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15R - Quick Reflectance Measurements with the 15R for Monitoring Mirror Soiling

For the usual reflectance measurement with the 15R Specular Reflectometer, the recommended procedure is to align the instrument to produce a maximum reading. The alignment is accomplished with two outboard adjusting screws that tilt the instrument in orthogonal planes. The adjustment brings the reflected and focused image of the point source fully inside the receiving aperture and captures the maximum amount of reflected energy within a defined angle about the specular direction. The acceptance angle is set by the selection of the receiving aperture. The standard receiving apertures are 15, 25 and 46 mrad (full angle).

For some routine measurements such as monitoring mirror soiling, where a tight acceptance angle is not required, it is possible to fix the alignment of the instrument and greatly increase the speed of taking measurements. If alignment is not required for each measurement the instrument can be positioned quickly and a measurement stored or recorded in just a few seconds.



Photo showing locking hardware installed

For this purpose the 46 mrad aperture can be used. To fix the alignment, locking hardware is provided with the instrument. After carefully centering the source image in the smallest aperture, the locking nuts can be tightened on the outboard adjusting screws. Although not critical for this measurement, the central support screw can be adjusted for the thickness of a second surface mirror prior to adjusting the outboard screws. With the alignment fixed, and using the large receiving aperture, the reflected image will be located well within the receiving aperture as it is moved from one point to another on a flat mirror. For a parabolic mirror, the alignment error can be minimized by orienting the instrument with the outboard adjusting screws on a line perpendicular to the axis of the parabolic reflector. In this orientation the mirror surface below the measurement port will be at very nearly the same angle as if the instrument were resting on a flat mirror.



Optimum orientation on a parabolic mirror