REPAIR GUIDELINE

PART 1: BLADE REMOVAL & INSTALLATION-LM2120E-SP Lawn Mower

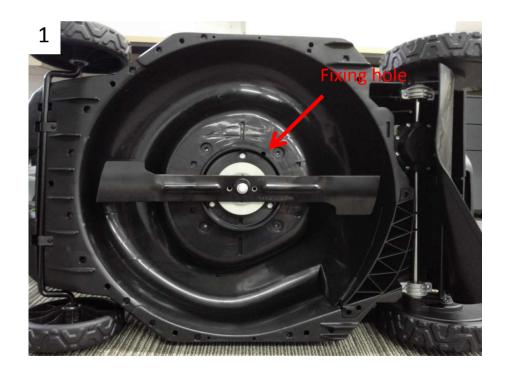


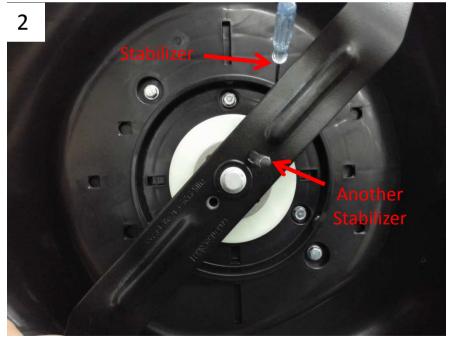
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LM2120E-SP Lawn Mower

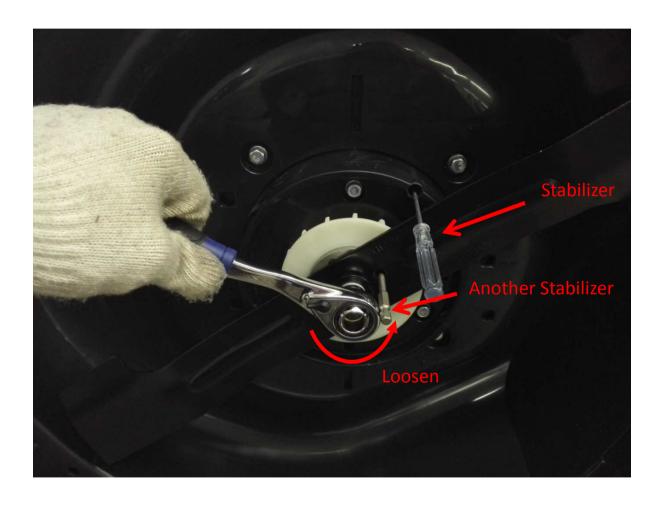
NO.	Contents	Page
1	Blade Removal	3-5
2	Blade Installation	6-9

- 1. Release switches and remove the battery pack from the mower.
- 2. Wear protective gloves, turn the mower on its side (Fig. 1).
- 3. Place a metal rod (e.g., a screwdriver) with a diameter between 9 11mm into the fixing hole to act as a stabilizer and place another metal rod (e.g., a long bit) with a diameter between 5 6.35mm into the holes to act as another stabilizer (Fig. 2).

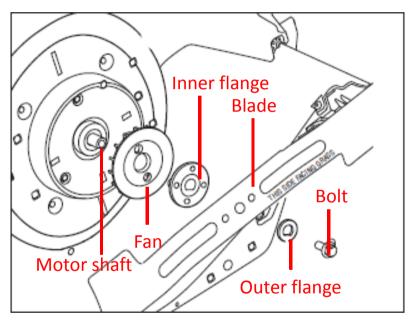




4. Use a 14mm wrench to turn the blade bolt counterclockwise to loosen it.



- 5. Remove the bolt, outer flange and blade. Replace any broken or worn parts.
- 6. Remove the inner flange and fan from the motor shaft, then replace any broken or worn parts.

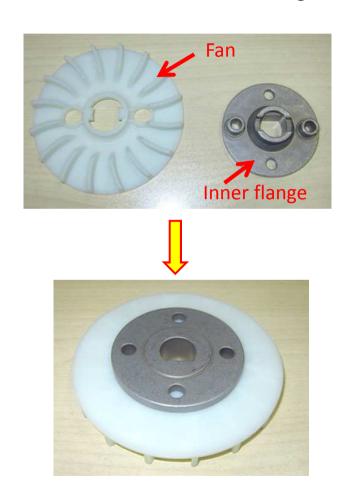


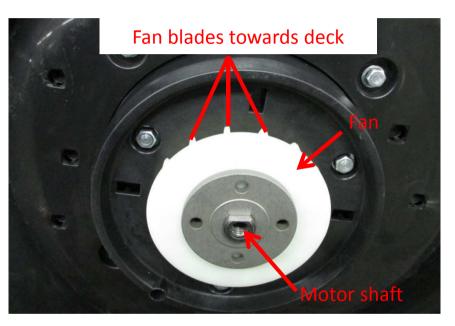
Description	Part Number	SPEC
Bolt	5640226001	M10×25
Outer flange	5650510001	
Blade	3706059001	
Inner flange	3520852002	
Fan	3127847001	

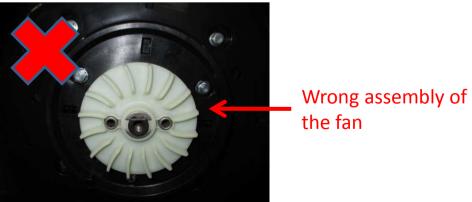




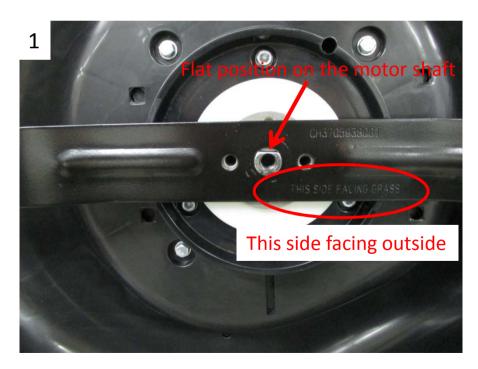
- 1. Fix the inner flange to the fan.
- 2. Mount the fan and the inner flange onto the motor shaft with the fan blade towards the deck.

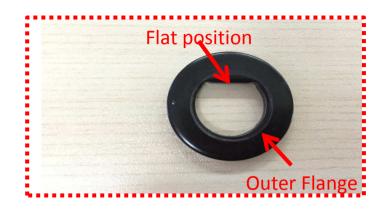


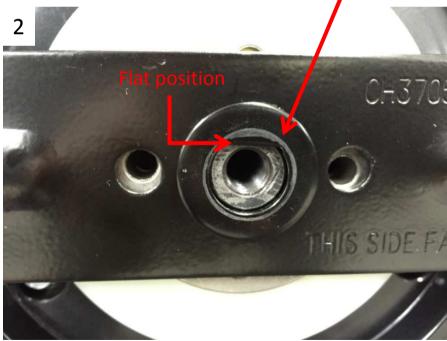




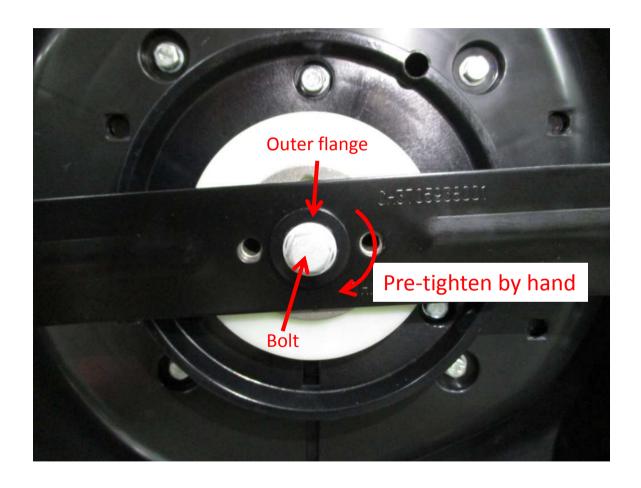
- 3. Mount the blade onto the inner flange with the surface stating "THIS SIDE FACING GRASS" facing outwards (Fig. 1).
- 4. Aligning the flat position of the outer flange with the corresponding flat position on the motor shaft, mount the outer flange in place(Fig. 2).



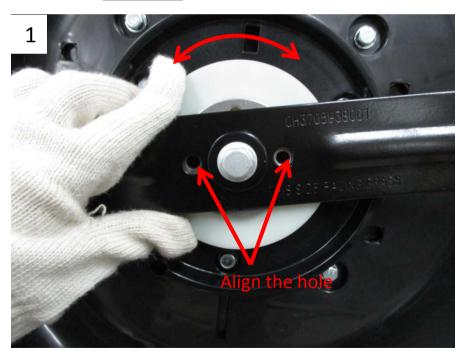


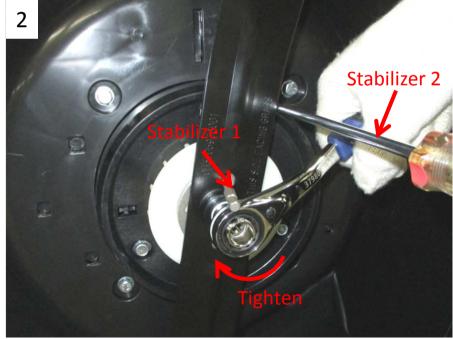


5. Fix the bolt into the shaft and pre-tighten it in a clockwise direction by hand.



- 6. Turn the blade by hand to align the holes in the blade with the holes in the inner flange(Fig. 1).
- 7. Place a metal rod (e.g., a long bit) with a diameter between 5 6.35mm into the aligning hole to act as a stabilizer. Place another metal rod (e.g., a manual screwdriver) with a diameter between 9 11mm into the fixing hole on the deck to act as another stabilizer(Fig. 2).
- 8. Use a <u>torque wrench</u>(S=14mm) to tighten the bolt clockwise. The recommended torque for the blade bolt is <u>49-59Nm</u>.





REPAIR GUIDELINE

PART 3: REAR COVER_LM2120E-SP Lawn Mower

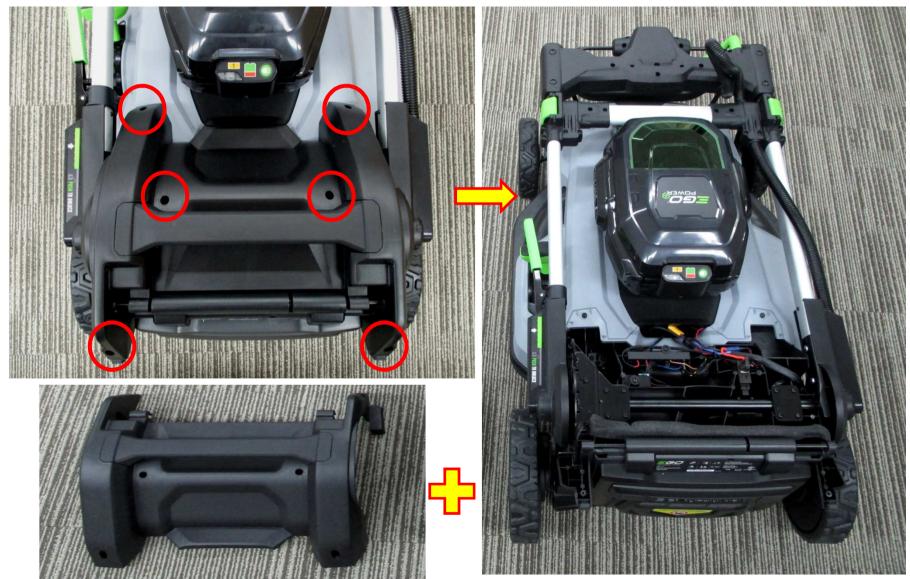




Rear Cover

Description	Part Number
Rear Cover	3126689003

1. Detach the service cover from the mower by loosening the 6 screws.



Rear Cover Replacement

- 2. Pull out the shaft from right side by hand (Fig. 1).
- 3. Take down the rear cover and shaft (Fig. 2).





Description	Part Number	SPEC
Shaft	5670345001	Ф7х 345

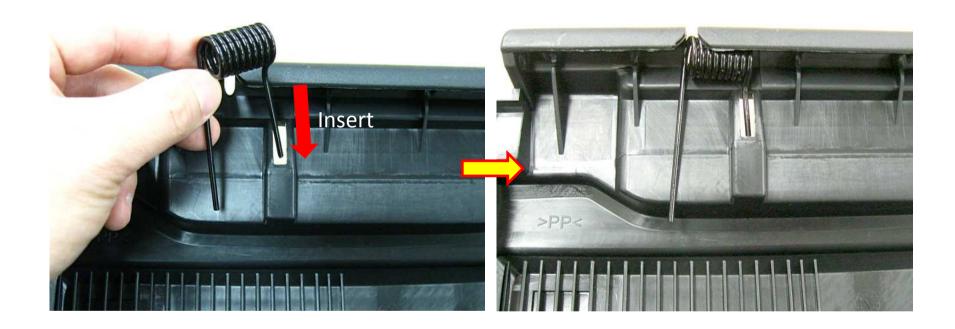
Rear Cover Replacement

- 4. Remove the spring from the rear cover.
- 5. Replace with a new rear cover or torsion spring.



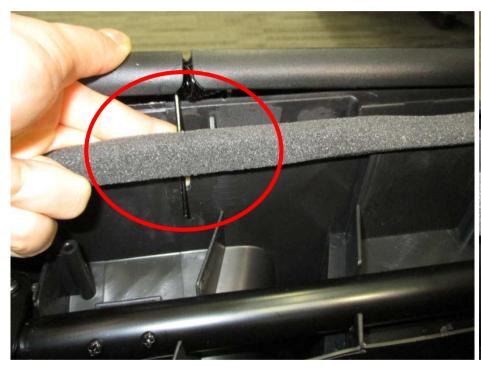
Description	Part Number	SPEC
Torsion Spring	3660559001	15.2x25

6. Insert the shorter foot of the torsion spring into the groove of the rear cover.



Rear Cover Replacement

7. Position the rear cover and torsion spring assembly in the deck. The foot of the spring should be in the deck groove.





8. Insert the shaft through the hole on the mower and the torsion spring, and push it into position.





9. Lift up the rear cover to check if it can rotate around the shaft smoothly. If it works well, mount the service cover onto the mower by tightening the 6 screws.

REPAIR GUIDELINE

PART 4: TOP HANDLE & SWITCH BOX COVER_LM2120E-SP Lawn Mower



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2	The Safety Button Replacement	7-10
3	The Main Switch Set(Lever/Trigger) Replacement	11-13
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5	The Top & Bottom Switch Box Cover Replacement	15
6	The Main Switch/Self-propelled Switch/Speed-adjusting PCB Replacement	16-26
7	Closing the Switch Box Cover	27-29

When opening the switch box covers, the following relevant parts can be replaced:

Description	Part Number
Main Switch	4870566001
Main Switch Trigger	3127908001
Main Switch Lever	2824118001
Self-propelled Switch	4870563001
Self-propelled Lever	3127928001
Switch Actuator	3127905001
Safety Button	3127929001
Top Handle	2823782001
Self-propelled Speed-adjusting PCB	4890439003
Self-propelled Speed-adjusting Knob	3127930001
Top & Bottom Switch Box Set	2824305001



1. Opening the Switch Box Cover

1. With the handle locked in the operating position, remove the 4 bolts. The 4 bolts are separately fixed by one hexagon nut on the reverse.







1. Opening the Switch Box Cover

- 2. Fold the handle to the grass bag removal position(Fig. 1).
- 3. Remove the 8 tapping screws from the housing(Fig. 2).

NOTICE: During this process, keep holding the top switch box cover with one hand to prevent dropping.

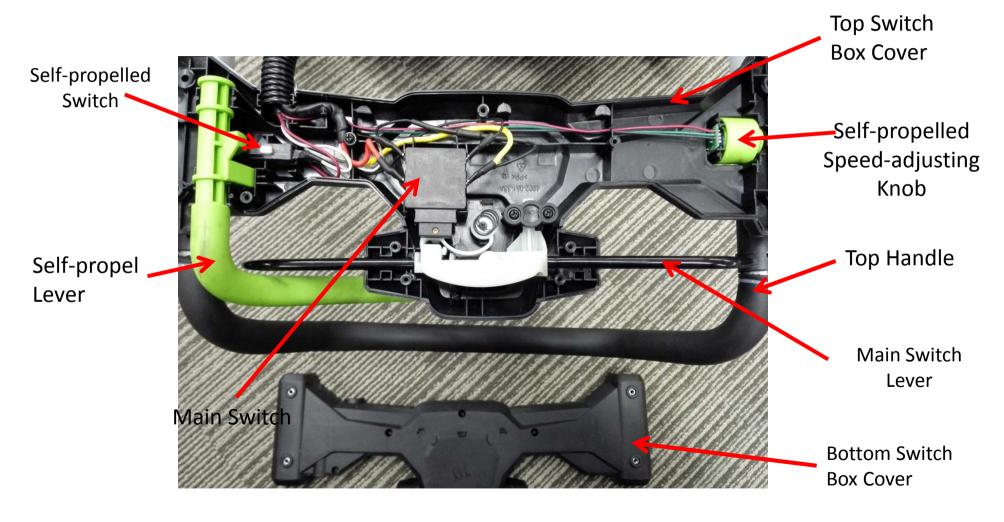




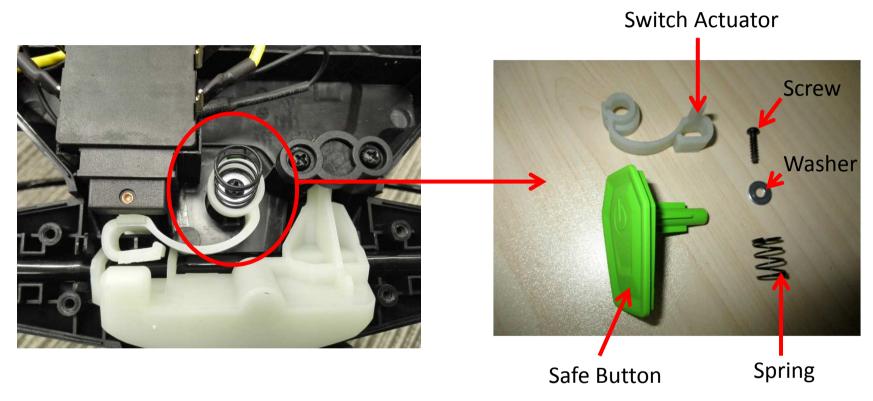
Description	Part Number	SPEC
Tapping Screw	5610032004	ST4x16

1. Opening the Switch Box Cover

4. Hold the top switch box cover with one hand and remove bottom switch box cover gently with the other hand. Replace any damaged parts accordingly.

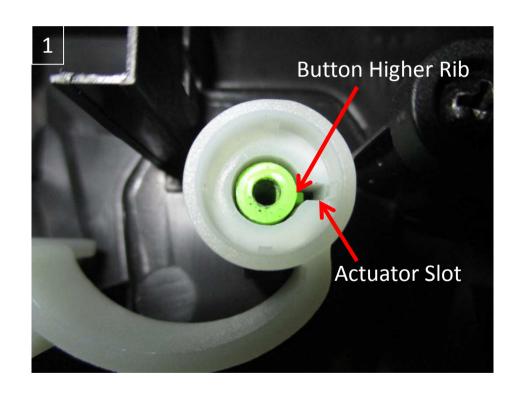


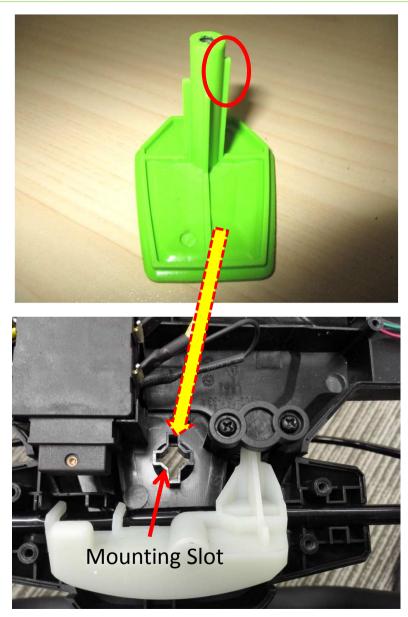
1. Remove the spring, screw, plain washer, switch actuator and safety button.



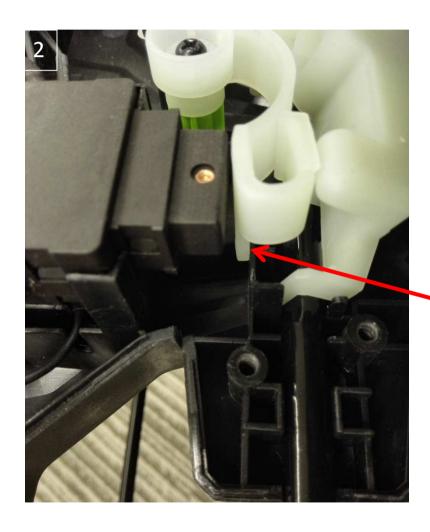
Description	Part Number	SPEC	Description	Part Number	SPEC
Spring	3660011002	12.7×16	Switch Actuator	3127905001	-
Tapping Screw	5610032004	ST4x16	Safety Button	3127929001	-
Plain Washer	5650004001	-			

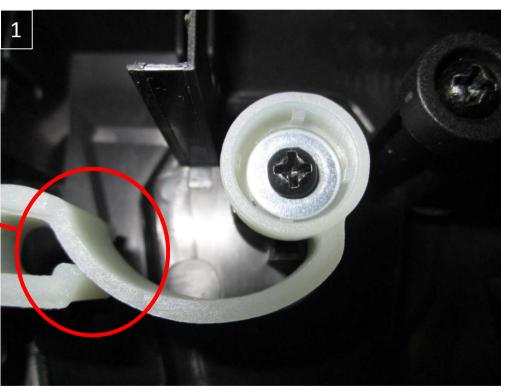
- 2. Place the new safety button into the mounting slot.
- 3. Align the actuator slot with the buttons highest rib (Fig. 1).



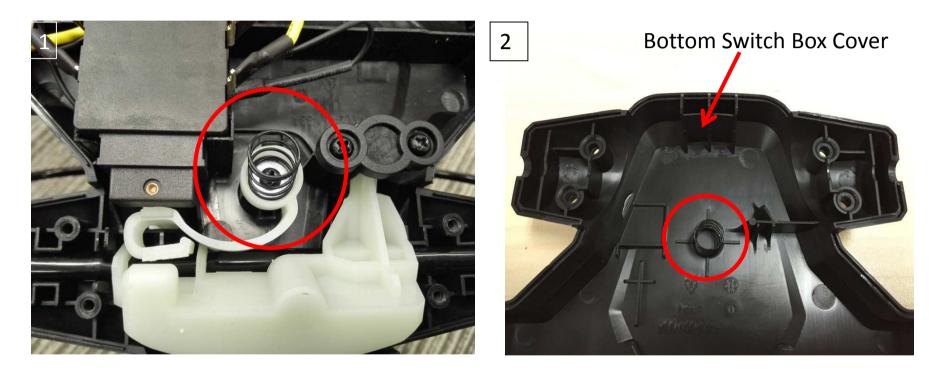


- 4. Place the plain washer onto the actuator and tighten it with a screw (Fig. 1).
- 5. Locate the actuator between the main switch and the housing (Fig. 2).





- 6. Place the spring onto the actuator and make sure it is securely located(Fig. 1).
- 7. Close the switch box cover as steps in following "Close the Switch Box Cover" part show.

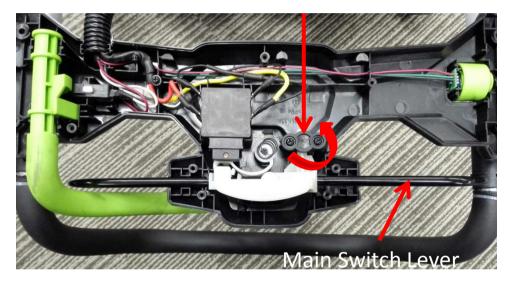


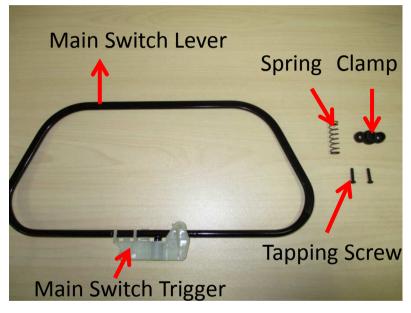
NOTICE: In case the spring remains located in the bottom switch box cover after opening the switch box cover(Fig. 2), remove it initially.

3. The Main Switch Set(Lever/Trigger) Replacement

- 1. Loosen the 2 screws . Remove the clamp, spring and switch lever set.
- 2. Replace with a new switch lever or trigger if any distortion or malfunction appears.





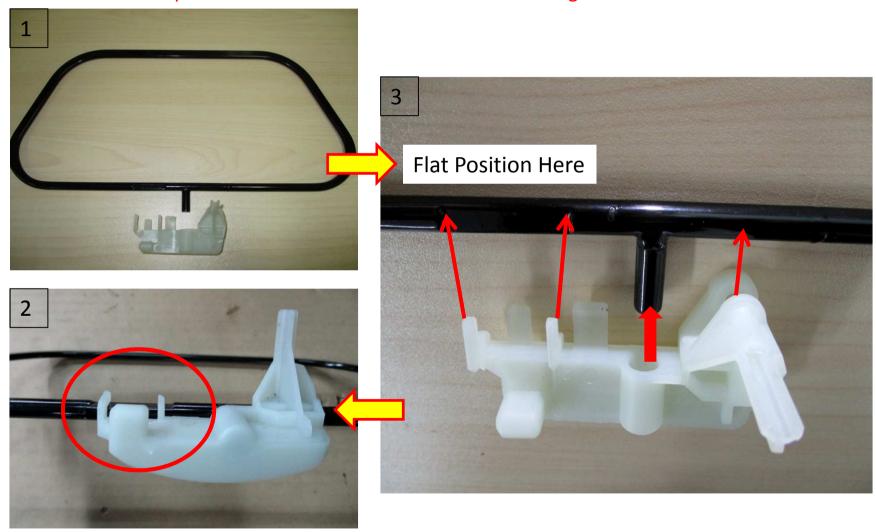


Description	Part Number	SPEC	Description	Part Number	SPEC
Main Switch Lever	2824118001	-	Tapping Screw	5610032004	ST4x16
Main Switch Trigger	3127908001	-	Clamp	3126763001	-
			Spring	3660562001	-

3. The Main Switch Set(Lever/Trigger) Replacement

3. Mount the switch trigger to the switch lever.

NOTICE: The flat position on the lever should be fixed as the fig. 3 show.



3. The Main Switch Set(Lever/Trigger) Replacement

- 4. Put the spring into the hole. Mount the main switch set onto the spring with the hook outside the spring(Fig. 1).
- 5. Align the clamp slot with the locating rib on the housing(Fig. 2).
- Lock the main switch set by tightening the clamp with the 2 screws(Fig. 3).







4. The Top Handle Replacement

- 1. Pull the top handle, removing the handle from the plastic bushings in the aluminum tubes.
- 2. Replace with a new one if it appears worn or broken.
- 3. Insert the two sides into the plastic bushings and press them into place.





Description	Part Number
Top handle	2823782001

5. To Replace the Top & Bottom Switch Box Cover

- 1. Remove all the switches as well as their cables from the top switch box cover;
- 2. Remove the main switch lever and self-propelled lever from the top switch box cover;
- 3. Replace with a set of new covers;
- 4. Refer to the previous slides to fix the parts into the top switch box cover.

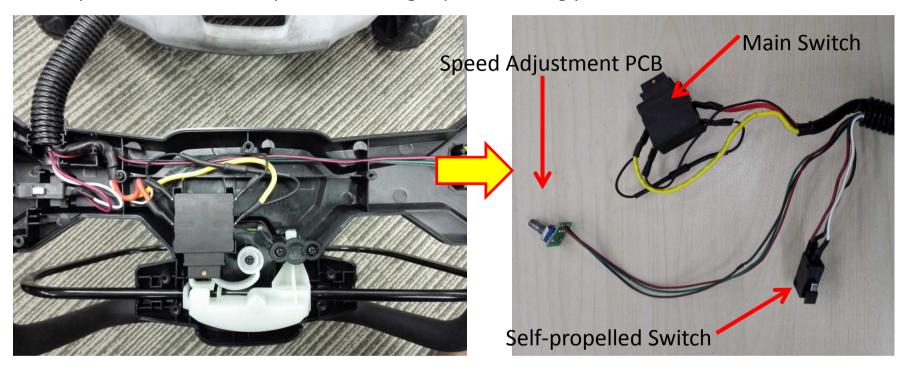


Description	Part Number
Top & Bottom switch box set	2824305001

6. The Main Switch/Self-propelled Switch/Speed- adjusting PCB

LM2120E-SP Lawn Mower

1. Remove the main switch, self-propelled switch and speed adjustment PCB assembly from the top switch box cover. Replace the damaged part accordingly.



Description	Part Number
Main Switch	4870566001
Self-propelled Switch	4870563001
Self-propelled Speed-adjusting PCB	4890439003

6. The Main Switch/Self-propelled Switch/Speed- adjusting PCB

1 IF the main switch is broken, disconnect it from the wires and replace with a new one by resoldering.

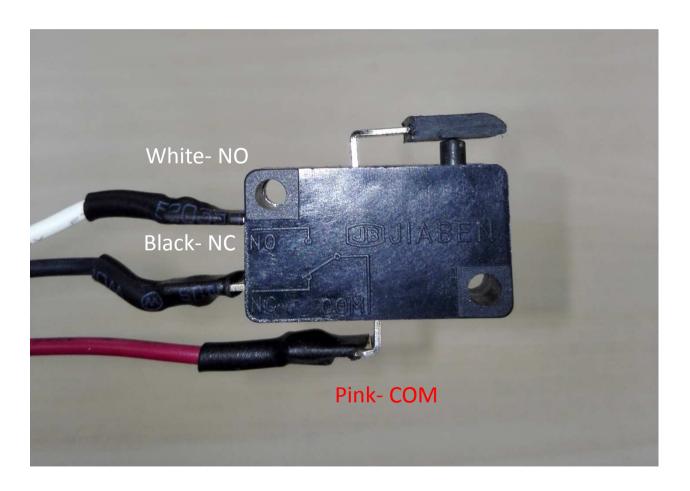
NOTICE: Note the soldering sequence as following picture show.



6. The Main Switch/Self-propelled Switch/Speed-adjusting PCB

② If the Self-propelled switch is broken, disconnect it from the wires and replace with a new one by resoldering.

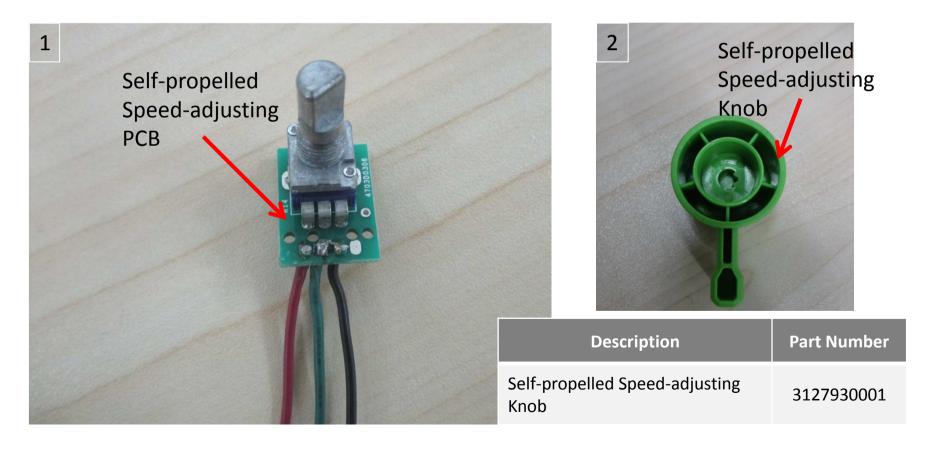
NOTICE: Note the soldering sequence as following picture show.



6. The Main Switch/Self-propelled Switch/Speed- adjusting PCB

- ③ IF the speed-adjusting PCB is broken, disconnect it from the wires and replace with a new one by resoldering.
- ④ If the speed-adjusting knob is also broken, replace it with a new one.

NOTICE: Mind soldering sequence as Fig. 1 show.



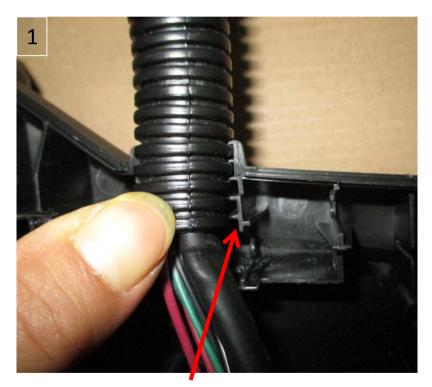
2. Test

- 1 Test the main switch:
- Insert a fully charged battery pack into the battery case.
- Adjust the handle to the operating position and fully extend the side rails and lock with the side clamps.
- Press the trigger to check if the mower can be turned on properly.
- ② Test the self-propelled switch:
- Insert a fully charged battery pack into the battery case.
- Adjust the handle to the operating position and fully extend the side rails and lock with the side clamps.
- Press the self-propelled switch trigger to check if the mower moves.
- **③** Test the self-propelled speed-adjusting PCB:

Follow the instructions in step 2. Meanwhile turn the PCB knob to check if the mower's speed can be adjusted.



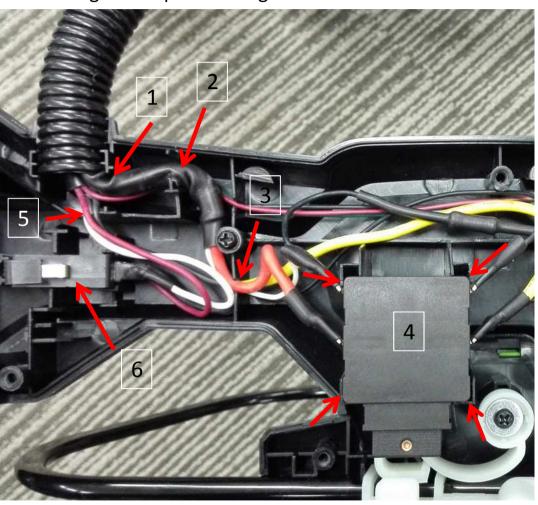
- 3. Align the bellows into the housing groove with at least five threads located in (Fig. 1).
- 4. Align the self-propelled speed-adjusting PCB wires into the grooves (Fig. 2).



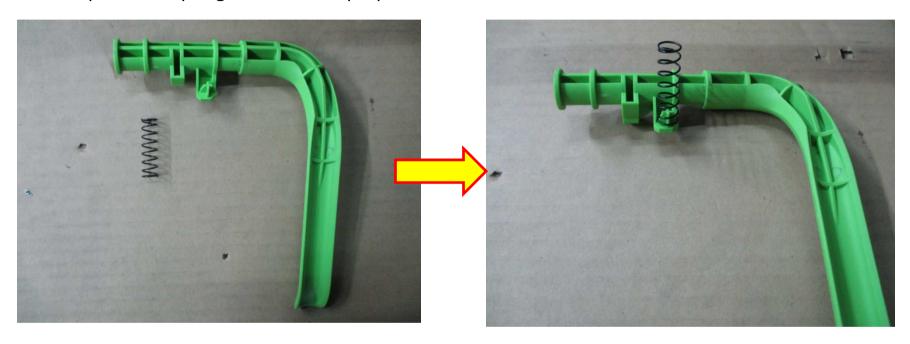


At least 5 threads of the bellows located in the housing groove

5. Align the wires of the main switch and self-propelled switch into the groove and place the main switch into the holder following the steps NO. in figures below.

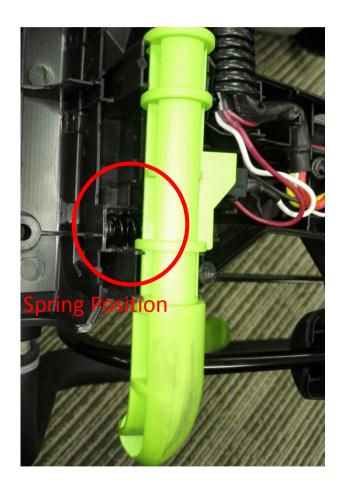


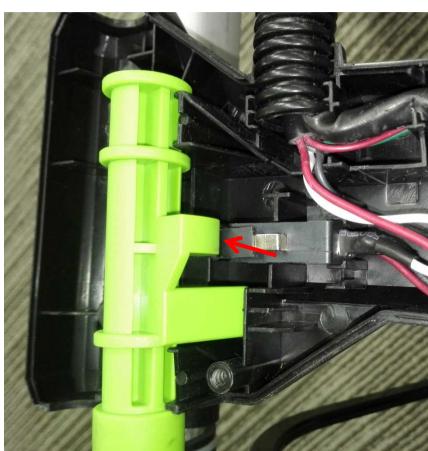
- 6. Align the self-propelled lever into the top switch box cover.
- ① First place the spring onto the self-propelled lever.



Description	Part Number	SPEC
Spring	3660562001	11×38
Self-propelled Switch Lever	3127928001	-

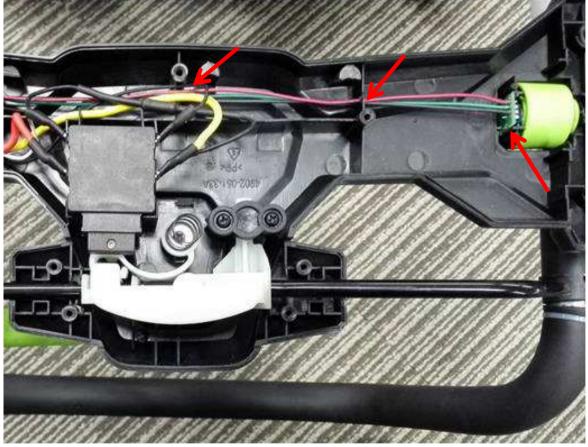
2 Align the self-propelled lever into the grooves on the top switch box cover.



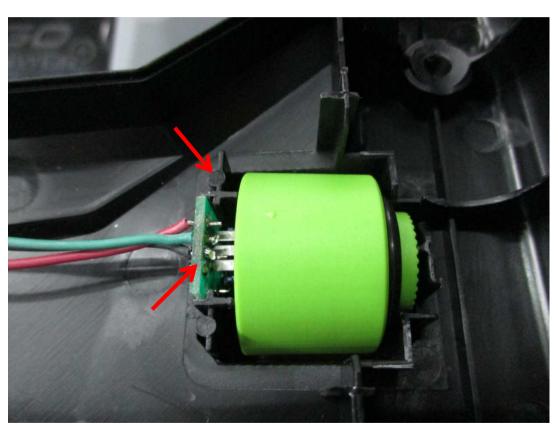


- 7. Align the self-propelled speed-adjusting PCB and knob set into the housing hole correctly.
- ① Assemble the self-propelled speed-adjusting knob to the PCB initially.
- ② Mount the PCB and knob set into the place correctly.





NOTICE: If the self-propelled speed-adjusting PCB has been inserted into the groove incorrectly, the knob can't be put into place meaning the cover can't be closed.







7. Closing the Switch Box Cover

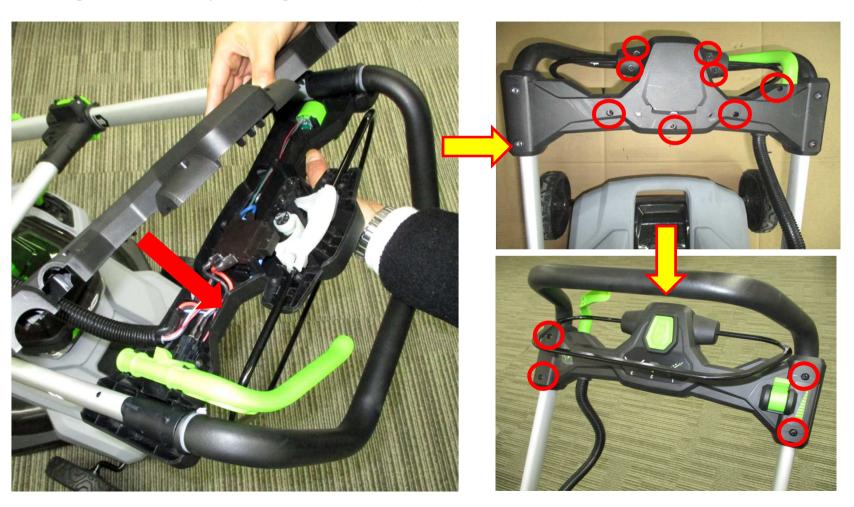
1. Fully extend the side rails to mount the top switch box cover to the handle, making sure the ribs on the handle locate on the ribs on the switch box cover.





7. Closing the Switch Box Cover

2. Close the switch box set and fix them by tightening the 8 screws on the bottom switch box cover firstly and the 4 bolts on the top switch box cover to lock the cover set, making sure the 4 hexagon nuts are in place. (Fig. see next slide).





REPAIR GUIDELINE

PART 5: HANDLE LOCKING CLAMP_LM2120E-SP Lawn Mower

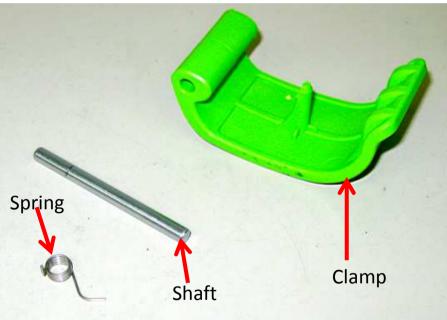




Description	Part Number
Handle Locking Clamp Set	2823714002

1. Use a pin and a hammer to tap out the shaft carefully and remove the clamp, shaft and spring from the tube.

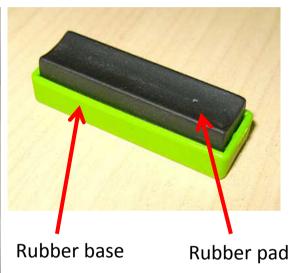




- 2. Move the handle downwards to take out the rubber pad and rubber base.
- 3. Replace the broken or worn parts.







4. Put the rubber pad and rubber base into the recess with the rubber pad on the inside and the rubber base on the outside.





5. Insert the short foot of the spring into the hole in the clamp, then mount the clamp into the joint.





- 6. Insert the shaft and knock it with a hammer until the lower side is flush with the housing surface.
- 7. Test the clamp. The side rails should be locked stably by the two clamps. They should not retract when force is applied to the handle.





Description	Part Number	Picture
Handle Locking Clamp Set	2823714002	

REPAIR GUIDELINE

PART 6: LEFT/RIGHT BEAM HOUSING_LM2120E-SP Lawn Mower



NO.	Contents	Page
1	Opening the Right Beam Housing	4-6
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3	Opening the Left Beam Housing	11-12
4	Closing the Left Beam Housing	13-14
5	Replacing the Left/Right Inner Tube ASSY/Beam Tube	15-19

When opening the left/right beam housing, the following parts can be replaced:

Left inner tube ASSY Left beam housing set



Right beam housing set (micro switch inside)

Description	Part Number
Micro switch	4870500001
Left beam housing set	2824427001
Right beam housing set	2824426001
Switch actuator	3126768001
Spring	3660287002
Left inner tube ASSY	2824292001
Right inner tube ASSY	2824295001
Beam tube	3705393001

1. Opening the Right Beam Housing

1. Remove the 8 tapping screws to open the right beam housing.

NOTICE: The micro switch is located in the right beam housing.

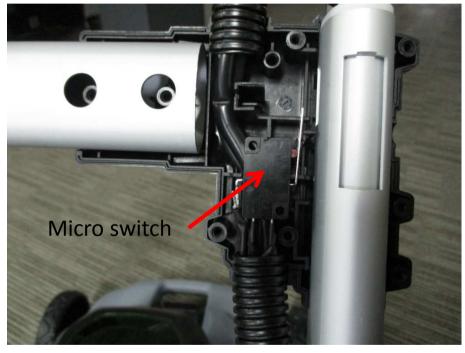




Description	Part Number	SPEC
Tapping Screw	5610032004	ST4x16

1. Opening the Right Beam Housing

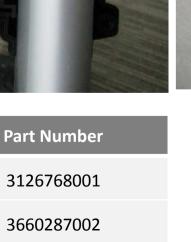
2. Remove the top housing, rubber pad and rubber base, switch actuator and spring (fixed on the switch actuator).

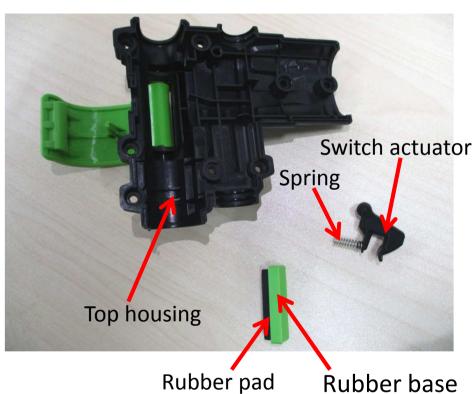


Description

Switch Actuator

Spring

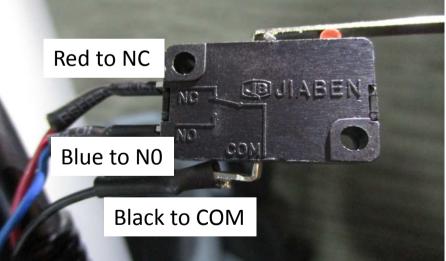




1. Opening the Right Beam Housing

- 3. Remove the micro switch and cable from the bottom housing.
- 4. Replace with a new switch if it malfunctions.
- 5. Test the micro switch.
 - Leave the trigger of the micro switch un-depressed. Turn on the mower, the mower should be turned on properly.
 - Depress the trigger, the mower should stop running



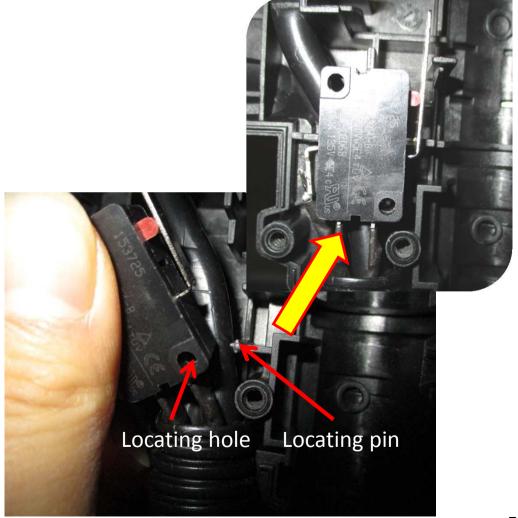


Description	Part Number	SPEC
Micro Switch	4870500001	4(4)A 250V~5E4,6(6)A

2. Closing the Right Beam Housing

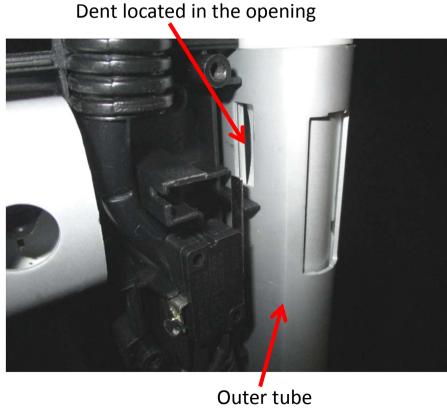
- 1. Align the cable in the bottom housing; press the cable into place.
- 2. Align the locating hole with the locating pin on bottom housing, position the switch into place.





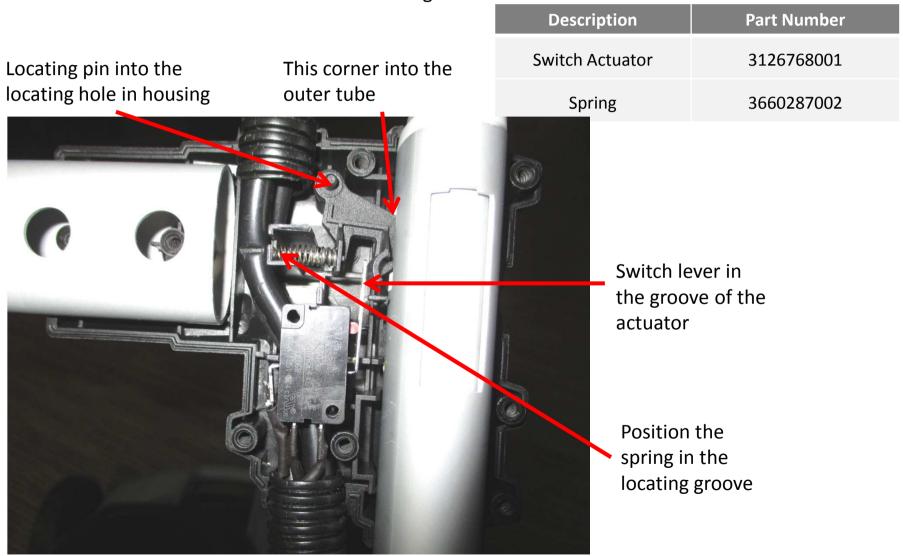
- 3. Mount the bottom housing onto the side rail and beam tube.
- 4. Fully extend the side rail to make sure the dent on the rail appears in the opening of the outer tube.





2. Closing the Right Beam Housing

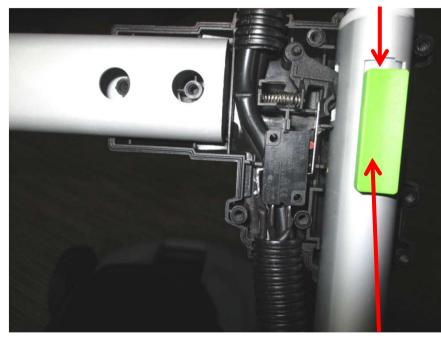
5. Fix the switch actuator into the bottom housing.



2. Closing the Right Beam Housing

- 6. Attach the rubber pad and base into the rectangle groove of the outer tube.
- 7. Close the top housing with the 8 tapping screws.







Rubber pad and base

Description	Part Number	SPEC
Tapping Screw	5610032004	ST4x16
Right Beam Housing Set	2824426001	-

3. Opening the Left Beam Housing

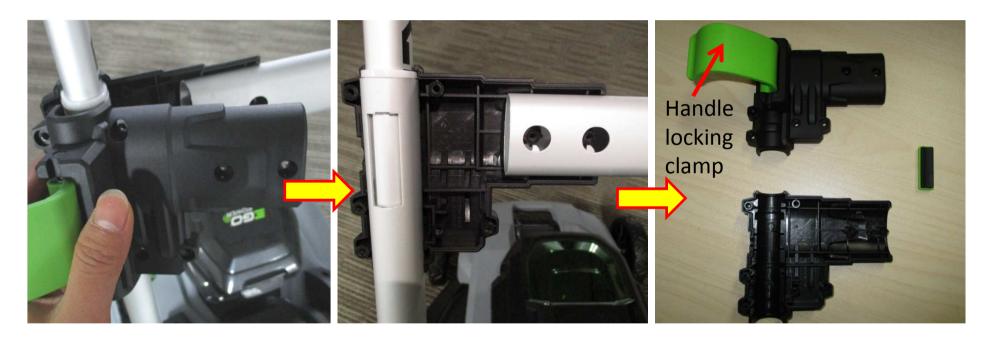
1. Remove the 8 tapping screws to open the left beam housing.



Description	Part Number	SPEC
Tapping Screw	5610032004	ST4x16

3. Opening the Left Beam Housing

- 2. Separate the top and bottom housing, remove the bottom housing from the side rail and beam tube.
- 3. Replace the left beam housing set if they appear to be worn.
- 4. Assemble the handle locking clamp onto the new left beam housing as shown in Part 5.



Description	Part Number
Left Beam Housing Set	2824427001
Handle Locking Clamp Set	2823714002

4. Closing the Left Beam Housing

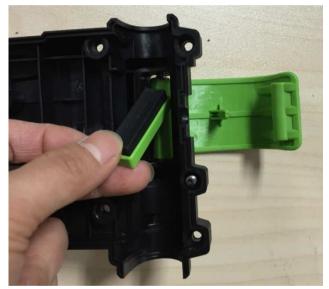
- 1. Mount the top housing onto the side rail and beam tube.
- 2. Turn the handle to lock it in any of the operating positions.





4. Closing the Left Beam Housing

- 3. Position the rubber pad and rubber base into the groove of bottom housing, making sure the rubber pad pointing outside.
- 4. Close the bottom housing using screws.







Rubber pad pointing outside

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- 1. Remove the switch box covers (see Part 4).
- 2. Pull the top handle and remove it from the plastic bushings in the two side aluminum tubes.
- 3. Remove the left/right beam housing (see page 3-6 and 11-12 in this guide)

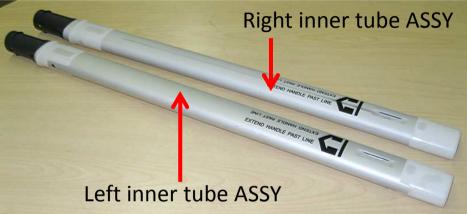


4. Pull the left/right inner tube assembly from the outer tube.

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5. Replace damaged tubes.



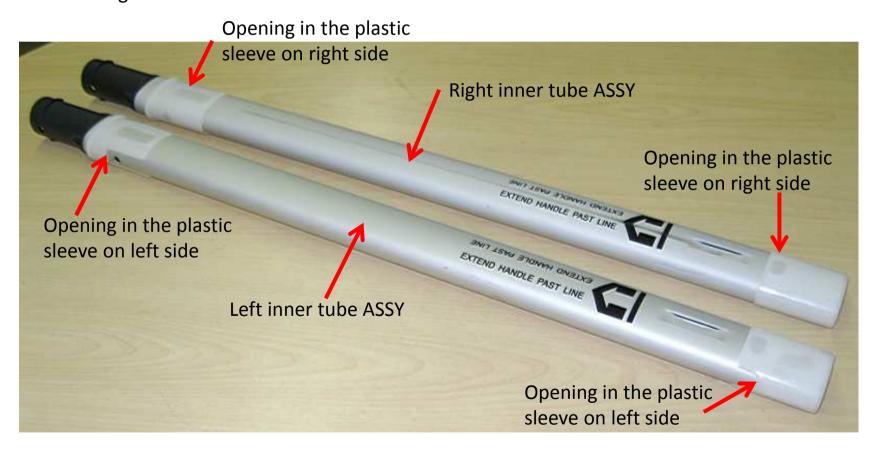




Description	Part Number
Left Inner Tube ASSY	2824292001
Right Inner Tube ASSY	2824295001
Beam Tube	3705393001

LM2120E-SP Lawn Mower

6. Insert the left/right tube assembly into the outer tube. The left and right inner tubes are not interchangeable.



LM2120E-SP Lawn Mower





5. Replacing the Left/Right Inner Tube ASSY/Beam Tube

LM2120E-SP Lawn Mower

7. Close the left/right beam housing (see page 7-10 and 13-14 in this guide).





8. Mount the top hand and switch box covers back (See part 4).

REPAIR GUIDELINE

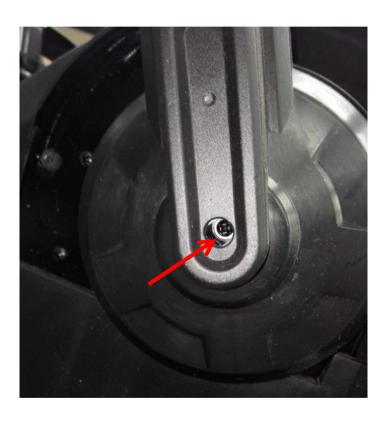
PART 7: QUICK ADJUSTING LEVER_LM2120E-SP Lawn Mower





Description	Part Number
Quick Adjusting Lever	2824250001

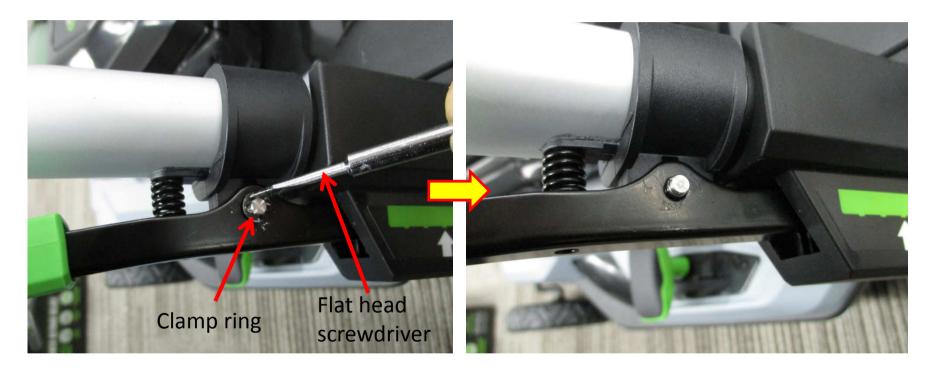
1. Remove the two tapping screws (one in the decoration cover, another in the inner side of the side tube.



Description	Part Number	SPEC
Tapping Screw	5610032004	ST4x16

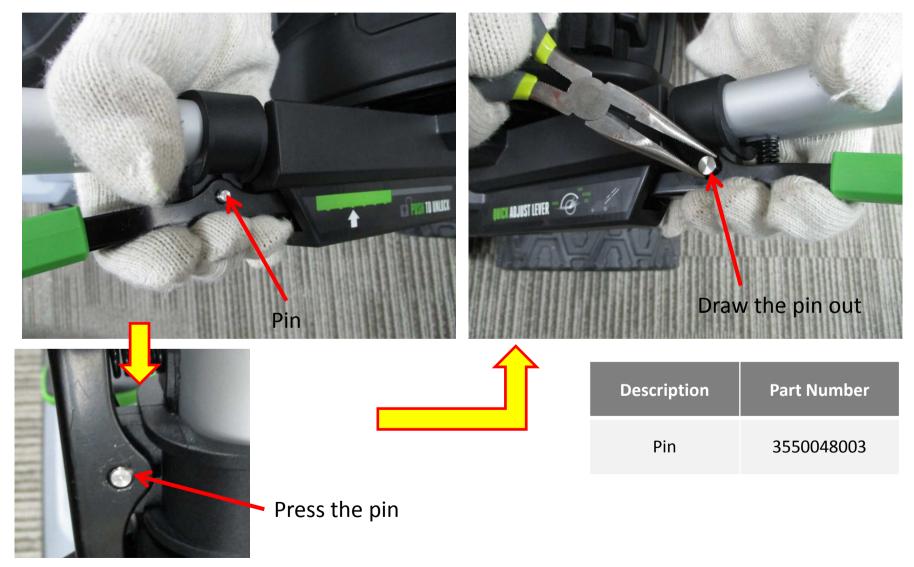


2. Remove the clamping ring with a flat head screwdriver .



Description	Part Number
Clamping Ring	5660003003

3. Press the lever to loosen the pin and then draw it out.



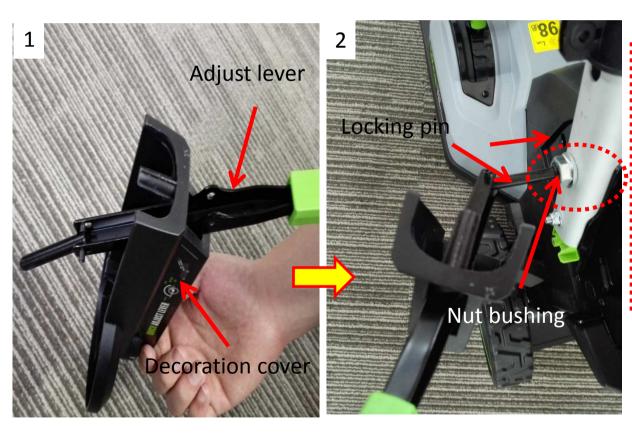
- 4. Remove the spring, adjusting lever and decorative cover from the side tube.
- 5. Replace the damaged parts accordingly.

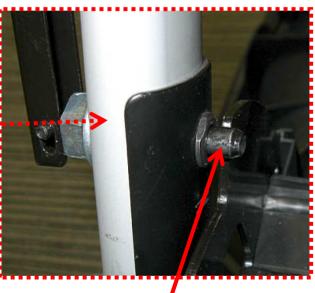




Description	Part Number
Decorative Cover	3126912001
Quick Adjusting Lever	2824250001
Spring	3660565001

- 6. Pass the adjusting lever through the decorative cover (Fig. 1).
- 7. Move the handle to Grass bag removal position.
- 8. Align the locking pin with the nut bushing, fully force the pin into the bushing and let the pin extend out of the side tube so that the handle can be locked at the position (Fig. 2).





Extend the pin out of the side tube so that the handle can be locked at the grass bag removal position

- 9. Align the screw dome with the hole in the side tube and mount the decorative cover onto side tube.
- 10. Fix the spring between the adjusting lever and the side tube.



- 11. Hold the tube and lever, depress the lever to align the hole in the lever with the hole in the plastic part.
- 12. Fully insert the pin and lock the pin with the clamping ring from the backside.





Clamp ring

- 13. Lock the decorative cover with two tapping screws.
- 14. Test the lever function to check if it can lock the handle at different positions.





REPAIR GUIDELINE

PART 9: Wheels Replacement_LM2120E-SP Lawn Mower



NO.	Contents	Page
1	Rear Wheel Replacement	3-8
2	Front Wheel Replacement	9-10

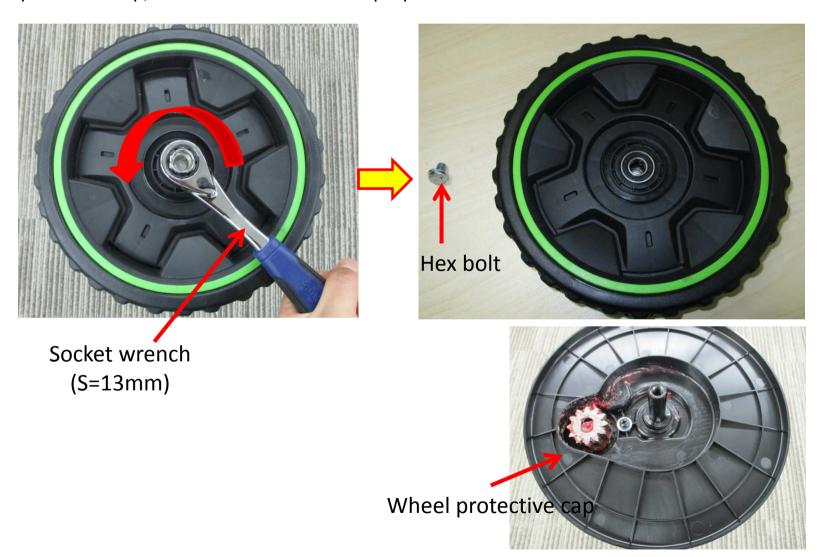
If the rear wheel is damaged, replace it.

1. Turn the mower on its back or side and separate the hubcap with a screwdriver.

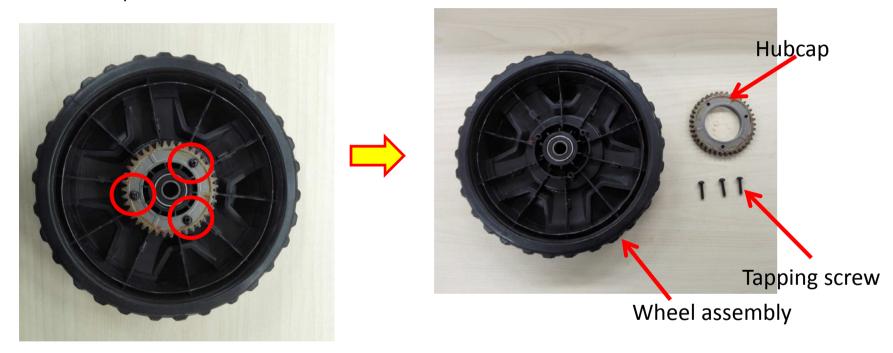


Description	Part Number	SPEC
Hubcap	3126765001	-
Hex bolt	5640010003	M8×12

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



- 3. Remove the gear from the wheel assembly by loosening the 3 screws.
- 4. Replace with a new wheel assembly. Fix it onto the self-propelled unit in reverse order(Notice see next slide).



Description	Part Number	SPEC
Gear	3520933001	-
Wheel assembly	2824430001	-
Tapping screw	5610042014	ST4.2x19

NOTICE: During wheel reassembly, pay attention to which side of the gear faces the wheel.

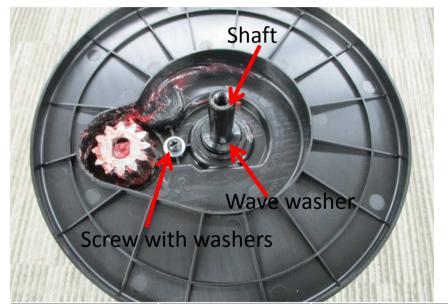
This side facing wheel



This side facing protective cap



- 5. If the wheel protective cap is broken, replace it with a new one.
- 6. Loosen the screw and remove it with its spring washer and plain washer. Detach the wheel protective cap from the shaft as well as the wave washer.



Description	Part Number	SPEC
Wheel protective cap	3127923001	-
Screw	5620041006	$M4 \times 14$
Plain washer	5650004001	-
Spring washer	5650007001	-
Wave washer	5650453001	-







7. Mount a new protective cap onto the self-propelled unit shaft as well as the wave washer. Fix the cap by tightening the screw with spring washer and plain washer. The recommended torque is 1.8-2.5Nm.

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

- 8. Mount the wheel assembly onto the self-propelled unit and fix it by tightening the hex bolt. The recommended torque is <u>3.5-5Nm</u>.
- 9. Insert the hubcap into the wheel.

If the front wheel is damaged, replace it.

1. Separate the hubcap from the wheel and remove the hex bolt in the same way as the rear wheel.





Description	Part Number
Hubcap	3126769001
Hex bolt	5640010003
Wheel assembly	2824429001
Wave washer	5650453001





2. Front Wheel Replacement

- 2. Replace with a new front wheel.
- 3. Mount it onto the axle with the wave washer beneath it.
- 4. If the axle is broken, replace it (see Part 10).



REPAIR GUIDELINE

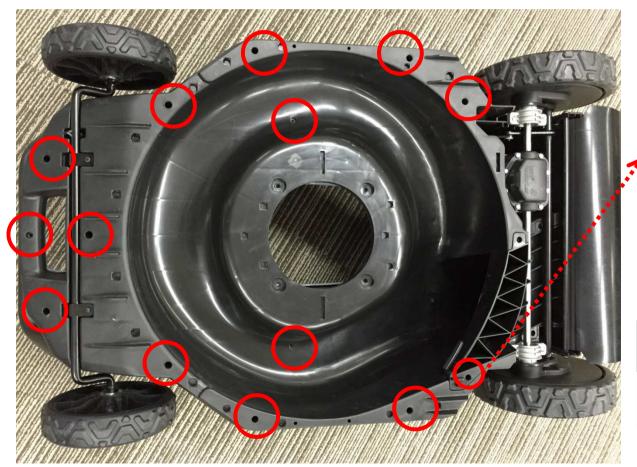
PART 10:

Housing Cover and Front Axle Replacement_LM2120E-SP Lawn Mower



NO.	Contents	Page
1	Housing Cover Replacement	3-6
2	Front Axle Replacement	7-11

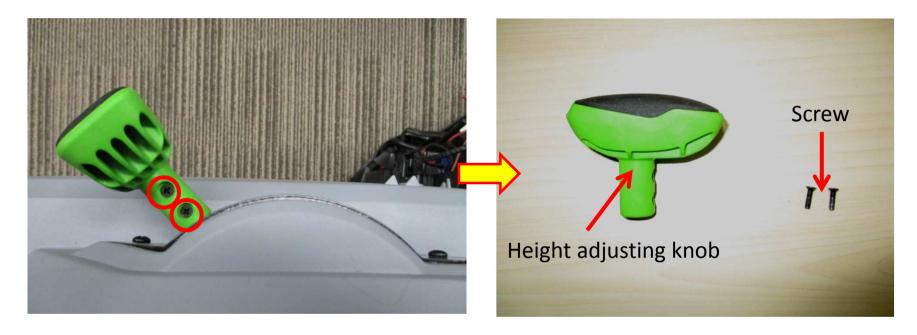
- 1. Remove the blade(see Part 1).
- 2. Remove the service cover and power unit(see Part 2.1)
- 3. Turn the mower on its back to remove the 14 screws on the poly deck.





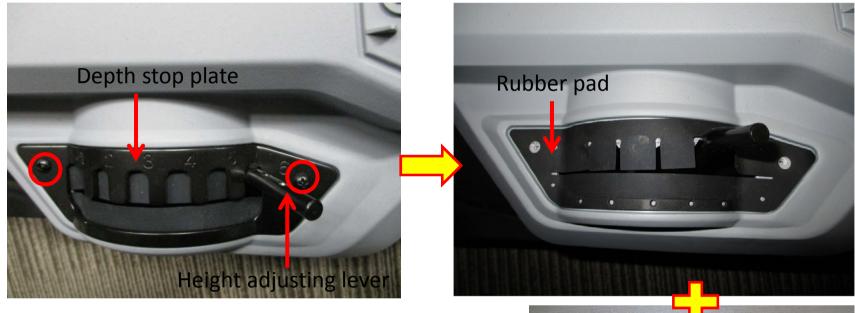
Descripti on	Part Number	SPEC
Tapping screw	5610042 014	ST4.2x 19

- 4. Remove the power unit of the mower(see Part 2.1).
- 5. Remove the 2 screws on the height adjusting knob to remove the height adjusting knob.



Description	Part Number	SPEC
Height adjusting knob	3321478001	-
Screw	5620065004	M3x12

- 6. Remove the 2 screws on the depth stop plate.
- 7. Move the height adjusting lever outwards to remove the depth stop plate.



Description	Part Number	SPEC
Depth stop plate	3705896001	-
Rubber pad	3128083001	-
Height adjusting lever	2823295001	-
Tapping screw	5610042014	ST4.2x19



- 8. Remove the housing cover from the mower.
- 9. If the housing cover is damaged, replace it with a new one. Assemble it in reverse order.

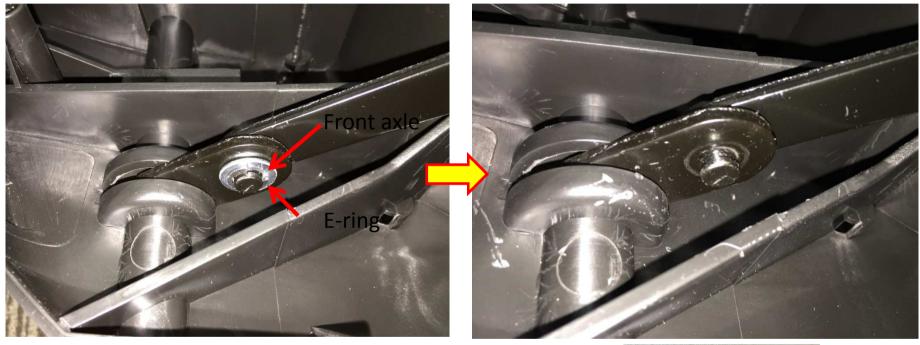


Description	Part Number
Housing cover	3127975001
Decorative cover	3127974001

1. If the front axle is damaged, remove the housing cover as previous steps show.



2. Remove the E-clip and plain washer on the joint.

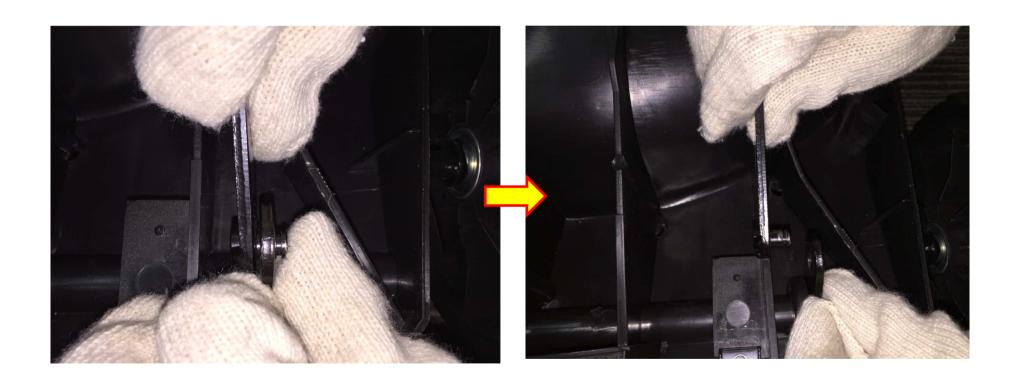


Description	Part Number
E-clip	5660139002
Plain washer	5650025004

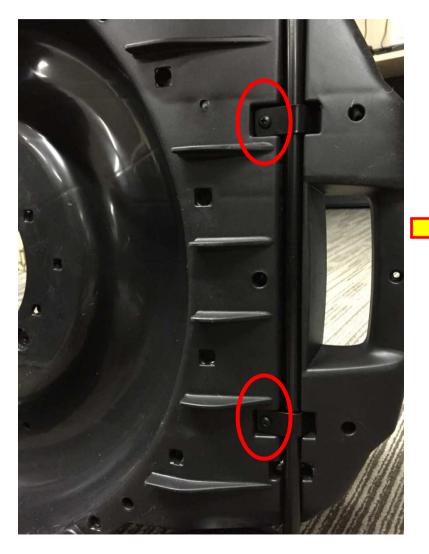


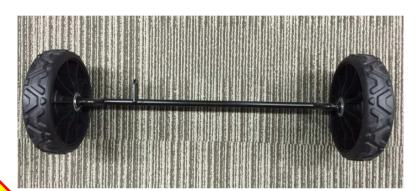
3. Separate the joint by hand.

WARNING: Take care when performing this operation. Please wear gloves.



- 4. Turn the mower on its side.
- 5. Remove the 2 screws and remove the 2 mounting plates as well as the front axle with wheels.







Description	Part Number	SPEC
Tapping screw	5610042014	ST4.2x19
Mounting plate	3705216001	-
Front axle	2824194001	-

- 6. Disassemble the front wheels(see Part 9).
- 7. Replace the broken front axle with a new one.
- Mount the wheels onto the new front axle(see part 9).
- Mount the front axle into the mower deck groove and then insert the mounting plates into place. Lock them by tighten the 2 screws(Fig. 2 &3).
- 10. Close the housing cover.
- 11. Assemble the power unit onto the mower(see Part 2.1).

