

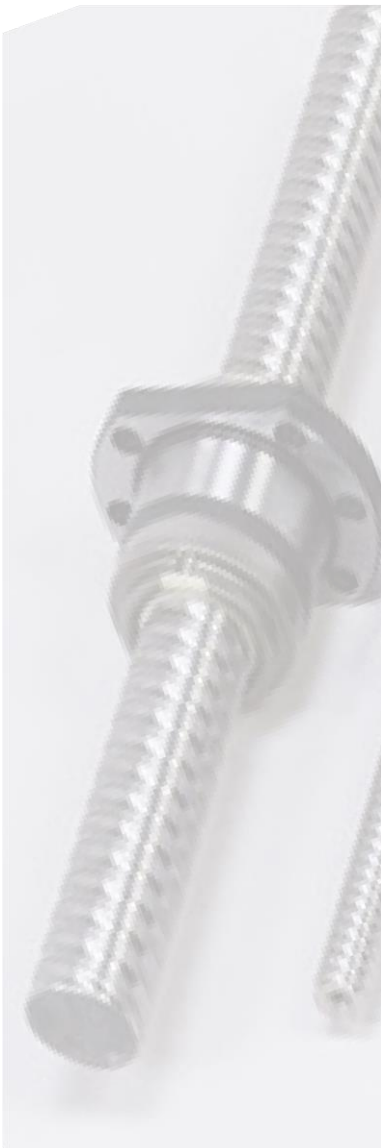


# Lubeneotes:

Design Engineer's Guide to Selecting a Lubricant

Dulub Co., Ltd. [www.dulub.com.tw](http://www.dulub.com.tw) tel : 886-7-536 5500 

## Lubricants for Ball Screws and Lead Screws



Many factors must be considered when designing or selecting a linear positioning device. Operating load, speed, accuracy, environment, and power requirements all play major roles in the design decision. Whether the engineer selects a rolled ball screw, precision ground ball screw, or an Acme lead screw, the lubricant should also be carefully considered. A properly selected lubricant minimizes friction, reduces torque, increases the screw's efficiency, and extends performance life.

**Enhancing grease performance.** High quality synthetic greases offer many performance advantages over mineral-based lubricants. Synthetic lubricants function over wider temperature ranges; they offer greater thermooxidative stability and lower volatility; and they retain the viscosity needed to provide an adequate film thickness through a specified range of operating temperatures, speeds and loads. Special additive packages can further improve a grease's natural ability to resist water wash-out and reduce wear in the presence of shock loading and vibration. Other additives can improve lubricity, to further reduce friction.

**Specifying a lubricant.** Proper lubrication plays an especially vital role in the performance and life of Acme lead screws with bronze or polymer nuts, because they are subject to higher friction and greater wear than ball screws. Even with self-lubricated nuts, lead screw performance can be significantly enhanced with light greases. Additional lubrication can also reduce heat in these units. Polymer or plastic nuts benefit from silicone-based greases and PTFE additives, which lower friction, increase efficiency and prolong performance life. Solid lubricants such as PTFE may also improve the roughness associated with the increased preloads of anti-backlash nuts.

Precision ground ball screws, where precise motion and smooth, quiet operation are desired, can take advantage of ultrafiltration technology. Pioneered by Nye Lubricants, ultrafiltration of grease and oil results in lubricants with unsurpassed cleanliness. For greases, ultrafiltration also improves the homogeneity of the thickening agent.

**Ultrafiltration.** Ultrafiltration removes virtually all particulate matter from grease and oil. For greases, it also improves the homogeneity of the thickening agent. Nye will ultrafilter any oil or grease and typically will recommend this service for precision bearing and ball screw applications to extend the bearing life.

**Selecting the right lubricant for your application.** Following is a partial list of popular Nye lubricants for ball screws and lead screws. Additional oils and greases are available to meet a wide range of application requirements. For technical specifications, evaluation samples, questions about any Nye products, or to discuss a lubricant custom-designed for your application — call us at +1.508.996.6721 or visit our website at [www.nyelubricants.com](http://www.nyelubricants.com).

Contact Nye at +1.508.996.6721  
or [contact@nyelubricants.com](mailto:contact@nyelubricants.com)

TECHNOLOGY IN MOTION™

## Lubnotes: Lubricants for Ball Screws and Lead Screws

Greases for Light Duty Ball and Lead Screws	Temp Range (°C)	Applications
<a href="#">Fluorocarbon Gel 855D</a>	-40 to 125	A PTFE thickened, light viscosity, synthetic hydrocarbon grease intended for light damping & noise reduction in gear trains, slides & plastic components. Benefits include good water resistance.
<a href="#">Rheolube® 362HF</a>	-54 to 125	A light viscosity, lithium-thickened, synthetic hydrocarbon grease, PTFE-fortified for low starting torque.
<a href="#">Fluorocarbon Gel 866</a>	-54 to 125	Rust inhibited. A PTFE thickened, light viscosity, synthetic hydrocarbon grease intended for instruments with moving plastic parts, gears & slides & lightly loaded mechanical applications where available torque is low.
<a href="#">UniFlor™ 8512</a>	-50 to 225	Chemically resistant, fluorinated, wide-temperature grease for extreme conditions.

Greases for Medium to Heavy Duty Ball Screws	Temp Range (°C)	Applications
<a href="#">Rheolube® 363HT</a>	-50 to 125	A medium-consistency, multi-purpose synthetic hydrocarbon grease.
<a href="#">Fluorocarbon Gel 866R-MS</a>	-40 to 125	EP-fortified, rust-inhibited, PTFE thickened for heavily-loaded low torque applications.
<a href="#">Rheolube® 380</a>	-50 to 130	EP-fortified, lithium-gelled, synthetic hydrocarbon & ester formulation.
<a href="#">UniFlor™ 8511R</a>	-50 to 225	Chemically resistant, rust-inhibited, wide-temperature grease for extreme conditions.

Greases for Precision Ground and High Speed Ball Screws	Temp Range (°C)	Applications
<a href="#">Rheolube® 733F, Ultrafiltered</a>	-54 to 125	A medium consistency, EP- & PTFE-fortified grease for medium-duty precision ball screws, where smooth, precise motion is needed. Good low-temperature, low-noise properties.
<a href="#">Rheolube® 374C</a>	-40 to 150	Lithium-thickened, synthetic hydrocarbon grease for high-speed applications, developed as a synthetic replacement for Exxon's discontinued Andok® C.
<a href="#">Nye Instrument Grease 732C</a>	-54 to 150	Ester-based grease for high-speed, wide-temperature, light-to-medium duty applications.

Lead Screws with Polymer Nuts	Temp Range (°C)	Applications
<a href="#">RheoSil™ 500F</a>	-40 to 200	Soft, light-duty, silicone grease. PTFE-fortified.
<a href="#">UniFlor™ 8192R</a>	-20 to 250	High-viscosity, PFPE grease. Excellent plastic & elastomer compatibility.

Greases for Vacuum Applications	Temp Range (°C)	Applications
<a href="#">NyeTorr® 5200</a>	-45 to 150	Ultrafiltered, soft consistency grease with good load-carrying capability & very low vapor pressure characteristics for high-vacuum applications. PTFE-thickened to enhance low-temperature performance & reduce noise.
<a href="#">NyeTorr® 5350</a>	-55 to 250	Ultrafiltered, chemically resistant, wide temperature grease for extreme conditions. Low vapor pressure. Good wear resistance & endurance.

Nye Lubricants, Inc. 12 Howland Road Fairhaven, MA 02719 USA Ph: +1.508.996.6721 NyeLubricants.com

Because we cannot anticipate or control the many different conditions under which this information and our products may be used, we cannot guarantee the applicability of this information or the suitability of our products in any individual situation. For the same reason, the products discussed are sold without warranty, expressed or implied. Statements concerning the possible use of our products are not intended as recommendations to use our product in the infringement of any patent.