



HS327 Plant and Equipment Procedure

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Contact Officer	Manager, UNSW Health & Safety		
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Associated Documents	HS663(a) Pre Purchase Checklist (Equipment) HS728 Design and Modification guideline HS027 Writing safe working procedures guideline HS312 Inspection, Testing and Monitoring Procedure HS030 Inspection, Testing and Monitoring Schedule Form HS088 Plant and Equipment Training Register HS709 Materials handling Guideline HS820 Permit to work procedure HS708 Noise Management procedure		
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1. Purpose and Scope

The purpose of this procedure is to establish a plant safety management system which can systematically identify, assess and control the risks arising from the use of plant in order to safeguard the health, safety and welfare of all persons at UNSW. The system shall consist of local plant inventories, safe working procedures and staff and student plant training records. Training of relevant personnel and auditing of the system are also described.

This procedure does not apply to plant that relies exclusively on manual power and is designed to be supported by hand.

This procedure applies to:

- All UNSW personnel who are involved in the importation, supply, installation/erection, commissioning, use, alteration, dismantling, storage and disposal of UNSW controlled plant.
- Plant, which includes any machinery, equipment (including scaffolding), appliance, implement or tool and any component or fitting thereof or accessory thereto.
- NOTE: Other Persons Conducting a Business or Undertaking (PCBU) such as contractors may share duties with UNSW under the WHS Act. Consultation with those PCBU's should be undertaken to enable identification of shared duties and their compliance.

The requirements for design and registration, manufacturing, importation, supply, installation and commissioning apply to new plant.

The requirements for use, repair, alteration, dismantling and disposal apply to all plant irrespective of the date of manufacture.

Refer to HS728 Design and Modification Guideline for information related to risk management during plant design or modification and the registration of certain plant with the Regulators.

2. Definitions

(See Appendix B)

3. Procedure

3.1 Purchasing and Hiring

3.1.1 Pre Purchase Risk Management Plan

Prior to purchase of new or second-hand plant, a risk management process is to be conducted, (for medium to high risk plant), and should include:

- Completion of a pre-purchase checklist. HS663a can be used for this task (unless the work unit has an alternative form that meets the same intent). (Please refer to HS316, Health and Safety Purchasing Guideline section 1 for when a Pre-purchase checklist is to be used).
- Hazards and risks associated with storage, transport, installation and commissioning and how the risks will be controlled.
- Any safety specifications required, such as compliance with specific safety or technical standards.
- Whether the plant is registrable under schedule 5 of the WHS Regulation. ([NSW](#) or [ACT](#))
- Whether the plant is suitable for its intended use, including the environment it will be used in.
- Consideration of noise levels to be introduced (see HS708 Noise Management procedure).
- Any modification of the plant and the environment it will be in. For example, if the plant is from overseas you will need to check for compliance with electrical wiring rules and plug connections at least.

- Where you will locate the plant – does it need its own restricted area, line marking or fencing, does it need fixing in place or is it safe to use anywhere, will it be an obstruction or emit any odours or fumes that need ventilation, can maintenance be performed safely?.
- The need to change any existing safe work procedures.
- How the plant may interact with existing equipment or processes (e.g. additional noise or space impingement)
- Any special skills or licences required for operators or those installing, commissioning, inspecting and maintaining the plant. See also section 3.7 High risk work licences
- Protective equipment and clothing needs.
- Any other hazards being introduced by the plant.

3.1.2 Second-Hand Plant

Particular care should be taken when purchasing or acquiring second-hand plant. In particular:

- Where plant has been in service prior to purchase and information regarding safe use is not available, a competent person should be engaged to assess the plant and develop this information.
- Safety features currently required on new plant may need to be retrospectively fitted to the second-hand plant to effectively control the risk in the new workplace.
- The supplier must provide information in writing about the condition of the plant and any identified faults or, if the plant is supplied only for spare parts or scrap, that it is not to be used as plant. This requirement is legislated and mandatory.

3.1.3 Hiring plant

When you hire plant, both you and the person you have hired it from must ensure that the plant is safe to use. Factors for consideration:

- Before hiring you must assess that the plant is suitable for its intended use.
- Check that the plant has been inspected and maintained by the supplier according to manufacturer's specifications. This may involve checking log books or maintenance manuals.
- Ensure the supplier provides manufacturer's information about the proper use of the plant.

In most cases the supplier is responsible for inspecting and maintaining the plant. However, if the plant is to be hired for an extended period of time, you and the supplier will need to develop arrangements to ensure the plant is adequately inspected and maintained throughout the lease.

3.2 Install the plant

Where the plant is found not to conform to safety specifications identified prior to purchase then any deficiencies must be rectified prior to being put into operational use.

Install the plant according to the manufacturer's instructions, taking into account the hazards and risks involved in transporting and setting up the item in the new location and consider environmental factors affecting installation (e.g. wet conditions).

Include inspection during installation that ensure, so far as is reasonably practicable, the risks are monitored.

Ensure all electrical installations associated with the plant comply with AS3000 (Australian wiring rules) as relevant.

During installation determine through risk management and consultation if there are any further hazards or risks which may have been overlooked prior to the plant arriving in its new location. Address these prior to commissioning and update the risk management form.

3.2.1 Commission the plant

Commissioning includes recommissioning of plant and is done to ensure the plant is in full and safe working order. Commissioning includes testing:

- that the plant operates as specified in the manual or if no manual exists that it operates as you expect (this is often done by the manufacturer's representative on site).
- the functioning of any safety devices, guards or other engineering controls to ensure they work and are easy to operate.
- the functioning of safety controls which are not on the plant itself but assist to control hazardous events arising from the plant, e.g. gas monitors, smoke alarms, electrical safety switches.

3.3 Use of the Plant (Existing or New Plant)

3.3.1 Instruction, Training and Supervision

- 1) Determine the level of instruction, training and supervision required to ensure safe operation and maintenance of the plant.
- 2) Identify what people need to know to operate the plant.
- 3) Identify the standard of performance required for different levels of supervision.
- 4) Identify how and by whom their competency will be assessed.
- 5) Document the training required according to the HS Training Procedure.
- 6) Maintain a register of trained personnel.

A posted list of authorised users near the plant may help with controlling who uses the plant.

3.3.2 Complete risk management forms

The following should be considered in the process:

- All the hazards and risks involved in use, maintenance, alteration, dismantling, storage and disposal of the plant.
- How those risks will be managed.
- Potential emergency situations.

Refer to HS728 Design and Modification Guideline for more information to ensure particular risk controls and design standards are being implemented for the plant you are purchasing or already using. This guide will help if modifications to plant are planned.

3.3.3 Safe Work procedure (SWP)

A SWP is required where the lack of a procedure would increase the risk of injury when operating the plant. See the HS027 Writing Safe working procedure guidelines.

Obtain and keep the Manufacturer's instructions/manual for the plant. These instructions will provide information to help complete the risk management process, maintenance schedules and if necessary a Safe Work Procedure.

3.3.4 Inspection and Testing

Plant requiring periodic inspection, testing, monitoring or maintenance, must be identified and records need to be kept. Safety devices and

engineering controls are items that require Inspection, Testing and Monitoring e.g. local exhaust ventilation for protection of people. A maintenance schedule must identify what maintenance is required, when it is required (according to the manufacturer or a competent person) and necessary legal requirements. You will find that the Inspection, Testing and Monitoring Schedule form HS030 assists you to do this.

Identified problems arising from plant inspection and testing should be documented and the recommendations for fixing the problem should be recorded. The Online Hazard, Incident and Environmental reporting system should be used to manage these actions.

- The plant should be inspected according to its inspection, testing, monitoring schedule by a person competent to detect faults or items requiring maintenance and able to initiate corrective action – you may use the UNSW plant inspection checklist for this, refer to the [HS website](#)
- Inspection procedures should be documented and may include checklists and timetables.
- Regular workplace safety inspections where plant is checked for correct functioning and operation will help to identify plant which may pose a hazard and require ad hoc repair or maintenance.

NOTE: If it is not reasonably practicable to comply with manufacturer's recommendations then inspection and testing must occur annually.

Plant for materials handling – Please refer to the Materials handling guideline HS709 if you have equipment which falls into this category, such as forklift, hoist, crane, hand truck, hand trolley, hand pallet jack, or pallet racks.

3.3.5 Operate the plant

- Use the plant according to the manufacturer's instructions. If you wish to deviate from them you will need to risk assess and justify that aspect before continuing.
- Train personnel in the safe use of the plant if that is required. Where an SWP exists then the training should at least be in the demonstrated ability to accurately follow that procedure.
- If the plant or work on the plant is considered as "High Risk" then use a permit to work system, e.g. confined spaces, hot work in hazard zones, etc. Refer to HS820 Permit to work procedure.
- Monitor that the plant is being used correctly and all risk controls are in place and used correctly. Record that this monitoring takes place.
- Report any incidents or malfunctioning of the plant to the owner/custodian. If it is a matter which you cannot rectify yourself then you may report using the Online HS hazard reporting system.
- Any plant identified as unsafe must be quarantined or withdrawn from service. (refer to section 3.3.7)

3.3.6 Maintain the plant

A maintenance schedule must identify what maintenance is required, when it is required (according to the manufacturer or a competent person) and necessary legal requirements. You will find that the Inspection, Testing and Monitoring Schedule form HS030 assists you to do this.

- Maintenance must be carried out according to the recommendations of the designer/manufacture or as outlined in any relevant Australian Standard.
- Plant should be de-energised, decontaminated, tagged and/or locked out of service during the process of being cleaned, serviced, repaired or altered if that process could pose a risk to health and safety. A SWP should be followed for this process.

NOTE: If it is not reasonably practicable to comply with manufacturer's recommendations then maintenance must occur annually.

3.3.7 Isolation of plant

Isolation of Equipment for General maintenance

Cleaning, minor repairs and general plant maintenance processes should be documented in the operational SWP or in a separate SWP for such purposes. This should cover several processes, including how the plant will be withdrawn or removed from service whilst being serviced.

Always follow the maintenance and cleaning precautions and processes in the manufacturers or operators manual. Any deviation from the manufacturer's instructions must be risk managed and achieve at least the same or a greater level of safety.

- When a mechanical, physical or electrical hazard may still exist then de-energise and, lock out or tag out the equipment prior to general maintenance processes.
- When a hazardous substance may exist it must be decontaminated to made safe for maintenance purposes.
- Where the hazard to an operator is low then a Caution – Out Of Service Tag may be used instead of the Danger tag.

An out of service tag is a notice that distinguishes equipment out of operation for repairs or alteration, or plant that is still being installed or commissioned. Do not operate equipment whilst this tag is in use.

Isolation of Damaged or Unsafe Equipment

When taking damaged and unsafe plant out of service for repair it must be appropriately isolated to manage any risk associated with an unexpected release of energy, hazardous substance or isolated to manage any other risk.

- The person responsible for the plant and equipment should be notified about the reason and or damage so they can initiate repairs and isolation if required.
- The damaged plant/equipment should, where possible, be prevented from being used. It could be locked out of use or even have the cord removed or the item relocated.
- A danger tag should then be fixed to the damaged plant/equipment informing other operators what the problem is and not to operate it.

This process will allow easy identification of unsafe plant and equipment. Testing of the isolation control should occur to ensure health and safety.

Danger tags: Warn that operation of the device may endanger the life of the person who affixed the tag or the operator. Danger tags should be used in conjunction with a lock out device to physically prevent accidental operation.

3.3.8 Return to service

A competent person is required to check the normal operating conditions and safety features of plant and equipment after any repairs or alterations before the item is returned to service. This can be verified by an inspection of the item or service records completed by a competent person.

Portable electrical appliances must be Electrically Tested and Tagged prior to return to service.

Should the item not meet the necessary requirements the item shall not be returned to service.

3.3.9 Storage and Dismantling

Plant that is not in use must be stored in a manner such that it does not create a risk to workers or other people in the workplace and so that the plant is at minimal risk of damage.

Plant in storage for extended periods should be recommissioned before use as if it was being put into use for the first time (see “commission the plant” above).

Storage and dismantling, if required, is to be carried out by a competent person. All available information is to be made available to the competent person.

If any plant to be disposed of contains materials that present a risk to health or safety, the disposal is to be carried out by a competent person.

[Procedures, forms, guides and checklists to be considered.](#)

[HS723 Laboratory and Equipment Decommissioning / Project Cessation Procedure](#)

[HS921 Equipment decommissioning Certificate](#)

[HS704 Laboratory Decommissioning Checklist](#)

[HS726 Cessation of Laboratory Activities Checklist](#)

[HS321 Laboratory Hazardous Waste Disposal Guideline](#)

[HS015 Waste Disposal Form - Biological](#)

[HS014 Waste Disposal Form - Chemical](#)

[HS699 Laboratory Clearance Certificate Guideline](#)

[HS700 Laboratory Clearance Certificate](#)

[HS601 Radiation Procedure \(Ionizing\)](#)

3.4 Design control or making changes to plant

The risk management process of hazard identification, risk assessment and risk control should be applied to the design or proposed modification phase of any piece of plant or equipment. The purpose of this process is to identify potential hazards and eliminate them in the initial phases, to eliminate This process should also be repeated if you intend to undertake further alterations or change the way it is used, or use it for a purpose that it was not designed.

If a competent person assesses that the plant is not suitable for the proposed task, it must not be used for that task.

The person with designated responsibility for the plant is responsible for ensuring that an item of plant is registered if it is listed in Appendix C – registrable plant by applying to the Regulator to register that item of plant.

You must not allow the use of any registrable plant in the workplace if it has not been registered.

For more information please refer to the [HS728 Design and Modification Guideline](#).

3.5 Personal Protective Clothing and Equipment

Where personal protective equipment is required, it should be:

- appropriate for the task;
- accompanied by suitable training;
- used correctly and
- maintained in a serviceable condition.

The personal protective clothing and equipment required to be used when operating plant must be identified in the Risk Management Process and the Safe Working Procedure accompanying the plant.

3.6 Recordkeeping

Refer to [HS733 HS Records Procedure for record keeping duration and disposal requirements](#).

Records to be kept include:

- Risk Management Form and/or operations manual relating to the plant.
- A Safe Work Procedure which describes the safe manner of operation of the plant.
- Plant Inspection, Testing and Monitoring (ITM) Schedule for all plant identified as requiring ITM.
- Record of any alteration made to the plant
- Records related to the inspection, testing, maintenance and monitoring of plant, such as log books, checklists, timetables, etc.

Electronic versions in the form of spreadsheet or database applications of these forms are permitted e.g. SafeSys.

For the plant listed in Schedule 5 of the WHS Regulation 2011, records should be kept for any tests, maintenance, inspections, commissioning or alteration of such plant, as relevant to controlling its risks. These records must be kept for the period the plant is used or until the University relinquishes control of the plant.

3.7 High Risk Work licences

SafeWork NSW requires and issues national licences to perform high risk work (high risk work licences) for:

- forklifts
- scaffolding
- rigging
- dogging
- cranes including tower cranes, mobile cranes, vehicle loading cranes, bridge and gantry cranes
- hoists including personnel and materials hoists, elevated work platforms and concrete placing booms
- pressure equipment such as boilers, turbines and steam engines
- reach stackers.

High risk work licences are recognised in all Australian states and territories.

A person performing high risk work must hold a relevant licence unless they are

undergoing training. Only Registered training organisations (RTOs) approved by WorkCover can deliver training and assessment for high risk work licences in NSW. The training and assessment must be delivered under the supervision of an RTO but practical training can occur in the workplace.

A detailed list of high risk work licences and classes of high risk work can be found in Schedule 3 of the WHS Regulation. Schedule 4 of the Regulation lists high risk work licence – competency requirements.

Additional information is available from SafeWork NSW and Worksafe ACT.

4. References

[Managing the Risks of Plant in the Workplace](#) – Safe Work Australia, Code of Practice

5. Review & History

Appendix A: History

Version	Authorised by	Approval Date	Effective Date	Sections modified
draft	Manager, OHS Section	15/11/2001	15/11/2001	Policy and Program documents were communicated and in use but were not formally approved.
0.1	Director, Human Resources	01/11/2006	01/11/2006	Revised format and contents
1.0	Director, Human Resources	01/01/2007	01/01/2007	Final version approved
1.1	Director, Human Resources	01/08/2007	01/08/2007	Add Section 5.7 National Certificated of Competency licenses
1.2	Director, Human Resources	17/07/2008	17/07/2008	Electronic versions permitted
1.3	Director, Human Resources	23/10/2009	23/10/2009	Clarification and detail added New Section – Use of Plant Verification of designs Added to Particular risk controls Training requirements changed
2.0	Director, Human Resources	10/12/2010	10/12/2010	Added new section isolation of damaged plant and took out section on design and placed in new Plant design guideline. Place definitions and equipment in appendices.
3.0	Director, Human Resources	29/04/2013	29/04/2013	Removed responsibilities and objectives sections. Added sections on hiring and of second hand plant. Removed requirement for plant register. Added instruction, training and supervision section. Revised high risk work licences section. Refer directly to regulations. Updated Branding Logo in accordance with UNSW Branding Guidelines. Modified the document identifier from OHS to HS in accordance with WHS legislation review
3.1	Director, UNSW Safety and Sustainability	30 April 2014	30 April 2014	Reviewed for administrative updates
3.2	Director, UNSW Safety and Sustainability	3 March 2016	3 March 2016	Reviewed for administrative updates

Appendix B – Definitions

Alter: in relation to any plant means to change the design of, add to or take away from the plant where the change may affect health or safety, but does not include routine maintenance, repairs or replacements.

Commissioning: means performing the necessary adjustments, tests and inspections to ensure plant is in full working order to specified requirements before the plant is used. Commissioning includes re-commissioning.

Competent person: means a person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills enabling that person to perform the task required.

Danger tag: Warn that operation of the device may endanger the life of the person who affixed the tag or the operator. Danger tags should be used in conjunction with a lock out device to physically prevent accidental operation.

Designer: means a person who designs plant for use in a workplace or plant intended to be used in a workplace or is responsible for the design.

Electrical installation: means all the electrical wiring, accessories, fittings, consuming devices, control and protective gear and other equipment associated with the installation situated in or on workplaces.

Electrical plant: means plant which consumes converts or generates electricity.

Erector means a person who erects, dismantles or alters the structure of plant in a workplace.

Ergonomic: means to optimise the functioning of the plant and systems of work associated with the plant by adapting them to human capacity or need.

Fault: means a break or defect which may cause the plant to present an increased risk to health and safety. In the case of a fault in the design, this means an aspect of the plant design which may cause the plant to be a risk to health and safety if manufactured in accordance with the design specifications.

Gas cylinder: means a particular rigid pressure vessel not exceeding 3000 litres water capacity and without openings or integral attachments on the shell other than at the ends, designed for the storage and transport of gas under pressure and which is covered by AS 2030.

Guard: means a device that prevents or reduces access to a danger point or area.

Hazard: means the potential to cause injury or illness.

Importer: means a person who imports plant for use in a workplace or plant intended to be used in a workplace.

Installer: means a person who installs plant in a workplace.

Interlocked: means the connection between a guard or machine element with the control system or the power system of the plant. This connection allows access to the moving parts of the plant at the times when those parts are not moving and prevents moving parts from starting up or operating when access is available to those moving parts.

Manufacturer: means a person who manufactures plant for use in a workplace or plant intended to be used in a workplace.

Minimise: means to reduce to the lowest practicable level.

Out of service tag: is a notice that distinguishes equipment out of operation for repairs or alteration, or plant that is still being installed or commissioned. Do not operate equipment whilst this tag is in use.

Plant: includes any machinery, equipment (including scaffolding), appliance, implement or tool and any component or fitting thereof or accessory thereto. Experimental and research apparatus designed, manufactured and supplied to staff and students, by staff and students or a third party, is also plant and equipment.

Pressure equipment: means boilers, pressure vessels and pressure piping. For the purposes of this national standard pressure equipment are those specifically covered by AS 1200 and having hazard level A, B, C or D according to the criteria identified in AS 3920 Part 1, Pressure Equipment Manufacture - Assurance of Product Quality.

Repair: means to restore plant to an operating condition, but does not include routine maintenance, replacement or alteration.

Risk: A risk is the chance of something happening that will have an impact on objectives. It is measured in terms of consequences and likelihood. In the Health and Safety (HS) context, risk should be thought of as the HS consequence of a given severity, and the likelihood of that particular consequence occurring.

Risk Assessment: means the process of evaluating the likelihood and consequences of injury or illness arising from exposure to identified hazards associated with plant.

Supplier: includes a person who supplies plant for use in a workplace or plant intended to be used in a workplace, by way of sale, lease, exchange or hire, whether as a principal or agent for another.

Use: means work from, operate, maintain, inspect and clean.

Note: Refer to NOHSC: 1010 (1994) for full range of definitions.

Appendix C Registrable Plant

List of plant requiring registration of design as outlined in Schedule 5 (Part 1 NSW, and 5.1 ACT) of the WHS Regulations

- Pressure equipment, other than pressure piping, and categorised as hazard level A, B, C or D according to the criteria in Section 2.1 of *AS 4343 Pressure equipment – hazard levels*
- Gas cylinders covered by Part 1.1 of *AS 2030.1 Gas cylinders - General Requirements*
- Tower cranes including self-erecting tower cranes
- Lifts, including escalators and moving walkways
- Building maintenance units
- Hoists with a platform movement exceeding 2.4 metres, designed to lift people
- Work boxes designed to be suspended from cranes
- Amusement devices covered by Section 2.1 of *AS 3533.1:2009 - Amusement Rides and Devices*, except Class 1 structures (see below)
- Concrete placement units with delivery booms
- Prefabricated scaffolding and prefabricated formwork
- Boom-type elevating work platforms
- Gantry cranes with a safe working load greater than 5 tonnes or bridge cranes with a safe working load of greater than 10 tonnes, and any gantry crane or bridge crane which is designed to handle molten metal or Schedule 10 hazardous chemicals
- Vehicle hoists
- Mast climbing work platforms
- Mobile cranes with a rated capacity of greater than 10 tonnes

Plant that does not require registration includes:

- heritage boiler
- crane or hoist that is manually powered
- elevating work platform that is a scissor lift or vertically moving
- tow truck.

List of plant items requiring registration as outlined in Schedule 5 (Part 2 NSW and 5.2 ACT) of the WHS Regulations

- Boilers categorised as hazard level A, B or C according to criteria in Section 2.1 of *AS 4343 - Pressure equipment - hazard levels*.
- Pressure vessels categorised as hazard level A, B or C according to the criteria in Section 2.1 of *AS 4343 - Pressure equipment - hazard levels*, except for gas cylinders; LP Gas fuel vessels for automotive use, and serially produced vessels.
- Tower cranes including self-erecting tower cranes.
- Lifts, including escalators and moving walkways.
- Building maintenance units.
- Amusement devices covered by Section 2.1 of *AS 3533.1:2009 - Amusement Rides and Devices*, except for certain Class 1 structures (see below).
- Concrete placement units with delivery booms.
- Mobile cranes with a rated capacity of greater than 10 tonnes.