ROLLING DOOR DIVISION
DASMA TECHNICAL DATA SHEET
#258

Door & Access Systems Manufacturers Association International
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

NFPA 80-2016 states 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)*

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

1. Closing Mechanism that Incorporates a "Dropout". A "dropout" is a weighted mechanical device for disengaging the door drive mechanism for hand chain, crank, push up or electric operation. In some cases, a portion of the door spring charge is released to cause the door to close automatically under the control of the governor mechanism. To return the fire door to manual operation, a trained door systems technician

must reset the spring charge and reset 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 Mechanism that Does Not Incorporate a "Dropout". In this case, a rolling steel fire door has a braking means (electrical or mechanical) that prevents the door from closing. In general, this type of door will close when a signal is received from a fire alarm and/or from fusible link separation (or power outage) resulting in the release of the brake. 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 release options, in consideration of whether or not a rolling steel door has a "dropout", whether the door is manually or motor operated, and choosing one of four basic resetting requirement options. Activation options include fusible links, and various release devices. As noted on the chart, some release devices may incorporate a "close on-alarm controller".

There are a number of different release devices available; of these there are three basic 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.

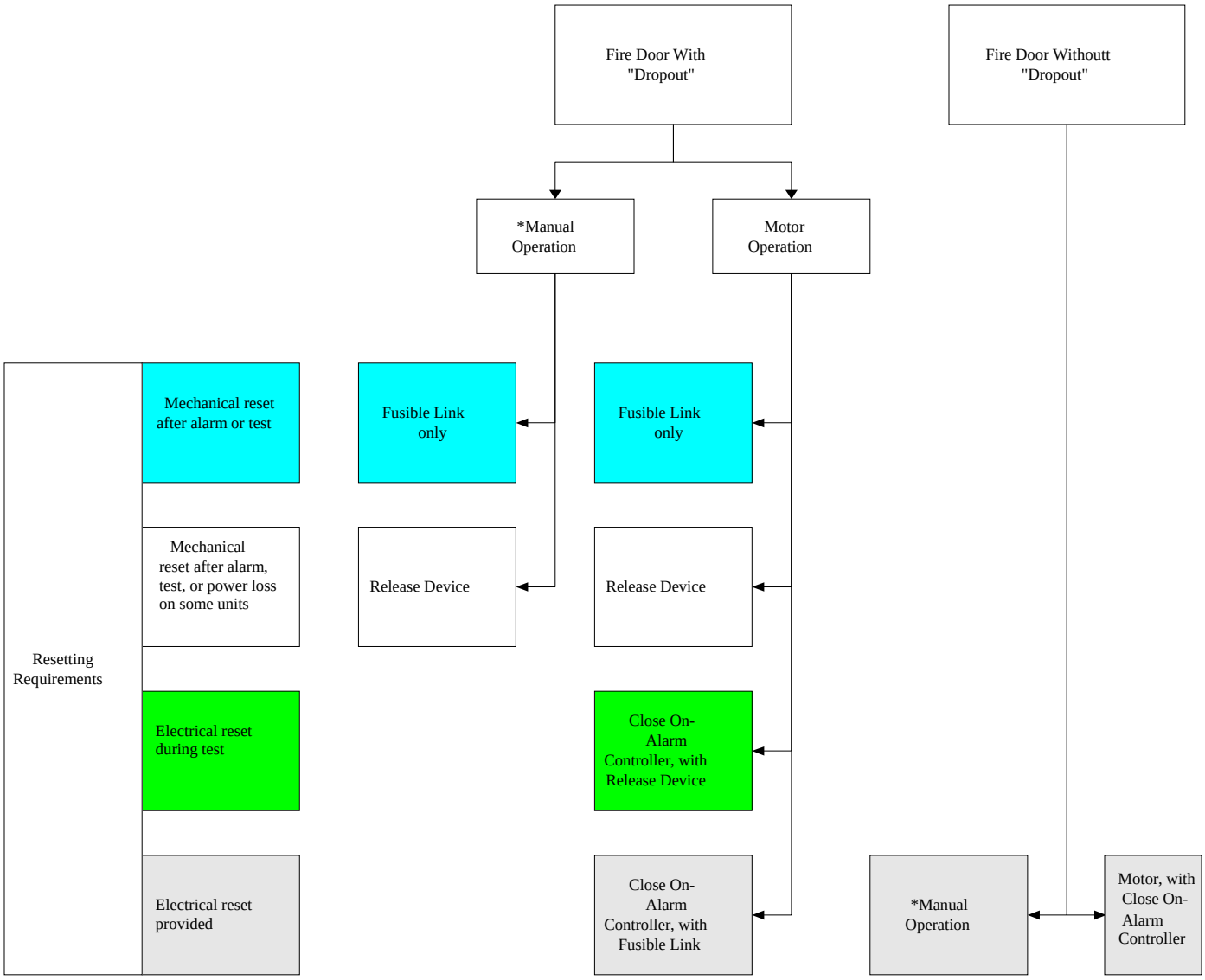
2. Release Device with Internal Battery Back Up or an Approved UL1481 Regulated Power Supply with Battery Back Up – This type of unit operates the same as the basic unit with some additional functions: a) the unit will not release in the event of a non-alarm power outage for duration of battery life, 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 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 "dropout". This type of unit has obstruction logic similar to item 3 above, but will never release. Therefore, this unit will never require mechanical resetting.

Figure 1
Rolling Steel Fire Doors - Release Options



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

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.