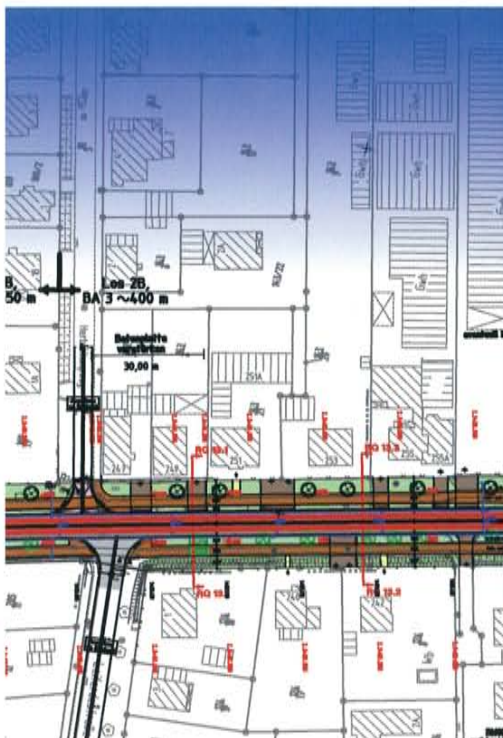
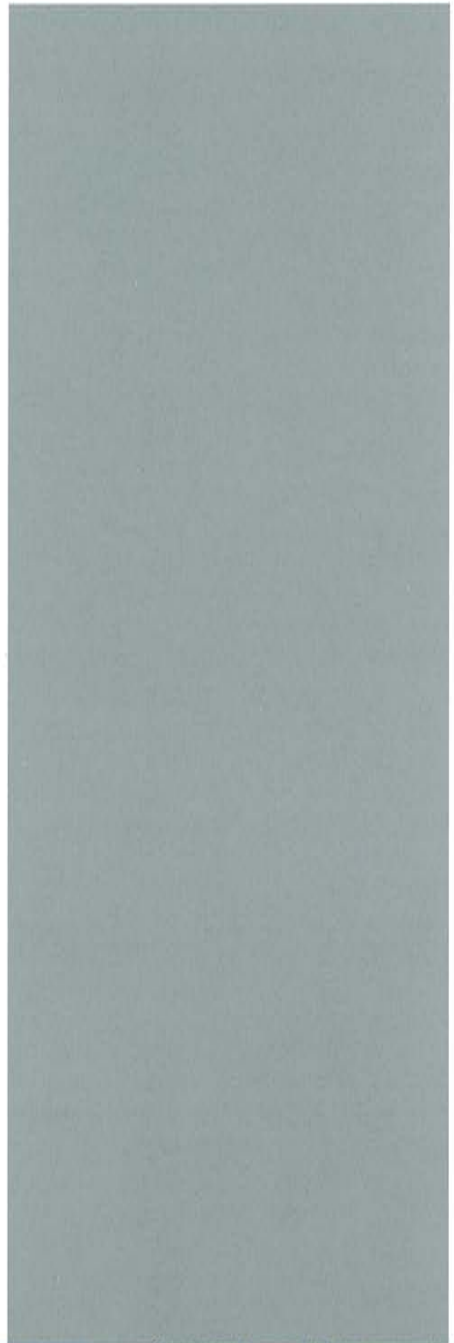




moklansa
E3S

Electronic
Rail Lubrication System



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Wear and Noise in Curves and Points

Points and curves are the nerve centre of railway traffic. Increased wear on rails, switch tongues, check rails and wheels is accompanied by noise pollution which can at times be considerable. Intelligent lubrication of the guiding surface, leading edge and, if necessary, a thin film applied to the rail head offers some remedy.

Wear to wheels, rails and switch tongues can be substantially reduced by the installation of the **moklansa E3S**. Maintenance work, such as build-up welding of the rail flanks or reworking of the tyre is reduced, while extending the life of the tracks and points.

Effective noise reduction is to the benefit of residents and helps to improve the acceptance of rail traffic.

Controlled Lubrication

moklansa E3S - The Electronic Rail Lubrication System has established itself over the years in continuous use at DB AG (Germany Railways Ltd) as well as rail operators, local traffic services and the industry at home and abroad. The basic principle is compelling: lubricant precisely dosed to specific requirements is applied exactly between the wheel flange and the rail flank, the passing wheel picks up the lubricant, rolls it over and thus distributes it automatically along the critical points of wear.

This process comprises three system components:

- The installation core controls the lubrication process and contains the interchangeable grease reservoir.
- The sensor station registers the approaching rail vehicle and notifies the control centre in the installation core, which then triggers the lubrication process.
- The lubrication path with lubrication channels or lubrication ridges applies the lubricant to pinpoint accuracy between flange and rail flank.



The EBA approval certificate is available for the **moklansa E3S** (EBA = German Federal Railway Office).



Optimized for Grooved and Vignol Rails

The **moklansa E3S** system is suitable for all common rail profiles and wheel flange types.

Lubrication channels

Thanks to a special drilling technique, the rail can be equipped with lubrication channels, the outlets of which are located precisely on the rail flank, leading edge or on the rail head. Lubrication ridges are integrated at the check rails, if required later on, for wheel lubrication. In addition, mobile (feedable) lubrication ridges are available. They can be used in combination with grooved rails, even on covered tracks.

By aligning the lubrication channel connections towards the centre of the track, high-pressure pipes can be safely installed under protective cover strips, in inspection boxes or in connector boxes.

Bus System

Due to the high reaction speed of the bus system, there is almost no delay between process activation (grease request by the rail vehicle) and the emergence of grease at the grease channels. In combination with a minimum quantity output, the multiple lubri-

cation of each and every bogie of a vehicle with the smallest of grease quantities has been solved in the best way.

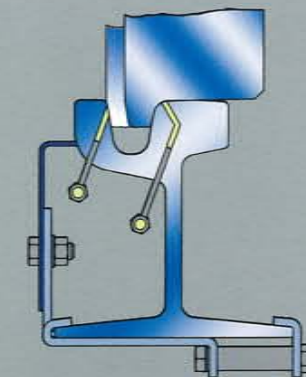
Multiple lubrication paths can be supplied with track lubricant at any time or simultaneously, as well as separately. Due to the long distances between lubrication path and installation core (up to 80 metres), double-track curves, complete Y-tracks or entire track harps are supplied with track lubricant by only one installation core.

Grease switch

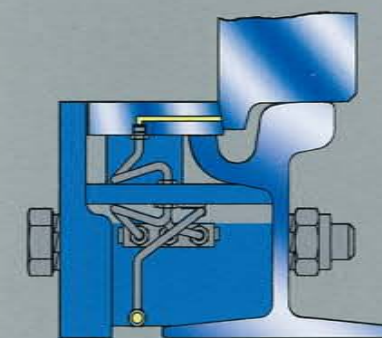
Systems with grease switch are suitable for branches, e.g. the tip of an Y track. Here too, an installation core supplies the lubrication paths for two tracks independently.

Film Lubrication of the Track

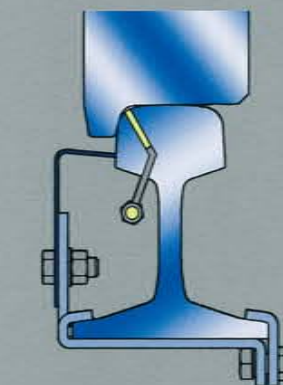
The precise dosage by the **moklansa E3S** enables even the most accurate moistening of driving surfaces. In combination with the lubrication of the rail flank, the moistening of the contact surface of the inner curved rails enables quiet driving in bends. Before starting the moistening of the contact surfaces, brake tests according to BOSTrab are recommended.



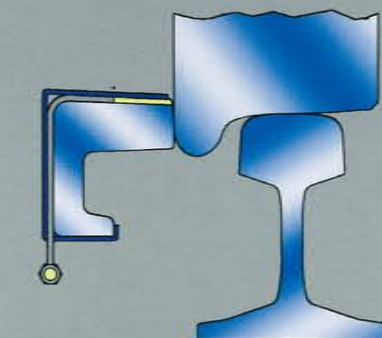
Arrangement of lubrication channels on grooved rail profile



Arrangement of the mobile lubrication ridge for wheel lubrication

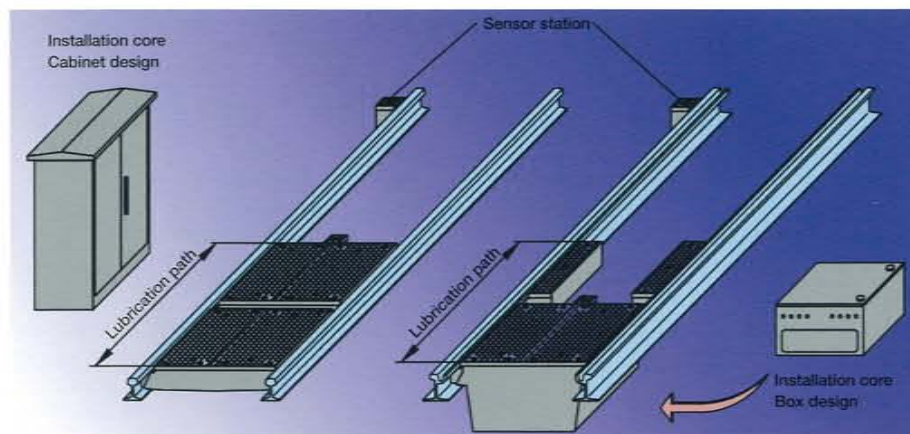


Arrangement of lubrication channels on vignol rail profile



Arrangement of lubrication ridges on the check rail

Lubricated to Straight to the Point



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Geometric Precision

The quantities of grease **moklansa E3S** supplies to the respective lubrication channels are absolutely identical, and are not influenced by differences in hose length or fluctuations in temperature. The required flow rate can be adjusted with precision and kept constant at all times. The stored-program control of **moklansa E3S** processes all relevant operating parameters. Lubricant flow rate, lubrication intervals, even the number of lubrication impulses per vehicle are infinitely variable. The system can be adjusted individually to the respective operating requirements. The settings and operating conditions are shown in a display panel.

A temperature-dependent quantity output is also an option. All adjustable operating parameters are selected individually with three independent temperature bands.

Economical, Safe and Reliable

The **moklansa E3S** dispenses the well-adhering lubricant extremely sparingly, which was specially developed for this system. The grease supply is used economically, so that soiling to the track bed and vehicle are avoided. Of course, the **moklansa E3S** can also be monitored via the operating control centre. Furthermore,

external information can be processed, for example a rain sensor shuts down the system.

A robust gear pump is responsible for conveying the lubricant and for the generation of pressure. This pump, which has been modified for the conveyance of lubricants has been applied in the field of oil hydraulics many hundreds of thousands of times – **moklansa** has been using it successfully from the beginning for stationary rail lubrication systems.

Maintenance-friendly Thanks to Exchangeable Reservoirs

It couldn't be simpler to refill the **moklansa E3S**: The refillable grease reservoirs can be replaced in no time, with no mess or spillage. Breakdowns due to contamination or air locks can be practically ruled out.

To refill the grease reservoirs, many customers make use of the **moklansa** grease refill centre. However, we also provide filling stations for self-fillers as an accessory.

The new refillable pressure reservoirs with modified membrane technology further increase economic efficiency. The higher filling pressure reduces the remaining quantities and optimises the process sequence. The reservoirs are available in two sizes.



More Grease for Longer Running Times

The following **moklansa E3S** versions are available:

- box design with one or two grease reservoirs
 - Assembly next to the track system on a base or jig
 - Assembly under the ground in the ground box in the middle of the track or next to the track system

- cabinet design with up to three grease reservoirs
- The cabinet design is set up next to the track system at a distance of not more than 80 metres from the lubrication path. The reservoirs are emptied simultaneously. 3-Container cabinets can also be delivered with „Single emptying in succession“ option.



no more no less



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System planning

Our consultant engineers will assist you right from the design phase and the selection of a suitable location, bringing with them extensive experience from a variety of projects.

CAD support in the planning phase ensures the optimum positioning of all system components, taking the local conditions into account.



Service On Site

moklansa E3S is delivered ready for operation, then installed and connected. This includes fitting the lubrication channels into the rail section. The level of precision required for this is achieved with a specially developed drilling implement.

With our Full Service Package we offer not only inspection and maintenance, but also assure the uninterrupted operability of your system.

We train your specialists either in our training rooms in Dortmund or else in Inhouse seminars.



Remote monitoring

The **moklansa E3S** enables remote monitoring and data transfer via mobile radio. Operating parameters can be accessed and set and malfunction messages can be forwarded via text message or e-mail. Modified operating parameters are automatically sent to a preset fax address for documentation purposes.

Power Supply

The **moklansa E3S** system is connected to the 230V/AC mains supply. No further sources of power are required.

If the locations are far from the power supply, the following variants are available:

- solar energy
- current transformer
- interchangeable battery pack



Solar energy



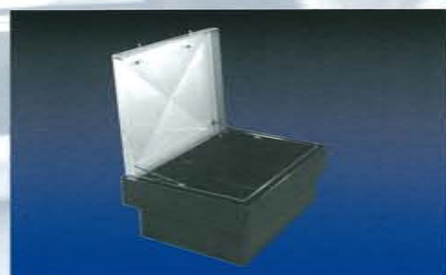
DC/DC transformer

and all that goes with it

Ground box for installation
in the centre of the track



Ground box for installation
next to the track



Inspection box for installation
on grooved rails



Filling station

Accessories

A comprehensive range of accessories is available, allowing **moklansa E3S** to be adapted for individual site conditions and operating parameters:

- mid-track, low-level ground boxes, connector boxes and distributor boxes
- protective cover strips attached to the lower flange of the rail
- photovoltaic driving terminals
- DC/DC transformer
- battery pack
- rain sensors
- breeze concrete plates
- underframes
- filling stations



Power supply with battery pack

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Short overview

Dimensions

Box design
1 or 2 reservoirs

housing box B 800 x T 600 x H 350
mounted on foundation base, mounting frame
or fitted in a ground box.

Cabinet design
1 or 2 reservoirs

housing box B 800 x T 450 x H 1100
assembled on base, concrete slab or breeze
concrete plate

Cabinet design
3 reservoirs

housing box B 1100 x T 400 x H 1100
assembled on base, concrete slab or breeze
concrete plate

Power supply

230 V/AC, 24 V/DC, DC/DC transformer 600 V/24V
solar technology or interchangeable battery pack

Control

compact PLC with key operation, operating states and
inputs can be read on the display. Function diodes,
potential-free contact for remote transmission.

Vehicle detection

Inductive approach initiators, installed in a sensor
terminal box or a sensor station.

Alternative: By external signalling.

Grease reservoir

two-chamber reusable container (DIN 4807),
effective volume 9 litres each or refillable pressure reser-
voir, effective volume 4 resp. 9 litres each

Lubricant transfer

Directly on the contact surfaces by special lubrication
channels integrated into the rail or check rail or for the
lubrication of the wheel with feedable lubrication ridges.

Rail flank lubricant

KUB 2 K-20 – established over many years, specially
designed for rail flank lubrication.

KUB 1 K-30 – with further improved moistening proper-
ties. Is particularly suitable for moistening the head if the
dosage is accordingly small.

If external products are used, we recommend a compa-
tibility test with the polymers used.

Options

Temperature-dependent quantity and cycle control.
BCD-coded interfaces for data exchange.

Complete data exchange including alarm chain with
GSM technology.

Our sales and distribution partners:



VTEC - Gesellschaft für den
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