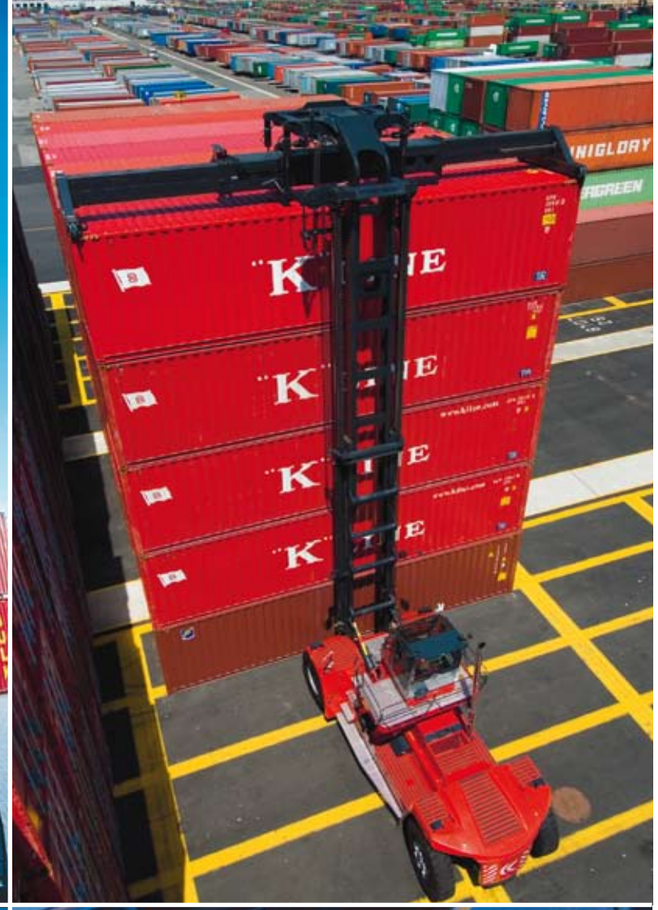
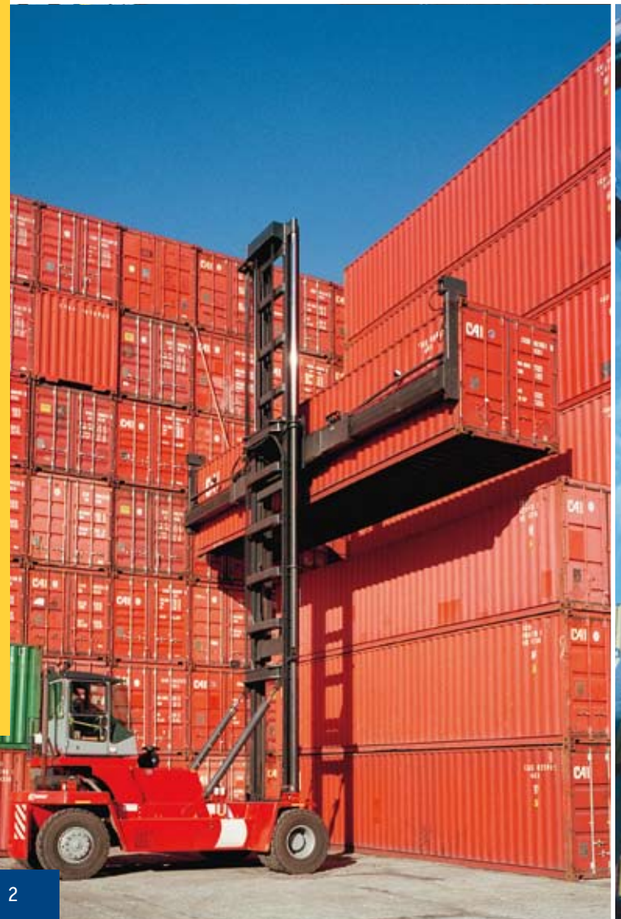
MOBILE EQUIPMENT SPREADERS

A Tradition Of Innovation

BROMMA





Yard Operations As Efficient As Your Ship-to-Shore Operation

Bromma's new mobile equipment spreader product family has been designed to meet Bromma's larger product mission – to lift terminal productivity and reliability throughout the container handling chain – from ship-to-shore to the yard.

Bromma mobile equipment solutions include reach stacker spreaders; side lift spreaders for masted lift trucks for the handling of empty containers; and top lift spreaders for the handling of laden containers. Models in the product portfolio include the RSX40 reach stacker spreader; the RSX40C combi spreader; the SLV40 side lift spreader with vertical twistlocks; the SLC40T side lift spreader with hooks and side clamps for double empty container handling; the TLF40 top lift spreader with standard/inverted forks mounting; and the TLG40 top lift spreader with gantry mounting.

A Compelling Advantage In Mobile Equipment Performance

The Bromma mobile equipment spreader family offers end users a compelling advantage in performance. For example, at 7,600 kg, Bromma's reach stacker spreader is up to 20% lighter than most competitive reach stacker spreaders. Less weight on the reach stacker means fuel saving, energy saving, and less wear and tear on tires, power train, transmission, and drive train axles. This in turn results in:

- *longer service intervals*
- *significant lifetime operating cost savings, and*
- *longer likely replacement cycles*

Achieving an excellent driver experience is a top design priority in the mobile spreader family. Bromma proportional control [PWM] means that rotation and side shift are achieved with advanced, smooth control. PWM control also means a dampening of telescoping when approaching the end position with maximum speed, which avoids shocks and increases driver's comfort. Telescopic speed is symmetrical due to Bromma's chain-driven telescoping system. Bromma analogue sensing of each telescopic position means accurate and remembered positioning, with no need for the spreader to be fitted with mechanical stops, which generate damages and are a source of additional maintenance. A mechanical pile slope of +/–5 degrees means superior flexibility and maximum spreader mobility.

Bromma's reach stacker spreader is up to 20% lighter than most competitive reach stacker spreaders. Less weight on the reach stacker means fuel saving, energy saving, and less wear and tear on tires, power train, transmission, and drive train axles.

5 Reasons To Specify Bromma Mobile Spreaders

1. **They are up to 20% lighter, which means less weight on the reach stacker, corresponding fuel and energy savings, and less wear and tear on tires, power train, transmission, and drive train axles.**
2. **They are designed, built, and supported by Bromma, the strongest organization in the spreader business.**
3. **They make the driver's job easier, due to proportional control, which dampens telescopic motion; makes possible accurate and remembered positioning, eliminates the need for mechanical stops, and produces 100% alignment in all situations, for maximum spreader mobility.**
4. **They are easier to service and maintain, due to self-diagnostic technology, leading to greater uptime and fewer downtime events.**
5. **They will remain the industry's premier spreaders, due to Bromma's large, experienced, and proven spreader R&D organization.**

Bromma mobile equipment spreaders also promise to be easier to service. Bromma's self-diagnostic technology, derived from Bromma's innovative SCS^3 crane spreader control system, has advanced capabilities, including wire break detection. Bromma self-diagnostic technology furthers equipment reliability and shortens the time required to find and fix problems. Bromma technology, such as the programmable electronic control unit [ECU], also prevents breakdowns by identifying potential spreader faults – anomalies in spreader performance – before the spreader breaks down. Reduced cabling and wiring further reduces potential problem areas on the spreader. The on-board CAN-bus interface, connected to the reach stacker management system, makes self-diagnostics and service simple, leading to greater spreader uptime and fewer spreader downtime events. All of these diagnostic and prognostic features produce spreaders that are more reliable, with higher MMBF and MTBF.

For high volume container operations, the new Bromma mobile equipment spreader family offers unmatched operating advantages.

For The Mobile Equipment OEM, The Strongest Partner In Spreaders

The new Bromma mobile equipment spreader family also offers tremendous advantages for mobile equipment OEMs. For example, the up to 20% lighter weight of the RSX40 reach stacker spreader gives OEMs using it an immediate advantage in counter-balance weight. This also means:

- *greater fuel economy*
- *an easier path to meet strict emission norms*
- *less wear and tear on the reach stacker; and*
- *longer equipment life*

Bromma offers mobile equipment OEMs the advantages that come with partnering with the strongest spreader R&D design group in the industry. The Bromma mobile equipment spreader family has been designed and tested at Bromma headquarters in Stockholm, Sweden. Bromma is a company with a tradition of innovation, and Bromma sustains innovation year-after-year through the largest research and development budget in the spreader industry.

Listening To Customers

At Bromma, product innovation begins with the discipline of listening to our customers – both the end user that will be operating the equipment, and the OEM. Innovation begins with good ideas, and many of the best ideas tend to originate with the people who use our equipment day after day. Good ideas then become good products through a cycle of design, prototype development, prototype production, headquarters testing, field testing, and continuous product refinement and improvement.

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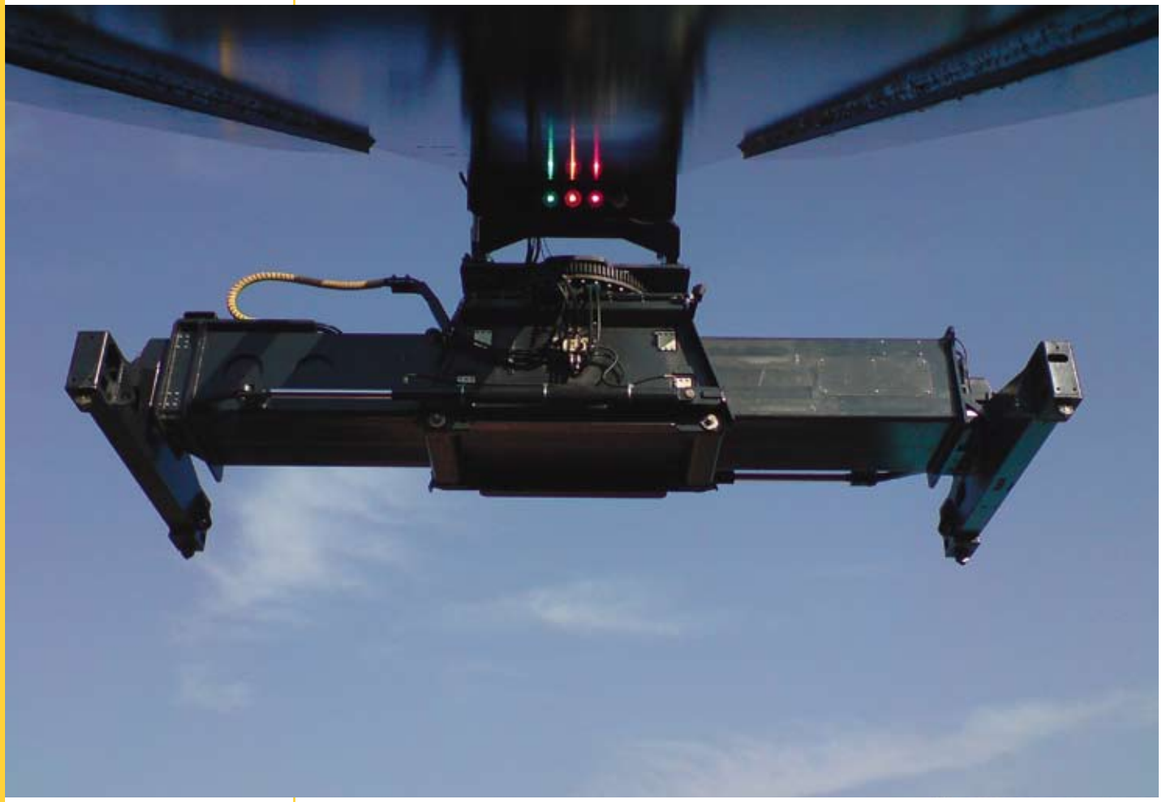
Bromma Services solutions include everything from quick availability of spare parts [spare parts shipped from depots around the world] to a full spectrum of preventive and corrective maintenance services.

Bromma has a history of developing products that have taken container handling to a higher level. Bromma R&D engineers have been responsible for the industry's first telescopic spreader; first twin-lift spreader; first all-electric yard crane spreader; first industry-standard spreader safety system, the TTDS twin-twenty detection system; first memory positioning system; first spreader diagnostics and prognostics technology, SCS; first Tandem™ line of twin-40 and twin-45 spreaders; first all-electric STS45E spreader; and now, the new RSX40 reach stacker spreader.

At Bromma our mission is not only to provide the equipment terminals need, but the service and support you need. Bromma Services solutions include everything from quick availability of spare parts [spare parts shipped from depots around the world] to a full spectrum of preventive and corrective maintenance services. Bromma information services include knowledge products derived from our advanced, pioneering SCS[3] technology.



Bromma Services – Support When You Need It, Where You Need It

Bromma is the strongest company in spreaders, building more than 2,000 spreaders every year, including the most advanced crane spreaders in the industry. A member of the Cargotec group, Bromma is the strongest long-term spreader partner a mobile equipment OEM can choose, which is one reason why Bromma Mobile is now supplying two of the industry's top 5 reach stacker manufacturers. Bromma is financially strong, with a world-class supply and supply chain management guarantee, and can deliver real time information globally, through online product support management, online spare parts ordering, and online order tracking. Bromma quality stability is assured through best-in-class production processes, and Bromma has ISO 9001:2000 and ISO 14001:2004 certifications.

The Bromma mission begins with listening to our customers. Exceptional service and support is something our customers expect, and it is something we are committed to deliver.

Environmental Leadership In Spreaders

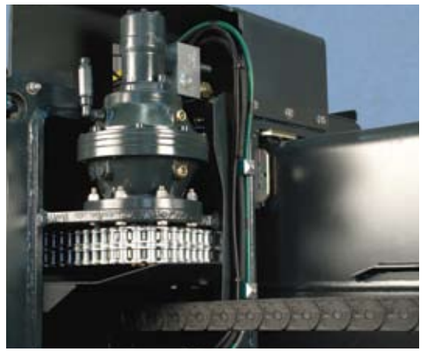
In recent years environmental concerns have taken on increasing importance at terminals around the world. As a Scandinavian company, Bromma has a history of environmental awareness, and Bromma is committed to making engineering choices that demonstrate environmental leadership in spreaders.

Built For Long-Term Reliability

The world of container handling is a tough one. Only the toughest equipment survives. As with all Bromma products, Bromma mobile equipment spreaders are built to last. Bromma durability is due in part to Bromma's use of Swedish steel, which is renowned for its unique combination of strength, weldability, and formability. Bromma durability is also a result of Bromma design. Designing a better spreader doesn't necessarily mean designing a more complicated spreader. Good design emerges from strong design values. Bromma mobile product design values include modularity, easy accessibility, ease of maintenance, and interchangeable, standardized spare parts for a reduced spare parts inventory. Finally, Bromma durability results from state-of-the-art spreader factories in Nordic countries and Asia, where all major components are jig-built for a high degree of accuracy.
At Bromma quality stability is one goal among many in our commitment to world-class manufacturing.

A Higher Return On Investment

In the end, what sets Bromma apart from competitors is a major difference in lifetime value. A spreader fleet made up of less reliable, less productive spreaders is a more expensive spreader fleet. Less reliable spreaders require more maintenance time and expense. Less reliable spreaders lead to slower ship turns, and less efficient berth allocation, thus compromising the competitive position of your terminal, and putting a ceiling on terminal revenue.



What determines true spreader value? Spreader value is not calculated simply by looking at initial spreader price. Spreader value is best calculated by looking at the performance and operating costs of a spreader over a lifetime – its productivity, lifetime energy costs, lifetime service and maintenance costs, and most importantly, its reliability. Bromma spreaders deliver a higher return on investment.

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Bromma mobile product design values include modularity, easy accessibility, ease of maintenance, and interchangeable, standardized spare parts for a reduced spare parts inventory.

For mobile equipment solutions that will lift performance to a higher level on the yard, Bromma is the first name in spreaders.

A Serious Mobile Equipment Spreader Company, For A Serious Industry

In the highly competitive container handling industry, it pays to compete with the strongest team at your side. Bromma is a serious company – serious about its products, serious about its commitments. You know what you get with Bromma. Bromma means strength: financial resources plus unmatched spreader production capabilities, with which to support your growth ambitions. Bromma factories in Asia and Scandinavia give Bromma the high capacity and production flexibility to meet short OEM lead time delivery requirements. Bromma means knowledge: spreaders are our only business, and on a global basis we have the industry's most experienced spreader organization. Bromma means consistency: we have always stood behind our products across their lifecycle, and we never walk away from a problem. Bromma means reliability: we are an honest company with an ethical culture that has a tradition of stability, quality, professionalism, and trustworthiness. Bromma means resources: our staff of nearly 600 manufactures well over 2,000 spreaders a year, and our continuing investment in R&D is the industry's highest. Finally, Bromma means global: we are the spreader business partner best-equipped to meet the needs of other global organizations.

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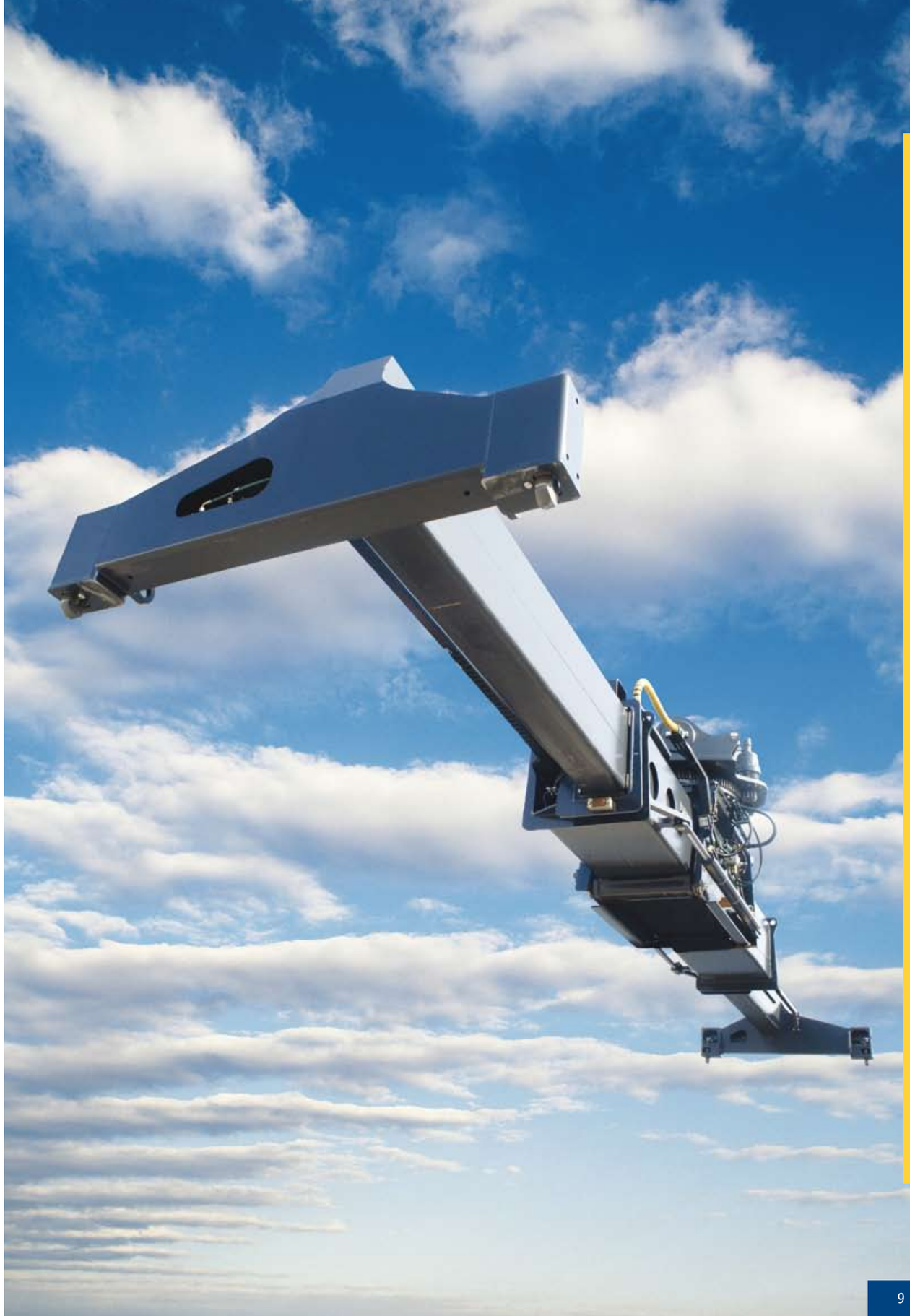
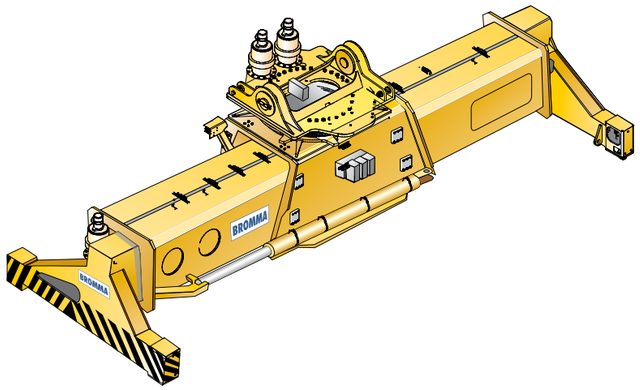




RSX40 Reach Stacker Spreader

- **Low tare weight for high performances**
- **Smooth control technology**
- **20' to 40' at maximum speed with dampening**
- **Floating ISO twistlocks**
- **±800mm side shift**
- **–195°/+105° rotator**
- **±5° MPS**
- **Full CANopen bus integrated management**
- **Longer service intervals**
- **Light but robust thanks to well proven design for a long economic life**

The Bromma RSX40 is a telescopic top lift spreader for the handling of single ISO and Binnen containers with reach stackers.

The industry must innovate to address container handling demand and this is just what Bromma did with the RSX40 – it is set to revolutionize the way drivers operate with the spreader increasing efficiency and productivity for a minimized total cost of ownership.

The spreader can adjust its length to lift containers from 20' to 40' using ISO floating twistlocks. Mechanical Pile Slope [MPS], tilt (optional), rotation and side shift features enable easy location onto containers achieved with smooth control technology.

The telescopic spreader is of a monobeam frame construction designed to absorb both vertical and horizontal forces. Four ISO twistlocks engage the containers top apertures and lock into the corner castings. As standard, the spreader is equipped with 4 x 10 tonnes lifting lugs in the corners of the end beams for handling damaged containers or special cargoes.

The RSX40 is controlled with 24 V DC solenoid operated valves and inductive proximity sensors. The electrical system is designed to ensure maximum safety during operation.

All motions of the spreader are controlled from the driver's cab over serial communication [CANopen] or parallel wiring (optional) and all commands are processed safely by the spreader Electronic Control Unit [ECU]. Lifting allowance is monitored by the ECU and implemented on the reach stacker to ensure safe container handling.

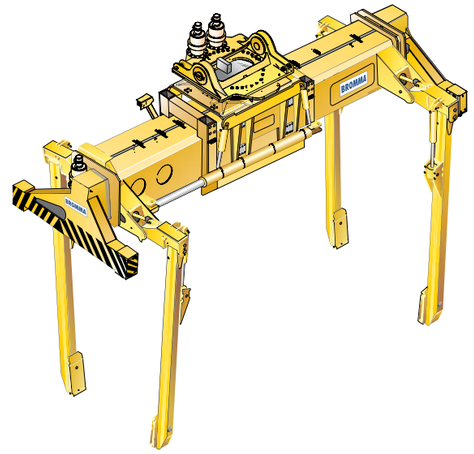
In addition, the onboard ECU offers self-diagnostic technology, derived from Bromma's innovative SCS³ crane spreader control system.

Made of high quality steel and components, the RSX40 spreader achieves greater performances with lower tare weight, extended service intervals and longer likely replacement cycles. Available with several options, the Bromma RSX40 will enhance driver's experience for a maximum productivity.

Technical Data RSX40

Lifting capacity (SWL)	45 tonnes	up to ±10% eccentric loading
	4 x 10 tonnes	with lifting lugs on twistlocks endbeams
Tare weight (TW)	7,600 kg	approximately, without extra equipment
ISO floating twistlocks	90° in less than 1.5 sec	mechanical & electrical safety interlock system
Telescoping	20' to 40' in less than 15 sec	analogue sensing of telescoping positions and dampening with maximum speed
Rotation	–195°/+105° in less than 50 sec	with smooth control technology
Side shift	±800 mm in less than 15 sec	with smooth control technology
Mechanical Pile Slope	±5°	
Electrics	24 V DC control voltage	
	Electronic Control Unit	with diagnostic technology
	Serial interface	CANopen according to CiA DS 444 profile
	2 working lights	70W each
Hydraulics	70–90 l/mn at 160 bar	ISO cleanliness rating 18/16/13 (ISO 4406)
Surface conditioning	PUR RAL 7021 (black grey) 120/2 FeSA2.5 with gloss grade 30±5	
	for a corrosion protection classification C3L/C2M according to EN – ISO 12944	

An extensive list of options enables you to adapt the spreader more precisely to your needs.
Further information is available on request. This specification is subject to alterations without prior notice.



RSX40C Reach Stacker Combi Spreader

- **Low tare weight for high performances**
- **Smooth control technology**
- **20' to 40' at maximum speed with dampening**
- **Floating ISO twistlocks**
- **Grapple arms with block stacking**
- **±800mm side shift**
- **–195°/+105° rotator**
- **±5° PPS**
- **Full CANopen bus integrated management**
- **Longer service intervals**
- **Faster diagnostics**

The Bromma RSX40C is a telescopic top lift combined container/trailer handling spreader for the handling of single ISO or Binnen containers, trailers or swap bodies with reach stackers.

The spreader can adjust its length to lift containers from 20' to 40' using ISO floating twistlocks. It also features grapple arms to lift trailers, swap bodies (C715, C745) and bottom lifting containers. Powered Pile Slope [PPS], tilt (optional), rotation and side shift features enable easy location onto containers or near pick-up points achieved with smooth control technology.

The telescopic spreader is of a monobeam frame construction designed to absorb both vertical and horizontal forces. Four ISO twistlocks engage the containers top apertures and lock into the corner castings. As standard, the spreader is equipped with 4 x 10 tonnes lifting lugs in the corners of the end beams for handling damaged containers or special cargoes.
Four grapple arms distant from 4876 mm according to the European standards can be used to lift trailers or swap bodies up to 9'6" high and 2.6 m wide.

The RSX40C is controlled with 24 V DC solenoid operated valves and inductive proximity sensors. The electrical system is designed to ensure maximum safety during operation.

All motions of the spreader are controlled from the driver's cab over serial communication [CANopen] or parallel wiring (optional) and all commands are processed safely by the spreader Electronic Control Unit [ECU]. Lifting allowance is monitored by the ECU and implemented on the reach stacker to ensure safe container handling.

In addition, the onboard ECU offers self-diagnostic technology, derived from Bromma's innovative SCS³ crane spreader control system.

Made of high quality steel and components, the RSX40C spreader achieves greater performances with lower tare weight, extended service intervals and longer likely replacement cycles. Available with several options, the Bromma RSX40C will enhance driver's experience for a maximum productivity.

Technical Data RSX40C

Lifting capacity (SWL)	45 tonnes	up to ±10% eccentric loading
	4 x 10 tonnes	with lifting lugs on twistlocks endbeams
Tare weight (TW)	12,200 kg	approximately, without extra equipment
ISO floating twistlocks	90° in less than 1.5 sec	mechanical & electrical safety interlock system
Grapple arms	2 pairs with block stacking	analogue sensing of arms position
	up or down in less than 20 sec	
Telescoping	20' to 40' in less than 15 sec	analogue sensing of telescoping positions and dampening with maximum speed
Rotation	–195°/+105° in less than 50 sec	with smooth control technology
Side shift	±800 mm in less than 15 sec	with smooth control technology
Powered Pile Slope	±5°	
Electrics	24 V DC control voltage	
	Electronic Control Unit	with diagnostic technology
	Serial interface	CANopen according to CiA DS 444 profile
	4 working lights	70W each
Hydraulics	70–90 l/mn at 160 bar	ISO cleanliness rating 18/16/13 (ISO 4406)
Surface conditioning	PUR RAL 7021 (black grey) 120/2 FeSA2.5 with gloss grade 30±5	
	for a corrosion protection classification C3L/C2M according to EN – ISO 12944	

An extensive list of options enables you to adapt the spreader more precisely to your needs.
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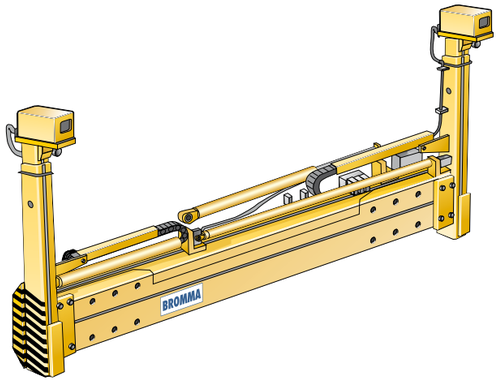

SLV40 Side Lift Spreader with Vertical Twistlocks

- **Increased capacity and decreased LLC**
- **Full block stacking with higher visibility**
- **20' to 40' at maximum speed with dampening**
- **ISO twistlocks**
- **±600mm side shift**
- **Up to ±3° self-levelling**
- **Full CANopen bus integrated management**
- **Longer service intervals and long economic life**

The Bromma SLV40 is a telescopic side lift spreader for the rapid handling of single ISO empty containers with masted lift trucks.

The industry must innovate to address container handling demand and this is just what Bromma did with the SLV40 – it is set to revolutionize the way drivers operate with the spreader increasing efficiency and productivity for a minimized total cost of ownership. The visual contact with the stack, container corners and twistlocks has been optimized.

The spreader can adjust its length to lift empty containers from 20' to 40' with a height from 8' to 9'6" and a width from 8' to 2500 mm (Binnen containers) using ISO twistlocks. Mechanical Pile Slope [MPS] and side shift features enable easy location onto containers.

The telescopic spreader is of a low height monobeam frame construction which is shorter than the containers. Its specific design offers better visibility to position easily and rapidly the twistlocks heads onto the containers, which will remain accessible even when they are fully block-stacked.

Both the spreader and the side shift carriage are designed to be optimally integrated into the lifting mast with high strength roller bearings (optional) and to minimize the Loss of Load Centre [LLC]. Two ISO twistlocks engage the containers top apertures and lock into the top corner castings. A mechanical and electrical safety system prevents the locking and release of the twistlocks if the spreader is not correctly positioned against the container.

The SLV40 is controlled with 24 V DC solenoid operated valves and inductive proximity sensors. The electrical system is designed to ensure maximum safety during operation.

All motions of the spreader are controlled from the driver's cab over serial communication [CANopen] or parallel wiring (optional) and all commands are processed safely by the spreader Electronic Control Unit [ECU]. Lifting allowance is monitored by the ECU and implemented on the lift truck to ensure safe container handling. In addition, the onboard ECU offers self-diagnostic technology, derived from Bromma's innovative SCS³ crane spreader control system.

Made of high quality steel and components, the SLV40 spreader achieves greater performances with low tare weight, extended service intervals and longer likely replacement cycles.
Available with several options, the Bromma SLV40 will enhance driver's experience for a maximum productivity.

Technical Data SLV40

Lifting capacity (SWL)	9 tonnes	
Tare weight (TW)	3,100 kg (spreader only)	approximately, without extra equipment
	~1,500 kg for the sideshift carriage depending on mast interface	
ISO twistlocks	90° in less than 1.5 sec	mechanical & electrical safety interlock system
Telescoping	20' to 40' in less than 15 sec	analogue sensing of telescoping positions and dampening with maximum speed
Side shift	±600 mm	with smooth control technology
Mechanical Pile Slope	up to ±3° self-levelling	MPS in side shift carriage in combination with 200 mm float & spring loaded vertical heads
Electrics	24 V DC control voltage	
	Electronic Control Unit	with diagnostic technology
	Serial interface	CANopen according to CiA DS 444 profile
	2 working lights	70W each
	3 indication lights	unlocked (G) – landed (Y) – locked (R)
Hydraulics	70–90 l/mn at 160 bar	ISO cleanliness rating 18/16/13 (ISO 4406)
Surface conditioning	PUR RAL 7021 (black grey) 120/2 FeSA2.5 with gloss grade 30±5	
	for a corrosion protection classification C3L/C2M according to EN – ISO 12944	

An extensive list of options enables you to adapt the spreader more precisely to your needs.
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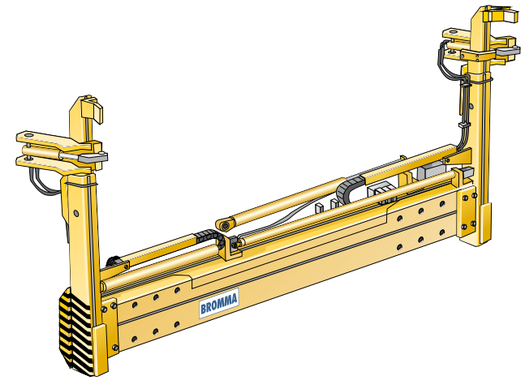


SLC40T Twin Lift Side Spreader with Hooks and Side Clamps

- **Increased capacity and decreased LLC**
- **Higher visibility and better efficiency**
- **20' to 40' at maximum speed with dampening**
- **Suspended lifting hooks with side clamps**
- **±600mm side shift**
- **Up to ±6° Powered Pile Slope**
- **Full CANopen bus integrated management**
- **Longer service intervals and long economic life**

The Bromma SLC40T is a telescopic twinlift side spreader for the simultaneous and rapid handling of two ISO empty containers with masted lift trucks. The industry must innovate to address container handling demand and this is just what Bromma did with the SLC40 – it is set to revolutionize the way drivers operate with the spreader increasing efficiency and productivity for a minimized total cost of ownership. The visual contact with the stack, container corners and hooks has been optimized.

The spreader can adjust its length to lift empty containers from 20' to 40' using hooks and side clamps with hydraulic blocking. Powered Pile Slope [PPS] and side shift features enable easy location on the containers.

The telescopic spreader is of a low height monobeam frame construction providing better visibility to position easily and rapidly the hooks into the corner castings of the container.

Both the spreader and the side shift carriage are designed to be optimally integrated into the lifting mast with high strength roller bearings (optional) and to minimize the Loss of Load Centre [LLC]
Two hooks engage the bottom container top side apertures and safety lashing clamps lock into the side corner castings of both containers. In addition to the side clamps position monitoring, a combination of mechanical sensing pins and electrical container detection sensors ensure maximum safety during handling operation, either with one or two containers.

The SLC40T is controlled with 24 V DC solenoid operated valves and inductive proximity sensors. The electrical system is designed to ensure maximum safety during operation.

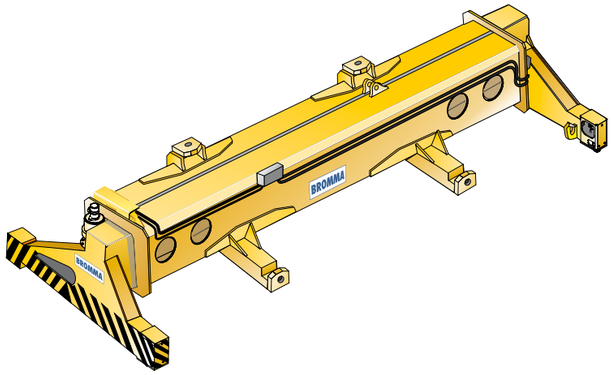
All motions of the spreader are controlled from the driver's cab over serial communication [CANopen] or parallel wiring (optional) and all commands are processed safely by the spreader Electronic Control Unit [ECU]. Lifting allowance is monitored by the ECU and implemented on the lift truck to ensure safe container handling. In addition, the onboard ECU offers self-diagnostic technology, derived from Bromma's innovative SCS³ crane spreader control system.

Made of high quality steel and components, the SLC40T spreader achieves greater performances with low tare weight, extended service intervals and longer likely replacement cycles.
Available with several options, the Bromma SLC40T will enhance driver's experience for a maximum productivity.

Technical Data SLC40T

Lifting capacity (SWL)	10 tonnes	
Tare weight (TW)	3,200 kg (spreader only)	approximately, without extra equipment
	~1,700 kg for the side shift carriage depending on mast interface	
Suspended lifting hooks	2 pcs	
Side clamps	90° in less than 2 sec	mechanical & electrical safety interlock system
Telescoping	20' to 40' in less than 15 sec	analogue sensing of telescoping positions and dampening with maximum speed
Side shift	±600 mm	with smooth control technology
Powered Pile Slope	up to ±6°	PPS in sideshift carriage in combination with 200 mm float & spring loaded vertical heads
Electrics	24 V DC control voltage	
	Electronic Control Unit	with diagnostic technology
	Serial interface	CANopen according to CiA DS 444 profile
	2 working lights	70W each
	4 indication lights	unlocked (G) – landed (Y) – aligned (Y) – locked (R)
Hydraulics	70–90 l/mn at 160 bar	ISO cleanliness rating 18/16/13 (ISO 4406)
Surface conditioning	PUR RAL 7021 (black grey) 120/2 FeSA2.5 with gloss grade 30±5	
	for a corrosion protection classification C3L/C2M according to EN – ISO 12944	

An extensive list of options enables you to adapt the spreader more precisely to your needs. Further information is available on request. This specification is subject to alterations without prior notice.



TLG40 Top Lift Spreader, Gantry Mounting

- **Low tare weight for high performances**
- **Increased capacity and decreased LLC**
- **Smooth control technology**
- **20' to 40' at maximum speed with dampening**
- **Floating ISO twistlocks**
- **±400mm hydraulic side shift**
- **±5° slew / ±120 mm reach**
- **±5° MPS**
- **Full CANopen bus integrated management**
- **Longer service intervals**
- **Light but robust thanks to well proven design for a long economic life**

The Bromma TLG40 is a telescopic top lift spreader for the handling of single ISO and Binnen containers with masted lift trucks fitted with a gantry.
The industry must innovate to address container handling demand and this is just what Bromma did with the TLG40 – it is set to revolutionize the way drivers operate with the spreader increasing efficiency and productivity for a minimized total cost of ownership.

The spreader can adjust its length to lift containers from 20' to 40' using ISO floating twistlocks. Mechanical Pile Slope [MPS] or Powered Pile Slope [PPS] (optional), side shift, slew and reach features enable easy location onto containers achieved with smooth control technology. Additional tilt is achieved with the lift truck mast.

The TLG40 is attached to the gantry with 4 telescopic hangers for spreader self leveling with containers lying on trailers with pile slope up to 5°. Integrated gantry mounting increase capacity and decrease Loss of Load Centre (LLC).

The telescopic spreader is of a monobeam frame construction designed to absorb both vertical and horizontal forces. Four ISO twistlocks engage the containers top apertures and lock into the corner castings.

The TLG40 is controlled with 24 V DC solenoid operated valves and inductive proximity sensors. The electrical system is designed to ensure maximum safety during operation.

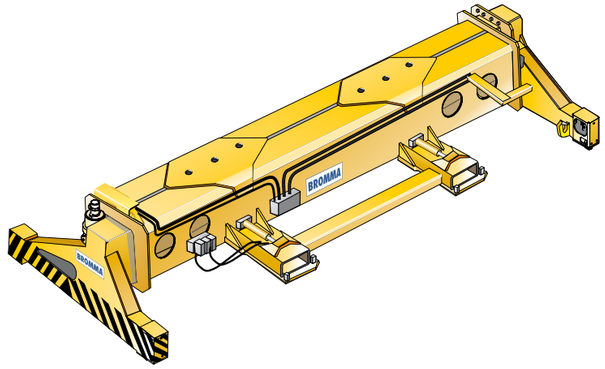
All motions of the spreader are controlled from the driver's cab over serial communication [CANopen] or parallel wiring (optional) and all commands are processed safely by the spreader Electronic Control Unit [ECU]. Lifting allowance is monitored by the ECU and implemented on the lift truck to ensure safe container handling. In addition, the onboard ECU offers self-diagnostic technology, derived from Bromma's innovative SCS^3 crane spreader control system.

Made of high quality steel and components, the TLG40 spreader achieves greater performances with lower tare weight, extended service intervals and longer likely replacement cycles. Available with several options, the Bromma TLG40 will enhance driver's experience for a maximum productivity.

Technical Data TLG40

Lifting capacity (SWL)	45 tonnes	up to ±10% eccentric loading
	4 x 10 tonnes	with lifting lugs on twistlocks endbeams
Tare weight (TW)	5,000 kg	approximately, without extra equipment
ISO floating twistlocks	90° in less than 1.5 sec	mechanical & electrical safety interlock system
Telescoping	20' to 40' in less than 15 sec	analogue sensing of telescoping positions and dampening with maximum speed
Slew	±5°	with smooth control technology
Reach	±120 mm	with smooth control technology
Side shift	±400 mm in less than 8 sec	with smooth control technology
Mechanical Pile Slope	±5°	self leveling with 4 telescopic hangers
Electrics	24 V DC control voltage	
	Electronic Control Unit	with diagnostic technology
	Serial interface	CANopen according to CiA DS 444 profile
	2 working lights	70W each
	3 indication lights	unlocked (G) – landed (Y) – locked (R)
Hydraulics	70–90 l/mn at 160 bar	ISO cleanliness rating 18/16/13 (ISO 4406)
Surface conditioning	PUR RAL 7021 (black grey) 120/2 FeSA2.5 with gloss grade 30±5	
	for a corrosion protection classification C3L/C2M according to EN – ISO 12944	

An extensive list of options enables you to adapt the spreader more precisely to your needs.
Further information is available on request. This specification is subject to alterations without prior notice.



TLF40 Top Lift Spreader, Standard/Inverted Forks Mounting

- **Low tare weight for high performances**
- **Minimized loss of load centre**
- **Smooth control technology**
- **20'to 40' at maximum speed with dampening**
- **Floating ISO twistlocks**
- **±3° slew / ±50 mm reach**
- **±5° MPS**
- **Full CANopen bus integrated management**
- **Longer service intervals**
- **Light but robust thanks to well proven design for a long economic life**

The Bromma TLF40 is a telescopic top lift spreader for the handling of single ISO and Binnen containers with masted lift trucks equipped with standard or inverted forks.

The spreader can adjust its length to lift containers from 20' to 40' using ISO floating twistlocks. Mechanical Pile Slope [MPS], slew and reach (optional) features enable easy location onto containers. Additional tilt and side shift are provided by the fork lift truck.

The TLF40 is designed with fork pockets to fit standard or inverted forks. The spreader is latched onto the heels of the forks by means of pivoting arms mechanically secured with pins. Slew and reach is optional: it is achieved by 2 hydraulic cylinders which connect the spreader and an intermediate forks frame fitted between the forks and the fork pockets mounted on sliding pads. Dedicated fork mounting ensure self leveling with containers lying on trailers with pile slope up to 5°.

The telescopic spreader is of a monobeam frame construction designed to absorb both vertical and horizontal forces. Four ISO twistlocks engage the containers top apertures and lock into the corner castings. As standard, the spreader is equipped with 4 x 10 tonnes lifting lugs in the corners of the end beams for handling damaged containers or special cargoes.

The TLF40 is controlled with 24 V DC solenoid operated valves and inductive proximity sensors. The electrical system is designed to ensure maximum safety during operation.

All motions of the spreader are controlled from the driver's cab over serial communication [CANopen] or parallel wiring (optional) and all commands are processed safely by the spreader Electronic Control Unit [ECU]. Lifting allowance is monitored by the ECU and implemented on the lift truck to ensure safe container handling. In addition, the onboard ECU offers self-diagnostic technology, derived from Bromma's innovative SCS^3 crane spreader control system.

Made of high quality steel and components, the TLF40 spreader achieves greater performances with lower tare weight, extended service intervals and longer likely replacement cycles. Available with several options, the Bromma TLF40 will enhance driver's experience.

Technical Data TLF40

Lifting capacity (SWL)	45 tonnes	up to ±10% eccentric loading
	4 x 10 tonnes	with lifting lugs on twistlocks endbeams
Tare weight (TW)	5,000 kg	approximately, without extra equipment
	5,900 kg	with slew and reach intermediate carriage
ISO floating twistlocks	90° in less than 1.5 sec	mechanical & electrical safety interlock system
Telescoping	20' to 40' in less than 15 sec	analogue sensing of telescoping positions and dampening with maximum speed
Slew	±3°	with smooth control technology
Reach	±50 mm	with smooth control technology
Side shift	on fork lift truck	
Mechanical Pile Slope	±5°	self leveling
Electrics	24 V DC control voltage	
	Electronic Control Unit	with diagnostic technology
	Serial interface	CANopen according to CiA DS 444 profile
	2 working lights	70W each
	3 indication lights	unlocked (G) – landed (Y) – locked (R)
Hydraulics	70–90 l/mn at 160 bar	ISO cleanliness rating 18/16/13 (ISO 4406)
Surface conditioning	PUR RAL 7021 (black grey) 120/2 FeSA2.5 with gloss grade 30±5	
	for a corrosion protection classification C3L/C2M according to EN – ISO 12944	

An extensive list of options enables you to adapt the spreader more precisely to your needs.
Further information is available on request. This specification is subject to alterations without prior notice.

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