

Technical Bulletin

Re: TR310316#1SJ
TRAM Safety System on Cranes vs Traditional Fall Protection

Thursday 31st March 2016



The TRAM is a unique height safety restraint system that is simple to use, provides the operator with full mobility and yet completely prevents the user from falling to another level.

While other height safety systems will arrest a free fall, they can expose the user to suspension related issues or the risk of hitting obstacles while falling. TRAM overcomes this safety issue while also reducing the likelihood and consequence of a fall on the same level.

The TRAM system removes the issues related to more traditional anchorage solutions while working on all types of crane.

TRAM vs Traditional Fall Protection

Comparing TRAM with the following systems:

- Single Overhead Line Cable Fall Protection System
- Single Foot Level Line Cable Fall Protection System
- Single Line Track Fall Protection System
- Twin Line Cable Fall Protection System
- Twin Line Track Fall Protection System

Comparison Points

- **Suspension Related Syncope and Rescue**

- Falls with lifelines can cause suspension related syncope and require a rescue plan.
- All fall arrest systems allow workers to drop while the fall is arrested. There is a very high risk of trauma through impact with hazards below.
- With the TRAM system the worker cannot fall and therefore syncope and rescue are not considerations

- **Fall Arrest Loads and Clearance**

- Fall arrest systems are subject to much greater loads as vertical fall is arrested. The total load on the static line system is much greater than the loads on a TRAM system
- End loads generated in cable systems can exceed 18kN and require a 2:1 safety factor, meaning the anchorage requires
- When a worker falls on a static line system the fall arrest clearance can be in excess of 6m due to the clearance requirements of the fall protection PPE and also the deflection in the cable of the horizontal system.
- Use of lanyards on any line or track system whether overhead or at foot level requires a fall clearance of at least 6m. This does not allow for deflection of cable based systems.

- **Worker Loadings**

- Use of twin line fall arrest blocks can result in loads higher than the maximum allowed 6kN and in some cases up to 12kN. Check with the manufacturer to confirm worker load is less than 6kN.
- Use of 2 separate fall arrest blocks can result in loads higher than the maximum allowed 6kN and in some cases up to 12kN. Check with the manufacturer to confirm worker load is less than 6kN.
- Use of 2 separate lanyards in a fall will produce loads on the user in excess of the maximum allowed 6kN, and in some cases up to 12kN.
- Use of restraint lanyards on foot level systems on cranes is not restraint as the user can still step off the walkway.
- The TRAM system uses short lanyards that prevent the user from stepping off the platform whilst both are connected.
- When a worker falls on a static line system the cable trolley will slip along the cable to the midpoint of the cable span. This effect increases the risk of impact as the person falling may be travelling horizontally, as well as dropping vertically, during the fall.

- **Systems after a fall**

- After a fall, all static line systems must be taken out of service until they are inspected and re-certified. Costly repairs are not covered by manufacturer's warranty.

- **User Comfort**

- Cable Lifeline systems can snag and suffer from trolley hang-ups.
- The TRAM Trolley provides a stable and mobile hand hold that prevents stumbles and falls and the level, which could easily become full falls off the platform with other systems.