



PAUL N GARDNER COMPANY
9104 GUILFORD ROAD, SUITE H
COLUMBIA, MD 21046 USA

EMAIL GARDCO@ALTANA.COM
PHONE +1-954-946-9454



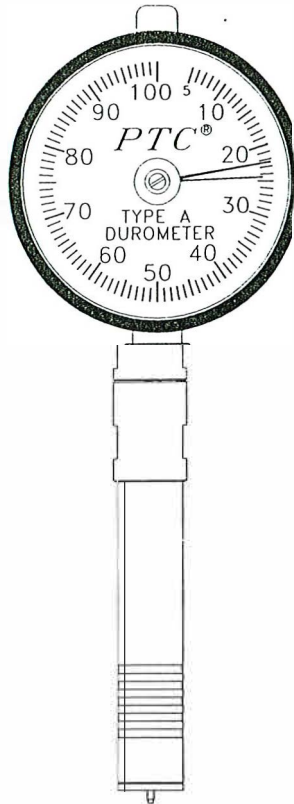
INSTRUCTIONS

GARDCO DISTRIBUTED PRODUCTS



Model 201 & 202 Pencil Durometer--ASTM Type A or D

PTC[®]
INSTRUMENTS



*Model 201 Type A Durometer
for rubber, rubberlike materials,
and soft plastics.*

- **1/2" diameter base--available in either ASTM Type A or D.**
- **Meets or exceeds current ASTM D2240 Specifications.**
- **Accuracy of ± 1 point.**
- **Max reading pointer standard.**

The durometer's 1/2" diameter base is the smallest base permitted by ASTM D2240 Specifications. This allows it to be used in confined or hard to reach areas other durometers cannot test. These durometers meet or exceeds all aspects of ASTM D2240.

The instrument uses a dial gauge with a full 360° scale and bold, easy to read numbers. The dial scale can easily be read to 1/2-point accuracy. A standard max-hold hand holds the peak reading until reset.

The dial has a red zone to assist the user in determining if the hardness of the material being tested is within the durometer's recommended range. ASTM D2240 suggests that readings in this red area should not be reported for either Type A or D.

SPECIFICATIONS

1. Model 201--Type A; Model 202--Type D.
2. Meets or exceeds current ASTM D2240 Specifications.
3. Accuracy..... ± 1 point.
4. Orientation:..... Vertical use only.
5. Dimensions:
 - Height 6-1/2 in. (16.5 cm).
 - Width 2-1/4 in. (5.7 cm).
 - Depth..... 1-3/8 in. (3.5 cm).
6. Weight..... 7 oz. (198 g).
7. Shipping weight..... 2 lb.. (907 g).

CERTIFICATION SERVICE

A 10-point certification for these durometers is available at a nominal cost. PTC's calibration equipment is traceable to N.I.S.T.; the calibration system is in accordance with MIL-STD-45662A. Each certification provides "as received" and "as certified" data. Certifications are only available for durometers, check blocks are not certifiable.

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OPERATING INSTRUCTIONS

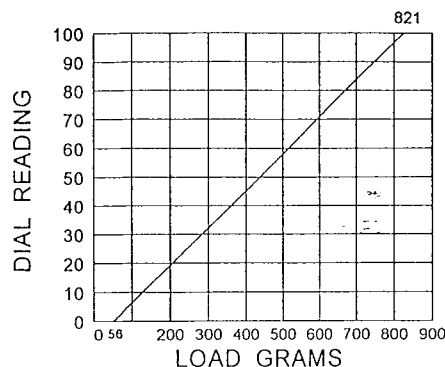
The following procedures are based on ASTM Standard D2240. This standard is recognized as being definitive, however, not all applications require such stringent controls.

Important: The Model 201 & 202 Pencil Durometers must be used in a vertical position.

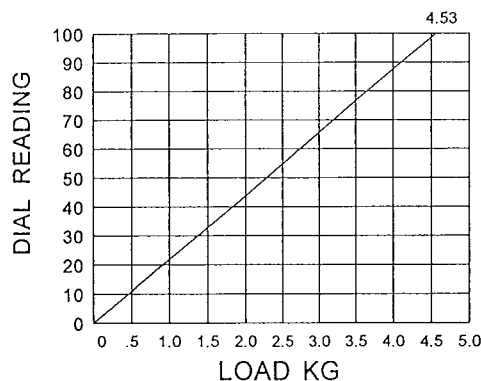
Readings below 10/A may be inexact and should not be reported for some materials. Readings above 90/A should be made on a Type D durometer. Readings below 10/D maybe inexact and should be made on a Type A durometer.

The surface of the sample to be tested shall be clean and smooth. The sample should be at least 1/4" (6 mm) in thickness unless it is known that identical results are obtained with a thinner specimen. Thinner materials can be stacked to obtain the minimum thickness (DO NOT GLUE). Such results may not agree exactly with those of a solid specimen. The sample should be large enough so that the indenter is at least 1/2" (12 mm) from any edge unless it is known that identical results are obtained when measurements are made closer to the edge. The surface of the specimen shall be flat over a sufficient area to permit the presser foot to contact the specimen over an area having a radius of at least 1/4" (6 mm) from the indenter point. The temperature of the specimen should be 73.4°F $\pm$ 3.6°F (23°C $\pm$ 2°C). The specimen should be allowed to rest at this temperature for at least 1 hour prior to testing, as the properties of most materials change with temperature.

Place the specimen on a hard, horizontal surface. Set the ancillary hand of the durometer below 5 points on the dial. Hold the durometer vertically with the point of the indenter at least 1/2" (12 mm) from any edge. Apply the presser foot to the specimen as rapidly as possible without shock, keeping the foot parallel to the surface of the specimen. Apply just sufficient force to obtain firm contact between the presser foot and the specimen. Hold for 1 or 2 seconds, the maximum reading can be obtained from the ancillary hand. If other than a maximum reading is needed, hold the durometer in place without motion and obtain the reading after the required time interval. Make 5 tests at least 1/4" (6 mm) apart and use the average value.



Force curve for Type A



Force curve for Type D

PTC® stocks all ASTM durometer types: A, B, C, D, DO, O, and OO. PTC® has the Model 302SL and Model 412 (Type OOO), which are foam & sponge rubber hardness testers. We also offer ASKER Type C and JIS Types A or C hardness testers.

GUARANTEE & CALIBRATION SERVICE

Pacific Transducer Corp. guarantees the workmanship and materials of these instruments for one year from the date of purchase.

PTC® offers a free calibration check service on these instruments. This offer covers only a calibration check and should not be construed as replacement of parts or repairs. Return postage required.

GARDCO

Paul N. Gardner Company Inc.

316 N.E. FIRST STREET • POMPANO BEACH, FL 33060
POST OFFICE BOX 10688 • POMPANO BEACH, FL 33061-6688
PHONE: 1-800-762-2478 • (954) 946-9454 • FAX (954) 946-9309
www.gardco.com • e-mail: gardner@gardco.com

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CHECK BLOCKS AVAILABLE FOR ALL OF OUR DUROMETERS

All New Design! Color Coded for Identification!
Precision blocks for field checking durometers

Model	Durometer Type	Color
401	<i>Type A</i>	<i>Black</i>
401B	<i>Type B</i>	<i>Purple</i>
401O	<i>Type O</i>	<i>Black</i>
402	<i>Type D</i>	<i>Red</i>
402C	<i>Type C</i>	<i>Blue</i>
402DO	<i>Type DO</i>	<i>Red</i>
403	<i>Type OO</i>	<i>Black</i>
404	<i>Type OOO</i>	<i>Black</i>
405	<i>Model 302SL</i>	<i>Red</i>

We recommend these blocks be used periodically to 'field check' the durometer. It will give the user an indication as to whether the durometer is mechanically sound prior to usage. The block is designed to check a combination of the indenter extension and mainspring calibration.

However, the block is not intended for calibrating purposes. The durometer should be returned to PTC® at least once every 12 months for a complete calibration and instrument check by our trained technicians. The instrument will be inspected upon receipt; no work will be done unless authorized by the customer. Our calibration protocol is designed to meet or exceed current ASTM D2240 Specifications.

PTC® INSTRUMENTS' TECH NOTES ON DUROMETERS

1. ASTM Specification D2240 is the recognized standard for Type A, B, C, D, DO, O, and OO durometers. Other listed durometers are industry standards which are not yet covered by an ASTM specification.
2. PTC® offers a 10-point certification upon request for a nominal fee. Calibration equipment is traceable to the National Institute for Standards and Technology (NIST). Each certification provides "as received" and "as certified" data. The points calibrated are 10, 20, 30, etc. over the durometer's scale from 0 to 100. All certifications are performed in accordance with MIL-STD-45662A. Certifications are only available for durometers, test blocks are not certifiable.
3. For most accurate results a test stand should be employed. Where high repeatability and portability are required when using a Type A, B, or O durometer, the Constant Load Weight, Model 441, should be employed.
4. It is recommended that readings below 10 or above 90 be avoided. It is also recommended that materials above 90/A be tested with a Type D durometer, and that materials below 10/D should be tested with a Type A durometer. Types B or C durometers can be used to keep readings closer to mid-range for samples that read at the high end of Type A or low end of Type D. For unusual or specialized materials outside the ranges of our standard durometers, a custom durometer can be created for consistent test results.
5. Several (5) tests should be made on a given sample and the results averaged.
6. When recording hardness results, the following should be noted: a) The temperature at the time of test, if other than 23°C. b) The time interval, in seconds, that the readings are made after firm contact, if other than one second. c) The maximum reading from the ancillary hand should be recorded for measurements made with time intervals other than one second.