

**EXAMPLES OF SAFETY CRITICAL DEVICES AND ASSOCIATED TEST & INSPECTIONS**

Item of Equipment / System	Test/Inspection Required	Suggested Record Keeping <sup>1</sup>
<b>Fume Cabinet</b> alarms and meters: E.g. flow meter, sash height and low flow alarms (also, automatic extinguisher system, if fitted)	Daily Operator Check of flow and warning indicators,	No
	1 - 6 monthly formal check, as appropriate to the risk	Yes
	Annual Formal Inspection & Test by Engineer (arranged via E&F)	Yes – Engineer’s
<b>Pressure Relief Valves</b> (manually tested) (EXCLUDING Autoclaves): E.g. on compressors and pressurised lines  <u>Burst Disks should be visually inspected at least monthly</u>	Weekly operation check (where practicable)	No
	Blow-off Test, as per manufacturer’s instructions	Yes
	Annual Thorough Examination by Insurance Engineer <sup>2</sup>	Yes – Engineer’s Report
<b>Laser Systems</b> , enclosed and semi-enclosed Class 3b or 4 <i>Assess interlocks, warning devices, cooling system, special gases protective devices and access panels</i>	Daily Operator Check	No
	Formal Inspection per manufacturer’s instructions	Yes
<b>Electrical &amp; Mechanical Interlocks</b> controlling starting or restricting access into critical areas whilst equipment in operation, eg: <ul style="list-style-type: none"> <li>• Access to exposed live (50v+) electrical terminals</li> <li>• Access to gears, pulleys</li> <li>• Door interlocks</li> <li>• “dead-man switches” and two-hand and foot-interlocked starter switches</li> <li>• Emergency mechanical cut-off switches</li> </ul>	Operator Check (prior to use)	No
	Regular test, as is practical and pertinent to the level of risk and likelihood of failure/overriding. Refer to Manufacturer instructions. <i>Use of tamper-tape will reduce frequency requirements.</i>	Yes, as applicable
	Formal Inspection and Test of Critical Controls, as per manufacturer’s instructions	Yes
	Annual Formal Inspection and Test of all Critical Controls and Devices <i>Frequency may vary if tamper indicator used on rarely accessed interlocked access panels, etc.</i>	Yes
<b>Emergency Stop Controls</b> – power cut-off  <i>Emergency switches may be installed for a whole room/area and/or control a single item of equipment</i>	<b>Area/Room Emergency stop switching :</b>	
	System Test – e.g. through activation of a single/multiple switch each week/month/bi-monthly, as appropriate.	Yes
	<b>Individual controls for items of equipment:</b>	
	Operator Test, as appropriate	No
As per manufacturer’s instruction; e.g. 6 monthly Test of all Emergency Switches & Controls which are not utilised as off switches.	Yes	

<sup>1</sup> Regularity of testing can and will vary according to the use and ease of testing of some devices and systems

<sup>2</sup> Notify items to University Insurance Officer – Pressure Systems Safety Regs. apply

<b>Guards</b> , fixed and movable	Daily Operator Check	No
	6-12 monthly Formal Check (more frequent where likelihood of overriding guards is apparent)	Yes
<b>Compressors &amp; Vacuum</b> devices and systems (also see <u>Pressure Relief Valves</u> )	Weekly Check – if applicable to the usage	No
	Drain-down of Condensate and Oil Traps	Yes (as appropriate)
	Annual Thorough Examination by Insurance Engineer	Yes – Engineer’s Report
<b>Autoclaves</b> - <u>floor standing</u>	<u>Before First Use</u> – Engineer to prepare Written Scheme of Examination <sup>3</sup>	Yes – Engineer’s Report. Note: Instructions re: Testing of Interlocks displayed by machine
	Daily check of Closure System and Interlocks by authorised (trained and approved) Users	No
	1-3 monthly Periodic Inspection by Approved Departmental/School Technical Staff	Yes
	Formal Inspection by a Specialist/External Engineer as per the Manufacturer’s instructions; based on time or cycles; to include a check of correct operation and pressure relief mechanisms, and in addition to the Insurance Inspection.	Yes
	Regular Kill Efficiency Tests by Approved Departmental/School Technical Staff.	Yes
	Annual Thorough Examination by Insurance Engineer	Yes
<b>Autoclaves &amp; Sterilisers</b> - <u>bench top/movable type</u>	<u>Before First Use</u> – Engineer to prepare Written Scheme of Examination <sup>4</sup>	Yes
	Daily Operator Check	No
	1-3 monthly Periodic Inspection by Approved Staff or competent contractor	Yes
	Annual Thorough Examination by Insurance Engineer	Yes – Engineer’s Report
<b>Centrifuges</b> , on-bench and micro	Daily User Inspection of the Lid, Locking Mechanism and Condensate Tray & Drain	No
	1 -6 monthly Inspection of cleanliness, condensate, Rotor, Lid and Interlocks	Yes, as applicable
	Annual Inspection of all Protective Devices, Gas Springs, Rotors & Clips and Chamber Cleanliness	Yes

<sup>3</sup> Arranged through University Insurance Officer

<sup>4</sup> Arranged through University Insurance Officer

<b>Centrifuges</b> , floor standing (e.g. high performance, Ultra)	Daily Inspection	No
	1-2 monthly Operational Test of Emergency power Cut-off(s)	Yes
	1 -2 monthly inspection of Rotors, Interlocks, Cleanliness and Automatic Warning Devices (as applicable)	Yes
	Annual Inspection by External Engineer, more frequent where appropriate	Yes
<b>Lifting Equipment &amp; Lifting Accessories (NON-PEOPLE):</b> E.g. slings, shackles, Fork Lift Truck, MEWPs <i>(not including goods lifts, which are subject to more detailed controls)</i>	Weekly Inspection of Lifting Equipment eg Overhead Cranes, Pulleys and Winches (as applicable)	Yes, as applicable to use/item
	6 month/Annual Thorough Examination by Insurance Engineer <sup>5</sup>	Yes – Engineer’s Report
<b>Lifting Equipment &amp; Lifting Accessories (PEOPLE):</b> E.g. MEWPs, harnesses, safety-lines, fall-protection devices <i>(not including passenger lifts, which are subject to more detailed controls)</i>	Weekly Inspection of all in-use Life-Safety Devices (as applicable)	Yes
	6 month/Annual Thorough Examination by Insurance Engineer (as <sup>4</sup> above)	Yes – Engineer’s Report
Gas Line Devices (Acetylene – blow-off )  Visual for non-resetting type, manual activation of testable devices	Daily inspection by Operator	No
	1 – 2 monthly Inspection of re-setable flash back arrestors	Yes, as appropriate
	Annual confirmation of device being “in-date”	No
Temperature Sensors, Gauges and Thermo-cut offs	Assess manufacturer’s guidance and ensure item is periodically tested to confirm accuracy and replaces as advised. All critical safety thermo devices will have a replacement date. Keep records of all sensor replacements and temperature accuracy testing.	
Compressed Gases Regulators (affixed to cylinders, manifold and downstream)	Replacement every 5 years All first-line Regulators to be on Insurance Schedule and receive at least an annual inspection (on-Cylinder/Manifold) Regulators for toxic and corrosive gases should be inspected more often and may be replaced more frequently.	

Many other items of equipment may also require specific tests, e.g. UV Illuminators (interlocks). Please also refer to Manufacturer’s Manual for details of replacement schedule for Pressure Relief Valves, critical temperature sensors and other critical safety devices.

For vehicle and Trailer safety Inspections please see: [www.bangor.ac.uk/hss/drivervehicle.php.en](http://www.bangor.ac.uk/hss/drivervehicle.php.en)

V.June 2014

<sup>5</sup> Notify items to University Insurance Officer - Lifting Operations and Lifting Equipment Regs apply