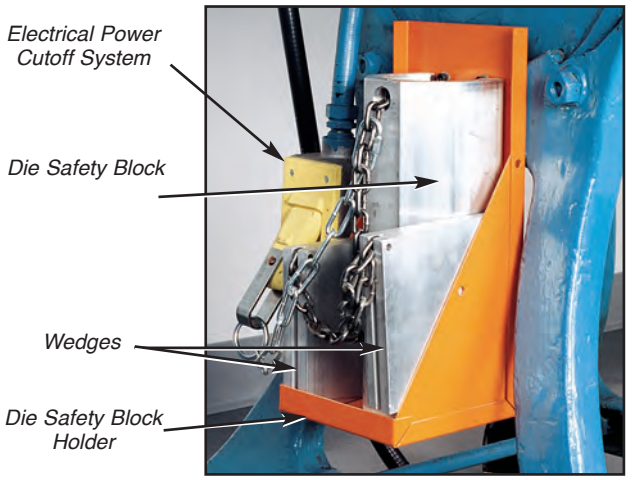
According to OSHA 29 CFR 1910.217, "The employer shall provide and enforce the use of safety blocks for use whenever dies are being **adjusted** or **repaired** in the press." They are not required during die setting unless die blocks are included in your die setting procedure. They also satisfy the lockout/tagout requirements for isolating mechanical energy.

Die safety blocks are placed between the die punch and holder with the machine stroke up. They are rated to support a static load. The static load represents the combined weight of the press ram, ram components (ram-adjust assembly and connection rod[s] or pitman arm[s]), and the upper die.

In some applications, as many as four safety blocks may be required. This is determined by the size of the press bed and the weight the blocks must support. On larger presses, the total slide weight must then be distributed among the quantity of safety blocks required.



U-Shaped Safety Block in Holder With Wedges and Electrical Power Cutoff System

The ram is usually adjustable; therefore, wedges or the adjustable screw device is offered to provide a proper fit. If the die takes up most of the space on the die set, it may be difficult to find a place to insert the block. To avoid accidentally stroking the press or leaving the safety block in the die after use, an electrical power cut-off interlock system should be used.

Note: Electrical interlocking of die safety blocks to the machine's motor and control circuits is required by ANSI B11.19.

ALUMINUM DIE SAFETY BLOCK SYSTEM

This high-strength die safety block is lightweight and comes in several sizes. The unique shape and mechanical properties of the 6063-T5 material have been calculated according to stringent structural aluminum design analysis standards to provide high strength.

To determine the number of die safety blocks required, the static load each die safety block will support, and the length of each block, please follow the instructions below and on the next page.

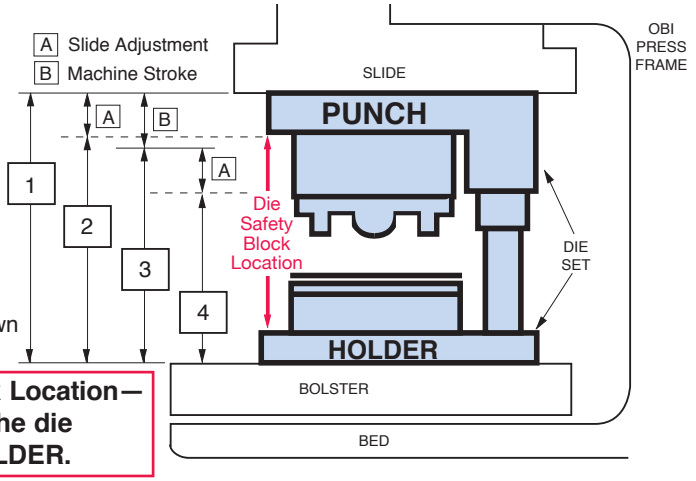
1. Determining the static load the die safety block(s) will support:

The actual static load that the die safety block(s) will support is determined by adding the actual weights of the press slide and slide components (ram-adjustment assembly, connection rod[s] or pitman arm[s], and the upper die).

If this weight cannot be determined, an approximate static load can be calculated using the information and formulas on the next page.

SHUT HEIGHT, 3 (DIE SPACE), ON MECHANICAL POWER PRESSES AND LOCATION OF SLIDE (BETWEEN 1 AND 2) WHEN APPLYING DIE SAFETY BLOCKS

1 S.U.A.U. - Stroke Up - Adjustment Up
2 S.U.A.D. - Stroke Up - Adjustment Down
3 S.D.A.U. - Stroke Down - Adjustment Up
SHUT HEIGHT
4 S.D.A.D. - Stroke Down - Adjustment Down



Die Safety Block Location—Place between the die PUNCH and HOLDER.

Allow 2000 pounds of static load for each cubic foot displaced in the press bed area (front to back x right to left) multiplied by the shut height (die space) of the press. *Note: When using this formula, the calculated approximated static load has a safety factor of two (2).*

Formulas:

$$\frac{\text{Press Bed Area (sq in) x Shut Height (in)}}{\text{Cubic Inches/Cubic Feet (Constant) (1728 cu in/cu ft)}} = \text{Cubic Feet Displaced}$$

Cubic feet displaced x 2000 lb/cubic foot = Total Static Load

Example:

(Press Bed Area) (Shut Height)

$$\frac{48 \text{ in by } 96 \text{ in} \times 24 \text{ in}}{1728 \text{ cu in/cu ft}} = \frac{110{,}592}{1728} = 64 \text{ cu ft}$$

64 cubic feet displaced x 2000 lb/cu ft = 128,000 lb static load

2. Determining the Die Safety Block Length

With the machine at the top of its stroke; stroke up—adjustment up (S.U.A.U.–see previous page), measure the space between the upper and lower die set plates (not the distance between the bolster and slide). This gives the maximum safety block length. To determine the stroke up—adjustment down (S.U.A.D.–see previous page) measurement, subtract the ram adjustment from the S.U.A.U. figure. This provides the minimum length of the die safety block.

Total Length of Die Safety Block Required _____"

EXCEPTIONS

A. If wedges will be used, subtract 1½" maximum. This is an allowance for variation in the stopping point of the crankshaft or adjustment of the ram.

Total Length of Die Safety Block Required _____"

B. When an adjustable screw is added to an octagonal safety block, the **minimum length of the aluminum portion of the safety block** is as follows:

For small and medium safety blocks

2½" plus the size of the adjustable screw device

For large safety blocks

3" plus the size of the adjustable screw device

When an adjustable screw device is added to an octagonal safety block and the screw is all the way inside of the safety block, **it will add 2" to the overall length of small and medium safety blocks and 2½" to the overall length of large safety blocks**. Therefore, subtract 2" for small or medium blocks and 2½" for large blocks to determine the length of the aluminum portion of the die block.

Example: If the minimum overall length of the small or medium safety block required is 10½" with any size adjustable screw device, the aluminum portion of the safety block would be 8½" (10½" - 2" = 8½").

Example: If the minimum overall length of the large safety block required is 16" with any size adjustable screw device, the aluminum portion of the safety block would be 13½" (16" - 2½" = 13½").

Total Length of the Aluminum Portion of the Die Safety Block _____"

3. Determining the Size of the Die Safety Block

The size of the die safety block (small, medium, large) is determined by one or both of the following factors:

A. The size of the block itself and the area available in the die. (See static load charts.)

B. The static load capacity of the block (small, medium, large) versus the total static load being supported. (See static load charts.)