

# CS Part 19 Tools Strike Bold Draft – Final Effective October 13, 2016

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

CONSTRUCTION SAFETY STANDARDS

Filed with the Secretary of State on October 6, 2016

These rules take effect immediately upon filing with the Secretary of State unless adopted under **section sections** 33, 44, or 45a(6) of 1969 PA 306.

Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 19 and 21 of 1974 PA ~~454~~ **154, MCL 408.1019 and 408.1021** and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)

R 408.41901, R 408.41902, R 408.41927, R 408.41932, R 408.41936, R 408.41937, R 408.41942, R 408.41943, R 408.41945, R 408.41949, R 408.41951, R 408.41952, R 408.41954, R 408.41959, R 408.41960, R 408.41969, and R 408.41980 of the Michigan Administrative Code are amended, as follows:

## PART 19. TOOLS

R 408.41901 Scope.

Rule 1901. This **standard part** pertains to the manufacture, care, and use of tools for construction operations.

R 408.41902 Adopted and referenced standards.

Rule 1902. (1) The following standards are adopted by reference in these rules and are available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or ~~via the internet at website: web site:~~ [www.global.ihs.com](http://www.global.ihs.com), ~~http://global.ihs.com~~ at a cost as of the time of adoption of these rules, as stated in this **rule: subrule.**

(a) American National Standards Institute (ANSI) 01.1 "Safety Code for Woodworking Machinery," 1961 edition. Cost: \$20.00.

(b) ANSI A10.3 "Powder-Actuated Fastening Systems," 1985 edition. Cost: \$20.00.

(c) American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII, "Unfired Pressure Vessels," 1980 edition. Cost: \$514.00.

(2) The standards adopted in **these rules subrule (1) of this rule** are also available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA **Regulatory Services Standards** Section, **530 West Allegan Street, 7450 Harris Drive**, P.O. Box 30643, Lansing, Michigan, 48909-8143.

(3) Copies of the standards adopted in **these rules subrule (1) of this rule** may be obtained from the publisher or may also be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA **Regulatory Services Standards** Section, **530 West Allegan Street, 7450 Harris Drive**, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in this rule, plus \$20.00 for shipping and handling.

(4) The following Michigan occupational safety and health (**MIOSHA**) standards are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA **Regulatory Services Standards** Section, **530 West Allegan Street, 7450 Harris Drive**, P.O. Box 30643, Lansing, **Michigan, MI**, 48909-8143 or via the internet at website: [www.michigan.gov/mioshastandards](http://www.michigan.gov/mioshastandards). For quantities greater than 5, the cost, at the time of adoption of these rules, is 4 cents per page.

(a) Construction Safety Standard Part 6 "Personal Protective Equipment," R 408.40601 to R 408.40641.

(b) Construction Safety Standard Part **17 "Electrical Installations," R 408.41701 to R 408.41734.** ~~-22 "Signals, Signs, Tags And Barricades," R 480.42201 to R 408.42242,~~

(c) **Construction Safety Standard Part 22 "Signals, Signs, Tags and Barricades," R 480.42201 to R 408.42242.** ~~Occupational Health Standard Part 621 "Health Hazard Control for Specific Equipment and Operations for Construction," R 325.62102 to R 325.62126.~~

(d) **Occupational Health Standard Part 621 "Health Hazard Control for Specific Equipment and Operations for Construction," R 325.62102 to R 325.62126.**

R 408.41927 Definitions; G to O.

Rule 1927. (1) "Grounded" means grounding as required by **Construction Safety Standard Part 17 "Electrical Installations," as referenced in R 408.41902.** ~~rule 1728 of Part 17. Electrical Installations, being R 408.41728 of the Michigan Administrative Code.~~

(2) "Guard" means an enclosure designed to restrain pieces of abrasive wheel and protect the employee in the event of wheel breakage.

(3) "Hammer-actuated piston tool" means a low-velocity, powder-actuated device that, when struck by a heavy hammer and supplemented by a power load, moves a captive piston to drive a fastener into a material.

(4) "Hand tool" means an instrument used or worked by hand.

(5) "Hand-held circular saw" means a hand-held machine ~~that which~~ has a circular blade and ~~that which~~ is used for crosscutting and ripping.

(6) "Hand-held powered tool" means a tool that is operated by hand, but powered by other means.

(7) "Jack" means a device for lifting and lowering a load or moving it horizontally by application of a pushing force.

(8) "Jointer" means a machine with a revolving cutter head set into an adjustable table over which the material is moved across the cutter head.

(9) "Lockout" means to secure by use of a lock.

(10) "Masonry cutting" means the cutting off, notching, or slotting of units of materials such as brick, tile, block, or refractory shapes where the workpiece is brought into the machine.

(11) "Minimum clear hot stick distance" means the distance from an energized conductor or equipment to the closest hand of the employee holding the hot stick.

(12) "Offhand grinding" means the grinding of any material ~~that which~~ is held in an employee's hand.

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, **the guard** ~~it~~ shall not be made inoperative. **The guard** ~~it~~ may be removed only for repair, service, or setup, and it shall be replaced before the tool is returned to use.

(3) 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.

(4) 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 **Construction Safety Standard Part 22 "Signals, Signs, Tags, and Barricades," as referenced in R 408.41902.** ~~construction safety standard, Part 22 "Signals, Signs, Tags, and Barricades," which is referenced in R 408.41902.~~

(5) A tool that is used in a potentially explosive atmosphere shall be designed and approved for such atmosphere.

(6) A safety device or operating control shall not be made inoperative, except for the removal of lock-on control devices.

R 408.41936 Cleaning with compressed air.

Rule 1936. (1) Compressed air shall not be used for blowing dirt or dust from the hands, 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.

(4) The employee using air under pressure shall use personal protective equipment provided for and as prescribed in **Construction Safety Standard Part 6 "Personal Protective Equipment," as referenced in R 408.41902,** ~~Part 6. Personal Protective Equipment, being R 408.40601 et seq. of the Michigan Administrative Code,~~ to protect against hazards created by the operation.

R 408.41937 Powered staplers and nailers.

Rule 1937. (1) A portable powered stapler or nailer that is capable of driving a fastener ~~that 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 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 loading 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 a 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 **Construction Safety Standard Part 6 "Personal Protective Equipment," as referenced in R 408.41902.** ~~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 408.41942 Powder-actuated tool operators' cards.

Rule 1942. (1) An operator of a powder-actuated tool shall have an operator's 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 text and bear the signature of the issuer of the card, authorized as provided in subrule (8) of this rule:

<b>QUALIFIED OPERATOR POWDER-ACTUATED FASTENING TOOLS</b>
<b>DATE:</b>
<b>SERIAL NUMBER:</b>
<b>NAME OF OPERATOR:</b>
<b>THIS CERTIFIES THAT THE ABOVE NAMED OPERATOR HAS RECEIVED THE PRESCRIBED TRAINING IN THE OPERATION OF POWDER-ACTUATED FASTENING TOOLS MANUFACTURED BY THE FOLLOWING:</b>
<b>NAME OF MANUFACTURER:</b>
<b>MODEL(S):</b>
<b>AUTHORIZED ISSUER:</b>
<b>SIGNATURE OF OPERATOR:</b>

**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** ~~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** ~~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 operators' 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** ~~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 Construction Safety Standard Part 6 "Personal Protective Equipment," ~~as which is~~ referenced in R 408.41902.

(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 Construction Safety Standard Part 22 "Signals, Signs, Tags, and Barricades," ~~as which is~~ referenced in R 408.41902.

(3) A powder-actuated tool shall not be loaded until just prior to the intended firing time. An unattended powder-actuated tool shall not be left loaded.

(4) A powder-actuated tool shall not be left unattended in a place where it is available to unauthorized persons.

(5) Neither a loaded nor an empty powder-actuated tool shall be pointed at any employee, and hands should be kept clear of the open barrel end.

(6) A fastener shall not be driven under any of the following conditions:

- (a) Through an existing hole, unless a positive guide is used to secure accurate alignment.
- (b) Into a material ~~that which~~ can be easily penetrated, unless the material is backed by a substance that will prevent the fastener from passing completely through and creating a flying missile hazard on the other side.
- (c) Into a very hard or brittle material, such as cast iron, glazed tile, surface hardened steel, glass block, live rock, face brick, or hollow tile, unless designed for such use. Before fastening any questionable material, the operator shall determine its suitability by using a fastening as a center punch. If the fastener point does not easily penetrate, is not blunted, and does not fracture the material, initial test fastenings shall then be made pursuant to the tool manufacturer's recommendations.

(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.

(7) A fastener shall not be driven into a spalled area caused by an unsatisfactory fastening.

(8) A powder-actuated tool shall be used with the correct guard, shield, or attachment recommended by the manufacturer.

R 408.41945. Powder-actuated tools; design and construction.

Rule 1945. A powder-actuated tool shall be designed and constructed as prescribed in section 6 of ~~the~~ ANSI **standard** ~~standard~~, A10.3 "Powder-Actuated Fastening Systems," 1985 edition, ~~as which is adopted by reference~~ in R 408.41902.

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 "Powder-Actuated Fastening Systems," 1985 edition, as which is adopted by reference in R 408.41902.

(2) Studs or other fasteners used in powder-actuated tools shall be only those specifically manufactured for use in powder-actuated tools.

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. This 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 and 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 **April 11, 1979**, 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.

R 408.41952. Woodworking tools and machinery.

Rule 1952. All woodworking tools and machinery shall meet all other applicable requirements of the ANSI standard 01.1 "Safety Code for Woodworking Machinery," 1961 edition, as which is adopted by reference in R 408.41902.

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 Nonkickback** 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. **Non-kickback fingers or dogs** 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 either of the following means:

(a) Sloping the unit.

(b) A counterweight system. This system shall not use fiber and synthetic rope or springs.

R 408.41959. Fuel-powered tools.

Rule 1959. (1) A fuel-powered tool shall be stopped before being refueled, serviced, or maintained.

(2) When using a fuel-fired powered tool in an enclosed area, the toxic fumes shall be exhausted as prescribed by Occupational Health Standard Part 621 "Health Hazard Control for Specific Equipment and Operations for Construction," as which is referenced in R 408.41902.

(3) A fuel-fired portable tool shall be moved a minimum of 10 feet from the place where it was refueled before starting.

(4) 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.

(5) The use of a chain saw to open a hole in a solid object, such as a floor, wall, or panel, is prohibited.

(6) 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.

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 **that covers** 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.

(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 **that 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," as referenced in R 408.41902.** ~~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:

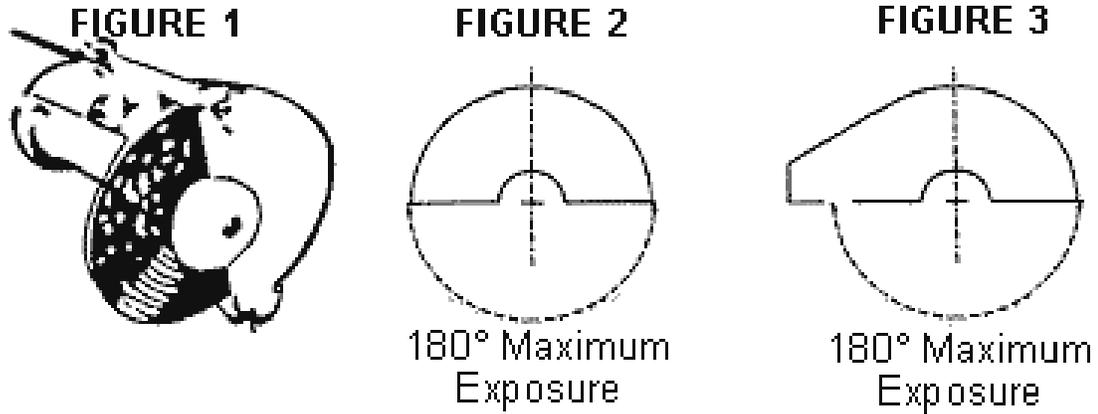
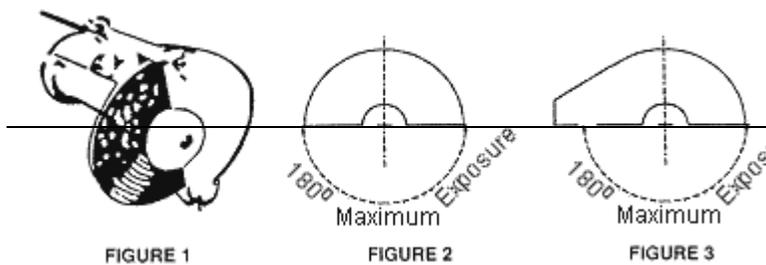


Table for R 408.41960



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 **that 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) **of this rule.**
- (3) A hot stick shall not be used unless it has been certified and labeled by the manufacturer to meet the following standards:
- Fiberglass, 100,000 volts per foot of length for 5 minutes, or any equivalent test.
  - 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 live-line tools, shall not be violated.
- (7) The minimum working distance for live-line bare-hand technique prescribed in table 2 shall not be violated.

<b>TABLE 1</b>	
<b>ALTERNATING CURRENT MINIMUM DISTANCES</b>	
<b>Voltage Range (phase-to-phase) Kilovolts</b>	<b>Minimum Working and Clear Hot Stick Distance</b>
2.1 to 15	2 ft. 0 in.
15.1 to 35	2 ft. 4 in.
35.1 to 46	2 ft. 6 in.
46.1 to 72.5	3 ft. 0 in.
72.6 to 121	3 ft. 4 in.
138 to 145	3 ft. 6 in.
161 to 169	3 ft. 8 in.
230 to 242	5 ft. 0 in.
345 to 362	<sup>1</sup> 7 ft. 0 in.
500 to 552	<sup>1</sup> 11 ft. 0 in.
700 to 765	<sup>1</sup> 15 ft. 0 in.

<sup>1</sup> NOTE: For 345-362 kv., 500-552 kv., and 700-765 kv., the minimum clearance distance and the minimum clear hot stick distance may be reduced provided that such distances are not made less than the shortest distance between the energized part and a grounded surface.

TABLE 2		
MINIMUM CLEARANCE DISTANCES FOR LIVE-LINE BARE-HAND WORK (ALTERNATING CURRENT) Distance in feet and inches for maximum voltage		
Voltage Range (phase-to-phase) Kilovolts	Phase to Ground	Phase to Phase
2.1 to 15	2 ft. 0 in.	2 ft. 0 in.
15.1 to 35	2 ft. 4 in.	2 ft. 4 in.
35.1 to 46	2 ft. 6 in.	2 ft. 6 in.
46.1 to 72.5	3 ft. 0 in.	3 ft. 0 in.
72.6 to 121	3 ft. 4 in.	4 ft. 6 in.
138 to 145	3 ft. 6 in.	5 ft. 0 in.
161 to 169	3 ft. 8 in.	5 ft. 6 in.
230 to 242	5 ft. 0 in.	8 ft. 4 in.
345 to 362	<sup>1</sup> 7 ft. 0 in.	<sup>1</sup> 13 ft. 4 in.
500 to 552	<sup>1</sup> 11 ft. 0 in.	<sup>1</sup> 20 ft. 0 in.
700 to 765	<sup>1</sup> 15 ft. 0 in.	<sup>1</sup> 31 ft. 0 in.

<sup>1</sup> NOTE: For 345-362 kv., 500-552 kv., and 700-765 kv., the minimum clearance distance may be reduced provided the distances are not made less than the shortest distance between the energized part and a grounded surface.

~~—Table 1  
—Alternating Current — Minimum Distances~~

~~Voltage range — Minimum working  
(phase to phase) — and clear hot  
kilovolt — stick distance~~

~~2.1 to 15 — 2 ft. 0 in.  
15.1 to 35 — 2 ft. 4 in.  
35.1 to 46 — 2 ft. 6 in.  
46.1 to 72.5 — 3 ft. 0 in.  
72.5 to 121 — 3 ft. 4 in.  
138 to 145 — 3 ft. 6 in.  
161 to 169 — 3 ft. 8 in.  
230 to 242 — 5 ft. 0 in.  
345 to 362 — \*7 ft. 0 in.  
500 to 552 — \*11 ft. 0 in.  
700 to 765 — \*15 ft. 0 in.~~

~~\* Note: For 345-362 kv., 500-552 kv., and 700-765 kv., the minimum working distance and the minimum clear hot stick distance may be reduced provided that such distances are not less than the shortest distance between the energized part and a grounded surface.~~

~~—Table 2  
—Minimum Clearance Distances for Live-Live  
—Bare-Hand Work (Alternating Current)~~

~~— Distance in feet and inches  
— for maximum voltage  
Voltage range — Phase to Phase  
to (phase to phase) — ground~~

~~phase kilovolts  
2.1 - 15 — 2'0" 2'0"  
15.1 - 35 — 2'4" 2'4"  
35.1 - 46 — 2'6" 2'6"  
46.1 - 72.5 — 3'0" 3'0"  
72.6 - 121 — 3'4" 4'6"  
138 - 145 — 3'6" 5'0"  
161 - 169 — 3'8" 5'6"  
230 - 242 — 5'0" 8'4"  
345 - 362 — \*7'0"  
\*13'4" 500 - 552 — \*11'0"  
\*20'0" 700 - 765 — \*15'0"  
\*31'0"~~

~~\* Note: For 345-362 kv., 500-552 kv., and 770-765 kv., the minimum clearance distance may be reduced provided the distances are not made less than the shortest distance between the energized part and a grounded surface.~~

R 408.41980. Air receivers.

Rule 1980. (1) All new air receivers installed after July 28, 1995, shall be constructed in accordance with the American Society Of Mechanical Engineers (ASME) "Boiler And Pressure Vessel Code," Section VIII, "Unfired Pressure Vessels," 1980 edition which is adopted by reference in R 408.41902.

(2) All safety valves used shall be constructed, installed, and maintained in accordance with the ASME "Boiler and Pressure Vessel Code,' Section VIII, "Unfired Pressure Vessels," 1980 **edition, as edition which is adopted by reference** in R 408.41902.

(3) Air receivers shall be installed so that all drains, handholes, and manholes are easily accessible. An air receiver shall not be buried underground or located in an inaccessible place.

(4) A drain pipe and valve shall be installed at the lowest point of every air receiver to provide for the removal of accumulated oil and water. Adequate automatic traps may be installed in addition to drain valves. The drain valve on the air receiver shall be opened and the receiver completely drained frequently to prevent the accumulation of excessive amounts of liquid in the receiver.

(5) Every air receiver shall be equipped with an indicating pressure gauge that is located so that it is readily visible and equipped with 1 or more spring-loaded safety valves. The total relieving capacity of the safety valves shall be adequate to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10%.

(6) A valve shall not be placed between the air receiver and its safety valve or valves.

(7) Safety appliances, such as safety valves, indicating devices, and controlling devices, shall be constructed, located, and installed so that they cannot be readily rendered inoperative by any means, including the elements.

(8) All safety valves shall be tested frequently at regular intervals to determine whether they are in good operating condition.