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TEST REPORT

No. 240-2019 UFC

CLIENT	**UFC QUE CHOISIR**
NAME	

TESTED PRODUCT	
Product	Switch controller
Model	-
Brand	Nintendo
Batch/serial number	

Velaux, on Wednesday, 5 February 2020

The result of the test is valid only for the tested sample and in no case for the whole production. Reproduction of this report is permitted only in the form of an integral photographic facsimile.

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PHONE: +33 (0)4 42 81 34 20 – FAX: +33 (0)9 71 70 23 34 SAS (simplified joint-stock company) with a share capital of €180,000, entered in the Commercial Register of Salon-de-Provence – Principal Activity Code APE 7022Z – Business Identification SIRET No. 493 240 774 00031

TEST

Problem encountered:

Many customers have complained about a directional problem, especially with the joystick on the left hand side of the controller.

Figure 1 Joystick on the left hand side of the controller

This problem occurs after a certain time of use or immediately and sometimes prevents playing.

SAMPLES

Twenty (20) samples will be used for the test:

Five (5) samples with purchase information and detailed explanations regarding the problem encountered:

Identification no.	Date of purchase	Date the problem occurred
1	November 2018	June 2019
2	January 2018	June 2018
3	June 2017	December 2018
4	August 2017	August 2018
5	November 2017	March 2019

Plus 15 samples with the number of hours played, the age of the console and the date when the problem occurred.

Number of hours played	Age	Date the problem occurred
40% of the samples have more than 1,000 hours of play time	60% between 2 and 3 years old	45% between 1 and 2 years after purchase
60% of the samples have fewer than 1,000 hours of play time	15% less than one year old	25% less than 6 months after purchase
-	25% between 1 and 2 years old	20% between 6 months and 1 year after purchase
-	-	10% between 1 and 2 years after purchase

The information given shows that the problem occurs very soon after the purchase (1,000 hours of game play corresponding to about 3 hours a day for 1 year) and that it affects mainly consoles purchased between 2017 and 2018.

PLAY TEST

This first table refers to the first 5 samples which illustrate the problems encountered:

Identification no.	Problem initially reported	Problem encountered	Play time before problem is discovered
1	Left joystick stuck towards the left. The problem occurs as soon as the joystick on the left hand side of the controller is touched. It continues to be jammed, and returns to normal function only sporadically.	The problem occurs instantly, without touching the joystick, as the screen character moves forward on its own. Responds slowly to commands. The problem is nearly constant.	Immediately

2	Left joystick stuck in the up position on the left side all the time. The problem takes several seconds to go away. The problem occurs as soon as the joystick on the left hand side of the controller is touched.	The problem occurs instantly, without touching the joystick, as the screen character moves forward on its own very rapidly. The problem is nearly constant.	Immediately
3	Left joystick is not performing the right commands. The problem has intensified over time.	The problem occurs instantly, without touching the joystick, as the screen character moves forward on its own. The problem is not constant.	Immediately
4	Left joystick stuck in the forward position almost constantly, very rarely to the sides, never in the down position. Joystick needs to be moved to stop the movement.	The problem occurs when the joystick is moved up, as the screen character continues to move forward on its own. The problem rarely occurs.	After 30 minutes of playing.
5	Left joystick stuck in forward position and sometimes in down position in a rather irregular and random fashion. The screen character continues to move forward for 3 to 5 seconds or moves in a jerky manner.	The problem occurs when the joystick is moved up, as the screen character continues to move forward on its own. The problem rarely occurs.	After 45 minutes of playing.

This second table refers to the other 15 samples:

Identification no.	Problem encountered	Play time before problem is discovered
6	Impossible to control the joystick. The joystick does not act on its own, but does not respond to commands.	Immediately
7	The screen character moves randomly to the left, especially when it is directed to the left.	Immediately
8	The problem occurs when the joystick is moved up, as the screen character continues to move forward on its own. The problem rarely occurs.	Immediately
9	The problem occurs when the joystick is moved up, as the screen character continues to move forward on its own. The problem rarely occurs.	Immediately

10	The joystick holds the upwards movement, even when moved in a different direction.	Immediately
11	No problem while playing. Outside the game, the joystick does not respond when it is moved up. Re-test: Outside the game, the joystick does not respond when it is moved up. No problem inside the game. Once outside the game, the joystick remains jammed in the up position. The problem goes away when the console goes into standby and is then turned back on again.	Immediately
12	No problem while playing. Outside the game, the joystick does not respond when it is moved up. Re-test: Outside the game, the joystick does not respond when it is moved up. No problem inside the game. Once outside the game, the joystick remains jammed in the up position.	Immediately
13	The joystick sometimes holds the upwards movement.	After a few minutes of playing.
14	The joystick sometimes holds the upwards movement.	After twenty minutes or so
15	The problem occurs when the joystick is moved up, as the screen character continues to move forward on its own.	Immediately

Identification no.	Problem encountered	Play time before problem is discovered
16	The problem occurs when the joystick is moved up, to the right or to the left. The screen character continues to move forward on its own, mostly moving to the right.	Immediately
17	The problem occurs when the joystick is moved up, as the screen character continues to move forward on its own towards the right. The problem rarely occurs.	Immediately
18	The problem occurs when the joystick is moved up, as the screen character continues to move forward on its own. The problem rarely occurs.	Immediately

19	The problem occurs when the joystick is moved up and to the left, as the screen character continues to move forward on its own towards left. And when the joystick is moved to the right, as the screen character continues to move forward on its own towards the right. The problem occurs almost all the time.	Immediately
20	The joystick holds the upwards movement, even when moved in a different direction.	Immediately

JOYSTICK CALIBRATION

The Nintendo Switch system allows the joysticks to be calibrated using the interface shown below.

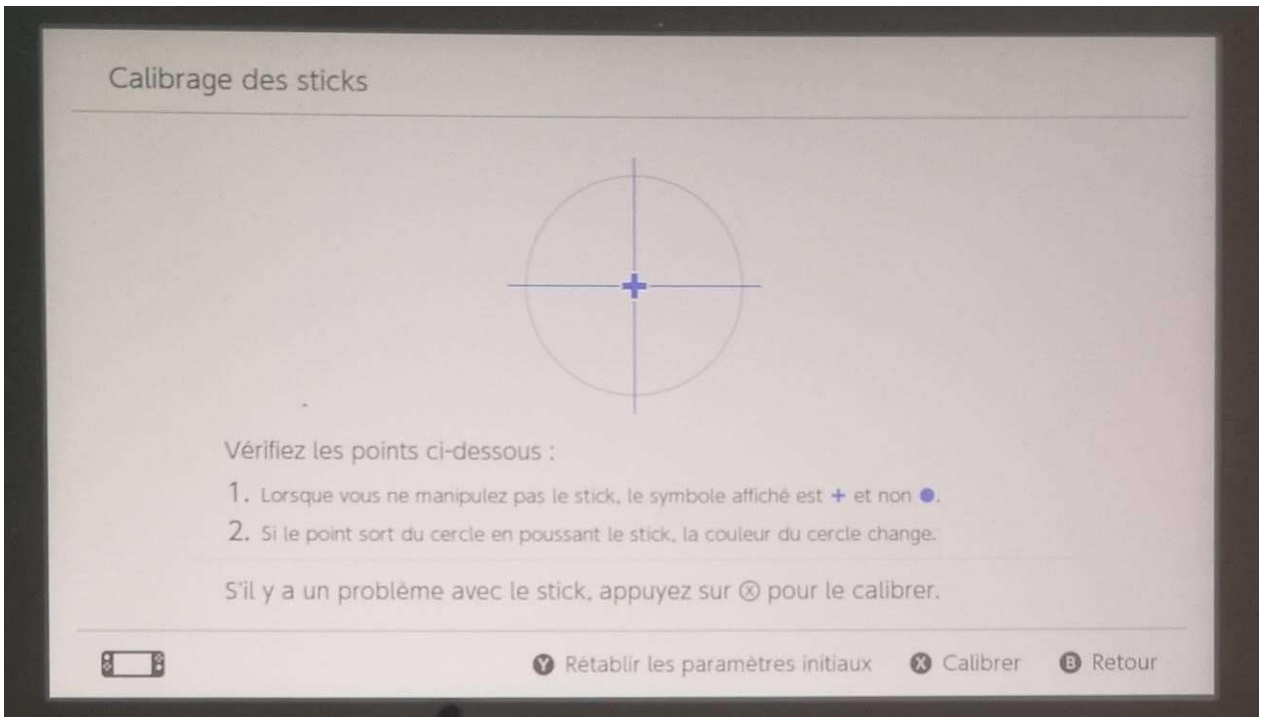

Figure 2 Interface for calibrating the joystick

This interface can be used to show the position of the joystick when it is stationary but also when it is in use. The reference joystick acts in the normal way, i.e., it goes in the direction it is told to go and returns to the centre immediately afterwards. This makes it possible to show the position of the joystick detected by the console.

Movement of the joystick

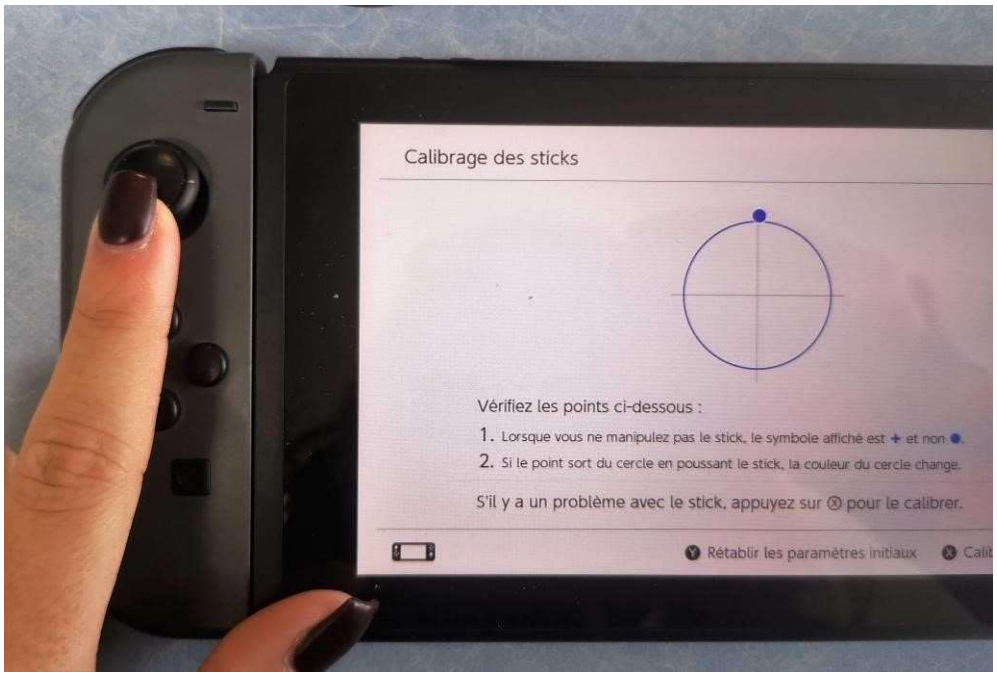

Figure 3 Normal joystick behaviour

This interface can also be used to show whether movement detection is irregular. For example, it can demonstrate the following problem:

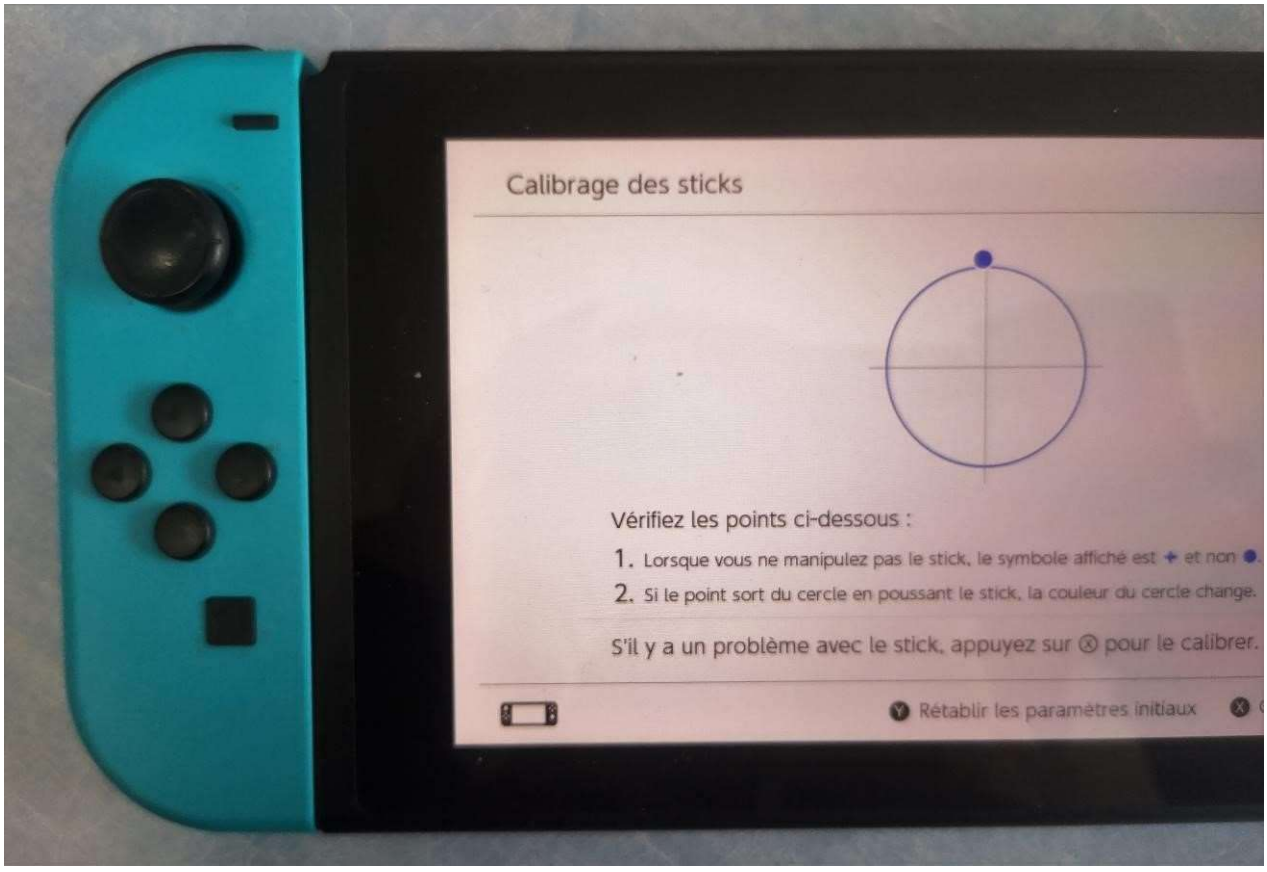

Figure 4 Problem with detection

This picture shows that the joystick detects upward movement while the joystick is not moved.

The following table summarises how the joystick is detected by the interface:

Identification no.	Pointing stability (joystick position)
1	Very unstable when pointed up: The joystick remains up after a jerk up. Slowly returns to the centre. The joystick is not properly centred in its initial position.
2	Very unstable when stationary: The joystick moves off-centre on its own when stationary. The joystick never returns to the centre. The down position is not affected by this problem, but returns to its initial position slowly.
3	Unstable when stationary and when moved up: The joystick (sometimes) moves off-centre on its own when stationary. Never returns to the centre from its up position. The problem occurs with random frequency.

Identification no.	Pointing stability (joystick position)
4	Stable; sometimes returns to the centre slowly.
5	Stable; sometimes returns to the centre slowly.
6	Very unstable when pointed up: The joystick remains up after a jerk up. Slowly returns to the centre.
7	Very unstable when pointed to the left: The joystick remains fixed to the left when using this direction and either returns to the centre slowly or stays on left until the direction is changed.
8	Fairly stable: The joystick sometimes returns to the centre slowly from its up position.
9	Fairly stable: The joystick sometimes returns to the centre slowly from its up or left position.
10	Very unstable when stationary: The joystick constantly remains in the up position and almost never returns to the centre.
11	Very unstable when stationary: The joystick constantly remains in the up position and almost never returns to the centre.
12	Very unstable when stationary: The joystick constantly remains in the up position and almost never returns to the centre.
13	Fairly stable: The joystick sometimes returns to the centre slowly from any position.

14	Fairly stable: The joystick does not respond well when moved down. The joystick sometimes does not re-centre well.
15	Fairly stable: The joystick sometimes returns to the centre slowly from its up position.
16	Unstable when stationary and for all directions: The joystick (almost always) moves off-centre on its own when stationary. Never returns to the centre from its up, left and right positions. Returns to the centre from its up and left positions very slowly. The problem occurs almost all the time.

Identification no.	Pointing stability (joystick position)
17	Impossible to access the interface because the button to access it does not work.
18	Fairly stable: The joystick often returns to the centre slowly from its up position.
19	Fairly stable: The joystick often returns to the centre slowly from its left or right position. The joystick may not return to the centre but may remain on the centre line on the left side.
20	Very unstable when stationary: The joystick constantly remains in the up position and almost never returns to the centre from any position.

DISASSEMBLY OF THE LEFT CONTROLLERS

Joystick operation:

The joystick works thanks to 2 sliders that move with the position of the joystick. (Photo 1)

Photo 1 Internal structure of the joystick

Photo 2 Joystick slider

The sliders consist of 2 metal parts that make contact with the flexible printed circuit board (blue) located above them. (Photo 2)

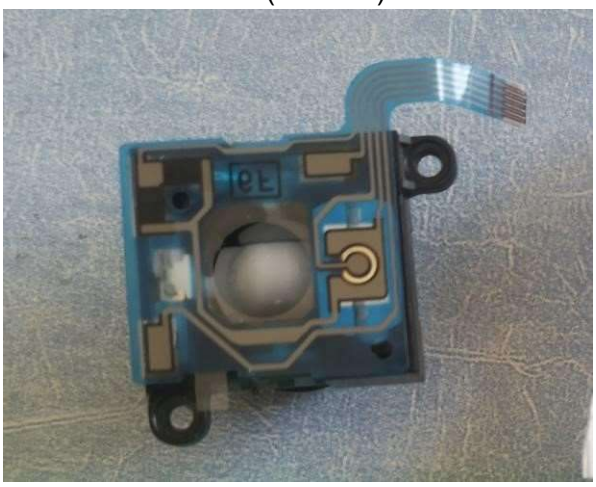

Photo 3 Rear side of printed circuit board

Photo 4 Front side of printed circuit board

This electronic card-slider-joystick assembly is held in place by a metal plate and a spring. (Photo 3)

Photo 5 Metal plate

Photo 6 Printed circuit board and spring

Observations after disassembly:

- **Electronic card:**

First, there are two electronic card versions. One version serves as reference and is one of the defective samples, and another version for the other samples.

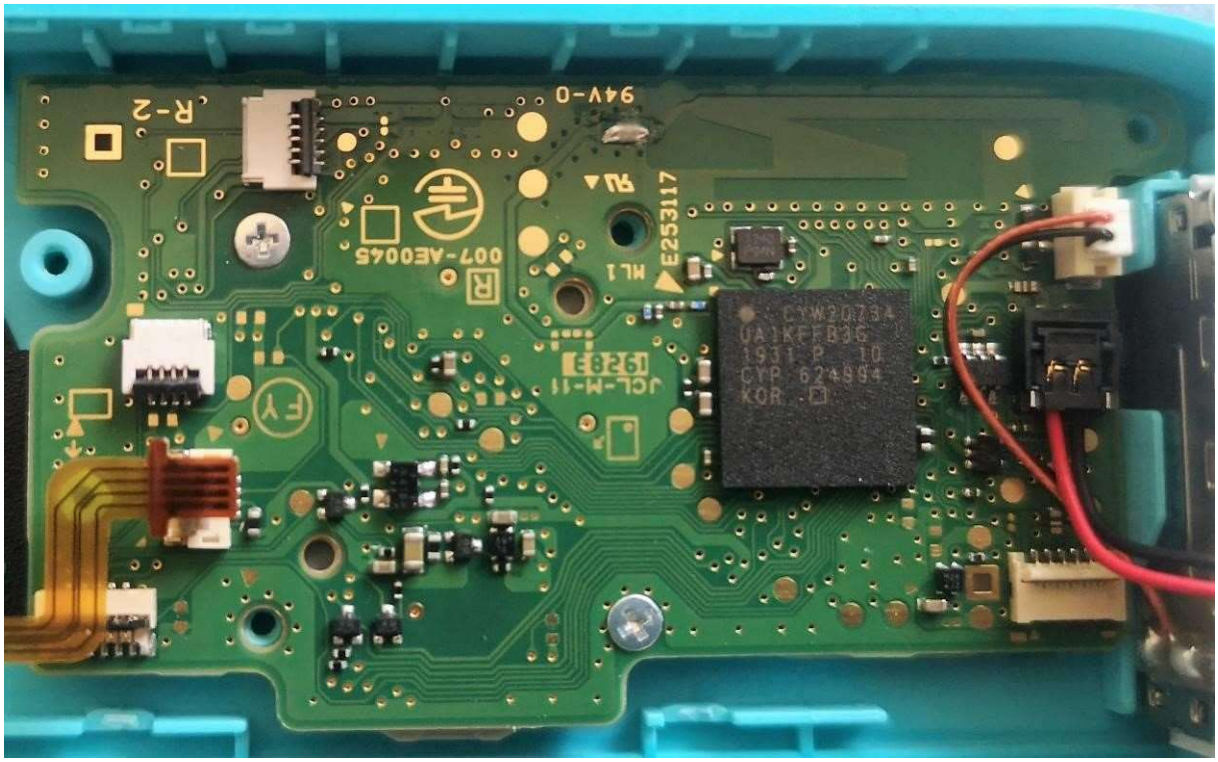

Photo 7 Reference electronic card and used in one of the samples

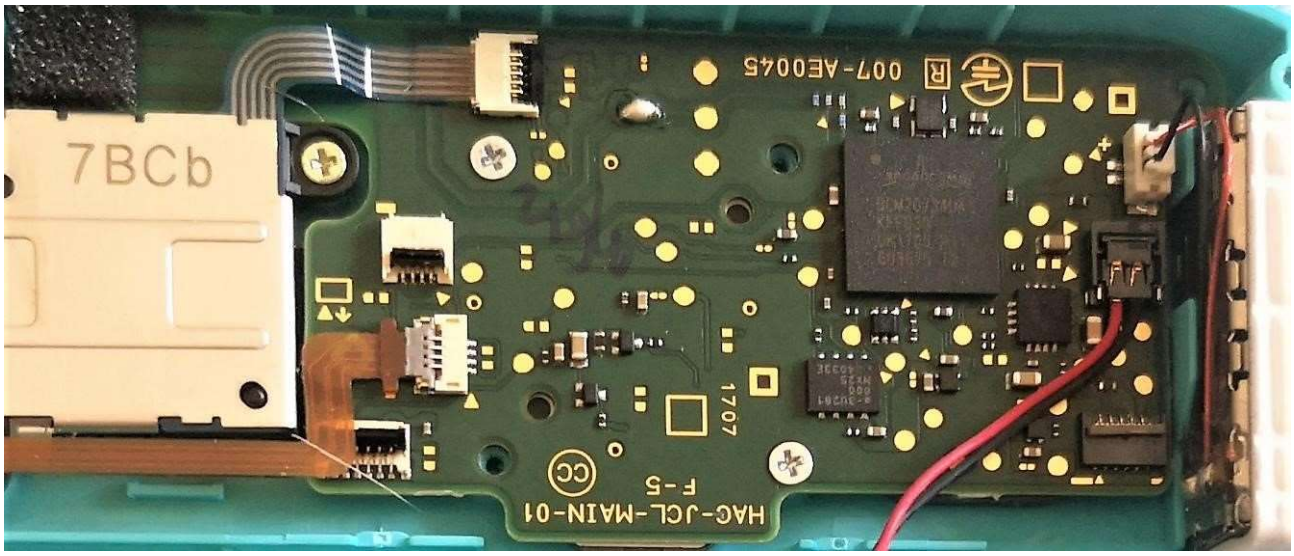

Photo 8 Electronic card of the other defective samples

- **Joystick:**

The joystick is the same for the reference and other defective samples.

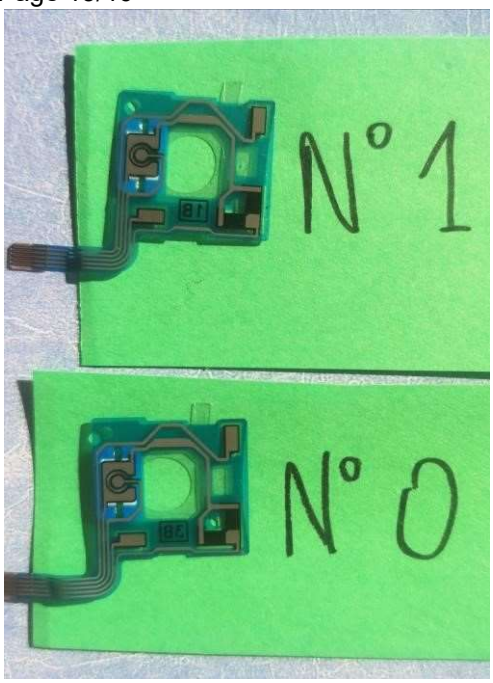

Photo 9 Comparison of printed circuit boards

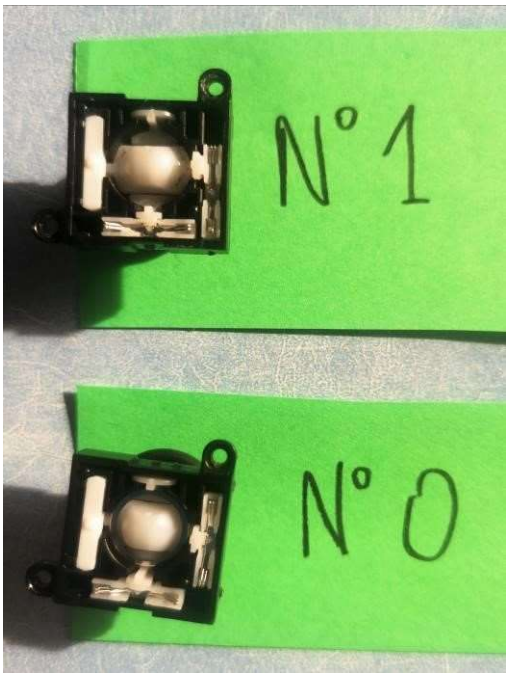

Photo 10 Comparison of internal structure

Except for samples No. 7 and No. 12, which are different from all the others:

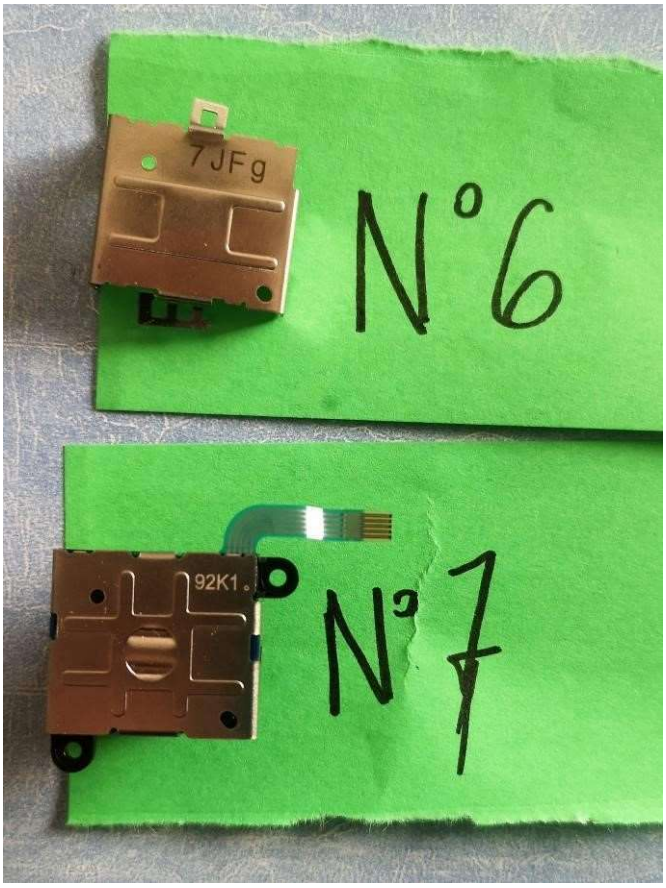

Photo 11 Comparison of metal plates

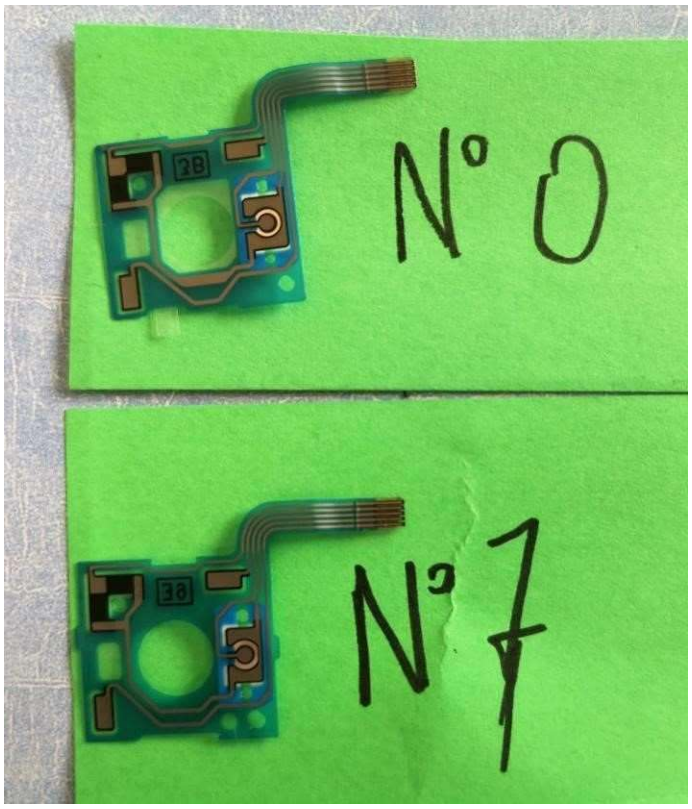

Photo 12 Comparison of printed circuit boards

Slight differences are visible especially on the metal plate and in the two areas of the electronic card shown in the photos above:

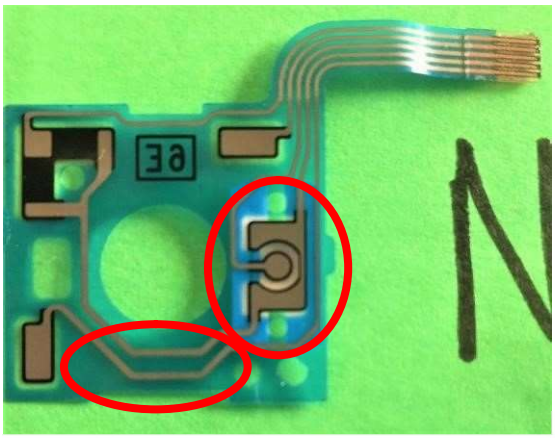

Photo 13 Printed circuit board No. 7

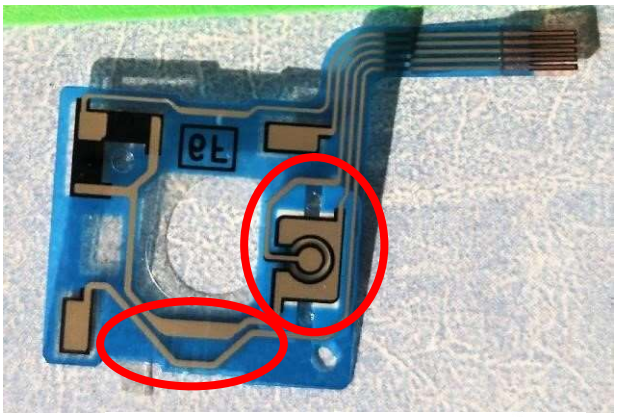

Photo 14 Printed circuit board No. 1

These differences do not affect the handling and behaviour of the joystick.

Finally, there is dust in the joysticks as well as on the flexible circuit board:

Photo 15 Dust on the joystick

Photo 16 Dust in the internal structure

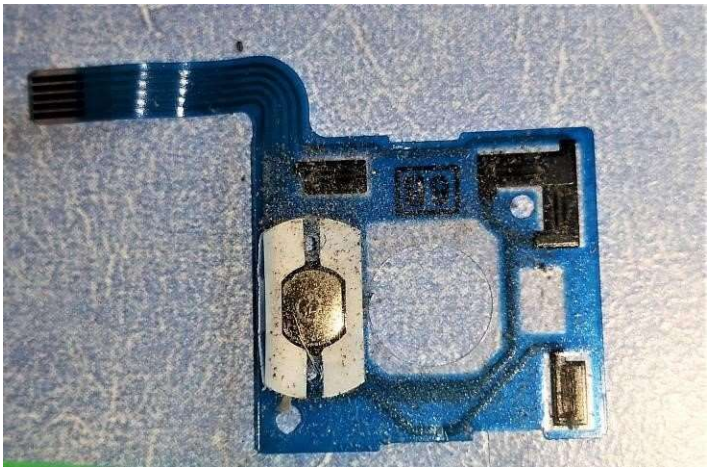

Photo 17 Dust on the printed circuit board

Dust infiltrates the joystick through the space between the central rod of the joystick and the plastic gasket that covers it.

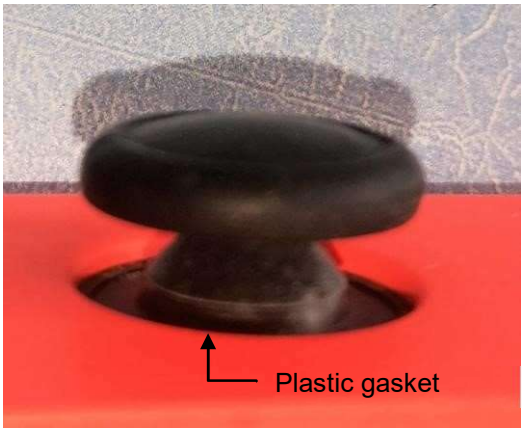

Photo 18 External structure of the joystick

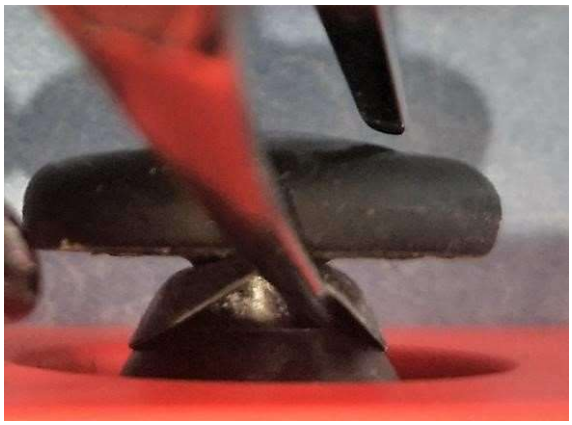

Photo 13 Rod under the gasket

- **Flexible printed circuit board of the joystick:**

There are also signs of wear and tear in the black areas. These are caused by the sliders rubbing against this surface to define the movement. (See Photo 2)

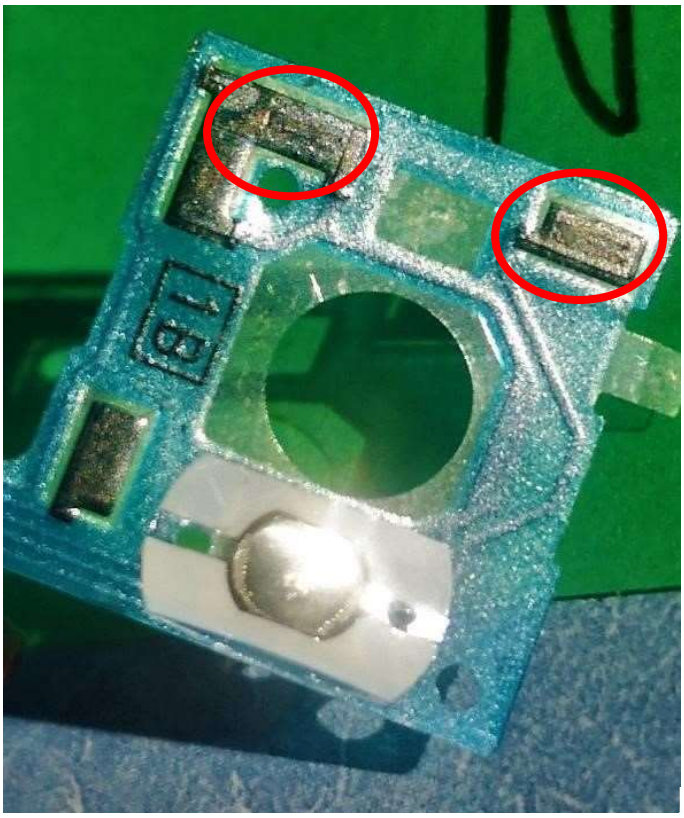

Photo 204 Wear and tear on the printed circuit board

CONCLUSION

Based on our assessment, we can conclude that there is a problem with the joystick on the left hand side of the controller and, in particular, with moving the joystick up while playing.

It would appear that this defect is the result of several malfunctions:

- **Mechanical malfunction:**

The signs of wear and tear on the flexible printed circuit board in the joystick can cause contact problems and thus poor movement detection.
The dust in the joystick indicates that it is not dustproof. This could also cause detection faults on the contact points of the printed circuit board.

- **Electronic or coding malfunction:**

The fact that the fault is only in one direction and that it occurs quickly could indicate a problem with the electronic card.

The manufacturer has changed the electronic card on the new product, and one of the consoles with the defect seems to indicate that the origin of this anomaly has not really been identified.