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GP-B Telescope
"Position Forward Plate Assembly on
Metering Tube/Baseplate Assembly"
P0375 Rev -

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POSITION FORWARD PLATE ASSEMBLY ON METERING TUBE/BASEPLATE ASSEMBLY

- for SUGP-B dwg#25091
- follows *Position Metering Tube on Baseplate Assembly* (SUGP-B P0374)
- also use *GP-B Telescope Image Divider Assembly (IDA) General Alignment and Bonding Procedures* (SUGP-B P0282) for procedures concerning safety; personnel; work area requirements; fixture cleaning and acceptance; flight part inspection, handling, storage, and cleaning; redline authority; and sign-off and recording requirements.

CAUTION:

- The flight parts used in this operation are heavy, delicate, and somewhat irreplaceable with multiple critical surfaces that can be easily damaged or contaminated by normal handling. Compliance with the above defined safe handling practices is critical.

CAUTION:

- If at any time during this procedure flight hardware is not live monitored, verify that all flight hardware is seismically secured and protected against airborne contamination. This precaution is especially important during this operation due to the size and dimensions of the Metering Tube/Baseplate Assembly.

WARNING:

- Some of the solvents, detergents, and/or bonding agents used in this procedure may be flammable, toxic, or reactive. Consult P0282 for information about specific chemicals.

1) Verify cleanliness of all fixturing.
2) Place an 8" diameter optically flat (~1/2 wave; not critical) mirror below the custom 7" Davidson Autocollimator (OID dwg#800-0049C, "AC") on a large custom tip-tilt stage.
3) Turn on the light source in the 7" AC. Using a retroreflector (Melles Griot 02CCH015), verify that the return image is focused to better that five arc-seconds (~2 arc-sec typ.). Adjust any of the 15+ degrees of freedom in the AC assembly as required.
4) Adjust the AC tipping plates and mirror such that the return image is centered in the AC readout monitor.
5) Place a single large sheet of cleanroom wipe (VWR TWTX609) on top of the mirror.
6) Carefully place the Metering Tube/Baseplate Assembly ("Telescope Body") on the wipe on top of the mirror. This will require two qualified flight part handlers (per P0282); one to lift the Telescope Body and move it into position using care to avoid contact with any fixturing, and the second to guide the Baseplate surface into gentle contact with the covered mirror.

7) Using a bright light inspection process, verify the cleanliness of the top surface of the Metering Tube per P0282. Use care to prevent transporting removed particulates to the interior of the Telescope Body since those surfaces will be very difficult to access after the conclusion of this procedure.

8) Place 3 small pieces (~4cmsq.ea.) of 2 mil woven nylon 'orange' shim stock on the top surface of the Metering Tube, equally spaced.

9) Using a bright light inspection process, verify the cleanliness of the bottom surface of the Forward Plate Assembly (SU dwg#25088, a.k.a. Corrector Plate Assembly) per P0282.

10) Carefully place the Forward Plate Assembly on top of the orange shims on the Metering Tube as shown in SU dwg#25091. Use care to prevent contact between flight parts at this time.

11) Carefully insert the alignment plug (sketch attached) into the through hole in the forward plate. Place a small piece of semi-transparent film (i.e. Scotch Tape) over the aperture in the alignment plate.

12) Install two translation stages with custom stops at a right angle to each other onto the middle platform of the AC support structure. Coarsely position them such that they will act as hard stops for the Forward Plate's OD and clamp them in place.

13) Adjust the translation stages such that the stops are firmly against the OD of the Forward Plate. Verify that the Forward Plate still rests flatly upon the Metering Tube shims.

14) Verify that the return image from the Forward Plate viewed through the AC readout monitor is centered. If more than 5 arc-seconds of variation has occurred. Reverify alignment of the supporting mirror to the AC. (Repeat any of steps 3-9 as required.)

15) Adjust the location of the Forward Plate using the translation stages until the image of the AC light is visible on the film layer and centered (difficult due to optical lever arm) with respect to the alignment plug to <20 mils (it may be necessary to adjust the intensities of the AC light source and/or room lighting to view this). The light should appear as a ~40 mil diameter ring on the film.

16) Remove the Forward Plate Assembly from the Telescope Body. Remove the orange shims from the Metering Tube.

17) Verify the cleanliness of all fixturing (Use care to prevent transporting removed particulates to the interior of the Telescope Body) and bonding surfaces.

18) Bond the Forward Plate Assembly to the Telescope Body using *Bonding Procedures for Fused-Quartz Components* (SUGP-B P0218).

19) Make the following adjustments as required within a minimum amount of time (<100 seconds recommended, Adjust the tip-tilt stage under the Telescope Body (if required) such that the return image of the Forward Plate viewed in the AC readout monitor is centered. Position the Forward Plate using the translation stages (if required) such that the image of the AC light is centered with respect to the alignment plug.

19) Monitor the bond for at least 15 minutes and make adjustments as required (will only be possible during first few minutes until bond sets).

20) Carefully seismically secure the new assembly.

21) Allow bond to cure at least 48 hours before disturbing telescope.

Attachments: SUGP-B dwg#'s 25088, 25091; OID dwg #800-0049C; Alignment Plug Sketch