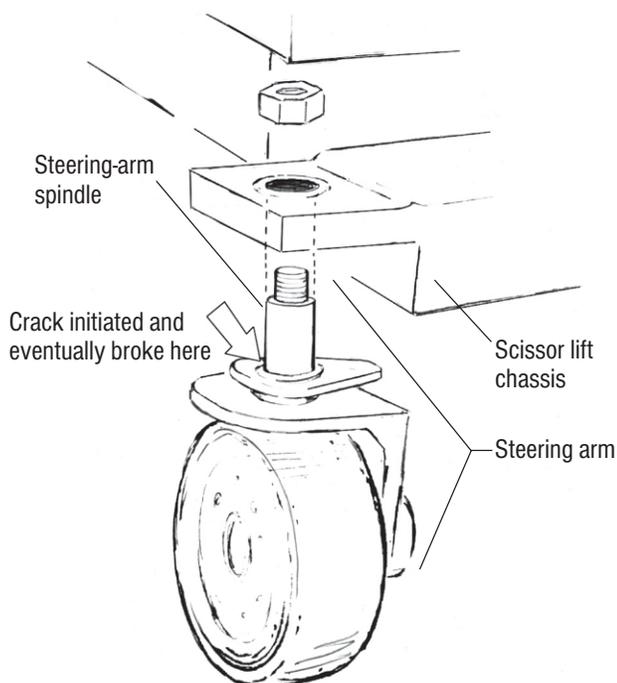


## Scissor Lift Hazard

In a recent incident, a scissor lift being operated on a new concrete floor of a tilt-up building under construction fell over without warning when the operator lowered the lift slightly to clear a steel joist and proceeded to drive backwards. The scissor lift hit an adjacent steel column on its way down, with enough force to bend the guardrails on the platform. The worker managed to jump out of the lift before it hit the ground, and suffered only minor injuries.

The scissor lift was a Marklift J25 EP unit with a capacity of 800 pounds and a maximum extension of 25 feet. It fell over because the left front steering arm, to which the left front wheel was mounted, had separated from the scissor lift chassis. The steering arm and steering-arm spindle are welded together, forming a complete unit. The steering-arm spindle had broken into two pieces, and the steering arm and wheel had fallen away from the chassis. As a result of the sudden loss of support at one corner of the chassis, the scissor lift toppled over.



### Fatigue cracks in spindles can cause steering arms to fail

Examination of the broken spindle showed a small fatigue crack located at the spindle root radius (the point where the spindle joins the steering arm). The spindle remained straight – it was not bent after the sudden failure – and the fracture surface was consistent with that of a brittle fracture resulting from a single overload. The location and small size of the fatigue crack would have made it impossible to see the crack without removing the steering arm from the machine.

### Widespread problem

The steel-erecting company operating the scissor lift involved in this incident had experienced two other steering-arm failures involving an identical Marklift J25 EP unit. The equipment rental company that owned these Marklift units had also experienced steering-arm failures involving its Terex TS30 scissor lifts.

Marklift went out of business in 1990 and its assets were purchased by Terex, which continued to manufacture boom and scissor-type manlifts very similar, if not identical, to those formerly made by Marklift. In January 2003, Terex issued a campaign bulletin advising that the steering arms of its TS30 and TSM30 lifts be replaced because of cracks that could cause the steering arms to fail. There are many of these Marklift and Terex scissor lifts in service in British Columbia and throughout Canada.



## **Inspect and replace defective steering arms**

Equipment rental and servicing companies and all other owners of Marklift J25 EP and Terex TS30 and TSM30 scissor lifts must inspect the steering-arm spindles on these units to ensure that there are no cracks at the spindle root radius. To conduct the inspections, remove the steering arms from the machine and use the magnetic particle technique or other effective non-destructive testing method. The magnetic particle technique enables cracks to be distinguished from other markings on the spindle. Steering arms with cracks in the spindle must be replaced with the appropriate replacement part from the manufacturer where possible, or, if no replacement part is available, with a suitable device designed by a professional engineer.

## **Regulatory requirements**

Section 4.3 of the Occupational Health and Safety Regulation states requirements for safe machines and equipment, including scissor lifts. Each machine must be inspected and maintained in accordance with the manufacturer's instructions and the relevant standard the machine is required to meet. In addition, if a machine is determined to be unsafe for use, it must be identified in a manner that will ensure it is not inadvertently returned to service until it is made safe for use. A replacement part used to repair a scissor lift must be of a type approved by the equipment manufacturer or certified by a professional engineer.



WORKERS' COMPENSATION BOARD OF BC

Revised January 2005