

MIOSHA Fact Sheet

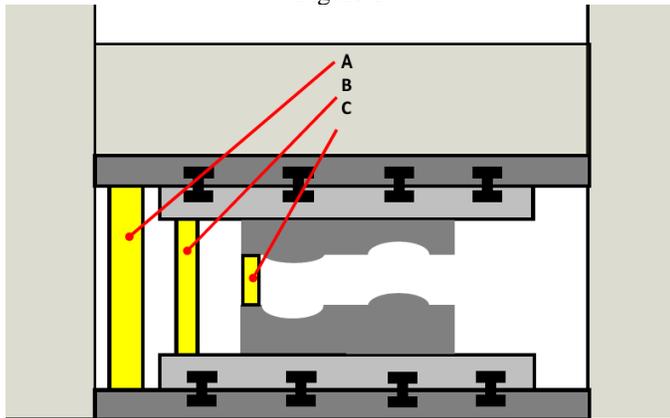


Safety Blocks

A risk assessment should be conducted to determine when safety blocks are required, how many to use, when they can be avoided (other protective measures in place), or what state the press is in during die setup and repairs. It is the responsibility of the company and the individuals involved in the risk assessment to evaluate all factors. This document is intended to be a general guideline for best practice of use of safety blocks to protect personnel during die setting, die repair, adjustments, and similar activities. For more information, refer to [MIOSHA Part 23 Hydraulic Power Presses](#) and [Part 24 Mechanical Power Presses](#).

1. It is a best practice to place safety blocks inside the die set between the upper and lower die set plates. This is the best protection in the event the upper plate is not secured to the slide and could drop.

Safety Block Placement
Figure 1



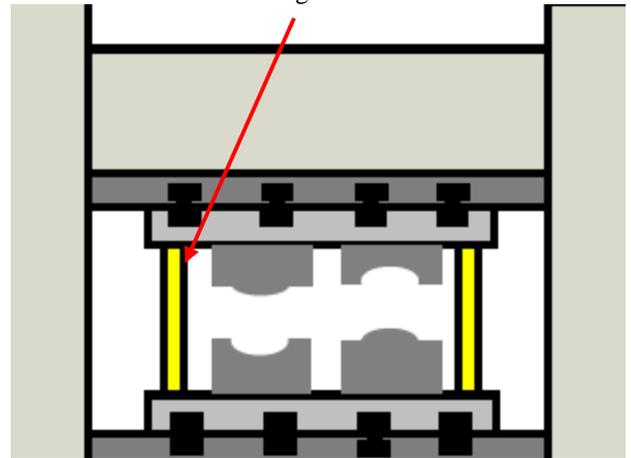
Minimum requirement is placing the safety block(s) between the ram (slide) and the bed of the press (A).
Best practice is placing the safety block(s) between the upper and lower die shoes (B), or if possible, between the dies themselves (C).

2. The safety block weight capacity should support the total static weight of the upper die set, plate, punches, slide, and all slide components. Multiply

by a safety factor of at least two (2). Safety blocks are designed to support the static load and are not designed for a press under power and the energy and tonnage that goes with it.

3. There should be at least one safety block, but there may be a need for two or more blocks for various reasons: a. *Due to the large size of the die set and the area of the press bed.* b. *To meet the weight capacity and safety factor of two (2).* c. *For redundancy.*

Safety Block Placement
Figure 2



Safety Block Placement
Figure 3

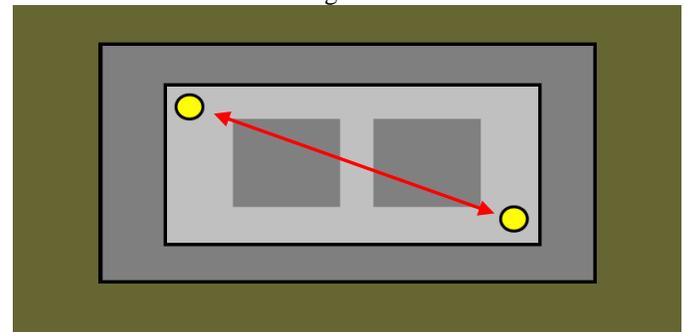


Figure 3 is a top-down view of the safety blocks inserted diagonally from one another. The number

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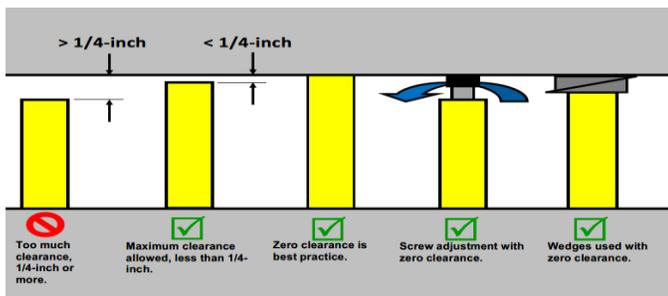


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(CET #0507 • Revised 01/03/2022)



of safety blocks used is determined by the size of press bed and the weight the blocks must support.

4. When the safety block is in place there should be less than a 1/4-inch (6 mm) clearance between the safety block and the upper die set plate as a minimum requirement. A better practice is for zero clearance. Use a screw adjustment or wedges to fill this space. The purpose is to prevent the block from tipping, create a pinch point, or allow downward momentum to exceed the capacity of the blocks.



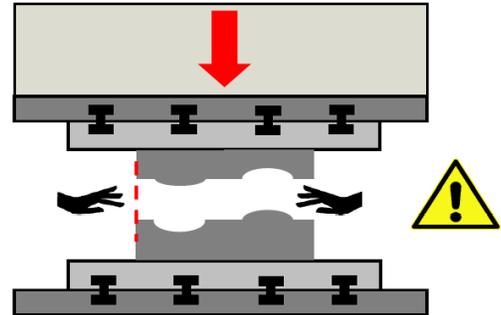
5. Safety blocks should be made of an alloy that will not shatter under an excessive load. Aluminum and magnesium are common materials used. Magnesium is more expensive, but is much lighter than aluminum, a desirable trait for large safety blocks that must be manually lifted.

6. It is preferred that safety blocks be electrically interlocked with the press controls or lockout would be implemented. When the safety block is unplugged, the flywheel must come to a rest before placing the block in the press. This also prevents the press from cycling with safety blocks left in.

7. Safety blocks are also part of a lockout/ tagout procedure when all energy, including gravity, needs to be at a zero state. If the ram is raised and there is the potential for the ram or die set components to come down, the safety blocks must be in place. There is always the potential for clutch/brake failure, hydraulic failure, and other failures that can allow gravity to bring the ram down. Safety blocks are the best method to control this energy.

8. Guidelines for when safety blocks may or may not be required:

- a. Safety blocks are required anytime a body part (incl. fingers, hands, arms, torso, etc.) is between the die set, punches and dies, during die repair, adjustments, parts removal, etc.



Safety blocks are required on power presses anytime a body part (fingers, hands, arms, torso, etc.), is in a pinch point, such as between the die set. There is a plane (dotted line), if broken by a body part, safety blocks are required. If the ram drops and the die set closes, a serious pinch point is created.

- b. On some die sets with transfer rails and other components, adjustments can be made to transfer articulated finger tooling, and other parts without breaking the plane and getting inside the die set (between punches and dies.). Safety blocks may not be required in these cases.
- c. Tools should be used for those frequent, but brief times to avoid reaching in to retrieve parts or to make quick adjustments. Tools can be designed, modified, and fabricated to perform many frequently repeated tasks to keep hands and body parts out of the die set and save the time needed for setting up safety blocks.
- d. When the die set is closed all the way and the press is at bottom, there is no need for blocking if repairs can be done in this position. Also, when die sets are rolled into the press during die change, safety blocks may not be necessary because there are no body parts inside the die. One exception might be, if someone has to reach on top of the die set, between the upper plate and the slide. A block can be inserted into this space, or tools used to reach into this space.

9. When the safety devices are limited in any way, for example during set up and in inch mode, safety blocks must be used to protect employees.