Distributor Maintenance Manual

Date: 17 Apr 2023
Rev.: 02

Model no.: NZS21
J-CLASS
NEA22750

Table of Content

Tools required for repairing.

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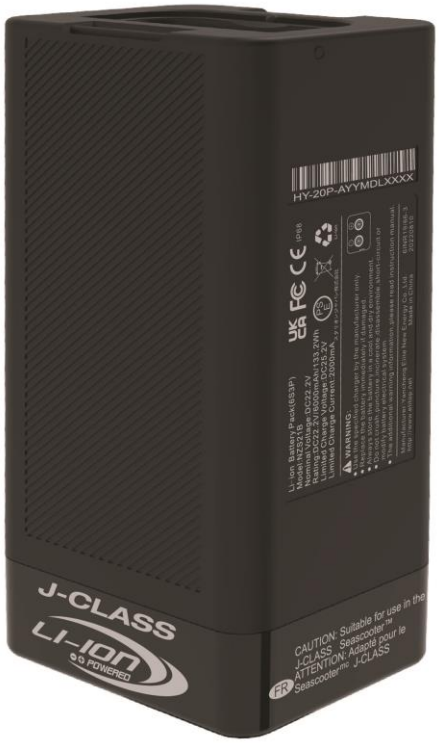
Section 1 - Battery Pod Replacement (NZS21B)



Unscrew rear housing knob and slide up to remove rear housing

Flip out two battery pod latches to unlock battery pod

Grip battery pod handle to pull battery pod out

Change by fully charged battery pod, add sealing grease over 4 seal ring surfaces

Slide in battery pod with guiding slot facing bottom of seascooter

Press two latches down to lock battery pod in place

Slide rear housing back down

Turn rear housing knob clockwise to lock rear housing

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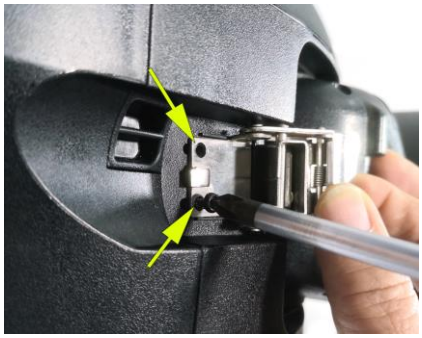
Section 2 - Steel Latch Replacement (N21023)

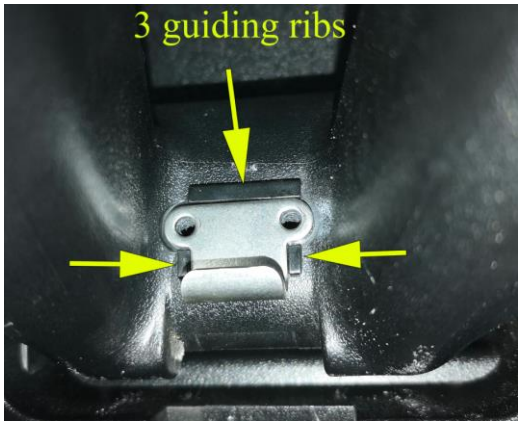
Unscrew 2 mounting screws and remove latch body

Unscrew 2 mounting screws and remove hook piece

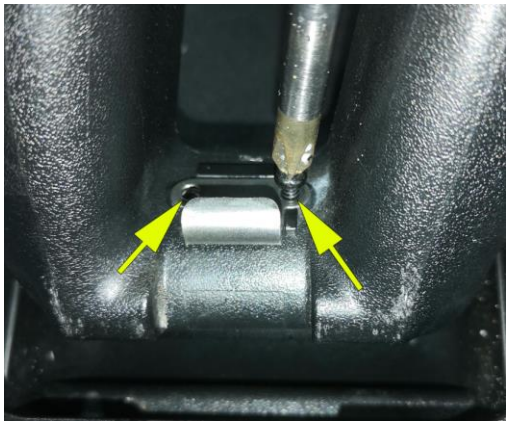
Replace new latch body placing between 2 guiding ribs



Replace new hook piece placing within the 3 guiding ribs



Fasten 2 mounting screws to hold hook piece in place



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Section 3

GoPro Mount (N21018) and Multipurpose Mount (N21002) Replacement

GoPro Mount (N21018)

Multipurpose Mount (N21002)

Unscrew 2 mounting screws to take out GoPro camera mount

Replace new GoPro camera mount or change to multipurpose mount.

MAKE SURE the indexing key slot is matched.

Fasten 2 mounting screws to hold the mount in place

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Section 4

Rear Housing Replacement (N21011)

Rear Housing Foam Replacement (N21012)

Top Cap Replacement (N21007)

Top Cap Buoyancy Foam Replacement (N21008)

Bottom Cap Replacement (N21003)

Bottom Cap Buoyancy Foam Replacement (N21004)

Battery Support Replacement (N21006)

Rear Housing (N21011)

Rear Housing Foam (N21012)

Top Cap (N21007)

Top Cap Buoyancy Foam (N21008)

Bottom Cap (N21003)

Bottom Cap Buoyancy Foam (N21004)

Battery Support Replacement (N21006)

Unscrew rear housing knob and slide up to remove rear housing

Unscrew to remove rear housing buoyancy foam

Replace new rear housing buoyancy foam and fasten 2 mounting screws

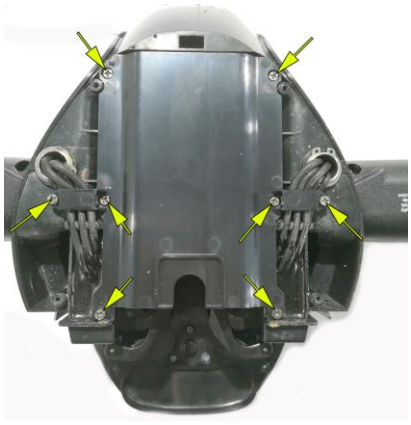
Unscrew 4 top cap mounting screws and undo 2 side latches to remove top cap

Take out top cap buoyancy foam

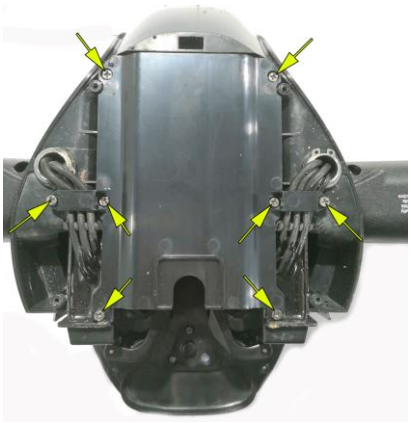
Unscrew 4 mounting screws to remove bottom cap

Remove bottom cap buoyancy foam

Unscrew 8 mounting screws to take out battery support bracket

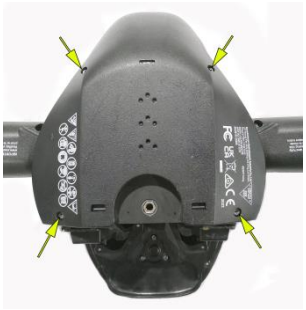


Replace new battery support bracket and fasten 8 mounting screws to hold



Replace new bottom cap buoyancy foam

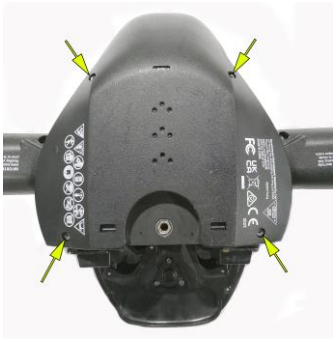
Replace new bottom cap and fasten 4 mounting screws to hold



Replace new top cap buoyancy foam

Replace new top cap and press both sides down to engage two latches

Fasten 4 mounting screws to hold top cap in place



Slide down rear housing and fasten locking knob clockwise to hold

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Section 5

Handle top right cover replacement (N21021)

Handle top left cover replacement (N21027)

Handle left top foam replacement (N21026)

Right trigger module replacement (N21019)

Left trigger module replacement (N21024)

Handle top right cover (N21021)

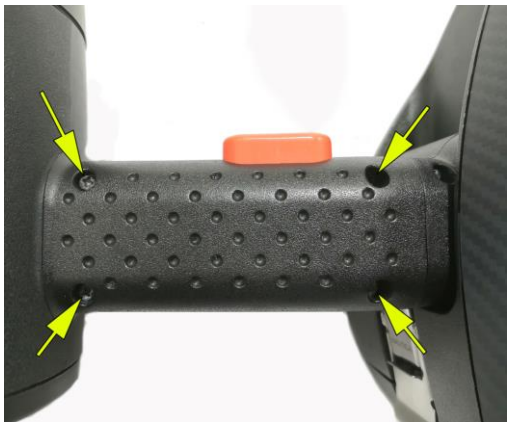
Handle top left cover (N21027)

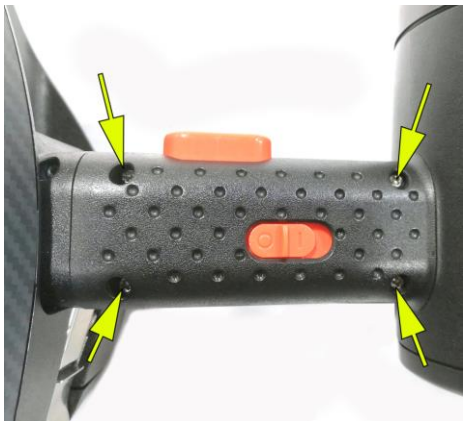
Handle left top foam (N21026)

Right trigger module (N21019)

Left trigger module (N21024)

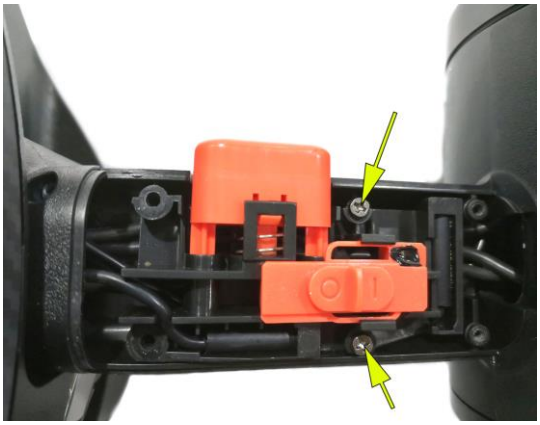
Unscrew to remove LR handle top covers



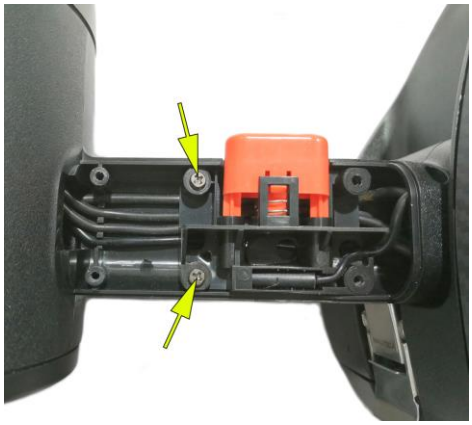


Take out handle top left foam

Unscrew right trigger module



Unscrew left trigger module



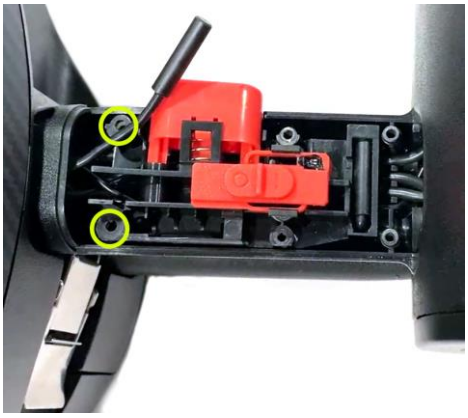
Take out right trigger module and take out right sensor from module slot. DO NOT damage sensor cable

Take out master switch sensor from module slot. DO NOT damage sensor cable

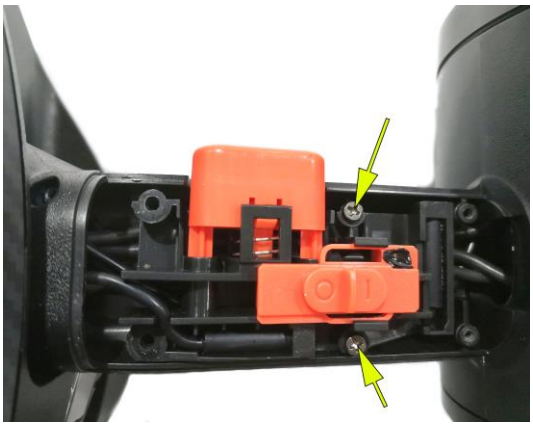
Replace new right trigger and master switch module

Pass master switch sensor through the hole and lay down on slot then tidy up cable

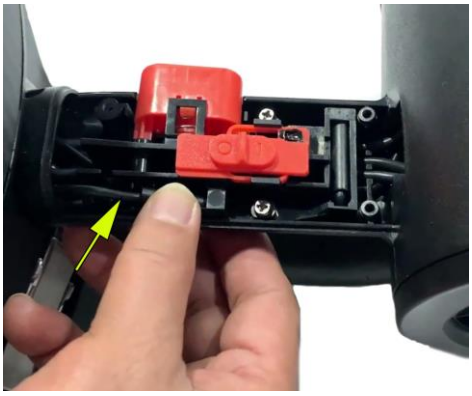
Fit right trigger module down through 2 screw posts



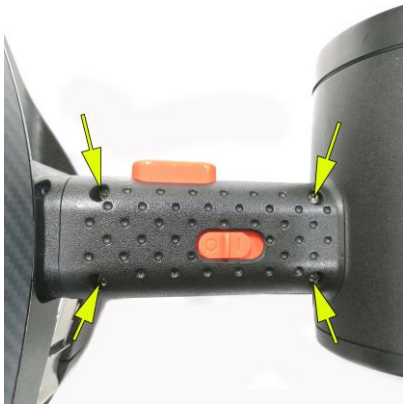
Fasten 2 mounting screws to lock right trigger module in place



Fit right trigger sensor to slot and tidy up sensor cable

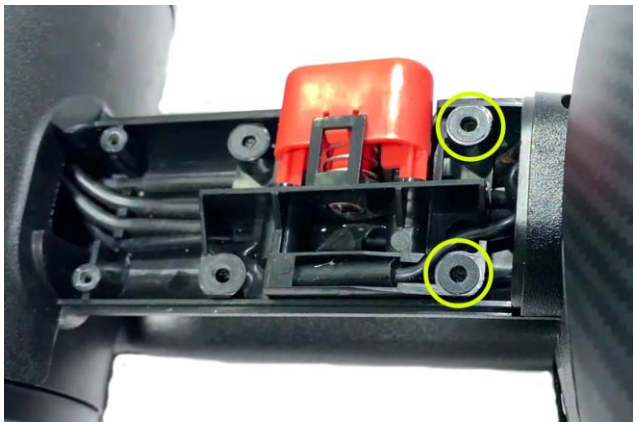


Replace new handle top right cover and fix it by 4 mounting screws

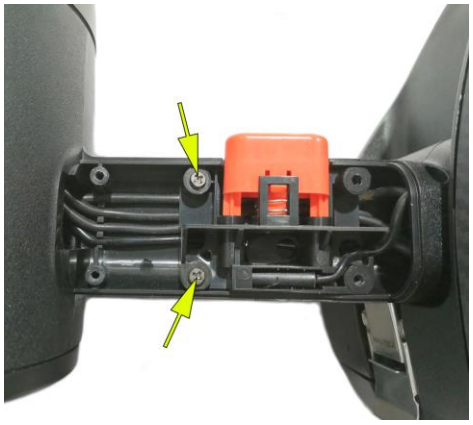


Fit left trigger sensor to the slot of new left trigger module and tidy up sensor cable

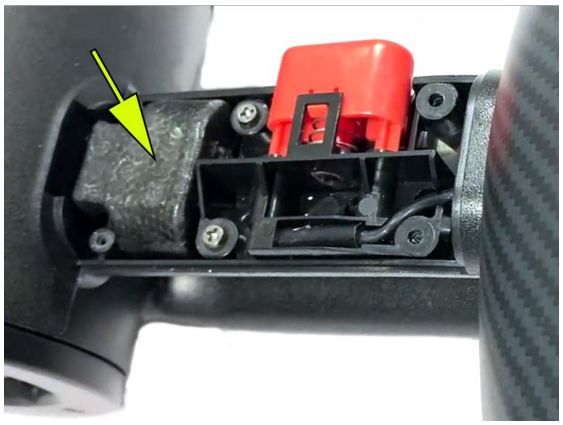
Fit left trigger module down through 2 screw posts



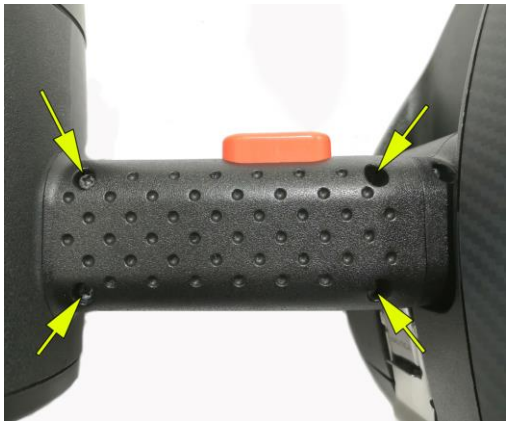
Fasten 2 mounting screws to lock left trigger module in place



Fit new handle left top foam in place



Replace new handle top left cover and fix it by 4 mounting screws



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Section 6

Nozzle Rear Grille Replacement (N21013)

Left (N21025)/ Right (N21020) Nozzle Foam Replacement

Left (N21028)/ Right (N21029) Nozzle Front Grille Replacement

Propeller Replacement (N21041)

Nozzle Rear Grille (N21013)

Left (N21028)/ Right (N21029) Nozzle Front Grille

Propeller (N21041)

Left (N21025) Nozzle Foam Set

Right (N21020) Nozzle Foam

Unscrew and take out right nozzle rear grille

Slide out rear nozzle buoyancy foams those with debossment R1, R2 and R3

Unscrew right nozzle front grille and pull out

Hold the propeller and use nut driver to unscrew propeller nylock nut

Ensure propeller drive pin is located equal lengths on either side of propeller shaft

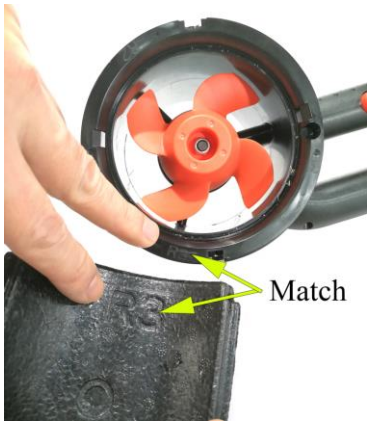
Replace new propeller with drive pin slot in line with propeller drive pin

Fasten nylock nut to lock propeller in place

DO NOT over tighten the nylock nut, it'll bend the drive pin

Replace new right nozzle buoyancy foams marked with R1, R2 and R3

MAKE SURE positions and orientations are all correct



Install new right nozzle rear grille with ribs pointing to the motor cable slot

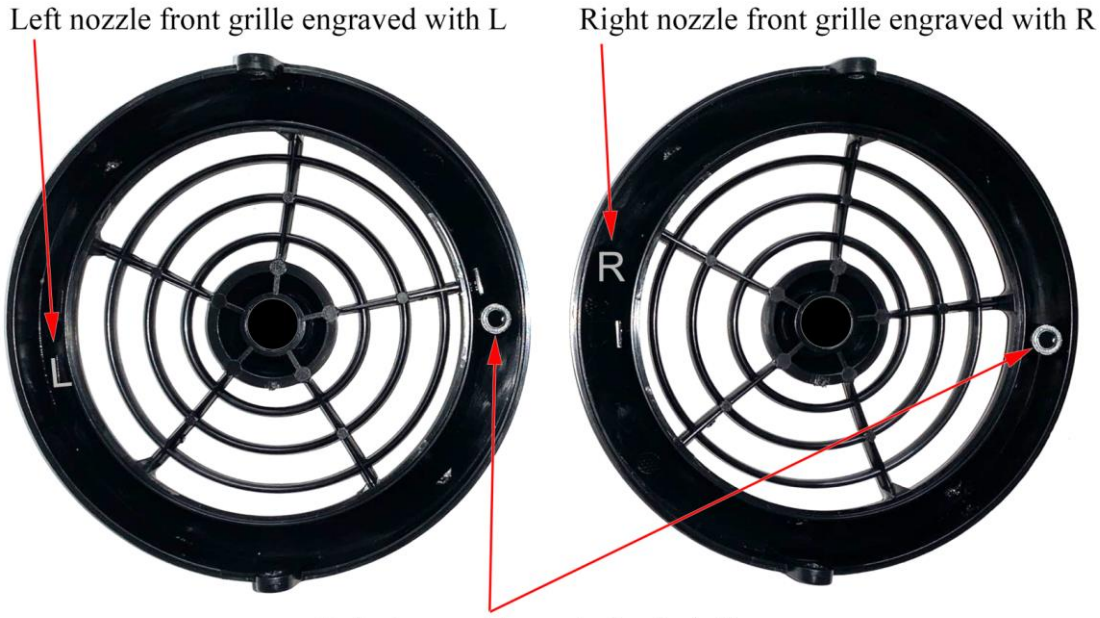
Fasten rear grille mounting screws to lock rear grille in place

Push new right nozzle front grille back (engraved with R)

ENSURE engraving R matches and grille's orientation is correct

Fasten mounting screws back to lock front grille in place

Repair left grilles, left buoyancy foams and left side propeller follows the same procedures.



Reminder :

1. Front grille engraved with L is for left side, R is for right side.
2. Front grilles indexing post constraints orientation of front grilles when installing front grilles back to the nozzles.
3. L/R rear grilles are identical part, left and right are the same.
4. Nozzle buoyancy foams are debossed with marking R1, R2, R3, L1, L2 and L3. All markings are corresponding to the buoyancy chambers with same marking when installing all these buoyancy foams back.
5. MAKE SURE propeller drive pin sits right inside propeller drive slot.
6. DO NOT over tighten the propeller nylock, it'll bend the drive pin.

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Section 7

Bottom Housing Face Seal (N21009)

Leakage Sensor Bracket （N21015）

Bottom Housing Foam

Power EMI Suppression Core Inductor UF-70B (N21041)

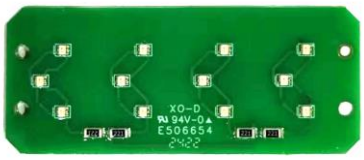
Main Board Housing Seal (N21010)

Motor EMI Suppression Core Inductor A2 RC16x13x8-MB (N21040)

Positive Power Wire (N21032)

Negative Power Wire (N21033)

LED Board Cable (N21031)



LED Board (N21038)

LED Housing (N21001)

7-1 Bottom Housing Face Seal Replacement (N21009)

Unscrew rear housing knob and slide up to remove rear housing

Flip out two battery pod latches to unlock battery pod

Grip battery pod handle to pull battery pod out

Unscrew 4 top cap mounting screws and undo 2 side latches to remove top cap

Take out top cap and top cap buoyancy foam



Unscrew 16 mounting screws to take out controller module



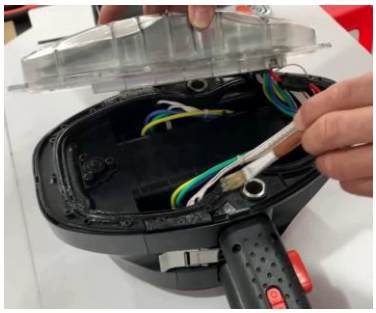
Remove damaged bottom housing seal and replace

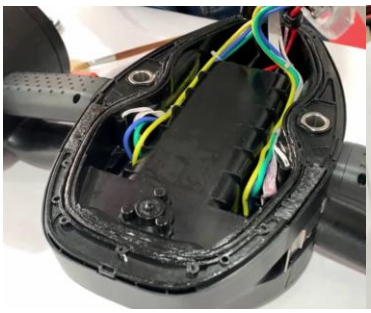

Add sealing grease to the seal ring groove on bottom housing.

Replace new bottom housing seal, sit seal ring inside seal ring groove at bottom housing.

Add sealing grease all over seal ring surface.

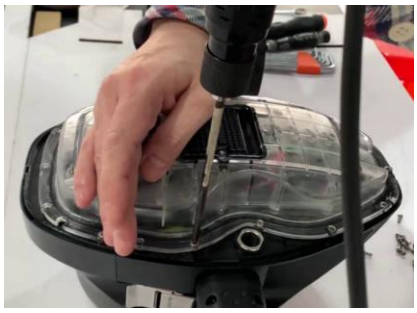
Tidy up left right cables for transparent module to cover down over bottom housing.





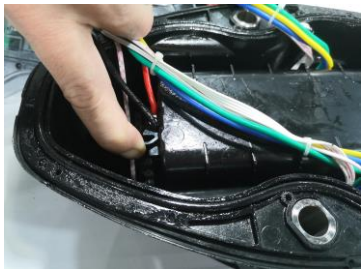
Fasten 16 screws to seal up transparent module with bottom housing.

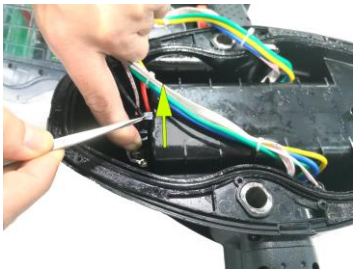
Check seal ring compression mark through transparent housing.



7-2 Leakage Sensor Bracket Replacement (N21015)

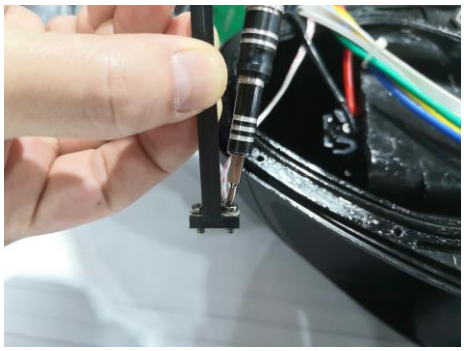
Press the V hook and pull out leakage sensor bracket.

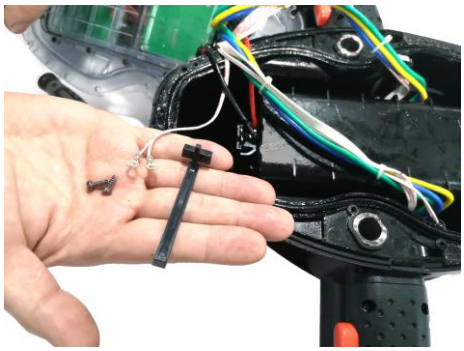




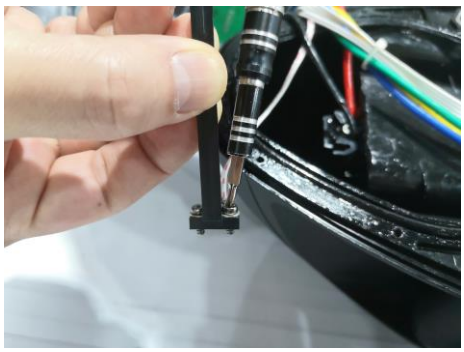
Unscrew 2 screws to disconnect 2 sensor cables from sensor bracket

Replace new sensor bracket.

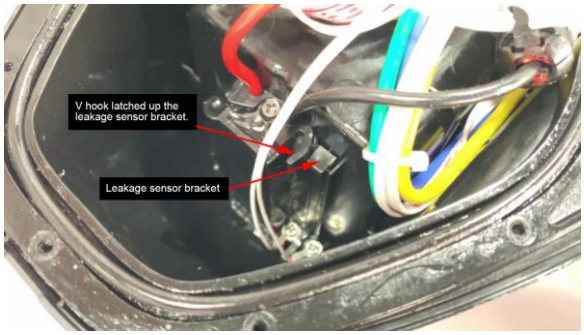




Pass mounting screws through sensor cable terminals to fix sensor cables to sensor bracket

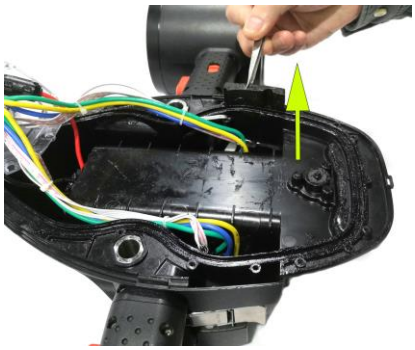


Slide leakage sensor bracket back down along the slots until it is latched by the V hook.

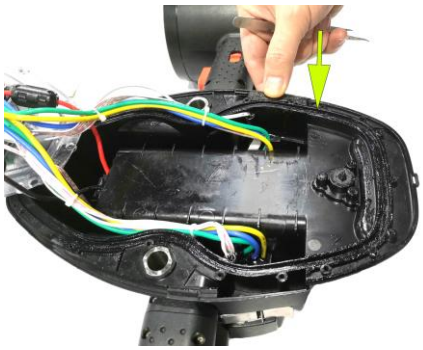


Section 7-3-Bottom Housing Foam Replacement

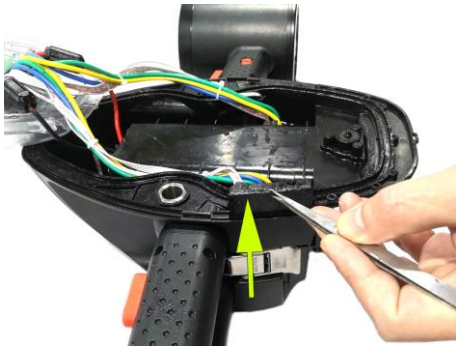
Use tweezers to take out bottom housing foam 2 from right handle side.



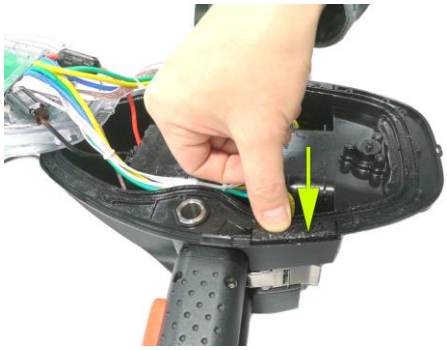
Replace new bottom housing foam 2 (marked) down to the slot.



Use tweezers to take out bottom housing foam 1 from left handle side.

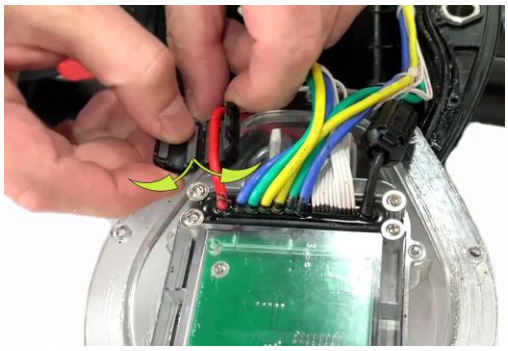


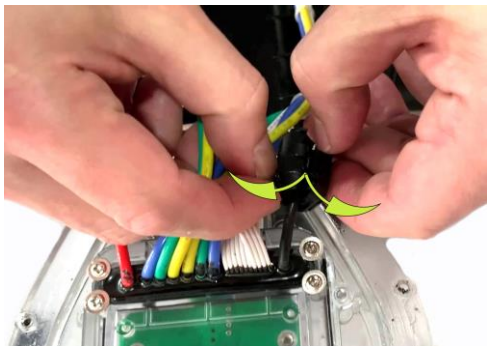
Replace new bottom housing foam 1 (marked) down to the slot.



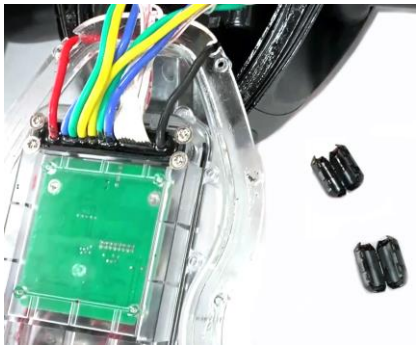
Section 7-4-Power EMI Suppression Core Inductor Replacement

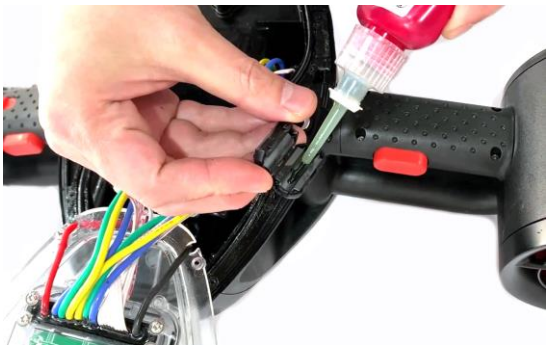
Unclip power EMI suppression inductors and remove.



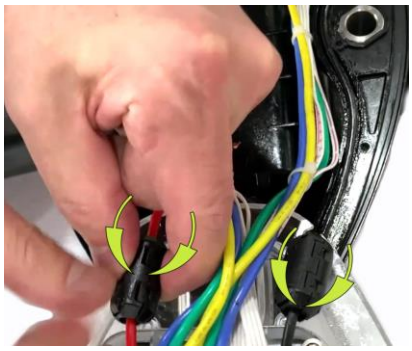


Replace new power EMI suppression inductors, add glue to the slots.



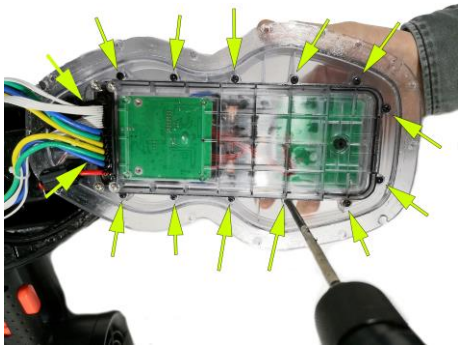


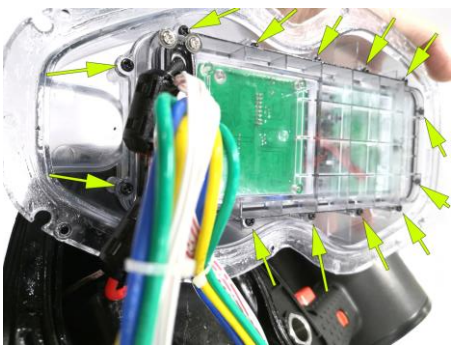
Clip back new power EMI suppression inductors not too far away from transparent module.



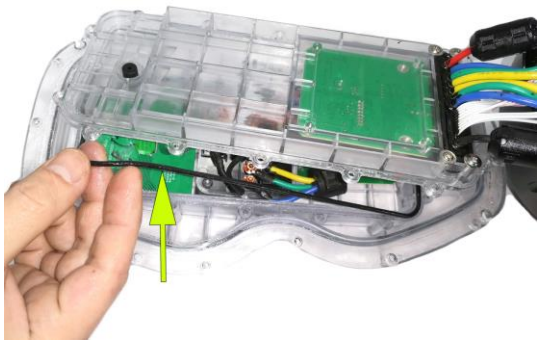
Section 7-5-Main Board Housing Seal Replacement

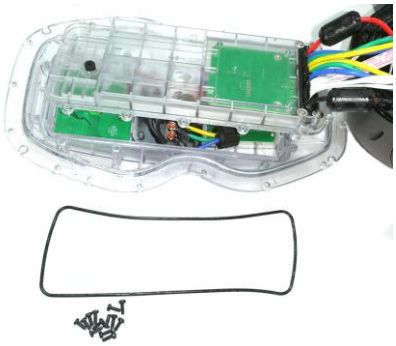
Unscrew 14 screws to open main board housing, keep the screws for re-assemble.





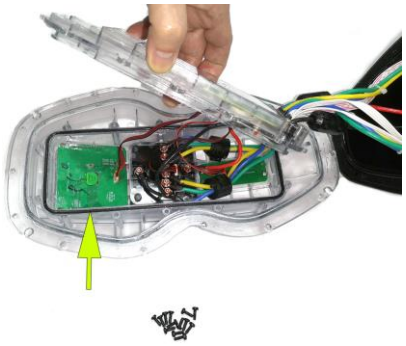
Remove main board housing seal.





Add grease to the seal ring groove on main board top housing.

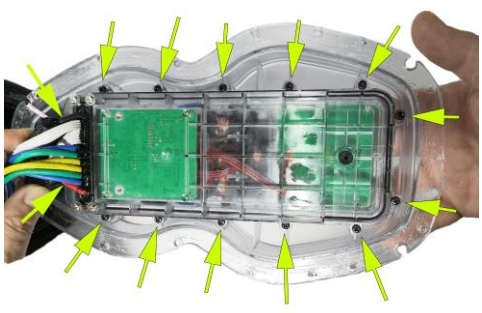
Replace new main board housing seal ring to the seal ring groove

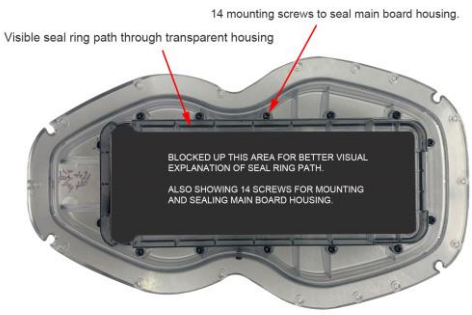


Add sealing grease along the seal ring surface.

Tidy up cables to avoid supporting ribs puncture cables when closing back the housing

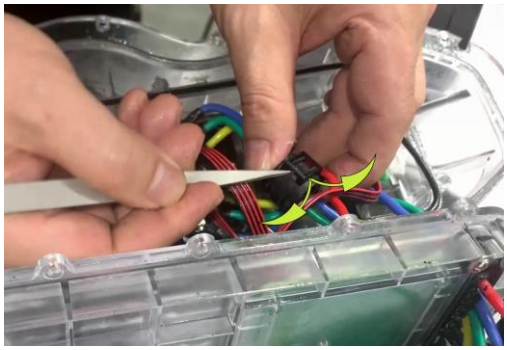
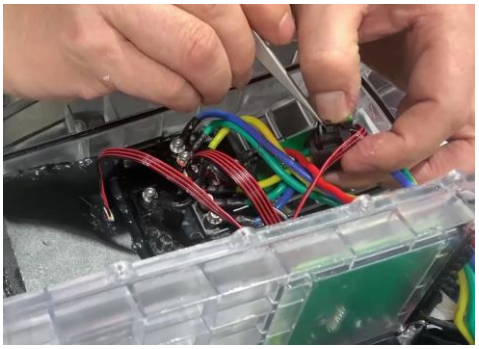
Fasten 14 screws back to seal main board housing.



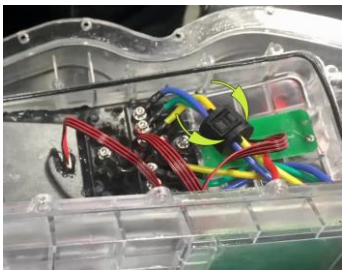
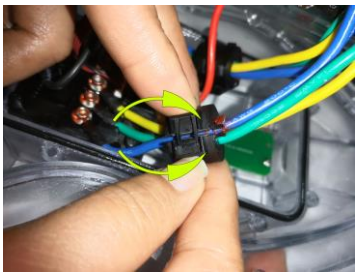


Section 7-6-Motor EMI Suppression Core Inductor Replacement

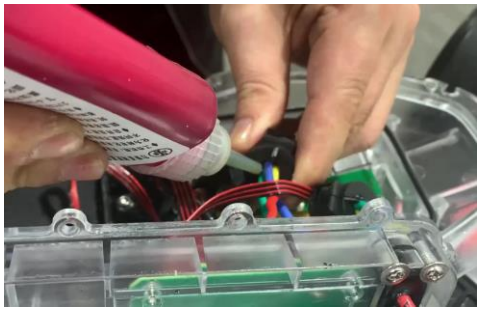
Unclip motor EMI suppression inductors and remove.

Replace new motor EMI suppression inductors to the middle length of cables and clip to lock.

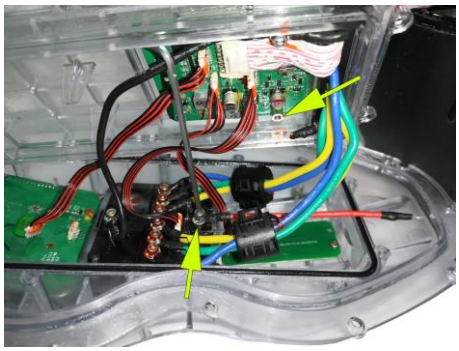
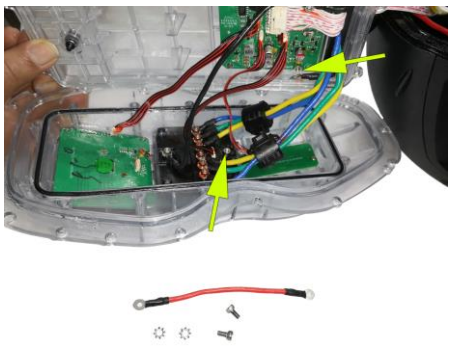




Add glue to fix the inductors in places.



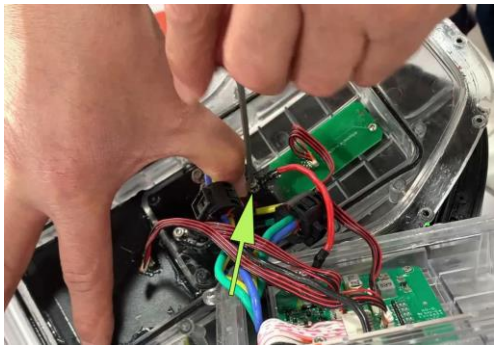

Section 7-7-Positive and negative power wire replacement

Use A/F 2.5mm allen key to unscrew positive cable, make sure to keep tooth washers and socket head screws to fix new cable.

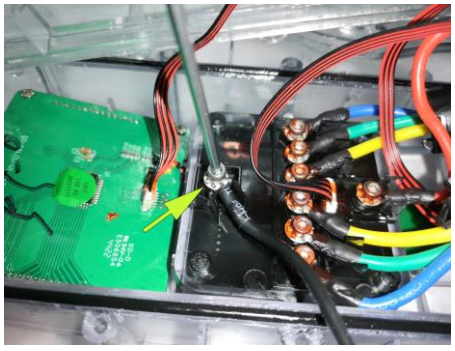



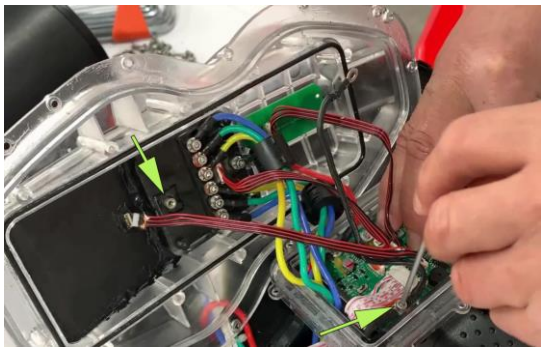
Change new positive cable, socket head screw through tooth washer and
2 red cable terminals then tighten back to main board positive terminal post.

Socket head screw through tooth washer and red cable terminal then tighten
back to driver board positive terminal post. Align cable between guiding ribs.



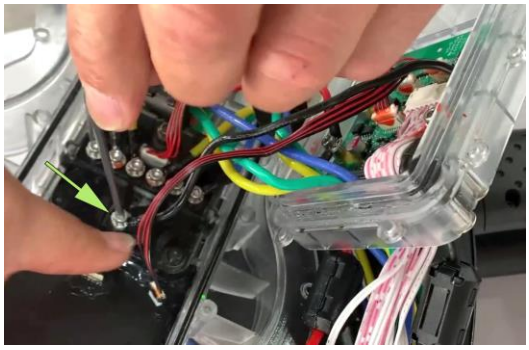
Use A/F 2.5mm allen key to unscrew negative cable, make sure
to keep tooth washers and socket head screws to fix new cable.





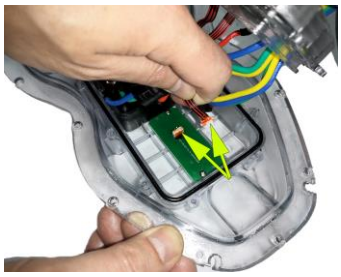
Change new negative cable, socket head screw through tooth washer and
2 black cable terminals then tighten back to main board negative terminal post.

Socket head screw through tooth washer and black cable terminal then tighten back to driver board negative terminal post. Align cable between guiding ribs.



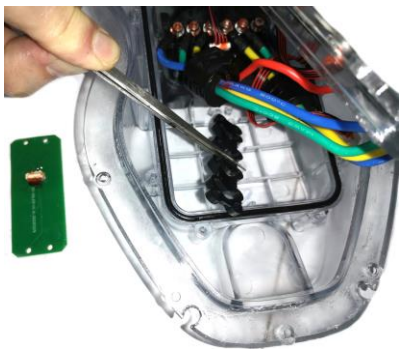
Section 7-8-LED Board-LED Housing-LED Board Cable Replacement

Unscrew LED board and remove.

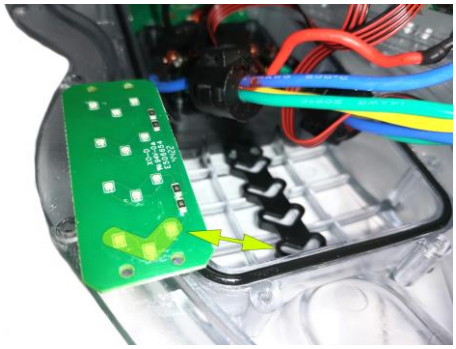


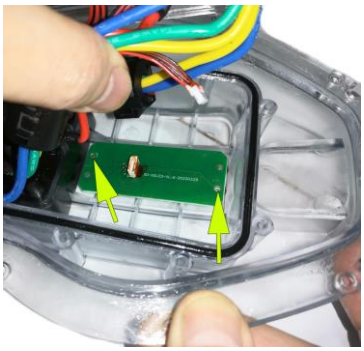
Remove LED housing.

Replace new LED housing with flat surface facing out.

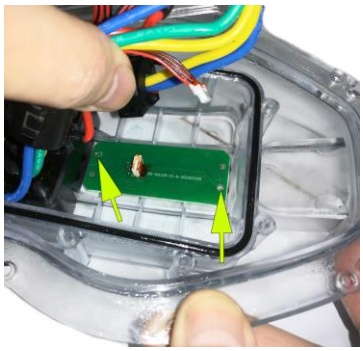


Replace new LED board with socket pointing driver board

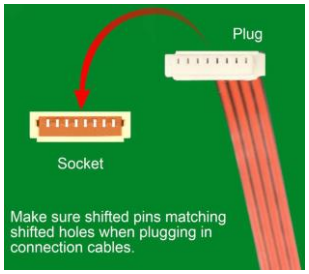


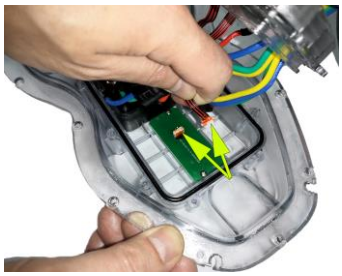


Fasten 2 mounting screws back to lock LED board in place.

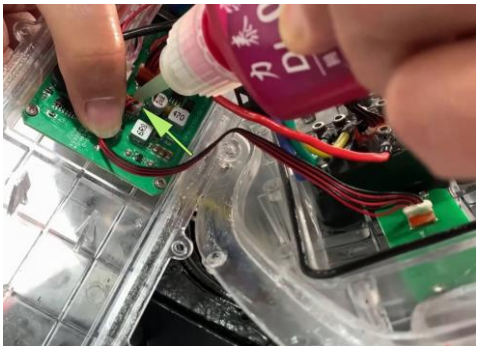


Replace new LED board cable, plug sockets with correct orientation (socket pins are shifted).





Add glue to fix plug/socket not to wobble and move.



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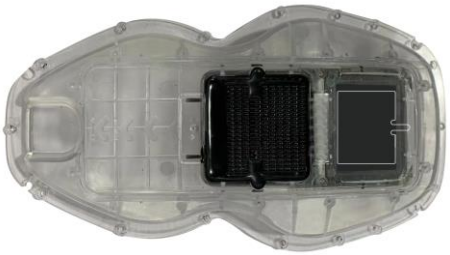
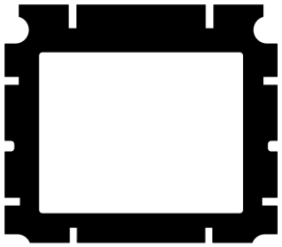
Section 8



Top Housing Module (N21017)

Main Board (N21036)



LCD Backlight Blocking Sheet (N21022)

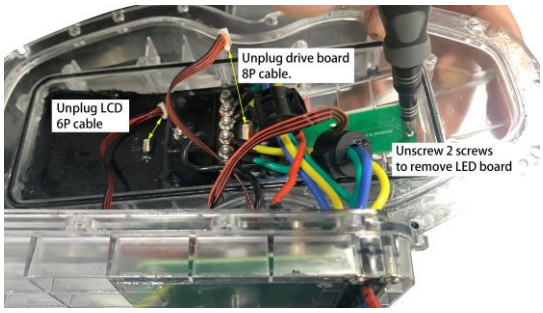
LCD Display Board (N21037)

LCD Board Cable (N21031)

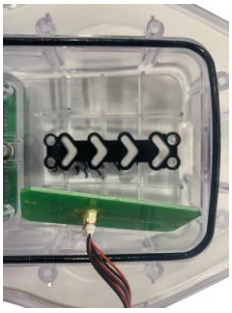
Main Board & Driver Board Cable (N21034)

8.1 Top Housing Module Replacement (N21017)

Unplug LCD cable and drive board cable



Unscrew and take out LED board



Take out LED housing.

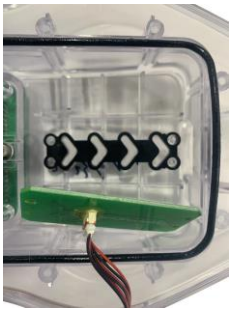
Unscrew 8 socket headed screws, keep the screws and tooth washers.

All cables are disconnected from top housing module.

Top housing module is completely disconnected for replacement

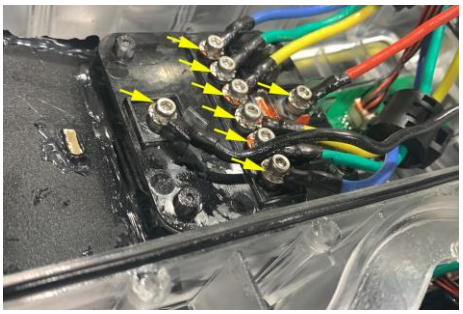
Replace new top housing module
Make sure add seal ring back to new module.

Reassemble LED housing with flat side face out



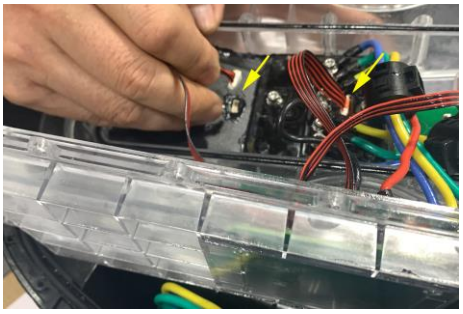
Reassemble LED board with socket side close to drive board. Fasten 2 screws to fix.

8 socket headed screws through tooth washers and cable terminals then tighten back to driver board connection posts. Align cable between guiding ribs.

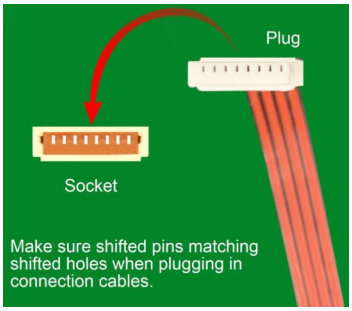


Make sure socket headed screws through tooth washers and cable terminals

Plug 6P LCD cable and 8P drive board cables back and glued to fix.

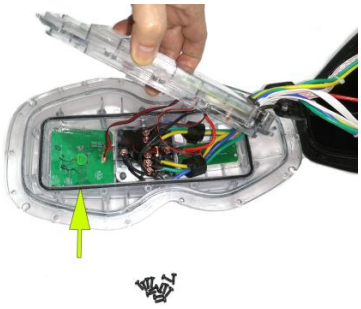


Plug sockets with correct orientation (socket pins are shifted).



Add grease to the seal ring groove on main board top housing.

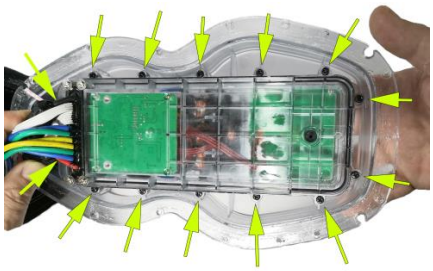
Fit main board top housing seal to the seal ring groove.

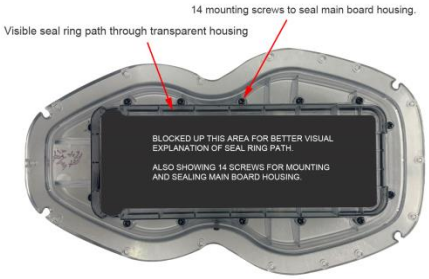


Add sealing grease along the seal ring surface.

Tidy up cables to avoid supporting ribs puncture cables when closing back the housing

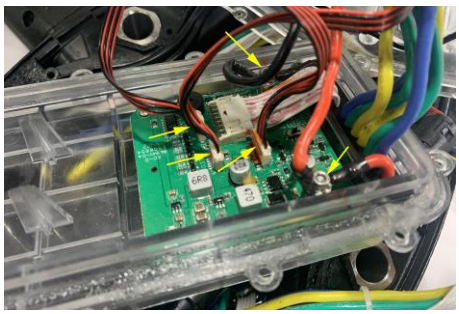
Fasten 14 screws back to seal main board housing.



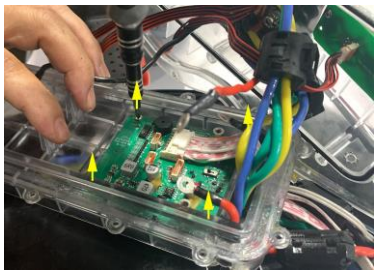


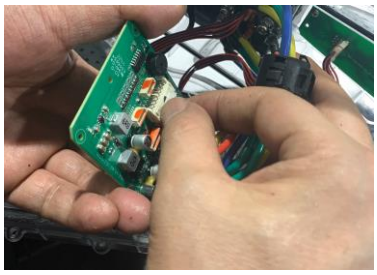
8.2 Main Board Replacement (N21036)

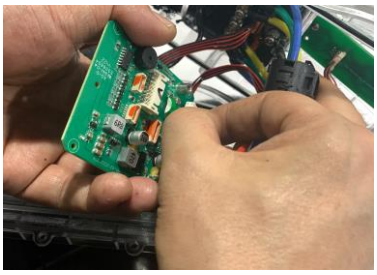
Unplug LCD/LED/Drive board cables on main board, unscrew power cables and keep screws and tooth washers for reassemble.



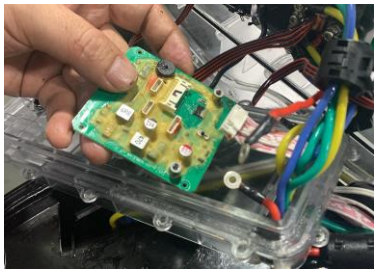
Unscrew main board 4 mounting screws. Unlatch 16P plug and pull out to disconnect main board.

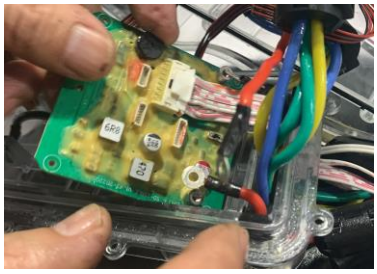




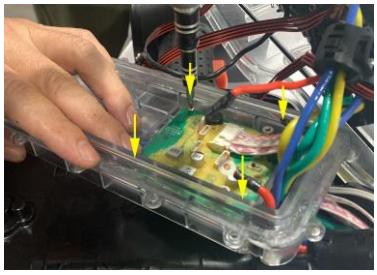


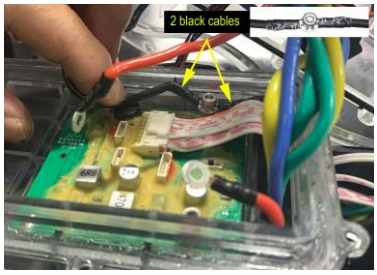
Replace new main board. 16P plug latch to socket. Fit main board in place

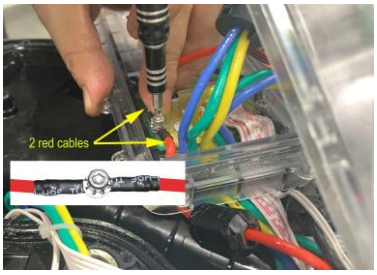




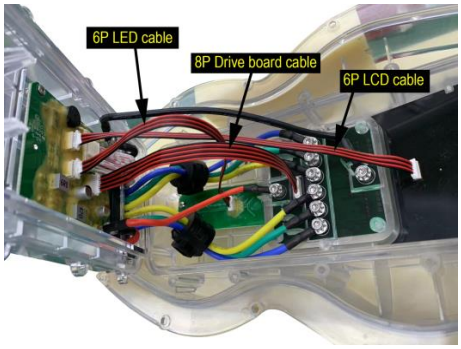
Fasten 4 mounting screws. Fasten 2 black cables. Fasten 2 red cables.



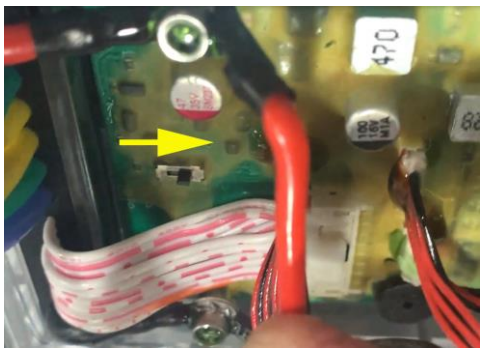




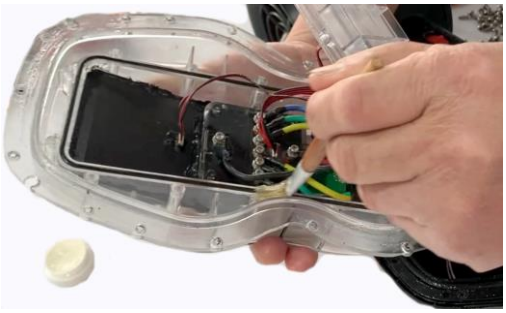
Plug back cables and glue plug/socket to avoid loose.



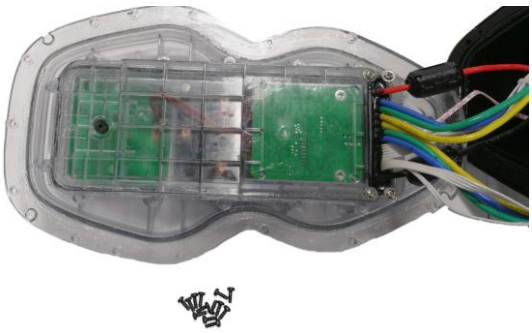
Slide switch pointing to 16P socket to turn to operation mode.



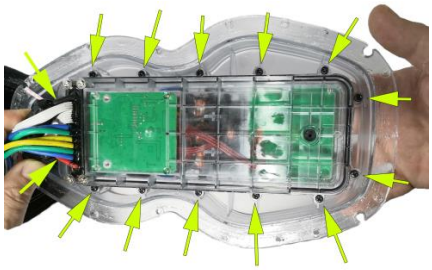
Add sealing grease along the seal ring surface.



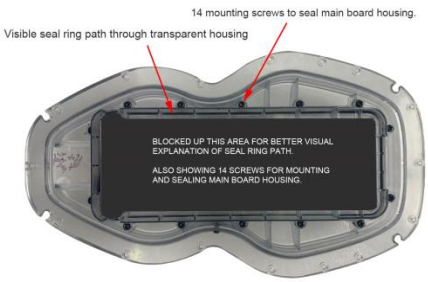
Tidy up cables to avoid supporting ribs puncture cables when closing back the housing



Fasten 14 screws back to seal main board housing.



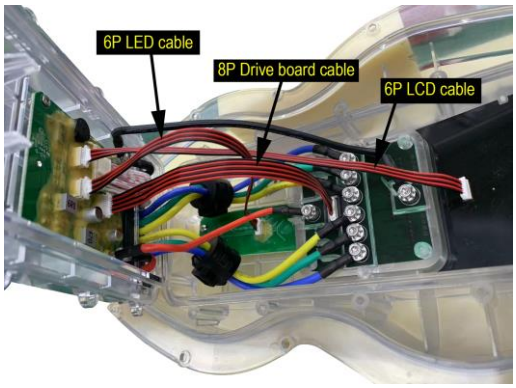
Check seal ring path misalignment through transparent housing.

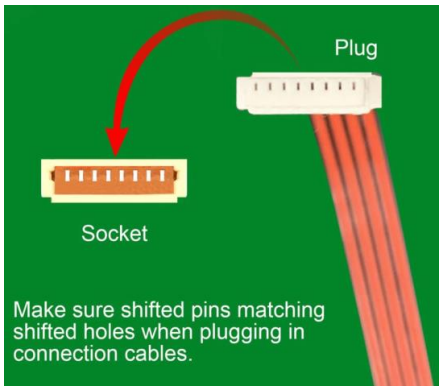


8.3 Main Board & Driver Board Cable Replacement (N21034)

8.4 LCD Board Cable Replacement (N21031)

Unplug cable both sides to remove cable. Replace new cables and pay attention to plug's orientation matched with sockets. Add glue to avoid plug/socket loose.



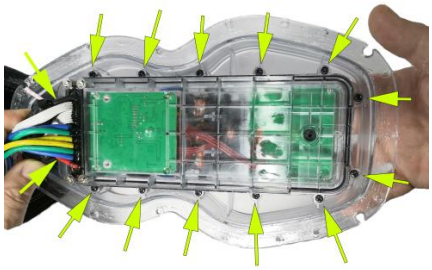


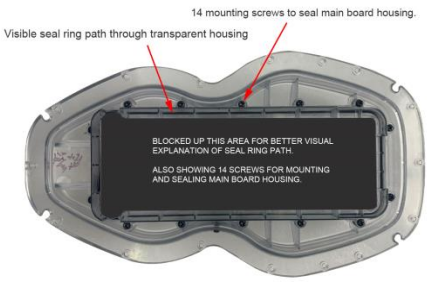
Add sealing grease along the seal ring surface.

Tidy up cables to avoid supporting ribs puncture cables when closing back the housing

Fasten 14 screws back to seal main board housing.

Check seal ring path misalignment through transparent housing.

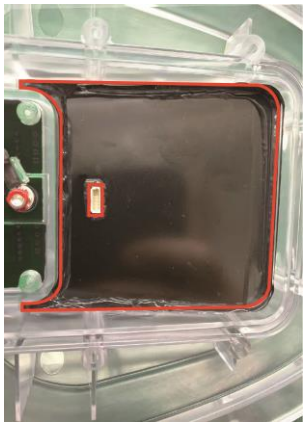




8.5 LCD Display Board Replacement (N21037)

8.6 LCD Backlight Blocking Sheet Replacement (N21022)

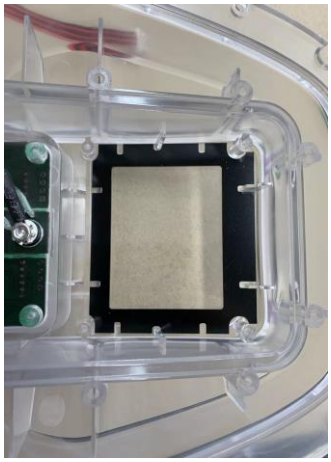
Unplug LCD cable and cut silicone glue along red line.



Take out sealing sheet and scrap, clean residual silicone glue on top housing.

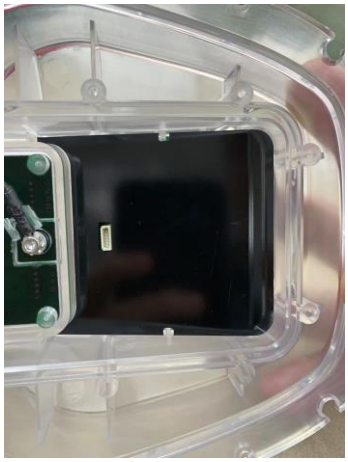
Unscrew to remove LCD board.

Change blocking sheet.



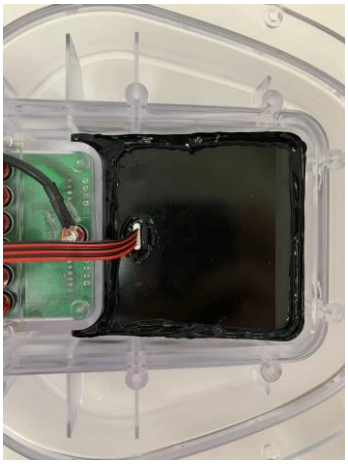
Install new LCD board.

Install sealing sheet.

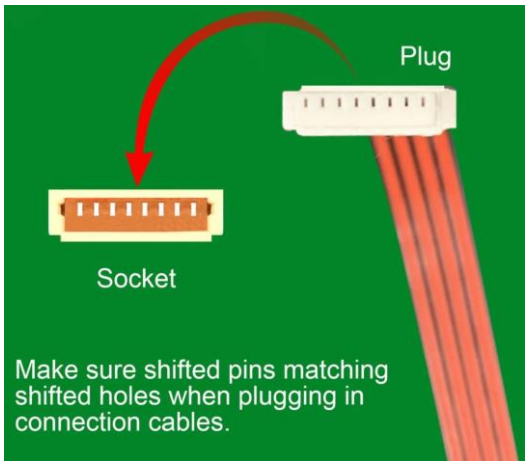


Add silicone glue to seal the sheet and seal the gap around socket.

Allow silicone glue to dry and then plug in LCD cable. Glue plug/socket



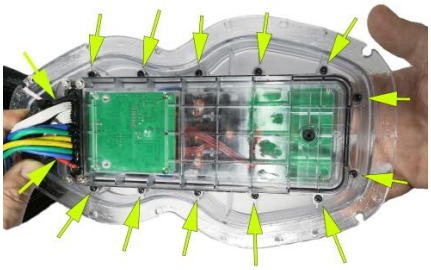
Pay attention to plug's orientation matched with socket. Add glue to avoid plug/socket loose.



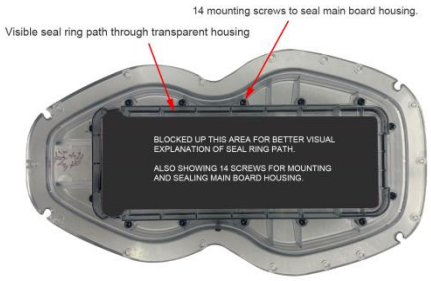
Add sealing grease along the seal ring surface.

Tidy up cables to avoid supporting ribs puncture cables when closing back the housing

Fasten 14 screws back to seal main board housing.



Check seal ring path misalignment through transparent housing.



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Section 9

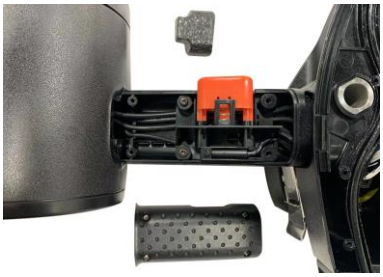
Brushless Motor (Left) Replacement (N21039)

Brushless Motor (N21039)

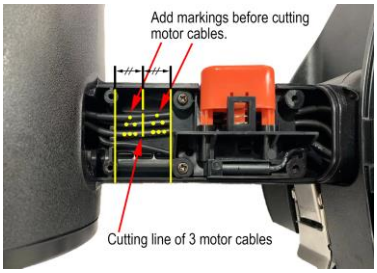
CAN DO THE SAME ON RIGHT MOTOR IF FEASIBLE !

Unscrew to remove left handle top cover.

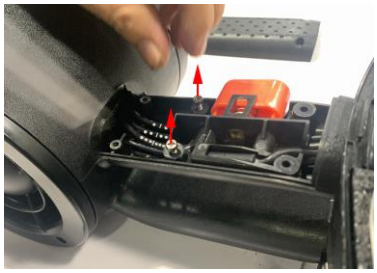
Take out handle cover and buoyancy foam.



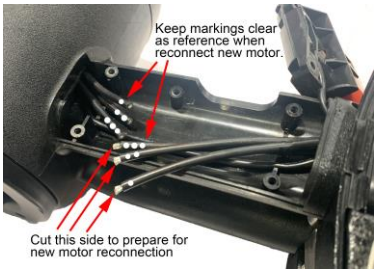
Add markings at three 14 AWG motor cables.



Unscrew to take out left trigger module.



Use cutter to cut three marked motor cables, strip motor cables about 3mm distance for reconnection.

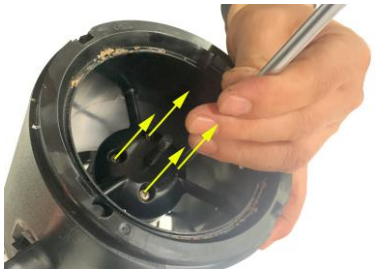


Unscrew to take out left nozzle front cap.

Use nut driver to unscrew nylock nut, take out propeller and drive pin and keep for re-assemble.

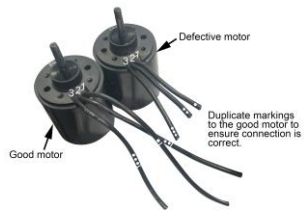
Unscrew to remove left nozzle rear cap.

Unscrew motor mounting screws, keep spring washers and screws for re-assemble.

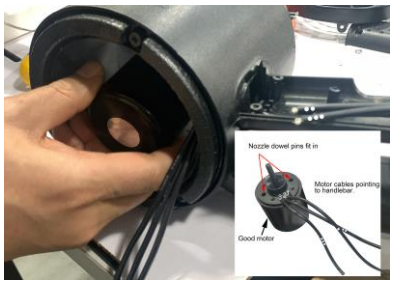


Take out defective motor from nozzle back.

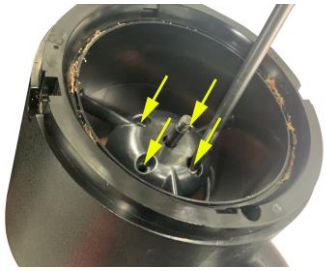
Copy cable markings to the good motor at same distances.



Install new motor to the nozzle, make sure orientation and dowel pins fit the motor.



Fasten motor mounting screws with spring washers back to fix motor.



Pass motor cables out through nozzle side hole to handlebar.

Install nozzle rear cover, make sure orientation is correct.

Fasten nozzle rear cover screws.

Insert drive pin to motor shaft.

Install propeller matching drive pin slots.

Hold propeller and fasten nylock nut.

Clip in nozzle front cap, make sure orientation is correct and then fasten 2 screws.

Cut cable 1 with matched length for connection.

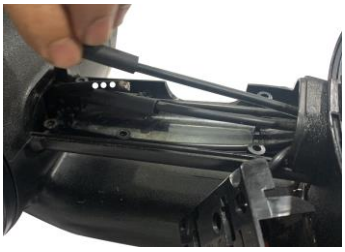
Strip cable 1 get ready for soldering.

Soldering both sides of stripped cable 1.

Insert GLUED heat shrink tube get ready for soldering.

Soldering to connect cable 1.

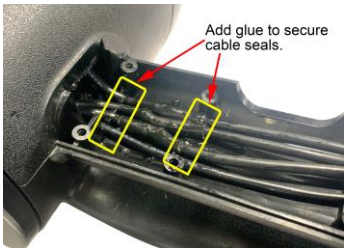
Same to connect cable 2 and 3, position heat shrink tubes to the center of joints.



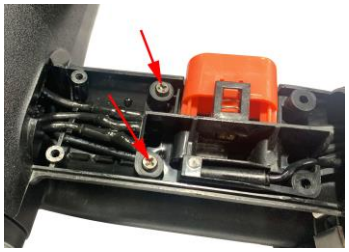
Switch ON unit to check motor direction before using hot air gun to shrink the tubes and seal the cables.

Add gules to the shrink tube ends to secure cable seals.

Lay cables flat and add glue to secure the seals.



Re-install trigger module and fasten 2 screws.



Re-install handle cover and fasten 4 screws to fix.

Reminder !!

- Check motor turning direction before shrinking the heat shrinkable tube.
- In case motor turning direction is reversed, swap any two motor cables will change motor direction !

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Section 10

Activate BT for software upgrade and product diagnosis

10.1 Install IPA document to your iPhone to get latest version SMACIRCLE APP, MAKE SURE the software is 8124 or newer version.

You should see an APP icon like this once installed APP properly

10.2 MAKE SURE J-Class's battery is charged enough to do software upgrade and diagnosis.

10.3 Activate J-Class's BT by doing the following 4 steps.

1. Holding left trigger at OFF mode

2. Slide master switch to ON position

3. Keep holding the trigger for 3 seconds when the LCD screen is at standby mode.

4. Tap left trigger 6 times (fast) to activate BT and then release left trigger.

10.4 BT is not activated. DO NOT turn OFF master switch otherwise BT will be blocked up and need to repeat 10.3 again.

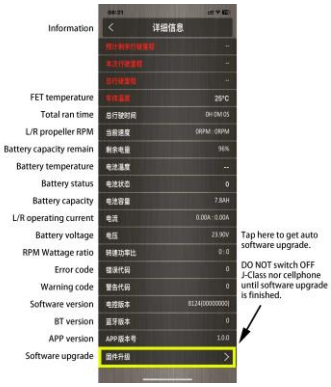
10.5 ONLY turn ON one J-Class a time to pair APP.

10.6 Refer to following procedures to pair BT/Seascooter, read diagnosis data, upgrade software and quit.

Tap SMACIRCLE1024 to pair

Tap icon to get in diagnosis page.

Upgrade software and read diagnosis data.



Software upgrading

Total 1-3 software(s) need to upgrade.

Upgrade finish and tap 返回 icon to quit.

10.7 BT will be blocked up again when J-Class's master switch is OFF.

Section 11

Error codes / descriptions / actions

No.	Error Code	Description	Action
1	E08	Motor ON/OFF error	Release triggers, OFF and ON master switch again to retry.
2	E10	Motor right driver not receive control signal	Check connection cables between main board and motor drive board.
3	E11	Motor left driver not receive control signal	Change motor drive board.
4	E12	Main board not receive motor right signal	Check connection cables between main board and motor drive board.
5	E13	Main board not receive motor left signal	Change motor drive board.
6	E34	MOSFET or MCU high temperature	Wait for temperature cool down
7	E41	Water ingress inside main body	Check and repair sealing
8	E60	Motor right software over current	Release triggers to reset.
9	E61	Motor right short circuit protection	Release triggers to reset.
10	E62	Motor right over voltage protection	Release trigger and use appropriate battery pod.
11	E63	Motor right low voltage protection	Release trigger and recharge battery pod or replace fully charged battery pod.
12	E64	Motor right startup malfunction	Release triggers to reset.
13	E66	Motor right phase loss error	Release triggers and check motor phase wire connections
14	E67	Motor right high temperature error	Release triggers and wait for temperature cool down.
15	E68	Motor right phase current zero offset error	Change motor drive board
16	E69	Motor right stalled error	Release triggers and check whether motor is stalled
17	E80	Motor left software over current	Release triggers to reset.
18	E81	Motor left short circuit protection	Release triggers to reset.
19	E82	Motor left over voltage protection	Release trigger and use appropriate battery pod.
20	E83	Motor left low voltage protection	Release trigger and recharge battery pod or replace fully charged battery pod.
21	E84	Motor left startup malfunction	Release triggers to reset.
22	E86	Motor left phase loss error	Release triggers and check motor phase wire connections
23	E87	Motor left high temperature error	Release triggers and wait for temperature cool down.
24	E88	Motor left phase current zero offset error	Change motor drive board
25	E89	Motor left stalled error	Release triggers and check whether motor is stalled

THERE COULD BE OTHER REASONS IF ACTION CANNOT REPAIR THE PROBLEM !