

COMPARISON SPECTROSCOPE MODEL SP-116

When using standard spectrum tubes, the best results will be obtained with a relatively large slit opening. Examination of the necked down portion of the spectrum tube shows a heavy glass wall with a small bore or capillary in the center. This reduction in the cross-section, in relation to the larger diameter at either end, greatly increases the current density and hence the light output. The inside and outside diameters of the tube form a concave-convex lens system which, on balance, will be a diverging system. You will further recall that the index of refraction of glass is greater for short wavelengths than for long. The short wavelength violet rays are spread slightly more than the red. Using a rather large slit opening will minimize the imbalance in intensity and assure the student a clear understanding of just what a spectrum really is.

When viewing other sources of light such as flames, incandescent or fluorescent lamps, or indirect sunlight, the slit can be closed considerably for better resolution. The farther away the source of the light, the more nearly parallel will be the rays reaching the slit and therefore the sharper will be the diffracted image.

The wire clips on the spectrum tube holders may also be used to position test tubes holding various liquids for the study of the absorption bands of light that are characteristic of those liquids. Blood and chlorophyll are two common substances that exhibit distinct absorption patterns.



MAINTENANCE

Since the battery is only operated for very short periods of time to illuminate the scale, it will last a long time. When the light does become too dim for acceptable viewing, remove the cover screws and lift off the cover. The battery is a common 9 volt-type available at any hardware store. It is mounted in a clip at the front of the unit. Simply pop out the old one and insert the new one. Both terminals are on the same end of the battery; by convention, the positive terminal would normally be placed in the insulated connector of the mounting clip but a reversal of polarity will have no effect on operation. Note that the lamps are connected in series for operation at reduced voltage to assure long life.