

# RV200

# Radon Fan Installation Instruction

## Radon Reduction System

The device measures room vacuum pressure, and reports when vacuum pressure becomes negative for the system's operation.

NOTE: Building should be tested for Radon of least 4 and 2 tests, or as required or recommended by state or local agencies.

CALL FOR SERVICE IF BOTH COLUMNS ARE AT ZERO  
OR IF VACUUM PRESSURE CHANGES SUBSTANTIALLY

For Service:

Installer: \_\_\_\_\_

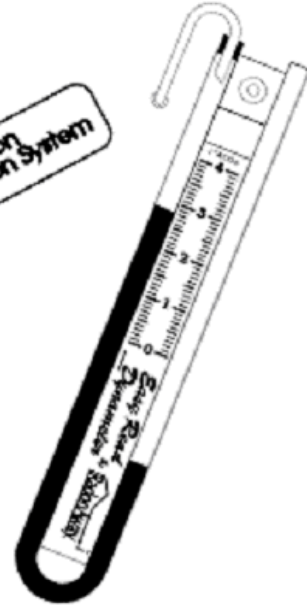
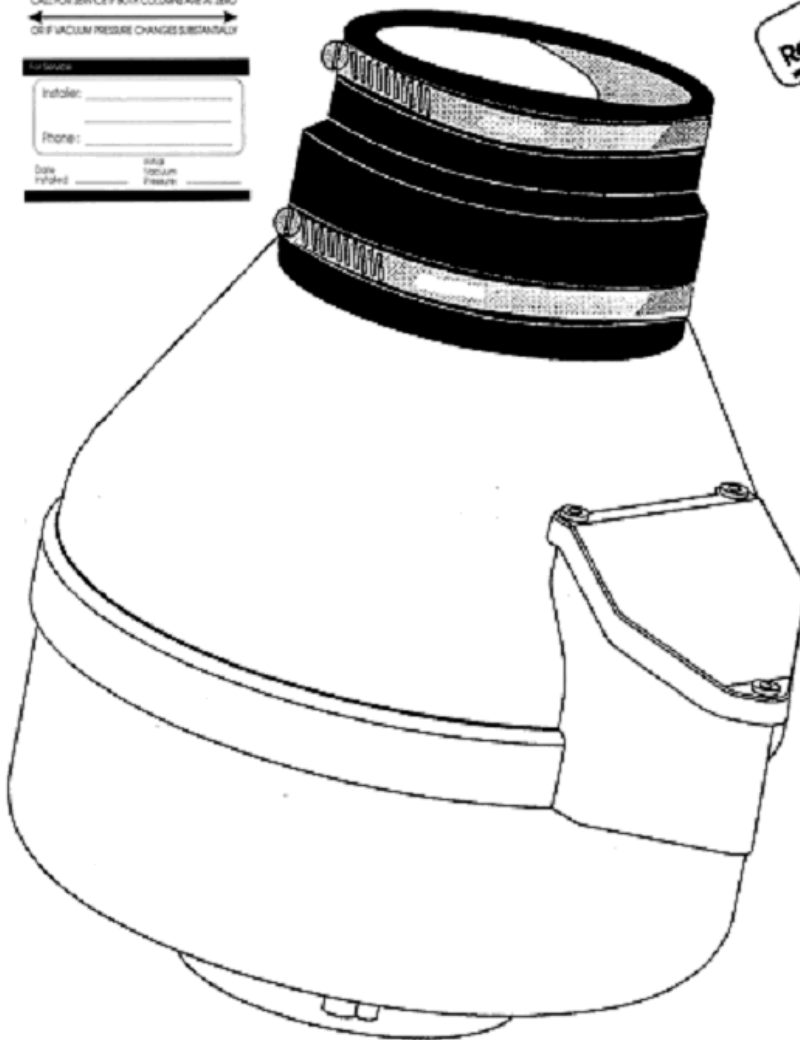
Phone: \_\_\_\_\_

Date Installed: \_\_\_\_\_

Room  
Vacuum  
Pressure

Radon  
Reduction System

Radon  
Reduction System



Installation Instructions P/N IN051 Rev A



Spruce Environmental Technologies, Inc. Ward Hill, MA IN051 Rev A  
RV200 Radon Fan Installation Instructions

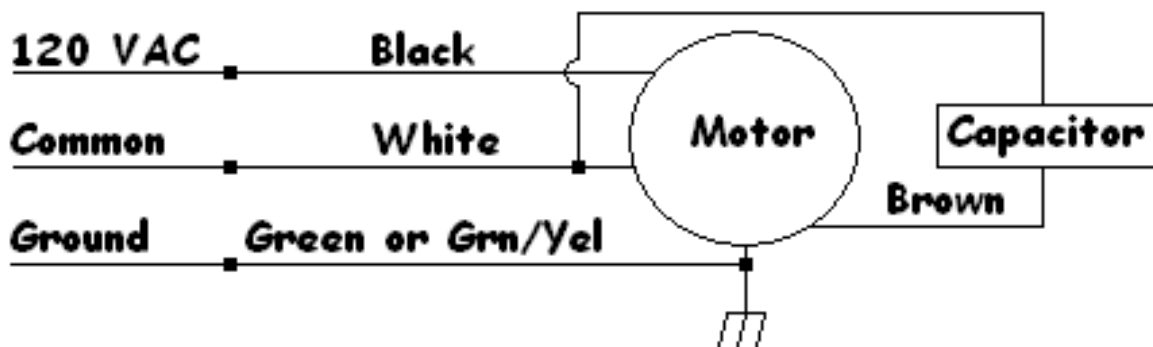
Please Read And Save These Instructions.

**DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED. MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION. DISCONNECT POWER BEFORE SERVICING FAN.**

1. **WARNING!** Do not use fan in hazardous environments where fan electrical system could provide ignition to combustible or flammable materials.
2. **WARNING!** Do not use fan to pump explosive or corrosive gases.
3. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.
4. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.
5. **NOTICE!** There are no user serviceable parts located inside the fan unit. **Do NOT attempt to open.** Return unit to the factory for service.
6. All wiring must be in accordance with local and national electrical codes.

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## RV200 Wiring Diagram





## 1.0 SYSTEM DESIGN CONSIDERATIONS

### 1.1 INTRODUCTION

The DynaVent RV200 Radon Fans is intended for use by trained, professional Radon mitigators. The purpose of this instruction is to provide additional guidance for the most effective use of a DynaVent Fan. This instruction should be considered as a supplement to EPA standard practices, state and local building codes and state regulations. In the event of a conflict, those codes, practices and regulations take precedence over this instruction.

### 1.2 ENVIRONMENTALS

The RV200 Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, special system considerations must be taken into account to prevent icing and excessive condensation. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F. or more than 100 degrees F.

### 1.3 ACOUSTICS

The RV200 Fan, when installed properly, operates with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the "rushing" sound of the outlet air may be disturbing. In these instances, the use of a Spruce Exhaust Muffler is recommended.

### 1.4 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes thus blocking air flow to the RV200 Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff and falls upon shutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes allowing for return to normal operation.

### 1.5 SLAB COVERAGE

The RV200 Fan can provide coverage up to 2000+ sq. ft. per slab penetration. This will primarily depend on the sub-slab material in any particular installation. In general, the tighter the material, the smaller the area covered per penetration. Additional suction points can be added as required. It is recommended that a small pit (5 to 10 gallons in size) be created below the slab at each suction hole.

## 1.6 CONDENSATION & DRAINAGE

Condensation is formed in the piping of a mitigation system when the air in the piping is chilled below its dew point. This can occur at points where the system piping goes through unheated space such as an attic, garage or outside. The system design must provide a means for water to drain back to a slab hole to remove the condensation. The RV200 Series Fan **MUST** be mounted vertically plumb and level, with the outlet pointing up for proper drainage through the fan. Avoid mounting the fan in any orientation that will allow water to accumulate inside the fan housing. The RV200 Series Fans are **NOT** suitable for underground burial.

For RV200 Series Fan piping, the following table provides the minimum recommended pipe diameter and pitch under several system conditions.

Pipe Dia.	Minimum Rise per Foot of Run*		
	@25 CFM	@50 CFM	@100 CFM
4"	1/8"	1/4"	3/8"
3"	1/4"	3/8"	1 1/2"

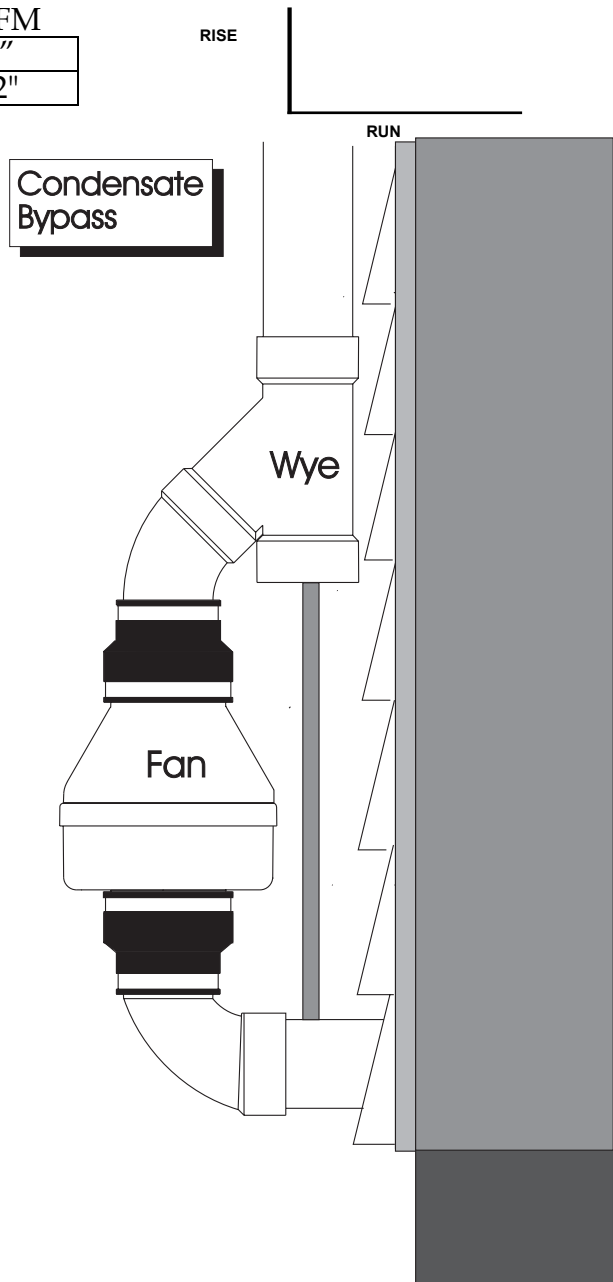
\*Typical RV200 Fan operational flow rate is 25 - 90 CFM.  
(For more precision, determine flow rate by using the chart in the addendum.)

Under some circumstances in an outdoor installation a condensate bypass should be installed in the outlet ducting as shown. This may be particularly true in cold climate installations which require long lengths of outlet ducting or where the outlet ducting is likely to produce large amounts of condensation because of high soil moisture or outlet duct material. Schedule 20 piping and other thin-walled plastic ducting and Aluminum downspout will normally produce much more condensation than Schedule 40 piping.

The bypass is constructed with a 45 degree Wye fitting at the bottom of the outlet stack. The bottom of the Wye is capped and fitted with a tube that connects to the inlet piping or other drain. The condensation produced in the outlet stack is collected in the Wye fitting and drained through the bypass tube. The bypass tubing may be insulated to prevent freezing.

## 1.7 "SYSTEM ON" INDICATOR

A properly designed system should incorporate a "System On" Indicator for affirmation of system operation. A U-Tube manometer is recommended for this purpose. See the Installation Instructions included with the P/N 50006-1 U-tube manometer.



## 1.8 ELECTRICAL WIRING

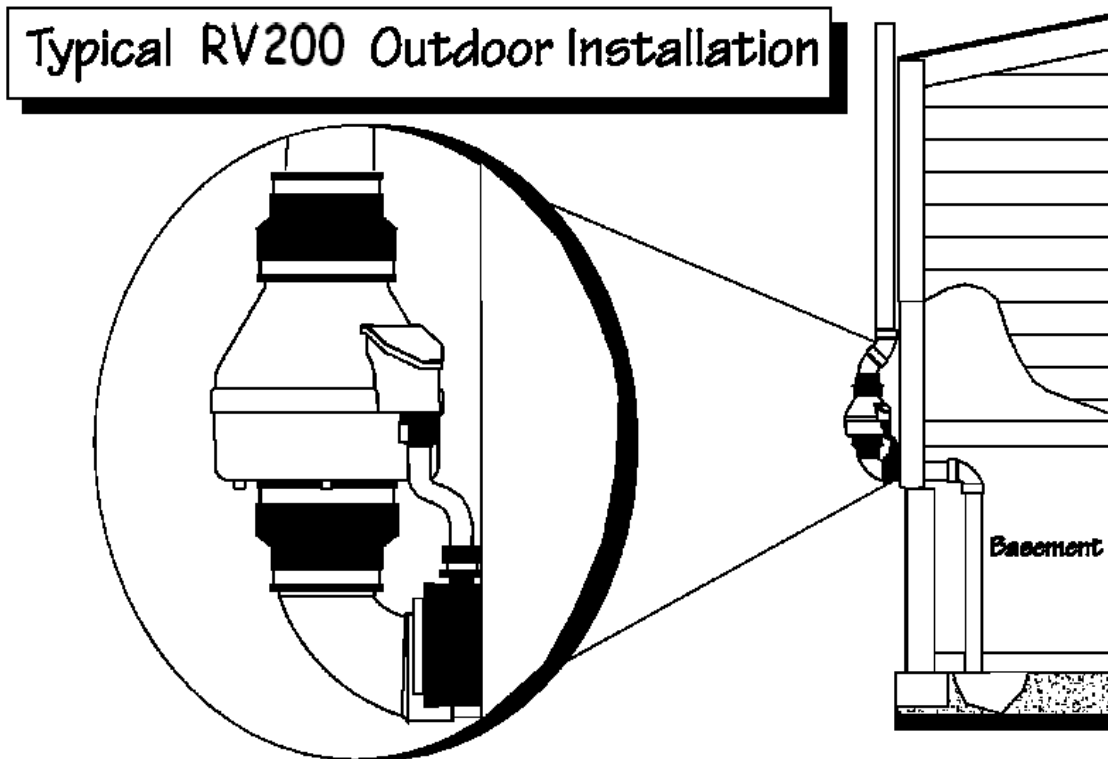
The RV200 Series Fans operate on standard 120V 60 Hz. AC. All wiring must be performed in accordance with the National Electrical Code and state and local building codes. All electrical work should be performed by a qualified electrician. Outdoor installations require the use of a U.L. listed watertight conduit.

## 1.9 SPEED CONTROLS

The RV200 Series Fans are rated for use with electronic speed controls ,however, they are generally not recommended.

## 2.0 INSTALLATION

The RV200 Series Fan can be mounted indoors or outdoors. (It is suggested that EPA recommendations be followed in choosing the fan location.) The RV200 Series Fan may be mounted directly on the system piping or fastened to a supporting structure by means of optional mounting bracket.



## 2.1 MOUNTING

Mount the RV200 Fan vertically with outlet up. Insure the unit is plumb and level. When mounting directly on the system piping assure that the fan does not contact any building surface to avoid vibration noise.

## 2.2 MOUNTING BRACKET (optional)

The RV200 Series fan may be optionally secured with Spruce P/N 25007-1 mounting bracket. Foam or rubber grommets may also be used between the bracket and mounting surface for vibration isolation.

## 2.3 SYSTEM PIPING

Complete piping run, using flexible couplings as means of disconnect for servicing the unit and vibration isolation.

## 2.4 ELECTRICAL CONNECTION

Connect wiring with wire nuts provided, observing proper connections:

Fan Wire	Connection
Green	Ground
Black	AC Hot
White	AC Common

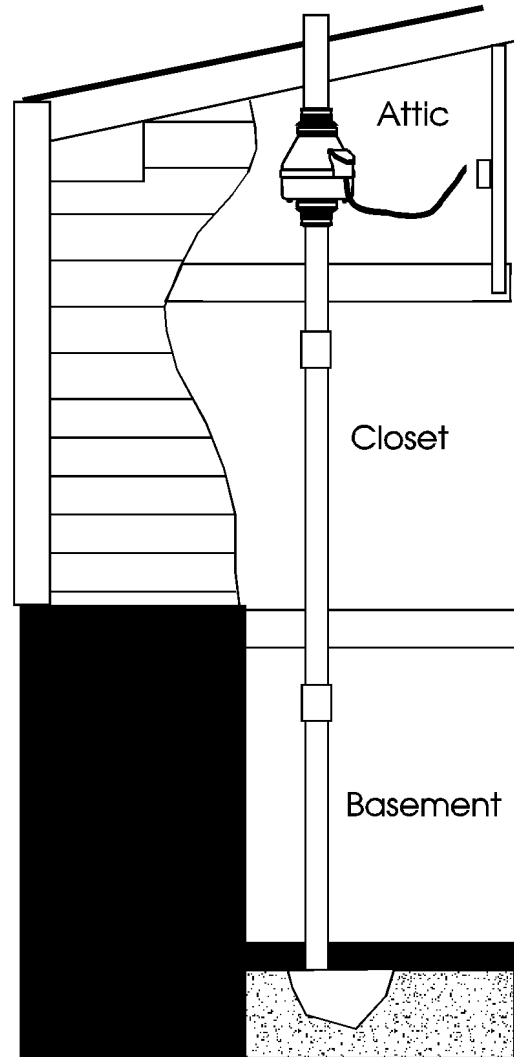
## 2.5 VENT MUFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

## 2.6 OPERATION CHECKS

- \_\_\_ **Verify** all connections are tight and **leak-free**.
- \_\_\_ **Insure** the RV200 Series Fan and all ducting is secure and vibration-free.
- \_\_\_ **Verify** system vacuum pressure with manometer. **Insure** vacuum pressure is **less than** maximum recommended operating pressure  
(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 Feet.)  
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments)  
See Product Specifications. If this is exceeded, increase the number of suction points.
- \_\_\_ **Verify Radon levels by testing to EPA protocol.**

## TYPICAL RV200 Indoor Installation



## RV200 PRODUCT SPECIFICATIONS

The following chart shows fan performance for the RV200 Fan:

	Typical CFM Vs Static Suction "WC					
	0"	.2"	.5"	.75"	1.0"	1.5"
RV200	184	170	144	121	87	1

Maximum Recommended Operating Pressure*	
RV200	1.4" W.C. (Sea Level Operation)**

*\*Reduce by 10% for High Temperature Operation*

*\*\*Reduce by 4% per 1000 feet of altitude*

Power Consumption @ 120 VAC	
RV200	49-66 watts

**RV200 Inlet/Outlet:** 6" OD (Couplings are 4.0" PVC Sched 20/40 size compatible)

**Mounting:** Mount on the duct pipe or with optional mounting bracket.

**Recommended ducting:** 3" or 4" Schedule 20/40 PVC Pipe

**Storage temperature range:** 32 - 100 degrees F.

**Normal operating temperature range:** -20 - 120 degrees F.

**Maximum inlet air temperature:** 80 degrees F.

**Size:** 9.5H" x 8.5" Dia.

**Weight:** 6 lbs.

**Continuous Duty**

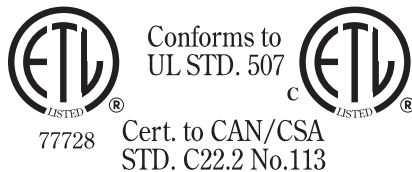
**Thermally protected**

**Class B Insulation**

**3000 RPM**

**Rated for Residential & Commercial Use**

**Rated for Indoor or Outdoor use**



## IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the RV Series Fan for shipping damage within 15 days of receipt. Notify **Spruce of any damages immediately**. Spruce is not responsible for damages incurred during shipping. However, for your benefit, Spruce does insure shipments.

There are no user serviceable parts inside the fan. **Do not attempt to open**. Return unit to factory for service.

Install the RV Series Fan in accordance with all EPA standard practices, and state and local building codes and state regulations.

### WARRANTY

Subject to any applicable consumer protection legislation, Spruce Environmental Technologies, Inc. ("Spruce") warrants that the RV/RB/DB/RL Series Fan (the "Fan") will be free from defects in materials and workmanship for a period of five (5) years from the date of manufacture (the "Warranty Term").

#### **Warranty claims made during the first thirty days after installation:**

Spruce will replace any Fan which fails due to defects in materials or workmanship. The Fan may be returned (at owner's cost) to either the point of purchase or the Spruce factory. The point of purchase may require proof of purchase or a bill of sales for replacement.

#### *Warranty claims made after the first thirty days after installation through the end of the Warranty Term:*

Spruce will (at its option) either recondition or replace any Fan which fails due to defects in materials or workmanship. The Fan must be returned (at owner's cost) to the Spruce factory.

This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of Spruce.

Spruce is not responsible for installation, removal or delivery costs associated with this Warranty.

**EXCEPT AS STATED ABOVE, THE RV/RB/DB/RL SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

**IN NO EVENT SHALL SPRUCE BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. SPRUCE'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH SPRUCE'S WARRANTY AS PROVIDED ABOVE.**

For service under this Warranty, contact Spruce for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping cost to and from factory.

Spruce Environmental Technologies, Inc.  
3 Saber Way  
Ward Hill, MA 01835  
TEL. (978) 355-0901  
FAX (978) 521-3964

#### **Record the following information for your records:**

Serial No. \_\_\_\_\_  
Purchase Date \_\_\_\_\_