

The current edition of NFPA 92, *Standard for Smoke Control Systems*, classifies all systems used to address the impact of smoke from a fire as a Smoke Control System. Smoke control systems are categorized in two ways: as Smoke Containment Systems, the sub-classification of pressurization systems, and Smoke Management Systems, the sub-classification of systems for large-volume spaces. These systems can be further classified as either a Dedicated Smoke Control System (installed for the sole purpose of providing smoke control) or a Non-dedicated Smoke Control System (shares components with another system [i.e. the building HVAC system] and changes the mode of operation to achieve smoke control).

Per NFPA 105, *Standard for Smoke Door Assemblies and Other Opening Protectives*, periodic inspecting and testing and maintenance of Smoke Dampers shall also be in accordance with NFPA 92 and Combination Fire/Smoke Dampers shall meet the testing requirements prescribed in NFPA 80, *Standard for Fire Doors and Other Opening Protectives*. Consult your local building code to verify whether there is a required maintenance and testing schedule. Most local jurisdictions reference NFPA 105 for smoke dampers and NFPA 80 for combination fire/smoke dampers.

Periodic Inspection, Testing and Maintenance

Per NFPA 92, Dedicated Smoke Control Systems shall be tested at least semiannually and Nondedicated Smoke Control Systems shall be tested at least annually and dampers that are a part of these systems shall be cycled as part of this testing. Per NFPA 80, fire dampers (which includes Combination Fire/Smoke Dampers) shall be inspected 1 year after installation and then every 4 years, except for hospitals where the frequency is every 6 years. In addition to these requirements, NFPA 72, *National Fire Alarm and Signaling Code*, outlines periodic testing requirements for various types of fire alarm systems and components associated with these systems (i.e. Duct Smoke Detectors).

All requirements of testing for actuated smoke and fire/smoke dampers are to be conducted under normal HVAC airflow conditions.

1. Remove any obstructions, dirt, rust, corrosion, or other observed conditions that could impede proper damper operation. Clean damper blades and other moving parts if necessary. Use of a mild detergent or solvents is recommended for any cleaning required.
2. Linkage and jackshaft bearing brackets should be lubricated with a dry lubricant (such as T.F.E. Dry Lube). Never use a regular lubricating oil on dampers, as it will attract dirt and grit. Blade linkage is concealed in the side jamb out of the airstream and is maintenance free. Bearings are self-lubricating oilite bronze.
3. Verify that appropriate power (voltage or pneumatic air pressure) is being supplied to the actuator. Check actuator and tighten the linkage or coupling as necessary. Refer to manufacturer's recommended maintenance procedure for pneumatic and electric actuators.
4. All inspections and testing shall be documented indicating the location of the damper, date of inspection, name of inspector, deficiencies detected, and how deficiencies were corrected.
5. Remote Testing: According to the most recent versions of NFPA 80 and NFPA 105, Actuated Smoke and Combination Fire/Smoke Dampers only need to be visually tested at the initial testing during commissioning. This inspection will confirm that the position indication method accurately reflects the full-open and full-closed position of the damper. From this point, all following inspections can be done remotely with the use of the position indicator switches.

Dampers with Position Indicating Device

1. Use the signal from the damper's position indication device to determine if the damper is in the fully open position.
2. Remove air pressure or electrical power from the actuator to cause the actuator's spring return feature to close the damper.
3. Use the signal from the damper's position indication device to determine if the damper is in the fully closed position.
4. Reapply air pressure or electrical power to reopen the damper.
5. Use the signal from the damper's position indication device to determine if the damper is in the fully open position.

Dampers without Position Indicating Device

1. Visually confirm that the damper is in the fully open position.
2. Ensure that all obstructions are out of the path of the damper blades and then remove air pressure or electrical power from the actuator to cause the actuator to spring to the fully closed position.
3. Visually confirm that the damper is in the fully closed position.
4. Reapply air pressure or electrical power to reopen the damper.

Care should be exercised to ensure that all tests are performed safely by personnel wearing the appropriate personal protective equipment and such tests do not cause system damage. All inspections and testing shall be documented indicating the location of the damper, date of inspection, name of inspector, deficiencies detected, and how deficiencies were corrected.