

Warehouse High Velocity Fan Maintenance and Lockout/Tagout (LOTO) Procedure

1.0 Maintenance Objective & Frequency

The objective of this procedure is to perform preventative maintenance on warehouse high velocity fans to ensure safe operation, minimize vibration, extend bearing life, and prevent unplanned downtime. This includes cleaning, lubrication, belt tension adjustment, and electrical safety checks.

Frequency: Quarterly (every 3 months) or 2,000 operating hours, whichever comes first. Additional inspection recommended after any reported unusual noise or vibration.

2.0 Lockout/Tagout (LOTO) & Safety

- **Electrical Isolation:** Locate the dedicated disconnect switch or circuit breaker for the fan. Turn off and apply a personal lock and tag. Verify zero energy by attempting to start the fan.
- **Mechanical Isolation:** Ensure the fan blades have come to a complete stop before proceeding. Do not attempt to stop blades by hand.
- **PPE:** Safety glasses, cut-resistant gloves, hearing protection (if noise levels exceed 85 dBA), and steel-toed boots. Use a hard hat if working near overhead fans.
- **Fall Protection:** If the fan is mounted at height (e.g., ceiling or mezzanine), use an approved ladder or scissor lift with fall arrest harness anchored to a rated point.

3.0 Required Tools, Parts & Lubricants

- Personal lockout/tagout kit (lock, hasp, tag)
- Multimeter (for voltage verification)
- Set of combination wrenches (metric and imperial as per fan model)
- Allen key set (metric)
- Belt tension gauge (or straight edge and ruler)
- Grease gun with NLGI #2 lithium complex grease (compatible with fan bearing specifications)
- Clean lint-free rags
- Vacuum with HEPA filter or compressed air with moisture trap
- Replacement V-belts (if worn or cracked)
- Replacement fan blades (if damaged)
- Threadlocker (medium strength, e.g., Loctite 242)
- Torque wrench (range covering fan mounting bolts)

4.0 Step-by-Step Maintenance Procedure

1. Perform Lockout/Tagout: Isolate electrical power at the disconnect switch or breaker. Apply personal lock and tag. Verify zero energy by attempting to start the fan using the local control. Confirm fan blades are stationary.
2. Access the Fan: Remove the safety guard or access panel using appropriate tools. Store fasteners in a safe location. If fan is overhead, use a stable ladder or lift with fall protection.
3. Inspect Fan Blades: Visually check each blade for cracks, deformation, or excessive dirt buildup. Clean blades using a damp rag or vacuum. Replace any blade that shows structural damage.
4. Check Blade Balance: Spin the fan hub slowly by hand. Observe if any blade drags or if the hub wobbles. If imbalance is suspected, mark the heavy blade and add balancing weights per OEM instructions.
5. Inspect and Tension Belts: Examine V-belts for cracks, fraying, glazing, or stretching. Measure belt deflection using a tension gauge or by pressing midway between pulleys with moderate thumb pressure (deflection should be 1/64 inch per inch of span). Adjust tension by loosening motor mount bolts and sliding the motor. Torque motor mount bolts to OEM specification (typically 20-30 Nm).
6. Lubricate Bearings: Locate bearing grease fittings (if equipped). Wipe fittings clean. Using a grease gun, apply 2-3 pumps of NLGI #2 lithium complex grease. Do not overgrease. Wipe away excess grease.
7. Inspect Electrical Connections: Open the junction box or motor terminal box. Check for loose wires, corrosion, or signs of overheating. Tighten all terminal screws to 2-3 Nm. Verify ground connection integrity.
8. Check Fan Mounting and Guard: Tighten all mounting bolts to the fan base or support structure. Torque to OEM specification (typically 30-50 Nm). Ensure the safety guard is securely fastened and all fasteners are present.
9. Clean the Fan Area: Remove any debris, dust, or obstructions from the fan intake and discharge areas. Ensure clear airflow path.
10. Reinstall Guard and Panels: Replace all safety guards and access panels. Secure with original fasteners. Torque to spec if applicable.

5.0 Verification & Return to Service

1. Remove LOTO: Remove personal lock and tag. Ensure all personnel are clear of the fan area. Restore electrical power at the disconnect switch.
2. Test Run: Start the fan using the local control. Listen for unusual noises (grinding, squealing, rattling). Observe for excessive vibration. Let the fan run for at least 5 minutes.
3. Verify Airflow: Confirm that the fan is moving air in the correct direction and at expected velocity. Use an anemometer if available to measure airflow (should be within 10% of nameplate rating).
4. Final Inspection: Check that all guards are in place and no tools or rags are left inside the fan housing. Verify the fan stops promptly when turned off.
5. Documentation: Record maintenance date, findings, parts replaced, and any anomalies in the CMMS (ServiceGrid). Sign off on the PM work order.

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.