Press Brake Guarding and Controls
Guideline to Proper Equipment Selection

Introduction - Due to the interaction required between the operator , workpiece, and the point of operation, press brake guarding requires versatility with both the press brake control system along with flexibility in the point of operation guardig device. Production can be had with the protection only when the guards and controls put on a machine are properly designed to match the operational procedures your shop may dictate; may it be a short run multiple die change job shop to the needs of a high volume long run production shop. The following packages incorporate features and functions to address the many needs of the industry based on our many years of experience in the metal stamping and metal forming industries.

OSHA & ANSI Standards:
OSHA (Occupational Safety & Health Act) - Federal Register Sub-Part O, 1910.212.
ANSI - American National Standard B11.1-2001.

Press Brake Classification	SELECT ONE Press Brake Control Options	SELECT ONE Point of Operation Guarding Options
Mechanical Partial revolution clutch-mechanical friction-currently uses mechanical pedal to actuate press brake	*Package #2100*-Converts to electric foot switch and incorporates automatic slow forming. When optional ram indexing modes are added, system is excellent for the high production shop. Updates controls for control reliability and component monitoring.	• SuperLight VI Floating Blank infrared light curtain
	Package #1-Retains current mechanical foot treadle to retain operator feel for slow forming. Excellent for brakes working in the top end of the tonnage spectrum. Updates controls for control reliability and component monitoring.	• SuperLight VI Floating Blank infrared light curtain only.
	Package #2101-Incorporates the two-hand/foot method of press brake control. Works well for the low volume job shop press brake. Updates the controls for control reliability and component monitoring.	• Utilizes two hand controls included in package.
	Package #2110-Converts the mechanical press brake to electric foot switch and incorporates a single forming speed. This package is used for press brakes used as punch presses. Updates the controls to meet current OSHA standards for control reliability and component monitoring.	• SuperLight VI Floating Blank infrared light curtain. • Two Hand Controls
Air Clutch Partial revolution clutch-uses electric foot switch to actuate press	*Package #2120*-Updates control to meet current OSHA standards for control reliability and component monitoring.	• SuperLight VI Floating Blank infrared light curtain. • Two Hand Controls
	Package #3122-Updates control to meet current OSHA standards for control reliability and component monitoring. This control incorporates the two-hand/foot method of control and guarding.	• Utilizes two hand controls included in package.
With updated controls	*Package #130 PB Mute-Out*-When an air clutch press brake meets current standards for control reliability and component monitoring, package #130 PB interfaces directly with the existing controls to mute-out the infrared light guard on the non-hazardous portion of the stroke.	• SuperLight VI Floating Blank infrared light curtain.
Hydraulic/Hydro Mechanical	*Package #130 PB Mute-Out*-When a hydraulic press brake meets current standards for control reliability and component monitoring, package #130 PB interfaces directly with the existing controls to mute-out the infrared light guard on the non-hazardous portion of the stroke.	• SuperLight VI Floating Blank infrared light curtain.
	Package #4101-Gives the hydraulic press brake the two-hand/foot method of guarding the point of operation. Same operational description as packages #2101 or #3122. Submit schematic for proper point of interface.	• Two Hand Controls

Mechanical Press Brake Control with Automatic Slow Forming

Package 2100

Model 3400SS (Solid State) Control System

Package 2100 incorporates single stroke function with Select-O-Stop and ram control functions. This converts mechanically actuated press brakes to electrical foot switch actuation and gives the press brake automatic slow forming capability. Excellent for the long run and small piece part production shop where uniform piece part forming is required. Meets current OSHA standards for control reliability and component monitoring and also incorporates brake monitoring.

Package 2100 includes the following:

Model 3400SS (Solid State) Control System

- Control reliable design
- Diverse redundant design concept
- Quickview diagnostic message display
- Interrupted stroke provision
- System logic and component diagnostics
- Redundant captive contact safety relays
- Control incorporates cross-checking, self checking, and diverse redundancy
- Control transformer (reduces voltage from 480/260 to 120VAC)
- Power interlock
- NEMA 12 enclosure
- Brake monitor top stop indicator
- Ground fault indicator
- Keyed selector switch for two hand/foot mode of operation
- System on illuminated indicator light
- System start guarded push button
- System stop unguarded push button
- Keyed selector switch for Select-O-Stop Function on/off
- Control design writing
- Incorporates light curtain mute-out
- Light curtain interface (optional)

No. UL-102 UltraTouch Modules (optional)

No. 300 Calibrated Switch Actuator (Activates Select-O-Stop)

No. 301 Limit Switches (four)

No. 302 Guarded Foot Switch

No. 303 Dual Solenoid Valve with Muffler

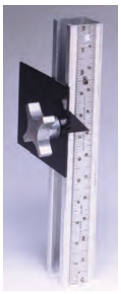
No. 305 Ram Control Cylinder Assembly

No. 306 Heavy Duty Pressure Switch

No. 311 Filter, Regulator, Lubricator

A proper point of operation guarding device is required when using the electric foot switch as the activating device. Refer to Pages 3 through 9 for details.

Components



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For "Custom Programming & Remote Field Upgrades," refer to page 30.

Mechanical Press Brake Control with Automatic Slow Forming

Ram Control Cylinder Assembly–No. 305(Press Brake Applications) The Triad Ram Control incorporates a No. 305 ram control cylinder assembly into the Model 3400 control system to provide a slow speed feature on mechanically actuated, friction clutch press brakes. This allows the operator to automatically slow-form a part to prevent damage to the part and to prevent potential injury due to part "whipping up" during the forming. When equipped with the Triad Ram Control, the ram advances to a predetermined position above the work with the clutch fully engaged (fast down). At this point, the ram will stop, allowing for realignment of the part before forming. The foot switch is then actuated a second time and the ram will advance slowly , forming the part and then return to the top of the stroke at a high speed (fast return). The Ram Control can be adjusted to provide the best speed for the part being formed.

Automatic Ram Cycling and Indexing Options

Auto Cycle — All systems are designed for single stroke only . Auto Cycle allows the press to continue past top stop as long as the operator has maintained foot pedal contact and stops at the Select-O-Stop position. AutoCycle may only be used with a light curtain, which will prevent the press from continuing past top stop, if the operator has his/her hand in the die area when the press reaches top stroke. Excellent for the production of small parts on press brakes and workpieces with flanges.

Auto Retrip — When Select-O-Stop has been turned on, the press will automatically stop at a preset point, which is normally set just above the piece part to be formed. The operator then has to release the pedal and depress it to continue the forming cycle. The Auto Retrip function will automatically restart the press at that point, as long as the operator maintains foot pedal contact. Excellent for large sheet forming.

Auto Form — While controlling the forming speed of a piece part, it sometimes is necessary to fully engage the clutch, just prior to the bottom of the stroke, to obtain a desired radius with the die being used. Auto Form will bypass the feed cylinder at that point, allowing full engagement of the clutch and preventing the possibility of a stall at the bottom of the stroke. Excellent for top end tonnage forming on press brakes.

Auto Return — Press will automatically return to top of stroke after piece part has been formed (requires additional limit switch). This feature enhances ram cycling.

Select-O-Stop function is activated by the calibrated switch actuator which is mounted on the side of the ram. Select-O-Stop allows the operator to bring the ram down to a preset position which is 1/4" (6.35mm) above the material being formed and will automatically stop the ram. This gives the operator the opportunity to realign the work piece and then slow form the workpiece if desired. Select-O-Stop is a keyed function on/off on the main control panel.

Light Curtain Mute-Out automatically bypasses light curtain when die has reached piece part and point of operation hazard no longer exists. Light curtain is automatically reactivated when press reaches top of stroke to prevent operator from being in point of operation during the hazardous downstroke of the press. This feature is only used when a light curtain is used as the point of operation guarding device.

Ordering Procedure (Package 2100)

- ❑ Manufacturer of Press Brake _____ Model _____ Serial #_____
  Bed Length _____
- ❑ Voltage _____Cycle _____ Phase _____

OPTIONS

- ❑ Electro--mechanical relay system (RL) instead of solid state (SS) control.
- ❑ Motor H.P. if magnetic starter desired (Main Motor) ___ Full Load Amps ___ Rev. or Non-Rev.
- ❑ Motor H.P. if magnetic starter desired (Ram Motor) ____ Full Load Amps ___ Rev. or Non-Rev.
- ❑ Main Power fused electrical disconnect switch --- Yes ____ No ____
- ❑ Rotary cam, sprockets, and chain to replace two limit switches

PRODUCTION FUNCTIONS DESIRED

- ❑ Auto Cycle is a keyed function on control panel on/off (can only be used with a light curtain)
- ❑ Auto Retrip is a keyed function on control panel on/off
- ❑ Auto Form is a keyed function on control panel on/off
- ❑ Auto Return is a keyed function on control panel on/off (requires additional limit switch)

- ❑ SuperLight VI infrared light curtain model _____ (requires light curtain interface on control panel if light curtain is used)
- ❑ Light Curtain Mounting Brackets
  - ❑ Model 8000 Pedestal Mounts. Refer to Page 28 for details.
  - ❑ Model 9000 Swing Mounting Brackets. Refer to Page 28 for details.
- ❑ Model BM-1600 Time-Based Brake Monitor. Consult Factory.
- ❑ Specify any additional options desired but not shown.

Mechanical Press Brake Guarding

Retains Mechanical Pedal to Slow Form Parts and to Retain Operator Feel for Forming

Package 1

Model 3400SS (Solid State) Control System

Package 1 was designed to retain the existing mechanical foot pedal for machine actuation in conjunction with the use of a SuperLight VI Floating Blank infrared light curtain as the point of operation guard. Excellent for the long run and where versatility is needed during the forming cycle. Meets current OSHA standards for control reliability and component monitoring and also incorporates brake monitoring.

Package 1 includes the following:

Model 3400SS (Solid State) Control System

- Control reliable design
- Diverse redundant design concept
- Quickview diagnostic message display
- Interrupted stroke provision
- System logic and component diagnostics
- Redundant captive contact safety relays
- Control incorporates cross-checking, self checking, and diverse redundancy
- Control transformer (reduces voltage from 480/260 to 120VAC)
- Power interlock
- NEMA 12 enclosure
- Brake monitor top stop indicator
- Ground fault indicator
- System on illuminated indicator light
- System start guarded push button
- System stop unguarded push button
- Keyed selector switch for Select-O-Stop Function on/off
- Control design writing
- Incorporates light curtain mute-out
- Light curtain interface

No. 300 Calibrated Switch Actuator (Activates Select-O-Stop)

No. 301 Limit Switches (five)

No. 303 Dual Solenoid Valve with Muffler

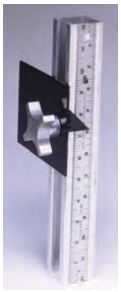
No. 304 Air Cylinder Assembly

No. 306 Heavy Duty Pressure Switch

No. 311 Filter, Regulator, Lubricator

A proper point of operation guarding device is required when using the mechanical foot pedal as the press brake actuating device. Refer to Pages 3 through 9 for proper guarding device specifications.

Components



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For "Custom Programming & Remote Field Upgrades," refer to page 30.

Mechanical Press Brake Guarding

Retains Mechanical Pedal to Slow Form Parts and to Retain Operator Feel for Forming

Package 1 allows an operator to engage and disengage the mechanical friction clutch on a mechanical press brake with the existing mechanical pedal. The light curtain is activated at the top of the stroke (Top Stop) when the operator depresses the mechanical foot treadle and the ram begins its downward travel. This is the hazardous portion of the stroke. The light curtain stays on and the machine cycles until the light curtain is interrupted by the operator or passerby. When interrupted, the solenoid valve is de-energized and the air is dumped from the air cylinder causing the press brake to stop and the mechanical foot pedal to fall to the floor. When the interruption is cleared, the SuperLight VI light curtain automatically resets and the foot pedal gently rises to continue the machine cycle. ***The operator has total control on the machine cycling speed and the forming speed***, (slow-forming) as they currently do by retaining the mechanical pedal as the actuating device.

This system is excellent for the press brake that is working at the top end of the tonnage spectrum and that works with a wide range of products and where the operator must have control of the forming speed.

Select-O-Stop function is activated by the calibrated switch actuator which is mounted on the side of the ram. Select-O-Stop allows the operator to bring the ram down to a preset position which is 1/4" (6.35mm) above the material being formed and will automatically stop the ram. This gives the operator the opportunity to realign the work piece and then slow form the workpiece if desired. Select-O-Stop is a keyed function on/off on the main control panel.

Automatic Ram Cycling
(Package 1 is designed for single stroke only)
Auto Cycle allows the press to continue past top stop as long as the operator has maintained foot pedal contact and stop at the Select-O-Stop position. Auto Cycle may only be used with a light curtain, which will prevent the press from continuing past top stop, if the operator has his/her hand in the die area when the press reaches top of stroke. Auto-Cycle is controlled by a keyed selector switch on the control panel, on/off. Excellent for small p art production and workpieces with flanges.

Light Curtain Mute-Out Automatically bypasses light curtain when die has reached piece part and point of operation hazard no longer exists. Light curtain is automatically reactivated when press reaches top of stroke to prevent operator from being in point of operation during the hazardous down stroke of the press. Light curtain mute-out is only supplied when a light curtain is used as the point of operation guarding device.

Package 1 Ordering Procedure

- Manufacturer of Press Brake _____ Model _____ Serial #_____
  Bed Length _____
- Voltage _____Cycle _____ Phase _____

OPTIONS

- Electro--mechanical relay system (RL) instead of solid state (SS) control.
- SuperLight VI Floating Blank infrared light curtain model. Refer to Pages 3 through 9 for selecting model (requires light curtain interface on control panel when light curtain is used).
- Light curtain Mounting Bracket
- Model 8000 Pedestal Mounts. Refer to Page 28 for details.
- Model 9000 Swing Mounting Brackets. Refer to Page 28 for details.
- Motor H.P. if magnetic starter desired (Main Motor) ___ Full Load Amps ___ Rev. or Non-Rev.
- Motor H.P. if magnetic starter desired (Ram Motor) ____ Full Load Amps ___ Rev. or Non-Rev.
- Main Power fused electrical disconnect switch --- Yes ____ No ____
- Rotary cam, sprockets, and chain to replace two limit switches
- Model BM-1600 Time Based Brake Monitor. Consult Factory.
- Auto Cycle is a keyed function on the control panel on/off (can only be used with a light curtain)
- Specify any additional options desired but not shown

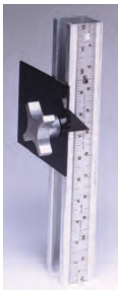
Mechanical Press Brake Guarding

Two-Hand/Foot Method of Guarding and Machine Control

Package 2101

Model 3400SS (Solid State) Control System

Components



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UL-102

Package 2101 is for converting mechanical press brakes currently being actuated by a mechanical treadle.

This system provides a two-hand/foot method of guarding and machine control which converts the press to electric foot pedal operation. System has single stroke and is foot actuated with Select-O-Stop and automatic ram control. Excellent for the job shop for the versatility needed in short runs.

Meets current OSHA standards for control reliability and component monitoring and also incorporates brake monitoring.

Package 2101 includes the following:

Model 3400SS (Solid State) Control System

- Control reliable design
- Diverse redundant design concept
- Quickview diagnostic message display
- Interrupted stroke provision
- System logic and component diagnostics
- Redundant captive contact safety relays
- Control incorporates cross-checking, self checking, and diverse redundancy
- Control transformer (reduces voltage from 480/260 to 120VAC)
- Power interlock
- NEMA 12 enclosure
- Brake monitor top stop indicator
- Ground fault indicator
- Keyed selector switch for two hand/foot method of guarding and machine control (optional)
- System on illuminated indicator light
- System start guarded push button
- System stop unguarded push button
- Keyed selector switch for Select-O-Stop Function on/off
- Control design writing

No. UL-102 UltraTouch Modules (two)

No. 300 Calibrated Switch Actuator (Activates Select-O-Stop)

No. 301 Limit Switches (four)

No. 302 Guarded Foot Switch

No. 303 Dual Solenoid Valve with Muffler

No. 305 Ram Control Cylinder Assembly

No. 306 Heavy Duty Pressure Switch

No. 311 Filter, Regulator, Lubricator

For "Custom Programming & Remote Field Upgrades," refer to page 30.

Mechanical Press Brake Guarding

Two-Hand/Foot Method of Guarding and Machine Control

Two-Hand, Foot Control

The two-hand/foot method of guarding and machine control of press brake operation is unique in that it provides point of operation guarding, yet allows operator to form the part without interference from a guard. Unlike some systems, no additional setup time is required.

When the press stops at the top of the stroke, the foot switch is automatically deactivated, requiring the operator to use the palm buttons once again to bring the ram down to its preset position.

If the operator does not need to hold the part at any time during the stroke, the keyed selector switch may be turned to "hand only." Use of the hand buttons only enables the operator to cycle the press through one complete stroke without stopping. Similar to punch press work.

The press may be jogged at any time but will stop when either the palm buttons or foot pedal is released.

Many safety devices are bypassed for setup purposes. However, this system is ideal for setup since the operator must use the two-hand/foot method for setup as well as production. At the same time, it will not create any additional problems during set up.

Operational Description

- Operator depresses the two run buttons and initiates the press brake stroke.
- Operator must hold the buttons down and the ram descends at fast speed down to the 1/4" (6.35mm) position above the workpiece. If the operator releases one or both run buttons, the ram will stop automatically. If the control panel is keyed to "hand only," the ram will make one complete stroke. This is helpful if the press brake is used for punching, piercing, notching, or blanking.
- Select-O-Stop automatically stops ram 1/4" (6.35mm) above the workpiece.
- If the workpiece is not already in die, it may be inserted at this time.
- The two-hand control or the foot switch is now re-initiated and the press brake slow forms the workpiece and then returns to top stop at high speed. The press brake is then ready for the next stroke.

Ram Control Cylinder Assembly–No. 305 (Press Brake Applications) The Triad Ram Control incorporates a No. 305 ram control cylinder assembly into the Model 3400 control system to provide a slow speed feature on mechanically actuated, friction clutch press brakes. This allows the operator to automatically slow-form a part to prevent damage to the part and to prevent potential injury due to part "whipping up" during the forming. When equipped with the Triad Ram Control, the ram advances to a predetermined position above the work with the clutch fully engaged (fast down). At this point, the ram will stop, allowing for realignment of the part before forming. The foot switch is then actuated a second time and the ram will advance slowly, forming the part and then return to the top of the stroke at a high speed (fast return). The Ram Control can be adjusted to provide the best speed for the part being formed.

Select-O-Stop is a keyed function that is activated by the calibrated switch actuator which is mounted on the side of the ram. Select-O-Stop allows the operator to bring the ram down in fast speed to a preset position which is 1/4" (6.35mm) above the material being formed and will automatically stop the ram. This gives the operator the opportunity to realign the work piece and then slow form the workpiece if desired. Select-O-Stop is a keyed function on/of f on main control panel.

Package 2101 Ordering Procedure

- Manufacturer of Press Brake _____ Model _____ Serial #_____
- Voltage _____Cycle _____ Phase _____

OPTIONS:

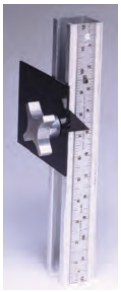
- Electro--mechanical relay system (RL) instead of solid state (SS) control. Photo on Page D-6.
- Motor H.P. if magnetic starter desired (Main Motor) ___ Full Load Amps ___ Rev. or Non-Rev.
- Motor H.P. if magnetic starter desired (Ram Motor) ____ Full Load Amps ___ Rev. or Non-Rev.
- Main Power fused electrical disconnect switch --- Yes ____ No ____
- Rotary cam, sprockets, and chain to replace two limit switches
- Model BM-1600 Time-Based Brake Monitor. Consult Factory.
- Model 8500 pedestal mount for operator run buttons. Specify height from floor. Refer to Page 28 for specifications.
- Additional run buttons for multiple press operators, keyed switch controlled
- Auto-Return function is a keyed function on control p anel on/off (requires additional limit switch)
- Specify any additional options desired but not shown

Mechanical Press Brake Control When Used as Punch Press

Package 2110

Model 3400SS (Solid State) Control System

Components



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Package 2110 Control converts mechanically actuated press brakes to electrical foot switch operation and gives the press brake single forming speed when used as a mechanical power press for punching, piercing, notching, or blanking operations. The control incorporates single stroke function with Select-O-Stop and utilizes an electric foot switch for machine actuation. Meets OSHA standards for control reliability and component monitoring and also incorporates brake monitoring.

Package 2110 includes the following:

Model 3400SS (Solid State) Control System

- Control reliable design
- Diverse redundant design concept
- Quickview diagnostic message display
- Interrupted stroke provision
- System logic and component diagnostics
- Redundant captive contact safety relays
- Control incorporates cross-checking, self checking, and diverse redundancy
- Control transformer (reduces voltage from 480/260 to 120VAC)
- Power interlock
- NEMA 12 enclosure
- Brake monitor top stop indicator
- Ground fault indicator
- Keyed selector switch for two hand/foot method of guarding and machine control
- System on illuminated indicator light
- System start guarded push button
- System stop unguarded push button
- Keyed selector switch for Select-O-Stop Function on/off
- Control design writing
- Incorporates light curtain mute-out
- Light curtain interface (optional)

No. UL-102 UltraTouch Modules (optional)

No. 300 Calibrated Switch Actuator (Activates Select-O-Stop)

No. 301 Limit Switches (four)

No. 302 Guarded Foot Switch

No. 303 Dual Solenoid Valve with Muffler

No. 304 Air Cylinder Assembly

No. 306 Heavy Duty Pressure Switch

No. 311 Filter, Regulator, Lubricator

A proper point of operation guarding device is required when using the electric foot switch as the activating device. Refer to SuperLight VI Programmable Safety Light Curtain for proper guarding device specifications.

For "Custom Programming & Remote Field Upgrades," refer to page 30.

Mechanical Press Brake Control When Used as Punch Press

Operational Description
Package 2110 allows the press brake to be operated as a partial revolution punch press. The controls meet all current standards for control reliability and component monitoring and also incorporates brake monitoring. The normal operating procedure is the same as a partial revolution punch press.

- Operator inserts workpiece into the die area
- Operator clears body parts from hazardous zone
- Operator initiates the ram cycle
- Ram cycles and stops at top stop
- Operator then removes workpiece from die area

Automatic Ram Cycling and Indexing Options
Auto Cycle — All systems are designed for single stroke only. Auto Cycle allows the press to continue past top stop as long as the operator has maintained foot pedal contact and stops at the Select-O-Stop position. Auto-Cycle may only be used with a light curtain, which will prevent the press from continuing past top stop, if the operator has his/her hand in the die area when the press reaches top stroke. Excellent for the production of small parts and workpieces with flanges.
Auto Return — Press will automatically return to top of stroke after piece part has been formed (requires additional limit switch). This feature enhances ram cycling.

Select-O-Stop function is activated by the calibrated switch actuator which is mounted on the side of the ram. Select-O-Stop allows the operator to bring the ram down to a preset position which is 1/4" (6.35mm) above the material being formed and will automatically stop the ram. This gives the operator the opportunity to realign the work piece and then slow form the workpiece if desired. Select-O-Stop is a keyed function on/off on the main control panel.

Light Curtain Mute-Out Automatically bypasses light curtain when die has reached piece part and point of operation hazard no longer exists. Light curtain is automatically reactivated when press reaches top of stroke to prevent operator from being in point of operation during the hazardous downstroke of the press. This feature is only used when the SuperLight VI infrared light curtain is used as the point of operation guarding device.

Package 2110 Ordering Procedure
- Manufacturer of Press Brake _____ Model _____ Serial #_____ Bed Length _____
- Voltage _____Cycle _____ Phase _____

OPTIONS
- Electro--mechanical relay system (RL) instead of solid state (SS) control.
- Main Power fused electrical disconnect switch --- Yes ____ No ____
- Motor H.P. if magnetic starter desired (Main Motor) ___ Full Load Amps ___ Rev. or Non-Rev.
- Motor H.P. if magnetic starter desired (Ram Motor) ____ Full Load Amps ___ Rev. or Non-Rev.
- Rotary cam, sprockets, and chain to replace two limit switches

PRODUCTION FUNCTIONS DESIRED
- Model BM-1600 Time Based Brake Monitor. Consult Factory.
- Auto cycle is a keyed function on control panel on/off (can only be used with a light curtain)
- Auto return is a keyed function on control panel on/off (requires additional limit switch)
- Light curtain Model. Refer to Pages 3 through 9 (requires light curtain interface on control panel if light curtain is used)
- Light curtain Mounting Brackets
  - Model 9000 Swing Mounting Brackets. Refer to Page 28 for specifications.
  - Model 8000 Pedestal Mounts. Refer to Page 28 for specifications.
- Palm button actuation; operator station UL-401.
- Specify any additional options desired but not shown

Air Clutch Press Brake Controls

Updates Controls to Obtain Control Reliability

Package 2120

Model 3400SS (Solid State) Control System

Package 2120 updates the controls on air clutch press brakes to meet current OSHA standards for control reliability and component monitoring and also incorporates brake monitoring.

Single-stroke, foot-actuated function with Select-O-Stop.

Package 2120 includes the following:

Model 3400SS (Solid State) Control System

- Control reliable design
- Diverse redundant design concept
- Quickview diagnostic message display
- Interrupted stroke provision
- System logic and component diagnostics
- Redundant captive contact safety relays
- Control incorporates cross-checking, self checking, and diverse redundancy
- Control transformer (reduces voltage from 480/260 to 120VAC)
- Power interlock
- NEMA 12 enclosure
- Brake monitor top stop indicator
- Ground fault indicator
- Keyed selector switch for two-hand/foot method of guarding and machine control (optional)
- System on illuminated indicator light
- System start guarded push button
- System stop unguarded push button
- Keyed selector switch for Select-O-Stop Function on/off
- Control design writing
- Incorporates light curtain mute-out
- Light curtain interface (optional)

No. UL-102 UltraTouch Modules (optional)

No. 300 Calibrated Switch Actuator (Activates Select-O-Stop)

No. 301 Limit Switches (four)

No. 302 Guarded Foot Switch

No. 303 Dual Solenoid Valve with Muffler

No. 306 Heavy Duty Pressure Switch

No. 311 Filter, Regulator, Lubricator

A proper point of operation guarding device is required when using the electric foot switch as the activating device. Refer to SuperLight VI Safety Light Curtain for proper guarding device applications.

Components

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For "Custom Programming & Remote Field Upgrades," refer to page 30.

Air Clutch Press Brake Controls

Updates Controls to Obtain Control Reliability

Package 2120 is designed for the air clutch press brake that requires the controls to be updated to meet current control reliability standards. The controls are designed to meet these standards for forming operations and also for air clutch press brakes which are used for punching, piercing, or notching operations. SuperLight VI safety light curtains can be added to this control to obtain proper point of operation guarding. Refer to Pages 3 through 9.

Operational Description

- Operator depresses foot switch and ram descends at fast speed to Select-O-Stop position 1/4" (6.35mm) above the workpiece.
- Work piece is realigned or slow-forming mode of the press brake is actuated. At this time the point of operation guard is muted-out until ram returns to top stop position.
- This control is designed to retain current press brake functions and to incorporate control reliability and component monitoring.

Select-O-Stop is a keyed function that is activated by the calibrated switch actuator which is mounted on the side of the ram. Select-O-Stop allows the operator to bring the ram down in fast speed to a preset position which is 1/4" (6.35mm) above the material being formed and will automatically stop the ram. This gives the operator the opportunity to realign the work piece and then slow form the workpiece if desired. Select-O-Stop is a keyed function on/off on main control panel.

Automatic Ram Cycling and Indexing Options

Auto Cycle — All systems are designed for single stroke only. Auto Cycle allows the press to continue past top stop as long as the operator has maintained foot pedal contact and stops at the Select-O-Stop position. Auto Cycle may only be used with a light curtain, which will prevent the press from continuing past top stop, if the operator has his/her hand in the die area when the press reaches top stroke. Excellent for the production of small parts on press brakes and workpieces with flanges.

Auto Return — Press will automatically return to top of stroke after piece part has been formed (requires additional limit switch). This feature enhances ram cycling.

Light Curtain Mute-Out — Automatically bypasses light curtain when die has reached piece part and point of operation hazard no longer exists. Light curtain is automatically reactivated when press reaches top of stroke to prevent operator from being in point of operation during the hazardous downstroke of the press. Light curtain mute out only is supplied when a light curtain is used as the point of operation guarding device.

Package 2120 Ordering Procedure

- Manufacturer of Press Brake _____ Model _____Serial #_____
- Voltage _____Cycle _____ Phase _____ Specify: Single Speed Twin Speed

OPTIONS

- Electro--mechanical relay system (RL) instead of solid state (SS) control.
- Motor H.P. if magnetic starter desired (Main Motor) ___ Full Load Amps ___ Rev. or Non-Rev.
- Motor H.P. if magnetic starter desired (Ram Motor) ____ Full Load Amps ___ Rev. or Non-Rev.
- Main Power fused electrical disconnect switch --- Yes ____ No ____
- Rotary cam, sprockets, and chain to replace two limit switches
- Model BM-1600 Time-Based Brake Monitor. Consult Factory.

PRODUCTION FUNCTIONS DESIRED:

- Auto Cycle is a keyed function on control panel on/off (can only be used with light curtain)
- Auto Return is a keyed function on control panel on/off (requires additional limit switch)

POINT OF OPERATION GUARD OPTIONS:

- SuperLight VI infrared light curtain model. Refer to Pages 3 through 9 for selecting model (requires light curtain interface on control panel if light curtain is used)
- Light curtain mounting brackets
  - Model 8000 Pedestal Mounts. Refer to Page 28 for specifications.
  - Model 9000 Swing Mounts. Refer to Page 28 for specifications.

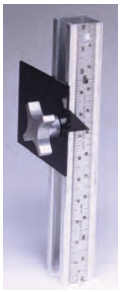
Air Clutch Press Brake Controls

Updates Controls to Obtain Control Reliability for Two-Hand/Foot Method of Guarding and Machine Control

Package 3122

Model 3400SS (Solid State) Control System

Components



#300

#302

#303

#311

#301

#306

UL-102

Package 3122 updates the controls on air clutch press brakes to meet current OSHA standards for control reliability and component monitoring. It also incorporates the two-hand/foot method of guarding the point of operation. The control also incorporates brake monitoring.

Package 3122 includes the following:

Model 3400SS (Solid State) Control System

- Control reliable design
- Diverse redundant design concept
- Quickview diagnostic message display
- Interrupted stroke provision
- System logic and component diagnostics
- Redundant captive contact safety relays
- Control incorporates cross-checking, self checking, and diverse redundancy
- Control transformer (reduces voltage from 480/260 to 120VAC)
- Power interlock
- NEMA 12 enclosure
- Brake monitor top stop indicator
- Ground fault indicator
- Keyed selector switch for two-hand/foot method of guarding and machine control (optional)
- System on illuminated indicator light
- System start guarded push button
- System stop unguarded push button
- Keyed selector switch for Select-O-Stop Function on/off
- Control design writing

No. UL-102 UltraTouch Modules (two)

No. 300 Calibrated Switch Actuator (Activates Select-O-Stop)

No. 301 Limit Switches (four)

No. 302 Guarded Foot Switch

No. 303 Dual Solenoid Valve with Muffler

No. 306 Heavy Duty Pressure Switch

No. 311 Filter, Regulator, Lubricator

A proper point of operation guarding device is required when using the electric foot switch as the activating device. Refer to SuperLight VI Safety Light Curtain for proper guarding device applications.

For "Custom Programming & Remote Field Upgrades," refer to page 30.

Air Clutch Press Brake Controls

Updates Controls to Obtain Control Reliability for Two Hand/Foot Method of Guarding and Machine Control

Two-Hand, Foot Control

The two-hand/foot method of press brake operation is unique in that it provides point of operation guarding, yet allows operator to form the part without interference from a guard. Unlike some systems, no additional setup time is required.

When the press stops at the top of the stroke, the foot switch is automatically deactivated, requiring the operator to use the palm buttons once again to bring the ram down to its preset position.

If the operator does not need to hold the part at any time during the stroke, the keyed selector switch may be turned to "hand only." Use of the hand buttons only enables the operator to cycle the press through one complete stroke without stopping. Similar to punch press work.

The press may be jogged at any time but will stop when either the palm buttons or foot pedal is released.

Many safety devices are bypassed for setup purposes. However, this system is ideal for setup since the operator must use the two-hand/foot method for setup as well as production. At the same time, it will not create any additional problems during set up.

Operational Description

- Operator depresses the two run buttons and initiates the press brake stroke.
- Operator must hold the buttons down and the ram descends at fast speed down to the 1/4" (6.35m) position above the workpiece. If the operator releases one or both run buttons, the ram will stop automatically If the control panel is keyed to "hand only," the ram will make one complete stroke. This is helpful if the press brake is used for punching, piercing, notching, or blanking.
- Select-O-Stop automatically stops ram 1/4" (6.35m) above the workpiece.
- If the workpiece is not already in die, it may be inserted at this time.
- The two-hand/foot method or the foot switch is now re-initiated and the press brake slow forms the workpiece and then returns to top stop at high speed. The press brake is then ready for the next stroke.

Select-O-Stop is a keyed function that is activated by the calibrated switch actuator which is mounted on the side of the ram. Select-O-Stop allows the operator to bring the ram down in fast speed to a preset position which is 1/4" (6.35m) above the material being formed and will automatically stop the ram. This gives the operator the opportunity to realign the work piece and then slow form the workpiece if desired. Select-O-Stop is a keyed function on/of f on main control panel.

Automatic Ram Cycling and Indexing Options
Auto Return — Press will automatically return to top of stroke after piece part has been formed (requires additional limit switch). This feature enhances ram cycling.

Package 3122 Ordering Procedure

- Manufacturer of Press Brake _____ Model _____ Serial #_____
- Voltage _____Cycle _____ Phase _____

OPTIONS

- Electro--mechanical relay system (RL) instead of solid state (SS) control.
- Motor H.P. if magnetic starter desired (Main Motor) ___ Full Load Amps ___ Rev. or Non-Rev.
- Motor H.P. if magnetic starter desired (Ram Motor) ____ Full Load Amps ___ Rev. or Non-Rev.
- Main Power fused electrical disconnect switch --- Yes ____ No ____
- Rotary cam, sprockets, and chain to replace two limit switches
- Model BM-1600 Time-Based Brake Monitor Description. Consult Factory.
- Model 8500 Pedestal mount for operator run buttons. Refer to Page 28 for details.
- Additional run buttons for multiple press operators
- Auto-return function--Press will return to top of stroke after part has been formed (requires additional limit switch)
- Specify any additional options desired but not shown

Press Brake Classification

Air Clutch, Hydraulic, Hydro-Mechanical

These designs of press brakes usually incorporate twin forming speeds and are normally actuated by an electric foot switch. Due to their more recent date of manufacture, the controls normally have control reliability but verification of this should be done prior to machine guarding. If the controls meet current standards, the following is needed:

- Mute-Out Package #130 PB (see Page 10)
- SuperLight VI Safety Light Curtain (see Pages 3 through 9)
- Mounting Brackets for light curtain (see below)

NOTE: Always submit the machine electrical schematic to assure proper point of interface.

Pedestal Mounts

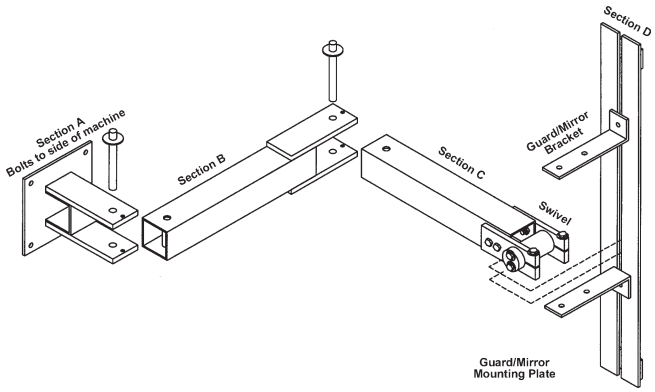
Painted OSHA yellow and made of heavy angle construction. Both models are supplied with a floor mounting plate that can be lagged to the floor.

Model 8000: used to mount cornering mirrors or safety light curtains off of a machine.

Model 8500: used to mount an operator station or palm buttons off of a machine and includes a top plate for mounting.

Swing Mount Brackets

Model 9000: Excellent method of mounting light curtain for press brakes or when light curtain is to be moved for die set-ups or machine maintenance. Model 9000 consists of three 180 degree pivot points along with light curtain diagonal movement capability for virtually unlimited light curtain positioning. Model 9000 is a two-inch square tubing painted OSHA yellow which mounts directly onto the machine housing making it a heavy duty yet versatile mounting bracket.



B and C Dimensions are Required

1. Pivot Point (1) will rotate 90 degrees in either direction from position shown.
2. Pivot Point (2) will rotate 180 degrees to the right from position shown.
3. Pivot Point (3) will rotate 90 degrees in any direction from position shown.
4. Light curtain mounting plate is slotted to allow adjustment up or down.