What Would
You Have Done?

Maintenance Decision Points — Before the Error Became an Accident

Every backwards installation in this collection passed through at least one moment where something could have been caught. A technician paused and looked again. An inspector signed off work that didn't quite look right. A pilot questioned the mechanic at the gate. In each case, the decision made — or not made — determined whether an error stayed on the ground or flew.

This issue presents four reports in two parts. The first half gives you the situation as the technician or inspector saw it — the task, the environment, and the moment where a choice had to be made. Then we stop. Before you read what happened next, consider what you would have done. There are no trick questions. There are no wrong answers in the conventional sense. The goal is to put you at the workbench before you read the outcome.

Part 121 — The First Half of the Story

(ACN: 772287)

You are a DHC-8-200 maintenance technician working a graveyard shift. You have replaced a failed aileron servo per the AMM and performed the required Aileron Servo Test 05 — it passed. Earlier in the night, out of curiosity, you ran an optional test not required for this task and noticed that the control wheel moved opposite to the heading bug. You assumed you were wrong about the direction. The aircraft is now 50 minutes from its scheduled departure.

Technician:

When I was moving the heading bug CCW the control wheel moved CW, and vice versa. I did not do this full test at that time as it is not the return to service test for an aileron servo replacement. At first I was puzzled by this, and thought the controls were moving backwards, then I grabbed the manual and did the required aileron servo test 05, and it passed the test. After it passed the test, I thought to myself, I guess I was wrong about the direction...

What Would You Have Done?

The Rest of the Story...

The technician went back to verify against another aircraft and found — ten minutes before departure — that the aileron servo was indeed wired backwards. The autopilot, if engaged, would have rolled the aircraft.

Technician (continued):

I ran out and found to my horror that the aileron servo is moving the control wheel on Aircraft X backwards to the heading bug commands. The aircraft was 10 minutes from departure. I explained my concern to the flight crew and confirmed the control wheel was indeed turning backwards to heading bug commands. I called Maint Control and we agreed that we could put the autopilot on MEL. I don't believe that I made any mistakes in the installation, as the cables were transferred one at a time, and they are threaded differently between the top and bottom cables. I suspect that the aileron servo is wired backwards.

The technician's gut feeling — noticed, then dismissed after the required check passed — was correct. The manufacturer's teardown confirmed the servo was internally wired backwards; 13 more were found in the same condition. The required test was not designed to catch this failure mode. The optional test was.

Part 121 — The First Half of the Story

(ACN: 1370016)

You are an EMB-120 technician. You have replaced the hot mic switch on the captain's yoke, labeled all three wires before removal, re-soldered them on the new switch as labeled, and ops-checked the installation against the first officer's side. It passed. You signed it off. The pilot now tells you the switch is upside down. You remove it, flip it right-side up, and re-install it.

Technician:

I just soldered the 2 wires reverse of each other and installed switch upside down, so it function correctly upside down but right side up it was backwards. I then reinstalled the switch right side up. Signed it off as flipped switch.

What Would You Have Done?

The Rest of the Story...

Flipping the switch right-side up reversed the wiring orientation relative to the installation. The pilot returned: now the hot mic and push-to-talk functions were swapped.

Technician (continued):

Then pilot noticed the hot mic switch and push to talk was reversed.

Two sign-offs, two pilot writeups, same root cause: the wires were soldered in the wrong sequence for upright installation. The ops check comparison to the first officer's side confirmed function but not orientation. When the switch was flipped right-side up without re-soldering, the error persisted in a different form. The fix required understanding the wiring logic, not just the physical position.

Part 121 — The First Half of the Story

(ACN: 1421446)

You are a CRJ-700 technician. You have installed the captain's steering tiller in a replaced console. You perform a full steering operations check per the AMM — it passes. You sign off the work. The next day, a coworker tells you the tiller is written up as incorrectly installed.

Technician:

After installation I performed an operations check of the steering in accordance with the Aircraft Maintenance Manual (AMM). The steering operations checked good and I signed off my work performed. [The day after] near end of shift I was informed by a coworker that the plane (Aircraft X) had its steering tiller written up as being incorrectly installed.

What Would You Have Done?

The Rest of the Story...

The tiller was backwards — but due to the design of the component, turning it clockwise still turned the nosewheel right, and counterclockwise still turned it left, regardless of orientation. The ops check could not detect the error.

Technician (continued):

It was at this time that I realized I must have installed it backwards. Due to the design of the tiller, no matter which way it was oriented in installation, turning the tiller clockwise would cause the nose wheel to turn right and counterclockwise left. It was for this reason that the incorrect installation went unnoticed during my operations check and also by flight crews, and mechanics taxiing immediately.

A functionally symmetric component is a category of installation hazard the standard operational check cannot address. The check verified that steering worked — it could not verify which way the tiller was oriented. Visual inspection against the AMM illustration was the only method that could have caught this. Complacency on a familiar task was the decisive factor.

Part 121 — The First Half of the Story

(ACN: 1295814)

You are a DC-10 avionics and thrust reverser technician with 25 years of experience. During Auto Re-Stow Testing, you notice the thrust reversers are stowing when they should not be able to. You trace the anomaly and find that the PRSOV and OPSOV pneumatic lines at the Dual Switcher Valve appear to be connected to the wrong ports — across the entire company fleet. The connections have been this way, as far as you can determine, since the Switcher Valve was originally installed years ago.

Technician:

The Pressure Regulating Shutoff Valve (PRSOV) and Overpressure Shutoff Valve (OPSOV) connections to all TRAS Lock Engine Dual Switcher valves are not connected properly. It has been verified via company Engineering that the PRSOV valve is actually connected to the Dual Switcher Valve OPSOV connection and the OPSOV valve is actually connected to the Dual Switcher Valve PRSOV connection. The connections are backwards. If the lines were properly connected, the Thrust Reverser would not be able to stow during testing.

What Would You Have Done?

The Rest of the Story...

The technician escalated to company Engineering, requested a manual schematic review, and filed this ASRS report covering the entire fleet. The error had existed undetected — across multiple aircraft and multiple maintenance cycles — because the Boeing LAMM schematic itself was inaccurate.

Technician (continued):

Flight Safety — The PRSOV valve could be open in flight as it is on the ground during the Auto Re-Stow test as a result of the lines being connected backwards. [Recommend] to properly connect the lines to the Dual Switcher Valve. Verify if the OPSOV air is still solenoid controlled air. If not, then we must connect the lines to the Dual Switcher Valve properly. If the OPSOV is solenoid operated, then inform Engineering and change the LAMM schematic to reflect this.

This report is the only one in the dataset where the backwards installation had persisted undetected across a fleet for years, surviving multiple maintenance cycles and A.D. compliance checks. The technician's decision to escalate rather than accept the anomaly as a schematic quirk is exactly the kind of persistence that the maintenance safety reporting system depends on.