TB-P25 (1112)

THE
State Auto Group

Your Business
Insurance Specialists

Risk Control Services

Fire Doors Inspection, Testing and Maintenance

FIRE DOORS

Inspection, Testing and Maintenance

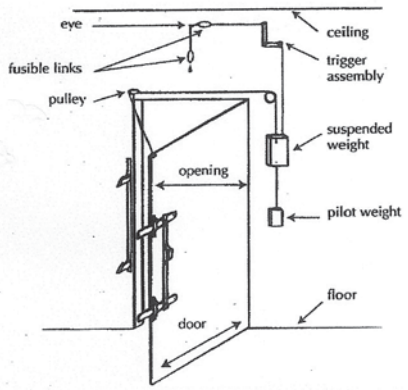

Figure 1. Closing devices for single swinging door

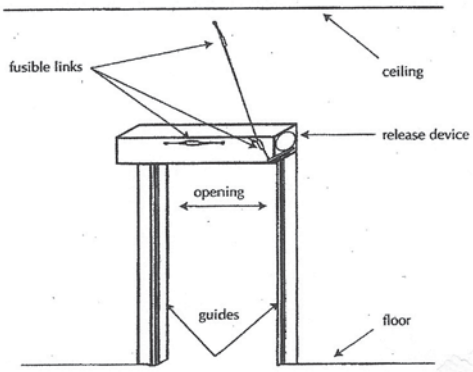

Figure 2. Closing devices for single rolling steel door

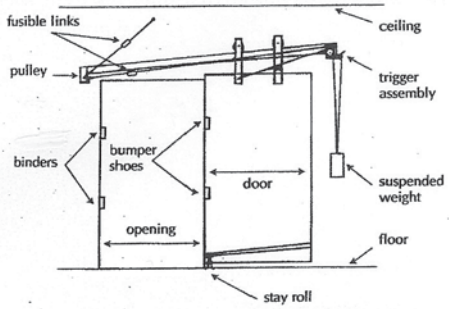

Figure 3. Closing devices for single sliding door (inclined track)

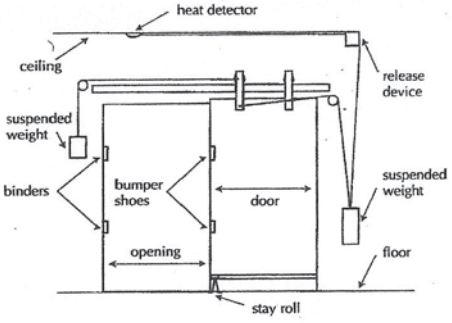

Figure 4. Closing devices for single sliding door (level track)

FIRE DOORS

Inspection, Testing and Maintenance

Fire doors are an important part of any fire protection system. Fire doors are installed to provide a barrier against the passage of flame and heat through wall openings. They also can be a key factor in saving lives by confining a fire and protecting the path of escape for the occupants of a building.

The effectiveness of a fire door depends on good maintenance which is the result of routine inspections and testing. Operating tests show that *a statistically high number of fire doors fail to close when trip-tested during simulated fire conditions*. These doors however, rarely failed to operate properly due to faulty design or improper installation. Rather, they failed from a lack of proper maintenance.

NFPA 80 lists five specific requirements for proper care and maintenance of fire doors. They include inspection, lubrication and adjustment, prevention of door blockage, maintenance of closing mechanisms, and repair of fire doors and windows. As with any preventive maintenance program, regular inspection of all fire door components is essential.

Types of Fire Doors

There are four (4) basic designs of fire doors:

- Horizontal Sliding
- Swinging or Hinged
- Vertical Roll-Down
- Vertical Sliding (Guillotine)

To be acceptable to the local building or fire prevention codes or other authority having jurisdiction, the door and door frame assembly must have been tested and labeled by a recognized testing agency such as Underwriters Laboratories. Detailed information on types of fire-rated doors is provided in the Underwriters Laboratories Building Materials Directory. A thorough summary of fire door ratings, types, construction and installation details and much more is contained in the NFPA 80, Standard for Fire Doors and Windows.

Whether an overhead rolling, tin-clad or hollow metal sliding, or swinging type of door is selected, it should be installed in accordance with the manufacturer's instructions. It should confirm with its specified listing. See Figures 1 through 4 (on previous page) for typical fire door arrangements.

Release Mechanisms

Commonly, there are two methods of releasing a fire door so that it can automatically close. This includes use of a fusible link or an electro-magnetic device.

A fusible link is a soft metal element that is designed to melt / break apart to release the fire door once a certain temperature has been achieved. If a fusible link is used:

- It should be rated at 165° F in order to help ensure the most rapid operation (closure) possible in the event of a fire.
- Multiple links are desirable on each side of the protected opening, with at least one located near the ceiling (6 to 12 inches).
- Fusible links are required on both sides of the fire barrier wall so that the door will rapidly release to close regardless on which side of the wall the fire originates.

Electro-magnetic fire door release devices are most commonly released by activation of a smoke or heat detector, but can also be configured to release by activation of a manual fire alarm, water flow detector for a sprinkler system, or by activation of a carbon dioxide or other special extinguishing system.

- Detectors should not be placed in the "Dead Air" space developed at the intersection of the wall and ceiling directly above the fire door. They should be located 6 to 12 inches below this intersection.
- If electromagnetic hold open devices are utilized, they should be cleaned and tested frequently.

Fire doors protecting exit passages should be kept closed at all times or activated by smoke detection devices instead of fusible links (as fusible link releases usually take a comparably long time to operate and smoke can pour into the exit passageway creating a life safety hazard).

Inspection, Testing and Maintenance

A proper fire door maintenance program includes formal inspections, regular maintenance and annual "drop" or performance testing. The following suggestions are made for your inspection and testing program:

- **Document Your Inspection, Testing & Maintenance.** The first step in establishing a good inspection and testing program is to document inspections and testing. Start by identifying and labeling all fire doors in the facility. Inventory the fire doors by number, including their location and type (sliding, overhead, swinging, etc.). See attached sample door inspection and testing form (on inside back cover of this brochure).

- **Conduct Weekly Visual Inspections.** This should include:

  √ Visual check of the fire door and all associated hardware for damage—metal shielding, door casings, door guides and rails, counterbalances, bumpers, pulleys and cabling, fusible links, covered baffles of overhead fire doors, etc.

  √ Visual check of guides and pulleys to ensure they are clean and lubricated.

  Visual check for obstructions—storage or wedges that would hinder or prevent a fire door from properly operating or fully closing.

  √ During a visual inspection, the fire door and all associated devices should appear to be in good repair. Fusible links should be properly located at the top of the opening or at the projecting arm on sliding fire doors and near the releasing mechanism for overhead fire doors, and at the ceiling level on each side of the opening.

  √ Fusible links should not be tied, painted, missing or corroded. If a fusible link is painted the door may not be released to close. Painted links need to be replaced (do not scrape off the paint as the link element may be compromised).

  √ Closing devices that rely on electronic detection should be energized and in good working order. Rails, guides and pulleys must be clean and well lubricated.

  √ All damage should be noted on the appropriate form and any problems addressed immediately.

- **Annual "Drop" or Performance Test**
  Perform a full operational "drop" or performance test at least annually. Operational testing of the fire door should simulate actual conditions. Fusible link operated door testing is done by disengaging the fusible link from the link arm when the door is in the fully open position. Gravity or the closing weight should close the door. Doors activated by smoke detection devices should be tested by using smoke to activate the detector. Overhead rolling doors or guillotine type doors with concealed mechanisms should be tested and reset in accordance with manufacturer's instructions. Care should be taken that these doors do not fall so quickly as to endanger building occupants.

√ Do not use heating devices or cutting of fusible links to release the fire door. The purpose of the "drop" or performance test is to check the proper operation of the fire door to make sure that it will operate automatically in the event of a fire.

√ During testing, the governing assembly of overhead fire doors and spring tension should be checked and adjusted as needed prior to the re-setting of the overhead fire door.

√ The door should close fully and freely without binding or hesitating in its operation. Swinging doors must latch solidly and with positive force. Horizontal and vertical sliding doors must come to rest against their stops and within the sill and wall binders so they press against the wall. Also, sliding doors should overlap the door opening by at least four inches on the sides and top (and on the bottom if the door is installed above floor level, such as on a conveyor opening).

√ Any damaged or inoperative parts should be replaced immediately. Wood doors should be inspected regularly for signs of dry rot. Examine chains, cables, or ropes etc., for signs of wear or stretching.

√ Check the open spaces around the fire doors during closing to ensure that spacing at the bottom of the fire door does not exceed what's listed in NFPA 80 "Standard for Fire Doors & Fire Windows." This standard is 3/8-inches or less for the fire doors with bottom sills, 3/4-inches or less for doors without bottom sills and 3/4-inches or less from the bottom of the door to the floor.

√ Fusible links need not be tested, but should be replaced if they are painted, corroded or otherwise damaged.

√ After the performance test is completed, lubricate the moving parts and follow the manufacturer's instructions for resetting the door.

√ Ideally, an authorized agent of the manufacturer should reset the door. If a manufacturer's representative does not reset the fire door, the door should be reset and retested to verify proper resetting procedures have been used. Once successful operation has been verified the door can be reset and made operational.

Door Blockage Prevention

A fire door should never be obstructed from closing or else it will compromise the fire barrier wall.

- Door openings and the surrounding areas on both sides of the door should be kept clear of all storage. Piling materials against the door or in its travel path should be prohibited. Consider installing door guard barriers to prevent storage or painting a line on the floor near the door to indicate a clear zone where stock piling against the doors or opening should be prohibited.
- The door's closing weights should be protected or kept free of impediments that may interfere with proper fire door operation. Guides for overhead rolling doors should not be crimped or damaged by material handling equipment. Doors should never be wedged or propped open. When it is necessary to keep the door open, a fusible link or an electromagnetic hold open device should be provided.

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FIRE DOOR MAINTENACE PROGRAM

Company: _____ Location: _____

Date: _____ Inspected By: _____

_____ Weekly Visual _____ Monthly Maintenance _____ Annual Drop/Performance Test

Supervisor's Initials and Date of Review: _____

Door Number / Location	Door Type	Trip Type	Test Method	Pass	Fail	Comments:

Note: Comment on any failed test or door damage.

Door Type: Horizontal sliding, vertical roll-down, guillotine, swinging or hinged etc.
Trip Type: Fusible link, smoke detector, heat detector etc.
Test Method: Removed link, tripped detector etc.
Pass: Door closed properly during testing.
Fail: Door did not close properly during testing.

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