



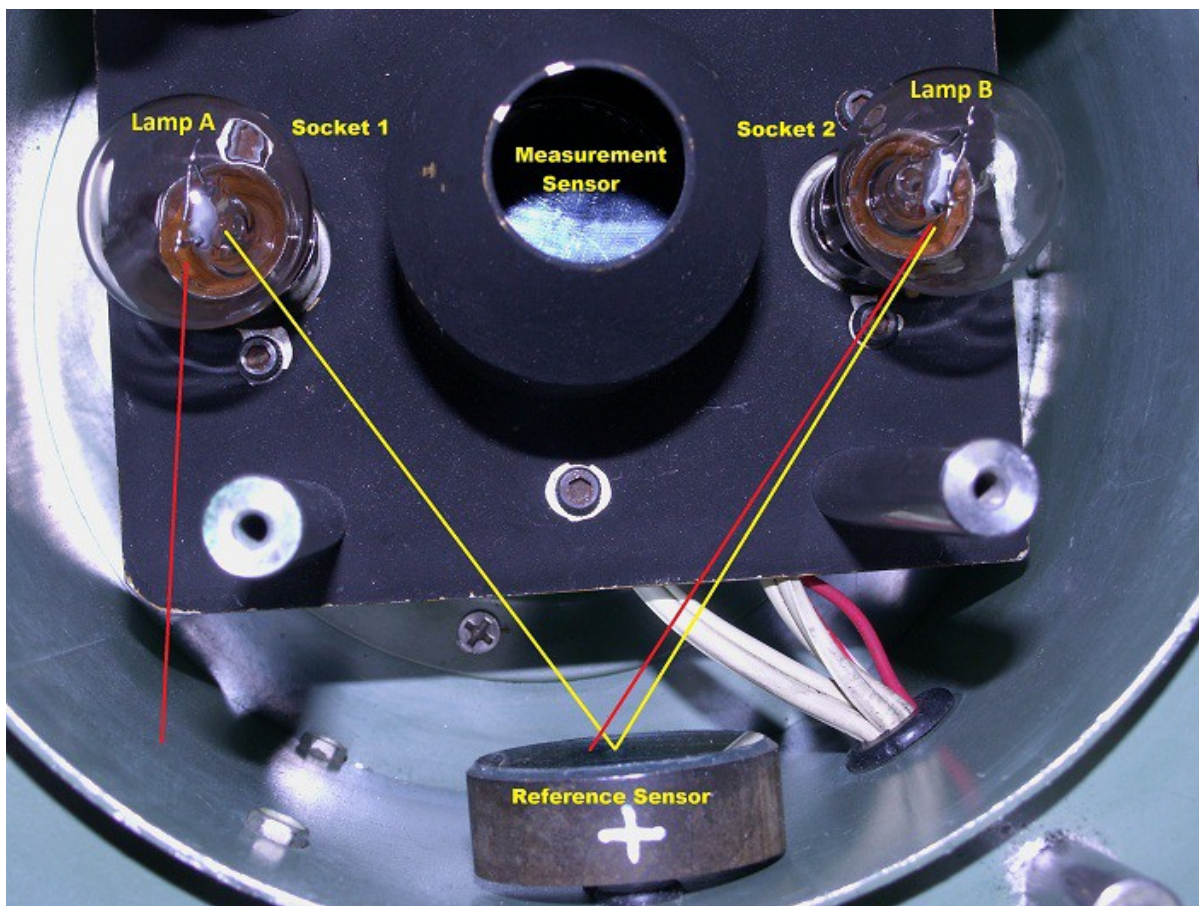
An analog Sizing Tester (model KA) had two new 1680X lamps in it. The Sizing Tester was not meeting the white tile sensitivity spec.

The filaments of those two lamps were not aligned correctly. They were rotated slightly clockwise as viewed from above, one lamp more than the other. In these marked photographs which show those two lamps, one is marked **Lamp A** and the other is marked **Lamp B**. The filament of Lamp B is rotated further from correct position than is the filament of Lamp A.

The **RED** lines are aligned with the filaments. The **YELLOW** lines are aligned with the path from lamp to Reference sensor.

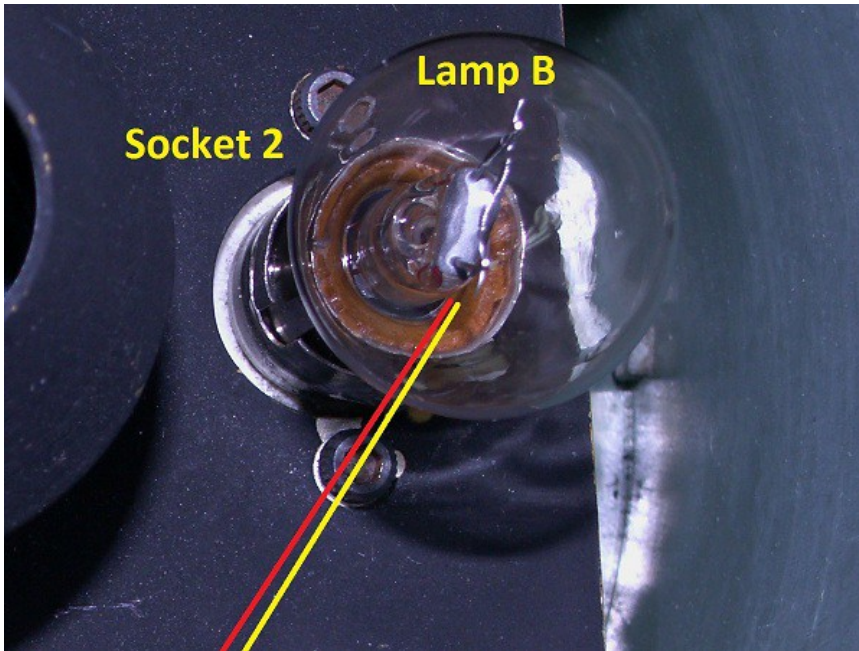
When Lamp B is in the right socket (Socket 2), its yellow and red lines are pointing nearly the same direction. The reference sensor sees only one end of Lamp B's filament, and the rest of the filament is hidden from the reference sensor by the near end of the filament. That greatly reduces the amount of light reaching the reference sensor from Lamp B. The light as seen by the reference sensor with that filament alignment was found to be (by measuring reference sensor sensor photocurrent with the other lamp off) to be about 1/3 of what it normally is.

The lamps in the HST were as shown in the first photograph below. Lamp B's filament end pointing right at the reference sensor was the cause of the weak white tile sensitivity of 19 microamps.





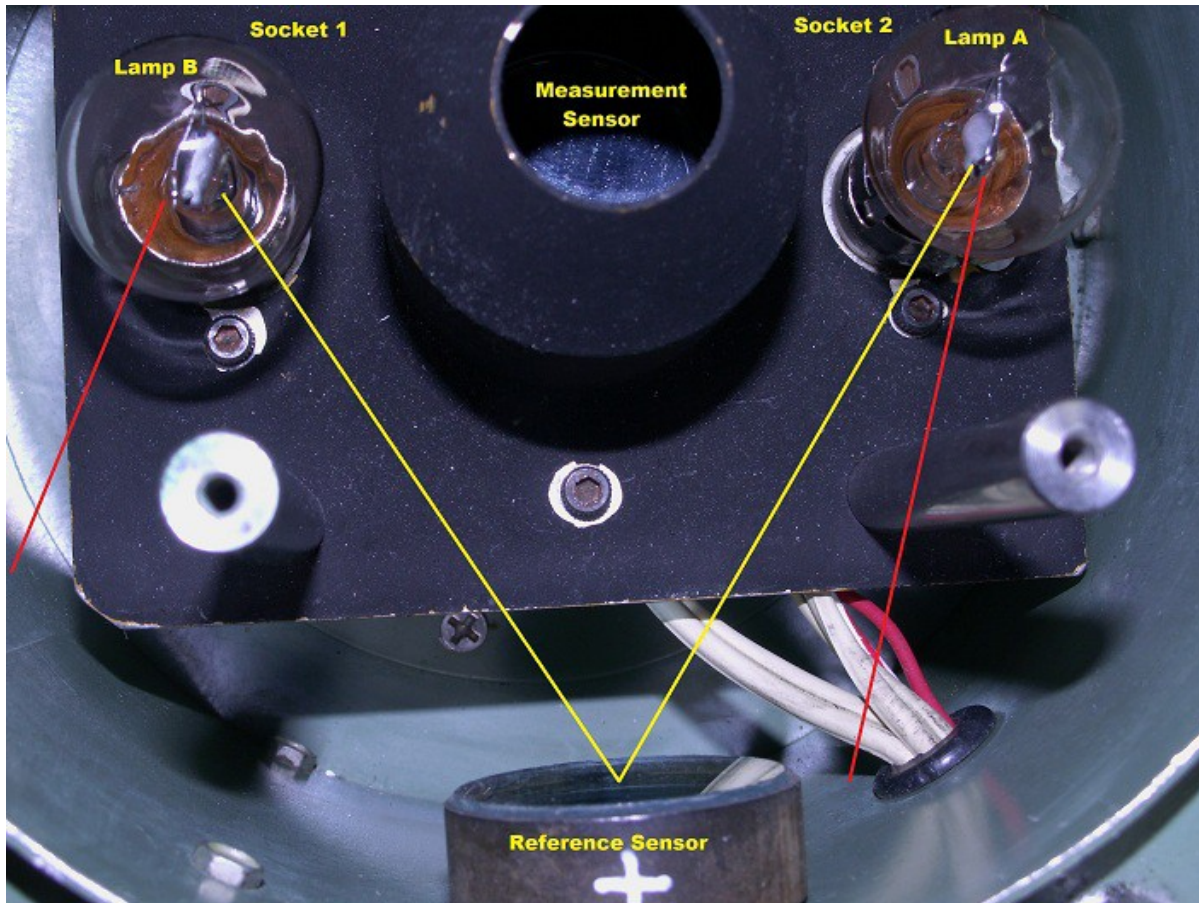
NOTE in the enlargement of just Lamp B that the filament has an “S” curve. Even though the two ends of the filament don't quite align with the path the the reference sensor, most of the filament does.



Lamp A also has a misaligned filament, though not as extreme as Lamp B. When Lamp A is put in Socket 2, its filament end almost points at the reference sensor, but not quite. Along the yellow path in the next photo, Lamp A in Socket 2 does have all of its filament visible to the reference sensor – just barely!

With the same two lamps swapped between the sockets, Lamp B in Socket 1 and Lamp A in Socket 2, and no other change made, the white tile sensitivity rose to 24 microamps.

White tile sensitivity went from below the 20 microamp minimum spec at 19 microamps with Lamp B's filament pointed right at the reference sensor, to well above spec at 24 microamps by simply swapping the two lamps with each other.



Watch for Rotated filaments. Lamps should not be made that way, but they often are. Fortunately, lamp makes do control filament height well, which is critical to the measurement sensor in an HST. But filament position rotation, which matters to the reference sensor, is not as well controlled by lamp manufacturers.

The correct rotational alignment of the lamps is filament at right angles to the bayonet pins of the base.

The red line directions of the filament ends should NOT align with the yellow line paths from lamps to reference sensor.

PLACE LAMPS CAREFULLY: If a filament is rotated strongly clockwise, put it in the left socket, Socket 1, so reference sensor can see the entire filament, not just one end of it. Likewise, if a lamp is rotated strongly counter clockwise, put it in the right socket, Socket 2. If two lamps have the same strong rotation, set one aside, save it for the next lamp change, and find a lamp with a filament that is either less rotated or rotated the opposite direction.