

REPAIR GUIDELINE

String Trimmer_ST1500E



Version: 1

Issue Date: 02/27/2015

Table of Contents

NO.	Contents	Page
1	Troubleshooting	3
2	Tool list	4
3	Part 1: Replace the motor Assembly	5-28
4	Part 2: Replace the PCBA	29-40

Troubleshooting

Problem	Possible Cause	Fault Position	Test & Solution
Not feed line	Poor cutting line	trimmer line	Replace the cutting line. (e.g. 2.4mm nylon line)
Fail to start	The cables that connect to motor are loosed or fallen off from motor.	Motor	Open the motor housing, check the cable connection with motor.
	Motor is burned	Motor	If the cables are well connected, check the motor and test with a new motor.
	PCBA is broken	PCBA in rear housing	If the cables are well connected, and motor is functional, replace the PCBA in the rear housing.
The battery pack is not stayed/locked on the trimmer properly; or hard to remove from the trimmer.	The locking mechanism is worn.	Rear housing	Replace the rear housing set.
The motor speed varies up and down when the trimmer works.	Motor was burned due to overload	motor	Replace the motor

Tool List For Repair

NO.	Tool List	SPEC	Remark
1	Magnetic bits	#1 , #2 phillips	
2	Socket wrench	13mm	
3	Hex wrench	M5	
4	Electric soldering iron		
5	Heat gun		
6	Heat shrinkable sleeves		
7	Scissors		To remove the shrinkable sleeve

Part 1: Replace the Motor Assembly

Replace the Motor

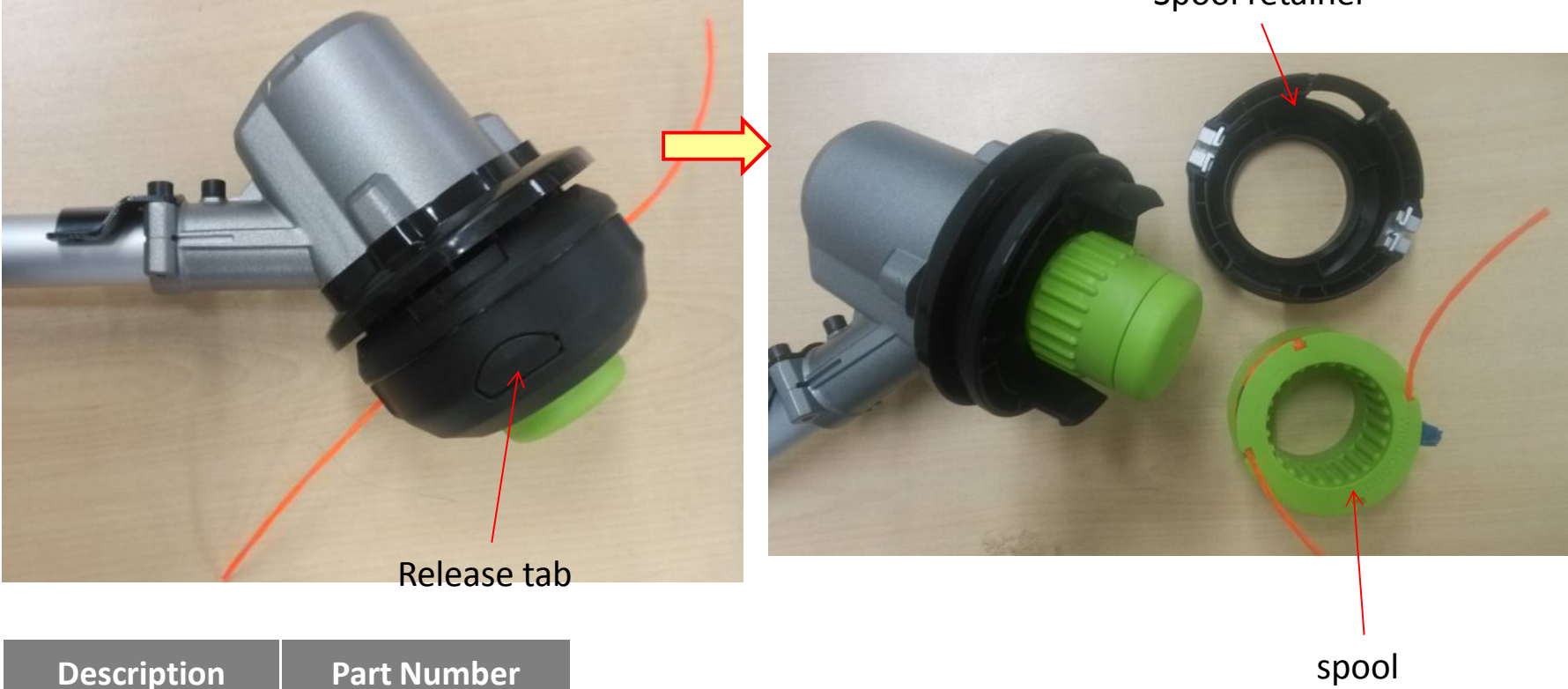
- 1. Stop the motor and remove the battery pack from the string trimmer.
- 2. Loosen the two bolts in the guard with the M5 hex wrench, remove the guard from the shaft.



Description	Part Number	SPEC
Guard Assembly	2824011000	

Replace the Motor

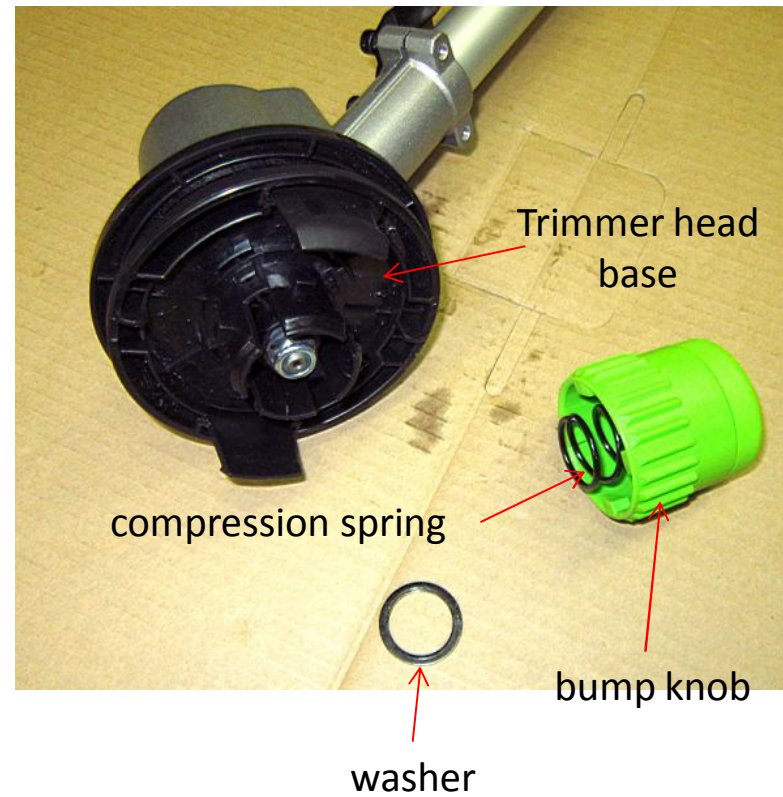
3. Press the release tabs on the upper housing to remove the spool and spool retainer.



Description	Part Number
Spool	3127635000
Spool retainer	2824019000

Replace the Motor

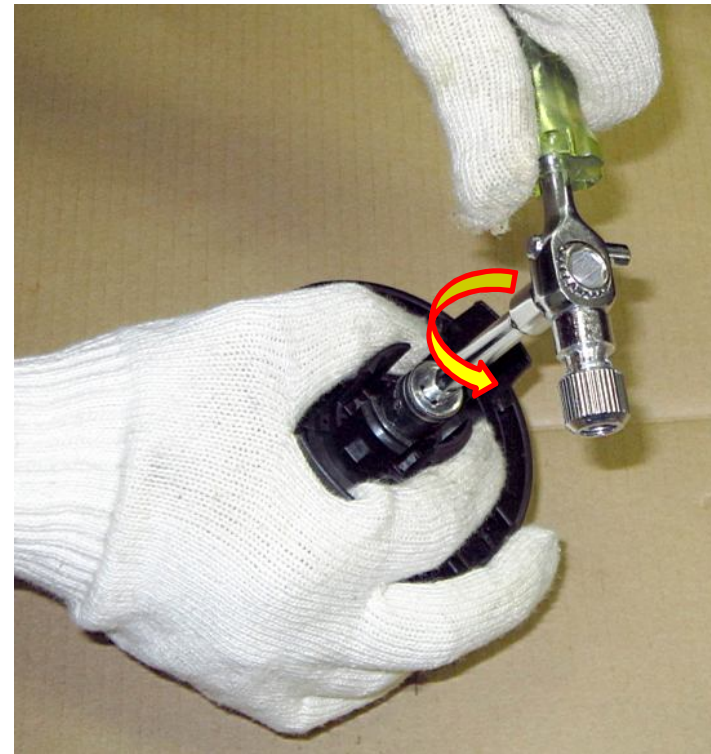
4. Hold the bump knob and pull it straight out; remove the bump knob, compression spring, washer from the trimmer head base.



Description	Part Number
Bump knob	2824022000
compression spring	3660582000
washer	5650349000

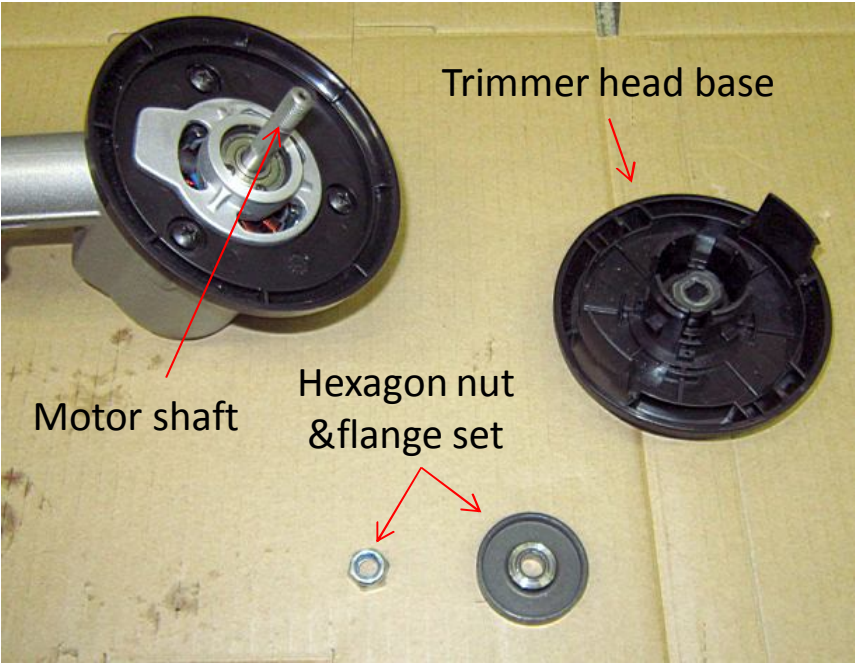
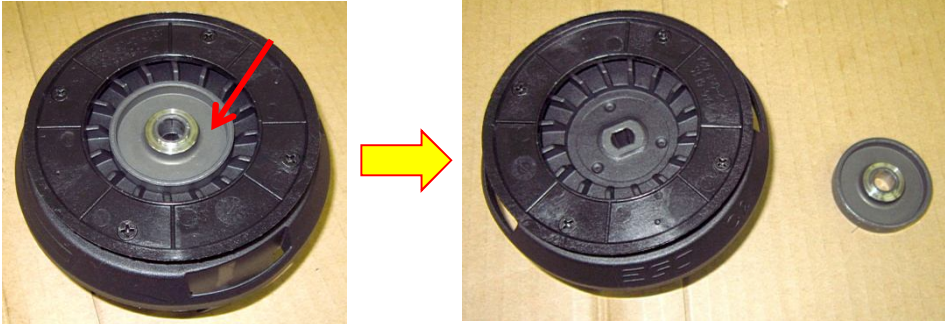
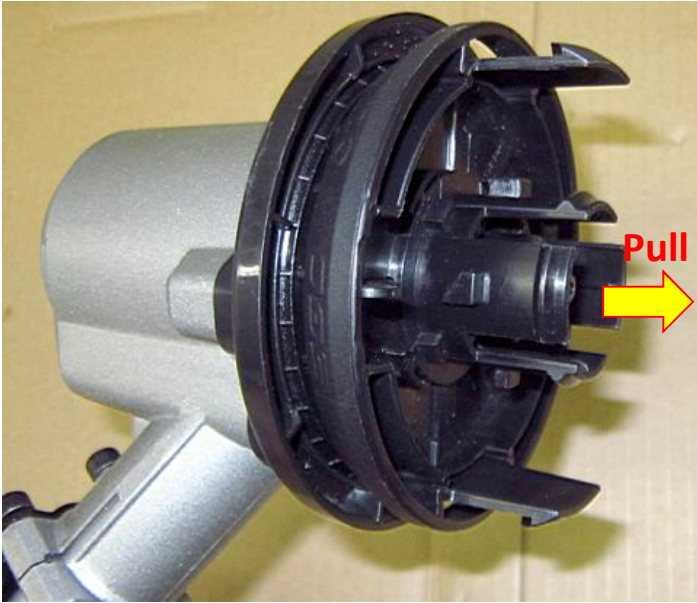
Replace the Motor

5. Wear gloves and hold the trimmer head base with one hand, use a 13mm manual socket wrench to turn the hexagon nut counterclockwise to loosen it.



Replace the Motor

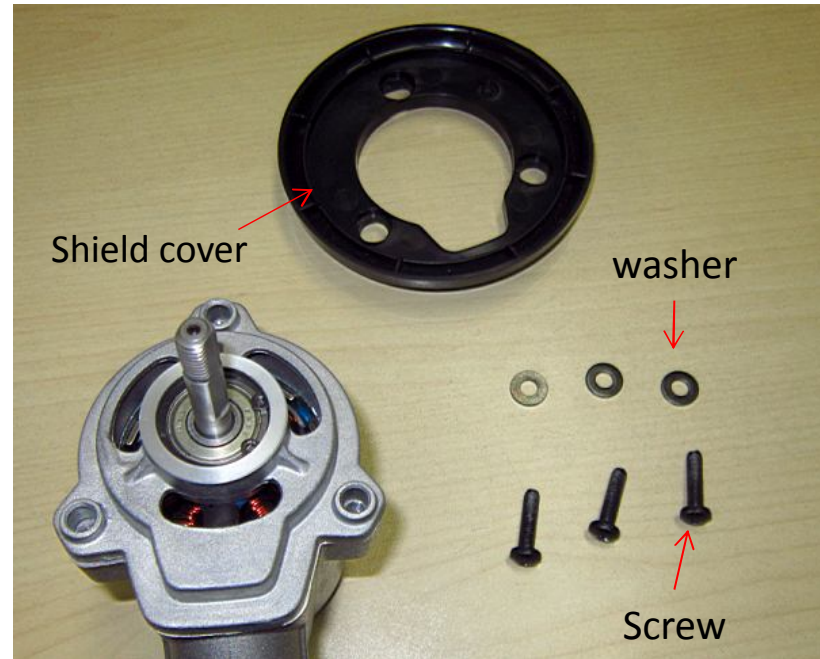
6. Hold the trimmer head base and pull it straight out from the motor shaft. Remove the flange from the base.



Description	Part Number
Hexagon nut & flange set	2824010000
Trimmer head base	2824082000

Replace the Motor

7. Loosen the three screws on the shield cover, remove the shield cover from the motor assembly.



Description	Part Number	Including
Trimmer Head Set	2824021000	Spool, spool retainer, bump knob, compression spring, washer, trimmer head base
Shield cover	3127655000	
Screw	5610059000	
washer	5650396000	

Replace the Motor

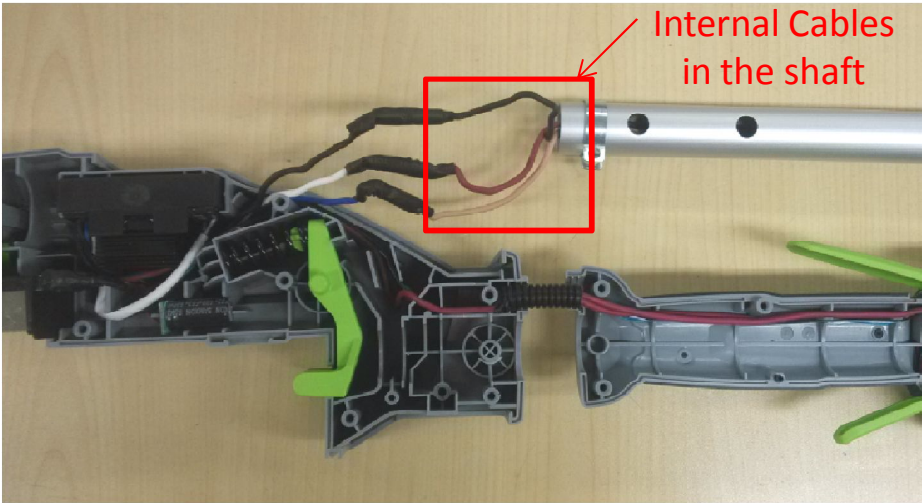
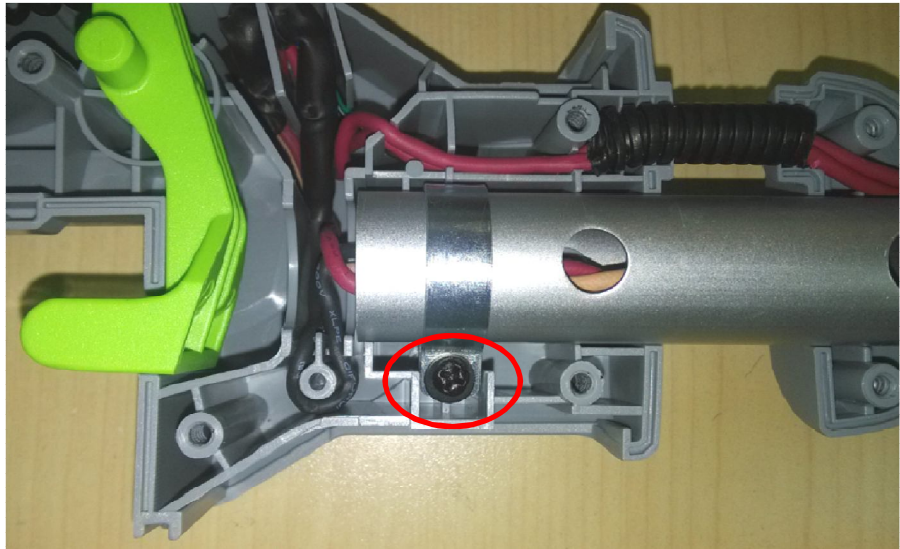
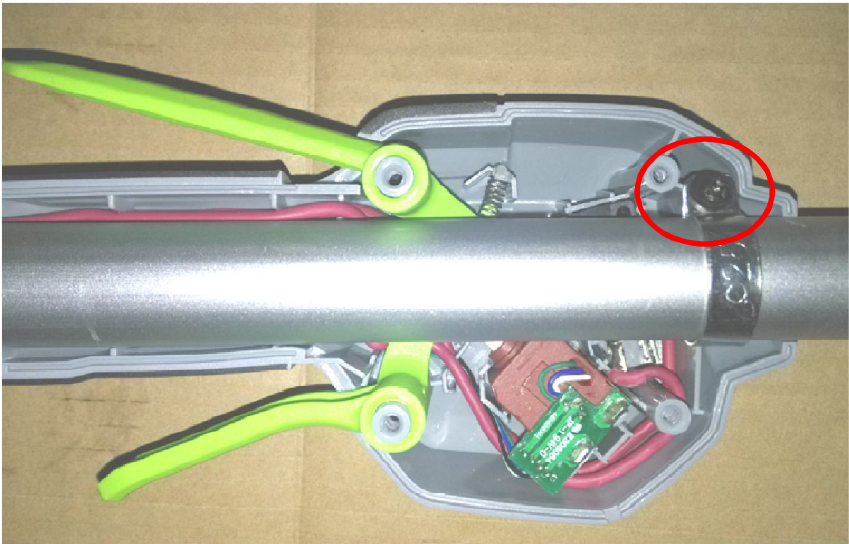
8. Loosen the screws in the rear housing (7 screws) and handle (7 screws), remove the housings, upper cover and lower cover.



Description	Part Number	Qty.	Description	Part Number	Qty.
Tapping Screw	5610032000	14	Upper cover	3127650000	1
			Lower cover	3127675000	1

Replace the Motor

9. Loosen the two locking screws on the fixing rings, take out the shaft from the housings.



Description	Part Number	Qty.
Fixed Ring	3705178000	2
Plain Washer	5650005000	2
Tapping Screw	5610032000	2
Internal Cables Assembly	4860285000	1

- **Remark:** There are two kind of the internal cables assembly for this string trimmer ST1500E. They have different color assortment.

Below separate them with structure A and structure B:

1. **Structure A:** The colors of the internal cables assembly is **black, red and blue.**



2. **Structure B:** The colors of the internal cables assembly is **black, red and brown.**



✓ **Correct connection:**

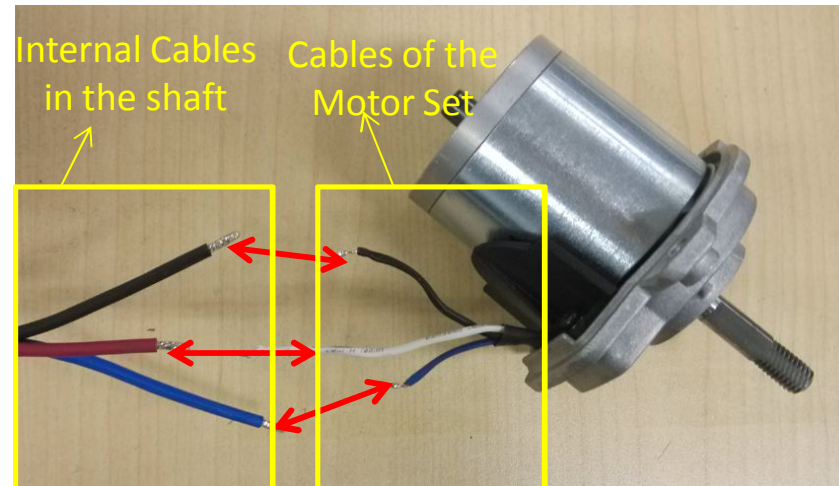
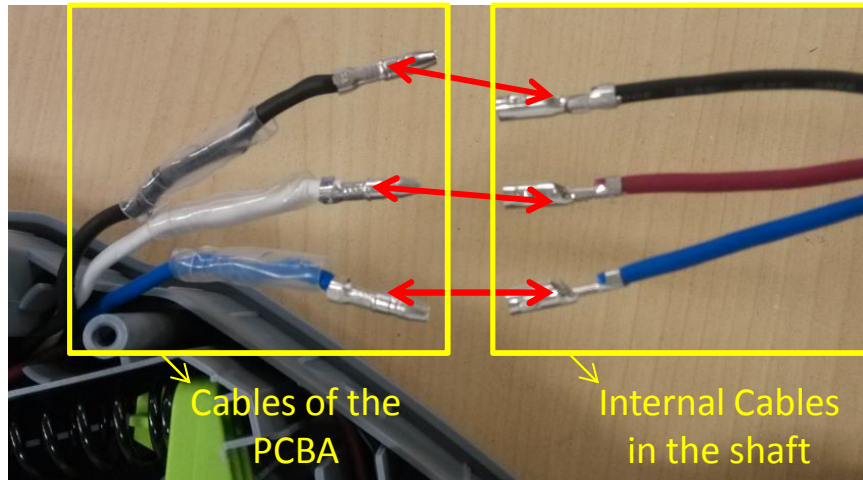
Between the cables of the PCBA and the Internal cables in the shaft;

Between the cables of the Motor Set and the Internal cables in the shaft;

1. **Structure A:**

Table A

The cable colors of the PCBA	The cable colors of the Internal Cables	The cable colors of the Motor Set
Black	Black	Black
White	Red	White
Blue	Blue	Blue



✓ **Correct connection:**

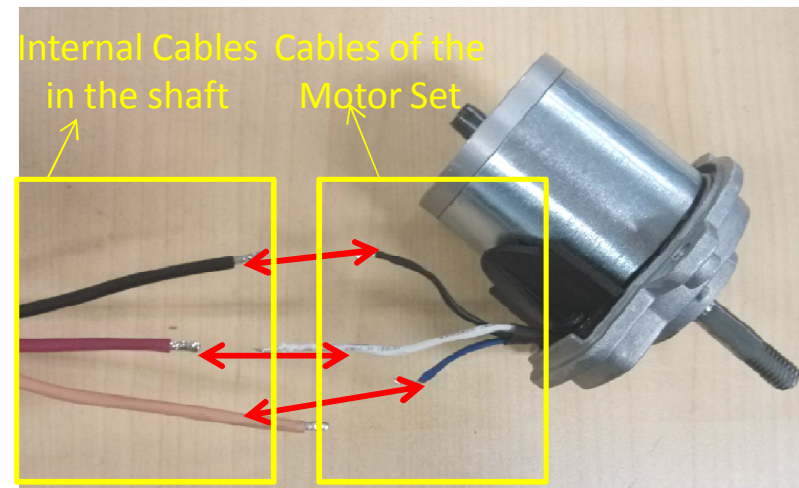
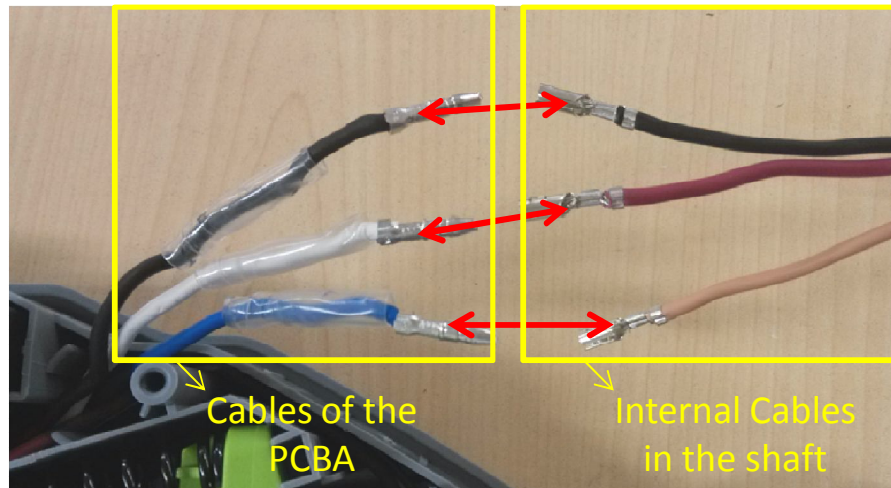
Between the cables of the PCBA and the Internal cables in the shaft;

Between the cables of the Motor Set and the Internal cables in the shaft;

2. Structure B:

Table B

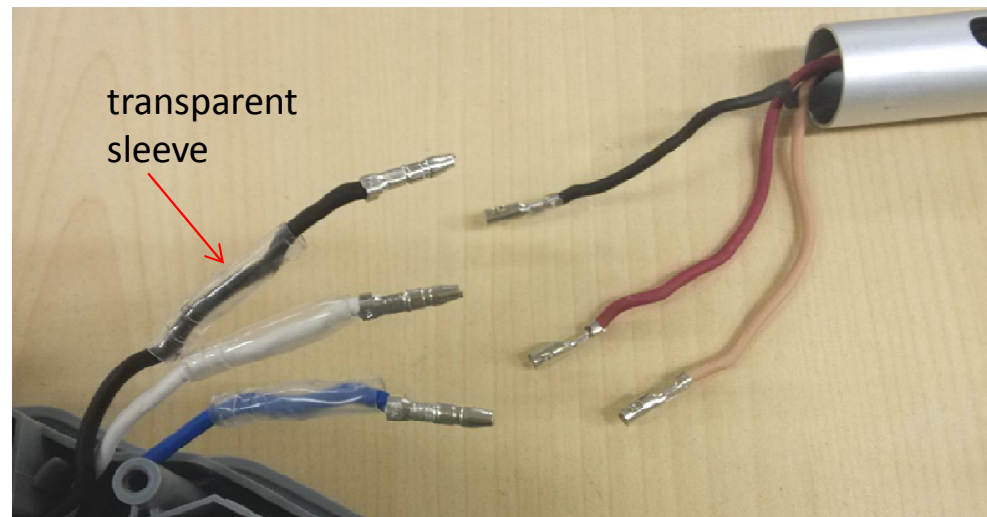
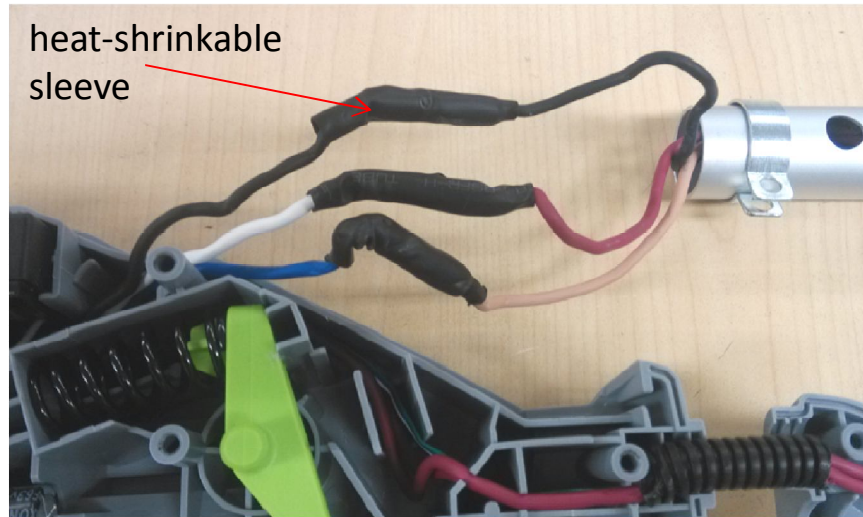
The cable colors of the PCBA	The cable colors of the Internal Cables	The cable colors of the Motor Set
Black	Black	Black
White	Red	White
Blue	Brown	Blue



- **Notice:** If the Internal Cables are broken, no matter the Internal Cables are Structure A (black, red and blue) or Structure B (black, red and brown), replace them with Structure A (black, red and blue).

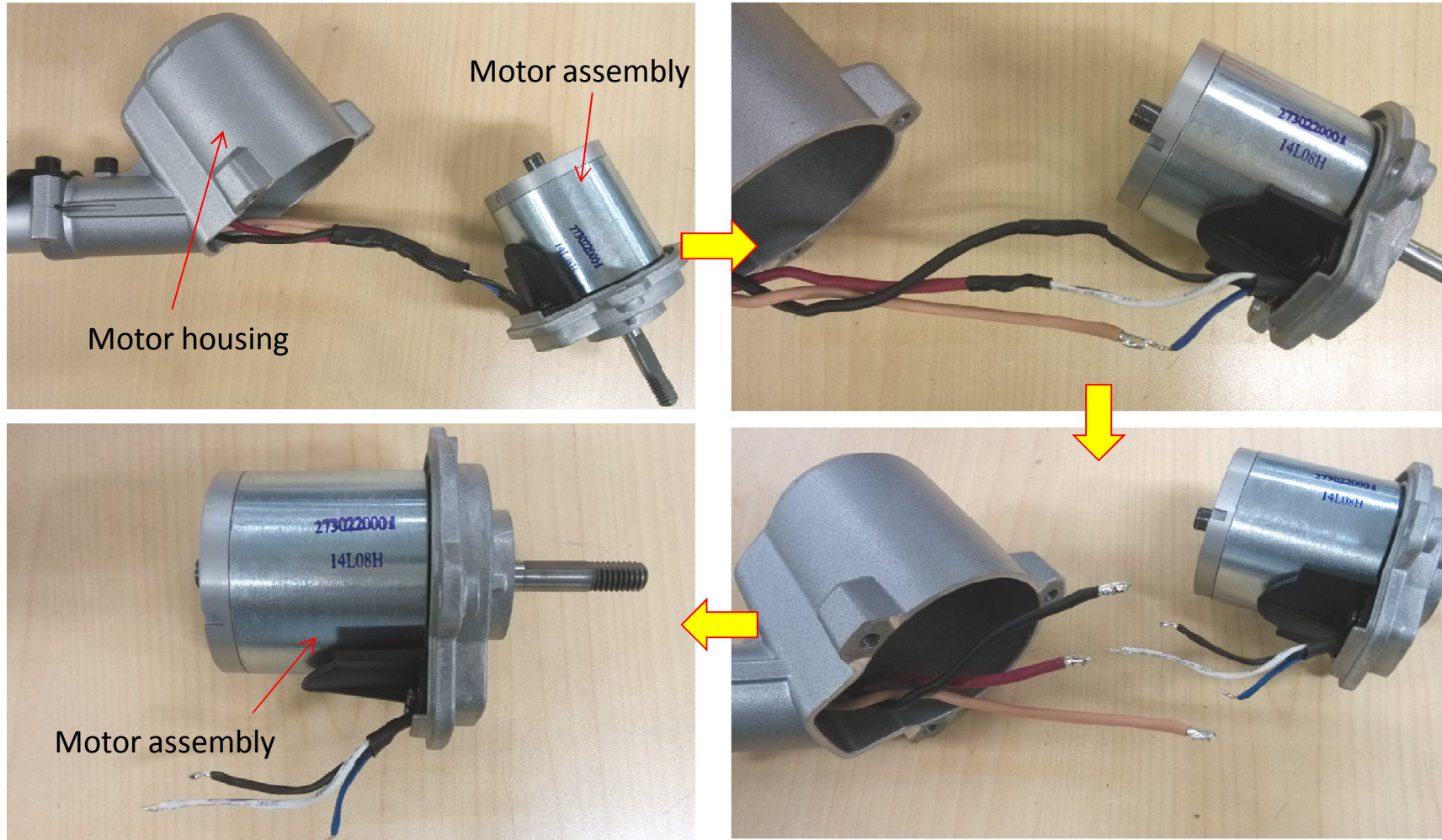
Replace the Motor

10. Remove the heat-shrinkable sleeves from the connectors with a scissors.
11. Move the transparent sleeve aside, and pull the connectors to separate.



Replace the Motor

12. Take out the motor assembly from the motor housing;
13. remove the heat-shrinkable sleeves from the cables and disconnect the cables.



Replace the Motor

14. Replace with a new motor assembly.
15. The motor housing can be replaced as well if it is broken or worn.
16. Place new heat-shrinkable sleeves through the cables. Connect the cables with electric soldering iron. **Correct connection: See Table A or Table B in slide 15-16.**



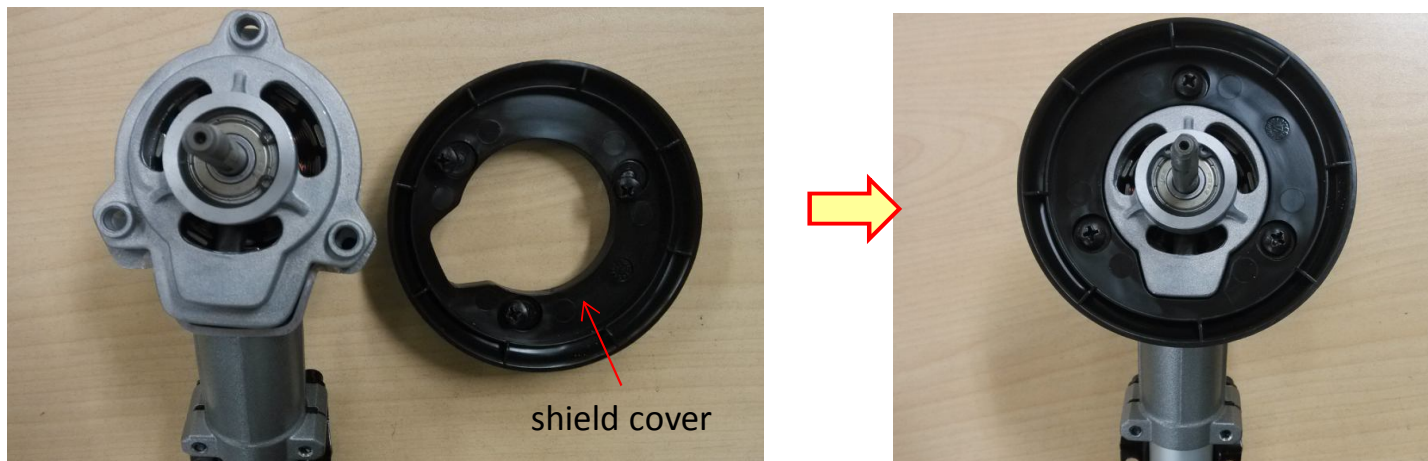
Description	Part Number
Motor assembly	2730220000
Motor housing	3421602000

Replace the Motor

17. Move the heat-shrinkable sleeves to cover the soldering points and use a hot air gun to shrink the sleeves.



18. Position the motor assembly into the motor housing; mount the shield cover on the motor assembly and lock it with three screws and washers.

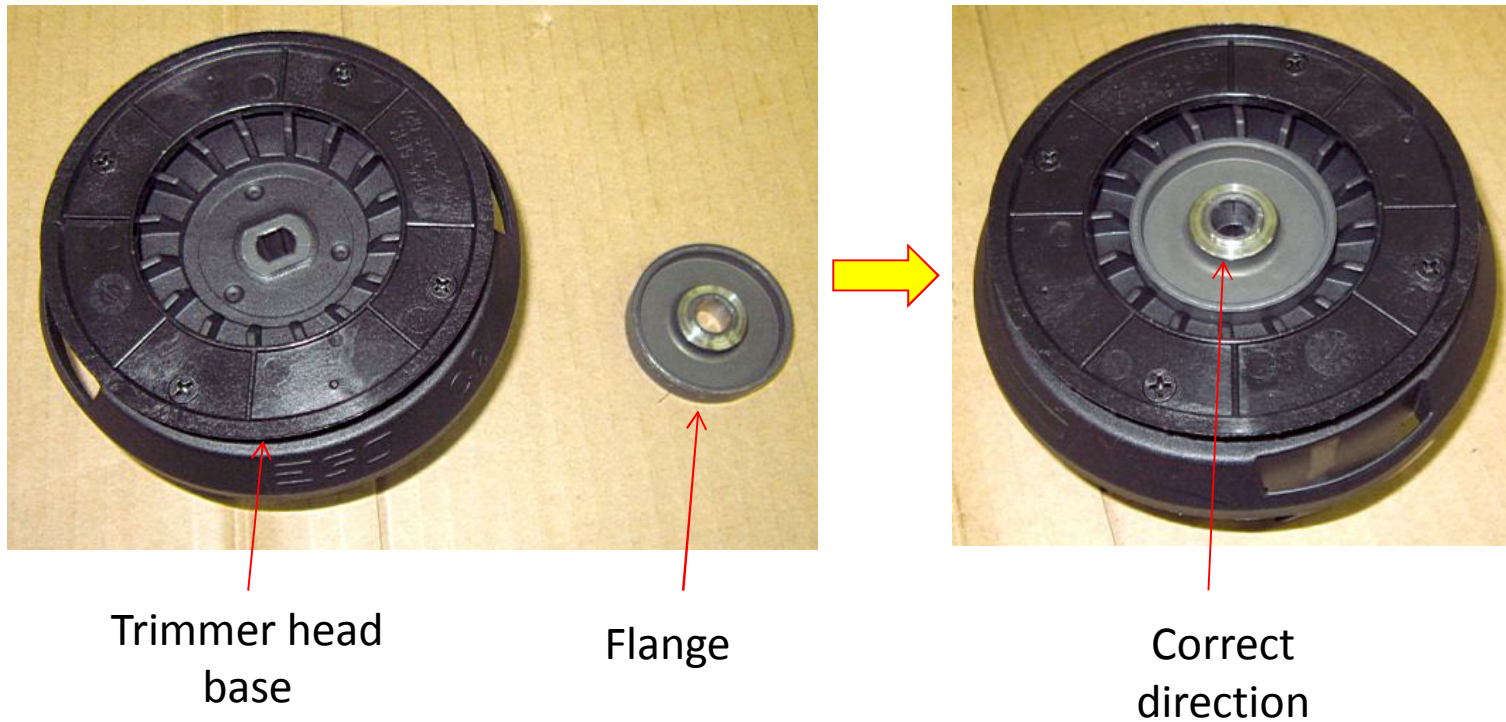


Replace the Motor

19. Assemble the trimmer head set onto the motor shaft.

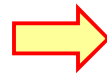
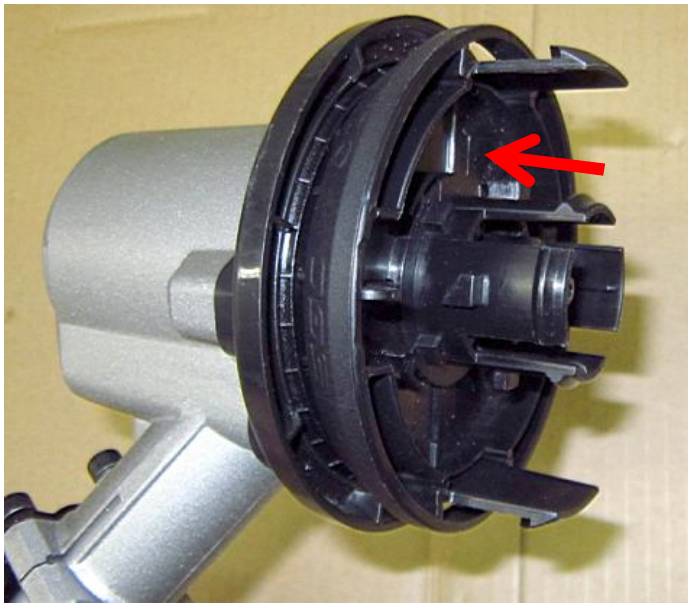
a) Position the flange into the trimmer head base;

- Notice: the flat surface of the flange should be rested on the trimmer head base.



Replace the Motor

- b) Mount the trimmer head base together with the flange onto the motor shaft, lock the base with the hexagon nut.

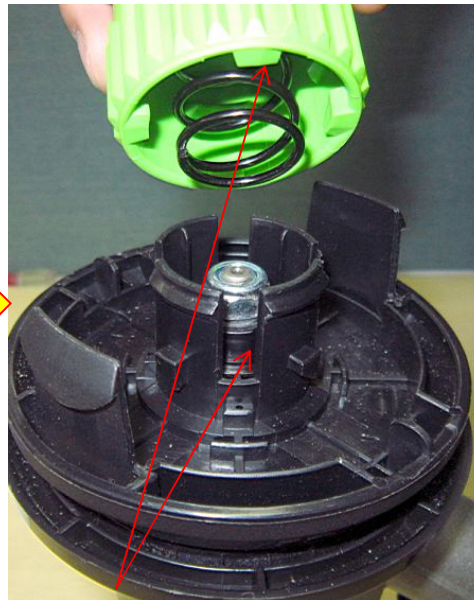


Replace the Motor

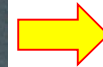
- c) Fix the washer into the trimmer head base.
- d) Align the ribs in the bump knob with the slots in the trimmer head base, fix the bump knob onto the base.
- e) Press the bump knob until it is fully slid in position and locked by the base.



washer



Align the ribs
with slots in the
base



Replace the Motor

- f) Put the spool in the spool retainer and mount the spool retainer to the trimmer head base.



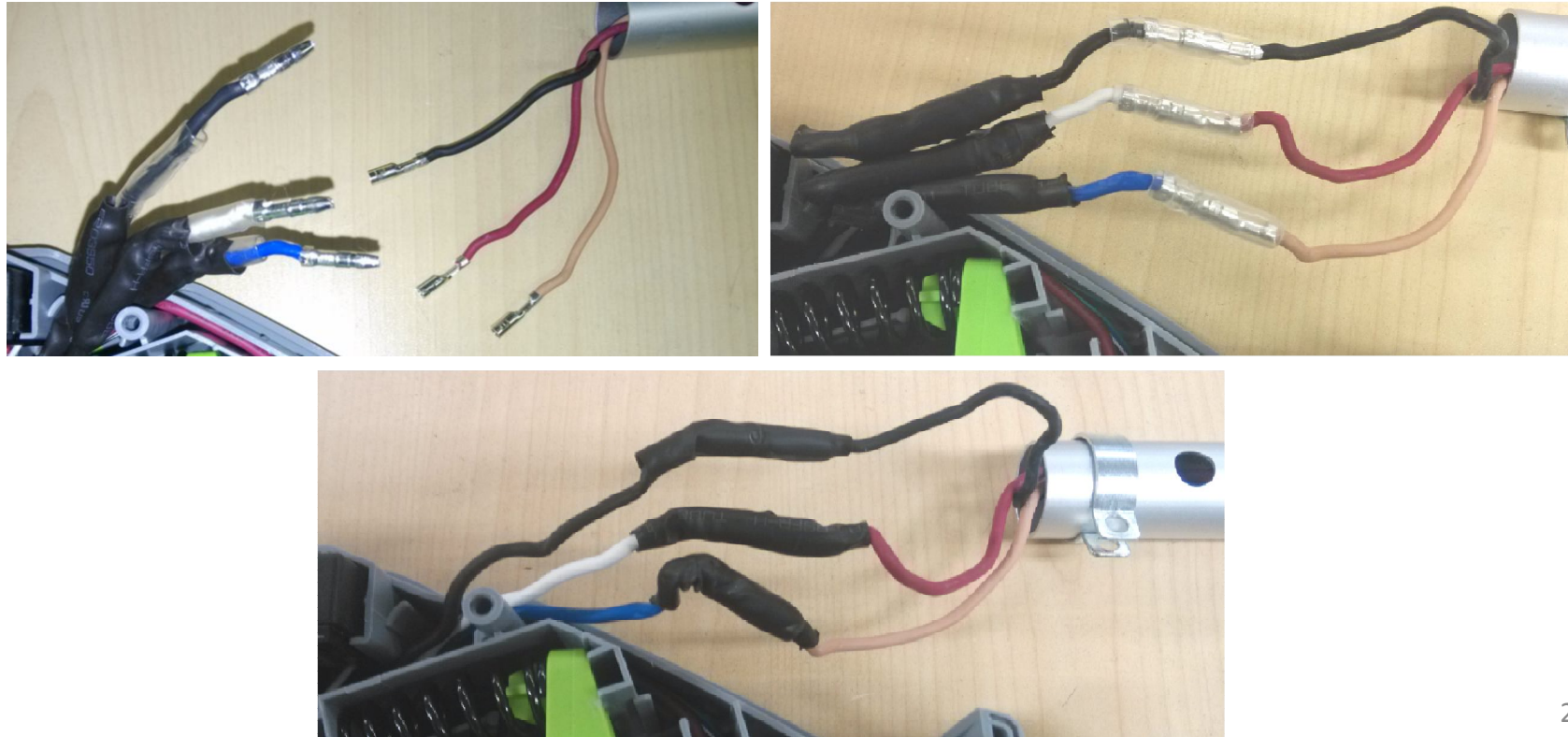
Replace the Motor

20. Assemble the connectors in the rear housing.

- a) Place new heat-shrinkable sleeves through the connectors.
- b) Plug the three connectors and make sure they are fully insert in place.

Correct connection: See Table A or Table B in slide 15-16.

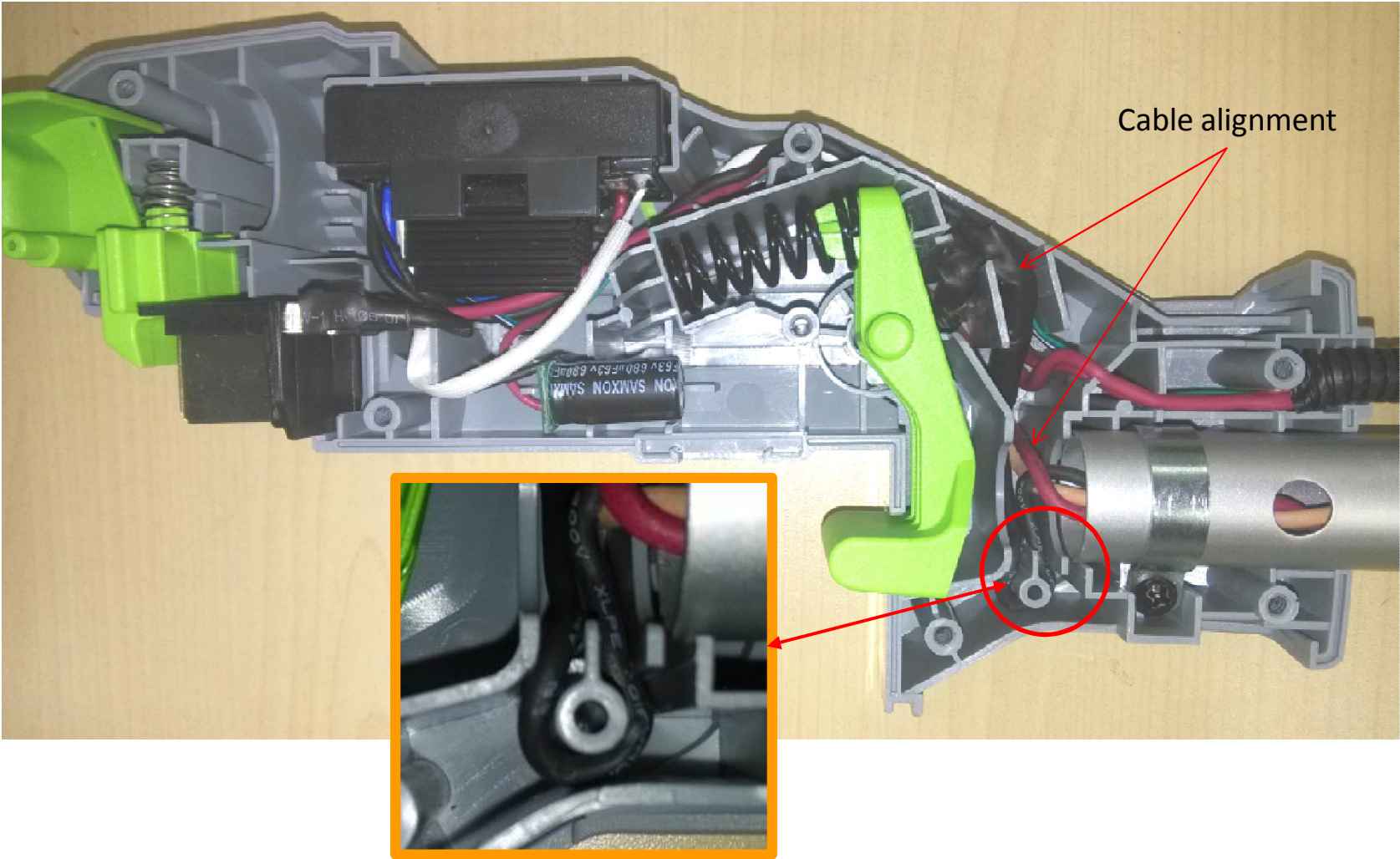
- c) Move the transparent sleeves and the heat-shrinkable sleeves to cover the connectors and use a hot air gun to shrink the sleeves.



Replace the Motor

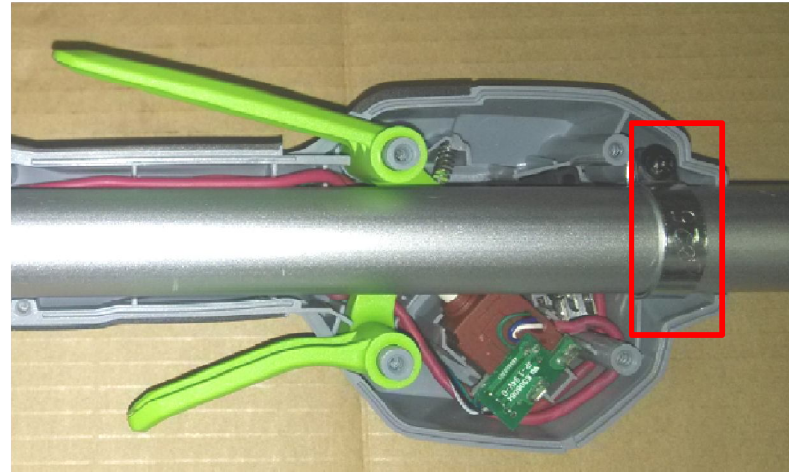
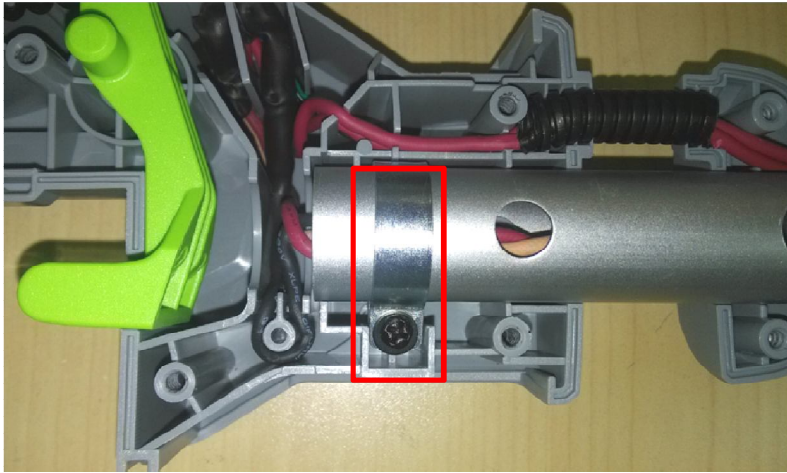
21. Align the cables in the grooves of the rear housing.

Notice: the **black cable** must be aligned as followed in the figure below.



Replace the Motor

22. Position the shaft in the rear housing and handle housing, lock it by the fixed rings with the tapping screws.



23. Close the handle housing, put the support leg and upper cover into position, then close the rear housing, lock the housings with 14 tapping screws.



Part 2: Replace the PCBA

Replace the PCBA

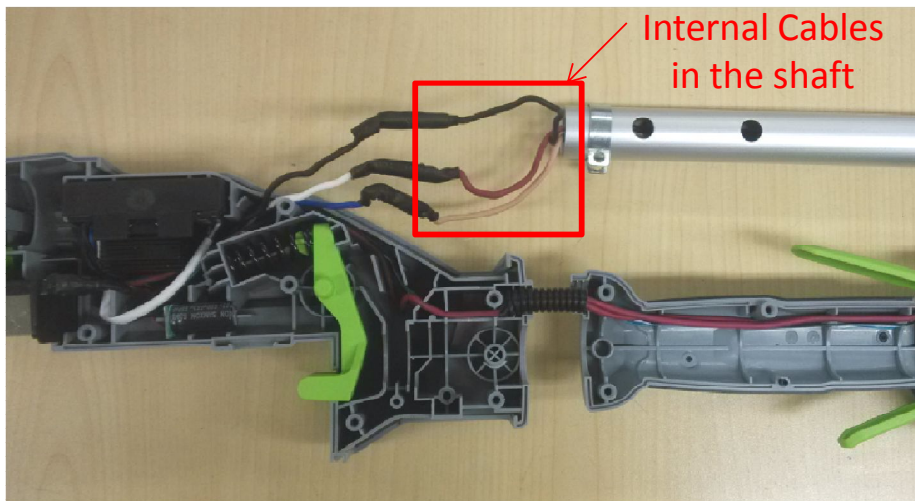
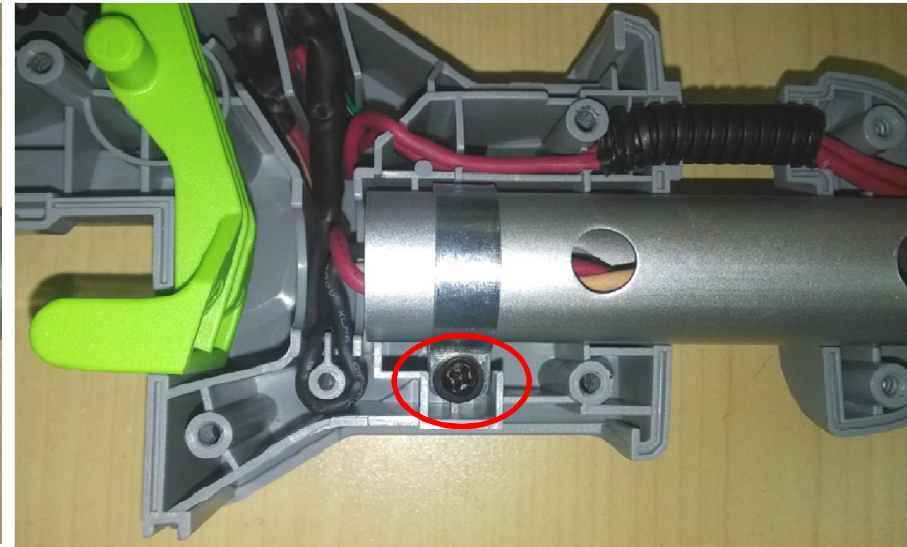
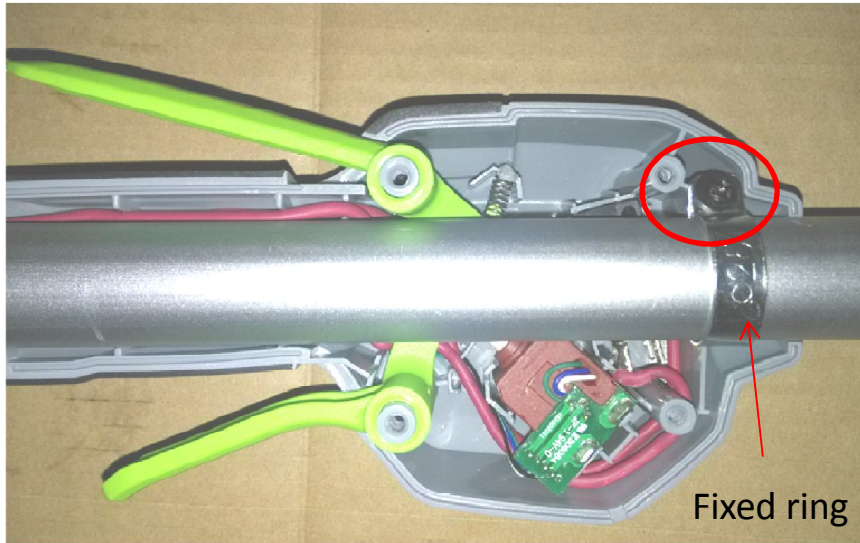
1. Loosen the screws in the rear housing (7 screws) and handle (7 screws), remove the housings, upper cover and lower cover.



Description	Part Number	Qty.	Description	Part Number	Qty.
Tapping Screw	5610032000	14	Upper cover	3127650000	1
			Lower cover	3127675000	1

Replace the PCBA

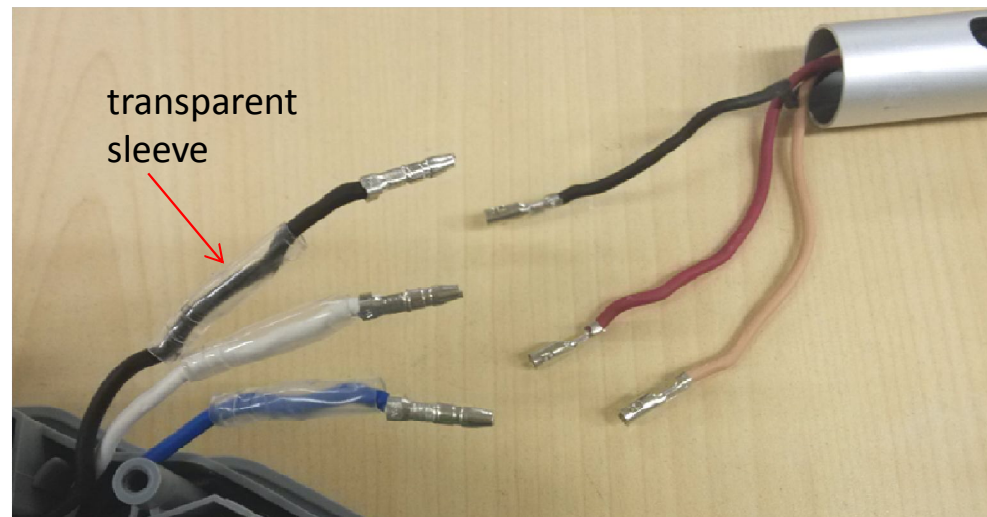
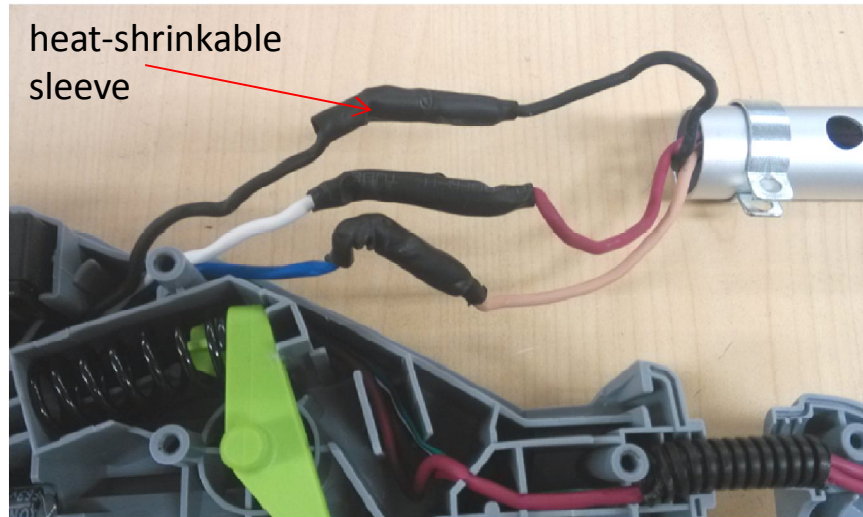
2. Loosen the two locking screws on the fixed rings, take out the shaft from the housings.



Description	Part Number	Qty.
Fixed Ring	3705178000	2
Plain Washer	5650005000	2
Tapping Screw	5610032000	2
Internal Cables Assembly	4860285000	1

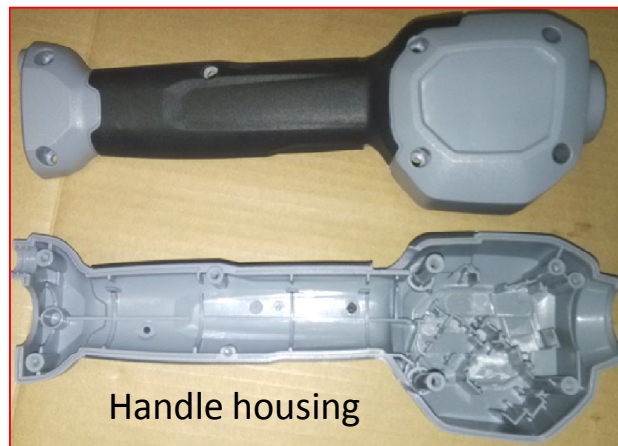
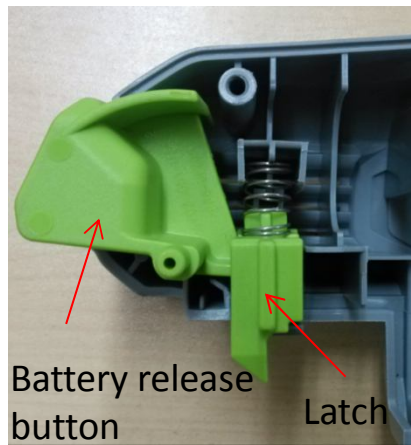
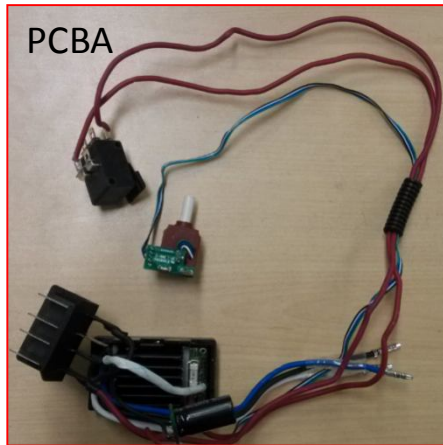
Replace the PCBA

3. Remove the heat-shrinkable sleeves from the connectors with a scissors.
4. Move the transparent sleeve aside, pull the connectors to separate.



Replace the PCBA

5. Take out the PCBA from the housings. Replace it with a new PCBA.
6. The battery release button, latch, battery ejection lever, housings can be replaced if they are broken or worn.



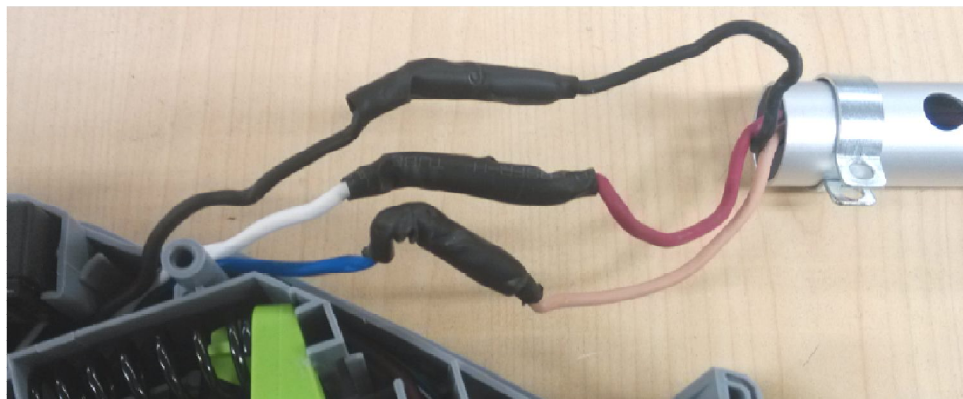
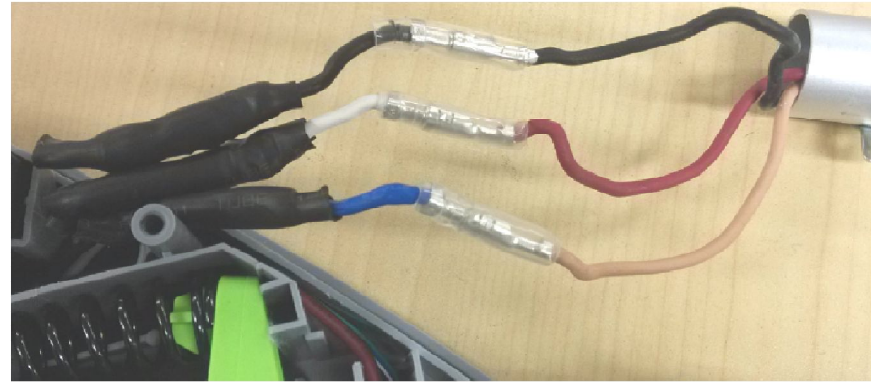
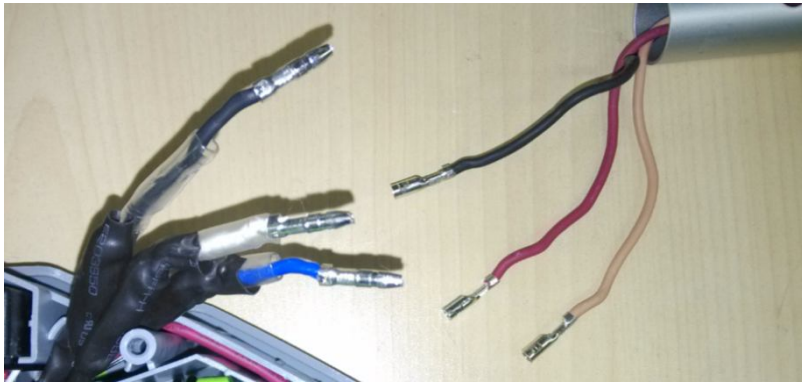
Description	Part Number
PCBA	2830057000
Battery release button	3127201000
Latch	3127202000
Battery ejection lever	3127206000
Rear housing	2824012000
Handle housing	2824018000

Replace the PCBA

7. Place new heat-shrinkable sleeves through the connectors.
8. Plug the three connectors and make sure they are fully insert in place.

Correct connection: See Table A or Table B in slide 15-16.

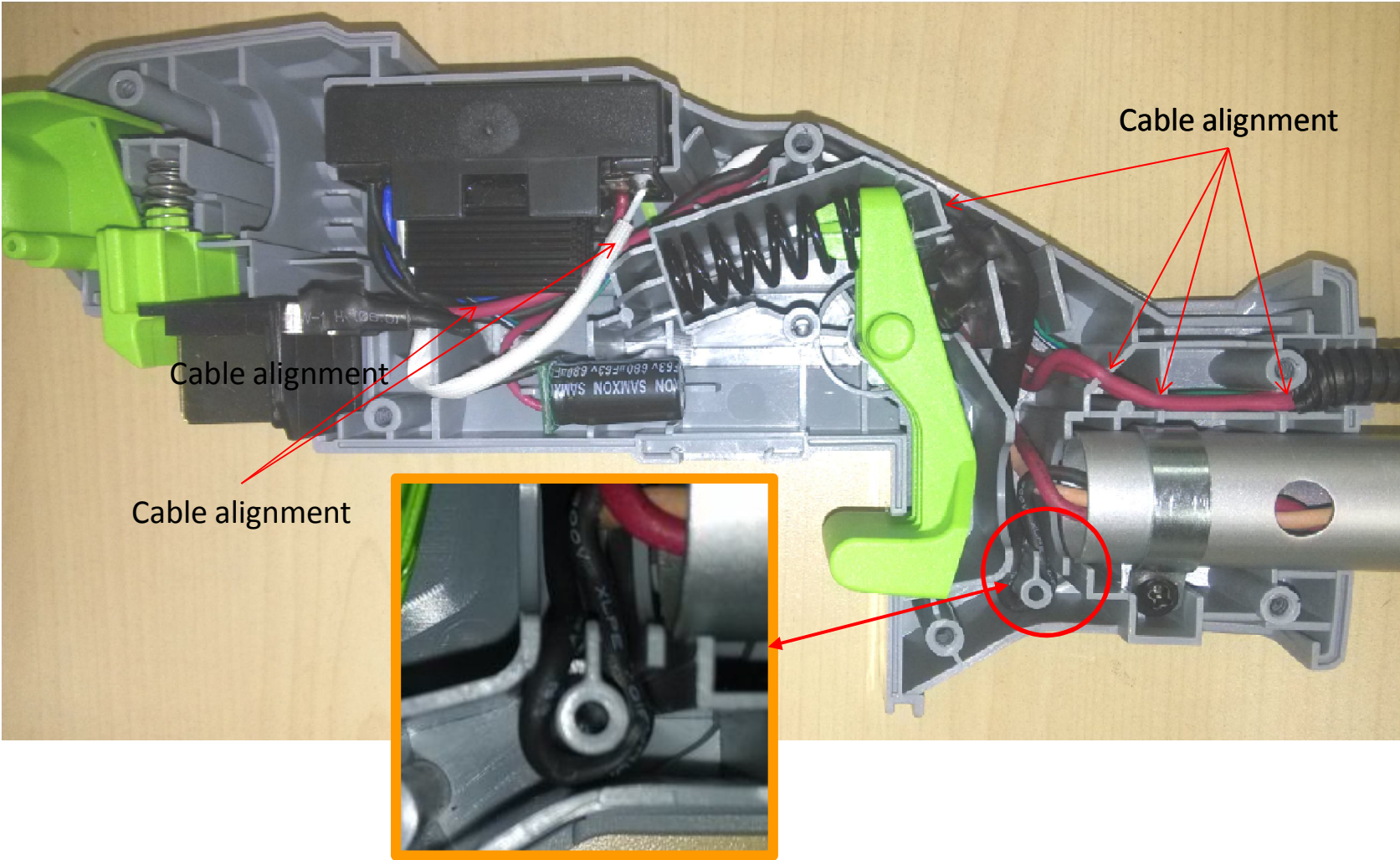
9. Move the transparent sleeves and the heat-shrinkable sleeves to cover the connectors and use a hot air gun to shrink the sleeves.



Replace the PCBA

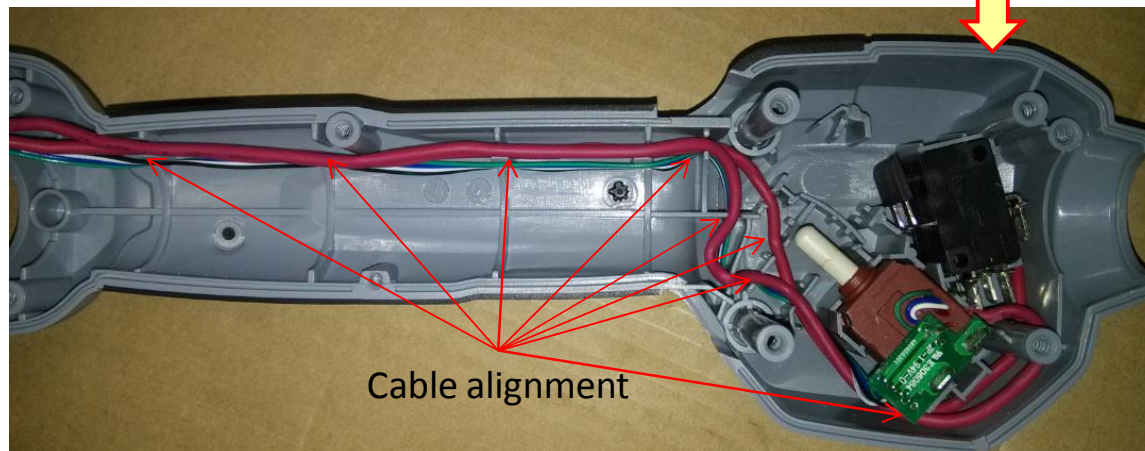
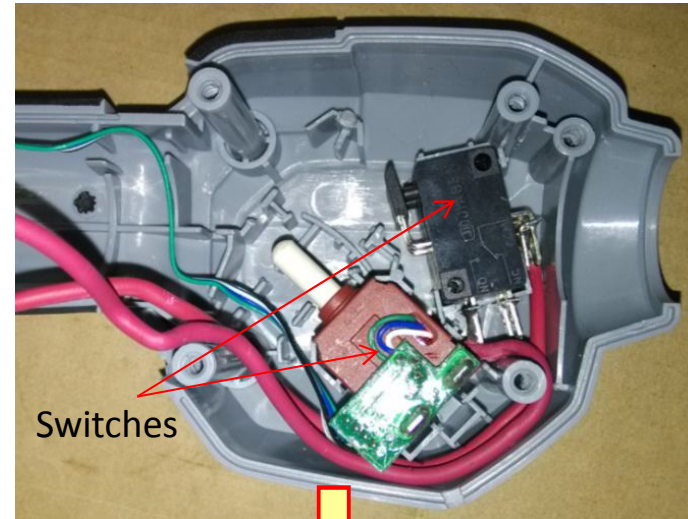
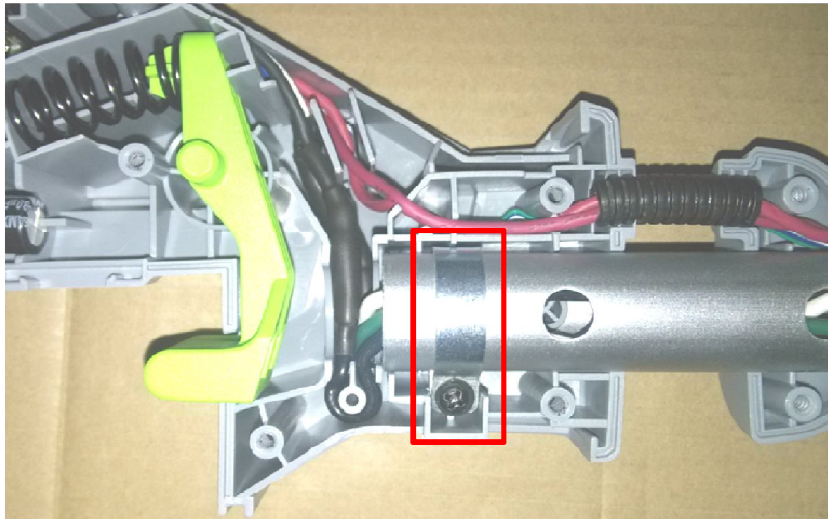
10. Position the PCBA in the housing, align the cables in the grooves of housing.

Notice: the **black cable** must be aligned as followed in the figure below.



Replace the PCBA

11. Position the shaft in the rear housing, lock it by the fixed ring with the tapping screw.
12. Fix the switches into the handle housing, align the cables in the grooves.



Replace the PCBA

13. Replace the lock-off trigger or switch trigger if they are broken.



Lock-off Trigger Compression spring



Switch Trigger

Description	Part Number	Qty.
Lock-off Trigger	3127654000	1
Compression Spring	3660030000	1
Switch Trigger	3127653000	1

Replace the PCBA

- 14. Mount the lock-off trigger and switch trigger into the handle housing.
- 15. Position the shaft in the handle housing, lock it by the fixed ring with the tapping screw.



Align the fixing hole in the lock-off trigger with the fixing pole in handle and push the trigger in place

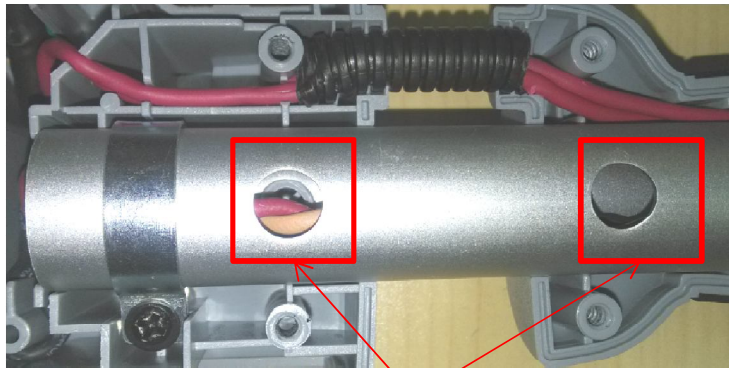
Align the fixing hole in the switch trigger with the fixing pole in handle and push the trigger in place



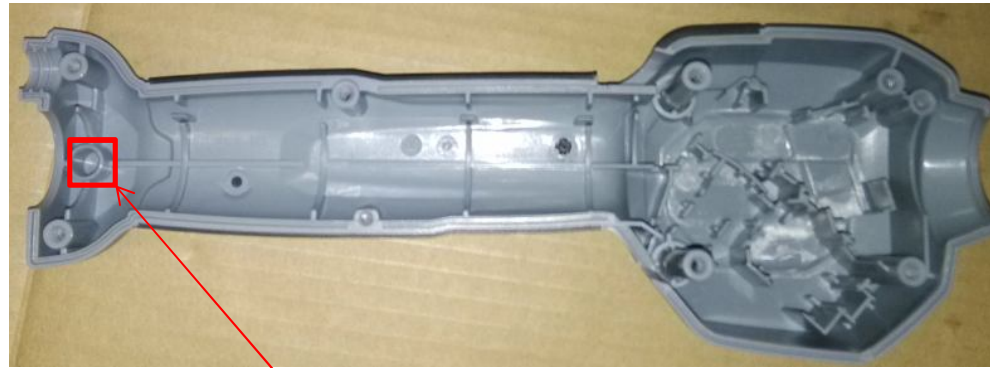
Replace the PCBA

16. Close the handle housing, put the lower cover and upper cover into position, then close the rear housing. (pictures on next page)

Notice: the fixing pole in the rear housing and handle housing must align with the fixing hole in the shaft.



fixing hole in the shaft



fixing pole in the handle housing



fixing pole in the rear housing

Replace the PCBA

17. Lock the housings with 14 tapping screws.

