

Single-Point Lubricators Reduce Maintenance, Ensure Accurate Bearing Lubrication

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Automatic lubricators can be installed on most applications that require greasing maintenance. Here, a worker adjusts the lubricator on a honing machine for bearing manufacture.

Nearly 90% of all bearings are lubricated with grease and 80% of all bearing failures are lubrication-related. Therefore, a crucial aspect of preventive maintenance is ensuring that bearings are maintained at proper lubrication levels, with adequate grease to help keep out water, dust and other contaminants. But it's as important to understand how much and how often a lubricant should be delivered as it is to know the type.

Unfortunately, in many applications proper lubrication is not a high priority. This is often due to bearing inaccessibility or because bearings cannot be lubricated until the equipment stops operating. At the same time, grease amounts - both over-greasing and under-greasing - are also potential causes of bearing failures.

There are three basic bearing-lubrication methods: manually; through a centralized lubrication system; and through single-point automatic lubrication.

Manual lubrication is simple in theory, yet is not always carried out properly and reliably. Extreme diligence must be taken on the part of the maintenance team to ensure that each bearing application receives the right amount of grease at the proper operational intervals. Manual lubrication increases costs, because it requires a person dedicated to lubricating each bearing application.

Centralized lubrication systems, while more reliable, are expensive and typically not cost-effective unless numerous lubrication points are grouped in close proximity using the same type of grease.

Single-point, automatic lubrication stands out as a virtually maintenance-free lubrication device that is cost-effective and easy to install. FAG (Fischer Aktien-Gesellschaft), a Germany-based maker of lubrication systems with a U.S. branch based in Danbury, CT, offers electrochemical and motor-driven, electromechanical single-point lubrication systems.

The electrochemical automatic lubricator operates on a bladder principle, where the bladder expands inside its housing through the formation of gas. An activator screw in the rear of the unit drops a pellet into a liquid electrolyte to create up to 65 psi of pressure through a chemical reaction. This pressure causes the bladder to push a piston forward and continuously dispense grease into the lubrication point. The length of time it takes to empty the unit (which holds approximately 120cc of grease) is controlled by the use of different activating screws - offering one, three, six and 12-month lube periods - and allows for precise and continual lubrication. The activating screws, as well as the ambient temperature, determine how rapidly the chemical reaction builds up pressure and, therefore, how quickly lubricant is dispensed.

Though electrochemical units are affected by temperature (gas expands in hot conditions, for example, and will expel grease faster than in colder temperatures), the activating screw can be set to ensure that the unit works in temperatures ranging from -13 to 104 degrees F. Gas-driven units can function in virtually any position - including under water and in explosion-proof environments - but remotely mounted units can extend no more than 6 ft. from the lubrication point.

Electromechanical systems consist of a reusable, battery-powered motor unit and a replaceable lubrication canister. These systems can be set for different discharge periods and can be turned on and off with a switch. They are temperature-independent and have precise discharge periods. The motor has two dip switches: one for determining the volume of grease that can be attached to the device, and the second for regulating the discharge time period. A self-check capability issues a warning when grease is low or if there is a problem delivering lubricant.

An advantage of the motor-driven system is that it will ensure that the discharge cycle is reliable and that the same amount of grease is delivered every time. Once switched on, the motor activates the gear set, which is connected to a threaded spindle on which a piston rides. The piston quickly builds to 75 psi pressure and begins dispensing grease.

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The motor will drive any of three sizes of lubricant canisters, and can be set to different discharge periods. Electromechanical lubricators can be remotely mounted up to 12 ft. from equipment, though must be positioned between a 90-degree and a 270-degree angle, and can only be used in a non-explosive environment.

Automatic lubricators can be used in most mechanical environments that require a steady flow of grease. Relevant industrial applications exist in pulp & paper, cement, metal production, petrochemical, automotive, power generation, food processing, water/waste water treatment, HVAC, and textile, as well as facility management.

They can also be used as a smaller version of a complete central lubricating system, delivering grease to multiple points without an outside supply of energy or controls. The design and reliability of today's automatic, single-point lubricators make them an important component of preventive maintenance, offering both simplicity and long-term cost savings.

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