

# HEAT & SMOKE VENT INSPECTION AND MAINTENANCE PACKET

A firefighter is positioned on a tall, silver metal aerial ladder, spraying a powerful stream of water into a large fire. The fire is intense, with thick, dark smoke billowing upwards and filling the background. The firefighter is wearing full protective gear, including a helmet and oxygen tank. The scene is dramatic, with the bright white water jets contrasting sharply against the dark, smoky environment.

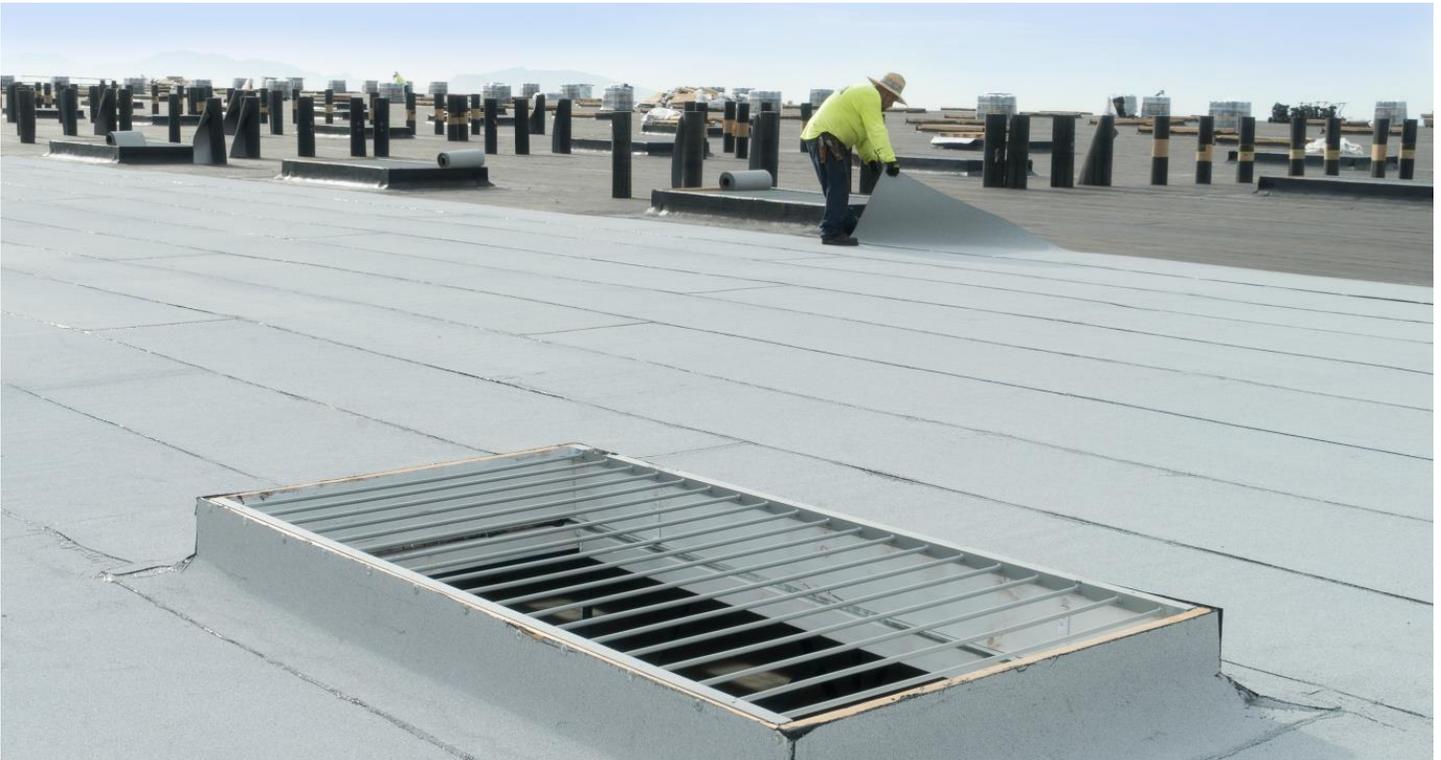
Fire protection for your warehouse and industrial properties. Shedding light on the importance of proper routine inspection and maintenance of your heat and smoke vents as per NFPA 204.

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Presented by: **Skyco**  
SKYLIGHTS

# Before going any further let's review proper fall protection!



**“Falls account for 1/3 of construction workplace fatalities.”**

To view a short video presentation on proper fall protection methods,  
go to:

**[www.SkycoSkylights.com/fall-protection](http://www.SkycoSkylights.com/fall-protection)**

# When working on a roof, which kinds of fall protection should be used?

- Railing systems
- Fall arrest systems
- Warning systems
- Covering systems



As of July 2016, Security/Burglar Bars are a CalOSHA approved fall protection method

-Title 8 Section 3212

# Introduction

Heat and Smoke Vents are designed for emergency smoke and heat ventilation and may incorporate translucent domes for natural daylighting. They are life saving devices and should be inspected routinely to ensure they operate in the event of a fire. The following pages outline proper smoke vent inspection and maintenance as per NFPA 204. This informational packet serves as guidance for facilities manager and building owners.

## Table of Contents

- Inspection & Maintenance Details (Press Release)
- Smoke Vent Inspection Form
- New Smoke Vent Info Sheet





## Inspecting and Maintaining Heat and Smoke Vents

In a recent [Roofing Market Survey](#) conducted by Skyco Skylights, “the vast majority of commercial roofers estimated 40 to 60% of commercial low-slope roofs are due for re-roof or significant maintenance.” Over half of those roofs have outdated skylights and smoke vents in desperate need of replacement.

Fire Marshals and Fire Inspectors are now utilizing the NFPA 204 Standard for Smoke and Heat Venting, which is referenced in the International Building Code (IBC) and International Fire Code (IFC). [Smoke vents](#) are a life-safety device for occupants and fire fighters, designed to automatically release the smoke, heat, and hot gases from a burning building in the event of a fire.

Specifically, the NFPA 204, Chapter 12, Inspection and Maintenance Section is the section that Fire Marshals and Fire Inspectors are now following, which provides mandatory guidelines for annual smoke vent inspections.

As per NFPA 204 Standard for Smoke and Heat Venting, “Smoke and heat venting systems and mechanical smoke exhaust systems shall be inspected and maintained in accordance with Chapter 12 [Inspection and Maintenance].” Proper inspection and maintenance is paramount for building owners and facility managers, otherwise fines and/or replacement may be costly.

The following is an outline of scheduling, inspection and maintenance of existing smoke vents as per NFPA 204.

**Requirements:** Mechanically opened vents shall be provided with manual release device. Typically, a cord and handle is used to manually activate smoke vent. This will be used to facilitate the inspection and/or for Fire Fighters to ventilate a burning building quick and safe.

**Inspection Schedule:** Annual inspection schedules for each smoke vent shall be written out detailed with dates and procedures. Any special mechanisms, such as gas shocks, shall be inspected individually each year or as specified by the manufacturer.

### Details to Note

- Changes in appearance
- Damage to any components
- Fastening security
- Weather tightness
- Adjacent roofing and flashing condition
- Any deficiencies
- Any other pertinent items

### Inspection Actions and Details

- Doors shall be activated by pulling on manual release. Latches should immediately release smoothly and open moving through its designed travel. Doors should open fully without assistance or interruption which would indicate a faulty piston, sticking weather seal, or corroded bearings.
- With doors open, inspect the restraining cable system. Cabling should have ample tension and no frays. Observation shall be made of the whip and travel path of cable, noting any possible obstruction that would delay release of the doors. Any interference shall be corrected by removing obstruction and noted immediately.
- All operating levers, latches, hinges and weather-sealed surfaces shall be examined to determine conditions, such as deterioration and accumulation of foreign materials. An operational test shall be performed after removal or correction of any issues.
- Inspect the fusible link to determine the date and temperature rating stamped on each fusible link. Fusible links have a life expectancy of 5 years. If during the inspection the fusible link is 5 years or older, it must be replaced with a new fusible link with the identical temperature rating.



- Temperature setting shall be set at a temperature that does not interfere with any sprinkler or first response systems. i.e. Temperature must be set higher than temperature response setting for sprinklers so sprinklers can engage as designed.

**Reporting:** Upon completion of the inspection, an inspection report shall be provided to the Facilities Manager, and maintained on file by the local Fire Inspector. Each vent shall also have an inspection tag attached, indicating date, who inspected and results of inspection.

**Vent Inspection Tag**

Number of Vents: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Found Satisfactory

Repair in Progress

<p><b>Smoke Vent Inspection Form</b></p> <p>Building Equipment Summary: _____</p> <p>Smoke Vent Locations: _____          _____          _____          _____</p> <p>Total number of vents: _____</p> <p>Type:</p> <p><input type="checkbox"/> Single Door Vent</p> <p><input type="checkbox"/> Dual Door Vent</p> <p>Releasing Mechanism:</p> <p><input type="checkbox"/> Fusible Link</p> <p><input type="checkbox"/> Motor</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> Fusible link replaced</p> <p>Date of link replacement: _____</p> <p>Fusible links are to be replaced if painted or show unusual buildup or discoloration. They are good for approximately 5 years.</p>	<p>Inspection Checklist:</p> <p>Overall Condition (Inside &amp; Outside): (Check if satisfactory)</p> <p><input type="checkbox"/> Door seals in tack, no leaks</p> <p><input type="checkbox"/> Hinges clean, no problematic paint or rust</p> <p><input type="checkbox"/> Door panels clean, no rust</p> <p><input type="checkbox"/> Area is clear to allow air passage</p> <p><input type="checkbox"/> No foreign restraints or cable installed</p> <p><input type="checkbox"/> Fusible link clean and within date</p> <p><input type="checkbox"/> Hardware examined and in good condition</p> <p><input type="checkbox"/> Cables or chains properly tensioned and are not stretched</p> <p><input type="checkbox"/> Guides, bearings, springs and hinges well lubricated</p> <p><input type="checkbox"/> Doors satisfactorily operated to full open position</p> <p><input type="checkbox"/> Hang inspection tag at location</p> <p>Comment of service provided or needed:          _____          _____          _____</p> <p>Complete new form and hang if repair performed</p> <p>Service provided by: _____</p> <p style="text-align: right;">Date: _____</p>
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**Maintenance:** It's highly advised to consult a skylight and smoke vent professional when it comes to any maintenance on units. Manufacturers like [Skyco Skylights](#) in Costa Mesa, CA are able to direct maintenance on various items to address. In most cases, a new unit is the best and safest option. If you choose to perform maintenance on your units always make sure every item works 100% and do not conflict with other parts. It should be noted that dome only change outs on smoke vents may void the UL Listing and create unintentional liability for the building owner.

Smoke vents are life saving devices. A regular, diligent inspection and upkeep program is needed to ensure the units perform as designed. It is up-to building owners and facilities managers to keep their units in working shape. Inspectors will periodically check in and issue orders to replace or fix. If you have any questions or concerns about the state of your smoke vents please contact Skyco Skylights at 949-629-4090.

[Skyco Skylights](#) is an industry leading industrial and custom structural skylight manufacturer located in Costa Mesa, CA. offering a full range of products including Industrial Skylights, UL Listed Smoke Vents, Custom Structural Skylights, Photovoltaic Skylights & Canopies, rooftop safety and security products. Each product comes with a 10 year warranty. For additional information, call 949-629-4090 or email [info@SkycoSkylights.com](mailto:info@SkycoSkylights.com)

# Skyco

## SKYLIGHTS

Lighter, stronger performance

Fire protection and natural daylighting go hand in hand



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UL listed  
HEAT AND SMOKE VENT

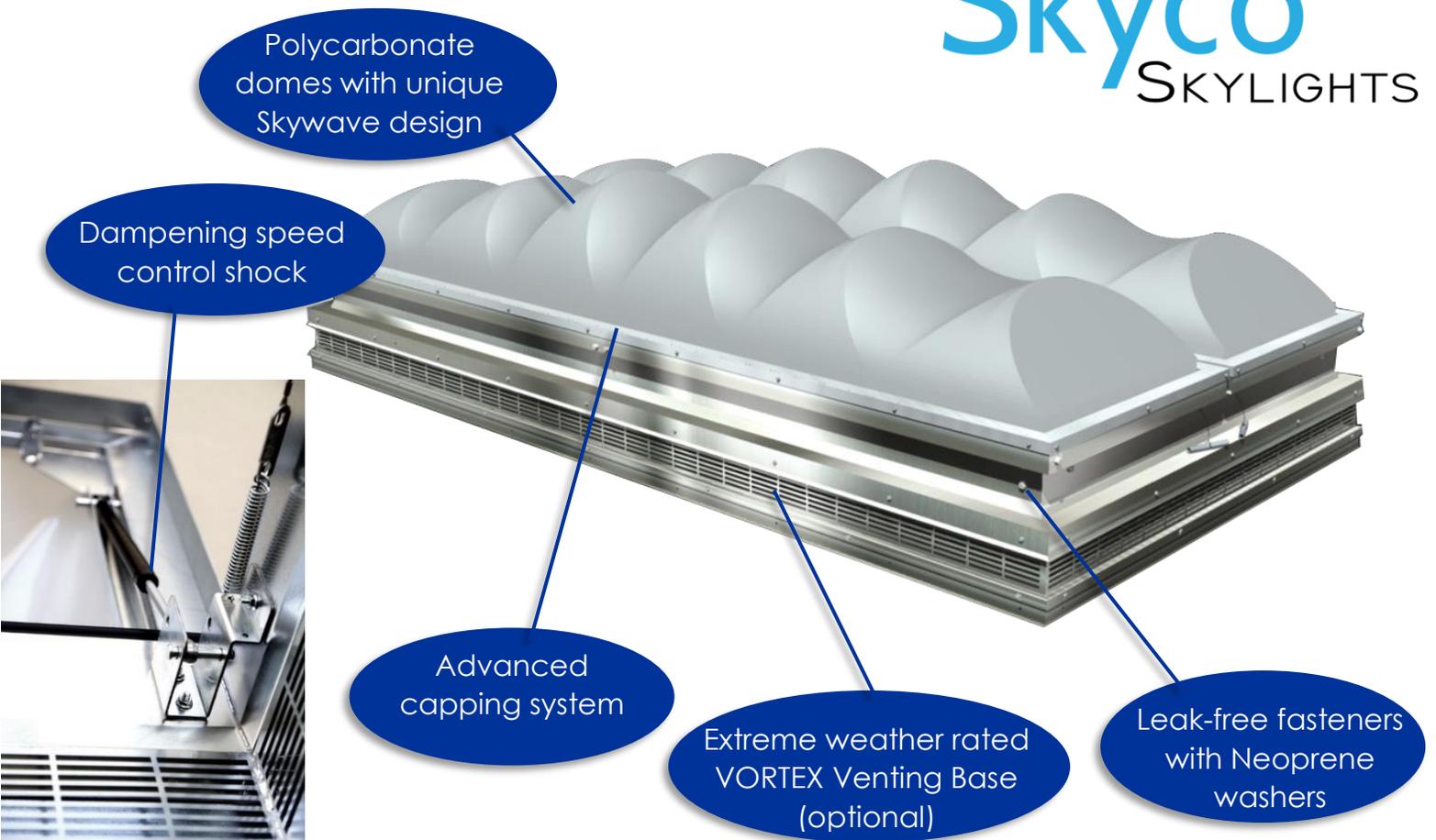


[www.SkycoSkylights.com](http://www.SkycoSkylights.com)

[info@SkycoSkylights.com](mailto:info@SkycoSkylights.com)

949-629-4090

# Skyco SKYLIGHTS



## Details:

- UL No. E472388
- Meets standards for Int. Fire Code and CA Fire Code
- 800 lbs. Impact Test
- Light weight - 146 lbs. (without optional VORTEX base)
- High wind rated
- Curb Mounted or Self Flashing Available
- 10 Year Pass Through Warranty

## VORTEX Venting Base (optional):

- Extreme weather rated design
- Neoprene washers
- Rain shield comes standard
- Superior intake and exhaust
- Optional: Dust Filter or Insect Screen



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Costa Mesa, CA 92626

# Skyco

## SKYLIGHTS

Lighter, stronger performance

Fire protection and natural daylighting go hand in hand



INTEGRITY  
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Single door  
HEAT AND SMOKE VENT



[www.SkycoSkylights.com](http://www.SkycoSkylights.com)

[info@SkycoSkylights.com](mailto:info@SkycoSkylights.com)

949-629-4090

Polycarbonate domes with unique Skywave design

Dampening speed control shock

Advanced capping system

Leak-free fasteners with Neoprene washers

Extreme weather rated VORTEX Venting Base (optional)



## Details:

- 800 lbs. Impact Test
- Lightweight aluminum frame
- High wind rated
- Curb Mounted or Self Flashing Available
- Manual opening handle
- 10 Year Pass Through Warranty

\*This model is not UL Listed. Ask about our UL Listed model.

## VORTEX Venting Base (optional):

- Extreme weather rated design
- Neoprene washers
- Rain shield comes standard
- Superior intake and exhaust
- Optional: Dust Filter or Insect Screen



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# Appendix

- Typical Smoke Vents in the Field
- NFPA 204 Chapter 12
- Smoke Vent Inspection Form
- Smoke Vent Inspection Tags



## Typical Smoke Vents in the Field

If you're inspecting older smoke vents, especially if they are single door, they can be hard to identify in the field. Older smoke vents typically are single door and some were built without manual release handles. Some of the following pictures are examples of older smoke vents you may find in the field.



### Older Single Doors

This smoke vent is about 15-25 years old. The smooth dome is an older design phased out and replaced by parabolic domes (wave designs) for better light gathering surface area and strength. The manual release handle is tough to notice given the short cable and small ring.



### Pulling the Manual Release

Another older smoke vent. You will notice the manual release was pulled but the smoke vent did not open completely. This would be an automatic fail if inspected. This unit is equipped with a capless fiberglass glazing. These pose serious fall risk. Switching to a capped parabolic polycarbonate glazing system is highly recommended.



### **Typical Newer Unit by Other Manufacturer**

Some features to note here are; first the single door design is not UL Listed and in many cases not approved by Fire Marshals. Second, the capless design poses serious fall risks and cracking early in the life of the unit.



### **Cracking and Exposed Lip**

Capless units are dangerous and a drain of capital. The screw penetrating the dome causes almost immediate cracking. The exposed lips allow wind driven rain to enter the building. If domes are replaced with the same capless design, cracking is common. Dome change-outs are not a real solution to dome failure problems and can cost a lot more capital in the long run.



### **New UL Listed Smoke Vent by Skyco Skylights**

The dual door design is the only UL Listed system currently (non-UL single door available but consult local fire marshal for approval before installing). The noticeable design is much easier to identify on a roof mixed with skylights and smoke vents. The capping system ensures no cracking or leakage from the dome. This is an advanced design, code compliant and built to last.

# **NFPA 204**

Chapter 12

## Smoke Vent Inspection and Maintenance

### 11.3\* Storage Occupancies Protected by Control Mode Sprinklers.

11.3.1 Where draft curtains are provided, they shall be located over the longitudinal center of an aisle.

11.3.2 The aisle width shall not be less than 1.5 times the spacing between sprinklers in the direction perpendicular to the draft curtain.

11.3.3 Sprinklers shall be located on both sides of the curtain per NFPA 13, *Standard for the Installation of Sprinkler Systems*, requirements for sprinkler placement with respect to walls.

11.3.4 The aisle width required by 11.3.2 shall not be required if a full height partition is used in lieu of a draft curtain.

## Chapter 12 Inspection and Maintenance

12.1\* **General.** Smoke and heat venting systems and mechanical smoke exhaust systems shall be inspected and maintained in accordance with Chapter 12.

### 12.2\* Requirements.

12.2.1 **Mechanically Opened Vents.** Mechanically opened vents shall be provided with manual release devices that allow direct activation to facilitate inspection, maintenance, and replacement of actuation components.

12.2.2 **Thermoplastic Drop-Out Vents.** Thermoplastic drop-out vents do not allow nondestructive operation; however, inspection of installed units shall be conducted to ensure that the units are installed in accordance with the manufacturer's instructions and that all components are in place, undamaged, and free of soiling, debris, and extraneous items that might interfere with the operation and function of the unit.

12.2.3 **Inspection and Maintenance.** The inspection and maintenance of multiple-function vents shall ensure that other functions do not impair the intended fire protection operation.

### 12.3 Inspection, Maintenance, and Acceptance Testing.

#### 12.3.1 Inspection Schedules.

12.3.1.1 A written inspection schedule and procedures for inspection and maintenance shall be developed.

12.3.1.2 Inspection programs shall provide written notations of the date and time of inspections and of discrepancies found.

12.3.1.3 All deficiencies shall be corrected immediately.

12.3.1.4\* Vents shall be inspected and maintained in an operating condition in accordance with Chapter 12.

#### 12.3.2 Mechanically Opened Vents.

12.3.2.1 An acceptance performance test and inspection of all mechanically opened vents shall be conducted immediately following installation to establish that all operating mechanisms function properly and that installation is in accordance with this standard and the manufacturer's specifications.

12.3.2.2\* Mechanically opened vents shall be inspected and subjected to an operational test annually, following the manufacturer's recommendations.

12.3.2.3\* All pertinent characteristics of performance shall be recorded.

12.3.2.4 Special mechanisms, such as gas cylinders, thermal sensors, or detectors, shall be checked annually or as specified by the manufacturer.

#### 12.3.3 Thermoplastic Drop-Out Vents.

12.3.3.1\* An acceptance inspection of all thermoplastic drop-out vents shall be conducted immediately after installation and shall include verification of compliance with the manufacturer's drawings and recommendations by visual examination.

12.3.3.2\* Thermoplastic drop-out vents shall be inspected annually in accordance with 12.4.2 and the manufacturer's recommendations.

12.3.3.3 Changes in appearance, damage to any components, fastening security, weather tightness, and the adjacent roof and flashing condition shall be noted at the time of inspection, and any deficiency shall be corrected.

12.3.3.4 Any soiling, debris, or encumbrances that could impair the operation of the vent shall be promptly removed without causing damage to the vent.

12.3.4 **Inlet Air Sources.** Where required for the operation of vent systems, intake air sources shall be inspected at the same frequency as vents.

### 12.4 Conduct and Observation of Operational Tests.

#### 12.4.1 Mechanically Opened Vents and Air Inlets.

12.4.1.1 Mechanically opened vents and air inlets shall be operated during tests by simulating actual fire conditions.

12.4.1.2 The restraining cable at the heat-responsive device (or other releasing device) shall be disconnected, releasing the restraint and allowing the trigger or latching mechanism to operate.

12.4.1.3\* When the heat-responsive device restraining cable for mechanically opened vents or air inlets is under tension, observation shall be made of its whip and travel path to determine any possibility that the vent, building construction feature, or service piping could obstruct complete release. Any interference shall be corrected by removal of the obstruction, enclosure of cable in a suitable conduit, or other appropriate arrangement.

12.4.1.4 Following any modification, the unit shall be retested for evaluation of adequacy of corrective measures.

12.4.1.5 Latches shall release smoothly and the vent or air inlet shall open immediately and move through its design travel to the fully opened position without any assistance and without any problems such as undue delay indicative of a sticking weather seal, corroded or unaligned bearings, or distortion binding.

12.4.1.6 Manual releases shall be tested to verify that the vents and air inlets operate as designed.

12.4.1.7 All operating levers, latches, hinges, and weather-sealed surfaces shall be examined to determine conditions, such as deterioration and accumulation of foreign material. An operational test shall be conducted after corrections are completed, when conditions are found to warrant corrective action.

12.4.1.8 Following painting of the interior or exterior of vents and air inlets or the addition of sealants or caulking, the units shall be opened and inspected to check for paint, sealants, or caulking that causes the parting surfaces to adhere to each other.

12.4.1.9 Heat-responsive devices coated with paint or other substances that could affect their response shall be replaced with devices having an equivalent temperature and load rating.

#### 12.4.2 Thermoplastic Drop-Out Vents.

12.4.2.1 All weather-sealed surfaces on thermoplastic drop-out vents shall be examined to determine any adverse conditions, such as any indication of deterioration and accumulation of foreign material. Any adverse condition that interferes with normal vent operation, such as caulking or sealant bonding the drop-out vent to the frame, shall be corrected.

12.4.2.2 Following painting of the interior or exterior of the frame or flashing of the vents, the units shall be inspected for paint adhering surfaces together; any paint that interferes with normal operation shall be removed or the vent shall be replaced with a new, listed and labeled unit having comparable operating characteristics.

12.4.2.3 Manual releases shall be tested annually.

#### 12.4.3 Inspection, Maintenance, and Testing of Mechanical Smoke-Exhaust Systems.

##### 12.4.3.1 Component Testing.

12.4.3.1.1 The operational testing of each individual system component of the mechanical smoke-exhaust system shall be performed as each component is completed during construction.

12.4.3.1.2 It shall be documented in writing that each individual system component's installation is complete and that the component has been tested and found to be functional.

##### 12.4.3.2 Acceptance Testing.

12.4.3.2.1 Acceptance tests shall be conducted to demonstrate that the mechanical smoke-exhaust system installation complies with and meets the design objectives and is functioning as designed.

12.4.3.2.2 Documentation from component system testing shall be available for review during final acceptance testing.

12.4.3.2.3 If standby power has been provided for the operation of the mechanical smoke-exhaust system, the acceptance testing shall be conducted while on both normal and standby power.

12.4.3.2.4 Acceptance testing shall be performed on the mechanical smoke-exhaust system by completing the following steps:

- (1) Activate the mechanical smoke-exhaust system.
- (2) Verify and record the operation of all fans, dampers, doors, and related equipment.
- (3) Measure fan exhaust capacities, air velocities through inlet doors and grilles, or at supply grilles if there is a mechanical makeup air system.

12.4.3.2.5 Operational tests shall be performed on the applicable part of the smoke-exhaust system wherever there are system changes and modifications.

12.4.3.2.6 Upon completion of acceptance testing, a copy of all operational testing documentation shall be provided to the owner and shall be maintained and made available for review by the AHJ.

##### 12.4.3.3 Periodic Testing.

12.4.3.3.1 Mechanical smoke-exhaust systems shall be tested semiannually by persons who are knowledgeable in the operation, testing, and maintenance of the systems.

12.4.3.3.2 The results of the tests shall be documented and made available for inspection.

12.4.3.3.3 Tests shall be conducted under standby power where applicable.

##### 12.4.3.4 Exhaust System Maintenance.

12.4.3.4.1 During the life of the building, maintenance shall be performed to ensure that mechanical smoke-exhaust systems will perform their intended function under fire conditions.

12.4.3.4.2 Maintenance of the systems shall include the testing of all equipment, including initiating devices, fans, dampers, and controls.

12.4.3.4.3 Equipment shall be maintained in accordance with the manufacturer's recommendations.

##### 12.4.3.5 Inspection Schedule.

12.4.3.5.1 A written inspection schedule and procedures for inspection and maintenance for mechanical smoke-exhaust systems shall be developed.

12.4.3.5.2 Inspection programs shall provide written notations of date and time of inspections and for discrepancies found.

12.4.3.5.3 All system components shall be inspected semiannually in conjunction with operational tests.

12.4.3.5.4 Any deficiencies noted in the system components or smoke-exhaust system performance shall be corrected immediately.

#### 12.5 Air Inlets.

12.5.1 Air inlets necessary for operation of smoke and heat vents or mechanical smoke-exhaust systems shall be maintained clear and free of obstructions.

12.5.2 Operating air inlet louvers, doors, dampers, and shutters shall be examined and operated to assure movement to fully open positions.

12.5.3 Operating equipment shall be maintained and lubricated as necessary.

12.6 Ice and Snow Removal. Ice and snow shall be removed from vents promptly, following any accumulation.

## Chapter 13 Design Documentation

13.1\* Documentation Required. All of the following documents shall be generated by the designer during the design process:

- (1) Design brief
- (2) Conceptual design report
- (3) Detailed design report
- (4) Operations and maintenance manual

13.1.1 Design Brief. The design brief shall contain a statement of the goals and objectives of the vent system and shall provide the design assumptions to be used in the conceptual design.

# Smoke Vent Inspection Form

## Inspection Checklist:

Building Equipment Summary:

Overall Condition (Inside & Outside):

Smoke Vent Locations:

(Check if satisfactory)

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- Door seals in tack, no leaks
- Hinges clean, no problematic paint or rust
- Door panels clean, no rust
- Area is clear to allow air passage
- No foreign restraints or cable installed
- Fusible link clean and within date
- Hardware examined and in good condition
- Cables or chains properly tensioned and are not stretched
- Guides, bearings, springs and hinges well lubricated
- Doors satisfactorily operated to full open position
- Hang inspection tag at location

Total number of vents: \_\_\_\_\_

Type:

- Single Door Vent
- Dual Door Vent

Comment of service provided or needed:

Releasing Mechanism:

- Fusible Link
- Motor
- Other
  
- Fusible link replaced

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Date of link replacement: \_\_\_\_\_

Complete new form and hang if repair performed

Fusible links are to be replaced if painted or show unusual buildup or discoloration. They are good for approximately 5 years.

Service provided by:

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Date: \_\_\_\_\_

**Vent Inspection Tag**

Number of Vents: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Found Satisfactory

Repair in Progress

**Vent Inspection Tag**

Number of Vents: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Found Satisfactory

Repair in Progress

**Vent Inspection Tag**

Number of Vents: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Found Satisfactory

Repair in Progress

**Vent Inspection Tag**

Number of Vents: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Found Satisfactory

Repair in Progress

**Vent Inspection Tag**

Number of Vents: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Found Satisfactory

Repair in Progress

**Vent Inspection Tag**

Number of Vents: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Found Satisfactory

Repair in Progress