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Smart Clean Troubleshooting Guide: Valve Leaking Air & Blown Cylinder Isolation

Efficiently determine whether an air leak is due to a faulty Smart Clean (SC) valve or a blown cylinder on the planter. Use a **progressive test method**: confirm SC valve operation → test each full circuit → isolate back pressure → move to row-by-row testing only if needed.

💡 **Pro Tips**:

- **Air cylinders have a typical 2-year life expectancy**. It's recommended to perform a **row-by-row leak check, (Step 3) before each planting season** to proactively identify failures.
- **Plumb shop air directly into the planter system** during troubleshooting to **avoid unnecessary cycling of the planter-mounted compressor**.
- **Quick field test for a leaking valve**: Set the PSI on the leaking valve to 0 and unplug the line going to the planter. If the valve stops leaking, it's likely due to **back pressure from a blown cylinder**. Proceed to Step 3 to isolate the source.

Preliminary Step: Inspect SC Box for Internal Leaks

Before testing valve outputs, **inspect the internal plumbing of the Smart Clean box**:

1. Open the SC enclosure and **visually inspect all internal air lines**.
2. Ensure that all **push-to-connect fittings are properly seated** and that no air lines are broken, kinked, or loose.
3. Listen for any hissing that could indicate a slow leak inside the box.
4. Tighten or re-seat fittings as needed before proceeding.

Once no internal leaks are found, continue with valve output testing.

Step 1: Isolate and Verify SC Valve Output

Test each valve circuit independently to confirm the SC box is functioning correctly:

- **Disconnect both output air lines** from the SC box (UP and DOWN circuits to the planter).
- To test the **UP circuit**:
  - Set **Valve A (UP) to 20 PSI**, and **Valve B (DOWN) to 0 PSI**.
  - Confirm that air is flowing out from the UP port.

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To test the **DOWN circuit**:

- Set **Valve A (UP) to 0 PSI**, and **Valve B (DOWN) to 20 PSI**.
- Confirm that air is flowing out from the DOWN port.

If both valves output correctly, the SC box is working properly. Proceed to the next step.

Step 2: Test Each Full Circuit for Back Pressure

Test A: UP Circuit

To check for back pressure in the UP circuit:

1. **Connect the UP circuit from the planter to the SC box**.
2. **Leave the DOWN circuit unplugged**.
3. Set the **UP valve to MAX PSI**.
4. Set the **DOWN valve to 0 PSI** (to prevent pressure feeding the unplugged circuit).
5. **Hold your thumb over the unplugged DOWN line**.
6. **Check for air pressure buildup**:
   - **Yes?** → Back pressure present → Proceed to row-by-row test of UP circuit.
   - **No?** → UP circuit likely clear.

Test B: DOWN Circuit

To check for back pressure in the DOWN circuit:

1. **Connect the DOWN circuit from the planter to the SC box**.
2. **Leave the UP circuit unplugged**.
3. Set the **DOWN valve to MAX PSI**.
4. Set the **UP valve to 0 PSI** (to prevent pressure feeding the unplugged circuit).
5. **Hold your thumb over the unplugged UP line**.
6. **Check for air pressure buildup**:
   - **Yes?** → Back pressure present → Proceed to row-by-row test of Down circuit.
   - **No?** → DOWN circuit likely clear.

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Step 3: Row-by-Row Back Pressure Check (Only If Needed)

If **back pressure is detected** in one of the circuits from Step 2:

Perform the following test for each row:

1. **Pressurize the UP circuit only** by plugging in the UP line and setting the UP valve to MAX PSI. Leave the DOWN circuit unplugged.
2. Set the **DOWN valve to 0 PSI** (to prevent pressure from feeding into the unplugged circuit).
3. **Hold your thumb over the unplugged DOWN line** coming from the cylinder.
4. **Check for air pressure buildup** behind your thumb:
    - **Yes?** → Indicates internal leaks on the UP circuit.
    - No? → UP circuit likely clear
5. Repeat this process for **all rows** on the planter.

Note: Cylinders may leak in only one direction, so it's important to test both circuits.

Repeat the same procedure for the **DOWN circuit**:

1. **Pressurize the DOWN circuit only** by plugging in the DOWN line and setting the DOWN valve to MAX PSI. Leave the UP line unplugged.
2. Set the **UP valve to 0 PSI** (to prevent pressure from feeding into the unplugged circuit).
3. **Hold your thumb over the unplugged UP line** from each cylinder.
4. **Check for air pressure buildup**:
    - **Yes?** → Indicates internal leaks on the DOWN circuit.
    - No? → Indicates Down circuit likely clear.

Repeat this test for **all rows** on the planter.

Final Notes...

- A **leaking cylinder** will create back pressure that causes the SC valve to **relieve pressure**, giving a **false valve failure** indication.
- Replacing the leaking cylinder(s) will resolve the issue.