

## **PROCESS INNOVATIONS, INC.**

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## **Model 105**

**Tunnel Oven for heat-shrinkable tubing,  
thermal processing and curing.**

The Model 105 Tunnel Oven is a table conveyor heater, that provides a controlled process system, suitable for processing a variety of products, including heat-shrinkable tubing, solder paste applications, and thermal curing of various products.

The M105 is designed as an integrated modular unit consisting of the upper heater chamber and base, modular wire mesh belt conveyor with lower heater element, and remote control enclosure.

The standard unit, P/N 12000012 is provided with a 39" long conveyor.

The wire mesh belt conveyor is designed to permit custom conveyor lengths in excess of 39" for specific customer application requirements. A six foot detachable umbilical cable connects the processor unit to the control enclosure. An adapter bracket is provided to mount the control enclosure directly to the processor when required.

The M105 has two upper heating chamber height positions, ( 2.11" and 3.86") The position is adjusted by removing the pivot pins and relocating them in the bearing stands.

The upper chamber is cantilevered to permit processing of assemblies that require only a portion of the assembly to pass through the heat zone.

The upper chamber is provided with adjustable heat shields to maximize the oven heating efficiency for various applications.

The M105 has two 1500 watt stamped foil infrared heating elements, one in the upper chamber and the other mounted to the transport conveyor below the wire mesh belt.

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

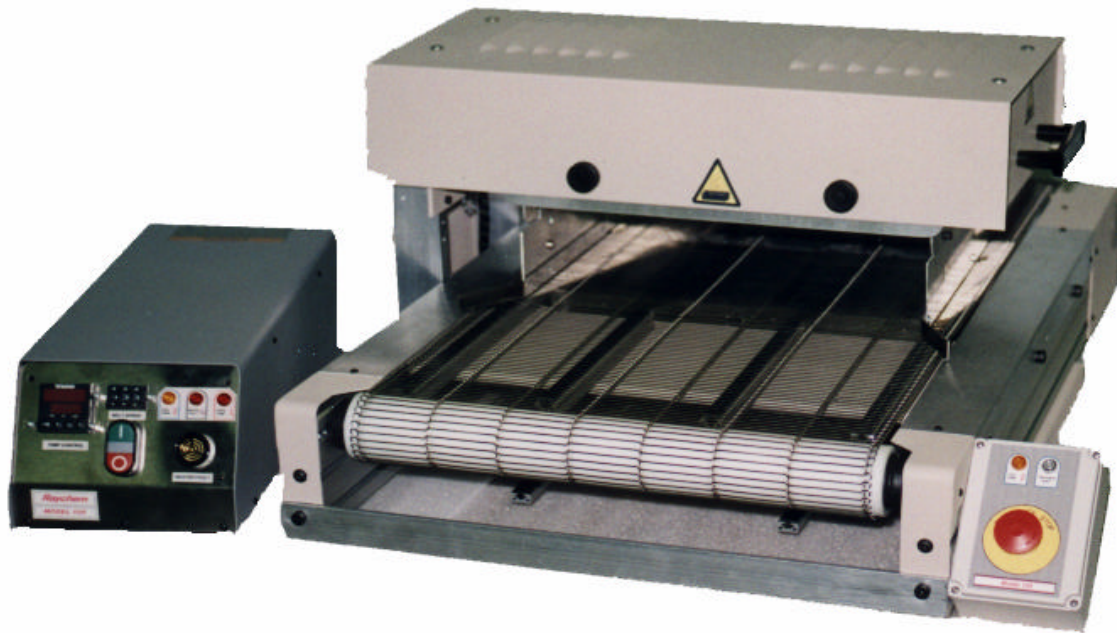
Assemblies are placed on the entry section of the mesh belt and transported through an opposing 8" wide x 15.25" long infrared heating chamber, across a bank of cooling fans and discharged from rear of the conveyor.

The dwell time in 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 M105 processor operates on single phase 208 - 240 VAC, 50/60 Hz.

The M105 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 105 processor uses stamped foil heating elements that are manufactured to a strict wattage requirement. Consistent temperatures are obtained through a K-type thermocouple embedded into the upper heating element and a closed loop temperature controller. An alarm light illuminates whenever the heating element temperature varies from the set point temperature 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

The open loading area of the entry section of the M105 requires that the operator simply place the assembly on the mesh conveyor belt within the effective width of the heat zone.

### Versatility

The processor is designed to process a broad range of heat-shrinkable products up to 3 inch (56.2 mm) in diameter and infinite length. The infrared energy source is ideally suited to efficient processing of either single-wall or adhesive-lined tubing. Heat output and drive speed can be controlled to accommodate a wide variety of products and substrates.

### Safety features

- Circuit breaker for current overload.
- Audible alarm indication of a heater failure.
- Automatic cool-down circuit to prevent heat damage to integral components.
- Indicator alarm light to advise operator of when the process is ready and the oven is up to temperature.

### Custom length conveyors

The M105 can be manufactured to custom conveyor lengths for longer entry and/or exit sections.

### Optional Accessories

- Powered outboard conveyor for processing large assemblies that require only a portion of the assembly to be heated. (1 side only)
- Powered entry and exit conveyors for processing long and rigid assemblies requiring entry and exit support of the product.
- Ability to add additional heater chambers to extended custom length wire mesh conveyors.
- Custom floor stands.

## Specifications and dimensions

Electrical	P/N 12000012
Power Requirements	208/240 VAC, 1Ø, 50/60 Hz, 15 A
<b>Processor Unit</b>	
Heating elements	(2) 1500 watt infrared stamped foil with black quartz 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	Wire mesh 70% open, with optional Teflon coating
Heater Oven Gap	2 Position - 2.11" Lower Position, - 3.86" Upper Position
Effective Heating Width	356 mm (14")
<b>Standard Unit Dimensions mm (in.)</b>	
Control box dimensions	515mm (20.25) D x 210 mm (8.25) W x 178 mm (7.0) H
Control box weight	7.7 Kg (17 lb.)
Heating Conveyor dimensions	990 mm (39") D x 685 mm (27") W x 417 mm (16.5") H
Heating Conveyor weight	68 Kg (150 lb.)
<b>Product sizes</b>	
Inside diameter	Up to 76.2 mm (3.0")
Length	14" perpendicular to belt travel, unlimited length parallel to belt travel