

# Theory of Operation

The Series 2110 shut height monitor accurately indicates shut height positions to quickly and accurately assist setup personnel in changing a die on a mechanical stamping press. Positions can be monitored within a thousandth of an inch. During a die change, the monitor displays the position of the press's shut height on a large LED display. If the shut height is moved beyond its programmed end limits, the monitor de-energizes a limit switch. (This will only occur if the optional relay module is installed.) This limit switch can work in conjunction with the safety interlock of the press. For example, when wired properly, power will be removed from the press's ram adjust motor(s).

The monitor can also stop updating the shut height during a press's stamping cycle while retaining the last shut height read. This is used to filter out press movement and deflection during the stamping cycles. When power is applied to the input, the monitor holds the displayed shut height on the read out. When this input is released, the monitor continuously updates the display with the current shut height position.

A built-in timer is also included which is used to detect a possible jam or drive component failure. The timer starts when power is applied to the ram adjust motor(s) and stops when the monitor senses motion from the input device. If the ram does not move within a programmed value, the monitor de-energizes limit switches and displays an error message. When properly wired to the safety interlock of the press, the limit switches de-energizing will take power away from the press's ram adjust motor(s).

Other features of the shut height monitor include the following:

- Measures in inches or millimeters.
- Program mode access code protects against unauthorized access.
- Separate bolster plate offset speeds setup.
- States of the limit switches can be changed for N.O. and N.C. operations.