

# Use of lifting devices and lifting accessories

Provisions issued by the Swedish Work Environment Authority

# Use of Lifting Devices and Lifting Accessories

**Provisions of the Swedish Work Environment Authority on Use of Lifting Devices and Lifting Accessories, together with General Recommendations on implementation of the Provisions**

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# Provisions of the Swedish Work Environment Authority on Use of Lifting Devices and Lifting Accessories

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The following provisions<sup>1</sup> are issued by the Swedish Work Environment Authority pursuant to Section 18 of the Work Environment Ordinance (SFS 1977:1166).

## Scope

### Section 1

These Provisions apply to the use of lifting devices and lifting accessories. They do not apply to equipment coming under the Provisions of the Work Environment Authority on Use of Trucks.

## Definitions

The following meanings shall apply for the purposes of these Provisions.

<i>Periodic inspection</i>	Regular inspection which includes ocular examination and functional testing.
<i>Hoist/Lifts</i>	A lifting device with a controlled load-carrying member which can move between fixed landings.
<i>Crane</i>	A lifting device which, with the aid of a non-controlled load-carrying member, can lift and lower the load vertically and also move it horizontally in one or more directions.
<i>Load-carrying member</i>	Parts of a lifting device which directly sustain the load.
<i>Lifting device</i>	A device for lifting or lowering loads.

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<sup>1</sup> Cf. COUNCIL DIRECTIVE of 30 November 1989 concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (89/655/EEC) (OJ L 393, 30.12.1989, p. 3, Celex 31989L0655), last amended by Directive 2001/45/EC of the European Parliament and of the Council (OJ L 195, 19.7.2001, p. 46, Celex 32001L0045).

Information has been communicated in accordance with Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services (OJ L 204, 21.7.1998, p. 37, Celex 398L0034), amended through Directive 98/48/EC of the European Parliament and of the Council (OJ L 217, 5.8.1998, p. 18, Celex 398L0048).

<i>Lifting accessories</i>	Components or equipment not attached to the lifting device and placed either between the lifting device and the load or on the load in order to attach it.
<i>Maximum load</i>	The heaviest load for which a lifting device or lifting accessory is intended.
<i>Stripper crane</i>	A lifting device having a controlled load-carrying member and fitted with stripper tongs or a stripper unit for extracting ingots from chill moulds or a casting machine.
<i>Grapple crane</i>	Lifting device having a controlled load-carrying member and fitted with a grapple for conveying steel ingots, chill moulds and platforms.
<i>Overload protection device</i>	Collective term for devices which, in the event of excess load, warn against or prevent dangerous movements by a lifting device or load.

## **Investigation and risk assessment**

### **Section 3**

Working conditions shall be investigated and the hazards assessed when lifting devices and lifting accessories are to be used. The following shall be particularly investigated:

1. the stability of the lifting devices in different ground and weather conditions,
2. access to danger zones,
3. the practical and theoretical knowledge possessed by the employees,
4. work beneath an elevated load and hoisting of persons,
5. servicing and assembly work,
6. use and selection of lifting accessories,
7. securing of load, load coupling and manual load control,
8. coincident work zones and use of several lifting devices for lifting a common load (tandem lifting) and
9. the life expectancy and maintenance of lifting devices and lifting accessories.

### **Section 4**

Renewed investigation and risk assessment shall be carried out

1. if follow-up pursuant to Section 6 shows existing hazards to differ from an earlier risk assessment,
2. if measures taken pursuant to Section 5 have not had the expected result or
3. if changes are made to work processes or the operation.

## **Remedial measures**

### **Section 5**

On the basis of the risk assessment, all necessary measures shall be taken for the prevention of ill-health or accidents. The stipulations in Sections 7-34 shall always be satisfied.

## **Follow-up**

### **Section 6**

The risk assessment and the measures taken shall be followed up regularly in order to make clear whether the risk assessment is correct and the measures have had the result expected.

## **Stipulations concerning products**

### **Section 7**

If a lifting device or lifting accessory was governed by Swedish prescriptions transposing EC directives to Swedish law when it was placed on the market or taken into service within the EEA, the following shall apply. The equipment may only be used if it meets the requirements concerning its nature and concerning information with regard to its use which applied to it when it was placed on the market or taken into service.

The same applies to work equipment which came under corresponding provisions in some other country inside the EEA. With regard, however, to marking, interactive software and instructions for use, the language requirements which follow from the Swedish Provisions shall always apply in connection with use.

### **Section 8**

An item of work equipment not coming under Section 7 shall meet the requirements of Annex A when used. Work equipment subject to the requirements of Section 7 in certain respects only shall otherwise meet the requirements of Annex A when used.

## **Stipulations concerning use**

### **General**

#### **Section 9**

Work using lifting devices and lifting accessories shall be planned, organised and conducted in such a way that dangerous situations are avoided.

In connection with lifting operations where representatives of several activities are involved, one person shall be placed in charge of planning and conducting the lifting operations.

### **Stability and ground conditions**

#### **Section 10**

When using a lifting device which is mobile or can be dismantled and moved between different erection sites, measures shall be taken which prevent the device from turning over, sliding or otherwise being inadvertently moved. These measures shall be taken with special regard to ground conditions.

Before a lifting operation takes place, a check shall be made to ensure that the measures as aforesaid have been correctly taken.

## **Suspended load**

### **Section 11**

Measures shall be taken to ensure that no person loiters beneath a suspended load. This does not apply if work is to be done underneath a hoisted load and the lifting device is specially designed for such work and efficient performance of the tasks requires it.

A load may not normally be transported over unprotected worksites where personnel are present.

When this nonetheless occurs, if the tasks cannot be efficiently performed in any other way, suitable working methods shall be defined and applied.

## **Securing of load**

### **Section 12**

A load shall be secured in such a way that it cannot move inadvertently when hoisted or moved in the horizontal plane.

## **Outdoor use**

### **Section 13**

A lifting device may not be used outdoors when weather conditions are such that safe use is jeopardised and persons thus exposed to risks. In addition, suitable safety precautions shall be taken so that no one is exposed to risks when the equipment is being used outdoors. This particularly applies to measures preventing the equipment from turning over.

## **Overload protection device and limit switches**

### **Section 14**

Overload protection device and limit switches shall be set in such a way that the safety function is activated before danger occurs.

## **Personal fall restraint equipment**

### **Section 15**

Personal fall restraint equipment shall be used if needed for safe access to the various parts of the lifting device or if there is a risk of the lifting device being run into by another device or vehicle.

The fall restraint equipment shall be kept readily available on or near the device.

## **Access to operating position**

### **Section 16**

A mechanically powered hoist/lift shall be provided for access to the cab if mounted more than 25 metres above ground or some other access level.

No lift is needed if

1. the cab can be raised and lowered or
2. the lifting device is normally controlled from ground level and only in exceptional instances from the cab.



## **Lifting of persons**

### **Section 17**

Persons may only be lifted with a device designed and manufactured for this purpose.

The stipulation in the foregoing may be waived

1. in emergency situations,
2. in connection with rescue work in rescue services, the police or armed forces, or
3. if this is sanctioned by special provisions and the conditions of those provisions are satisfied.

## **Risk of collision**

### **Section 18**

When two or more devices for lifting loads have been installed or assembled at a worksite in such a way that their work zones partly coincide, measures shall be taken to void collisions between the loads or devices.

When a device for lifting a load or personnel is used in the place where there is a risk of the device being run into by another vehicle, measures shall be taken to prevent this from happening.

## **Tandem lifting**

### **Section 19**

If two or more lifting devices have to be used simultaneously for lifting a load, a procedure ensuring good co-ordination between the operators shall be established and applied.

## **Choice of lifting accessories**

### **Section 20**

Lifting accessories shall be chosen according to

1. the load to be handled,
2. the grip points or lifting eyes to be used,
3. prevailing weather conditions and
4. the way in which the load is strapped or slung.

Lifting accessories which are not dismantled after use shall be clearly marked so as to inform the user of the characteristics of the equipment.

## **Storage of lifting accessories**

### **Section 21**

Lifting accessories shall be stored in such a way that there is no risk of their being damaged or destroyed.

## **Hoists/Lifts**

### **Section 22**

Servicing and erection work on hoists/lifts shall be carried out in such a way that risks do not occur.

In connection with servicing and assembly work, the hoist shall be operated with controls that automatically return to the "off" position when released.

A fall arrest device and speed limiter shall be connected if assembly work is carried out while a person is present on the load-carrying member.

### **Section 23**

Bulky goods may only be carried on hoists/lifts

1. which are specially designed for the purpose,
2. which are provided with a cage door or
3. whose cage opening has a safety device which stops the hoist in the event of the goods coming into contact with the shaft wall.

## **Lifting devices for lifting a freely suspended load**

### **Signaller**

#### **Section 24**

If the operator of a device for lifting a freely suspended load does not command an adequate view of the entire lifting zone, either directly or with auxiliary equipment, a person competent for the task shall be in direct contact with and guide the operator. The work shall be organised in such a way that the load cannot move in a dangerous manner.

### **Load coupling**

#### **Section 25**

The person securing or detaching a load manually shall be able to do so safely by having control of the lifting device or being in direct contact with the person operating the lifting device.

### **Manual alignment of load**

#### **Section 26**

For work requiring manual alignment of a load, a lifting device shall be used which can be regulated so as to afford good control of the lifting operation.

### **Energy outage**

#### **Section 27**

If a device for lifting a freely suspended load cannot hold the load in the event of the energy supply being partly or wholly cut off, suitable measures shall be taken so that no person will be exposed to any risk on this account.

### **Surveillance of load**

#### **Section 28**

A freely suspended load may not normally be left without surveillance.

## **Knowledge**

### **Section 29**

A lifting device or lifting accessory may be used only by a person who is closely familiar with the work and has the theoretical and practical knowledge needed for safe use.

This knowledge shall include current work environment rules and relevant aspects of the lifting device's and lifting accessories'

1. structure,
2. operation,
3. maneuvering,
4. properties,
5. uses,
6. limitations,
7. maintenance and
8. inspection.

An employer ordering an employee or outsourced worker to use lifting devices or lifting accessories shall have documentation concerning that person's practical and theoretical knowledge with regard to safe use of the equipment. A worker to whom subsection one of this section does not apply but who uses lifting devices or lifting accessories at a common worksite shall have corresponding documentation available at the worksite.

Employees and outsourced personnel shall have written permission from the employer and hirer respectively to use a mechanically powered lifting device. The permission shall indicate the types of lifting device, lifting accessory and duties included.

These requirements concerning documentation and permission do not apply to the use of hoists/lifts.

## **Maintenance and inspection**

### **Section 30**

A lifting device and lifting accessory shall be maintained and shall undergo continuous supervision and daily inspections when in use.

### **Section 31**

A lifting device shall be inspected and functionally tested every time it is taken into service after having been dismantled.

### **Section 32**

Maintenance, repair and rebuilding shall be carried out in such a way that the functioning, mechanical strength and stability of a lifting device or lifting accessory are not jeopardised.

### **Section 33**

A logbook shall be kept of

1. maintenance and continuous supervision as referred to in Section 30,
2. inspections as referred to in Section 31,
3. the operation of mechanically powered cranes for maximum loads exceeding 1,000 kg and
4. other points specified by the manufacturer.

### Section 34

Deficiencies in or damage to a lifting device or lifting accessory which have been discovered in the course of inspection shall, if capable of jeopardising safety, be remedied or repaired before further use. Condition analysis of the lifting device shall be carried out when a logbook or inspection shows the device to be approaching the end of its design service life.

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1. These Provisions enter into force on 1st July 2007.
  2. Through these Provisions the following Notices, Provisions and General Recommendations of the National Board of Occupational Safety are repealed.
    1. Notice 1974:23      Lifting Block Chain.
    2. Directions 58                      Building Hoists and Cranes
    3. Directions 103      Cabs for Building Cranes
    4. Directions 119      Pre-slung Pulp Bales
    5. Directions 131      Crane Hoists for Building Cranes
    6. AFS 1980:19      Load Limiting Devices on Cranes
    7. AFS 1981:17      Drivers' Cabs on Stationary Cranes
    8. AFS 1981:18      Gangways on Tower Cranes
    9. AFS 1985:13      Lifting Tables

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## **Annex A Technical stipulations**

### **A 1. Introductory remarks**

The stipulations in this annex apply only when the use of a lifting device or lifting accessory entails the risk referred to.

The measures required in order for lifting devices and lifting accessories to meet the stipulations in this annex are not necessarily the same as those needed to meet the basic requirements for work equipment coming under Section 7.

### **A 2. General stipulations**

#### **A 2.1 Mechanical strength and stability**

The mechanical strength and stability of lifting devices and lifting accessories shall be assured. Special consideration shall, for example, be paid to the loads which are to be lifted and the load on suspension points.

#### **A 2.2 Marking**

A lifting device shall be clearly and distinctly marked with its maximum load and, where applicable, with the maximum load for its various configurations.

A lifting accessory shall be marked so as to clearly show how it is to be used safely.

Lifting devices and lifting accessories which are not intended for lifting people but which it is to be feared may be thus used shall be clearly marked in this respect.

#### **A 2.3 Load moving inadvertently**

Lifting devices and lifting accessories shall be designed so as to entail a limited risk of the load accidentally falling freely, coming loose or moving in a dangerous manner.

#### **A 2.4 Protection of persons**

A permanently installed lifting device (lifting installation) shall be constructed and installed so as to limit the risks of the load colliding with persons.

#### **A 2.5 Lifting of persons**

A lifting device used for lifting persons or moving them in the horizontal plane shall be constructed in such a way that

- (a) there are suitable devices preventing the risk of the load-carrying member falling or tipping over,
- (b) the user is prevented from falling off the load-carrying member,
- (c) the user does not risk being crushed, trapped or struck, especially through inadvertent contact with an object,
- (d) the safety is guaranteed of persons trapped as a result of a breakdown or other occurrence, in such a way that they can be evacuated.

#### **A 2.6 Controls and driver's cab**

A driver's cab shall be designed so as to afford protection from wind and weather. There shall be a device facilitating good air change inside the cab. Comfort heating shall also be provided if needed.

The cab shall be designed so as to afford a good view.

Controls and cabs shall be designed so as to provide good ergonomic conditions.

It shall be possible to control the lifting device from ground level as well as from the cab.  
Operation of the lifting device shall not be possible from more than one point at a time.

#### **A 2.7 Manual winch**

A manual winch shall be designed so as to entail a limited risk of kickback if the winch handle slips or is released.

#### **A 2.8 Overload protection device**

Cranes, stripper cranes and grapple cranes intended for loads exceeding 5 tonnes or load torques exceeding 2 tonne-metre shall be equipped with overload protection device. Cranes with a statistical stability against overturning which exceeds 2.5 and used for light duty only are exempted from this stipulation.

### **A 3. Special stipulations for hoists/lifts intended for professional use by specially instructed personnel**

#### **A 3.1 Limit switches**

In addition to the normal operating current switch for the uppermost and bottom landing, there shall also be a limit switch for the main power supply. This limit switch shall be designed for manual reset.

#### **A 3.2 Fall arrest device**

Hoists/lifts which personnel are permitted to enter shall be equipped with a dependable fall arrest device which is activated by a speed limiter or corresponding safety device. The same applies to hoists/lifts entered by personnel only in the course of assembly.

#### **A 3.3 Overload limiter**

A hoist to a crane cab or a ride-on crane cab shall be equipped with an overload limiter.

#### **A 3.4 Controls**

The controls of a hoist/lift not intended for carrying people shall be inaccessible from the cage.

# **General recommendations by the Swedish Work Environment Authority on implementation of the Provisions on Use of Lifting Devices and Lifting Accessories**

The following Recommendations are issued by the Work Environment Authority concerning implementation of its Provisions (AFS 2006:6) on Use of Lifting Devices and Lifting Accessories.

General Recommendations have a different legal status from Provisions. They are not mandatory. Instead they serve to elucidate the meaning of the Provisions (e.g. by explaining suitable ways of meeting the requirements, instancing practical solutions and procedures) and to provide recommendations, background information and references.

## **General**

The stipulations in these Provisions apply to the types of work equipment indicated in the scope for the same as defined in Section 1 (lifting devices and lifting accessories). Certain parts relating solely to the use of lifting devices and lifting accessories have been transferred from the Provisions of the Work Environment Authority on Use of Work Equipment. Those Provisions contain general rules for the use of work equipment of all kinds and are applicable to the use of lifting devices and lifting accessories in conjunction with the present Provisions.

## **Background**

As a member of the European Union (EU), Sweden is required to transpose EC Directives to Swedish provisions. The EU rules on workers' safety and health are set forth in a framework directive stating the basic rules of safety in the workplace. A number of special directives contain minimum requirements which may not be fallen short of in the EU Member States. The second individual directive (89/655/EEC), amended by directives 95/63/EC and 2001/45/EC, contains stipulations for the safe use of work equipment by workers at work. The Provisions on Use of Lifting Devices and Lifting Accessories are based on that directive.

These Provisions supersede a number of earlier Notices, Directions and Provisions of the National Board of Occupational Health which contained rules on lifting devices and lifting accessories. The intention has been to modernise those rules without altering the technical stipulations applying to the lifting devices and lifting accessories to which the stipulations apply. The Entry into force section indicates the Notices, Directions and Provisions now repealed.

Rules containing stipulations for certain technical devices are also contained in provisions issued by other national authorities. The Statute Book of the National Board of Housing, Building and Planning, for example, includes provisions on lifts. It should be noted, however, that the Provisions of the Work Environment Authority on Use of Work Equipment and on Use of Lifting Devices and Lifting Accessories also apply to the use of lifts.

Swedish standards contain "codes" concerning, among other things, the design of new lifting devices and lifting accessories, periodic inspection and condition monitoring. Those standards can also be of some assistance in assessing the safety level of existing lifting devices and lifting accessories.

## **Guidance on certain sections**

### **Scope**

#### **Section 1**

Certain devices intended for other purposes can also be used as lifting devices, in which case they come within the scope of these Provisions. Machinery of this kind includes, for example, earth-moving machines manipulating freely suspended loads.

### **Definitions**

#### **Section 2**

The terminology used in these Provisions has, as far as possible, been chosen to agree with definitions in international standards and EC directives.

Ocular inspection means looking at the device and its constituent parts in order to detect any deficiencies.

A controlled load-carrying member means that the load cannot oscillate. A non-controlled load-carrying member means that the load can oscillate freely in all directions. Load-carrying members include, for example, lifting ropes, chains, hooks, hook blocks and hoist cages.

Lifting accessories include chain slings, slings, rings, hooks, shackles, swivels, load decks, scissor lifts or yokes.

### **Investigation and risk assessment**

#### **Section 3**

Rules on systematic work environment management are contained in special Provisions of the Work Environment Authority which apply conjointly with the present Provisions. The rules on systematic work environment management require the employer to regularly investigate working conditions and assess the risks of anyone incurring ill-health or meeting with an accident at work. The risk assessment has to be recorded in writing.

#### **Section 4**

If there is a change in the conditions attending a lifting operation, it is important that a new risk assessment be carried out.

### **Products**

#### **Sections 7 and 8**

Section 7 refers to devices subject to stipulations of CE marking and basic health and safety stipulations, e.g. under the Machinery Directive. Section 8 refers among other things to older devices which were already in use before the stipulations of Section 7 entered into force.

### **Use**

#### **Planning and organisation**

##### **Section 9**

It is important that the person responsible for the planning and conduct of the lifting operations should have the knowledge needed for the discharge of these duties, including for example



- (a) choice of suitable cranes and other lifting devices and lifting accessories,
- (b) instruction and surveillance to ensure safe conduct of the lifting operations,
- (c) verification of satisfactory maintenance, periodic inspection and inspection being carried out,
- (d) verification of the existence of effective non-conformance reporting and of corrective measures being taken when necessary.

After work has been completed, a follow-up may be appropriate with a view to gathering experience which can prevent dangerous situations from occurring in future.

The stationing, alteration, maintenance, repair, dismantling or transportation of a lifting device should be carried out by a person closely familiar with the work or under continuous supervision by such a person.

## **Stability and ground conditions**

### **Section 10**

It is important to ascertain the carrying-capacity of the underlay and where necessary to use ground pressure distribution mats. There may be cases where the maximum load capacity of the lifting device cannot be used, owing to the poor carrying capacity of the underlay. To prevent inadvertent motion, wheel chocks or a parking brake may need to be used, for example. Extra consideration must be paid to stability when a lifting device is positioned on a pontoon.

## **Suspended load**

### **Section 11**

Jobs which, to be done efficiently, require someone to be stationed beneath a suspended load, include, for example, various forms of stage work often done beneath stage sets, flies or other stage equipment. Work on vehicles standing on vehicle lifts is another such example.

An appropriate working method as referred to in subsection two can be for lifting operations to be performed on marked transport routes combined with a warning signal, so that persons present in the danger zone can leave it.

## **Securing of load**

### **Section 12**

It is important to use a lifting hook secured against inadvertent unhooking if there is a risk of the lifting rope slackening. The lifting hook should also be designed for protection from inadvertent hooking. Swedish Standards contain recommendations concerning, among other things, suitable design of self-locking lifting hooks.

When a tail lift is used for loading or unloading a vehicle, it is important to secure the load against inadvertent motion.

## **Outdoor use**

### **Section 13**

When large lifting devices are used outdoors, a wind gauge should be available so that the wind strength can be settled when necessary.

Some lifting devices are dimensioned to withstand the heaviest wind loads occurring, but only if special measures are taken, such as lowering the crane jib, releasing the crane jib

brake or securing special storm locks. It is very important that these measures should be taken before leaving the crane at the end of the working day or shift.

One important point to bear in mind is that certain devices are not intended for outdoor use, in which case they are not dimensioned, for example, for wind loads.

## **Overload protection device and limit switches**

### **Section 14**

It is important for overload protection device to be set to be actuated while there is still a secure margin against a crane overturning or a load-carrying structure or other important load-bearing parts such as ropes, lifting machinery, hydraulic systems etc. being damaged. It is important for devices showing load or load torque to be set in such a way that the value read off from the instrument agrees with the true load or load torque.

It is important that a lifting device equipped with a friction clutch and where the friction clutch is often used as stop at the limit position, should also be fitted with a limit position stop having a cut-out function.

## **Personal fall restraint equipment**

### **Section 15**

Rules on the use of work equipment and use of personal protective equipment, together with rules on fall restraint equipment, are contained in special Provisions issued by the Work Environment Authority.

## **Access to operating position**

### **Section 16**

A mechanically powered hoist/lift should be provided for access to a cab mounted more than 20 metres above ground or some other access level.

## **Lifting of persons**

### **Section 17**

Rules on temporary lifting of persons using cranes and trucks are contained in special Provisions issued by the Work Environment Authority.

## **Risk of collision**

### **Section 18**

This stipulation should in the first instance be made by means of effective anti-collision safeguards. In the second instance organisational measures can be taken, such as an open channel of communication and limited work areas, in which case it is important that those parts of a crane which are excluded from the crane driver's field of vision, e.g. the rear counterweight stack of a tower crane, should not entail any risk of collision.

## **Tandem lifting**

### **Section 19**

Swedish Standards contain recommendations on tandem lifting procedures. In order to have a margin against unforeseen centre-of-gravity shifts, it is important not to make maximum use of the load capacity of the lifting devices.

## **Choice of lifting accessories**

### **Section 20**

Lifting accessories as referred to in subsection two can be lifting accessories temporary assembled for a particular purpose. A specially designed new lifting accessory is subject to the certification stipulations of the Provisions on Machinery and Certain Other Technical devices.

## **Hoists/Lifts**

### **Section 22**

One possible example is the screening-off of the work area so that nobody can enter the danger zone.

Where a hoist has a landing by a scaffold which is a worksite, it is important for the landing gates to be designed so as not to entail any interruption in the safety rail surrounding the worksite.

### **Section 23**

There are great risks involved in carrying bulky goods in hoists with no cage door or other safeguard in the cage opening. A number of serious accidents, several of them fatal, have occurred as a result of goods catching in the shaft wall and crushing a person against the rear wall or roof of the cage. Many such accidents have occurred in the transportation of receptacles for waste paper recycling, but transportation of vessels and carts of other kinds can also cause accidents.

## **Signaller**

### **Section 24**

Much depends on good communication between the crane driver and the signaller or the slinger. Radio communication or, for example, an appropriate signalling code can be used. Rules on safety signs and warning signals at workplaces are contained in special Provisions issued by the Work Environment Authority.

## **Manual alignment of load**

### **Section 26**

The majority of cranes meet the requirement of good control in connection with manual load alignment.

Machinery designed primarily for operations other than the lifting of freely suspended loads does not as a rule meet the requirements of good control. It may have in-built safety devices which, during the lifting of a freely suspended load (excess load or dynamic stresses), entail a risk of the load uncontrollably falling. Machinery of this kind includes excavators and loaders fitted with jibs.

## **Surveillance of load**

### **Section 28**

An unsupervised load can entail major hazards, e.g. if it falls down or the wind causes it to oscillate.

If a freely suspended load yet is left unsupervised the load has to be safely secured and the area enclosed.

## **Knowledge**

### **Section 29**

Knowledge on all the points enumerated is important to drivers of lifting devices. In the case of slingers, signallers and personnel carrying out maintenance, repair and alteration work, knowledge of relevant aspects may suffice. The knowledge needed to meet the stipulations can vary, depending on the complexity of the lifting device and lifting accessory.

In the case of drivers of more complicated lifting devices, e.g. tower cranes and mobile cranes, the stipulations can be considered met if the driver has passed an examination after completing a quality-assured driving course which includes theoretical instruction and driving practice. Training arranged by the National Joint Council of the Building Industry (BYN) and leading to a vocational certificate issued by a Regional Vocational Committee is one example of such an examination. Training programmes arranged in Denmark, Norway, Iceland and Finland and conferring competence recognised by the occupational safety and health authority of the country concerned are another such example.

Swedish Standards include recommendations concerning the training of crane drivers and drivers of mobile work platforms, and also of slingers and signallers.

Rules in minors in working life are contained in special Provisions issued by the Work Environment Authority. Under those Provisions, minors, with few exceptions, may not be employed as drivers or operators of mechanically powered lifting devices.

Collective agreements concluded between the Swedish Construction Federation/the Earth-Moving Contractors' Association and the Swedish Building Workers' Union/the Union of Service and Communication Employees (SEKO) require crane drivers in these collective-bargaining areas to have certificates of competence.

## **Maintenance and inspection**

### **Section 30**

It is appropriate, e.g. when work begins or at least once daily, to check that the lifting device is in proper working order.

The manufacturer indicates points for maintenance and inspection in the course of periodic inspection and suitable intervals for the same. It is important that parts with a bearing on safety but not directly included in the device, e.g. crane tracks, should also be maintained and inspected. Swedish Standards include recommendations on periodic inspection and suitable intervals in connection with various uses.

Rules on inspection of lifting devices and certain other technical devices are contained in special Provisions issued by the Work Environment Authority. These may stipulate inspection by an accredited inspection body for certain types of lifting device.

### **Section 33**

It is important for logbooks concerning maintenance, periodic inspection and inspection to contain particulars of what has been checked, when the inspection was carried out and what measures, if any, have been taken.

### **Section 34**

Lifting devices are often designed for a limited service life, depending on duration and mode of use. This makes it important to log operations, so as to be able to decide when it is time for the device to be decommissioned or what measures need taking so that it can be safely used for an additional length of time (condition monitoring). Swedish Standards include recommendations on possible procedures for monitoring the condition of lifting devices. Automatic recording of use – data logging – is an alternative to manual logbooks.

## **Guidance on Annex A**

### **Introductory remarks**

**Guidance on A 1** This Annex also contains certain stipulations not to be found in the harmonised standards for lifting devices. Older lifting devices therefore need to have certain properties not stipulated for lifting devices coming under Section 7 in order to meet the requirements of this Annex.

### **Mechanical strength and stability**

**Guidance on A 2.1** It is important for a shaft, e.g. a pulley axle, to be secured against inadvertent rotation.

It is important for the upper hook of a lifting block to be secured against unhooking or loosening inadvertently.

It is important for the nut on a hook having a threaded nut shaft to be adequately secured. Fastening with a split cotter above or through the nut is not considered secure.

It is important that there should be no play between nut and hook shaft. This can occur, for example, after water has seeped in, causing corrosion to the threads.

### **Personal protection**

**Guidance on A 2.4** Tower cranes and building hoists are examples of devices regarded as permanent installations.

### **Controls and driver's cab**

**Guidance on A 2.6** It is important for the crane to be controllable from ground level for purposes of inspection and functional testing.

## **Overload protection device**

**Guidance on A 2.8** This stipulation applies to cranes, stripper cranes and grapple cranes which do not come under the Provisions of the Work Environment Authority on Machinery and Certain Other Technical Devices.

Some cranes not subject to the stipulation in point A 2.8 have nonetheless been delivered with overload limiting device. Chap. 8, Section 2 of the Work Environment Act makes it a punishable offence to remove a safety device or render it inoperative without special cause.

It is important for a mobile crane with a telescopic jib or a jib of this kind fitted with a mobile jib to be equipped with overload protection device.

Mobile cranes and other cranes which can overturn and which have a load torque exceeding 60 tonne-metres should also be equipped with a load torque indicator or load indicator. They should also have a load-signalling device.

For the purposes of these Provisions, light-duty cranes are cranes which, when taken into service, were assigned to crane group I under code IKH 4.30.01 of the Cranes and Hoists Commission, 1st ed., or operating classes B1 and B2 according to the second edition of the same code.

## Information from the Work Environment Authority

### Directives from the European Communities

#### *Work environment directives*

COUNCIL DIRECTIVE of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work (89/391/EEC) (OJ L 183, 29.6.1989, pp. 1-8, Celex 31989L0391)

COUNCIL DIRECTIVE of 30 November 1989 concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (89/655/EEC) (OJ L 335, 30.12.1989, pp. 13-17, Celex 31989L0655)

COUNCIL DIRECTIVE 95/63/EC of 5 December 1995 amending Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC) (OJ L 335, 30.12.1995, pp. 28-36, Celex 31995L0063)

DIRECTIVE 2001/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 June 2001 amending Council Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (OJ L 195 , 19.07.2001, pp. 46-49, Celex 32001L0045)

#### *Directives relating to technical trade barriers*

DIRECTIVE 98/34/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations (OJ L 204, 21.7.1998, pp. 37-48, Celex 31998L0034)

### Legislation and statutory instruments

The Work Environment Act (SFS 1977:1160)

The Work Environment Ordinance (SFS 1977:1166)

### Provisions issued by the Work Environment Authority (AFS)

- 1994:48 Machinery and Certain Other Technical Devices
- 1996:1 Minors at Work
- 1996:7 Design of Personal Protective Equipment
- 1997:11 Safety Signs and Warning Signals at Workplaces
- 2001:1 Systematic Work Environment Management
- 2001:3 Use of Personal Protective Equipment
- 2003:6 Inspection of Lifting Devices and Certain Other Technical Devices
- 2006:4 Use of Work Equipment
- 2006:5 Use of trucks
- 2006:7 Temporary lifting of persons using Cranes and Trucks

### Other relevant rules etc.

Rules, brochures, books etc. are listed in ADI 100 Produktkatalog (obtainable free of charge from the Work Environment Authority, address: Arbetsmiljöverket, Publikationsservice, Box

1300, SE-171 25 SOLNA). Publications can also be ordered via the Authority's website, [www.av.se](http://www.av.se).

The Work Environment Authority also publishes an annual list of all current statutory instruments and General Recommendations adopted.

For updates on current regulations it is also appropriate to visit the Authority's website [www.av.se](http://www.av.se), subheading Law and justice, to check which rules apply to a particular activity. Note, however, that documents on the Internet may be inaccurate and that legally it is the printed text which applies.

#### **Swedish Standards and codes**

IKH 8.00.07	General Instructions for the Operation and Care of Cranes
SS 768 00 04	Cranes - Inspection and Maintenance
SS 768 50 06	Cranes - Lifting accessories - Periodical inspection
SS-EN 1677-3	Components for slings - Safety - Part 3: Forged steel self-locking hooks - Grade 8
SS-ISO 9926-1	Cranes - Training of drivers - Part 1: General
SS-ISO 12482-1	Cranes - Condition monitoring - Part 1: General
SS-ISO 15513	Cranes - Competency requirements for crane drivers (operators), slingers, signallers and assessors
SS-ISO 18878	Mobile elevating work platforms - Operator (driver) training

There are a large number of standards concerning the construction and design of new lifting devices and lifting accessories. These standards are obtainable from SIS, the Swedish Standards Institute.