



Two-hand control can be used as a safeguarding device in the single-stroke mode of operation on part-revolution clutch and hydraulic press and press brakes.

There are many requirements that must be met before two-hand control can be used as a point-of-operation safeguard. These requirements are located in OSHA 29 CFR 1910.217 and ANSI B11.1, B11.2, B11.3, and B11.19. We have referenced the following paragraphs for your convenience:

TWO-HAND CONTROL

OSHA

(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)(vii) The two-hand control 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 controls shall be provided for each operator, and shall be designed to require concurrent application of all operators' controls to activate the slide. The removal of a hand from any control button shall cause the slide to stop.

(b) Each two-hand control shall meet the construction requirements of paragraph (b)(7)(v) of this section.

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

$D_s = 63 \text{ inches/second} \times T_s$ where:

D_s = minimum safety distance (inches);

63 inches/second = hand speed constant; and

T_s = stopping time of the press measured at approximately 90° position of crankshaft rotation (seconds).

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

(b)(7)(v) Two-hand controls for single stroke shall conform to the following requirements:

(a) Each hand control shall be protected against unintended operation and arranged by design, construction, and/or separation so that the concurrent use of both hands is required to trip the press.

(b) The control system shall be designed to permit an adjustment which will require concurrent pressure from both hands during the die closing portion of the stroke.

(c) The control system shall incorporate an anti-repeat feature.

(d) The control systems shall be designed to require release of all operators' hand controls before an interrupted stroke can be resumed. This requirement pertains only to those single stroke, two-hand controls manufactured and installed on or after August 31, 1971.

ANSI

The following formula is used to compute the minimum safety distance (D_s) on mechanical power presses to meet the ANSI (American National Standards Institute) B11.1 press safety standard:

$D_s = K \times (T_s + T_c + T_r + T_{spm})$ where:

K = Hand speed constant (63 inches/second)

T_s = Stop time of equipment measured at the final control element

T_c = Response time of the control system

T_r = Response time of the two-hand control device and its interface

T_{spm} = Additional time allowed for the stopping performance monitor to compensate for variations in normal stopping time

D_{pf} = The added distance due to the depth penetration factor. *Note: If the channel blanking feature is used on light curtains, additional safety distance must be enforced based on the number of channels blanked.*

When determining the safety distance, a portable or built-in stop-time measuring unit must be used to check the stopping time (T_s) of the machine. Please see pages 47 and 48 for details on a portable STM (stop-time measurement) device. Also see page 47 for a safety distance chart which can be used for a quick, easy reference.

The application of any safeguarding device, the requirements of proper machine interface, as well as the safety distance formulas may be difficult to understand and apply. When any of these safeguarding devices detailed in this section are a consideration, these factors must be evaluated. To help understand how to apply these devices, We offer monthly safeguarding seminars to educate the employer/user on the safety requirements. See pages 2 through 6 for more details on our seminars. For a seminar schedule or for additional details, please use the address, phone or fax number, e-mail address, or Web site on the back cover of this catalog.