

1.0 PURPOSE

This standard operating procedure is used by the Electrical Safety Division for the detailed inspection of explosion-proof (XP) electrical enclosures and to accelerate inspection procedures without sacrificing the quality of inspection, when quantities of identical assemblies are present on an enclosure design.

2.0 SCOPE

This Standard Test Procedure encompasses explosion-proof enclosures submitted to MSHA for approval under 30 CFR, Part 18.

3.0 REFERENCES

30 CFR, Section 18.60(a) and (b)

4.0 DEFINITIONS

Assembly - Any arrangement of parts that may be added to an enclosure, such as a packing gland assembly, connector assembly, shaft assembly, lens assembly, or pushbutton assembly.

5.0 PROCEDURE

5.1. An inspection of each electrical component shall include the following:

5.1.1. A detailed check of parts against the drawings submitted by the applicant to determine that the drawings and parts coincide and that all minimum requirements have been met. Mark dimensional findings on the drawings. Record any comments on the Inspection Data Sheet (see Appendix 1).

5.1.2. Exact measurement of all flame-arresting paths.

5.1.3. Examination for unnecessary through holes.

5.1.4. Examination of welds for flaws and weaknesses.

5.1.5. Examination of adequacy of lead entrance design and construction.

5.1.6. Examination for distortion of enclosure before tests.

5.1.7. Examination for adequacy of fastenings.

5.2. Inspection when quantities of identical assemblies are present.

- 5.2.1. The following is based on the assumption that the order of machining is not random, but the selection of parts comprising the assembly is random.

For example, the primary parts of a typical shaft assembly are the shaft, bushing, bushing boss and boss hole. The machining of the boss hole is drilling and tapping or reaming if a press fit. Because of machine shop practice and machine tool wear, a check of the first and last machined parts is advisable: variation can occur during initial setup, due to previously used tools, and wear as tools are used. The “first” and “last” boss holes should be selected for complete inspection. At the factory, the shafts, bushings and bushing bosses are machined, operator inspected, placed in part baskets or trays, randomly inspected, “boxed” and later randomly selected for assembly. Consequently, there is no reason to believe these parts will vary from unit to unit, except in a random way. The complete inspection of more than one identical shaft assembly tends to become a quality assurance inspection, rather than an inspection against Part 18 requirements. The same applies to most other types of assemblies.

- 5.2.2. Select the first and last in a row or group of assemblies for complete inspection. Selection may also be the first and last on a cover or box, depending on the configuration.
- 5.2.3. Select additional assemblies for complete inspection, based on the following table:

Total Number of Assemblies	Number to inspect
1 to 2	All
3 to 8	2
9 to 12	3
13 to 20	4
21 to 40	5
More than 40	7

The number to select in 5.2.3 is chosen based on (1) past experience that measurements of identical shaft assemblies have little variance, (2) a 1 in 4 inspection seems reasonable, and is more than normally performed in a machine shop or inspection station, and (3) sample size vs. lot size is typical of statistical sampling. Judgment must be used in applying 5.2. Since the goal is to inspect the first and last drilled boss holes as a minimum, select an assembly at each end of a row on a cover or a box.

- 5.2.4. Visually check all other assemblies (as assembled) for defects. Make spot measurements if deemed necessary.
- 5.2.5. Make judgment if additional assemblies should be completely inspected. Judgment should be based on inspection findings.
- 5.2.6. If an out of tolerance part or defect is found, then check all assemblies for the discrepancy.
- 5.3. Enclosure must measure within the manufacturers specified tolerances, and all minimum requirements must be met.

Appendix 1 – Data Sheet

Data Sheet No. 1-A

U.S. Department of Labor
Mine Safety and Health Administration
Approval and Certification Center
Electrical Safety Division
Triadelphia, WV 26059

Date: _____ MR: _____

To: _____ PAR: _____

From: _____ MFG: _____

Subject: Inspection Enclosure Type: _____

Reference: Title 30 CFR, Part 18.60 _____

Weight _____ lbs

Discrepancies and General Comments: _____
