

**Examination Requirements for Specialist Equipment**

**1 Introduction**

Organisations and individuals who own, operate or have control over work equipment have a legal duty to ensure that it is fit for purpose and does not pose an unacceptable level of risk to anyone who uses it (or might be harmed if the equipment was to fail). This duty applies to any employer, whether they own equipment or hire it from another supplier for use within their organisation. The University of Glasgow owns and operates thousands of pieces of equipment ranging from simple hand tools such as hammers and chisels to specialist equipment such as fume cupboards and autoclaves.

To ensure that equipment is safe to use throughout its operational lifetime it should be regularly inspected to check it is in good condition, working properly and is maintained and repaired as necessary. The Provision and Use of Work Equipment Regulations 1998 (PUWER) include requirements to ensure that any equipment provided for work is:

* Suitable for the intended purpose (and safe for use)
* Maintained in a safe condition and inspected regularly to ensure it is correctly installed and that it does not subsequently deteriorate in use
* Used only by people who have received adequate information, instruction and training
* Accompanied by suitable health and safety measures (e.g. protective devices and controls). Examples of controls measures may include guards, emergency stop devices, warning devices and clear, visible markings.

Simple pieces of equipment such as hand tools can be visually inspected locally by a member of staff who is familiar with the equipment to identify any signs of degradation or damage. For more specialist equipment it will often be necessary to use a specialist engineer to carry out the necessary inspections and maintenance.

Specialist (or safety critical) equipment may be subject to more stringent requirements for testing, inspection and maintenance which will apply **in addition to** any requirements set out in PUWER. There are three key categories of equipment used in the University that are subject to additional requirements:

* Lifting equipment and accessories (including passenger and goods elevators)
* Local Exhaust Ventilation (LEV) systems (e.g. fume cupboards)
* Pressure systems (e.g. boilers, compressors, autoclaves)

Colleges, Schools and Services must ensure that robust procedures are in place to keep these in a safe condition and, most importantly, to ensure that the receive the legally required periodic examinations. These may be regarded as similar to the requirement to have cars periodically examined via an MOT and, as is the case with vehicles, using lifting equipment that has not been examined within the requisite period, or has failed and examination is a criminal offence. Within the University the responsibility for ensuring that procedures are in place to undertake all required inspections and maintenance lies with the Head of the Unit that has ownership (or maintenance responsibility) for the item of equipment. For items such as passenger and goods lifts this responsibility normally lies with Estates.

The University has a contract with Zurich Engineering to carry our periodic examination of its lifting equipment, pressure plant and local exhaust ventilation that require periodic examinations. Colleges, Schools and Services can access this service and any required statutory examinations will be carried out free of charge at the point of delivery with the cost being met centrally by the University.

**2 Inspection of Lifting Equipment**

Failure of lifting equipment can pose a significant hazard to staff and students in the workplace, especially where the equipment is designed for carrying heavy loads or lifting people (e.g. passenger lifts and patient hoists). Under the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER), lifting equipment must be formally inspected by a competent person before it is used for the first time, following assembly or construction (for mobile lifting equipment such as cranes) and when certain exceptional circumstances arise that could compromise the safe use of the equipment such as:

* Damage to, or failure of any part of the equipment
* Reinstatement of the equipment following any extended period where the equipment is out of service
* Major changes to the equipment that could affect its integrity (e.g. modification, replacement or repair of critical parts

In the event that any of the above circumstances arise, the affected equipment should be removed from service pending inspection. In addition to the above requirements, throughout its lifetime, lifting equipment must be formally inspected by a competent person on a regular basis, this is known as a thorough examination and test (TExT). The frequency of inspection depends on the type of equipment and what it is normally used for, the standard inspection frequencies are shown below:

* 6 monthly for passenger and goods elevators
* 6 monthly for equipment (and accessories) used for lifting people (e.g. patient hoists and slings)
* 12 monthly for lifting equipment for equipment which is not used for lifting people (e.g. equipment hoists)
* 6 monthly for lifting accessories which **are not** used for lifting people (e.g. slings, chains and harnesses).

The University has a contract with Zurich Engineering to carry our periodic examination of lifting equipment. Colleges, Schools and Services can access this service and any required statutory examinations will be carried out free of charge at the point of delivery, the cost being met centrally by the University.

Lifting equipment is inspected by Zurich Engineering on behalf of the University and should be clearly marked with the date of the most recent inspection and the date by which a further inspection is required. If a piece of equipment has not been inspected by the specified date it should be immediately removed from service until it can be inspected by a competent person.

**Note: The requirement for a pre-use inspection is removed where new equipment has been supplied along with a test certificate or certificate of conformity from the supplier although all other inspection requirements remain in place.**

**Note: Lifting equipment does not usually need to undergo any additional routine testing outwith the normal inspection frequency or in the specific conditions highlighted above and in fact this could lead to the equipment being damaged. Additional testing should only be undertaken on a case-by-case basis when specified by the supplier / manufacturer.**

**3 Inspection of Local Exhaust Ventilation (LEV) Systems**

Local Exhaust Ventilation (LEV) systems such as fume cupboards and microbiological safety cabinets are safety-critical equipment commonly used in both research and teaching laboratories to help protect staff and students from exposure to hazardous substances. Under the CoSHH Regulations 2002 they should be regularly inspected to ensure that they are working efficiently and providing the required level of extraction and/or filtration to protect laboratory users.

The CoSHH Regulations specify that LEV systems should be subject to a Thorough Examination and Test (TExT) on a 14-monthly cycle. However, to simplify the system and make it easier to schedule inspection visits LEV systems are usually scheduled annually. Microbiological safety cabinets located in containment level 3 (CL3) laboratories are an exception to this rule and should be inspected on a 6-monthly basis due to the increased risks associated with the biological materials handled in facilities of this type.

LEV systems (with the exception of microbiological safety cabinets) are inspected by Zurich Engineering on behalf of the University and should be clearly marked with the date of the most recent inspection and the date by which a further inspection is required. If a local exhaust ventilation system has not been inspected by the specified date it should be immediately removed from service until it can be inspected by a competent person.

Due to the specialist nature of microbiological safety cabinets they **are not** inspected by Zurich and a specialist contractor must be employed to undertake the required examinations. This is **not** currently managed centrally by the University and each Management Unit is required to make their own arrangements and keep appropriate records to ensure legal compliance.

**Note: SEPS recommend that in addition to the annual thorough examination and test, fume cupboards are inspected locally by users on a monthly basis to identify any potential problems arising between statutory inspections. A checklist has been prepared has been prepared by SEPS to help laboratory users undertake this process** [**https://www.gla.ac.uk/media/Media\_932358\_smxx.docx**](https://www.gla.ac.uk/media/Media_932358_smxx.docx)

**Note: Laminar air flow benches (sometimes referred to as “wet decks” are not considered protective devices and are intended to protect sensitive work from contamination. They are therefore not subject to statutory inspection under CoSHH.**

**4 Inspection of Pressure Systems**

Pressurised equipment such as steam boilers, compressors and cryogenic storage tanks can pose a significant risk of injury and/or property damage in the event of failure and it is extremely important that they are regularly examined to ensure that both they and any associated safety devices (e.g. pressure relief valves) are in good condition.

For certain items of pressure plant, there is a requirement that the nature, extent and frequency of the periodic statutory examination is defined and recorded in a formal document known as a Written Scheme of Examination. This applies to any steam system and to other systems where the stored energy in the largest pressure vessel in the system exceeds 250 bar litres. This requirement applies to larger air receivers, to some cryogenic storage vessels and to systems where one or more compressed gas cylinders are connected to rigid pipework (manifold systems). Zurich are able to prepare written schemes for such systems and if notified of equipment items will advise when written schemes are required.

Unlike LEV systems and lifting equipment, the frequency of inspection is not fixed will vary with the type of equipment, current industry guidance and how the equipment is being used. The frequency of examination for each piece of equipment will be determined by the competent person and entered onto a written scheme of examination which is used to schedule inspections and specify what checks are required.

Pressure systems will usually be subject to both a periodic thorough examination and test and regular in-service inspections. The former will usually require the equipment to be depressurised and removed from service prior to examination while the latter can normally be undertaken without significant disruption to normal operations. Any particular requirements for the depressurisation should be discussed with Zurich in advance of the examination e.g. notice periods required to allow for a safe shutdown of any associated equipment.

**Note: New pressure equipment should be supplied with documentation from the manufacturer in particular a declaration of conformity which may remove the need for a full out of service inspection. This documentation should be made available to the inspector and if not available may result in the equipment being removed from service temporarily pending further testing.**

**Gas Supply Manifolds**

Gas manifolds are commonly used to supply specialist gases to laboratory and workshop areas allowing gas cylinders to be safely stored outside rather than in the workplace. In most cases the only part of the manifold system that will be subject to thorough examination and test by Zurich will be the associated pressure relief valves (PRV). Pressure relief valves can be hard to identify but usually appear as metal cylinders connected to the manifold system which direct excessive pressure to a safe area either directly or via an associated pipeline (see figure 1). If you are unsure whether or not a system is fitted with a pressure relief valve contact Zurich or SEPS for advice.



**Figure 1:** Example of a pressure relief valve connected to a gas manifold system and exhaust pipe.

Under PUWER the rest of the system should still be inspected and maintained (this will most likely require specialist training or employing an outside contractor) with visual inspections, pressure drop tests and other tests commonly undertaken. Arrangements for this should be made by the management unit responsible for the equipment and it is strongly recommended that all gas manifold systems fitted with pressure relief valves are notified to Zurich even where examinations and development of written schemes of examination are being undertaken by another contractor. This will allow oversight of the existence and operation of such systems reducing the risk of examinations being missed.

**Note: Any pressure system containing a relevant fluid (other than steam) will be exempt from some requirements of PSSR if the product of the pressure in bar and the internal volume in litres of its pressure vessel(s) is less than 250 bar litres (i.e. maximum working pressure x volume <250). This exemption removes the need for qualifying equipment to be included in a written scheme of examination and subject to regular statutory examination. It does not however, remove the requirements for regular ongoing in-service inspection and maintenance under PUWER.**

**5 Management of Statutory Inspections**

**Inventory of Equipment**

Colleges, Schools and Services, including Estates must maintain an inventory of equipment under their control that is subject to statutory inspection. Zurich Engineering have schedules of examinations that they have carried out previously that may serve as a basis for a local register. However, Zurich schedules are arranged entirely by building and so it is not possible to directly view a list of all equipment held by a particular unit. The schedules are arranged in this manner to minimise schedule disruption by University administrative changes and to ensure continuity of record keeping. To ensure that the University maintains an accurate register of equipment that is subject to statutory inspection it is important that any changes to inventories are clearly communicated to Zurich as soon as possible. This helps to avoid new items being overlooked (leading to required inspections not being completed) and improves efficiency by removing obsolete equipment or items that are out of service for long periods of time ensuring that Zurich do not spend time looking for equipment that no longer exists.

When a new piece of equipment is procured which falls under the scope of the regulations (see appendix 1 and 2), the relevant Zurich inspector should be informed by e-mail to allow them to add it to the system. By the same token, when a piece of equipment is removed from service (either permanently or on a long-term basis) Zurich should be informed as soon as possible to allow the item to be deleted from the system reducing the number of unnecessary inspection visits.

Issues often arise when portable equipment (e.g. a benchtop autoclave) is moved from one location to another especially where equipment is moved to another building or campus. This can make it difficult for engineer surveyors to easily locate the equipment leading to overdue or missed inspections. When equipment subject to inspection is relocated Zurich must be informed as soon as possible to allow the database to be updated accordingly.

**Note: Ensuring that new equipment is added to the register and equipment which has been relocated or removed from service is updated on the database or deleted is the responsibility of the School / Service who are responsible of the equipment. In each case Zurich should be informed of any changes as soon as possible to allow the database to be amended.**

**Note: If a piece of equipment that has been out of service for a long period of time is to be brought back into service it should be examined before it is first used. If the equipment is subsequently returned to service Zurich should be informed in advance to ensure it is inspected in accordance with legal requirements.**

**Facilitating Inspections**

When an inspection is due, Zurich will contact a designated responsible person (nominated by the School or Service) to make the arrangements for the equipment to be examined. To facilitate this the School / Service should ensure the following:

* A local point of contact who is available on campus should be identified for each management unit to ensure that the engineer surveyor is able to contact an appropriate person in good time to make the arrangements.
* SEPS should be informed of the main point(s) of contact for each management unit to allow us to add the appropriate individuals to Crimson as a point of contact. This will ensure that the nominated individuals receive copies of any relevant inspection reports, defects and failed visits.
* Prior to inspection the local contact should ensure that the engineer surveyor can access any equipment that is due to be examined. This should include arranging access on the day to laboratory or workshop facilities as required including provision of contact details for a local point of contact. Local users of the equipment should also be informed that equipment should be removed from service and made safe prior to the inspection taking place.

Inspection visits will be managed locally by the School / Service working in partnership with Zurich. Zurich maintain a database of items requiring inspection and will schedule inspection visits in accordance with the written scheme of examination and / or legally mandated inspection frequencies. When a piece of equipment is due for inspection Zurich will inform the local contact to make arrangements for the inspection (usually by telephone or e-mail).

To ensure legal compliance, owners and operators of equipment should ensure that they cooperate with requests for access to equipment made by engineer surveyors working on behalf of Zurich. Where removal from service for the purposes of inspection requires special arrangements (e.g. the attendance of specialist engineers) or additional notice is required to make it available, these requirements should be clearly communicated to Zurich in good time. For example, if inspection of a piece of equipment requires facilities to be shut down the time taken for this should be identified and discussed in advance with Zurich who will work with local users to agree a suitable schedule.

**Note: Every effort should be made to ensure equipment is available for inspection and testing. This may include removing equipment from service prior to inspection where required and providing access to the area where the equipment is located for the surveyor.**

**Specialist Systems**

On occasions, Zurich may require the attendance of a specialist contractor to prepare the equipment for statutory examination, leading to additional costs and duplication of service. Where this is the case Colleges, Schools and Services may wish to have the statutory examination and preparation of Written Schemes of Examination carried out by a specialist contractor rather than Zurich Engineering. This is legally acceptable provided the contractor can provide written evidence that they hold any relevant accreditations and professional competencies required.

**Note: In some cases there may be a requirement for a specialist engineer to be available during the statutory examination to help dismantle the equipment or otherwise help to prepare it for examination by the Zurich Engineer Surveyor. Where this is a requirement units should discuss with Zurich and may find it convenient to align the statutory inspection schedule with the maintenance schedule of the equipment.**

**Actions Required on Receipt of Reports**

When an inspection has been completed the engineer surveyor will discuss any identified defects / issues verbally with the local contact or lab / workspace manager and explain any further actions that may be required. Where a serious defect has been identified the engineer surveyor will formally communicate this and the equipment should be removed from service immediately (and placed beyond use) pending repair or disposal.

Once the statutory examination has been completed, the engineer surveyor will produce an electronic report that will be sent to Estates, SEPS and any local contacts who have been identified for the building on Crimson. These reports should be checked by the local responsible person to identify any faults, failures or unsuccessful visits and arrangements made for remedial action as required.

Key managers within the University who have responsibility for equipment subject to statutory examination, often senior technical staff, may have direct access to the Crimson system so that they may receive reports and view these online within the Crimson system. This access can be set up by SEPS. Users may have access that allows sight of the entire system but to reduce the volume of non-relevant reports sent to an individual, the system is structured by groups known as communities that reflect University School or Services with the buildings occupied by that unit visible to the 'community'.

When reports are issued on any items within buildings associated with a School or Service, email notification is sent by the Crimson system to members of the relevant community. PDF copies of reports are also sent to community members by email attachment and can also be viewed within the Crimson system.

Any safety defects should always be dealt with as soon as practicable. Zurich provide only an examination service and units will need to make separate arrangements with a maintenance contractor for any required repairs. This may be done directly with a specialist contractor of may be able to be dealt with via the Estates CBRE contract, although a budget code may be needed to allow cost recovery for non-Estates items. Schools and Services should also aim to deal with other defects where they are identified and to address any observations where it is reasonably practicable to do so.

Unless equipment has been withdrawn from service because of an immediate safety defect it is not normally necessary to arrange a re-examination before returning the equipment to service after a repair. If equipment has been withdrawn because of an immediate safety defect re-examination should be arranged prior to further service. The Engineering Surveyor will advise on this.

**Note: For especially serious failures (e.g. faulty safety devices failing to danger) the engineer surveyor will inform the enforcing authority (HSE) directly. This is a legal requirement and forms part of the duties of the competent person.**

**Ongoing Maintenance Requirements**

While the statutory inspection (whether thorough or a working examination) is a legal requirement designed to provide statutory examination of equipment and to verify that it remains safe for continued use it does not provide any element of routine maintenance of the equipment that is being examined and is simply intended to ensure that equipment is safe to use at the time of examination (much like a car MOT). It is also the case that the TExT may only cover the part(s) of the equipment specified in the legislation. To ensure that equipment remains fit for purpose, systems should also be subject to regular inspection and maintenance checks that may not be covered by statutory inspections. This will often require the use of specialist contractors.

Colleges, Schools and Services therefore must also have a robust maintenance program in place to make sure that equipment is kept in good condition and is able to pass the periodic statutory examination. It is for the owner or operator of the equipment to identify the nature and extent of maintenance required and should take full account of manufacture advice. It will rarely be sufficient to rely only the statutory examination as the sole maintenance check and even for very simple items regular user visual checks may be practicable. For complex, or high value items of equipment a specialist maintenance contract may be appropriate.

**Note: Ongoing maintenance is not covered by the programme of statutory inspections and arranging it is the responsibility of the School or service who are responsible for the equipment. Ongoing maintenance is not managed centrally by the University.**

**6 Further Information**

Further information can be obtained by contacting the Safety and Environmental Protection Service (SEPS) and the relevant Zurich engineer surveyor. More detailed guidance on pressure systems, LEV systems and lifting equipment is available in the A-Z section of the SEPS website and detailed guidance notes are also available in the Chemical Safety Section of the website for pressure and LEV systems.

To add a new point of contact to the Crimson database ensuring they receive copies of inspection reports please contact the SEPS team who oversee the online building communities, SEPS may be contacted by calling extension 5532 or e-mailing at safety@glasgow.ac.uk. Contact details for our engineer surveyors are given below (correct as of June 2023):

**Garscube Campus**

* Pressure Systems Brian Baldasara (07875 887608) brian.badasara@uk.zurich.com
* Lifting Equipment James Chesney (07875 887505) james.chesney@uk.zurich.com
* Local Exhaust Ventilation (LEV) James Kerr (07875 887665) james.1.kerr@uk.zurich.com

**Gilmorehill Campus**

* Pressure Systems Pat Morris (07875 096033) patrick.morris@uk.zurich.com
* Pressure Systems Bobby Gilpin bobby.gilpin@uk.zurich.com
* Lifting Equipment Andrew Moran (07812 265455) andrew.moran@uk.zurich.com
* Local Exhaust Ventilation (LEV) James Kerr (07875 887665) james.1.kerr@uk.zurich.com

**Appendix 1: Summary of statutory inspection requirements**

**Lifting Equipment (Thorough Examination and Test)**

* Passenger and goods elevators 6 Monthly
* Equipment (and accessories) used for lifting people 6 Monthly
* Lifting equipment for equipment (not used for lifting people) 12 Monthly
* Lifting accessories which (not used for lifting people) 6 Monthly

**Lifting Equipment (Exceptional Circumstances)**

* Damage to, or failure of any part of the equipment
* Reinstatement of the equipment following any extended period where the equipment is out of service
* Major changes to the equipment that could affect its integrity (e.g. modification, replacement or repair of critical parts

**Local Exhaust Ventilation (LEV) Systems**

* Microbiological Safety cabinets (Containment Level 3) 6 Monthly
* Microbiological Safety cabinets (other than CL3) 14 monthly\*
* Ducted fume cupboards 14 Monthly\*
* Filtered fume cupboards and other benchtop extraction systems 14 Monthly\*

**Pressure Systems**

* Various Variable frequency\*\*

\*Usually undertaken annually for ease of scheduling

\*\*Inspection frequency is specified in accordance with the written scheme of examination

**Appendix 2: Examples of equipment requiring statutory inspection**

**Lifting Equipment**

* Passenger and goods elevators
* Patient hoists
* Goods / equipment hoists
* Runway beams and swing jibs associated with lifting equipment
* Suspension points for lifting equipment
* Mobile elevating work platforms (e.g. scissor lifts and cherry pickers)
* Lifting access platforms for use by disabled individuals (including stairlifts)
* Manual and electric pallet trucks
* Hydraulic / electric lifting trolleys
* Lifting accessories including chains, slings, harnesses, straps etc.
* Winches and chain blocks
* Vehicle tail lifts

**Local Exhaust Ventilation (LEV) Systems**

* Ducted and recirculating fume cupboards
* Microbiological safety cabinets
* Extension arm fume extraction systems
* Bench-mounted fume extraction systems
* Extraction systems attached to pieces of equipment (e.g. dust extraction on woodworking equipment)
* Downdraft extraction benches
* Welding and soldering fume extraction systems
* Gloves boxes and other enclosed systems fitted with extraction systems (e.g. shot blasting cabinets)

**Pressure Systems**

* Hot water / steam boilers
* Hot water heated storage tanks
* Air compressors (250 bar litres and above)
* Air / gas receivers (250 bar litres and above)
* Pressurised cryogenic storage tanks / Dewars
* Pressure relief valves (PRV) associated with pressure systems
* Fixed and benchtop autoclaves
* Pressure cookers

**Note: This list is not exhaustive and there will be other equipment in each category that may require statutory examination. If you are unsure whether or not a piece of equipment is within the scope of the regulations contact the relevant engineer surveyor in the first instance who will be able to advise.**

**Appendix 3: Equipment life cycle and examination flowchart**

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