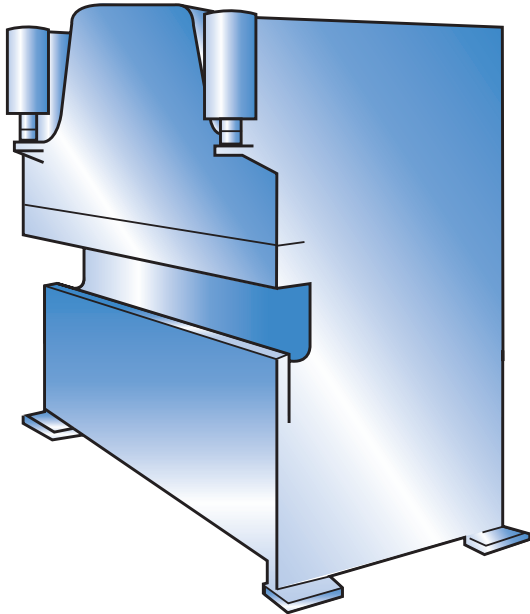
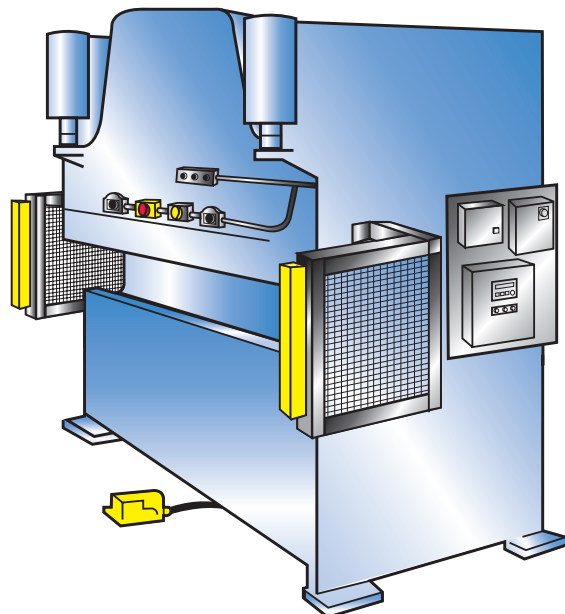


HYDRAULIC PRESS BRAKES

UNGUARDED



SAFEGUARDED WITH LIGHT CURTAIN OR TWO-HAND CONTROL



INTRODUCTION

Hydraulically operated press brakes are widely used in industry today. Manufacturers of these types of press brakes are listed on pages 150-151.

Most hydraulic press brakes have single-stroke and high/low modes for cycling the machines. When the high/low mode is selected, usually the slide or beam will start to close at high speed and then automatically go to a slow speed to finish bending the workpiece. The slide or beam will usually return at a high speed.

These press brakes usually have a down-acting slide or an up-acting slide (moving lower slide or beam). The existing electrical controls may have control reliability. For verification of this, a review of the electrical and hydraulic schematics by our engineering department is required.

SAFEGUARDING

Like any other hydraulically operated press brake, the moving slide creates a point-of-operation hazard as the dies close. To safeguard these machines, a light curtain control package can be installed. These controls also include two-hand control that can be used as a point-of-operation safeguarding device. The palm buttons must be pressed concurrently and maintained during the hazardous portion of the stroke. Release of one or

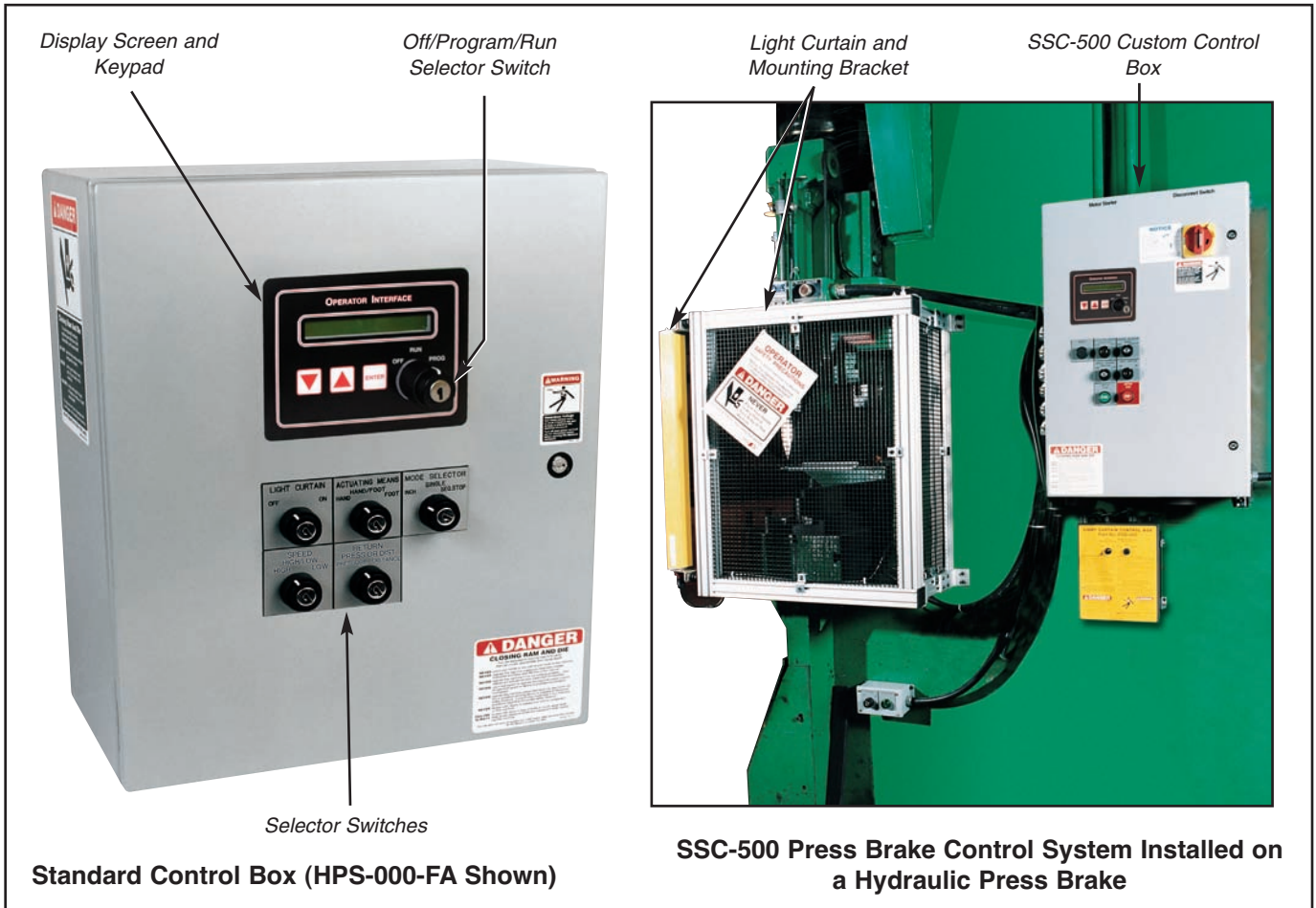
both palm buttons reverses or stops the action of the slide. The palm buttons must also be mounted at the proper safety distance. Please refer to the safeguarding section of this catalog for choices of other safeguards that are available.

SELECTING A CONTROL SYSTEM FOR HYDRAULIC PRESS BRAKES

1. Identify if the press brake is a down-acting or an up-acting press brake. The electrical and hydraulic schematics must be sent to Rockford Systems for our engineering department to review to determine if the press brake has control reliability. If a light curtain or two-hand control will be furnished, these schematics are required to properly interface these safeguards into the control system.
2. Light curtains and light curtain mounting brackets are not part of the component packages and must be ordered separately. Please see pages 45-73 for light curtain options and mounting brackets.
3. Determine what rear safeguarding must be applied. See page 213 for a cable and push-button e-stop assembly.

HYDRAULIC PRESS BRAKES

SSC-500 HYDRAULIC PRESS BRAKE CONTROL



STANDARD SSC-500 HYDRAULIC PRESS BRAKE CONTROL

This SSC-500 solid-state control system is designed for use on hydraulic press brakes. It is designed and built to comply with OSHA 29 CFR 1910.212 and ANSI B11.3 and B11.19. This control can update or replace existing relay-based or PLC control systems on hydraulic press brakes that are found in users' plants or can be furnished for new hydraulic press brakes.

The control includes control reliability, light curtain interface, and diagnostics (one user-programmable input). It also includes batch and stroke counters with presets, and a hard-wired emergency-stop master control relay.

The SSC-500 is an economic, full-featured dual-microprocessor-based control system. The system uses redundant inputs from components such as palm buttons, foot switches, and light curtain(s).

The system output to the solenoid valves is provided by one safety relay with force-guided contacts and two 115-V AC solid-state relays. These output relays are independently controlled and cross-checked by the microprocessors. This allows control reliable operation of the outputs in the event of a single control component failure.

The standard control box is a 24" x 24" x 8" NEMA enclosure with the operator controls, ground indicator light, and the keypad/display mounted on the door, as illustrated in the left photo above.

Please go to the chart on page 138 to obtain the correct SSC-500 hydraulic control part number and follow directions 1-8.

Please see page 139 for the information on the cams and limit switches for cycle timing.

HYDRAULIC PRESS BRAKES

STANDARD SSC-500 HYDRAULIC PRESS BRAKE CONTROL (continued)

MODES OF OPERATION

- Off
- Two-hand inch
- Two-hand single stroke
- Foot single stroke
- Sequence stop (hand/hand, hand/foot, foot/foot, PSDI/foot)
- High/low automatic speed change
- One-hand or foot trip single stroke
- PSDI (presence-sensing device initiation)*

*A remote station may be required to use this mode of operation.

FEATURES

- Meets and exceeds OSHA 29 CFR 1910.212 and ANSI B11.3 and B11.19
- Provides two-hand control safeguarding device
- NEMA 12 enclosure
- Redundant/cross-checking microprocessors
- Two monitored 115-V AC solid-state solenoid relays
- One user-programmable sinking input (24 V DC) for diagnostic monitoring
- 1-line x 16-character LCD with 3-key keypad for operator interface
- Bottom dwell timer (0-60 s)
- Decompression timer (25-250 ms)
- Selector switch for slide return (pressure or distance)
- Light curtain interface with off/on selector switch
- Selector switch for high, high/low, and low speed (to support machines with a speed change solenoid valve)
- The existing TOS (top-of-stroke) and BOS (bottom-of-stroke) limit switches can be reused
- 7-digit stroke and batch counters with presets
- Blocking valve monitoring
- PSDI (presence-sensing device initiation) single- and double-break modes of operation

OPERATOR INTERFACE KEYPAD/DISPLAY

The operator interface keypad/display is used to enter setup information, monitor machine operation, and display messages on a 1-line by 16-character LCD (liquid crystal display). As standard, this keypad is mounted in the control box door. For operator convenience, it can be installed in a remote operator station (see page 180). Programming is accessed by a keyed selector switch on the keypad.



Operator Interface Keypad/Display

PROGRAMMING

The SSC-500 can be quickly and easily programmed. There is one 24-V DC current-sinking (NPN) programmable input provided for the user. A fault message, input logic, and stop type can be assigned to the input from the following list. When a fault condition is detected, the machine will top stop or emergency stop, and the assigned message will be displayed. This feature helps when troubleshooting common fault conditions.

Fault Message List:

Lube Fault	Rear Guard Fault
High Lube Fault	Left Guard Fault
Low Lube Fault	Right Guard Fault
Low Lube Level	Load Monitor Fault
Main Motor Overload Fault	Safety Block Fault
Lube Motor Overload Fault	Stock Buckle
Auxiliary Motor Overload Fault	End of Stock
Guard Open Fault	Die Protection Fault

SPECIAL NOTE

To determine whether the SSC-500 hydraulic control can be used with the existing hydraulic system, please furnish both electrical and hydraulic schematics of the existing equipment to Rockford Systems' engineering department for verification when requesting a quote or when ordering.

HYDRAULIC PRESS BRAKES

SSC-500 HYDRAULIC PRESS BRAKE CONTROL (continued)

CUSTOM SSC-500 HYDRAULIC CONTROL BOX

Hydraulic press brake SSC-500 custom control boxes are also available to fit your particular needs. These controls include the same features and modes of operation as the standard control box as described on pages 177 and 178.

These custom control boxes are furnished with an IEC through-the-door main power fused disconnect switch and a hydraulic pump IEC magnetic motor starter (with push buttons). They are prewired and built into a NEMA 12 oil-tight enclosure.

Operator controls and the keypad/display can be located on the front of the enclosure door. A plain-door control or subpanel can also be furnished. If a plain-door custom control or a subpanel custom control is required, a remote operator station is needed (see next page).

NEMA-type disconnect switches and motor starters, and brand name components that may be specified are also available. To ensure the starter and disconnect are sized properly, please check horsepower for the main hydraulic motor on the press brake, as well as full-load amps, and primary voltage to the press brake. After obtaining this information, please go to the chart on page 138 and follow directions 1-8 to determine the proper custom control box part number.

Example of part numbering system: The press brake requires a control with a nonreversing 30-A main motor starter without ram adjust, a 60-A disconnect switch for 10-HP motor, voltage is 230 V, and operators are on the door. The part number to order would be **HPS-214-FA**.

SSC-500 HYDRAULIC PRESS BRAKE REMOTE-OPERATOR STYLE CONTROL BOX

Remote operator-style X, Y, and Z hydraulic press brake control boxes include the same features and modes of operation as the standard SSC-500 press brake control boxes described on pages 177-178.

However, they do not have a control transformer. These control boxes are designed in a smaller enclosure so they can be conveniently located on the front of the machine near the operator. The keypad/display and all operator controls are located on the front of the enclosure door.

These controls are for applications where the machine's existing magnetic motor starter, fused disconnect switch, and **control transformer** meet the safety requirements and can be reused. If the existing control transformer cannot be reused or a new one is required, please contact the factory.

CONTROL MODULE KIT

Part No. HPS-000-KA

A control module kit allows the end user to update the hydraulic control of a press brake with minimum equipment costs. The kit is supplied without the control enclosure, panel, control transformer, control fuse, terminal strips, wire duct, and wiring.

A set of electrical prints is supplied to show typical wiring and all mounting dimensions are provided in order for a qualified person to install the control module kit. The minimum area required on an existing control panel to install this kit is 18" H x 14" W x 6" D.

This control module kit includes the control module, control relays, shock mounts, fasteners, suppressors, danger labels, and electrical prints. A keypad/display kit is required unless a remote operator station is used (see below).

KEYPAD/DISPLAY KIT

Part No. LLD-5039—STANDARD KIT

The keypad/display kit can be used with any of the plain-door control boxes or the control module kit. This kit includes the keypad/display, an off/on/program selector switch, a light curtain off/on selector switch, a hand, hand/foot, foot selector switch, an inch/single/sequence stop selector switch, a speed selector switch, a return selector switch, nameplates, and 25' of cable. Additional push buttons and nameplates for the motor starter, etc., can be furnished depending on the features required. Please consult the factory.

HYDRAULIC PRESS BRAKES

SSC-500 REMOTE OPERATOR STATIONS FOR CUSTOM CONTROL BOXES

REMOTE OPERATOR STATIONS

For operator convenience, a remote operator station can be furnished for use with a plain-door standard control box, plain-door custom control box, module kit, or subpanel. The remote operator station contains the keypad/display, program selector switch, other selector switches, and push buttons as required.

Remote operator stations are available in a standard format or can be customized to meet any requirements. Select from the following remote operator stations.



Part No. LLD-5019
Remote Operator
Station for
Hydraulic Press

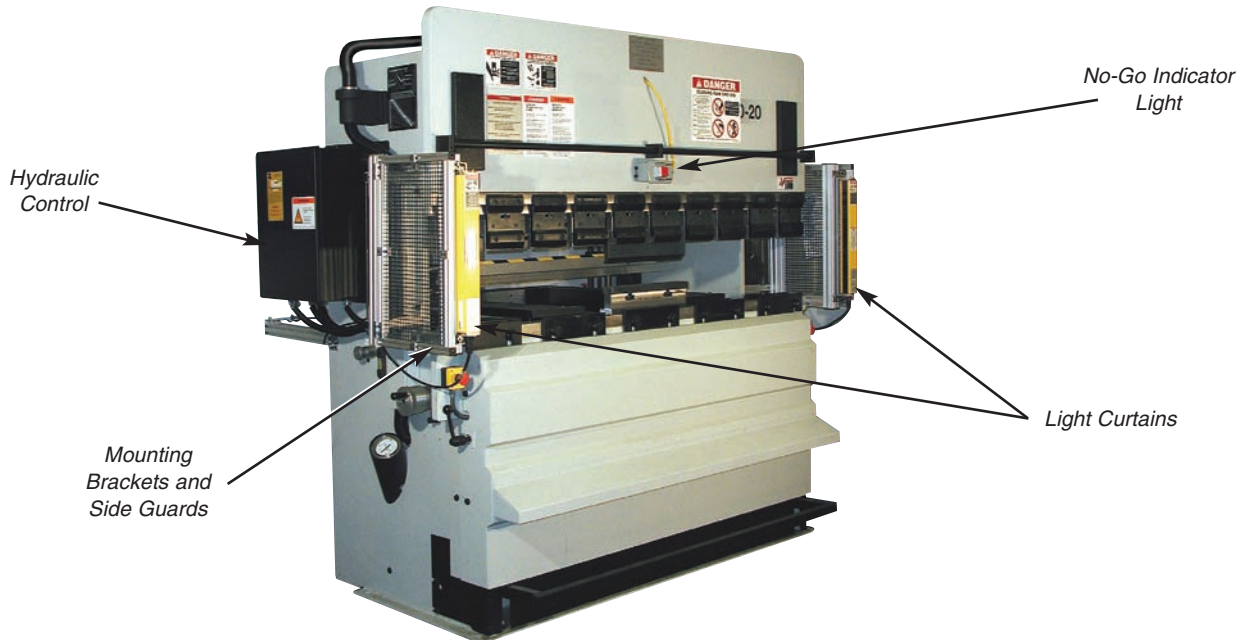
FEATURES	PART NO. LLD-5019	PART NO. LLD-5020	PART NO. LLD-5021	PART NO. LLD-5022
Keypad/Display	X	X	X	X
Off/Program/Run Selector Switch	X	X	X	X
Light Curtain Off/On Selector Switch	X	X	X	X
High/Low Speed Selector Switch	X	X	X	X
Pressure/Distance Return Selector Switch	X	X	X	X
Inch/Single/Sequence Stop Selector Switch	X	X	X	X
Hand, Hand/Foot, Foot Selector Switch	X	X	X	X
PSDI (Presence-Sensing Device Initiation) Operators		X		X
Main Motor Start and Stop Push Buttons			X	X

The above remote operator stations are available without the enclosure. Please consult the factory.

INDIVIDUAL COMPONENTS

Individual components such as cycle timing devices and blocking valves, may be required to complete the SSC-500 hydraulic press brake control system. Other components may include a palm button assembly, foot switch, PSDI station, supervisory control station, etc. Please see pages 139 and 140 for the part numbers and descriptions of these components.

MOVING LOWER RAM (BEAM) HYDRAULIC PRESS BRAKES



Moving Lower Beam Press Brake With a Light Curtain as the Point-of-Operation Safeguard

UP-ACTING PRESS BRAKES

On these types of press brakes, the upper die and support is stationary and the lower beam raises (up-acting) to apply the necessary force to bend or form the material. The moving lower beam on these machines creates a point-of-operation hazard as the dies close. To safeguard these machines, a control package and a light curtain system can be installed.

This type of machine is hydraulically operated and is usually controlled by a mechanical foot treadle or foot switch. When the foot treadle is depressed, it operates a proportional valve that supplies hydraulic power to raise the lower beam. If the press brake does not operate in this manner, please consult the factory.

Since this is a manually actuated hydraulic machine, the only electrical equipment used is a hydraulic pump motor and motor control. Typically, the control consists of pump motor start/stop push buttons and a motor indicator light. A disconnect switch and motor starter can also be provided.

The control systems available include a light curtain interface which allows the operator to continue to use the existing mechanical foot treadle. The light curtain and control are arranged so that if an operator should enter the plane of light as the beam comes up, the beam will return to its starting point. This is accomplished by tying in to the hydraulic pump motor control circuit. The light curtain can be muted from ¼" or less from the workpiece and through the balance of the working

part of the stroke. During the mute portion of the stroke, the workpiece can be bent into the plane of light and the machine will finish its cycle.

Electrical and hydraulic schematics must be sent to our engineering department to review for control reliability for all up-acting press brakes. After engineering has reviewed these schematics, a proposal detailing the necessary equipment to update or replace your hydraulic control will be sent to you.

CONTROL BOX

The following control boxes and components can be applied to various up-acting press brakes such as Amada RG series and Hurco. Send electrical and hydraulic schematics to our engineering department in order to verify that this control will provide a light curtain interface to your existing machine.

ORDERING INFORMATION	
Control Box Part No.	Additional Components Required
LRS-402	CMC-029—Limit Switch CMT-027—Linear Cam Assembly RCD-533—Hydraulic Valve*
LRS-280 (For use with Amada RG series with an NC9EX backgauge only)	CMC-029—Limit Switch CMT-024—Linear Cam Assembly RCD-533—Hydraulic Valve*

*If required

