

NAFLIC

National Association For Leisure Industry Certification

Standards & Related Documents Committee

TECHNICAL BULLETIN – SEPTEMBER 2006

312. Positive Mode Switching

The committee has been asked to remind designers and Design Review Inspection Bodies of the use of limit or position switches, in particular when used to detect the position of seat restraints and locking devices.

As an example the following text has been taken from PD 5304:2005 Guidance on Safe use of Machinery, which is available from BSI.

Safety of Amusement Devices: Design (Second Edition) also gives guidance on this topic.

“Position switch operating in the positive mode

In this mode of operation, the switch stem is held depressed by a cam attached to the guard, when the guard is in a position other than closed. The final closing movement of the guard releases the switch stem allowing the contacts to close by the action of the return spring, i.e. the contacts are normally closed, and when the guard is opened the contacts are positively (directly) opened by the cam. This arrangement is more reliable than that shown in b) because it does not rely on a spring to return it to the safe condition and it cannot be defeated by depressing the switch stem. It can, however, ultimately fail to danger if the components of the guard are not properly maintained, e.g. excessive wear or misalignment of the cam with the switch can result in the switch stem not being depressed far enough to open the contacts. The arrangement shown in Figure 81 is a method of reducing this possibility.”

The following sketch is based upon Figure 74 from PD 5304:2005

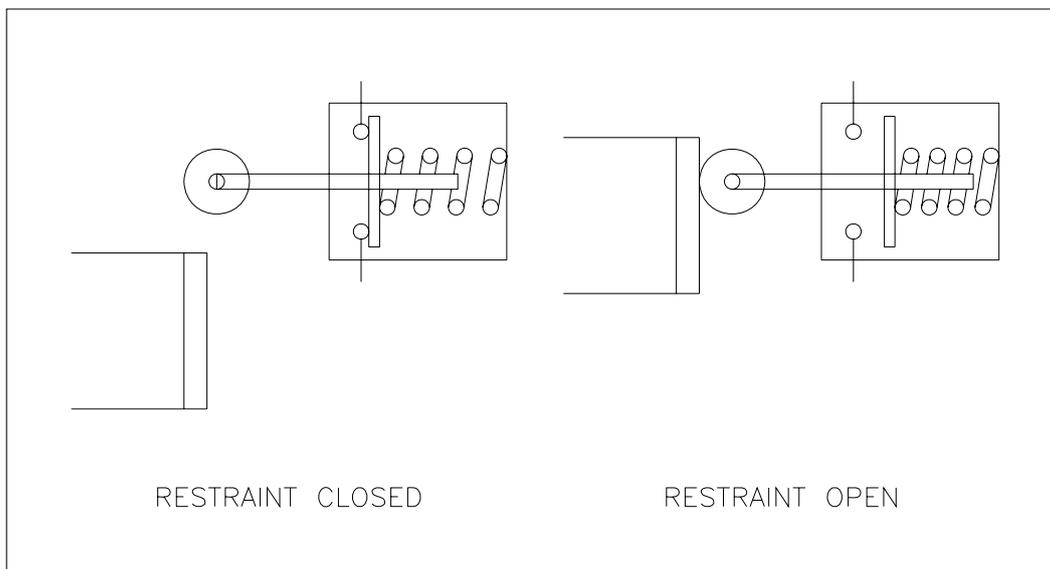
Committee Members:- Mr. Doug Dadswell (Chairman), Mr. Richard Barnes, Mr. Peter Smith,
Mr. Ian Grant, Mr. John Green, Mr. Phil Mitchell, Mr. Ron Dale Dr Garry Fawcett MBE, & Mr. Dave Inman

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Designers are advised to refer to PD 5304:2005 which provides detailed information on the appropriate use of switches as safety interlocks.

TB 167 June 1998 gives further information.

Safety of Amusement Devices: Design (Second Edition) published September 2006, also gives guidance on this topic (e.g. Chapter 9 paragraph 74) addresses the assessment of safety integrity of passenger restraints and locking, and the need or otherwise for additional safety measures.

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