STRAP IN

A 'strap your crane' campaign has been gaining traction following a lorry loader incident. Ben Spencer explains the recommended safety procedures that could have prevented the situation

ALLMI, the loader crane trade association, has been promoting a safety campaign following an incident that could have been avoided if the loader crane and brick grab attachment were correctly strapped for travel.

Prior to the incident, the lorry loader was being taken to a location by an unnamed third-party delivery company. It was fitted with a brick grab attachment and so was not folded for travel but stowed in a horizontal position over the body with the attachment resting on the vehicle bed. The boom extensions had not been fully retracted, which increased the swing or whiplash effect on the loader crane when cornering. The driver of the vehicle had not been told of the requirement to strap down the loader crane, so it was not secured. When the lorry loader turned a corner, the crane slewed over the side of the vehicle bed and the grab struck two structures on the pavement before making contact with an occupied, parked vehicle. No one was injured, and the driver has since been trained in the requirements and methods of strapping down the loader crane – guidance which has been included in the new initiative.

ALLMI's 'Strap Down Your Loader Crane' campaign provides instructions for loader cranes fitted with a brick grab, clamshell or other attachment that prevents the crane from being folded in the absence of manufacturer or employer instructions to the contrary.

- The loader crane should be stowed in a horizontal position over the body, with the attachment resting on the vehicle bed. (If the vehicle is loaded, clamping the attachment to a load is not considered as a sufficient means of security. Strapping should be used at all times.)
- Boom extensions should be fully retracted, as this minimises wear and tear on the components during travel and reduces any swing or whiplash effect on the loader crane when cornering.
- The attachment should be opened to its widest extent and placed so that the rails/attachment sides are running fore to aft down the vehicle body.

ALLMI technical manager Keith Silvester explains that it is important for the attachment to be secured to the load bed via a ratchet strap or equivalent rigging to prevent the loader crane from moving during transit and coming into contact with the vehicle sides or breaching the extremities of the vehicle.

Both ratchet straps and rigging must be sufficiently rated for the loader crane being secured. The following are the key British Standards for load securing purposes which users, suppliers and bodybuilders can use to make suitable assessments:

- BS EN 12195-1:2010 Load restraining on road vehicles. Safety – Calculation of securing forces
- BS EN 12195-2:2001 Load restraint assemblies on road vehicles. Safety – Web lashing made from man-made fibres
- BS EN 12195-3:2001 Load restraint assemblies on road vehicles. Safety – Lashing chains
- BS EN 12640:2019 Intermodal loading units and commercial vehicles. Lashing points for cargo securing. Minimum requirements and testing
- BS EN 12642:2016 Securing of cargo on road vehicles. Body structure of commercial vehicles. Minimum requirements.

This process is accompanied by a recommendation to use dedicated lashing points, a stipulation that Silvester confirms is in place to prevent operators using ad-hoc substitutes. "Lashing points will be included in the design of the bodybuilder. An ad-hoc point could be anything that isn't a dedicated lashing point which has not been designed for such a purpose and would be highly likely to fail during travel."

According to Silvester, these rules do not apply to tipper grabs whose rigid sides will prevent a loader crane from breaching the extremities of the vehicle. Bodybuilders need to be consulted for information on design specifications.

For tipper grab type vehicles, the clamshell bucket is typically stowed

by resting on the vehicle bed or dug into the load while the extensions are retracted in the same way as loader cranes fitted with a brick grab. Also, for all types of attachments, the second boom should be taken to the end of its stroke and then backed off by approximately 50mm. In addition, the bucket should be fully open with the blades running 'fore to aft' down the vehicle body and the levers relaxed to release any pressure in the system.

Educating drivers is just one part of the safety process. Outside of the scope of the safety campaign, the lorry loader design standard EN 12999 and the Road Traffic Act require each vehicle to come with a system that provides a visual and audible warning from the driving position if the crane is not correctly stowed below permissible transport height. This system operates via a sensor mounted on the column/first boom.

MAXIMUM HEIGHT

"EN 12999 does not state what the permissible transport height is, as this is down to national legislation. This would usually be set to make maximum use of the motorway and trunk road network, although no specific height is specified," Silvester continues. "Typically, the system will be checking for the first boom not being above horizontal – meaning that the top of the column height effectively becomes the permissible height for the warning system."

He says that while Department for Transport previously advised ALLMI that there is currently no legal height limit, it recommends wherever possible a height of 4.95m above the carriageway should be adhered to in order to make maximum use of motorways and trunk roads.

Delving further into this technology, Hiab sales product manager Alastair Evans says that warnings within the company's own system can be triggered by a magnetised sensor inside hydraulic cylinders or angle detection sensors. The boom is generally fitted with two angle sensors for the first and second boom, while the slewing system is fitted with a magnetised sensor placed on the rack pinions in the slew of the crane. If the crane moves left or right or up or down, the angle sensors can detect the change in position.

"The boom is generally fitted with angle sensors. In the magnet sensor, a magnet travels up and down a core rod to detect the movement of the slew rack and pinion, and converts that left/right motion to an angle to predict where it is in its 360° arc."

The system also allows engineers to change the parameters or settings to suit the customer's needs, which according to Evans, opens up options to change the angles or positions of the crane or desired parking position. "So, there could be a situation where you always want the grab to be stowed in the top right-hand corner. Then if the operation changes, they can change it to be in a completely different position should they wish." TE

CAMPAIGN PROGRESS

Launched in March, ALLMI's 'Strap Down Your Loader Crane' campaign is for businesses involved in the movement of lorry loaders, including fleet owners, crane installers, bodybuilders, truck dealers and delivery companies. It offers a range of resources for employers to utilise, including videos, a 3D animated reconstruction, an information leaflet and toolbox talk.

Silvester said: "The campaign has been received very well. Campaign material has been distributed across the lorry loader and related industries, not only via our own communication channels but also with the assistance of other related trade associations."