FLO COMPONENTS LTD

AUTOMATIC LUBE SYSTEMS FOR THE RAIL INDUSTRY

- √ Gauge Face, Restraining Rail & Top-of-Rail Lubrication
- √ Exact metering of lube delivered to every lube port
- √ High-pressure, Clog-free Systems for All-Year Usage
- √ Rail Wear & Noise Reduction

FLO COMPONENTS STATIONARY OR WAYSIDE RAIL LUBRICATION SYSTEMS

A drastic increase in wear is prevalent on rails, wheels and switches on highly strained areas of track networks. Typical wear patterns in curves include slip-deformation on the inner rail (low rail) and lateral wear on the outer rail (high-rail). Also, noise emission is greatest through curves. Stationary or Wayside, lubrication systems from FLO Components for rail flanks and rail heads lower noise emission and considerably reduce wear on rails, switches and wheels, reducing maintenance costs and increasing the lifespan of the rail network. FLO's high-pressure systems enable the usage of NLGI 2 class grease, which offers exceptional adhesion to the rail and wheel as well as better lubrication properties.

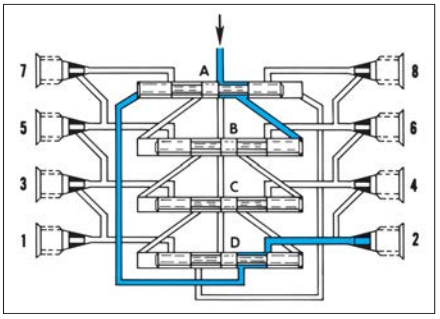
SYSTEM OPERATION

FLO's Lincoln wayside lubrication systems apply lubricant with a wiper bar that is flanged to the rail profile. The lube is accurately applied to the contact surface such as the gauge face or top-of-rail. Sensors detect and count the axles of the approaching train and initiate a lube event. The duration of the event which determines the lube supply, is adjustable and can be set to the applicable conditions. A high-pressure pump supplies the wiper bars with an exact metered amount of lubricant. The lube is picked up by the train's wheel circumference and evenly distributed on the rail contact area. Depending on the lubricant and application (gauge face or top-of-rail lubrication), the distributed lube is evident for kilometers beyond the lubrication station.

Lincoln wiper bar = open, clean ports

Benefts

- High-pressure, low-volume pump ensures there is no clogging of lubrication ports
- System effectively covers the rail with just enough lubrication = no waste
- 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
- Positive displacement design of divider block ensures a constant, metered volume of grease is delivered to each lube port regardless of back pressure or cold weather conditions

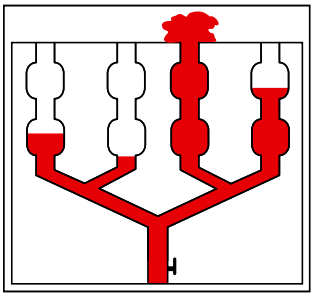


Lincoln progressive-type PTP divider block

Features of the Lincoln Pump to Port (PTP) Divider Block

- Progressive-type, positive displacement design
- 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

Non-Metered Flood-Type System

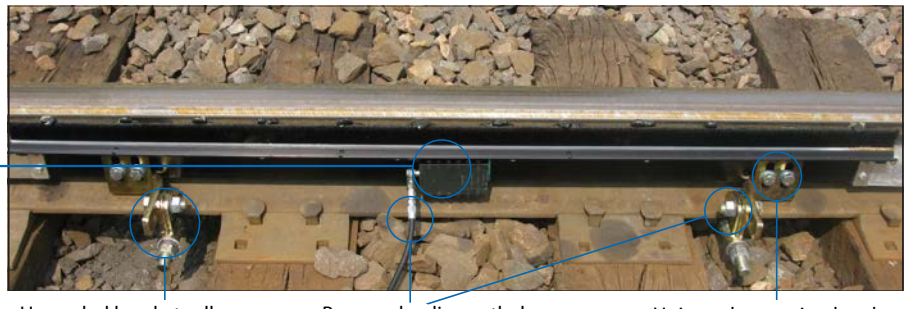


Lube follows path of least resistance

- Consists of low-pressure, high-volume pump, tee fittings and applicator ports - no distribution blocks.
- High-volume pump floods the rail and requires personnel to constantly try and "dial in" the system.
- Higher volume needed to achieve constant flow especially in colder weather = wasteage
- Low-pressure pump cannot force debris from a clogged port.
- Fluid follows path of least pressure resistance = uneven grease application, especially during cold weather.

Flood-type wiper bar = clogged ports divert grease to the ONLY open lube port

- PTP SSV divider valves ensure each port receives the same, precise 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 minimies grease waste.
- Wiper bar is tucked under the rail to eliminate wheel strikes.

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.

- Mounting brackets allows bar to be folded out of the way for routine track maintenance.

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. Applying a minimum amount of grease on the top-of-rail reduces both screeching and slip deformation.

- Low profile design reduces wheel strikes.
- Mounting hardware for the restraining rail, like the gauge face bar, is designed for easy installation and removal for track maintenance.

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. FLO's restraining rail lubrication system protects the rail from friction and greatly reduces noise emission.

SYSTEM COMPONENTS

Reservoirs

- 800 lb. *(363 kg)* reservoir Lid opening provides easy access with bulk- or manual pail-fill methods. Environmentally safe, double-wall polyethylene material design capable of containing an entire reservoir leak.

- 200 lb. *(91 kg)* reservoir Smaller metal reservoir typically used in city applications. Also available in carbon or stainless steel.

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 intended for minimal consumption. Also used in rail head conditioning systems, especially in municipalities with public rail transport.

Controller

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 to and from any hand-held device.

Solar Panel

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

SPECIALTY RAIL LUBRICANTS

Lubcon Specialty Grease & Oil

Lubricant combinations in rail applications must meet high safety requirements and be simultaneously eco-friendly and easily biodegradable. In close collaboration and joint development-projects with OEMs, vehicle and rail owners, operators and maintenance companies, Lubcon has successfully developed lubricants which are water and oxidation-resistant and show excellent load and adhesion properties, tailored to meet the various requirements in the public transportation and railway sectors.

Super Lube® Railroad Lubricant

Super Lube® RailRoad Grease is a NLGI #1 grade grease specially formulated for track side lubricators used to reduce the noise and wear associated with wheel flange to curved rail sections on light rail systems. Rated H-1 by the USDA and NSF for incidental contact with food or potable water, Super Lube® RailRoad Grease offers an environmentally friendly alternative to the typical curve grease.

THE FLO DIFFERENCE

FLO has been the leading distributor for Lincoln in Ontario since 1977 and has received the Lincoln "Distinguished Distributor Award" which is awarded annually for outstanding sales performance to one or two distributors in North America, in 1999, 2002, 2005, 2007 and 2010. We are committed to "Meeting Customers' Needs Better" with qualified, well trained people who focus at making us the best at responding quickly, at installing professionally and at providing quality customized lubrication solutions for all our customers - done right the first time. Our clients understand that they're not dealing with "just another lube equipment supplier". They consistently choose FLO because they know they can trust and rely on FLO to take care of them, quickly and professionally. It is with this level of expertise and commitment that FLO will design, install and maintain an automatic rail lubrication system for you.

ISO 9001:2015 CERTIFICATION
Intertek

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For Total Lube Solutions,

GO WITH THE FLO!