LINCOLN

Lubrication solutions for the rail industry

Clog-free lubrication systems for gauge face, restraining rail and top-of-rail

- Exact metering of lubricant delivered to every lubrication port
- High-pressure/low-volume systems excel even in extreme weather conditions
- Rail wear and noise reduction

SKF

What sets Lincoln apart from others

The issues

- Clogged lube ports
- Uncontrolled and uneven grease placement on the rail
- Lack of support
- System power loss due to insufficient battery reserve

Competitor's wiper bar – clogged ports divert grease to the ONLY open lube port

Benefits

- **Free** track survey to pin point trouble spots and recommend placement of lubricators.
- "No-clog" lubrication via high-pressure pumps.
- Exact metering of grease ensures each lube port receives the same small amount of grease every time without having to continuously "dial in" the system.

The solution

- Lincoln's lubrication systems for top-of-rail, gauge face and restraining rail

Lincoln's wiper bar – open, clean ports

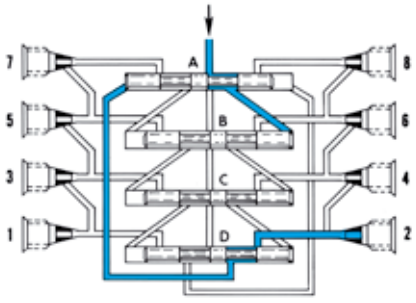
The value of Lincoln

Lincoln is continually providing solutions and satisfying our railroad customers with innovative lubrication equipment and pumping systems for wayside, top of rail, metro and on-board applications. For more than 100 years, companies from multiple industries all over the globe have relied on our technical and quality leadership, our world-class manufacturing and customer service and our vast network of qualified distributors, field support and service professionals.

Lincoln	The competition
• **Pump design** – High-pressure, low-volume pump effectively covers the rail with just enough lubrication, no waste. – No clogging of lubrication ports. • **Battery and power system** – 24 V system provides more storage capacity during periods of extended cloudiness. • **Grease application** – Positive displacement a constant, metered volume of grease is delivered equally to each lubrication port regardless of back pressure and/or cold weather conditions.	• **Low-pressure, high-volume pump floods the rail and requires personnel to constantly try and "dial in" the system.** • **Low-pressure pump cannot force debris from a clogged port.** • **12 V system draws more current and results in a less efficient electrical system.** – The controller will shut down the system if no power is available. • **Path of least resistance** – Uneven grease application especially during cold weather.

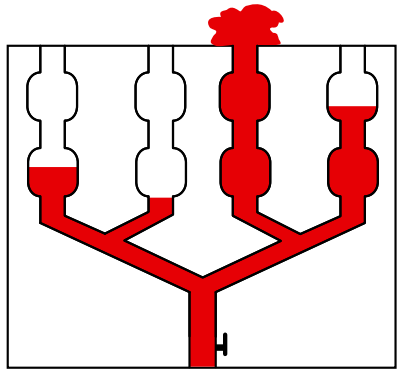
Lincoln's wayside lubrication systems effectively apply a consistent and controlled volume of grease to the rail and holds that grease in place allowing the wheels to grab and carry it around the track curve.

Lincoln systems with PTP divider block



Pump to port (PTP)
Fluid pressure from the pump pushes each piston to displace fluid to one port.
Cavity displacement is the same at varying temperature and pressure resistance.
Each port receives equal amounts of grease.

Other systems



Path of least resistance
Fluid follows path with least pressure resistance.
Higher volume needed to achieve constant flow especially in colder weather.
Grease is not evenly distributed to the rails.

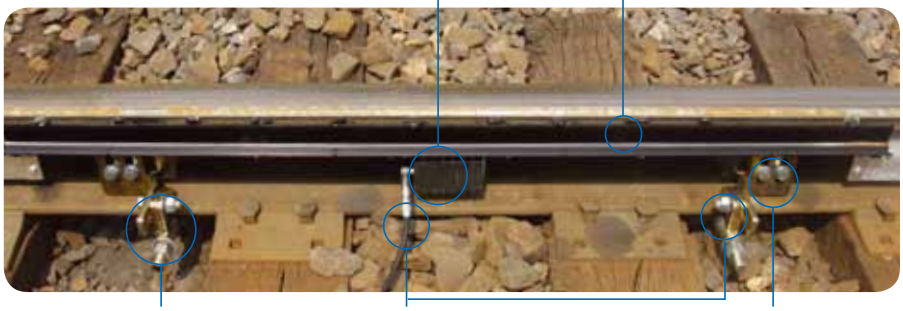
Applications

Gauge face lubrication reduces wheel flange friction

In curved sections, the high rail (outside) wheel runs on the gauge face. This contact results in semi-continuous friction that significantly causes wear to the wheel flange and gauge face. The strong contact friction between wheel and rail surfaces causes noise emission in the track curve.

PTP SSV divider valve ensures each port receive the same volume of grease.

Each port is capable of generating 4 000 psi (276 bar) ensuring grease delivery in cold temperatures and automatically keeping ports open and free of debris.



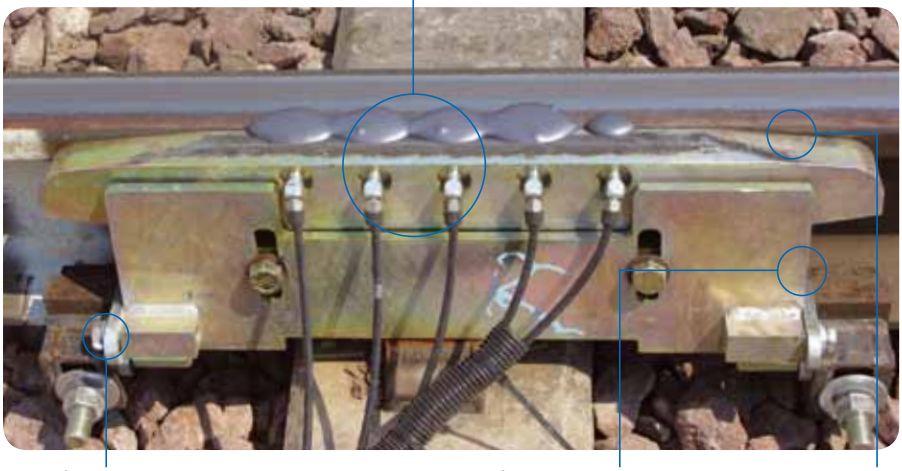
Upgraded brackets allow for easy reinstallation after rail grinding.

Bars can be dismantled by only removing two bolts and one hose.

Universal mounting bracket easily adjusts to install the wiper bar on most rail sizes.

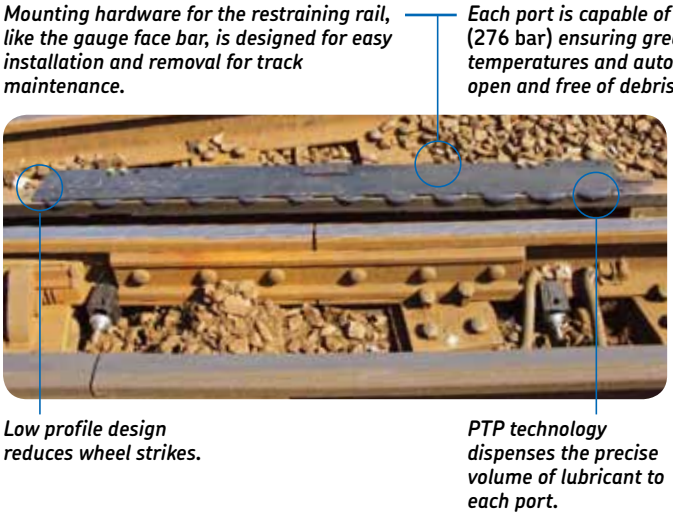
Places grease high on the gauge face so it can be carried by passing wheel flanges and avoiding grease migration to the top of the rail. One gauge face system can supply several curves in succession.
Brush holds excess grease to be picked up by the next train which minimizes grease waste.

Wiper bar is tucked under the rail to eliminate wheel strikes.



Top-of-rail (TOR) protection against the slip-stick effect

The path of the inner curve wheel is shorter and the wheel runs toward the rail middle causing tension. When the tension is greater than the frictional forces, the inside wheel jerks and slips. This slip-stick effect causes the inner wheel to shudder, resulting in screeching and wear on the running surface. This effect is especially prominent on very tight track curves.



Reduces noise emission from restraining rail friction

Restraining rails exist to support trains from derailing in curved-track situations. When the train begins the turn, the outside flange on the high rail side makes contact with the restraining rail. The friction from the contact creates high noise emission. Lincoln's restraining rail lubrication system protects the restraining rail from the friction and greatly reduces the noise emission.

System components

Reservoirs

Lincoln offers two standard-sized reservoirs for lubricant containment

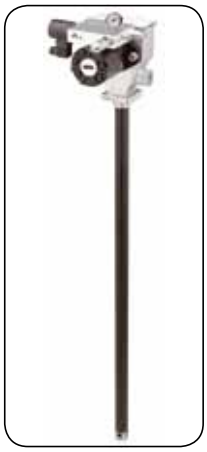
- 800 lb. *(363 kg)* reservoir
  Relocated lid opening provides easy access with bulk- or manual pail-fill methods. Increased number of pallet access points for ease of installation and transfer. Environmentally safe, double-wall polyethylene material design capable of containing and entire reservoir leak.
- 200 lb. *(91 kg)* reservoir
  Smaller metal reservoir typically used in metro applications. Also available in carbon or stainless steel.
- Custom reservoirs
  Available upon request.

Controller

Lincoln's digital controller precisely controls the amount of material applied to the rail. The exact volume of material dispensed can be measured and recorded. The RS232 port can be used to transmit and receive system information.

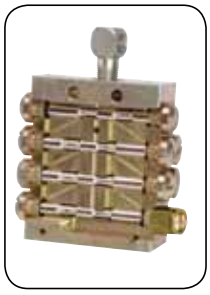
Pumps

- FlowMaster pump
  High-pressure, 24 VDC two-stage pump proven in harsh industrial applications.
- Standard pump
  For gauge face, TOR and restraining rail.
- P653S pump
  Designed for compact rail lubrication systems that are intended for minimal consumption. This pump is also used in rail head conditioning systems especially in municipalities with public rail transport.



Retractable wheel sensor

Robust design protects against damage from debris or ice. Non-contacting, magnetic flux sensor mounts in a protected location below the rail head out of the path of wheel flanges.



SSV divider valves

More than a drilled manifold block, SSV valves incorporate a series of metering pistons which accurately dispense lubricant from each outlet, overcoming back pressure of up to 4 000 psi *(276 bar)*. Available with lube ports ranging from six to 22 and available in carbon steel or 303 stainless steel.

Solar panel

170 W solar panel is designed to provide 20 plus years of life in extreme temperatures and low-light conditions. The solar controller ensures a proper battery charge and disables the system if the batteries reach an unsafe level.

Model	Description
85562	Gauge face, single track, solar*
85563	Gauge face, dual track, solar*
85564	Gauge face, single track, AC
85565	Gauge face, dual track, AC
85613	Top of rail, single track, solar*
85614	Top of rail, dual track, solar*
85615	Top of rail, single track, AC
85616	Top of rail, dual track, AC
274815	Restraining rail wiper bar
274813	Restraining rail mount
274170	Rain/snow sensor
276652	Center GF rail mount
274639	Inside track mat 59 in. x 50 ft. *(150 cm x 15,3 m)*
274640	Outside track mat 19 in. x 50 ft. *(48,3 cm x 15,3 m)*
274157	Inside track mat 59 in. x 100 ft. *(150 cm x 30,5 m)*
274158	Outside track mat 19 in. x 100 ft. *(48,3 cm x 30,5 m)*

* 274541 solar panel also required

Lincoln is the total solution for friction problems

While the competition produces a variety of products, Lincoln only focuses on lubrication solutions for friction wear. From the rail, to the machines that maintain the rail, to the service vehicles that deliver grease to the reservoirs and the shops that service those vehicles, Lincoln's state-of-the-art technology is prominent in every area.

System house dealers and field support

Our system dealers plan your installations to suit your specifications with the exact combination of Lincoln components that you need. They then build the installations at your operation with experienced technicians or work closely with your personnel to ensure that everything goes smoothly.

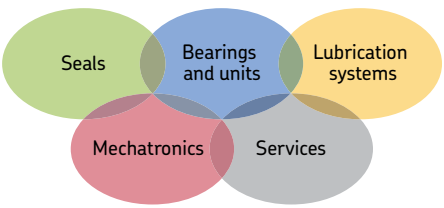
All dealers have the complete range of product, monitoring devices and accessories in stock and meet our exacting demands with their specialized knowledge about products, installations and service.

Service garage equipment (pumps, reels and meters)

Auto lube systems on movable bridges

Bulk grease and lube trucks

Auto lube systems on maintenance-of-way equipment



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.

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