

## PRODUCT INFORMATION

## YSX40 Marathon™ Yard Crane Spreader



*The spreader shown is equipped with extra accessories*

The Bromma YSX40 Marathon is a heavy-duty yard crane spreader calculated for 2 million cycles. The spreader can adjust its' length to lift 20 foot and 40 foot containers using ISO floating twistlocks.

The telescopic spreader is of a rectangular frame construction enabling easy location on containers. The design with recessed end beams makes handling of lashing frames and hatch covers possible. As a standard, the spreader is equipped with 4 x 10 tonnes lifting lugs in the corners of the end beams for heavy lifts and for handling damaged containers.

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. Control valves for twistlock and guide arms are mounted on the end beams, in order to simplify maintenance and to minimize the

number of hydraulic hoses in the cable chain system. Several guide arm combinations are available.

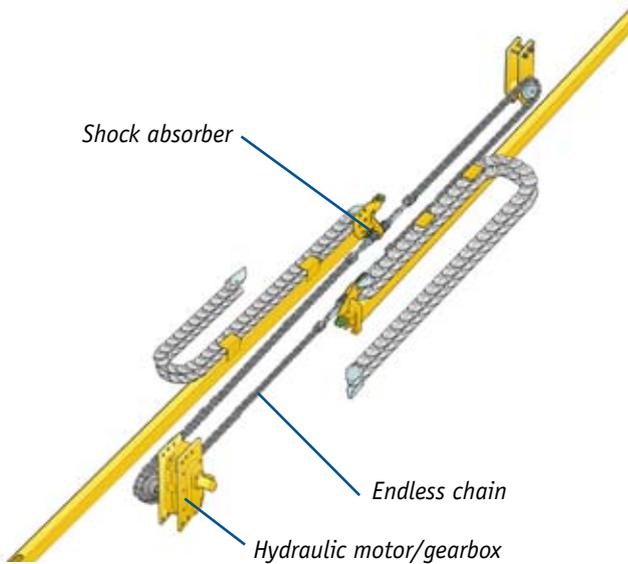
The electrical components and the cable chain system are well protected inside the main frame. The hydraulic power pack is entirely enclosed within the main frame to ensure maximum protection. The complete hydraulic unit is shock mounted in one sturdy frame with protective covers.

Made of high quality steel, the standard YSX40 Marathon spreader provides high lifting capacity with a low nominal tare weight thanks to the box design of the telescoping arms and the main frame. The spreader is designed in accordance with DIN 15018 H<sub>2</sub>B<sub>4</sub>. All components can be easily assembled, adjusted, removed and are accessible for inspection and maintenance.

### MAJOR FEATURES

- High lifting capacity
- Adjustable for 20' and 40' containers
- Recessed end beams allow handling of lashing frames and hatch covers
- Bolted side guides
- Robust and well proven design
- Long economic life

## TELESCOPING SYSTEM



The telescoping system is driven by means of a hydraulic motor and a reduction gearbox connected to an endless chain. The chain is fitted with a Bromma design shock

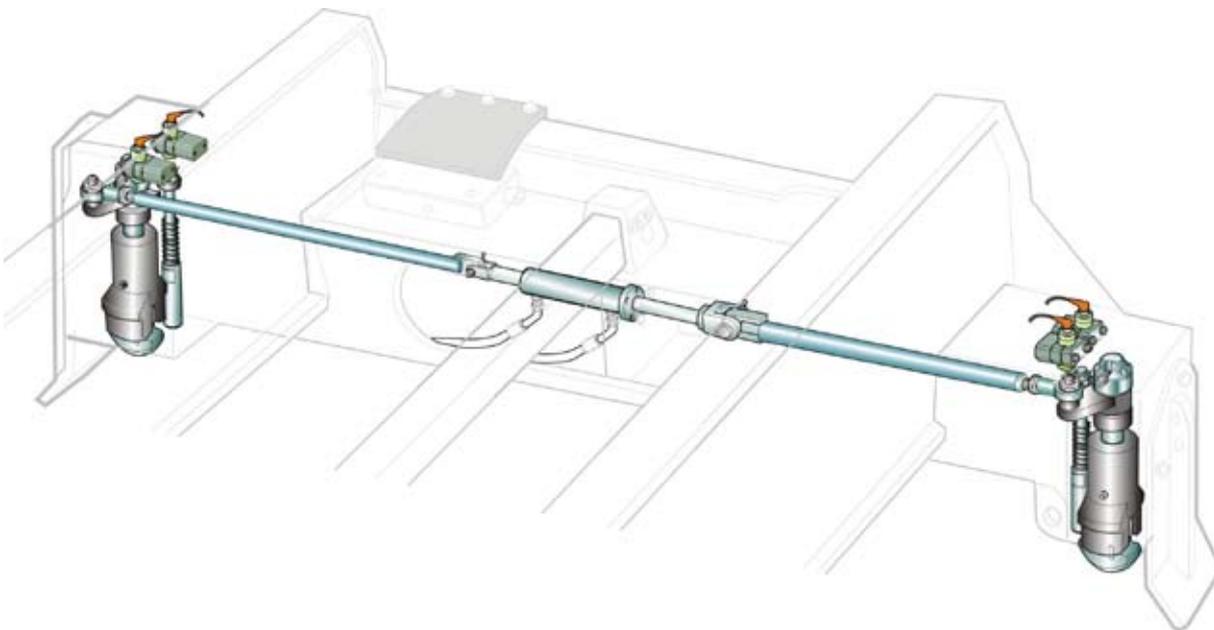
absorber at both ends. The shock absorber is designed to dampen the effects of impact on the spreader structure and components due to loads imposed to the spreader ends. The telescopic beams are running on sliding pads.

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 small changes in spreader length 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.

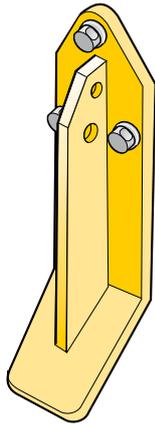
The double acting cylinder operates the two twistlocks mounted at the end beams. Proximity switches are used for locking, unlocking and landing pin function. Sensors indicate if the two twistlocks are closed or open and also their positions. Each twistlock has a separate sensor indicating landing. The floating range is  $\pm 6$  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.

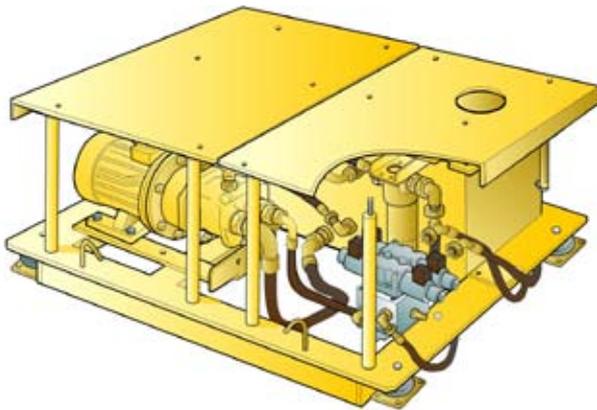
Corresponding signals are provided to the crane cabin.

## GUIDE ARMS



The spreader is equipped with four fixed guide arms to guide the spreader onto the container. These are located one at each end of the long side of the spreader. The guide arms are fastened by means of bolts and nuts on a slotted adaptor. The bolts can be slid out of the slot if sheared off. Several guide arm combinations are available.

## 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.

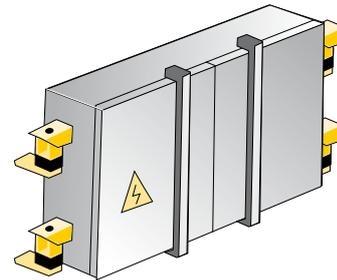
The hydraulic oil is filtered through an externally mounted 10 micron absolute rated line filter. Additionally, another

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 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.

The electrical components are mounted in a stainless steel cabinet, IP65. All cables are well protected in cable chains.

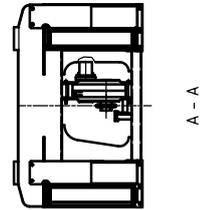
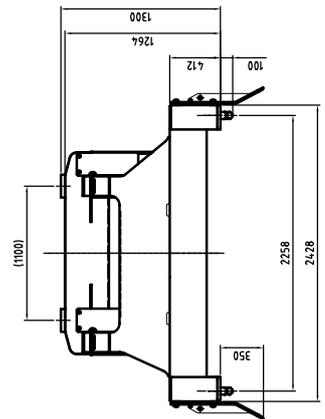
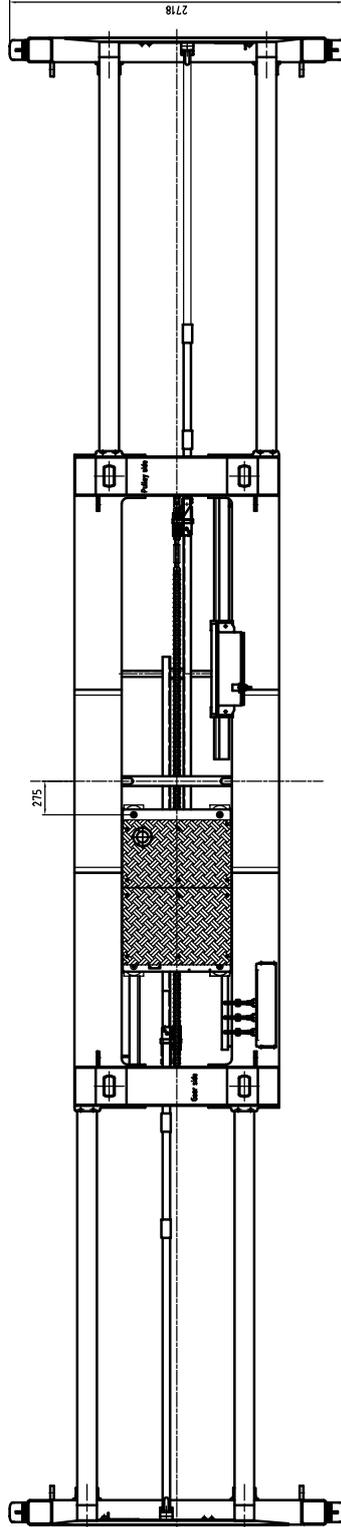
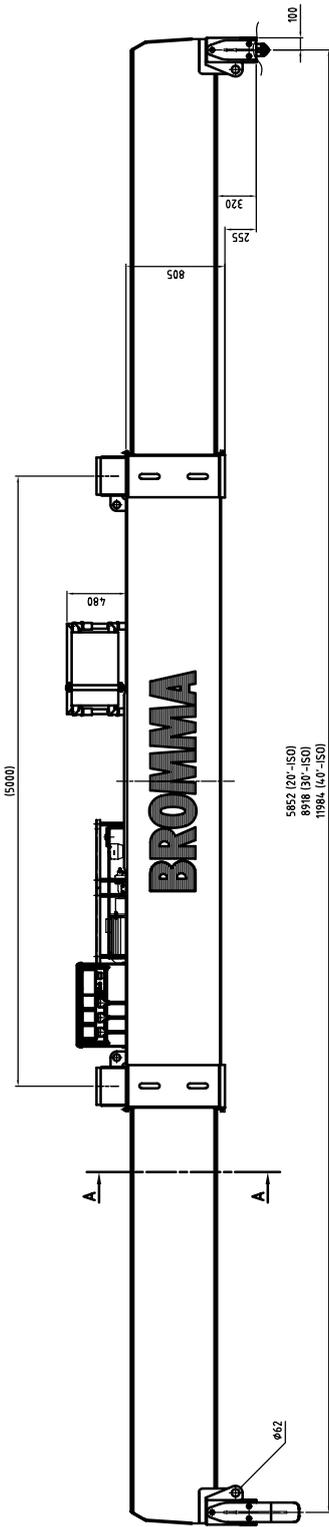
For reliability reasons Bromma recommends the use of 24 VDC on all controls.

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 SCS<sup>2</sup> Spreader Communications System. However, a PLC system or a relay based system can also be used.

# DIMENSIONAL DRAWINGS – YSX40



TECHNICAL DATA YSX40 MARATHON	
	
<b>Lifting capacity:</b> (According to DIN 15018 H <sub>2</sub> B <sub>4</sub> )	Twistlocks 41 tonnes evenly loaded Twistlocks 41 tonnes ±10% eccentric loading Lifting lugs 4 x 10 tonnes in the main frame and end beams
<b>Weight:</b>	7.6 tonnes (without extra equipment)
<b>Telescopic motion:</b>	From 20' to 40' in approx 28 sec
<b>Twistlock rotation:</b>	90° approx in 1 sec
<b>Hydraulics:</b>	System pressure 100 bar Piston pump pressure compensated Maximum flow 50 l/min Shock valve setting telescoping 70 bar
<b>Power supply:</b>	400/230 VAC 50 Hz or otherwise as agreed
<b>Max power consumption:</b>	5.5 kW
<b>Surface conditioning:</b>	Sand-blasted SA 2 1/2 50 microns 2-component zinc epoxy 70 microns 2-component MIO epoxy 40 microns 2-component acrylic epoxy 40 microns 2-component acrylic epoxy
<b>Design criteria:</b>	DIN 15018 H <sub>2</sub> B <sub>4</sub> ; FEM 1.001; British Standard BS 2573
<b>Manuals:</b>	Full service and repair manual supplied
<b>Warranty:</b>	1 year

This specification is subject to alterations without prior notice.

#### Bromma Conquip AB

Krossgatan 31-33  
 S-162 50 Vällingby, Sweden  
 Phone: +46 8 6200900  
 Fax: +46 8 7393786  
[sales@bromma.com](mailto:sales@bromma.com)

#### Bromma Inc.

4400 Ben Franklin Blvd  
 Suite 200  
 Durham, NC 27704, USA  
 Phone: +1 919 471 4000  
 Fax: +1 919 471 4343  
[brommaus.sales@bromma.com](mailto:brommaus.sales@bromma.com)

#### Bromma Sdn. Bhd

19, Jalang Kelebang 1/6  
 Kinta Free Industrial Zone  
 Poskod 31200, Chemor  
 Malaysia  
 Phone: +60 5 293 8890  
 Fax: +60 5 291 4099  
[bromma@pc.jaring.my](mailto:bromma@pc.jaring.my)

#### Bromma Middle East

**Bromma M.E.FZCO.**  
 PO Box 17909 Dubai,  
 United Arab Emirates.  
 Phone Office: 009714-8872520  
 Mobile: 0097150-5518255  
 Fax: 009714-8872525.  
[graham.boxall@bromma.com](mailto:graham.boxall@bromma.com)

#### Bromma Far East

Blk. 102E, Pasir Panjang Road  
 #08-07, Citilink Warehouse Complex  
 Singapore 118529  
 Phone: +65 272 0400  
 Fax: +65 272 0411  
[bfe@bromma.com.sg](mailto:bfe@bromma.com.sg)

#### Bromma Shanghai

Shanghai Representative Office  
 B, 20 Fir, Liang Feng Mansion  
 No 8 Dong Fang Road, Pudong  
 Shanghai 200120  
 Phone: +86 21 5888 7164/  
 +86 21 5888 7409  
 Fax: +86 21 5888 7408  
[jeff\\_jiefu@bromma.com.cn](mailto:jeff_jiefu@bromma.com.cn)

#### Bromma UK

36, Piercing Hill  
 Theydon Bois  
 Essex CM16 7JW  
 England  
 Phone: +44 1992 812085  
 Fax: +44 1992 813250  
[m.j.carter@btconnect.com](mailto:m.j.carter@btconnect.com)

#### Bromma GmbH

Im Klint 12  
 D-30938 Burgwedel  
 Germany  
 Phone: +49 5139 806630  
 Fax: +49 5139 806644  
[spreader.sales@bromma-gmbh.de](mailto:spreader.sales@bromma-gmbh.de)

For nearest contact and latest information on Bromma products and services, visit the Bromma website at [www.bromma.com](http://www.bromma.com)