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Mechanical and Quality Requirements for Tapping Screws

RATIONALE

Current requirements for Tapping Screws are contained in ASME B18.6.3 - Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series) and SAE J2596 - Fastener Part Standard - Tapping Screws and Metallic Drive Screws (Inch Dimensioned). SAE J933 contains useful information and may have current users.

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1. Scope

1.1 This SAE Recommended Practice covers the mechanical and quality requirements for steel tapping screws used in automotive and related industries. It does not apply to corrosion resistant (stainless) steel screws. (Dimensional requirements for most types of screws mentioned herein are covered in ASME B 18.6.4, 'Thread Forming and Thread Cutting Tapping Screws and Metallic Drive Screws'.)

1.2 The primary objective of the specification is to insure that screws form or cut mating threads in materials of construction into which they are normally driven, without deforming their own thread and without breaking during assembly or service.

NOTE—Certain limitations on basic material and manufacturing processes have been incorporated because the size and configuration of the parts under consideration make them vulnerable to relatively small variations in chemistry, heat treatment, etc., and because experience has shown that in processing it is difficult to keep these variables consistently "in balance." Until improved performance tests are developed, these limitations will supplement the "performance" features of the specification.

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2. References

2.1 Applicable Publications

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J423—Methods of Measuring Case Depth

2.1.2 ASME PUBLICATIONS

Available from ASME International, Three Park Avenue, New York, NY 10016-5990

ASME B 18.6.4—Thread Forming and Thread Cutting Tapping Screws and Metallic Drive Screws

3. Performance Requirements

3.1 General

In cases where screws are plated subsequent to delivery to the purchaser (or where plating of screws is otherwise under the control of the purchaser), the screw producer is not responsible for failures due to plating. In such cases, additional screws from the same lot shall be stripped of plating, baked, lubricated with machine oil, and retested in the plain finish condition.

3.2 Drive Test for Types A, B, C, D, F, G, T, AB, and BP[1]

Sample screws (coated or uncoated, as received) shall, without deforming their own thread, form a mating thread in test plate described as follows until a thread of full diameter is completely through the test plate.

The test plate shall be made of low-carbon cold-rolled steel, having hardness of Rockwell B70-85 or equivalent, and thickness as specified in Table 1A. Test holes shall be drilled or punched and redrilled, or reamed, to ±0.001 in of nominal diameter specified in Table 1B for type and size screw being tested.

[1] This test does not apply to Types BF, BG, and BT screws.

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