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## **Installation Recommendations**

REHAU window and doors systems.  
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# 01. General

These installation recommendations have been based on The British Plastics Federation 356/2 Code of Practice for the installation of PVC-U windows and doors Glass and Glazing Federation (GGF) Good Practice Guide for installation of replacement windows and doors BS 8213-4 Code of Practice for Survey and Installation of external windows and doors.

They regulate the installation of elements by the fabricator or installation firm and ensure good building practices for satisfactory installation of UPVC Windows and Doors.

## 1.1 Surveying

Prior to installation it is important that a full survey has been carried out by a competent person. Window design sustainability and risk assessments should be fully determined to ensure that the installation runs as smoothly as possible.



## 1.2 Transportation

It is important that, when delivering elements to site, they are transported and stored in an upright position and placed on timber battens, with a soft interlayer used between windows to protect the frame edges and corners from damage.



## 1.3 Storage

When delivered to site the elements must be stored under cover to prevent soiling. It is also important to ensure they aren't placed in direct sunlight or near heating appliances.



## 1.4 Installation preparation

When on site it is important to discuss with the homeowner the installation schedule and identify any fixtures and fittings which could become damaged during installation. The installer is responsible for both internal and external protection of the property during the installation work. You should obtain consent from the homeowner before proceeding with the installation. Prior to commencing any work you should ensure the aperture and element size are measured to verify compatibility including any allowances.

## 02. Removal of old frames

Where possible new windows and doors should be installed and sealed on the same day that the existing windows or doors are removed to maintain security and weather tightness of the building

If this is not possible an alternative arrangement for security and weather tightness should be agreed in advance between the installer and homeowner.

### 2.1 Removal of timber windows and doors

It is easiest for opening lights to be removed first, complete with glass, by levering the screws from the frames, unscrewing the hinges or cutting through the hinges as shown in Figure 1.

After removal of the opening lights and fixed light glazing any mullions and transom can be cut through to remove them from the outer frame of the windows or door as shown in Figure 2.

If original fixing nails or screws cannot be found and removed the outer frame can be cut through twice to remove a small central piece of the outer frame. The frame can then be carefully levered from the surrounding aperture causing minimal damage.

### 2.2 Removal of plastic windows and doors

To begin this process glass should be taken out through the removal of glazing beads, although a sharp knife may be required to free the glass where glazing tapes have been used. It is advisable to remove any trim profiles around the windows and doors to allow easier access and to determine the presence of fixing brackets.

Plastic windows and doors are usually fixed by through-frame fixings, brackets or proprietary means.

- Through-frame fixings can usually be unscrewed to allow the frame to be removed from the aperture.
- Where fixing brackets have been used to secure the window or door it is preferable to unscrew the fixings in the fixing bracket. Where this is not possible the brackets can be cut with an angle grinder. Extra care should be taken to reduce inevitable damage to the surround.
- Proprietary fixings might require special instruction from the manufacturer.

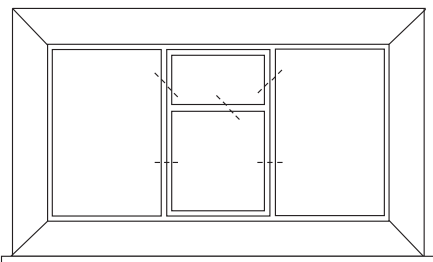


Figure 1

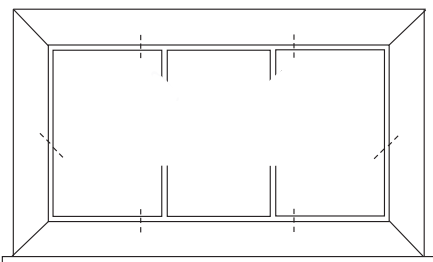


Figure 2



### 2.3 Removal of box sash windows

Most box sash windows pre-date cavity walls and are built into the internal reveals of solid brickwork. The sashes can be removed fully glazed whilst following these instructions:

- Removed the mitred beading from around the frame.
- Carefully cut the sash cords to release and lower the weights.
- Remove the bottom sash then take off the parting bead and take out the top sash.
- Cut the outer frame from the aperture leaving the horns in the structure.
- Remove the counter-weight from the sash box.
- Remove the sub-sill if this is not part of the outer frame.

### 2.4 Removal of metal windows and doors

Metal windows and doors can be removed in one of the two following ways according to the type of window or door:

1. For metal windows and doors fixed through the frame into a timber sub-frame or direct into the aperture:
  - a. Remove all glazing from fixed lights, separate and remove all opening lights from the frames.
  - b. Locate the screws holding the metal frame in place and remove.
  - c. Remove any timber sub-frame as stated for timber windows and doors.
2. For metal windows and doors set directly into the brickwork or concrete held in place by lugs attached to the outer frame:
  - a. Remove any opening lights with an angle grinder or hacksaw.
  - b. Cut through any transoms and mullions and remove.
  - c. Remove the screws from the frame by drilling out the heads or by driving them through the frame using a suitable punch.
  - d. Cut through each side of the frame with an angle grinder and lever away from the wall taking care not to damage the fabric of the aperture.

### 2.5 Removal of sub-sills

Sub-sills and sometimes heads, window boards and mullions are often horned into the fabric of the aperture. This can conceal Damp Proof Membrane's and lead to difficulties when removing. Great care has to be taken when cutting and levering these items to keep damage to plaster, renders and brickwork to a minimum. If the DPM is damaged, then it needs to be repaired or replaced

### 2.6 Preparation of the aperture

Brush down the aperture and check the condition of the DPM (if applicable). If the DPM is damaged this must be replaced prior to installation of the window or door.



# 03. Frame positioning & new frame preparation

## 3.1 Frame positioning

In general, replacement products should be positioned in the same position as the original frame.

- The new frame should bridge the DPM and the required expansion gap should be maintained.
- The new frame should be set back as far as possible within the aperture to shield it from the elements.
- UPVC windows and doors should be installed perfectly level, vertically plumb and correctly aligned. The fabricator must notify the customer in writing of any deviation from these regulations as this may invalidate the guarantee.

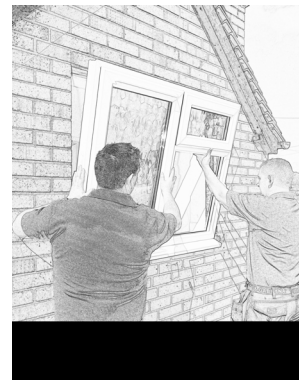
The joint between the element and the building must incorporate an adequate gap to ensure no damage will result from linear expansion, contraction or building distortion. REHAU recommend a minimum of 5mm either side.

## 3.2 New frame preparation

When preparing the new frame, special window fixings such as stepped metal strips or lugs, can be used in most situations and allow expansion movement, particularly with larger elements. These are fixed to the frame with screws or by location between the frame lugs and should be firmly attached to the outer frame. Fixing to the building fabric is achieved with screws and wall plugs, nails or shot riveting. Nails or shot rivets must not be used to fix frames. If you are screwing through the main outer frame into the structure, then glass must be removed.

Hollow dowels of steel or plastic with a central screw can be used directly through the frame profile and into the building fabric. They provide horizontal and vertical support but must not be used for the lower member as the rebate bed will puncture allowing water ingress.

All anchoring materials must be protected against corrosion, be suitable for the building fabric and able to withstand the stresses transmitted.





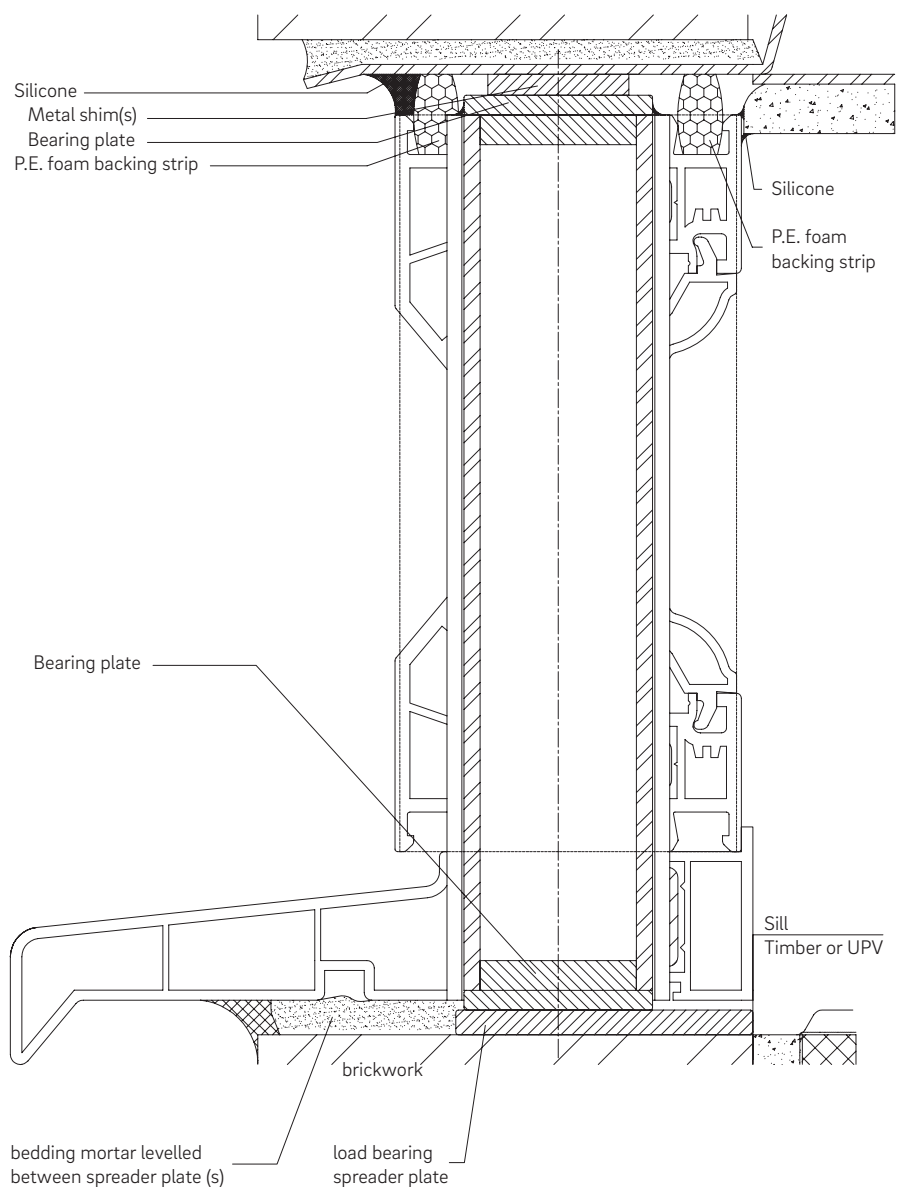
### 3.3 Baypoles

Where significant loads are being transferred (e.g. several storeys or just a roof) it is recommended that the baypoles are carried through the sill to the bearing plate. If you are unsure please contact a Structural Engineer.

For lesser loads it may be possible to position baypoles directly on to reinforced sills. In this case it is imperative that:

- The reinforcing system is designed to perform this task
- The system manufacturer's guidelines are followed

The image (right) shows a Baypole Jacking System using a load bearing pole and shims. It may be necessary to use jacking posts depending on load bearing requirements.



# 04. Fixing methods and fixing distances

## 4.1 Fixing methods

There are two principal methods of fixing available which may be used separately or in combination: through frame fixings and lug fixings. The manufacturer's instructions should always be followed.

Screws should be sized to penetrate at least 25mm into timber or 40mm into plugged holders in brick, block or masonry, unless equivalent demonstrable provision can be made by other means, e.g. in accordance with an appropriate structural code. Connections to steelwork up to 2mm thick such as folded sheets lintels should be made with appropriate thread cutting screws. Connections to steelwork over 2mm thick should be either into pre-taped holders with machine screws of minimum 5mm diameter, or with power-driven hardened self-drilling screws.

Fixings should be at least as corrosion resistant as BS EN 1670:1998, Grade 3.

The presence of pre-cast concrete or steel lintels may make it impractical or pose severe difficulties in achieving the specified fixing distances. In these instances the use of polyurethane foam has proved useful when used with mechanical fixings. However, foam fixings should never be used as the sole method of fixing the entire frame into the reveal.

## 4.2 Installation packers

Installation packers should be used adjacent to fixing positions to prevent outer frame distortion during installation. Installation packers should be resistant to compression, rot and corrosion. They should span the full depth of the outer frame. The fixings should be tightened so that the frame is held securely against the packers. Over-tightening can lead to distortion and should be avoided.

## 4.3 Fixing distances

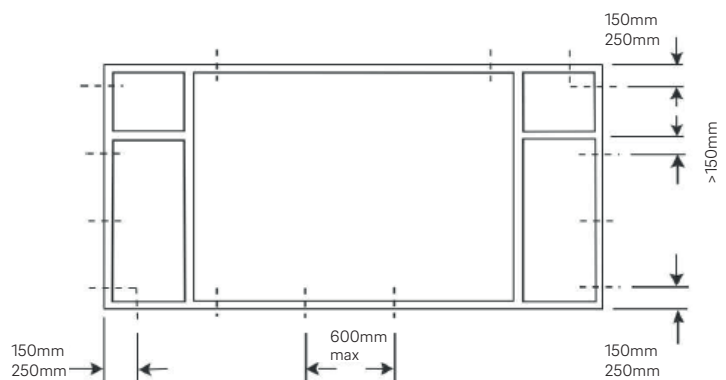
Where possible, all four sides of the frame should be secured as follows:

- Corner fixings should be between 150 mm and 250 mm from the external corner.
- No fixings should be less than 150 mm from the centre line of a mullion or transom.
- Intermediate fixings should be at centres no greater than 600mm.
- There should be a minimum of two fixings on each jamb.

If the head is fixed with polyurethane foam, then the fixings at the head may be as follows:

- Frame width up to 1200mm – no fixings
- Frame width 1201mm to 2400mm – one fixing
- Frame width 2401mm to 3600mm – 2 equally spaced fixings.

The image shows recommended fixing positions for UPVC Windows and Doors.





# 05. Glazing

All glazing should conform to the recommendations given in the relevant part of BS 6262 and in BS 8000-7:1990 Workmanship on building sites. In addition, any glass or insulating glass unit manufacturer's instructions should be followed.

All insulating glass units should be examined for damage prior to installation and defective units should not be used.

Insulating glass units incorporating safety glass should be oriented with the safety glass on the appropriate side.

It is a legal requirement that the marking on the safety glass remains visible after installation.

Insulating glass units with low emissivity coatings should be oriented in accordance with the manufacturer's instructions. Failure to do so can render the coating less effective.

Many windows and doorsets are delivered ready-glazed. Alternatively they can be supplied with glass units and pre-formed glazing gaskets to be applied on site in accordance with the manufacturer's instructions.

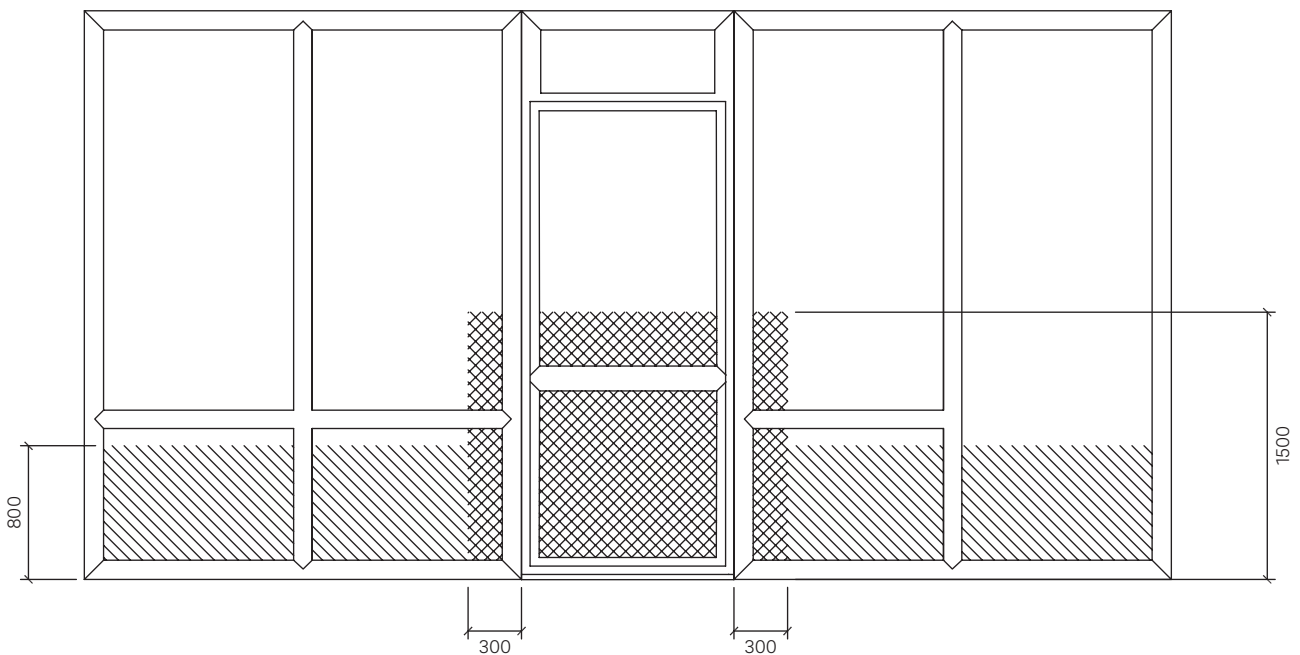
Insulating glass units should be installed in accordance with BS 8000-7:1990 Workmanship on building sites and code of practice for glazing,, requiring, where appropriate, the correct use of setting and location blocks, distance pieces, frame to glass and bead to glass gaskets, bead to frame air seals, corner sealing blocks, beads and bead end caps, and bedding and capping sealants.

Please see Sealed unit packing instructions for more information.



## 06. Safety glazing - critical locations

The Critical locations set out below for the positioning of safety glazing are minimum requirements. For more information please refer to Building Regulations Part N & BS 6262-4.



Low Level Glazing



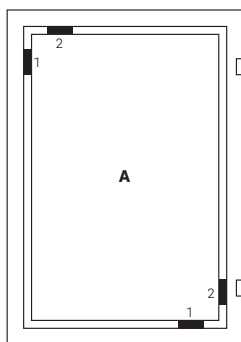
Doors / Glazing Adjacent to doors

### 6.1 Critical safety area locations

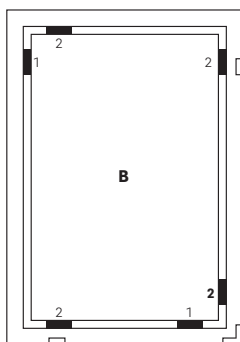
The areas that are considered to be "critical locations" in terms of safety are:

- Between the finished floor level and 1500mm above that level in doors, and side panels which are within 300mm of either edge of the door.
- Between the finished floor level and 800mm above that level in the case of all other windows.

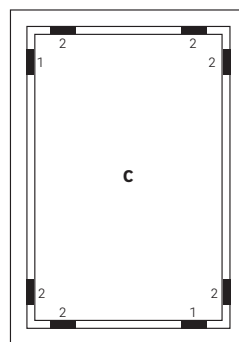




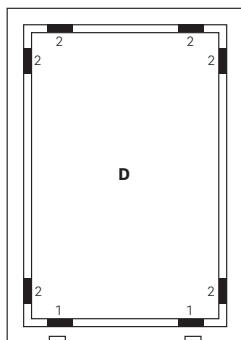
Side hung sash



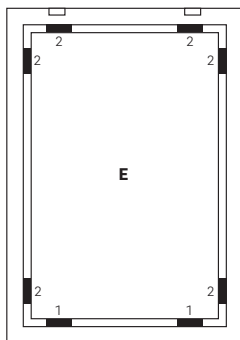
Tilt &amp; turn sash



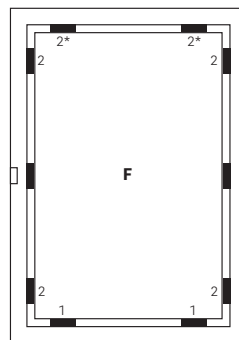
Lift &amp; turn sash



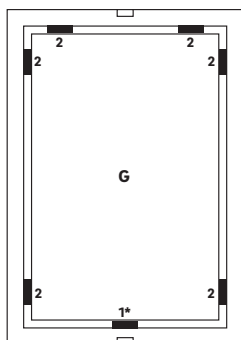
Tilt sash



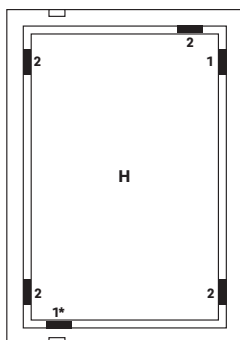
Top hung sash



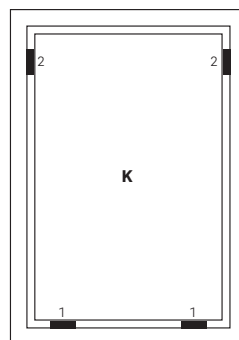
Horizontal pivot



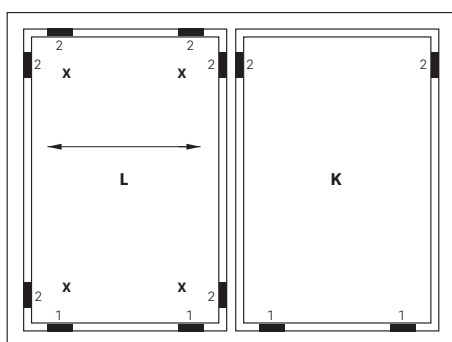
Symmetrical vertical pivot



Unsymmetrical vertical pivot



Fixed light



Sliding element

## 07. Glazing - sealed unit packing instructions

- 1 = Load bearing setting blocks, 100mm long, approx. 100mm from each corner
- 1\* = With units wider than 1m, two load-bearing setting blocks of at least 60mm should be positioned over the pivot to spread the load
- 2 = Location blocks
- 2\* = Become load bearing blocks with sash rotated
- X = Location blocks of shock absorbing material

Note:- That additional packing may be required around the hardware keeps, pull-in wedges etc.

# 08. Sealing & finishing the job



## 8.1 Sealing

The joint between elements and masonry must contain a foam sealing strip, polyethylene foam or a similar material to act as a backing for the pointing mastic. If thermal or sound insulation is critical then the joint can be completely filled with mineral or sound insulation wool. Filling the gaps with mortar or plaster is not permissible. If foam filling is to be used, the manufacturer's instructions must be carefully read and strictly adhered to and must be compatible with the frame material and sealing mastic.

Windows should be attached by fixing bolts, not fixing brackets, if foam filling is to be applied to the areas between the elements and building fabric.

Sealing mastic should be used to form the external seal, this must be compatible with the frame material and the manufacturer's instructions should be observed.

If a damp proofing membrane has been specified, construction must be carried out in accordance with the prevailing circumstances and the architect or surveyors specifications.



## 8.2 Finishing off and making good

Every attempt should be made during installation to ensure that debris such as wet plaster does not block drainage paths or impair operation of the hardware.

Internal reveals should be made good, ready for the customer to redecorate. Neither cement or plaster should be used to fill the gap between the back of the frame and the structural opening.

When it is necessary to seal internally, sealants should be capable of accepting paint or wallpaper i.e. not silicone. All internal sealant should be flushed off ensuring the frame and reveal are free of surplus sealant.

If cover trims are required to complete the installation use the minimum width to achieve a satisfactory appearance.



## 8.3 Cleaning and acceptance

Once the installation has been completed an inspection with the homeowner should be made to ensure they are fully satisfied. The homeowner should also become familiarised with operating features so the homeowner knows how the windows work. Once satisfied they should be given a REHAU Maintenance Tips Sheet to maintain the life of their windows.

Before hand, debris and mess should be tidied away, internal reveals should be made good and all protective foils should be removed when completed. The element should also be cleaned using UPVC Cleaner or warm soapy water.

# 09. Building regulations

## 9.1 The Building Regulation Approved Documents

Where windows and doors are to be replaced (but not where they are to be repaired only, as repair work does not fall within the definition of building work) the replacement work should comply with the requirements of Parts L and N of Schedule 1. In addition after the work has been completed, the building should not have a lesser level of compliance with the other applicable parts of Schedule 1.

Summary: Replacement doors and windows should always comply fully with the requirements of:

- Approved Document L - Conservation of fuel and power in existing dwellings
- Approved Document N - Glazing - Protection against Impact

However, for all other applicable parts of the Building Regulations the windows or doors should either comply fully with the requirements of the Approved Documents or, if the item being replaced does not already comply, the replacement item should NOT make the non-compliance worse.

## 9.2 Documents which may be required for reference

Building Regulations Approved Documents:

- |                              |  |
|------------------------------|--|
| • <b>Approved Document A</b> | Structure  |
| • <b>Approved Document B</b> | Volume 1: Dwelling houses  |
| • <b>Approved Document C</b> | Site Preparation and the Resistance to contaminants and moisture |
| • <b>Approved Document E</b> | Resistance to the passage of sound                               |
| • <b>Approved Document F</b> | Ventilation  |
| • <b>Approved Document J</b> | Combustion appliances and fuel storage systems                   |
| • <b>Approved Document K</b> | Protection from falling, collision and impact                    |
| • <b>Approved Document L</b> | Conservation of Fuel and Power                                   |
| • <b>Approved Document M</b> | Access to and Use of buildings                                   |
| • <b>Approved Document N</b> | Glazing  |

# 10. Final inspection checklist

	Y/N
<b>Visual Appearance</b>	Is the frame installed plumb and square?
	Is the beading fitted correctly and evenly?
	Are exposed faces, including beads, free from damage?
	Is the frame clean with all protective tape removed?
	Has any damage to the aperture been correctly made good?
	Have all trims been fitted correctly?
	Has all site debris been removed?
<b>Glazing</b>	Is all glazing as specified within the contract?
	Do the sealed units meet current visual quality standards?
	Are obscure and coated glass orientated properly?
	Are sealed unit spacer bars covered by frame and beads?
	Is the glazing held properly by beads/gaskets etc?
	Is safety glass used where necessary?
<b>Operation</b>	Do all openers open, close and lock as intended?
	Are all frames sealing with no gaps?
	Are cams free from binding against strikers?
	Is all operating gear lubricated as necessary?
	Is all hardware attached with correct numbers of fixings?
<b>Sight Lines</b>	Are all sightlines visually correct?
	Are adjacent opening lights aligned as appropriate?
	Are all decorative features e.g. leading, correctly aligned?
<b>Sealing</b>	Are all joints smooth and correctly formed?
	Is the sealant continuous around the frame?
	Is the frame face free from excess sealant?
<b>Drainage</b>	Are all drainage channels free from obstruction?
<b>Miscellaneous</b>	Are all sub-sill end caps fitted if required?



# Notes



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