



CNSL

READINESS STANDARDS GUIDE

VENTILATION SYSTEMS

CURRENT ISSUES

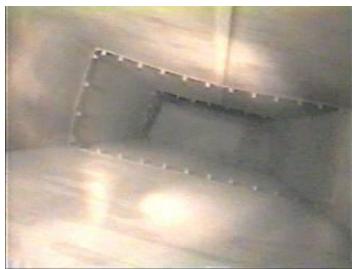
VENTILATION CLEANLINESS

Issue: Damage Control Petty Officers (DCPOs) lack the requisite knowledge to properly complete the cleaning and inspection of ship board ventilation systems IAW PMS guidelines.

- All components of the HVAC system shall be inspected and cleaned regularly in accordance with PMS MIP 6641/005 and the Navy Ventilation Cleanliness Assessment Guide located in Appendix B of NSTM 510.
- The Navy Ventilation Cleanliness Assessment Guide located in Appendix B of NSTM 510 applies to all ventilation components to include duct work, fan coils and electric vent heaters. It provides a component description and a pictorial guide to assist ship's force in the cleaning and inspection of all components of the HVAC system.
- Local Regional Maintenance Centers routinely conduct balance surveys of shipboard ventilation systems at the ship's request. If Ship's Force suspects that an issue exists with a particular ventilation system, they should submit a 2-Kilo for the compartment and ventilation system requiring testing. Block 35 comments of the 2-Kilo should be specific and include; the compartments being affected and the type of ventilation (Supply, Exhaust, Recirc) associated with the affected compartment. Local RMCs can also provide cleaning services that are beyond S/F capability.

CLEAN DUCT

NO ACTION REQUIRED



LIGHT BUILDUP

NO ACTION REQUIRED



MODERATE BUILD UP

CLEANING REQUIRED





Buildup of dirt obstructs airflow through ventilation system

HEAVY BUILD UP SHOULD BE CLEANED AS SOON AS POSSIBLE!!!!



LEVELS OF CLEANLINESS (IAW NSTM 510 Appendix B)

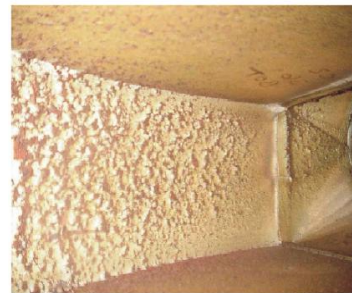
- **Clean:** Cleaning is not required at this time.
- **Light Buildup:** Cleaning is not required at this time.
 - **Moderate Buildup:** This system requires cleaning. Commence a plan for cleaning at earliest opportunity. If the system is associated with the laundry, ductwork with moderate buildup should be cleaned immediately due to the potential flammable nature of the debris in these ducts. Cleaning shall return the ductwork and components to the “clean” condition.
 - **Heavy Buildup:** This area should be cleaned as soon as possible. Cleaning shall return the ductwork and components to the “clean” condition.
- Most ductwork may be cleaned with a portable duct-cleaning tool.
- Textile duct should be cleaned in the ship’s laundry rooms.
- Galley exhaust ducts tend to rapidly collect grease buildup. This buildup is a fire hazard, and the system should be inspected on a regular basis.

Any ductwork with grease accumulation (an example is galley exhaust ductwork) should be cleaned by hand, not with the duct-cleaning tool.

HEAVY BUILDUP IN GALLEY EXHAUST



MODERATE BUILDUP IN GALLEY EXHAUST

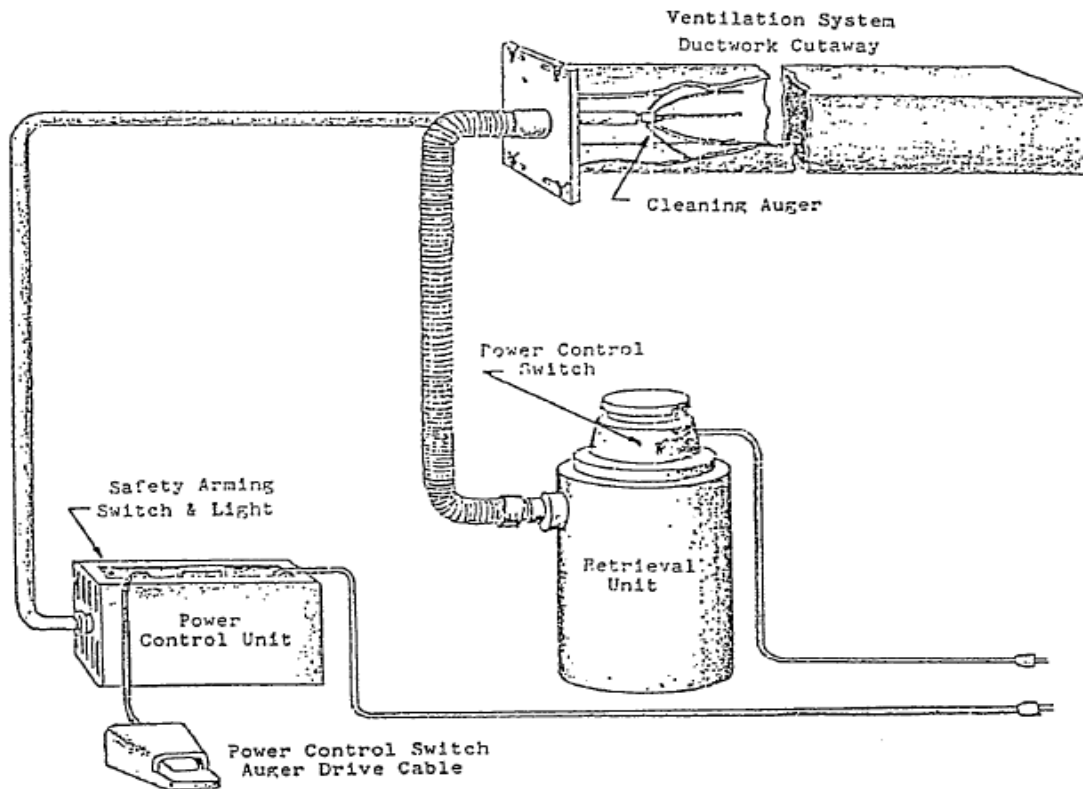


CLEAN ALL GALLEY DUCTING AND COMPONENTS BY HAND ONLY*

- The duct-cleaning tool has the following major components: a power unit, a flexible shaft connected to the power unit with a rotating plastic head used to dislodge debris in the ductwork, and a vacuum to remove debris from the ductwork. The duct cleaning tool should be operated as shown in the manufacturer’s description, operation, and maintenance instruction technical manual and videotape for the Extraction Systems Inc. Model 3607B Portable Duct Cleaning System (NSN 7910-01-255-1776).



- The 3607B is available from Defense Distribution Depot or directly from the Tomlinson group dba Extraction Systems Int'l. Cage 9Z672. The direct purchase price is \$7675.00 each.



Extraction Systems Inc. Model 3607B Portable Duct Cleaning System (NSN 7910-01-255-1776).

REFERENCES

- NSTM 510 Section 7 and NSTM 510 Appendix B.
- OPNAVINST 9640.1
- MIP 6641/005

SANITARY SPACE VENTILATION

Issue: Ventilation does not meet minimum design flow criteria.

- Ventilation in all sanitary spaces shall be specifically designed to minimize high humidity, condensation and odor persistence including a minimum air exchange rate of 15 changes per hour.
- At a minimum, provision of one exhaust terminal located to service each shower group and water closet group.
- Sanitary space exhaust systems tend to build up dirt and debris very rapidly, second only to laundry exhaust.
- Perform PMS IAW 6641/005 A-18 (inspect vent ducting/clean vent ducting interior) to ensure ventilation system ducting is clean.



REFERENCES

- NSTM 510 Section 7 and NSTM 510 Appendix B.
- OPNAVINST 9640.1A
- MIP 6641/005

AIR FLOW ALARMS

Issue: Air flow alarms are not severely degraded or non-operational. Ventilation systems shut down with no audible alarm indications.

- They Navy currently uses analog and digital type airflow alarms. Ship's force must first verify the type onboard to ensure the proper PMS is being conducted.
- Each system is designed to provide a means of activating audible and visual alarms when the rate of airflow decreases below a pre-determined level.
- The installation for each compartment shall consist of an airflow sensor and an indication/control panel.
- Airflow sensors shall be located in the exhaust duct of each compartment and connected to the indication/control panel located external to the compartment and adjacent to the access.
- The airflow rate setting for actuating the alarm shall be the point at which the exhaust ventilation system fails to remove 70 percent of design air flow.
- Perform PMS IAW 4361/002 M-2 or M-1 (Perform system status check) as applicable to system type.
- Perform PMS IAW 4361/002 A-10 (test air flow alarms, /test airflow alarm set points) as applicable to system type.
- Perform PMS IAW 4361/002 A-11 (Perform functional test of digital air flow monitoring system, and alarm set points) as applicable to system type.
- Verify Air Flow Indication Set Point Date Labels are installed on or in close proximity to the monitoring panel IAW MIP 4361/002 A-11 and 4361/051 A-6 as applicable to system type.

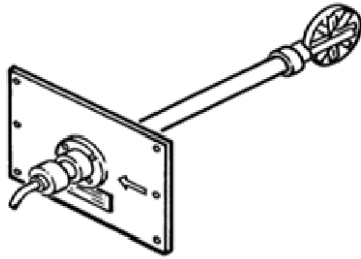
AIRFLOW INDICATION/ALARM SETPOINT DATA
LABEL MARKING BY DIRECTION OF NSWCCD-SSES CODE 954
ISEA EMAIL: SENSOR_ISEA.NSWC.FCT@nmci-isf.com
MONITORED COMPARTMENT CIRCUIT # _____
MONITORED COMPARTMENT LOCATION _____
VENTILATION CONTROL COMPARTMENT LOCATION _____
NORMAL AIR VELOCITY _____ FPM
ALARM SETPOINT _____ FPM
DATE _____



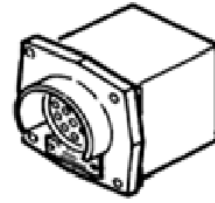
DIGITAL ALARM PANEL



ANALOG ALARM PANEL



AIRFLOW SENSOR



REMOTE AIRFLOW ALARM

REFERENCES

- Reference NAVSEA TECH MANUAL NAVSEA S9AA0-AB-GOS-010
- MIP 4361/002
- MIP 4361/051
- NAVSEA TECH MANULA SE168-AC-MMO-010