



**TIN 050**

**Prevention of Objects Falling from Height**

**1.0 Scope**

This Technical Information Note deals with the prevention of objects falling from height, during work at height on tower cranes.

**2.0 Regulatory Requirements**

Regulation 10 of the Work at Height Regulations 2005 says that: *“Every employer shall, where necessary to prevent injury to any person, take suitable and sufficient steps to prevent, so far as is reasonably practicable, the fall of any material or object.”*

**3.0 Planning Including Risk Assessment**

Planning for any work at height on tower cranes should consider the risk of falling objects, including tools, components, materials and equipment. A suitable and sufficient risk assessment should be carried out and recorded. Where the risk of falling objects is identified, the risk should either be eliminated or, if that is not possible, suitable control measures put in place.

**4.0 Hierarchy of Measures**

Where the risk assessment has identified the risk of falling objects the following hierarchy should be followed:

1. Eliminate the risk by ensuring that loose objects are not present at height;  
*if this is not reasonably practicable, then*
2. Reduce the risk by putting in place collective measures to prevent objects falling;  
*if this is not reasonably practicable, then*
3. Reduce the risk by putting in place individual measures to prevent objects falling.

**4.1 Collective measures**

Collective measures employed to prevent objects on a tower crane falling from height or mitigating the consequences include:

- Crane design improvements to ensure components cannot fall when being replaced/maintained e.g. enclosed panels (machine rooms,) manufacturer designed pin catchers, integrated tethers, tethering points on sheaves and other components.
- Reduction of gaps in walkways and toe boards to prevent small objects falling through;
- Magnetic trays (secured to the structure);
- Storage boxes (secured to the structure);
- Effective housekeeping (see TIN 005);
- Exclusion zones (see TIN 032).

**4.2 Individual measures**

Individual measures employed to prevent objects on a tower crane falling from height Include:

- Capture bags;
- Safety helmet chin straps;
- Tethering.



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**4.3 Exclusion zones**

The establishment of an exclusion zone (see TIN 032) is sometimes employed as a measure to reduce the risk of injury from falling objects, however this does not prevent objects from falling and is only effective if the zone is of sufficient size and all personnel are excluded during overhead operations.

**5.0 Tethering**

A commonly used measure to prevent tools and other objects from falling from height is tethering them, either to persons working on the crane or to the crane's structure. This is often seen as a universal panacea, but unless implemented and managed effectively may have several disadvantages:

- The measure is at the bottom of the risk hierarchy set out in **4.0** above;
- The number of small objects (tools, mobile phones, replacement parts and other small components etc.) carried by persons working on a tower crane mean that individually tethering every object will result in a significant number of tethers. This can lead to entanglement, potential trip hazards and possibly an increased risk of an object being inadvertently dropped;
- Only very light objects should be tethered to a person's wrist;
- Heavier objects should be tethered to a waist belt and the weight of the object assessed to ensure that it does not affect the wearer's stability;
- Heavy objects such as pins and mast bolts cannot always be effectively tethered.

**6.0 Training and Briefing**

Whatever measures are put in place to prevent objects from falling from height on tower cranes, it is essential that all personnel involved are trained in the use and inspection of the measures. It is also essential that all personnel are adequately briefed before work starts on a particular crane.

**7.0 Examples of Tools with a facility for Tethering**



**8.0 Example of a Magnetic Tool Mat**

The mat shown below is manufactured for use on tower cranes. It is padded to protect the user's knees, with magnets in each corner to attach it to the expanded mesh floor. These magnets also retain tools, screws etc. An upstand is provided to prevent items rolling off the mat, which has drain holes and a tether point.

