

VACUUM PUMP FILTER & MECHANICAL CONSUMABLES SERVICING CHECKLIST

QUICK-REFERENCE FIELD & LAB VERIFICATION FORM — SOP-VAC-2021-08 QA PROTOCOL

Document ID: CHK-VAC-2021-08 | Effective Date: November 12, 2021 | Lead Technician: Kadeem Manning (Tier II Vacuum Lab Tech)

Step / Service Category	Operational Procedure & OEM Standard	Acceptance Criteria	Result & Initials
1. LOTO & EHS Isolation	Perform LOTO per OSHA 29 CFR 1910.147. Isolate electrical breaker, depressurize inlet, and don 6 mil powder-free nitrile gloves and ANSI Z87.1 eyewear.	Power isolated; 0 psig inlet pressure; PPE donned.	☐ Pass ☐ Fail Init: _____
2. Air Intake Filter Inspection	Unscrew intake housing. Inspect 5 µm paper/polyester element for dust, oil saturation, or tear defects. Clean mesh screen in ultrasonic IPA bath.	Element clean/dry; housing free of debris; mesh clear.	☐ Pass ☐ Fail Init: _____
3. Exhaust Mist Eliminator Swap	Unbolt exhaust housing. Remove saturated 0.01 µm micro-fiberglass coalescing element. Clean housing sump, clear auto-return line, install new element.	New coalescing element installed; return line clear.	☐ Pass ☐ Fail Init: _____
4. External Spin-On Filter Swap	Unscrew spin-on filter with strap wrench. Catch oil run-off. Lubricate new NBR gasket with clean ISO VG 68 oil. Hand-tighten 3/4 turn past gasket contact.	Gasket seated smoothly; hand-tight torque applied.	☐ Pass ☐ Fail Init: _____
5. Foreline Sorption Trap Servicing	Inspect 13X zeolite molecular sieve charge. Check for oil discoloration. Replace media or bake out at 200°C for 4 hrs under 1.0 L/min dry N ₂ sweep.	Zeolite media light-tan; bake-out dry N ₂ sweep complete.	☐ Pass ☐ Fail Init: _____
6. Mechanical Wear Components	Inspect diaphragm backing pump heads (annual PTFE diaphragm/flapper swap) or dry scroll tip seals (PTFE seals replaced every 8,000–10,000 hrs).	Diaphragms/flappers uncracked; scroll tip seals >0.5mm.	☐ Pass ☐ Fail Init: _____
7. Re-Assembly & Seal Audits	Inspect all Viton O-rings for cracking or flattening. Apply transparent film of vacuum grease. Star-pattern torque CF/KF flange bolts evenly.	O-rings pliable; flange bolts torqued to OEM spec.	☐ Pass ☐ Fail Init: _____
8. De-Aeration & Gas Ballast Run	Re-energize pump with inlet isolated. Open gas ballast valve for 2–3 minutes to purge de-aerated air bubbles from new oil and filter matrix.	Gas ballast valve operational; fluid de-aerated.	☐ Pass ☐ Fail Init: _____
9. Ultimate Base Vacuum Test	Connect calibrated Pirani gauge to pump inlet. Measure ultimate pressure after 5 minutes continuous operation with gas ballast closed.	Oil pumps: <100 mTorr (10–20 µm); Dry scroll: <10 ⁻² Torr.	☐ Pass ☐ Fail Init: _____
10. External Leak Check & CMMS	Execute helium mass spectrometer external spray leak check. Record Pirani base pressure, motor current draw, and serial numbers in CMMS.	He leak rate < 8.0×10 ⁻⁴ mbar·L/s; CMMS entry complete.	☐ Pass ☐ Fail Init: _____

TECHNICAL OBSERVATIONS & CMMS LOGGING

Field Notes / Replaced Part Serials / Oil Type Used:

AUTHORIZATION & QUALITY ASSURANCE SIGN-OFF

Lead Servicing Technician:	Kadeem Manning, Tier II Vacuum Lab Tech	Signature: <i>Kadeem Manning</i>	Date: Nov 12, 2021
Operations Manager Review:	Mark Tigges, Field Operations Manager	Signature: <i>Mark Tigges</i>	Date: Nov 12, 2021
QA Manager Approval:	Genevieve Lariviere, QA Manager	Signature: <i>Genevieve Lariviere</i>	Date: Nov 13, 2021