

PRODUCT INFORMATION

MSX45 Single Lift Mobile Harbour Crane Spreader



The spreader shown is equipped with extra accessories

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 MSX45 extends from 20 foot to 45 foot with an intermediate stop at 40 foot. Six powerful hydraulically operated flipper arms are mounted at the ends and sides of the spreader to provide efficient gathering on to a container even when the spreader is rotating.

The main frame of the spreader is connected to the crane through a sliding tower assembly. This enables the center of gravity lifting point to be moved a maximum of 1.25 meters towards each end of the spreader, so that unevenly loaded containers can be picked up horizontally. After unlocking an unevenly loaded container, the sliding tower assembly automatically returns to the central position.

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 disorted containers.

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

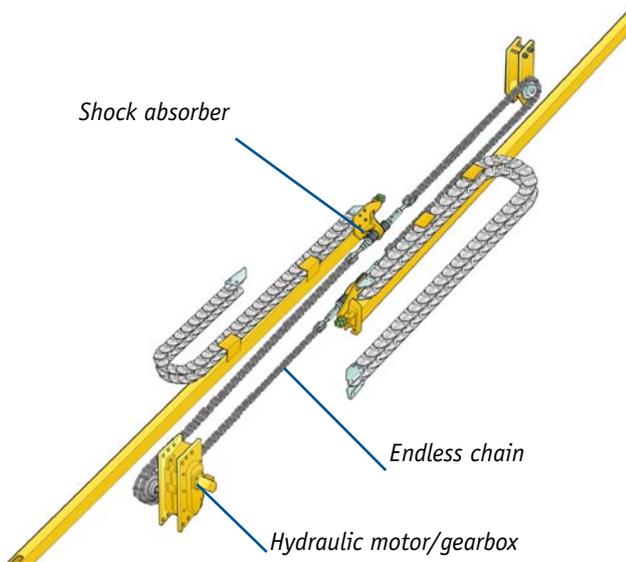
The safety platform on the tower for easy access to mains power plug and lifting shaft minimizes the risk of injuries.

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.

MAJOR FEATURES

- Tower design with ± 1.25 m gravity point adjustment
- High lifting capacity, 41 tonnes, with low tare weight
- Adjustable for 20' 40' and 45' containers
- Six side-flipper arm configuration
- Bromma standard ISO floating twistlock
- Proximity switches for positioning of telescopic motion
- Flipper installation for better protection of the flipper arm in cell guides
- Shock absorption between telescopic beam and main frame
- Fulfils design criteria among DIN 15018 H₂B₄, FEM 1.001 and British Standard BS 2573

TELESCOPING SYSTEM



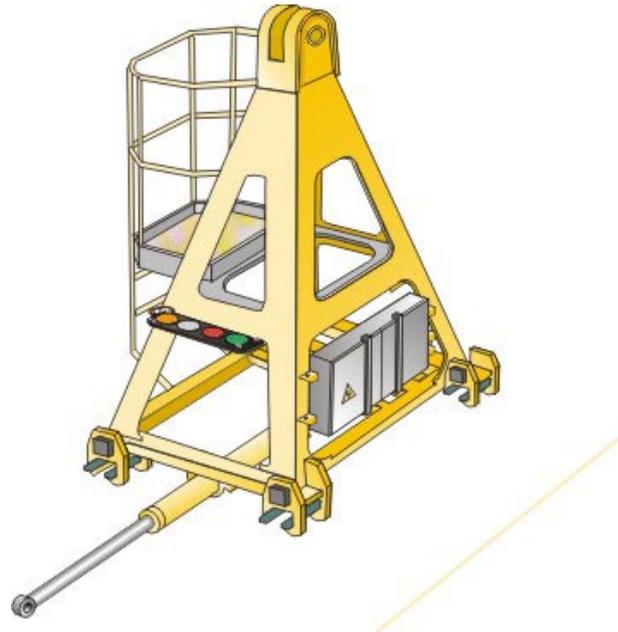
The telescoping system is driven by means of a hydraulic motor and a reduction gearbox connected to an endless chain. The endless chain is fitted with a Bromma design shock absorber at both ends. The shock absorber is designed to dampen the effects of impact on the spreader structure and components due to loads imposed to the spreader ends. The telescopic beams are running on sliding pads.

The telescoping system's ability of absorbing extreme loads mechanically provides the end user with a highly reliable spreader with increased life even under extreme load conditions.

The flexibility in the system allows for changes in spreader length up to ± 15 mm when handling distorted containers.

This system stops accurately in all positions. It is durable and strong but has low weight, is easy to maintain and has long service intervals. The telescoping positions are controlled by an absolute encoder (or proximity sensors, option) placed on the pedestal bearing.

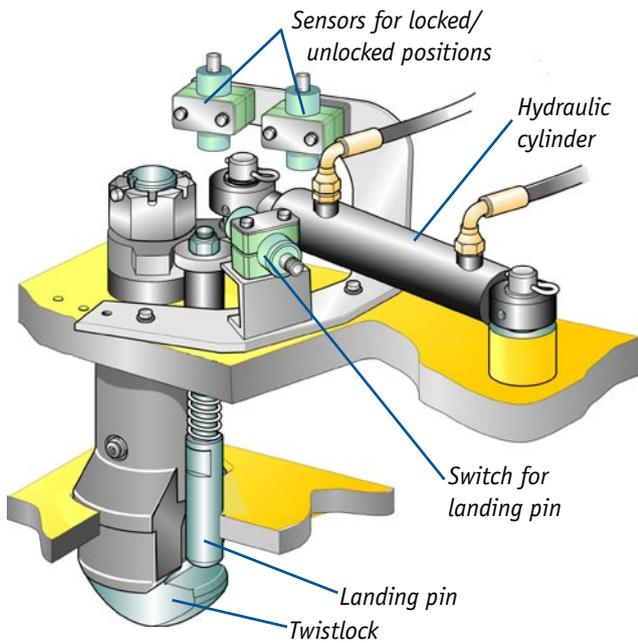
GRAVITY POINT ADJUSTMENT



The main frame of the spreader is connected to the crane through a sliding tower assembly. The gravity point adjustment is controlled by a hydraulic cylinder. This enables the centre of gravity lifting point to be moved a maximum of 1.25 meters towards each end of the spreader. This means that unevenly loaded containers can be picked up horizontally, which is specially important when loading or unloading in the guides in the ship's cells. After unlocking an unevenly loaded container, the sliding tower assembly automatically returns to the central position.

The tower also has a safety platform for easy access to mains power plug and lifting shaft.

TWISTLOCK SYSTEM



The spreader is latched onto containers by means of hydraulically operated floating ISO twistlocks.

Each twistlock is operated with a separate hydraulic cylinder. The cylinder rotates the twistlock, and two sensors indicate the position of the twistlock – Locked or Unlocked.

A spring loaded landing pin near each twistlock is pushed up into the twistlock housing when the spreader is landed on the container. When the spreader is properly landed on a container, the landing pin will activate a proximity switch. The twistlocks can only be turned when all the corners of the spreader are landed.

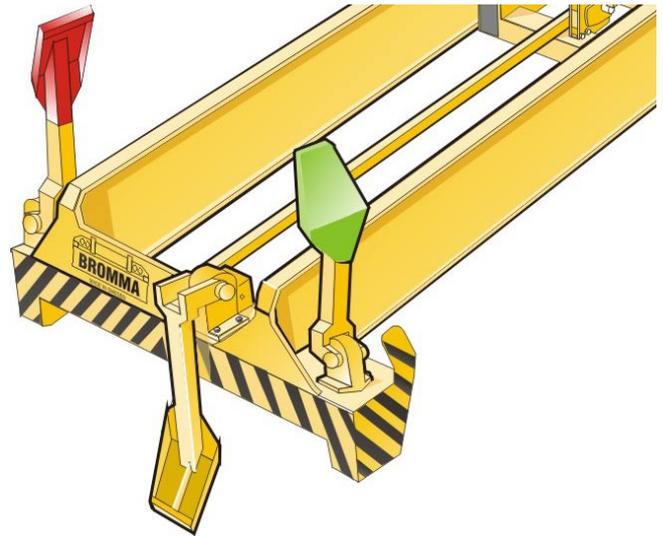
The floating range is ± 6 mm in all directions. Each twistlock will incorporate a mechanical interlock to prohibit unlock operation when under load. The twistlock pins are proof load tested to 37 tonnes.

LED type signal lights are placed on each end of the spreader's main frame (optional), showing the driver when:

- the twistlocks are open,
- the spreader is properly engaged in the corner castings,
- all twistlocks are properly locked in the corner castings.
- the tower is in the mid position.

Corresponding signals are provided to the crane cabin.

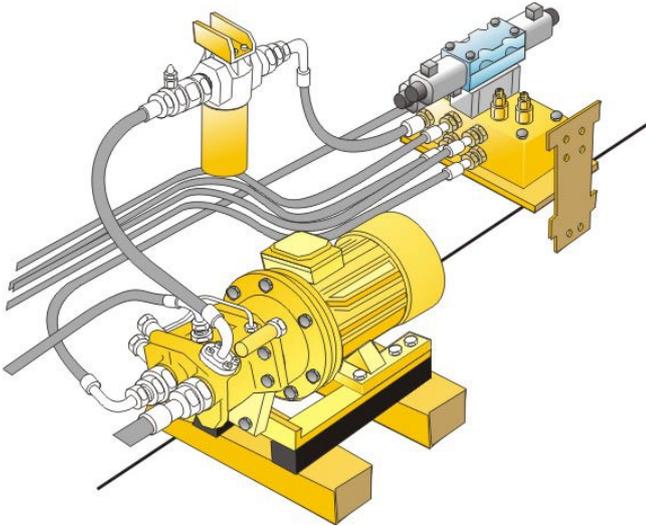
FLIPPER ARMS



Six retractable aligning arms, flippers (two at each long-side and one at each gable end) are fitted to the spreader. They are of a strong construction and driven by hydraulic motors (or hydraulic actuators as option) and controlled by solenoid valves, which enables easy and fast location of the spreader onto containers.

The opening torque for each arm is about 2,500 Nm with hydraulic motors (about 6,500 Nm with optional hydraulic actuators) and they provide a gathering capacity of about 23 cm. The arms are always under pressure and each arm is provided with a shock relief valve, which opens at pressure 180 bars. As soon as shockload ends the arms return to vertical position.

HYDRAULIC UNIT



The hydraulic unit consists of a shock mounted tank and pump, an electrical motor, valves and a filter.

The foot and flange mounted three phase cage induction electric motor corresponds to the major worldwide standards. The motor gives 7.5 kW at 50 Hz and 9 kW at 60 Hz and the protection grade is IP 55 (suitable for most climates).

To achieve maximum durability a robust piston pump is used. The pump has low noise level and is easy to service.

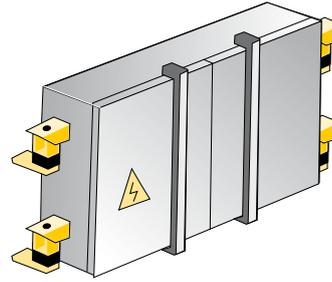
The oil tank has an open design and is easy to clean and inspect. The tank holds 120 litres and the oil level is clearly shown in the sight glass.

The hydraulic oil is filtered through an externally mounted 10 micron absolute rated line filter. Additionally, another 10 micron absolute rated return line filter is mounted inside the oil tank. The hydraulic oil meets the requirements of ISO code 17/15/13 cleanliness classification.

The power pack is designed to work under various conditions and the oil type has to be chosen according to local demands.

Oil is distributed to hydraulic valves on the main frame to control the telescoping. Oil is also distributed to the end beams via hoses that are well protected inside the cable chains and tension rods. The hydraulic valves for flippers and twistlocks are placed in the end beams.

ELECTRICAL SYSTEM



The power required to operate the spreader's electrical components is obtained from the crane. All electrical components on the spreader are designed to withstand loads imposed during container handling operations and suitable for a marine environment.

The spreader is supplied with CANopen slave units based on a standard field bus system. This enhances the possibility of monitoring each I/O point and reduces the number of cables needed and the replacement time for connecting sensors and actuators to the controls.



CANopen box

The electrical components are mounted in a stainless steel cabinet, IP65. The electrical cabinet is mounted on heavy-duty rubber shock absorbers and is well protected being placed on the tower. Relays, transformers, circuit breakers, timers, hour counters and sockets are mounted in this cabinet. All cables are well protected in cable chains.

For reliability reasons Bromma recommends the use of 24 VDC on all controls.

The electrical safety features to protect and ensure proper handling of containers are as follows:

- Spreader cannot be hoisted unless all four twistlocks are fully "Locked" or "Unlocked". (Provided the crane controls have a hoist permit safety circuit.)
- Spreader twistlocks can only be "Locked" or "Unlocked" when all four corners are properly seated on a container or hatch cover.
- The spreader has a blockading system to prevent telescoping if the twistlocks are locked or if the four landing pins are in the 'up' position.

As a monitoring and diagnostic system, Bromma recommends the use of the SCS² Spreader Communications System. However, a PLC system or a relay based system can also be used.

MONITORING AND DIAGNOSTIC SYSTEM SCS²



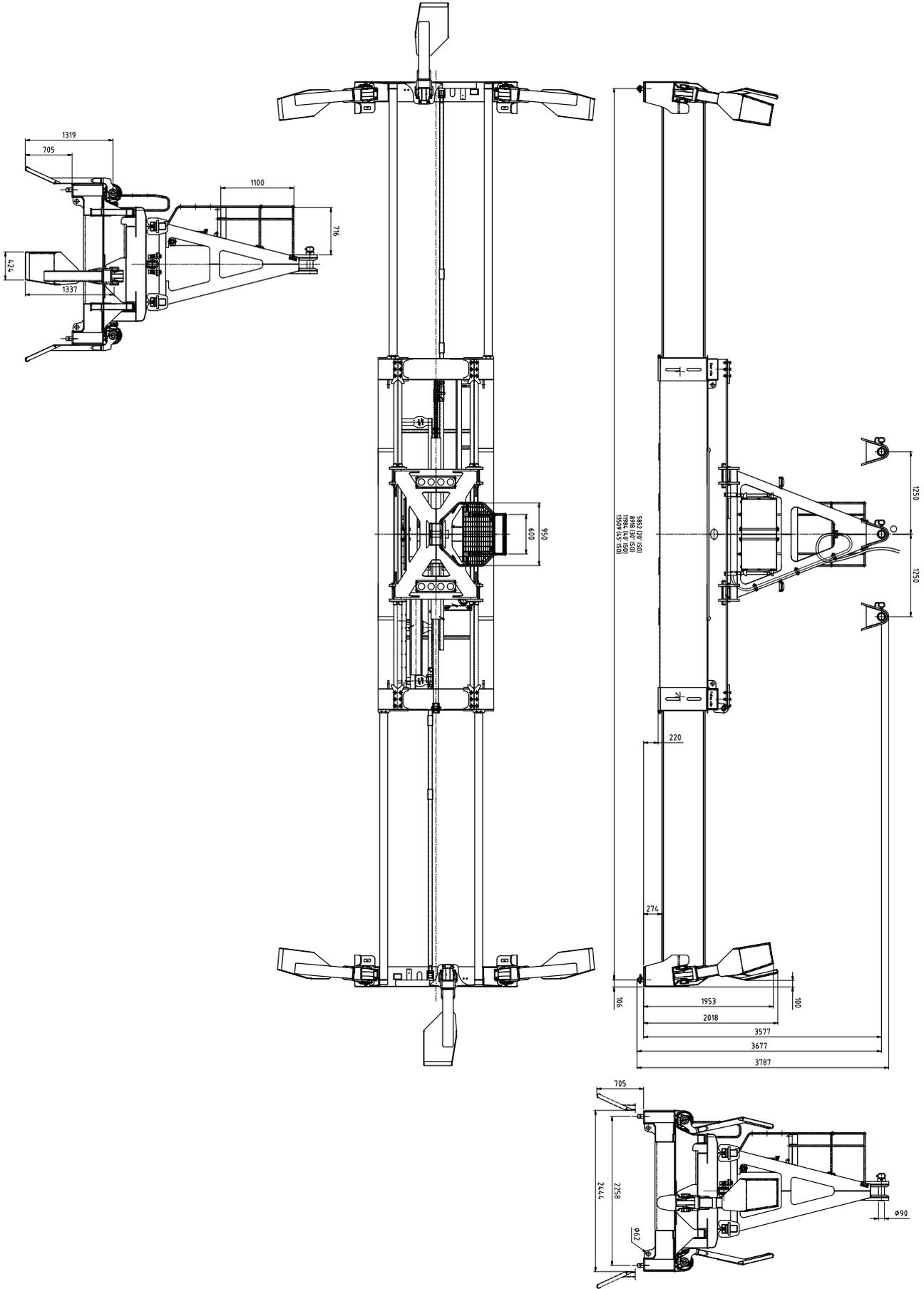
For monitoring and diagnosing the MSX45 mobile harbour crane spreader, Bromma recommends the SCS² Spreader Communications System. It is comprised of physical nodes for the crane and spreader, a crane-spreader communications protocol, sensors and switches, as well as two kinds of software. The SCS² can connect to a wide variety of host controllers including PLCs, DCS and PC-based control systems.

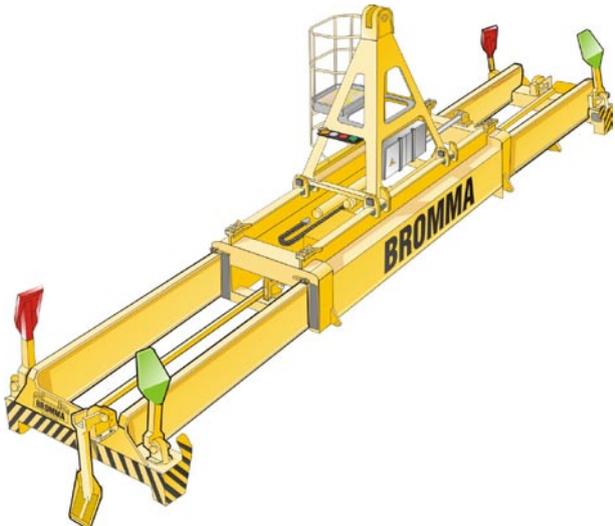
The SCS² system delivers advanced monitoring and diagnostic information, which means that service staff can react faster to fault events. Instead of investigating possible sources of fault events one by one, the SCS² gives service technicians specific, precise information, enabling them to quickly solve the problems occurred.

The SCS² system simplifies handling of the spreader and prevents fault events. It also eliminates or minimizes junction boxes, terminal strips, terminal ends, relays, and DIN rails – areas where wire breakage is common. Conventional wiring is reduced.

The SCS² system comes as standard with the Bromma mobile harbour crane spreaders.

DIMENSIONAL DRAWINGS – MSX45



TECHNICAL DATA MSX45	
	
Lifting capacity: (According to DIN 15018 H ₂ B ₄)	Twistlocks 41 tonnes evenly loaded Twistlocks 41 tonnes ±10% eccentric load Lifting lugs 4 x 10 tonnes in the main frame and end beams
Weight:	9.3 tonnes (without extra equipment) 9.5 tonnes with flipper actuators
Gravity point adjustment:	±1.25 meters in 20 seconds
Telescopic motion:	From 20' to 45' in approximately 25 seconds
Flipper arm speed:	180° in 3–5 seconds
Twistlock rotation:	ISO floating 90° in approximately 1 second
Hydraulics:	System pressure 100 bar / 150 bar Piston pump pressure compensated Maximum flow 55 l/min Shock valve setting telescoping 110 bar
Power supply:	400/230 VAC 50 Hz or otherwise as agreed
Max power consumption:	7.5 kW

TECHNICAL DATA MSX45	
Electrical cabinet:	Stainless steel IP65
Control voltage:	24 VDC
Surface conditioning:	Sand-blasted SA 2.5 50 microns 2-component zinc epoxy 70 microns 2-component MIO epoxy 40 microns 2-component acrylic epoxy 40 microns 2-component acrylic epoxy
Design criteria:	DIN 15018 H ₂ B ₄ ; FEM 1.001; British Standard BS 2573
Manuals:	Full service and repair manual supplied
Warranty:	1 year

This specification is subject to alterations without prior notice.

Bromma Conquip AB

Krossgatan 31-33
SE-162 50 Vällingby, Sweden
Phone: +46 8 620 09 00
Fax: +46 8 739 37 86
sales@bromma.com

Bromma US

4400 Ben Franklin Blvd
Suite 200
Durham NC 27704
USA
Phone: +1 919 471 40 00
Fax: +1 919 471 43 43
brommaus.sales@bromma.com

Bromma Malaysia

Lot 19, Jalan Kelebang 1/6
31200 Chemor, Perak
Malaysia
Phone: +60 529 388 90
Fax: +60 529 140 99
malaysia@bromma.com

Bromma Middle East

P.O Box 17909 Dubai
United Arab Emirates
Phone: +971 488 725 20
Fax: +971 488 725 25
graham.boxall@bromma.com

Bromma Far East Pte Ltd

Blk 102E, Pasir Panjang Rd
08-07, Citilink Warehouse Complex
118529 Singapore
eL: +65 627 204 00
Fax: +65 627 204 11
bfe@bromma.com

Bromma Shanghai

B, 20 Fir, Liang Feng Mansion
No 8 Dong Fang Road, Pudong
Shanghai 200120
China
Phone: +86 21 588 871 64
Phone: +86 21 588 874 09
Fax: +86 21 588 874 08
jeff_jiefu@bromma.com.cn

Bromma UK

36 Piercing Hill
Theydon Bois
Essex CM16 7JW
United Kingdom
Phone: +44 199 281 2085
Fax: +44 199 281 3250
m.j.carter@btconnect.com

Bromma GmbH

Im Klint 12
DE-30938 Burgwedel
Germany
Phone: +49 5139 806 630
Fax: +49 5139 806 644
spreader.sales@bromma-gmbh.de

For nearest contact and latest information on Bromma products and services, visit the Bromma website at www.bromma.com