

§ 229.77

ELECTRICAL SYSTEM

§ 229.77 Current collectors.

(a) Pantographs shall be so arranged that they can be operated from the engineer's normal position in the cab. Pantographs that automatically rise when released shall have an automatic locking device to secure them in the down position.

(b) Each pantograph operating on an overhead trolley wire shall have a device for locking and grounding it in the lowest position, that can be applied and released only from a position where the operator has a clear view of the pantograph and roof without mounting the roof.

§ 229.79 Third rail shoes.

When locomotives are equipped with both third rail and overhead collectors, third-rail shoes shall be deenergized while in yards and at stations when current collection is exclusively from the overhead conductor.

§ 229.81 Emergency pole; shoe insulation.

(a) Each locomotive equipped with a pantograph operating on an overhead trolley wire shall have an emergency pole suitable for operating the pantograph. Unless the entire pole can be safely handled, the part of the pole which can be safely handled shall be marked to so indicate. This pole shall be protected from moisture when not in use.

(b) Each locomotive equipped with third-rail shoes shall have a device for insulating the current collecting apparatus from the third rail.

§ 229.83 Insulation or grounding of metal parts.

All unguarded noncurrent-carrying metal parts subject to becoming charged shall be grounded or thoroughly insulated.

§ 229.85 High voltage markings: doors, cover plates, or barriers.

All doors, cover plates, or barriers providing direct access to high voltage equipment shall be marked "Danger-High Voltage" or with the word "Dan-

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ger" and the normal voltage carried by the parts so protected.

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§ 229.87 Hand-operated switches.

All hand-operated switches carrying currents with a potential of more than 150 volts that may be operated while under load shall be covered and shall be operative from the outside of the cover. Means shall be provided to show whether the switches are open or closed. Switches that should not be operated while under load shall be legibly marked with the words "must not be operated under load" and the voltage carried.

§ 229.89 Jumpers; cable connections.

(a) Jumpers and cable connections between locomotives shall be so located and guarded to provide sufficient vertical clearance. They may not hang with one end free.

(b) Cable and jumper connections between locomotive may not have any of the following conditions:

- (1) Broken or badly chafed insulation.
- (2) Broken plugs, receptacles or terminals.
- (3) Broken or protruding strands of wire.

§ 229.91 Motors and generators.

A motor or a generator may not have any of the following conditions:

- (a) Be shorted or grounded.
- (b) Throw solder excessively.
- (c) Show evidence of coming apart.
- (d) Have an overheated support bearing.
- (e) Have an excessive accumulation of oil.

INTERNAL COMBUSTION EQUIPMENT

§ 229.93 Safety cut-off device.

The fuel line shall have a safety cut-off device that—

- (a) Is located adjacent to the fuel supply tank or in another safe location;
- (b) Closes automatically when tripped and can be reset without hazard; and
- (c) Can be hand operated from clearly marked locations, one inside the cab and one on each exterior side of the locomotive.