

PROCESS INNOVATIONS, INC.

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Model 175R

Belt Conveyor Oven for heat-shrinkable tubing, thermal processing and curing.

The Model 175R Belt Conveyor Oven is a minimal maintenance table top conveyor heater that provides a controlled processing system, suitable for heating a variety of products, including heat-shrinkable tubing, solder paste applications, and thermal curing of various products.

The Model 175R incorporates a direct drive motor system for the pulleys and belts, eliminates the maintenance need of continually lubricating drive chains sprockets and bushings.

Opposing double sided tractor belts grip the individual product assemblies and carry them through a closed loop IR heating zone, through a cooling zone, then deposit the completed assemblies in a collection area for removal.

The Model 175R incorporates additional control circuitry to provide a "lockout" feature preventing product feed when the operating temperature is out of range of the process set-point.

This circuitry causes the drive belts to run in reverse any time the temperature is out of range.

The M175R is designed as an integrated unit consisting of a rear pivoting upper heater chamber fixed lower heater chamber and base, with attached control enclosure.

The M175R's upper pivoting heating chamber is provided with adjustable stop rollers to permit front end belt gapping for processing large diameter harness bundles.

The M175R is equipped with red and green indicator lights to advise the operator of the status of the unit. The red light when illuminated indicates temperature out of range and the green light indicates the temperature is within band and the process is ready.

The M175R upper heating chamber and upper belts float on a spring loaded mechanism, to accommodate various wires and bundle diameters up to ½ inch.

The M175R oven chamber has two 1000 watt infrared heating elements, above and below the product pass line of the drive belts. The heating chamber is shielded on both sides of the elements to prevent fan cooling air flow from affecting the processing of products.

The side shielding of the heating elements provides up to 30% increased production as compared to similar units.

The temperature of the heating elements is precisely maintained by a closed loop temperature controller.

Assemblies are positioned on the entry alignment tray using centering markers, and pushed forward into the opposing tractor belts that transport the product through opposing 4" wide x 10" long infrared heating elements.

Aft of the heating chamber the assembly is cooled in an open air flow cooling section and discharged from rear of the conveyor into a collection tray.

The drive speed of the product transport belts the oven can be set between 0.2 and 5.0 feet per minute, ensuring every assembly being processed sees the same precise amount of heat.

The M175R processor operates on 230 VAC, single phase, 50/60 Hz.

The M175R is designed to meet the requirements of the Occupational Safety and Health Administration (OSHA) and the National Electrical Code (NEC).

Sheet metal guards and fans protect the operator from exposure to the temperature in the heating chamber. The processor has an automatic cool-down circuit to prevent heat damage to the components.



Product features

Controlled heating zone

The Model 175R 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. Two alarm lights provide the operator with visual indicators of when the processing temperature is "Out of Range" and when the element temperature is within range and the unit is in a "Process Ready" condition.

Reverse Drive Lockout

The reversing feature of the 175R prevents operator loading of parts any time the temperature is "out of range".

Conveyor speed control

The conveyor 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 5.0 feet per minute), for precise heating of assemblies.

Minimal skill requirements

There are centering guides for aligning the assembly as well as the tubing device being processed. The operator only has to center the assembly and the tubing or device; the tractor drive belts carry the assembly through the heating and cooling zone and deposit them into the large unloading bin.

Versatility

The processor is designed to process a broad range of heat-shrinkable products up to 1/2 inch in diameter and 4 inches 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-button 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 proper heater cycling and heater failure.

Specifications and dimensions

Electrical

Power Requirements	208/240 VAC, 1Ø, 50/60 Hz, 15 A
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Processor Unit

Heating elements	(2) 1000 watt infrared foil with quartz glass face; one top & bottom
Operating Temperature	Ambient to 650° C
Drive System	DC motor with SCR Drive controller and 3 digit speed potentiometer
Conveyor Speed	0.20 to 5.0 Feet/Minute
Conveyor Belt	Double sided timing belts, opposed, driven bottom, tractor drive top
Heater Oven Gap	38.1 mm (1 1/2")
Effective Heating Width	101.6 mm (4")

Standard Unit Dimensions mm (in.)

Conveyor dimensions	203 mm (8") W x 1117 mm (44") L x 376 mm (14.8") H
Control enclosure dimensions	990 mm (18") W (center mounted to rear of conveyor)
Conveyor weight	68 Kg (150 lb.)
Shipping Weight	91 Kg (200 lb.)

Product sizes

Inside diameter	Up to 12 mm (.5")
Length	4" perpendicular to belt travel