

Fume Fan Troubleshooting

Mechanical Integrity checks

- 1) If the rotor fails any one of the following checks, contact Dave Williamson before proceeding with any more of the work.
- 2) Remove current guard and discard as it is ineffective.
- 3) Cut 4X4 wedges for locking the shaft
- 4) Clean all oil and debris off the top base plate.
- 5) Excess bearing clearance.
 - a) With a dial indicator and prybar, check for vertical movement at both bearings.
~ 2 mil max
- 6) Shaft runout
 - a) With a dial indicator, check for shaft concentricity, mid-shaft. < 4 mil TIR
 - b) Mic the shaft in several places. Should be to size +.000 -.003.
- 7) Pull the cap on each bearing, one at a time.
 - a) Check for metal flakes in the lube, visible damage to the bearing, and contaminated lube?
 - b) Verify the stab ring is in place and is tight.
 - c) Check that the thrust bearing is locked down on the shaft.
 - i) Use a pry bar and attempt to push bearing on the shaft, should be 0 movement.
 - d) Check bearing clearance. Should be > 1.5 to ~ 3.5 mil max.
- 8) Do the bearing housings show signs of the outer race spinning in the housing?

Impeller mounting and condition

- 1) Pull the inspection panel on the inlet side to look directly into the fan inlet
- 2) With the shaft locked with the 4X4 wedges, rock the impeller back and forth while someone looks into the inlet to see and feel any movement between shaft and impeller. **MUST BE NONE!**
- 3) Inspect the inlet shroud and cone area of the fan for dirt, clean as needed.
 - a. Must clean both the blast side and front side of both.

- 4) Clean then inspect all impeller vanes and welds for cracks and erosion.
 - a. Must clean both the blast side and backside of all vanes.
 - i. Wire brush and scraper is OK, water blaster would be better.

Fasteners and Base condition

- 1) Remove and discard all structural fasteners.
- 2) Clean oil and debris under base plate access holes.
- 3) Inspect entire base for cracks with the aid of a wire wheel and grinder.
 - a. Mark any cracks found for evaluation and repair later.
- 4) Replace all fasteners with new Grade 5 nuts/bolts and washers.
 - a. Tighten fasteners using a crossing sequence.
- 5) Use correct torque value.

Impeller Crack Inspection

- 1) Cut an inspection access port in the housing at the shaft entrance. ~ 10" by 10" should be large enough.
- 2) Clean impeller back plate all the way around the shaft and ~8" out.
- 3) Inspect back plate for cracks and mark any found.
- 4) Fabricate a plate to cover the new inspection port.
 - a. ~ 12" by 12", 10 gauge flat plate if available.
- 5) Attach to fan housing with 4, 3/8" studs (minimum) welded to the housing.

Map balance weights

- 1) Lay out rotor by numbering each impeller vane (1 - 12).
- 2) Measure the size and thickness of each weight (tape measure is fine)
 - a. Record weight data on paper (nearest vane #, weight size and inches from a vane).
- 3) Remove all weights with the exception of the factory weights.
- 4) The added weights should be cut off with a torch or grinder (make certain not to gouge the impeller).

- 5) Grind smooth.
- 6) Get the map of the rotor to Dave Williamson. I will calculate weights and add the vectors to figure the resulting weight.

CAUTION: DO NOT RESTART

IR2

Dave Williamson

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