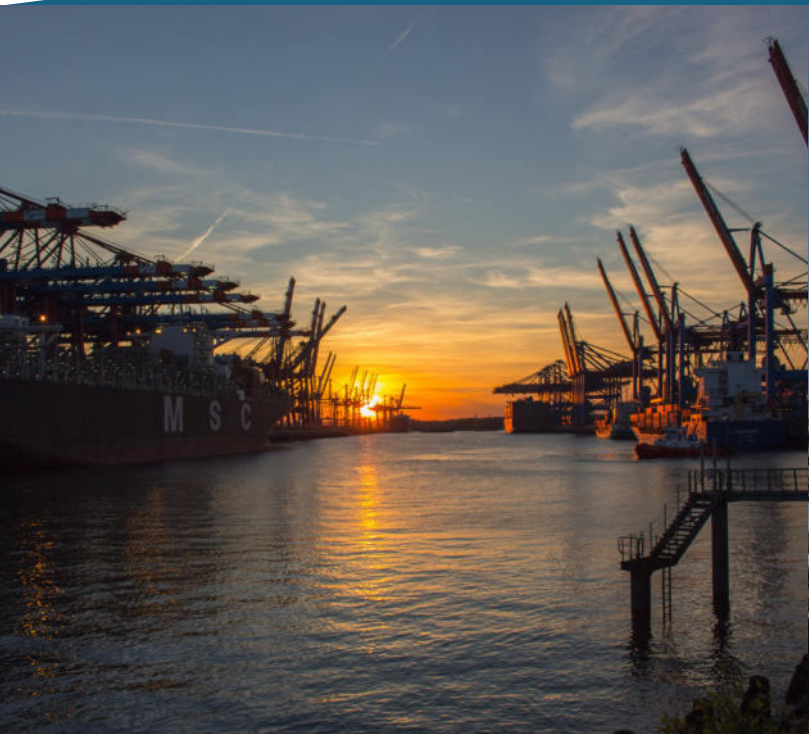


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Wear protection with molybdenum

Wear protection and dry lubrication in block form

Wear protection and friction preservation in block form

Dry lubricant „fluid“ MOLYTROP®

Adhesive blocks

A simple but effective way to reduce wear, is to use „metal-protection blocks“ for surface conditioning. The blocks are mounted in a way, that they continuously glide on the surface, which should be protected, using spring pressure (like electric carbon brushes). In that way, a protective layer of 0.001 - 0.005 mm is applied. The particles are integrated into the metal or plastic surface where they produce a highly stressable dry layer.

The adhesive blocks with a friction coefficient of 0.3-0.7 are used to protect against wear but at the same time keep the necessary friction (driving gears, driving and friction wheels). These wear-protection adhesion blocks have a standard friction coefficient of 0.7. Our in-house development and production allows us to manufacture adhesion blocks with higher or lower friction coefficients adapted to the respective application.

Applications:

The adhesive blocks are used where slippage leads to abrasive wear. Through an increase in friction coefficients. By increasing the friction coefficient, wear- and slip-free operations are possible.

Characteristics:

- **dry und dust repellent** - used in harsh operating conditions and dusty environments
- **for high tangential speeds** - adhesive effect, no migration of the wear protection layer
- **highly temperature resistant**
- **low-maintenance** - only small amounts of wear protection material to guarantee slip-free operation
- **eco-friendly** and not subject to labelling - lowest water hazard classification
- **water-resistant**

Used as wear-protection on:

drive rollers, drive wheels, friction wheel applications etc. We produce variable sizes and shapes of adhesive blocks. We can also produce exactly the size and shape you need for your application.

Mounting of adhesive blocks

Adhesive blocks are held by brackets. These brackets are then installed on the machine where they are needed. For various mounting mechanisms we offer a wide spectrum of brackets for our blocks.

We offer brackets with or without consumption display, as well as easily refillable brackets with insertions.

This ensures the perfect position of the brackets on your application.

If there is no perfect bracket for your application, we can also produce one which exactly matches your needs.



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10035_29x29x100 - Wear protection block



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10035_19x44x76 - Wear protection block pluggable



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H0029_0100 - Bracket



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H0020_0076_Es - Bracket with insertion

Applications with adhesive blocks



Drive wheel railway engine



Asphalt dryer friction drive



Friction drive asphalt drum



Charging wagon



Crane rail



On storage rail



on friction drive



Crane Rail



Friction drive asphalt dryer

Lubrication blocks

Lubrication blocks with a friction coefficient of 0.015 are used to protect against wear and at the same time lubricate dry, continuously and maintenance-free.

Characteristics:

- **dry und dust repellent** - used in harsh operating conditions and dusty environments where oil and grease can't be used because they are dust binding
- **for high tangential speeds** - e.g. on turning parts. High centrifugal forces are responsible for high losses of oil and grease lubrication. Our lubrication blocks are the perfect solution.
- **high-temperature resistant**
- **low-maintenance** - only small amounts of wear protection material to guarantee perfect lubrication.
- **eco-friendly** and not subject to labelling - lowest water hazard classification
- **water resistant** - usable in humid environments
- **very low friction coefficients**
- **preventing wear and corrosion**

Used for lubrication on:

Gears, rings, shifting systems, elevators, high-bay warehouses, cranes, drums, guidings, asphalt mixers, concrete mixers, etc.

We differentiate between dry lubrication blocks with high percentage of molybdenum disulphide (type 10036) and blocks with high percentage of graphite (type HG045, HG020). In addition we offer dry lubrication blocks with boron nitride as lubricating agent too. Because of that, we can offer the perfect solution for every customer and its application.

We produce variable sizes and shapes of lubrication blocks. We can also produce exactly the size and shape you need for your application.

Mounting of lubrication blocks

Lubrication blocks are held by brackets. These brackets are then installed on the machine where they are needed. For various mounting mechanisms we offer a wide spectrum of brackets for our blocks.

We offer brackets with or without consumption display, as well as easily refillable brackets with insertions.

This ensures the perfect position of the brackets on your application.

If there is no perfect bracket for your application, we can also produce one which exactly matches your needs.



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10036_19x44x76 - Lubrication block pluggable



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HG020_030x100x150 - Lubrication block



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Brund - Bracket for lubrication block round



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H0130_0120_La_Vb - Bracket with consumption display and flaps

Applications with lubrication blocks



Concrete mixer Liebherr



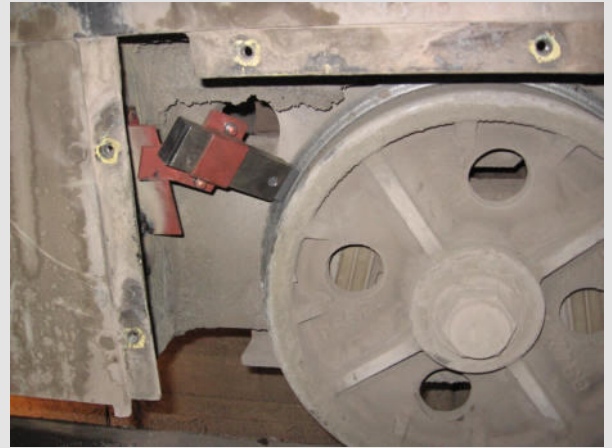
Rotary tube detail



Concrete mixer Stetter



Storage cart



Flange lubrication railway engine



Plastic supporting roller



Pressure roll cement factory



Charging carriage



Lifting beam



Trimming shear



Press

MOLYTROP® - Dry-Lubricant „fluid„

MOLYTROP® is made of MoS₂ with organic and inorganic components, which control the stability and flow characteristics. The substrate transports MoS₂ components to the dedicated lubrication point. By the movement of the friction partners the MoS₂ is rolled into the surface and completely dries. In that way a highly stressable, wear-resistant and dry lubrication layer of MoS₂ is produced. MOLYTROP® often replaces loss lubrication through oil and grease by working on minimum lubrication. MOLYTROP® does not contain any mineral oil! MOLYTROP® is filled in commercial lubrication dispensers and can be continuously applied, like oil or grease, on the dedicated surfaces. MOLYTROP® can be used with standard lubrication-systems. Thanks to its flow characteristics, maintained by special components, MOLYTROP® is only fluid in the moment of application and later reacts as a dry lubricant.

Characteristics:

- **dry und dust repellent** - used in harsh operating conditions and dusty environments where oil and grease can't be used because they are dust binding
- **for high tangential speeds** - e.g. on turning parts. High centrifugal forces are responsible for high losses of oil and grease lubrication. MOLYTROP® is the perfect solution.
- **high-temperature resistant**
- **low-maintenance** - only small amounts of wear protection material to guarantee perfect lubrication.
- **eco-friendly and not subject to labelling** - lowest water hazard classification
- **water-resistant** - usable in humid environments
- **very low friction coefficients**
- **easy integration into present systems**
- **preventing wear and corrosion**

Containers:

Cans: 0.25 to 5 kg, Euro cartridges: 400 ml, automatic cartridges : 60 ml, 125 ml, 250 ml

Mounting of MOLYTROP®:

- Manually: at fixed intervals by spraying, brushing, using Euro cartridges (DIN 1284) or electronically controlled grease guns.
- Automatic: directly with cartridges or lubricant pumps automatic cartridges apply permanent optimum thick lubricant layers.

Every kind of application of lubricants which can be used for oil and grease, can also be used for MOLYTROP®. Proven functionality and feasibility in state of the art hydraulic pumps and central lubricating systems in many applications.



Automatic cartridges



Container MOLYTROP® 1 kg



Container MOLYTROP® 0,5 kg



Mounting of automatic cartridges with lubricant feed

Applications with MOLYTROP®



Cartridges on gear drive



Cartridges on gear drive



Drip lubrication on chain



Switch plate manual



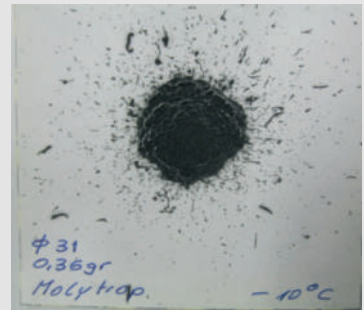
Rack, gear drive



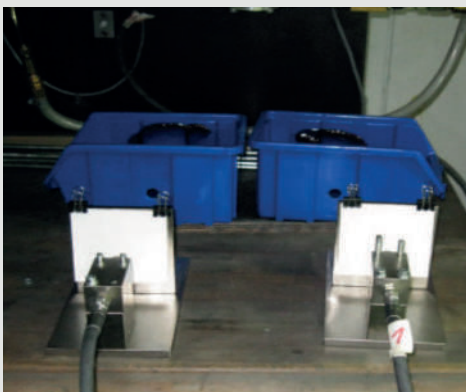
Lubrication of gear rack



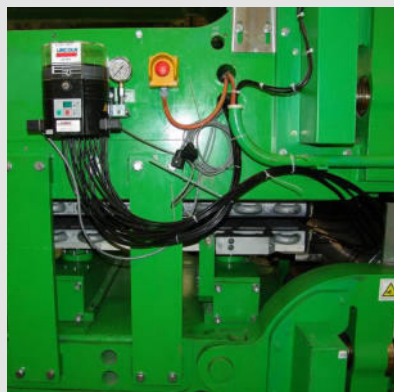
Test setup MOLYTROP®



Spraying test -10°C



Test setup MOLYTROP®



Lubrication pump



Spraying test Luac

Bonded coating

A monoconstituent lacquer for tribological surface coatings. It consists of a fast-drying lacquer and a carefully emulsified high-purity-electrographite (HG045).

Characteristics:

- Surface: dark grey
- Density: ca. 1.05 g/cm³
- Drying process: depending on the layer thickness dry to touch after 3 h, completely dry after 24 h at 20 °C, 60% relative humidity.
- Spreading capacity: 1 l depending on the application type and layer thickness, 1 l is enough for 8-10 m² per coating
- Storage: store frost-proof; in closed containers for max. 6 months. All surfaces have to be free of rust, contamination, and grease.

You can coat the surfaces by brushing, spraying or dipping.

Application:

To reduce friction on rail fasteners: The bonded coating is applied on the fasteners - controlled thermal expansions of the rail.

Cable lubrication

Reducing friction forces within cables between strands which occur. Re-lubrication of cables is done by dry-lubrication blocks which are pressed against the cables by springs. The cable lubrication system embraces the cable which moves relatively to the lubrication system, and therefore lubricates it from all sides at once.

No contamination of the cable through dust and particles by dust binding oil and grease.

Highly increased bending cycles and highly reduced friction within a cable can be observed.

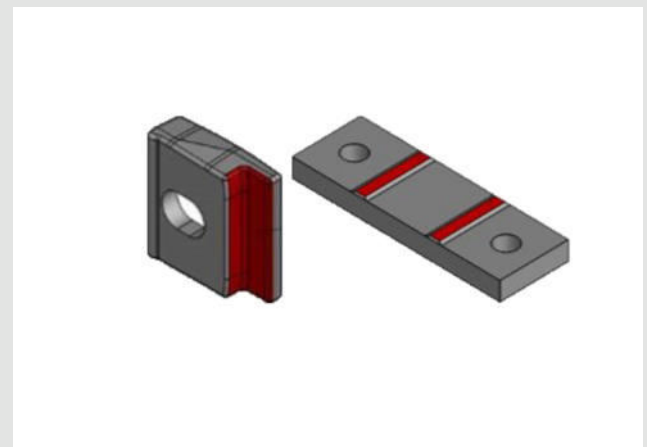
Our cable lubrication products are equipped with our dry lubrication blocks and therefore have the same characteristics when it comes to applicability. Our cable lubrication products are customized for every needs. We offer different solutions for various cable diameters.

Application:

Mostly this product is used with cables on cranes. Nevertheless it can be used in any operation where moving cables need to be lubricated.



Tribological lacquer 1000 ml



Slide surface, enclosure and platen



Cable lubrication unit, all diameters



Cable lubrication unit, all diameters

Application in asphalt mixing plants

Chain drive:

The drum dryer is driven by a chain.

Problem:

Lubrication of supporting rolls and rings by oil and grease is required.

- manual lubrication is complex
- environmental factors: dust, rain, pollution,...
- environmental pollution from dropping lubricant
- costs for new rolls are about € 14,000.-

Solution:

According to the width of the rollers, two sets of dry lubrication blocks (HG020) are mounted on the supporting rollers.

Thanks to the dry lubrication blocks a maintenance-low, ecological, dry and water resistant lubrication is realized (up to 2 years!!!).

Friction drive:

The drum dryer is driven by rollers.

Problem:

Due to permanent abrasion, the lifespan-production-volume of the rollers and rings is only about 350,000 tons. No wear protection on driving rollers and rings.

- costs for new rollers are about € 19,000.-

Solution:

According to the width of the rollers, two sets of wear protection adhesion blocks are mounted on the driving rollers.

Thanks to the adhesion blocks the operating life of driving rollers and rings is doubled!!!



Drum dryer - chain drive



Mounting of lubrication blocks



Rotary dryer friction drive



Consumption indicator



Mounting of adhesive blocks

Application on containers and outdoor cranes

Large cranes consist of certain parts: ground tracks, crane base carriages, main structure, horizontal beam or cantilever and one or multiple trolleys. Longer manipulation distances are executed by the crane base carriage, load manipulation is executed by the trolley.

The crane base carriage and the trolley are partly equipped with flange wheels or/and supporting rollers. Those run on trails which are driven by electric motors. Because of large charges at the contact point between wheel and trail, a lot of friction and wear occur in this applications.

Industry Segments: Port operations, timber, cement-, lime-, gypsum industry, plaster and mortar industry, chemical factories, paper mills, aluminum and steel plants, sugar factories, quarries, raw material industry, etc

Problems on treads:

High wear of rails and wheels on the tread or head rail, loss of friction due to strain hardening of the rail (danger of slipping, unknown braking distance, starting slip, slip-stick effect), high costs and long waiting times for rail repair (welding, grinding, changing), wheel change (trolley is in a height of 30 m).

Solution for tread on ground track and trolley:

Equipment with adhesion blocks "10035" in brackets "H0030". Those coat maintenance-low with adhesive agents to maintain a constant friction between wheel and rail (dynamic coefficient of friction of 0.3-0.5). Simultaneously wheels and trails are protected against wear. The operating life is doubled at least. Convenient side-effects of using wear protection adhesion blocks „10035“ are higher smoothness and freedom from maintenance.

Problems on wheel flange:

Shrinkage of rails on flanks, shrinkage of wheels, tendency of wheels to "climb" (Wheel flanks seize on rail flanks and climb). High costs and long waiting times for rail repair (welding, grinding, changing), wheel change (trolley is in a height of 30 m).

Solution for wheel flange:

Equipment of wheel flanges with lubrication blocks "HG045" in brackets "H0020". The wheel flanges are coated maintenance-low with dry lubricant. The wheel sets and rails are protected against wear.

The dangerous "climbing" of the wheels is prevented by an extremely hard and dry lubricant film. The operating life should double. High time and cost saving because maintenance intervals for wheels and rails are minimized.



Adhesion and lubrication blocks



Wheel flange lubrication



Wheel flange lubrication



Adhesion and lubrication blocks on ground track

Applications on Indoor cranes

Indoor cranes usually consist of chassis rails and crane trolleys. Long distances are executed by the chassis rail, load manipulations with the trolley. The trolley drive is generally made for faster movements than the chassis rail drive. Chassis and trolley are equipped with flange wheels and/or supporting rollers. They are driven by electric motors, the wheels are exposed to large loads due to friction wear on the wheel-rail contact point.

Problem for treads:

High wear on treads or rail heads of wheels and rails. Friction loss through strain hardening or flaking of the rail. Danger of slipping and therefore uncertain breaking distances, starting slip and slip-stick effects due to deposition, condensation of surrounding air. High costs and long waiting periods for rail repair (welding, grinding, exchanging) and wheel change.

Solution for treads of chassis rails and trolleys

Equipment with adhesion blocks "10035" in mountings "H0030" with consumption display. The adhesion blocks 10035 are mounted to the rail and protect it from wear. They coat the rail and tread maintenance-free with a dry lubricant. The coating enhances a constant friction between wheel and rail of about 0.3 - 0.5. At the same time wheels and rails are protected from wear. Side effects of the wear protection adhesion blocks "10035" are increased smoothness and freedom from maintenance.

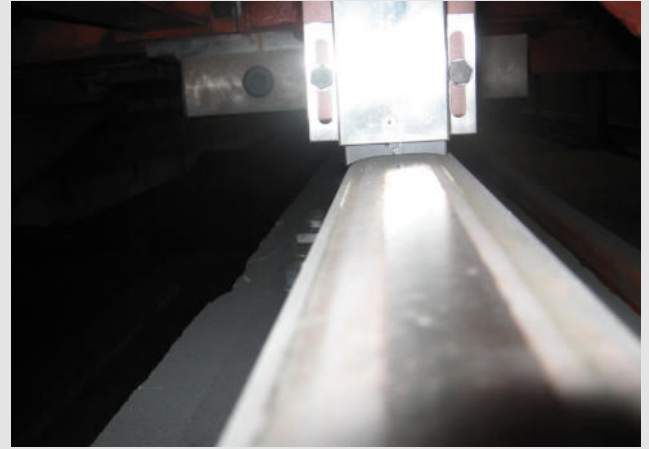
Problem for flanges:

Due to uneven loads the wheels tend to climb the rail flank. Here, the flanges are extremely stressed by friction wear. This results in grading and rolling of rail flanks and abrasion on flanges. The consequences are high repair costs and uneven crane movement.

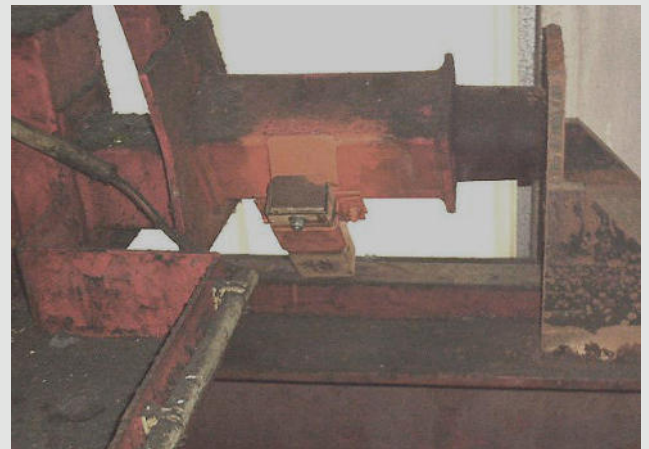
Solution for flanges:

Equipment with lubrication blocks "HG045" or in cases of high wear with lubrication blocks "10036". The blocks are directly mounted on flanges (2 pieces per wheel) and coat maintenance low with dry lubricant. The substances are rolled into the surfaces, therefore adhesion blocks for friction preservation and lubrication blocks for wear protection can be mounted side by side: Since mostly welded rails are used, lubricating blocks can also be mounted on the sides of the rails.

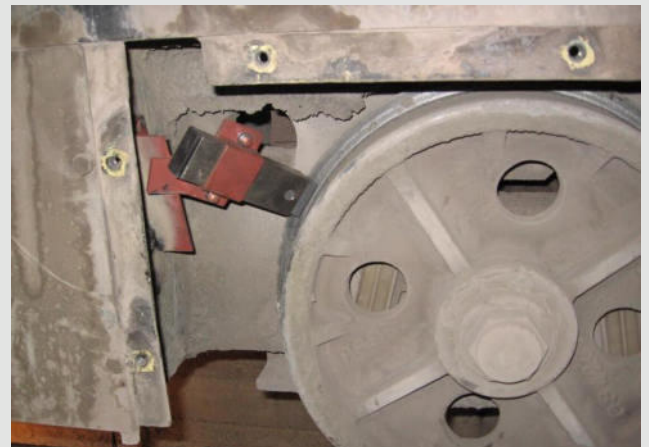
Benefit: Need for less lubrication blocks!



Adhesion block on crane rail



Adhesion block on crane rail



Flange lubrication



Flange lubrication

Application on rotary kilns

In rotary kilns materials are heated and/or mixed, burned or sintered by rotation. Those installations are driven by sprockets or chain drives.

The load of the drum is carried by the supporting rollers. The axial rollers stabilize and move the rotary kilns. Axial rollers (thrust rollers) are hydraulically or mechanically pressed to the ring flanks.

Industries: Cement-, lime-, gypsum plants, plaster and mortar industry, chemical factories, paper mills, steel plants, sugar factories, quarries, raw material industry, etc.

Problem on supporting rollers:

Manual lubrication on supporting rollers and rings with oils and grease. Dust, rain and pollution negatively affect the durability of this type of lubrication. Pollution of the surroundings by dripping oil and grease.

Solution:

According to the width of the rollers, dry lubrication blocks "HG045" are mounted on the supporting rollers. To ensure a constant lubrication, also on uneven rollers, 2-8 blocks in individual mountings, up to the required width of 200-500 mm, are applied.

Another solution are individual blocks "HG045" in different, i.e. 350x30x200 mm, or 430x30x50 mm are installed. Thanks to the dry lubrication blocks maintenance-low, ecological, dry and water-resistant lubrication is realized that lasts up to 2 years!!!

Problem on axial rollers:

Axial rollers and lateral faces of supporting rings face high pressures – danger of deformation.

Solution:

Application of lubrication blocks "10036" with frames and mountings to prevent wear and deformation on axial rollers and the ring and at the same time lubricate maintenance-free and dry.

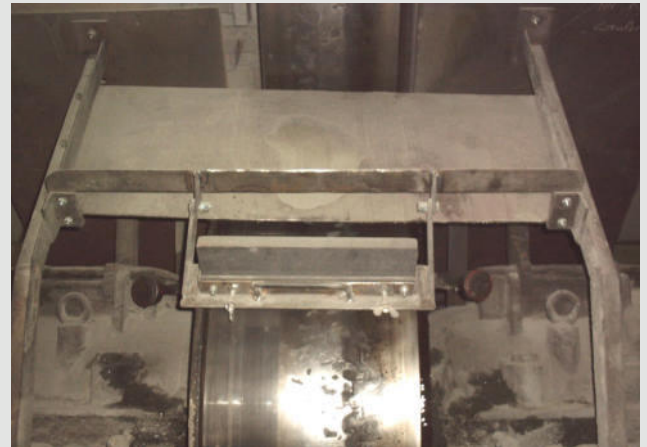
Thanks to the application of molybdenum disulfide you get an extremely resilient and dry lubrication coating, which is renewed maintenance-free.

Example on thrust-axial roller with a width of 150 mm:

- 2x lubrication blocks Type 10036
- 2x mountings H0030_100_Vb
- 1x frame with quick-change system Trkt2



Rotary Kiln



Mounting of lubrication blocks



Axial roller



Axial roller with lubrication block type 10036

Wear protection on high-bay warehouses

Application bottom rail storage and retrieval machine:

Blocks and mountings: standard mounting types 0030 and adhesion blocks type 10035 for wear protection of rail and adjustment of the optimum friction coefficient (dry 0.7 and wet 0.35) on drive wheels. Wear protection and dry lubrication through lubrication blocks 10036 or HG045 on lateral supporting rollers. Various dimensions are possible!

In case of highly stressed lateral drive wheels, we suggest using lubrication blocks type 10036 – they contain more than 40% of MoS_2 and generate a heavy-duty wear protection layer. Normally a thin lubrication layer from lubrication blocks type HG045 is sufficient.

We offer various ready-to-fit mountings according to individual draws and sketches

Application vertical rail storage and retrieval machine:

Blocks and mountings: standard types 0020

Lubrication blocks type 10036 in case of increased wear on rolls and rails. Lubrication blocks type HG045 for standard dry lubrication. All dimensions are available depending on rail width!

Equipment for 1 storage and retrieval machine:

Standard set for bottom rail, consisting of:

- 1 x adhesion block type 10035/(31x55x100 mm), mounting and clamping device
- 2 x lubrication block type 10036/(31x55x100 mm), or block HG045, mountings and clamping devices

Standard set for vertical rail, consisting of :

- 3 x lubrication block type 10036 or block HG045 (20x45x60 mm)
- 3 x mountings H0020, with spyhole
- 3 x clamping devices H0020- HR



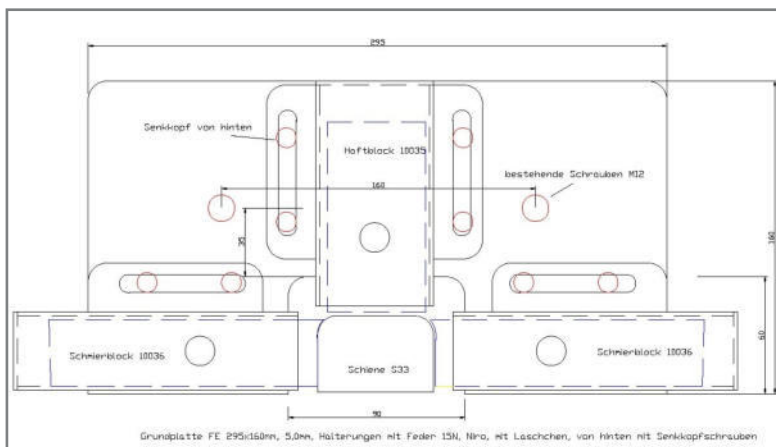
Adhesion block on floor rail RBG



Lubrication block on vertical rail



Lubrication block on vertical rail



Mounting plate for 1x adhesion, 2x lubrication block



High-bay racking

Standard products



10035 019x044x076
pluggable



10035 029x055x076
pluggable



10035 025x080x100



10035 029x029x100



10035 020x045x120



10035 030x100x100



10035 030x120x230



10035 030x80x120



10035 031x055x100



10035 080x070x030
pluggable



10036 019x044x076
pluggable



10036 020x045x120



10036 025x060x100



10036 029x029x100



10036 030x100x100



10036 160x120x30



10036 pluggable white



10036 white 25x50x80



HG020 018x040x0100



HG020 030x100x150



HG020 030x120x200



HG020 031x055x100



HG045 015T x031x0100



HG045 015x030x100



HG045 020x045x120



HG045 020x045x060



HG045 025x060x100



HG045 29x29x100



HG045 030x050x075



HG045 030x075x100



HG045 030x090x100



HG045 030x090x100



HG045 030x100x100



HG045 030x030x030



HG045 031x055x080



HG045 031x055x100



HG045 040x060x090



HG045 rund 021x150



H Welle



H0020 0076 Es

Standard products



H0020 0120



H0029 0100



H0030 0075 Es



H0030 0080 La



H0030 0100



H0030 0100 Vb



H0030 02000 Vb Es



H0030 La left right



H0030 La



H0070 0100 Vb



H080



H080 + Adhesion block



H0090 0100



H0090 0100



H0090 0100 La



H0090 0100 Vb



H0100 055 La



H120 La



H0130 0120 La Vb



H0230 0120 La Vb



HRund



K0020



K0020 Es



K020 top part on end



K0029



K0030 G



K0030 G



K0030 top part on end



K0030 4



K0030 W



K0030 top part



K0090 W



K150mm 3



Square for 200



Square for 230



Molytrop 0.5 kg



Molytrop 1 kg



Molytrop 5 kg



Molytrop 400 ml



Molytrop Simalube
60, 125, 250 ml

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Dry lubrication and wear protection with molybdenum

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