



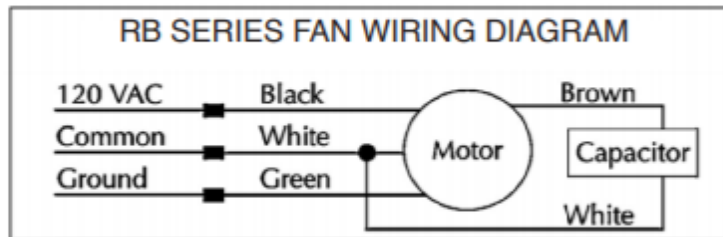
# Spruce RB Series Operation Instruction and Parts Manual



Fan Installation & Operating 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!** For General Ventilating Use Only. Do Not Use to Exhaust Hazardous, Corrosive or Explosive Materials, Gases or Vapors. See Vapor Intrusion Application Note #AN001 for important information on VI Applications. See RadonAway.com/vapor-intrusion.
2. **NOTE:** Fan is suitable for use with solid state speed controls; however, use of speed controls is not generally recommended.
2. **WARNING!** Check voltage at the fan to ensure it corresponds with nameplate.
3. **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.
4. **NOTICE!** There are no user serviceable parts located inside the fan unit. **Do NOT attempt to open.** Return unit to the factory for service.
5. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.
6. **WARNING!** TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:
  - a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
  - b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
  - c) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire rated construction.
  - d) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturers' guidelines and safety standards such as those published by any National Fire Protection Association, and the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), and the local code authorities.
  - e) When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.
  - f) Ducted fans must always be vented to outdoors.
  - g) If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application and be connected to a GFCI (Ground Fault Circuit Interrupter) protected branch circuit.





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## Fan Installation & Operating Instructions

Fan Series	
RB110	p/n 28128
RB275	p/n 28115
RB300	p/n 28088
RB350	p/n 28261
RB400	p/n 28206
RB500	p/n 28207

### 1.0 MOUNTING

The Spruce RB Series fans may be mounted at any angle without affecting performance although the vertical mounting position shown in Fig. 1 is highly recommended. If the vertical mounting position is not possible, care should be taken to avoid creating a low spot in the fan/duct system where condensation might accumulate in the fan housing as shown in Fig. 2. In situations where horizontal mounting is desired and condensation is likely to occur (bathroom ventilation in cold climates) this problem might be avoided by mounting the fan 30 degrees beyond horizontal as shown in Fig. 3.

Fig. 1

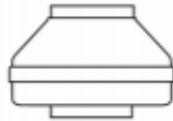


Fig. 2

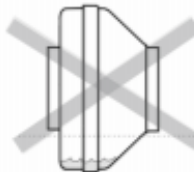
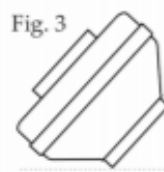


Fig. 3



### 2.0 FAN SEALING

RB Series Fans are factory sealed, no additional caulk or other materials are required to inhibit air leakage.

### 3.0 DUCTING

Any type of ducting is acceptable, however, flexible nonmetallic ducting is recommended for easy installation and quieter operation. Insulated flexible ducting is highly recommended in cold climates to prevent the warm bathroom air from forming condensation in the ducting where it is exposed to colder attic air. The outlet of the fan should always be ducted to the outside. Avoid venting the outlet of the fan directly into an attic area. The excess moisture from the bathroom can cause damage to building structure and any items stored in the attic. Multiple venting points may be connected together using a T or Y fitting. Ideally duct should be arranged such that equal duct lengths are used between intake and T or Y fitting, this will result in equal flow rates in each intake branch. If adjustable intake grilles are used on multi-intake systems, then the opening on each grill should be equal in order to minimize noise and resistance. Straight smooth runs of rigid metal ducting will present the least resistance and maximize system performance. The Equivalent Length of Rigid Metal Ducting resulting in .2" WC pressure loss for each fan model is provided in the specification section of these instructions. Flexible ducting, if used, must always be as close to being fully extended as possible. Formed rigid metal duct elbows will present the least resistance and maximize system performance, recommended bend radius of elbow is at least 1.5 x duct diameter.

To ensure quiet operation of our inline and remote fans, each fan shall be installed using sound attenuation techniques appropriate for the installation. For bathroom and general ventilation applications, at least 8 feet of insulated flexible duct shall be installed between the exhaust or supply grille(s) and the fan. RB Series fans are not suitable for kitchen range hood remote ventilation applications. The ducting from this fan to the outside of the building has a strong effect on the airflow, noise and energy use of the fan. Use the shortest, straightest duct routing possible for best performance, and avoid installing the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fans installed with existing ducts may not achieve their rated airflow.





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## 4.0 BACKDRAFT DAMPERS

Backdraft dampers allow airflow in only one direction preventing cold/hot drafts from entering the vented area and minimize possible condensation and icing within the system while the fan is not operating. Backdraft dampers are highly recommended at each intake grille for bathroom ventilation in all cold climate installations. Installation instructions are included with Spruce backdraft dampers.

## 5.0 ELECTRICAL WIRING

All wiring must be performed in accordance with the National Fire Protection Association's (NFPA) "National Electrical Code, Standard #70" current edition for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. A Ground Fault Interrupter (GFI) circuit is not required in most installations; check your local codes. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box. Note that the fan is not intended for connection to rigid metal conduit.

## 6.0 APPLICATIONS

Suitable for general ventilation, bathroom venting, fresh air supply, duct boosting, building pressurization, etc.  
**Not suitable for kitchen range hood venting.**





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## 7.0 INSTALLATION

**Step 1:** Install Mounting Bracket as shown (Fig. 4) (RB110 & RB275 only; separate instructions for RB400 & RB500 are included with Mounting Bracket Kit). Insert Grommets into slots in Mounting Bracket. Orient the Electrical Box relative to Mounting Bracket as required. Attach the fan to the Mounting Bracket with 3 #10 self-tapping screws, provided. Avoid over tightening screws.



Fig. 4

**Step 2:** Select location for fan mounting. A location 2/3 along the ducting, a minimum of 10 feet away from the inlet vent to the fan or the Y/T of a multi-intake system- will provide the quietest operation. Fan should be mounted vertically to prevent moisture from accumulating in the fan housing. Attach bracket to mounting structure with the 1 1/4" screws provided (Fig. 5).



Fig. 5

**Step 3:** Connect ductwork between fan inlet and area to be vented through inlet grille (Fig. 6). Flexible, nonmetallic ducting is recommended for quietest operation and easiest installation. Insulated flexible ducting is highly recommended for bathroom ventilation in all cold climate installations. Metal worm drive clamps, spring clamps, and adjustable plastic ratchets are recommended for connection of ducting. Silicon caulk or duct tape may be used for additional sealing. Duct tape should be used to retain insulation.



Fig. 6

**Step 4:** Connect inlet grille(s) (Fig. 7). An optional backdraft damper may be installed in the inlet grille to prevent cold air from backing into the inlet, prevent conditioned air from escaping and also prevent condensation from forming inside the ductwork. Backdraft dampers are highly recommended at each intake grille for bathroom ventilation in all cold climate installations.



Fig. 7

**Step 5:** Connect outlet of fan to outside vent (Fig. 8). The outside vent may go through the roof, sidewall or soffit as desired. Flexible, nonmetallic ducting is recommended for quietest operation and easiest installation. Insulated flexible ducting is highly recommended for bathroom ventilation in all cold climate installations.



Fig. 8

**Step 6:** Make electrical connection to fan (Fig. 9). Ensure any metal filing used in the installation is properly grounded. A plastic cable connector such as a T&B #3300 may be used to avoid any filing grounding problem. Observe the proper wiring connections (See Section 5.0). Note that the fan is not intended for connection to rigid metal conduit.



Fig. 9

RB Series Wire	AC Connection
Black	AC Line
White	AC Common
Green or Grn/Ye	Ground



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## RB SERIES PRODUCT SPECIFICATIONS

The following chart shows fan performance for RB Series Commercial/Residential Fans:

### Typical CFM vs. Static Pressure "WC

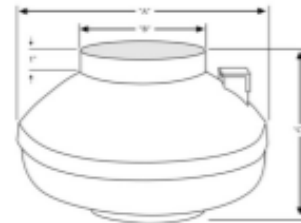
	0"	.2"	.5"	.75"	1.0"	1.25"	1.5"	1.75"	2.0"
RB110	121	100	68	20	-	-	-	-	-
RB275	251	210	157	117	70	26	-	-	-
RB300	318	270	211	170	135	87	30	-	-
RB350	334	299	247	210	176	142	116	87	52
RB400	531	490	415	340	268	200	139	84	41
RB500	542	500	420	344	275	219	165	102	48

### Power Consumption @ 120 VAC, 60Hz (2.0 Amp Maximum)

RB110	14-20 watts
RB275	47-65 watts
RB300	66-87 watts
RB350	91-129 watts
RB400	96-138 watts
RB500	99-152 watts

### Size Chart

Fan Model	"A" Dim	"B" Dim	"C" Dim	Duct Size	Weight	L.2
RB110	9.7"	3.9"	8.5"	4"	5 lbs	30 ft
RB275	11.8"	5.9"	8.6"	6"	5.5 lbs	48 ft
RB300	13.4"	5.9"	9"	6"	8 lbs	40 ft
RB350	13.4"	5.9"	9"	6"	8.5 lbs	30 ft
RB400	13.4"	7.9"	10.5"	8"	11.5 lbs	57 ft
RB500	13.4"	9.9"	10.5"	10"	11.5 lbs	140 ft



L.2 = Estimated Equivalent Length of Rigid Metal Ducting resulting in .2in WC pressure loss for Duct Size listed. Longer Equivalent Lengths can be accommodated at Flows Lower than that at .2in WC pressure loss (see CFM Vs Static Pressure "WC Table). Do not operate fan above 80% of maximum Static Pressure per performance table.

**Mounting:** Mounting bracket included.

**Recommended Ducting:** 4", 6", 8" or 10" Rigid or Flexible Ducting

**Storage Temperature Range:** 32-100 degrees F.

**Continuous Duty:** 3000 RPM

**Thermally Protected:** Class F Insulation [RB110 Class B]

**Rated for indoor use only**

**Rated for Residential and Commercial use**

**Suitable for use with solid state speed controls**

**Suitable for use over tub or shower**

### Thermal Cutout

RB110	130°C (266°F)
RB275	150°C (302°F)
RB300	150°C (302°F)
RB350	150°C (302°F)
RB400	150°C (302°F)
RB500	150°C (302°F)



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