SPECIFICATION GUIDE

‘BIG ENOUGH TO COPE, SMALL ENOUGH TO CARE’
INTRODUCTION

AFTER NEARLY 3 DECADES OF PROVIDING EXCELLENT SERVICE AND VALUE FOR MONEY, KING LIFTING IS TODAY THE LEADING CRANE HIRE, HEAVY LIFT, MACHINERY MOVEMENT AND TRANSPORT SPECIALIST IN THE UNITED KINGDOM.

Operating an extensive and modern fleet of vehicles & equipment from a network of depots across the UK, has always allowed King Lifting to meet and exceed customers expectations. The fleet includes all-terrain and city class cranes, mobile and pedestrian operated tower cranes together with semi low & low loaders, flatbed vehicles fitted with lorry loaders and highly specialised plant & machinery movement equipment.

The accreditation of our Quality Management System to BS EN ISO 9001:2001 is not only a sign of the company’s effectiveness but is a guarantee of consistently high standards of service.

King Lifting as an Environmentally Friendly company operate an Environment Management System which complies to the requirements of BS EN ISO 14001:2004.

We are members of the Construction Plant-hire Association Freight Transport Association are a CPCS Construction Plant Competence Scheme accredited Test Centre and maintain both internal and external consultants to assist with all aspects of Health and Safety, Environmental and Employment Law.

At King Lifting we are totally committed to ensuring the safety of our customers, employees and the public. We continue to promote a safety culture and invest in the highest levels of training and equipment for all our employees.

If you choose to undertake the lifting operations on a CPA Crane Hire only basis, ‘BS 7121 - Safe Use of Cranes’ and recommendations from the Health and Safety Executive place the responsibility of providing a suitably qualified and experienced Appointed Person on the customer. The Appointed Person is responsible for planning the lift and preparing the necessary method statement and risk assessments prior to the commencement of the lifting operation.

In this high risk industry King Lifting recommend that customers who are not experienced in hiring cranes and therefore not aware of the responsibilities, duties and risks involved, take advantage of our CPA Contract Lift service.
BRISTOL DEPOT
Third Way, Avonmouth, Bristol, BS11 9YL
T: 01179 821121 F: 01179 235762

NORTHAMPTON DEPOT
Cavalry Hill, Cavalry Hill Industrial Park, Weedon, Northampton, NN7 4PP
T: 01327 342180 F: 01327 342764

SOUTHAMPTON DEPOT
Unit G3, Oceanic Way, Marchwood Industrial Park, Marchwood, Southampton, SO40 4BD
T: 02380 661384 F: 02380 661494

SOUTH WALES DEPOT
Tir-y-berth Industrial Est, Tir-y-berth, Hengoed, Mid Glamorgan, CF82 8AU
T: 01443 812457 F: 01443 814143

SWINDON DEPOT
Darby Close, Cheney Manor Industrial Est, Swindon, SN2 2PN
T: 01793 542740 F: 01793 514837

WEST LONDON DEPOT
Stockley Farm Road, Stockley Park, West Drayton, UB7 9BW
T: 01895 446443 F: 01895 446449

EAST LONDON DEPOT
Albion Parade, Canal Basin, Gravesend, Kent, DA12 2RN
T: 01474 321721 F: 01474 321821

YE OVIL DEPOT
Westlands, Lysander Road, Yeovil, BA20 2YB
T: 07778 879606 F: 01935 704843

'BIG ENOUGH TO COPE, SMALL ENOUGH TO CARE'
CAUTION

UNLESS YOU UNDERSTAND THE REQUIREMENTS CONTAINED IN THIS GUIDE, WE WOULD RECOMMEND YOU CHOOSE A CONTRACT LIFT.

DISCLAIMER

The configurations and duties for the cranes included in this specification are too numerous to include fully. The charts that have been included have been reproduced from manufacturer specifications, and while every effort has been made to ensure their accuracy, we do not accept any responsibility for errors or omissions.

We also need to draw your attention to the guidance notes to assist you with your crane selection.

All aspects of this document are for guidance purposes only. If you have any queries regarding the content or you require more extensive specifications please contact your nearest depot or alternatively the technical department on 0117 982 1121.
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The charts that have been included have been reproduced from manufacturer specifications, and while every effort has been made to ensure their accuracy, we do not accept any responsibility for errors or omissions.

We also need to draw your attention to the guidance notes on page iv to assist you with your crane selection.
DEFINITION OF CPA CRANE HIRE AND CPA CONTRACT LIFT

INTRODUCTION
The guide clarifies the contractual arrangement, duties, responsibilities and risks involved when hiring mobile cranes.

The Lifting Operations and Lifting Equipment regulations 1998 (LOLER) provide details of the statutory provisions for lifting operations. This is supported by the code of practice British Standard Safe Use of Cranes: BS7121 and in particular parts 1 and 3. Both of these documents clearly define the qualifications and duties of all personal involved.

TRAINING
The importance of correctly trained and certified personnel is critical King Lifting is committed to training and conducts regular training courses for employees and customers we are an CPCS accredited test and training centre.

Employees can contact our Health and Safety Department and customers should contact our training services on 0117 982 1121.

INSURANCE
The hire of any item of plant or equipment is inevitably accompanied by risk- either through accidental damage, theft or misuse. With the cost of modern mobile cranes ranging from £100,000 to over £2.5 million, the financial implications for customers in the event of a serious incident are significant.

BS7121- Safe Use of Cranes- notes these risks and highlights the need to protect against their consequences through appropriate comprehensive insurance cover. A factor which is now considered by many customers to be as important as the specification of equipment.

We at King Lifting are able to offer a damage waiver which is specifically tailored to the crane hire market at an increased cost and rely on own insurances.

Damage Waiver Scheme For CPA Crane Hire Only.

CPA Crane hire waives the right of recovery under Clause 13 of the CPA Model Conditions of Hire “Hirer’s Responsibility for Loss and Damage” at 16.5% of invoice value:

- Accidental damage to crane on hire to full replacement value.
- Loss of hire charges as a result of loss or damage to the crane.
- Cover in respect of goods being lifted up to a value of £25,000.
  Limit can be increased on request and the appropriate charge made.

NB: Excesses and exclusions apply.

Insurance Cover arranged by us for use in respect of CPA Contract Lift
Insurance is included within the contract lift price subject to following limits:

- A maximum liability of £25,000 in respect of goods lifted;
- A maximum liability of £5 million in respect of loss or damage to other property or death/injury to persons (Public Liability).

NB: Exclusions apply.
DEFINITION OF CPA CRANE HIRE
AND CPA CONTRACT LIFT

CPA CRANE HIRE

Under the terms of a standard CPA Crane Hire agreement, the crane and the operator are the responsibility of the customer once the crane leaves the public highway in order to access site. This includes travel on any access roads in the event that the site is not immediately adjacent to the public highway.

The Customer's Appointed Person is responsible for planning the lift and all the personnel and equipment involved. In addition, under CPA Model conditions, the Customer is responsible for and we recommend should provide for the following:

- Loss or damage to our plant and equipment whilst on site and under the customer's control;
- Loss of or damage to the goods being lifted;
- Continuing hiring charges whilst the equipment is unable to work as a result of loss or damage;
- Legal Liability—injury to the driver/operator whilst under the supervision and control of the Customer along with injury to third parties, including damage to their property, arising from crane operations.

For hires under CPA Crane Hire agreements, it is important to note the following:

- The Customer’s Appointed Person must have the knowledge and understanding of all aspects of the lifting operation;
- The Crane Owner must supply a competent operator and crane fit for the intended purpose, BS7121- Safe use of Cranes gives a full description of such responsibilities.

If you wish your responsibilities to be waived an additional charge will be levied.

In summary, under a CPA Crane Hire agreement, it is the customer's responsibility to fully plan, control, supervise and insure the crane operation and personnel.

CPA CONTRACT LIFT

Under the terms of standard CPA Contract Lift, the crane/equipment, operator and all personnel supplied with the crane, (including the Appointed Person/Crane Supervisor) are the responsibility of the Crane Owner.

The Crane Owner is responsible for all aspects of the planning and execution of the lift and will be insured for the following:

- Loss of or damage to plant/equipment caused solely by the owner’s negligence in the performance of lifting contract;
- Loss of or damage to third party property caused solely by the owner’s negligence in the performance of the lifting contract subject to:
  A maximum liability of £25,000 in respect of goods being lifted;
  A maximum liability of £5 million in respect of loss of or damage to third party property or death/injury to third party persons.
DEFINITION OF CPA CRANE HIRE AND CPA CONTRACT LIFT

CPA CONTRACT LIFT

If you wish our limits to be increased an additional charge will be payable.

It is important to note that a CPA Crane Hire agreement only becomes a CPA Contract Lift when the crane owner supplies the Appointed Person/Crane Supervisor and hence, accepts liability for planning and supervising the lift.

Specifying the correct type of contract will ultimately improve safety and ensure that the correct system of work is adopted.

Under Contract Lift conditions the Customer still retains certain liabilities and therefore should hold adequate insurance to provide protection against incidents arising from:

• Own negligence;
• Inadequate or unstable ground conditions;
• Inadequate or incorrect information supplied in connection with the goods being lifted.
MANAGEMENT & SUPERVISION FOR
SAFE LIFTING OPERATIONS

A SUMMARY OF CONTRACT LIFTING
If an individual or organisation does not have expertise in lifting operations they should not hire cranes but should opt for the contract lift option.

<table>
<thead>
<tr>
<th>EMPLOYING ORGANISATION</th>
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<tbody>
<tr>
<td>The organisation requiring the load to be moved</td>
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</table>

HIREDCRANE (Hired & Managed)

THE EMPLOYING ORGANISATION MUST:
- Carry out all work in accordance with BS7121.
- Supply the “Appointed Person”.
- Plan the lift and operate a safe system of work.
- Ensure that the crane hired is of a suitable type and capacity.
- Check the credentials of the crane hire company and certifications supplied.

THE CRANE OWNER HAS A DUTY TO:
- Provided a crane that is properly maintained, tested and certificated.
- Provide a competent driver.

CONTRACT LIFT (Fully Contracted)

THE EMPLOYING ORGANISATION SHOULD SPECIFY:
- That all work is to be undertaken in accordance with BS7121.
- That the contractor is to supply the “Appointed Person”.
- What information and/or services will be provided to the contractor by the employing organisation.

THE CONTRACTOR IS RESPONSIBLE FOR:
- Supplying the “Appointed person”
- Planning the lift, and operation of a safe system of work (via method statement).
- Organisation and control of the lifting operation.

HSE INSPECTORS WILL EXPECT TO FIND
- Lifting operations planned by trained, competent and appointed person(s);
- Lifting plan/method statement prepared as part of the project H&S Plan;
- Responsibilities established: clarity as to whether contact or crane hire terms apply;
- Crane outrigger support assessed i.e. identify loadings and load-bearing capacity of the ground;
- Slinging arrangements planned and slinging undertaken by trained and competent persons;
- Lifting operations supervised by trained persons and carried out in accordance with the lifting plan;
- Maintenance of machines and equipment supported by up to date examination reports.
MANAGEMENT & SUPERVISION FOR SAFE LIFTING OPERATIONS

Know your Lift Team
Appointed Person, Crane Supervisor, Crane Operator and Slinger/Signaller

Ensure that your Lift Team is
Trained, competent and authorised

Know your Load
Weight, dimensions, type, lift points, location before and after up/down, hot, cold, sharp edges

Know your crane
Size, type, duties, outrigger settings and loadings, boom length, radius of work, area for erection

Ensure that your crane is
Tested, examined, inspected, fit for purpose

Know your ground
Access, egress, level, sloping, excavations, condition, load bearing

Know your proximity hazards
Electrical structures, stacked goods, pedestrians, overhead racks and trays

Know the weather
Wind, rain, ice and snow, fog, sun, thunderstorms

Permit to work
Safe System of Work (Method Statement)

Remember—all lifting operations must be;

“Properly Planned, Appropriately Supervised and Carried out Safely”
(Lifting Operations and Lifting Equipment Regulations 1998 Regulation 8)

1. APPOINTED PERSON
The role of the Appointed Person, as defined by BS7121 part 1, is to provide a safe system of work for all lifting operations which are properly planned and adequately supervised. This includes the preparation of a comprehensive risk assessment and an adequate method statement. As well as selecting the correct crane for the lift the Appointed person must also select the appropriate load handling accessories (chains, slings, webs etc.), the method of attaching the load to the crane (the slinging technique) and calculate the down rating of the accessories where necessary to ensure a safe operation.

2. CRANE SUPERVISOR
The crane supervisor should direct and supervise the lifting operation, ensuring that these are carried out in accordance with the method statement. The crane supervisor should be competent and suitably trained and should have sufficient authority to stop the lifting operation if the supervisor considers it dangerous to proceed.

NOTE: The appointed person may decide to undertake the duties of the crane supervisor or to delegate these to another person with appropriate expertise for the lifting operation.
MANAGEMENT & SUPERVISION FOR
SAFE LIFTING OPERATIONS

3. CRANE OPERATOR

The crane operator should be responsible for correct operation of the crane in accordance with the manufacturer's instructions and within the safe system of work. The crane driver should only respond to a signal from the slinger to carry put initial lifting of the load, and then only to signals from one slinger/signaller, who should be easily identified, during the remainder of the lifting operation.

WARNING: It is essential that the crane driver does not tamper with any controls, mechanisms or other equipment, including the rated capacity indicator.

The crane operator should be:

• Trained on the specific model of crane used;
• Able to assimilate and apply information contained in reports and duty charts relating to the range of duties and safe use of the crane;
• Familiar with the manufacturer's instructions for the rigging operation and for maintenance of the crane;
• Aware that the crane should be used on level ground or else set level on outriggers before any load is applied;
• Fully conversant with the correct use of outriggers and where outriggers should be fitted, and aware of how to properly support the outrigger feet (this requires regular monitoring to ensure that no movement occurs throughout the operation);
• Able to set and check the functioning of the rated capacity limiter and rated capacity indicator;
• Aware of the effects of wind and other climactic effects on the crane and load;
• Able to resist pressures from other persons to carry out unsafe operations;
• Able to take the action to avoid dangerous situations, including stopping operations;
• Able to operate fire suppressant equipment, if fitted.
MANAGEMENT & SUPERVISION FOR SAFE LIFTING OPERATIONS

4. SIGNALLER
The signaller should be responsible for relaying the signal from the slinger to the crane driver. The signaller may be responsible for directing movement of the crane and load instead of the slinger, provided that only one person is responsible at any time.

During the lifting operation, hand signals and voice instructions to the crane driver should be given by only one person at a time. If, during the lifting operation, responsibility for directing the crane and load is transferred to another signaller, the first signaller should clearly indicate to the crane driver that this responsibility is transferred and to whom. The first signaller should clearly indicate to the second signaller that the transfer is taking place. The crane driver and the second signaller should clearly indicate that they accept the transfer.

NOTE: It is common practice to train personnel to enable them to carry out duties of both slinger and signaller.

5. SLINGER
The slinger should be responsible for attaching and detaching the load to and from the crane load lifting attachment, and for using the correct lifting accessories and equipment in accordance with the operation plan.

The slinger should direct initial movement of the crane. If there is more than one slinger, only one slinger should direct initial movement.

If continuous signalling is required and the slinger is not visible to the crane driver, another slinger or signaller should relay the signals to the crane driver.

NOTE: Alternatively, other audio or visual methods may be used. If other audio or visual methods are used, the equipment or means of equipment use should be so that the crane driver can become immediately aware if equipment fails, so that movement of the crane can be stopped.

The following indications of equipment failure should cause the crane driver to immediately stop movements of the crane:

- Blank screen on a television monitor;
- Cessation of continuous instructions from a signaller using radio, to e.g. “lower...lower...lower” etc;

NOTE: If radio is used as means of signalling, then selected personnel involved should be kept clear of other communications. All personnel involved in signalling should be given a clear and unique call sign and all communications should be preceded by the call sign. The crane driver should not respond to signals not preceded by the call sign.
ASSESSING GROUND CONDITIONS

DETERMINING PERMISSIBLE GROUND LOADINGS

RESPONSIBILITY
The Appointed Person is responsible for ensuring the ground conditions are suitable to set up and operate the crane, and therefore safely carry out the lifting operation.

In most cases the Appointed Person’s role has 3 stages:

• Ensure that accurate data is obtained in respect of the imposed loadings.
• Ensure that this data had been assessed by a suitably competent person, such that suitable support systems have been specified.
• Ensure that the specified system of support has been correctly installed and maintained.

SOURCES OF INFORMATION

• Under the Construction (Design and Management) Regulations, the client and the designer have a duty to make available to the Planning Supervisor information relating to the site.
• If this is not available the ground conditions should be assessed by a suitably competent engineer, who may have to be a specialist Geotechnical Engineer.
• In extreme cases physical load tests may have to be carried out in advance of the lifting operation, to verify the load bearing capability of the ground.

METHODS OF DISTRIBUTING LOADS
The standard outrigger support equipment carried by most crane suppliers has been proven by experience to provide effective load distribution in the majority of cases.

However, in certain situations additional load distribution is required to achieve acceptable ground bearing pressures.
# ASSESSING GROUND CONDITIONS

## PERMISSIBLE GROUND PRESSURES (SOURCE: DIN 1054)

<table>
<thead>
<tr>
<th>Ground Condition</th>
<th>t/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backfilled Ground, not compacted</td>
<td>0 to 10.0</td>
</tr>
<tr>
<td>Mud, Peat, Marsh</td>
<td>0</td>
</tr>
<tr>
<td>Non-Cohesive Ground</td>
<td></td>
</tr>
<tr>
<td>- medium to fine gravel</td>
<td>15</td>
</tr>
<tr>
<td>- course sand gravel</td>
<td>20</td>
</tr>
<tr>
<td>Cohesive Ground</td>
<td></td>
</tr>
<tr>
<td>- mushy</td>
<td>0</td>
</tr>
<tr>
<td>- soft</td>
<td>4.0</td>
</tr>
<tr>
<td>- firm</td>
<td>10.0</td>
</tr>
<tr>
<td>- semi solid</td>
<td>20.0</td>
</tr>
<tr>
<td>- hard</td>
<td>40.0</td>
</tr>
<tr>
<td>Rock</td>
<td>150.0 to 300.0</td>
</tr>
</tbody>
</table>
ASSESSING GROUND CONDITIONS

DETERMINING GROUND CONDITIONS
In order to determine the support arrangements required for a crane, it will be necessary to gather some information about the ground conditions on site.

It will be necessary to know:
• The character of the ground
• The water conditions
• The engineering properties of the ground relevant to the design of the foundations
• The location of any underground hazards

SITE CATEGORIES
Sites can be categorised to highlight the most likely potential problems that need to be considered. More attention is required to establish the strength of the ground where ground conditions are poor or where there is lack of data on the nature of the sub-soil.

BEACHES
• Low sand density and/or high/variable water table create difficult conditions.

FILLED CONSTRUCTION SITES (BROWNFIELD)
• Unknown previous conditions, e.g. basements, poorly filled open pits, storage tanks, variable and compacted fill.

PAVED AREAS
• These can look deceptively strong but may have been laid on week ground underneath.
• If a road is used regularly by heavy commercial vehicles and shows no sign of distress then it will be less of a concern than a lightly trafficked car park or estate road.
• Footpaths always demand further investigations Edges of paved areas are usually weak as there may be weaker material or shallow services underneath thin surfacing.

TOWN CENTRE AREAS/SITES
Expect underground hazards e.g. basements, sewers, tunnels, live services, poorly back filled trenches, manholes, inspection chambers etc.

Rule of thumb: A rule of thumb to check for settlement of support area, raise the boom to minimum radius and slew 360° and pause momentarily over each outrigger. Any settlement will require a larger support base or ground improvement.

NOTE: Crane Operators are not, nor are they meant to be Geotechnical Engineers. On many sites an operators experience and expertise will determine a safe crane set up. However if doubt exists the Appointed Person must be contacted or a suitable engineer to determine the continuing suitability of any ground.
ASSESSING GROUND CONDITIONS

FACTORS OF SAFETY (FOS)

The following charts give foundation areas for a range of Factors of Safety against bearing failure and excessive settlement of the ground.

FOS of 3.0 is more normally used for permanent work foundations and will give a conservative size of foundation area. It should be used for outrigger foundations where minimum ground information is available, where soils are variable or where minor settlements could be critical to a precision lifting and placing operation.

FOS of 2.0 is adequate for most situations.

FOS of 1.5 is the absolute minimum and should only be used where ground conditions have been accurately identified under the guidance of an experienced geotechnical engineer.

OUTRIGGER FOUNDATION AREAS

GRANULAR SOILS

- If only general information on the soil type is available use the upper limit of the bands shown.
- Where groundwater is at a depth B or less below the level of the foundation, or the site is liable to flooding, then the above foundation areas should be doubled. (B is the width of the foundation).
ASSESSING GROUND CONDITIONS

OUTRIGGER FOUNDATION AREAS

COHESIVE SOILS

- If only general information on the soil type is available use the upper limit of the bands shown.
- If the site is liable to flooding, then the above foundation areas should be increased by 50%.
- If the foundation is NOT approximately square in plan, but is rectangular then the above foundation areas should be increased by 10% (B/L should not exceed 0.5 where B is the width of the foundation and L is the length of foundation.)
ASSESSING GROUND CONDITIONS

MAT FOR MOBILE CRANE OUTRIGGER DATA
CRANE: 30 tonne capacity truck-mounted mobile.
SIZE OF OUTRIGGER PADS: 400 x 400mm
MAXIMUM OUTRIGGER LOAD: Take 33 tonnes-i.e. approx 330 kN
GROUND: Dense to very dense sandy gravel

EXAMPLE

REQUIRED SIZE OF MAT
Using factor of safety = 2, and \( \phi = 40^\circ \), area of mat required + 0.9m\(^2\).

For granular soil, this area can be square or rectangular; try 3 no. sleepers wide x 1200mm long i.e 750mm x 1200mm i.e area = 0.75 \times 1.2 = 0.9m^2.
ASSESSING GROUND CONDITIONS

CALCULATION OF AREA OF RECTANGULAR/SQUARE MAT
Area of Mat = Length x Width

EXAMPLE: A crane outrigger mat measures 2.4m in length x 1.2m in width
Area of mat is 2.4 x 1.2 = 2.88m²

CALCULATION OF AREA OF CIRCULAR MAT
Area of Mat = \( \pi \times R^2 \)
\( \pi = 3.14 \quad R^2 = R \times R \)

EXAMPLE: Mat Diameter is 0.9m
Radius = 0.9m/2 = 0.45m
\( R^2 = 0.45 \times 0.45 = 0.21 \)
Area of Mat is 3.14 \times 0.21 = 0.66m²
ASSESSING GROUND CONDITIONS

45° OUTRIGGER LOAD - SIMPLE EXPLANATION

When two lower mats (a) are placed side by side, the upper mat (b) that covers the lower mats must extend beyond the centre line.
The guidelines given above apply both to work adjacent to permanent structures and to work near to temporary works, e.g. sheet pile retaining walls, trench support systems, etc.

**FINAL SITING CHECKS**

Even when mats have been correctly dimensioned, care must be exercised so that outriggers or tracks avoid dangerous positions.

The following figure gives guidelines for positioning so that stability is not compromised. If a crane operator or lift supervisor find themselves needing to set up within the “Danger Areas” further engineering consideration must be given to the problem before moving the crane into these areas.

If you are in a “Danger Area” do not lift without an engineering assessment being made by a competent engineer. These areas apply to crawler cranes, lorry mounted telescopic cranes or any other heavy plant.
SELECTING AND SAFE USE OF LIFTING ACCESSORIES

ALWAYS

• Plan the lift, establish the weight of the load and prepare the landing area ensuring that it will take the weight.
• Check slings and equipment are free of damage, use slings/slinging method suitable for the load and protect slings from sharp edges and corners.
• Attach the slings securely to the load and appliance and position hook to face outwards.
• Keep fingers and toes etc clear when tensioning slings and when landing loads.
• Ensure the load to be lifted is free.
• Make a trial lift and trial lower.

NEVER

• Use damaged slings or accessories.
• Twist or knot a sling.
• Hammer slings into position.
• Overload slings due to the weight of the load or mode of use.
• Trap slings when landing the load.
• Drag slings over floors etc, or attempt to pull trapped slings from under loads.
• Allow personal to ride on loads.

SLING CONFIGURATION AND RATING

Slings are available in single, two, three and four leg or endless form. In practice it will be found that chain, wire rope and fibre rope slings are available in any of these configurations but the flat woven sling is limited to single leg and endless, whilst the roundsling is supplied in endless form.

The maximum load that the sling may lift in use is governed by the slinging arrangement (mode of use) and may vary from the marked SWL. In the case of textile slings the SWL for the various modes of use is usually given on the information label. In other cases it will be necessary to multiply the marked SWL by a mode factor. The following three simple rules will ensure that the sling is not overloaded. In some cases this will mean that the sling is under utilized although this is unlikely to hinder the user unduly. Where the maximum utilization is required reference should be made to a competent person who understands the factors involved and who can perform the necessary calculations.

1. For a straight lift never exceed the marked SWL and in cases of multi-leg slings the specified angle or range of angles.
2. When using slings in a choke hitch, multiply the maximum SWL by 0.8 to obtain the reduced maximum SWL the sling may lift.
3. With multi leg slings when using less than the full number of legs, reduce the maximum load in proportion to the number of legs in use. Simply multiply the marked SWL by the number of legs in use expressed as a fraction of the total, thus
   • 1 leg of a two leg sling in used  = 1/2 marked SWL
   • 3 legs of a four leg sling being used  = 3/4 marked SWL and so on.
SELECTING AND SAFE USE OF LIFTING ACCESSORIES

OPERATIVE TRAINING
Trained operatives who understand the methods of rating and application of mode factors should only use slings.

SAFE USE OF SLINGS
Good slinging practice must ensure that the load is a safe and secure in the air as it was on the ground, and that no harm is done to the load, lifting equipment, other property or persons.

Establish the weight of the load and ensure the lifting method is suitable and inspect the sling and attachments for obvious defects. Prepare the landing area making sure the floor is strong enough to take the load, follow any specific instructions from the supplier.

Ensure the lifting point is over the centre of gravity of the load, any loose part of the load should be removed or secured.

Secure the sling firmly to the load by hooks onto lifting points or shackles etc. The sling must not be twisted, knotted or kinked in any way. Use packing to prevent damage to the sling from corners or edges and to protect the load.

A GENERAL PURPOSE SLINGING PRACTICE
Do not exceed the SWL or rated angle, any choke angle must not exceed 120° and any basket angle must not exceed 90°.

Do not force, hammer or wedge slings or accessories into position, they just fit freely.

When attaching more than one sling to a hook of an appliance use a shackle to join the slings and avoid overcrowding of the hook.

Use an established code of signals to instruct the crane operator, ensure that the load is free to be lifted and not for example bolted down. Check that there are no overhead obstacles such as power lines. Where appropriate use a tag line to control the load. Except where special provision is made, do not allow anyone to pass under or ride on the load, the area should always be kept clear.

Keep fingers and toes etc clear ensuring they do not become trapped when lifting or lowering or controlling loads.

Make a trial lift and set down, ensuring the sling will not become trapped. Use supports, which are strong enough to sustain the load.

Never drag slings over floors etc, or attempt to drag a load. Place the hooks of free legs onto the master link and take care to ensure that empty hooks do not become accidentally engaged.

Never use slings, which may become in contact with chemicals or hat without the manufacturers approval. Never use damaged or contaminated slings.

On completion of the lift return all equipment to proper storage.

This information is of a general nature and should always be read in conjunction with manufacturers instructions.
SELECTING AND SAFE USE OF LIFTING ACCESSORIES

LIFTING ACCESSORIES
The following pages contain examples of test certificates for accessories, in addition to an example of a 6 month thorough examination reports. Also included are simple formulas to enable an appointed person to calculate the correct minimum SWL for various types of lifting accessories in general use, which, together with various charts will form a useful reference for an appointed person.

- **CHAIN SLINGS**
- **WIRE ROPE SLINGS**
- **POLYESTER SLINGS**
- **D AND BOW SHACKLES**
- **LIFTING BEAMS**
SELECTING AND SAFE USE OF LIFTING ACCESSORIES

DISTANCE BETWEEN LIFTING POINTS AFFECTS THE SLINGS ANGLES

30°
Half leg length = 30°

60°
Equal to leg length = 60°

90°
1.4 times the leg length = 90°
Maximum recommended included angle

120°
One & two thirds times leg length = 120°
For special application only
SELECTING AND SAFE USE OF LIFTING ACCESSORIES

SLING ANGLES
When lifting with multi-legs slings, they are rated at a certain tonnage from 0° to 90° and this SWL should NOT be exceeded even if the angle is less than 90°. When using single slings in pairs however, you must always be aware of the increased loadings in the slings when lifting at an angle.

![Diagram of sling angles and loadings](image)

- **0.5 Tonne** each Sling
- **0.53 Tonne** each Sling
- **0.58 Tonne** each Sling
- **0.7 Tonne** each Sling
- **1.0 Tonne** each Sling
- **6.0 Tonne** each Sling
SELECTING AND SAFE USE OF LIFTING ACCESSORIES

SAFE WORKING LOADS - (SINGLE ACCESSORIES)

Single chain slings, wire ropes and shackles have all been given a S.W.L. for use in a vertical application.

When using single accessories inclined to each other, the maximum included angle of 90 degrees (alpha angle) or 45 degrees beta angle should not be exceeded.

To allow for the increasing leg tension (stress/force) we as users are required to obtain a revised S.W.L.

For inclined lifting using single items, (gear/tackle) - the following uniform load method should be used.

The S.W.L. for 2 vertically rated accessories to be used for inclined loading can be calculated by using the following simple formula.

The factor of 1.4 x the S.W.L. of 1 accessory will give the total load that may be lifted by the 2 accessories together, as a pair.

- **EG:** 2 No 5 tonne S.W.L. Wire rope slings used at a 90° included angle have a combined lifting capacity of :-
  - **1.4 x 5 = 7 TONNES**

The S.W.L. of 3 or more vertically rated single accessories to be used at inclined loadings, will be calculated using the same method as above except for using a factor of 2.1.

- **EG:** 4 No 5 S.W.L. Tonne shackles used at a 90° included angle have a combined lifting capacity of :-
  - **2.1 x 5 = 10.5 Tonnes**

The factor of 2.1 x the S.W.L. of 1 accessory will give the total load that may be lifted by the 3 or 4 accessories together, AS A SET.
SELECTING AND SAFE USE OF LIFTING ACCESSORIES

DETERMINING THE SWL OF VERTICALLY RATED SINGLE ACCESSORIES, WHERE THE WEIGHT OF THE LOAD IS KNOWN FOR INCLINED LOADINGS :- (INCLINED ALPHA AND BETA ANGLE)

Using the following straightforward calculations it is easy to determine the MINIMUM correct S.W.L. of the accessories.

2 Point lift using SINGLE accessories. 71% of load weight will give the MINIMUM S.W.L. of each accessory.

EG: Load weight 10 tonne therefore :- 71% of load =
71% of 10 Tonnes = 7.1 TONNES

To lift a 10 Tonne load on 2 single accessories, the S.W.L. of each accessory must not be less than 7.1 TONNES

3 and 4 point lifting using single accessories. 50% of load weight will give the minimum S.W.L. of each accessory

EG: Load weight 20 Tonnes therefore :- 50% of load =
50% of 20 Tonnes = 10 TONNES

To lift a 20 Tonne load on 3 or 4 single accessories the S.W.L. of each accessory must not be less than 10 Tonnes.
SELECTING AND SAFE USE OF LIFTING ACCESSORIES

WORKING LOAD LIMITS

The Working Load Limits (WLL) listed in the tables below are the maximum weights which slings are designed to sustain in general lifting service, according to the standard uniform load method of rating. In exceptionally hazardous conditions, or in any other circumstances which might indicate a need for a WLL lower than the designed figure, the degree of hazard should be assessed by a competent person and the working load limit adjusted accordingly. The WLL, which should be marked on the sling itself or on a securely fixed metal tag, must not be exceeded in any circumstances.

ALL CAPACITIES ARE IN TONNES.
# CALCULATION OF THE LOAD

**EXAMPLE OF HOW TO CALCULATE THE PERCENTAGE OF CAPACITY USED**

Note: The reduction for fly does not apply to all Cranes - please consult Spec Book to confirm.

## TYPICAL EXAMPLE

<table>
<thead>
<tr>
<th>CRANE CAPACITY DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Radius</td>
</tr>
<tr>
<td>Weight of Load</td>
</tr>
<tr>
<td>Slings/Shackles</td>
</tr>
<tr>
<td>Lifting Beam</td>
</tr>
<tr>
<td>Load Reduction for Fly</td>
</tr>
<tr>
<td>Hock Block</td>
</tr>
<tr>
<td>Total Load</td>
</tr>
<tr>
<td>Capacity</td>
</tr>
<tr>
<td>% of Capacity used</td>
</tr>
</tbody>
</table>

## TYPICAL EXAMPLE

<table>
<thead>
<tr>
<th>CRANE CAPACITY DETAILS FOR MAN BASKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man Basket</td>
</tr>
<tr>
<td>Personnel - 2 No.</td>
</tr>
<tr>
<td>Slings/Shackles</td>
</tr>
<tr>
<td>Lifting Beam</td>
</tr>
<tr>
<td>Load Reduction for Fly</td>
</tr>
<tr>
<td>Hock Block</td>
</tr>
<tr>
<td>Total Load</td>
</tr>
<tr>
<td>100% Contingency</td>
</tr>
<tr>
<td>Revised Load</td>
</tr>
<tr>
<td>Capacity</td>
</tr>
<tr>
<td>% of Capacity used</td>
</tr>
</tbody>
</table>
CALCULATION OF THE LOAD

ESTIMATED WEIGHTS OF VARIOUS LOADS

<table>
<thead>
<tr>
<th>MATERIAL TYPE</th>
<th>WEIGHT in kg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>800</td>
</tr>
<tr>
<td>Magnesium</td>
<td>1750</td>
</tr>
<tr>
<td>Concrete</td>
<td>2440</td>
</tr>
<tr>
<td>Brickwork</td>
<td>2000</td>
</tr>
<tr>
<td>Water</td>
<td>1000</td>
</tr>
<tr>
<td>Steel</td>
<td>7700</td>
</tr>
<tr>
<td>Cast Iron</td>
<td>7200</td>
</tr>
<tr>
<td>Aluminium</td>
<td>2700</td>
</tr>
<tr>
<td>Earth</td>
<td>1600</td>
</tr>
<tr>
<td>Paper</td>
<td>1120</td>
</tr>
<tr>
<td>Copper</td>
<td>8800</td>
</tr>
<tr>
<td>Lead</td>
<td>11200</td>
</tr>
<tr>
<td>Soft Wood</td>
<td>600</td>
</tr>
<tr>
<td>Hard Wood</td>
<td>800</td>
</tr>
<tr>
<td>Greenheart</td>
<td>1200</td>
</tr>
</tbody>
</table>

1000kgs = 1 Tonne 2240lbs = 1 Ton

NOTE: The figures above represent an average weight which have been rounded for ease of use. Figures may possibly change due to water content and composition.
LIFTING PERSONNEL

MAN BASKET
Carriers should not be used in the following conditions:

- Winds exceeding 7m/s (15.6mph);
- Electrical storms;
- Snow or ice;
- Fog;
- Sleet; or
- Other weather conditions that could affect the safety of personnel.

Unintentional rotation of the carrier should be prevented (e.g. by using guide ropes or anchoring). The means of preventing unintentional rotation should not inhibit any emergency procedures and should not otherwise interfere with safe operation of the carrier.

Carriers should not be occupied while the crane is travelling.

Lifts should not be made on any other hoist lines of the crane while any person occupies a carrier attached to the crane.

The crane, load lifting attachments and carrier should be inspected every day during use.

CAPACITY
The crane selected to lift the carrier should have a rated capacity on the fixed load lifting attachment of at least twice the minimum rated capacity of the crane configuration in use.
CRANES WORKING NEAR AERODROMES

A GUIDE TO SAFE OPERATION OF CRANES IN THE VICINITY OF AERODROMES

- Aviation law, in particular The Air Navigation Order, makes it an offence to act recklessly or negligently in a manner likely to endanger aircraft. BS 7121 Safe Use of Cranes places a duty on all operators of cranes and other lifting equipment to comply with procedures when intending to work in the vicinity of aerodromes.

- The Appointed Person should consult the Aerodrome Manager for permission to work if a crane is to be used within 6Kms of the Aerodrome measured from its perimeter, and if its height exceeds 10m above ground level or that of the surrounding structures, trees etc.

- The term “Aerodrome” includes Airports, Airfields and Heliports where aircraft and helicopters land and take off. The unauthorised operation of cranes and other high lifting equipment in the vicinity of such places could present a serious hazard to aircraft and helicopters either as a physical obstruction or by interfering with electronic precision guidance equipment.

- The risk to pilots and aircrew who are unaware of such equipment when flying could result in an aircraft or helicopter colliding with such equipment resulting in an accident.

- The developer or crane operator should approach the Aerodrome concerned at least one month in advance of requiring the use a crane or other tall construction equipment to find out if there are any limitations and regulatory procedures that must be agreed upon before work commences.

- At least three days prior to delivery of the crane the operator must report to the Aerodrome with precise details of the crane or lifting equipment to be used on site and applies for the permit to set up and use the specified equipment. Information must be provided on the type of crane that is to be used Tower or Mobile, the length and radius of operation of the boom, the area of operation along with intended times and dates of operations, applicants name and contact details for the crane when operating.

- The permit will set out the criteria and any specific restrictions. A copy of the permit must remain with the crane operator for the duration of the lifting operation and must be produced if requested by an Aerodrome, CAA official or a Police Officer.

- Once these details have been considered it will be determined as to whether the operation can proceed, any of the following conditions may be imposed.

  - The fitting of red obstacle lights normally they will be steady red lights of either 200 or 2000 candelas depending on height and visible throughout 360 degrees.

  - Restrictions on crane operating times.

  - Crane operations dependant on the runways in use.

  - Restrictions on crane operating height.

  - Restrictions during periods of poor visibility, this may require the boom to be lowered or positioned in a particular direction.
CRANE WORKING IN THE VICINITY OF OVERHEAD POWER LINES

ELECTRIC LINES - GUIDANCE NOTES

WARNING: All overhead lines and other electrical apparatus should be treated as live unless declared “dead” and “safe” by the line operator. If in doubt, seek advice from your operations manager.

If the crane makes contact with live electric line or cable, observe the following precautions: Ref: BS 7121 Safe Use of Cranes:

- Remains inside cab.
- Warn all other personnel to keep away from the crane and not to touch any part of the crane, rope or load.
- Try, unaided, and without anyone approaching the machine, to move the crane until it is clear of the power line or cable.
- If the machine cannot be moved away, remain inside the cab. If possible, get someone to inform the electricity supply authority at once. Take no action until it has been confirmed that the conditions are safe.
- If it essential to leave the cab because of fire or some other reason, jump clear as far away from the crane as possible. Do not touch the crane and the ground at the same time.
- Inform the responsible engineer of the works or authority concerned of the situation immediately, and until assistance is received someone should remain near the crane to warn of the danger.

HEALTH AND SAFETY AT WORK ETC. ACT 1974

SECTION 7: It shall be the duty of every employee while at work - to take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions at work.
# WIND SPEED

## BEAUFORT SCALE - WIND VELOCITY TABLE

This chart is intended as a general guide only - all conversion calculations are rounded to the nearest whole number. Accurate details relating to working conditions for individual Cranes must be obtained by reference to Crane Specification Manuals or other bulletins issued by the Manufacturer of the crane concerned. Please note-stricter wind speed tolerances apply to cranes of over 200 tonnes lifting capacity.

**Note:** As a general guide most Cranes working on Main Boom operate to 9.8 m/s. For cranes working on Fly Jib and Luffing Fly Jib, this figure is greatly reduced. For further information contact the Technical Department.

<table>
<thead>
<tr>
<th>Wind Force</th>
<th>Description</th>
<th>Average Wind Velocity</th>
<th>Average Wind Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Km/h</td>
<td>M/Sec</td>
</tr>
<tr>
<td>0</td>
<td>Almost or quite windstill</td>
<td>2.5</td>
<td>0.7</td>
</tr>
<tr>
<td>1</td>
<td>Slight current of air</td>
<td>6.6</td>
<td>1.85</td>
</tr>
<tr>
<td>2</td>
<td>Slight breeze</td>
<td>13.3</td>
<td>3.7</td>
</tr>
<tr>
<td>3</td>
<td>Light Breeze</td>
<td>19.5</td>
<td>5.4</td>
</tr>
<tr>
<td>4</td>
<td>Fair breeze</td>
<td>26.5</td>
<td>7.3</td>
</tr>
<tr>
<td>5</td>
<td>Fresh Breeze</td>
<td>34.0</td>
<td>9.4</td>
</tr>
<tr>
<td>6</td>
<td>Strong breeze</td>
<td>41.0</td>
<td>11.4</td>
</tr>
<tr>
<td>7</td>
<td>Wind</td>
<td>48.5</td>
<td>13.5</td>
</tr>
<tr>
<td>8</td>
<td>Gusty wind</td>
<td>58.5</td>
<td>16.2</td>
</tr>
<tr>
<td>9</td>
<td>Gale</td>
<td>69.0</td>
<td>19.2</td>
</tr>
<tr>
<td>10</td>
<td>Strong gale</td>
<td>78.5</td>
<td>21.8</td>
</tr>
<tr>
<td>11</td>
<td>Heavy Gale</td>
<td>98.0</td>
<td>27.2</td>
</tr>
<tr>
<td>12</td>
<td>Hurricane</td>
<td>110.0</td>
<td>30.5</td>
</tr>
</tbody>
</table>
RECOGNISED CRANE HAND SIGNALS

- **Operations Start**
  (follow my instructions)

- **Stop**

- **Emergency Stop**

- **Hoist**
  Clench and unclench fingers to ‘inch’ load

- **Lower Slowly**

- **Lower**

- **Slew in Direction Indicated**

- **Jib Up**

- **Jib Down**

- **Extend Jib**

- **Retract Jib**

- **Travel to Me**

- **Travel From Me**

- **Derrick Jib**

- **Telescoping Jib**

- **Crane Movement**
  Use both hands

- **Travel in Direction Indicated**

- **Cease Operations**
GUIDANCE NOTES

Please take note of the following guidelines which will assist in the assessment of suitable cranage for various lifting applications.

It is important that all relevant load reductions are applied.

LOAD CHART REDUCTIONS

- At all times the weight of the hookblock and all other load handling accessories is considered part of the load and suitable allowance for them should be made.
- Where a crane has twin hoist facility two hookblocks may be fitted. An allowance for the combined weight of the hookblocks should be made.
- Where a crane carries a fly jib stowed on the main boom (underslung or side mounted) the safe working load should be reduced to allow for the additional weight. The relevant load reductions are included in the specification guide. This is not the case however with cranes manufactured by Jones, Tadano and Kato, where the safe working load has been calculated with the fly jib carried in the stowed position.
- When using the main boom with any form or fly jib installed an allowance for both the fly jib and hookblock should be added to the weight of the load, please contact your nearest depot for further guidance.

LIFTING HEIGHT CHART

- A generic lifting height chart has been including to assist with the assessment of boom required for the lifting operation (see next page).
King Lifting has integrated into its fleet the new folding tower cranes. This type of tower crane is able to tackle lifts in urban areas with confined sites and the associated phased developments.

Available in both mobile and pedestrian operated/self erecting types. Our experience survey teams are available to offer consultation and advise on this type of lift.

- Greater functionality than traditional tower and mobile cranes
- 18 min erection time for Spierings mobile crane
- Reduced need for road closures, site and neighbourhood disruptions
- Potain IGO range of pedestrian operated tower cranes
- Spierings range of mobile tower cranes
- Tower crane erection services
- Full 3D CAD planning / feasibility studies
SPIERINGS SK 599-AT5

DIMENSIONS

The charts that have been included have been reproduced from manufacturer specifications, and while every effort has been made to ensure their accuracy, we do not accept any responsibility for errors or omissions. We also need to draw your attention to the guidance notes on page iv to assist you with your crane selection.
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www.kinglifting.co.uk
SPIERINGS SK 599-AT5

Max. outrigger loading 440 kN
Outrigger foot 750x600 mm
Pressure under foot 1 N/mm²
Jib can be unfolded through 360°
Lifting the jib 30° can be controlled from the crane cab

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SPIERINGS SK 599-AT5
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SPIERINGS SK 1265-AT6

DIMENSIONS

Vehicle weight 60,000kg
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### Tower Crane

<table>
<thead>
<tr>
<th>Make: SPIERINGS</th>
<th>Type: SK1265-AT6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cranes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Serial number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year of construction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Speeds</th>
<th>Jib horizontal / Jib 30° luffed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Jib horizontal</th>
<th>hook height 25.2 / 35.5 (height under the jib 27.4 / 37.2 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>10000 10000 10000 10000 10000 10000 10000 10000 10000 10000</td>
</tr>
<tr>
<td>3.5</td>
<td>10000 10000 10000 10000 10000 10000 10000 10000 10000 10000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Jib horizontal</th>
<th>hook height 25.2 / 35.5 (height under the jib 27.4 / 37.2 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>10000 10000 10000 10000 10000 10000 10000 10000 10000 10000</td>
</tr>
<tr>
<td>3.5</td>
<td>10000 10000 10000 10000 10000 10000 10000 10000 10000 10000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Jib 30° luffed</th>
<th>hook height 25.2 / 35.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>10000 10000 10000 10000</td>
</tr>
<tr>
<td>3.5</td>
<td>10000 10000 10000 10000</td>
</tr>
</tbody>
</table>

### Lifting chart

**Outrigger spread:** 7.95 m x 7.66 m (up to wind force 6 on the beaufort scale)

- **Jib horizontal:** 10,000 kg
- **Max. load:** 10,000 kg
- **Max. radius with max. load:** 13.2 m
- **Max. capacity:** 132 tm
- **Max. jib length:** 60 m

**Outrigger position:** 7.95 x 7.66 m

Operations allowed up to a wind force of 6 on the Beaufort scale (wind speed 16 m/s).

**Outrigger spread:** 7.95 m x 5.72 m (up to wind force 6 on the beaufort scale)

- **Jib horizontal:** 10,000 kg
- **Max. load:** 10,000 kg
- **Max. radius with max. load:** 13.2 m
- **Max. capacity:** 132 tm
- **Max. jib length:** 60 m

**Outrigger position:** 7.95 x 5.72 m

Operations allowed up to a wind force of 6 on the Beaufort scale (wind speed 14 m/s).

Changes subject to modifications.
SPIERINGS SK 1265-AT6

- Max. outrigger loading: 520 kN
- Outrigger foot: 750x600 mm
- Pressure under foot: 1.15 N/mm²
- Jib can be unfolded through 360°
- Luffing the jib 30° can be controlled from the crane cab

The charts that have been included have been reproduced from manufacturer specifications, and while every effort has been made to ensure their accuracy, we do not accept any responsibility for errors or omissions. We also need to draw your attention to the guidance notes on page iv to assist you with your crane selection.
SPIERINGS SK 1265-AT6

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SPIERINGS SK 2400-AT7

DIMENSIONS

Vehicle weight | 84,000kg
SPIERINGS SK 2400-AT7

NORMAL WORKING DUTIES

The charts that have been included have been reproduced from manufacturer specifications, and while every effort has been made to ensure their accuracy, we do not accept any responsibility for errors or omissions. We also need to draw your attention to the guidance notes on page iv to assist you with your crane selection.
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SPIERINGS SK 2400-AT7

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### LIFTING CHART

#### Outrigger square 7.95 m x 7.53 m

<table>
<thead>
<tr>
<th>Jib horizontal</th>
<th>3.5</th>
<th>5</th>
<th>10</th>
<th>14.6</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius (m)</td>
<td>9000</td>
<td>8400</td>
<td>7725</td>
<td>7140</td>
<td>6562</td>
<td>6140</td>
<td>5766</td>
<td>5590</td>
<td>5520</td>
<td>5500</td>
</tr>
</tbody>
</table>

**Make:** SPIERINGS  
**Type:** SK2400-AT7

#### LIFTING CHART

#### Outrigger square 7.95 m x 5.72 m

<table>
<thead>
<tr>
<th>Jib horizontal</th>
<th>3.5</th>
<th>5</th>
<th>10</th>
<th>14.6</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius (m)</td>
<td>9000</td>
<td>8400</td>
<td>7725</td>
<td>7140</td>
<td>6562</td>
<td>6140</td>
<td>5766</td>
<td>5590</td>
<td>5520</td>
<td>5500</td>
</tr>
</tbody>
</table>

**Tower Crane**  
**18 Tonne**
The charts that have been included have been reproduced from manufacturer specifications, and while every effort has been made to ensure their accuracy, we do not accept any responsibility for errors or omissions. We also need to draw your attention to the guidance notes on page iv to assist you with your crane selection.
SPIERINGS SK 2400-AT7

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### IGO-50 SELF ERECTING TOWER CRANES

#### DIMENSIONS

|        | 40m | 3   | 14m | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
|--------|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 400kg  | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| 4000kg | 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000| 4000 | 4000 |

- **Tower Crane**

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- **Luffing Jib**

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IGO-50 SELF ERECTING TOWER CRANES

DIMENSIONS

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