



# Surveying and Measuring Guide

## INTRODUCTION

Survey guidelines have been based on manufacturing and installation knowledge of PVC-U windows and door sets and the British Plastics Federation 'Code of Practices'.

Due to the variety of installation conditions and building details found in the UK, it is not possible to cover all applications. The recommendations in this document shall be regarded as a guide to good building practices to ensure satisfactory installations of PVC-U windows and door-sets. You should refer to the fabricator's technical manual, or local building control office for specific technical advice.

## SURVEYOR'S ROLE

Define the sales promise and the customer's requirements into products fit for the purpose and application.

Provide concise information to allow the manufacturing and installation process to be undertaken efficiently.

Obtain from the customer confirmation of any details where the customer can exercise choice.

Verify contractual issues with the customer.

Ensure product designs will conform to statutory requirements.

Prepare a schedule of all consumable materials.

## PRELIMINARY CHECKS

The Surveyor is responsible for ensuring the customer's property is structurally sound for the installation to be successfully undertaken.

Establish the suitability of the structural opening

- Presence of structural supports
- Condition of DPC
- Cracks
- Damp

Establish and record any damage to existing fittings and fitting, including:-

- Ceramic tiles
- Sanitary ware
- Roof or cladding material
- Work tops
- Fitted Units

Record the presence of any obstruction and agree an appropriate course of action with the customer:-

- Satellite Dishes
- Telephone Wires
- Aerials

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Undertake a risk assessment of the proposed installation:-

- Access equipment
- Asbestos
- Customer and property protection

Consider the building detail and recommend appropriate installation instructions.

## 3.0 MEASUREMENT

The width of the aperture should be measured at three points - the top, middle, and bottom of the opening. The smallest of these is used to determine the aperture width.

The height of the aperture should be measured at three points - the left, middle and right of the opening. The smallest of these is used to determine the aperture height.

If the diagonals differ by more than 10mm in length, the smallest height and smallest width MUST be used.

When the resulting gaps exceed the requirements of good joint design, then the gaps may be filled with frame extensions and/or covered with internal/external trims.

The front to back dimension of the existing frame should be checked to ensure that the installation of the new frame would not cause problems with the DPC.

The frame set back dimensions should be calculated to ensure seals and building finishes are not compromised.

The wall surrounding the aperture should be checked to ensure that it is Vertical, level and perpendicular.

The reveal sizes should be checked to ensure that the proposed replacement window or door-set will function. Another area to consider is the clearance between the bottom of the fascia board and the opening casement.

The method of fitting the sub-sill - for example with horns - should be checked to determine the length of the sub-sill. The sub-sill overhang should project at least 25mm from the front face of the building.

To ensure accurate dimensions are obtained it may be necessary to chop back building finishes such as architraves and render.

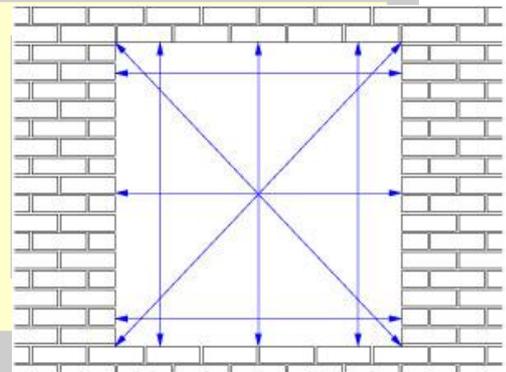


FIG 1



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## RECOMMENDED MANUFACTURING SIZES

The deductions for dark-surface profiles, including wood grain foiled profiles are 50% higher than for white profiles. This is due to dark surface profiles reaching higher surface temperatures due to solar radiation than white profiles.

These deductions are from the total width or height, and are not 'per side'. All height deductions will be at the head of the PVC-U frame. When calculating height deductions, allowance should be made for height of any silicone or mortar bed at the sub-sill level.

Width/Height of opening	White PVCU	Non White PVCU
Up to 1.5m	10mm	15mm
1.5m to 3.0m	10mm	15mm
3.0m* to 4.5m	15mm	20mm
Over 4.5m*	20mm	28mm

## LOAD BEARING WINDOW AND DOOR SETS

Most flat windows and door-sets are not load bearing, but all flat windows and door-sets must be checked to ensure that there is a lintel or other suitable load-transferring structure above the replacement frames.

It is best to assumed that all bay window assemblies are load bearing. In some cases, it will be necessary to remove render, plaster and / or trim sections to determine the construction methods used in the building.

If the surveyor is in any doubt as to the extent of the loads carried by the bay window, or the methods of construction used, then the advice of a qualified structural engineer must be sought prior to removal of the existing window assembly.

## FRAME SPECIFICATION

The surveyor is responsible for correctly specifying the customer's frame specification. This shall include:

- Frame configuration: Openings and handling
- Product colour/finish
- Outerframe size: 65mm or 70mm
- Glazed: Internal or external
- Locking mechanism: Shootbolt or espagnolette
- Ironmongery: Type, colour and position
- Glazing: Specification and pattern

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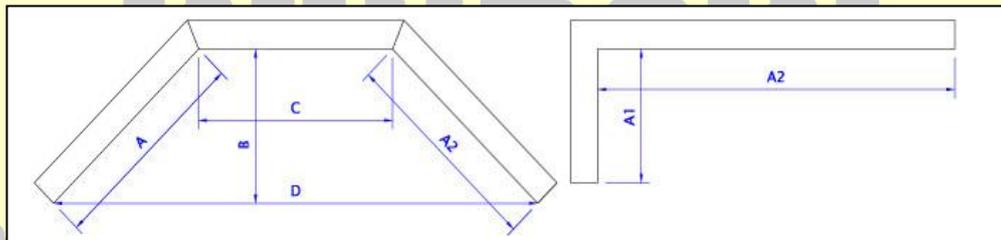
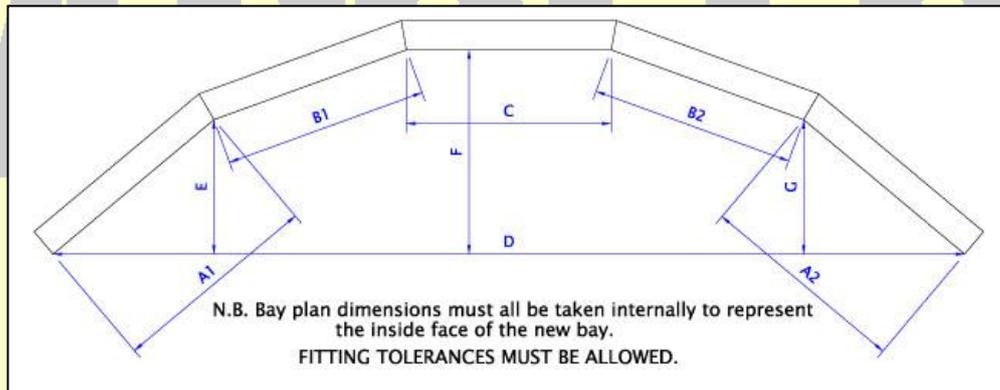
## BAY WINDOWS

There is no requirement for expansion gaps for individual bay segments less than 2500 mm wide. The same number of bay poles should be used again in any replacement bay assemblies. In some cases it will not prove possible to establish full construction details for a bay window, and whether there are any defects present in the window structure until the old bay window is removed.

The inspection of the head plate is essential during the survey to determine the condition, position, and type used. Where possible the existing head plate should be retained. Any evidence of timber infestation should be brought to the attention of the customer and remedial action agreed.

Bay window assemblies traditionally used, have considerable amounts of decorative trims and fascias, which conceal a variety of edge conditions. The edge conditions will affect the manufacturing sizes of the bay segments. Some trims will have to be removed when surveying a bay window assembly.

In general, bay window section sizes and sill layouts are measured from the **inside** of the property. The fabricator requires back spans, projections and/or sill angles for calculating the sill layout. When measuring the height of the bay window, the surveyor should take into account the installation process.

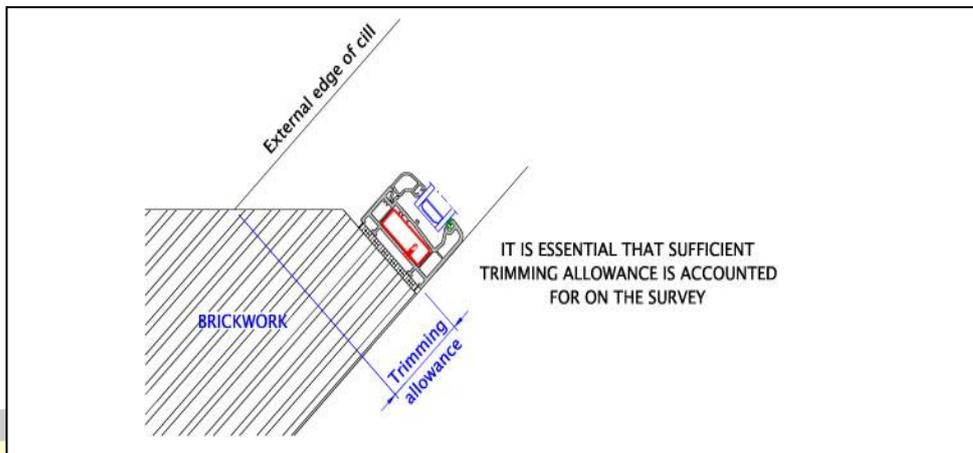


By far the easiest and quickest way to accurately measure a bay is to use an angle finder. This then negates the need to take the backspan and projection measurements.

Using an angle finder allows the surveyor to re-assess the angles required for the new bay. This is particularly useful when replacing a badly fitting previously fitted replacement bay window.

When the head of a bay is being left in, it is important to take the bay angles at the head rather than cill level.

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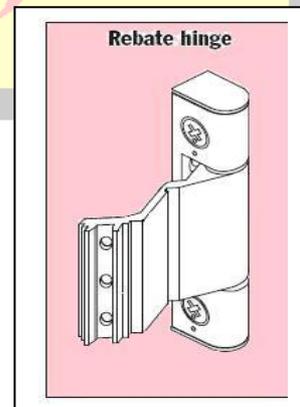
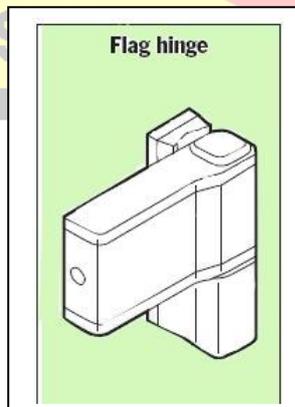
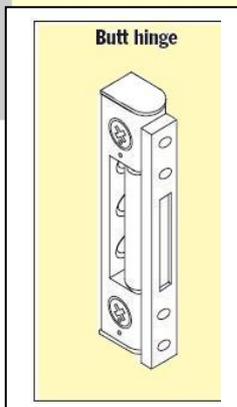
## DOORS

The same principle for measuring a window aperture should be used for doors. However, there are a number of issues particular to door measuring that must be considered to avoid costly mistakes.

For inward opening doors the importance of checking internal plaster thicknesses is essential to ensure there is enough girth between the edge of the frame and the hinge, to prevent the possibility of binding. Different manufacturers have different jig settings, and the type of hinge being used on the new door can also affect the distance.

In general a normal butt hinge on a uPVC door is set in 20mm. A flag hinge on the same uPVC door is likely to be only 10mm from the edge. Whereas, Composite door hinges are completely different again and can vary between 25 -30mm. If you are in any doubt, it is best to order a frame extender or "Add On" on the hinge side. The overall dimension quoted when ordering a door includes the frame extender.

One further word of warning- When measuring an old Victorian style house with a narrow hallway, it is not just the plaster thickness to take in to account. Please observe the thickness of the skirting board, as this can also lead to binding if not enough allowance has been made.

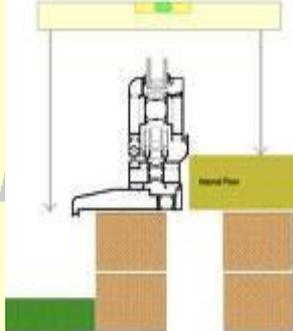


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The threshold and cill level of a door is perhaps the most misunderstood area of surveying. When replacing an existing door, the options are probably more straight forward, because the most obvious course of action is to copy what is already there. However, there are pitfalls, even in this situation. Check if there is a mortar bed underneath the existing cill, and decide whether or not it will be removed when the old door frame comes out. This will give you your lowest datum point. From here you can establish the clearance required to the internal finished floor level, including the thickness of a door mat if required! Upvc doors will have a second rebate which closes against the bottom of the frame, so it is important to take this measurement in to account also.

New build is more complicated because of the requirement of building regulation Approved document M and BS8300.

These regulations set down certain minimum standards, and relate to new buildings, as well as extensions, material alterations and changes of use. The new document raises previous outdated standards, and promotes universal accessibility in new projects.



This diagram is a typical illustration showing the possible difference in the internal and external levels of an older property.

New buildings require the difference in level not to exceed 12mm. With this figure in mind it is important to accurately obtain the **finished floor height including final floor finishes**, before you order your new door.

One way of making sure you don't get caught out by a late change to the finished floor height is to order your door with a frame extender at the top.

You will then have the option, if all else fails, to lift the door and frame by removing the frame extender.

## BUILDING REGULATIONS

It is good practice to ensure that replacement windows and door-sets are manufactured and installed in compliance with the current Building Regulations. The most relevant to windows and door-sets are listed as a guide. However, Building Regulations and Fensa state that when replacing an existing window, the replacement window should not make the situation worse than the window it is replacing with regard to Documents B, E and F.

### APPROVED DOCUMENT B: Fire safety

If a window is intended as part of an escape route in case of fire, it needs to provide a minimum unobstructed opening of:

- Minimum of 450mm high
- Minimum of 450 mm wide
- Openable area of 0.33sq metres
- Bottom of the openable area not higher than 1100mm above the floor



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## APPROVED DOCUMENT E: Resistance to the passage of sound

Good sealing between the window and door-set and the building fabric is critical to the achievement of the desired acoustic insulation. The presence of the smallest gap can impair the effectiveness of the best acoustic window or door-set.

## APPROVED DOCUMENT F: Ventilation

Building Regulations require the provision of background ventilation. A trickle ventilator built into or added to the window or door is normal

The required area of ventilation is dependent on the size of the room and its intended use.

See table 1 below for current requirements. If the original windows have trickle ventilators, any replacement frames should also be provided with such. The area of opening windows should not be less than that which was originally provided.

As an alternative approach to the ventilation provisions listed in table 1 below, the overall provisions for background ventilations for the dwelling should be equivalent to an average of 6000mm<sup>2</sup> per room for the rooms listed, with a minimum provision of 4000mm<sup>2</sup> in each room.

**Table 1 Ventilation: current requirements for various rooms**

Room	Rapid ventilation	Background ventilation
Habitable room	1/20th of the floor area of the room served	8000mm <sup>2</sup>
Kitchen and utility	Opening window (No minimum size)	4000mm <sup>2</sup>
Bathroom/Shower rooms	Opening window (No minimum size)	4000mm <sup>2</sup>
Sanitary accommodation	1/20th of the floor area of the room served	4000mm <sup>2</sup>

## APPROVED DOCUMENT L: Conservation of Fuel & Power

Approved Document L outlines measures to limit the heat loss through the fabric of the building. A Standard Assessment Procedure (SAP) is described, by which a Building's Energy Rating may be calculated. Double-glazed windows and door-sets are virtually mandatory in all installations. Therefore air leakage and cold bridging are relevant, as is the perimeter aperture sealing of the window or door-set.

**Please see our separate section on Energy Rated Windows to see the latest requirements.**

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## APPROVED DOCUMENT N: Glazing – materials and protection

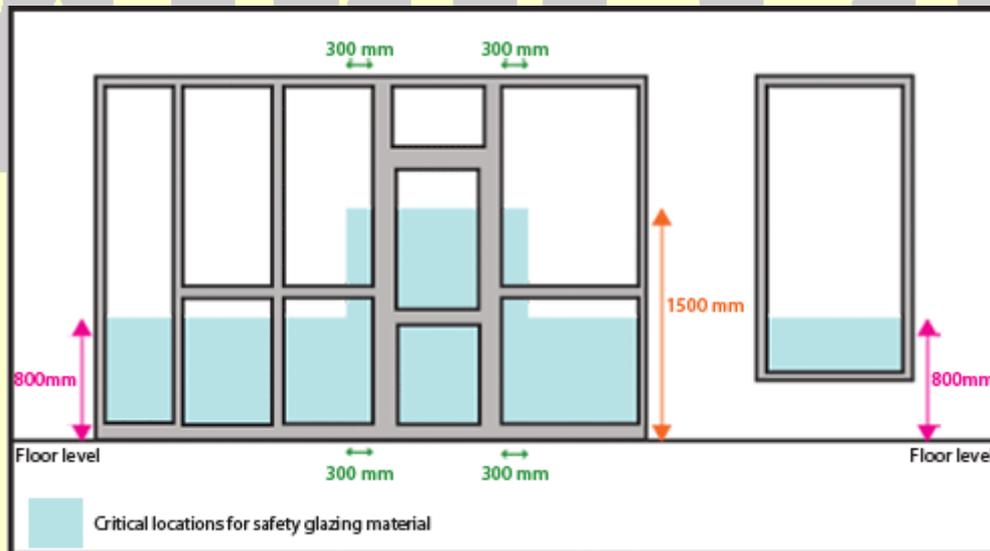
### Critical Locations

Critical locations as described in the Building Regulation Document N are as follows:-

- Finish floor level and 800mm above that level in internal and external walls and partitions
- Between finished floor level and 1500mm above that level in a door or in a side panel close to the edge of the door

Critical locations are further extended in BS6262 glazing for building to cover bathing areas:

- Any glazing located adjacent to a bath or shower area shall constitute a potential danger due to the possibility of a person slipping on a wet surface.



## LISTED BUILDINGS

The existence of restrictions limiting the installation of PVC-U replacement frames should be checked, especially for listed buildings and/or buildings with special architectural or historic interest.

There are three main categories of LISTED BUILDINGS:

- Grade I: These are buildings of exceptional interest and outstanding national importance
- Grade II: These are buildings of special interest, which warrant preservation
- Grade II \*: These are buildings of particular importance and of more than special interest

Under no circumstances should any attempt to survey and to install PVC-U frame products within these three categories. Surveyors should be aware that every part of the building (including new extensions) and any area / item within the boundary are listed.



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The current criteria for LISTED BUILDINGS includes:

- All buildings built before 1700 which survived in anything like their original conditions
- 
- Most buildings built in the period between 1700 and 1840. Buildings built between 1840 and 1914 of certain quality and character, including the work of the principal architect
- 
- Selected buildings built between 1914 and 1939, and a few outstanding buildings built after 1939. . . Local planning authorities have a duty of care to determine which parts of their area are areas of . . . special architectural or historic interest, and to designate them as CONSERVATION AREAS, and to develop policies and means to enhance or preserve them.
- 
- In areas of doubt, the surveyor must contact the Local Authority in order to obtain Conservation area consent for PVC-U replacement products. Surveyors should advise customers that approval may be subject to windows and door-sets designs being 'like for like' to the original.

## FINAL CHECKS

The following details should be checked to ensure that none of these would adversely affect the installation:-

- Is the proposed configuration and handing of the replacement windows and door-sets correct?
- Is the proposed style of replacement window and door-set suitable for the geographical location?
- Is the proposed style of replacement window and door-set within the manufacturers frame size limits?
- Will the proposed style of replacement window and door-set permit the opening lights to function?
- Will the proposed replacement window or door-set compromise the security of the property?
- Will the proposed replacement window or door-set compromise safety in case of fire?
- Has the correct use of safety glass been identified in accordance with the Building Regulations?
- Has the required hinge clearance on tilt & turn windows and residential door-sets been maintained?
- 
- Has the required door leaf clearance of 12mm for a low threshold door been maintained?
- Has the site adequate access for the installers and the replacement products?
- Have the additional requirements of night vents, restrictors, special hardware been identified?