

Title/Subject: Policy for Inspection of Identical Assemblies in XP Testing		
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1.0 Purpose

This Policy is used by the Electrical Safety Division to accelerate X/P enclosure inspection procedures without sacrificing the quality of inspection, when quantities of identical assemblies are present on an X/P enclosure design. Because of machine shop practice and machine tool wear, a check of the first and last machined portions of the enclosure is advisable. The various parts of an assembly are usually machined, operator inspected, placed in parts 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.

2.0 Scope

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

3.0 Reference

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, or pushbutton assembly.

5.0 Background

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: initial setup - previously used tools - wear as tools are used. Consequently, the "first" and "last" boss holes should be selected for complete inspection. 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 number to select in 6.3 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 table found in a paper on statistical sampling.

Judgment must be used in applying 6.2. Since the goal is to inspect the first and last drilled boss holes as a minimum, select a shaft assembly at each end of a row or a cover or a box. As examples of selection for identical shaft assemblies:

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.

6.0 Procedure

6.1 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.

6.2 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.

6.3 Select additional assemblies for complete inspection, based on the following table:

Total No. of Assy's	Number to inspect
1 - 2	All
3 - 8	2
9 - 12	3
13 - 20	4
21 - 40	5
more than 40	7

These quantities include the first and last selected.

- 6.4 Visually check all other assemblies (as assembled) for defects. Make spot measurements if deemed necessary.
- 6.5 Make judgment if additional assemblies should be completely inspected. Judgment should be based on inspection findings.
- 6.6 If an out of tolerance part or defect is found, then check all assemblies for the discrepancy.