



# The One Constant: HEALTH & SAFETY

Valuing our People

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**The One Constant: Health & Safety – Valuing Our People**

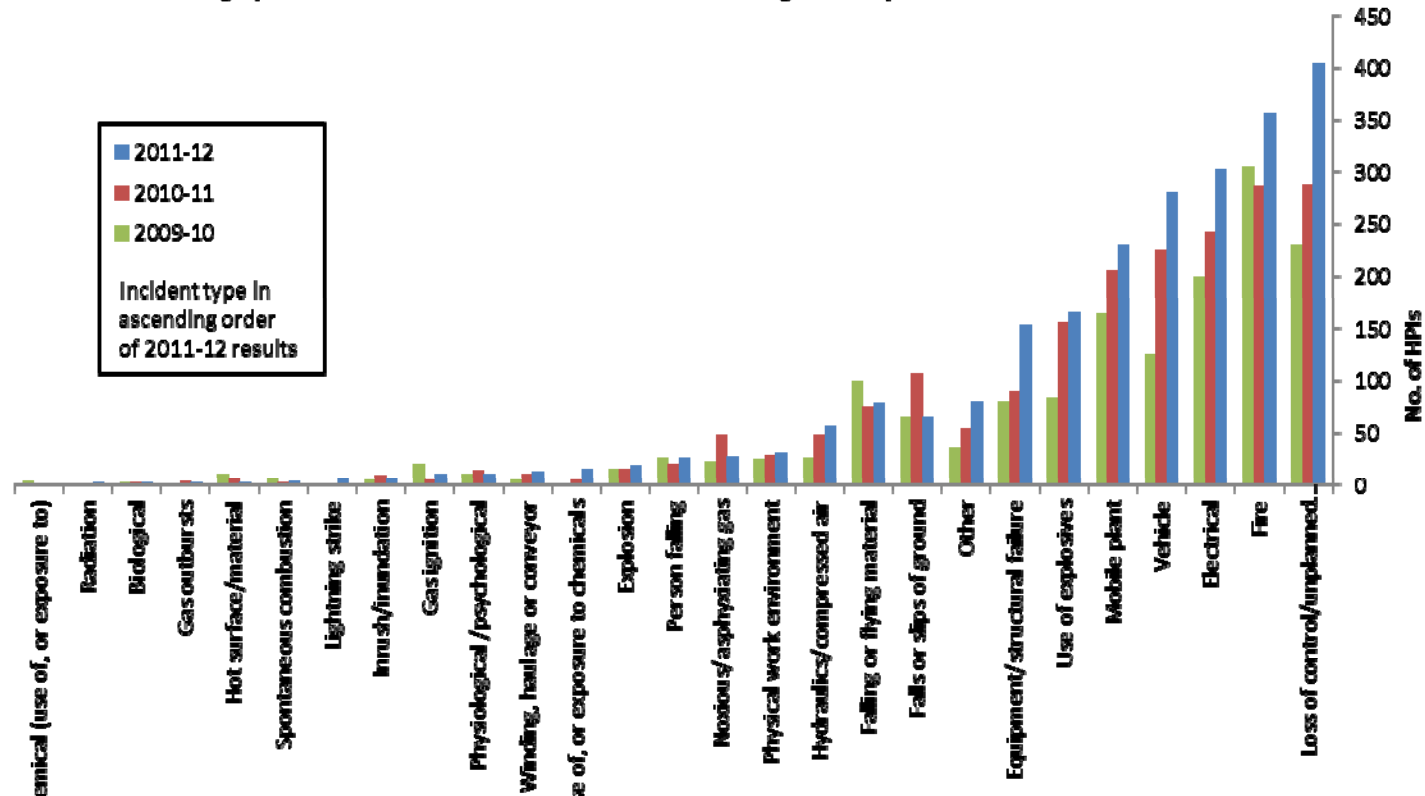
# **REDUCING THE RISK OF UNCONTROLLED MOVEMENTS FOR ROAD GOING VEHICLES USED IN MINING OPERATIONS**





## CONSTANT CONCERN; Uncontrolled/Unplanned Vehicle Movement

High potential incidents in the Queensland mining industry 2009-12





## CONSTANT CONCERN; Uncontrolled/Unplanned Vehicle Movement

### Rating by Mine Type

Mine type	HPI Rating	% of Total HPI's
Surface Metalliferous Mines	1 <sup>st</sup>	32%
Underground Metalliferous Mines	1 <sup>st</sup>	20%
Surface Coal Mines	2 <sup>nd</sup>	17%
Quarries	5 <sup>th</sup>	8%
Underground Coal Mines	6 <sup>th</sup>	6%



## INCIDENT EXAMPLES

A diamond drill support trailer was unhitched from a light vehicle. The light vehicle has runaway downhill, missing two workers in its path and coming to a stop after hitting the wall approximately 10 metres from the release point.

A serviceman parked a Toyota Landcruiser utility and with the passenger exited the vehicle. The serviceman went to move another vehicle that was parked nearby. The passenger climbed onto the tray to retrieve some equipment for the intended task. While the passenger was on the tray, the vehicle began to roll backwards toward the other side of the access drive where it struck the wall. When the serviceman and the passenger inspected the damaged utility tray and decided to not report the incident and carried on working. Another operator in an integrated tool carrier, further down the drive at the time of the incident was aware that the incident had occurred, but also failed to report the incident. The damage to the utility tray was noticed by operators on the following shift. When questioned about the damage, the serviceman and passenger then reported what had occurred. The vehicle park brake and transmission have been checked and both function when engaged.

A driver (with passenger on board) parked a Toyota Landcruiser and vacated the vehicle, failing to engage the hand brake or leaving the vehicle in gear. The driver and passenger both left the area and it was then that the vehicle rolled forward approximately 30 metres coming to rest on level ground approximately 1.5 metres from an employee who had no idea of the potential danger. The entire workforce is being notified again of vehicle parking procedure.

A light vehicle was travelling down North decline with two occupants. Brakes were applied by the operator. The operator found the brake pedal to be very hard and brakes did not appear to be working. The driver stopped the vehicle by striking the left hand wall, sliding the vehicle down the



## RIGGERS

**he examples demonstrate;**

**riggers can and do include;**

- Mechanical failure
- Mal adjusted brakes and park brake
- Equipment that is unfit for purpose

**human errors play a significant part;**

- Failure to comply with policies or procedures
- Failure to apply or fully apply park brakes
- Task demands and workloads
- Risk taking
- Distraction
- Training or experience



## CONTROLS TO REDUCE THE RISK

### Brake system that is fit for purpose

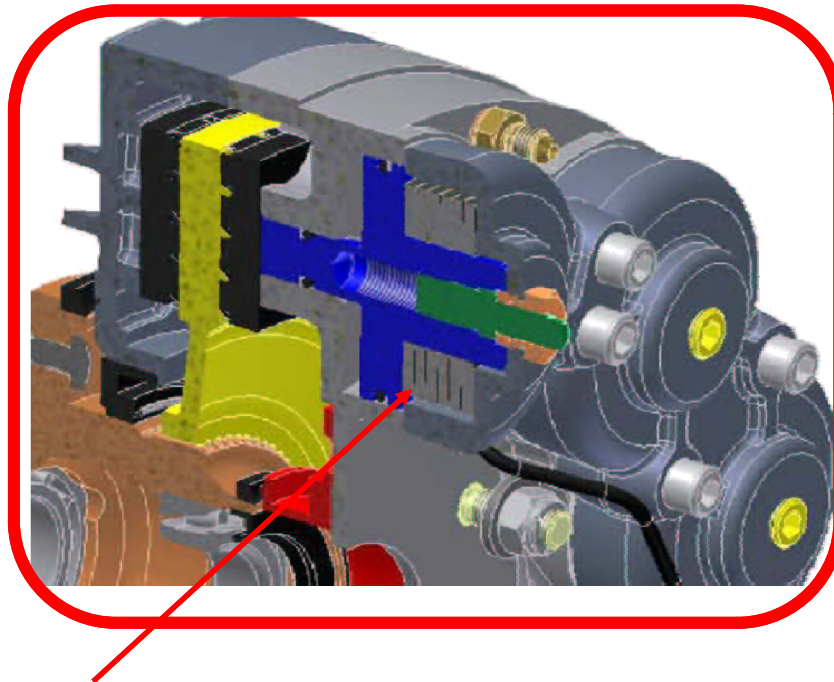
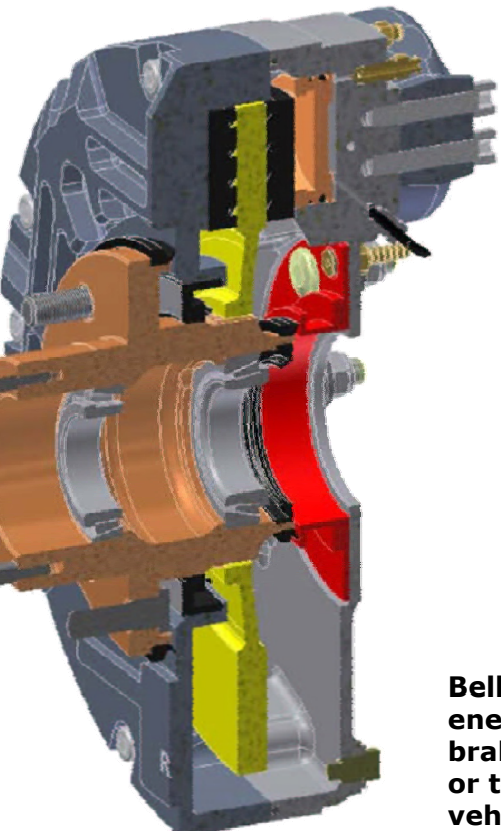
And where possible removes the human factor

1. Automatic fail safe spring applied hydraulic release (SAHR) brake
2. Operator applied emergency brake
3. Integrated park brake to ensure full and automatic brake application through selected interlocks
4. Reliable braking in all conditions

m = To ensure the vehicle is never without a brake that can stop



## SPRING APPLIED HYDRAULIC RELEASE



**Bellville Springs provide an autonomous energy source to mechanically apply brake either in an emergency situation or to park the vehicle ensuring the vehicle is always fundamentally stable**





## CONTROLS

### Operator Interface



**Operator Applied  
Emergency Brake**

### Automatic Brake application Interlocks

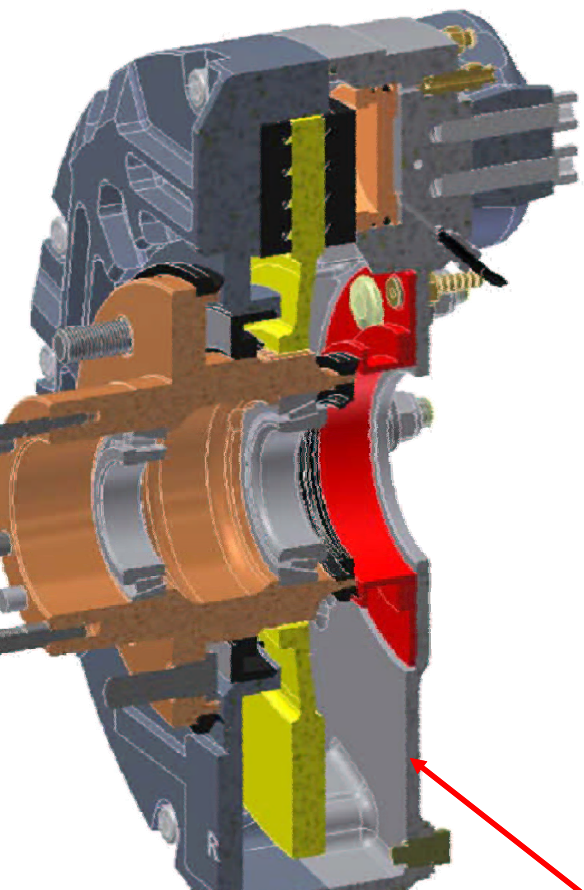
#### Ignition Interlock



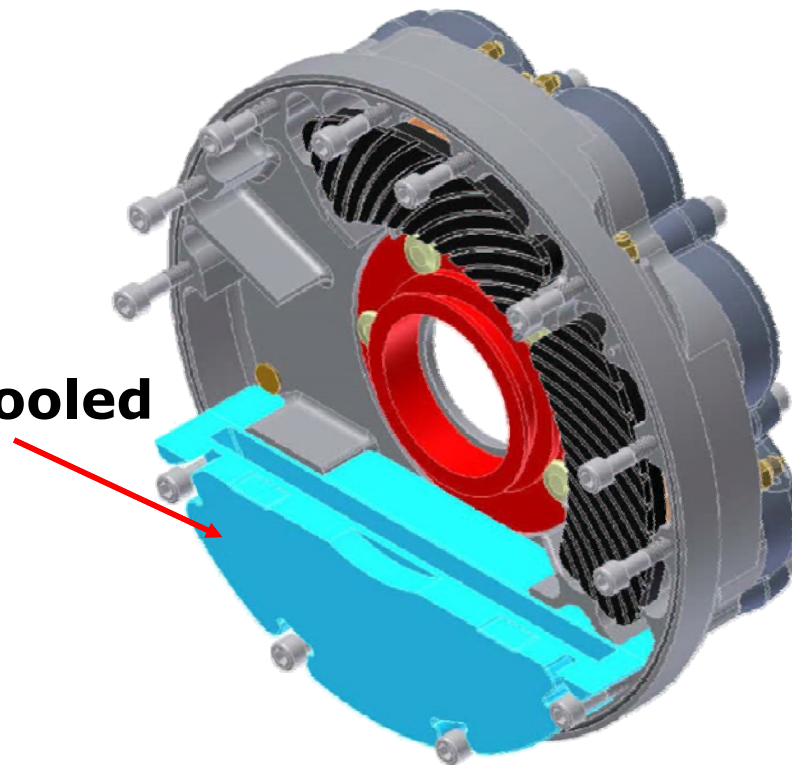
**Door  
Interlock**



## RELIABLE BRAKING



**Oil Cooled**





## DESIGN STANDARDS

### IBS® - Australian & International Compliance

#### **Compliant with Australian and International standards for on-road use without restriction:**

- › Australian Design Rule (ADR) 35/03
- › New Zealand Type Approval for Low Volume Vehicle Component Approval Certificate
- › ECE R13 Tested by TUV, Germany
- › South African Bureau of Standards (SABS) 1207

#### **Compliant with various international standards for mine use:**

- › South African Bureau of Standards (SABS) 1589
- › New South Wales MDG15 (Mines Design Guide)
- › Prevailing MSHA (USA) standards



## APPLICATIONS

**Light Vehicle: Wheel-End Brake Systems**



**Light Truck: Wheel-End Brake Systems**



**Truck: Autonomous Fail Safe Brake Systems**







## BS® – MINE SITE LOCATIONS

