Installation - Sub Cills

Sub Cill Expansion Joint

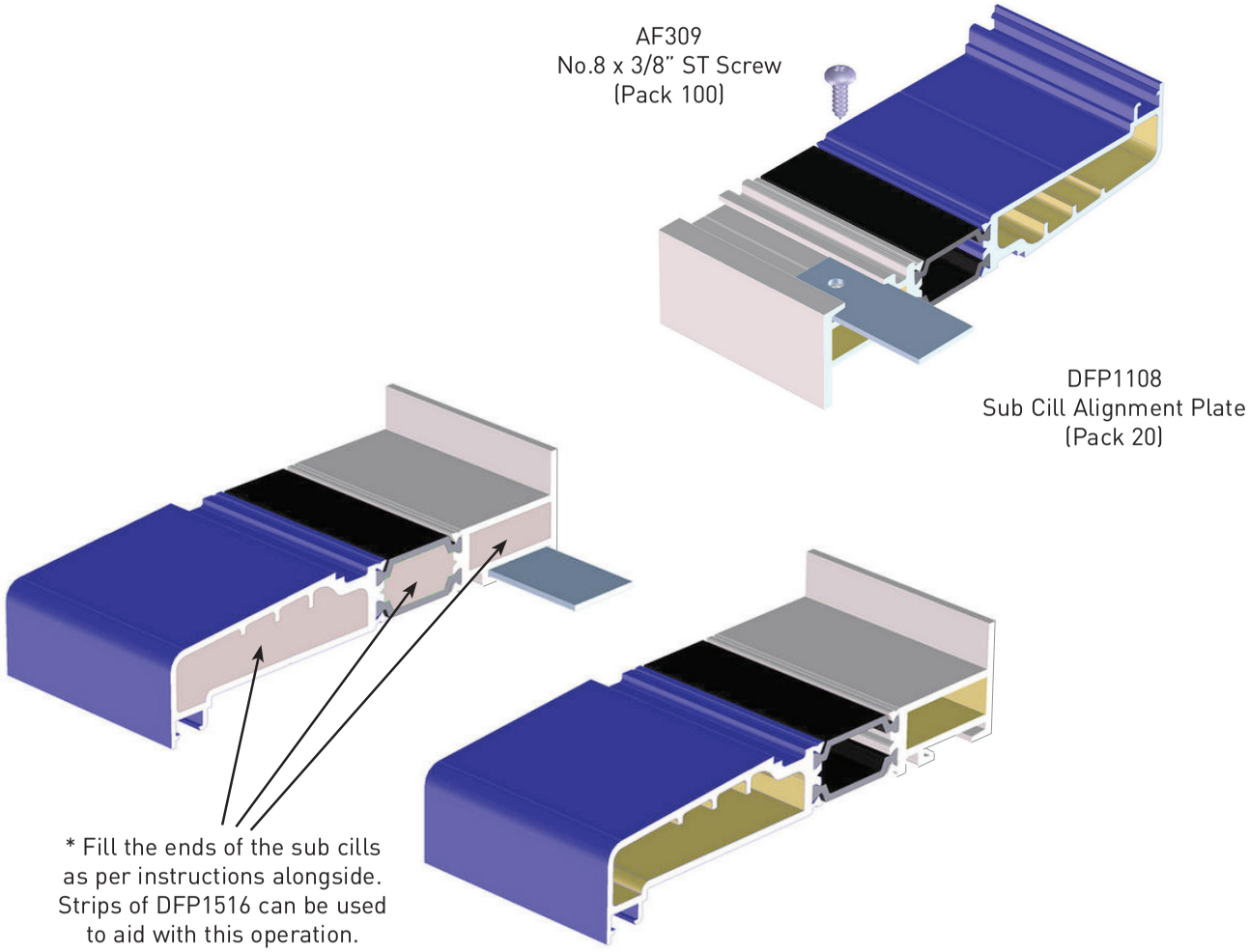
Profile DF703, DF704, DF705, DF713

Wherever a cill exceeds 5m in length, an allowance must be made for thermal expansion. To achieve this, follow the details on this page, allowing an expansion gap of 10mm between sub cill ends as shown.

First fit the sub cill alignment plate with one No. 8 x 3/8" csk self tap screw, to the underside of one sub cill only. This plate is used to align both sub cills when they are positioned in-situ, and is only secured to one sub cill to allow for thermal expansion.

* Now the ends of both sub cills are to be fully filled with silicone sealant. Fill the voids in the ends of the sub cills with foam backing strip, followed by silicone sealant and allow the sealant to cure. Just before the sub cills are situated into the structure opening, trim back the sealant flush with the end of the sub cills while maintaining a 10mm gap between both sub cills. Silicone sealant can now be applied into the joint between both cills and tooled to give a smooth appearance.

The quality of the seal is of upmost importance and is directly linked to the performance of the joint, and as such the sealant must be used in accordance with manufactures recommendations.



Installation - Sub Cills

Sub Cill Expansion Joint

Profile UF518

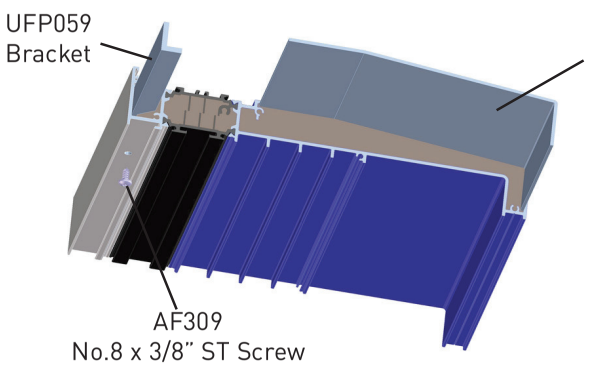
Aluminium cills expand with an increase in temperature, which must be taken care of by the installation techniques.

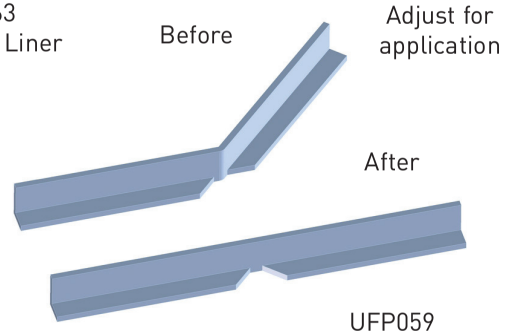
Wherever a cill exceeds 5m in length, an allowance must be made for thermal expansion. To achieve this, follow the details on this page, allowing an expansion gap of 10mm between sub cill ends.

UFP059 Sub Cill joint inner bracket is used in a number of ways and is supplied preformed. This item will need to be tailored for this application, via means of a vice and appropriate tooling.

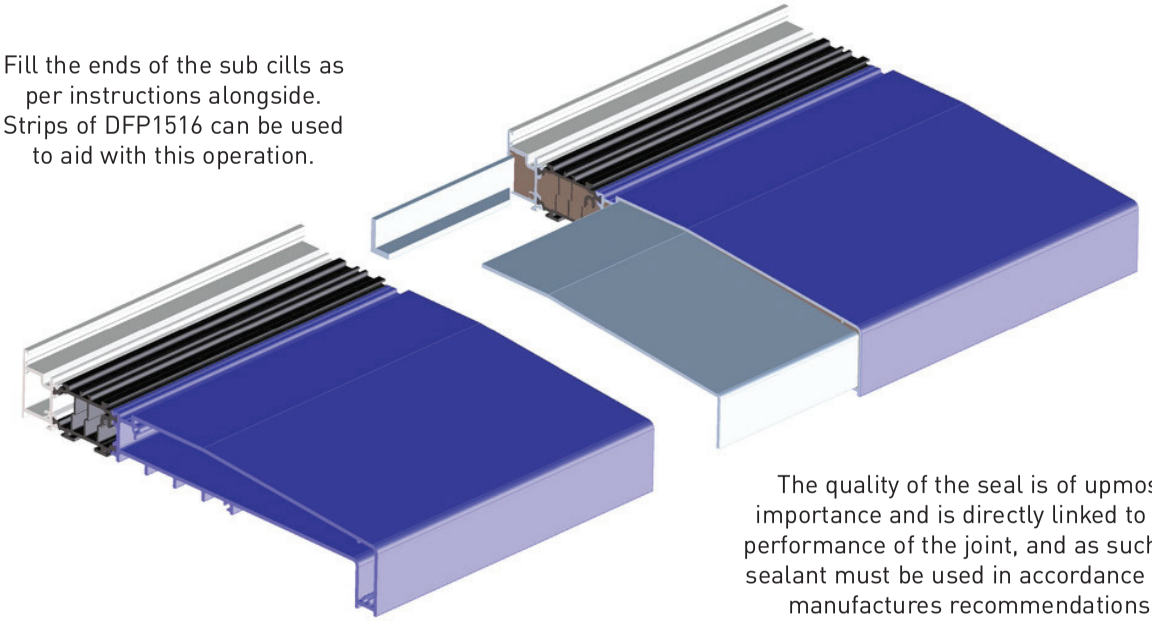
Insert the sub cill joint bracket 100mm into the cill, spot through cill fixing hole with a 3.5 dia hole and secure with one No. 8 x 3/8" pan self tap screw. This bracket is used to align both sub cills when they are positioned in-situ, and is only secured to one sub cill to allow for thermal expansion. Now insert the joint liner 100mm into the cill, and seal the end of the sub cill fully with silicone sealant using a backing strip and allowing the sealant to cure.
DO NOT SEAL THE OPPOSING SUB CILL AT THIS STAGE.

Just before the sub cills are situated into the structure opening, trim off excess sealant from the end already sealed, to create a fresh surface and using the same sealant, fully seal the unsealed sub cill. Now insert both sub cills together and while maintaining a 10mm gap between both sub cills, silicone seal the joint between both cills and tool to give a smooth appearance.





Fill the ends of the sub cills as per instructions alongside. Strips of DFP1516 can be used to aid with this operation.



The quality of the seal is of upmost importance and is directly linked to the performance of the joint, and as such the sealant must be used in accordance with manufactures recommendations.

Assembling 90° Sub Cill Corner

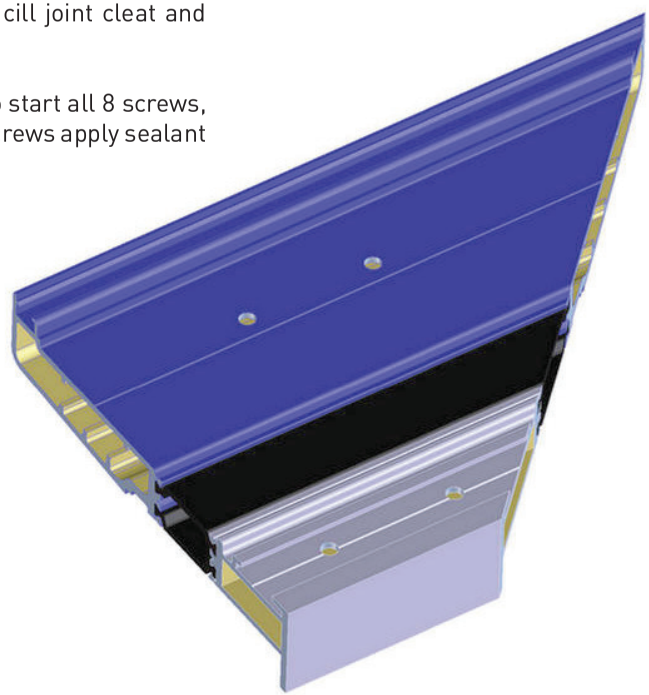
Profile DF703, DF704, DF705

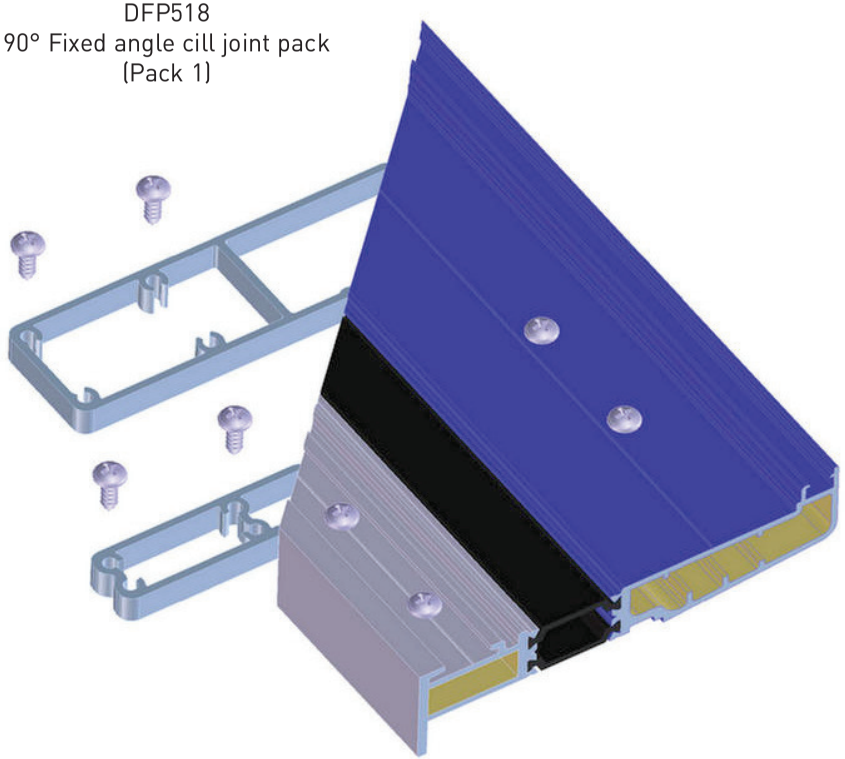
All joints must be sealed with silicone sealant. Sealing over the joint again after assembly in the area covered by the framework is recommended. Only clean sealant from surfaces that will be visible.

Seal along the mitred ends of the sub cill prior to assembly, then assemble with 90° cill joint cleat and screws DFP518.

Best results for corner jointing is to start all 8 screws, then before final tightening of the screws apply sealant under the heads.

DFP518
90° Fixed angle cill joint pack
(Pack 1)





Installation - Sub Cills

90° Sub Cill Corner Joint

Profile UF518

90° External up to 90° internal corner joints can be assembled in the same fashion, 90° external joint shown.

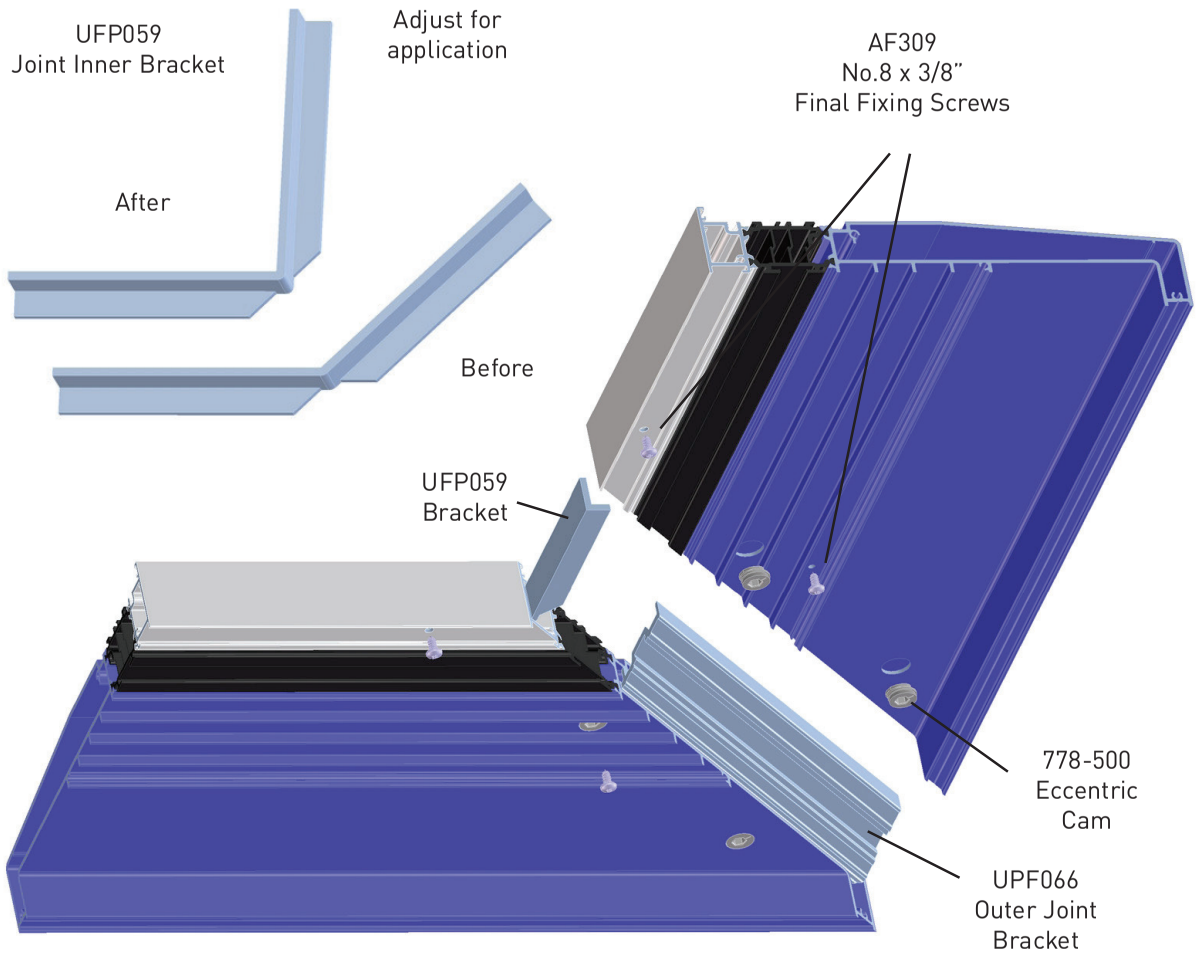
UFP059 Sub cill joint inner bracket is used in a number of ways and is supplied preformed. In most instances this item will need to be tailored to exact requirements via means of a vice and appropriate tooling.

UFP066 Sub cill joint outer bracket is pre cut for 90° internal and external corner joints. On internal joints the bracket is inserted opposite to that illustrated. For non 90° joints, this bracket will need to be machined as detailed on the following page.

Seal along the mitred ends of the sub cill prior to assembly with Henkel Terostat 934 (clear) or 939 (grey, black or white). Insert illustrated brackets, then seal eccentric cam fixing holes prior to eccentric cam insertion to provide a water barrier. Now insert 778-500 eccentric cams with indicator line facing away from the join. Using a 6mm Allen key, turn the cams to draw up the corner tightly then clean off any excess sealant immediately.

Spot through the four final fixing holes (two into UFP066 and two into UFP059) with a 3.5 dia drill and secure with No. 8 x 3/8" pan self tap screws. Apply sealant under screw heads before final tightening.

Sealing over the joint again after assembly in the area covered by the framework is recommended, and only clean excess sealant from surfaces that will be visible.



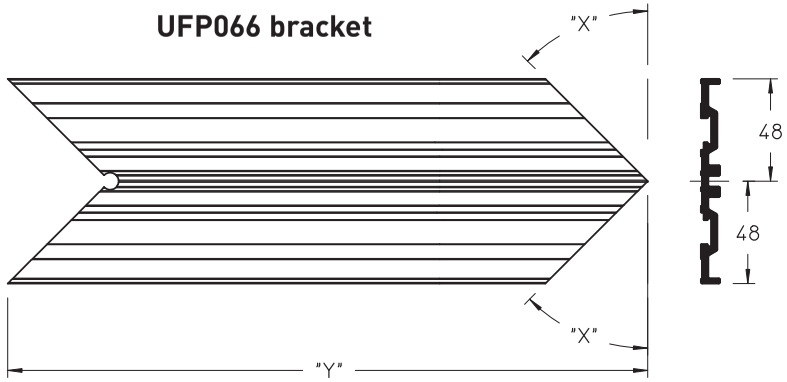
Sub Cill Corner Joint UFP066

Profile UF518

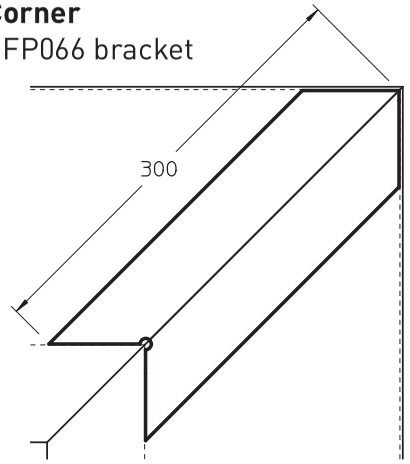
As stated on the previous page, UFP066 Sub cill joint outer bracket is pre cut for 90° internal and external corner joints, for non 90° joints, this bracket will need to be cut down.

Using the chart below, determine the length and angle and machine appropriately. Note this bracket is always cut down from the front as per example 135° Corner shown.

UFP066 bracket

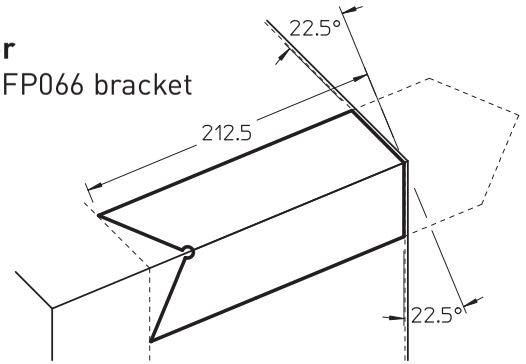


90° Corner
Std UFP066 bracket



UFP066 Subcill Joint Bracket Chart										
Ext/Int Angle	90 °	91 °	92 °	93 °	94 °	95 °	96 °	97 °	98 °	99 °
Angle 'X'	45 °	44.5 °	44 °	43.5 °	43 °	42.5 °	42 °	41.5 °	41 °	40.5 °
Dim 'Y' (mm)	300.0	297.0	294.0	291.0	288.0	285.5	283.0	280.0	277.5	275.0
Ext/Int Angle	100 °	101 °	102 °	103 °	104 °	105 °	106 °	107 °	108 °	109 °
Angle 'X'	40 °	39.5 °	39 °	38.5 °	38 °	37.5 °	37 °	36.5 °	36 °	35.5 °
Dim 'Y' (mm)	272.5	270.5	268.0	265.5	263.5	261.0	259.0	257.0	255.0	253.0
Ext/Int Angle	110 °	111 °	112 °	113 °	116 °	114 °	115 °	116 °	117 °	118 °
Angle 'X'	35 °	34.5 °	34 °	33.5 °	32 °	33 °	32.5 °	32 °	31.5 °	31 °
Dim 'Y' (mm)	251.0	249.0	247.0	245.0	240.0	243.5	241.5	240.0	238.0	236.5
Ext/Int Angle	119 °	120 °	121 °	122 °	123 °	124 °	125 °	126 °	127 °	128 °
Angle 'X'	30.5 °	30 °	29.5 °	29 °	28.5 °	28 °	27.5 °	27 °	26.5 °	26 °
Dim 'Y' (mm)	235.0	233.0	231.5	230.0	228.5	227.0	225.5	224.0	223.0	221.5
Ext/Int Angle	129 °	130 °	131 °	132 °	133 °	134 °	135 °	136 °	137 °	138 °
Angle 'X'	25.5 °	25 °	24.5 °	24 °	23.5 °	23 °	22.5 °	22 °	21.5 °	21 °
Dim 'Y' (mm)	220.0	219.0	217.5	216.0	215.0	213.5	212.5	211.5	210.0	209.0
Internal or external Angles										

135° Corner
Cut down UFP066 bracket



Installation - Sub Cills

Fitting Of Sub Cill

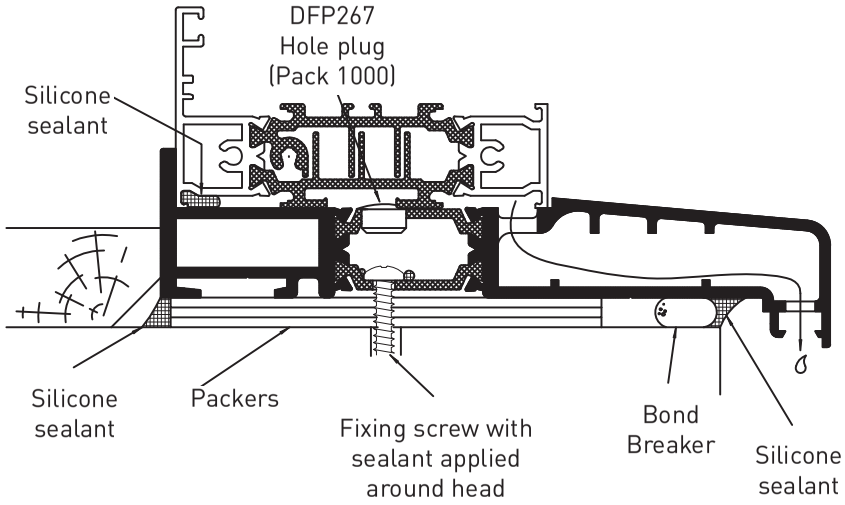
Profile DF703, DF704, DF705, DF713

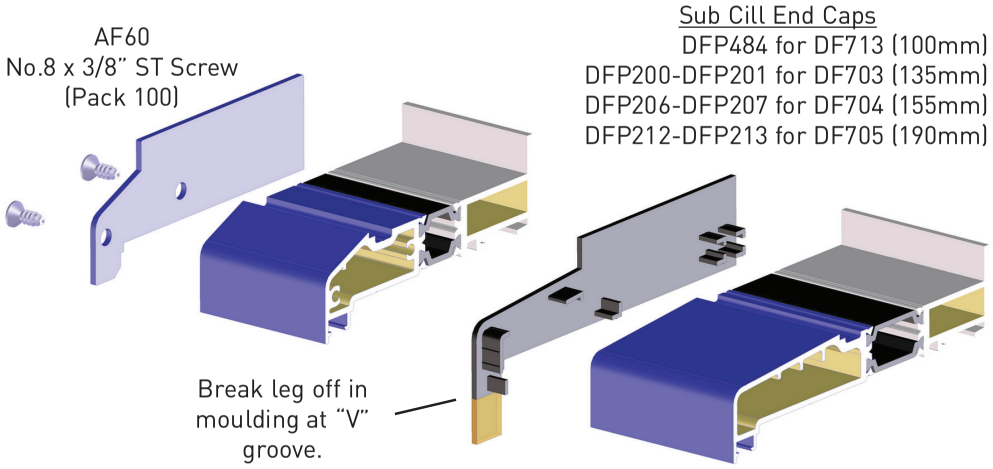
Drainage paths through the sub-cill can be seen on the illustration alongside, so care must be taken to ensure they are not obstructed and that screw fixings do not penetrate these areas.

When positioning the frame to the sub cill, silicone sealant must be gunned as shown to ensure that a watertight joint is created on the inside of the frame.

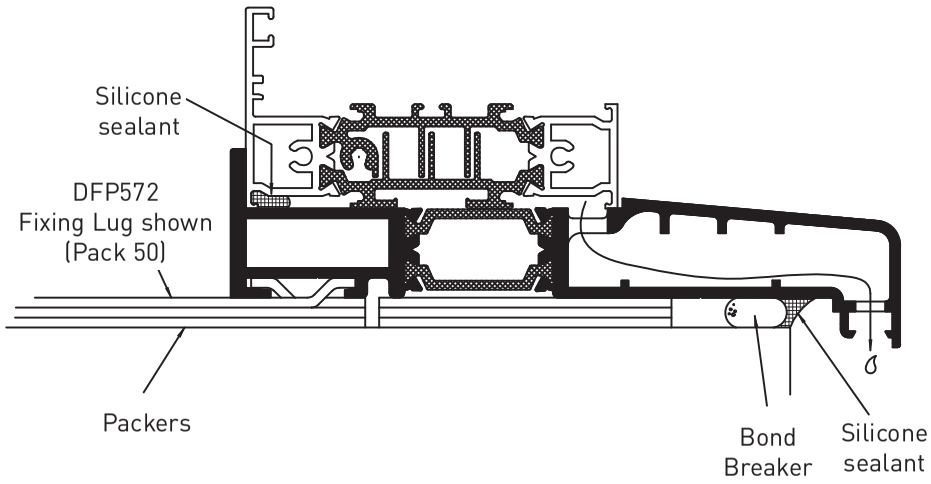
Seal under the head of any fixing screws to prevent water ingress and seal DFP267 hole plugs into position.

Sub cill end caps must be fully sealed then pushed into position, or as for DF713, fully sealed and secured into position using No.8 x 3/8" csk screws.





Sub Cill End Caps
DFP484 for DF713 (100mm)
DFP200-DFP201 for DF703 (135mm)
DFP206-DFP207 for DF704 (155mm)
DFP212-DFP213 for DF705 (190mm)



Installation - Sub Cills

Fitting Of Sub Cill

Profile UF506

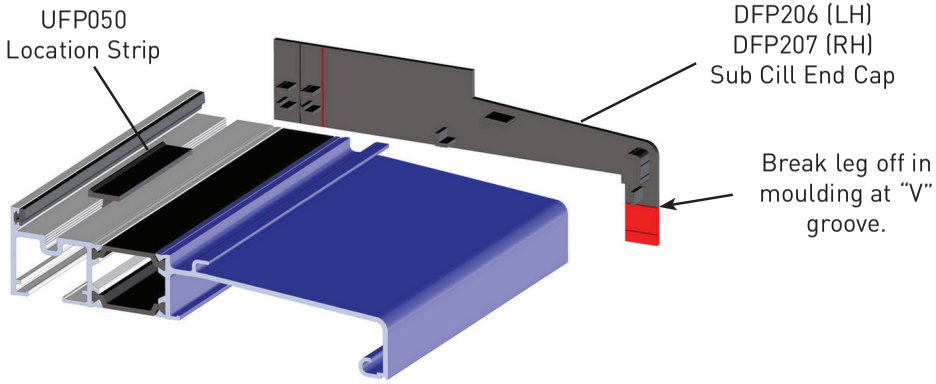
The drainage path through the sub-cill can be seen on the illustration alongside, so care must be taken to ensure that it is not obstructed.

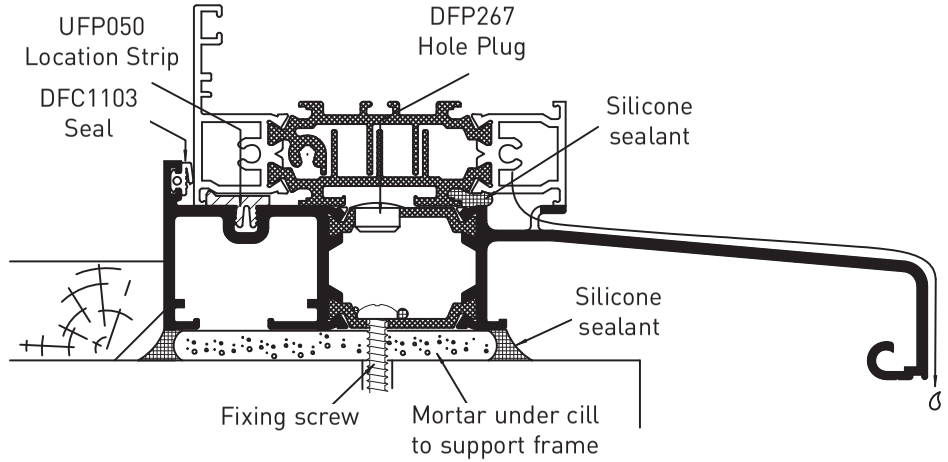
Seal under the head of any fixing screws to prevent water ingress and if used, seal DFP267 hole plugs into position.

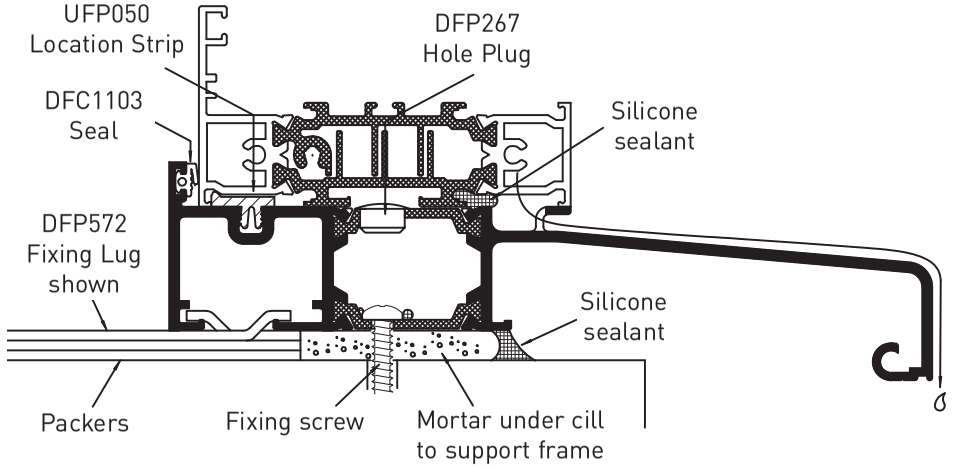
Sub cill end caps must be fully sealed then pushed into position (see illustration below)

Before positioning the frame to the sub cill, fit seal DFC1103 to the cill rebate. Cut seal away for any couplers and apply sealant around the coupler so sub cill join.

Frames are held in position on the sub cill by the use of location strips, these are positioned 150mm from the ends and then at 300mm centres. Apply a spot of silicone sealant into the sub cill recess before clip fitting the location strip, checking orientation before clipping into position (see illustration).







Installation - Sub Cills

Fitting Of Sub Cill

Profile UF518

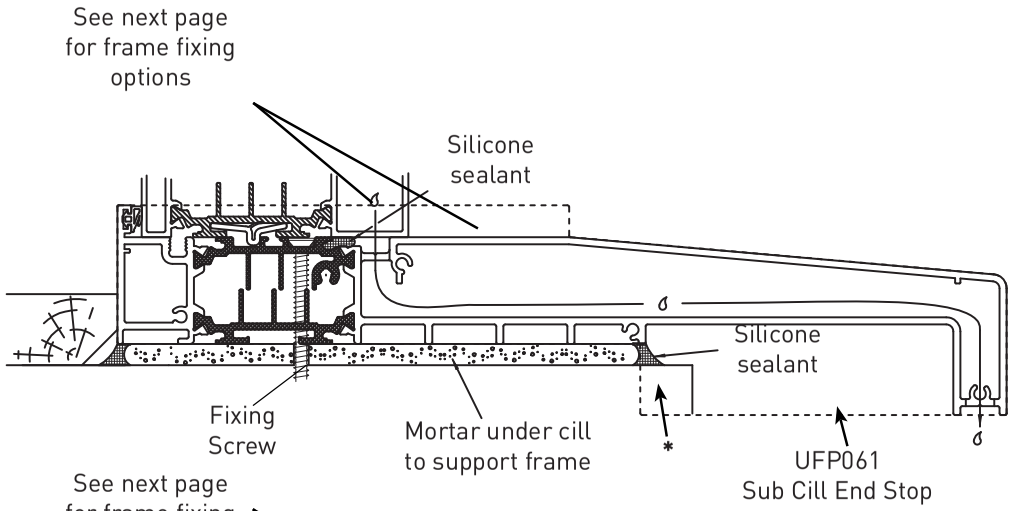
Sub cill end stop UFP061 must be fully sealed and secured into position using No.6 x 3/8" csk self tap screws. Csk end stop fixing holes to 6.0 dia before fitting.

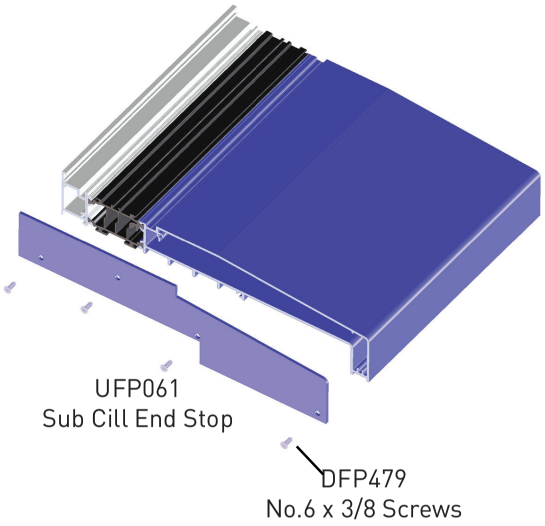
* Note if necessary cut end cap around structure as required.

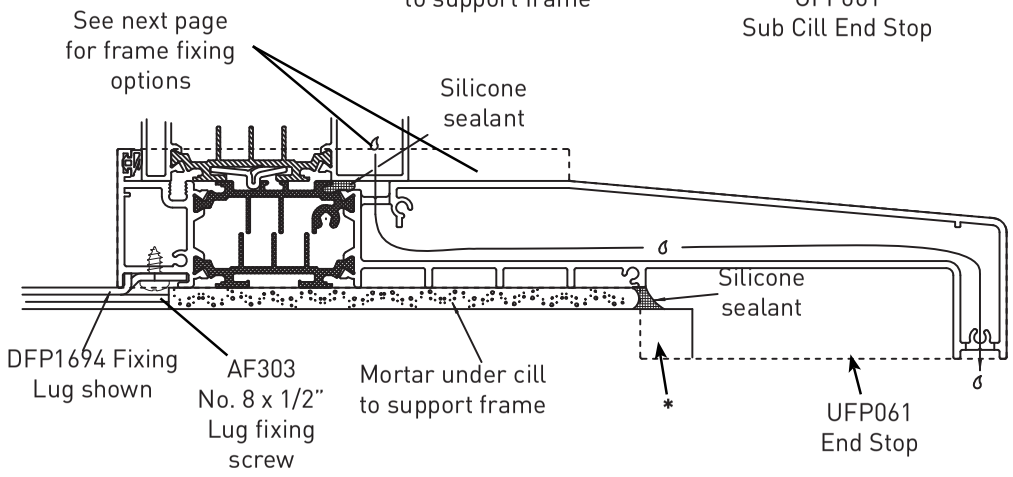
Care must be taken to ensure that drainage paths through the sub cill, illustrated, are not obstructed and that screw fixings do not penetrate these areas.

When positioning the frame to the sub cill, silicone sealant must be gunned as to ensure that a watertight joint is created on the inside of the frame.

Seal under the head of any fixing screws to prevent water ingress.







Fitting of Sub Cill with Applied Nose

Profile UF513

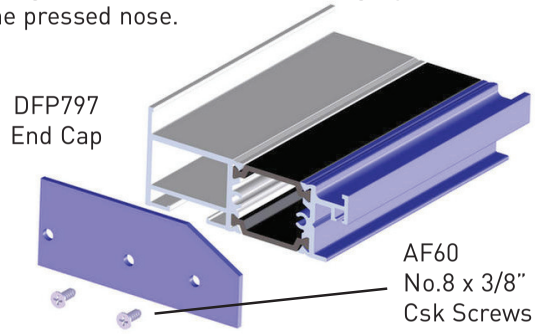
Drainage paths through the sub cill are as shown right, care must be taken to ensure that they do not become blocked when fitting.

Secure the end caps as detailed below, then secure the sub cill to the structure using suitable fixings, and packed as necessary to ensure it is level. The sub cill must then be silicone sealed to the structure along its length and across its ends. 9.0mm hole plugs must be sealed into the clearance holes in the top of the sub cill after it has been secured to the structure.

The pressed nosing should now be offered into position with No.6 x 1/2" Pan head fixing screws at a maximum of 600mm centres. STC164 gasket is now fitted along the full length of the sub cill, taking care not to stretch during fitting.

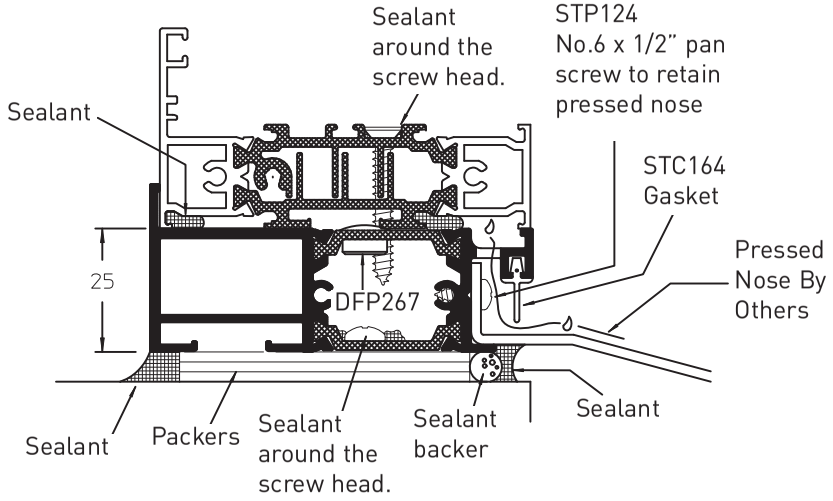
A bead of sealant should then be applied along the ends of the sub cill at the point that it abuts the structure. Note that additional packing may be required if the nose pressing is particularly large to prevent sag.

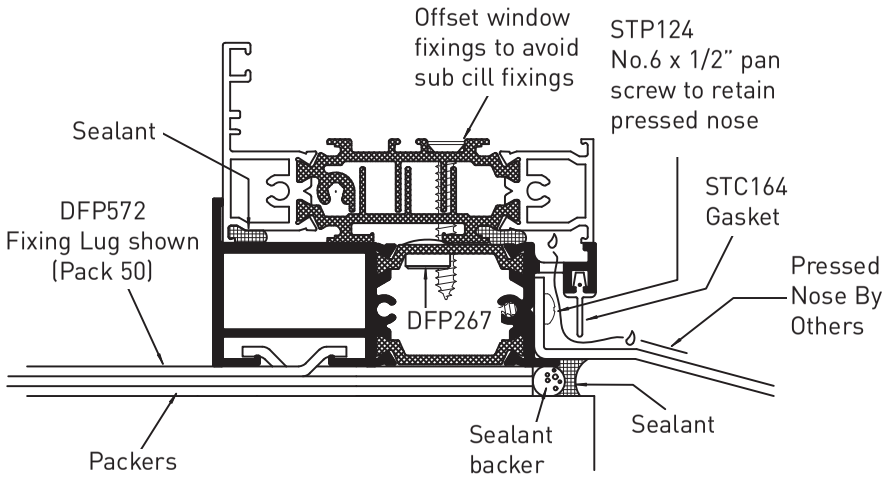
When fitting the frame to the sub cill silicone sealant must be gunned as shown alongside to ensure that a watertight joint is created on the inside and outside under the pressed nose.



The applied nose aluminium end plate is sealed and screwed to each end of the profile, with 2 off No.8 x 3/8" Csk screws.

Care must be take to ensure that the end of the sub cill is fully sealed to the end plate to prevent any water that enters the sub cill penetrating the structure.





Installation - 25mm Box Coupler

25mm Box Coupler Fitting Guide

Profile DF072 & DF073

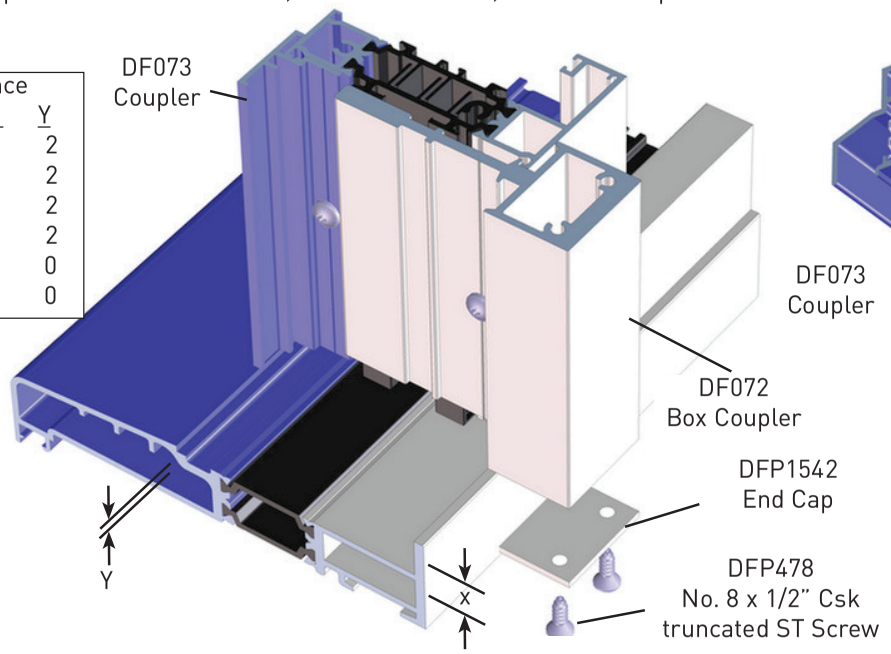
Typical assembly details for the 25mm Box coupler can be found on this page. Note that the example shows the box on the inside of the window, make appropriate adjustments should the box be on the outside.

To reduce the amount of necessary end preparation, DF072 box coupler is positioned on top of the sub cill upstand. The open end is closed off with DFP1542 end cap and secured with No. 8 x 1/2" Csk self tap screws.

DF073 coupler is positioned on the outside, side of the frame, and sits on top of the sub cill.

Up stand Allowance

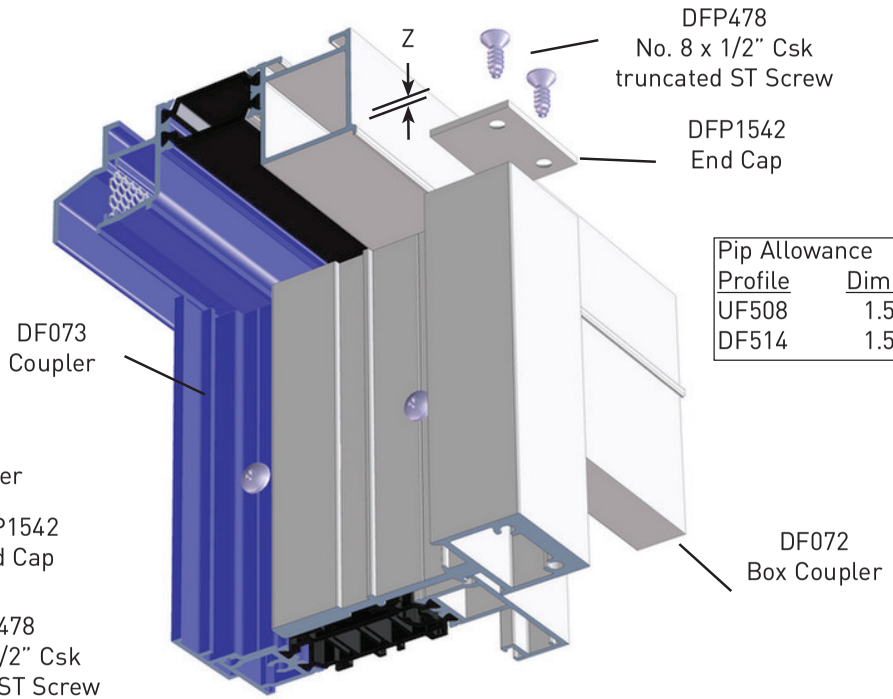
Profile	Dim X	Y
DF703	12	2
DF704	12	2
DF705	12	2
DF713	12	2
UF506	9	0
UF513	9	0



On this head example, DF072 box coupler would butt up to the pip on the trickle vent profile. With the open end closed off with DFP1542 end cap and secured with No. 8 x 1/2" Csk self tap screws.

DF073 coupler is also positioned so that it touches the pip.

Note on window runs of three or more, DF073 is fitted to the same outer frame (as shown) and the adjoining window is slotted in place. On the last join of a window run, DF073 is fitted as page 2-17, to allow the last window to be positioned in place.



Pip Allowance

Profile	Dim Z
UF508	1.5
DF514	1.5

Fitting Frame Into Aperture

It is vitally important that the cill is laid flat and level to achieve good performance. Jambs must be vertical in both planes, and no twist or other distortion allowed in the frame.

Prior to installing the frame, the opening should be checked to ensure that it is free of debris, and that any projecting brickwork has been trimmed back.

Any damaged damp proof membranes should be replaced or additional membranes incorporated.

When the opening was originally measured a suitable gap should have been allowed around the window, this will allow the window to be packed to ensure that it is plumb and square within the opening.

Ideally the frame should be bedded on mortar.

The frame can then be positioned in the opening and held square by packing at the very corners of the frame, taking care not to damage or deform the frame profiles.

To check for squareness, measure the diagonals from corner to corner, these diagonal dimensions should not differ by more than 1 or 2mm, if they do then adjust the packing until the frame is square within the opening.

The lay of the frame in to out can be checked by using a spirit level on the jambs. On replacement applications, the correct position of the frame might not align with the original. This will require some remedial work to make good the plaster reveal around the frame on the inside as well as any render that is present on the outside.

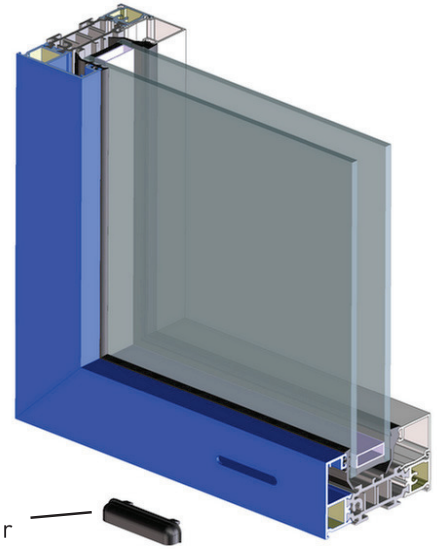
Drain Hole Cover (Open In / Glaze In Frame)

DFP327 drain hole covers are glued into position with:-

Henkel Terostat 934 (clear)
or
Henkel Terostat 939 (Grey, Black or White)

Clean off any excess sealant using :-

Terosan FL Cleaner



DFP327
Drain Hole Cover
(pack 50)

Installation - Frame

Fixing Of Frames - Screw Fixing

The first fixing must always occur within 150mm of the corner of the unit then at not more than 600mm centres (do not over-tighten fixings), the type and frequency depends on the expected applied loadings. Any fixed lights that have been glazed may need to be de-glazed to allow for fixing. It might be necessary to drill through stay arms on the jambs, see page 5-21 for more information.

Packing will be required at the fixing points to prevent distortion of the frame. Drilled holes in the frame should be sealed where there is a possibility of moisture penetration around the screw.

Fixing Of Frames - Lug Fixing

Lug fixings should be spaced at the same intervals as screw fixings. The fixing lugs are twist fitted to the frame and then screw fixed to the structure.

If extended frame DF1441 or DF1442 is to be fitted with fixing lugs, first clip in the outer frame brace, then twist the fixing lug into the frame brace.

On replacement windows, plaster on the internal reveal will have to be removed in the vicinity of the lug and made good after.

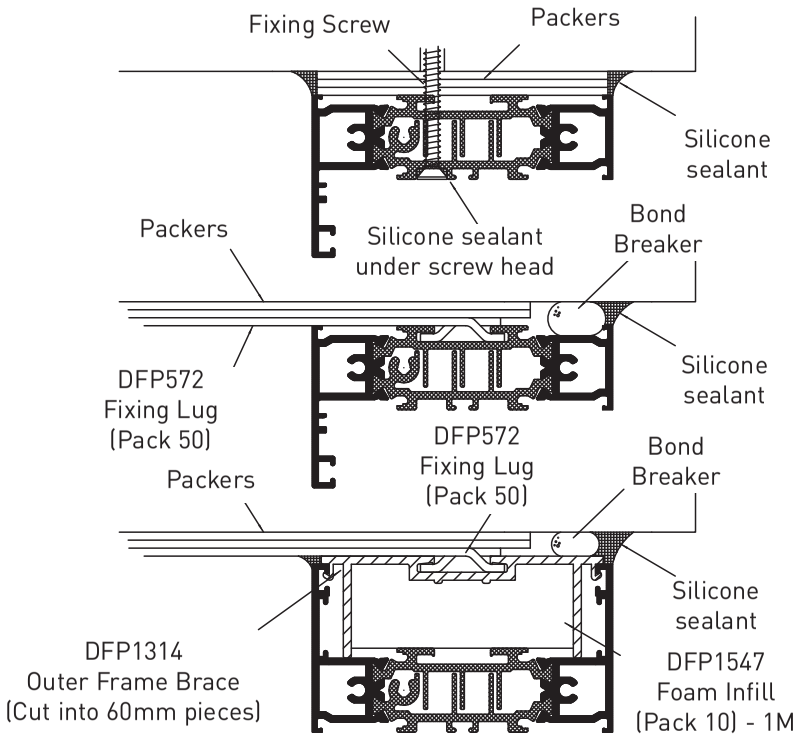
Packing the frame about the lug would be advisable to stabilise the frame.

Outer frames DF1402, DF1403, DF1414 and DF1415 cannot be lug fixed.

Fixing Of Frames - Foam Fixing

Fixing foam can be used in conjunction with screw and lug fixing, but is not an alternative to screw fixing.

Care must be taken not to allow the foam to come in contact with the painted finish, and as such the use of some form of masking tape would be advisable. Permanent staining will be caused if the foam contacts the frame.

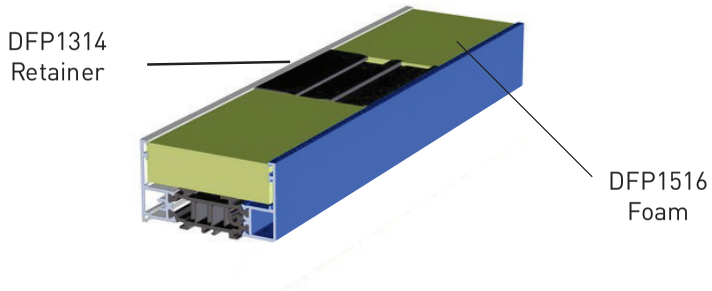


Outer Frame
DF1441 or DF1442
(DF1441 shown)

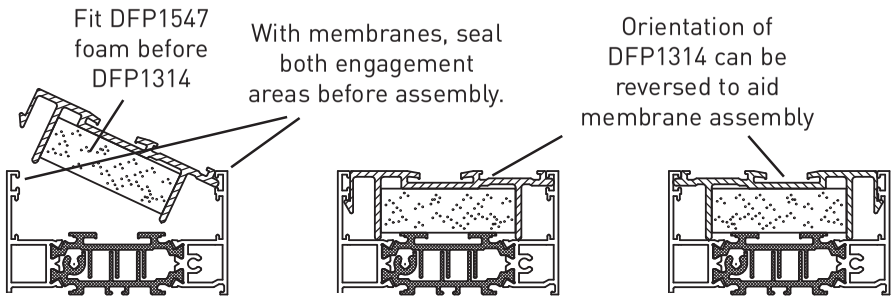
Deep Frames Foam Infill

Deep frames DF1441 and DF1442 with extended legs are to have foam fitted in the back of the profiles.

Normally 80mm pieces of DFP1314 frame brace are fitted for lug fixing and frame packing, with DFP1516 foam butt jointed both sides of the frame brace.



If membrane gaskets DFC1688, DFC1689 or DFC1690 are to be used with deep frame profiles, then DFP1314 frame brace would have to run the full length of the profile. This will involve the use of DFP1547 foam being used instead of DFP1516.



Installation - Frame

Frame Membrane

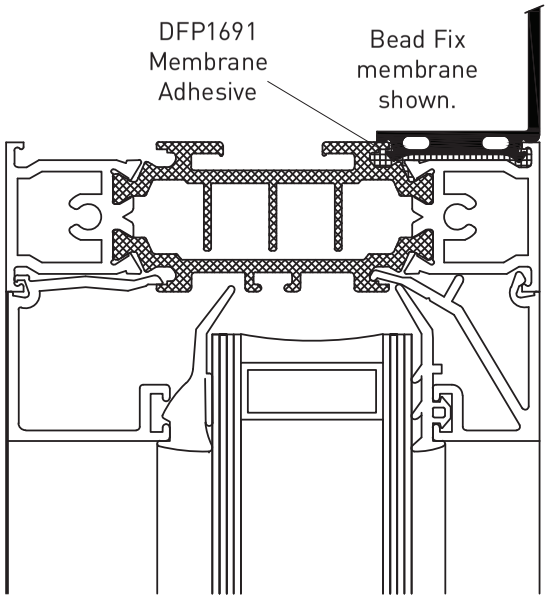
A number of options are available for frame membranes, length and area of location.

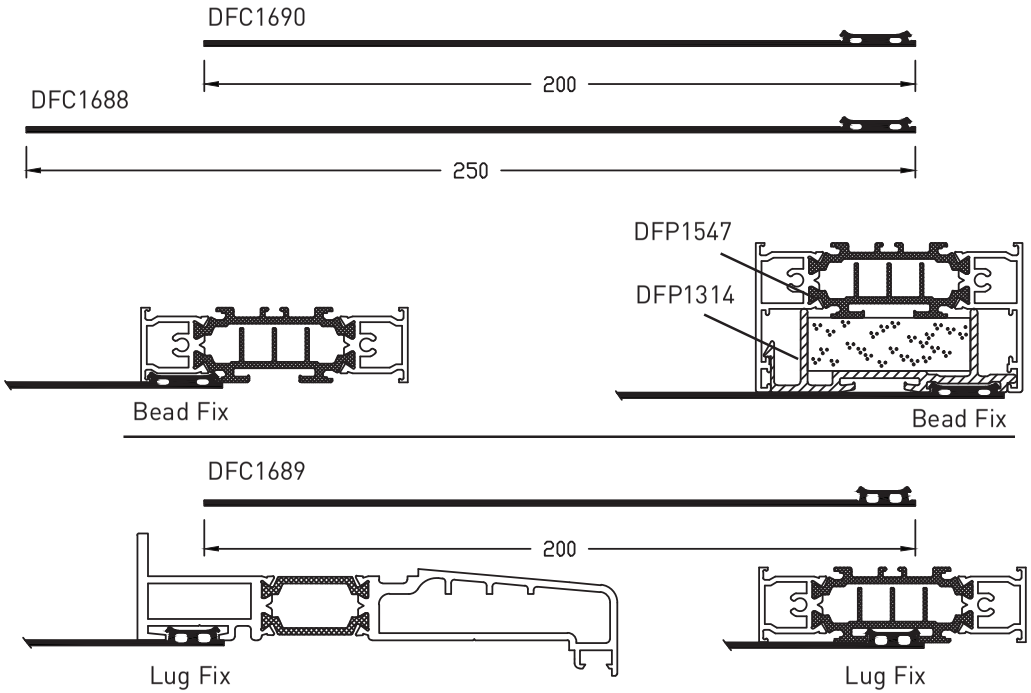
200mm (DFC1690) and 250mm (DFC1688) bead fix membranes plus,
200mm (DFC1689) Lug fix membrane.

Membrane assembly will vary with site conditions e.g. flush or extended, but the principles will be the same.

Seal membrane in position, overlap all joints, fully seal against water ingress.

	DFP1691 Sealant
	DFP1692 Applicator
	DFP1693 Nozzles



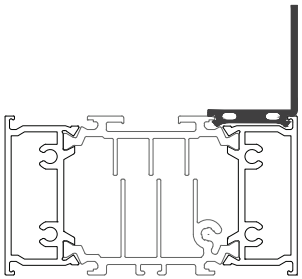


Installation - Frame

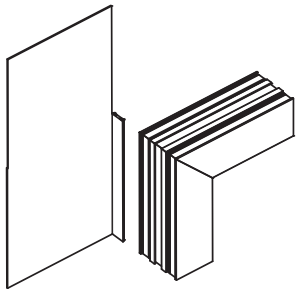
Si Frame Membrane Assembly

The following details are for **flush** window membrane assembly, see following page for extended window.

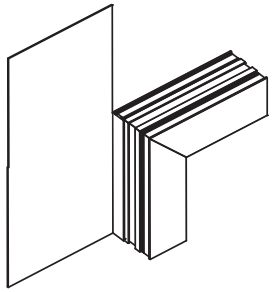
Seal DFC1690 membrane into Si frame bead groove on the perimeter of the frame.



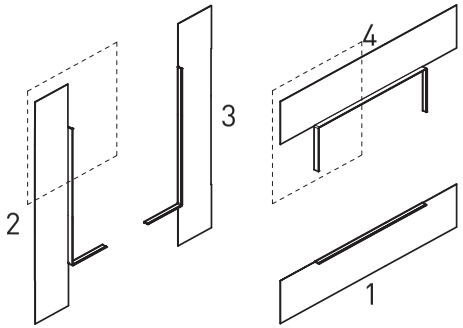
A. Cut the engagement part of the vertical membrane.



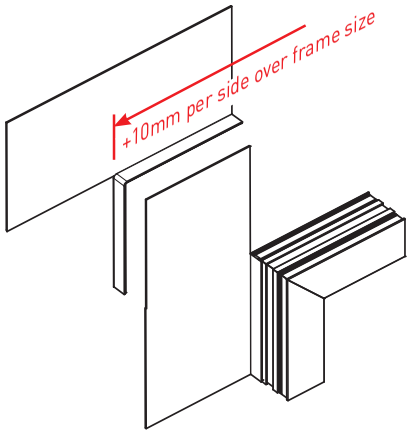
B. Apply membrane sealant to the bead groove and fully secure the membrane into place.



The following assembly sequence is for the corner highlighted. Note orientation of remaining corners for correct assembly.

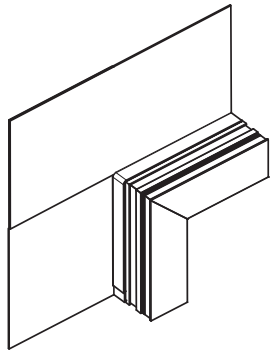


C. Cut the engagement part of the horizontal membrane and bend down as shown.



D. Apply membrane sealant to the bead groove and mating faces of the pre-fitted membrane and fully secure the membrane into place.

Important!
The corner is a vulnerable area, and extra precaution must be taken to ensure that the joint is fully sealed.

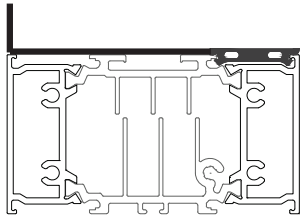


Installation - Frame

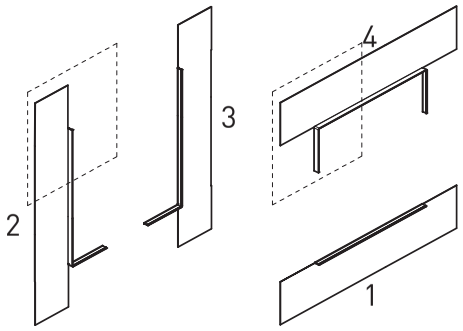
Si Frame Membrane Assembly

The following details are for **extended** window membrane assembly

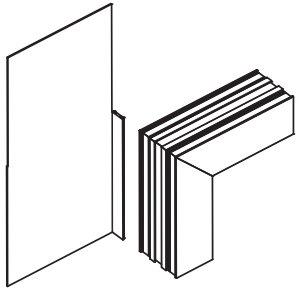
Seal DFC1690 membrane into Si frame bead groove on the perimeter of the frame.



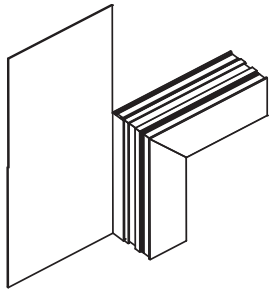
The following assembly sequence is for the corner highlighted. Note orientation of remaining corners for correct assembly.



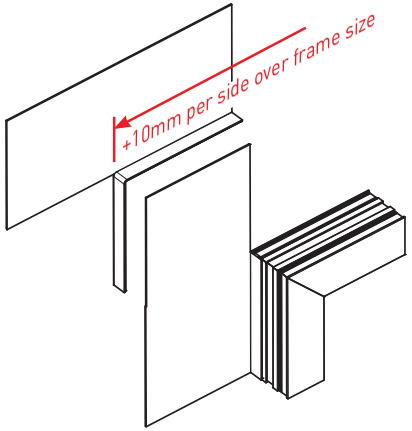
A. Cut the engagement part of the vertical membrane.



B. Apply membrane sealant to the bead groove and fully secure the membrane into place.

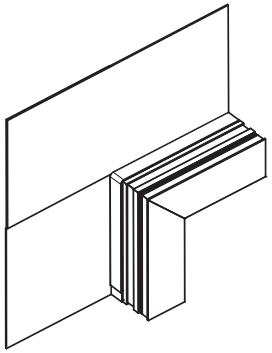


C. Cut the engagement part of the horizontal membrane and bend down as shown.



D. Apply membrane sealant to the bead groove and mating faces of the pre-fitted membrane and fully secure the membrane into place.

Important!
The corner is a vulnerable area, and extra precaution must be taken to ensure that the joint is fully sealed.



Fitting Outer Frames Onto Sub Cill

Profile UF518

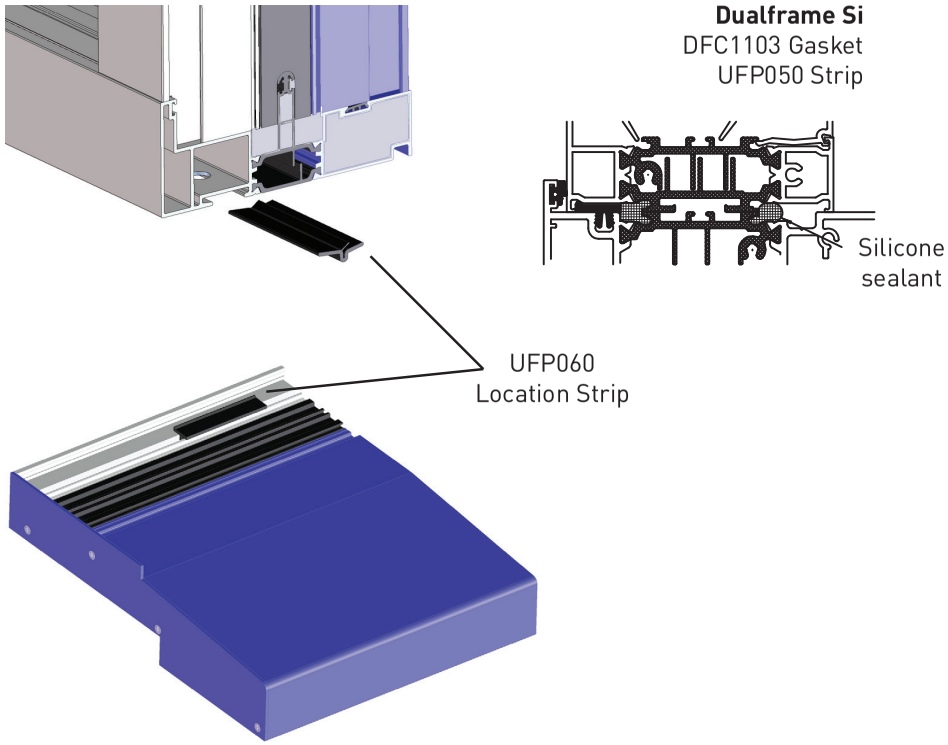
Outer frames are held in position on the sub cill by the use of frame location strips, UFP050 or UFP060. Weathering is provided by fitting either DFC1103 or DFC1200 gasket, with a run of silicone sealant close to the drainage channel in the sub cill.

Location strip and gasket usage is determined on the outer frame that is being used, see illustration alongside.

Before positioning the frame onto the sub cill, fit the gasket to the cill rebate. Cut seal away for any couplers and apply sealant around the coupler to sub cill join.

Frame location strips are positioned 150mm from the ends and then at 300mm centres. Apply a spot of sealant to maintain their position.

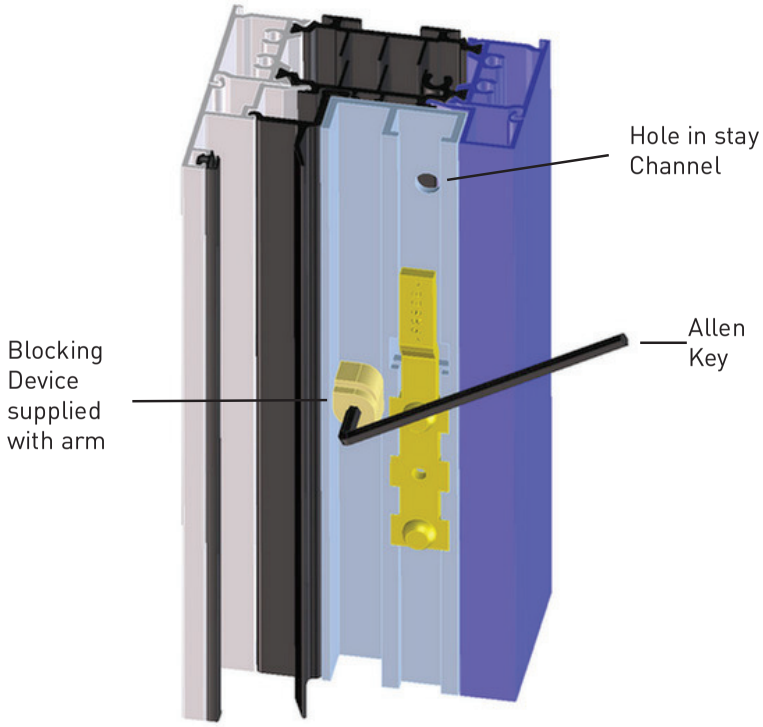
UFP050 location strips are fitted into the sub cill, UFP060 location strips are inserted into the fixing lug groove in the outer frame. Check orientation of location strips before fitting.



Installation

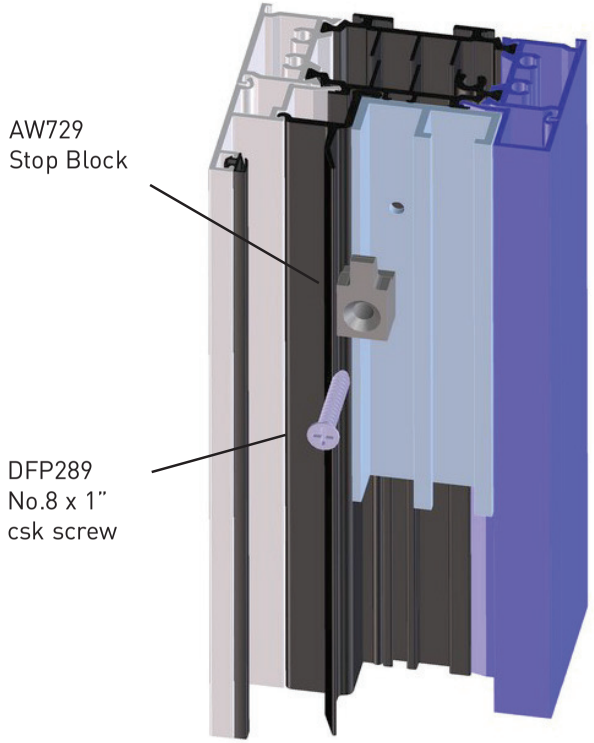
Fitting Optional Blocking Device

The blocking device allows the inbuilt restrictor to be used to the initial restricted position for opening and closing only. To open the window further for cleaning, the block has to be removed and then replaced after the window has been cleaned.



Fitting Optional Stop Block

The stop block AW729 can be used to restrict the reversal of the sash when cleaning. It is fitted to the glider track and must be positioned to allow the first reverse inbuilt restrictor to engage. The actual position of the block can vary depending on condition on site. Drill 3.5 dia fixing hole for No 8 csk screw.



Installation - Finishing Off

Sealing
The recommended sealant for the exterior is Low Modulous Neutral Cure Silicone Sealant. Backing foam should be used where the perimeter gap is over 5mm. Where the gap is within the 5mm range, a neat application of silicone is all that is required on the outside.

A final check of the internal and external perimeter seals should be undertaken. Any weak spots that are identified should be rectified and tooled to a high visual finish. Any excess sealant must be cleaned off of the finished surfaces using appropriate cleaner.

Cleaning After Installation
If excess sealant is to be cleaned off. Ensure that any solvent used will not damage any of the metal finishes, synthetic rubbers or plastics which may be present.

Warning
Take particular care if there is any cement or plaster on the aluminium. It is harmful to the metal finish and should be washed off while still wet. DO NOT RUB or particles of grit will permanently damage the metal or paint finish.

Routine Cleaning
No aluminium finish is "Maintenance Free" and hence should be cleaned at regular intervals.

Product should be washed down with warm water containing a mild detergent at least once a year. In areas where airborne contaminants are more concentrated than usual - near the sea, around swimming pools, or in place where in industrial air pollution is a known hazard - the products should be cleaned every three months or more frequently if requested by the powder coat manufacturer for that specific location.

When cleaning the products, it is a wise precaution to check that all hardware fixing screws are tight, and that all parts are free from damage. At the same time, and at least annually, make sure that drainage paths are not blocked by airborne debris, or other 'foreign' bodies.

Maintenance
The hardware fitted to Hydro products does not need 'calendar' servicing but should be maintained on 'as necessary' basis. Thus items such as stays and locking gear, which have been lubricated in manufacture and/or installation should be treated with the appropriate lubricant when they show signs of stiffening up in use, or if they have been left unused for a considerable time.

Regular checks to be carried out on the locking gear and stays, at least once a year or more frequently depending upon the hostility of the environment, i.e. coastal regions or dusty environments.

Operation
In order to preserve functionality of the window, and to maintain security, it is imperative the directives listed below are observed.

- Intermittent operation or sudden unexplained impairment of the functioning of any item of hardware should be investigated immediately by a person familiar with the product and repairs/adjustments be effected before user safety or product function is jeopardised.

- Replacement of faulty or damaged parts should be carried out by an experienced person using the correct parts.

- Where an item is still covered by the warranty given by the fabricator or installer of the product, requests for remedial work under such guarantees must, in the first instance, be referred to that person or company.

Installation - Hinge Operation

Hinge Operation

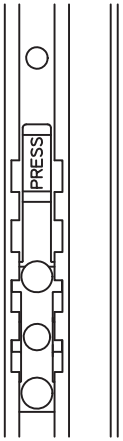
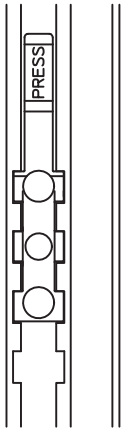


Fig 1
When the window is closed, the restrictor is depressed below the aluminium track and is not engaged.



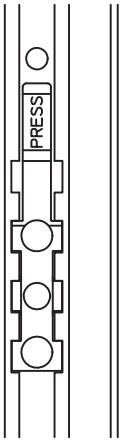


Fig 2
When the sash of the window is opened, the integral restrictor bar will travel until it engages into the first three pre punched slots in the aluminium track. At that position, the sash movement is held and limited to an opening of approx 100mm.

A blocking device can be added by inserting the device into the pre punched hole giving additional user safety (page 6-9).

To close, first depress the restrictor bar whilst controlling the sash from closing by holding the window handle with your other hand. Then pull the sash in the direction of closing, making sure that fingers are removed from inside the window as the sash closes.

Fig 3
To open the window sash past the initial restricted position as shown in fig 2, first if fitted remove the blocking device (page 6-9) with the Allen key provided.

Press down the restrictor bar so that the restrictor is clear of the pre punched slots in the aluminium track, whilst controlling the sash from closing by holding the window handle with your other hand. Once released, push the sash in the opening direction until the restrictor engages into the second set of pre punched slots in the aluminium track, the sash is now held in this restricted position.

To close, first depress the restrictor bar pass the two restricted positions whilst controlling the sash from closing, by holding the window handle with your other hand. Then just pull the sash in the direction of closing making sure that fingers are removed from inside the window as the sash closes.

Note:-
Any attempt to close the window without depressing the restrictor bar is likely to result in damage to the hinge and the need for hinge replacement.

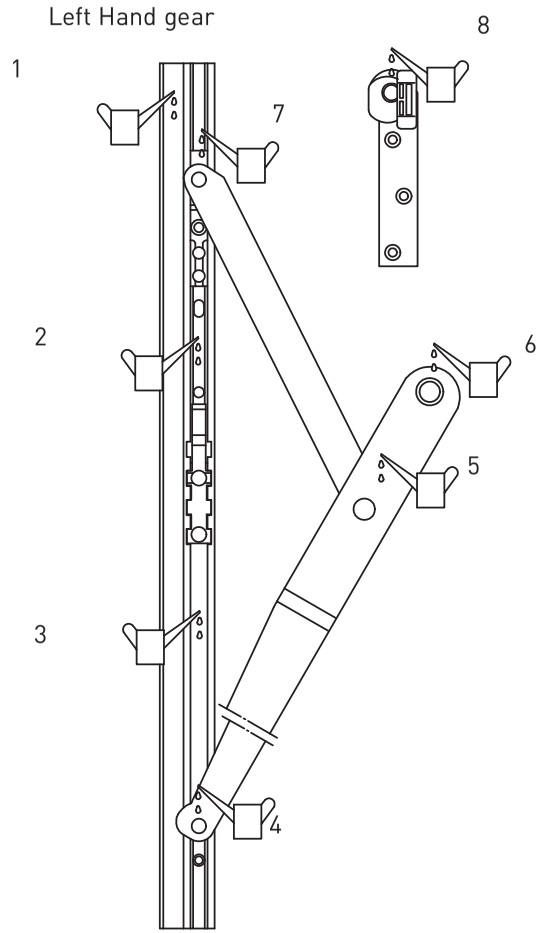
For reversing and cleaning:-
When reversing for cleaning, press down the restrictor bar and pass both pre punched restricted positions in the aluminium track, controlling the sash from closing, by holding the window handle with your other hand. Continue opening until sash is at arms length, then rotate the sash by pulling down the sash top rail whilst controlling the movement until the reverse restricted position is reached as in fig 3.

The sash is now prevented from rotating back to the opening restricted positions by the restrictor bar. Further reversal to the position as shown in fig 2 is possible if required, by depressing the restrictor bar and pulling the sash towards the frame in the direction of cleaning.

After cleaning, the restrictor bar is depressed to pass both pre punched restricted positions in the aluminium track and the sash pushed gently in the direction away from the frame and back towards the restricted position. When rotated to a position where the handle can be reached safely at arms length, pull the sash to the closed position by first depressing the restrictor bar to pass the two restricted positions whilst controlling the sash from closing, by holding the window handle with your other hand. Pull the sash in the direction of closing making sure that fingers are removed from inside the window as the sash closes, or to the point where the blocking device can be replaced.

Important note:-
Note any additional blocking devices fitted should be removed with the key prior to cleaning operation but must be refitted after cleaning and before the window is finally closed.

Maintenance and Lubrication



Maintenance and lubrication of PN UNI topswing gearing:-

The main areas for lubrication are shown for both the left hand gearing (restricted hinge), as well as the right hand gearing (unrestricted hinge).
The hinges are handed from the inside of the building looking out.

(1) The top glider track must be kept clean and free from any obstructions, if any fixings have been used in this track care must be taken to ensure smooth reversal without interference with nylon gliders. The top glider track should be kept lightly lubricated with acid free oil, vaseline or silicon lubricant such as Gleitmo 300. The top glider track must not be repainted.

(2) The aluminium track behind the restrictor arm should be lubricated as (1).

The fixing screws should be secured making sure they do not interfere with the smooth movement of the gearing.

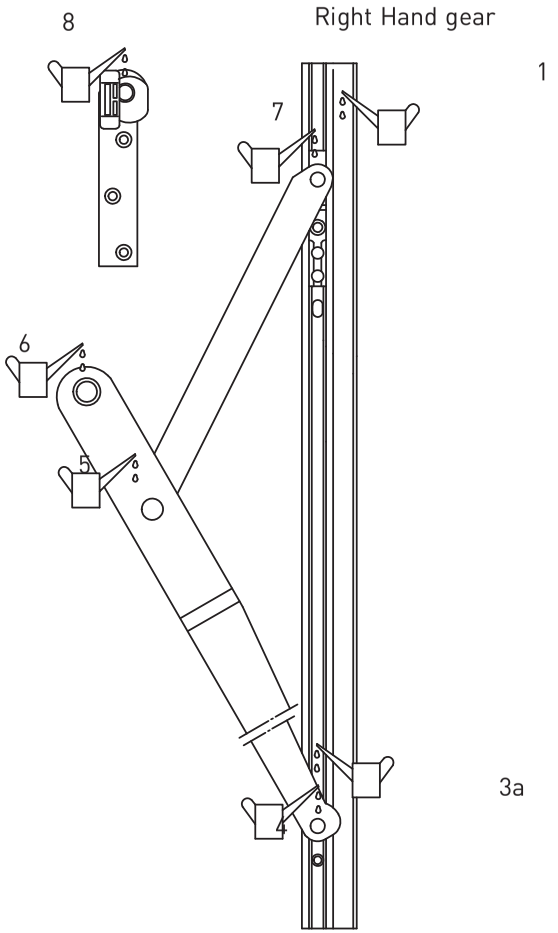
NB. (3) The steel bar on the left hand restricted arm should be lubricated during fabrication as (1).

(3a) Wheel on right hand unrestricted hinge should be lubricated as (1).

(4,5,7,8) Rivets to be lubricated as (1).

(6) Pivot point to be lubricated as (1).

All points, lubrication when necessary, min. once a year.
Frequency of lubrication must be increased in corrosive areas.



Installation

HYDRO

PN 0476 - 3799 Sizes and fire escape openings instructive.
1: Sash weight max 60 kg with topglider PN 0599
2: 745mm sash height gives 450mm opening.

Sash Height	Building Regulations Part B compliance chart											
1320	45	45	45	45	45	45	45	45	45	45	45	
1300	45	45	45	45	45	45	45	45	45	45	45	
1200	45	45	45	45	45	45	45	45	45	45	45	
1100		45	45	45	45	45	45	45	45	45	45	
1000			45	45	45	45	45	45	45	45	45	
900				45	45	45	45	45	45	45	45	
800					45	45	45	45	45	45	45	
745					45	45	45	45	45	45	45	
	500	530	600	700	800	900	1000	1100	1200	1300	1320	Sash Width

45	Will meet the fire escape regulation of min. 45 cm opening and HxW= min. 0,33 m2