



Australian Government

MSL963002 Repair glass apparatus using simple glassblowing equipment

Release: 1

MSL963002 Repair glass apparatus using simple glassblowing equipment

Modification History

Release 1. Supersedes and is equivalent to MSL963002A Repair glass apparatus using simple glassblowing equipment

Application

This unit of competency covers the ability to perform basic repairs to glass apparatus using simple glassblowing equipment. It includes the ability to assess the economics of salvage and to follow a procedure of disassembly/assembly of the apparatus in accordance with specifications.

This unit of competency is applicable to scientific glassblowers. It covers work that will sometimes be performed by less experienced workers under the guidance of an experienced scientific glassblower.

While no specific licensing or certification requirements apply to this unit at the time of publication, laboratory operations are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked.

Pre-requisite Unit

MSL963001 Operate basic handblowing equipment

Competency Field

Scientific glassblowing

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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| 1 | Prepare for repair operations | 1.1 | Identify job, appropriate procedure, hazards and safety requirements, and apparatus required |
| | | 1.2 | Establish correct cleaning procedure for contaminated glassware before commencing repair operations |

- 1.3 Use safety equipment, safety procedures and personal protective equipment (PPE) specified for the job and materials to be used
 - 1.4 Record job description, compare with blueprint, drawing, sketch, design or similar specification and report perceived difficulties
 - 1.5 Prepare equipment for repair in accordance with job requirements
 - 1.6 Identify, select and prepare glass stocks and components for job
- 2 **Repair apparatus**
 - 2.1 Check and adjust equipment and tools for job requirements
 - 2.2 Check and adjust equipment and tools for the job
 - 2.3 Start up equipment using workplace procedures
 - 2.4 Follow supplied designs and workplace procedures to perform the repairs required
 - 2.5 Follow equipment shutdown procedures
- 3 **Operate annealing equipment**
 - 3.1 Prepare annealing equipment for the job
 - 3.2 Start up, operate and shut down annealing equipment using workplace procedures
 - 3.3 Monitor, adjust and record annealing operation
 - 3.4 Rectify routine problems
- 4 **Maintain a safe work environment**
 - 4.1 Follow established safe work practices to ensure own safety and that of others
 - 4.2 Minimise the generation of wastes
 - 4.3 Ensure the safe disposal of wastes
 - 4.4 Clean, care for and maintain work area, equipment and tools

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| | 4.5 | Report hazards and incidents in accordance with workplace procedures |
| 5 | Maintain records | |
| | 5.1 | Record data in accordance with workplace requirements |
| | 5.2 | Maintain equipment logs in accordance with workplace requirements |
| | 5.3 | Maintain security and confidentiality of workplace information |

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Standards, codes, procedures and/or workplace requirements

Standards, codes, procedures and/or workplace requirements include the latest version of one or more of:

- Australian and international standards covering the requirements for the laboratory safety; quality and environmental management; and labelling, storage, handling and transport of hazardous materials
- national work health and safety (WHS) standards and codes of practice
- specific codes, guidelines and procedures, such as principles of good laboratory practice (GLP)
- workplace documents, such as standard operating procedures (SOPs); quality and equipment manuals; maintenance schedules; material safety data sheets (MSDS); safety procedures; material, production and product specifications; production and laboratory schedules; workplace recording and reporting procedures; and waste minimisation and safe disposal procedures

Hazards

Hazards include, but are not limited to, one or more of:

- glass dust
- sharps and broken glassware
- heat sources, such as burners and ovens
- fluids under pressure (acetylene and oxygen)
- cuts associated with glass grinders and cutters
- manual handling of heavy bags and containers

Safety procedures

Safety procedures include, but are not limited to, one or more of:

- ensuring access to service shut-off points
- recognising and observing hazard warnings and safety signs
- correct labelling of samples and hazardous materials
- extracting dust
- following established manual handling procedures
- handling, and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer instructions, and workplace procedures and regulations
- regular cleaning and/or decontamination of equipment and work areas
- using PPE, such as heat resistant gloves, safety glasses, goggles, face guards, coveralls, respirators and safety boots

WHS and environmental management requirements

WHS and environmental management requirements include:

- complying with WHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of samples
- accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health, where relevant

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSL963002A Repair glass apparatus using simple glassblowing equipment

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>

Assessment Requirements for MSL963002 Repair glass apparatus using simple glassblowing equipment

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Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- safely performing basic repairs to at least three (3) different items of glass apparatus using simple glassblowing equipment
- assessing the economics of salvage
- following a procedure of disassembly/assembly of the apparatus in accordance with specifications
- determining types of contaminants present on or in apparatus and applying appropriate contamination and/or cleaning techniques before repair operations are undertaken
- reading and following blueprints, drawings, sketches and designs relevant to repair work
- selecting appropriate grades of glass and preparing for use
- preparing apparatus for repair
- optimising and using appropriate glassblowing and annealing equipment
- using appropriate treatment processes, with particular attention to risks associated with blowing used and possibly contaminated glass
- identifying atypical or out of normal repair problems
- reporting problems to either supervisor or outside service technician according to workplace procedures
- completing workplace documentation accurately and communicating work results.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- use and function of the broken apparatus to be repaired
- pre-repair apparatus preparation procedures
- repair materials and reason for their choice
- risks associated with blowing used and contaminated glass
- contamination and cleaning techniques to be performed before repair operations
- glassblowing techniques used for repairs
- selection and use of appropriate tools and equipment
- basic chemical and physical concepts related to behaviour of glass under heat and stress
- critical material properties and appropriate glassworking parameters
- annealing procedures

- methods of minimising potential quality problems
- relevant hazards, work health and safety (WHS) and environment requirements.

Assessment Conditions

- Judgement of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event. The timeframe must allow for adequate assessment of operation under all normal and a range of abnormal conditions.
- This unit of competency is to be assessed in the workplace or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
 - MSL963001 Operate basic handblowing equipment
- Holistic assessment methods include:
 - inspection of glasswork and workplace documentation completed by the candidate
 - review of candidate's work outputs over a period of time to assess accuracy, consistency and timeliness
 - feedback from supervisors and/or customers
 - oral or written questioning about properties of glass, repair techniques, quality problems and safe work procedures.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
 - a scientific glassblowing facility, appropriate safety equipment, materials and safe work procedures, and repair methods
 - bench burner, hand torch, micro torch and ribbon burner, gas supplies and gas economiser
 - hand tools, such as carbon paddles and mandrels, range of forceps, glass tubing gauges, angle setting jigs, calipers, glass support rollers, brass shapers, carbon rods, glass knife, stainless steel gauze, vernier calipers and other measuring tools, and strain viewer, dydinium glasses and polariscope
 - glassworking lathe, mechanical glass cutters and saws, and mechanical glass grinding equipment
 - annealing oven
 - measuring and recording equipment

- various glass types, including soda-lime, borosilicate, quartz, silica and special formula glasses; and glass to metal seals.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competence and currency.
- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience.
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment OR
 - having consulted with a laboratory about performing the competency being assessed within the last twelve months.

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