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Standard Guide for Fastener Sampling for Specified Mechanical Properties and Performance Inspection¹

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INTRODUCTION

Throughout this guide the terms *detection* and *prevention* apply to quality control systems. A brief description of both is provided to assist the purchaser in the application of this guide.

The *detection system* relies on inspection as the primary means of controlling the quality of furnished material. Methods include in-process and final inspection. In-process inspection is typically performed by the individual performing the process and generally includes a first-piece inspection by someone other than the operator. Quality-control inspection may perform audit inspections on the process output during the course of the production run. In addition, a final inspection is performed by quality control inspectors according to a prescribed sample plan. The other sample plans utilize zero defects as their acceptance criteria.

The *prevention system* uses advanced quality planning in addition to many of the techniques used in the detection system. Quality planning incorporates a systems approach to quality control that focuses on defect prevention and continual improvement. In addition, Statistical Process Control (SPC) is usually applied to control the process, thereby reducing the variability of the output.

The ISO 9000 and/or the ANSI/ASQC Q9000 quality system standards are models that may be used in establishing a prevention-based quality systems.

1. Scope

1.1 This guide provides sampling methods for determining how many fasteners to include in a random sample in order to determine the acceptability of a given lot of fasteners.

1.2 This guide is for mechanical properties, physical properties, coating requirements, and other quality requirements specified in the standards of ASTM Committee F-16. Dimensional and thread criteria sampling plans are the responsibility of ASME Committee B18. Therefore, unless otherwise specified in this guide, dimensional and thread fit sampling shall be in accordance with ANSI/ASME B18.18.3M.

1.3 This guide provides for two sampling plans: one designated the “detection process,” as described in Terminology F 1789, and one designated the “prevention process,” as described in Terminology F 1789.

2. Referenced Documents

2.1 ASTM Standards:

F 1789 Terminology for F-16 Mechanical Fasteners

2.2 ANSI Standards:

ASME/ANSI B18.18.3M Inspection and Quality Assurance for Special Purpose Fasteners²

ASME/ANSI B18.18.5M Inspection and Quality Assurance Plan Requiring In-Process Inspection and Controls²

ASME/ANSI B18.18.6M Quality Assurance Plan for Fasteners Produced in Third Party Accreditation System²

ASME-FAP-1 Quality Assurance Program Requirements for Fastener Manufacturers and Distributors²

ANSI/ASQC Q9000 Quality Management and Quality Assurance Standards—Guidelines for Selection and Use²

ANSI/ASQC Q9001 Quality Systems—Model for Quality Assurance in Design/Development, Production, Installation, and Servicing²

ANSI/ASQC Q9002 Quality Systems—Model for Quality Assurance in Production and Installation²

ANSI/ASQC Q9004 Quality Management and Quality System Elements—Guidelines²

QS 9004 Quality System Requirements³

2.3 ISO Standards:

ISO 9000 Quality Management and Quality Assurance Standards—Guidelines for Selection and Use²

¹ This guide is under the jurisdiction of ASTM Committee F16 on Fasteners and is the direct responsibility of Subcommittee F16.93 on Quality Assurance Provisions for Fasteners.

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² Available from the American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

³ Available from Automotive Industry Action Group (AIAG), 26200 Lahser Road, Suite 2000, Southfield, MI 48034–9738.