

## THE DESIGN ENGINEER'S GUIDE TO SELECTING A GEAR BOX GREASE

Lubricants engineered to improve the performance and reliability of high-load, speed, and temperature gear box applications.





# GEAR BOX GREASES

INDUSTRY PROVEN FOR HIGH-PERFORMANCE APPLICATIONS

GRAPH KEY:



Rheolube® 380



Rheolube® 380-G1



Rheolube® 363AX-1



Rheolube® 363AX-1

----- General Purpose Synthetic Grease

## Gear Greases as Critical Design Components

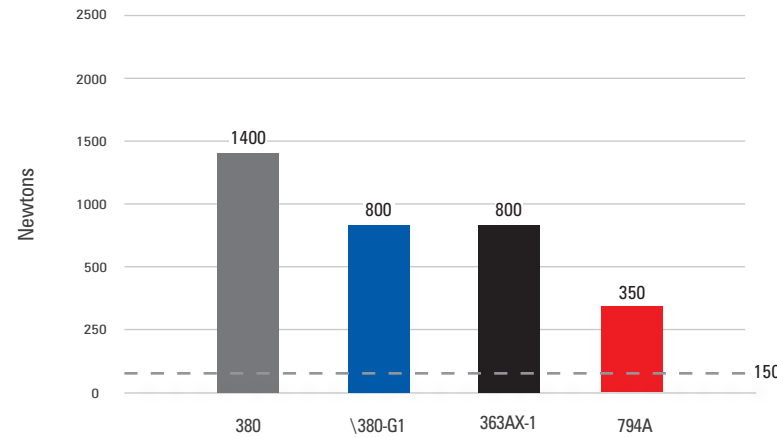
Gear box performance has been consistently focused on mechanical efficiency, load handling capacity, and reliability. Recently, there has been additional demands to develop lighter weight, more durable and compact designs.

Gear boxes are often used for high-load, speed and temperature applications. Elevated speeds and loads often increase temperature, which can impact the life of the lubricant and ultimately the performance of the device. Many devices cannot utilize an oil bath to remove heat and wear debris; grease can provide the necessary lubrication to reduce friction and wear, extending the life of the gear box. Nye's gear greases were designed to perform under these mechanically demanding conditions.

In addition to common metal gear applications, recent advances have allowed the use of lighter weight plastic gears for some applications. Plastic housings have also become more prevalent to support lighter weight design initiatives.

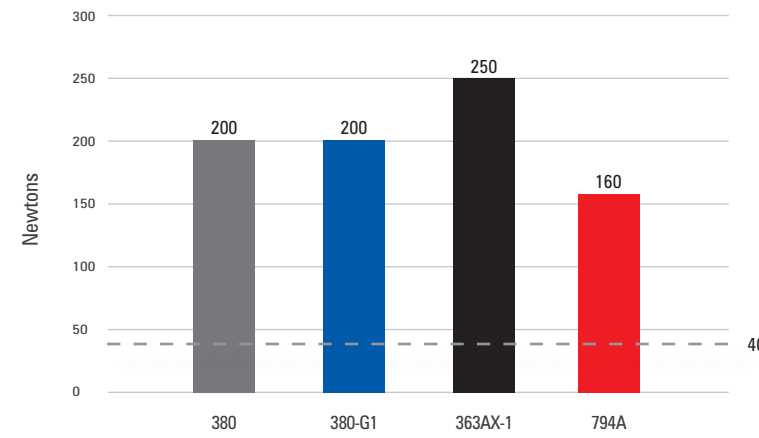
Nye Lubricants has a complete line of synthetic, plastic compatible gear greases formulated specifically to address requirements for wear minimization under high-load conditions.

### Extreme Pressure Capacity – SRV OK Load



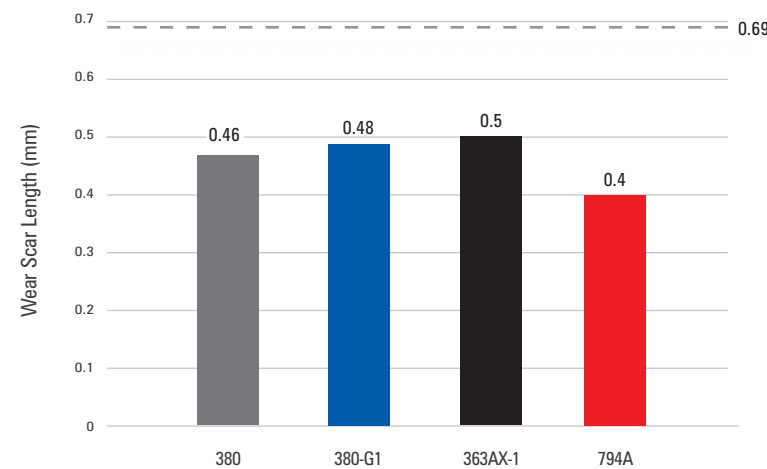
**Test Method:** ASTM D-5706, The test load is increased every 2 minutes until the specimens weld together, indicating lubricant failure.

### Weld Point (WP) – 4-Ball EP



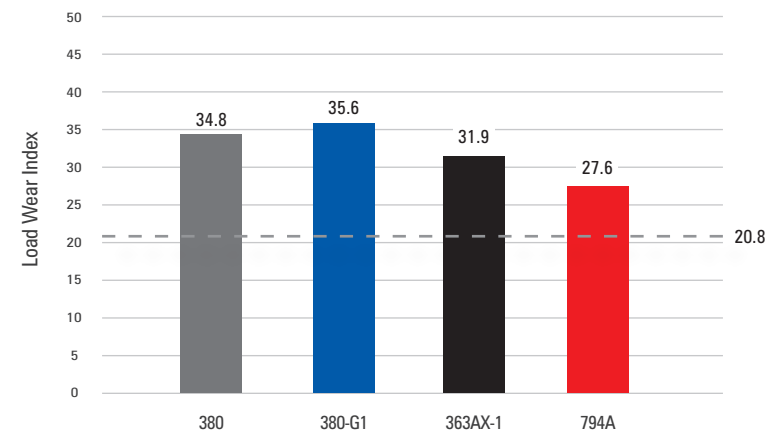
**Test Method:** ASTM D-2596, Measures the lowest applied load on Four-Ball Extreme Pressure (EP) at which the sliding metal surfaces seize and then load.

### 4-Ball Wear



**Test Method:** ASTM D-2266 for Wear Preventative Characteristics of Lubricating Grease (Four-Ball Method)

### Load Wear Index (LWI)



**Test Method:** ASTM D-2596, Creates an index of the ability for a lubricant to minimize wear at applied loads. It is based on a calculation of wear at non-seizure loads on the way to determining the weld point.

## Proven Performance

Nye's ability to innovate, adapt, and develop solutions is as much in evidence today as it has been at any time during our history. For more than 20 years, Nye greases have been used to improve the performance and reliability of mechanically demanding applications with synthetic lubricants.

In one case study, a market leader who specializes in power tools for the DIY consumer and commercial trades, reached out to Nye to help lubricate gears in their angle grinders. These angle grinders operate at high speeds of up to 8500 rotations per minute and can generate a great amount of friction from regular operational use. Our lubricant successfully prevented the gears in their gear box from wearing prematurely, thus increasing the overall lifespan of their angle grinders.

In addition to solutions for professional power tools, Nye high-performance greases continue to be used in other demanding gear box applications such as outdoor power equipment, off-road machinery, aviation, heavy-duty trucks, industrial robotics, and automotive applications. Nye greases are available in a variety of packaging sizes for both high-volume automated dispensing and small manual dispensing, such as field repair activities.

We have a track record of using our extensive technical knowledge to provide customer-focused solutions for demanding applications.

## The advantages of lubricating gears and gear boxes

- Reduce Friction
- Improve Efficiency
- Control Temperature Rise
- Decrease Gear Wear
- Extend Operational Life
- Diminish Noise Emission



# How to Select Your High-Performance Gear Grease.

Nye Lubricants has a complete line of high-performance gear greases designed specifically to address application requirements for gear lubrication, high-load operation, temperature limits and material compatibility.

<b>380</b>	NLGI Grade 2 Grease optimized for metal gears, high loads and long life.
<b>380-G1</b>	NLGI Grade 1 Grease optimized for metal gears, high loads and long life.
<b>363AX-1</b>	Ideal for use when plastic housing materials are required. Designed for improved adhesion to gears.
<b>794A</b>	Higher viscosity gear grease with ultra low oil separation.

## Properties of Rheolube® 380, 380-G1, 374A, & 363AX-1

LUBRICANT PROPERTIES	380	380-G1	363AX-1	794A	Test Method	
Base Oil	PAO/Ester	PAO/Ester	PAO	PAO/Ester	–	
Temperature Range	-50 to 130 °C	-50 to 130 °C	-50 to 125 °C	-20 to 150 °C	–	
Kinematic Viscosity	40°C	34 cSt	37 cSt	41 cSt	440 cSt	ASTM D445
Viscosity Index	137	130	145	105		ASTM D2270
NLGI Grade	2	1	2	2		–
Oil Separation	(24h, 100°C)+	4.5%	18.6%	2%	0.6%	ASTM D6184
Plastic Gear Compatibility*	Better	Better	Better	Better		–
Plastic Housing Compatibility*	Fair*	Fair*	Better	Fair*		–

\*Esters are compatible with most plastic gear materials but may not be compatible with other plastics / elastomers. Nye offers Material Compatibility Testing.

## Nye Today: Our performance is reflected in the value we bring to our customers.

Nye Lubricants is a leader in the innovation, formulation and provision of synthetic lubricants, enabling and improving breakthrough products and critical new technologies. We bring proven experience, deep technical knowledge and customer focus to solve our customers' toughest challenges, adding tangible value to products in a wide range of industries and applications.

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