High-Speed Rotor Balance

During planned or unplanned maintenance, turbomachinery rotors are typically balanced at low speed before reinstallation. However, low-speed balance may not be adequate to ensure the safe and efficient operation of the rotor when it is put back in service. Repairs to the rotor or replacement of rotor parts can cause changes to the rotor dynamics that don’t appear during low-speed balance. Undetected unbalances can excite the rotor at operating speeds, causing it to vibrate excessively. High vibrations can trigger an unplanned shutdown, potentially costing millions of dollars in lost production.

Elliott’s high-speed balancing capabilities minimize vibration in any manufacturer’s rotor throughout the entire speed range. High-speed balance also relieves residual stresses introduced during the repair process and allows the rotor components to settle into place. Following a high-speed balance at Elliott’s facility, our experienced team of test engineers and technicians carefully review the results with the customer to establish that any unbalances have been corrected and will not affect the future performance of the rotor.

High-Speed Balance Candidates
Certain circumstances dictate that a rotor should be high-speed balanced before going into service. Responsible operators ship these rotors to Elliott for high-speed balance and verification:

- Problem rotors with persistent vibration issues
- Repaired or rebalanced rotors
- Improperly stored spare rotors
- Any turbomachinery critical to a production process

24-hour Turnaround
At Elliott, we know that turnaround timetables can be tight. We regularly balance rotors and ship them back to customers within 24 hours after delivery to Elliott’s high-speed balance facility.
Facility Accommodations

The Elliott high-speed balance facility has two pairs of bearing pedestals that support rotors weighing from 130 lbs. to 27,500 lbs.* Both sets of bearing pedestals accommodate either tilting pad or liner type bearings. Elliott maintains a wide range of standard size tilting-pad journal bearings. If our standard bearing does not fit your specific application, we can design and manufacture a suitable bearing. Below are the specifications for each set of pedestals.

DH4 Pedestal (Manufacturer: Schenck Trebel Corp.)
- Maximum rotor weight: (approx) 2,750 lbs.
- Maximum speed: 27,000 RPM
- Maximum rotor component diameter: 96 inches
- Maximum rotor length: (approx) 303 inches
- Journal Bearing Diameters: 2.0 to 5.0 in.

DH7 Pedestal (Manufacturer: Schenck Trebel Corp.)
- Maximum rotor weight: (approx) 27,500 lbs.*
- Maximum speed: 12,000 RPM
- Maximum rotor component diameter: 96 inches
- Maximum rotor length: (approx) 303 inches
- Journal Bearing Diameters: 5.0 to 11.0 in.

* Rotors weighing slightly more than 27,500 lbs. might also be accommodated in our facility, depending upon specific conditions. Our engineering staff will review these conditions upon request.

For more information on high-speed balance, contact your Elliott Service Sales Representative.