

Finishing Room Positive Pressure Verification & Calibration

1.0 Maintenance Objective & Frequency

The objective of this procedure is to verify and calibrate the positive pressure differential in the finishing room to ensure it remains within the specified range (typically 0.02 to 0.05 inches of water column positive relative to adjacent areas). Maintaining proper positive pressure prevents infiltration of airborne contaminants, dust, and humidity from surrounding production areas, which is critical for paint booth, coating, or clean finishing operations. This PM is to be performed weekly or whenever pressure alarms are triggered.

2.0 Lockout/Tagout (LOTO) & Safety

- Electrical Isolation: Lock out the HVAC supply fan motor disconnect switch and the exhaust fan disconnect switch (if applicable) before accessing any electrical components or adjusting fan drives.
- Pneumatic Isolation: Not applicable for this procedure unless pneumatic actuators are present on dampers; if so, isolate and bleed pneumatic lines.
- Hydraulic Isolation: Not applicable.
- Mandatory PPE: Safety glasses, hearing protection (if fans are running during testing), and nitrile gloves when handling calibration equipment.
- Confined Space: Do not enter ductwork or plenums without additional confined space permits and procedures.

3.0 Required Tools, Parts & Lubricants

- Digital manometer (range 0-1 inch WC, accuracy ± 0.001 inch WC) with static pressure tips and tubing
- Calibration certificate for manometer (valid within 12 months)
- Magnehelic gauge (if installed) for cross-reference
- Small flathead screwdriver (for zero adjustment on Magnehelic)
- 5mm Allen key (for damper linkage adjustments if needed)
- Lint-free wipes and isopropyl alcohol (for cleaning pressure ports)
- Log sheet or tablet with ServiceGrid work order

4.0 Step-by-Step Maintenance Procedure

1. Verify that the finishing room is in normal operating mode with all HVAC systems running (supply fan on, exhaust fan on if present, doors closed). Do not perform this procedure during a production shutdown or when doors are propped open.
2. Perform LOTO on the HVAC supply fan disconnect switch and exhaust fan disconnect switch to prevent accidental startup while accessing electrical panels or adjusting drives. Tag out with personal lock.
3. Locate the static pressure ports: one inside the finishing room (reference side) and one in the adjacent corridor or uncontrolled area (high side). Ensure ports are clean and unobstructed. Wipe with lint-free cloth and isopropyl alcohol if necessary.

4. Connect the digital manometer: attach the high-pressure hose to the corridor port and the low-pressure hose to the finishing room port. Ensure tubing is not kinked or pinched.
5. Zero the digital manometer according to manufacturer instructions (typically by pressing the zero button with both ports open to atmosphere). Record the zero reading.
6. Re-energize the HVAC system by removing LOTO and restoring power. Allow the system to stabilize for 5 minutes with doors closed.
7. Read the pressure differential on the digital manometer. Record the value in inches of water column (in. WC). The acceptable range is 0.02 to 0.05 in. WC positive (finishing room higher than corridor).
8. If the reading is outside the acceptable range, adjust the supply fan speed or damper position: For VFD-driven fans, adjust the frequency up/down by 2 Hz increments via the VFD keypad. For belt-driven fans, adjust the sheave pitch diameter (refer to fan manufacturer manual for specific turns). For motorized dampers, adjust the linkage using a 5mm Allen key to open or close the damper by 10% increments.
9. After each adjustment, wait 3 minutes for the system to stabilize, then re-read the pressure differential. Repeat until the reading is within the acceptable range.
10. If a Magnehelic gauge is installed, compare its reading to the digital manometer. If the Magnehelic reading differs by more than 0.01 in. WC, zero-adjust the Magnehelic using the small screwdriver on the zero adjustment screw until it matches the digital manometer.
11. Document the final pressure differential reading, any adjustments made, and the date/time on the ServiceGrid work order. Attach a photo of the manometer reading if possible.
12. Clean and store all tools. Return the finishing room to normal production status. Ensure all doors are closed and the room is ready for operation.

5.0 Verification & Return to Service

1. Perform a final pressure differential reading after all adjustments and confirm it is within the acceptable range (0.02 to 0.05 in. WC positive). Record the reading on the work order.
2. Conduct a smoke test: using a smoke pencil or incense stick, slowly move it along the door perimeter and any wall penetrations. The smoke should be drawn out of the finishing room into the corridor, confirming positive pressure. If smoke is drawn into the room, there is a leak or negative pressure condition that must be addressed.
3. Verify that all HVAC equipment is running normally (no unusual noises, vibrations, or alarms). Check that the supply and exhaust fans are operating at the correct speeds.
4. Remove all LOTO tags and locks. Ensure all access panels are closed and secured.
5. Sign off on the PM work order in ServiceGrid, including the final pressure reading, any adjustments made, and the smoke test result. Mark the task as complete.

Regulatory Disclaimer: This document is a generic maintenance template provided for educational and informational purposes only. It does not constitute professional engineering or reliability advice. The end-user assumes all liability for validating all step sequences, torque specs, and LOTO protocols against specific machinery OEM manuals before deployment to a live production floor.