



installations
& home improvements

7

Things You Should Know Before You Buy New Windows

Another quality Installation

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Introduction

Your home's windows provide you with light, noise reduction and warmth. The world of windows is far more involved than it might at first seem, and the reason that we produced this report is so that you are armed with all the information you need *before* contacting potential suppliers.

The decision to replace your windows is a big one. You're effectively inviting strangers into your home and asking them to make modifications to it (some of which may be structural). There is a lot to know, and we hope this report will enable you to make a much better informed buying decision.

What are the 7 Things You Need to Know?

The rest of this report is divided into 7 sections. I recommend that you read them in order as some of the later sections refer to names and ideas described in the earlier sections.

1. All About Window Frames
2. All About Doors
3. All About Glazing
4. All About Hardware
5. All About Installation
6. All About Safety and Security
7. Some Important Questions you *must* ask your supplier

So without further ado, let's start by explaining all about Window Frames...

1 All About Window Frames

1.1 Materials

The frame of a window is the material making up the non-glazed area. The frame is typically made from timber, metal, uPVC or a combination of materials.

Timber Frames are typically made from softwood or hardwood. Softwood frames are a lot less expensive than hardwood, but hardwood is often chosen for its beauty and endurance. All timber frames require maintenance in the form of regular painting or weather protection treatment. Restrictions on some properties (such as listed buildings or conservation areas) may mean that timber frames are the only permissible option.

UPVC frames are made of PVC protected with an ultra-violet shield to prevent it deteriorating in sunlight (hence the “U”). They have the advantage that they require minimal maintenance and come in a variety of finishes – either plain white or foiled to simulate various types of hardwood. Modern uPVC frames are typically guaranteed for 10 years.

Metal frames date back hundreds of years. However, metal is a very efficient conductor of heat, so traditional metal windows lose a great deal of heat in winter. Modern metal windows are frequently “thermally broken” (meaning that they have an insulating strip between the outer and inner sections of the frame). Most modern metal frames are powder-coated and need no maintenance, and they tend to be more expensive than either timber or uPVC frames.

Composite frames combine the durability of metal with the beauty of wood. They are a premium product and are typically installed by specialists.

1.1.1 Materials and the Environment

There is an ongoing debate about which materials are the most environmentally friendly. Whilst wood appears to be the best candidate at first sight, it’s important to ensure that it comes from sustainable forests. Also, hardwood, which is a much more resilient material, takes a long time to grow. Also, consider that most wood requires regular treatment and these treatments themselves can sometimes harm the environment.

Aluminium frames require a great deal of energy to manufacture, but are very durable and require minimal maintenance after they’re installed.

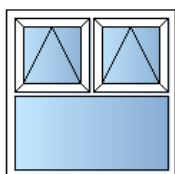
UPVC is an oil-based material, but requires minimal attention after installation. The materials companies are now starting to include recycled material into new frames, and this is likely to increase in the future.

Overall, there doesn’t seem to be a clear winner in this debate. Actually, the biggest factor isn’t the materials used, but the amount of energy which new, more efficient windows will save over a minimum period of 20 years.

1.2 Parts of the Frame

There are many names for the different elements of a window. The outer part of the frame is called an “outer frame”. A pane which cannot be opened is called a “fixed pane”. A hinged pane is called a “casement”. A pane which slides open is usually called a “sash” or a “vertical slider”. Any element which opens is (naturally enough) called an “opener”.

The vertical components of a frame are called “mullions” or “stiles”, and the horizontal components are called “transoms” or “muntin bars”.



Most window companies tend to produce diagrams such as that shown to the left, which is a convention used with the trade. However, to you this diagram is better presented as the frame on the right.



Both diagrams are viewed from the outside – the diagonal lines in the left hand diagram point to the location of the hinge.

1.3 Opener Types

1.3.1 Sash Windows

The traditional hinged opener is usually called a casement. However, there are several other options to bear in mind. In particular if you live in a period property, sliding sash windows are now available in timber, uPVC and composite materials.



1.3.2 Tilt and Turn Windows

Another style which you may have seen is the “tilt and turn” window. This works in two ways. By moving the handle in one direction, it operates as a normal hinged window, but by a simple change of the handle direction can turn into a bottom-hinged opener with restricted opening, allowing ventilation. The picture to the right shows two tilt and turn windows, one operating in ventilation mode and the other in opener mode.



1.3.3 Horizontal Sliding Windows

Horizontal sliding windows have the advantage that no extra space is required when opening them. Fly screens can be fitted easily without interfering with the opening of the window. This style of window is very popular in the United States, especially in humid areas where the fly screens are important, but they are no longer popular here in the UK.



1.4 Beading and gaskets

Beading is the means with which the glass is kept into the frame. It is typically clipped in to the frame, usually with a sealant for weatherproofing and security. There are two ways of beading a window: “External” and “Internal”. External beading means that the glass can be installed from outside the house. This originated in the UK, and derives from the use of “putty” to keep glass into wooden frames. Internal beading originated in Europe; it was developed as a result of the problems of glazing tower blocks from the outside. (The ground floor is easy, the 17th floor somewhat more challenging!).

Internally beaded frames are generally better for security, although timber windows are still frequently glazed from the outside without compromising security.

2 All About Doors

There are many kinds of doors on the market for different purposes.

1.5 Residential Doors

The best way to describe a residential door is to think of the one at number 10 Downing Street.



Residential doors are hinged at either the left or right and can be made from timber, uPVC or a composite material. They come in almost any colour or design.

Some residential doors (typically timber) will fit into an existing door frame, but other such as uPVC and composite doors will require their own frame to make the door secure and weather-tight.

As with anything, you get what you pay for. More expensive doors tend to be solid or reinforced.

1.6 French Doors



French doors consist of two opening doors which interlock when shut. Again they can be made of almost any material, but they are typically partially or fully glazed to allow light into the room. Modern French doors typically have multi-point locks to ensure that they cannot be levered open when shut. A major advantage is that both doors can be opened on a sunny day to make the room feel as if it's part of the garden. The disadvantage is that a wider opening is required, meaning that the places you can put furniture are restricted.

Because of the large distances French doors can span a structural lintel will be required. (This is discussed later).

1.7 Patio Doors



Patio doors consist of 2, 3 or 4 panels, of which one or more can slide. They are typically made of UPVC or metal construction, and the same considerations about wall space apply as for French doors.

Because of the large distances a patio door can span a structural lintel will be required. (This is discussed later).



1.8 Sliding/Folding Doors

Sliding/folding doors are a relatively recent innovation. They are typically used in conservatories or extensions, and allow a very wide area to be opened up to the outside. They originated in Europe, where they can frequently be seen at the front of cafes and restaurants. They're usually pulled wide open in the summer months and gradually closed as the air gets cooler. Aluminium sliding folding doors tend to be more suitable for wide spans.

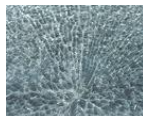
A major factor to be aware of is that because of the wide spaces these doors require, a proper structural analysis of the load above them will be required, and a structural lintel will be required (this is discussed later).

2 All About Glazing

In the UK, all replacement glazing now has to meet a minimal energy efficiency standard. This almost certainly means that a minimum of double glazed panels is required. A double glazed unit consists of two pieces of glass with an air or gas filling. The filling represents a barrier to heat passing through the window.



Standard “float” glass will tend to shatter if broken, leaving a number of large sharp pieces lying about with a risk of serious injury. For safety reasons, any pane of glass near to an opening such as a door or opener must be “toughened” or “laminated”. Toughened glass is treated so that if the glass is broken it will shatter into thousands of tiny, blunt chips, with no sharp edges, as shown to above.



Laminated glass consists of a thin plastic foil sandwiched with two sheets of glass, and if the glass is broken the foil will hold the pieces together, reducing the risk of injury, as shown to the left. Laminated glass is used primarily in vehicles, but can be used in homes in some cases.



Glass comes in different thicknesses – most typical sealed units contain 6mm glass, a 12mm air gap and another 6mm glass sheet, but this can vary.

1.9 Bevels and Stained Glass

Windows can contain decorative features such as “stained glass” and “bevels”. These are typically internal to the sealed unit, which makes cleaning easier and simpler. There are a huge range of patterns available to choose from.



A resin is a pattern which typically sits in the centre of a piece of glass.



A bevel is similar to a resin, but occupies the whole area of each glass sheet.

1.10 Leading

Leading originated in the days when it was not possible to make a piece of clear glass larger than a few square inches. Each piece of glass was joined to the others by a strip of lead, which was easy enough to form by hand and was typically soldered together. These days it's typically a decorative grill, again fitted within and/or outside the sealed units.

There are several varieties of leading:-



Diamond Leading



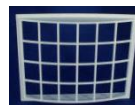
Square Leading



Queen Anne Leading

1.11 Georgian Bars

Georgian bars simulate the rectangular glazing effect used on Georgian houses. Typically these are created with a lattice of bars within (or sometimes attached to) the sealed unit.



1.12 Obscure Glazing

Sometimes there is a requirement for obscure glazing. This still allows a significant amount of light into the room, but prevents people seeing in or out. Examples may include bathrooms, or windows overlooking adjacent houses.

Obscure glass comes in a variety of patterns, and the obscure pattern makes up one side of the double glazed unit. The degree of obscurity varies with the style chosen.



1.13 Self-Cleaning Glass

Some glass has a special coating applied to it which means that each time it rains; any dirt is washed off it. This can be particularly advantageous if you live in a dusty environment, such as near a main road or other source of dust. The special coating means that you must be careful not to use any abrasive cleaners on it (this is only likely in the event of paint drops, as you won't normally need to clean the glass anyway!). If the windows do become dusty, a quick blast with a hose pipe is all that's required to get them sparkling clean again.

1.14 Solar Control Glass

This is mainly used in conservatory roofs, but a variety of different types of glass are available with different thermal properties, such as reducing glare and heating effects, as well as keeping heat in during the winter.

1.15 Energy Efficiency Considerations

The frame and glazing together determine the energy efficiency of the window. This is measured using "Window Energy Ratings" (WERs), which rate a window from "A" (most efficient) to "G" (very inefficient), very much like the energy ratings on domestic appliances.

On 1st November 2010 new regulations mean that only "C" rated windows and above will be allowed to be installed in UK properties. Bear in mind that the cost of fuel for heating is likely to increase faster than the rate of inflation for the next few years, so if you can afford it, paying a little extra for 'A' rated windows might be a smart decision.

2 Hardware

2.1 Hinges and Stays

Hardware refers to all the extras such as handles, locks, hinges etc. Older timber windows tended to have a very simple arrangement of typically two hinges and a “stay” to keep the window open or closed. This has the disadvantage that a burglar can simply break the glass and lift the stay off its catch to enter your property. These old-style stays can sometimes also be blown loose if left open on a very windy day, which could result in damage to the window, although some designs also feature a locking mechanism.



Most modern hinged windows use a “Friction Stay” mechanism, which combines the functions of hinge and stay as shown here, together with a more advanced form of window lock. When the window is opened to a certain setting it will remain there until moved, even under windy conditions. Traditional friction stay mechanisms won’t allow the window to be fully opened, but many suppliers now offer a special “fire-escape” version of the stay which will allow the window to be fully opened as an escape route, or for cleaning.

2.2 Locks

Modern locks tend to involve several locking points, making it much harder to lever the window or door open. For example a door lock may consist of 4 separate locking points, meaning that there is no weak spot from which to lever the door open. The diagram below shows the way in which a lock (in the centre) connects additional locking points at the top and bottom of the frame.



Essentially, the more locking points, the better, as each point makes it harder to lever the window or door open.

When considering doors, make sure that the hinges are of high quality. Cheap hinges can easily have the pins knocked out and the door can then be lifted off its hinges.

Security is discussed in more detail later.

2.3 Sills and Window Boards

While strictly not hardware in the normal sense of the word, it’s useful to mention calls and window boards at this point.

Many windows sit on top of a call (or sill) which is designed to drain water from the window to the outside of the house wall. Some calls are made of stone, but others



may be of timber. When installing a new window, the call may also be replaced as part of the process.



The horizontal board inside the window is referred to as a “window board”, and this typically butts up to the inside of the window frame. Occasionally window boards extend up around all sides of the “reveal” (which is the opening into which the window fits).

Door sills (or “thresholds”) come in a variety of different sizes, including special low-level access thresholds for wheelchairs etc. These also minimise the risk of tripping.

3 Installation

3.1 The process

Installation typically consists of the following stages:-

1. Survey. The windows are measured up and their final specifications are checked. Although a salesperson may measure the frames roughly to get an idea of price, it is usual for a surveyor to come and take accurate measurements and check other technical details. A surveyor will usually ask you to sign a confirmation of what you require. Take your time before you sign and check everything is in order, as any mistakes at this stage could result in a dispute later, which is not in anyone's interest.
2. Manufacture. Your supplier will either make the frames themselves or send off an order to have them made. They'll also order the sealed units to go with the frames.
3. Removal of old frames. The old frames will be removed and taken off site (make sure that this is agreed before you order – there is a checklist of questions like this you need to ask at the end of this document). Usually the installer will only remove frames that they can replace the same day to ensure the house is kept secure and weather-tight.
4. Remedial work on the recess. This may include enlarging openings, checking lintels, adding or replacing lintels and cavity trays where required. (This is described shortly).
5. Fitting of new unglazed frames (and sills where required). These should be secured to the recess, levelled and made weather-tight.
6. Glazing of the frames. The sealed units are placed in situ and beading is installed to hold the glazing in place. The internal window boards are then installed as required.
7. Making good and finishing. The frame and glass should be cleaned, the hinges trimmed and the locks tested. Generally speaking, the fitting team are not decorators, but they should leave a clean surface for repainting or repapering around each window.
8. Each night all tools should be locked away or taken off site, and each room should be left clean and tidy.
9. When the job is finished the installer should walk around each window with you and check that everything has been completed to your satisfaction. All rubbish should be removed from site. Many installers will ask to leave an advertisement for a few weeks, which hopefully you'll be delighted to agree to as they've done such a good job!

3.2 Safety during the Installation Process

The process of installing new windows poses a number of risks which you and your installer need to be aware of. Some of these risks affect the installation team, and some affect you.



The process is not one in which children should be involved or anywhere near, so make sure that any young children are physically kept away from the working area, and older children know about and understand the risks.

Removing old windows can often result in glass breakage, and debris falling from heights.

Installing new frames often involves working at heights (for which the installation team will have received training), but again it is important to keep anyone not involved away from the immediate area, and especially away from the bases of any ladders or scaffolding.

The tools used are themselves dangerous in the wrong hands, so make sure that all tools are locked away at night or whenever the site is left unattended. Trailing electrical cables also form a potential hazard.

Don't worry – this isn't meant to put you off – all decent installers will manage these risks for you and make sure that the whole experience is as painless as possible.

3.3 Lintels

Lintels are structural beams which sit above a window or a door. Many old houses didn't use lintels, but the brickwork was built around the timber window frames. When the old frames are removed a lintel may be required to support the brickwork and remove any load from the window frame. If this isn't done, the brickwork above the window may fail as shown here:



Installing lintels if required is an important job and it's critical that your chosen supplier checks this. Obviously, this will add to the cost of the installation, but your safety (and the structure of your house) is at risk if this isn't done correctly. All professional installers will make sure this is done as part of the work.

3.4 Cavity Trays

In any building with a cavity wall, damp can travel down the cavity. Windows are usually installed on the outer course of the cavity. Thus, the damp could arrive inside the house, which will lead to staining and damp patches around the window. The solution to this is called a "cavity tray". This is a simple waterproof bridge which makes sure that any water is drained outside the window. A professional installer will be able to advise you if you need any cavity trays fitting or replacing.

3.5 Knock-Throughs

Sometimes it may be necessary to create a new opening, or extend an existing one. This work may require building control consent, and may also require planning permission. The discussion about lintels above is particularly important in this case, as it could involve loads of many tons. If the knock through is for a conservatory, note that there must be a thermal barrier such as French doors between the house and the conservatory, unless you are prepared to go through the planning process.

Knocking a wall through requires structural props to make sure that the wall doesn't move or collapse during the process – it's not a job for amateurs!

4 Safety and Security

This section considers two different issues: how hard it is for others to enter your house from the outside, and how easy it is for you to exit in an emergency such as fire (or, possibly, flooding).

4.1 Fire Escapes

In the event of fire, it is important that you have an escape plan, (designed in advance - it's a bit late when you're trapped in a smoke-filled room. Part of this should involve identifying windows you can open and escape through. It is always a good idea to ensure that you have one or more windows on each floor which can open sufficiently for you to escape through (don't assume that you'll easily be able to smash the glass to escape – sealed units can be VERY hard to break without the appropriate tools to hand).

Many modern hinges have a special “Fire Egress” feature, which allows the window to be pushed open to its full extent for rapid exit.

4.2 Break-ins

Your windows are potentially one of the weakest points in your home's security. There is no such thing as perfect security – the best you can hope for is to make it difficult for a burglar to enter. To this end, make sure that all windows can be locked when you're away on holiday (don't forget to unlock any fire escape windows when you're in the house).

Recently a couple of developments have come to light involving ingenious methods for breaking into apparently secure locks.

4.2.1 Lock Bumping

“Lock bumping” involves the use of a special key which can be used to open any standard lock. There is no visible sign of entry, as effectively a “valid” key has been used. Break-ins done using this technique are often excluded from insurance policies. Check with your supplier about “anti-bumping” locks.

4.2.2 Lock Snapping

Some doors (in particular uPVC doors sold over the last 20 years) are also susceptible to “lock snapping”. This is a very low-tech way of breaking into a house – effectively the lock is physically snapped in two. There are new locks available which prevent this, and they're likely to become much more common very soon!

4.2.3 Other Considerations

Of course, another way to enter your premises is to smash a window. This isn't as easy as it sounds, and doing it can make a LOT of noise. However, if you live in an isolated area, it's worth considering additional security (burglar alarms and large dogs are pretty effective!). If anything, your new windows will be a lot more secure than your existing windows, so don't worry too much about this.

5 Choosing a Supplier – Some Key Questions

Choosing a window supplier is a big decision. It's probably one of the biggest investments you'll make in a while, and the consequences of getting it wrong could stay with you for years. So we've put together some key questions for you to check:

5.1.1 Do you trust the Installer?

This sounds like a stupid question, but they will have access to your house whilst you're not there, and potentially access to your valuables. So make sure you trust the people you're going to let work on your house.

5.1.2 Is the cheapest price really what you want?

Many people opt for the cheapest option. However, it's impossible to do a job cheaper than any other supplier without cutting quality or service. So if you do go for the cheapest quote, make sure you understand the pressures the supplier is putting themselves under. In particular, very cheap suppliers don't usually stay in business long, and when they've disappeared, who'll service your windows for you?

5.1.3 Do you know someone who's had a good job done by them?

This is a key question – working off a recommendation from a friend or neighbour has several advantages. Firstly you can usually examine the work which has been done calmly in your own time. Secondly, someone you know and trust has already taken a risk with them, and it worked out well. And they also know that if you've been recommended by someone, and if they do a good job, they could end up with further recommends either from you or your friend.

Don't forget to check the specification and results for yourself. Your friends might be pleased with a friendly company even if they fit inferior products so still ask all the questions and compare other companies even if you do get a recommendation from a friend.

5.1.4 Are they FENSA/CERTASS registered?

It is very important to check that whoever installs your windows is FENSA/CERTASS registered. All windows have to comply with building regulations and FENSA/CERTASS registered installers have their work checked to make sure that it does comply.

Every professional window installer in the UK is a member of FENSA/CERTASS. This means that they register your window installation with your local authority. All FENSA/CERTASS members are assessed regularly and their accreditation will be withdrawn if they are not up to scratch. In addition, every FENSA/CERTASS installation has to have a 5-10 year insurance-backed guarantee, which means that if your supplier goes out of business, your guarantee is still valid.

5.1.5 Is all rubbish to be removed by the supplier, and are skips included?

This sounds like a daft question, but make sure that your supplier has agreed to remove all old windows from site and dispose of them. Otherwise you might end up with an extra bill and a lot of work to clear the site!

5.1.6 Will the site be left safe overnight?

Make sure that the supplier can explain to you what precautions they take to leave your house safe from intruders, and to keep the residents safe from tools and debris.

5.1.7 Is Planning permission/consent required?

For most replacement window jobs no planning is required, but if you live in a listed building, conservation area, national park or other building with restricted development rights you may be limited on your options. In addition, if you're extending the property, seek professional advice. In any case your supplier should be able to advise you and even manage the process for you.

5.1.8 What is the payment schedule?

Before you sign any contract, make sure that you understand what is due to be paid when. Typically an effective plan is to agree an up-front deposit, a payment on completion and a small retention fee when all snags have been ironed out.

5.1.9 Is their finance scheme really the best deal

If you decide to take out finance to pay for the new windows, make sure that you're sure you understand what it will cost you. Many suppliers sell finance and receive commission for it, and in some cases you may be able to pay far less simply by taking out a bank loan or other alternative.

All finance schemes must provide an APR (annualised percentage rate), which allows you to compare how much the finance will cost you easily.

5.1.10 What aftercare does the supplier offer?

Before you sign, make sure that you understand if the supplier proposes to make any follow up visits after the installation.

5.1.11 What treatment/servicing is required?

After installation, make sure you understand how to clean the frames and what treatment if any is required. With timber in particular make sure you have a specification for the recommended treatment, frequency and its colour.

5.1.12 Checking your Window Order

It is important when reviewing your window order that you check each frame to make sure that the following are correct:

1. Colours (internal and external)
2. The location of the frame (e.g. Master Bedroom)
3. The openers and hinge positions
4. The size of the openers and fixed panels
5. In particular make sure that you can safely reach all handles
6. Where relevant, check that you can escape in the event of a fire
7. Any obscure glazing required

And Finally...

Hopefully you now know a lot more about windows and doors than when we started. If you need more information, there are lots of resources on our website:- www.sageinstallations.co.uk

Thanks for taking the time to read this, and good luck if you do go ahead and replace your windows!



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