WHAT YOU NEED TO KNOW ABOUT…

SUSPENDED SCAFFOLDS

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Construction & Utilities Program
WorkSafe Victoria

Preface

Suspended scaffolds are often used to provide access and working platforms in the construction, alteration, inspection, repair, refurbishment and maintenance of high-rise buildings, industrial plant, bridges and other large structures.

They are also often used in the installation of lifts, particularly the purpose-designed suspended scaffolds known as false cars.

WorkSafe Victoria has produced this set of safety checklists and explanatory information to assist:

- Suppliers of suspended scaffolding equipment, including hire companies,
- Principal contractors where suspended scaffolds are used,
- Employers whose workers are required to operate or work from suspended scaffolds,
- Scaffolding contractors, scaffold designers and personnel directly responsible for the erection, alteration and dismantling of suspended scaffolds, and
- Health & Safety Representatives whose Designated Work Groups includes workers operating, using or working in the vicinity of suspended scaffolds.

The following organisations provided valuable input in the development of this booklet:

- The Master Builders Association of Victoria,
- The Scaffold Association of Victoria,
- The Victorian Construction Safety Alliance,
- The Office of the Chief Electrical Inspector (now part of Energy Safe Victoria),
- The CFMEU's Construction & General Division, and
- The CEPU's Electrical Trades Union.

Further copies of this booklet can be downloaded from WorkSafe's Construction & Utilities webpage:

www.workcover.vic.gov.au/construction

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GENERAL INFORMATION

WHAT IS A SUSPENDED SCAFFOLD?

A **suspended scaffold** is defined in the Victorian ***Occupational Health & Safety (Plant) Regulations 1995***[1] as:

> *"… a scaffold incorporating a suspended platform which is capable of being raised or lowered when in use."* [2]

Common types of suspended scaffolds likely to be encountered in the construction industry include:

- **Swing stages** which have cradles supported by a single row of suspension ropes.
- **Double-rope** scaffolds, with cradles supported by two rows of suspension ropes.
- **Work cages** which are small cradles supported by one suspension rope only.
- **Boatswain's chairs** where the platform is a seat for one person.
- **False cars** are specialised forms of suspended scaffolding, which are often used in the construction of lifts. Additional requirements for false cares are covered in Part 8 of this document.

Please note: Hand-hauled industrial rope access systems are **not** regarded as a form of scaffolding.

COMMON TYPES OF SCAFFOLDING HOISTS

All suspended scaffolds rely on **scaffolding hoists** to provide them with the means by which they can be raised and lowered during use.

The two main sorts of scaffolding hoist are:

- **Wrap-traction hoists** where the hoist "climbs" a stationary suspension rope reeved through several sheaves within the hoist.
- **Drum hoists** where the suspension rope is anchored to the hoist.

Scaffolding hoists include electrically, pneumatically and manually powered types.

WHAT HEALTH AND SAFETY LAWS APPLY?

The primary law is the ***Occupational Health and Safety Act 2004***, which sets out the general duties of care for:

- Designers, manufacturers, and suppliers of suspended scaffolding systems and equipment,
- Installers of suspended scaffolds,
- Employers of persons using suspended scaffolds (including principal contractors whose sub-contractors are using suspended scaffolds, and
- Employees whose work involves anything to do with suspended scaffolding.[3]

The two sets of Regulations under the ***Occupational Health and Safety Act*** of most direct relevance to suspended scaffolding issues are the:

- ***Occupational Health and Safety (Plant) Regulations 1995***, and
- ***Occupational Health and Safety (Certification of Plant Users and Operators) Regulations 1994***.

WorkSafe's *Code of Practice for Plant*[4] provides recommendations on how those with obligations under the ***OHS (Plant) Regulations*** can comply with those Regulations. In particular, the *Code of Practice for Plant* incorporates the following Australian Standards[5] that deal with suspended scaffolding:

- AS 1418.2, *Cranes (Including Hoists and Winches)*, Part 2: *Serial Hoists and Winches*,
- AS/NZS 1576.1, *Scaffolding,* Part 1: *General Requirements*,
- AS 1576.4, *Scaffolding*, Part 4: *Suspended Scaffolding*,
- AS/NZS 4576, *Guidelines for Scaffolding*, and
- AS/NZS 4431, *Guidelines for Safe Working on New Lift Installations in New Constructions* (for false cars).

The Foundations for Safety *Industry Standard for Electrical Installations on Construction Sites*[6] is also relevant to suspended scaffolding where electrically powered scaffolding hoists are used or where there is provision to plug in electrically powered tools from suspended scaffold cradles.

The set of checklists, together with the explanatory material provided in this booklet, is consistent with the above-listed Acts, Regulations, Code of Practice, incorporated Australian Standards and Foundations for Safety Industry Standard.

CHECKLISTS

NO 1: SCAFFOLD SUPPLIER'S

SAFETY CHECKLIST FOR SUSPENDED SCAFFOLDING				
Ref.	**SCAFFOLD SUPPLIER'S**	**Tick**		
Part	**PRE-DELIVERY OF EQUIPMENT**	**yes**	**n/a**	**no**
1:1	Is there written confirmation of design notification for new types of powered scaffolding hoists?			
1:2	Do scaffolding hoists and the secondary protective devices have legible data plates bearing the necessary information?			
1:3	Does the RCD in the cradle have a legible data label bearing the necessary information?			
1:4	Do the controls have all necessary labels and operational functions displayed?			
1:5	Are the hoist(s) and the central control box compatible?			
1:6	Is the control box designed to be removed from the platform when not in use?			
5:6 5:8	Has the correct type, size and length of flexible power cord been provided?			
4:11	Is the correct size and type of wire rope provided?			
4:13	If required, has the secondary protective device been adjusted for the size of wire rope to be used?			
1:7	Has each hoist and secondary protective device undergone inspection and load testing before being installed onsite?			
1:8	Have all scaffolding components been inspected before being sent to site?			
4.7	Are the counterweights specifically manufactured for the purpose and correctly labelled?			
3.2	Are the supplied components compatible with the design plan?			
1:9	Have all relevant safe use instructions and checklists been provided to the user?			

This checklist is designed to be used with the Booklet, *What you need to know about Suspended Scaffolds*, sections of which are referenced by the number in the left column of the checklist. Unless **yes** or **n/a** is recorded the scaffold should not be used, until rectification occurs.

NO 2: SCAFFOLD DESIGNER'S

SAFETY CHECKLIST FOR SUSPENDED SCAFFOLDING				
Ref.	**SCAFFOLD DESIGNER'S**	**Tick**		
Part	**INITIAL PLANNING AND DESIGN**	**yes**	**n/a**	**no**
3:1	Has the supporting structure been assessed by a competent person?			
3.1	Has a statement of assessment for the supporting structure been provided to the site?			
3:2	Has a detailed design plan been prepared for the erection of the scaffold?			
3:3	Have alterations or changes to the scaffold been amended to the design plan?			
3:4 2.7	Has the tasks which are to be carried out from the scaffold been taken into consideration when selecting and designing the scaffold?			
2:1	Has the protection of the public been addressed?			
2:2	Has the protection of other workers been addressed?			
4.3	Has the protection of workers, who have to erect the scaffold been addressed?			
2:3	Has the issue of the proximity to overhead power-lines been addressed?			
2:5	Has the issue of vehicle traffic around the scaffold been addressed?			
3:5	Has the voltage drop (electrical power) limitations of the installation been taken into consideration?			
3:6	Have measures to restrict lateral movement of the scaffold, during operation, been addressed?			
6:10	Have issues relating to safe access and egress of the workers, who are to use the platform, been addressed?			
6:14 6:15	Has the storage and security of the scaffold, when not in use, been addresses?			

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NO 3: SCAFFOLD ERECTOR'S

SAFETY CHECKLIST FOR SUSPENDED SCAFFOLDING				
Ref.	**SCAFFOLD ERECTOR'S**	**Tick**		
Part	**SCAFFOLD ERECTION AND INSTALLATION**	**yes**	**n/a**	**no**
4:1	Is the erection, alteration or dismantling of the scaffold carried out or directly supervised by the appropriate certificate holder?			
3:1	Has the supporting structure been assessed by a competent person?			
3.1	Has a statement of assessment for the supporting structure been provided to the site?			
4:2	Does the scaffold erector have a copy of the scaffold design plan, prior to erection?			
4:3	Do the scaffolders erecting the scaffold have adequate fall protection?			
2.1	Has the protection of the public been addressed?			
2.2	Has the protection of other workers been addressed?			
2.3	Has the issue of the proximity to overhead power-lines been addressed?			
4:5	During the erection, **if needed**, are the areas around the support rigging, underneath and adjacent to the cradle barricaded off?			
4:6	During erection, **if needed**, is a safety observer positioned to prevent access to the area below the scaffold?			
4:7	Are the supplied counterweights labelled with their weight in Kg and have they been manufactured for the purpose?			
4:7	Are the counterweights correctly and securely attached to the suspended scaffold support rigging?			
4:8	If used, are traversing tracks fitted with stops at each end of the rails?			
4:8	If used, are traversing trolleys rated at least 500 Kg?			
4:9	Are the outboard ends of the needles higher than the inboard ends?			
4:10	Is the suspension rig stable?			
4:11	Is the wire rope used of the correct size and type for the hoist?			
4:12	Is each hoist fitted with a secondary protective device?			
4:13	Has the secondary protective device been adjusted for the size of wire rope fitted?			
4:14	Are all wire ropes independently attached to the rigging?			
4:15	Has the suspended cradle been assembled correctly?			
4:16	Is the safe working load limit displayed in the cradle?			
4:17	Is the cradle in good mechanical condition?			
4:18	Has the scaffold been erected as per the design plan?			
6:10	Has safe access been provided for workers to enter and leave the cradle?			
4.18	Has the scaffold been erected as per the design plan, with any modifications or changes approved and recorded on an amended plan?			

SAFETY CHECKLIST FOR SUSPENDED SCAFFOLDING				
Ref.	**SCAFFOLD ERECTOR'S**	**Tick**		
Part	**ELECTRICAL INSTALLATION**	**yes**	**n/a**	**no**
5:1	Has an adequate power supply been provided for the suspended scaffold?			
5:2	Has the voltage drop requirements for suspended flexible cable been taken into consideration?			
5:3	Is the construction power-board situated near the support rigging of the suspended scaffold?			
5:4	Can the suspended flexible cable be accidentally removed from power-board?			
5:5	Has the suspended flexible cable been correctly secured to the support rigging and the cradle?			
5:6	Is the suspended flexible cord the correct type?			
5:7	Has the suspended cable adequate running clearance?			
5:8	Is the suspended cable of sufficient length?			
5:9	Is the control box attached to the outside guardrail?			
5:10	Are the electrical cables from the control box to each hoist, correctly installed?			
5:11	Are the cables from the control box to each hoist adequately protected from mechanical damage?			
Part	**HANDOVER OF SCAFFOLDS**	**yes**	**n/a**	**no**
4:18	Has the completed or altered scaffold been inspected before being used for the first time?			
4:19	Has a written statement of completion been supplied?			
4:19	Has the user of the scaffold been supplied with all safe use information?			

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NO 4: SWING STAGE & BOATSWAIN'S CHAIR IN-SERVICE

IN-SERVICE CHECKLIST FOR SUSPENDED SCAFFOLDING				
Ref.	**SWING STAGE & BOATSWAIN'S CHAIR**	**Tick**		
Part	**OPERATION**	**yes**	**n/a**	**no**
3:1	Has the supporting structure been assessed by a competent person and a statement of assessment for the supporting structure been provided to the site?			
4.19	Has the completed or altered scaffold been inspected before being used for the first time and a written statement of completion been supplied?			
4.18	Has the scaffold been erected as per the design plan?			
6:3	Are emergency rescue procedures in place to remove trapped worker(s)?			
2:1 9.1	Has sufficient protection been provided for the public?			
2:2 9:1	Has sufficient protection been provided for other workers?			
6:4	Are measures in place to protect the worker(s) on the suspended scaffold from falling debris?			
6:2	Has the supplier provided a copy of the operator's manual and copies of the daily checklist?			
6:5	Are the operator(s) authorised by their employer to operate the scaffolding hoist?			
6:6 6:8	Have the operator(s) received instruction on the operation of the equipment?			
6:7 6:8	Have all persons working in the suspended scaffold received instruction in the safe systems of work and the emergency procedures for the equipment?			
7:2	Can the seated operator of a boatswains chair activate all controls, including emergency decent?			
2:3 2:4	Have the dangers of overhead electric powerlines been addressed?			
4:6	Are the supplied counterweights adequate for the purpose, of the correct number and are securely attached to the suspension support rigging?			
4:10	Is the suspension rigging stable?			
4:11	Is the wire rope used of the correct construction and size for the hoist?			
4:12	Is each hoist fitted with a secondary protective device?			
4:13	Has the secondary protective device been adjusted for the size of wire rope fitted?			
4:14	Are all wire ropes independently attached to the support rigging?			
4:15	Has the cradle or chair been assembled correctly?			
4:16	Does the cradle or chair appear to be in good mechanical condition?			

SWING STAGE & BOATSWAIN'S CHAIR		Tick		
Part	**OPERATION**	**yes**	**n/a**	**no**
4:16	Is a sign with the safe working load in Kg fixed inside the cradle or to the chair?			
6:13	Is the load on the platform within its safe working load?			
6:10	Is safe access provided for workers to enter and leave the cradle?			
6:11	If required, are lateral restraints being used?			
6:12	Is there safe access along the entire work platform of the cradle?			
2:5	Is there sufficient control over the movement of vehicles in the area of the scaffold?			
2:6	Is there sufficient control of cranes working in the vicinity?			
2:7	Are there sufficient controls over the storage, handling, and use of hazardous substances on the cradle?			
2:8	Is the selection of the type of scaffold hoist appropriate for the location?			
6:9	Is there an effective method of communication between the occupants of the work platform and the ground?			
5:6 **5:7**	Has the correct type and size of suspended flexible electrical power cord been provided?			
5:8	Is the suspended flexible electrical cable of sufficient length?			
5:4	Is the suspended flexible cable installed so that it cannot be accidentally removed from power-board?			
5:5	Has the suspended flexible cable been correctly secured to the support rigging and the cradle?			
5:7	Has the suspended flexible cable adequate running clearance?			
5:9	Is the control box attached to the outside guardrail?			
5:10 **5:11**	Are the electrical cables from the control box to each hoist, correctly installed and are the cables protected from mechanical damage?			
Part	**UNATTENDED SCAFFOLDS**	**yes**	**n/a**	**no**
6:14	When the scaffold is unattended for short periods, are appropriate safety measures observed?			
6:15	When left unattended for longer periods, are appropriate safety measures observed?			
Part	**INSPECTION, SERVICING & MAINTENANCE**	**yes**	**n/a**	**no**
6:16	Have the operator(s) prior to using the scaffold, been completing the daily checklist?			
6:17	Has the scaffold undergone the monthly inspection?			
6:18	Have all the electrical leads, components, and electrical protection devices been inspected and tested (as per Industry Standard for Electrical Installations on Construction Sites)?			

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NO 5: FALSE CARS IN-SERVICE

IN-SERVICE CHECKLIST FOR SUSPENDED SCAFFOLDING				
Ref.	**FALSE CARS**	**Tick**		
Part	**INSTALLATION & OPERATION**	**yes**	**n/a**	**no**
8:1	Prior to work commencing, are written procedures in place to rescue trapped workers?			
2:2	Has sufficient protection been provided for other workers?			
8:2	Is the erection, alteration and dismantling of the false car carried out or directly supervised by the appropriate certificate holder or by a qualified employee of a lift company granted an exemption?			
8:2	If the lift company has been granted an exemption has the employee been adequately trained in compliance with the exemption conditions? (see appendix No:1)			
8:2	If the lift company has been granted an exemption, is a list available of exempt employees who hold either an advanced certificate or an old endorsed class 3 & 4 rigging certificate for lift maintenance, repair & installation?			
8:2	Do the employees covered by the lift company's exemption each have a copy of the relevant work procedures?			
4:11	Is the wire rope used of the correct construction and size for the scaffold hoist?			
4:12	Is the scaffold hoist fitted with a secondary protective device?			
4:13	Has the secondary protective device on the scaffold hoist been adjusted (if necessary) for the size of wire rope fitted?			
4:14	Are the suspension and secondary wire ropes independently attached to the support rigging?			
8:13	Are the wire ropes adequately protected against mechanical damage on the working platform of the false car?			
4:15	Has the false car been assembled correctly?			
8.6	Has the safety gear been fitted to the underside of the false car platform?			
8:14	Does the false car have adequate edge protection?			
6:4	Are measures in place to protect the worker(s) on the false car from falling debris?			
6:4	Are measures in place to protect other worker(s) from any debris which could fall from the false car?			
4:16	Does the false car appear to be in good mechanical condition?			
4:17	Is the working load limit of the false car displayed?			
6:14 6.15	When the false car is unattended, are appropriate safety measures observed?			
8:3	Is the lift shaft and working platform lighting adequate?			
8:4	Is the lift shaft and working platform fitted with adequate emergency lighting?			
6:10	Is safe access provided to enter and leave the false car?			
6.4 6:5	Are the operator(s) trained and authorised by their employer to operate the false car?			

6:7 **6:8**	Have all persons working in the false car received instruction in the safe systems of work and the emergency procedures?			
8:5	Does the installation of electrical wiring to the false-car comply with the industry standard?			
2:7	Are there sufficient controls over the storage, handling, and use of hazardous substances?			

IN-SERVICE CHECKLIST FOR SUSPENDED SCAFFOLDING

Ref.	**FALSE CARS**	**Tick**		
	OPERATIONAL CHECKS AND MAINTENANCE	**yes**	**n/a**	**no**
8:6	Has the commissioning inspections and tests been completed?			
8:7	Has the daily pre-operation inspection (checklist) been done?			
8:8	Have the 3 monthly periodic tests been carried out?			
8:9	Has the 6 monthly testing of the safety systems been done?			
8:10	Are maintenance and inspection records available?			

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EXPLANATORY NOTES FOR CHECKLISTS

Part 1: EQUIPMENT SUPPLY

Suppliers of suspended scaffolding equipment have a general duty under the ***Occupational Health and Safety Act 2004*** to ensure that:

- the equipment they supply is safe and without risks to health when properly used, and
- there is readily available information about the use(s) for which the equipment was designed and tested, and any conditions necessary to ensure that, when put to that use, it will be safe and without risks to health.[7]

The ***Occupational Health and Safety (Plant) Regulations 1995*** place a series of more detailed obligations on suppliers of suspended scaffolding equipment.[8]

WorkSafe recommends that suppliers seeking to comply with these obligations should obtain and keep written confirmation that:

- The suspended scaffolding system has been designed in accordance with AS/NZS 1576.1 and AS 1576.4,[9]
- Couplers supplied for use with suspended scaffolding have been designed, tested and marked in accordance with AS 1576.2,[10] and
- Scaffolding hoists have been designed, manufactured and tested in accordance with AS 1418.2.[11]

In particular, WorkSafe advises suppliers of the following:

1:1 The design of the powered scaffolding hoists being supplied must have been notified to WorkSafe Victoria or an equivalent interstate workplace safety authority.[12]

1:2 All scaffolding hoists and secondary protective devices should have legible data plates bearing the following information:

- Type model identification
- Serial number
- Details of steel wire rope used with the hoist – nominal size, grade (quality), construction, and maximum length (where applicable)
- Classification of mechanism of the hoist
- Rated capacity hoisting
- Name or identification mark of the manufacturer of the hoist
- Reeving requirements, where applicable
- Power supply requirements, where applicable.[13]

1:3 The Residual Current Device (RCD) for the cradle, should have a legible data label bearing the following information:

- Rating load in Amps
- Residual tripping current (not exceeding 30 mA)
- Power supply in Volts.

1:4 All hoisting controls must be labelled and, unless the function is obvious, the operational functions displayed. Labels should include:

- Operation instructions
- Emergency stop switch
- Up and down control.[14]

1:5 The control box should be compatible with the operation of the specific type and model of hoist and, if multiple hoists are used, each hoist should have the same operating specifications.

1:6 The control box should be removable, unless an alternative method is used to isolate power to the cradle, for safety and security when the suspended scaffold is not in service.[15]

1:7 Before each site delivery, each scaffolding hoist, each secondary protective device and each load-limiting device should have been inspected and subjected to an operational test in accordance with the recommendations given in AS/NZS 4576.[16]

- Undergo inspection and testing
- If an electrically powered scaffolding hoist, be fitted with a load-limiting device that will prevent the hoist from lifting more than 125% of its rated load
- If a secondary protective device, be capable of preventing the cradle from falling due to a failure within the hoist.

1:8 Between hiring's of scaffolding equipment the supplier must ensure that all scaffolding components are inspected and maintained.

1:9 The supplier of the suspended scaffold must provide, for the users of the equipment, written operating and safe use instructions and the daily safety checklists.

Part 2: SCAFFOLD VICINITY

The scaffold designers, erectors and operators need to take into consideration the areas around the suspended scaffold during design, erection and operation. The following particular areas of concern should be considered and addressed prior to work commencing on the erection or operation of the scaffold.

2:1 Where the scaffold is erected adjacent or over public space or adjoining property, there may be the need to provide specific controls (e.g. hoardings, catch platforms, barricades, etc.)

2:2 Where the possibility exists for other workers to enter the area below the suspended scaffold, specific controls may need to be provided (e.g. catch platforms, barricades, signs, etc).

2:3 Power-lines are a major hazard and no part of the suspended scaffold including suspension and secondary ropes, which should be anchor, shall be closer than 4.6m to any power-line. Refer to WorkSafe's pamphlet "No Go Zones for Overhead Electrical Power Lines – Special provisions for scaffolds" for conditions for erecting scaffolding near overhead powerlines.

2:4 All power-lines should be considered live unless there is written confirmation from the local distribution company that the power-lines are not live at the specific time that work is being undertaken.

2:5 Uncontrolled vehicle movement in close proximity to a suspended scaffold (collision), the trailing power cable or hoisting cables (entanglement) may lead to structural collapse, uncontrolled movement of the platform or mechanical damage. Protective measures may need to be provided to control the movement of vehicles.

2:6 Where cranes operate in close proximity of a suspended scaffold, there is a risk of the load snagging the scaffold or endangering persons on the platform. Specific site procedures may need to be developed to minimise the risk.

2:7 Where corrosive substances are to be used on the scaffold or in its vicinity, it may be necessary to develop specific procedures to minimise the risk of damage to critical scaffolding components.

2:8 The use certain types of equipment in some areas may place persons at high risk. The dangers presented by hazardous areas should be assessed before selecting equipment (e.g. electric hoists should not be used where dust can form an explosive atmosphere).

Part 3: INSTALLATION DESIGN

The scaffold designer needs ensure that any scaffolding configuration which they design, modify or allow to be modified is suitable for the location and the intended use of the equipment. The designer of the scaffold should consider the following to ensuring that during erection and when properly used it is not unsafe and a risk to health.

3:1 The building or structure to which the suspended scaffold is to be mounted must be capable of supporting the scaffold and all intended loads (dead, live and environmental loads). The supporting structure needs to be assessed by a competent person and a statement of assessment provided.
***Note:-This statement may be included in the design plan.**

3:2 A detailed design plan must be prepared for the erection of each suspended scaffold, that takes into account the design specifications of the scaffold, the limitations of the support structure, any wind loading or lateral forces it may be exposed to during erection or operation.

3:3 Where structural alterations to the suspended scaffold are made, the changes should be recorded on an amended design plan. The designer or another competent person should review and approve the changes before the scaffold is used for the first time.

3:4 Damage can be caused to the cradle or hoisting systems if certain activities are undertaken without adequate protective measures being in place.
(e.g. welding, water or pressure blasting, demolition activities, etc).

3:5 To operate correctly an adequate power supply must be available for electrically powered hoists, the Victorian Electricity Safety Legislation prohibits voltage drop from exceed 5% of the nominal supply voltage.

- This requirement is for the entire installation, the flexible cord for the suspended scaffold is only part of this 5%.
- Additional information on the electrical requirements is provided in Part 5.

3:6 Lateral restraints should be used to prevent instability of the platform which may result from the work procedures or wind, and may include:

- Lanyards
- Tensioned wire ropes
- Removable ties
- Fan units
- Suction Units

Part 4: SCAFFOLD ERECTION

The scaffold erector needs to ensure that nothing in the way which the suspended scaffold is erected is unsafe or a risk to the health of the scaffolder(s) or others and when installed and properly used is not unsafe or a risk to health of the operators or others.

4:1 The person carrying out or directly supervising of erection or modification work on any suspended scaffold must have either Advanced Certificate in Scaffolding or Rigging.

4:2 The person supervising the work must have a copy of the design plan, which specifies the rigging requirements including the number, size and positioning of the counterweights, prior to the erection or modification of the suspended scaffold.

4:3 Ensure that fall protection is in position at the building edge or the scaffolders are using safety harnesses with adequate anchorage points if working near an exposed edge.

4:4 To prevent injury to workers the area around the support rig should be restricted to only those workers engaged in assembling the scaffold.

4:5 To prevent injury to persons, from dropped cables, rigging components or tools, a sufficiently large area below the scaffold should be barricaded off to prevent access.

4:6 During erection, where there is no physical barrier at edge to prevent objects falling off the supporting structure or when work is occurring over the edge, a safety observer should be positioned, if necessary, to prevent people accessing the barricaded area below the scaffold.

4:7 Any counterweight should be manufactured for that purpose, labelled with its mass in Kg, be placed directly on the needle or innermost support in the designed location, and secured in such a manner so as not to be displaced or removed with out the use of a tool.

4:8 When used, traversing tracks should be fitted with through-bolted stops at the ends, to prevent any trolley from running off and each trolley must have a rated working load of a least 500 Kg.

4:9 The outboard end of a needle should never be lower than the inboard end.

4:10 The suspension rig must form a structure that is rigid and stable under working conditions.

4:11 Only the wire rope recommended by the manufacturer for the hoist shall be used, details of the wire rope construction can be located on the hoist data

plate. The use of the wrong construction of wire rope in a scaffold hoist has result in sudden failure, with the rope severing in the hoist.

4:12 A secondary protective device shall be provided for each scaffolding hoist, to operate on the suspension wire rope above the hoist or on a secondary wire rope. This device provides an emergency brake to hold the cradle if the hoist or wire rope within the hoist fails, some types may also prevent an over-speed decent.

4:13 It is essential that the secondary protective device's internal mechanism is adjusted for the size of wire rope fitted, as some devices are capable of using different sizes of wire rope.

4:14 If used, the secondary wire rope for any scaffolding hoist should be attached to the suspension rigging, at a point that is independent of the main suspension rope attachment.

4:15 All cradle components should be inspected, on site, prior to assembly and checked to ensure all locating pins and clips are fitted and in position.

4:16 A sign, clearly displaying the safe working load limit, in kilograms, should be fixed to the inside of each cradle.

4:17 The cradle should have guardrails, midrails and toe boards fitted, the working deck needs to be fixed, of a non-slip type and with adequate drainage holes. None of these components should have visible signs of mechanical damage (cracked or split welds, missing or broken decking, cut or bent guardrails, etc).

4:18 The finished suspended scaffold must conform to the design plan. Alterations due to installation conditions must be included on an amended plan. The designer or another competent person must review these variations and approve the modified plan before the scaffold is first used.

4:19 A competent person or the certificate holder responsible for erecting or altering the scaffold should supply a written statement that the scaffold is complete and safe for use before the scaffold is used for the first time and after every alteration.

Part 5: ELECTRICAL INSTALLATION

It is essential for safe operation of the suspended scaffold hoists and electrical protection devices to have an adequate power supply. The principal, electrical and scaffolding contractors should co-ordinate on the planning of the electrical installation to ensure appropriate voltage levels are provided.

5:1 This may include the positioning the power-board close to the scaffold, dedicated power circuits, larger sub-mains, alternative methods of positioning the power-board, etc.

5:2 To limit voltage drop the suspended flexible cord should:

- Not be of excessive length, or
- If extra length is required, have larger size conductors to compensate.

***Note:- An electrician or electrical inspector can provide guidance in this matter.**

5:3 The power supply for the suspended scaffold may need to be close to the scaffold, to limit the length of the flexible cord needed to descend to the platform; this will assist in limiting voltage drop.

5:4 The construction power-board should be designed so the removal of the suspension flexible cord from the socket-outlet requires a person to complete a deliberate act.

5:5 The suspended flexible cord should be supported in a manner that protects the cable from mechanical damage and prevents the cable from bending at a radius less than the manufacturer's minimum. If manufacturer's information is not available, AS/NZS3000 gives the minimum internal radius as 6 times the cable diameter.

5:6 Any suspended flexible cord shall be the heavy-duty double insulated type and be able to support its own weight over the length of the drop.

5:7 The flexible cord must be supported in such a manner as to prevent the cradle from fouling or causing mechanical damage to the cable. The cable should be installed so that it is not pulled across the structure of the cradle.

5:8 The flexible cord must be long enough to allow the cradle to descend to the ground or a lower structure, for egress, in an emergency.

5:9 When in use the control box should be attached to the guardrail of the cradle on the side away from the working face.

5:10 The electrical cables installed in the cradle should not be excessive in length, to prevent mechanical damage occurring to the cables and to limit voltage drop.

5:11 Electrical cables from the control box to the hoists should be enclosed for protection from mechanical damage and securely attached to cradle. Additional mechanical protection may be required and is dependent on the work undertaken (e.g. demolition, grinding, abrasive blasting, etc).

5:12 There should be a system that allows the suspended scaffold to be effectively isolated from the power supply when not in use, to prevent unauthorised operation; this may be located within a locked power-board or by the use of a readily removable control panel on the cradle.

Part 6: SCAFFOLD OPERATION

The employer of persons working in the suspended scaffold, prior to operating the equipment, should have procedures and safe systems of work in place to ensure that the equipment is not unsafe when properly used and persons are not exposed to risks to health.

6:1 A written statement that the scaffold is complete and safe for use must be supplied by a competent person or the certificate holder responsible for erecting or altering the scaffold, prior to operating the scaffold.

6:2 The supplier of the suspended scaffold must provide, for the users of the equipment, written operating and safe use instructions and the daily safety checklists.

6:3 The people suspended on the platform must have a method of safe egress; procedures must be in place for the rapid retrieval of the suspended people in the event of an emergency. This could be an arrangement with local fire brigade or onsite crane work box or other method.

6:4 The danger of debris, from higher work, falling onto workers in the cradle may exist and measures may need to be in place to control this risk.

6:5 The employer must nominate the designated operator(s) and provide written authorisation.

6:6 The employer must provide operator(s) with information, training and instruction on the specific type of equipment to enable them carry out the daily inspections and to use the equipment safely.

6:7 The employer must ensure workers are trained in the safe work practices for suspended scaffolds, including any emergency procedures. Workers should be able to demonstrate these safe work practices before working in the suspended scaffold.

6:8 The employer must maintain and have available up-to-date records of this training.

6:9 Effective communications must be in place between the cradle or chair and other workers to alert others on site in case of an emergency. It may include people onsite being in sight of the cradle/chair at all times to observe hand signals, hear whistles, bells or in radio or telephone communication.

6:10 Where access and egress is not from the ground or a protected landing, safety harnesses and lanyards shall be provided and used when entering or leaving the cradle. During this procedure, safety harnesses shall be attached to suitable anchorage points on the main structure. The cradle should also be effectively secured to prevent movement.

6:11 If the scaffold is subjected to movement due to wind forces or the work procedures being undertaken, lateral restraints are required.

6:12 The cradle platform should be in a tidy condition with unobstructed access along the entire length.

6:13 The total load of all persons, materials, and equipment must not exceed the safe working load limit of the suspended scaffold.

6:14 During meal breaks etc, the platform should be secured to the structure, to prevent damage due to wind, the power disconnected from the scaffold hoists or supply point.

6:15 Overnight or longer periods require the platform to be parked in its storage position and secured to the structure to prevent movement or damage due to wind.

- Where not on a secured site, it should be parked in an inaccessible position.
- All trailing ropes and cables to be securely stored within the platform, protective devices locked onto ropes, power cables disconnected from supply and if air operated air-lines disconnected and pressure released.

6:16 The operator should each day, prior to commencing work from the scaffold, carry out a safety inspection in line with the requirements of the supplier.

6:17 A competent person should inspect the cradle and suspension system at not greater than monthly intervals, if the scaffold has been onsite and not altered during that time.

6:18 All portable electrical equipment including scaffolding hoists and cabling is required to be inspected and tested every 3 months, while the RCD protection devices are to be time/current tested monthly.

Part 7: BOATSWAIN'S CHAIRS

When boatswain's chairs are used, the following issues also need to be addressed.

7:1 Unless a large enough exclusion zone is setup under the chair to protect other persons, measures should be in place to prevent tools or equipment falling from the chair (eg. lanyards for hand tools, heavy equipment suspended from another rope, etc).

7:2 The operator must be able to activate all controls including the emergency descent system from the seated position.

7:3 If the chair is subjected to movement due to wind forces or the work procedures being undertaken, lateral restraints are required.

Part 8: FALSE CARS

The suppliers, erectors and operators of false cars, used in lift installation, should comply with the following specific requirements for false cars in addition to the relevant general sections of this document.

8:1 Written rescue and recovery procedures for a person supported by a safety harness must be in place, prior to installation. These procedures should be available onsite, distributed to all relevant persons and made available to all emergency services.

8:2 Unless the employer is granted an exemption, workers carrying out this work must hold or be directly supervising by a holder of an Advanced Certificate in Scaffolding or Rigging. The conditions of the exemption can be found in attachment No:1.

8:3 Lift shafts should have adequately light, guidance for lift shaft lighting is given in Part 6.3 & 6.4 of the Industry Standard for Electrical Installations on Construction Sites.

8:4 Emergency lighting shall be provided, for a minimum of one hour, to allow safe egress from the lift shaft upon loss of normal lighting.

8:5 Guidance for false-car wiring is given in Part 6.6 of the Industry Standard for Electrical Installations on Construction Sites.

8:6 The installer or other qualified person shall inspect and test the installation before the car is used for the first time. This procedure should be based on the requirements of AS/NZS 4431 Appendix B and include the false car, the hoisting system and safety gear.

8:7 Daily the operator should inspect the false car, the suspension systems and complete the manufacturer's checklist, prior to use.

8:8 The following should be tested to the manufacturer's specifications at 3 monthly intervals, the hoisting winch and the instantaneous safety devices

8:9 Ever six months after commissioning the safety gear should be tested the details of these tests procedures are outline in Appendix B of AS/NZS 4431.

8:10 A written record of all maintenance, inspections and repairs should be signed by the individual(s) carrying out the procedures and kept on site for the life of the installation work.

8:11 An operational inspection and safety procedure should be attached to the platform.

8:12 A notice stating the safe working load in Kg should be prominently displayed on the platform.

8:13 All ropes should be protected against damage for least 2m above the floor of the platform such protection should be removable for inspection.

8:14 The platform should be fitted with edge protection, where the gap between the edge of the platform and the face of the wall exceeds 225 mm. Edge protection should include:

- Guardrail between 900 mm and 1100mm
- Toeboard at least 150 mm high
- Midrail approximately half way between the guardrail and toeboard
- Vertical bars with a gap of no more than 450 mm fitted between midrail and toeboard

Where the possibility exists of persons accessing the area beneath the platform while work activities are being undertaken, the platform should be fitted with toeboards.

ATTACHMENTS

NO1: EXEMPTION

OCCUPATIONAL HEALTH AND SAFETY
(CERTIFICATION OF PLANT USERS AND OPERATORS)
REGULATIONS 1994

CRN-EXMN.016 REVISION 1

Purpose

To exempt Lift Industry employees from the requirement to hold an Intermediate and Advanced Rigging certificate of competency to perform certain work.

Scope

In this exemption "Lift Company" means:

- OTIS Elevators Pty Ltd
- Schindler Lifts Australia Pty Ltd;
- A.P. Morling
- Home Lifts
- Liftmod
- Express Lifts
- Independent Lifting Services
- Tieman Industries Pty Ltd
- Kone Elevators Pty Ltd
- Deve Hydraulic Lifts
- Forte Elevator Services
- Total Elevator Services Pty Ltd
- Thyssen Elevators Australia
- Liftronics
- United Lift Services Pty Ltd
- Sanscord Pty Ltd
- Multilift Pty Ltd

Background

In undertaking their duties, lift company employees perform a number of tasks which require them to hold a Dogging, Basic Rigging, Intermediate Rigging and Advanced Rigging certificate of competency under the *Occupational Health and Safety (Certification of Plant Users and Operators) Regulations 1994.*

However, as the work required to be performed is only a small portion of that which falls within the scope of the Intermediate and Advanced Rigging certificate of competency, an exemption was sought by the Australian Lift Industry Skills & Training Council Limited on behalf of the Lift Industry.

Regulations

Regulation 7(2) of the *Occupational Health and Safety (Certification of Plant Users and Operators) Regulations 1994* states:

"(2) An employer must not allow an employee to do any such work unless the employee holds an appropriate certificate of competency with respect to that work".

Lift company employees who hold a Rigging certificate of competency endorsed with classes 4 and 6 for "Lift Installation and Maintenance" issued under the *Lifts and Cranes Act 1967,* can continue to perform the work within the scope of the certificate.

Exemption

Under Regulation 9(1) of the *Occupational Health and Safety (Certification of Plant Users and Operators) Regulations 1994*, I exempt the lift companies from Regulation 7(2) with respect to an Intermediate and Advanced Rigging certificate of competency, for the type of work described below, subject to the conditions listed below.

I am satisfied that the work can be performed as safely by a person who does not hold a certificate of competency as it can be performed by a person who holds such a certificate, provided that the conditions are adhered to.

Type of Work

The installation, testing, maintenance, repair and modernisation of lifts and escalators.

Conditions

1. Lift company employees **who <u>do not</u> hold a Rigging certificate of competency endorsed with classes 4 and 6 for "Lift Installation and Maintenance" issued under the *Lifts and Cranes Act 1967,*** and working under this exemption-

   (a) must undertake and successfully achieve NUL09 *"Lifting Techniques and Load Shifting"* of the Lift National Training Package - UTL 98.

The assessment for NUL09 must be in accordance to the Dogging National Assessment Instrument as amended from time to time. Assessments must be conducted by an Authorised Certificate Assessor, authorised in the Dogging certificate class.

Employees are required to apply and hold a national certificate of competency card for the Dogging certificate class and

   (b) must undertake and successfully achieve Unit NUL07 *"Rigging Procedures For Lifts 1"* of the Lift National Training Package - UTL 98.

The assessment for NUL07 must be in accordance to the Basic Rigging National Assessment Instrument as amended from time to time. Assessments must be conducted by an Authorised Certificate Assessor, authorised in the Basic Rigging certificate class.

Employees are required to apply for a national certificate of competency card for the Basic Rigging certificate class and

> **(c) must** undertake and successfully achieve NUL10 *"Rigging Procedures For Lifts 2"* of the Lift National Training Package - UTL 98.

The assessment must be in the following Sections of the Advanced Rigging certificate class:

- ***Written Assignment*** – Section 3 "Suspended Scaffolds" and

- ***Knowledge Assessment*** – Section 1 "Fabricated Hung Scaffold Requirements" and Section 2 "Suspended Scaffold Requirements".

Assessments must be conducted by an Authorised Certificate Assessor, authorised in the Advanced Rigging certificate class and

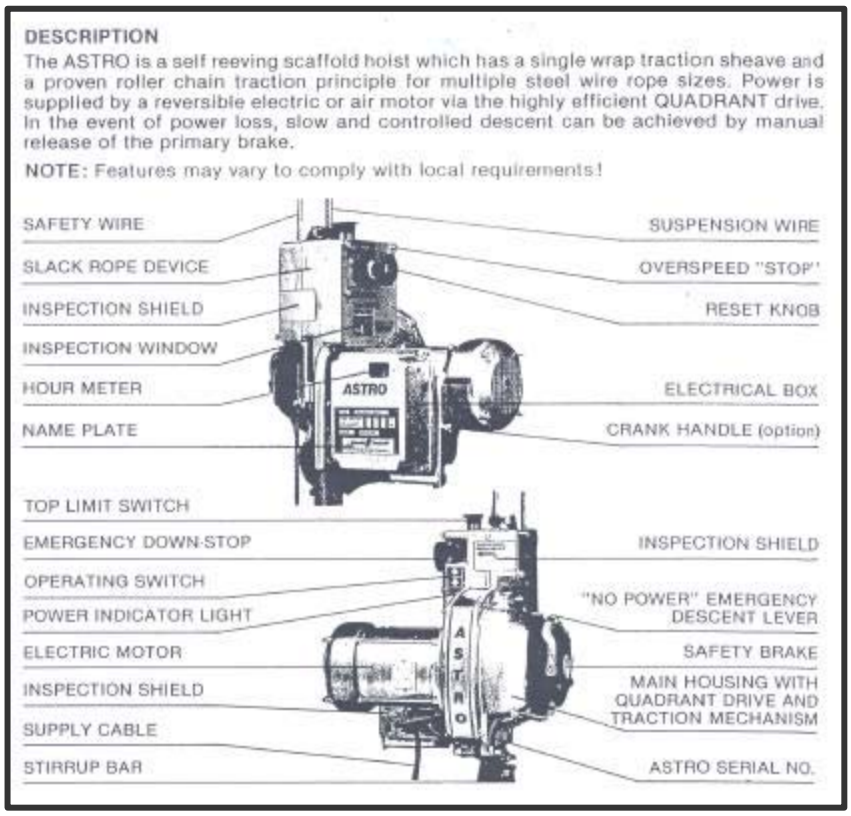
> **(2)** Lift companies must retain a list of all their employees who have successfully completed the training and assessment required under the above conditions and this **list must be available to WorkCover upon request** and
>
> **(3)** Each lift company employee working under this exemption **must** have a copy of the relevant work procedures that are subject to this exemption.

Further Assistance

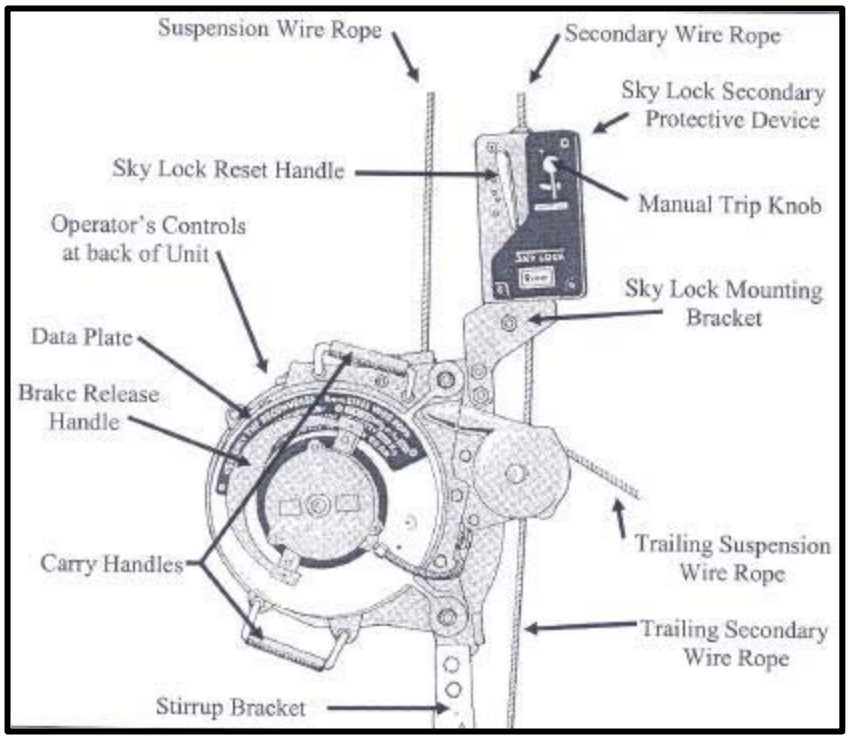
Should you require further assistance please contact the Licensing Branch on 9941 0500 or the Advisory Service on 1800 136 089.

NO 2: COMMON TYPES OF ELECTRIC SCAFFOLD HOISTS

ASTRO HOIST WITH INTEGRATED SECONDARY PROTECTIVE DEVICE



SKY CLIMBER ALPHA HOIST WITH SKY LOCK SECONDARY PROTECTIVE DEVICE



ENDNOTES

[1] All Victorian Acts and Regulations can be accessed free-of-charge from the Victorian legislation website: www.dms.dpc.vic.gov.au

[2] See Regulation 105 of the ***Occupational Health and Safety (Plant) Regulations 1995***.

[3] See Sections 21, 25, 27, 29 and 30 of the ***Occupational Health and Safety Act 2004***.

[4] All WorkSafe Codes of Practice can be accessed free-of-charge, from the Legislation section of WorkSafe's website: www.workcover.vic.gov.au

[5] All Australian Standards can be purchased on-line from Standards Australia's website: www.standards.com.au

[6] All Foundations for Safety Industry Standards can be accessed, free-of-charge, from the Publications section of WorkSafe's website. Foundations for Safety is Victoria's primary OHS forum for the construction industry. At the time of publication, it includes 25 member organisations – State Government regulatory authorities, employer associations and unions. To find out more about Foundations for Safety, go to the "Our Stakeholders" section of WorkSafe's Construction & Utilities webpage: www.workcover.vic.gov.au/construction

[7] See Section 30(1) of the ***Occupational Health and Safety Act 2004***.

[8] See Parts 6 and 10 of the ***Occupational Health and Safety (Plant) Regulations 1995***.

[9] AS/NZS 1576.1, *Scaffolding,* Part 1: *General Requirements*, sets out the general design rules for all scaffolding systems and all scaffolds. AS 1576.4, *Scaffolding*, Part 4: *Suspended Scaffolding*, sets out additional rules for the design of suspended scaffolding. They form part of WorkSafe's *Code of Practice for Plant*, which provides guidance on compliance with the ***Occupational Health and Safety (Plant) Regulations 1995***.

[10] AS 1576.2, *Scaffolding*, Part 2: *Couplers and Accessories*, forms part of WorkSafe's *Code of Practice for Plant*.

[11] AS 1418.2, *Cranes (Including Hoists and Winches)*, Part 2: *Serial Hoists and Winches*, forms part of WorkSafe's *Code of Practice for Plant*.

[12] See Regulations 1001, 1004 and Schedule 2, Item 1 of the ***Occupational Health and Safety (Plant) Regulations 1995***.

[13] See Clause 5.8 of AS 1418.2 and Clause 11.1 of AS/NZS 4576, *Guidelines for Scaffolding*.

[14] See Regulation 306 of the ***Occupational Health and Safety (Plant) Regulations 1995***.

[15] See Clause 5.2 of AS 1576.4 and Clause 11.9 of AS/NZS 4576.

[16] See Clauses 13.12, 13.13 and 13.14 of AS/NZS 4576.