

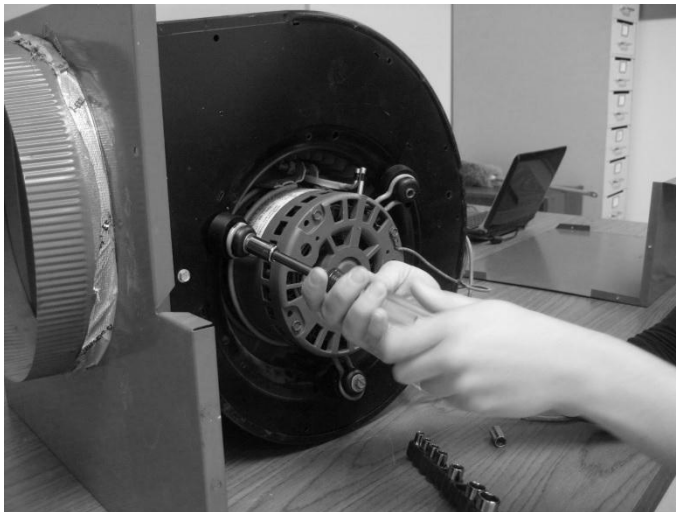
Knowledge Domain: Motors
Unit: Tightening/ Attachment/ Balance
Skill: Vibration and motor

Tools and Parts Required:

- 1) The motor to be inspected
- 2) Screw driver
- 3) Power supply
- 4) Work gloves

Introduction

There are many electrical and mechanical forces present in an electric motor. Imbalance of these forces gives rise to abnormal vibrations in the motor. Excessive vibrations in the motor reduce the efficiency of the motor. To reduce the vibrations in the motor, you have to identify and then adjust the cause of the vibration.



Identification and Diagnosis

Vibration problems in motors may lead to greatly reduced reliability. With proper knowledge and procedures, it is normally possible to quickly identify the cause of the vibration. You should inspect motors to identify such sources and symptoms of particular vibration problems.

Procedure

Wear work gloves.

- 1) Run the motor with proper power supply and no load on motor.
- 2) Look for the possible symptoms mentioned in the first column of the table below.
- 3) Refer to the following table to identify the possible cause of the vibration and the solution.

Cause of the vibration	Solution
Imbalance or misalignment	Align machine, check rotor alignment
Possible mechanical System resonance.	Remove motor from load. If motor is still noisy, rebalance motor.
Noisy ball bearings.	Replace the ball bearings, check lubrication
Loose punchings or Loose rotor on shaft.	Tighten all holdings bolts.
Objects caught between fan and end shields.	Disassemble motor end clean it. Any rubbish around motor should be removed.
Motor loose on Foundation.	Tighten holding-down bolts. Motor may possibly have to be realigned.
Coupling loose.	Check coupling joint. Check alignment. Tighten coupling

- 4) If you find any of these symptoms, disconnect the motor from power supply.
- 5) Remove the casing of the motor by removing screws in casing with screw driver.
- 6) Determine a proper solution referring to the table above and carry out the instructions.
- 7) If you can't locate the exact problem or can't find a solution in the table, there is some other problem with the motor.

Exercise

Your instructor will give you a motor to be inspected. Follow the procedure above to determine the cause of the vibrations in motor.

Your instructor must verify your work before you proceed.

Take your findings to your instructor to know the severity of damage. Then take your findings to a shop to find the proper replacement.

Preventative Maintenance and Calibration

Do not overload the electric motor. Do not subject the motor to sudden loads. This will prevent shearing of the motor shaft key. Do not overheat the motor. Keep any motor casing vents clean.

Always calibrate every medical device before returning it to use.