

EH7 & EH9

Gantry Crane Spreader with Rotator and G.P.A.



Bromma's EH7 rotating telescopic spreader with gravity point adjustment is ideal for the handling of off-centre container loads. The unit is often used for the purpose of rotating a container through 180 degrees to ensure that the container is placed in the correct way on a trailer or rail car. The EH7 is used in conjunction with the Bromma EH9 rotator.

Why specify the EH7 and EH9?

SAFE ROTATION

Bromma's EH7 telescopic spreader is comprised of Bromma's standard telescopic spreader, plus gravity point adjustment and a rotator. Designed specifically for use on gantry cranes, the EH7 can rotate a container through 180 degrees to ensure that it is properly placed into position on a trailer or rail car.

GRAVITY POINT ADJUSTMENT ELIMINATES TILTING AND OVERLOADING

The EH7's gravity point adjustment mechanism identifies out-of-centre container loads when a container is lifted in the normal position. This allows the spreader to be safely

rotated without tilting or overloading. When the container is unlocked from the spreader, the gravity point adjustment returns automatically to the central position.

SPECIALLY DESIGNED FOR GANTRY CRANE APPLICATIONS

The EH7 is specially designed for ship-to-shore gantry applications. The spreader extends from 20'-40', with intermediate stops at 30' and 35' if required. As the EH7 is based on the design for Bromma's EH600, engineering improvements made to the EH600 are also incorporated into the EH7. See page 14 for details on continuing Bromma main frame and end beam design enhancements.

Did You Know?

Bromma has more than 40 standard spreader models – many of which were developed in response to particular customer needs. This is the largest, most complete line of crane spreaders available today.



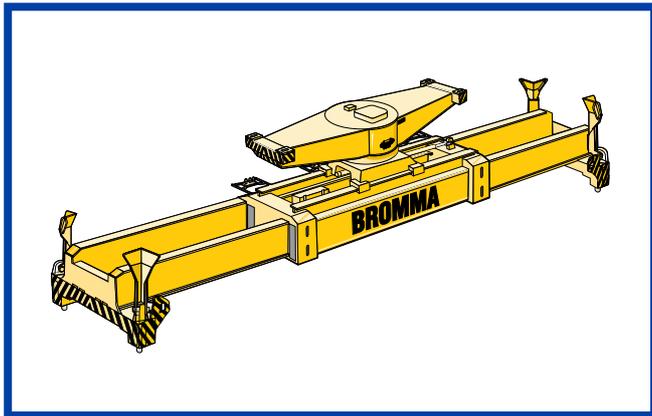
ZETECOGROUP

Technical Summary- EH7 / EH9

The Bromma telescopic spreader type EH7 is suitable for use on gantry cranes. The spreader is normally used in conjunction with the Bromma EH9 rotator and is fitted with gravity point adjustment so that eccentrically loaded containers can be safely handled.

The EH7 extends from 20'-40', with an intermediate stop at 30' and/or 35' if required. The EH7 is specially designed for gantry cranes where the headblock sheaves are at approximately 5m x 1m centres. The EH7 is based on the Bromma EH600 spreader, yet is also fitted with gravity point adjustment and a powered rotator. All functions are controlled by the driver in the crane cab. The unit is often used for rotating a container up to 180 degrees in order to ensure that the container is properly placed on a trailer or rail car.

The EH7 has a tare weight of 13,4 tonnes. Made of high quality Swedish steel, these units are of rectangular frame construction, and designed in accordance with DIN standard 15018. Structures are proof-tested at the plant with a minimum 50% overload. The unit can be adapted to fit the customer's headblock, or can be fitted with sheaves in order to fit directly to the crane. Repair and maintenance is simplified through easy access to each component.



TECHNICAL SPECIFICATIONS EH7 20'-40' Crane Spreader

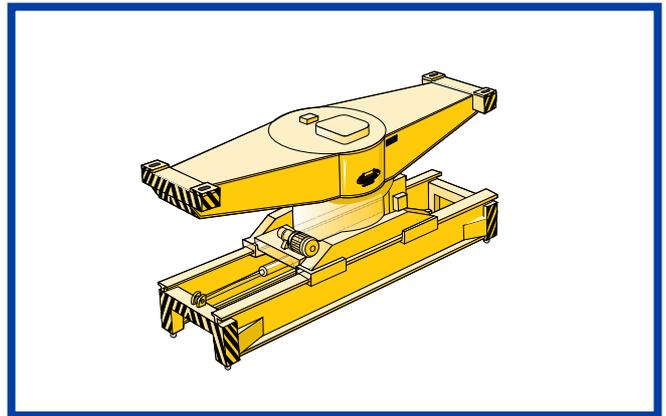
LIFTING CAPACITY (twistlocks)	35 tonnes ±10% eccentric loading 41 tonnes evenly loaded lifting lugs 4 x 10 tonnes in end beam
WEIGHT	13,4 tonnes
ROTATION	1 RPM 360°
GRAVITY POINT ADJ.	±1,2m in 25 seconds
TELESCOPIC MOTION	from 20' to 40' in approximately 30 seconds
FLIPPER SPEED	180° in 5-7 seconds
TWISTLOCK ROTATION	90° approximately in 1,5 seconds
HYDRAULICS	normal operating pressure 100 bar
POWER SUPPLY AND CONSUMPTION	400/230 V AC 50 Hz or otherwise as agreed maximum 12,4 kW
SURFACE CONDITIONING	sand-blasted SA 2 1/2; two coats of zinc-rich epoxy primer and two coats of acrylic top coat
MANUALS	full service and repair manual supplied proof load test certificate
WARRANTY	one year

This specification is subject to alterations without prior notice.

The gravity point adjustment mechanism runs on glide plates. Off-centre container loads are identified by weight sensors when the container is lifted into the normal position. The gravity point adjustment can then be moved either manually or automatically. Once adjustment is made, the spreader can be safely rotated without tilting or overloading. The rotating mechanism runs on large, heavy-duty roller bearings and is powered by a hydraulic motor.

At each end of the EH9 rotator a flashing light is fitted that indicates that the unit is level. If a badly out of centre container is picked up, the rotator will tilt and the flashing light at the low end of the unit will go out, giving clear indication to the crane driver.

The telescoping motor, the motor for gravity point adjustment, and all twistlocks can be hand operated, and access to twistlocks is possible even in the ship's cell. All functions are failsafe. Lamps at each end of the spreader indicate the twistlock position and when the spreader is correctly landed onto a container. The hydraulic power pack is well-protected inside the main structure. Gravity point adjustment and rotation are performed by hydraulic cylinders.



TECHNICAL SPECIFICATIONS EH9 Rotator

LIFTING CAPACITY	43 tonnes 62 tonnes
LIFTING LUG CAPACITY	4 x 10 tonnes
WEIGHT	6,6 tonnes (without extra equipment)
GRAVITY POINT ADJ.	±1.2 in 25 seconds
HYDRAULICS	normal operating pressure 100 bar
POWER SUPPLY AND CONSUMPTION	400/230 V AC 50 Hz or otherwise as agreed maximum 7,5 kW
SURFACE CONDITIONING	sand-blasted SA 2 1/2; two coats of zinc-rich epoxy primer and two coats of acrylic top coat
MANUALS	full service and repair manual supplied proof load test certificate
WARRANTY	one year

This specification is subject to alterations without prior notice.

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TECHNICAL SPECIFICATION EH7

Bromma rotating telescopic spreader type EH7 is specially designed for use on container gantry cranes, where the headblock sheaves are at approximately 5m x 1m centres. The unit comprises a standard Bromma type EH600 telescopic spreader and is fitted with gravity point adjustment and a powered rotator. All functions are controlled by the driver in the crane cab. The unit is often used on terminal cranes for rotating a container through 90 degrees to ensure that the container is placed the correct way on a road or rail wagon.

The spreader will be mechanically and electrically adapted to your crane and is for handling of 20' and 40' ISO containers.

All motions of the spreader will be controlled from the drivers cab and there are provisions made for signals in the cab indicating the position of the twistlocks.

Lifting capacity is 35 tonnes at 10 % eccentric load. The spreader is designed according to DIN 15018 H₂B₄ (equivalent to FEM section 1 - group A6) and its built of high quality construction steel in accordance with British standard (equivalent to DIN17100 st 52.3).

The spreader is latched onto containers by means of hydraulically operated floating twistlocks, simultaneously engaging the corner castings of the container and controlled from the drivers cab. Both mechanical and electrical interlocks ensure that twistlocks cannot be rotated, unless all four are properly engaged in the corner castings.

Signal lights are placed on each end of the spreader main frame, showing the driver when:

- a) the twistlocks are open,
- b) the spreader is properly engaged in the corner castings,
- c) all twistlocks are properly locked in the corner castings.

Corresponding signals can be provided to the crane cabin.

The gravity point adjustment mechanism runs on self-lubricating slide plates. Out of centre container loads are identified when the container is lifted in the normal position by weight sensors in the crane wires. The gravity point mechanism can then be moved either manually or automatically until the load in the crane wires is equal.

The spreader can now be safely rotated without the occurrence of tilting or overloading of the crane wires. The rotating mechanism runs on large heavy duty roller bearing and is powered by an electric motor.

When the container is unlocked from the spreader the gravity point adjustment returns automatically to the central position.

Retractable aligning arms (flippers) are fitted to each corner of the spreader. They are of a strong construction and driven by a powerful hydraulic motor, which enables easy and fast location of the spreader onto containers. The gathering torques of the arms are about 150 kpm and they provide a gathering capacity of about 200 mm. The arms are always under pressure and each arm is provided with a shock relief valve, which opens at pressure that surpass the working pressure with approx. 40 bars. As soon as shockload ends, the arms return to vertical

position. The arms can be operated individually, in pairs or all at the same time. The flipper system is designed to give sufficient clearance between any part of the flipper and the ship's cell.

The spreader is equipped with lifting lugs in the end beams next to the twistlocks. Lifting lugs in the end beam are used i.e. for handling of damaged or overloaded containers. The corner lugs will be positioned along the centre line of the end beam. The diameter of the lug hole is 50 mm.

Lifting lugs capacities are 10 tonnes each.

The electrical equipment and the cable chain system are well protected in the mainframe, and the hydraulic unit assembly (comprising the variable displacement piston pump, motor, tank, valves and filter) is entirely enclosed within the main frame. This ensures maximum protection from possible damage.

The control valves for twistlock and flipper arms are placed in the gable end, in order to minimise the number of hydraulic hoses, who are transferring hydraulic pressure from the hydraulic unit to the gable end via a cable drag chain system.

The telescopic system provides a positive location on centres for 20' and 40' containers. If a sufficient number of cores are available signals that indicate the position of the telescopic arms can be provided from the electrical central of the spreader to the drivers cabin.

The telescopic system is driven by means of a hydraulic motor connected to an endless chain. The draw bars are fitted with blocks of springs to absorb shockloads and allow small changes in the spreader length. The system offers a certain amount of flex in the beams which enables distorted containers to be handled. The length flexibility offered by this system is up to + 15 mm on each end of the spreader. The telescopic motion can be hand cranked, in event of power failure.

The spreader has a blockading system to prevent telescoping if the twistlocks are locked or if the four blockading pins are in the 'up' position.

Surface conditions according to our standard program:

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

Total minimum film thickness 200 micr.

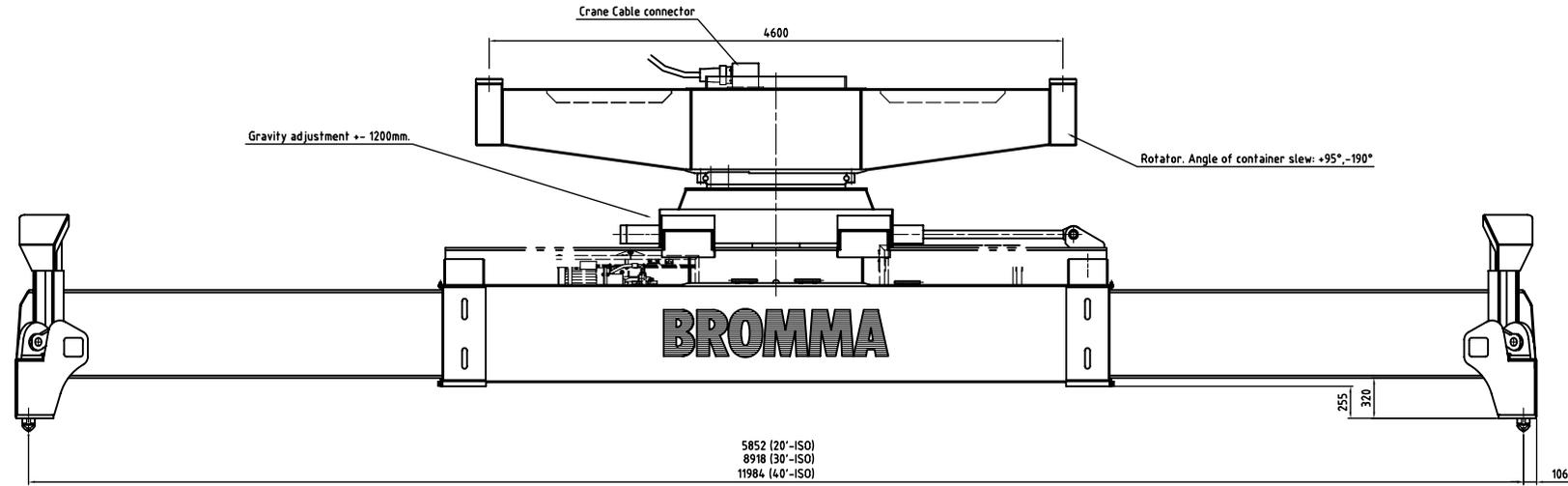
The spreader EH7 is specially designed for ship to shore gantry cranes.

The EH7 structure is made in such a way that clearance between the bottom corners and the main frame is 250 mm to enable handling of overstuffed containers.

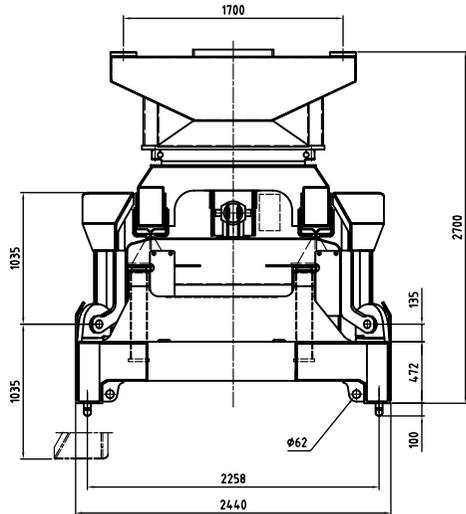
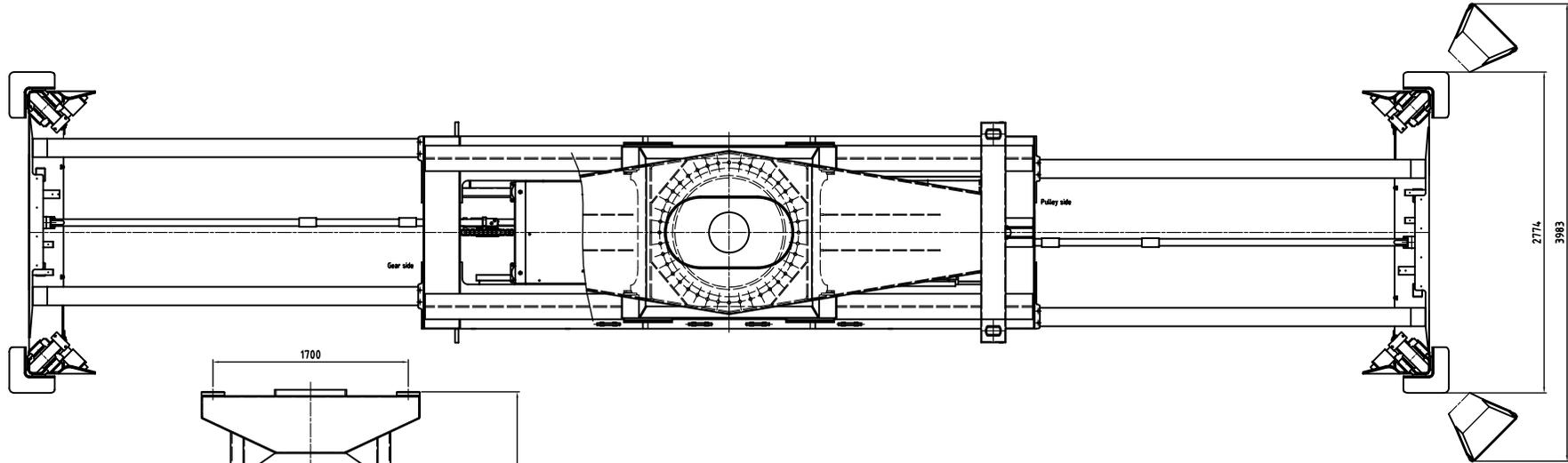
Spreader - Datasheet

Type	EH7
Se-No	
Container Range	20' - 40'
Capacity	
Lifting capacity (evenly loaded)	40 tonne
Lifting capacity (10% gravity point off set)	35 tonne
Lifting lug capacity (gable end)	4 x 10 tonne
Lifting lug capacity (main beam)	4 X 10 tonne
Operating Movements	
Telescoping 20' to 40' or 40' to 20'	30 s
Flipper through 180 °	5 – 7 s
Flipper torque	1250Nm
Twistlock rotation locking or unlocking 90°	1,5 s
Electrical Equipment	
Power voltage	415 V AC
Frequency	50 Hz
Control voltage	240 V AC
Control valve	24 V DC
Total power consumption	14,5 kW
Electrical protection	IP 54
Hydraulic Equipment	
Working pressure of pump	100 bar
Pump capacity	40 l/min
Shock valve setting, Flipper	140 bar
Shock valve setting, Telescoping	110 bar
Tank capacity	150 l
Ambient temperature	45 °C
Filter in the return hose	3 µm
Corrosion protection	
All surfaces are grit blasted	SA 2.5
Interzinc 72 EPA 069/073 (Interzinc 72 EPA 069/073)	50 µm
Intervinix VL-Serie (Intervinix VL-Serie)	50 µm
Intervinix VS-Serie (Intervinix VS-Serie)	2 x 50 µm
Min. coating thickness, total	200 µm

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5852 (20'-ISO)
8918 (30'-ISO)
11984 (40'-ISO)



DESIGNED	SIGN	DATE	GENERAL ASSY	SERIAL No.	SPREADER TYPE	SURFACE TREATMENT	TOLERANCE GENERAL
PLLOT DATE					EH7		C
ARTICLE No.	BROMMA		GENERAL ASSEMBLY		SCALE	REVISION	
					1:20	EH 7	
					DRAWING NUMBER		