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Rolling Steel Fire Doors: Release Options

NFPA 80-2010 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. *Power-operated fire door shall be equipped with an automatic-closing device that, upon activation, will cause the door to close irrespective of power loss or operation under normal conditions, and remain closed or be capable of opening and then reclosing until the automatic-closing device has been reset. (Ref.: Section 11-4.2.2)*

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 system mechanic 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 a smoke detector (or power outage) resulting in the release of the brake allowing for powered or gravity closure. 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.

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.

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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. Release 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 w/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, b) the unit can support (power) auxiliary devices (smoke detectors, sounders & strobes), and c) the unit possesses down limit detection capability – the device can recognize a door in the closed position and will not release. NOTE: A battery back up powers the release device only, and will not power a motor on a motor-operated door.
3. Release Device w/Battery Back Up and Motor Controller - This type of unit operates the same as the previous unit plus an additional function - the unit will power the door closed (using the motor operator) during an alarm condition, provided power is present at the motor. Most units incorporate obstruction logic during powered alarm closures, which effectively cycles the closing attempts (typically 3 attempts) when the door encounters an obstruction. NOTE: A sensing edge is required on all doors with automatic motor controls. If the obstruction is still present after the closing sequencing, the unit will either stop the door on the obstruction and wait for obstruction removal or will release the door onto the obstruction.

If power is not present at the motor operator, the unit will mechanically release the door.

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, resetting will be necessary.

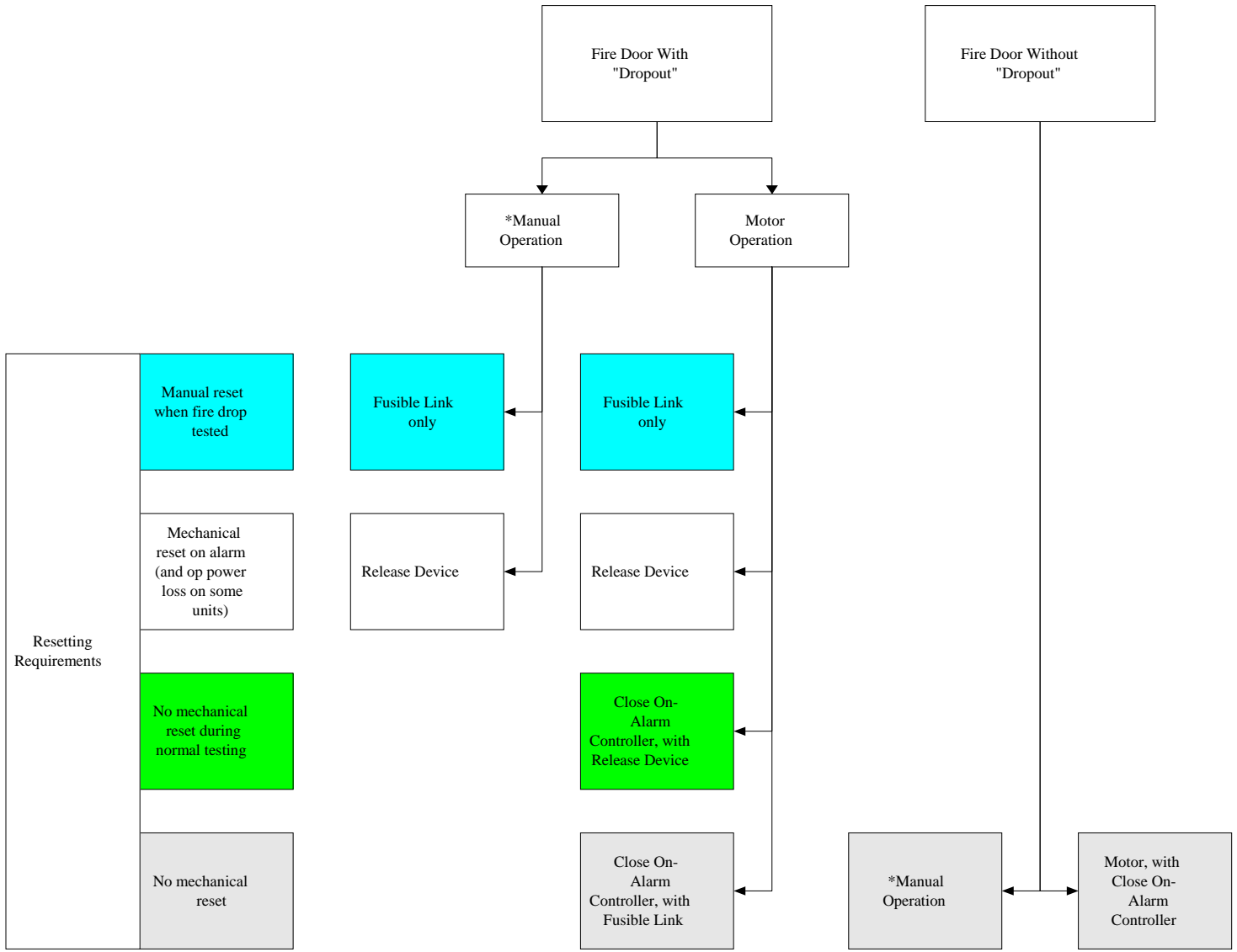
A **“close on-alarm controller”** can be incorporated in a release device (item 3 above) or can be independent. Typically, a unit without a release device is used with a fire door with no “dropout”. This type of unit has obstruction logic similar to item 3 above, but will never release. Therefore, this unit will never require mechanical resetting.

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Figure 1
Rolling Steel Fire Doors - 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 80-2010..

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

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