



## GUIDELINES FOR OPERATING BUCKET TRUCKS

### **“EMPLOYEE INJURED AFTER FALLING FROM BUCKET OF TRUCK”**

#### **What happened:**

An employee was in the lift on the bucket truck. While maneuvering the bucket, the employee heard a “popping” sound and advised a co-worker he was coming down. As he attempted to lower the boom and bucket, the lift dropped or fell suddenly from a height of approximately 20 feet to a height of 8 feet. The bucket hit the side of the truck, resulting in the employee being thrown from the bucket to the ground. The employee was not wearing his safety harness.

The investigation of this incident revealed several potential adverse conditions which likely led to this injury and failure of the lift mechanism:

- The lift fell due to the failure of the idler sprocket pin and chain terminal-turntable connection. The failure of these components was likely due to inadequate maintenance.
- Large pieces of metal shavings, believed to be from the pin, were found on top of the turntable.
- Employees were aware of the “popping” noise on several occasions prior to the incident and no action was taken to resolve the problem.
- The employee’s failure to use the safety harness (body belt) violates existing OSHA standards and most likely contributed to the injuries he sustained.

#### **Discussion:**

Further investigation identified that the lack of lubrication of the idler sprocket pin was believed to have resulted in adverse wear between the pin and the sprocket. This galling gradually reduced the cross-sectional area of the pin and increased the diameter of the sprocket pin hole, dropping metal shavings onto the turntable in the process. The sides of the sprocket became scored from contact with and rotation upon the ends of the bushings. Damage to the tips of the sprocket teeth most likely occurred from binding contact with and slippage past a compensating sector tooth or teeth and possibly the chain links, as well. Binding and slipping of sprocket teeth most probably produced the “popping” noise described by the employees.

When the idler sprocket finally dropped far enough from its original position that it no longer supported the chain, the chain was suddenly tensioned, and the load was transferred to the turntable via the chain terminal. The loud pop heard immediately before the upper boom fell

was most probably produced by the failure of the turntable frame member. After the failure occurred, the release in chain tension allowed the upper boom cylinder to move upward, and the upper boom fell.

**Other information:**

This truck was a 1982 GMC 7000, equipped with a Hi-Ranger Hustler II lift (Model No. 4FI-40PBI) with a rated capacity of 300 pounds.

**LOSS CONTROL GUIDELINES:**

Many municipalities operate bucket trucks, similar to this unit, for a variety of purposes. The safe operating procedures and preventive maintenance of these vehicles is of the utmost importance to the safety and well-being of the employees who routinely operate them. Risk Management Services claims history shows there have been similar instances of employees being injured while working in the elevated bucket of these lifting devices. Special care needs to be taken to insure similar occurrences are not repeated.

Here are some basic guidelines that all operators of bucket trucks should follow (NOTE: Also refer to OSHA standard 1910.67 - Vehicle-mounted elevating and rotating work platforms):

1. Before operating the unit, read and understand all operating and safety information contained in the manuals provided by the manufacturer with the unit and on all signs installed on the unit.
2. Inspect the vehicle and aerial device, including operation, prior to use, daily, per instructions in the manual. If any discrepancy is observed, it should be noted and the unit placed out of service until repairs are completed.
3. Check insulated boom and all insulated components for cleanliness and dryness.
4. For stationary operation, vehicle must be securely parked and stabilized for the work to be performed prior to operating the aerial device.
5. Start engine and engage power take-off.
6. Do not operate unless unit is set on level and solid ground.
7. On slopes in excess of 5°, extend platform only over up-hill side of vehicle.
8. Engage and lock all stabilizing means, if unit is so equipped.
9. Outriggers, when required, must be on solid footings.
10. Operate all controls slowly for smooth platform motion.
11. Do not load beyond rated capacity.
12. Inspect and service unit per instructions in manual.
13. Always wear your safety belt at all times.
14. Do not operate this equipment with broken cable strands, or with missing or worn elbow liners. Failure to replace worn or broken cables will result in bucket overturning, with serious or fatal injury to occupants.
15. Keep unauthorized people away from truck when operating aerial device.

**Suggested preventive maintenance guidelines:**

1. All wire rope cables must be inspected monthly for broken strands, rust, and damage.
2. Lubricate, monthly, exposed sections of lift, leveling, and hold-back cables at elbow and platform with manufacturer's recommended grease or equivalent.

3. Do not overtighten cables. Excess cable tension will result in broken strands and rapid wear of elbow sheave liners. Consult you dealer, your manufacturer, or a qualified service agency for correct tension adjustment.
4. Replace cables and nylon liners at elbow sheave if liners are missing or worn through, causing cables to wear against the steel sheave grooves.
5. All cables must be replaced every 36 months from date of manufacture.
6. Read the manual for additional instructions.
7. Prepare and retain all records of inspection and maintenance for future reference.
8. Lubricate idler sprocket pin in accordance with manufacturer's recommendations.

The preceding information is a preliminary guideline designed to help local governments develop a safety operating procedure for bucket trucks. These guidelines are not intended provide complete operating or safety instructions. It is strongly recommended that the local governmental unit review these guidelines with their Risk Manager, Safety Officer, or Town Attorney to insure that the procedure is tailored toward specific local government needs.

RMS does not represent that these recommendations identify and address all of the unsafe or hazardous conditions associated with the operation of bucket trucks, nor do we represent that implementing our recommendations is the best possible solution and that no injury or financial loss will occur if they are followed. It is our opinion that implementing the recommendations should reduce the potential for losses. These recommendations are made from a Loss Control perspective and are not a substitute for legal advice. Final language of any agreement/waiver should be reviewed by the local government's counsel.

For additional information contact risk management services at **1- 800-228-0986** and select **“safety and risk control”** from the available options.

*This Bulletin is intended to assist in minimizing potential exposure to financial loss and is not intended to insure compliance with federal, state or local laws, regulations or rules, nor is it intended to be a substitute for legal counsel, actuarial assistance or other professional services. By offering periodic information on safety or risk management topics, neither the League nor its sponsored risk pools undertake to assume or guarantee safety or risk from injury or loss.*