

Shear

Power squaring shears and plate shears cut sheets of metal using either mechanical or hydraulic-driven rams for the shearing action. The ram moves a non-rotary blade at a constant rate past the edge of a fixed blade.

The operator feeds or places the stock between the blades, ensures it is properly positioned, and activates the cutting cycle with either foot or hand controls. The material hold-down devices, exerting a tremendous amount of force, clamp the stock immediately prior to the shearing action.

Two other types of shears are also used in industry: alligator and guillotine shears. Both of these types are used to cut metal stock and scrap metal. Guillotine shears also are used for paper and plastic.



Georgia Tech Research Institute

Hazard

Like all machines that have operating cycles, shears present the possibility of placing a hand in the danger zone. And in the case of a shear, the consequences are severe.

The primary hazard of the point of operation is the shear hazard. Since shears use blades to sever many forms and various sizes of stock, there is no doubt what can happen to hands or fingers.

The hold-down devices on power squaring shears also create a very serious pinch point, which can lead to amputation or fractures to the hands or fingers.

Serious lacerations can also occur from handling the blades.

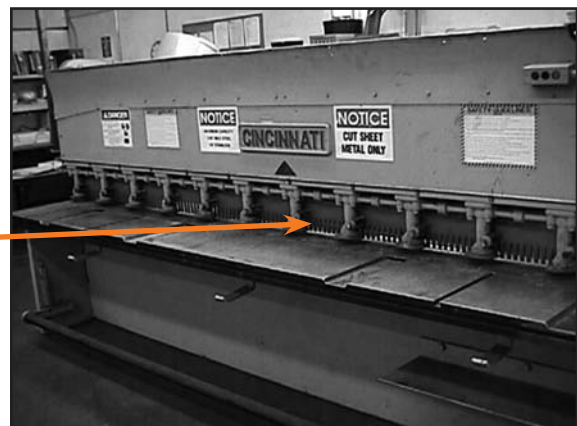


Gensco Equipment

Properly guarded alligator shear.

Solution

The shear blades are normally safeguarded by the equipment manufacturer's barrier guard. If not, a barrier guard, capable of adjusting to the thickness of the stock, must be installed in front of the shear blades. *The jagged-edge barrier guard behind the hold-down devices in the picture (right) is the shear blade guard.*



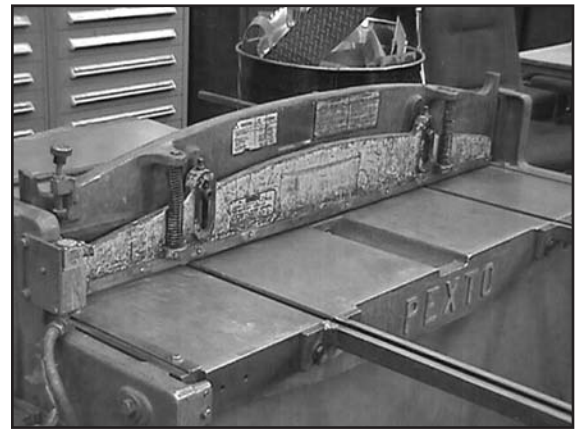
Unguarded hold-down devices on a power squaring shear.

An adjustable barrier guard must also be provided in front of the hold-down devices to protect the operator from the pinch point hazard.

These guards must meet the safe opening requirements found on page 41. They must be adjustable so that operators can feed the stock but cannot get their hands or fingers into the hazard area.



Adjustable barrier-type guarding for the hold-down devices must accommodate stock, not fingers.



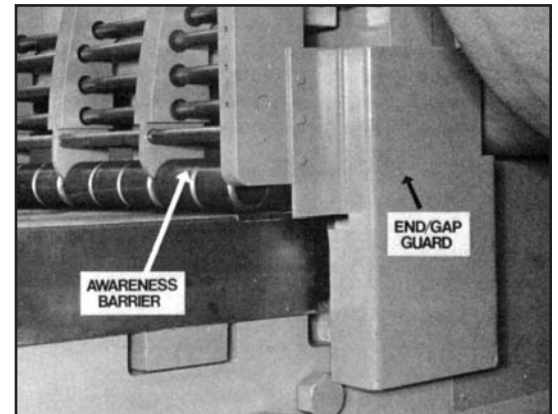
Adjustable barrier-type guard. Georgia-Pacific (Wauna Mill)

On mechanical shears equipped with a part-revolution clutch or for those that are hydraulically powered, light curtain presence-sensing devices or two-hand control devices can also be considered to be safeguarding options.

Wear gloves when handling the stock. In addition to gloves, appropriate mechanical devices or assistance should be used when removing, handling, and installing the blades.

Hand/foot controls should be enclosed or shrouded to eliminate accidental cycling.

The back of the shear, where sheared debris drops, should be barricaded.



Cincinnati Inc.

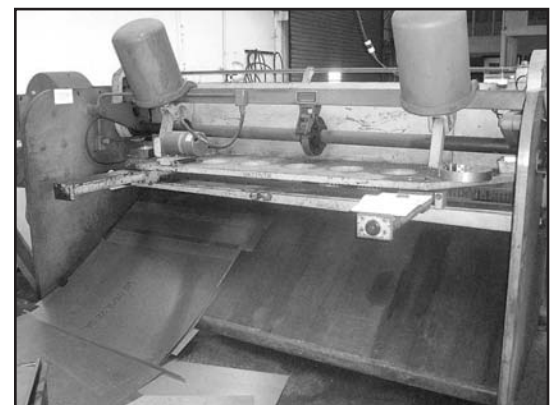
If the C-frame throat is open on either side of a power squaring shear, the gap must be guarded.

References

■ General Industry

*Oregon OSHA Division 2/Subdivision O
29 CFR 1910.212 — General Requirements
for All Machines*

- ANSI B11.4 *Shears — Safety Requirements for Construction, Care, and Use.*



Barricade or restrict the area behind the shear.