

## Technical Data Sheet

### 1.1 Survey & installation guidelines – composite doorsets in plastics outerframes

#### 1. GUIDANCE

##### 1.1 GUARANTEE & MAINTENANCE

Failure to install a composite door product in accordance with published guidelines may result in reduced levels of performance and in severe cases may invalidate any applicable product guarantee.

Failure to carry out regular and routine service and maintenance may also result in reduced levels of performance and in severe cases may invalidate any applicable product guarantee.

##### 1.2 SPECIFICATION

Survey and installation guidelines are based on the most typical type of composite doorset specification supplied. Further guidance on specialist products may be obtained by referring to the supplier.

##### 1.3 FURTHER GUIDANCE

For further guidance relating to the principles of replacement doorset installation, including –

- variations in aperture types
- use of sealants
- use of polyurethane foam
- PVC-UE trims
- plastics doorset removal techniques

refer to the BPF (British Plastics Federation) Code of Practice for *The Survey and Installation of Replacement Plastics Windows and Doorsets*, ref: W362/1.

For fire doorsets, also refer to BS 8214 and/or the ASDMA (Architectural and Specialist Door Manufacturers Association) *Best Practice Guide to Timber Fire Doors*

##### 1.4 REPAIRS

Repairs to damage which may be caused during installation may require specialist tools and equipment subject to the level of damage; further information may be obtained by referring to the supplier.

##### 1.5 PRECAUTIONS

###### 1.5.1 Doorset removal & installation

Doorset removal and installation can be a dangerous, health and safety precautions should be observed at all times. Operatives should be formally trained in the safe use of all tools, and installation companies should take all possible precautions to ensure that operatives have the correct equipment.

###### 1.5.2 Care of the product

When using cleaning and lubricating products always follow the manufacturer's instructions; take care not to use an excessive quantity. For cleaning products, test a small area of the product in an obscure location first.

NOTE: Do not use solvent-based or abrasive cleaning products or products containing bleaching agents.

#### 2. SURVEYING POINTS

##### 2.1 REPLACEMENT DOORSETS

The surveyor is responsible for –

- Specifying installation techniques
- Measuring the aperture
- Preparing a schedule any ancillary items, including additional hardware requirements, which may not be included for in the standard specification

Surveyors shall be fully trained in doorset installation techniques.

##### 2.2 SUITABILITY OF THE APERTURE

The surveyor shall check for any apparent defects and deficiencies around the structural opening. Agreement should be reached as to who is responsible for rectifying any defects prior to doorsets being installed.

NOTE: It may be advisable to remove one doorset to check the condition of the existing DPC (Damp proof course), in so far as this is possible. If the existing DPC will need to be disturbed or otherwise modified, the surveyor shall indicate the method and materials required to reinstate the DPC.

##### 2.3 EXISTING LOAD-BEARING DOORSETS

Check to ensure that there is a lintel or other suitable load-transferring structure above the doorset. Plastics doorsets are not designed to carry dead loads.

##### 2.4 REGULATIONS

The installation must comply with any relevant regulations. The principal regulations that may apply are The Building Regulations (England & Wales) B, E, F, L, M and N, or the equivalent regulations in Scotland and Northern Ireland.

###### 2.4.1 Listed buildings and conservation areas

The existence of any restrictions limiting the installation of replacement products should be checked.

###### 2.4.2 Building Regulations

The surveyor should check whether the installation will be subject to Building Regulations and/or planning approval procedure.

##### 2.5 OUTWARD OPENING DOORSETS

Check the correct mode of opening (inward or outward)

On outward opening doorsets a restrictor, such as an overhead restrictor, may be required as the door leaf may be subject to sudden movement by wind gusting.

##### 2.6 CILL & THRESHOLD

The requirement for a cill of the appropriate size and the threshold type to be used shall be checked, with attention paid to the internal floor level and the need for the door to swing clear of internal floor-coverings.

##### 2.7 FIRE DOORSETS

All fire resisting doorsets must be fitted with a self-closing device capable of overcoming the latch.

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#### 3. SURVEYING FOR 'NEW BUILD' WORKS

##### 3.1 GENERAL

In general terms, the requirements for products used in 'New Build' situations are similar to those requirements referred to in this guide as 'replacement doors'.

Specifically –

- The product shall be fitted correctly – square, plumb and without twist
- A suitable perimeter clearance is allowed for manufacturing tolerances of the building aperture and the doorset

##### 3.1.1 Prepared Openings

Doorsets shall be fitted into prepared structural openings as late as possible in the construction programme, to avoid potential damage.

It is normal practice in 'New Build' to form the structural opening around a suitably sized template, which is removed and replaced by the door. It is essential that both systems ensure adequate fitting space for the door.

On completion of the installation, all products shall be checked for ease of operation, correct function and cleanliness as for replacement products.

NOTE: Care shall be taken in specifying manufacturing sizes where proprietary cavity closers are used, as these products can reduce the effective opening sizes.

NOTE: It may be appropriate to re-check the finished structural opening sizes after removal of the sub-frame template prior to manufacture.

##### 3.1.2 Proprietary sub-frame systems

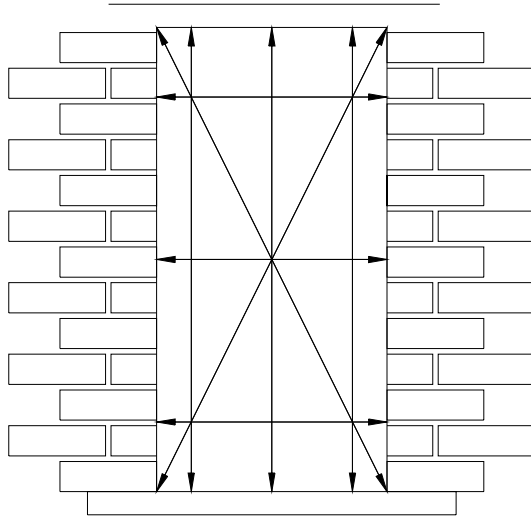
There are several proprietary plastics systems on the market which include a built-in sub-frame suitable for 'bricking up to'. These provide a pre-formed sub-frame, of suitable size and material, which will enable subsequent insertion of the door.

It is the responsibility of the specifier to reassure themselves that the particular proprietary system chosen will permit the doorset to function correctly, function as a cavity closer - if required, and permit adequate expansion and contraction of the doorset.

#### 4. MEASUREMENT

##### 4.1 FLAT DOORS

Fig 1. Flat measurement



##### 4.1.1 Width measurement

The width of the aperture shall be measured at three points - the top, middle, and bottom of the opening. The smallest of these is used to determine the aperture width. (See Fig 1. Flat measurement)

##### 4.1.2 Height measurement

The height of the aperture shall be measured at three points - the left, middle, and right of the opening. The smallest of these is used to determine the aperture height. (See Fig 1. Flat measurement)

##### 4.1.3 Diagonal measurement

The squareness of the aperture shall be checked by measuring the diagonals of the aperture. If the diagonals are more than 10mm different, then the client shall be informed, and a solution agreed (See Fig 1. Flat measurement).

NOTE: Irregular openings may require packing pieces and/or external trims.

##### 4.1.4 Front to Back Dimension

Check that the installation of the new frame will not cause problems with the DPC or cavity closing.

#### 4.2 WALLS & APERTURES

The aperture shall be checked to ensure that it is plumb and level.

#### 4.3 REVEAL SIZES

The difference between the internal and external reveal sizes shall be checked to ensure that the opening of the door or any door fitting will not be impeded by plaster, render or tiles etc.

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#### 4.4 MANUFACTURING SIZES

A negligible amount of expansion and contraction is to be expected due to temperature fluctuations, and although this is not as great as with other materials it must be taken into consideration.

Allowances are also to be made with regard to the doorset and building aperture tolerances. Table 1. (below) provides the deductions that are recommended for non-fire resisting doorsets in plastics outerframes.

Table 2. provides deductions for fire resisting doorsets in plastics outerframes, which differ for the width and height.

**Table 1. Deduction distances**

Length	Up to 1.5m	1.5 – 3.0m	3.0 – 4.5m	Over 4.5m
Deduction	10mm	10mm	15mm	20mm

**Table 2. Deduction distances – fire doorsets**

Width	Up to 1.1m
Deduction	10mm
Height	Up to 2.3m
Deduction	5mm (total)

NOTE: These deductions are from the total width or height, and are not 'per side'. With normal installations, all the height deduction will be at the head of the door.

NOTE: When calculating height deductions, due allowance should be made for any silicone or mortar bed at the sill.

#### 5. SURVEY CHECKS

##### 5.1 FINAL SURVEY CHECKS

The following items shall also be checked to ensure that none of these will adversely affect the installation –

- The proposed replacement shall be checked to ensure that neither the security of the property, nor the resident's safety in case of fire are decreased
- The hinge clearance shall be checked
- The access to the site shall be checked to ensure adequate access for the installers and the replacement products
- Check with the client that the configuration and handing of doorsets are correct

##### 5.2 SURVEYING CHECKLIST

It is advisable a checklist is used to ensure that all aspects of surveying are completed.

An example is provided in Table 2. (opposite).

**Table 2. Surveying checklist**

AREA TO BE CHECKED	OK? YES/NO
<b>Aperture</b>	
1. Aperture and DPC in suitable condition for the installation?	
2. Any evidence of damp or existing cracks?	
3. Doorsets not load-bearing?	
4. Any Services in the aperture/existing frame?	
<b>Measurement</b>	
1. Aperture diagonals within 10mm of each other?	
2. Do the 3 Width measurements agree within 5mm? If not what action is proposed?	
3. Do the 3 Height measurements agree within 5mm? If not what action is proposed?	
4. Length and type of cill checked?	
<b>Regulations</b>	
1. Is a fire rated door required?	
2. Is there a requirement for disabled access?	
3. Is a gas vent required to be fitted?	
4. Is the building 'listed', or in a conservation area?	
5. Is the replacement likely to be subject to planning permission, or Building Regulation approval?	
<b>Function</b>	
1. Reveal sizes checked to ensure proposed Doorset will function?	
2. Are doorset sizes within available range?	
3. Will leaded/georgian glass line through?	
4. Are all the extras specified on the order correct?	
<b>Fixing method</b>	
1. Can fixings be obtained at the correct spacing?	
2. How will the heads be fixed?	
<b>Doorset</b>	
1. Is the mode of opening correct?	
2. Threshold and cill size OK?	
3. Is all extra hardware correct and practicable?	

#### 6. REMOVAL OF EXISTING DOORSETS

##### 6.1 CARE OF THE PROPERTY

Care should be taken to avoid soiling of, or damage to floor coverings and needless damage to decorations. Damage will inevitably be caused to the reveals adjacent to the installation, and reasonable care must be taken to keep this to a minimum.

It is good practice to install and seal new doorsets on the same day that the existing doorsets are removed, to maintain security and the weather tightness of the structure. This is essential with fire doorsets.

The method used to minimise damage to the structure and its finishings usually results in the removed sub-sill being unsuitable for further use. If the sub-sill is made from concrete, slate, bricks or tile, then it may be left in position for re-use, providing any defects are remedied.

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#### 7. INSTALLATION – REPLACEMENT

##### 7.1 PRE-INSTALLATION CHECKS

Prior to commencing any installation work, the sizes, type, and condition of all doorsets should be checked against both the survey sizes as well as the actual aperture sizes.

The doorset specification, including hardware, glazing and door style, should be checked against the order acknowledgement provided by the doorset supplier. Before discarding any packaging for ancillary components which may be supplied loose, particularly lever handles. Check that all ancillary components required are accounted for.

NOTE: composite doorsets must be stored in a dry location prior to installation. Prolonged exposure to moisture may invalidate any applicable product guarantee

##### 7.2 GENERAL

The importance of installing doorset outerframes plumb and square within the aperture, without twist, racking or distortion of any member, cannot be overemphasised.

Repeatedly check the squareness and alignment of the Outerframe during the process of installation.

##### 7.3 POSITIONING OF DOORSETS

The positioning of the new frame in the aperture is fundamental to the success of the installation. In general the replacement doorset shall –

- Bridge the cavity
- Cover the DPC
- Be set back as far as possible in the aperture to minimise exposure to the elements

##### 7.4 FIXING METHOD

Fixing methods will be influenced by movement –

- The presence or absence of a wall cavity
- The nature of any cavity
- The relative positions of the frame and cavity
- The position of the plaster line, and the need to preserve the interior decorations
- The design of the reveal

##### 7.4.1 Fixings

There are two principal methods of fixing available –

- Through-frame fixings
- Lug fixings

As a general rule, only through-frame fixings are recommended for fixing of plastics outerframe composite doorsets and must be used for fire doorsets.

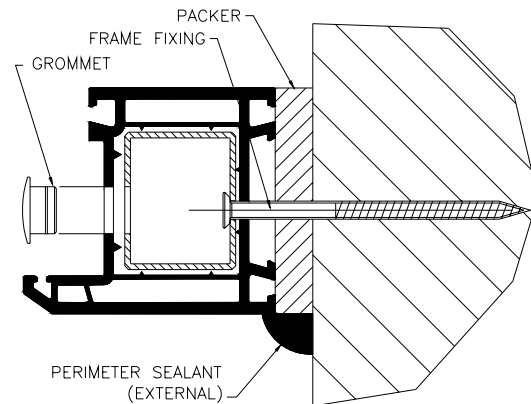
Through-frame fixings should be plastic sheathed of minimum 100mm length, and shall penetrate a minimum of 50mm into the substrate.

The head of any through-frame fixing must be seated beneath the outer wall of the plastic outerframe member within the hollow chamber to prevent distortion or cracking of the frame.

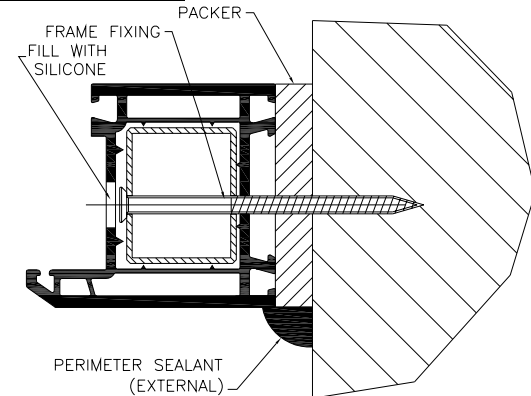
A larger hole than that required for the fixing will need to be drilled in the outermost wall of the plastic outerframe member only, into which a cover cap should be inserted.

NOTE: Other proprietary mechanical fixing methods are available. Prior to their use, it shall be determined that these are satisfactory by obtaining suitable third party assessment.

**Fig. 2 Acceptable positioning of frame fixings**  
**PREFERRED OPTION**



##### SECONDARY OPTION



##### 7.4.2 Fixing distances

Generally, only two sides of the frame shall be secured using the following guidelines to determine the fixing spacings –

- Corner fixings should be a minimum of 150mm and a maximum of 250mm in from the external corner
- No mullion or transom fixings should be closer than 150mm, or further than 250mm from the centre line of a mullion or transom
- Intermediate fixings should be at centres no greater than 600mm
- There must be a minimum of 2 fixings on each jamb – Fig.3 below illustrates fixing positions

NOTE: If it is impossible to find a suitable fixing position, then the nearest possible fixing should be used.

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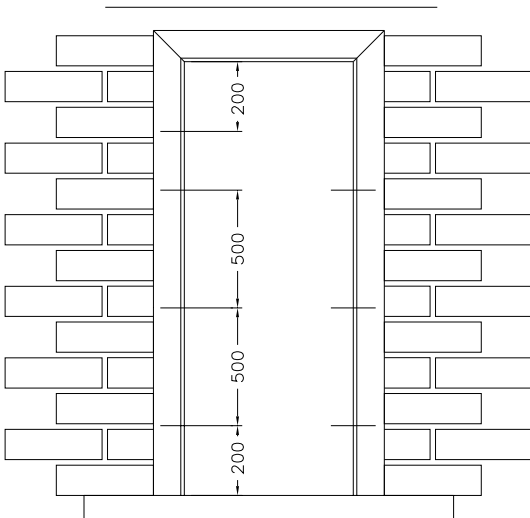
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Fig 3. Fixing positions

#### 7.4.3 Use of installation packers

Appropriately sized installation packers shall be used adjacent to fixing positions to prevent outer frame distortion during installation. Installation packers should



be incompressible, resistant to rot or corrosion, and span the full width of the outer frame profile. For fire doorsets they should be of a hard, stable material.

The fixings should be tightened so that the frame is held securely against the packers. Take care not to over-tighten the screws and distort the frame.

NOTE: packers shall be used adjacent to hinge/locking points.

#### 7.4.4 Foam fixing at the head

Foam fixing with polyurethane (PU) foam products at the head of the frame is discouraged and shall not be used for combination frame doorsets or fire doorsets.

NOTE: Mechanical fixings to the head of the frame may be required on some installations and is left to the installer's discretion. If a fixing is required it should be no closer than 200mm from the corner of the frame.

#### 7.5 FINISHING OFF AND MAKING GOOD

##### 7.5.1 General

Efforts must be made during installation to ensure that debris such as wet plaster does not foul drainage paths nor impair operation of hardware. Neither sand and cement, nor plaster should be used to fill the gap between the frame and the structural opening.

All protective films placed on the outerframe profiles and door facings should be removed as soon as the installation is finished, and prior to perimeter sealing.

#### 8. PERIMETER SEALING

##### 8.1 GENERAL

The purpose of a perimeter sealant is to prevent water & air leakage between the aperture and the doorset.

##### 8.2 NON-FIRE RESISTING DOORSETS

No joint width shall be designed to be less than 5mm. Local variations in the line of the brickwork may create gaps greater than 5mm, the following examples illustrate common cases for filling these gaps.

##### 8.2.1 Sealing gaps up to 6mm

For non-fire resisting doorsets, gaps up to 6mm in width can be sealed solely with a ribbon of silicone sealant. In all cases the sealant should fill the gap to a depth no less than the width of the gap; a backing strip may be used to limit the amount of silicone used.

Backing strips can be either foam, compressible, or expandable strips, or 'in-situ' expanded foam. Any such materials must be compatible with plastic outerframes.

Priming of either the substrate or the frame is generally unnecessary when using quality sealants. However if the substrate is friable, then primer may be applied to the aperture surface to ensure adequate bonding.

##### 8.2.2 Sealing gaps between 6mm & 15mm

When sealing gaps between 6mm and 15mm, the use of a backing material is essential. This is also needed when the gap varies such that locally it exceeds 6mm.

##### 8.2.3 Sealing gaps over 15mm

Design widths above 15mm are not recommended and should not be necessary in UK conditions. Where this is due to mis-measure or irregular brickwork, reduce the gap to the design joint width using packing pieces.

##### 8.2.4 Sealing at heads

There should be an expansion gap between 5mm and 10mm at the head of the frame.

##### 8.3 FIRE RESISTING DOORSETS

For fire doorsets, the perimeter seal must be fire and smoke stopping as well as prevent water & air leakage.

For fire doorsets, design joint widths should never be more than 5mm. The sealant must be an intumescent mastic and must completely close the gap for the full depth of the frame. External perimeter sealants need not be of an intumescent type.

##### 8.3.1 Sealing gaps between 6mm & 15mm

Large and irregular gaps may be packed to reduce the gap to the design joint width of 5mm using mineral wool or intumescent plaster or dry foam.

##### 8.4 DRAINAGE

When sealing perimeter joints take care to ensure any drainage channels are not blocked or obstructed.

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#### 9. FINAL INSPECTION

##### 9.1 CHECKLIST

After installation, a Final Inspection should be carried out to ensure that the installation is of the highest standard. There should be a formal procedure for checking the installation, which should use a checklist to ensure that all relevant points are checked.

A general checklist is provided in Table 3. (opposite).

It is advisable that these checks are carried out in the presence of the client. It is good practice to ensure that the customer is familiar with the method of operation of the installed doorsets.

##### 9.2 DOORSET OPERATION & MAINTENANCE

Operating features such as key locks, hook-bolts and latches shall be checked and should be demonstrated so that the client and tenant know how to use them. This is especially important in the case of exits that may be used in fires.

Such training is best supplemented with written operating and maintenance instructions which should be available from the doorset supplier.

Service and maintenance guidelines shall also be obtained and provided to the client.

**Table 3. Final inspection checklist**

AREA TO BE CHECKED	OK? YES/NO
<b>Visual Appearance</b>	
1. Doorsets installed plumb, square and vertical?	
2. Exposed faces free from surface damage?	
3. Doorset clean and all protective film removed?	
4. Check for weld cracks, clean & consistent shadow grooves	
5. Check for damage to surrounding aperture	
6. Check all internal trims installed correctly	
7. Check site clean and all debris removed	
<b>Glazing</b>	
1. Glazing as specified?	
2. No cracks, scratches on glass, or signs of sealed unit failure?	
3. Obscure glasses oriented correctly?	
<b>Doorset operation</b>	
1. Door leaf opens & closes correctly?	
2. No air gaps between frame seal and door leaf?	
3. No scraping/rubbing between hooks and strikers?	
4. When doors slam, no mullion bounce, nor outer frame movement?	
5. All hardware correctly lubricated?	
6. All hardware attached with correct number of fixings?	
<b>Fixing</b>	
1. Through-frame fixings used at correct distances?	
2. Fixing heads located within frame profile and cover caps fitted?	
<b>Sealing</b>	
1. Sealant joints have smooth finish, and are of correct shape?	
2. Sealant to be continuous around frame run?	
3. No excess sealant to be present on frame faces?	
<b>Drainage</b>	
1. Threshold drainage channels free from obstructions?	
2. Sub-sill end caps in place, and attached firmly?	