

Possible Picker Drop Causes

Purpose:

The up down motion of the picker does not have an encoder so it cannot track its physical position.

This leaves us open to an error state where the picker slips its position and continues to run, but with the picker no longer properly aligned with the decks or the vend door. This of course leads to the pile of DVDs that spill out of the door when you open it.

The root cause of this is usually from the picker hitting something while moving.

The intent of the list is to gather all our experiences together into one document.

Causes:

1. **Slot data is off** – Slot data must be adjusted so that both the left and right gripper fingers are not in line with the opening of the slot, this causes the gripper fingers to “rub” on the DVD and drag it partially into the picker when it’s trying to put the DVD away. The newer cases are more sensitive to this than the older ones.
2. **Discs are not being pushed into the slot** - Check that there are no cases hanging over the lip of the drum, this could indicate an issue with the extend/retract sensors or motor and may catch the picker as the drum rotates
3. **The lower or upper Z limit sensors** are not working, dirty or the sensor/cable is not communicating with the arcus board.
4. **Picker sensors** especially sensors 1 and 6 are critical to preventing the picker from moving with a DVD hanging out of it.
5. **Loose vend door clutch** - Make sure that the vend door clutch is holding the vend door firmly enough to prevent the customer from opening it from the outside, but not so tight that it can hurt someone’s finger when it closes.
6. **If the arcus board was recently replaced**, make sure to check for the 2 pin gap between the X/Y sensors and 24 volt connection on the right. Check the X/Y sensor LEDs trip when blocked. (Upper limit, Home, and Lower limit located on the Y Rail are hardwired connections along with the X sensor). If the X or Y sensor has failed, you must replace the entire cable bundle to the Arcus board.

Make sure the X and Y Amp connections are in the correct position on the arcus board.

7. **Loose set screws** - Grab one of the vend door flags and see if it has a lot of loose play – if it does then one of the 4 set screws that join the vend door shaft to the clutch and the clutch to the vend door motor may be loose. Make sure that you tighten the screws onto the center of the motor and shaft flags, or it will just loosen up again.
8. **Loose vend door rotor** -Grab a vend door flag and the black plastic vend door rotor and make sure that there isn’t any play between the rotor and the shaft – if you do find that it’s loose to the shaft you need to disassemble the vend door to tighten the rotor back up.
9. **Vend door close position** - Make sure that when the vend door goes to the “close” position that the door is closed well enough to not be pried open from the outside – if it can you may need to adjust the vend door flags so that it closes to a different angle.
10. **Something catching on the picker** - Close the door completely and move from deck 1 to deck 8, stick your ear against the vend door while it’s moving and listen for any rubbing or banging sounds. You can move smaller distances to determine where the picker is hitting (IE: move from deck 1 to 3 and then deck 3 to 6 to see where you hear the rubbing sound). Some common snag points are listed below.

- a. A cable from the vend door is catching on the picker as it moves past.
- b. A cable from the picker is catching on something as it moves up and down.
- c. The screws for the track open/close spring are unscrewed far enough that they are rubbing/ hitting the vend door.
- d. The cable guide on the door is not closed properly and the picker is hitting it.
- e. The gripper fingers are hitting the QLM bay
- f. The gripper fingers are hitting one of the platters
- g. There are DVDs hanging out of the platters.
- h. The touchscreen or credit card reader cables are not neatly routed thru the door.
- i. The picker is hitting the vend door because the vend door assembly isn't properly aligned with the door cut-out that it fits into.
- j. The picker is loose and tilted down on the Z rail.
- k. The left track is loose and hitting the door
- l. The inner support structure is misadjusted and causing the picker to hit the door (call machine support to fix this one –it's tricky)
- m. The screws that attach the long V-rail that the picker rides up and down on are loose and the picker intermittently hits them.
- n. The black segmented guide that routes the communication cables to the picker is broken and jams as the picker moves.

11. **A foreign object** was “returned” to the machine that can hang out of the picker without blocking the picker sensors.

12. **The cables on the picker controller are hitting the Z motor** when the machine initializes.

13. **The gripper finger retract sensor** is on without the extend/ retract sensor tripping it – This will allow you to move the picker with the gripper fingers extended into the deck.

14. **DVD case problem** –a single DVD case if not found can cause a machine to repeatedly drop the picker, here are some possible case problems.

- a. Case that is cracked
- b. Case that has a broken hinge
- c. Case that has the rod in the hinge sticking out the top or bottom of the case
- d. Case that is dog chewed
- e. Case that doesn't snap closed properly and is too thick for the slot.
- f. Case that has a substance on it (IE: ketchup)
- g. Case that is warped.
- h. Case from a different, regional video rental company

15. **Bent gripper finger** – causes a problem similar to slot data being off.

16. **Gripper finger insert** is damaged or hanging partially off the gripper – causes a problem similar to slot data.
17. **Worn rent/sell/close cam** causes the grippers to not open as wide - creating an issue similar to slot data.
18. **Slot data Y position (Vend Door) is off** can cause DVD jams or a problem with the picker pulling the disk on certain areas of a platter.
19. **Warped platters** – these should all be fixed, and the heater bracket retrofit should prevent all future ones, but this will cause a problem similar to a slot data Z position problem.
20. **Kiosk is not level** or rocks when you push on it – causes DVDs to ride out of decks into the path of the picker.
21. **Center of platters** are bowed upwards – causes the center of the platter to be higher than the outer edge which lets the DVDs ride out into the path of the picker as the drum rotates.
22. **Drum flag is too low** – causes an intermittent slot data problem since the kiosk will sometimes calculate slot data off of the leading edge of the flag and sometime off of the top or trailing edge of the drum flag.
23. **Drum flag is loose** – causes random shifts in slot data.
24. **72 slot deck is configured as a 90 slot deck or visa-versa** if the slot data and system data files are not configured correctly for the deck type the kiosk may peek just fine on slot 1 but have a severe slot data problem on the higher slots.
25. **On a 72 slot deck DeckSellStat** can be set to 2 – this change can only be made while at the kiosk since some adjustment may be needed to the gripper finger extend sensor, but what it does is it tests a sell slot to make sure it's empty before it tries to put a new disk in there – this prevents multiple DVDs stuffed into the same sell slot.
26. **R-Motor pulley is loose** – easy to detect by grabbing the drum and seeing if it has an inch of loose play.
27. **Encoder is loose** – causes a slot alignment problem
28. **End Cap** that's loctite'd into the end of the drum shaft is loose causing a slot data alignment issue.
29. **Encoder isn't communicating with the arcus board properly** – shows itself as an intermittent slot data problem either a damaged cable or an issue with the communication to the arcus board.
30. **Drum is spinning too quickly** – drives the disks out of the drum – similar to if the platters are bowed in the center.
31. **Loose amplifier wire, crimp or loose amplifier plug in back of UPS** – only check it with the power off. (I know this sounds weird, but we've seen several of them).