VorBlade by Avantechs, Inc.

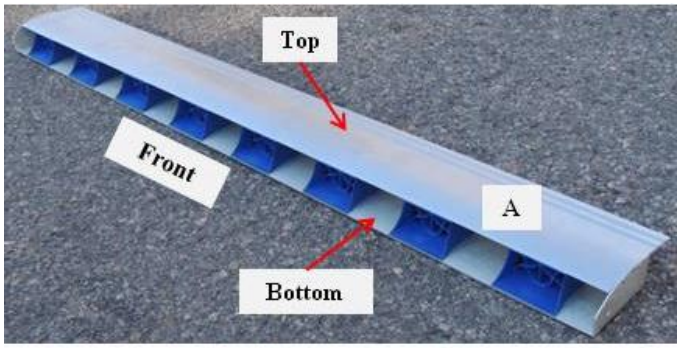
VorBlade Wing™ System

EPA SmartWay Verified and C.A.R.B. Compliant

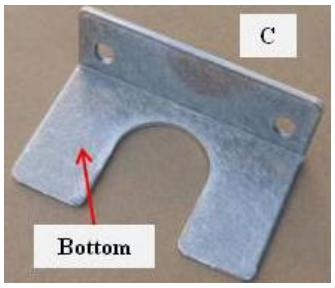
VorBlade Invisible Shield. Feel the difference. Share your experience.

www.vorblade.com 303-HIGHWAY (303-444-4929)

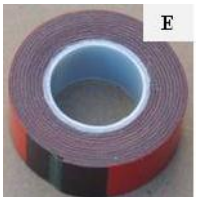
Packing list - please check received parts against the list and identify each part as it is unpacked



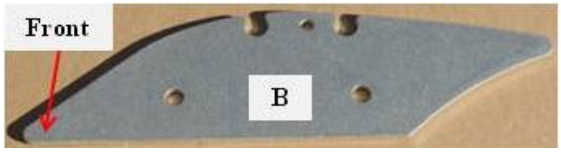
VorBlade Wing sections **A** – **6**



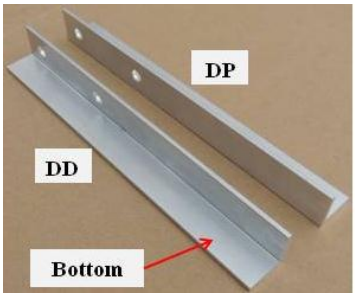
Safety brackets **C** – **6**



Adhesive tape rolls **E - 12**



Wingtips **B** – **9**



Safety beams **D** – **2** (**DD** – **1**, **DP** – **1**)

Hardware bag **H** – **1**

Identification decals **F** – **2**

Quick links **G** – **2**

Packing list and terms of use - **1**

The hardware bag H *contains:* long tap bolts **J (**length 1”, diameter 1/4”) - **8**; short tap bolts **K (**length 3/4”, diameter 1/4”) - **16**; flat washers **L** - **24**; lock washers **M** - **24**; lock nuts with nylon ring inserts **N (**diameter 1/4”) - **24**; sheet metal screws **O (**#8, length 2”) - **6**; long-grip closed end blind rivets **P** (grip 0.251”-0.375” , diameter 1/4”) - **8**; short-grip closed end blind rivets **Q** (grip 0.126”- 0.250”, diameter 1/4") – **20**.

INSTALLATION GUIDE

This guide is for the person who will actually perform or supervise the installation of the VorBlade Wing on a trailer. To ensure safe and reliable installation, it shall be performed by at least two persons.

Please read the Guide carefully before installation. Be careful to use correct parts and hardware as specified in the Guide. Please inspect your trailer before the installation. Some of the procedures or requirements specified in the Guide may be unsuitable for uncommon trailer configurations. If this happens to be the case for your trailer, please contact Avantechs, Inc for alternative installation options.

Required installation conditions

Attaching VorBlade Wing modules to a trailer must be performed from a trailer bay, scaffold, rolling ladder or other appropriate platform providing stable, non-slippery and otherwise safe support to the personnel performing the installation. Please note that two connected VorBlade Wing sections are about 8 ft long, weigh about 13 lb and have to be mounted on a trailer height up to 14 ft above the ground. Assistance of a second person is required to ensure personnel safety during the installation.

The personnel performing the installation must be skilled in using tools like a drill and a pop rivet gun and follow exactly safety procedures for the applied tools, both manual and powered.

Please install VorBlade Wing on your trailer in well-lit dry environment at temperatures from 50°F to 110°F to further guarantee installation safety and the bond strength of an adhesive tape.

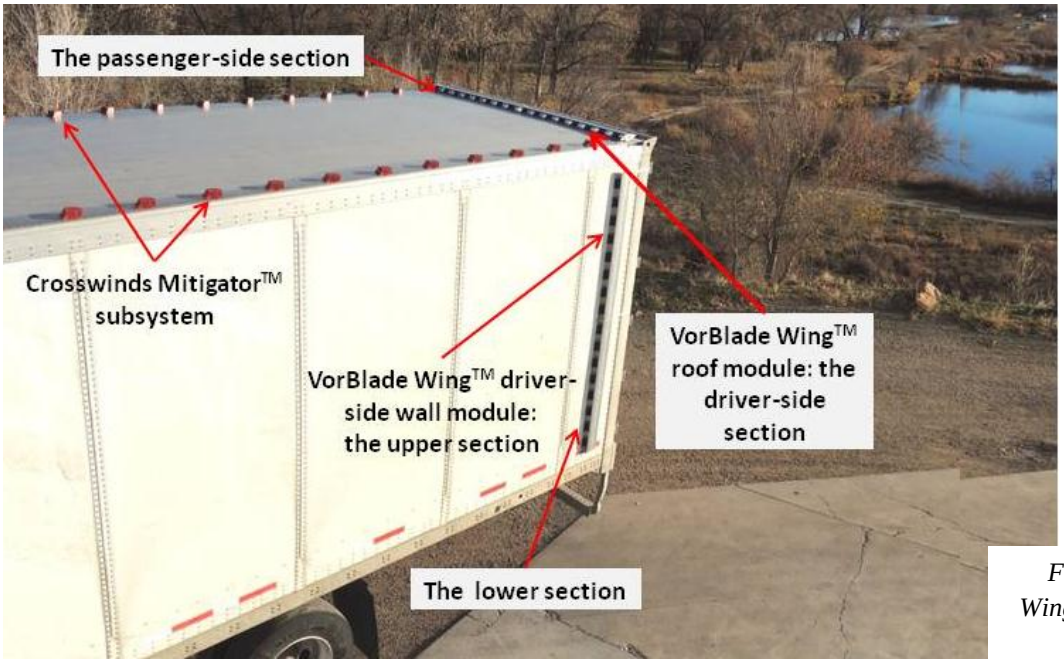


Figure 1A: The VorBlade Wing™ on a typical 53' trailer

Installation Overview

VorBlade Wing system includes three VorBlade Wing modules to be mounted on the rear edges of a trailer roof and side walls. We also feature Crosswinds Mitigator™ subsystem to be mounted on a trailer roof (the subsystem and the proper installation guide are shipped separately). Each module consists of two VorBlade Wing sections. The roof and the driver-side wall modules are shown in Figure 1A. *Please note: All provided sections, wingtips and safety brackets are identical to each other and can be equally used for the roof or sidewall modules.*

Installation of the VorBlade Wing modules in any location is independent of the installation in other locations thus the modules may be mounted on a trailer in any succession or simultaneously. Detailed instructions for installing the VorBlade Wing modules in each location are provided below.

Each VorBlade Wing modules is to be assembled from two sections before attaching to a trailer. The working surface may be on a ground, a workbench and the like. The surface must be flat, well lit, dry and clean, and have a size of at least 9 ft x 2 ft.

Required tools (the tools may be manual or, if available, the powered ones): two 7/16" wrenches, Phillips screwdriver #2, a drill, a drill bit F (0.257"), a drill bit 1/8" or 3/16" for pilot holes, a center punch and a hammer, a rivet gun for 1/4" blind rivets, cleaning solvent such as 50/50 mixture of Isopropyl Alcohol with water, grease remover and the like, cloth or paper towels, and a utility knife.

1. Installation of the VorBlade Wing module on the trailer roof

Compile the required parts for installing the module on a trailer roof: **2** sections **A**; **3** wingtips **B**; **2** safety brackets **C**; **1** driver side safety beam **DD**; **1** passenger side safety beam **DP**; **8** long bolts **J**; **4** short bolts **K**; **6** flat washers **L**; **12** lock washers **M**; **12** lock nuts **N**; **2** screws **O**; **4** rolls of double-sided adhesive tape **E**.

1.1: Assembling the VorBlade Wing roof module on the working surface

May the roof module be attached to a door frame or alike where the "roof leak" is not a concern, the safety beams are not needed. The module may be riveted directly to the roof surface by standard closed end blind rivets (not provided). Please contact our customer support for specific instructions.

1.1.1: Connecting two sections with a wingtip and two safety beams - the major parts to be connected are shown in Figure 1.1.

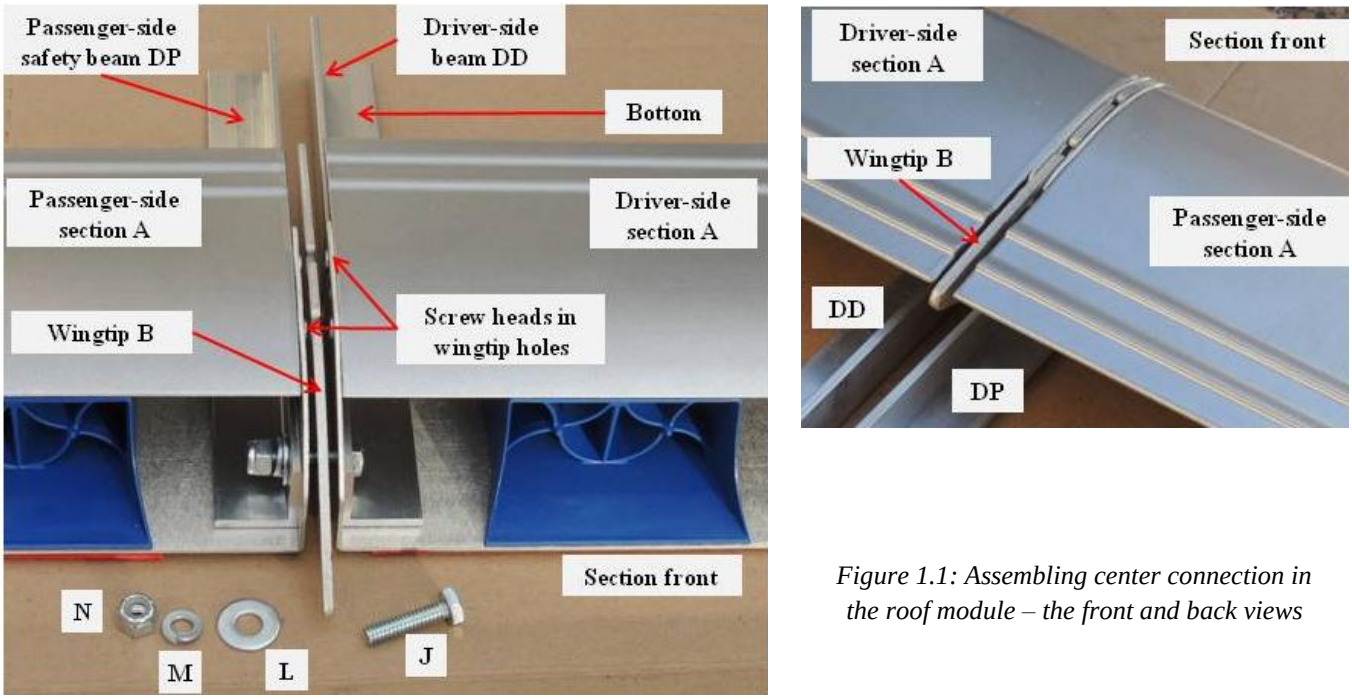


Figure 1.1: Assembling center connection in the roof module – the front and back views

1.1.1.1: Place wingtip B vertically between two sections A, the wingtip front towards the section fronts, and hand-press tightly the sections together. Make sure that the conical screw heads on the top of the sections are inserted inside the appropriate holes in the wingtip as shown in Figure 1.1.

1.1.1.2: Place a driver-side beam DD in the driver-side section, the beam bottom lays on the section bottom plate; Figure 1.1.

1.1.1.3: Place a passenger-side beam DP in the passenger-side section, the beam bottom lays on the section bottom plate.

1.1.1.4: Insert two long bolts J through the holes in safety beams DD and DP, sections A and a wingtip B as shown in Figure 1.1.

1.1.1.5: Put flat washers L, lock washers M and lock nuts N on the bolt ends as shown in Figure 1.1.

1.1.1.6: Tighten lightly the nuts N so the beams can be moved up or down along the slots; do not engage locks M in this step.

1.1.2: Connecting a wingtip and a safety bracket to the driver-side end of the roof module - the major parts are shown in Figure 1.2.

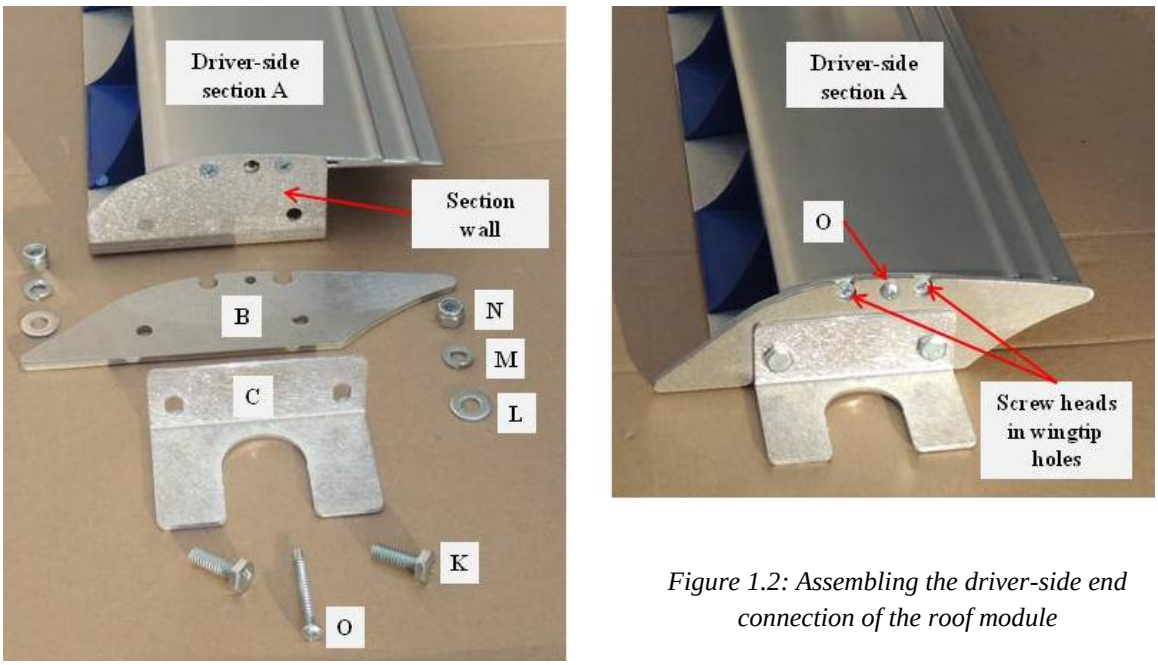


Figure 1.2: Assembling the driver-side end connection of the roof module

1.1.2.1: Place a wingtip B vertically at the driver side of the driver-side section A, the wingtip front towards the section front, and hand-press it to the section tightly. Make sure that conical screw heads on the top of the section are inserted inside appropriate holes in the wingtip; Figure 1.2.

1.1.2.2: Place a safety bracket C at the driver side of the wingtip, the bracket bottom matches the section bottom; Figure 1.2.

1.1.2.3: Insert two short bolts K through the holes in the section, a wingtip and a safety bracket as illustrated in Figure 1.2, the bolt heads outside the bracket.

1.1.2.4: Put flat washers L, lock washers M and lock nuts N on the bolt ends as illustrated in Figure 1.2. The nuts must be inside the section.

Flat washers L must be placed between a section wall and lock washers M to avoid damaging the section wall.

1.1.2.5: Tighten lightly the nuts N so the bracket C can be moved up or down along the slots; do not engage locks M in this step

1.1.2.6: Place a screw O into a central hole in the wingtip and tighten it into the section A by Phillips screwdriver; Figure 1.2. Do not over-tighten the steel screw - the wings are made from aluminum.

1.1.3: Connecting a wingtip and a safety bracket to the passenger-side end of the roof module

- Repeat operations 1.1.2.1 – 1.1.2.6 for the passenger-side end.

The passenger-side connection is a mirror image of the driver-side one.

1.1.4: Attaching double-sided adhesive tape to the bottom of the roof module.

1.1.4.1: Clean the bottom surfaces of the VorBlade Wing sections by standard cleaning solvents such as 50/50 mixture of Isopropyl Alcohol with water, wax and grease removers and the like.

1.1.4.2: Wipe surfaces dry with cloth or paper towels.

Safety warning: be sure to clean and dry the surfaces carefully - adhesive tape does not provide strong bond on wet, greasy or otherwise dirty surfaces.

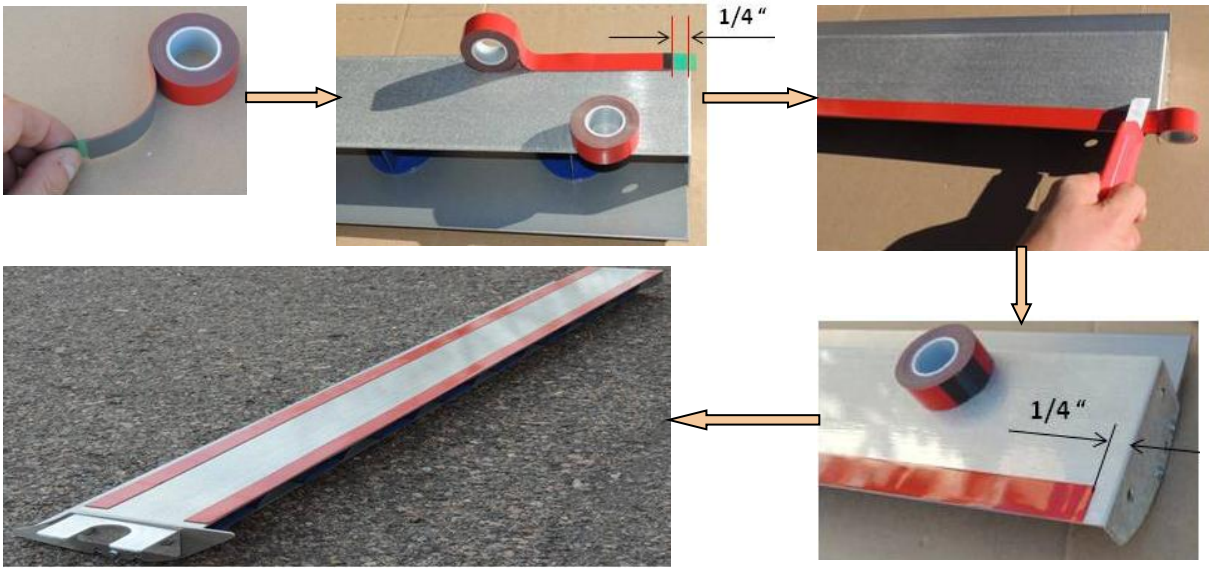


Figure 1.3: Attaching adhesive tape to the bottom of VorBlade Wing section

4 rolls of adhesive tapes may be attached to the bottom of two sections in any sequence.

1.1.4.3: Peel off a tip of adhesive tape E from a roll and press it firmly to the front edge of any section at about 1/4“ from the section end; Figure 1.3.

1.1.4.4: Continue unrolling a roll and pressing the tape firmly along the front of the section until about 1/4” from the other end of the section; Figure 1.3.

If the roll does not cover a full length of the section, apply an extra roll to compensate the insufficient length.

1.1.4.5: Cut off the excess tape by a sharp utility knife.

1.1.4.6: Repeat operations 1.1.4.3, 1.1.4.4 and 1.1.4.6 for the rear side of the section to get a pattern in Figure 1.3.

1.1.4.7: Repeat operations 1.1.4.3 - 1.1.4.6 for the second section.

1.2: Positioning the VorBlade Wing roof module on a trailer roof

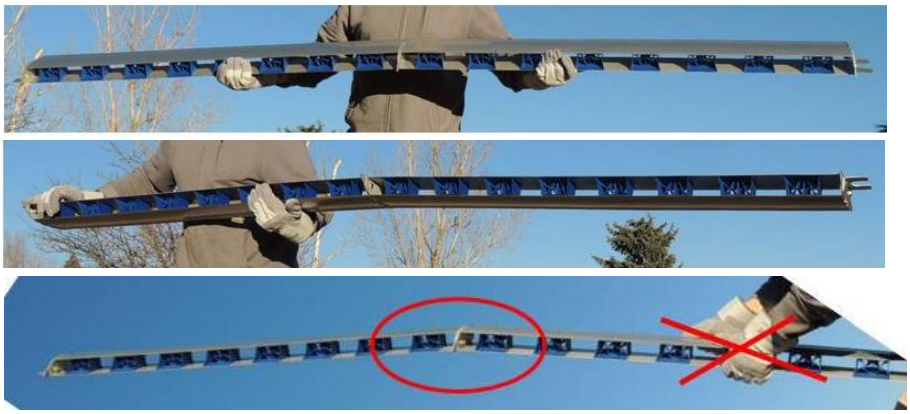


Figure 1.4: Two correct ways to handle VorBlade Wing modules – <u>preferably</u> support two sections and / or hold the module upside down.

Do not let the VorBlade Wing module “self-break” by supporting only one section unless you hold the module upside down

1.2.1: Lift the assembled roof module to a trailer roof and place it near the rear edge of the roof. Please handle the module properly as illustrated in Figure 1.4.

Warning: please be careful, the roof module is about 8 ft long and weighs about 13 lb. When lifting a module, please support both sections and / or hold it upside down to avoid damaging the module; Figure 1.4.

1.2.2: Position the rear edge of a module at a distance from 1” to 10” from the rear edge of a trailer roof as illustrated in Figure 1.5. Do not place the bottom surfaces of the sections over rivet heads or other obstacles.

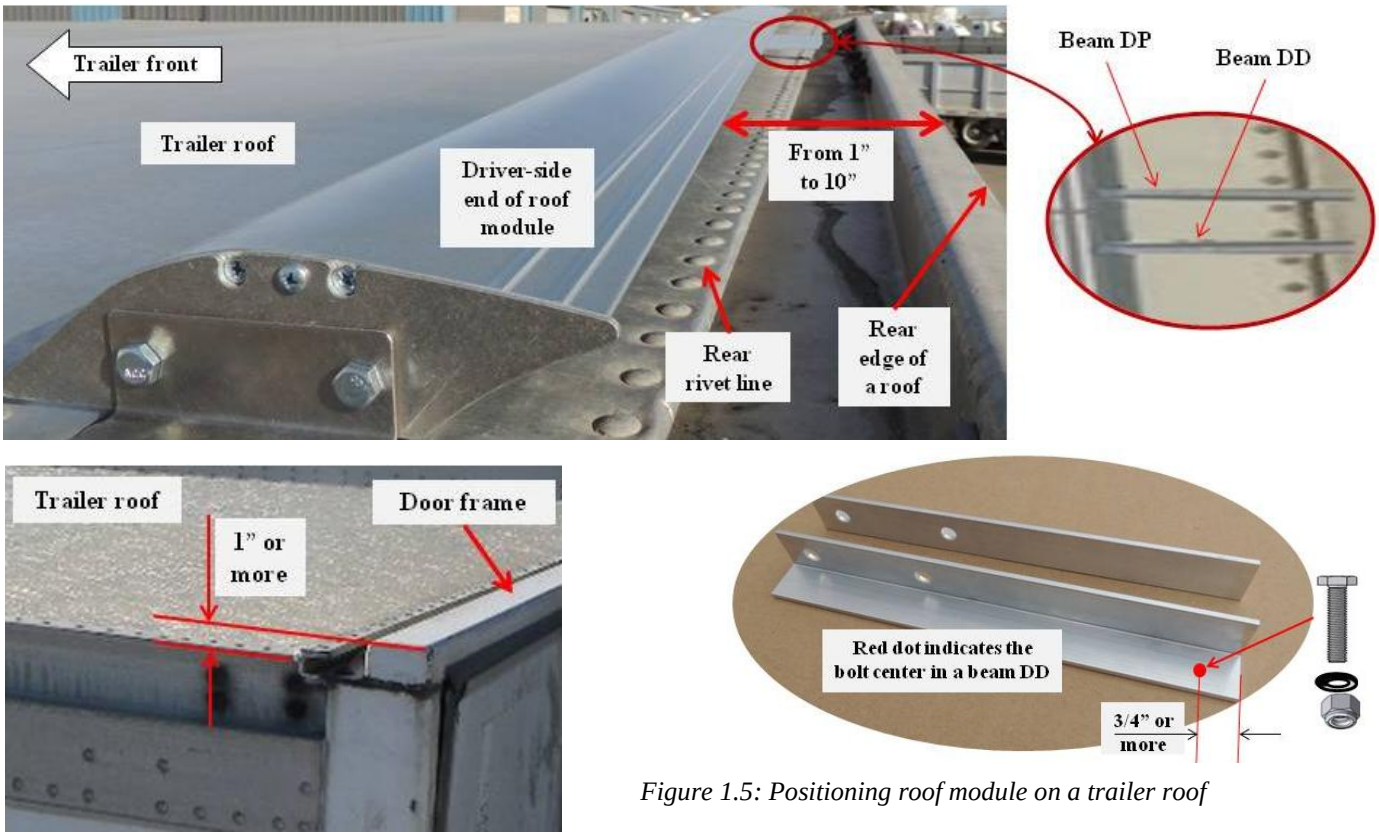


Figure 1.5: Positioning roof module on a trailer roof

Safety beams DD and DP are to be attached to a trailer roof by bolts. For a typical trailer as in Figure 1.5, the bolts may be placed on or near the rear rivet line. However, trailer roofs are of different configuration and specific locations for the bolts may differ from one configuration to another. For some trailers safety beams are unsuitable because they cannot be bolted to the roof. If this happens to be the case for your trailer, please contact Avantechs, Inc. for alternative options.

1.2.3: Choose location for the bolts for safety beams DD and DP on a trailer roof. Make sure that the rear beam ends extend at least 3/4” behind the chosen bolt centers; Figure 1.5.

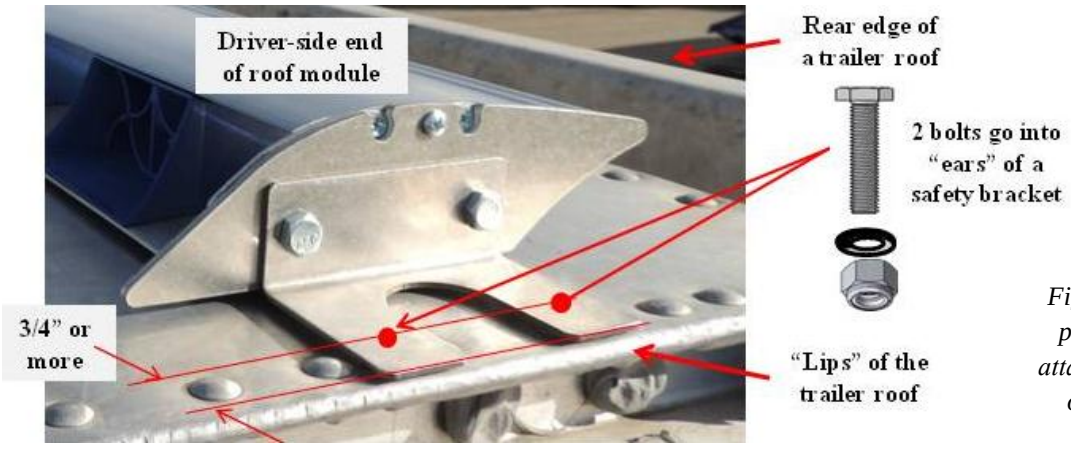


Figure 1.6: Adjusting module position on a trailer roof to attach safety brackets to “lips” of the trailer roof by bolts

The door frame of some trailers sticks up more than 1” above the roof level as illustrated in Figure 1.5 which can potentially interfere with the generated vortices. In order to ensure the best performance of the roof module in such cases, position the module at the maximum distance from the door frame allowed by the length of safety beams but not farther than 10” from the rear roof edge.

Otherwise it is preferable to position the module as close to the rear roof edge as possible. Please choose the closest to the rear edge position where the system does not interfere with your trailer's operations.

1.2.4: Adjust the module position in such a way that allows securing safety brackets to the "lips" of a roof on the driver and passenger sides by two bolts on each side; Figure 1.6. Make sure the bolt centers are at least 3/4" away from the bracket edges. The safety brackets might slightly extend beyond the side edges of a roof for some trailers.

1.2.5: Adjust a height of the driver-side safety bracket in the module: keep the driver-side section on the roof surface and hand-press the bracket down to lay it on the roof "lip"; Figure 1.6. Tighten the lock nuts N in the driver-side connection to engage the locks M.

1.2.6: Adjust a height of the passenger-side safety bracket in the module in the same way as the driver-side bracket and tighten the lock nuts N to engage the locks M.

1.2.7: Adjust a height of safety beams above the trailer roof: keep the sections pressed to the roof surface and hand-press safety beams DD and DP down until they lay on a surface or the heads of rivets on the trailer roof. Tighten the lock nuts N in the center connection to engage the locks M.

1.3: Attaching the VorBlade Wing roof module to a trailer roof

1.3.1: Attaching the roof module to a trailer roof by adhesive tape.

1.3.1.1: Check carefully the chosen position of the roof module: a distance from the trailer rear edge shall be between 1" and 10", the rear ends of safety beams shall extend back sufficiently for the safety bolts connection, and the safety brackets lay properly on the trailer roof "lips"; Figures 1.5 and 1.6.

Warning: the module cannot be moved after the adhesive tape is attached to the trailer roof surface.

1.3.1.2: Mark clearly selected position for the roof module on a trailer roof.

1.3.1.3: Move the module slightly away from the chosen position in order to prepare the trailer roof surface for the module attachment.

1.3.1.4: Clean the surface for attaching the module by standard cleaning solvents such as 50/50 mixture of Isopropyl Alcohol with water, wax and grease removers and the like.

1.3.1.5: Wipe surfaces dry with cloth or paper towels.

Safety warning: be sure to clean and dry the surface carefully - adhesive tape does not provide strong bond on wet, greasy or otherwise dirty surfaces.

Figure 1.7: Attaching VorBlade module to a trailer by adhesive tape

1.3.1.6: Peel protective liners from adhesive tapes on the bottom of module; Figure 1.7.

1.3.1.7: Set the front edge of the module in the marked position on a trailer roof.

1.3.1.8: Lower the rear edge of a module towards the trailer roof and push the module firmly to the surface.

Do not apply any force to the roof module for 15 min or more to set up the bond.

1.3.2: Attaching the roof module to a trailer roof by bolts.

1.3.2.1: Choose locations for the bolt centers in safety beams and safety brackets. Make sure that the centers are at a distance of 1/2" or more from the material edges of the trailer roof; Figure 1.8.

Safety warning: If the bolt centers are distanced less than 1/2" from the ends of the trailer roof body, it may cause a material fracture.

Figure 1.8: The red dots show locations for bolt centers in the beams (left) and brackets (right) of the roof module

1.3.2.2: Apply the center punch to mark selected bolt centers. Make sure to form deep enough dimples to "guide" the tip of a drill bit and prevent wandering of the bit.

1.3.2.3: Use 1/8" or 3/16" bit to drill pilot holes throughout safety brackets and safety beams and a trailer body. The pilot holes ensure steady drilling of smooth cylindrical holes to fit the bolts closely.

Warning: close-fit holes for bolts must be of exact cylindrical shape to ensure a durable attachment.

1.3.2.4: Drill holes for 0.25" bolts through the pilot holes using a drill bit F (0.257").

1.3.2.5: Insert six long bolts J through the holes; *do not use flat washers L in these connections*.

1.3.2.6: Put lock washers M and lock nuts N on the bolt ends.

1.3.2.7: Tighten the lock nuts N to engage the locks M.

2. Installation of the VorBlade Wing modules on the trailer side walls

Compile the required parts for installing the module on the passenger-side wall: **2** sections **A**; **3** wingtips **B**; **2** safety brackets **C**; **6** short bolts **K**; **6** flat washers **L**; **6** lock washers **M**; **6** lock nuts **N**; **2** screws **O**; **4** long-grip rivets **P**; **8** short-grip rivets **Q**; **4** rolls of double-sided adhesive tape **E**.

2.1: Assembling the VorBlade Wing passenger-side wall module on the working surface

2.1.1: Connecting two sections with a wingtip.

2.1.1.1: Place a wingtip B vertically between two sections A, the wingtip front towards the section fronts, and hand-press tightly the sections together. Make sure that the conical screw heads on the top of the sections are inserted inside the appropriate holes in the wingtip; Figure 2.1.

2.1.1.2: Insert two short bolts K with flat washers L through the holes in the sections and wingtip as illustrated in Figure 2.1.

Flat washers L must be placed between a section wall and bolt heads to avoid damaging the wall.

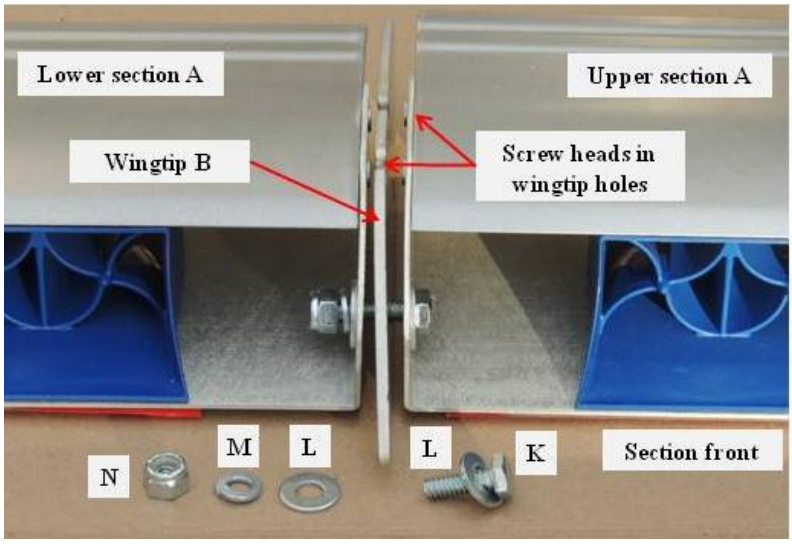
2.1.1.3: Put flat washers L, lock washers M and lock nuts N on the bolt ends as illustrated in Figure 2.1.

Flat washers L must be placed between a section wall and lock washers M to avoid damaging the wall.

2.1.1.4: Tighten the lock nuts N to engage the locks M.

2.1.2: Connecting wingtips and safety brackets to the ends of the passenger-side wall module.

- Connect wingtips B and safety brackets C to both ends of the module in the same way as described in Steps 1.1.2.1 – 1.1.2.6 and 1.1.3 and illustrated in Figure 1.2. As specified in 1.1.2.5, do not engage the locks M in this step.



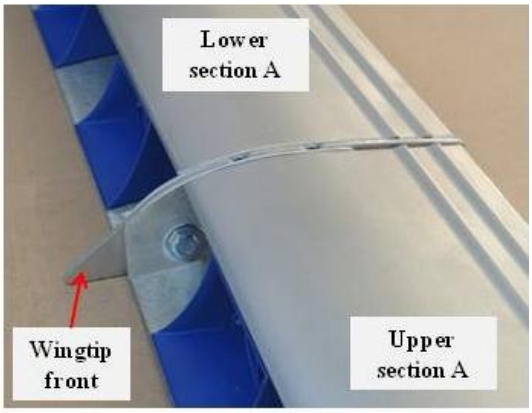


Figure 2.1: Assembling center connection of the passenger-side wall module

2.1.3: Attaching adhesive tape to the bottom of the passenger-side wall module.

- Attach double-sided adhesive tape E to the bottom of the wall module in the same way as described in Step 1.1.4 and illustrated in Figure 1.3.

2.2: Positioning the VorBlade Wing wall module on the passenger-side wall

Warning: two persons are needed for this step – one person to perform the required operations and second person to hold the module.

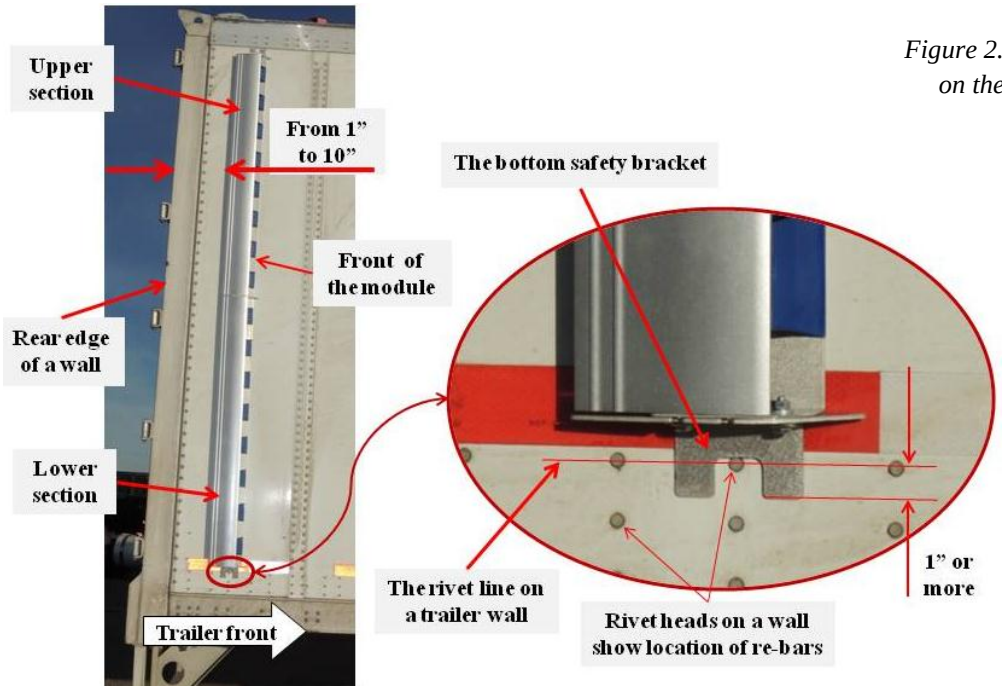


Figure 2.2: Positioning the wall module on the passenger-side trailer wall

2.2.1: Lift the assembled wall module and place it vertically near the rear edge of the passenger-side wall, the module front towards the front of a trailer; Figure 2.2. Please handle the module properly as illustrated in Figure 1.4.

Warning: please be careful, the roof module is about 8 ft long and weighs about 13 lb. When lifting a module, please support both sections and / or hold it upside down to avoid damaging the module; Figure 1.4.

2.2.2: Position the rear edge of a module at a distance from 1" to 10" from the rear edge of a trailer wall; Figure 2.2. Make sure that the bottom surfaces of the sections are located on a flat trailer wall. Do not place sections over rivet heads or other obstacles.

Warning: although it is preferable to position the module as close to the rear trailer edge as possible, the module should not prevent opening a trailer door. Choose the closest to the edge position that allows opening the door far enough for normal trailer operations. Please note that door chains may be expanded with the provided quick links as described in Step 3.2.

2.2.3: Position the module at the proper height to ensure durable and reliable riveting to a wall. The outer "skin" of most trailers is riveted to re-bars inside trailer walls and the rivet heads on the wall indicate locations of the re-bars; Figure 2.2. Adjust a height of the module so the lower edge of the bottom bracket is 1" or more below the upper rivet line as illustrated in Figure 2.2.

2.2.4: If needed, move the module slightly back or forth so the bracket "ears" lay on the trailer wall and between rivet heads as shown in Figure 2.2. Do not place the safety brackets on top of the rivets.

Warning: the bottom bracket carries a significant fraction of the module weight. To enforce attachment of the module to a trailer wall, the bracket should preferably be riveted to re-bars inside the wall.

2.2.5: Adjust a height of the bottom safety bracket in the module: keep the lower section A on the wall surface and hand-press the bracket down until it lay on the wall frame. Tighten the lock nuts N to engage the locks M.

2.2.6: Adjust a height of the top safety bracket in the module: keep the upper section A on the wall surface and hand-press the bracket down until it lay on the wall surface. Tighten the lock nuts N to engage the locks M.

2.3: Attaching the VorBlade Wing wall module to the driver-side trailer wall

2.3.1: Attaching the wall module to a trailer wall by adhesive tape.

Warning: two persons are needed for this step – one person to perform the required operations and second person to hold the module.

2.3.1.1: Check carefully the chosen position of the wall module: a distance from the trailer rear edge shall be between 1" and 10", the trailer doors shall be able to open far enough for a normal trailer operations and the bottom bracket should be riveted to the re-bar inside the trailer sidewall if possible; Figure 2.2.

Warning: the module cannot be moved after the adhesive tape is attached to the trailer wall surface.

2.3.1.2: Mark clearly selected position for the wall module on a trailer wall.

2.3.1.3: Remove the module from the chosen position in order to prepare the trailer sidewall surface for the module attachment.

2.3.1.4: Clean the surface for attaching the module by a cleaning solvent.

2.3.1.5: Wipe surfaces dry with cloth or paper towels.

Safety warning: Be sure to clean and dry the surface carefully - adhesive tape does not provide strong bond on wet, greasy or otherwise dirty surfaces.

2.3.1.6: Peel protective liners from adhesive tapes on the bottom of the module as in Figure 1.7.

Warning: in steps 2.3.1.7 – 2.3.1.9 one person handles the upper section of the module and second person handles the lower section

2.3.1.7: Set the front edge of the module in the marked position on a trailer wall.

2.3.1.8: Lower the rear edge of the module on the trailer wall and push firmly to the surface.

2.3.1.9: Keep the module pressed to the wall for at least 1 min.

Do not apply a force to module for 15 min or more to set up the bond.

2.3.2: Attaching the passenger-side wall module to a trailer wall by rivets.

2.3.2.1: Choose locations for the centers of 2 rivets in the bottom safety bracket and 2 rivets in the top bracket. Make sure that the centers are at a distance of 3/8" or more from the edge of the bracket "ears"; Figure 2.3.

Safety warning: if the rivet centers are distanced less than 3/8" from the material edge, it may cause a material fracture.

It is preferable to rivet the bottom bracket to a re-bar inside a trailer wall. The rivets in the bracket shall preferably be placed on a rivet line on a trailer wall (the line is indicated in Figure 2.2) or as close to the line as possible as illustrated in Figure 2.3.

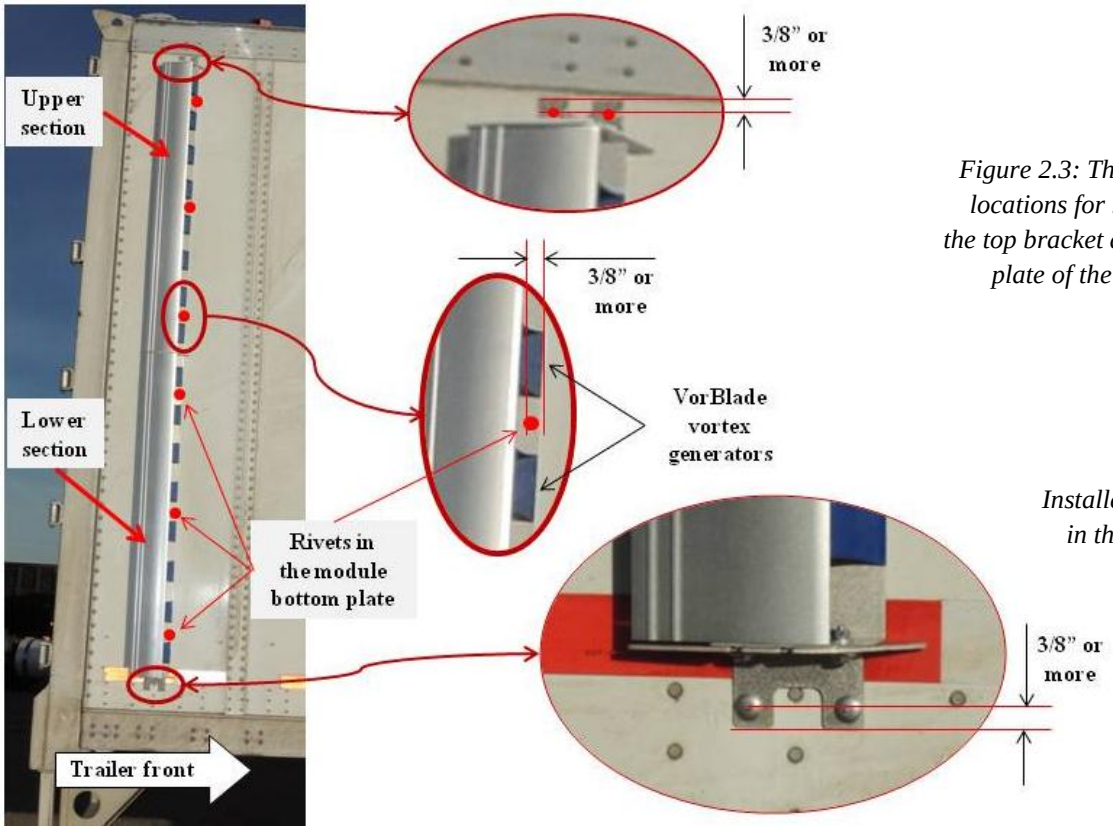


Figure 2.3: The red dots show locations for rivet centers in the top bracket and in the bottom plate of the wall module

Installed rivets are shown in the bottom bracket

2.3.2.2: Choose locations for the centers of 6 rivets in the bottom plate of the module as illustrated in Figure 2.3 - 3 rivets per section. Make sure that the centers are at a distance of 3/8" or more from the front edge of the plate.

There are 8 vortex generators in each section A and 7 spaces between the generators. To ensure durable attachment, the evenly spaced locations for rivets in the bottom plate of the wall module are preferable. Such evenly distributed rivets in the 1st, 4th and 7th spaces between the generators are illustrated in Figure 2.3.

2.3.2.3: Apply the center punch to mark selected rivet centers. Make sure to form deep enough dimples to "guide" the tip of a drill bit and prevent wandering of the bit.

2.3.2.4: Use 1/8" or 3/16" bit to drill pilot holes throughout a trailer wall. The pilot holes ensure steady drilling of smooth cylindrical holes for closed end blind rivets.

Safety warning: holes for included closed end blind rivets must be of exact cylindrical shape to ensure a durable attachment and a waterproof seal. The closed end blind rivets are designed to completely prevent liquids, moisture, air, and other contaminants from entering the riveted hole and/or the rivet itself when installed in the defect-free holes.

2.3.2.5: Drill holes for 0.25" closed end blind rivets through the pilot holes using a drill bit F (0.257").

2.3.2.6: Install 2 long-grip closed end blind rivets P in the holes in the bottom safety bracket with a rivet gun; the heads of installed rivets are shown in Figure 2.3.

Safety warning: please follow carefully safety instructions for the applied gun.

2.3.2.7: Using a rivet gun, install 2 short-grip closed end blind rivets Q in the holes in the top safety bracket.

For some trailers the "ears" of the top bracket may lay on the re-bar located underneath the sidewall skin. In this case the long-grip rivets P may be needed instead of the short-grip rivets. On the other hand the short-grip rivets may be needed for the lower bracket instead of the long-grip ones for some trailers (the extra rivets P & Q are provided).

2.3.2.8: Install 6 short-grip closed end blind rivets Q in the holes in the bottom plate of the wall module with a rivet gun.

2.4: Installing the VorBlade Wing wall module on the driver-side trailer wall

The required parts and procedures for installing the VorBlade Wing modules on the driver-side wall of a trailer are identical to those for the passenger-side wall.

- Install the driver-side wall module by compiling the same parts as for the passenger-side one and following the steps 2.1 – 2.3.

The driver-side wall module is a mirror image of the passenger-side one.

3. Finishing the installation

3.1: Affixing identification decals

3.1.1: Choose locations for attaching identification decals F on both sides of your trailer. It is preferable to attach the decals on an "eye level" (approximately 5 feet from the ground) for the easier identification by the DOT or C.A.R.B. inspectors.

The decals may be attached to VorBlade Wing modules as in Figure 3.1 or to trailer walls near the modules. The decals on trailer walls may be oriented vertically as in Figure 3.1 or horizontally.

3.1.2: Clean surfaces in selected locations by standard cleaning solvents such as 50/50 mixture of Isopropyl Alcohol with water, wax and grease removers and the like.

3.1.3: Wipe surfaces dry with cloth or paper towels.

Note: Be sure to clean and dry the surfaces carefully – adhesive on decals does not provide strong bond on wet, greasy or otherwise dirty surfaces.

3.1.4: Peel off a protective liners from the reverse side of an identification decals F; Figure 3.1.

3.1.5: Attach the decals on both trailer sides at about eye-level height. The words "EPA SmartWay" shall be on the top if decals are attached vertically and the word "VorBlade^{TM}" shall be on the top if decals are attached horizontally to trailer sidewalls.

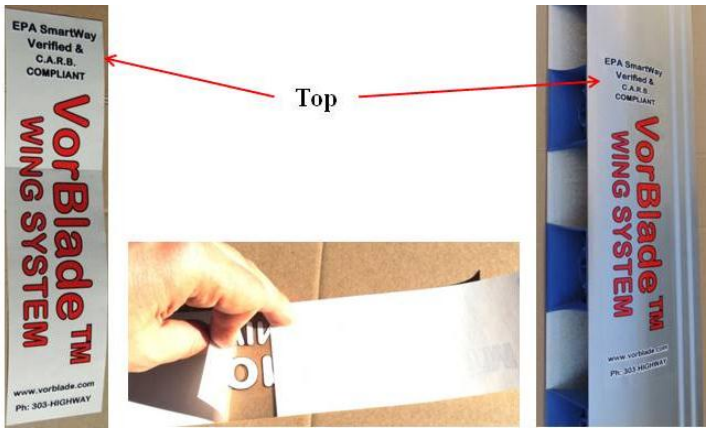


Figure 3.1: Affixing VorBlade^{TM} identification decals

The VorBlade^{TM} identification decals prove your compliance with the C.A.R.B. requirements.

3.2: Attaching quick links

3.2.1: Open trailer doors carefully; do not press doors too firmly to the VorBlade Wing.

3.2.2: Check whether the open doors can be chained to a wall without significant pressure on the top of modules as in Figure 3.2.

Note: For most trailers, the doors can be fully opened and safely chained; Figure 3.2.

3.2.3: If the modules prevent doors of your trailer from being open completely and chained to a wall, expand the length of your door chains by attaching the chain quick links G; Figure 3.2.

If the length of door chain is still insufficient, add a required number of standard chain links (not provided).

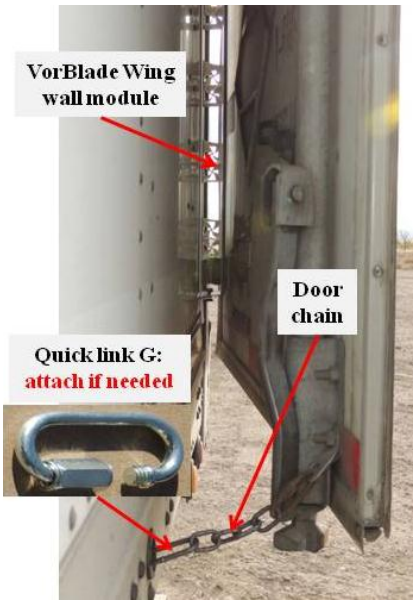


Figure 3.2: Opening trailer doors and attaching the chain quick links (if needed)

3.3 Do not drive the vehicle for several hours and keep it in dry and warm environment (50°F to 110°F) for at least 24 hours allowing the adhesive to build-up the bond strength.

Please note: VorBlade™ system does not require a periodic maintenance. Nevertheless, due to deviations from the installation procedures, harsh vibrations, unforeseen mechanical impacts, extended exposure to adverse weather conditions, or any misuse of the system, bolt or rivet connections might un-tighten or adhesives might lose strength. The system must be inspected every 2 months for such issues or any mechanical damage. Any detected problems must be fixed. It is the sole responsibility of the user to maintain the VorBlade™ products in safe and fully operational condition.

Disclaimers

The enclosed hardware kit fits most trailers. However, Avantechs Inc does not guarantee that the kit fits configuration of the roof and side wall rear edges for all trailers. Please contact our customer support for specific instructions if the kit does not fit your trailer.

Any installation of VorBlade product is subject to the terms and conditions of use posted on the company's website. The Buyer/ Installer understands and agrees that these terms and conditions shall apply to any and all orders/installations of VorBlade products placed or performed at any time by the Buyer and/or Installer.

Avantechs Inc. does not warrant that products are suitable for all uses and operations on all truck, trailer, or vehicle models. It is the sole responsibility of the buyer and/or installer to determine product compatibility and ensure usage safety. Avantechs Inc. is not responsible for any injuries, damages to trucks, trailers or other vehicles including third party vehicles due to installation and/or use of the product. Avantechs Inc. is not responsible for damages which might result due to impact of trailer doors against the VorBlade Wing System. Avantechs Inc. is not liable for non-compliance with any local or state regulations. It is the sole responsibility of the buyer to establish his vehicle(s) or fleet compliance.

Avantechs Inc. is not responsible for traumas, injuries or fatalities occurred during the installation due to the use of unstable, slippery or otherwise inappropriate platform, unskillful or otherwise inappropriate use of installation tools, violation of safety instructions for the applied manual or powered tools, or other violations of the standard safety rules and instructions.

Modification of the installation pattern may result in the VorBlade Wing sections being torn from a trailer which in turn may lead to serious or crushing injuries. Neglecting specified installation procedures may reduce structural strength and durability of the VorBlade Wing and result in water leaks into a trailer. Avantechs, Inc. takes no responsibility for installation procedures different from the ones specifically provided by for the VorBlade products.

Avantechs Inc is not responsible for damages to the VorBlade Wing due to the use of side sections as a ladder, a support for climbing, a hanger for any objects, or any other inappropriate use imposing the loads which are not supposed to be applied to the VorBlade Wing at the standard working conditions.