

Bromma Wear Parts Kit – Manual Instruction References					
<b>Author:</b>	Mohd Wazir Saadan			<b>Date (yy-mm-dd)</b>	22-10-07
<b>Spreader type:</b>	STS45			<b>Approved by</b>	Christofer, Pilo
				<b>Approved by</b>	
<b>Hydraulic</b>	<input type="checkbox"/>	<b>Electrical</b>	<input type="checkbox"/>	<b>Mechanical</b>	<input type="checkbox"/>
<b>Material</b>	<input type="checkbox"/>	<b>General</b>	<input checked="" type="checkbox"/>	<b>Sales support</b>	<input checked="" type="checkbox"/>
<b>Topic:</b>	Bromma Wear Parts Kit – Manual Instruction References				

This document summarizes the instructions from the Bromma manual related to the Bromma Wear Parts Kit, and includes instructions of how to replace and inspect the related items.

Before starting any work on the spreader, please, read though the warnings and safety precautions in Chapter 1 and Chapter 6 of the spreader manual.

For further details of the Bromma spreader maintenance and references in below summary, please refer to the spreader manual.



To ensure safe and reliable spreader operation, it is important to follow the instructions below and only use Bromma spare parts when replacing components.



**HAZARD!** Always disconnect the power supply before work is carried out!



The spreader shall only be operated and serviced by authorized personnel.



Manual instructions included in this document:

- REP 01. Twistlocks
- REP 03. Main Frame Bearing Plates & 20'/19'6" Buffer
- REP 13. Oil and Filters
- REP 37. Buffer Plates on Flipper Gearbox
- REP 38. Buffer Plates on Flipper Arms

Manual instruction references in relation to the Bromma Wear Parts Kit

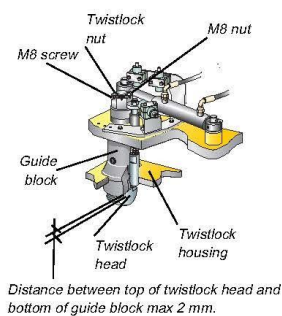
Item	Title	Manual Instruction Reference
<b>1</b>	<b>BUFFER KIT</b>	
	<b>MAIN ASSEMBLY</b>	
1	LANDING BUFFER SOFT	REP 03. Main Frame Bearing Plates & 20'/19'6" Buffer
2	20' ASSEMBLY/ 19'6" ASSEMBLY	
	<b>FLIPPER GEARBOX</b>	
1	BUFFER ASSY	
2	SHIM PLATE	REP 37. Buffer Plates on Flipper Gearbox
3	SCREW M6S 10x45	REP 38. Buffer Plates on Flipper Arms
4	FLIPPER ARM BUFFER	
<b>2</b>	<b>GLIDE PLATE KIT</b>	REP 03. Main Frame Bearing Plates & 20'/19'6" Buffer
1	MAIN BEAM BEARING PLATE	
<b>3</b>	<b>FILTER ELEMENT KIT</b>	
1	RETURN FILTER ELEMENT	REP 13. Oil and Filters
2	PRESSURE FILTER ELEMENT	
<b>4</b>	<b>TWISTLOCK KIT</b>	
1	TWISTLOCK PIN KIT	REP 01. Twistlocks
2	SPHERICAL WASHER	
3	TWISTLOCK ARM TYPE 1	
4	TWISTLOCK ARM TYPE 2	

## REP 01. Twistlocks



### Warning!

Read through the warnings and safety precautions in Chapter 1 and Chapter 6 before starting any work on the spreader.



### Dismounting the twistlock pin

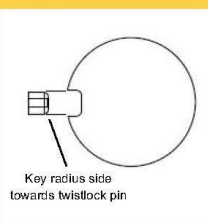
- 1 Disconnect the power.
- 2 Remove the M8 screw and nut from the top of the twistlock.
- 3 Grab hold of the twistlock head.
- 4 Slack off the twistlock nut.
- 5 Lower the twistlock pin and guide block.
- 6 Do not lose the twistlock pin key!

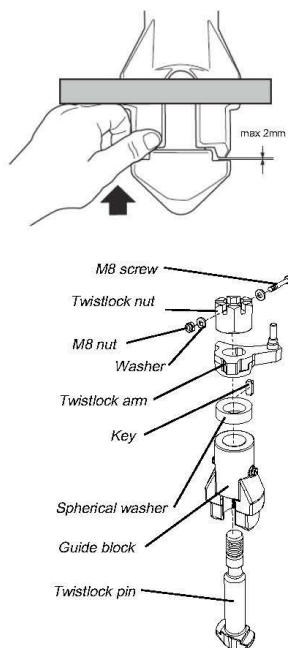
### Mounting the twistlock pin

- 1 Disconnect the power.
- 2 Perform the above steps in the reverse order.
- 3 Carry out adjustments as per 'Twistlock adjustment' below, before mounting the M8 screw and nut.
- 4 Lubricate according to instructions in section 6.1 Lubrication Instructions.




### Note!






### Checking the float

- 1 Disconnect the power. 
- 2 Grab hold of the twistlock head.
- 3 Push or pull the twistlock to one of the corners.
- 4 Ensure the guide block is touching the twistlock housing bottom plate. If not, the twistlock needs to be adjusted/lowered.
- 5 If the twistlock is touching the bottom plate, press the twistlock upwards while holding it in the corner.
- 6 The twistlock should be moving up slightly. If it moves a lot, adjust it higher.
- 7 If the twistlock does not move at all, it needs to be adjusted down.

### Twistlock adjustment

- 1 Disconnect the power. 
- 2 Remove the M8 screw from the top of the twistlock.
- 3 To lower the twistlock, loosen the twistlock nut slightly. To raise the twistlock, tighten the nut. The distance between the top of twistlock head and the bottom of guide block max 2 mm.
- 4 Recheck the float of the twistlock.
- 5 Reinstall the M8 screw. Replace if worn out and re-torque according to guidelines found in section 6.1 Tightening Torques.

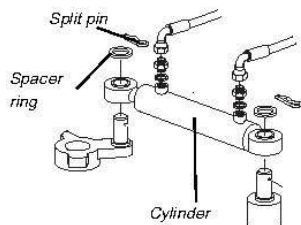


Failure to properly adjust the twistlock will greatly reduce the life of the twistlock.



### Removing the twistlock cylinder

- 1 Disconnect the power.
- 2 Relief the oil pressure from the system.
- 3 Remove the hoses from the cylinder. To avoid oil leakage, thread a plastic bag over the end of the hoses and secure them with straps.
- 4 Pull out the split pins. Remove the spacer rings and the cylinder.



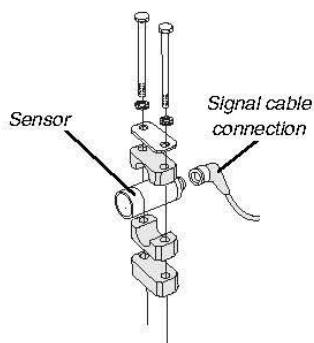
### Installing the twistlock cylinder

- 1 Perform the steps above in the reverse order.
- 2 The hoses must be tightened to 95 Nm (70 ft-lbs) torque.
- 3 Perform REP 14. Deaeration of Hydraulic System.



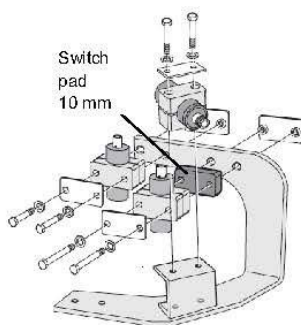
### Removing sensors

- 1 Disconnect the power.
- 2 Unscrew the cable connection from the sensor.
- 3 Loosen the two screws on the switch attachment.
- 4 Remove the sensor.



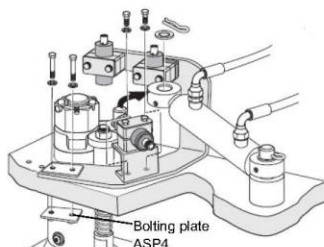
### Installing sensors

- 1 Perform the steps above in the reverse order.
- 2 The distance between sensor face and flag is approximately 5-6mm. Check the sensor by grabbing the twistlock head and moving it around in different positions. If the signal is lost, adjust the sensor closer to its flag. Make sure the flag does not come in contact with the sensor.



### Installing the sensor attachment

- 1 Remove the piston end of the twistlock cylinder from the twistlock arm by pulling out the lock pin and removing the washer. Turn the cylinder aside. Hoses may remain attached.
- 2 Mount the sensor attachments and the sensors on the sensor plate as shown.
- 3 Install the sensor plate assembly into the twistlock housing. Use the existing holes for sensor attachments.
- 4 Connect the cables to the sensors (if the sensors don't have cable connections, perform step 3 before step 2).
- 5 Remount the twistlock cylinder.



### Adjusting sensors

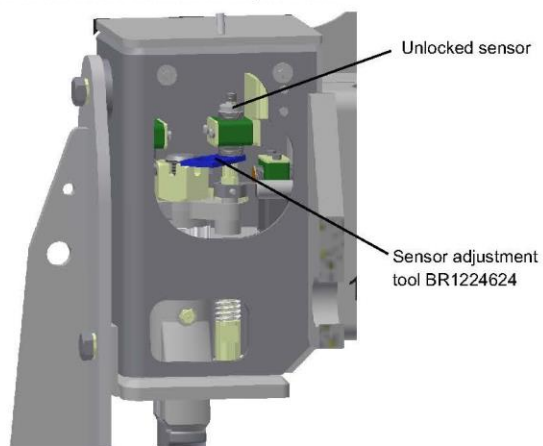
- 1 Check the distance between the sensor face and flag for twistlock unlocked and twistlock locked sensors. It should be 6 mm. (The landing pin sensor is also 6 mm.)
- 2 Connect the power and test the sensor functions by grabbing the twistlock head and moving it around in different positions. If the signal is lost, adjust the sensor closer to its flag. Ensure that the flag does not come into contact with the sensor.

### Adjusting sensors with tool BR1224624

Sensors adjustment tool (BR1224624) is used to adjust the landed sensor, twistlock locked sensor and twistlock unlocked sensor. Before proceeding to do the adjustment, place the spreader on trestles or similar devices.



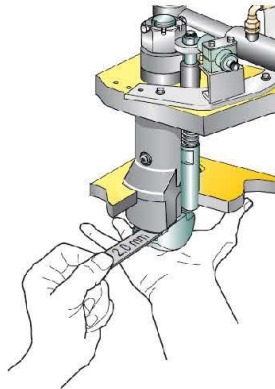
To adjust the locked and unlocked sensors, place the tool on top of the sensor flag and adjust the sensor downwards until it touches the tool. Now the distance to flag is 6 mm.



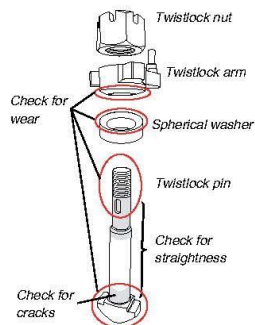


## Checking for wear and cracks

- 1 Disconnect the power.



- 2 If the gap between the twistlock pin lifting surface and the guide block (floating distance) cannot be adjusted to less than 2 mm, the twistlock pin should be replaced. Measure with a 2,0 mm feeler gauge.
- 3 If the distance between the rectangular top surface of the twistlock pin head and the bottom of the head is less than 56 mm, the twistlock pin should be replaced. Use a new guide block when measuring.

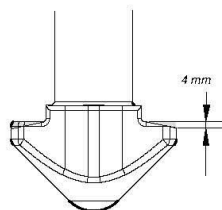


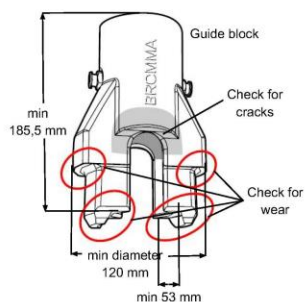
- 4 Dismantle all twistlocks as per 'Dismantling the twistlock pin' instructions above.



- 5 Inspect all parts. Look for any damage which could necessitate their replacement.
- 6 Check that there are no cracks or other faults in the threads of the twistlock pins or heads. Check also the guide blocks. Use penetrating fluid to detect fissures.

- 7 Check the wear of the twistlock pin heads. Maximum wear 4 mm measured as shown in figure. Replace if necessary.



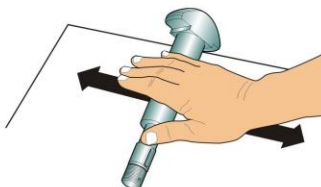
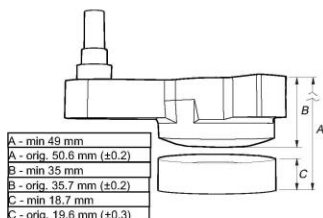


- 8 Replace the twistlock pins, nuts and guide blocks if cracks are detected, or if they are in general deformed, damaged, bent or are less than specified minimum measures.

It is recommended to replace all four (eight) twistlock pins at the same time to keep track of the amount of lifting cycles for each twistlock.

The twistlock arms, keys and spherical washers should be replaced together with the twistlock pins. make a note of the date, number of lifting cycles or running hours, and which parts have been replaced in Chapter 9 of this manual.

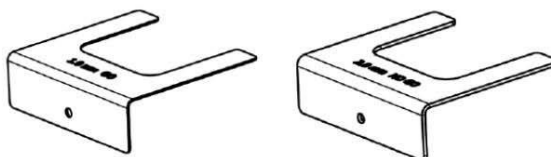
- 9 Clean and inspect the sliding surfaces of the spherical washer and the twistlock arm for abnormal wear.



- 10 Roll the twistlock pin back and forth on a table or similar flat surface to ensure the pin is not bent.
- 11 Clean and lubricate all parts according to section 6.1 Lubrication Instructions.
- 12 Reassemble the twistlocks as per 'Assembling the twistlock pin' instructions above.



### Twistlock Wear Measurement Tool



1 mm Twistlock gap adjustment tool (BR1197919)

2 mm Twistlock gap adjustment tool (BR1198022)

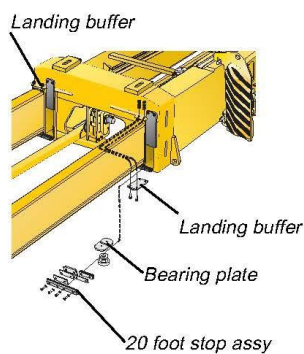
## REP 03. Main Frame Bearing Plates & 20'/19'6" Buffer



### Warning!

Read through the warnings and safety precautions in Chapter 1 and Chapter 6 before starting any work on the spreader.

### Dismounting bearing plates



- 1 Disconnect the power.
- 2 Remove the landing buffer from the top of the main frame.
- 3 Lift up the telescopic beam unit by either using a forklift truck or other lifting equipment. The beam unit should be lifted up gently so the beams just come in contact with the top of the main frame.
- 4 Secure the beams in this position (blocks inside the main frame).
- 5 Remove the bearing plate with a screw driver.

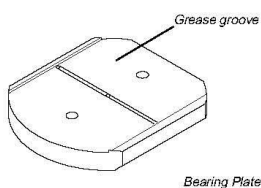


### Installing the main frame bearing plates

- 1 Perform the steps above in the reverse order.
- 2 Secure the 20' stop assembly screws with Loctite.
- 3 Lubricate the parts as per lubrication instructions section 6.1 Lubrication Instructions.

### Checking wear and tear

- 1 Replace the rubber buffers if it has become hardened or if there are tears or cracks inside it.
- 2 Replace the main frame bearing plate if worn out more than 2 mm and the grease groove is no longer visible, or if there are tears or cracks inside it.



### Dismounting the 20'/19'6" buffer

- 1 Telescope out from 20' position.
- 2 Disconnect the power.



- 3 Remove the 20'/19'6" stop assembly.

***Installing the 20'/19'6" buffer***

- 1 Perform the above steps in the reverse order.
- 2 Secure the 20' stop assembly screws with Loctite.

## **REP 13. Oil and Filters**



### **Warning!**

Read through the warnings and safety precautions in Chapter 1 and Chapter 6 before starting any work on the spreader.

### **Changing the oil and replacing filters**

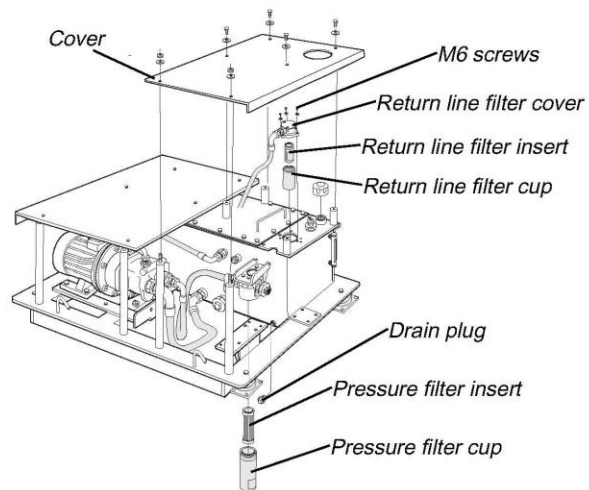
- 1 Disconnect the power.
- 2 Remove the cover over the hydraulic unit.
- 3 Prepare a separate container, into which the oil can be drained (150 liters).
- 4 Remove the drain plug and filler cap to drain the oil into the separate container.
- 5 Dispose the oil waste according to local environmental regulations.
- 6 Remove the four M6 screws holding the return line filter cover.
- 7 Remove the filter insert and replace it according to the instructions below.
- 8 Remove the pressure filter cup and replace the filter according to the instructions below.



### **Note!**

The cup is filled with oil. Clean the cup and assemble with a new filter insert.

- 9 Reinstall the drain plug and filler cap.
- 10 Refill the oil tank through the return line filter.
- 11 Reinstall the four M6 screws holding the return line filter cover.
- 12 Refill the pump by loosening the case drain hose and pouring oil into the pump. Please check with your Bromma service representative on suitable oil to use.
- 13 Reinstall the hose and remove the air for the system according to REP 14. Deaeration of Hydraulic System.



Pressure line  
filter indicator

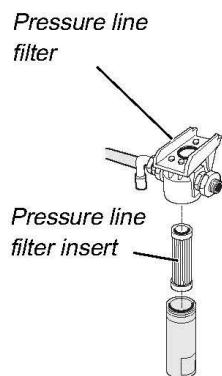


### Checking the pressure line filter

The pressure line filter is equipped with a clogging indicator on top. When the difference of the pressure on the clean side and on the polluted side increases, the red indicator raises and becomes visible.

- 1 If the indicator has never indicated when reaching 100,000 moves, check the function of the indicator as per below, and replace the filter insert.
- 2 If the filter has indicated, turn of the hydraulic pump.
- 3 Reset the indicator by pressing the indicator button back down.
- 4 Start the pump and run the telescoping.
- 5 If the filter indicates once again and the oil has reached its working temperature, the filter insert should be replaced





### **Changing the pressure line filter insert**

- 1 Remove the pressure filter and replace the pressure filter insert.



#### **Note!**

The cup is filled with oil. Clean the cup and assemble with a new filter insert.

### **Checking the return line filter**

The return filter clogging indicator is a type of pressure gauge with a scale divided into three different colours:

- GREEN = Filter OK
- YELLOW = Filter insert needs to be replaced soon
- RED = Replace the filter insert

- 1 Ensure the oil has reached its operating temperature.

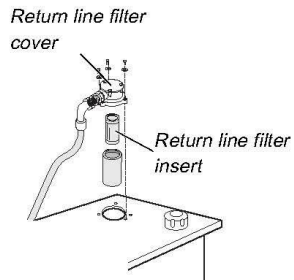


#### **Note!**

If the oil is not warm enough, the indicator may show false values!

- 2 Start the pump and run the telescoping. If the gauge indicates red, change the filter insert
- 3 If the indicator has never indicated when reaching 100,000 moves, check the function of the indicator and replace the filter insert.





### ***Changing the return line filter insert***

- 1 Disconnect the power.
- 2 Remove the four M6 screws holding the return line filter cover.
- 3 Lift the return line filter cover from the tank and replace the filter insert.

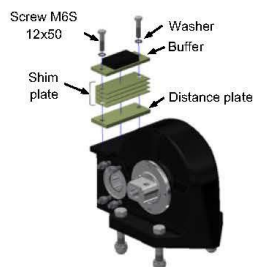


## REP 37. Buffer Plates on Flipper Gearbox



### Warning!

Read through the warnings and safety precautions in Chapter 1 and Chapter 6 before starting any work on the spreader.



### Removing buffer plates on the flipper gearboxes

- 1 Remove the two screws and washers.
- 2 Remove the old buffer but leave the shim plate at the original location.
- 3 Perform the above steps on all flipper gearboxes.



### Installing buffer plates on flipper gearboxes

- 1 Place the new buffer plate on the shim plate.
- 2 Retighten the two screws and washers.
- 3 Perform the above steps on all flipper gearboxes.

## **REP 38. Buffer Plates on Flipper Arms**

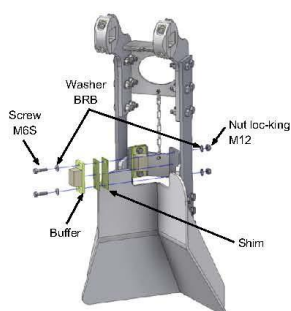


### **Warning!**

Read through the warnings and safety precautions in Chapter 1 and Chapter 6 before starting any work on the spreader.

### **Removing buffer plates on flipper arms**

- 1 Remove the two screws, washers and nuts.
- 2 Remove the old buffer.
- 3 Perform the same steps for the buffer plates on other flipper arms.



### **Installing buffer plates on flipper arms**

- 1 Place the new buffer plate on the shim.
- 2 Tighten the two screws, washers and nuts.
- 3 Perform the same steps for the buffer plates on other flipper arms.

