

REPAIR GUIDELINE

PART 8: Self-propelled PCBA and Unit Replacement_LM2100SP Lawn Mower



Updated on 2021/09/07

Table of Contents

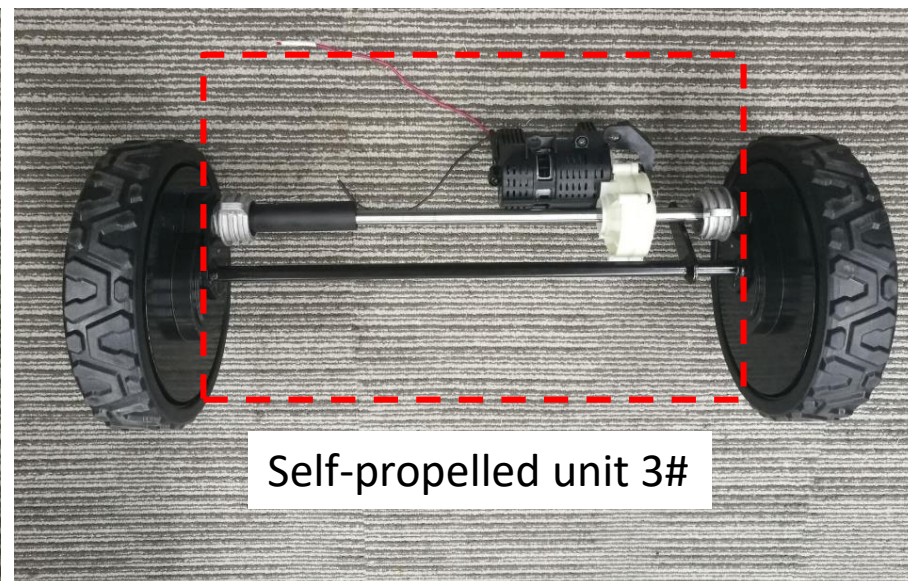
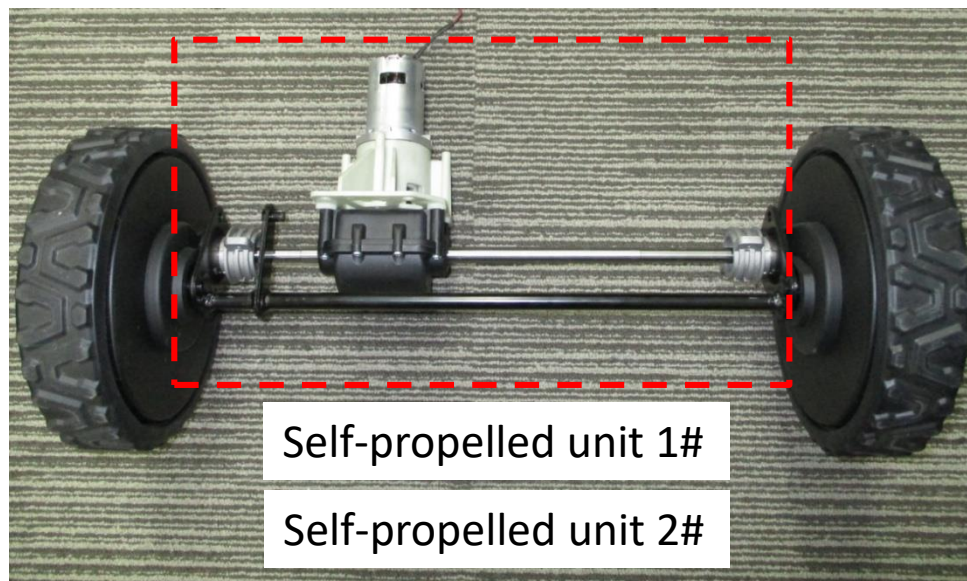
LM2100SP Lawn Mower

NO.	Contents	Page
1	Notice for Self-propelled Unit Replacement	3-5
3	Self-propelled PCBA Replacement	6-14
4	Motor in Self-propelled Unit Replacement_LM2100SP_A	15-25
5	Gear Box and Rear Axle Set in Self-propelled Unit Replacement_LM2100SP_A (no longer for service when old parts are run out)	26-29
6	Motor in Self-propelled Unit Replacement_LM2100SP_B	30-46

Notice for Self-propelled Unit Replacement

LM2100SP Lawn Mower

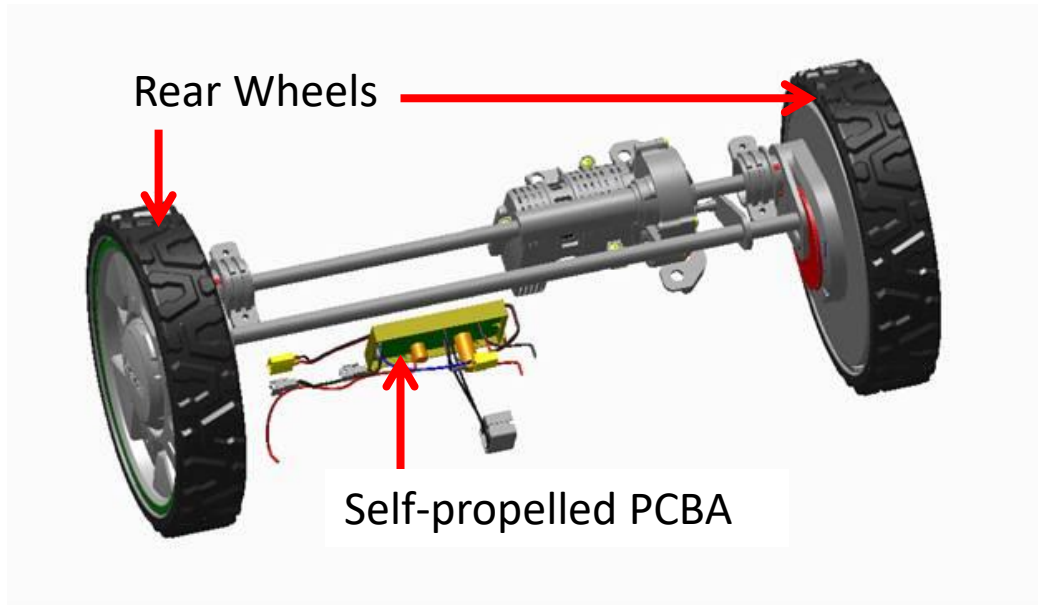
NOTICE: There are 2 different versions of self-propelled units for LM2100SP (LM2100SP_A & LM2100SP_B), see below. However considering the connection way (see next slides) between the rear axle and connection rod, there are 3 kinds of structure, we name as self-propelled unit 1# (snap ring connection, old self-propelled unit), self-propelled unit 2# (nut connection, old self-propelled unit) and self-propelled unit 3# (nut connection, new self-propelled unit).



Description	Part Number	Status Remark	Replacement Running Change
Self-propelled unit 1#	2824280001	LM2100SP_A	The old self-propelled unit 1# & 2# will not be available from 2020/11. New self-propelled unit SET (including the rear wheels and self-propelling PCBA of version B, see next slide) (2828353001) will be used for spare parts order and repair.
Self-propelled unit 2#	2824280003		
Self-propelled unit 3#	2825258001	LM2100SP_B	

Notice for Self-propelled Unit Replacement

New self-propelled unit **SET: 2828353001**
(w/ the rear wheels and self-propelling PCBA of version B)



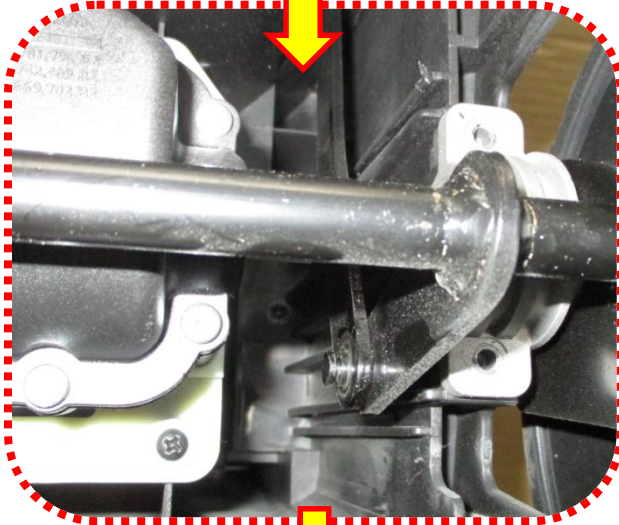
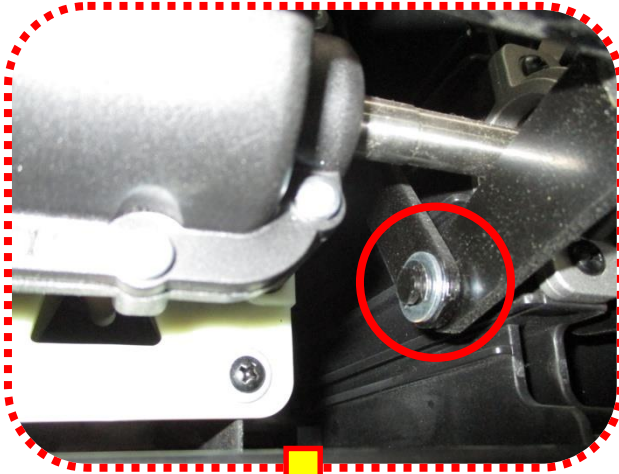
Self-propelled unit of version B: **2825258001**
(w/o the rear wheels and self-propelling PCBA)



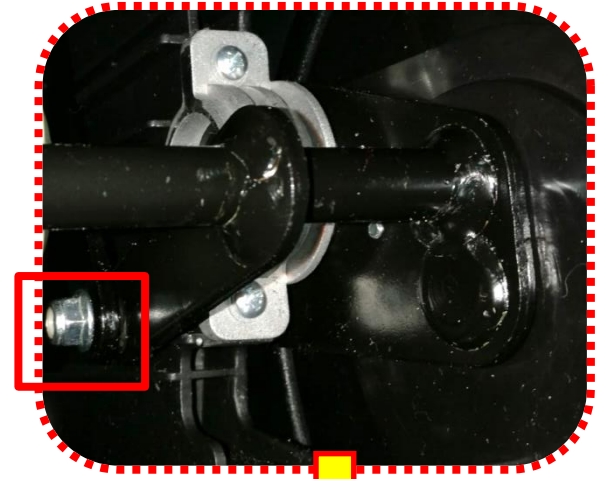
Notice for Self-propelled Unit Replacement

LM2100SP Lawn Mower

Snap-ring
Connection:

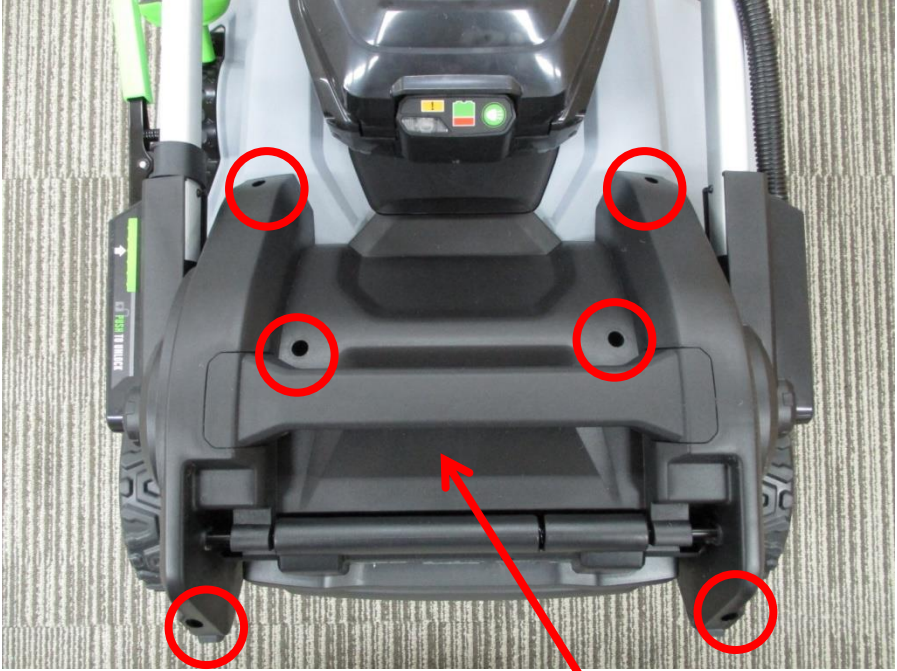


Nut
connection:



Self-propelled PCBA Replacement

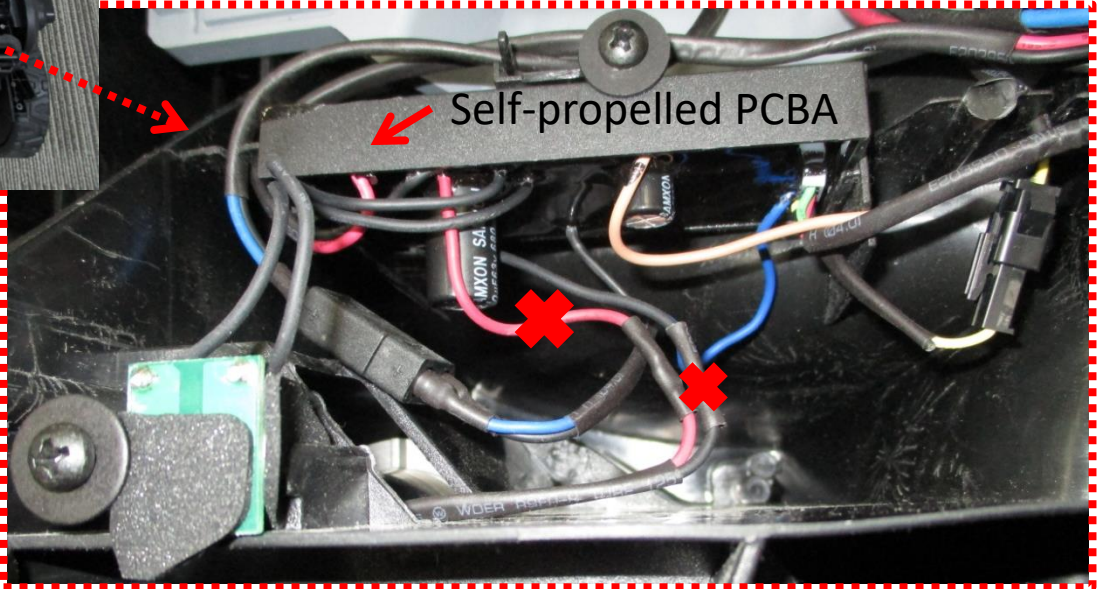
1. Before replacing or maintaining the PCBA or parts in self-propelled unit, first fold the handle to the grass bag removal position to detach the service cover from the mower.



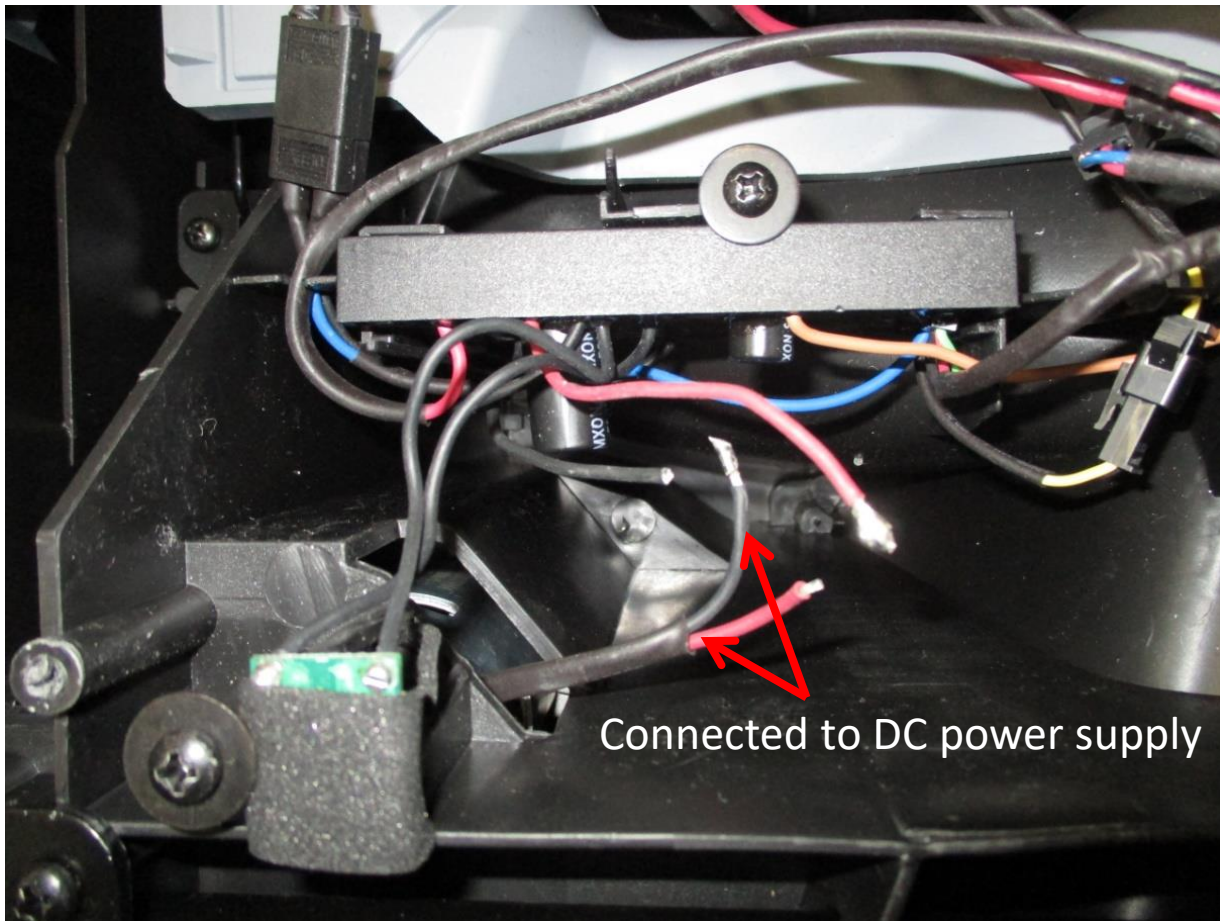
Service Cover

Self-propelled PCBA Replacement

- 2. Cut off the red and black thin wires by scissors. They are used for connecting the self-propelled PCBA to the self-propelled motor.

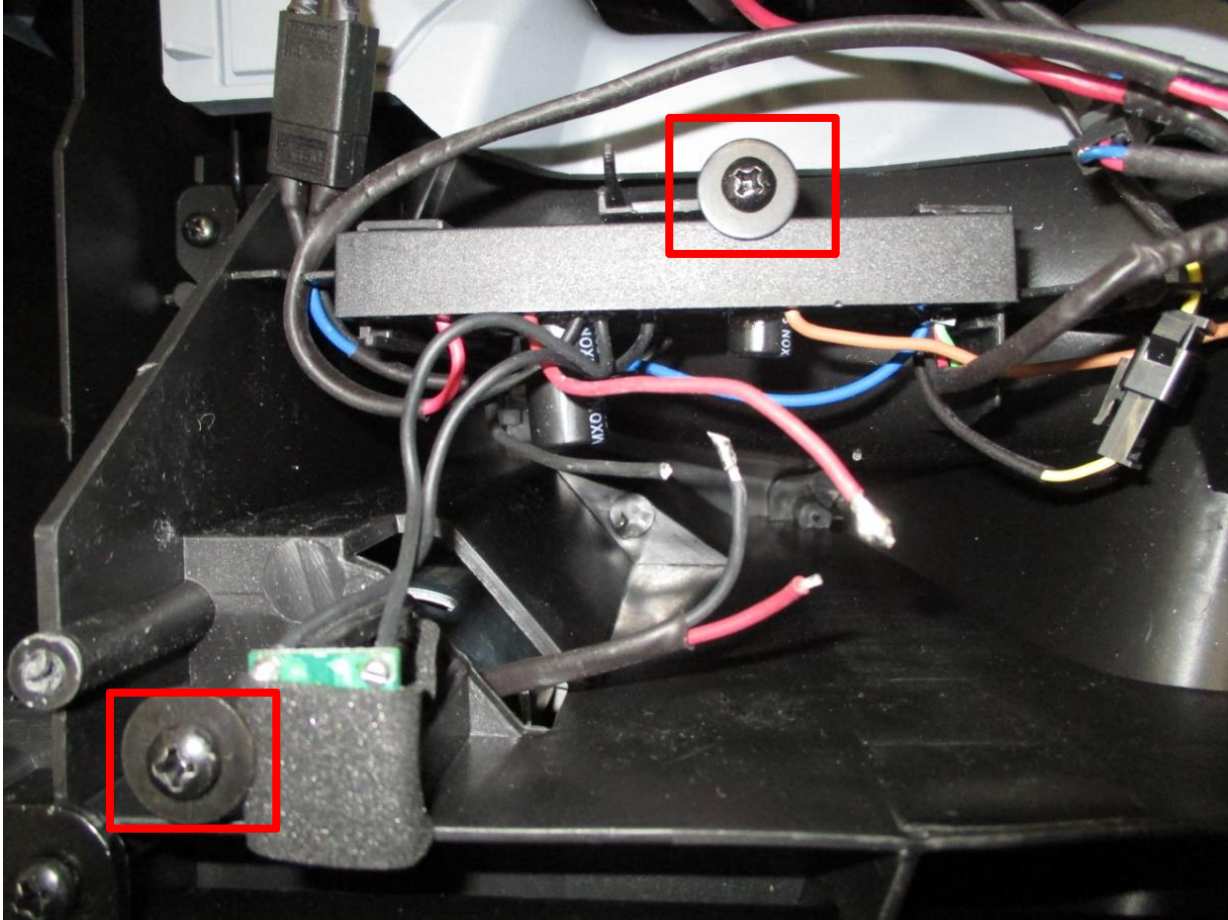


3. Test the self-propelled motor by connecting the motor cables to a DC power supply. If the motor doesn't run, disassemble the self-propelled unit and replace the motor. Otherwise replace the PCBA.



Self-propelled PCBA Replacement

4. Remove the 2 screws with their washers.



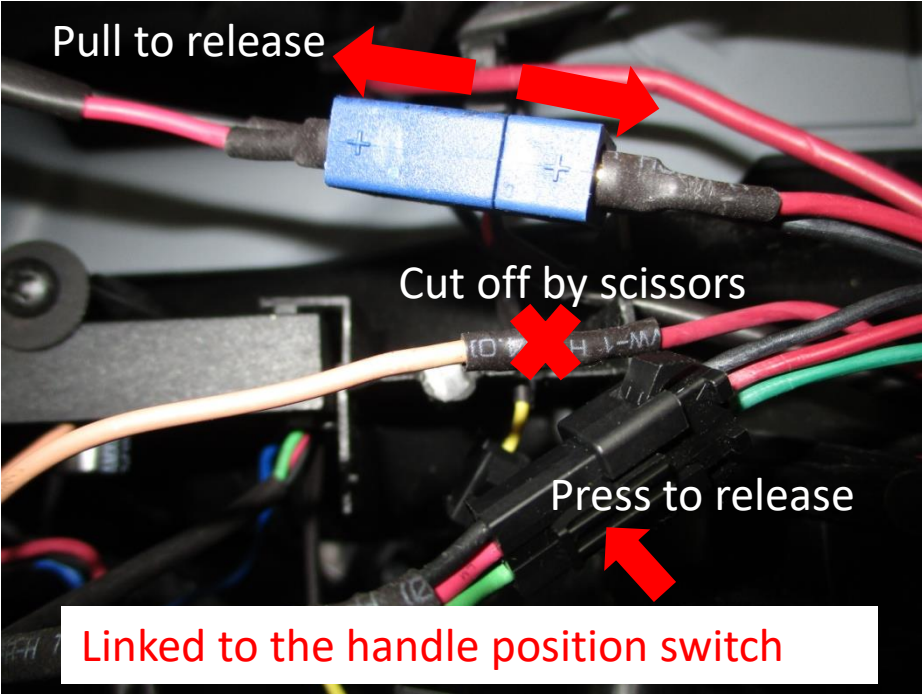
Description	Part Number	STATUS REMARK
Self-propelled PCBA	2830076006	LM2100SP_A
	2830076005	LM2100SP_B

Self-propelled PCBA Replacement

5. Disconnect the self-propelled PCBA from the power unit and the handle position switch.



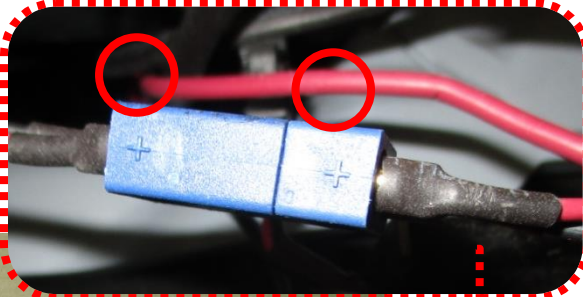
Linked to power unit



Linked to the handle position switch

Self-propelled PCBA Replacement

- 6. Replace with a new PCBA.
- 7. Connect the new PCBA (solder and plug).



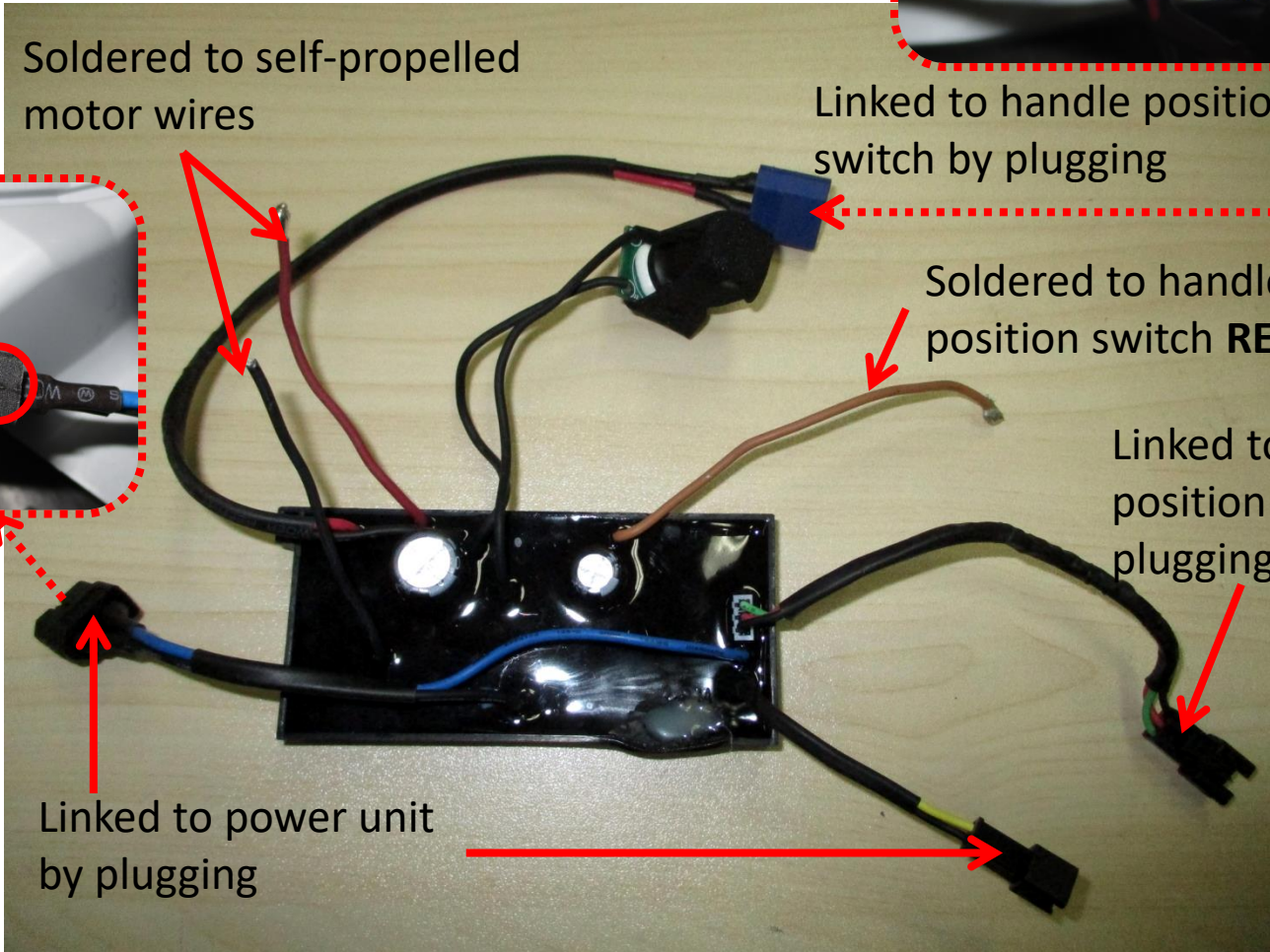
Soldered to self-propelled motor wires

Linked to handle position switch by plugging

Soldered to handle position switch **RED** wire

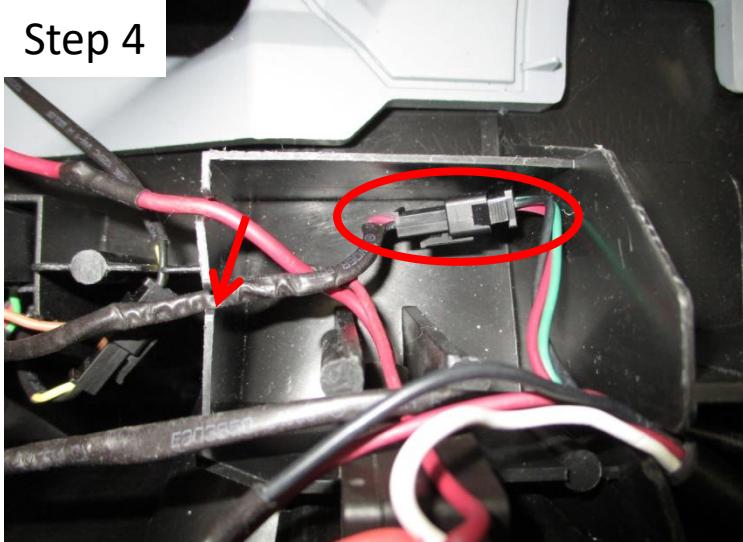
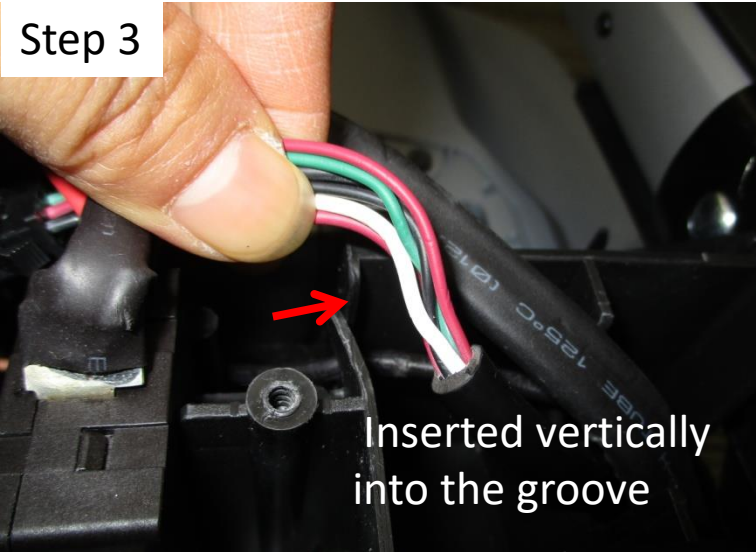
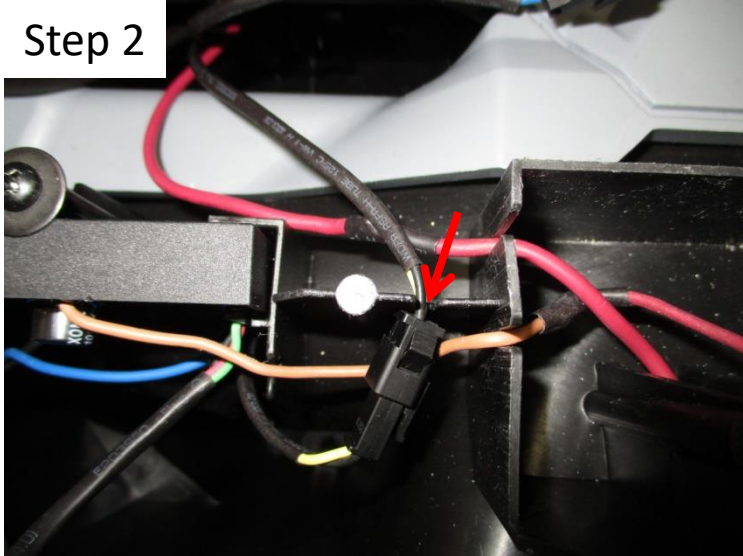
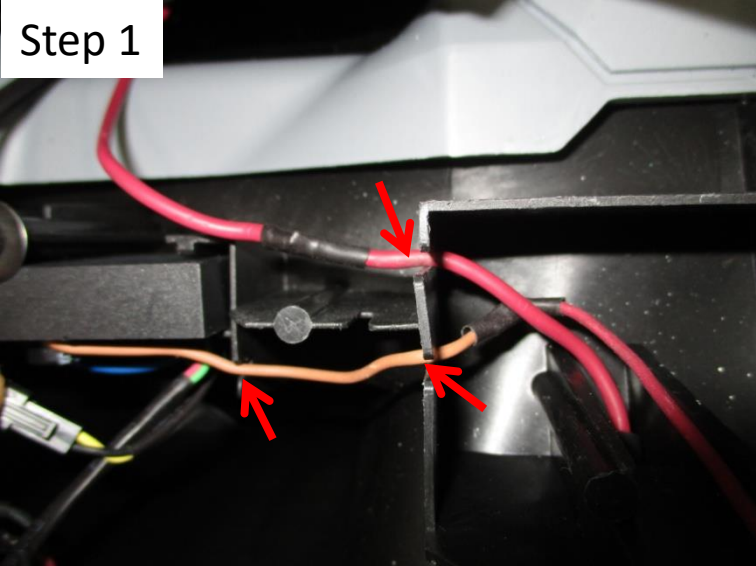
Linked to handle position switch by plugging

Linked to power unit by plugging

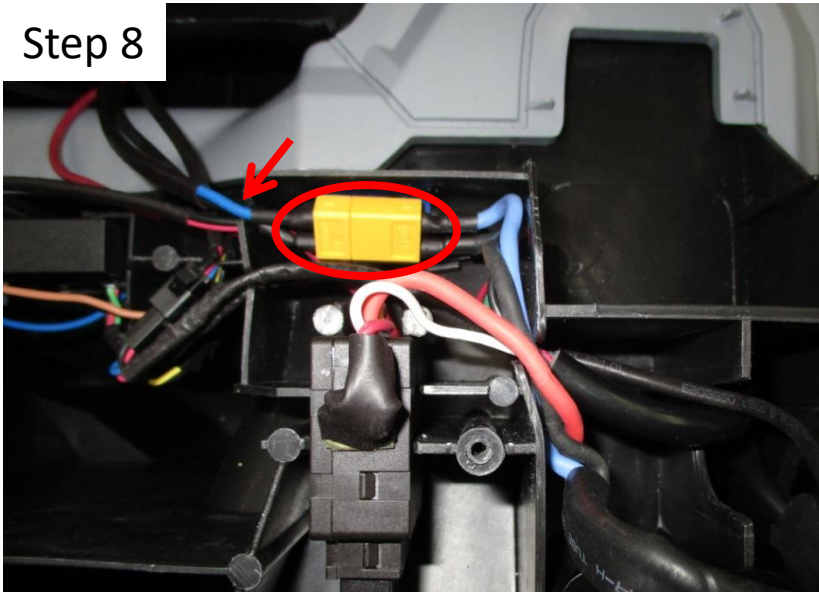
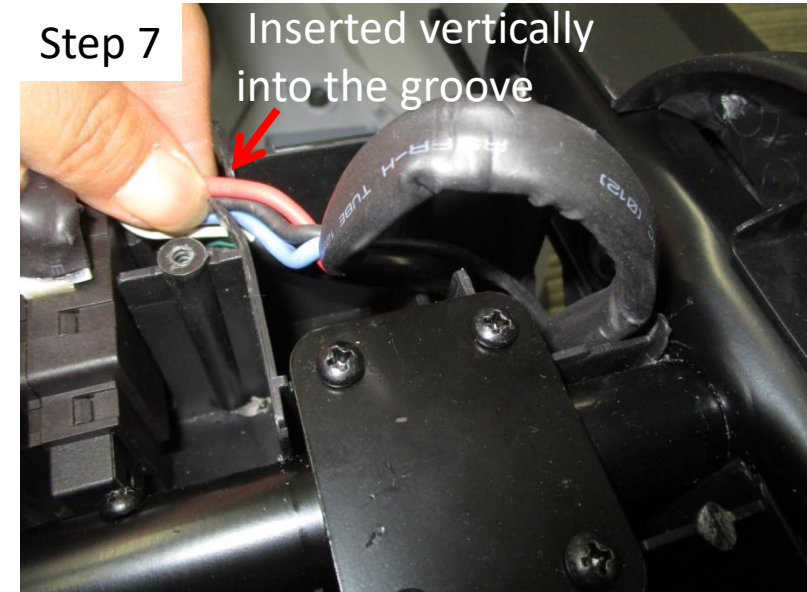
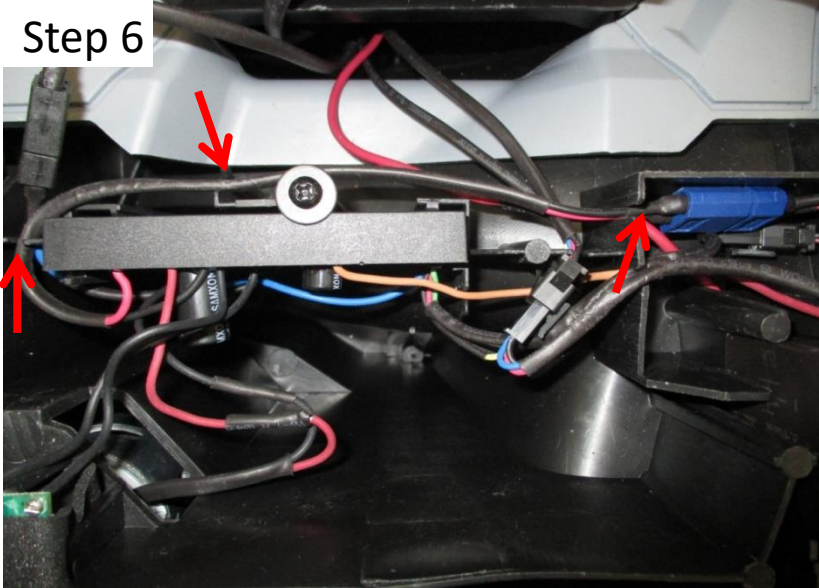
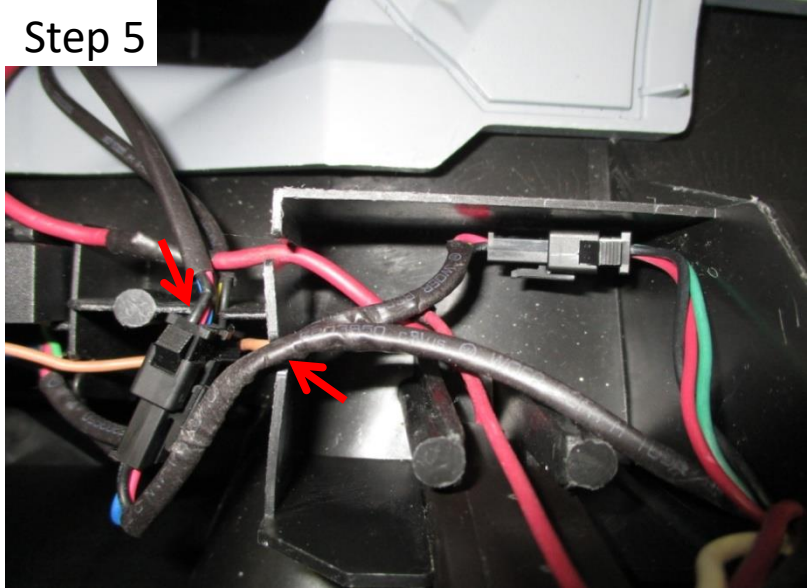


Self-propelled PCBA Replacement

8. Align the wires into the grooves.



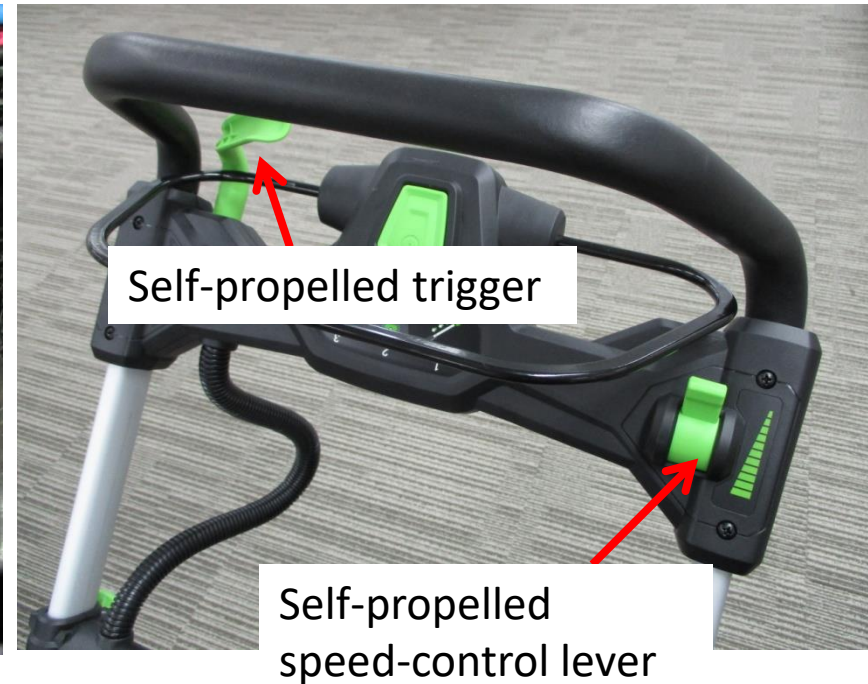
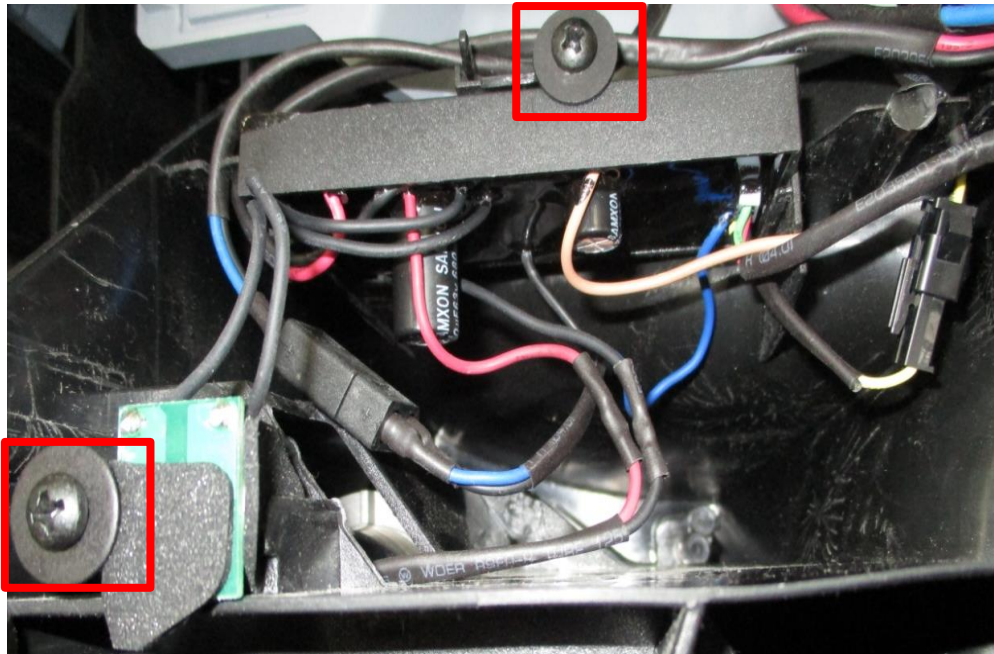
Self-propelled PCBA Replacement



Self-propelled PCBA Replacement

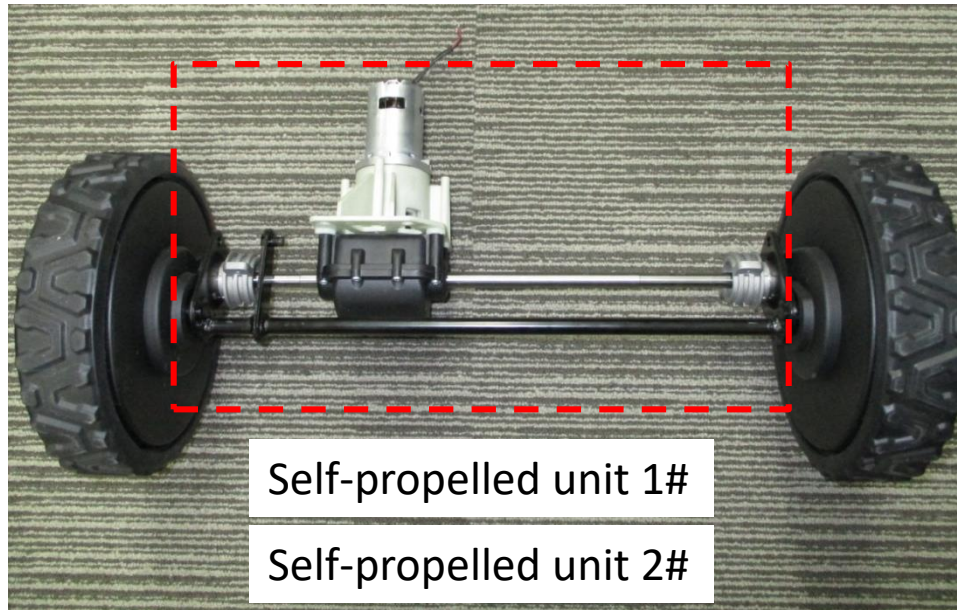
LM2100SP Lawn Mower

9. Tighten the 2 screws with the washers to fix the PCBA.
10. Turn on the self-propelled trigger by pressing it and adjust its speed-control lever to test whether the PCBA is assembled correctly.



Motor in Self-propelled Unit Replacement_LM2100SP_A

For LM2100SP_A self-propelled units, when the self-propelled motor is damaged, follow the steps from Slide P16-20, 22-25 to have self-propelled motor replaced. Otherwise, replace the unit with a new self-propelled unit **SET (2828353001)**. See Slide 21 for detailed instructions.



Description	Status Remark
Self-propelled unit 1#	Both are LM2100SP_A, different in connection between the rear axle and connection rod for Self-propelled unit 1# and 2#.
Self-propelled unit 2#	

Motor in Self-propelled Unit Replacement_LM2100SP_A

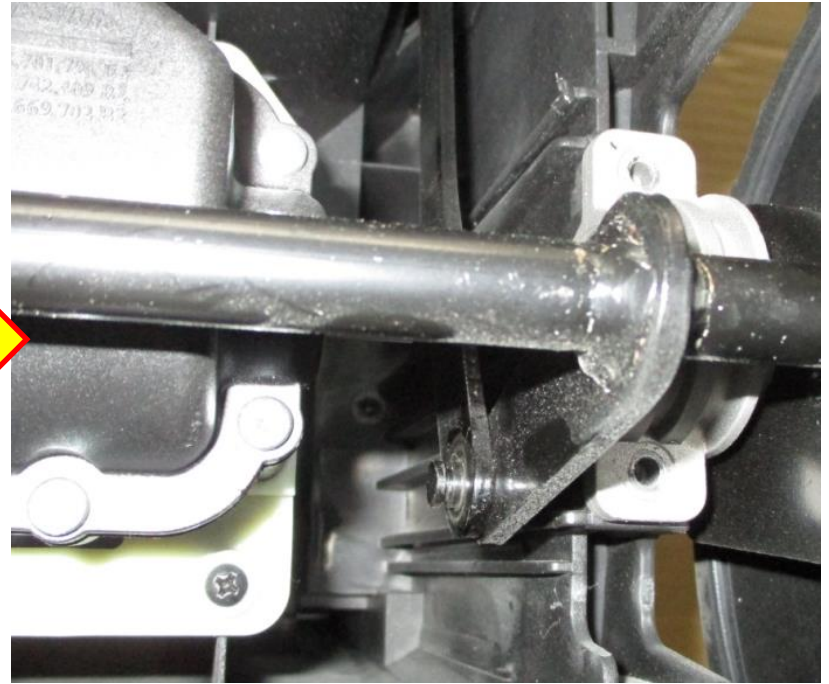
1. Adjust the mower to the highest cutting position and then turn the mower on its back.
2. Remove the snap-ring and plain washer on the joint (plain washer with snap-ring fixing, see P16) or remove the nut (nut fixing, see P17).

NOTICE: If the mower is set at other cutting position, it's really hard to separate the self-propelled unit from the mower after removing the snap-ring and plain washer or removing the nut.



Motor in Self-propelled Unit Replacement_LM2100SP_A

Self-propelled unit 1#: remove the snap-ring and plain washer on the joint.

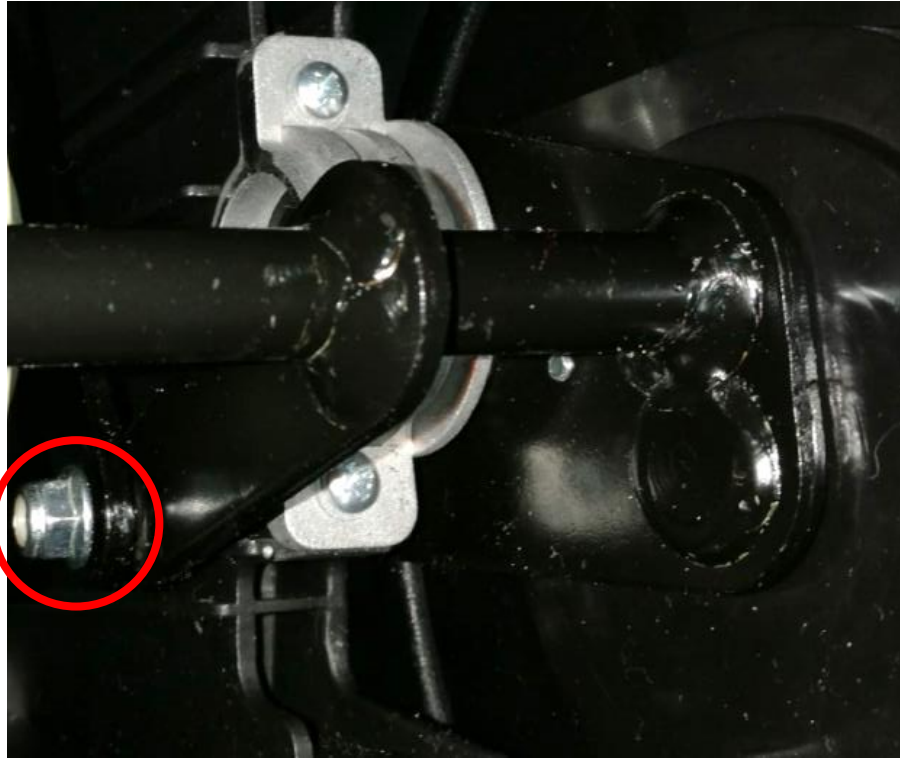


Description	Part Number
Plain washer	5650025004
Snap-ring	5660139002



Motor in Self-propelled Unit Replacement_LM2100SP_A

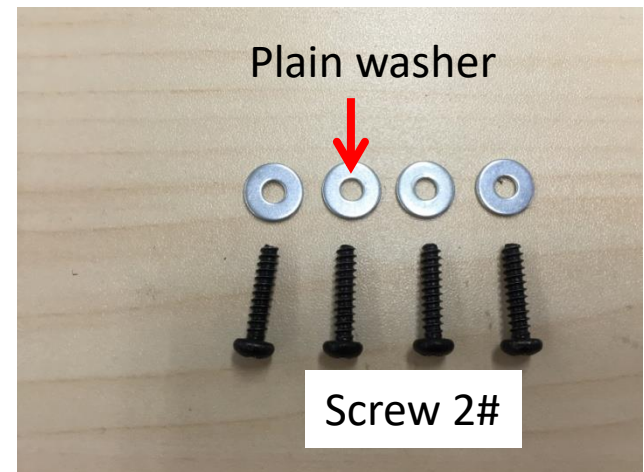
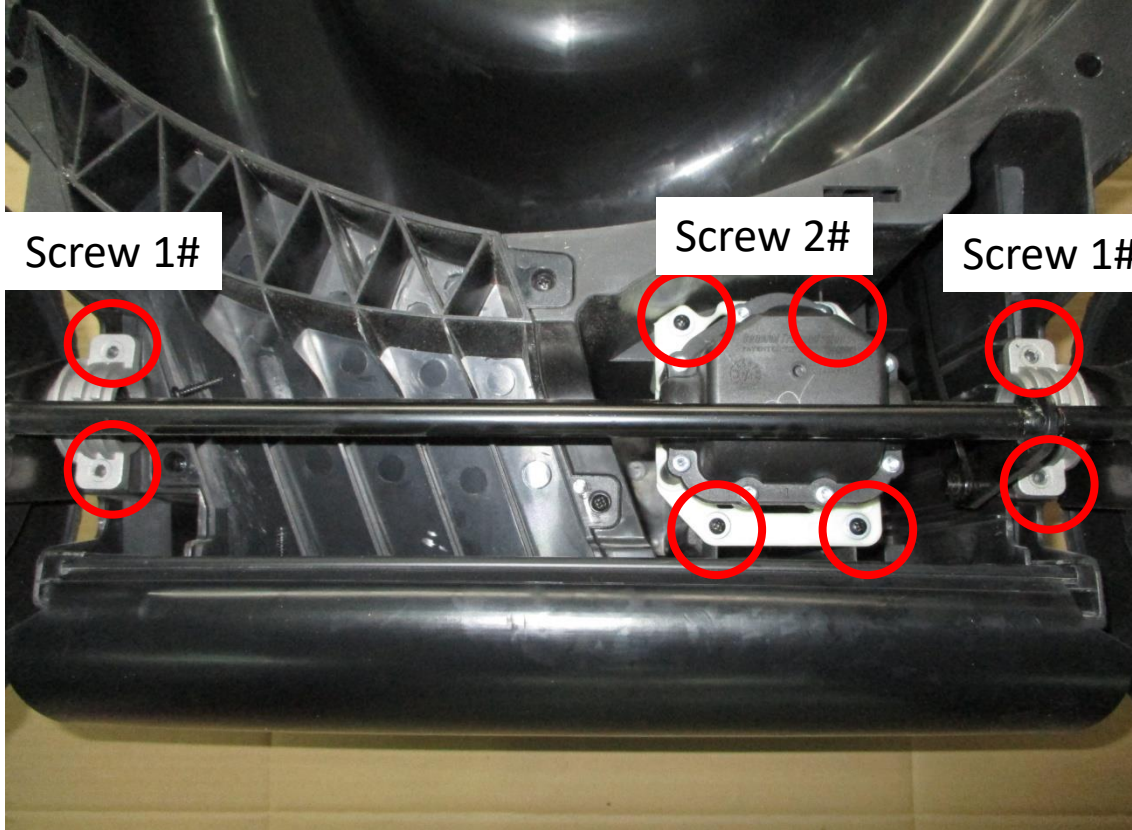
Self-propelled unit 2#: remove the nut on the joint.



Description	Part Number
Nut	5630013003

Motor in Self-propelled Unit Replacement_LM2100SP_A

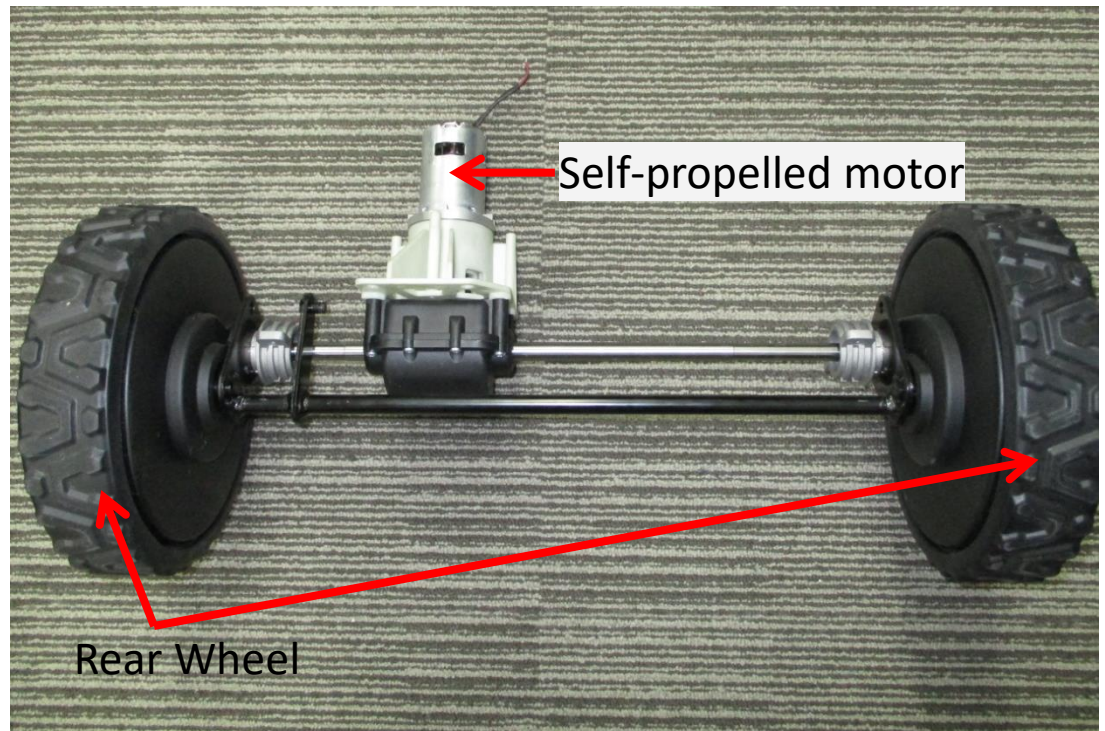
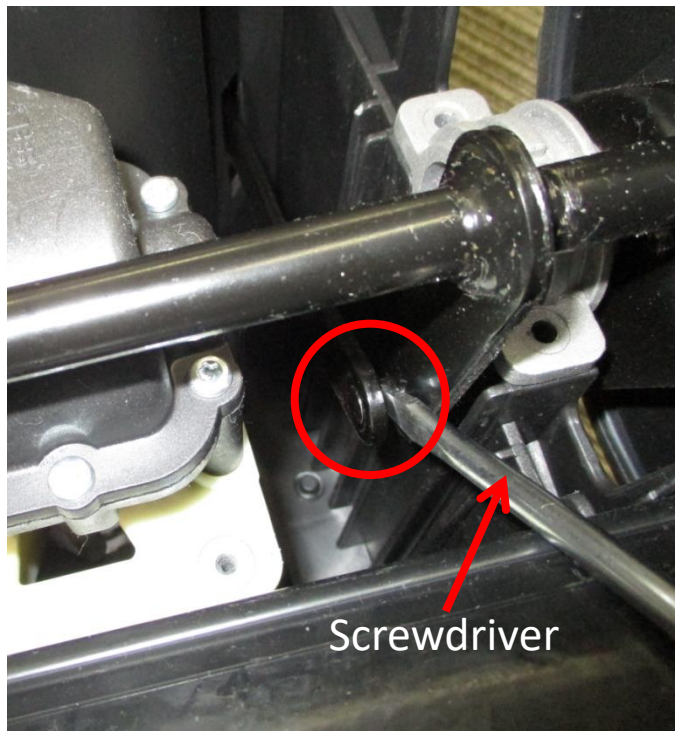
3. Remove the 4 screws 1# and 4 screws 2#. There are 4 plain washers under screw 2#.



Motor in Self-propelled Unit Replacement_LM2100SP_A

4. Separate the self-propelled unit with the two rear wheels from the mower by prying it with a flat head screwdriver at the joint.

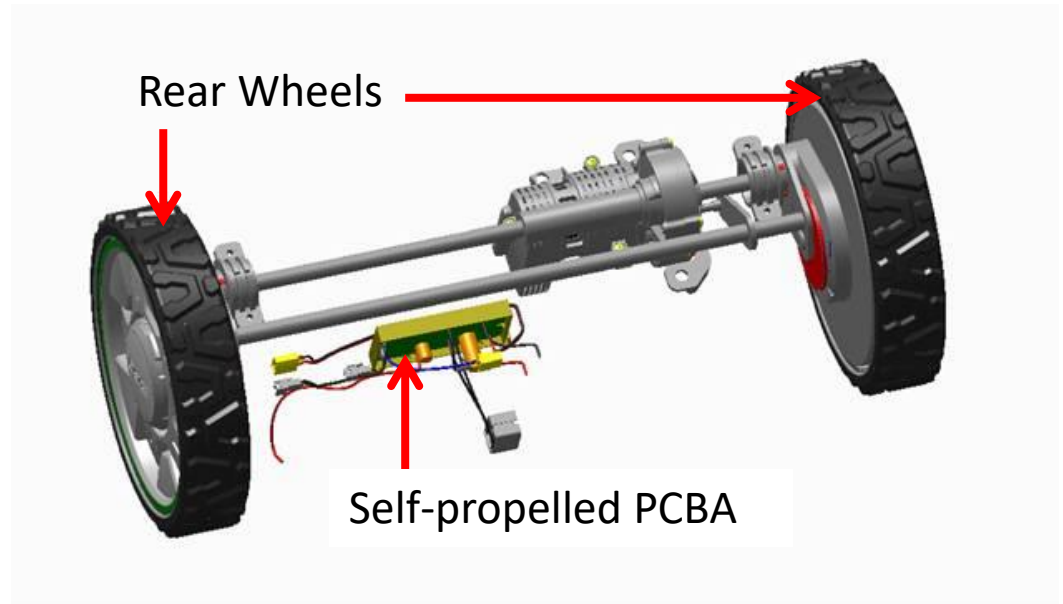
WARNING: This step may cause injuries. Slow down. Gloves recommended.



Motor in Self-propelled Unit Replacement_LM2100SP_A

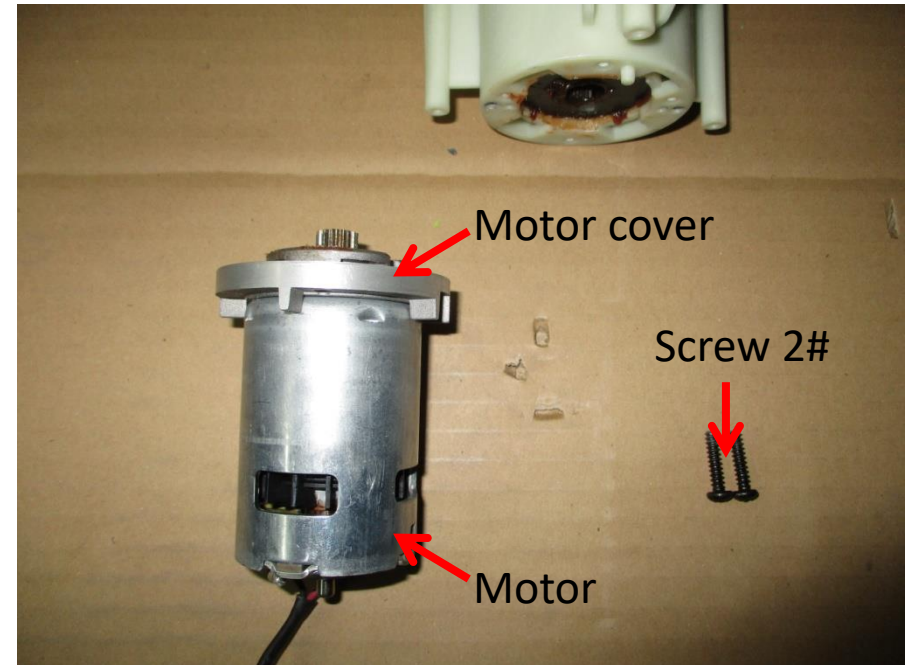
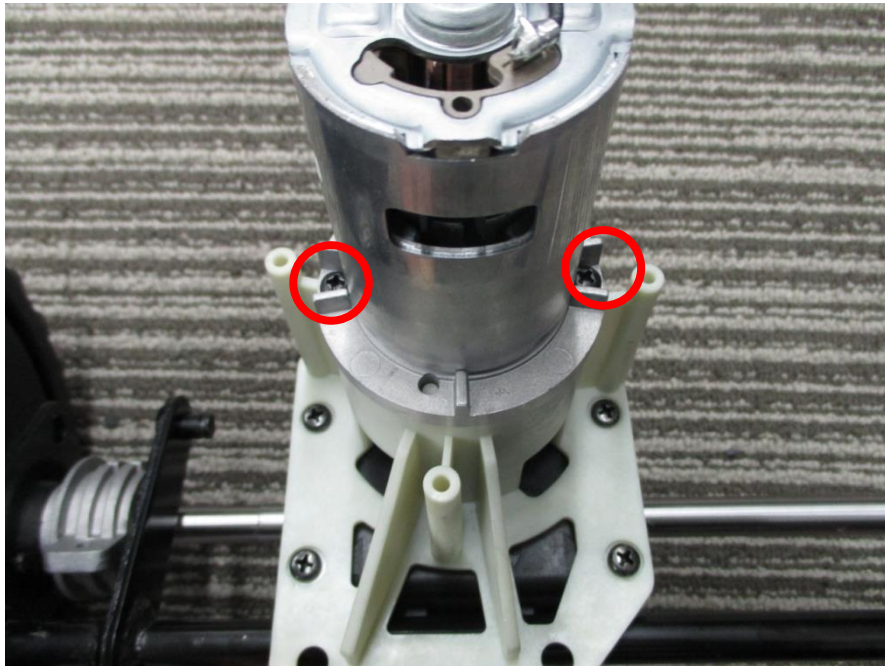
➤ If the gear box or the rear axle set in the self-propelled unit is diagnosed as defective, rather than the self-propelled motor, from this step, have the whole self-propelled unit replaced with a new self-propelled unit **SET (2828353001)**. See below.

- ① Reassemble the new self-propelled unit SET onto the mower in the reverse order.
- ② **Scrape the existing self-propelled PCBA of the failed mower** and then follow the instructions in “***Self-propelled PCBA Replacement***” section to reassemble the self-propelled PCBA.
- ③ Test the self-propelled function.



Motor in Self-propelled Unit Replacement_LM2100SP_A

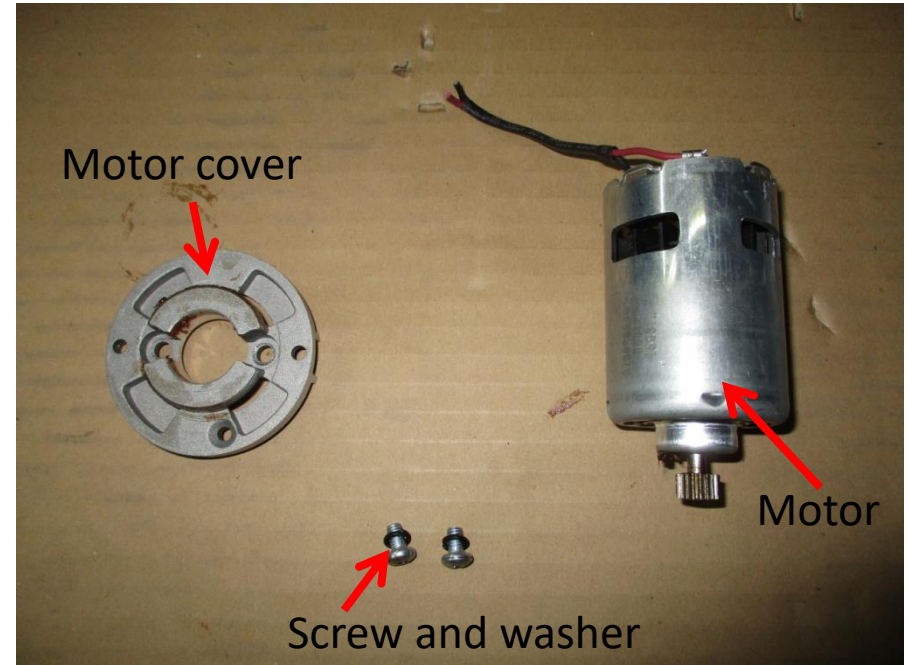
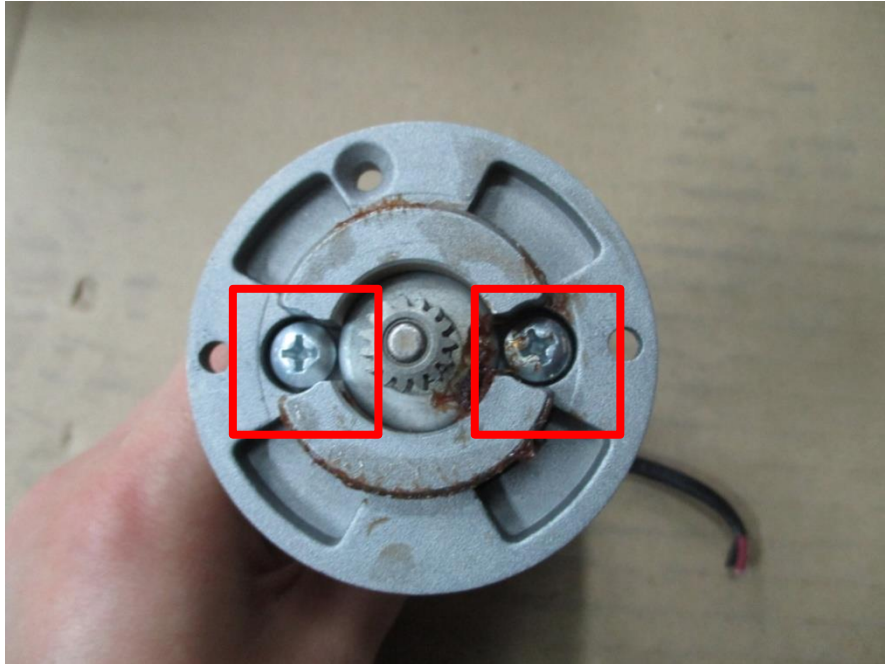
5. Remove the 2 screws 2# to detach the motor from the self-propelled unit. Save the 2 screws for reassembly.



Description	Part Number
Motor	2824424001

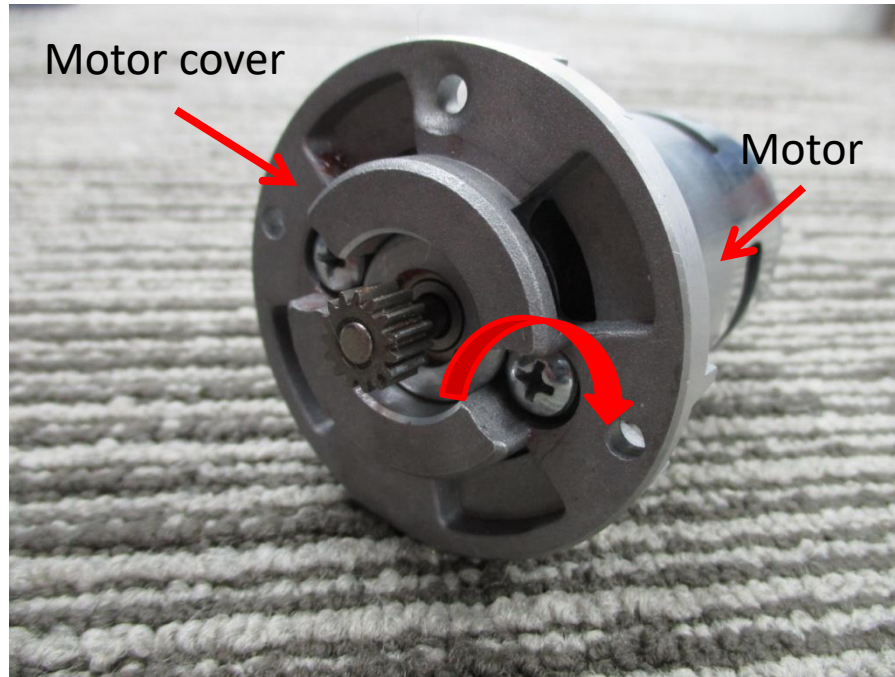
Motor in Self-propelled Unit Replacement_LM2100SP_A

6. Remove the 2 screws with washers on the motor cover to separate the motor from its cover. Save the motor cover and screws/washers for reassembly.



Motor in Self-propelled Unit Replacement_LM2100SP_A

7. Replace with a new motor.
8. Fix the motor cover onto the new motor by tightening the 2 screws with washers.

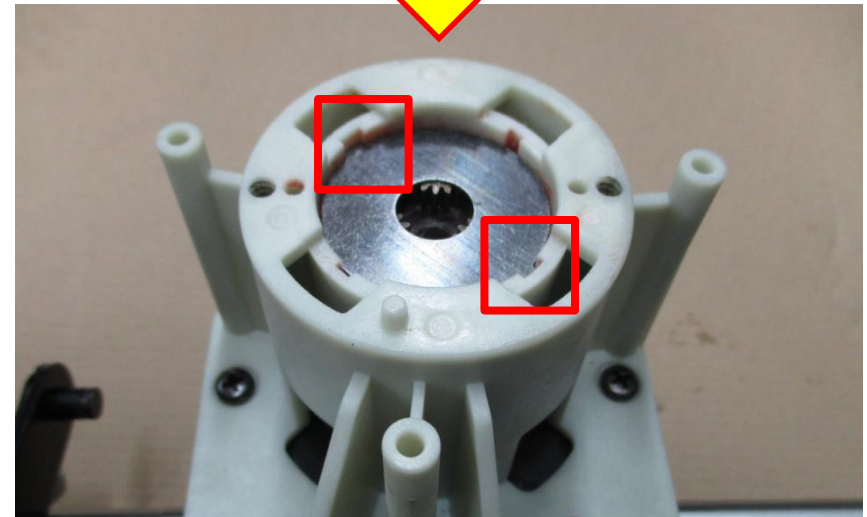
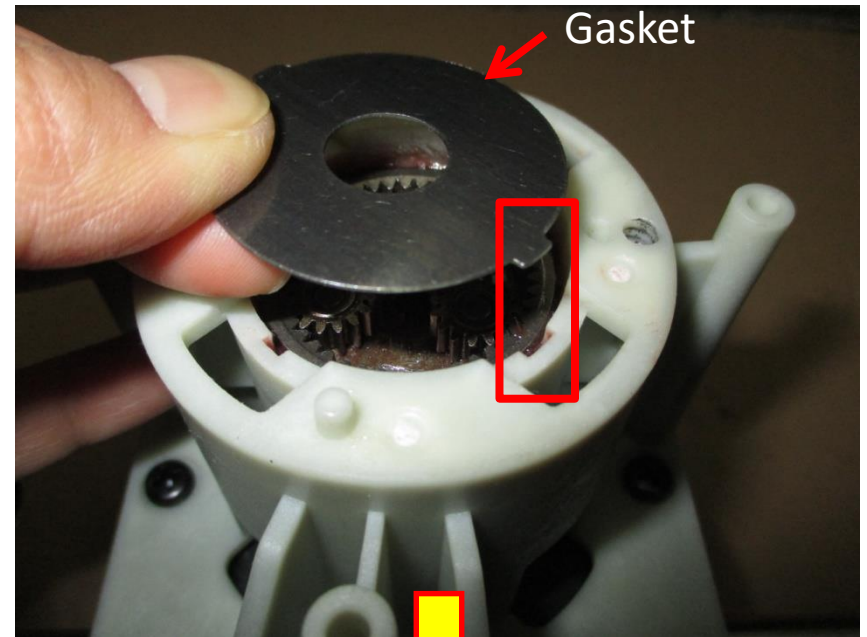
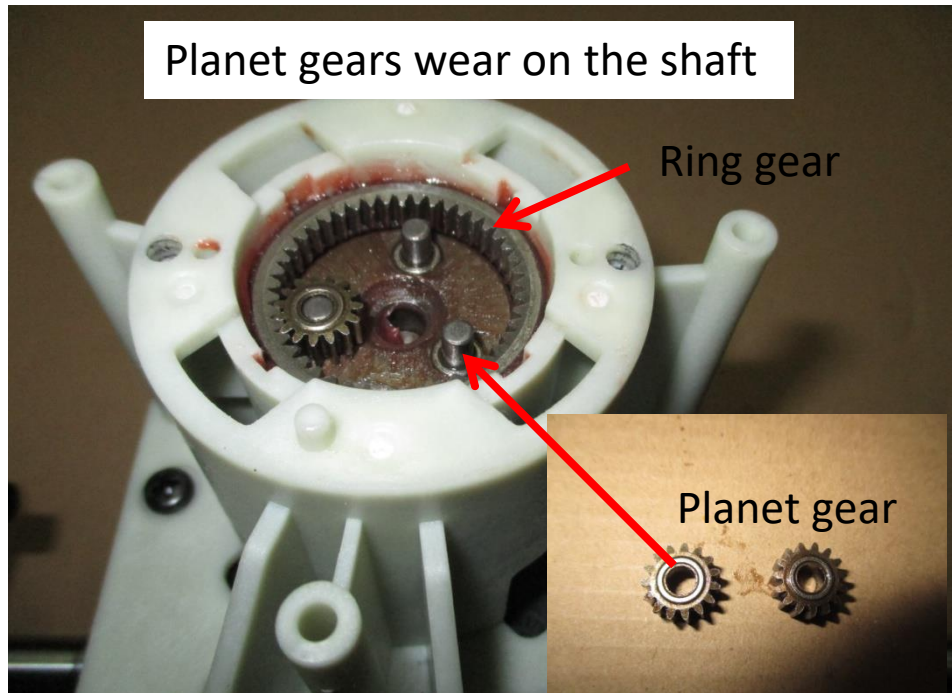


10. Fix the motor and cover assembly onto the self-propelled unit with the saved 2 screws 2# in step 5.

NOTICE: Before mounting the new motor, check whether the 3 planet gears are well against the ring gear in the gear box and whether the gasket is located in the slots. If not, put them in place(see next slide).

Motor in Self-propelled Unit Replacement_LM2100SP_A

How to assemble the ring gear, planet gears and gasket in the gear box correctly?

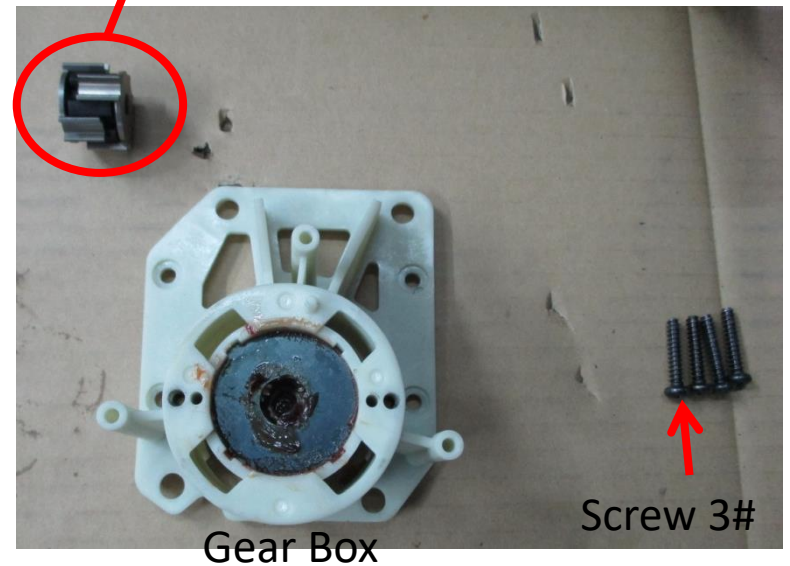
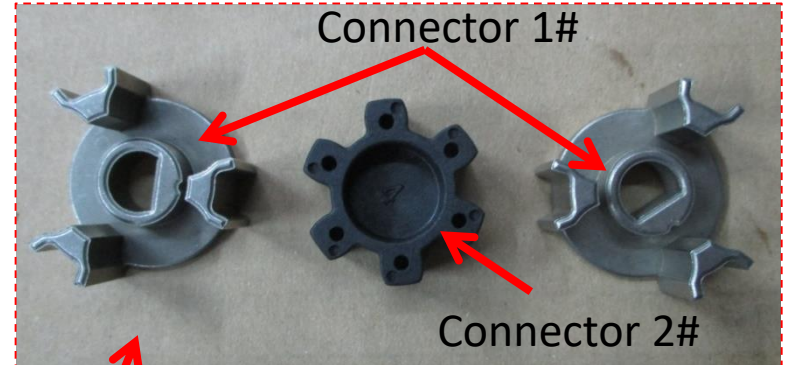
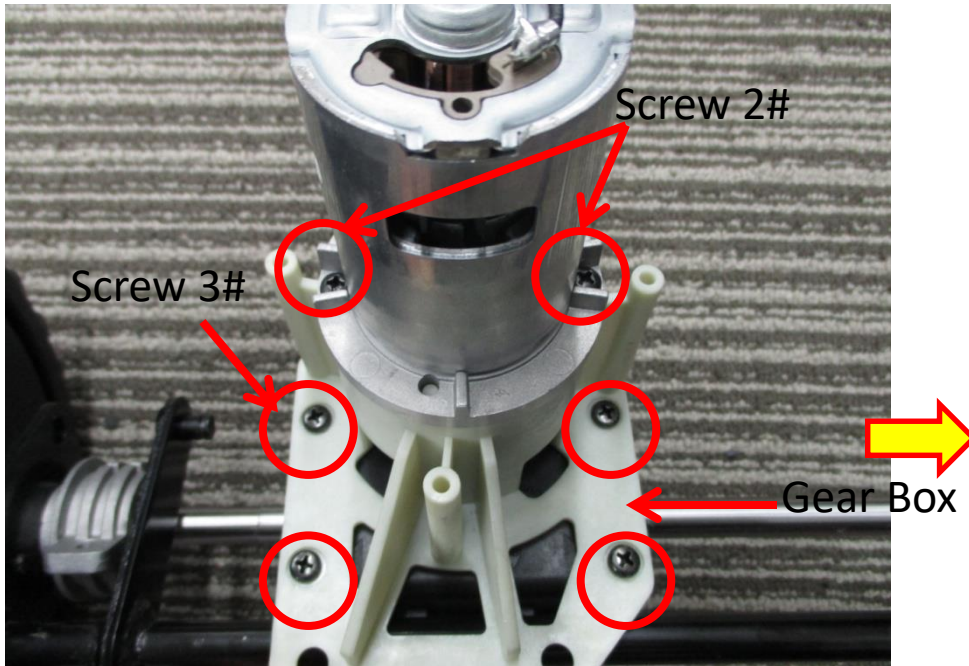


Gear Box and Rear Axle Set in Self-propelled Unit Replacement_ LM2100SP_A (no longer for service when old parts are run out)

- For the spare parts which still have stock and can be used until they are out of stock, follow the next slides to have the separate gear box or the rear axle set replaced.
- When these spare parts are run out, no gear box and rear axle set is allowed for service. Once they are diagnosed as defective, have the whole self-propelled unit replaced with a new self-propelled unit **SET (2828353001)**. See Slide 21.

Gear Box and Rear Axle Set in Self-propelled Unit Replacement_ LM2100SP_A (no longer for service when old parts are run out)

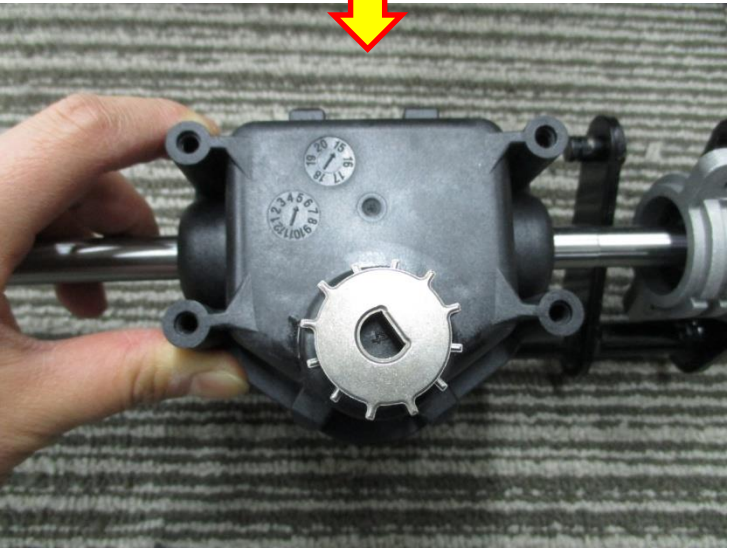
1. Remove the 4 screws 3# to detach the gear box from the rear axle set and 2 screws 2# to detach the motor ASSY from gear box.
2. Have the gear box replacement.



Description	Part Number
Gear box	2824425001

Gear Box and Rear Axle Set in Self-propelled Unit Replacement_ LM2100SP_A (no longer for service when old parts are run out)

- 3. Have the rear axle set replacement, if needed.
- 4. Mount the connectors set on the rear axle set.

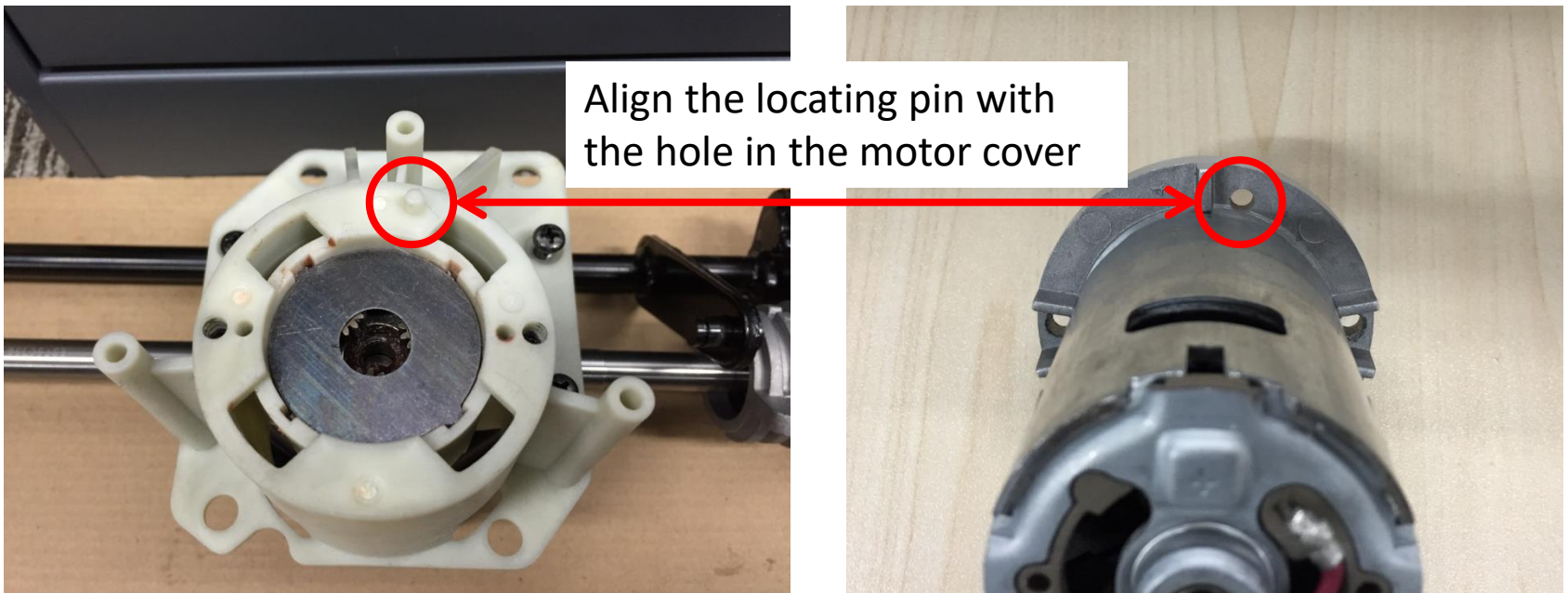


Description	Part Number	STATUS REMARK
Rear axle set	2824476001	Plain washer with snap-ring fixing
	2824476005	Nut fixing

Gear Box and Rear Axle Set in Self-propelled Unit Replacement_LM2100SP_A (no longer for service when old parts are run out)

5. Mount the gear box set onto the rear axle. Fix it by tightening the 4 screws 3#, saved in step 1.
6. Mount the motor ASSY onto the gear box and lock it with the 2 screws 2#, saved in step 1.

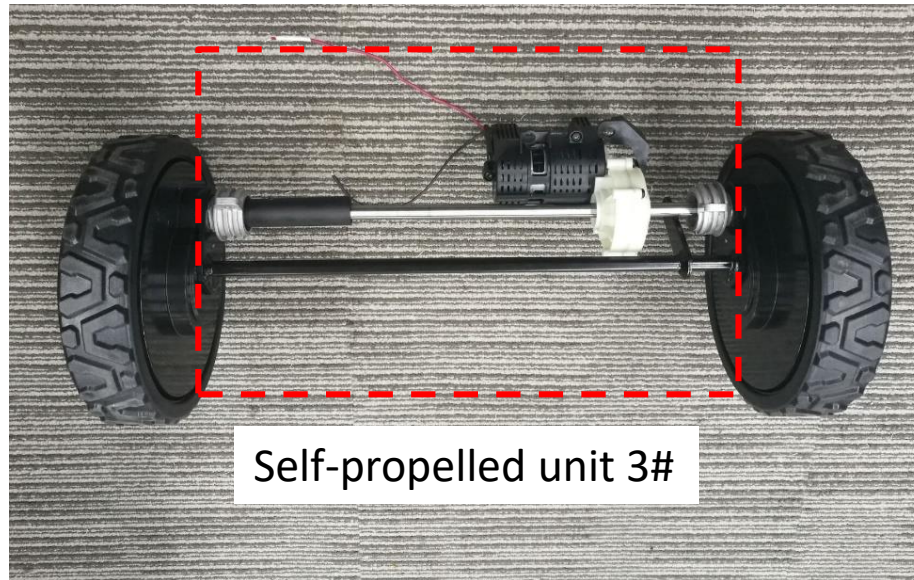
NOTICE: All the gears and gasket in the gear box requires assembling correctly ,see Slide P25.



7. Mount the self-propelled unit onto the mower in reverse order.
8. Connect the two motor cables with the self-propelled PCBA by soldering.
9. Turn on the self-propelled trigger by pressing it and adjust its speed-control lever to test whether the self-propelled unit is assembled correctly.

Motor in Self-propelled Unit Replacement_LM2100SP_B

For LM2100SP_B self-propelled unit: follow the steps from Slide P31 to 46 to have self-propelled motor replaced.

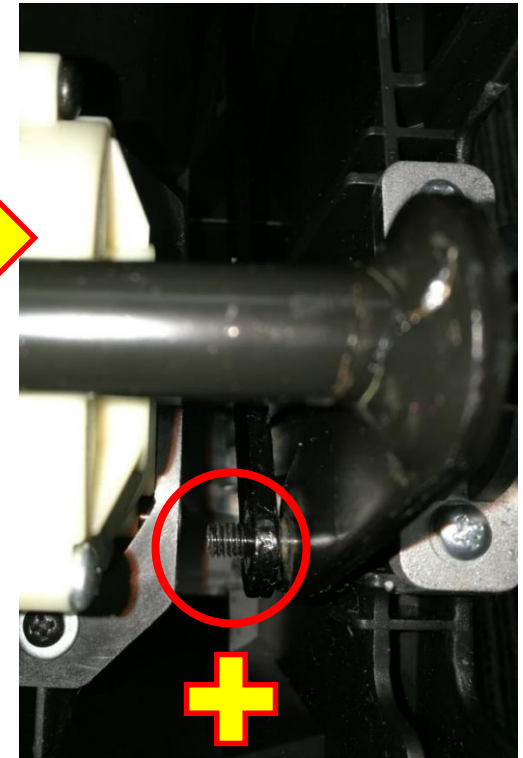
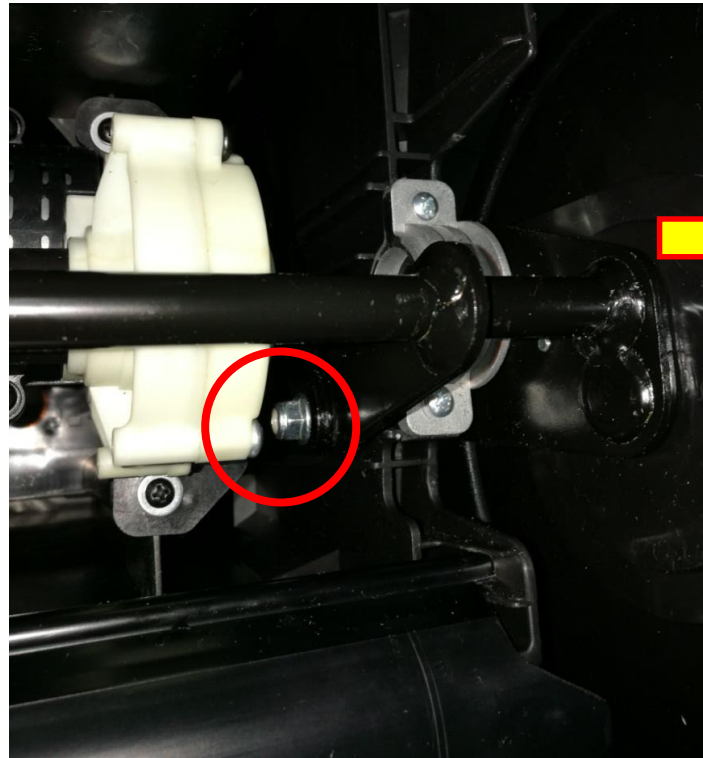


Description	Part Number	Status Remark
Self-propelled unit 3#	2825258001	LM2100SP_B

Motor in Self-propelled Unit Replacement_LM2100SP_B

1. Adjust the mower to the highest cutting position and then turn the mower on its back.
2. Remove the nut on the joint.

NOTICE: If the mower is set at other cutting position, it's really hard to separate the self-propelled unit from the mower after removing the snap-ring and plain washer or removing the nut.

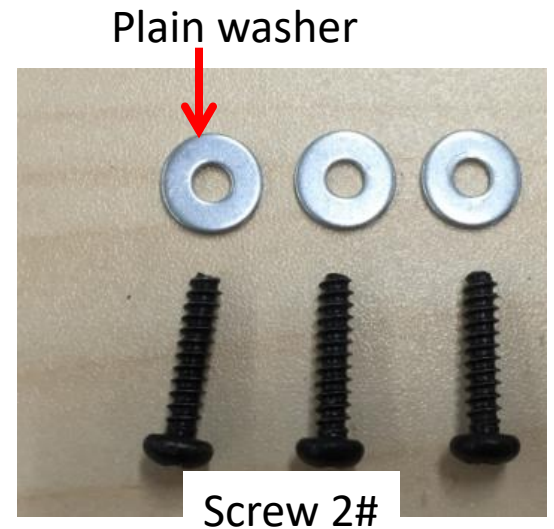
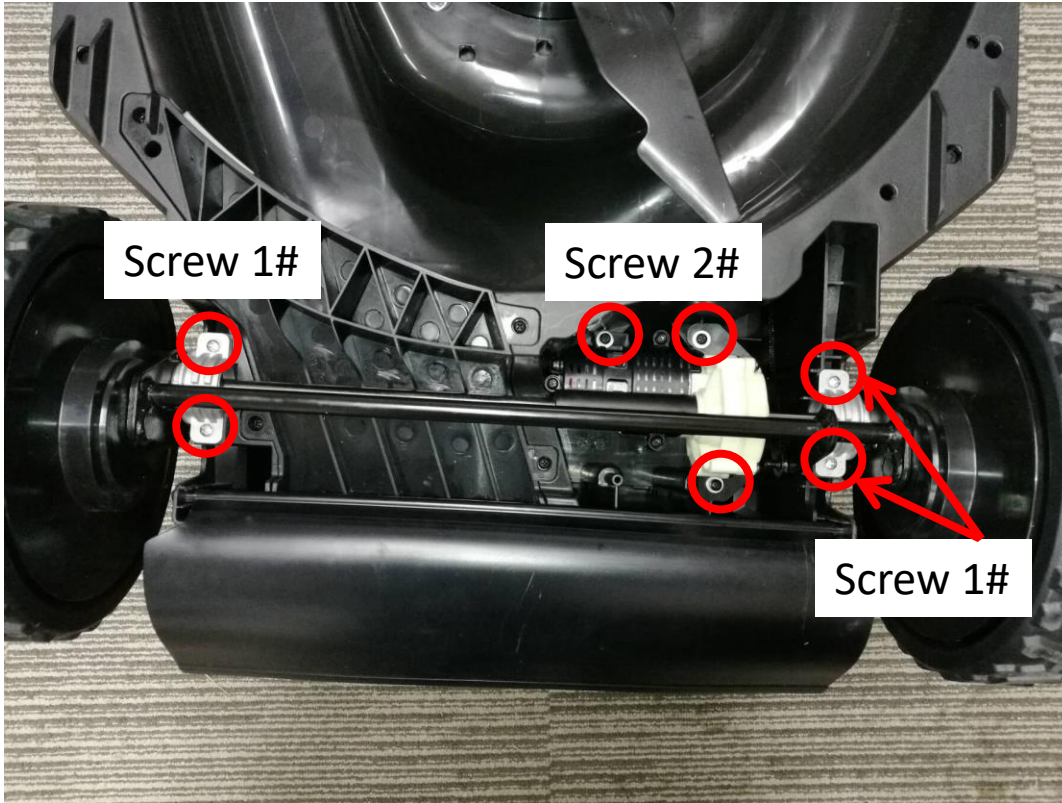


Description	Part Number
Nut	5630013003



Motor in Self-propelled Unit Replacement_LM2100SP_B

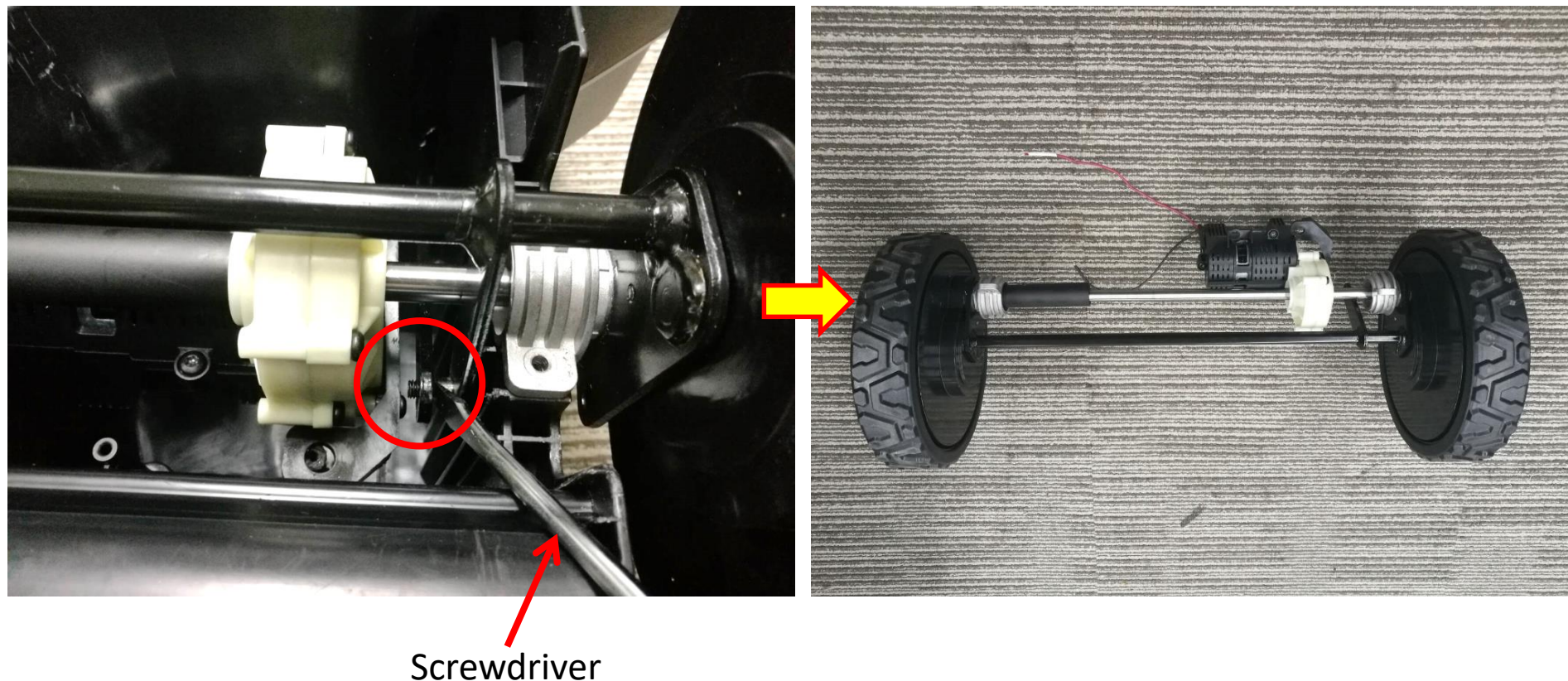
3. Remove the 4 screws 1# and 3 screws 2#. There are 3 plain washers under screw 2#.



Motor in Self-propelled Unit Replacement_LM2100SP_B

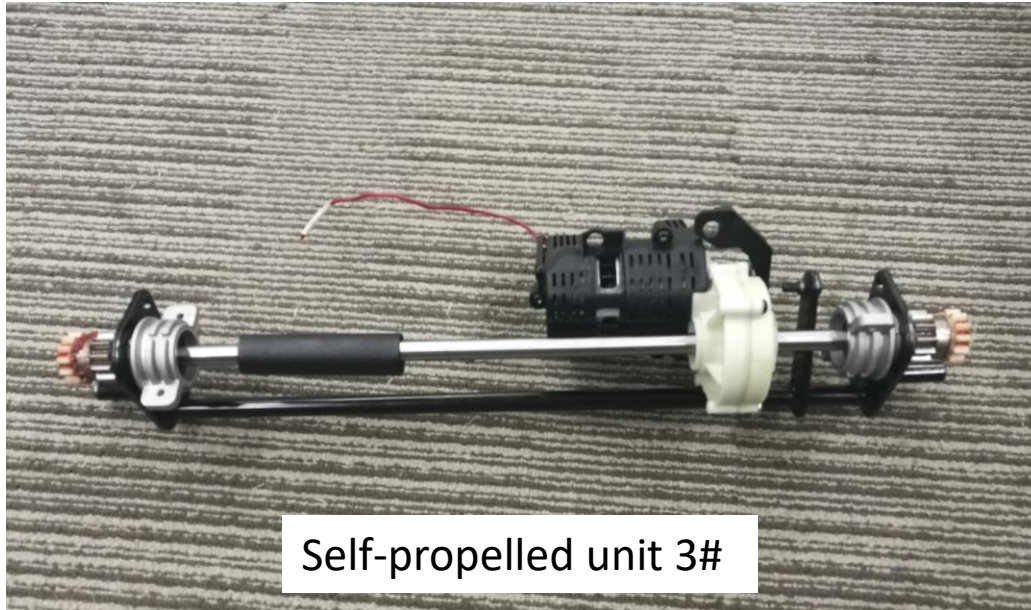
4. Separate the self-propelled unit, with rear wheels from the mower by prying it with a flat head screwdriver at the joint.

WARNING: This step may cause injuries. Slow down. Gloves recommended.



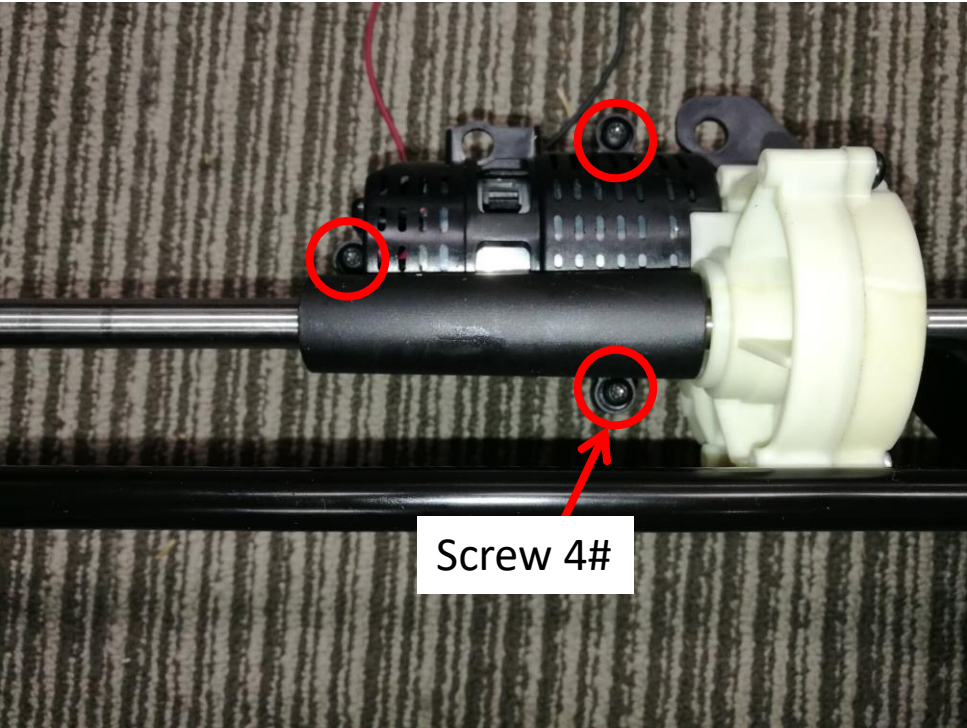
Motor in Self-propelled Unit Replacement_LM2100SP_B

5. If the mower's self-propelling function doesn't work, but the self-propelled motor runs OK, remove the 2 wheels (see ***RG_Part 9_Wheels Replacement_LM2100SP.pptx***) and replace the whole self-propelled unit.
6. If the motor is broken, go to the next step.



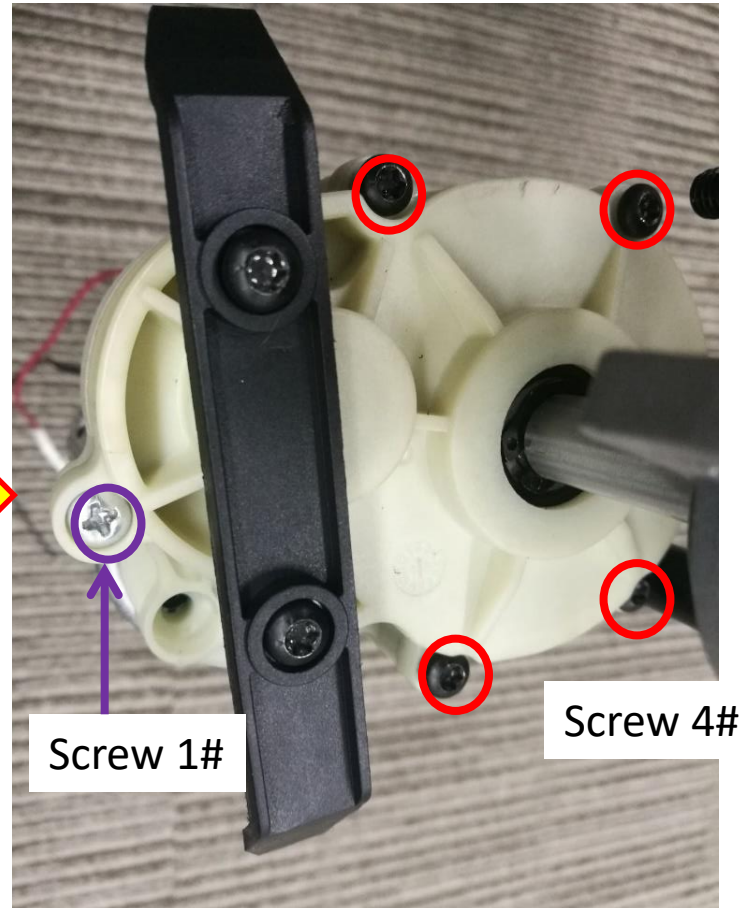
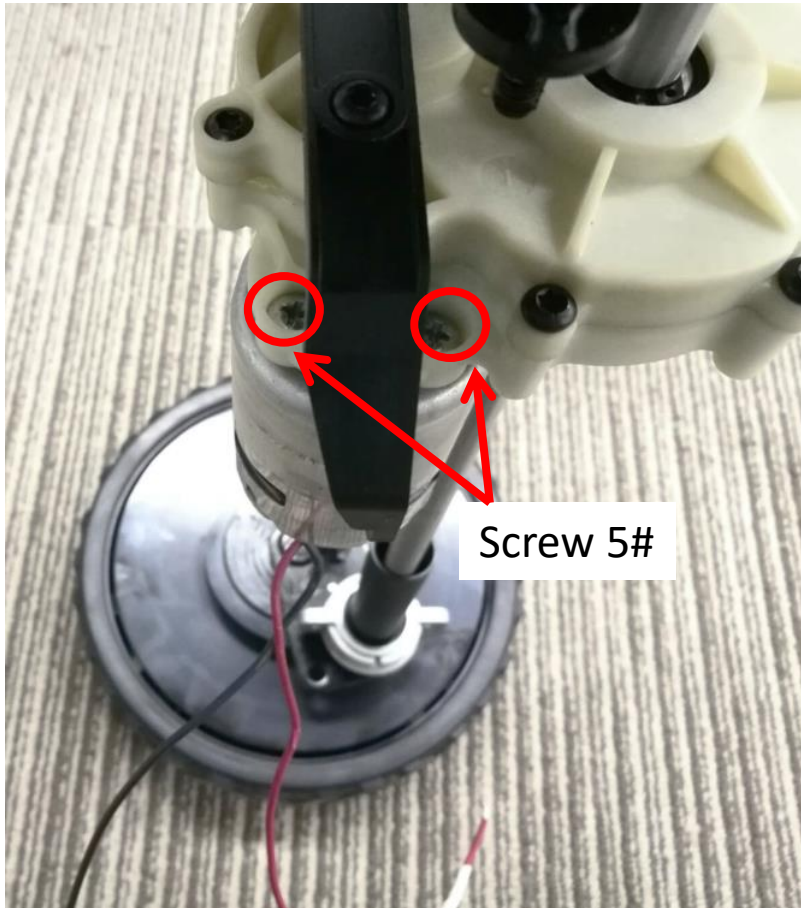
Motor in Self-propelled Unit Replacement_LM2100SP_B

7. Loosen 3 screws 4# to remove the dust cover from the motor.



Motor in Self-propelled Unit Replacement_LM2100SP_B

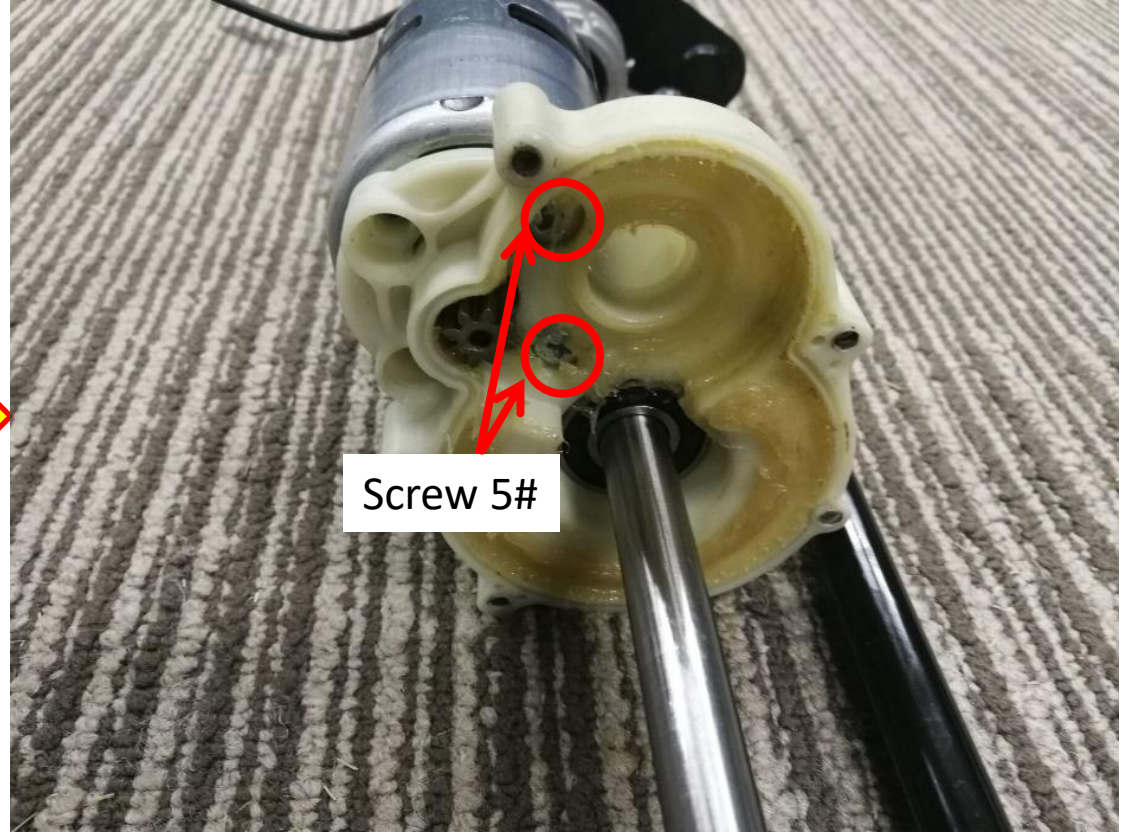
8. Remove the 2 screw 5#.
9. Remove the 4 screw 4# and 1 screw 1#.



Motor in Self-propelled Unit Replacement_LM2100SP_B

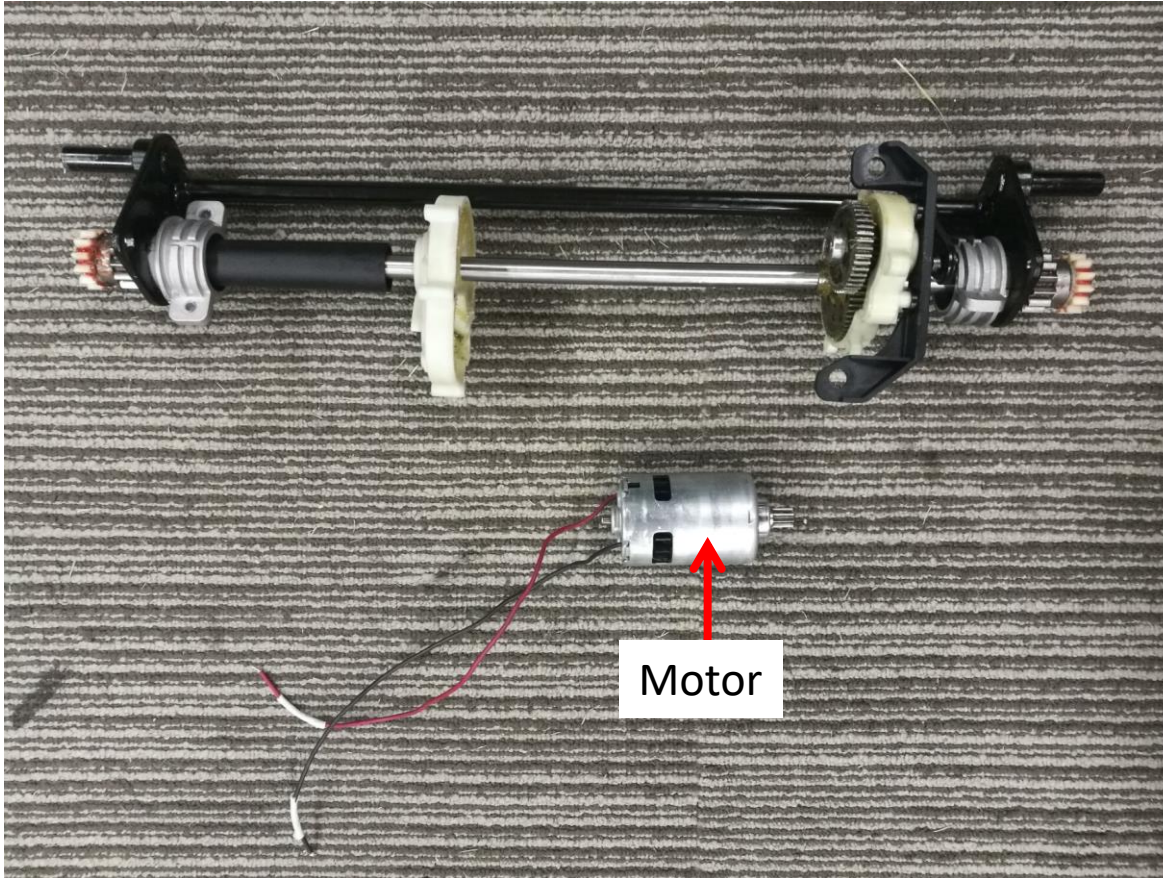
10. Separate the gear case.

11. Loosen the 2 screws 5# to remove the motor from the gear case.



Motor in Self-propelled Unit Replacement_LM2100SP_B

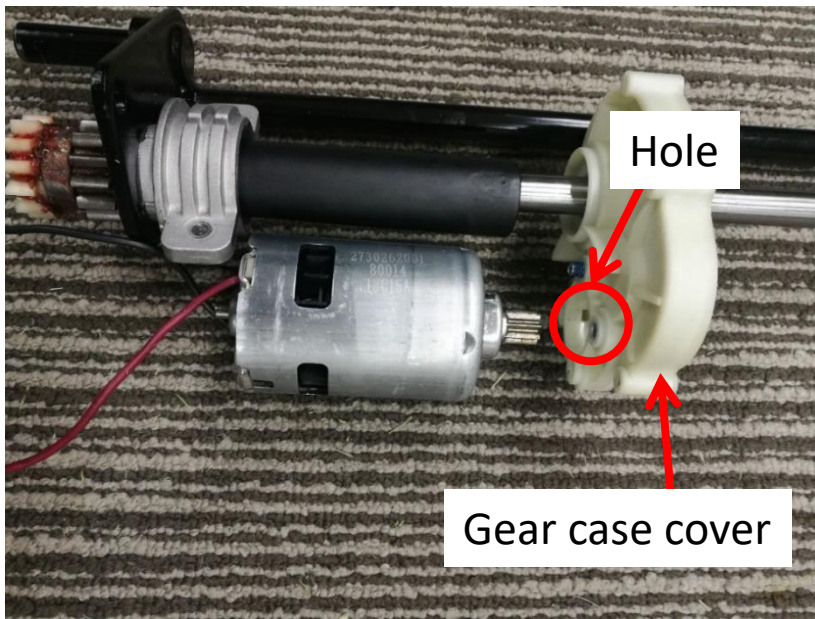
12. Replace the motor with a new one.



Description	Part Number
Motor	2825265002

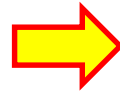
Motor in Self-propelled Unit Replacement_LM2100SP_B

13. Pass the motor shaft through the hole of the gear case cover.
14. Fix the motor onto the gear case cover with the 2 screws 5#.



Motor in Self-propelled Unit Replacement_LM2100SP_B

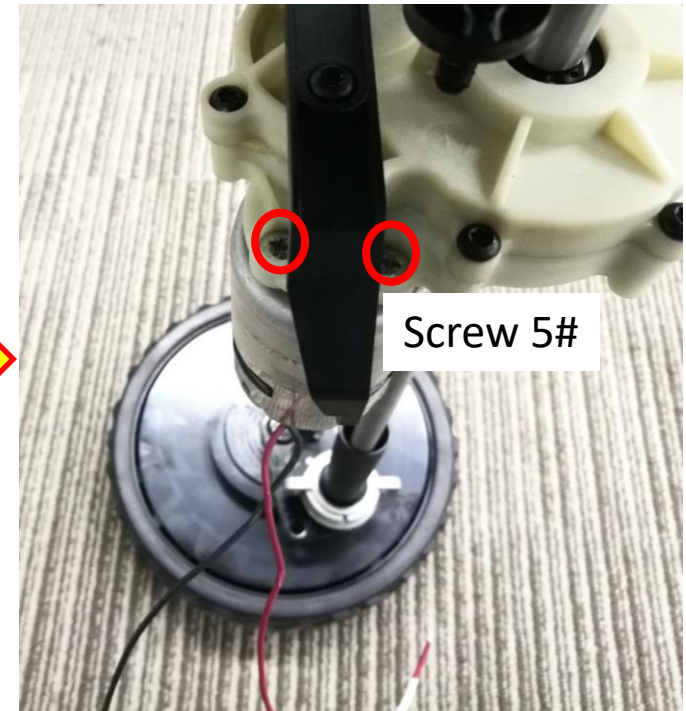
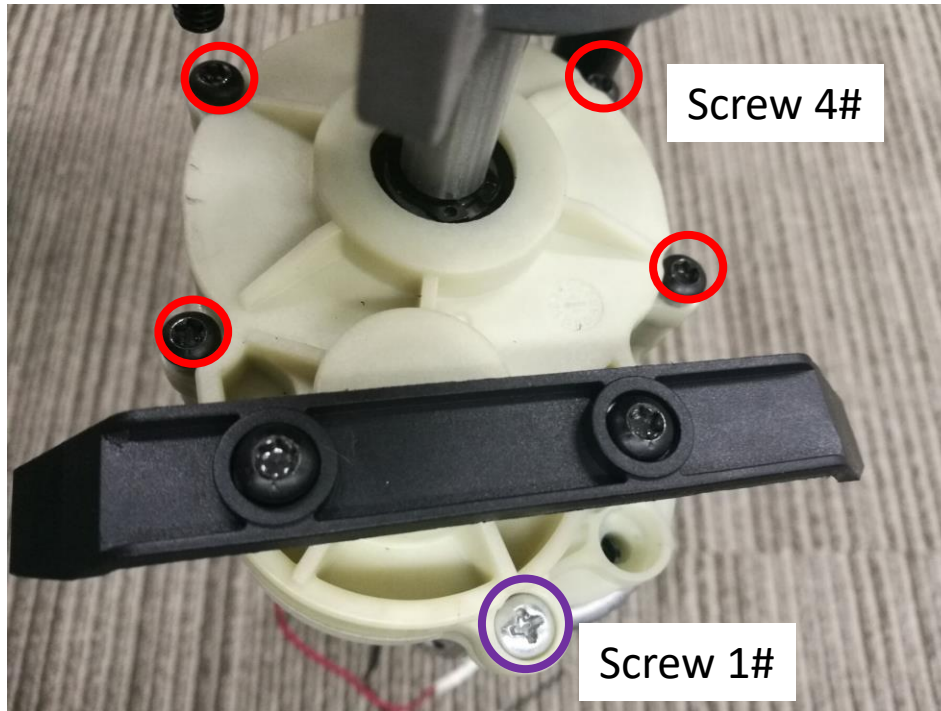
15. Assemble the gear case cover with the other half cover.



Motor in Self-propelled Unit Replacement_LM2100SP_B

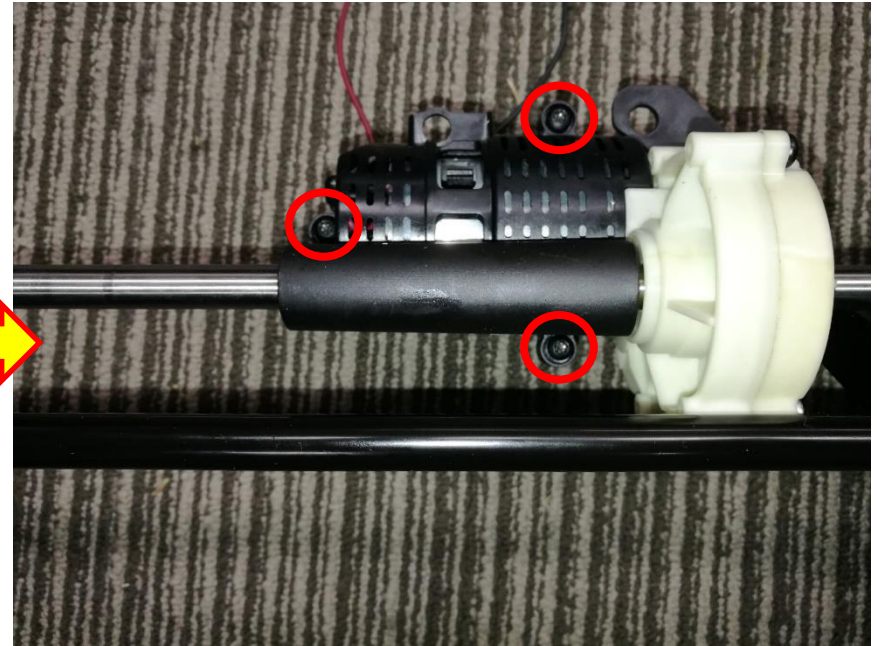
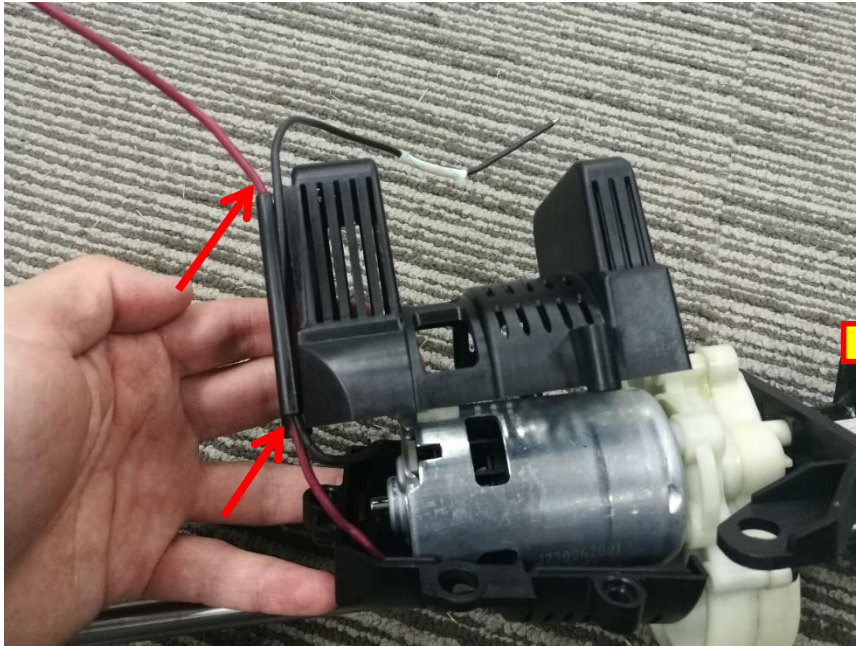
16. Tighten the gear case covers with the 4 screws 4# and 1 screw 1#.

17. Fasten the motor with the 2 screws 5#.



Motor in Self-propelled Unit Replacement_LM2100SP_B

18. Align the red and black wires into the groove of the dust cover of the motor and then close the covers onto the motor and fasten them with the 3 screws 4#.

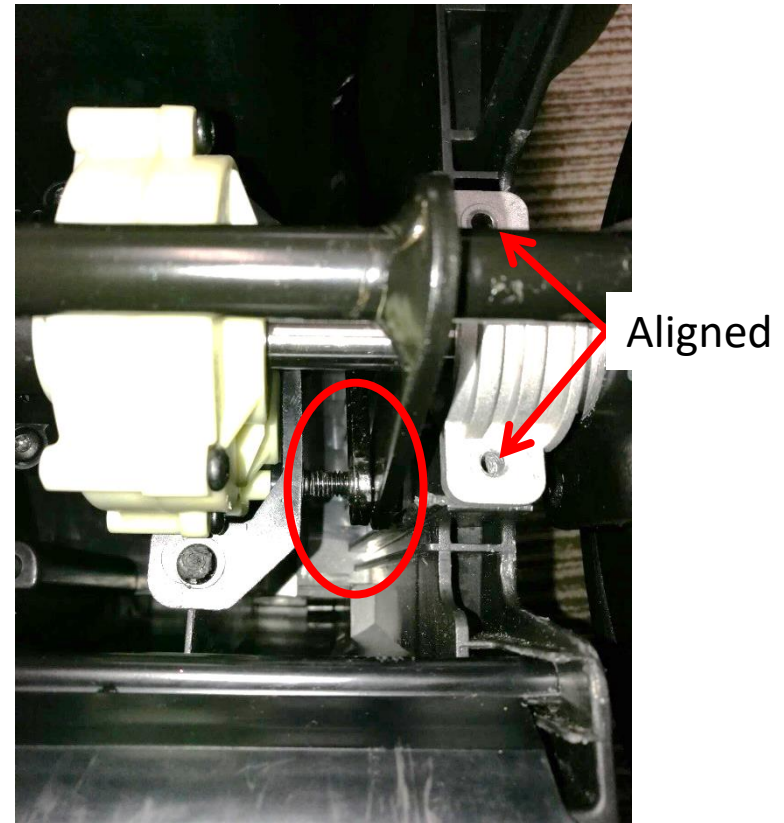
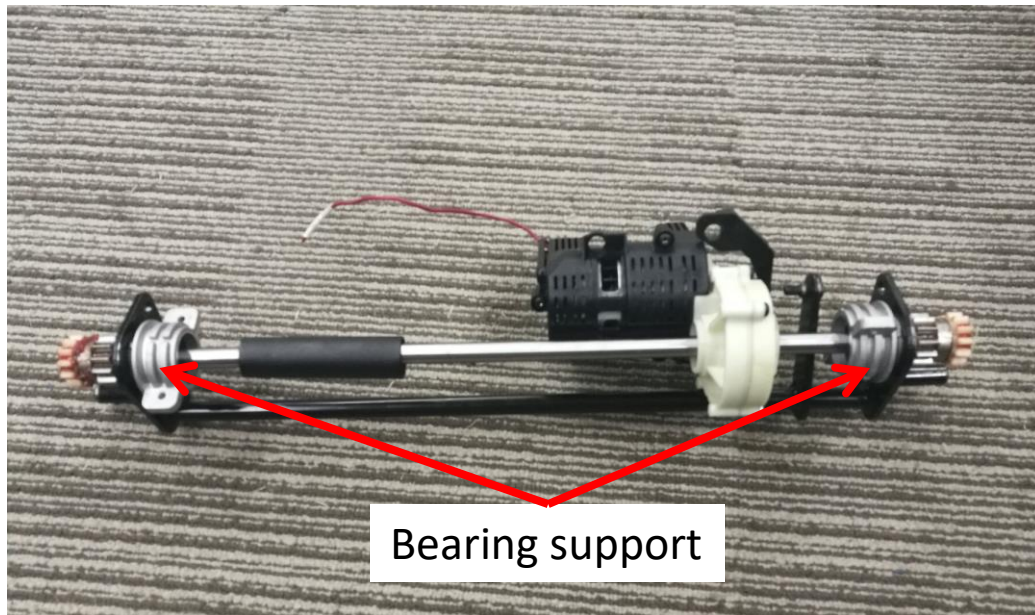


Motor in Self-propelled Unit Replacement_LM2100SP_B

19. Locate the bearing support of the self-propelled unit onto the corresponding position of the mower deck.
20. Reconnect the joint by hand.

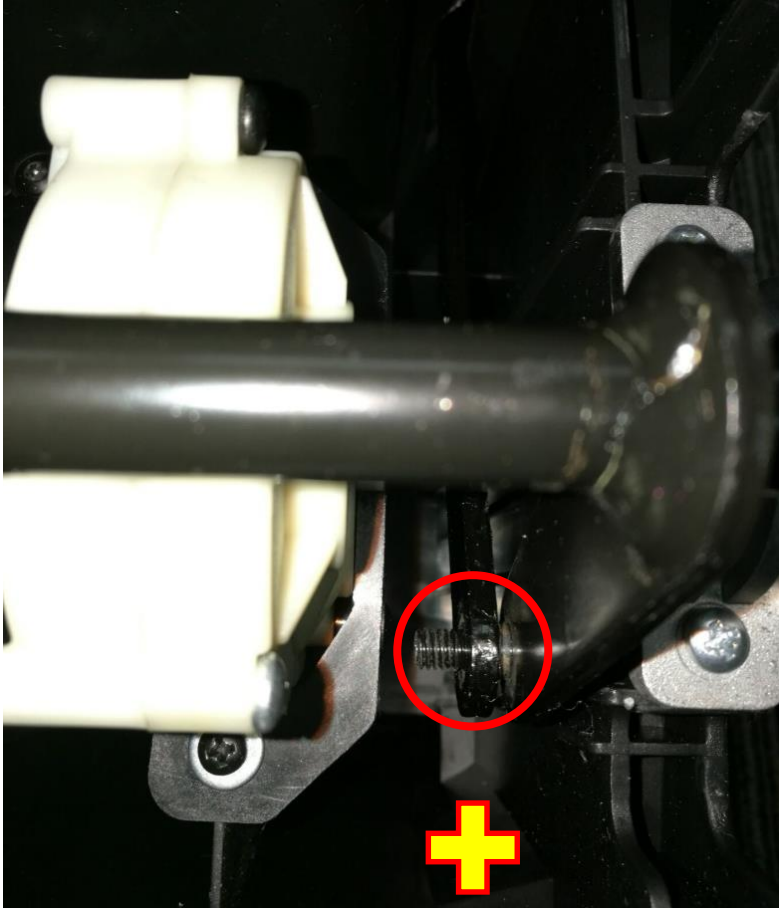
WARNING: This step may cause injuries. Slow down.

Gloves recommended.



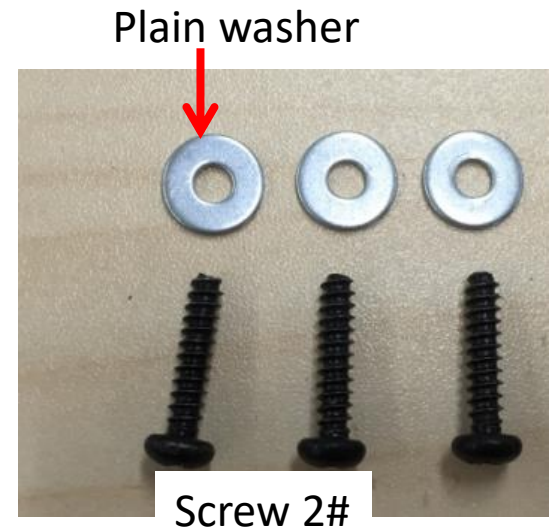
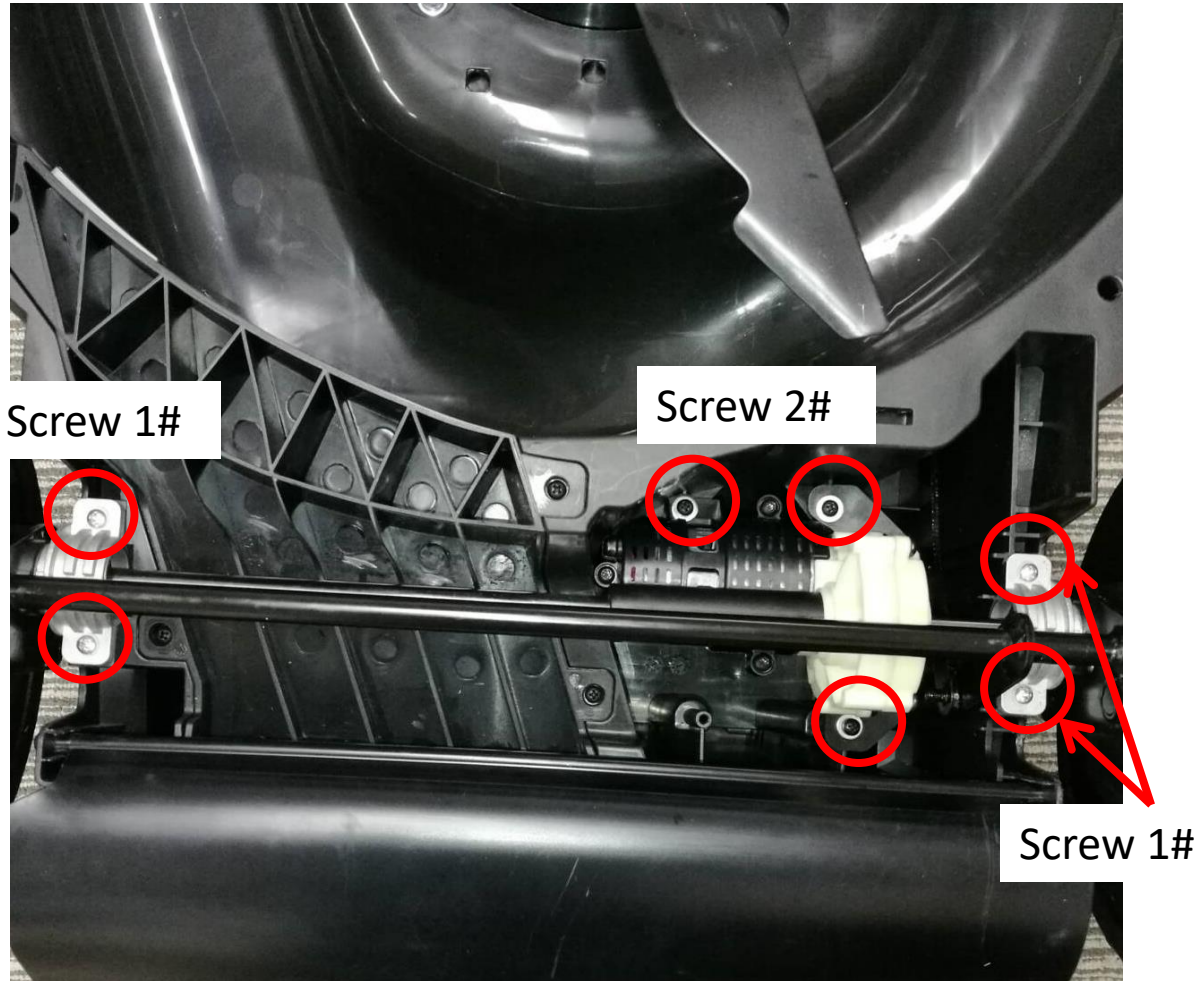
Motor in Self-propelled Unit Replacement_LM2100SP_B

21. Tighten the joint with the nut.



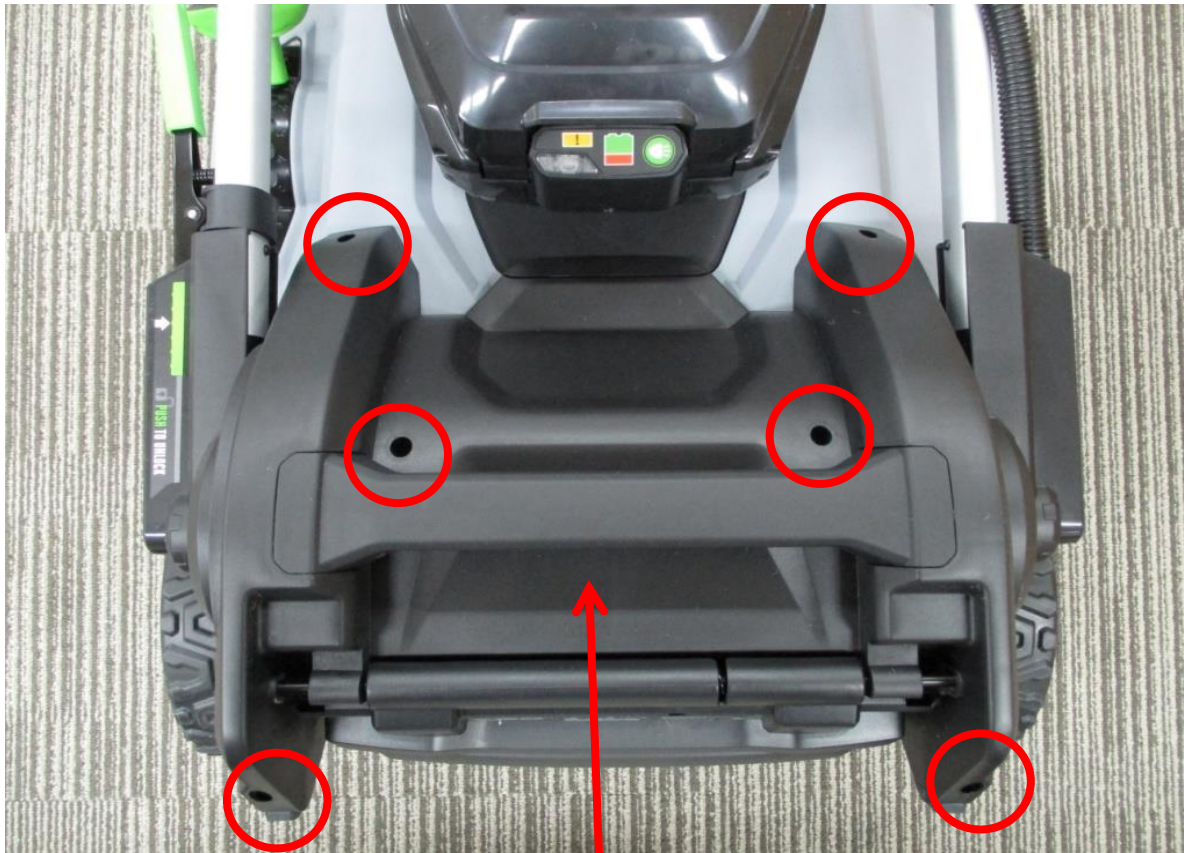
Motor in Self-propelled Unit Replacement_LM2100SP_B

22. Tighten the self-propelled unit with the deck by the screws that removed during disassembly.



Motor in Self-propelled Unit Replacement_LM2100SP_B

23. Assemble the rear wheels on the mower(see *RG_Part 9_Wheels Replacement_LM2100SP.pptx*).
24. Assemble the self-propelled PCBA as the “**Self-propelled PCBA Replacement**” section instructed.
25. Assemble the service cover with screws.



Service Cover