

Serious Event – Hydraulic Cylinder Failure

A cab on a MAN Dumper truck (TGA 40.400) was in the process of being tilted for engine inspection when the hydraulic cylinder gave way and broke. The piston rod was almost fully extended at the time when the incident occurred, the failure caused the cab to fall forward onto the ground, as it was no longer supported by the rod or any other means. Fortunately, the only further damage which occurred was a cracked windscreen and scuffed paint. This could have resulted in fatal or serious injury if anyone had been standing close by to the front of the vehicle. This type of vehicle only has one cylinder fitted and no other means of securing the cab once it is in the tilted position.

This safety alert has been prepared by the RSTA. Completed forms for adding to the RSTA website should be submitted to Kathy@rsta-uk.org further information regarding this safety alert please email Kathy or phone 01902 824 325

Safety Alert



Hydraulic cylinder in situ



Hydraulic cylinder broke at this point



Broken piston rod end



Cab fell forward onto ground

Immediate Cause: The piston rod came away from the cylinder due the attaching threaded bolt failing.

Root Cause Analysis results:

Over 12 months ago, the original MAN cylinder was broken and could not be repaired, MAN manufacture the cylinder not to be repairable, in that damaged parts cannot be replaced. A local metal grinding workshop was therefore tasked with the manufacturing (threading) of a retaining bolt, by cutting/grinding a hole in the head of the rod and fitting a new seal on 24.05.17. The cylinder was kept in the store for nearly 12 months until required. The cylinder was then fitted on the truck the same day the incident occurred, so failed on first use.

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Conclusion: The retaining bolt failed as it was under designed for the purpose, being too small a diameter, poorly fitted or was not a proprietary/branded part for the MAN cylinder. An inspection and report are awaited by an official MAN supplier.

Actions taken/required to prevent reoccurrence:

- Check all hydraulic cylinders used for this purpose (tilting) on all vehicle cabs, that they are intact and have not been repaired in a similar manner.
- If a proprietary part cannot be sourced the whole unit should be replaced on such critical items.
- Review RA & SSOW to ensure there is no one standing near the cab during the tilting operation in case of repeat. Cones and tape can be deployed as barriers as part of the SSOW.
- Investigate secondary means of securing the cab once fully tilted.

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