error report

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After defining the custom labware “flowerplate\_48\_wellplate\_3200ul” though the [Custom Labware creator](https://labware.opentrons.com/create) the definition was supposed to be tested. For that the protocol script “test\_FlowerPlate 48 Well Plate 3200 µL.py” (see attached) was created by the labware creator together with the .json definition file.

The testing was done following the [labware definition test guide](https://opentrons-publications.s3.us-east-2.amazonaws.com/labwareDefinition_testGuide.pdf).

Initial error

After starting the script execution through the opentrons app, the pipette was supposed to be calibrated as usual, first attaching a tip to the pipette (right, p300\_single). When advancing to the next step, the pipette moved into homing position and afterwards to the left tip probe switch, which it interacted with normally. However, after moving towards the right switch and when lowering the pipette, the tip pressed on top of the small metal plate, which makes up the switches contact point and pressed it out of its brackets (falling into the trash’s metal scaffold). After then finishing to lower the pipette, the head moved leftwards to meet the calibration switch, however without the metal plate the contact was not registered and the pipette kept moving into the calibration point.

Due to the surprise of his happening, I did not shut of the OT-2, instead I stopped the pipette by hand and moved the head rightwards. After this the pipette continued to move a small way to the left and afterwards stopped while showing a smoothie error in the app (I did not write down the error code).

The previous explanation of the reason for this misbehavior (the pipette removing the metal plate itself) was only discovered after further investigation.

Because of this, after this error happening the first time, the robot was homed and the script started anew. The missing plate of the right calibration switch was not yet noticed and as such the robot behaved the same, continuously moving into the calibration point. Again, the robot was stopped by hand in the previous way and an error message was displayed.

Following error

The error message stated to try the calibration again and see, if the error would repeat, so the calibration was started again, this time with the pipette lowered into the trash’s metal scaffold. There the robot did not home by itself but instead further lowered the pipette (probably since the current location was treated as “home”) and moved forward fast, slamming the pipette into the front wall of the trash’s metal scaffold. The pipette may have made a cracking sound at this point. The robot was quickly shut off. At this point, the missing metal plate was noticed and set back into its holding brackets.

With the help of a supervisor (Rainer Machne, [machne@hhu.de](mailto:machne@hhu.de)) the robot was turned on again and the calibration was repeated, now with the metal plate reattached. During this run it was noticed that the pipette removed the metal plate itself. The pipette was again stopped by hand, homed and the metal plate attached.

Aftermath

At this point I suspected a miscalibration of the head, shifting the pipette calibration leftwards and thus moving the pipette tip closer to the metal plate. Therefore, I recalibrated the robot through the app and reran the script. Now the pipette calibration worked without a problem and the rest of the definition testing script was executed.

It is therefore likely, that an initial miscalibration of the head caused the faulty pipette calibration.