



**Analytical Instruments**

**Operation Manual**  
**Model C25L**  
**Manual Polarimeter**



**Measurement  
Range  $\pm 180^\circ$**

**Cat. No. 4601P**

# VEE GEE C25L Operation Manual

±180° Full Circle Manual Polarimeter

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Warranty information and a registration card  
can be found at the following web address:

**[www.veege.com/service\\_support](http://www.veege.com/service_support)**

Disclaimer: The information provided in this operation manual is believed to be accurate and reliable at the time of printing. However, no responsibility shall be assumed by VEE GEE Scientific for its use. The information contained in this document is subject to change without notification.

This product is designed and intended for use only as a polarimeter system. Modifying the product in any manner for use not originally intended shall automatically void the manufacturer's warranty. In no event shall VEE GEE Scientific LLC be held liable for any incidental or indirect damage arising from the use of modified or altered product.

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For information about parts, accessories, or service -  
contact your VEE GEE dealer or contact VEE GEE Scientific at:  
800-423-8842 | [veege.com](http://veege.com) | [sales@veege.com](mailto:sales@veege.com) | [techsupport@veege.com](mailto:techsupport@veege.com)


## **VEE GEE** Introduction

Thank you for purchasing this VEE GEE Polarimeter. With the user in mind, VEE GEE Polarimeters are built from modern designs and, with proper care, this instrument should provide many years of reliable performance. It's recommended this manual is read entirely before using the polarimeter for the first time.

The VEE GEE Model C25L is designed to measure the angle of rotation caused by passing polarized light through an optically active substance. Measurements can be made with an accuracy of  $\pm 0.1$  by utilizing a large,  $\pm 180^\circ$ , full circle Vernier scale. Readings can be interpolated to  $\pm 0.05$  by an experienced user.

This instrument features a long-life, energy-efficient LED light source with a 589nm filter. The LED light should last the life of the instrument and therefore requires no regular replacement. The instrument is provided with 100mm & 200mm sample cells.

## **VEE GEE** Safety Precautions

 This polarimeter is a delicate optical instrument and requires an accurately aligned, internal optical path for proper functioning. Do not shake or jolt the instrument. The impact may damage or cause the optical components to shift which will result in inaccurate readings.

 Do not attempt to open the body of the instrument as there are no user serviceable parts inside.

 Please refer to the Service & Support section website for detailed info on returning your instrument for service.

## **VEE GEE** Maintenance

### **Fuse Replacement**

This instrument uses a 1A 250V (part number 1200-FS4) fuse which is located on the bottom of the instrument.

1. Turn the power switch off, labeled "0", and unplug from the power outlet.
2. Remove any sample cells that may be present in the cell chamber and carefully place the polarimeter on its side.
3. Using a Phillips or slot screwdriver unthread the fuse holder (figure 1) and visually inspect the filament inside the fuse. If the filament is burnt or the inside of the fuse is blackened then replace the fuse. Use only the correct fuse. NEVER use a fuse that is rated higher than what came with the instrument.
4. Re-thread the fuse holder back into the base of the polarimeter.

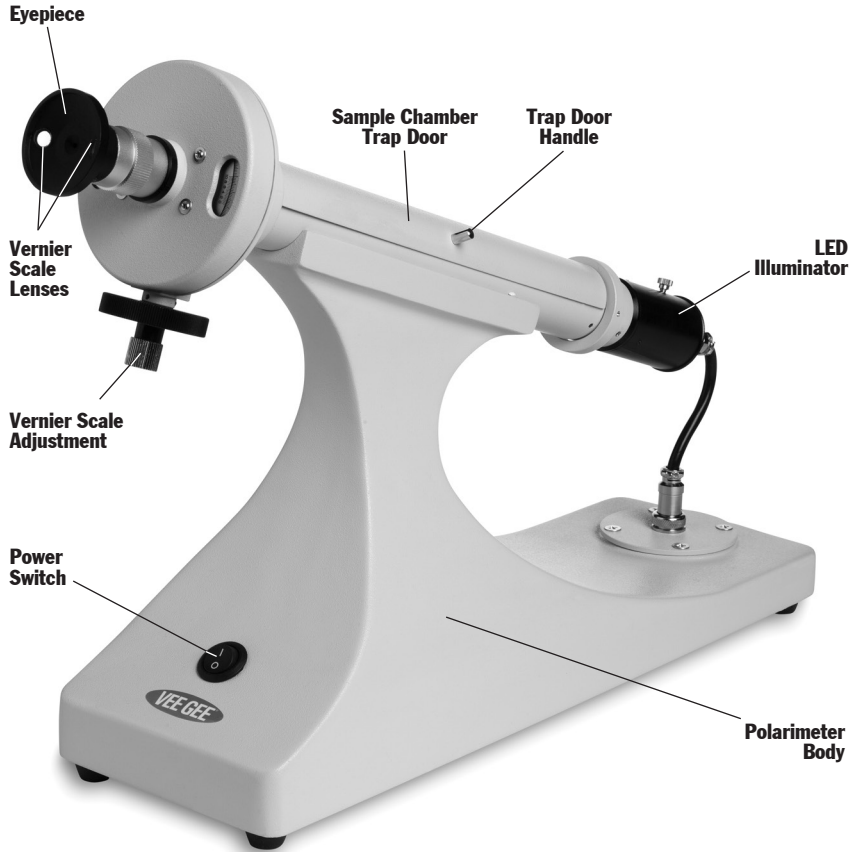


Figure 1

### **Cleaning**

1. The instrument should not be used in an overly humid environment and should be cleaned with a moist cloth and mild detergent after use or when liquids have been spilled on it.
2. The polarimeter body can be cleaned using water and light detergent with a soft cloth or tissue. Do not use harsh chemicals as this may damage the painted surfaces. Be sure to unplug the instrument from the power source before cleaning. Do not immerse or allow large amounts of water to splash onto the instrument.
3. After each use, clean the sample cell in water and light detergent then wipe dry with a soft cloth or tissue and allow to air dry.
4. Use only specially formulated lens cleaning fluids and tissues to clean the optical components of the instrument. Failure to do so may result in scratched lens surfaces.

## **VEE GEE** Polarimeter Components



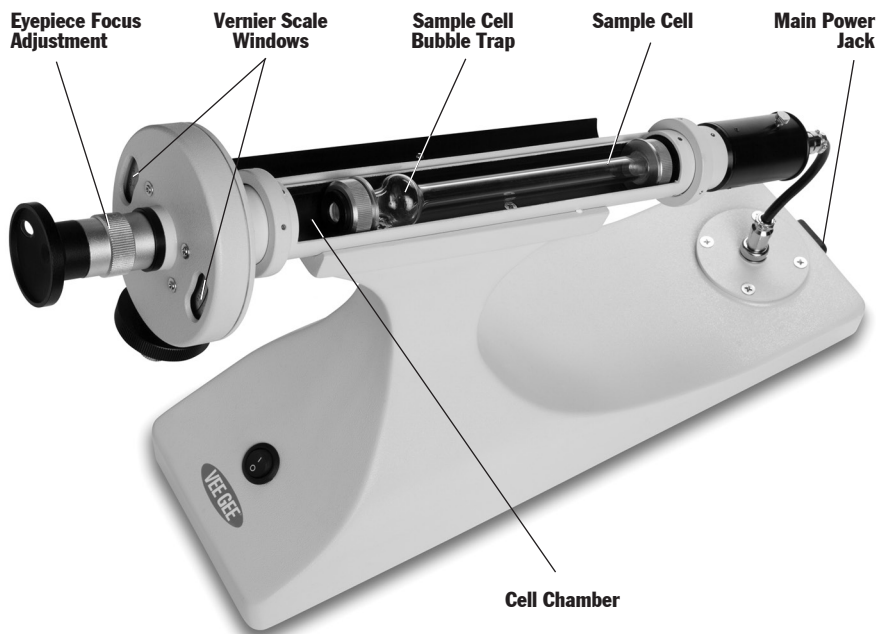
## **VEE GEE** Included Parts

Upon receiving your VEE GEE Model C25L Polarimeter, check to see that all parts are functioning and focusing properly and that the following items are supplied with your instrument:

1. Assembled Polarimeter Body (1 ea.)
2. Power Cable (NEMA 5 or Euro Schuko depending on voltage) (1 ea.)
3. 100mm & 200mm Sample Cells (1 ea.)
4. Operation Manual (1 ea.)

For information about parts, accessories, or service - contact your VEE GEE dealer or contact VEE GEE Scientific at: 800-423-8842 | [veegee.com](http://veegee.com) | [sales@veegee.com](mailto:sales@veegee.com) | [techsupport@veegee.com](mailto:techsupport@veegee.com)

## VEE GEE Polarimeter Components



## VEE GEE Replacement Parts

Replacement parts can be ordered through your VEE GEE dealer. Contact us for more information.

### Item

Factory replacement 100mm Sample Cell with bubble trap  
Factory replacement 200mm Sample Cell with bubble trap  
1A 250V Fuse

### Part No.

4600P-SC100  
4600P-SC200  
1200-FS4

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## VEE GEE Setup

### Basic Assembly and Eyepiece Focusing

Ensure that the work area is free of dust and dirt.

1. Remove all parts from packaging and place the polarimeter body on a stable work surface.
2. Insert female end of the main power cord into the power jack located on the rear of the polarimeter.
3. Insert male end of the main power cord into a suitable power outlet.
4. Flip the power switch to the on position, labeled “I”.
5. The C25L polarimeter utilizes an LED illuminator and therefore requires no warm up period before use.
6. Observe the field of view through the eyepiece and rotate the eyepiece focus adjustment (figure 2) until the edges of the round field of view are sharply focused.

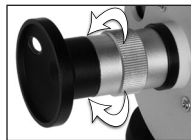


Figure 2

## VEE GEE Operation

### Glass Sample Cells

The polarimeter comes with 100mm and 200mm glass sample cells. Both utilize bubble traps to prevent air bubbles from giving inaccurate readings.

1. Obtain a well homogenized sample of the substance to be tested.
2. Unthread and remove the endcap pieces from one end of the sample cell.
3. Pour the substance into the sample cell leaving only a very small amount of air in the cell. Replace the endcap being careful to tighten only by hand and only until it prevents liquid from leaking out. Over tightening the end cap will cause stress in the glass which can produce erroneous readings.
4. Open the sample chamber trap door and place the filled sample cell into the chamber with the bubble trap toward the top, making sure that any air bubbles still in the cell are trapped inside the bubble trap. Close the trap door.

### Measuring

This instrument works by passing linear polarized light through an optically active liquid sample and measuring the degree of rotation that occurs. The reading is then displayed to the user through a triplex field of view with the left half-shadow and the right half-shadow being divided by a center section (figure 3).

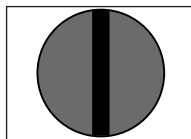


Figure 3

1. While looking through the eyepiece rotate the Vernier scale adjustment knob (figure 4) until the two half-shadows are at the same dark intensity as the center section (figure 5).
2. The angle of rotation can now be read on the Vernier scales (figure 6) through the magnifying lenses located on the eyepiece. A reading of  $0^\circ$  indicates that the sample is optically inactive.



Figure 4



Figure 5

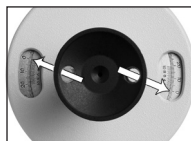


Figure 6

## **VEE GEE** Operation (continued)

### **Instrument Accuracy**

Your VEE GEE polarimeter was calibrated at the factory during production. Follow the instructions below to check the accuracy of your instrument and make adjustments if necessary.

1. Ensure the the ambient room temperature of your work area is 20°C ( $\pm 2^\circ\text{C}$ ). Fill the sample cell with distilled water that is at room temperature. You should get a 0° reading which indicates that your instrument is reading properly.

2. If the reading is off slightly you can either make manual adjustments to your results or recalibrate the Vernier Scales. Note: a recalibration should only be performed by a user that is comfortable making mechanical adjustments to the instrument.

3. With a small Phillips screwdriver (not included) loosen the two set screws (figure 7) located near the Vernier scale that is reading incorrectly. Do not remove the screws, it is only necessary to slightly loosen them.

4. Use your fingers to push up or pull down the loosened set screws to reposition the inner scale until the 0° reading is obtained. Hold the scale steady while retightening the adjustment screws. Repeat on the opposite side Vernier scale if necessary.



Figure 7

## **VEE GEE** Troubleshooting

No light visible in eyepiece:	Check if power switch is flipped to the “ ” position. Check if the power cord is attached to the rear of the polarimeter and to a functioning power supply. Refer to Basic Assembly section. Check to see if fuse is burnt. Refer to Fuse Replacement section.
Field of view is blurry:	Ensure there is nothing blocking the light path in the sample cell chamber. Make adjustment to eyepiece focusing control. Refer to Basic Setup and Eyepiece Focusing section. Ensure that the eyepiece lens is clean and free of oil or dirt.
Obtaining erroneous readings:	Check the accuracy and zero the scale if necessary. Refer to Instrument Accuracy section.

## **VEE GEE** Specifications

<b>Measuring Scale:</b>	°Arc
<b>Measuring Range:</b>	$\pm 180^\circ$
<b>Resolution:</b>	0.1
<b>Accuracy:</b>	$\pm 0.1$
<b>Optical Wavelength:</b>	589nm
<b>Sensitivity:</b>	Up to 99.9% Light Absorption
<b>Measuring Light Source:</b>	LED
<b>Sample Cell Length (max):</b>	200mm
<b>Power Requirements:</b>	110/220VAC, 50/60Hz
<b>Dimensions:</b>	460 x 140 x 330mm
<b>Weight:</b>	5.2kg

