Heavy Vehicle Purchasing Summary

Heavy Vehicle Purchasing

Without doubt, an essential component of the heavy vehicle industry is the heavy vehicle. Selecting a vehicle with the right features and technologies is equally as important.

Increasingly, contractors and consignors are requiring certain safety features be fitted in order to grant contracts. By selecting vehicles with these options fitted, you not only improve your safety in the short term but may increase your eligibility for future contracts.

This means that buying a new (or newer) truck can be one of the biggest decisions that a business can make. Considering safety options, knowing what technologies are available, what they do, and what fits best for the type of work you do, can help make this decision a little bit easier.

While many of these technologies are currently optional, it should be noted that they are likely to become mandatory in the future.

The National Heavy Vehicle Regulator (NHVR) has developed a heavy vehicle purchasing guide (the purchasing guide). This guide provides information for operators and owners of heavy vehicles about the safety technologies that can be fitted to trucks and trailers.

Heavy Vehicle Purchasing Guide

The purchasing guide provides a single reference for the safety technologies and systems that are available to the Australian heavy vehicle market. It provides a general description of how the technologies work and outlines the risks identified with different operating environments. Operators should use this guide to gain a better understanding of vehicle and general safety considerations when upgrading to newer vehicles.

To further assist operators with information about matching safety improvements to their vehicles, the NHVR will also be developing industry specific documents. These documents will look to assess the freight task and operating environment and identify safety technologies that address these risks.

This document provides a general overview of the information available in the purchasing guide. The guide looks at systems and technologies that may be physically fitted to the vehicle, the function they perform but also considers general safety improvements that should be considered including the environment the vehicle will be primarily used in. To further assist operators, a quick reference table to the most commonly used terms is included in Appendix A.

Vehicle based systems and technologies

Many of the new technologies available are fitted directly to the vehicle. These technologies typically use sensors that feed information to a centralised system that is programmed to assist the driver. The systems and technologies vary in complexity from making information available, or providing a warning to the driver, to actively slowing or steering the vehicle.

The safety technologies fitted to trucks and trailers are designed to work by improving visibility and road presence, or, by monitoring vehicle performance around braking, stability, and road position.

Visibility and road presence

Visibility technologies reduce driver blind spots and increase other road user's awareness of the vehicle. These technologies are particularly useful when trucks operate in urban environments where there is traffic, pedestrians, and cyclists.

There are a number of options available to improve the driver's vision around the vehicle. From simple options such as adding blind spot mirrors, 360-degree camera systems and door windows that are low cost and easily retrofitted to most vehicles, through to more complex system such as blind spot sensors or truck designs that provide more direct vision.

Conspicuity markings and signs are one way of increasing other road user's awareness of the vehicle making it easier to identify the overall size and position of the vehicle. Left turn alarms are a more direct method of alerting vulnerable road users to the intended movement of the heavy vehicle.

Braking, stability, and road position

Braking and stability technologies can improve the performance of the braking system and reduce the severity of incidents. These systems use information taken from sensors mounted on the vehicle to monitor the position of the vehicle in relation to the road and other vehicles.

Braking and stability safety technologies are either Passive or Active. Passive systems monitor vehicle performance and warn driver of potential incidents and require the driver to take evasive action as necessary.

Active systems operate without driver intervention. They generally activate after a warning but may also work to slow and or steers the vehicle quicker than a driver can react. For more information refer to the purchasing guide.

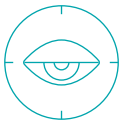
General safety improvements

Vehicle based systems and technologies are not the only way to improve vehicle safety. Considerations should be given to general improvements in safety that can be provided by non-technological improvements such as the physical design features of the vehicle (vehicle design), the people that will be using the vehicle (driver aids), the impact the vehicle has on the environment (emissions) and how the technologies are integrated into broader business systems and practices (business systems and practices).

Vehicle Design

There are a number of considerations relating to the physical design of the vehicle that can contribute to safety. From cabin strength to innovative Performance Based Standards (PBS) designs, the physical vehicle can be fitted with a range of features that, while not technical in nature, help to avoid and reduce the severity incidents.

Driver aids



Driver aids are systems that directly assist the driver and their wellbeing. This includes the use of fatigue or distraction detection technologies which can provide real time information about how alert a driver is based on their behaviours rather than relying on work hours. Consideration should also be given to matching the comfort and amenities available to the driver within the cabin with the freight task.

Emissions

Reducing vehicle emissions remains a priority across the globe. Pollutants and particulates have been linked to increased rates of cancer in humans. Reduced harmful emissions have been mandatory in new vehicles in Australia since the introduction of the first requirements in 2003. Upgrading to vehicles that produce fewer harmful emissions can have a significant impact on health and environment.

Business systems and practices

Vehicle based systems and technologies alone do not provide the answer to safer vehicles. They do not replace the need for skilled drivers or for safe practices. Integrating technologies into good business practices and safety management systems is central to reducing risks associated with the heavy vehicle industry.

Other safety improvements

In additions to the technologies and systems fitted to the vehicle, consideration must be given to the quality of the parts and repairs and ongoing maintenance of the vehicle.

Operating environments

The environment that the vehicle will be working is an important consideration when selecting which safety features to fit. This approach allows for safety improvements to be prioritised based on the identified risks associated with the operating environment. For example, vehicles operating in urban and metropolitan environments, focus should be given to improving visibility due to the increased number of vulnerable road users.

The purchasing guide provides an overview of safety risks associated with the different operating environments heavy vehicles may encounter. Understanding these risks can assist in matching safety features.

Common terms

With so many safety features and technologies available, it can be easy to lose track of what all the terms and acronyms mean. Appendix A (below) identifies some of the most commonly used terms and abbreviations and gives a very brief description. This should be used as a quick reference guide with more in-depth information available in the purchasing guide or directly from the equipment manufacturer.

Appendix A: Common terms

Term	Acronym	Basic Description
Australian Design Rules	ADR	Sets mandatory requirements for new vehicles
Blindspot Information Systems	BSIS	Detects cyclists and pedestrians
Conspicuity markings	–	Reflective tape that outlines vehicle
Code of Practice	COP	Voluntary set of rules, usually industry specific
Coupling warning	–	Helps prevent dropped trailers
Construction Logistics and Community Safety – Australia	CLOCS-A	Construction vehicle safety document
Controller Area Network Bus	CANbus	Master system for truck electronics
Design Approval	DA	Blueprint for building PBS vehicle
Drive Away Protection/Parking Brake Alarm/ Interlock	DAP	Turns park brake on when truck is stopped
United Nations Economic Commission for Europe	UNECE	Sets European standards
Electronic Braking Systems	EBS	Sends electronic signal to brakes
Electronic Stability Control	ESC	Helps keep trailers upright
Forward Collision Alert	FCA	Warns driver of obstacles in front of vehicle
Front Under-Run Protection	FUP	Helps stop vehicles from getting caught under front of truck
Global Positioning System	GPS	Provides location of vehicle
Heavy Vehicle National Law	HVNL	Legislation for heavy vehicles used in transport
Indirect Vision Devices	IVD	Mirrors, cameras etc.
Lane Departure Warning	LDW	Warns driver of wandering across lane on the road
Lane Keep Assist	LKA	Steers truck back into middle of lane
Left turn alarm	–	Tells people outside vehicle it is turning left
Onboard Mass Monitoring System	OBM	Scales fitted to truck/trailer
Parking Brake Alarm	–	Uses horn/alarm to advise driver park brake not engaged
Performance Based Standards	PBS	Alternate standards for vehicle design
Rear Under-Run Protection	RUP	Helps stop vehicles from getting caught under back of truck
Roll Stability Control	RSC	Helps keep truck upright
Secondary trailer retention	–	Backup in the event of trailer breakaway (e.g., safety chains)
Safety Management System	SMS	Identifies possible safety problems and ways to limit their impact
Side Under-Run Protection	SUP	Helps stop VRUs from getting dragged under vehicle
Telematics	–	Tracks vehicle location and performance (speed, braking etc.)
Trailer Electronic Braking Systems	TEBS	Sends electronic signals to trailer brakes
Tyre Pressure Monitoring System	TPMS	Provides real time tyre pressure and temperature
Vehicle Approval	VA	Certificate of built PBS vehicle
Vulnerable Road Users	VRU	Pedestrians/Cyclists etc.