CS Part 19. Tools
Compared With
29 C.F.R. 1926 Subpart I – Tools – Hand and Power
1926.300 General requirements
1926.301 Hand tools
1926.302 Power-operated hand tools
1926.303 Abrasive wheels and tools
1926.304 Woodworking tools

Summary: The significant differences between CS Part 19. Tools and 29 C.F.R. 1926 Subpart I – Tools – Hand and Power are in:

- Employer and employees responsibilities
- Tools generally
- Portable powered tools, controls
- Electric-powered tools
- Portable pneumatic-powered tools
- Cleaning with compressed air
- Powered staplers and nailers
- Hand tools
- Powder-actuated tools
- Woodworking machinery
- Stationary circular saws; generally
- Circular table saw guards
- Radial arm saws; guards, spreaders, and stops
- Band saws
- Jointers; use and guards
- Stationary machine tools generally
- Fuel-powered tools
- Abrasive wheels generally
- Offhand grinders; safety devices
- Hand-held grinders; safety devices
- Hydraulic power tools
- Jacks generally
- Chain falls and hoist and pullers; capacity
- Chain falls and hoist and pullers; use
- Hot sticks
- Powered feed rolls
- Roll-form machines
- Powered benders
- Powered clamping device
- Slitter
- Controls
- Metalworking machinery or equipment; maintenance and lubrication
- Hydraulic and pneumatic systems
- Squaring shear

The comparisons show only those provisions where MIOSHA rules are different than OSHA or where MIOSHA rules are not included in 29 C.F.R.

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R 408.41931. Employer and employees; responsibilities. **Rule 1931**. (1) An employer shall do all of the following: (a) Ensure that an employee has been trained in the use of tools before authorizing their use. (b) Maintain, or require to be maintained, tools free of defects that could cause injury to an employee. (2) An employee shall do all of the following: (a) Use personal protective equipment as prescribed by Part 6. Personal Protective Equipment, being R 408.40601 et seq. of the Michigan Administrative Code. (b) Report defective tools to the employer. (c) Not use a tool for other than its designed or approved use.	**No comparable OSHA definitions**

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R 408.41932. Tools generally. **Rule 1932**. (1) Regardless of ownership, a tool or part of a tool with a defect that could cause an injury shall be replaced or repaired before use. (2) When a guard is provided on a tool, it shall not be made inoperative. It may be removed only for repair, service, or setup, and it shall be replaced before the tool is returned to use. (3) All means of power transmission and reciprocating and rotating parts of a tool, such as belts, gears, sprockets, shafts, pulleys, and chains, shall be guarded if exposed to contact. General industry safety standard, Part 7. Guards for Power Transmission, being R 408.10701 et seq. of the Michigan Administrative Code, may be used as a source of reference for guarding requirements. This standard may be purchased from the Safety Standards Division, Michigan Department of Consumer and Industry Services, Box 30643, 7150 Harris Drive, Lansing, Michigan 48909. (4) Hand tools or portable powered tools shall not be left on a scaffold, ladder, or work platform after the completion of the work operation or day. Before the scaffold, ladder, or work platform is moved, all tools shall be removed or properly secured against displacement. (5) Racks, bins, or tool chests shall be provided for the storage of tools, and any sharp or pointed edges shall be arranged so as not to create a hazard. (6) A tool shall be visually inspected by the user for safe operation before each daily use and, when found defective, shall be removed from service and tagged. The tag shall be in compliance with the provisions of rule 2241 of the construction safety standards commission standard, Part 22. Signals, Signs, Tags, and Barricades, being R 408.42241 of the Michigan Administrative Code. (7) A tool that is used in a potentially explosive atmosphere shall be designed and approved for such atmosphere. (8) A safety device or operating control shall not be made inoperative, except for the removal of lock-on control devices.	**1926.300 General requirements** **(a)Condition of tools.** All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition. **1926.300(b) Guarding.** **1926.300(b)(1)** When power operated tools are designed to accommodate guards, they shall be equipped with such guards when in use. **1926.300(b)(2)** Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating or moving parts of equipment shall be guarded if such parts are exposed to contact by employees or otherwise create a hazard. Guarding shall meet the requirements as set forth in American National Standards Institute, B15.1-1953 (R1958), Safety Code for Mechanical Power-Transmission Apparatus. **1926.300(b)(3)** "Types of guarding." One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks. Examples of guarding methods are - barrier guards, two-hand tripping devices, electronic safety devices, etc.
R 408.41933. Portable powered tools, controls. **Rule 1933**. (1) A hand-held powered circular saw which has a blade diameter of more than 2 inches; an electric, hydraulic, or pneumatic chain saw; and a percussion tool without positive accessory holding means shall be equipped with a constant-pressure switch or control that shuts off the power when the pressure is released. A gasoline-powered, hand-operated tool shall be equipped with a constant pressure throttle control. A throttle position lock may be provided for starting only. (2) All of the following tools shall be equipped with a constant pressure switch or control and may have a lock-on control if the tool can be turned off by a single motion of the same finger or fingers that turn it on without release of the grip on the tool: (a) A hand-held powered drill. (b) Tapper. (c) Fastener driver.	**1926.300(d)Switches.** **(3)** All other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means, shall be equipped with a constant pressure switch that will shut off the power when the pressure is released. **1926.300(d)Switches.** **(2)** All hand-held powered drills, pattpers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools shall be equipped with a momentary contact “on-off” control and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same

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(d) Grinder with a wheel more than 2 inches in diameter. (e) Disc sander with a disc more than 2 inches in diameter. (f) Belt sander. (g) Reciprocating saw. (h) Saber saw. (i) Scroll saw. (j) Jigsaw with a blade shank more than a nominal 1/4 inch. (k) Similarly operating power tool. The lock-on control of a drill of more than 3/8-inch capacity shall not be used when the drill is held in the hand to drill, clean, or enlarge a hole. (3)**** (4) The operating control on a hand-held power tool shall be located so as to prevent accidental operation.	finger or fingers that turn it on.
R 408.41934. Electric-powered tools. **Rule 1934.** (1) An electric-powered tool, such as a saw, drill motor, and router, shall be grounded. This requirement does not pertain to ungrounded electrical systems. Ground fault circuit interrupters shall be used with ungrounded electrical systems. (2) Subrule (1) of this rule does not apply to a double insulated electric power tool labeled with underwriters laboratory or other nationally recognized testing laboratory approval for double-insulated tools. (3)**** (4) A cracked, bent, or damaged saw blade shall not be used. (5) The size and shape of the bore of the saw blade shall provide the proper fit of arbors or proper adapters. (6) An electric-powered tool shall not be left running unattended. (7) An extension cord to an electric-powered tool shall be located so as to minimize tripping hazards. (8)**** (9) A powered tool shall be disconnected from its power source when it is serviced or when the point of operation device is changed by a device or tool. (10) When not grounded or double-insulated, an electrically powered hand tool used for the installation of power transmission and distribution systems shall be connected to the power supply by means of an isolating transformer or other isolated power supply.	**No comparable OSHA provisions except:** **1926.302(a) Electric power-operated tools.** **1926.302(a)(1)** Electric power operated tools shall either be of the approved double-insulated type or grounded in accordance with Subpart K of this part. **1926.300(b)(4) Point of operation guarding.** **(i**) Point of operation is the area on a machine where work is actually performed upon the material being processed. **(ii)** The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards therefore, or in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle. **(iii)** Special handtools for placing and removing material shall be such as to permit easy handling of material without the operator placing a hand in the danger zone. Such tools shall not be in lieu of other guarding required by this section, but can only be used to supplement protection provided. **(iv)** The following are some of the machines which usually require point of operation guarding: (a) Guillotine cutters. (b) Shears. (c) Alligator shears. (d) Power presses. (e) Milling machines. (f) Power saws. (g) Jointers. (h) Portable power tools. (i) Forming rolls and calenders. **1926.300(b)Exposure of blades.** **(5)** When the periphery of the blades of a fan is less than 7 feet (2.128 m) above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than ½ inch (1.27 cm).

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R 408.41935. Portable pneumatic-powered tools. **Rule 1935**. (1) Pneumatic tools shall be kept in good operating condition and be thoroughly inspected before use. Particular attention shall be given to the control and exhaust valves, hose connections, and die and tool holders. (2) A portable pneumatic grinder or drill shall be equipped with a means to maintain the speed of the grinder or drill at not more than the tool's rated speed. (3)**** (4) Pressure shall be shut off by means of a valve and exhausted from lines before disconnecting the lines from tools or connections, except when using a quick makeup coupling. (5)**** (6) The rated pressure capacity of hoses, pipes, filters, valves, and fittings shall be not less than the rated pressure capacity of the tool. The pneumatic tool and its accessories shall not be operated at a pressure that is more than the rated capacity. (7) Hoses shall not be laid over ladders, stairways, scaffolds, ramps, or runways in a manner that creates a tripping hazard. (8) Defective hoses or connections shall be removed from service. (9)**** (11) An airless spray gun that atomizes paint and fluids at a pressure of more than 1,000 pounds per square inch shall be equipped with an automatic or visible manual safety device that prevents the pulling of the trigger to release the paint or fluid until the safety device is manually released. (12) A line used to supply air to a pneumatic grinder shall be equipped with a moisture accumulator and oiler. (13) A pneumatic hose used on or around electrically energized lines or equipment shall be located so that it does not become part of the electrical circuit.	**No comparable OSHA provisions except:** **1926.302(b) Pneumatic power tools.** **(5)** The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.
R 408.41936. Cleaning with compressed air. **Rule 1936.** (1) Compressed air shall not be used for blowing dirt or dust from the hand, face, or clothing. (2) Air pressure at the discharge end of a portable air gun or hose used for cleaning shall not exceed 30 pounds per square inch gauge (p.s.i.g.), except the pressure may exceed 30 p.s.i.g., when sandblasting, cleaning concrete forms, or for joint cleaning. When air pressure exceeding 30 p.s.i.g. is used for concrete forms or joint cleaning, a pipe extension of not less than 4 feet shall be used at the end of the hose. (3) When air under pressure is used to remove chips or dust, a chip guard, such as a fixed or removable shield, safely located, shall be provided to protect the operator and any employee in an adjoining area.	**No comparable OSHA provision except:** **1926.302(b)(4)** Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment which meets the requirements of Subpart E of this part. The 30 p.s.i. requirement does not apply for concrete form, mill scale and similar cleaning purposes.
R 408.41937. Powered staplers and nailers. **Rule 1937**. (1) A portable powered stapler or nailer that is capable of driving a fastener which has a diameter of more than .0475 inch, 18 gauge A.W.G., at more than 75 feet per second shall be designed so that the operator is	**No comparable OSHA provision**

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required to make not less than 2 separate operations to activate the tool, with 1 operation being to place the tool against the work surface. (2) The design shall prevent the discharge of the stapler or nailer when loaded or when dropped. (3) A portable powered stapler or nailer shall not be pointed or discharged at other than the workpiece. (4) The operator of the portable powered stapler or nailer and those employees within the striking distance of its fastener shall wear eye protection provided for and as prescribed in rules 617, 623, and 624 of Part 6. Personal Protective Equipment, being R 408.40617, R 408.40623, and R 408.40624 of the Michigan Administrative Code. (5) A positive actuation of the operator control shall be required to propel each fastener from a powered stapler or nailer. (6) When relieving a jam-up of a fastening device, the source of power shall be disconnected. (7) Before use, a portable powered stapler and nailer shall be tested for safe operation.	
R 408.41941. Powder-actuated tool operator's qualifications. **Rule 1941**. An operator of a powder-actuated tool shall be trained to clean the tool correctly and to recognize any worn or defective part or defective operation. The operator shall be able to use the powder-actuated tool safely under varying conditions, know the limitations of its use, and demonstrate competence by actually operating the tool in the presence of the persons who issue the operator's card. The operator shall be familiar with the provisions of these rules and the instructions provided by the manufacturer for operation and care of the powder-actuated tool to be operated, and be able to read the instructions.	**1926.302(e) Powder-actuated tools.** **1926.302(e)(1)** Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool.
R 408.41942. Powder-actuated tool operators' cards. **Rule 1942**. (1) An operator of a powder-actuated tool shall have an operators' card that should be in the operator's possession at all times while using the tool and be presented upon request or an employer may establish and maintain at the jobsite a list of employees qualified to operate a powder-actuated tool. (2) Failure to comply with any of these rules is sufficient cause for the immediate surrender of an operator's card to the employer. (3) The purpose of the card is to certify that the operator has completed the required training to become a qualified operator. (4) The card should be of a size, approximately 2 1/2 by 3 1/2 inches, that readily fits into a wallet. (5) The face of the card should include the following test and bear the signature of the issuer of the card, authorized as provided in subrule (8) of this rule:	**No comparable OSHA provision**

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QUALIFIED OPERATOR POWDER-ACTUATED FASTENING TOOLS Date Serial Number_____ This certifies that (name of operator) has received the prescribed training in the operation of powder-actuated fastening tools manufactured by (name of manufacturer) Model(s) _____ (Authorized Issuer)_____ (Signature of Operator)_____ (6) A statement should be provided on the card as follows: "I have received instruction in the safe operation of powder-actuated fastening tools of the makes and models specified, and I agree to conform to the rules governing their use." (7) A note should be printed on the card as follows: "Revocation of Card — Failure to comply with any rule for safe operation of powder-actuated fastening tools is sufficient cause for the immediate surrender of the card to the employer." (8) The manufacturer of a powder-actuated tool should establish an appropriate program to instruct its employees, dealers, and distributors in the proper technical training and testing of operators and the issuance of operator's cards. Operators' cards may be issued by either of the following: (a) A dealer or distributor of powder-actuated tools, who has been authorized by the tool manufacturer to issue such cards. (b) An authorized employee of a powder-actuated tool manufacturer.	
R 408.41943. Powder-actuated tool operation. **Rule 1943**. (1) An operator and assistant using a powder actuated tool shall be safeguarded by means of eye protection. Head and face protection shall be used, as required by the working conditions. Eye protection and head and face protection shall be provided for and as prescribed in Part 6. Personal Protective Equipment, being R 408.40617, R 408.40623, and R 408.40624 of the Michigan Administrative Code. (2) Before using a powder-actuated tool, the operator shall inspect it to determine to the operator's satisfaction that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions. A tool found not to be in proper working order, or that develops a defect during use, shall be immediately removed from service and tagged, and not used until repaired. The tag shall be as prescribed in rule 2241 of the construction safety standards commission standard, Part 22. Signals, Signs, Tags, and Barricades, being R 408.42241 of the Michigan Administrative Code. (3)**** (6) A fastener shall not be driven: (a) Through an existing hole, unless a positive guide is used to secure accurate alignment.	**No comparable OSHA provision except:** **1926.302 (e) Powder-activated tools.** **(4)** Personal protective equipment shall be in accordance with subpart E of this part.

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(b)**** (d) Directly into material, such as brick or concrete, closer than 3 inches from the unsupported edge or corner, or into a steel surface closer than 1/2 inch from the unsupported edge or corner, unless a special guard, fixture, or jig is used. As an exception, a low velocity powder-actuated tool may drive no closer than 2 inches from the edge in concrete or 1/4 inch in steel. When fastening other material such as a 2 inch by 4 inch wood section to a concrete surface, a fastener of no greater than 7/32 inch shank diameter may be driven not closer than 2 inches from the unsupported edge or corner of the work surface	
R 408.41944. Powder-actuated tool testing and servicing. **Rule 1944**. (1)**** (3) A powder-actuated tool owner shall have the tool serviced and inspected at regular intervals by competent service personnel and shall not permit the tool to be altered or repaired, except by competent repair people.	**1926.302 (e) Powder-activated tools.** **(3)** Any tool found not in proper working order, or that develops a defect during use, shall be immediately removed from service and not used until properly repaired.
R 408.41945. Powder-actuated tools; design and construction; adoption of standard. **Rule 1945**. A powder-actuated tool shall be designed and constructed as prescribed in section 6 of the ANSI standard, A10.3-1985, powder-actuated fastening systems, which is adopted in these rules by reference and may be inspected at the Lansing office of the department of consumer and industry services. The standard may be purchased at a cost as of the time of adoption of these rules of $24.00 from the American National Standards Institute, 11 West 42nd Street, New York, New York, 10036, or from the Michigan Department of Consumer and Industry Services, Safety Standards Division, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909.	**No comparable OSHA provision** **See 1926.302 (e) Powder-actuated tools** **(3)** Any tool found not in proper working order, or that develops a defect during use, shall be immediately removed from service and not used until properly repaired. **1926.302 (e) Powder-actuated tools** **(12)** Powder-actuated tools used by employees shall meet all other applicable requirements of American National Standards Institute, A10.3-1970, Safety Requirements for Explosive-Actuated Fastening Tools.
R 408.41949. Powder-actuated tool loads and studs. **Rule 1949**. (1) Power loads shall be coded and used as prescribed in section 7 and table 1 of the ANSI standard A10.3-1985, a powder-actuated fastening system, which is adopted in these rules by reference in R 408.41945. (2) Studs or other fasteners used in powder-actuated tools shall be only those specifically manufactured for use in powder-actuated tools.	**No comparable OSHA provision.** **See 1926.302 (e) Powder-actuated tools.**
R 408.41950. Powder-actuated tool defects and misfires. **Rule 1950**. In case of a misfire, the operator shall hold the powder-actuated tool in the operating position for not less than 30 seconds. The operator shall then try to operate the tool a second time. The operator shall wait another 30 seconds, holding the tool in the operating position, then the operator shall proceed to remove the explosive load in strict accordance with the manufacturer's instructions. Misfired cartridges should be placed carefully in a metal container filled with water and returned to the supervisor for disposal.	**No comparable OSHA provision.** **See 1926.302 (e) Powder-actuated tools**

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R 408.41951. Woodworking machinery generally. **Rule 1951**. (1) A woodworking machine shall have a disconnect switch that can be locked in the off position. The rule does not apply to hand-held tools. An employer shall establish and maintain a lockout procedure. A machine connected to an electrical source by a plug-in cord shall be considered in compliance if the plug is disconnected and tagged. (2) The vibration of a machine shall not create a hazard to the operator. (3) An arbor and mandrel shall have a firm and secure bearing. (4) The frames and all exposed metal parts of electric woodworking machinery shall be grounded. A portable motor driving an electric tool shall be grounded unless it has approved double insulation. (5) A woodworking machine shall not automatically restart upon restoration of power after a power failure. A machine wired to a 110 volt line before the effective date of this part is excepted from this rule. (6) Operating controls shall be located within reach of the operator while the operator is at the regular work station, making it unnecessary to reach over the cutters. The controls shall be installed so as to eliminate the danger of accidental activation. This subrule does not apply to a constant pressure control used only for setup purposes. (7) All woodworking machines shall be provided with point of operation guards.	**No comparable OSHA provisions except:** **1926.304 Woodworking tools** **(a) Disconnect switches**. All fixed power driven woodworking tools shall be provided with a disconnect switch that can either be locked or tagged in the off position. **1926.304(b) Speeds.** The operating speed shall be etched or otherwise permanently marked on all circular saws over 20 inches in diameter or operating at over 10,000 peripheral feet per minute. Any saw so marked shall not be operated at a speed other than that marked on the blade. When a marked saw is retensioned for a different speed, the marking shall be corrected to show the new speed. **1926.304(c) Self-feed.** Automatic feeding devices shall be installed on machines whenever the nature of the work will permit. Feeder attachments shall have the feed rolls or other moving parts covered or guarded so as to protect the operator from hazardous points. **1926.304(d) Guarding**. All portable, power-driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position. **1926.304(e) Personal protective equipment**. All personal protective equipment provided for use shall conform to Subpart E of this part. **1926.304(f) Other requirements**. All woodworking tools and machinery shall meet other applicable requirements of American National Standards Institute, 01.1-1961, Safety Code for Woodworking Machinery.
R 408.41952. Stationary circular saws; generally. **Rule 1952**. (1) An automatic cut-off saw that strokes continuously without the operator being able to control each stroke shall not be used. (2) Lugs shall be cast on saw frame or tables or another means shall be provided to limit the saw blade size that can be mounted so as to avoid overspeed caused by mounting a saw larger than intended. (3) The operating speed as designated by the manufacturer shall be etched or otherwise permanently marked on a circular saw blade more than 20 inches in diameter. A saw blade shall not be operated at a higher speed than shown on the blade. When a marked saw blade is retensioned for a different speed, the marking shall be corrected to show the new speed. (4) A hand-fed circular ripsaw shall have a spreader to prevent material from squeezing the saw or being thrown back at the operator. The spreader shall be made of steel, or	**1926.304(d) Guarding**. All portable, power-driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position. **(f) Other requirements.** All woodworking tools and machinery shall meet other applicable requirements of American National Standards Institute, 01.1-1961, Safety Code for Woodworking Machinery.

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its equivalent, and shall be thinner than the saw kerf and slightly thicker than the saw disk. It shall be at least 1 inch wide at the table to provide adequate stiffness or rigidity to resist any reasonable side thrust or blow tending to bend or throw it out of position. The spreader shall be attached so it will remain in true alignment with the saw, even when either the saw or table is tilted. It should be placed so there is not more than a 1/2 inch space between the spreader and the back of the saw when the largest saw is mounted in the machine. A spreader need not be used in connection with grooving, dadoing, or rabbeting. On the completion of such operations, the spreader shall be replaced immediately. (5) A hand-fed circular ripsaw shall have nonkickback fingers or dogs located to oppose the thrust or tendency of the saw to pick up the material or to throw it back at the operator. They shall be designed to provide holding power for all the thicknesses of material being cut. (6) The practice of inserting wedges between the saw disk and the collar to form what is commonly known as a wobble saw is prohibited. (7) Combs, featherboards, or suitable jigs shall be provided at the work place for use when a guard cannot be used, as in dadoing, grooving, jointing, moulding, and rabbeting. (8) A cracked, bent, or damaged saw blade shall not be used. (9)The bore of a saw blade shall be of proper size and shape to properly fit arbors or proper adapters.	
R 408.41953. Circular table saw guards. **Rule 1953**. (1) A circular table saw shall have a hoodtype guard covering the blade at all times when not in use. When in use, the hood type guard shall enclose that part of the blade above the table and that part of the blade above the material by adjusting automatically to the thickness of the material being cut, or it may be a fixed or manually adjusted hood-type guard if the hood remains in contact with the material. (2) A hood-type guard shall be made of 14-gauge metal or thicker. Plastic may be used if it can resist blows and strains incidental to reasonable operation, adjusting, and handling, and is designed to protect the operator from flying splinters and broken saw teeth. The guard shall be made of material soft enough so that it will be unlikely to cause tooth breakage. (3) The hood shall be mounted so that its operation is positive, reliable, and in true alignment with the saw. The mounting shall be of sufficient strength to resist any reasonable side thrust or other force tending to throw it out of line. (4) Where a hood-type guard cannot be used because of unusual shapes or cuts, a jig or fixture providing equal safety to the operator shall be used. On the completion of these operations, the guard shall be replaced immediately. (5) A push stick shall be used in cutting short or narrow stock.	**No comparable OSHA provisions except:** **1926.304(d) Guarding**. All portable, power-driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.

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R 408.41954. Radial arm saws; guards, spreaders, and stops. **Rule 1954**. (1) The upper hood of a radial arm saw shall completely enclose the upper portion of the blade down to a point that includes the end of the saw arbor. The upper hood shall be constructed in a manner and of not less than 14-gauge sheet metal or equivalent material that protects the operator from flying splinters and broken saw teeth and deflects sawdust away from the operator. The sides of the lower exposed portion of the blade shall be guarded to the full diameter of the blade by a device that automatically adjusts itself to the thickness of the stock and remains in contact with the stock being cut to give the maximum protection possible for the operation being performed. (2) Non-kickback fingers or dogs shall be located on both sides of each radial arm saw blade used for ripping to oppose the thrust or tendency of the saw to pick up the material or to throw it back toward the operator. They shall be designed to provide adequate holding power for all thicknesses of material being cut. When a radial arm saw is used for ripping, a spreader should be provided that complies with rule 1952(4). (3) An adjustable stop shall be provided to prevent the forward travel of the blade beyond the position necessary to complete the cut in repetitive operations. A limit chain or other equally effective device shall be provided to prevent the saw blade from sliding beyond the edge of table or the table at that place shall be extended to eliminate overrun. (4) The cutting head of a radial arm saw shall return gently, without rebound, to the starting position when released by 1 of the following means: (a) Sloping the unit. (b) A counterweight system. This system shall not use fiber and synthetic rope or springs. (5) Ripping and ploughing shall be against the direction in which the saw turns. The direction of the saw rotation shall be conspicuously marked on the hood. In addition, a permanent label colored standard danger red, not less than 1 1/2 inches by 3/4 inch, shall be affixed to the rear of the guard at approximately the level of the arbor, reading as follows: DANGER: Do Not Rip or Plough From This End.”	**No comparable OSHA provisions except:** **1926.304(g) "Radial saws."** **1926.304(g)(1)** The upper hood shall completely enclose the upper portion of the blade down to a point that will include the end of the saw arbor. The upper hood shall be constructed in such a manner and of such material that it will protect the operator from flying splinters, broken saw teeth, etc., and will defect sawdust away from the operator. The sides of the lower exposed portion of the blade shall be guarded to the full diameter of the blade by a device that will automatically adjust itself to the thickness of the stock and remain in contact with stock being cut to give maximum protection possible for the operation being performed.
R 408.41955. Band saws. **Rule 1955.** (1) All portions of the band saw blade shall be enclosed or guarded, except for the working portion of the blade between the bottom of the guide and the table. (2) A band saw wheel shall be fully encased. The outside periphery of the enclosure shall be solid. The front and back of the band wheels shall be enclosed by solid material, wire mesh, or perforated metal. Mesh or perforated metal shall be not less than .0037 inch (United States gauge no. 20) the openings shall be not more than 3/8 of an inch. Solid material used for this purpose shall be of an equivalent strength and firmness. The upper wheel guard shall be made to conform to the travel of the saw on the wheel. The top member of the guard should have not less than a 2 inch clearance outside the saw and be lined with smooth material.	**No comparable OSHA provisions**

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(3) A guard for the portion of the blade between the sliding guide and the upper saw wheel guard shall protect the saw blade at the front and outer side. The guard shall be self-adjusting to raise and lower with the guide. The sliding blade guide shall be kept to within 1/4 inch of the workpiece. (4) A band saw shall not be stopped by thrusting a piece of wood against the cutting edge of the teeth when the power is off. (5) A horizontal band saw shall have all portions of the saw blade enclosed, except for the working portion of the blade.	
R 408.41956. Jointers; use and guards. **Rule 1956**. (1) Each hand-fed planer and jointer with a horizontal or vertical head shall have a cylindrical cutting head, the knife projection of which shall not extend more than 1/8 inch beyond the cylindrical body of the head. Square cutting heads shall not be used on jointers and planers. (2) The opening in the jointer table shall be kept as small as possible. The clearance between the edge of the rear table and the cutter head shall be not more than 1/8 inch. The table throat opening shall be not more than 2 1/2 inches when tables are set or aligned for zero cut. (3) A proper push block shall be used when jointing short or narrow stock. (4) A hand-fed jointer with a horizontal or vertical cutting head shall have an automatic guard covering all of sections of the cutting head on the working side of the fence or guard. The guard shall effectively keep the operator's hand from coming in contact with the revolving knives. The guard shall adjust itself automatically so as to cover the unused portion of the cutting head and shall remain in contact with the material at all times. (5) A hand-fed jointer with a horizontal cutting head shall have a guard covering the section of the head back of the gauge or fence. (6) Vertical head jointers shall have an exhaust hood covering the section of the head back of the gauge or fence. (7) The minimum length of the piece jointed shall be not less than 4 times the distance between the 2 tables. Neither half of the jointer table should be adjusted horizontally so that the clearance between the edge of the table and revolving knives is more than 1/4 inch.	**No comparable OSHA provisions**
R 408.41957. Stationary machine tools generally. **Rule 1957**. (1) Machine tools, such as band saws, drill presses, and pipe-cutting and pipe-threading machines, which are set up on a construction project in a temporary stationary position shall have a stop device which is within reach of the operator's designated position and shall have power on/off switch. The switch shall be located and guarded so as to prevent unintentional activation by contact with objects or part of the body. (2) A foot control shall be provided with a cover or guard that is capable of preventing accidental activation. (3) Frames of electrically driven or supplied machines shall be grounded.	**No comparable OSHA provisions**

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(4) Band saws and other machinery requiring warm-up for safe operation shall be permitted to warm up before being put into operation when temperatures are below 45 degrees Fahrenheit. (5) The use of cracked, bent, or otherwise defective parts, such as saw blades, cutters, and knives, is prohibited. (6) Bases or frames of temporary stationary machinery shall be secured by fasteners made of slip-resistant materials to prevent movement or upset.	
R 408.41959. Fuel-powered tools. **Rule 1959**. (1)**** (2) When using a fuel-fired powered tool in an enclosed area, the toxic fumes shall be exhausted as prescribed by the rules of the Department of Consumer and Industry Services, being O.H. rules 2101(2) and 3101. These rules are available from the Michigan Department of Consumer and Industry Services, 3500 N. Logan, Box 30643, Lansing, Michigan 48909. (3) A fuel-fired tool's moving parts, such as a flywheel, rotating screen, or clutch, shall be guarded. (4) A fuel-fired portable tool shall be moved a minimum of 10 feet from the place where it was refueled before starting. (5) An engine throttle control provided on a fuel-powered tool shall be located so that it can be operated only while the operator maintains a secure grip on the tool. (6) A fuel-fired tool shall have a guard that protects the throttle lever from inadvertent contact. (7) A centrifugal clutch, if provided on a fuel-fired tool, shall have a throttle control, carburetor, and clutch system so that if the throttle control is released, the engine idle speed shall become lower than the clutch disengagement speed, allowing the driven components to come to a complete stop. (8) A chain saw's chain shall be stopped if it is not being used for sawing. A chain saw shall be carried by the top handle with the guide bar to the rear. (9) The use of a chain saw to open a hole in a solid object, such as a floor, wall, or panel, is prohibited. (10) A manual chain oiler control, if provided on a chain saw, shall be located so that it can be operated without the operator relinquishing a secure grip on the saw. (11) A chain saw's chain shall be guarded adjacent to the handle area. Sawdust from a chain saw shall be directed away from the operator.	**No comparable OSHA provisions except:** **1926.302 (c) Fuel powered tools.** **(2)** When fuel powered tools are used in enclosed spaces, the applicable requirements for concentrations of toxic gases and use of personal protective equipment, as outlined in subparts D and E of this part, shall apply.
R 408.41960. Abrasive wheels generally. **Rule 1960**. (1) Except for the following operations or tools, an abrasive wheel shall be provided with a guard which shall cover the spindle end, nut, and flange projections as well as the periphery: (a) Internal grinding while within the work being ground. (b) Mounted wheels that are not more than 2 inches in diameter. (c) A cup wheel operated at less than 500 revolutions per minute.	**No comparable OSHA provisions except:** **1926.303 Abrasive wheels and tools** **(a) Power.** All grinding machines shall be supplied with sufficient power to maintain the spindle speed at safe levels under all conditions of normal operation. **1926.303(b) Guarding.** **1926.303(b)(1)** Grinding machines shall be equipped with safety guards in

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(d) A tuck point grinder wheel. Such wheel shall be guarded as shown in figure 1. (e) Masonry or concrete saws. Such saws may have the spindle end nut and flange guarded as shown in figure 2 or 3. (2) An abrasive wheel shall not be run at a speed which is greater than the rated speed on the wheel. (3) A cracked or broken abrasive wheel shall not be used. (4) Eye protection shall be provided to, and used by, each employee operating an abrasive wheel. Eye protection shall comply with the provisions of construction safety standard, Part 6. Personal Protective Equipment, being R 408.40601 et seq. of the Michigan Administrative Code. (5) Figures (1), (2), and (3) read as follows: See Figures	conformance with the requirements of American National Standards Institute, B7.1-1970, Safety Code for the Use, Care and Protection of Abrasive Wheels, and paragraph (d) of this section. **1926.303(b)(2) "Guarding design."** The safety guard shall cover the spindle end, nut, and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard, except: **1926.303(b)(2)(i)** Safety guards on all operations where the work provides a suitable measure of protection to the operator, may be so constructed that the spindle end, nut, and outer flange are exposed; and where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted; and **1926.303(b)(2)(ii)** The spindle end, nut, and outer flange may be exposed on machines designed as portable saws.
408.41961. Offhand grinders; safety devices. **Rule 1961**. (1) Offhand grinders shall be equipped with either a work rest or a device that shall prevent the work-piece from jamming between the abrasive wheel and the wheel guard. (2) A work rest shall be adjusted and maintained to within 1/8 of an inch (0.3175 cm) of the abrasive wheel. (3) A work rest shall be designed and constructed of metal that is capable of supporting the work-piece. A work rest shall be of rigid construction and designed to be adjustable to compensate for wheel wear.	**No comparable OSHA provisions**
R 408.41962. Hand-held grinders; safety devices. **Rule 1962**. (1) A guard on a right angle head or vertical portable grinder shall have the guard located so as to be between the operator and the abrasive wheel during use. (2) A cup wheel on a portable grinder shall be protected by a band-type or revolving cup guard.	**No comparable OSHA provisions**
R 408.41964. Hydraulic power tools. **Rule 1964.** (1)**** (3) Hose or hydraulic power tools used around electrically energized lines or equipment shall be located so as not to become part of the electrical circuit.	**No comparable OSHA provisions**
R 408.41966. Jacks generally. **Rule 1966**. (1)**** (2) A hydraulic jack used for lift slab construction shall have a device that causes the jack to support the load in any position if the jack malfunctions. (3) A lift slab jack system that is automatically controlled shall have a device which stops the operation when a 1/2 inch leveling tolerance is exceeded. (4) A jack shall be provided a firm foundation. A wood block shall be placed between the load and the metal cap of	**1926.305 Jacks –lever and ratchet, screw, and hydraulic.** **(a) General requirements.** **(1)** The manufacturer's rated capacity shall be legibly marked on all jacks and shall not be exceeded. **(2)** All jacks shall have a positive stop to prevent overtravel. **(b) [Reserved]** **(c) Blocking.** When it is necessary to provide a firm foundation, the base

<table>
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<tr><td>a jack to prevent slippage.</td><td>of the jack shall be blocked or cribbed. Where there is a possibility of slippage of the metal cap of the jack, a wood block shall be placed between the cap and the load</td></tr>
<tr><td>R 408.41967. Chain falls and hoist and pullers; capacity.
Rule 1967. (1) A chain fall or hoist and puller shall be used at not more than its rated capacity.
(2) The capacity of a chain fall or hoist and puller shall be permanently labeled or marked on it.
(3) An accessory, such as a chain or cable, used to secure or support a chain fall or hoist and puller shall have a capacity of not less than the chain fall or hoist and puller.
(4) An object subject to a lift or pull by a chain fall shall have the capacity to absorb the lift or pull without creating a hazard to an employee in the area.</td><td>No comparable OSHA provisions</td></tr>
<tr><td>R 408.41968. Chain falls and hoist and pullers; use.
Rule 1968. (1) A chain fall or hoist and puller shall be secured to an anchorage and the load attached to the chain fall or hoist and puller in a manner which prevents inadvertent disengagement.
(2) When a chain fall or hoist and puller is under tension of a load, a positive action shall be required to release the tension.
(3) A hoist and puller lever handle shall not be operated with an extension handle, except as furnished by the manufacturer.
(4) A chain fall or hoist and puller shall be visually inspected for observable defects before each job use by the employee using the tool.</td><td>No comparable OSHA provision</td></tr>
<tr><td>R 408.41969. Hot sticks.
Rule 1969. (1) A hot stick and any tool attached to it shall be clean and inspected for damage before use.
(2) A hot stick which has been damaged shall not be used until replaced or repaired by a knowledgeable employee or an outside service and tested to meet the requirements of subrule (3).
(3) A hot stick shall not be used unless it has been certified and labeled by the manufacturer to meet the following standards:
(a) Fiberglass, 100,000 volts per foot of length for 5 minutes, or any equivalent test.
(b) Wood, 75,000 volts per foot of length for 3 minutes, or any equivalent test.
(4) A hot stick shall be stored in a manner to protect it from damage. A hot stick made of wood shall be protected from moisture.
(5) A hot stick shall not be used in excess of the rated capacity certified by the manufacturer.
(6) The minimum working distance and minimum clear hot stick distances prescribed in Table 1, when using liveline tools, shall not be violated.
(7) The minimum working distance for live-line barehand technique prescribed in Table 2 shall not be violated.</td><td>No comparable OSHA provision except:

1926.950(c)(2)(i)
The minimum working distance and minimum clear hot stick distances stated in Table V-1 shall not be violated. The minimum clear hot stick distance is that for the use of live-line tools held by linemen when performing live-line work.
1926.950(c)(2)(ii)
Conductor support tools, such as link sticks, strain carriers, and insulator cradles, may be used: Provided, That the clear insulation is at least as long as the insulator string or the minimum distance specified in Table V-1 for the operating voltage.

TABLE V-1 –
ALTERNATING CURRENT - MINIMUM DISTANCES
<table><tr><th>Voltage range (phase to phase) (kilovolt)</th><th>Minimum working and clear hot stick distance</th></tr><tr><td>2.1 to 15</td><td>2 ft. 0 in.</td></tr><tr><td>15.1 to 35</td><td>2 ft. 4 in.</td></tr><tr><td>35.1 to 46</td><td>2 ft. 6 in</td></tr><tr><td>46.1 to 72.5</td><td>3 ft. 0 in</td></tr><tr><td>72.6 to 121</td><td>3 ft. 4 in</td></tr></table></td></tr>
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<tr><td>138 to 145</td><td>3 ft. 6 in.</td></tr>
<tr><td>161 to 169</td><td>3 ft. 8 in.</td></tr>
<tr><td>230 to 242</td><td>5 ft. 0 in.</td></tr>
<tr><td>345 to 362</td><td>(1)7 ft. 0 in.</td></tr>
<tr><td>500 to 552</td><td>(1)11 ft. 0 in.</td></tr>
<tr><td>700 to 765</td><td>(1)15 ft. 0 in.</td></tr>
</table>
Footnote(1) NOTE: For 345-362 kv., 500-552 kv., and 700-765 kv., minimum clear hot stick distance may be reduced provided that such distances are not less than the shortest distance between the energized part and the grounded surface.
</td></tr>
<tr><td>
R 408.41970. Powered feed rolls.
Rule 1970. Powered feed rolls shall have either of the following:
(a) The in-running side of the feed rolls guarded by a barrier which is fixed or adjustable and which is designed so that the material can be fed without permitting the operator’s fingers to be caught between the feed rolls or feed rolls and guard.
(b) An emergency stop device which can be activated by the body to stop the feed rolls. When an emergency stop device has been actuated, the machine shall be restarted manually.
</td><td>
No comparable OSHA provisions except:

1926.304 (c) Self-feed.
Automatic feeding devices shall be installed on machines whenever the nature of the work will permit. Feeder attachments shall have the feed rolls or other moving parts covered or guarded so as to protect the operator from hazardous points.
</td></tr>
<tr><td>
R 408.41971. Roll-form machines.
Rule 1971. (1) Ninety days after the effective date of these rules, an automatically fed roll-form machine shall have a shield that runs the entire length of the point of operation which will prevent horizontal access to the rolls or shall have a continuous stop cable that runs the length of the machine. The shield shall be secured to the machine.
(2) Manually fed roll forming machine shall be guarded as prescribed in 408.41970.
</td><td>
No comparable OSHA provision
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<tr><td>
R 408.41972. Powered benders.
Rule 1972. A powered bender shall have 1 of the following:
(a) A barrier or enclosure guard designed to protect the operator from the clamping point operation.
(b) Either a single-stroke, hand controlled actuation device which allows 1 hand to hold the workpiece and which is remote from the point of operation or a single-stroke, foot-controlled device which allows both hands to hold the workpiece and which is remote from the point of operation.
(c) A 2-hand, single-stroke control device.
</td><td>
No comparable OSHA provision
</td></tr>
<tr><td>
R 408.41974. Powered clamping device.
Rule 1974. An operator of a powered clamping device, except for a pivoted pillar buck used for holding a workpiece, unless remote from the point of operation, shall be protected by 1 of the following:
(a) Guarding or adjusting the device so that the opening between the clamp and workpiece insertion is not
</td><td>
No comparable OSHA provision
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</table>

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more than 1/4 of an inch. (b) Two-hand controls furnished to and used by each operator. (c) A single control for each operator if the operator is remote from the point of operation. (d) A means which would prevent the clamping device from closing while the employee is in the point of operation.	
R 408.41975. Slitter. **Rule 1975**. A slitter shall be in compliance with all of the following provisions: (a) The in-running side shall be guarded as specified in R 408.41970. (b) Have a device to cut scrap into short lengths or a rewinder to rewind the scrap for safe handling. (c) Have a method to secure the loose end to the coil before removing it from the rewinder.	**No comparable OSHA provision**
R 408.41976. Controls. **Rule 1976**. (1) When a presence-sensing device is used as a safety device, the control shall incorporate a fail safe feature. (2) Machine start controls shall be designed and installed or guarded to prevent unintentional activation by contact with objects or a part of the body. (3) A machine shall be provided with a stop device that is within the reach of the operator's designated position. (4) A foot control shall be provided with a cover or guard to prevent accidental activation.	**No comparable OSHA provision**
R 408.41977. Metalworking machinery or equipment; maintenance and lubrication. **Rule 1977**. (1) A power source of any metalworking machine or equipment to be repaired or serviced shall be locked out and, where required, residual pressure relieved by each employee doing such work if unexpected motion would cause injury, except where power is essential for testing and setup. (2) Any of the following methods shall be used to lubricate metalworking machinery or equipment: (a) Manual lubrication when the machine can be shut off and locked out. (b) The use of an automatic pressure or gravity feed system. (c) The use of an extension pipe leading to an area outside guards or away from any hazard. (d) The use of a means which would provide equal or greater protection to the employee than the methods specified in subdivisions (a), (b), or (c) of this subrule	**No comparable OSHA provision except:** **1926.307 (f) (4) Opening for oiling.** When frequent oiling must be done, openings with hinged or sliding self-closing covers shall be provided. All points not readily accessible shall have oil feed tubes if lubricant is to be added while machinery is in motion..
R 408.41978. Hydraulic and pneumatic systems. **Rule 1978**. (1) A hydraulic or pneumatic system shall be designed and constructed to have a safety factor of not less than 4. (2) Hydraulic or pneumatic flexible lines shall be protected from chafing.	**No comparable OSHA provision**

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(3) To provide for the safety of employees working on or about equipment, when hydraulic, air, or steam lines are bled, equipment supported by these systems shall be physically blocked or otherwise secured by means other than components in the circuit.	
R 408.41979. Squaring shear. **Rule 1979**. (1) A mechanical or manual squaring shear shall be in compliance with 1 of the following provisions: (a) Have the blade and hold down clamp guarded by a fixed barrier set in accordance with figure 4. (b) Have automatic clamps set within 1/4 of an inch of the table or stock with the cutouts filled in so that the fingers of the operator cannot enter the pinch point. (c) Have a self-adjusting barrier with a limit of not more than 1/4 of an inch above the table or material. (2) Where small stock is being sheared, a pusher stick shall be provided and used. (3) An employee who tends the backside of a squaring shear shall be separated from the moving parts by a table, rack, or chute, such as the back gauge, shear blade, or workpiece on which the sheared stock shall fall before being handled, or else the point of operation shall be guarded as prescribed in subrule (1)(a) of this rule. The table rack or chute shall maintain the employee's position not less than 3 feet from the point of operation or a hazardous moving part. (4) An automatically fed squaring shear shall be guarded by a barrier that is located to prevent access to the point of operation. The guard may be swung aside for hand-feeding if the control is on inch setting. (5) Figure 4 reads as follows: See Figure 4	**No comparable OSHA provision**
R408.41980. Air receivers. **Rule 1980.** (1) All new air receivers installed after the effective date of these rules shall be constructed in accordance with the 1980 edition of American society of mechanical engineers boiler and pressure vessel code, section viii, which are adopted in these rules by reference and are available from the American Society of Mechanical Engineers, 22 Law Drive, Box 2350, Fairfield, New Jersey 07007-2350, or from the Safety Standards Division, Michigan Department of Consumer and Industry Services, Box 30643, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $460.00. (2) All safety valves used shall be constructed, installed, and maintained in accordance with the 1980 edition of the American society of mechanical engineers boiler and pressure vessel code, section viii, which are adopted in these rules by reference and are available from the American Society of Mechanical Engineers, 22 Law Drive, Box 2350, Fairfield, New Jersey 07007-2350, or from the Safety Standard Division, Michigan Department of Consumer and Industry Services, Box 3064, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of $460.00.	**1926.306 Air receivers.** **(a) General requirements** **(1) Application.** This section applies to compressed air receivers, and other equipment used in providing and utilizing compressed air for performing operations such as cleaning, drilling hoisting, and chipping. On the other hand, however, this section does not deal with the special air to convey materials nor the problems created when men work in compressed air as in tunnels and caissons. This section is not intended to apply to compressed air machinery and equipment used on transportation vehicles such as steam railroad cars, electric railway cars, and automotive equipment. **(2) New and existing equipment.** **(i)** All new air receivers installed after the effective date of these regulations shall be constructed in accordance with the 1968 edition of the A.S.M.E. Boiler and Pressure Vessel Code Section VIII. **(ii)** All safety valves used shall be constructed, installed, and maintained in accordance with the A.S.M.E. Boiler and Pressure Vessel Code, Section VIII Edition 1968.

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PART 19. TOOLS **APPENDIX** Rule 1945 of this part adopts by reference the ANSI standard A10.3, Powder Actuated Fastener Systems. This standard provides the safety requirements for a powder actuated tool on machinery which propels a stud, pin, fastener, or other object for the purpose of affixing it by penetration to another object. This standard is available from the American National Standards Institute, 1430 Broadway, New York, New York 10018.	**No comparable OSHA provision.**

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