

Operation of articulated cranes

Subject

The purpose of this safety bulletin is to highlight unique handling and operational characteristics of articulated cranes. It also provides some additional measures that should be followed when operating one of these vehicles on the road network.

Issue

Articulated cranes, which may also be known to industry as pick and carry cranes, are unique pieces of equipment that have become a common choice of a number of industry sectors due to their mobility and versatility as a crane.

However the unique design features that makes articulated cranes so popular, mean they have some unique performance characteristics when used on public roads. To ensure these vehicles are used safely, operators of these vehicles need to be aware of these unique characteristics and ensure they are addressed in their operating procedures.

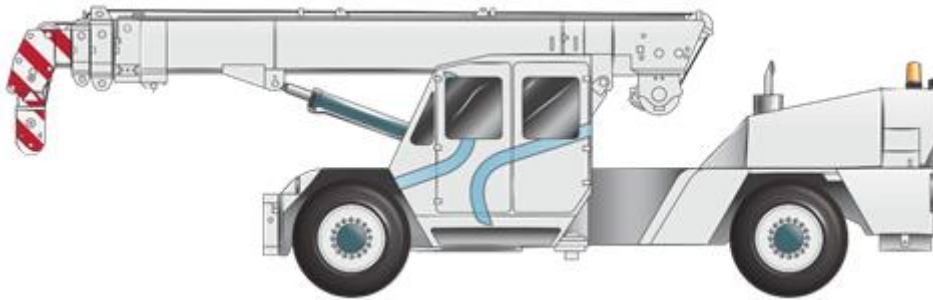


Figure 1. Example of an articulated crane

Action required

Daily Pre-operation Inspection

Prior to driving an articulated crane on a road, several pre-operational checks should be conducted according to the manufacturer's recommendations. Examples of these checks include:

- Check fluid levels
- Tyre pressures

As part of a daily pre-operational check, ensure tyre pressures meet the highway values specified in the operation manual prior to on-road operation of the vehicle. See below for an example of this.

TYRE INFLATION CHART

Position	Construction & Ply Rating	Inflation Pressure (PSI)	
		Pick & Carry	Highway Travel
Front	X.00 – YY x YY Ply	XXX	XXX
Rear	X.00 – YY x YY Ply	XXX	XXX

- Emergency steering check
Articulated cranes are fitted with a hydraulic steering system driven by the hydraulic pump on the engine. In the case of hydraulic pump failure an emergency back up steering system, such as an electric-powered hydraulic pump, will be activated. Refer to the crane manufacturers specifications about how this emergency steering system should be checked as part of a pre-operation inspection.
- Confirm retaining pins for lifting gear (i.e. spreader bar and hook block) are in place.
- Visually inspect the crane for loose or missing bolts / nuts.
- Drain air tanks of any moisture.
- Grease articulation joints and check greasing system.

On a weekly basis, inspection of additional items may be required by the manufacturer. These could include:

- Check wheel nuts for retention and tension
- Check steering pins
- Check brake adjustment

Pre-operational checks and scheduled inspections form part of a maintenance management system that ensures the crane continues to be safe for use. In addition to programmed (e.g. annual) third party inspections that may be required to maintain registration or accreditation, the operator should ensure that all scheduled inspections set out by the manufacturer are also conducted.

Crane Operator (Driver) License Requirements

Different states and territories have different heavy vehicle licensing requirements to operate an articulated crane. Operators should ensure they hold the correct heavy vehicle driver licence in the state or territory they are operating.

While not required for driving on public roads, a Non-Slewing High Risk Work Licence or a Slewing High Risk Work Licence may be required for operators using the articulated crane for lifting tasks. Both licences are issued by the relevant Workplace Health and Safety Regulator in each State or Territory.

Operator (Driver) Training

Articulated cranes have some unique handling characteristics which means that any person driving the vehicle must have been appropriately trained so they can safely operate the vehicle.

This specific training should cover operational activities such as:

- Correct positioning, securing and storage of crane components such as pins, spreader bars and their brackets, boom, block and hook.
- The roads the vehicle is permitted to operate on and any special travel conditions, such as the need to tether the boom when travelling in road tunnels.
- All accessories are safely stored so they cannot shift or fall from the vehicle when travelling on roads.
- How to configure the vehicle to ensure mass compliance when travelling on roads, such as the need to position removeable counterweights correctly.
- Road speed limitations imposed by either the manufacturer or regulator, which are in addition to sign posted speed limits.
- How to correctly position and drive the vehicle on a road to account for the unique design of the vehicle, for example given the projection of the boom, how to safely navigate corners etc so the boom does not interfere with other traffic or strike infrastructure.
- How to correctly and safely operate the vehicle, accounting for its unique performance characteristics, for example the impact that the vehicle's higher mass and higher centre of gravity have on normal driving activities such as braking (distance to stop) and cornering ability (avoiding roll situations).
- How to correctly and safely operate the vehicle on account of its a unique steering configuration and performance, namely the pivot point being rear of the driving position and the steering not self-centring following a steering input or manoeuvre . This training should cover both normal driving situations and emergency situations.

Chain of Responsibility

Under Chain of Responsibility (CoR) laws, parties in the transport supply chain have a duty to ensure the safety of their transport activities. They must eliminate or minimise potential harm or loss (risk) by doing all that is reasonably practicable in their business to ensure safety.

Relevant measures include choosing appropriately licensed drivers, providing specific training, implementing pre-operational checks and regular inspections, and avoiding contracting with operators who don't have those systems in place.

Further information

The Crane Industry Council of Australia (CICA) has prepared self-paced training material to assist operators and drivers understand how to safely operate articulated cranes and how to complete pre-operational checks. For more information, please contact admin@cica.com.au.