



Standard Practice for Using Hand Calipers to Measure the Width of Steel Sheet¹

This standard is issued under the fixed designation A1087/A1087M; 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 defines procedures for measuring the width of steel sheet when decimal, not fraction tolerances are indicated. The ability to accurately measure width using hand calipers is critical in determining if product meets decimal specifications. The methods described are designed and intended for use in the laboratory, mill situations, and general use.

1.2 The flat steel product shall conform to all the requirements of the appropriate specifications as follows: Specifications [A917](#) and [A924/A924M](#).

1.3 Quantitative limits are not addressed and are established in the general requirements, or individual product specifications, or both; or when applicable, as agreed to between supplier and user.

1.4 This specification is applicable to orders in either inch-pound units or SI units. Values in inch-pound and SI units are not necessarily equivalent. Within the text, SI units are shown in brackets. Each system shall be used independently of the other.

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

[A902 Terminology Relating to Metallic Coated Steel Products](#)

[A917 Specification for Steel Sheet, Coated by the Electrolytic Process for Applications Requiring Designation of](#)

[the Coating Mass on Each Surface \(General Requirements\)](#)

[A924/A924M Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process](#)

3. Terminology

3.1 *Definitions:* See Terminology [A902](#) for definitions of general terminology.

3.2 The definitions and procedures for measuring width characteristics of steel sheet products are provided so that purchasers and suppliers have common definitions and measuring procedures for width measurements. The intention of these definitions and measuring methods is not to provide dimensional specifications for width characteristics, but rather common procedure(s) for quantifying width values. For determining compliance with width specifications, references are provided to appropriate ASTM standards.

4. Apparatus

4.1 Calipers used for width measurement shall be constructed with parallel blades so the sheet can be placed between them for measurement. The outside blades of a caliper are used to measure the width of steel sheet; inside blades of a caliper are used to measure internal dimensions of non-sheet products. Calipers can be electrical digital, dial or analog with vernier scale, as shown in the photographs. See [Fig. 1](#) and [Fig. 2](#).

4.2 Unlock the caliper and if electrical digital, turn it on.

4.3 Clean caliper blades prior to use. Place cleaning material, such as clean dry paper, lint-free cloth, or fabric (not abrasive such as sandpaper) on the outside blades and wipe clean. Repeat until the caliper is clean. Usually once or twice is adequate.

4.4 The typical method to hold or secure the caliper is to grasp the caliper, as shown in [Fig. 3](#), with right hand and the sheet in left hand.

4.5 Close the caliper by rotating the thumb wheel or sliding the movable blade toward the fixed blade. The caliper is acceptable for use if it reads zero. If not, for electronic digital calipers, zero out (reset) the caliper per manufacturer's instructions. For dial and vernier calipers, adjust them to read zero per manufacturer's instructions.

NOTE 1—Mechanical calipers are sensitive to use and adjusting,

¹ This test method is under the jurisdiction of ASTM Committee [A05](#) on Metallic-Coated Iron and Steel Products and is the direct responsibility of Subcommittee [A05.07](#) on Methods of Testing.

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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.

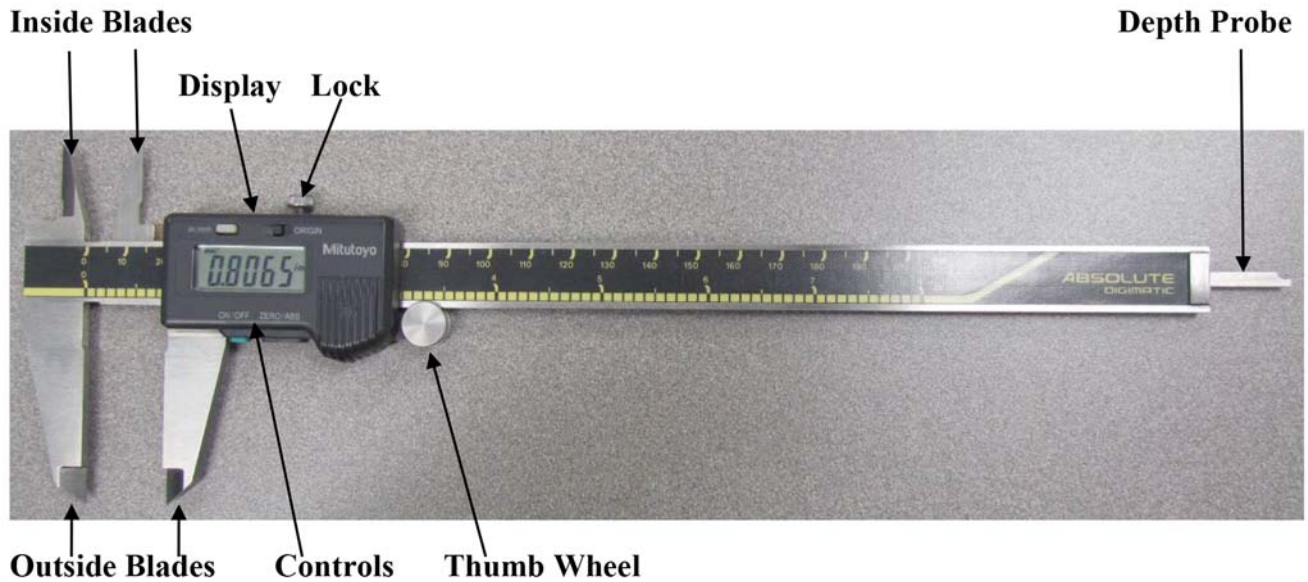
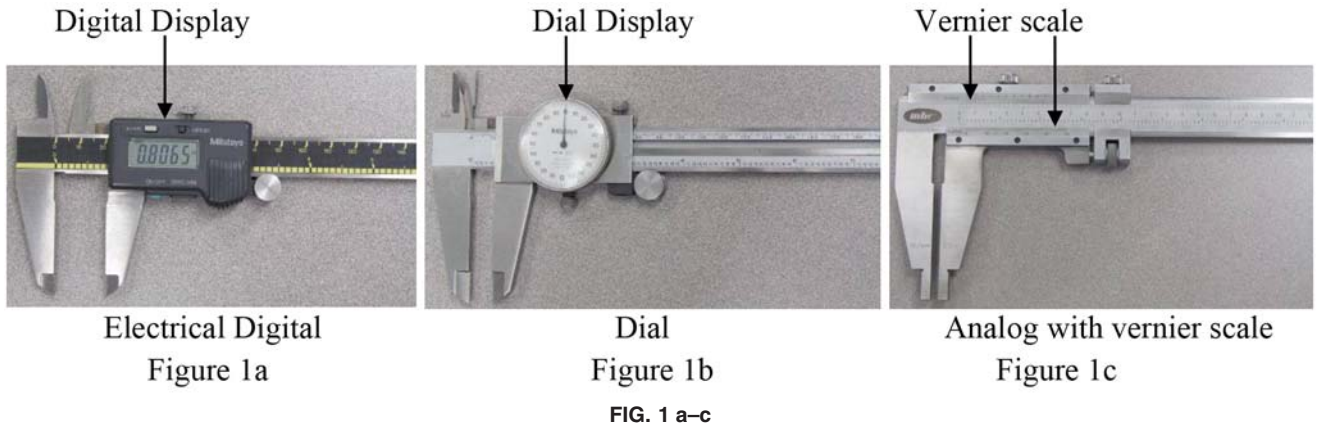


FIG. 2

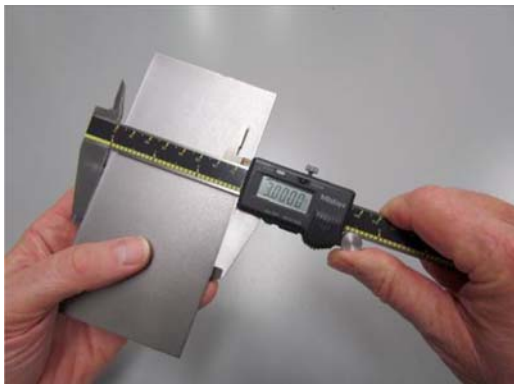


FIG. 3

recalibrate per manufacturer's instructions.

4.6 Measure the material width by holding the caliper with the right hand and sheet with the left hand. Open the caliper blades large enough so the sheet can be placed between the blades. Place the sheet fully within the outside blades and then tighten the outside blades until contact is made on the outside

edges of the sheet. For electronic digital calipers, read the viewing screen for the measurement. Follow the manufacturer's instructions for vernier scale or dial readout calipers.

4.7 Repeat the measurement at the same location. If the reading matches the original measurement value, accept the reading. If the value does not match, take an additional reading. Average the three readings to arrive at the measurement value. Note that the caliper readings are subject to the accuracy of the type of caliper used.

4.8 Recording readings

4.8.1 If required on the sheet sample, identify where the reading(s) was made using a circle, box, cross hairs, etc.

4.8.2 In the measurement record of readings, use a traceable identification back to the sheet sample.

5. Calibration Checks

5.1 It is common practice to calibrate calipers to NIST traceable standards on an annual basis.

5.2 Zero out the caliper.

5.3 Measure an NIST traceable standard. Use a width standard in increments of 6.000 in. [150 mm] that is in the

width range of the sheet steel being measured. Example: to measure, use two standards that bracket the sample width within a range of 6.000 in. [150 mm]. If the caliper readings of the standards are satisfactory the device can be used to measure sheet steel with confidence. If the caliper readings are out by more than 0.001 in. [0.025 mm], the device requires adjustment. See manufacturer's instructions.

6. Proper Care of the Instrument

- 6.1 Do not disassemble a digital caliper.
- 6.2 Store the caliper at room temperature, typically 60 to 100 °F [16 to 38° C].
- 6.3 Keep the caliper clean and in a clean environment.
- 6.4 Keep caliper away from liquids of any kind.
- 6.5 Do not subject the caliper to sudden shocks such as from dropping, or to excessive force during measuring.
- 6.6 Wipe off dust, cutting chips, oil, and moisture from the caliper after each use.
- 6.7 When cleaning the caliper, use a soft cloth using a neutral detergent. Do not use any organic solvent (thinner, etc.) as it may cause damage to the device.

6.8 Do not use an electric marking pen or other such device on the caliper.

7. Accuracy Statement³

7.1 Accuracy of Electronic Digital Calipers is ± 0.002 in. [± 0.05 mm].

7.2 Accuracy of Dial Calipers is ± 0.003 in. [± 0.08 mm].

7.3 Accuracy of Vernier Calipers is ± 0.003 in. [± 0.08 mm].

7.4 The accuracy statement was determined through statistical examination.

NOTE 2—The studies used Calipers with resolutions of: Electronic Digital 0.0005 in. [0.013 mm], Dial 0.001 in. [0.025 mm], Vernier 0.001 in. [0.025 mm].

8. Keywords

8.1 caliper; steel sheet; steel-sheet—metallic-coated

³ Supporting data have been filed at ASTM International Headquarters and may be obtained by requesting Research Report RR:A05-1006. Contact ASTM Customer Service at service@astm.org.

SUMMARY OF CHANGES

Committee A05 has identified the location of selected changes to this standard since the last issue (A1087/A1087M–13) that may impact the use of this standard.

(1) Added new Section 7 and renumbered Keywords section.

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