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Product Information

This Service and Replacement Parts Manual applies to the following Bushman AvonTec machinery:

Product Type:	Die Cart
Model Number:	
Rated Load Capacity:	
Serial Number:	
Registered User:	
Date Shipped:	

For warranty information, service, and replacement parts information; please call your local dealer or Bushman AvonTec at (800) 558-7850. Please have the above Product Information available when calling.

This manual should be kept with the machine at all times. In the event the machine is re-sold, or transferred to another facility, please contact the factory so that we can update our service and warranty records.

Responsibilities of Owners/Users

The following are the Responsibilities of Owners and Users of this equipment:

1. **Intended Use**
   It is the responsibility of the user/purchaser to advise the manufacturer of the weights and sizes or tooling used with this equipment, as well as the methods used to store and transfer tooling.

2. **Inspection and Maintenance**
   The lift shall be inspected and maintained in proper working order in accordance with the manufacturer's operating/maintenance manual and safe operating practices.

3. **Removal from Service**
   Any lift not in safe operating condition shall be removed from service until it is repaired to the original manufacturer's standards.

4. **Repairs**
   All repairs shall be made by authorized personnel in conformance with the manufacturer's instructions.

5. **Operators**
   Only trained and authorized personnel shall be permitted to operate the equipment. A copy of the service manual should be kept with the equipment at all times so that all operators may refer to it.
   A. Before using the lift, the operator shall have:
      (1) Read and/or have explained and understood, the manufacturer's operating instructions and safety rules, or be trained by a qualified person.
      (2) Inspected the equipment for proper operation and condition. Any suspect item shall be carefully examined and a determination made by a qualified person as to whether it constitutes a safety hazard. All unsafe items shall be corrected before further use of the lift.
   B. During operation the equipment shall be used only in accordance with its intended use and within the manufacturer's limitations and safety rules.
      (1) Do not overload the equipment.
      (2) Ensure that all safety devices are operational and in place.

6. **Safety Warning Labels**
   It is the responsibility of the owner to maintain all safety warnings labels in a clear, readable condition in the same positions as originally applied by the manufacturer.

7. **Modifications and Alterations**
   Modifications or alterations of this equipment shall be made only with the written permission of the original manufacturer. These changes shall be in conformance with all applicable provisions of the standard covering the safety requirements for Industrial Scissors Lifts and shall be at least as safe as the equipment was before modification. These changes shall also satisfy all safety recommendations of the original equipment manufacturer for the particular application of the equipment.

Safety Instructions

1. Do not operate this equipment unless you have been trained and authorized to do so.

2. Understand and follow all of these warnings and instructions as well as those contained in the lift Owner's Manual.

3. Before using equipment, inspect it for proper operation and condition.

4. Before using equipment inspect all safety devices to be certain they are in place and functioning properly.

5. Do not exceed the machine's capacity as stated on the serial number plate.

6. Center loads on the die platform.

7. Do not attempt to move cart without the die stop pins in place.

8. Keep the entire load within the perimeter of the platform while lift is in motion.

9. Ensure that people and objects are clear of the areas beneath the platform and immediately surrounding the perimeter of the lift while lift is in motion.

10. Do not work under the scissors lift portion of the equipment without the maintenance device(s) in position. See Owner's Manual for how to ensure the safe use of the maintenance device.

11. When transferring dies do not stand between the cart and edge of press or storage racks. Use the supplied pendant, and stand clear of the die and cart.

Battery Charging

This equipment is supplied with an on-board battery and charger. Refer to the instructions supplied by the manufacturer(s) of these components for information regarding maintaining and operating the battery and charger.

The cart may not operate correctly if the battery is allowed to become discharged. Refer to the battery charge indicator on the powerhead to check that the battery is charged before operating.

Load Capacity

Load Capacity Rating for Hydraulic Scissors Lifts

Bushman AvonTec lifts have the load capacity rating and serial number stamped on a metal plate attached to one end of the lift platform. Most lifts also have the serial number stamped in the upper flange of a base frame channel near a corner of the base of the frame. Note that the serial number plate is only valid for the platform supplied with the lift in an unmodified condition. If you remove, replace or modify the platform, contact Bushman AvonTec to obtain a new serial number plate.

> The capacity is a net capacity rating for a lift as furnished by the factory. The relief valve of the pumping unit has been set to raise the weight of the deck, plus the rated capacity, plus any surface mounted equipment installed by Bushman AvonTec, plus a small amount of overload.

To prevent damage to the lift and/or severe personal injury or death**, never exceed the rated capacity of the lift.**

Daily Operator Checks

Operator checks for hydraulic scissors lift mechanism:

Before using the lift platform to raise equipment, the operator should perform the following checks:

1. Walk around the lift to see that the surrounding area is clear, checking that there will be no interference with the lift platform's movement on the sides or from above.

△ DANGER

2. Check for any visible signs of damage or wear. Report any damage to an authorized service person, and do not use the platform until this condition has

been corrected. Do not enter the area under the lift platform. See maintenance instructions on how to do this.

3. Operate the lift platform through one complete lift and lower cycle. If any unusual vibration or noises occur during this initial use, report these immediately to a trained and authorized service person before using the lift platform.

4. Allow only authorized and trained personnel to operate the lift platform.

Daily Operator Checks for die transfer mechanism:

Before using the die transfer mechanism to transfer dies, the operator should perform the following checks:

1. Check that the die roller surfaces are free of damage, and that there is no debris or obstructions in the die area.

2. Check the action of the pivoting die hook. It should pivot freely on its pin.

3. Using the pendent control, move the die transfer mechanism to each end of its limits of traverse. Observe that the limit switches at each end of traverse are operational.

Operator Instructions

Read and understand all safety precautions that should be observed when operating this machine. Only trained and authorized personnel should operate this machine.

Cart Travel

Make sure that the lifting platform is at its lowest position and that the die stop pins are in position in the receptacles located at the leading edge of the die platform. The cart will not travel unless the die stop bracket is in.

Refer to the Powerhead Owners Manual for instructions on driving the cart.

Lifting and Lowering Platform

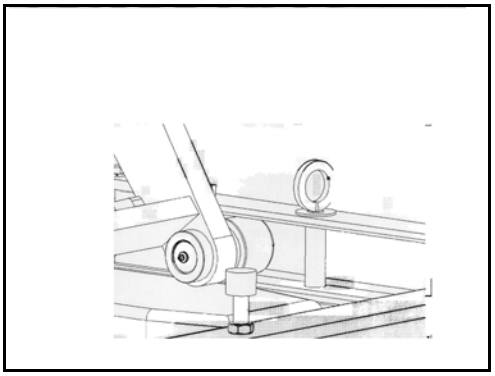
Make sure that the cart has come to a complete stop.

1. If there is a die on the platform make sure it is centered and that the die stop pins are in.

2. The platform can be raised or lowered by pushing the appropriate button on the powerhead handle or on the pendant

Die Transfer

1. Make sure the cart is aligned with a rack or press. The edge of the cart should be parallel with the edge of the bolster or storage rack. If supplied: Make sure



the platform-docking bar is securely set in the docking fixture.

2. Raise or lower the table top so that the die rollers are level with the top surface of the press or storage rack.

3. Remove the die stop pins.

4. If supplied: Lower the leveling jack so that it firmly contacts the floor.

5. Press the pushbutton on the pendent to move the die hook to the leading edge of the cart. Ensure that the pivoting die hook is lowered. When the pivoting die hook is fully engaged on the bracket mounted to the die, press the “Out” button on the pendent to begin removing the die from the press or storage rack.

6. It may be necessary to press the “Up” button on the pendent to raise the table slightly as the die transfers onto the cart. Some slight settling of the table surface may occur as the weight of the die moves onto the table.

7. Insertion of dies to press or racks: Follow reverse of above procedure. It may be necessary to lower table top as die transfers off the cart. Be sure to unlatch the pivoting die hook when die is in press or storage rack.

Maintenance Instructions

Maintenance Instructions for hydraulic scissors lifts:
A falling lift can cause personal injury or death. Before working under the lift, RAISE THE LIFT AND ENGAGE THE MAINTENANCE DEVICE AS SHOWN IN THE DIAGRAM. Do this every time you work under the lift.

Securing the Lift for Maintenance and Repair

1. The lift has two maintenance safety devices or pins mounted in the base frame, one on each side of the lift - locate these. It may be necessary to remove safety

skirt to access these safety stops.

2. Remove all loads from the lift.

3. Raise the lift to its fully raised position.

4. Place each of the safety devices in position.

NOTE: On some lifts it may be necessary to disable the “Up” limit switch so that the table can be raised sufficiently to position the maintenance stops. Disable the “Up” limit switch by removing the limit switch arm with an Allen-key or similar tool. Make sure there is no load on the table before performing this service, and replace the limit switch before returning the equipment to operating condition.

5. Lower the lift until the lower channel rollers or scissors arms are in contact with the safety devices.

6. Lock and tag out all lift controls using approved procedures to ensure that none of the lift controls may be used.

7. It is now safe to enter below the lift and perform routine maintenance procedures.

8. **Do not attempt to remove or loosen center pivot pins, hinge pins or leg rollers**. Removing or loosening these parts could cause the lift to suddenly collapse, e**ven If the maintenance device is engaged.** If any of these components require service:

   A. Remove all loads from the lift platform.
   B. Lockout power to the lift and tag as unsuitable for service.
   C. Clear the area surrounding the lift.
   D. **Contact Bushman AvonTec 800-558-7850 for instructions**.

9. After completing maintenance under the lift, reverse the above procedure to restore the lift to operational use.

Maintenance of Die Transfer Mechanism

1. Visually inspect all die roller surfaces for damage or wear. Damaged rollers should be replaced.

2. Once a month lubricate the bearings on die rollers, as well as the Acme die-transfer screw, the shaft on the pivoting die hook, and the pillow-block bearings on the transfer mechanisms,

3. Check that the electrical limit switches at each end of die transfer screw are operational. Ensure that each limit switch stop die transfer mechanism traverses. If a limit switch fails to stop screw rotation, severe damage to screw and other components may result.

Adjustments to Lift

Adjusting hydraulic scissors lifts:

1. Bushman AvonTec scissors lifts are shipped completely assembled and ready to install, and should not normally require adjustment prior to use.

2. In the event that the lift in the fully raised position is significantly lower, or significantly higher than the specified height shown in the Approval Drawing when the lift was ordered, it may be necessary to adjust the limit switch that controls the upward travel limit of the lift.

Limit Switch Adjustment

1. Limit switches have a certain amount of adjustment to them and can be adjusted to stop the lift's travel slightly before the limit of travel has been reached. This can be done by changing the position of the operating arm of the limit switch.

2. At no time should the limit switch be adjusted to extend the travel of the lift beyond the contract raised height, as continued operation in this position may cause damage to the hydraulic relief valve and to the hydraulic cylinder seals.

Hydraulic Relief Valve

1. The hydraulic and structural components of the lift are designed to handle a certain amount of pressure. The relief valve is set to relieve this pressure before it becomes too great. The relief valve has been included for the protection of all personnel who use the lift.

2. The hydraulic relief valve is pre-set at the factory to open approximately 100 p.s.i. above the maximum operating pressure of the system when the lift is carrying the rated load. It should not be necessary to adjust this valve.

3. In case the lift does not operate correctly at its rated capacity, please contact Bushman AvonTec before attempting to adjust the relief valve.

4. **Do not change the setting on the relief valve.** If the setting is changed, this may cause the lift to suddenly fail, which may result in severe personal injury or death and/or the lift and the payload may be damaged.

Flow Limiters/Velocity Fuses

1. **Do not remove, adjust or tamper with velocity fuses or flow limiters at the base of the cylinders.**

2. Tampering with them could cause the fuses to fail, which would prevent the fuses from slowing the descent of the lift in case of a hose failure. A free-falling lift can cause severe personal injury or death to persons working in its vicinity, as well as causing damage to the lift structure and components.

Lubrication

Lubricating die cart

1. The lift is equipped with aluminum-bronze bearings at all pivot points where components rotate. The cam rollers in the scissors mechanisms are equipped with similar bearings or needle roller bearings. Additionally, there may be grease fittings on the caster wheels located at the front edge of the cart.

2. All lubrication points are equipped with zerk fittings, and capped with a red plastic cap for ease of identification of each lubricating point.

3. Under normal conditions of use, all lubricating points should be flushed with grease every six months. In addition to providing lubrication to the bearing surfaces, flushing with grease assists in removing dirt and other foreign matter from the bearings.

4. **Recommended grease** is Sonoco Multi-Purpose 2 E P industrial grease or equivalent.

Hydraulic Fluid

Hydraulic fluid recommendations

1. Replace the hydraulic oil filter (if provided) at least annually.

2. If the oil level in the reservoir should become low, evidenced by a noisy pump and the lift not reaching its full limit of travel, then oil should be added to the reservoir. The following hydraulic oil should be used:
   Medium M S non-foaming, approximately 330 SSU viscosity @ 100 degrees F. with anti-corrosion and anti-oxidation properties.

Troubleshooting Guide

Troubleshooting guide for hydraulic scissors lifts:

1. Lift will not rise:
   - A. Check electrical circuit. See electrical section.
   - B. Check oil level in hydraulic power unit reservoir. When the lift is fully raised, oil level should be about 1-1/2" above bottom of reservoir.

2. Lift will not lower:
   - A. Test solenoid valve coil. If voltage correct, replace coil
   - B. Check for mechanical restrictions blocking lift from lowering.

3. Lift rises slowly or only lifts a partial load:
   - A. Check voltage to pump motor under load. Low voltage affects capacity.
   - B. Check for foam in hydraulic reservoir. Foam is usually caused by air. Check for loose connections in suction line.

4. Lift settles slowly when down valve is not energized:
   - A. Operate lift up and down without load several times to flush down Solenoid valve.
   - B. If lift continues to settle, replace down solenoid valve.

5. Lift does not reach fully raised height:
   - A. Check for low hydraulic oil level. Add oil if necessary.
   - B. Check limit switch adjustment - see next section.

6. Lift does not operate smoothly:
   Run lift up and down under load to purge air from hydraulic system.

Warranty

Bushman AvonTec will replace, F.O.B. the factory, any goods that are defective in materials and workmanship within 12 months of date of shipment, provided the buyer returns the defective materials, freight and delivery prepaid, to the manufacturer, which shall be the buyer's sole remedy for defective materials.

Manufacturer shall not be liable to purchaser or any other person or entity for consequential or incidental damages. The end user is responsible for the integrity of any structure, crane or fixture to which Bushman products have been attached. This warranty does not apply to equipment and/or components, which have been altered in any way or subjected to abusive or abnormal use, inadequate maintenance or lubrication, or use beyond seller recommended capacities and specifications.

Manufacturer shall not be liable under any circumstances, for labor costs expended on such goods or consequential damages. Manufacturer shall not be liable to purchaser or any other person or entity for loss or damage directly or indirectly arising from the use of goods or from any other cause.

No employee, agent, officer or seller is authorized to make further oral or written representations or warranty of fitness or to waive any of the foregoing terms of sale, and none shall be binding on the manufacturer.

If there are any problems or questions regarding this equipment or its application, contact your local sales representative or Bushman AvonTec directly at 262-790-4207.