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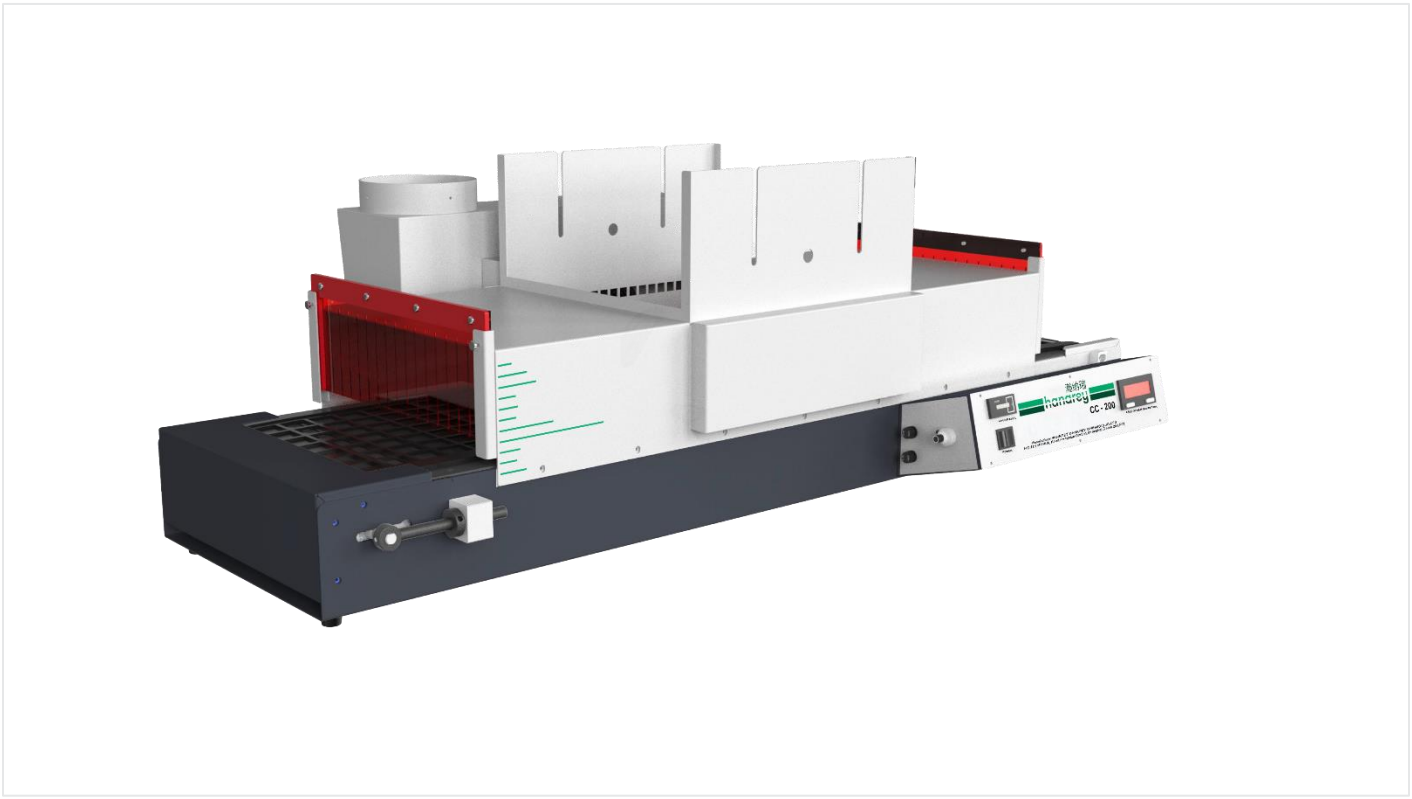
hanarey



CC-200

Light-Curing Conveyor
User Guide

About Hanarey

Hanarey specializes in developing, manufacturing, and marketing advanced UV and LED curable adhesives, coatings, and light-curing equipment for the China market. Hanarey's core competence is the development of light-curable materials for the consumer electronics and medical device assembly markets. With a focus on customer collaboration, Hanarey's Research and Development department ensures a deep understanding of customer needs, delivering tailored products and solutions for product assembly, dispensing, and system integration.

Please note that most dispensing and curing system applications are unique. Hanarey does not warrant the fitness of the product for the intended application. Any warranty applicable to the product, its application, and use is strictly limited to that contained in the Hanarey standard Conditions of Sale. Hanarey recommends that any intended application be evaluated and tested by the user to ensure that desired performance criteria are satisfied. Hanarey is willing to assist users in their performance testing and evaluation by offering equipment trial rental and leasing programs to assist in such testing and evaluations. Data sheets are available for valve controllers or pressure ports upon request.

Contents

Introduction

This guide describes how to assemble, use, and maintain the Hanarey CC-200 safely and efficiently.

Intended Audience

Hanarey prepared this user guide for experienced process engineers, technicians, and manufacturing personnel. If you are new to UV light curing and do not understand the instructions, contact Hanarey Application Engineering to answer your questions before using the equipment.

Where to Get Help

Hanarey Customer Support and Application Engineering teams are available in China, Monday through Friday, from 9:00 a.m. to 5:00 p.m. (Beijing time). You can also email Hanarey at info@Hanarey.com. Contact information for additional Hanarey locations can be found on the back cover of this user guide.

Additional resources are available to ensure a trouble-free experience with our products:

- Detailed product information on www.hanarey.com
- Hanarey adhesive Product Data Sheets (PDS) on our website
- Material Safety Data Sheets (SDS) provided with shipments of Hanarey adhesives

Safety

WARNING! *If you use a Hanarey light-curing conveyor without first reading and understanding the information in this user guide, injury can result from exposure to high-intensity light. To reduce the risk of injury, read and ensure you understand the information in this user guide before assembling and operating a Hanarey conveyor system.*

To use this system safely, it must be set up and operated in accordance with the instructions given by Hanarey. Using the system in any other manner will impair the protection of the system. Hanarey assumes no liability for any changes that may impair the protection of the system.

General Safety Considerations

All users of Hanarey equipment should read and understand this user guide before assembling and using the equipment.

To learn about the safe handling and use of light-curable formulations, obtain and read the SDS for each product.

Hanarey includes an SDS with each adhesive sold. In addition, fluid product SDS can be requested through our website.

Specific Safety Considerations

Hanarey light-curing conveyors are designed to maximize operator safety and minimize exposure to UV light. To use the conveyor safely, it must be set up and operated in accordance with the instructions in this user guide.

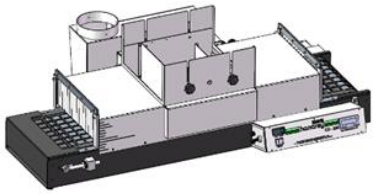
Product Overview

The Hanarey CC-200 is designed to provide reliable and consistent processing of UV/Visible light-curable adhesives and coatings. Standard features include a Direct-Drive Motor, adjustable Lamp height, integrated and adjustable Cooling System, and a UV-Resistant Belt.

The CC-200 is designed for bench- or table-top operations. The self-contained Cooling System and integral UV light allows the Conveyor to be placed virtually anywhere space permits.

Figure 1.
CC-200 Conveyor System

Hanarey UV light-curing sources are capable of curing a wide variety of light-curable adhesives, coatings, and inks. They have extensive use in a variety of applications such as bonding, potting, sealing, and encapsulating. These light sources offer exceptional versatility and expandability to accommodate most process demands.



A large number of accessories are available for the base Conveyor. These items address safety, as well as functional flexibility, which is depicted and discussed in this manual.

Unpacking and Setup

Unpacking and Inspecting Your Shipment

When your conveyor arrives, inspect any boxes for damage and notify the shipper immediately of box damage.

Open each box and check for equipment damage. If parts are damaged, notify the shipper and submit a claim for the damaged parts. Contact Hanarey so that new parts can be shipped to you immediately.

Check that the parts included in your order match those listed below. If parts are missing, contact your local Hanarey representative or Hanarey Customer Support to resolve the problem.

Parts Included

- **CC-200**
- **UV Goggles**, one Pair
- **Exhaust Blower**
- **Hanarey CC-200 System User Guide**

Lamp Installation & System Interconnect

F300 Series Lamps

NOTE: *Refer to the Fusion Lamp operator's manual for detailed Irradiator and Power Supply information.*

1. Unpack the F300 Lamp Assembly(ies). Each Lamp Assembly includes an Irradiator (Lamp), and Lamp-Connector Cord (Figure). For Dual-F300 Lamp units, the Primary Lamp Assembly includes an RF Detector, an RF-Detector Connector Cord, and "Primary" to "Secondary" Power-Supply Connector Cords.

   CAUTION! *Each F300 Lamp Assembly has a fine mesh RF Screen covering the Lamp Face. Great care should be taken during installation and handling of these units to avoid puncturing or damaging the RF Screen. RF energy can be released if the RF Screen is damaged in any way.*

2. Inspect the RF Screen on the bottom of the Irradiator. Make sure there are no rips or tears in the RF Screen.

   NOTE: *Any tears in the RF Screen will result in an RF Interlock failure when the equipment is operated.*

3. Mount the Irradiator(s) into the Conveyor's Lamp Support (Figure 3). Take particular care not to damage the Protective Screen covering the Bulb end of the Irradiators.

4. Locate the RF Detector Mounting Bracket on the opening provided in the Lamp Basket Assembly (Figure 4). The RF Detector senses microwave leakage through the Rubber Window in the wall of the Conveyor. Microwave leakage indicates a torn Protective Screen on the bottom of the Irradiator.

   NOTE: *The RF Detector Assembly is pre-installed on all new conveyors purchased with Fusion Lamps.*

Figure 2.
Cable Configuration

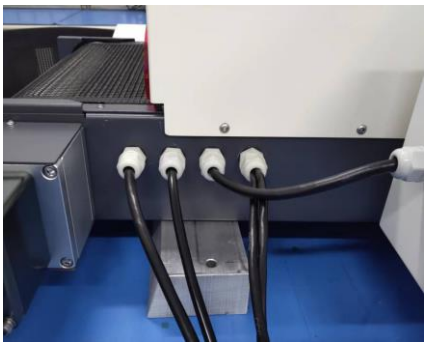
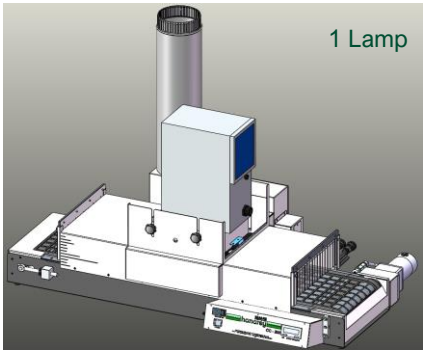
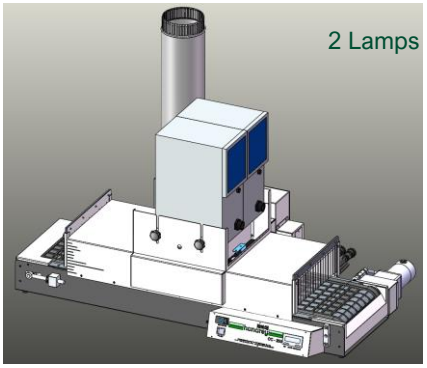


Figure 3.
Irradiator

Figure 4.
Conveyor with Lamp(s) Installed





5. Install the RF Detector next to the F300 Irradiators on the Conveyor's intake side (if not already installed). Attach the RF Detector's Connector Cord to the RF Detector (Figure).

Figure 5.
RF Detector Assembly

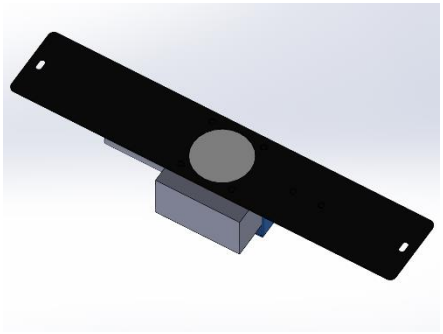
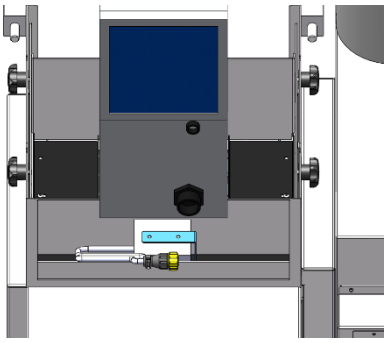
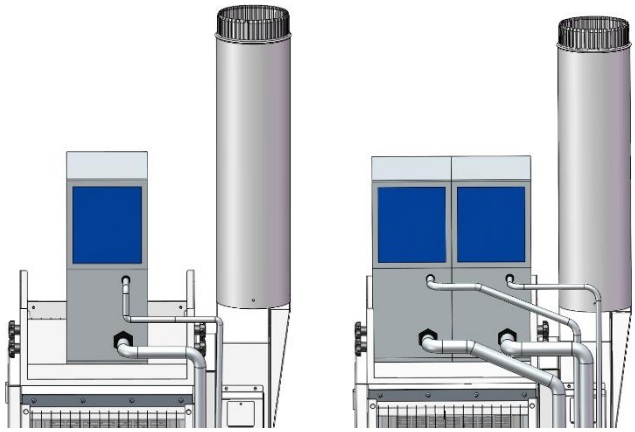


Figure 6.
RF Detector Connector Cord



6. Connect the Irradiator Cable(s) to the Irradiators (Figure).

Figure 7.
Irradiator Cable Connections



7. Unpack the Power Supply(ies). A 220-Volt Power Cord is provided with each Power Supply (Figure). The Power Supplies may be configured for either 50 or 60 HZ operation and for 208-, 220-, 230-, or 240-Volt operation. Changing between 50 and 60 HZ operation requires repositioning of two Capacitor Jumpers in each Power Supply. The Power Supply's shipping box is labeled with the voltage and frequency set at the factory. Detailed Power Supply setup instructions are provided in the Fusion Lamp operator's manual.

Figure 8.
Power Supplies (front)

8. Position the Power Supply(ies) on the Conveyor's Mounting Stand or in a location near the Conveyor. Attach the Connector Cable leading from the RF Detector to the J-105A Receptacle on the back of the Primary Power Supply. Attach the cables leading from the back of the Conveyor to the J-105B and J-106 Receptacles of the Primary Power Supply (Figure). These cables are labeled to aid in assembly.

Figure 9.
Power Supplies (Back)

9. For dual Fusion units, connect the Jumper Cable between J-107 of the Primary Power Supply and J-106 of the Secondary Power Supply. Install the Jumper Plug in J-105A of the Secondary Power Supply.

10. Connect the other end of the Irradiator Cable to the J-103 and J-104 Receptacles of the Power Supply(ies). Connect the Power Cord to the back of the Power Supply and to a 208-240-Volt Power Source.

11. Plug in the Conveyor and turn it on. When the Conveyor is operating, and the Belt is in motion, turn the Power Supply on by closing the Breakers on both Power Supply Front Panels.

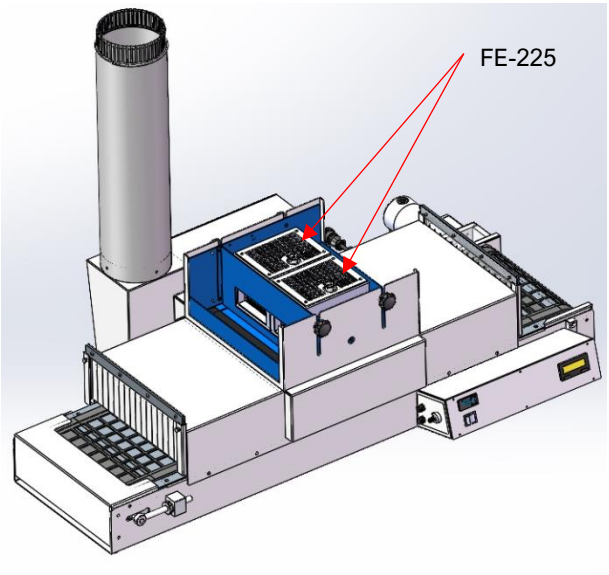
12. Turn the Irradiators on by pressing the Lamp On Button of the Primary Power Supply (Figure). Both the Primary and the Secondary Power Supplies will go through a warm-up cycle. The Blower inside the Irradiators will turn on and the Lamps will ignite. The Lamps reach full intensity within 5 seconds after ignition. Your CC-200 is now ready for operation.

Figure 10.
Power Supply (Front)

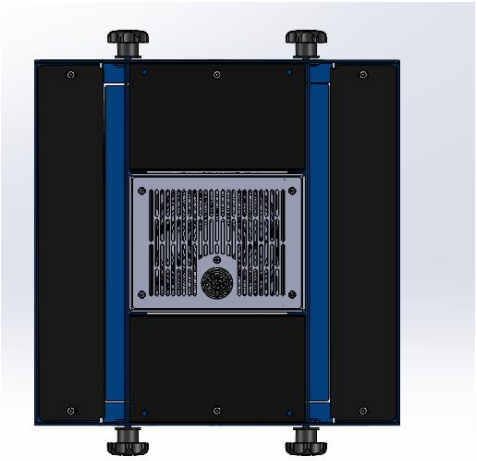
FE-225 Flood Emitters

CC-200 conveyors can be equipped with one or two FE-225 flood emitters as shown in the diagrams below.

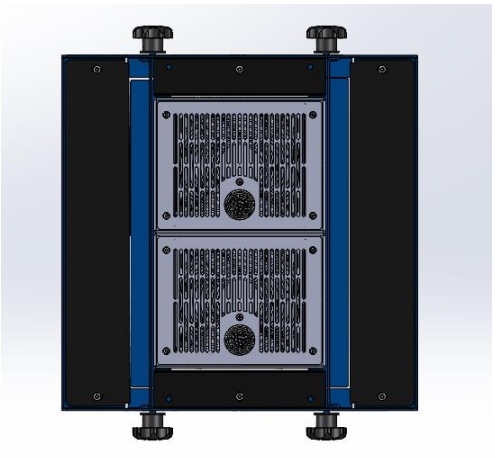
NOTE: *Refer to the FE-225 operator's manual for detailed Irradiator and Power Supply information.*



Place the emitters on a cradle.



FX-1250 1*1



FX-1250 1*2

5000-EC Lamps

1. Place the controller on a sturdy table.

2. Place the irradiator on the conveyor belt.

3. Connect the relevant wires, as shown in the following figure.

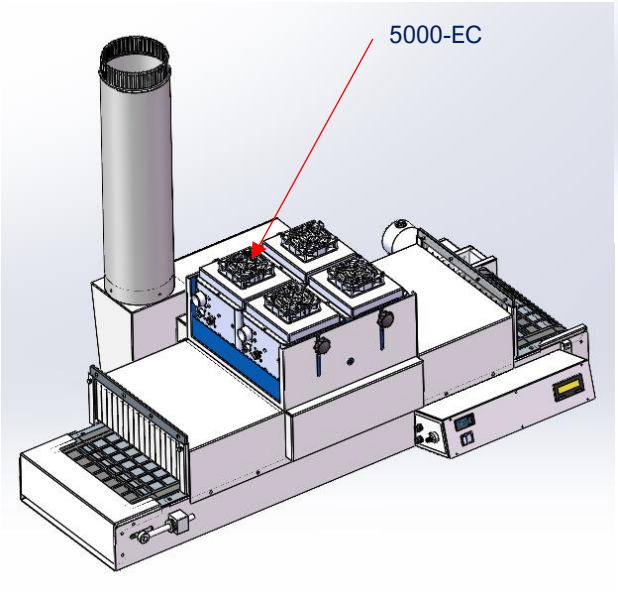
4. Insert the power cord into the socket.

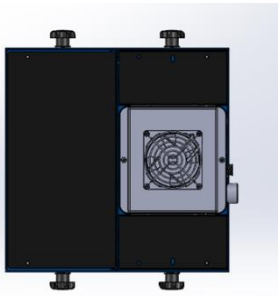
Irradiator

Controller

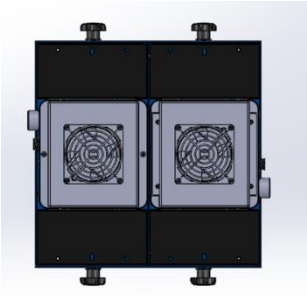
The CC-200 conveyor comes with four different lamp installation combinations. The installation of the lamps is shown in the following figure. Please refer to the 5000-EC uuder manual for instructions.

NOTE: *Refer to the 5000-EC operator's manual for detailed Irradiator and Power Supply information.*

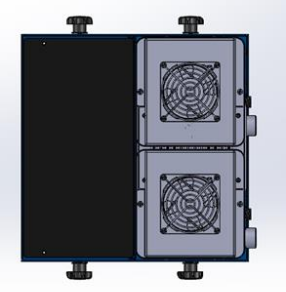




5000-EC 1*1



5000-EC 1*2



5000-EC 2*1

5000-EC 2*2

Place the lamps on a cradle.

Conveyor Operation

1. Install all safety accessories to protect operator from UV-light emissions.

2. Apply power to the Conveyor and turn it on.

3. Unlock the Speed Control Knob (Figure) and adjust the speed for the desired setting. The Speed Control Knob is a 10-Turn Potentiometer and allows speed adjustment from approximately 1.0 FPM to 32 FPM (feet per minute).

4. If any adjustments are needed for the Belt alignment, refer to the Maintenance Section of this manual.

5. Adjust the height of the Lamps to the desired distance.

6. Once all the settings (speed and Lamp height) have been properly set, the Conveyor is ready for operation.

7. When the Conveyor is operating and the Belt is in motion, turn the Power Supply on by closing the Breaker(s) on both of the Power Supply's Front Panels.

8. Turn the Irradiators on by pressing the Lamp On Button of the Master Power Supply (Figure). Both the Master and the Slave Power Supplies will go through a warm-up cycle. The Blower inside the Irradiators will turn on and the Lamps will ignite. The Lamps reach full intensity within 5 seconds after ignition. Your CC-200 is now ready for operation.

   NOTE: *The F300 Power Supplies are interlocked with the Conveyor so that the Conveyor must be operating and the Conveyor Belt in motion before the Lamps will ignite. This prevents Belt overheating and damage that can result if the Belt is stationary when the Lamp is turned on.*

Figure 11.
Conveyor Front Panel

Figure 12.
Speed Control Knob

Setting Adjustments

Adjusting Conveyor Blower Speed

The Blower controls the amount of cooling air provided to the Lamp Assemblies to keep them at proper operating temperatures. A small percentage of the cooling air is also diverted downward through the Conveyor Belt. This air flow provides a small hold-down force to keep light objects from moving while traveling on the belt. The Exhaust Blower speed is set at the factory during final system testing for the Conveyor model ordered.

If adjustment is required, remove the Access Panel from the front of the Exhaust Blower Housing (Figure 2), unlock the Speed Control Knob (Figure 3), adjust the Exhaust Blower speed setting, and relock the Speed Control Knob. The range of the Exhaust Blower Speed Control Knob is 0.0 to 0.85 turns.

Figure 2.
Access Panel

Figure 3.
Speed Control Knob

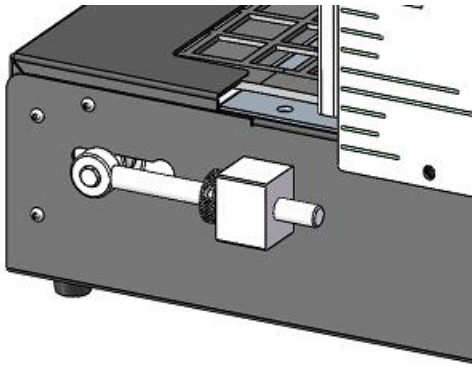
Maintenance

Belt-Tracking Adjustment

The Hanarey CC-200 is factory adjusted to provide proper tracking of the Belt. Should further adjustments become necessary, there are two knurled Adjustment Knobs located at the input end of the Conveyor (Figure 4). To adjust tracking, simply tighten the side to which the Belt is tracking.

NOTE: *Do not over tighten the Belt. This will lead to accelerated degradation of the Belt. The Belt should be stoppable with moderate hand pressure.*

Figure 4. Belt-Tension Adjustment Knob



Conveyor Belt Replacement

1. Remove the Pinch Guard from the motor side of the Conveyor by removing the two M4x8 Screws (Figure 5) on the front side of the Conveyor and the M4x25 Screw (Figure 6) from the motor-drive side of the Conveyor.

2. Remove the Pinch Guard from the input side of the Conveyor by removing the three M4x8 Screws (Figure 7) from both sides.

Figure 5.
Two M4x8 Screws

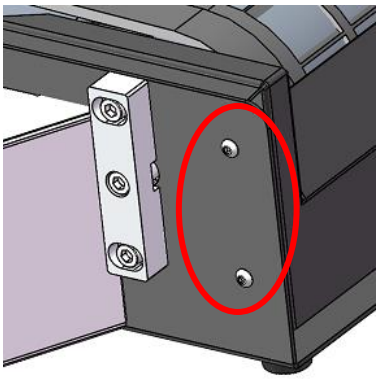
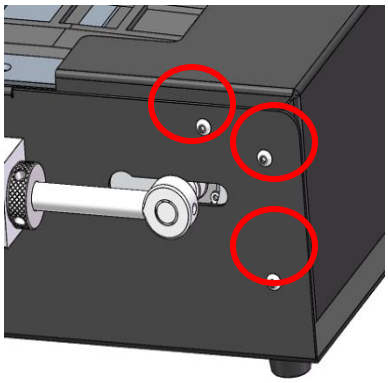


Figure 6.
M4x25 Screw

Figure 7.
Three M4x8 Screws



3. Remove all tension from the Belt by fully backing off the Belt-Tension Adjustment Knobs (Figure 4).
4. Position the Belt Splice to the end of the Conveyor (Figure 8). Remove the Fiberglass Rod that ties the ends of the Belt together (Figure 9). Remove the Belt.
5. Run the new Belt around the Conveyor Frame (Figure 10).
6. Install the Fiberglass Rod through the Belt Loops.
7. Apply some adhesive to both ends of the Fiberglass Rod to prevent it from moving during Conveyor operation (Figure 11).

Figure 8.
Spliced End of Belt

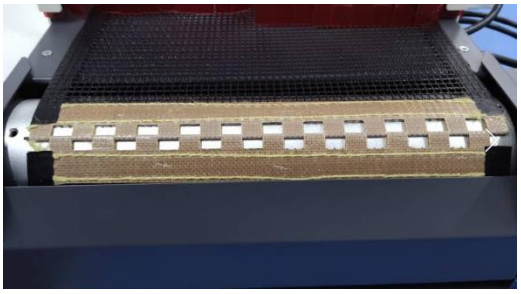


Figure 9.
Fiberglass Rod

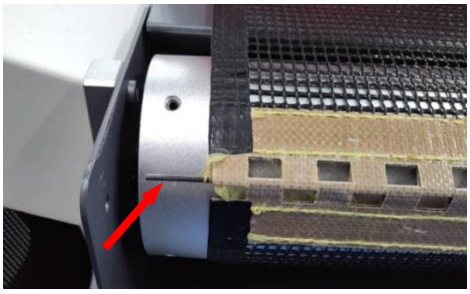


Figure 10.
Replacing Belt

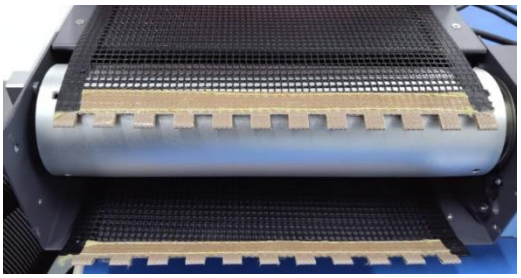
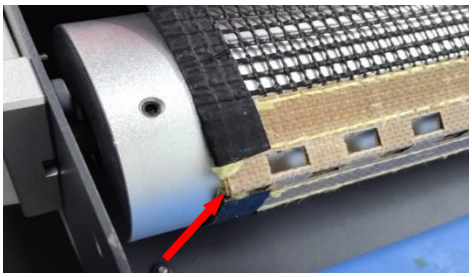


Figure 11.
Applying Adhesive



8. Equally tighten the Belt-Tension Knobs (Figure 4) on both sides of the conveyor to remove excess slack from the Belt. Enough tension should be applied on the Belt so that the Belt can only be moved across the two Rollers by moderate hand pressure when the Conveyor is not running.

   CAUTION! *Excessive tightening of the Belt will result in early Belt failure. Since the two Conveyor Rollers have a crown in the middle, only minimum tightening is necessary.*

9. Start the Conveyor and adjust the Belt-Tensioning Knobs (Figure 4) until the Belt runs in the center of the loading end of the Conveyor. There should be enough tension on the Belt so that the Belt does not slip on the rollers, but loose enough so that it can be stopped by moderate hand pressure when the Conveyor is running. If stopping the Belt stalls the Conveyor Motor, the Belt is too tight and must be loosened.

10. Monitor the tracking of the Belt as the conveyor operates and use the Belt-Tensioning Knobs (Figure 4) to make fine adjustments. To adjust tracking, simply tighten the side to which the Belt is tracking.

11. Reinstall the Pinch Guards on both ends of the Conveyor. This step is critical to Belt-Speed Sensor operation. The Pinch Guard on the Unloading End of the Conveyor contains a Shield for the Sensor to prevent damage if the Belt contacts it while operating.

Troubleshooting

CAUTION! *Only qualified maintenance personnel should attempt the following procedures.*

Table 1.
Troubleshooting Chart for the CC-200

Problem	Possible Cause	Testing	Corrective Action
Conveyor is not operating	Main-Line Circuit Breaker deployed	Toggle Power Switch off, then on, to reset the Circuit Breaker.	Check current rating of the Breaker and compare to Table 4.
	Improperly fastened connections	Check all connections.	Properly fasten Power Cord.
	Fuses for Motor Controller blown	Remove Fuses from Fuse Holders (located in the left side of Control Box of unit) and check with an Ohmmeter.	Replace if defective.
	Belt is hung up	Inspect the Belt for any signs of a mechanical bind.	Resolve bind and continue operation.
	Tension too low on Belt (Power Switch will light and Motor will turn but the Belt does not move)	Verify the operation of the Drive Shaft and Drive Rollers.	Use the Tracking Adjustment Knobs to increase the tension on the Belt. Both Knobs will have to be turned the same amount to not affect the alignment.
Belt tracks to one side	Belt-Adjustment Knobs are out of position	Visually inspect the Belt. Belt will track to one side.	Tighten the Adjustment Knob (the one located on the side to which the Belt is tracking towards) until Belt tracks straight. Only minor adjustments should be made at one time.
Fusion Lamp(s) not igniting	Please reference the Fusion Lamp operator's manual for troubleshooting assistance.		

Spare Parts and Accessories

Conveyor Accessories

Item	Part Number
Blower, 230 VAC,	84399
Blower Regulator	40149
Circuit Breaker, 220 VAC	84410
DC Motor Controller	84405
DC Motor Controller	84400
Conveyor Speed Potentiometer	84429
DC Motor Speed Indicator Sensor	39132
Hour Meter	35981
Mesh Belt	83351
Red Lion 12V Power Supply	84403
Speed Controller Knob	84398
Drive Roller	81252
Driven Roller	81253

F300 Lamp Spare/Replacement Parts

Item	Part Number
D Bulb UV	36399
H Bulb	36441
V Bulb	38146
F300 Lamp Filter Kit	36560
F300 Irradiator Screen Kit	37010
F300 Lamp/ Power Switch (“D” Bulb)	36402-C
F300 Lamp/ Power Switch (“H” Bulb)	43441-C
Magnetron	38136

FE-225 Flood Emitter Spare/Replacement Parts

Item	Part Number
Power Cord, LED Flood Emitter, 2M, China	84020
FE-225-E 365 nm COMPLETE	86611
FE-225-E 385 nm COMPLETE	86612
FE-225-E 405 nm COMPLETE	86613
FE-225 CTRL 2CH CN PLUG KIT	86614
FE-225 CTRL 1CH CN PLUG KIT	86615

5000-EC Lamp Spare/Replacement Parts

Item	Part Number
Lamp, Metal Haide 400 Watt UV (Standard)	38560
Lamp, Mercury Vapor 400 Watt UV (Standard)	36970
Lamp, Visible 400 Watt (Optional)	36658
Lamp Base Replacement Kits	35979
Power Switch	36288

Specifications

Table 2.
Physical Specifications

Property	Specification
Model	CC-200, BELT, MAIN / CC-200, BELT, MAIN (F300 LAMP)
Part Number	86101/ 86102
Motor Drive	Direct
Belt Speed	1.0 – 32.0 ft/min [0.3 – 9.8 m/min]
Belt Speed Display	Red LED, 1 decimal place
Maximum Part Height	4.5" [114 mm]**
Exhaust System	1 integral centrifugal blower

* The CC-200 has a 12" belt width. A single Fusion lamp will utilize the center 6" of the belt, while the dual Fusion lamp configuration could span the full 12" width.

** Larger part heights are achievable with the installation of optional factory-installed riser kits.

Property	Specification	
Number of Lamps*	F300 (1 Lamp)	F300 (2 Lamps)
Width of Illuminated Area	6" [152 mm]	12" [305 mm]
Number of Lamps*	FE-225 (1 Lamp)	FE-225 (2 Lamps)
Width of Illuminated Area	5" [127 mm]	10" [254 mm]
Number of Lamps*	5000-EC (1 Lamp)	5000-EC (2 Lamps)
Width of Illuminated Area	5" [127 mm]	6" [300 mm]

Figure 12.
CC-200 Dimensions

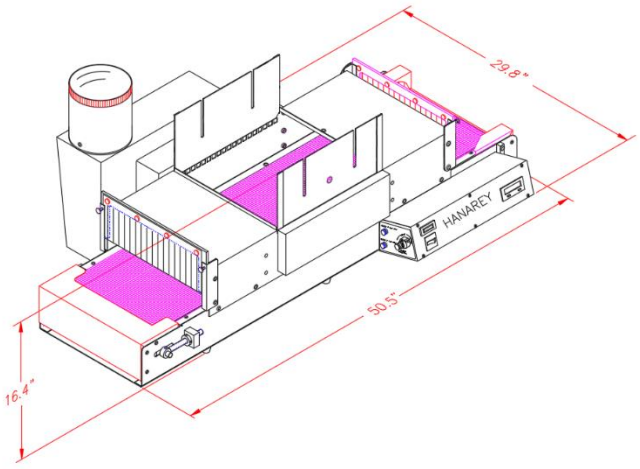


Table 3.
Electrical Specifications

AC Current Value of Conveyor System (Starting/Running Current)

Item	200-230 VAC, 50 / 60 Hz Operating Current
CC-200 Conveyor System	2.4 / 1.2 A

AC Current Value of Lamp and Controller

Item	200-230 VAC, 50 / 60 Hz Operating Current
5000-EC (1 Lamp)	3.15 A
F300 (1 Lamp)	15.0 A
FE-225 (1-CH)	3.9 A
FE-225 (2-CH)	7.8 A

Definition of Terms

Brightness, also known as Luminance - description of energy in the visible region of the spectrum (approximately from 400 to 700 nm) and recorded in photometric units. “Intensity” (see below) of visible light energy is called Luminance.

Dose - Irradiance integrated over time, or Irradiance (W/cm^2) x Time (s) = Dose ($Joules/cm^2$). Note: Watt is the power that gives rise to the production of energy at the rate of 1-joule (J) per second (s).

Intensity - A measure of light energy over the unit of surface area (usually surface at the specified working distance from the bottom of a reflector housing) in W/cm^2 or mW/cm^2. For the UV portion of light, this measure is often called in literature “irradiance”, i.e. radiant energy arriving at a point on a surface per unit area.

Lamp - Light source generating Ultraviolet, Visible, and Infrared radiant energy from burning matter stimulated by electrical power conditioned by a proper power supply which is an integral part of a Lamp. A light source is usually placed into a

reflector (of various geometry) to increase light source efficiency by collecting and directing radiant energy of selected spectra (for a given curing process).

Luminance - Luminous flux (energy of visible light) incident per unit area and measured in Lx (lux) or Lumen/cm^2.

Ozone - Oxidizing agent (O_3) produced by the action of Ultraviolet radiant energy (below 185 nm) or electrical corona discharge of oxygen on air.

Ultraviolet (UV) - The invisible region of the spectrum just beyond the violet end of the visible region. Wavelength ranges in general from 1.0 to 400 nm. Hanarey lamps (bulbs) do not radiate energy in deep Ultraviolet; there are very minute amounts below 220 nm and practically nothing can be sensed below 200 nm. This is due to the use of an ozone blocking quartz lamp envelope (See Ozone).

1. Ultraviolet A (UV-A) - UV of long wavelength from within approximately 400 to 320 nm of the spectral band (4000 to 3200⊕) - predominately produced by Hanarey flood lamps.

2. Ultraviolet B (UV-B) - UV of medium wavelength from within approximately 320 to 280 nm - Hanarey flood Lamps produce some amount of their energy within this bandwidth.

3. Ultraviolet C (UV-C) - UV of short wavelength below 280 nm (we say from 280 to 200 nm) – a large amount of this energy is present in the sunlight.

4. Visible – Light that can be seen 400-700 nm.

OSHA 1910.145: "Regulation of Accident prevention Signs and Tags" defines the following headers as:

- ***WARNING*** *– is used when there is a hazardous situation that has some probability of severe injury.*
- ***CAUTION*** *- is used to indicate a hazardous situation that may result in minor or moderate injury.*
- ***NOTICE*** *- is used to convey a message related directly or indirectly to the safety of personnel, or protection of property.*

Warranty

From date of purchase, Hanarey Corporation offers a one-year warranty against defects in material and workmanship on all system components with proof of purchase and purchase date. Unauthorized repair, modification, or improper use of equipment may void your warranty benefits. The use of aftermarket replacement parts not supplied or approved by Hanarey Corporation will void any effective warranties and may result in damage to the equipment.

IMPORTANT NOTE: *HANAREY CORPORATION RESERVES THE RIGHT TO INVALIDATE ANY WARRANTIES, EXPRESSED OR IMPLIED, DUE TO ANY REPAIRS PERFORMED OR ATTEMPTED ON HANAREY EQUIPMENT WITHOUT WRITTEN AUTHORIZATION FROM HANAREY. THOSE CORRECTIVE ACTIONS LISTED ABOVE ARE LIMITED TO THIS AUTHORIZATION.*

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