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**GP-B Telescope Image Divider Assembly (IDA)**  
**“Position Image Divider Housing/Channel B Assembly**  
**on Channel A Plate”**  
**P0293 Rev -**

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## **POSITION IMAGE DIVIDER HOUSING/CHANNEL B ASSEMBLY ON CHANNEL A PLATE**

- for SUGP-B dwg# 25089
  - follows *Position Channel A Reflectors on Channel A Plate* (SUGP-B P0292) and *Position Image Divider Housing on Channel B Plate* (SUGP-B P0287)
  - also use *GP-B Telescope Image Divider Assembly (IDA) General Alignment and Bonding Procedures* (SUGP-B P0282).
- 1) Verify cleanliness of all fixturing.
  - 2) Mount fixture #'s 506-0028A and 506-0029A per OID dwg# 800-0046D.
  - 3) Position IDA assembly fixturing in workspace such that the end of the Channel A Roof Splitter can be monitored by autocollimation from a distant location (10'-20' away).
  - 4) Align remote autocollimator (Davidson Model 656) to end of Roof Splitter (<5 arc-seconds) and secure autocollimator and assembly fixturing as possible. Once bonding has begun, it will no longer be possible to verify correct alignment of beam. It may be necessary to shutdown all fans and otherwise minimize vibrational disturbances to achieve this alignment. Keep all air filtration systems operating whenever possible.
  - 5) Place a small piece (~3cmsq.) of 2mil 'orange' shim stock over each corner of Channel B Plate to protect surfaces during initial alignment.
  - 6) Verify cleanliness of all fixturing.
  - 7) Place Image Divider Housing/Channel B Plate Assembly (from SUGP-B P0287) on shims on Channel A Plate assembly (SUGP-B dwg# 25445). Use care to prevent damage to flight parts.
  - 8) Coarsely adjust three brass screws such that the Housing/Channel B is visibly aligned with the Channel A Plate assembly (<0.020").
  - 9) Adjust the screw contacting the channel A side of the housing such that the channel A 'face' of the Housing is closely aligned (<0.005") to the corresponding 'flat' on the Plate.
  - 10) Turn on the laser to maximum power. Place a small piece of translucent material (an ~1"x3" piece of clean room wipe works well) over the channel A 'face' such that the laser spots and outlines of the through holes in the Housing are visible (background illumination is helpful). Use care to not damage the flight part or contaminate a bonding surface.
  - 11) Adjust the two screws contacting the channel B side of the housing such that the position of the two laser spots is centered (<0.010") with respect to the position of the two through holes. (Under current design, this yields a 'cross-eyed' appearance and each spot will not be centered with respect to its hole.)
  - 12) Adjust the screw farthest from the autocollimator such that the return image from the channel B 'face' is aligned (<10 arc-seconds) to the return image from the end of the Roof Splitter.

- 13) Place a small piece of translucent material (an ~1"x3" piece of clean room wipe works well) over the channel B 'face' such that the laser spots and outlines of the through holes in the Housing are visible (background illumination is helpful). Use care to not damage the flight part or contaminate a bonding surface.

- 14) Adjust the screw contacting the channel A side of the housing such that the position of the two laser spots is centered ( $<0.010''$ ) with respect to the position of the two through holes. (Under current design, this yields a 'cross-eyed' appearance and each spot will not be centered with respect to its hole.)
- 15) Repeat steps 9-14 as necessary to final alignment.
- 16) Remove Housing to verify autocollimator to Roof Splitter end alignment. If there is any change, repeat steps 4 and 13.
- 17) Verify cleanliness of all fixturing.
- 18) Remove Housing and shims. Bond Housing to Channel B Plate using *Bonding Procedures for Fused-Quartz Components* (SUGP-B P0218).
- 19) Continue to monitor laser spots and autocollimator image after bonding and make alignment adjustments as required within a few minutes.
- 20) After curing, remove fixture #'s 506-0028A and 506-0029A.

Attachments: SUGP-B dwg#'s 25089, 25445; OID dwg# 800-0046D.