

## Failures of winch type signs

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### Purpose

To highlight the risks associated with winch type signs (i.e. wind up signs). Winch type signs are commonly used at schools, clubs and churches and at some retail locations.



Photograph 1 - Example of a winch type sign

### Background

A number of incidents have occurred where the upper part of the sign has suddenly dropped. Some of these have been caused by a lack of adequate maintenance. However, in at least one incident, the emergency brake failed to engage when the wire winch rope failed, causing the sign to drop to within 70 cm of the ground.

Although most of the incidents have resulted in only minor injuries, there is the potential to cause serious injury or death, as the upper part of these signs can weigh as much as 70 kg.

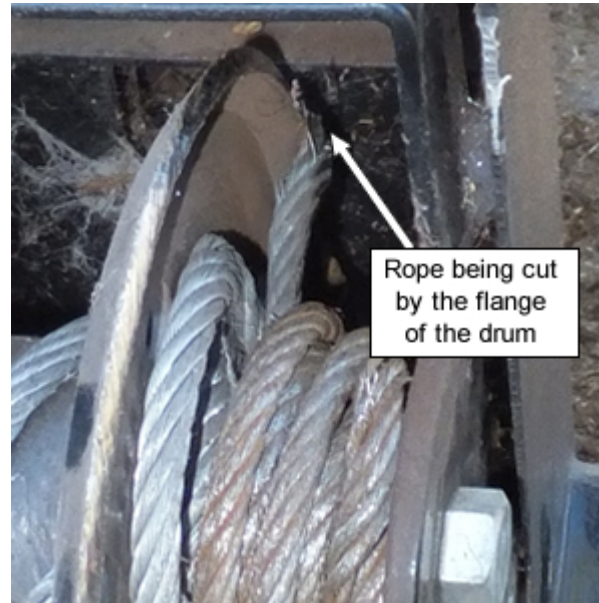
The winch drum and safety gear on many of these signs have plastic covers (refer photograph 6) to help protect the mechanism from corrosion. This cover can conceal critical faults.

As some signs will have been in use for more than 15 years without effective maintenance, the number of failures is likely to increase. One manufacturer and supplier of these signs has improved the design of the emergency brake and recommends that signs be upgraded.

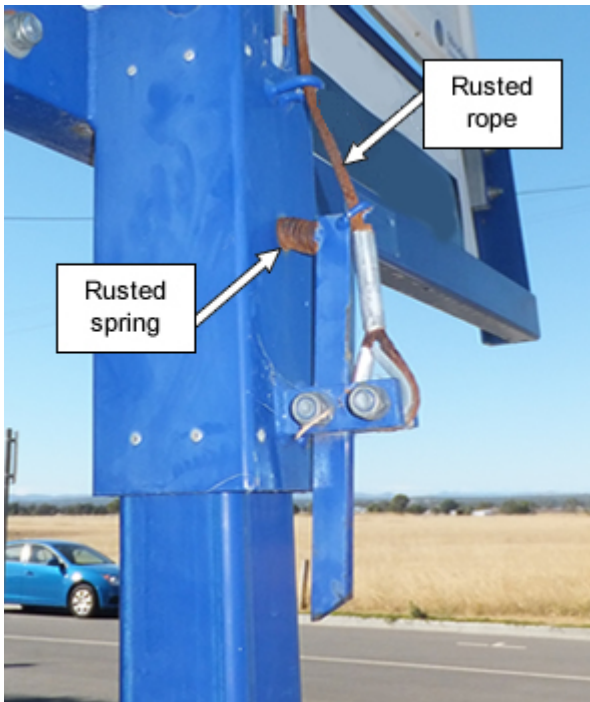
Photographs 2 to 6 show examples of faults on different parts of the signs.



Photograph 2 - Wire rope has wound off winch drum and onto winch shaft on the right of the drum.



Photograph 3 - Close up of winch drum and wire rope damage in photograph 2. Wire rope is being cut by the sharp edge on the flange, indicated by the arrow.



Photograph 4 - Emergency brake on a winch type sign showing rusted spring and wire. The emergency brake may not operate effectively because of this deterioration.



Photograph 5 - Broken hoist wire (caused by corrosion and possibly over-winding) on a winch type sign.



Photograph 6 - Emergency brake cover on one kind of winch type sign. It is important to inspect the inside mechanism as critical faults could be concealed by the cover.

### **Action required Emergency brake**

Wind up signs should not be operated unless:

- an inspection is carried out to ensure that the existing sign is safe to use and that the emergency brake will function properly in the event of the wire rope being cut or the winching mechanism failing. This inspection should include testing to ensure the emergency brake works and should not rely only on a visual inspection

OR

- the signs are upgraded with an improved emergency brake design in accordance with the manufacturer's recommendations.

### **On-going inspection and maintenance**

A visual inspection is limited because most of the components cannot be seen with the covers on. Winch type signs should therefore be inspected with the covers removed at periodic intervals to ensure the sign is safe for ongoing use.

The inspection should include:

- removing the protective covers on the winch and emergency brake
- inspecting the flexible steel wire rope in accordance with accepted inspection criteria (e.g. Australian Standard AS 2759 Steel wire rope - Use, operation and maintenance)
- inspecting the rope sheaves (i.e. pulleys) to determine that the sheaves are not damaged, are lubricated and can freely rotate
- inspecting the winch drum for damage and checking that the wire rope is wound on the drum
- inspecting the emergency brake for corrosion and ensuring that parts are able to move freely and all components are operational
- checking that the upper part of the sign is able to move up and down the guide post without excessive lateral (sideways) movement, without excessive force being applied by the user and ensuring the wear pads have not been excessively worn and need replacing
- ensuring the rope ferrules (i.e. terminations) cannot contact the sheaves
- inspecting the bolts, screws and welds for damage or corrosion.

Refer to the manufacturer's instructions for further information on the items that need to be checked during routine and/or periodical inspections. All repairs should be carried out in accordance with the sign manufacturer's instructions.

### **Sign operation**

It is important that wind up signs are operated in accordance with the sign manufacturer's instructions and that only nominated persons operate the signs.

A raised sign should be carefully lowered with the operator's body away from the potential fall zone of the sign.

The emergency brake on the sign will allow it to drop for a short distance before being stopped. For this reason signs are usually fitted with stickers that warn people not to stand directly under the cross bar. Some later models have the winch offset from the main support post to reduce the likelihood of injury to the user.

Do not allow children or students to raise or lower the signs.

### **Further information**

Visit [www.worksafe.qld.gov.au](http://www.worksafe.qld.gov.au) or call the WHS Infoline on 1300 369 915.

Further information may be obtained from the following codes of practice:

- [\*How to Manage Work Health and Safety Risks Code of Practice 2011\*](#)
- [\*Managing Risks of Plant in the Workplace Code of Practice 2013\*](#)