

NFPA79 and UL508A

Industrial Machinery Operating Handle Requirements

a White Paper by ABB, Inc.





NFPA79 and UL508A

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Scope

This document is intended to discuss the functional requirements for the disconnecting means (operating handle) in an electrical control panel classified as Industrial Machinery. These requirements are found in NFPA79, the Electrical Standard for Industrial Machinery, and UL508A, the standard for Industrial Control Panels, Section 65 and 66, dealing with Industrial Machinery applications.

What is an Industrial Machine?

According to NFPA79 and UL508A, the following types of machines are classified as Industrial Machinery:

- a) Metalworking machine tools
- b) Plastics machinery
- c) Wood working machinery
- d) Assembly machines
- e) Material handling machines
- f) Inspection and testing machines

What is not an Industrial Machine?

The following types of machines are not classified as Industrial Machinery.

- a) HVAC
- b) Pumps
- c) Fans
- d) Wastewater treatment
- e) Portable machines of any kind.

What is a Disconnecting Means?

According to NFPA79 and UL508A, we can summarize the following:

- a) Disconnect = UL98 Listed General Purpose Switch, UL489 Molded Case Circuit Breaker, or UL489 Molded Case Switch.
- b) Disconnecting means = operating handle of the disconnect.
- c) These operating handle requirements only apply to the main disconnecting means supplying power to the industrial machine.
- d) A UL508 Manual Motor Controller cannot serve as the main disconnect to an industrial machine and is not subject to these requirements.

Two types of operating handles are typically available:

- a) Flange (cable or shaft operated) style
- b) Rotary (through the door) style

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The requirements contained in NFPA79 and UL508A were originally written to describe the function of a typical flange handle. However, ABB rotary style handles also meet these requirements using appropriate optional handles.

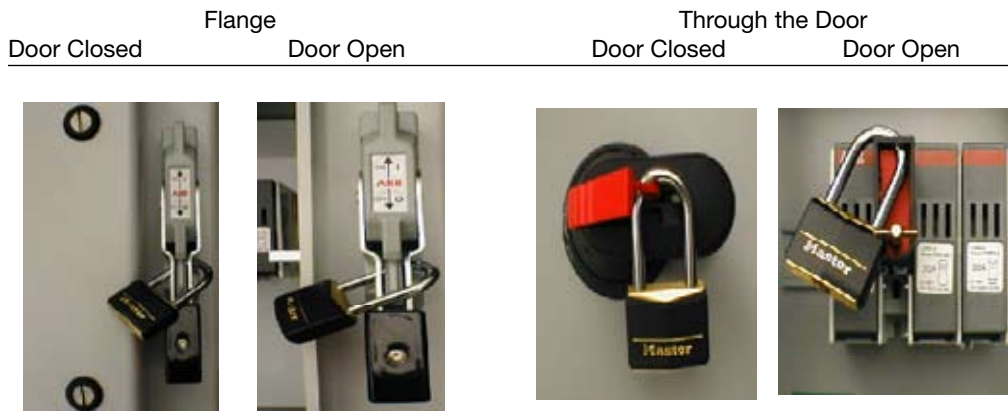
Listed below are the applicable sections of NFPA79 2002 and UL508A 2005 concerning the operating requirements of the Disconnecting Means. The ABB solutions for both flange and rotary disconnect switch handles meet the requirements found in NFPA79 and UL508A. These solutions have been reviewed and approved by UL.

NFPA79 - 5.3.3.1 (3) Disconnect mechanism shall be padlockable in the "OFF" position only, independent of the door position.

UL508A - 66.6.3 (d) Able to be locked in the "OFF" position independent of the door position; and when locked, closing of the disconnect is not possible.

ABB flange solution: Allows direct padlocking of the disconnecting means and prevent closing of the disconnect when padlocked in the "OFF" position. Available in non-fusible switch products from 30-1200 amps and for fusible products from 30-800 amps.

ABB rotary solution: Optional handles mounted directly on non-fusible and fusible switch products from 30 - 400 amps, allows direct padlocking of the disconnecting means and prevent closing of the disconnect when padlocked in the "OFF" position.





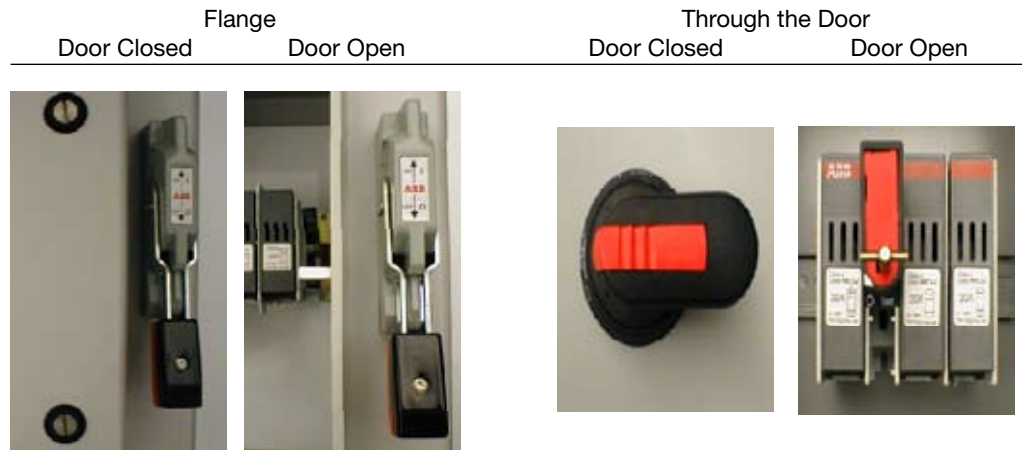
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NFPA79 - 5.3.3.1 (5) Disconnect mechanism operable independent of the door position without the use of tools.

UL508A - 66.6.3. (c) Be operable independent of the door position without the use of accessory tools or devices;

ABB flange solution: Allows operation of the switch independent of the door position. Available for non-fusible switch products from 30-1200 amps and for fusible products from 30-800 amps.

ABB rotary solution: Optional handles mounted directly on non-fusible and fusible switch products from 30 - 400 amps allow direct operation of the switch when the enclosure door is open. Along with the external operating handle mounted on the enclosure door these allow operation of the switch independent of the door position.



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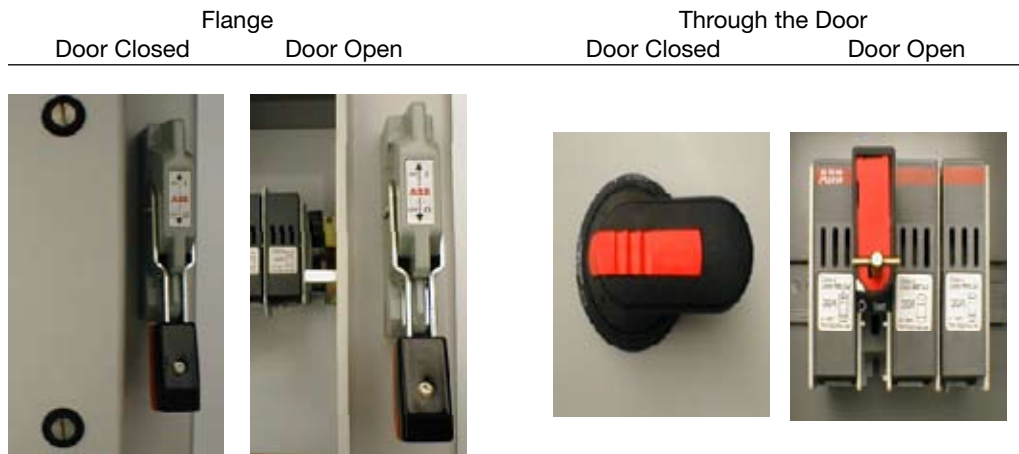
NFPA79 - 5.3.4.2 (1) Operating handle accessible with door in the open or closed position.

UL508A - 66.6.3. (a) Readily accessible when the enclosure doors are in the open or closed position;

UL508A - 66.6.3 (b) Installed so that its operation is not restricted by the enclosure door while in the open position;

ABB flange solution: Allows operation of the switch independent of the door position. Available for non-fusible switch products from 30-1200 amps and for fusible products from 30-800 amps.

ABB rotary solution: Optional handles mounted directly on non-fusible and fusible switch products from 30 - 400 amps allow direct operation of the switch when the enclosure door is open. Along with the external operating handle mounted on the enclosure door, these allow operation of the switch independent of the door position.





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NFPA79 - 6.2.3.1 Door interlocked with operating mechanism in “ON” position.

UL508A - 66.1.5 A door of an enclosure that gives access to uninsulated live parts operating at 50 volts rms ac or 60V dc or more shall be interlocked with the disconnecting means such that none of the doors can be opened unless the power is disconnected.

ABB flange solution: Operating handle provides door interlock when the switch is in the “ON” position. Available for non-fusible switch products from 30-1200 amps and for fusible products from 30-800 amps.

ABB rotary solution: Door mounted operating handle provides door interlock when the switch is in the “ON” position.

Flange		Through the Door	
Door Closed	Door Open	Door Closed	Door Open
	Does not apply		Does not apply

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NFPA79 - 6.2.3.1.1 Door interlock defeatable in "ON" position (optional).

NFPA79 - 6.2.3.1.2 (1) Tool required to defeat door interlock when switch on (door closed)

NFPA79 - 6.2.3.1.2 (2) Door interlock reactivates automatically when door is closed.





UL508A - 66.1.5.1 (a) Means to defeat the interlock without removing power and which requires the use of a tool to operate;

UL508A - 66.1.5.1 (c) Reactivated automatically when all the doors are closed

ABB flange solution: Door interlock can be defeated with the use of a tool when the operating handle is in the "ON" position. Available in non-fusible switch products from 30-1200 amps and for fusible products from 30-800 amps.

ABB rotary solution: Door interlock can be defeated with the use of a tool when the door mounted operating handle is in the "ON" position.

*This should only be performed by qualified personnel using appropriate safety practices.

Flange		Through the Door	
Door Closed	Door Open	Door Closed	Door Open
			





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NFPA79 - 6.2.3.1.2 (3) With door open, switch may only be turned on by defeating a mechanism interlock with “deliberate action” (no tool required).

UL508A - 66.1.5.1 (b) means to prevent restoring power while the enclosure doors are open unless a defeat mechanism is operated;

ABB flange solution: In order to restore power with the enclosure door open, an interlock defeat mechanism, internal to the enclosure must be released. Available in non-fusible switch products from 30-1200 amps and for fusible products from 30-800 amps.

ABB rotary solution: Optional handles mounted directly on non-fusible and fusible switch products from 30 - 400 amps allow direct padlocking in the “OFF” position. Removal of the padlock constitutes defeating the mechanism interlock, allowing power to be restored with the enclosure door open.

		Flange		Through the Door	
Door Closed	Door Open	Door Closed	Door Open	Door Closed	Door Open
Does not apply		Does not apply			

Conclusion: ABB non-fusible and fusible switches provide compliance with NFPA79 and UL508A Industrial Machinery Operating Handle Requirements when flange or optional handle equipment are utilized.

ABB Optional Direct Mount Handles

	Fusible				Non-Fusible		
Frame Size	OS30	OS60-100	OS200	OS400	OT30-100	OT200	OT400
Catalog No.	OHB5	OHB4	OSV200BK	OSV400BK	CXYB68419/1	OTV250EK	OTV400EK

Consult Section 18 of the online catalog at www.abb-control.com for ABB flange operated solution ordering information.



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