WINDOW SERVICING AIDE MEMOIRE

Contents

Contents

Introduction

This aide memoire has been produced to provide useful information and tips on common window related matters from basic servicing windows to replacing component's and act as a quick guide to direct users to other areas of relevant information which may be required.

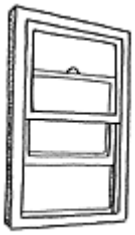
Window Types

A basic window consists of a head, two jambs and a sill. If the window is divided horizontally, a transom would be used, if vertically a mullion. The area of glass is known as the light. The opening part of the light is called the casement if hinged and the sash if sliding. A window isn't just meant to bring light and views into a room. It may also define a room's shape, provide an architectural focal point, allow for ventilation, and/or provide for emergency escape. To serve widely varying needs, windows are made in a vast array of types and sizes, each of which functions differently.

Broadly speaking, windows are either fixed or operable. Fixed windows are used mostly for accents or where light and views—but not ventilation—are important. Most unusually shaped windows are fixed, as are large picture windows. It is not unusual for a single window aperture to be filled by a frame that includes more than one type of window. So for example, a fixed pane is often positioned next to a casement sash, above which sits an awning light.

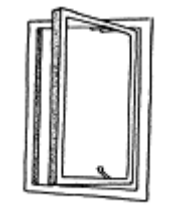
Operable windows may slide up, down, or sideways, or they may hinge outward or inward. The windows shown below represent the major types.

Contemporary windows are available in a number of innovative styles. You can buy bent-glass corner windows, curved-glass windows, or casements with no centre stile, for example. Some bow and bay windows, made up by combining fixed and operable units, are also common.

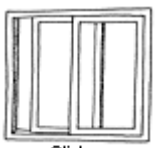

Double-hung

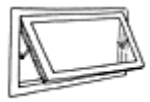
Double-hung windows, classic in appearance, offer excellent control of ventilation. They have an upper outside sash that slides down and a lower inside sash that slides up. Hidden springs, weights, or friction devices help lift, lower, and position the sash. With certain types, the sash can be removed, rotated, or tilted for cleaning. If only one sash slides, the window is called "vertical sliding" or "single-hung."

Casement windows, are hung singly or in pairs, side-mounted, top mounted or pivot mounted on hinges and may be operated by cranks that swing the sash inward or, more commonly, outward, or simply moved by hand.. They open fully for easy cleaning are easily decorated and offer excellent ventilation because they can "scoop-in" breezes.

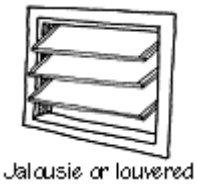

Casement window

Horizontal slider windows may have one or more fixed panels in addition to one or more panels that slide in horizontal tracks. Only half of the total window may be opened for ventilation at a time.


Slider


Awning window

Awning windows are like horizontal, top-hinged casements—they tilt out at the bottom, offering partial ventilation, an unobstructed view, and reasonably good security.


Jalousie or louvered

Jalousie windows, also called louvers, are made of glass slats set in metal clips that can be opened and closed in unison. These offer good ventilation but are drafty in cold climates.


Hopper window

Hopper windows are like awning windows except that they hinge at the bottom. Hoppers are normally used for ventilation above a door or another window, where they are protected by eaves.


Tilt-turn

Tilt-turn windows offer distinctive European styling and have a special advantage over conventional double-hung windows: They tilt in toward the room at the top and also turn a full 180 degrees for easy cleaning. This feature also makes them excellent emergency exits. Look for a multipoint locking system; this adds security and helps keep the window tightly closed.


Round top

Round-top windows and others that are geometrically shaped are used as architectural accents.


Bow window

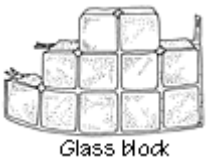
Bow windows project out like bays but have more than three sections that join to form a gentle curve. Center windows are generally fixed; side sashes are typically casement windows.


Seamless bent glass

Seamless bent-glass corner windows are fairly new and offer unobstructed views at the corner of a house.


Bay window

Bay windows project out from the wall; a center window parallel to the wall is flanked by two windows attached at an angle, usually casement or double-hung styles. Box bays have side windows at a 90-degree angle.


Glass block

Glass block is a light-allowing alternative to conventional windows, used both in exterior and interior walls. Various patterns allow varying degrees of view or privacy. Typical sizes are 6-, 8-, and 12-inch squares and 4-by-8 and 6-by-8 rectangles made for 4-inch-thick walls.

Selection of Window Fittings

The way that your window opens determines what sort of security fittings you should use so that the opening mechanism can be obstructed, and thus prevent the window from opening.

There are also specific fittings for use on the various window frame materials, so ensure that you select the right ones for your range of windows. In addition to selecting the right mechanism, window furniture is often available in a range of finishes, such as brass, chrome, nickel and white enamel to best complement your interior.

Window locks must be strong enough to resist being forced. To optimise their strength, a lock should be placed in the centre of a small window, or two locks should be spaced apart on a large window.

Locks operated by a removable key are the most secure, especially if the key has several variations, rather than a standard profile.

Window Construction Material

Window frames may be manufactured in a number of materials, each of which have their advantages and disadvantages in terms of energy efficiency, durability, aesthetics and cost, as listed below

Wooden windows

Most wooden frames will be made using timber from a sustainable forest in Scandinavia, such as European Redwood, which is then treated with preservatives to improve its durability.More expensive hardwoods are available, usually at double the cost, but a frame's overall durability will be influenced more by its installation and maintenance, so upgrade to a hardwood only where vital.

Wooden frames are available in a range of styles and sizes, but also different levels of finish. A basic 'S' model is an unfinished softwood frame, while the 'SG' type will be glazed too (for approximately double the price). In addition, you can order wooden frames with a stain basecoat or pre-primed or indeed fully finished with paint and furniture attached, where the delivery time will usually be longer the more 'finished' a window is.

Positives

- Natural look Can be painted or stained in any colour
- Highly flexible material that can be cut to fit any aperture
- Good thermal insulator that resists condensation
- Long lasting if well maintained

Negatives

- Must be painted, stained or varnished regularly to avoid rot, warping and sticking.
- A raw timber frame is cheap but can be expensive once glazed and painted

UPVC Windows

UPVC (unplasticised polyvinyl chloride), or vinyl, is now the most widely used material for home joinery as the finished windows are generally cheaper than a finished timber window.

Most widely seen in plain white, other colours are available and can also be manufactured with an embossed woodgrain, although the latter is usually 50% more expensive than the plain white option.

UPVC window frames are also usually relatively energy efficient as they include hollow chambers where air or insulation reduces heat transfer.

Positives
- Maintenance-free
- Cheapest fully finished option
- Available in a wide range of styles and sizes
- Durable
- Relatively energy efficient
- Colour permeates frame, so scratches don't stand out

Negatives
- Colour cannot be changed
- Difficult to repair
- Production and disposal produces toxic byproducts
- Dark colours fade in intense sunlight
- Not as strong as other frame materials

Aluminium Windows

Introduced to the market before uPVC, aluminium can be moulded to fit any window, particularly large ones where it has the strength to support a large window pane for an uninterrupted vista. An aluminium frame adds a sharp modern look to a window.

Aluminium and its steel predecessor have, nevertheless, fallen out of favour because they conduct heat away from a room, and can become cold enough to allow condensation on the inside to frost.

However, a plastic ‘thermal break’ can be placed between the interior and exterior components of the frame to overcome this problem.

Positive
- Can be painted in any colour
- Strong
- Durable

Negatives
- Cause conductive heat loss unless plastic thermal breaks are included.

Fibreglass Windows

A recent addition to the range of options, and therefore not widely available, fibreglass is strong enough to support large window panes. Like vinyl, the frames have hollow chambers that use air or insulation to reduce heat loss, to create the most thermally insulative window frames available.

Positives
- Durable Strong
- Can be painted in any colour
- Can do a good impression of wood
- Colour is resistant to sunlight
- Best thermal insulation properties

Negatives
- Expensive
- Still limited in available sizes

Composite Windows

Composite windows are made of more than one material to combine their advantageous properties, although they are usually about double the price of a basic timber or uPVC frame.

Generally these are made of a wooden frame, to retain the attractive appearance inside, which is then clad in vinyl or aluminium on the exterior surface to improve durability and reduce the need for maintenance.

Steel

A steel extrusion shaped as a Z set in a timber surround. The glass is held in place either by wire clips with metal placement putty as the base and face putty over the top, or hollow steel glazing beads either screwed to the frame or clipped to studs in the frame.

Crittall windows are known for being both durable, strong as well as visually appealing due to the thin frames but that is not to say they are without their problems. They do provide a very classic look, yet building legislation brought in by the government in 2010 puts the old steel Crittall windows at risk of falling foul to energy efficiency standards. However, replacing them with more modern windows may not always be possible. They are often present on listed on buildings or in conservation areas so they cannot always be replaced with modern alternatives. Therefore maintenance and repair is a very important aspect for commercial and industrial premises with Crittall windows

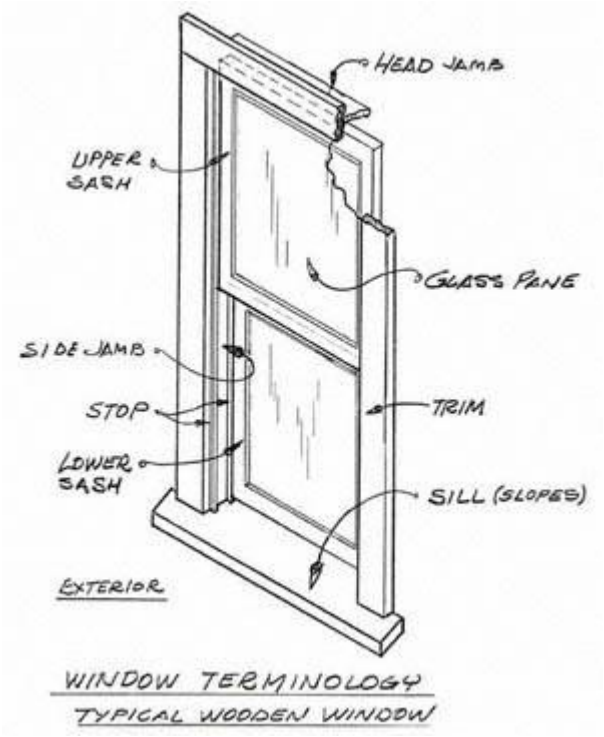
Positive

- Can be painted in any colour
- Strong
- Durable

Negatives

- Cause conductive heat loss unless plastic thermal breaks are included.

Diagrams and Parts



Sash – The framework holding the glass in the window.

Jambs – Refers to side jambs and the head jamb. Side jambs are the vertical members of a window frame and the head jamb is the horizontal member across the top.

Sill – The horizontal bottom of the window frame that is sloped away from the interior.

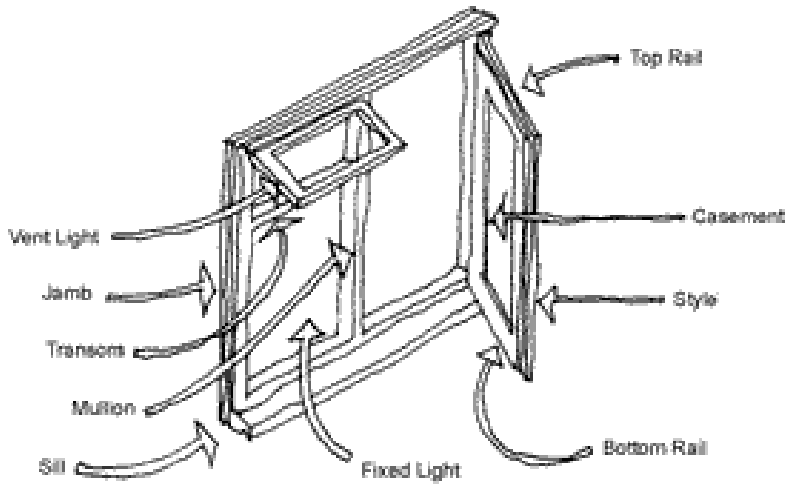
Pane – Also known as glazing, this is the glass portion of the window. It can also be made out of other transparent materials

Frame – Parts of a window that are assembled together to enclose the sash. These parts are then placed into and attached to the rough opening.

Mullion – The vertical or horizontal member separating windows in a series. It is the typical way multiple windows are joined together within one opening.

Stool – The projecting shelf-like piece at the bottom of a window which rests on the apron.

Stop – Trim that prevents an operable window sash from moving laterally or vertically



Transom

The central horizontal member of a window Sill The horizontal member at the base of a window that forces water to run off and away from the building.

Bottom Rail

The bottom horizontal member of a casement or sash.

Top Rail

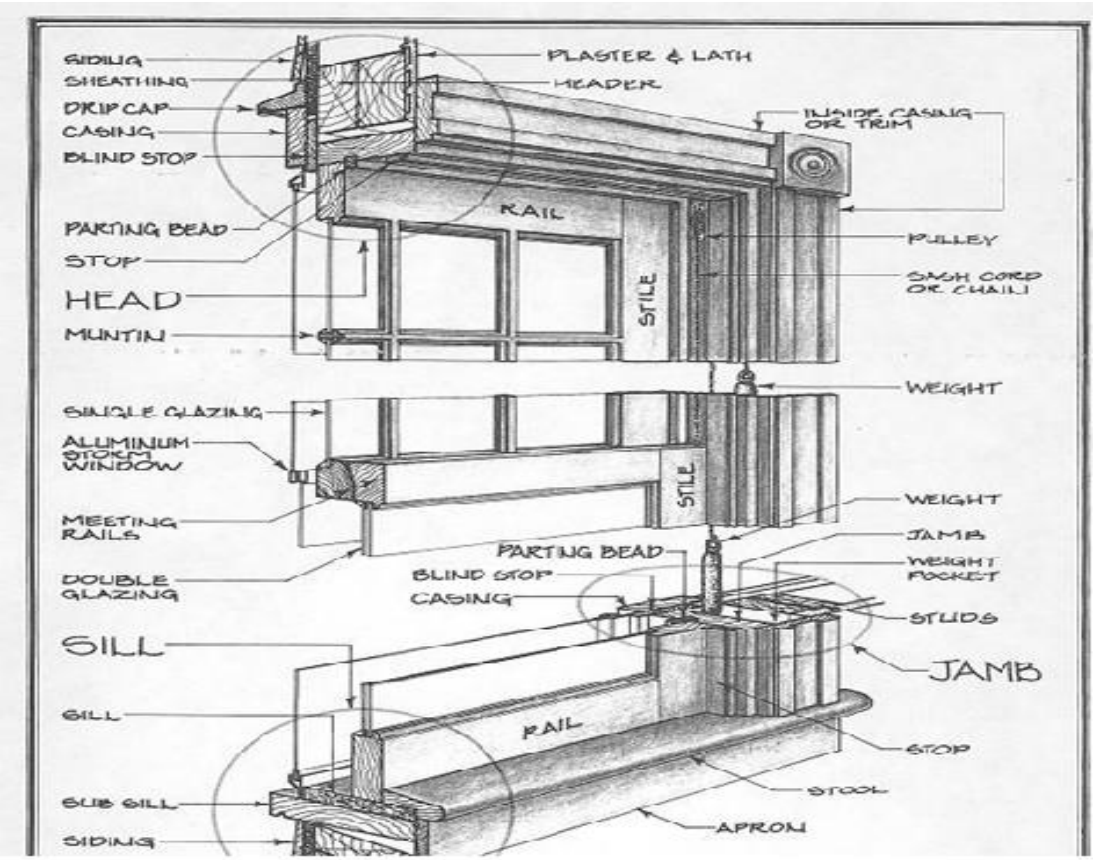
The top horizontal member of a casement or sash.

Vent Light

An opening part at the top or bottom of a window, hinged at either its top or bottom rail. If hinged at the top it opens out and if hinged at the bottom it usually opens in.

Fixed Light

The glazed part of the window that is not hinged or opening. i.e. it
is fixed in position.



Cranks

Casement, awning, and hopper windows utilize cranks for opening and closing. (Older types used push-bar operators.) Some manufacturers offer cranks in nonmetallic finishes (notably white), and some new types have fold-down handles that are relatively inconspicuous.

Latches and Locks

Latches are used to hold the window tightly closed. Two are recommended on tall or wide hinged windows. On double-hung windows, sash locks pull together the upper and lower sash. Keyed sash locks provide an additional measure of security. On sliders, look for security locks so the operable sashes cannot be jimmied open.

Hinges

The best casement, awning, and hopper hinges pivot to allow arm space between the sash and the window frame to make washing exterior glass an easy job. You can even find special European hardware that turns a casement window into a hopper window.

Because the hardware locks tightly in several places around the frame, the windows have very low air infiltration. But, unlike American casement windows, the European-style window mechanism swings into the room, which can be awkward and inconvenient depending on the type of window coverings you have.

Counterbalances

On double-hung windows, the sash is counterbalanced on the sides by weights or mechanisms such as torsion screws.

Sliding Mechanisms

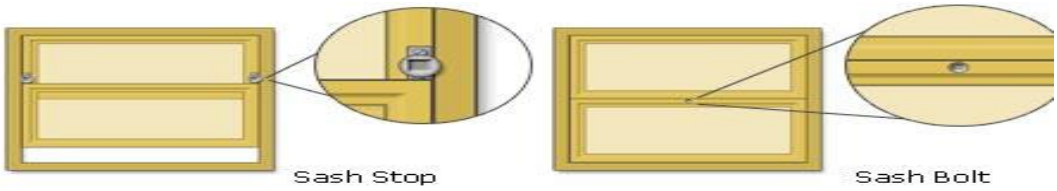
The sashes of most aluminum and vinyl windows are lightweight enough to slide in the sill tracks. But large, door-height sashes must be supported by heavy-duty rollers on their bottom edges.

Bolts and Locks

Pivoting Windows

Most pivoting windows are supplied with integral locks built into their frame. However, where they are missing, or you require additional security, several standard locks that attach the moving sash to the static frame can be used.

The simplest is a push lock that uses a steel bolt to fix the window to its frame, locking automatically as it is pushed in, and requiring a key to unlock.

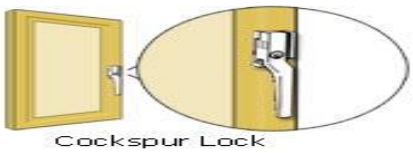


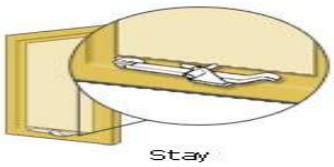
Hinged Windows

Hinged windows are usually locked by fastening the moving sash to its static frame.

The most commonly used furniture on hinged windows are stays and fasteners, or cockspur locks. A stay is placed at the bottom edge of the window, where its notches can also be used to secure the window while open.

On reasonably large windows a fastener, or cockspur lock, should also be mounted on the opening side of the window, where the lock's protruding bolt then fits into a mortice, or hole, cut into the frame to prevent opening.





Sliding Windows

Sliding windows are often locked to one another so that neither can be moved within the frame. Most locks for these types of windows are designed for box sash windows, but the locks can equally be used on horizontally sliding windows too.

For an inconspicuous look, a dual screw sash bolt should be used which passes through both sash frames at the 'meeting rails'. This bolt is unscrewed using a special key so the bolt can be removed and the windows become decoupled. The same end result can be achieved using a sash fastener that is mounted to the top of the bottom window and the bottom of the top window, preventing the two from being separated.

Sash stops allow a sash window to be opened for ventilation, but prevent the window from being opened further to allow an intruder in or out. With the windows closed, a pair of stops should be fitted to the frame of the top window within about 127mm (5in) of the top of the closed bottom window. With the stops in place, the bottom window can only be opened this far, but the stops can be completely removed with a key to allow the window to be opened fully.

Ventilation

All habitable rooms must have a form of ventilation either mechanical (using ducts and fans) or natural, this is usually by opening windows. Opening windows for ventilation are the most common and economical forms of ventilation.

Building regulations vary from country to country however a good rule of thumb to use is that the windows for the room must have an opening area of at least 10% of the floor area.

This will need to be checked with your local building regulations. Kitchens, bathrooms, wc's and laundries are different again because of odour, moisture and airborne bacteria.

They are often required to have a form of mechanical ventilation in lieu of or as well as opening windows. (As with all building projects you must check with your local authority and building regulators before you embark on a job that requires construction rather than decoration. It would pay to employ the services of an architect, draftsperson or engineer to establish the legal parameters).

Heat, Cold and Sound

Due to its very nature, a pane of glass is usually quite thin and transparent, especially in comparison to the wall in which it sits. The wall has been designed to stop or reduce the transference of heat, cold and noise and so should a window while still achieving all of its other functions. Unfortunately glass is a poor thermal insulator unless working in conjunction with an air gap. Various methods are used to stop or reduce the sound and thermal transference as much as practical.

Double-glazing is the most common method of this. There are various glasses that have beneficial properties such as Hush glass, and solar control glasses that control these factors to a degree. A sealed gap between two sheets of glass forms a system of double-glazing.

A space of 20 millimeters is enough to improve thermal insulation however a gap of 150 to 200 millimeters is needed to reduce sound. Typical double-glazing with 20mm gap does give some sound reduction.

Ensuring that there is a good seal between the opening part of the window (the sash or casement) and the frame will reduce heat loss and improve sound insulation. Metal or plastic rubberized sealing strips around the rebates of the frame and opening sash will aid in achieving this.

Glass companies are constantly improving glass technology and are
experts in this field. They are usually more than happy to go over the options available as well as offer brochures and sometimes samples, so if you are recommending or wanting to use double-glazing, contact them.

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Clear glass:

To meet enhanced thermal performance standards set by UK Government, glass with an energy efficient coating is used in the manufacture of double glazed units. As a consequence, it is perfectly normal to see a slight tint within the glass.

Standards:

The manufacture of glass is an exceptionally aggressive process. As a consequence slight imperfections and blemishes cannot be avoided and are accepted as an industry standard which states:-

1. With the exception of the high energy coating, transparent glass used in the manufacture of double glazed units is similar to that used in single glazing and will therefore have a similar level of quality.

2. Both panes of the double glazed units shall be viewed from the room side, standing at a distance of 2 metres (6.5 feet) in natural daylight and not in direct sunlight. The area to be

viewed is the normal vision area with the exception of a 50mm (2") wide band around the perimeter of the unit.

3. Transparent glass shall be deemed acceptable if the following phenomena are neither obtuse or bunched:-

    - Totally enclosed seeds
    - Bubbles or blisters
    - Hairline or blobs
    - Fine sctraches not more than 25mm (1") long
    - Minute embedded particles

4. Obtrusiveness of blemishes shall be judged by looking through the glass and not at it, under normal lighting conditions, as described in 2 above.

(extracted from the standards of the Glass and Glazing Federation)

Though exacting inspection and quality control systems are in place, tints from the energy coating, inherent blemishes and marks within glass used to produce double glazed units is beyond our control.

Patterned and Decorative Glass:

Patterned and decorative glass is manufactured in large sheets and due to the spacing of pattern repitition, centralisation and matching of a design in an individual unit cannot be guaranteed.

Window Problems

Condensation:

Under normal conditions, water vapour is present in any atmosphere. In the home, steam, gas fires and even breathing further dampen the atmosphere. It may only become noticeable when air comes into contact with a cold surface, for example a wall, which could lead to dampness. It is more usually encountered on window glass where it shows as a misting. The phenomenon is known as condensation which can never be eliminated but can be alleviated by maintaining good ventilation and warm internal atmosphere.

NOTE: The security of open windows, even when in the ventilation position, and open conservatory roof vents should be considered particularly if the property is to be left unattended.

Misted Windows - Draughts and Leaks

Most window problems are associated with components of the window breaking. If your windows are no longer under warranty then the parts need to be purchased and installed, the good news is, it is still a lot cheaper to repair than it is to replace.

Why Do Sealed Units Go Misty?

Contrary to popular belief Sealed units are not manufactured in a dry environment, nor is a vacuum created inside the unit to prevent breakdown.

Sealed units are made using a square tube (commonly known as BAR and comes in 4 main colours Gold, silver, white and Bronze) which is either heat sealed or glued into place, inside this tube is a desiccant made from silicone beads these beads draw moisture from within the sealed unit, once these beads are full of moisture they release the moisture back into the unit (Usually when the temperature changes) which creates the misting inside the unit. The moisture that gets into the unit gets there from several different avenues. From original manufacture in the air If the window has poor or insufficient drainage and also threw the seal of the unit breaking down.

None of these are an exact science which is why unit manufacturers are constantly trying to come up with new innovations to solve the problem.

Most people have heard of k glass and Know that it helps keep warmth in your home in the winter and helps keep the heat out in the summer. K glass has been on the market for many years and is commonly used by all larger window companies. However there are now a couple of new contenders to help improve your glass. K glass is a hard coating put on the inside of a piece of glass. Now a new coating by a different manufacturer has been invented this is called Planitherm. Planitherm is a soft coating and has a slightly better reflective property than that of K glass. It is now also possible to fill your units with Argon gas, Argon gas which is commonly used in arc welding for many years has been found to contain thermal properties and so by filling the double glazed units with Argon gas coupled with the reflective coating of K or Planitherm glass we are coming very close to having a thermal value to that of walls, but not only that, it has also been found that because we have removed the air from within the double glazed unit and replaced it with a thermal gas that the units are not breaking down so quickly. In fact I have been told that units manufactured using a combination of Planitherm and Argon gas will never break down (go misty).

Guarantees

All Sealed unit manufacturers have guidelines set out by the Glass and Glazing Federation and as long as these basic guidelines are followed a unit should be guaranteed for at least 4 years. My supplier gives a 5 year guarantee, although I have never replaced one of his units in 7 years.

Some window suppliers offer a 10 year warranty on their windows however this does not usually carry on to the sealed units. There are of course exceptions.

Draughts and Leaks

Draughts and leaks around your windows; this is likely to be caused by them being out of alignment, or the hinges have gone.

In most cases this can be fixed with adjustments and re-fitting. Again this is much more cost effective than replacing the windows.

General Maintenance

Maintenance is very simple. Just follow these straightforward guidelines.

Clean the PVCU frames occasionally or at least four times a year. Use a soft cloth, warm water and a mild detergent such as washing up liquid on PVCU, wood grains, coloured finishes and other surfaces. NEVER use excessive pressure when cleaning PVCU.

Clean glass with a clear liquid spray type glass cleaner.

Take care not to dislodge decorative lead strips during cleaning. Though strongly bonded, excessive pressure might cause distortion or de-lamination of the lead from the glass surface. Exposed lead will oxidise naturally creating a lasting patina. It is recommend this is not disturbed.

Where fitted, drainage holes and slots should be inspected and kept clear from blockage for optimum performance, especially in bad weather. Dirt and grit should be removed from door thresholds, in particular from metal, low level cills, and the inside lower rebates of opening windows. A suitable cloth or soft brush, such as a paint brush, can remove dust and cobwebs from moving parts, rebates and sill areas where dirt, dust and grit can naturally accumulate.

Keep weather-strips and glazing gaskets clean and free from grime. Inspect to ensure there is good and consistent surface contact. Any dislodged gaskets or weather seals can be slid back into position. If damaged it is important we are contacted for replacement.

Keep patio door roller tracks clear of dust and debris.

Never use glass cleaner, bleach, solvents, abrasive or cream cleaner on PVCU window frames or door panels.

Never use high-pressure or steam cleaners, or abrasive papers such as sandpaper on frames or glass.

Never use abrasives or brass cleaner on handles, door knockers or letter plates.

Don't try to paint PVCU or attempt to remove paint from PVCU.

Lubricate hinges, hardware and moving parts sparingly. This is to allow smooth operation and should stop sticking and stiffness.

For window locks, window and door handles, hinges and pivots use light oil such as 3 in one, WD 40 or similar.

For friction hinges, friction stay channels, or other sliding sections use a thin film of light grease such as Vaseline.

For door locks, cylinder locks use a graphite PTFE based lubricant.

For ventilators, cat flaps and other ancilliaries lubricate hinges and pivots with light oil as necessary.

If the handle becomes stiff due to high humidity, free it with a single drop of lubricant.

To prevent weather ingress, joints between the building and windows, doors or conservatory are sealed with a suitable compound. It is possible that in time, some unavoidable discolouration and shrinkage of the compound may occur. This is an easily solved problem, the sealant just needs removing and replacing.

Wood Grain Finishes:

As with natural wood, allowance should be made for variations in the shading and pattern of wood grain finishes together with slight surface marks, scratches and inclusions including those caused by the fabrication process such as welding of the joints.

Coloured Finishes:

When viewed from a reasonable distance, coloured finishes should be substantially free from blemishes and orange peel effect. Allowances should be made for slight variations in shading between surfaces and those caused by the fabrication process such as welding of the joints. Like all surfaces exposed to sunlight, some slight colour changes can be expected over time.

Guide to Choosing and Using Sealants and Gaskets for Skylights and Other Sloped Glazing

The critical issues with window glazing sealants are joint size and shape, compatibility among the building materials used, and the type and preparation of the surfaces to be bonded and sealed.

The Role of Joint Depth and Joint Width in Window Sealing

With a window product having a + / - 25 percent movement capability, such as silicones, a 1/4-inch wide joint can safely handle 1/16" movement in either direction. If the sealant is installed with materials at one end of the temperature range (very hot or very cold) then all of

the subsequent movement will be in one direction (cooling and shrinking, or warming and expanding), requiring a wider joint that can tolerate more total movement.

Up to a point, the wider the joint the better it is able to tolerate movement caused by temperature changes in the materials. Joint *depth* also affects the performance of the sealant. Deeper joints create greater stresses at the bond line. The recommended joint depth for silicone is from 1/8-inch to 3/8-inch.

Where Sealed Window Joints Fail

A window joint sealant can fail either in adhesion to the substrate or in cohesion within itself. That is, the sealant may separate from the surface of the material being sealed, or the sealant may tear within itself. Either failure leaves an opening, a leak, and either leads to eventual failure at the window seal joint.

Our photo (left) shows a skylight that has suffered recurrent leaks at the glazing frame itself.

This unit, patched with tar and roof cement is on a New York college campus and installed in a slate roof where skylight repairs, properly performed, will reduce the frequent need to access this high and fragile slate roof.

Where an old but leaky skylight is already installed in a location where complete replacement would be very costly, careful inspection, surface cleaning, and sealing is an appealing alternative.

How to Avoid Joint Depth Sealant Failures at Windows

Bond-breaking tapes or rods (backer rods) should be used under the sealant to prevent this sealant joint breakage due to joint depth, and also to control the shape and depth of the joint. Tooling of the sealant's surface should be done immediately after the sealant has been applied. Masking tape applied to the glass and removed while the sealant is still set will provide a neat attractive line.

How to Avoid Adhesion Failures at Window Sealants and Caulks

To achieve good adhesion between the sealant and the surfaces it is sealing against leaks, clean the surfaces well with an appropriate solvent and, if necessary, with the correct primer. When cleaning each surface use a clean portion of the rag and pour solvent onto the rag (don't hold the rag against the solvent bottle or can mouth and tip the bottle or can). This will avoid contaminating the solvent itself. Using contaminated solvent to "clean" a surface will simply redeposit debris onto that surface, possibly leading to a caulk or sealant failure later.

Wipe the cleaned surfaces dry (also using a clean rag) so that contaminants are not re deposited when the solvent evaporates.

Apply the sealant to the cleaned surfaces quickly, before the surfaces have a chance to oxidize or collect fresh dust and dirt.

Tips for Using Window Glazing Tapes

When using glazing tapes - such as butyl or the newer PVC foam tapes - below the glass, choose a product with sufficient hardness that it will not over-compress under the weight of the glass at the lower edge. Butyl glazing tape has been used successfully for many years in vertical applications, but it has no structural properties. It will not absorb movement, nor will it return to its original shape if it is deformed. If over compressed, butyl glazing tape may run. Pre-shimmed butyl glazing tape has a hard core designed to withstand the compression of glass weight and loads in sloped applications.

Tips for Using Dry Window or Glass Glazing Gaskets

In dry systems, dense neoprene and EPDM (50 to 70 Durometer) have proven themselves. The material should comply with ASTM standards C-864 and ASTM C-509. The proper compression must be achieved. for a water-tight fit, this is usually between 25 and 40 percent of the original gasket thickness.

Since both glazing tapes and window gaskets rely on a fairly narrow range of compression to be effective, a secondary wet seal is often a good idea, such as using a bead of silicone caulk on the outside of the window, at the joint between the glass and the wood stop.

Tips for Using Window Setting Blocks, During Glass Installation

For setting blocks, which support the weight of the glass at the bottom of the window or skylight unit, dense neoprene or silicone rubber (80 to 90 Durometer) should be used. Two blocks should be used per glass unit, set in from the corners about one quarter of the length of the glass bottom.

The window setting blocks must support both lites (both the outermost and innermost glass panes of a double-glazed or triple-glazed window pane) well. Otherwise the glass lite that is not well supported may slide down past its mate(s), breaking the window seal and causing leaks and condensation.

In wet window sealing systems (using sealant caulks), the setting blocks should ideally bond to the sealant gummed around them. The sealant should cover the top exposed edge of the setting blocks to avoid leaks in that location.

The use of neoprene (setting blocks) in contact with silicone sealants (caulks) may cause discoloration of the silicone over time, and can lead to a sealant bond failure.

Finally, use common sense. Do not use sealants when there is moisture or frost on the surfaces. Find out the temperature range for application of the sealant you've chosen (read the package instructions). If you don't find the answer in reading the instructions that come with your sealant, gasket, or tape, consult with the manufacturer about the selection and use of cleaners, primers, proper substrates, and compatibility problems.

Glass coatings, plastic glazings, and oily woods (e.g. redwood) can present sealant problems and lead to leaks and window failures. Prepare a sealant test sample. If the fully-cured sealant peels easily off of the substrate the bond may be poor and the joint is more likely to fail.

Building Regulations

A number of Building Regulations pertain to windows, which mainly relates to their safety and energy efficiency. This advice note only refers to the requirements of the Building Standards (Scotland) Regulations 1990 as amended. These came into effect on 1 April 1991. For advice as to whether planning permission is required please contact the Planning Department of your local council particularly if the property is listed as a building of architectural or historic interest or to buildings in conservation areas.

Regulations mainly call for most modern windows to be supplied as double-glazed units, with a draught-excluding strip attached and ventilating ‘trickle vents’ included however this rule does not apply to replacement glazing where the window frame remains in place.

No component of a house or building affects overall energy consumption as much as windows. Per square metre, windows lose more heat in the winter and gain more heat in the summer than the walls or the roof. This is because glass is a poor insulator and represents little barrier to radiant heat, so single glazed windows (that our homes were fitted with as standard up to the 1990s) allow a considerable amount of energy to be wasted as heat persistently ‘leaks’ away.

This heat loss is significantly reduced in double glazing as the air gap between the two panes of glass is an effective insulator to both heat and to a lesser extent, sound.

The energy efficiency of glazing is measured by its thermal conductivity, or ‘U-value’ in BTU/hr/m3/oC, where the lower the number, the better the insulation. Conventional single glazing has a U-value of around 5.0, whereas current building regs require double glazing with a U-value no greater than 2.0 to be fitted.

Safety Glass

Safety glazing, meeting British Standard 6206: 1982, must be fitted to;

- Any window pane less than 800mm (31½in) above floor level
- Any window pane less than 300mm (12in) from a door
- Any window pane in or surrounding a door whose width or height is greater than 250mm (10in)
- All Fire Egress windows

There are two kinds of safety glass;

- **Toughened or tempered glass** has been heat treated so that instead of breaking into potentially lethal shards, it cracks into lots of small, blunt lumps.
- **Laminated glass** is constructed from two layers of glass that sandwich a layer of clear plastic. If impacted, this glass won't break into pieces, but instead retains its shape.

Fire Exit

In the absence of an external door or second flight of stairs, all rooms in a basement or greater than 4.5m above ground level, except kitchens, must have a window through which someone can escape a fire.

This window must be at least 450mm (17¾in) high and 450mm (17¾in) wide, with an unobstructed openable area of at least 0.33m^2 (3½ sqft). The bottom of the window must be sited no more than 1100mm (43¼in) above floor level (or 600mm (24in) in a loft room). This window must be fitted with safety glass.

Safe Access to Window Controls

Controls to open windows must be within safe reach, with no obstruction to lean over;

A window control must be no higher than 1.9m (6ft 3in) above floor height.

To lean over an obstruction that is 600mm (24in) deep and 900mm (35½in) high (such as kitchen base units), the window control must be no higher than 1.7m (5ft 7in) above floor level.

If the control cannot be put within these limits, a remote manual or electric system must be installed.

Safe Access to Clean Windows

Windows must be accessed safely for cleaning purposes.

Where a window cannot be reached by a secured platform or 9m long ladder, it must be possible to clean the exterior of the window from the inside the building. These reversing windows should have a mechanism that holds the window still whilst it is reversed for cleaning.

Further Information Sources (CLICK ON LINK)

- How to Free a Stuck Window Sash
- How to Detect Window Air Leaks
- How to Fix a Double-Hung Window That Falls Shut
- How to Fix a Bent Sliding Window Track
- How to Open a Painted Shut Window
- How to Protect a Window Sill
- How to Repair Rotted Window Woodwork
- How to Tighten a Window Sash That Is Too Loose
- Window Parts & Diagrams
- What Is "Daylighting"?
- Bay Windows
- Box Bay Windows
- Jalousie Windows
- What Is a Header?
- Window Frame Construction

Sloped Glazing Details

Seals, sealants & leaks
Sloped Glazing Design
Temperature effects on windows
Sealants & Gaskets
Sealant Joint Depth & Width
Sealed Window Joint Failures
Avoid Joint Depth Sealant Failures
Avoid Adhesion Window Sealant Failures
Using Window Glazing Tapes
Using Window Glazing Gaskets
Using Window Setting Blocks
Choosing Skylight Glass

Skylight Glass Breakage
Window Glass Seal Failures
Stopless Window Glazing
Window frame materials
Common sizes of window
Window security
Full list of windows & doors topics