

# Safety Alert

## NOTICE TO RAIL TRANSPORT OPERATORS

RSA-2013-02 Date Issued 18 November 2013

### SUBJECT

Coupling Systems and Brake Systems Fitted to Infrastructure Trolleys and Trailers

### ISSUE

On 9 November 2013 as a result of the derailment of a rail mounted excavator, the two trailers which it was towing became detached and ran away, subsequently colliding with a second rail mounted excavator which was located 6 kilometers away from the original derailment site.



Figure 1: Point of collision

While the incident is still under investigation, the following information is provided to alert operators of infrastructure trolleys and trailers to the circumstances of the incident so that they can examine their equipment to prevent occurrence of a similar incident.

Rail Transport Operators should examine all risks associated with using Road Rail Vehicles (RRV) to tow/push rolling stock. Your examination should cover all types of RRV's, trailers, trolleys and any other rolling stock coupled to them and not limited to the specific type of equipment involved in this incident.

### Coupling System

The coupling between the excavator and trailer was a "Ringfeder" type typically found on heavy road vehicles. The operator advises preliminary enquiries reveal a size mismatch between the drawbar ring and the Ringfeder pin of approximately 10mm. The pin was therefore not fully engaged in the drawbar ring and only became dislodged when the excavator de-railed when travelling at approximately 5km/h.



Figure 2: Ringfeder type coupler

### Braking System

The trailers were fitted with “hydraulic over spring” brakes (meaning hydraulic pressure hold spring brakes in the released position). Brakes are applied by reducing the hydraulic pressure in the brake line allowing the spring to apply brake force to the wheels. The operator controls the vehicle’s speed via the excavator’s normal travel levers which adjusts the hydraulic pressure in the drive motors and brake line according to the desired travel speed.

In this incident, once the trailers became separated from the excavator the hydraulic line separated at the “breakaway coupling”, however the ball (or poppet) valve inside each side of the fittings maintained hydraulic pressure in the trailer’s brake line which kept the trailers’ brakes in the released position allowing them to roll away uncontrolled and in an un-braked condition.

The operator advises the excavator should have been fitted with a locking hydraulic coupling (not the “breakaway coupling” as found on the machine at the time of the incident), so that the flexible hydraulic hose would tear, lose hydraulic pressure and apply the brakes in the event of separation. Both types of fitting are identical in appearance, the difference only detectable in the way they are engaged. The operator is currently investigating why the incorrect fitting was used on this machine.

It is noted that the correct functioning of such arrangement would cause the spillage of hydraulic fluid.



Figure 3 and 4: Hydraulic coupling

### Communications within the Worksite

The means of communication available to the driver of the excavator towing the trailers was insufficient for him to warn others downhill in the rail corridor of the imminent danger posed by the runaway trailers.

### Actions

All rail transport operators are asked to:

1. Examine the adequacy of coupling arrangements to prevent unintended parting.
2. Undertake a thorough evaluation of braking systems to ensure vehicles, trailers, trolleys etc. do not enter an un-braked state in the event of separation. Additionally, ensure the vehicle’s brake system will stop and hold the fully loaded vehicle stationary on the ruling grade and in all weather and track

conditions.

3. Assess whether the use of hydraulic braking equipment, causing a spillage in case of separation is acceptable.
4. Ensure equipment new to their operation (including that provided by contractors and/or sub-contractors) is comprehensively assessed, tested and commissioned by a suitably qualified and competent person to ensure compatibility with other equipment it may be coupled to.
5. Review repair and servicing specifications and associated process controls to ensure only correctly specified parts are installed in safety critical systems. Additionally, ensure the towing assembly is capable of handling the towing forces and the equipment configuration is well managed.
6. Ensure there is an effective and reliable means of communication with all track users (including all those working within a work site) available for immediate use in the event of an emergency situation arising.
7. Examine safety risk controls used to manage the risks associated with setting up worksites where machinery or equipment is working uphill from other track users (including members of their own workgroup) who are located downgrade.
8. Review internal audit programs to check they include examination of:
  - a. Testing, commissioning and certification by a suitably qualified and competent person of all equipment introduced to their operations
  - b. Equipment inspection, servicing and repair records
  - c. Management of worksites.

For further information please contact Andreas Kornusch, National Manager Audit and Compliance on (08) 8406 1528

**THIS ADVICE IS EFFECTIVE IMMEDIATELY**

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