

**GI Part 42. Forging  
Compared With  
29 C.F.R. 1910.218 Forging Machines**

**Summary:** The significant differences between GI Part 42. Forging and 29 C.F.R. 1910.218 are in:

- Aisles
- Platforms
- Lighting and controls
- Use of lead
- Scale removers, oil swabs, and tongs
- Guards, general
- Guards, hammers, and forge presses
- Hammer installation
- Ram props and blocks
- Hammer die keys
- Hammer cylinder heads and fastener
- Steam and pneumatic hammers
- Mechanically operated hammers and forging presses
- Point of operation device
- Board drop hammers
- Forging presses
- Inspection
- Bulldozers
- Bolt-heading and rivet-making machines
- Power shears
- Material-handling equipment
- Tumbling barrels and shot blasts
- Upsetting machines
- Billet heating furnaces

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

\*\*\*\*means there is a comparable OSHA rule to this paragraph

| MIOSHA  | OSHA                                       |
|---|--|
| <p><b>R 408.14222 Aisles.</b><br/> <b>Rule 4222.</b> An aisle for vehicular traffic shall be not less than the width of the widest vehicle or load plus 3 feet. An aisle shall be outlined by marking.</p>  | <p><b>No comparable OSHA provision</b></p> |
| <p><b>R 408.14223 Platforms.</b><br/> <b>Rule 4223.</b> A platform used on the floor in front of a machine shall be designed to hold the weight imposed on it without creating a tripping hazard.</p>   | <p><b>No comparable OSHA provision</b></p> |
| <p><b>R 408.14224 Lighting and controls.</b><br/> <b>Rule 4224.</b> (1) Machinery and equipment shall be provided with a minimum of 15 footcandles light intensity to fall upon the general area. When natural light is insufficient, artificial light shall be provided. Direct or reflected glare and shadows, including moving shadows, should be avoided.<br/> (2) A manually operated valve or switch for power forging equipment shall be identified as to function and accessible to the operator.</p> | <p><b>No comparable OSHA provision</b></p> |

| MIOSHA  | OSHA  |
|---|---|
| <p><b>R 408.14226 Use of lead.</b><br/> <b>Rule 4226.</b> The following safety requirements apply to lead casts or other use of lead in a forge shop or die shop:<br/>           (a) to (c)****<br/> <br/>           (d) A sign shall be posted in the work area prohibiting eating in the area and calling attention to dangers of oral ingestion of lead dust from hands and clothing.</p>  | <p>Equivalent<br/> <br/> <b>No comparable OSHA provision</b></p>  |
| <p><b>R 408.14227 Scale removers, oil swabs, and tongs.</b><br/> <b>Rule 4227.(1)****</b><br/> <br/>           (2) ...The worker should be instructed in the proper body position when using tongs. Tongs should be checked periodically to see that they remain at the proper hardness level for the job. When rings or equivalent devices for locking tongs are used, they should be inspected periodically to ensure safe condition.</p>   | <p>Equivalent<br/> <br/> <b>No comparable OSHA provision</b></p>  |
| <p><b>R 408.14231 Guards, general.</b><br/> <b>Rule 4231.</b> (1) A press, hammer, upsetter, bolt header, riveting machine or bulldozer having a flywheel, shaft, clutch and gears not confined within the frame shall be arranged with guards as prescribed in the general industry safety standards commission standard, Part 7, Guards for Power Transmission.<br/>           (2) An overhead part which may fall or fly off shall be secured or by other means prevented from falling.</p>  | <p><b>No comparable OSHA provision</b></p>  |
| <p><b>R 408.14232 Personal protective equipment.</b><br/> <b>Rule 4232.</b> (1) Protective goggles or spectacles shall be provided to, and used by, all employees where a face and eye hazard exists. Protective goggles and spectacles shall comply with the requirements of general industry safety standard, Part 33. Personal Protective Equipment, being R 408.13301 et seq. of the Michigan Administrative Code.<br/>           (2) Head protection shall be provided to, and used by, all employees where a head hazard exists. Head protection shall comply with the requirements of general industry safety standard, Part 33. Personal Protective Equipment, being R 408.13301 et seq. of the Michigan Administrative Code.<br/>           (3) Foot or toe protection shall be provided to, and used by, all employees in accordance with general industry safety standard, Part 33. Personal Protective Equipment, being R 408.13301 et seq. of the Michigan Administrative Code, where a foot or toe hazard exists.<br/>           (4) Other types of personal protective equipment, such as aprons, spats, sleeves, and specialty gloves other than lightweight cotton or similar types of gloves, shall be provided to, and used by, employees when such personal protective equipment is required for the protection of the employee from hazards.</p> | <p><b>1910.218 Forging machines</b><br/> <b>1910.218(a) General requirements</b><br/> <b>1910.218(a)(iv)</b>Personal protective equipment (gloves, goggles, aprons, and other items) shall be worn.</p> |

| MIOSHA   | OSHA   |
|--|--|
| <b>HAMMER AND FORGE PRESSES</b>  |  |
| <p><b>R 408.14241 Guards, hammers, and forge presses.</b><br/> <b>Rule 4241.</b> (1) The portion of a treadle at the rear of a hammer shall be guarded so that scrap or other material cannot collect below this portion of the treadle and prevent it from returning to normal position.<br/> (2) A treadle shall be blocked or otherwise secured during the time an employee is exposed under the ram or between the dies.<br/> (3) A scale guard constructed of not less than 20 gauge sheet steel or equivalent material shall be provided at the back of a hammer, so arranged as to stop flying objects and anchored or secured so that it cannot tip or fall.<br/> (4) A foot operated device, such as a treadle, pedal, bar, valve, or switch, shall be substantially and effectively protected from unintended operation.</p>                 | <p><b>No comparable OSHA provision, except for:</b></p> <p><b>1910.218 Forging machines.</b><br/> <b>1910.218(a)(3) Hammers and presses.</b><br/> <b>1910.218(a)(3)(iv)</b> The ram shall be blocked when dies are being changed or other work is being done on the hammer. Blocks or wedges shall be made of material the strength and construction of which should meet or exceed the specifications and dimensions shown in Table O-11.</p> |
| <p><b>R 408.14243 Ram props and blocks.</b><br/> <b>Rule 4243.</b> A ram prop or block shall be provided and used at each hammer when dies are changed or repaired. The prop or block shall have a handle on the side. One of the following shall be used:<br/> (a) A wooden ram prop or block of hardwood and complying with not less than the specifications of table 1. The ends shall be square.<br/> (b) A steel ram prop of not less than 2 1/2-inch outside diameter by 2-inch inside diameter, or a structural shape of equal strength, with squared ends.<br/> (c) Other material which shall be of equal or greater strength as required for steel in subdivision (b).</p> <p style="text-align: center;"><b>See Table 1</b></p>   | <p><b>1910.218 Forging machines.</b><br/> <b>1910.218(a) General requirements</b><br/> <b>1910.218(a)(iv)</b> The ram shall be blocked when dies are being changed or other work is being done on the hammer. Blocks or wedges shall be made of material the strength and construction of which should meet or exceed the specifications and dimensions shown in Table O-11.</p>   |
| <p><b>R 408.14244 Hammer die keys.</b><br/> <b>Rule 4244.</b> (1).....A die key shall project not more than 3 inches in front or in back of the ram or die.<br/> (2) A head of a key shall be kept free of mushrooming and splitting by grinding off any flaring.<br/> (3) A head of a manual key driver shall be kept free of mushrooming by grinding or machining. A cutting torch shall never be used for this. A driver shall be suspended from a securely fastened beam with chain or cable of sufficient size to handle the weight of the driver plus a safety factor of 5. Chain, cable and fasteners shall be kept free of twisted, bent or elongated links. A driver shall be made of steel that will not chip on impact.<br/> (4) A pneumatic key driver is recommended. The driver shall be made of steel that will not chip on impact.</p> | <p><b>No comparable OSHA provision</b></p>   |

| MIOSHA  | OSHA                                       |
|---|--|
| <p><b>R 408.14245 Hammer cylinder heads and fasteners.</b><br/> <b>Rule 4245.</b> Parts, such as, but not limited to, a cylinder head and fasteners for a cylinder head, glands, tie plates and guide bolts, which are subject to failure shall be secured by use of a safety cable strung to them.</p>   | <p><b>No comparable OSHA provision</b></p> |
| <p><b>R 408.14246 Steam and pneumatic hammers.</b><br/> <b>Rule 4246.</b> (1) A steam or air hammer shall be equipped with a functional safety cylinder head to act as a cushion if the piston rod breaks or pulls out of the ram.<br/> (2) A steam hammer shall be provided with a quick access emergency shut-off valve identified by name or color in the supply, sometimes called admission, pipeline at a location within reach of the operator. This valve shall be closed and locked in the "off" position while the hammer is being adjusted, repaired, or serviced, or when the die are being changed, except where necessary to move the ram.<br/> (3) If the steam hammer cylinder is constructed without a self-draining arrangement, a drain cock shall be provided which shall be piped to a sump or drain pipe.<br/> (4) A pneumatic hammer shall have a drain cock on the main head cylinder and on the clamp cylinder, if a clamp cylinder is provided.<br/> (5) Steam or air pressure at the hammer shall be no higher than that for which the hammer is designed. A pressure regulator and safety valve at the source of power or at the equipment, whichever is applicable, shall be used to insure this.<br/> (6) A steam pipe shall be covered where exposed to contact. Pipe supports or other effective means shall be provided to prevent failure from vibration, expansion or contraction.<br/> (7) Steam or air piping shall be as prescribed in ANSI B31.1.0-1967, Power piping, with addenda issued before April 28, 1971, which is incorporated herein by reference and may be inspected at the Lansing office of the Department of Consumer and Industry Services. This standard may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018, or from the Michigan Department of Consumer and Industry Services, State Secondary Complex, 7150 Harris Drive, Box 30643, Lansing, Michigan 48909, at a cost of \$8.00 each.<br/> (8) Where it is necessary to service a steam cylinder, a fixed platform, as prescribed in R 408.14249(2), shall be provided, or the employee shall wear a safety belt and lanyard, with the lanyard secured to the hammer or a structural member.</p> | <p><b>No comparable OSHA provision</b></p> |

| MIOSHA   | OSHA                                       |
|--|--|
| <p><b>R 408.14247 Mechanically operated hammers and forging presses.</b></p> <p><b>Rule 4247.</b> (1) A mechanically operated hammer or forging press shall be provided with a means for disconnecting the power. Acceptable methods include the following:</p> <p>(a) A disconnect switch ahead of the starter on the primary line with provision for locking and within reach from the floor. Power shall be locked off when the machine is being repaired or serviced.</p> <p>(b) A tight and loose pulley on a countershaft, with a belt shifter, with a means to lock it in the "off" position. The belt shifter shall be within easy reach of the operator.</p> <p>(c) A clutch or drive pulley, with a clutch handle, with a means to lock it in the "off" position. The clutch handle shall be within easy reach of the operator.</p> <p>(2) Springs suspending the ram in a mechanically operated hammer shall be enclosed or restrained from flying in case of breakage.</p> | <p><b>No comparable OSHA provision</b></p> |
| <p><b>R 408.14248 Point of operation device.</b></p> <p><b>Rule 4248.</b> Effective August 31, 1974, the following shall pertain to a mechanically operated hammer used for cold restrike operations:</p> <p>(a) Where only 1 hand is used for holding the material, a safety stop, dog or catch shall be provided to prevent the ram from descending until this device has been released and is held out of the way by the other hand, or a hand lever instead of a foot treadle shall be provided for tripping the hammer.</p> <p>(b) On a hammer where neither hand is used for holding the material, there shall be provided a point of operation device that restrains the operator from inadvertently reaching into the point of operation or which automatically withdraws the operator's hands if they are within the point of operation as the dies close, or a tripping level or safety stop or both that will require concurrent use of both hands to trip the hammer.</p>  | <p><b>No comparable OSHA provision</b></p> |
| <p><b>R 408.14249 Board drop hammers.</b></p> <p><b>Rule 4249.</b> (1) On a board drop hammer a guard constructed of 20 gauge sheet steel or stronger shall be provided around the board above the rolls to prevent the board from falling if the board breaks or comes loose from the ram.</p> <p>(2) Where work must be done at or near the rolls of a board hammer, a fixed or portable platform equipped with handrail and toeboards as prescribed in the Occupational Safety Standards Commission standard, Part 2, Floor and Wall Openings, Stairways and Skylights, as amended, being R 408.10201 to R 408.10241 of the Michigan Administrative Code and the general industry safety standards commission standard, Part 3, Fixed Ladders, being R 408.10301 to R 408.10365 of the Michigan Administrative Code, shall be provided and used.</p>  | <p><b>No comparable OSHA provision</b></p> |

| MIOSHA  | OSHA  |
|---|---|
| <p><b>R 408.14249</b> (3) Roll release levers and front friction rods on a board hammer shall be prevented from falling by being secured to the hammer frame by cable, chain or an equally effective means.</p>   | <p><b>No comparable OSHA provisions</b></p> |
| <p><b>R 408.14251 Forging presses.</b></p> <p><b>Rule 4251.</b> (1) Forging press operating valves shall be located so that the operator will have a clear and unobstructed view of the press when standing in the usual operation position. If this arrangement is impossible, a mirror shall be installed in front of the operator to assist him in obtaining a full view of the press.</p> <p>(2) When dies are being changed or maintenance is being performed on a press, the following shall be accomplished:</p> <p>(a) The energy source to a mechanical press shall be locked out, and the flywheel shall be at rest before work begins.</p> <p>(b) The hydraulic pumps and power apparatus of the hydraulic press shall be locked out.</p> <p>(c) Blocking shall be provided and used to prevent the ram from dropping. The material shall equal or exceed specifications in table 1. Die design shall take into consideration the need for a flat spot for the block.</p> <p>(3) Location of steam, air, or water headers and scale or splash aprons shall give the operator sufficient clearance at the front of the forging press for any upward or downward movement of the tongs without creation of a pinch point between these facilities and the tongs.</p> <p>(4) A hot forging press shall be equipped with a scale guard, as prescribed in R 408.14241(3).</p> <p>(5) A forging press shall be provided with a positive means for retaining a piston and head assembly inside the counterbalance cylinder in case of failure or breakage of the piston and rod assembly.</p> <p>(6) An electrical motor shall be provided with a disconnect switch, as prescribed in R 408.14247(1). A hydraulic forging press shall be equipped with a positive type lockout disconnecting switch or valve.</p> <p>(7) Fire resistant fluids shall be used in a hydraulic press forming hot work.</p> <p>(8) Die bolts shall not be worn or damaged, and shall be long enough to permit being threaded into die bolt holes a distance not less than 1 1/2 times the diameter of the bolt. Washers shall not be used in multiple to compensate for excessive lengths of bolt.</p> <p>(9) A mechanical foot pedal or foot switch shall be covered on both sides and top with a substantial guard to prevent accidental tripping. The guard shall have rolled, broad or covered edges to prevent injury or discomfort. The mechanical foot pedal shall be mounted to a press leg or anchored to the floor.</p> | <p><b>No comparable OSHA provision</b></p>  |

| MIOSHA   | OSHA   |
|--|--|
| <p><b>R 408.14252 Inspection</b><br/> <b>Rule 4252.</b> (1) Daily visual observation, without dismantling, shall be made of a forging hammer and forge press to insure the safe condition of bolts, screws, keys, valves and all parts of treadles and clutches and other operating mechanisms that might become loose by vibration</p> <p>(2) to (3)****</p>  | <p><b>No comparable OSHA provision</b></p> <p>Equivalent</p>   |
| <p><b>OTHER MACHINES</b></p>   |  |
| <p><b>R 408.14263 Bulldozers.</b><br/> <b>Rule 4263.</b> (1) A guard shall be attached to the side of the moving head of a bulldozer and shall extend past the stationary head to prevent persons from stepping between the dies, or another method may be used which offers equal protection.</p> <p>(2) A bulldozer shall be provided with a positive-type lockout device as prescribed in R 408.14247(1).</p>   | <p><b>No comparable OSHA provision</b></p>   |
| <p><b>R 408.14265 Boltheading and rivet-making machines.</b><br/> <b>Rule 4265.</b> (1) A treadle (pedal) of a bolt-heading or rivet-making machine shall be guarded as prescribed in R 408.14251(9).</p> <p>(2)****</p> <p>(3) A screen shield shall be installed across point-of-operation on a boltheading or rivet-making machine to protect against flying pieces.</p> <p>(4) Tension or relief springs on a boltheading or rivet-making machine shall be guarded.</p> <p>(5) Safety blocks as prescribed in R 408.14243 shall be used when required while working on, removing, or setting dies.</p> | <p><b>No comparable OSHA provisions</b></p> <p>Equivalent</p> <p><b>No comparable OSHA provision</b></p> |
| <p><b>R 408.14267 Power shears.</b><br/> <b>Rule 4267.</b> (1) A positive-type lockout device for disconnecting the power to a power shear shall be provided as prescribed in R 408.14247(1).</p> <p>(2) The maximum size and specification of material being sheared on a power shear, as recommended by the manufacturer of the shear, shall not be exceeded.</p> <p>(3) Effective point-of-operation guarding shall be provided at both the feeding end and discharge end of a power shear</p>  | <p><b>No comparable OSHA provision</b></p>   |
| <p><b>R 408.14268 Material-handling equipment.</b><br/> <b>Rule 4268.</b> Material-handling equipment shall be of such capacity and size as to safely handle the imposed load of the dies and containers.</p>  | <p><b>No comparable OSHA provision</b></p>   |

| MIOSHA  | OSHA                                       |
|---|--|
| <p><b>R 408.14269 Tumbling barrels and shot blasts.</b><br/> <b>Rule 4269.</b> (1) A tumbling barrel shall:</p> <p>(a) Have all means of power transmission guarded as prescribed in the Occupational Safety Standards Commission standard, Part 7, Guards for Power Transmission.</p> <p>(b) Have fittings to the barrel dust-tight or the barrel shall be enclosed in a booth with an exhaust system as approved by the state department of consumer and industry services.</p> <p>(c) Be locked in place while being loaded or unloaded.</p> <p>(d) Have an interlocked barrier across the front before it can be started.</p> <p>(e) Have a positive type lockout device for disconnecting the power to the barrel, as prescribed in R 408.14247(1).</p> <p>(2) A shot blast cleaning chamber shall have doors, curtains including silhouettes or guards to protect the operator.</p> | <p><b>No comparable OSHA provision</b></p> |
| <p><b>R 408.14271 Upsetting machines.</b><br/> <b>Rule 4271.</b> (1) An upsetter pedal (treadle) shall be guarded as prescribed in R 408.14251(9).</p> <p>(2) A shut-off valve or safety switch for service equipment on an upsetter, such as air lines, electric lines and water and oil lines, shall be located conveniently for the operator, and each shall be distinctly marked for ease of identification.</p> <p>(3) A positive type lockout device for disconnecting the power to the upsetter shall be provided as prescribed in R 408.14247(1).</p> <p>(4) An upsetting machine shall be installed so that it will remain on its foundation.</p>  | <p><b>No comparable OSHA provision</b></p> |
| <p><b>R 408.14273 Billet heating furnaces.</b><br/> <b>Rule 4273.</b> (1) A billet heating furnace shall be equipped with an automatic valve on the main fuel line which will shut off in case of electrical or fuel supply failure.</p> <p>(2) Radiant heat from a billet furnace shall be controlled by 1 or more of the following methods:</p> <p>(a) Reflective shields of aluminum or materials of equal reflectively.</p> <p>(b) Controlled openings.</p> <p>(c) Evaporative cooling.</p> <p>(d) Water jackets.</p> <p>(e) Chain curtains.</p> <p>(3) An exhaust system shall be provided as prescribed by the state department of consumer and industry services.</p>  | <p><b>No comparable OSHA provision</b></p> |

Disclaimer:

Documents available from this server were prepared as a courtesy for informal guidance and assistance. This information is not intended to replace or supercede the actual MIOSHA standard or rule requirement. Please reference the specific MIOSHA standard or rule for the actual rule requirement language.

All information published online by MIOSHA is subject to change without notice. Every effort is made to ensure that the information provided at this site is accurate and up-to-date, but no legal responsibility is accepted for any errors, omissions, or misleading statement.