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**HOMEOWNER'S WINDOW
MAINTENANCE & OPERATION
MANUAL**

FOR:

ACOUSTICAL VINYL WINDOWS

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Congratulations . . . and thank you for your selection of Graham Architectural Products windows, which have become an integral part of your new home or remodeling project. All products are manufactured to the highest possible standards. All Graham windows and patio doors are engineered and randomly selected for testing by certified third party laboratories to assure that our products perform as designed day in and day out. Like any highly-engineered product, periodic maintenance is required to assure a lifetime of low maintenance performance.

There are several elements the homeowner should pay attention to when cleaning and maintaining their Graham window or door. These elements are:

- The cleanliness of the vinyl, glass, and screen
- The operability of vents and sashes
- Effectiveness of the water drainage system
- Understanding of condensation and humidity

Cleanliness of the Vinyl, Glass, and Screen

In order to extend the life of your window, it is very important to keep it clean. Many kinds of debris and dirt build-up can harm your window and decrease its durability. The vinyl must be cleaned on a regular basis to prevent a build-up, which could be difficult to remove later. Although this sounds like a difficult task, it really is quite easy to clean the vinyl with little effort. In most cases, a heavy rain is sufficient to clean the exterior side of the window.

Normal Maintenance for Vinyl

Wash the vinyl using a soft cloth or ordinary soft bristle brush. Do not use cleaners containing aggressive organic solvents because they could affect the surface appearance of the vinyl. Examples of such cleaners are: chlorine bleach, liquid grease remover, nail polish remover, and oven cleaners. In some cases, you may wish to use a mild abrasive cleaner such as Soft Scrub®. Care must be taken using any abrasive; it could have a negative affect on the sheen of the vinyl.

Normal Maintenance for Glass

Clean the glass using standard glass cleaner such as Windex®. Do not use abrasive cleaners, as it will scratch the glass. Decals and dried debris can be removed with a new single edged razor blade wetting the glass first with glass cleaner.

Normal Maintenance of the Screen

To clean the screens, simply hose them off with water. For built-up dirt, you can use a mild soap and sponge, then rinse thoroughly. Do not use abrasive cleaners. Damaged screen mesh can be replaced by the owner or at most hardware stores. Do not use aerosol cleaning agents on screens, as certain propellants in the cleaners can cause damage to the molded corner parts.

Vent and Sash Operation

General

The windows which have been installed into your home are referred to as “dual windows.” This means that there are two sets of sash or vents (interior and exterior) separated by a wide air space. This wide air space between the panes of glass results in better noise reduction. The interior sash/vent must be operated or removed for cleaning the exterior sash/vent.

Hung Windows

Hung windows are windows with the operating sash moving in a vertical direction. These windows are balanced using block and tackle devices; one on each side of the operating sash. To operate the sash, make sure the locking device is in the unlocked position, grasp the pull handle, and slide the sash away from the locking frame member (upward for the bottom sash and downward for the top sash). For cleaning the sash, your windows have been provided with a tilt-in feature. This enables cleaning all surfaces of the glass simply by engaging the tilt latches on each sash and tilting them to the interior of the house. More detail is given in the **V3900** window section of this manual.

Horizontal Sliding Windows

Horizontal sliding windows are windows where the operating sash move in a horizontal direction. To operate the sash, make sure the locking device is in the unlocked position, grasp the pull handle, and slide the sash away from the locking frame member. Ensure that there is no debris in sill tracks, as this will impede smooth operation. To remove the sash, open the sash, and then lift the sash up to clear the bottom sill. More detail is given in the **V0400** window section of this manual.

Casement/Projected Windows

Casement window:

A window unit in which the single vent cranks outward, to the right or left.

Projected window:

A window unit that the vent projects either inward or outward at the top or the bottom.

All moving hinge and locking hardware should be kept clean and lubricated at least annually with a greaseless type lubricant. Interior sash removal requires the removal of the interior vinyl glazing beads. More detail is given in the **V6900** window section of this manual.

Fixed Windows

Fixed windows are those windows that have non-operating sash or fixed glazing. Interior sash removal requires the removal of the interior vinyl glazing beads. More detail is given in the **V1100** window section of this manual.

Water Drainage System

Your Graham windows incorporate a low-point, high-pressure weep system. This system uses small holes in the window sill, which will route water to the exterior face of the window or door through very small openings (weep holes). It is customary for water to accumulate in the sill area when raining. There is no cause for alarm, as this water will weep to the exterior. At times, the small passages get plugged with excess dirt and debris. This is evidenced by water standing in the sill long after the rain has stopped or overflowing the sill during a rain period. In most cases, a piece of wire or a pipe cleaner inserted into the weep holes will clear the debris (**Photo 1**). In severe cases, the snap-in sill track may be removed with an angled tool, such as an Allen wrench, to expose possible clogged openings in the sill frame. Highly-effective weep systems have been engineered into all Graham window products to allow for water drainage. Please keep weep holes clean and clear so that water drains to the outside, as designed. To ensure proper operation, keep the sill of your windows free of dust, and periodically clean your weep holes with a small soft bottle brush.



Photo 1

Weep holes – must be clear of debris.

Understanding Condensation & Humidity

Condensation on exterior surfaces of windows and doors occurs because of the increased U-value of the windows produced today. On clear nights with still, humid air, condensation occurs when moisture-laden air comes in contact with a glass surface that is below the dew point temperature. "Dew point" is the temperature at which the air will no longer hold its moisture vapor. Cold air holds less moisture than warm air. In high-performance windows with low-E glass and argon gas-filled, the outside glass surface will actually be colder than a similar "regular" window without these features. This is because the high-performance window is doing its job—reducing heat flow to the outside and preventing the warming of the exterior surface above dew point. This is not a window defect. Like dew forming on grass and car hoods, it is a natural phenomenon. Condensation on interior surfaces of windows and doors occurs because of a combination of high humidity and insufficient air exchange inside the home. In many windows built using older technologies, there were gaps in the windows where a significant draft could be felt and where air would flow. This exchange of air, in many cases, was sufficient enough to prevent condensation from forming. The high-performance windows of today are designed to be as air tight as possible to reduce heat loss. By doing this, it reduces air flow, and in humid conditions, will allow for condensation to form on windows. Again, this is not a window defect.

Other factors that influence condensation are:

Window Size- Larger windows may have a higher tendency to show condensation.

Window Location- Windows protected from the wind will have a higher tendency to show condensation.

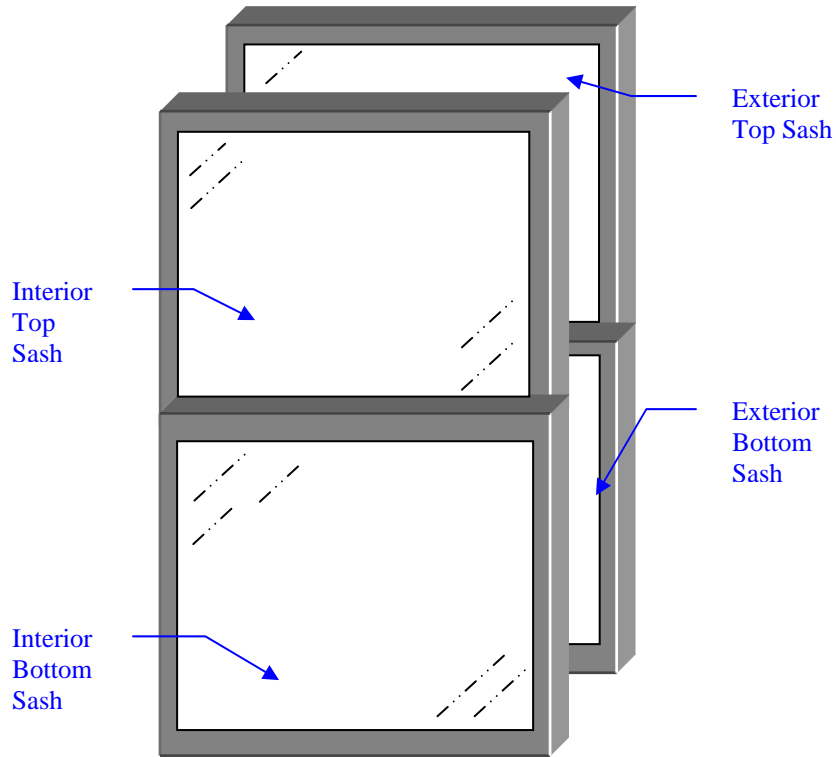
Screens- Windows protected by exterior screens may have a different condensation behavior than the same windows without screens under the same conditions.

Air Circulation- Good air circulation, such as exposure to wind, reduces the occurrence of condensation. Building projections, foliage, and other wind breaks may contribute to condensation.

Interior Shades- Opening interior shades or blinds may reduce condensation by allowing more heat to transfer to the outside or allow interior room airflow to come in contact with the window.

Minor differences in conditions can cause condensation to form on one window and not on another, even when they are side-by-side. Finally, condensation on windows can be a seasonal, night-time event. When outside temperatures are warm, the glass temperature will usually be above the dew point. The same is true during cold, winter weather. Condensation will most often occur during transition months.

SERIES V3900 Double Hung Window



Activation of Tilt-In Sash for Cleaning

1. Release the sash lock, and raise the interior bottom sash 4 to 6 inches (**Photos 2 & 3**).
2. Unlock the exterior bottom sash, and raise 2 to 4 inches (**Photos 4 & 5**).
3. Slide the tilt latch plungers toward center of the window to release the interior bottom sash (**Photo 6**).
4. Tilt the interior bottom sash by gripping the meeting rail and pulling the top of the sash toward the interior of the room (**Photo 7**). For cleaning purposes, tilt the sash until it is resting on the window stool or other firm support (**Photo 8**).
5. Release the sash lock and lower the interior top sash until its bottom rail is about 3 inches above the rail of the lower sash, which was just tilted (**Photo 9**).
6. Slide the tilt latch plungers toward the center of the window to tilt the interior top sash, and tilt inward as described in step 4 above (**Photo 10**).

SERIES V3900 Double-Hung Window

7. Raise the exterior bottom sash until the top rail is just beneath the sash guide buttons **(Photo 11)**.
8. Slide the tilt latch plungers toward the center of the window, and tilt the sash inward approximately 2" or until it clears the guide buttons.
9. Raise the exterior bottom sash until the bottom rail is above the interior top sash that is already tilted inward **(Photo 12)**.
10. Continue tilting the sash inward until it rests on the interior top sash **(Photo 13)**.
11. Release the sash lock, and lower the exterior top sash until its bottom rail is about 3 inches above the rail of the bottom sash, which was just tilted **(Photo 14)**.
12. Slide the tilt latch plungers toward the center of the window to tilt the exterior top sash. Then, tilt inward as described in step 4 above **(Photo 15)**.

Screen Removal and Replacement

1. Raise both sets of bottom sash, and lower both sets of top sash approximately halfway **(Photo 16)**.
2. Grasp the screen removal tabs, and pull the screen toward the opposite side in a direction parallel to the face of the window **(Photo 17)**.
3. When the screen rail has disengaged from the screen-retaining leg of the window frame, push outward on the screen rail.
4. Hold the screen with hand to prevent it from falling.
5. Pull the screen to the interior of the house through the window opening **(Photo 18)**.
6. To replace the screen, reverse the procedure as described above.
Note: Engage the screen in the screen-retaining leg of the frame opposite the removal tabs to start the replacement procedure (Photo 19).

**SERIES V3900
Double-Hung Window**



**Photo 2
Unlock interior bottom sash.**



**Photo 3
Raise interior bottom sash 4-6 inches.**

**SERIES V3900
Double-Hung Window**



Photo 4
Unlock exterior bottom sash.



Photo 5
Raise exterior bottom sash 2-4 inches.

**SERIES V3900
Double-Hung Window**



Photo 6

Slide tilt latch plungers toward center.



Photo 7

Tilt lower sash inward.

**SERIES V3900
Double-Hung Window**



Photo 8

Support tilted sash.



Photo 9

Unlock interior top sash and lower until it is 3-4 inches above tilted bottom sash.

**SERIES V3900
Double-Hung Window**



Photo 10

Slide tilt latch plungers toward center.



Photo 11

Exterior bottom sash raised until slightly beneath sash guide button.

**SERIES V3900
Double-Hung Window**



Photo 12

Raise the exterior bottom sash until its bottom rail is above the interior top sash.



Photo 13

Tilt exterior bottom sash inward.

**SERIES V3900
Double-Hung Window**



Photo 14

Unlock exterior top sash, lower until 2-3 inches above bottom sash, and then slide tilt latch plungers toward center.



Photo 15

Tilt inward and rest upon previously tilted sash.

**SERIES V3900
Double-Hung Window**



Photo 16

Open all sash halfway.



Photo 17

Use screen removal tabs to remove screen.

**SERIES V3900
Double-Hung Window**



Photo 18

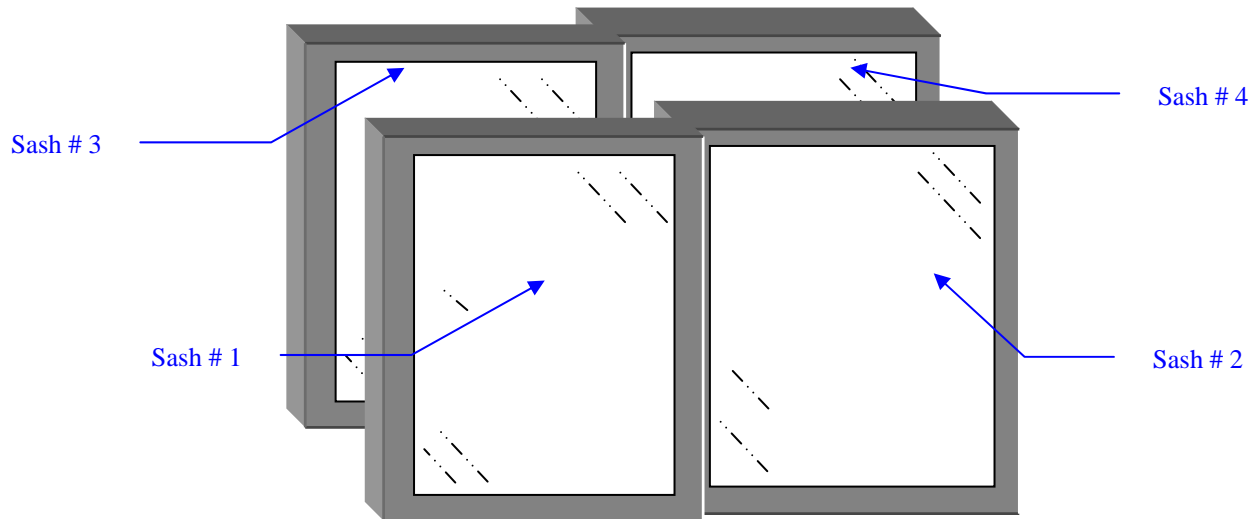
Pull screen to the interior of the house.



Photo 19

Slide screen into screen-retaining leg.

SERIES V0400 Horizontal Sliding Window



Removal and Replacement of Sash for Cleaning

There are four sash in the main frame of the window. For purposes of this manual, they will be referred to as sash # 1 through # 4. Sash # 1 will be the innermost sash progressing outward to sash # 4, the outermost, when looking at the window from inside the home. To remove the sash, the innermost sash (# 1) is removed first, and then # 2, # 3, and finally # 4.

1. Release the sash lock on sash # 1, and slide sash open until it is past the anti-lift device (**Photos 20 & 21**).
2. Firmly grasp both side rails approximately halfway down from the top, and carefully raise the sash into the head pocket (**Photo 22**).
3. With the sash raised, pull the bottom of the sash toward the interior of the house until the bottom sash rail is clear of the sill (**Photo 23**).
4. With the bottom rail still clear of the sill, lower the sash until it disengages from the head.
5. Continue steps 1-4 for each sash to be removed.
6. To replace the sash, the reverse order for the removal is followed (# 4, # 3, # 2, and # 1).
7. Insert top rail of sash # 4 into frame head.
Note: Make sure the sash is in the correct orientation; the rollers are on the bottom rail of the sash (*Photo 24*).

SERIES V0400 Horizontal Sliding Window

8. With the top rail engaged into the head, align the bottom rail of the sash with the sill sash track.
9. Lower the sash into the track and slide sash to check proper alignment.
10. Repeat steps 7-9 for the remaining sash in the order described above.

Screen Removal and Replacement

1. Open both sets of sash approximately halfway (**Photo 25**).
2. Grasp the screen removal tabs, and pick up screen toward the opposite side in a direction parallel to the face of the window (**Photo 26**).
3. When the screen rail has disengaged from the screen-retaining leg of the window frame, push outward on the screen rail.
4. Hold the screen with both hands (**Photo 27**) and rotate 90 degrees.
5. Pull screen to the interior of the house through the window opening (**Photo 28**).
6. To replace the screen, reverse the procedure as described above.
Note: Engage the screen in the screen-retaining leg of the frame opposite the removal tabs to start the replacement procedure (*Photo 29*).

SERIES V0400
Horizontal Sliding Window



Photo 20
Release sash lock.



Photo 21
Open sash past anti-lift device.

SERIES V0400
Horizontal Sliding Window



Photo 22

Grasp side rails and lift sash into head.



Photo 23

Pull bottom of sash toward interior of house.

SERIES V0400
Horizontal Sliding Window



Photo 24

Sash roller is on bottom of sash.



Photo 25

Open all sash halfway.

SERIES V0400
Horizontal Sliding Window



Photo 26

Use screen removal tabs to remove screen. Push up and then outward.



Photo 27

Hold screen with both hands and rotate.

SERIES V0400
Horizontal Sliding Window



Photo 28

Pull screen to interior of house.



Photo 29

Slide screen into screen-retaining leg.

SERIES V6900 Casement Window



Interior Sash Removal and Replacement

Note: The interior screen must be removed prior to sash removal. See screen removal below.

1. The interior glass is contained in a removable sash. Snap out the two side glazing beads by pressing down on the interior edge of the glazing bead toward the sash. Then, while continuing to press down on the bead, remove the bead by sliding it toward the center of the glass until it has disengaged from the frame (**Photos 30 & 31**).

Note: A flat blunt tool can be used to start the glazing bead, but be careful not to damage the plastic bead because it will be reused later.

2. Remove the top and bottom glazing beads in the same manner (**Photo 32**).
3. Carefully lift the sash out of the frame by tilting the top of the sash inward. Then, grasp the side rails about midway (**Photo 33**).

SERIES V6900 Casement Window

4. To replace the sash, the reverse procedure as described above is followed.
5. Insert the bottom rail of the fixed sash into the sill of the frame.
6. Tilt the top of the sash inward toward the main frame and into the sash track.
7. The glazing beads are replaced starting with the top, then bottom, followed by the sides.
8. To install the glazing beads, start at one end inserting the flat portion of the glazing bead into the glazing rabbit of the frame (**Photo 34**).
9. From that end, continue laterally to press the bead into the pocket (**Photo 35**).
10. Continue this process with the remaining glazing beads.

Screen Removal and Replacement

1. The interior screen is held in place with plastic retaining tabs.
2. To remove the screen, rotate the retaining tabs such that the screen moves freely in the frame (**Photo 36**).
3. The screen can now be pulled inward by grasping the side rails about ¼ way down and pulling inward (**Photo 37**).
4. To replace the screen, reverse the procedure described in steps 1-2 above. Make sure the retaining tabs are rotated to hold the screen in place.

**SERIES V6900
Casement Window**



Photo 30

Start bead with flat blunt tool.



Photo 31

Remove side glazing beads first.

**SERIES V6900
Casement Window**



**Photo 32
Top glazing bead removal.**



**Photo 33
Tilt top of sash inward and grasp side rails.**

**SERIES V6900
Casement Window**



Photo 34

Install top bead first, beginning at one corner.



Photo 35

Once bead is engaged on end, continue to press in place as shown.

**SERIES V6900
Casement Window**



Photo 36

Rotate retaining tab away from screen.



Photo 37

Tilt screen inward and remove.

SERIES V1100 Fixed Window



Interior Sash Removal and Replacement

1. The interior glass is contained in a removable sash. Snap out the two side glazing beads by pressing down on the interior edge of the glazing bead toward the sash. Then, while continuing to press down on the bead, remove the bead by sliding it toward the center of the glass until it has disengaged from the frame.

Note: A flat blunt tool can be used to start the glazing bead, but be careful not to damage the plastic bead because it will be reused later *(See Photos 38 & 39)*

2. Remove the top and bottom glazing beads in the same manner **(Photo 40)**.
3. To replace the sash, the reverse procedure as described above is followed.
4. Insert the top rail of the fixed sash into the head of the frame **(Photo 41)**.

SERIES V1100
Fixed Window

5. Lifting upward on the fixed sash, move the bottom rail of the sash toward the sill and insert into the sash track.
6. The glazing beads are replaced starting with the top, then bottom, followed by the sides.
7. To install the glazing beads, start at one end, inserting the flat portion of the glazing bead into the glazing rabbit of the frame (**Photo 42**).
8. From that end, continue laterally to press the bead into the pocket (**Photo 43**).
9. Continue this process with the remaining glazing beads.



Photo 38

Start bead with flat blunt tool.

**SERIES V1100
Fixed Window**



Photo 39

Remove side glazing beads first.



Photo 40

Top glazing bead removal.

**SERIES V1100
Fixed Window**



Photo 41

Insert top rail of sash into head.



Photo 42

Install top bead first, beginning at one corner.

SERIES V1100
Fixed Window



Photo 43

Once bead is engaged on end, continue to press in place as shown.