



## Mechanical Hazards

### NATURE OF THE HAZARD

Like other technologies that work with metals, welding and cutting seldom work in isolation. Other equipment and tools are normally used and kept nearby. The use of, or the closeness to, mechanical equipment can present hazards to the welder. Knowledge of the proper use of power tools, such as grinders, chippers, drills, and various hand tools, is important to welder safety. Know and understand the safe limits and proper use of cranes, positioners, and other material handling equipment. Use appropriate guards and personal protective equipment. Some safety recommendations follow.

### PERSONAL SAFETY

- Wear proper head, eye and hand protection.
- Use face shields, safety glasses, and goggles as appropriate.
- Wear dry, hole-free insulating gloves when welding or cutting.
- Avoid wearing loose items such as earrings, rings, necklaces, bracelets, loose clothing, neckties, and scarves.
- Watch out for sharp objects, pinch points, and moving objects.

- Protect long hair and beards.

### GRINDING WHEEL SAFETY

- Follow grinding wheel speed limitations according to manufacturer's instructions.
- Do not grind on the side of a wheel unless designed for such service.
- When starting a new wheel, stand to the side until it reaches speed, and correct any abnormalities noted.
- Be sure guards are in place.

### TOOL SAFETY

- Use the right tool for the job. Use good quality tools. Use them for the job they were intended to perform.  
For example, it is often tempting to use a screwdriver for a chisel or a pair of pliers for a wrench. Avoid such practices. The right tool will do the job faster and safer.
- Inspect tools before use.
- Never use a tool that is in poor or faulty condition.
- Keep all tools in good condition.

- Keep a firm grip on tools to prevent them from slipping away.
- Do not overload or force a tool beyond its capabilities.
- Foresee results of unexpected occurrences such as tools getting away, binding, or coming loose from their handles.
- Check any tool that has become jammed, or otherwise overstressed, for damage before reuse.
- Anticipate the reactive force from tools.
- Anticipate what might happen to a component that is to be loosened or unbolted from its working position.
- When using tools that involve weights and spring tension, be certain that all pressures are applied and released in a safe manner.
- Follow lockout/tagout procedures for equipment and tools as required.
- Do not bypass safety interlocks on equipment. Bypassing defeats the safety device and creates a possibly serious hazard.
- Store tools in a safe place. Many accidents are caused by tools falling off ladders, shelves, or scaffolds. Each tool should have a designated place in a tool box or pouch.
- For additional information of the safe operation and guarding of mechanical equipment, refer to the manufacturers' safe operating procedures.

## INFORMATION SOURCES

American National Standards Institute (ANSI). *Safety in Welding, Cutting, and Allied Processes* (ANSI Z49.1), published by the American Welding Society, 8669 Doral Blvd., Doral, FL 33166; telephone 800-443-9353; Web site: [www.aws.org](http://www.aws.org).

American National Standards Institute (ANSI). *Control of Hazardous Energy - Lockout/Tagout and Alternative Methods* (ANSI Z244.1), available from ANSI, 25 West 43<sup>rd</sup> Street, New York, NY 10036; telephone: 212-642-4900; web site: [www.ansi.org](http://www.ansi.org).

American National Standards Institute (ANSI). *Practice for Occupational and Educational Eye and Face Protection* (ANSI Z87.1), available from ANSI, 25 West 43<sup>rd</sup> Street, New York, NY 10036; telephone: 212-642-4900; web site: [www.ansi.org](http://www.ansi.org).

Occupational Safety and Health Administration (OSHA). *Code of Federal Regulations*, Title 29 Labor, Parts 1910.1 to 1910.1450, available from the U.S. Government Printing Office, Washington, DC 20401; telephone: 800-321-6742; web site: [www.osha.gov](http://www.osha.gov).

Mine Safety and Health Administration (MSHA). *Code of Federal Regulations* Title 30 Mineral Resources, Parts 1 to 199, available from the U.S. Government Printing Office, Washington, DC 20401; telephone: 202-693-9400; web site: [www.msha.gov](http://www.msha.gov).

American Welding Society (AWS). *Safety and Health Fact Sheets*, published by the American Welding Society, 8669 Doral Blvd., Doral, FL 33166; telephone 800-443-9353; Web site: [www.aws.org](http://www.aws.org).