

Standard range of anti climbing devices specifically designed for the Light Rail market.



Up to 1200 kN total combined force

## LRV Anti Climbers

This design incorporates Oleo's renowned gas hydraulic and deformation technology into one compact, lightweight device, providing more cost effective solutions with shorter lead-times, to meet customer project requirements.

Oleo anti climbers have benefited from extensive dynamic testing. Static compression tests alone do not realistically reflect the performance characteristics during a collision.

Without anti climbers one vehicle would over ride another in a serious accident. Anti climbers contribute to the crash worthiness of rail vehicles by absorbing impact energy as collision forces rise following coupler overload, in line with International Standards such as EN 15227.

Oleo's LRV anti climber ranges have been specifically designed to limit vertical movement even in offset impacts, and promote a controlled longitudinal stroke.

Anti climber contact faces lock together prior to any vehicle structural deformation and minimise the tendency of vehicles to climb or override.

Oleo was involved in the development of the first anti climbers in the 1990's. End on collisions present the greatest hazard to passengers and most fatalities happen at speeds of less than 60km/h. Oleo anti climbers are successful in the prevention of overriding and crash energy management.

## Product Details

New standard range of LRV anti-climber devices:

- Force range starting from 200kN up to a maximum of 600kN per device.
- Fully customisable force characteristics at no extra cost.
- Standard fixed length and design per stroke.
- Extensive range of available strokes.
- All units are tested by Oleo with validated mathematical models in accordance with EN15227. Available with Radioss and LS-Dyna finite element models.
- The system used by Oleo for the mathematical modelling of crash scenarios is approved by a European Rail Authority as being accurate, appropriate and properly controlled.
- Reduced manufacturing lead-time.
- Standard Mounting Plate design.

## Product Advantages

- Performance can be fully optimised with Oleo 1D Train™ at no additional cost.
- Consistent and predictable deforming forces across the complete stroke.
- Controlled energy absorption throughout the total stroke.
- Near 100% energy absorption efficiency.
- Standard mounting options for ease of customer selection.
- Designed to withstand vertical offsets ( $\pm 40$ mm from axis).

## Applications



Metro



Light Rail



Locomotive & Freight



High Speed



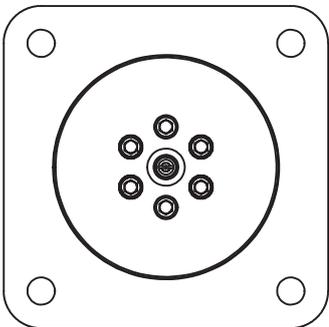
Mainline



# LRV Anti Climbers Data

Recoverable Stroke (mm)	Deforming Stroke (mm)	Energy Absorption (kJ)	Deforming Force (kN)		Max Bending Force (kN)	LRV Anti-Climber Strut Examples	Unit Code
			Min	Max			
0	200	120	200	600	60	<p>50 Stroke Recoverable      250 Stroke Recoverable</p>	SAE
	250	150					SAF
	300	180					SAG
	350	210					SAH
50	200	150					SBE
	250	180					SBF
	300	210					SBG
	350	240					SBH
100	200	175					SCE
	250	205					SCF
	300	235					SCG
	350	265					SCH
150	200	205					SDE
	250	235					SDF
	300	265					SDG
	350	295					SDH

## LRV Anti Climber Head



## Dynamic impact for Oleo LRV Anti Climber Strut

