

Operation and Maintenance Manual

AL115

Lapometer



Associated Development Corporation
6825 38th Street North • Pinellas Park, FL 33781
Tel: 800-524-5454 or 727-525-2153 • Fax: 727-526-7872
sales@optek-online.com • service@optek-online.com
www.optek-online.com

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Chapter 1: Introduction

Congratulations on your selection of the Optek® AL115 Lapometer™!

Safety

Operator safety is of the utmost importance. To ensure the highest level of safety, anyone operating the equipment must be thoroughly trained in its operation and safety features. Special notations and symbols are used in this manual to help you identify and understand potential hazards:

Complete familiarity with your equipment and its operation is the most effective way to ensure the best results in your surfaced lenses and the safest work environment. Please read this entire manual carefully before attempting to install or operate the equipment.



General Danger - a risk of **injury to personnel** if instructions are not followed.



General Mandatory Action - a particularly important point or a risk of damage to equipment if instructions are not followed.



Never perform any maintenance or adjustments without disconnecting the equipment from utility power.

Protective Covers

When using the AL115 Lapometer with all covers in place, the operator is protected from any contact with electrical contacts and wiring.



The operator should never attempt to service the AL115. The gauge should NEVER be operated with the covers open or removed.

Product Specifications

| | |
|---------------|--|
| Power | 120 V AC, 1 Ph, 60 Hz, .07 A or 230 V AC, 1 Ph, 50 Hz, .1 A (9V DC to unit with supplied transformer) |
| Width | 6" (15.2 cm) |
| Depth | 11" (27.9 cm) |
| Height | 16" (40.6 cm) |
| Weight | 18 lb. (8.2 kg) |

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Chapter 2: Installation

Proper installation of your Optek equipment is essential to ensuring optimal results. This chapter will guide you through each procedure in the installation process. You should only have to follow these steps once, but you may need to refer to them again if you relocate your AL115.

Required Items

- Utility knife

Uncrating and Positioning

1. Use the utility knife to open the shipping box.
2. Remove the unit, transformer, calibration standards and 1200-6 adaptor (optional) from the shipping box.
3. Place gauge at desired operating location.

Electrical Service Issues

1. Connect the black power cable coming from the transformer to the socket on rear of gauge.
2. Plug the transformer into the appropriate surge protected receptacle. *Voltage specifications are identified on the identification plate located back of the transformer.*

Chapter 3: Operation

1. Gently press the ON/OFF button in the upper right hand corner of the keypad.



Never use a sharp or pointed object to depress the keys on the pad. Doing so will cause serious damage to the keypad.

2. Once the gauge has been turned on the display shows the index of refraction on the left side and ----- on the right. *Example below:*

530*DIO -----

3. Choose the type of measurement desired.
 - Dioptr Value: If you choose diopters value, you may select any of the preprogrammed indices. This is done by pressing any of the keys with the superscript denoting INDEX #1 through 4.
 - SAG VALUE: If you choose sag value, all calculations are displayed in millimeters.
 - RADIUS or DIAMETER: These two forms are only used in precision optics and are available in either millimeters or inches.
4. Gently depress on the lever located on the front of the unit and insert a lap into the lap vise.
5. Depress the handle located on the right side of the unit until the outer ballpoints come into contact with the lap surface.

The default setting is 1.530 for U.S. operation.



If the inside ballpoints (rather than the outside) touch the lap, the unit must be set to small ballpoint spacing mode to insure proper reading. Depressing the button marked with the superscript L/S, "toggles" between the large and small ballpoint spacing. The unit indicates that it is set to small ballpoint spacing mode by flashing the asterisk (*) in the display. A non-flashing asterisk indicates large ballpoint spacing mode.

6. The display will now read the base curve of the lap. *Example below:*

530*DIO. 6.03

7. Gently release the handle to retract the ballpoints from the lap.
8. Rotate the lap vise 90 degrees to the right and repeat steps 6 & 7 to measure the cross curve of the lap.
9. Remove the lap and follow same procedures for the next lap.

Chapter 4: Calibration

Due to changes in your room temperature, it is necessary to check calibration of the AL115 everyday. Generally it will not be necessary to recalibrate the unit, but this preventative measure will insure accurate readings. This chapter will help you become acquainted with the calibration process and guide you through the procedures.

Large Ball Point Spacing Mode

1. Enter access code into the unit by pressing “C”, “E”, “5”, “2” on the keypad.
2. The display will show INDEX 1 1.530 (index value may differ).
Press “C” and enter the index of refraction desired (decimal point is required).



For normal operation, leave all indices set at 1.530 diopters.

3. Press “E” to accept the value.
4. Repeat steps 2 & 3 for INDEX 2 1.530 & INDEX 3 1.530
5. After completing entry for INDEX 2 and INDEX 3, INDEX S 1.530 is displayed and cannot be changed. Press “E”.
6. The display will now read LRG. mm 50.0000. Make sure this value is 50.0000. If not, re-enter the value including the decimal point. Press “E”.

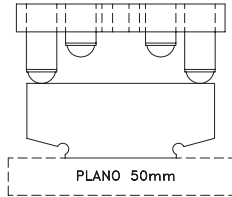


The decimal point is inserted by depressing the Rad/Dio button while in calibration mode

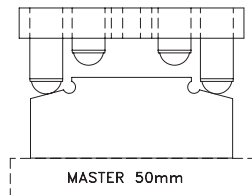
7. The display will now read BALL mm 9.52119. Make sure this value is 9.52119. If not, re-enter value including the decimal point. Press “E”.
8. The display shows PLANO. Rotate the lap vise so that the lever is toward you. Depress the lever on the lap vise and insert the mounting plate so that the side with the long groove is facing up. Release the lever. Position the large

block into the center of the groove on the mounting plate so that the plano surface of the block is facing up.

9. Depress the handle located on the right side of the gauge until the ballpoints come into contact with the plano block surface.



10. The display will now show **PLANO -----**. Continue holding the lever down as the “-----” repeats across the display.
11. When the display reads **RAD mm (a value)**, gently release the handle to retract the ballpoints from the lap.
12. Confirm the value displayed matches the value in the master curve box top (within 1/10,000). If not, re-enter the value including the decimal point and press “E”.
13. The display will now show **MASTER**. Flip over the block, so that it rests in the center of the groove on the mounting plate with the angled side facing up.



15. The display will now show **MASTER -----**. Continue holding the lever down as the “-----” repeats across the display.

16. The display will now read *WAIT*.
17. Once the display returns to the original screen, gently release the handle to retract the ballpoints from the block.
18. The gauge is ready for standard operation.

Small Ball Point Spacing Mode

1. Enter access code into the unit by pressing “C”, “E”, “5”, “2” on the keypad.
2. The display will show INDEX 1 1.530 (index value may differ). Press “C” and enter the index of refraction desired (decimal point is required).



For normal operation, leave all indices set at 1.530 diopters.

3. Press “E” to accept the value.
4. Repeat steps 2 & 3 for INDEX 2 1.530 & INDEX 3 1.530
5. After completing entry for INDEX 2 and INDEX 3, INDEX S 1.530 is displayed and cannot be changed. Press “E”.
6. The display will now read LRG. mm 50.0000.
7. Press the button marked with the superscript L/S.
8. The display will now read SML. mm 20.0000. Make sure this value is 20.0000. If not re enter including the decimal point. Press “E”.

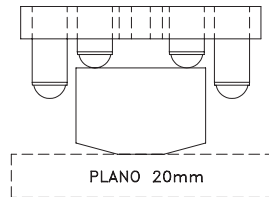


The decimal point is inserted by depressing the Rad/Dio button while in calibration mode

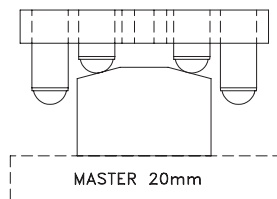
9. The display will now read BALL mm 9.52119. Make sure this value is 9.52119. If not re enter including the decimal point.
10. The display shows PLANO. Rotate the lap vise so that the lever is toward you. Depress the lever on the lap vise and insert the mounting plate so that the side with the long groove is facing up. Release the lever. Position the small

block into the center of the groove on the mounting plate so that the plano surface of the block is facing up.

11. Depress the handle located on the right side of the gauge until the ballpoints come into contact with the plano block surface.



12. The display will now show **PLANO -----**. Continue holding the lever down as the “-----” repeats across the display.
13. When the display reads **RAD mm (a value)**, gently release the handle to retract the ballpoints from the lap.
14. Confirm the value displayed matches the value in the master curve box top (within 1/10,000). If not, re-enter including the decimal point. Press “E”.
15. The display will now show **MASTER**. Flip over the block, so that it rests in the center of the groove on the mounting plate with the curve side facing up.
16. Depress the handle located on the right side of the gauge until the ballpoints come into contact with the angled block surface.



17. The display will now show **MASTER -----**. Continue holding the lever down as the “-----” repeats across the display.

18. The display will now read *WAIT*.
19. Once the display returns to the original screen, gently release the handle to retract the ballpoints from the lap.
20. The gauge is ready for standard operation.

Chapter 5: Maintenance

1. Keep unit in a clean, dry place.
2. Cover unit when not in use.
3. Never place the unit near anything that produces static interference.
4. Never oil the transducer (center rod).
5. Never hit the transducer with the lap, lens or plano block. If hit with any object, the transducer can be seriously damaged.

Chapter 6: Troubleshooting

Occasionally, power surges will cause the AL115 to lose the calibration of the transducer unit. This problem is generally manifested by the inability to recalibrate the gauge correctly. This problem is easily remedied by resetting the internal gauge.



The control panel is connected to the control box by a short ribbon cable. Failure to follow the instructions in step 2 may result in damage to the unit.

1. Unplug the power supply from the wall outlet.
2. Remove the six (6) screws that hold the control panel to the control box and secure the panel to the left side of the box using two (2) of the screws.



Steps 3 – 7 require that the AL115 be connected to its power source and the gauge “ON”. Extreme caution must be used to avoid electrical shock.

3. Plug the power supply into the wall outlet.
4. See if the internal gauge is “Zeroed” and reading in “mm” with a resolution of “.00”. If correct, go to step 6.
5. On the internal gauge, press the following buttons in order:
 - “Zero/Abs” button.
 - “in/mm”
 - “res”
6. Replace the control panel.
7. Recalibrate the unit as described in chapter 4.