

SAFETY ALERT/ACTION NOTE

KOLMAX PLUS MIAMI TRIP

On 12 June 2010 at Halifax a young, disabled person was injured when they were ejected from the right hand end seat a 20 seat Kolmax Plus Maimi Trip ride. The ride had been manufactured in the Czech Republic in 2004. See Fig 1.



Fig 1.

Following the incident an investigation was carried out by HSE NFIT inspectors assisted by an HSE Specialist Mechanical Engineer.

It is believed that at the time of the accident the overhead restraint bars were properly fastened. An ergonomic and ride force study is currently being undertaken to examine these aspects of the containment system. However, it is believed that she was able to fall sideways from the right end seat. The left side seat is shown in Fig 2.

During the investigation a number of other areas of concern with the ride were found and these are outlined below with the actions required to correct them.

Action Required - 1: With immediate effect no passengers should be seated in the last outside seats of these devices, on either side, until a supplementary restraint system/bars has been fitted to prevent a person being ejected from the ride. It is understood that design review work in this area has been started by the showman involved in this incident in consultation with an ADIPS approved design reviewer. The restraint system or bars should be fitted so that they do not cause any trapping

hazard and should be padded to prevent injuries when riders contact them during the ride.



Fig 2.

Action Required – 2: On the ride seen, (a 2004 model) the electrical interlock switch on the restraint bar only detects the lowering of the bar. It does not detect that the bar is positively latched and it is possible that the ride can be run without the latch being fully closed. The current interlock switches could also fail to danger as they rely on a spring to return the switch to the restraint bar open position. This design should be reviewed and changed as necessary so that the ride cannot be started until all the restrain bars are down and their latches properly closed. This system should be designed and installed so that the interlocking system cannot fail to a situation where the ride can be started with the latch not fully closed. The new system may or may not incorporate the existing interlock switches, but if it does then their mode of operation will need to be changed into a fail safe mode and additional interlock switches are likely to be required to detect the closing of the latches. Whatever approach is taken the starting requirements for safety referred to above remain.

Action Required – 3: At the end of the ride cycle the restraint bars are released by the operator pushing down a pedal on the side of the gondola. See Fig 3. This pedal can be reached and activated by the passenger sitting in the end seat nearest the pedal. This access is to be prevented. This may be done by fitting a shroud around the pedal housing so that passengers cannot reach the pedal or by designing the restraint bars mentioned above such that they prevent passengers reaching the pedal.

Any shroud should not be fitted such that it creates a further risk to the operator when unloading the ride.



Fig 3.

Action required – 4: The braking system for the ride is air activated and works on a disk brake operating on the drive shaft for the tyre driving the main drive wheels. If the air system fails or falls below a certain level the brake will fail and the ride cannot be brought to a controlled stop or made stationary whilst loading/unloading is carried out. This system is to be fitted with a low pressure alarm to indicate a failure in the air supply or compressor. The alarm should be set so that it operates whilst there is sufficient air in the system to safely brake and stop the ride.

Action – 5: The ride operates by means of a shaft on the end of which is a wheel and inflated tyre. This tyre runs on one large ‘locomotive’ type wheel which is connected to another by means of a connecting rod. This whole system is counterbalanced and if the gondola is lightly loaded/empty it will naturally move up to the 12 ‘o’ clock position. If loaded above a certain weight it will move down to the 6 ‘o’ clock position.

A procedure must be prepared and training and instruction provided to ride operators and attendants on the correct procedure for safe release of passengers in the event of either loss of power, braking or a tyre puncture when the seat is lightly loaded and the passengers are left stranded at the top dead centre or 12 ‘o’clock position. The procedure should also cover the situations where there has been loss of power, braking or a tyre puncture and the bench is full and at bottom dead centre or 6 ‘o’clock position, but will become counterweight heavy as passengers get off, to ensure the

bench does not start to rotate upwards whilst passengers are still on or trying to get off the ride. This procedure should be put in place with immediate effect.

Actions 1 & 2 above are adjustments to safety critical components and will require design review by an appropriately qualified person.

Actions 2, 3 and 4 should be put in place as soon as possible but in any case by 1 January 2011 or by the date of next test, whichever is soonest.

Ride examiner action: These rides should not pass any further ADIPS TER examination until the adjustments above have been made.

HSE action: HSE NFIT Inspectors will be briefed about this Alert and will seek confirmation from controllers that remedial work to the devices is ongoing. Rides not altered in accordance with this note by 1 Jan 2011 will be subject to prohibitions on use.

Further information if required from M Sandell (HSE) on 07527002689 19.07.2010