

LINCOLN



Automatic lubrication solutions for the mobile on-road market

Helping maintain and sustain commercial vehicles in the mobile on-road market



Proven, reliable and effective



A Lincoln Quicklub system can reduce your average cost per mile by \$0.013. Use the return on investment (ROI) worksheet on page 11 to determine your savings.

Industry average cost to operate your vehicle: \$1.43 per mile*

* Source: C2005 American Trucking Association with estimated inflation rates for fuel, salaries and equipment

Lincoln has been providing efficient and reliable lubrication solutions for all types of vehicles since 1910. Fleet owners, maintenance managers and operators trust Lincoln's quality and service because they know that a Lincoln system will help maximize their profitability.

The company has been awarded more U.S. patents for lubrication equipment than all other competitors combined. With so many innovations in vehicle lubrication, and a worldwide network of knowledgeable distributors, Lincoln will fit your vehicle with a lubrication system that will help increase its life span and lower your operating costs.

Automated lubrication – the right choice

Lincoln enables fleet managers to keep their trucks properly greased and extend preventive maintenance (PM) intervals.

Why use automated lubrication?

- Reduce PM man hours
- Extend PM intervals
- Decrease component failures
- Reduce road failures
- Increase truck usage
- Extend truck life
- Reduce tire wear
- Improve fleet safety and reliability

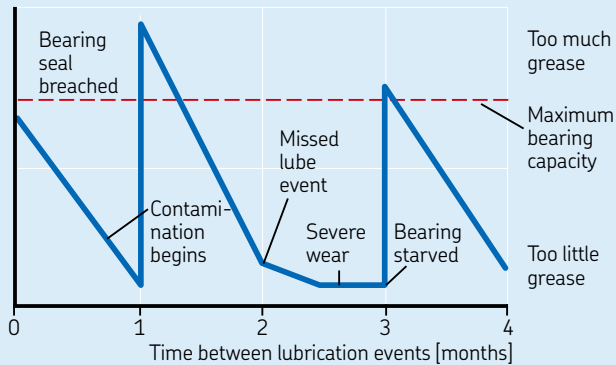
Other hidden benefits!

- Increase your fleet size with your existing maintenance team
- Reduce the impact from the shortage of qualified mechanics
- Handle the increased maintenance requirements of new emission engines
- Frees up mechanic's time for inspections and other repairs
- Increase the life of brake linkages

A little grease more often is better

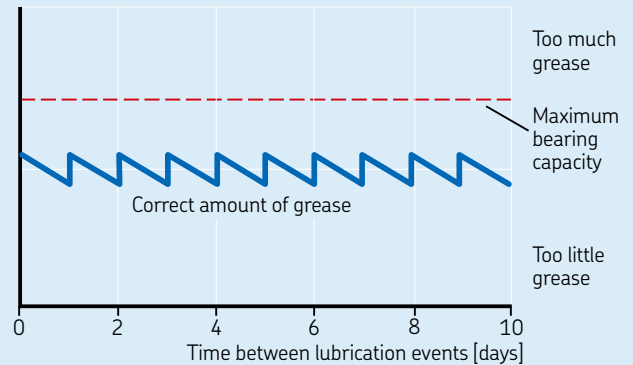
Manual lubrication cycles

Amount of lubrication dispensed



Lincoln Quicklub cycles

Amount of lubrication dispensed



Grease viscosity matters

Lincoln is one of the few suppliers in the industry capable of pumping #2 grease.

Most automated lubrication systems pump light-viscosity, semi-fluid grease. Heavy greases are recommended and specified by the leading chassis component original equipment manufacturers.



“Semi-fluid greases (NLGI grades 00, 000) may perform adequately for quite some time in wheel ends and at some non-critical chassis points on the vehicle due to constant replenishment of the grease. However, ArvinMeritor does not recommend the use of semi-fluid lubrication systems for the brakes, universal joints and other critical components that have been validated for solid grease lubrication (NLGI Grades 1 and above.)”

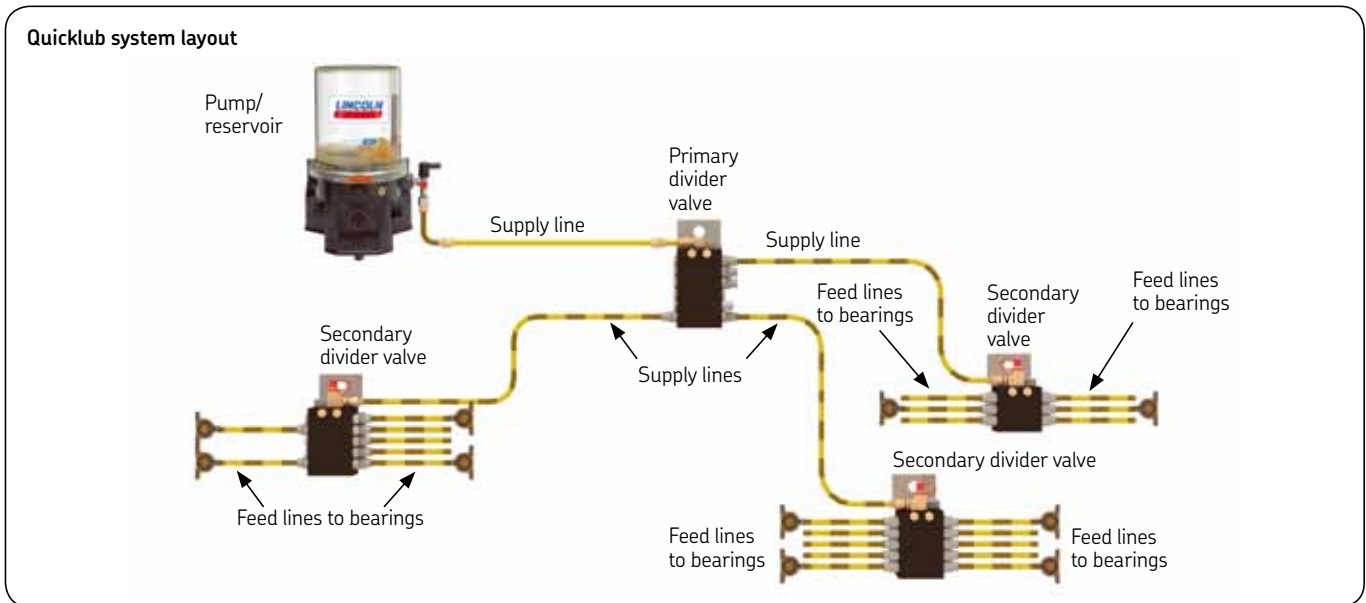
ArvinMeritor, grease expert
Myrtis Hartry – Heavy Duty Trucking

* In extreme weather conditions, a cold-weather formulated grease is required

Why choose a system that pumps #2 grease?

- Stays in place, protecting and lubricating longer
- Eight times better lubricant film retention rate than #0 grease
- Provides the best grease seal performance for keeping out contamination
- Less affected by wash out than lighter greases
- Retains full body even during hot days
- Standard shop grease is convenient and inexpensive.
- Lubricant dripping from the chassis is greatly reduced.

Lincoln's Quickclub system is the answer



Features and benefits of a Lincoln automated lubrication system

- System lubricates while the truck is in operation, which is the best way to lubricate bearings.
- All systems have high-pressure capability to ensure #2 grease can be used in almost all climates.
- Positive displacement metering valves ensure all bearings receive the proper amount of lubricant every time.
- If the pump is damaged, the system can be cycled manually by attaching a grease gun to the integrated grease fitting at the top of the valve.
- A blocked lube point can be detected at the pump.
- Lincoln offers three reservoir choices (2-, 4- or 8-liter) to fit your application and maintenance interval needs.
- The adjustable timer is built in the pump to reduce installation time.
- Optional alarm systems are available with in-cab monitoring/notification.
- Centralized (without a pump) systems are available for trailers and other applications.

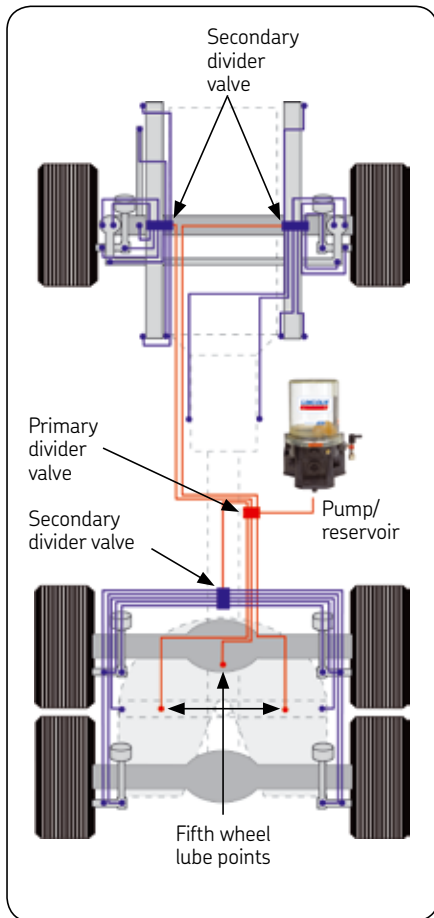
System description

- The Lincoln Quickclub system is a positive displacement progressive system, not a system based on the path of least resistance.
- A typical system includes an automated electric pump, patented Lincoln SSV metering valves, supply and feed lines, hose/tubing and mounting hardware.
- Lincoln's Quickclub pump typically combines a two-liter lubricant reservoir, a pump and timer.

System operation

- The Quickclub pump turns on automatically by an internal adjustable timer while the vehicle is running.
- Grease flow starts and lubricant is delivered to the primary divider valve through the supply line hose.
- The primary divider valve distributes grease in measured amounts to the secondary valves.
- The secondary valves further proportion the grease and deliver exactly measured amounts to the bearings according to their specific needs through feed line tubing.
- The pump shuts off when the set run time has been reached.

Typical Quicklub system layout for chassis



Truck chassis applications

A Lincoln automated lubrication system delivers small measured amounts of #2 chassis grease to each bearing at predetermined intervals. Each system is custom designed based on the application and number of lubrication points.



Front right and left secondary valve feeds

Upper and lower king pin, tie rod ends, camshaft bushing, slack adjuster, spring and shackle pins, steering arm for severe duty and manual transmission cross shaft

Primary valve feeds

Front left and front right valves, rear secondary valve, fifth wheel faceplate; can also be used to feed drop axle valves, tag axle valves, roller bearing and chute valves for cement trucks and other attachments



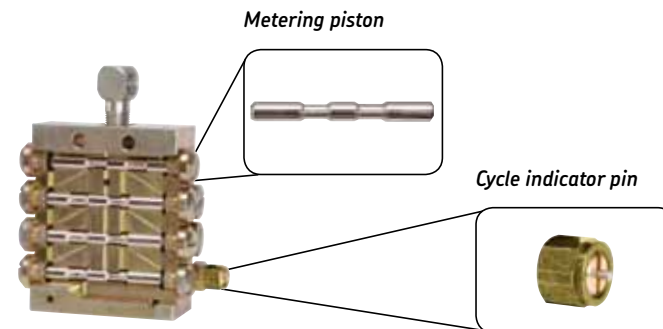
Lincoln Quicklub 203 pump with a 2-liter reservoir and SSV divider valves

Rear secondary valve feeds

Camshaft bushings, slack adjusters and fifth wheel pivots

The Quicklub patented SSV divider valve is more than a simple drilled manifold. Positive displacement allows internal metering pistons to distribute precisely measured amounts of grease to each lube point – every time.

The cycle indicator pin on the primary valve provides a visual confirmation that the divider block is working properly.



SSV divider valve cut-away

Clean, professional installations

Lincoln Quickclub systems are installed by trained, professional Lincoln distributors. The high-quality installations include heavy-duty components that are designed to handle tough applications.

- The Lincoln mobile on-road distributor is factory trained to ensure systems are designed and installed properly.
- Lubricant feed lines are wrapped with "spiral wrap loom" to protect against the elements and road debris.
- Installations are non-intrusive and allow for easy access of chassis components by maintenance personnel.

Pump and primary valve

The heart of Lincoln's automated lubrication system is the Quickclub 203 pump and the divider valves that dispense the grease.

The pump is typically mounted on the frame rail of the truck chassis for easy reservoir refilling and inspection.

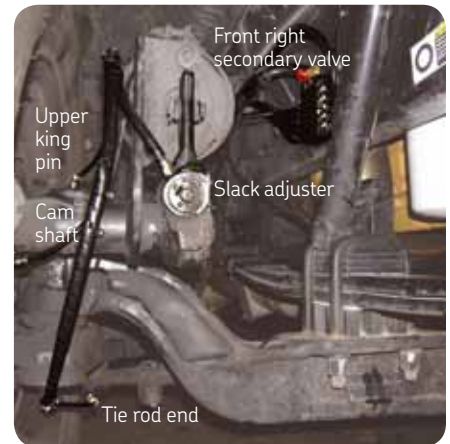
The primary divider valve is located in close proximity to the pump which allows for quick inspection and verification of system operation.

Secondary divider valves are located closer to the lubrication points in the front and rear of the vehicle.

Front-end

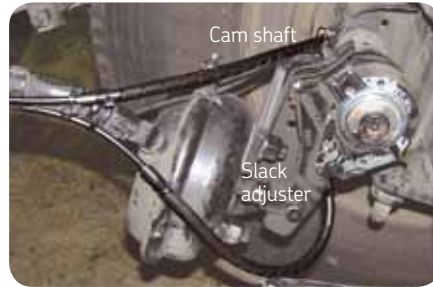
Quickclub automated lubrication systems lubricate the following front-end lube points:

- kingpins (top and bottom)
- tie rod ends
- transmission cross shaft
- spring shackle pins
- cam shaft bushing
- slack adjuster
- steering arms



“Our local Lincoln distributor provides excellent product knowledge, installation capability and service support for both the systems they install as well as OEM-installed systems.”

– Waste Management



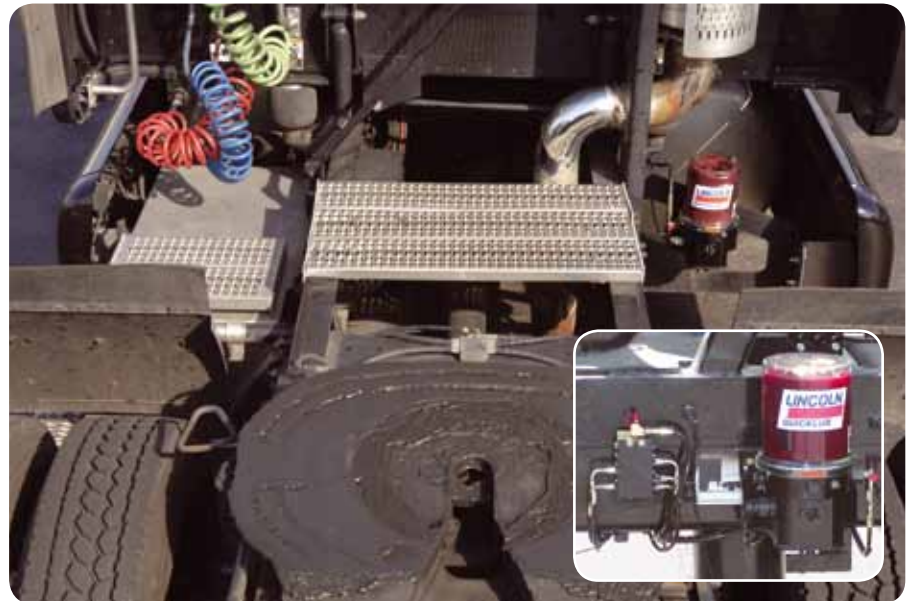
Rear-end

The rear secondary divider valve is mounted on the chassis near the rear of the truck and delivers grease to the following points:

- brake cams
- slack adjusters
- fifth wheel pivots (optional)

Fifth wheel

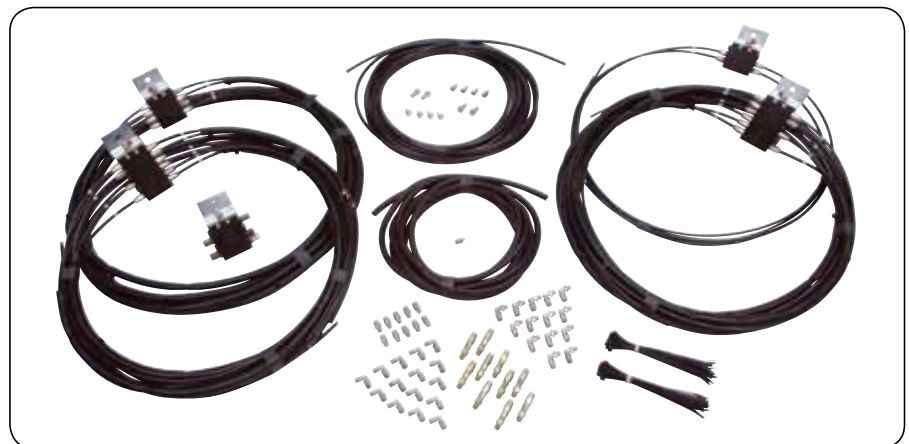
The primary valve ensures the fifth wheel maintains the proper lubricant film, reducing component wear and improving tire life.



Quicklub kits

All Lincoln Quicklub automated lubrication systems are available as a comprehensive kit to minimize installation time. Most can be installed in eight man hours or less.

These systems are available at the OEM level or can be professionally installed on site.



Vocational trucks – lubrication above the chassis



Lincoln systems not only lubricate chassis, but also body components that are subjected to high wear on vocational trucks.

Municipalities, fleet operations, construction trucks, military equipment and transportation companies are constantly under pressure to save money, increase productivity and make every investment in vocational vehicles last longer. A Quicklub system can be part of the chassis lubrication system or installed as a stand-alone system for the body.

“The Lincoln Quicklub system has reduced both service time per preventive maintenance (PM) and mixer truck downtime. This has helped them get all PM service work done and handle more trucks per day without having to add more technicians.”

– Aggregate Industries
Bobby Van Sykes
Fleet and purchasing manager





“Prior to Lincoln’s Quickclub systems, we replaced tie rod ends every 18-24 months. We now replace very few of these components since we started using the Quickclub system.”

– Caldwell Freight Lines
John Reid

Applications

Below is a partial list of typical applications that can effectively utilize Quickclub systems:

- waste trucks – side, front and rear loaders
- concrete trucks (mixers and pumpers)
- dump trucks (snow plows)
- sewer cleaning trucks
- low-boy and heavy-duty service trucks
- truck cranes and boom trucks
- street sweepers ... and more!

Whether you need a fully automated lubrication system or a single point kit to condense lubrication points on your vehicle, Lincoln can provide effective solutions that save time and lower a vehicle’s direct operating costs.



This sewer cleaning truck had over 40 lubrication points located on the truck body. With Lincoln’s Single Point Kit System, they only have five grease fittings to service.



Trailers require lubrication too

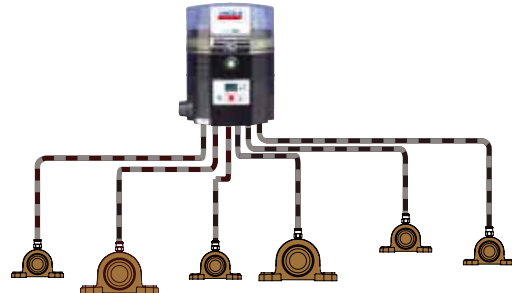
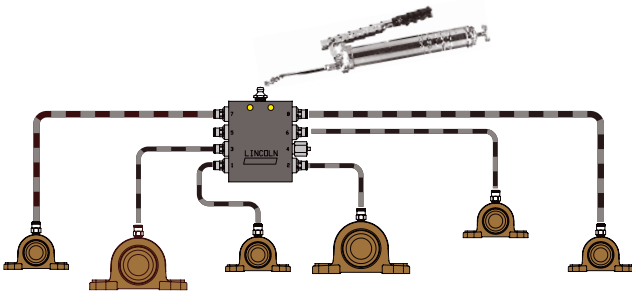
Two types of trailer systems – single point systems or automated systems?



Lincoln's single point kit brings together all trailer lubrication points into one – saving valuable maintenance time



Lincoln's Quickclub automated lubrication system eliminates the need to manually lubricate under the trailer



You make the choice

- Single point systems
 - Typical for most trailers
 - Cost-effective system designed to service up to 18 points from a single grease fitting using the SSV divider valve technology
 - Delivers precise amounts of lubricant, fully monitored with the divider valve's cycle indicator pin
- Automated systems
 - Accurate lubrication without the need for continuous power
 - Controller card that keeps track of the time a trailer is in use by monitoring its vibration
 - Delivers the precise lubrication an OTR trailer requires exactly when it is needed by using the power of the trailer's brake lights
 - The system keeps lubricating each time the trailer's brakes are applied until its controller card adds up the "on times" and determines that the pre-set time for a complete lubrication cycle has been reached



Similar to truck chassis, brake cams, slacks and spring shackle pins are covered

Return on investment worksheet

An example of a typical return on investment for a standard commercial vehicle for a five-year period

Five year truck ownership period	Cost parts/ labor	Auto lube savings	Savings %	Repair labor hours	Hour savings	Your numbers
Manual greasing (50 lube events x \$35 per event)	\$1,750	\$1,575	90%	40	36	_____
Replacement components and rebuilds						
1 King pin set at \$115 per set plus 8 hours labor per repair	\$515	\$386	75%	8	6	_____
2 Tie rod ends at \$57 per set plus 2 hours labor per repair	\$314	\$236	75%	4	3	_____
1 Drag link at \$194 each plus 1 hour labor	\$244	\$183	75%	1	1	_____
6 Slack adjusters at \$80 each plus 2 hours labor per repair	\$1,080	\$810	75%	12	9	_____
6 Brake cams at \$194 each plus 2 hours labor per repair	\$1,764	\$1,323	75%	12	9	_____
2 Spring pins & bushings at \$131 each plus 2 hours labor per repair	\$462	\$347	75%	4	3	_____
Steering tire replacement (at 100,000 miles replacement)	\$6,900	\$690	10%	12	1.2	_____
5th wheel rebuild	\$0	\$0				_____
Subtotal of replacement components and labor	\$13,029	\$5,549	42.6%	93	79	_____
Lost gross margin (2 x repair hours x \$0.42/mile x 60 mph) ¹⁾	\$4,687	\$3,425				_____
Total cost for manual lubrication and projected savings						
Five-year period	\$17,716	\$8,974				_____
One-year period	\$3,543	\$1,795				_____
Cost of a lincoln auto grease system installed ²⁾	\$2,500					_____
ROI = (system cost/annual savings) x 12 months				16.37 mos.		_____
Total savings per mile (auto lube savings (\$8,974) / 600,000 miles				\$0.015/mile		_____

This is based on a class 8 truck (with 32 lubrication points) traveling 120,000 miles per year and fully loaded. Repair labor rate at \$50 per hour

Based on this financial model, every 147 trucks saves 2,000 maintenance hours or potentially one mechanic.

¹⁾ (Truck out service is estimated double the repair hours times gross profit per mile times 60 mph)

²⁾ System price may vary by region, number of lubrication points and application

Make the move to Lincoln



- Want to completely outsource lubrication maintenance? We can do that, too.
- Special financing needs? Let us know what's necessary.

We can help you improve your profit by driving down parts, labor and inventory costs, while improving garage thru-put.

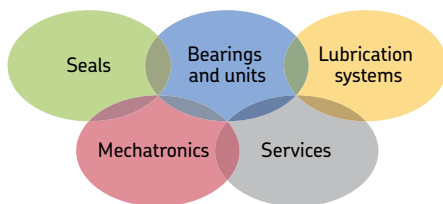
Local distribution is here to help

Lincoln's network of full-service distributors is the best in the industry. They can install a Quickclub system on a typical on-road vehicle in about eight hours.

From system design, and inventory, to installation, warranty and repair, their highly skilled sales and servicemen are trained to take care of all your needs in a timely manner.

Visit our web site www.lincolndrives.com for your nearest authorized sales and service representative and international contact information.

- Need to try it? We will develop a trial program structured around your needs.
- Installation – OEM, dealer or your yard, let us know what works best for you.
- Training – Tell us what is needed and we'll help make it happen.
- Parts availability and warranty support are as close as your local distributor.



The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

"We have reduced our cost per mile on our coast-to-coast trucks by extending our preventive maintenance intervals with Lincoln Quickclub systems using our standard NLGI-2 chassis grease."

– Zimmerman Truck Lines
Shane Zimmerman
Fleet Maintenance Manager



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SKF PUB LS/P2 12451 EN · December 2011 · FORM 442962

