

What Makes This Thing Shake?

Misalignment-couplings/bearings and bent shafts; why do motor bearings fail? which one fails first?

- Bad bearings
- Eccentric journals-think of it as being off-center
- Bad gears or shafts, bent or chipped teeth, normal wear and more
- Mechanical looseness
- Bad drive belts; when replacing one gear on chain drive, always replace both (same for sheave)

The mark on the belt; with unit properly locked out, place a chalk mark across multiple V belts, and rotate the unit by hand; observe what happens to the marks as the belts rotate at different rpm's

ELECTRICAL

- Rotor not round
- Eccentric armature journals
- Rotor and stator misalignment - unequal air gap
- Elliptical stator bore - egg - shaped barrel
- Open or shorted windings

AERODYNAMIC OR HYDRAULIC FORCES

- Blade pass - in water or air
- Why fan housings vibrate opposite the rotating blades
- Reciprocating forces/pistons/engines
- Back and forth, stop and go the other way

RESONANCE

- Everything runs smoothly until the second dryer is started
 - A machine's "natural" beat
 - A great way to bring down the Golden Gate Bridge
 - By the way...is air a liquid, solid, or gas?
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