

M4 coating fixture assembly instruction

Hanshin Lee

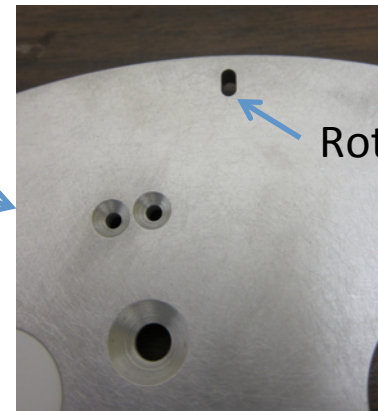
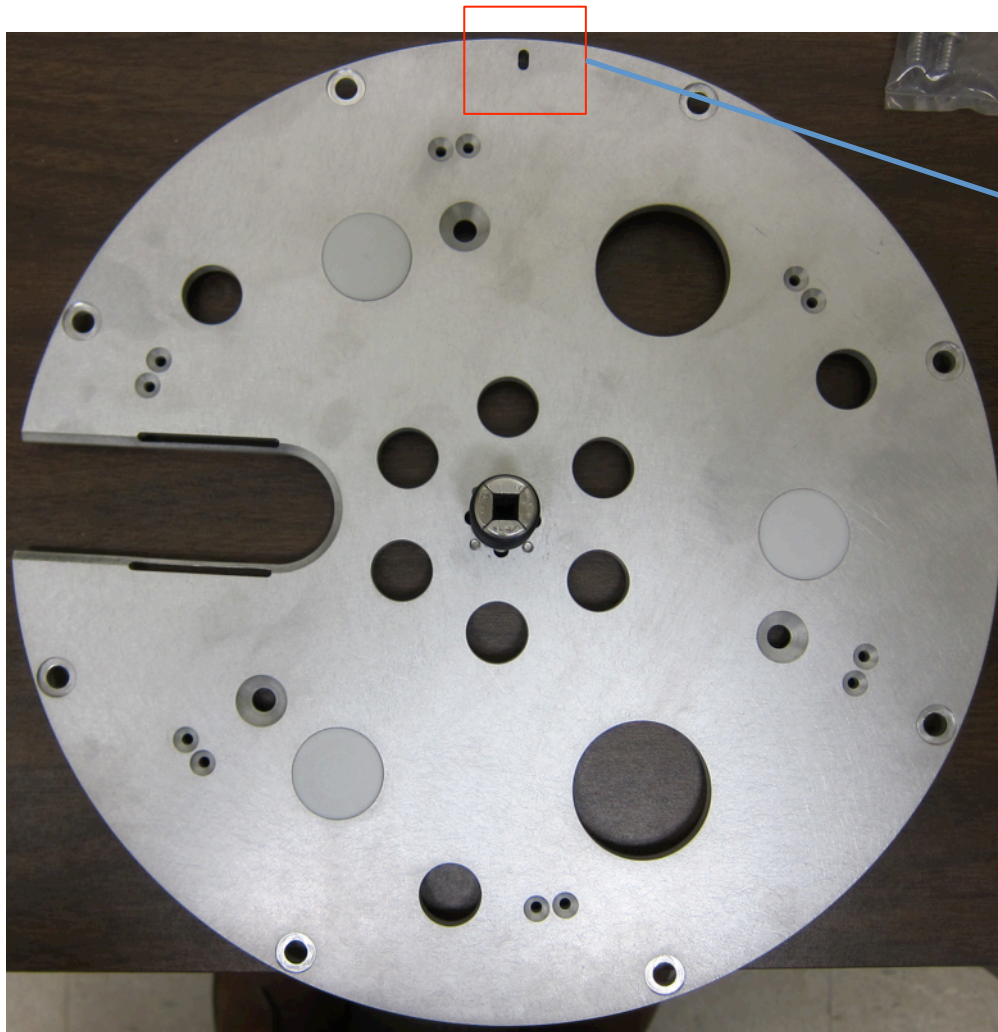
McDonald Observatory, UT-Austin

February 20, 2013

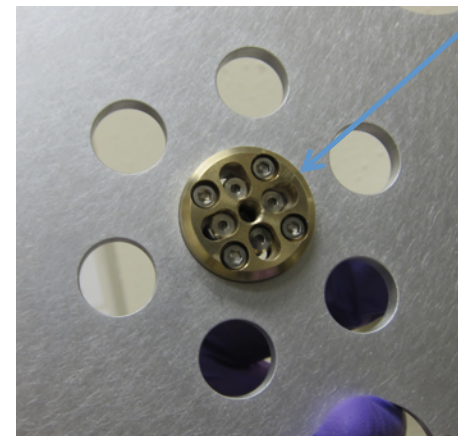
FIXTURE PART DESCRIPTION

Fixture parts

1. "Mirror plate" with center shaft and Teflon pads



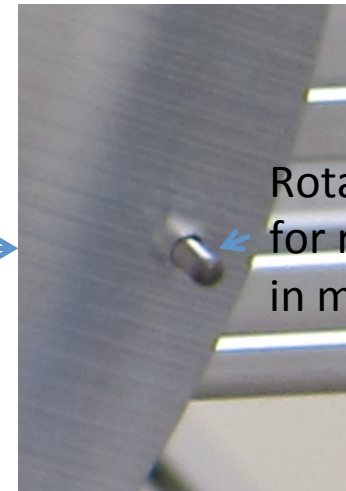
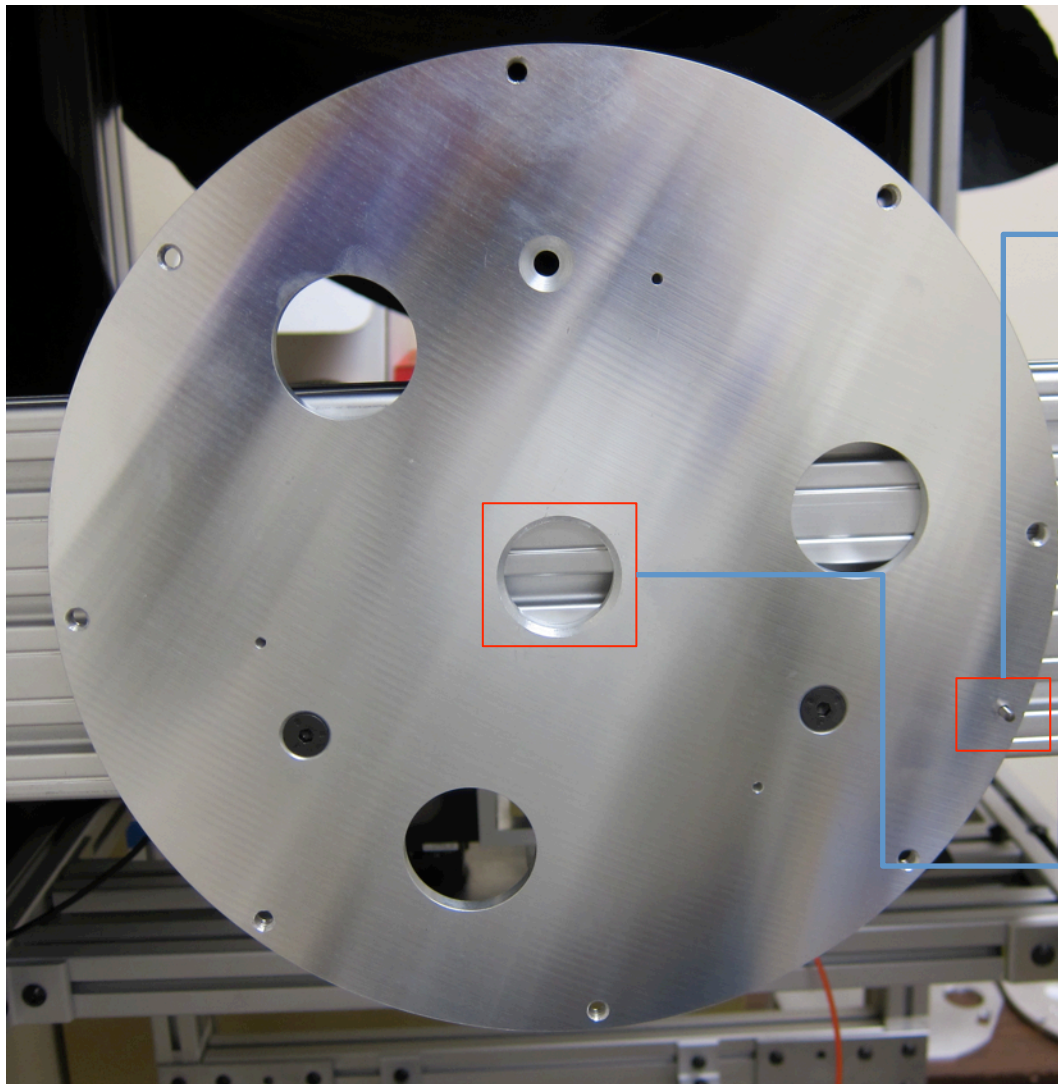
Rotation pin slot



Shaft mounting boss
(on the back)

Fixture parts (continued)

2. "Interface plate" with rotation pin



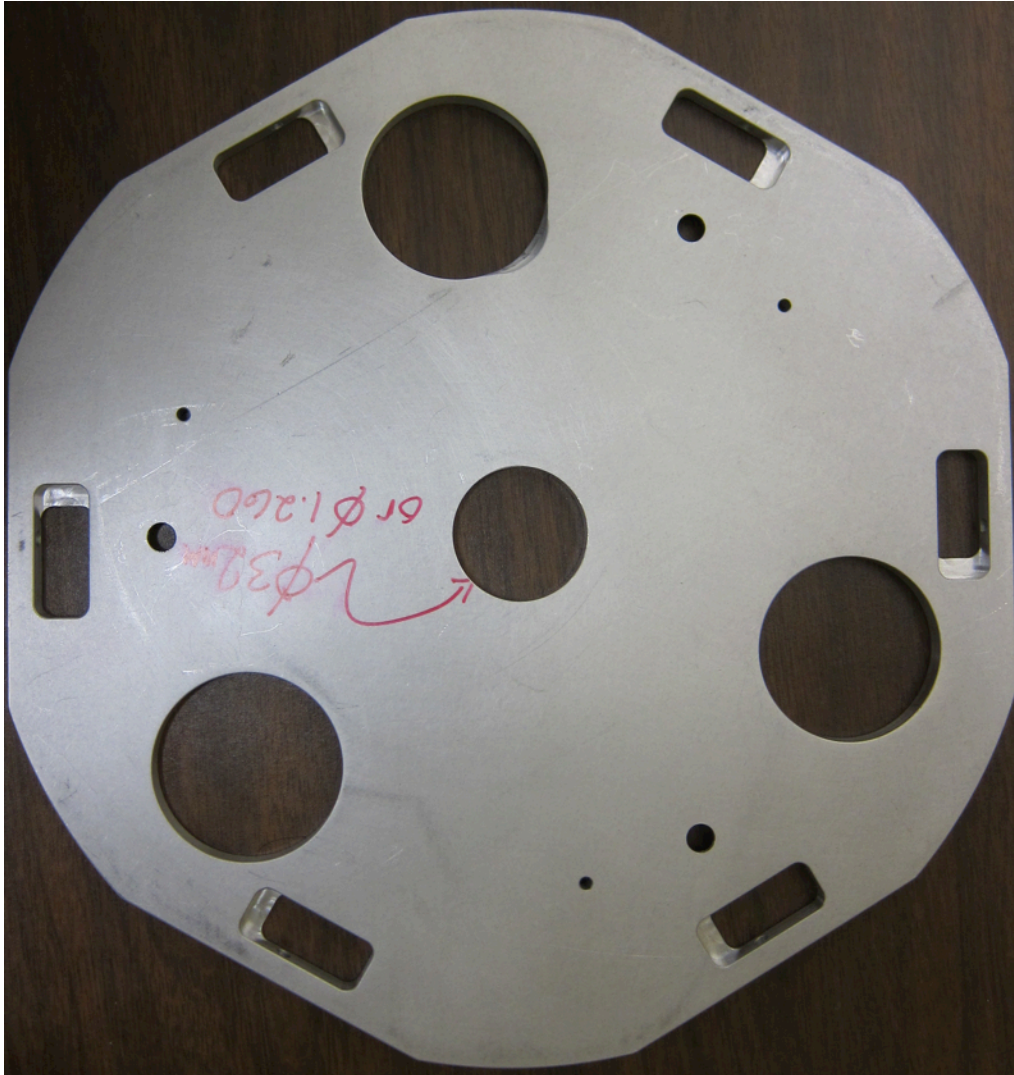
Rotation pin
for rotation pin slot
in mirror plate



Beveled center hole
for shaft mounting boss
in mirror plate

Fixture parts (continued)

3. "Installation plate" (as a temporary stand when assembling mirror into the mirror plate)



Fixture parts (continued)

4. "Center shaft"

"4 expanding collets" with Viron O-ring



"Tapered rod" with thread



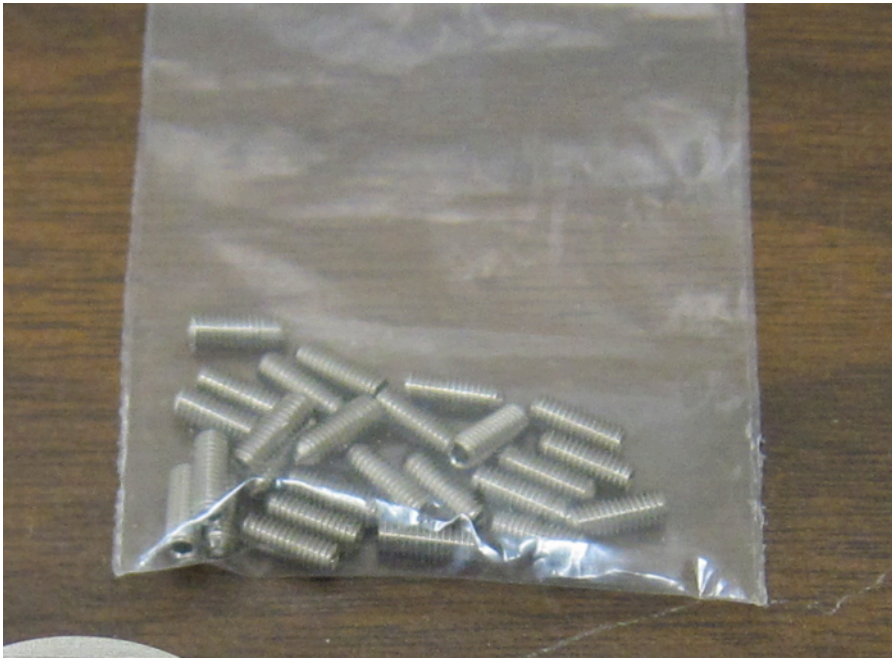
"Teflon washer"



Fixture parts (continued)

5. Screws

“M3 set screws”



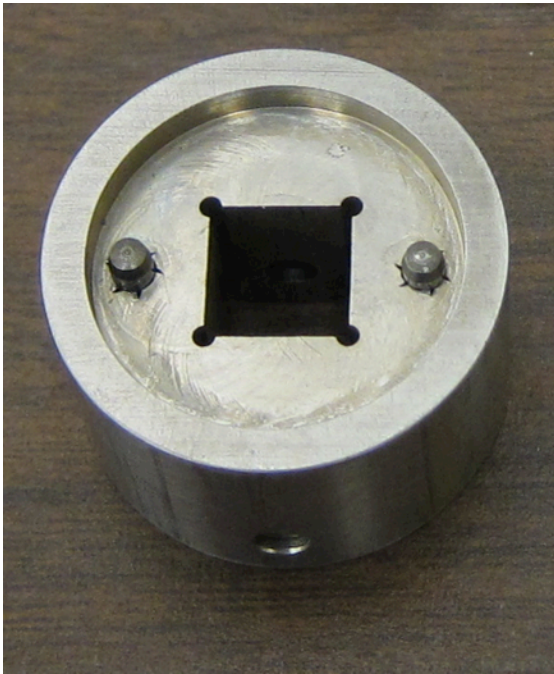
“1/4-20 with lock washer”



Fixture parts (continued)

6. Tools

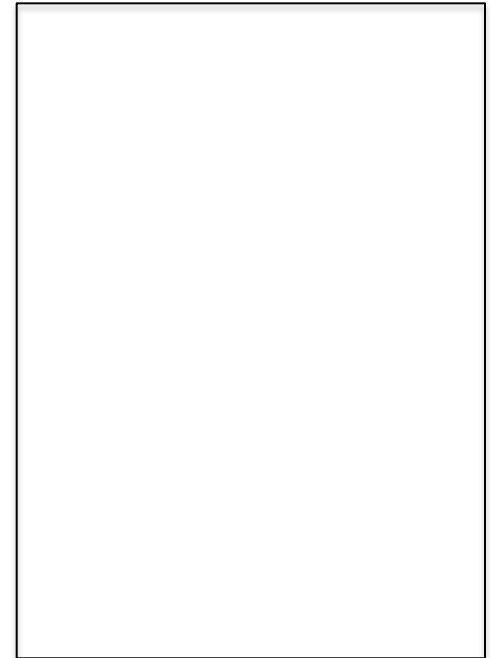
“3/8 wrench square socket”



“1/4-20 hex key” (left) and
“M3 hex key” (right)



“3/8 wrench” 8in long
(to be delivered later)
For the fixture test, use
the one used at STF
facility in Jan visit.

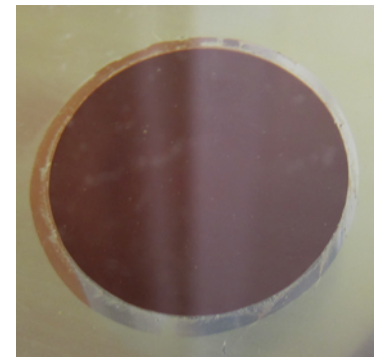
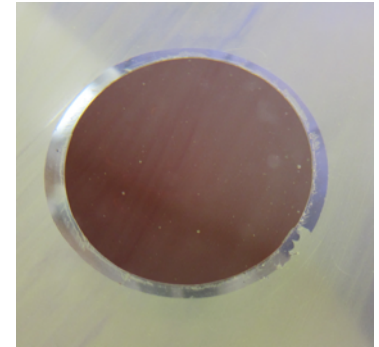


Fixture parts (continued)

6. "Dummy mirror" with pucks glued (as shipped)



Bonded area



Also included...

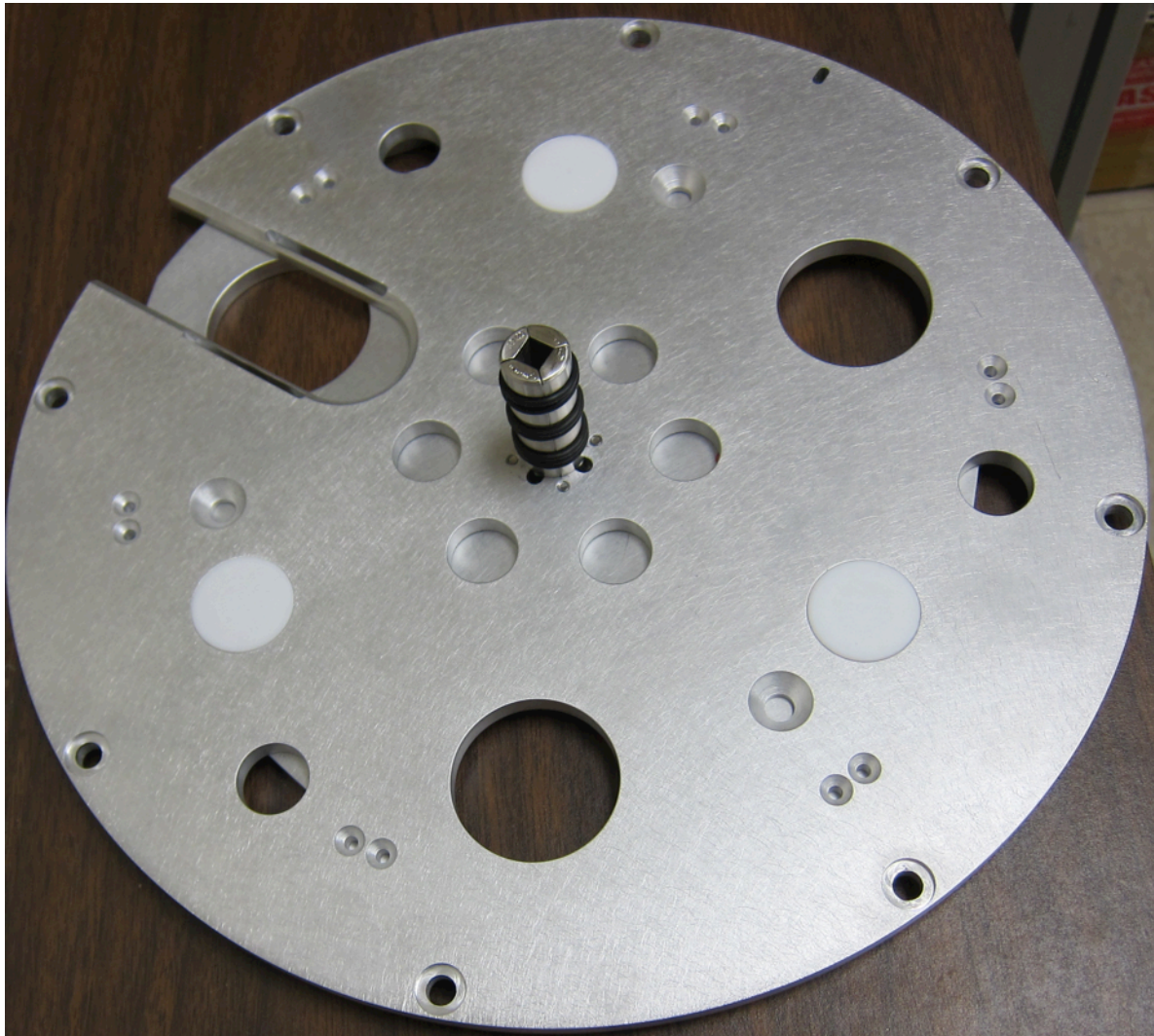
7. 5 Fused silica blocks (15mmx10mmx3mm) for coating witness



ASSEMBLY INSTRUCTION

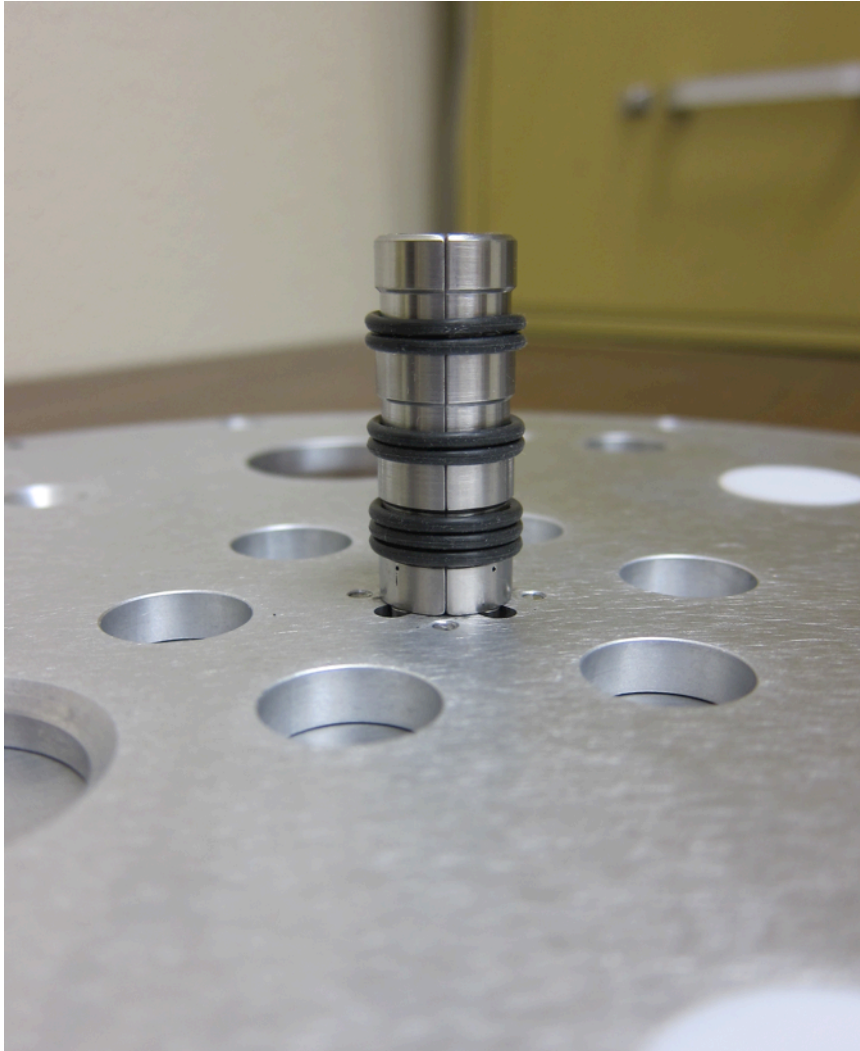
Assembly instruction

STEP 1. Place “mirror plate” on “installation plate” as shown.
Make sure three holes on each plate match up.



Assembly instruction (continued)

STEP 2. Install O-ring on “expanding collets” as shown.
Make sure there are 2-2-3 O-rings from top to bottom.



Assembly instruction (continued)

STEP 3. Install “dummy mirror” (or “M4” in production).

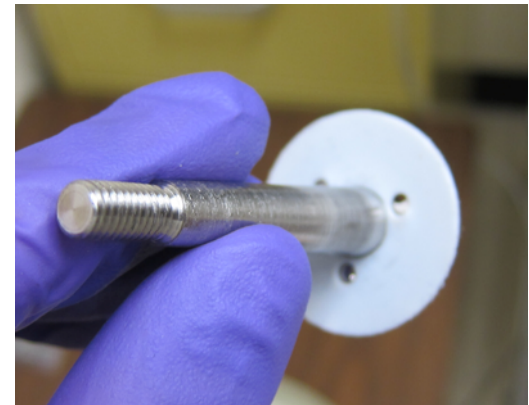
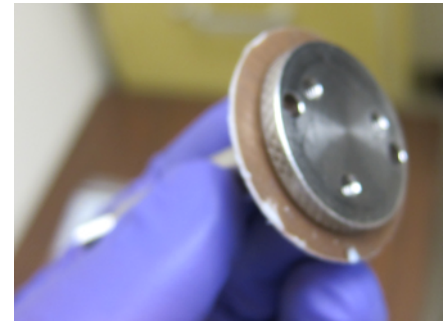
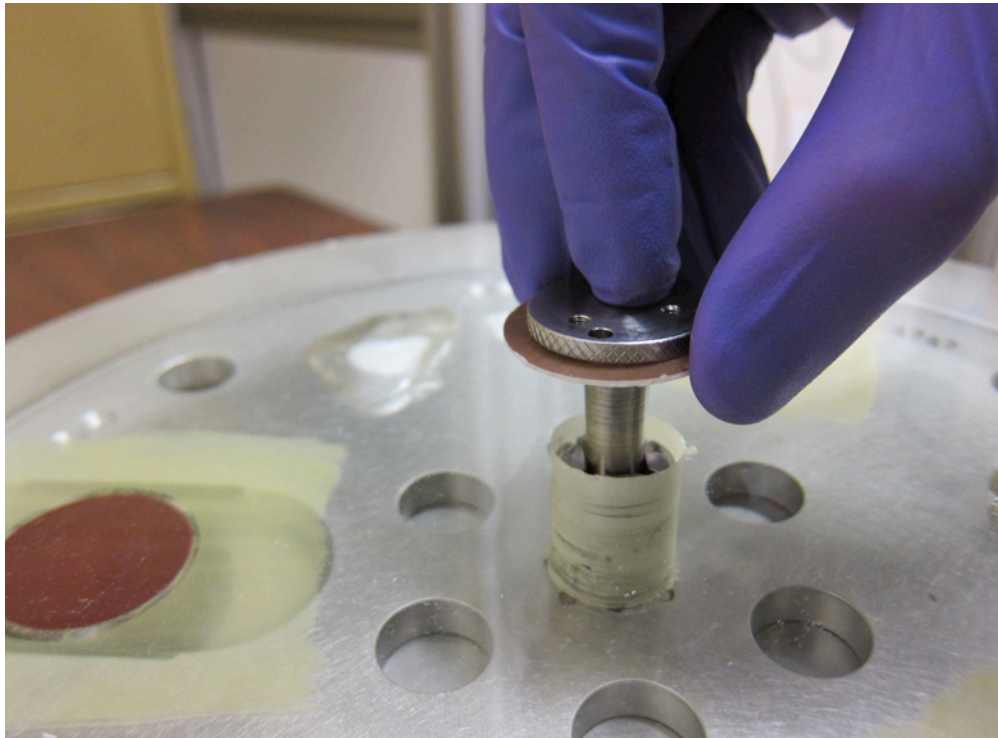
Slightly move the mirror to center the ID to “expanding collets”.

Match “pucks” to three “puck holes” during installation

STEP 4. Install “Teflon washer” to “tapered rod”.

(Tape “washer” to the head of “tapered rod” if necessary)

STEP 5. Insert and press “tapered rod through “expanding collets until it stops.



Assembly instruction (continued)

STEP 6. Screw down “tapered rod”.

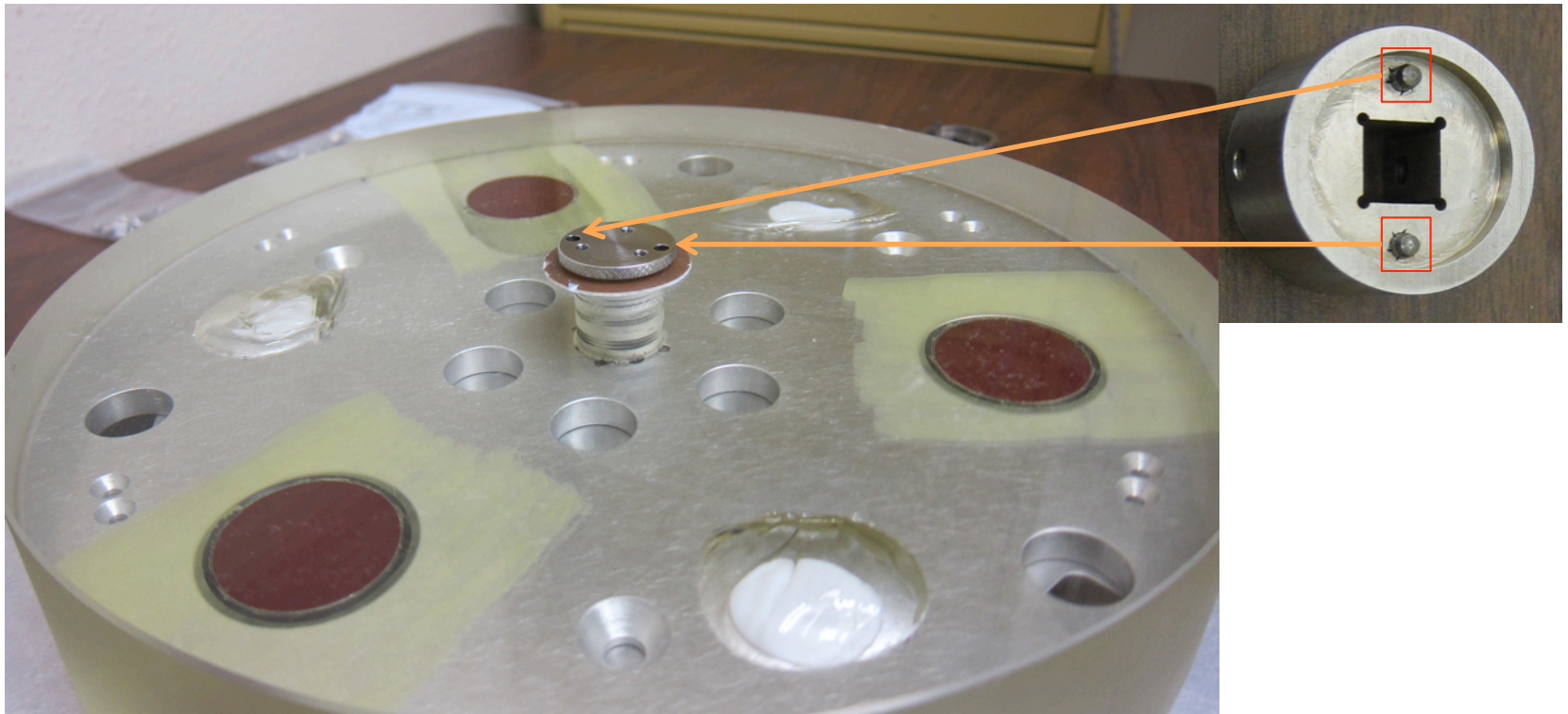
Use 3/8 wrench and socket.

Make sure two pins of “socket” go into two pin-holes on the head of of “tapered rod” as indicated.

Stop when “tapered rod” resists to turning.

DO NOT OVER TIGHTEN.

(If needed, look at the bottom of “shaft mounting boss”. The bottom end of “tapered rod” should almost flush to the bottom of “shaft mounting boss” when the thread is bottomed out.)

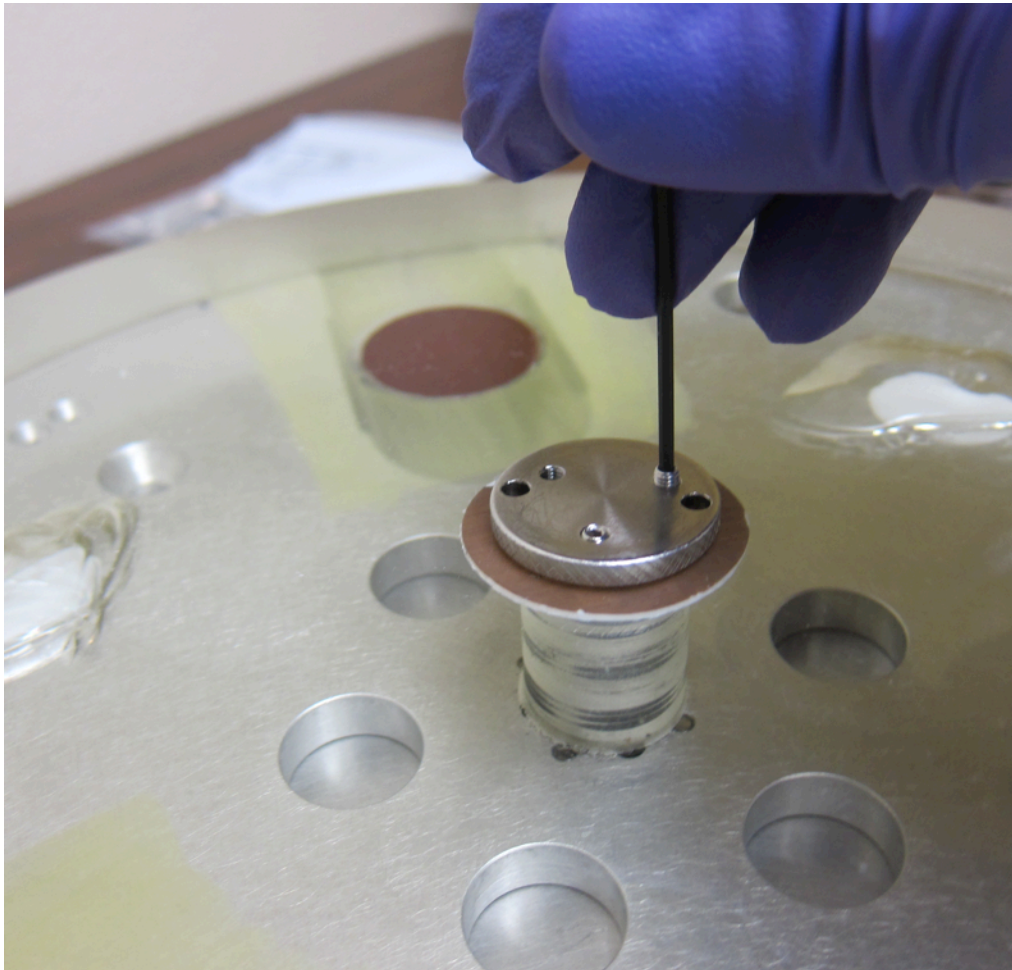


Assembly instruction (continued)

STEP 7. Screw down “M3 set screws” using “M3 hex key”.

(Look from the top to see through the set screw holes on the head of “tapered rod”. You should see the top surface of “expanding collets” through only two set screw holes.

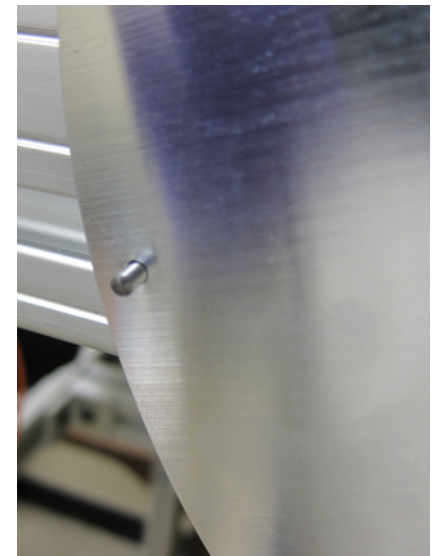
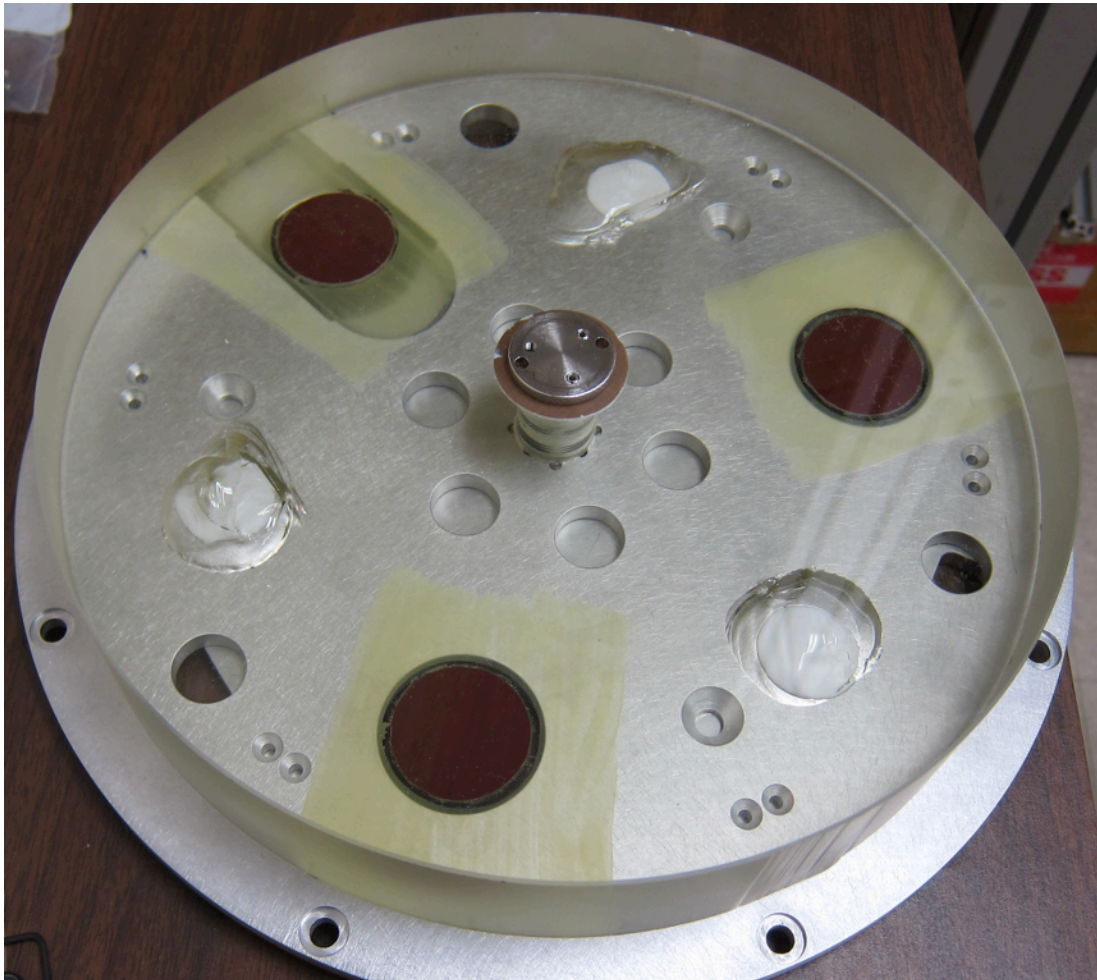
Insert set screws only through those holes.)



Assembly instruction (continued)

STEP 8. Now “mirror” is assembled into “mirror plate”

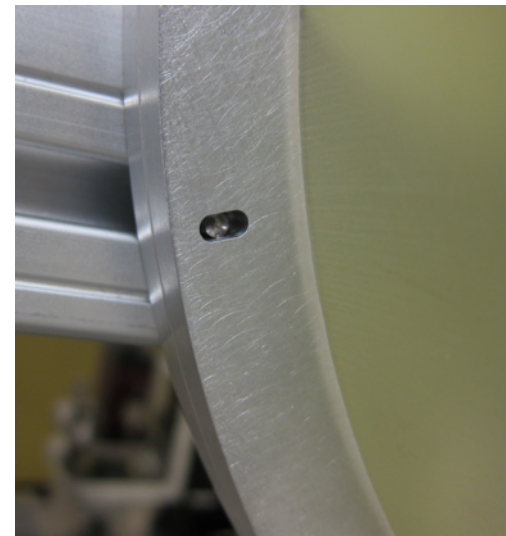
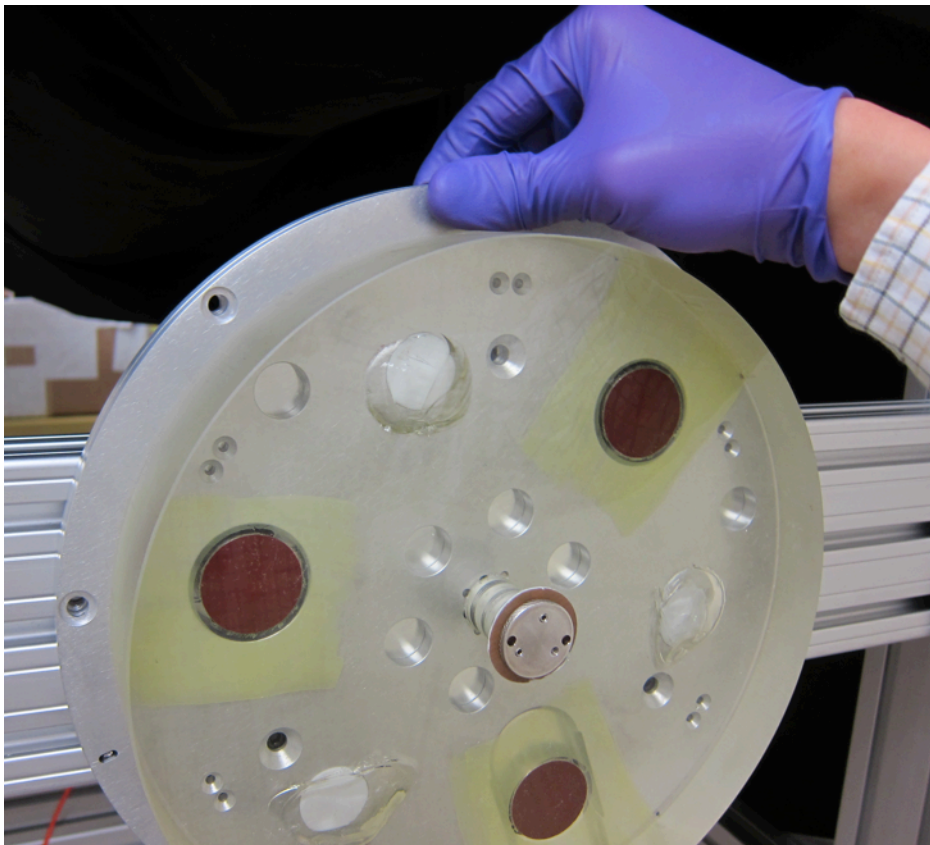
STEP 9. Identify the location of the pin slot on “mirror plate”
Identify the location of the pin on “interface plate”



Assembly instruction (continued)

STEP 10. Grab the assembled “mirror plate” such that “pin slot” can match “pin” conveniently.

STEP 11. Install the assembled “mirror plate” onto “interface plate”
(“Shaft mounting boss” is thicker than “pin” on “interface plate”.
Therefore, it has to be inserted through the center hole on “interface plate”
before “pin” can be engaged through “pin slot” on “mirror plate”)

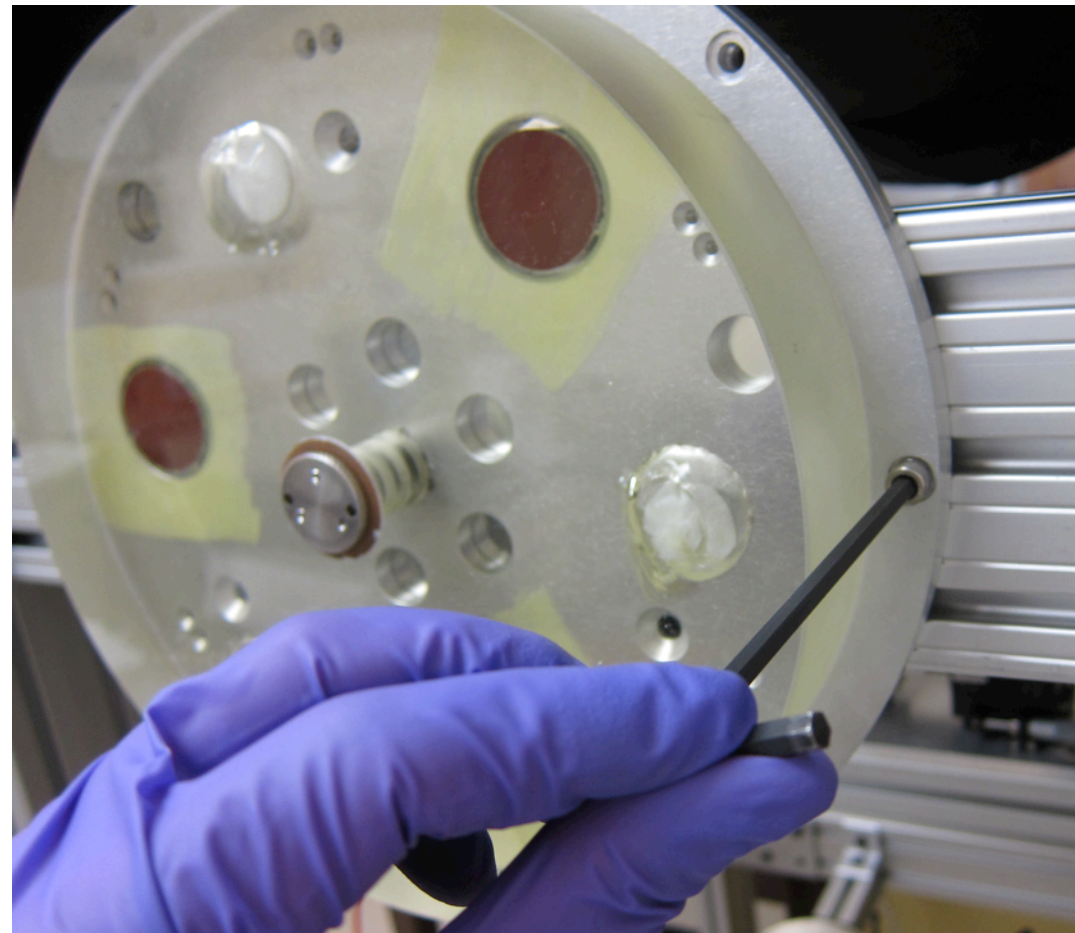
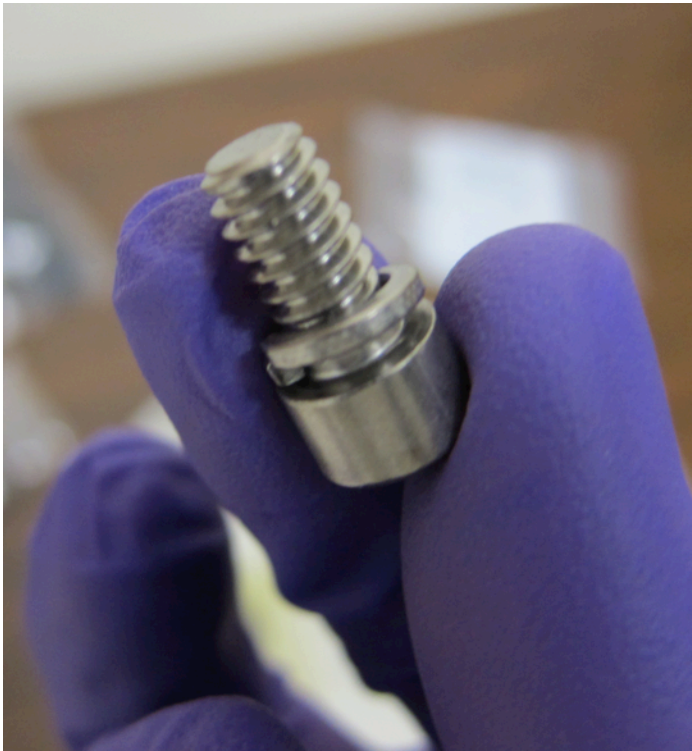


STEP 12. Hold down “mirror plate” and “interface plate” as shown on the left (or in a way that prevents “mirror plate” from falling) because they are not fully engaged at this point.

Assembly instruction (continued)

STEP 13. Take a “1/4-20 lock washer screw” and screw it down through one of 8 mounting holes on the edge of “mirror plate” as shown. Tighten down until the lock washer flattened.

STEP 14. Engage screws to at least three thread holes and tighten down.



Assembly instruction (continued)

STEP 15. The mirror is fully assembled into the fixture and ready for testing or coating.

