



# Bearing Lubrication Monitoring

Product Ref. Code: APPLLUBRICATION

## General Description:

Lubricators depend on Ultrasonic Detection to schedule greasing tasks. Over lubrication is silently killing your bearings. While too much grease is a crime with good intentions, it's still a crime. Over lubricating damages bearing seals and builds pressure on the bearing. Contamination and increased temperature levels stress the bearing, shortening its normal life span.

## Technical Description:

### Digital Ultrasonic Method

All rotating equipment produces ultrasonic or acoustic vibration regardless of the state of lubrication. By measuring and trending this energy with a digital ultrasonic detector, lubricators trend deviations from normal baselines and determine specific lube needs. A product such as SDT's Ultrawave 170 can help schedule lube cycles leading to prolonged equipment life and decreased PM costs.

Lubrication absorbs energy created by friction between the balls and raceway of a bearing. Acoustic vibration is low when the bearing is properly lubricated but as the lubrication film breaks down, this energy proportionally increases even though the bearing may not have any significant wear. This energy can be measured and trended on the digital readout of the SDT 170. An increase of 8 to 10 decibels over historical baseline indicates a need for lubrication. This is confirmed by listening to the bearing's acoustic qualities in the headphones, or by viewing the waveform on a spectrum analyzer. Bearings lacking lubrication will sound louder, with a rough growl, compared to the relatively smooth whirring noises of a well-greased bearing. The waveform on an oscilloscope will show inconsistent peaks if the bearing is lacking grease.

### The Ultrawave 170 Tells Us When to Stop Greasing

Now that we know it's time to grease, how do we know when it's time to stop? (Hint: Before the grease pours out the seals and onto the floor). It's simple. Place the sensor onto the bearing case. Take an ultrasonic measurement with the SDT 170 while listening to the sound quality in the headphones. Begin pumping the grease gun and listen. The sound quality changes as the grease reaches its intended destination. Re-take the dBuV measurement and compare. If there is no damage to the bearing, the level will return to its baseline. Store the reading in the SDT 170's internal memory for future reference and trending.

### Data Storage and Trending

The SDT Ultrawave 170 makes scheduling and trending easy. Trending ultrasonic data as part of a regularly scheduled PM provides enough information to effectively schedule lubrication requirements throughout the plant. An advanced memory capacity is built into the SDT 170 that permits storage of 1000 points per collection route. Each of the 1000 points is capable of storing multiple data such as acoustic vibration measurements (dBuV), temperature, and RPM.

The data can be kept within the SDT 170 or downloaded for trending and reporting to management. Its is an excellent Predictive Maintenance Tool that will allow you to benchmark the progress of your program for years to follow.

**Revision History:**

DATE	Version	Revision
September 1998	0.0	Written by Allan Rienstra, SDT-Canada
02 August 2000	1.0	Draft for internet and PDF file.
19 September 2000	1.1	English draft
29 Januray 2001	1.2	English version

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The information herein is believed to be accurate to the best of our knowledge.

Due to continued research and development specifications of this product can change without prior notice.

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