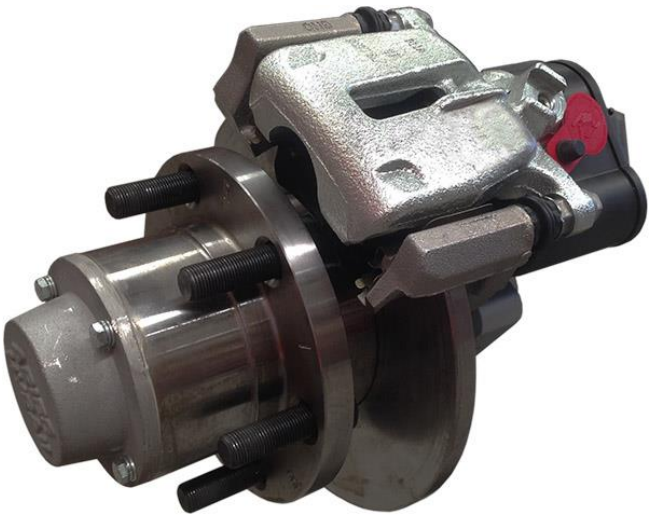
AUTOMATIC HYRAIL BRAKE SYSTEM

System overview



The Aries Hyrail automatic brake system has been designed to prevent uncontrolled movement of hyrail vehicles when operating on-rail. Working with the Aries Hyrail vehicle control system or as an independent braking solution, the automatic brake prevents the vehicle getting to a condition where an uncontrolled movement could occur. If a roll-away were to begin, the brakes will quickly and safely bring the vehicle to a halt.

HOW IT WORKS

Unlike traditional fail-safe brakes, which respond to an un-controlled vehicle movement in a responsive manner, the automatic braking system can pro-actively prevent un-controlled movements from happening. At the heart of the system is a rugged solid state control unit that includes a self-monitoring battery backup which, is used to apply the brakes if the vehicle battery fails.

By monitoring the status of the vehicle and the actions of the driver, the brakes can be applied automatically in a number of situations including:

- When the vehicle battery fails.
- When a cabin door is opened.
- When the engine is switched off.
- When the vehicle park brake is applied.
- When the vigilance driver monitoring system is activated.
- During road-rail transitions.

FEATURES	BENEFITS
Positional feedback.	Ensures the brakes have applied in the correct manner when required.
Internal battery backup	Brakes will apply automatically if the vehicle battery fails.
System monitoring.	The integrity of the electrical system is monitored and the driver alerted if wiring has been damaged by trackside obstructions.
Self-test functions	Faults can be detected before they become a problem and without driver input.
Independent L/R operation.	If one calliper is damaged and becomes inoperable, the other will still function correctly.
Long stroke.	Ensures full braking effort even with poorly adjusted or worn pads.
Maximum force at full stroke.	Ensures consistent high braking torque throughout the operating range.
ABS Compatible.	Capable of operating as part of an ABS system.
Vehicle movement monitoring.	Allows the system to apply the brakes automatically if an uncontrolled movement occurs.
Park brake mechanically locked in position.	Piston cannot be moved un-intentionally.
Integral service brake.	Reduced part count, simplified design and increased reliability.
Fluid-free park brake.	No risk of a fluid leak causing the vehicle to become stuck on-track.
Safe daily check.	Allows the driver to safely check the condition and operation of the brakes without risking accidental activation.
Calliper designed for automotive applications.	Increased reliability when operating in Australia's tough environmental conditions. Over 15 million callipers sold worldwide.

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SYSTEM COMPARRISON		
	CONVENTIONAL HYDRAULIC RELEASE BRAKE	AUTOMATIC HYRAIL BRAKE SYSTEM
Manual over-ride – Allows the operator to manual release the brakes in the event of mechanical failure or damage.	✗	✓
Positional Feedback – Provides confirmation that the brakes are applied and released as required.	✗	✓
Fault warnings – Display warnings to the driver in the event of failure or damage.	✗	✓
Applies the brakes if the vehicle battery fails	✓	✓
Maximum pad to disc clearance – Must be maintained to ensure the brakes apply correctly.	<1mm	5mm
Stroke	5mm	15mm
Application time	Up to 5 seconds	0.8 seconds
Braking force at full stroke	<10%	100%
Maximum clamping force	13kN (based on similar size calliper)	20kN
Park brake mechanically locked in the applied position	✗	✓
Integral service brake	✗	✓
ABS Compatible – When used with a suitably equipped vehicle.	✗	✓
Designed for automotive applications	✗	✓
Reduced risk of environmentally damaging fluid leaks.	✗	✓
No risk of fluid leaks draining the hyrail system and preventing operation of the emergency hand pump.	✗	✓

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