



Standard Practice for Ultrasonic Examination of Turbine-Generator Steel Retaining Rings¹

This standard is issued under the fixed designation A531/A531M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This practice covers ultrasonic examination of turbine-generator retaining rings produced in accordance with Specifications [A288](#) and [A289/A289M](#) with an inside diameter to wall thickness ratio equal to or greater than 5:1 and with wall thicknesses from 1 to 4 in. [25 to 102 mm].

1.2 Forgings may be inspected by either the contact or the immersion methods, or combinations thereof, as agreed upon between the manufacturer and the purchaser.

1.3 Supplementary requirements of an optional nature are provided for use at the option of the purchaser. The supplementary requirements shall apply only when specified individually by the purchaser in the purchase order or contract.

1.4 This practice is expressed in inch-pound and SI units; however, unless the purchase order or contract specifies the applicable “M” specification designation (SI units), the inch-pound units shall apply. The values stated in either SI units or inch-pound units are to be regarded separately as standard. Within the practice, the SI units are shown in brackets. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

¹ This practice is under the jurisdiction of ASTM Committee [A01](#) on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee [A01.06](#) on Steel Forgings and Billets.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[A288](#) Specification for Carbon and Alloy Steel Forgings for Magnetic Retaining Rings for Turbine Generators

[A289/A289M](#) Specification for Alloy Steel Forgings for Nonmagnetic Retaining Rings for Generators

[E127](#) Practice for Fabricating and Checking Aluminum Alloy Ultrasonic Standard Reference Blocks

[E317](#) Practice for Evaluating Performance Characteristics of Ultrasonic Pulse-Echo Testing Instruments and Systems without the Use of Electronic Measurement Instruments

2.2 Other Documents:

[ANSI/ASME B46.1](#) Surface Texture (Surface Roughness, Waviness and Lay)

[Recommended Practice No. SNT-TC-1A](#) Personnel Qualification and Certification in Nondestructive Testing³

3. Personnel Requirements

3.1 Personnel performing ultrasonic examinations to this practice shall be qualified and certified in accordance with a written procedure conforming to Recommended Practice No. SNT-TC-1A or other national standard acceptable to both the purchaser and the supplier.

4. Ordering Information

4.1 When this practice is to be applied to an inquiry, contract, or order, the purchaser shall so state and shall also furnish the following information:

4.1.1 The method or combination of methods to be used for inspection.

4.1.2 The frequency to be used for conducting each inspection.

4.1.3 Report requirements including C-scan plot, if applicable.

4.1.4 Supplementary requirements, if any.

5. General Requirements

5.1 As far as possible the entire volume of the retaining rings shall be subject to ultrasonic inspection. Circumferential and axial faces shall be machined flat and parallel to one another.

³ Available from American Society for Nondestructive Testing (ASNT), P.O. Box 28518, 1711 Arlingate Ln., Columbus, OH 43228-0518, <http://www.asnt.org>.

*A Summary of Changes section appears at the end of this standard