

ADVANCED FEATURES & OPTIONS

6.1 Advanced Features

6.1.1 Low Pressure Alarms

Gas Supply Pressure Switches are installed on the process gas manifolds. These switches are normally closed. They open when proper pressure is present in the process gas supply lines.

The current switches are set to open when pressure falls below set points in the following table:

Table 6-1 Initial Alarm Settings			
Manifold	Process Gas	Pressure	
Gas 1	Nitrogen or CDA	55-60 psi	3.8-4.1 Bar
Gas 2	Nitrogen, Forming Gas or other (Dual Gas option only)	55-60 psi	3.8-4.1 Bar
Gas 2	Hydrogen (H ₂ option only)	55-60 psi	3.8-4.1 Bar

The pressure switch set points can be adjusted manually. Locate the switch in the process gas supply line. To increase the set point turn the wheel clockwise. Turn the top of the switch counter clockwise to decrease the pressure set point so the alarm will not occur until the pressure drops to a lower point.



Figure 6-1 Pressure Switch

6.1.2 Sample Ports (option)

This option includes control enclosure port connection to one or more of the sample ports located on the underside of each zone. Allows connection of an oxygen analyzer, moisture analyzer or other gas analyzer. Must be used with a sample pump (not included). See port connection location in Figure 2-10. Figure 6-5 shows port location on a RTC LA-306. Actual port connection to chamber can be seen in .

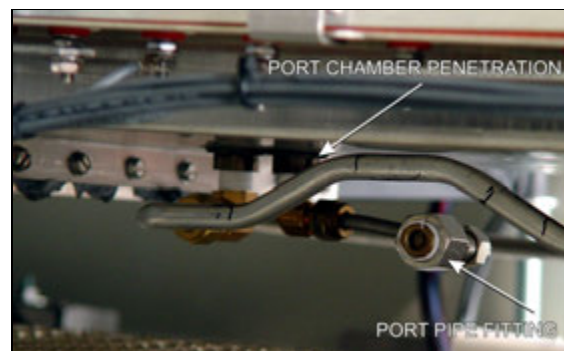


Figure 6-2 Sample Port Chamber Penetration

6.1.3 Oxygen Analyzer (option)

Includes process oxygen analyzer with electrochemical RACE™ cell and internal sample pump (0.1-0.5 L/min sample rate). Measuring range: 0.1-1000 ppmv. Features microprocessor controlled functions, large auto-ranging LED display, and fast response. To avoid interference, must indicate if hydrogen gas will be present.



Figure 6-3 Oxygen Analyzer



Figure 6-4 Oxygen Analyzer

Section 6

6.2 Options

6.2.1 CB-1 Circuit Breaker (option)

A special high-power circuit breaker is inserted in the supply power lines with access at the rear of the furnace on the back or side of the Control Enclosure. See Figure 6-5.



Figure 6-5 Control Console showing 3 options: Circuit Breaker; Dual Process Gas; & Sample Port



Figure 6-6 Controls for Supply Gas Mixing System. (Only available on Dual Gas Furnaces)

6.2.2 Dual Gas (option)

Includes separate manifold for supply of a separate gas to the furnace heating zones. Gas 1 can be CDA or nitrogen supplied to eductors, entrance baffle, transition tunnel, lamp seals, and the cooling system. Gas 2 is usually nitrogen, forming gas or other specialty gas. See Figure 6-5.

6.2.3 Supply Gas Mixing (option)

Includes two (2) pressure regulators with pressure gauges and flowmeters to allow switching between Gas 1 and Gas 2 supply to furnace heating zones. Users can adjust for 100% forming gas to the furnace for critical reducing operations and later switch to nitrogen to save higher cost specialty gas. User can also adjust flowmeters to increase amount of nitrogen in the forming gas mix. See Figure 6-6.

6.2.4 Auto Gas Shutoff (option)

This furnace may be equipped with Auto Gas Shutoff. The Auto Gas Shutoff feature consists of solenoid valves on the process gas supply lines integrated with the furnace. These valves open and allow Process Gas to flow when Controls Green (ON) button is pressed. This feature is designed to conserve process gas. To shut down the furnace the operator need only put the system into Cool Down and press Controls red (OFF) button. When the Cool Down timer expires, the furnace shuts down and the process gas valves close.

The Auto Gas Shutoff valves fail in the closed position.

6.2.5 Independent Over Temperature Alarm Operation (option)

The Over Temperature Alarm system consists of independent redundant zone thermocouples, a scanner/annunciator and digital panel meter hardware integrated into the furnace software. The scanner/annunciator and digital panel meter are mounted on top of the furnace.

NORMAL OPERATION. The system scans each zone and passes a temperature signal to the digital panel meter. The operator can view the temperature on the panel meter and the respective zone being monitored will be indicated on the scanner

ALARM. If the temperature in any zone reaches the alarm set point, an alarm will sound in the scanner/annunciator and the furnace will go into Cool Down, the heating elements will be shut off by the controller. To silence the alarm, press ACK on the scanner/annunciator. The furnace cannot be restarted until the zone temperature drops below the alarm set point.

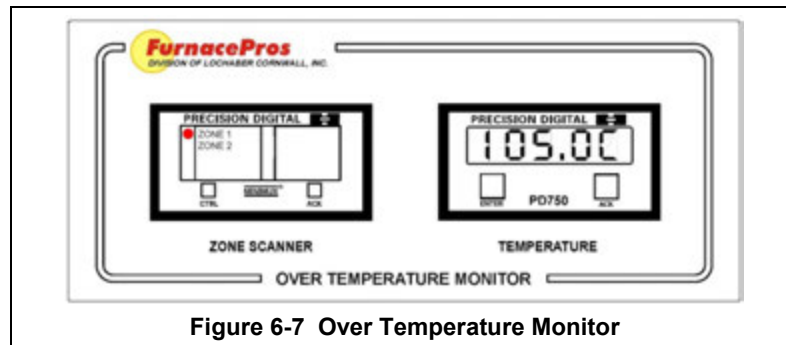


Figure 6-7 Over Temperature Monitor

6.2.1 Cabinet Temperature

A secondary thermocouple is attached near the center of the heating chamber between the chamber and the outside panel. The sensor is attached to an indicator to allow the user to monitor the cabinet temperature, which can reveal possible cabinet fan failure, or blocked air inlets or exits.

6.2.2 European Certification (option)

A strict implementation of CE requirements is followed according to the following documents:

[CE Compliance to Machinery Directive Annex 1, 89/392/EEC](#)

[Safety of Machinery - Electrical Equipment of Machines Part 1-EN60204-1](#)

The following supplemental options are also added to achieve the standard:

Operation Manual for Europe

Circuit Breaker

Line Filter

6.2.3 Line Filter (option)

An AC line filter reduces the potential electrical interference generated by SCRs and motor controls within the furnace. Compliant with IEC 60950. This option is standard for European operators who purchased CE.

Section 6

6.2.4 Low or High Belt Speed (option)

Standard belt speed is 5-500 mm/min. Alternate belt speeds can be offered increasing or decreasing the current min/max belt speed. Special conveyor belt speeds require changes to motor speed, power and gearing for this option.

6.2.5 Ultrasonic Cleaner/Dryer (option)

The ultrasonic belt cleaning system removes contamination that accumulates on the belt during normal furnace operation. This system includes an ultrasonic tank, belt dryer and timer system to enable automatic cleaning of the belt. A fan-driven air blow-off removes water droplets and can be provided with an optional heater to further drive moisture from the belt. The belt is drawn through an ultrasonic tank that is automatically filled and drained by a timer and control circuitry. The cleaning/drying of the belt takes place when the furnace is off-line. This option requires connection to facility water source and water drain.

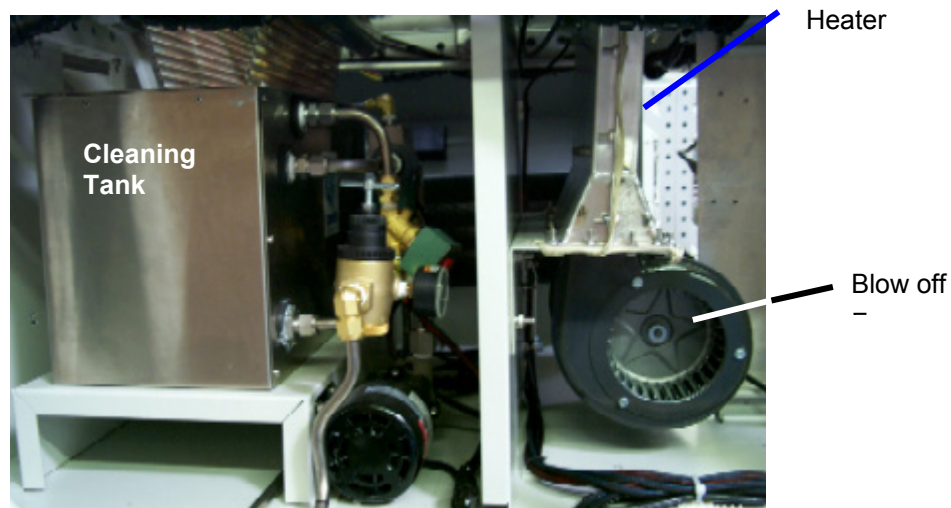


Figure 6-8 Ultrasonic Cleaner installation

6.2.6 UPS (option)

This option adds an uninterruptable power supply to keep the belt, fans, and control system running for at least twenty minutes during a power outage. The transport belt continues to run at set speed which minimizes product loss during brief power failures. The unit automatically switches from standby to process start upon restoring power, whether provided by generator backup or city power.