

Hydraulic Press Control Replacements

Specified, quoted, sold, designed, built in USA, installed on your press, wired, start up and training by



175 Ton Cincinnati High Speed Hydraulic Presses
and Other High Tonnage Hydraulic Presses
Get New Programmable Controls

Money Saving Note:

The control design may attempt to REUSE existing components to reduce cost if desired.

Heavy duty motor starters and switch gear are an example.

Your new electronic controls include ONLY what you need and want.

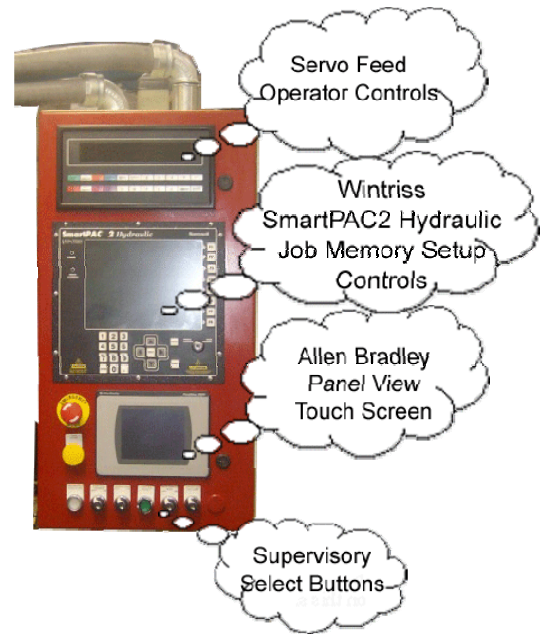
We are insured and have installed hundreds of press controls for over 30 years!

First,

We use a **Wintriss SmartPac2™ Hydraulic** system to bring amazing new, high technology functions to your hydraulic press. IT ALLOWS YOU TO **SAVE YOUR ENTIRE JOB SETUP** including; the upper and lower stroke limit, the press speed, the speed change points, and the optional reverse on pressure (tonnage) and much more! Spare programmable, job memory CAMS are included standard!

Things that were considered impossible or extremely expensive are now EASY. You buy only what you want and need. Here's what YOUR old hydraulic press could now have: Wintriss™ Die Protection, Servo feed setup, Smart View job memory backup, Info Center job documentation, Error/Event Logging, Hot keys, More Memory Programmable Cams and LETS factory efficiency reporting.

v v v SEE THE WHOLE STORY BELOW v v v





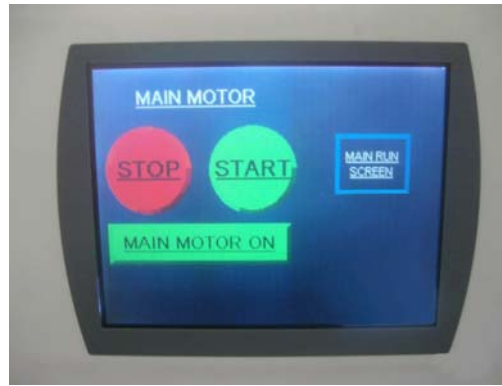
Using PanelView C600® color touch screen
to handle ALL non-supervisory buttons needed
saving panel space and \$\$\$\$.



Rockwell, Allen Bradley MicroLogix 1400®
programmable logic controller shown with
Smart Guard 600® Safety Controller



Inside the operator's console, from top to bottom:
Servo Feed operator's panel,
Wintriss SmartPac2™ Hydraulic system panel,
PanelView C600® color touchscreen and
six supervisory buttons or selectors.



PanelView C600® color touchscreen and supervisory control buttons.
 The touch screen handles ALL other buttons needed
 saving panel space and \$\$\$\$.

Next

A **Rockwell, Allen Bradley MicroLogix 1400®** programmable logic controller provides the foundation of the control. It handles functions such as single stroke, inch, continuous modes, all hydraulic functions, press lube, optional die clamping and status messages sent to SmartPAC2. It also monitors safety circuit outputs from the Smart Guard 600 via hard wired inputs and over the machine Ethernet network.

The speed and movement of the press ram is controlled by the MicroLogix 1400 based on job settings that are SAVED in the SmartPAC2 operator control. Hundreds of jobs may be set up and saved for quick set up change over!

Finally,

A **Rockwell, Allen Bradley Smart Guard 600® Safety Controller** monitors all of the safety devices on the press. It monitors the hard wired e-stop, light curtain guards, guard interlocks, die blocks and safety contactor output for example.

A Rockwell, Allen Bradley **PanelView C600® color touch screen** is the operator interface for starting the press motor, selecting the press stroke mode, and operating the die clamping system. Why pay for old fashioned control buttons when the touch screen can do it for you? It uses much less panel space too. The press speed that was selected with the job setup and saved in the SmartPAC2™ is also displayed.

Many other functions can be set up using the PanelView C600 depending on your needs. We show an example of an optional maintenance screen that can be used for checking and adjusting hydraulic pressure.

Here Are The Details:

The Wintriss SmartPac2™ Hydraulic System works like our mechanical press system except that it has linear cams instead of rotary cams. Now you can have the finest Wintriss™ Die Protection and automation on your hydraulic presses that thousands are familiar with on mechanical punch presses.

The ProCamPac™ linear cams understand when the press is on the upstroke or down stroke. You can easily set cams to turn on during the upstroke and stay on to a point in the down stroke. All die protection cam settings work this way as well.

SmartPAC2 programmable cams AND die protection settings are adjustable while the press is running. This makes fine tuning a job easy.

The settings are saved with the job. Jobs can be copied and renamed and backed up to a laptop or networked computer.

Additionally, the SmartPac2 communicates with the MicroLogix 1400 over an RS232 half duplex connection, allowing press control error and status messages to be displayed on its color screen.

The ProCamPac™ 8 channel linear cam uses 6 channels for the press control. This leaves 2 spares. The cams needed for the press control are:

1. PROGRAMMABLE UPPER LIMIT
2. PROGRAMMABLE LOWER LIMIT
3. PROGRAMMABLE DWELL ON BOTTOM
4. RESERVED FOR TONNAGE MONITORING
5. GLOBAL LOWER LIMIT
6. SPEED CHANGE POINT

Cams that are not needed can be re-assigned to, for example, additional speed change or stock feeder control. Also, eight additional cams can be purchased.

Our example **Cincinnati High Speed Hydraulic 175 ton Press** has solenoids for 3 different speeds for down stroke and 3 speeds for upstroke. Speeds and change points are selected using SmartPac2 and saved with all the other job settings.

Press Operating Modes

All modes of operation require the safety circuits to be closed and in a normal run state. All downward movement of the ram requires actuation of the two hand control buttons.

1. **Single Stroke.** In single stroke the press cycles thru the stroke at the selected speeds. A single stroke cycle must be started at the top of the press stroke. The run buttons must be held down through the bottom of the stroke. Once the press reaches the bottom of the stroke, the run buttons can be released and the ram will return to the top of the stroke and stop.
2. **Inch.** In the inch operating mode the press will cycle at the speeds that are selected. The press does not need to be at the top of the stroke to start an inch cycle, and can be jogged through the entire press cycle.
3. **Continuous.** In continuous the press will cycle thru the stroke at the selected speeds. Continuous operation must

be started at the top of the press stroke and a prior act input must be made before starting the press. The run buttons must be held down through the bottom of the first continuous stroke. Once the ram reaches the bottom of the stroke the run buttons can be released, the press will continue to cycle until a stop input is present.

4. **Die Change.** The die change operating mode will move the press ram down at slow speed only. The ram does not need to be at the top of the press stroke for a die change cycle to be started. Once the press reaches the bottom of the stroke the ram stops.
5. **Manual Return.** The manual return button is enabled in all four operating modes. When pressed the ram will move up until the button is released, or until the ram reaches the absolute upper limit of the press. Pressing the manual return button while the press is moving down will cause the ram to reverse.

Supervisor Control

Supervisor control is achieved by a keyed selector switch labeled Supervisor. The supervisor key must be in the on position to select the stroke mode, start the press motor and unclamp the die. Once the press is set up for operation the supervisor key can be switched to off and removed. With the supervisor key off, no changes can be made to press stroke mode or die clamps, the press motor can be stopped but the supervisor key must be turned on before the motor can be restarted. The supervisor key also takes the press control out of lockout, by cycling the key from the off position to the on position.

Anti – Tie Down / Anti – Repeat

Four MicroLogix 1400 inputs, one normally closed and one normally open on each run button, are used for the anti – tie down / anti – repeat circuit. For the MicroLogix to process a valid run input the following steps must occur in this order:

1. Both run buttons must be released.
2. The press must be stopped at the top of the stroke.
3. The press must be in a ready to run state (no E-Stop, light curtain faults etc.)
4. Both run buttons must be pressed within two seconds of one another.
5. Both run buttons must be held down thru the bottom of the stroke.
6. Both run buttons must be released before another press cycle can be started.

If one run button is held down for more than two seconds, then both run buttons must be released to reset the anti – tie down timers. As soon as the press starts, the anti – tie down timers are placed in a forced expired state, preventing the press from being jogged with one hand within the two second palm time window. After the press stroke is completed a no run input must be present before another press cycle can be started. Additionally, one run button is wired to sinking inputs of the MicroLogix while the other run button is wired to sourcing inputs of the MicroLogix, to prevent an attempt by the end user to defeat two hand operation.

Continuous Prior Act

If continuous operation will be installed, the press must have OSHA compliant light curtains, electrically interlocked hard guards, or a combination of both. It is the end user's responsibility to insure all hazards are properly guarded.

Operation: before the press can be started in continuous a prior act button must be pressed. The following steps must be followed to produce a valid prior act signal:

1. The press must be stopped at the top of the stroke.
2. The run buttons must be released.
3. The prior act button must be released.
4. The prior act button must be pressed and released.
5. A valid run input must be seen within six seconds of a valid prior act input.
6. The run buttons must be held down thru the bottom of the first continuous stroke.
7. After the first continuous stroke is completed the press will cycle continuously until a top stop is opened, or until a safety circuit is opened.

If the prior act button is held for longer than two seconds, then the valid prior act signal will be canceled until the prior act is released and the prior act process is restarted. As soon as the press is started the prior act timers are placed in a forced expired state, preventing the press from being started more than one time per prior act input. An indicator lamp on the prior act push button stays lit while the prior act timers are enabled.

Smart Guard 600® Safety Controller

The Smart Guard 600 safety controller is approved and certified for use in safety applications per IEC 61508 and ISO 13849-1, providing a Safety Integrity Level (SIL) 3, and Category (CAT) 4 safety control. Each safety circuit

uses dual test voltage sourcing inputs, where one input seeks test voltage 0 and the other input seeks test voltage 1. The test voltages are outputted from the Smart Guard 600 at 24 VDC, however each test voltage is pulsed at different frequencies. If the wrong test voltage or pure 24 VDC is applied to a safety input the Smart Guard goes into a fault condition. Safety circuits wired to the Smart Guard include, emergency stop push buttons, hard guard safety interlock switches, front and rear light curtains, and a die safety block receptacle. Each safety circuit has two inputs as stated above, if the state of the dual circuits disagree, then the safety controller goes into a fault condition. Internal logic in the Smart Guard 600 controller activates a safety rated output for each safety circuit input. Each safety output is wired to inputs of the MicroLogix controller for safety circuit status. Two safety contactors are also wired to two of the safety outputs of the Smart Guard 600. All safety circuits must be closed and in a normal run condition for the safety contactors to turn on. The state of each safety contactor is monitored and can never disagree. All of the ram motion solenoids power is passed thru normally open contacts of the two safety contactors. The main ram down and main ram up solenoids are also wired to safety outputs of the Smart Guard 600. If voltage is present at any of the safety outputs while they are in an off state the Smart Guard goes into a fault condition. Any time that the Smart Guard is faulted the press control goes into a lockout state.

**LET'S MAKE YOUR HYDRAULIC PRESS BETTER THAN
EVER!
CALL**

***Crane* PRODUCTION SYSTEMS CORP.**

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