Machine Guarding

Machine Guarding

Machine guarding protects you and other employees from injuries such as:

- Crushed hands and arms
- Severed fingers
- Amputated limbs
- Fatal accidents

Requirements for Safeguards

OSHA requires machine safeguards to:

- Prevent contact
- Be secure
- Protect from falling objects
- Create no new hazards for the operator

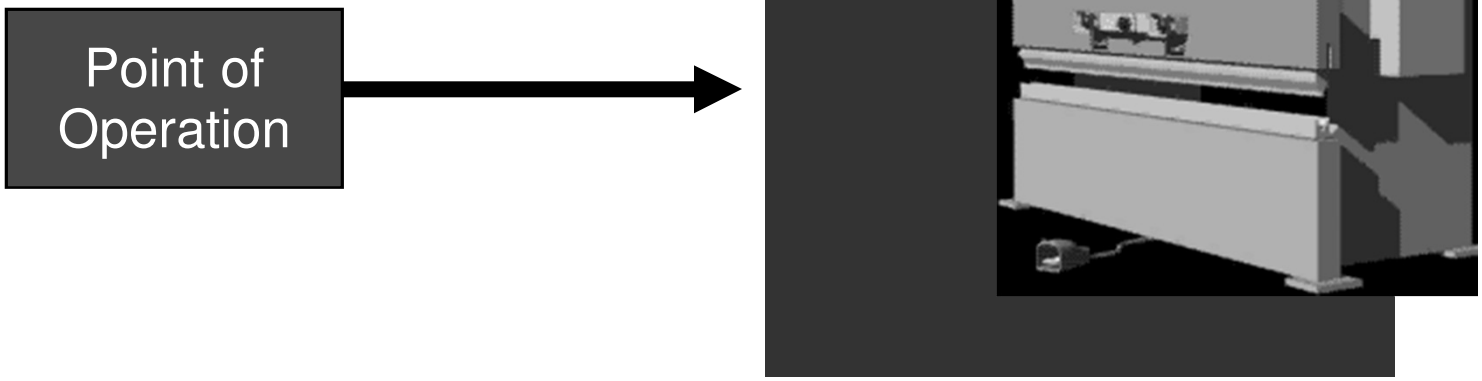
Fair Labor Standards Act (FLSA)

FLSA prohibits employees younger than 18 years from operating the following machines at work:

- Band saws
- Circular saws
- Punching and shearing machines
- Meat packing, processing, or slicing machines
- Paper products machines
- Woodworking machines
- Metal forming machines

Point of Operation

A key term to understand is “point of operation.” This is the point where work is performed and where many machine hazards exists. The point of operation must be guarded.



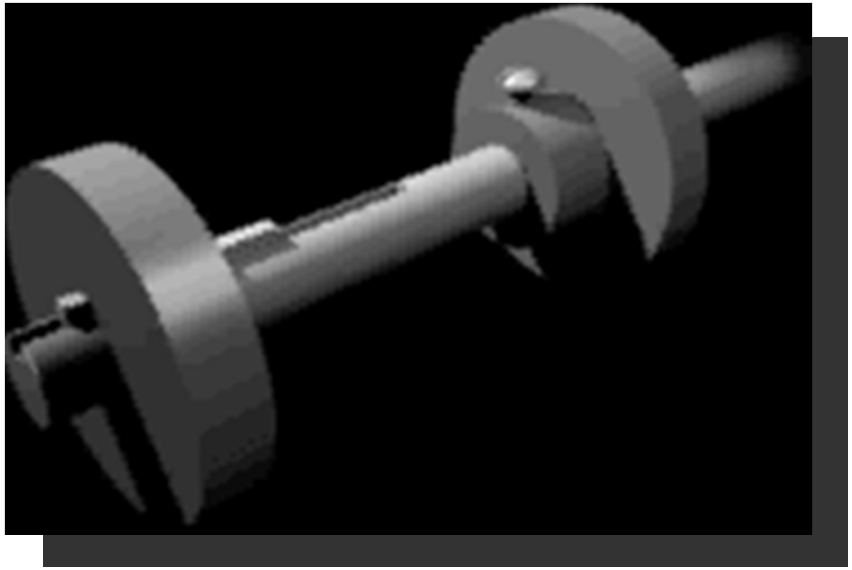
Hazardous Mechanical Motions

The basic types of hazardous mechanical motions are:

- Rotating
- In-running nip points
- Reciprocating
- Transversing

Mechanical Motion: Rotating

Any rotating motion can be dangerous, even when the motion appears to be slow and smooth.

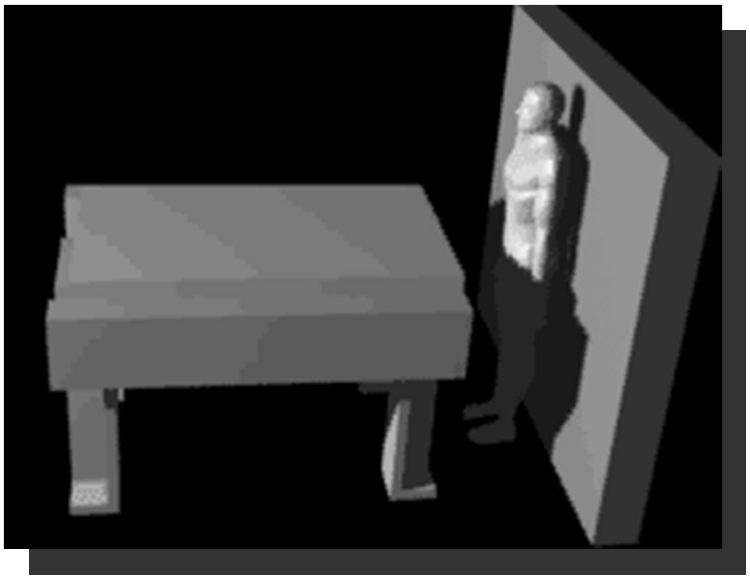


Mechanical Motion: In-Running Nip Points

Nip points are created when rotating parts on a machine come in contact with, or are in close proximity to, each other.

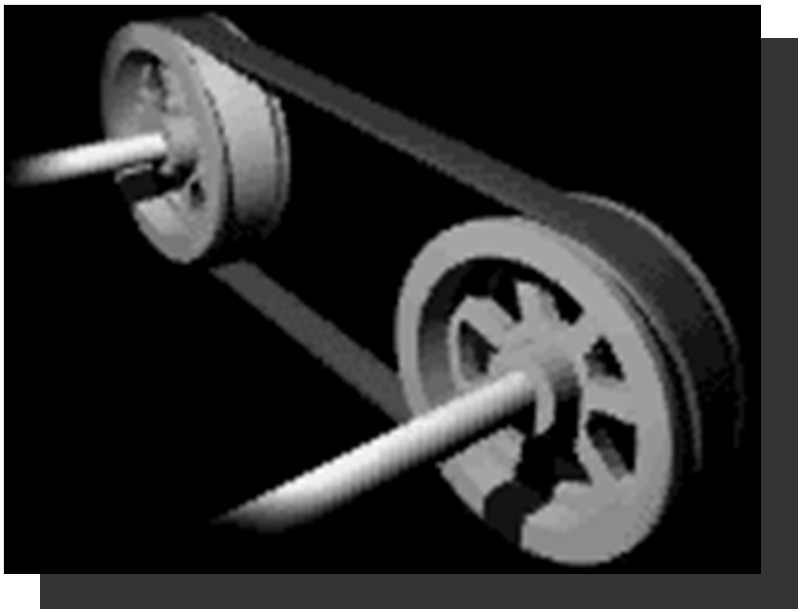
Mechanical Motion: Reciprocating

This back-and-forth or up-and-down motion creates a crushing hazard between moving and stationary parts.



Mechanical Motion: Transverse

Transverse motion is movement in a straight or continuous line.



Hazardous Mechanical Actions

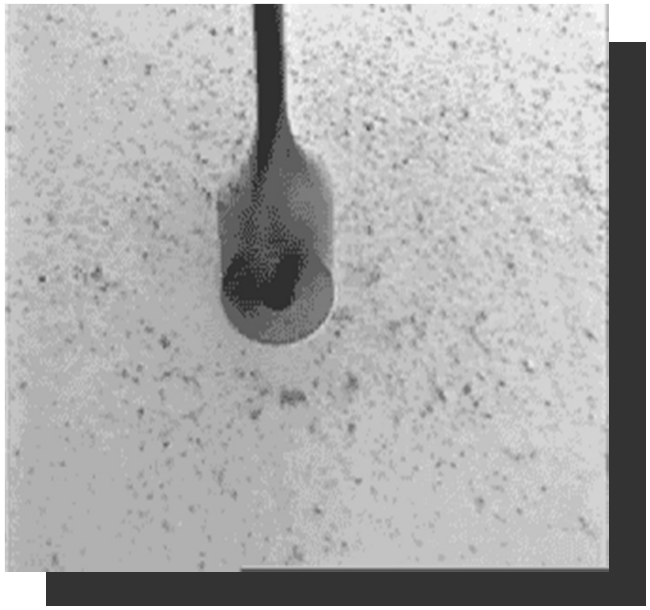
The basic types of hazardous mechanical actions are:

- Cutting
- Punching
- Shearing
- Bending

Mechanical Action: Cutting

Cutting action may involve rotating, reciprocating or transverse motions.

The danger of cutting action exists at the point of operation.

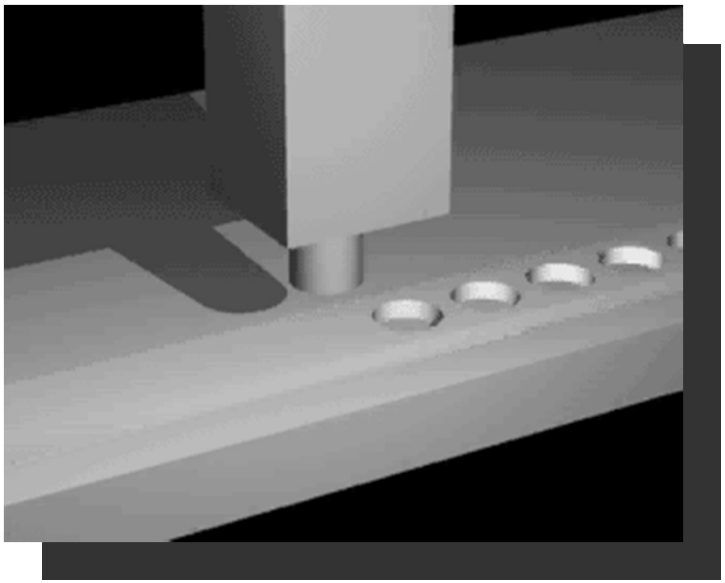


Mechanical Action: Punching

Punching action results

when power is applied to a slide in order to blank, draw or stamp metal or other materials.

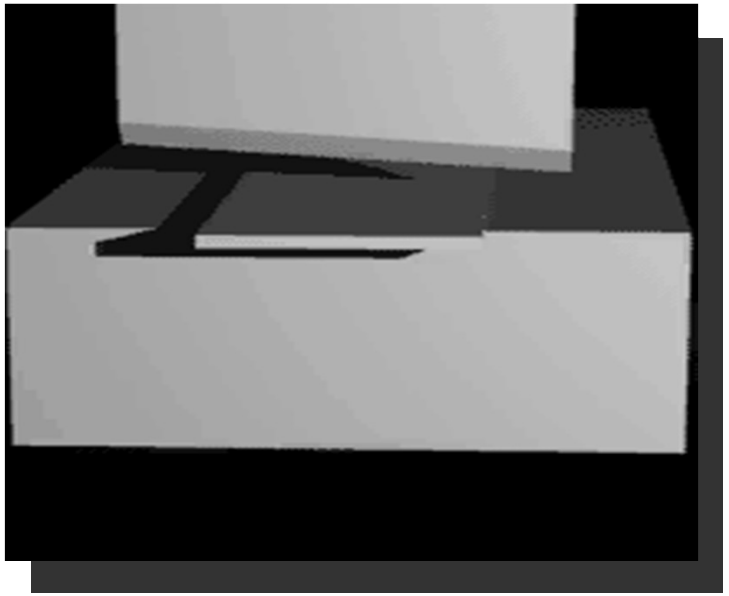
The danger of punching action exists at the point of operation.



Mechanical Action: Shearing

Shearing action applies power to a slide or a knife in order to trim or shear metal or other materials.

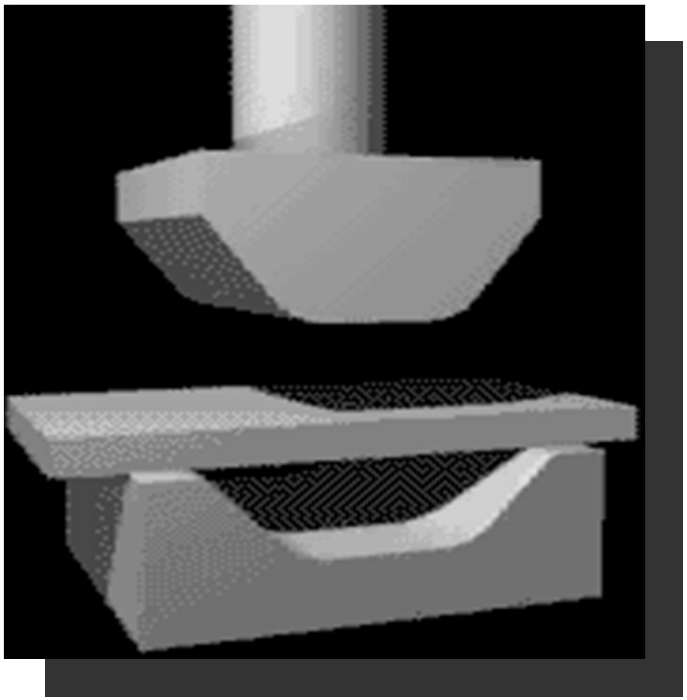
The danger of shearing action exists at the point of operation.



Mechanical Action: Bending

Bending action occurs when power is applied to a slide in order to shape, draw, or stamp materials.

The danger of bending action exists at the point of operation.



Machine Guarding Methods

Common methods of machine guarding include the use of:

- Guards
- Devices
- Location or distance
- Safety aids

Guards: Fixed

A fixed guard provides a barrier and is a permanent part of the machine.

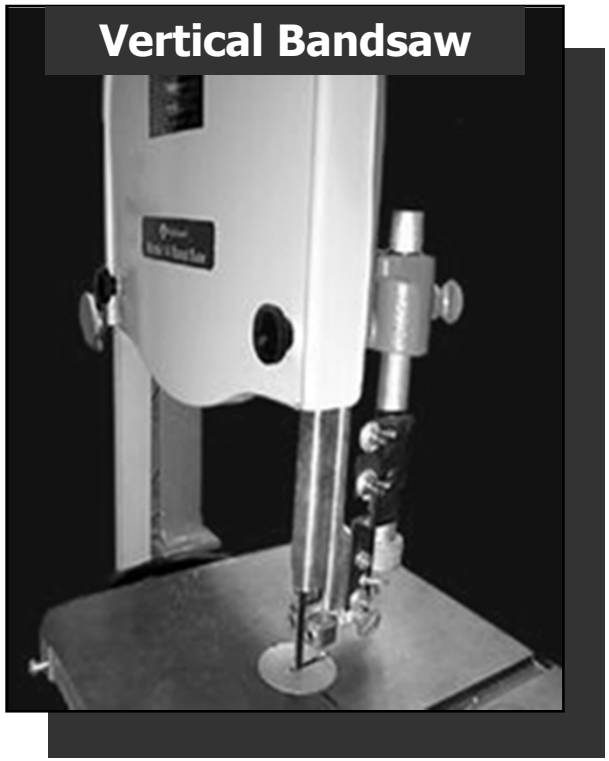
It is preferable to all other types of guards.

Guards: Interlocking

When this type of guard is opened or removed, the mechanism or power automatically disengages or shuts off and cannot be reset or restarted until the guard is back in place.

Guards: Adjustable

Provides a barrier which can be adjusted to accommodate different production operations.



Guards: Self-Adjusting

Provides a barrier which adjusts according to the size of stock entering the hazardous area.

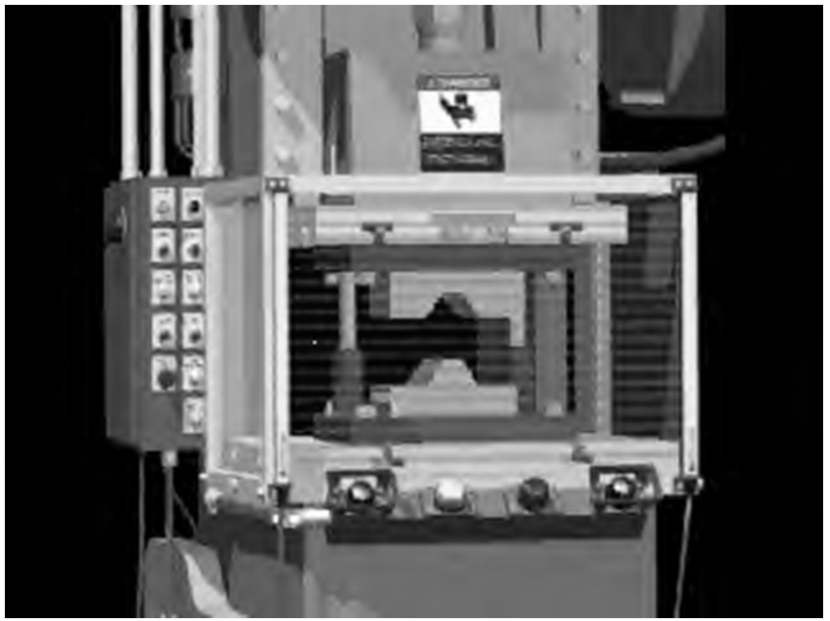
Devices

The common types of devices used on machinery include:

- Presence-sensing device
- Restraints
- Pullback cords
- Safety trip controls
- Two-hand control or trip
- Safety gates

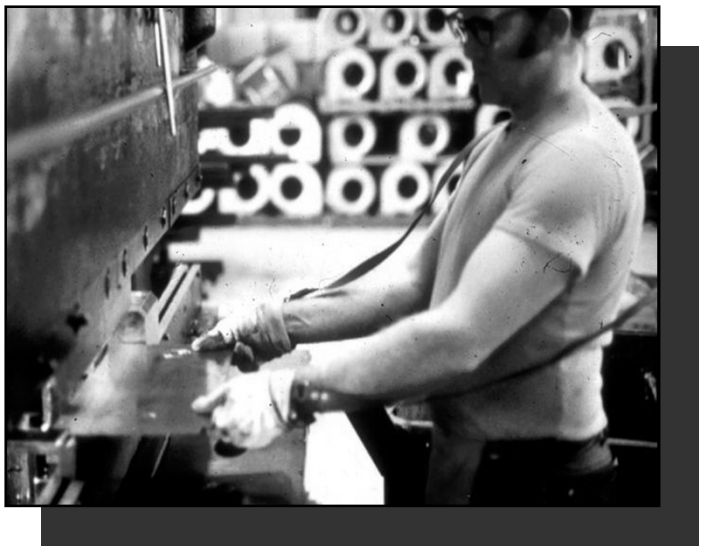
Devices: Presence-Sensing

Stops the machine from operating when someone or something enters the sensing field or when a set amount of weight is applied.



Devices: Restraints

Uses cables or straps attached to the operator's hands and a fixed point so that they cannot travel beyond a safe point.



Devices: Pullback Cords

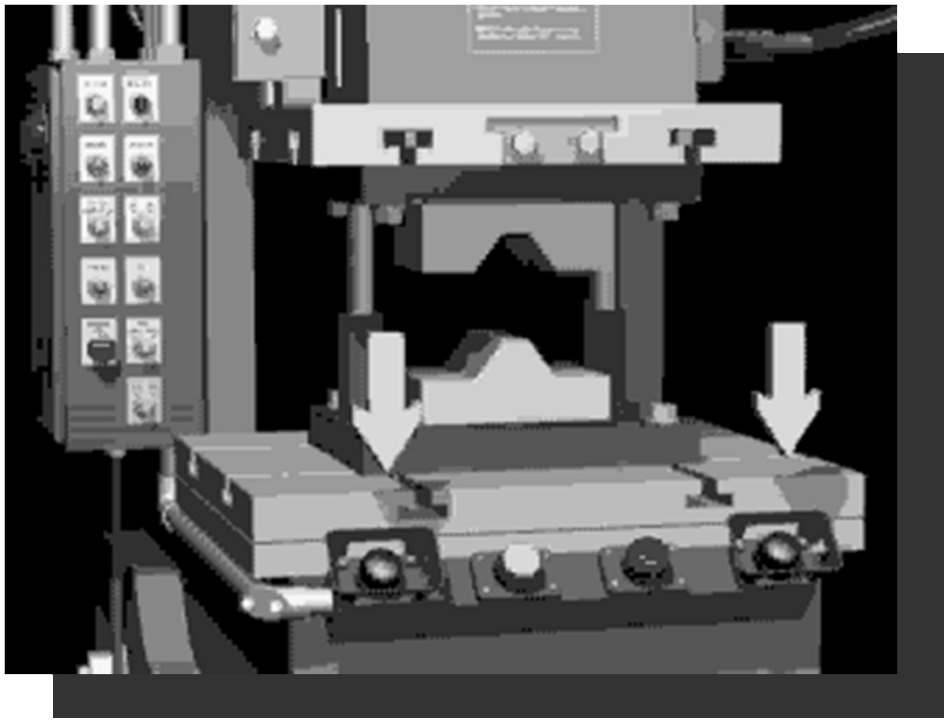
Allows access to the point of operation when the slide/ram is up and withdraws hands when the slide/ram begins to descend.

Devices: Safety Trip Controls

Device located around the perimeter of or near the danger area of a machine that stops the machine when it is tripped.

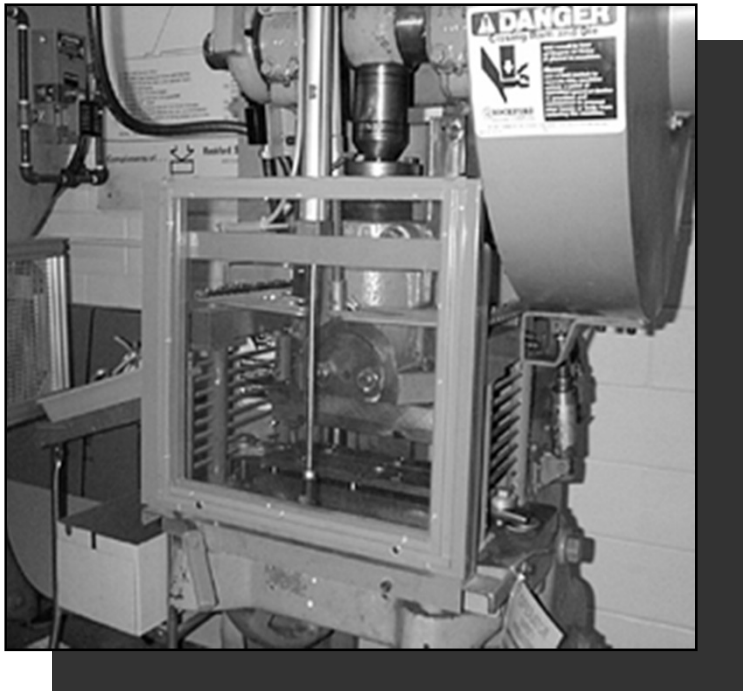
Devices: Two-Hand Controls

Machine requires constant pressure from both hands on the controls in order to operate.



Devices: Safety Gates

A moveable device that provides a barrier between you and the point of operation.



Location or Distance Guarding

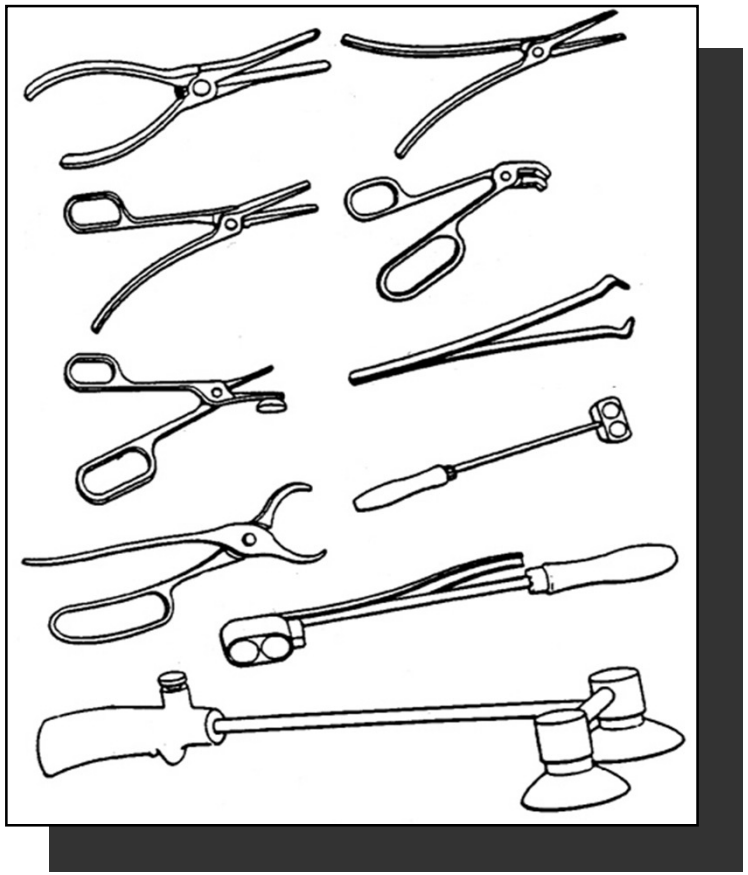
Guarding can be accomplished by locating the machine or its dangerous moving parts so they are not accessible or do not present a hazard to a worker during normal operation.

Workers must maintain a safe distance from the danger area.

Safety Aids

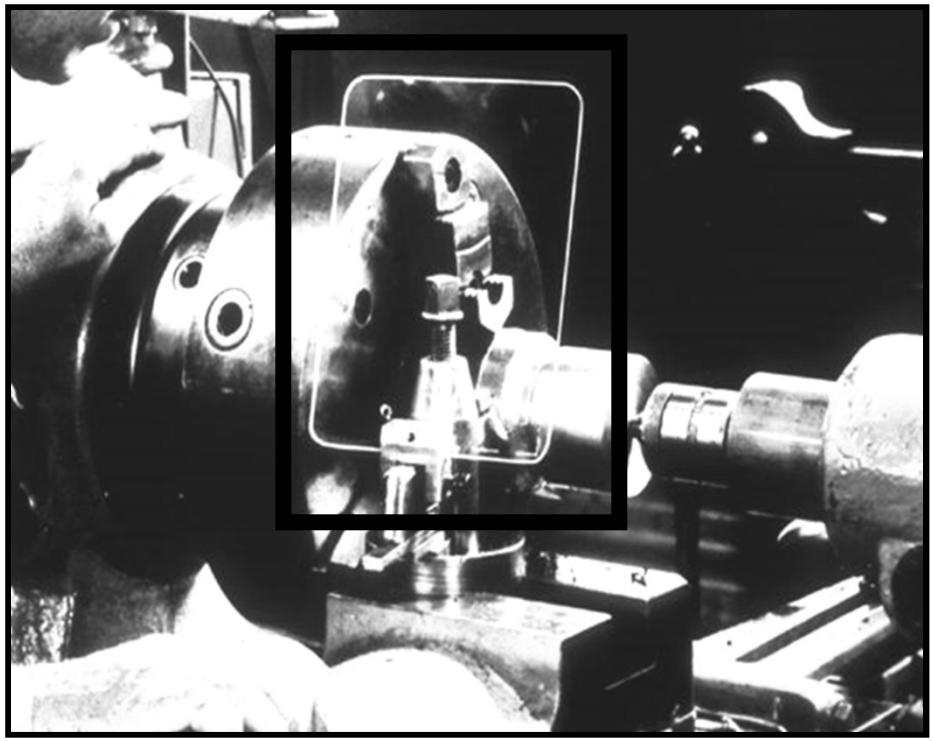
A safety aid is anything that helps protect you from mechanical hazards.

One example would be tools that are used to feed material into or remove material from a machine.



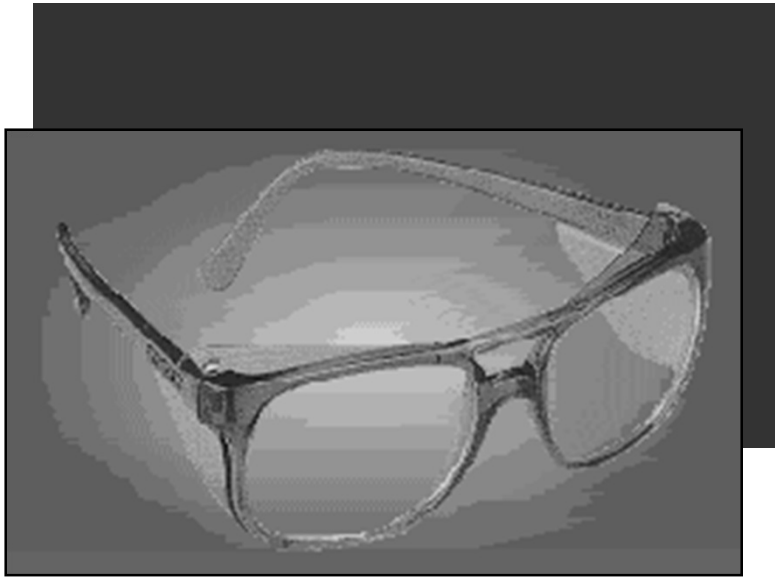
Safety Aids: Protective Shields

These do not give complete protection from machine hazards, but do provide some protection from flying particles, splashing cutting oils, or coolants.



Safety Aids: PPE

Personal Protective Equipment (PPE) can be used to help protect you from flying mechanical debris.

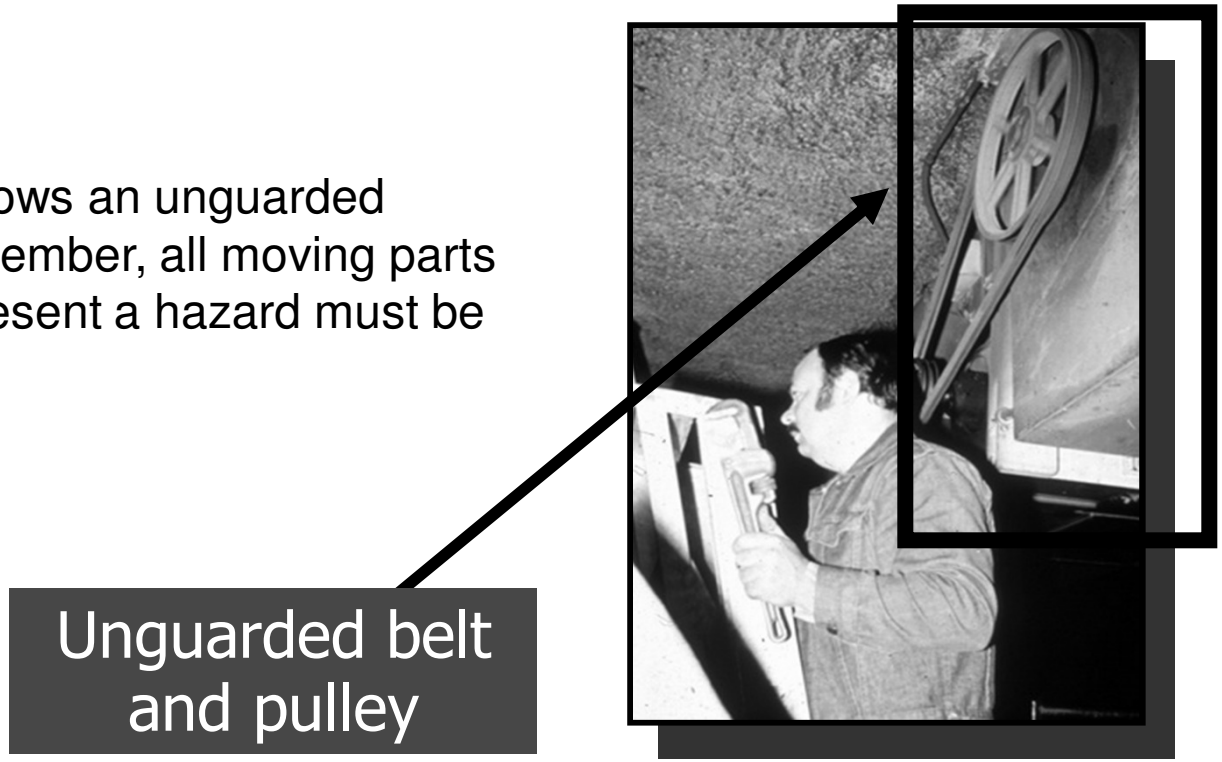


Machine Guarding Example

What is wrong with this picture?

Machine Guarding Example

This picture shows an unguarded machine. Remember, all moving parts which could present a hazard must be guarded.



Training

Training on machine guarding offered by employers should include the following:

- Information about all potential hazards in your work area.
- The correct use of workplace machines and their safeguards.
- Safe operating procedures and work practices.
- Personal protective equipment that may be required.
- Methods for reporting unsafe conditions.

Summary

To StartSafe and StaySafe when working around machines, you should:

- Be sure you are trained on all machinery you will be using for your job.
- Keep the work area free of fall hazards.
- Don’t wear loose clothing or jewelry around machinery.
- Always use the right tools, machines, and materials for the job.
- Use safety aids when possible.
- Wear the proper personal protective equipment.