

Standard range of anti climbing devices.

Providing more cost effective solutions.

Shorter lead times.



Up to 1500kN force

### Sentry™ Anti Climbers

Oleo Sentry 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 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 Oleo Anti Climbing Devices:

- 2 Stage Stroke;
  - Recoverable hydraulic
  - Non-recoverable deformation
- Low Force; from 800kN.
- High Force; up to 1,500kN.
- 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 Anti Climber head profile and Mounting Plate design.

### Product Advantages

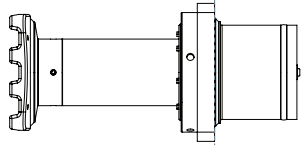
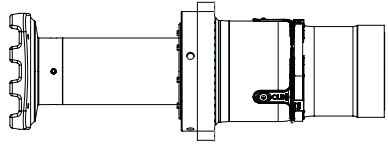
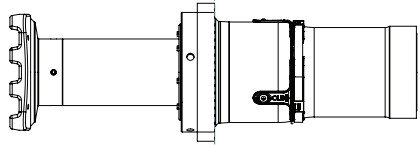
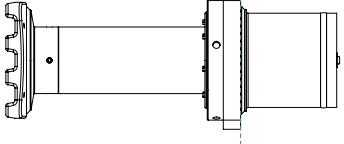
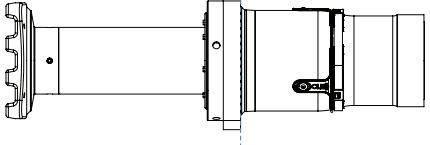
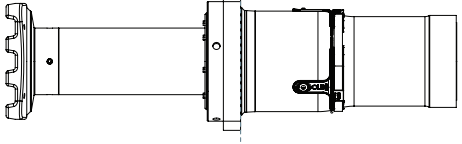
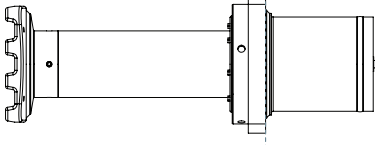
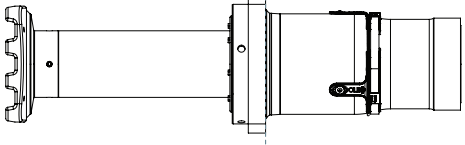
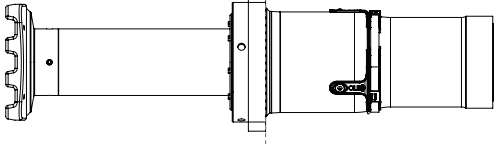
- Performance can be fully optimised with Oleo 1D Train™ at no additional cost.
- Consistent and predictable deforming forces across the complete stroke.
- Controlled energy absorption throughout the total stroke.
- Standard mounting options for ease of customer selection.
- Designed to withstand vertical offsets ( $\pm 40\text{mm}$  from axis).
- Can withstand 150kN climbing loads.
- Capability to absorb low speed impacts and recover. In high speed crash scenarios, crash protection is given through deformation.

### Applications

- Metro
- Light Rail
- Locomotive & Freight
- High Speed
- Mainline



# Sentry™ Anti Climbers Data

Gas Hydraulic (recoverable) stroke (mm)	Deformation (non recoverable) stroke (mm)	Sentry™ Anti Climber Range	Maximum Force Rating	Energy Absorption (kJ)
			Up to 1500kN	
70			AM300	100
	160		AM316	340
	230		AM323	445
100			AM400	145
	160		AM416	385
	230		AM423	490
125			AM500	180
	160		AM516	420
	230		AM523	525