

Sony Vaio Duo 13 Battery Replacement

Sony Vaio Duo 13 Li-ion Battery Replacement. Li-ion battery pack: VGP-BPS36. Spec: 7.5 V, 6320 mAh, 48 Wh.

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INTRODUCTION

This is a brief guide for the Li-ion battery replacement of Sony Vaio Duo 13.

In this guide, a swollen Li-ion battery is replaced with a new one as a demonstration.

Replacing the old or damaged Li-ion battery is not only improves the performance of the laptop, but also keeps the battery in a healthy state for safety, avoiding the risk of thermal runaway.

Step descriptions:

- 1. Step 1: Check the appearance of the laptop before replacement
- 2. Step 2: Check the status of the battery before replacement (optional)
- 3. Step 3~11: Teardown the laptop until the Li-ion battery appears
- 4. Step 12~13: Remove the old or damaged Li-ion battery
- 5. Step 14~15: Replace the old double-sided tapes (optional)
- 6. Step 16: Install new Li-ion battery
- 7. Step 17~18: Stick back the plastic sheet and double-sided tape
- 8. Step 19: Spacing fixing (optional)
- 9. Step 20: Check the laptop after replacing the battery
- 10. Step 21: Check the status of the battery after replacement (optional)

NOTE:

- 1. There is a "destructive" teardown that cannot be restored to its original state in step 9.
- 2. Steps 2 and 21 can be skipped when users don't want to know the status of the battery or don't have the software.
- 3. Steps 14~15 and 19 can be skipped when old double-sided tapes still provide sufficient stickiness.

TOOLS:

- Phillips Screwdriver (1)
- Flat-blade Screwdriver (1)
- Plastic Crowbar (1)

PARTS:
 VGP-BPS36 (1)

Step 1 — Check the appearance of the laptop before replacement



 Please check the appearance before fixing the laptop. For example: The laptop has been spread by the battery inside (up to 5 mm).

Step 2 — Check the status of the battery before replacement (optional)

m	BatteryInfoView	×	BatteryMon Battery Information
File Edit View Options Help			Battery Information (Slot 1)
🔲 🖹 🖾 🗙 🛄 🖗 🖻 🖄 📲			Status Discharging 61.8%
Description /	Value		Device name Reserved
🔋 Battery Name	Reserved		Serial Number Reserved
🚺 Manufacture Name	Sony Corporation		
🔋 Serial Number	Reserved		Unique ID ReservedSony
🔋 Manufacture Date			Time remaining (sec) [10549
Power State	Discharging		Battery Temperature N/A
🔋 Current Capacity (in %)	61.8%		Date of Manufacture N/A
🔋 Current Capacity Value	2,932 mAh		Type of use Normal operation
🌗 Full Charged Capacity	4,744 mAh		Rechargeable Yes
🗿 Designed Capacity	6,429 mAh		Chemistru Libium Ion
🔋 Battery Health	73.8%		Design capacity E0020 ml/dr (C421 mAh)
🚺 Voltage	7,782 millivolts		Design capacity buusu mwn (6431 mAn)
🔋 Charge/Discharge Rate	-7,034 milliwatts		Full charge capacity [36920 mWh (4746 mAh)
🔋 Chemistry	Lithium Ion		Current capacity (22820 mW/h (2934 mAh)
Low Battery Capacity (1)			Alert levels W: 1 / L: 3692
Low Battery Capacity (2)	474 mAh		Critical Bias None
			Charge cycles 306
Number of charge/discharge cycles	306		Voltage ////9 Volts
· ·····, · ·····			Charge rate _6954 mW/
Remaining battery time for the current activity (E	Estimated)		chago tato poperinte
Full battery time for the current activity (Estimate a	ed)		Select a battery slot (1 Slots and 1 Batteries available)
Remaining time for charging the battery (Estimated and the state)	ted)		
Total time for charging the battery (Estimated)			
22 item(s)	IlirSoft Freeware. https://www.nirsoft.net	i.	Close Refresh Help

- This is an optional step. This step can be skipped when users don't want to know the battery status or don't have the software.
- Check the "cycle times" by battery software.
- Suggested software: (1) BatteryInfoView, (2) BatteryMon.
- Background: The number of "cycle times" depends on battery usage. It usually > 0. A Li-ion battery usually has "cycle times" about 500~1000. REF: <u>https://doi.org/10.31224/osf.io/swcyg</u>
- For example: BatteryInfoView shows that "Number of charge/discharge cycles" is 306 (red box). BatteryMon shows that "Charge cycles" is 306 (blue box).

Step 3 — Teardown the laptop until the Li-ion battery appears



- Go to the back side of the laptop.
- Remove the screw with a "+" screwdriver (the red circle).
- Number of screws: 1

Step 4



- Go to the front side of the laptop. Behind the LCD monitor.
- Remove the screw with a "+" screwdriver (the red circle).
- Move to the other side and remove the screw with a "+" screwdriver (not shown).
- Number of screws: 2



- Go to the back side of the laptop.
- Lever the plastic part by crowbar gently.
- Suggested tools: (1) Crowbar, (2) "-" screwdriver.

Step 6



- Rotate the laptop 180°.
- Remove the screws with a "+" screwdriver (red circles).
- Number of screws: 4



- Remove the "NFC cover" with a lever gently. Do not break the retaining buckle.
- Suggested tools: (1) fingernail, (2) "-" screwdriver.

(i) NOTE: Do not break the retaining buckle.

Step 8



- Remove the screws with a "+" screwdriver (red circles).
- Number of screws: 4
- (i) NOTE: If the battery is severely swollen, you will see the back of the laptop stretched open after the screws are removed.



- Rotate the laptop 180°.
- Tear off the plastic sheet (silver) and double-sided tape (black). The main thing is to let the screws hidden underneath show up.
- (i) NOTE: It is difficult to remove the double-sided tape completely, and some remain on the surface, but it does not affect entire the repair process.

A CAUTION: This step is a "destructive" teardown and cannot be restored to its original state.

Step 10



- Remove the screws with a "+" screwdriver (red circles).
- Number of screws: 6

Step 11 — Open the back side of the laptop



- Rotate the laptop 180°.
- Follow the direction of the red arrow and open the backside of the laptop from the open side, where the cooling cooper tube can be obviously been seen.
- The swollen Li-ion battery appears (the white package).

A CAUTION: If the backside is opened from other directions, the flat cable may be broken or the plug may be damaged (the red circle).

Step 12 — Remove the old or damaged Li-ion battery



- Remove the screws with a "+" screwdriver (red circles).
- Number of screws: 7
- (i) NOTE: Please avoid flat cables when removing screws. For example: see the red box.
- CAUTION: Don't damage the Li-ion battery or something bad will happen, such as gas leakage, electrolyte leakage, fire, and explosion. REF: <u>https://doi.org/10.31224/osf.io/swcyg</u>



- Lift the Li-ion battery gently.
- Pull out the flat cable gently and then remove the Li-ion battery completely.
- Background: About the flat cable. Generally speaking, the red thick line is the "+" power line; the black thick line is the "-" power line; other thin lines are signal lines.

CAUTION: Don't damage the Li-ion battery or something bad will happen, such as gas leakage, electrolyte leakage, fire, and explosion. REF: <u>https://doi.org/10.31224/osf.io/swcyg</u>

Step 14 — Replace the old double-sided tapes (optional)



- Condition: The double-sided tape of the plastic part is degummed and has lost its stickiness. The plastic part clearly leaves the surface.
- Remove the double-sided tape that has lost its stickiness.



- Use new double-sided tape.
- Paste the plastic part back to its original position.
- Do the same on the other side if necessary.
- Suggestion: Do the same on the other side even though the plastic part sticks right on the surface. Because the old double-sided tape might not provide sufficient stickiness.
- Other methods: The epoxy AB glue can replace the double-sided tape.

Step 16 — Install new Li-ion battery



- Plug the cable into the new Li-ion battery gently and tightly.
- To reassemble the laptop, follow steps 3~11 in reverse order. Some possible conditions and how to handle them will be described in the following steps.
- (i) NOTE: Make sure the cable is firmly inserted (the red box).
- CAUTION: If the cable is not firmly inserted. Several worse conditions might happen. (1) Power failure (No electricity) and (2) Unstable connection cause an electric arc, fire, and explosion.
- (i) NOTE: Make sure the cable is securely fastened (red circles).

CAUTION: If the cable is not securely fastened. The cable might be squeezed by other parts, causing an unstable power supply and even safety issues (arc, fire, and explosion). REF: https://doi.org/10.31224/osf.io/swcyg

Step 17 — Stick back the plastic sheet and double-sided tape



- Condition: The stickiness of the old double-sided tape (black) is not sufficient to stick back the plastic sheet (silver).
- Use new double-sided tape (white) to stick the plastic sheet and the old double-sided tape.
- (i) NOTE: The new double-sided tape should avoid the soundhole (red box).

Step 18



• Condition: The damaged plastic sheet (silver) is caused by the "destructive" teardown in step 9.

Step 19 — Spacing fixing (optional)



- Condition: If the stickiness of the double-sided tape is not sufficient, causing a spacing.
- Suggested method: Repeat steps 14 and 15.
- Other methods: Use tape to fix the problem. In this case, the yellow tapes are used for the clear demonstration. Users can use other color tapes.

Step 20 — Check the laptop after replacing the battery



- After replacing the battery, please check the appearance of the laptop.
- Please turn on the laptop and unplug the AC power line to check the functionality of the battery.

Step 21 — Check the status of the battery after replacement (optional)

BatteryInfoView				
File Edit View Options Help				
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Description /	Value			
Battery Name	Reserved			
Manufacture Name	Sony Corporation			
🔋 Serial Number	Reserved			
🚺 Manufacture Date				
Power State	Discharging			
Current Capacity (in %)	37.5%			
Current Capacity Value	3,124 mAh			
I Full Charged Capacity	8,342 mAh			
🔋 Designed Capacity	8,342 mAh			
🔋 Battery Health	100.0%			
🚺 Voltage	7,576 millivolts			
🔋 Charge/Discharge Rate	-21,591 milliwat			
Chemistry	Lithium Ion			
Low Battery Capacity (1)				
Low Battery Capacity (2)	834 mAh			
🔋 Critical Bias				
Number of charge/discharge cycles	0			
🔋 Battery Temperature				
Remaining battery time for the current activity (Estimated)	00:49:22			
Full battery time for the current activity (Estimated)	02:11:48			
Remaining time for charging the battery (Estimated)				
Total time for charging the battery (Estimated)				
22 item(s), 1 Selected Hir Soft	Freeware. https://www.nirsoft.net			

- This is an optional step. This step can be skipped when users don't want to know the battery status or don't have the software.
- Check the "cycle times" by battery software.
- Suggested software: (1)
 BatteryInfoView, (2) BatteryMon.
- For example: BatteryInfoView shows that "Number of charge/discharge cycles" is 0 (red box), indicating that the laptop treats the battery as a new one.

This brief guide provides a simple Li-ion battery replacement procedure for Sony Vaio Duo 13.