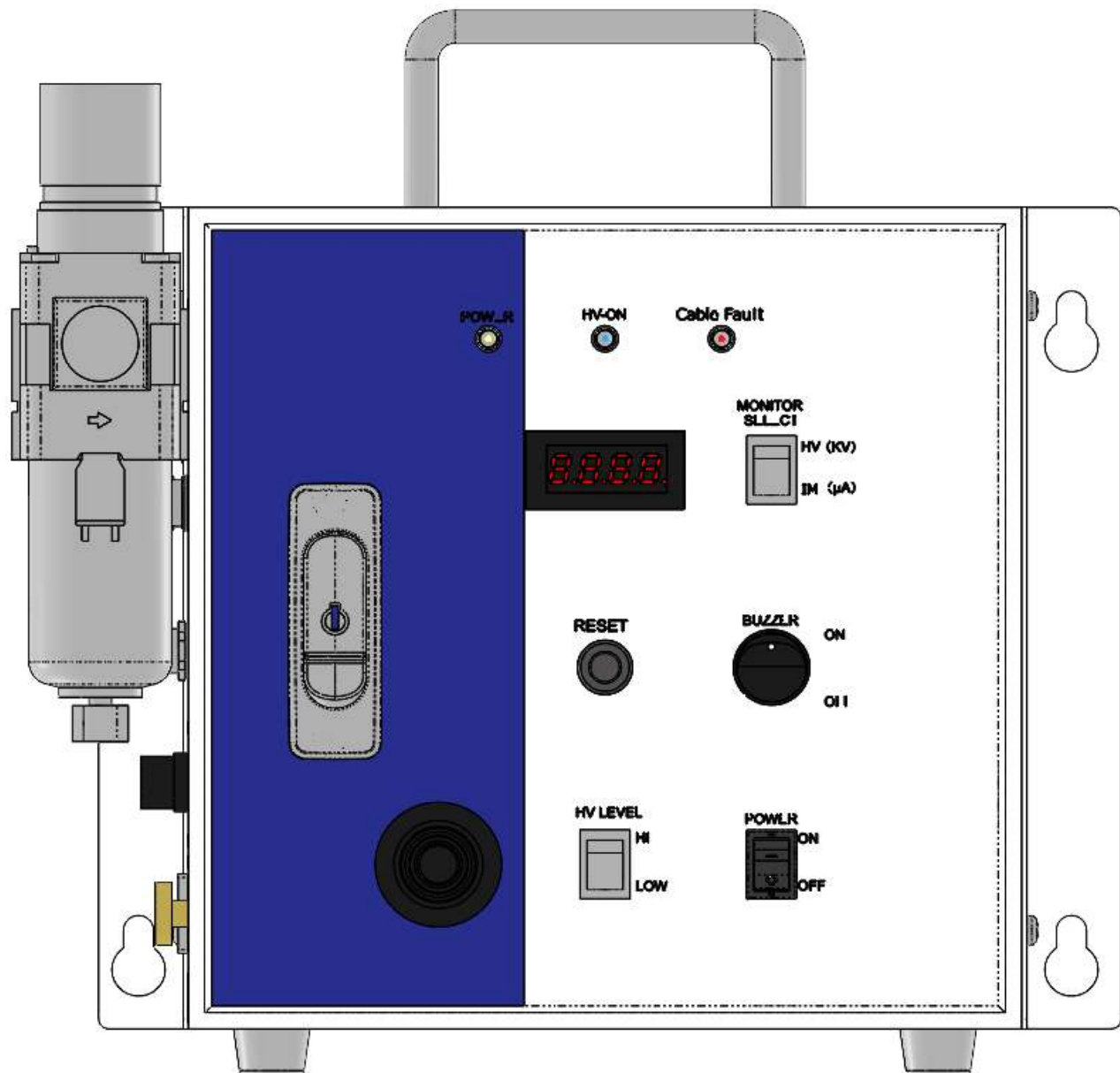




For additional information or copies of your service manual, please visit us online at:

binks.com/support/resource-library

Or use this QR code with your mobile device:

RANSFLEX HVX™ LOW-VOLTAGE CONTROLLER



Obey local or municipal regulations for product recycling and disposal.

ABOUT THIS MANUAL

ITS PURPOSE

The purpose of this manual is to help you get the most value from your RansFlex system. It can help you to determine how to install, operate, maintain, and repair your equipment. It provides information and procedures for routine maintenance and servicing and offers diagnostic and repair procedures to follow when trouble occurs.

ITS CONTENTS

This manual is divided into chapters, each of which is divided into consecutively numbered sections.

Pages with images will have paragraphs and sentences with callout numbers that refer to their respective images, steps, and parts.

Procedures, once described in the text, are not normally repeated. When it is necessary to refer to another chapter or section, the reference will be given as chapter and section number. Cross references given without the use of the word "chapter" apply to sections or paragraphs in the current chapter.

Chapter 02 Table of Contents.

Chapter 03 Safety: Safety, hazard, and warning rules.

Chapter 04 System Overview: Describes controller components.

Chapter 05 Installation: Installing the controller.

Chapter 06 Operation: Operating the controller.

Chapter 07 Safety Features: Special features to ensure safe operation.

Chapter 08 Maintenance: Maintenance warnings and inspection schedule.

Chapter 09 Troubleshooting: Corrective actions for common problems.

Chapter 10 Manual Change Summary: The revisions and changes made to this manual.

Chapter 11 Warranty: Your equipment's warranty.

WHO SHOULD USE THIS GUIDE

This guide is intended for users with different levels of knowledge and experience with this system:

Installers: The person(s) who will locate and install this equipment.

Users: The person(s) who will learn how to operate this equipment.

Servicers: The person(s) who will service and maintain this equipment.

This guide assumes all persons who will install, use, operate, and service this equipment have some knowledge of the product and its operating system.

MANUAL DISCLAIMER

All current and applicable certifications shown in this manual confirm Binks' adherence to the strict standards met to obtain the required regulatory compliances.

This manual was prepared with the most accurate information current at the time of publishing. Binks does not accept responsibility for errors in, or omissions from, the information contained herein.

Please get in touch with your distributor or Binks Customer Service for additional service information and assistance.

RELATED MANUALS & PUBLICATIONS

Part Number	Description
AH-26-01	RansFlex HVX™ Air Spray Applicator Installation Manual

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03 SAFETY

03.1 SAFETY PRECAUTIONS

Before the operation, maintenance, or servicing of this Binks system, fully read and understand all technical and safety literature for your product. This manual contains information that is important for you to know and understand.

This information relates to USER SAFETY and the PREVENTION OF EQUIPMENT PROBLEMS.

To help you understand this information, we use recognizable ANSI Z535 and ISO warning boxes and symbols throughout this manual. Please obey these safety sections.

⚠ DANGER

DANGER! Indicates a hazardous situation that, if not avoided, will result in death or severe injury.

⚠ WARNING

WARNING! Indicates a hazardous situation that, if not avoided, could result in death or severe injury.

⚠ CAUTION

Caution! Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury, or equipment damage.

NOTICE

Notice: Indicates information considered important but not hazard related.

SAFETY

Safety: Indicates a type of safety instruction, or a separate panel on a safety placard, where specific safety-related instructions or procedures are described.

Careful study and continued use of this manual will provide a better understanding of the equipment functions and procedures.

This understanding will result in improved operation, efficiency, and longer, trouble-free service with faster and easier troubleshooting. If you need the necessary safety literature for your specific system, contact your local Binks representative or Binks directly.

NOTICE

This manual lists standard specifications and service procedures. Differences can occur between this literature and your equipment.

Differences in local or municipal codes, manufacturer or plant requirements, material delivery requirements, and more can make variations unpreventable. To find these differences, compare this manual to your system installation drawings and other applicable Binks equipment manuals.

⚠ WARNING

The user **MUST** read and be familiar with the Safety Section in this manual and the safety literature therein identified.

Only trained personnel can operate this equipment.

All personnel who operate, clean, or maintain this equipment **MUST** fully read and understand this manual! To operate and service the equipment, follow all **WARNINGS** and safety requirements.

The user must be aware of and adhere to **ALL** local building and fire codes and ordinances, as well as **NFPA 33 AND EN 16985 SAFETY STANDARDS, LATEST EDITION**, or applicable country safety standards, before the installation, operation, or servicing of this equipment.

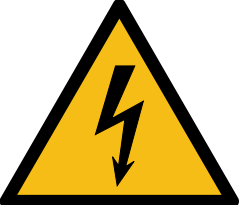
⚠ WARNING

The hazards shown on the pages that follow can occur during the normal use of this Binks equipment, but not all listed hazards will be applicable to your product model or equipment.

Repairs may only be performed by personnel authorized by Binks.

AREAS Indicate possible hazard occurrences	HAZARDS Indicate possible hazards	SAFEGUARDS Prevention of possible hazards
Spray Areas  	Fire Hazards Improper or unsatisfactory operation and maintenance procedures will cause a fire hazard. If the safety interlocks are disabled during operation, protection against accidental arcing is shut off and can cause a fire or explosion. Frequent Power Supply or Controller shutdown identifies a problem in the system. For this occurrence, a correction will be necessary	Fire extinguishing equipment must be present in the spray area. Periodically run a test to make sure the equipment stays usable. Keep spray areas clean to prevent the build-up of combustible residues. Do not smoke in the spray area. The high voltage supplied to the atomizer must be turned off before the equipment is cleaned, flushed or maintained. Spray booth ventilation must be kept at the rates as set by NFPA-33, OSHA, country, local, and municipal codes. If flammable or combustible solvents are used to clean the equipment, ventilate the area. Prevent electrostatic arcing. Maintain spark-safe work distance between the parts that get coated and the applicator. A span of one inch for every 10KV of the output voltage is necessary. Do an equipment test only in areas free of combustible material. The test may necessitate the high voltage to be on, but only as instructed. Non-factory replacement parts or unauthorized equipment modifications can cause a fire or injury. Non-factory replacement parts or unauthorized equipment modifications can cause a fire or injury. The key switch bypass is used only during setup operation. Do no production work with disabled safety interlocks. Set up and operate the paint procedure and equipment under NFPA-33, NEC, OSHA, local, municipal, country, and European Health and Safety Norms.

AREAS Indicate possible hazard occurrences	HAZARDS Indicate possible hazards	SAFEGUARDS Prevention of possible hazards
Spray Areas  	Explosion Hazard Improper or unsatisfactory operation and maintenance procedures will cause a fire or explosion hazard. If the safety interlocks are disabled during operation, protection against accidental arcing is shut off and can cause a fire or explosion. Frequent Power Supply or Controller shutdown identifies a problem in the system. For this occurrence, a correction will be necessary.	Prevent electrostatic arcing. Maintain spark-safe work distance between the parts that get coated and the applicator. A span of one inch for every 10KV of output voltage is necessary. Unless specifically approved for use in hazardous locations, put all electrical equipment outside of Class I or II, Division 1 or 2 hazardous areas in accordance with NFPA-33, or outside of Zone 2 or Zone 22 in accordance with EN standards. If equipped, set the current overload sensitivity as described in the related section of the equipment manual. If incorrectly set, the current overload sensitivity for protection against accidental arcing is turned off and can cause a fire or explosion. Frequent power supply shutdown indicates a problem in the system, which requires correction. Always turn off the control panel power before the system is flushed, cleaned, or servicing the spray system equipment. Make sure no objects are within the spark-safe work distance before the high voltage is turned on. The control panel must interlock with the ventilation system and conveyor in accordance with NFPA-33, EN 50176. Fire extinguishing equipment must be present in the spray area. Periodically run a test to make sure the equipment stays usable. Do an equipment test only in areas free of combustible material.
General Use and Maintenance 	Improper or unsatisfactory operation and maintenance procedures will cause a fire hazard. Personnel must be correctly trained in the operation and maintenance of this equipment.	Train all personnel in accordance with the requirements of NFPA-33, EN 60079-0. Before equipment operation, personnel must read and understand these instructions and safety precautions. Obey appropriate local, municipal, state, and national codes governing ventilation, fire protection, operation maintenance, and housekeeping. Reference OSHA, NFPA-33, EN Norms, and your insurance company requirements.

AREAS Indicate possible hazard occurrences	HAZARDS Indicate possible hazards	SAFEGUARDS Prevention of possible hazards
Spray Area High Voltage Equipment    	Electrical Discharge This equipment contains a high voltage device that can cause an electrostatic induction on ungrounded objects. This electrical charge is capable of igniting coating materials. Insufficient ground will cause a spark hazard. A spark can ignite many coating materials and cause a fire or explosion.	Operators in the spray area and the parts to be sprayed must be sufficiently grounded. All conductive objects inside the spray area must be grounded. Hold the parts that get sprayed on conveyors or hangers that are correctly grounded. The resistance between the parts and the earth-ground must not be more than 1 MΩ. Refer to: NFPA-33. Before the equipment is operated, ground all operators. They cannot wear rubber-soled insulated shoes. Wear ground straps on wrists or legs for sufficient ground contact. Operators must not wear or carry ungrounded metal objects. When used, operators must make complete contact with the applicator handle and electrostatic applicator. Use conductive gloves or gloves with the palm section cut out. Operators must wear grounded footwear. NOTE: REFER TO NFPA-33 OR SPECIFIC COUNTRY SAFETY CODES FOR GUIDANCE TO CORRECTLY GROUND THE OPERATOR. Except for objects needed for the high-voltage process, all electrically conductive objects in the spray area are to be grounded. Supply a grounded conductive floor in the spray area. Always turn off the applicator voltage before the system is flushed, cleaned, or when servicing the spray system equipment. Unless specifically approved for use in hazardous locations, put all electrical equipment outside of Class I or II, Division 1 or 2 hazardous areas in accordance with NFPA-33, or outside of Zone 2 or Zone 22 in accordance with EN standards. Do not install an applicator into a fluid system if the solvent supply is ungrounded. Do not touch an energized applicator electrode.

AREAS Indicate possible hazard occurrences	HAZARDS Indicate possible hazards	SAFEGUARDS Prevention of possible hazards
Spray Areas 	Toxic Fluid or Fumes Toxic fluids or fumes can cause severe injury or death if splashed in the eyes or on the skin, or if inhaled or swallowed.	Read the Safety Data Sheet (SDS) for instructions to know and understand how to handle the specific hazards of the fluids used, and the effects of long-term exposure. During the spray, clean, or servicing of equipment, or when in the work area, keep the work area fully ventilated. Always wear personal protective equipment (PPE) when in the work area or during equipment operation. Refer to the Personal Protective Equipment warnings in this manual. Store hazardous fluid in approved containers and refer to local, municipal, state, and national codes governing the disposal of hazardous fluids.
Spray Area and Equipment Use 	High-pressure fluid sprayed from the applicator, hose fittings, or ruptured/damaged components can pierce the skin. While this injury can appear as cut skin, this is a severe injury that can result in the amputation of the affected area.	Do not point or operate the spray applicator at the body part of a person. Do not put your hand or fingers over the applicator fluid nozzle or fittings in the hose or Proportioner. Do not try to stop or deflect leaks with your hand, glove, body, or shop rag. Do not “blowback” fluid, as the equipment is not an air spray system. Relieve pressure in the supply hoses, Proportioner, and QuickHeat™ hose before the equipment is inspected, cleaned, or serviced. Use the lowest possible pressure to recirculate, purge, or troubleshoot the equipment. Examine the hoses, couplings, and fittings every day. Service or immediately replace parts that leak, are worn, or are damaged. Replace high-pressure hose sections. They cannot be recoupled or serviced.

AREAS Indicate possible hazard occurrences	HAZARDS Indicate possible hazards	SAFEGUARDS Prevention of possible hazards
Equipment and Fluids 	Skin and Clothing Burns Equipment surfaces and fluids can become very hot during operation.	Do not touch hot fluid or equipment during operation. Do not let clothing touch the equipment during operation or immediately after the equipment is stopped. Let the equipment fully cool before the examination or servicing of the component.
Pressurized Aluminum Parts    	The use of certain solvents and chemicals can cause equipment damage and severe personal injury.	Do not use 1,1,1-trichloroethane, methylene chloride or other halogenated hydrocarbon solvents or fluids that contain such solvents. These solvents can cause a severe chemical reaction and equipment rupture that results in equipment and property damage, serious bodily injury, or death.

⚠ CAUTION

Only operate the equipment after you have read this section.

03.2 ADDITIONAL SAFETY INFORMATION

To ensure safe operation of the electrostatic spray applicator, constantly monitor the output voltage, operating voltage, and current during electrostatic painting. The controller limits the output of operating voltage and current to prevent ignition discharge even if the spray applicator's high-voltage electrode comes near or contacts the workpiece.

Observe all local or municipal safety measures and wear approved protective equipment when servicing this equipment. Clean all spilled chemicals and materials and do all work in a clean and organized environment to prevent personal injury and equipment damage.

⚠ DANGER

To prevent injury or electrocution while the system is under power, do not contact, disconnect, or manipulate electrical connections or devices. The main disconnect on the right side of the controller can be locked out. Follow the proper Lockout–Tagout (LOTO) procedures for internal controller electrical work.

Only qualified electrical personnel can perform the work if diagnosis and troubleshooting are not possible during working conditions.

⚠ WARNING

To prevent possible chemical spillage when personnel are not on site, air and fluid supplies for the equipment must be disabled when the equipment idles for an extended period, such as an end-of-day shutdown.

NOTICE

During the initial commission of the equipment and at periodic times throughout equipment life, visually examine all fluid fittings for leaks.

Periodically, it is necessary to visually examine all pieces of this equipment for signs of noticeable degradation due to chemicals or other conditions in the equipment's environment.

SAFETY

Obey local or municipal regulations that require installed fire suppression for equipment operation.

If the operation of this equipment, sensors, switches, or other ancillary equipment occurs in the presence of flammable gases and vapors, connect this equipment through intrinsic-safe or Zener barriers. Classify them as a "simple apparatus" or approve them for use in these areas.

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04 SYSTEM OVERVIEW

The RansFlex HVX Low-Voltage (LV) Controller was developed specifically for RansFlex electrostatic spray applicators. It allows safe and easy use of the spray applicators.

04.1 BASIC SPECIFICATIONS

Item	Description
Model	81510-XX
Weight	5.2 kg (excluding accessories)
Size	W 250mm x H 250mm x D 160mm (excluding protrusions)
Number of applicators	1
Input power and frequency	AC100V to AC240V, 1A, 50/60Hz
Operating temperature and humidity range	40°-105° F (5°-40° C), 0-80% (no condensation)
Storage temperature and humidity range	15°-140° F (-10° to 60° C), 10-90% (no condensation)

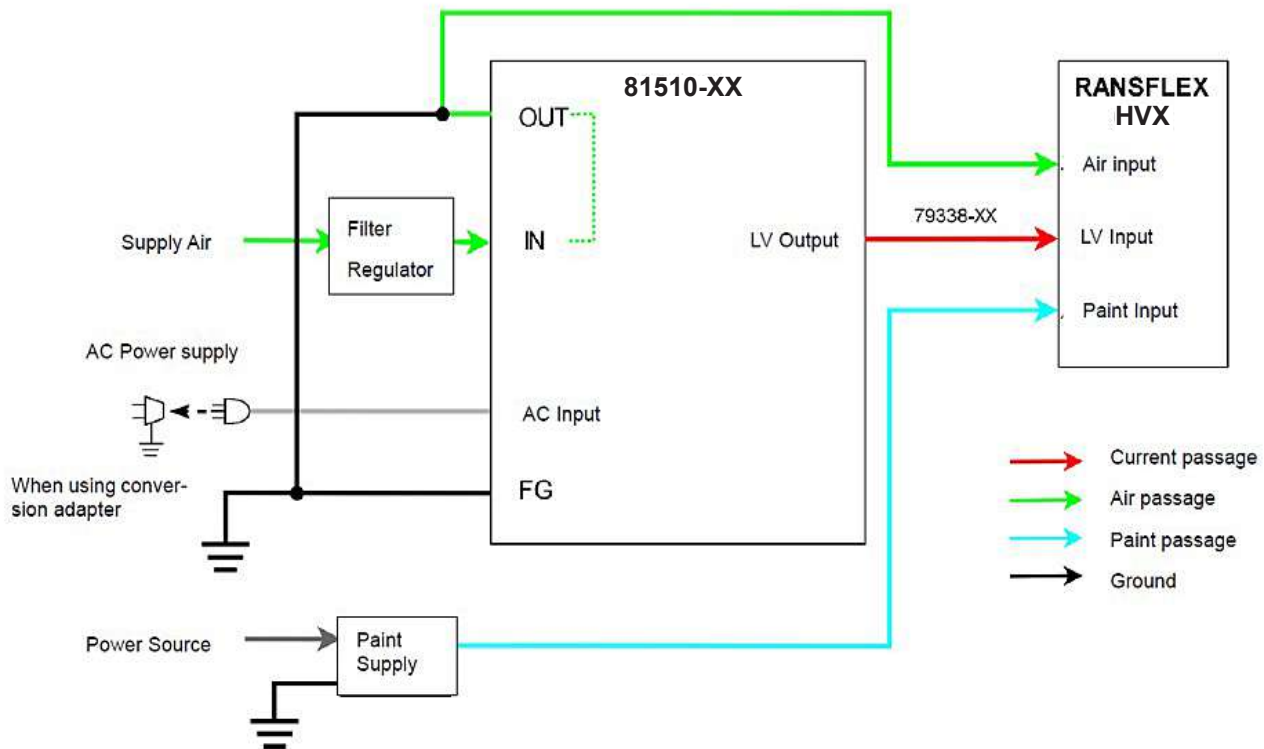
04.2 FUNCTIONAL SPECIFICATIONS

Item	Description
Maximum high voltage	-45kV, -65kV, -85kV (depending on spray applicator model)
Safety circuit	Limits maximum output to 18V/0.5A
High-voltage output switching	High mode: 100%, low mode: 70% (factory default)
Low-voltage cable disconnection detection	Detects breakage when low-voltage cable is disconnected, illuminating the Cable Fault indication light.
7-segment LED	Displays voltage/current values. Use the SELECT switch to change the display.
LED indicator	POWER, HV-ON, Cable Fault
Input/output system	Low-voltage cable connector: 1 system Airflow in/out: 1 system each (input side includes air filter)
Reset	Reset after wire break detection
Buzzer mute	Mute alarm sound

04.3 SYSTEM CONFIGURATION DIAGRAM

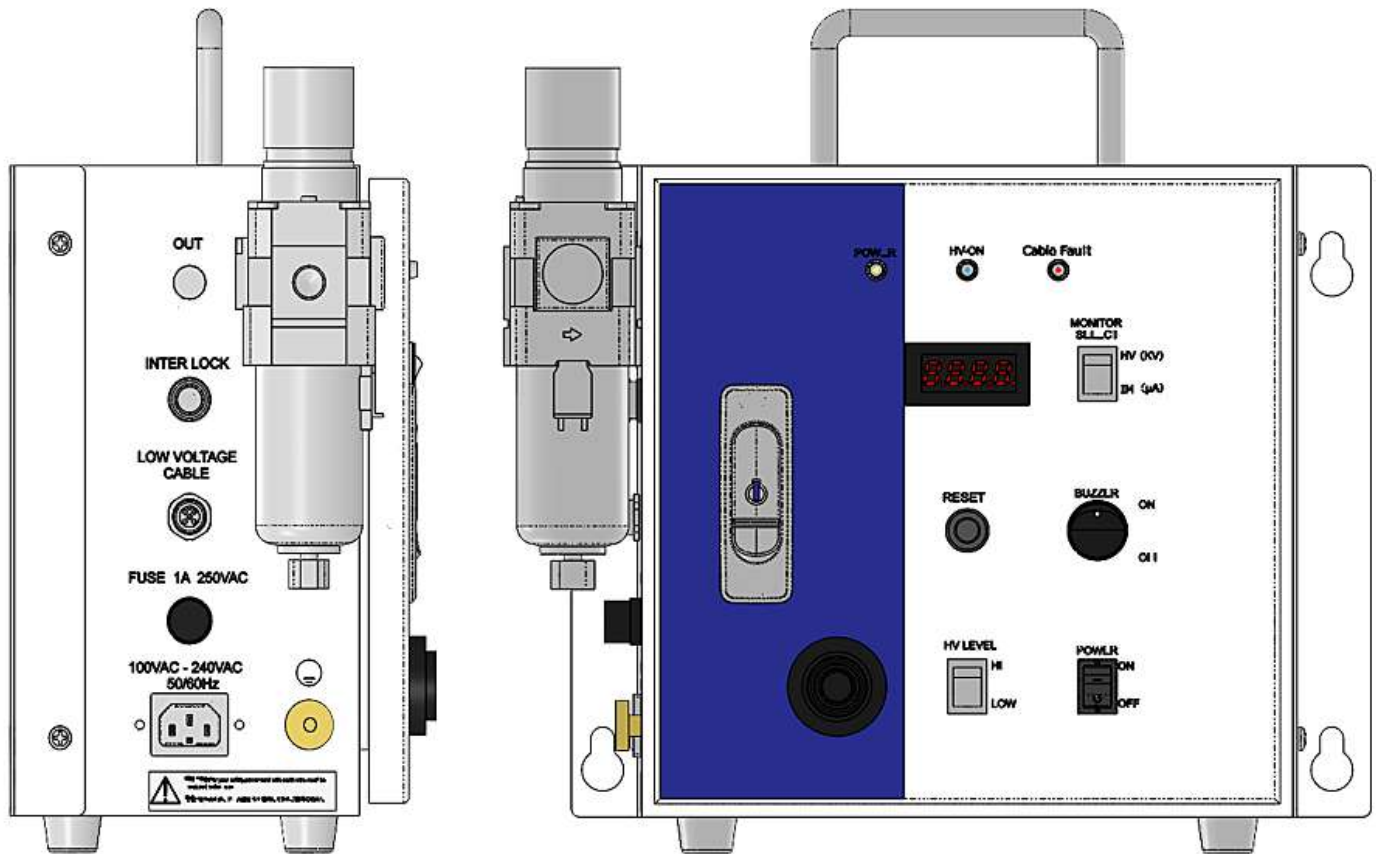
The diagram shows a basic configuration example for this unit.

Lightly pulling the trigger of the electrostatic spray applicator ejects air from the applicator while applying high voltage. Firmly pulling the trigger discharges the paint.



04.4 APPEARANCE AND COMPONENT NAMES

04.4.1 APPEARANCE



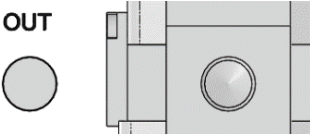
04.4.2 PART NAMES AND FUNCTIONS

Image	Name	Function
POWER 	POWER (power ON indicator)	Illuminates when the power switch is ON.
HV-ON 	HV-ON (high voltage ON indicator)	Illuminates while high voltage is applied.
Cable Fault 	Cable Fault (break detection)	The indicator lights illuminates and an alarm sounds when a low-voltage cable break is detected. Press RESET to turn OFF.

04.4.2 PART NAMES AND FUNCTIONS

Image	Name	Function
	7-segment monitor	Displays the voltage or current value.
	MONITOR SELECT switch	Switches between voltage and current display on the 7-segment monitor. Pressing the top of the switch displays the voltage value. Pressing the bottom of the switch displays the current value.
	RESET switch	Press RESET to clear the indicator and disable the alarm when the safety function activates.
	Alarm switch	Disables the alarm when the safety function activates.
	Buzzer	Sounds when the safety device activates. Stops sounding when reset.
	HV LEVEL switch	Allows switching the electrostatic spray applicator tip voltage between HI output (100%) or LOW output (approximately 60%).
	POWER switch	Turns the main unit power ON or OFF. Turning it ON energizes the main unit.
	Lockable opening/closing handle	Opens and closes the front panel. Locking prevents accidental access to the interior.
	Filter regulator (with pressure gauge)	Connect the air supply from the compressor. Adjust pressure using the adjustment dial.

04.4.2 PART NAMES AND FUNCTIONS

Image	Name	Function
	Mounting bracket	These are mounting brackets for securing the unit to a wall or similar surface. The brackets are removable.
	Air input/output terminals	The air filter side is the input. Connect OUT to the spray applicator body.
	LOW VOLTAGE CABLE connection terminal	This terminal supplies power to the electrostatic spray applicator. Connect using the dedicated cable.
	FUSE socket	Uses a 250VAC 1A fuse. A spare fuse is located inside the case.
	AC inlet	Connect the included AC cord. Ensure the AC cable's ground wire is properly grounded.
	Main unit ground terminal	Connect ground cable from true earth ground. Ensure proper grounding.
	INTERLOCK	Connecting pins (1) and (2) (closed) enables operation readiness. Configure the system to remain open if high voltage must not be applied.

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05 INSTALLATION

This section explains how to install the controller.

⚠ WARNING

- ▶ Under no circumstances should the low-voltage controller be placed in a hazardous area where paint spray may reach. Electrical equipment can generate sparks, which may cause fire or explosion (refer to applicable fire codes).
- ▶ Always ground the low-voltage controller. Failure to do so may cause electrical discharge and risk electric shock. Use the device strictly within its specified operating limits as outlined below. Failure to comply may cause device malfunction.
- ▶ Personnel responsible for operating, cleaning, or maintaining this device must read and fully understand this manual. Pay particular attention to and comply with the warnings and requirements for safe operation, repair, and inspection. Users must understand and comply with all local building and fire codes and regulations, as well as all relevant national safety regulations, before installing, operating, and/or repairing this device.
- ▶ Use only approved painting equipment on the 81510-XX controller, as outlined in AH-26-01.
- ▶ Use the power supply inbound voltage within the specified range. Failure to do so may cause equipment malfunction or fire hazard.

05.1 INSTALLATION LOCATION AND INSTRUCTIONS

⚠ WARNING

- ▶ The 81510-XX must be installed outside hazardous areas (Class 1, Divisions 1 and 2 or Zones 1 and 2).
- ▶ Do not install the controller near or adjacent to heat-generating equipment (such as ovens or high-power lamps).

The ambient temperature in the area must not exceed 50°C (122°F). Install the controller as close as possible to the painting machine to minimize the length of the painting machine cable.

To install the controller, either stand it on a flat surface with the rubber feet facing down or mount it to a wall.

To mount the controller on a wall or similar surface, securely fasten it using the included dedicated mounting bracket and screws.



When mounting the controller, Binks recommends installing it horizontally with the rubber feet facing down.

⚠ CAUTION

- ▶ Ensure the controller is securely fastened.
- ▶ After installation, ensure the unit is free of any play.

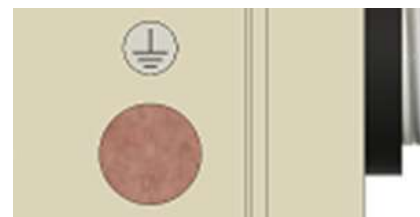
05.2 GROUNDING

⚠ CAUTION

The included green/yellow grounding cable must be connected to the grounding screw of the electrostatic manual spray gun. The grounding cable must be connected directly to true earth ground.

To achieve good coating results and help ensure safe operation, the system must be properly grounded using direct grounding. Direct grounding is a copper rod driven into the ground.

The grounding cable is included with the controller. The image below and diagram on the following page show the connection point on the side of the 81510-XX.



If not properly grounded, the following malfunctions may occur:

1. Poor coverage, low transfer efficiency.
2. Uneven coating thickness.
3. Paint particle adhesion to the coating machine and operator.
4. Hazardous static charge buildup on the coated object.

05.3 MAIN POWER SUPPLY

The power cable is included with the controller. Connect this cable to the side of the 81510-XX main unit.



Additionally, a 3-pin to 2-pin AC cable adapter is included with the accessories for this unit (Japan only). Do not forget to connect the grounding cable even when using the adapter.

Purchase power cables for other regions separately.

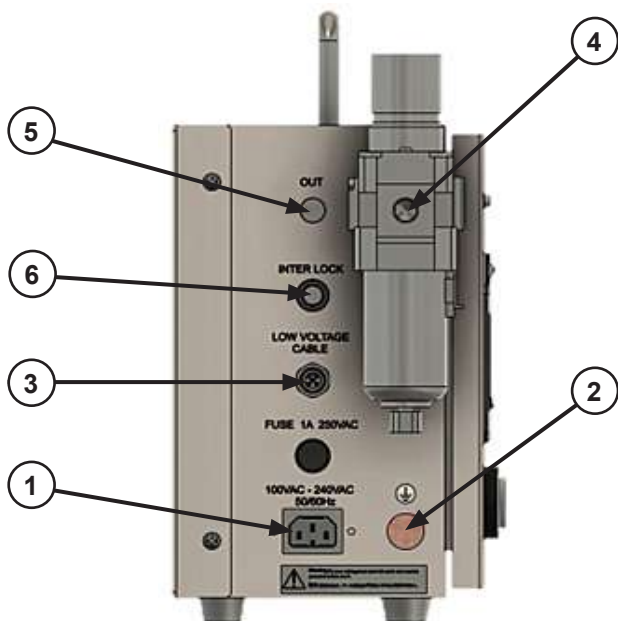
POWER CABLE OPTIONS

Part Number	Region
76449-03	China
76449-02	Central Europe

05.4 81510-XX CONNECTIONS

81510-XX CONNECTIONS

Item	Connector Name
1	AC inlet
2	Ground terminal
3	Low voltage cable
4	Air flow switch input
5	Air flow switch output
6	Interlock input



05.4.1 AC INLET

The AC inlet receptacle is a standard IEC C14 power inlet connector rated up to 240 VAC.

Connect the inlet to either 110 VAC and 220 VAC inputs at 50 Hz or 60 Hz.

05.4.2 GROUND TERMINAL

Connect the included ground wire.

05.4.3 LOW VOLTAGE CABLE

Connect the controller unit to the spray applicator using the dedicated low-voltage cable (79338-XX).

05.4.4 AIR FLOW SWITCH INPUT

Install included fitting into regulator port. Fitting depends on the type of connection required:

- NPS connection: 82374-00
- BSP connection: 82373-00

05.4.5 AIR FLOW SWITCH OUTPUT

To connect the air hose:

- Connect the supply air to the main unit's air input terminal (air filter side).
- Connect the air output side to the spray applicator using the dedicated air hose (80558-XX).
- The air hose (80558-XX) includes a ground wire. Be sure to ground it.

05.4.6 INTERLOCK

⚠ WARNING

Failure to connect interlocks could result in a fire or explosion.

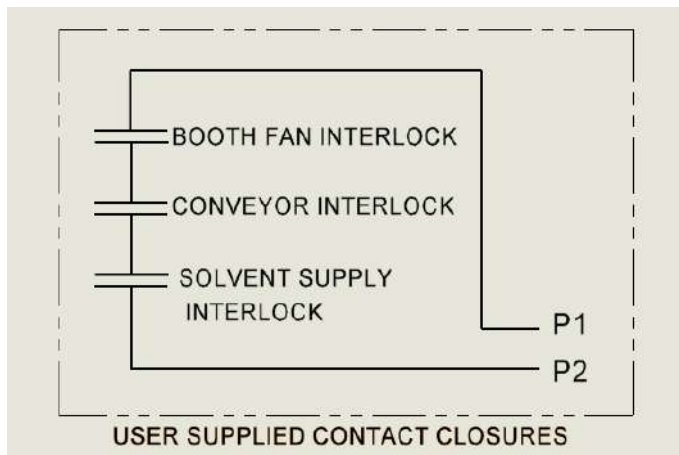
⚠ CAUTION

Shield the cable connecting the controller to the required interlocks to prevent electrical noise from affecting the interlock function.

The interlock input is not pre-wired. Interlocks required by code are as follows:

- Booth Fan Interlock: When the booth fan is on, a contact closure is made.
- Conveyor Interlock: When the conveyor is moving, a contact closure is made.
- Solvent Interlock: When solvent supply to the applicator is off, a contact closure is made.

Refer to the drawing on the following page for more information.



- c. If the spray applicator is energized, the green LED on the back of the applicator will illuminate. Additionally, the **HV-ON** LED on the controller unit will light up, and the current output voltage value will be displayed.

05.6.2 CABLE FAULT DETECTION CHECK

1. Disconnect the low-voltage cable from the unit and gently pull the spray applicator trigger.
2. Confirm that the **Cable Fault** indicator lights up and the alarm sounds.
3. After verification, press the reset button to clear the error.

05.5 FILTER/REGULATOR INSTALLATION

The filter/regulator comes separate from the controller. To install:

1. Locate the inlet port.
2. Thread onto the flow switch port marked "inlet."

NOTICE

Refer to AH-26-01 HVX Spray Applicator Installation Manual for additional installation instructions.

05.6 OPERATION CHECKS

After installation is complete, perform an operation check before spraying paint.

Perform the following inspection routine before using the spray applicator. Follow the routine every time you use applicator.

NOTICE

This section does not involve the use of paint or thinner.

05.6.1 OPERATION CHECK PROCEDURE:

1. Connect the AC cable to the power outlet. Verify that the AC cable's ground wire is properly grounded.
2. Set **POWER** switch to ON and confirm that the **POWER** indicator lights up.
3. Set **MONITOR SELECT** to the voltage side (kV) and confirm the monitor display shows "00.0."
4. Supply air to the unit and verify there are no air leaks from the air hose, fittings, or around the main unit.
5. Adjust the air pressure to 0.3 MPa (43 psi) using the pressure adjustment dial on the air filter.
6. Test the spray applicator.
 - a. Confirm the safety of the surrounding area.
 - b. Lightly pull the spray applicator trigger. High voltage will be applied along with the air.

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06 OPERATION

This section explains how to operate the main functions of this unit.

NOTICE

To trigger the applicator voltage, there must be air flow through the flow switch and the applicator switch must be in the ON position.

06.1 7-SEGMENT MONITOR

Switching the **MONITOR SELECT** switch displays either voltage (kV) or current (μ A).

Voltage Display Mode

When the **MONITOR SELECT** switch is in the up position, the display shows the voltage. The display range for voltage is 00.0 kV to 99.99 kV.

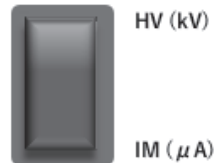
The example on the right is 45 kV.

Current Display Mode

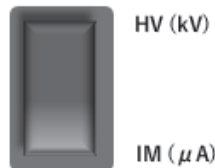
When the **MONITOR SELECT** switch is in the down position, the display shows the current. The display range for current is 000.0 μ A to 199.9 μ A.

The example on the right is 30 μ A.

MONITOR
SELECT



MONITOR
SELECT



06.2 HV LEVEL SWITCH

This unit comes with two preset voltage levels, allowing users to switch to the high voltage level as needed.

HV LEVEL: HI

Setting the **HV LEVEL** switch to **HI** generates the maximum voltage for your spray applicator.

The voltage value varies depending on the spray applicator model used and will be either 45kV, 65kV, or 85 kV. This example is 45 kV.

The output voltage in **HI** mode is a fixed value.

HV LEVEL: LO

Setting the **HV LEVEL** switch to **LO** generates a high voltage of approximately 60% of the maximum outlet voltage.

The output voltage in **LO** mode is set to approximately 70% of the maximum voltage.

This example is 30 kV.

HV
LEVEL



HV
LEVEL



NOTICE

Please consult your distributor or contact Binks directly to change the low voltage level.

06.3 HV-ON OPERATION

After setting up the air supply and turning it ON, pull the trigger to apply voltage to the spray applicator.

While high voltage is applied, the **HV-ON** indicator on the controller unit and the LED on the back of the spray applicator will illuminate.

Turn the electrostatic/non-electrostatic switch on the rear of the applicator clockwise to activate non-electrostatic mode (HV-OFF).

The applicator in HV-OFF mode can be used as a standard spray applicator.

In non-electrostatic mode, the LED on the rear of the applicator turns OFF.

When the applicator is set to the non-electrostatic position, the **HV-ON** indicator on the low-voltage controller will still illuminate even though high voltage is not applied.

The controller will also still display voltage or current when operating the trigger.

Confirm whether high voltage is applied on the indicator at the rear of the applicator.

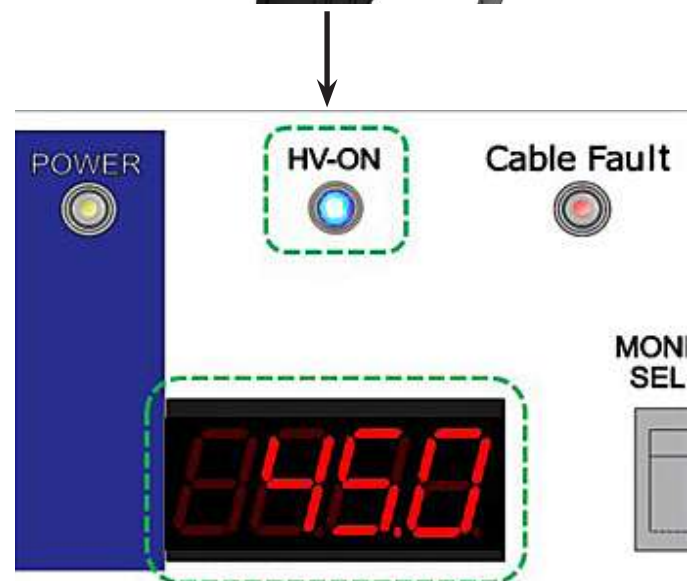
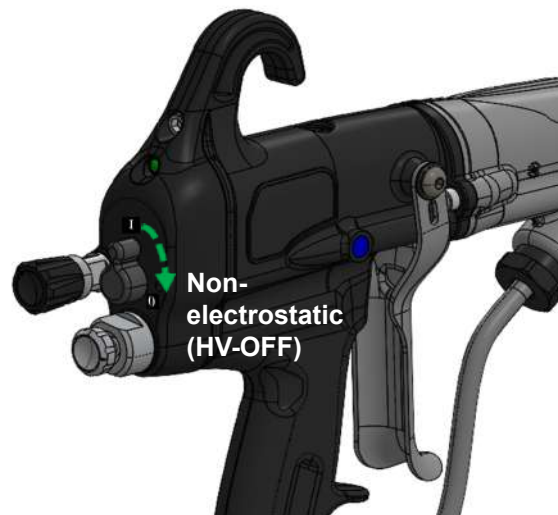
NOTICE

Even in non-electrostatic position, the **HV-ON** indicator on the low-voltage controller will illuminate. The LED on the rear of the applicator indicates whether high voltage is actually applied. Check the LED to confirm voltage status.

Controller Side

Electrostatic Applicator Side

HV-ON

Electrostatic
(HV-ON)Non-
electrostatic
(HV-OFF)

06.4 CHANGING THE LOW VOLTAGE SETTING ON THE HVX CONTROLLER

1. Ensure the power to the controller is off, remove line cord.

! WARNING

Power must be off to prevent any contact with the input power mains. Any contact with the mains may cause severe injury or death.

! WARNING

Do not adjust any other potentiometers on the PC board. This may create an unsafe condition.

2. Use the latch on the control cabinet door to open the lid and provide an open view of the PC board.
3. Locate the VR5 pot on the board.
4. Rotate the pot counterclockwise (CCW) to lower the voltage or clockwise (CW) to increase the voltage.

The original setting from the factory is 60% of full voltage. The table below is approximately the gain or loss in kV from the original 60% factory setting.

Approximate Voltage Change from Factory Setting

Turns from 60%	45 kV HVX	65 kV HVX	85 kV HVX
CCW -1/8 turn	-7 kV	-12 kV	-15 kV
CCW -1/4 turn	-12 kV	-17 kV	-23 kV
CCW -3/8 turn	-14 kV	-20 kV	-27 kV
CCW -1/2 turn	-15 kV	-22 kV	-28 kV
CW +1/8 turn	+10 kV	+13 kV	+17 kV
CW +1/4 turn	+14 kV	+21 kV	+27 kV

5. Close and lock the lid.
6. Re-install the line cord.
7. Switch the power to the controller back on. Use the low setting as needed for the application.



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07 SAFETY FEATURES

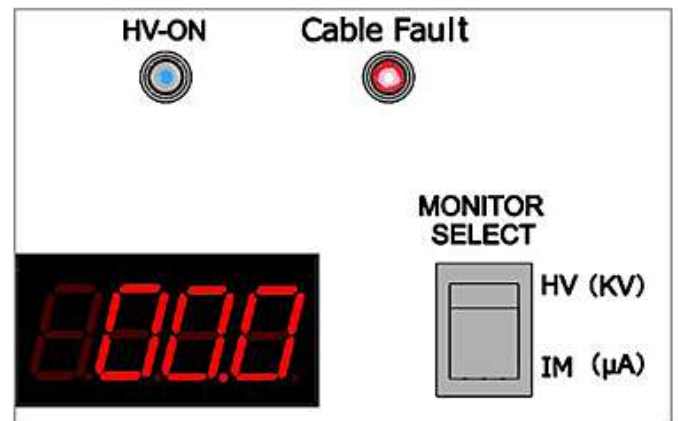
07.1 OUTPUT VOLTAGE LIMITATION

The 81510-XX controller is equipped with a circuit that limits output to prevent spark discharge even if the gun tip comes too near or contacts the workpiece.



07.2 CABLE FAULT DETECTION

The **Cable Fault** indicator illuminates and the alarm sounds if users attempt to turn ON high-voltage while the low-voltage cable connecting the controller and applicator is broken or shorts.



07.3 SAFETY RESET PROCEDURE

To deactivate the safety function, first confirm that the cause has been eliminated.

Press **OL-RESET** to reset the controller. The safety circuit will be released, the indicator will turn OFF, and the alarm will stop sounding.



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08 MAINTENANCE

Read this chapter and follow the precautions before maintaining or inspecting the low-voltage controller and electrostatic spray applicator. Close attention ensures safe and proper operation.

WARNING

Before completing any maintenance procedures, the controller power must be switched off. Failure to follow this could cause severe injury or death.

WARNING

- ▶ Handling high-voltage equipment requires dedicated personnel with specialized knowledge in installation, operation, and maintenance.
- ▶ Only qualified personnel who have completed the required training according to your company's regulations should perform these tasks.
- ▶ Do not operate the controller with the cover open.
- ▶ Do not operate switches or other components inside the controller.
- ▶ If an overload occurs, eliminate the cause, perform sufficient safety checks, and then reset.
- ▶ Use the power supply voltage within the permissible range. Failure to do so may cause equipment malfunction or fire hazard.
- ▶ Under no circumstances place the low-voltage controller in a hazardous area where paint spray may reach. Electrical equipment can generate sparks, which may cause fire or explosion (refer to the Fire Service Act, ordinances, etc.)

CAUTION

- ▶ Do not bring flammable materials into the spray booth.
- ▶ Prepare safety inspection preparations and checklists based on your company's regulations, and conduct regular safety inspections.
- ▶ Do not operate this coating machine without running the paint booth's supply and exhaust ventilation.
- ▶ Wear appropriate protective gear (work clothes, anti-static shoes, safety glasses, mask, gloves, etc.) when entering the paint booth.

08.1 AVAILABLE REPLACEMENT PARTS

Part Number	Description
81127-00	PC BOARD, HVX CONTROLLER
81128-00	POWER SUPPLY, HVX
82375-K5	FUSE 250V 1A
13742-01	AIR FLOW SWITCH

08.2 MAINTENANCE PROCEDURES

08.2.1 PC BOARD REPLACEMENT

1. Remove all connectors from the PC board (1).
2. Remove the four (4) screws retaining the board.
3. Install new board.
4. Replace all connectors.

08.2.2 POWER SUPPLY REPLACEMENT

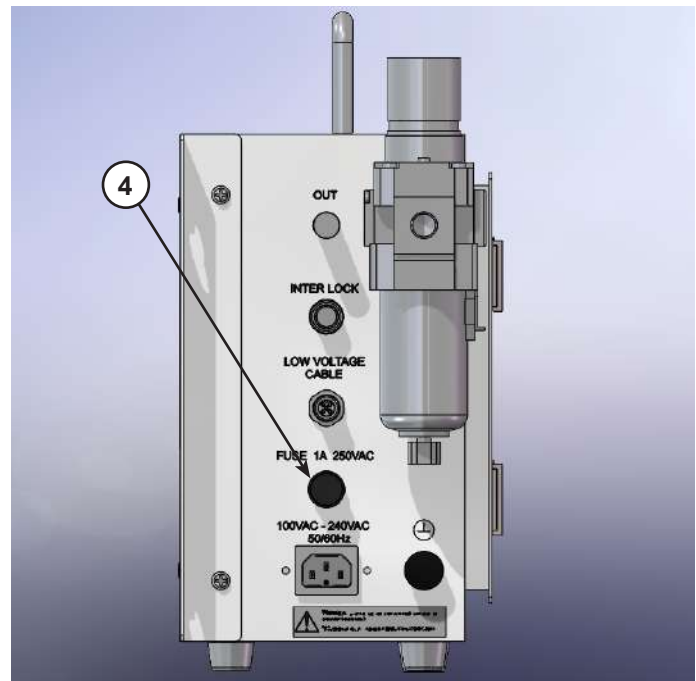
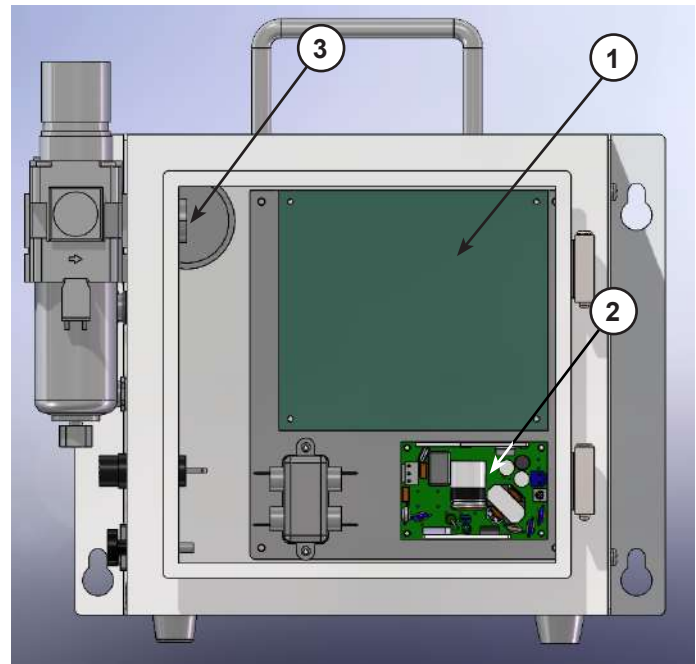
1. Disconnect the two connectors from the power supply (2).
2. Remove the four (4) screws retaining the power supply and remove the supply.
3. Replace the supply with the replacement part.
4. Secure in place and reconnect the two connectors.

08.2.3 FLOW SWITCH REPLACEMENT

1. Remove the filter regulator from the inlet port (3).
2. Remove the PC board as described in 8.2.1 PC Board Replacement.
3. Remove the nuts and washer securing the flow switch to the case.
4. Remove the flow switch.
5. Remove the harness from the old flow switch and install it on the replacement flow switch.
6. Re-install all components.

08.2.4 FUSE REPLACEMENT

1. Turn the fuse holder counterclockwise (4).
2. Remove the old fuse from the holder.
3. Insert a new fuse into the holder.
4. Re-install the fuse holder into the controller.



08.3 INSPECTION CHECKLIST

Inspection Items	Inspection Method	Acceptance Criteria	Corrective Action for Abnormalities	Inspection Cycle
Output limit verification	Visual	Ensure no flammable materials are nearby. Then bring the gun tip close to a grounded object and verify that the gun indicator turns off.	Replacement	Daily
Low-voltage controller display check	Visual	No abnormalities.	Replacement	Monthly
Installation environment	Visual or check temperature and humidity gauge.	- Ambient temperature below 50°C. - No moisture in the vicinity.	Maintain environment.	Monthly
Grounding verification	Visual or use grounding tester.	- No looseness. - Grounded to a point with ground resistance of 100Ω or less.	Ensure proper grounding.	Monthly
Electrical degradation of cascade insulation materials	Visual	- No high-voltage leakage. - No contamination.	Clean or replace.	Monthly
High-voltage applied components discharge noise	Auditory	No discharge sound.	Clean or replace.	Monthly
Casing temperature rise	Check casing for heat or unusual odor.	Ensure casing is not abnormally hot.	Replacement	Monthly
Loose low-voltage cable	Visual	No looseness or contamination.	Re-tightening, cleaning	Monthly
Damage to low-voltage cable outer sheath	Visual	No damage.	Replacement	Monthly
Cable core wire breakage	Check resistance between cores within cascade using tester.	Within specified range.	Replacement	Monthly

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09 TROUBLESHOOTING

If you suspect a malfunction while using this device, first refer to this table for troubleshooting.

If the issue persists after taking the recommended action from this table, please contact your distributor or Binks.

TROUBLESHOOTING		
Problem Description	Possible Cause	Action
No display appears even when the power switch is turned on (POWER indicator does not light up).	Power is not being supplied.	- Verify that the rated voltage is being supplied to the power source. - Check the AC cable connection.
	Insufficient power supply capacity to handle inrush current at power-on.	Increase the power supply capacity.
	The power switch or circuit breaker has tripped.	Set the power switch to OFF once, then set the power switch back to ON.
	Terminals are loose.	Tighten each terminal securely.
	The fuse has blown.	Replace the fuse.
	The controller is malfunctioning.	Replace the controller.
High voltage is not outputting (display is abnormal).	Power is not being supplied.	- Verify the rated voltage is being generated at the power source. - Check the AC cable connection.
	Low-voltage cable is disconnected or broken.	Check and replace the low-voltage cable.
	Low-voltage cable connector is loose.	Tighten the connector.
	Low-voltage cable connector pins are dirty.	Replace or clean the low-voltage cable.
	The electrostatic applicator body is dirty.	Clean the electrostatic applicator body.
	The electrostatic/non-electrostatic switch on the back of the gun is set to the non-electrostatic side.	Switch the selector switch to the electrostatic side.
	MONITOR SELECT is set to current display.	Switch MONITOR SELECT to voltage display.
	The cascade is malfunctioning.	Replace the cascade.
	The controller is malfunctioning.	Replace the board.
	No output to cable.	Replace air flow switch.

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MANUAL CHANGE SUMMARY

Date	Description	Version
04/2026	Initial release.	R1.0

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WARRANTY POLICY

This product is covered by Binks' materials and workmanship limited warranty.

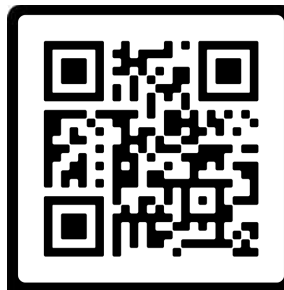
The use of parts or accessories from sources other than Binks will void all warranties. Failure to follow reasonable maintenance guidance provided can invalidate the warranty.

For specific warranty information, please contact Binks.

For technical assistance or to locate an authorized distributor, contact one of our international sales and customer support locations listed below.

REGION	BINKS CONTACT
Americas	Tel: 1-800-992-4657
Europe, Africa, Middle East	Tel: +4401202571111
India	marketingroa@binks.com
China	Tel: +862133730108
Korea	Tel: +82313663303
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Australia	Tel: +61085257555

WARRANTY PAGE





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