Wrekin Windows

YOUR SOCIAL HOUSING PARTNER

Specifiers Product Guide

Introduction

Since 1985 **Wrekin Windows** has been committed to working together with Local Authorities and Registered Social Landlords, manufacturing and installing high quality, secure, low maintenance PVC-U windows and doors for social housing properties.

Wrekin's comprehensive range of PVC-U 60mm and 70mm windows and doors are fabricated using Profile 22, one of the UK's leading systems.

Using this versatile and advanced integrated PVC-U window and door system enables **Wrekin Windows** to offer an extensive range of quality thermally efficient products, in a choice of white or woodgrain finishes, with numerous glazing and hardware options.

- **Wrekin Windows** has exclusively supplied the social housing sector since 1985.
- Proven Best Value through competitive pricing, quality products and services.
- Experienced partner in the social housing sector with local authorities, housing associations and contractors.
- Over half a million windows and doors now in social housing properties across the UK.
- Technologically advanced manufacturing facility.
- Factory production approaching 1500 social housing windows and doors weekly.
- Production and delivery geared to client's programmes with 'first time' complete property installation.
- 10 Year product guarantee (including **Wrekin Windows** approved hardware).
- Part of the Epwin Group, the UK's third largest extruder of PVC-U products.
- Profile 22 system 'in-house' fabricator.
- Nationwide coverage.

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Quality Assurance

Wrekin Windows is committed to the highest quality standards on all products that are supplied and installed.

constructionline

sinclair directories

BBA BRITISH BOARD OF AGREMENT CERTIFICATE No. 91/2654

BSI REGISTERED

BS EN ISO 9001
FM09180

FENSA
No: 17754

LICENSED PRODUCTS ATTACK SECURED BY DESIGN www.securedbydesign.com SAFEWARE.info

macdata

PAS 23-1:1999
PAS 24-1:1999

KM07957
BS5713
SEALED UNITS

KM13543
BS7412
WINDOWS

KM33525
BS7950/7412
ENHANCED SECURITY
WINDOWS

BS 7412 *plastic windows made from PVC-U extruded hollow profile specification.*
The BS 7412 specifies types and requirements for materials, construction, security, safety, weathertightness, operation and strength of performance, in which any frame member is less than three meters. To achieve BS 7412, the profile used must comply with BS 7413; BS EN 12608:2003. The Kitemark for BS 7412 is held by Wrekin's Group window production facility, who also produce products to BS 7950 for the enhanced security performance of domestic windows.

BSI *registered firm scheme*
Quality management systems, products and installation are licensed to BS EN ISO 9001:2000. It incorporates assessment of Quality Management Systems, type testing of products and continuous audit and testing by BSI. Epwin Group production facility manufactures windows within the framework of the standard.

BPF *code of practice for the survey and installation of plastic windows and door sets.*
This particular code provides guidelines and recommendations for the good practices required for the survey and installation of plastic windows, including the design and installation of bay windows. In addition, the products and system used by **Wrekin Windows** have been approved by an extensive list of local authorities and housing associations.

PAS23-1:1999 *general performance requirements for door assemblies, currently applies to single leaf, external door assemblies to dwellings.* It specifies requirements for operating forces, weathering, durability and a range of other requirements aimed at confirming door assemblies are fit for purpose.

PAS24-1:1999 enhanced security performance requirements for door assemblies PAS24-1:1999 specifies the requirement for impact testing, mechanical loading and manual attack to confirm enhanced security performance of door assemblies.

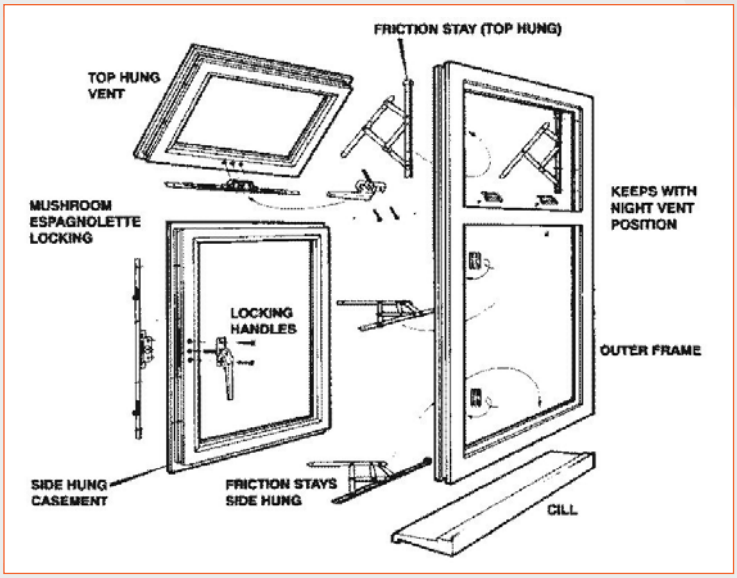
Casement Windows

Wrekin's casement windows are available in a variety of single or multi-light styles. Using internally glazed top hung vents, top and side hung casements and fixed lights, they are fabricated to BS 7950/BS 7412 and are available in white or woodgrain finish and reinforced with galvanised steel reinforcement to BS EN 10142. Double weatherseals ensure their performance exceeds the requirements of BS 7412, as shown in the tables below.

TEST	EXPOSURE CATEGORY			
	1200Pa	1600Pa	2000Pa	2400Pa
AIR PERMEABILITY	200Pa	300Pa	300Pa	300Pa
WATERTIGHTNESS	200Pa	200Pa	200Pa	300Pa
WIND RESISTANCE	1200Pa	1600Pa	2000Pa	2400Pa

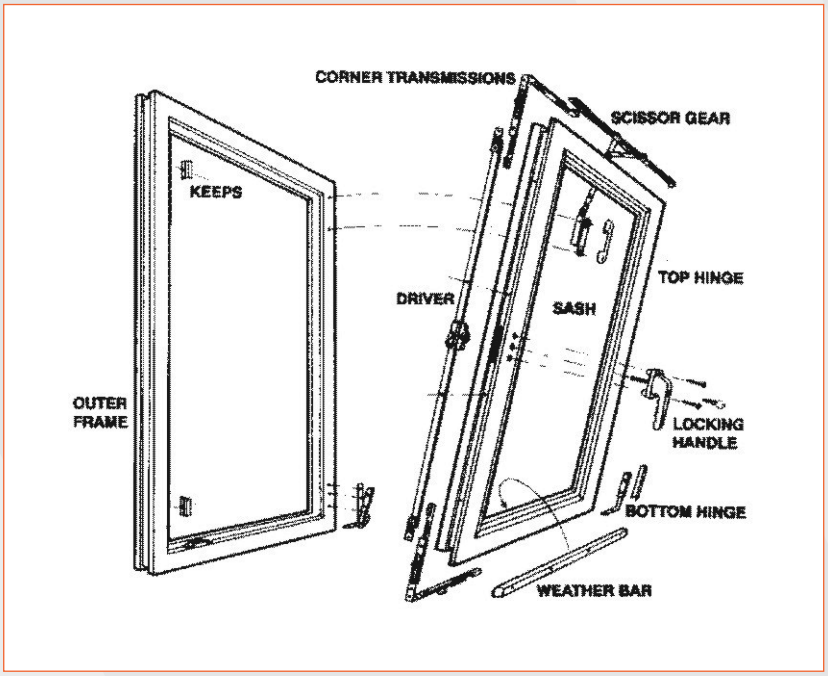
Minimum & Maximum Sizes (Subject to Sealed Unit weight)

	STYLE	LOCKING	MIN. SASH SIZE		MAX. SASH SIZE	
			WIDTH	HEIGHT	WIDTH	HEIGHT
FIXED LIGHT		N/A	340	340	202m²	202m²
TOP HUNG			290 335	290 316	1235 1235	1235 1235
SIDE HUNG			376 431	290 335	735 735	1335 1335



Vents and casements are hinged using stainless steel friction hinges with locking or non locking handles available in a variety of finishes. The use of dedicated hardware means our products can meet the requirements of BS 7412. Hinge options are available for egress in case of fire and additional safe cleaning requirements. Casement windows are also fitted with a night vent facility together with mushroom-headed espagnolette locks for added security (shoot bolt locks for ground floor). In addition to the night vent, controllable or permanent ventilators are available as an optional extra which can be fitted within the head profile of the sash window or into a separate head extension.

Tilt Before Turn Windows



For exceptional security and weathertightness, the Wrekin tilt before turn window features all round locking, internal glazing and inward opening. The tilt before turn operation provides improved child safety and the ability to carry out internal and external cleaning without risk. In the tilt mode it offers secure ventilation, an important consideration for ground floor installations, and depending on design requirements, an added feature is the option of curved or angled head and top rails.

The tilt before turn safety feature ensures the tilt or ventilation option occurs first, followed by the turn or cleaning option. The mechanism comprises bi-chromate finished steel multi-point espagnolette locking operation around the sash. The number of locking points are dependant upon the window size.

A mishandling device is fitted to prevent selection from tilt to turn while in the tilt mode and vice versa and the window must be closed before the alternative mode can be selected. A locking handle is fitted for added security.

Once again, double weatherseals ensure performance exceeds the requirements of BS 7412 (see table below). *Actual performance will depend on size and style.*

TEST	EXPOSURE CATEGORY		
	1200Pa	1600Pa	2000Pa
AIR PERMEABILITY	200Pa	300Pa	300Pa
WATERTIGHTNESS	200Pa	200Pa	200Pa
WIND RESISTANCE	1200Pa	1600Pa	2000Pa

Minimum & Maximum Sizes

STYLE	LOCKING	MIN	DIM	MAX
TBT	TBT GEAR	413	W	1613
		603	H	2333

Fully Reversible Windows

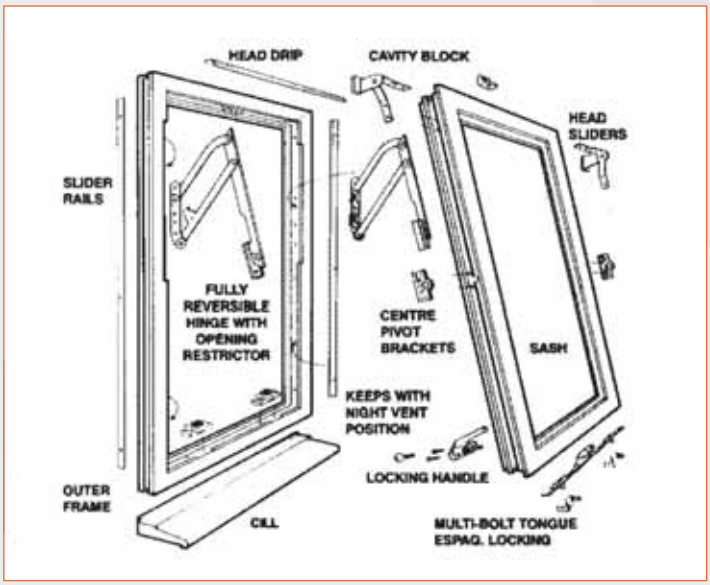
Wrekin Windows fully reversible windows are internally beaded and designed to allow easy and safe cleaning in high rise and inaccessible locations. Moreover, the window completely rotates without intruding into the room space. High security locking is provided by multi-point tongue bolt espagnolette with optional shootbolt locking facility, lockable handles, and child-resistant safety catches. These combine with excellent weathertightness performance to ensure really exceptional quality windows.
A night vent facility is also available. However, unlike some reversible windows, this particular type of design does not require an external canopy for controllable or permanent ventilation. Whilst actual performance of the window depends on size and style, a glance at the performance table will show its effectiveness in key areas.

TEST	VALUE
AIR PERMEABILITY	300Pa
WATERTIGHTNESS	200Pa
WIND RESISTANCE	1200Pa

Minimum & Maximum Sizes

	STYLE	LOCKING	MIN	DIM	MAX
FULLY REV		ESPAG	502 388	W H	1602 1488

Window Operation

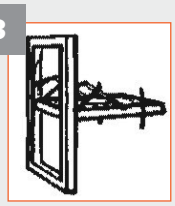


1 

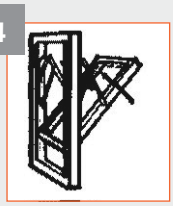
The window can rest in the narrow night ventilation position or with approximately 100mm opening.

2 

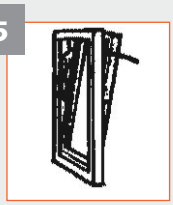
Once the safety catch is released the window can be completely rotated.

3 

The window rotates without entering the room space.

4 

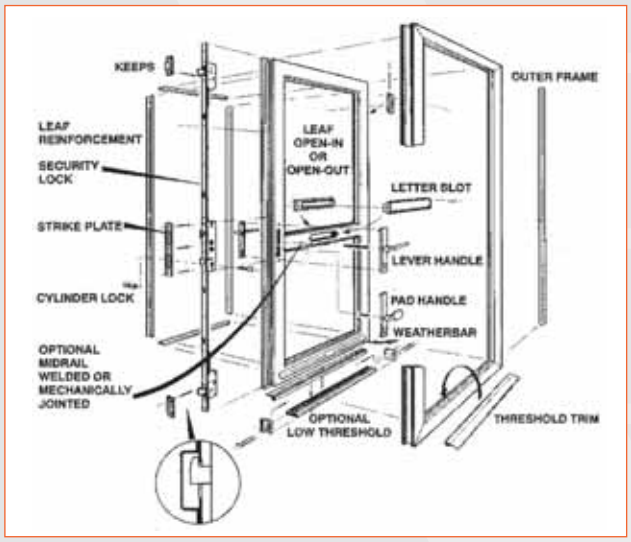
The special hinge assembly brings the outside of the window to the inside of the room.

5 

The fully reversed window engages on a safety catch and allows safe and easy cleaning of the outside pane.

Residential Doors

All doors are glazed-in and can either 'open-in' or 'open-out' as required. They also come with the option of a standard frame cill or low threshold, suitable for disabled access.



TEST	EXPOSURE CATEGORY		
	1200Pa	1600Pa	2000Pa
AIR PERMEABILITY	200Pa	300Pa	300Pa
WATERTIGHTNESS	200Pa	200Pa	200Pa
WIND RESISTANCE	1200Pa	1600Pa	2000Pa

PVC-U Doors

PVC-U doors are available half or fully glazed with feature infill panels supplied in a white or woodgrain finish with either a standard or steel reinforced treated core. Doors are manufactured to BS EN ISO 9001:2000 registered quality systems.

Welded midrails can be fitted if required. An additional feature is the option of curved or angled head and top rails to suit design requirements. Door viewers, security chains and door bells can be provided.

Door Frames

Manufactured from acrylic modified high quality impact-resistant white Profile 22 PVC-U extrusion, producing a rigid multi-chambered profile conforming to BS 7413 requirements and manufactured to BS EN ISO 9001:2000 registered quality systems.

Reinforcement

Leaf stiles, top and bottom rails, together with outer frame jams, are reinforced for strength and security with galvanised mild steel to BSEN ISO 9001 2000 and sealed within the profiles' centre cavity.

Glazing

Depending on thermal or acoustic requirements, single or double glazing to BS 6262 can be supplied using 4mm or 6mm safety glass.

Double glazed units conform to BS EN ISO 1279: 2002 and glazing options include patterned glass, Georgian bars and leaded lights, all internally glazed with co-extruded bead.

Performance

Double weatherseals ensure excellent performance when tested to PAS 23-1:1999. All 'open-in' doors are fitted with a weather bar.

Hardware

Handle furniture is available in a variety of finishes and options. Letter plates can also be fitted when required.

Locking

Wrekin Windows use the next generation of high quality, high security, durable door locks, SAFEWARE. Locks available include SAFEWARE 3+, a versatile clean face multi point three hook lock with optional shootbolts top and bottom to give a maximum of five locking points, and SAFEWARE 7 which is a seven point lock including three hooks and four pre-compression rollers. The door locks were specially designed and developed for the Profile 22 system, and are fully tested to current security standards. SAFEWARE offers quality assurance, holding PAS 23-1:1999 / PAS 24-1:1999, Secured By Design and there is a 10 year guarantee on every lock.

Doors and Sidescreens

Wrekin Windows' residential door and sidescreen units are available in a variety of styles, in white or woodgrain finish and with a range of panel options to suit requirements. 'Open-out' or 'open-in' windows can be incorporated into the screens, and letterplates can be incorporated into screen midrails or infill panels if required.

Glazing

Screens may be single or double glazed to BS 6262 using annealed or safety glass, depending on the design and application. Double glazed units conform to BS EN 1279 PT 2 and glazing options include patterned glass, Georgian bars and leaded lights, all internally glazed with co-extruded or standard bead.

Sizes

The maximum size of one piece door/sidescreen units will depend on style and glass size limitations. However, units may be coupled in excessive size applications.

Reinforcement

Specific members are reinforced with galvanised mild steel to BS EN 10142 sealed within the profiles centre cavity.

Emergency Exit Doors

Selected doors in the **Wrekin Windows** range can be supplied with panic bars for emergency or fire exits etc. Single doors use either multi-roller or head and threshold shootbolts, double doors use shootbolt mechanisms, and all doors are fitted with midrails and are bar operated.

Standard or low thresholds can be supplied to suit specific requirements. In addition to single or double doors, combination units are available comprising a single residential door for normal access with an adjacent single panic bar door for emergency.

All doors conform to our residential door specification and panic bar mechanisms meet BS EN 1125.

Composite Doors

Wrekin's range of advanced composite residential doors are available in a variety of styles, colours and as single or double units. A choice of thermoplastic or steel facing is available with waterproof-treated dense timber subframe and insulated core, ensuring a high degree of security and insulation whilst reducing maintenance and service costs.

Patio Doors

Wrekin Windows has a range of high quality and secure PVC-U in-line sliding patio doors.

- Slim stepped 85 mm outer frame for minimal plaster cutback.
- Multi chambered profile for greater thermal insulation.
- Low line gaskets extruded to sash frame for greater visible glass area.
- Stainless steel track for smooth operations.
- 2/3/4 pane options.
- Anti jacking 4 hook locking.
- Available in white and woodgrain.
- Midrail with letter plate available.

Profile

Minimum & Maximum Notes

The dimensions stated on the charts on previous pages are the recommended Minimum/Maximum sizes for the relevant product. If windows/doors are required to be fabricated outside of these limits consult the Technical Department.

RULES FOR COMPOSITE WINDOWS

1 Any opening or fixed light in a frame must conform to the sizes stated in the charts on the previous pages.

2 On crucifix frames with mullions and transoms that span the total width and height, the smallest dimension (width or height) must be reinforced continuously to achieve optimum performance.

BS KITEMARK COMPLIANCE

The reader should be aware that the manufacture of a product within the maximum overall sizes stated, and reinforced where required with the recommended steels, does not signify that the product automatically complies with BS Kitemark provisions.

To conform to BS Kitemark requirements the following criteria must be met.

a The manufacturing company must be approved to BS EN ISO 9001, or alternately operate a system which conforms to those standards.

b The product must be fitted with a sealed unit manufactured to BS 5713 (BS EN 1279 PT 2)

c The quality of hardware, weatherseals and gaskets fitted must conform to approved levels, using parts as recommended by PROFILE 22.

d The product must not exceed the maximum overall sizes for stated profiles.

e Where required, the profiles must be reinforced with the recommended steels.

If the reader is in any doubt regarding conformity with BS Kitemark requirements, they are invited to contact the Technical Department for advice.

The above information is provided for general guidance only and may be subject to change without notice.

Hardware

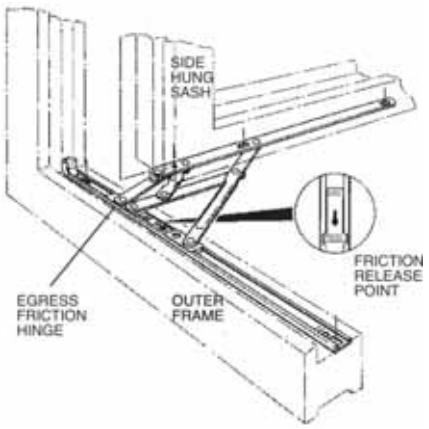
To take full advantage of **Wrekin Windows**' quality window/door systems, hardware must be of equally good quality and designed to suit the particular system. Off-the-shelf hardware inevitably means compromises which result in less than optimum performance. This in turn can lead to in-service problems. **Wrekin Windows** work closely with hardware suppliers, in some cases agreeing unique changes to ensure the window/door provides maximum security, weathering and reliability.

Windows

On Casement Windows, providing they are suitably maintained, friction stays not only fulfil the function of hinging the sash, but also serve to:-

- Provide effective closing/sealing of the sash to frame at the corners.
- Offer constant opening/closing friction during the lifetime of the window.
- Effectively support the sash weight during opening/closing - particularly important on side-hung applications.
- Provide an essential element in achieving the requirements of BS 7950.
- Allow for egress in case of fire, providing additional modifications can be incorporated. Moreover, whilst the standard hinge allows cleaning from the inside, additional release mechanisms can be included to allow greater access on side-hung windows. (See diagram).

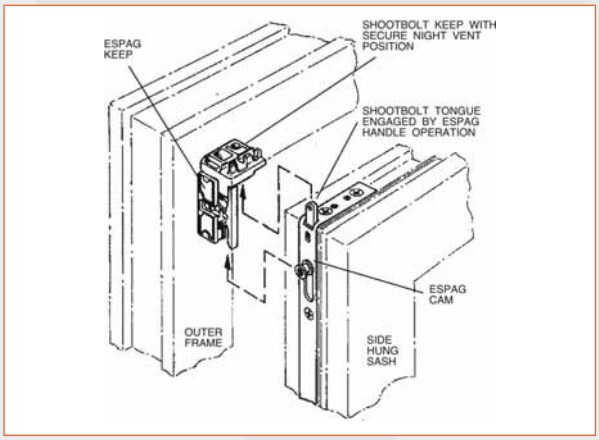
Note:
Egress Hinges satisfy fire regulation requirements and may also be used to facilitate additional safety cleaning to BS 8213: Part 1: 1991



Espagnolette locking, now almost exclusively used for weathering and securing PVC-U Casement Windows, are available in two options:-

Mushroom cams, 1, 2, or 3 per espagnolette, depending on size, engaging with die cast keeps. All cams are eccentrically adjustable to allow final adjustment and provide a good level of security.

Shootbolt locking can be provided either in addition, or instead of mushroom cams, and serve to fully secure the corners of the sash locking jamb. (Shootbolt locking is essential to meet the requirements of BS 7950).



Hardware (cont.)

BS 7950

Certification is available for a full range of Casement Windows options, together with an 'open-in' TBT option utilising multi-point locking with mushroom cams

Restrictors

Locking child restrictors are available as an option, to BS 8213

Vents

Controllable or permanent ventilators to suit 2000, 4000 or 6000mm^2 free air are available together with gas ventilators where necessary. Where a room only has one window, two vents will be required to achieve 8000mm^2.
Compliance with Building Regulations Approved document F1 is achievable.

Doors

Doors take a great deal of abuse in service and therefore need to be built with this in mind if they are to offer trouble-free use.

Hinges on the range of **Wrekin Windows** doors are die-cast with a stainless steel and three way adjustability to offer quick on-site setting of the leaf/frame relationship - particularly useful on double doors.

Three quality hinges are fitted per leaf and to offer improved security at the hinge jamb, two dog bolts can be fitted in to the hinge cavity to provide ultimate security in the event of attack

Wrekin Windows use the next generation of high quality, high security, durable door locks, SAFEWARE. Locks available include SAFEWARE 3+ a versatile clean face multi point three hook lock with optional shootbolts top and bottom to give a maximum of five locking points, and SAFEWARE 7 which is a seven point lock including three hooks and four pre-compression rollers.

The door locks were specially designed and developed for Profile 22, and are fully tested to current security standards. SAFEWARE offers quality assurance, holding PAS23-1:1999 / PAS24-1:1999, Secured By Design and there is a 10 year guarantee on every lock.

Glass

The Thermal Performance of Glass

Calculated in accordance with BS EN673 - Normal exposure conditions (U values are rounded to the nearest 0.1W/m2K in accordance with the above standard).

PKG = PILKINGTON K GLASS
** Note: U Values highlighted fall within Document L February 2002 for Wrekin Windows 60mm and 70mm windows.*

Cavity Width	6	8	10	12	14	16	18	20
4mm Float / Air / 4mm Float	3.3	3.1	3.0	2.9	2.8	2.7	2.7	2.8
4mm Float / Argon / 4mm Float	3.0	2.9	2.8	2.7	2.6	2.6	2.6	2.6
4mm Float / Air / PKG	2.7	2.3	2.1	1.9	1.8	**1.7**	**1.7**	**1.8**
4mm Float / Argon / PKG	2.2	1.9	1.8	**1.6**	**1.5**	**1.5**	**1.5**	**1.5**
4mm Float / Air / 4mm Float / Air / 4mm Float	2.3	2.1	2.0	1.9	1.8	1.8	**1.7**	**1.7**
4mm Float / Argon / PILKINGTON Optitherm™ SN						**1.1**		

Maximum Sizes

CLEAR GLASS (Annealed, Toughened or Laminated) is obtainable in very large sizes, but the maximum width or height should not exceed 2500mm. The maximum glass area is dependent on the type of glazing and the situation of the installation:-

GLAZING OPTIONS			
THICKNESS	ANNEALED	LAMINATED	TOUGHENED
4mm	$2m^2$	N/A	$3m^2$
6mm	$5m^2$	$4.5m^2$	$7m^2$
4+4	$4m^2$	N/A	$6m^2$
6+6	$10m^2$	$9m^2$	$7m^2$

Note:- The above table is extracted from BS6262 and is based on a Design Wind Pressure of 1200 Pa

PATTERNED GLASS should not exceed a maximum size of 1320mm x 2140mm

Glass Weight

Single Glaze 4mm thick = 10 Kg/m^2
6mm thick = 15 Kg/m^2

Double Glaze 4-16-4 = 20 Kg/m^2
6-12-6 = 30 Kg/m^2

Handling

It should be noted that large units are more prone to damage, due to the difficulty of handling and access limitations (size and weight), probably requiring additional personnel, both in factory and on site.

Safety Glass

All glazing must conform to BS 6262 'British Standard Code of Practice for GLAZING for BUILDINGS'.
The following basic information on safety glazing is provided for general guidance only.
Annealed Glass = Float, polished plate and patterned glass.
Safety Glass = Toughened or laminated glass.

TOUGHENED GLASS is produced by subjecting annealed glass to a process of heating and rapid cooling which can increase its strength to four or five times that of annealed glass.

Glass (cont.)

- It should be pointed out that toughened glass is a finished product, and as such cannot be cut or drilled.
- All such work on the glass must be carried out prior to toughening.
- On fracturing, toughened glass will disintegrate into small particles which are unlikely to cause the cutting and piercing injuries, which could occur with fractured annealed glass.

LAMINATED GLASS Laminated glass is produced by combining two or more panes of glass with layers of polyvinylbutyral (p.v.b.), or with resin interlayers.

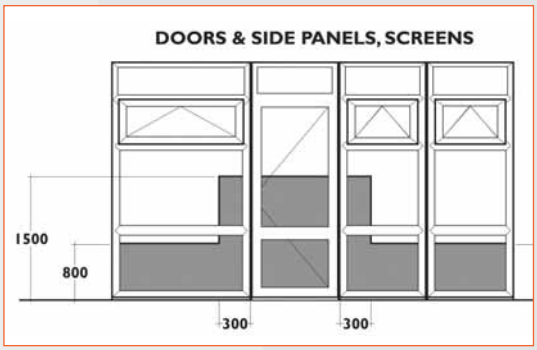
- The performance varies with the number and types of glass and interlayers, to achieve safety, security, bullet, blast and fire resistance etc.
- Laminated glass can be cut to size and supplied from stock by the supplier.
- When fractured, the pieces of glass are held together by the interlayers and the danger of injuries are minimised.

Windows

- Safety glass must be used for glazing windows that are wholly or partially within 800mm from floor level and other risk areas, such as stairways and landings etc.
- In critical applications, provided the small dimension of the glass edge is 250mm or less, annealed glass of a suitable thickness may be used. If the glass edge exceeds 250mm then safety glass must be specified.

Doors

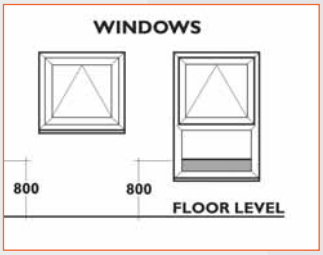
- Glazing that falls wholly or partly within 1500mm from floor or ground level must be safety glass. There are exclusions to this rule dependant on the dimensions of the glazing and also for glazed side panels. More detail is contained within BS 6262 part 4 or Building Regulations Approved Document N.
- Where safety glass is required, it is recommended that toughened glass is used as the standard safety glass and laminated glass only supplied when specified.
- If any doubt is experienced when considering glass choice for a particular application, you are strongly advised to seek advice from your glass supplier.



Safety Glass

The following locations may be considered 'critical' in terms of safety:

1. Between finished floor level and 800mm above that level in internal and external walls and partitions (see diagram)
2. Between finished floor level and 1500 mm above that level in a door or in a side panel (see diagram).
3. Area's of high public traffic, these may include:
   a) Corridors and assembly areas.
   b) Any area where children gather or play.
   c) Vulnerable situations e.g. landings, balconies, stairways and at the bottom of stairs.



Satisfying the Requirements

Glazing In Doors Glazing in doors which is wholly or partially within 1500mm from floor level shall be: Minimum Class C to BS 6206 and marked accordingly. If the smaller dimension of the pane is greater than 900mm it shall be: *Minimum Class B to BS 6206 and marked accordingly.*

Low Level Glazing Glazing which is wholly or partially within 800mm of the floor level shall be: *Minimum Class C to BS 6206 and marked accordingly*

Glazing Adjacent to Door Glazing which is wholly or partially within 300mm of the edge of a door and which is wholly or partially within 1500mm from floor level shall be: Minimum Class C to BS 6206 and marked accordingly. If the smaller dimension of the pane is greater than 900mm it shall be: *Minimum Class B to BS 6206 and marked accordingly.*

Thermal Performance

April 2002 brought big changes to the window and door industry in the form of changes to Approved Document 'L' of the Building Regulations covering England and Wales, and concerning the conservation of fuel and power. This now requires PVC-U windows and doors sold into the replacement markets to achieve a maximum U value of 2.0 W/m^2 deg K. There is an exclusion from this requirement for replacement doors with less than 50% glazing.

New build is slightly different. Here there are three options to demonstrate compliance:

1. The Elemental Method – this specifies U values for construction elements. The requirements for windows are as for replacement windows and doors above, but there is no exclusion for doors with less than 50% glazing.
2. The Target U Value Method – this establishes a Target U Value for a building and allows opportunities for 'trade off' between different building elements.
3. The Carbon Index Method - this uses the SAP (Standard Assessment Procedure) to calculate the Carbon Index of the building which must achieve a specified level.

The latter two methods above can only be applied to specific buildings. As a supplier of window systems, therefore, our most sensible approach is to establish compliance to the U values given in the Elemental Method.

A similar approach is taken in Scotland where Part 'J' of the Scottish Technical Standards has been amended and effective from March 2003 all PVC-U windows and doors must achieve a maximum U value of 1.8 W/m^2 deg K by the Elemental Method. There is no exclusion in Scotland for replacement doors with less than 50% glazing although there is a minor concession to a U value of 2.0 W/m^2 deg K where the efficiency of the heating system can be shown to exceed certain minimum values.

Similarly, the current Elemental Method requirement in the Republic of Ireland is for U value of 2.2 W/m^2 deg K and for Northern Ireland a U value of 3.3 W/m^2 deg K is required.

The route to demonstrating compliance is strictly laid down and can be by mathematical simulation or by physical testing of a window of a certain size and style given in GGF document 2.2 2002 - Window and Door System U-Values : Provision of Certified Data.

Profile 22 has been active on both routes to compliance and can confirm that:

60mm frames glazed with 4/16/4 Pilkington K glass, air filled, aluminium spacer units achieve a U value of 1.9 W/m^2 deg K. Thus being compliant for use in England and Wales, and Ireland.
70mm frames glazed with 4/16/4 Pilkington K glass, air filled, aluminium spacer units achieved a U value of 1.8 W/m^2 deg K. Thus being compliant for use in England and Wales, Ireland and Scotland.

The key elements that determine the thermal performance of a window or door are the glass and the construction of the sealed unit. The build specification of the glass units used above are based on standard, commercially available sealed units. There are, however, more thermally efficient glasses, together with 'warm edge' spacer bars and a range of alternative gas fills. These options open up a whole new range of combinations and performances although some may not be available on a widely commercial basis. For more information on these options consult the Technical Department.

Ventilation

Building Regulations

Approved Document F1* 1995 requires that ventilation openings should be reasonably secure, adjustable and typically located 1.75 m above floor level, so as to avoid discomfort due to cold drafts and ingression from rain.
*Approved Document "K" 1997 in Scotland.

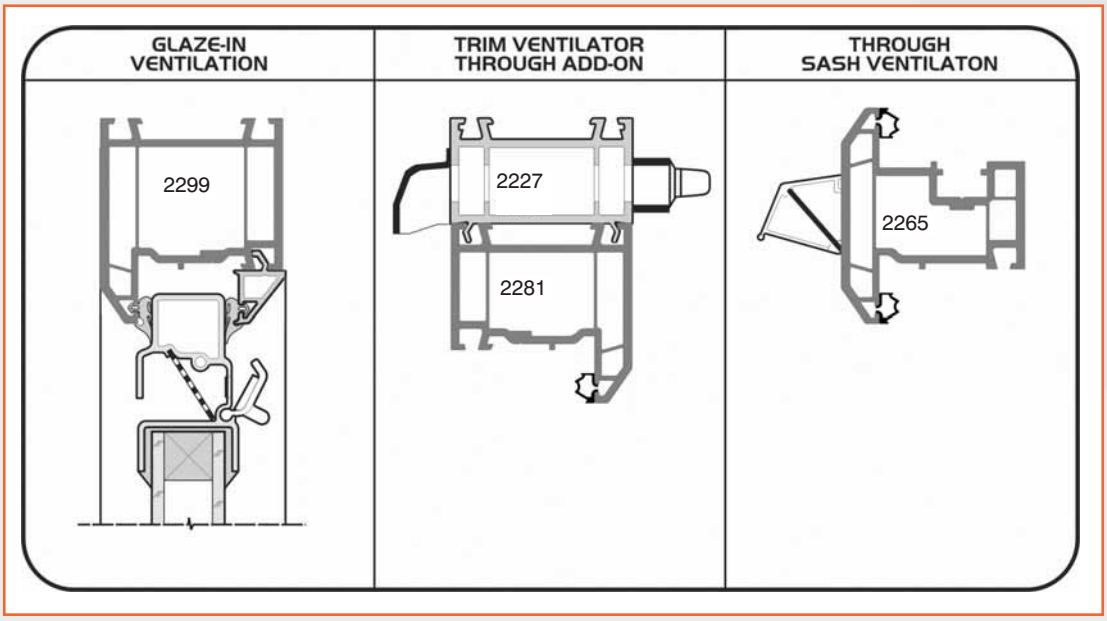
N.B. Document 'L' 2002: Trickle Ventilators are excluded from U Value calculations and testing are ventilators in add-on (over the frame) extensions, these are deemed ancillary items.
Replacement windows now constitute a 'material change' and where compliance with Part 'L' is not prejudiced, compliance with Part 'F' - Ventilation, Part 'B' - Fire Safety, Part 'J' Heat Producing Appliances and Part 'N' Safety Glazing should be taken into account.

Air Flow Requirements

Habitable Room	8000 mm^2
Kitchen	4000 mm^2
Utility Room	4000 mm^2
Bathroom (with or without WC)	4000 mm^2
Sanitary Accommodation (separate from bathroom)	4000 mm^2
Rooms with gas appliances (based on BTU output)	15000 mm^2

Types of Ventilator

Suitable for Wrekin Windows Windows and Doors.
Profile 22 fenestration can be used in conjunction with through frame hit and miss trim ventilators, (fitted in various sashes, and add ons) glaze-in ventilators (normally suitable for 20mm, 24mm and 28mm glazing cavities) and a proprietary overframe ventilator.



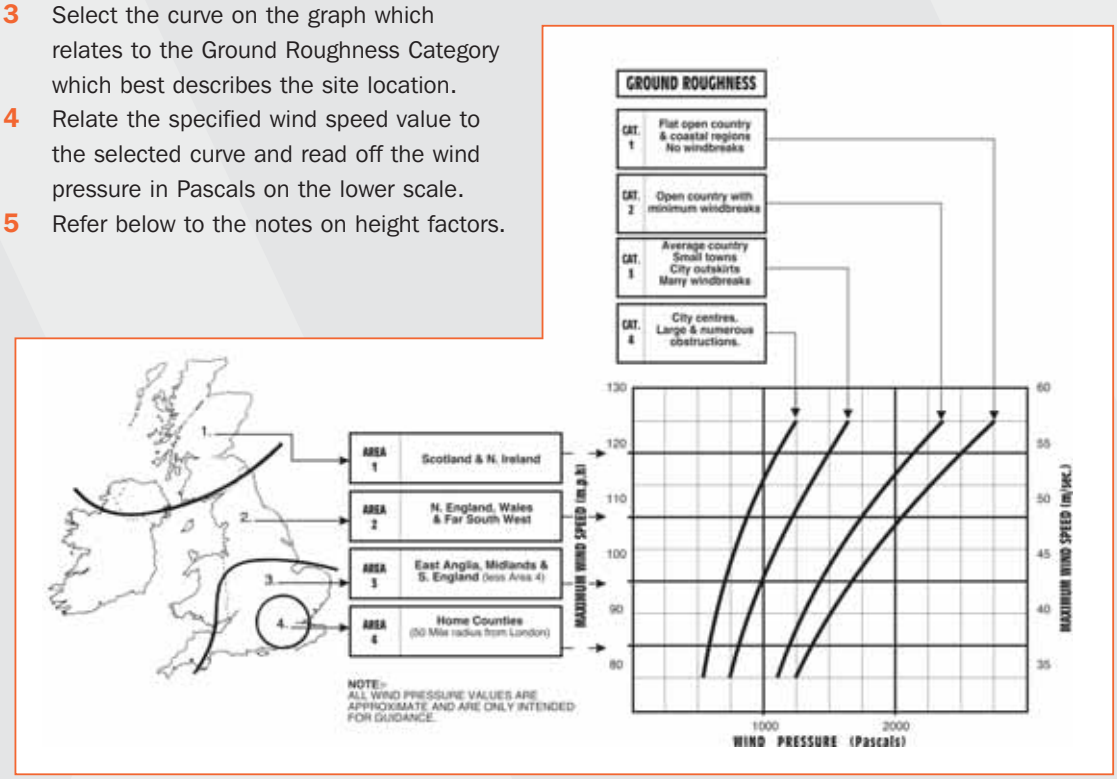
Wind Pressure

The maximum wind pressure to which an installed unit may be subjected is dependant upon the following:-

a The maximum wind speed likely to be experienced at the geographical location of the site.
b The Ground Roughness Category. i.e. The amount of obstruction which will interrupt the air flow.
c The height above ground.
Other factors which influence the wind pressure, e.g. pressure coefficients (Based on Cp = 1.4) and topography etc., have been included in the calculations to simplify the method of obtaining wind pressure values.

To find the maximum wind pressure for a specific site:-

1 Refer to the map and chart and select the geographical area in which the site is located.
2 Read across and note the maximum wind speed value specified for that area.
3 Select the curve on the graph which relates to the Ground Roughness Category which best describes the site location.
4 Relate the specified wind speed value to the selected curve and read off the wind pressure in Pascals on the lower scale.
5 Refer below to the notes on height factors.



Note 1 The wind speed is the maximum gust velocity which is likely to be exceeded only once in 50 years, measured at a height of 10m above the ground in open country.

Note 2 wind speeds in excess of 120mph may be experienced on exposed headlands and islands in Northern & Western coastal regions.

Height Note :-

The graphs represent values for buildings 10m high (to eaves or parapet). For buildings 5m high multiply wind pressure values by factor of 0.8, for 3m high by factor of 0.7.
For building heights above 10m refer to BS Publication BS 6399.

Wind Pressure (cont.)

Acceptable levels of window performance are vital to achieve required standards, eliminate costly corrective action, maintain customer confidence and uphold the reputation of Wrekin Windows.

Profile and reinforcement choice, window size and configuration will all affect window performance. The product variations are innumerable and therefore, until the specific parameters are known, it is impossible to provide predictable performance results.

Standards require that doors and windows meet the specification of BS 7412, for Air Permeability, Watertightness and Wind Resistance, as shown in the following chart:

TEST	DESIGN WIND PRESSURE			
	1200Pa.	1600Pa.	2000Pa.	2400Pa.
AIR PERMEABILITY	200Pa.	300Pa.	300Pa.	300Pa.
WATER TIGHTNESS	100Pa.	200Pa.	200Pa.	300Pa.
WIND RESISTANCE	1200Pa.	1600Pa.	2000Pa.	2400Pa.

The units tested shall avoid air and water leakage and resist wind pressures, measured in Pascals, for the tests listed and to the values indicated under the four exposure categories.

Specifiers are invited to contact the Technical Department for advice, where special exposure categories are specified, unusual difficulties may be experienced, or where installation in exposed locations can be expected to be subjected to above average climatic conditions.

The information on wind pressure, found within this section, is presented in simplified form and is only intended for guidance.

For detailed information covering all aspect of wind loading, window performance and testing etc, refer to the current issue of the following BSI publications.

(a) BS 6375 : Part 1
Performance of Windows
Part 1 Classification of Weathertightness

(b) BS 6399 Loading for Building (Formerly CP3)
Part 1 Code of Practice for dead and imposed loads
Part 2 Code of Practice for windloads
Part 3 Code of Practice for imposed roof loads

(c) BS 5368 : Method of Testing Windows
Part 1 Air Permeability Test
Part 2 Watertightness Test
Part 3 Wind Resistance Test

(d) BS 7412

PVC-U and The Environment

Approximately 57% of the weight of PVC-U is derived from salt (sodium chloride), a virtually limitless raw material. It is therefore more economical in the use of oil than most other synthetic products.

The energy used to manufacture PVC-U windows is substantially less than that used for metal windows, meaning their lower energy consumption helps to reduce carbon dioxide emissions. Carbon dioxide is one of the gasses involved in the so called "greenhouse effect".

If the 25 million plus PVC-U windows installed in the UK were to be replaced by hardwood it is estimated that 4 million trees would need to be felled.

Recycling

PVC-U is easily and efficiently recycled. Over 95% of industrial scrap resulting from the manufacture of PVC-U products is collected and recycled.

If buildings are modified after the installation of PVC-U windows, the windows may be re-used or recycled.

Wrekin Windows vigorously subscribes to the collection and re-use of PVC-U via its associated companies, Dekura and Polypro.

PVC-U Windows Help Cut Carbon Dioxide Emissions

Up to 20% of heat lost in buildings can be attributed to the windows.
The more heat that is required to heat a building means that more energy is required to produce that heat, increasing the levels of carbon dioxide emissions, which is a known contributing factor to the so called greenhouse effect. Typically, a double glazed PVC-U window can reduce heat loss by up to 60% for standard double glazed units, and 75% for specially treated double glazed units or triple glazed units.

Comparisons are based upon a single glazed timber window against PVC-U window frame. Therefore, the energy saved by fixing PVC-U windows is a major contributory factor for combating carbon dioxide emissions.

Building Regulations Document L April 2002 requires that, as well as windows fitted in new build applications, replacement windows are also now included.
Therefore windows inserted after 1st April 2002, must be fitted with high performance, low emissivity glass providing PVC-U windows with a thermal U value of 2.0W/m^2 deg K or less, in accordance with Table A1 "Building Regulations April 2002".

The revision to the Building Regulations is a result of the Government's commitment to the Kyoto Agreement to reduce carbon dioxide emissions by 47% in existing dwellings, and 21% in new dwellings by the end of this decade.

Wrekin Windows is committed to this directive and we undertake to develop our products to achieve these aims.

Windows - safe opening and closing

Safe Opening and Closing of Windows

Windows, skylights and ventilators which can be opened by people in or about the building shall be so constructed or equipped that they may be opened, closed or adjusted safely. Guidance is given in BS 8213: Part 1. Note that BS 8213 is currently being revised and will recommend that a risk assessment is carried out for each installation to identify situations where, for example, the fitting of a window restrictor may be appropriate. The information contained here is taken from an existing published document.

Performance

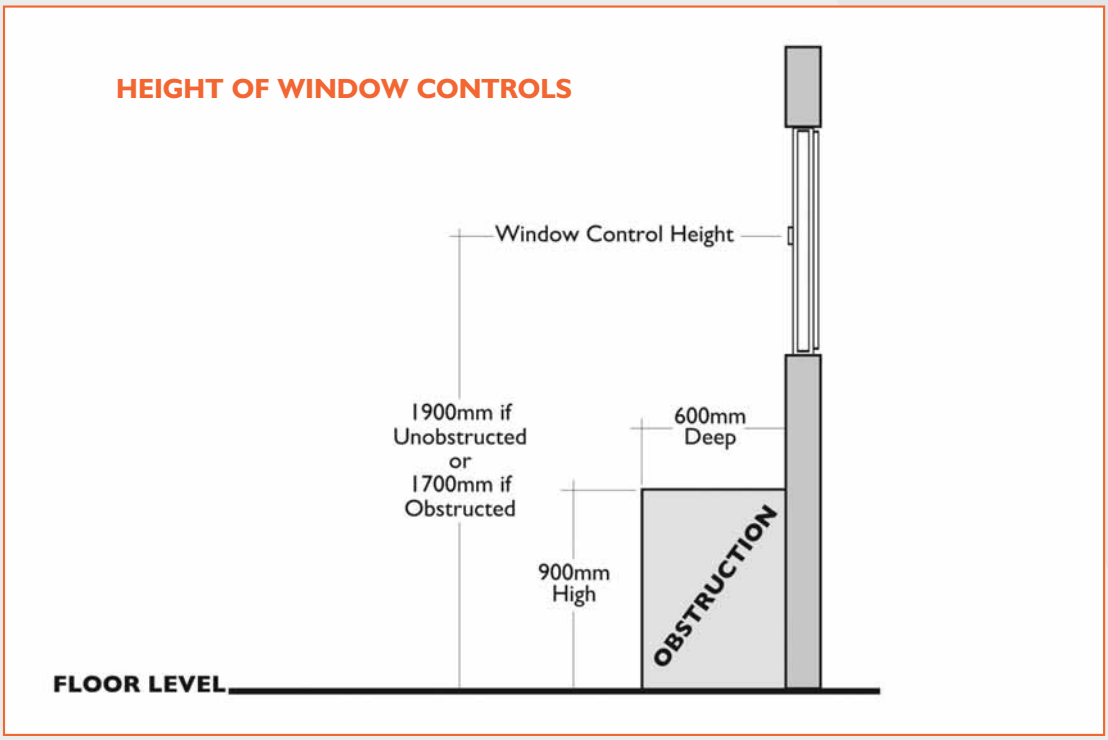
The safety requirement will be met if windows, skylights, and ventilators which open, can be operated safely.

Satisfying The Requirements

The following notes outline some ways of complying with the requirements.

Location of Controls

1. Where controls can be reached without leaning over an obstruction they should not be more than 1.9m above the floor or other permanent stable surface provided to give access. Small recesses, such as window reveals, should be ignored.
2. Where there is an obstruction the control should be lower, e.g. not more than 1.7m. Where there is a 600mm deep obstruction (including any recess) the control should be no more than 900mm high. (See Diagram below).
3. Where controls cannot be positioned within the safe reach from a permanent stable surface, a safe means of remote operation, such as a manual or electrical system should be provided.



Prevention of Falls

Where there is a danger of the operator or other person falling through the window above ground floor level, suitable opening limiters should be fitted or guarding should be provided.

Windows - safe access for cleaning

Safe Access for Cleaning Windows

Provision shall be made for windows or glazed surfaces to be safely accessible for cleaning.

Performance

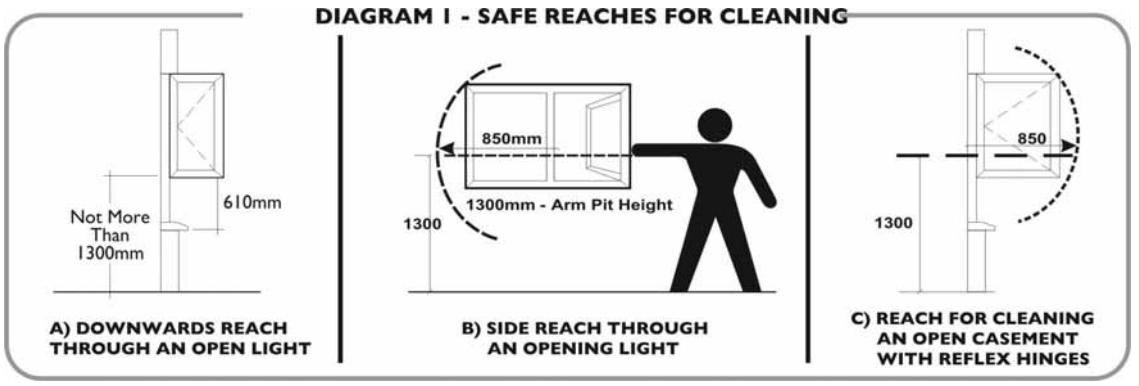
The safety requirement will be met if provision is made for safe means of access for cleaning both sides of glazed surfaces where there is a danger of falling more than two metres.

Satisfying the Requirements

Where glazed surfaces cannot be cleaned safely by a person standing on the ground, a floor, or other permanent stable surface, the requirement should be satisfied by provisions such as the following:

1 Provision of windows of a size and design that allow the outside surface to be cleaned safely from inside the building (see Diagram 1). Windows which reverse for cleaning should be fitted with a mechanism which holds the window in the reversed position. Additional guidance is given in BS 8213: Part 1 Windows, doors and rooflights.

DIAGRAM 1 - SAFE REACHES FOR CLEANING



2 Provision of an adequate area of firm level surface, in a safe place, to allow use of portable ladders not more than 9m long (measured from the ground to the upper support). Where ladders up to 6m long will be used, normal soil will provide a suitable standing surface (see Diagram 2); Where ladders over 6m long will be used suitable tying or fixing points should be provided. (see Diagram 3).

3 Provision of walkways at least 400mm wide, either with guarding at least 1100mm high, or with anchorages for sliding safety harnesses (see Diagram 3).

4 Provision for access equipment such as suspended cradles or travelling ladders, with attachments for safety harnesses.

5 Provision of suitable anchorage points for safety harnesses or abseiling hooks.

6 Only in circumstances where other means cannot be used, space for scaffolding towers should be provided, and located so that glazed surfaces can be cleaned.

DIAGRAM 2
LADDERS NOT MORE THAN 6m LONG

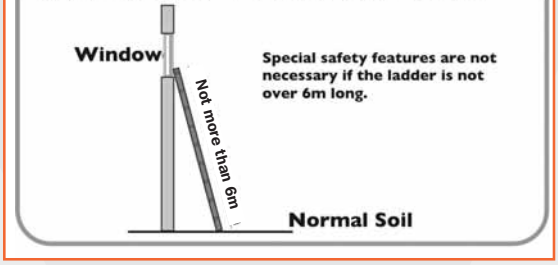
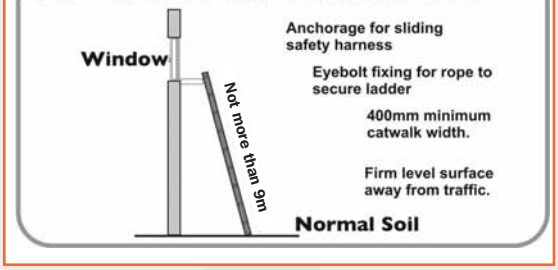


DIAGRAM 3
LADDERS NOT MORE THAN 9m LONG



Windows - fire safety and means of escape

Dwelling Houses - Floors not more than 4.5m above ground level

Where required windows shall be designed and installed to provide appropriate means of escape in case of fire from the building to a place of safety outside the building. Windows shall be capable of being used for escape safely and effectively at all times.

Performance

The safety requirement will be met if there are sufficient number of escape routes, suitably located to enable persons to escape to a place of safety in the event of fire.

Satisfying The Requirements

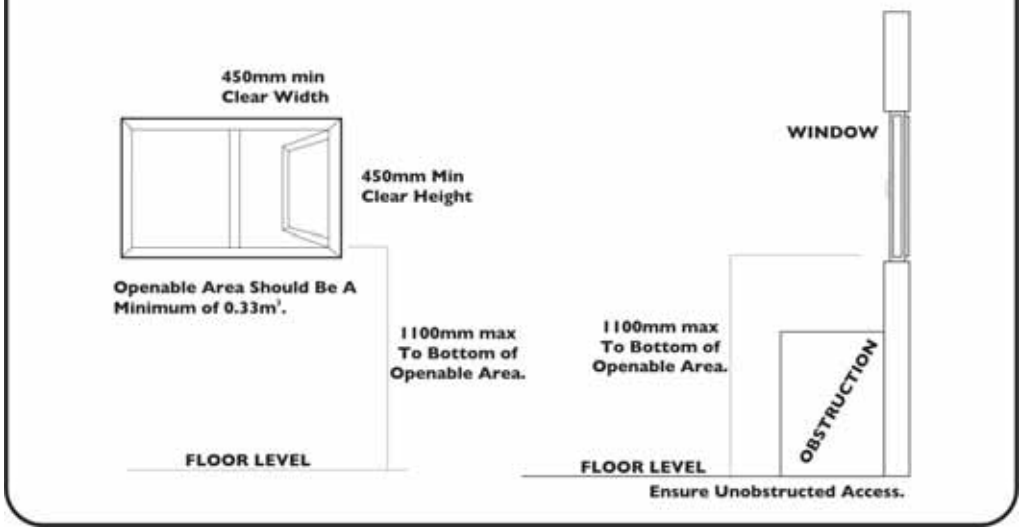
On the ground storey all habitable rooms, except for kitchens, should either open directly onto a hall leading to the entrance or other suitable exit or be provided with a window or door.
On the upper storey(s) all habitable rooms, except for kitchens, of a house served by only one stairway should be provided with a window or external door.

Emergency Egress Windows and External Doors

Any window provided for emergency egress purposes and any external door provided for escape should comply with the following conditions.

1. The window should have an unobstructed openable area that is at least 0.33m² and at least 450mm high and 450mm wide (the route through the window may be at an angle rather than straight through). The bottom of the openable area should be not more than 1100mm above the floor. (see diagram 1)
2. The window or door should enable the person escaping to reach a place free of danger from fire. This is a matter of judgement in each case, but in general a courtyard or back garden from which there is no exit other than through other buildings would have to be at least as deep as the dwelling is high to be acceptable.

DIAGRAM 1 - WINDOW FOR MEANS OF ESCAPE



Service and Maintenance

Installation

Product installation should reflect the recommendations laid down by the BPF codes of practice for the survey and installation of PVC-U windows and doors sets.

Maintenance

Wrekin's comprehensive range of high quality, low maintenance PVC-U windows and doors require minimal maintenance, such as periodical lubrication and cleaning to remove atmospheric grime.

Please refer to Wrekin's Maintenance handbook for additional information.

BS EN ISO 9001
FM09180

KM13543
BS7412
WINDOWS

KM07957
BS5713
SEALED UNITS

KM33525
BS7950/7412
ENHANCED SECURITY
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