# NASA IMPACTS Probe Maintenance and Cleaning

## **Modification History**

Written by Kendra Sand 2020/01/16: Updated by Kendra Sand 2022/09/01: Updated by David Delene

#### **Probe Maintenance and Cleaning Summary**

Acronym	Purging	Duration	Purge Tools Needed	Required Cleaning Supplies
2DS	Yes	5 min disassemble 10 min purging 5 min reassemble	Regular Driver	Methanol, Kimwipes, Q- tips
CDP	No		N/A	Q-tips, 91% Isopropyl Alcohol, White Vinegar, Distilled Water
Hawkeye (FCDP, 2DS, 2DS, CPI)	Yes	15 min disassemble 25 min purging 5 min reassemble	Regular Driver, 3/32 Allen Wrench, Magnet (Optional)	Methanol, Q-tips, Cleaning Wand, Snips
HVPS3-A	Yes	5 min disassemble 10 min purging 5 min reassemble		Methanol, Kimwipes, Q- tips
HVPS3-B	Yes	5 min disassemble 10 min purging 5 min reassemble		Methanol, Kimwipes, Q- tips
King	No		N/A	N/A
Nevzorov	No		N/A	N/A
PHIPS	No		N/A	N/A
RICE	No		N/A	Isopropyl Alcohol, Kimwipes, Extended Ladder
Pitot Static	No		N/A	N/A
Pitot Dynamic	No		N/A	N/A

#### Probe Cleaning Procedure

#### HVPS3-A, HVPS3-B, and 2D-S

- 1. Soak a regular Q-tip in methanol (green bottle).
- 2. Cover the Q-tip with a Kimwipe.
- 3. Swipe the Kimwipe covered, methanol-soaked Q-tip over the top OAP window only once.

4. Swipe the Kimwipe covered, methanol-soaked Q-tip over the bottom OAP window only once. Notes:

- Clean OAP windows in order, top to bottom.
- Use the cleaning wand to reach the eight OAP windows in the Hawkeye.
- Methanol-soaked Q-tips may be reused, but use each Kimwipe only once.

#### Hawkeye (Hawkeye FCDP, Hawkeye 2D-S, Hawkeye CPI)

- 1. Cut a regular Q-tip in half.
- 2. Insert Q-tip halves into each end of the cleaning wand, be careful not to touch the Q-tip heads.
- 3. Apply a few drops of methanol (green bottle) to each Q-tip.
- 4. Swipe the Q-tip over each of the 8 optical windows, working from top to bottom.
- 5. Repeat steps 1-4 until all 8 windows have been satisfactorily cleaned.
- 6. Insert a dry Q-tip into the cleaning wand and use to dab any excess drops.

#### CDP

- 1. Soak a black Q-tip in isopropyl alcohol (yellow bottle).
- 2. Wipe the isopropyl soaked Q-tip over the top CDP window.
- 3. Wipe the isopropyl soaked Q-tip over the bottom CDP window.
- 4. Repeat steps 1-3 using white vinegar.
- 5. Repeat steps 1-3 using distilled water (pink spray bottle).

#### Notes:

- A Kimwipe may be used in conjunction with the Q-tips, if needed.
- The top window should have a blue tint (this is the receiving window).
- Bottom window should be completely clear and appear invisible (transmitting window).

#### Rosemount Icing Probe

- 1. Extend a ladder up to the Rosemount probe location.
- 2. Apply some isopropyl to a couple Kimwipes.
- 3. Climb up the ladder with the isopropyl-dampened Kimwipes.
- 4. Carefully wipe the surface of the Rosemount probe.

#### Notes:

Conduct one day prior to flight, if possible.

#### King Probe

- No cleaning required.
- Visually inspect the hotwire for protruding ends along the coiled wire
  If wire is broken requires replacement.
- Be careful, the probe is very delicate

#### WCM

- No cleaning required
- Visually inspect each sensor for damaged or missing parts.
- If damaged, the entire sensor head requires replacement with our spare sensor head.

## **Probe Purging Procedure**

Conduct one day prior to flight, if possible.

- 1. All hermetic PMS cans need to be purged occasionally, preferably the day prior to a flight.
- 2. Remove tail cone (end cap).
- 3. Have purge gas ready.
- 4. Release valve caps as purge gas is applied.
- 5. Purge for 10-20 minutes, alternating valves halfway through.
- 6. Once complete, seal with valve caps to finger tight.
- 7. Reattach the tail cone.
- 8. Notify a maintenance crew member so the probes can be checked for airworthiness.

## Figures



Figure 1: Image (left) illustrating a dirty windows and an image (right) illustrating a clean window on the Cloud Droplet Probe (CDP).