

Knowledge Domain: Motors
Unit: Belts/Gears/Shafts/Coupling
Skill: Bent Shaft (Vibration and Wobbling)

Tools and Parts Required:

- 1) Electric motor to be inspected
- 2) Power Supply
- 3) Screw driver
- 4) Work gloves
- 5) Safety goggles
- 6) Wrench

Introduction

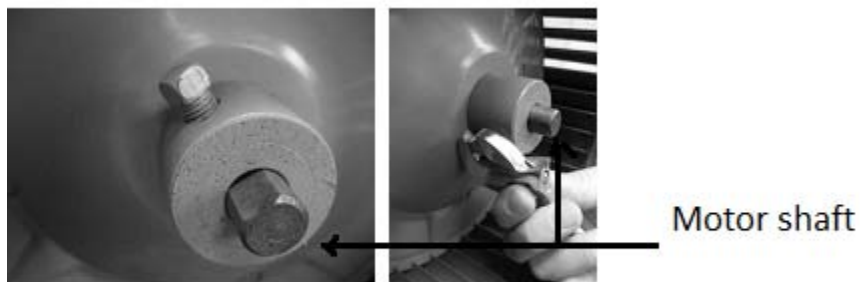
A shaft in a motor transfers the energy generated by the motor to the assembly connected to the motor. It is a rotating part. A bent shaft in motor can be caused by one or more of the following factors.

- Mechanical overload on the motor
- Damage due to improper handling
- Impact during operation
- Machine misalignment

A bent shaft increases motor vibration. A bent shaft can be responsible for the noisy operation of a motor. A bent shaft in motor should be corrected or replaced for proper operation of a motor.

Example

The pictures below show a shaft in electric motor.



Identification and Diagnosis

A bent shaft in the motor can be identified by

- Equipment vibration due to unbalance
- Damage to bearings, seals, and couplings
- Noisy operation of motor
- Noise when rotation of motor while power off

On finding these symptoms, you should take your motor to the motor specialist to confirm that the shaft is faulty or bent. You should then find a proper replacement for the shaft.

Procedure

1. Your instructor will give you the motor to be inspected.
2. Wear work gloves.
3. Connect the motor to the power supply and run the motor.
4. Listen for a hum or other excessive noise from motor. This noise can be caused by a misaligned or bent motor shaft.
5. While the motor is running, check for the vibrations in motor or wobbling of the motor. These are important indications of a bent shaft.
6. Disengage the power from the motor. If the noise continues until the motor runs to a stop, the problem can again be a bent shaft.
7. Remove the motor casing by loosening holding screws using screwdriver.
8. Look within to see if any obvious signs of wear or damage can be found.
9. Inspect the motor shaft.
10. It should be perfectly aligned in the motor.
11. If possible, remove the shaft. Roll on a flat piece of glass to determine if straight.
12. If the motor shaft looks straight, there may be another fault.
13. Take your findings and the motor to your instructor to confirm the actual fault in the motor and find out the proper replacement.
14. Your instructor must verify your findings before you proceed.

Exercise

Your instructor will give you a motor to be inspected. Follow the procedure above to determine whether the shaft has been bent. Take your findings to your instructor.

Your instructor must verify your work before you proceed.

Preventative Maintenance and Calibration

Always calibrate every medical device before returning it to use.