



A Division of Schultes Precision Manufacturing  
1250 Busch Parkway Buffalo Grove, IL 60089  
TEL: 847-465-9009 800-927-3982  
FAX: 847-465-9229 [www.rexgauge.com](http://www.rexgauge.com)

## REX GAUGE COMPANY, INC.

### Automatic Durometer Operating Stand Model OS-AUTO

The Model OS-AUTO ASTM D2240 Type 3 automatic operating stands provide constant load, controlled rate-of-descent, and application velocity, through a geared electric motor and braking mechanism that alternately lowers the durometer onto the specimen and then raises it in preparation for the next testing cycle. The electronic timer adjusts the amount of time the durometer remains in the lowered position (dwell time), allowing time recording of test determinations. The stand can perform high volume testing compared to hand-held or manually operated stands.

The versatile Model OS-AUTO is compatible with Rex Gauge Models 1600, 2000, and DD-4. The Model OS-AUTO is also will accommodate many durometers of other manufacturers, although a mounting adapter maybe necessary.

Unlike its predecessors and competitive models, the Model OS-AUTO will accommodate ASTM D2240 Type OO, OOO and OOO-S durometers! The durometer and carriage assembly have a mass sufficient for use with Types A, B and O. Type C, D, & DO durometers require the addition of the optional larger mass.

#### Features:

- Precision Machined Aluminum Frame
- Gloss Black Powder Coated Aluminum Base
- Heavy Duty Electric Drive Motor and Servos
- Precision Ground Stainless Steel Guide Rods
- Precise and Stable Durometer Application
- Precision Long-Reach Linear Bearings
- Smooth, Positive, Wobble Free Operation
- Stainless Steel Housing



Rex, Manufacturer of the Model SG-5000 Durometer used by NASA

Durometer Hardness Gauges for Elastomers, Plastics and other Non-Metals



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### Model OS-AUTO Specifications

Specification	Description   Value
Durometer Types	No Mass: A, B, E, & O Large Mass: C, D, & DO Custom: OO, OOO, & OOO-S
Overall Dimensions (D x W x H)	356 x 156 x 248 mm (14 x 6.125 x 9.75 in.)
Specimen Table Dimensions	177 x 182 mm (7 x 6 in.)
Throat Depth	83 mm (3.25 in.)
Throat Height	79 mm (3.125 in.)
Weight (Without Additional Mass)	16 kg (35 lb.)
Minimum Specimen Thickness	6 mm (0.240 in.) per ASTM D2240
Maximum Specimen Thickness	Varies with Durometer Model; ~75 mm (3 in.)
Timer Operation	0 through 9999 seconds
Power Requirements	120 VAC 60 Hz   240 VAC 50 Hz Optional
Operating Temperature	23.0 ± 2.0 °C (73.4 ± 3.6 °F)

### Mounting and Aligning the Durometer

This section describes how to mount the durometer on the operating stand and align the instrument so that the presser foot is parallel to the specimen platform.

1. Plug in the power cord to the back of the OS-AUTO and a properly grounded wall outlet.
2. Turn the power switch to the 'on' (I is depressed) position.
3. The OS-AUTO will begin to raise or lower the durometer mounting bracket. When the bracket reaches the lowest position (down delay), turn the power switch off (O is depressed).
4. Turn the durometer height adjustment knob until the bottom of the durometer mounting bracket is approximately four inches above the top of the specimen platform.
5. Secure the durometer to the mounting arm bracket.
6. Ensure that tapered faces of the conical spacers are placed into the orifice of the mounting arm.
7. Loosen the durometer mounting screw one-quarter turn.
8. Using the height adjustment knob, raise the durometer approximately one inch.





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9. Place the metal alignment plate on the table with the hole centered directly below the durometer's indenter. **CAUTION:** Always position the alignment plate directly below the indenter before lowering the durometer to the specimen platform. Contacting the specimen platform with the indenter may damage the indenter and possibly damage the durometer's internal mechanism.
10. Turn the durometer height adjustment knob to lower the durometer until the presser foot firmly contacts the alignment plate.
11. Ensure, by eye-level observation, that the indenter centrally enters the alignment plate hole.
12. Grasping the top of the durometer between your thumb and forefinger, apply a gentle, constant downward pressure on the alignment plate.
13. Maneuver the durometer, by pivoting gently left and right mounting assembly, to ensure that the presser foot is flush with and parallel to the plate. It is recommended to observe the contact between the presser foot and the alignment plate at eye level to prevent indenter contact with the platform or the alignment plate.
14. Maneuver the durometer until the instruments reads zero (never more than +1).
15. Firmly, but gently, tighten the durometer mounting screw. DO NOT OVER TIGHTEN - Over tightening may damage the conical spacers, durometer mounting threads, and mounting knob;
16. Turn on the Model OS-AUTO's power switch. When the durometer reaches the highest position, turn the power switch off.
17. Remove the alignment plate from the specimen table.

**CAUTION:** Turn off (cycle switch or power switch) the Model 90004a only when it is in the up delay or down delay position. If the Model 904a is turned off while the stand is in motion, it may stall the motor. If the motor stalls or slows severely, remove any optional mass, turn the power switch off and on, then use the cycle switch to halt/resume travel until the normal cycle resumes. This may take several repetitions.

### Performing ASTM D2240 Test Determinations

This section outlines the procedure for performing ASTM D2240 test determinations using the Model OS-AUTO automatic operating stand and does not address those of ISO 7619-1, DIN 53 505 or other methods.

1. Obtain a copy of ASTM D2240 *Standard Test Method for Rubber Property—Durometer Hardness-05 (2010)* which is available for download at <https://secure6.astm.org/STORE/review-order.html>
2. It is very important to that all operators thoroughly read the 'procedure' section of this document to be assured that the operator is fully aware of the requirements for proper durometer hardness testing.
3. Failure to follow the procedures outlined in ASTM D2240 will lead to incorrect test determinations.
4. Turn the power switch to the 'on' (I is depressed) position.
5. When the durometer mounting arm reaches the highest position (up delay), turn the power switch off (O is depressed).





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6. Turn the durometer height knob until the bottom of the durometer is approximately one inch above the specimen.
7. The alignment block is approximately 1 inch in width. Place on its side, may be used as a hand-held spacer.
8. Turn the power switch on. When the durometer reaches its lowest position (down delay), turn the power switch off or use the cycle switch to halt the movement.
9. If needed, adjust the durometer mounting knob and durometer height knob to ensure positive contact with the specimen.
10. Performing tests of Type A, B, E, and O requires no additional mass.  
Performing tests of Type C, D, or DO scale durometer require the addition of the large mass (optional).  
Performing tests of Type OO, OOO and OOO-S durometers require no mass, however they do require the addition of the optional polymer durometer height adjustment knob
11. Turn the power switch on. The Model OS-AUTO raises the durometer to the up (delay) position.
12. The dwell timer on the side of the Model OS-AUTO controls how long the durometer remains at the lowermost position (0 to 999 s), in contact with the specimen before returning to the uppermost position.
13. Adjust the dwell timer to meet your testing requirements. ASTM D2240 specifies a 1s dwell time, however this maybe adjusted to meet other requirements and reported.
14. Refer to the booklet, included with this document, regarding the adjustment of the dwell timer.
15. When the durometer returns to the uppermost position it will begin the next test cycle by actuating the cycle switch located on the side of the OS-AUTO.
16. Record each reading for at least five cycles. When employing a durometer with an analogue maximum indicating hand or digital maximum reading hold feature, reset it at each up delay cycle.
17. Calculate the average or the mean (refer to ASTM D2240) of the readings to obtain the test result.

