Ransburg RVC Junction Box

Model: 80951, 80953

IMPORTANT: Before using this equipment, carefully read SAFETY PRECAUTIONS and all instructions in this manual. Keep this Service Manual for future reference.

CONTENTS

SAFETY

SAFETY PRECAUTIONS

Before operating, maintaining or servicing any electrostatic coating system, read and understand all of the technical and safety literature for your products. This manual contains information that is important for you to know and understand. This information relates to **USER SAFETY** and **PREVENTING EQUIPMENT PROBLEMS**. To help you recognize this information, we use the following symbols. Please pay particular attention to these sections.

⚠ WARNING

A WARNING! states information to alert you to a situation that might cause serious injury if instructions are not followed.

⚠ CAUTION

A CAUTION! states information that tells how to prevent damage to equipment or how to avoid a situation that might cause minor injury.

NOTE

A NOTE is information relevant to the procedure in progress.

While this manual lists standard specifications and service procedures, some minor deviations may be found between this literature and your equipment. Differences in local codes and plant requirements, material delivery requirements, etc., make such variations inevitable. Compare this manual with your system installation drawings and asscoiated equipment manuals to reconcile such differences.

Careful study and continued use of this manual will provide a better understanding of the equipment and process, resulting in more efficient operation, longer trouble-free service and faster, easier troubleshooting. If you do not have the manuals and safety literature for your equipment, contact your local Carlisle Fluid Technologies representative or Carlisle Fluid Technologies technical support.

⚠ WARNING

- The user **MUST** read and be familiar with the Safety Section in this manual and the safety literature therein identified.
- This equipment is intended to be used by trained personnel **ONLY**.
- This manual **MUST** be read and thoroughly understood by **ALL** personnel who operate, clean or maintain this equipment! Special care should be taken to ensure that the **WARNINGS** and safety requirements for operating and servicing the equipment are followed. The user should be aware of and adhere to **ALL** local building and fire codes and ordinances as well as **NFPA-33 AND EN 50177 SAFETY STANDARDS, LATEST EDITION**, or applicable country safety standards, prior to installing, operating, and/or servicing this equipment.

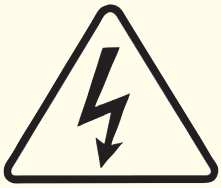
⚠ WARNING

- The hazards shown on the following pages may occur during the normal use of this equipment.

Repairs may only be performed by authorized personnel.

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Spray Area 	**Fire Hazard** Improper or inadequate operation and maintenance procedures will cause a fire hazard. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if any safety interlocks are disabled during operation. Frequent Power Supply or Controller shutdown indicates a problem in the system requiring correction.	Fire extinguishing equipment must be present in the spray area and tested periodically. Spray areas must be kept clean to prevent the accumulation of combustible residues. Smoking must never be allowed in the spray area. The high voltage supplied to the atomizer must be turned off prior to cleaning, flushing or maintenance. Spray booth ventilation must be kept at the rates required by NFPA-33, OSHA, country, and local codes. In addition, ventilation must be maintained during cleaning operations using flammable or combustible solvents. Electrostatic arcing must be prevented. Safe sparking distance must be maintained between the parts being coated and the applicator. A distance of 1 inch for every 10KV of output voltage is required at all times. Test only in areas free of combustible material. Testing may require high voltage to be on, but only as instructed. Non-factory replacement parts or unauthorized equipment modifications may cause fire or injury. If used, the key switch bypass is intended for use only during setup operations. Production should never be done with safety interlocks disabled. The paint process and equipment should be set up and operated in accordance with NFPA-33, NEC, OSHA, local, country, and European Health and Safety Norms.

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Spray Area 	**Explosion Hazard** Improper or inadequate operation and maintenance procedures will cause a fire hazard. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if any safety interlocks are disabled during operation. Frequent Power Supply or Controller shutdown indicates a problem in the system requiring correction.	Electrostatic arcing must be prevented. Safe sparking distance must be maintained between the parts being coated and the applicator. A distance of 1 inch for every 10KV of output voltage is required at all times. Unless specifically approved for use in hazardous locations, all electrical equipment must be located **outside** Class I or II, Division 1 or 2 hazardous areas, in accordance with NFPA-33. Test only in areas free of flammable or combustible materials. The current overload sensitivity (if equipped) MUST be set as described in the corresponding section of the equipment manual. Protection against inadvertent arcing that is capable of causing fire or explosion is lost if the current overload sensitivity is not properly set. Frequent power supply shutdown indicates a problem in the system which requires correction. Always turn the control panel power off prior to flushing, cleaning, or working on spray system equipment. Before turning high voltage on, make sure no objects are within the safe sparking distance. Ensure that the control panel is interlocked with the ventilation system and conveyor in accordance with NFPA-33, EN 50176. Have fire extinguishing equipment readily available and tested periodically.
General Use and Maintenance 	Improper operation or maintenance may create a hazard. Personnel must be properly trained in the use of this equipment.	Personnel must be given training in accordance with the requirements of NFPA-33, EN 60079-0. Instructions and safety precautions must be read and understood prior to using this equipment. Comply with appropriate local, state, and national codes governing ventilation, fire protection, operation maintenance, and housekeeping. Reference OSHA, NFPA-33, EN Norms and your insurance company requirements.

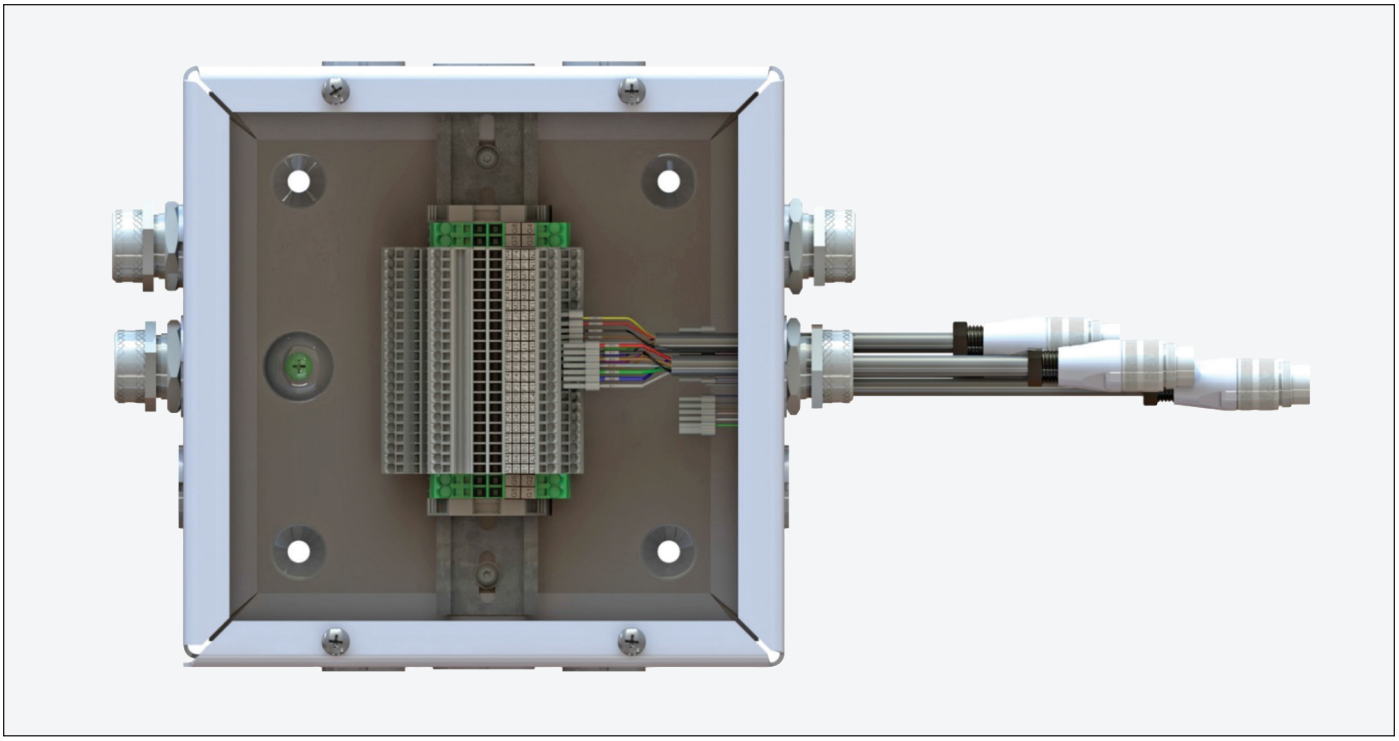
AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Spray Area / High Voltage Equipment 	**Electrical Discharge** There is a high voltage device that can induce an electrical charge on ungrounded objects which is capable of igniting coating materials. Inadequate grounding will cause a spark hazard. A spark can ignite many coating materials and cause a fire or explosion.	Parts being sprayed and operators in the spray area must be properly grounded. Parts being sprayed must be supported on conveyors or hangers that are properly grounded. The resistance between the part and earth ground must not exceed 1 megohm. (Refer to NFPA-33.) Operators must be grounded. Rubber soled insulating shoes should not be worn. Grounding straps on wrists or legs may be used to assure adequate ground contact. Operators must not be wearing or carrying any ungrounded metal objects. When using an electrostatic handgun, operators must assure contact with the handle of the applicator via conductive gloves or gloves with the palm section cut out. NOTE: REFER TO NFPA-33 OR SPECIFIC COUNTRY SAFETY CODES REGARDING PROPER OPERATOR GROUNDING. All electrically conductive objects in the spray area, with the exception of those objects required by the process to be at high voltage, must be grounded. Grounded conductive flooring must be provided in the spray area. Always turn off the power supply prior to flushing, cleaning, or working on spray system equipment. Unless specifically approved for use in hazardous locations, all electrical equipment must be located **outside** Class I or II, Division 1 or 2 hazardous areas, in accordance with NFPA-33. Avoid installing an applicator into a fluid system where the solvent supply is ungrounded. Do not touch the applicator electrode while it is energized.

AREA Tells where hazards may occur.	HAZARD Tells what the hazard is.	SAFEGUARDS Tells how to avoid the hazard.
Electrical Equipment 	**Electrical Discharge** High voltage equipment is utilized in the process. Arcing in the vicinity of flammable or combustible materials may occur. Personnel are exposed to high voltage during operation and maintenance. Protection against inadvertent arcing that may cause a fire or explosion is lost if safety circuits are disabled during operation. Frequent power supply shut-down indicates a problem in the system which requires correction. An electrical arc can ignite coating materials and cause a fire or explosion.	Unless specifically approved for use in hazardous locations, the power supply, control cabinet, and all other electrical equipment must be located outside Class I or II, Division 1 and 2 hazardous areas in accordance with NFPA-33 and EN 50176. Turn the power supply OFF before working on the equipment. Test only in areas free of flammable or combustible material. Testing may require high voltage to be on, but only as instructed. Production should never be done with the safety circuits disabled. Before turning the high voltage on, make sure no objects are within the sparking distance.
Toxic Substances 	**Chemical Hazard** Certain materials may be harmful if inhaled, or if there is contact with the skin.	Follow the requirements of the Safety Data Sheet supplied by coating material manufacturer. Adequate exhaust must be provided to keep the air free of accumulations of toxic materials. Use a mask or respirator whenever there is a chance of inhaling sprayed materials. The mask must be compatible with the material being sprayed and its concentration. Equipment must be as prescribed by an industrial hygienist or safety expert, and be NIOSH approved.
Spray Area 	**Explosion Hazard — Incompatible Materials** Halogenated hydrocarbon solvents for example: methylene chloride and 1,1,1, - Trichloroethane are not chemically compatible with the aluminum that might be used in many system components. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.	Spray applicators require that aluminum inlet fittings be replaced with stainless steel. Aluminum is widely used in other spray application equipment - such as material pumps, regulators, triggering valves, etc. Halogenated hydrocarbon solvents must never be used with aluminum equipment during spraying, flushing, or cleaning. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your coating supplier. Any other type of solvent may be used with aluminum equipment.

INTRODUCTION

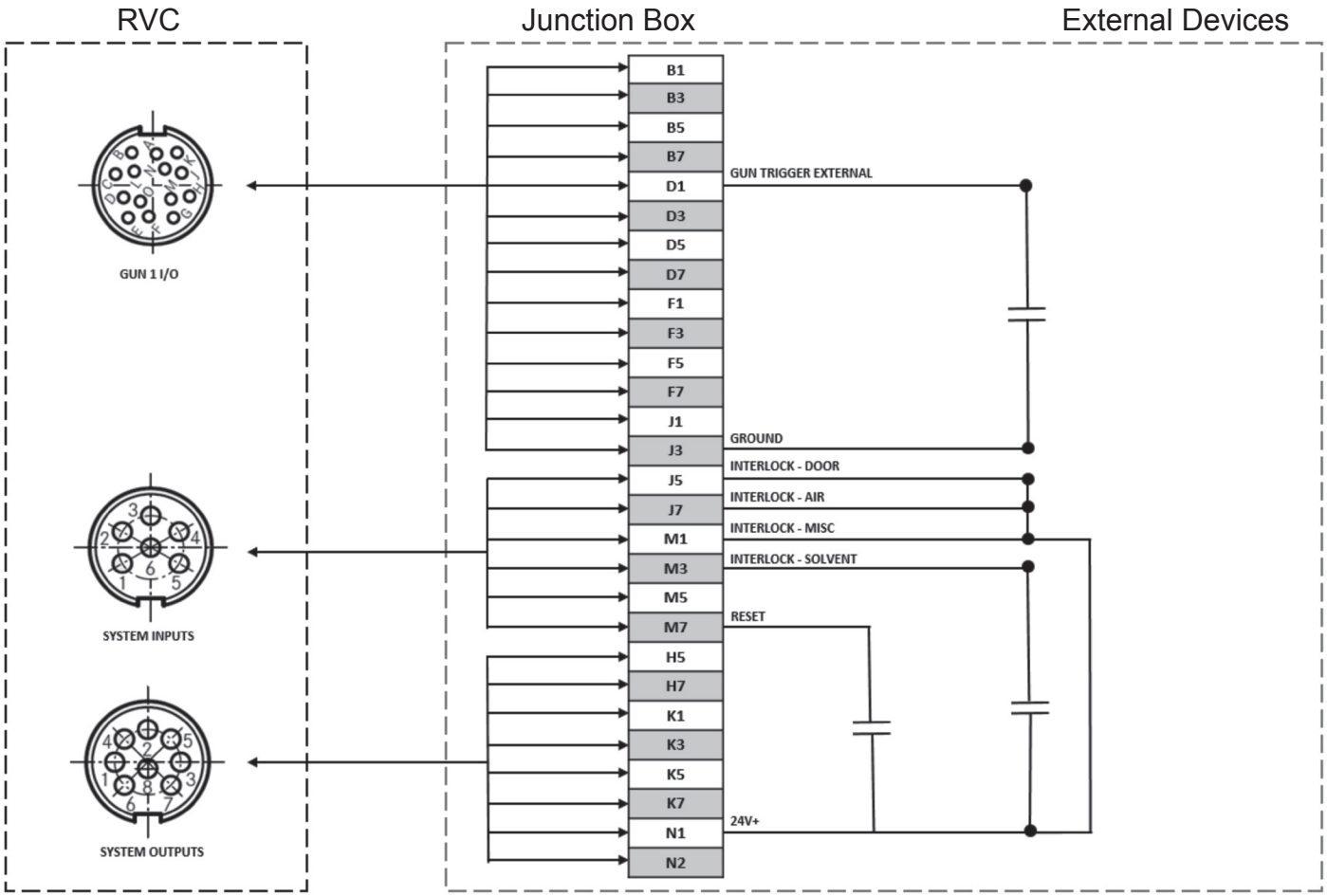
SYSTEM OVERVIEW
GENERAL DESCRIPTION

The RVC Junction Box provides easy discrete interfacing to all I/O of the RVC. This allows external devices to connect, and communicate to the RVC with discrete signals. All I/O is labeled, and more detailed information on each signal can be found in the RVC manual.



OPERATIONAL SPECIFICATIONS

See RVC manual for more information on signals and I/O information. Below is an example of how a RVC Junction box may be used. This schematic shows separate switches controlling Gun Trigger External, Reset, and Solvent Interlock.



TERMINAL BLOCK LAYOUT

Wire Label	Signal	Cable Terminal	User Terminal
GUN1 - A	Hv On Output (+)	B1	B2
GUN1 - B	Triple Setpoint 1	B3	B4
GUN1 - C	Triple Setpoint 2	B5	B6
GUN1 - D	Not Connected	B7	B8
GUN1 - E	Gun Trigger (External)	D1	D2
GUN1 - F	Power (VCC +24V)	D3	D4
GUN1 - G	Analog Extra Input (+)	D5	D6
GUN1 - H	KV Setpoint (+)	D7	D8
GUN1 - J	uA Feedback Common	F1	F2
GUN1 - K	uA Feedback (+)	F3	F4
GUN1 - L	Process Cycle Indicator Input	F5	F6
GUN1 - M	Analog Input Common	F7	F8
GUN1 - N	HV On Output (-)	J1	J2
GUN1 - O	Ground	J3	J4
GUN2 - A	Hv On Output (+)	A1	A2
GUN2 - B	Triple Setpoint 1	A3	A4
GUN2 - C	Triple Setpoint 2	A5	A6
GUN2 - D	Not Connected	A7	A8
GUN2 - E	Gun Trigger (External)	C1	C2
GUN2 - F	Power (VCC +24V)	C3	C4
GUN2 - G	Analog Extra Input (+)	C5	C6
GUN2 - H	KV Setpoint (+)	C7	C8
GUN2 - J	uA Feedback Common	E1	E2
GUN2 - K	uA Feedback (+)	E3	E4
GUN2 - L	Process Cycle Indicator Input	E5	E6
GUN2 - M	Analog Input Common	E7	E8
GUN2 - N	HV On Output (-)	H1	H2
GUN2 - O	Ground	H3	H4
SI - 1	Interlock – Door	J5	J6
SI - 2	Interlock – Air	J7	J8
SI - 3	Interlock – Misc	M1	M2
SI - 4	Interlock – Solvent	M3	M4
SI - 5	Spare Input Signal	M5	M6
SI - 6	Reset	M7	M8
SO - 1	Trigger 1 Ready (-)	H5	H6
SO - 2	Fault Output (-)	H7	H8
SO - 3	Trigger 2 Ready (-)	K1	K2
SO - 4	Fault Output (+)	K3	K4
SO - 5	Trigger 2 Ready (+)	K5	K6
SO - 6	Trigger 1 Ready (+)	K7	K8
SO - 7	Power (VCC +24V)	N1	N2
SO - 8	Ground (GND)	N2	N4

INSTALLATION

This section discusses how to install the RVC Junction Box

⚠ WARNING

➤ This manual and the RVC user manual MUST be read and thoroughly understood by ALL personnel who operate, clean, or maintain this equipment! Special care should be taken to ensure that the warnings and requirements of operating and servicing safely are followed. The user should be aware of and adhere to ALL local building and fire codes and ordinances as well as NFPA-33, OSHA, and all related country safety codes prior to installing, operating, and/or servicing this equipment.

➤ Only approved applicators should be used with the RVC controller.

⚠ CAUTION

➤ **Observe safety regulations in RVC manual.**

LOCATION OF RVC AND RVC JUNCTION BOX

⚠ CAUTION

➤ RVC Junction Box and RVC must be located outside the hazardous area (zone 22, class I division 2).

⚠ CAUTION

➤ **DO NOT** locate the controller near or adjacent to heat producing equipment such as ovens, high wattage lamps, etc.

Install the RVC and RVC Junction Box in an area outside the hazardous location in accordance with federal, state, and local codes. The area should protect the controller from the possibility of environmental intrusion (such as dust or moisture), have ambient temperatures that do not exceed 40°C (104°F), and be as close to the applicator as possible to minimize the applicator cable length.

The controller and junction box may be free standing on any flat surface.

GROUNDING

⚠ CAUTION

➤ The supplied grounding cable (green/yellow) must be connected to the grounding screw of the electrostatic manual painting equipment. The grounding cable also must have a good metallic connection with the coating cabin, the recovery unit and the conveyor chain and must be connected to true earth ground.

In order to achieve a good coating and for safety reasons (see safety regulations), the system must be properly grounded to true earth ground (copper rod driven into the ground). A ground cable is included with the controller. The following picture shows the connecting point on the back of the RVC.

Grounding of the work piece is a prerequisite for optimum painting. A poorly grounded work piece causes:

1. Very bad wrap-around, poor efficiency
2. Uneven coating thickness
3. Back spray onto spray applicator and user
4. Dangerous electric charging of the work piece

CONNECTING THE RVC JUNCTION BOX TO THE RVC

The RVC Junction Box comes with either 3 or 15 meter cables. These cables can connect to the System Outputs, System Inputs, Gun 1 I/O, and Gun 2 I/O receptacles. Gun 2 I/O is only used with a two gun RVC and RVC Junction Box.

RVC Controller

WARRANTY POLICY

This product is covered by Carlisle Fluid Technologies materials and workmanship limited warranty. The use of any parts or accessories, from a source other than Carlisle Fluid Technologies, will void all warranties. For specific warranty information please contact Carlisle Fluid Technologies.

Carlisle Fluid Technologies is a global leader in innovative finishing technologies.
Carlisle Fluid Technologies reserves the right to modify equipment specifications without prior notice.

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

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China	Tel: +8621-3373 0108 Fax: +8621-3373 0308	
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