MOBILE HARBOUR CRANE SPREADERS

A Tradition Of Innovation
Wherever mobile or jib cranes are found, Bromma spreaders can usually be found there as well. Container terminals throughout the world, whether in fast growing emerging economies, or high-throughput developed economies, have common goals when it comes to equipment selection: reliability, efficiency, and productivity. This is why Bromma for many decades has been the world leader in spreaders, and why Bromma mobile harbor crane spreaders are the spreader of choice, with a global market share of approximately 70%. Bromma’s partnerships with the leading mobile harbor crane OEMs, as well as with end user terminals, are long and deep. At Bromma we seek to listen to our partners, and this has led to the development of a broad family of mobile harbor crane spreader solutions.

Bromma has a dominant position in mobile harbor crane spreaders for a simple reason: in terminals where reliability is essential, Bromma spreaders have an unmatched reputation for reliability. Bromma spreaders show up for work every day, in the world’s most demanding container terminals, and perform at a high level of productivity. When reliability is crucial, Bromma is the obvious choice. Bromma’s family of mobile harbor crane spreaders includes single-lift options such as the EH5U spreader (capable of handling 20’ or 40’ containers); the EH12U single-lift lightweight spreader; and the MSX45 spreader (also capable of handling 45’ containers). For terminals seeking higher productivity from each lift, Bromma mobile harbor crane spreader twin-lift options include the EH170U twin-lift mobile harbor crane spreader (capable of handling two 20’ containers); the MTS45 separating twin-lift spreader; and the MTR45 twin-lift mobile harbor crane spreader (capable of handling 45’ containers).

Whatever the lifting requirements and container mix at your terminal, Bromma has the right spreader for you.

Feature-Rich Design
No spreader company has more real-world experience in container handling than Bromma, and in mobile harbour crane spreaders. The Bromma mobile harbour crane spreader family also includes the EHSU – the industry’s leading mobile harbour crane spreader.
spreaders this has led to feature-rich design. Bromma MHC spreaders offer tower and gravity point adjustment, so that unevenly loaded containers can be picked up horizontally, which is especially important when loading or unloading in the guides of the ship’s cells. A sliding assembly allows the gravity lifting point to be adjusted by 1.2 metres in both directions. When a container is released, the tower automatically returns to the centre position. Spreaders can also be equipped with a leveling device which prevents the crane operator from moving the tower in the wrong direction when adjusting the gravity point. Plus, a versatile six side-flipper arm configuration provides the crane operator with an improved ability to locate the containers and the side-flipper installation mounted on an inclined base eliminates the interference with cell guides when flippers are in the upper position.

Intelligent design has led to spreaders that have a high lifting capacity [41 tonne in single-lift; 50 tonne in twin-lift] while maintaining a low nominal tare weight. In addition, intelligent design leads to extended durability. On a Bromma spreader, main frame and flipper shock protection systems are designed to ensure the long-term structural integrity of the spreader. To reduce shock on the main frame, a rubber damper system is between the main frame and the sliding telescopic beam. The telescopic drive system is equipped with a high grade shock absorption system to protect the structure and facilitate movement in the telescopic system. Finally, a rubber mounted landing buffer in the flipper system reduces shock if the flippers are hit in their upper position, extending the lifetime of the flipper arm. The telescopic system, electrical equipment and cable chain system are also well protected in the main frame.

The Bromma advantage in spreader engineering and design is an important reason why Bromma is the first name in MHC and rail-mounted jib crane spreaders. **Lower Downtime, Increased Uptime**

Purpose-designed Bromma SCS³ control and communications technology monitors spreader performance, reduces downtime events (through simplified wiring and fewer connections) and shortens downtime duration (through faster fault diagnosis) when faults occur. The latest generation of this technology, SCS³, is easy to use and simple to understand, due to an on-board touch-screen display. It also features the industry’s first generation of spreader prognostics, an “early warning system” for future spreader faults. Spreader prognostics mean that terminals can now not only fix problems faster, but prevent faults (and downtime) from occurring. By delivering specific fault information [monitoring and recording each individual sensor and switch, instead of monitoring a fault group], the SCS³ touch-screen display provides technicians with very specific intelligence. Bromma Services believes this technology can reduce spreader downtime by 20% or more.

Bromma SCS³ is designed with the necessary ruggedness to survive high-impact container handling and an operating protocol capable of smooth performance even in “dirty” terminal electrical environments. It easily interfaces with the crane PLC and is highly efficient in terms of cores, with cost reduction in cable and the crane cable reel as a result. The Bromma advantage in spreader technology is an important reason why Bromma spreaders move containers today in 96 out of the world’s top 100 container ports.

**Building MHC Spreaders To Survive Real-World Container Handling**

Bromma understands the familiar terrain of container handling – the tough physical environment in which terminals operate. High heat and humidity, driving rain, sleet or snow, blowing sand, wind-borne salt – such conditions would test any equipment, but in addition to this, spreaders are beat up constantly.

**SCS³ is easy to use and simple to understand, due to an on-board touch-screen display.**

**It also features the industry’s first generation of spreader prognostics, an “early warning system” for future spreader faults.**
Bromma spreaders are designed for the terrain of the terminal, and remain productive, reliable and durable under conditions that are never ideal. Core commitments at Bromma, such as design simplicity, quality control, manufacturing integrity, and leading technology, are at the heart of minimizing spreader downtime, and helping terminals achieve faster ship turns and the fullest possible utilization of terminal berth capacity.

In addition, Bromma has the resources to invest for production success. Bromma develops its own testing systems, and its own production rigs, because Bromma understands that few physical environments are as challenging as container handling. Bromma spreaders are built to thrive in real-world container handling.

Designing With Details In Mind
Engineering excellence means careful attention to the little things in spreader design. The continuous improvement engineering philosophy of the Bromma Group has led to mobile harbour crane spreaders that are engineered for higher performance.

ISO floating twist locks have a floating capacity of 6 mm and both electrical interlock and mechanical blocking. The telescopic motion is controlled by proximity switches for a further simplified maintenance set up. Twin-lift MHC spreaders are designed for installation of the Bromma TTDS (Twin Twenty Detection System), with the attachment already included in the standard configuration. Finally, all components are readily accessible and simplified design means fewer mechanical components, fewer spare parts and reduced maintenance.

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 also include knowledge products derived from our advanced, pioneering SCS3 technology.

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 MHC Spreaders
In recent years environmental concerns have taken on increasing importance at terminals around the world. By achieving an excellent weight-to-lifting capacity ratio, Bromma spreaders reduce energy costs. Lower spreader weight means lower annual crane energy costs. As a Scandinavian company, Bromma has a history of environmental awareness, and Bromma R&D has for many years made engineering choices, in part, based on environmental concerns. Bromma is committed to making engineering choices that demonstrate environmental leadership in spreaders.

A Greater Return On Your Mobile Harbour Investment
Bromma sells more than 1,000 telescopic crane spreaders each year – more than all of its competitors combined. The reason? In the end, what sets Bromma apart from competitors is a major difference in lifetime value.

A spreader fleet made up of less reliable spreaders is a more expensive spreader fleet. Less reliable spreaders require more service time and expense. They lead to more capital being invested in spreader spares – capital that could be re-allocated to terminal growth-producing initiatives. Less reliable spreaders compromise the competitive position of your terminal, and put a ceiling on terminal revenue. They can weaken a terminal’s relationships with its customers, and slow growth. In the end, operational performance determines which terminals compete and win, and which flatten or decline.

What determines true spreader value? Spreader value is not calculated simply by looking at initial spreader price, but by the performance and operating costs of a spreader over a lifetime – lifetime energy costs, lifetime service and maintenance costs, and most importantly, spreader reliability and productivity. This is why mobile harbour crane spreader fleet planning must be based on the full spectrum of value – cost to purchase, but also cost to operate — lifetime energy and maintenance costs, fleet durability, and spreader productivity.

Growing terminals need business partners who understand the metrics of performance and the necessity of achieving high capital return on investment. Bromma supports the success and growth of our terminal partners, through our focus on spreaders [spreaders are our only business], our resources [Bromma builds nearly 2,000 spreaders per year] and the enterprise values at Bromma which are consistent with success.

In the end, Bromma spreaders will mean a higher return on your mobile harbour crane investment. This is why Bromma is the first name in mobile harbour crane spreaders.
### EH5U, 20’–40’ Single Lift Spreader
The Bromma EH5U spreader is a single lift mobile harbour crane spreader with high lifting capacity of 41 tonnes combined with low weight. This means better performance with no impact on the load curve or the travelling of the crane. The EH5U comes with the Bromma standard ISO floating twistlock with a floating capacity of 6 mm and both electrical interlock and mechanical blocking.

The telescopic motion is controlled by proximity switches for a further simplified setting, and the spreader is prepared for installation of the Bromma TDTS (Twin Twenty Detection System).

To handle unevenly loaded containers, a sliding tower assembly allows the gravity lifting point to be adjusted by 1.2 meters in both directions. When a container is released, the tower will automatically return to the centre position.

### EH12U, 20’–40’ Single Lift Light Weight Spreader
The Bromma EH12U spreader is a single lift mobile harbour crane spreader with high lifting capacity of 35 tonnes evenly loaded, combined with low weight. This means better performance with no impact on the load curve or the travelling of the crane. EH12U is a lightweight version of EH5U, ideal for use on cranes rated to lift less weight.

The EH12U comes with the Bromma standard ISO floating twistlocks with a floating capacity of 6 mm and both electrical interlock and mechanical blocking.

The telescopic motion is controlled by proximity switches for a further simplified setting, and the spreader is prepared for installation of the Bromma TDTS (Twin Twenty Detection System).

To handle unevenly loaded containers, a sliding tower assembly allows the gravity lifting point to be adjusted by 1.2 meters in both directions. When a container is released, the tower will automatically return to the centre position.

### Technical Data EH5U

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifting capacity (According to DIN 15018 H2B)</td>
<td>41 tonnes evenly loaded</td>
</tr>
<tr>
<td></td>
<td>41 tonnes ±10% eccentric load</td>
</tr>
<tr>
<td>Lifting lugs</td>
<td>4 ± 10 tonnes in the main frame and end beams</td>
</tr>
<tr>
<td>Weight</td>
<td>9.0 tonnes (without extra equipment)</td>
</tr>
<tr>
<td>Gravity point adjustment</td>
<td>±1200 mm in 20 seconds</td>
</tr>
<tr>
<td>Telescopic motion</td>
<td>From 20’ to 40’ in approximately 30 seconds</td>
</tr>
<tr>
<td>Flipper arm speed</td>
<td>180° in 3–5 seconds</td>
</tr>
<tr>
<td>Twistlock rotation</td>
<td>ISO floating 90° in approximately 1 second</td>
</tr>
<tr>
<td>Hydraulics</td>
<td>System pressure 100 bar</td>
</tr>
<tr>
<td></td>
<td>Piston pump pressure compensated</td>
</tr>
<tr>
<td></td>
<td>Maximum flow 30 l/min</td>
</tr>
<tr>
<td>Power supply</td>
<td>400/230 VAC 50 Hz or otherwise as agreed</td>
</tr>
<tr>
<td>Max power consumption</td>
<td>12.9 kW</td>
</tr>
<tr>
<td>Electrical cabinet</td>
<td>Stainless steel IP65</td>
</tr>
<tr>
<td>Control voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Surface conditioning</td>
<td>Sand-blasted SA 2.5</td>
</tr>
<tr>
<td></td>
<td>50 microns 2-component zinc epoxy</td>
</tr>
<tr>
<td></td>
<td>70 microns 2-component MD epoxy</td>
</tr>
<tr>
<td></td>
<td>40 microns 2-component acrylic epoxy</td>
</tr>
<tr>
<td></td>
<td>40 microns 2-component acrylic epoxy</td>
</tr>
</tbody>
</table>

### Technical Data EH12U

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifting capacity (According to DIN 15018 H2B/3)</td>
<td>35 tonnes evenly loaded</td>
</tr>
<tr>
<td></td>
<td>30.5 tonnes ±10% eccentric load</td>
</tr>
<tr>
<td>Lifting lugs</td>
<td>4 ± 8.75 tonnes in the main frame and end beams</td>
</tr>
<tr>
<td>Weight</td>
<td>6.6 tonnes (without extra equipment)</td>
</tr>
<tr>
<td>Gravity point adjustment</td>
<td>±1200 mm in 20 seconds</td>
</tr>
<tr>
<td>Telescopic motion</td>
<td>From 20’ to 40’ in approximately 30 seconds</td>
</tr>
<tr>
<td>Flipper arm speed</td>
<td>180° in approximately 5 seconds</td>
</tr>
<tr>
<td>Twistlock rotation</td>
<td>ISO floating 90° in approximately 1.5 second</td>
</tr>
<tr>
<td>Hydraulics</td>
<td>System pressure 100 bar</td>
</tr>
<tr>
<td></td>
<td>Piston pump pressure compensated</td>
</tr>
<tr>
<td></td>
<td>Maximum pump flow 40 l/min</td>
</tr>
<tr>
<td>Power supply</td>
<td>400/230 VAC 50 Hz or otherwise as agreed</td>
</tr>
<tr>
<td>Max power consumption</td>
<td>7.5 kW at 50 Hz/6.0 kW at 60 Hz</td>
</tr>
<tr>
<td>Electrical cabinet</td>
<td>Stainless steel IP66</td>
</tr>
<tr>
<td>Control voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Surface conditioning</td>
<td>Sand-blasted SA 2.5</td>
</tr>
<tr>
<td></td>
<td>50 microns 2-component zinc epoxy</td>
</tr>
<tr>
<td></td>
<td>70 microns 2-component MD epoxy</td>
</tr>
<tr>
<td></td>
<td>40 microns 2-component acrylic epoxy</td>
</tr>
<tr>
<td></td>
<td>40 microns 2-component acrylic epoxy</td>
</tr>
</tbody>
</table>
**MSX45, 20’–45’ Single Lift Spreader**

The Bromma MSX45 spreader is a single lift mobile harbour crane spreader with high lifting capacity of 41 tonnes combined with low weight. This means better performance with no impact on the load curve or the travelling of the crane.

The telescoping system is driven by means of a hydraulic motor connected to an endless chain, which is fitted with a block of springs to absorb shock loads. The flexibility in the system allows small changes in spreader length when handling distorted containers.

The electrical components and the cable chain system are well protected inside the tower. The hydraulic unit is fully enclosed within the main frame. The unit consists of a variable displacement piston pump, tank, motor, valves and filter.

The safety platform on the tower for easy access to power connections and lifting shafts minimizes the risk of injuries.

The spreader is made of high quality steel. It is designed in accordance with DIN 15018 H₂B₄. All components can be easily assembled, adjusted, removed and are accessible for inspection and maintenance. Structures are proof-tested at the plant with a minimum 50% overload.

**Technical Data MSX45**

- **Lifting capacity (According to DIN 15018 H₂B₄):** 41 tonnes evenly loaded
- **Lifting lugs:** 4 x 10 tonnes in the main frame and end beams
- **Weight:** 9.1 tonnes (without extra equipment)
- **Gravity point adjustment:** ±1250 mm in approximately 20 seconds
- **Telescopic motion:** System pressure 100 bar ± 150 bar
- **Flipper arm speed:** 180° in 3–5 seconds
- **Twistlock rotation:** ISO floating 90° in approximately 1 second
- **Hydraulics:** Piston pump pressure compensated
- **Power supply:** 400/230 VAC 50 Hz or otherwise as agreed
- **Max power consumption:** 7.5 kW
- **Electrical cabinet:** Stainless steel IP 65
- **Control voltage:** 24 VDC
- **Surface conditioning:** Sand-blasted SA 2.5
- **Material:** 40 microns 2-component zinc epoxy
- **Material:** 70 microns 2-component MD epoxy
- **Material:** 40 microns 2-component acrylic epoxy
- **Material:** 50 microns 2-component zinc epoxy
- **Material:** 70 microns 2-component MD epoxy
- **Material:** 40 microns 2-component acrylic epoxy

**EH170U, 20’–40’ Twinlift Spreader**

The Bromma EH170U spreader is a twinlift mobile harbour crane spreader with high lifting capacity of 41 tonnes in single lift and 50 tonnes in twin lift combined with low weight. This means better performance with no impact on the load curve or the travelling of the crane.

The electrical components and the cable chain system are well protected inside the tower. The two hydraulic units are placed inside each end beam. Each unit consists of a built-in tank, variable displacement piston pump, motor, valves and filter. A third hydraulic unit for twin boxes is placed in the main frame.

The spreader is made of high quality steel. It is designed in accordance with DIN 15018 H₂B₄. All components can be easily assembled, adjusted, removed and are accessible for inspection and maintenance.

**Technical Data EH170U**

- **Lifting capacity (According to DIN 15018 H₂B₄):** 41 tonnes evenly loaded
- **Lifting lugs:** 2 x 25 tonnes in both modes
- **Weight:** 10.7 tonnes (without extra equipment)
- **Gravity point adjustment:** ±1200 mm in approximately 20 seconds
- **Telescopic motion:** System pressure 100 bar
- **Flipper arm speed:** 180° in 3–5 seconds
- **Twistlock rotation:** ISO floating 90° in approximately 1.5 seconds
- **Hydraulics:** Piston pump pressure compensated
- **Power supply:** 400/230 VAC 50 Hz or otherwise as agreed
- **Max power consumption:** 15.9 kW
- **Electrical cabinet:** Stainless steel IP 65
- **Control voltage:** 24 VDC
- **Surface conditioning:** Sand-blasted SA 2.5
- **Material:** 70 microns 2-component zinc epoxy
- **Material:** 70 microns 2-component MD epoxy
- **Material:** 40 microns 2-component acrylic epoxy
- **Material:** 40 microns 2-component acrylic epoxy
The Bromma MTR45 telescopic twinlift mobile harbour crane spreader offers the loading and unloading speed of twin-lift spreaders, with the added flexibility to perform singlelift container handling as well.

The MTR45 can single-lift one container in the 20', 30' (option), 40' or 45' position, or twin-lift two fully loaded 32.5 tonne containers, or twin-lift two containers with quite different loads.

The MTR45 is capable of highly eccentric gravity point adjustment of 2.1 meters. It can also be outfitted with Bromma’s twin-twenty detection system, (TTDS) which uses a cluster of sensors to detect a gap between containers loaded in the ship’s cell.

The MTR45 features a pole design for the gravity point adjustment, so that eccentrically loaded containers can be adjusted into horizontal position. This allows the spreader to be safely rotated without tilting or overloading. The gravity point adjustment is especially important when loading or unloading in the guides in the ship’s cells. After unlocking an unevenly loaded container, the tilting pole assembly automatically returns to the vertical position.

The flexibility designed into the telescopic system allows small changes in spreader length when handling distorted containers. Bromma’s six-flipper arm layout, coupled with a hydraulic motor flipper drive, provides positive damping to allow efficient gathering on to a container even when the spreader is rotating.

The MTR45 is made of high quality steel. It is designed in accordance with DIN 15018 H2B4. All components can be easily assembled, adjusted, removed and are accessible for inspection and maintenance.

The spreader comes with the SCS3 Spread Control System, reducing and preventing downtime through improvements in the area of electrical connections. It will also shorten downtime through faster spreader fault diagnostics.
**Technical Data MTS45**

**Lifting capacity**
- One container 51 tonnes ±10% eccentric loading
- Twinlift of two 20’ containers 2 x 32.5 tonnes

**Lifting lugs**
- 4 x 10 tonnes in end beam

**Separating capacity**
- 0–1600 mm with full load

**Gravity point adjustment**
- 2.1 meters in 7 seconds

**Telescopic motion**
- From 20’ to 45’ in approximately 30 seconds

**Flipper arm speed**
- 180° in 3 to 5 seconds

**Twistlock rotation**
- 90° in approximately 1.5 seconds

**Twinlift unit up/down**
- Approximately 8 seconds

**Twin expand/retract**
- Approximately 16 seconds

**Hydraulics**
- System pressure 100 bar/160 bar
- Piston pump pressure compensated and power controlled
- Maximum flow 50 l/min
- Shock valve setting telescopic 70 bar
- Shock valve setting flipper arm 200–250 bar

**Power supply**
- 400/230 V AC 50 Hz or otherwise as agreed
- 400/230 V AC 50 Hz or otherwise as agreed

**Max power consumption**
- 7.5 kW at 50 Hz/5.0 kW at 60 Hz

**Control system**
- SCS3 Spreader Control System

**Control voltage**
- 24 V DC

**Electrical cabinet**
- Stainless steel IP 66

**Surface conditioning**
- Sand-blasted SA 2.5
- 50 microns 2-component zinc epoxy
- 70 microns 2-component RO epoxy
- 40 microns 2-component acrylic epoxy
- 40 microns 2-component acrylic epoxy

**MTS45, 20’–45’ Separating Twin Spreader**

The Bromma MTS45 telescopic twinlift mobile harbour crane spreader offers the loading and unloading speed of twinlift spreaders, with the added flexibility to perform singlelift container handling as well.

Two 20’ containers can be moved synchronised towards one another and apart from one another from 0 to 1.6 meters under full load while suspended under the twistlocks. The movements are symmetrical and can be done at anytime in the crane cycle with no stopping time.

The MTS45 can single-lift one container in the 20’, 30’ (option), 40’ or 45’ position, or twin-lift two fully loaded 32.5 tonne containers, or twin-lift two containers with quite different loads.

The MTS45 is capable of highly eccentric gravity point adjustment of 2.1 meters. It can also be outfitted with Bromma’s twin-twenty detection system, (TTDS) which uses a cluster of sensors to detect a gap between containers loaded in the ship’s cell.

The MTS45 features a pole design for the gravity point adjustment, so that eccentrically loaded containers can be adjusted into horizontal position.

This allows the spreader to be safely rotated without tilting or overloading. The gravity point adjustment is especially important when loading or unloading as the guides in the ship’s cells. After unlocking an unevenly loaded container, the tilting pole assembly automatically returns to the vertical position.

The flexibility designed into the telescopic system allows small changes in spreader length when handling distorted containers. Bromma’s six-flipper arm layout, coupled with a hydraulic motor flipper drive, provides positive damping to allow efficient gathering on to a container even when the spreader is rotating.

The MTS45 is made of high quality steel. It is designed in accordance with DIN 15018 H2B4. All components can be easily assembled, adjusted, removed and are accessible for inspection and maintenance.

The spreader comes with the SCS3 Spreader Control System, reducing and preventing downtime through improvements in the area of electrical connections. It will also shorten downtime through faster spreader fault diagnostics.