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|  | <b>MRAT<br/>063</b> | <p align="center"><b>Pneumatics equipment and compressed air</b></p>   | <b>Applicable to:</b><br>use of compressed air to drive portable power tools and experiments with pneumatics | <b>See also:</b><br>065 |
| <b>Process(es) covered:</b>  |                     | The use of compressed air to drive portable power tools.<br>The use of compressed air and related equipment to teach the use of pneumatics |  |                         |

### Control Measures

- Tie back long hair, remove or cover jewellery, and secure loose clothing.
- Always use tools and experimental systems at the correct pressure.
- Always drain the receiver of moisture after use.
- Fixed equipment should be properly guarded. It is not possible to guard experimental circuits and users should be warned of the dangers of trapping. Some pneumatic teaching systems use components made of plastics and work on much lower air pressures. The use of these systems greatly reduces injury as a result of trapping.
- Fit a regulator and pressure gauge between the air supply and any equipment connected to it.
- Keep flexible air hoses to a minimum, and only use hoses which are able to withstand the safe working pressure.
- Hose fittings on portable power tools should automatically cut off the air supply when disconnected.
- When constructing experimental systems, users should be instructed to check all connections. The teacher should also check before air is turned on. Air receivers should conform to BS 5169 and should be subject to regular internal examination.

### Immediate Remedial Measures:

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| Dust is in the eye | Irrigate immediately with water for several minutes, telling the casualty to hold eyelids apart.  |
| Severe cuts        | Apply pressure on or as close to the cut as possible, using fingers or a pad of cloth. Leave any embedded large bodies and press round them. Lower the casualty to the floor and raise the wound as high as possible. Protect yourself from contamination by blood. |

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| <b>Storage</b> |  |
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| <b>Disposal</b> |  |
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## Risk Assessment

### Hazards:

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| Trapping<br>Entanglement<br>Tripping<br>Physical injury<br>Explosion | <p>Fingers can become trapped between moving and fixed parts of pneumatics equipment, both on fixed equipment and on experimental circuits.</p> <p>Long hair, dangling jewellery or loose clothing can become entangled with moving parts that are not fully enclosed.</p> <p>Trailing air hoses present a tripping hazard and may become damaged.</p> <p>Air which is forced into the bloodstream or body orifices can be life threatening.</p> <p>Air hoses can thrash about under pressure. Incorrect air pressure can be a hazard.</p> <p>Compressed air receivers can corrode due to condensation in the receiver, leading to explosion.</p> |
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### Risks:

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| Trapping        | Inadequate guarding, or a lack of guards as will occur in experimental circuits, increases the risk of trapping.   |
| Entanglement    | Entanglement could occur if the user is too close to moving parts.   |
| Tripping        | Trailing hoses present a real risk from tripping and damage in crowded workshops.  |
| Physical injury | The risk of air entering the bloodstream or body orifices is low provided appropriate instruction is given and proper supervision is available. When setting up experimental systems, inexperienced users may not connect air lines correctly. |
| Explosion       | Receivers that are used infrequently may be allowed to stand for some time with condensation present. Corrosion may then be excessive.   |

### Further Information:

- Compressed air equipment should not be used to remove dust and swarf from machines or other equipment. If a large compressor is used to operate an air brush then a suitable regulator must be fitted to ensure that air at the correct pressure is supplied to it. The normal operating pressure for larger pneumatics teaching equipment should be between 2 and 3 bar. Pneumatics teaching systems are available which operate at lower pressures and are preferable.
- If large compressed air systems are in operation (in which the pressure multiplied by the internal volume of the air receiver exceeds 250 bar litre), the requirements of the *Pressure Systems Safety Regulations 2000* must be observed. Employers must make arrangement for the regular examination of such equipment by a competent person. Guidance is available in *Safety of Pressure Systems (Approved Code of Practice to the Pressure Systems Safety Regulations 2000)*, ISBN 071761767X, from HSE Books.