

**14.5 Laboratory Procedure / Summary Sheet**

Group: \_\_\_\_\_ Names: \_\_\_\_\_  
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- (1) Select the motor/bearing you want to take data from and set the toggle switch to the correct position.
- (2) Switch on the power supplies for the charge amplifier and the motors.
- (3) Set the motor speed to 3600 rpm with the aid of the strobe or retroreflective photosensor.
- (4) Look at the waveform you are getting on the oscilloscope.
- (5) Process the waveform using the Fast Fourier Transform (FFT) feature on the oscilloscope. To access this feature on an HP Digital oscilloscope, use the  $\pm$  button between the channel 1 and channel 2 buttons to access a menu that allows you to perform math on the signals. Turn on Function 2 and display the FFT menu (NOTE: this feature is available only on the HP54602A oscilloscopes equipped with the HP54657A Measurement/Storage module). Turn off the channel 1 and 2 displays (with the Channel buttons) so only Function 2 is on. This results in a clear line spectrum display. Sketch the vibration waveform and the FFT spectrum. Alternatively, acquire the data with LabView and the DAC hardware, and process it in MATLAB, MathCAD, or LabView to generate FFT spectrum plots.
- (6) Repeat the procedure for the other motor/bearing.

Compare the two sets of waveforms and spectrum plots. Try to draw conclusions about which bearing is in better shape. Submit the sketches and comments to the TA.