

**WEATHER BARRIER FLANGE/  
NAIL FIN INSTALLATIONS**



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**Installation Guidelines for  
Windows, Doors and Receptors  
With Weather Barrier Flange/  
Nail Fins**

**Approved 1/6/2020**

# WEATHER BARRIER FLANGE/ NAIL FIN INSTALLATIONS

## Installation Guideline Disclaimer

This document contains general installation guidelines for Graham Architectural products and does not address each particular condition or installation. Shop drawing installation details may vary from these Guidelines as these Guidelines do not address every possible condition, so any variances should be addressed by the design professional. These Guidelines do not address the structural adequacy on any installation and such should be addressed by a design professional. Anchorage to existing or proposed wall conditions are not addressed in this document. Sealant compatibilities and application details should be reviewed by the sealant manufacturers. This document does not address all the connection possibilities between the window system and the building weather barrier system and should be reviewed by the waterproofing consultant. It is generally recommended that insulation be installed in all voids of a thermally improved system, but the application of insulation in wet areas needs to be addressed by the design professional and the particular type of insulation may need to be specified.

**Note:** For the sake of simplicity, the term “Nail Fin” is used throughout this document to refer to the Weather Barrier Flange/ Nail Fin.

# WEATHER BARRIER FLANGE/ NAIL FIN INSTALLATIONS

Thank you for your purchase of Graham Architectural Windows. These instructions contain the sealing instructions when using windows, doors or receptor systems that incorporate a nail fin. Read these instructions, and the instructions for the particular product that you are installing before starting said installation. Following the attached installation instructions step by step will assure trouble free operation of your new windows.

## HANDLING – SORTING – PROTECTING ALUMINUM WINDOWS

Aluminum windows, doors and receptors are finished products and must be protected against damage. The following precautions are recommended to assure early acceptance of your products and workmanship:

1. **HANDLE CAREFULLY – DO NOT DROP.** Be careful handling windows with pre-loaded sash. Make sure pre-loaded sash are locked prior to moving windows. Stack vertically with adequate separation so window parts will not rub together, including any protruding hardware such as handles. Do not use the hardware or grids for lifting or manipulating the window.
2. Protect products from moisture and dirt prior to installation. It is important that all products that are not installed, are protected from direct contact with rain, snow, or ice so as to protect the finish and glazing of the product. If water gets into, and is retained in the glazing pocket it will cause the edge seal of the insulating glass to fail. All products should be stored on top of wood blocking to protect the finish, weather-strip, and nail fins.
3. Construction debris and dirt within the frame will affect the operation of the window. Protect from construction debris, cement, plaster, terrazzo, and other construction materials, which include, but are not limited to, alkali based materials or caustic cleaners. This must be removed immediately to prevent damage to the finish of the aluminum or to the clarity of the glass.
4. Prior to applying sealants, the surfaces must be cleaned and prepared as directed by the sealant manufacturer.

*CAUTION – Products are not to be used as ladders, scaffolds, or supports. Installed window or door openings are not to be used as construction entrances, unless adequate protection to the sill and jambs is provided. Damage to any products from any construction activity will void the product warranty for the products in question.*

**Note:** Copies of these instructions can be downloaded from [www.grahamwindows.com/architectural-resources/technical-information/](http://www.grahamwindows.com/architectural-resources/technical-information/)

# WEATHER BARRIER FLANGE/ NAIL FIN INSTALLATIONS

## General Installation Instructions

A. Upon delivery carefully check that all products have been received undamaged. If any of the products have been damaged, immediately notify your Graham Representative.

Table #1	Installation Tolerances (+/- Target)		
	Inches/ foot	Inches Maximum	Method of Measurement
Level (Horizontal Measurement)	1/32"	1/8"	Measure sill using level
Plumb (Vertical Measurement)	1/32"	1/8"	Measure jambs using level or plumb bob
True (In Plane Measurement)	1/32"	1/8"	Attach strings across corners. Measure where they cross
Extrusion Straightness	1/64"	1/16"	Measure with straight edge.
Square (Diagonal Measurement)	N/A	1/16"* 1/8"***	Measure diagonal corners (Difference/2)
* Openings up to 20 sq. ft.		**Openings 20 sq. ft. and over	

B. Install the products in accordance with the shop drawings.

C. It is not recommended to drill through any sills. If fasteners are required to penetrate the sill; sealant must be applied in the pre-drilled hole first. Drill the hole, clean out the drill shavings/debris, clean around the hole area, apply sealant in the hole, install the fastener, and then seal over the fastener head.

D. The sill will need adequate support. The sill must be level in accordance with Table 1.

E. Never place fasteners too close to the edge of masonry substrates. Refer to fastener manufacturers guidelines for proper edge distance, load capacity and installation techniques.

F. The fastening schedule will generally be determined by a structural engineer. If a fastening schedule has not been specified, Graham Architectural recommends applying at least #8 screws with a minimum of 1" engagement in the substrate at a maximum of 3 - 9 inches from each corner, and then a maximum of 12 inches apart. (Note: Recommended fastening does not apply to projects that have blast mitigation, hurricane requirements, or special wind conditions)

G. Seal the exterior in accordance with the shop drawings.

H. Insulate between the rough opening and the window frame (or receptor).

I. These instructions are not intended to replace ASTM E2112, but provide guidance where ASTM E2112 refers to manufacturer's installation instructions.

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- A. Graham Architectural offers windows, doors and receptors with integral nail fins, as well as nail fins that can be applied. These instructions will cover the application of the nail fins as well as how to seal the nail fins to the building conditions.
- B. All products will need a solid surface to attach the nail fin to. The type of fastener, the frequency of application, and the edge distance for that particular type of fastener will need to be determined by a Structural Engineer. If a fastening schedule has not been specified, Graham Architectural recommends applying at least #8 screws a maximum of 3 - 9 inches from each corner, and then a maximum of 12 inches apart. All fasteners will need to be long enough to extend through the nail fin, penetrate through the sheathing and embed at least 1" into the framing in order to support the window during any expected wind load events.
- C. Applied nail fins slide or clip onto the window frame, and then the corners are attached with screws. These systems will need to be continuously sealed to the window frame, and the corners will need sealed.
- D. Nail fins shall be continuously sealed with sealants and flashing to the building, and shall incorporate into the weather resistive barrier (house wrap). Weather resistive barriers (WRB) come in either liquid applied or in fabric style products.
- E. If a fabric style weather resistive barrier is used, the WRB will need to be cut to allow the window to be installed. Cut along the full length of the top edge of the opening. Then cut an upside down "V" shape starting at the bottom corners of the opening. Where these cuts come together, make a vertical cut through the center of the WRB (See Figure #1). Fold the jambs and the sill into the opening and cut off the excess. Cut at 45 degree angles starting at the top corners of the opening, until a location is met that is the width and height of the flashing. This will make a flap that will go over the head flashing (See Figure #2).

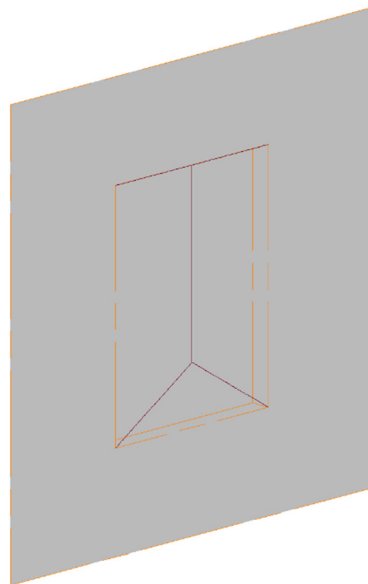


Figure #1

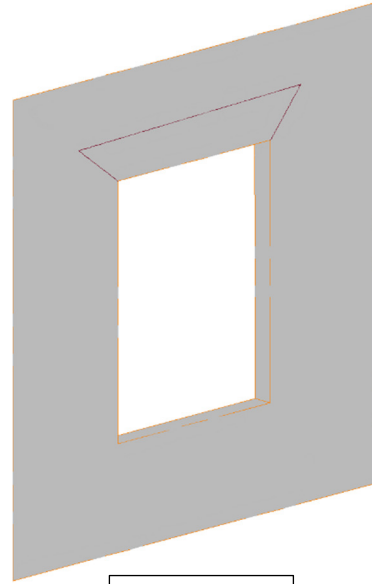


Figure #2

# WEATHER BARRIER FLANGE/ NAIL FIN INSTALLATIONS

- F. The sill flashing must be applied first. The top edge of the flashing must be in line with the sill of the opening (See Figure #4). The flashing must extend past the ends of the opening, but no further than the width of the jamb flashing (not applied yet).

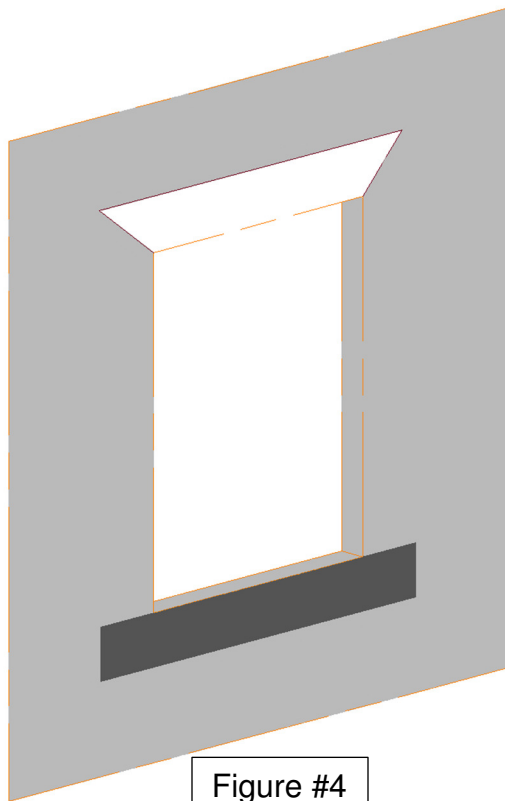


Figure #4

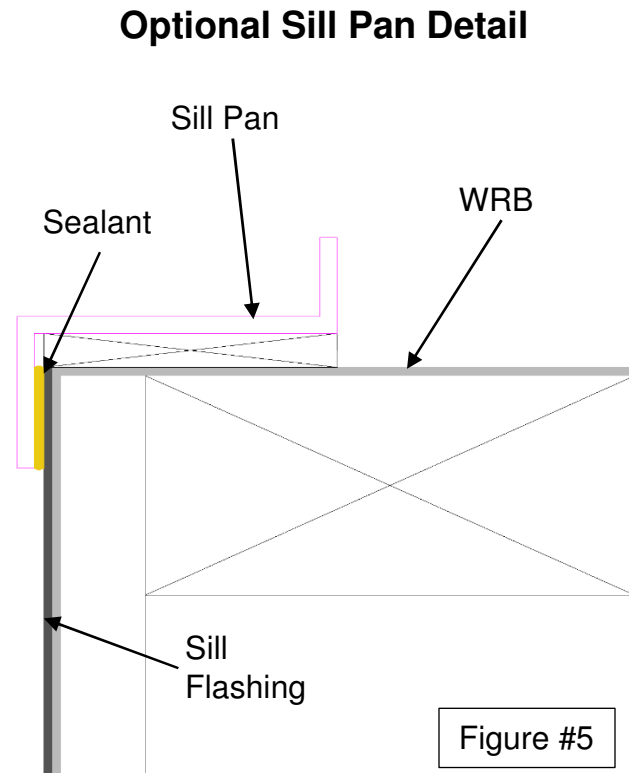
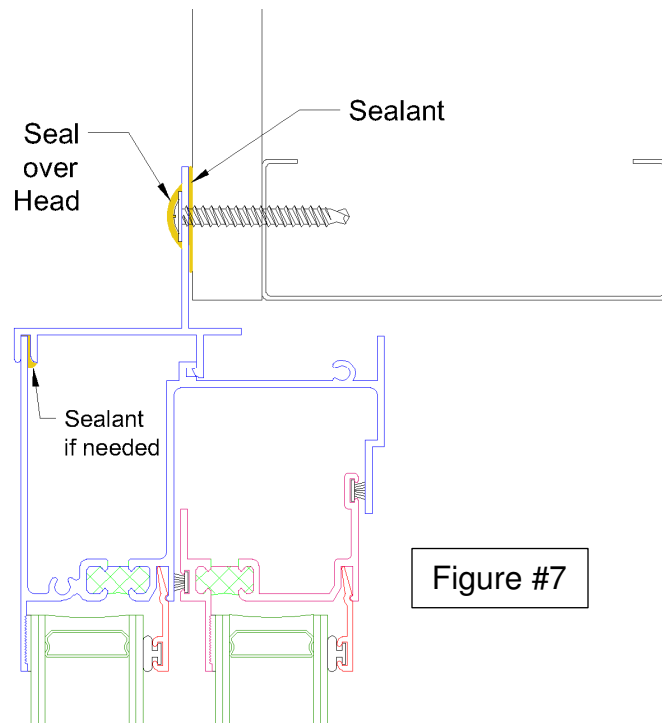
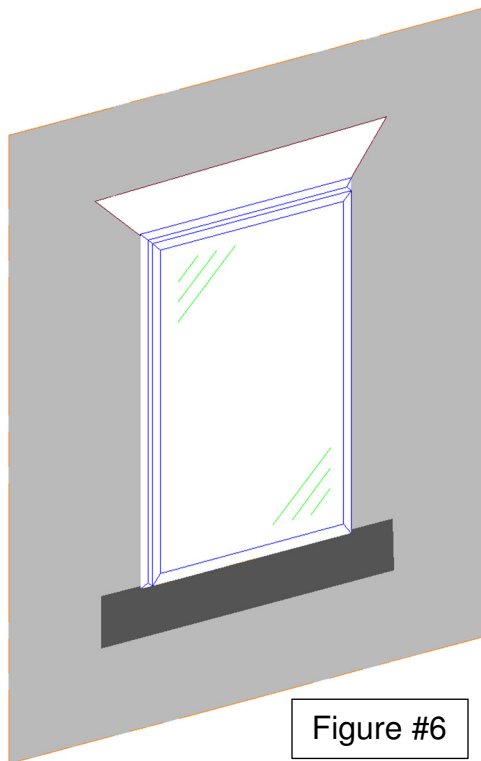


Figure #5

- G. ASTM E2112 recommends, and some water proofing consultants require, sill pans under the sill when installing nail fin products. If metal sill pans are used, make sure they do not cause the thermal break to be by-passed. A sill pan must have ends dams, and a self-supporting interior leg. The end dams and interior leg must be high enough for the water resistance of the building (as specified or 20% of the design pressure). The sill pan must also have a method to seal it to the exterior of the wall.
- H. If a pre-purchased sill pan is used, follow the manufacturer's installation instructions for the sill pan. If the sill pan is field formed, it will need secured to the opening with fasteners through the end dams. Depending on the width of the opening, and the design pressure of the building, fasteners might be needed through the bottom of the sill pan. In this case, pre-drill the holes through the sill pan, clean the hole, inject sealant in the hole, and then apply the fastener. Once the fastener is applied, seal over the fastener head.

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- I. If the sill pan has a flat leg that attaches flush to the wall surface, it will need back-sealed prior to the sill pan being installed (See Figure #5). This will seal to the sill flashing. If the exterior leg terminates perpendicular to the wall surface, it will need backer rod and sealant after the sill pan is installed. It is recommended that the top edge of the end dams are sealed to the rough opening.
- J. Clean the interior and exterior sides of the nail fin prior to the application of sealants.
- K. Apply shims to the rough sill, as necessary. Apply a 3/8" diameter bead of sealant on the back side of the nail fin, in line with where the fasteners will go through the nail fin (See Figure #7). Set the window (or door, or receptor) into the opening and press it tight into the sealant (See Figure #6).



- L. Install a fastener near one of the top corners to hold the window in place. Check the frame for level, plumb, square and the straightness of the extrusions. Window must be within the tolerances outlined in Table 1. Adjust as necessary, and install shims where needed. Shims must be installed in a manner that will ensure the product is square, level, and plumb without twisting the frame members. Install the fasteners as required. Make sure there is squeeze out of the sealant around the perimeter. Seal over the fastener heads.

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M. If the jamb flashing is not self-adhesive, apply a bead of sealant on top of the nail fin, and continue several inches above the opening. If the jamb flashing is self-adhesive, check with the manufacturer to make sure the adhesive does not react with the sealant that was used behind the nail fin. The jamb flashing will need to extend below the rough opening until it overlaps the sill flashing. The top of the jamb flashing will need to extend above the rough opening by several inches, but cannot extend past the top of the head flashing (See Figure #8).

N. If the head flashing is not self-adhesive, apply a bead of sealant on top of the nail fin. Apply a second bead where it will seal the top of the head flashing to the wall sheathing (See Figures #9 and 10). Install the head flashing, so it will extend past the outer edges of the jamb flashings.

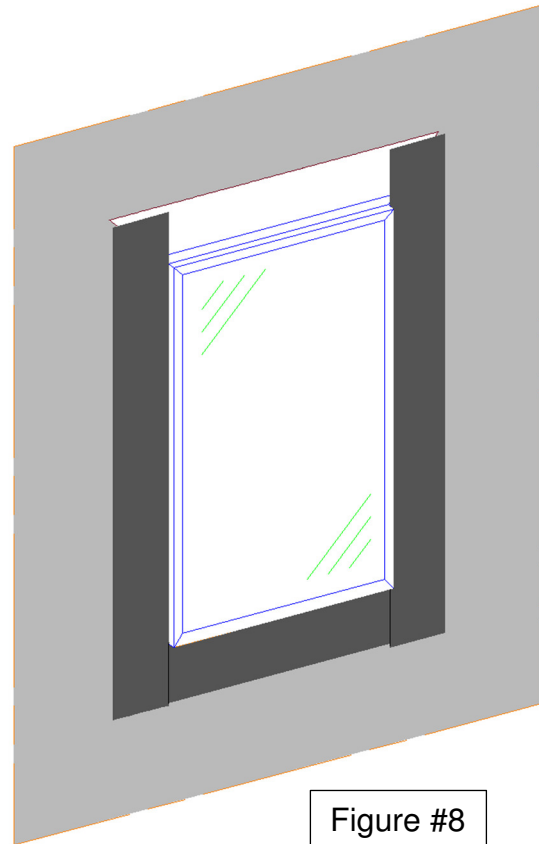


Figure #8

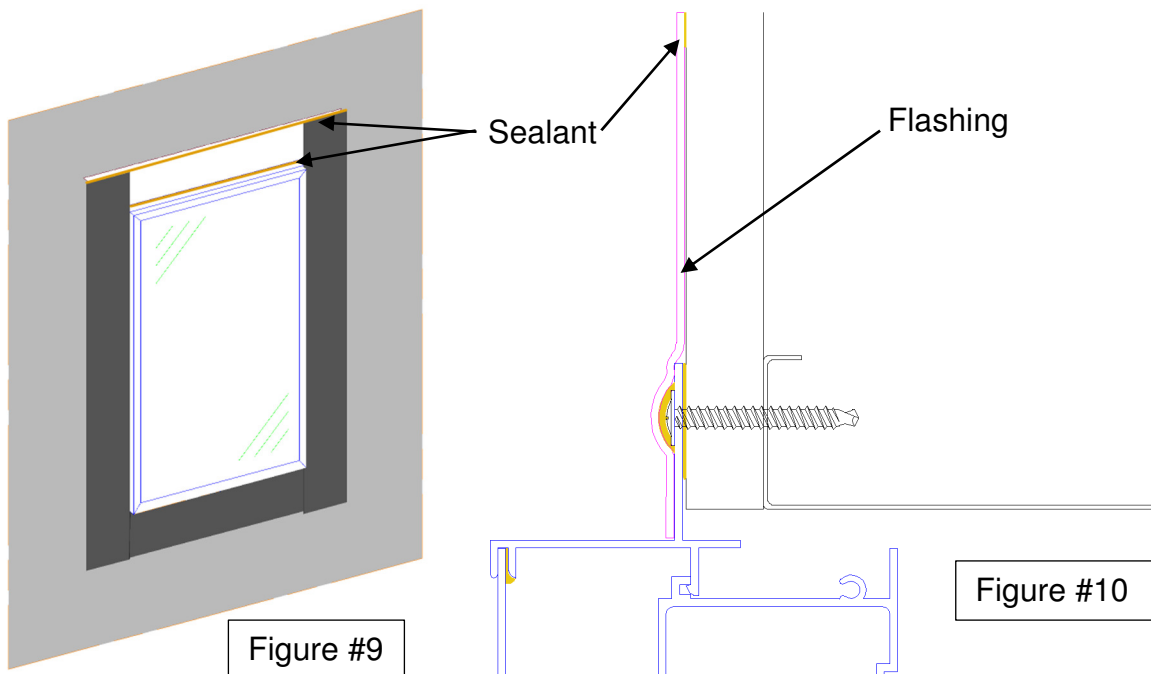


Figure #9

Figure #10



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- O. If a fabric weather resistive barrier was used, bring the flap back down on top of the head (See Figures #11 and #12). Tape the ends of the flap using the WRB tape.

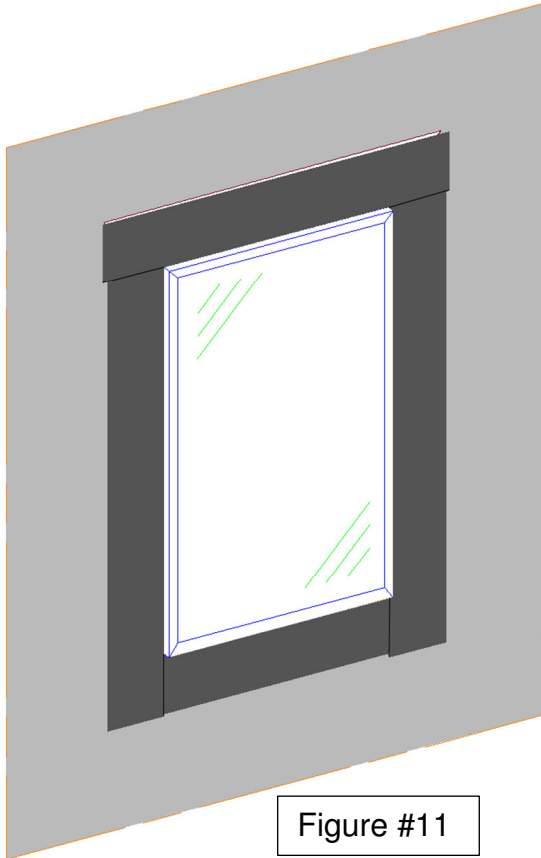


Figure #11

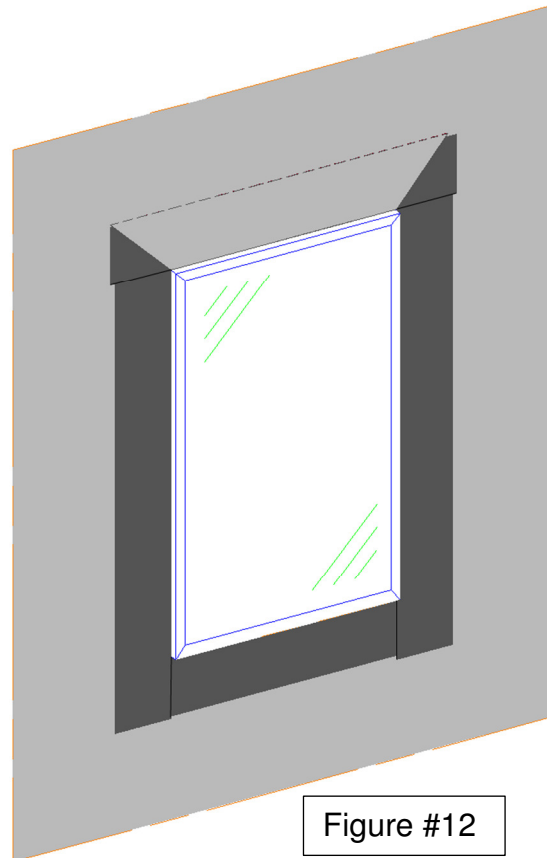


Figure #12

- P. Any fasteners for the exterior cladding cannot penetrate the nail fin of the window, and should not penetrate the flashing within 3" of the edge of the nail fin.
- Q. If the wall uses a liquid-applied WRB, or the weather-resistant barrier is incorporated in the exterior sheathing system, skip steps E and O in the procedure above, but the remaining steps of the procedure apply.