

FAQ

Module-13: Balancing of machines

1) What is rotor?

Any rotating body is a rotor. For example, main shaft with usual elements mounted on it, fan, cam, crank, warp beam, winding drum, take-up roller, beater, drafting rollers, perforated drum, cylinder, doffer, spindle, flyer, etc. It should not be confused with the rotor of open-end spinning machine.

2) Why the unit of 'Heavy spot' is mass times radius?

Since both the mass of heavy spot and its location from the axis of rotor affect the magnitude of its unbalance (turning moment), it is defined as mass times radius.

3) Does a single heavy spot can represent multiple voids in single plane rotor?

Yes. Each void can be represented by an individual heavy spot. All these heavy spots can be summed up into a single heavy spot by vector addition representing all the voids.

4) Is the static balancing effective for long rotor?

No. It is suitable only for single plane rotor like disc/pulley. In long rotor, shaft carries pulleys and gears at many planes. The couple unbalance usually present in the rotor can't be detected by this method. Even in the case of single plane rotor having small amount of heavy spot can't be detected easily with static balancing method using supports like knife

edge/hard rollers. All these require use of sophisticated vibration measuring instruments to locate the heavy spot and its amount.

5) Which rotor require zero run out, perfect mass distribution and very low eccentricity in mounting it in the bearing?

Bottom drafting rollers, cylinder, doffer and lickerin require zero run out, perfect mass distribution and very low eccentricity in mounting inside the bearing. In the case of former, controlling the periodic irregularity on drafted materials is the main consideration. Heavy masses of rotors, closer settings between them and need to preserve the bearings from fatigue failure are the main considerations in carding machine.

6) Is it a statically balanced rotor dynamically balanced?

Not always. For single plane rotor (disk/pulley), if it is statically balanced, then it is also dynamically balanced. But it is not so for multi-plane rotor. The converse of statement is true that 'a dynamically balanced rotor is statically balanced'.

7) After breakdown maintenance, is it necessary to measure vibration?

It is better to measure vibration if possible. Before dismantling the rotor, the location of correction weight and size and location of various fasteners must be properly marked. This ensures that they are put back at their respective locations after reassembling the machine.