

PROCESS INNOVATIONS, INC.

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Model 238

Traveling Bed Heater Oven for heat-shrinkable tubing and thermal processing

The Model 238 is designed to process component assemblies by moving the heating carriage from the right or left parking station, across fixed component assemblies positioned on the bed frame processing area and stopping at the opposite end parking station.

The Model 238 is controlled by PLC based control logic, permitting custom performance for specific applications.

The Model 238 can also be provided with additional control systems to permit the unit to function as a shuttle processor. In Shuttle Mode the carriage's parking station is the center point of the bed frame, and processing is done to the left and right alternately.

The Model 238 has process selection controls to permit continuous low speed processing across the full product length or stepped speed processing across product length. In stepped speed mode the carriage will alternately travel at high speed and low

speed across the product length. This mode increases production rates on applications where only specific portions of the product length require thermal processing.

The Model 238 Bed Heater is a modular unit consisting of one traveling carriage and a floor mounted bed frame assembly. The bed frame assembly consists of the right end parking station with one meter processing section module and a left end parking station module. *Additional one meter processing sections modules can be added to extend the processing length of the bed frame for extremely long products.*

The Model 238 incorporates 2 external cooling fans on each end of the carriage to permit the cooling of assemblies immediately after the heating section has passed over the assemblies. The cooling fans are controlled by logic such that on the trailing direction fans operate during the cycle.

The two key process parameters, carriage speed and process temperature are controlled by closed loop electronic modules. Speed settings range from 0 to 2 meters/minute, temperature settings range from ambient to 600° C, though speed settings below 0.4 meters per minute and temperature settings above 550° C are not recommended. The Model 238 Bed Heater is designed to run continuously at recommended settings.

The Model 238 Bed Heater also contains many self-diagnostic and safety features. These include alarms, indicator lights, process inhibit and cool down circuitry. Indicator lights and alarms tell the operator if it is permissible to operate the oven, alert the operator if temperature is too high, and display heater faults when these conditions are present. Also, when the OFF ("O") push button is pressed, the Model 238 Bed Heater goes into a 20 minute Cool Down mode that allows the fans to run without powering the heater elements.



Product features

Controlled heating zone

The Model 238 processor uses stamped foil heating elements that are manufactured to a strict wattage specification. Consistent temperatures are obtained through a K-type thermocouple embedded into the upper heating element and a closed loop temperature controller. An alarm light provide the operator with visual indicator of when the processing temperature of the elements is within range and the unit is in a "Process Ready" condition.

Carriage speed control

The carriage speed is precisely set by a 3-digit potentiometer. The SCR drive controller and DC drive motor ensures constant conveyor speed at any potentiometer setting from 100 to 999 (0.2 to 2.0 meters per minute), for precise heating of assemblies.

Minimal skill requirements

The M238 is provided with 2 fixture support bars to position assemblies on the component carrier bed, the fixture bars have positioning pins to provide the operator with locations to place the assemblies. Once positioned on the bed carrier the operator only needs to initiate a cycle start to process the parts. Custom fixtures are available for a variety of various shaped parts.

Versatility

The M238 is designed to process a broad range of heat-shrinkable products up to 4 inches in diameter and infinite inches in length. The infrared energy source is ideally suited to efficient processing of either single-wall or dual wall adhesive-lined tubing. Temperature set-point and drive speed can be controlled to accommodate a wide variety of products and substrates.

Safety features

- Circuit breaker for current overload and mains power disconnect.
- Emergency Stop push-buttons for immediate shut down of the unit in a critical situation.
- Automatic cool-down circuit to prevent heat damage to integral components.
- Over temperature thermal switch to shut the unit down if an over temp condition is sensed.
- Indicator lights to advise operator of process ready, over-temperature and heater failure.
- Over travel E-stop limit switches to prevent carriage from damaging base frame.

Specifications and dimensions

Electrical

Power Requirements	208/240 VAC, 1 \emptyset , 50/60 Hz, 20 A
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Processor Unit

Heating elements	(2) 1560 watt infrared foil with quartz glass face; one top & bottom
Operating Temperature	Ambient to 550° C
Drive System	DC motor with SCR Drive controller and 3 digit speed potentiometer
Carriage Speed	0.20 to 2.0 Meters/Minute
Carriage Drive	Rubber drive rollers with UHMW side guides tracking on aluminum rails
Heater Oven Gap	25 mm (1") to 300mm (6")
Effective Heating Width	190 mm (7.5")

Standard Unit Dimensions mm (in.)

Carriage dimensions	680mm (26.8") W x 790 mm (31.1") L x 720 mm (28.3") H
Base Frame Dimensions (1 Meter Processing Bed)	780mm (30.75") Wide x 2575mm (101.3") Long 1830mm (72.3") Height
Carriage weight	68 Kg (150 lb.)
Shipping Weight (1 Meter Unit)	360 Kg (800 lb.)

Product sizes

Inside diameter	Up to 100 mm (4")
Length	Infinite