



MIAMI-DADE COUNTY PERFORMANCE TEST REPORT

TAS100a-95 TEST REPORT

Report No.: G1600.01-801-18

Rendered to:

Solar Royal, LLC Austin, Texas

PRODUCT TYPE: Solar Powered Roof Vent **SERIES/MODEL**: SR1800 Series (20/22/25/30/40/50Watt)

This report contains in its entirety:

Cover Page:1 pageReport Body:6 pagesSketches (1):1 pagePhoto(2):2 pagesDrawing(s):6 pages

Test Start Date:	08/22/16
Test End Date:	08/22/16
Report Date:	09/08/16





Client Identification:

1.1 Report Issued To	: Solar Royal, LLC
	3530 Bee Caves Rd, Ste. 104
	Austin, Texas 78746
1.2 Contact Person:	Roy Stocker

- 2.0 Laboratory Identification:
 - 2.1 Test Laboratory: Architectural Testing, Inc., an Intertek company ("Intertek-ATI") 1909 10th Street, Suite 100 Plano, Texas 75074
 2.2 Phone Number: 469-814-0687

3.0 Project Summary:

3.1 Introduction: Intertek-ATI was contracted by Solar Royal, LLC to conduct TAS 100a testing on a SR1800 Series Solar Powered Roof Vent. The specimen tested did meet the performance requirements set forth in the protocols. The results are summarized in Table 1.

Table 1:	Summary of Test Results
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Specimen #	Test Protocol	Max Wind Speed
1	TAS 100a	110 mph

- 3.2 Product Type: Solar Powered Roof Vent
- 3.3 Series/Model: SR1800 Series (20/22/25/30/40/50Watt)
- 3.4 Test Date(s): 08/22/16
- **3.5 Test Location**: Intertek-ATI test facility in Plano, Texas.
- **3.6 Calibration Report**: Reference Intertek-ATI Report No. G1600.02-801-18, dated 08/22/16 for complete calibration results.
- **3.7 Test Specimen Source**: The test specimen was provided by the client. Representative samples of the test specimen(s) will be retained by Intertek-ATI for a minimum of ten years from the test completion date.
- **3.8 Drawing Reference**: The test specimen drawings have been reviewed by Intertek-ATI and are representative of the test specimen reported herein. Test specimen construction was verified by Intertek-ATI per the drawings located in Appendix C. Any deviations are documented herein and on the drawings.





3.0 Project Summary: (Continued)

3.9 List of Official Observers:

<u>Name</u>

<u>Company</u>

Roy Stocker	Solar Royal, LLC
Clint Barnett	Intertek-ATI

4.0 Test Protocol(s):

TAS 100a-95, Test for Wind and Wind Driven Rain Resistance.

5.0 Test Specimen Description:

5.1 Product Sizes: Table 2 provides product sizes for the overall test specimen(s) and operable components.

	1	
Overall Area : 16 ft ²	Length (in.)	Width (in.)
Overall size	26	26
Collar	12-5/8	-
Hood	24	24
Solar Cell	18	18

Table 2: Overall Specimen and Operable Component Sizes





5.0 Test Specimen Description: (Continued)

5.2 Member Details:

5.2.1 Vent Construction: The vent was fabricated utilizing the members listed in Table 3.

Vent Member	Part #	Material	Description
Base	NA	Powder Coated Aluminum (6061)	One piece tapered profile
Hood	NA	Plastic- ABS	One piece tapered profile with a ventilation

Table 3: Vent Member Details

5.2.2 Mount Construction: The vent mount constructed as described in Table 4.

Table 4:	Mount Construction Details

Location	Joinery Type	Details
Fan mount to	4 point interlock	Secured onto the base with a four point
base	pins	interlocking system

5.2.3 Metal Thickness and Plastic Thickness: The vent was fabricated utilizing the members listed in Table 5.

Vent Member	Thickness
Base	0.075"
Hood	0.112"





5.0 Test Specimen Description: (Continued)

- 5.3 Installation: The test deck was an 8' wide x 6' high southern yellow pine nominal 2 x 6 on 16" centers and clad with 15/32" OSB sheathing. The OSB was secured to the rafters with 1-1/2" long with 0.120' smooth shaft and 0.320" head galvanized roofing nails located 6" on center around the perimeter and 12" on center in the field. The roof was set at 2:12 pitch. The roofing surface was elevated to place the test deck within the generated wind driven rain. A gutter system was installed along the underside of the ridge to collect water penetrating the specimen. The deck was covered with Warrior Roofing 15# asphalt-saturated felt underlayment anchored with 1-1/2" long with 0.120" smooth shaft and 0.320" head galvanized roofing nails. Timberline Asphalt shingles were installed over the deck with 1-1/2" long with 0.120" smooth shaft and 0.320" head galvanized roofing nails. Two 15" diameter holes were cut out of the roof. Two roof vents were centered onto the test deck with the bases spaced 12" apart from each other. Roofing sealant was applied to the flange and anchored in place. The Roof vents were anchored with #10 1-1/2" long pan head wood screws spaced 6" from each corner then every 4" thereafter. Roofing sealant was applied to the nail heads.
- 6.0 Test Results: The temperature during TAS 100a testing was 75°F. The roof deck was placed outside for 3 days where roof temps were over 120 degrees for 8 hours each day. Results are tabulated as follows:

6.1 Protocol TAS 1003-95 , rest for wind and wind Driven Rain Resistance	6.1	Protocol TAS 100a-95,	Test for Wind and Wind Driven Rain Resistance
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Table 15: Test Results						
Test Wind Speed	Water Usage (gal)	Water Usage Rate (in/hr)	Allowed Water Penetration	Actual Water penetrated		
35 mph	69.00	9.22	NA	0.018 Gallons See Note #1		
70 mph	67.00	8.96	NA	0.020 Gallons See Note #1		
90 mph	67.00	8.96	NA	0.000 Gallons		
110 mph	20.90	8.38	NA	0.000 Gallons		
Total	223.90	35.52	0.1195 Gallons (0.05%)	0.038 Gallons (0.01%)		

Note 1: Small water droplets were observed penetrating the Louver Fan approximately 1 minute into the 1st two test sequences.

Conclusion: This test specimen did satisfy the requirements of TAS 100a-95 .





Laboratory Compliance Statements: The following are provided as required by the protocols for the testing reported herein.

Upon completion of testing, specimens tested for TAS 100a-95.

Intertek-ATI will service this report for the entire test record retention period. Test records such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For ARCHITECTURAL TESTING, INC.:

Clint Barnett Technician Tyler Westerling Sr. Project Engineer

CB:cm

Attachments (pages): This report is complete only when all attachments listed are included. Appendix A: Photos (2) Appendix B: Sketches (1) Appendix C: Drawings and Vent Installation Instructions (9)

This report produced from controlled document template ATI 00651, revised 07/08/15.





Appendix A

Photos



Mounted Solar Vents







Left Side of Solar Vents





Appendix **B**

Roof Deck Sketches









Appendix C

Drawings and Installation Instructions





Solar Royal SR1800 Series Installation Manual



Solar Royal SR1800 Series Installation Manual Solar Ventilation (Attic) Fan Installation

Rev4 RS/vm 2015.3

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1 Introduction

Thank you for purchasing the Solar Royal SR1800 Series (SR1800). Before installing the unit, be sure you make yourself familiar with the different components. Carefully unpack the unit and review the manual before attempting to install the unit. The SR1800 is the easiest solar attic fan to install because the separate flashing (metal base) is made to be installed before the rest of the unit so the attic fan is easier to mount. Once the flashing is installed, the hood unit of the SR1800 can be easily placed and then securely snapped into place.

1.1 Purpose

This document is provided to serve as a guide for installing the Solar Royal SR1800 on **composite shingle roofs**.

Installing an attic fan is fairly easy but Solar Royal, LLC recommends that if you have not worked on a roof, installed something on your roof before, or are not familiar with working on a roof that you should hire an insured and bonded professional to install anything on your roof, including a solar attic fan.

2 Installation Manual

2.1 Pre-requisites

The following tools and materials will be required to install the Solar Royal SR1800.

- Safety Goggles
- Measuring Tape
- Marking Pencil
- Utility Knife
- Screws (Provided)
- Caulk (MP1 or similar)
- Stud Finder
- Drill w/Phillips Bit
- Flat Pry Bar
- Caulk Gun
- Reciprocating Saw
- String and 2 Nails (Recommended)

2.2 Pre-installation Tasks

2.2.1 Location

The location of the Solar Attic Fan must be established. For best operation, install solar fan where it will receive direct sunlight. South or West facing roof slopes will work best. If a southern exposure is not feasible, the fan can be installed on any other exposure as the solar panel can be adjusted up to 45 degrees to accommodate the maximum sunlight capacity. Placement should be approximately in the center of the attic space and about 24" from the ridgeline if no ridge vents are present. If ridge vents are present, the fan should be at least 6 feet down towards the centerline.

2.2.2 White-Out Film

For your protection the SR1800 is delivered with a safety film that covers the solar panel. The safety film serves to protect the installer from the unit starting to spin during the installation, which could damage the unit and also injure the installer. Also, if the client wishes to have the unit in another color, the SR1800 can be painted to match the home and/or roof color.* Once the fan is installed, the white film should be removed so that the SR1800 will work properly.

*Please contact Solar Royal regarding painting the unit. Please note once the unit has been painted, it is now altered and no longer can be returned.

2.3 Installation Procedure

Once all prerequisite checks (2.1) and pre-installation tasks (2.2) are completed, proceed to the unit installation, listed chronologically below.

 \triangle Do not cut through any roof substrates, rafters or framed portions of the roof. Also prior to cutting, make sure that you do not have any electrical, plumbing or possible gas lines in the area. If you do, then either make sure you stay clear of these hazards or possibly consider installing the unit in another location.

Solar Royal, LLC recommends that if you have not worked on a roof, installed something on your roof before, or are not familiar with the hazards of working on a roof that you should hire an insured and bonded professional to install anything on your roof, including a solar attic fan.

2.3.1 Measuring and Cutting the Hole

On either 24"/16" center construction, we recommend cutting a 15" round hole between the rafters. We recommend installing the SR1800 between the rafters but if not possible it is OK to install the SR1800 over a rafter. We recommend marking the cut by connecting a nail to string or rope and inserting the nail at the center of the hole. Measure 7.5" out and connect a second nail to the string or rope. Use the second nail to score a line in the roof. When you are sure the measurements are correct, make the cut with a reciprocating saw. >>Remember to measure three times and cut once.



Measuring the hole



The hole cut out

2.3.2 Inserting the Flashing

Once the hole as been made, trim away shingles as needed to accommodate the metal base flashing so that you have a clean and tight fit. Normally if you cut a clean 15" hole, we recommend trimming away from the top rows of shingles an additional 1" (one inch) to allow the base flashing to slip under the top row(s) of shingles and over the bottom row(s).

Slip the flat metal base under the top rows of shingles and center the unit over the opening. If the unit is not properly centered this will jeopardize the integrity of the installation. The SR1800 has been designed to accommodate all roof slopes. The base is square so it does not mater which side is installed first. Before attempting to slide in the flashing, remove any roofing nails or other obstructions. Do not force the flashing into place. Carefully find out what is causing the issue and adjust as needed. It is also important to avoid deep scratches in the flashing's powder-coating.



Removing obstructions



*Flashing after being slide in

*If possible and to make it look cleaner, replacing the shingles on the bottom third of the flashing. This is not a requirement, just optional.

2.3.3 Sealing and Securing the Flashing

Once the metal flashing is in place, gently lift the lower exposed metal base flashing and apply sealant (caulk) generously under the side and lower edges but not so much that it oozes out. If sealant starts to ooze, just wipe off excess before it hardens. The bottom part of the flashing will be exposed and sit on top of the shingles.

Drill 8 mounting holes (along bottom and exposed sides). Use the eight (8) #10 1-1/2" wood screws (pan head) to mount the unit while making sure the unit is properly squared with the roof edge or side before securing the second screw. Not having the unit properly squared will make for an uneven look from the ground so it's important to aligned it carefully.

After properly mounting the SR1800 to the roof, utilize the exterior grade, high-heat, waterproof sealant (caulk) - apply generously over the screws, as needed over or on the sides of the shingles and verifying again the status of the oozing or lack of sealant on the exposed metal flashing underside. Now is the time to do it right and make sure the installation is watertight.



Securing the flashing



Sealing the flashing

2.3.4 Attaching and Configuring the Hood

The SR1800 comes with a 36" thermostat wire (thermoball) attachment. This is designed to hang down into your attic. You can adjust the length of the thermostat with a cable tie or tape. The Thermoball is designed to allow the fan to run once the temperature is above 80° F (+/- 5°). If you do not want to utilize the thermostat, the unit is delivered with a bridge adapter in the same pouch as the screws, that allow you to remove the thermostat from the circuitry, within the thermoball, which allows the fan to run regardless of the temperature when there is available sun. **SPECIAL NOTE**: If the white film is removed prior to installing the solar attic fan on the roof, the thermoball and cable can get caught up quickly within the fan. Be sure to verify that they fan/motor is clear and the cable is clear of the blade and handing down properly. The blade can spin so fast that if not careful the wiring can be sliced thus making the solar attic fan none operable.

Then, carefully set the SR1800 down (centered) on the metal base (flashing) making sure the thermoball /cable is not being pinched and is handing down within the attic space. Also if you want to have your solar panel at an angle - remember to take into consideration where and how the panel is set to angle to make sure you set the hood into place correctly. The SR1800 when placed on the base is slightly off and not exactly squared with the metal base unit, once the unit is (turned to the left) clicked into place, you will hear a very distinct secure metal clip that locks the solar attic fan into place. If you have found that you have placed it incorrectly, you will then need to remove the four screws from the sides, lifting the top portion of the solar attic fan off. Being careful you do not pinch or sever the wiring. You will then find two metal thumb-spring plates which you will need to slightly lift so that you can turn the lower portion of the solar attic fan to the right so it can be removed and reattached to the top part of the unit.

Solar Royal SR1800 Series Installation Manual



Attaching the hood



Raising the solar panel