

Safeguarding Machinery and Equipment

General Requirements

**Some Common
Safeguarding Applications:**

Feed rolls



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Safeguarding feed rolls in general

Feed rolls are found in a wide variety of industries, such as paper products manufacturing and sheet metal production. They present a high risk of serious injury because of their high speed of operation. Once a worker is caught in a feed roll, the damage is done quickly, and stopping the equipment will not undo it.

In general, there are two types of feed rolls:

- Those that run material into a machine but do not have to be accessed by workers. These can usually be safeguarded by enclosure or location within the machine.
- Those that are hand-fed as part of the production process. These require closer attention to safeguarding.

Safeguarding design criteria for feed rolls fed by hand

Figure 4.6 provides guidance for designing fixed barrier guards to prevent hands from accessing the nip points created by feed rolls. Please refer to “Point-of-operation (feed) guards: maximum permissible openings” beginning on page 27 of *Safeguarding Machinery and Equipment* for the safe distances for guard placement and guard openings.

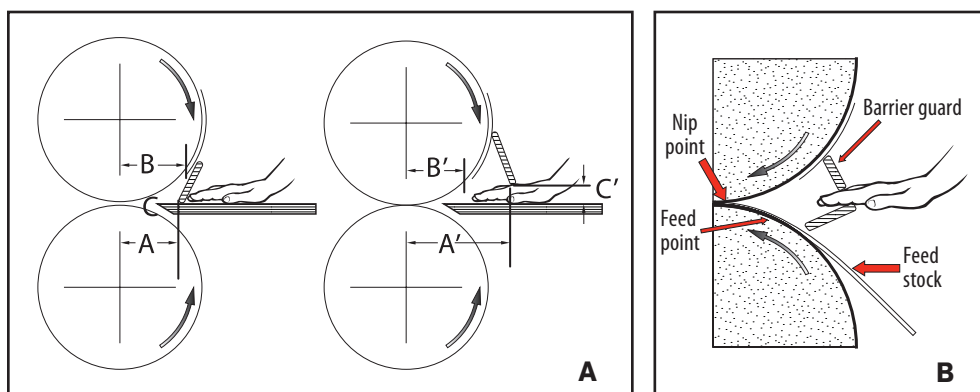


Figure 4.6. Fixed barrier guards for feed rolls. (A) Position of barrier guard relative to feed roll nip point in operation with feed table. Note how the guard feed opening C can be increased to C' as the guard position A is moved further out to A' from the nip point, allowing the position of the fingertips (B) to get closer (B') to the feed point. (B) Barrier guard for operation without feed table.

You can also use the following rule of thumb to determine the maximum safe opening in a feed guard located less than 305 mm (12 inches) from the danger zone:

Maximum safe opening = 6 mm (inch) + $\frac{1}{8}$ of the distance from the guard to the point where the rolls are 9 mm ($\frac{3}{8}$ inch) apart (the danger zone)

You may have to make a sketch to determine this distance.

Example

A guard is needed for an operator feeding sheet goods into feed rolls 152 mm (6 inches) in diameter and 9 mm ($\frac{3}{8}$ inch) apart. The guard must be within 102 mm (4 inches) of the centreline of the rolls in order to accommodate the type of material being fed.

How large a feed opening can be allowed under the guard?

Solution

The feed rolls meet at 9 mm ($\frac{3}{8}$ inch) apart. The distance from the danger zone (in this case, the centreline of the rolls) to the guard is therefore 102 mm (4 inches). The maximum permitted opening is:

$$\begin{aligned} &6 \text{ mm (inch) } + \frac{1}{8} \text{ of } 102 \text{ mm (4 inches) } = 6 \text{ mm (inch) } + 12 \text{ mm (inch) } \\ &= 18 \text{ mm (inch) } \end{aligned}$$