

## § 18.32

carried by the cable is intrinsically safe.

(c) No assembly will be approved that requires the opening of an explosion-proof enclosure to operate a switch, rheostat, or other device during normal operation of a machine.

[33 FR 4660, Mar. 19, 1968, as amended at 57 FR 61209, Dec. 23, 1992]

### § 18.32 Fastenings—additional requirements.

(a) Bolts, screws, or studs shall be used for fastening adjoining parts to prevent the escape of flame from an enclosure. Hinge pins or clamps will be acceptable for this purpose provided MSHA determines them to be equally effective.

(b) Lockwashers shall be provided for all bolts, screws, and studs that secure parts of explosion-proof enclosures. Special fastenings designed to prevent loosening will be acceptable in lieu of lockwashers, provided MSHA determines them to be equally effective.

(c) Fastenings shall be as uniform in size as practicable to preclude improper assembly.

(d) Holes for fastenings shall not penetrate to the interior of an explosion-proof enclosure, except as provided in paragraph (a)(9) of § 18.34, and shall be threaded to insure that a specified bolt or screw will not bottom even if its lockwasher is omitted.

(e) A minimum of 1/8-inch of stock shall be left at the center of the bottom of each hole drilled for fastenings.

(f) Fastenings used for joints on explosion-proof enclosures shall not be used for attaching nonessential parts or for making electrical connections.

(g) The acceptable sizes for and spacings of fastenings shall be determined by the size of the enclosure, as indicated in § 18.31.

(h) MSHA reserves the right to conduct explosion tests with standard bolts, nuts, cap screws, or studs substituted for any special high-tensile strength fastening(s) specified by the applicant.

(i) Coil-thread inserts, if used in holes for fastenings, shall meet the following:

(1) The inserts shall have internal screw threads.

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(2) The holes for the inserts shall be drilled and tapped consistent with the insert manufacturer's specifications.

(3) The inserts shall be installed consistent with the insert manufacturer's specifications.

(4) The insert shall be of sufficient length to ensure the minimum thread engagement of fastening specified in § 18.31(a)(6) of this part.

[33 FR 4660, Mar. 19, 1968, as amended at 57 FR 61210, Dec. 23, 1992]

### § 18.33 Finish of surface joints.

Flat surfaces between bolt holes that form any part of a flame-arresting path shall be plane to within a maximum deviation of one-half the maximum clearance specified in § 18.31(a)(6). All metal surfaces forming a flame-arresting path shall be finished during the manufacturing process to not more than 250 microinches. A thin film of nonhardening preparation to inhibit rusting may be applied to these finished metal surfaces as long as the final surface can be readily wiped free of any foreign materials.

[57 FR 61210, Dec. 23, 1992]

### § 18.34 Motors.

Explosion-proof electric motor assemblies intended for use in approved equipment in underground mines that are specifically addressed in part 7 of this chapter shall be approved under part 7 of this chapter after February 22, 1996. Those motor assemblies not specifically addressed under part 7 of this chapter shall be accepted or certified under this part.

(a) *General.* (1) Motors shall have explosion-proof enclosures.

(2) Motors submitted to MSHA for test shall be equipped with unshielded bearings regardless of whether that type of bearing is specified.

(3) MSHA reserves the right to test motors with the maximum clearance specified between the shaft and the mating part which forms the required flame-arresting path. Also reserved is the right to remachine these parts, at the applicant's expense, to specified dimensions to provide the maximum clearance.