**Training Aid to Assist in Developing Ventilation Verification Procedure**

**Filtration** - Review system capacity and airflow to determine the highest Minimum Efficiency Reporting Value (MERV) filtration for eliminating contagions, replace or upgrade filters where needed, and verify that such filters are installed correctly.

1. Existing Filter - Verify and Document
	1. Document rating of existing filters.
	2. Document filters size/depth/quantity.
	3. Is the filter installed correctly? *If not document the deficiency and take any measurements required to make the repair.*
	4. Are the frames and filter bank free of any openings around the filters that would allow for untreated air to bypass the filters? *If not document the deficiency and take any measurements required to make the repair.*
	5. Determine type of motor and control (ECM, VFD, Belt, Direct).
	6. Document nameplate and installed components as applicable.
		1. Motor Nameplate
		2. Drive Assembly Components
		3. Variable Frequency Drive (VFD)
2. MERV 13 Filter Verification
	1. All tests shall be completed in a safe manner by personal wearing personal protective equipment.
	2. Verify if MERV 13 or better filtration is installed.
	3. If MERV 13 or better filtration is not installed, perform the following steps to determine the highest Minimum Efficiency Reporting Value (MERV) filtration that can be installed without adversely impacting equipment.
	4. Obtain the existing filters new and final pressure drop from the manufacturer.
	5. Posture the unit to provide full cooling, or high fan speed, and disable the economizer.
	6. With the existing filters installed, perform, and document a static pressure profile, temperature profile, fan RPM, Motor RPM, voltage, and amps.
	7. Using the previously recorded data as a baseline, determine the maximum filter pressure drop, without adversely impacting equipment, by adding temporary Construction Pad Media Filter material to the filter until the measured or calculated airflow drops by no more than 5%.[[1]](#footnote-1)
		1. Primary Method to verify airflow - Directly measure the change in airflow if accessible and efficient.
		2. Secondary Method – Calculate the change in airflow.
			* $CFM\_{N}=CFM\_{O }× √\frac{SP\_{N}}{SP\_{O}}$
	8. With the maximum pressure drop achieved, document static pressure profile, temperature profile, fan RPM, Motor RPM, voltage amps, and note the ability to increase fan speed if needed.
	9. Verify air volume, under maximum pressure drop condition, is within manufacturers specifications. Commonly specified as:
		1. Minimum CFM per ton (or)
		2. Minimum Supply Air Temperature
	10. If applicable, document and take any measurements required to increase the filter frames to accommodate deeper filters.
	11. Remove added material and provide documentation in the assessment report so a licensed professional can determine the highest MERV filtration that can be installed with the existing equipment.
	12. Return the unit to normal operation and enable the economizer.
	13. Include relevant photographic documentation.

*This document is intended to be used solely as an aide when developing the methods, procedures, and forms used in the Ventilation Verification Assessment.  It is the responsibility of each contractor, supervisor, and technician to ensure that the methods, procedures, and forms used meet the requirements of the local mechanical and health codes. Furthermore, it is the responsibility of the IAQ Supervisor or contractor to submit the methods, procedures, and forms that it drafts directly to the Authority Having Jurisdiction (AHJ) for approval and owner’s representative, prior to performing the actual work. The National Energy Management Institute Committee makes no representations, whatsoever, that drafting procedures or forms based on this document will meet that requirement of local mechanical, building, and health codes and expressly disclaims any liability or responsibility regarding the use of this document.*

1. 5% recommendation and maximum pressure drop determination steps derived from: ASHRAE, ASHRAE Epidemic Task Force: Building Readiness (February 1, 2021) (<https://www.ashrae.org/file%20library/technical%20resources/covid-19/ashrae-building-readiness.pdf>) [↑](#footnote-ref-1)