

Note: There are two (2) possible applications for two-hand trip on full-revolution-clutch presses: to initiate a press cycle only, or as a method of safeguarding the point of operation for operators. In both instances, OSHA has established certain requirements. Applicable ANSI standards can also be referenced for two-hand trip.

(1) TWO-HAND TRIP—USED AS A METHOD OF INITIATING A PRESS CYCLE ONLY.

OSHA 1910.217(b)(6)

(i) A two-hand trip shall have the individual operator's hand controls protected against unintentional operation and have the individual operator's hand controls arranged by design and construction and/or separation to require the use of both hands to trip the press and use a control arrangement requiring concurrent operation of the individual operator's hand controls.

(ii) Two-hand trip systems on full-revolution-clutch machines shall incorporate an antirepeat feature.

(iii) If two-hand trip systems are used on multiple-operator presses, each operator shall have a separate set of controls.



This description covers the use of two-hand trip as an initiating means only, to obtain a press cycle. It does not provide any type of point-of-operation safeguarding. Some other properly applied and installed guard or device must also be provided in accordance with OSHA 29 CFR 1910.217(c).

(2) TWO-HAND TRIP—USED AS A METHOD OF SAFEGUARDING THE POINT OF OPERATION.

TWO-HAND TRIP

(c)(3)(i) Point-of-operation devices shall protect the operator by:

(e) Requiring application of both of the operator's hands to machine operating controls and locating such controls at such a safety distance from the point of operation that the slide completes the downward travel or stops before the operator can reach into the point of operation with his hands;

(c)(3)(viii) The two-hand trip device shall protect the operator as specified in paragraph (c)(3)(i)(e) of this section.

(a) When used in press operations requiring more than one operator, separate two-hand trips shall be provided for each operator, and shall be designed to require concurrent application of all operator controls to activate the slide.

(b) Each two-hand trip shall meet the construction requirements of paragraph (b)(6) of this section.

(c) The safety distance (D_m) between the two-hand trip and the point of operation shall be greater than the distance determined by the following formula:

$D_m = 63 \text{ inches/second} \times T_m$ where:

$D_m =$ minimum safety distance (inches);

63 inches/second = hand speed constant; and

$T_m =$ the maximum time the press takes for the die closure after it has been tripped (seconds). For full-revolution-clutch presses with only one engaging point, T_m is equal to the time necessary for one-and-one-half revolutions of the crankshaft. For full-revolution-clutch presses with more than one engaging point, T_m shall be calculated as follows:

$$T_m = \left[\frac{1}{2} + \frac{1}{\text{Number of engaging points per revolution}} \right] \times \begin{matrix} \text{time necessary} \\ \text{to complete one} \\ \text{revolution of} \\ \text{the crankshaft} \\ \text{(seconds)} \end{matrix}$$

Note: See chart (next page) for easy reference when applying two-hand trip on full-revolution presses.

(d) Two-hand trips shall be fixed in position so that only a supervisor or safety engineer is capable of relocating the controls.



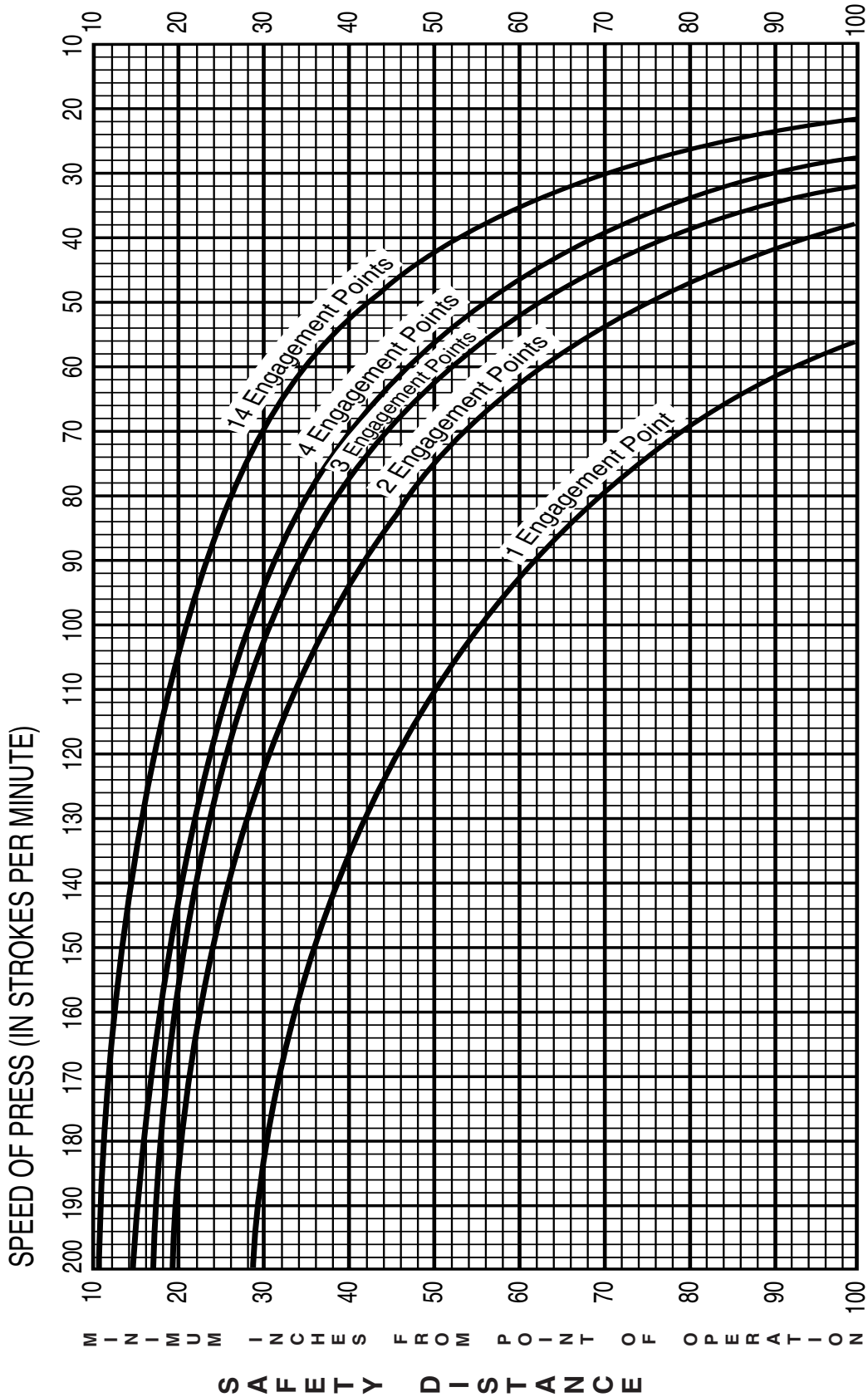
When applying two-hand trip to meet the requirements for a point-of-operation safeguarding device, make sure the buttons are located on the press so they are at least the minimum safety distance required by the preceding OSHA formula. Refer to the chart on the next page.



This means the palm buttons must be located far enough away so that after the press is tripped and the operator releases one or both palm buttons, the operator cannot "beat the ram" or reach into the point of operation or other pinch points before the dies close.

TWO-HAND TRIP SAFETY DISTANCE CHART

To establish the proper safety distance for two-hand trip on full-revolution-clutch presses, determine the speed of the press in SPM (strokes per minute) when running in the continuous mode and the number of engagement points in the clutch mechanism. Then determine the **Safety Distance** from the following chart.



Each square is equal to 2" of safety distance. 1, 2, 3, 4, and 14 engagements points in the clutch mechanism are the most common. Machines with other engagement points may exist.