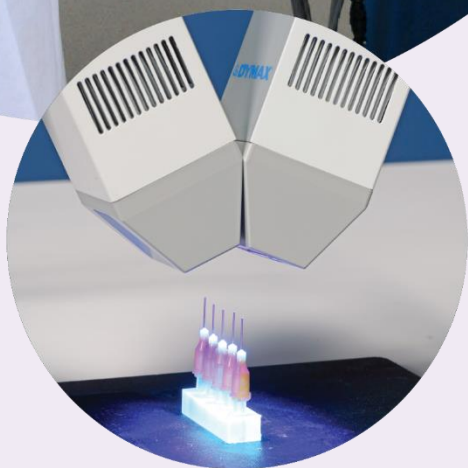


UVCS Version 2.0 with EC-Series Lamps

Light-Curing Conveyor User Guide



About Dymax

UV/Visible light-curable adhesives. Systems for light curing, fluid dispensing, and fluid packaging.

Dymax manufactures industrial, light-curable, epoxy, and activator-cured adhesives. We also manufacture a complete line of manual fluid dispensing systems, automatic fluid dispensing systems, and light-curing systems. Light-curing systems include LED light sources, spot, flood, and conveyor systems designed for compatibility and high performance with Dymax adhesives.

Dymax adhesives and light-curing systems optimize the speed of automated assembly, allow for 100% in-line inspection, and increase throughput. System designs enable stand-alone configuration or integration into your existing assembly line.

Please note that most dispensing and curing system applications are unique. Dymax 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 Dymax standard Conditions of Sale. Dymax recommends that any intended application be evaluated and tested by the user to ensure that desired performance criteria are satisfied. Dymax 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 pots upon request.

Contents

Introduction	4
Where to Get Help.....	4
Safety	4
General Safety Considerations.....	4
Specific Safety Considerations.....	4
Dymax UV Light-Curing System Safety Considerations	5
Product Overview	7
Description of the System Components.....	7
Unpacking	9
Unpacking and Inspecting Your Shipment.....	9
Parts Included in the UVCS Conveyor.....	9
System Setup	9
Lamp Configurations.....	9
Lamp Installation and System Interconnect.....	11
Conveyor Operation	12
Maintenance	16
Belt-Tracking Adjustment.....	16
Conveyor Belt Replacement	16
Troubleshooting	19
Spare Parts and Accessories	21
UVCS Conveyor Spare/ Replacement Parts & Accessories	21
Lamp Spare/Replacement Parts.....	22
Specifications	22
Dimensions.....	22
Configurations.....	23
Specifications.....	24
Definition of Terms	25
Warranty	26
Index	27

Introduction

This guide describes how to assemble, use, and maintain the Dymax UVCS Light-Curing Conveyor System safely and efficiently.

Intended Audience

Dymax 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 Dymax Application Engineering to answer your questions before using the equipment.

Where to Get Help

Dymax Customer Support and Application Engineering teams are available in the United States, Monday through Friday, from 8:00 a.m. to 5:30 p.m. Eastern Standard Time. You can also email Dymax at info@dymax.com. Contact information for additional Dymax 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.dymax.com
- Dymax adhesive Product Data Sheets (PDS) on our website
- Material Safety Data Sheets (SDS) provided with shipments of Dymax adhesives

Safety



WARNING! *If you use a Dymax 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 Dymax conveyor system.*

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

General Safety Considerations

All users of Dymax 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. Dymax includes an SDS with each adhesive sold. In addition, fluid product MSDS can be requested through our website.

Specific Safety Considerations

Dymax 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.

Dymax UV Light-Curing System Safety Considerations

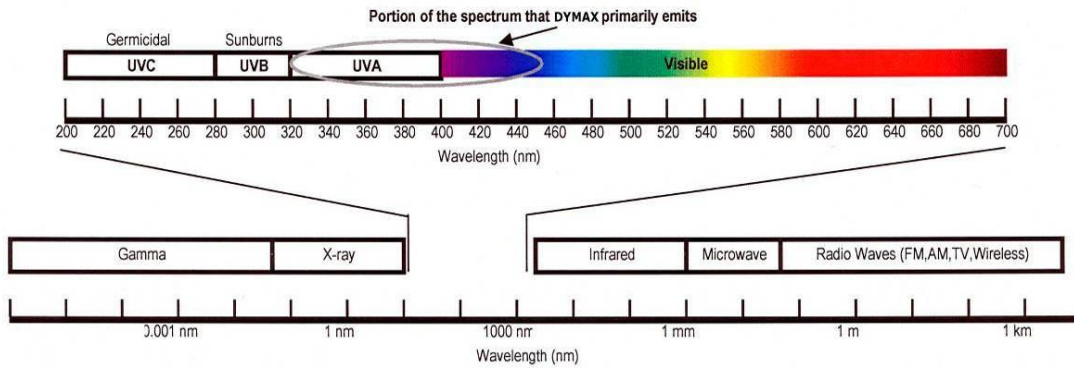
Dymax UV light-curing technology has been used successfully for over 30 years. The fast cure, one-component nature of our UV light-curing technology has made it the process of choice for many manufacturers requiring a "cure on demand" assembly process. Operators must understand these four concepts to use the UV light source safely: UV exposure, high-temperature surfaces, ozone, and bright, visible light. Each is described below.

UV Exposure

Standard Dymax UV light-curing systems have been designed primarily to emit UVA energy (Figure 1). UVA energy is generally considered the safest of the three UV ranges: UVA, UVB, and UVC. Although OSHA does not currently regulate UV light exposure in the workplace, the American Conference of Governmental Industrial Hygienists (ACGIH) does recommend Threshold Limit Values (TLVs) for ultraviolet light.

The strictest interpretation of the TLV (over the UVA range) for workers' eyes and skin allows continuous exposure up to 1 mW/cm² (intensity). Unless you are placing bare hands into the curing area, it is unusual to exceed these limits. To put 1 mW/cm² limit into perspective, a cloudless summer day will typically exceed 3 mW/cm² of UVA light, and also include the more dangerous UVB light (primarily responsible for sun tans, sun burns, and skin cancer) as well.

Figure 1.
UV Spectrum



Checking the Workstation

The human eye cannot detect "pure" UV light, only visible light. A radiometer should be used to measure stray UV light to confirm the safety of a UV light-curing process. A workstation that exposes an operator to more than 1 mW/cm² of UVA continuously should be redesigned.

Protecting Operators

Light-curing technology can be a regulatory compliant, "worker-friendly" manufacturing process when the proper safety equipment and operator training is utilized. There are two ways to protect operators from UV exposure: shield the operator and/or shield the source.

Shield the Operator

UV-Blocking Eye Protection - UV-blocking eye protection is recommended when operating UV light-curing systems. Both clear and tinted UV-blocking eye protection is available from Dymax.

UV-Blocking Skin Protection — Where the potential exists for UV exposure upon skin, opaque, UV-blocking clothing, gloves, and full-face shields are recommended.

Shield the Source of UV

Any substrate that blocks UV light can be used as a shield to protect workers from stray UV light. The following materials can be used to create simple shielding structures or blind corners:

Sheet Metal — Sheet metal (aluminum, steel, stainless steel, etc) should be coated black or black anodized to minimize reflection of UV and visible light toward operators.

Rigid Plastic Film — Transparent or translucent/UV-blocking plastics (typically polycarbonate or acrylic) are commonly used to create shielding where some level of transparency is also desired. These rigid plastic films are available either water clear or tinted.

Flexible Film — UV-blocking, flexible urethane films can be used to quickly create workstation shielding. This UV-blocking, flexible urethane film is available from Dymax. Call for assistance.

High-Temperature Surfaces

Surfaces exposed to high-intensity curing lights may rise in temperature. The intensity, distance, exposure time, cooling fans, and composition of the surface can all affect the rise in surface temperature. In some cases, exposed surfaces can reach temperatures capable of producing a burn or causing damage to a substrate. In these cases, care must be taken to ensure either a more moderate surface temperature or appropriate protection/training for operators.

Ozone

Standard Dymax lamps (UVA type) generate an insignificant amount of UVC and therefore essentially no ozone. Some UV light-curing systems, like those used to cure UV inks, emit primarily “shortwave” (UVB and UVC) energy. Upon exposure to UVC light (specifically <240 nm), oxygen molecules (O₂) split into oxygen atoms (O) and recombine with O₂ to create ozone O₃. The current, long-term ozone concentration limit recommended by ACGIH, NIOSH, and OSHA is 0.1 ppm (0.2 mg/m³).

Bright, Visible Light

The bright, visible light energy emitted by UV light-curing systems can cause eye strain if proper eye protection or shielding is not used. The proper use of tinted eye protection and/or opaque/tinted shielding can be utilized to reduce eye strain and address this concern.

Summary

UV light sources can be more “worker friendly” than many commonly accepted industrial processes, provided the potential concerns are addressed. Contact your Dymax representative for information regarding the proper use of Dymax UV light-curing systems.

Product Overview

Description of the System Components

UVCS Conveyor

The Dymax UVCS Light-Curing Conveyor System is designed to provide reliable and consistent processing of UV/Visible light-curable adhesives and coatings. The UVCS is designed for bench- or table-top operations and is available in 120 Volt or 200-240 Volt models. The system's standard features include a direct-drive motor, adjustable lamp height, integrated and adjustable cooling system, and a UV-resistant belt. The self-contained cooling system and integral UV light allow the conveyor to be placed virtually anywhere space permits. 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.

Figure 2.
UVCS Conveyor System with Two 5000-EC Lamps, Side-by-Side



Solid-State Power Supply

The solid-state power supply allows external electrical inputs and provides power to the lamp located in the reflector housing. An on/off power switch and hour meter are located on the front panel while the back panel features an integrally fused AC power receptacle and a 14-pin female amp connector. The unit also houses cooling fans and power distribution for optional accessories.

The lamp power supply yields reliable and stabilized lamp voltage in virtually any electrical system in the world. No other adjustment or settings are required other than ensuring a properly wire configured plug is employed to the system. The power supply also conditions the electrical power to the lamp providing longer, more reliable lamp life.

Reflector Housings

This conveyor system utilizes Dymax's EC-series lamps as its curing source. These light sources are auto voltage select and offer exceptional versatility and expandability to accommodate most process demands.

1200-EC

The Dymax 1200-EC is a focused-beam UV Lamp used for the curing of UV light-curable adhesives, coatings, and inks. The unit's elliptical Reflector provides an intense 1" x 6" area of UV energy, 4.5" away from the lower edge of the Lamp/Reflector Assembly Housing.

The 1200-EC employs convection cooling. An optional Fan Ventilation Kit is available. This kit removes excessive heat and ventilates curing vapors away from the Lamp/Reflector Assembly Housing. Refer to the spare parts/options section of this manual for more information on the Fan Ventilation Kit.

2000-EC

The Dymax 2000-EC is a general purpose UV Flood Lamp with an effective curing area of approximately 8" x 8", making it ideal for batch processing or curing large areas.

An optional Glass UV Filter may be installed in the 2000-EC Reflector to reduce UV-B and UV-C spectral emissions. When operated correctly using the Glass UV Filter, extensive shielding associated with many Lamps can be minimized.

The 2000-EC employs convection cooling. An optional Fan Ventilation Kit is available. This kit removes excessive heat due to the Lamp's possible proximity to other heat sources and removes vapors from under the Lamp/Reflector Assembly Housing during curing of UV light-curable materials. Refer to the spare parts/options section of this manual for more information on the Fan Ventilation Kit.

5000-EC

The Dymax 5000-EC is a general purpose UV Flood Lamp with an effective curing area of approximately 5" x 5". The unit is ideal for small batch processing of UV-curable adhesives and potting compounds.

The 5000-EC provides more than twice the output intensity of a 2000-EC Flood Lamp, allowing for faster curing capability and the additional ability to cure conformal coating resins.

Figure 3.
1200-EC Lamp & Power Supply



Figure 4.
2000-EC Lamp & Power Supply

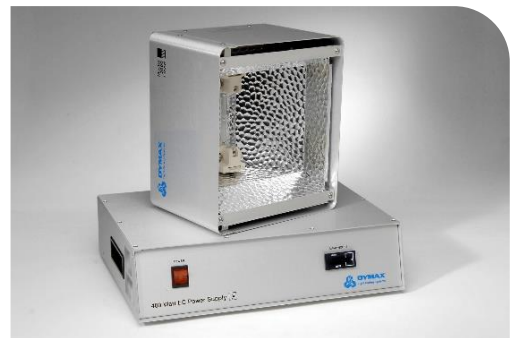


Figure 5.
5000-EC Lamp & Power Supply



Unpacking

Unpacking and Inspecting Your Shipment

When your conveyor arrives, inspect any boxes or crates for damage and notify the shipper immediately of 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 Dymax 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 Dymax representative or Dymax Customer Support to resolve the problem.

Parts Included in the UVCS Conveyor

- **UVCS Conveyor Unit**
- **Solid-State Lamp Power Supply**
- **Reflector Housing & Lamp** – Contains the reflector, lamp bases, high-voltage starter, three circulator connectors, and the lamp. A 400 Watt metal-halide UV lamp comes standard with the system. Optional mercury vapor (PN 36970) or visible spectrum lamps (PN 36658) are available upon request.
- **Power Cord**
- **Connection Cable** - Connects the power supply to the reflector housing.
- **UV Goggles** - Two Pairs
- **Dymax UVCS Conveyor System User Guide**

System Setup

Lamp Configurations

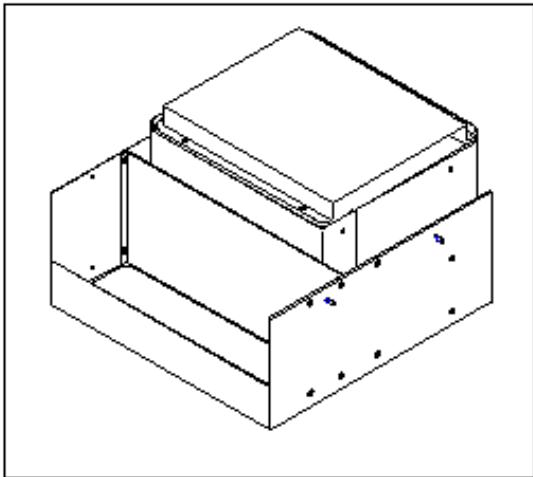
1200-EC OR 2000-EC LAMPS

Conveyors with Dymax 1200-EC or 2000-EC Lamps are single-Lamp configuration only.

5000-EC LAMPS

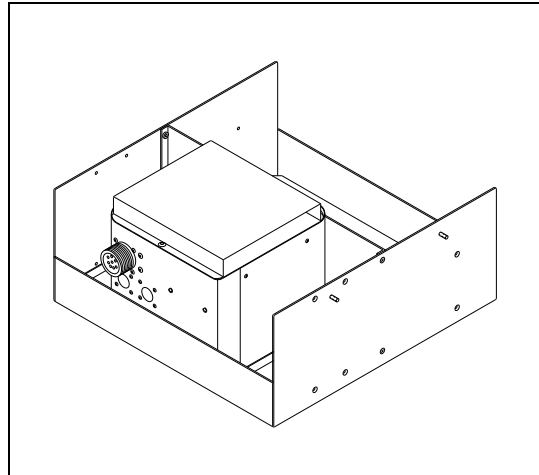
Conveyors with Dymax 5000-EC Flood Lamps may be configured in a one-Lamp, two-Lamp, or four-Lamp configuration. Dual-Lamp configurations can be set up in-line for 6" wide curing (2A) or side-by-side for 12" wide curing (2B). Spacers and Block-Off Plates cover the unused Lamp locations. Additional Lamps can be purchased and added to existing UVCS Conveyor Systems.

Figure 6.
Single 1200-EC/2000-EC Configuration



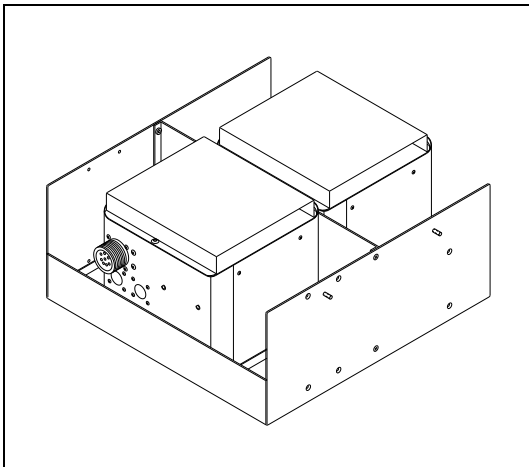
Models: UVCS-D1-1-120 & UVCS-D1-1-230 (1200-EC)
UVCS-D2-1-120 & UVCS-D2-1-230 (2000-EC)

Figure 7.
Single 5000-EC Configuration



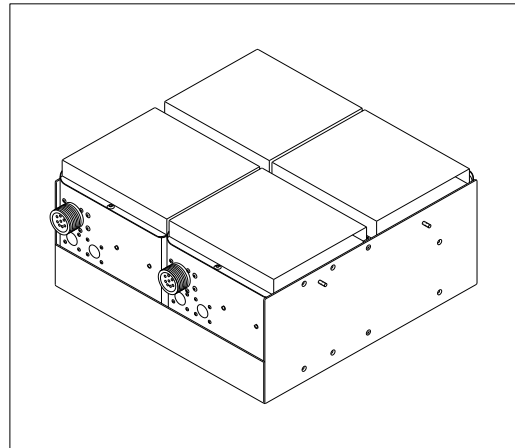
Models: UVCS-D5-1-120 & UVCS-D5-1-230

Figure 8.
Dual 5000-EC Configuration (2A Shown)



Models: UVCS-D5-2A-120, UVCS-D5-2B-120,
UVCS-D5-2A-230, & UVCS-D5-2B-230

Figure 9.
Four 5000-EC Configuration



Models: UVCS-D5-4-120 & UVCS-D5-4-230

Lamp Installation and System Interconnect

1. If the optional Conveyor Cart (PN 39215) has been purchased, assemble the Conveyor Cart prior to building the Conveyor System.
2. Remove the protective coverings from the Conveyor. Place the Conveyor on the Conveyor Mounting Cart or on a convenient work surface. Install the Exhaust Ventilation Stack on the Blower Motor's Outlet Flange. Secure the Exhaust Ventilation Stack with the 3 fasteners provided.
3. Unpack the Lamp(s). Each Flood Lamp System includes a Power Supply, Reflector Assembly, 400 Watt Bulb, Lamp Connector Cord, and a Power Cord.

Figure 10.
Secure Exhaust Ventilation Stack



Figure 11.
Unpack Lamp (5000-EC Shown)



4. Install the Bulb into the Reflector Housing ensuring that the Bulb is properly seated (Figure 13). Consult the Flood Lamp System manual for details on installing Bulbs.
5. Attach the Lamp Connector Cord to the back of each Reflector (Figure 14).

Figure 12.
Install Bulb in Reflector Housing



Figure 13.
Attach the Lamp Connector Cord



6. Install the Reflector Assemblies into the Conveyor's Upper Lamp Support Brackets. Adjust the position of the Lamps and tighten the four Lamp Securing Knobs. See *Lamp Configurations* on page 9 for all possible configurations.

7. Attach the Lamp Connector Cable leading from each Reflector to the rear of each Power Supply (Figure 17). Connect the Conveyor Power Cord to a 110-120V AC power source (200-230V AC for 230V units). Connect each Power Supply's Power Cord to a 100-240V AC power source.

Figure 14.
Power Supply Rear Panel Connections



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 16) and adjust the speed for the desired setting. The Speed Control Knob is a 10-Turn Potentiometer and allows speed adjustment from approximately 0.9 FPM to 32 FPM (feet per minute).

Figure 15.
Conveyor Front Panel

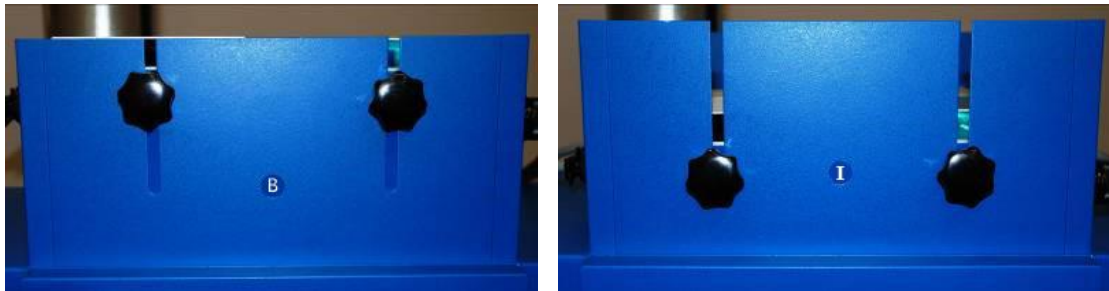


Figure 16.
Speed Control Knob



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. Height is adjustable from 2.1 - 4.5 inches.

Figure 17.
Lamps Adjusted to Various Heights



Note: If needed, the Angle Support (Figure 18) can be removed to gain extra travel. To remove it:

- Remove the flood lamps from the conveyor (Figure 19).
- Disconnect the Angle Support by removing the three screws and sliding it out from the under the conveyor's edge (Figure 20).
- Remount the flood lamps in the conveyor (Figure 21).

Figure 18.
Angle Support

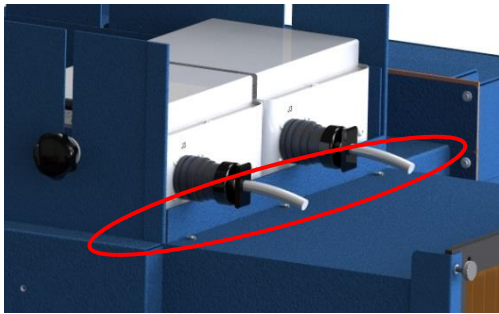


Figure 19.
Remove Flood Lamps

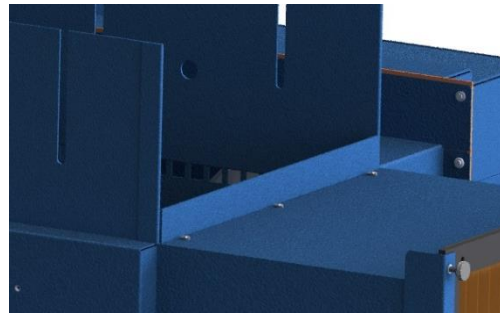


Figure 20.
Disconnect Support Angle

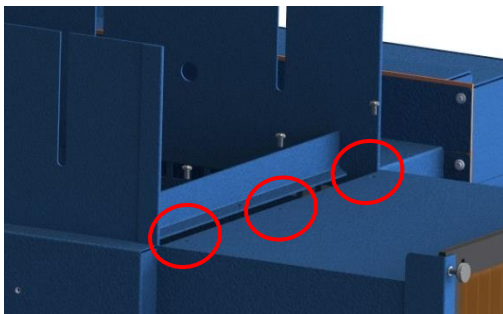
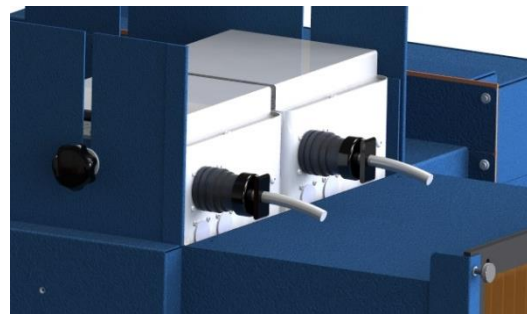


Figure 21.
Reinstall Flood Lamps



6. Once all the settings (speed and Lamp height) have been properly set, the Conveyor is ready for operation.
7. Apply power to the Lamps and turn them on.

Additional Information

- The conveyor has an adjustable Exhaust Blower. The Exhaust 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 Chain. This air flow provides a small hold-down force to keep light objects from moving while traveling on the Chain. The Exhaust Blower speed, when adjusted, provides minor changes to this hold-down airflow. Adjusting the height of the Entrance and Exit UV Curtains also affects cooling air to the Lamps and hold-down force to a lesser degree.
- UV Curtain height should be set to the height of the products to be placed on the Conveyor. The Exhaust Blower Speed can then be adjusted for optimum Lamp temperature. For 5000-EC Lamps, a Temperature Indicator Strip (Temperature Strip Indicator Kit PN 38693) is attached to the appropriate location on the Reflector Housing. The optimum operating temperature is from 115°F to 145°F, 0-80% relative humidity, non-condensing. Figure 24 shows a typical Temperature Indicator Strip reading a representative temperature. The Exhaust Blower speed is set at the factory at approximately 170 CFM during final system testing for the Conveyor model ordered. Customers should do a final blower speed adjustment based on their installation cooling setup and operating environment to meet Temperature Strip compliance. If adjustment is required, remove the access panel from the front of the Exhaust Blower Housing, unlock the Blower Speed Potentiometer and turn it to change Exhaust Blower speed.
- If the lamps continue to run hot after adjusting the Exhaust Blower speed, a reflector cooling fan and skirt assembly (PN 38320) is available. The fan connects to the 24Vdc harness available on the reflector.

Figure 22.
Access Panel



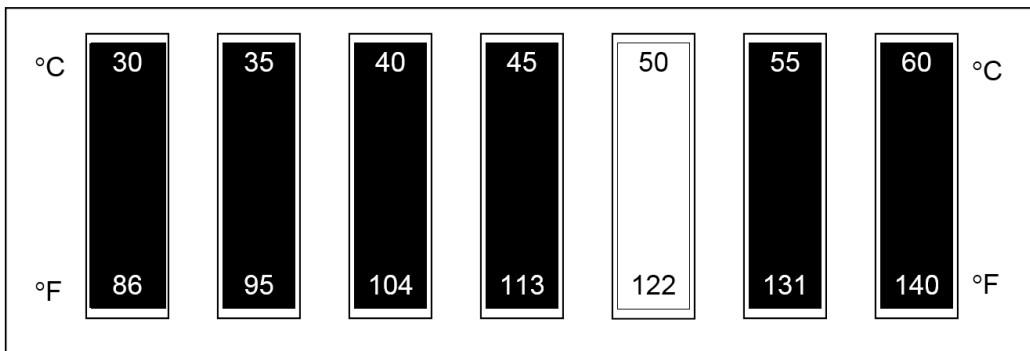
Figure 23.
Speed Control Knob



Table 1.
Blower-Speed Potentiometer and Lamp-Cradle Height Settings for Optimum Bulb Cooling

Model Number	Blower-Speed Potentiometer Setting		
	1 in	3 in	4.5 in
UVCS-D-5-1-120/230	0.0	0.27	0.45
UVCS-D-5-2A/2B-120/230	0.15	0.35	0.45
UVCS-D-5-4-120/230	0.45	0.54	0.80

Figure 24.
Temperature Indicator Strip (PN 38693) for the 5000-EC Flood Lamps



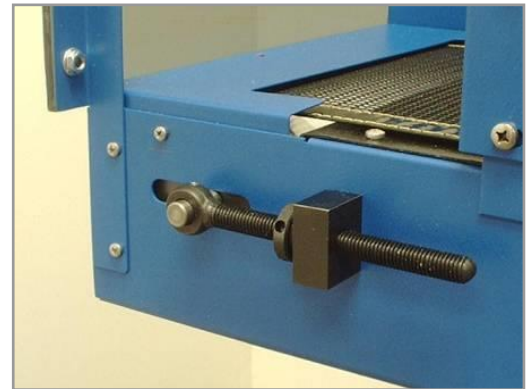
Maintenance

Belt-Tracking Adjustment

All Dymax UVCS Conveyors are factory adjusted to provide proper tracking of the Belt. Should further adjustments become necessary, this is done via two knurled Adjustment Knobs located at the input end of the Conveyor (Figure 25). 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 25.
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 26) on the front side of the Conveyor and the M4x25 Screw (Figure 28) from the motor drive side of the Conveyor. Remove the motor box cover (Figure 27) to obtain access to the M4x25 Screw.

Figure 26.
M4x8 Screws



Figure 27.
Remove Motor Box Cover

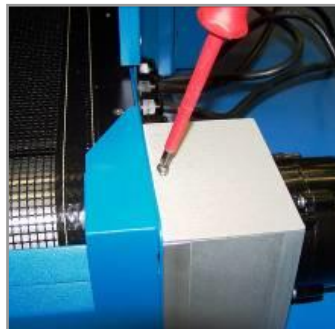


Figure 28.
M4x25 Screw



2. Remove all tension from the Belt by fully backing off the Belt-Tension Adjustment Knobs (Figure 25).
3. Position the Belt Splice to the end of the Conveyor (Figure 29). Remove the Fiberglass Rod that ties the ends of the Belt together (
4. Figure 31). Remove the Belt.
5. Run the new Belt around the Conveyor Frame (
6. Figure 32).
7. Install the Fiberglass Rod through the Belt Loops.
8. Apply some adhesive to both ends of the Fiberglass Rod to prevent it from moving during Conveyor operation (Figure 33).

Figure 29.
Spliced End of Belt

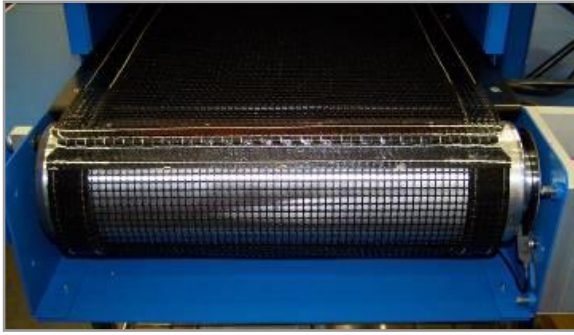


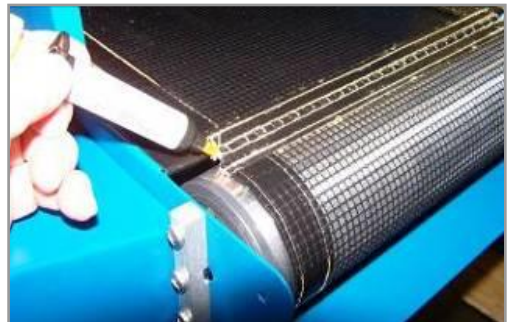
Figure 30.
Fiberglass Rod



Figure 31.
Replacing Belt



Figure 32.
Applying Adhesive



9. Tighten the Belt-Tension Knobs (Figure 25) finger tight to remove excess slack from the Belt. The Belt should be loose enough to be moved across the two Rollers by hand 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.

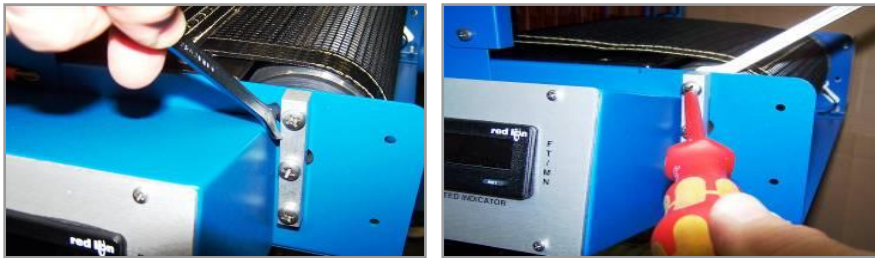
10. Start the Conveyor and adjust the Belt-Tensioning Knobs until the Belt runs in the center of the loading end of the Conveyor. The Belt should be able to be stopped by hand when the Conveyor is running. If stopping the Belt stalls the Conveyor Motor, the Belt is too tight and must be loosened.
11. When the Belt runs in the center of the Loading End, observe the Belt's position at the Motor End. If the Belt runs too far to one side on the Motor End, adjust the Motor Pulley as follows:
 - Turn the Conveyor off.
 - Remove Belt tension by loosening the two Belt-Tensioning Knobs.
 - Loosen the two Drive-Roller Shaft-Support Fasteners (Figure 25), located on the front of the Conveyor Frame, enough to slightly move the Shaft Assembly.

Figure 33.
Loosening Drive-Roller Shaft-Support Fasteners



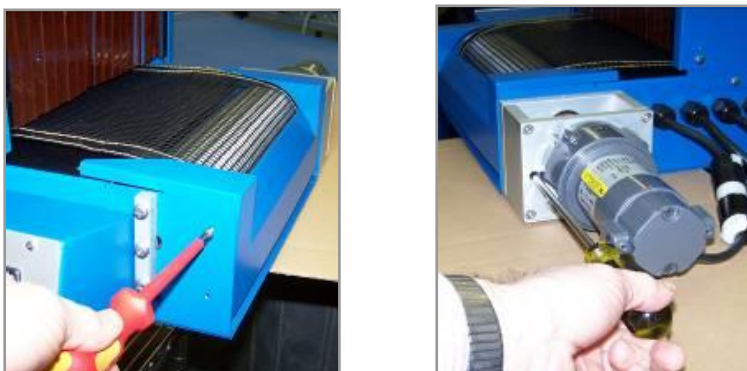
- Move the Shaft Assembly slightly to realign the Drive Roller and center the Belt. Tighten the bolts when adjustment is complete (Figure 35).

Figure 34.
Tightening Drive-Roller Shaft-Support Fasteners



- Turn the Conveyor on and adjust the Belt-Tension Knobs (Figure 25) until the Belt is properly tightened. Make sure that the Belt runs in the center of the Conveyor on both the Loading and Unloading Ends. Repeat this step as necessary to align the Belt.
- 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.

Figure 35.
Installing Pinch Guard (front & back)



Troubleshooting

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

Table 2.
Troubleshooting Chart for the UVCS Conveyor

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.

Table 3.
Troubleshooting Chart for the UVCS Conveyor Lamps

Problem	Possible Cause	Testing	Corrective Action
Lamp Will Not Ignite, Lamp Flickers, or Lamp Won't Maintain Operation	Improperly fastened connections	Visually inspect all connections to and from the Power Supply.	Secure all connections.
	Main Line Fuse blown	Remove Fuse from Power Receptacle and check with an Ohmmeter.	Replace Fuse if defective.
	Corroded Lamp Bases	Visually inspect the Lamp Bases for ANY signs of corrosion.	Replace the Lamp Bases if corrosion exists (both Lamp Bases should be replaced at the same time).
	Bulb beyond useful life	Replace Bulb with known good Bulb and re-test unit.	Replace Bulb if defective (typical Bulb life = 2,000 hours).
	Power Supply Board failed	Check UV output voltage on the Power Supply Board. Set Oscilloscope to: 20 ms/div 100 V/div	Replace Power Supply Board if defective.
	Igniter malfunctioned	Verify open circuit voltage from Igniter. Set Oscilloscope to: 50 us/div 1000 V/div	Replace if defective.
	See Lamp user's manual for additional information. Contact Dymax for additional support.		
EC Power Supply Blows Input Fuse	Malfunction in the Power Supply Board	Remove power. Disconnect the Lamp/Reflector Assembly from the Power Supply. Replace the Fuse. Apply power. If the Fuse blows, the Power Supply is defective.	Replace the Power Supply Board.
UV Intensity Appears To Be Low	Bulb beyond Its useful life	Use a Radiometer (Dymax ACCU-CAL™ 50) to measure actual output intensity. Consult manual for proper output.	Replace Bulb if beyond useful life (typical life = 2,000 hours).
	Quartz Envelope on Bulb contaminated	Visually inspect the Bulb for signs of contamination (Quartz envelope MUST be free from ANY contamination).	Clean the Bulb with a soft, lint-free cloth and isopropyl alcohol. The Bulb may have to be replaced if contamination is burned into Quartz Envelope.
	Surfaces of Reflector may be contaminated	Examine Reflector Surface for contaminants (should be a clean, shiny surface).	Clean the Reflector with a soft, lint-free cloth and isopropyl alcohol or equivalent.
	Reflector temperature is too low (5000-EC lamps only).	Verify that the Reflector temperature is between 115°F and 145°F as show on the Temperature Indicator on top of the Reflector Housing.	Adjust the speed of the Conveyor Blower (slower for Lamps running cold, faster for Lamps running hot). Add or remove Lamp Reflector Ventilation Plates as necessary to achieve proper temperatures.

Spare Parts and Accessories

UVCS Conveyor Spare/ Replacement Parts & Accessories

Item	Part Number
Blower, 115 VAC	40146
Blower, 220 VAC	40147
Circuit Breaker, 115 VAC	39128
Curtain Assembly (2 Required)	39207
DC Motor Controller	40179
DC Motor Controller Resistor	40178
DC Motor Speed Indicator Sensor	39136
Gear Motor, 90 VDC	43391
Hour Meter	35981
Mesh Belt	39134
Mesh Belt, Fine	39772
Pinch Guard, Conveyor Discharge	39119
Pinch Guard, Conveyor Inlet	39118
Potentiometer, Conveyor Speed	40006
Potentiometer, Exhaust Blower Speed	40149
Red Lion Counter Timer 50020	39132
Red Lion 12V Power Supply	39133
Shield, Solid Acrylic (2 Required)	39205
Speed Controller Knob	40143
Accessories	
Conveyor Rolling Cart Kit	39215
Riser Kit, 2" (for 6" of Clearance)	39218
Riser Kit, 6" (for 10" of Clearance)	39280
Shield Extension Kit*	39209
Cooling Fan Skirt Assembly	38320
Temperature Strip Indicator Kit	38693

*One Extension Shield Kit required for each end of the Conveyor.

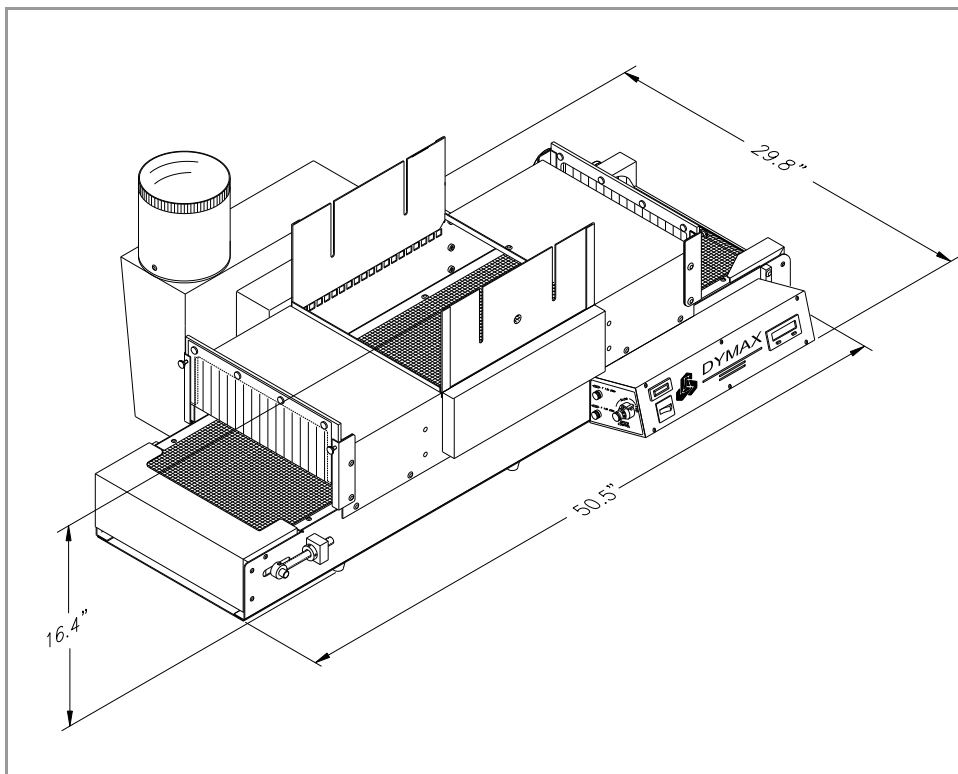
Lamp Spare/Replacement Parts

Item	Part Number
Fuse, F 6.25 Amp*	35141
Lamp, Mercury Vapor 400 Watt UV (Optional)	36970
Lamp, Metal Halide 400 Watt UV (Standard)*	38560
Lamp, Visible 400 Watt (Optional)	36658
Lamp Base Replacement Kits*	35979
Power Switch	36288
UV Filter, Glass (2000-EC only)*	35899

Specifications

Dimensions

Figure 36.
UVCS Version 2.0 Dimensions



Configurations

Figure 37.
Naming Convention

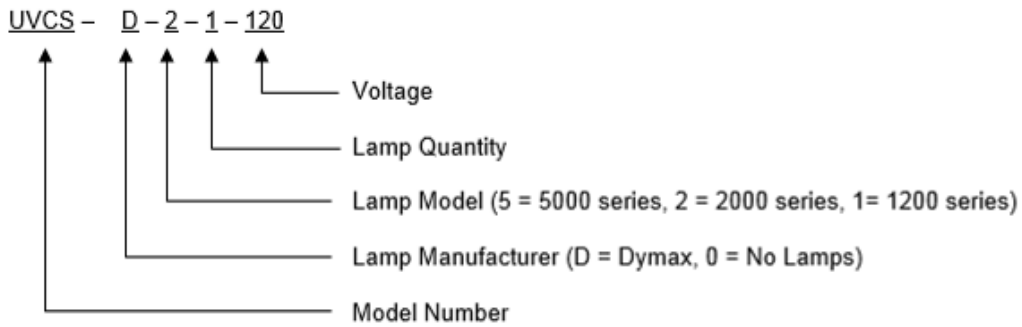


Table 4.
Conveyor Configurations

Model	Part Number	Lamp Configurations*
UVCS-D-5-1-120	39060	5000-EC, 1
UVCS-D-5-2A-120	39070	5000-EC, 2, In-Line
UVCS-D-5-2B-120	39080	5000-EC, 2, Side-by-Side
UVCS-D-5-4-120	39100	5000-EC, 4
UVCS-D-5-1-220	39065	5000-EC, 1
UVCS-D-5-2A-230	39075	5000-EC, 2, In-Line
UVCS-D-5-2B-230	39085	5000-EC, 2, Side-by-Side
UVCS-D-5-4-230	39105	5000-EC, 4
UVCS-D-2-1-120	39250	2000-EC, 1
UVCS-D-2-1-230	39135	2000-EC, 1
UVCS-D-1-1-120	39140	1200-EC, 1
UVCS-D-1-1-230	39145	1200-EC, 1
UVCS-0-0-120	39290	No Lamps
UVCS-0-0-230	39291	No Lamps

Specifications

Table 5.
Physical Specifications

Specifications	
Lamp Configurations	One 1200-EC, one 2000-EC, or up to four 5000-EC lamps
Cure Width*	6" - 12" [152 mm - 305 mm]
Motor Drive	Direct
Belt Speed	0.8 – 32.0 ft/min [0.3 – 9.7 m/min]
Belt Speed Display	Red LED, 1 decimal place
Lamp Focus Adjustment	2.1" - 4.5" [53.3 mm - 114 mm]
Maximum Part Height	4.5" [114 mm]**
Exhaust System	1 integral centrifugal blower

* The UVCS Conveyor has a 12" belt width. A single lamp will utilize the center 6" of the belt, while the two lamp configuration could span the full 12" width.

** Larger part heights are achievable with the installation of optional Riser Kits.

Table 6.
Electrical Specifications

Property	Specification	
Voltage Requirements	115 or 220 VAC, 50 or 60 Hz	
AC Current Values (Start/Run Current)	At 115 VAC 50/60 Hz	Total Conveyor - 4.8A / 2.4A rms Fan - 2.0A rms Motor Control - 400 mA rms
	At 200-230 VAC 50/60 Hz	Total Conveyor – 2.4A / 1.2A rms Fan - 1.0A rms Motor Control - 200 mA rms
Lamp Current Values and AC Current Requirements for Conveyor	AC Current at 115 VAC	6.3A
	AC Current at 220 VAC	3.15A
Conveyor and Lamps Total Input Current	UVCS-D-5-1-120	8A
	UVCS-D-5-2A-120	15A
	UVCS-D-5-2B-120	15A
	UVCS-D-5-4-120	27A
	UVCS-D-5-1-230	4A
	UVCS-D-5-2A-230	7A
	UVCS-D-5-2B-230	7A
	UVCS-D-5-4-230	16.8A
	UVCS-D-2-1-120	8A
	UVCS-D-2-1-230	4A
	UVCS-D-1-1-230	8A
	UVCS-D-1-1-230	4A

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 - is irradiance integrated over time, or Irradiance (W/cm^2) \times Time (s) = Dose (Joules/cm²). 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/cm².

Ozone - oxidizing agent (O₃) 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. Dymax 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 \oplus) - predominately produced by Dymax flood lamps.
2. Ultraviolet B (UV-B) - UV of medium wavelength from within approximately 320 to 280 nm - Dymax 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, Dymax 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 Dymax Corporation, will void any effective warranties and may result in damage to the equipment.

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

Index

- Assembly and Setup, 9
- Belt Replacement, 16
- Belt Tracking Adjustment, 16
- Contact Information, 4
- Curing System Safety, 5
- Definition of Terms, 25
- Dimensions, 22
- Electrical Specifications, 24
- Help, 4
- Installation, 11
- Maintenance, 16
- Operation, 12
- Optional Equipment, 21
- Parts List, 9
- Product Overview, 7
- Safety, 4
- Safety of UV Light
 - Bright, Visible Light, 6
 - High-Temperature Surfaces, 6
 - Ozone, 6
 - UV Exposure, 5
- Spare Parts and Accessories, 21
- Support, 4
- System Interconnect, 11
- Troubleshooting, 19
- Unpacking, 9
- UV Exposure, 5
- UV Light Shielding, 6
- Warranty, 26

