

418. HSE guidance on the safe operation of barrel (egg) trains

The Health and Safety Executive has issued guidance on the safe operation of barrel (egg) trains.

The HSE notes that incidents involving these devices resulting in injuries are still occurring in the UK. The most recent in 2014 resulted in a young girl suffering an amputated ear. Barrel trains often have a high centre of gravity and are not normally fitted with roll over protection. There is a risk of injury to passengers resulting from carriages overturning. This risk is increased if routes are not properly planned and drivers are not trained or act inappropriately.

The HSE adds that an investigation into a recent incident involving the overturning of the rear carriages on such a device found that this was probably caused by a whip effect when a tight turn was carried out unsafely.

The guidance covers manufacturers, duties on the person in overall control of the barrel train, seat belts, driver training and driver duties. Full information is available on the HSE website at <http://www.hse.gov.uk/agriculture/topics/machinery/barrel-egg-trains.htm> or see the accompanying copy of the guidance.

HSE Guidance on the Safe Operation of Barrel (Egg) Trains

This guidance is for operators of barrel (egg) trains at open farms and similar leisure facilities. Operators have a legal duty to take reasonably practicable measures to ensure the safety of their employees and others including people riding in the train.

Background

Incidents involving barrel egg trains resulting in injuries are still occurring in the UK. The most recent in 2014 resulted in an eight year old girl suffering an amputated ear. In 2012 an accident in the USA resulted in a fatality of a child. 4 other children aged between 3 and 8 years of age suffered serious injuries.

Barrel trains often have a high centre of gravity and are not normally fitted with roll over protection. There is a risk of injury to passengers resulting from carriages overturning. This risk is increased if routes are not properly planned; drivers are not trained or act inappropriately.

The investigation into a recent incident involving the overturning of the rear carriages, was probably caused by a whip effect when a tight turn was carried out unsafely.

Manufacturers

Manufacturers of barrel trains have duties to ensure, so far as is reasonably practicable, that they are designed and constructed to ensure they are safe to use whilst in operation. If the train is 'home made' by the operator this duty lies with them.

Committee Members: Mr. D Dadswell (Chairman), Mr. A Mellor (Secretary), Mr. P Smith, Mr. J Green, Mr. D Cox, Mr. M Thirkettle, Mr. I Davies, Mr. J Shilling & Mr. D Inman

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Duties on the person in overall control of the barrel train

Barrel trains are defined as a fairground ride. The person in overall control of a fairground ride, including a barrel train, is called the ride controller. The ride controller, has duties to ensure:

- The train is properly designed and built to ensure it is safe to use; and
- It is regularly inspected to make sure it stays in that condition.

These can be done through a system of pre-use and in-service inspections. More information regarding the duties placed on ride controllers can be found in [HSG 175 \(pdf\)](#).

The controller must also assess the risks from operation of the train and take sensible and proportionate measures to control them.

The steps set out below, particularly those relating to speed and no tight turns, should reduce the risk of overturning and ejection.

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Risk control measures include:

- Using a fit for this purpose towing vehicle:
 - Some small tractors and quad bikes are not designed for towing and must not be used.
 - The suitability of the towing vehicle should be checked with the manufacturer.
 - The manufacturer's restrictions regarding the un-braked towing weight of the towing vehicle must not be exceeded.
- Ensuring the towing vehicle and the barrel train are properly maintained, kept in good condition and that brakes are capable of safely stopping the train when it is fully loaded. The maintenance regime should cover wheels, tyres, axles, hitches and other safety critical parts.
- Ensuring passenger carriages are safe for how they are going to be used.
- Pre-use inspections are carried out on the barrel train before it is brought into use for the first time and that the ride is subject to an annual in-service inspection in line with the Amusement Devices Inspection Scheme (ADIPS). (Further information available in HSG175).
- Tyre pressures on both the towing vehicle and train are correct. The vehicle should be checked before use and the tyres inflated (if required). Unbalanced tyres can result in instability of the vehicle.
- Planning the route for the train ensuring that transverse or excessively steep slopes, tight turns and tight circles are avoided. It may be necessary to impose different speed limits at different parts of the route.
- Ensuring the train is only towed at walking pace:
 - Particular attention should be made to the speed of the vehicle during turns and to
 - ensuring that the last carriage has completed the turn before increasing speed.
 - The vehicles used for towing may not be fitted with a speedometer when new, so other
 - methods of speed control, such as defined gear selection may be required.
- Having arrangements in place to ensure passengers can be observed at all times. This cannot effectively be undertaken by the driver alone who should be looking forward.
 - Controllers may decide to operate with a 'conductor' riding in the back car. If this option is
 - taken up they should ensure the car is suitable for that purpose.
 - Alternatively, an observer may be able to walk alongside the carriages.
 - The conductor or observer should be trained to know what to do if passengers are
 - behaving incorrectly and should be able to communicate effectively with the driver.
- Ensuring the driver has been trained and is competent to use the equipment. In line with the operation of other amusement devices of a similar nature, the driver should be at least 18 years of age. See below for advice on driver training.

Seat belts

HSE has considered the case for seat belts, however as the risk of an overturn cannot be entirely eliminated, and in the absence of roll-over protection systems (ROPS), seat belts may present a risk of trapping passengers under the carriage and dragging them along the ground, causing more severe injury.

Driver training

The competence of drivers is critical to the safety of passengers. Drivers must be trained and instructed in the safe operation of barrel trains. This will include:

- Pre-use checks on tyre pressures, brakes, integrity of the carriages and their connectors.
- The safe operation of the train including following designated routes, speed restrictions, avoiding tight turns, sudden speed changes and supervision of passengers.
- Information on the assessment of passengers' suitability to be on the ride. Those who are too small, too big, or who are unlikely to remain seated during the ride or may become frightened or distressed during the ride should be excluded as they can increase the risk of overturn.
- Drivers need to be aware of the maximum number of carriages and people that can be pulled. Some of the trains may have as many as 12 carriages which, when laden, constitutes a considerable weight.

Driver duties

Drivers are responsible for driving the train in a way which does not put themselves or passengers at risk of injury. They need to be familiar with the safe method of operation of the train and fully understand the training they were given. (see driver training).

References

- [HSG 175 Fairgrounds and amusement parks guidance on safe practice \(pdf\)](#).