

	<b>MRA 043</b>	<b>Portable power drills</b>	<b>Applicable to:</b> most resistant materials	<b>See also:</b>
<b>Process(es) covered:</b>		Drilling holes in resistant materials. Cutting oils or other lubricants may sometimes be required. Most portable power tools are electrically operated but pneumatic tools are used where compressed air is available. The use of tools with integral low-voltage battery packs is increasing.		

### Control Measures

- Wear eye protection. Tie back long hair, cover or remove jewellery, and cover loose clothing by a secure apron or overall.
- It is impracticable to guard all the hazardous areas when using portable power drills. Correct selection of the bit speed will reduce the risk of drill breakage.
- Guards around rotating parts will reduce the risk of hand or finger injury but training and experience are essential in reducing risks.
- Route power leads and pipes to minimise the tripping hazard. Battery-powered tools avoid this problem.
- Two persons should handle heavy items to reduce the risk of back injury.
- Assess the strength of young persons using portable tools, to limit potential injury or damage. Younger pupils should use low voltage battery operated tools which generate less torque.
- Do not allow immature pupils to use portable power tools.

### Immediate Remedial Measures:

A particle could be in the eye	Tell the casualty not to rub the eye, sit him/her down facing the light with the head leaning back. Stand behind the casualty to look for the particle in the eye. If it is over the iris or pupil, DO NOT ATTEMPT TO MOVE IT. Tell the casualty to hold a gauze pad over the eye and close the other one. Send for an ambulance to take the casualty to hospital. If the particle is visible over the white of the eye, the corner of a moistened handkerchief can be used to remove it. Call 111 and seek medical attention.
Injury to the eye	If there is any sign of injury to the eye, tell the casualty to hold a gauze pad over the eye and close the other one. Take the casualty to hospital as quickly as possible.
Other injury	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.
Coolant is in the eyes	Irrigate immediately with water for at least 10 minutes, holding eyelids apart. Call 111 and seek medical attention.
Minor back pain	Help the casualty to lie down, either on the ground or on a firm mattress, and instruct him/her to rest until the pain eases. Obtain medical attention if symptoms persist.
Back injury resulting in loss of control of, or sensation in, limbs	Keep the head, neck and spine aligned while supporting the casualty's head. Send for an ambulance.

## Risk Assessment

### Hazards:

Flying material	Chuck keys or broken drill bits can be ejected violently.
Physical injury	Human contact with rotating parts and swarf can cause cuts or abrasions.
Tripping	Wrist sprains can result from a jamming drill bit.
Entanglement	Power leads or compressed air pipes present a tripping hazard.
Manual handling	Long hair, dangling jewellery or loose clothing can become entangled with rotating parts, dragging the user onto them.
Burns	Heavy workpieces and the gyroscopic effect of rotating motors can present a manual-handling hazard. When drilling metal the work piece and the drill bit can become hot.

### Risks:

Flying material	Flying off-cuts are unlikely to occur but there is a high risk that inexperienced users will break drills.
User injury	There is a high risk that trainees will put hands or fingers in hazardous places and experienced users may attempt short cuts. When a drill bit jams, some users may not be able to restrain the tool.
Tripping	Trailing leads or pipes present a real risk of tripping.
Entanglement	Entanglement is most likely to occur if rotating parts are exposed.
Manual handling	Handling heavy components or awkward manipulation will not occur frequently but will present a real risk. Novices may have difficulty controlling the tool.
Burns	Burns from hot metal or drill bits are usually superficial.

### Further Information:

- Chuck keys should not be dangled on chains near the working area as this increases the risk of entanglement.
- The use of batteries with a lower voltage, and which do not allow the machine to produce a large torque are preferable for younger pupils who usually do not have the physical strength to control more powerful machines, especially if the drill bit jams in the work piece.
- Using a bench or pillar drilling machine will usually give more accurate work, and with fewer hazards.
- Precautions to be taken with compressed air supplies are listed in MRAT 000.
- For general requirements on electrical supplies including a discussion on the use of 110 V, see MRAT 000.
- Portable tools should be examined before use and should have regular formal inspections and tests. The frequency depends on use, but half-termly would be typical