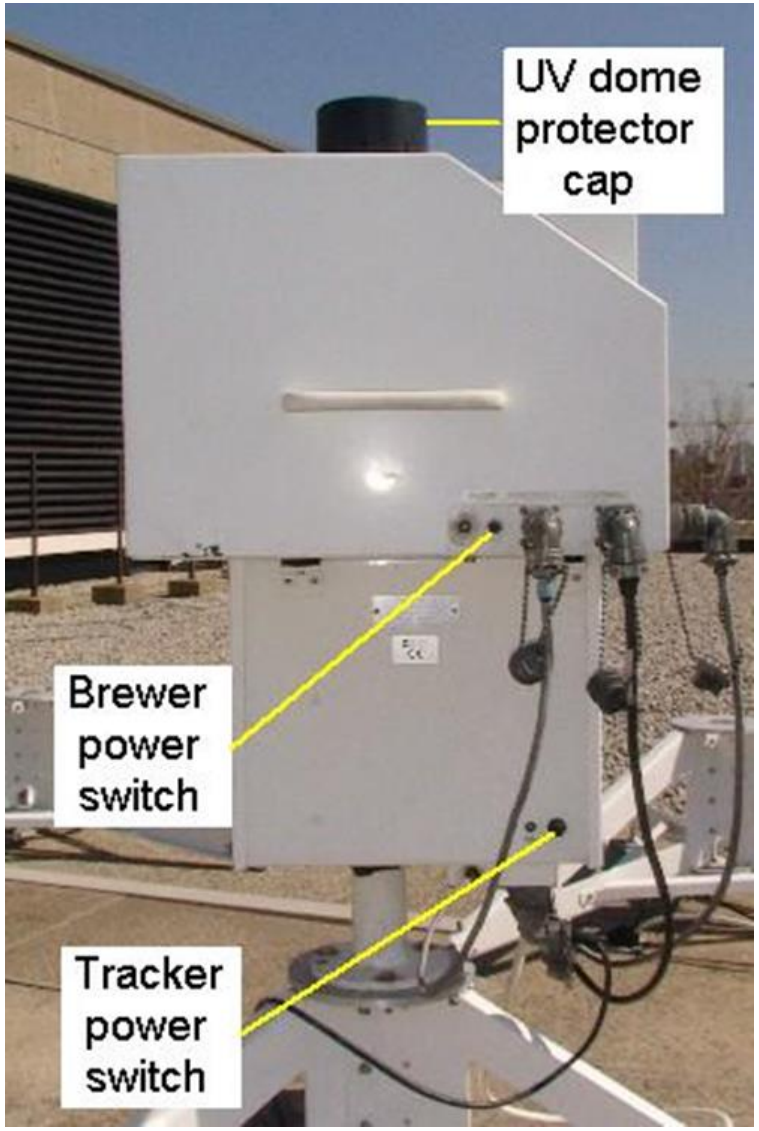
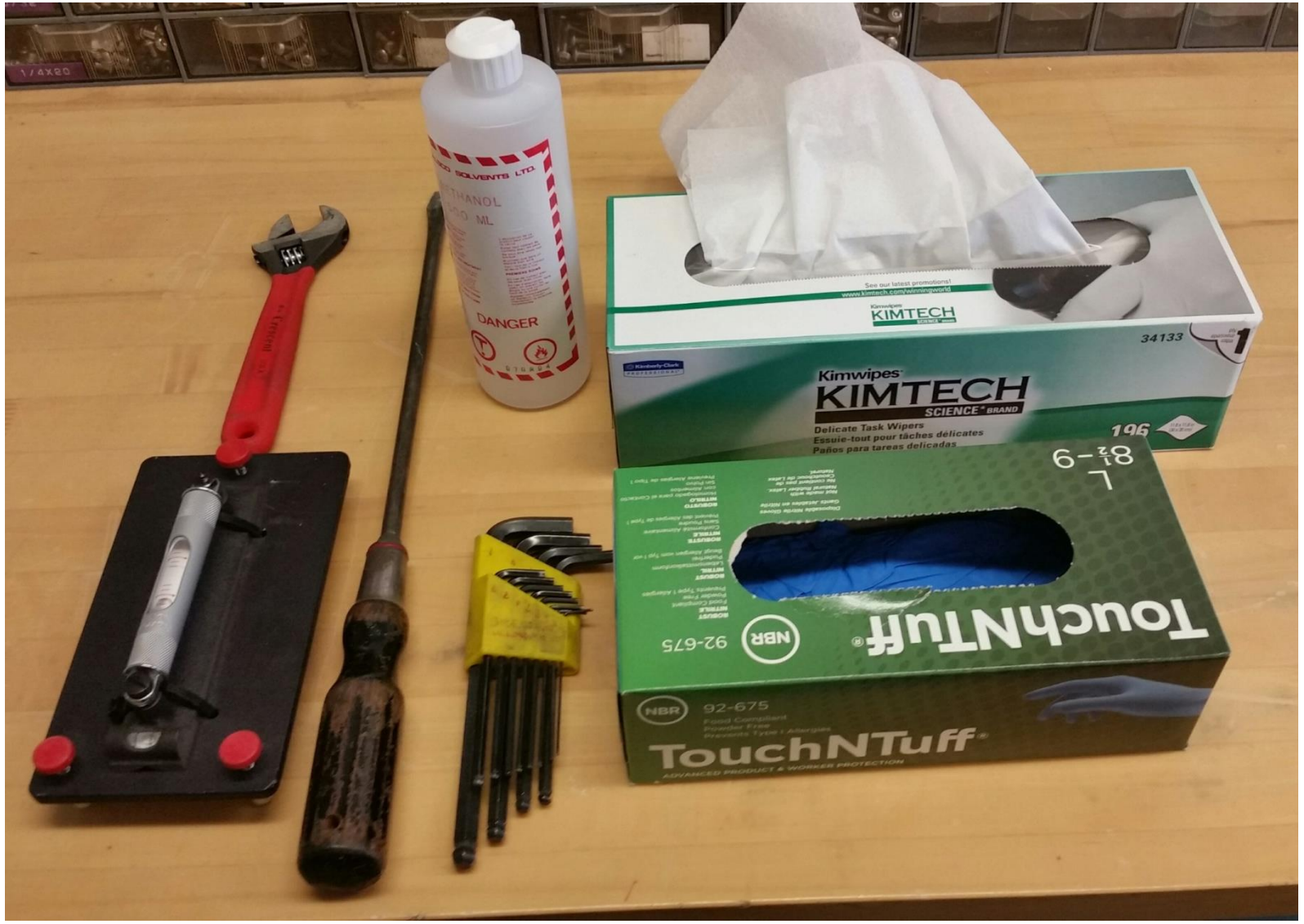
What is Needed and How Often

Things that Need To Be Done

- **If the instrument is moved**
  - Orient the Tracker
  - Level the Instrument
  - Ensure the location is correct
  - Ensure the computer is using GMT
  - Ensure the time is correct
- **Monthly**
  - Drive plate cleaning
- **Twice per month**
  - Sightings
- **Daily**
  - Window cleaning
  - Confirm correct time
  - Humidity Check (if your Brewer has a sensor)
  - Log all activity / changes or helpful information

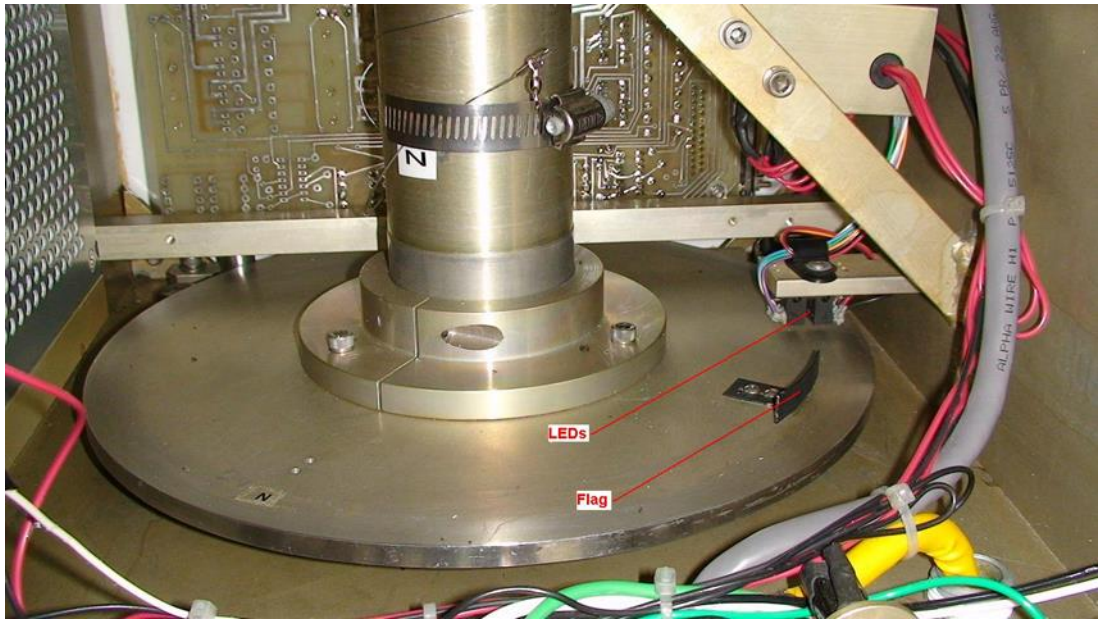
Tools and Supplies

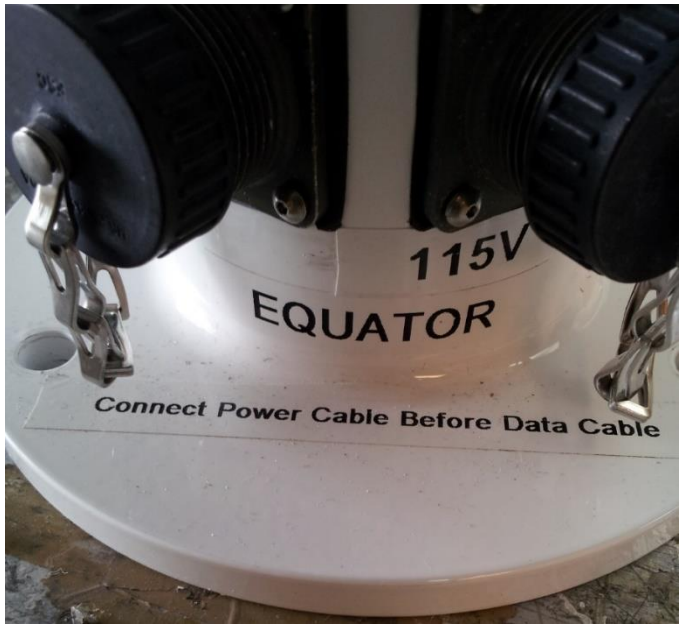




When the Instrument is Moved

Tracker Orientation





Older instruments have a “N” indicator at the back of the tracker.
The indicator should be towards the north or south depending on the hemisphere you are in.

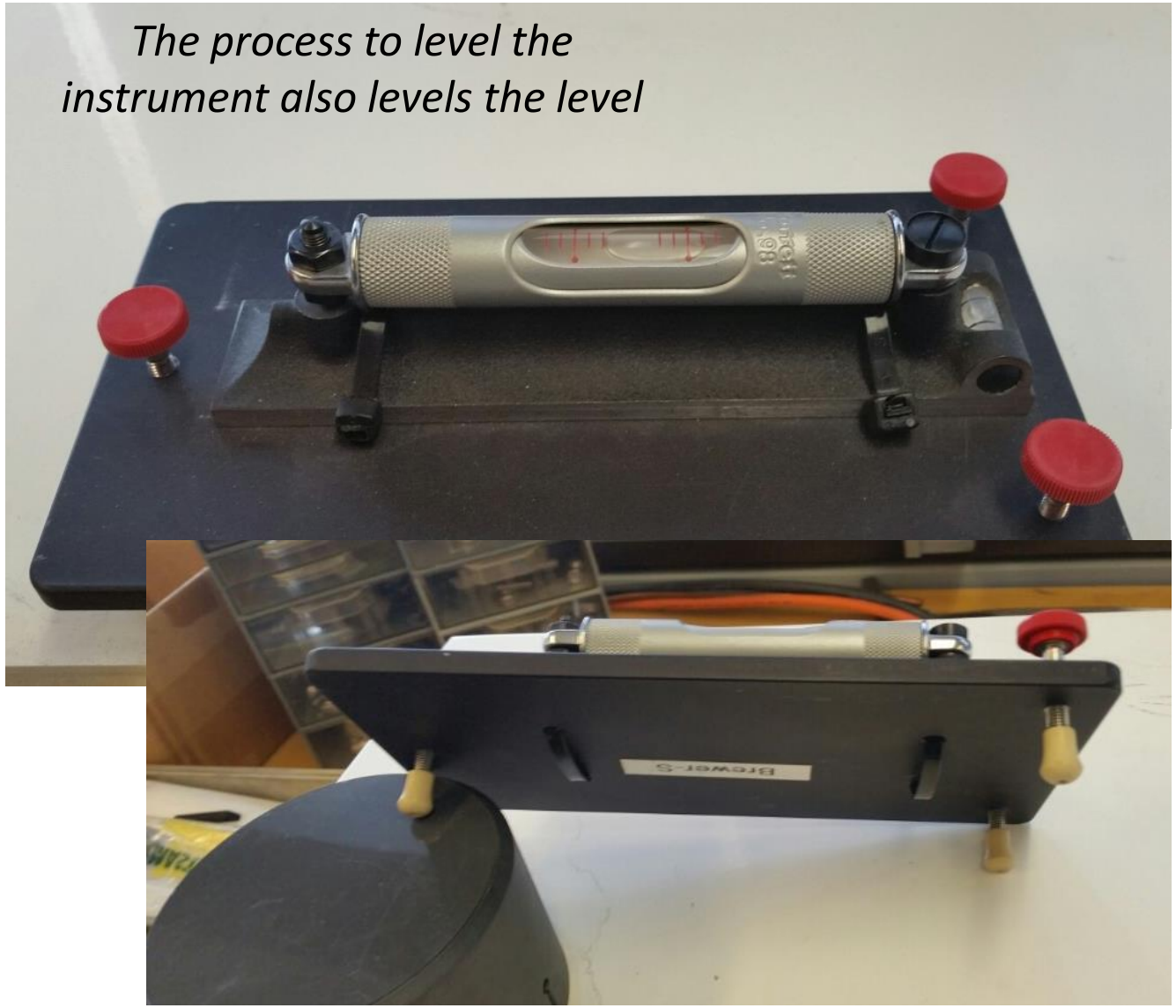
Newer instruments have a universally correct Equator sticker on the front of the tracker.

Improper position will:

- Cause a large north correction
- Contribute to tracker kill switch problems
- Contribute to tracker over-rotations
- Loss of data during Azimuth tracker failures

Instrument Level

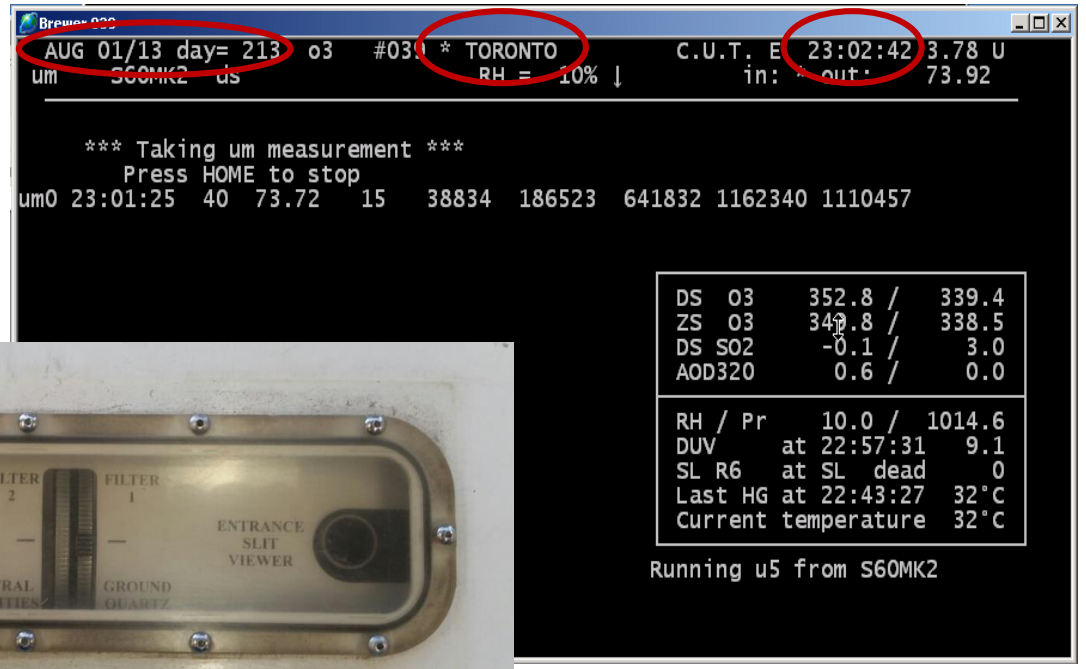
The process to level the instrument also levels the level

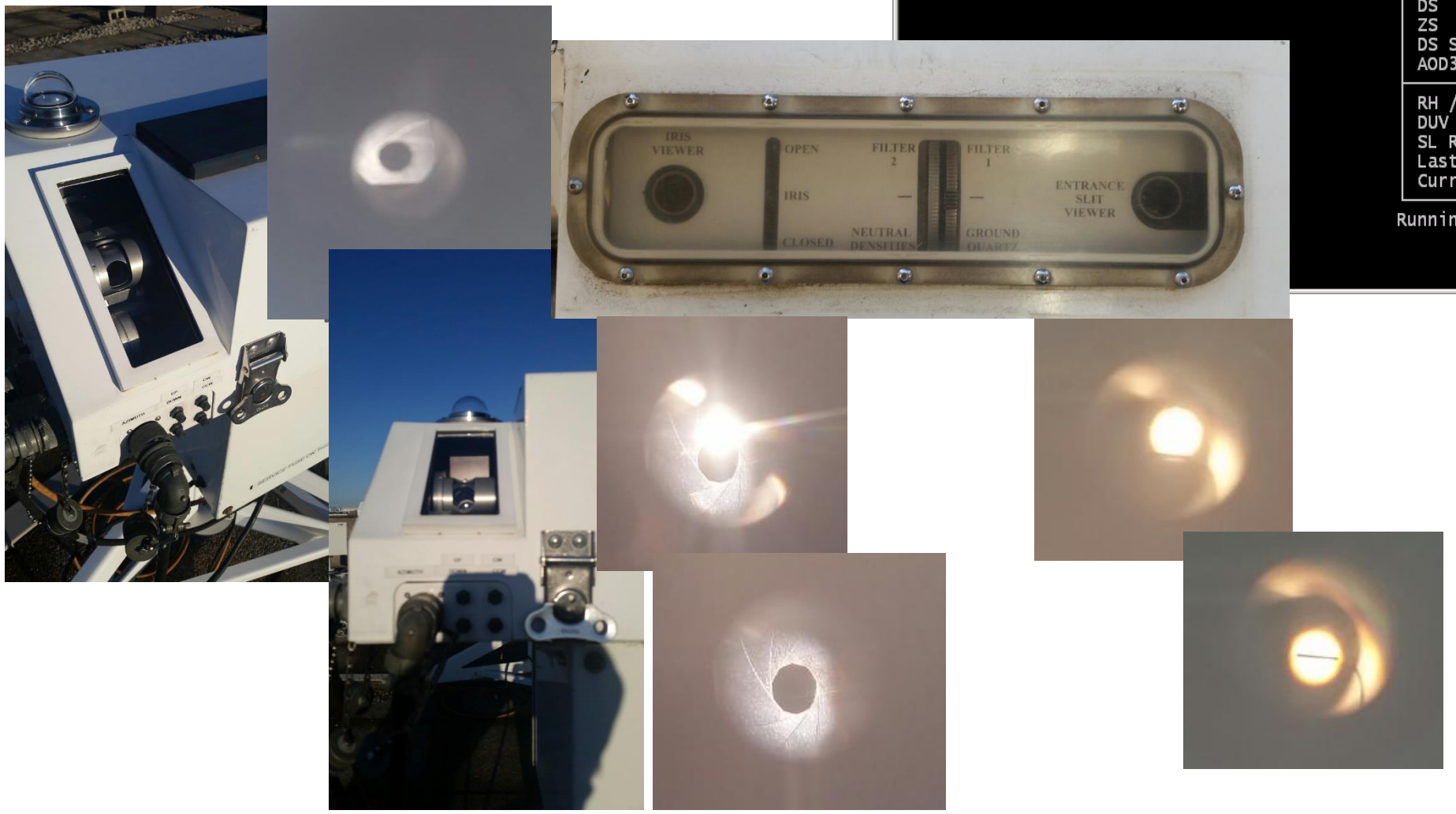


Levelling an instrument is iterative between adjusting the level and adjusting the tripod legs. “Hands – On” practicing is the best way to understand the process of levelling an instrument.

An unlevelled instrument will not track the sun properly resulting in poor and missing data.

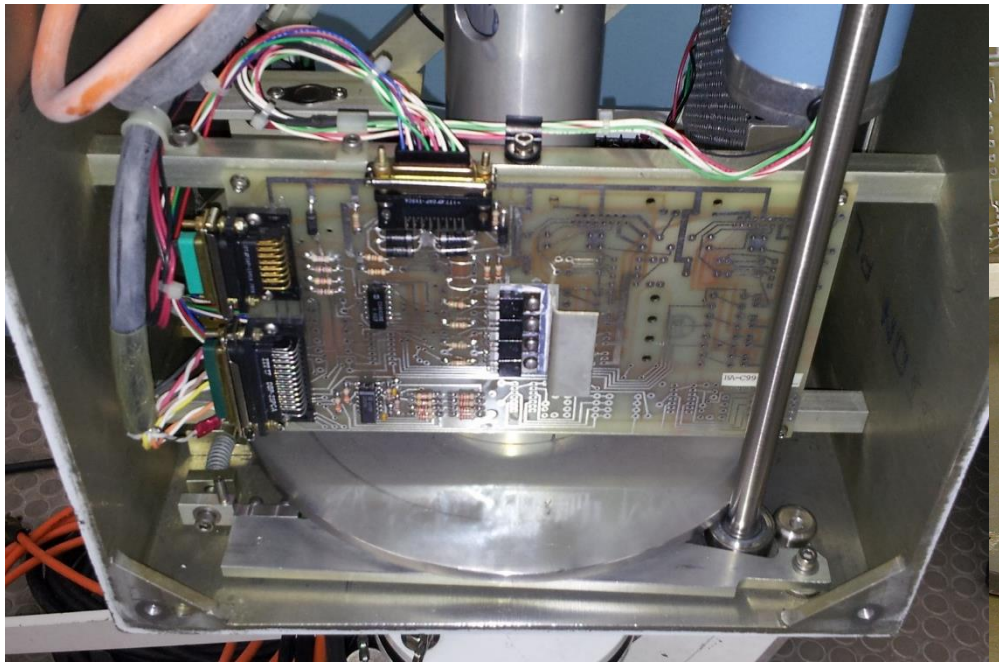
- Ensure location is correct
- Ensure the correct date and time (in GMT)
- Sighting on the sun – likely a large correction

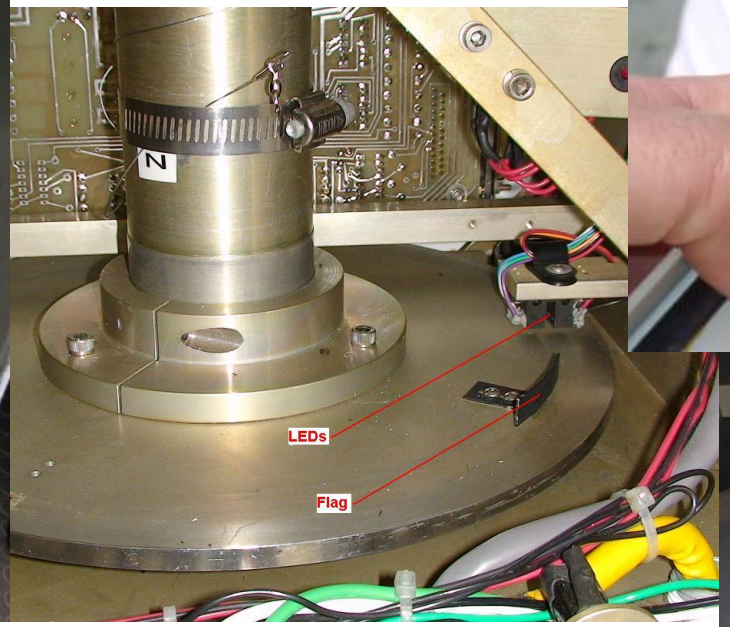


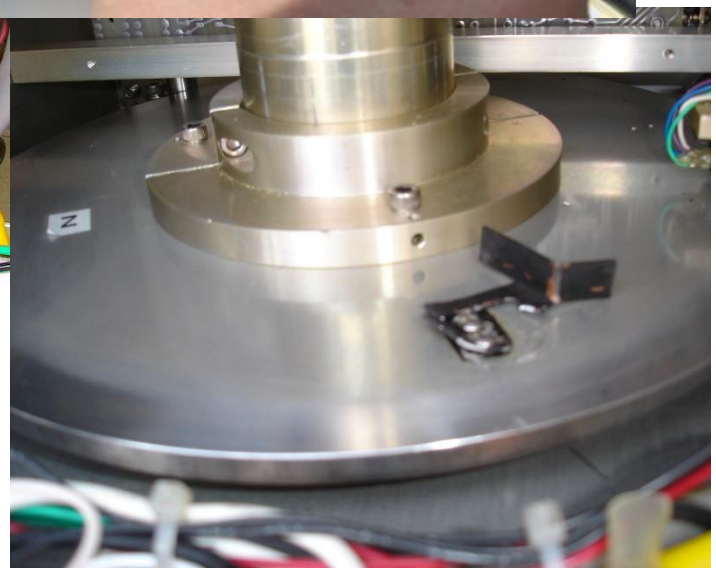


Things that need to be done monthly

- Drive plate cleaning



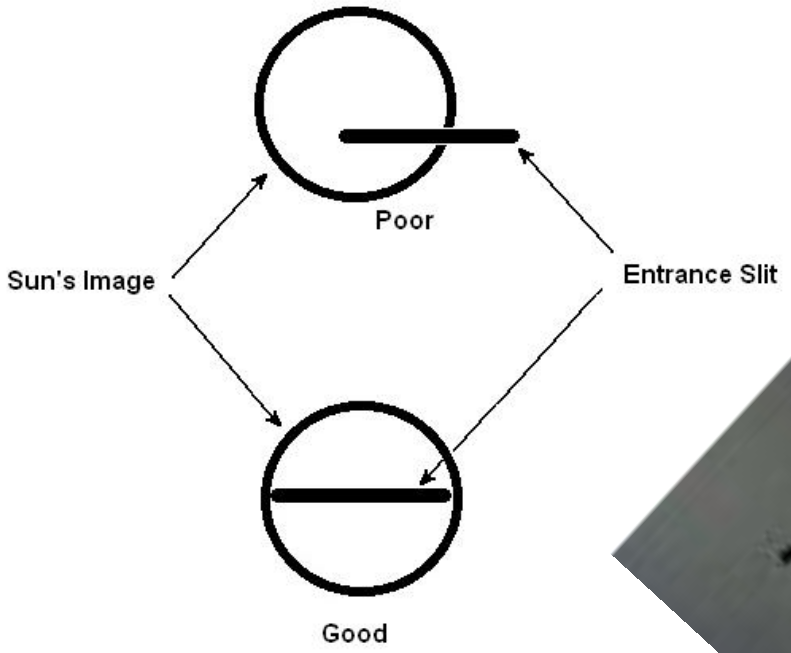


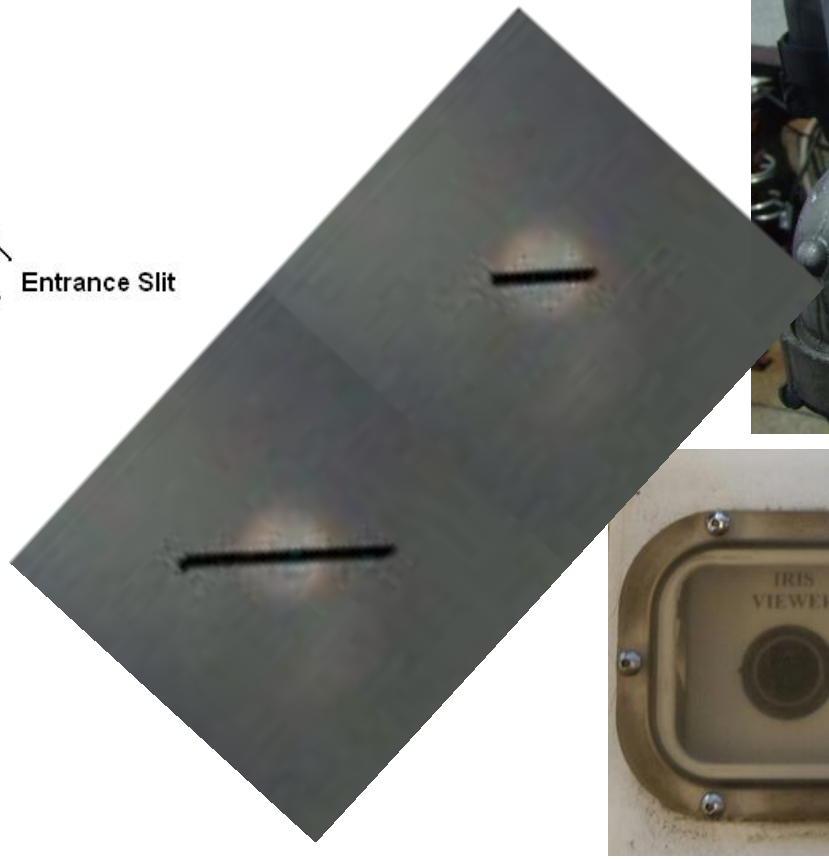


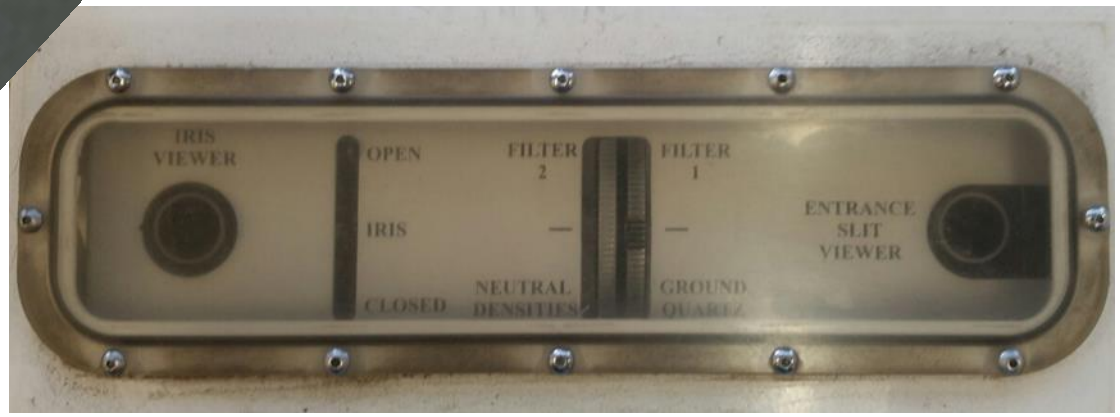
- Stop the collection software (Home Key)
- Turn off the tracker
- Face Brewer to the equator. Clean ½ of the drive plate.
- Return back to the original equator orientation, then clean the other half of the drive plate.

Things that should be done twice per month

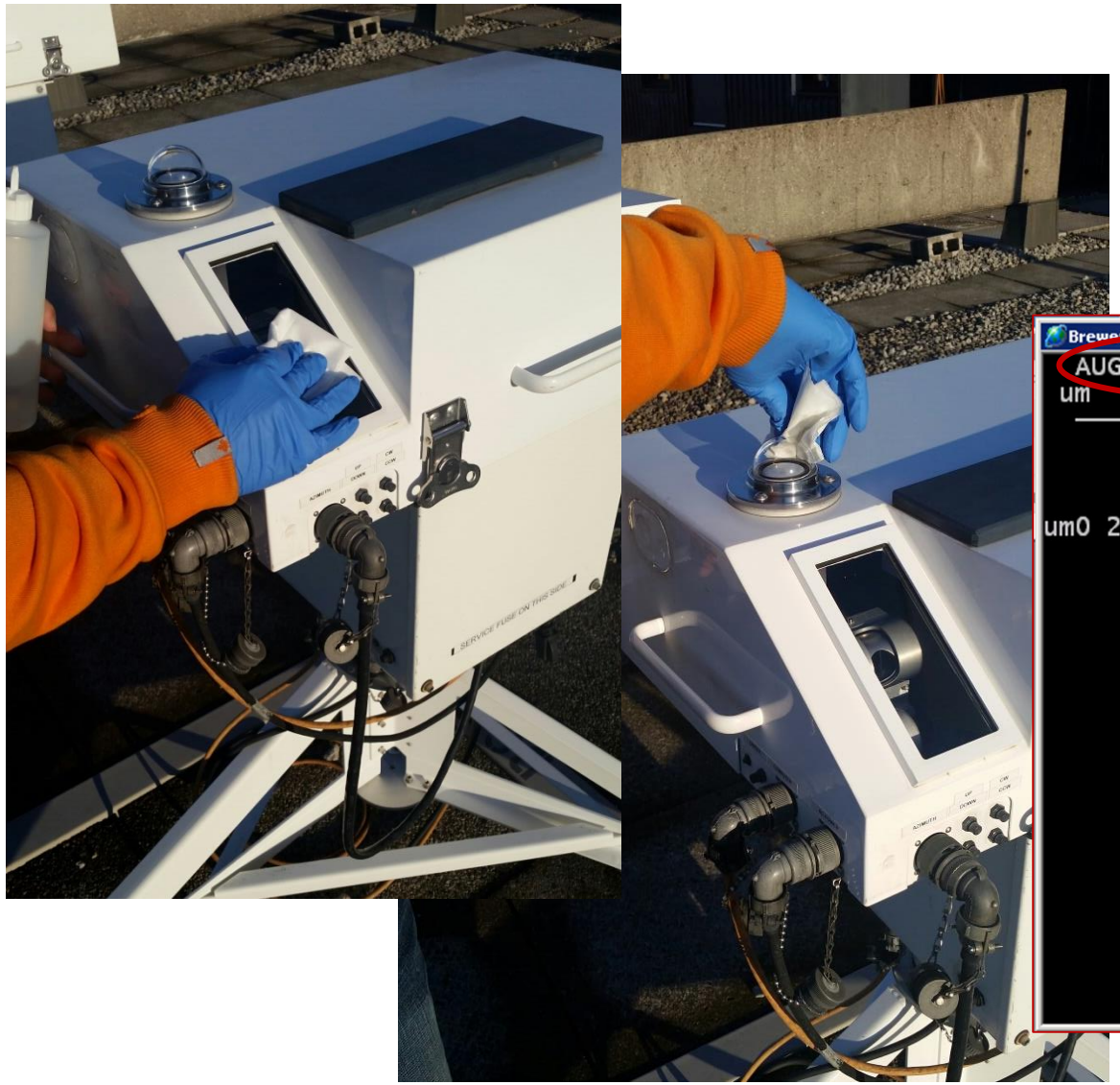
- Sighting Confirmation



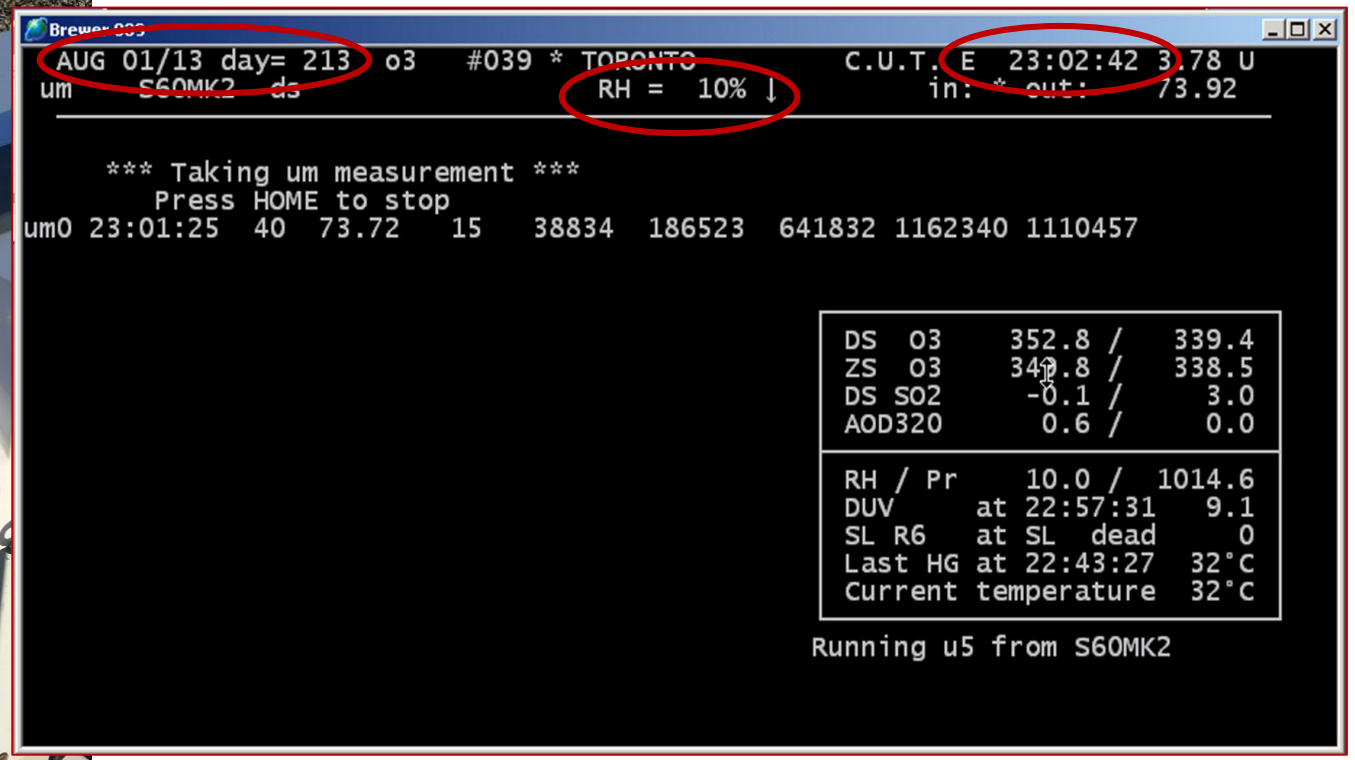




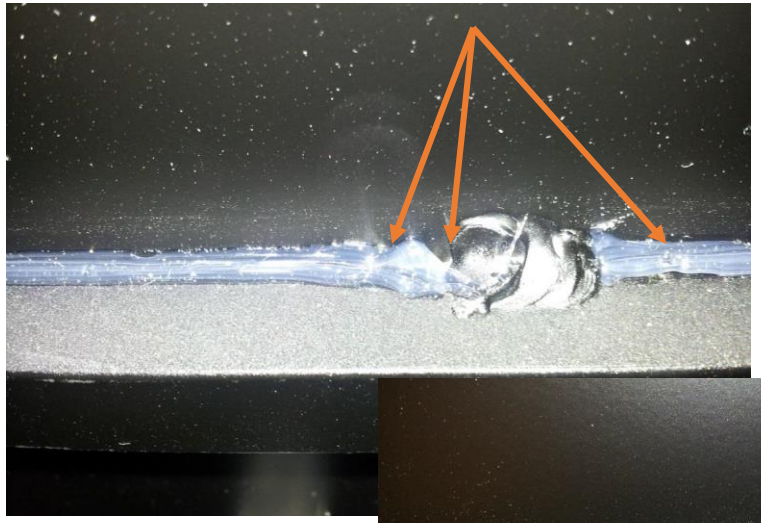
Things that should be done daily

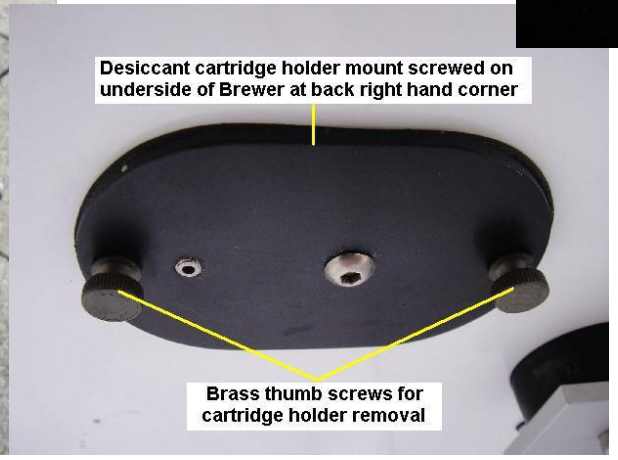


- Window and Dome Cleaning
- Time and Date Confirm
- Humidity Check (if your Brewer has a sensor)



Humidity / Desiccant





Unexpected (but Common) Issues:

- Azimuth Tracker failure:

  Possible causes:

  Kill switch tripped

  over-rotated during maintenance

  software/schedule caused over-rotation

  Ribbon cable faulty

  Azimuth cable problem or connector not tight

  I/O Board problems

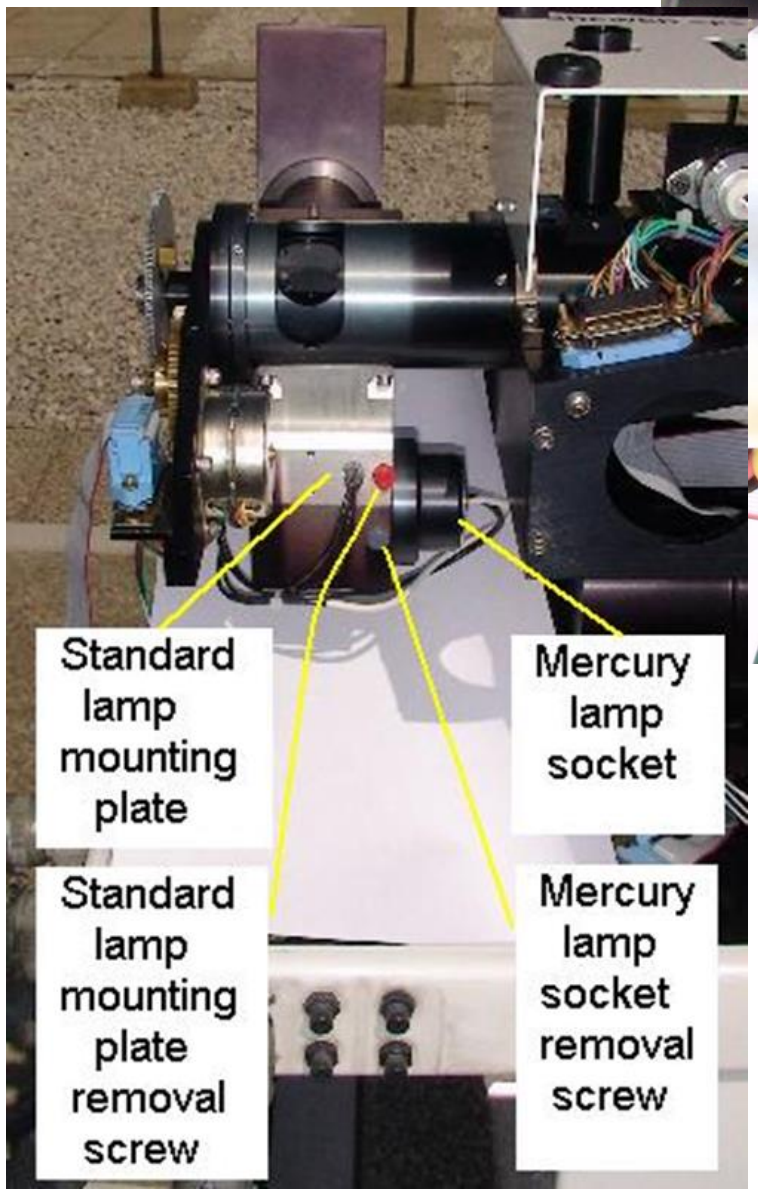
  Optical switches (LED's) faulty

  Results:

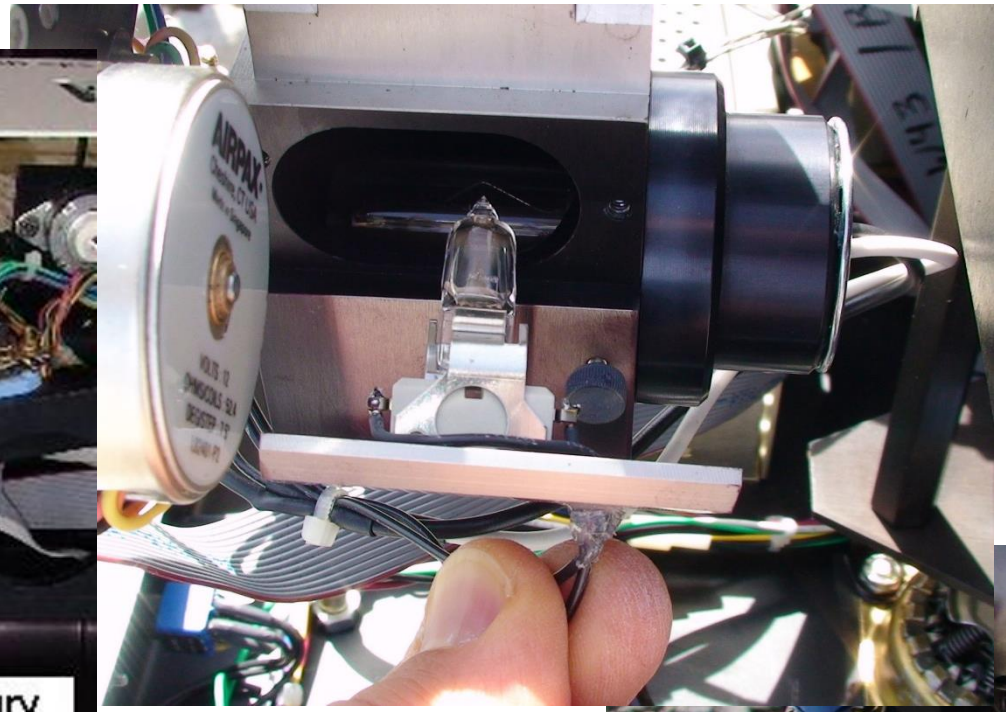
  Does not track the sun – loss of data

  Possible damage to cables – extra costs of repair and loss of data

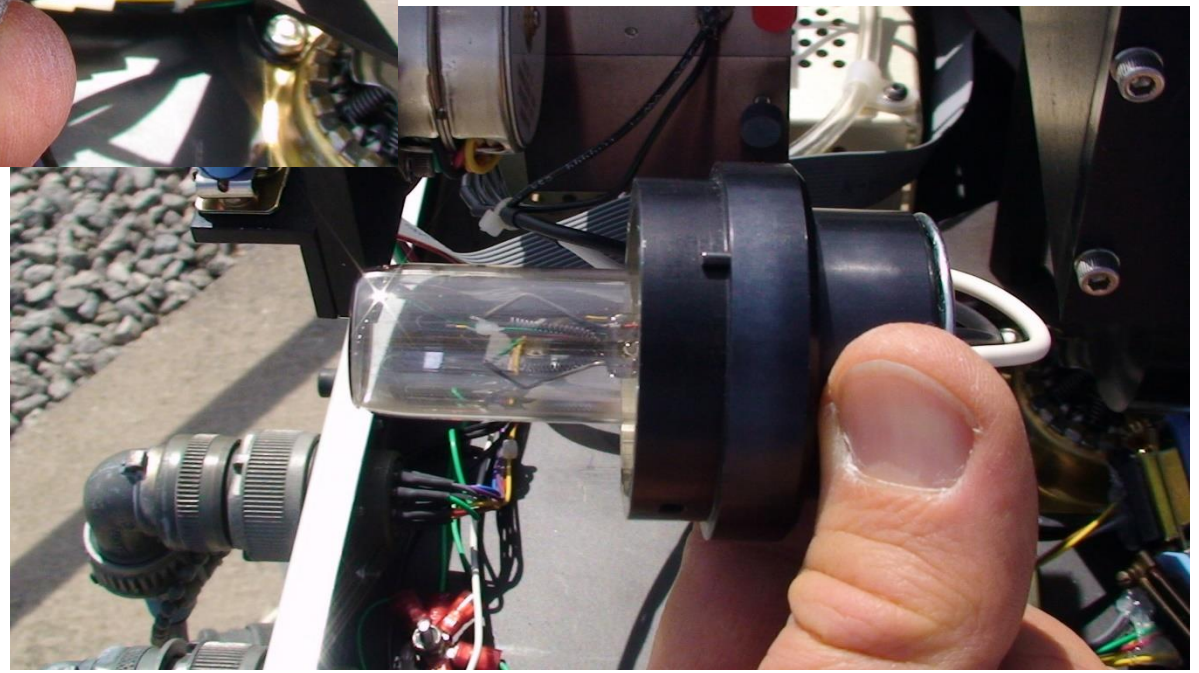
Bulb failures:



Standard Lamp

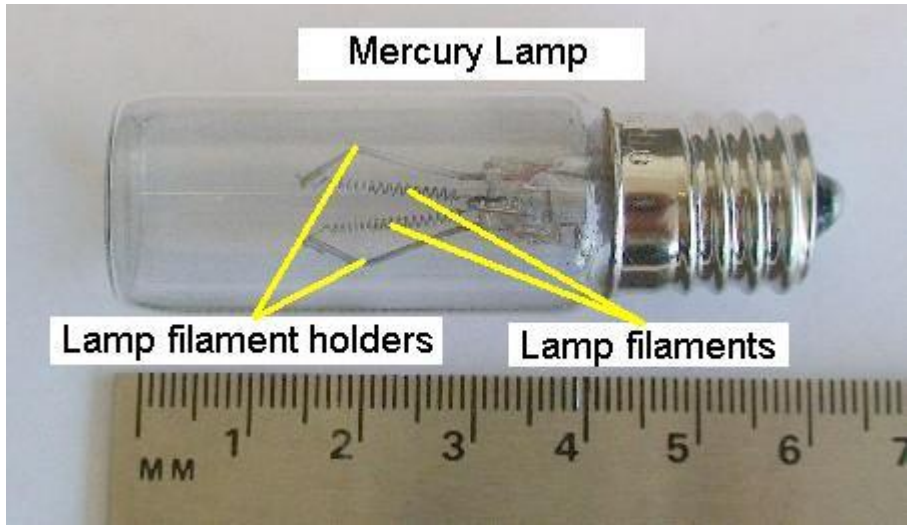


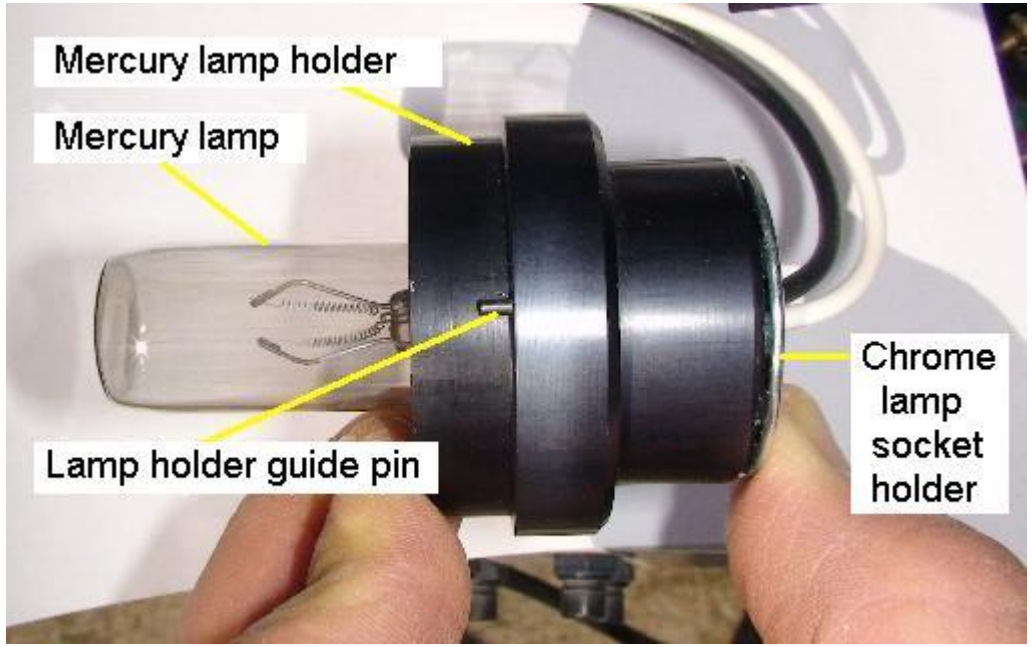
Mercury Bulb



Mercury (Hg) Bulb:

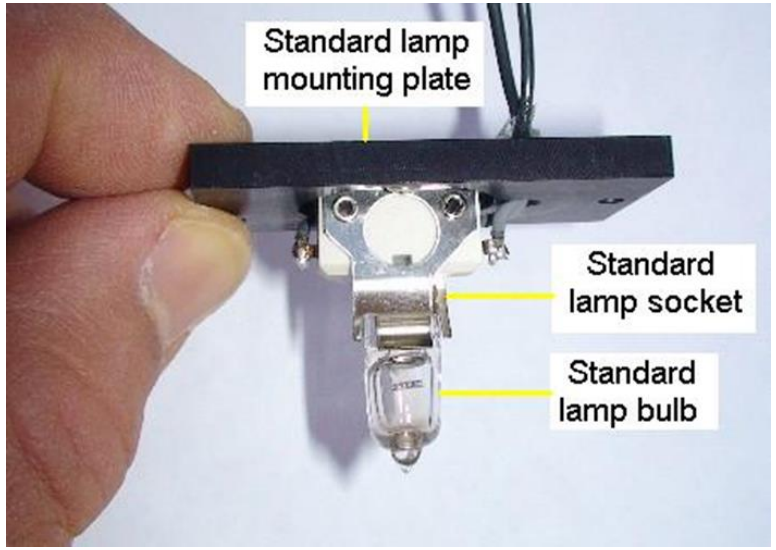
- This bulb requires more frequent replacement
- Do not handle the bulb, use a clean glove or tissue
- The bulb emits UV light when on, use UV rated safety glasses
- This bulb is mounted below the Standard Lamp
- The lamp holder guide pin will align with the SL Bulb filament
- The Mercury filaments should align to 45° from the alignment pin to ensure the SL filament does not block light from the Hg filament

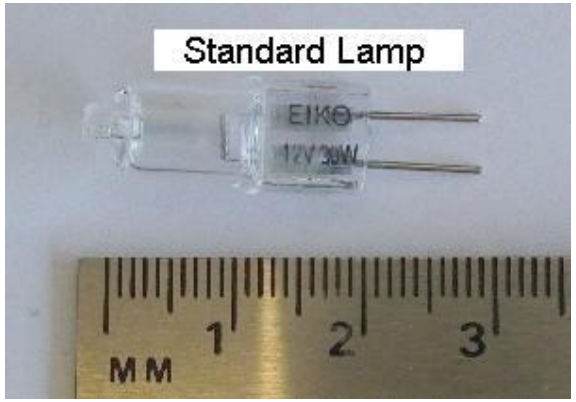


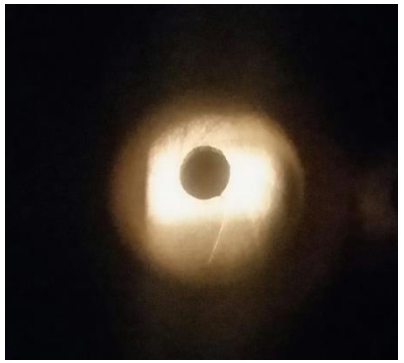


Standard Lamp: Beyond Basic Maintenance

- This bulb seldom requires replacement outside of calibration events
- Only done if there is a failure or calibration because the R6/R5 Ratios will change – effects O3 result
- Seek professional instruction / guidance
- The bulb gets very hot. Ensure the bulb is off and cool
- Do not handle the bulb; use a clean glove or tissue
- The bulb emits UV light when on, use UV rated safety glasses
- This bulb is mounted above the Mercury bulb.
- The lamp pins press into the holder. Try to position the bulb filament close to the original position
- Different manufacturers locate the filament within the bulb differently
- A different filament position will require a different zenith offset/origin to optimize the light
- A change in zenith offset/origin will change the horizon correction and Zenith UV Position







The Most Important for Last: Instrument Logs

- The Scientist or PI often will be looking at data many months or years after the data was collected. Logs are extremely valuable in understanding the data.

Day of Month (DD)	Julian Day (JJJ)	Time of Check (CUT) (HH:MM)	Schedule in Use (Type "skc" to select schedule)	Cleaned Dome and Window (y or n)	Operator Initials
1	152				
2	153				
3	154	21:47	ecsc	n	pf
4	155	19:43	"	n	mm
5	156	20:01	calsc	n	gr
6	157	19:45	"	n	mm
7	158	19:45	"	n	pf
8	159				
9	160				
10	161				
11	162				
12	163				
13	164				
14	165				
15	166				
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21	172				
22	173				
23	174				
24	175				
25	176				
26	177				
27	178				
28	179				
29	180				
30	181				

Drive Plate EDGE Cleaned	Sightings					Desiccant						Station Supplies Inventory Please Fill Out March and September				
	Day	CUT Time	Horizon Correction	North Correction	Heater Fans On	Day	RH	Box		Tube						
								Expired	Replaced	Expired	Replaced	Hg Lamps	Standard Lamps	Bottles of Methanol	Boxes of Kimwipes	5 amp Fuses
(DD)	(DD)	(HH:MM)	(Steps)	(Steps)	(y/n)	(DD)	(%)	(%)	(y/n)	(%)	(y/n)	(# of)	(# of)	(# of)	(# of)	(# of)
05	05	19:57	6	1620	y	05	3		n		n					

List other supplies needed for Brewer system maintenance:

Day (DD)	Time (CUT) (HH:MM)	Operator Initials	**Details of Other Maintenance and Abnormal Brewer System Operation** **Please do NOT start a new line if an entry exceeds a line on the table.** **Continue to enter information into the same cell.**
05	13:51	RS	schedule changed to calsc
05	19:59	GR	cleaned drive disc did sr and si