



2600SEG115 SAFETY STANDARD FOR HAND TOOLS

1.0 PURPOSE

The purpose of this Standard is to prevent workers from being injured while utilizing hand tools.

2.0 BACKGROUND

This Standard updates and complements the criteria established in the Regulation on Safety and Occupational Health/Occupational Health and Risk Control Regulation of the Panama Canal Authority (ACP) titled *Control de Riesgos y Salud Ocupacional*.

3.0 SCOPE

This Standard applies to all employees, contractors, and third parties performing work or activities in installations or areas under ACP responsibility.

4.0 LEGAL FOUNDATION

This Standard is established pursuant to Agreement No. 12, of the Board of Directors of the Panama Canal Authority (ACP), Chapter 1, Article 3, titled Regulation on Safety and Occupational Health *Reglamento de Control de Riesgos y Salud Ocupacional*.

5.0 DEFINITIONS

Hose: Conduit for distribution of air, vapor, oils, etc.

6.0 GENERAL

6.1 All persons who are routinely or continually exposed to hazards while using hand tools shall:

- 6.1.1** Maintain hand tools in good condition.
- 6.1.2** Keep maintenance logs.
- 6.1.3** Inspect hand tools before and after their use.
- 6.1.4** Not use the tools if not trained on their operation.
- 6.1.5** Operate tools in accordance with the manufacturer's instructions.
- 6.1.6** Use appropriate personal protective equipment.

6.2 Hand tools.

6.2.1 The screwdrivers: Most screwdrivers are not designed for use with electric equipment. Utilize insulated screwdrivers. Do not hold an object in the palm of your hand while

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utilizing a screwdriver to tighten it. Utilize a table or solid support during this operation. Do not utilize a screwdriver as a hammer. Routinely inspect screwdriver handles and blades.

6.2.2 Pliers: Do not utilize pliers as hammers. Use insulated pliers when executing electric work.

6.2.3 Hammers: Use a suitable hammer for the type of work to be performed. Verify that the space in which the hammer will oscillate while in use is adequate. Always inspect the hammers before their use.

6.2.4 Chisels: Use chisels away from your body. Cover sharp edges during chisel operations. Ensure that chisels are integral before using them.

6.2.5 Knives: Always cut away from your body. Do not use knives without handles. Store the knives adequately.

6.3 Power tools: Power tools shall be used with safety guards and switches. The types of power tools are determined by their electric, hydraulic, pneumatic, gunpowder and fuel supply. To avoid risks associated with the use of power tools, employees shall observe the following general precautions:

- Never transport a tool by its cord or handle.
- Never disconnect tools by pulling their cords or handles to unplug them from the electric outlet.
- Keep electric cords and handles away from heat, oil, or sharp edges.
- Disconnect tools while not in use, and before repairing and cleaning detachable accessories, such as blades and knives.
- Maintain all persons not involved in the work at a safe distance.
- Avoid accidental ignition. Do not keep fingers on switch while transporting tool.
- Follow the instructions in the user's manual to lubricate and replace accessories.
- Use of adequate personal protective clothing and equipment is essential to prevent accidents.
- When using a power tool, ensure that a line-to-ground circuit switch is utilized.
- In electrical installations where there is an existing explosion danger due to flammable steam, specific non-sparking hand tools shall be used.

6.3.1 Guards: Exposed, moving power tool parts need to be protected. Included are camshafts, pulleys, gears, drums, wheels and chains. Such machine guards shall be supplied to protect the operator and others in the following areas:

- Operating points
- Pinching points
- Belts
- Wheels

Safety guards shall never be removed while a tool is in use. Portable power-driven circular saws having a blade greater than 2 inches (5.08 centimeters) in diameter shall be equipped with guards at all time. An upper guard shall cover the saw to the depth of the teeth. A lower one (retractable guard) shall cover the saw to the depth of the teeth, except where contact is made with the work material. The retractable guard shall automatically return to its covering position when the tool is withdrawn from the work.

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6.3.2 Operating controls and switches: Hand-held portable electric tools shall be equipped with a constant pressure switch or a control knob that interrupts the power supply in cases of emergency. Portable power tools shall be equipped with a positive “on-off” control switch, a constant pressure switch, or a locking device in front of the control.

6.3.3 Hand-held power tools: For user protection from serious injuries, hand-held power tools shall have a three-wire cord with one grounded, it shall be doubly insulated or shall be insulated transformer-powered at a low voltage. The three-wire cord shall have a grounded conduit. When a two-wire adaptor is utilized, the receptacle shall have a grounded wire. The following general practices shall be followed when utilizing hand-held power tools:

- Utilize appropriate safety gloves and shoes.
- Store hand-held power tools in dry places.
- Do not use hand-held power tools in humid or wet places, unless recommended by the manufacturer.

6.3.4 Abrasive Wheel Tools: Before an abrasive wheel is mounted, it shall be thoroughly inspected. The ring shall be checked to ensure that it is crack-and fault-free. To test it, the wheels shall be smoothly drilled with a nonmetallic instrument light. If the wheels make a grinding sound, it shall not be used because it could break away separately during its operation. The following safety measures shall be observed when utilizing abrasive wheel tools.

- Always utilize protective face gear.
- Disconnect the power supply when not in use.

6.3.5 Pneumatic tools: Pneumatic tools are powered by compressed air and include drills, hammers and surface sanders. There are several hazards associated with the use of pneumatic tools. Foremost is the hazard of getting hit by one of the tool ties or by some broach clamp that the worker is using. Pneumatic tools shall be checked to ensure that the tools are firmly adjusted to the overhead hose to prevent them from disconnecting. If an overhead hose is at more than 1/2 inch (12.7 millimeters) from the diameter recommended by the manufacturer, a safety valve shall be installed to control the excess valve flow and, so, reduce the pressure in case of hose failure. In general, the same precautions shall be taken with an overhead hose that is recommended for the electric wiring cords because the hose is subject to the same type of damage or has been accidentally struck. When pneumatic tools are used, a safety clamp or retainer shall be installed. Pneumatic tools which shoot hooks, rivets, clamps, or similar broaches, and which operate at major pressures of 1,000 pounds per square inch (6,890 kPa), shall be equipped with a special device to protect the broaches and prevent their becoming detached. Airless spray guns of the type which atomize paints and fluids at high pressures 1,000 pounds or more per square inch (6,890 kPa) shall be equipped with automatic or visible manual safety devices that will act as trigger bridges until the safety device is manually released. The following safety measure shall be observed when utilizing pneumatic tools:

- Eye protective gear is mandatory. Face and head protectors are recommended for employees that work with pneumatic tools.
- Screens shall also be prepared to protect workers who are in the vicinity from being struck by projecting fragments while riveting, clipping or utilizing overhead drills.
- Compressed air spray guns shall never be aimed towards other employees. A splinter guard shall be used when we perform clean-ups with compressed air.

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- Use of heavy-duty drilling machines may cause fatigue and stress. Rubber insulations reduce those effects, providing a safe hand hold.

6.3.6 Combustible liquid tools: Normally, combustible tools operation is gasoline-driven. The most serious risk associated with the use of combustible-driven tools comes from the combustible vapors that could burn or explode, and also emit dangerous smoke in the discharge. The worker shall be careful when handling and transporting combustibles, and shall only utilize approved flammable liquid containers. Before replacing a tank of the combustible-driven tool, the user shall shut off the artifact and allow it to ventilate to prevent the accidental ignition of dangerous vapors. When a combustible-driven tool is used inside an enclosed area, effective ventilation, and/or use of appropriate respirators is necessary. There shall be fire extinguishers available in the area.

6.3.7 Powder-powered tools: Powder-powered tools operate as loaded guns and shall be treated with extreme precaution. In fact, they are so dangerous that they shall only be operated by specialized workers. When using powder-powered tools, the following safety measures shall be observed:

- An employee shall wear ear and face protective gear, eyewear included.
- Do not use a tool in an explosive or flammable atmosphere.
- Inspect the tool before using it to determine that it is clean, that all parts operate freely, that the barrel is obstruction-free and that it has the appropriate shield, guard and ties recommended by the manufacturer.
- Do not load the tool unless it is to be used immediately.
- Do not leave a loaded tool unattended, mainly where it would be available to individuals who are neither familiar nor authorized to use them.
- Keep your hands in areas that are safe.
- Never point the tool at other employees.

When using powder-powered tools in broaches, a few additional procedures shall be followed:

- Do not shoot broaches in material that allow for the broach to go through the other side.
- Do not handle broaches in material that is too hard or brittle that could cut, spatter, or cause the broaches to rebound.
- Always use an alignment guide when shooting broaches in existing holes.
- When using a high-speed tool, do not handle broaches at more than 3 inches (7.62 centimeters) from the edge without support.

6.3.8 Hydraulic tools: The fluid used in hydraulic tools shall be of an accepted type, resistive, and have the characteristics that allow for operation at extreme temperatures. The pressures at which the hoses operate shall be those recommended by the manufacturer, and shall not be exceeded in valves, piping, filters and other installations.

7.0 INQUIRES

Any information or clarification of the content or application of this Standard must be requested in writing to the Safety and Industrial Hygiene Unit (RHSH).

8.0 TRAINING AND REFRESHER COURSE REQUIREMENTS:



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All personnel working with tools shall be trained and informed with regard to the proper use of such tools, the foreseeable dangers that could present themselves and the safety precautions to be taken during their use. Additionally, personnel shall be instructed in verifying all tools' safety mechanisms at regular intervals. Contractor shall provide training for their own employees.

9.0 EXCEPTIONS

Requests for deviations or temporary exceptions in complying with the present Standard shall be directed in writing to Safety and Industrial Hygiene Unit (RHSI).

10.0 TERM

This Standard shall remain in force until amended or revised.

11.0 REFERENCES

- 11.1 *Manual de Seguridad y Salud Ocupacional de la ACP*. Revision: January 2000.
- 11.2 Standard 2600SEG113 *Seguridad para el resguardo de máquinas y equipo*.