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Greases available to the trucking industry are not created equal, and many are formulated for specific applications. Just reading the information on the label on the container may not be enough to determine if the greases that are being used by our customers for maintenance is compatible with greases used in Eaton clutch products. The following information will provide details of what to look for when selecting a grease for Eaton Clutch Release Bearings, effects on the product when incompatible grease is used during servicing, and information about the Roadranger Grease EP-2.

Document contains:

- Eaton Clutch Grease Service Requirements
- Information for when incompatible greases are used with Eaton clutch products
- Roadranger® Grease EP-2 information

## What to look for when selecting grease

- Look for these 3 things:
  1. Grade
  2. Thickener Type
  3. Performance
- Greases are considered “compatible” when these parameters don’t change when mixed:
  - Grade (Consistency) – If the grease becomes softer
  - Lower Heat Resistance – If the grease melts sooner
  - Decrease in Additive Performance – If the grease does not protect as well

**Note: Even though incompatibility is not predictable, certain types of thickener combinations often have been found unsatisfactory and are recognized as incompatible.**

## Eaton Clutch Grease Service Requirements

1. Grade: National Lubricating Grease Institute ( NLGI ) #2
2. Thickener Type: Lithium Complex
3. Performance: NLGI LB/GC
4. Eaton Clutch Service Lubrication Requirements: Proper greasing is the key to clutch longevity. Proper grease intervals purge the debris from the grease and provide new grease for bearings. Consult the appropriate Clutch Service Manual for a detailed explanation of the lubrication techniques.

## Incompatible Grease usage

The use of a grease that is not compatible with the Roadranger® Grease EP-2 Lithium-Complex grease can result in premature release bearing failures.

## General Information

# Grease Compatibility – Eaton Clutch Products

Failure to properly lubricate the bearing/bushing will result in bearing and bushing failures.

- Regular grease service intervals are required to purge the debris from the grease.
- If not maintained, the debris can become hard and prevent the flow of grease when serviced.

Pictured are examples of failures due to incompatible greases:

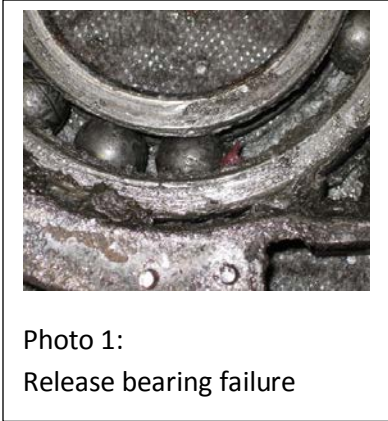


Photo 1:  
Release bearing failure



Photo 2:  
Grease contaminated with debris



Photo 3:  
Debris close-up

Photo 1 shows the release bearing where the majority of the grease has disappeared. This is likely due to using grease with a lower operating temperature. When the release bearing gets hot, the grease “melts” and does not provide adequate lubrication.

Photo 2 shows a release bearing with grease that is contaminated with debris. It is very important to grease at regular service intervals to purge the debris from the bearing.

Photo 3 is a close-up of the debris in the grease. The debris is damaging to the bearing and will cause premature failures.

### Grade (Consistency)

The NLGI grade of grease refers to its consistency. It is measured by dropping a weighted cone into the grease per ASTM D217. The depth the cone penetrates into the grease is called the consistency. The NLGI grade refers to a range of depths the cone penetrates into the grease.

The chart to the right is a helpful reference to understand the consistency and appearance of a grease based on the NLGI Grade.

NLGI GRADE	APPEARANCE	CONSISTENCY
000	Fluid	Cooking oil
00	Fluid	Applesauce
0	Very Soft	Brown mustard
1	Soft	Tomato paste
2	Moderately Soft	Peanut butter
3	Semi-fluid	Vegetable shortening
4	Semi-hard	Frozen yogurt
5	Hard	Smooth pate
6	Very hard	Cheddar cheese spread

### Grease Thickener Type Incompatibility (Observations of failed clutch release bearings)

## Grease Compatibility – Eaton Clutch Products

- Lowered Heat Resistance occurred when mixing two incompatible thickener types. By lowering the heat resistance of the grease mixture, the clutch release bearing failed prematurely.
- The data below show the maximum operating temperature of two greases and of a 50/50 mixture of the greases:
  - Lithium Complex Type Grease: 486°F
  - Calcium Sulfonate Type Grease: 486°F
  - 50/50 mixture: 310°F
- The reduction in the maximum operating temperature of the mixture shows that the two greases are not compatible.

**NOTE: Calcium Sulfonate Type Greases are not compatible with Lithium Complex Types. Use of Calcium Sulfonate Type Greases will reduce the life of Eaton Clutch release bearings.**

### Performance

NLGI developed designations and performance descriptions for service grease categories. These categories are defined per ASTM D4950 and include the lubrication of wheel bearings and chassis components.

An “L” designation includes such things as ball joints, steering pivots, universal joints and other chassis components, and a “G” designation includes wheel bearing greases. Each class (L and G prefix) are further divided into categories based on service needs. The most demanding service category is designated by defining both classes (L and G) and the highest alphabetical nomenclature for the class. The GC-LB service category defines a multi-purpose grease suitable for both chassis and bearing service applications.

The symbol below is provided from NLGI to designate the service performance quality of a grease. It is not always found on the packaging. Often, a reference to the specification is found on the product datasheet.



L – Designation is for chassis components

G – Designation is for bearings

# Grease Compatibility – Eaton Clutch Products

## Roadranger® Grease EP-2

This grease is multi-purpose, high performance NLGI Grade 2 lithium-complex grease used for a variety of on and off road applications, where the use of conventional lithium grease is limited.

### Application

Roadranger Grease EP-2 is highly recommended for lubrication of U-joints, tripods, drive shafts, clutch release bearings, release sleeve bushings and brakes with high temperature conditions. Its excellent low temperature behavior makes it suitable for extreme climate conditions around the world. Roadranger Grease EP-2 has excellent anti-friction properties in order to reduce shudder. It is also suitable for machinery used in construction, dredging, forestry, marine, and mining where this type of grease is required.

### Benefits

- Meets NLGI GC-LB (Chassis and Wheel Bearing) requirements
- Roadranger® U-joint and clutch requirements
- Improved extreme pressure and rust protection
- Copper and iron corrosion resistance
- Extended bearing life
- Provides greater “wash off” resistance
- Performs in high and low temperatures
- Excellent elastomer compatibility
- Recommended operating temperatures between -40°C (-40°F) and +150°C (302°F)

### Datasheet for Roadranger Grease EP-2

Characteristics	Test Methods	Roadranger® Grease EP-2
NLGI Grade	ASTM D-217	2
Thickener Type		Li-Complex
Color		Blue
Texture		Smooth
Dropping Point, °C	ASTM D2265	274
Base-Oil Viscosity, cSt	ASTM D445	
100°C		15.6
40°C		150
Timken Ok load, kg (lbs)	ASTM D2509	50 (110)
Four Ball EP	ASTM D2596	
LWl, kgf		74
Weld Point, kg		620
Four Ball Wear, scar diameter, mm	ASTM D2266	0.41
Fretting Wear, mg	ASTM D4170	5.1
Rust Test, rating	ASTM D1743	Pass
Copper Corrosion, rating	ASTM D4048	1A
Wheel Bearing Leakage, grams	ASTM D4290	4.0
Bearing Life Performance, hours	ASTM D3527	140
Water Resistance at 80°C, % removed	ASTM D1264	3.9
Oil Separation, % loss	ASTM D1742	1.8
Low Temperature Torque @ -40°C, Nm	ASTM D4693	9.7
Elastomer Compatibility	ASTM D4289	
ASM 3217/3B CR Type 70 hrs @ 100°C		
Volume Change, %		14
Hardness Change, Durometer-A, pts		-6
ASM 3217/2B NBR-L Type 70 hrs @ 150°C		
Volume Change, %		10

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