

SUP & VRUs (LHD)



Shocking moment a cyclist is hit by a flatbed truck in Toronto.

CTV News Toronto, 10 August 2024

SIDE UNDERRUN PROTECTION: WHAT YOU NEED TO DO



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Presenters

Chris Loose
Why

ATA contractor



Darcy Shepherd
Technical requirements

Smedley's Engineering



Scott Grimme
Operational issues and requirements

FTE Trailers



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ADR106/00 – SIDE UNDERRUN PROTECTION: WHY

Chris Loose



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Coroner's Finding for a Cyclist's Death

Arzu Karakoc, VIC-FINDING INTO DEATH, 2017/1148

Rec 3. mandate side underrun protection among commercial HV.

CI 123. 2009 RIS did not support SUPs.

Rec 4. add blind spot tech and additional indirect vision devices.



Weather was fine and day light hours.
Unladen skeleton B-double container trailer
Fuso COE @ 21 km/h

35 YO mother and law student

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Safer Freight Vehicles (up to 2.55m OAW Trucks)

SUPs is 1 of 7 new or updated ADR for SFV

- ADR 14/03 – Mirrors
- ADR 35/07 – HV Braking
- ADR 97/00 – Advanced Emergency Braking
- ADR 99/00 – Lane Departure Warning Systems
- ADR 13/00 – Lighting / Conspicuity Marking
- ADR 105/00 – Blind Spot Information Systems, from 1/2/27
- ADR 106/00 – Side Underrun Protection

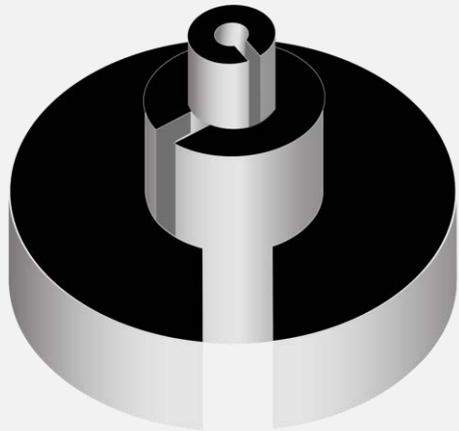
Buses are next (2+years away), then possibly trailers.

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CLOCS-A (clocs-a.org.au) requirement

SUPs is a CLOCS-A Silver level requirement.



A higher standard of equipment that is preferred for heavy vehicles complying with CLOCS-A technical requirements. Similar to UK CLOCS and broadly aligned to current NSW Vic government major projects.

Accreditation requires compliance with at least one of the standards nominated as “either/OR” plus all remaining standards where applicable.

Accreditation to Silver also requires prior accreditation to Bronze.

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CLOCS-A requirement + Left Turn Audible Warning

LTAW is a CLOCS-A Silver requirement as is SUPs.

“Fit a speed-sensitive left turn indicator that incorporates a recorded (spoken) message able to be heard by cyclists and pedestrians near the to left side of the vehicle.

And places more onus on the VRU, but

[NRSPP Paper](#) *“A 2021 European survey found that 27% of those involved in an **accident** or near-miss wore headphones at the time”.*

“A recent study by Ford Motor Company, participants wearing headphones had a response time to sounds 4.2 times slower than those not wearing headphones”.

This will be further exacerbated with noise cancelling headphones.

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So far.....

VRU definition -> for ADR106, pedestrians and cyclists only!

Truck Vs VRU

- Physics. Noise does not help.
- Truck driver probably won't be aware of the incident.
- 2 lives destroyed.

SUPs are

- A basic passive safety system. No further onus on the driver.
- Low cost / light weight / full face for aerodynamics/catch points.
- Appropriate where there are VRUs, but not necessarily for the Hume!
- Required for CLOCS-A and SFVs.

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From ADR106 SUPs to Best Practice



SUPs aims to protect VRUs from being caught under the wheels of a HV.

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ADR106/00 – SIDE UNDERRUN PROTECTION: TECHNICAL REQUIREMENTS

Darcy Shepherd



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Differences Between ADR106/00 and UN R73

The ADR's are generally prescriptive.

UN R73 is more flexible : -

C13.3 Vehicles where any LPD is incompatible with their on-road use may be partly or fully exempted from this Regulation, subject to the decision of the Type Approval Authority."

ADR106 - C6.8. The derogations in paragraphs 13 and 16 of Appendix A shall not apply – instead refer to clauses 6.9 to 6.13 below.

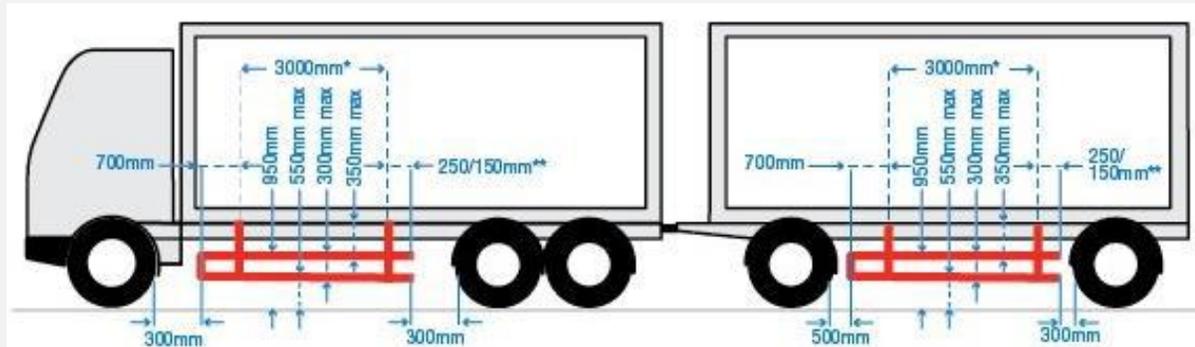
SUP TAP : -

It is not the intention of the ADR to restrict the functional design of a vehicle; where necessary for the safe and practical operation of a vehicle, the Department may approve a vehicle to be fitted with a non-compliant SUP, in particular where compliant SUP would be incompatible with the operational purpose of the vehicle. The extent of the non-compliance, and therefore the nature of the approval issued, will be a decision for the Department after undertaking assessment of the application.

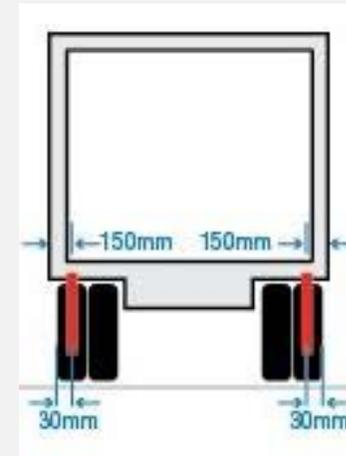
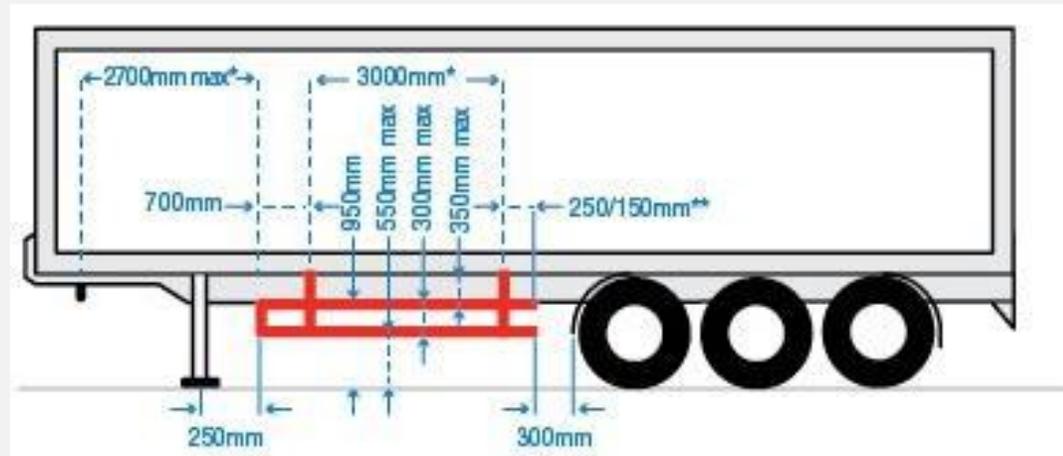
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SUP Overview



- Geometric Requirements
- Mudguards where applicable may form part of the SUP
- Smooth continuous flat surface
- Vertical leg requirements
- Forward edge requirements
- Rear edge requirements



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ADR 106 – Technical Clause Interpretation

Clause 12.8

- *The lower edge of LPD shall at no point be more than 550mm above the ground.*

Clause 12.9.1

- *Where the plane in paragraph 12.9 does not cut the structure of the vehicle, then the upper edge shall be level with the surface of the load-carrying platform, or 950mm from the ground, whichever is the less;*

Clause 12.9

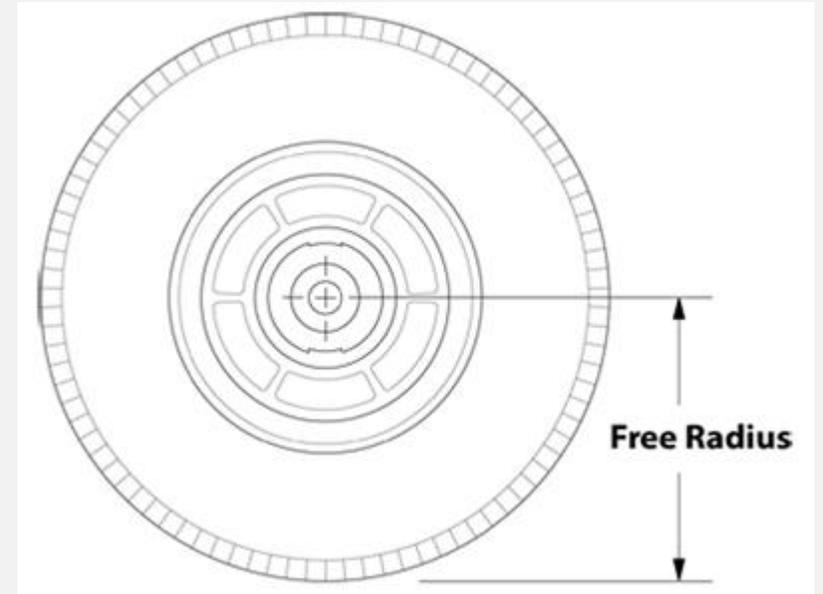
- *The upper edge of LPD shall not be more than 350mm below that part of the structure of the vehicle, cut or contacted by a vertical plane tangential to the outer surface of the tyres, excluding any bulging close to the ground, except in the following cases:*

Clause 12.9.3

- *On a vehicle specially designed and constructed, and not merely adapted, for the carriage of a container or demountable body, the upper edge of the device may be determined in accordance with paragraphs 6.12(a) and 6.12(b), the container or body being considered as part of the vehicle;*

Anomalies/Geometric considerations

- Access Steps
- Checker Plate
- “Practically Continuous surface” – Clause 12.3
- Tyre size modification impact

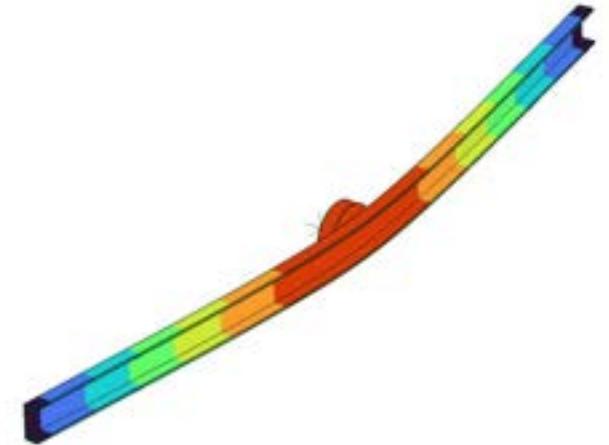
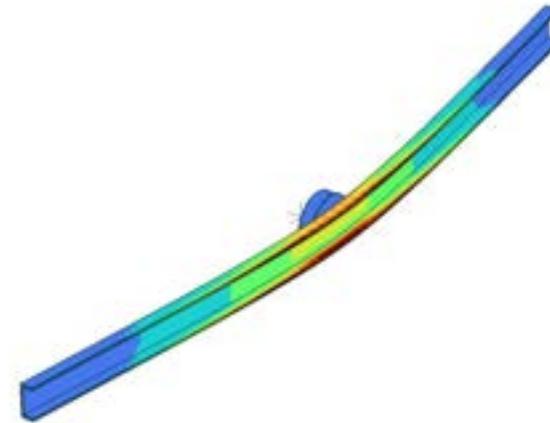


	265/70R19.5	275/70R22.5	295/80R22.5	11R22.5
Free Radius	434	479	522	525
Laden Radius	401	445	487	489
Tyre Height	835	924	1009	1014

Engineering Validation

- ADR106 Test requirements
- Steel Purlins Selected sections - C10015 & C15012.
- Aluminium Channel Selected sections - UA2464 (100x50) & UA5058 (125x50)
- Sections not listed in the TAP will require testing to ADR106 by an approved test facility to be used as a SUP.

LPD Sections	Max Span – Supported (mm)	Max Overhang (mm)
Steel – C10015	2400	600
Steel – C15012	3000	700
Al – UA2464	1900	400
Al - UA5058	2150	450



ADR106/00 – SIDE UNDERRUN PROTECTION: OPERATIONAL ISSUES / REQUIREMENTS

Scott Grimme



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Mounting Considerations:

- Body style
- Mounting locations:
 - Floor
 - Chassis
 - Landing Leg

Refer to your Manufacturer.



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Other Things to Consider:

- Material:
 - Aluminium
 - Monopan
 - Fibreglass

Other Things to Consider:

Weight: How much weight does it add?

Serviceability: how easy is it to replace?

Cost?

Can it be retro fitted?



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Other Options:

- Access to items:
 - Spare tyres.
 - Service items.
 - Pallet jacks etc.



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Retro Fit kits:

- Are these available?

Most Manufacturers have retrofit kits available.

- How long does a retrofit take?

Depending on the manufacturer. FTE retrofit kits can generally be fitted in 8 hours.

- How much does it cost?

Please refer to your manufacturer or SUP installer.



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Approvals and Sign Offs:

- For Safer Freight Vehicles, units must be fitted with Side Underrun Protection (SUP) that complies with ADR 106/00.
- If you fit your own SUP you must have it inspected and signed off by a Qualified Engineer or at an Authorized Test Facility to ensure compliance with ADR 106/00.
- Retrofit Kits – must be installed following the manufacturer’s installation and compliance/certification support material provided. The installation can then be signed off by an Authorized Vehicle Examiner (AVE), to ensure compliance with ADR 106/00, the ATA TAP or UN R73.

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SUPs assist in the protection of VRUs.

SUPs is a required for CLOCS-A (Silver) and Safer Freight Vehicles.

As the ADRs are prescriptive, and we need your help to identify gaps in the TAP & ADR. Forward to engineering@truck.net.au

Chris



Darcy



Scott



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Session Questions and Answers

Q1 – Have vehicles with a non-complying ADR106/00 SUP received ADR approval?

A1 – It is understood one has, but this will be investigated.

Q2 – Truck and Dogs, which are required to “Jack Knife” for unloading, for which SUPs is not easily compatible. What is recommended?

A2 – The decision to mandate SUPs for CLOCS-A Silver level was made before ADR106 was published and its limitations understood. This will be investigated after the session.

Q3 - Is there data to support the fitment SUPs?

A3 - Support for SUPs was generally based on the experience in London with a significant number of deaths of VRUs. The complexity of the Australian, makes it hard to collate a simple listing. There are applicable Coroner’s reports in most States, similar to the one reference in the presentation. Subsequent to TMC, a collated list of VRU deaths, injuries and near missed could not be found.