

(2) *Step-up transformer.* A step-up transformer is a transformer that steps up the low or medium voltage to high voltage (See Figure 2 in this section) and must meet the following requirements:

(i) The trailing cable supplying low or medium voltage to the step-up transformer must meet the applicable requirements of 30 CFR part 75;

(ii) The high-voltage circuit output of the step-up transformer supplying power to the continuous mining machine must meet the applicable provisions of § 75.824;

(iii) The step-up transformer enclosure must be—

(A) Securely mounted to minimize vibration on:

(1) The continuous mining machine; or

(2) A sled/cart that must be connected to the continuous mining machine by a tow-bar and be in close proximity to the mining machine.

(B) Grounded as follows:

(1) Connected to the incoming ground conductor of the low- or medium-voltage trailing cable;

(2) Bonded by a No. 1/0 A.W.G. or larger external grounding conductor to the continuous mining machine frame; and

(3) Bonded by a No. 1/0 A.W.G. or larger external grounding conductor to the metallic shell of each cable coupler.

(C) Equipped with:

(1) At least two interlock switches for each of the enclosure covers; and

(2) An external emergency stop switch to remove input power to the step-up transformer.

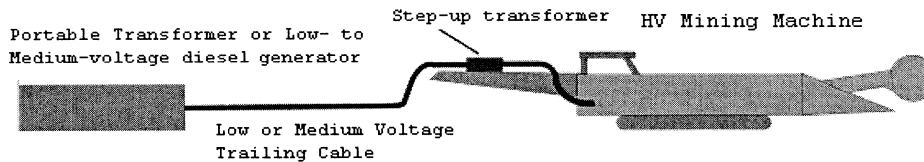


Figure 2 - Power source - 75.829(c) (2) 480 or 995 volts to a step-up transformer to 2300 volts for tramming

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§ 75.830 Splicing and repair of trailing cables.

(a) *Splices and repairs.* (1) Splicing means the mechanical joining of one or more severed conductors in a single length of a cable including the replacement of: Insulation, semi-conductive tape, metallic shielding, and the outer jacket(s).

(2) Repair means to fix damage to any component of the cable other than the conductor.

(3) Splices and repairs to high-voltage trailing cables must be made:

(i) Only by a qualified person trained in the proper methods of splicing and repairing high-voltage trailing cables;

(ii) In a workman-like manner;

(iii) In accordance with § 75.810; and

(iv) Using only MSHA-approved high-voltage kits that include instructions for outer-jacket repairs and splices.

(b) *Splicing limitations.* (1) Splicing of the high-voltage trailing cable within 35 feet of the continuous mining machine is prohibited.

(2) Only four (4) splices will be allowed at any one time for the portion of the trailing cable that extends from the continuous miner outby for a distance of 300 feet.

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§ 75.831 Electrical work; troubleshooting and testing.

(a) *Trailing cable and continuous mining machine electrical work procedures.* Prior to performing electrical work, other than troubleshooting and testing, on the high-voltage trailing cable or the continuous mining machine, a

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qualified person must de-energize the power center and follow procedures specified in paragraph (1) or (2):

(1) If a trailing cable disconnecting switch is provided:

(i) Open and ground the power conductors, lock out and tag the disconnecting switch; and

(ii) Lock out and tag the plug to the power receptacle.

(2) If a trailing cable disconnecting switch is not provided and a cable coupler is used as a disconnecting device:

(i) Remove the plug from the power receptacle and connect it to the grounding receptacle;

(ii) Lock out and tag the plug to the grounding receptacle; and

(iii) Place a dust cover over the power receptacle.

(b) *Troubleshooting and testing the trailing cable.* During troubleshooting and testing, the de-energized high-voltage cable may be disconnected from the power center only for that period of time necessary to locate the defective condition. Prior to troubleshooting and testing trailing cables, a qualified person must perform the following:

(1) If a trailing cable disconnecting switch is provided:

(i) Open and ground power conductors and lock out and tag the disconnecting switch;

(ii) Disconnect the plug from the power receptacle;

(iii) Lock out and tag the plug; and

(iv) Place a dust cover over the power receptacle.

(2) If a trailing cable disconnecting switch is not provided and a cable coupler is used as a disconnecting device:

(i) Remove the plug from the power receptacle and connect it to the grounding receptacle to ground the power conductors;

(ii) Remove the plug from the grounding receptacle and install a lock and tag on the plug; and

(iii) Place a dust cover over the power receptacle.

(c) *Troubleshooting and testing limitations.* Troubleshooting and testing energized circuits must be performed only:

(1) On low- and medium-voltage circuits;

(2) When the purpose of troubleshooting and testing is to determine voltages and currents;

(3) By qualified persons; and

(4) When using protective gloves in accordance with the following table:

Circuit voltage	Type of glove required
Greater than 120 volts (nominal) (not intrinsically safe)	Rubber insulating gloves with leather protectors.
40 volts to 120 volts (nominal) (both intrinsically safe and non-intrinsically safe).	Either rubber insulating gloves with leather protectors or dry work gloves.
Greater than 120 volts (nominal) (intrinsically safe)	Either rubber insulating gloves with leather protectors or dry work gloves.

(d) *Power center electrical work procedures.* Before any work is performed inside any compartment of the power center, except for troubleshooting and testing energized circuits as specified in paragraph (c) of this section, a qualified person must:

(1) De-energize affected circuits;

(2) Open the corresponding disconnecting switch, lock it out, and tag it to assure the circuit is isolated;

(3) Visually verify that the contacts of the disconnecting switch are open and grounded; and

(4) Discharge all high-voltage capacitors and circuits.

(e) *Locking out and tagging responsibilities.* (1) When more than one qualified

person is performing electrical work, including troubleshooting and testing, each person must install an individual lock and tag. Each lock and tag must be removed only by the persons who installed them.

(2) If the person who installed the lock and tag is unavailable, the lock and tag may be removed by a person authorized by the operator, provided that:

(i) The authorized person is a qualified person; and

(ii) The mine operator assures that the person who installed the lock and tag is aware that the lock and tag have been removed.

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