

## FREQUENTLY ASKED QUESTIONS

### INTERNAL DISCONNECT SHIELD

Question	Answer
Is the Internal Disconnect Shield arc flash rated?	Currently there's no standard that specifies an arc flash rating for industrial control enclosures or any other electrical components. The term "arc flash rated" is often confused in the marketplace with "arc resistant." There are a few standards and guides commonly referenced when talking about arc flash, but they are not related specifically to the design of industrial control enclosures, nor do they provide an arc flash rating. One is NFPA 70E, which is an electrical safety standard that provides practices for reducing the risks associated with electrical hazards in the workplace. These practices range from conducting employee training to installing warning labels to providing appropriate Personnel Protective Equipment (PPE). Another one is IEEE C37.20.7, which is a guide for testing switchgear for internal arcing faults. This is commonly used for testing for arc resistance, meaning that the system construction is designed to protect workers from the thermal and mechanical effects of an arc flash. An enclosure that is tested according to these guidelines can be labeled "arc resistant" to the tested available fault current energy.
What kind of protection from arc flash does the Internal Disconnect Shield provide?	The Internal Disconnect Shield provides protection by reducing the risk of electric shock and arc flash. This is achieved by acting as a barrier over the disconnect switch and thereby minimizing incidental contact or exposure to the line side lugs. This does not completely eliminate the chance of an arc flash incident. Additionally, in the event that an arc flash does occur, this is not arc resistant; it does not contain the heat and pressure or direct it away from the worker in any way. Essentially, it is a touch-safe solution designed to help prevent the occurrence of electric shock and arc flash.
Can the Internal Disconnect Shield reduce the level of PPE?	The Internal Disconnect Shield can potentially reduce the arc flash PPE category level depending on the electrical components used and layout. If current-limiting fuses or current-limiting circuit breakers are used and housed inside the Internal Disconnect Shield, the arc flash PPE level could be reduced. Table 130.7(C) (15(A)(b) from the NFPA 70E 2015 Handbook for Electrical Safety in the Workplace states the following:  "For equipment rated 600 volts and below, and protected by upstream current-limited fuses or current-limiting circuit breakers sized at 200 amperes or less, the arc flash PPE category can be reduced by one number but not below arc flash PPE category 1."
Can nVent HOFFMAN provide an arc resistant Internal Disconnect Shield?	HOFFMAN does not currently provide this type of solution. To be able to label it arc resistant and claim it as a product that can contain and direct the heat and pressure away from the worker requires testing at a third party lab per the testing guidelines from IEEE C37.20.7. The Type 1 construction of this enclosure is not robust enough to withstand the extreme forces of an arc flash; therefore, a more calculated construction that's tested is required.

### Question

Does the Internal Disconnect Shield meet the Type 1 rating?

### Answer

Yes, HOFFMAN's Internal Disconnect Shield is designed in accordance with the Type 1 construction requirements specified by UL50. In particular, it meets the requirement of having the indicated overlap length on the side flange.



UL50 states the following regarding the Type 1 construction requirements for the areas where the enclosure sides join and fasten:

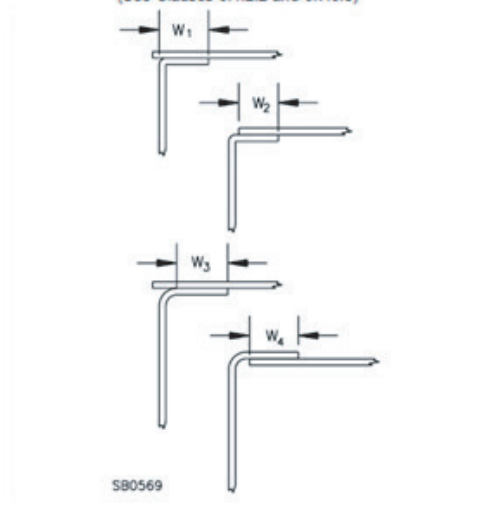
#### 6.4.2 Joints and Fastenings

6.4.2.1 All seams, joints, or splices at corners or back edges of an enclosure shall be closed by:

- a. Overlapping flanges formed of sheet metal from which the enclosure is made;
- b. Metal surfaces overlapping adjacent surfaces or supporting frame;
- c. Separate overlapping flanges; or
- d. Continuous welding that provides a construction equivalent to an integral-flanged construction

6.4.2.2 The overlap required by Clause 6.4.2.1 shall be at least 11.1 mm (7/16 inch) and shall extend approximately the full length of the seam. See Figure 7.

**Figure 7**  
Overlap between flat cover and enclosure flange and at corner or enclosure seam  
(See Clauses 6.4.2.2 and 6.7.6.3)




## HOFFMAN INTERNAL DISCONNECT SHIELD FAQ

Question	Answer
What types of disconnects can be used with the Internal Disconnect Shield?	The Internal Disconnect Shield is designed for flange-mount disconnects. It contains knock-outs for either variable-depth or cable-operated disconnects and the symmetrical construction allows it to be used with left-hand or right-hand disconnects. Whether fused switches or circuit breakers are used, the following must be considered: component dimensions must be measured to ensure fit within the walls of the Internal Disconnect Shield; the wire bend space must be considered based on the walls of the main enclosure; and the disconnect handle must be laid out to ensure alignment.
What switch amperage fits within the Internal Disconnect Shields?	The switch amperage that fits in each of Internal Disconnect Shield models depends on the combination of the components and layout of the components housed within. The type of disconnect switch (fused switch or circuit breaker), the fuse type (if fuses are used), and the wire bend layout play a role. Based on typical applications, our assumptions are that a range of 30A-600A could fit; however, because there are various disconnect manufacturers and the combination of components and layout could vary from customer to customer, layout drawings should be created to ensure the desired switch amperage fits inside the Internal Disconnect Shield.
Can the Internal Disconnect Shield be used only with HOFFMAN enclosures?	To maintain the UL type rating, the Internal Disconnect Shield must be mounted to the internal panel of the main enclosure, which must be a type rated enclosure. The main enclosure could be a wall-mount, free-stand, floor-stand, or modular enclosure. The Internal Disconnect Shield can be used inside any of these as long as the flange disconnect handle aligns, the wire bend space is sufficient, and there's no interference with the main enclosure walls, door, or other components.
What is the difference between the Internal Disconnect Shield and the Sequestr External Disconnect Enclosure?	<p>Both are designed with electrical safety in mind to help prevent the occurrence of electric shock and arc flash. They do this by isolating the disconnect switch, which minimizes exposure or incidental contact with the line side of the disconnect. Coming into contact with this could cause an electric shock or arc flash. Whereas the Internal Disconnect Shield isolates the disconnect switch inside the main the enclosure, the Sequestr External Disconnect Enclosure isolates it outside of the main enclosure. This results in two methods of incorporating safety to help meet customers' different applications and needs. The Internal Disconnect Shield helps reduce the risk of electric shock and arc flash, especially in cases where moving the disconnect to an external enclosure is not an option due to limited floor space and when retrofitting an existing system is more feasible than designing a whole new system. The Sequestr External Disconnect Enclosure helps provide an additional level of safety especially in cases where further risk reduction is needed. Sequestr provides extra risk reduction by:</p> <ul style="list-style-type: none"><li>• Completely removing the entire line side of the disconnect (including the lugs and cables) to an external compartment.</li><li>• Having an additional interlock that serves a dual purpose. When the power is turned OFF, it prevents the external disconnect enclosure door from being opened before the main enclosure door. It also requires both the external disconnect enclosure door and main enclosure door be closed before power is able to be turned ON.</li><li>• Mounting the disconnect enclosure in a location where it would not be convenient to place tools or other items on top.</li></ul> <p>It's important to note that although the enclosure design can play a more effective role in reducing electrical risks, it is not the only way to protect workers from the hazards. Companies need to take a holistic approach to electrical safety, from the design of their systems, to installing warning labels, to conducting employee training, to providing appropriate PPE.</p>

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