



## Window and Glazing Topics – Installation of PVC-U windows

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## 1. Resources

As with any specialist product, trained installers are required and the appropriate tool kit for fitting PVC-U windows is required. Details of the appropriate tool kit are given in Appendix 1.

## 2. Work planning

Windows and doors may be installed into either prepared openings in new constructions or into the openings in existing masonry after removal of the doors and windows to be replaced. No sub-frames are required. The surveying instructions and style sheets for each system should be used to ensure that the correct size and style is ordered. PVC-U windows are finished as a complete product and the aperture should be complete before installation takes place. The aperture should include a lintel, and tolerances should be allowed to enable the window to be installed. PVC-U windows should not be installed until the aperture is complete and should not be used as a template for the building work. To avoid scratching or marking of the PVC-U frames is essential to prevent the transport of materials through windows once the PVC-U frames have been installed.

## 3. Work off site

PVC-U windows are delivered site ready and all work apart from installation and glazing is completed off site.

## 4. Transport and handling

Glazed or unglazed frames should be transported in an upright position on clean resilient packing. This will minimise racking and prevent surface damage of the frames. For long distance transport cardboard wrapping or cardboard spacers are recommended.

Frames on site should be treated as above and should be carried securely and heavy impacts should be avoided. Storage on site should be on edge, under cover in a clean area and supported to avoid damage.

All materials used in the manufacture of PVC-U windows have a high resistance to weather corrosion and materials found on a building site.

Cement, plaster and sand will not chemically affect the PVC-U but may scratch the surface if rubbed in during handling. Drainage channels and glazing bead rebates should be clean to prevent blockages and fitting difficulties. Abrasive materials should also be kept away from moving parts to avoid wear and undue scratching.

Tar and bitumen should be kept off the surface of PVC-U to avoid staining. Silicone and other sealants will generally have no effect on PVC-U but solvent based products should be avoided.

## 5. Preparation

### New construction

See above.

### Removal of existing windows

(a) Before removing existing windows, it is of extreme importance that the following points are checked:

- Check the external and internal structure for existing damage and report any such damage to the customer before commencing work;
- Check that the new windows have not been damaged in transit and that they have been manufactured in accordance with the customer's original order;
- Check that the measurements of the new windows are correct so that they will fit into the aperture once the existing windows have been removed;

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- Move any items of furniture away from the window aperture to avoid damage whilst removing the existing window or installing the new window;
  - Cover carpets and soft furnishings with sheets so as to minimise the possibility of damage and to facilitate the 'cleaning up operation' after the installation is complete.
- (b) Using a craft knife or similar, score around the perimeter of the existing frame on the inside, where the plaster or wall decoration meets the frame. In most cases this will minimise the damage.
- (c) Remove all opening sashes and glass from the main frame.
- (d) Saw through any mullions or transoms and break these out of the main frame.
- (e) Saw through verticals of main frame as far as possible without causing damage to internal reveals or structure.
- (f) Protecting plaster and renderings with a bearing block, use a levering bar between the structure and the main vertical frame to carefully lever the verticals inwards and then complete the saw cut. Remove the vertical members completely from the aperture.
- (g) Remove the horizontal members of the outer frame from the aperture.
- (h) Clean aperture and remove any mastic from the structure.
- (i) Remove all debris from the site.
- (j) Check that the DPC has been installed and has not been damaged.

## 6. Installation

### Frame preparation

If using fixing brackets these should now be firmly attached to the outer frame, starting at no less than 150mm from the corners and no more than 600mm centres. If installation is to be by screwing through the main outer frame into the structure, then the glass in the appropriate fixed light must be removed. If a cill is required and has been supplied separately from the window then it must now be attached in accordance with the instructions. If the cill is to be fixed to the window frame with screws, always screw from the underside into the frame. It is important that fixing systems do not penetrate drainage channels. If the window is too heavy for convenient handling the glass units may have to be removed. Store any glass or sash you have removed safely away from the work area.

### Installation

- (a) Offer the window into the aperture, bedding in the manner recommended by the systems supplier, temporarily wedging it into position to make sure it is level and plum.
- (b) Fix the window into the aperture using either fixing brackets or by drilling and fixing into the outer frame, screw holes should be no less than 150mm from the corners and at no more than 600mm centres. If it is necessary to screw through the bottom member of the outer frame, where water can collect, then adequate sealing should be applied. If a fixing is required along the bottom member, it is preferable to use brackets. Having fixed in this manner the temporary wedges may be removed.
- (c) Refit any of the glass units that have been removed, making sure that they are sitting on the necessary glazing blocks to allow for drainage of water. Refit the glazing beads, according to the manufacturer's instructions and taking extreme care not to damage the glass.
- (d) Refit any sash or sashes removed.
- (e) Check the window for correct operation before proceeding with the mastic seal or making good. Any malfunction must be rectified now.

## 7. Making good

There should be approximately a 5mm gap between the outer frame and the building structure. Insert into this gap a flexible filler, usually supplied with the window, making sure it is far enough into the gap

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so as not to interfere with the sealant. Prepare the external surface of the window frame before sealing. Any internal making good and sealing should now be done. Plaster and cement may damage metal fittings and gearing and should be wiped off immediately. Drainage channels should be cleared. Following installation, the PVC-U window frames may be cleaned using warm water containing household detergent. Stubborn marks may be removed using very fine water-based creams but it may be necessary to rebuff with a lamb's wool mop if a full gloss finish is to be retained.

The external making good and finishing off to any window is an important factor in replacement work. Important points are:

Between the edge of the window and the brickwork a flexible infill foam can be used to cut down the amount of silicone mastic required. This should be inserted well inside the gap so as not to interfere with the sealant.

It is essential that a mastic seal is provided between the ends of the cills and the brick reveal. This is to eliminate the possibility of any ingress of water through the internal plaster reveals.

The windows and doors should be cleaned up before leaving the site with cleaner. In cases of scratching polishing discs can be used and finishing off with a sisal brush.

It is important that all moving parts i.e., gearing, are oiled after installation.

Remove the transparent protective tape from all window surfaces immediately after making good is complete.

## **8. Site quality control**

Site quality control is the responsibility of the Site Supervisor who should ensure that all of the above recommendations are carried out in full.

## **9. Site safety**

PVC-U windows require no special site safety procedures other than those normally in operation. The use of safety glasses when operating power tools is recommended and suitable protective clothing should be worn at all times when glass handling is involved.

## **10. Maintenance information**

There is often a requirement for maintenance information on PVC-U windows from domestic and specification customers. As a general rule PVC-U windows have an extremely low maintenance requirement compared to other material types but there is still a need to maintain the product to get the best out of it. Customers who require reassurance regarding maintenance of their windows can be given a copy of the Tangram Technology publication 'Window and Glazing Topics - Maintenance of PVC-U windows'.

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## Appendix 1: Installation toolkit

As with any specialist product, trained installers are required and the appropriate tool kit for fitting PVC-U windows is required.

We recommend the following as a minimum:

- Dust sheets
- Dust pan and brush
- Broom
- Ladder
- Levering bar
- Bolster
- Club hammer
- Hammer (16-20 oz)
- Mallet (plastic/rubber)
- Personal safety equipment
- Cold chisels (various sizes)
- Wood chisels (various sizes)
- Panel saw
- Hacksaw (blades)
- Bow saw (blades)
- Multipurpose saw (blades)
- Saw trestle
- Stanley knife (blades)
- Hand drill (selection of speed drills)
- Brace (selection of bits)
- Hammer action electric drill (selection of masonry and steel drills)
- Extension leads (Fitted with safety cut outs)
- Tape rule (pencil)
- Folding rule
- Bevel square
- Protractor
- Set square (large size)
- Spirit levels (small and large – 1000 mm)
- Plumb line
- Screwdrivers (selection of types)
- Pump action screwdriver (selection of bits)
- Sealant guns (two, one for caulking)
- Window glass grips

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- Wedge blocks
- Glass handling equipment
- Glass cutter
- Unit lifter
- Putty knife
- Gasket wedger
- Gasket cutter
- Specialist window adjustment tools (Allen keys/spanners)
- Buckets
- Plastering hawk
- Plastering float
- Pointing trowel
- Paint brushes
- Adequate cleaning materials