

deceuninck®

Guidelines for the use of deceuninck thermal chamber insulator profiles (TCI)

01.10



The manufacturing / installation instructions of Deceuninck thermal chamber insulators (TCI) are not limited to those that can be found in this document. Further instructions / recommendations can be found in the Deceuninck manufacturing guides and should be read in conjunction with the latest versions of the following standards and Codes of Practice:-

- *BS 7412: Specification for windows and doorsets made from unplasticised polyvinyl chloride (PVC-U)*
- *BS 8213-4: Windows, doors and rooflights. Code of Practice for the survey and installation of windows and external doorsets.*
- *323/1 - BPF code of practice for the reinforcement of high impact modified PVC Windows and Doors.*
- *BS 7950: 1997 Specification for the enhanced security performance of casement and tilt/ turn windows in domestic applications.*
- *EN14351 - 1: 2006 Windows and Doors Product standard, performance characteristics, windows and external pedestrian doorsets without resistance to fire and / or smoke leakage characteristics.*

Some elements of this technical document and the associated products within it may be subject to change. Deceuninck Ltd. reserves the right to alter any specification or design without prior notice.

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Enclosed in this document you will find detailed manufacturing instructions for how best to utilise the unique benefits of Thermal Chamber Insulators (TCI) into your window production processes, however should you have any further questions, please do not hesitate to contact the Deceuninck Technical Department on Tel : 01249 810415.

The Thermal Chamber Insulators (TCI) identified within this document have been developed by Deceuninck for exclusive use with Deceuninck products. Please ensure that these instructions for use are followed at all times, failure to do so may invalidate your Deceuninck guarantee.

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1. Welcome to TCI

As a responsible organisation, Deceuninck Group has been recycling its own production waste and off-cuts of window profiles (post manufacturing waste) for quite some time.

As a supporter of Vinyl 2010, which is a 10 year voluntary commitment by the European PVC industry to enhance sustainability of its products and production over the full lifecycle, Deceuninck has committed to improving production processes and products, investing in technology, minimising emissions and waste and boosting collection and recycling.

As part of this on-going commitment towards sustainability Deceuninck is continually looking at ways of increasing the number of products which are produced from PVC-U waste and recycled into fully fledged products.

Through innovation and product development Deceuninck recently found a solution for recycling it's more difficult post industrial PVC-U waste, by inserting Recycled PVC-U profiles into their own high quality PVC-U window frames, giving enhanced insulating properties, hence the name Thermal Chamber Insulator (TCI).

By its very location inside the window frame, TCI sometimes mistakenly gets called a reinforcement. TCI is not a reinforcement for PVC-U windows but a genuine commitment by Deceuninck to both reduce the carbon footprint of it's manufacturing processes by minimising the amount of waste which potentially may go to landfill but to also make Deceuninck fenestration products more thermally efficient once they reach the 'In-use' phase of the product lifecycle, by reducing the amount of heat loss from inside the building to outside, resulting in reduced heating bills and less carbon emissions. Twice the environmental saving!

TCI also brings a number of benefits to the window manufacturing process through its unique material properties, such as:

- Less risk of weld contamination due to the removal of steel and the grease used to protect it from rust.
- Can be cut with a standard chop saw suitable for PVC-U, reducing the need for using steel saws and the resulting danger of contamination of coolant oils during welding.
- No sharp edges, reducing the risk of injury to operatives
- Can be optionally mitred and welded at corners, reducing the amount of reinforcement retention screws needed bringing associated cost savings.
- Less TCI shapes fit more profiles, reducing stocks.
- TCI weighs less than steel, making windows lighter, giving not only health and safety benefits but importantly making savings on lorry load delivery weights and associated CO₂ savings.

2. Introduction

Deceuninck are pleased to introduce a range of thermal chamber insulators (TCI). These insulators have been designed to fit our white and light coloured (see list below) casement outer frames and sashes of the 2500 / 2800 / 3000 profile series. It is possible to use TCI profiles in the following foiled or coated finished profiles included within the Deuctone range:-

6003-RAL 9016, traffic white	1004-RAL 7001, grey
1019-RAL 9010, warm white	1078-RAL 1015, light ivory
6096-RAL 9001, cream	6908-RAL 9006, white aluminium

TCI offer many advantages both from an environmental aspect and fabrication processing, which will be covered later in this document.

Deceuninck Thermal insulator profiles can be used in the sashes and outer frame profiles of white and light coloured casement windows listed, in predominantly domestic locations up to and including class A3, 1200 Pascal's wind load exposure category in accordance with BS 6375-1:2009. Higher wind load exposure categories can be achieved in multilight windows when used in conjunction with steel reinforcement to transom/mullion profiles. (See accreditation section)

Use of Deceuninck Thermal insulator profiles is not permitted in white mullion and transom profiles or with any foiled / coated profiles other than those listed above. These should continue to be reinforced with Deceuninck galvanised steel reinforcements as per the recommendations in the relevant Deceuninck Manufacturing Manual.

Please note that screw fixings for hardware and retention of TCI sections are different to those used for galvanised reinforcements. Please refer to section 11 of this document for correct specification.

3. Window Energy Ratings

Steel has many benefits with regard to structural rigidity but by its very nature is a good conductor and therefore has a negative effect on the overall thermal performance of a window.

TCI's innovative shapes and design brings all the benefits of PVC-U when it comes to thermal performance. Through indicative thermal modelling tests carried out, we have found by using TCI in white windows, the thermal performance can be improved, indeed the energy index rating which determines the Window Energy Rating band can be improved by up to 3 points.

For the first time, Deceuninck window systems can gain 'A' ratings using double glazed IGU's containing hard coat low emissivity glass* by harnessing the improved insulating benefits of TCI.
















* Simulations carried out include Pilkington K 'OW', Pilkington Optiwhite, 90% argon Gas fill and a choice of 'warm edge' spacer bar.

4. Accreditation

4.1 TCI is launched with full British Standards Kitemark approval, for weather testing and enhanced security, having successfully tested both P3387 and P2539 to BS 6375-1:2009 (weather testing) and BS 7950:1997 enhanced security standard for windows.

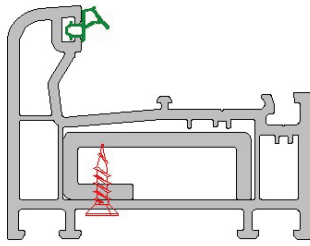
Note. Where approval to BS7950 Enhanced Security is required using P 2539 TCI, outer frames P 2533 and P 2833 are not permitted for use.

See the testing size limitation and performance matrix below for casement windows. (Contact Deceuninck Technical on Tel: 01249 810415 for test hardware specification)

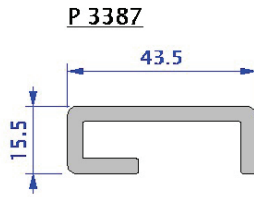
Applicable Profile Suite	Window type	Length (up to a maximum of)	Height (up to a maximum of)	Perimeter (up to a maximum of)	Transom/mullion length including frame (up to a maximum of)	Exposure category as given in table 1 of BS 6375-1:2009
 2500 chamfered  2800 decorative	Projecting top hung windows with TCI 2539 inserted into sash and outer frame profiles	1200mm	1200mm	-	-	Class A3 1200
 3000 zendow	Projecting top hung windows with TCI 3387 inserted into sash and outer frame profiles	1200mm	1200mm	-	-	Class A3 1200
 2500 chamfered  2800 decorative	Projecting side hung windows with TCI 2539 inserted into sash and outer frame profiles	700mm	1400mm	-	-	Class A3 1200
 3000 zendow	Projecting side hung windows with TCI 3387 inserted into sash and outer frame profiles	700mm	1400mm	-	-	Class A3 1200
 2500 chamfered  2800 decorative  3000 zendow	Fixed windows	2000mm	2000mm	8000mm		Class AE 2400
 2500 chamfered  2800 decorative	Multilight windows 2845 transom/mullion reinforcement	2400mm	2400mm	7600mm	1450mm	Class A4 1600
 2500 chamfered  2800 decorative	Multilight windows 2846 transom/mullion reinforcement	2400mm	2400mm	7600mm	1450mm	Class A4 1600
 3000 zendow	Multilight windows 3238 transom/mullion reinforcement	2400mm	1400mm	7600mm	1400mm	Class A4 1600
 3000 zendow	Multilight windows 3207 transom/mullion reinforcement	2400mm	1400mm	7600mm	1400mm	Class A4 1600

5. Ordering:

5.1 P3387 and P2539 are available in 6m lengths:



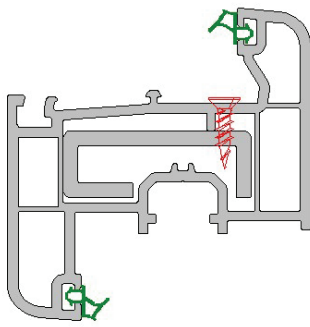
3000



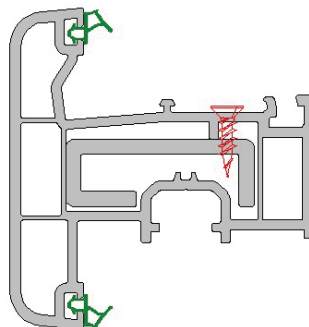
P 3387

Note.

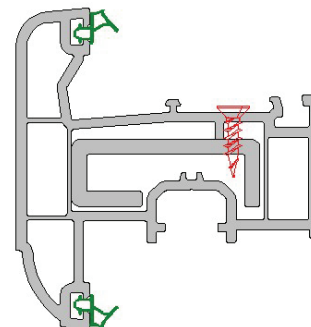
P 3387 is permitted for use with white and light coloured profiles in casement windows only. See Page 4 for details of permitted 'light colours'.



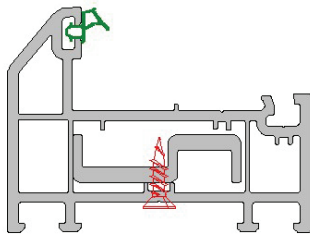
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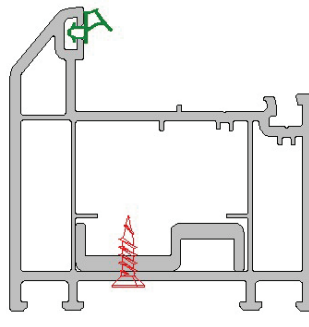
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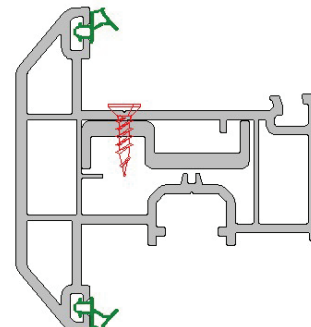
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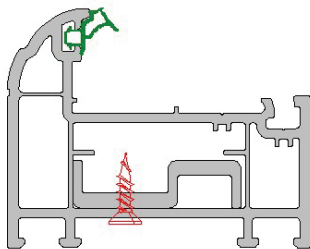
2532



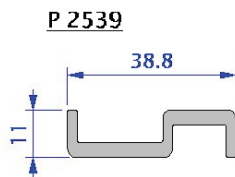
2534



2534



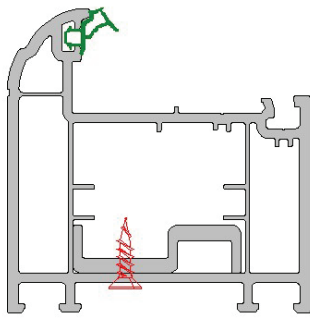
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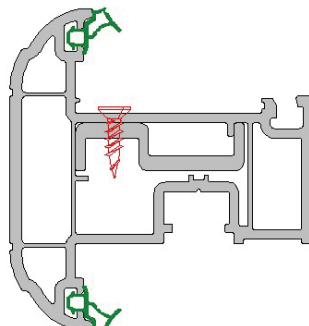
P 2539

Note.

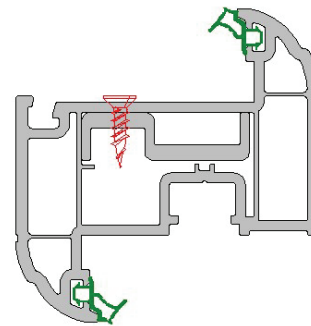
P 2539 is permitted for use with white and light coloured profiles in casement windows only. See Page 4 for details of permitted 'light colours'.



2833



2825



2826

6. Packing

6.1 The profiles can be ordered as individual lengths.

7. Storage prior to Manufacture

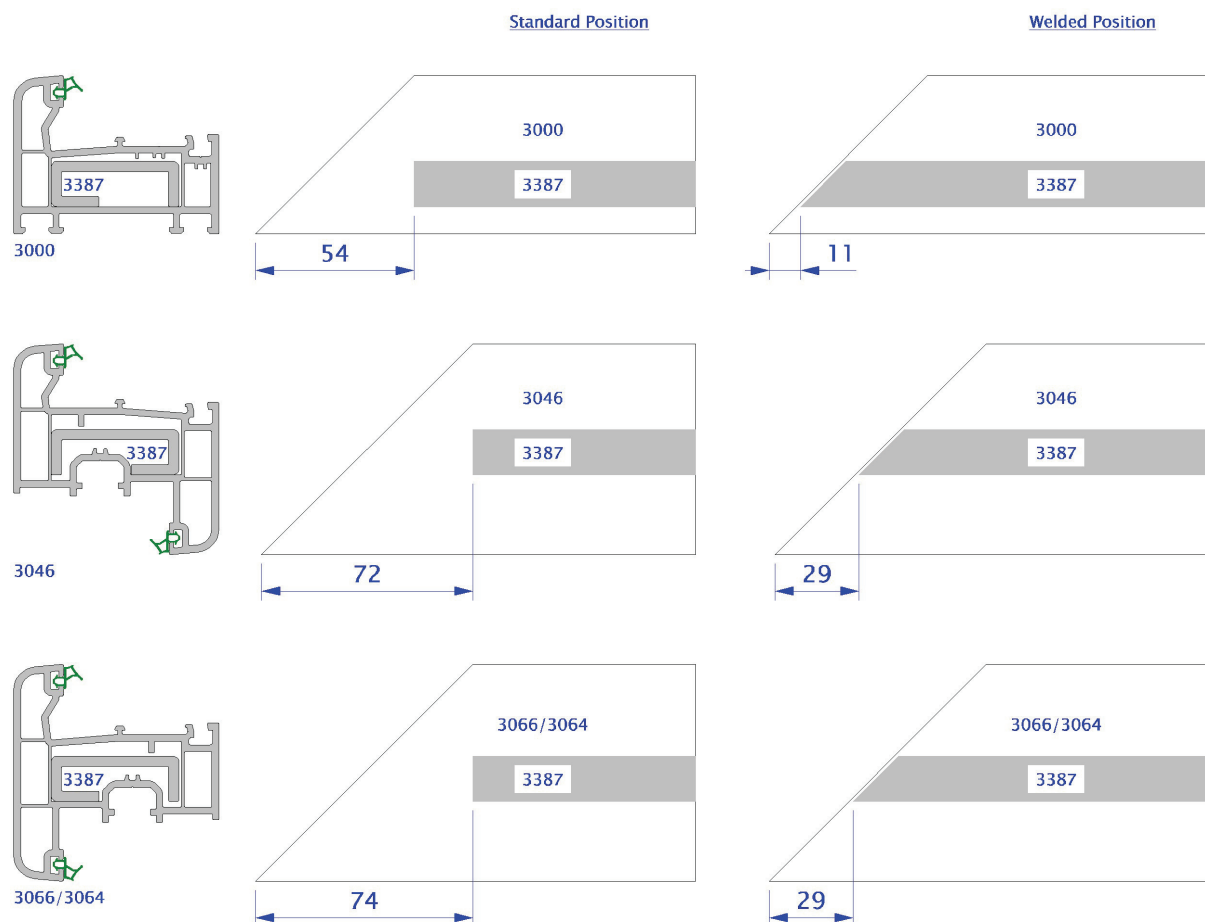
7.1 The insulator profiles should be supported horizontally at a maximum of 1200mm centres.

7.2 If the insulator profiles are intended to be welded at the corners they should be stored in dry conditions at approx 15–18 Centigrade for a minimum of 12 hours prior to use.

8. Cutting

8.1 The insulator profiles can be cut and inserted in the same manner as conventional steel reinforcement, however due to the nature of the material there is no need to use a steel saw, the insulator profile can be cut with a conventional chop saw suitable for PVC-U.

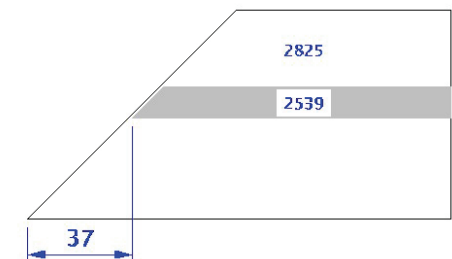
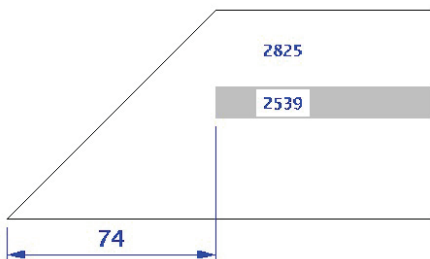
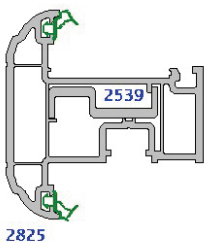
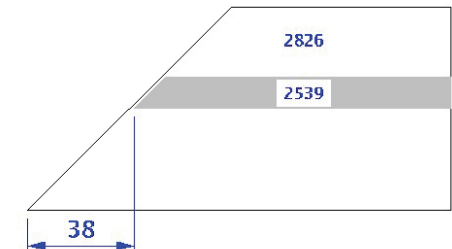
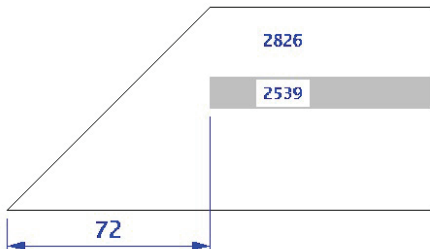
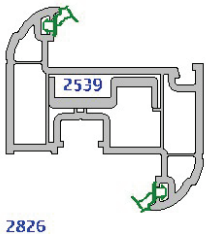
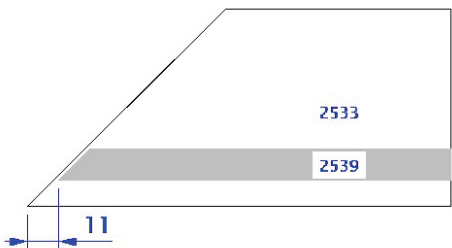
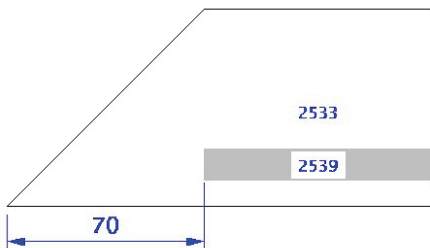
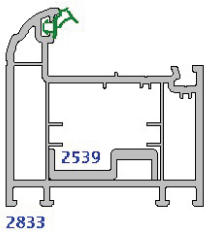
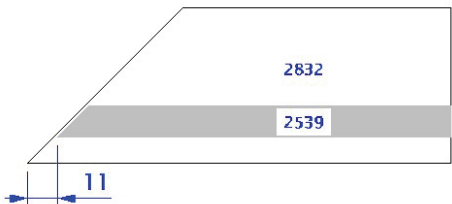
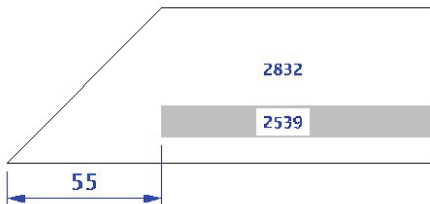
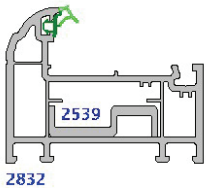
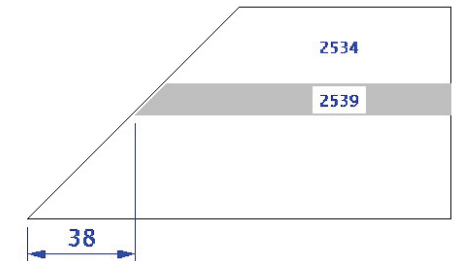
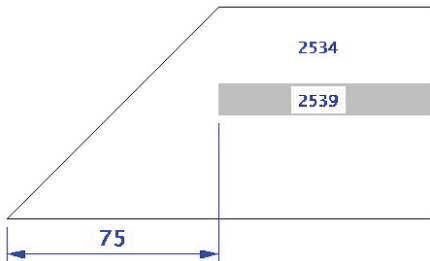
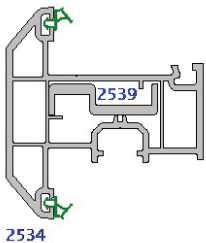
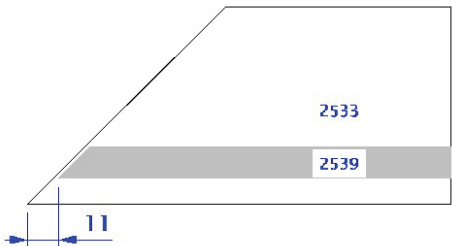
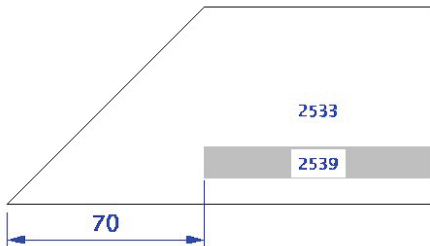
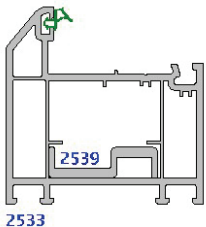
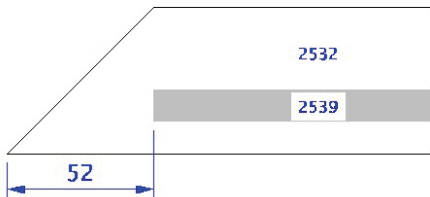
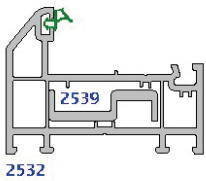
8.2 Cutting deductions for thermal insulator.



Cutting deductions for thermal insulator (cont)..

Standard Position

Welded Position



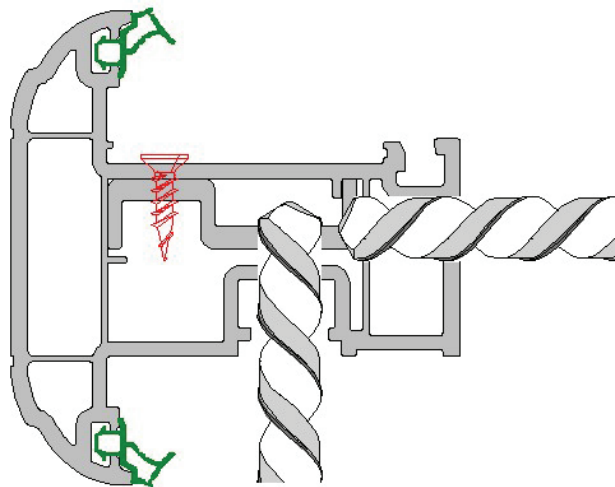
Note regarding the previous cutting size illustrations.

¹Where approval to BS7950 Enhanced Security is required, outer frames P 2533 and P 2833 are not permitted for use.

²P 3387 and P 2539 TCI profiles are only permitted for use in white and light coloured profiles (details on Page 4) of casement windows only.

9. Prepping

9.1 The thermal insulator profiles can be pre-inserted, and then prepped and routed using normal drills and router bits. However it should be noted that the insulator profile will need to be secured to the outer frame or sash before any drilling or routing takes place.



10. Hardware

10.1 For approved hardware tested in accordance with BS 7950:1997, Specification for enhanced security of windows in domestic applications, please refer to Deceuninck BS 7950 Security Manuals for 2500, 2800 and 3000 profile series. For further advice and assistance please contact Deceuninck Technical on Tel: 01249 810415.

11. Screw Retention and Fixings

11.1 All insulator profiles should be fixed at max 300mm centres fixings, and 100mm from corners if being cut and inserted like conventional steel reinforcement, however if the insulator profile has been mitred and welded at the corners then 400mm centres and 400mm from corners will be acceptable reducing the amount of retention screws required.

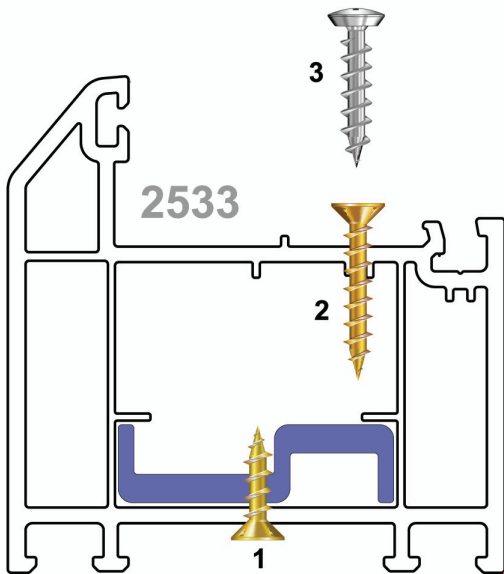
Notes

¹A minimum of 2 screw fixings are required per cut length for insulator profile retention.

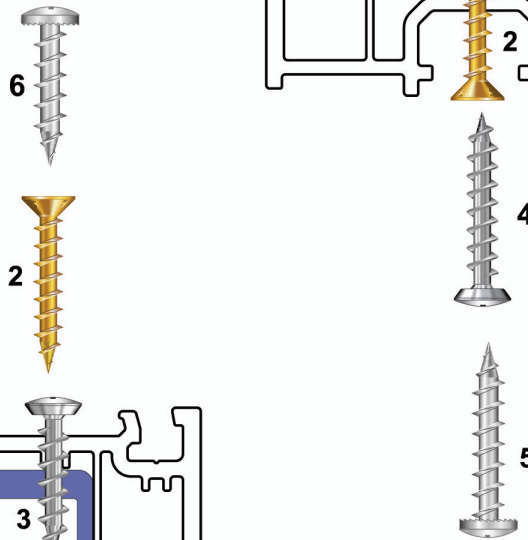
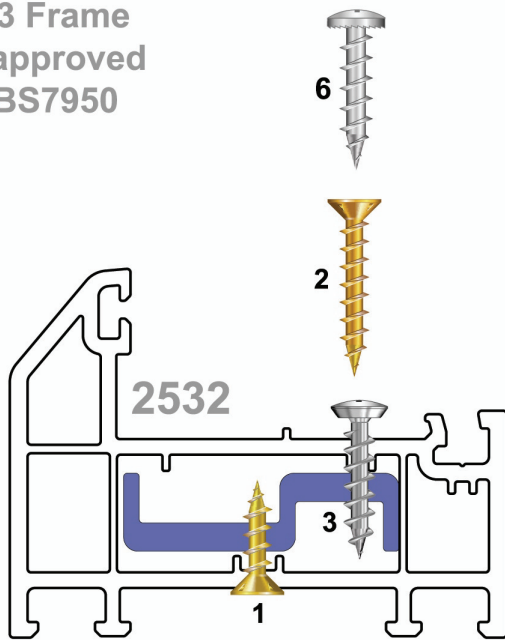
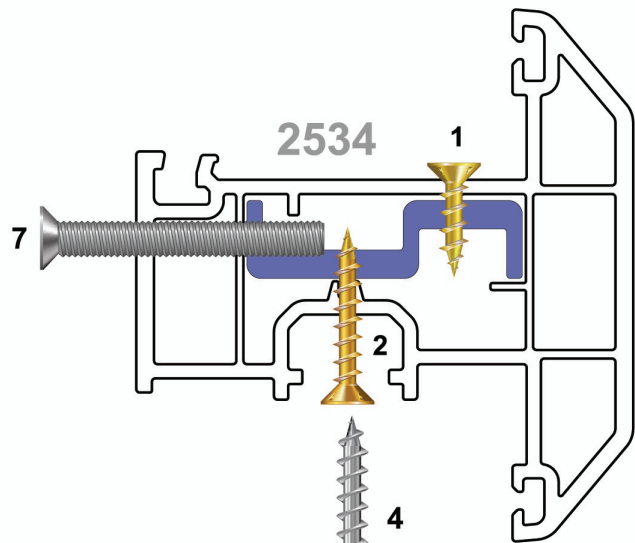
²All Kitemark testing for weather performance and enhanced security was carried out using screw fixings from RapierStar; Tel: 01260 285868, (contact Andrew Nicklin). Please refer to the following 3 pages for correct screw/fastener application, size, thread, head and coating/finish



Casement Window with Thermal Chamber Insulator



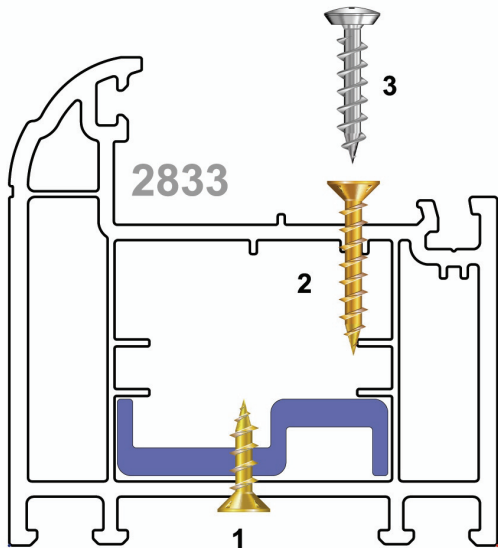
2533 Frame
Not approved
to BS7950



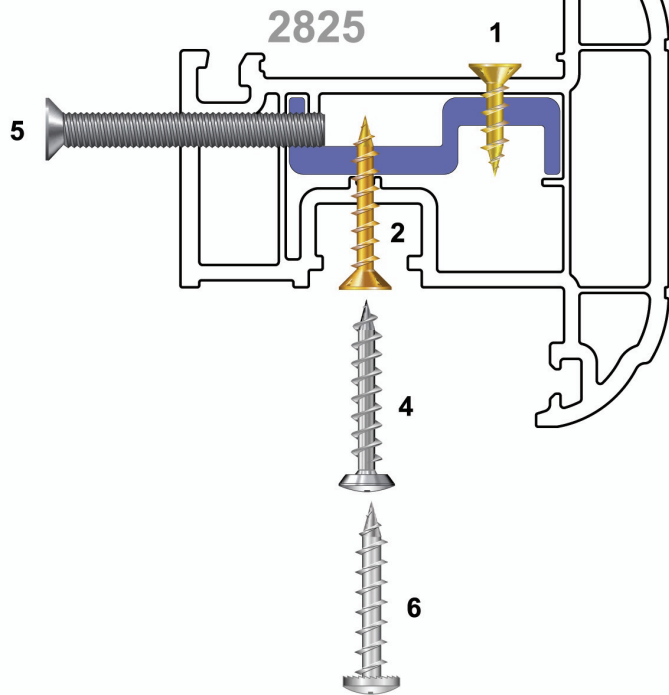
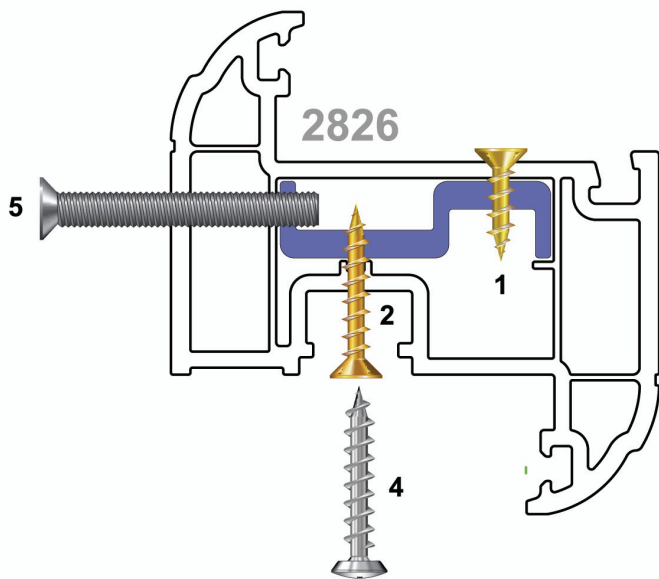
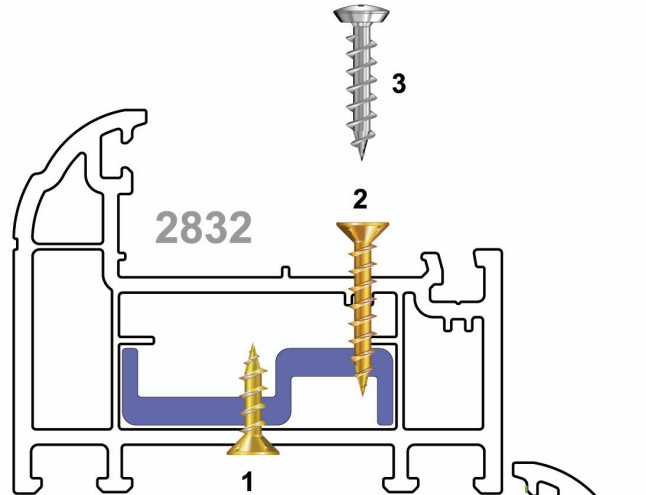
1	CFG 4.3 x 16 Y	T. C. I. retention
2	CFG 4.3 x 25 Y	Gearing to Sash. Keep to Frame
3	SFG 4.3 x 20 Z	Friction stay to Frame, Claw Lock to 2533 Frame
4	SFG 4.3 x 25 Z	Friction Stay to Sash
5	SFG 4.8 x 25 Z	Claw Lock to Sash
6	SFG 4.8 x 20 Z	Claw Lock to 2532 Frame
7	MS M5 x 40 Z	Handle retention



Casement Window with Thermal Chamber Insulator



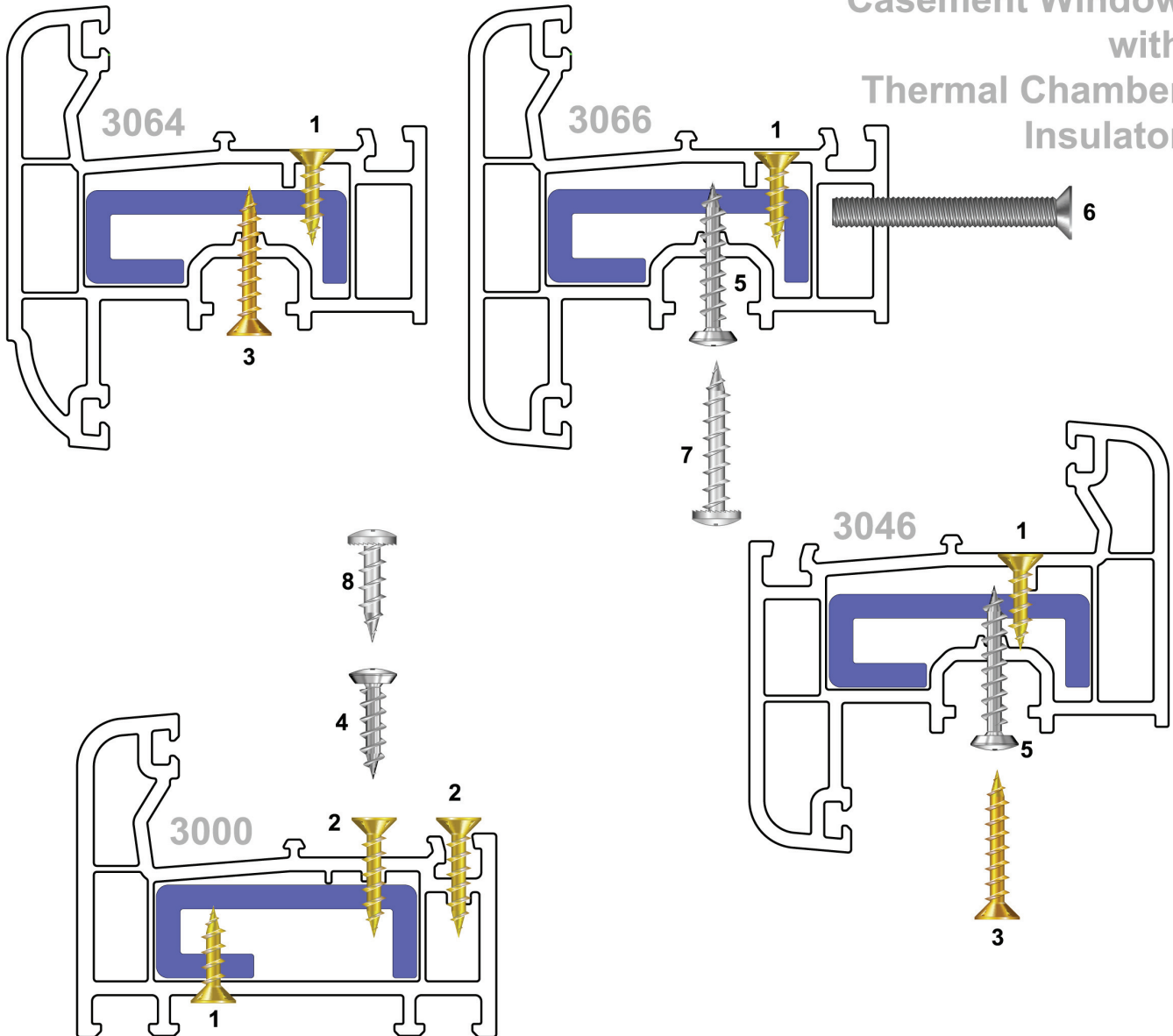
2833 Frame
Not approved
to BS7950



1	CFG 4.3 x 16 Y	T. C. I. retention
2	CFG 4.3 x 25 Y	Gearing to Sash, Keep to Frame
3	SFG 4.3 x 20 Z	Friction Stay to Frame
4	SFG 4.3 x 25 Z	Friction Stay to Sash, Claw Lock to Frame
5	MS M5 x 40 Z	Handle retention
6	SFG 4.8 x 25 Z	Claw Lock to Sash



Casement Window with Thermal Chamber Insulator



1	CFG 4.3 x 16 Y	T. C. I. retention
2	CFG 4.3 x 20 Y	Keep to Frame
3	CFG 4.3 x 25 Y	Gearing to Sash
4	SFG 4.3 x 16 Z	Friction Stay to Frame
5	SFG 4.3 x 25 Z	Friction Stay to Sash
6	MS M5 x 40 Z	Handle retention
7	SFG 4.8 x 25 Z	Claw Lock to Sash
8	SFG 4.8 x 16 S	Claw Lock to Frame

12. Welding

12.1 As mentioned previously, these insulator profiles can be inserted into the sash or outer frame prior to welding, please see cutting deductions in section 8.

12.2 When insulator profiles are inserted in this way, one of the many benefits is that retention fixing screws can be reduced.

12.3 Please refer to Deceunincks Published Technical data for full and detailed instruction guide regarding welding.

13. Combination Frames / Coupling

13.1 When using insulator profiles in Outer frames as part of a combination or coupling situation they cannot be taken as part of the structural wind loading calculations, or dead load calculations, therefore extreme caution should be exercised when using insulator profiles as part of a conservatory.

Note. When using insulator profiles, the overall size of the outer frames should not exceed 3 metres in any direction without a coupling, if in any doubt please seek advice from the Deceuninck tech dept.

14. Maximum size Criteria

Dimensions based on overall frame size (white and light coloured windows only) for wind load exposure categories up to and including 1200 pascals**. For higher exposure categories and 3rd party testing criteria, please refer to section 4 of this document titled accreditation*

Product	Maximum Width (mm)	Maximum Height (mm)
Fixed Light	2000	2000
Top Hung Casement	1200	1200
Side Hung Casement	700	1400
Multi-light Casement ***	3000	3000

* Please refer to Page 4 for details of permitted colours for use with TCI.

** Maximum size criteria can only be achieved if windows are securely fixed to the structure in accordance with BS 8213-4: Windows, doors and rooflights. Code of Practice for the survey and installation of windows and external door sets.

*** *Maximum transom/mullion length including frame 1450mm*

15. Transportation

15.1 The transportation of windows incorporating insulator profiles glazed or unglazed should be carried out as described in Deceuninck Technical manuals.

16. Installation

16.1 Please refer to Deceuninck manufacturing guides regarding basic installation guidelines for white windows. Deceuninck promotes industry best practice with regard to installation of its products and would advise all installers to familiarise themselves and work in accordance with BS 8213-4, code of practice for the survey and installation of windows and external door sets.

Issue 01.10

Approved MBB 05.01.10