Procedure to Install Alloy 39 Ring on Secondary Mirror

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The proper method to install Alloy 39 ring and teflon collar on M2.

This is a proposed procedure based on a theoretical understanding of relevant installation issues which suggests that the following sequence is the most reliable and efficient method to assemble the components.

CAUTIONARY NOTES

none at this time

EQUIPMENT INVOLVED IN THIS PROCEDURE

Secondary mirror
Teflon collars
Q3-6093

PROCEDURE

1. Turn the mirror on its face in the shipping box, and expose the backside.

2. Identify and mark the "bottom" edge of the mirror. From the mirror center hole, this is in the direction where the center foot for the "C" whiffle is glued, (and approximately where the pin for the "anti-rotation link" is glued). This is the edge closest to the ground with the mirror at horizon, and is shown on the assembly drawing.

3. From the set of Teflon collars provided, select the one which provides a reasonable "slip fit" clearance to the inside of the center hole in the back of the mirror. (Probably .006" to .015". The intent is to minimize compressive

deflection as the load changes between the ring and the rear face of the mirror, while providing for the differential CTE.)

4. Install the selected Teflon collar onto the A-39 ring as shown in the assembly drawing.

5. Install the ring/collar subassembly into the center hole on the mirror back face to verify the fit, and rotate the ring until the eccentric on the ring compensates for the offset in the hole location. In this orientation the ring ID will be concentric with the mirror axis and the holes in the surrounding cells of the mirror will all be accessible through the holes in the ring flange.

6. Mark the ring to document this orientation relative to the bottom of the mirror. The correct orientation, including the position of the eccentric, is shown in the assembly drawing.

7. Remove the ring/collar from the mirror; clean and prepare all of the appropriate surfaces for bonding.

8. Prepare and position .020" diameter wires (or equivalent spacers) as required to maintain a .020" bond thickness between the 1" wide contact surface on the outer flange of the ring and the back face of the mirror. These spacers are to be positioned so they can be removed after the bond has cured.

9. Apply the Q3-6093 to the bond annulus on the ring, and "squeegee" a thin coat onto the ID of the center hole. It is acceptable, even desirable, if there is no adhesive for 30 to 60 degrees on the portion of the hole which is towards the "bottom" edge of the mirror.

10. Before the silicone skins over install the ring/collar in the center hole of the mirror, correctly orient it and apply a weight no more than 20 lbs. adequate to maintain the .020 bond thickness at the flange annulus.

11. Apply a light force tangent to the mirror (approximately 20 lbs), directed to press the Teflon collar against the "top" side of the center hole (ie. towards the top edge of the mirror). (This is will be the load path for the weight of the mirror with the telescope at horizon.)

12. Maintain these loads on the ring while the Q3-6093 sets (approximately 24 hrs.).

13. After the silicone has set, remove the loads and the .020" spacers, then clean away any excess material.

END OF PROCEDURE
