HEATED HOLE PUNCH SETUP
AND OPERATIONS

Heated Hole Punch system is an add-on accessory for vertical form, fill and seal packaging machines. This unit provides for the addition of a hole punch to the seal area of a bag. The system consists of sealing jaws that have a provision for the hole punch and hole punch heater, a heated hole punch with an internal thermocouple and the control unit.

The sealing jaws have a hole in the seal face that allows the hole punch to extend past the sealing teeth to punch and seal a hole as the jaws close. The punch location is adjusted by loosening a setscrew that locks the punch in position and sliding the punch to the proper position. The punch cauterizes a bead around the edge of the hole to provide extra strength. This works particularly well with polypropylene films. The hole punch heater contains an internal thermocouple used in conjunction with the control unit to precisely maintain the set point temperature. An insulator surrounds the punch and heater to thermally isolate the punch from the sealing jaw heaters to allow for precise temperature control.

The control unit is custom manufactured by SOUTHWEST FORMSEAL, INC. It consists of a 7.5” wide X 9.5” high X 7.0” deep stainless steel NEMA 12 splash proof enclosure containing a compact 1/32 DIN temperature controller with a PID control algorithm. An LED panel on the control unit displays the actual temperature of the hole punch heater. The control unit requires a supply voltage of 120 volts. The electrical cord entering the enclosure supplies all the power requirements for the heater and control unit. All parameters required for proper operation of the control unit are preset by SOUTHWEST FORMSEAL. Power on/off and temperature setting are the only user inputs required. A self-test sequence initiates when the control unit is powered on ensures precise process temperatures. A high-temperature limit is pre-programmed to prevent overheating and heater burnout.

OPERATION - Operation of the control unit is straightforward. The heaters on the sealing jaws should be up to temperature before power is applied to the heated hole punch. The power switch is located on the front panel below the temperature controller. The controller runs through a self-test sequence when it is powered up, then displays the actual measured temperature. This takes just a few seconds before the unit is ready to operate. Four buttons are located on the front panel of the temperature controller (“set,” “arrow up,” “arrow down,” and “infinity”). The second and third buttons (“arrow up” and “arrow down”) close the process temperature. Pressing and holding the “set” and “arrow up” buttons causes the temperature to rise; conversely, pressing and holding the “set” and “arrow down” buttons causes the temperature to drop. The LED display shows the temperature changing while the arrow buttons are depressed. The actual temperature returns to the display after a few seconds. When the “set” button is momentarily depressed, the set point temperature is displayed. The high temperature limit is set to 850 degrees (F). Actual set point temperature is determined while the machine is in operation. Factors such as film type and thickness determine the proper temperature setting of the heated hole punch unit.

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