

REPAIR GUIDELINE

Hedge Trimmer_HT2400E



Version: 1

Issue Date: 2015/03/05

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Troubleshooting

Problem	Possible Cause	Fault Position	Test & Solution
Fail to start	Main PCB or its wires are broken	PCB Assembly	Replace the PCB Assembly.
	The blade is jammed when some obstruction stuck in the edge of the blade make the blade curved or deformed.	Blade Set	Clear the obstructions or replace the Blade Set
	Motor is jammed due to foreign objects stuck in the motor.	Motor	Replace the Motor And Gear Assembly.
	Gears are jammed due to broken tooth.	Gear Set	Replace the failure gears.
	Malfunction of switch levers	Switch Levers	Replace the Switch Lever.
Soft Start Failure	Main PCB is broken	PCB Assembly	Replace the PCB Assembly.
Excessive vibration	Unbalance of the motor	Motor	Replace the Motor And Gear Assembly.
	Over-worn of the Eccentric Block	Eccentric Block	Replace the Eccentric Block.
The speed is decreased or less powerful compared with normal use.	Motor is broken	Motor	Replace the Motor And Gear Assembly.
The switch lever doesn't return to the original position.	Dust adhered to the switch.	Switch Lever	Clear the dust

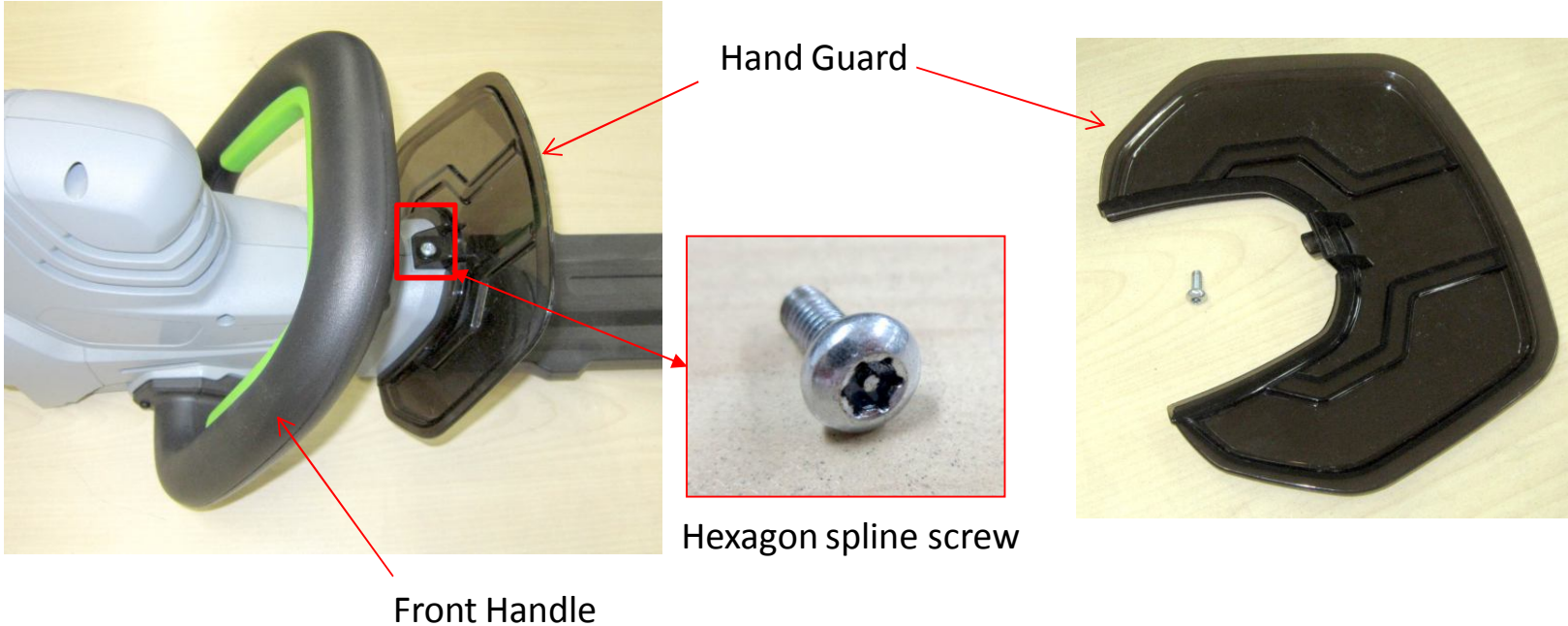
Tool List For Repair

NO.	Tool List	SPEC	Remark
1	Magnetic bits		
2	Hexagon Spline Screwdriver		To remove the hexagon spline screw
3	Screwdriver		
4	Torque Wrench	Rated torque should exceed 12 Nm	To tighten the blade bolt
5	Hex wrench	M6	
6	Electric Soldering Iron		To solder or separate the motor with the PCB
7	Solder sucker		
8	Heat shrinkable sleeves		
9	Scissors		To remove the shrinkable sleeve
10	Grease		To lubricate the Blade

Part 1: Replace the Front Handle Set

Replace the Front Handle Set

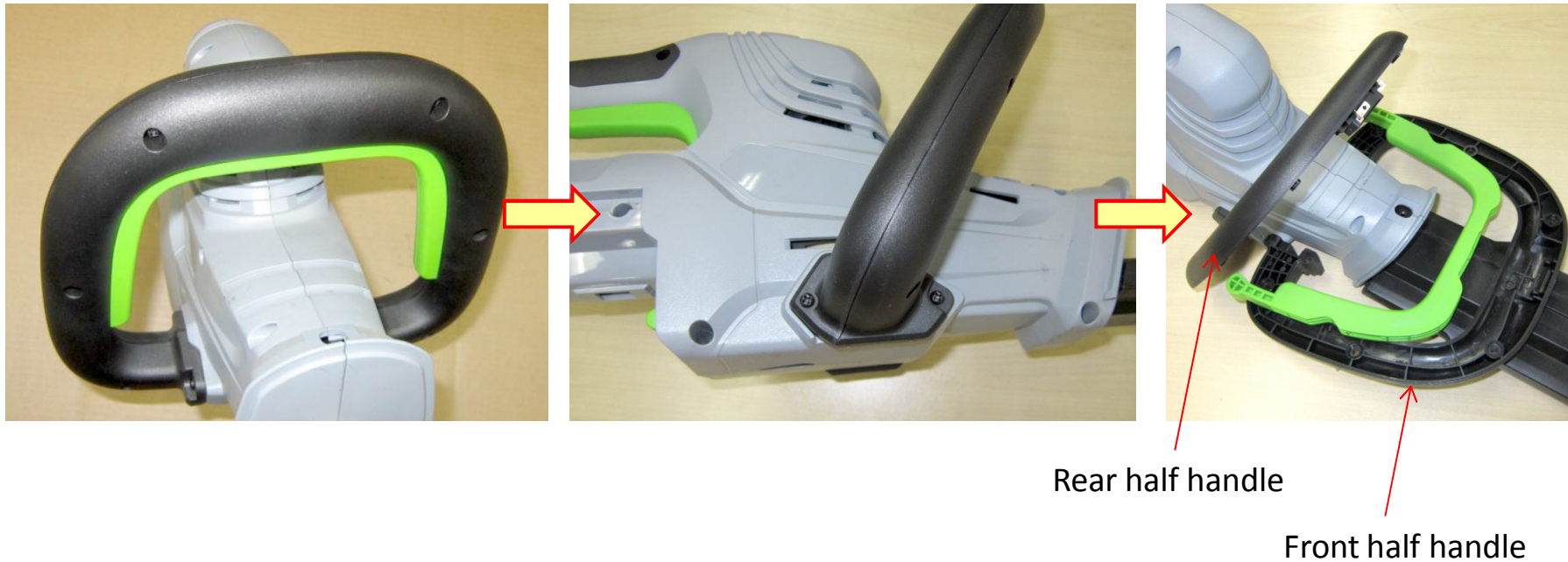
1. Loosen and remove the Hexagon spline screw in the hand guard with a hexagon spline screwdriver and remove the hand guard from the housing.
2. Replace the hand guard if it is broken.



Description	Part Number	SPEC
Hexagon Spline Screw	5620424000	---
Hand guard	3124203000	---

Replace the Front Handle Set

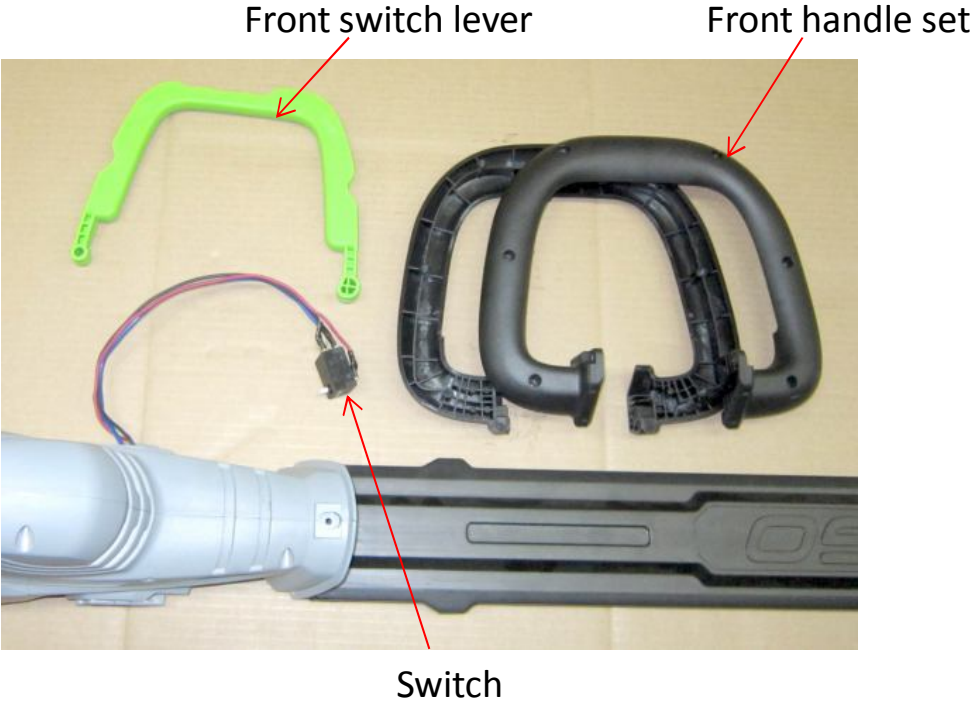
3. Loosen and remove the 6 screws in the front handle.
4. Loosen the 4 screws at both sides of the front handle set and remove the screws.
5. Separate the front half handle from the rear half handle.



Description	Part Number	SPEC
Tapping Screw	5610032000	ST4X16

Replace the Front Handle Set

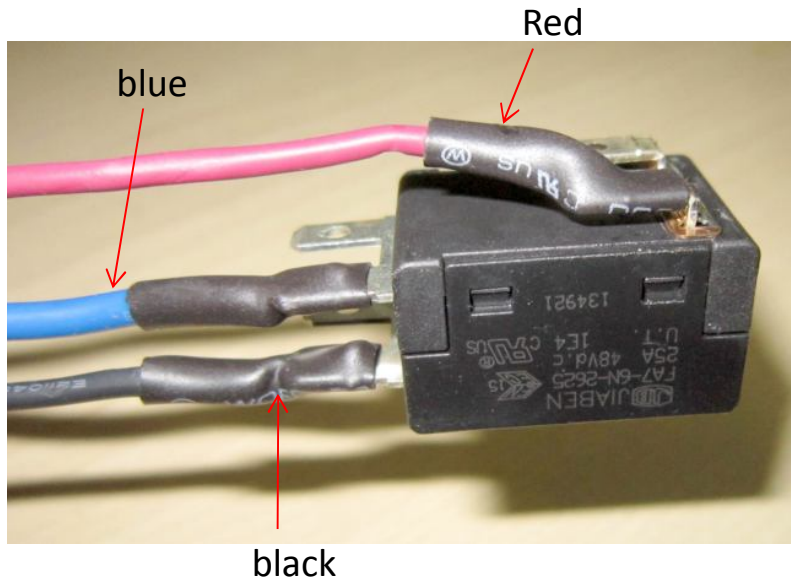
- 6. Take out the internal wire and switch from the rear half handle; remove the rear half handle from the housing.
- 7. Replace the front handle set if they are broken.



Description	Part Number
Front handle set	2823733000
Front Switch Lever	3124356000

Replace the Front Handle Set

8. To replace the switch:
 - (a) Remove the heat-shrinkable sleeves with a scissor, then remove the wires from the trigger with an electric soldering iron.
 - (b) Replace with a new switch.
 - (c) Place new heat-shrinkable sleeves through the wires, then solder the wires to the switch following the below figure.
 - (d) Move the heat-shrinkable sleeves to cover the switch feet and use a hot air gun to shrink the sleeves.



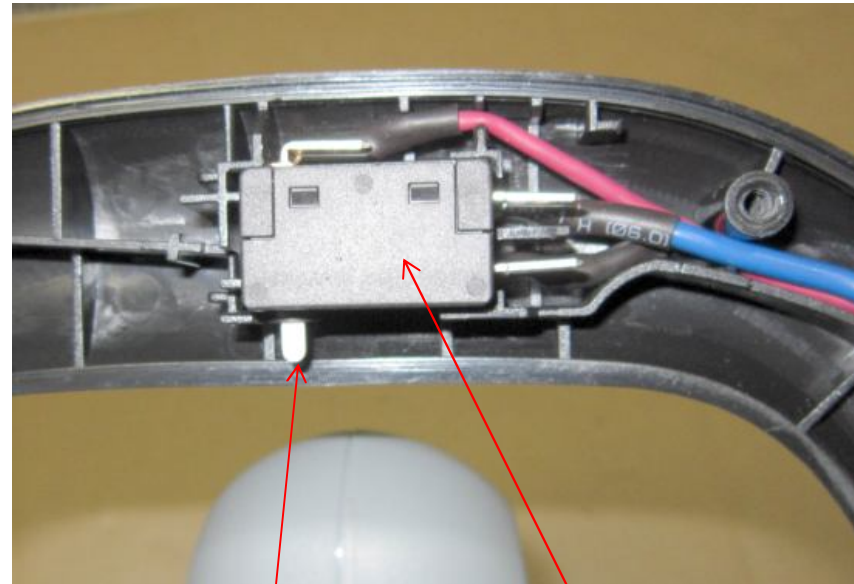
Description	Part Number
Front Trigger Switch	4870381000

Replace the Front Handle Set

9. Mount the rear half handle onto the housing.
10. Position the switch in the rear half handle, make sure the switch trigger downwards.



Rear half housing

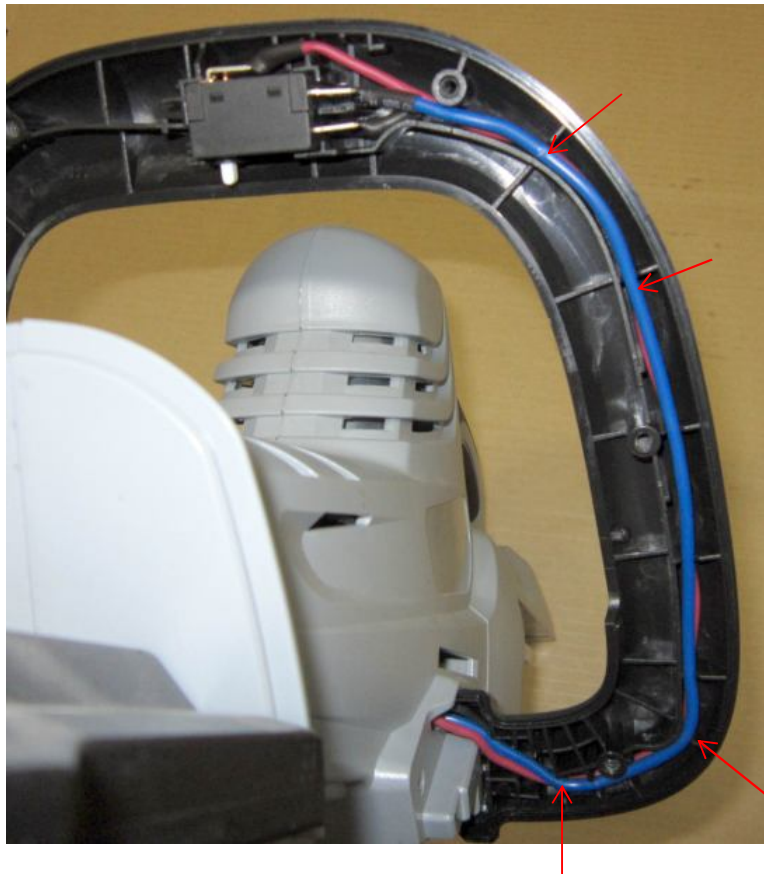


Switch trigger

Switch

Replace the Front Handle Set

11. Align the internal wire in the housing grooves, make sure the blue wire is on the top.
12. Adjust the switch lever to make the wider part on the left and mount the lever into the rear half housing.



Wider part on the left

Front switch lever

Replace the Front Handle Set

13. Close the front half handle and locked with 6 tapping screws.
14. Lock the handle on the housing with 4 screws.
15. Mount the handle guard onto the housing and locked with the Hexagon spline screw.



Part 2: Replace the Blade Assembly

Replace the Blade Assembly

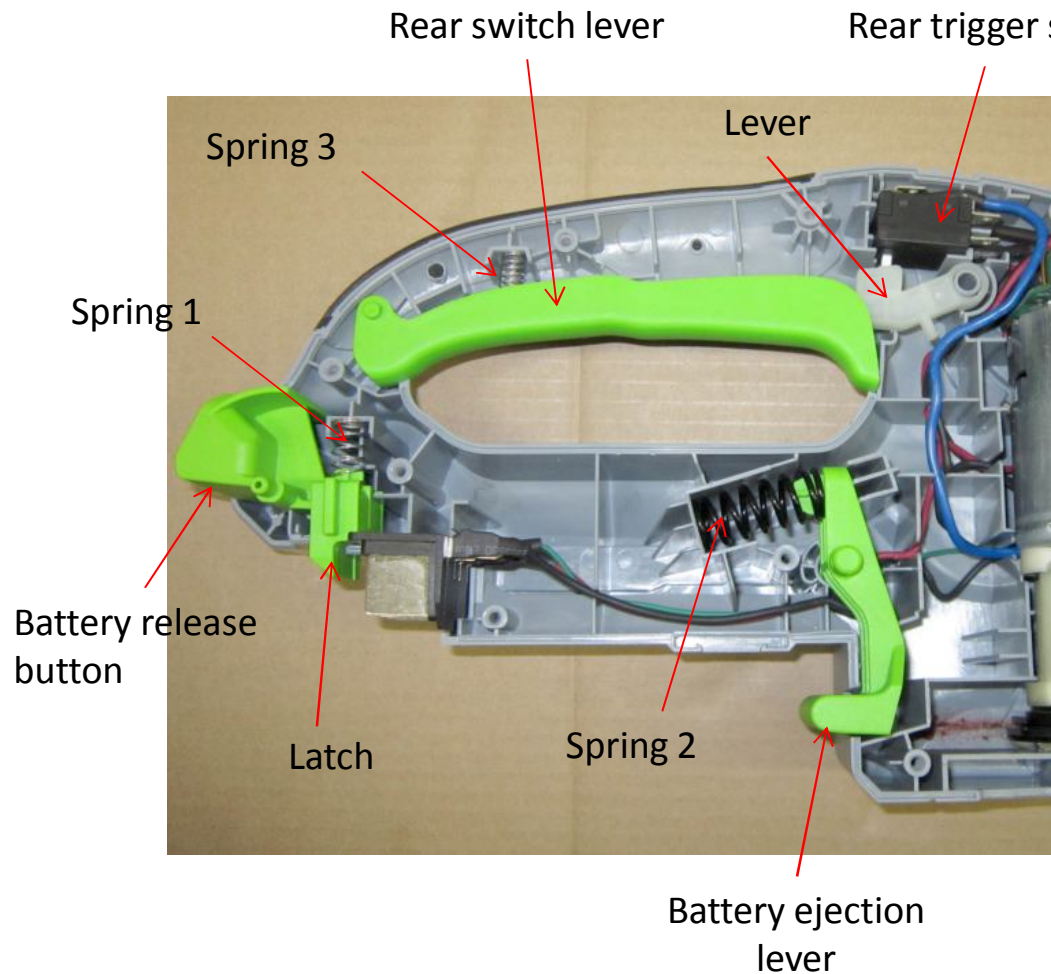
1. Following the instructions in “**Replace the Front Handle Set**” to remove the hand guard and front handle.
2. Loosen and remove the 12 screws in the right housing and open the housing.



Description	Part Number	SPEC
Tapping Screw	5610032000	ST4X16

Replace the Blade Assembly

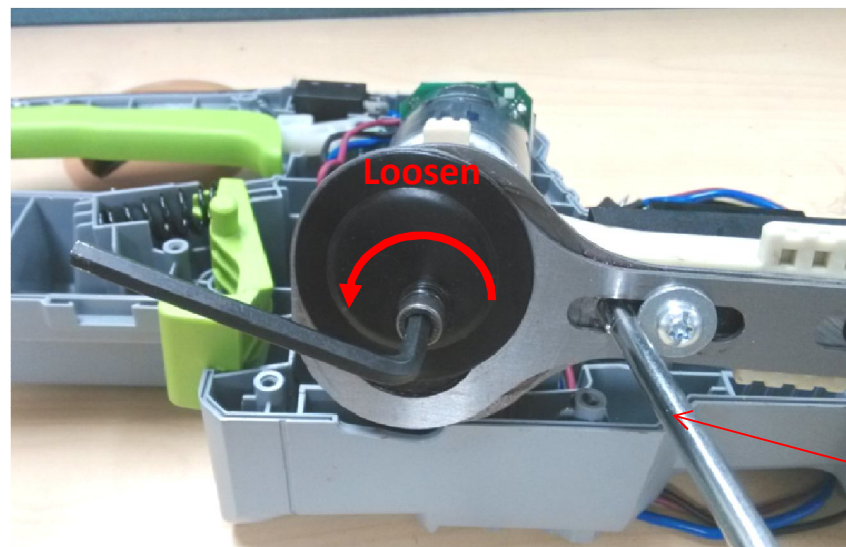
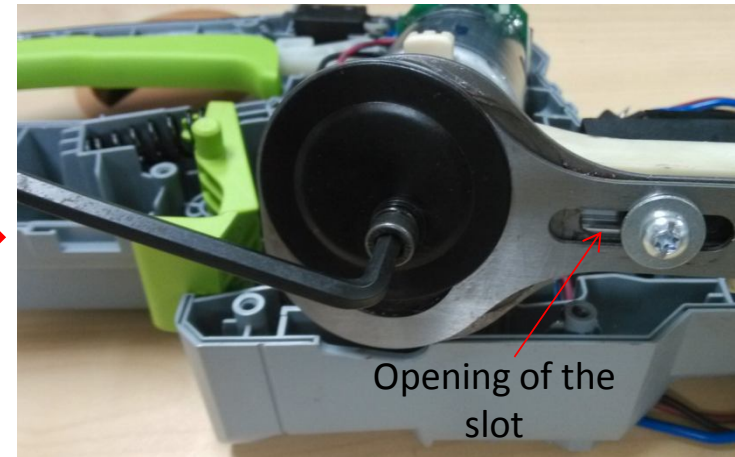
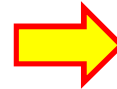
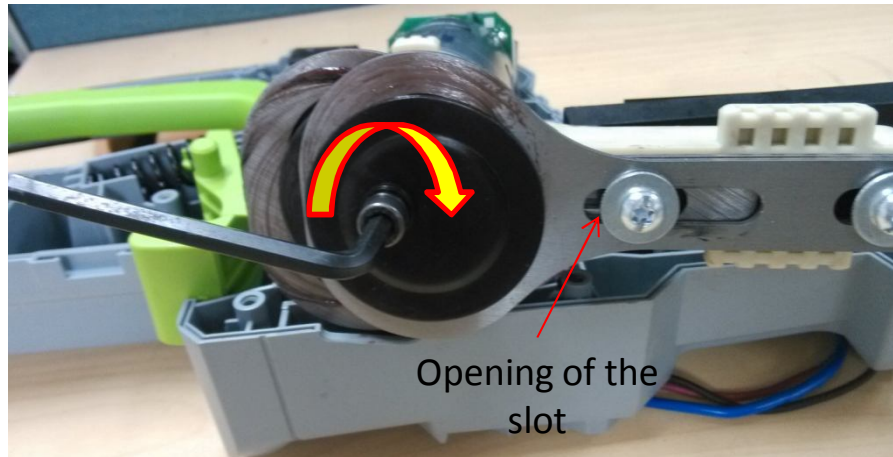
- The battery release button, latch, battery ejection lever, rear trigger switch, lever, rear switch lever, housings, springs can be replaced if they are broken or worn.



Description	Part Number
Battery Release Button	3127201000
Latch	3127202000
Battery Ejection Lever	3127206000
Rear Trigger Switch	4870381000
Lever	3124267000
Rear Switch Lever	3124357000
Housing set	2823732000
Spring (1)	3660013000
Spring (2)	3660129000
Spring (3)	3660148000

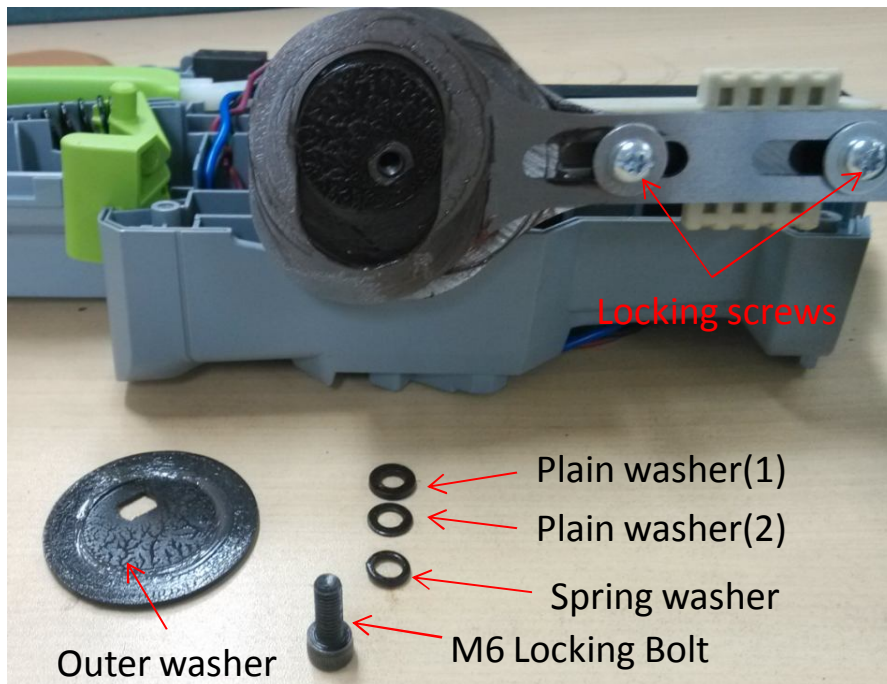
Replace the Blade Assembly

3. Use a M6 hex wrench to turn the bolt to adjust the opening of the slots in the blade.
4. Place a metal rod (e.g. a manual screwdriver) into the slots to act as a stabilizer.



Replace the Blade Assembly

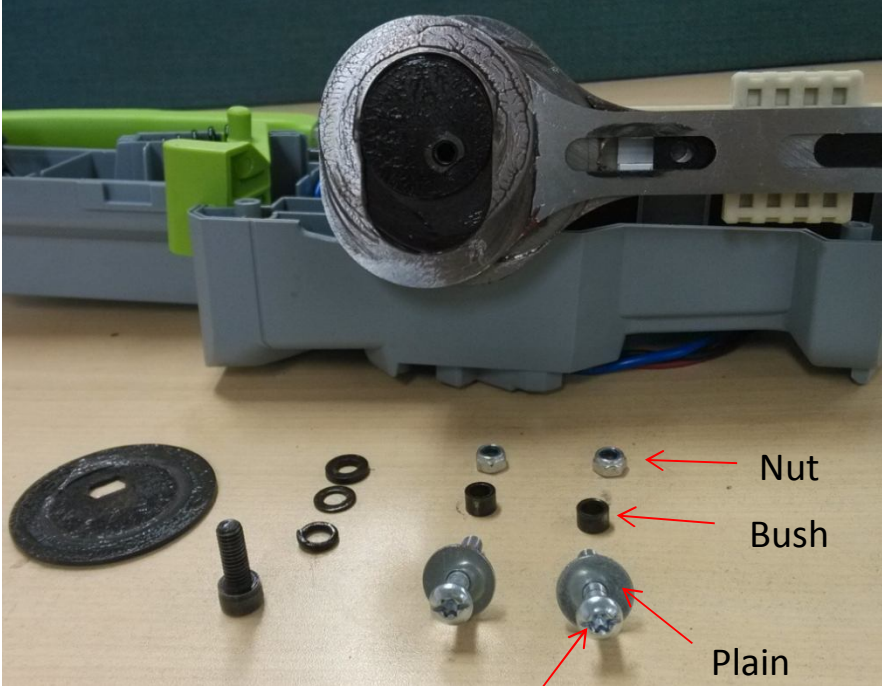
5. Use the M6 hex wrench to turn the bolt counterclockwise to remove the bolt, spring washer, plain washers and the outer washer.



Description	Part Number	Spec
Outer washer	5650494000	
Plain washer(1)	3700227000	
Plain washer(2)	5650213000	
Spring washer	5650020000	
Locking bolt	5620340000	M6

Replace the Blade Assembly

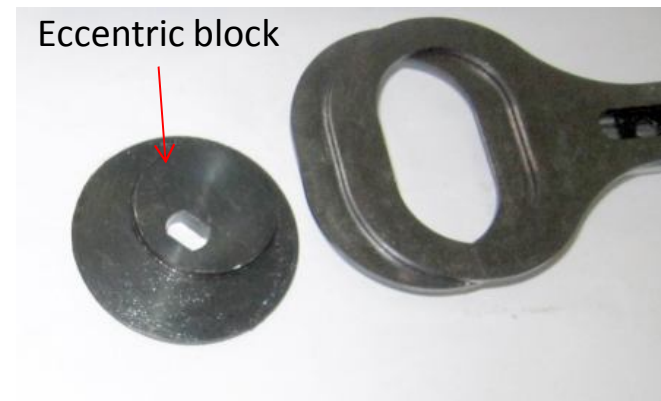
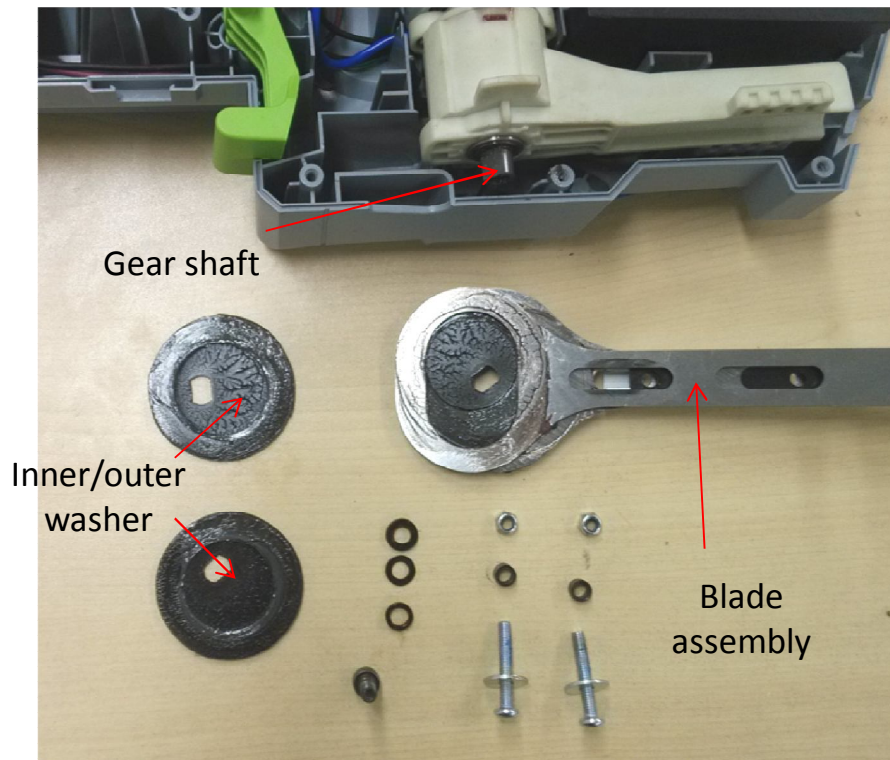
- 6. Loosen the two locking bolts in the blade and remove the bolts, plain washers, bushes and nuts from the blade.



Description	Part Number	Spec
Nut	5630007000	
Bush	5650493000	
Plain washer(3)	5650487000	
Locking bolts	5620462000	M5

Replace the Blade Assembly

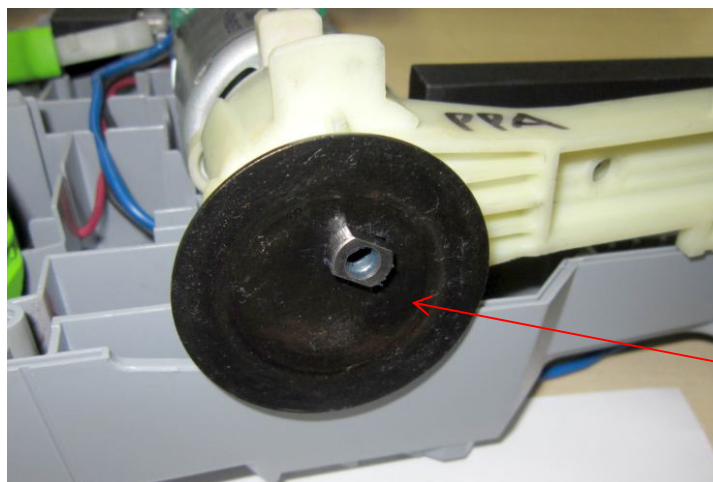
7. Remove the blade assembly, eccentric block and inner washer from the gear shaft.
8. Open the two half of the blade and take out the eccentric block.
9. Replace the blade assembly and other parts if they are worn or broken.



Description	Part Number	Spec
Blade assembly	2824123000	Eccentric block not included
Inner/outer washer	5650494000	
Eccentric Block	3552206000	

Replace the Blade Assembly

10. Mount the eccentric block into the new blade assembly.
11. Mount the inner washer onto the gear shaft, make sure the concave surface of the washer towards outside.



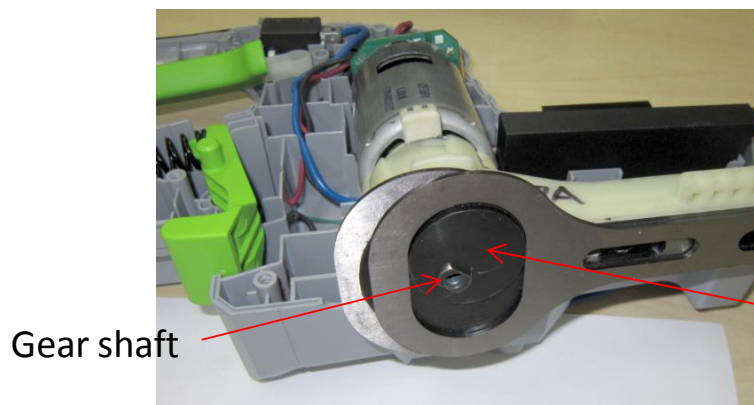
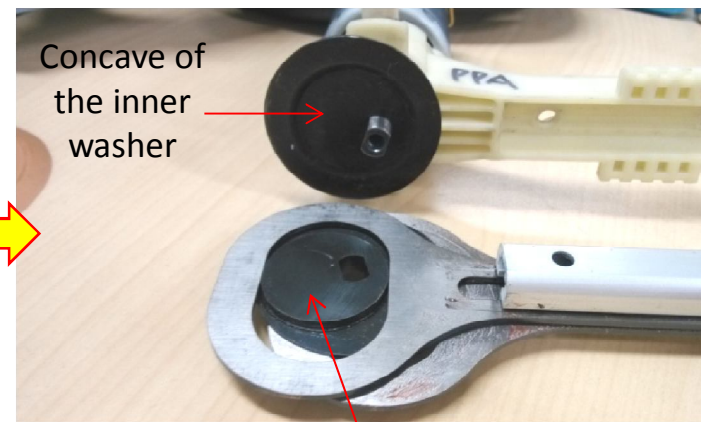
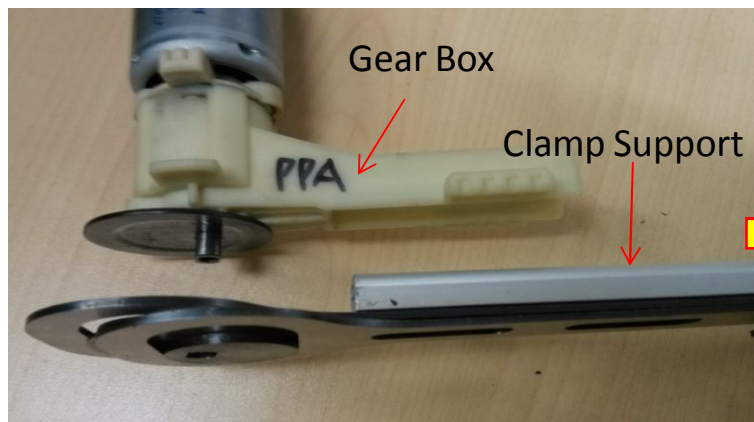
Concave surface
towards outside

Replace the Blade Assembly

12. Mount the eccentric block together with the blade assembly onto the gear shaft.

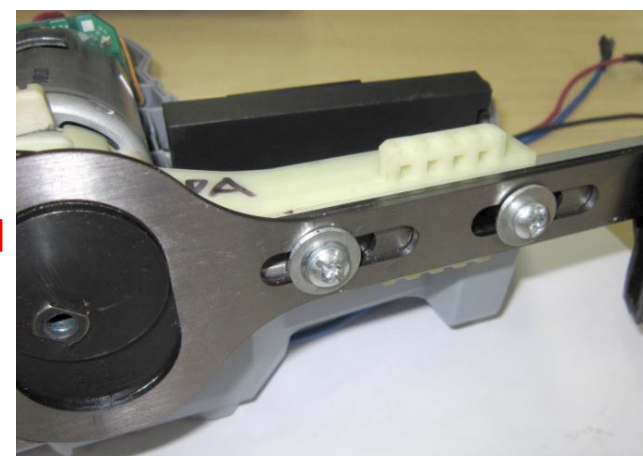
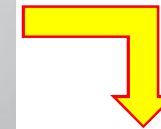
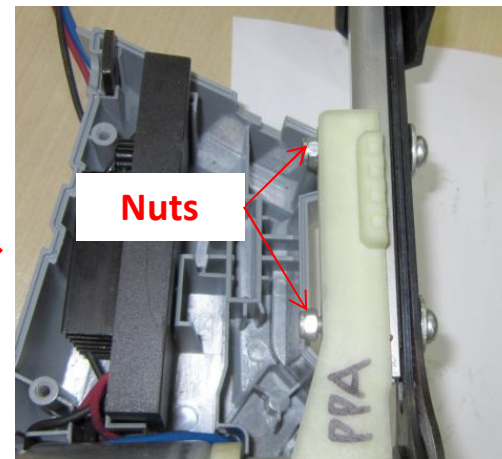
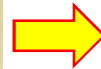
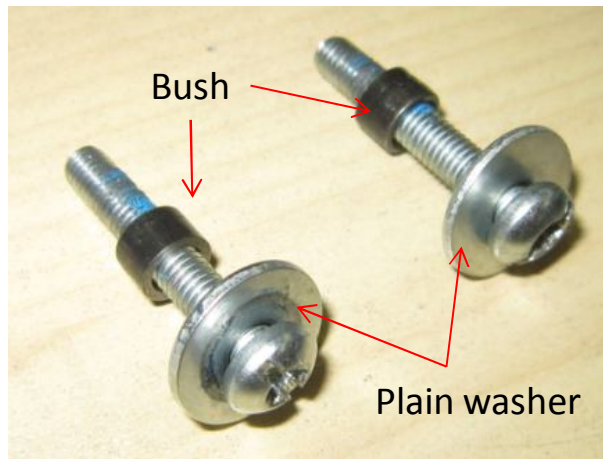


Notice the assembly direction: The clamp support of the blade assembly should point towards the gear box. The eccentric block should be mounted onto washer with the circular convexity of the eccentric block sitting into the concave of the inner washer.



Replace the Blade Assembly

13. Place the plain washer, bush through the bolts; put the bolts through the locking holes in the blade assembly; mount the nuts onto the bolts from the backside of the gear case and tighten the bolts.
14. Add some grease on the eccentric block.

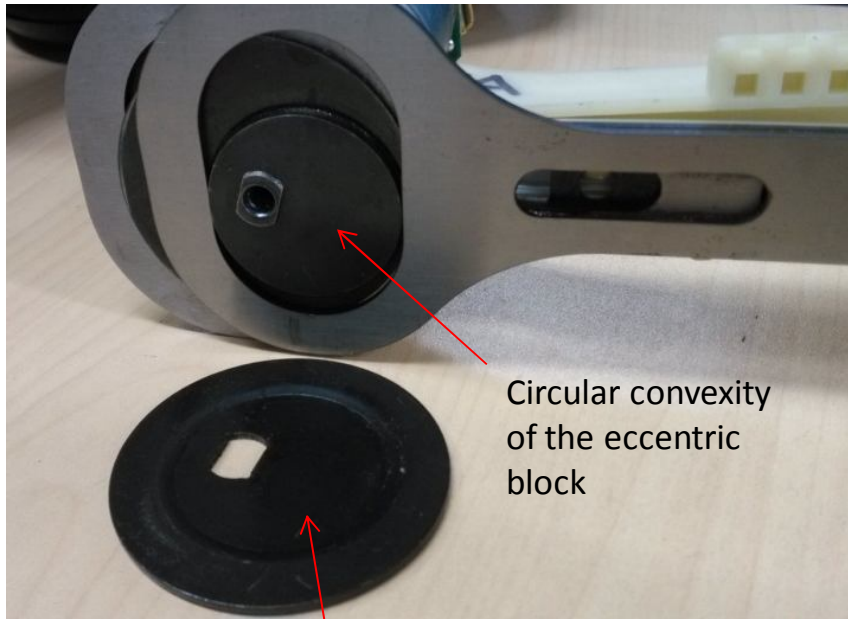


Replace the Blade Assembly

15. Align the fixing hole in the outer washer with the gear shaft and mount the washer onto the shaft.



Notice the assembly direction: The concave of the outer washer should be mounted towards the eccentric block and make sure the circular convexity of the eccentric block sitting into the concave of the outer washer.



Concave of the outer washer



Convexity of the outer washer towards outside

Replace the Blade Assembly

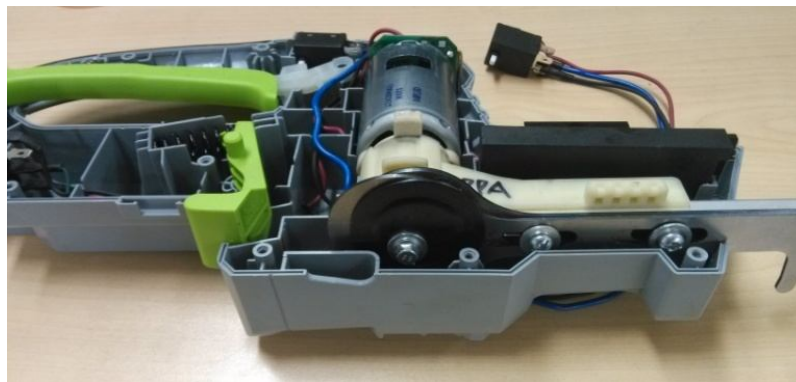
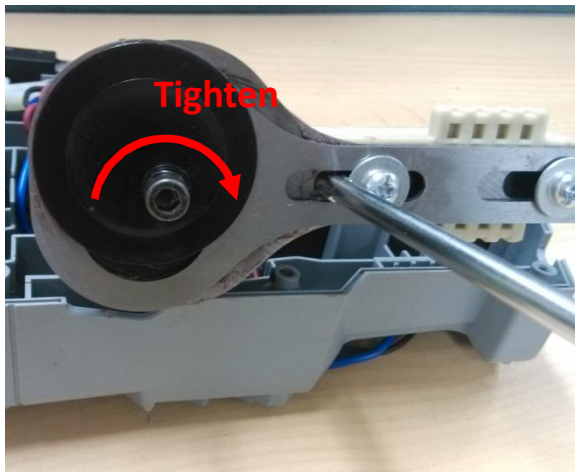
- Check at this step to make sure the previous assembly steps are correct:
- Use a vernier caliper to measure the depth of the shaft end which is lower than the outer washer surface. It should be less than 0.6mm. If the depth exceeds 0.6mm, reassemble the blade set step by step following the previous steps.



The shaft end should be a little lower than the outer washer surface (<0.6mm)

Replace the Blade Assembly

16. Pass the spring washer, two plain washers through the locking bolt and mount the bolt into the gear shaft; tighten the locking bolt. The reference tightening torque is 10 NM-12 NM.
17. Position the blade assembly into the left housing, close the right housing and lock it with 12 screws.



Replace the Blade Assembly

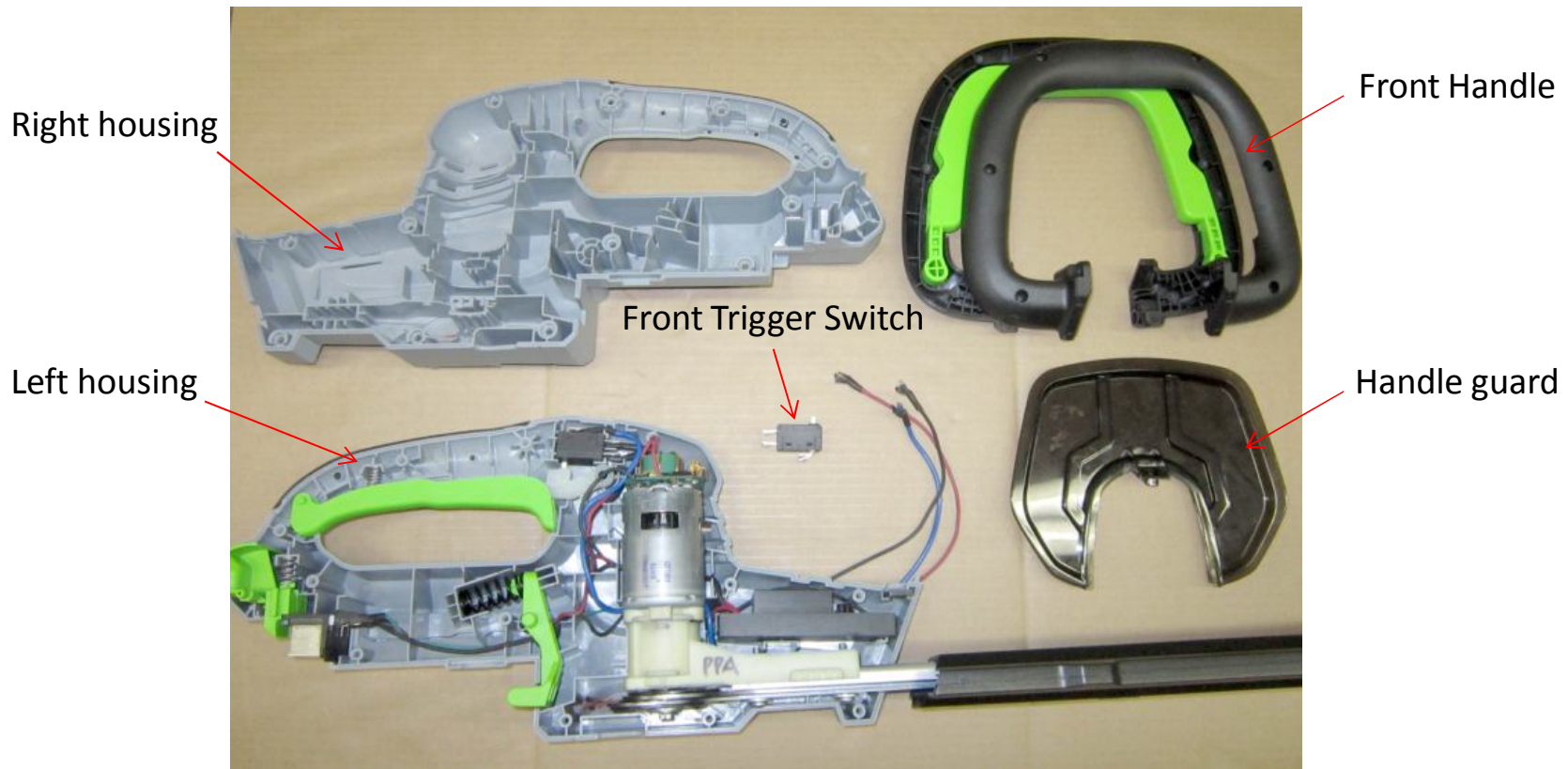
18. **Test before assemble the front handle:** Install the battery, press the switch trigger and switch lever at the same time, check if the blade works properly at least 30s. If not, reassemble all the parts, make sure every step is correct.
19. Following the instructions in “**Replace the Front Handle Set**” to assemble the front handle and the hand guard.



Part 3: Replace the PCB Assembly

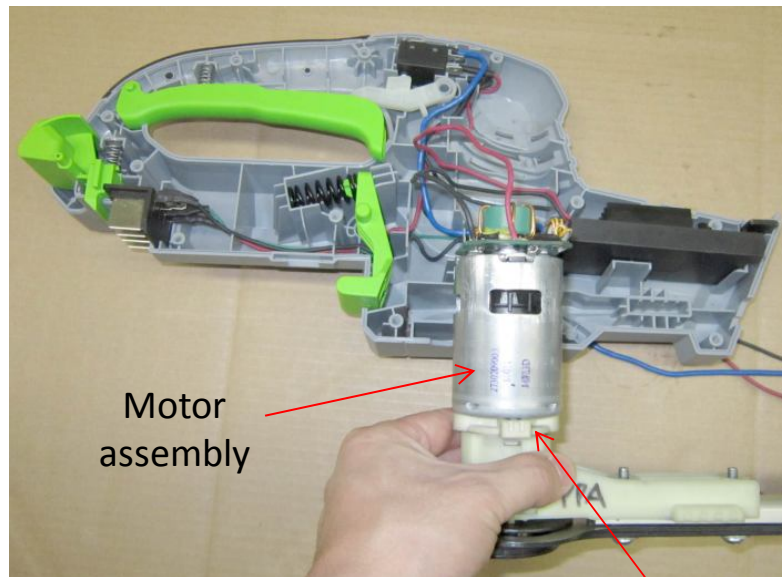
Replace the PCB Assembly

1. Following the instructions in “**Replace the Front Handle Set**” to remove the hand guard, front handle and front trigger switch.
2. Loosen and remove the 12 screws in the right housing and open the housing.



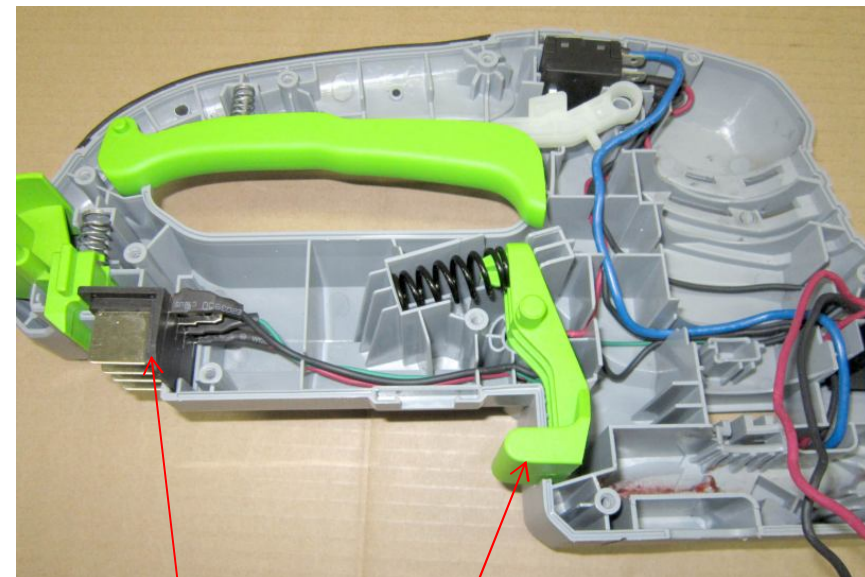
Replace the PCB Assembly

3. Take out motor assembly and gear box assembly from the left housing.
4. Remove the battery ejection lever and take out the battery connection terminal from the left housing.



Motor assembly

Gear box assembly

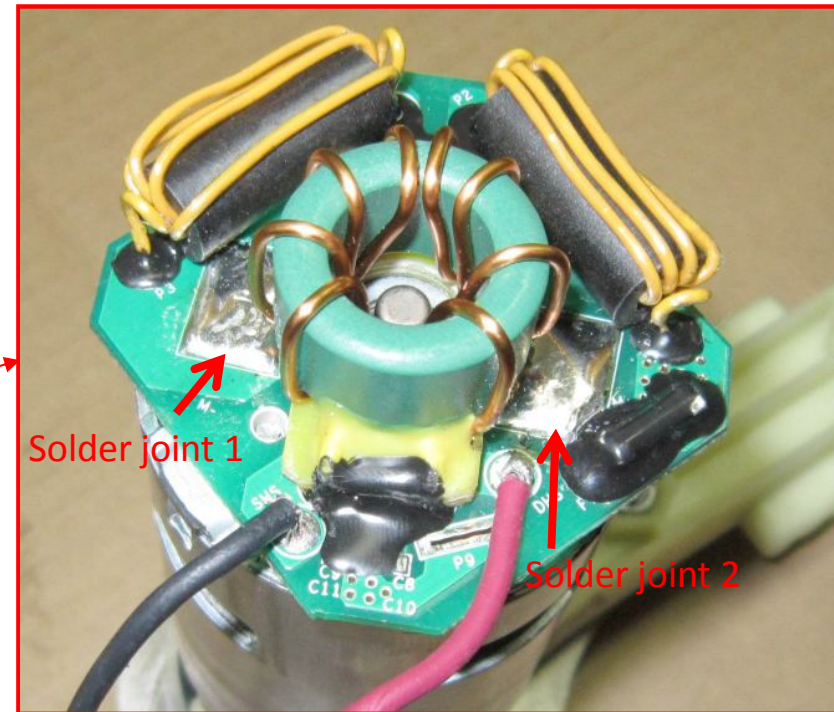
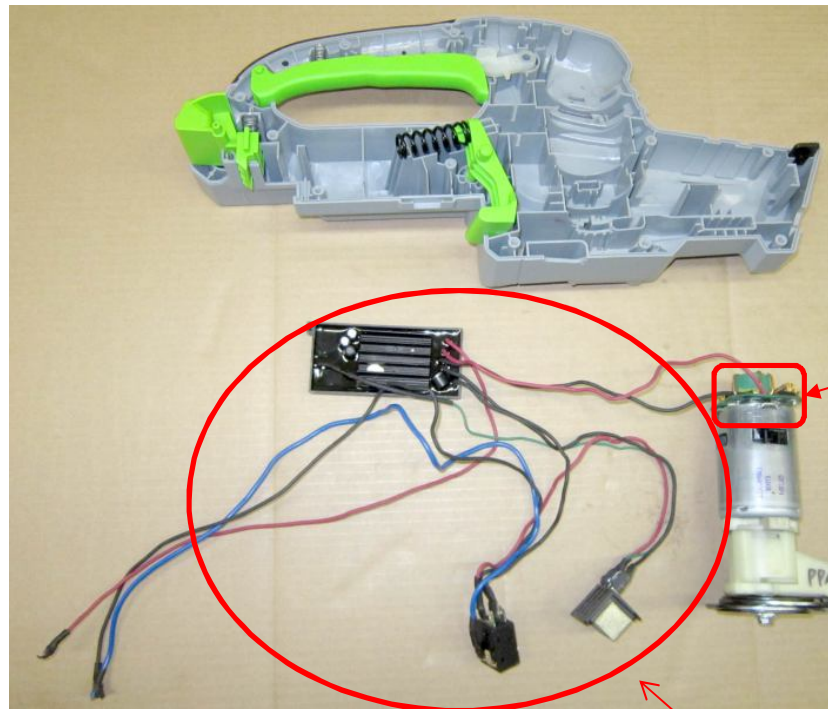


Battery connection terminal

Battery ejection lever

Replace the PCB Assembly

5. Take out the PCBA from the housing.
6. Use an electric soldering iron and solder sucker to disconnect the two solder joints as indicated on the below figure and remove the PCBA from the motor.



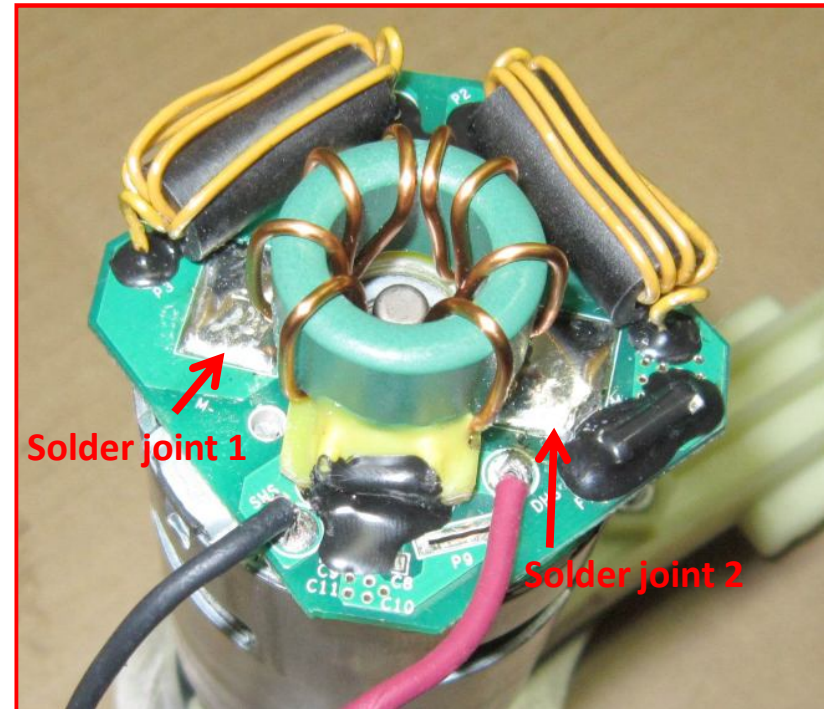
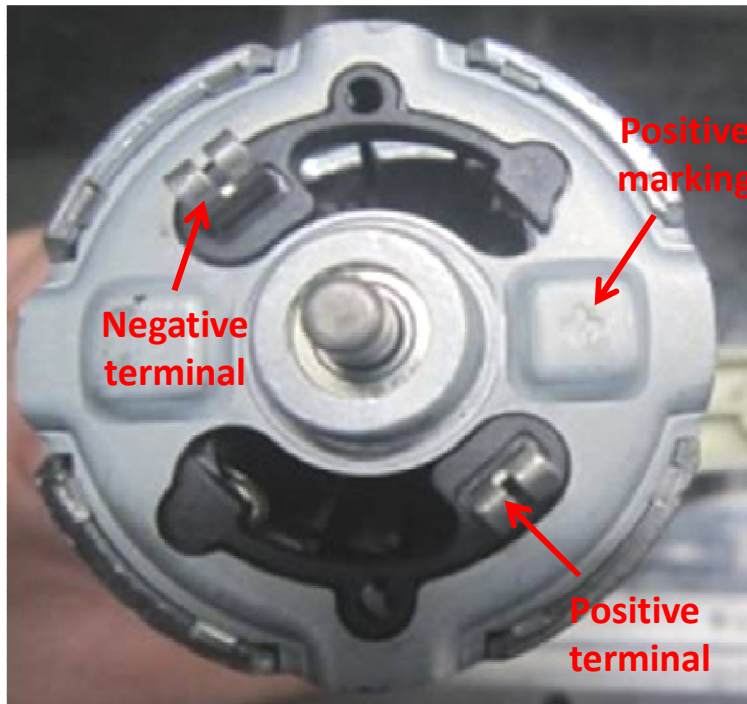
PCB assembly

PCB assembly includes the PCB on the top of the motor

Description	Part Number
PCBA	2830043000

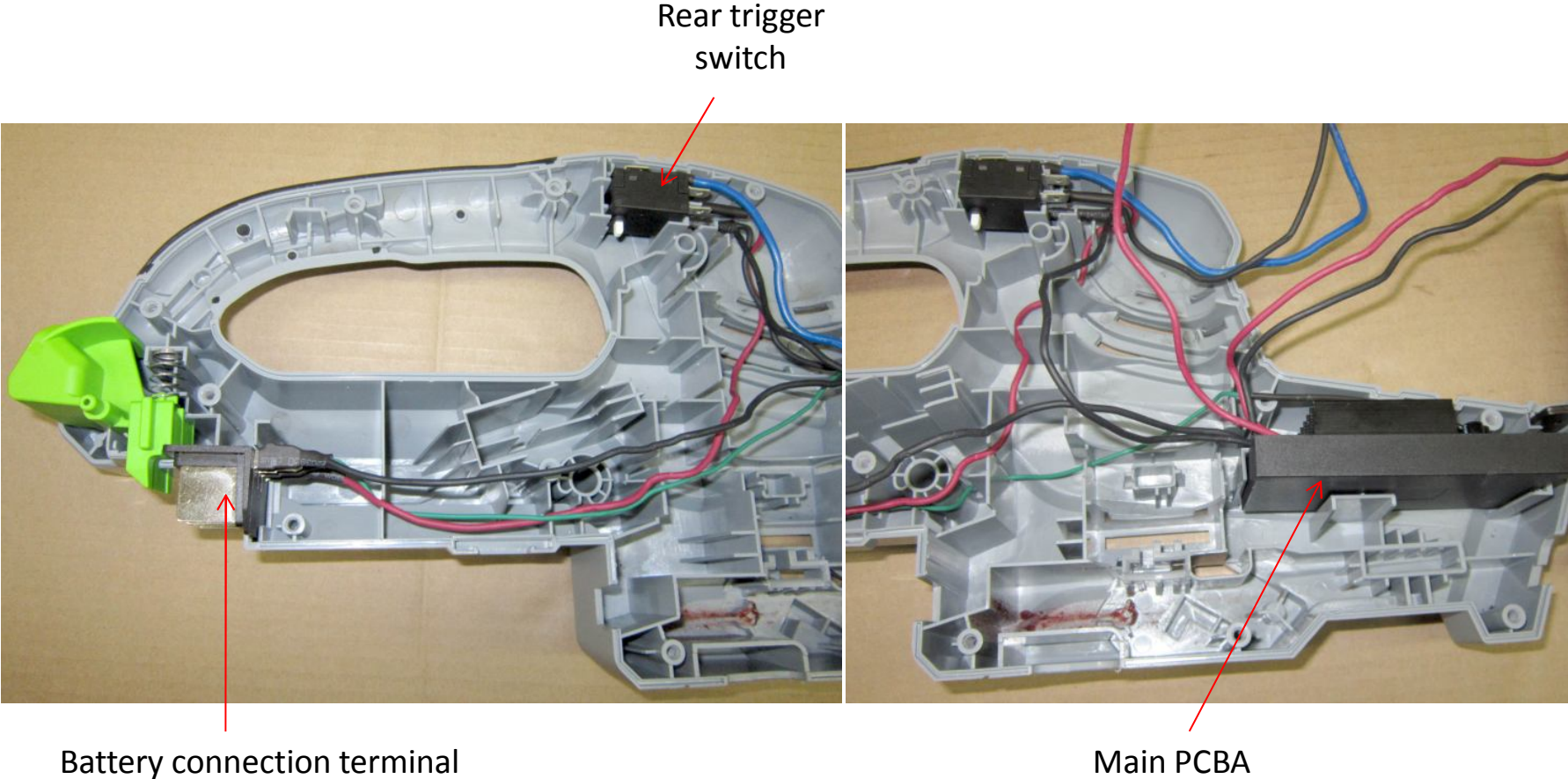
Replace the PCB Assembly

7. Replace with a new PCAB.
8. Mount the new PCBA onto motor; solder the two joints with the two terminals on the motor.
 - The solder joint 2 (close to the red wire) connected to the positive terminal on the motor.
 - The solder joint 1 (close to the black wire) connected to the negative terminal on the motor



Replace the PCB Assembly

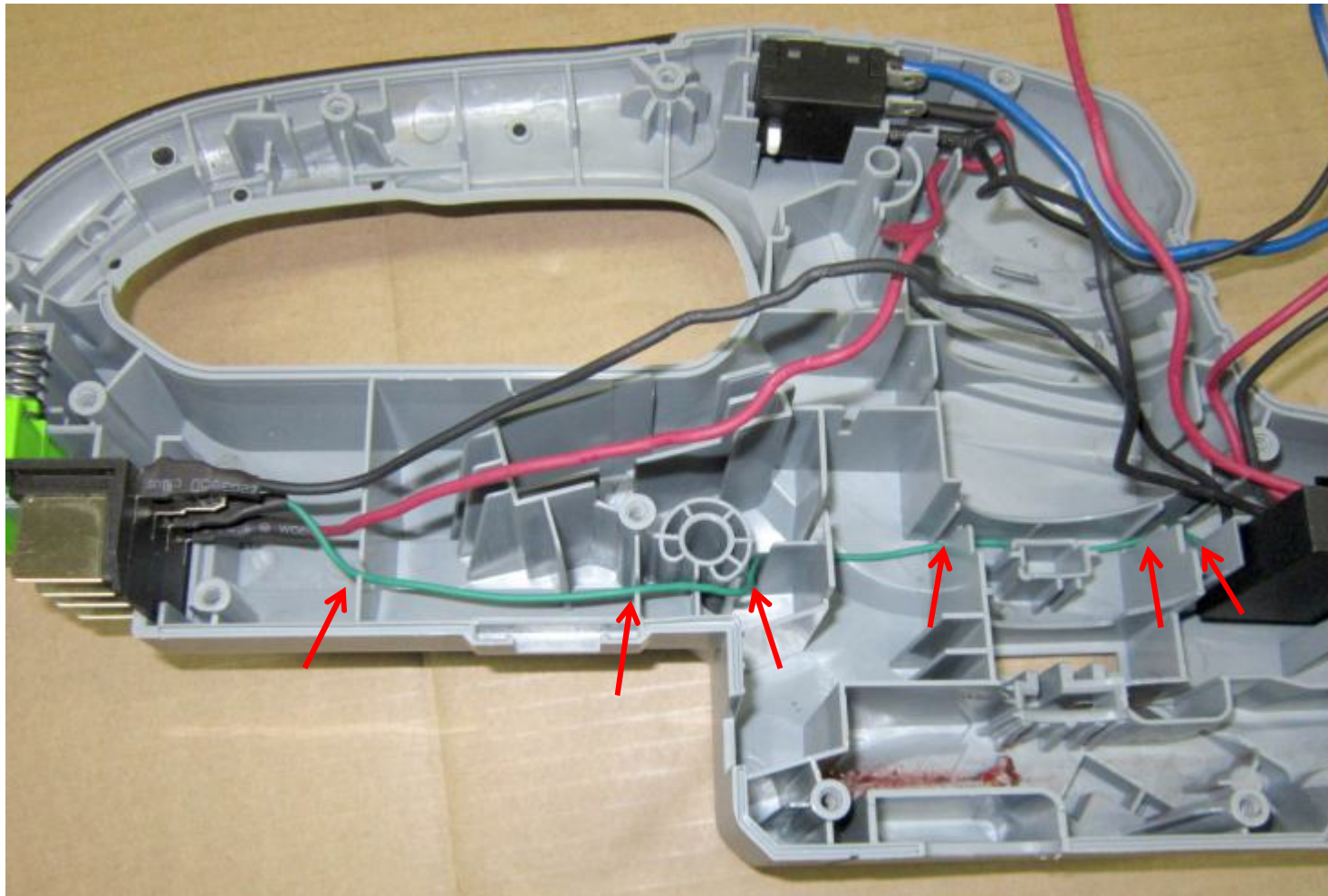
9. Position the battery connection terminal, rear trigger switch and main PCBA in the left housing.



Replace the PCB Assembly

10. Internal wire alignment

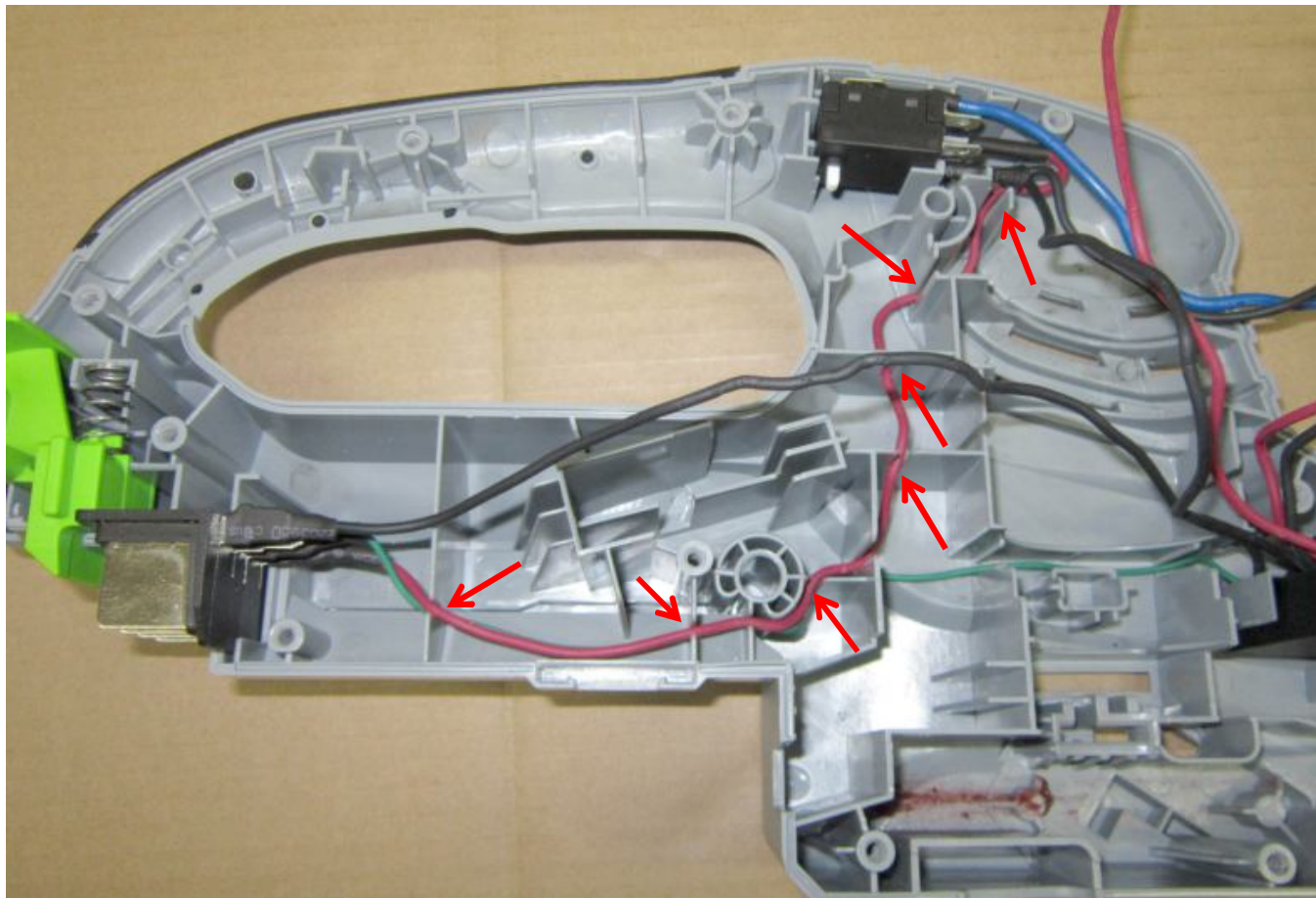
(a) Align the green wire (connecting battery connection terminal to main PCBA) in the groove.



Replace the PCB Assembly

10. Internal wire alignment

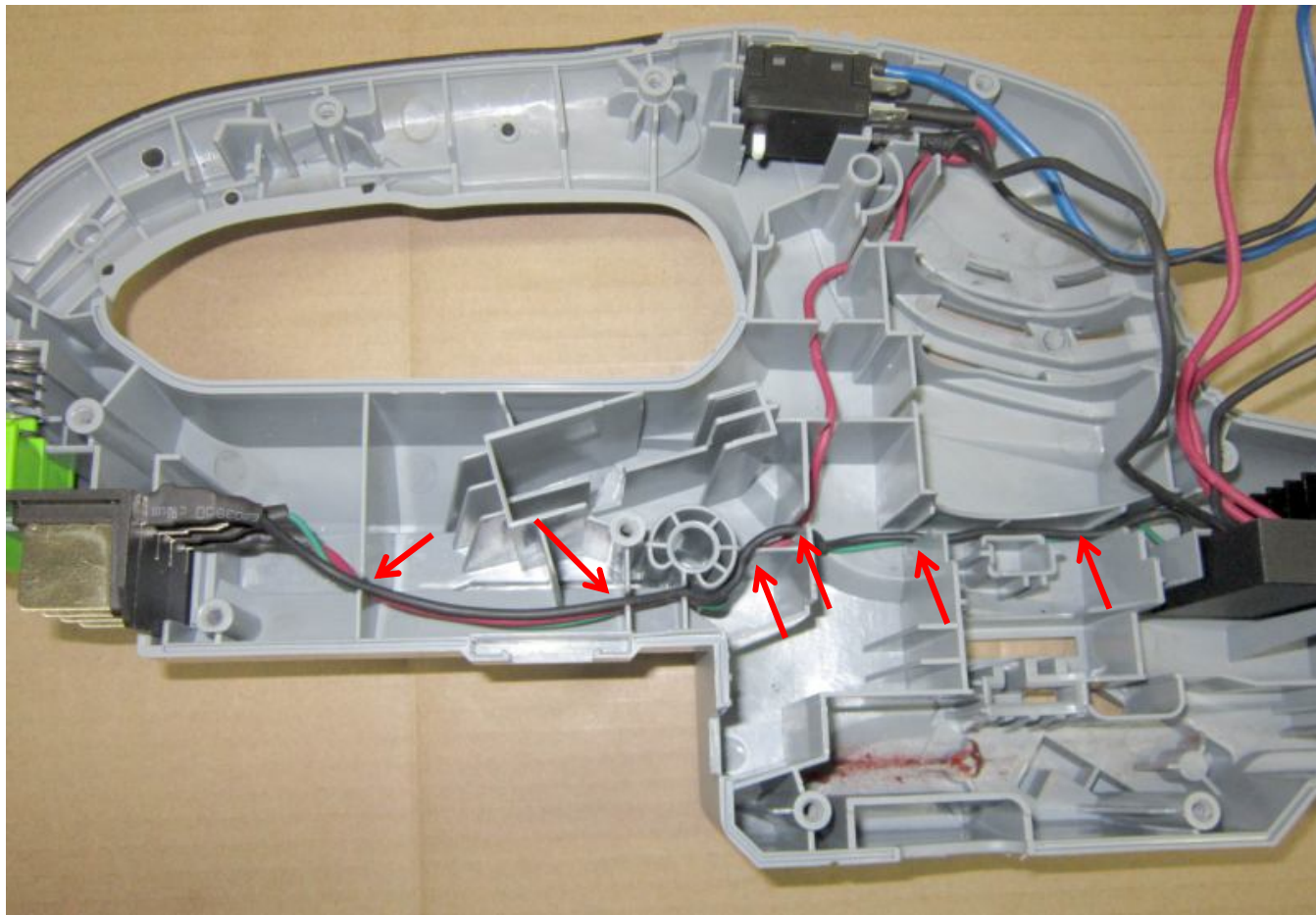
- (b) Align the red wire (connecting battery connection terminal to rear trigger switch) in the groove.



Replace the PCB Assembly

10. Internal wire alignment

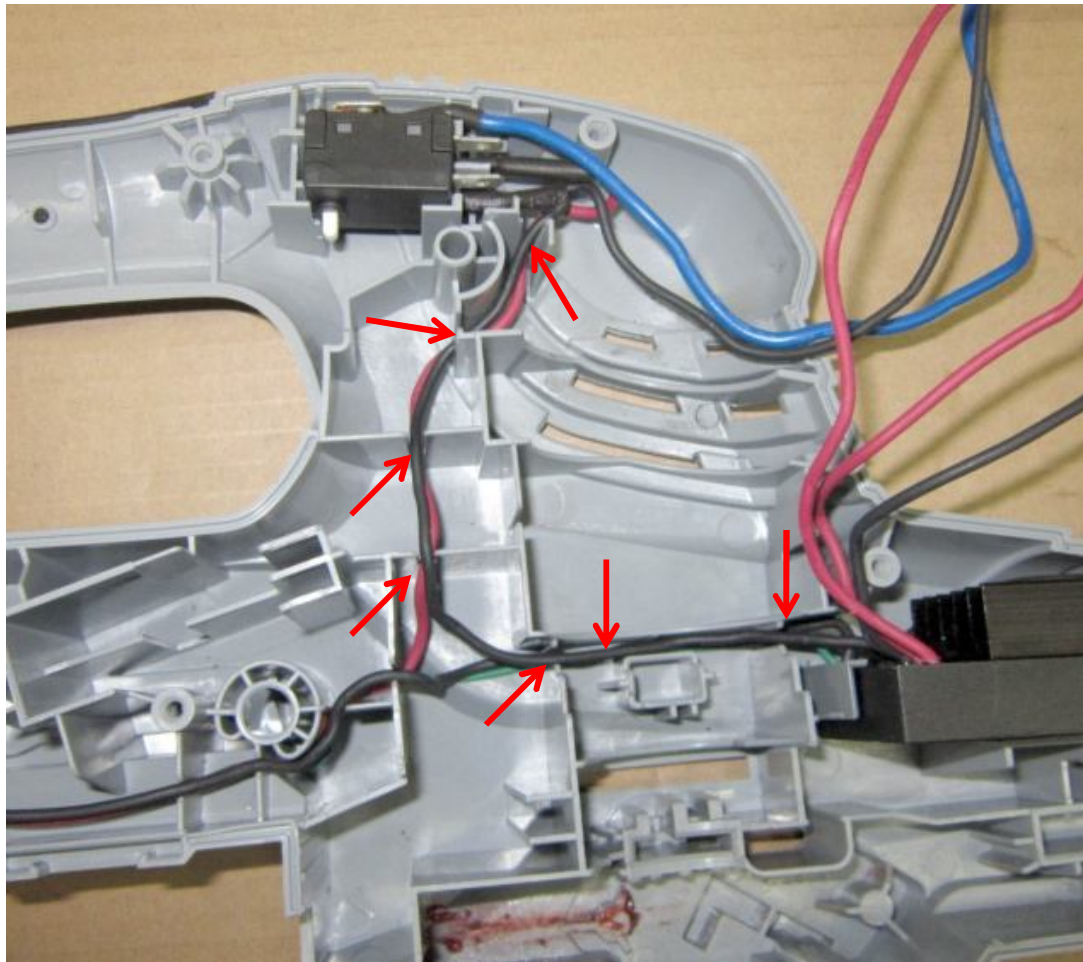
(c) Align the black wire (connecting battery connection terminal to main PCBA) in the groove.



Replace the PCB Assembly

10. Internal wire alignment

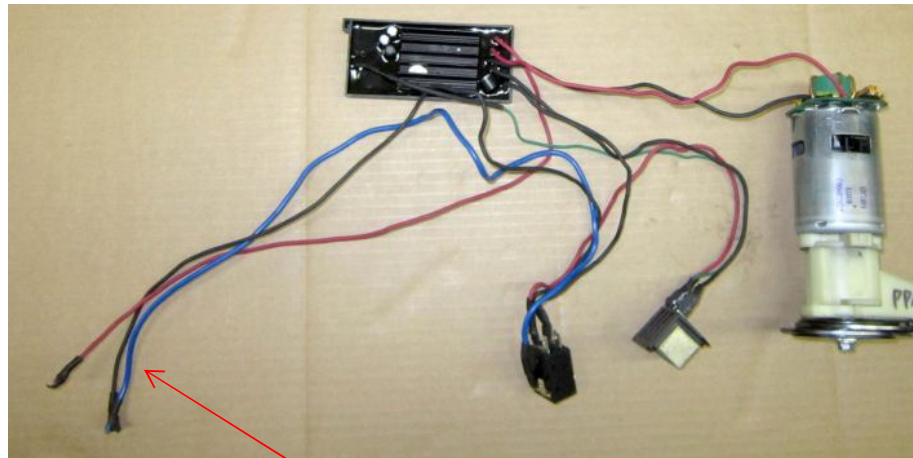
(d) Align the black wire (connecting rear trigger switch to main PCBA) in the groove.



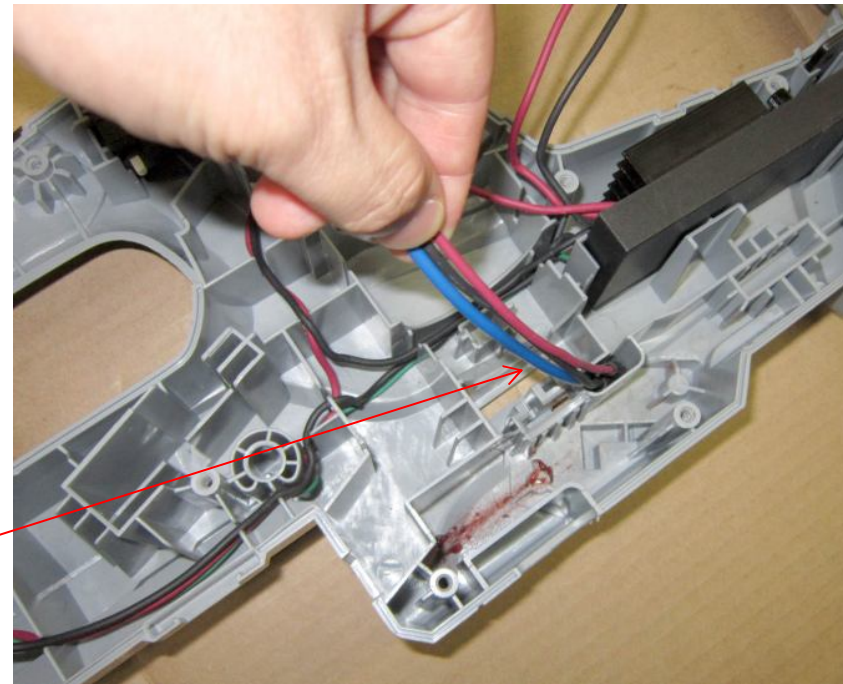
Replace the PCB Assembly

10. Internal wire alignment

- (e) Pass the three wires (red, brown and blue, connecting to the trigger switch in the front handle) through the hole in the left housing.



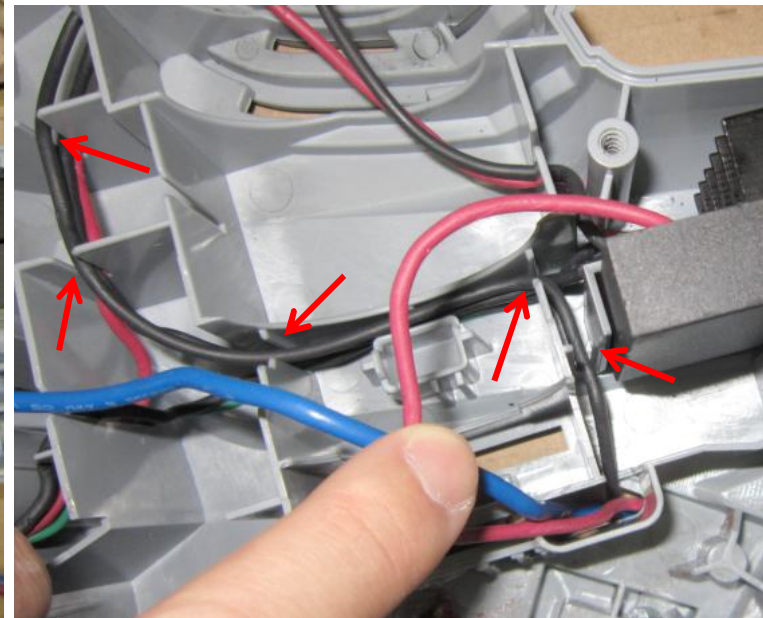
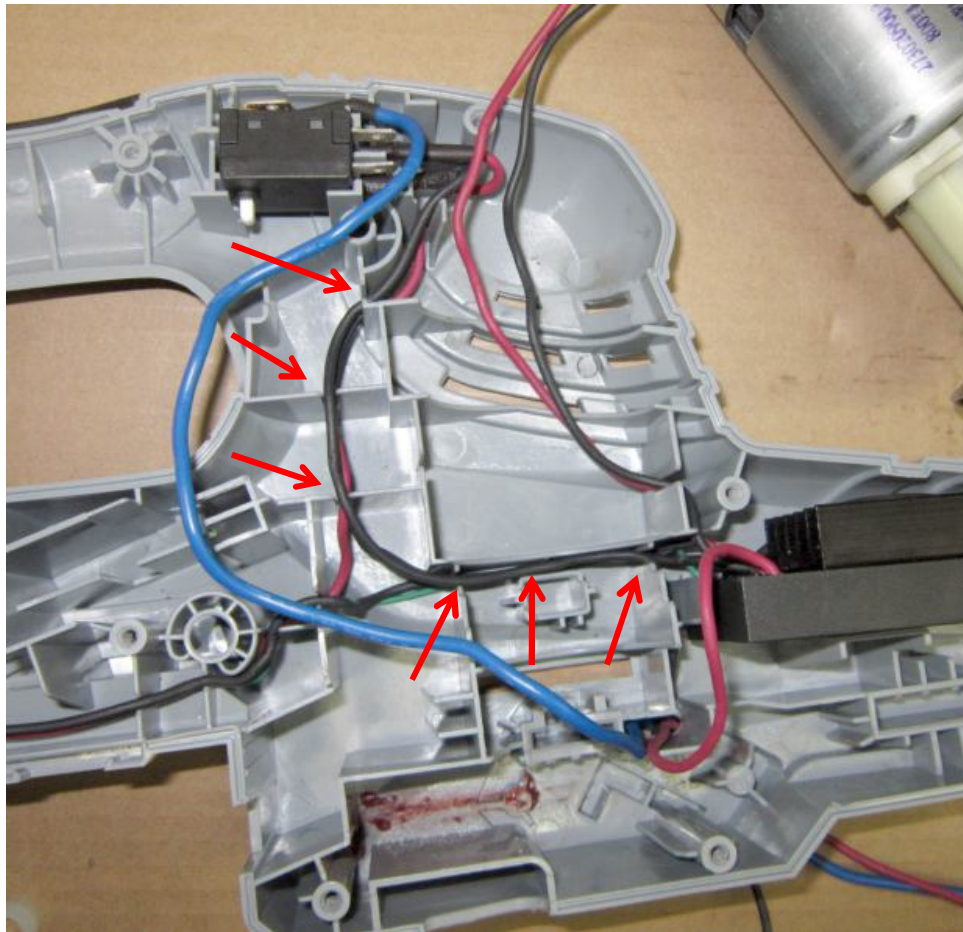
Three wires connecting to the trigger switch in the front handle



Replace the PCB Assembly

10. Internal wire alignment

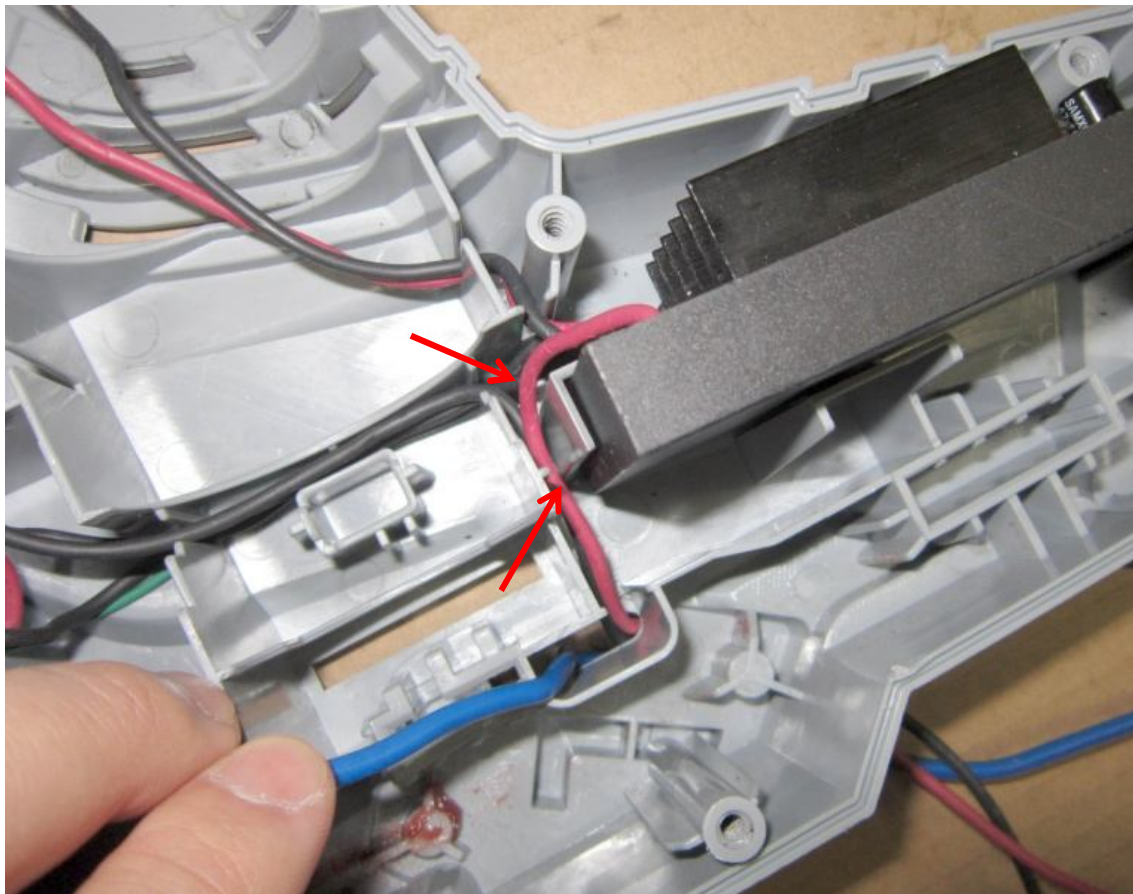
(f) Align the black wire (connecting the rear trigger switch to the trigger switch in the front handle) in the groove.



Replace the PCB Assembly

10. internal wire alignment

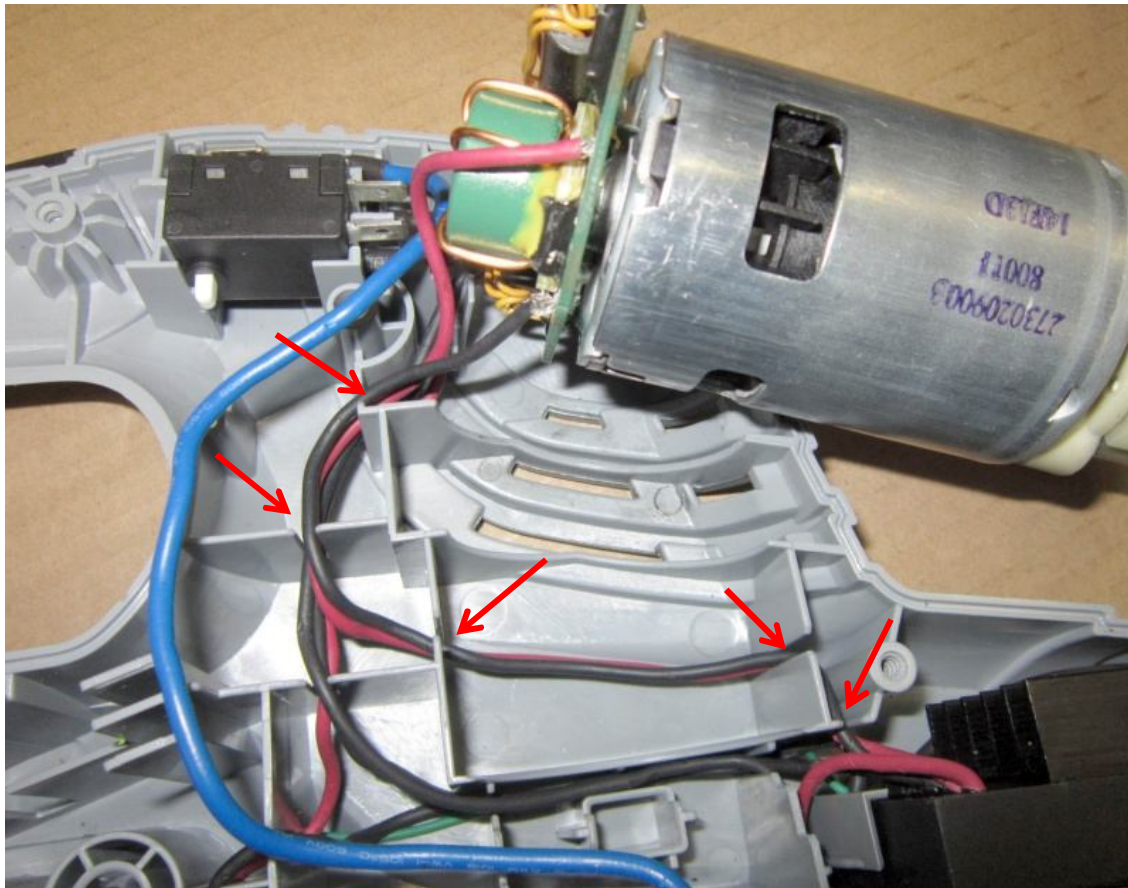
- (g) Align the red wire (connecting main PCBA to the trigger switch in the front handle) in the groove.



Replace the PCB Assembly

10. Internal wire alignment

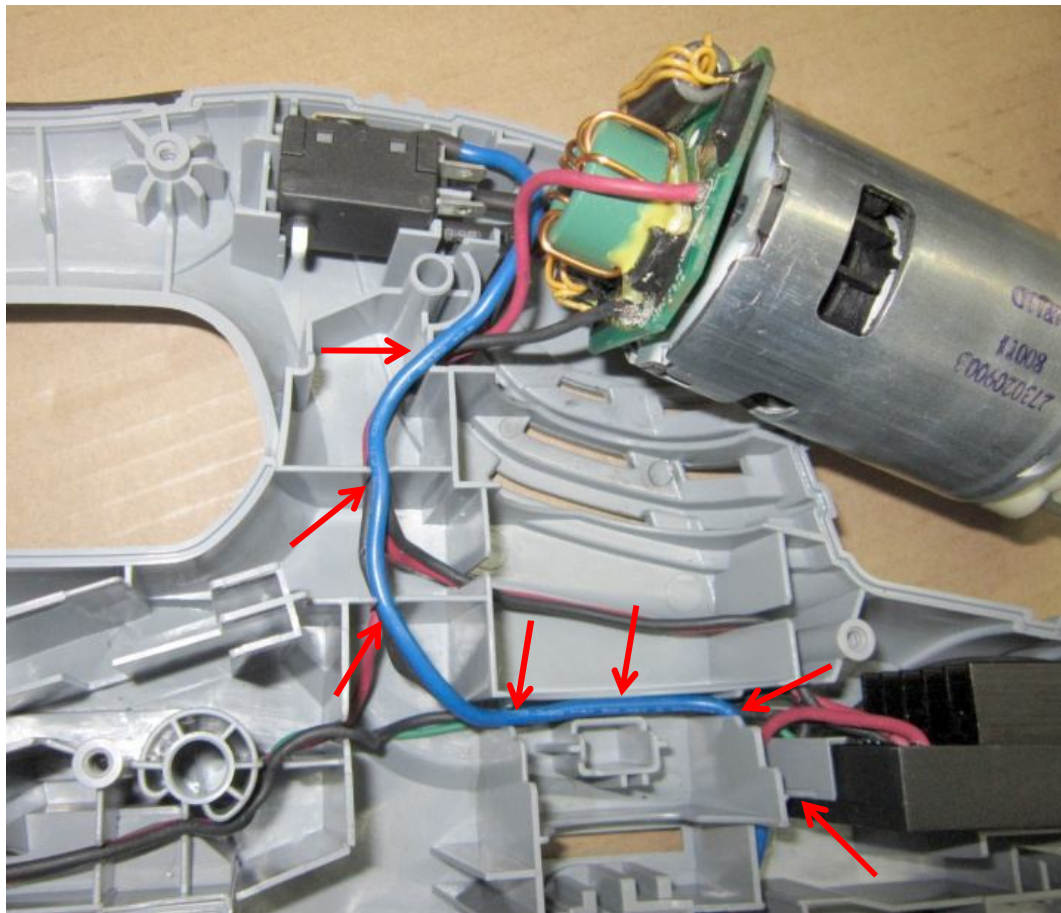
(H) Move the motor assembly and gear box assembly aside; align the red and black wires (connecting main PCBA to the motor) in the groove.



Replace the PCB Assembly

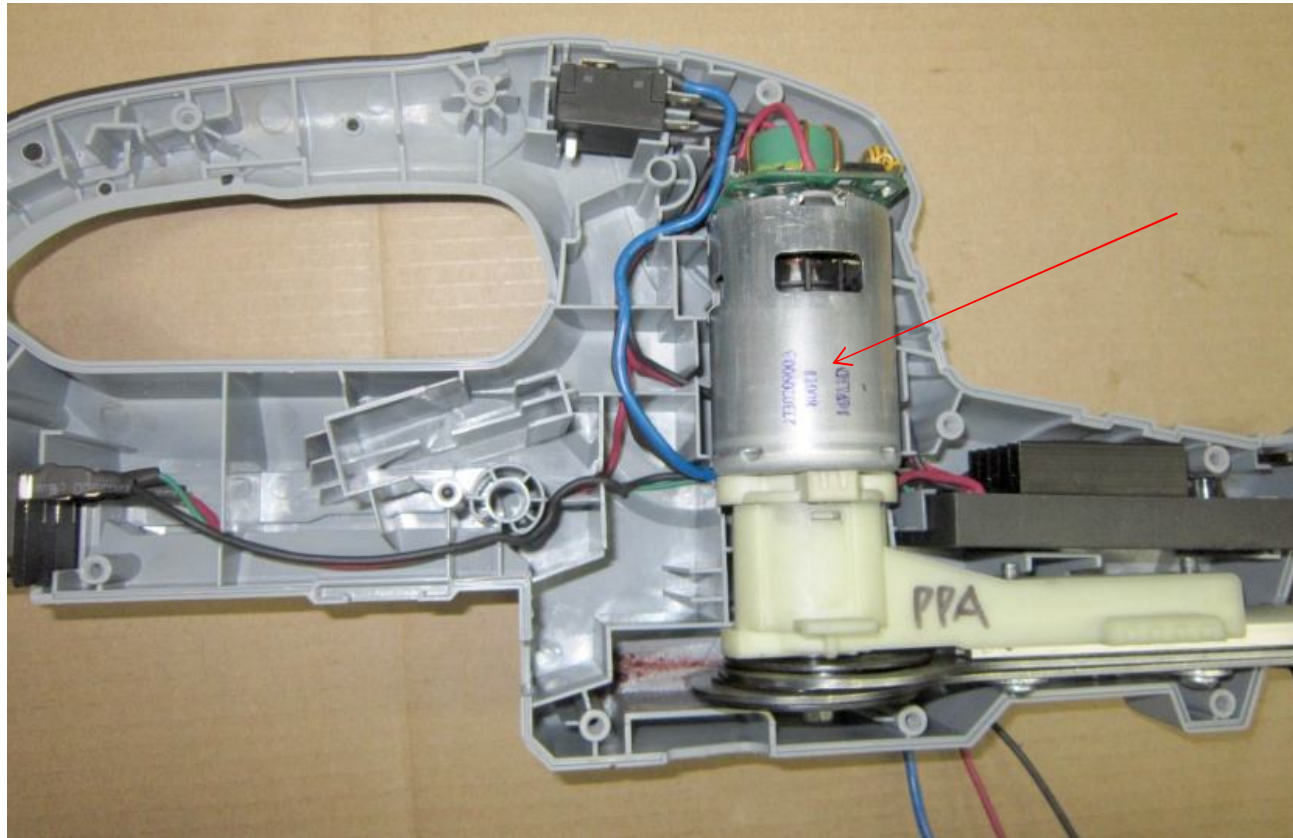
10. Internal wire alignment

- (I) Align the blue wire (connecting rear trigger switch to the trigger switch in the front handle) in the groove.



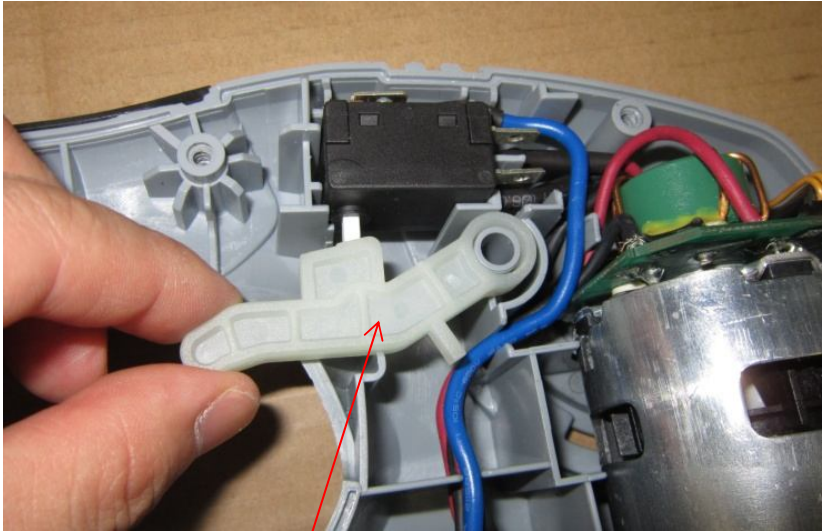
Replace the PCB Assembly

11. Position the motor assembly together with the gear box assembly into the left housing, make sure they are rested in position.



Replace the PCB Assembly

12. Fix the switch lever and switch trigger in turn. Make sure the rotation side of the lever is rested in the switch trigger.



Switch lever

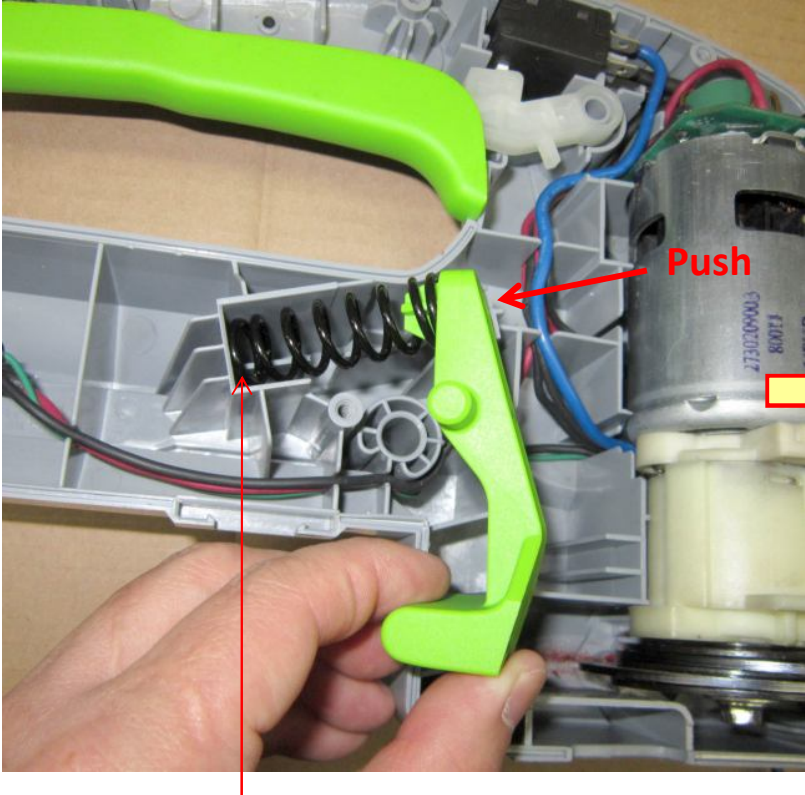


Switch trigger

Rested in the trigger

Replace the PCB Assembly

- 13. Rest one side of the spring in the limit cave of housing, push the ejection lever and position it into the housing.



Rest this side in the housing

Replace the PCB Assembly

14. Check the internal wires and make sure they are fine located in the grooves; close the right housing and locked with 12 screws.
15. Following the instructions in **“Replace the Front Handle Set”** to connect the wires to the trigger switch in the front handle, then assemble the front handle and hand guard.



Part 4: Replace the Motor and Gear Box Assembly

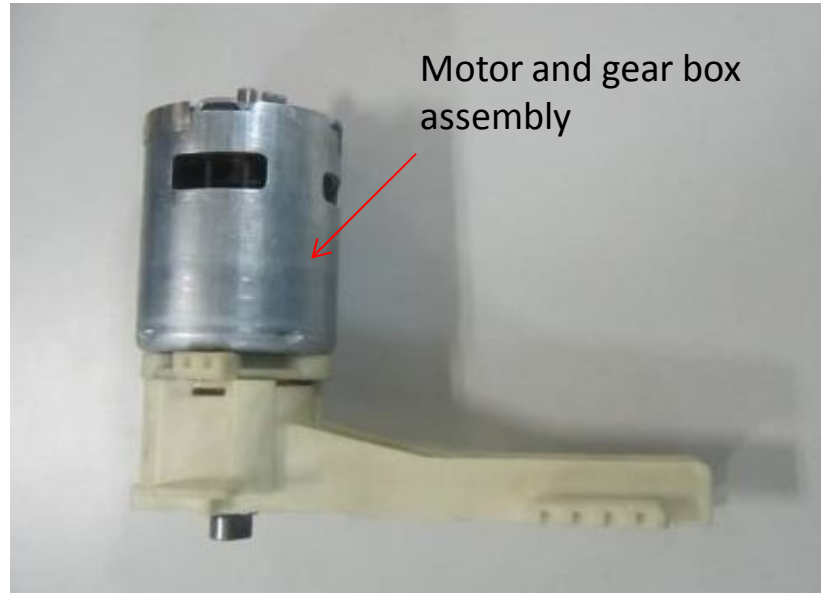
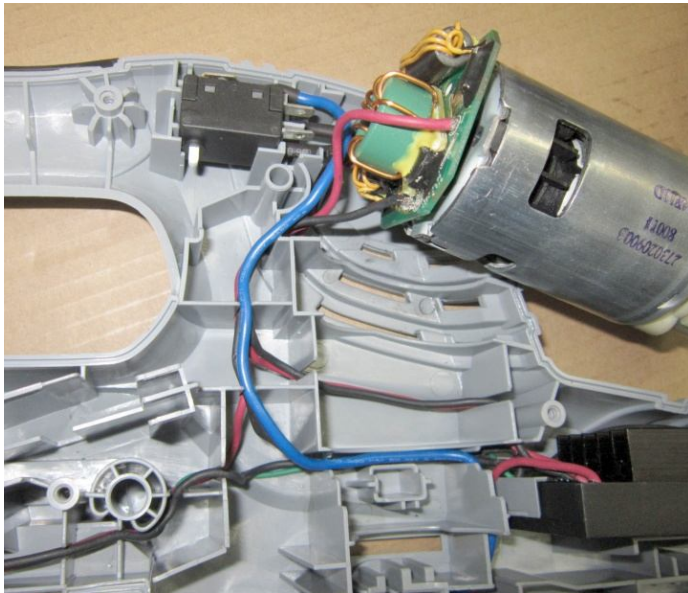
Replace the Motor and Gear Box Assembly

1. Following the instructions in **“Replace the Front Handle Set”** to remove the hand guard, front handle.
2. Loosen and remove the 12 screws in the right housing and open the housing.
3. Following the instructions in **“Replace the Blade Assembly”** to separate the blade assembly with the Gear shaft.



Replace the Motor and Gear Box Assembly

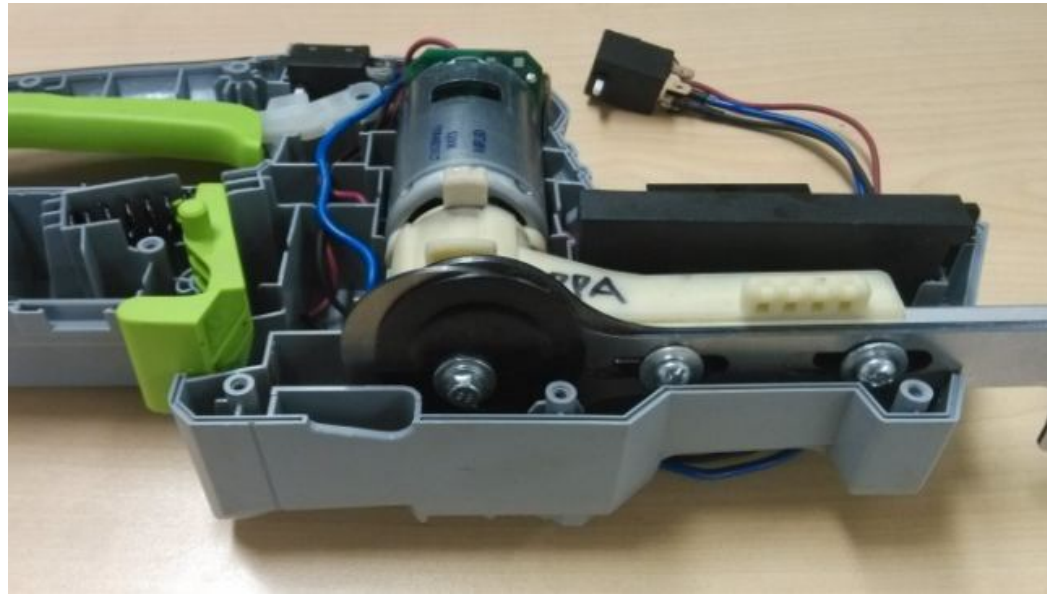
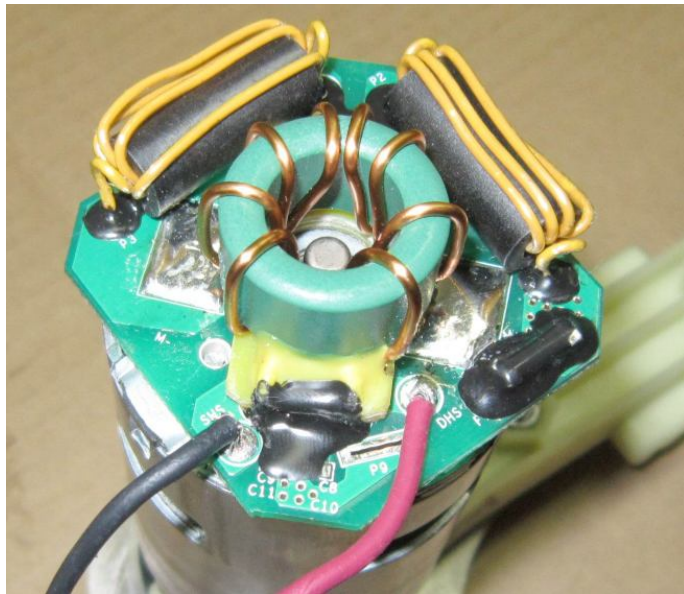
4. Take out motor assembly and gear box assembly from the left housing.
5. Following the instructions in **“Replace the PCB Assembly”** to separate the main PCBA from the motor.
6. Replace with a new motor and gear box assembly.



Description	Part Number	SPEC
Motor and gear box assembly	2790770000	---

Replace the Motor and Gear Box Assembly

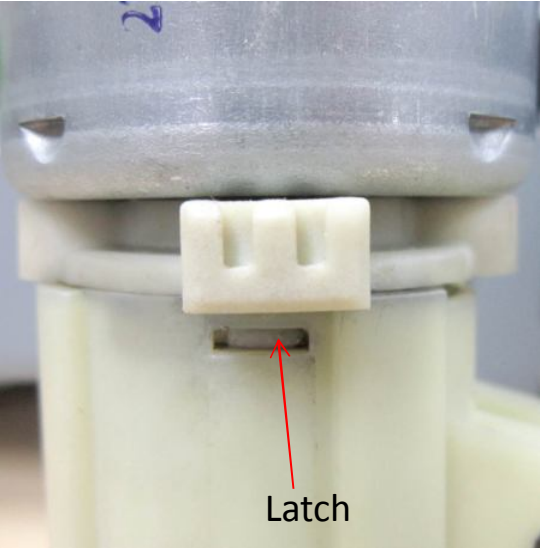
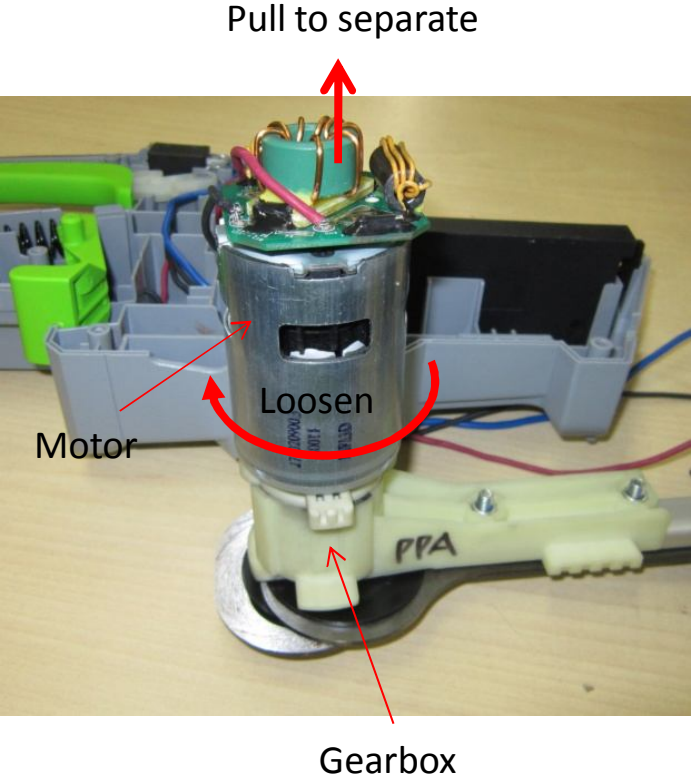
7. Following the instructions in “[Replace the PCB Assembly](#)” to connect the main PACB to the motor.
8. Following the instructions in “[Replace the Blade Assembly](#)” to mount the blade assembly onto the gear shaft.



Part 5: Replace the Gears in Gear Box

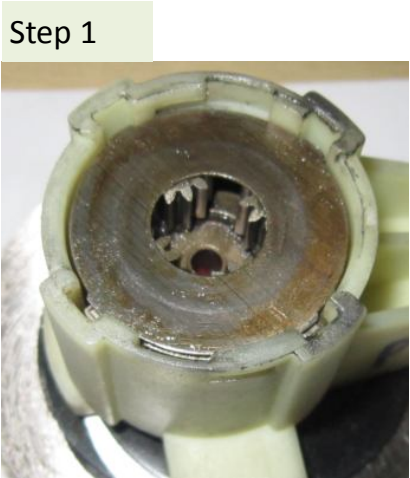
Replace the Gears in Gear Box

- 1. Turn the motor clockwise to release the latch from the gear box;
- 2. Pull the motor upwards to separate the motor from the gearbox.



Replace the Gears in Gear Box

3. Take out the parts in the gear box in turn.



Height:
9.15mm



Replace the Gears in Gear Box

Step 9



Step 10



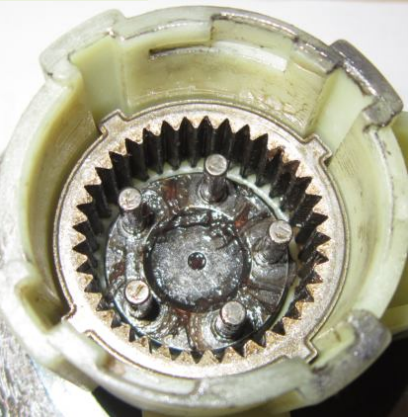
Step 11



Step 12



Step 13

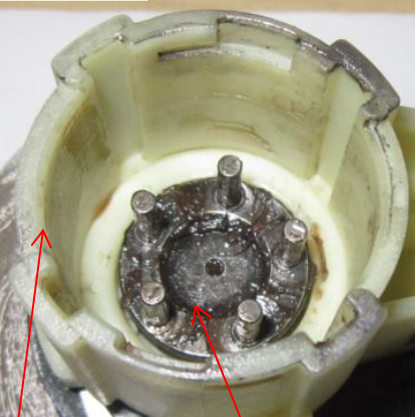


Step 14



Height:
13.15mm

Step 15



Gear case

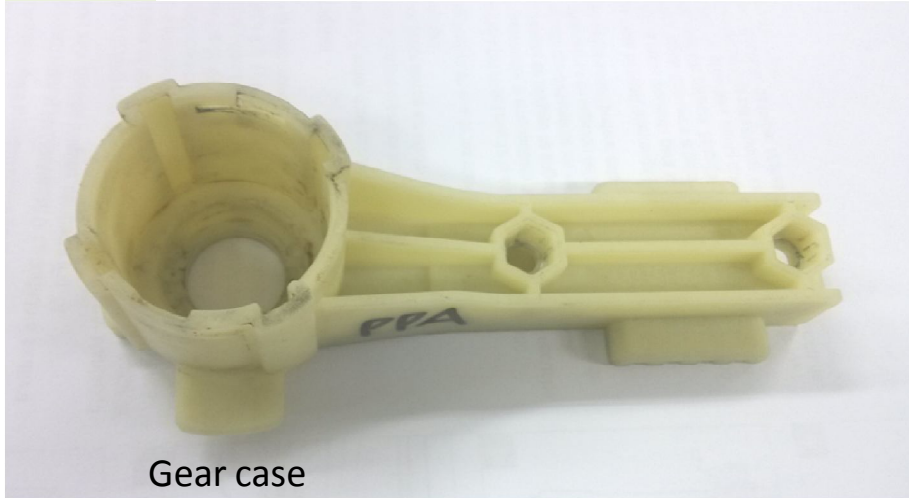
Carrier

Step 16



Replace the Gears in Gear Box

Step 17

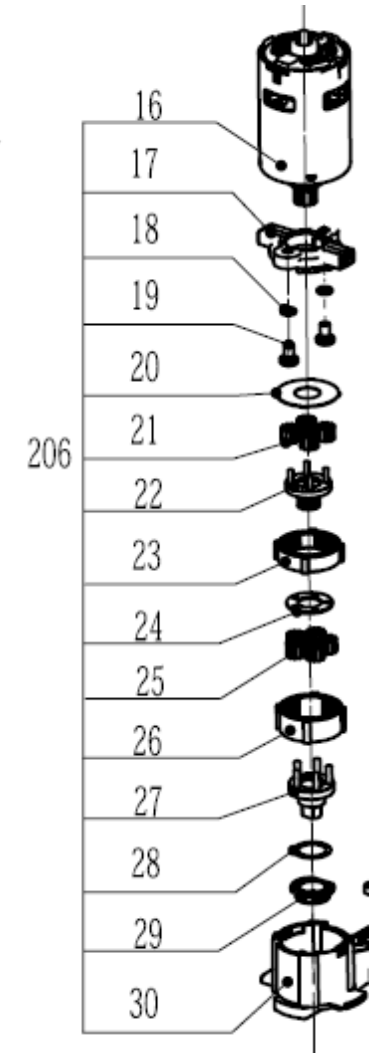


Gear case

Replace the Motor and Gear Set

4. Replace the parts if they appear worn or damaged.

#	Part No.	Description	Qty.	Spec
16	2820184000	Motor & Gear ASSY	1	
17	3124234000	Gear Case Cover	1	
18	5650015000	Spring Washer	2	5
19	5620220000	Screw	2	
20	5650331000	Washer1	1	13.8x34.4x0.5;
21	3520292000	1 st Planet Gear	4	m=0.7 z=11
22	3520511000	Sun Gear	1	m=0.7 z=14
23	3520391000	1 st Ring Gear	1	m=0.7 z=38
24	3705616000	Washer 2	1	Φ13xΦ24.5x1.0
25	3520540000	2st Planet Gear	5	m=0.7 z=11
26	3520539000	2st Ring Gear	1	m=0.7, z=36
27	2824093000	Carrier	1	
28	5650200000	Washer	1	15x20x0.2
29	5700280000	Oil Impreging Bearing	1	14x18x6.3
30	3124240000	Gear Case	1	
206	2790377000	Motor And Gear ASSY		

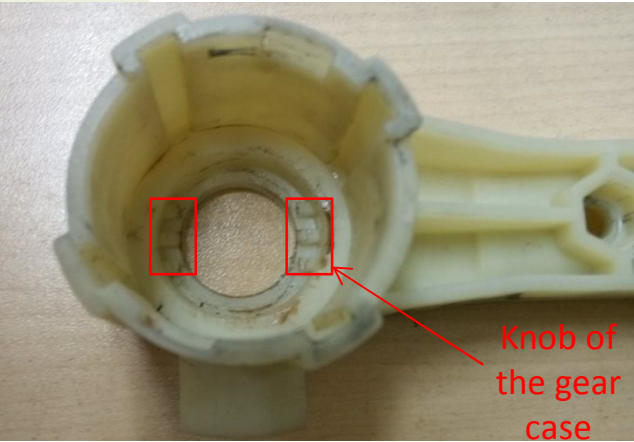


Replace the Gears in Gear Box

5. Assemble the parts in the gear box in turn.

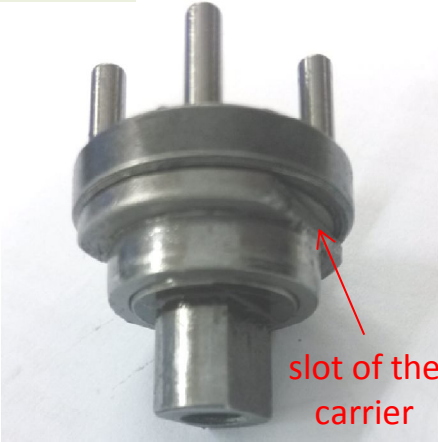
(1) Place the carrier into the gear case, make sure the flat position of the carrier align the knob of the gear case.

Step 1



Gear case

Step 2



Carrier

Step 3



Replace the Gears in Gear Box

(2) Align the rib of the 2st ring gear with the slot of the gear case, place the 2st ring gear into the gear case. Do not mix the 2st ring gear with 1st ring gear, distinguish them by the different height size.

Then, assemble the five 2st planet gears (same as 1st planet gears) into position.

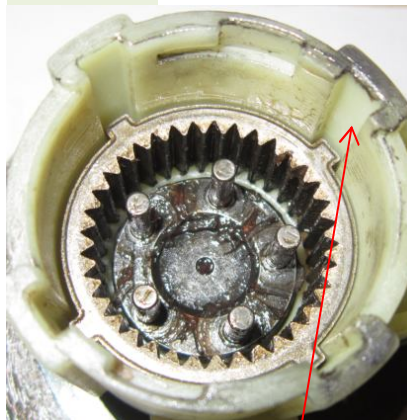
Step 4



Height:
13.15mm

rib of the 2st
ring gear

Step 5



Step 6



Step 7



Replace the Gears in Gear Box

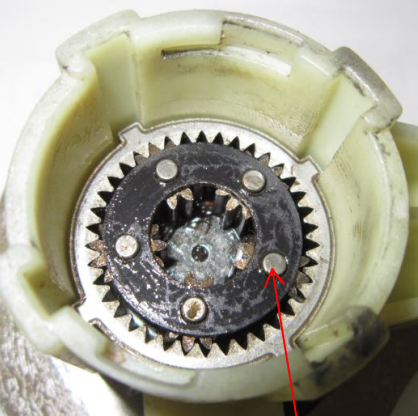
(3) Place the washer 2 into position, make sure the holes of the washer 2 inserted into the cylinder of the carrier.

Then, insert the sun gear among the planet gears, make sure they are engaged properly.

Step 8



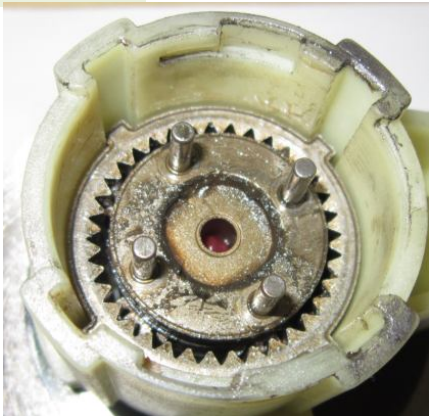
Step 9



Step 10



Step 11



Replace the Gears in Gear Box

(4) Align the rib of the 1st ring gear with the slot of the gear case, place the 1st ring gear into the gear case. Do not mix the 1st ring gear with 2st ring gear, distinguish them by the different height size.

Then, assemble the four 1st planet gears (same as 2st planet gears) into position.

Step 12

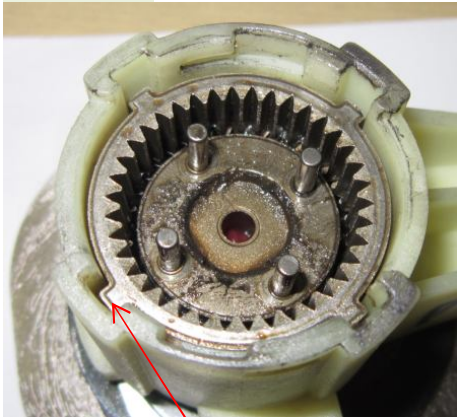


1st ring gear

rib of the 1st ring gear

Height: 9.15mm

Step 13



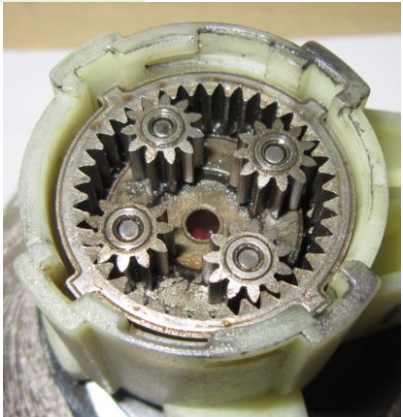
Slot of the gear case

Step 14



1st planet gear

Step 15



Replace the Gears in Gear Box

(5) Align the knob of the washer 1 with the slot of the gear case, place the washer 1 into the gear case.

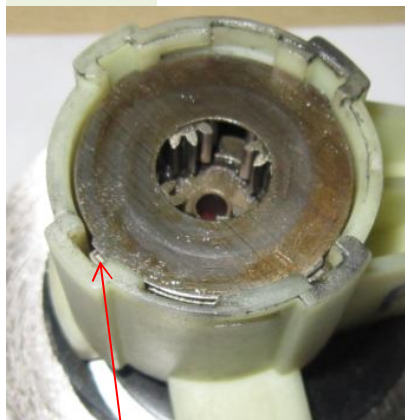
(6) Check if the surface of the washer 1 is under the lower edge of the slot in the gear case. If not, reassemble all the parts from Step 1, make sure every step is correct.

Step 16



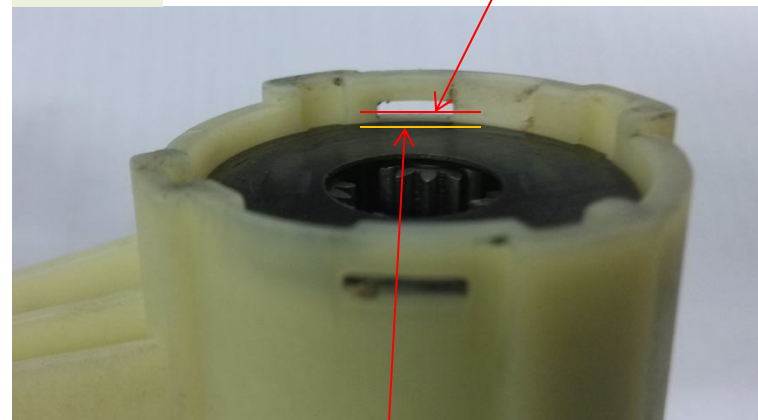
knob of the washer 1

Step 17



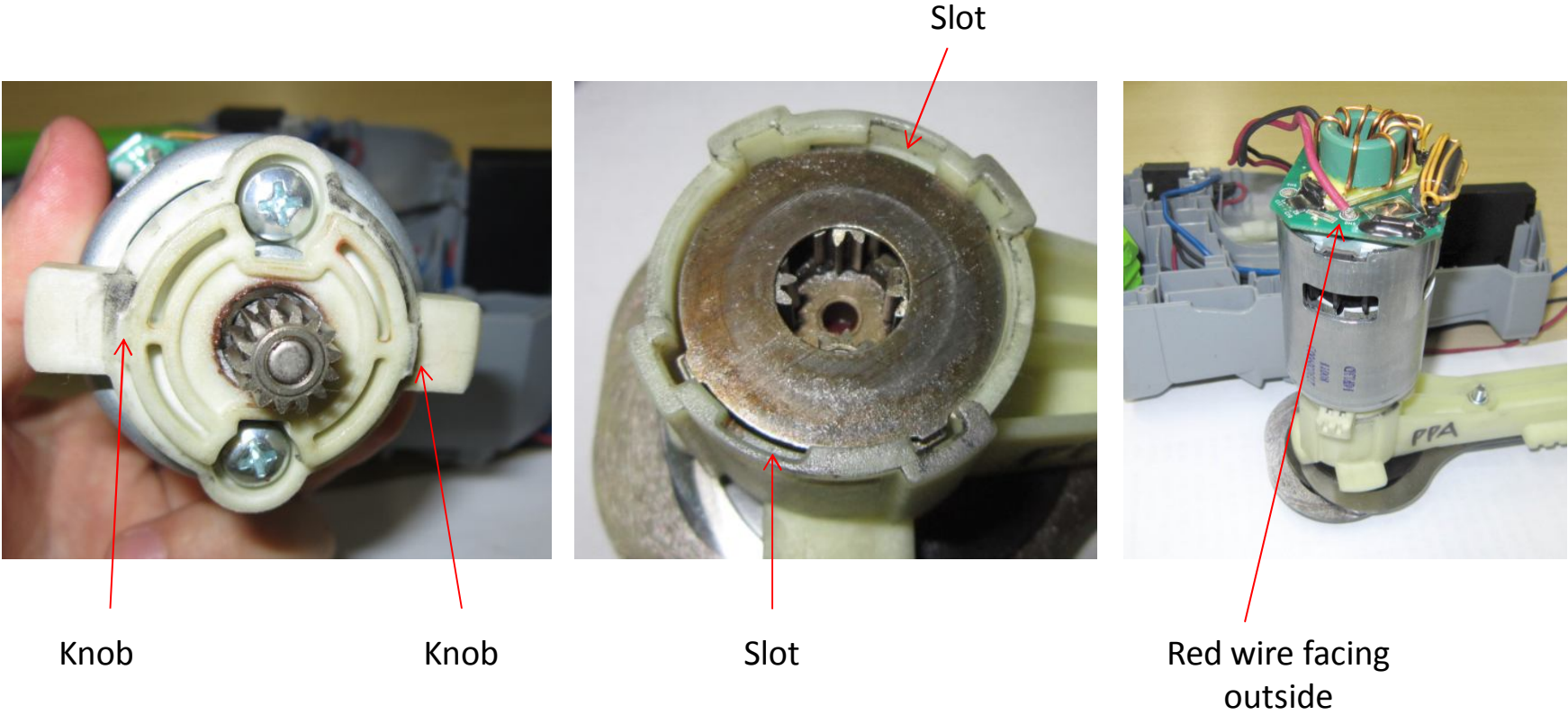
Slot of the gear case

Step 18



Replace the Gears in Gear Box

- 6. With the red wire on the motor PCBA facing outside, align the knob of the gear case cover on the motor with the slot of the gearbox, mount the gear case cover onto the gear box.



Replace the Gears in Gear Box

7. Turn the motor counterclockwise until the knob (latch) of the gear case cover moved and locked on the gear case.
8. Follow the instructions in **“Replace the PCB assembly”** to align the wires and close the housing.

