

Why Rotary Electric Vibrators Need Regular Maintenance

By Jason Witte

Introduction

Proper lubrication of **rotary electric vibrators** and **vibratory drive motors** is critically important to their longevity and performance. Smaller vibrator motors, 50 Frame and under, typically do not require lubrication. Their bearings are sealed and are lubricated for the life of the motor. Larger vibrators, typically 50 Frame and larger, do require regular lubrication maintenance, and it must be with the vibrator manufacturer's specified brand and type of grease. Here's what you need to know...



Lubrication Guidelines

In general, three rules apply to proper lubrication of vibratory motors:

1. Do not over-lubricate
2. Do not under-lubricate
3. Always use the specified type of grease and the amount required by the manufacturer.

Do not over-lubricate.

Over-lubrication of a vibratory motor bearing is detrimental to the life of the bearings and the function of the vibrator. Over-lubrication of a bearing will cause a few different issues for the life of the bearing. Excessive grease in a bearing cavity will cause the rollers or balls to push or disturb the normal flow of grease in an operating bearing. This movement can result in loss of energy of the vibrator and increased bearing temperature. The energy loss will cause the vibrator to malfunction. Additionally, the increased temperature can cause motor/bearing issues. Elevated temperatures will cause stator failure over time. High temperatures can also cause oxidation or degradation of the grease itself. Grease is composed of a thickener and oil. High temperatures caused by over-lubrication can cause the oil to bleed out of the thickener and literally "cook" the grease into a non-functioning hard crust. This crust can build up and prevent future lubrication from reaching the operational components of the bearing. This build-up eventually will result in failure of the rotational bearing components and damage to the raceways. Ultimately, it will lead to complete bearing failure.

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Over-greasing can also cause seal failure. A standard grease gun can produce upwards of 15K PSI in a seal. This pressure, when coupled with too much grease, can cause a number of modes of bearing failure. One mode is allowing contaminants to enter the bearing. There, contaminants will destroy the rotational components of a bearing. A ruptured bearing seal will also cause grease to propagate into the electrical components of a vibrator, which will cause a short circuit or complete stator failure.

Do not under-lubricate.

Under-greasing can be just as bad as over-greasing and the effects are similar. Lack of a protective film of oil on a bearing surface will generate excessive heat. Heat, in turn, will cause the same issues as over-lubrication—damage to the grease itself and damage to bearing components. Lack of grease in a bearing will cause open air voids to form inside of the bearing. These voids will enable the grease to oxidize and harden, which, again, causes issues similar to over-lubrication.

Use the brand and type of grease recommended by the vibrator manufacturer.

A final issue that is common with rotary electric vibrator lubrication is using the wrong grease. Bearing manufacturers specify grease that is designed to maximize bearing performance and life. When two incompatible greases are mixed, bad things can happen. One is the mixture will harden and the grease will then not release any oil onto the bearing surfaces. Alternatively, the mixture softens, all of the oil is quickly released, and the bearing is left with no lubrication protection. Both of these situations result in bearing failure over time.

Another issue associated with mixed grease has to do with grease viscosity. Different greases have different viscosity levels. Mixing grease types changes the viscosity level. Too high a viscosity level and the bearing surface can be starved of lubrication. Too low a viscosity level can result in a lesser oil film on the operational surfaces of the bearing. This will cause wear and heat, which, again, will lead to shortened bearing life. Mixing greases can also cause liquification of the grease. When this occurs, the liquid mixture can drain out of the bearing, causing two problems: 1. Lack of bearing lubrication, which leads to problems similar to those previously listed; 2. The possibility of electrical issues caused by contamination of the stator and/or internal electrical connections. Never deviate from the manufacturer's recommended grease!

Conclusion

Proper lubrication is very important for the life of a rotary electric vibrator. Without it, failures will occur and production time will be lost. Here are the key take-aways from this blog:

- Only use manufacturer-specified grease

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- Follow the manufacturer’s recommended lubrication schedule
- Always use the manufacturer’s recommended amount of grease for the specified lubrication point
- Always clean a Zerk fitting before pumping grease into the vibrator
- Pump grease slowly into a bearing. Quickly pumping a grease gun can cause seal damage and improper grease distribution
- Stop adding lubrication if a back-pressure is felt while operating a grease gun
- Specify the type of grease gun to be used to make sure the proper amount of grease is being introduced to a bearing
- Establish an employee training program for proper lubrication practices
- Consider installation of an automatic lubrication system that will guarantee correct amounts and intervals of grease introduction

Following these vibrator lubrication rules will not only extend the vibrator’s life, but also ensure maximum performance.

To learn more about the use and care of rotary electric vibrators, we suggest you also see **“FAQs”** and **“Maintenance and Best Practices.”**

Jason Witte is Service Shop Manager at AIRMATIC and has more than 16 years of experience in overseeing the daily repair operation that quickly and consistently brings Customers’ tools and equipment back to new tool standards.

Thanks for reading our post. If you would like to learn more about maintaining your vibrators – either air or electric models – or have questions about selecting a vibrator, please contact one of our Vibration Specialists at **+215.333.5600** or at **infocenter@airmatic.com**.