

STRATEGIC FORUM
FOR CONSTRUCTION

PLANT SAFETY
GROUP

GOOD PRACTICE GUIDE

Safe Use of Telehandlers in Construction

Second Revision



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Safe Use of Telehandlers In Construction

Strategic Forum for Construction Good Practice Guide



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Contents

| | Page |
|--|------|
| Foreword | 4 |
| 1. Introduction and Summary..... | 5 |
| 2. Definitions | 10 |
| 3. Planning | 15 |
| 4. Telehandler Principles | 18 |
| 5. Types of Telehandler and Attachments | 31 |
| 6. Selection of Telehandlers and Attachments | 34 |
| 7. Provision of Information | 36 |
| 8. Planning, Supervisory and Operating Personnel | 38 |
| 9. Familiarisation | 44 |
| 10. Safe Use of Telehandlers | 45 |
| 11. Review and Monitoring of the Safe Use of Telehandlers..... | 60 |
| 12. Maintenance and Inspection | 65 |
| 13. Thorough Examination | 71 |
| Annex A Example Risk Assessment and Method Statement for Non - suspended Loads | 72 |
| Annex B Planning of the Lifting of Suspended Loads | 74 |
| Annex C Example of a Method Statement for Lifting Suspended Loads with a Telehandler..... | 82 |
| Annex D Example of a Lifting Schedule | 90 |
| Annex E Example of a Checklist for Familiarisation..... | 91 |
| Annex F Example of Daily (pre-use) Checks | 92 |
| Annex G Key Points for Telehandler Operators | 95 |
| Annex H Key Points for Supervisors of Telehandler Operators | 96 |
| Annex I Key Points for Telehandler Operators - Lifting and Travelling with Suspended Loads | 97 |
| Annex J Key Points for Supervisors of Telehandler Operators - Lifting and Travelling with Suspended Loads | 98 |
| Annex K Further Information and Guidance | 99 |
| Annex L Topic Index | 102 |
| Annex M Working Group Membership | 103 |

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Foreword

Telehandlers are one of the most versatile pieces of construction site equipment, making a significant contribution to the efficient delivery of the construction process. The development of telehandlers in both capacity and reach to the stage where they are able to carry out many of the tasks traditionally undertaken by mobile and tower cranes introduces new challenges. Unfortunately the very versatility that makes them so useful also provides scope for unsafe use. This has led to a significant number of serious accidents, tragically including some fatalities. Not only do these accidents have a terrible cost in terms of human suffering, they also have a significant financial cost for all concerned. Consequently there is a very strong business case for improving safety performance.

As with all lifting equipment, safe operation of telehandlers depends on a number of factors including the selection and maintenance of the telehandler, the planning and supervision of its use, and the competence of the operator. If any of these are deficient, the risk of a serious accident increases significantly and it is therefore essential that site managers ensure that all telehandler operations are planned, supervised and carried out safely by competent people.

This guidance has been developed by a working group representing all parts of the industry. It provides clarity on the safe use of telehandlers and will help telehandler suppliers and users improve health and safety standards. The guidance addresses planning for safe use, roles and responsibilities, inspection, maintenance and thorough examination and training. The advice in this document is straightforward, comprehensive and easy to adopt. This guidance may go further than the minimum you need to do to comply with the law.

I thank those who have been involved in its preparation and commend the guidance to anyone who owns, supplies or controls the operation of telehandlers. Please read the publication and turn the advice into action.



Heather Bryant

HM Chief Inspector of Construction

Chair of the Health and Safety Executive's Construction Industry Advisory Committee (CONIAC).

1.0 Introduction and Summary

Telehandlers (also known as Rough Terrain Telescopic Handlers or Variable Reach Trucks) make a valuable contribution to the construction process by enabling materials to be unloaded from delivery vehicles, transported around construction sites and placed at height (reach). They are versatile machines which can be fitted with a wide range of attachments such as buckets, skips, work platforms and crane jibs. Unfortunately there have been a significant number of accidents involving the use of telehandlers, which have tragically included a number of fatalities.

This document is intended to provide guidance on the management and supervision of the use of telehandlers on construction sites including planning, equipment selection, selection and training of personnel, provision of information, familiarisation, safe use, maintenance, inspection and thorough examination, together with monitoring of the whole process. It is essential that in managing the use of telehandlers, adequate attention is paid to all aspects of the process – selection of the correct equipment for the application, planning its use by competent people, monitoring the activity and rectification of issues; if any one aspect is ignored the probability of an incident will increase significantly, putting both the machine operator and people in the vicinity at risk.

The document structure starts with principles and moves on to specific requirements and information. This inevitably leads to information on certain topics, such as visibility, appearing in more than one section and is a deliberate strategy to ensure that readers who dip into the document are given adequate information in one place. A topic index had been provided at **Annex H** to facilitate easy navigation of the document.

The advice given in this document is based on the current state of the art of telehandler design. As new designs are developed, this document will be updated to reflect any such changes to the state of the art.

Whilst the document is aimed specifically at the construction industry, its guidance applies to other sectors of industry where telehandlers are used. Where local rules are more onerous than those set out in this document, they take precedence.

The following parts of Section 1.0 are a summary of the main body of the document, giving a brief outline of the items covered. Sections 2 to 13 and the Annexes should be consulted for detailed guidance

1.1 Planning

All operations on construction sites should be planned to ensure that they are carried out safely and that all foreseeable risks have been taken into account. Poor planning is one of the major causes of accidents arising from the use of telehandlers and the responsibility for planning tasks lies with the employer who is undertaking that task. The employer should ensure that they identify a person who is competent to undertake the planning and give them that duty. The planning process should identify the task to be undertaken, identify the hazards associated with that task, carry out a risk assessment, identify control measures, develop the method to be used (including the selection of appropriate equipment), record the planning in a method statement, communicate the plan to all those involved in the task and review the plan before the job starts.

Where a telehandler is to be used as a crane for lifting suspended loads and travelling with those loads, additional planning is required by a person competent to undertake the task, the “Competent Person” (often referred to as the Appointed Person), taking account of the additional hazards associated with these activities. Details of this process are given in **Annex B**. Additional planning is also required for other non standard lifting operations such as unusual loads, or circumstances, loads with large wind areas, use of integrated work platforms, use of special attachments, use in confined spaces, and use in tight areas where contact with other structures could be hazardous. As telehandlers are not primarily designed for lifting suspended loads the first step should be to ensure that a telehandler is the most suitable equipment for carrying out the task.

Unlike a mobile crane, tower crane or lorry loader a non rotating telehandler cannot lift a load over a point without the operator simultaneously raising and extending the boom to keep the suspension point stationary on the horizontal plane. Similarly if the load is to be moved to either side of the telehandler centreline the whole machine has to be moved on its wheels, rather than using the slew motion of a crane. These restrictions may prevent precision lifting operations with small clearances being carried out safely. In such circumstances the use of alternative lifting equipment should be strongly considered

1.2 Telehandler Principles

Telehandlers are generally designed to European Standard BS EN1459. The scope of this Standard very clearly states that it applies only when the telehandler is stationary and lifting on substantially flat, level and compacted ground. It also applies only to use with forks.

Consequently if a telehandler is used in other circumstances such as travelling with loads on the forks, travelling or lifting on slopes or with attachments other than forks or lifting and travelling with suspended loads, the additional risks need to be reassessed.

1.3 Types of Telehandler

Telehandlers fall into two main types:-

1.3.1 Non-rotating

These machines comprise a powered wheeled chassis onto which is mounted a telescopic boom, pivoted on the chassis, which can be elevated from below the horizontal to an angle approaching the vertical. The outer end of the boom is fitted with a fork carriage and forks for handling unit loads. Levelling of the forks in the longitudinal plane, as the boom elevation changes, is carried out automatically.

These machines are able to transport loads from one part of a site to another and place the load at height. On construction sites, the wheels are generally fitted with lug grip tyres to enable the chassis to negotiate unpaved ground.

Many telehandlers are fitted with stabilizers which are deployed when the machine is stationary to provide additional stability and enhance the machine's lifting capacity.

1.3.2 Rotating

Rotating telehandlers have all of the features of the non-rotating type with the addition of a rotating or slewing superstructure on which the boom and operator's cab are mounted. These machines also have outriggers fitted at either end of the chassis which enable the entire chassis to be lifted clear of the ground for maximum stability.

The main advantages of these machines over the non-rotating type is compact chassis size, enhanced lifting height, increased stability and ease of placing loads without moving the chassis.

All telehandlers can be fitted with a wide range of attachments such as buckets, skips, work platforms and crane jibs.

1.4 Selection of Telehandlers and Attachments

An effective and safe telehandler is one which is well matched to the type and size of load to be carried and lifted, together with the environment in which it is to be used. Attachments for use with telehandlers should be chosen with care to ensure that the combination of telehandler and attachment is both safe and productive. It is essential that all attachments are compatible with the telehandler with which they are to be used. Where necessary and appropriate, the telehandler manufacturer should be consulted when third party attachments are to be used. The selection of the telehandler and any attachments should be part of the planning process.

Regulation 4 of the Provision and Use of Work Equipment Regulations 1998 (PUWER) requires that employers ensure that work equipment provided for their employees is the most

suitable for the purpose for which it is being used and reduces or eliminates risks to the user and other people.

1.5 Provision of Information

The wide variation of designs and the increasing complexity of telehandler technology make it essential that supervisors and operators are supplied with adequate information to enable them to carry out their duties effectively and safely. Information comes in various forms and from several sources such as telehandler or third party attachment manufacturers.

Telehandler owners must ensure that a robust system is in place to provide adequate up to date information to users and maintenance personnel.

1.6 Supervisory and Operating Personnel

Employers must ensure that their personnel are competent to work safely with telehandler operations. Employers must therefore assess the competence of their staff and, where necessary, provide training to achieve the level of competence required. The training needs to reflect the ability and level of responsibility of the individual, degree of complexity of the task and the risks involved.

Any gaps in the knowledge, skills and understanding of competent persons (planning), supervisors and operators must be remedied by suitable training. This may be carried out in-house or by an external training provider. At the end of the training period the trainee must be assessed to ensure that the learning objectives have been met.

Requirements for telehandler operator basic training and testing are set out in HSE (L117) *Rider operator lift trucks: Operations training Approved Code of Practice and Guidance*.

Basic telehandler operator training does not include the lifting of suspended loads, the lifting of persons or the use of other attachments. If such tasks are to be carried out the employer must ensure that the operator is suitably trained and assessed as competent. In addition basic operator training for non-rotating machines does not cover rotating machines. This can normally be carried out by a local training provider.

1.7 Familiarisation

Telehandlers come in a variety of shapes and sizes with significant differences in operating controls and characteristics. It is therefore essential that operators and supervisors are given adequate familiarisation on an unfamiliar type or model of telehandler or attachment before they begin operations. **The employer of the telehandler user is responsible for ensuring that familiarisation is provided.**

1.8 Safe Use of Telehandlers

Two of the most significant hazards associated with telehandler operation are lateral stability and visibility.

1.8.1 Lateral stability

As a load on the forks of a telehandler is lifted, the centre of gravity of the whole machine rises. This does not matter if the machine is level: if however the machine is on a cross slope, the centre of gravity will move towards the tipping line as the load is raised with a risk of overturning. This effect is exacerbated when the telehandler is driven with a raised load. Lateral stability is also an issue when lifting and travelling with suspended loads as the load may swing, adding to potential instability.

1.8.2 Visibility

Restricted visibility when the boom is raised or when large loads are carried, plus poor segregation have been identified as a major cause of accidents involving pedestrians and telehandlers. Telehandlers are often fitted with aids to improve visibility and the operator's awareness of people in the vicinity of the telehandler. These aids should be in good working

order and properly adjusted. It is the operator's responsibility to check the condition of all secondary aids to visibility and **NOT TO USE THE MACHINE** if they are not present or not working correctly. It is the Supervisor's responsibility to fully support the operator in this action.

Whilst the Principal Contractor has the primary responsibility to ensure adequate segregation and the Supervisor must ensure that it is enforced, it remains the operators responsibility to look around and check for the absence of pedestrians before moving and whilst manoeuvring and travelling. If the operator cannot see clearly, they should seek assistance or leave the cab to look around to confirm it is safe to continue the procedure.

Wherever possible pedestrians should be segregated from moving vehicles, including telehandlers. Visibility aids and operator vigilance are valuable control measures, but segregation should always take priority.

Thought should also be given to the operator's ability to keep the load in view at all times, particularly with high reach telehandlers where the operator may have difficulty in judging distance at height.

1.9 Review and Monitoring

It is important that the use of telehandlers is subject to regular review and constant monitoring to ensure that tasks are being carried out as planned, that supervisors and operators have the necessary competences and that planning is effective.

1.10 Maintenance and Inspection

The effective maintenance of a telehandler is an essential part of safe operation. As with all machines, a telehandler will wear, deteriorate and can suffer damage over time. The maintenance process, including checks and inspections, monitors, prevents and rectifies this deterioration. It is important that the personnel asked to carry out these tasks have the necessary machine-specific training, experience and competence in both periodic and breakdown maintenance.

Telehandlers require the manufacturer's preventative maintenance instructions to be strictly complied with, if safety is to be maintained in use. Checks and inspections should be carried out taking account of the frequency of use of the telehandler and the environmental conditions in which it works.

Both the user and owner of the telehandler, and any attachments used with it, have a responsibility to ensure that they are maintained in a safe working condition. In practice the maintenance, other than pre-use checks, is normally undertaken by the telehandler owner on behalf of the user.

1.11 Thorough Examination

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) require that all lifting equipment is thoroughly examined by a competent person at specified intervals. In the case of a telehandler, it should be thoroughly examined as follows:-

- When the telehandler is put into service for the first time (LOLER Reg. 9(1))

NOTE: *If the telehandler has not been used before and the EC declaration of conformity was made not more than 12 months before the telehandler was put into service, the declaration may be used as evidence of the first thorough examination.*

- At regular intervals of:-
 - a period not exceeding 12 months if the telehandler is only used for lifting goods (LOLER Reg. 9(3)(a)(ii));
 - a period not exceeding 6 months if the telehandler is used for lifting persons (LOLER Reg. 9(3)(a)(i));
- After any major alteration or damage (event) (LOLER Reg. 9(3)(a)(iv)).

LOLER also requires that lifting accessories and lifting attachments are thoroughly examined at intervals not exceeding six months (LOLER Reg. 9(3)(a)(i)).

1.12 Key Points for Operators and Supervisors

Key points for telehandler operators are given in **Annex G** and key points for supervisors of telehandler operators are given in **Annex H**. These may be reproduced in a convenient form such as pocket cards.

1.13 Statutory Regulations

Attention is drawn to the statutory regulations listed in **Annex K**.

2.0 Definitions

attachment

bucket or other device which can be easily attached to the boom of a telehandler, either directly or via a quick hitch

de-stacking

removing loads (generally palletised), from a vertical stack

duties

configurations in which the telehandler can be used and the rated capacity for that configuration (i.e. lifting unit loads on forks or lifting suspended loads with stabilizers deployed)

fork arm extensions

manual or hydraulic extensions to increase the length of fork arms and used to reach loads in deep racking or to handle extra depth loads.

lifting operation complexity

measure of the complexity of a lifting operation taking into account both the complexity of the load and the environment in which it is being lifted (See **Figure B1** in **Annex B**)

lifting attachment

hook or jib which can be easily attached to the boom of the telehandler, either directly or via a quick hitch, to facilitate the lifting of suspended loads

load centre

the distance from the centre of gravity of the load to the front face of the fork shank (vertical member) (See **Figure 1**)

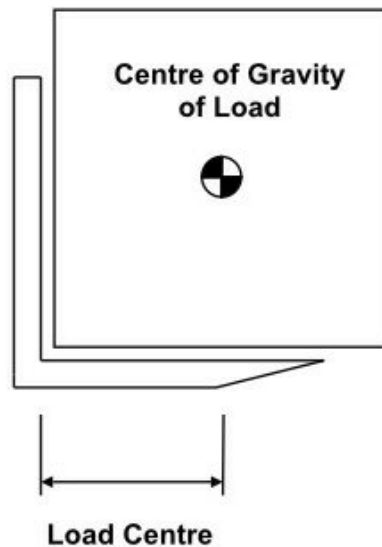


Figure 1 – Load Centre

load chart

durable load chart which should be affixed in a prominent position, easily readable by the operator including information on rated and actual capacities (see **Figure 2**)

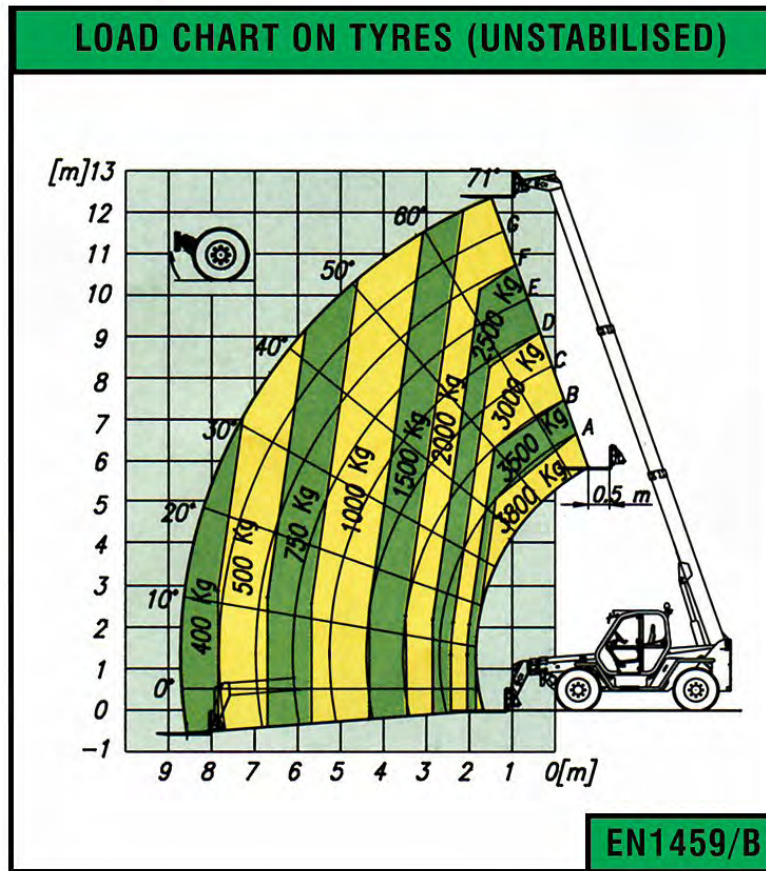


Figure 2 - Example Load Chart

longitudinal load moment indicator (LLMI)

device that warns the operator of a change to the load handling geometry which would increase the longitudinal load moment, beyond pre-determined limit(s)

longitudinal load moment control (LLMC)

device that prevents the operator changing the load handling geometry in direction(s) which would increase the longitudinal load moment, beyond the allowable limit(s)

method statement

document produced to describe the safe system for the use of a telehandler

outrigger

device to increase the stability of the telehandler by increasing the supporting base and lifting the chassis clear of the ground

personnel

competent person - general

person who has such capacity combined with practical skills, theoretical knowledge and experience of the telehandler and the equipment used in the lifting operation as is necessary to carry out the function to which the term relates in each particular context

competent person - lifting of suspended loads

person with the training, practical and theoretical knowledge and experience required to comply with **Annex B**

Lift Supervisor

person who controls the lifting operation, and ensures that it is carried out in accordance with the competent person's safe system of work

site management

person or organisation responsible for operations on a construction site or part of a construction site

NOTE: This includes Principal, package and sub contractors

supervisor

person responsible to higher management for the day-to-day performance of individuals or a small group, guiding the group toward its goals, ensuring that all members of the team are safe, productive and resolving problems, within their competence, as they arise

telehandler operator

person who is operating the telehandler

quick hitch

device to facilitate the efficient connection and removal of attachments to telehandlers

NOTE: Also known as Quickhitches, Quick Couplers or Attachment Brackets (Quick fastening)

rated capacity of telehandler

load that the telehandler is designed to lift for a given operating condition (e.g. configuration, position of the load)

NOTE: The rated capacity was formerly known as "safe working load" (SWL)

rough terrain telescopic handler (RTTH)

see telehandler

stability

longitudinal stability

stability of the telehandler along the centre line of the machine. i.e. the tendency to tip forwards or backwards

lateral stability

stability of the telehandler at right angles to the centre line of the machine. i.e. the tendency to tip sideways

stability triangle

diagrammatic representation of the tipping lines for a non-rotating boom telehandler

stabilizer

aid to the supporting structure connected to the base of the telehandler to provide stability, without lifting the chassis from the ground

stacking

placing loads, generally palletised, on top of each other in a vertical stack

side-shift carriage

fork carriage enabling horizontal sideways movement of the fork arms to allow precise positioning.

telehandlernon-rotating boom

a wheeled, counterbalanced, powered truck which embodies a variable reach lifting mechanism consisting of a telescopic elevating boom, normally equipped with a fork carrier at its expanding end

NOTE: Also known as Rough Terrain Telescopic Handler (RTTH) or Variable Reach Trucks (VRT)

rotating boom

a wheeled, counterbalanced, powered truck which embodies a variable reach lifting mechanism consisting of a telescopic elevating boom mounted on a rotating turret, normally equipped with a fork carrier at its extending end

thorough examination

examination by a competent person in such depth and detail as the competent person considers necessary to enable them to determine whether the equipment being examined is safe to continue in use

NOTE: The thorough examination is not part of the maintenance regime for the equipment but additionally provides owners with information which could be used to determine the effectiveness of the regime.

tipping line

the horizontal line about which a telehandler will rotate, should it overturn

undercutting

lifting with the tip of the forks situated under the outer edge of the load to enable the load to be placed adjacent to a wall

working platform

platform attached to the boom of a telehandler to provide a safe means of access for persons working at height

integrated working platform

attachment with controls that are linked to and isolate the telehandler controls so that in normal use, only a person in the platform can control the lift height of the platform and machine movements

non-integrated working platform

attachment for use in conjunction with a telehandler to elevate people so they can work at height, but they have no controls in the platform that allow a person in the platform to control the lift height of the platform or move the chassis; i.e. all telehandler and working platform movements are controlled by the telehandler operator

Non-integrated platforms attachments must not be used for planned tasks on construction sites

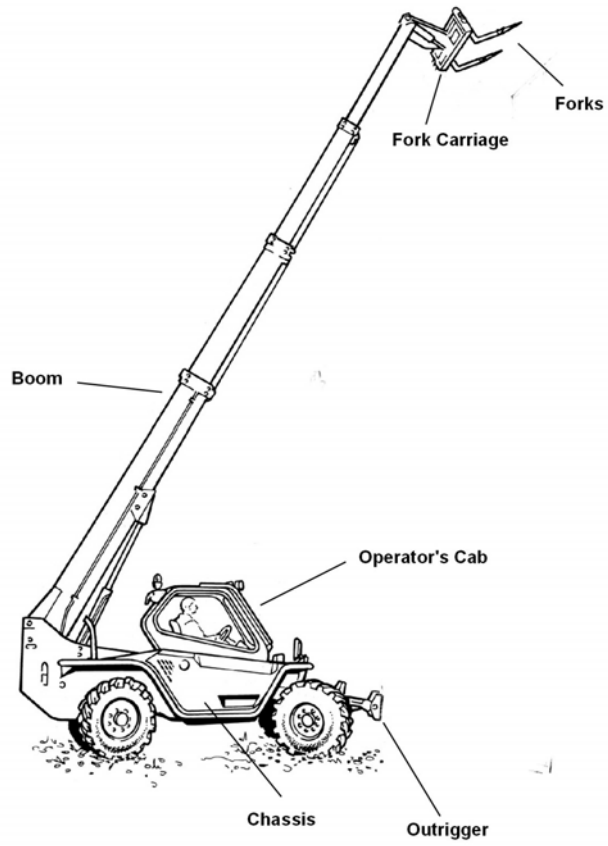


Figure 3 - Parts of a Non-rotating Telehandler

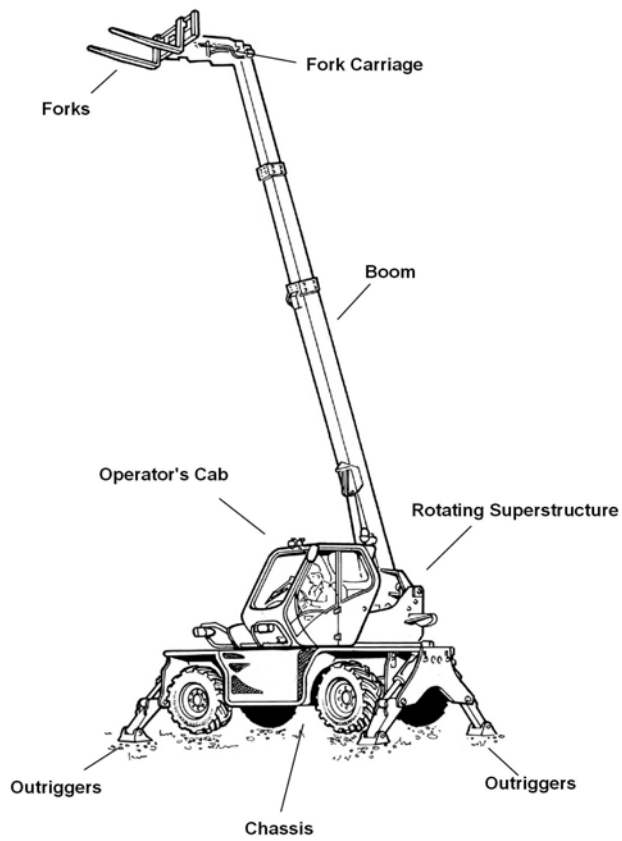


Figure 4 - Parts of a Rotating Telehandler

3.0 Planning (Management and Coordination)

All operations on site should be planned to ensure that they are carried out safely and that all foreseeable risks have been taken into account. Poor planning is one of the major causes of accidents arising from the use of telehandlers.

3.1 Responsibility for planning

The responsibility for planning tasks lies with the employer who is undertaking the task. The employer should ensure that they identify a person who is competent to undertake the planning and give them that duty. The attributes and selection of this person are detailed in 8.2.1.

3.2 Identifying the task to be undertaken

As the first stage in the planning process, the task to be undertaken should be clearly identified, together with the location and sequence. Part of this process is ensuring that the most suitable equipment is chosen for the task.

3.3 Identifying the hazards associated with the task

The hazards associated with the task should be identified. These might be associated with the location and environment where the work is to be carried out, the type of telehandler, any attachment, the type of load, the location of the pick up and put down points, the travel route or the people associated with the task or located in the vicinity. This process should also consider the effect of other operations being carried out in the vicinity and the need for co-ordination.

3.4 Carrying out a risk assessment

Having identified the hazards associated with the task, a risk assessment should be carried out to identify who might be harmed, the chance of them being harmed and the consequences of any harm. This assessment should be recorded (See 3.11).

An example of a risk assessment is given in **Annex A**

***NOTE:** The assessment of language skills and prevailing or anticipated weather conditions should form part of all risk assessment carried out as part of the planning process for the safe use and maintenance of telehandlers.*

***NOTE:** For basic telehandler operations the risk assessment may be incorporated in risk assessments covering trade specific tasks. It must however adequately address the above points.*

3.5 Identifying control measures

Once the risk assessment has highlighted the risks involved in the task, the procedures and measures required to control them should be identified. Consideration should also be given to the suitability of a telehandler for the task to be undertaken or whether another more suitable type of equipment should be used.

3.6 Developing the method to be used

Having identified the hazards, evaluated the risks and worked out the control measures required to carry out the task safely, these components should be developed into a coherent plan. This should include consultation with those who will be undertaking or be affected by the task. Any contingency measures and emergency procedures should be included in the plan.

3.7 Recording the planning in a Method Statement

Once the plan has been developed it should be recorded in a Method Statement (Lift Plan). The length and detail of this document depends on the complexity of the task to be undertaken and on the risks involved. The Method Statement should include the following information:

- Project;
- Location;
- Date of issue, revision number and approval sign off;
- Equipment and load description;
- Load stability before, during and after the lifting operation, including checks to be undertaken;
- Pick-up and delivery points;
- Sequence of operations;
- Ground and operational area – assessed and passed as suitable for the lifting and travelling operations to be undertaken;
- Requirements for Exclusion Zones and any sequencing of other activities to maintain safe areas;
- Arrangements for adequate supervision of operations;
- Names of personnel involved in the lifting operation;
- Training for operator, banksman and supervisor;
- Authorisation of operator and supervisor;
- Communicate safe method of work;
- Contingency planning;
- Arrangements for ensuring that equipment provided is maintained and fit for purpose;
- Arrangements for ensuring that equipment (including lifting attachments) is thoroughly examined and tested at appropriate intervals.

An example of typical requirements included in a Method Statement is given in **Annex A**.

NOTE: For basic telehandler operations the method statement may be incorporated in method statements covering trade specific tasks. It must however adequately address the above points.

3.8 Communicating the planned safe system of work to all persons involved

One of the most important aspects of successful planning is to ensure that the contents of the planned safe system of work are communicated effectively to, and between, all parties involved, taking account of language differences. Arrangements should be made to ensure that copies of any method statements are given and explained to the appropriate people (including the Principal Contractor) and that others involved in the job are fully briefed. Similarly any changes to the plan should be communicated to all parties.

Confirmation of the plan being communicated should be obtained and recorded.

It is essential that part of the communication process includes co-ordination with other activities that may impinge on the task to be undertaken.

3.9 Reviewing the plan before the job starts

Immediately before a job starts the specified method should be checked to see if any aspect of the job has changed and the effect that these changes could have on the safety of the operation. If any modifications to the plan are required these should be communicated

effectively to all those involved. The competent person should amend the Method Statement and initial any significant changes.

3.10 The Use of Telehandlers With Attachments Other Than Forks

Telehandlers are generally used with forks for handling of unit loads. They may however be used with other attachments such as buckets, skips, work platforms and crane jibs, when permitted by the telehandler manufacturer. Care should be taken to ensure that the persons both fitting and using the attachments are competent to do so. The fitting of an attachment may alter the characteristics of the telehandler. (See **5.3**)

In every case the use of the telehandler and attachment must be planned in accordance with **3.1** to **3.8**. The lifting of suspended loads and the lifting of persons are covered in **10.7** and **10.8**.

Operators should be trained in the use of attachments and familiarised with each specific attachments (**See 8.6** and **9.0**)

3.11 Lifting and Travelling with Suspended Loads

Where telehandlers are used for lifting suspended loads and travelling with those loads the planning process must take account of the additional hazards associated with these activities. As telehandlers are not primarily for lifting suspended loads the first step should be to ensure that a telehandler is the most suitable equipment for carrying out the task.

Unlike a mobile crane, tower crane or lorry loader a non rotating telehandler cannot lift a load over a point without the operator simultaneously raising and extending the boom to keep the suspension point stationary on the horizontal plane. Similarly if the load is to be moved to either side of the telehandler centreline the whole machine has to be moved on its wheels, rather than using the slew motion of a crane. These restrictions may prevent precision lifting operations with small clearances being carried out safely. In such circumstances the use of alternative lifting equipment should be strongly considered

Regulation 4 of the Provision and Use of Work Equipment Regulations 1998 (PUWER) requires that employers ensure that work equipment provided for their employees is the most suitable for the purpose for which it is being used and reduces or eliminates risks to the user and other people.

3.12 Further guidance

Further guidance on planning is given in:

- HSE Leaflet INDG218 – *Guide to Risk Assessment*;
- HSE Leaflet INDG163 – *Five Steps to Risk Assessment*.
- **Annex K**

4.0 Telehandler Principles

For safe operation of telehandlers it is vital to have an understanding of their design criteria, expected use and limitations. Use outside of those areas is adding extra hazard of which the operator must be aware.

4.1 Design Principles

Telehandlers are generally designed to European Standard BS EN1459. The scope of this Standard very clearly states that it applies only when the telehandler is stationary and lifting on substantially flat, level and compacted ground or travelling with a load. It also applies only to use with forks. Consequently if a telehandler is used in other circumstances such as travelling or lifting on slopes or with attachments other than forks, the additional risks need to be reassessed.

As part of the test process to ensure conformance with the Standard, telehandlers are placed on a platform, which must be tilted to preset angles to assess stability. Across the slope, and with rated maximum load at full lift height*, this angle is only 7°. Most telehandler operators and supervisors, when asked, estimate that it is in the region of 25°- 30°, which is a significant over estimate.

***NOTE:** *The procedure is somewhat more complicated than this in reality*

With the rated load in the travelling position the minimum tilt platform angle required is somewhat greater at 26 degrees. However, it is clear that raising the mass of the boom and/or load greatly decreases stability as shown in **Figure 5**.

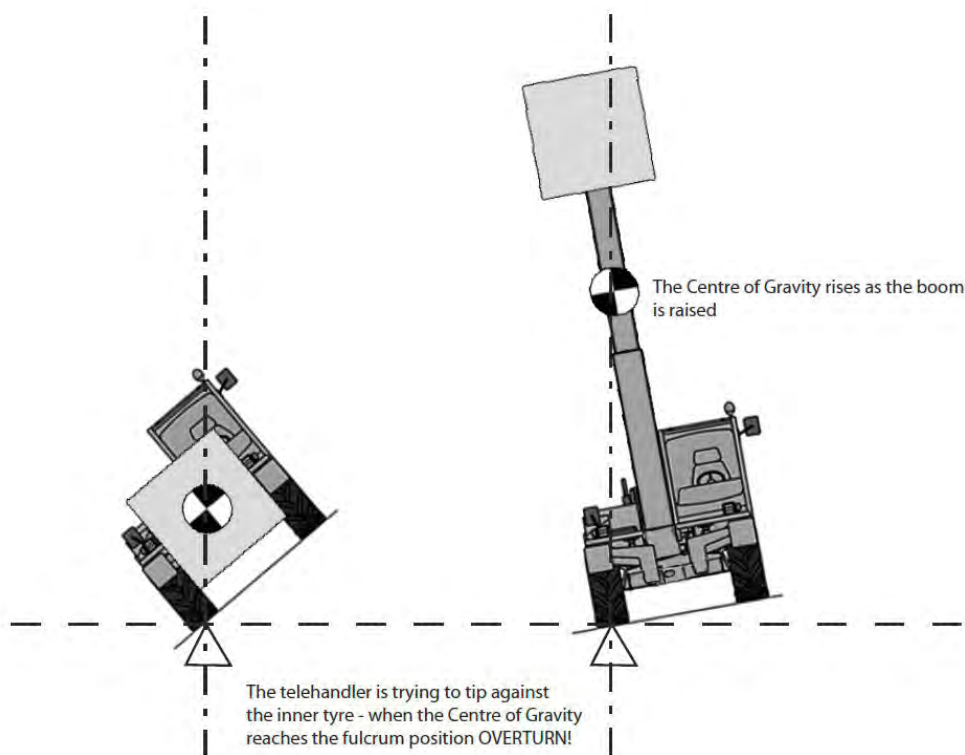
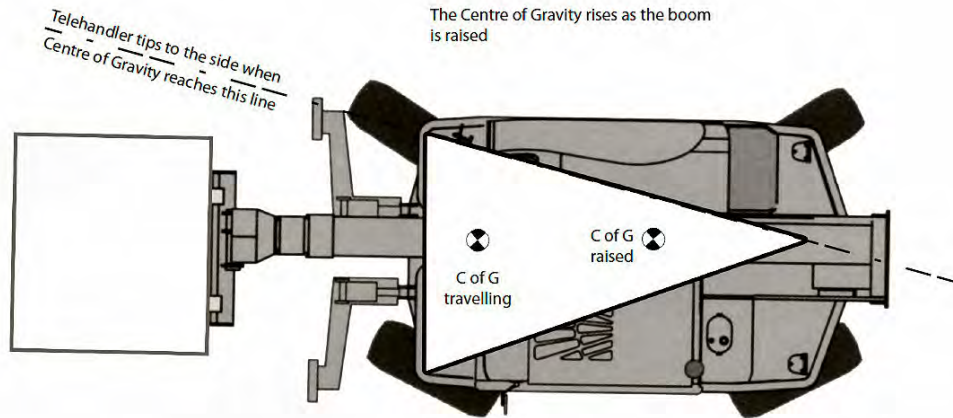


Figure 5 - Lateral Stability

Because telehandlers normally have freely oscillating rear axles, the tipping lines form a triangle, rather than the rectangle of machines supported on outriggers such as rotating boom telehandlers and mobile cranes. This has the effect of reducing lateral stability, particularly with the boom raised. See **Figure 6**



Because a telehandler normally has a freely oscillating rear axle, the balance is actually against a triangle - the Stability Triangle. As the boom is raised, the Centre of Gravity moves rearwards as well as upwards. So, as the boom is raised, the telehandler quickly becomes less stable to the side and more stable to the front!

Figure 6 - Typical Stability Triangle for Non-rotating Boom Telehandlers

Figure 7 below shows how telehandler stability is affected by travelling.

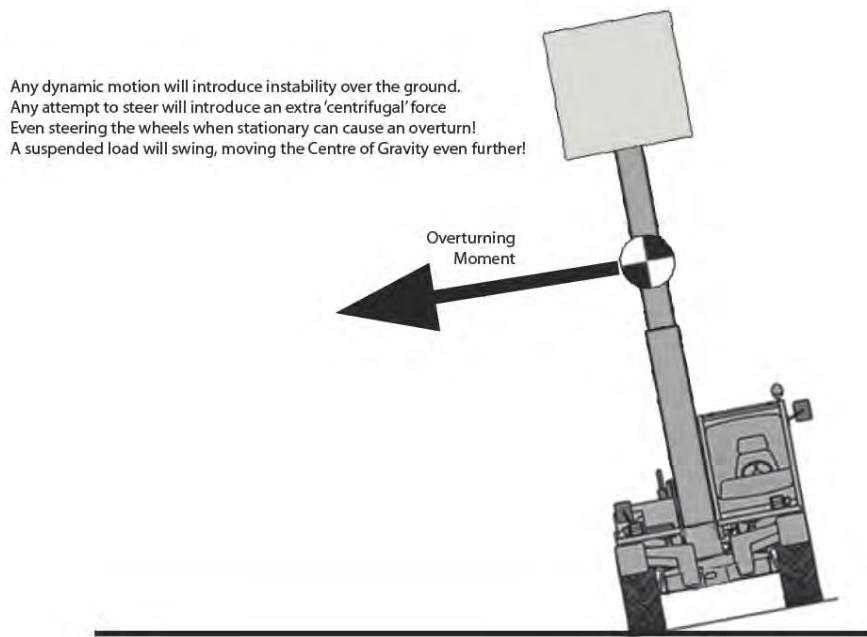


Figure 7 - Dynamic Stability

All the stability tests carried out on telehandlers during their design and development are performed with a standard load which consists of a cube with 1 metre sides. Using a load with physically larger dimensions, or which is not homogeneous, presents extra risks that must be assessed.

To maintain stability a telehandler:

- Should only be used on firm ground that resists sinking of the wheels or stabilisers (if fitted);
- Should lift vertically, either being on level ground or using a frame levelling feature;
- Should be stationary with the brake applied, for all "normal" lifts;
- May be less stable with a different shaped load;
- Should only be used by a trained, certificated and competent operator.

For further information see **10.7**



Figure 8 - Consequence of Instability

4.2 The Effect of Tyres on Stability

Tyres play a vital part in the stability of telehandlers. Stability and load carrying capacity can be adversely affected by issues such as:-

- Incorrect tyre pressure;
- Differences in diameter of tyres on the same axle due to differential wear;
- Incorrect ply rating;
- Use of tyres which are not of the required performance specification;
- Tyres with identical nominal sizes being of different physical size;
- Poor tyre repairs.

Tyre maintenance, repair and replacement are dealt with in more detail in **12.11**

4.3 Load Moment Indicators

From the first designs in the mid 1970s, telehandlers have been fitted with a device that monitors the tendency of the telehandler to tip over in the forward direction. The correct name is a Longitudinal Load Moment Indicator or LLMI.

It's vital to understand the functioning and, particularly, the limitations of this device. First, and most important, **it is not a Safe Load Indicator!**

The LLMI works by sensing the load upon the back axle. As the load on the forks is increased, or the boom extended, the load moment (load x distance) increases and the rear axle becomes 'lighter'. At a preset value, the LLMI sounds and shows a warning. However the LLMI only senses forward stability, not rearward or lateral stability and it is essential that operators understand this limitation.

Some manufacturers have linked this with a control device, which blocks further destabilising motion when the stability limit is approached. In this case, the device is called a Longitudinal Load Moment Control or LLMC. These are fitted on **new** telehandlers manufactured after September 2010, however there is no requirement to retrofit on older machines.

4.4 Driving with the Boom Raised

Telehandlers should always be driven with the boom lowered to ensure that the centre of gravity of the machine and the load is as low as possible. Driving with the boom raised should never be considered as "normal" practice, for all of the above reasons. It introduces an extra risk that must be assessed.

If the site is so restricted that manoeuvring is impossible without raising the boom, site management should re-assess the use of a telehandler at all or, at least, consider reselection of the machine chosen.

In the past, operators have raised the boom in order to see under it. The modern design of telehandler makes this unnecessary and regular driving of a telehandler with the boom raised should **ALWAYS** be challenged by supervisors.

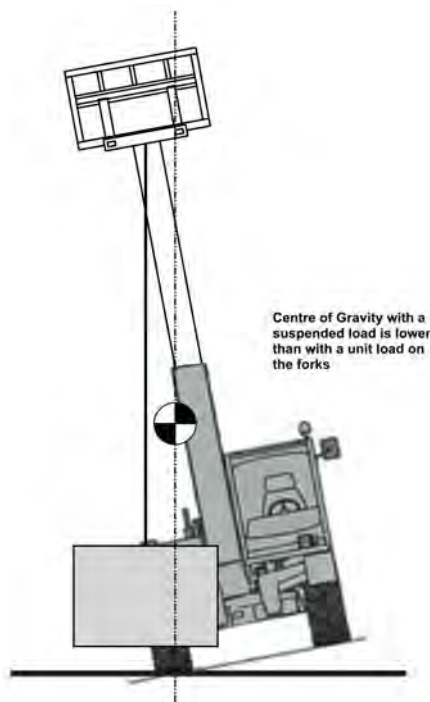


Figure 9 - Lateral Stability for Suspended Loads

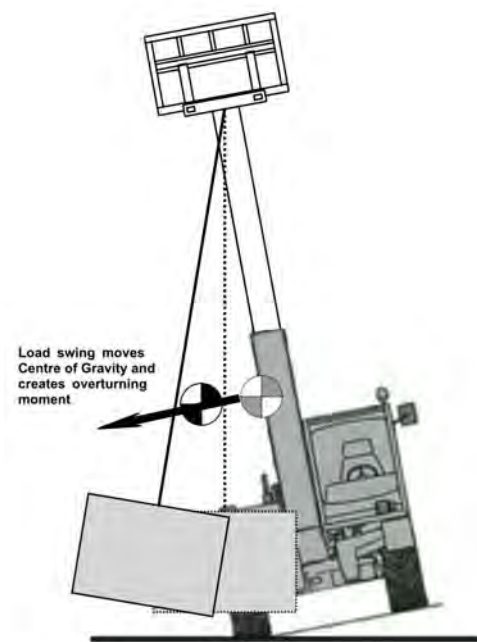


Figure 10 - Dynamic Stability for Suspended Loads

4.5 ***Suspended Loads***

Incident history confirms that travelling with a suspended load is a hazardous operation.

All lifting of and travelling with suspended loads must be planned and recorded in a method statement (lift plan).

Planning should be carried out using information provided by the telehandler manufacturer on the limitations of lifting and/or travelling with suspended loads. If this information is not available, lifting and/or travelling with suspended loads should not be carried out. In this case alternative equipment or alternative methods should be considered.

4.5.1 Lifting suspended loads

Telehandlers are often used to place suspended loads into position. The standard rating of a telehandler is for lifting unit loads on the forks; consequently the standard load chart will not be valid for lifting suspended loads due to different load centres and the effect of any side slope.

From 2010 newly manufactured machines should be fitted with a longitudinal load moment control (refer to operator's manual), and indication will be provided to the operator regarding longitudinal stability when stationary and the operator will be prevented from operating the machine outside of the limits determined by the manufacturer. Such machines may provide additional safety when lifting suspended loads.

There are two main operating configurations (duties) when lifting suspended loads with a telehandler:-

- Lifting a suspended load with the telehandler stationary and supported on stabilizers
- or
- Lifting a suspended load with the telehandler stationary, free on wheels

NOTE: *It is strongly recommended that where stabilizers are fitted, they are always used when lifting suspended loads.*

As both operating configurations (duties) are specific applications of use of the telehandler, the standard load charts for lifting unit loads on the forks do not apply and specific load charts for each configuration must be used. **Figure 11** shows example load charts for a machine with a hook fitted to the forks for lifting suspended loads and **Figure 12** shows example load charts for the same machine fitted with a jib. In both cases, charts are given for the stabilisers deployed and raised conditions. Comparing the two example charts in **Table 1** shows firstly, that lifting with the stabilisers raised results in a significant reduction in lifting capacity and maximum hook height, and secondly, that different attachments have very different rated capacities, reinforcing the point that the telehandler may only be used in the operating configurations for which a load chart is provided by the telehandler manufacturer. For example, if the telehandler manufacturer has only provided a load chart for lifting a suspended load with the telehandler stationary with stabilisers deployed, the machine should not be used for lifting a suspended load free on wheels with the stabilisers raised.

Where a load chart for the required configuration (duty) is not available, the telehandler manufacturer should be approached for advice.

NOTE: *When lifting a suspended load the weight of the load must include the weight of the lifting accessories (slings, shackles etc.) used to attach the load to the lifting attachment on the forks or carriage.*

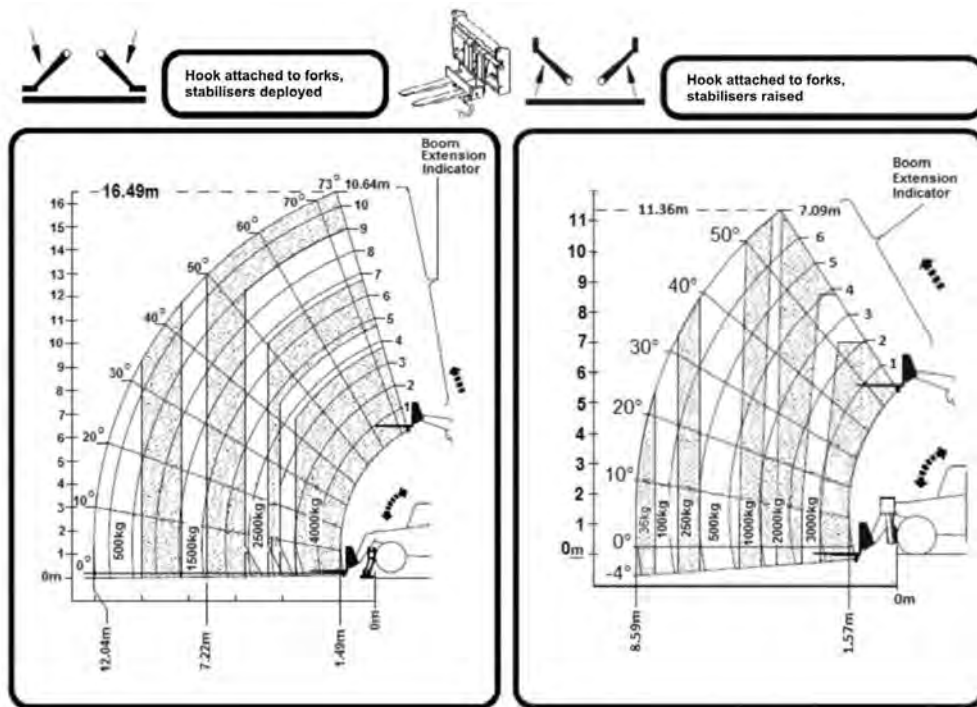


Figure 11 - Example Load Chart For Hook Located on Forks

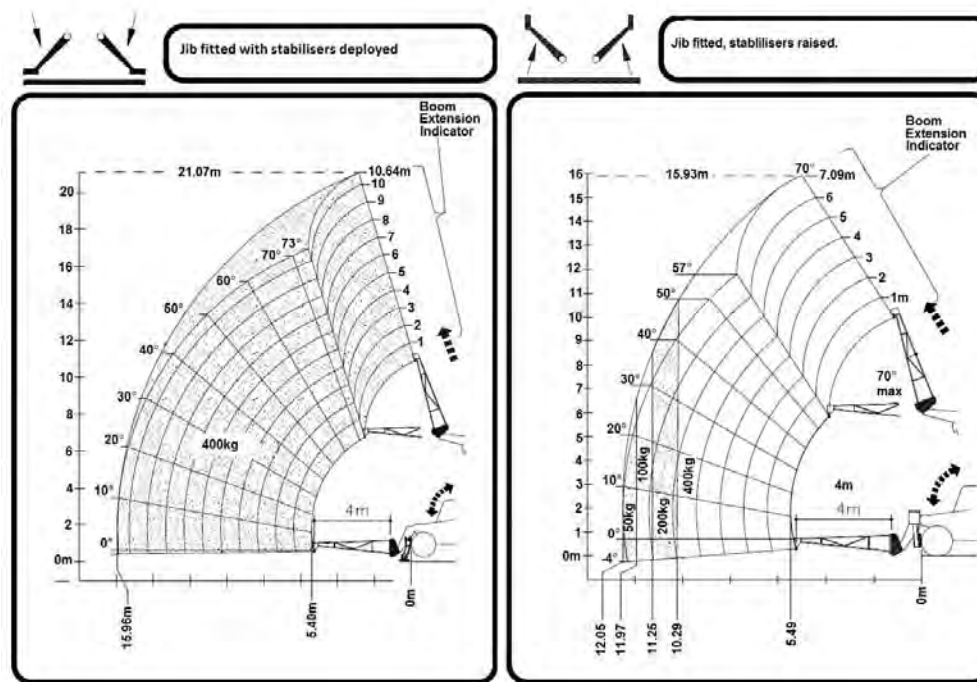


Figure 12 – Example Load Chart For a Jib

| <i>Load Chart</i> | | <i>Attachment</i> | <i>Stabilisers</i> | <i>Rated Capacity @ 6m Radius</i> | <i>Max Hook Height</i> |
|--|------------|-------------------|--------------------|-----------------------------------|------------------------|
| Figure 1 | Right Hand | Fork mounted hook | Raised | 500kg | 9m |
| | Left Hand | | Deployed | 2000kg | 14m |
| Figure 2 | Right Hand | 4m jib | Raised | 400kg | 15m |
| | Left Hand | | Deployed | 400kg | 19.5m |
| Table 1 - Example Load Chart Comparison | | | | | |

4.5.2 Travelling with suspended loads

Travelling with a suspended load involves travelling with the boom raised from the normal transport position, with additional dynamic forces due to swinging of the suspended load (See **Figure 10**).

If information for travelling with a suspended load is provided by the manufacturer (See **Figure 13**) and the activity is permitted by the site, the following points should be adhered to:-

1. The boom and load should be kept as low to the ground as practicable (load 300-500mm above the ground). To facilitate this the correct length of chains, slings etc. should be selected;
2. If necessary the boom should be extended from fully retracted position by the minimum amount required to ensure that the load does not interfere with the front of the telehandler chassis. It is essential that the load radius remains within that allowed by the load chart for the magnitude of the load being lifted;
3. Visibility may well be reduced and planning should identify appropriate control measures, such as a marshaller to guide the operator;
4. Any load swing must be minimised by delicate use of controls and slow travel speeds;
5. Operators should take care when braking and / or turning as this creates dynamic forces transmitted to the boom, thereby reducing stability;
6. Slinger/signallers and other personnel should never walk in front of the telehandler to steady a swinging load as it is very easy to trip, fall and be crushed by the telehandler wheels;
7. The machine should travel extremely slowly and never above walking pace;
8. The operator should follow the manufacturer's instructions for travelling on slopes and inclines. It is essential that they do not attempt to climb, descend or cross inclines in excess of manufacturer's limiting values, as this significantly increases the likelihood of overturning;
9. Lightweight but bulky items like roof trusses pose a special risk. Although relatively light, they are physically large, leading to large dynamic forces and are significantly affected by the wind. Physical restrictions on-site may require the boom to be elevated in order to clear fixed obstructions. Any carrying and placing of such items with a telehandler carries significant extra risk that must be addressed by the site risk assessment;
10. Care should be taken to avoid overhead obstructions including overhead power lines.

Further information on travelling with suspended loads, travelling on inclines, slope and gradients and overhead power lines is given in Sections **10.5, 10.10 and 10.7.3**.

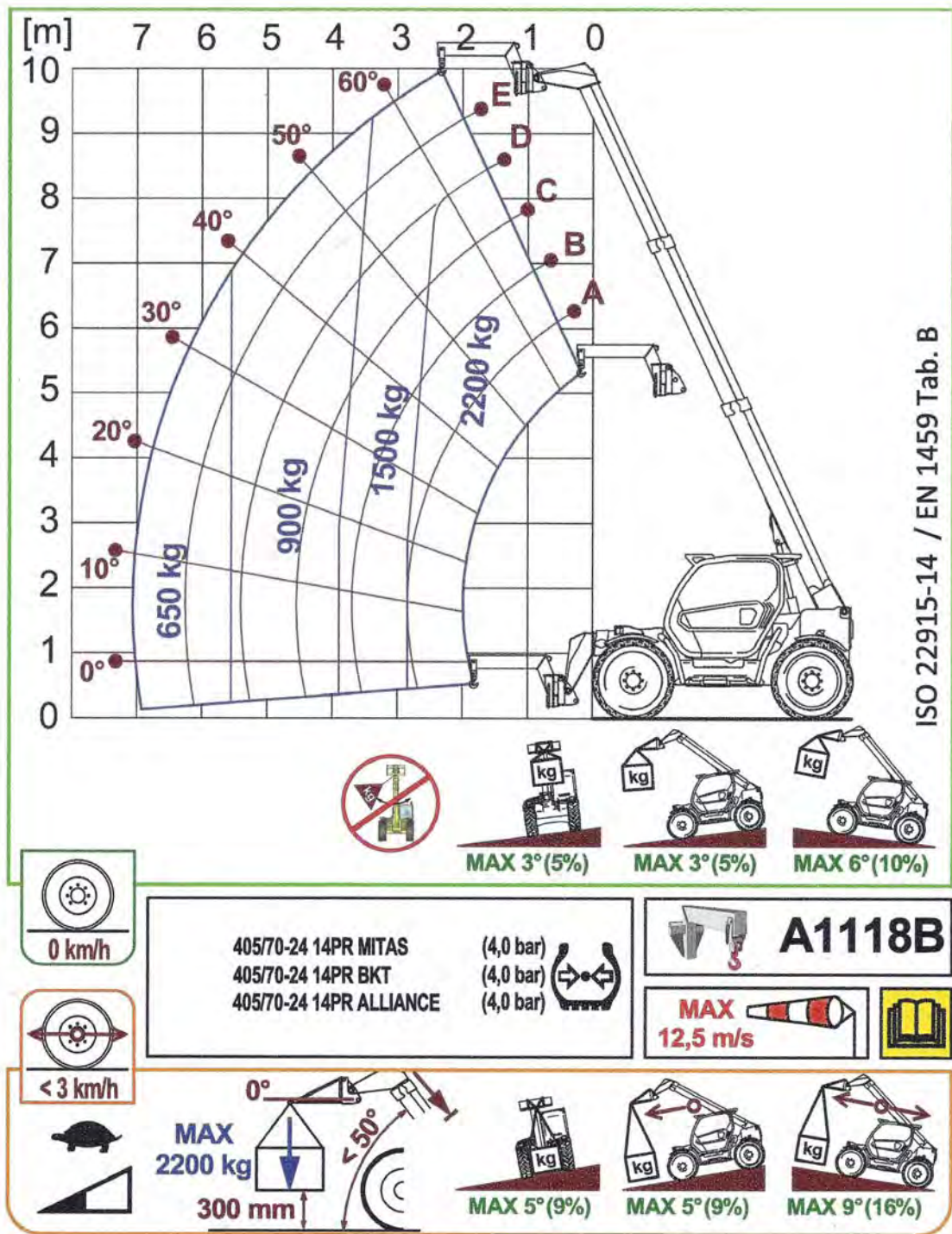


Figure 13 - Example of a Load Chart Giving Travelling Limits For a Jib



A damaged racing car was being removed from the track at the 2013 Canadian Grand Prix. The car had been lifted as a suspended load, using a telehandler and a marshal was escorting and steadying the load. The marshal dropped his two way radio, bent down to pick it up, tripped, fell and was run over by the telehandler. He later died from his injuries



A telehandler was travelling with a large shutter suspended from the carriage when the machine tipped in a forward direction. The telehandler boom was at an unnecessarily high angle and the load was outside the height/radius permitted by the load chart.



A 17m telehandler was lifting steel columns from a nearby lay-down area and positioning them for erection. Whilst manoeuvring with the boom section extended to give sufficient ground clearance, the telehandler tilted to one side causing the machine to overturn. The telehandler came to rest when the extended boom penetrated through an adjacent building roof. At the time of the incident, the vehicle was traversing an excessive slope of approximately 1:6 (9.5°, 16.5%). The accident was caused by inappropriate use of the telehandler for this task.

4.6 Visibility

Restricted visibility when the boom is raised or when large loads are carried, plus poor segregation have been identified as a major cause of accidents involving pedestrians and telehandlers. The great majority of telehandlers feature a side-mounted cab, with the boom mounted centrally or to the right of the machine chassis. The operator's view around the machine, when normally seated is obstructed or 'masked' by the cab pillars and any other part of the structure that is in the way. Certain parts of the loading cycle will place the boom in the operator's line of sight and consequently prevent a clear view.

Older designs of telehandler use a high mounting for the rear of the boom, making view to the right front quarter almost impossible. This led to the practice of driving with the boom raised to allow the operator to see underneath it. Newer designs of telehandlers have low profile booms that drop below the eye line when in the transport position. Supervisors should always query the practice of driving with the boom raised as it increases the extra risk of dynamic instability.

A new European Standard EN15830 will set scientifically measureable standards for telehandler visibility. A series of tests will produce a visibility diagram, indicating masked areas at radius of 12m and immediately adjacent to the machine (1m away). The standard permits some masking in less hazardous areas, and residual risk information such as a diagram – see **Figure 14**, to be provided where appropriate visual aid solutions don't currently exist. Areas of masking that exceed those permitted must be addressed by the use of secondary visual aids, such as mirrors, cameras or radar devices. The residual risk information provided in the operator's handbook should be used as part of the planning process.

NOTE: Masking is the blocking of parts of the operators field of vision by obstructions such as the load or parts of the telehandler structure.

It should not be forgotten that the most effective way of preventing accidents between pedestrians and telehandlers is to segregate vehicle and pedestrians. See **9.4.1**.

Operators should always ensure by appropriate means, prior to commencing a task, that personnel are clear of the area immediately adjacent to the machine. This may involve getting out of the cab and walking around the machine.

Operator visibility is aided by clean cab windows. Window cleanliness should form part of the operator's pre-use checks.

Guidance on the assessment of visibility and the selection of visibility aids is given in:-

- HSE Sector Information Minute No. 05/2010/03 *Visibility for operators of telehandlers (variable reach lift trucks)*

4.7 Selecting Visibility Aids

Manufacturers will supply machines with sufficient visual aids and residual risk information in order to meet prEN 15830 or supply legislation. Where additional or particular risks are present on a site, or application, and following a risk assessment, it may be necessary to add additional aids. The HSE Sector Information Minute No. 05/2010/03 *Visibility for operators of telehandlers (variable reach lift trucks)* provides the following advice on the selection of visibility aids.

In general users will need to consider the following factors when choosing appropriate visibility aids:

- **Vehicle speed and stopping performance:** visibility aids must be able to allow the operator to respond to a hazard in good time to prevent impact.
- **Site conditions:** the type of visibility aid fitted to the equipment should be appropriate for the site's conditions. In certain circumstances, users will prefer to use colour CCTV because of the improved contrast it provides against certain backgrounds.
- **Lighting conditions:** Vehicle lighting systems may compensate for low ambient light.
- **Human factors:** The aids should be selected and fitted to maximise the operator's chances of perceiving danger. Too many aids may confuse an operator and render them ineffective. The positioning of monitors and mirrors should take into account the operators normal operating position for the relevant direction of travel and minimise the number of different locations an operator needs to look. Where frequent, repetitive operations are performed (such as loading from a stockpile) the risk of the operator failing to use a vision aid increases and it may be beneficial to provide additional automatic sensing systems. Some additional aids may also be appropriate for ergonomic reasons, e.g. to reduce the need for the operator to frequently look over their shoulder.

4.7.1 Wide Angle Convex Mirrors

Convex mirrors can provide additional visibility along the sides of vehicles and of areas to the rear into which the vehicle can manoeuvre. They are used on telehandlers to view the areas to the sides, rearward of their fixing and if fitted at the pivot point immediately in front of the rear of the vehicle to enable the operator to check that those areas are clear before moving off.

When selecting and mounting convex mirrors, users will need to consider that the image provided by a convex mirror is distorted and that the more convex the mirror the greater the distortion. This may increase estimates of distance, leading to unsafe situations. Images can also be disrupted if vibrations from the vehicle transmitted through the mirror mountings cause excessive shake in a mirror. These two effects can result in a particular mirror installation becoming ineffective.

4.7.2 Closed Circuit Television

CCTV systems, i.e. a CCTV camera and monitor, can be positioned to allow the operator to see into various blind spots. The camera lens is chosen to provide the required angle of view,. The camera should be located in a position that reduces the possibility of damage from mud, debris, or collisions. If possible the monitor should be fitted at the same height as, and in line with, the external mirrors without obstructing forward vision. This will reduce the number of different locations that an operator needs to view. The monitor should be on all of the time not just switched on when in the vehicle is reversing. They can be detachable to stop vandalism and theft.

CCTV systems may need to be capable of coping with low, bright and changing light conditions, such as glare which should be assessed e.g. when CCTV is being considered for cabs with large areas of glass. The CCTV system may need automatic adjustment and shielding to prevent glare, and brightness control when it is used at night or additional, or alternative aids, may also be required.

NOTE: See also HSE Operational Circular OC 803/70 - Closed Circuit TV on Road Going Vehicles.

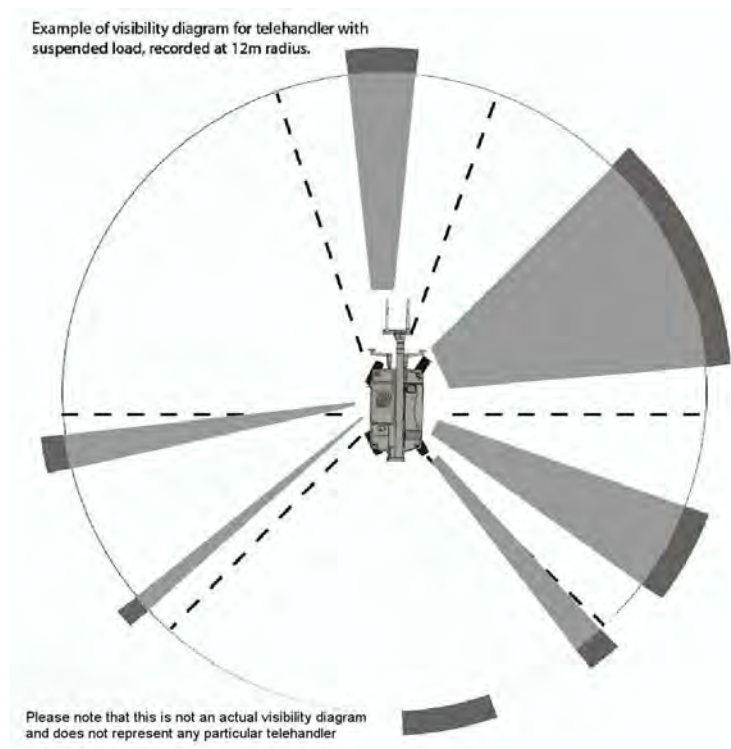


Figure 14 - Typical Visibility Diagram

4.7.3 Sensing Aids

Radar systems can either provide an audible and visual warning to the operator or apply the brakes of the machine when an object is detected close to the rear of the vehicle. More sophisticated systems have a two-stage response: warning the operator at a certain distance from the object and automatically applying the brakes at a closer distance. These systems, when fitted to the braking system, have the advantage over CCTV of giving automatic protection to the rear. Radar systems however, are not fail-safe and for this reason users normally fit a warning light to the machine to indicate when the system is switched off. The width and length of the detection zone(s) should be set according to the braking distance of the vehicle and the environment in which they operate. They should also be checked periodically.

These and other similar electronic sensing devices (e.g. ultrasonic systems) can be fitted on vehicles where the operator may not look back when reversing. The system either: stops the

machine, sounds an alarm or gives a visual warning when something is in the vehicles path. This is particularly useful where the vehicle moves repeatedly backwards and forwards motions.

An effective sensing system needs to be able to reliably detect an object in the risk area that it covers; the system should not however be prone to being triggered by objects that are not in the risk area or suffer from other "unwanted alarms" as this will tempt operators to deactivate the system. They may therefore be less tolerable on tight and congested sites.

5.0 Types of Telehandler and Attachments

Telehandlers fall into two broad categories:–

5.1 *Non Rotating*

These machines comprise a powered wheeled chassis on to which is mounted a telescopic boom, pivoted on the chassis, which can be elevated from below the horizontal to an angle approaching the vertical. The outer end of the boom is fitted with a fork carriage and forks for handling unit loads. Levelling of the forks in the longitudinal plane, as the boom elevation changes, is carried out automatically.

These machines are able to transport loads from one part of a site to another and place the load at height. On construction sites, the wheels are generally fitted with lug grip tyres to enable the chassis to negotiate unpaved ground. Various drive and steering configurations are available such as two-wheeled drive, four-wheeled drive, pivot steer, rear-wheel steering and four-wheeled steering.

Many telehandlers are fitted with stabilizers which are deployed when the machine is stationary to provide additional stability and enhance the machine's lifting capacity.

Telehandlers are often fitted with a feature which allows the chassis to be levelled laterally, where appropriate, before the boom is raised, when the machine is standing on uneven ground.

A typical example is shown in **Figure 15**



Figure 15 - Typical Non-rotating Telehandler

5.2 *Rotating Telehandlers*

Rotating telehandlers have all of the features of the non rotating type with the addition of a rotating or slewing superstructure on which the boom and operators cab are mounted. These machines also have outriggers fitted at either end of the chassis which enable the entire chassis to be lifted clear of the ground for maximum stability.

The main advantages of these machines over the non-rotating type is compact chassis size, enhanced lifting height, increased stability and ease of placing loads without moving the chassis.

A typical example is shown in **Figure 16**



Figure 16 - Typical Rotating Telehandler

5.3 Telehandler Attachments

Telehandlers are very versatile machines which, in addition to lifting of unit loads on forks, can be fitted with a wide range of attachments such as:-

- Sideshift Forks
- Sweepers
- Block Grabs
- Tipping Skips
- Crane Hooks
- Crane Jibs
- Buckets - General purpose and material handling
- Integrated Access Platforms

It is essential that all attachments are compatible with the telehandler with which they are to be used. Where necessary and appropriate, the telehandler manufacturer should be consulted where third party attachments are to be used.

5.4 Quick Hitches

Some telehandlers are fitted with "quick hitches" or "quick couplers" which enable attachments to be changed easily and rapidly. They fall into two types:-

5.4.1 Mechanical Quick Hitch

With the mechanical quick hitch, the hitch is engaged with the attachment, using the boom functions combined with fork carriage tilt. Once the quick hitch and attachment are engaged, a locking pin(s) is/are inserted and secured with a retaining pin.

5.4.2 Hydraulic Quick Hitch

The hydraulic quick hitch is engaged in the same manner as the mechanical quick hitch but the locking pin(s) is/are engaged hydraulically using the controls in the telehandler cab

Both types of quick hitch can allow the attachment to become detached from the quick hitch if the manual locking pin is left out or the hydraulic locking pin fails to engage fully. There have been several serious injuries caused by falling attachments and misuse.

It is essential that operators get out of the cab to physically ensure that all quick hitches are securely locked before starting work with a newly attached attachment.

5.5 Further Guidance

Further Guidance on quick hitches is given in:-

- The Strategic Forum for Construction *Best Practice Guide on the Safe Use of Quick Hitches on Excavators*.
- **Annex K**

6.0 Selection of Telehandlers and Attachments

6.1 Selection of Telehandlers

An effective and safe telehandler is one which is well matched to the type and size of load to be carried and lifted, together with the environment in which it is to be used. The selection process should at least take into account the following points:-

- Is the site of adequate size for the use of telehandlers?
- Is a telehandler an appropriate machine for this application?
- What are the weight, dimensions and characteristics of both the telehandler and the load(s) to be lifted?
- What are the radii and height of lift required?
- How far will the loads have to be carried and over what sort of terrain?
- What are the number, frequency and types of lifting operation?
- What space is available for telehandler access, deployment, operation and stowage, including the space required for correct deployment of stabilizers?
- Is there a need for attachments such as buckets, work platforms or lifting hooks?
- What is the effect of the operating environment on the telehandler and vice versa?
- Is there a need for the telehandler to travel on public roads?
- Is operator selection a criterion for machine selection?
- What is the source of the telehandler - user's own fleet, hired in or purchased?
- Will the operator have adequate visibility for the location in which it will be used?
- Is a telehandler still an appropriate machine for this application?

The selection of the telehandler and any attachments should be part of the planning process (See 3.0)

6.2 Selection of Attachments

Attachments for use with telehandlers should be chosen with care to ensure that the combination of telehandler and attachment is both safe and productive. The selection process should at least take into account the following points:-

- Which make and model of telehandler is the attachment going to be fitted to?
- What task is the attachment required for?
- Which type of attachment is best suited to the application?
- Is the attachment approved for use on that machine?
- Is the attachment compatible with the telehandler?
- Are load charts and user instructions available for the use of the attachment on the specific telehandler?
- Is the telehandler operator both familiar with and competent to operate the attachment?
- Will the operator require additional training and/or familiarisation?
- Who will be carrying out fitting and removal of the attachment and are they competent to do so?

- Are there particular hazards associated with the location and/or the task to be carried out?
- Will the attachment be sourced from the telehandler manufacturer, from an attachments manufacturer or from a third party?
- Will the attachment be sourced from the telehandler owner's own stock?
- Will the attachment be used for the lifting of suspended loads? See **3.11, 4.5, 8.4, 10.10** and **Annex B**.

Attachments should be designed for use with a specific machine, CE marked to the Machinery Directive and supplied with an EC Declaration of Conformity as items of "interchangeable equipment". They should also be supplied with instructions to enable them to be assembled and used safely with the specific telehandler. The instructions should specify which telehandlers the attachment can be safely assembled and used with, either by reference to the technical characteristics of the telehandler or, where necessary, by reference to specific models of telehandler.

It should be noted that where an attachment is not CE marked or supplied with an EC Declaration of Conformity, the person who assembles the telehandler/attachment combination is responsible for conformity of the new machine with the requirements of the Machinery Directive 2006/42/EC.

Specific guidance on the classification and CE marking of attachments is given in:-
CECE guidance on the classification of attachments to construction equipment for the machinery directive 2006/42/EC, Committee for European Construction Equipment

7.0 Provision of Information

7.1 Introduction

The wide variation of designs and the increasing complexity of telehandler technology make it essential that supervisors and operators are supplied with adequate information to enable them to carry out their duties effectively and safely. Information comes in various forms and from several sources, including telehandler and attachment manufacturers.

Telehandler owners must ensure that a robust system is in place to provide adequate up to date information to users and maintenance personnel. This may be achieved in a number of ways including:-

- Provision of paper manuals using a system which will ensure frequent updating is taking place;
- Provision of electronic manuals using a system which will ensure frequent updating is taking place;
- A central technical information function which can be contacted for up to date information whenever maintenance is taking place.

NOTE: *It is essential that a system is in place to ensure that manual updates, safety alerts and other information are communicated speedily to those who need to know.*

NOTE: *It is essential that information is provided in appropriate languages for non English speakers. The assessment of language skills should form part of all risk assessment carried out as part of the planning process for the safe use and maintenance of telehandlers. The Guidance to Regulation 10 of the Management of Health and Safety at Work Regulations says "The information provided should be pitched appropriately, given the level of training, knowledge and experience of the employee. It should be provided in a form which takes account of any language difficulties or disabilities. Information can be understood by everyone. For employees with little or no understanding of English, or who cannot read English, employers may need to make special arrangements. These could include providing translation, using interpreters, or replacing written notices with clearly understood symbols or diagrams."*

7.2 Manufacturer's Information

Information supplied by the telehandler manufacturer will be the main source of instructions and specifications for using and maintaining telehandlers. The primary document will be the operator's handbook for the specific telehandler model (and in some cases serial number), supplemented by the maintenance manual and technical information bulletins. Care should be taken to ensure that the information is up to date and relevant to the telehandler that is being used and maintained.

Manufacturer's manuals are not always complete and in the case where a particular task is not covered, the manufacturer or supplier must be contacted for information **BEFORE** the task is undertaken.

7.3 Overlaps and Shortfalls

The combination of a telehandler and an attachment may not have been supplied by one manufacturer. Frequently the attachment will have been supplied by a specialist manufacturer for retrofitting to an existing telehandler. Consequently the information covering the telehandler/attachment combination will have come from at least two sources and there is the danger that information may either overlap in a conflicting fashion or have gaps where a significant piece of information is missing from both sources. In this case the user must consult both manufacturers and suppliers to ensure that any shortfalls or discrepancies in information are rectified.

7.4 Instruction Labels

Most telehandlers manufacturers provide short form instructions on adhesive labels fitted to the telehandler's cab in a position where they can be clearly seen by the operator. Care

should be taken to ensure that the instruction labels are current and in good condition. Load charts such as those shown in **Figure 17** must be provided in the cab in easy view of the operator. These are often in the form of "flip over" charts giving the rated capacity at varying radii for loads carried on forks and a variety of attachments. Information formats vary from manufacturer to manufacturer and operators must be fully familiar with the information for the specific machine they are operating. The condition of all labels should be part of the daily checks and damaged or illegible labels replaced.

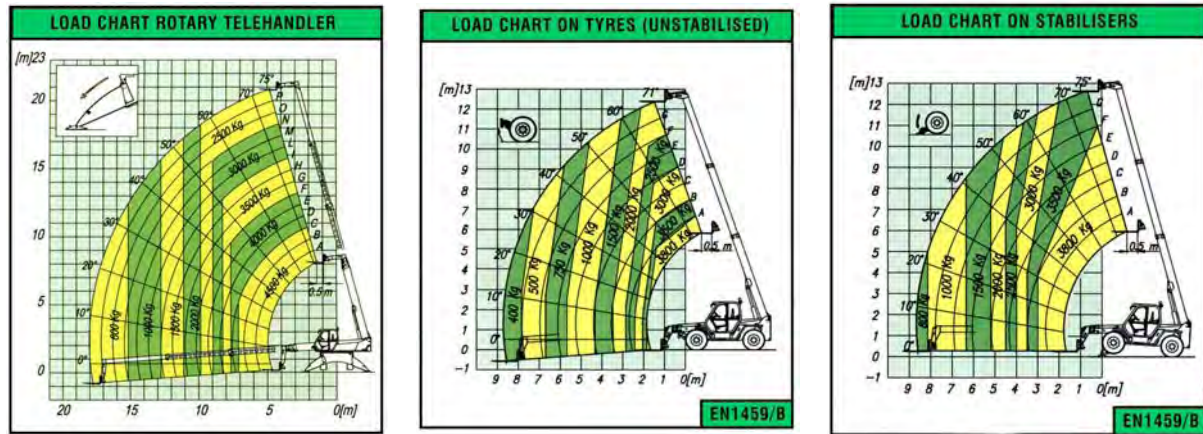


Figure 17 – Typical Load Charts

7.5 In-House Technical Information

Some telehandler owners will have their own technical information dealing with specific issues relating to the machines in their fleet. This can be a useful source of information for personnel but care should be taken to ensure that information is current, and that all out of date information has been withdrawn.

7.6 Machine History

The history of the repairs and maintenance carried out to a telehandler is often very helpful when trying to diagnose faults and repeated failures. Maintenance personnel should be encouraged to contact their manager or supervisor to request relevant machine history details when appropriate.

7.7 Information Formats

Paper information such as manuals and bulletins is rapidly being replaced by electronic formats such as CD-ROM and website downloads. This has the advantage that physical storage space is kept to a minimum and in the case of website downloads, information should be up to date at the point of access. However the use of electronic display devices, such as laptop computers, during maintenance is not always easy or practical. Information may therefore have to be printed out for use on site, in which case, care should be taken that for any subsequent use the data is still current and relevant.

7.8 Management of Information

Information should be managed effectively if it is to be of maximum benefit to those involved in the maintenance process. Outdated information can at best waste time and at worst may well affect safety. It is therefore essential that organisations carrying out maintenance on telehandlers ensure that they have robust systems and procedures to ensure that maintenance personnel are supplied with adequate information that is both up to date and accurate.

8.0 Planning, Supervisory and Operating Personnel

8.1 General Work Related Competence for Telehandler Operations

An often used definition of a competent person is “a person who has such practical and theoretical knowledge, experience and capacity as is necessary to safely carry out the task to which the term relates in each particular context”. A person who is competent to carry out one task will not necessarily be competent to carry out another with the same equipment. For example an operator who is competent to lift and place unit loads may not be competent to work with suspended loads.

Employers must ensure that their personnel are competent to work safely with telehandler operations. Employers must therefore assess the competence of their staff and, where necessary, provide training to achieve the level of competence required. The training needs to reflect the ability and level of responsibility of the individual, degree of complexity of the task and the risks involved.

Employers have a duty to both ensure the health of their employees and to ensure that any employee is fit to undertake the tasks they are required to carry out by ongoing assessment. Further guidance on assessing the medical fitness of construction plant operators is given in the Strategic Forum for Construction - Plant Safety Group *Medical Fitness to Operate Construction Plant - Good Practice Guide*.

8.2 Attributes and Selection

It is essential that planning, supervisory and operating personnel involved with the selection, and use of telehandlers have the necessary attributes to ensure that they will be able to carry out their duties both effectively and safely. The necessary attributes for planning, supervisory and operating personnel are set out below.

8.2.1 Competent Persons (planning) Attributes

Competent Persons carrying out planning of the use of telehandlers should know and understand:

- The principles of telehandler operation;
- What the telehandler can and cannot be used for;
- The hazards associated with telehandler operation including;
 - overturning
 - electrocution – contacting overhead power lines
 - colliding with pedestrians
 - crushes and trapping
 - falling loads
 - falling from height (when lifting people)
 - loss of control
 - insecure attachments
- The checks and inspections that are required on a daily and weekly basis;
- What can happen if the telehandler is poorly maintained;
- How to attach and detach an attachment in the prescribed manner;
- How to carry out checks to ensure the attachment has been correctly engaged;

- That all work must be carried out to a Method Statement and that the Method Statement is a description of the safe system of work developed from a risk assessment of the task to be undertaken;
- That accidents and incidents are mainly caused by incorrect planning and use;
- The increased risks when telehandlers are being operated in the vicinity of other people and ensure/maintain an exclusion zone wherever possible;
- Their responsibilities under the Health and Safety at Work Act.

Competent Persons should be able to:

- Carry out a risk assessment of the work to be carried out;
- Develop a safe system of work based on the outcomes of the risk assessment;
- Record the safe system of work in a Method Statement;
- Carry out an effective observation and know what to look for;
- Communicate effectively with supervisors, operators and line managers;
- Recognise bad practice and unsafe behaviour;
- Develop good working relationships;
- Raise health and safety standards;
- Display consistency and be persistent;
- Raise and address issues confidently and not be afraid of conflict.

8.2.2 Supervisor Attributes

Supervisors should know and understand:

- The principles of telehandler operation;
- What the telehandler can and cannot be used for;
- The hazards associated with telehandler operation including;
 - overturning
 - electrocution – contacting overhead power lines
 - colliding with pedestrians
 - crushes and trapping
 - falling loads
 - falling from height (when lifting people)
 - loss of control
 - insecure attachments
- The checks and inspections that are required on a daily and weekly basis;
- What can happen if the telehandler is poorly maintained;
- How to attach and detach an attachment in the prescribed manner;
- How to carry out checks to ensure the attachment has been correctly engaged;
- That work must be carried out to the Method Statement unless it is unsafe to do so in which case work must stop;
- That accidents and incidents are mainly caused by incorrect planning and use;

- The increased risks when telehandlers are being operated in the vicinity of other people and ensure/maintain an exclusion zone wherever possible;
- Their responsibilities under the Health and Safety at Work Act.

Supervisors should be able to:

- Carry out an effective observation and know what to look for;
- Communicate effectively with operators and line managers;
- Recognise bad practice and unsafe behaviour;
- Develop good working relationships;
- Raise health and safety standards;
- Display consistency and be persistent;
- Raise and address issues confidently and not be afraid of conflict.

8.2.3 Operator Attributes

Operators should know and understand:

- The principles of telehandler operation;
- What the telehandler can and cannot be used for;
- The hazards associated with telehandler operation including:
 - overturning
 - electrocution – contacting overhead power lines
 - colliding with pedestrians
 - crushes and trapping
 - falling loads
 - falling from height (when lifting people)
 - loss of control
 - insecure attachments
- What can happen if the telehandler is poorly maintained;
- They must physically leave the cab and check any attachment or quick-hitch before work commences or recommences following fitment;
- That they must organise their work in accordance with the Method Statement (generic or task specific), including coordination with others who may be affected, and follow the Method Statement unless it is unsafe to do so, in which case work must stop;
- That they must report all unsafe working practices and faults with their machine to their supervisor;
- That poor planning, operation, training, maintenance, supervision or working environment, (or a combination thereof), are major contributory factors to accidents/incidents;
- The increased risks when telehandlers are being operated in the vicinity of other people and ensure/maintain an exclusion zone wherever possible;
- The organisational procedures and requirements that they need to follow;
- The need for familiarisation training before operating new or unfamiliar types of telehandler and/or attachment;

- Their responsibilities under the Health and Safety at Work Act;
- Their limitations in organising their work or operating the machine in any given environment.

Operators should be able to:

- Communicate effectively with other workers and line managers;
- Interpret relevant information and follow given instructions;
- Organise the work activity or part of the work activity with others;
- Select and/or request resources and additional equipment required
- Carry out the checks and pre-use inspections that are required on a daily and/or weekly basis as required;
- Attach and detach an attachment in the prescribed manner;
- Carry out checks to ensure the attachment has been correctly engaged;
- Operate the telehandler according to manufacturer's requirements and safe working practices;
- Raise and address issues confidently and not be afraid of conflict or of stopping work when necessary to ensure safety.

8.3 **Assessment of Training Needs**

As part of personnel selection an assessment should be made of the extent of training which is needed for an individual, bearing in mind that this could be influenced by any previous training and experience. When supervisors or operators are recruited it is essential that employers check that their qualifications and experience relate to the job they are to do. Where the type of telehandler to be used is outside the employee's previous experience, additional training must be provided. In any event, some further job specific training is likely to be necessary.

Guidance on the assessment of training needs is given in HSE (L117) *Rider operator lift trucks. Operations training and safe use. Approved Code of Practice and Guidance*. Third Edition 2013.

Guidance on assessment of training needs for personnel carrying out maintenance and through examination is given in the *CPA Best Practice Guide on the Maintenance, Inspection and Thorough Examination of Mobile Cranes*

8.4 **Training**

Any gaps in the knowledge, skills and understanding of competent persons (planning), supervisors and operators must be remedied by suitable and sufficient training. This may be carried out in-house or by an external training provider. At the end of the training period the trainee must be assessed to ensure that the training objectives have been met.

Requirements for telehandler operator basic training are set out in HSE (L117) *Rider operator lift trucks. Operations training and safe use. Approved Code of Practice and Guidance*. Third Edition 2013.

Basic telehandler operator training does not include lifting or travelling with suspended loads. If these tasks are to be carried out the employer must ensure that the operator is suitably trained and assessed as competent. As the majority of basic training courses only deal with fork-mounted unit loads, only training providers who can demonstrate having appropriate expertise of suspended loads and lifting operations with telehandlers or mobile cranes should be selected, with learning programmes based on skill standards set by the requisite industry. Any training should include an appropriate element of slinging and signalling.

8.5 Assessment

Employers should ensure that personnel are assessed against occupational standards to establish that they are competent to carry out the tasks they are required to undertake. This applies equally to personnel completing training and those experienced workers who have been recently recruited.

Assessment should contain both practical elements to demonstrate the skills and standards achieved and the answering of questions to demonstrate relevant underpinning knowledge. The assessment should be carried out by occupationally competent and authorised assessors.

8.6 Applying Learnt Skills in the Workplace

On the majority of telehandler training programmes, for safety reasons, candidates do not operate the machine at its full potential, particularly in terms of placing heavy loads at full operating height and reach - most schemes only specify activities of up to 75% of full operating height. Consequently employers should ensure that newly trained operators are limited to activities and/or working areas encountered within the training programme until they become confident in operating to the parameters experienced within training. When being required to place heavy loads at full reach and/or height, appropriate supervision must be applied to ensure the operator can safely carry out the task.

Telehandler training courses for the construction sector generally concentrate on activities using the forks, and do not cover the use of attachments, particularly for lifting operations where a hook is used. Employers and supervisors should be aware of skills attained during the training course and provide further specific training as required. Manufacturers and importers of attachments, as well as external training providers, who offer telehandler training, can be approached for advice on relevant training requirements.

For newly qualified operators, employers and supervisors should:

1. Specify any particular work requirements to nominated training providers prior to the commencement of training;
2. Establish the type and the content of training and/ or assessment programmes undertaken by the operator;
3. Identify differences in learnt skills and the work site utilising training body learning outcomes and/or training material;
4. Initially limit the operator to activities and/or working areas encountered within the training programme;
5. Provide time for the operator to study the machine's operating notes/handbook and other related data;
6. Provide time and facilities for the operator to practice with the new machine type;
7. Monitor work undertaken to gauge operator confidence and ability;
8. Introduce new activities and/or working areas under supervision, especially if lifting loads to heights higher than previously encountered, or working within hazardous or busy areas;
9. Carry out periodic assessments and ascertain when new or high risk activities can be undertaken safely;
10. Provide specific additional training for such activities as lifting operations using a hook and other types of attachment.

NOTE: Learning outcomes and a training syllabus for telehandlers is publically available from The Construction Plant Competence Scheme (CPCS). Content is based on national occupation standards and can be downloaded at www/cskills.org/cpcs. Other training organisations may also provide training content.

8.7 Further guidance

Further guidance on training is given in:

- HSE (L117) *Rider operator lift trucks. Operations training and safe use. Approved Code of Practice and Guidance*. Third Edition 2013. ISBN 978 0 7176 6441 2
- **Annex K**

9.0 Familiarisation

Telehandlers and attachments come in a variety of shapes and sizes with significant differences in operating controls and characteristics. It is therefore essential that operators and supervisors are given adequate familiarisation on an unfamiliar type or model of telehandler and/or attachment before they begin operations. **The employer of the telehandler operator is responsible for ensuring that familiarisation is provided.**

Familiarisation may be carried out by:-

- an experienced person employed by the telehandler owner or;
- a representative of the telehandler or attachment manufacturer or supplier or;
- any other competent and authorised person.

The person giving familiarisation should have been assessed by a suitably trained person to ensure that they are competent to do so.

All familiarisation should be recorded by both the provider and the employer of the operator.

Familiarisation for the operator of a telehandler should include the following:-

- Layout and use of controls;
- Identification of specific areas of risk whilst using specific telehandler and/or attachment;
- Machine specific safe working procedures for connection and disconnection of attachments;
- Machine specific visual inspections of the telehandler or attachment;
- Machine specific "pre start checks" and basic maintenance requirements as recommended by the manufacturer.

An example check list for carrying out familiarisation is shown in **Annex E**

9.1 *Further guidance*

Further guidance on familiarisation is given in:

- HSE (L117) *Rider operator lift trucks. Operations training and safe use. Approved Code of Practice and Guidance*. Third Edition 2013. ISBN ISBN 978 0 7176 6441 2
- **Annex K**

10.0 Safe Use of Telehandlers

10.1 General

The safe operation of a telehandler starts with site management. The decision to buy or provide a specific telehandler may well have been made as a corporate decision, or the equipment hired in, but it is the site management who are ultimately responsible for it being put to into use. The site management must therefore ensure that the operation to be carried out has been effectively planned (See **Section 3.0**) taking into consideration all the safety issues which can arise, even where these are as a result of predictable misuse. The following points highlight some of the potential issues:-

- When there is a telehandler accident the operator is inevitably involved. It is therefore essential that they are given sufficient training and information to enable them to know how to operate and check the telehandler. The operator also needs to be authorised, preferably in writing;
- Only those people who are authorised to use a telehandler and are familiarised with that machine should actually use it. Consequently there is a requirement for robust arrangements to ensure that access to telehandlers is controlled and monitored. This may be means such as recorded key issue or the fitment of immobilisers;
- As all equipment on a telehandler is subject to wear and deterioration and can suffer damage, it is important that the telehandler and any attachments are adequately inspected and maintained to avoid increased risk of failure of the machine or any attachment;
- Fatalities involving telehandlers have been associated with travelling or manoeuvring, where a person has been struck or crushed by the telehandler, or with lifting operations where persons have been struck by a falling load. Accidents also occur when telehandlers are used to manipulate or support loads in confined areas whilst others are either working on or supporting the load. Persons, including the operator, have also been fatally injured by overturning machine both whilst travelling and during lifting operations (See **10.11**). The site management needs to make sure no-one is required to be beneath the forks or attachment at any time. They also need to ensure that activities such as attachment changing are segregated, preferably in clearly defined exclusion zones.

10.2 Supervision

To ensure that unsafe acts are minimised it is essential that supervision is effective. The supervisor therefore needs to:

- Check that the Method Statement is being worked to;
- Check that the method is as safe as possible;
- Check that people are kept clear of hazardous areas;
- Check that telehandlers are being used correctly;
- Check that tasks are only carried out by authorised people;
- Challenge unsafe practices;
- Record and arrange for the repair of any damage they see or have reported to them;
- Have the authority and ability to stop a task if they feel it is unsafe;
- Report and record unsafe behaviour (including near misses).

10.3 *Visibility*

10.3.1 Visibility of Persons in the Vicinity of the Telehandler

Restricted visibility when the boom is raised or when large loads are carried, plus poor segregation have been identified as a major cause of accidents involving pedestrians and telehandlers. Telehandlers are often fitted with aids to improve visibility and the operator's awareness of people in the vicinity of the telehandler. These aids should be in good working order and properly adjusted. It is the operator's responsibility to check the condition of all secondary aids to visibility and **NOT TO USE THE MACHINE** if they are not present or not working correctly. It is the Supervisor's responsibility to fully support the operator in this action.

Some parts of a telehandler work cycle present particular challenges. A suspended load, for example, will clearly block some forward view, but the raised boom may also obscure the view to the side. If a telehandler is to lift suspended loads on site, the physical dimensions of the loads and their effect upon visibility must form part of the Risk Assessment.

If a telehandler is used to load or unload a truck, the partially raised boom will obstruct view to the forward offside and may block the wing mirror giving visibility to the rear offside. The safest way of using a telehandler to load/offload is to keep the machine stationary and use the telescopic facility of the boom, rather than using the wheels. The driver of the truck should remain in a designated safe location for such operations.

Whilst the Principal Contractor has the primary responsibility to ensure adequate segregation and the Supervisor must ensure that it is enforced, it remains the operator's responsibility to look around and check for the absence of pedestrians before moving and whilst manoeuvring and travelling. If the operator cannot see clearly, they should seek assistance or leave the cab to look around to confirm it is safe to continue the procedure.

Advice on the selection of visibility aids is given in **4.6**.

NOTE: *The offside is the right hand side of the telehandler when facing forward*

10.3.2 Visibility of the Load Being Lifted

The vertical reach of telehandlers is increasing all the time and at the time of writing is up to 22m. As a consequence, the operator will not always be able to keep the load in full view and may have difficulty in judging the distance of the load from the landing/pick-up point or any obstructions. This issue should be taken into account when planning telehandler operations and consideration given to whether or not a telehandler is the most suitable machine for placing loads at great heights.

Where it is clear that the operator is not able to keep the load in full view or will have difficulty in judging the distance of the load from the landing/pick-up point or any obstructions, a signaller should be provided.

If a signaller is used, consideration should be given to the means of signalling i.e. hand signals or portable radio.

Some telehandlers allow the use of remote controls for boom functions which may mean that the operator can keep the load in view at all times. There are however several potential disadvantages that must be taken into account in planning the lifting operations:-

- The telehandler operator may well be at risk of tripping and falling when trying to move around the site over uneven ground whilst concentrating on controlling the telehandler. Pedestrian operated telehandlers should only be controlled whilst the operator is stationary;
- The operator may not have a good view of the load and any obstructions, consequently the operator must always have the telehandler boom and load in sight at all times, unless working under the direction of a signaller who has a clear view of the load and load path.

10.4 Site Conditions

Employers have legal obligations to plan and control the operation of telehandlers on site. Operators and contractors need to be made aware of site hazards which could affect the safe use of telehandlers and of site rules which limit where they may be used.

Particular attention should be paid to:

10.4.1 Traffic Management

Sites should be arranged so that wherever possible pedestrians and vehicles are adequately separated by establishing:-

- Pedestrian only areas from which vehicles are completely excluded;
- Safe designated pedestrian routes to work locations;
- Vehicle only areas, especially where space is limited or traffic is heavy;
- Safe vehicle routes around the site.

When planning the movement of vehicles on site the advice given in HSG 144 should be followed.

NOTE: *On some house building sites the site is organised so that telehandlers deliver material to the front of the houses and pedestrians enter the properties via the rear. Drives are laid early in the planning process to provide good lifting surfaces.*

10.4.2 Ground Conditions

Adequate assessment of ground conditions is essential to the safe use of telehandlers. Detailed guidance is given in the Strategic Forum for Construction Good Practice Guide on *Ground Conditions for Construction Plant* which can be downloaded from www.cpa.uk.net

10.4.3 Site Housekeeping

Areas where a telehandler may be used should be kept free of rubbish such as bricks, pallets, timber, etc. Such debris can significantly affect the safe operation of a telehandler.

10.4.4 Roads, Access Ways and Entrances

Consolidated roads, free from potholes, should be provided at the earliest possible stage of site development to minimise the need to travel on uneven or unstable terrain. Where off road operation is unavoidable, operators should be made aware of hazards which could contribute to overturning risks or other factors that can affect the safe use of a telehandler. These include loss of steering control/direction, loss of traction and braking – even on level surfaces, hidden obstacles, visibility (mud coating mirrors) and loads fouling the ground.

10.4.5 Operating on Public Roads

When operating a telehandler on Public Roads the following rules should be followed:

- The operator must hold a driving licence of an appropriate category. This is currently a full Category B (car) licence.

NOTE: *The following age restrictions apply - vehicles with a maximum authorised mass of more than 3,5 tonnes but less than 7.5 tonnes may be driven from the age of 18, vehicles which weigh more than 7.5 tonnes can be driven from the age of 21.*

NOTE: *Additional information is given in the DVLA Information Leaflet INF52 - Information for drivers of large vehicles.*

- The telehandler must be registered in accordance with the Vehicle Excise and Registration Act, display a number plate and be appropriately insured;
- Telehandlers should be driven in compliance with the provisions of the Highway Code;
- Telehandlers should be equipped with appropriate lighting;

- Telehandlers should be equipped with a flashing amber beacon when travelling at less than 25 mph on an unrestricted dual carriageway;
- Independent wheel braking systems, if fitted, must be linked;
- Telehandlers fitted with all wheel steering systems should have the rear wheels locked in line with the chassis;
- Four wheel drive systems should normally be disengaged, as should differential locks;
- Before travelling on the Public Road, fork arms should be either removed or folded back and secured. If this is not possible it is essential that marker plates are fitted to the fork arms or load handling attachment to warn oncoming traffic. These marker plates must be illuminated during the hours of darkness. Any forward projection must not exceed 2.0m.

10.4.6 Operating as a "Works Truck"

Under certain circumstances telehandlers are permitted to travel for short distances on a Public Road as a "Works Truck" as for example *"in delivering goods from or to such premises to or from a vehicle on a road in the immediate neighbourhood, or in passing from one part of any such premises to another or to other private premises in the immediate neighbourhood or in connection with road works while at or in the immediate neighbourhood of the site of such works"*. Further advice on Works Trucks is given in the Department for Transport Information Sheet - *Works Trucks: A brief guide*.

The operator must hold a driving licence of an appropriate category. This is currently a full Category B (car) licence.

NOTE: *The following age restrictions apply - vehicles with a maximum authorised mass of more than 3,5 tonnes but less than 7.5 tonnes may be driven from the age of 18, vehicles which weigh more than 7.5 tonnes can be driven from the age of 21.*

NOTE: *Additional information is given in the DVLA Information Leaflet INF52 - Information for drivers of large vehicles.*

10.5 *Travelling on Inclines, Slopes and Gradients*

The telehandler must only operate on slopes/gradients at a speed designated by the site, taking into account ground conditions, to ensure that the operator has full control at all times.

Traffic routes should be on consolidated ground or may be temporary roadways giving equivalent safety. The slopes/gradients given in **Table 2** are to assist planners in the preparation of traffic routes. They are the maximum gradients on which a telehandler can travel while being operated when crossing sites **in the standard travelling mode and at walking speed**. The standard travelling mode of a telehandler is with the boom retracted, the load/fork arms lowered to provide a clearance of 300mm and not more than 500mm (See manufacturer's instruction manual) from the ground to the upper faces of the fork arms, and the fork arms fully tilted rearwards.

Operation on any traffic route with a greater slope or in a travelling mode different to the above should be subject to a site specific risk assessment.

NOTE: *Consolidated ground is firm ground capable of accepting the mass of a loaded Telehandler without significant deformation.*

NOTE: *The maximum slopes given in Table 2 must not be used in combination as this will give a greater compound slope.*

| <i>Slope</i> | <i>%</i> | <i>Gradient</i> | <i>Angle</i> |
|-----------------------|----------|-----------------|--------------|
| Maximum down slope | 15% | 1 in 6.66 | 8.5° |
| Maximum up slope | | | |
| Maximum lateral slope | | | |

Table 2 - Maximum Slopes for Planning Purposes (unit load only)

A telehandler can generally obtain sufficient wheel grip (especially when laden) to climb slopes/gradients steeper than those they can safely be driven down. However, a telehandler capable of being driven up an incline may not always be controlled safely on that incline.

This is especially so if:

- The laden/unladen state is changed;
- The recommended driving direction is not adopted;
- The telehandler has not been properly maintained;
- The telehandler is driven too fast and/or is subjected to abrupt changes of speed or direction;
- The gradient that was firm, dry and smooth has become a hazardous wet uneven slippery slope when the weather changes;
- The telehandler has traction and braking facilities on one axle only or is four wheel drive but is operated in the two wheel drive mode.

10.5.1 Travelling on Steep Slopes

If the telehandler is required to travel on greater gradients than those quoted as maximum for planning purposes or to travel in a non-standard travelling mode (i.e. with the boom raised or extended in any way) (See 4.3) then risk assessment will be required by a competent person who has access to the telehandler manufacturer's information for use and understands the risks involved. The risk assessment should take account of any dynamic effects created by the load in its travelling position, ground conditions and any necessary speed limits, e.g. walking speed. Operators who have been trained in the handling of dynamic and raised loads and who are familiar with the telehandler manufacturer's information for use should be capable of carrying out this risk assessment.

Should steep slopes and gradients exist on site and it is necessary to negotiate them with a telehandler there are precautions which should be taken and operating techniques adopted to provide adequate safety:-

- As part of the job planning process, carefully choose routes or prepare the terrain to avoid very steep slopes and gradients and slippery or loose surfaces;
- Adopt the correct driving direction and travelling position for negotiating a slope or gradient, i.e. when a load is carried, the load should face uphill. When no load is carried the fork arms should face downhill;
- Always avoid turning on or traversing a slope or gradient (unless the machine is specifically equipped for this manoeuvre) and always descend straight down the gentlest gradient of a slope, instead of driving diagonally across it;
- Never attempt to stack/de-stack a load on a slope or gradient;
- Avoid sharp turns when travelling on a slope or gradient;
- There is always a risk of sideways overturn or rear overturn when moving with a raised boom, even in a unladen condition.

Some manufacturers provide a load chart giving the limits of load, speed and slopes when travelling with a unit load on forks (See **Figure 18**)

10.5.2 Parking on Steep Slopes

It should be recognised that telehandlers must never be parked on a steep slope or gradient. If, in an emergency there is no alternative and a telehandler has to be parked on a slope or gradient, the wheels must be chocked and load or forks left in the fully lowered or grounded position. When approaching an incline the correct driving direction and travelling position must be adopted.

The minimum parking brake performance of 15% (1 in 6.6 gradient, 8.5°) is based on a test carried out on a dry clean concrete or consolidated asphalt surface. If a truck is operated on slopes and gradients which are steeper than this or with an inferior surface, the parking brake may not be able to hold the telehandler stationary or the wheels may slip on the surface.

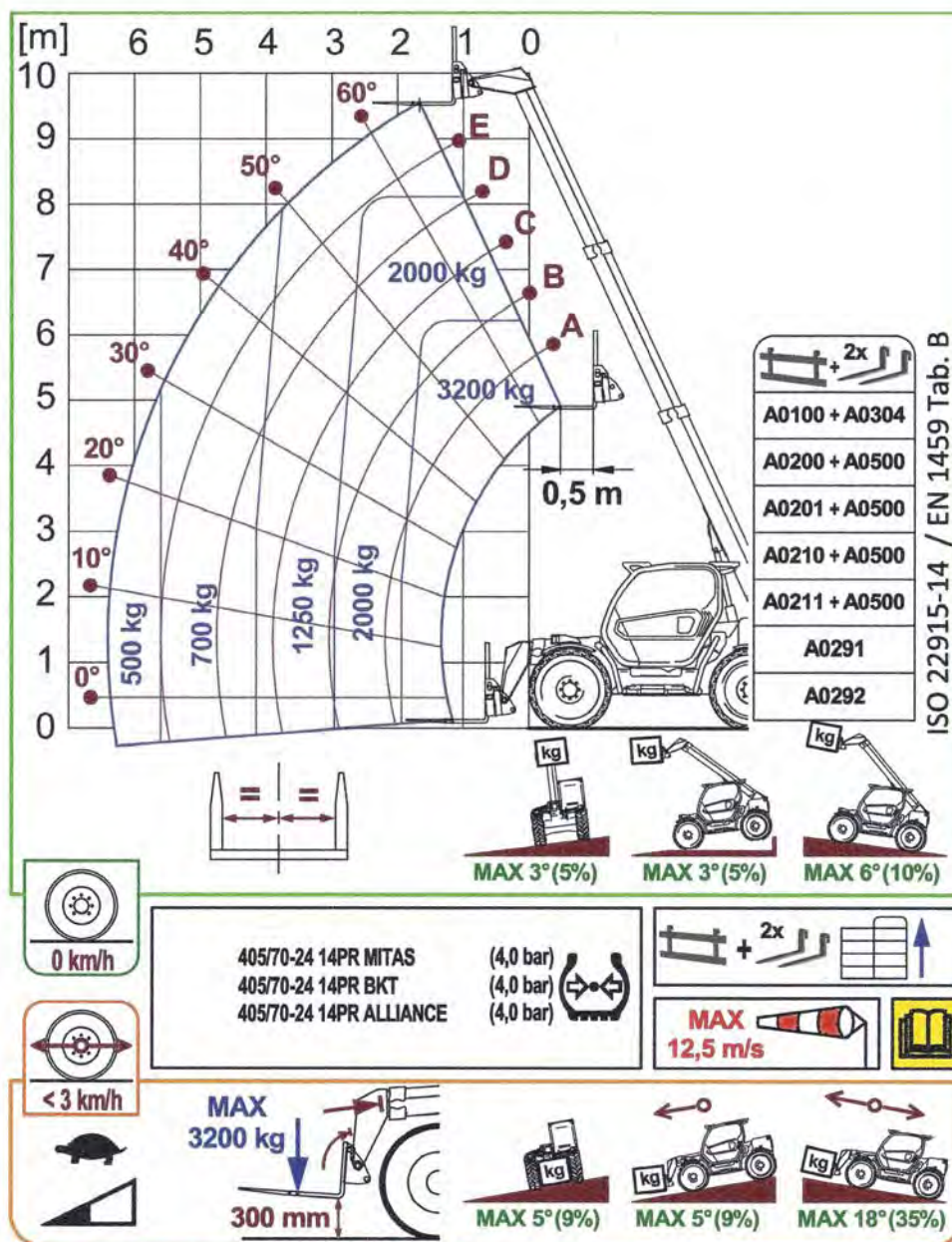


Figure 18 - Example of a Load Chart Giving Travelling Limits For Loads on Forks

10.6 Weight of the Load to be Lifted

The operator of a telehandler should always be provided with the accurate weight of the load to be lifted. This can be ascertained from:-

- The manufacturer's data plate;
- Markings on the load;
- Manufacturer's data sheets or instructions;
- Drawings;
- Shipping documents;
- Weighing the load.

Where this is not possible the load should be estimated by calculating the volume and using the information given in **Table 3**. Such calculations should be undertaken with caution as the load may not be a regular shape, it may be made from several materials or it may be hollow and contain other materials which may move when lifted.

| Material | Weight - kg/m³ | Weight - lb/ft³ |
|---------------------|----------------------------------|-----------------------------------|
| Aluminium | 2 700 | 170 |
| Brass | 8 500 | 530 |
| Brick | 2 100 | 130 |
| Broken Glass | 1 290 –1 940 | 80 –121 |
| Coal | 1 450 | 90 |
| Concrete | 2 400 | 150 |
| Copper | 8 800 | 550 |
| Earth | 1 600 | 100 |
| Gravel (loose, dry) | 1 522 | 95 |
| Iron and Steel | 7 700 | 480 |
| Lead | 11 200 | 700 |
| Oil | 800 | 50 |
| Paper | 1 120 | 70 |
| Sand (dry) | 1 602 | 100 |
| Sand (wet) | 1 922 | 120 |
| Water | 1 000 | 62 |
| Wood (hard) | 500 - 1000 | 31 - 62 |
| Wood (soft) | 350 - 850 | 22 - 53 |

NOTE 1 In some cases the values given are an average and the actual weight could vary according to the particular composition/water content, etc.

NOTE 2 All values have been rounded for convenience of use.

NOTE 3 When dealing with a hollow structure or container, check whether or not it contains anything and whether or not any such contents are liable to move.

NOTE 4 When assessing the load, ensure that the weight of the lifting accessories and/or container used for handling the material is included.

Table 3 - Weights of Materials

10.7 Loading/Unloading

10.7.1 Stability of the Telehandler

The stability of telehandlers and their loads are affected by the conditions of the ground on which they must stand when loading or unloading.

The area selected by the planners as a static loading area must be large enough to accommodate all the wheels of the telehandler and stabilisers or outriggers when fitted. The area should be of consolidated firm ground or surfaces giving similar levels of safety. It should be capable of accepting the mass of the loaded telehandler without significant deformation and be substantially level in both planes to ensure lateral and longitudinal stability when lifting operations are being carried out. Substantially level ground is defined as ground with a gradient of ideally 1% (1 in 100 gradient, 0.6°) but not more than the standard drainage slope of 2.5% (1 in 40 gradient, 1.4°).

When determining the area to be used for the unloading of lorries and the storage of materials, care should be taken to ensure the ground is consolidated and substantially level. The area provided must be large enough that the telehandler will not need to make tight turns with an elevated load.

A telehandler may be used for loading/unloading operations in areas which are not substantially level if they are used within their design capabilities. Where the achievement of a substantially level loading/unloading area is not reasonably practicable a risk assessment will be necessary.

NOTE: A telehandler fitted with level indicators can indicate where a machine can be used for loading/unloading on lateral (side) slopes. Under these circumstances the operator can carry out the risk assessment by referring to the level indicator before raising the telehandler boom above its standard travelling mode position.

NOTE: When a telehandler is not fitted with a level indicator the risk assessment should be carried out by a person who has access to the telehandler manufacturer's information and who has the necessary competence to specify the limiting boom height and extension figures which should not be exceeded.

10.7.2 Stability of the Load

When using a telehandler for loading or unloading a vehicle or stack, care must be taken to ensure that the load on the vehicle or stack is stable. Unless the correct sequence of loading or unloading is followed there is risk of the load becoming unstable with the potential for injury to persons in the vicinity. Loading should always be carried out with unloading in mind. Vehicles should always be loaded from the front or as directed by the vehicle driver, working from side to side and distributing the load evenly. Unloading should be carried out by reversing this sequence. When loading uncoupled articulated trailers, the first part of the load should be placed over the rear axle before loading from the front of the trailer.

Care should also be taken to ensure that the part of the load on the vehicle or stack is not dislodged by contact with the telehandler carriage, forks or other attachments. During loading and unloading measures such as exclusion zones or barriers, should be put in place to ensure that personnel are kept clear of falling loads.

Before lifting a load it should be assessed to ensure that it will be stable and secure during lifting. The forks should always be evenly spaced on either side of the centre of gravity of the load. Long or irregularly shaped loads may have a centre of gravity which is close to the edges of the forks and may well result in the load falling during lifting. Long loads can be easier to control where a wider fork carriage is used (See **Figure 19**) and personnel should be kept clear of the load. They should **NOT** be asked to steady the load!

The practice of "undercutting" where the load is lifted on the ends of the forks, rather than back at the heel, closest to the fork carriage, is often used when the load is to be placed adjacent to a wall or another item. This practice will reduce the rated capacity of the telehandler and may affect the stability of the load as its centre of gravity may be near or beyond the end of the forks.



Figure 19 - Use of Wider Fork Carriage

10.7.3 Loading Towers and Scaffolds

When lifting loads up to scaffolding, the load should always be landed on the scaffolding or a loading tower before unloading to avoid spillage of the load or injury to personnel on the scaffolding. The scaffolding or designed loading tower should be of suitable load bearing capacity.

Ensure that the telehandler frame is level so that the forks are parallel to the surface of the scaffolding or loading tower. People should not be on the loading platform when material is being placed or removed

10.7.4 Overhead Power Lines

Where a telehandler is in the vicinity of overhead power lines an exclusion zone should be established around the line and any other equipment that may be fitted to the pole or pylon. The minimum extent of these zones varies according to the voltage of the line, as follows:

- low-voltage line – 1 m;
- 11 kV and 33 kV lines (pole mounted) – 3 m;
- 132 kV line (tower mounted) – 6 m;
- 275 kV and 400 kV lines (tower mounted) – 7 m;

Figures 20 & 21 show the minimum exclusion zone distances for overhead power lines supported on poles and suspended from steel towers.

In case of doubt the electricity supply authority should be consulted. Further advice is given in HSE Publication GS6 - *Avoidance of Danger from Overhead Electric Power Lines 2013*, HSE Books.

10.7.5 Other Issues

Where necessary a competent banksman should be provided to guide the operator by means of the recognised hand signals. Details of hand signals are given in BS 7121-1:2006, *Code of practice for safe use of cranes — Part 1: General*.

Ensure all bystanders and/or workers are clear of the area where the elevated load could tip or fall.

Operators should never attempt to get out of the cab whilst the machine is in motion.

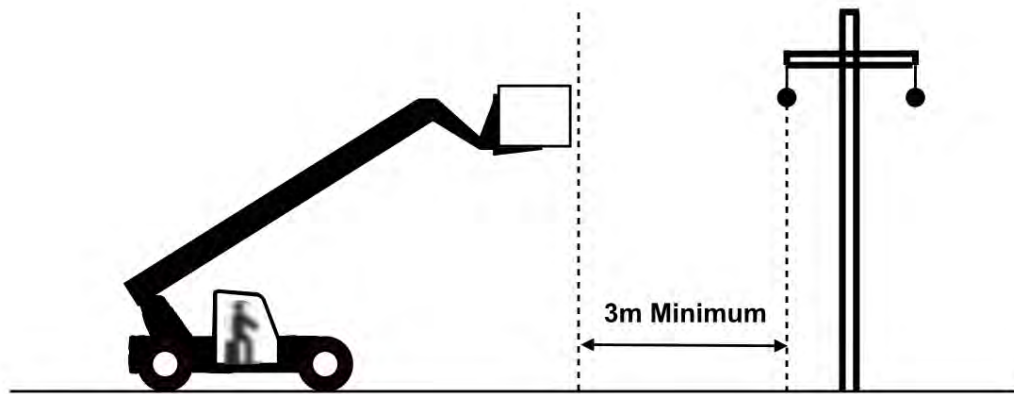


Figure 20 - Minimum Exclusion Zone Distance from Pole Mounted Power Lines up to 33kV

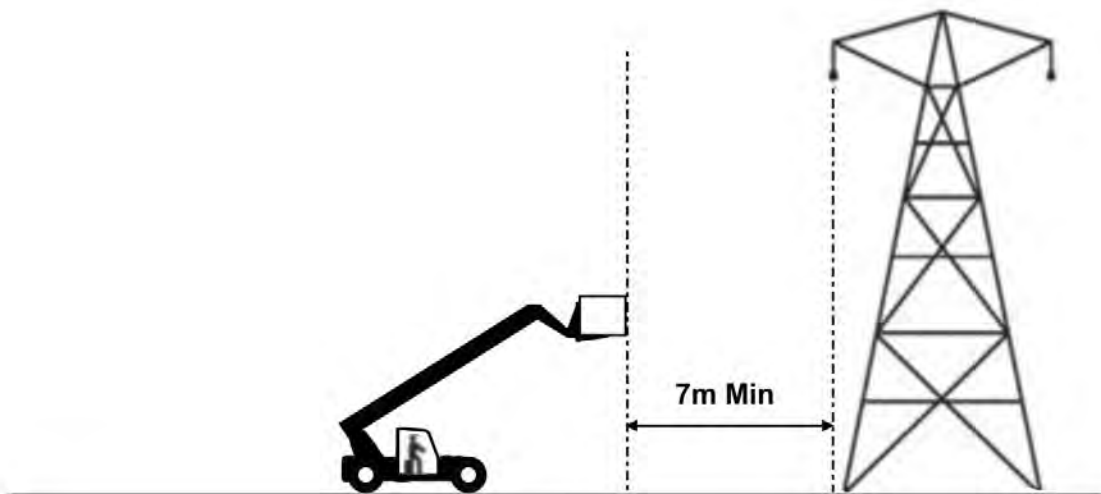


Figure 21 - Minimum Exclusion Zone Distance from Tower Mounted Power Lines above 33kV

10.8 *Fitting of Attachments*

When fitting attachments to a telehandler the following points should be observed:-

- The attachment should be compatible, approved for use with the telehandler and provided with machine specific load charts;
- Particular care should be taken when using fork extensions as these will tend to move the load centre out from the fork carriage, altering the rated capacity of the machine and increasing the load on the fork carriage levelling system;
- The operator should be familiar with the attachment process for the specific make and model of telehandler;
- Fitting and removal of attachments should be carried out in a suitable safe area, from which other personnel are excluded;
- Care should be taken to ensure that hydraulic hoses are depressurised before they are disconnected;
- Before raising the telehandler boom and attachment the operator should ensure that any locking device (this will depend on the type and make of quick hitch) is in place and secure. This will generally involve the operator getting out of the cab,

after applying the brake, to physically ensure that the quick hitch is securely locked before starting work with a newly attached attachment.

10.9 *Misuse of Attachments*

It is essential that attachments fitted to telehandlers are **ONLY** used for purposes for which they have been designed.

An example of misuse is where a bucket fitted to a telehandler was used to drive in a fence post. The fencepost failed and the bucket released from its attachment point, crushed the person guiding the post, who subsequently died.

In the seven years prior to 2014 there were five fatalities where a telehandler bucket has become unintentionally detached from the attachment point, quick hitch or quick coupler.

10.10 *Use of Lifting Hooks or Crane Jibs for Suspended Loads*

Many telehandlers can be fitted with a lifting hook or crane jib for lifting suspended loads (See **Figures 23, 24 & 25**), however before carrying out lifting of suspended loads the operation should be reviewed to ensure that a telehandler is the most appropriate piece of lifting equipment for the task.

The lifting of suspended loads should always be carried out with a telehandler that is fitted with a suitable lifting hook or attachment. If this can be shown to be not reasonably practicable, it is essential that any other method is justified by a robust risk assessment, taking account of the hierarchy of control.

Any lifting hook or crane jib should be marked with a Rated Capacity (Safe Working Load) which must not be exceeded; the Rated Capacity of the hook may be less than the Rated Capacity of the telehandler or vice versa. It is important that the lower of the two values is used to determine the Rated Capacity of the combination. When working out the total weight of the load to be lifted the weight of the lifting hook or crane jib and any lifting accessories (shackles, slings etc.) must be taken into account. Telehandler manufacturers supplying lifting hooks and crane jibs for their own machines will provide attachment/machine combination specific load charts where suspended loads are being lifted and carried. This is intended to reduce the risk of overload or overturn due to displacement of the load through travelling, boom movements or the effect of wind. Extreme care should be taken when travelling with a suspended load as any movement of the load will alter the load radius and may affect the stability of the telehandler (See **4.5** and **Figure 22**).

Suspended loads should never be attached to chains or slings over the forks or carriage. Only a properly designed, tested, thoroughly examined and fitted attachment should be used to carry a suspended load. Insecurely attached lifting accessories are a frequent cause of accidents, including fatalities, when lifting and travelling with suspended loads.

Without the appropriate load chart for the specific attachment a telehandler should not be used for lifting suspended loads. Travelling with suspended loads should only be undertaken in accordance with the manufacturer's instructions and where necessary, consultation with the manufacturer.



Sling Slipped over Fork



Carriage Mounted Lifting Point



Fork Mounted Lifting Point

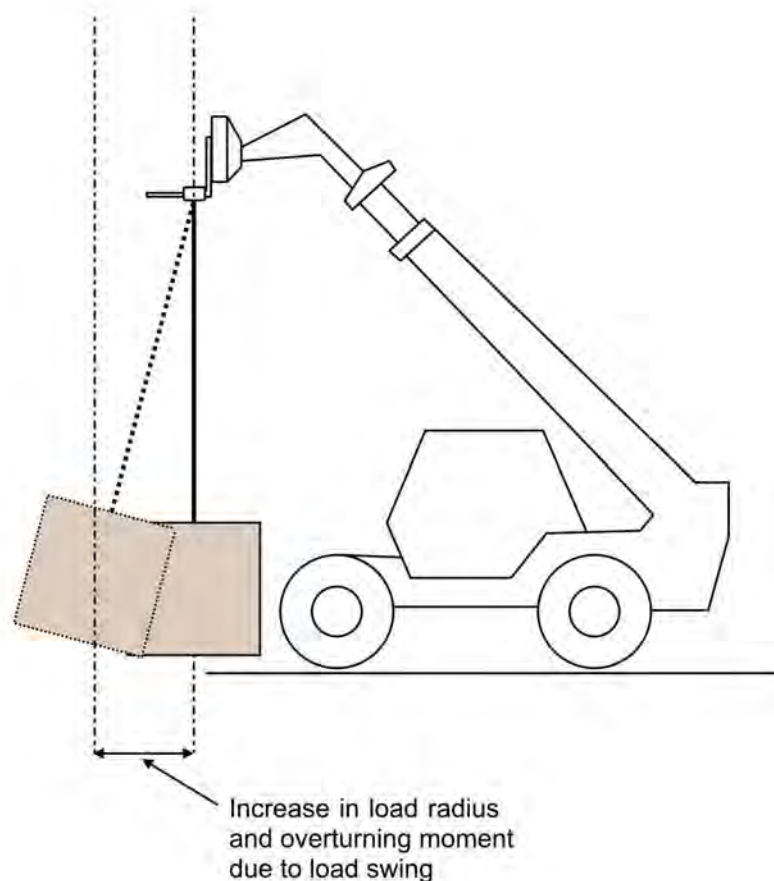


Figure 22 - Effect of suspended load swing when travelling

Regulation 8 of the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) requires that lifting operations are:-

- *"properly planned by a competent person;*
- *appropriately supervised; and*
- *carried out in a safe manner."*

The planning of lifting operations with suspended loads on telehandlers should be planned in accordance with the requirements of BS 7121-1:2006, *Code of practice for the safe use of cranes - Part 1:General* and BS 7121-3:2000, *Code of practice for the safe use of cranes - Part 3: Mobile cranes*. Both documents are cited in the HSE's guidance to LOLER.

Annex B provides details of these requirements.

Lifting of suspended loads with a telehandler may well require additional personnel such as Crane Supervisors and Slinger/Signallers.

Basic telehandler operator training does not include the lifting of suspended loads, the lifting of persons or the use of other attachments. If such tasks are to be carried out the employer must ensure that the operator is suitably trained and assessed as competent. This can normally be carried out by a local training provider.

Further detailed guidance on the lifting of suspended loads is given in:-

- HSE Guidance Document L113 - *Safe use of lifting equipment*
- **Annex G**



Figure 23 - Jib



Figure 24 - Fork Mounted Lifting Hook



Figure 25 - Jib With Integral Winch

10.11 Use of Telehandlers for the Lifting of Persons

Telehandlers are primarily intended for lifting materials and not people. However, they can be used with working platforms to allow people to work at height. It is generally accepted that, in conjunction with a telehandler, an integrated working platform (See **Figure 26**) provides a higher level of safety than a non-integrated type (See **Figure 27**) and should be used for the lifting of persons on construction sites, where a Mobile Elevating Work Platform (MEWP) is not available.

Non-integrated platform attachments must not be used for planned tasks on construction sites.

The design of telehandlers is covered by European standards BS EN 1459 whilst the design of MEWPs for lifting people is covered by BS EN 280. Consequently, telehandler/integrated working platform combinations that comply with both the industrial truck and MEWP Harmonised Standards (or equivalent), give a significantly higher level of safety than non-integrated platforms.

Further detailed guidance on the use of telehandlers for the lifting of persons is given in:-

- BS 8460:2005, *Code of practice for the safe use of MEWPs*
- HSE Construction Information Sheet No. 58 - *The selection and management of mobile elevating work platforms*
- Strategic Forum for Construction Plant Safety Group - *Best Practice Guide for MEWPs - Avoiding Trapping/Crushing Injuries to People in the Platform*
- **Annex K**



Figure 26 - Integrated Work Platform



Figure 27 - Non-integrated Work Platform

10.12 Wearing of Seatbelts

Telehandler cabs are provided with seat belts to restrain the operator and reduce the risk of serious injury in the event of the machine overturning.

A survey of reported telehandler accidents in the UK carried out by the Health and Safety Executive shows that in seven years there have been at least 72 lateral overturns of telehandlers. In three cases the operator was killed by being ejected from the cab and crushed; in a further two cases the operator was ejected from the cab and received serious crushing injuries. Had three of these operators been wearing their seat belts they would in all probability have lived.

It is vital that operators of telehandlers wear the seat belt provided at all times – it could save their lives!

10.13 *Leaving the Telehandler*

When leaving the cab of the telehandler for any reason, the operator should switch off the engine and remove the key.

After operations have been completed, the telehandler should be stored in a safe place, on level ground where possible, with the handbrake engaged, the boom and fork arms / handling attachment lowered to the ground, the key removed and the cab locked. The key should be stored in safe place.

11.0 Review and Monitoring of the Safe Use of Telehandlers

11.1 General

The review and monitoring of the safe use of telehandlers is an ongoing process and involves the cooperation of a number of parties.

11.2 Management systems (directly supervising organisation)

The organisation directly supervising the works involving the use of the telehandler may be a sub-contractor, contractor or principal contractor dependent on the contractual arrangements. They must have in place suitable management processes for the planning and implementing of safe systems of work when using telehandlers. These processes must include details for;

- The selection of telehandlers;
- Inspection and maintenance of telehandlers;
- The development of safe systems of work and communication;
- The appointment of trained competent persons as operators, supervisors and other relevant operatives.

The organisation must review these management processes to ensure their completeness, effectiveness and the implementation by staff /employees at all levels, including management (onsite or off site) and supervision.

It is suggested that the organisation's management systems are reviewed at least annually, or before, if significant incidents occur, and that implementation at site level is monitored via site visits / reviews at maximum monthly intervals. Any necessary corrective actions should be recorded and closed out.

11.3 Site management (directly supervising organisation)

The site management (based on or off site) of the organisation directly supervising the works must ensure that;

- The works are adequately planned and co-ordinated;
- Plant coming onto site is entered into a register to enable the checking and monitoring to be undertaken;
- The telehandler selected is appropriate for the specific task to be undertaken;
- Equipment is inspected and maintained correctly;
- Safe systems of work are developed for the specific telehandler to be used in the specific task and these safe systems of work are effectively communicated and implemented;
- Competent persons have been appointed to undertake the specific tasks (plant operators and others);
- Competent persons have been appointed to supervise the tasks;
- An effective monitoring and review process is in place for the above.

The supervising organisation's site management must, by observation, monitor site activities and employee actions including supervisors, operators or others, to ensure the safe system of work is adhered to and continually assess the competency of all staff.

11.4 Pre-work reviews / monitoring

Before using a telehandler, the operator's training and experience must be checked to assess their competency. Training must include adequate familiarisation on the specific equipment to be used.

Formal certification of training together with entries in the operator's log book, countersigned by their supervisor / manager may assist in this assessment. Observation of a new operator or an operator using new equipment, in a safe location away from other personnel, may also help those making the competency assessment.

Before commencing any task for the first time the operator together, with other relevant parties, must receive a safe system of work briefing from the supervisor. Immediately following this briefing, the operator and others involved should be closely monitored to ensure they understand and are working to the safe system of work.

11.5 Supervisor responsibilities

As an ongoing process and following significant changes on site or to the task it is the supervisor's responsibility to re-brief the operator and others on the task and ensure they are put to work safely. The supervisor should take this opportunity to;

- Reinforce the key elements of the safe system of work including:-
 - Use of designated traffic routes;
 - Strict adherence to exclusion zones;
 - Travelling and lifting on slopes;
 - The correct safe methods when fitting/removing attachments with the quick hitch;
 - Consult the operator and others regarding any issues/comments they have in adhering to or the effectiveness of the safe system of work, and where appropriate instigate changes.
- Check that the operator has undertaken the relevant daily checks;
- Check the required maintenance has been undertaken;
- Inspection/maintenance log/check sheet has been completed and signed. The supervisor's signature on the check list/log may be used as verification that they have carried out the check.

As part of the supervisor's ongoing duties, they must throughout the day monitor that the safe system of work is being adhered to including, maintenance of exclusion zones, and that no one is working below the load at any time.

The supervisor should regularly check that the manufacturer's manual for operating the telehandler is in the cab, that the next service date by a fitter has not expired and that the telehandler has a current certificate of thorough examination. The daily check list (See **Annex D**) will provide evidence of some of these points.

11.6 Monitoring by the contractor/principal contractor

Where the organisation directly supervising the works is not the main contractor or, principal contractor, the contractor/principal contractor must undertake suitable monitoring to enforce the safe use of telehandlers.

This should include, before a task or individual starts on site, the review of:-

- Any safe systems of work before work commences and any subsequent changes;
- The training and competency of supervisors and operators;
- Reports of thorough examination before the equipment is put to use.

The contractor/principal contractor should also monitor the following, which may be done during normal management site inspections / tours;

- That safe systems of work are being implemented;
- That plant coming onto site is entered into a register to enable the checking and monitoring to be undertaken;
- That only competent and authorised operators are using the equipment. Random questioning of the operators and sight of training records may assist in this;
- Random inspection of the cab and records to ensure that daily and weekly checks and maintenance are being undertaken, and that the manufacturer's documentation is in the cab and readily accessible;
- Pre-start task briefings must also be monitored to ensure they are taking place and are adequate; this may be done by random auditing of records and ad hoc attendance at briefing talks.

Any unsatisfactory issues found should be recorded and the necessary actions and time scales for rectification agreed with the organisation directly supervising the works.

Telehandler Safe Use Monitoring Guide

| Item to be monitored/ reviewed | Monitoring / review by | | | | |
|--|--|--|--|---|---|
| | Senior management of organisation directly supervising the works | Site level management of organisation directly supervising the works | Supervisor | Operator | Contractor / principal contractor |
| Overall Management systems for the planning and implementation of the safe use of telehandlers. | Reviews and monitors overall management system at max 12 monthly intervals or after an incident or reason to believe review is required. | N/A | N/A | N/A | Assesses as part of pre order competency check. |
| Management systems at specific site level for the planning and implementation of, the safe use of telehandlers. | Monitors at maximum monthly intervals by auditing of documentation and site inspection | Reviews at maximum weekly intervals by site inspection / observation of activities and review of documentation taking into account potential changes to risks. | N/A | N/A | Reviews as part of pre-start on site checks. |
| Equipment selection. | As Above | As Above | May assist in selection process- Observes suitability of equipment in use and advises management if inadequate. | Operator advises supervisor if they feel equipment is not correct for task or faulty. | |
| Equipment checks inspection and maintenance. | As Above | As Above | Checks at max weekly intervals that operator is carrying out daily and weekly checks. | Undertake daily and weekly checks as safe system of work / manufacturers' recommendations and records. Advises supervisor of any faulty equipment. | Reviews relevant documentation before equipment used on site, i.e. current thorough examination. Once operations commence, undertakes random sample checks off equipment documentation / inspection/ maintenance records. |

Telehandler Safe Use Monitoring Guide

| Item to be monitored/ reviewed | Monitoring / review by | | | | |
|--|---|--|---|--|---|
| | Senior management of organisation directly supervising the works | Site level management of organisation directly supervising the works | Supervisor | Operator | Contractor / principal contractor |
| Safe system of work development. | Monitors at maximum monthly intervals by auditing of documentation and site inspection | Reviews at maximum weekly intervals by site inspection / observation of activities and review of documentation taking into account potential changes to risks. | May assist in development. - Observes on site suitability of Safe System of Work as part of normal daily supervisory role. Stops work if inadequate and advises management. | May assist management in development. | Reviews before implementation and after any changes |
| Safe system of work implementation. | As Above | As Above | Observes operatives working as part of normal daily supervisory role. Stops work and takes corrective action if not fully implemented. | Adheres to safe system of work. Advises supervisor of any areas of improvement. | Reviews as ongoing process during site tours. |
| Initial task safety briefings | As Above | As Above | Undertaken by Supervisor | N/A | Carries out random sample checks of documentation and attendance at briefing. |
| Daily task re-briefs. | As Above | Ditto | Undertaken by Supervisor | N/A | Carries out random sample checks by questioning operators. |
| Manufacturer's instructions and information in cab | As Above | As Above | Checked weekly by supervisor | Ensures they are available in cab. | Carries out random sample checks of documentation |
| Operator competency | As Above | Checks made by site management and reviewed as above. | May assist in initial checks. Monitors via normal daily observation of operator. | N/A | Carries out random sample checks of documentation and observation / questioning of operators, or after an incident |
| Supervisor Competency | As Above | Reviews competency at maximum weekly intervals by site inspection / observation of activities and review of documentation | N/A | N/A | Ongoing process via site tours- adherence on sit of teams to Safe System of Work, random checks of maintenance documentation, reviews of site incidents. |

12.0 Maintenance and Inspection

12.1 General

The effective maintenance of a telehandler is an essential part of safe operation. As with all machines a telehandler wears, deteriorates and can suffer damage over time. The maintenance process, including checks and inspections, monitors, prevents and rectifies this deterioration. It is important that the personnel asked to carry out these tasks have the necessary machine-specific training, experience and competence in both periodic and breakdown maintenance.

Both the user and owner of the telehandler, and any attachments used with it, have a responsibility to ensure that they are maintained in a safe working condition. In practice the maintenance, other than pre-use checks, is normally undertaken by the telehandler owner.

Telehandlers require the manufacturer's preventative maintenance instructions to be strictly complied with, if safety is to be maintained in use. Checks and inspections should be carried out taking account of the frequency of use of the telehandler and the environmental conditions in which it regularly works. If the operator is considered to be competent to carry out routine pre-use and weekly checks, they may be authorised to do so.

The employer of the person carrying out these checks should ensure that the machine is taken out of use for the period of time required to carry them out. Also, the employer or authorized person carrying out the checks should ensure that a safe system of work is in place to prevent personnel from being exposed to risk, for example from the inadvertent operation of the equipment.

Basic checks and inspections should be carried out in accordance with company instructions and the manufacturer's recommendations:

- Daily Pre-use Checks - these are carried out at the start of every shift (or day) and include checks for damage and correct functioning of the telehandler (See list in **Annex F**).
- Weekly Inspections - these are additional inspections to the pre-use checks.

These checks and inspections should be recorded

If there is a defect that affects the safe operation of the telehandler it must be reported and the machine taken out of service immediately. If it does not affect the immediate safe operation of the telehandler the defect should be reported to the supervisor so that repairs may be carried out in a timely manner.

12.2 Reporting of Defects

There must be provision for the operator(s) of telehandlers to make written reports of defects or observations immediately they are identified.

The written report should be to a pre-defined format, (a company pro-forma, a section on the daily time sheet, etc), which requests details of the defect or observation and supporting information such as date, time, telehandler identification, circumstances, etc., and must be reported at least daily. 'Nil Reports' must also be submitted at least weekly.

All the defect reports, including the 'nil reports', should be forwarded to the telehandler owner, (or the delegated person), who is in a position to make an informed decision about a planned response to the report. A copy of the original report should be retained by the operator.

Once the defect / observation has been responded to and cleared this should then be recorded with supporting information on the original defect report.

The 'un-cleared' and 'cleared' reports should be securely lodged within the telehandler owning company's maintenance management system and must be made accessible on demand to the operators of the telehandler as well as other authorised bodies.

12.3 Precautions

Extreme care must be taken when carrying out maintenance procedures on telehandlers. Maintenance personnel should never stand under a suspended load or raised equipment as the load or equipment could fall or tip. If work has to be carried out under a raised boom suitable scotches or supports must be put in place before access is gained.

Care should be taken when working on the hydraulic system to ensure that hydraulic systems are depressurised. Even with the telehandler's engine switched off the hydraulic system may still be pressurised, consequently the replacement or repair of hydraulic hoses or fittings should be approached with extreme caution.

12.4 Modifications

Telehandlers should not be modified without the express written permission of the telehandler manufacturer. Unauthorised modifications will affect the warranty, invalidate the CE marking and may compromise safety.

12.5 Scheduled Lubrication

Operators may be required to carry out lubrication of certain items, such as the greasing of sliding parts, at specified intervals. They should only undertake such tasks if they are competent to do so and should be provided with the necessary equipment and instructions to carry this out safely.

12.6 Scheduled Maintenance

It is the responsibility of the site management to ensure that all telehandlers are adequately maintained in efficient working order and in a state of good repair.

A scheduled preventative maintenance program helps to meet these requirements. The frequency at which the maintenance activities are carried out must take into account the machine usage and the working environment. A record of maintenance should be kept for each telehandler.

Where a telehandler is hired out on the basis that the owner is responsible for carrying out maintenance, the owner should inform the hirer, at the start of the hire, that their maintenance staff will require access to the machine at specified intervals. The hirer should be advised of the frequency and length of time required for maintenance operations.

12.7 Breakdowns

Breakdowns should be minimised by adequate inspection and preparation of the telehandler prior to delivery on site. Repairs on site should only be undertaken following a thorough job and site specific risk assessment and the implementation of a safe system of work, including inspection of the work following completion.

12.8 Maintenance Records

Comprehensive maintenance records are essential to the safe, efficient and economical operation of telehandler. They provide a complete "cradle to grave" history of the individual telehandler giving the following benefits:-

- evidence of adequate maintenance as part of the management system;
- establishing breakdown trends over time and providing information for the review of maintenance frequency;
- identification of component failure trends for feedback to the manufacturer;
- evidence of adequate maintenance to the Enforcing Authorities in the event of an incident;
- enabling the performance of the telehandler to be reviewed over time to inform future purchases.

12.9 Maintenance Record Format

Maintenance records can be kept in either paper or electronic format. Paper records are often easier to update as the input will often be in paper format such as inspection reports or work sheets. Electronic records are however more secure against loss and damage, and the data is more readily analysed. There are many maintenance record software packages on the market but care should be taken when considering purchase to ensure that the system is flexible enough to accommodate changes in types of input and output.

12.10 Replacement Components

Replacement components should be in accordance with the telehandler manufacturer's specifications.

12.11 Tyre Maintenance, Repair and Replacement

This section applies to pneumatic tyres only. Foam filled tyres are not user serviceable.

12.11.1 Tyre Pressure Check

- Tyre pressures should be marked on the telehandler chassis adjacent to each wheel;
NOTE: Tyre pressure may be given in different units - pounds per square inch (psi), bar or kilo Pascals (kPa). Conversion factors are given in Table 4
- Pressures should be checked daily when the tyres are cold;
- Tyre pressures should be the same for all tyres on the telehandler and should be within +5% -0% of the manufacturers specified pressure, unless a different tolerance is specified by the manufacturer;
NOTE: Research undertaken by a major telehandler manufacturer indicates that 5% reduction in tyre pressure below the manufacturer's specified value, can result in a 30% reduction in rated capacity at certain points on the load/height/radius curve.
- Tyre pressure gauges should be of known accuracy (within +/- 1%)
- Remote tyre pressure monitoring systems are available. Before fitting third party monitoring systems it is advisable to consult the telehandler manufacturer.
- Where a tyre is found to be significantly under pressure, no attempt should be made to re-inflate it and return the machine to use. It is essential that the cause is investigated by a competent tyre specialist, as this may well be an indication of imminent tyre failure.
- Where tyres are frequently found to be under pressure the cause should be investigated by a competent tyre specialist, as this may well be an indication of potential tyre failure

| | psi | bar | kPa |
|-----|-------|--------|------|
| psi | 1 | 0.0689 | 6.89 |
| bar | 14.5 | 1 | 100 |
| kPa | 0.145 | 0.01 | 1 |

Table 4 - Pressure Conversion Factors

12.11.2 Tyre Inflation

The information in this sub-clause applies to tyres fitted on single piece wheels. For tyres fitted on multi-piece wheels see BITA Publication GN 67 , *Multi-Piece Pneumatic Tyred Wheels - Inspection, Maintenance & Repairs*. Where multi-piece wheels are fitted or there is any doubt about the type of wheel, a competent tyre specialist should be consulted.

- Air should be added, if required, inflating to the pressure specified in the manufacturer's manual;

- Before starting inflation a personnel exclusion zone of at least 3m around the machine should be established by the use of barriers, cones etc. (See **Figure 22**);
- Personnel inflating tyres should stand a minimum of 3 metres away from the tyre and outside the likely explosion trajectory to avoid injury in the event of a failure. This will require at least 3m of airline between the nozzle and airline trigger mechanism (See **Figure 22**);

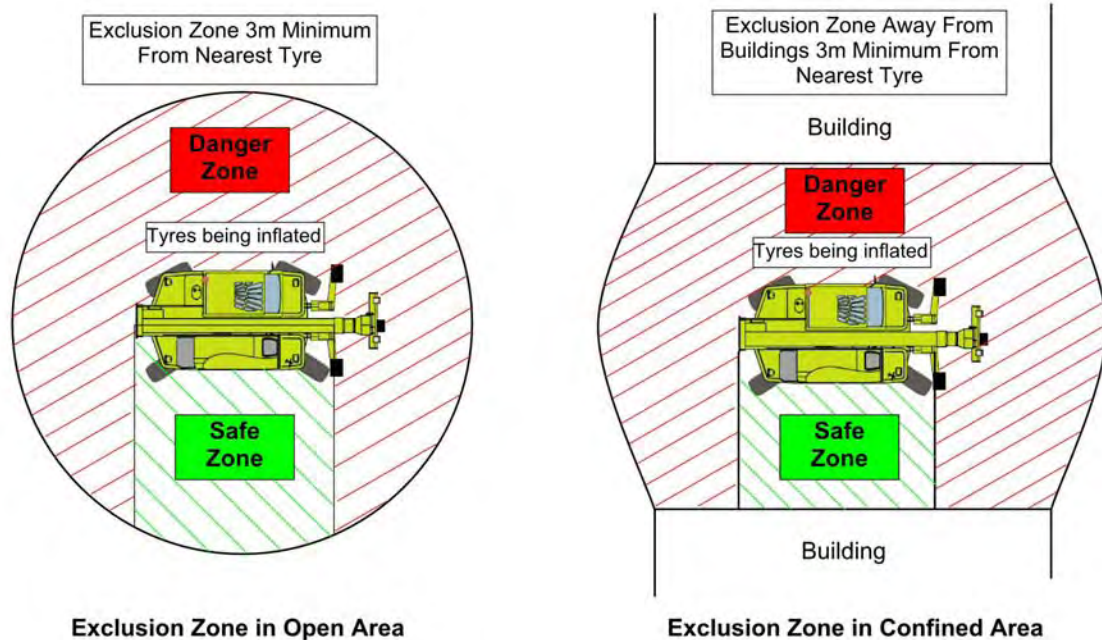


Figure 28 - Tyre Inflation Safe Zones and Exclusion Zones

- Personnel should ensure that they stand on the other side of the telehandler when inflating (See **Figure 28**);
- Tyre valves should be checked to ensure that they are not leaking. Valve stem caps should always be replaced.

Further detailed guidance on the safe inflation of tyres is given in:-

- HSE Publication INDG 433, *Safety during tyre inflation in motor vehicle repair*

A Real Life Example of Tyre Issues

A telehandler operator had been checking the tyre pressures on his machine. Having completed the checks, he was walking away from the machine and one of the tyres exploded. Subsequent investigation revealed that the tyre, which had recently been replaced, was 14 ply with a 3.5 tonne load, rating rather than the manufacturer's specification of 16 ply with a 6 tonne rating.

The contractor also found that the tyre had been ordered from their approved supplier by asking for a tyre for a model XXX telehandler, without any mention of ply or load rating. A subsequent check of other machines found that 30% were fitted with incorrect tyres.

12.11.3 Tyre Damage

All tyres should be inspected daily as follows:-

- The tread and side walls should be checked for bulges and separation;
- The tread and side walls should be checked for cuts;

When any cut, rip or tear is discovered that exposes sidewall or tread area cords in a pneumatic tyre, steps should be taken to remove the tyre from service immediately. Arrangements must be made for replacement of the tyre or tyre and wheel assembly.

12.11.4 Tyre Repairs

In the course of a tyre's life, a tyre may be subject to an enormous amount of use and damaged in many ways. Tyres which require repair OR which appear to require repair, should be removed from the associated wheel and thoroughly inspected because a penetrating object could damage the inside of the carcass, or excessive deflection could cause dislocation of the carcass cords. Plugs inserted from outside the tyre should only be used as a short term temporary repair until the tyre can be removed from its wheel, the tyre inspected and a permanent repair made.

It is essential that any tyre repairs are carried out by a competent tyre specialist to BS AU 159g: 2013. The repairs should be **permanent**, allowing the tyre to operate at its original speed, load and inflation pressure.

Clause 9 of BS AU 159g:2013, *Specification for repairs to tyres for motor vehicles used on the public highway* specifies that liquid sealant introduced into inner tubes or tubeless tyres to aid air retention properties shall **not** be considered to be a permanent repair.

12.11.5 Liquid Tyre Sealants

A liquid tyre sealant or gel introduced into inner tubes or tubeless tyres will help improve the air retention properties of a tyre due to punctures or slow leaks. It is, however, essential that the operator carries out a visual inspection of the tyres at the beginning of each working period. Any noticeable defects in a tyre will require the tyre to be removed from the wheel and thoroughly inspected by a competent tyre specialist for any internal damage. Repairs should be carried out to BS AU 159g: 2013 to allow the tyre to operate at its original speed, load and inflation pressure.

NOTE : Due to the varying nature of the chemical compositions of different tyre sealants, care should be taken when selecting a suitable tyre sealant for the task the machine is being asked to perform.

12.11.6 Tyre Replacement

Telehandler manufacturers generally list a range of approved tyres in the parts manual for a specific machine. If not using tyres from this list the replacement tyres must have the following characteristics:

- Same physical size as the original
- Equal or greater ply and load rating as the original;
- Tyre tread contact width equal or greater than original;
- Equivalent performance specification.

It is essential that either the telehandler manufacturer or a competent tyre specialist is consulted.

Unless specifically approved by the telehandler manufacturer, foam filled or ballast filled tyre assemblies must not be replaced with pneumatic tyres.

When a tyre is being replaced, it is essential that the condition of the other tyres on the machine is assessed by a competent tyre specialist and appropriate action taken. This may include moving part worn tyres around to ensure that the telehandler is substantially level when standing on a flat level surface.

If tyres on opposite sides of the telehandler are different sizes the boom will not be vertical when the machine is standing on level ground. This will cause the combined centre of gravity of the telehandler and load to move sideways, which may lead to instability.

12.11.7 Wheel Replacement

It is essential that replacement wheels have the same diameter, width and offset dimensions as the originals.

An Example of Issues with Tyre Specification

Because tyres deflect/distort under load they have a significant effect on telehandler stability and load carrying capacity.

Although tyres made by different manufacturers may be of the same specification in terms of nominal size, ply rating and load speed ratings, their deflection, distortion under load and physical size may vary significantly. When testing one particular 16 ply tyre, a telehandler manufacturer found that the performance was no better than a 12 ply tyre from a different manufacturer. Tests have also shown that if telehandler users replace tyres with ones of the same size and ply rating that are not of the same performance specification, the capacity can be reduced by up to 30%. This is worse at the limits of the load chart and can potentially result in the telehandler becoming unstable.

12.12 Actions in the Event of Defects and Breakdowns

All defects that make the telehandler unsafe for use should be recorded and reported immediately to both the telehandler owner and site's appropriate representative (such as service manager, site manager, or supervisor), and the telehandler should be taken out of service. Steps should be taken to ensure that the telehandler cannot be used before repairs have been completed. All other defects should be recorded and reported as soon as possible.

It is essential that repairs or adjustments are only carried out by authorised persons. Once any defects and breakdowns have been rectified, the person carrying out the work should sign the defect report to indicate that rectification has taken place.

12.13 Further Guidance

Further detailed guidance on the thorough examination of telehandlers is given in:-

- BS 7121-2-1:2012, *Code of practice for the safe use of cranes Part 2-1: Inspection, maintenance and thorough examination – General*
- **Annex K.**

13.0 Thorough Examination

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) require that all lifting equipment is thoroughly examined by a competent person at specified intervals. In the case of a telehandler, it should be thoroughly examined as follows:-

- When the telehandler is put into service for the first time (LOLER Reg. 9(1))

NOTE: *If the telehandler has not been used before and the EC declaration of conformity was made not more than 12 months before the telehandler was put into service, the declaration may be used as evidence of the first thorough examination.*

- At regular intervals of:-
 - a period not exceeding 12 months if the telehandler is only used for lifting goods (LOLER Reg. 9(3)(a)(ii));
 - a period not exceeding 6 months if the telehandler is used for lifting persons (LOLER Reg. 9(3)(a)(i));
- After any major alteration or damage (event) (LOLER Reg. 9(3)(a)(iv)).

Where periodic thorough examinations are carried out, it is incumbent on the competent person to set the date of the next thorough examination. This is generally six or twelve months from the date of the thorough examination, but should be reduced by the competent person where they judge that the rate of deterioration of the lifting equipment may lead to a dangerous situation occurring before the next thorough examination, if it were made at the maximum interval. Examples of this are where a telehandler:-

- Is being used in a corrosive environment such as a petrochemical plant or close to the sea;
- Is being used more frequently than normal i.e. double shifting;
- Is always lifting loads at or near the rated capacity;
- Has components that are wearing rapidly and require frequent replacement.

Reports of thorough examination should contain the details required by Schedule 1 of LOLER.

Thorough examinations should be carried out by competent persons who are sufficiently independent and impartial.

13.1 **Thorough Examination of Lifting Accessories and Lifting Attachments**

LOLER requires that lifting accessories and lifting attachments are thoroughly examined at intervals not exceeding six months.

13.2 **Responsibility for Thorough Examination**

LOLER is very clear that the responsibility for ensuring that the thorough examination of telehandlers is carried out lies with the user of the telehandler. In the case of a hired-in telehandler the actual undertaking of thorough examination is often delegated to the telehandler owner by the user. The user however, retains the legal responsibility for ensuring that thorough examinations are carried out.

NOTE: *The user is the employer carrying out tasks with the telehandler. The telehandler may be from the user's own fleet or may have been hired from a hire company.*

13.3 **Further guidance**

Further detailed guidance on the thorough examination of telehandlers is given in:-

- BS 7121-2-1:2012, *Code of practice for the safe use of cranes Part 2-1: Inspection, maintenance and thorough examination – General*
- L113 *Safe Use of Lifting Equipment - Lifting Operations and Lifting Equipment Regulations 1998 Code of Practice* - ISBN 0 7176 1628 2.
- **Annex K.**

Annex A – Example Risk Assessment and Method Statement for Non-suspended Loads

| Project: <i>Hogwarts Academy</i> | | Contractor: <i>Wizard Builders Limited</i> | | |
|--|--|--|---|----------------------|
| Task: <i>Lifting of palletised loads</i> | | Telehandler Make and Model: <i>Spellbound 175</i> | | |
| Risk Assessment/ Method Statement Compiled By: <i>H Potter</i> | | Date: <i>06:01:2011</i> | Rev. <i>A</i> | |
| Risk Assessment | | | | |
| NOTE: <i>This risk assessment has been undertaken on the basis that the telehandler is operated by an operator who has proof of competence, which should include proof of training (CPCS card or similar), proof of familiarisation on the telehandler to be used and adequate experience of the task to be undertaken.</i> | | | | |
| Operation /Issue | Hazard | Risk | Control Measures to Avoid or Minimise Risk | Residual Risk |
| People in area | Struck by: • Telehandler boom • Telehandler chassis • Moving load | High | <ul style="list-style-type: none"> Public excluded from secure site Segregate telehandler and personnel where possible Ensure telehandler has adequate vision aids If necessary establish effective exclusion zone in conjunction with Principal Contractor All personnel to wear high visibility clothing Ensure personnel are fully briefed on need to keep clear of load during lifting and telehandler during travelling Ensure telehandler is made secure from unauthorised access or operation | Low |
| | | | <ul style="list-style-type: none"> Establish presence of voids/underground services with Principal Contractor Assess ground and establish if there is a requirement for stabilizer mats If required, Supervisor to check that mats supplied match those specified in Method Statement | |
| Telehandler stability | Ground unable to support telehandler | Med | <ul style="list-style-type: none"> Establish presence of voids/underground services with Principal Contractor Assess ground and establish if there is a requirement for stabilizer mats If required, Supervisor to check that mats supplied match those specified in Method Statement | Low |
| | Telehandler overloaded | High | <ul style="list-style-type: none"> Ensure weight of load is known and accurate Telehandler operator to have proof of competence | Low |
| | Telehandler failure | Med | <ul style="list-style-type: none"> Ensure telehandler has been adequately maintained, pre-use checks carried out and has current report of thorough examination | Low |
| Movement of load | Load or telehandler structure collides with overhead obstacles | Med | <ul style="list-style-type: none"> Route to be planned and overhead obstacles marked with goal posts and signs Boom to remain as low as practicable at all times Operator and banksman to be advised of any overhead risks | Low |
| | Load collides with other plant - cranes, excavators etc | High | <ul style="list-style-type: none"> Establish effective exclusion zone Ensure that the safe systems of work for other plant in the vicinity address this hazard | Low |
| | Telehandler boom comes within arcing distance of overhead lines | High | <ul style="list-style-type: none"> Establish presence or otherwise of overhead lines. If present arrange for isolation or position telehandler boom/load outside minimum safe approach distance | Low |
| | Loose parts on load may fall | High | <ul style="list-style-type: none"> Inspect load for lose objects prior to lift and secure/remove loose items All personnel to wear hard hats | Low |
| | Load may fall on person | High | <ul style="list-style-type: none"> Ensure telehandler has been adequately maintained, has current report of thorough examination and that pre-use checks are carried out Inspect load for lose objects prior to lift and secure/remove loose items Ensure that as parts of a load are removed from transport that remaining part of load does not become unstable | Low |
| Environmental conditions | Telehandler becomes unstable when lifting loads with large wind area. | High | <ul style="list-style-type: none"> Wind speed to be checked with hand held anemometer by Supervisor before lift starts. Lift to be aborted if wind speed exceeds 15 mph | Low |

| Method Statement | |
|-------------------------|---|
| Item | Requirement |
| 1. | The supervisor must ensure that the telehandler to be used has been maintained and has a current report of thorough examination covering both the machine and any attachments. |
| 2. | The supervisor must ensure that the operator has proof of competence, which should include proof of training (CPCS card or similar), proof of familiarisation on the telehandler to be used and adequate experience of the task to be undertaken. |
| 3. | The supervisor must carry out a toolbox take before work starts covering the task to be carried out, personnel involved, work area, risks, exclusion zones and procedures. |
| 4. | At the start of each day or shift the operator should carry out the pre-use checks specified in the manufacture's operating instructions. |
| 5. | Seat belts must be worn at all times. |
| 6. | The telehandler's brake engine must be switched off and the applied before the operator leaves the cab. Before any personnel approach the telehandler to secure loads etc the operator must ensure that the telehandler is made safe i.e. brake applied and engine switched off. |
| 7. | The operator should plan the route and final destination of the load, making sure the route is clear of all obstacles, that there are no width or height issues with the load or telehandler and that the final destination is a safe and suitable place for the load. If the route involves travelling or working on slopes, the manufacturer's operators instructions should be consulted before traversing gradients and cross slopes. |
| 8. | Before lifting a load the operator should get out and inspect the load - check for warning signs, centre of gravity, loose materials on the load or anything anchoring the load. |
| 9. | Before lifting the load the operator should check ground conditions to make sure it is suitable for them to drive and use stabilisers on. Spreader mats should be used if the ground conditions or weight of the load make it necessary to do so. |
| 10. | The operator should then lift the load approximately 150mm (6 inches) and check the load position, weight and balance. |
| 11. | The load should then be secured, strapped down or fastened where necessary. |
| 12. | Before setting off, the boom should be telescoped in as far as possible and the load lowered as close to the ground as possible to increase stability whilst travelling. |
| 13. | If the load obscures the operator's view when travelling, a banksman should be used. A banksman should also be used when reversing. |
| 14. | Before placing the load in the final position the operators should check the ground conditions (See Item 9). |
| 15. | If the operator is unable to clearly see the load's final position, a qualified banksman should be used to signal to the operator when landing the load. |
| 16. | When lifting operation has been completed, the telehandler should be stored in a safe place, on level ground where possible, with the handbrake engaged, the boom and fork arms / handling attachment lowered to the ground, the key removed and the cab locked. The key should be stored in safe place and not left in machine. |
| 17. | When using extension forks the safe working limit should be reduced as the standard Rated Capacity chart will not give the correct information as it is only applies to loads on standard length forks. Information on the rated capacity of extended forks can be found in the manufacturer' operating instructions. |
| 18. | If the operator is unsure of any aspect of the lifting operation they must immediately stop and consult their supervisor |

Annex B - Planning of the Lifting of Suspended Loads

All lifting operations should be planned to ensure that they are carried out safely and that all foreseeable risks have been taken into account. Poor planning is one of the major causes of accidents arising from lifting operations.

The siting, setting up and use of a telehandler for lifting suspended loads requires careful planning if all these activities are to be carried out safely and efficiently. One person with sufficient training, practical and theoretical knowledge and experience should be appointed to be responsible for planning and supervising the tasks. This person is known as the “*Competent Person*”.

The Competent Person must ensure that the planning for each task includes the following:-

- Identifying the task to be undertaken;
- Selection of appropriate lifting equipment
- Identifying the hazards associated with the task;
- Carrying out a risk assessment;
- Identifying control measures;
- Developing the method to be used;
- Recording the planning in a Method Statement (including any contingency activities for rescue);
- Communicating the plan to all persons involved;
- Reviewing the plan before the tasks starts and incorporating any changing circumstances.

B.1 Lift Categories

To enable lifts to be planned, supervised and carried out effectively, three categories of lift are detailed below. The category into which a particular lift will fall depends on the assessment of the hazards associated with both the environment in which the lift is to be carried out and those associated with the load and lifting equipment. As can be seen from **Figure B1**, increases in either or both environmental or load complexity (the “*Complexity Index*”) will lead to the lift being allocated a higher category. Having identified the hazards associated with a particular lift, a hierarchy of control measures should be applied to eliminate or control those hazards.

The case study at **B.1.4** shows examples of where the same basic lifting task will fall into different lift categories depending on differing environmental or load complexities.

| | | | | |
|------------------------------|---|---------------------|---------------------|----------------|
| Environmental complexity (E) | 3 | Complex | Complex | Complex |
| | 2 | Intermediate | Intermediate | Complex |
| | 1 | Basic | Intermediate | Complex |
| | | 1 | 2 | 3 |
| | | Load complexity (L) | | |

Figure B1 – Relationship between Complexity Index and Lift Category

B.1.1 Basic lift

For a basic lift the duties of the Competent Person should include the following.

- a) Establishing the complexity of the lifting operation, including load and environmental complexity:-
 - Load complexity will include characteristics such as weight, centre of gravity and presence of suitable lifting points. This can be established by a reliable source of information, measuring and weighing the load, or calculation;

***NOTE:** Where the weight of the load cannot be accurately established the notional weight must be multiplied by an appropriate factor (typically 1.5) to allow for possible inaccuracies.*
 - Consideration of environmental hazards at the location of the operation will include the access and egress required for the telehandler and the suitability of the ground to take the loads imposed by the telehandler during preparation for the lift and during the lift itself;
- b) Selection of the telehandler, based on the load characteristics, including weight of the load and any lifting accessories; the maximum height of lift and the maximum radius required. The rated capacity of the telehandler should be specified by the manufacturer/installer in the information for use supplied with the telehandler. In cases where the telehandler has been derated at time of thorough examination, the rated capacity stated on the current Report of Thorough Examination, issued by the competent person, should be used. Manufacturer's sales leaflets and model classifications marked on the machine should not be relied on for the rated capacity for a specific telehandler;
- c) Ensuring that the telehandler is not operated in wind speeds in excess of those given in the instruction manual for the telehandler. The wind area of the load should also be taken into account to ensure that its movement in the wind does not present a hazard;
- d) Ensuring that the telehandler has been thoroughly examined at least within the previous 12 months (or 6 months for the lifting of persons), inspected and checked before use. It is essential that the Report of Thorough Examination which confirms that the equipment is safe to use is available;

NOTE: The Report of Thorough Examination for the telehandler should be carried with the vehicle

- e) Selecting appropriate lifting accessories, including their method of attachment to the load, configuration and any protection used to prevent damage;
- f) Ensuring that lifting accessories have been thoroughly examined, at least within the previous 6 months, inspected and checked before use. It is essential that the Report of Thorough Examination is available to confirm that the lifting accessories are safe to use;
- g) Ensuring that a system for reporting and rectifying defects is in place;
- h) Designating a suitable person to check the lifting accessories and any lifting points that are provided on the load to ensure they are free from any obvious defect before attaching the load to the telehandler;
- i) Ensuring that the outcomes of the planning process are recorded in a risk assessment and method statement which should be signed by the Competent Person;

NOTE: In many instances a basic lift may be covered by a generic risk assessment and a generic method statement provided that no additional hazards are identified on site

- j) Selecting and defining the roles of the members of the lifting team. In many instances it may be possible to combine some of the roles of members of the lifting team;
- k) Briefing all persons involved in the lifting operation to ensure that the safe system of work described in the method statement is understood. All persons involved in the lifting operation should be instructed to seek advice from the Competent Person if any change is required to the lifting operation, or if any doubts about safety arise. If one or more handlines/taglines are required to give more control of the load, the Competent Person should designate persons to handle the lines;
- l) Checking, if numerous loads are to be lifted over a long period that no changes are required in the safe system of work;
- m) Ensuring that there is a crane supervisor designated to direct personnel and that the operation is carried out in accordance with the method statement.

The Competent Person and crane supervisor should be aware of the limits of their knowledge and experience concerning lifting operations, and when conditions exceed these limits, further advice should be sought.

B.1.2. Intermediate lift

For an intermediate lift the duties of the Competent Person should include the following, in addition to the duties listed in **B.1.1**

NOTE: Intermediate lifts were previously called standard lifts in the BS 7121 series, this led to confusion between basic and standard lifts, hence the change from standard to intermediate.

- a) Identifying all significant hazards in the operating area, including any areas required for access or setting up of the telehandler;
NOTE: This may involve the Competent Person visiting site if there are any concerns about the detail and quality of the information with which the Competent Person has been provided;
- b) Ensuring that a site/task specific risk assessment and method statement, detailing control measures for the identified risks, is prepared;
- c) Liaison with any other person or authority, as required to overcome any hazard, by including any necessary corrective action or special measures in the safe system of work;

- d) Determining any requirement for personnel in addition to the telehandler operator, such as a slinger, signaller or dedicated crane supervisor;
- e) Consideration of the effect of the lifting operation on surrounding property or persons, including the general public. This should lead to arranging for appropriate action to minimize any adverse effects, and to giving appropriate notice to all persons concerned.

B.1.3 Complex lift

For a complex lift the duties of the Competent Person should include the following, in addition to the duties listed in **B.1.1** and **B.1.2**:

- a) Identifying all exceptional hazards in the operating area, including any areas required for access or setting up of the telehandler. This will require the Competent Person to visit the location of the planned lifting operation as part of the planning process;
- b) Liaison with any other person or authority, as required to overcome any hazard, by including any necessary corrective action or special measures in the safe system of work;
- c) Ensuring that the method statement includes the exact sequence of operations when lifting the load;
- d) Preparing a sufficiently detailed and dimensioned drawing of the site, telehandler and the load, identifying the load path, pick up and set down areas, together with the position of any exceptional hazards in the area. The information provided should be sufficient to enable the operator to position the telehandler accurately;

It is good practice for the Competent Person to be present on the site during a complex lift.

B.1.4 Case Study

The case study in **Figure B2** illustrates the way in which both the complexity of the load being lifted and the environment in which the lift is taking place affect the overall complexity of the lift. The case study takes a typical lifting operation carried out by a telehandler, the lifting of timber roof trusses. Three different situations are evaluated with examples of the hazards encountered and the control measures required to eliminate or reduce those hazards to an acceptable level. It should be noted that this is an example only and does not identify all the hazards that may be present in a given circumstance.

B.2 Identifying the task to be undertaken

As the first stage in the planning process, the task to be undertaken should be clearly identified, together with the location and sequence.

Certain lifting operations require particular care and attention. Further advice can be found in BS 7121 Part 3. The Competent Person should be familiar with these and plan the lift accordingly.

B.3 Site surveys

The planning of a lift using a telehandler may involve a site survey, carried out by the Competent Person or their representative. This involves visiting the location where the task is to be carried out so that both the task and any hazards involved can be identified. For simple tasks the remainder of the planning process may be completed at the same time, whilst for more complicated jobs the person carrying out the survey may need to complete the process off site. The survey should include assessment of ground conditions.

B.4 Identifying the hazards associated with the task

The hazards associated with the task should be identified. These might be associated with the location where the work is to be carried out, the nature of the telehandler, load to be lifted or the people associated with the task or located in the vicinity.

B.5 Carrying out a risk assessment

Having identified the hazards associated with the task, a risk assessment should be carried out to identify who might be harmed, the chance of them being harmed and the consequences of any harm. This assessment should be recorded.

B.6 Identifying control measures

Once the risk assessment has highlighted the risks involved in the task, the procedures and measures required to control them should be identified.

B.7 Developing the method to be used

Having identified the hazards, evaluated the risks and worked out the control measures required to carry out the task safely; these components should be developed into a coherent plan. Any contingency measures and rescue procedures should be included in the plan.


B.8 Selection of telehandler and lifting accessories


When selecting a telehandler for a particular task the following points should be considered:-


- The weight, dimensions and characteristics of the loader and the loads to be lifted ;
- The operation, speed, radii, height of lift and areas of movement;
- The number, frequency and types of lifting operation;
- The space available for telehandler access, deployment, operation and stowage including the space required for correct deployment of stabilizers;
- The control position which will be most suitable for the lifting operation. The control position should be selected to ensure that the operator has an adequate view of the load path is adequately protected from crushing hazards;
- The need for motion limiting devices such as slewing arc or height limiters;
- The effect of the operating environment on the telehandler.

Figure B2 - Illustrative Telehandler Case Study

Example Activity – Lifting of Timber Roof Trusses with a Telehandler

| | | | |
|--|-----------------|---|--|
| Situation 1 | | Trusses being lifted off delivery vehicle and placed on an adjacent set down area on a secure site with no pedestrian access or other environmental hazards | |
| Environment - 1 | Load - 1 | Example Hazards | Example Control Measures |
| Lift Categorisation - Basic | | <p>Overturning of telehandler or failure through overloading of the telehandler attachment or lifting accessory</p> <p>Overturning of telehandler through ground bearing failure</p> | <p>Accurately assess weight and max radius of load</p> <p>Selection of telehandler and lifting accessories</p> <p>Assessment of ground conditions and use of appropriate spreader plates</p> |
|  | | | |
| <p>Lifting Team</p> <ul style="list-style-type: none"> Competent Person prepares generic RA & MS Operator takes role of Lift Supervisor, Slinger/Signaller and Operator | | <p>Planning Requirements</p> <ul style="list-style-type: none"> Generic Risk Assessment and Method Statement Onsite review of RA and MS by Lift Supervisor | |

| | | | | | |
|--|-----------------|--|---|---|--|
| Situation 2 | | Trusses being lifted off the delivery vehicle and placed directly on to the roof structure with personnel standing on the roof at height. | | | |
| Environment - 2 | Load - 1 | Example Hazards | Example Control Measures | | |
| Lift Categorisation - Intermediate | | <p>Overturning of telehandler or failure through overloading of the telehandler attachment or lifting accessory</p> <p>Overturning of telehandler through ground bearing failure</p> <p>Crushing or striking of personnel on roof structure</p> <p>Overhead lines -electric shock</p> <p>Lifting near and over persons</p> | <p>Accurately assess weight and max radius of load</p> <p>Selection of telehandler and lifting accessories</p> <p>Assessment of ground conditions and use of appropriate spreader plates</p> <p>Slinger/signaller situated adjacent to landing area with agreed system of signalling (radio if line of sight obscured)</p> <p>Isolate power lines</p> <p>Control path of the load using tag lines</p> | | |
|  | | | | | |
| <p>Lifting Team</p> <ul style="list-style-type: none"> Competent Person prepares task and/or site specific RA & MS Operator takes role of Lift Supervisor and Operator Separate Slinger/signaller required on the roof | | | | <p>Planning Requirements</p> <ul style="list-style-type: none"> Task and/or site specific Risk Assessment and Method Statement Onsite review of RA and MS by the Lift Supervisor | |

| | | | |
|---|-----------------|--|--|
| Situation 3 | | Trusses being lifted off the delivery vehicle in a busy suburban street and placed directly on to the roof structure out of line of site of the operator and with personnel standing on the roof at height | |
| Environment - 3 | Load - 1 | Example Hazards | Example Control Measures |
| Lift Categorisation - Complex | | Overturning of telehandler or failure through overloading of the telehandler attachment or lifting accessory | Accurately assess weight and max radius of load Selection of telehandler and lifting accessories |
|  | | Overturning of telehandler through ground bearing failure | Assessment of ground conditions and use of appropriate spreader plates |
| | | Crushing or striking of personnel on roof structure | Slinger/signaller situated adjacent to landing area with agreed system of signalling (radio if line of sight obscured) |
| | | Lifting near and over persons | Control path of the load using tag lines |
| | | Injury of members of public in street. | Segregation of public from working area |
| | | Collision with passing traffic | Implement traffic management plan |
| | | Lifting Team | |
| <ul style="list-style-type: none"> Competent Person prepares site specific RA & MS Separate Lift Supervisor oversees lifting operation Operator takes role of Operator only Separate Slinger/signaller required on roof Temporary traffic management operative (if required) | | <ul style="list-style-type: none"> Site specific Risk Assessment and Method Statement Onsite review of RA and MS by the Lift Supervisor Traffic management scheme | |

B.9 Recording the planning in a Method Statement

Once the plan has been developed it should be recorded in a Method Statement. The length and detail of this document depends on the complexity of the task to be undertaken and on the risks involved. A simple low risk job such as a routine delivery and unloading of bulk materials or blocks to site might only require the use of a brief generic method statement, whilst a more complex and high risk job such delivering, unloading, and assembling and lifting into position of a loading platform on a construction site would require a more detailed job specific method statement. The method statement covering all planned lifting on a site is often referred to as the “*lift plan*”. The method statement should include a “*lifting schedule*” listing each type of item to be lifted together with the following information:

- Item description;
- Weight;
- Dimensions;
- Lifting points/method;
- Type of lifting accessories to be used and configuration;
- Pick up and landing locations referenced to the site plan.

An example of a lifting schedule is shown in **Annex D** and an example of a method statement in **Annex B**.

B.10 Communicating the plan to all persons involved

One of the most important aspects of successful planning is to ensure that the contents of the plan are communicated effectively to and between all parties involved, taking account of language differences. Arrangements should be made to ensure that copies of any method statements are given to the appropriate people and that others involved in the job are fully briefed. Similarly any changes to the plan should be communicated to all parties.

B.11 Reviewing the plan before the job starts

Immediately before a job starts, the risk assessment and method should be reviewed to check if any aspect of the job has changed and the effect that these changes could have on the safety of the operation. If any modifications to the plan are required these should be communicated to all those involved. The Competent Person should amend the method statement (lift plan) and initial any significant changes.

B.12 Further guidance

Further guidance on planning of lifting and installation is given in:

- BS 7121 *Code of practice for safe use of cranes – Part 1 General and Part 3 Mobile Cranes*;
- L113 *Safe Use of Lifting Equipment - Lifting Operations and Lifting Equipment Regulations 1998 Code of Practice* - ISBN 0 7176 1628 2;
- HSE Leaflet INDG218 – Guide to Risk Assessment;
- HSE Leaflet INDG163 – Five Steps to Risk Assessment.
- CIRIA publication C703 - Crane Stability on Site.

Annex C – Example of a Risk Assessment and Method Statement for Lifting Suspended Loads with a Telehandler

1. Task to be Undertaken (Example only)

Lifting of steelwork for installation on Building M6 between gridlines Ck and Cm, to be carried out by Steel-up-Quick Ltd.

2. Basic Information (Example only)

| | | |
|--------------------------------|---------------------------|---|
| Customer Details | Customer | MegaCity Retail Ltd |
| | Site | Building M6, Stratford, SE6 5PQ |
| | Contact | Andy Builder |
| | Contact Number | 07234 56789 |
| | Date of Lifting Operation | 02.04.10 |
| Load Information | Load | Prefabricated steel column sections |
| | Weight of load | 728kg |
| | Load dimensions | 3.4 long x 0.305 wide x 0.305 high |
| | Lifting point | Hole in end of web for shackle |
| | Maximum radius of lift | 5.8 m |
| | Maximum height of lift | 6.8m (top of upper column) |
| Telehandler Information | Telehandler make | Merlo |
| | Telehandler model | P38.14 + P38.14 Plus |
| | Stabilizer configuration | Front (2.42m extension) |
| | Maximum stabilizer load | 5.8 tonne |
| Site Conditions | Access to lift area | Metalled site road |
| | Ground conditions | Firm clay – Can moulded by strong finger pressure |
| | Void underground | None - Based on information from Principal Contractor |
| | Underground services | None - Based on information from Principal Contractor |
| | Public interface | None – Secured construction site |
| | Overhead lines | None observed during site visit |

3. Identification of Hazards (Example only)

a. People in area struck by:

- Telehandler boom
- Telehandler chassis
- Moving load

b. Telehandler stability:

- Ground unable to support telehandler
- Telehandler overloaded
- Telehandler failure

- c. Movement of load:
 - Load collides with structure
 - Load collides with other plant - cranes, excavators etc
 - Load/telehandler boom comes within arcing distance of overhead lines
 - Persons hand crushed/trapped by load
- d. Suspended load:
 - Load may fall on person
 - Loose parts on load may fall
- e. Working at Height:
 - Person falling from height when attaching or removing slings from load
- f. Environmental conditions:
 - High wind causes load to collide with fixed object
 - Telehandler becomes unstable

4. Risk Assessment (Example Only)

| Operation/Issue | Hazard | Risk | Control Measures to Avoid or Minimise Risk | Residual Risk |
|------------------------|---|-------------|---|----------------------|
| People in area | Struck by: <ul style="list-style-type: none"> • Telehandler boom • Telehandler chassis • Moving load | High | <ul style="list-style-type: none"> • Public excluded from secure site • Establish effective exclusion zone in conjunction with Principal Contractor • All personnel to wear high visibility clothing • Ensure lifting team are fully briefed on need to keep clear of load during lifting and telehandler during travelling | Low |
| Telehandler stability | Ground unable to support telehandler | Med | <ul style="list-style-type: none"> • Establish presence of voids/underground services with Principal Contractor • Assess ground and establish if there is a requirement for stabilizer mats • If required, Crane Supervisor to check that mats supplied match those specified in Method Statement | Low |
| | Telehandler overloaded | High | <ul style="list-style-type: none"> • Ensure weight of load is known and accurate • Telehandler operator to have valid CPCS card | Low |
| | Telehandler failure | Med | <ul style="list-style-type: none"> • Ensure telehandler has been adequately maintained and has current report of thorough examination. | Low |
| Movement of load | Load collides with structure | Med | <ul style="list-style-type: none"> • Tag line to be attached to load to control rotation | Low |
| | Load collides with other plant - cranes, excavators etc | High | <ul style="list-style-type: none"> • Establish effective exclusion zone in conjunction with Principal Contractor | Low |
| | Telehandler boom comes within arcing distance of overhead lines | High | <ul style="list-style-type: none"> • Establish presence or otherwise of overhead lines. • If present arrange for isolation or position telehandler boom/load outside minimum safe approach distance | Low |

| Operation/Issue | Hazard | Risk | Control Measures to Avoid or Minimise Risk | Residual Risk |
|--------------------------|--|-------------|---|----------------------|
| | Persons hand crushed/trapped by load | Med | <ul style="list-style-type: none"> • Tag line to be used • Gloves to be worn • All slinging to be completed by Slinger/Signaller with valid CPCS card | Low |
| Suspended load | Load may fall on person | High | <ul style="list-style-type: none"> • Ensure telehandler has been adequately maintained, has current report of thorough examination and that pre-use checks are carried out. • Ensure lifting accessories with adequate capacity have been selected, that they are adequately maintained, have current report of thorough examination and that pre-use checks are carried out. | Low |
| | Loose parts on load may fall | High | <ul style="list-style-type: none"> • Inspect load for loose objects prior to lift and secure/remove loose items. • All personnel to wear hard hats. | Low |
| Working at Height | Person falling from height when attaching or removing slings from load | High | <ul style="list-style-type: none"> • Delivery vehicle to be provided with ladder for access/egress. • Access to steelwork and fall protection arrangements as steelwork installation Method Statement. | Low |
| Environmental conditions | High wind causes load to collide with fixed object | High | Wind speed to be checked with hand held anemometer by Crane Supervisor before lift starts. Lift to be aborted if wind speed exceeds 20mph. | Low |
| | Telehandler becomes unstable | High | | Low |

5. Category of Lift (Example only)

| | |
|---------------------------------|--------------|
| Load Complexity | 1 |
| Environmental Complexity | 2 |
| Lift Category | Intermediate |

6. Lifting Team (Example only)

| Role | Name | CPCS Card No. | Mobile Phone |
|-----------------------------|-----------------|----------------------|---------------------|
| <i>Competent Person</i> | Keith Carter | 123 456 | 07234 56789 |
| <i>Crane Supervisor</i> | Dwayne Joseph | 123 457 | 07234 56788 |
| <i>Telehandler Operator</i> | Graham Dillaway | 123 458 | 07234 56787 |
| <i>Slinger/signaller</i> | Dwayne Joseph | 123 457 | N/A |

7. Equipment (Example only)

| Equipment | Specification | Maintenance Records | TE Report |
|----------------------|--|-----------------------------------|--------------------------|
| Telehandler | Merlo P38.14 + P38.14 Plus, fitted with lifting hook attachment. See Fig 1 . Rated Capacity 1500kg @ 5.8m radius and 9.8m height | Current and with machine | Current and with machine |
| Lifting Accessories | 1 No 1.5m long single leg 8mm chain sling WLL 2000kg | Current and on site | Current and on site |
| | 4 No small bow shackle. WLL 3 tonne | Current and on site | Current and on site |
| Stabilizer Spreaders | Not required | N/A | N/A |
| Tagline | 10mm diameter Polypropylene Rope | Pre use check | N/A |
| Short Access Ladder | Youngman Lorry Ladder | Current and with delivery vehicle | N/A |

8. Procedure (Example only)

- a. Competent person must ensure that Principal Contractor and Crane Supervisor are in possession of latest revision of Method Statement. If Competent Person is not attending site for the lifting operation they must brief the Crane Supervisor;
- b. Arrive on site and liaise with Principal Contractor;
- c. Inspect lifting area to ensure that nothing has changed since last site visit;
- d. Competent Person to brief Lifting Team on contents of Method Statement. Crane Supervisor, Operator and Slinger/Signaller to sign Method Statement to acknowledge receipt and understanding of briefing. If Competent Person not on site, briefing to be undertaken by Crane Supervisor;
- e. Establish exclusion zone in conjunction with Principal Contractor to exclude both personnel, other cranes and overhead plant;
- f. Remove forks and install lifting hook to fork carriage;
- g. Position telehandler as shown on attached Drawing No. SC-GBA-M6-00-TE-W-00001;
- h. Attach single leg chain sling to telehandler hook
- i. Carry out "dry run" to ensure that telehandler hook can reach required height and radius;
- j. Travel telehandler to delivery vehicle;
- k. Attach shackle to first column;
- l. Attach sling to telehandler lifting hook and load;

- m. Ensure all personnel are clear of the load;
- n. Lift load from delivery vehicle;
- o. Ensure all personnel are clear of the telehandler and the suspended load;
- p. Transport to set up position ensuring that load is kept just clear of ground at minimum radius.
- q. Position telehandler as shown on attached Drawing No. SC-GBA-M6-00-TE-W-00001 and deploy stabilisers;
- r. Attach tag line to load;
- s. Ensure all personnel are clear of load;
- t. Lift load to position and lower under direction of Slinger/Signaller, controlling load swing with tag line;
- u. Steel erectors to install column and release sling;
- v. Retract boom;
- w. Repeat for further three columns;
- x. Steel erectors to recover shackles;
- y. Remove exclusion zone in conjunction with Principal Contractor.

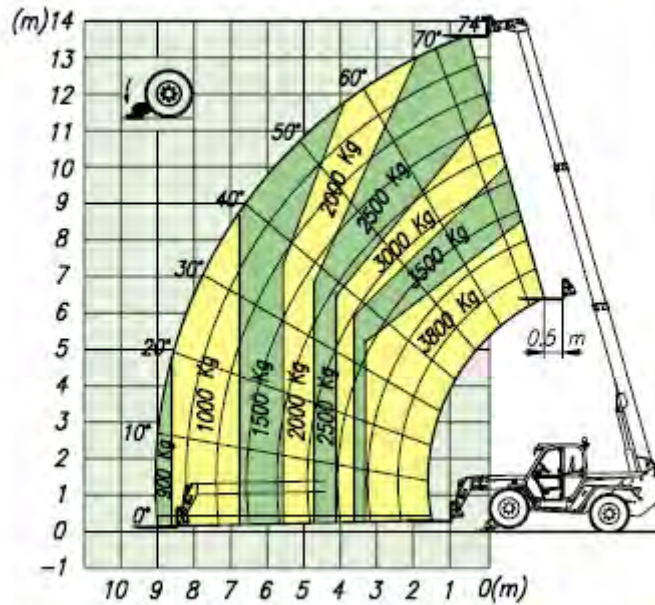
9. Revision Status and Distribution of Method Statement (Example only)

| | | |
|---------------------|----------------------------|---------------|
| Issue Date | 01.02.10 | |
| Revision | Rev 2 | |
| Distribution | <i>Competent Person</i> | Keith Carter |
| | <i>Crane Supervisor</i> | Dwayne Joseph |
| | <i>Site Representative</i> | Andy Builder |

10. Signatures (Example only)

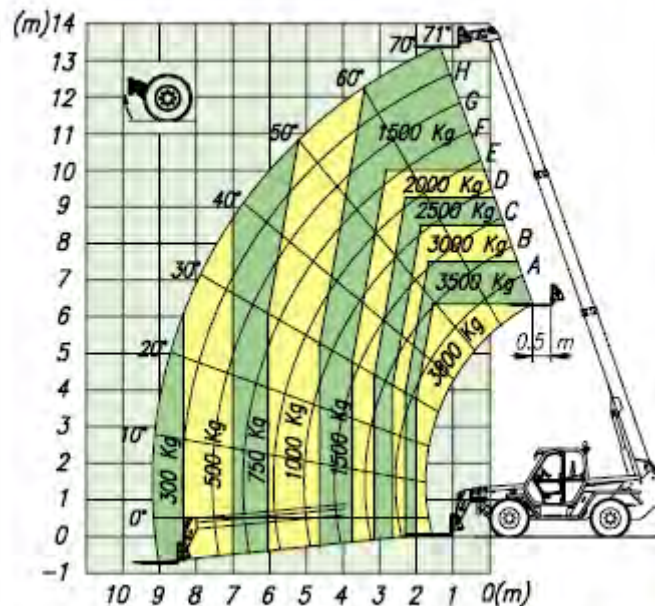
| | | |
|-----------------------------|---|------------|
| Competent Person | I have prepared this method statement and authorise the Lifting Team to proceed with the lifting operation in compliance with this document. Any changes to the specified procedure must be approved by me before the lifting operation begins | K Carter |
| Crane Supervisor | I have been briefed on this Method Statement by the Competent Person. I have checked that the lifting plan reflects the situation on site and the details are correct. I have briefed the contents of the Method Statement to the other members of the Lifting Team | D Joseph |
| Slinger/Signaller | I have been briefed on and understand the Method Statement for this lifting operation. | D Joseph |
| Telehandler Operator | I have been briefed on and understand the Method Statement for this lifting operation. | G Dillaway |
| Site Representative | I confirm that I have been briefed on and understand the Method Statement for this lifting operation. I also confirm that the ground on which the Telehandler will stand can accept the stabilizer loads provided to me by Steel-up-Quick. | A Builder |

P 38.14 + P 38.14 PLUS on stabilisers



EN 1459/B

P 38.14 + P 38.14 PLUS on tyres



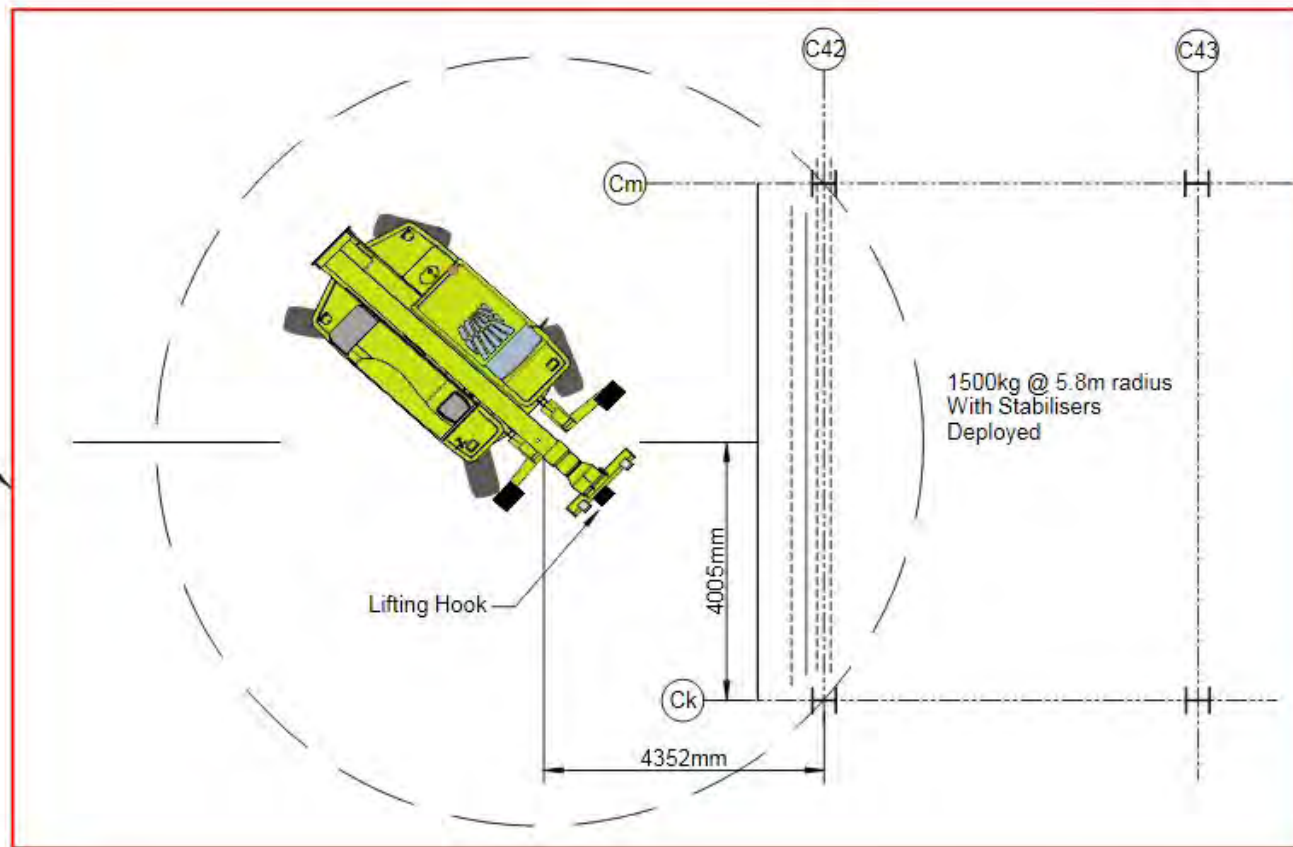
EN 1459/B

Rated Capacity Charts - On Stabilisers and on Tyres



Figure C1 - Lifting Hook

12m x 20m Exclusion Zone



| | |
|---|--------|
| Max Load Radius | 5.8m |
| Rated Capacity @ Max Radius With Stabilisers Deployed | 1500kg |
| Max Lift Height | 6.4 m |



Steel-up-Quick Ltd
Coketown - SE8 4HN
Tel : 01932 272408 Fax : 01932 272484

| | | | | |
|----------|-------------------------|-----|----------|---------|
| Title | Column Installation | Rev | Job | Remarks |
| | | | | |
| Drawn By | A Draftsman | Rev | 01/04/09 | |
| | | | | |
| Scale(s) | 1:100 | Rev | A4 | |
| | | | | |
| Proj No | SC-GBA-M8-00-TE-W-00001 | Rev | P0 | |
| | | | | |

Annex D – Example of a Lifting Schedule

| Lifting Schedule | | | | | | | | | | |
|---------------------------------|--------------------|--------------------|-------------------------------|------------------------|------------------------|-------------------------|--------------------------------|------------|-----------------------------|---|
| Site Location | Canal Street, Bury | | Employing Organisation | BBH Construction | | Competent Person | C Crane | | Contact Telephone No | 123 456 7890 |
| Item to be Lifted | Item Weight | Picked From | Transported To | Max Lift Radius | Max Lift Height | Lift Category | Lifting Accessories | | | Comments |
| | | | | | | | Type | SWL | Weight | |
| Crofters Brick Pack (500 pack) | 1400 kg | Compound | Grid A12 | 5.5 m | 12 m | Basic | Forks | 2000 kg | 180 kg | Use net to prevent falling objects |
| Durox Superbloc 125 (100 pack) | 1100 kg | Compound | Grid B20 | 5 m | 14 m | Basic | Forks | 2000 kg | 180 kg | Use net to prevent falling objects |
| Roof Truss K480 (5 pack) | 500 kg | Delivery Vehicle | Compound | 6 m | 8 m | Basic | 2 No Violet web slings 2m long | 1400 kg | 4 kg | Crane jib |
| Roof Truss K480 (Single) | 100 kg | Compound | Grid D10 | 10 m | 10 m | Intermediate | 2 No Violet web sling 2m long | 1400 kg | 4 kg | Crane jib + Separate slinger/signaller required on roof |
| Floor Beams 4m (10 pack) | 800 kg | Delivery Vehicle | Compound | 4 m | 8 m | Basic | Forks | 2000 kg | 180 kg | Exclusion zone |
| Finishing Plaster (10 bag pack) | 300 kg | Compound | Grid A6 | 6 m | 14 m | Basic | Forks | 2000 kg | 180 kg | Use net to prevent falling objects |

Annex E – Example of a Checklist for Familiarisation

| | |
|---|------------|
| Telehandler Familiarisation Handover Checklist | No. |
|---|------------|

| | |
|-----------------------|------------------|
| Issuing Depot: | Date: |
| Handover By: | Fleet No. |
| Machine Type: | |
| Customer: | |

| Operation of controls | ✓ | Fluid levels | ✓ |
|---|--------------------------|----------------------------------|--------------------------|
| Gear Selection | <input type="checkbox"/> | Fuel | <input type="checkbox"/> |
| Forward and reverse selection | <input type="checkbox"/> | Hydraulic oil | <input type="checkbox"/> |
| Steering mode selector | <input type="checkbox"/> | Engine oil | <input type="checkbox"/> |
| Boom reach raised | <input type="checkbox"/> | Batteries | <input type="checkbox"/> |
| Boom reach lowered | <input type="checkbox"/> | Transmission/powertrain | <input type="checkbox"/> |
| Boom reach out | <input type="checkbox"/> | Coolant | <input type="checkbox"/> |
| Boom reach in | <input type="checkbox"/> | Screen wash reservoir | <input type="checkbox"/> |
| Carriage tilt | <input type="checkbox"/> | Brake system reservoir | <input type="checkbox"/> |
| Stabiliser legs | <input type="checkbox"/> | Documentation/equipment | |
| Chassis levelling operation | <input type="checkbox"/> | Manufacturer's operating manual | <input type="checkbox"/> |
| LLMI/LLMC unit test | <input type="checkbox"/> | Load charts | <input type="checkbox"/> |
| Brake pedal | <input type="checkbox"/> | Thorough examination certificate | <input type="checkbox"/> |
| Horn | <input type="checkbox"/> | Operator's record book | <input type="checkbox"/> |
| Wiper | <input type="checkbox"/> | EC conformity certificate | <input type="checkbox"/> |
| Lights | <input type="checkbox"/> | Grease gun/tyre pressure gauge | <input type="checkbox"/> |
| Third service control | <input type="checkbox"/> | Comments | |
| Stop button | <input type="checkbox"/> | | |
| Engine isolation switch and key | <input type="checkbox"/> | | |
| Handbrake | <input type="checkbox"/> | | |
| I, the undersigned, acknowledge that I have been familiarised with the above controls and checks. | | | |
| Name (print) | | Signature | |
| Company | | Date | |

NOTE: Familiarisation is also required for telehandler attachments

Annex F – Example of a Daily (pre-use) Check List

Operator's Telehandler Pre-Use Check Sheet

| | |
|------------------------------|---------------------|
| Operator's Name: | Date: |
| Telehandler Make: | Model: |
| Motive Power: | Attachments: |
| Operator's Signature: | |

| | <i>Item</i> | OK (✓) | N/A (✓) | Defect Reported |
|-----|---|------------------|-------------------|------------------------|
| | Visual Pre - start Check or "walk-around." | | | |
| 1. | Verify location of handbook and confirm machine has a current report of Thorough Examination | | | |
| 2. | General condition and cleanliness, including cab | | | |
| 3. | Evidence of any oil leaks (include hydraulic cylinders, fittings, valves and wheel hubs) | | | |
| 4. | Fork carriage, (deformed arms, back rest damage, distortion) | | | |
| 5. | Attachments, (completeness, damage, decals, rated capacity, fastenings) | | | |
| 6. | Quick hitch fittings (if applicable) | | | |
| 7. | Pin security | | | |
| 8. | Wheels (bent rims and nut security) & tyres (worn tread, cuts and damage to side walls and tread) | | | |
| 9. | Tyre pressure (check using gauge) | | | |
| 10. | Hydraulic hose and pipe condition and security | | | |
| 11. | Cab condition, ROPS/FOPS mounting | | | |
| 12. | Cab windows, including roof section, to be clean. | | | |
| 13. | Cracked/unauthorised welding | | | |
| 14. | Guards, cowlings and fasteners | | | |
| 15. | Decals/labels, including manufacturer's rating plate | | | |
| 16. | Fire extinguisher (in-date, charged?) | | | |
| 17. | Manufacturer safety bars | | | |
| 18. | Mirrors / CCTV | | | |

| Physical Check of lubricants etc, (wearing gloves) | | | | |
|--|--|--|--|--|
| 19. | Engine oil | | | |
| 20. | Transmission oil | | | |
| 21. | Coolant | | | |
| 22. | Batteries | | | |
| 23. | Brake fluid | | | |
| 24. | Hydraulic oil | | | |
| 25. | Air filter indicator | | | |
| 26. | Fan belt deflection | | | |
| 27. | Fuel | | | |
| 28. | Visual check of all engine components | | | |
| Running Checks | | | | |
| 29. | All controls for correct function | | | |
| 30. | All gauges and instruments including horn and hour meter | | | |
| 31. | All lights/indicators including beacon | | | |
| 32. | Heater, defroster and wipers for correct function | | | |
| 33. | Verify seat position and seat belt function | | | |
| 34. | Any unusual noises | | | |
| 35. | Service brakes | | | |
| 36. | Verify all steering modes | | | |
| 37. | Stabilisers/outriggers/chassis tilt/360 rotation. (as appropriate) | | | |
| 38. | Parking brake test | | | |
| 39. | Load charts | | | |
| 40. | LLMI | | | |
| 41. | LLMC (if fitted) | | | |
| 42. | All warning devices must be operational | | | |
| NOTE: All pre-use checks must be carried out in accordance with the specific instructions published in the relevant manufacturer's operating handbook | | | | |

| Criteria Statement for use with Pre-use Check Sheet | |
|--|---|
| Item | Criteria |
| Fork arms (or attachment) | Visual checks on fork arms (or other attachment) to ensure that they are undamaged, not distorted and are securely attached to the carriage plate. |
| Carriage-plate (including Quick-hitch) | A visual check on the carriage plate to ensure that it is in good condition, not distorted and that any quick-hitch fittings are in good condition and correctly latched. |
| Telescopic boom | A visual check to ensure that there is no obvious damage or distortion, that all warning decals are clear and in place and, where there are visible hydraulic hoses and pipes, that they are undamaged and free to track the boom. A working check might come later. |
| Hydraulics (pipes, union, hoses) | A visual check on all other hydraulic pipes, unions and hoses to ensure that there is no damage, leakage or distortion likely to lead to breaks, etc. where visible, a check on hydraulic rams to ensure that there is no rust or scoring likely to lead to leakage past seals, etc. |
| Wheels & tyres | A visual check to ensure that all wheel nuts are present without signs of "working", that there is no leakage from hubs, that no foreign bodies have become trapped in the wheel mechanism, that tyres are in good condition with no chunking, splits or signs of apparent structural breakdown. This could include a periodic check on tyre pressures. |
| External condition (including mirrors) | This would be a general walk around to note any surface damage, light lenses damaged, mirrors in place and adjusted, decals clearly displayed, etc. Also included would be any moveable panel being secured |
| CCTV equipment | If the machine is fitted with CCTV, is it in position, undamaged and clean. A working check might come later. |
| Cab & cab doors / windows | An inspection of all cab windows and door for cleanliness and any evidence of damage, cab door lock effective and secure, and with particular attention on the window alongside the main boom to be in position, secure, clean and undamaged. |
| Operating cab | This check is about the floor of the cab and the access to it including mounting steps, rubber mats, exclusion bellows, etc, and clearing any rubbish, mud, stones, paper, refreshment refuse, etc that could block the full operation of any of the controls. |
| Operator's seat & restraint | This is a check on the seat itself, its condition and adjustability, and any presence microswitch control that might be installed. Also included would be the condition of the restraint system and its fastenings, as necessary including the inertia lock. |
| Rated Capacity Plate/Load Charts | Once in the seat, the operator can check the load charts and rated capacity information for condition, content and clarity. |
| Starting procedure | The operator can then insert the key and start the start-up procedure, making sure that the machine will start correctly. |
| Warning lights and instruments | Once started up, the operator can then check warning lights, hour meters, instruments for correct operation and any fault codes being shown. |
| Lights & beacons | A round check of all lights and beacons for operation. |
| Audible warnings | A round check of all audible warning systems. |
| Hydraulic controls | The operator should operate all hydraulic controls over their full range, noting any obvious defects, rough operation, ability to reach full extension, which will (a) show that the system is fully operational and (b) lubricate the whole system. Any evidence of rubbing, scoring, leakage or other damage should be recorded. |
| Load Moment Indicator/Control | The operation of the longitudinal load moment indicator or control can be checked during the above process. |
| Axle weight sensors | The operation of any load sensors on the rear axle could also be checked at the same time. |
| Stabilisers (if applicable) | Where stabilisers are fitted, they should be checked to ensure that feet are not distorted or missing, that they are secure and correctly stowed. It may also be possible to ensure that rams are in good condition and that hydraulic seals are not leaking. A full working check should be performed. |
| Slew turntable (if applicable) | If fitted, the slewing operation can be checked to ensure that it is fully operational and that there are no obvious defects. |
| Drive & braking (All systems) | The operator should check all brake systems in both travel directions and that drive is satisfactorily delivered in all modes. |
| Steering (All modes) | Finally, the steering should be operated, while the machine is moving in both directions, over its full steering lock in all modes (i.e. front-wheel, four-wheel and crab-steer). |

Annex G – Key Points for Telehandler Operators

- You have personal and legal responsibility to use all telehandlers safely. Serious misuse of telehandlers may well be treated as gross misconduct which could well lead to dismissal or individual prosecution;
- If it is not safe to start work - **Inform your supervisor**;
- If it is not safe to carry on working - **Stop and inform your supervisor**;
- Always follow the telehandler or attachment manufacturer's instructions
- The lifting of suspended loads with telehandlers and travelling with those loads, is generally more hazardous than lifting unit loads on the forks of a telehandler. The CPA publishes specific guidance on this topic at www.cpa.uk.net

1.0 Before Starting

- 1.1 Ensure that you are trained and authorised to operate telehandlers and have been familiarised with the specific make and model of telehandler you are to operate, including driving on the public highway (if applicable);
- 1.2 Verify with your supervisor that the telehandler has a current thorough examination report and has been suitably maintained;
- 1.3 Always carry out daily checks, including safety devices, before starting your shift;
- 1.4 Report all defects to your supervisor;
- 1.5 Ensure you have been briefed by your supervisor on the task, hazards, control measures (including designated exclusion zones) and site conditions that may affect the safe operation of the telehandler;
- 1.6 Ensure that you are comfortable with carrying out the task;
- 1.7 Ensure you have had authorisation from your supervisor to carry out the task;
- 1.8 If it is not safe to start work - **Inform your supervisor**.

2.0 During Use

- 2.1 Ensure that you understand the telehandler's limitations on the rating plate and load charts. Never overload the telehandler;
- 2.2 Know your site – be aware of slopes, ground conditions, visibility, pedestrians and other potential hazards that may affect the safe operation of the telehandler;
- 2.3 Wear your seat belt at all times to reduce the risk of injury should the telehandler overturn. **It could save your life!**
- 2.4 Ensure you are familiar with using and changing any attachments you use. You must understand the attachment's effect on the telehandler's actual capacity and the need for any derating;
- 2.5 Ensure you comply with the legal requirements for driving your telehandler on the public highway;
- 2.6 If it is not safe to carry on working - **Stop and inform your supervisor**.

3.0 After Use

- 3.1 When leaving the telehandler cab, park on level ground, lower the boom/attachments, apply the parking brake, leave the transmission in neutral, switch off and take the ignition keys out;
- 3.2 Get in and out of the cab safely.

NOTE: Further detailed guidance on the safe use of telehandlers can be downloaded free of charge from the Construction Plant-hire Association's website at www.cpa.uk.net

NOTE: These key points for Operators should be read with the corresponding key points for Supervisors of telehandler Operators

Annex H - Key Points for Supervisors of Telehandler Operators

- You have personal and legal responsibility to ensure that all telehandlers are used safely. Serious misuse of telehandlers may well be treated as gross misconduct which could well lead to dismissal or individual prosecution;
- Ensure that the operator knows that if it is not safe to start work - **They must inform you;**
- Ensure that the operator knows that if it is not safe to carry on working - **They must stop and inform you;**
- Ensure that the telehandler or attachment manufacturer's instructions are always followed.
- The lifting of suspended loads with telehandlers and travelling with those loads, is generally more hazardous than lifting unit loads on the forks of a telehandler. The CPA publishes specific guidance on this topic at www.cpa.uk.net

1.0 Before Starting

- 1.1 Ensure that the telehandler has a current thorough examination report and has been suitably maintained;
- 1.2 Ensure that the operator is trained to operate telehandlers and has been familiarised with the specific make and model of telehandler they are to operate, including driving on the public highway (if applicable);
- 1.3 Confirm that daily checks, including safety devices, are carried out before the start of each shift and that all defects are recorded and rectified;
- 1.4 Assess site conditions and check that there is adequate segregation of pedestrians and plant/vehicles in place;
- 1.5 Ensure you have briefed the operator on the task, hazards, control measures and site conditions that may affect the safe operation of the telehandler;
- 1.6 Confirm that the operator is comfortable with carrying out the task;
- 1.7 Ensure you have authorised the operator to carry out the task.

2.0 During Use

- 2.1 Confirm that the operator understands the telehandler's limitations on the rating plate and load charts, and that they should never overload the telehandler;
- 2.2 Ensure that the operator is familiar with the site and that they are aware of slopes, ground conditions, visibility, pedestrians and other potential hazards that may affect the safe operation of the telehandler;
- 2.3 Carry out regular spot checks on telehandlers working on site to monitor for safe working practices;
- 2.4 Check that the operator wears the seat belt to reduce the risk of injury should the telehandler overturn. **It could save their life!**
- 2.5 Confirm that the operator is familiar with using and changing any attachments;
- 2.6 Ensure that where the telehandler is driven on the public highway, all legal requirements are met.

3.0 After Use

- 3.1 Check that when leaving the telehandler cab the operator - parks on level ground, lowers the boom/attachments, applies the parking brake, leaves the transmission in neutral, switches off and takes the ignition keys out.

NOTE: Further detailed guidance on the safe use of telehandlers can be downloaded free of charge from the Construction Plant-hire Association's website at www.cpa.uk.net

NOTE: These key points for Supervisors should be read with the corresponding key points for telehandler Operators

Annex I - Key Points for Telehandler Operators - Lifting and Travelling with Suspended Loads

- You have personal and legal responsibility to use all telehandlers safely. Serious misuse of telehandlers may well be treated as gross misconduct which could well lead to dismissal or individual prosecution;
- If it is not safe to start work - **Inform your supervisor**;
- If it is not safe to carry on working - **Stop and inform your supervisor**;
- Always follow the telehandler or attachment manufacturer's instructions.

1.0 Before Starting

- 1.1 Ensure that you are trained and authorised to operate telehandlers when lifting and travelling with suspended loads and have been familiarised with the specific make and model of telehandler you are to operate, including driving on the public highway (if applicable);
- 1.2 Verify with your supervisor that the telehandler, lifting attachments and lifting accessories have a current thorough examination report and has been suitably maintained;
- 1.3 Always carry out daily checks, including safety devices and lifting accessories, before starting your shift;
- 1.4 Report all defects to your supervisor;
- 1.5 Ensure you have been briefed by your supervisor on the task, hazards, control measures (including designated exclusion zones) and site conditions that may affect the safe operation of the telehandler. You should be given a copy of the lift plan or method statement for the task;
- 1.6 Ensure that you are comfortable with carrying out the task;
- 1.7 Ensure you have had authorisation from your supervisor to carry out the task;
- 1.8 If you have a slinger/signaller assisting you, inform them that they must stay clear of the moving path of your machine, maintain regular eye contact with you and work to an agreed code of signals;.
- 1.9 If it is not safe to start work - **Inform your supervisor**.

2.0 During Use

- 2.1 Ensure that you understand the telehandler's limitations on the rating plate and the specific load charts for lifting suspended loads. Never overload the telehandler;
- 2.2 Know your site – be aware of slopes, ground conditions, visibility, pedestrians and other potential hazards that may affect the safe operation of the telehandler;
- 2.3 Drive slowly and carefully when travelling with a suspended load;
- 2.4 Only travel on slopes if allowed by the manufacturer and ensure that you take extreme care when travelling on slopes with a suspended load;
- 2.5 Wear your seat belt at all times to reduce the risk of injury should the telehandler overturn. **It could save your life!**
- 2.6 Ensure you are familiar with using and changing any attachments you use. You must understand the attachment's effect on the telehandler's actual capacity and the need for any derating;
- 2.7 Maintain regular eye contact with your slinger/signaller and stop your machine immediately if you lose sight of them;
- 2.8 Ensure you comply with the legal requirements for driving your telehandler on the public highway;
- 2.9 If it is not safe to carry on working - **Stop and inform your supervisor**.

3.0 After Use

- 3.1 When leaving the telehandler cab, park on level ground, lower the boom/attachments, remove lifting accessories, apply the parking brake, leave the transmission in neutral, switch off and take the ignition keys out;
- 3.2 Get in and out of the cab safely.

NOTE: Further detailed guidance on the lifting and travelling with suspended loads using telehandlers and on the general safe use of telehandlers can be downloaded free of charge from the Construction Plant-hire Association's website at www.cpa.uk.net

Annex J - Key Points for Supervisors of Telehandler Operators - Lifting and Travelling with Suspended Loads

- You have personal and legal responsibility to ensure that all telehandlers are used safely. Serious misuse of telehandlers may well be treated as gross misconduct which could well lead to dismissal or individual prosecution;
- Ensure that the operator knows that if it is not safe to start work - **They must inform you;**
- Ensure that the operator knows that if it is not safe to carry on working - **They must stop and inform you;**
- Ensure that the telehandler or attachment manufacturer's instructions are always followed.

1.0 Before Starting

- 1.1 Ensure that the telehandler, lifting attachments and lifting accessories have a current thorough examination report and have been suitably maintained;
- 1.2 Ensure that the operator is trained to operate telehandlers when lifting and travelling with suspended loads and has been familiarised with the specific make and model of telehandler they are to operate, including driving on the public highway (if applicable);
- 1.3 Confirm that daily checks, including safety devices and lifting accessories, are carried out before the start of each shift and that all defects are recorded and rectified;
- 1.4 Assess site conditions and check that there is adequate segregation of pedestrians and plant/vehicles in place;
- 1.5 Find out if the telehandler is allowed to travel on slopes with a suspended load. If it is establish the maximum permitted gradient and ensure that you inform the operator;
- 1.6 Ensure you have briefed the operator on the task, hazards, control measures (including designated exclusion zones) and site conditions that may affect the safe operation of the telehandler. You should give the operator a copy of the lift plan or method statement for the task;;
- 1.7 Confirm that the operator is comfortable with carrying out the task;
- 1.8 Ensure you have authorised the operator to carry out the task.
- 1.9 If a slinger/signaller is being used, ensure that they are fully briefed to stay clear of the machine's moving path at all times, maintain regular eye contact with the operator and work to an agreed code of signals.

2.0 During Use

- 2.1 Confirm that the operator understands the telehandler's limitations on the rating plate and the specific load chart for lifting suspended loads, and that they should never overload the telehandler;
- 2.2 Ensure that the operator is familiar with the site and that they are aware of slopes, ground conditions, visibility, pedestrians and other potential hazards that may affect the safe operation of the telehandler, including the need for extreme care when travelling on slopes with a suspended load;
- 2.3 Carry out regular spot checks on telehandlers working on site to monitor for safe working practices;
- 2.4 Check that the operator wears the seat belt to reduce the risk of injury should the telehandler overturn. **It could save their life!**
- 2.5 Confirm that the operator is familiar with using and changing any attachments;
- 2.6 Ensure that the operator knows that they must maintain regular eye contact with the slinger/signaller and stop their machine immediately if they lose sight of them;
- 2.7 Ensure that where the telehandler is driven on the public highway, all legal requirements are met.

3.0 After Use

- 3.1 Check that when leaving the telehandler cab the operator - parks on level ground, lowers the boom/attachments, applies the parking brake, leaves the transmission in neutral, switches off and takes the ignition keys out.

NOTE: Further detailed guidance on the lifting and travelling with suspended loads using telehandlers and on the general safe use of telehandlers can be downloaded free of charge from the Construction Plant-hire Association's website at www.cpa.uk.net

Annex K - Further Information and Guidance

Legislation

Health and Safety at Work etc. Act 1974. London: The Stationery Office.

Provision and Use of Work Equipment Regulations 1998

L22 *Safe use of work equipment*, HSE Books

The Lifting Operations and Lifting Equipment Regulations 1998

L113 *Safe use of lifting equipment*, HSE Books

The Management of Health and Safety at Work Regulations 1999 as amended

The Workplace (Health, Safety and Welfare) Regulations 1992

Work at Height Regulations 2005

The Supply of Machinery (Safety) Regulations 2008

The Construction (Design and Management) Regulations 2007

Personal Protective Equipment at Work Regulations 1992

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013

The Road Vehicles (Registration and Licensing) Regulations 2002

Standards

BS 6166-3:1998, *Lifting slings — Part 3: Guide to the selection and safe use of lifting slings for multi-purposes*

BS 6210:1983, *Code of practice for the safe use of wire rope slings for general lifting purposes*

BS 6968:1988, *Guide for use and maintenance of non-calibrated round steel lifting chain and chain slings*

BS 7121-1:2006, *Code of practice for safe use of cranes — Part 1: General*

BS 7121-2-1:2012, *Code of practice for the safe use of cranes - Part 2-1: Inspection, maintenance and thorough examination – General*

BS 7121-2-3:2012, *Code of practice for the safe use of cranes Part 2-3: Inspection, maintenance and thorough examination – Mobile cranes*

BS 7121-3:2003, *Code of practice for safe use of cranes — Part 3: Mobile cranes*

BS 8460:2005, *Code of practice for the safe use of MEWPs*

BS EN 1459:1998 + A2:2010, *Safety of industrial trucks. Self propelled variable reach trucks*

BS EN 15000:2008, *Safety of industrial trucks — Self propelled variable reach trucks — Specification, performance and test requirements for longitudinal load moment indicators and longitudinal load moment limiters*

Other Publications

HSE Leaflet INDG218 – *Guide to Risk Assessment*

HSE Leaflet INDG163 – *Five Steps to Risk Assessment*

HSE Leaflet INDG433 - *Safety during tyre inflation in motor vehicle repair*

HSE Publication L73 - *A guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995*, Fourth edition 2012, HSE Books

HSE (L117) *Rider operator lift trucks: Operations training and safe use Approved Code of Practice and guidance*, Third edition 2013, HSE Books

HSE Publication HS(G)6 - *Safety in Working with Lift Trucks 2000*, HSE Books

HSE Publication HSG 144 - *The safe use of vehicles on construction sites 2009*, HSE Books

HSE Construction Information Sheet No. 58 - *The selection and management of mobile elevating work platforms*, HSE Books

HSE Information Sheet MISC 614 - *Preventing falls from boom type mobile elevating work platforms*, HSE Books

HSE Sector Information Minute No. 05/2010/03 - *Visibility for operators of telehandlers (variable reach trucks)*

HSE Operational Circular OC 803/70 - *Closed Circuit TV on Road Going Vehicles*

Department for Transport Information Sheet - *Works Trucks: A brief guide*, DfT website

Driver and Vehicle Licensing Agency INF52 - *Information for drivers of large vehicles*

Operator's safety code for rough terrain trucks, British Industrial Truck Association

Do's & don'ts for users of industrial and rough terrain lift trucks, British Industrial Truck Association

Stability Awareness for powered industrial rough terrain lift trucks, British Industrial Truck Association

Safe Use of Quick Hitches on Excavators - Best Practice Guide. Strategic Forum for Construction - Plant Safety Group

Medical Fitness to Operate Construction Plant - Good Practice Guide. Strategic Forum for Construction - Plant Safety Group

Ground Conditions for Construction Plant - Good Practice Guide. Strategic Forum for Construction - Plant Safety Group

Code of practice for the safe use of lifting equipment. Lifting Equipment Engineers' Association

Maintenance, Inspection and Thorough Examination of Mobile Cranes - Best Practice Guide. Construction Plant-hire Association

Quality Assurance Procedural Code to be used when carrying out thorough examinations on industrial trucks to GN28, Consolidated Fork Truck Services Ltd

Voluntary Code of Practice for Plant and Equipment Operator Training, Off-highway Plant and Equipment Research Centre

A Practical Guide to Enhancing the All-round Awareness of Plant Operators, Off-highway Plant and Equipment Research Centre

CECE guidance on the classification of attachments to construction equipment for the machinery directive 2006/42/EC, Committee for European Construction Equipment

BITA Guidance Notes

| | |
|------|---|
| GN28 | Thorough examination & safety inspections of industrial lift trucks |
| GN29 | Truck control levers |
| GN40 | Handling of single suspended loads by rider controlled counterbalanced & reach trucks |
| GN44 | Rough terrain high lift telescopic handlers training guidance |
| GN49 | Engineers working at heights |
| GN50 | Tyre tread wear |
| GN54 | Specification for longitudinal load moment indicators for variable reach trucks |
| GN55 | Compliance with the machinery directive and application of the CE Mark |
| GN57 | Industrial trucks on public roads |
| GN60 | Operator restraint + HSE information sheet 'Fitting & use of restraining systems on lift trucks.' |
| GN61 | Planning & Management of Construction Sites for the Safe Use of Rough Terrain Telescopic Handlers |
| GN62 | Maintenance, inspection & repair of fork arms & attachments |
| GN65 | Overhead Guard (FOPs) Damage |
| GN67 | Multi-Piece Pneumatic Tyred Wheels - Inspection, Maintenance & Repairs |

NOTE: These Guidance Notes are provided free to BITA members and may be purchased by non-members from the BITA Store at <http://www.bita.org.uk/bitacart.aspx>

Useful Websites

| | |
|---|--|
| British Industrial Truck Association | www.bita.org.uk |
| Construction Plant-hire Association | www.cpa.uk.net |
| CITB | www.citb.co.uk |
| Health and Safety Executive | www.hse.gov.uk |
| Home Builders Federation | www.hbf.co.uk |
| Lifting Equipment Engineers Association | www.leea.co.uk |
| Off-highway Plant and Equipment Research Centre | www.operc.com |
| Safety Assessment Federation | www.safed.co.uk |
| Strategic Forum for Construction | www.strategicforum.org.uk |
| UK Contractors Group | www.ukcg.org.uk |

Annex L - Topic Index

| Topic | Section | Topic | Section |
|-----------------------------------|---|------------------------|---------------------------|
| Attachments | 3.10, 5.3, 6.2 10.8 | Stability | 1.8.1, 4.1, 4.2 10.7.1 |
| Competent person | 3.1, 8.2.1 | Supervisors | 1.6, 8.2.2 |
| Communications | 3.8 | Supervision | 10.2, 11.5 |
| Definitions | 2.0 | Telehandler principles | 1.2, 4.0 |
| Familiarisation | 1.7, 9.0, Annex E | Telehandler types | 1.3, 5.0 |
| Inclines, slopes and gradients | 10.5 | Thorough examination | 1.1, 13.0 |
| Information | 1.5, 7.0 Annex G | Traffic Management | 10.4.1 |
| Inspection | 1.10, 7.0, 12.1 12.2, 12.8, 12.9 | Training | 8.3, 8.4 |
| Lifting of persons | 3.10, 10.11 | Tyres | 4.2, 12.11 |
| Lifting suspended loads | 3.11, 4.5, 8.4, 10.10, Annex, B, C, I & J | Visibility | 1.8.2, 4.6, 4.7, 10.3 |
| Load stability | 10.7.2 | Works truck | 10.4.5 |
| Loading and unloading | 10.7 | Weight of the load | 10.6 |
| LLMI and LLMC | 4.3 | | |
| Method statement | 3.7, Annex A, B & C | | |
| Maintenance | 1.10, 12.1, 12.6 12.8, 12.9 | | |
| Operators | 1.6, 8.2.3 | | |
| Planning | 1.1, 3.0 | | |
| Pre-use checks | 12.1, 12.2 Annex F | | |
| Public road operation | 10.4.4 | | |
| Quick hitches | 5.4 | | |
| Review and monitoring | 1.9, 11.0 | | |
| Risk assessment | 3.4, Annex A, B, C | | |
| Safe Use | 1.8, 10.0 | | |
| Selection | 1.4, 6.0 | | |
| Site Conditions | 10.4 | | |
| Site housekeeping | 10.4.2 | | |

Annex M - Working Group Membership

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NOTE: The above list includes all those who have kindly given freely of their time and expertise to work on the any of the versions of the guidance document and does not necessarily reflect the current membership of the Working Group

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