

TITLE: Interpretation and Application of Fastener Requirements for Motor Assemblies Approved Under 30 CFR, Part 7

1.0 PURPOSE

To establish guidelines for the interpretation and application of the requirements related to minimum fastening diameter and maximum spacing and quantity of fastenings for explosion-proof motor assemblies submitted for approval under 30 CFR, Part 7.

2.0 SCOPE

This POL encompasses all applications for motor assemblies submitted for approval including new applications, extensions, and applications submitted under the Revised Approval Modification Program (RAMP).

3.0 REFERENCES

Title 30 Code of Federal Regulations, Part 7, Subpart J, Section 7.304.

4.0 DEFINITIONS

- 4.1. Fastener – a bolt, screw or stud used to secure adjoining parts to prevent the escape of flame from an explosion-proof enclosure
- 4.2. Step joint – a joint having two adjoining surfaces with a change or changes in direction between its inner and outer edges

Typically, a cylindrical portion and a plane portion comprise a step joint. The fasteners used to secure the joint insert through holes in the plane portion of the joint.

- 4.3. Flame-arresting path - two or more adjoining or adjacent surfaces between which the escape of flame is prevented

5.0 POLICY

- 5.1. In the past, motors were approved under Title 30 CFR, Part 18. The majority of motors approved had designs that prevented stresses on the fasteners used to secure the bearing caps/cartridges resulting from an ignition of a methane-air mixture. Typically, these designs had bearing caps/cartridges fastened to the inside surface of the bracket with screws that inserted through the bracket into blind holes in the bearing cap.

The requirements stated in Sections 4.1.1 do not apply to motors approved under Part 18, because Part 18 has no specific requirement for the spacing

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and quantity of fasteners used to secure a flame-arresting path joint with portions in two or more planes. Many of the motors tested used three screws to fasten the bearing cap/cartridge.

Motors with internal volumes that exceeded 124 cu. ins. were explosion tested and approved under Part 18 using ¼" diameter screws to fasten the bearing cap/cartridge to the bracket.

5.2. Application of Technical Requirement Based on Design

- 5.2.1. When the cylindrical portion of a motor step joint meets the minimum flame-arresting path length and maximum diametrical clearance requirements for a joint all in one plane, the maximum 8" spacing specified in 4.1.1 shall apply.
- 5.2.2. If the motor design precludes stresses on the screws or bolts securing the bearing caps/cartridges, then a minimum fastener diameter of ¼" and/or a minimum of three fasteners is acceptable regardless of the motors internal volume. Designs will be evaluated on a case by case basis and verified by testing as deemed necessary. This applies only to fasteners used to secure bearing caps/cartridges.
- 5.2.3. The acceptance of any design that includes the application of 5.2.1 and/or 5.2.2, including any testing performed, will be documented in the final report.