



DASMA
Door & Access Systems
Manufacturers Association
International

ROLLING DOOR DIVISION

TECHNICAL DATA SHEET

#258

1300 Sumner Avenue
Cleveland, Ohio 44115-2851
Phone: 216-241-7333 • Fax: 216-241-0105
E-mail: dasma@dasma.com

Rolling Steel Fire Doors: Release Options

This technical data sheet helps to clarify the types of closing devices available on rolling steel fire doors and the release device options for each. These will depend on the type of detectors available at the facility as part of the overall building fire protection system. NFPA 80 (Standard for Fire Doors and Other Opening Protectives) regulates the installation and maintenance of assemblies and devices used to protect openings in walls, floors, and ceilings against the spread of fire and smoke within, into, or out of buildings. NFPA 80 includes the following requirements for automatic closing of rolling steel fire doors:

1. *An automatic closing device shall be installed on every rolling steel door. (Ref.: Section 11.4.1.1)*
2. *Rolling steel doors shall close automatically upon activation or release of a fusible link or detector. (Ref.: Section 11.4.1.2)*
3. *After automatic closing, the bottom bar shall come to rest in the closed position. (Ref.: Section 11.4.1.3)*
4. *A governor, where provided, shall control the rate of descent of the door curtain during automatic closing. (Ref.: Section 11.4.1.4)*
5. *Rolling steel fire doors shall have an average closing speed of not less than 6 in./sec (152 mm/sec) or more than 24 in./sec (610 mm/sec). (Ref.: Section 11.4.1.5)*
6. *Power-operated fire doors shall be permitted to be furnished with a sensor that causes the door closer to stop or reverse upon contact with an obstruction under normal conditions. (Ref.: Section 11.4.2.1)*
7. *Power-operated rolling steel fire doors shall be equipped with an automatic-closing device that, upon activation, will cause the door to close. (Ref.: Section 11.4.2.2)*
8. *After automatic closing is activated, the door shall remain in the closed position until the automatic closing device has been reset. (Ref.: Section 11.4.2.2.1)*
9. *When automatic closing is accomplished by means of a power operator, the door shall remain in the closed position or shall be permitted to automatically open and then reclose if a sensing edge has been provided and an obstruction is encountered during automatic closure. (Ref.: Section 11.4.2.2.2)*
10. *The door shall remain in the closed position until the automatic closing device has been reset. (Ref.: Section 11.4.2.2.2.1)*
11. *When an automatic closing device is designed to open and reclose when encountering an obstruction, the unit shall be designed such that it can be reopened a maximum of three times. (Ref.: Section 11.4.2.2.3)*
12. *After encountering an obstruction for the third time, the bottom bar shall come to rest on the obstruction. (Ref.: Section 11.4.2.2.3.1)*

Note: Technical Data Sheets are information tools only and should not be used as substitutes for instructions from individual manufacturers. Always consult with individual manufacturers for specific recommendations for their products and check the applicable local regulations.

This Technical Data Sheet was prepared by the members of DASMA's Rolling Door Division Technical Committee. DASMA is a trade association comprising manufacturers of rolling doors, fire doors, grilles, counter shutters, sheet doors, and related products; upward-acting residential and commercial garage doors; operating devices for garage doors and gates, sensing devices, and electronic remote controls for garage doors and gate operators; as well as companies that manufacture or supply either raw materials or significant components used in the manufacture and installation of the Active Members' products.

There are two basic design types of automatic closing devices on rolling steel fire doors:

1. Closing Device that Releases Spring Tension. In this type of closing device, a portion of the door spring tension is released and a “dropout” as defined in TDS 277 (a weighted mechanical device for disengaging gearing or motor operator) is used on the drive side. These two features combine to cause the door to close automatically due to gravity, under the control of the governor. To return the fire door to normal operation, a trained door systems technician must reset the spring tension and the drive mechanism. It is important that the reset procedure is performed by a trained door systems technician to prevent damage to the door and to ensure that the door will function properly. Failure to do so may void the product warranty, may jeopardize the safety of those near the door, and/or may prevent the door from closing in the event of a fire.
2. Closing Device that Does Not Release Spring Tension. In this type of closing device, a portion of the spring tension is not released but rather a brake, clutch, gear or other holding device (electrical or mechanical) is released, enabling the door to close automatically due to gravity, under the control of the governor. In general, this type of door will close when a signal is received from an alarm, fusible link separation, or power outage resulting in the release of the holding device. Resetting the door can be automatic when the alarm is cleared or power is restored. NOTE: Some designs incorporate a mechanical release, which requires resetting.

Figure 1 is a chart that illustrates various closing device and release options, along with operation type and the four basic resetting requirement options.

There are a number of different release devices available; of these there are three different types:

1. Basic Release Device – Will release door when alarm signal (fire alarm and/or smoke detector) is received or when there is a loss of power. There is a time delay between signal reception and release of the doors. The standard delay is 10 seconds, but some models have adjustable delays up to 30 seconds.
2. Release Device with Internal Battery Back Up or an Approved UL1481 Regulated Power Supply with Battery Back Up – This type of unit operates the same as the basic unit with some additional functions: a) the unit will not release in the event of a non-alarm power outage for duration of battery life, b) the unit may support (power) auxiliary devices, e.g. smoke detectors, sounders & strobes and c) the unit may offer down limit detection capability – the device can recognize a door in the closed position and will not release (an external proximity switch may be required on the door.)
NOTE: Battery back up powers the release device only, and will not power a motor on a motor-operated door.
3. Release Device with Battery Back Up and Motor Controller - This type of unit operates the same as the previous unit plus will also activate the door to power close during an alarm condition, provided power is present at the motor. Most units incorporate limited entrapment protection when in alarm mode (a maximum of 3 times.) If the obstruction is still present after the closing attempts, the unit will electrically

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stop the door and either continue to close the door after the obstruction is removed, or will mechanically release the door onto the obstruction.

NOTE: External entrapment protection is required on all doors with automatic motor controls.

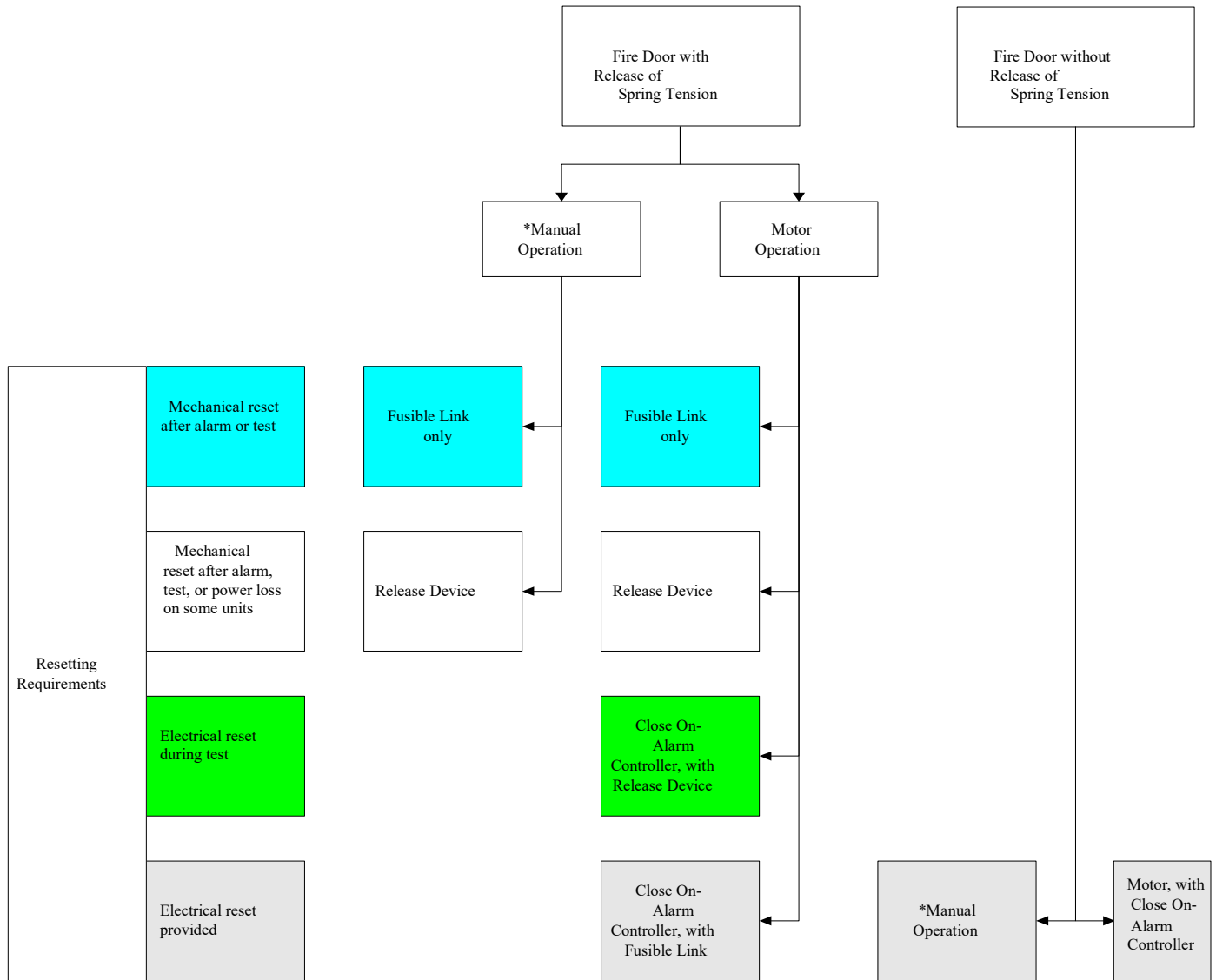
Testing of the units is typically done by testing the powered closure feature and will not require mechanical resetting. However, if the device does mechanically release, mechanical resetting will be necessary. This must be performed twice.

A “**close on-alarm controller**” can be incorporated in a release device (item 3 above) or can be independent. Typically, a unit with a mechanical or electrical release may be used with a fire door with no spring tension release. This type of unit has obstruction logic similar to item 3 above, but will never release. Therefore, this unit will never require mechanical resetting.

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Figure 1
Rolling Steel Fire Doors – Closing Device and Release Options



Safety Considerations

When a power operated fire door is designed to close on-alarm, the design should include the following features:

1. Visual and audible alarms should begin before the door starts to close.
2. A sensor that "causes the door closer to stop or reverse upon contact with an obstruction under normal conditions", as described in Section 11.4.2.1 of NFPA 80-2016.

*Manual is defined as push-up, hand chain or crank

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