



Schunk – Your Partner for Innovative Railway Technology

IRIS
Certification



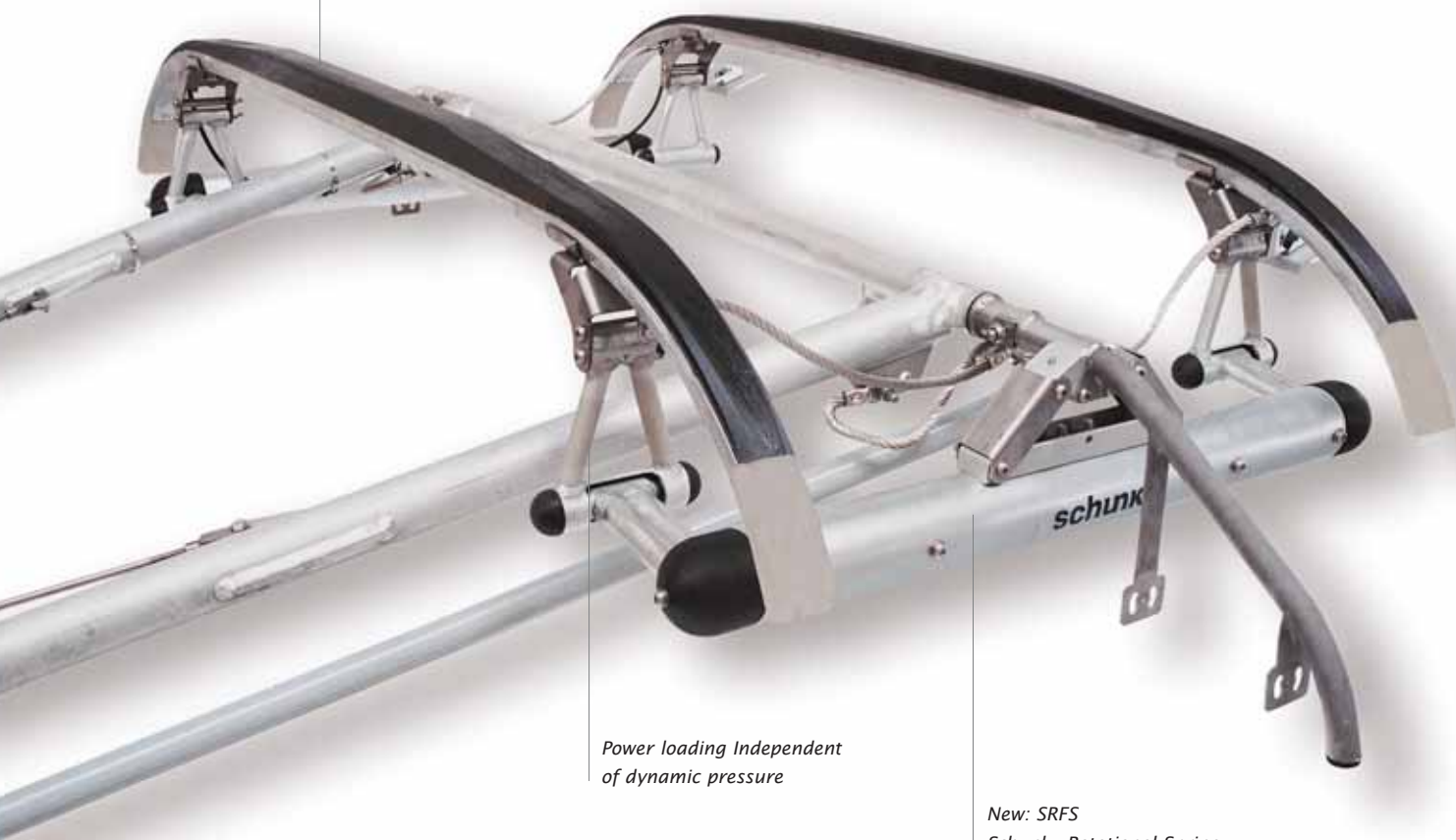
Schunk Bahn- und Industrietechnik GmbH



Innovation for High Speed Applications

400 km/h and more

Schunk - High Speed Collector Strips



*Power loading Independent
of dynamic pressure*

*New: SRFS
Schunk - Rotational Spring
Suspension System significantly
reduces dynamic pressure*

The New High Speed Rotational Spring Pan Head

With the development of a new high speed rotational spring pan head, Schunk has demonstrated its dedication to finding modern innovative solutions. The challenges which needed to be overcome in order to achieve the desired results were formidable. Six development goals were the focus of our attention:

- Optimization of the dynamic behavior
- Elimination of the effects of the dynamic pressure on the pan head suspension
- Reduction of the dynamic pressure force effect on the pantograph
- Minimization of aerodynamic impacts on the distribution of contact pressure
- Low level of noise emission
- Adaptability of the pan head to various operating conditions

The results are impressive:

Lower Dynamic Pressure-Optimized Distribution of Contact Pressure

By separating the direction of the dynamic pressure and the spring direction, the impact of the dynamic pressure on the pan head suspension is eliminated.

With a semi trailing link suspension an imaginary pan head bearing point is created. Thus a rotation of the pan head is avoided. The same contact pressure is applied to both collector strips.

Reduction of Air Resistance, Light Weight Design, Improved Aeroacoustics

Minimized surface and a lower air drag coefficient result in a lower dynamic pressure. That minimizes the forces on the pantograph frame at high speeds. The pan head shaft is made of extremely strong aluminum alloy with a special hard coating. The use of closed components and aeroacoustically optimized contours significantly reduces noise emissions.

Optimal Adaptability

The use of various carbon strip distances, pan head widths and spring constants with the SSS 400+ allows for optimal adaptation to different clearance gauges and overhead wire systems. This innovative pan head can also be adapted to various other pantograph types.
D

■ Schunk – Innovation as Driving Force

Many path-breaking technical innovations on pantographs can be attributed to Schunk engineers.

■ Constantly Exploring for Our Customers

Novelties in the field of Railway engineering such as carbon run-off horns, individual suspension, bellow drive mechanisms or rotational pan heads are examples for Schunk's constant search for better solutions for the benefit of the customer.

The SSS 400+ another example for Schunk's performance in innovation.



Pantograph, result of successful development in co-operation with Melecs.

- Various carbon strip distances
- Various pan head widths
- Various spring constants

Pantographs with Clear Advantages

The Innovative WBL Series

The pantographs of the WBL series were designed for normal speeds through the highest speeds. Reduction in mass and optimal aerodynamic adaptation, guarantee the best possible performance. Individually suspended collector strips provide good contact behavior. In addition, the pantograph is pneumatically damped. As options, Schunk offers an automatic lowering device, frame parts made of light weight components or stainless steel as well as pneumatic control for the regulation of contact pressure.

The Compact SBE Series

The pantographs of the SBE line are single arm pantographs with spring raising mechanisms and insulated electrical lowering devices. The advantages are: Compact dimensions coupled with maximum range.

■ WBL Series

Innovative solutions for normal speeds up to the highest speeds

■ SBE Series

Robust pantographs for light rail and tram vehicles

■ SBF Series

Proven design, even when used under difficult conditions

For technical details please call telephone number on the back of this prospect.

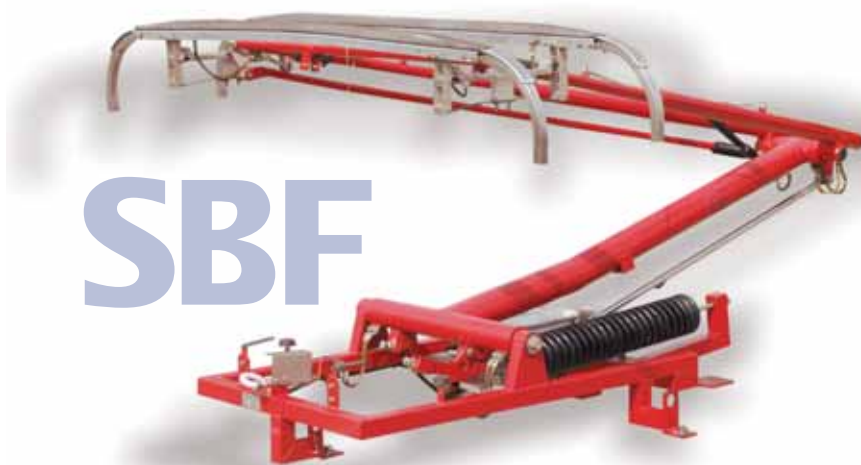
These pantographs are well suited for subway and tram vehicles. As options you may choose from: individually suspended collector strips with even better contact behavior, hydraulic damping, a lock down latch in the resting position and an automatic lowering device.

The Robust SBF Series

The pantographs of the SBF series are based on the SBE pantographs. All the essential components from the SBE series have been adopted except for the electrical lowering device. For using this pantograph, a simple low volume pressurized air supply is sufficient. Among the advantages are: simple maintenance and a pneumatic spring lowering device. As options we offer: individually suspended collector strips, hydraulic damping of the frame, an automatic lowering system as well as electric/pneumatic resting position indication.



Hydraulic frame damping



Robust pantograph, specially made for light rail vehicles. Proven under difficult operating conditions.

Innovation & Revolution

Upper arm with the highest degree of lateral stability (optionally with steel or aluminum models)

Individual suspension

WBL-Z

Maximum
on Modularity

Low Maintenance
Costs

Integrated air bellow drive system

Maintenance free bearings



SBE

*Single arm pantograph.
Compact dimensions coupled
with maximum range*

3rd Rail Current Collectors with a Bright Future

3rd De

New Designs for 3rd Rail

Schunk 3rd rail current collectors are completely new developments with decisive advantages for the operator.

- The mounting plate to the bogie is completely insulated
- Schunk 3rd rail current collectors run with maintenance-free bearings and maintenance-free pneumatic cylinders

With such features, Schunk 3rd rail current collectors significantly reduce operating costs.

Schunk 3rd rail current collectors have passed all type tests such as shock, vibration, insulation and also operational and performance tests. The current collectors comply to applicable national and European standards for bogies (DIN EN).

The shoe of the current collector covers the top, bottom and side of the current rail and provides a reliable power transmission, even with the usual horizontal and vertical oscillations of the train.

The device is specially designed to bear the loads caused by interrupted current rails. The wing is available in a right and a left design to fit all conditions of the bogie frame. Air pressure activates the current collector to the operating position.

Impulse-technique with self locking is available as an option. Lowering and lifting of each current collector is also possible by a hand lever.

The current collector unit is maintenance free until the main inspection. Only routine check for damage of the connecting cable and wear on the shoe are necessary.

Entire system tested for shock, insulation, environment conditions and vibrations, in accordance with DIN and EN standards

Schunk Offers Different Types of Collector Stripes from One Source:



Proven standard-collector strips made of cast iron for steel conductor rail



Copper collector strips for steel conductor rails



Casted strip with carbon inlay, casted design, good sliding properties



Full carbon collector strip. Especially suited for aluminum conductor rails with high-grade steel inlay



Mechanically strong metal impregnated collector strip for the transfer of high currents

Rail etails

Device for mounting a lever

Spring legs

Pressurized air unit

A short circuiting device provides safety. Mounted on the bogie, maintenance free

Collector strips for horizontal and vertical conductor rails



3rd rail pantograph with GRP protection cover and lever

International Operating Systems: 3rd Rail Current Collectors

Individual Solutions for Worldwide Applications

The individual Schunk 3rd rail current collector designs are applied worldwide and guarantee a perfect power transmission for different applications. As an innovative partner for all questions concerning power transmission we look forward to new challenges and the loyal and fair co-operation with our customers.

Highest Flexibility

The Dual-Mode-System enables the usage of two rail systems with the same rail car. The current rails can be contacted from both top and bottom without structural changes to be made on the car.

The Milan Underground Trains are operated with Schunk 3rd rail current collectors with an integrated fuse, position switches and pneumatic actuation.

Further Benefits

- Maintenance-free components
- Low interference liability
- Special spring packs for different contact force

Perfect Adjustment

Schunk's axle referenced contact shoe system has been developed in co-operation with Bombardier Transportation especially for London Underground's route network.

- Perfect adjustment to the constructional conditions of the rail system
- Maximum safety due to the application of fireproof insulation materials

An Extra Safety

Schunk 3rd rail current collectors are optionally also equipped with an integrated fuse as well as position switches signaling the positions of the current collector's contact shoe.

Milan

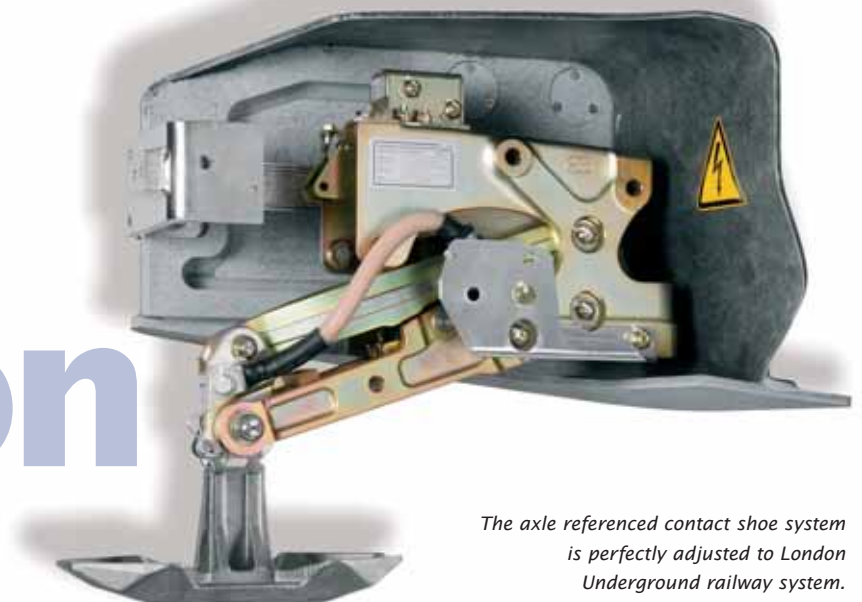


New York



Applying the Dual Mode Current Collector, the trains can be used on the different rail systems of Metro-North and Long Island Railroad.

London



The axle referenced contact shoe system is perfectly adjusted to London Underground railway system.

Schunk Earthing Contacts – Worldwide Benefits

Being Schunk's partner you enjoy many benefits around the product and a full customer service.

Schunk earthing contacts offer you:

- A modular concept and thereby an application or mounting on multi-system trains by the use of sensor integration
- Worldwide support & fast on-site service 24 hours a day
- Due to our highly professional competence and our long-term experience you will gain a large variety of types of best quality
- A customer-friendly design easy to maintain by the usage of individual pressure elements

Additionally, besides conventional earthing contacts we also offer carbon/carbon earthing contacts.



Conventional earthing contacts used in local trains

Schunk earthing contacts are used worldwide by all leading vehicle manufacturers.

Carbon/carbon earthing contacts differ from conventional earthing contacts in that both the metallic contact disc and the carbon brush with high metallic content are replaced by electrographite.

Advantages:

- considerably longer lifetime
- long term stability of signal transmissions
- no change of contact resistance during time of operating

In addition to newly designed earthing contacts, it is also possible to upgrade an existing earthing contact to carbon/carbon design.

Conventional earthing contact in comparison to carbon/carbon earthing contact



Green Wheel Flange Lubrication

Wheel Flange Lubrication Systems

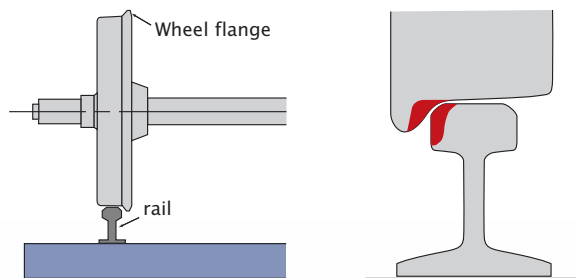
Schunk has been developing and manufacturing solid lubrication for more than 100 years.

Wheels of rail vehicles are exposed to wear. Especially in bends & turns the wheel flange and rail are prone to friction which leads to squeaking and wearing.

The lubrication of the wheel flange reduces the wear.

Compared to liquid lubricants a dry lubricant offers the following advantages:

- Cost-effective
- Permanent lubrication
- Simple, robust system. There is no need for electrical or hydraulic systems
- Wear and friction are only reduced at the wheel flange. Dry lubricants do not enter the wheel rim and therefore have no impact on braking and acceleration
- No contamination of bogie and car
- Environmentally friendly – “C-green product”
- Non-flammable



Solid lubrication sticks

We develop customized solutions.
Please contact us!
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*Robust holder for lubrication
at the point of use*



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