

ROTARY VANE & MECHANICAL ROUGHING PUMP

Fluid Servicing & Quality Verification Field Checklist

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EFFECTIVE DATE: Oct 18, 2021
REVIEW FREQUENCY: Annual

TECHNICIAN: Kadeem Manning (Tier II)
LOCATION: Vacuum Lab Bay 4

1. PRE-SERVICE INSPECTION & SAFETY VERIFICATION

Checkpoint / Task	Procedure & Specification	Target / Requirement	Status
1.1 LOTO & Safety Gear	Verify electrical supply is de-energized and tagged per LOTO procedure. Don 6 mil nitrile gloves and ANSI Z87.1 glasses.	Zero energy state confirmed	☐ Pass ☐ Fail
1.2 Pre-Service Oil Check	Inspect oil level and clarity through sight glass while pump is idle.	Level 1/2–3/4 full; Clear to light amber	☐ Pass ☐ Fail
1.3 Acoustic & Vibration Audit	Listen for unusual knocking, rattling (cavitation), or whining.	Smooth operation; No knocking or whining	☐ Pass ☐ Fail
1.4 External Leak Audit	Inspect casing, shaft seals, and foreline fittings for oil film or leakage.	Zero oil film/leakage	☐ Pass ☐ Fail

2. SYSTEM ISOLATION, WARM-UP & FLUID DRAINING

Checkpoint / Task	Procedure & Specification	Target / Requirement	Status
2.1 System Isolation	Close roughing valve / foreline isolation valve prior to shutdown.	Chamber fully isolated	☐ Pass ☐ Fail
2.2 Warm-Up Cycle	Operate pump for 10–15 minutes under zero-load conditions to warm oil.	Housing warm (60–80°C); Particles suspended	☐ Pass ☐ Fail
2.3 Pressure Relief	Safely bleed pump inlet to atmospheric pressure via small vent valve.	P = 760 Torr (Atmospheric)	☐ Pass ☐ Fail
2.4 Fluid Drainage	Remove top fill cap, then lower drain plug. Drain into pan; tilt pump 10–15° forward to evacuate trapped oil.	Oil completely evacuated; Drain plug O-ring replaced	☐ Pass ☐ Fail
2.5 Oil Condition Diagnosis	Evaluate drained fluid color and particulates. Record condition in CMMS.	Milky = Water; Dark = Oxidation/Heat	☐ Pass ☐ Fail

3. FILTER REPLACEMENT, FLUID REFILL & DE-AERATION

Checkpoint / Task	Procedure & Specification	Target / Requirement	Status
3.1 Exhaust Mist Filter	Unscrew exhaust coalescing element. Inspect housing; install new element with lubricated gasket.	New element installed; Housing wiped clean	☐ Pass ☐ Fail
3.2 Spin-on Oil Filter	Remove spin-on filter with strap wrench (if equipped). Lubricate gasket with fresh oil; hand-tighten.	Gasket lubricated; Hand-tightened secure	☐ Pass ☐ Fail
3.3 Fresh Oil Refill	Fill through top port with specified oil grade (Hydrocarbon ISO VG 68 or PFPE/Fomblin).	Fill to exactly 3/4 sight glass mark	☐ Pass ☐ Fail
3.4 Gas Ballast Purge	Restore power; run pump for 2–3 minutes with gas ballast valve open to de-aerate new oil.	Entrapped air bubbles eliminated	☐ Pass ☐ Fail

4. PERFORMANCE VERIFICATION & QA SIGN-OFF

Checkpoint / Task	Procedure & Specification	Target / Requirement	Status
4.1 Base Pressure Check	Measure ultimate vacuum level at isolated inlet using a calibrated Pirani / convection gauge.	Ultimate pressure <100 mTorr (10–20 μ m)	☐ Pass ☐ Fail
4.2 Motor Amperage	Measure motor current draw under ultimate vacuum using a clamp meter.	Current matches motor nameplate $\pm$ 5%	☐ Pass ☐ Fail
4.3 Post-Run Level Check	Re-check oil level after 5 minutes of operation. Top off if new filter absorbed oil.	Level stable at 3/4 sight glass mark	☐ Pass ☐ Fail
4.4 Hazardous Waste Log	Log drained oil volume in EPA waste tracking binder; transfer to drum.	EPA waste drum logged & sealed	☐ Pass ☐ Fail

TECHNICIAN SIGN-OFF:

Signature: _____
Kadeem Manning
 Tier II Vacuum Lab Technician
 Date: October 18, 2021

TECHNICIAN FIELD NOTES & CMMS ENTRY:

Pump Model / Serial: _____ Run-Hours: _____
 Base Vacuum Achieved: _____ mTorr Amperage: _____ A
 Oil Grade Used: ☐ Hydrocarbon ISO 68 ☐ PFPE/Fomblin Quantity: _____ L