

CASING VIBRATION READINGS - BASELINE DATA

NOTE: YORK RECOMMENDS BASE-LINE VIBRATION READINGS BE TAKEN AFTER START-UP. ONLY THIS WAY CAN LATER INTERPRETATIONS OF VIBRATION READINGS BE MEANINGFUL.

BEFORE PERFORMING VIBRATION ANALYSIS CHECK THE FOLLOWING:

1. Is the package mounted on a rigid concrete foundation? Refer to the Instructions to Erecting Engineer drawing 560D0124 (centrifugal compressors) or as specified in the Frick Manual S70-270 IB/FEB93 (screw compressors). Improper mounting will increase the vibration levels throughout the package.
2. Are the pipes connecting the package to the system supported correctly? (Pipes not supported properly will increase 2xRPM vibration levels)
3. Is the coupling installed properly between the motor and the compressor? (Reference the IOM)
4. Check the cold alignment. For a screw compressor, it should not exceed .004. For a centrifugal compressor, it should match the cold misalignment requirements shown in the IOM. Run the compressor until operating temperature is reached, then check the hot alignment. (Alignment procedure is covered in the IOM)
5. For screw compressors, the Volumizer or Slide Stop calibration needs to be checked. (The Volumizer potentiometer calibration is covered in the IOM). For centrifugal compressors, the capacity control must be tuned to minimize cyclic loading and unloading.
6. Load the compressor to design conditions. If this is not possible, make sure that readings are taken at the same compressor loading.
7. First, take vibration readings on the motor at both the inboard and outboard bearings. (Take vibration readings at each location in Inches per second peak, vs. a scale of 1000 Hz, then take a second set of readings in G's acceleration peak, vs. a scale of 10,000 Hz)
Note: For antifriction bearings (screw compressor and most NEMA motor frames), acceleration readings (G's) are of primary interest. On sleeve bearings (centrifugal compressors, large motors and gears), velocity readings in inches per second are of primary interest.
8. Second, take vibration readings on the compressor at each bearing location. On screw compressors, monitor both the male and female rotor on the inboard and outboard bearings. On screw compressors take three readings at each bearing location in the vertical, horizontal and axial directions. On each axis, take readings in both vibration (IPS), and acceleration (G's) spike energy. On centrifugals, measure velocity (IPS) in each of three axes on the housings as close as possible to the bearings (on the sump end, measure at the sump flange to split case junction).
9. Take vibration readings on the gearbox on centrifugal systems. Sketch the box and show the reading locations and types.

On screw compressor packages, it is common to see vibration readings on our packages at frequencies higher than input speed. This results from gas pulsation at the mesh frequency of the rotors. Mesh frequency depends on gear ratio (RXB/RXF) and number of male lobes. Refer to the VIBRATION SEVERITY GUIDELINES in Section 7 of this manual.

Compare readings to the setpoints