

Choose Lubricants Wisely

COLUMN BY GREGORY NEUENFELDT

I had the pleasure of meeting many of you at the ERA Trade Show in Atlantic City. During the technical training I had the opportunity to give a brief presentation on basic lubrication with a primary focus on grease. Many of you were not able to attend the training, so I thought it would be beneficial to share some of the basic points that were discussed:



- 1) Selection of the proper lubricant is very crucial. Factors such as load, environment, temperature, and speed need to be considered.
- 2) Greases are typically made up of a base oil, thickener system, and additives.
- 3) Older technology greases utilizing mineral (crude-based) stocks are becoming less desirable in rotating electrical applications. This is due to the inability of the grease to handle cold temperatures without thickening and the inability to handle high temperatures for very long before losing their lubricating base oil.
- 4) Advanced base stocks are being utilized to address the issues regarding temperature and wear. Synthetic greases and silicone greases are now gaining popularity as they have a much wider operating range than conventional greases. Dow Corning® 33 Extreme Low Temperature Bearing Grease has long been the material of choice for starter motor OEMs as the starter drive (overrun clutch) lubricating grease. It is a silicone grease that is well known in the industry.
- 5) The issue of starter applications in environments involving exposure to dirt and dust on the spiral spline were addressed. The solution is to use a dry film lubricant containing solids such as graphite or moly (molybdenum disulfide). Lubrication then occurs without having a grease to attract

abrasive particles.

- 6) The concern of imitation lubricating products, or “knockoffs” was discussed. Just because a grease is the same color and feels like another does not mean it will have the same performance as the original version. I’m sure you’ve all seen this same situation with hard parts that you purchase.

At the end of the presentation I shared my personal recommendation as to which type of greases should be used in various locations on starter motors. However, I did not share any specific product recommendations. The following is a brief summary with a specific Dow Corning® product recommendation:

- 1) Starter Drive/Overrun Clutch (Roller Style): As mentioned earlier in the article, the Dow Corning® 33 Extreme Low Temperature Bearing Grease is the silicone grease being used by the OEMs. This is the premium grease to use for lubricating the internal portion of the drive prior to installing the cap. We now offer another silicone grease called Dow Corning Molykote® G-5042 Silicone Automotive Service Grease. This cost-effective grease also works well in the internal portion of the drive, but does not have the extreme low temperature range of the Dow Corning® 33 (-58 degrees F vs. -100 degrees F).
- 2) Comm/Drive End Bushings, Planetary Gear Sets, and Spiral Spline: The grease that works well for these friction areas is the Dow Corning Molykote® G-1021 Synthetic Automotive Grease. It is an off-white grease that performs much better at low and high temperature extremes when compared to mineral-based greases.
- 3) Highly-loaded Bushings: Some of you mentioned the need for an extreme-pressure grease for heavy duty starter bushings. I recommend the Dow Corning Molykote® G-4700 Extreme Pressure Synthetic Grease. This is a black synthetic grease fortified with molybdenum disulfide for better wear prevention in bushings.
- 4) Spiral Splines Exposed to Dirt and

Dust: Mentioned earlier in the article, a dry film is best used here. The Dow Corning 321 Dry Film Lubricant Spray is an aerosol can containing a “lubricating paint” type of material. Within a short period after being applied, this film provides a dry lubricating film that will not attract dirt or dust particles, thus preventing wear.

It is my opinion that most automotive/light truck starter motor applications can be lubricated using two greases – the 33 or G-5042 in the drive and the G-1021 in the other friction areas. Don’t hesitate to ask if you have questions or concerns.

Distributors for these materials will be provided in next month’s issue of the *ERE*. In the meantime, if you have any questions regarding lubrication, please feel free to e-mail me at greg.neuenfeldt@dowcorning.com. Thank you and I wish you a prosperous 2005.

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