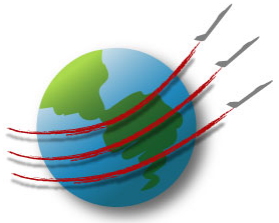


AMS/ACSM Tips, Tricks & FAQ's

Bill Brooks, Phil Croteau, Ed Fortner,

John Jayne, Leah Williams, Anita Avery

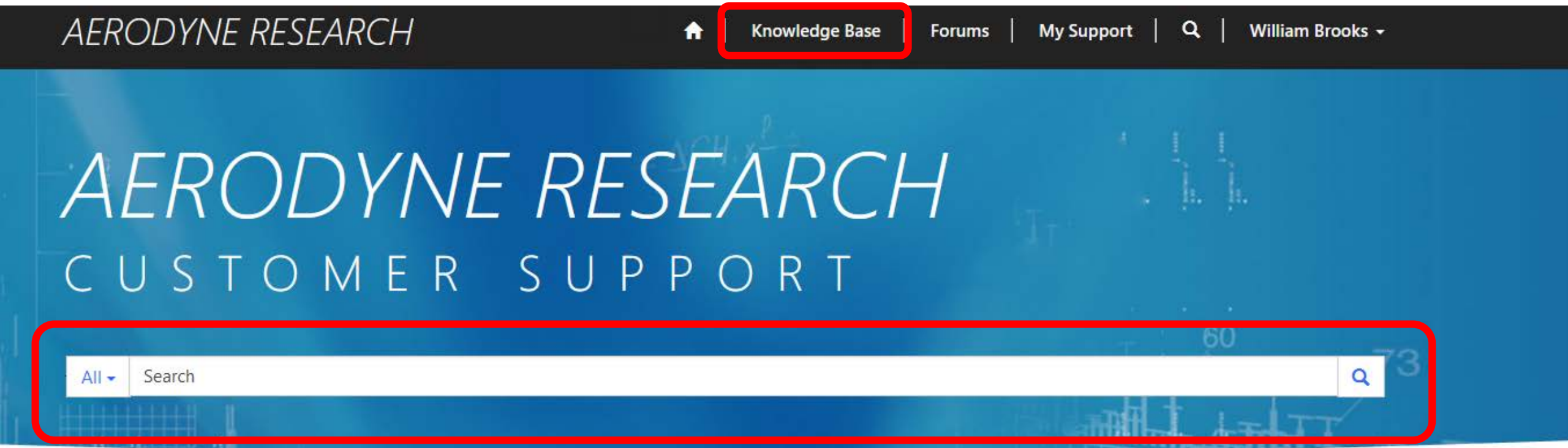
Virtual AMS User's Meeting

Jan 21, 2021

For Knowledge Base access and to submit support inquires:
https://Support.Aerodyne.com

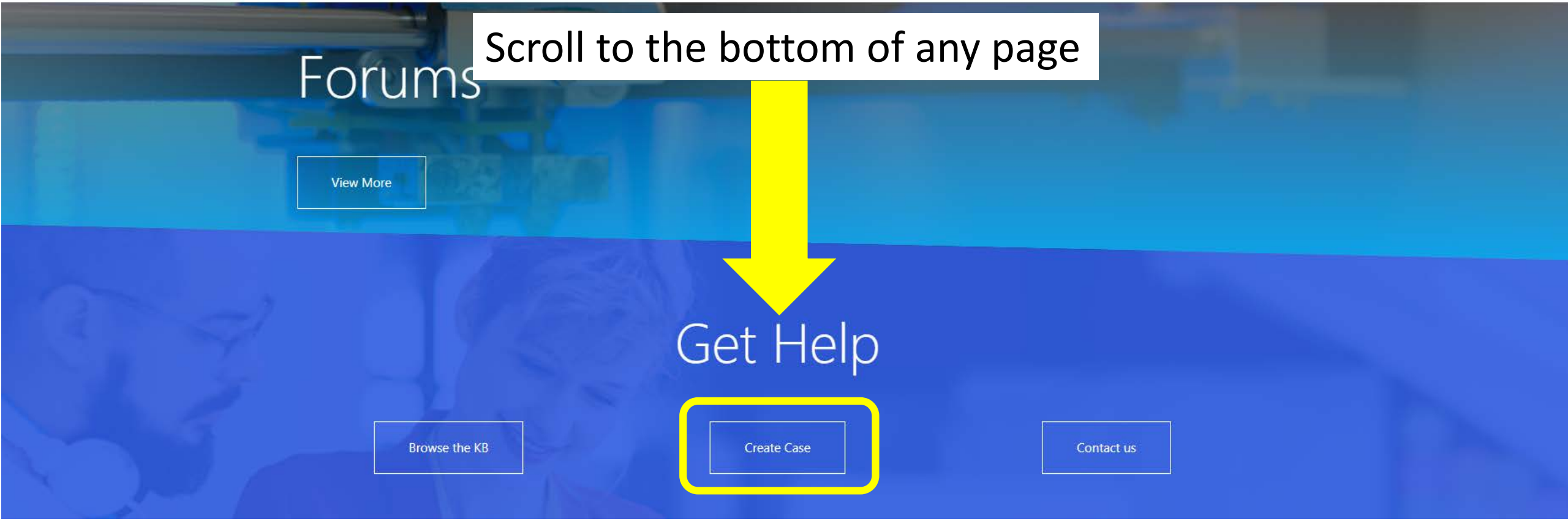
Email support inquires to:
CACC-Support@aerodyne.com

https://Support.Aerodyne.com



Welcome

Welcome to the Aerodyne Research Customer Support Site. You can search or browse our knowledge base to find manuals, software, and troubleshooting information for our instruments. If you need something that you can't find feel free to Contact Us.


Most Popular Articles
2020 CIMS Users' Meeting (Helsinki Virtual) Presentations
Tofware CIMS/Vocus: Download software and getting started
Tofware: CIMS and Vocus peak lists
Most Recent Articles
Jan 19, 2021
ToFAMS Tuning Instructions
Jan 19, 2021
TERN User's Guide
Jan 19, 2021
TERN GC Analaysis software
Be prepared with:
Instrument type and serial number
Description of the problem
Any key events which may have lead to the problem
Any troubleshooting already done
Scroll to the bottom of any page
Forums
View More
Get Help
Browse the KB
Create Case
Contact us

AMS Advancement Timeline

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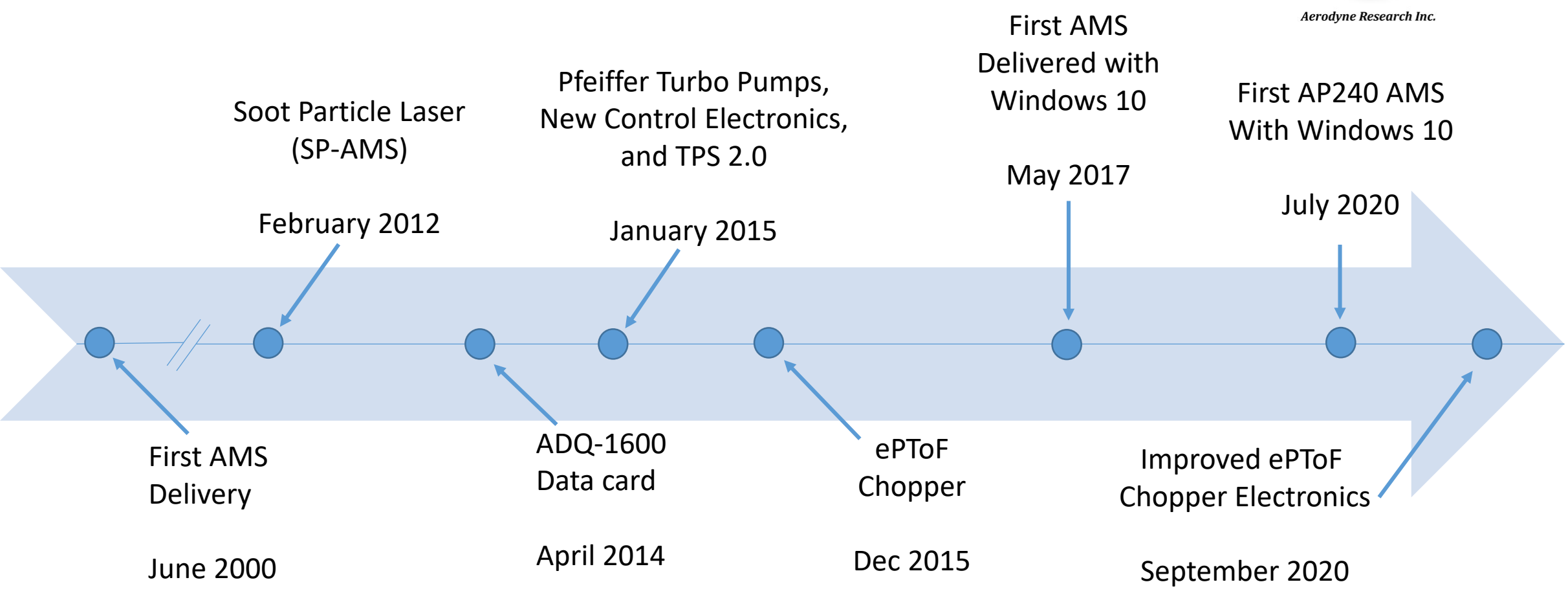
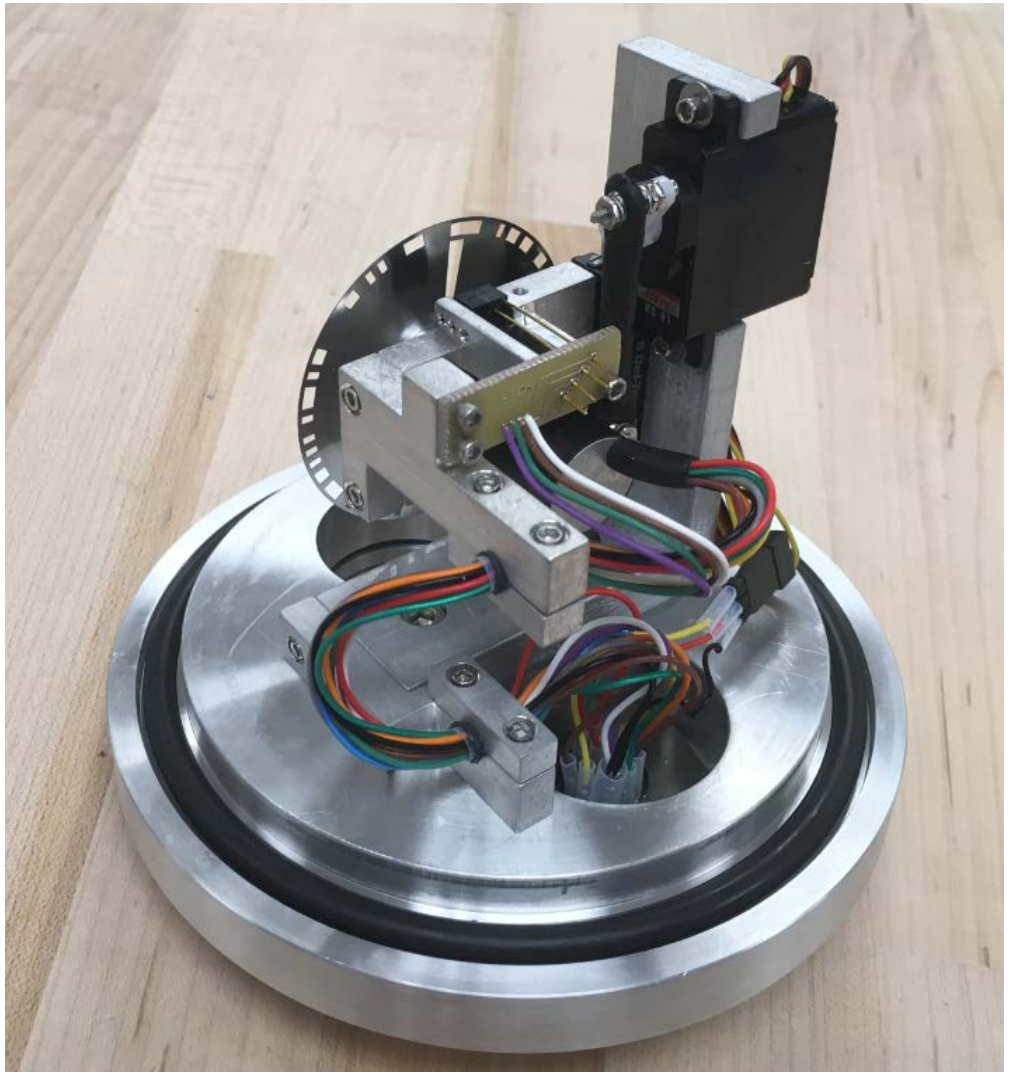


ePToF Troubleshooting



ePToF Chopper Flange

Aerodyne Research Inc.

ePToF chopper electronics calibration:
https://support.aerodyne.com/knowledgebase/articles/KA-01289/en-us

ePToF chopper replacement guide:
https://support.aerodyne.com/knowledgebase/articles/KA-01143/en-us

Standard PToF Troubleshooting

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Question:

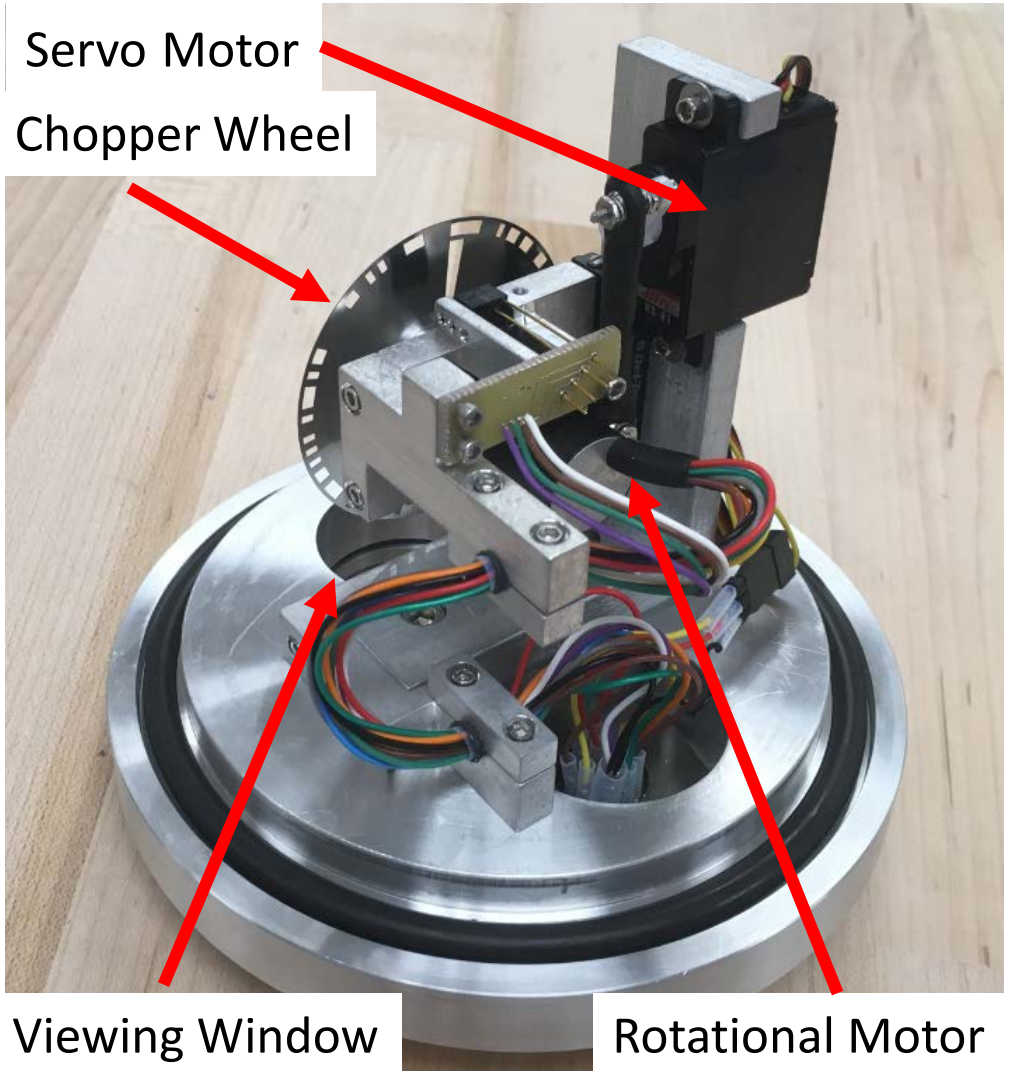
My chopper is on, but the Electronics Box LCD screen says the frequency = 1.5 Hz. What should I do?

Answer:

Confirm from the window that the chopper wheel is actually spinning. If so, perform the 2% chopper frequency calibration:

https://support.aerodyne.com/knowledgebase/articles/KA-01299/en-us

Chopper Servo Replacement



Question:
My signals suddenly dropped to zero, but the TPS voltages all look okay. What should I do?

Answer:

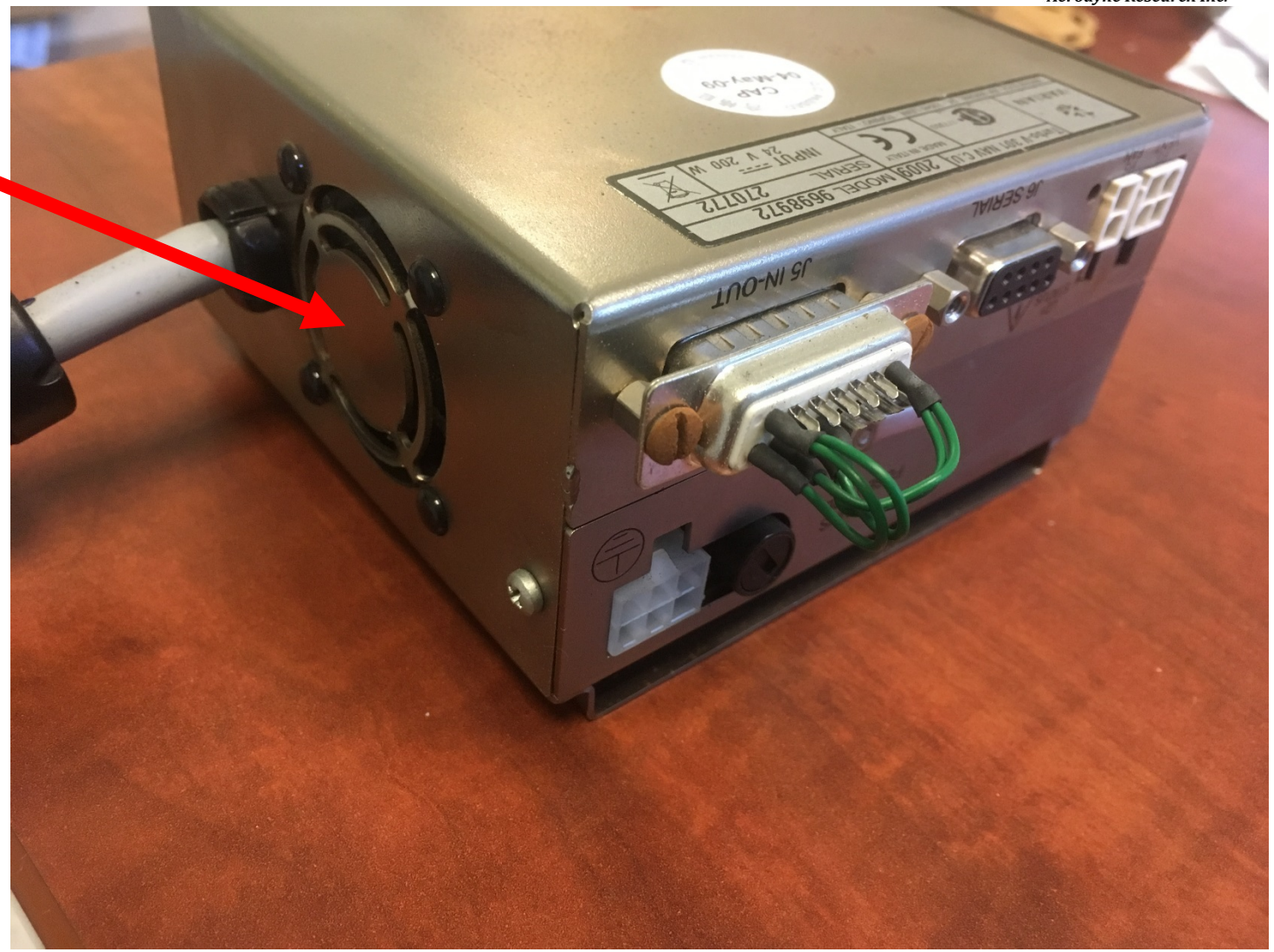
1. Check if the chopper wheel is moving between open and blocked by looking through the window.
2. Confirm servo PWM signals are present, and if so,
3. Replace Chopper Servo

Chopper Servo Replacement Guide:
https://support.aerodyne.com/knowledgebase/articles/KA-01140/en-us

P2 Controller Fan Failures

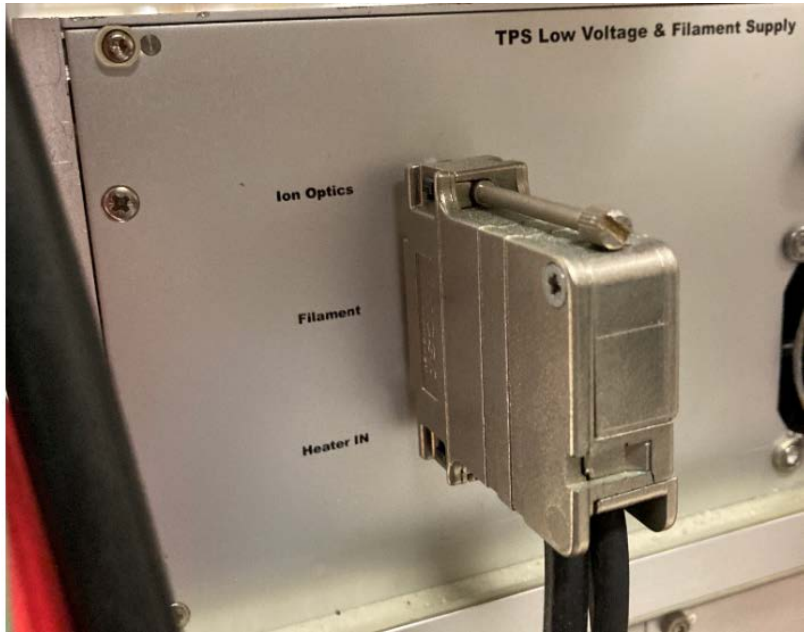
Aerodyne Research Inc.

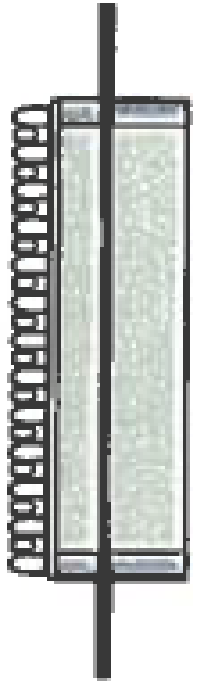
On AMS systems 10+ years old, we've seen this fan fail, leading to the pumps shutting down when the inlet is opened



Filament or Heater Continuity Check

Aerodyne Research Inc.





D-Sub Stecker			Fischer Buchse
PIN #	Aderfarbe	Signal-Name	Pin#
22	Weiss 1	Filament-Ground	1
23	Weiss 2	Filament 2	2
11	Weiss 3	Filament 1	3
12	Weiss 4	Heater 1 OUT	4
24	Weiss 5	Heater 2 OUT	5

DB25 Connector for Filament/Ion Optics/Heater Cable

Filament/Ion Optics/Heater cable pin out:
https://support.aerodyne.com/knowledgebase/articles/KA-01147/en-us

Filament Failures

New filament

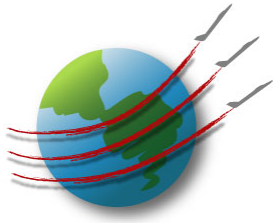
Continuous wire

Normal wear and tear Failure

Small gap in wire

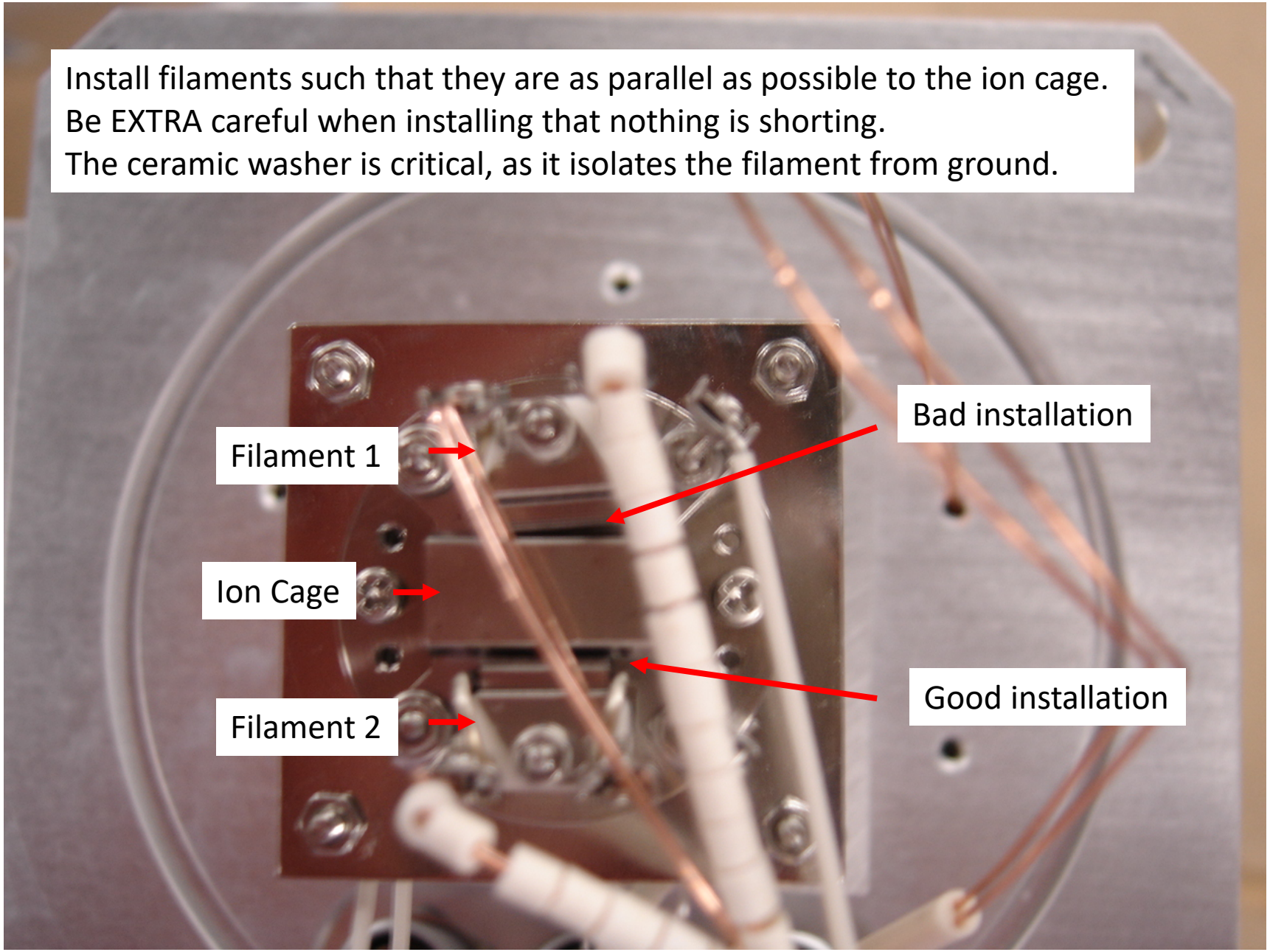
Likely TPS Low Voltage Supply (LVS) failure

Large gap in wire

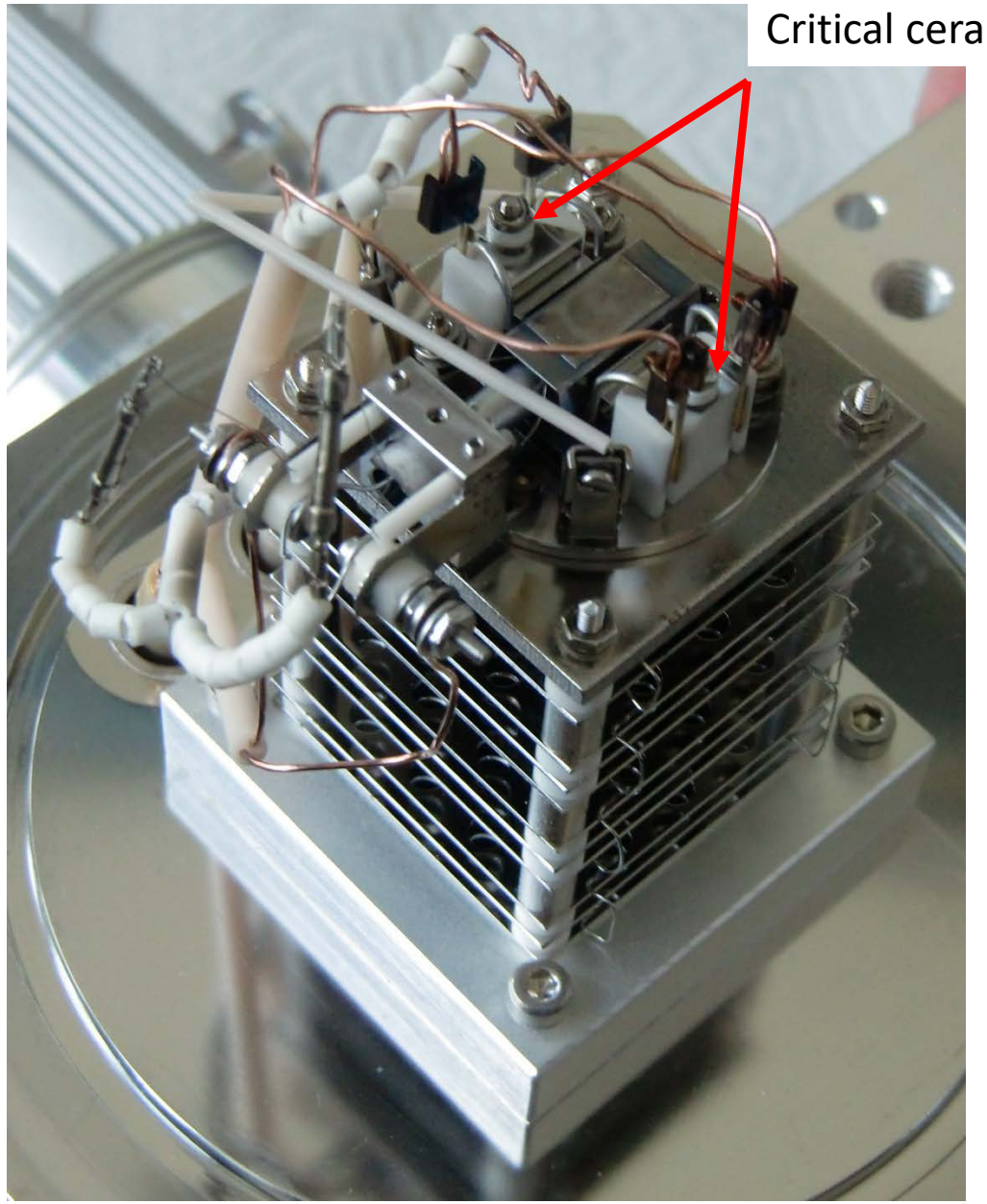


Filament Installation

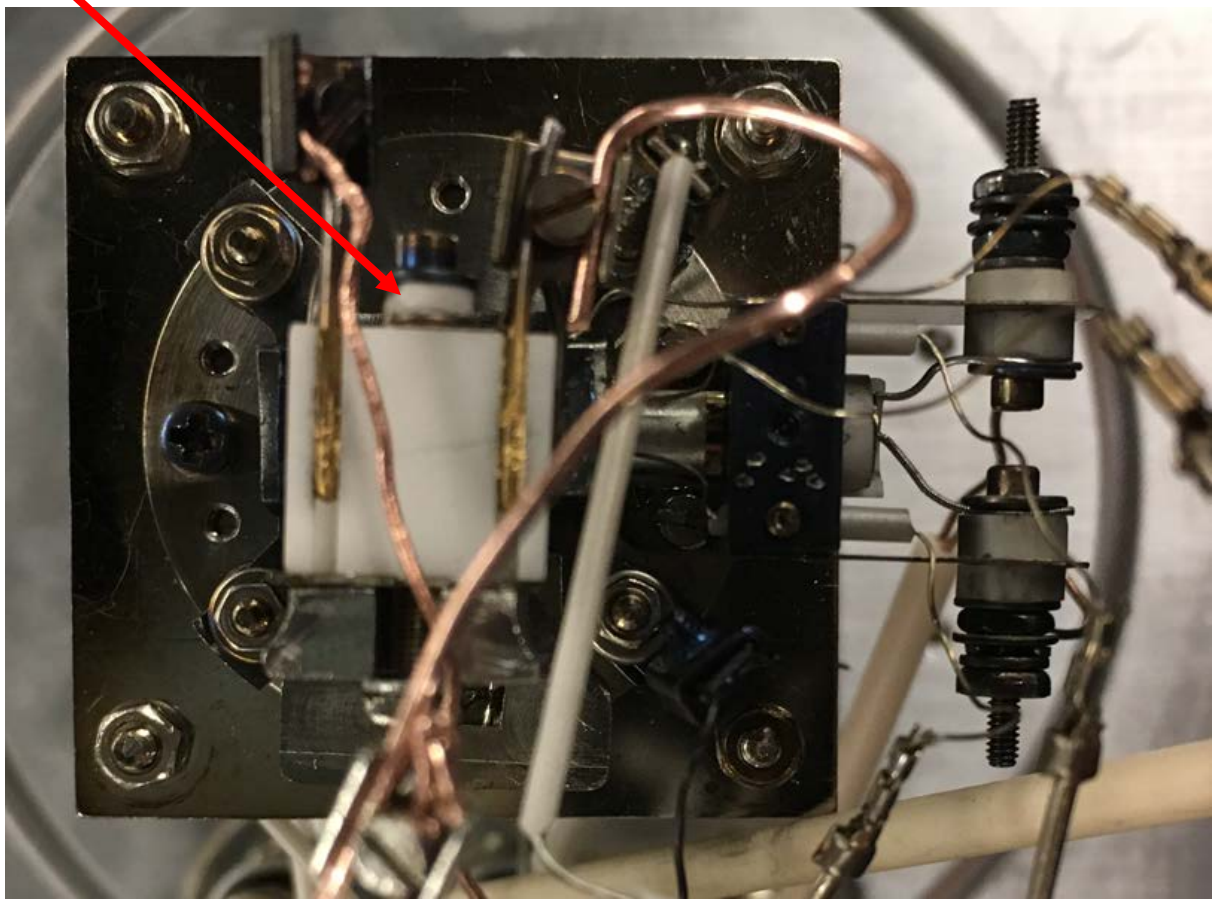
https://support.aerodyne.com/knowledgebase/articles/KA-01137/en-us


Install filaments such that they are as parallel as possible to the ion cage.
Be EXTRA careful when installing that nothing is shorting.
The ceramic washer is critical, as it isolates the filament from ground.
Filament 1
Ion Cage
Filament 2
Bad installation
Good installation

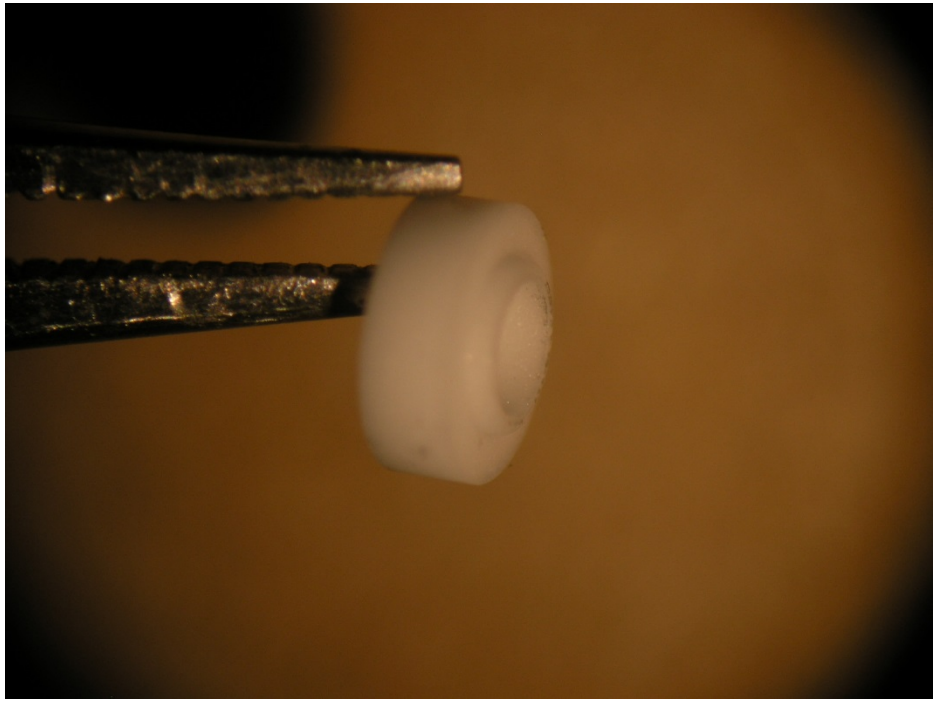
Non-SPAMS configuration

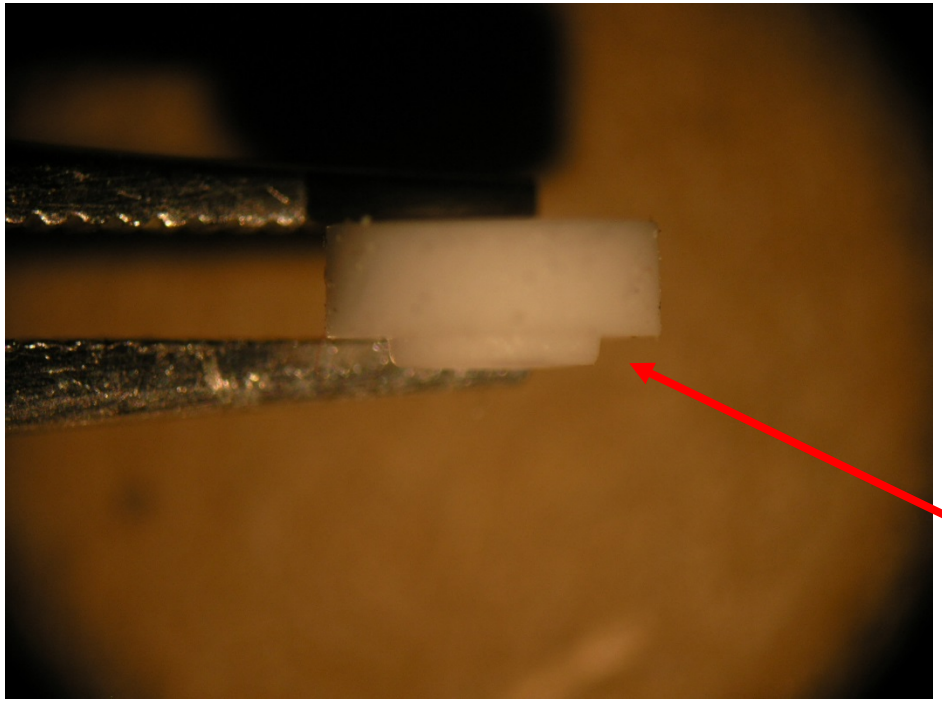


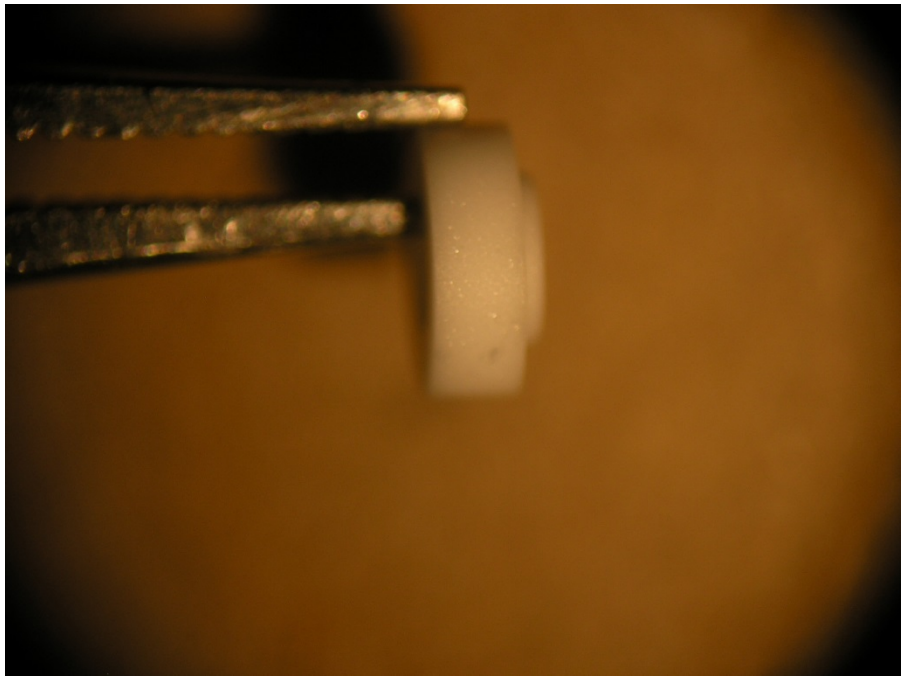
SPAMS configuration



Top View







This side down!

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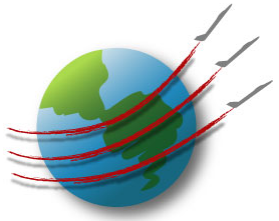
Tuning Tip:



- Tune *both* filaments before leaving for the field.
  - This can save time and possibly prevent one from having to vent while in the field. Also, sometimes a filament does not tune as well as one would like, so one may get a better tune with the second filament.

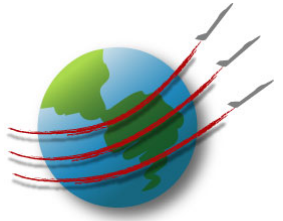
AMS ToF voltage tuning instructional videos:
https://support.aerodyne.com/knowledgebase/articles/KA-01306/en-us

Error code on DAQ corresponding to high temperature in the Prisma

-> Check fan filter for dust deposits
-> Check if fan needs replacement

Slide courtesy of AddAir

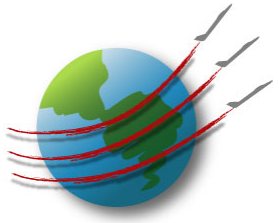
Agilent Turbo Pump Compatibility



Turbo Pump Type	AMS compatible?	Status
V70	YES	Discontinued but available via exchange
V81	YES	Discontinued and unavailable
84FS	YES	Available
74FS	YES	Available
V301	YES	Discontinued, but available via exchange through Aerodyne
304FS	NO	Overheats and shuts down on AMS
305FS	?	TBD

305FS is still being evaluated. We will release our findings via AMS Users email list soon.

AMS Maintenance



- Always monitor pump performance
- Always monitor MD1 pressure (load/no load)
- Clean vacuum chamber surface
- Check for loose/missing connections/fasteners
- Clean cooling fan filters
- Check for stressed cables
- Dirt inside computer
- *“Dirt”* on computer HD (clean up and defrag)
- Pfeiffer Pump Maintenance

Agilent Turbo Pumps

What are the operating currents for all pumps?

Aerodyne Research Inc.

	Gas Load Off (mA)	Gas Load On (mA)	Delta T* (Degrees C) (Closed/Open)
P2	~ 450	~ 850	9/13.3
P3	~ 250	~ 300	9/9.3
P4	~ 200	~ 250	6/5.9
P5	< 200	< 200	6.2/6.5
P6	~ 200	~ 200	9.6/9.6

*Delta T = Pump Temp – Ambient Temp

These are guidelines. Each AMS may be slightly different. Each user should know the pump characteristics for their specific AMS

Pfeiffer Turbo Pumps

What are the operating currents for all pumps?

Aerodyne Research Inc.

	Gas Load Off (W)	Gas Load On (W)	Delta T* (Degrees C) (Closed/Open)
P1	~ 25	~ 70	9/13.3
P2	~ 3	~ 3	9/9.3
P3	~ 2	~ 2	6/5.9
P4	~ 2	~ 2	6.2/6.5
P5	~ 2	~ 2	9.6/9.6

These are guidelines. Each AMS may be slightly different. Each user should know the pump characteristics for their specific AMS

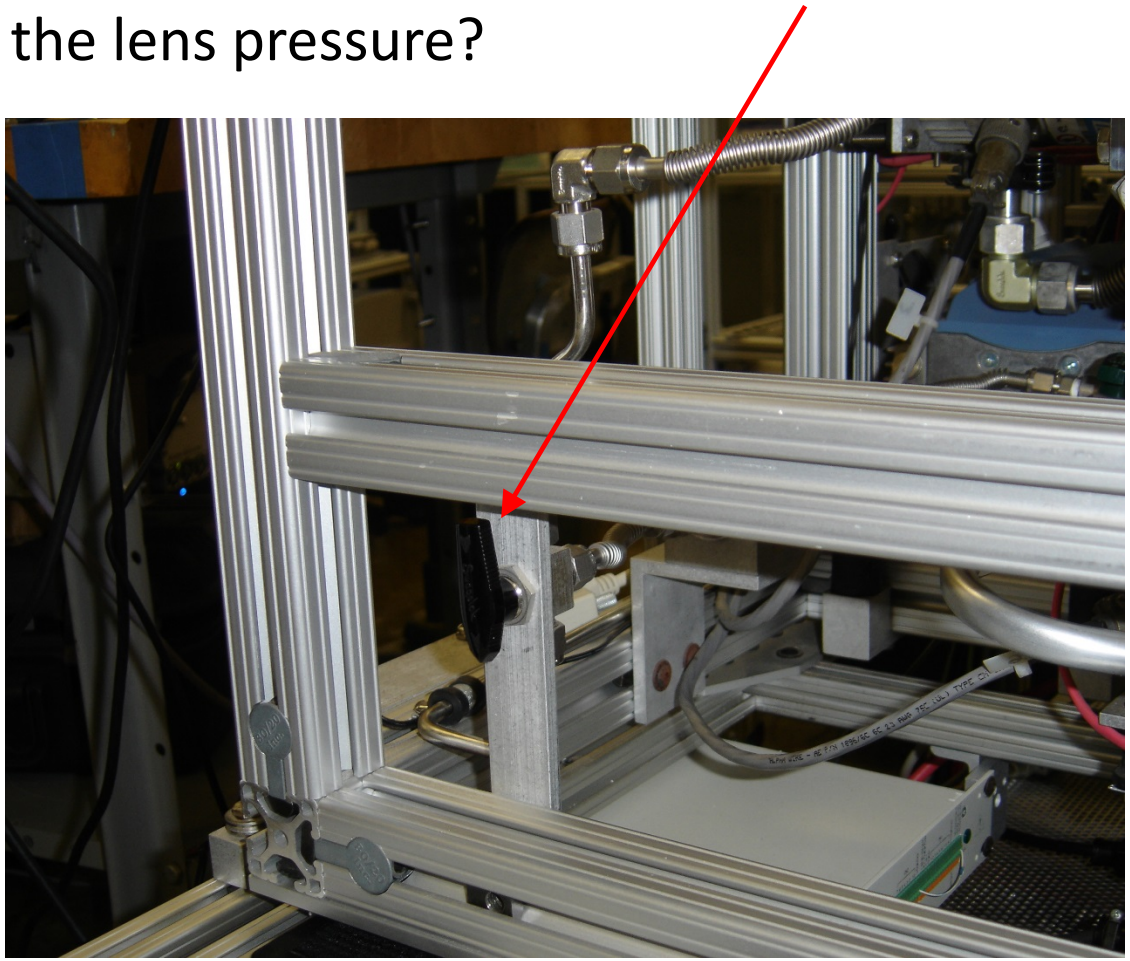
*Delta T = Pump Temp – Ambient Temp

AMS Pressure Measurements

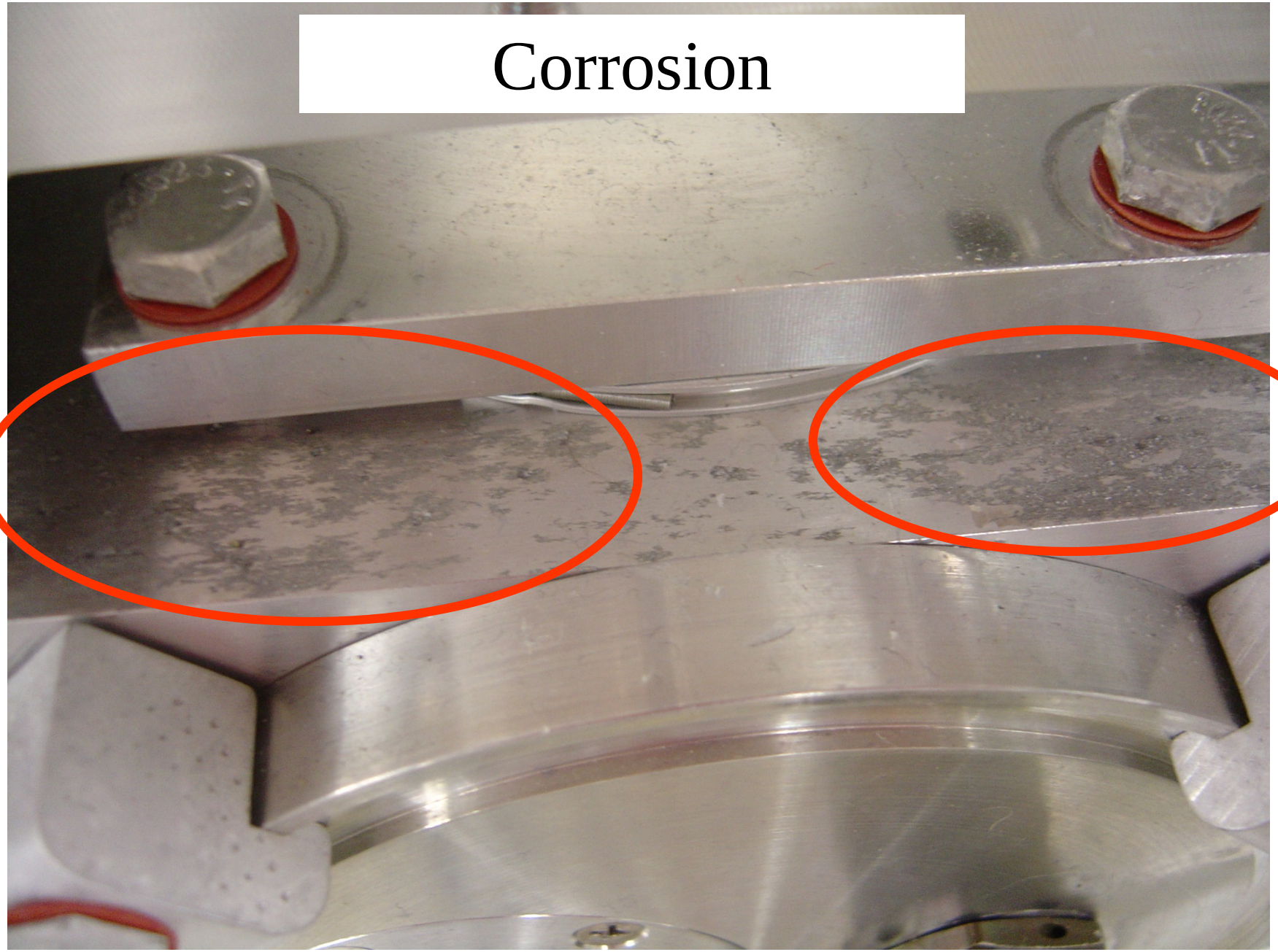
Aerodyne Research Inc.

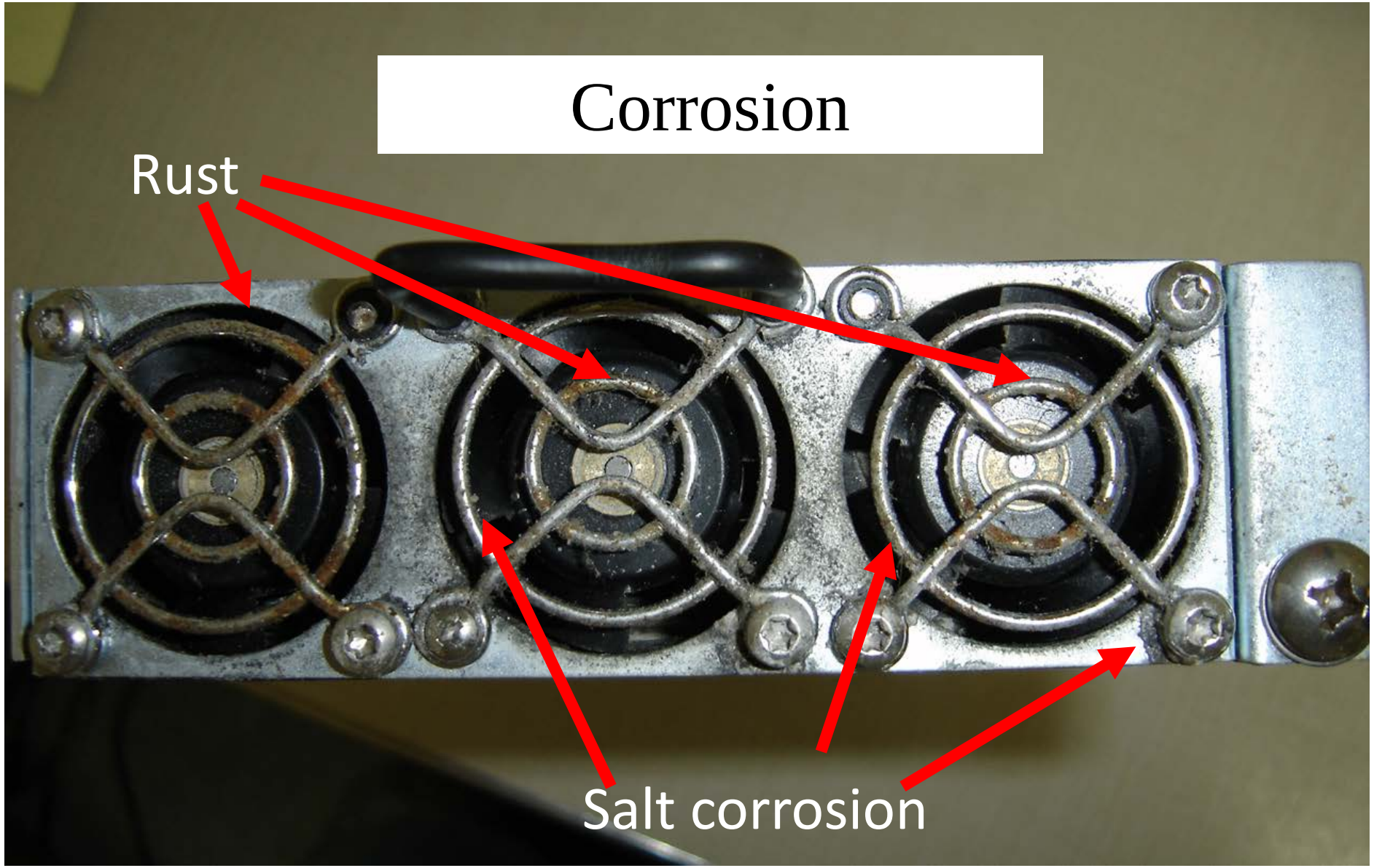
What is the backing pump pressure?

What is the lens pressure?



Corrosion




Corrosion
Rust
Salt corrosion

Inspect Shipping Container

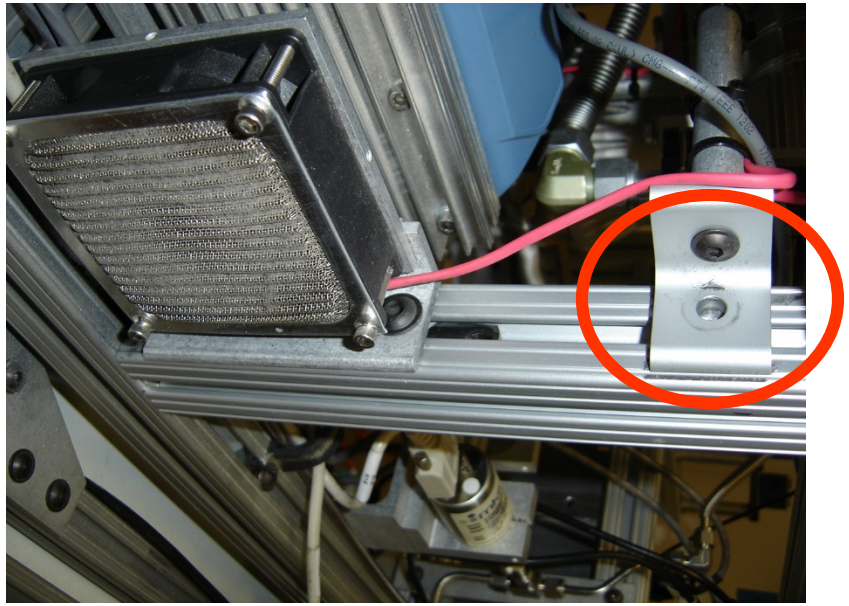
Fork Lift Damage

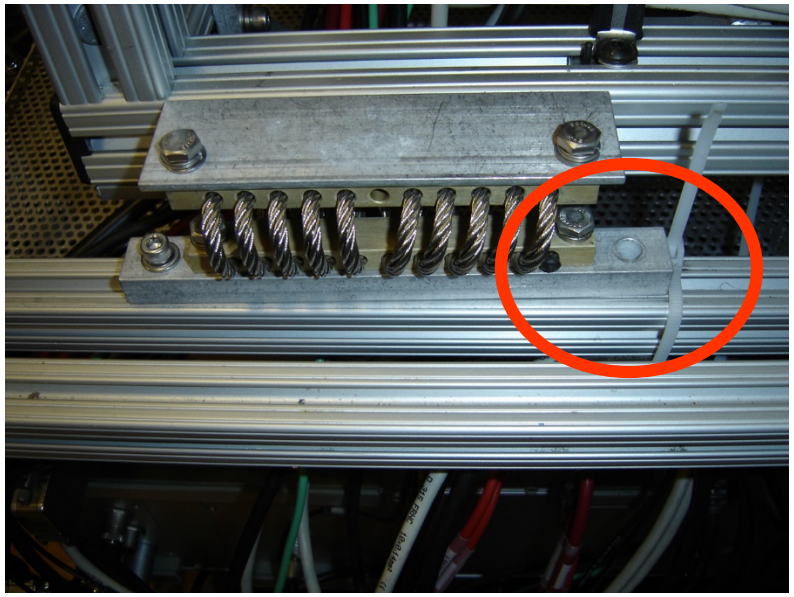
Don’t leave instrument in the shipping container

Maintenance Issues, cont'd

Aerodyne Research Inc.

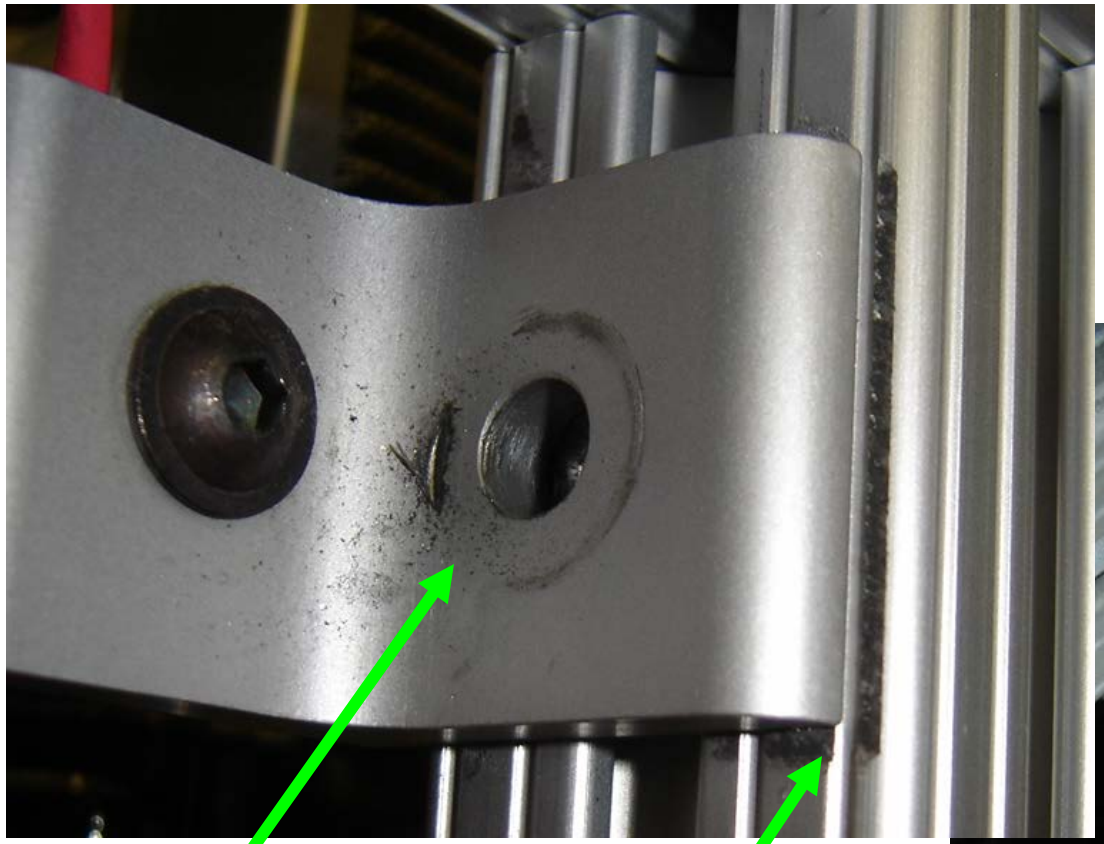
Missing fasters





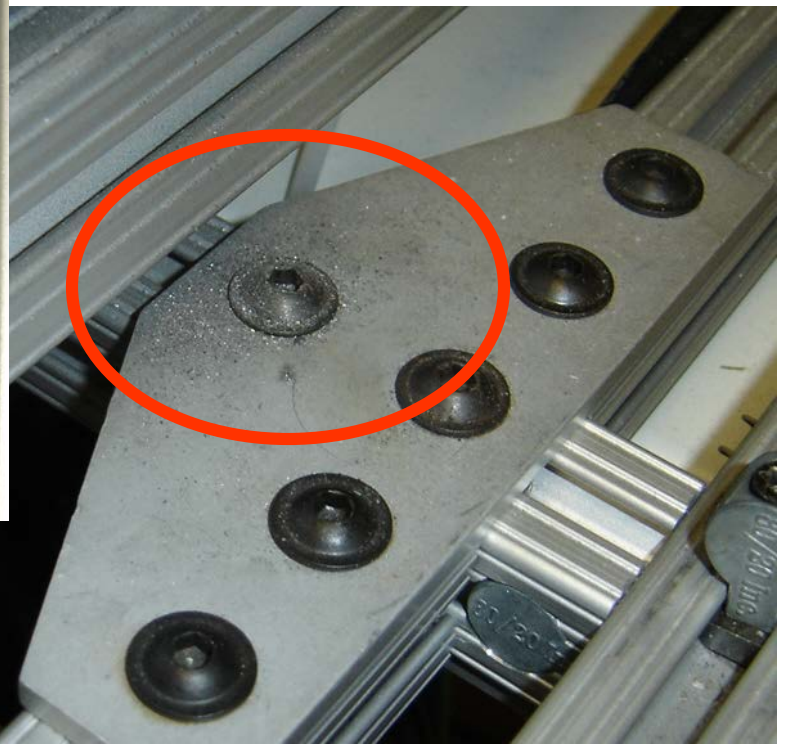
Maintenance Issues, cont'd

Aerodyne Research Inc.



Missing fastener, chaffing metal

Aluminum dust

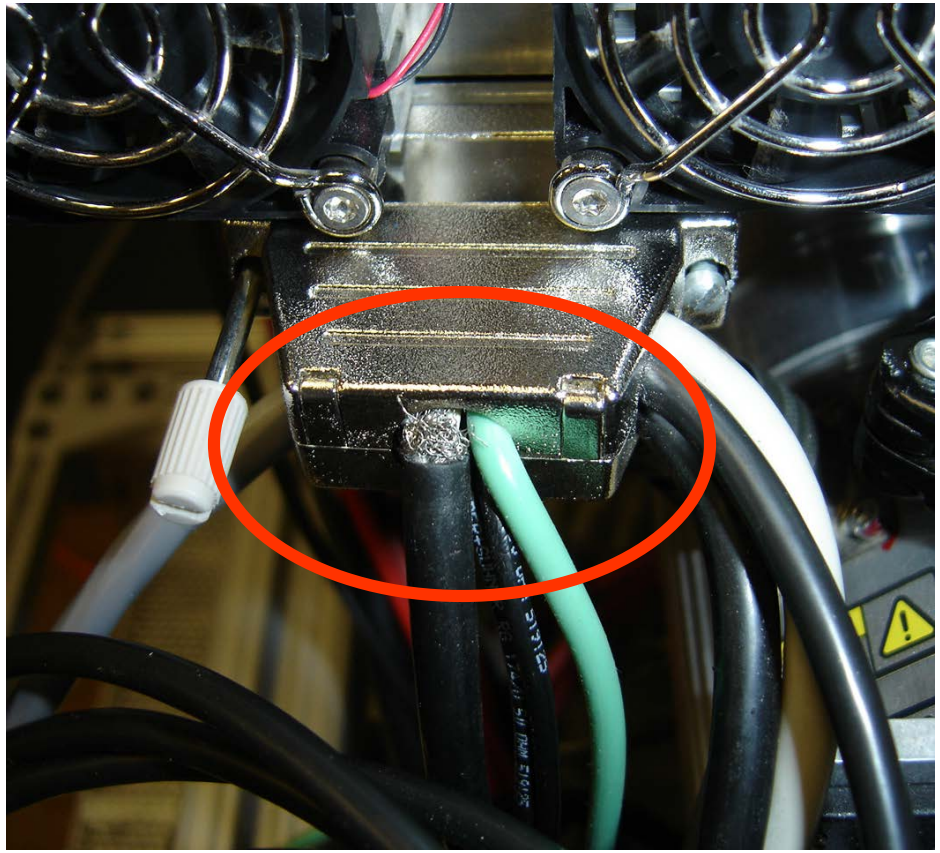


Maintenance Issues, cont'd

Aerodyne Research Inc.

Dirty fan filter

Stressed cables



Pfeiffer HiPace Turbo Maintenance

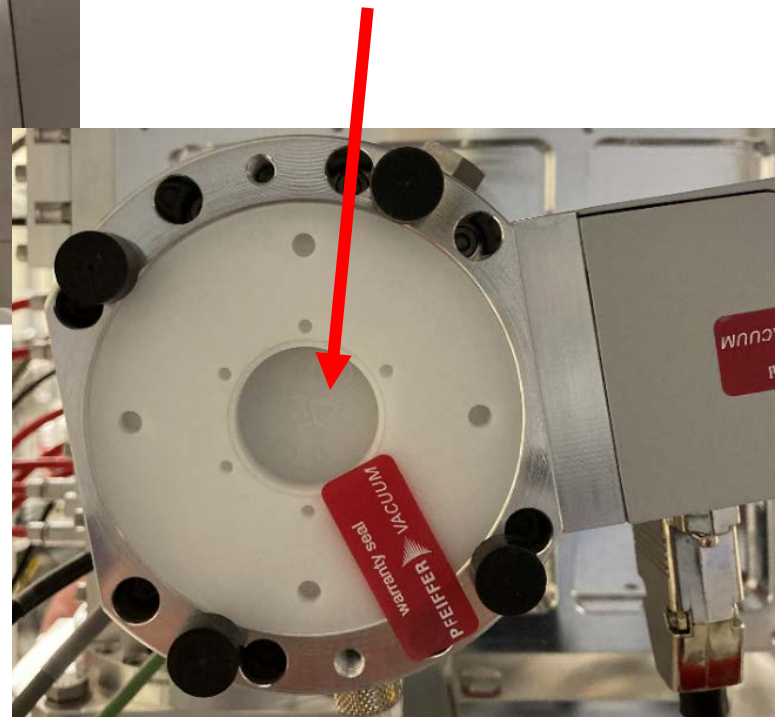
Aerodyne Research Inc.

Pfeiffer Turbo Pumps should have the lubricant reservoir replaced every 4 years.

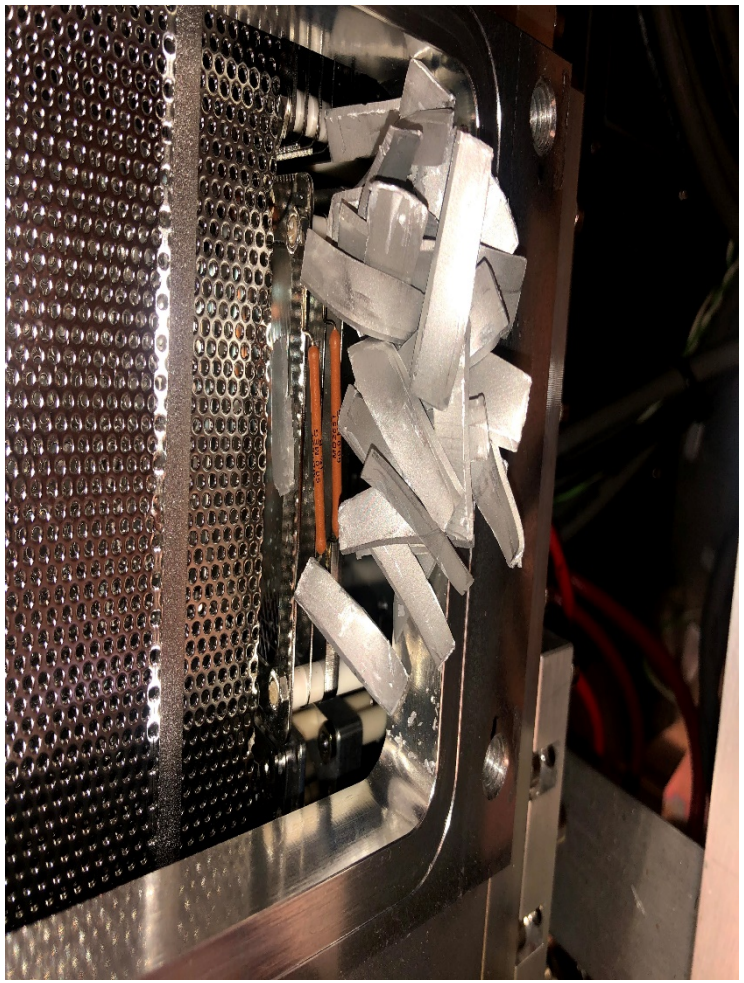
How to exchange lubricant reservoirs on HiPace80 and HiPace300 turbo pumps: https://support.aerodyne.com/knowledgebase/articles/KA-01144/en-us

HiPace80

Lubricant reservoir



“Crashed” Pfeiffer Split Flow Pump



Aerodyne Research Inc.

Attn ToF-ACSM Users and people who also have CIMS!

Pfeiffer Split Flow pumps need to be sent back to Pfeiffer for full maintenance every 5 years!!

“Crashed” Agilent Turbos

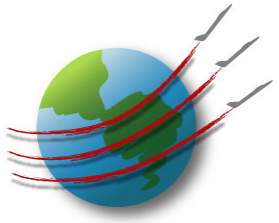
Aerodyne Research Inc.

Crashed Agilent V301 Turbo Pump

Exchange pumps are less expensive then new, but require sending back the failed pump

Sending back a “crashed” pump, Agilent will impose their “Crash Fee”

Inspect vacuum chamber for bits of metal!!



Thank you!

Any Questions?