# *Port of Seattle*

## *Sound Reduction Program*

[redacted]

# Home Owner's Instruction Manual

Window and Door products by:

CARE-FREE Windows
19720 Bothell-Everett Hwy SE
Bothell, WA 98012
(206)4817101

***Sales Representative:***

Randy Stone
(206)481-7101

Contractor: SKM Construction
14415 SE 143rd Place
Renton, WA 98059

# *Homeowner's Instruction Manual*

Enclosed within this manual you will find helpful information covering your CARE-FREE Windows purchase. Each and every CARE-FREE Window comes with a 10-year guarantee. If for any reason you are not satisfied with your CARE-FREE windows products, call (206)481-7101 and talk with our customer service department.

Included in this packet you will find: a condensation question and answer guide, cross sections and callouts of various windows on your order, diagrams of the operation of your windows, a parts replacement list if you should ever need parts copy of your order, the contractors name that performed the Installation of your CARE-FREE Windows, and a CARE-FREE WINDOWS 10 YEAR GUARANTEE WITH YOUR NAME AND INVOICE NUMBER INCLUDED.

On the copy of the order will be the product information if you should ever have a warranty claim or need to order any part in the future. The invoice number and date are included with the installation contractor information.

All CARE-FREE Windows products are made of polyvinylchloride (PVC) and are built to last. Our product unlike wood or aluminum, won't rot, warp, chip, crack, peel, mildew,fade,corrode and never need painting. To care for your CARE-FREE Windows, simply wipe them down with a damp cloth and a mild soap. Keep all tracks free of dust, sand and dirt. If while washing your window you should get water in the slide tracks, don't worry. All CARE-FREE Windows are designed to weep moisture to the outside.

You're CARE-FREE Windows are not only sound resistant, but they will dramatically improve your weatherization as well. Since vinyl doesn't conduct cold like aluminum windows, your vinyl window will keep your home more comfortable, reduce drafts, and reduce condensation.

The diagrams or instructions on the following pages will help to explain how to remove and replace panels and screens. Should you not understand how to operate any CARE-FREE Windows product, feel free to contact our customer service department at (206)481-7101.

# 10 - YEAR GUARANTEE

Customer satisfaction is our primary concern. ◆ That is why *CARE-FREE Windows* guarantees its vinyl window and door products for 10-years from the date of purchase. ◆ This Guarantee covers all defects in materials including bronze laminate or paint, and/or workmanship in products manufactured by *CARE-FREE Windows*. ◆ It's as simple as that. ◆

In the event a defect does occur, *CARE-FREE Windows* or an authorized contractor will, solely at the discretion of CARE-FREE Windows, repair or replace the defective product. ◆

This 10 Year Guarantee does not apply to products not manufactured by *CARE-FREE Windows* or damage to walls, floors or other structural parts. ◆ It also does not cover insulated units not installed by *CARE-FREE Windows* or the authorized contractor, glass breakage, incidental or consequential damage caused by misuse of the product or acts of nature (including fire, flood and earthquake). ◆

All claims must be made in writing to CARE-FREE Windows at the address below. ◆

RELIANT BUILDING PRODUCTS
ATT: RELIANT GUARANTEE SERVICE
615 CARSON ST
BRIANT TEXAS 77801-4817
BRIAN?

Paul D. Benson
President

Customer Name: [redacted]

Invoice Number: [redacted] Invoice Date: March 2, 1998

ALL SIDE WINDOW
OCT 2000

ALL SIDE WINDOW CO

RELIANT BUILDING PRODUCTS
979-779-7708
888-253-8439 ASK FOR
ASK FOR CLAIM PACKET

CARE-FREE® WINDOWS

197720 Bothell-Everett Highway
Bothell, Washington 98012-8124
(425) 481-7101

Effective Date 3-1-97

# Humidity and Condensation

(or how to reduce your moisture problems)

CARE-FREE WINDOWS

19720 Bothell-Everett Highway S.E.; Bothell, WA. 98012-8124; (206)481-7101

**Q. What is Humidity?**

**A.** Humidity is water vapor, or moisture, in the air. Usually it's invisible. But sometimes, as in the form of steam or ground fog, it's concentrated enough to be seen. Nevertheless, all air contains a certain amount of moisture, visible or not.

**Q. Where does the moisture come from?**

**A.** There are many things that generate indoor moisture. The normal perspiration and breathing of a family of four adds about half a pint of water to the air every hour. Cooking three meals a day adds four or five pints of water to the air. Each shower contributes another half pint. In fact, every activity that uses water (like dishwashing, mopping floors, doing laundry) adds moisture to the air. The truth is, daily living activities of a family of four can add more than 18 gallons of water a week to the air in their home. And the more water vapor in the air, the higher the relative indoor humidity.

**Q. What is relative humidity?**

**A.** Air can only hold a limited amount of water vapor, and that amount depends on the air temperature. When air at a certain temperature contains all the vapor it can hold, it's said to have a relative humidity of 100%. Thus, when it holds only half as much vapor as it could, the relative humidity is 50%. Cooler air is capable of holding less vapor than warmer air. So air at $30^{o}$ F and 100% relative humidity actually contains less water than air at $70^{o}$ F and 100% relative humidity.

**Q. Just what is condensation?**

**A.** Fog on windows is a form of condensation. So is the water that forms on the outside of a glass of iced tea in the summer. It all comes from water vapor in the air.

**Q. What causes condensation?**

**A.** Excess moisture in the air. When warm, moist air comes into contact with cooler surfaces, the moisture condenses. That's because the cooler air surrounding cooler surfaces can't hold as much moisture as warmer air.

**Q. What does condensation on windows mean?**

**A.** Window condensation can be a danger sign. It may mean that excessive indoor humidity could be doing unseen damage to other parts of your home.

**Q. How can I tell if there's too much humidity in my home?**

**A.** Check for damp spots on ceiling and room-side surfaces of exterior walls, particularly closets. Look for water and ice on windows. Even water-filled blisters on outside paint surfaces indicate excessive indoor humidity.

**Q. What does excessive humidity do to my home?**

**A.** Excess humidity contributes to the deterioration of any home. It can pass through walls and freeze in the insulation. In the spring it melts, damaging your ceiling and walls. Or, excess humidity can force its way out through siding to form blisters under your exterior paint.

**Q. What happens if moisture is actually going through my walls?**

**A.** Because certain varnishes and paints block the flow of moisture, condensation can occur between the inside and outside walls, or under exterior paint surfaces. It can rot a home's wood frame and blister the paint.

**Q. Can moisture actually go through walls?**

**A.** You bet. It's because of a force called "vapor pressure." Moisture in wet air tries to flow towards drier air to equalize itself. This flow acts independently of air currents. In winter, inside air is much more humid than colder outside air. So the vapor pressure, or equalization process, actually forces the inside moisture through cement, wood, plaster, and brick, toward the outside.

**Q. Is condensation more prevalent in any geographical region?**

**A.** Yes. Condensation is more apt to occur in climates where the average January temperature is $35^{o}$ F or lower.

**Q. Does condensation occur only in the winter?**

**A.** Usually. However, condensation can occur whenever water vapor in the air comes in contact with a surface whose temperature is lower than the dew point (the temperature at which air becomes saturated and produces dew). During hot, humid summer days, for example, condensation can form on the outside of windows when conditioned air inside the house makes the surface temperature of the glass cooler than the dew point.

**Q. Does condensation depend on whether my home is new or old?**

**A.** Generally, yes. Years ago, before all the concern about energy efficiency, homes were built less weathertight than they are today. Insulation concepts were very basic. Walls and ceilings were built with much more porous materials. Water vapor could easily flow in and out of walls. Today's homes are much "tighter." Windows and doors are built to reduce air leakage substantially. Weatherstripping, modern insulation, vapor barriers, and construction techniques intended to keep out cold air all can lock moisture inside. As a result, moisture created by bathrooms, kitchens, laundries, and occupants no longer flows to the outside, unless provisions for mechanical ventilation have been made. So it's very easy to build up excessive, even harmful, moisture levels in today's homes.

**Q. Do windows cause condensation?**

**A.** Windows are not a cause, per se. They provide a ready medium on which the vapor can condense. But the primary cause of condensation is excessive moisture in the air. Windows are simply indicators of that moisture.

**Q. Why do I see condensation on my windows and patio doors first?**

**A.** Condensation is generally seen first on windows and patio doors because they tend to have the lowest temperature of any of the visible surfaces in the house.

**Q. Are windows the only place condensation is forming?**

**A.** Possibly not. There's a point between exterior and interior walls that's just as cold as the inside window surface. Chances are, if you can see condensation on your windows, it's also forming between the walls. Room-side surfaces of exterior walls are normally warmer, but occasionally condensation occurs on cold spots such as nailheads and in the corners of outside walls and closets. That's because insulation is weaker and circulation is restricted in those areas.

**Q. What causes condensation on windows and patio doors?**

**A.** Remember: cool air can't hold as much moisture as warm air can. So when the warm, moist air of the room comes into contact with the cold glass or frame surface, some water vapor which the cooled air can no longer hold is deposited onto the glass or frame. Condensation can also occur when the flow of warm room air over windows is restricted.

**Q. Do drapes and window shades cause window condensation?**

**A.** Drapes and other window coverings don't cause window condensation, but they can contribute to the problem by restricting the flow of warm room air over the glass surface. Therefore, condensation is more apt to occur when drapes are closed and shades are pulled down. Today's heavily insulated drapes and tighter shades can contribute to the problem even more.

**Q. What damage can excess window condensation do to windows?**

**A.** It can cause paint to peel on wood windows or stain the inside frame and window sill. Water can run down into and cause dampness around the window frame.

**Q. Are there any cases where window condensation is only temporary?**

**A.** Yes, there are primarily three: new construction or remodeling when the building materials used contain a higher level of moisture; the beginning of heating season until the moisture absorbed during the warm humid summer months can dry out; and quick drops in temperature during the heating season.

**Q. Can windows help control moisture in my home?**

**A.** Only in the sense that they can be opened for ventilation. Otherwise, windows are only indicators of excessive moisture in the air.

**Q. How can I reduce indoor humidity in winter?**

**A.** There are at least two steps you can take: Control the sources of humidity by venting gas burners and clothes dryers to the outside, and use kitchen and bathroom fans; and ventilate your home because the outside air usually contains less moisture and it will dilute the moisture in the inside air to decrease inside humidity.

**Q. Will reducing the humidity in my home during the winter help control condensation?**

**A.** It's the most practical way. Condensation indicates excessive humidity. Eliminate the excessive humidity, and you eliminate the condensation.

**Q. We have been experiencing a layer of moisture on the outside of our windows. What is this?**

**A.** What you are seeing is dew. The same condensation you can see on car windshields, lawns and streets on many mornings.

**Q. Why does this happen?**

**A.** Because you are fortunate enough to have High-Performance insulating glass, which glass and window manufacturers such as Alpine and Cardinal have developed in the last few years. At certain times of the year, under certain atmospheric conditions, it is possible for High-Performance glass windows to develop a layer of moisture on the outside surface.

**Q. What causes it?**

**A.** Alpine High-Performance windows glazed with Cardinal Low-E have a microscopically thin metal coating bonded to the inner surface of the sealed pane of glass. This metallic coating restricts the flow of heat across the air space between the panes of glass. In heating situations, it restricts heat from getting out of the house. In cooling situations it restricts heat from entering the house.

**Q. And that means what?**

**A.** Most of these situations occur during Spring and in the Fall. Usually when cool nights follow warm days... typical of these two seasons. The outboard pane of the High-Performance insulating glass unit is colder because interior heat is not able to get through our metallic blockade. And that is just exactly what you would want to happen.

**Q. Why doesn't it happen all the time?**

**A.** Condensation like this happens only when the surface temperature on the outside surface of the glass falls below the dew point of the air. When humidity levels are high, the window surface needs to be only a few degrees less than the air temperature to cause condensation to form on the outside of the window.

**Q. Why is it only on the windows?**

**A.** It isn't. If you go outside and examine the siding on your house or look at your grass you may see or feel the same condensation or dew. It's just that your windows are the most visible demonstration of the condensation.

**Q. I still don't understand how a window can be colder than the adjacent air.**

**A.** Now you've asked a really technical question. Here goes: the answer is night sky radiation, a phenomenon that has been exploited for thousands of years to collect water and to cool buildings in the desert. All surfaces on Earth radiate heat out toward the cool sky in the same way a wood stove radiates heat to a room. The clearer the night, the colder an exposed surface becomes, sometimes dropping several degrees below the adjacent air temperature. When this happens, bingo!, condensation forms.

**Q. Can I control it?**

**A.** Only if you can control outside relative humidity... and the temperature. In a few words, it's very difficult to do.

**Q. Is it anything to worry about?**

**A.** Not really. It usually only happens when interior and exterior temperatures and exterior relative humidity reach a critical point where condensation in inevitable. Depending on where you live this may be only a handful of times in the Spring and in the Fall.

**Q. Does it mean my windows are leaking air, or not working properly?**

**A.** No, in fact just the opposite is true. This is actually the best example of the efficiency of a low-E, argon filled glazed insulated unit. Because the outer glass surface is so well insulated from the heat inside, there is no compensation for nighttime cooling. Thus, condensation can happen. With ordinary (non-High Performance) windows, exterior heat losses are offset by the warmth passing through the glass from inside the house. This heat loss means that the outer surface of the glass remains at least as warm as the adjacent air. But remember, The main reason for having High-Performance windows is to retard heat flow. In the unlikely event that you might have a non-High Performance glass window in the same structure you probably would see that no moisture would form on this window, because interior heat would be warming the exterior glass.

**Q. Will this form on all windows?**

**A.** It can, but it will last longer and is most often seen on windows that face west because the morning sun does not reach them to help speed up evaporation.

**Q. Can I do anything to prevent all this from happening?**

**A.** Remember, this is probably only going to happen a relatively few days of the year... and then only under certain conditions. There is no practical way to prevent this natural atmospheric phenomenon.

# Summary

**Q. What steps can I take to reduce excessive humidity and control window condensation in my home?**

**A.** 1) Recognize that the best way to stop condensation is to reduce the moisture in the inside air.

2) Be sure that attic and crawl spaces are properly ventilated. Add a vapor barrier to cover the earth in the crawl space.

3) If you have single-pane windows, install insulated glass, vinyl insulated windows, or storm windows.

4) Be willing to try living in lower humidities.

5) Eliminate any controllable sources of moisture in your home

6) In winter, provide more controlled ways for moist inside air to get out. Run kitchen or other ventilation fans longer and more often than you normally do.

7) If troublesome condensation persists, see your heating contractor about an outside air intake for your furnace (required by some state building codes on all new residential construction), about ventilation of gas-burning heaters and appliances, or about installation of ventilation fans.

8) When you're planning a home, take the necessary steps outlined by a heating and ventilation engineer. Your gas or electric company may have a residential heating engineer you can consult with. And remember, the best way to reduce or avoid condensation is to reduce the humidity in the inside air.

# Definitions

**Water Vapor:** The gaseous state of water

**Moisture:** Dampness that is felt as vapor in the air or as condensed liquid on solid surfaces.

**Saturation:** The point at which no more water vapor can be absorbed by the air; 100 % relative humidity.

**Relative Humidity:** A ratio of the amount of water vapor actually in the air to the amount of water vapor that the air could potentially hold; usually expressed as a percentage.

**Dew Point:** The temperature at which air is saturated and water vapor begins to condense as a liquid.

**Vapor Pressure:** The gas pressure exerted by water vapor; usually expressed as torr (metric unit of gas pressure).

**Humidity:** The amount of moisture in the atmosphere.

**Condensation:** Water vapor changing from vapor to a liquid.

**Conditioned Room:** A room conditioned by heating or cooling to alter the existing temperature.

Source Material: Washington State Energy Office
University of Illinois at Urbana-Champaign
American Architectural Manufacturers Association
Cardinal IG, Minneapolis, MN.

***Series 280 Horizontal Slider: Vent Removal***

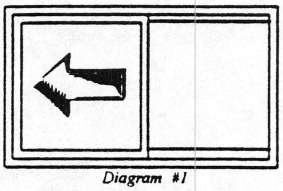


*Diagram #1*

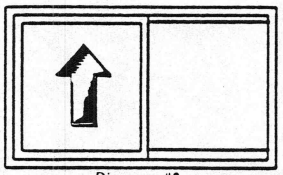


*Diagram #2*

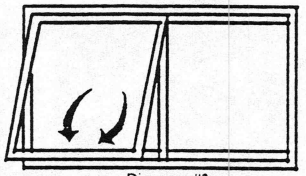
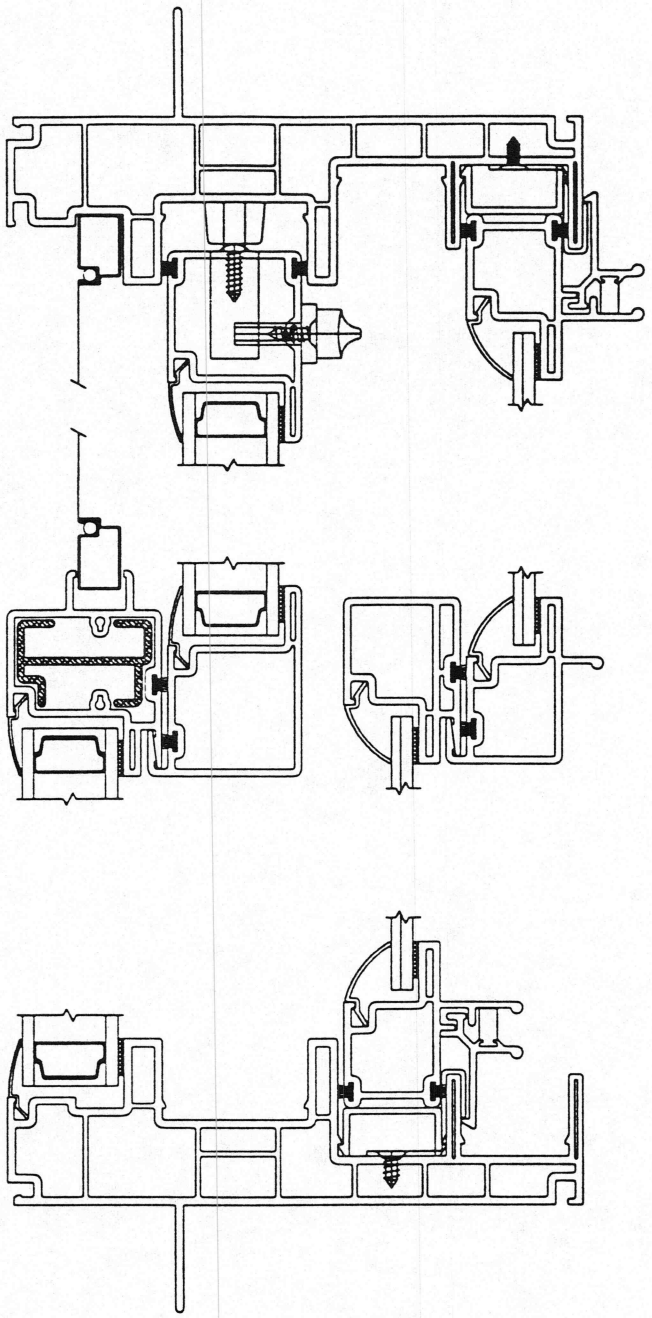
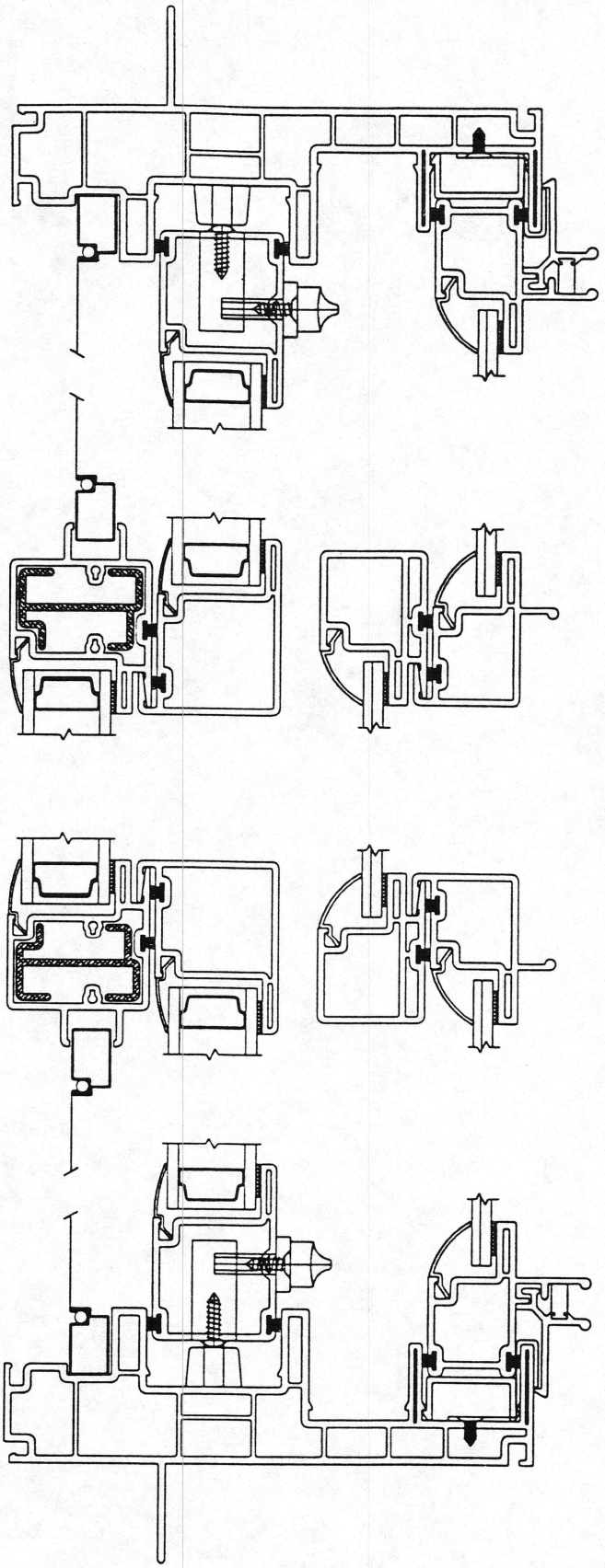


Diagram #3



HORIZONTAL VIEW – XO
1/2 SCALE

ALPINE SOUND SHIELD WINDOWS



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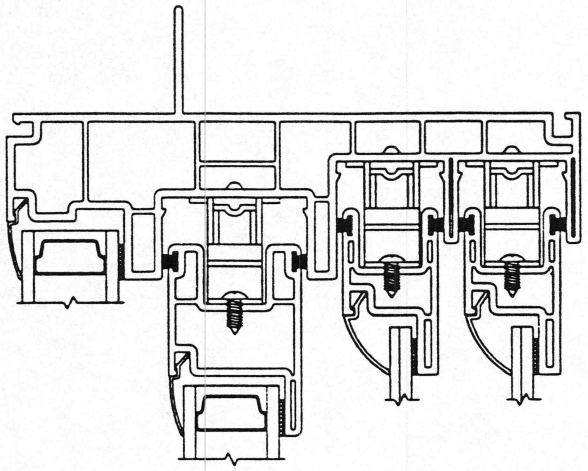
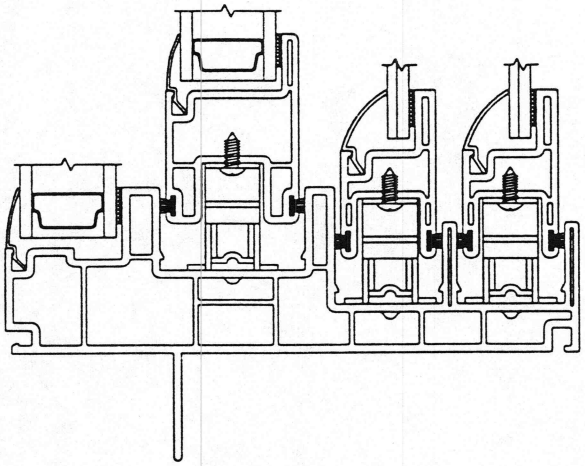
1/2 SCALE

ALPINE SOUND SHIELD WINDOWS





HORIZONTAL VIEW – ALL LITES
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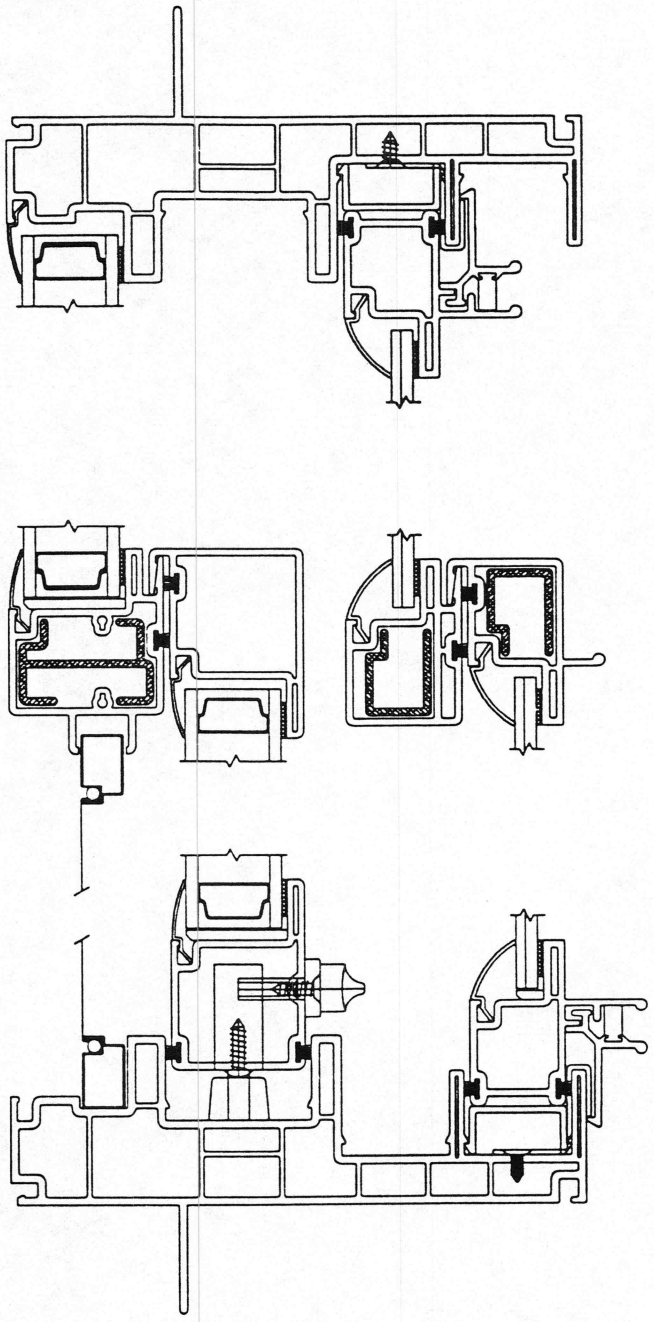
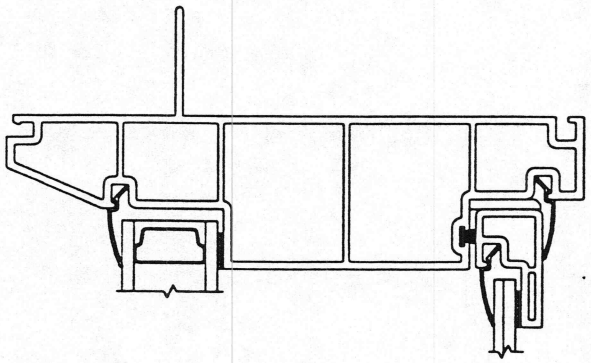
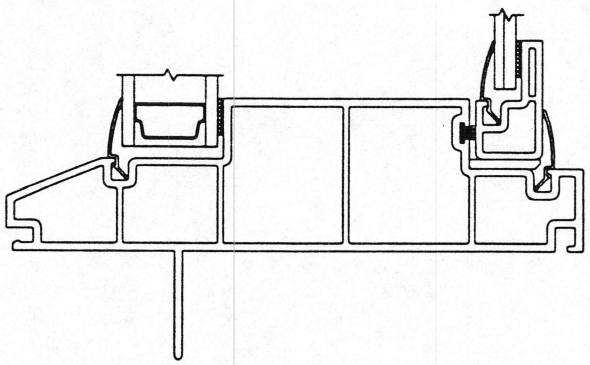
ALPINE SOUND SHIELD WINDOWS



VERTICAL VIEW – ALL LITES
1/2 SCALE

ALPINE SOUND SHIELD WINDOWS





HORIZONTAL VIEW
1/2 SCALE

ALPINE SOUND SHIELD WINDOWS

# *CARE-FREE Windows*
# *Replacement Parts Directory*

For more complete information on parts and ordering replacement parts, call CARE-FREE Windows. Any of the following can be replaced by the home owner without trouble. If original parts are damaged upon installation or are not worker properly, contact CARE-FREE Windows upon windows installation.

| *Part#* | *Part Description* | *Window Type* |
|---|---|---|
| D-4021-N | Tandem Roller | Series 170 Patio Door |
| 6266 | Panel Track | Series 170 Patio Door |
| 6227 | Screen Track | Series 170 Patio Door |
| M1420-075 | Roller Mounting Screw | Series 170 Patio Door |
| Die #2 | Stainless Steel Sill Cover | Series 170 Patio Door |
| TH-275 | Ventilator Grill | Series 170 Patio Door |
| 661-GT | Ventilator | Series 170 Patio Door |
| 4205 | Ventilator Hood | Series 170 Patio Door |
| 41-13-32-100 | Secondary lock | Series 170 Patio Door |
| 30080-32 | Secondary Lock Strike | Series 170 Patio Door |
| W232317W | Weather-stripping | Series 170 Patio Door |
| 6177 | Glazing Bead | Series 170 Patio Door |
| | | |
| 661-GT | Ventilator | Series 280 Horizontal Slider |
| 4205 | Ventilator Hood | Series 280 Horizontal Slider |
| 6177 | Glazing Bead | Series 280 Horizontal Slider |
| 6430 | Track | Series 280 Horizontal Slider |
| W232317W | Weather-stripping | Series 280 Horizontal Slider |
| 6152 | Vent Setting Block | Series 280 Horizontal Slider |
| 6153 | Fixed Setting Block | Series 280 Horizontal Slider |
| 6249 | Vent Anti-Lift | Series 280 Horizontal Slider |
| 9721-001 | White Night Lock | Series 280 Horizontal Slider |
| 9721-046 | Almond Night Lock | Series 280 Horizontal Slider |
| H-101 | Roller Housing | Series 280 Horizontal Slider |
| H-102 | Roller | Series 280 Horizontal Slider |
| A8301-30 | Cam Handle | Series 280 Horizontal Slider |
| 66900-061 | Weep Hole Cover | Series 280 Horizontal Slider |
| 8193 | Handle Strike | Series 280 Horizontal Slider |
| | | |
| 661-GT | Ventilator | Series 580 Single Hung |
| 4205 | Ventilator Hood | Series 580 Single Hung |
| 6177 | Glazing Bead | Series 580 Single Hung |
| W232317W | Weather-stripping | Series 580 Single Hung |
| 6152 | Vent Setting Block | Series 580 Single Hung |
| 9721-001 | White Night Lock | Series 580 Single Hung |
| 9721-046 | Almond Night Lock | Series 580 Single Hung |
| A8301-30 | Cam Handle | Series 580 Single Hung |
| 66900-061 | Weep Hole Cover | Series 580 Single Hung |

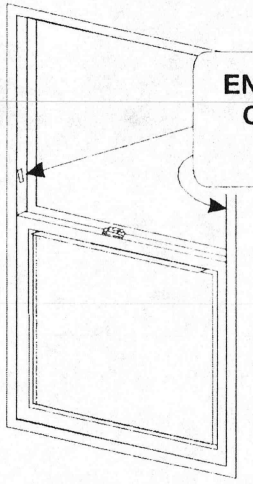
| | | |
|---|---|---|
| 8193 | Handle Strike | Series 580 Single Hung |
| 15P22 | Balance Take Out Clip | Series 580 Single Hung |
| 15P12 | Balance Sash Cam | Series 580 Single Hung |
| | Balance | Series 580 Single Hung |
| 6337 | Vent Stop | Series 580 Single Hung |
| 4995 | Glazing Bead | Series 780 Picture Window |
| kE-1409 | Glazing Bead | Series 290 Horizontal Slider |
| 18-10-32-100 | Single Hung Lift | Series 290 Horizontal Slider |

Please note window color when ordering parts. If screw are needed for the part you order, they will be included with the shipment. Any broken glass should be handled by an experienced glazing contractor. If windows do not operate correctly, or if insulated units develop moisture between the glass, contact your CARE-FREE Windows Representative at (206)4817101.

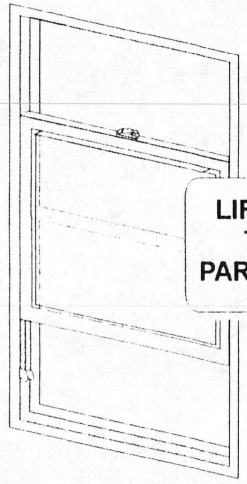
CARE-FREE WINDOWS SERVICE

# BALANCE REPLACEMENT & VENT REMOVAL

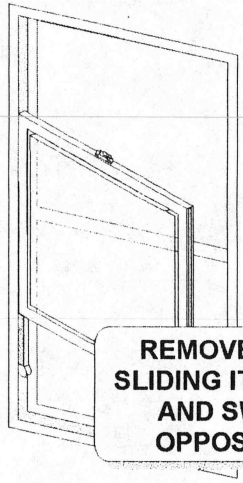
## FOR 580 & 570 SERIES SINGLE HUNG WINDOWS



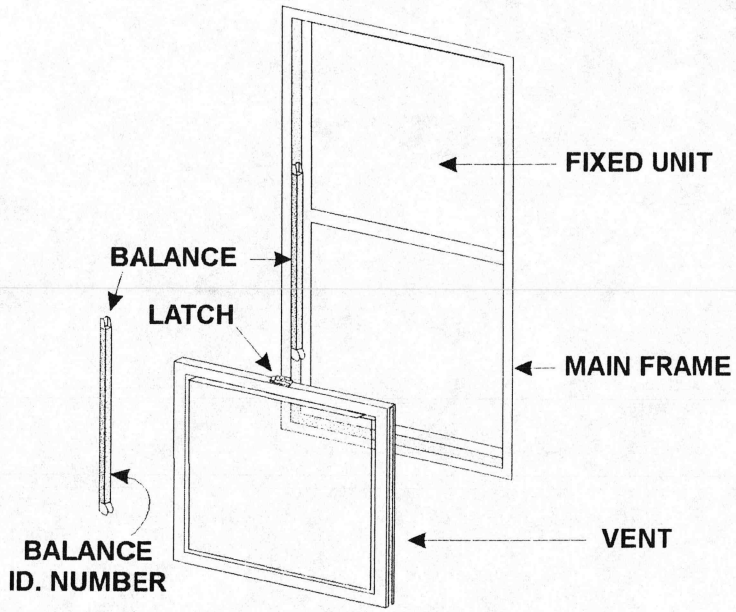
ENGAGE BOTH BALANCE CLIPS BY LIFTING THE BOTTOM EDGE OUT

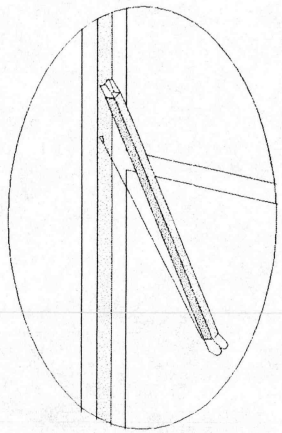


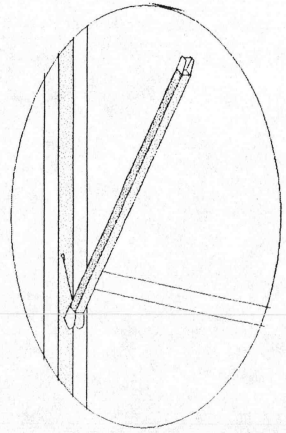
LIFT THE VENT UP UNTIL THE BALANCES ARE PARTIALLY IN VIEW BELOW



REMOVE THE VENT BY SLIDING IT LEFT OR RIGHT AND SWINGING THE OPPOSITE END OUT.





TO REMOVE THE BALANCES: GRASP WITH BOTH HANDS, PULL DOWN TO RELEASE THE BALANCE FROM THE CLIP. SLOWLY RAISE THE BALANCE, RETRACTING THE TENSION CORD FULLY. RELEASE THE HOOK FROM THE FRAME.