

6103

Semi-permanent horizontal positioning of the telescope and collimator prevents unintentional misalignment during student instruction. Focusing lock screws of the telescope and collimator are concealed under removable plugs. Tilt adjustment screws can be replaced with knurled head screws (supplied) when student adjustment is desired.

Position of the telescope is read to one minute by vernier and magnifier. A clamp and fine motion adjustment are provided on the telescope arm.

Prism table elevates 19 mm to accommodate objects of various sizes and locks in the selected position. The table (spring-loaded) rests on three leveling screws.

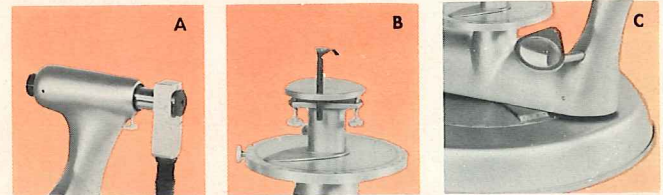
GAERTNER-PECK SPECTROMETER

CLASSROOM APPROVED THROUGH MARKET RESEARCH ACCESSORIES AVAILABLE FOR ADVANCED INSTRUCTION

Gaertner engineers working in collaboration with Professor Edson R. Peck, Physical Science Department of the University of Idaho, developed the L103 Spectrometer with consideration to requests received from numerous educators concerned with the teaching of optical principles. The greatest demands called for an instrument with a simplified method of adjustment and the ability to retain the adjustments during student instruction. Others specified the need for an inexpensive spectrometer with accessories for advanced experiments. These requests have all been fulfilled . . . and the result is one of the most practical student spectrometers available. A technical operations manual, complete with a series of experiments, has been prepared by Professor Peck, specifically for classroom use of the L103 Spectrometer.

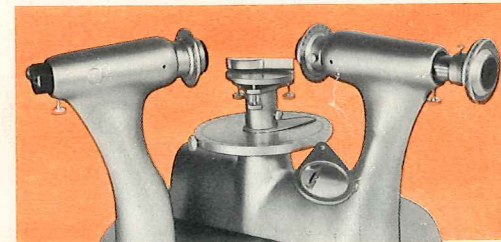
To further describe the spectrometer it is necessary to highlight the various features and advantages. As an example, the smooth overall design minimizes dust accumulation and protects delicate parts. Though this may sound insignificant, it is a feature that prolongs the service of the instrument. Special attention has been given to placement of operational adjustments in order to reduce set-up time and to keep the instrument "student-proof."

Accessories designed especially for the L103 Spectrometer increase its value for advanced instruction and laboratory use.



FEATURES:

(A) Illuminator attached to Gauss-Ramsden eyepiece converts telescope to autocollimator, and travels with telescope assembly. (B) Prism table protractor clamps in selected position and remains stationary. Readings can be made to 1/2 degree. Standard table has vertical adjustment to 19 mm to compensate for object size. Provision has been made to accommodate table accessories. (C) Circular scale on base is engine divided in 1/2 degree increments and is easily read with a vernier and magnifier mounted on telescope arm. Vernier can be read to nearest minute of arc.



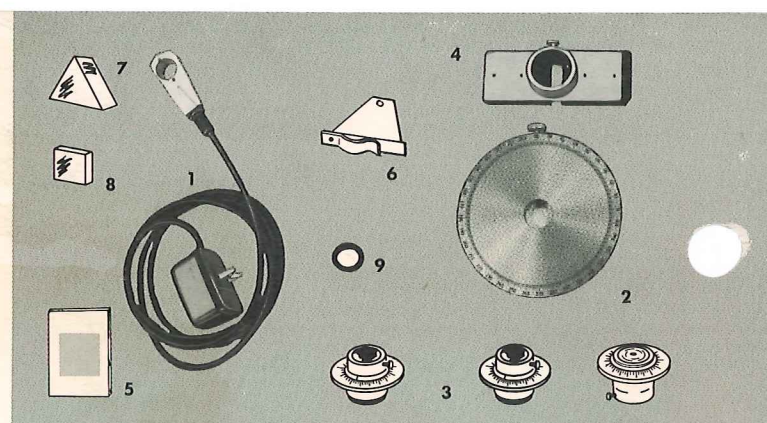
**POLARIZING
ACCESSORIES**

POLARIZING ACCESSORIES:

These are shown mounted in working position for the advanced studies of polarization and ellipsometry. Protractors read direct to 5 degrees for angular orientation. Fresnel's law of reflection at a dielectric interface, and Brewster's angle can be investigated with the polarizer and analyzer attachments. One significant example of informative experiments accomplished with polarizing accessories is ellipticity by reflection from surfaces, films or strata.

In its mechanical details, the Gaertner-Peck Spectrometer is simplified to lessen the basic operational instruction time, while the functions of the instrument have been expanded to increase the educational value. The following information explains how the instrument operates:

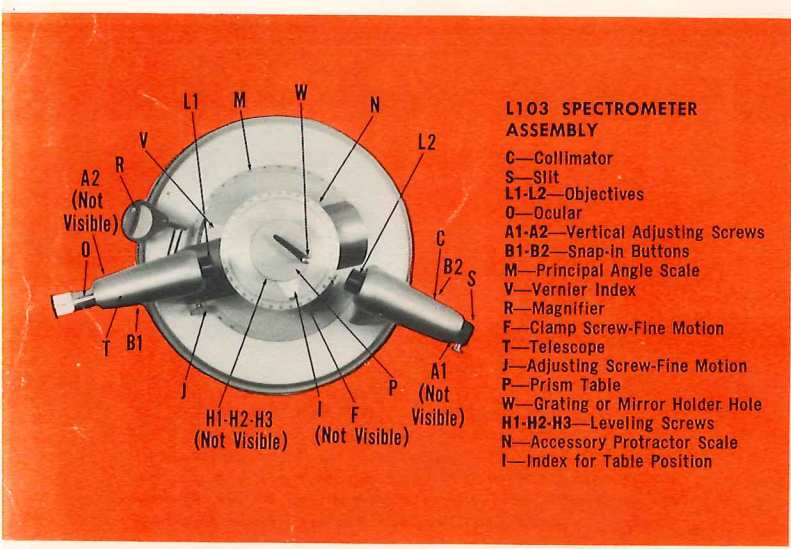
The collimator (C) is fixed in position, except for vertical tilt obtained by mounting the objective end between horizontal pivot screws, and supporting the slit (S) end by adjustment screw (A1). The telescope (T) rotates around a well defined vertical mechanical axis. Rotation is measured precisely by the divided scale (M), and read by vernier (V) to the nearest minute of arc. The telescope travels free when a large knurled screw (F) is released. Prism table (P) rests kinematically upon three leveling screws (H1-H2-H3) disposed at the corners of the equilateral triangle. A spring pulls the table down against the screws to assure positive positioning of the objects. Entire table assembly can be moved vertically on the central shaft up to 19 mm with position maintained by a collar. Snap-in Buttons (B1-B2) cover focusing lock screws.



ACCESSORIES:

- L103L—Gauss Ramsden Eyepiece Illuminator.
- L103Y—Protractor Attachment for Prism Table.
- L103P—Polarizing Assembly (3 pieces).
L103PO—Two Polarizing Attachments for mounting on Objective Ends of Collimator and Telescope.
L103PE—One Polarizing Attachment for mounting on Eyepiece of Telescope.
- L103D—Gate Diaphragm.
- Replica Transmission Gratings
L103GT-75 — 7500 lines per inch
L103GT-150—15000 lines per inch
- L100G—Grating Holder.
- L711—60° Flint Prism.
L103-90—90° Prism.
- L100AP—Adjusting Plate.
L136E—Steel Reflecting Surface.
L136F—Front Surface Mirror.
- L103Hg—Quarter Wave Plate (Mercury) (5461A).
L103Na—Quarter Wave Plate (Sodium) (5893A).

For additional information concerning Gaertner Spectrometer Accessories, please request Bulletin 157-64.



L103 SPECTROMETER ASSEMBLY

C—Collimator
 S—Slit
 L1-L2—Objectives
 O—Ocular
 A1-A2—Vertical Adjusting Screws
 B1-B2—Snap-in Buttons
 M—Principal Angle Scale
 V—Vernier Index
 R—Magnifier
 F—Clamp Screw-Fine Motion
 T—Telescope
 J—Adjusting Screw-Fine Motion
 P—Prism Table
 W—Grating or Mirror Holder Hole
 H1-H2-H3—Leveling Screws
 N—Accessory Protractor Scale
 I—Index for Table Position

EXPERIMENTS:

Advanced study of the Spectrometer can be accomplished through the addition of Gaertner designed accessories. As an example, the telescope can easily be converted to an autocollimator by backlighting the crosshairs of the reticle with a Gauss-Ramsden eyepiece and (1) illuminator. This illuminator travels with the telescope to eliminate the necessity of readjusting the light source to different positions of the telescope arm. Some of the important experiments include: Plane Polarization-Reflection at Dielectric Interface requires polarizing accessories (3). Refractive Index and Dispersion Through the Use of a Prism (7); and the observance of liquid samples or solids in liquids through a hollow prism to get the refractive

index. Fraunhofer Diffraction (gate aperture accessory (4) for the observance of vertical fringes in the telescope field. Ellipsometry — the study of thin films and surfaces through elliptical polarization (3). These experiments and many others are explained in detail, with diagrams in a manual prepared especially for the Gaertner-Peck Spectrometer. The manual contains material suitable for classroom instruction, and is included with each L103 Spectrometer purchased.

SPECIFICATIONS:

Divided Circle	
Diameter	190 mm
Smallest Division	1/2 degree
Vernier Reads to	1 minute
Objectives	
Type	Achromatic
Aperture	20 mm
Focal Length	130 mm
Eyepiece	
Style	Gauss-Ramsden
Power	14X
Reticle	90° Crosshairs
Slit	
Type	Unilateral
Length of Jaws	6 mm
Material of Jaws	Stainless Steel

DIMENSIONS (Approximate):

Prism Table63 mm dia.
Height of Optical Axis	215 mm
Prism Table Vertical Motion	19 mm
Eyepiece to Slit	450 mm
Separation between Objectives	140 mm
Diameter of Base	330 mm

SHIPPING:

Net Weight	15 lbs.
Shipping Weight	20 lbs.
(Instruction Manual Included)	

S/7M/1-64/U.S.A.