Protection from the harmful effects of arcing faults

Arc-exhaust plenum available for a single structure or combined for multi-structure lineups

ArcGard MVS provides arc-resistant protection for medium voltage metal-enclosed load interrupter switchgear. Arcing faults produce a variety of physical phenomena, including sudden pressure increases and extreme localized overheating, which combine to destroy conductors, insulation and enclosure parts. Internal arcing faults result in severe mechanical and thermal stresses on the switchgear assembly, and the materials involved in the arcing fault may produce hot decomposition products, either gaseous or particulate. Arc-resistant switchgear controls, collects and channels the decomposition products of an internal arcing fault to a designated area away from the perimeter of the switchgear.

Arc-resistant switchgear: making safety more comfortable

Provided that the protection clearing times of the equipment are <0.5 seconds, and the arc rating meets or exceeds the system fault rating, NFPA® 70E recognizes that arc-resistant equipment can eliminate the need for protective clothing around the perimeter of electrical distribution equipment.

130.7(C)(15)(a) of the 2012 revision of NFPA 70E identifies the perimeter of arc-resistant switchgear Types 1 or 2 with doors closed to have a Hazard/Risk Category (HRC) of 0. For arc-resistant Type 2B certification, this HRC category is extended with the low-voltage control compartment door opened. (For Eaton switchgear, this includes the control compartment door in front of the fuse compartment.)

Eaton offers a full family of tested configurations certified by UL® to protect personnel from arcing faults of up to 40,000A symmetrical for a duration of 0.5 seconds. Type 2B ratings are available for all arc-resistant configurations, reducing required personal protective equipment even with control doors open.

Integral safety features

- Type 2B arc-resistant construction allows for all instrument compartment doors to be opened without sacrificing protection from a potential internal arcing fault
- Door interlocks ensure that the switch and fuse panels remain closed unless the switch is opened
- Viewing window provides clear, visible confirmation of disconnected switch contacts
- Through-the-door switch operation is provided to maintain arc-resistant protection while operating the switch

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Safety enhancement options

- Optional integrated power switching device allows an operator to open and close the switch from a distance

Protection and metering

- Eaton will incorporate any manufacturer's meters, including Eaton's Power Xpert® power quality meter, which detects sags, swells and harmonics in addition to comprehensive power measurements and logging

Note: For comprehensive application information about switchgear controls, please see Eaton's *Consulting Application Guide* (Tab 5).

Arc-resistant standards

Eaton's arc-resistant switchgear has been fully tested in accordance with ANSI C37.20.7 (Type 2B).

Metal-enclosed switchgear standards

ANSI/IEEE® C37.20.3

Seismic qualification

Seismic-qualified by actual testing to meet requirements of IBC 2006 and CBC 2007.

Fully tested system configurations (layout flexibility)

- 36-inch-wide vertical structures
- Main, tie and feeder configurations available
- Main bus transitions from lower to upper main bus locations are available
- Fused and unfused switches are available
- The ability to mount devices on the front of fuse compartments helps simplify controls while minimizing real estate
- All options and configurations tested in accordance with IEEE C37.20.7
- Single switch structures are available making it possible to have arc-resistant protection on the primary side of a unit substation

Rugged arc-resistant construction

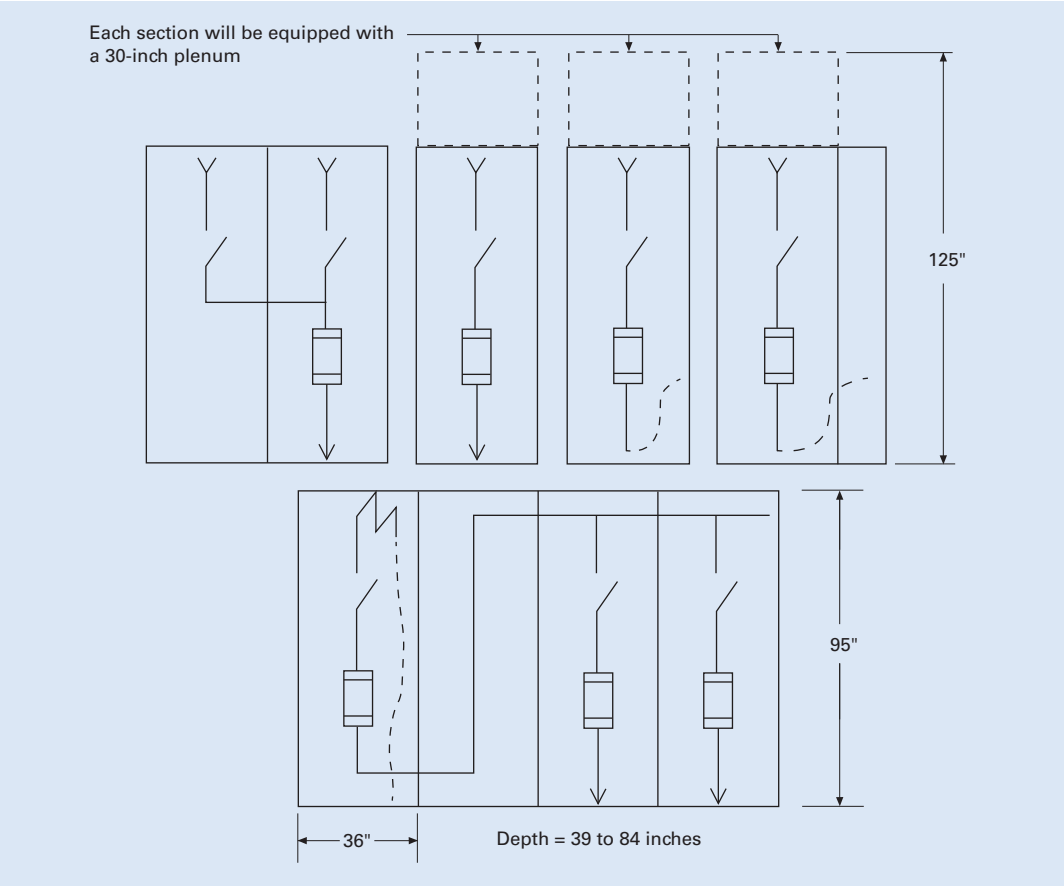
- Structure is built to withstand the effects of internal faults up to the maximum fault current rating of the switchgear
- Formed steel compartment design provides sealed joints under fault conditions
- A welded heavy-duty door design safely contains the extreme forces of an arcing fault

Ratings

- Rated maximum voltage: 5–15 kV
- Continuous current/load break: 600–1200A
- BIL rating: 60 kV and 95 kV
- Main bus ratings: 2000A
- Momentary/fault close: 40 kA or 61 kA (rms asymmetrical)
- 2-second withstand: 25 kA or 38 kA rms symmetrical
- Arc-resistant ratings: 40 kA rms symmetrical, 30 cycle per IEEE C37.20.7

Note: Please see Eaton's *Consulting Application Guide* for complete details of available ratings and layout dimensions.

Arc-exhaust plenum available for a single structure or combined for multi-structure lineups



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