

SSX45 Ship to Shore Spreader



The spreader shown is equipped with extra accessories

The Bromma SSX45 ship to shore spreader has been designed and built for long, reliable service on latest generation ship to shore cranes in high throughput environments.

The telescopic spreader is of a rectangular frame construction enabling easy location on containers. The spreader is as standard equipped with 4 x 10 tonnes lifting lugs in the corners of the end beams for heavy lifts and for handling damaged containers. The spreader can adjust its length to lift 20 foot, 40 foot and 45 foot containers using ISO floating twistlocks.

The spreader can retract to the 19 foot-6 inch position in case it becomes jammed in the ship's 20 foot cell. The design with recessed end beams makes handling of lashing frames and hatch covers possible. All motions of

the spreader are controlled from the driver's cab and there are provisions made for signals in the cab indicating the position of the twistlocks and landing pin status.

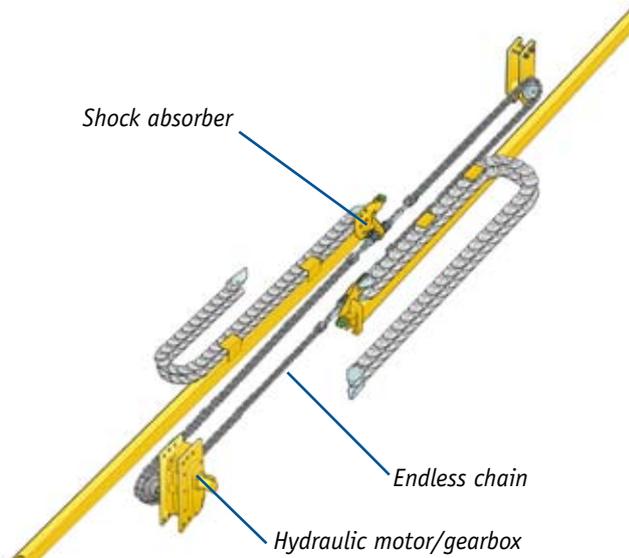
Made of high quality steel, the standard SSX45 spreader provides high lifting capacity with a low nominal tare weight thanks to the box design of the telescoping beams and the main frame. The spreader is designed in accordance with DIN 15018 H₂B₄. All components can be easily assembled, adjusted, removed and are accessible for inspection and maintenance.

The spreader comes with the SCS² Spreader Communications System, reducing and preventing downtime through improvements in the area of electrical connections. It will also shorten downtime through faster spreader fault diagnostics.

MAJOR FEATURES

- Adjustable for 20', 40' and 45' containers
- Recessed end beams allow handling of lashing frames and hatch covers
- Advanced communications system reduces downtime considerably
- Fast trouble shooting
- 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.

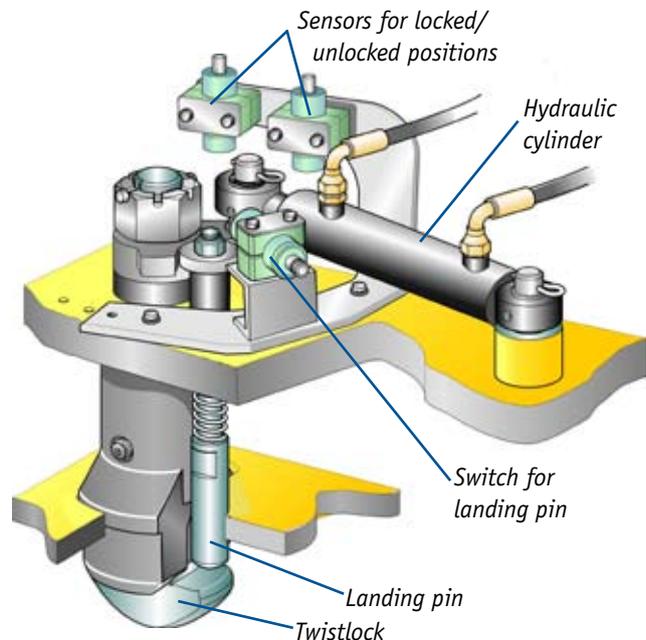
The flexibility in the system allows for changes in spreader length up to ± 15 mm when handling distorted containers.

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.

TWISTLOCK SYSTEM

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

Each twistlock is operated with a separate cylinder. Proximity switches are used for locking, unlocking and landing pin function. 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.

Corresponding signals are provided to the crane cabin.

FLIPPER ARMS



The spreader is equipped with four powerful flipper arms working individually (optional) or in pairs.

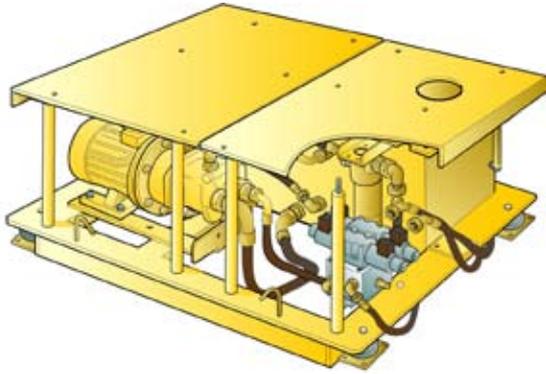
The flippers are driven by hydraulic motors (or actuators, optional) thus providing positive damping to allow efficient gathering onto containers.

The opening torque for each arm is about 2,900 Nm (higher torque can be supplied as option) providing a gathering capacity of about 16 cm. The arms are always under pressure

and each arm has a shock relief valve. As soon as shock load ends, the arms return to preset position.

The flipper system is designed to give sufficient clearance between any part of the flipper in raised position and the ship's cell.

HYDRAULIC POWER PACK



The complete hydraulic unit consists of a tank, a pump, an electrical motor, valves and a filter, altogether shock mounted in a sturdy frame with protection covers.

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 150 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. All cables are well protected in cable chains.

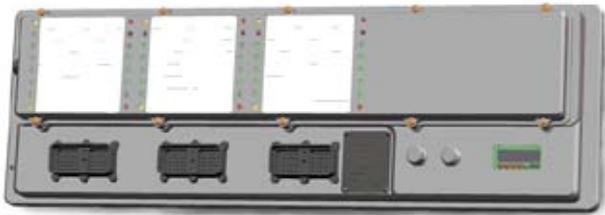
For reliability reasons Bromma recommends the use of 24 VDC on all controls.

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.

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 SSX45 ship to shore 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 all Bromma ship to shore systems.

TECHNICAL DATA SSX45	
	
Lifting capacity: (According to DIN 15018 H ₂ B ₄)	Twistlocks 41 tonnes evenly loaded Twistlocks 41 tonnes ±10% eccentric loading Lifting lugs 4 x 10 tonnes in the main frame and end beams
Weight:	9.6 tonnes (without extra equipment)
Telescopic motion:	From 20' to 45' in approximately 30 seconds
Flipper arm speed:	180° in 3–5 seconds
Twistlock rotation:	90° in approximately 1 second
Hydraulics:	System pressure 100 bar Piston pump pressure compensated Maximum flow 50 l/min Shock valve setting telescoping 70 bar Shock valve setting guide arm 200-250 bar
Power supply:	400/230 VAC 50 Hz or otherwise as agreed
Max power consumption:	7.5 kW
Control voltage:	24 VDC
Electrical cabinet:	Stainless steel IP65
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

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

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