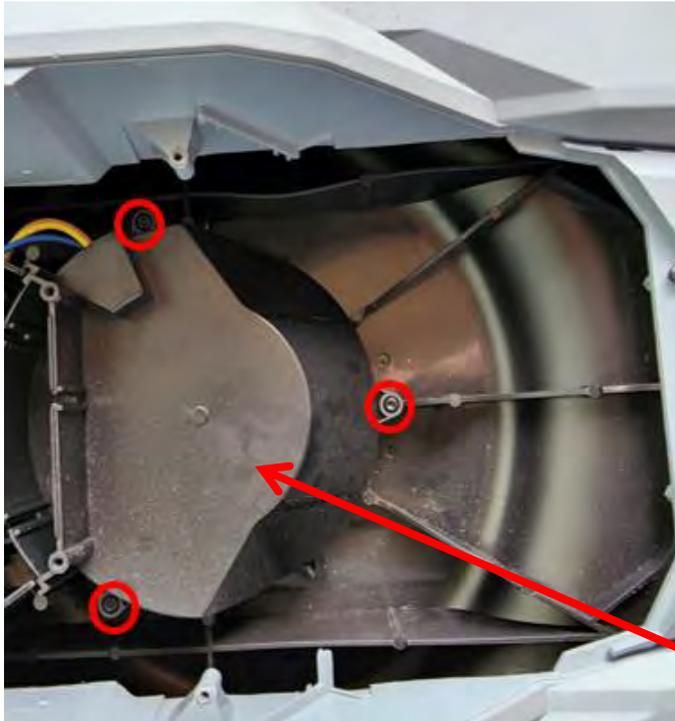
DC Motor & Main PCBA Replacement

- ④ Mount the battery connector assembly into the battery box and fix them by tightening the 4 screws.



DC Motor & Main PCBA Replacement

7. Loosen the 3 screws to remove the motor cover

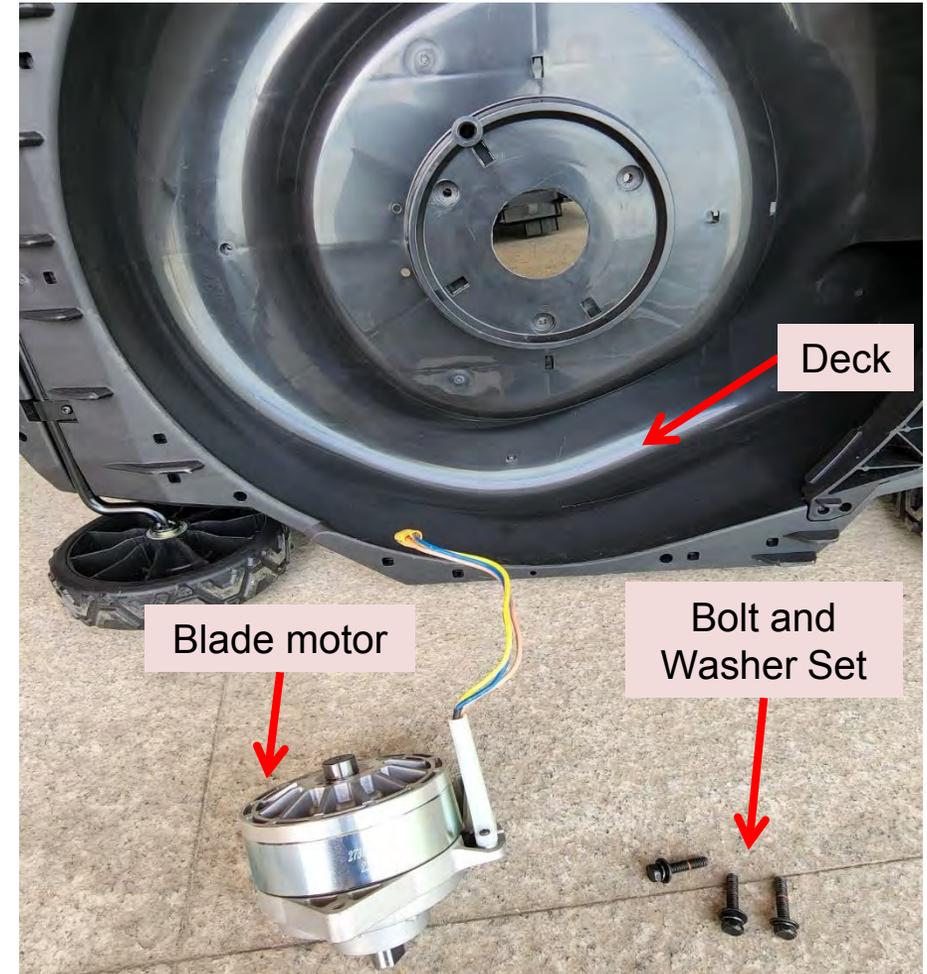
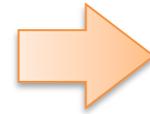


Motor Cover



DC Motor & Main PCBA Replacement

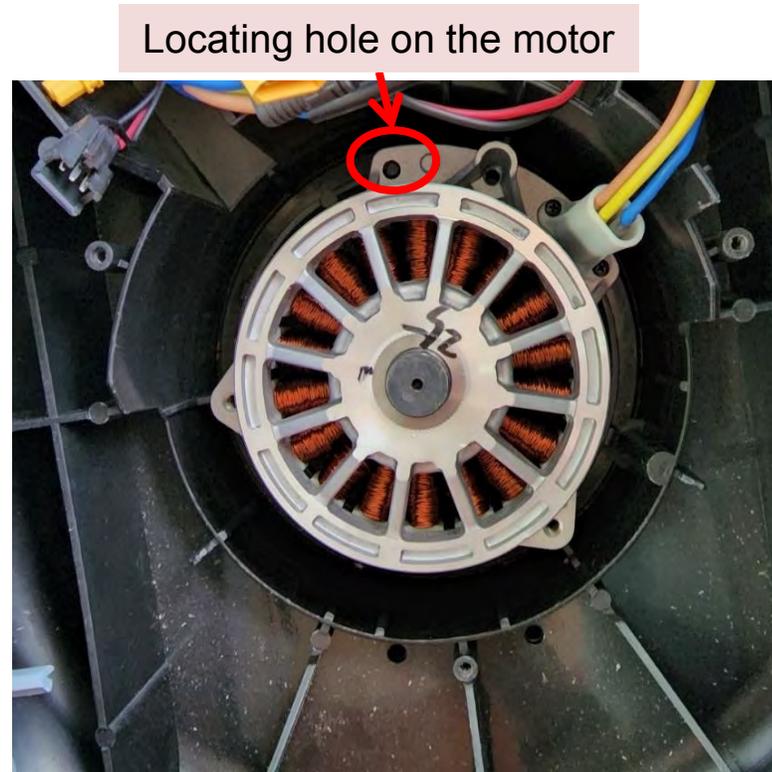
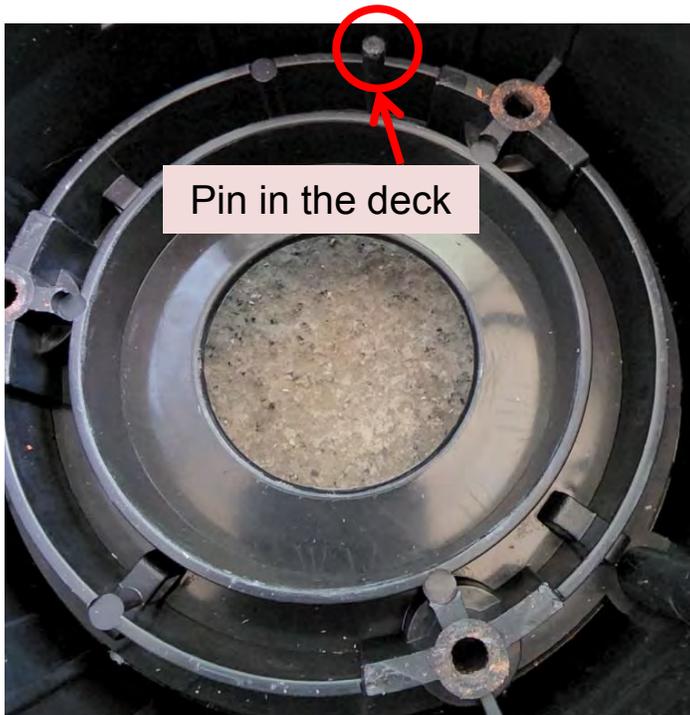
- Loosen the 3 hexagon head bolts with a 3/8" (S=10mm) socket wrench to remove DC motor from the deck.



WARNING: During this process, there is a risk of DC motor dropping. It should be supported by someone or something.

DC Motor & Main PCBA Replacement

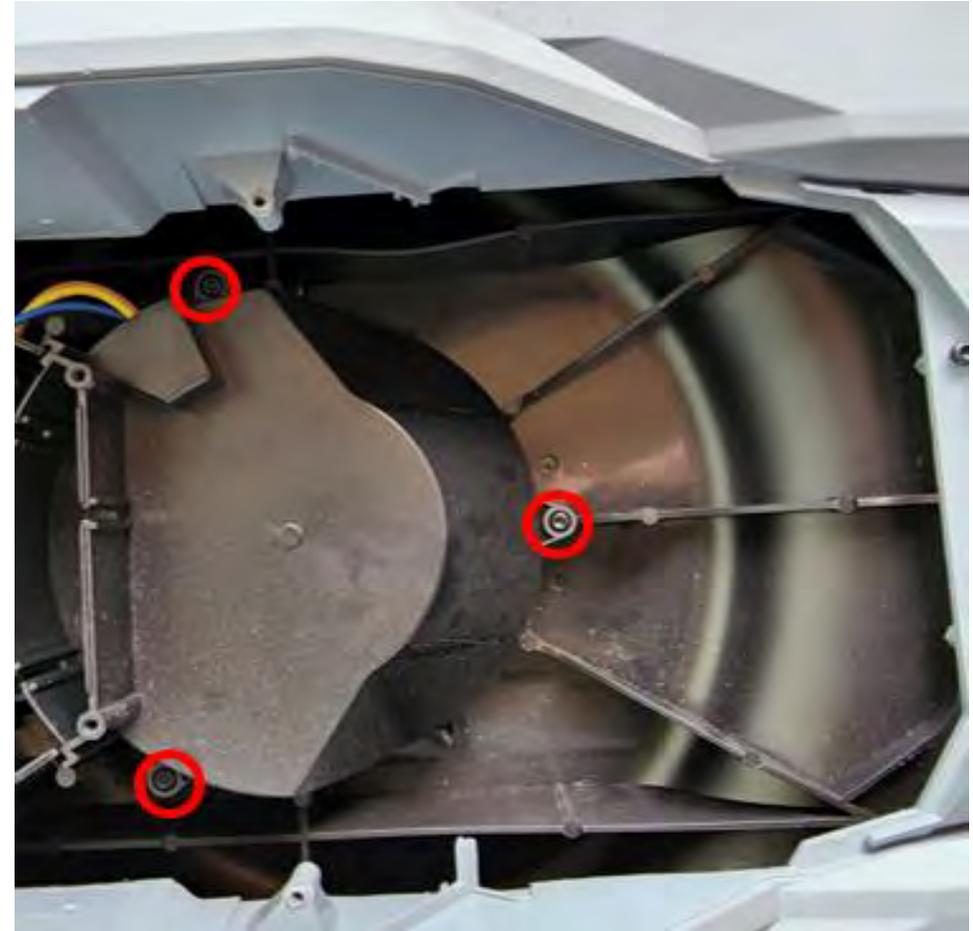
9. If the blade motor is broken, replace with a new one.
10. Align the locating hole on the motor with the locating pin in the deck to position the motor into place.
11. Turn the motor shaft upside to fix the motor onto the deck by tightening the 3 bolt and washer sets.



DC Motor & Main PCBA Replacement

12. Connect the blade motor plug and align the wires into the groove of the deck.

13. Mount the motor cover by tightening the 3 screws.



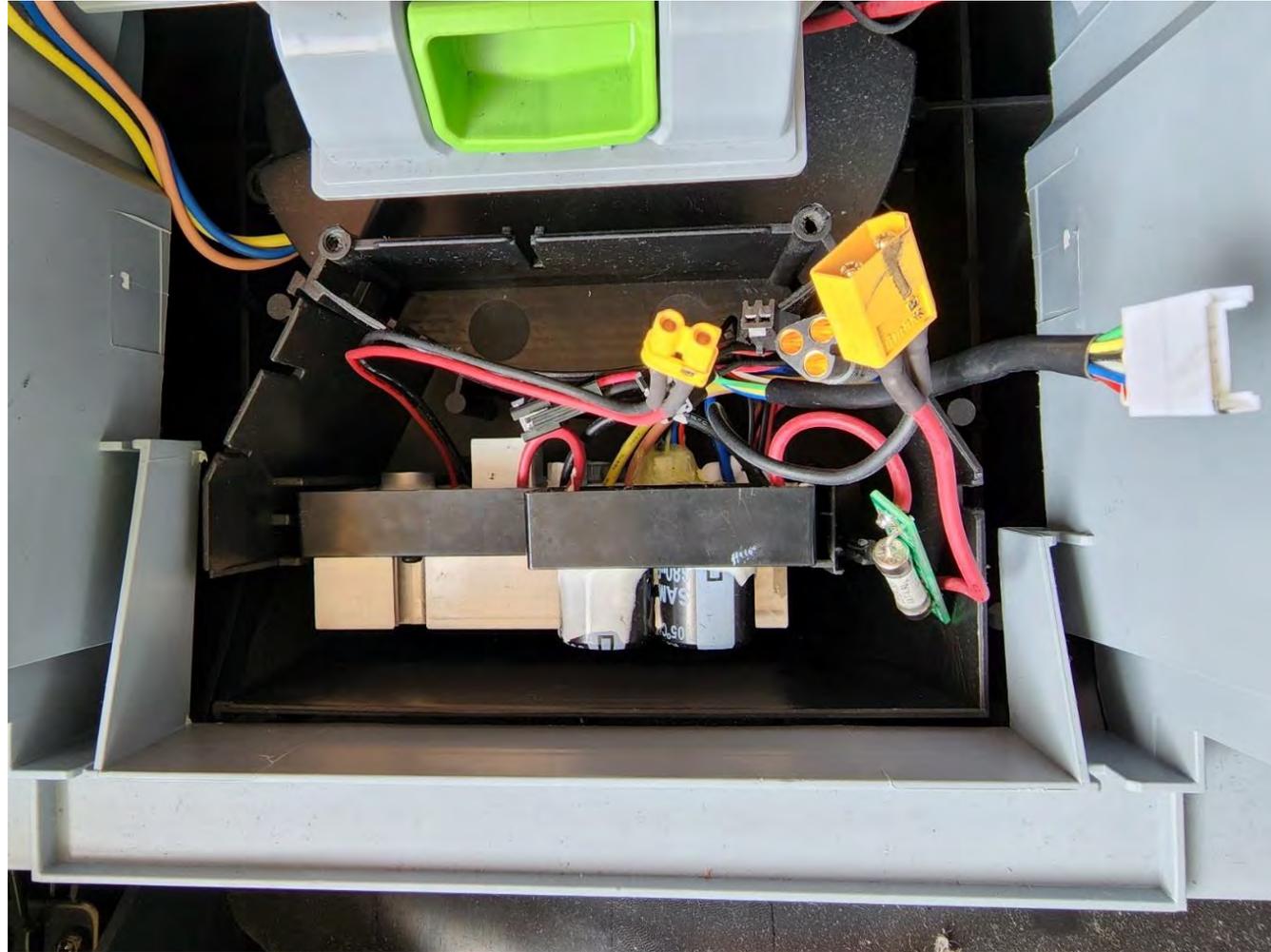
DC Motor & Main PCBA Replacement

14. Align the location notch on the front cover assembly with 2 screws on the top cover to position the battery box into place and then tighten the 2 screws with a torx screwdriver.
15. Mount the decorative cover onto the top cover by inserting the locating pin into the top cover hole. Tighten the screw (yellow circled) to fix the decorative cover onto the top cover



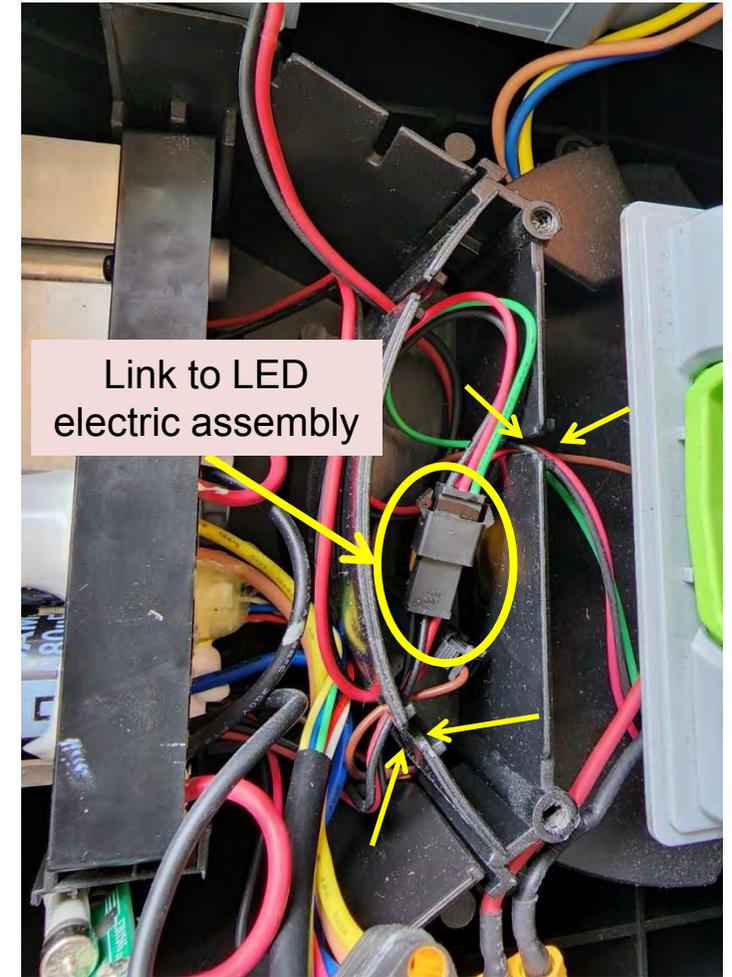
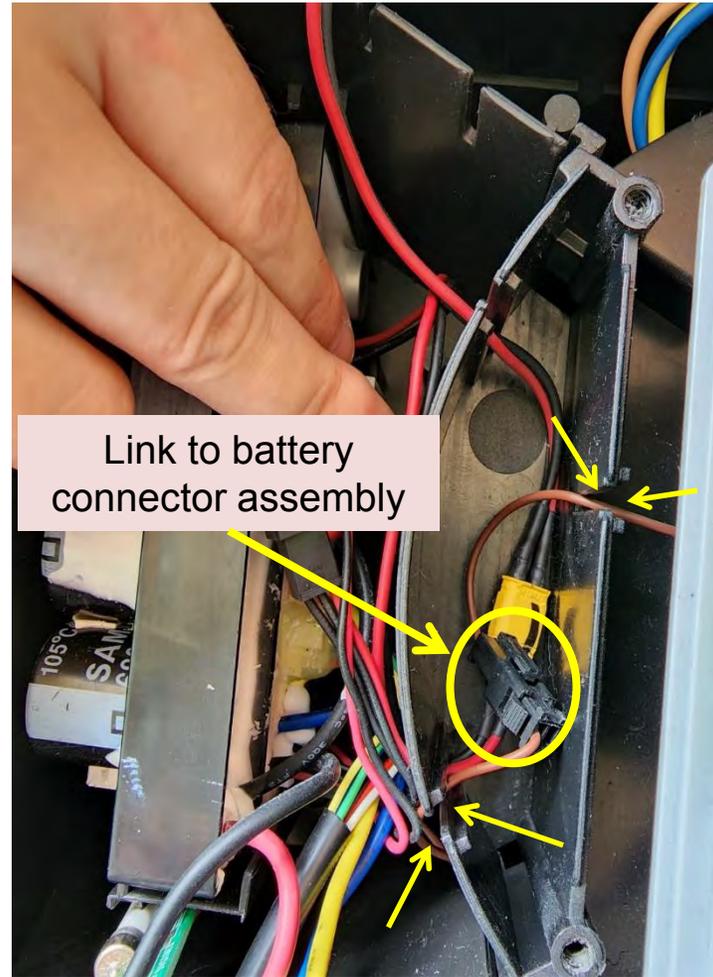
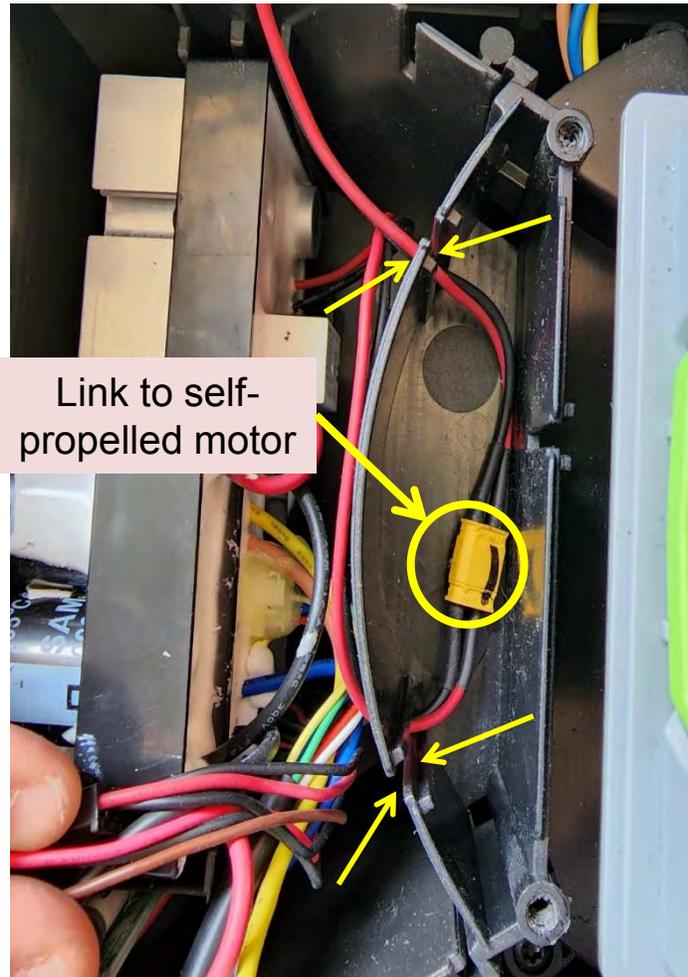
DC Motor & Main PCBA Replacement

16. Place the new PCBA in the right place in the motor cover as below shown.

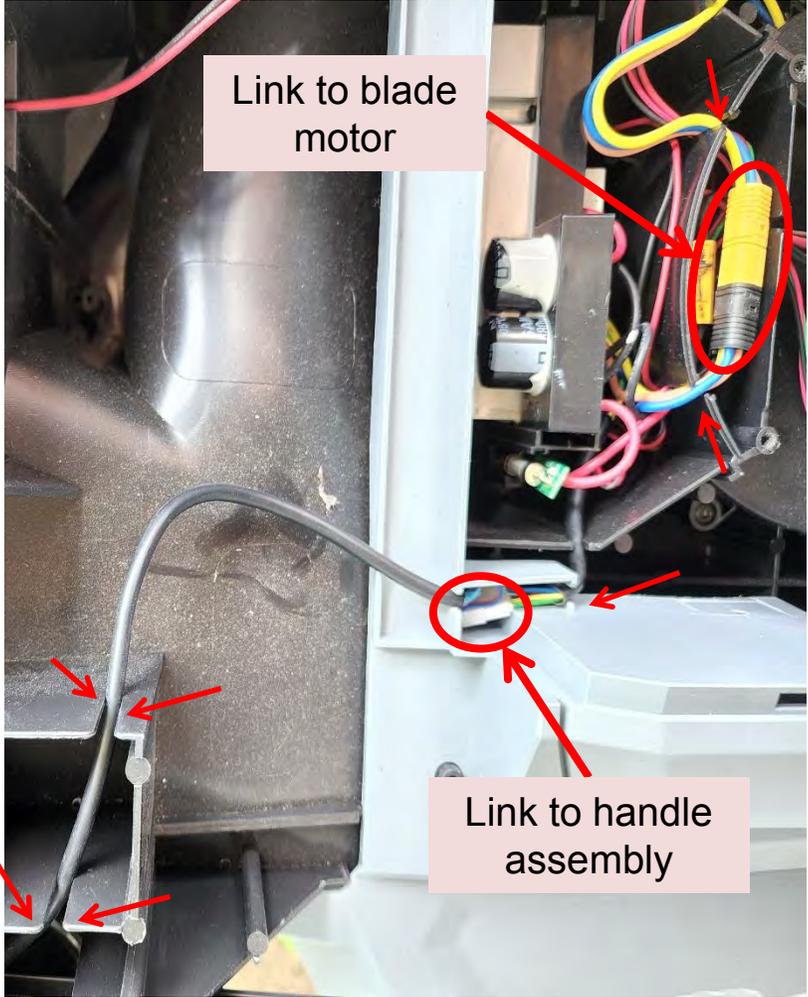
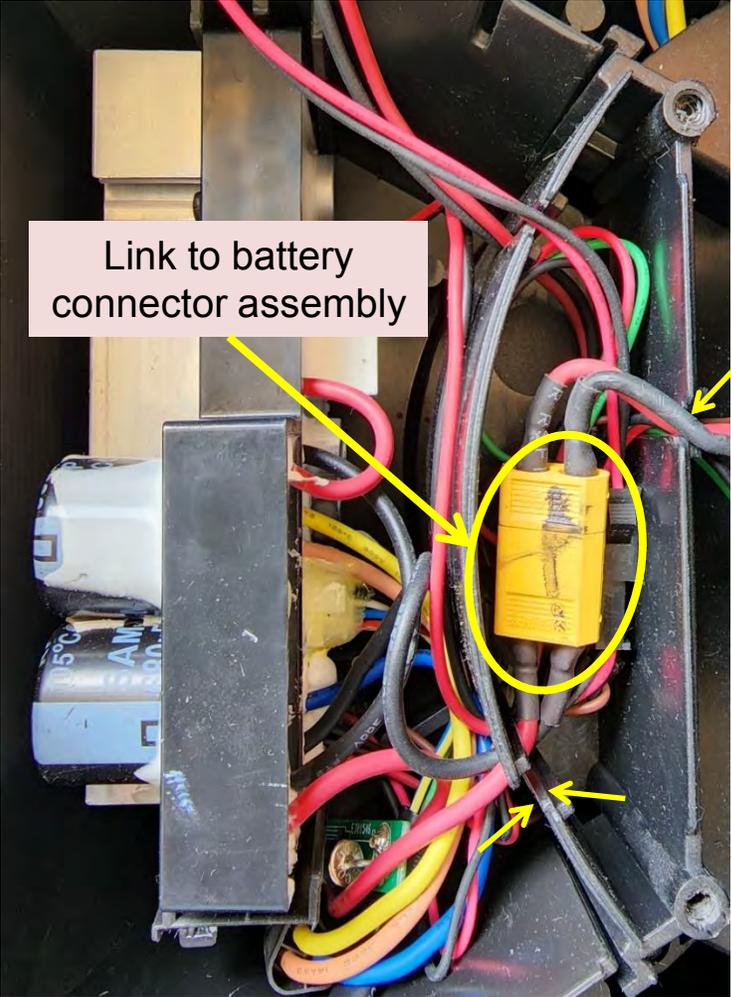
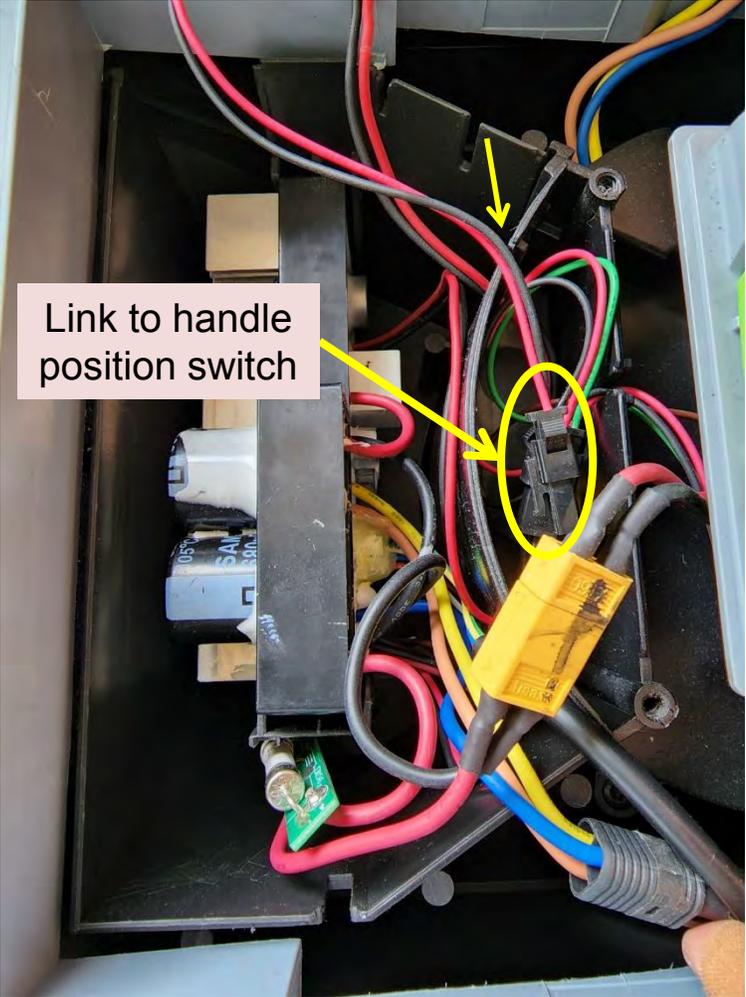


DC Motor & Main PCBA Replacement

17. Connect all the connectors and align the wires as shown below.

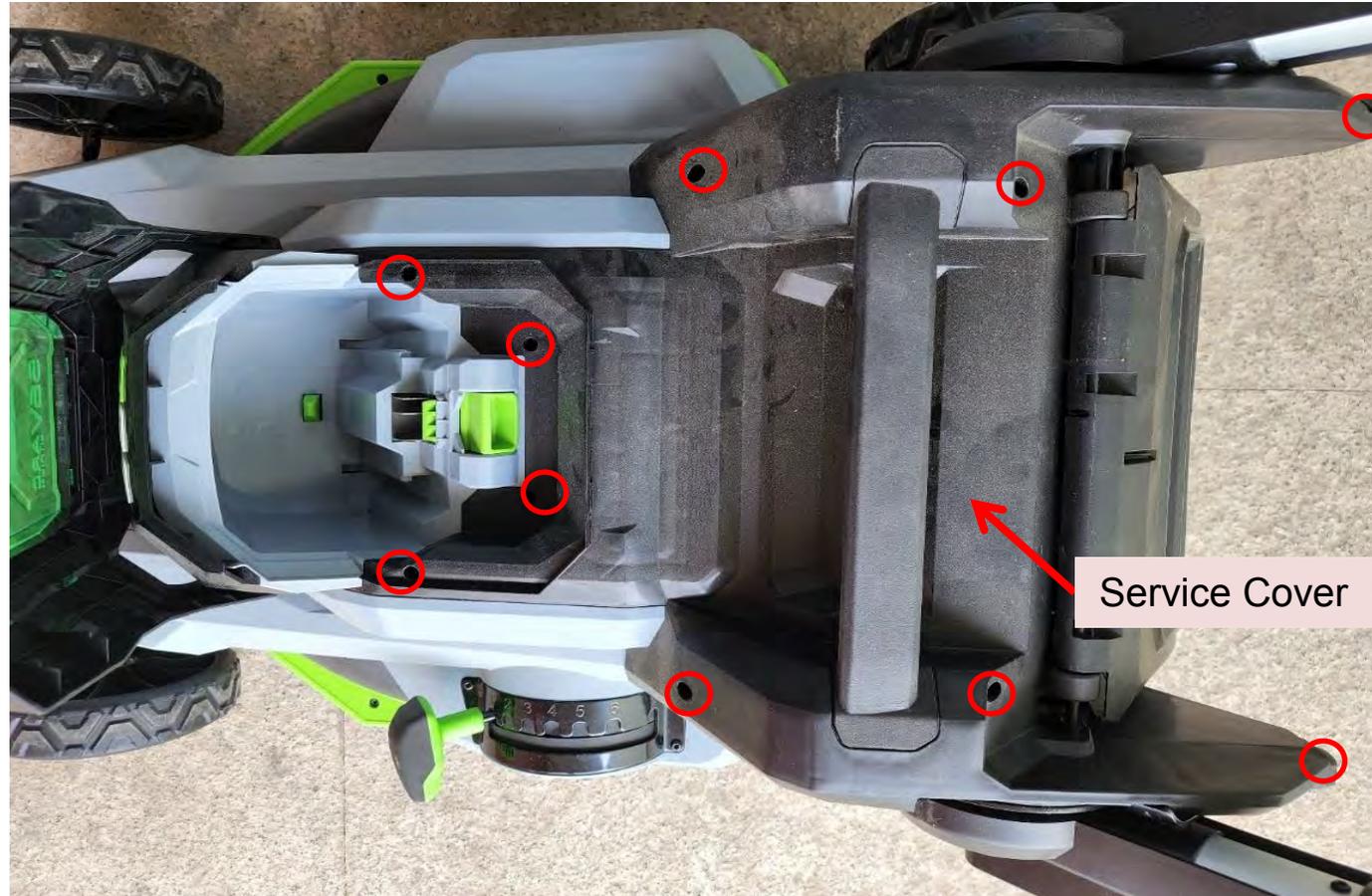


DC Motor & Main PCBA Replacement



DC Motor & Main PCBA Replacement

18. Close the service cover by tighten the 10 screws.



THE END

REPAIR GUIDELINE

PART 3: LED Electric Assembly Replacement_LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



Update Date: 2022/10/19

Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)
2	A slender rod

Note: Lawn mower LM2110, LM2110SP and LM2120SP share the same LED electric assembly.

LED Electric Assembly Replacement

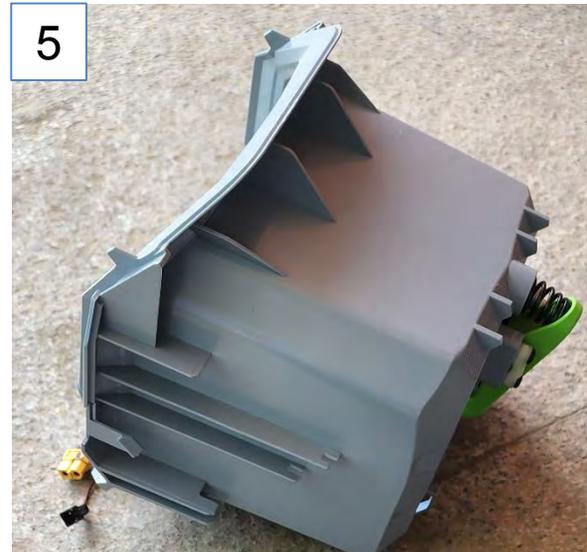
1. Remove the battery box from the mower as instructed in “**Part 2_DC Motor and PCBA Assembly Replacement**”.
2. Loosen the 2 screws (shown as Fig. 1&2) to remove the battery cover assembly from the battery box (Fig. 3).



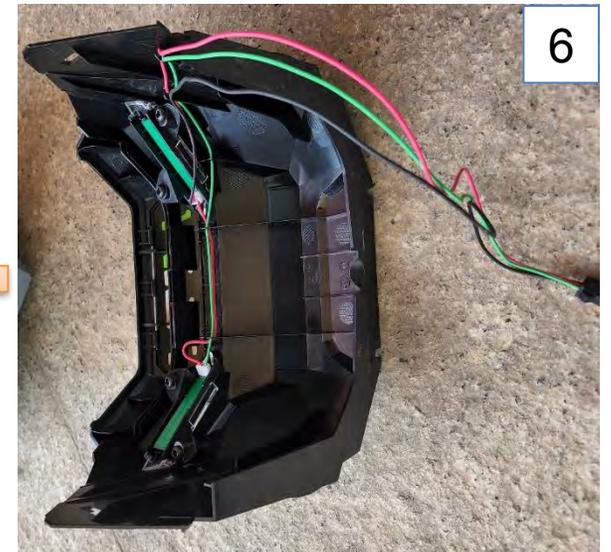
Battery cover assembly

LED Electric Assembly Replacement

3. Use a slender rod to separate the battery box assembly from the front box assembly (Fig.5 & 6).



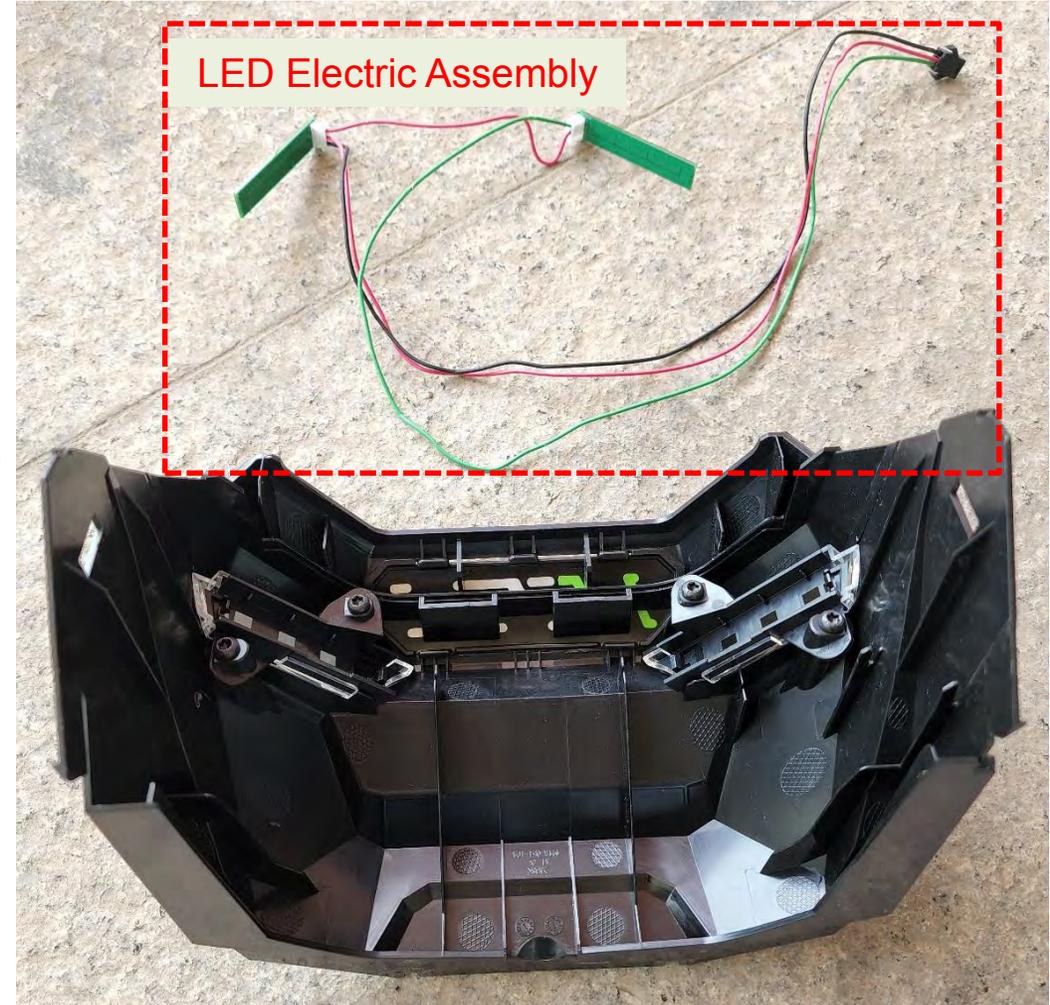
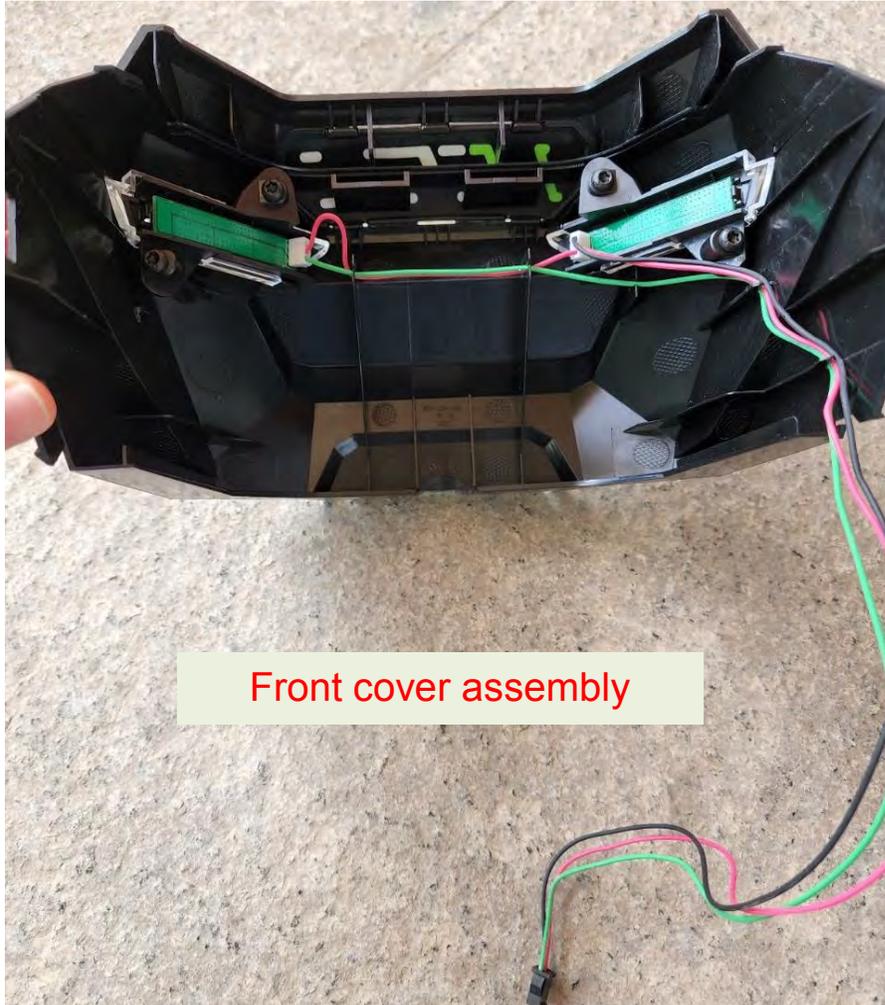
Battery box assembly



Front cover assembly

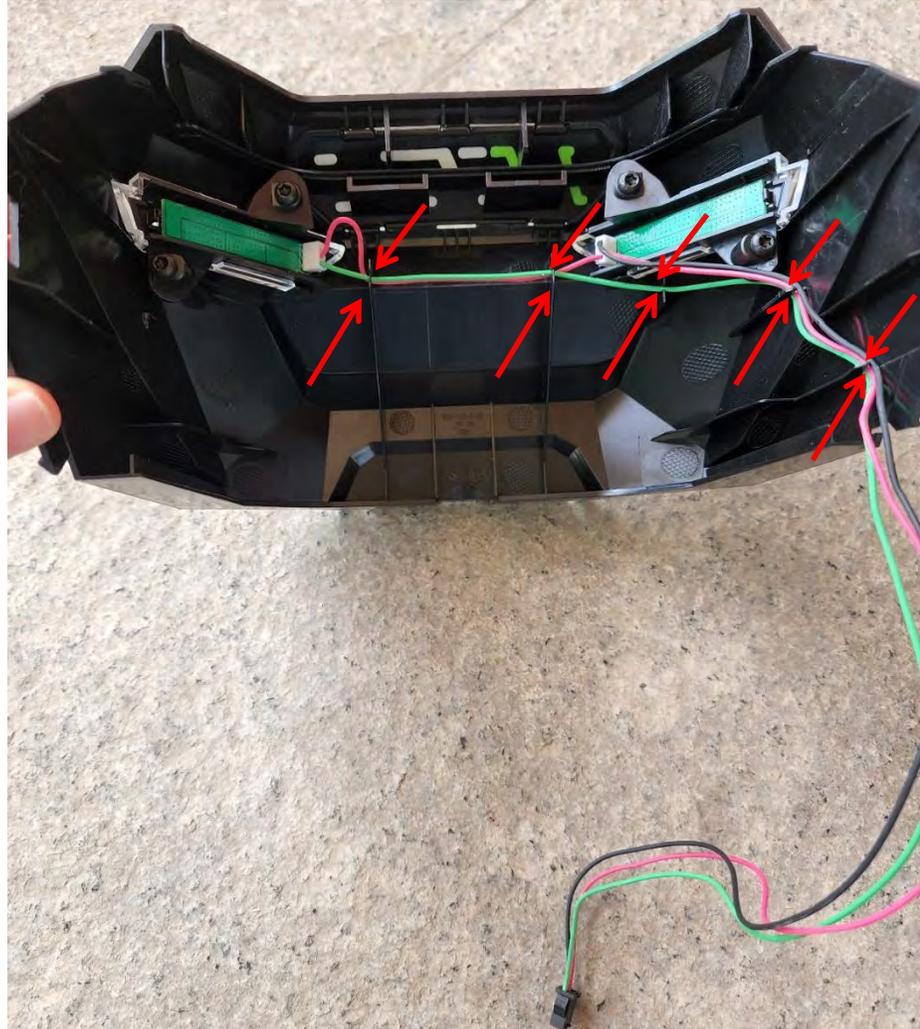
LED Electric Assembly Replacement

4. Remove the LED electric assembly from the front cover assembly and have it replaced.



LED Electric Assembly Replacement

5. Align the wires of the new LED electric assembly into the front cover assembly.



LED Electric Assembly Replacement

6. Mount the front cover assembly onto the battery box assembly.



Battery box assembly



Front cover assembly



LED Electric Assembly Replacement

7. Mount the battery cover assembly onto the battery box assembly and tighten it by 2 screws.

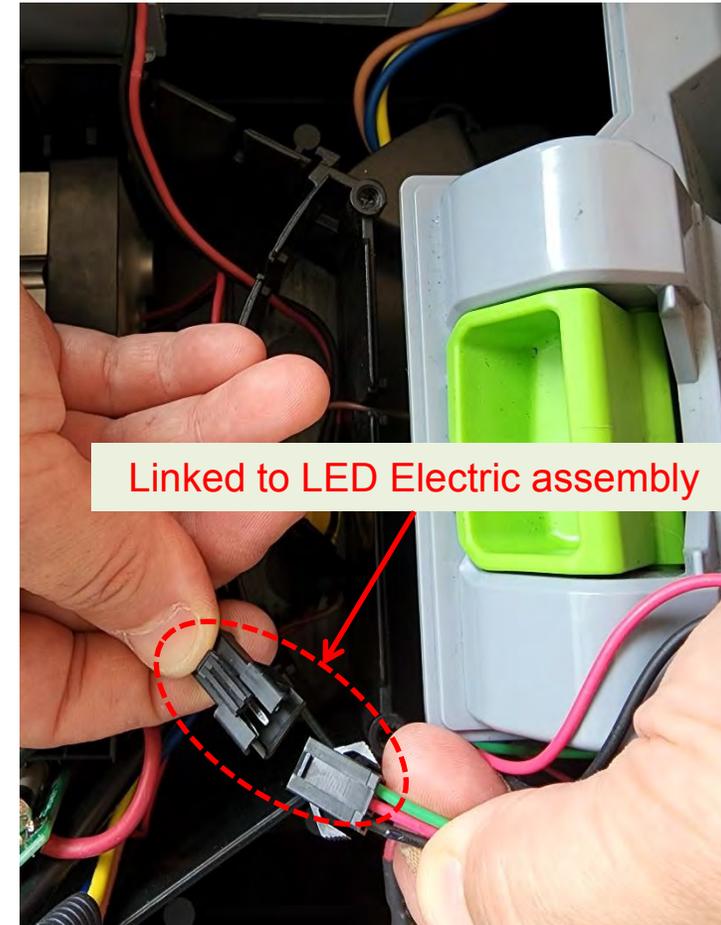
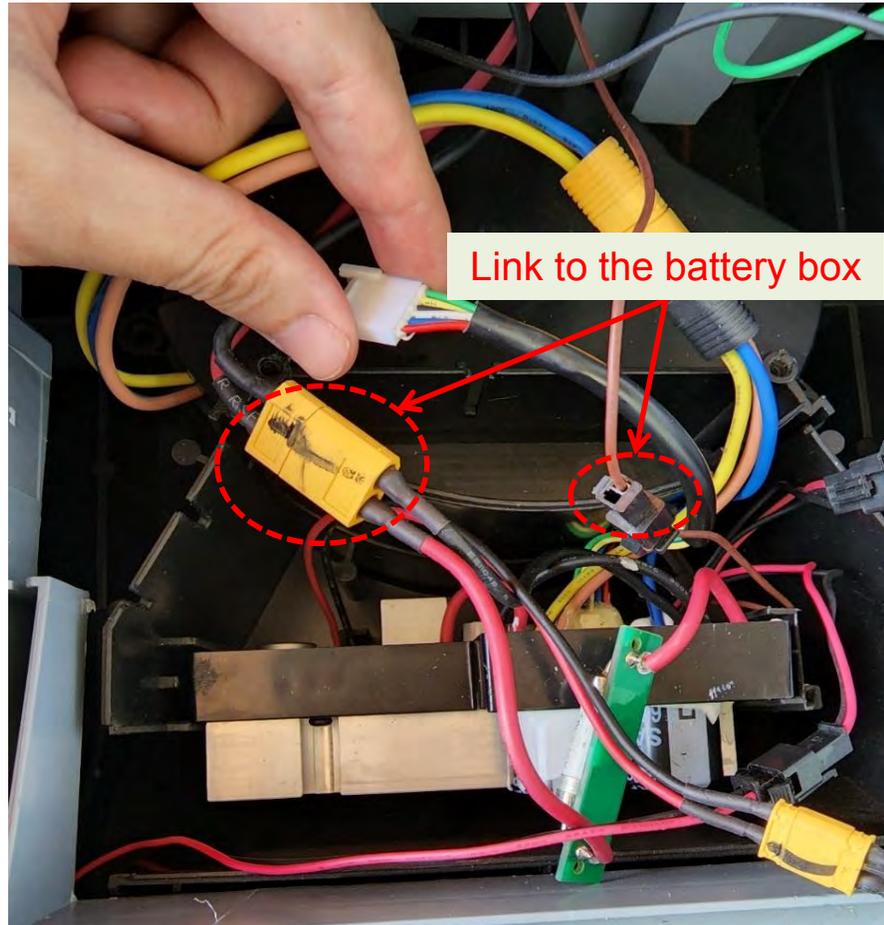


Battery cover assembly



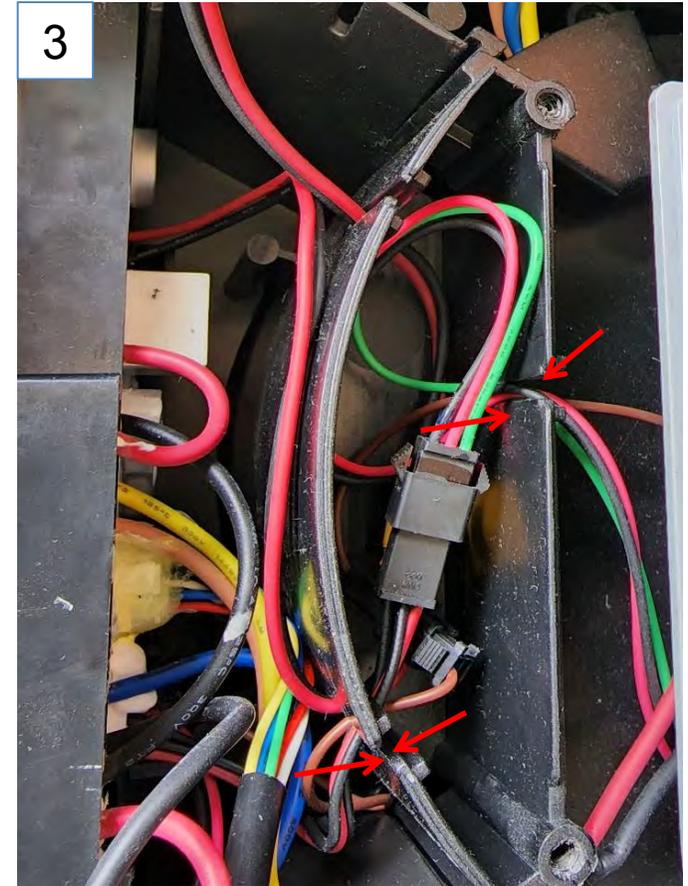
LED Electric Assembly Replacement

8. Mount the battery box onto the mower as instructed in "***Part 2_Main Motor and PCBA Replacement***".
9. Connect the bigger yellow connector and the smaller black connector with brown wire linked to the main PCBA.
10. Connect the LED electric assembly connector linked to main PCBA.

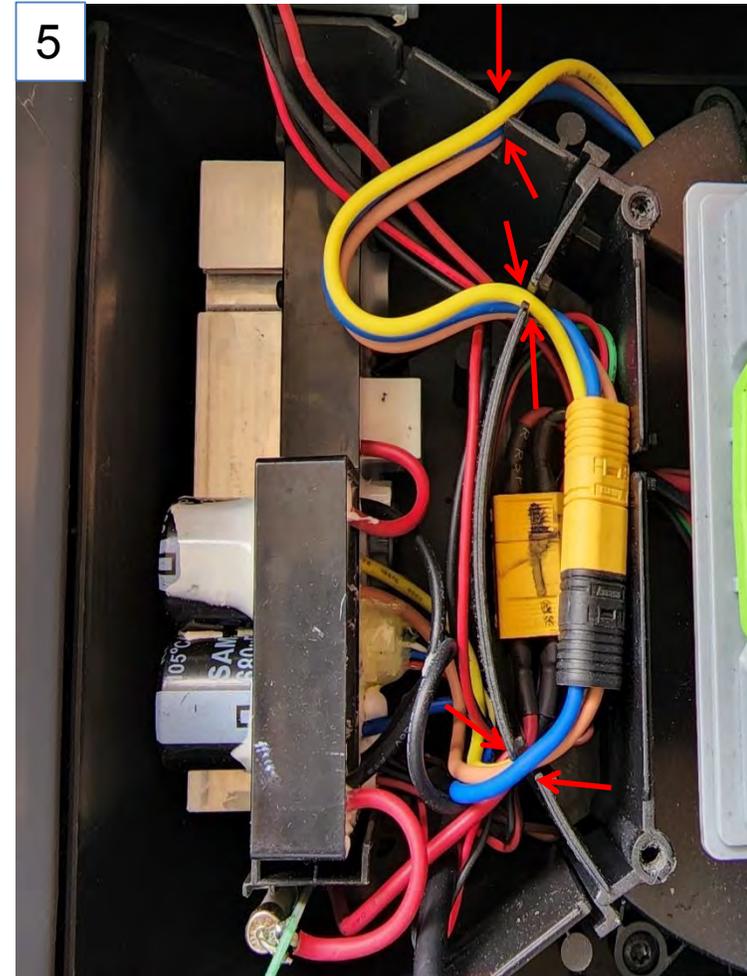
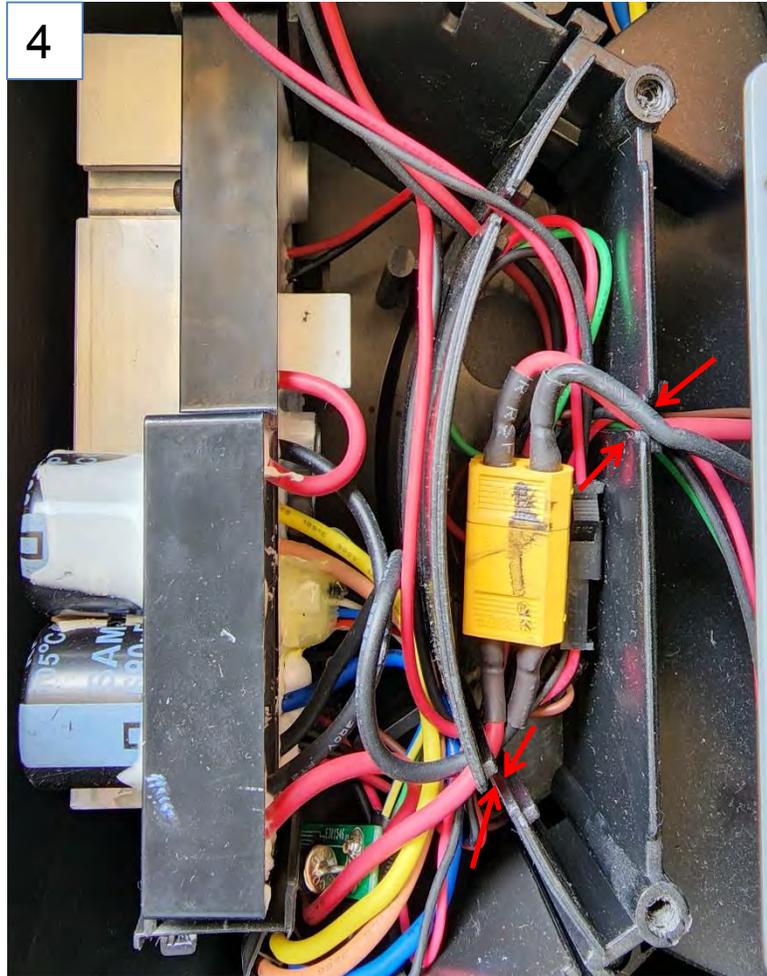


LED Electric Assembly Replacement

11. Align all the wires as below Fig.1-5 shown.

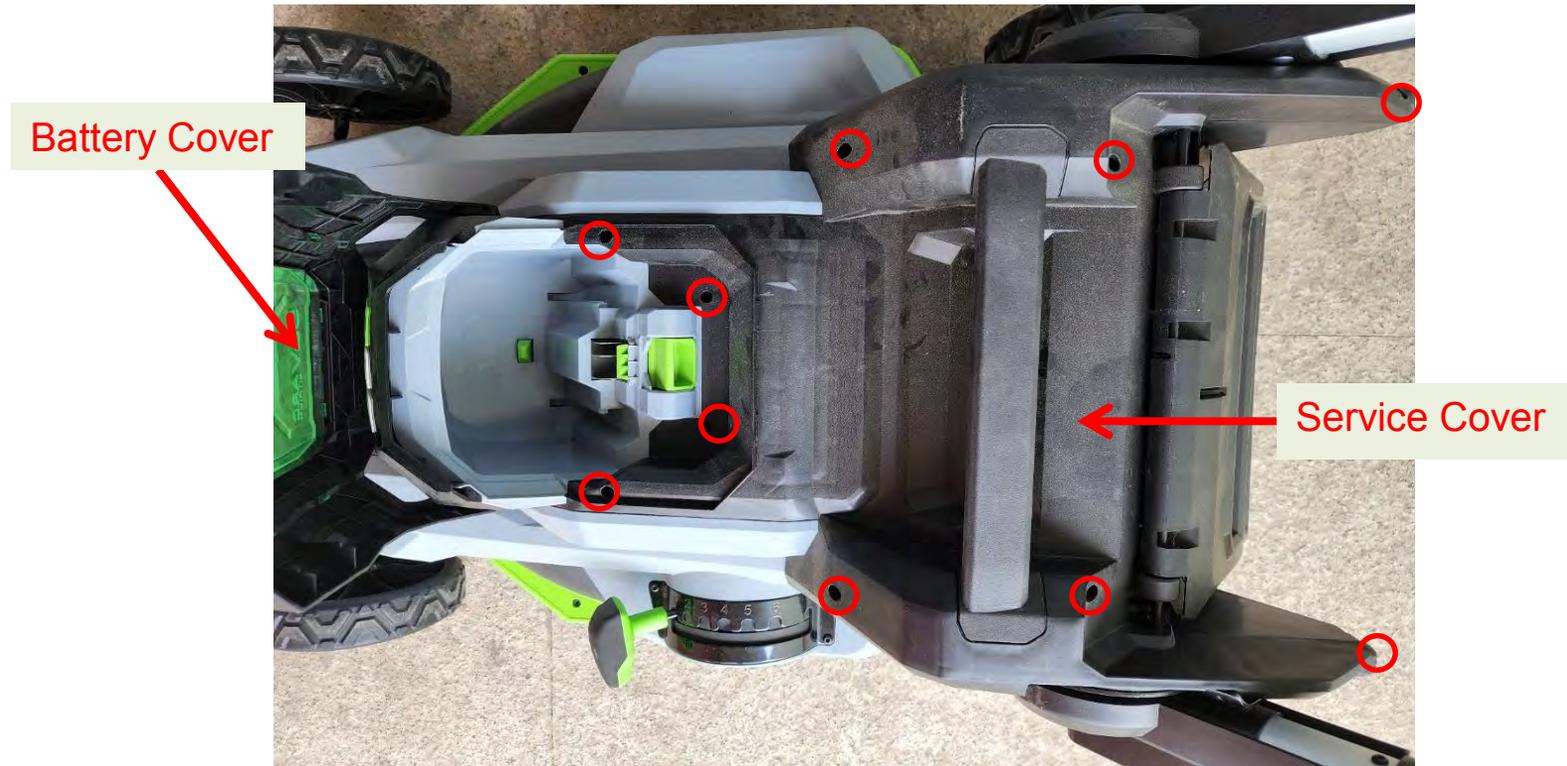


LED Electric Assembly Replacement



LED Electric Assembly Replacement

12. Close the service cover by tighten the 10 screws.



THE END

REPAIR GUIDELINE

PART 4: Handle Position Switch Replacement_LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



Update Date: 2022/10/19

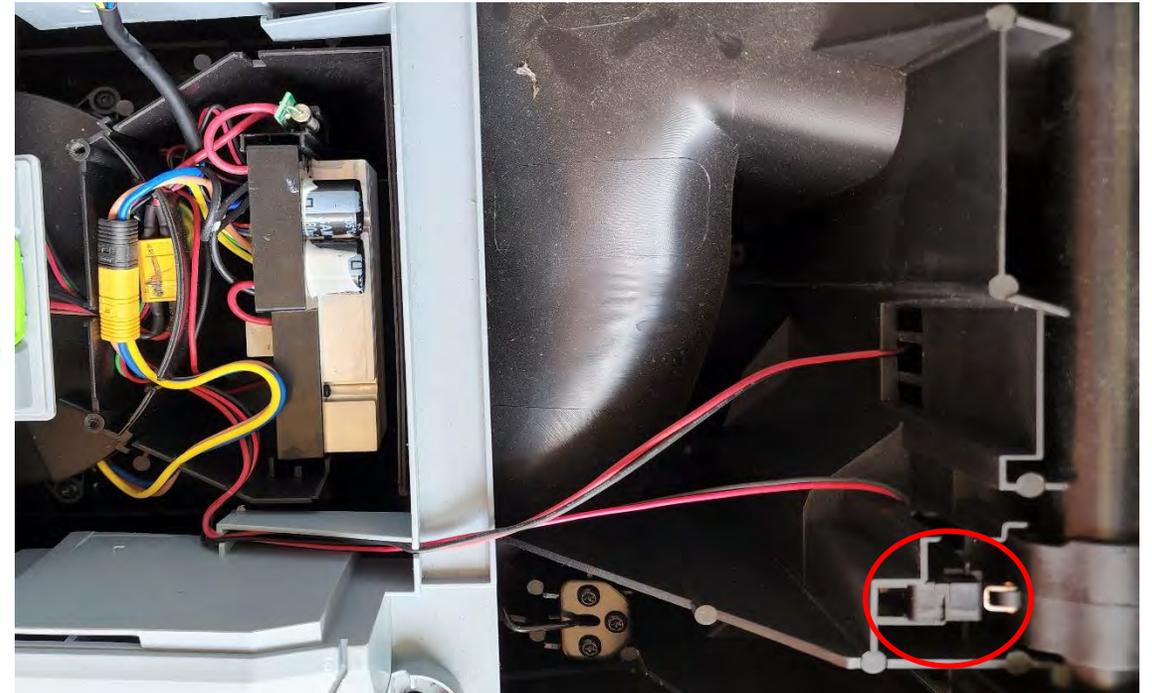
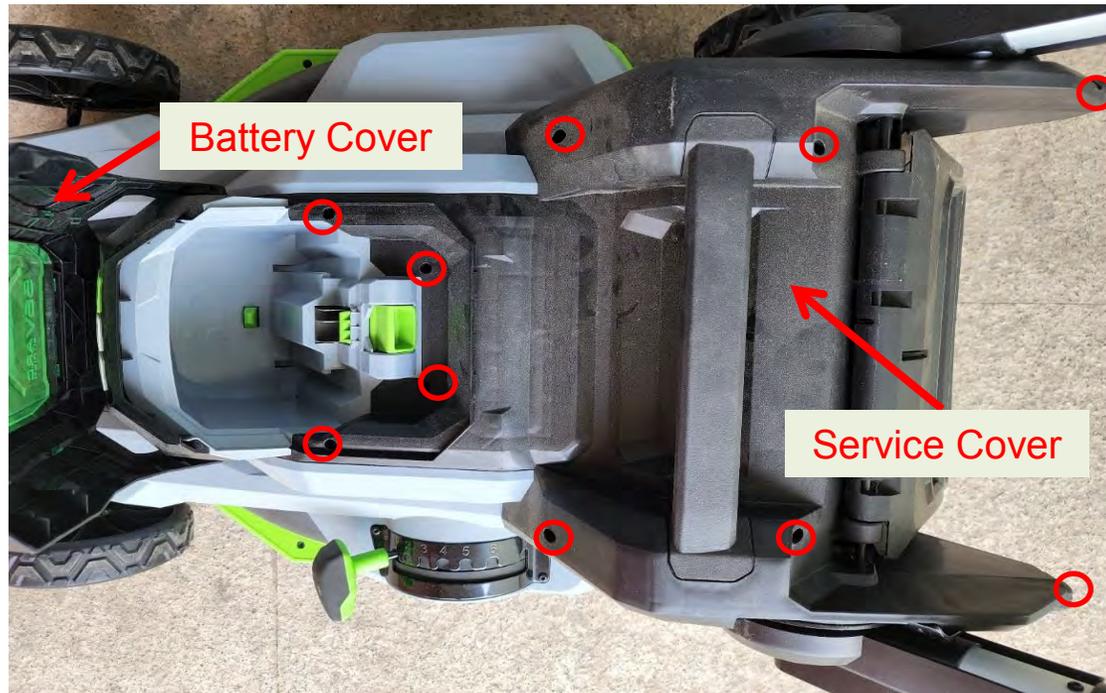
Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)
2	Multimeter

Note: Lawn mower LM2110, LM2110SP and LM2120SP share the same handle position switch.

Handle Position Switch Replacement

1. Open the battery cover and loosen the 10 screws on the service cover to expose the handle position switch with its wire which is linked with the main PCBA.

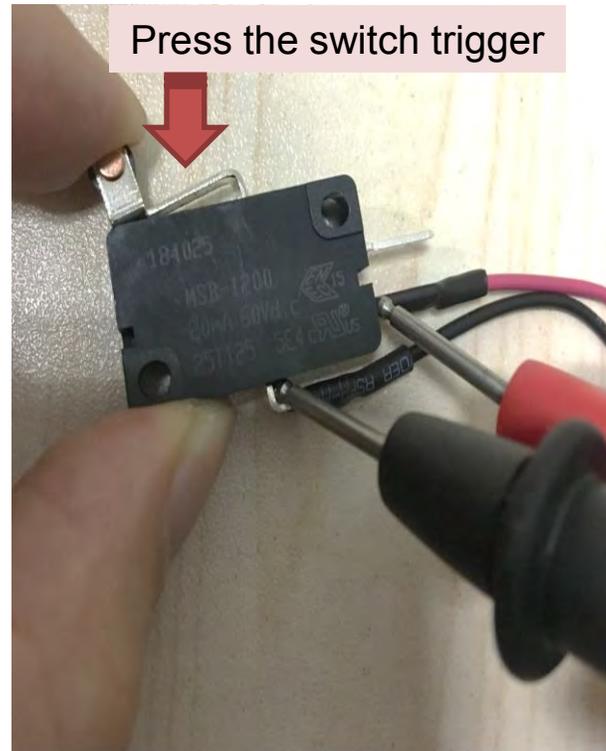


Handle Position Switch Replacement

2. Measure the handle position switch using a Multimeter as below shown.

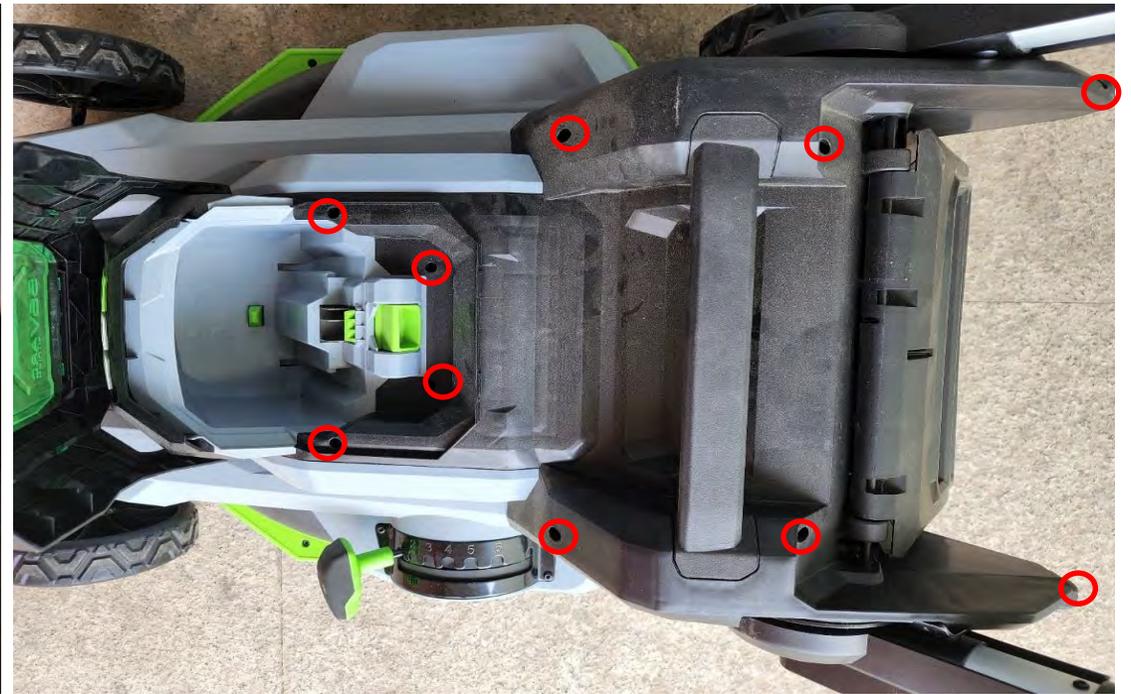
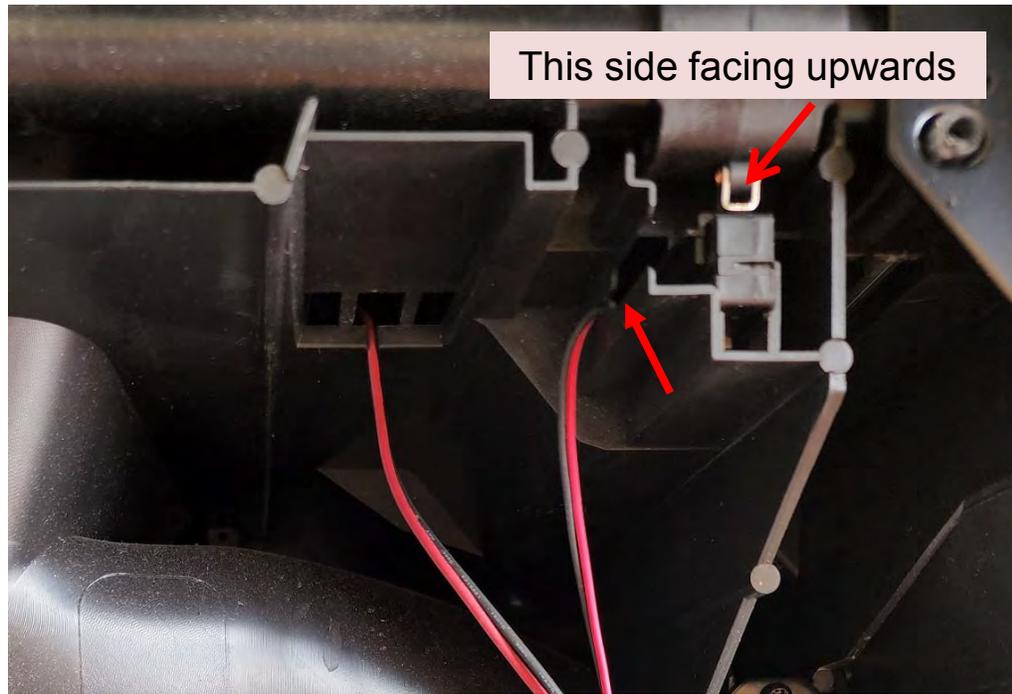
① Set the Multimeter function to “Resistance measuring”.

② With the handle position switch trigger pressed, contact the black pen pin and red pen pin to the two wire terminals. **If the measurement is infinite, it means the handle position switch is in open circuit. Replace with a new one. If it displays as picture shown, the switch is OK.**



Handle Position Switch Replacement

3. Replace a new handle position switch into the mower housing and align the wire into the groove correctly.
4. Fold and open the handle to start the mower test whether the handle position switch is replaced correctly. Otherwise reassemble it.
5. Close the service cover by tighten the 10 screws.



THE END

Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)

Switch Box Parts Replacement

1. Remove the 4 long hexagon socket screw from the Handle Assembly. Each bolt has a corresponding hex nut.

NOTICE: Remove the handle assembly as instructed in “**Part 9 Handle Lever Replacement**” first. It is easier to perform the repair.



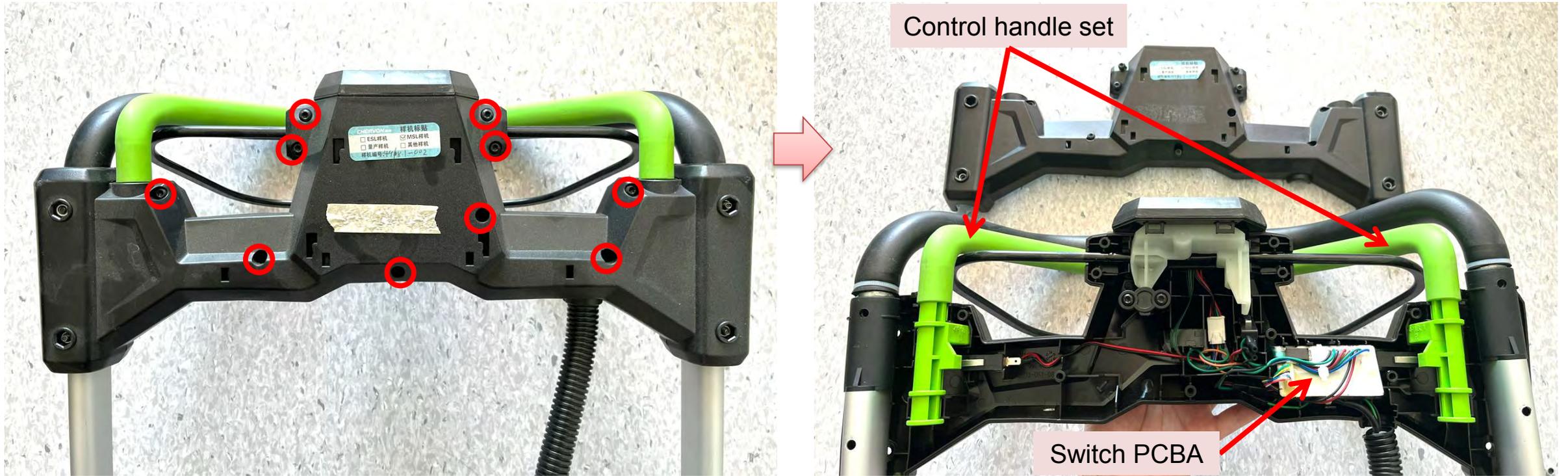
Screw & Hex Nut

Switch Box Parts Replacement

2. Flip the handle assembly to remove the 10 screws on the switch box bottom housing.

NOTICE: During this process, hold the switch box top housing with one hand to prevent dropping.

3. Open the switch box gently.



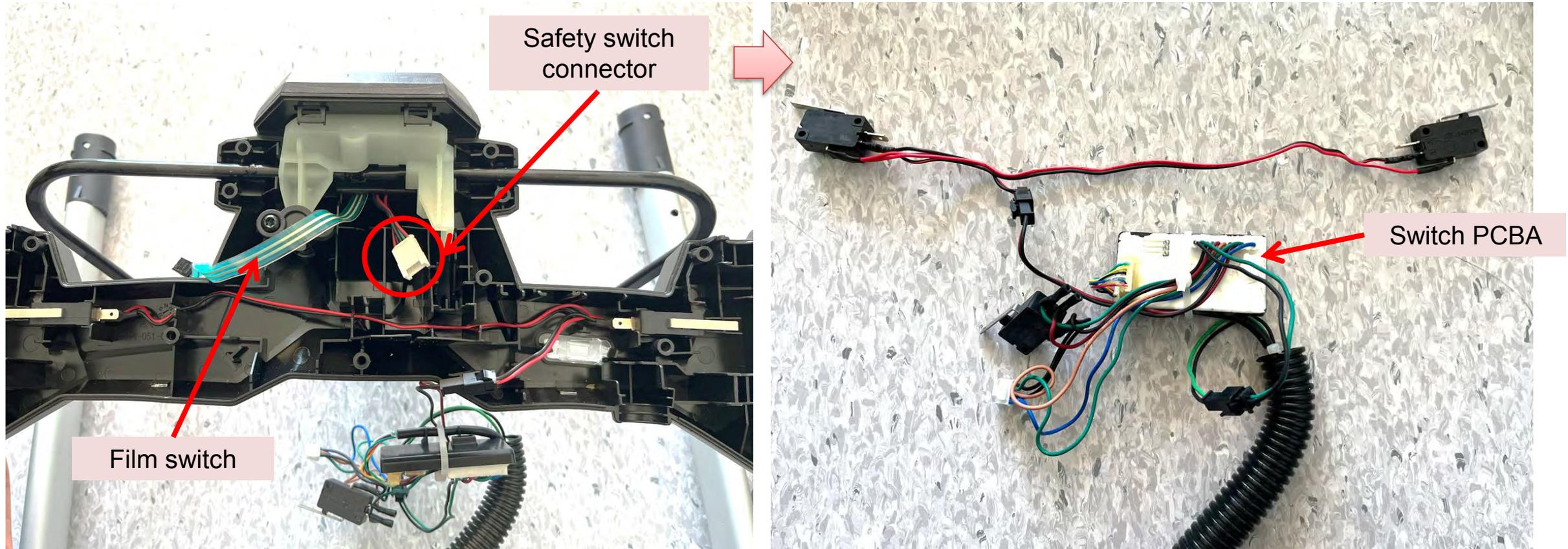
Switch Box Parts Replacement

4. Take off the sheath assembly and the control handle set. Replace any worn parts.



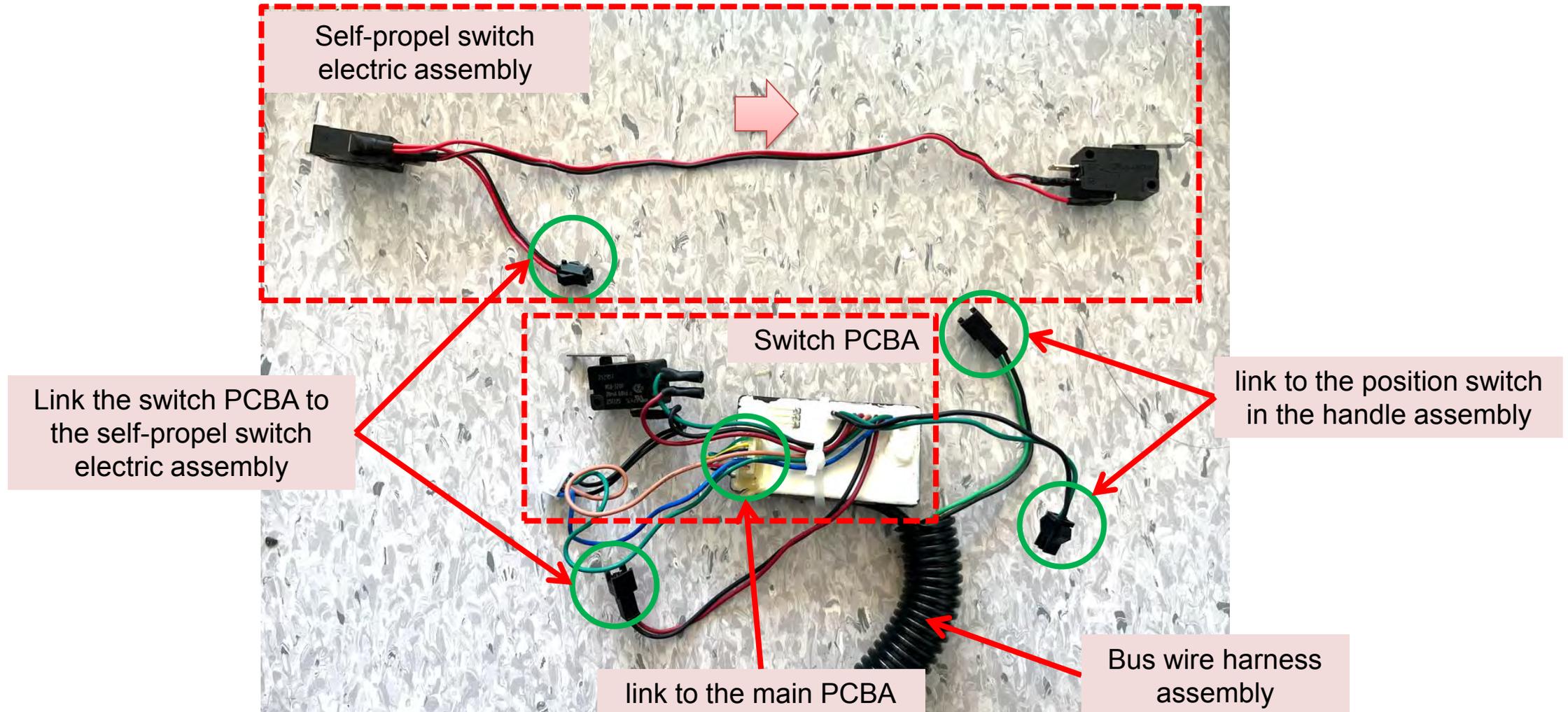
Switch Box Parts Replacement

5. Disconnect the film switch connector and the safety switch connector. Then take off the switch PCBA.



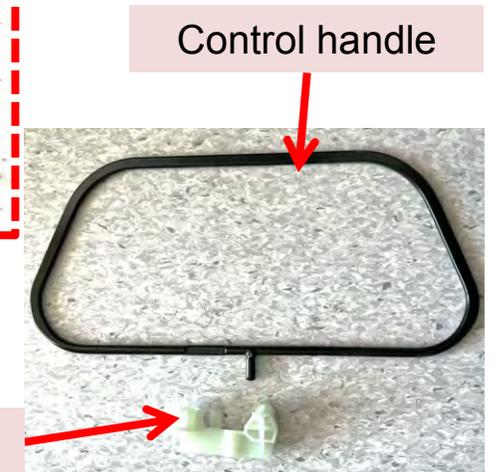
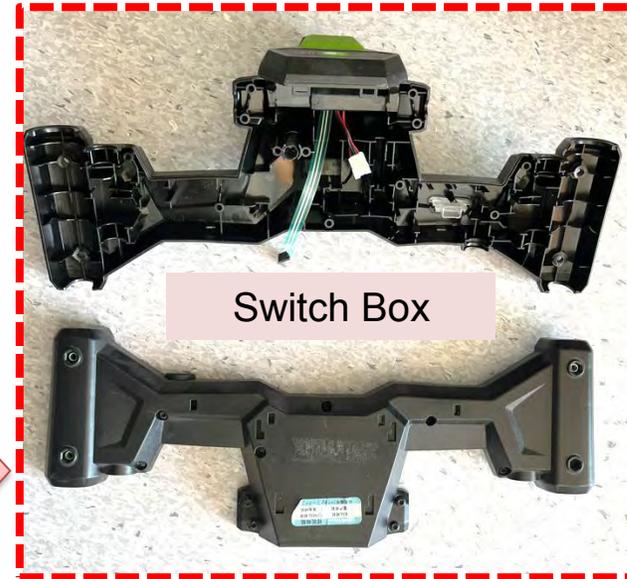
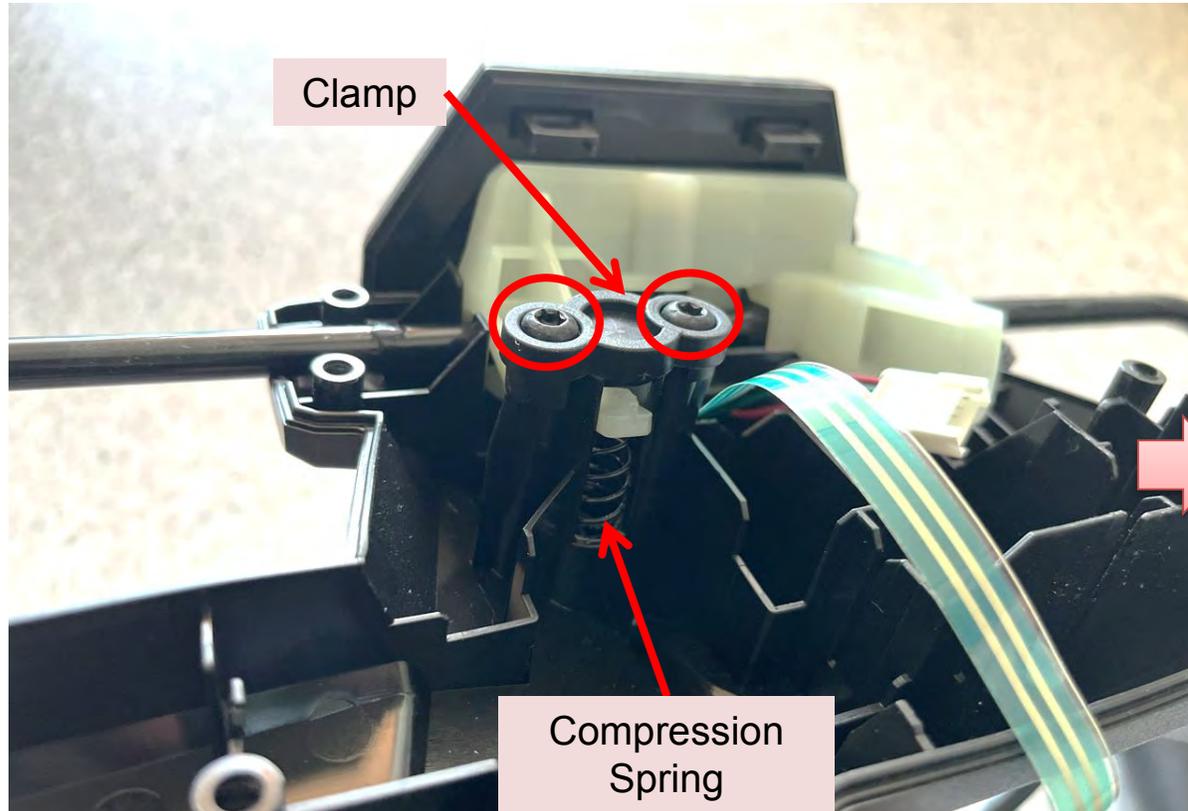
Switch Box Parts Replacement

6. Disconnect the connectors (circled in green). Replace any defective parts.



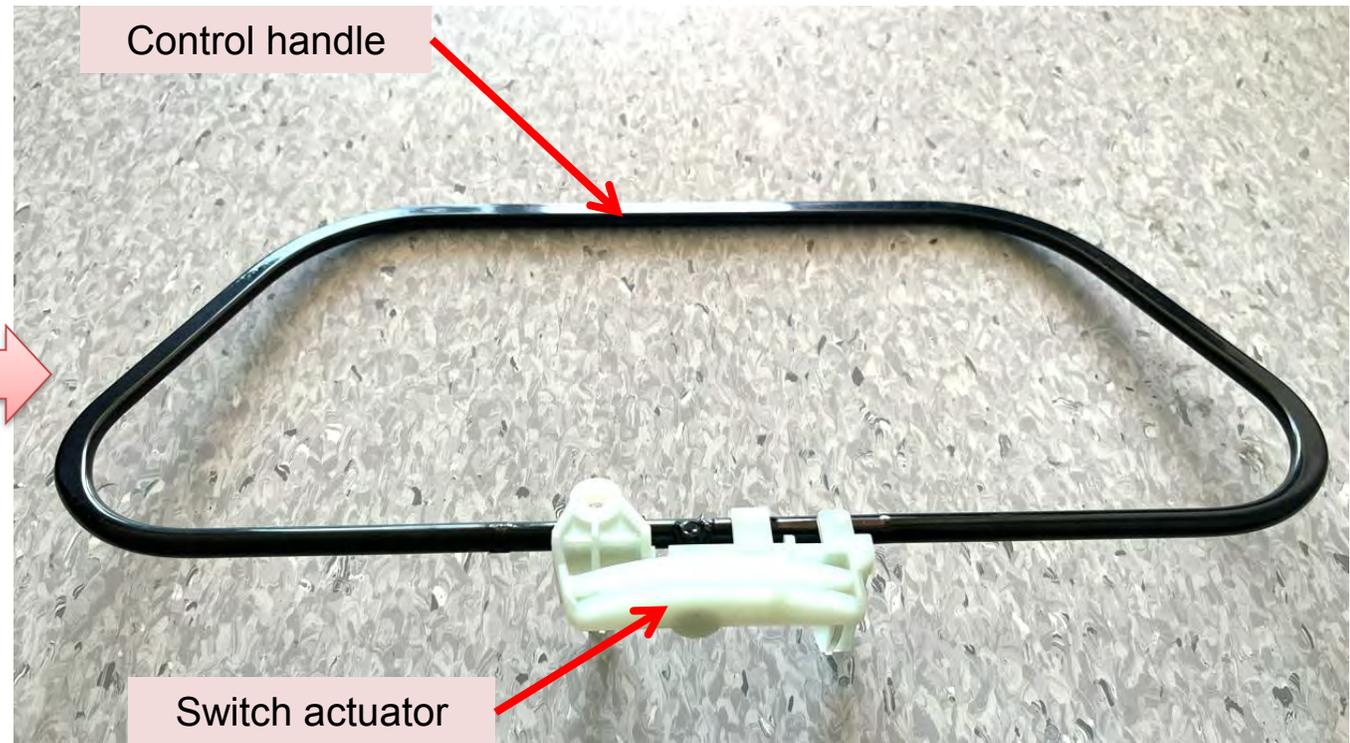
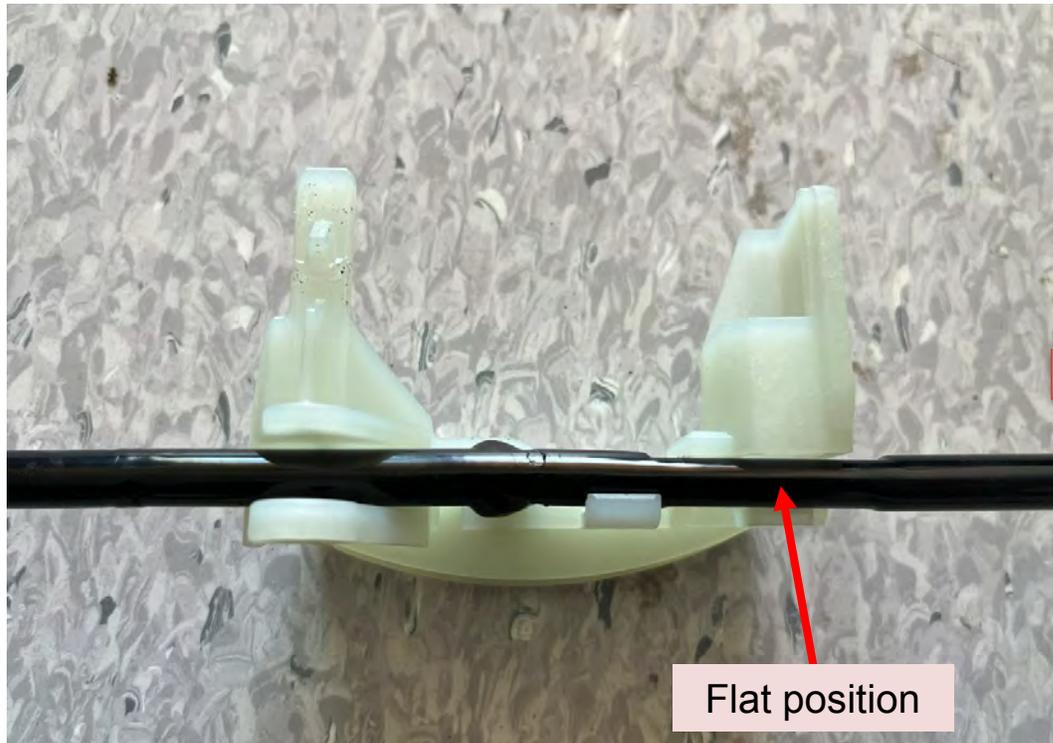
Switch Box Parts Replacement

7. Loosen the 2 screws to release the switch actuator and the control handle from the switch box. Replace any worn parts.



Switch Box Parts Replacement

8. Assemble the switch actuator with the control handle as below.



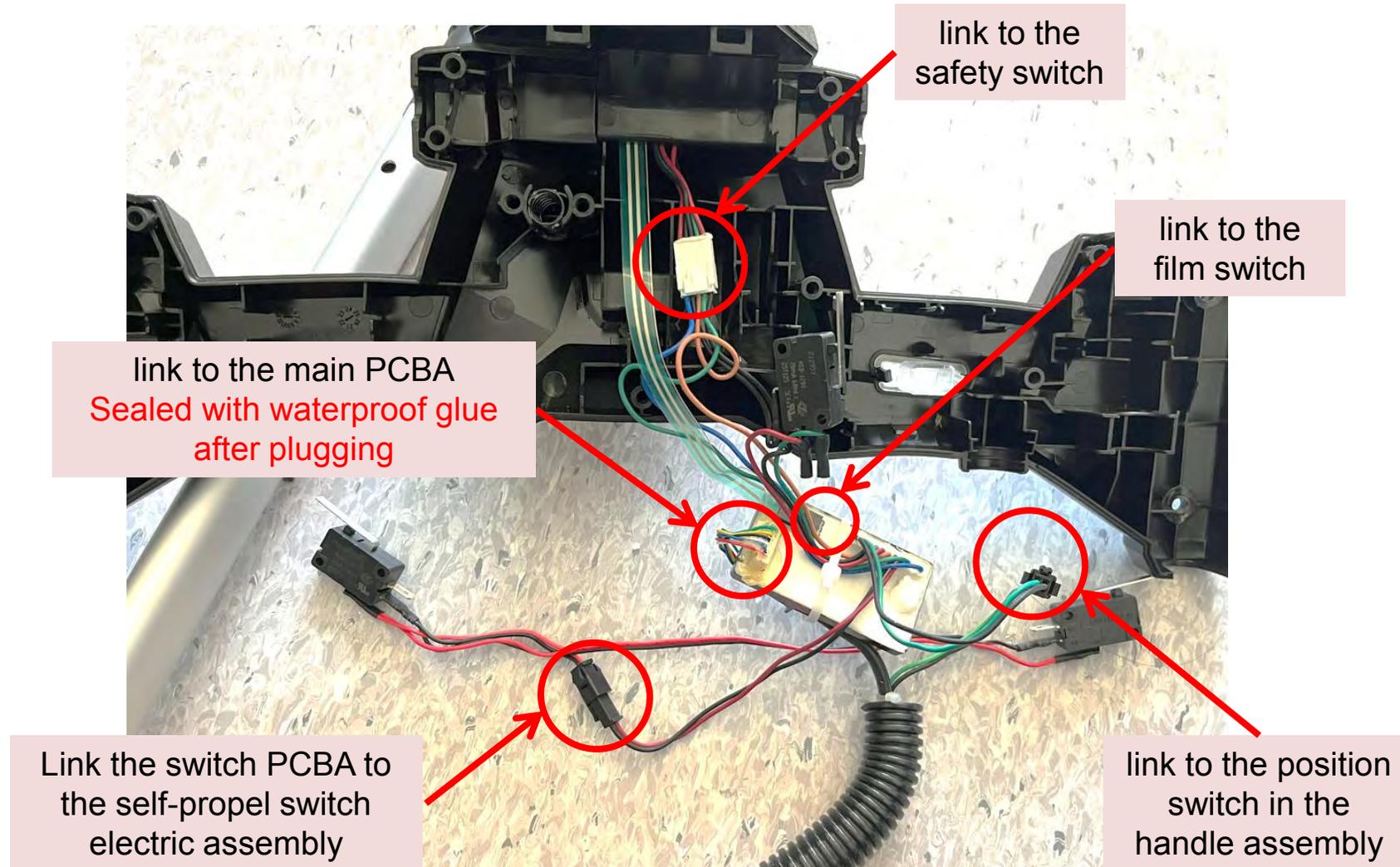
Switch Box Parts Replacement

9. Mount the switch actuator onto the spring with the hook inside the spring.
10. Align the clamp slot with the locating rib on the housing.
11. Lock the control handle set by tightening the clamp with the 2 screws.



Switch Box Parts Replacement

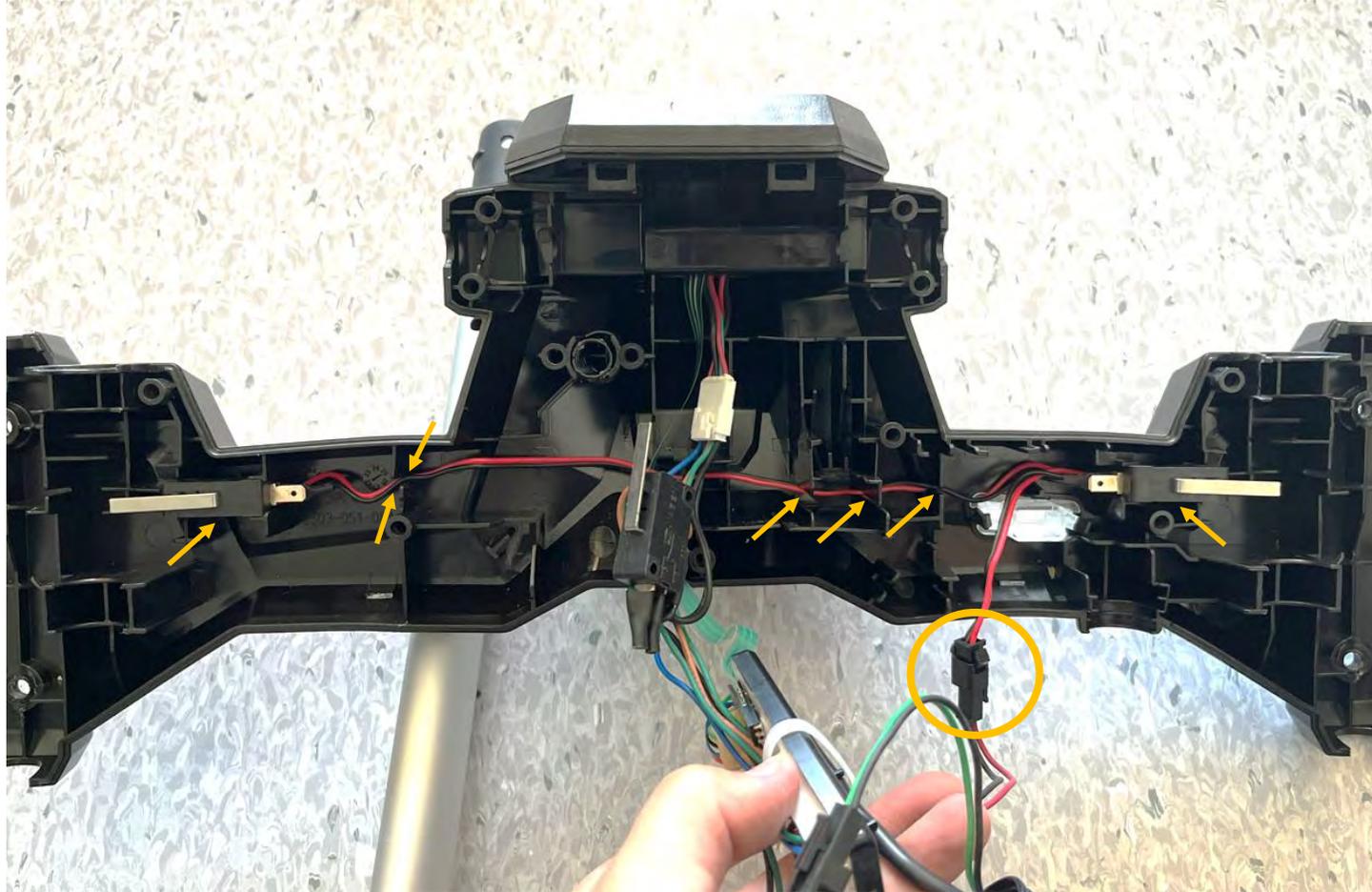
12. Reconnect the connectors as circled red below.



Switch Box Parts Replacement

13. Align the self-propel switches and wire into the groove as below instructed (yellow line).

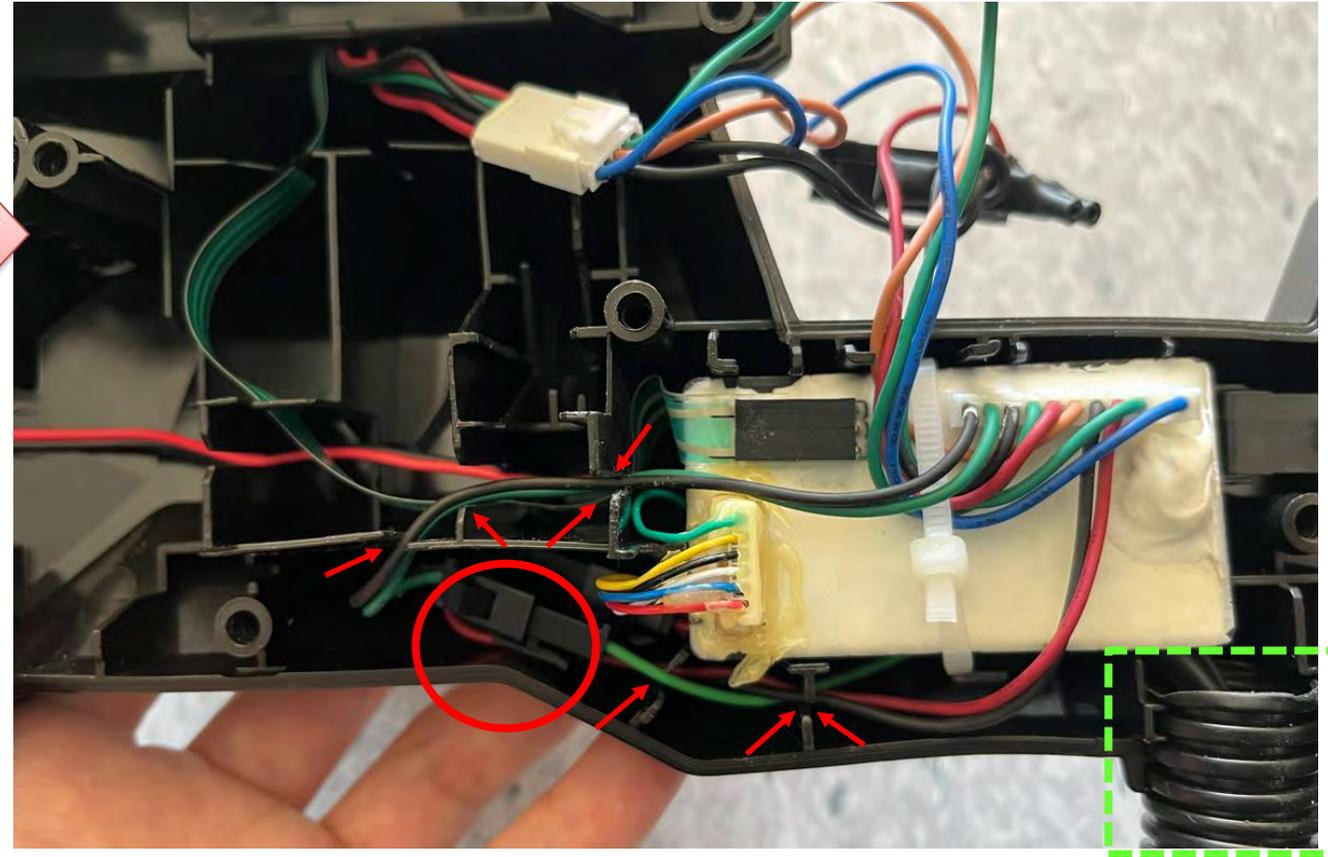
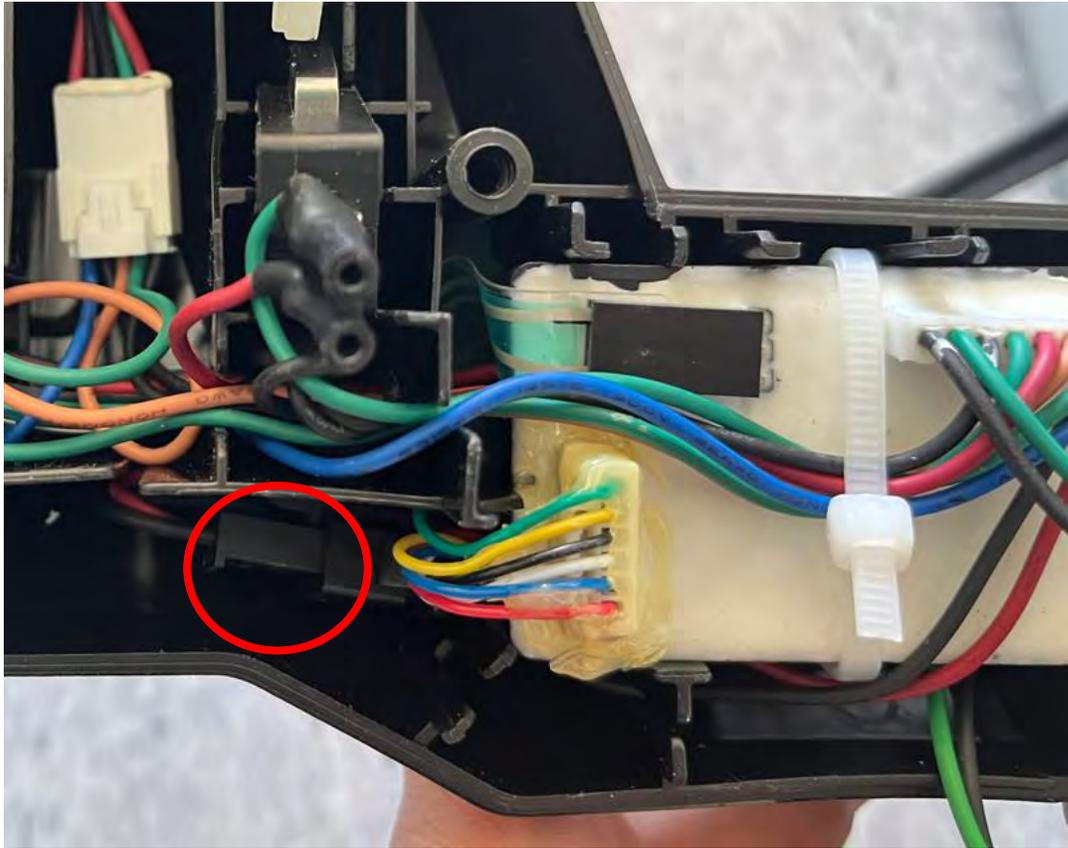
NOTICE: The connector should be on the right as shown below:



Switch Box Parts Replacement

14. Position the switch PCBA into the switch box housing. Securely locate the flexible hose into the housing groove.

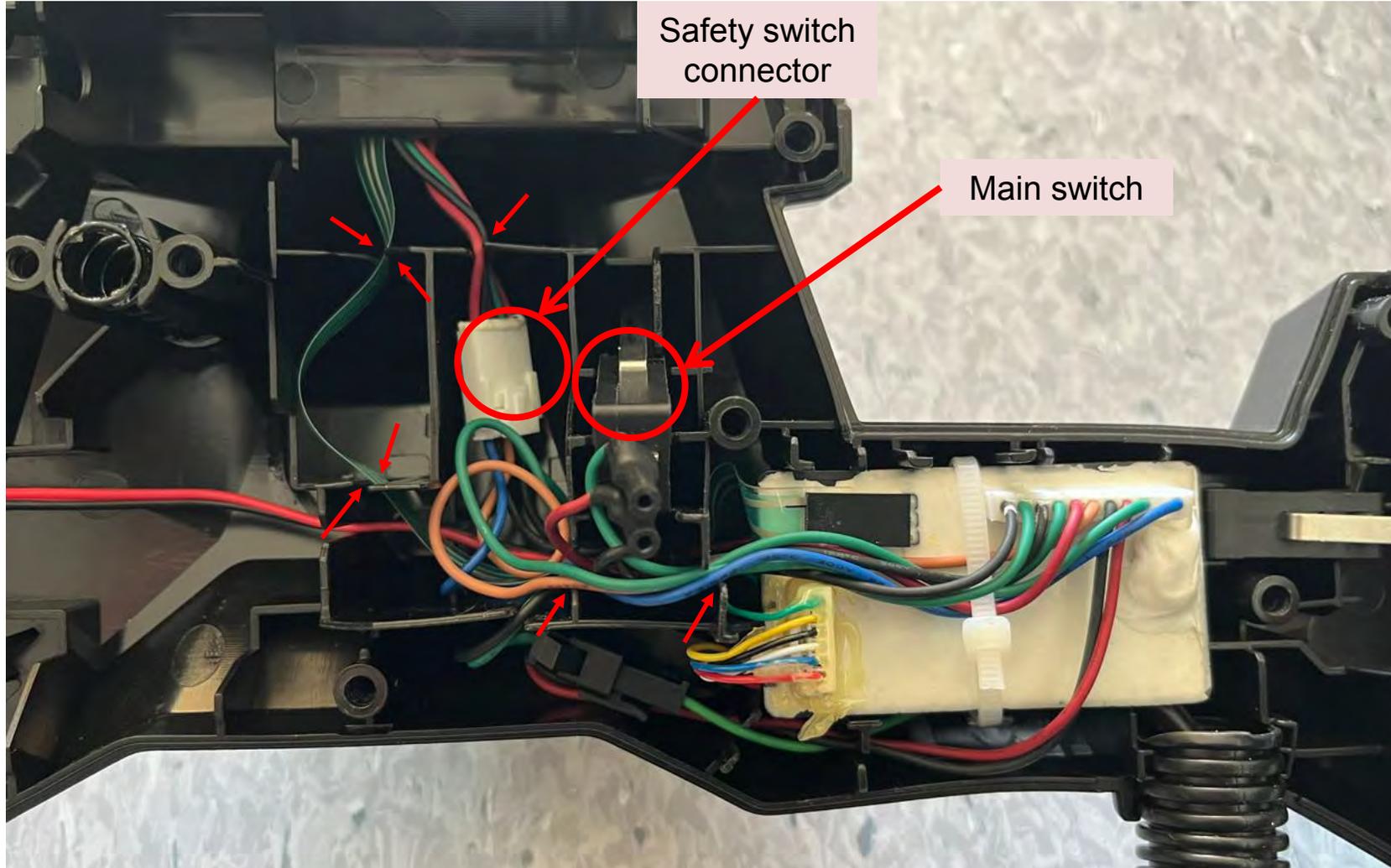
15. Place the connectors and wire into the groove as shown below.



Switch Box Parts Replacement

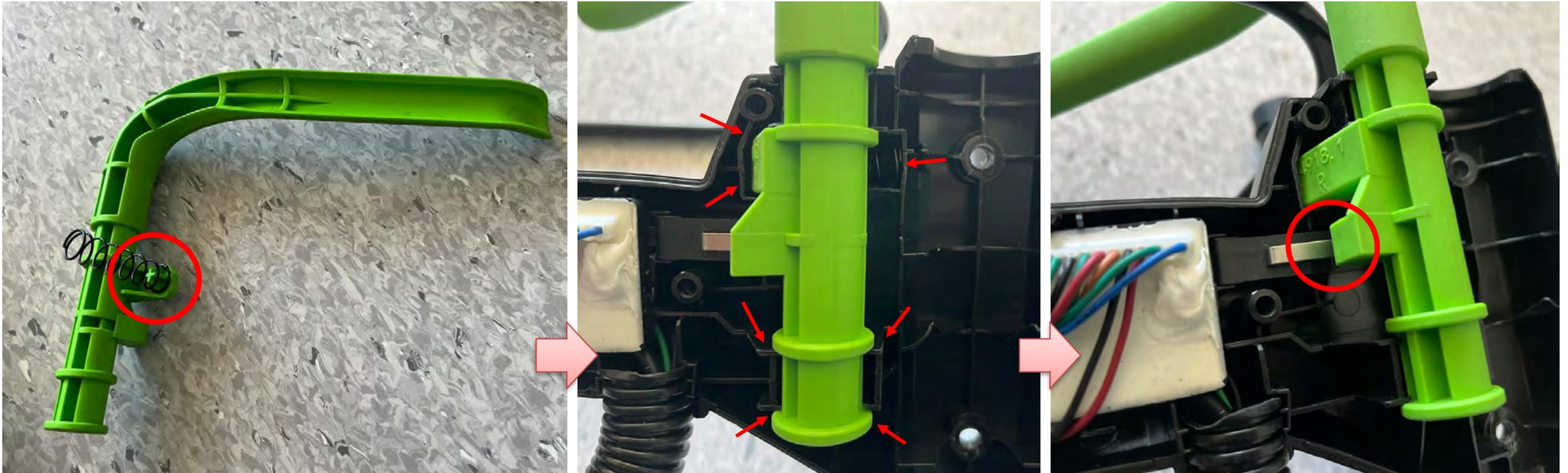
16. Position the main switch and the safety switch connector into the switch box housing.

17. Arrange the wires as shown below:



Switch Box Parts Replacement

18. Assemble the spring onto the self-propel control handle.
19. Place the handle into the switch box housing as shown below.
20. Ensure that the handle can engage the switch when rotated.



Switch Box Parts Replacement

21. Insert the sheath assembly into the aluminum tubes.



Switch Box Parts Replacement

22. Mount the sheath assembly with the tubes into the switch box housing. Making sure that the four locating holes are aligned.

23. Carefully close the switch box and fasten with 10 screws + 4 long bolts with nuts.



THE END

REPAIR GUIDELINE

PART 6: Left & Right Cover Replacement_LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



Update Date: 2022/10/18

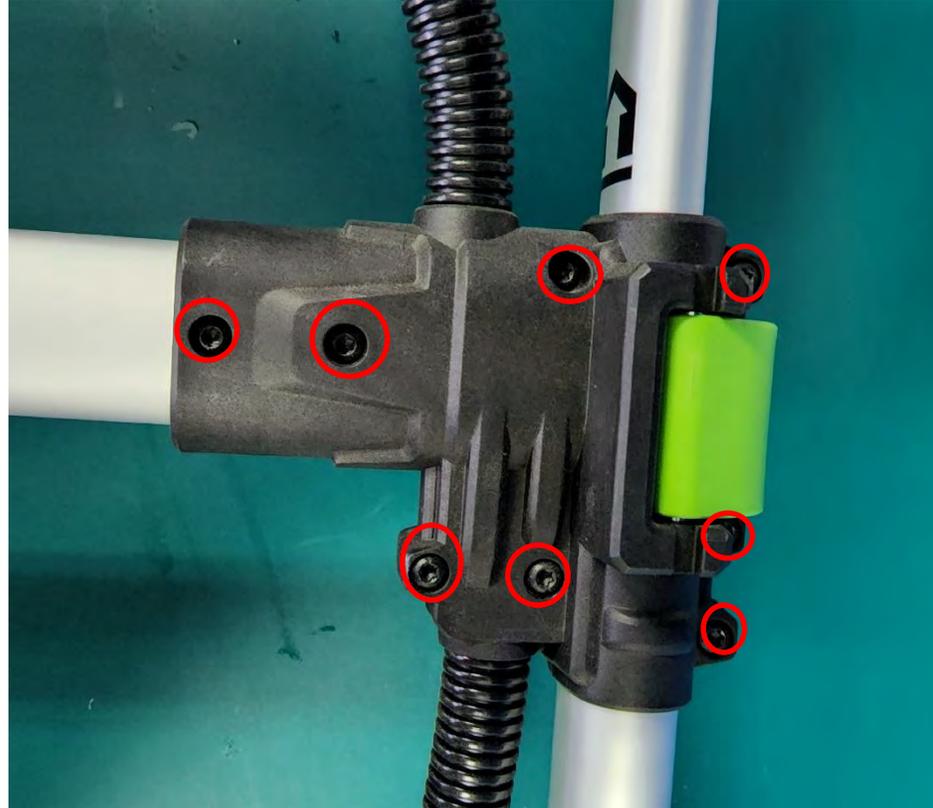
Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)

Note: Lawn mower LM2110, LM2110SP and LM2120SP share the same left & right cover in the handle assembly.

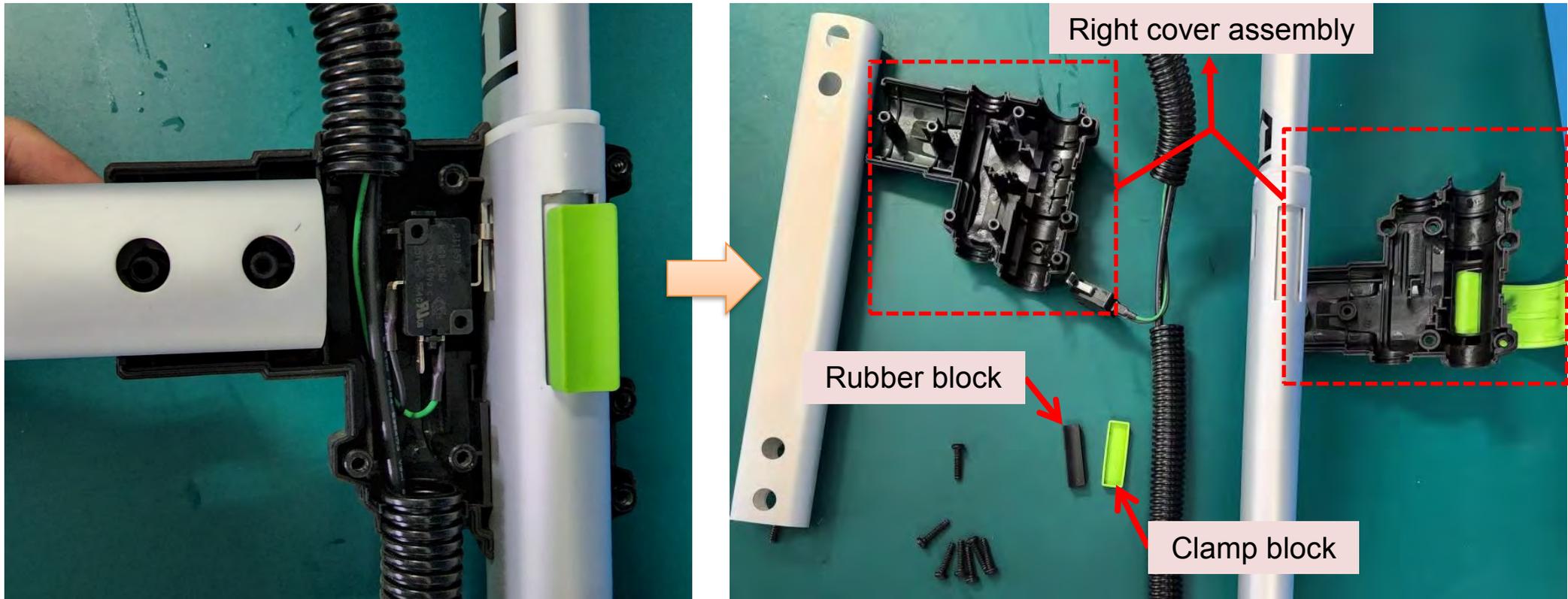
Left/Right Cover Replacement

1. Loosen the 8 screws on the right cover.



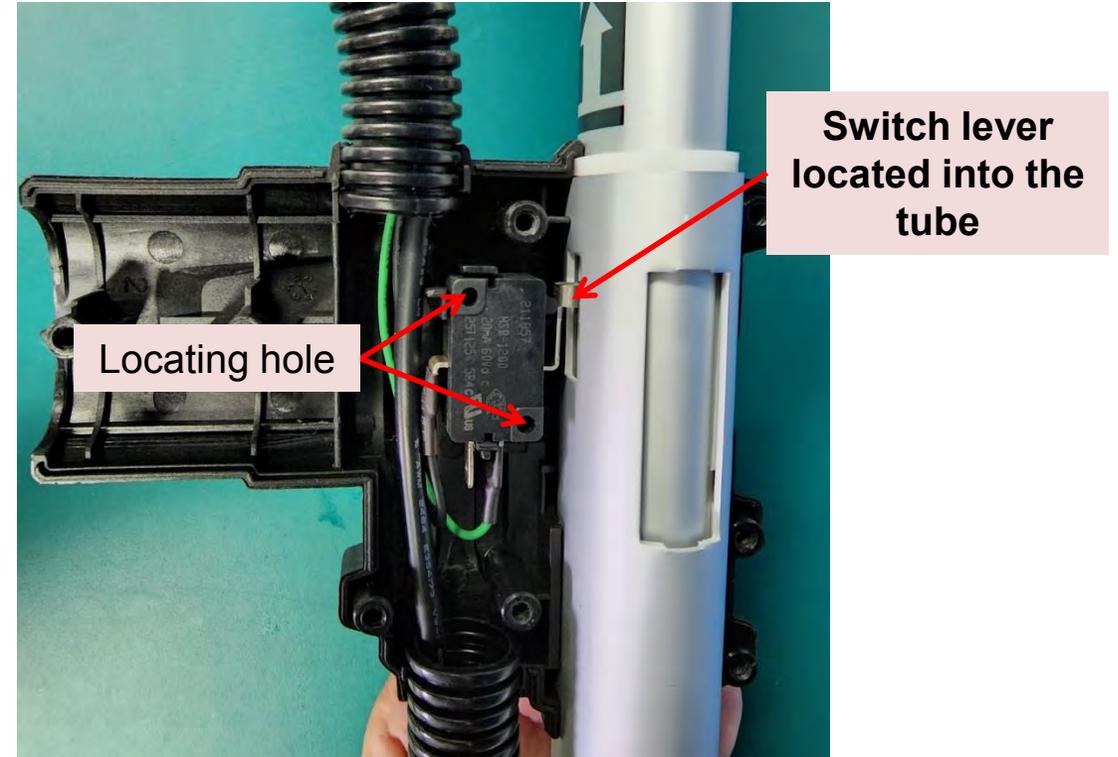
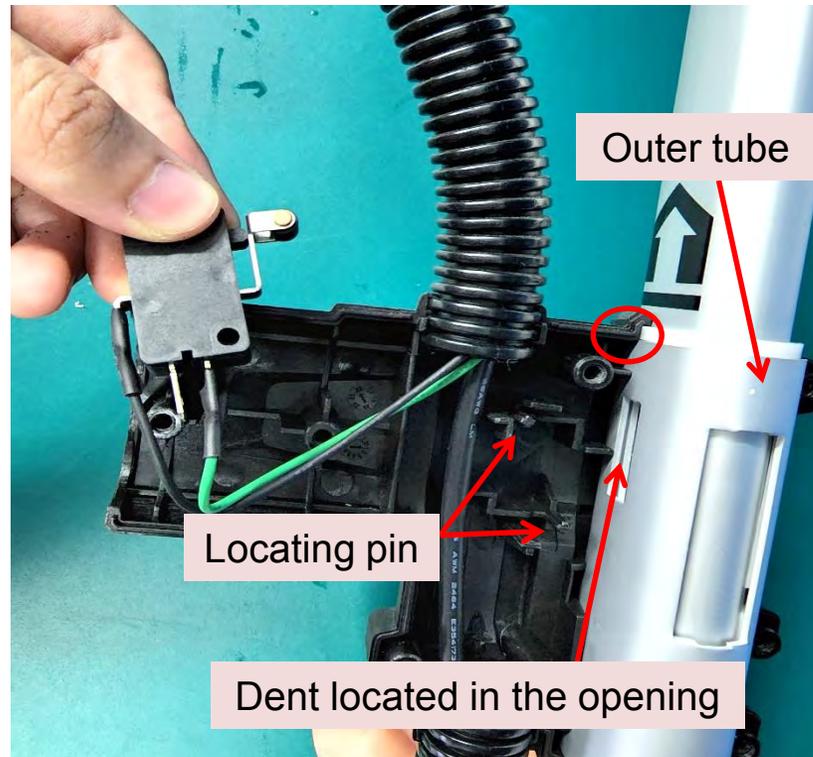
Left/Right Cover Replacement

2. Remove the top and bottom cover, rubber block and clamp block. If the rubber block or the clamp block is damaged/worn, replace it with a new one directly. If the covers are damaged, replace the whole right cover assembly (marked red) with a new set.



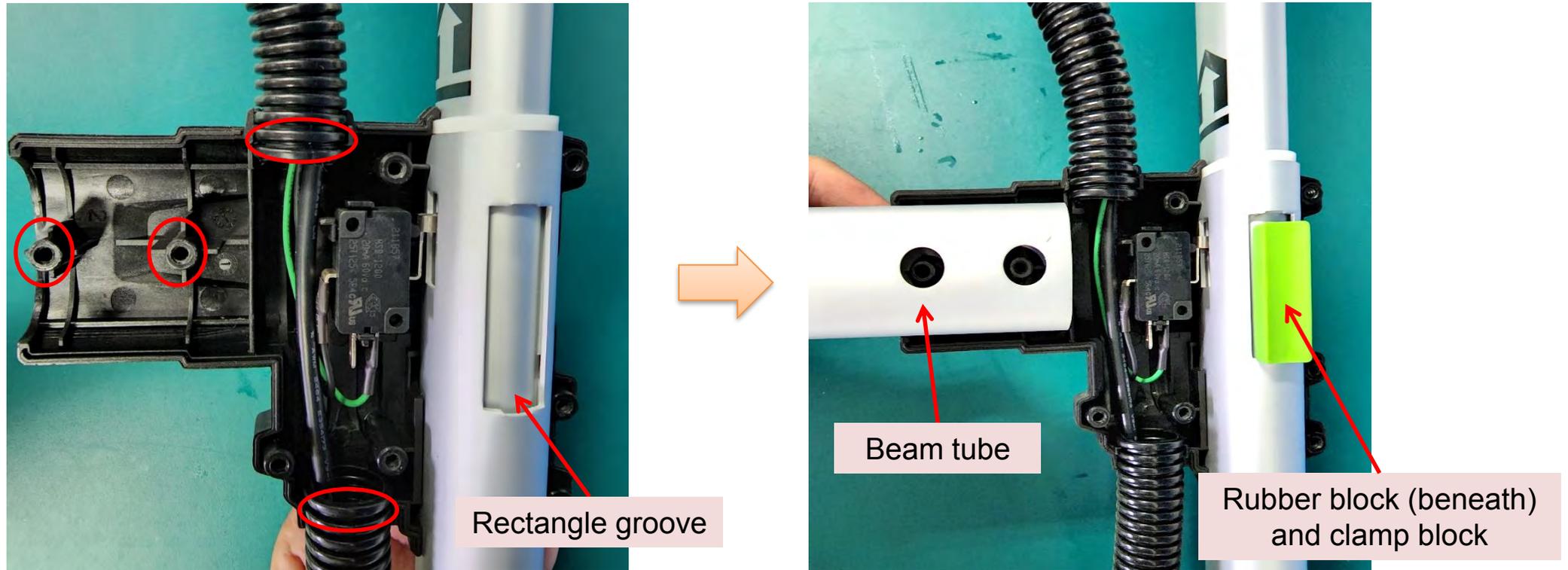
Left/Right Cover Replacement

3. Mount a new bottom cover onto the side rail.
4. Fully extend the side rail to make sure the dent on the rail appears in the opening of the outer tube.
5. Align the locating hole with the locating pin first and then position the switch into place.



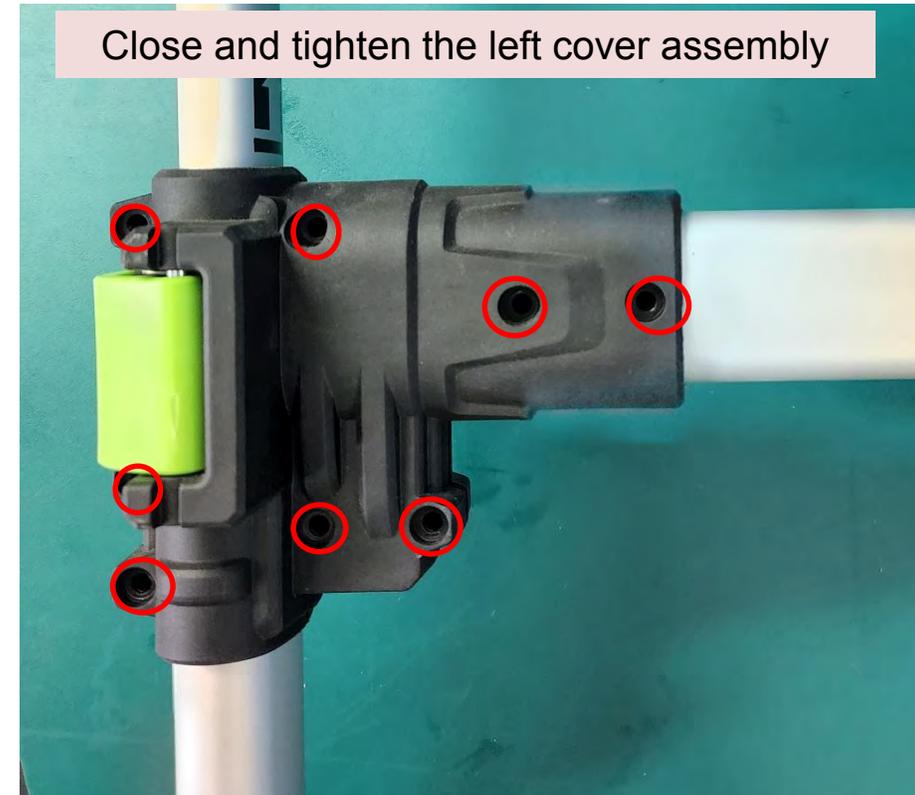
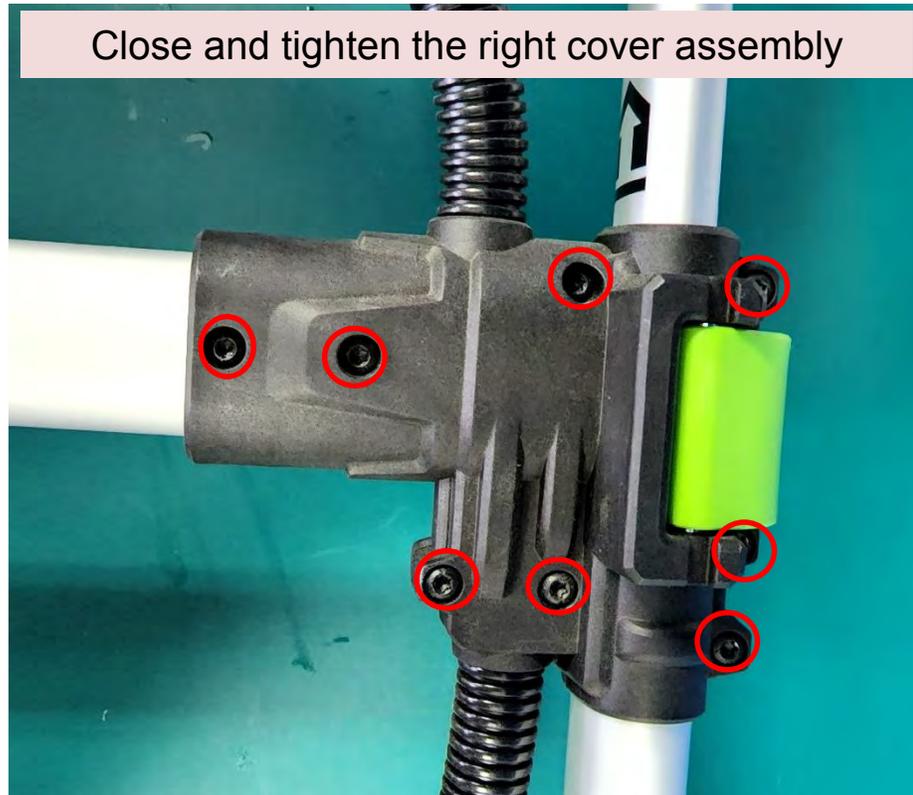
Left/Right Cover Replacement

6. Align the switch thin cable in the bottom housing and then press the flexible hose into the opening groove.
7. Align the locating hole with the locating pin first and then position the beam tube into place.
8. Attach rubber block and clamp block into the rectangle groove of the outer tube.



Left/Right Cover Replacement

9. Close the new top housing and tighten it with the 8 screws.
10. Replace the worn left cover in the same way as the right cover (There is no switch or wire inside the left side. It's easier.).



THE END

REPAIR GUIDELINE

PART 7: Rear Cover Replacement_LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



Update Date: 2022/10/19

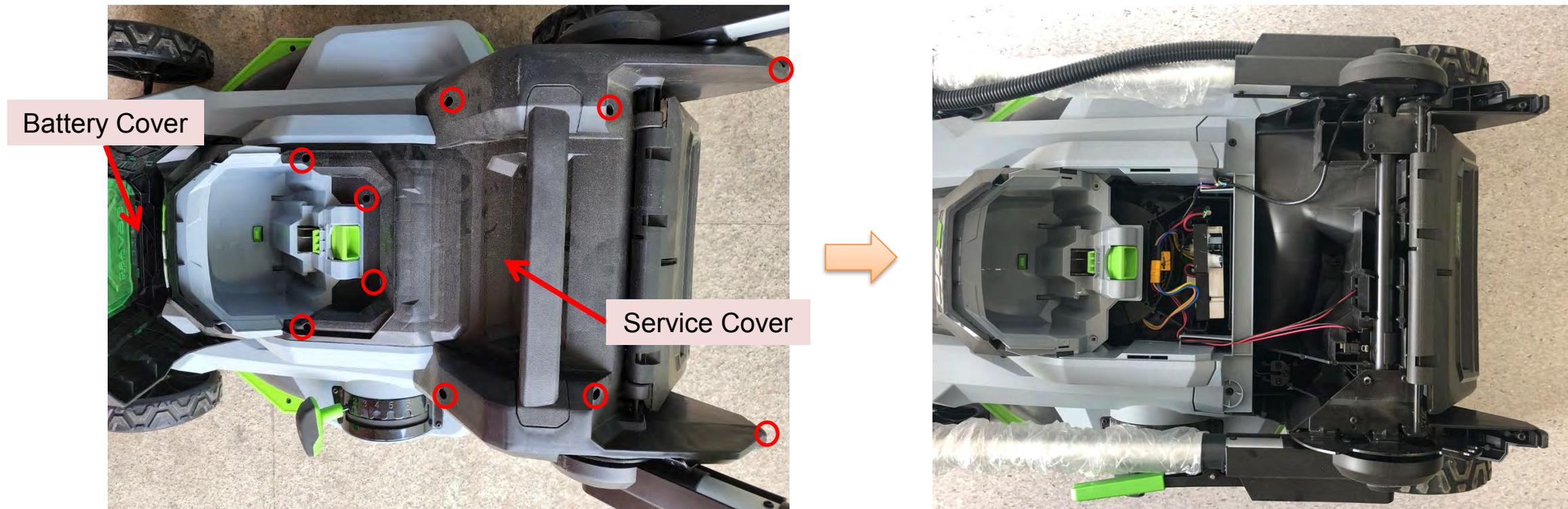
Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)

Note: Lawn mower LM2110, LM2110SP and LM2120SP share the same rear cover.

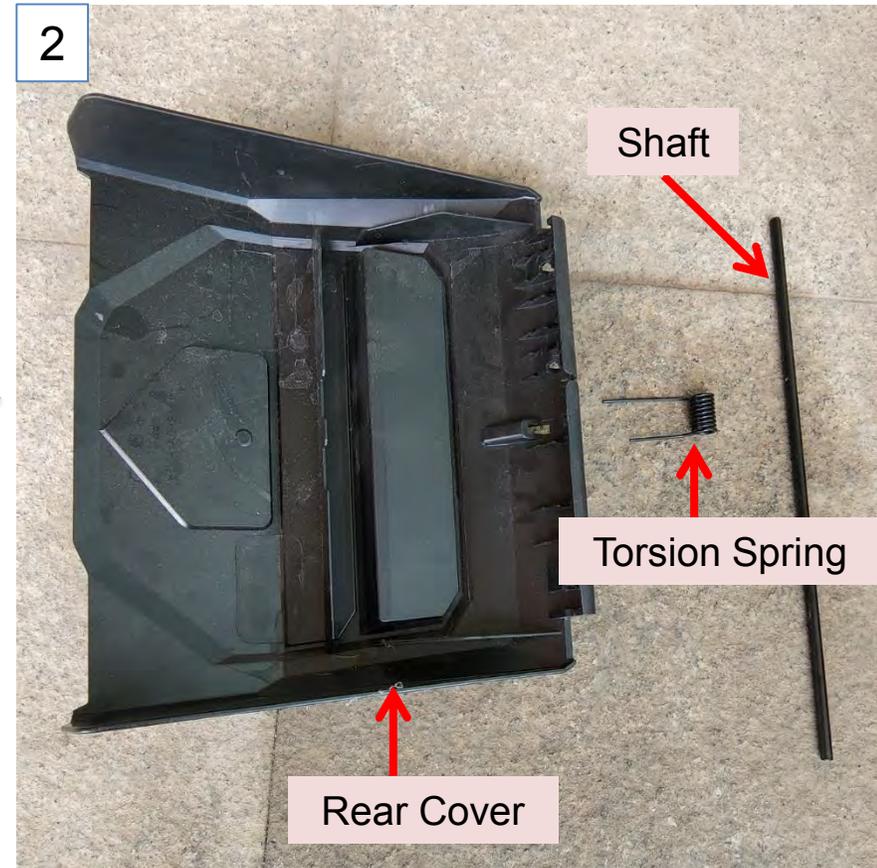
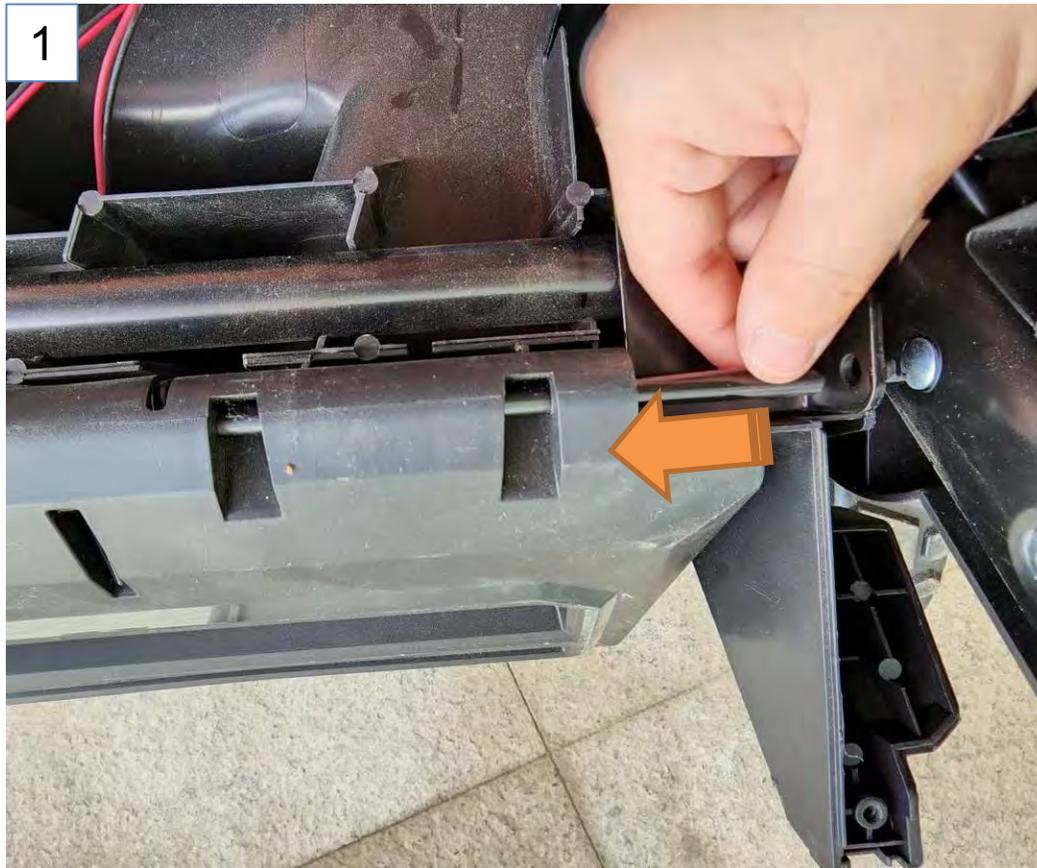
Rear Cover Replacement

1. Open the battery cover and remove the service cover from the mower by loosening the 10 screws with the mower handle positioned in its operating position.



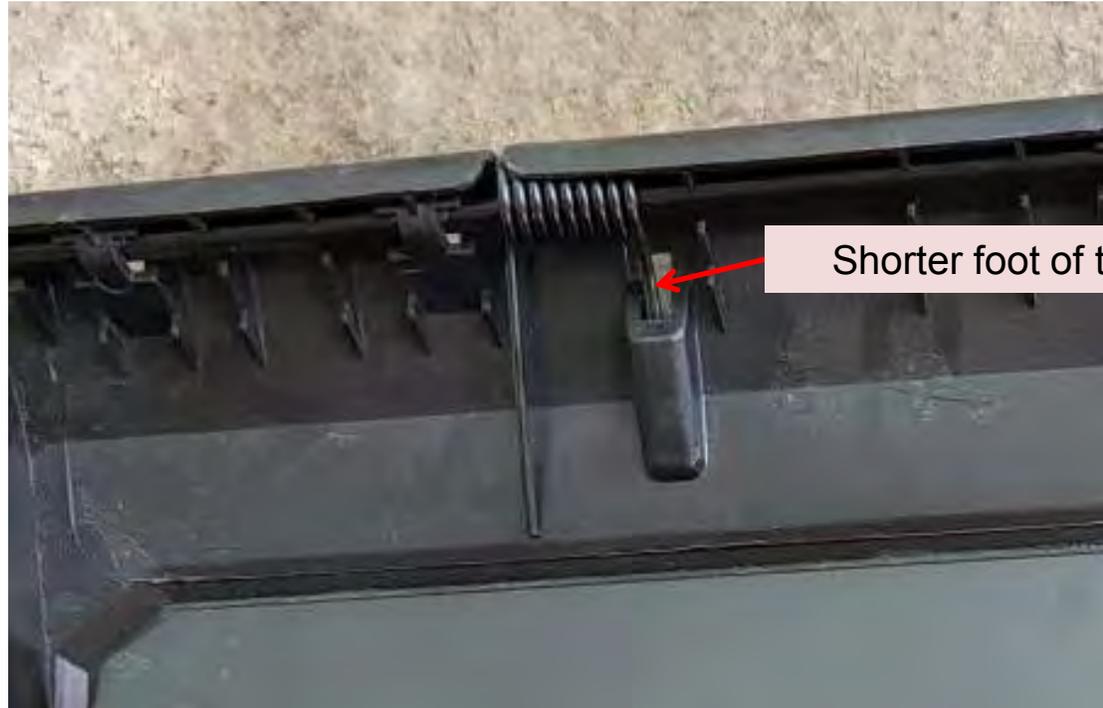
Rear Cover Replacement

2. Push the shaft towards left till it can be taken from the lower housing (Fig1).
3. Take down the rear cover, torsion spring and shaft (Fig2). If any part is damaged , replace it with a new one.



Rear Cover Replacement

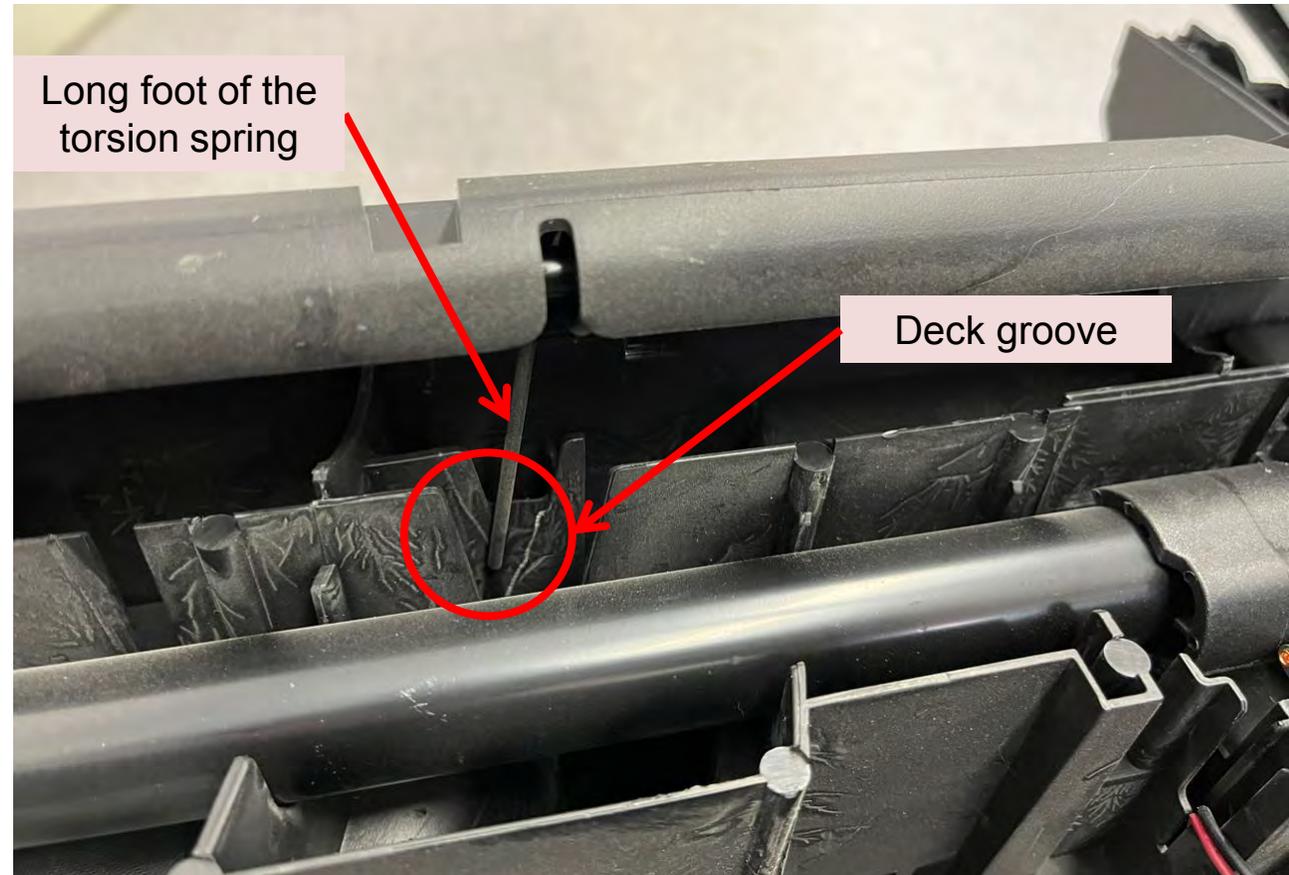
4. Reassemble the new rear cover.
5. Insert the shorter foot of the torsion spring into the groove of the rear cover.



Shorter foot of the torsion spring

Rear Cover Replacement

6. Position the rear cover and torsion spring assembly into the deck, with the long foot of the torsion spring rested in the deck groove.



Rear Cover Replacement

7. Insert the shaft towards left through the hole (the spring torsion inside should be aligned in the hole), until it is pushed into position.
8. Lift up the rear cover to check if it can rotate around the shaft smoothly. If it works well, mount the service cover back onto the mower.



THE END

REPAIR GUIDELINE

PART 8: Wheels Replacement_LM2110SP_LM2120SP Lawn Mower

LM2110SP



LM2120SP



Update Date: 2022/10/19

Table of Contents

NO.	Contents	Page
1	Rear Wheel Replacement	4 ~ 9
2	Front Wheel Replacement	10 ~ 11

Note: LM2110SP and LM2120SP share the same front and rear wheels.

Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)
2	Socket Wrench (S=13mm)
3	Screwdriver (PH1)

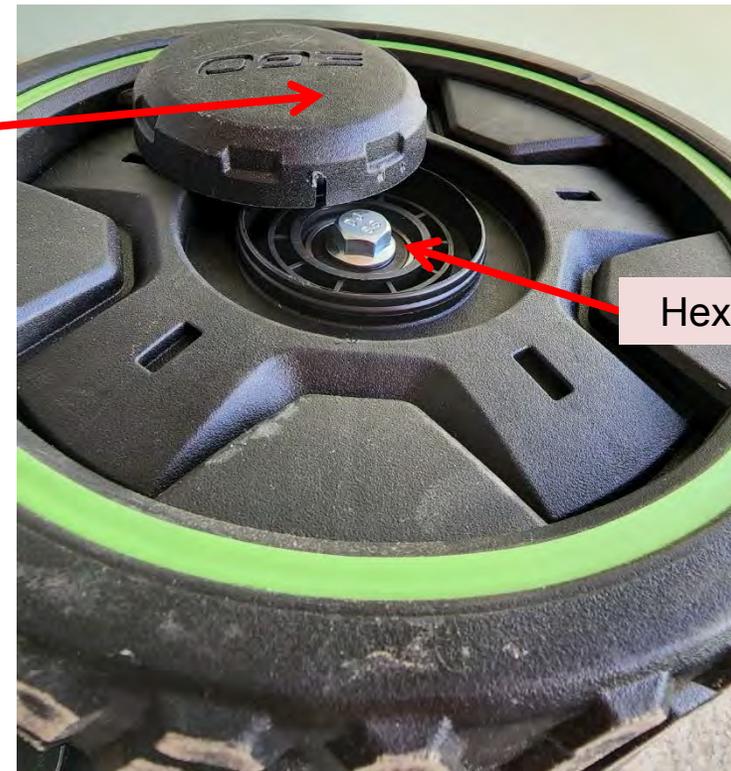
Rear Wheel Replacement

If the rear wheel is damaged, replace it.

1. Turn the mower on its side, pry the hubcap by a screwdriver to remove it.



Hubcap



Hex bolt

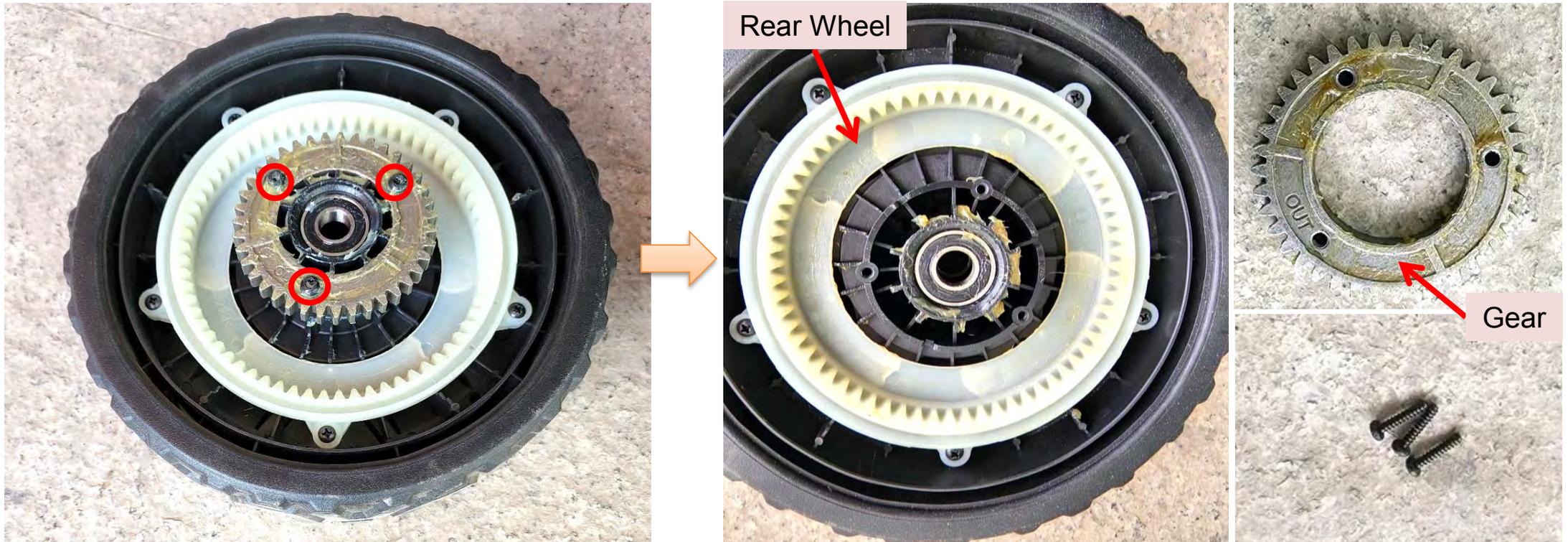
Rear Wheel Replacement

2. Remove the hex bolt by using a 1/2 inch (S=13mm) socket wrench to separate the wheel from its protecting cap, which is fixed on the self-propelled unit.



Rear Wheel Replacement

3. Loosen the 3 screws to remove the gear.
4. Replace with a new rear wheel. Fix the new wheel onto the mower in reverse order of disassembly. Please see next slide for notice.



Rear Wheel Replacement

NOTICE: During drive gear assembling, the surface of the gear stating “**OUT**” should face toward outward.

This side facing wheel



This side facing protecting cap



Rear Wheel Replacement

5. If the rear wheel protecting cap is damaged, continue disassembling to replace the protecting cap with a new one.
6. Loosen the screw by a cross screwdriver (PH2) to release the cap from the mower and then remove the wave washer and the rear wheel protective cap from the shaft.

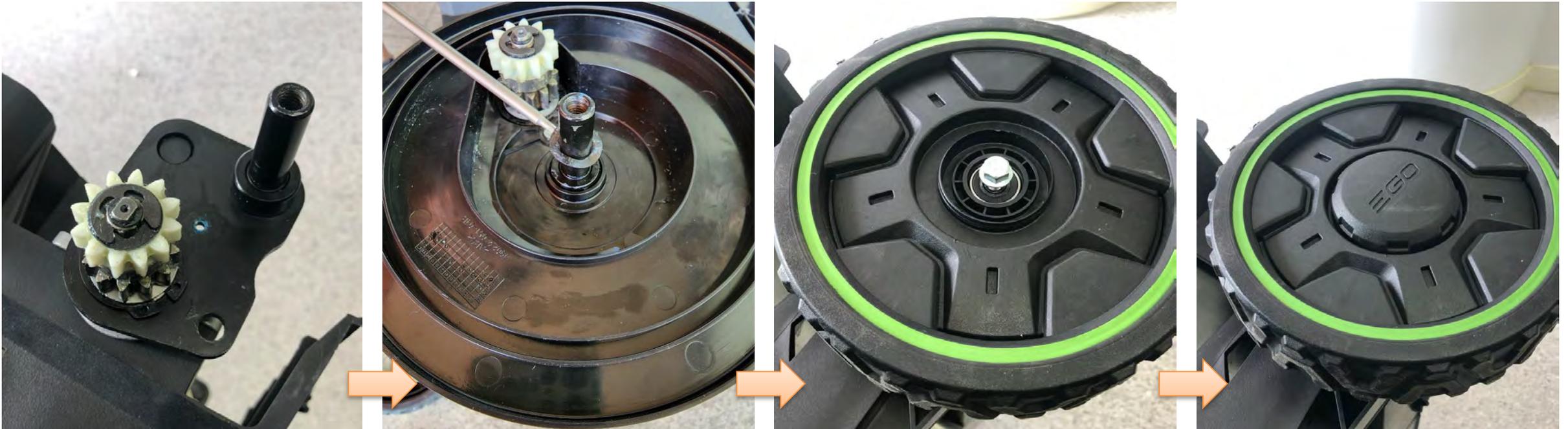


Rear Wheel Replacement

7. Mount a new protecting cap onto the self-propelled unit shaft as well as the wave washer.
8. Fix the cap by tightening the screw. The recommended torque is **1.3-1.8 ft-lb (1.8-2.5Nm)**.

NOTICE: The wave washer mustn't be omitted in this step.

9. Mount the wheel with the gear ASSY (Gear with “**OUT**” facing outside) onto the self-propelled unit and fix it with the hex bolt.
The recommended torque is **2.6-3.7 ft-lb (3.5-5Nm)**.
10. Insert the hubcap into the wheel.



Front Wheel Replacement

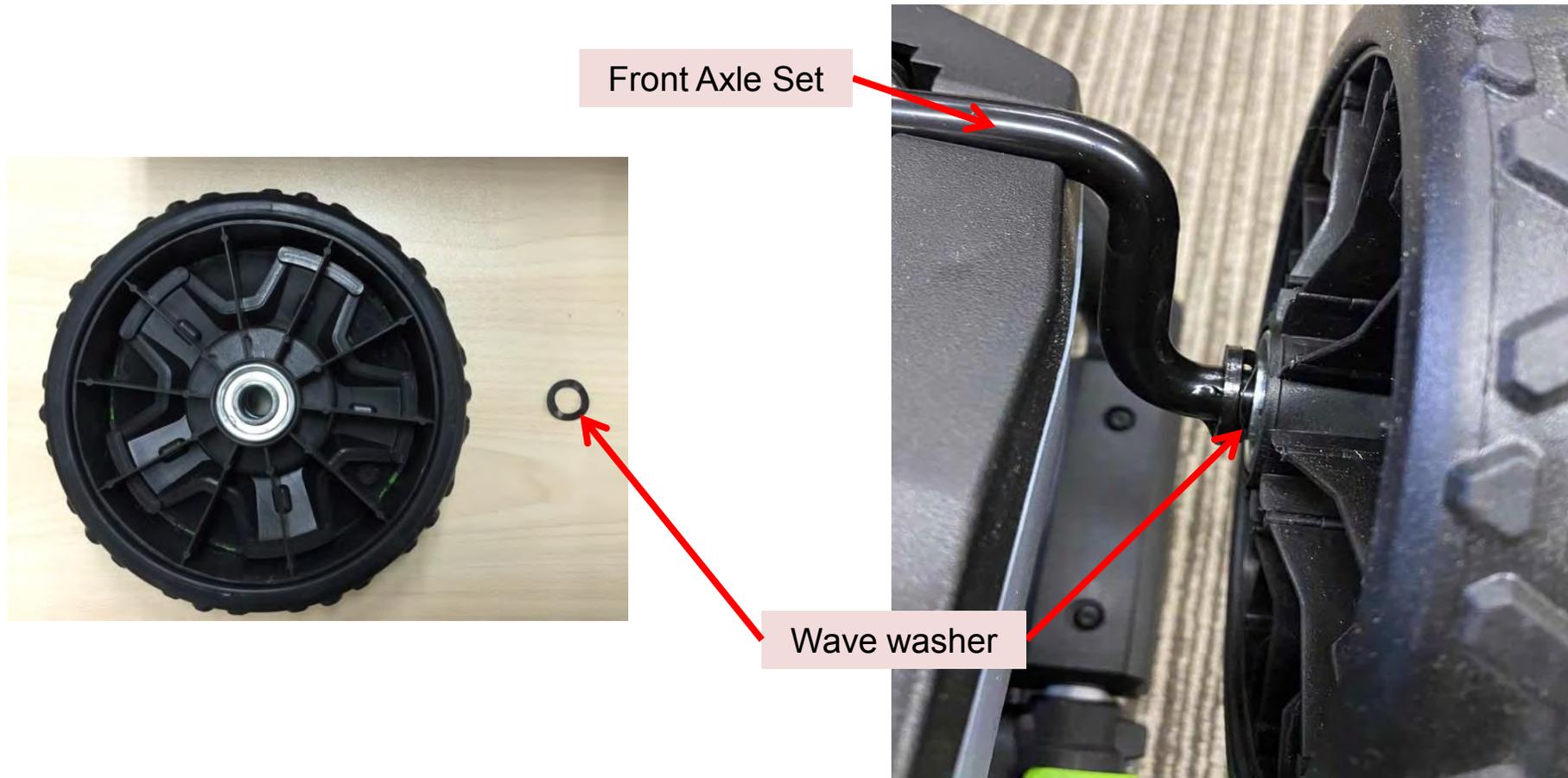
If the front wheel is damaged, replace it.

1. Turn the mower on the side or back, remove the hubcap and the front wheel from the mower in the same way as the rear wheels.



Front Wheel Replacement

2. Replace with a new front wheel.
3. Mount it onto the front axle with the wave washer beneath it.



THE END

REPAIR GUIDELINE

PART 9: Handle Lever Replacement_LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



Update Date: 2022/10/19

Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)
2	Flat head screwdriver

Note: Lawn mower LM2110, LM2110SP and LM2120SP share the same handle lever in the handle assembly.

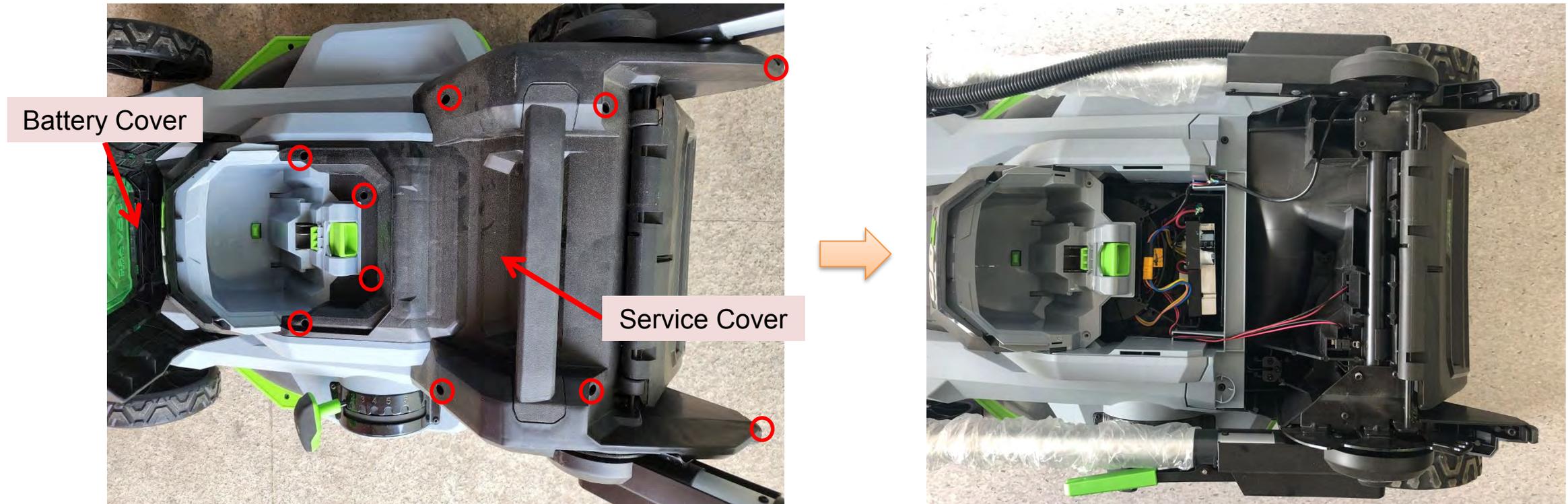
Handle Lever Replacement

Handle Lever



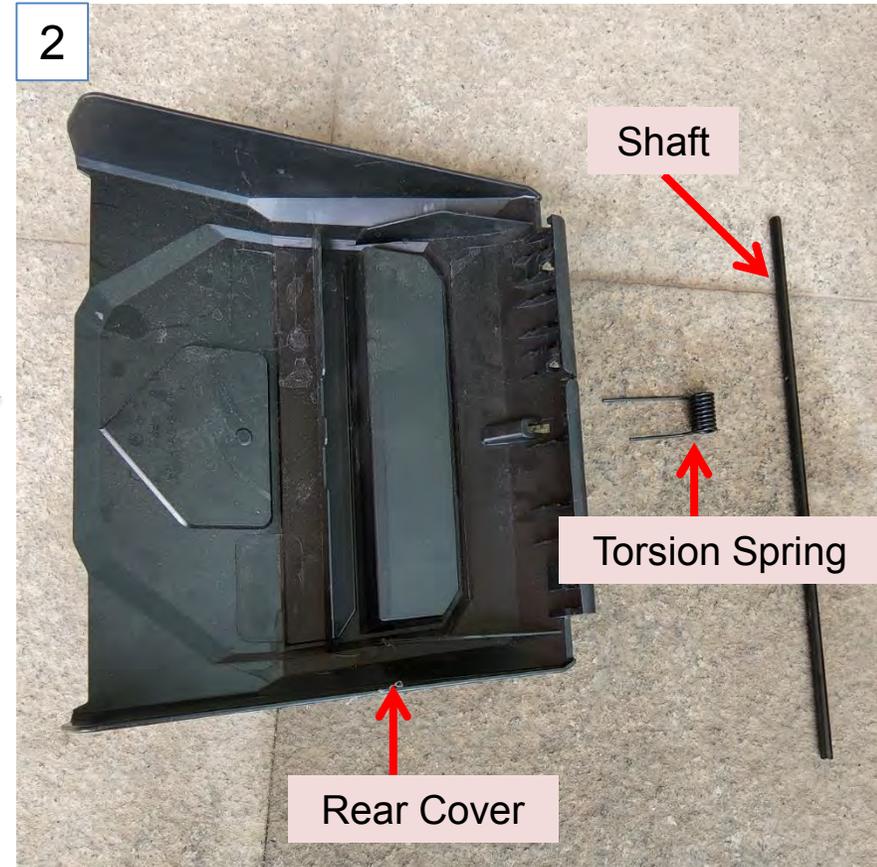
Handle Lever Replacement

1. Open the battery cover and remove the service cover from the mower by loosening the 10 screws with the mower handle positioned in its operating position.



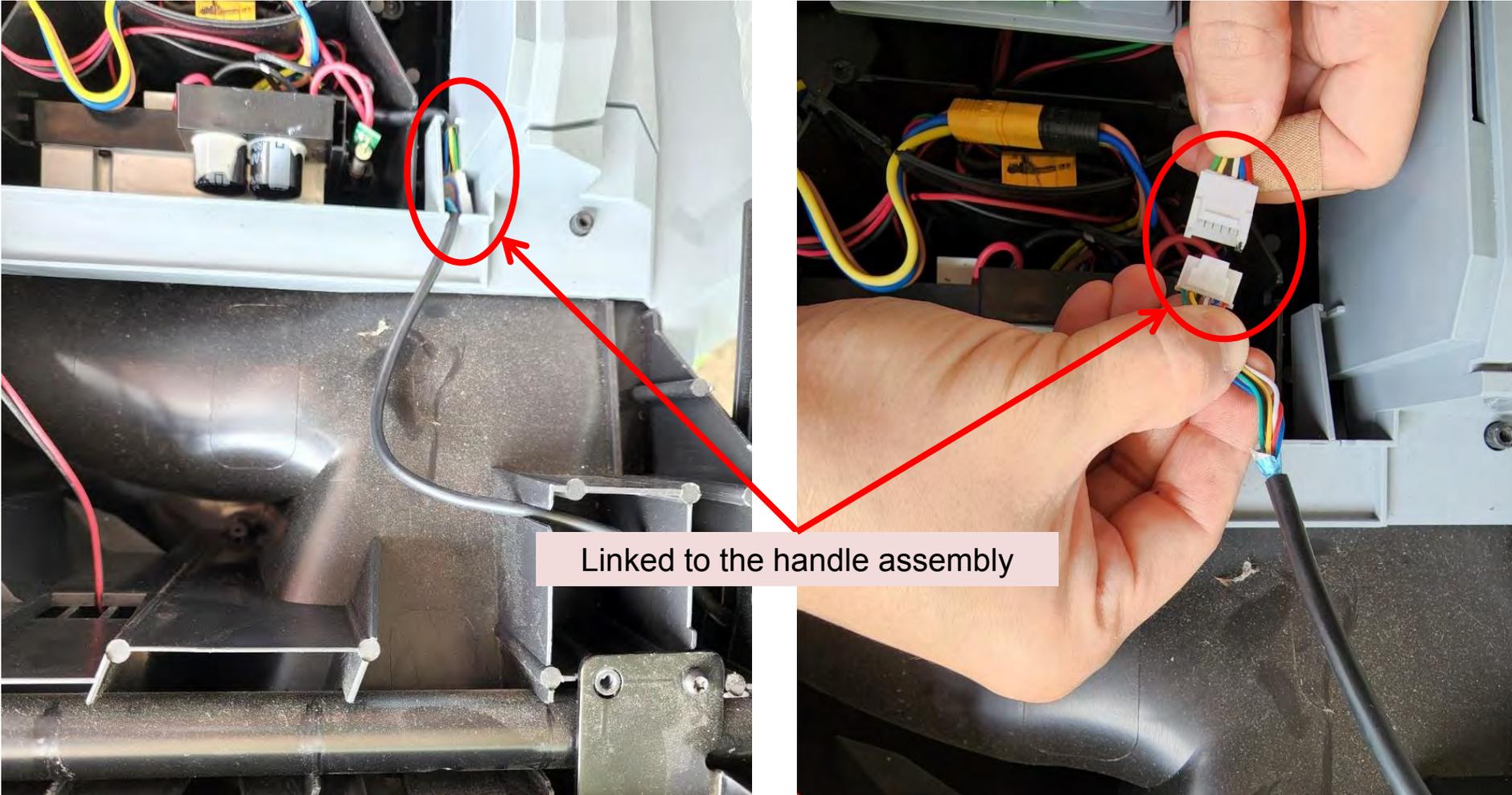
Handle Lever Replacement

2. Push the shaft towards left till it can be taken from the lower housing (Fig1).
3. Take down the rear cover, torsion spring and shaft (Fig2). If any part is damaged , replace it with a new one.



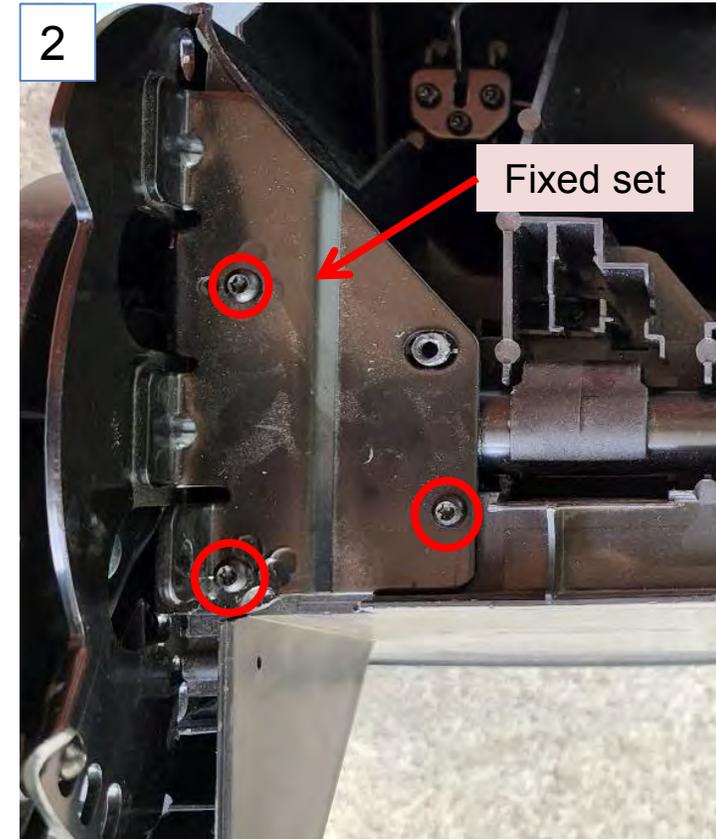
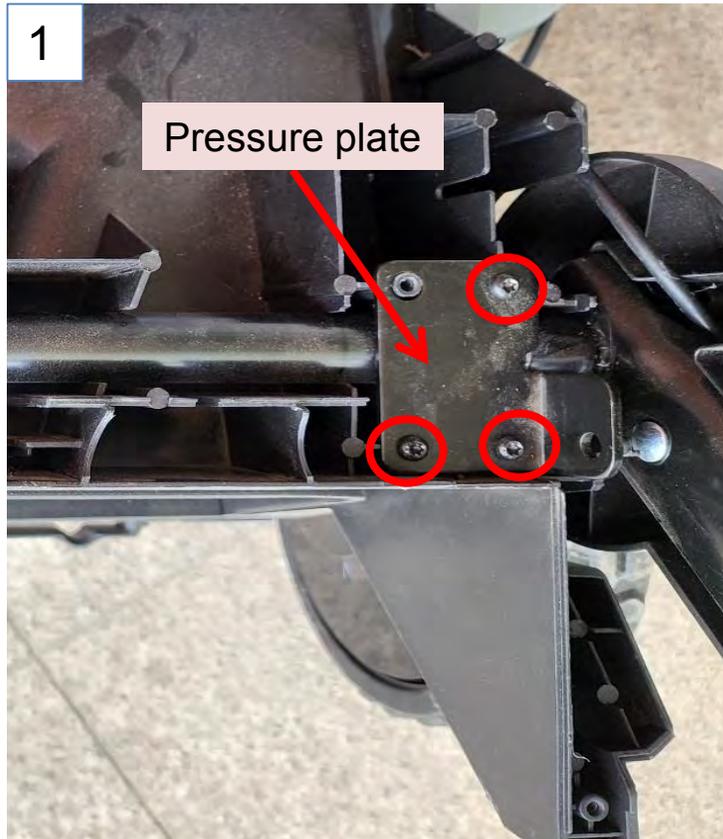
Handle Lever Replacement

4. Disconnect the white connector which links the handle assembly to the main PCBA.



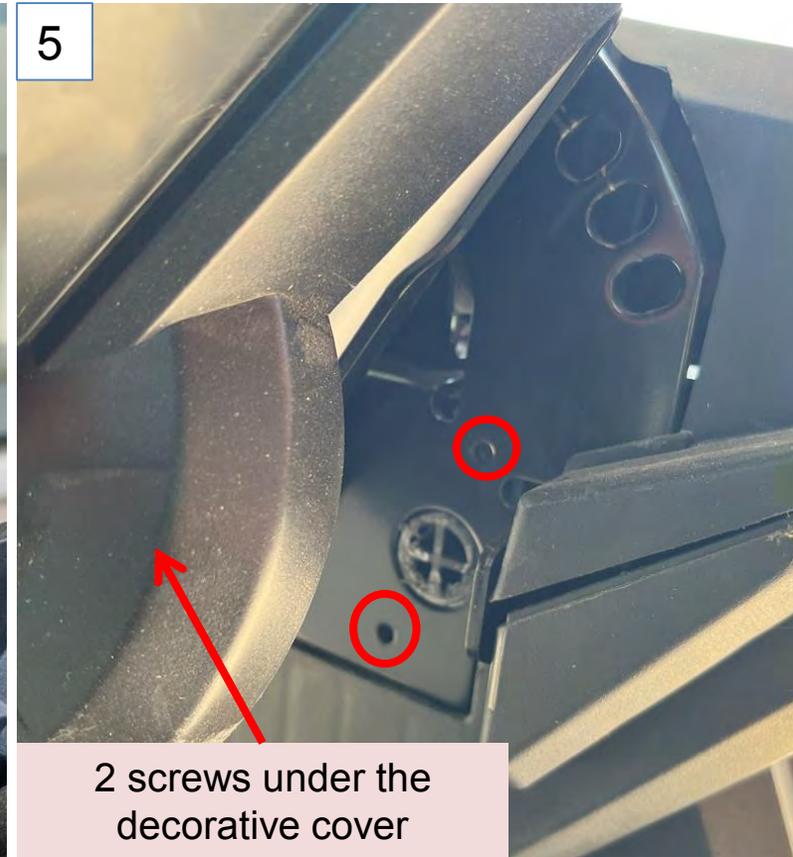
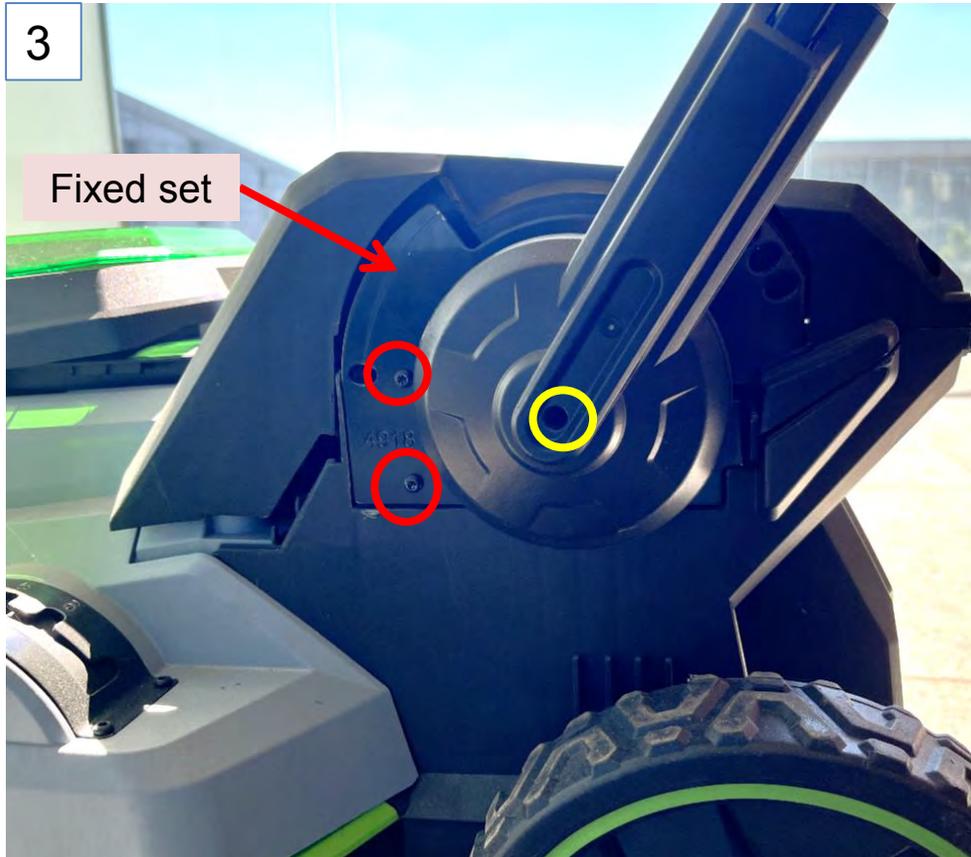
Handle Lever Replacement

5. Loosen and remove the 3 screws to take off the pressure plate (Fig. 1).
6. There are 3+4 screws used for locating the fixed set on the deck. Loosen and remove the three screws as shown in Fig.2.



Handle Lever Replacement

Then loosen 2 screws (marked yellow) on the left decorative cover to get access to loosen and remove the rest 4 screws on the fixed set. (Fig. 3 & 4 & 5)



Handle Lever Replacement

7. Remove the handle assembly from the deck.



Handle Assembly

Handle Lever Replacement

8. There are 2 screws for fixing the left decorative cover on the handle tube, which has been removed in the previous step.



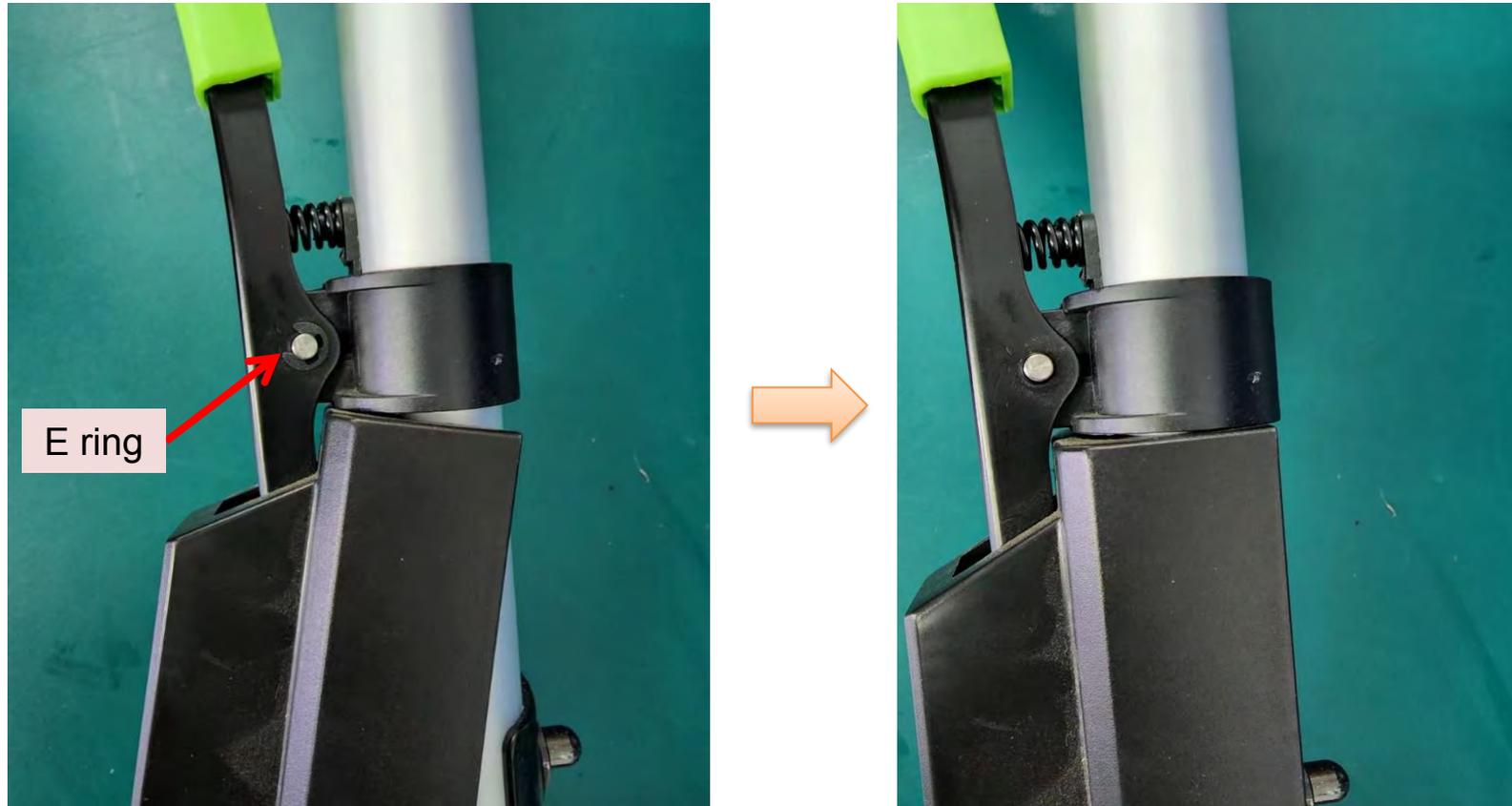
In the inner side of the tube



In the outer side of the tube

Handle Lever Replacement

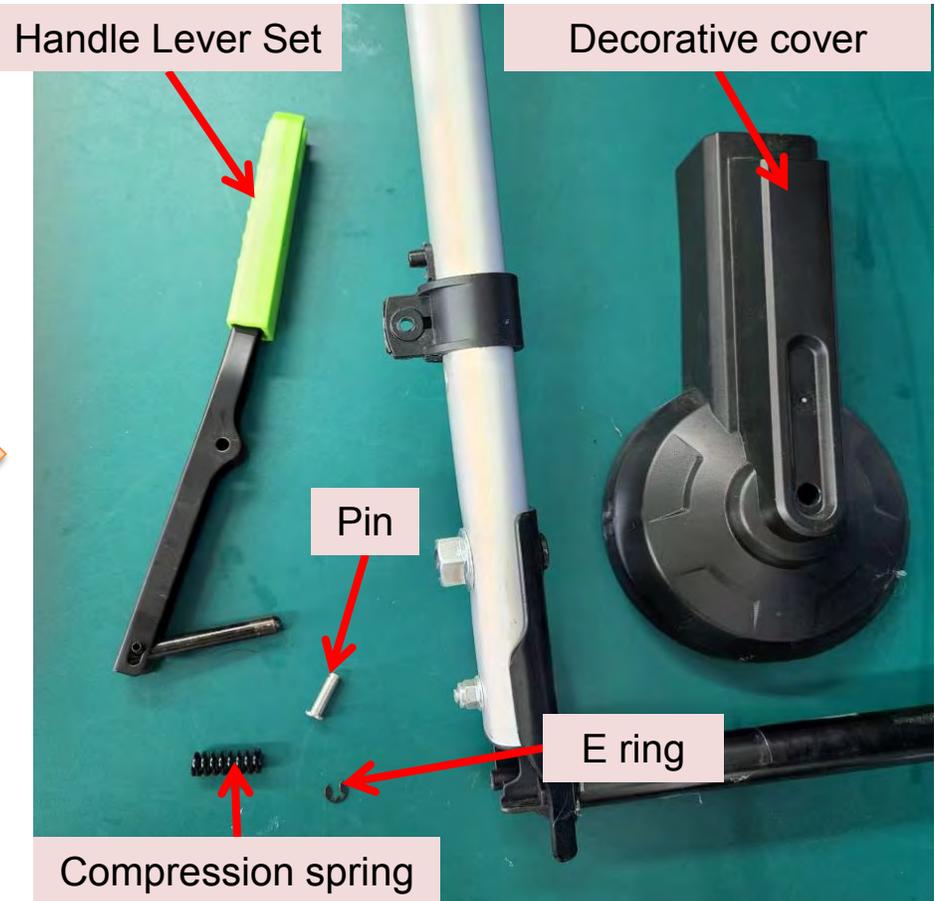
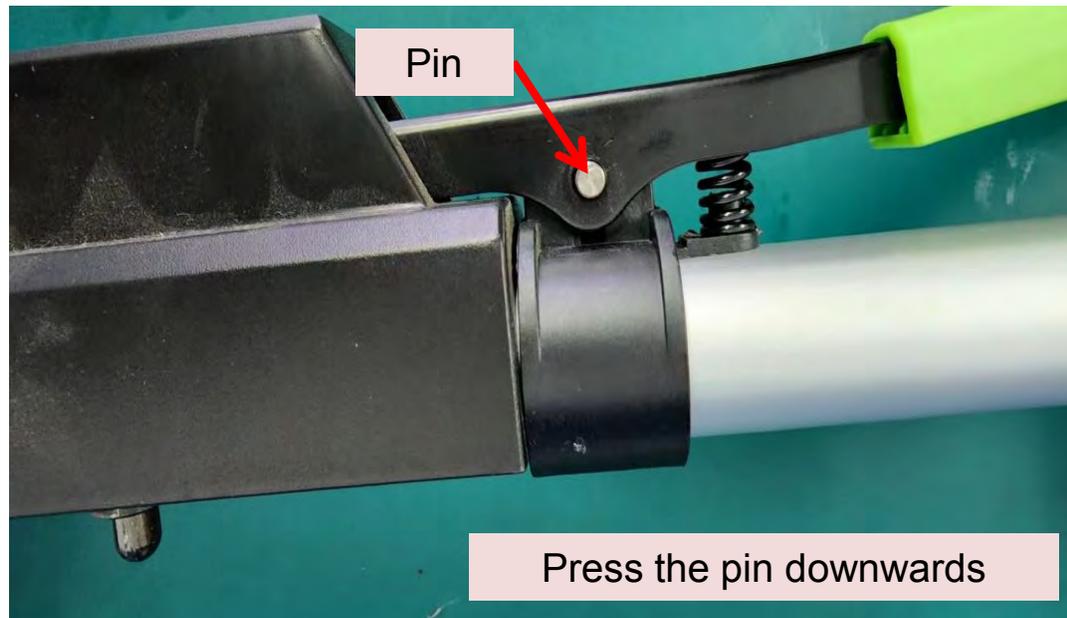
9. Use a flat head screwdriver to remove the E ring.



Handle Lever Replacement

10. Press the handle lever to loosen the pin and then pull it out.

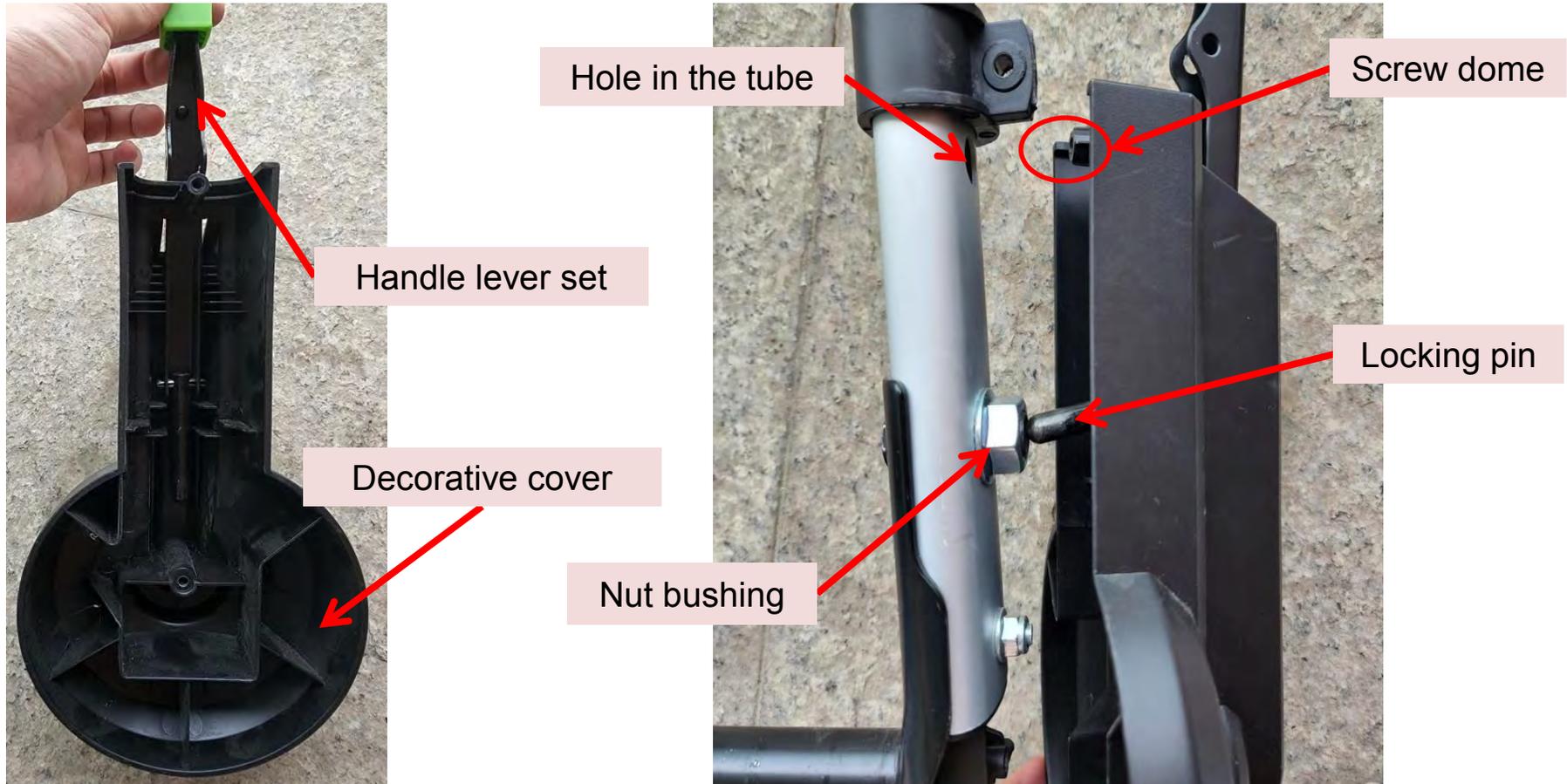
11. Remove the compression spring, handle lever set and decorative cover from the side tube. Replace any defective part.



Handle Lever Replacement

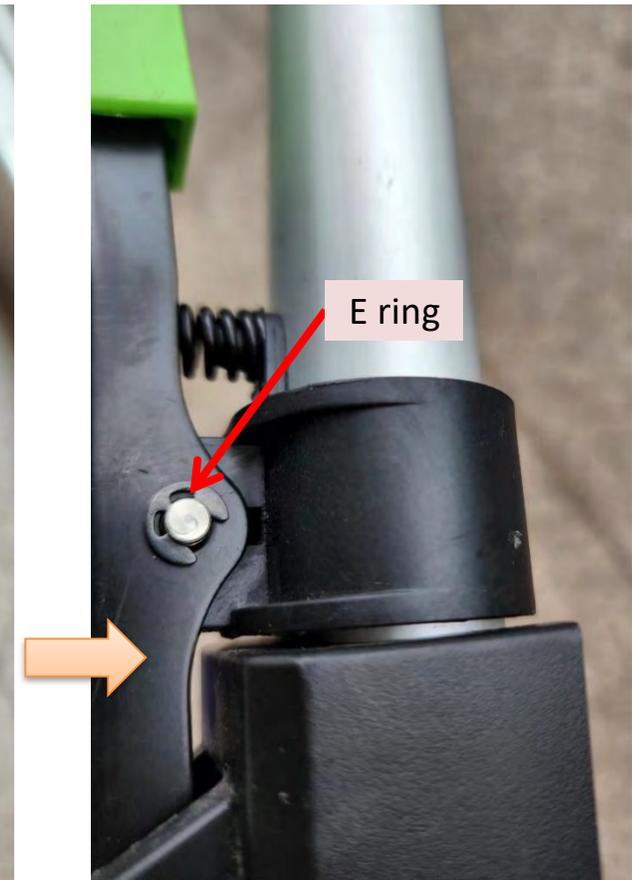
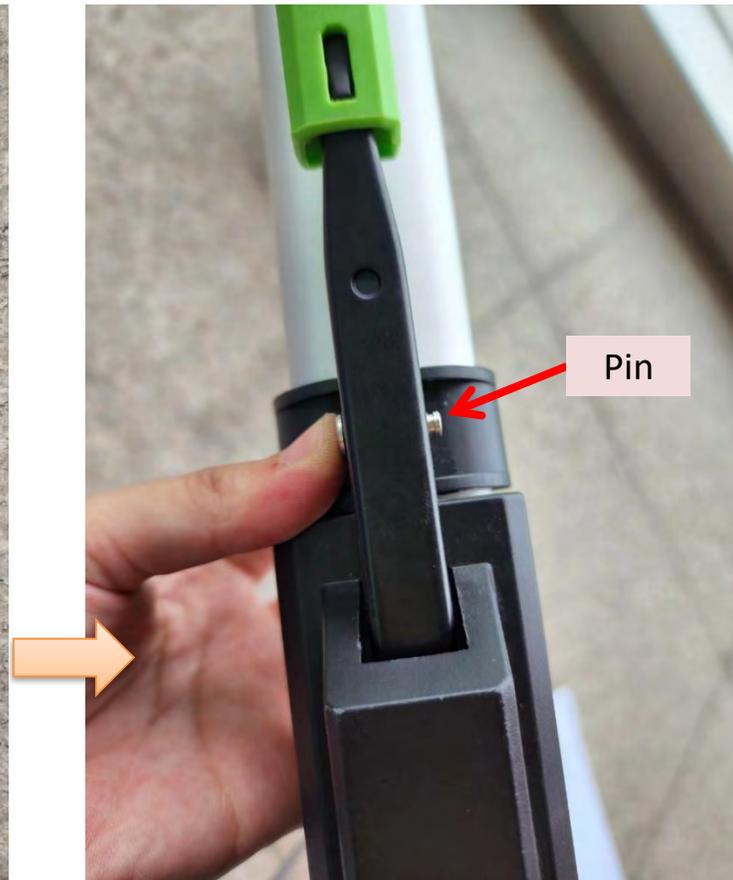
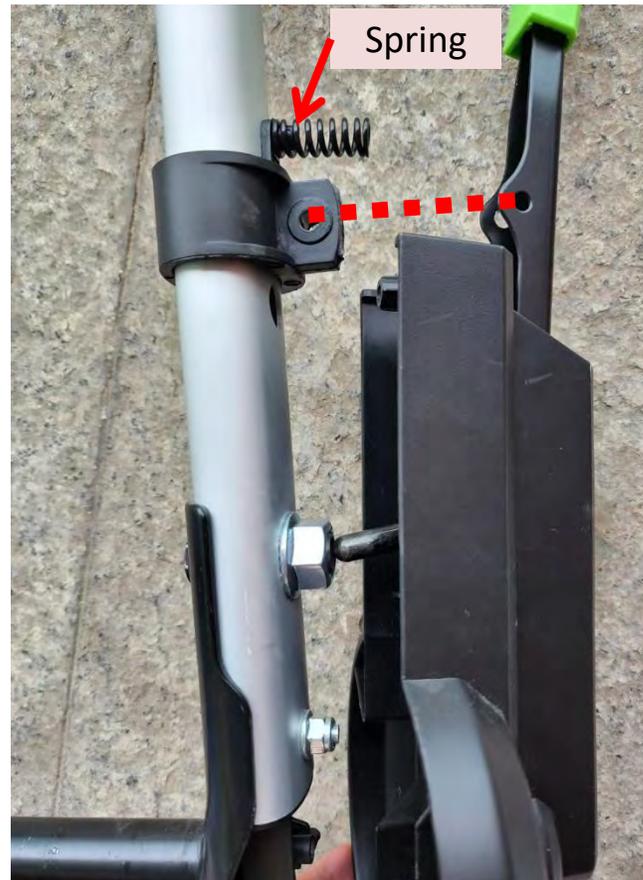
12. Pass the handle lever set through the left decorative cover.

13. With the screw dome aligned with the hole in the side tube, insert the locking pin into the nut bushing and then close the left decorative cover onto side tube.



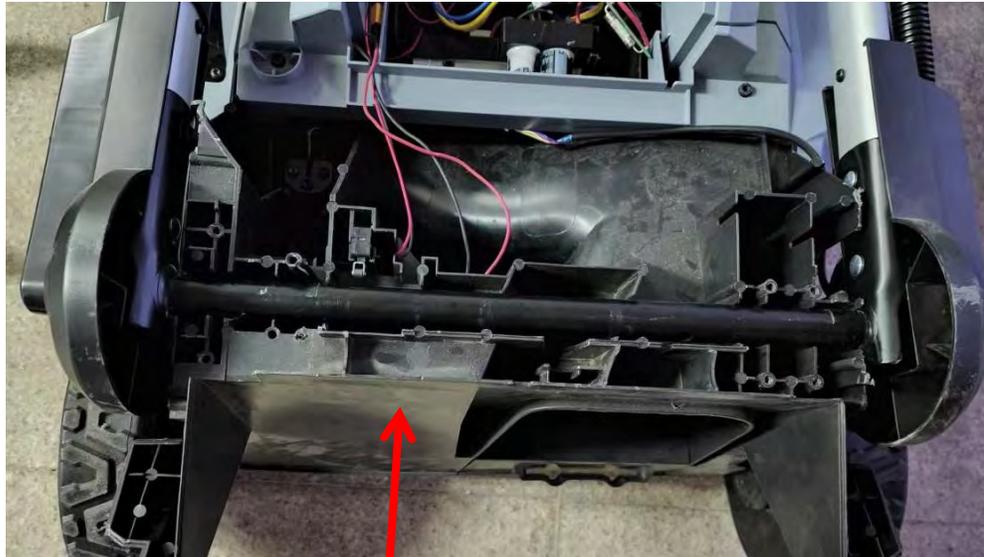
Handle Lever Replacement

14. Fix the spring between the handle lever and the side tube.
15. Hold the tube and the handle lever, depress the lever to align the hole in the lever with the hole in the plastic part.
16. Fully insert the pin and lock the pin with the E ring.

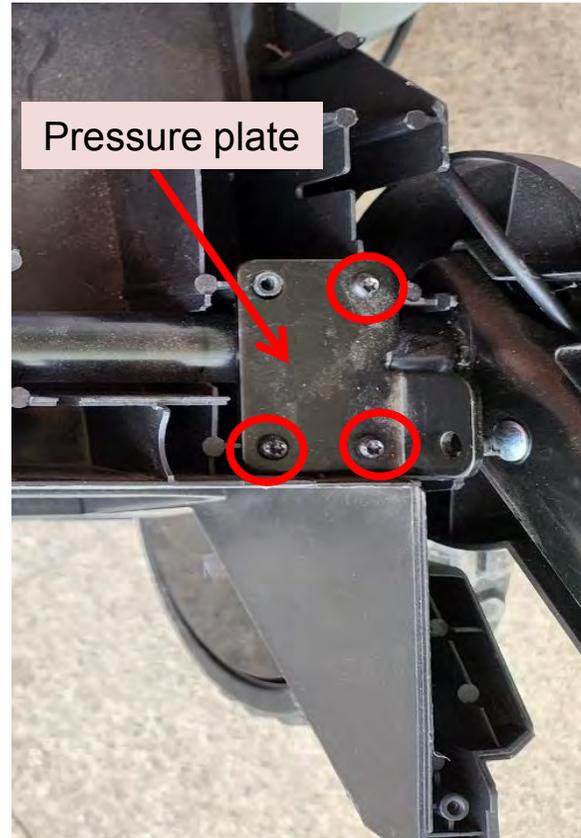


Handle Lever Replacement

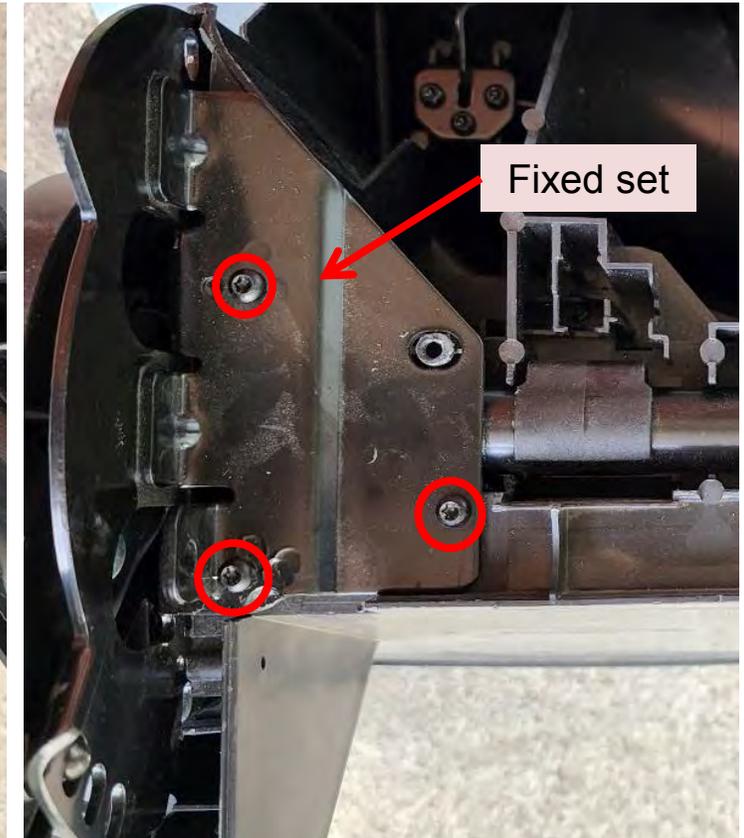
17. Mount the Handle assembly onto the deck groove.
18. Mount the pressure plate on the right side by tighten the 3 screws.
19. Mount the fixed set on the left side and tighten the 3 screws first.



Deck



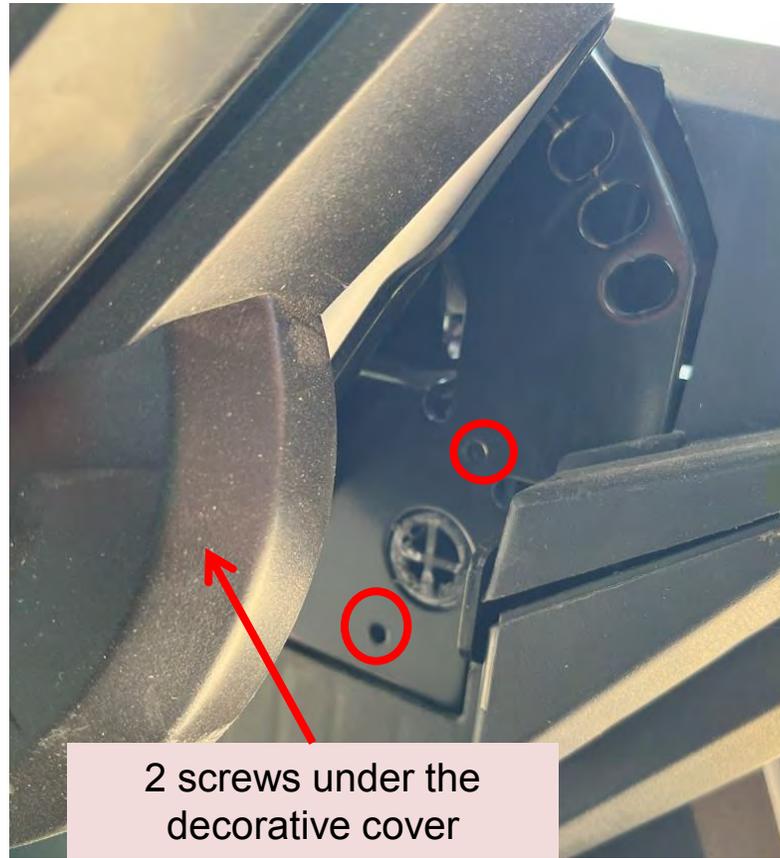
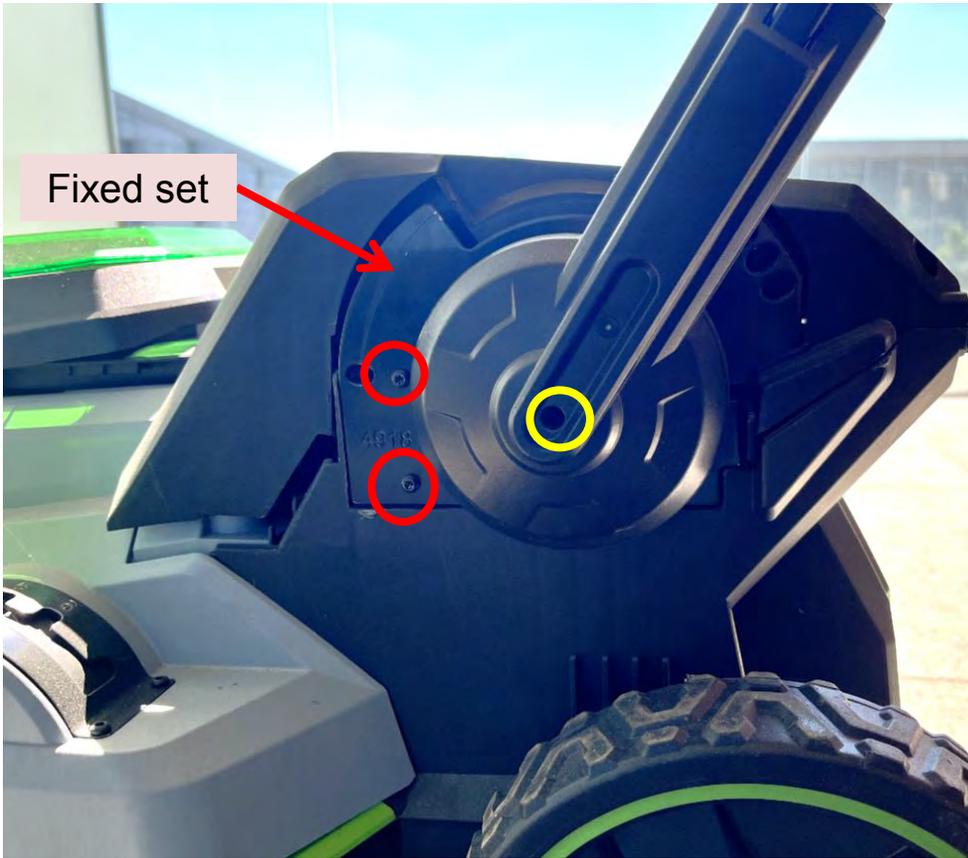
Pressure plate



Fixed set

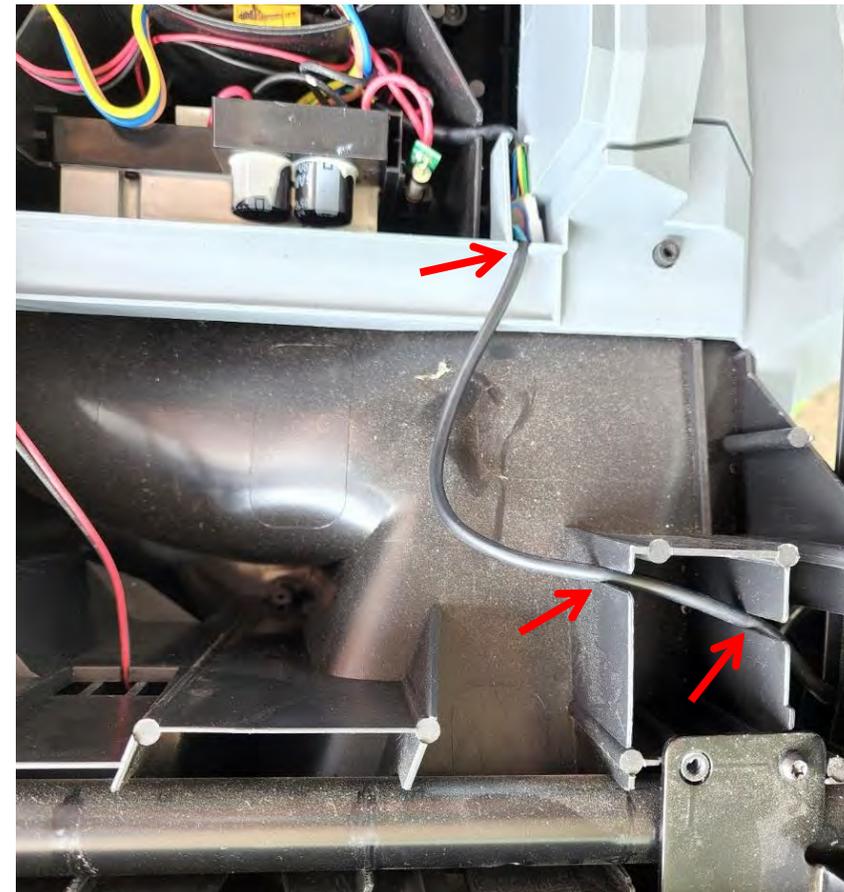
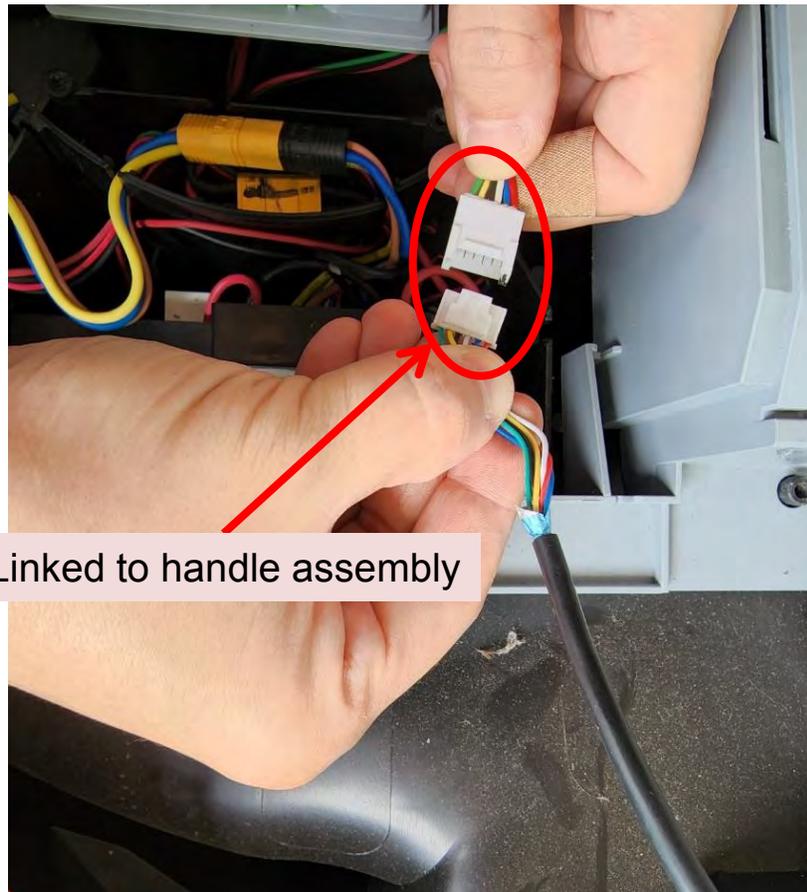
Handle Lever Replacement

20. Fasten the rest 4 screws (marked red) on the fixed set and then fasten the 2 screws (marked yellow) on the left decorative cover.



Handle Lever Replacement

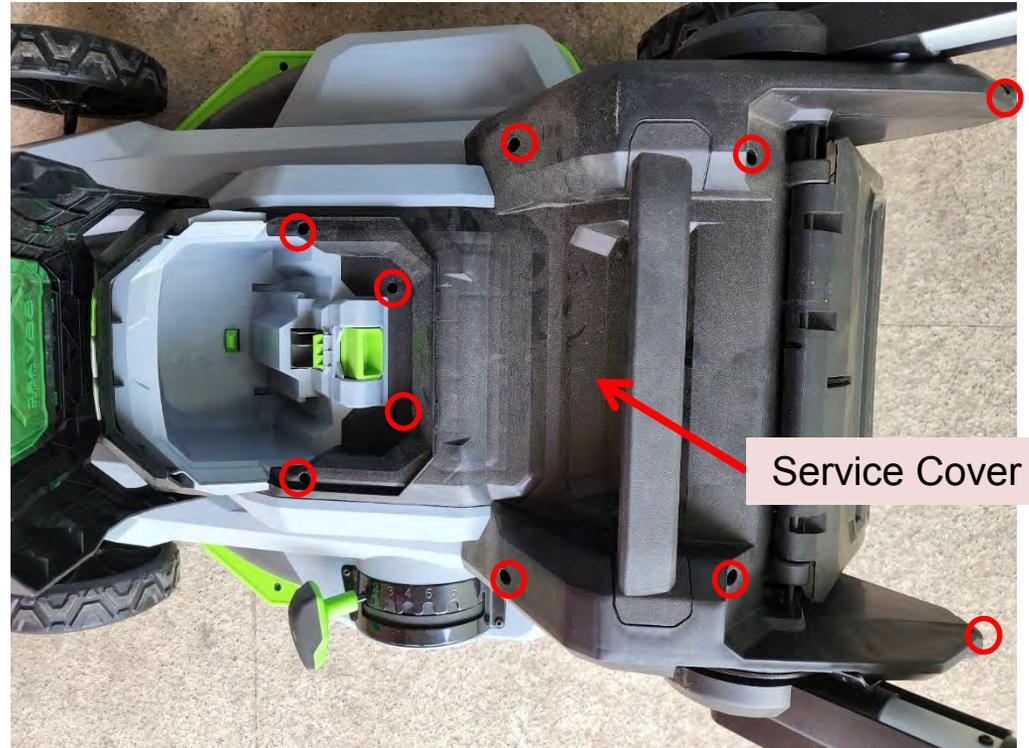
21. Reconnect the white connector which links the handle assembly to the main PCBA and align the wire as below red arrows shown.
22. Test the handle lever function to check if it can lock the handle at different operating positions. Otherwise reassemble it.



Handle Lever Replacement

23. Reassemble the rear cover as instructed in “Part 7_Rear Cover Replacement”.

24. Close the service cover by tighten the 10 screws.



THE END

REPAIR GUIDELINE

PART 10: Connecting Rod Assembly Replacement_LM2110_LM2110SP_LM2120SP Lawn Mower

LM2110



LM2110SP



LM2120SP



Update Date: 2022/10/19

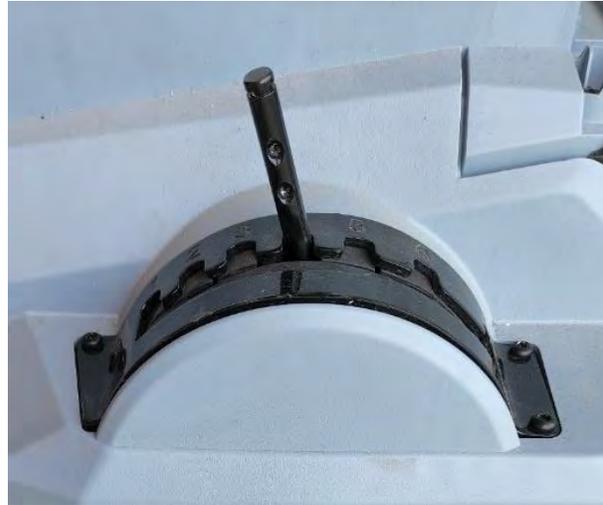
Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)
2	Socket Wrench (S=13mm)
3	Wrench (S=10mm)
4	Screwdriver (PH1)

Note: Lawn mower LM2110, LM2110SP and LM2120SP share the same connecting rod assembly for adjusting the cutting height.

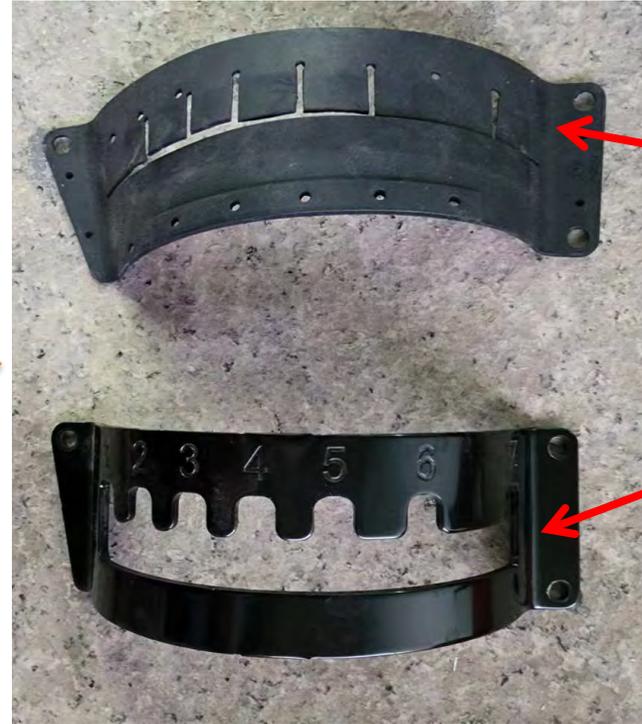
Connecting Rod Assembly Replacement

1. Remove the blade motor and the PCBA as instructed in “**Part 2 Motor & PCBA Replacement**”.
2. Remove the handle assembly as instructed in “**Part 9 Handle Lever Replacement**”.
3. Loosen and remove the 2 screws to take off the height adjust knob. Replace the corresponding part with a new one if needed.



Connecting Rod Assembly Replacement

4. Remove the depth stop plate as well as the rubber pad beneath from the top cover by loosen 3 screws.



Rubber pad

Depth stop plate

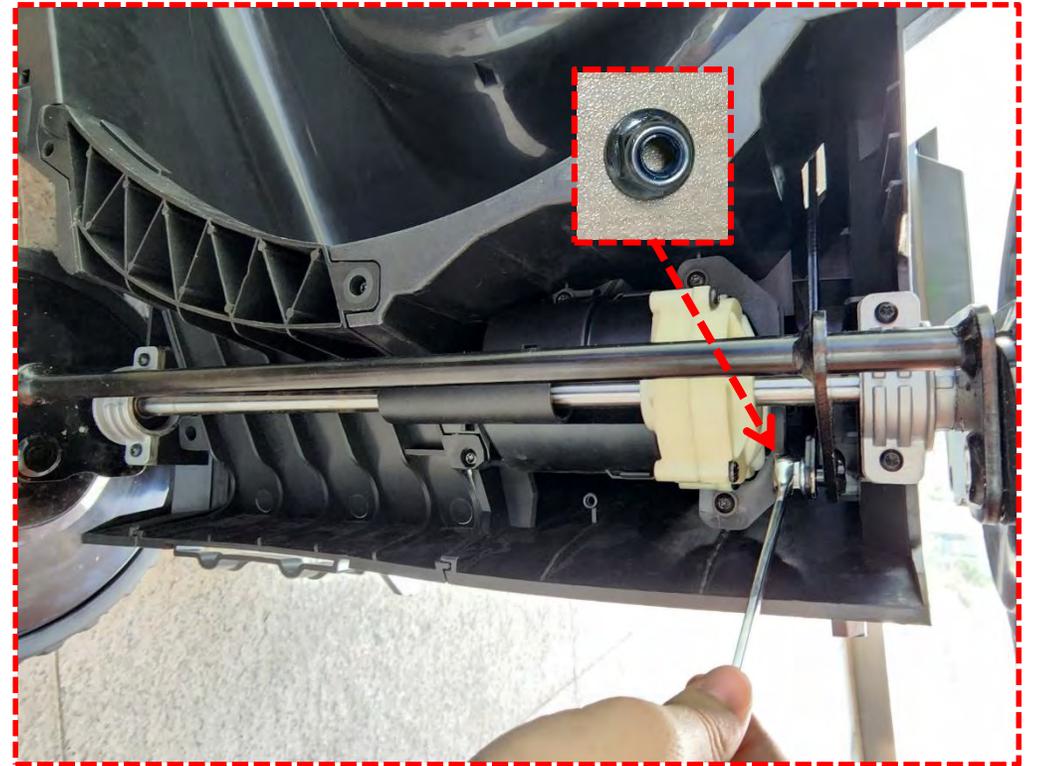
Connecting Rod Assembly Replacement

5. Turn the mower on its back or its side, and then remove the 12 screws to separate the mover top cover from the deck. If the top cover is damaged, replace it with a new one.



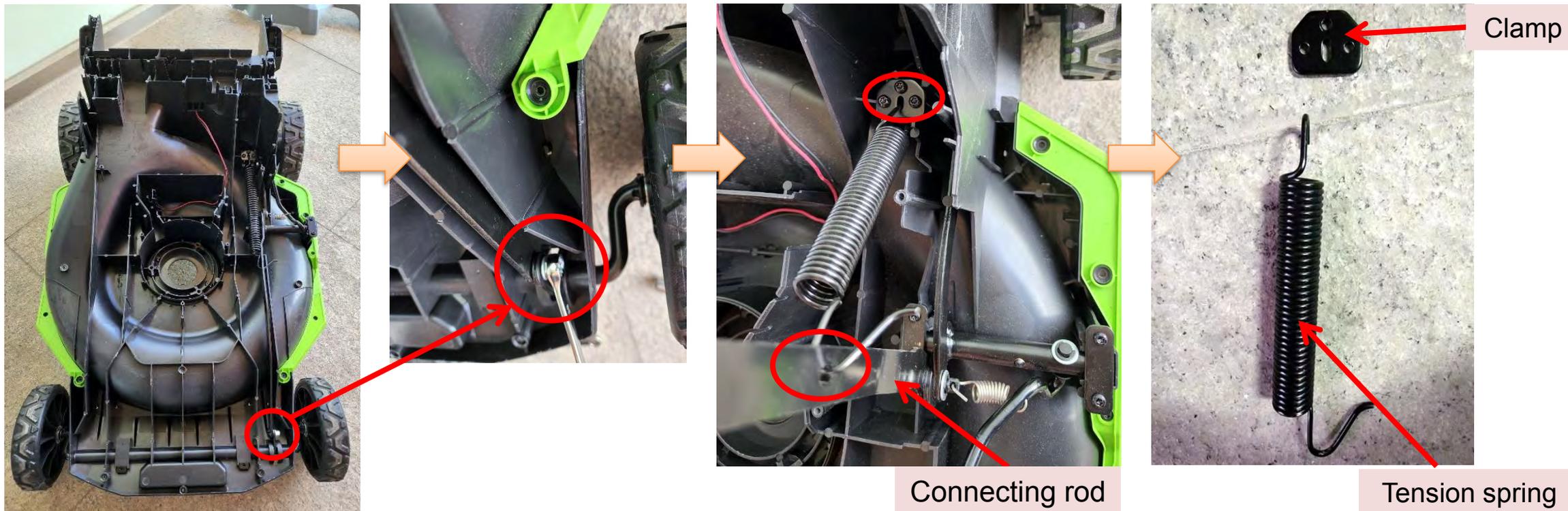
Connecting Rod Assembly Replacement

6. After removing the top cover, remove the trail shield to get a better view of the nut connecting the rod assembly to the rear axle.
7. **Keep the mower in the highest cutting position.** Using a 10 mm wrench to remove the nut on the joint.



Connecting Rod Assembly Replacement

8. Use a 10mm wrench to loosen the nut at the rod joint in the front axle.
9. Separate the front connecting rod from the front axle, and then gently control the connecting rod to the vertical position to make the spring under unstressed condition.
10. Loosen the 3 screws on the clamp first, and then take the spring out of the hole in the clamp and the hole in the connecting rod. If any parts is damaged, replace it with a new one.



Connecting Rod Assembly Replacement

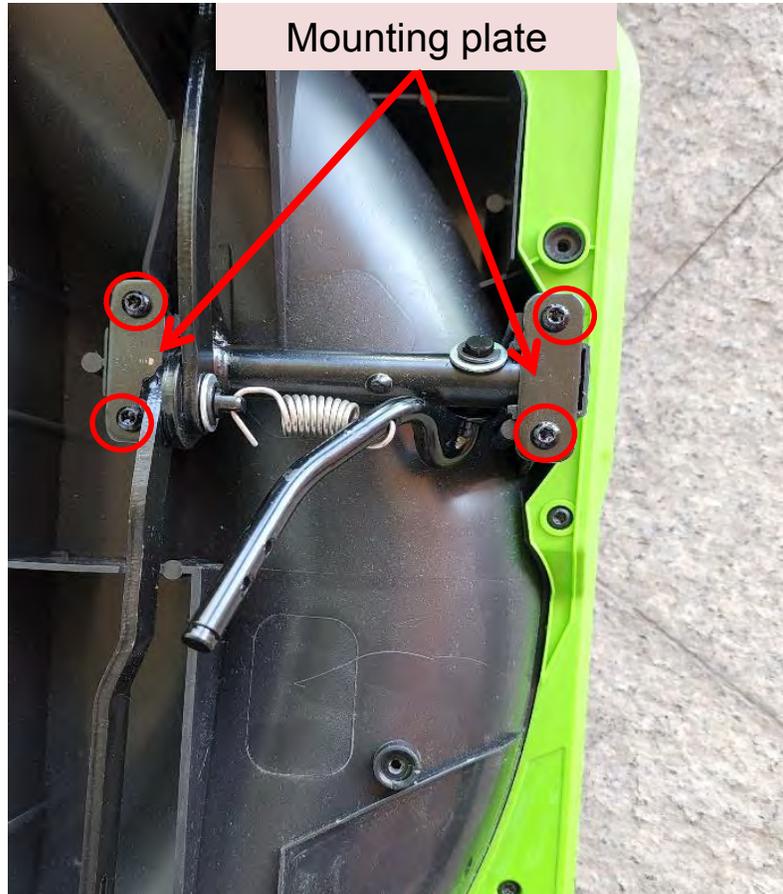
11. If the L/R cover set is damaged, remove the 2 screws on the left and 1 screw on the right to separate L/R cover set from the deck. Replace it with a new one.

NOTICE: The L/R cover is green for LM2120SP; Black for LM2110 & LM2110SP.



Connecting Rod Assembly Replacement

12. Loosen the 4 screws on the 2 mounting plates to remove the connecting rod assembly from the mower. If the connecting rod assembly is damaged, replace it with a new one.

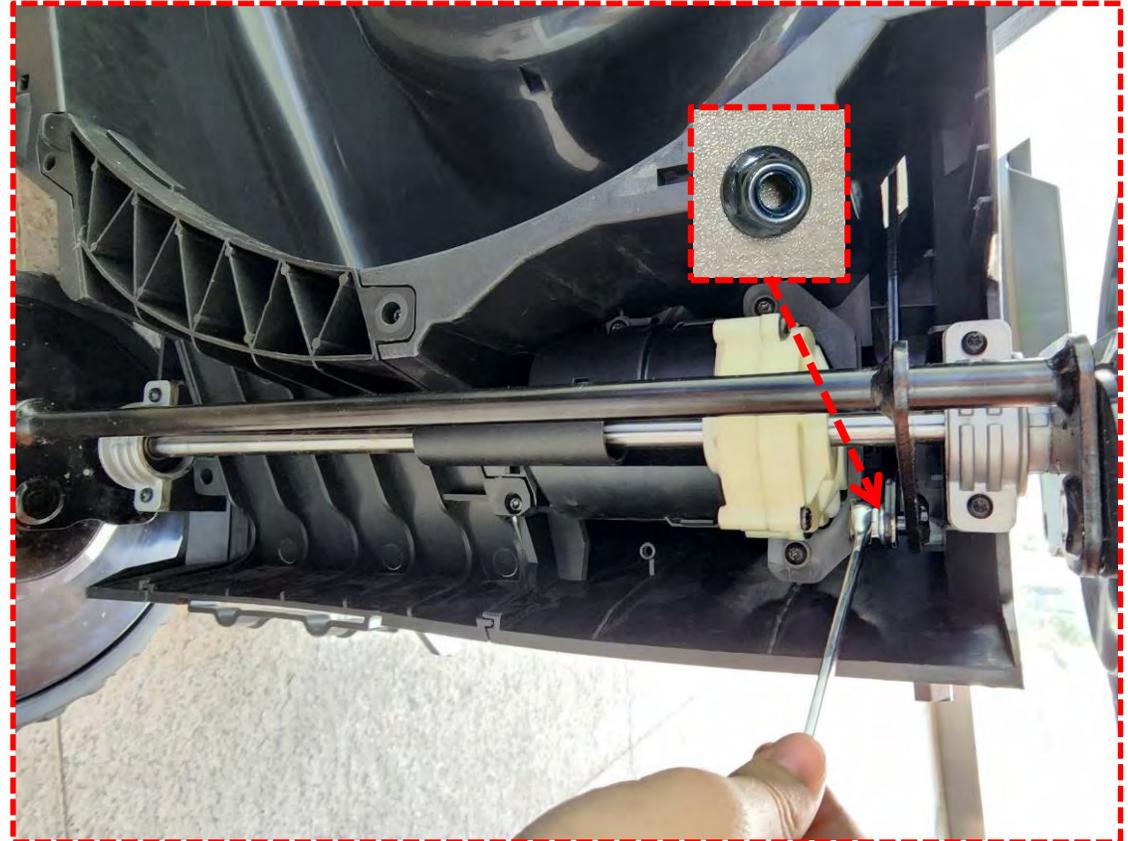
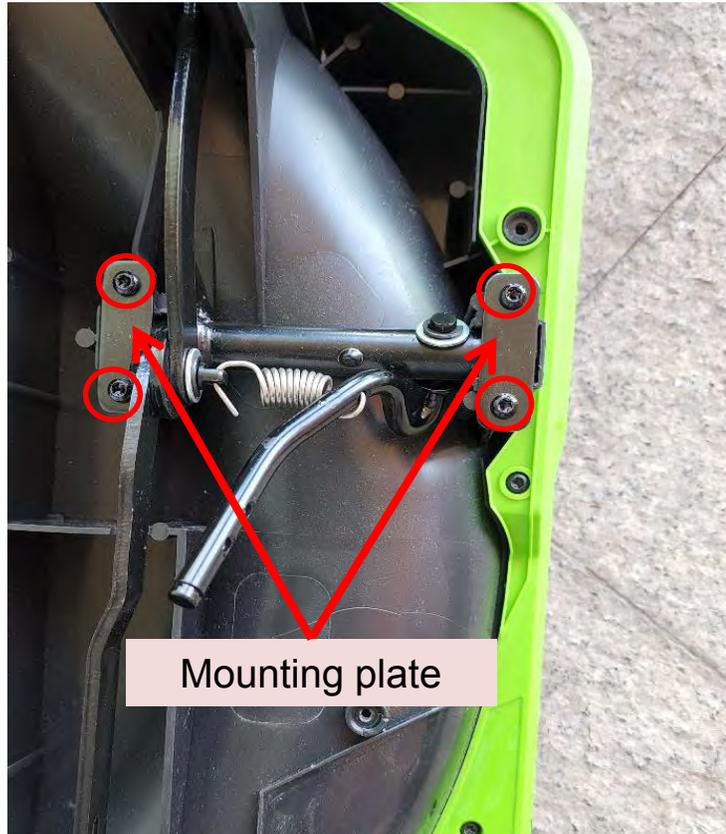


Self-propelled Unit Replacement

13. Put the new connecting rod assembly in the right place of the deck, then tighten the mounting plate by 4 screws.

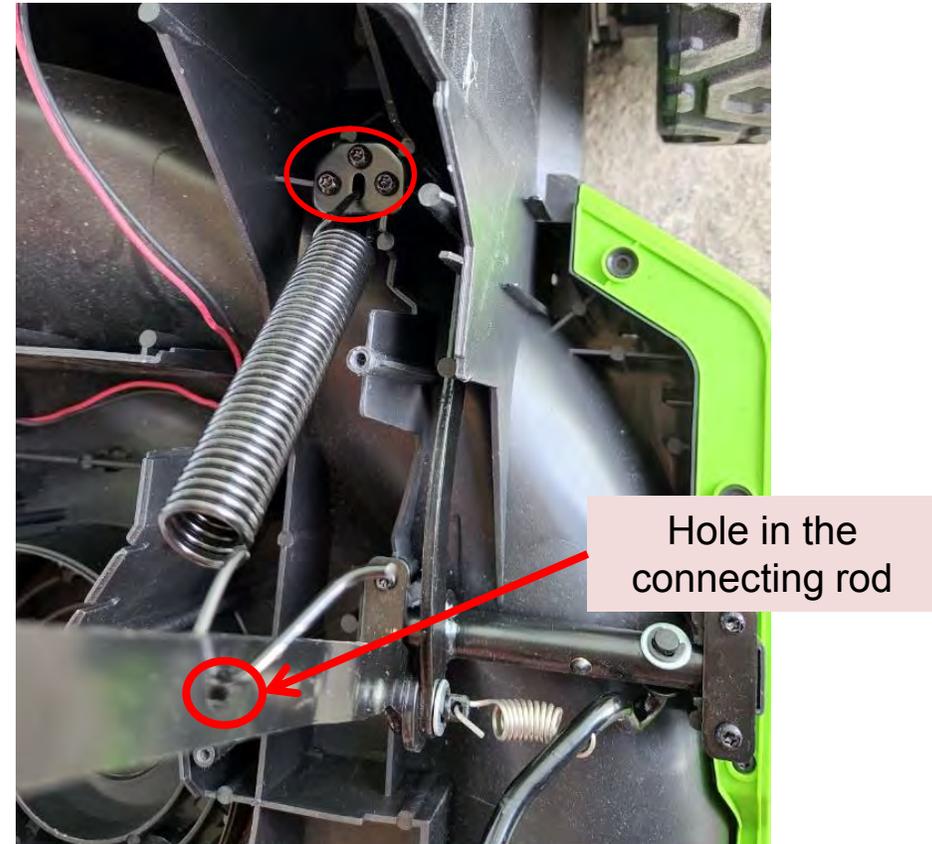
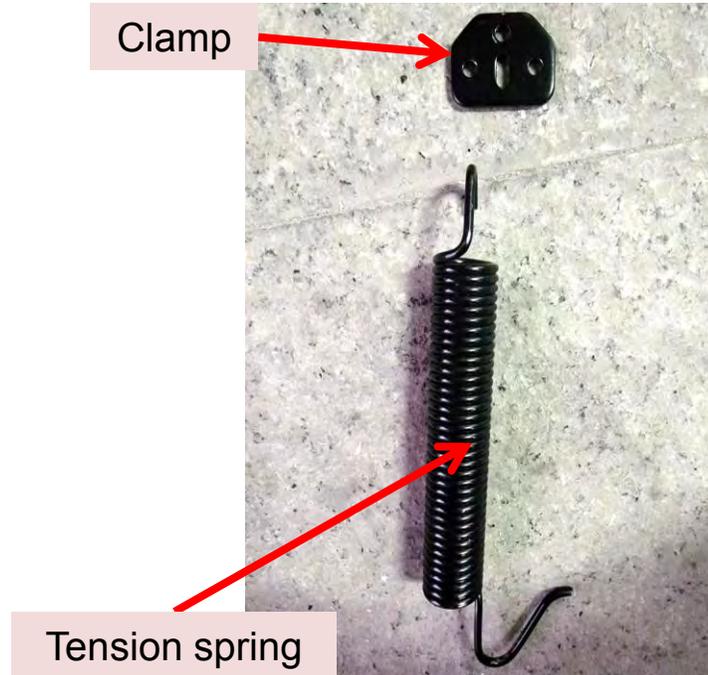
14. Using a 10 mm wrench to mount the nut on the joint.

NOTICE: The torque for the nut for assembly is 5.0 Nm-6.0 Nm.



Connecting Rod Assembly Replacement

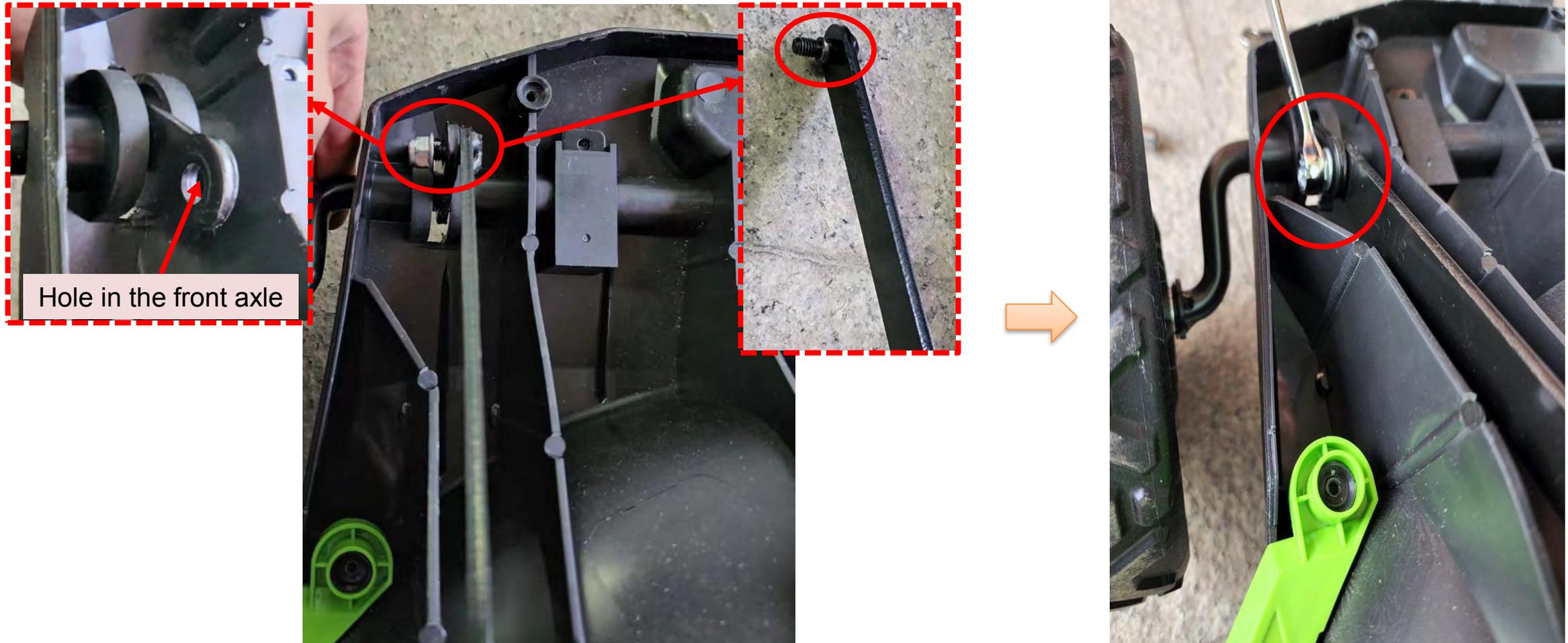
15. Insert the short hook of the spring into the hole in the clamp and then insert the long hook into the hole in the connecting rod.



Connecting Rod Assembly Replacement

16. Pull the connecting rod until the protrusion of the front connecting rod is aligned with the hole in the front axle.

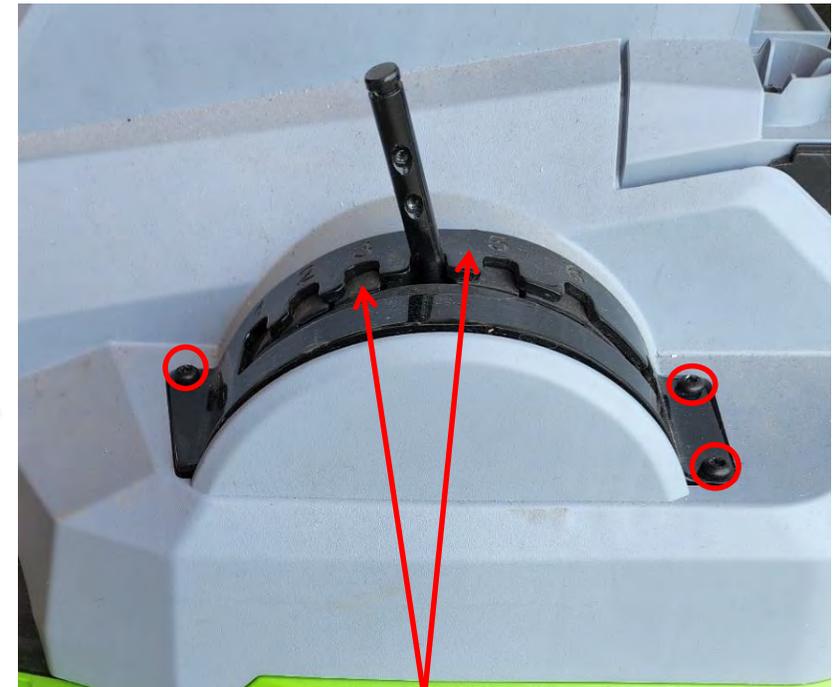
17. Tighten the nut to fix the front connecting rod and the front axle by a 10mm wrench.



Connecting Rod Assembly Replacement

18. Close the top cover and tighten it with the deck using 12 screws.

19. Mount the rubber pad and the depth stop plate onto the top cover, tighten them with the 3 screws.



Rubber pad (beneath) and depth stop plate

Connecting Rod Assembly Replacement

20. Mount the height lever knob onto the connecting rod assembly and fix it using 2 screws.



THE END

REPAIR GUIDELINE

PART 11: Self-propelled Unit Replacement_LM2110SP_LM2120SP Lawn Mower



Update Date: 2022/10/18

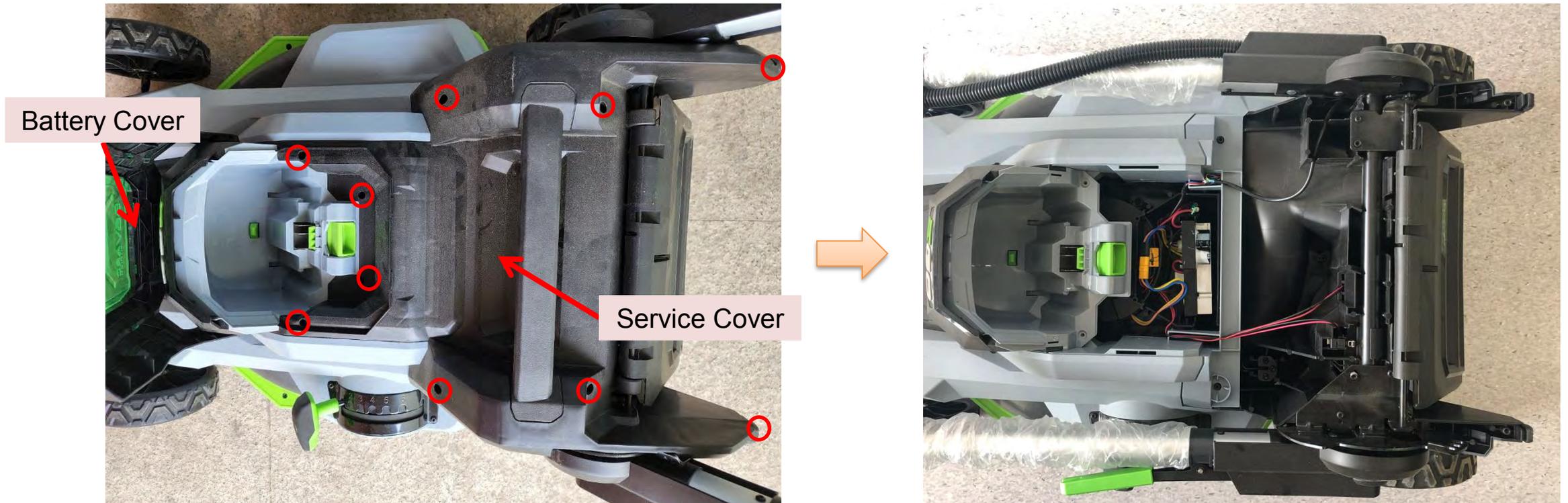
Tool List For Repair

NO.	Tool List
1	Torx screwdriver (T20)
2	Socket Wrench (S=13mm)
3	Wrench (S=10mm)
4	Screwdriver (PH1, PH2)

Note: LM2110SP and LM2120SP share the same self-propel unit.

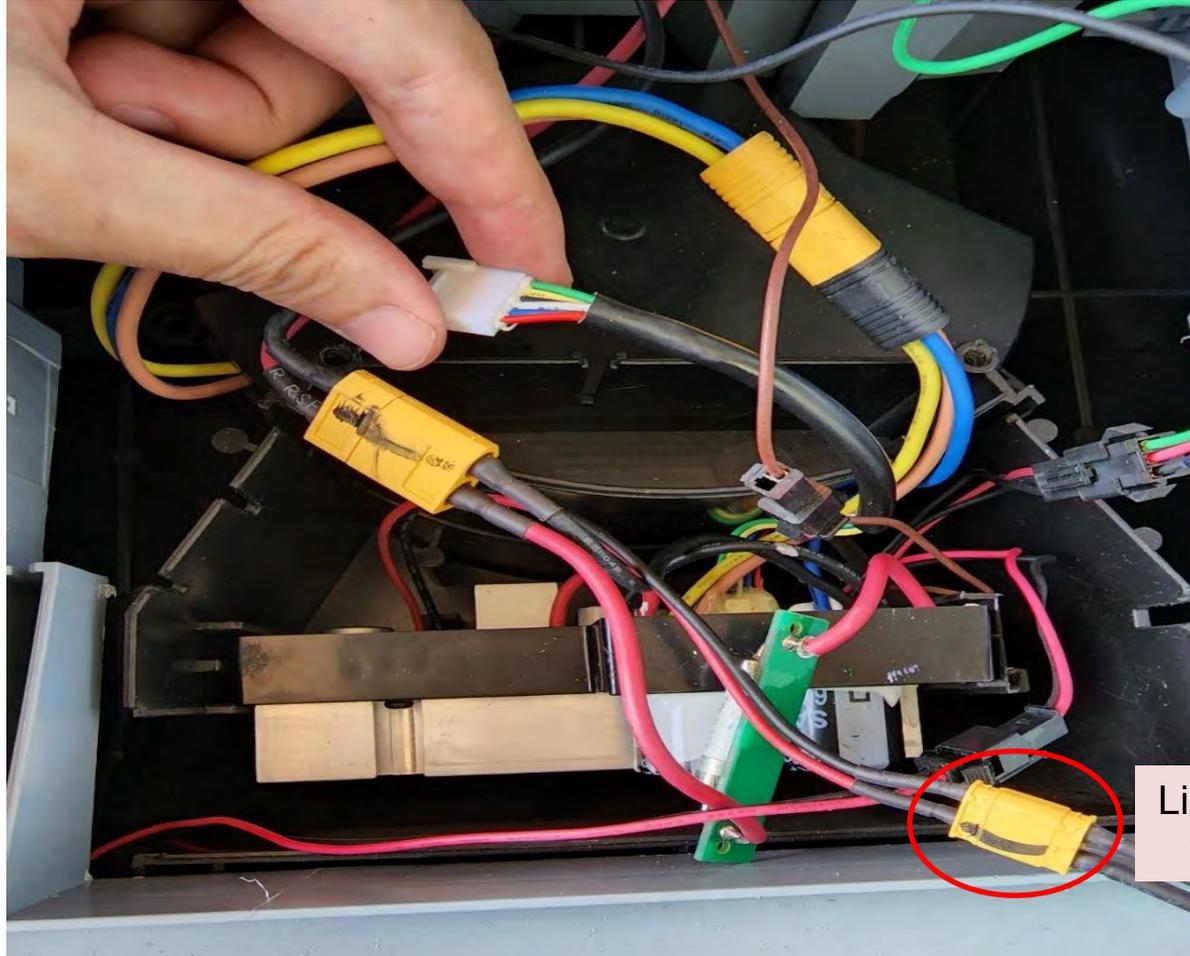
Self-propelled Unit Replacement

1. Before replacing the parts in the self-propelled unit, open the battery cover and remove the service cover from the mower by loosening the 10 screws with the mower handle positioned in its operating position.



Self-propelled Unit Replacement

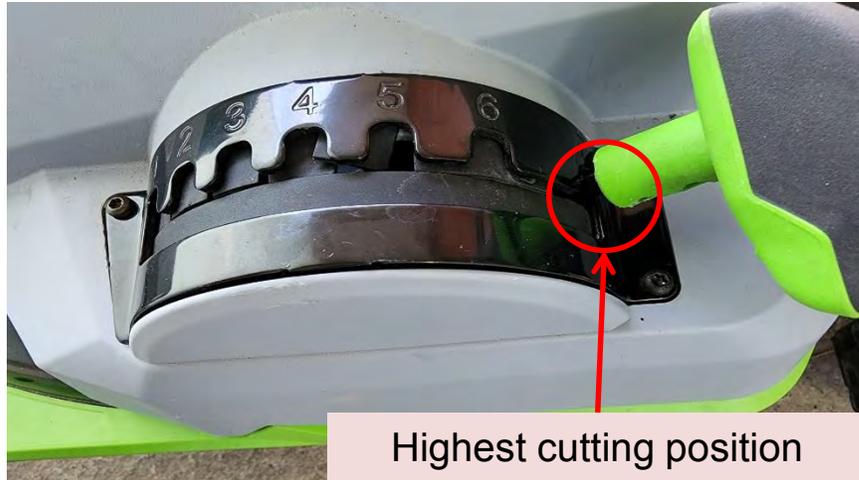
2. Disconnect the smaller yellow connector, which links the self-propelled motor to the main PCBA assembly.
3. Please refer to “**Part 2_DC Motor and Main PCBA Assembly Replacement_LM2120SP**” for main PCBA replacement instructions.



Linking the self-propelled motor to the main PCBA assembly

Self-propelled Unit Replacement

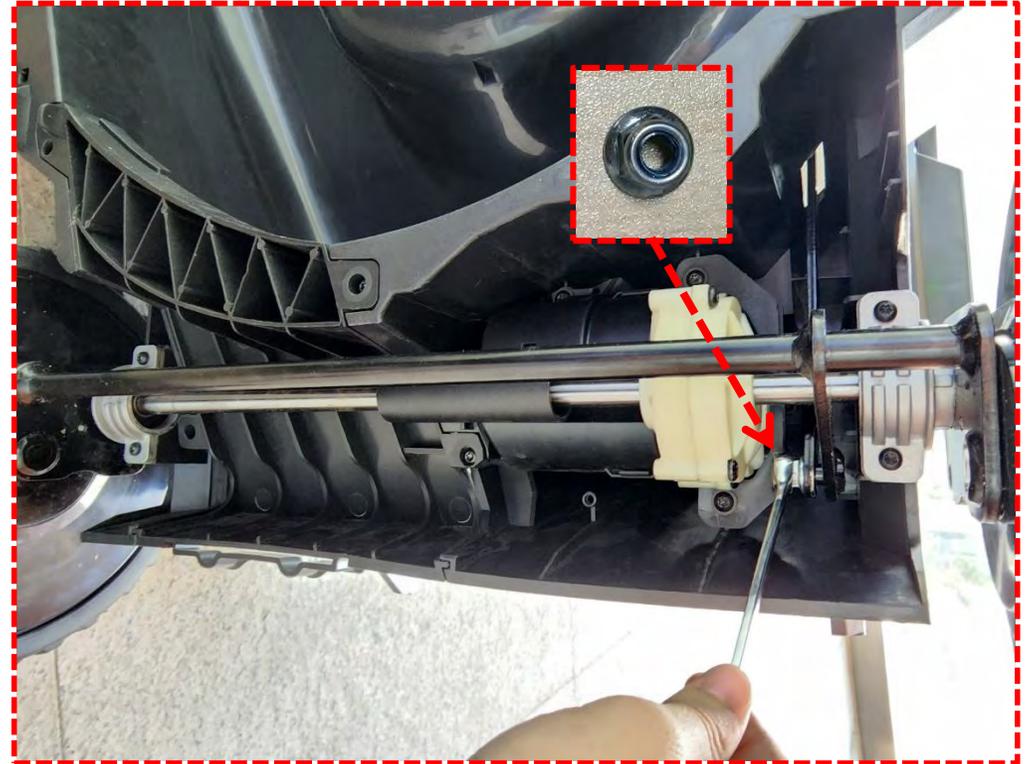
4. **Adjust the mower to the highest cutting position (7#)** first and then turn the mower on its back to remove the trail shield and the bevel support from the rear axle by loosening 3 screws. If the trail shield or the bevel support is damaged, have it replaced .



Self-propelled Unit Replacement

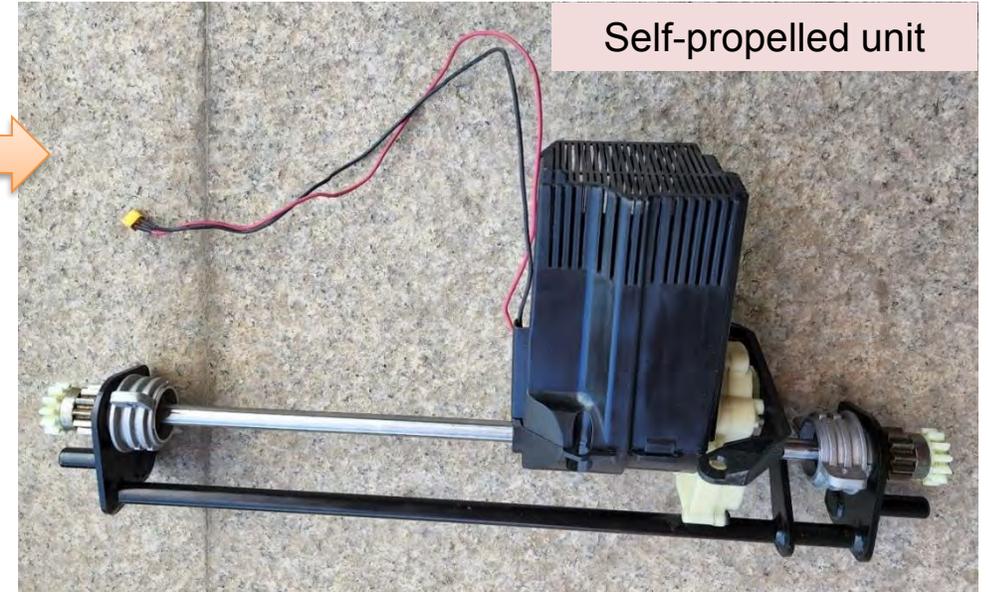
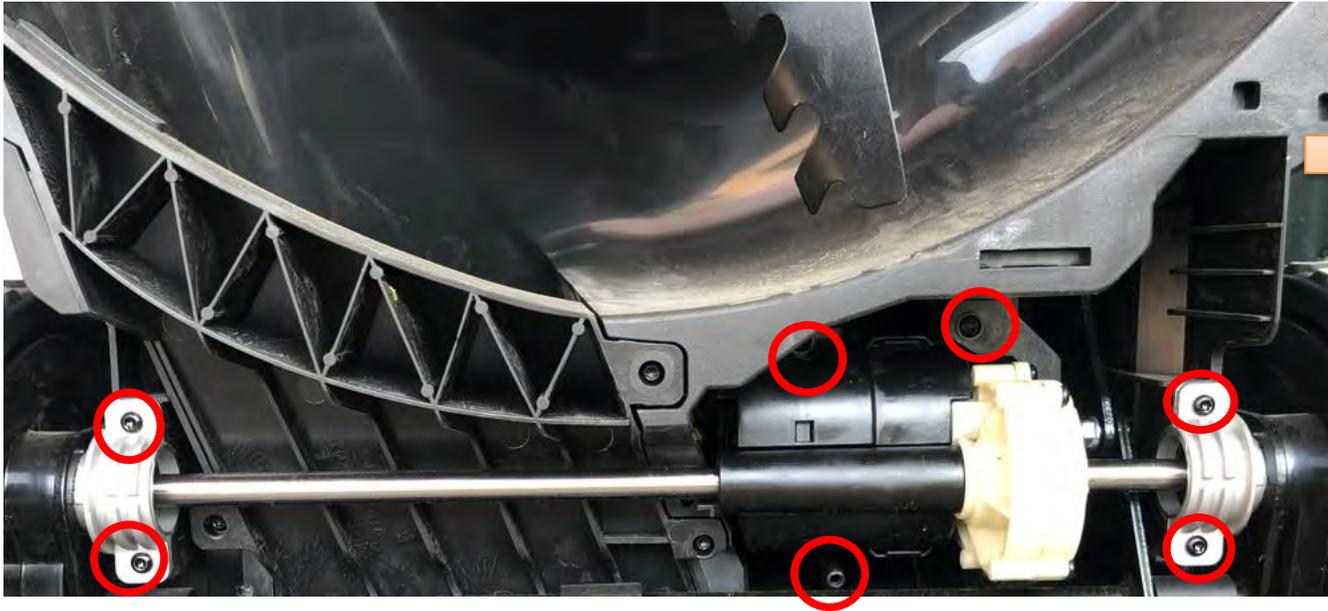
5. **Keep the mower in the highest cutting position.** Using a 10 mm wrench to remove the nut on the joint.

NOTICE: The torque for the nut for assembly is 5.0 Nm-6.0 Nm.



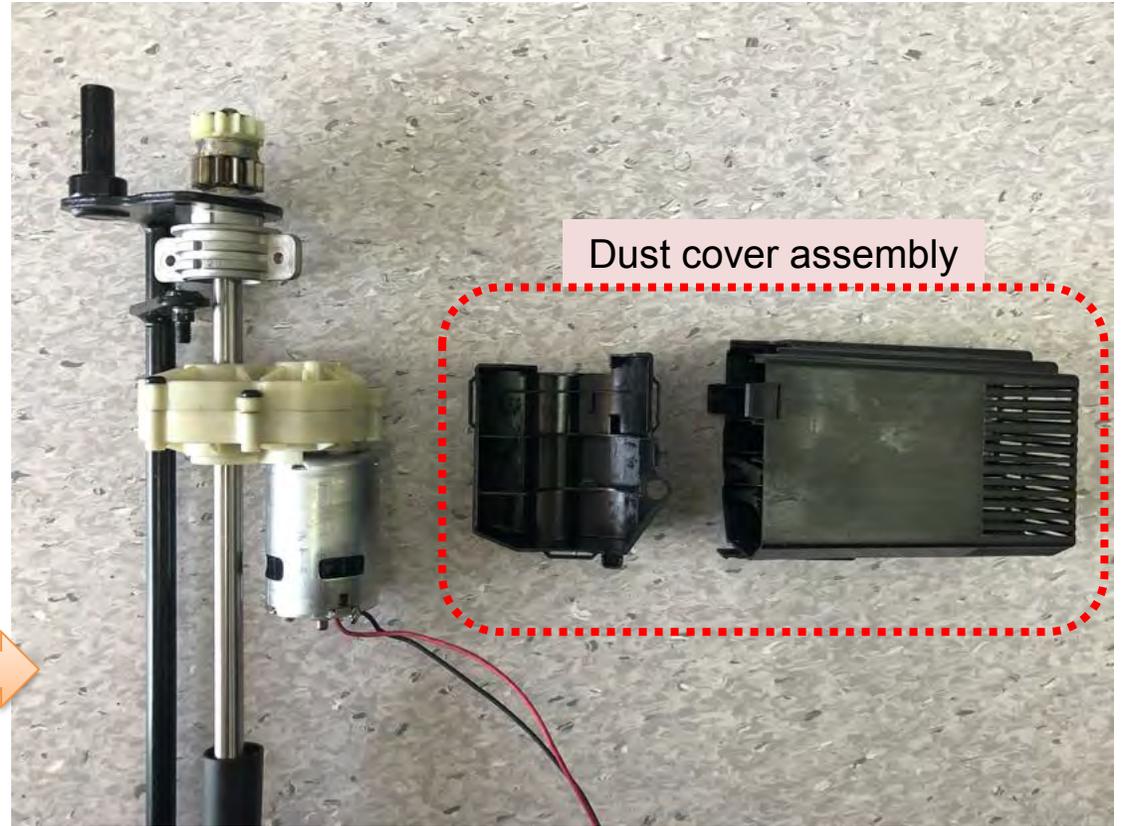
Self-propelled Unit Replacement

6. Please refer to “**Part 8_Wheels Replacement _LM2120SP**” to remove the rear wheels from the rear axle.
7. Remove the 7 screws on the self-propelled unit and then separate the self-propelled unit from the mower.



Self-propelled Unit Replacement

8. Open the dust cover assembly to separate the motor & gear assembly from the unit.



Self-propelled Unit Replacement

9. Remove the 2 screws to separate the support from the unit, if the support is damaged then have it replaced.



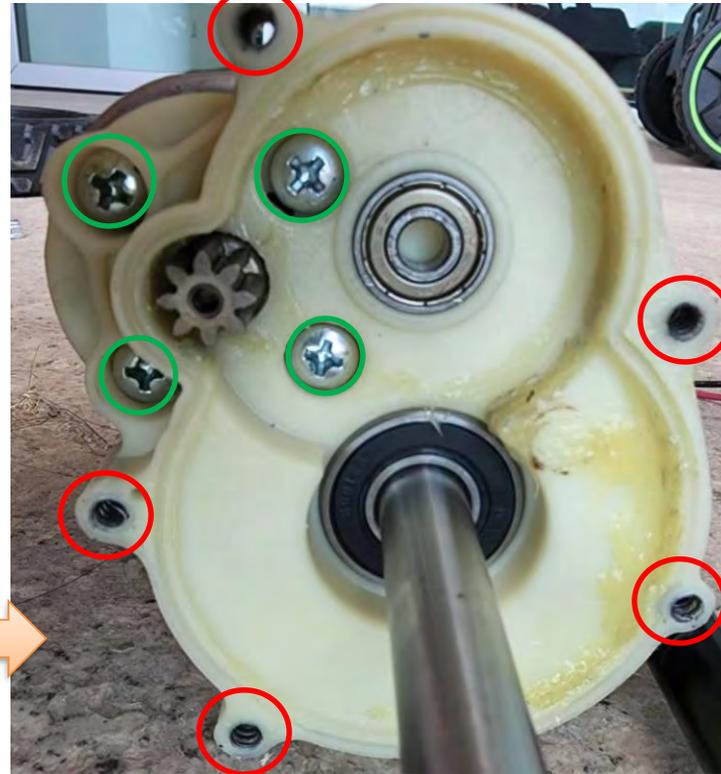
Self-propelled Unit Replacement

10. To detach the self-propelled motor & gear assembly from the unit, remove the 5 screws (circled red) and then open the gear cover to remove another 4 screws (circled green). If the motor & gear assembly is broken then have it replaced.

Before open the gear cover



After open the gear cover

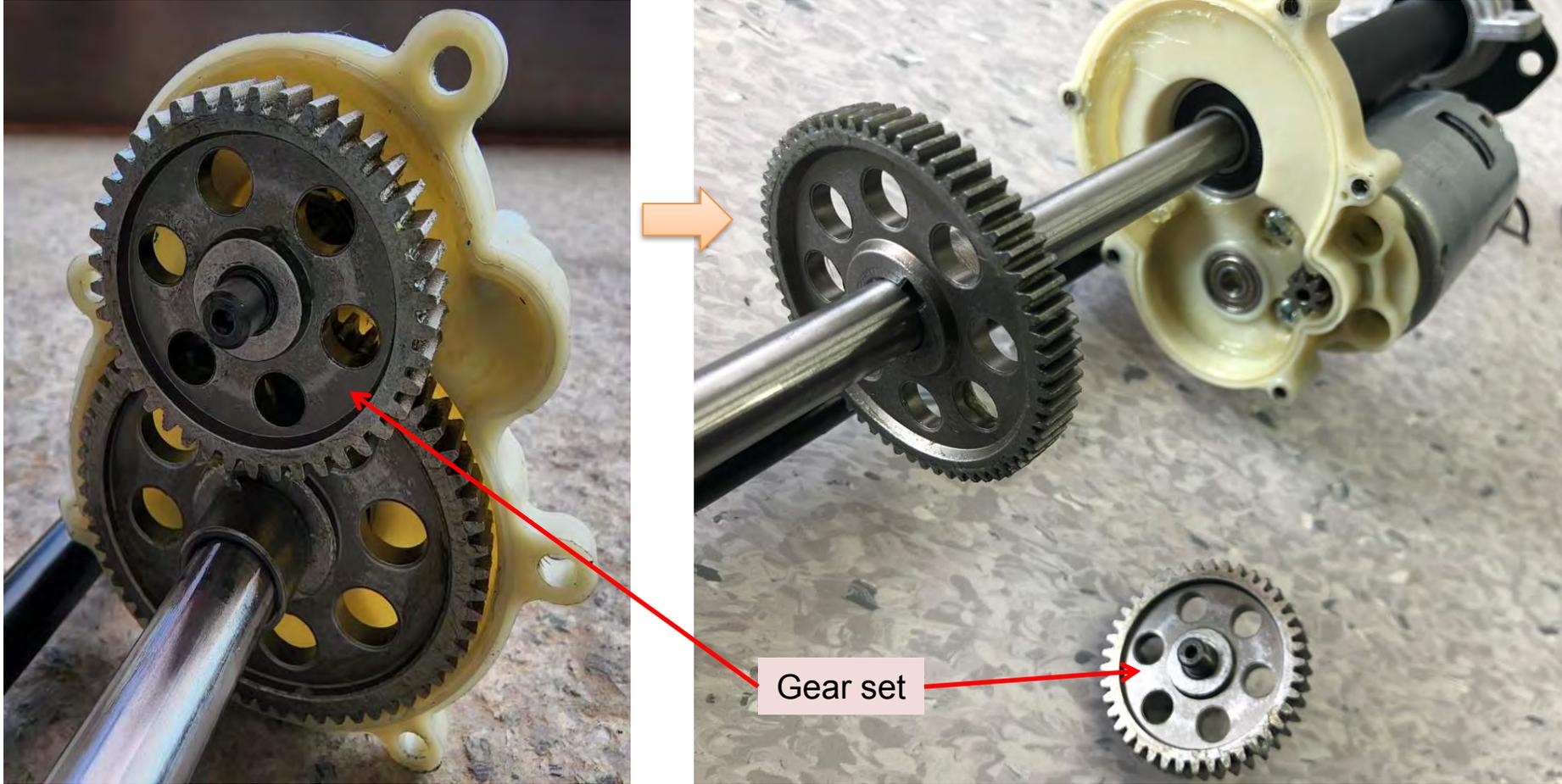


Motor & Gear assembly



Self-propelled Unit Replacement

11. Take the gear set out to have it replaced if needed.

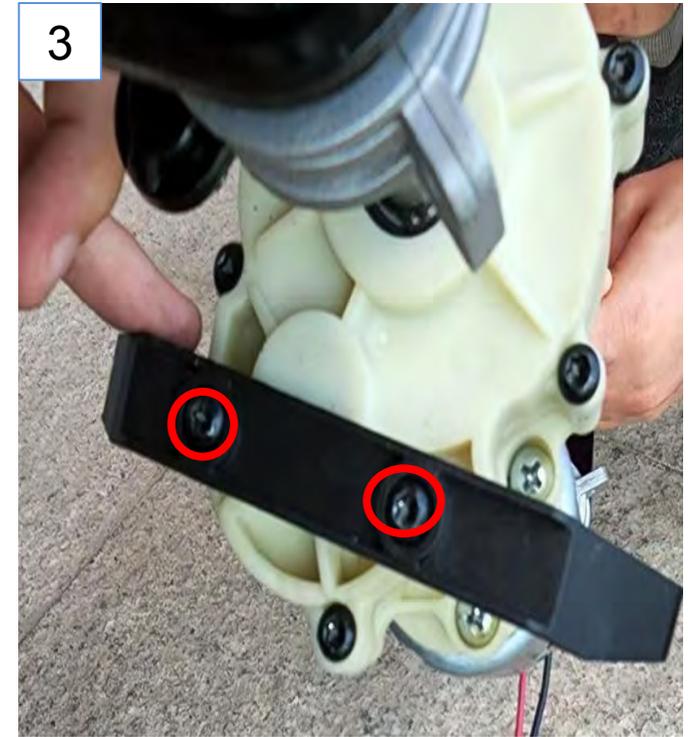
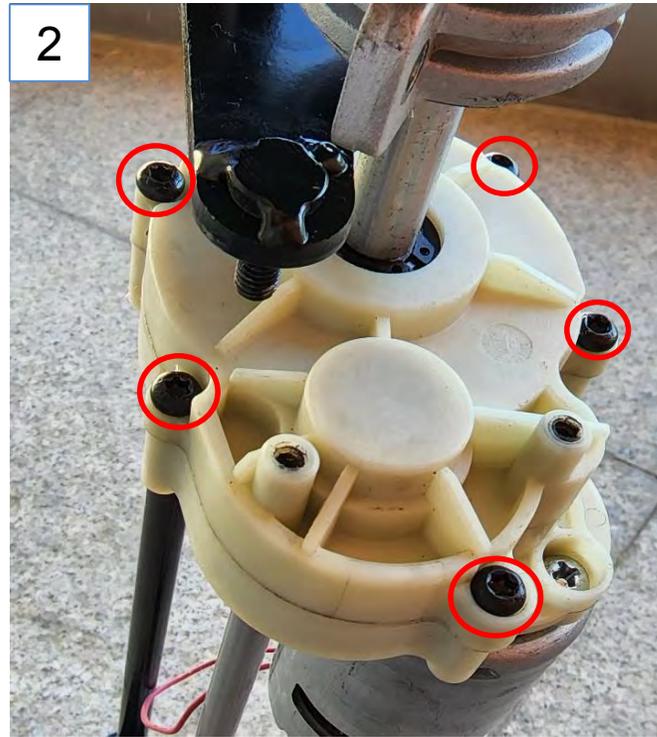
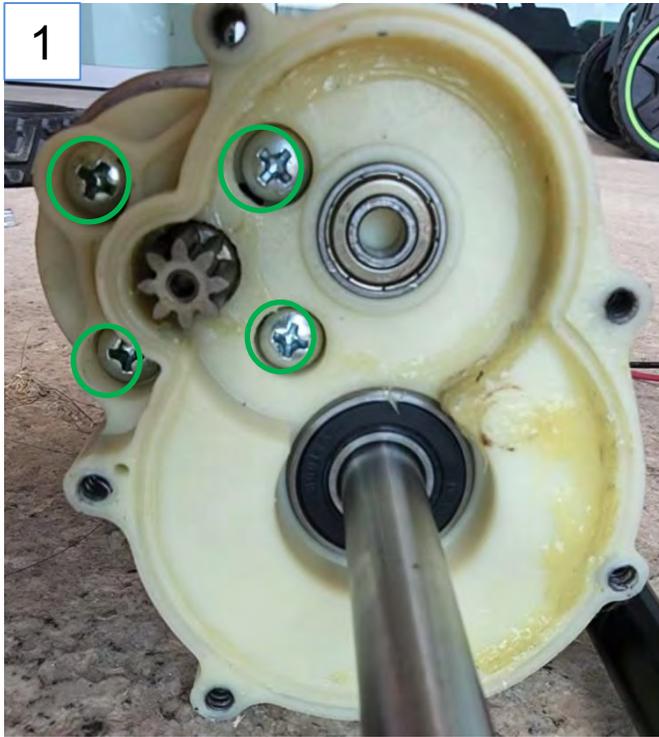


Self-propelled Unit Replacement

12. Attach the new motor to the gear case first and fix it using 4 screws (Fig.1).

13. Close the gear cover and fix it by tightening 5 screws (Fig.2).

14. Attach the support onto the gear case and fix it using 2 screws (Fig.3).



Self-propelled Unit Replacement

15. Attach the dust cover assembly onto the motor with the motor wires aligned into the cover groove.

16. Attach the trail shield and the rear wheels onto the self-propelled unit and then mount the whole set onto the mower in the reverse order.

Note: Make sure the round support is fit as shown below before tightening the screws.

