

Hoist

Note: It is recommended that you read the Supporting Information page before you read this factsheet.

Preparation for work *(Preparation)*

- Hoists are in effect a platform or cage used to transport goods, people or a combination of both to different levels or landings of a structure. The platform (mainly used to transport goods) or cage (mainly used to transport people) is attached to a vertical mast which itself is fixed, usually by ties, to a structure, although free-standing units are available where heights are limited.
- Several methods can be used to elevate the cage or platform, for example, a winch and rope pulley system, which uses an externally static mounted motor, mainly on goods-only types or a rack and pinion system where the motor is situated normally within the cage structure.
- As with all plant and equipment, thorough pre-use checks must be undertaken that follow manufacturer's requirements. This information will be found within the operator's manual as well as on warning or information decals around the hoist and cage/platform. The operator's manual, which contains vital information, must be kept with the hoist. The hoist should not be used unless the manual for that model and type is available to the operator.
- As there is a variety of hoist types and models, the operator (anyone who is required to operate the hoist) must have undertaken familiarisation training. This is in addition to basic training and is to ensure that each operator understands the specific requirements for that particular type or model, which may differ from previous models they have operated.
- One of the key checks that must be undertaken on types which carry an operator prior to being used is on the emergency lowering system. If the cage cannot be lowered from the internal controls, for example because of an electrical failure, emergency lowering can be undertaken from within most cages. It is imperative that this function is checked according to manufacturer's recommendations.
- Another of the many checks that should be carried out before work starts is on the function of the landing gates' electric interlock system, which prevents the cage from moving unless the access/egress gates and doors are properly shut. The interlocks at each gate should be checked individually one at a time in a designated sequence.
- A check should also be made to ensure that the area beneath the platform or cage is sealed off to prevent unauthorised entry whilst the hoist is in use.
- All types of hoist should be fitted with one or more safety or emergency-stop buttons and these should also be checked before work starts. Depressing an emergency stop button cuts working power, which subsequently isolates or cuts off lifting and lowering functions.
- Hoists are fitted with a variety of safety systems, such as limit switches which prevent the cage or platform from exceeding safe limits. Those that are adjustable can only be adjusted by trained and qualified installation and maintenance staff and not by the operator.

Transporting loads *(Working tasks)*

- All platforms and cages have a maximum weight limit which is determined by the hoist manufacturer and should be clearly marked on platform or cage. When calculating the load to be taken by the platform, the operator must consider the weight of any materials that may be loaded at different landings, so as to not overload the platform.
- The operator should also take into account any unprotected materials that have been left outside in wet weather, as they may become waterlogged, making them heavier than indicated on any labelling, tare sheet or other documentation.
- Where a combination of materials and personnel is being transported to another landing, the materials must be loaded in such a way so that they are not a trip hazard to personnel entering and leaving the cage, and that the load does not move during transit as this can cause injuries.

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- Loads should, wherever possible, be placed equally and centrally in the centre of the platform or cage. If a load is to be carried that is close to the maximum carrying weight of the platform and that the centre of gravity of the load is not central, then the hoist installation company must be contacted as the platform could be out of balance.
- Hoists are used by scaffolding teams or contractors to transport scaffolding materials to the required landings. In some cases, special platforms or cages are used that are specific to scaffold erection and allow scaffold tubing to be carried safely.
- If scaffold tubing is being carried in an adapted platform, no other materials can be transported at the same time. In all cases, the hoist can only be used by those within the scaffolding team and by those who have been trained to operate that particular type.
- Where scaffold tubing is being carried but cannot be evenly distributed, de-rating must take place. This means that the maximum load able to be carried must be reduced and the more uneven the load, the further reduction that needs to be made to the carrying capacity. If in doubt, the hoist installation company should be contacted at all times for further guidance.
- When transporting scaffold tubing, no part of any tubing can extend beyond the area or confines of the platform. Protruding scaffold tubing, has become jammed within the mast, damaging both the platform and mast, or in some cases has ejected the scaffold tubing, which has fallen down to ground level.

Working safely

- As hoists are used to access different levels of a multi-storey structure, they are exposed to weather conditions that may not be apparent at ground level, such as high wind speeds and changes to wind direction. The operator must know the maximum wind speed that the hoist can be operated in and shut down operations when the wind speed exceeds the manufacturer's criteria.
- The operator must also take into account gusts of wind or wind funnelling which can exceed safe the safe maximum caused by, for example, being between two buildings.
- During operation, the operator must ensure that the landing gates and platform doors are properly shut, locked and secured before the platform is operated. While lowering the hoist, the operator must ensure that the area below the platform or cage, particularly when the platform is approaching ground level, is clear of hazards and people.
- Goods only hoists are not designed or approved to carry persons. The only people that may travel in or on the platform of a goods only hoist are members of the erection team during erection, maintenance and dismantling activities.
- Many passenger-carrying hoists have an upper platform on the cage which houses the drive motor. The only time that an operator can be on the upper platform is when undertaking emergency lowering as access to the braking system is required.
- Where ground-based controls are fitted, they can again only be used in an emergency when people are being transported.

Emergency procedures

- On single-masted hoists, the emergency lowering process should be devised so that the platform or cage can be safely lowered by a single person within the cage. When any emergency lowering needs to take place, the platform should only be lowered to the next available landing.
- Prior to using a hoist in new location which will be transporting people, a rescue plan needs to be devised in case of a possible mechanical malfunction of the platform for which it is unable to move, that could trap people at height and who would need to be rescued at height. An electrical malfunction would, in most cases, allow the platform to be lowered using the emergency lowering system and the rescue plan not needing to be actioned.
- The rescue plan and procedures should be communicated to all those who need to operate the hoist. Communication procedures should be agreed between those at ground level and those in the platform or cage if a malfunction occurs at height.

Sample questions

The following questions are based on the text within this factsheet and indicate how the questions and answers are structured. Based on the factsheet, there is only one correct answer. The correct answer to each question is indicated at the end of this factsheet.

Q1. What course of action needs to be taken if the operator's manual for the hoist has not been supplied?



The warning decals can be used as an alternative



The hoist cannot be used until the specific information is received



Information from the handbook of another class of hoist can be used as an alternative



The hoist can continue be used by trained and designated operators

Q2. How can high wind speeds affect working operations with a hoist?



Above certain wind speeds, the hoist may not be used



Above certain wind speeds, the platform must be secured to a solid structure



Above certain wind speeds, the platform can only be used half-loaded



Above certain wind speeds, the platform may only be used up to certain heights

Study checklist

This checklist aims to act as a study aid to ensure that the reader has identified and understood the relevant parts of this factsheet.

Do you know?

1. Why hoists must be checked before use.
2. Where information about using the hoist can be found.
3. Why familiarisation training needs to be undertaken, even though basic training has already been done.
4. How the emergency lowering system is checked before use and why.
5. The function of the landing gates electrical interlock system.
6. Who can make any adjustments to the travel limit switches.
7. Why the operator needs to know the weight of all loads being transported.
8. The effect that waterlogged loads (materials that have become wet) can have on the carrying capacity of the platform/cage.
9. What the procedure is if the centre of gravity is not central of a heavy load that is to be transported.
10. What the procedures are for the carrying of scaffold tubing.
11. What needs to be taken into account if transporting both people and materials.
12. The dangers of having scaffold tubing that protrudes from the platform or cage.
13. How high wind speeds can affect hoist operations.
14. In what circumstances can a person travel in a goods only hoist.
15. In what circumstances can a person ride in the upper platform of a passenger carrying hoist.
16. What the requirements are for a rescue plan.
17. What the procedures are when a platform has to be lowered when a power failure has occurred.

Answers to sample questions: Q1: B and Q2: A