

§ 75.825

30 CFR Ch. I (7-1-23 Edition)

protected by a circuit-interrupting device of adequate interrupting capacity and voltage that provides short-circuit, overload, ground-fault, and under-voltage protection as follows:

(1) *Short-circuit protection.*

(i) The current setting of the device must be the setting specified in the approval documentation or 75 percent of the minimum available phase-to-phase short-circuit current, whichever is less; and

(ii) The time-delay setting must not exceed 0.050 seconds.

(2) *Ground-fault protection.*

(i) Neutral grounding resistors must limit the ground-fault current to no more than 0.5 ampere.

(ii) Ground-fault devices must cause de-energization of the circuit extending to the continuous mining machine at not more than 0.125 ampere. The time-delay of the device must not exceed 0.050 seconds.

(iii) Look-ahead circuits must detect a ground-fault condition and prevent the circuit-interrupting device from closing as long as the ground-fault condition exists.

(iv) Backup ground-fault devices must cause de-energization of the circuit extending to the continuous mining machine at not more than 40 percent of the voltage developed across the neutral grounding resistor when a ground fault occurs with the neutral grounding resistor open. The time-delay setting of the backup device must not exceed 0.25 seconds.

(v) Thermal devices must detect a sustained ground-fault current in the neutral grounding resistor and must de-energize the incoming power. The device must operate at either 50 percent of the maximum temperature rise of the neutral grounding resistor or 302 °F (150 °C), whichever is less. Thermal protection must not be dependent on control power and may consist of a current transformer and over-current relay in the neutral grounding resistor circuit.

(vi) A single window-type current transformer that encircles all three-phase conductors must be used to activate the ground-fault device protecting the continuous mining machine. Equipment grounding conductors must not pass through the current transformer.

(vii) A test circuit for the ground-fault device must be provided. The test circuit must inject no more than 50 percent of the current rating of the neutral grounding resistor through the current transformer. When the test circuit is activated, the circuit-interrupting device must open.

(3) *Under-voltage protection.* The under-voltage device must operate on a loss of voltage, de-energize the circuit, and prevent the equipment from automatically restarting.

(b) *Re-closing.* Circuit-interrupting devices must not re-close automatically.

(c) *Onboard Power Circuits.* When a grounded-phase indicator light circuit is used and it indicates a grounded-phase fault, the following corrective actions must be taken:

(1) The machine must be moved immediately to a location with a properly supported roof; and

(2) The grounded-phase condition must be located and corrected prior to placing the continuous mining machine back into operation.

[75 FR 17549, Apr. 6, 2010]

§ 75.825 Power centers.

(a) *Main disconnecting switch.* The power center supplying high voltage power to the continuous mining machine must be equipped with a main disconnecting switch that, when in the open position, de-energizes input to all power transformers.

(b) *Trailing cable disconnecting device.* In addition to the main disconnecting switch required in paragraph (a) of this section, the power center must be equipped with a disconnecting device for each circuit that supplies power to a high-voltage continuous mining machine. A disconnecting device is defined as a disconnecting switch or a cable coupler.

(c) *Disconnecting switches.* Each disconnecting switch must be labeled to clearly identify the circuit it disconnects, and be designed and installed as follows:

(1) Rated for the maximum phase-to-phase voltage of the circuit;

(2) Rated for the full-load current of the circuit that is supplied power through the device.

(3) Allow for visual observation, without removing any covers, to verify that the contacts are open;

(4) Ground all power conductors on the load side when the switch is in the "open and grounded" position;

(5) Can only be locked out in the "open and grounded" position; and

(6) Safely interrupts the full-load current of the circuit or causes the current to be interrupted automatically before the disconnecting switch opens.

(d) *Barriers and covers.* All compartments that provide access to high-voltage circuits must have barriers and/or covers to prevent miners from contacting energized high-voltage circuits.

(e) *Main disconnecting switch and control circuit interlocking.* The control circuit must be interlocked with the main disconnecting switch in the power center so that:

(1) When the main disconnecting switch is in the "open" position, the control circuit can only be powered through an auxiliary switch in the "test" position; and

(2) When the main disconnecting switch is in the "closed" position, the control circuit can only be powered through an auxiliary switch in the "normal" position.

(f) *Interlocks.* Each cover or removable barrier providing access to high-voltage circuits must be equipped with at least two interlock switches. Except when the auxiliary switch is on the "test" position, removal of any cover or barrier that exposes energized high-voltage circuits must cause the interlock switches to automatically de-energize the incoming circuit to the power center.

(g) *Emergency stop switch.* The power center must be equipped with an externally accessible emergency stop switch hard-wired into the incoming ground-wire monitor circuit that de-energizes the incoming high-voltage in the event of an emergency.

(h) *Grounding stick.* The power center must be equipped with a grounding stick to be used prior to performing electrical work to assure that high-voltage capacitors are discharged and circuits are de-energized. The power center must have a label readily identifying the location of the grounding

stick. The grounding stick must be stored in a dry location.

(i) *Caution label.* All compartments providing access to energized high-voltage conductors and parts must display a caution label to warn miners against entering the compartments before de-energizing incoming high-voltage circuits.

[75 FR 17549, Apr. 6, 2010]

§ 75.826 High-voltage trailing cables.

High-voltage trailing cables must:

(a) Meet existing trailing cable requirements and the approval requirements of the high-voltage continuous mining machine; and

(b) Meet existing ground-check conductor requirements (§ 75.804) or have a stranded center ground-check conductor not smaller than a No. 16 A.W.G.

[75 FR 17549, Apr. 6, 2010]

§ 75.827 Guarding of trailing cables.

(a) *Guarding.* (1) The high-voltage cable must be guarded in the following locations:

(i) From the power center cable coupler for a distance of 10 feet in by the power center;

(ii) From the entrance gland for a distance of 10 feet out by the last strain clamp on the continuous mining machine; and,

(iii) At any location where the cable could be damaged by moving equipment.

(2) Guarding must be constructed using nonconductive flame-resistant material or grounded metal.

(b) *Suspended cables and cable cross-overs.* When equipment must cross any portion of the cable, the cable must be either:

(1) Suspended from the mine roof; or
 (2) Protected by a cable crossover having the following specifications:

(i) A minimum length of 33 inches;

(ii) A minimum width of 17 inches;

(iii) A minimum height of 3 inches;

(iv) A minimum cable placement area of two and one half-inches (2½") high by four and one-quarter inches (4¼") wide;

(v) Made of nonconductive material;