

# OPERATION & MAINTENANCE MANUAL

PRESENTED TO

Rydon Maintenance Ltd

FOR

Grenfell Tower  
Grenfell Road  
London  
W11 1TQ

November 2015

**Table of Contents**

**1 – Grenfell Tower Suppliers Contact Information ..... 3**

a. Curtain Walling, Windows and Doors ..... 3

b. Glass ..... 3

c. Pressings, Copings & Architectural Metal Work ..... 4

d. Glazed in Aluminium Panels ..... 4

e. Glazed in Trickle Vents ..... 5

f. Steel Plant Doors ..... 5

g. Reynobond Cladding Panels ..... 5

h. Fixing Suppliers ..... 6

i. GRC Cladding Panels ..... 6

j. Insulation ..... 6

k. Fire Stopping ..... 7

l. Window Automation ..... 7

m. Sealants, Mastics & EPDM ..... 7

n. Glass Balustrades ..... 7

o. Glazing Equipment Hire & Accessories ..... 8

**2 – Finishes Schedule ..... 9**

**3 – Window System ..... 11**

a. Tilt & Turn Mechanism Care & Use Document ..... 12

b. Window & Door Glass Replacement Strategy ..... 18

c. Window Automation Controls ..... 20

**4 – Curtain Wall System ..... 21**

a. System 17 Curtain Walling: ..... 21

b. System 10 Commercial Doors: ..... 21

c. System ## (Glazed in windows): ..... 21

d. Curtain Wall Glass Replacement Strategy ..... 21

**5 – Cladding System ..... 24**

a. Cladding Panel Details ..... 24

b. Insulation Details ..... 24

c. Fire Barrier Details ..... 24

**6 – Balustrades ..... 25**

**7 – As Built Drawings ..... 27**



## 1 – Grenfell Tower Suppliers Contact Information

### **Harley Facades Ltd**

**Harley House**

**Brooklands Park**

**Tel:**

**Farningham Road**

**Crowborough**

**Fax:**

**East Sussex**

**TN6 2JD**

**web: harleyfacades.co.uk**

### a. Curtain Walling, Windows and Doors

#### System Supplier

**Metal Technology Ltd**

**Steeple Road Industrial Estate**

**Steeple Road**

**Tel:**

**Antrim**

**BT41 1AB**

**web: metaltechnology.com**

#### Fabricator

**Omnis Exteriors (Formerly CEP Architectural)**

**Roundwood Drive**

**Sherdley Road**

**St. Helens**

**Tel:**

**Merseyside**

**WA9 5JD**

**web: omnisexteriors.com**

### b. Glass

#### Glazing Supplier

**Glassolutions Peterborough**

**183 Fengate**

**Tel:**

**Peterborough**

**PE1 5BZ**

**web: glassolutions.co.uk**

#### Alternative Glazing Supplier

**Crystal Units Ltd**

**100 West Hendon Broadway**

**Tel:**

**London**

**NW9 7AQ**

**web: crystalunits.com**

### c. Pressings, Copings & Architectural Metal Work

#### Fabricator

**Tri-Fab Ltd**

Contact: Kenny Walker

**Downsview House**

**91 Marlborough Road**

Tel: [REDACTED]

**Lancing**

**BN15 8SU**

web: tri-fab.co.uk

#### Alternative Fabricator

**Hanem Fabrications Limited**

**Unit 1**

**Pipers Industrial Estate**

Contact: George Darling

**Pipers Lane**

**Thatcham**

Tel: [REDACTED]

**Berkshire**

**RG19 4NA**

web: hanemfabrications.co.uk

### d. Glazed in Aluminium Panels

#### Supplier

**Panel Systems Ltd**

**Welland Close**

**Parkwood Industrial Estate**

**Rutland Road**

Tel: [REDACTED]

**Sheffield**

**S3 9QY**

web: panelsystems.co.uk

#### Alternative supplier

**Newbrel Ltd**

**Gainsford Drive**

**Halesowen Industrial Park**

**Halesowen**

Tel: [REDACTED]

**West Midlands**

**B62 8BQ**

web: newbrel.com

#### e. Glazed in Trickle Vents

##### Supplier

**RW Simon Ltd**

**System Works**

**Hatchmoor Industrial Estate**

**Torrington**

Tel:

**Devon**

**EX38 7HP**

web: rwsimon.co.uk

#### f. Steel Plant Doors

##### Supplier

**Prima Doors Ltd**

Tel (H. Office):

**Newby Road Industrial Estate**

**Hazel Grove**

Tel (London):

**Cheshire**

**SK7 5DA**

web: primadoors.co.uk

#### g. Reynobond Cladding Panels

##### Supplier

**Alcoa Architectural Products (FR)**

**1, rue du Ballon**

Tel:

**68500 Merxheim**

**France**

web: Alcoa.com

##### Fabricator

**Omnis Exteriors (Formerly CEP Architectural)**

**Roundwood Drive**

**Sherdley Road**

**St. Helens**

Tel:

**Merseyside**

**WA9 5JD**

web: omnisexteriors.com

##### Cladding Support Rail Fabricator

**Tri-Fab Ltd**

Contact: Kenny Walker

**Downsview House**

**91 Marlborough Road**

Tel:

**Lancing**

**BN15 8SU**

web: tri-fab.co.uk

## [h. Fixing Suppliers](#)

### Structural Fixings

#### **ITW Construction Products**

**Fleming Way**

**Crawley**

Tel: [REDACTED]

**West Sussex**

**RH10 9DP**

web: itwcp.co.uk

### Structural Fixings Alternative

**Hilti UK Ltd**

Contact: Shaun Bailey

**1 Trafford Wharf Road**

**Trafford Park**

Tel: [REDACTED]

**Manchester**

**M17 1BY**

web: hilti.co.uk

### Colour Matched Fixings

#### **Mainline Products UK Ltd**

**Unit 3b**

**Aspect Court Cannel Row**

**Silverdale Enterprise Park**

**Newcastle under Lyme**

Tel: [REDACTED]

**Staffordshire**

**ST5 6SS**

web: mainlineproducts.co.uk

## [i. GRC Cladding Panels](#)

### Supplier

**BCM GRC Ltd**

**Unit 22 Civic Industrial Unit**

**Whitchurch**

Tel: [REDACTED]

**Shropshire**

**SY13 1TT**

web: bcmgrc.co.uk

## [j. Insulation](#)

### Supplier

**CCF Insulation Team**

**Lodge Way House**

**Harlestone Road**

Tel: [REDACTED]

**Northampton**

**NN5 7UG**

web: ccfltdco.uk

#### k. Fire Stopping

##### Supplier

Siderise Ltd

Forge Industrial Estate

Maestag

Tel:

UK

CF34 0AY

web: siderise.com

#### l. Window Automation

##### Supplier

SE Controls

Lancaster House

Wellington Crescent

Fradley Park

Lichfield

Tel:

Staffs

WS13 8RZ

web: secontrols.com

#### m. Sealants, Mastics & EPDM

##### Supplier

County Construction Chemicals

Unit 4

Chingford Industrial Centre

Chingford

Tel:

London

E4 8DJ

web: countyconchem.co.uk

#### n. Glass Balustrades

##### Stainless Steel Parts Supplier

Blackburns Metals Ltd (Edenbridge)

Commerce Way

Edenbridge

Tel:

Kent

TN8 6ED

web: blackburnsmetals.com

Glass Supplier – Crystal Units (see above)

[o. Glazing Equipment Hire & Accessories](#)

Supplier

**GGR Glass Ltd**

**Units 8-10 Ridgeway**

**Drakes Drive**

**Long Crendon Industrial Estate**

**Long Crendon**

Tel:

**Bucks**

**HP18 9BF**

web: [ggrglass.co.uk](http://ggrglass.co.uk)



## 2 – Finishes Schedule

Description	Material	Internal Finish	External Finish
Column Cladding Ground Floor	Glass Reinforced Concrete	N/A	BCM 262-S-HY GRC
Column Cladding Level 1 & Above	Reynobond Aluminium Composite Panel	N/A	Smoke Silver Metallic Duragloss 5000 Satin
Windows & Associated Trims	PPC Aluminium	RAL9010 30% Gloss	RAL7012 30% Gloss
Solid Spandrel Rainscreen Panels Level 4 & Above	Reynobond Aluminium Composite Panel	N/A	Smoke Silver Metallic Duragloss 5000 Satin
Intermediate Glazed in Sandwich Panel Level 4 & Above	PPC Aluminium Sandwich Panel	RAL9010 30% Gloss	RAL9010 30% Gloss
Solid Spandrel Rainscreen Panels Level 3	Reynobond Aluminium Composite Panel	N/A	RAL9010
Solid Spandrel Rainscreen Panels Level 2	PPC Aluminium Interlocking Rainscreen Panel	N/A	RAL7005 30% Gloss
Solid Spandrel Rainscreen Panels Level 1	PPC Aluminium Interlocking Rainscreen Panel	N/A	RAL7012 30% Gloss
Entrance Accent Colour Panels	PPC Aluminium Sandwich Panel	RAL6018 30% Gloss	RAL6018 30% Gloss
Steel Plant Room Doors	PPC Steel	RAL7012 30% Gloss	RAL7012 30% Gloss
Kitchen Vent Units	Plastic Casing	N/A	RAL7012 30% Gloss
Crown Enclosure	PPC Aluminium / Reynobond Aluminium Composite Panel	RAL9010 30% Gloss	Smoke Silver Metallic Duragloss 5000 Satin
Curtain Wall	Extruded Aluminium (Metal Tech System 17)	RAL9010 30% Gloss	RAL7012 30% Gloss

Rainscreen Insulation	Celotex RS5000 (160mm Buildup)	N/A	N/A
Rainscreen Fire Barriers	Siderise ###	N/A	N/A

### 3 – Window System

Metal Technology System 5-20Hi+ Tilt & Turn Windows

Enclosed:

System Brochure

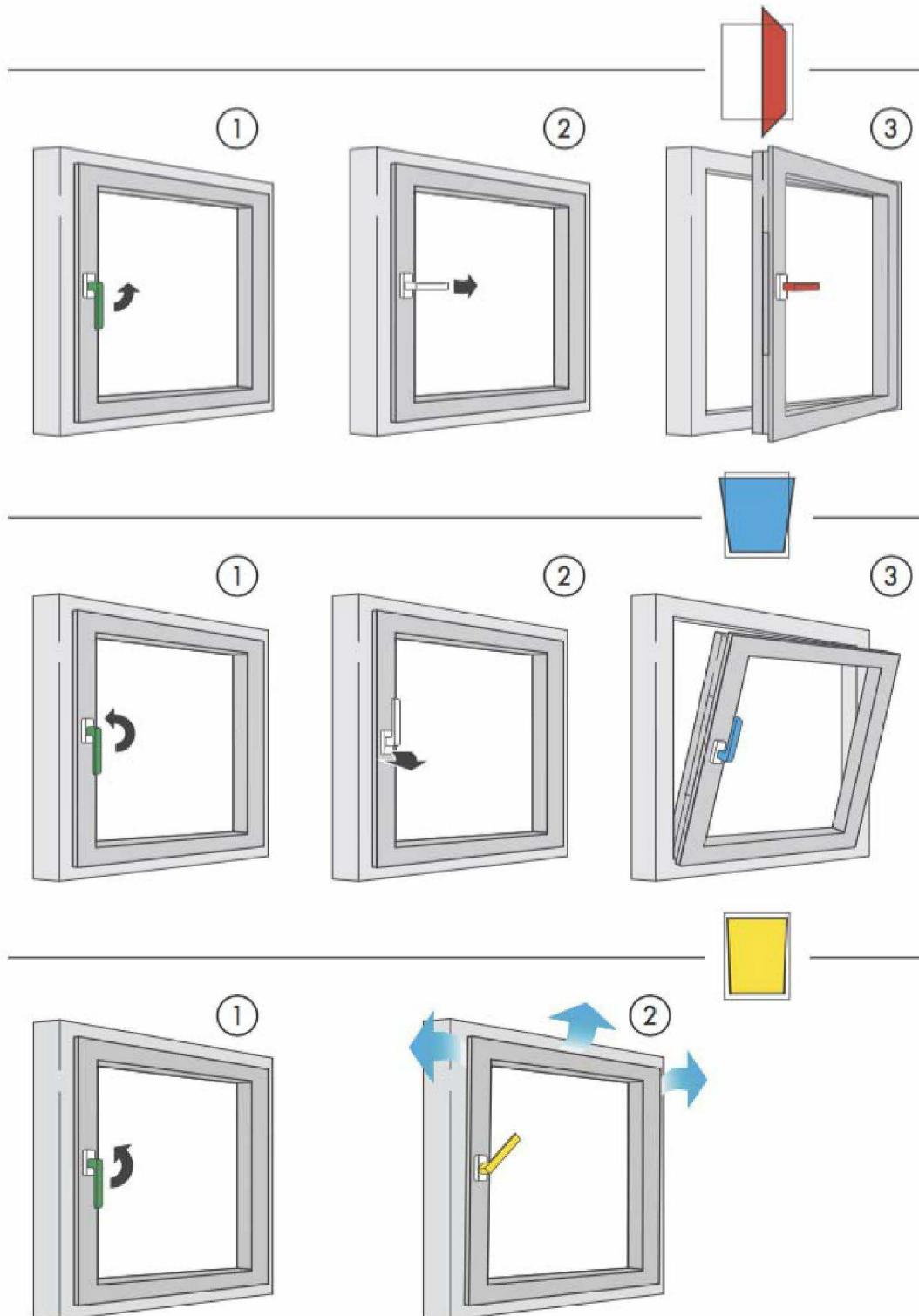
Tilt & Turn Mechanism Care & Use Document

Glass Replacement Strategy

Glass Specification

a. Tilt & Turn Mechanism Care & Use Document

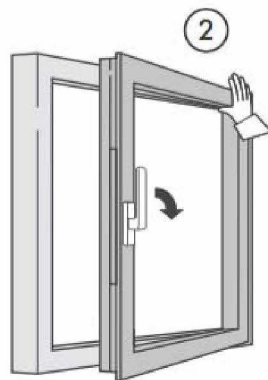
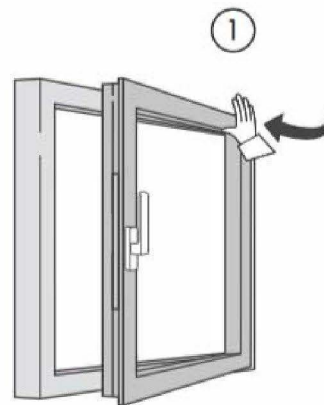
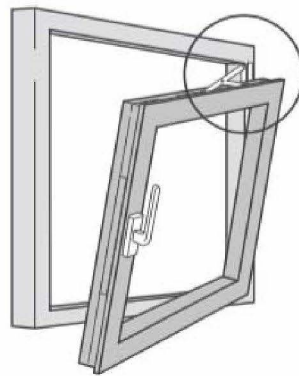
**Directions for Use - Turn and Tilt**



**SIEGENIA®**

3

## Rectifying Operating Problems



**SIEGENIA®**

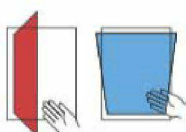
## Safety Instructions

- Always observe the safety instructions when carrying out work to windows/doors!
- Keep children and people who cannot estimate the dangers away from the point of danger!
- Avoid spilling lubricants onto the floor or leave tools unattended in the working area!



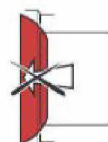
### Risk of injury from falling through open windows

- Always use stable step ladders.
- Protect yourself against falling out of windows.
- Do not steady yourself or hold on to the opened sash.



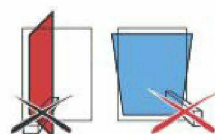
### Danger of injury through trapping of body parts

- Never reach into the opening between the sash and the outer frame when closing windows/doors.



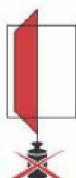
### Risk of injury or damage from pressing the sash against the reveal

- Do not press the sash against the window reveal.



### Risk of injury from trapping parts of the body between the sash and the frame

- Do not insert obstructions into the opening between sash and frame.



### Risk of injury and material damage from overloading the sash

- Do not overload the sash.



### Risk of injury from the effect of wind

- Prevent wind from acting on the open sash.
- During wind/drafts, close and lock windows.

## ⚠ WARNING

Operational malfunction of the window components may result in injury!

- ▶ Do not continue to use the window once an operational malfunction has been identified.
- ▶ Secure the window and instruct a **specialist company** to carry out the repairs.

**SIEGENIA®**



## Maintenance - Cleaning

Your windows and portal doors have high-grade SIEGENIA fittings. To ensure that they remain in good working condition we recommend that you inspect and maintain your windows/doors as described below at regular intervals (at least once a year or more often for school and hotel buildings).

### Cleaning and preserving surfaces

- When treating surfaces (painting or glazing your windows/doors), remove all fittings and protect them from stains and spills.
- Remove any stains or spills immediately because they could damage the surface protection of the fittings.
- Use only mild, pH-neutral, diluted cleaning agents.  
Never use sharp objects, abrasive agents or aggressive cleaning agents (such as vinegar or acidic cleaning agents) as they could damage the corrosion protection of the fittings.
- When cleaning, ensure that no water runs into the fittings.
- Dry the fittings thoroughly after cleaning and oil the surface with a non-acidic and non-resinous oil by wiping them with a cloth soaked in oil.

**ATTENTION:** After the Titan AF-X hardware surface has dried, it must **not** be wiped with oil. Oxygen from the air has to make contact directly with the surface to maintain self-forming passive layer of the hardware. This process would be hampered by an oil film. If you have any questions regarding your installed hardware please contact your window and/or door distributor.

**SIEGENIA®**

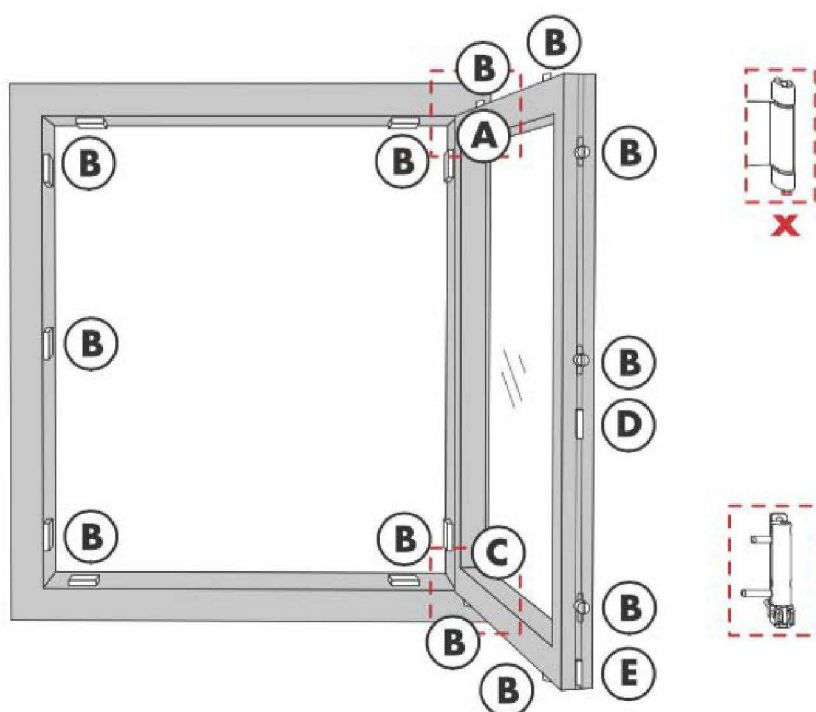
## Maintenance - Inspection and Lubrication

Check that all fittings() are secure and check for wear.

- Check that the top hinge pin (x) is pushed in up to the stop.  
If it is not, slide it up to the stop manually.
- Check for loose fixing screws and check that the handle is secure.  
Tighten the loose fixing screws using an appropriate tool.  
Important: Do not overtighten the screws.
- Have any worn/damaged fittings or overtightened screws replaced by a specialist company.

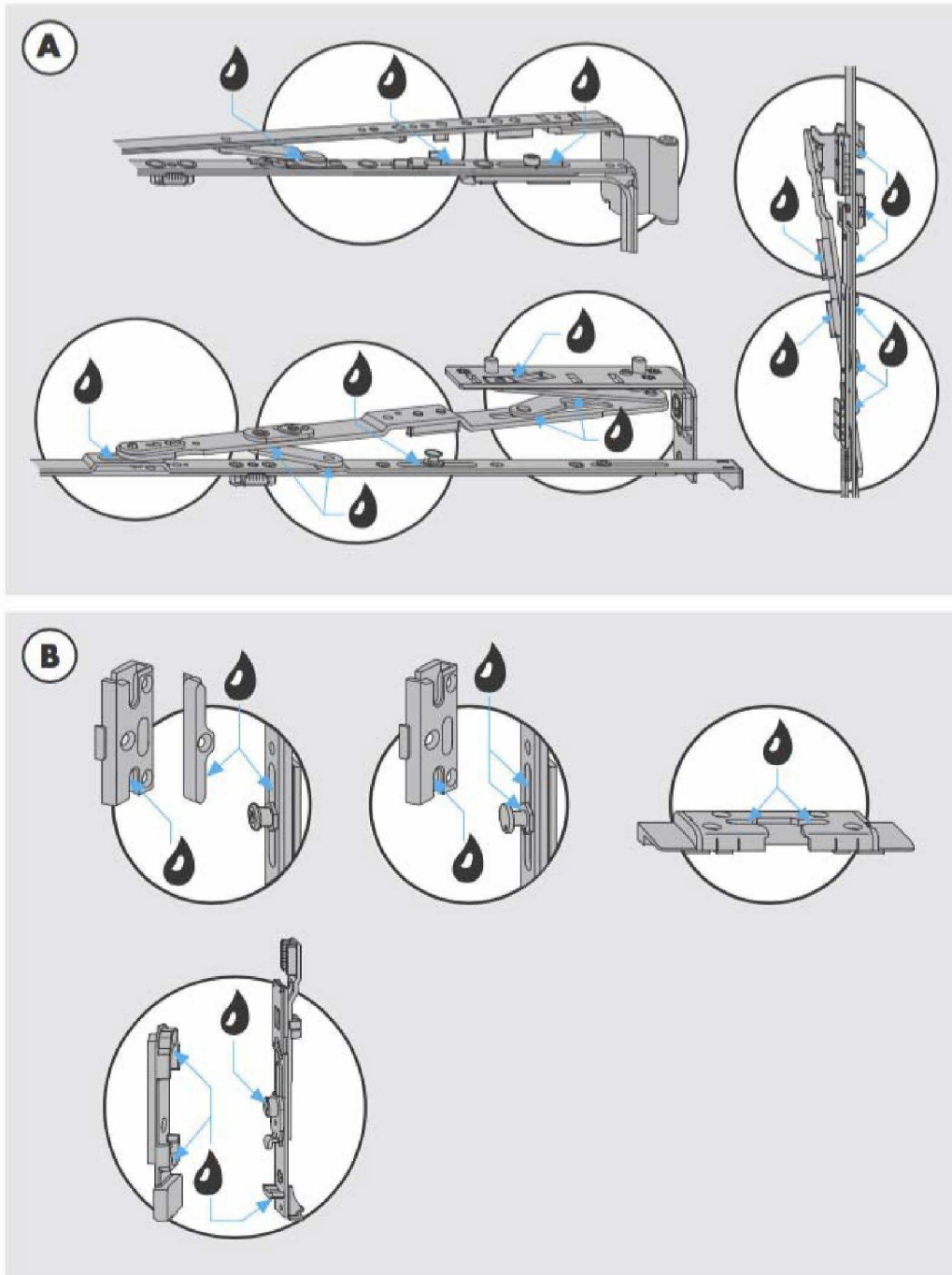
Grease or oil all movable fittings and all locking points.

- Use only acid-free and resin-free oil or grease.
- Use a grease spray on the movable parts in the window sash and spray into all openings in the fittings. Then move the fittings into position several times until the grease is distributed. Wipe off any excess oil or grease.
- Grease the striker plates in the window frame using a firmer grease (consistency class 2 in accordance with DIN 51818) in the places where the locking cam engages with the striker plate.  
Our maintenance grease is particularly suited for this. You can order it from SIEGENIA under material number ZXSX0120-093010.



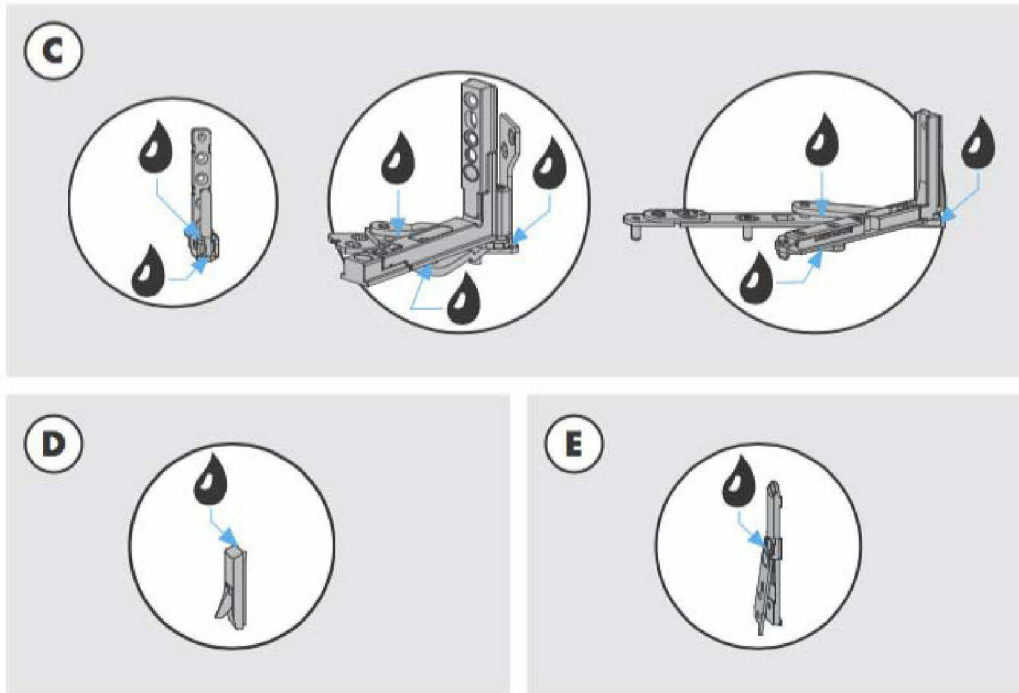
**SIEGENIA®**

## Maintenance - Lubrication Points



**SIEGENIA®**

## Maintenance - Lubrication Points



**SIEGENIA®**



## b. Window & Door Glass Replacement Strategy

Note: glazing should only be handled and replaced by a competent person(s).

The opening vents throughout Grenfell Tower are internally beaded, ensuring the safe and convenient exchange of double glazed units in the event that the unit needs to be changed.

1. Identify the location and size of the glass unit that needs replacing by cross referencing the window type and glass size drawings (enclosed).
2. Refer to drawing C1059-100G to determine the specification of the glass to be replaced, depending on location within the building.
3. When the replacement unit is ready, remove the gasket and bead within the affected opening vent and store in a dry, clean and safe place.
4. Remove the unit requiring replacement and dispose of in a suitable manner.
5. If necessary, replace the glazing packers with 28x100x2mm packers.
6. Whilst the frame is de-glazed, make sure the external gasket is clean and in good condition, otherwise clean/replace.
7. Taking care to note any labels from the manufacturer marking the internal/external pane, lift and position the new unit inside the frame.
8. Replace the window bead and push in window gasket. Using a lubricating spray may make this easier.
9. Clean the glass and frame, remove any rubbish created during the exchange.

N.B – most areas will require the use of a small hop-up (fig.1) to reach the higher level units. The boxing club area may require the use of a small mobile scaffold tower or podium scaffold (fig.2) due to the height of the windows.



Fig. 1



Fig. 2

c. Window Automation Controls



Care and  
operating instructions



Care and operating instructions:  
TITAN iP, TITAN AF, FAVORIT.

- WINDOW HARDWARE
- DOOR HARDWARE
- SLIDING DOOR HARDWARE
- VENTILATION TECHNOLOGY
- BUILDING TECHNOLOGY

WINDOW HARDWARE  
**TITAN**



# Table of Contents

Safety Notices ..... 2

**Directions for Use**

Turn and Tilt ..... 3

Rectifying Operating Problems ..... 4

Tilt Before Turn (TBT) ..... 5

Tilt ..... 6 - 7

Turn and Tilt Comfort ..... 8

**Maintenance**

Cleaning ..... 9

Inspection and Lubrication ..... 10

Lubrication Points ..... 11

Feedback on documentation

We are always happy to receive comments and suggestions for the improvement of our documentation. Please e-mail us your comments to ,dokumentation@siegenia.com'.

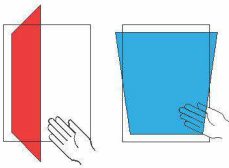
## Safety Instructions

- Always observe the safety instructions when carrying out work to windows/doors!
- Keep children and people who cannot estimate the dangers away from the point of danger!
- Avoid spilling lubricants onto the floor or leave tools unattended in the working area!



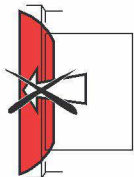
### Risk of injury from falling through open windows

- Always use stable step ladders.
- Protect yourself against falling out of windows.
- Do not steady yourself or hold on to the opened sash.



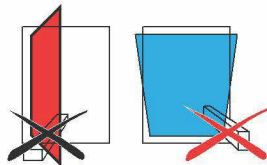
### Danger of injury through trapping of body parts

- Never reach into the opening between the sash and the outer frame when closing windows/doors.



### Risk of injury or damage from pressing the sash against the reveal

- Do not press the sash against the window reveal.



### Risk of injury from trapping parts of the body between the sash and the frame

- Do not insert obstructions into the opening between sash and frame.



### Risk of injury and material damage from overloading the sash

- Do not overload the sash.



### Risk of injury from the effect of wind

- Prevent wind from acting on the open sash.
- During wind/drafts, close and lock windows.

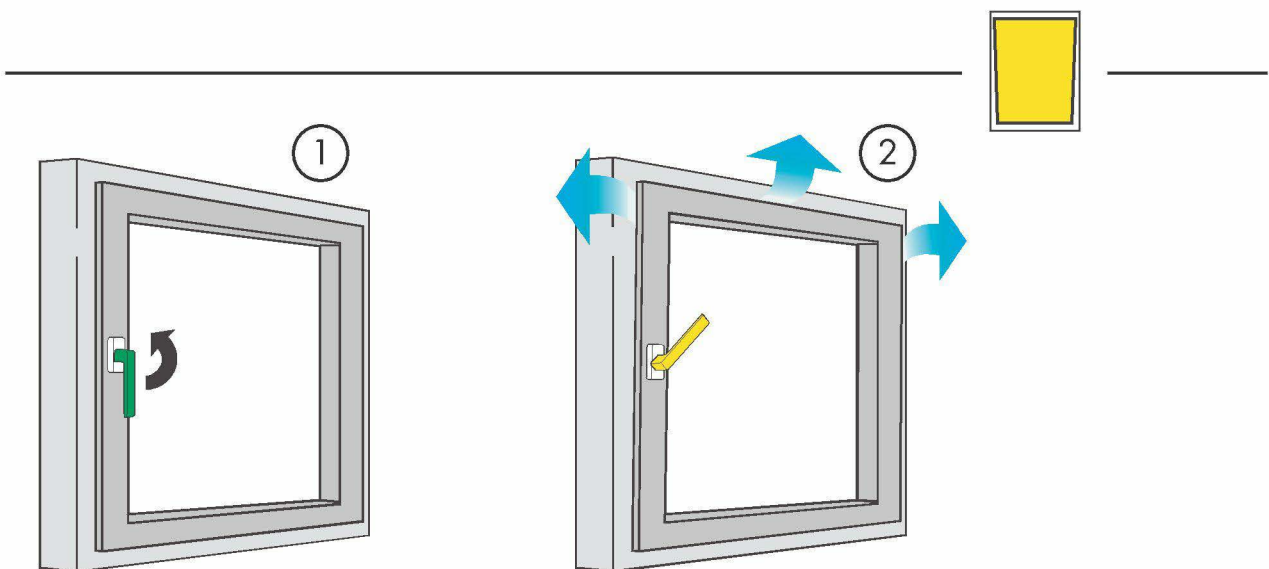
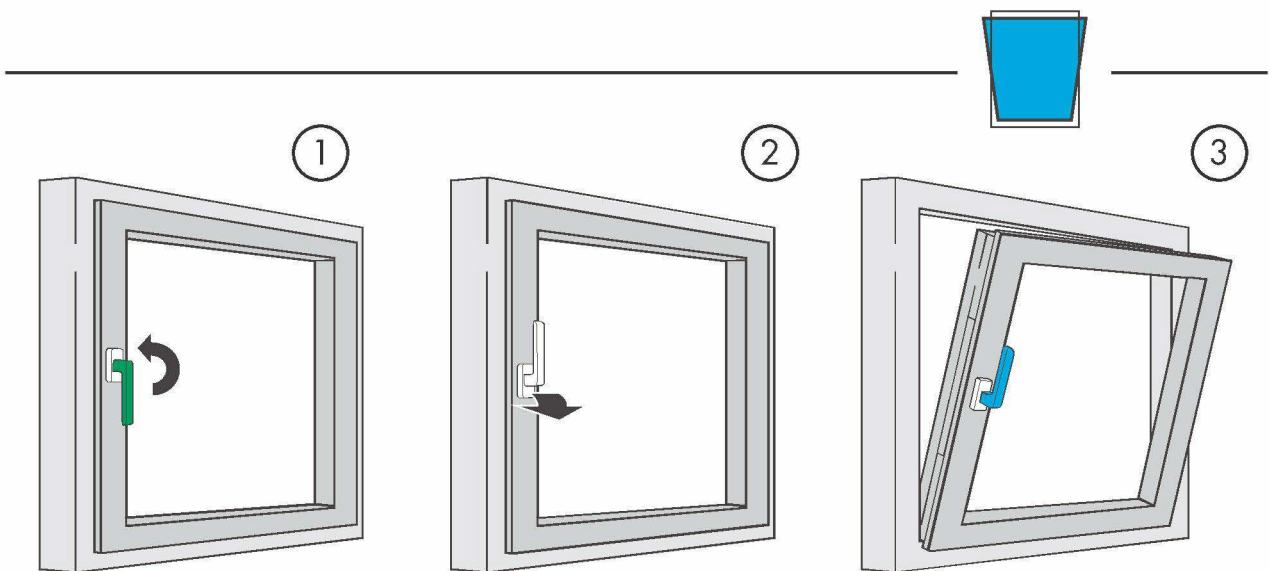
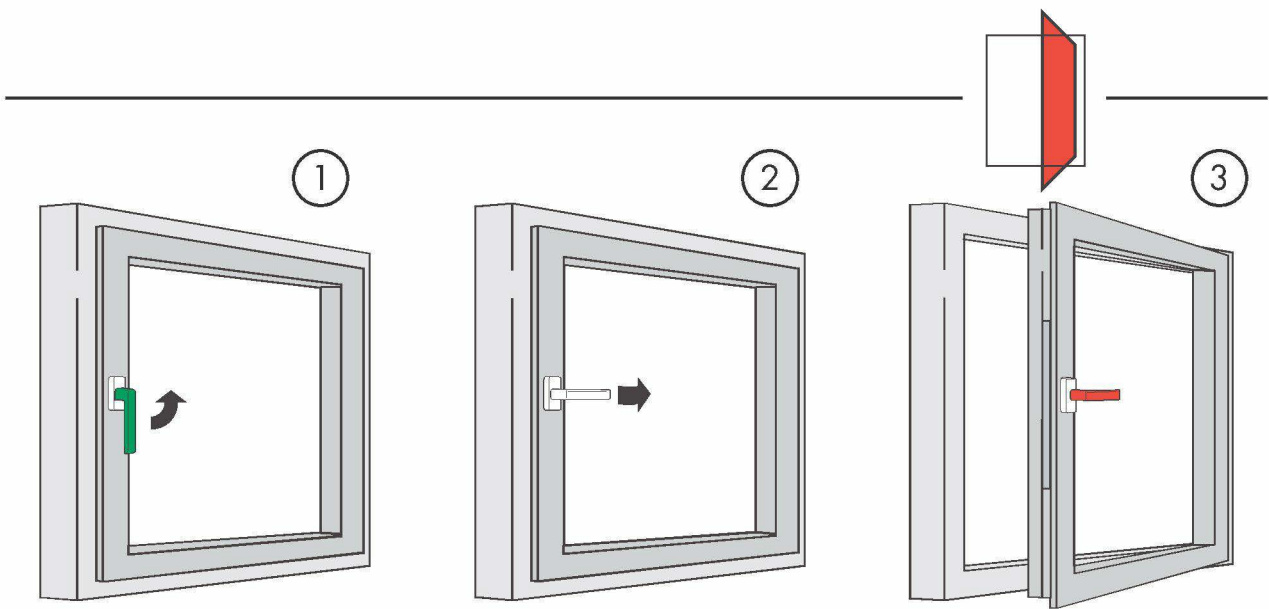


## ⚠ WARNING

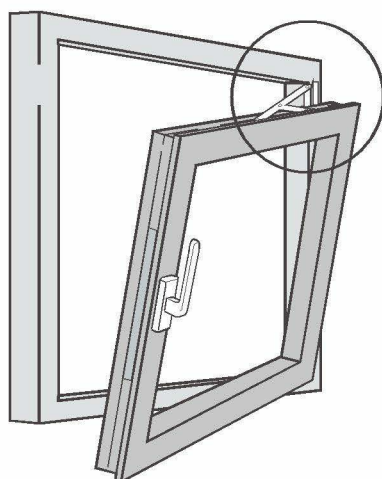
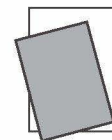
Operational malfunction of the window components may result in injury!

- ▶ Do not continue to use the window once an operational malfunction has been identified.
- ▶ Secure the window and instruct a **specialist company** to carry out the repairs.

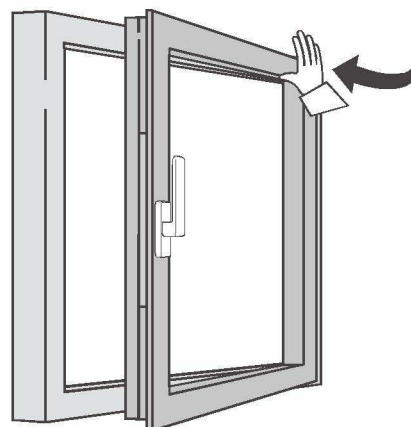
## Directions for Use - Turn and Tilt



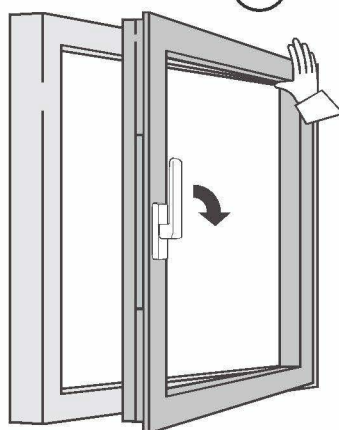
# Rectifying Operating Problems



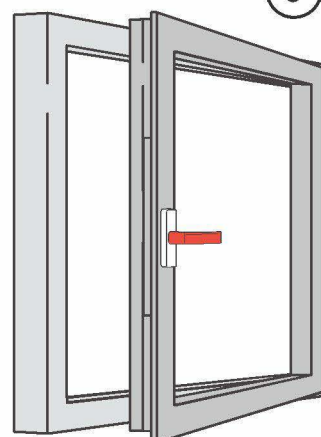
1



2

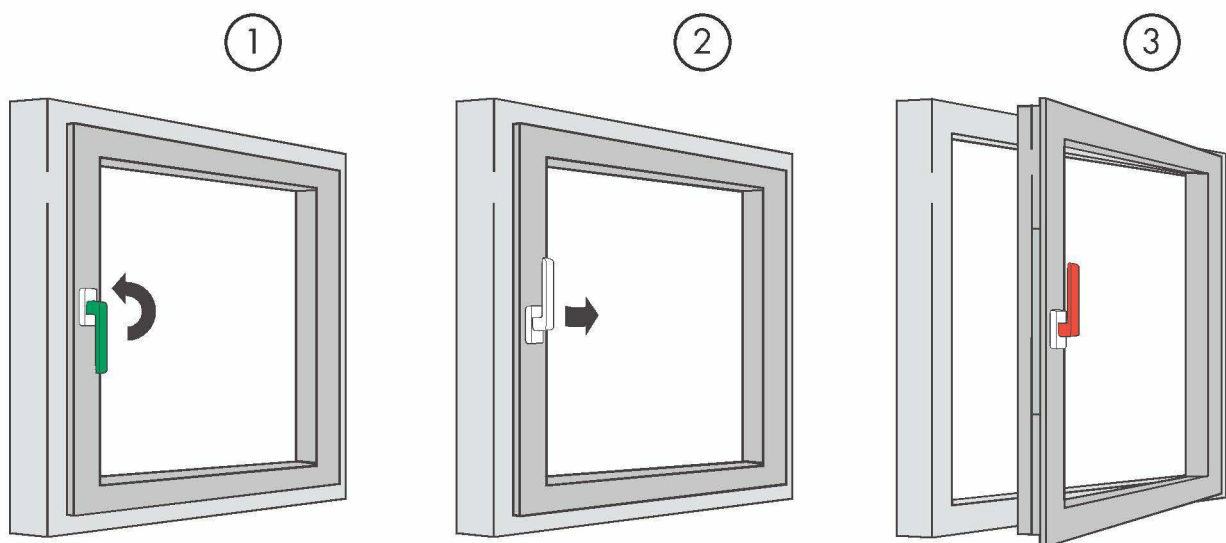
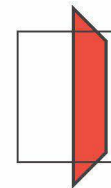
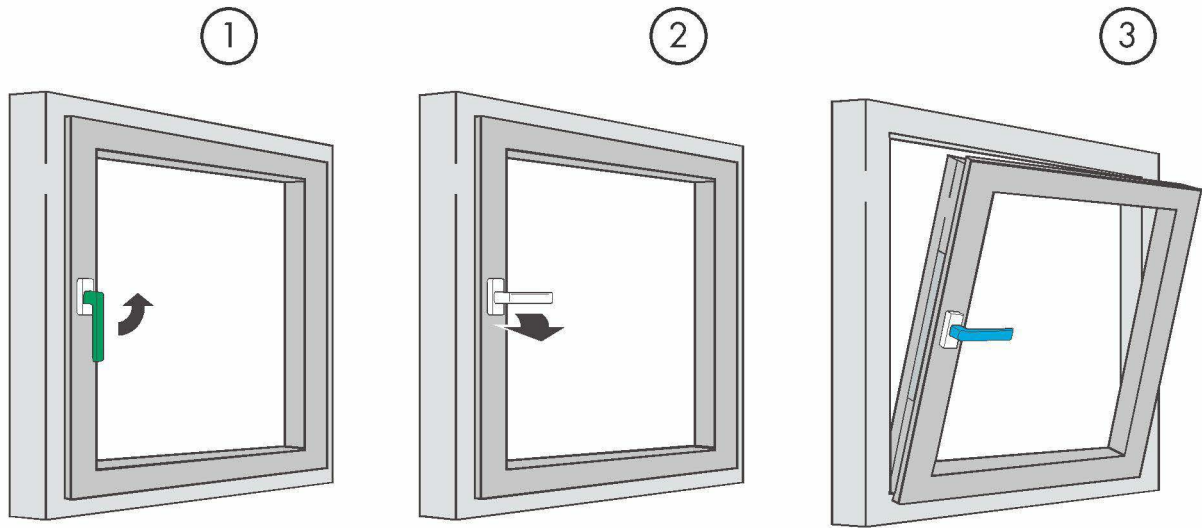


3

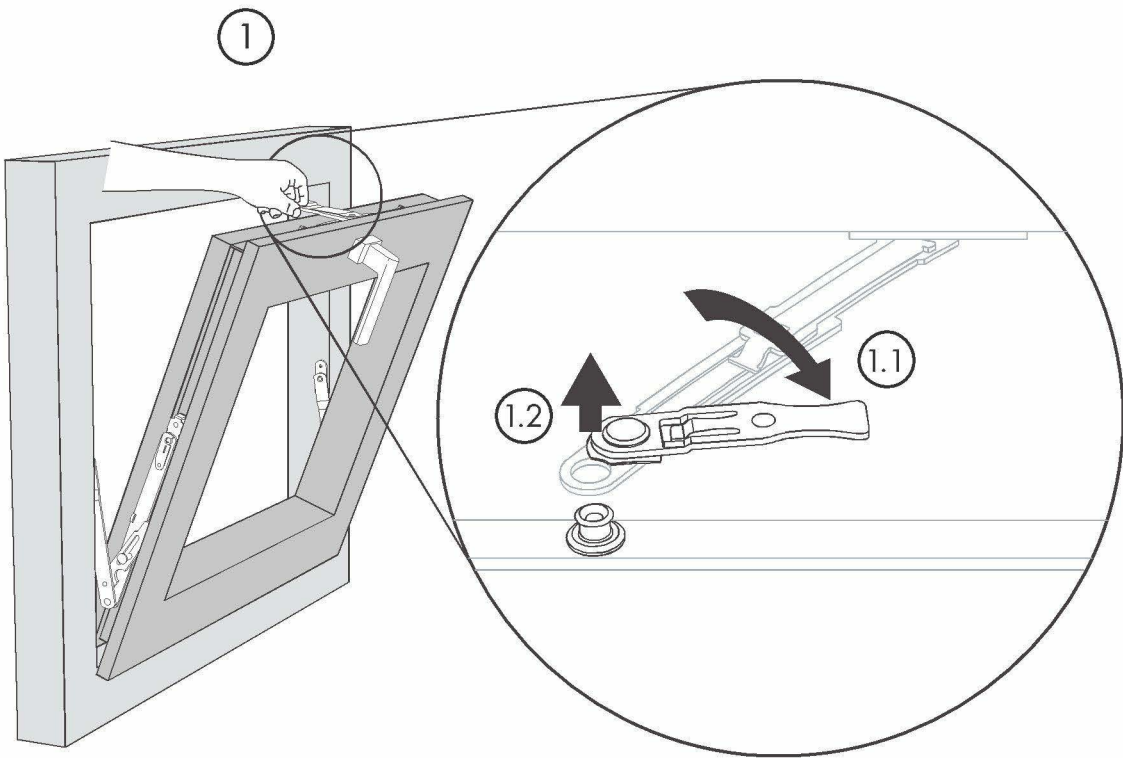
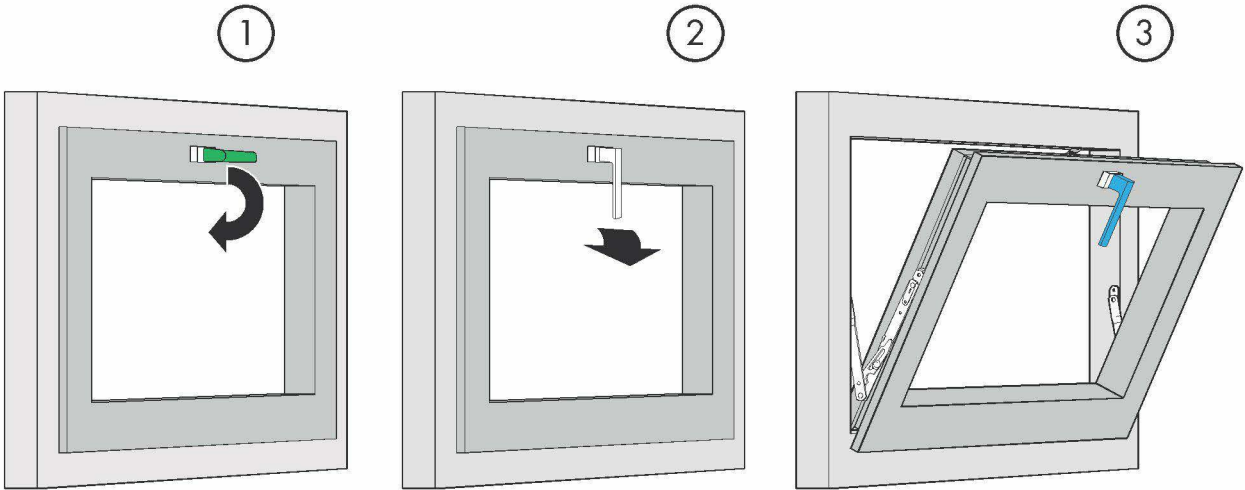




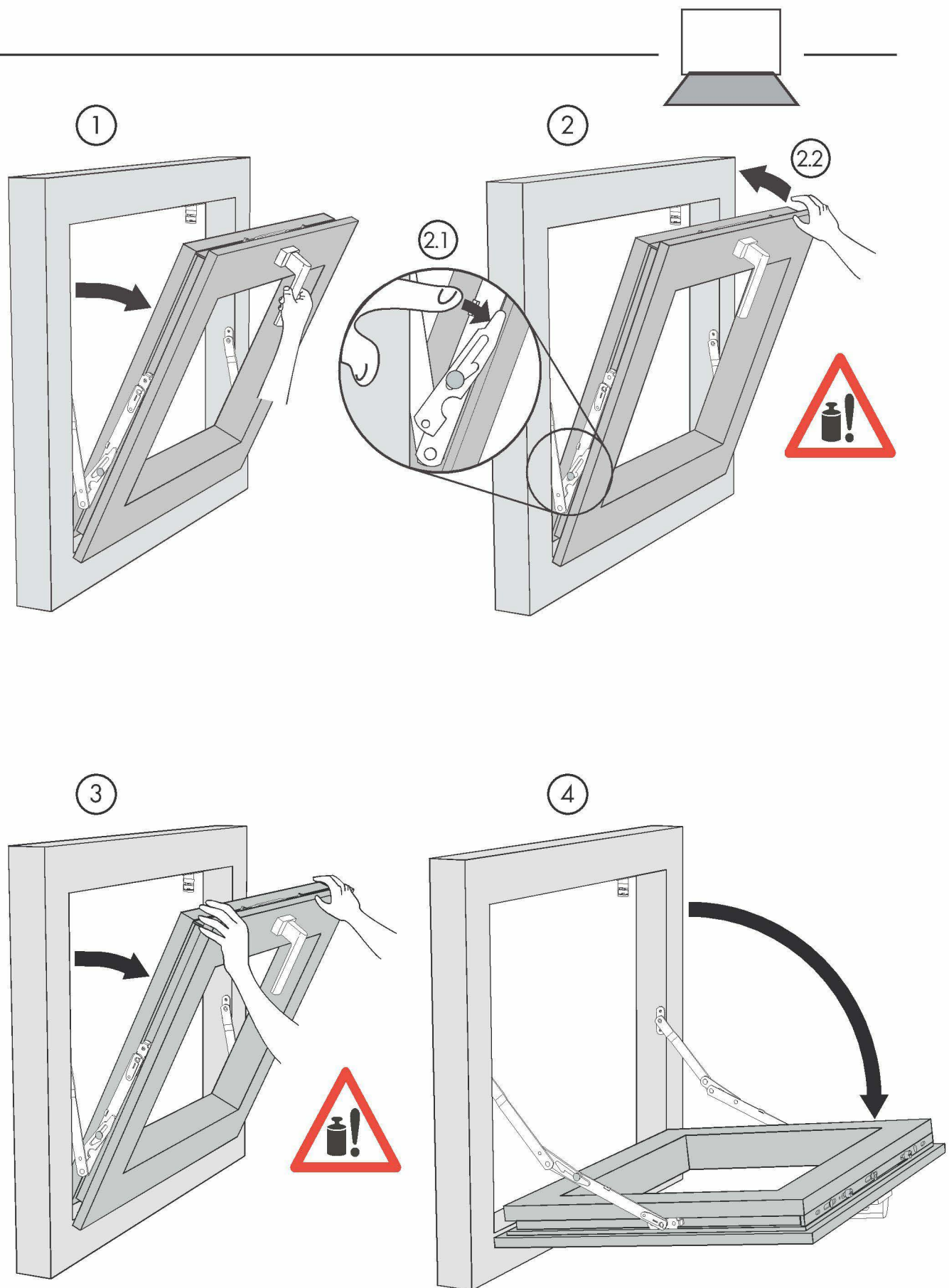
## Directions for Use - Tilt Before Turn (TBT)



Directions for Use - Tilt

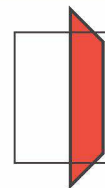


## Directions for Use - Tilt

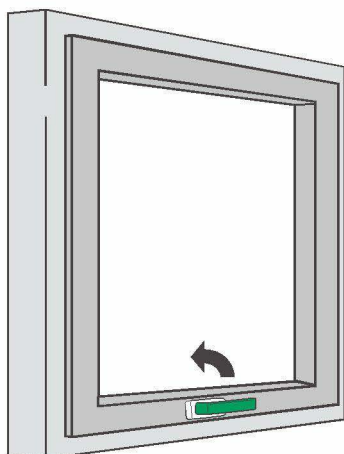


**SIEGENIA®**

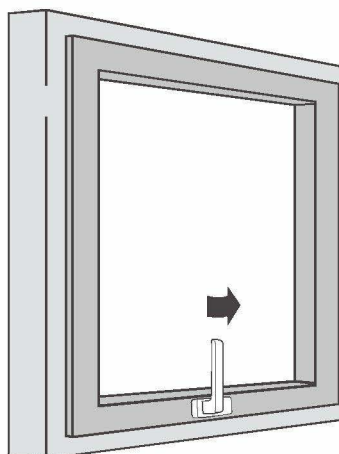
## Directions for Use - Turn and Tilt Comfort



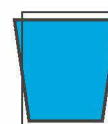
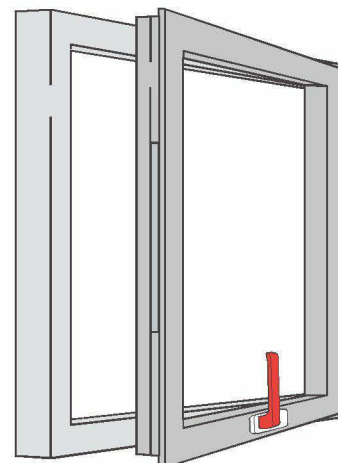
①



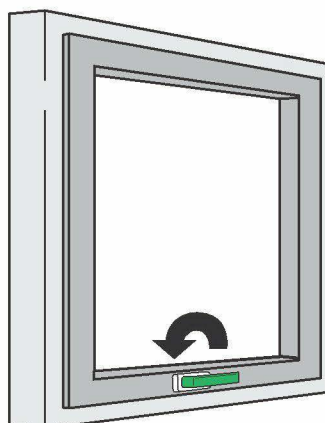
②



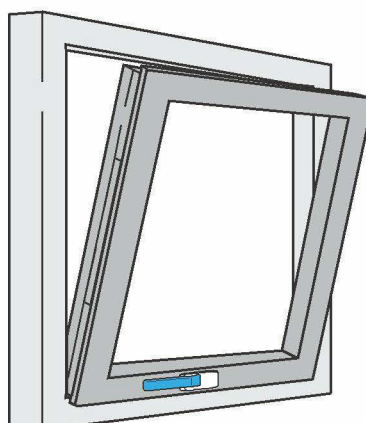
③



①



②



## Maintenance - Cleaning

Your windows and portal doors have high-grade SIEGENIA fittings. To ensure that they remain in good working condition we recommend that you inspect and maintain your windows/doors as described below at regular intervals (at least once a year or more often for school and hotel buildings).

### Cleaning and preserving surfaces

- When treating surfaces (painting or glazing your windows/doors), remove all fittings and protect them from stains and spills.
- Remove any stains or spills immediately because they could damage the surface protection of the fittings.
- Use only mild, pH-neutral, diluted cleaning agents.  
Never use sharp objects, abrasive agents or aggressive cleaning agents (such as vinegar or acidic cleaning agents) as they could damage the corrosion protection of the fittings.
- When cleaning, ensure that no water runs into the fittings.
- Dry the fittings thoroughly after cleaning and oil the surface with a non-acidic and non-resinous oil by wiping them with a cloth soaked in oil.

**ATTENTION:** After the Titan AF-X hardware surface has dried, it must **not** be wiped with oil. Oxygen from the air has to make contact directly with the surface to maintain self-forming passive layer of the hardware. This process would be hampered by an oil film. If you have any questions regarding your installed hardware please contact your window and/or door distributor.

## Maintenance - Inspection and Lubrication

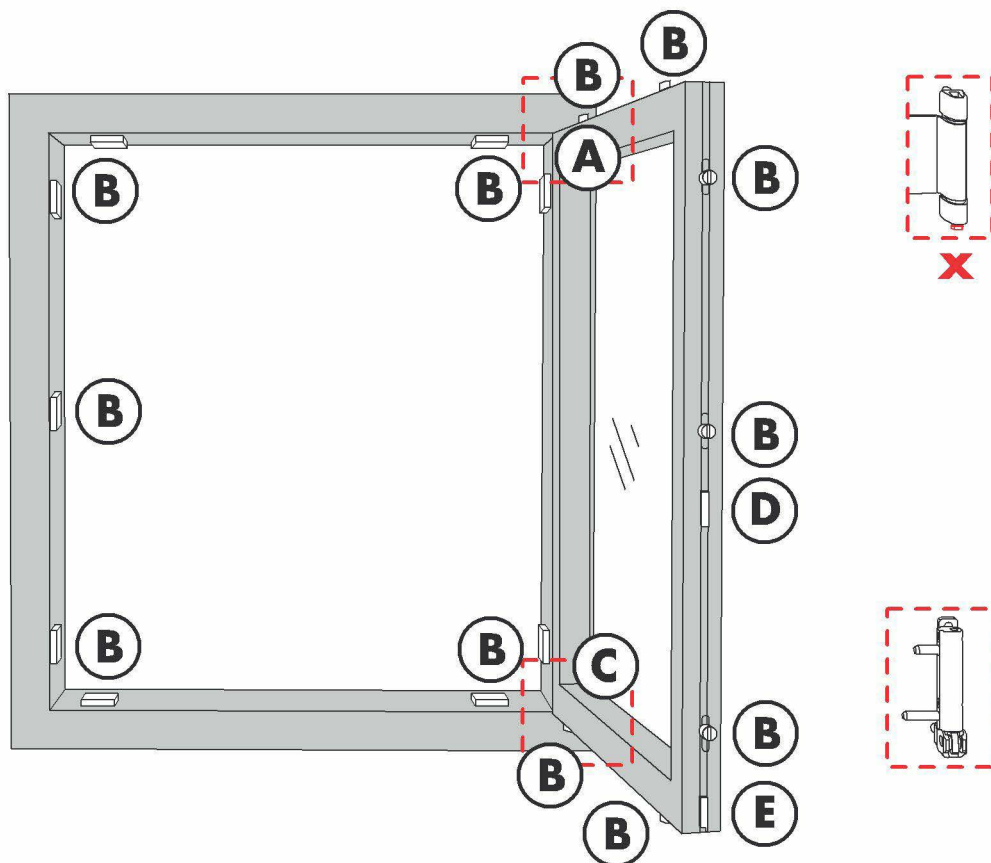
Check that all fittings (A) are secure and check for wear.

- Check that the top hinge pin (x) is pushed in up to the stop.  
If it is not, slide it up to the stop manually.
- Check for loose fixing screws and check that the handle is secure.  
Tighten the loose fixing screws using an appropriate tool.  
Important: Do not overtighten the screws.
- Have any worn/damaged fittings or overtightened screws replaced by a specialist company.

Grease or oil all movable fittings and all locking points.

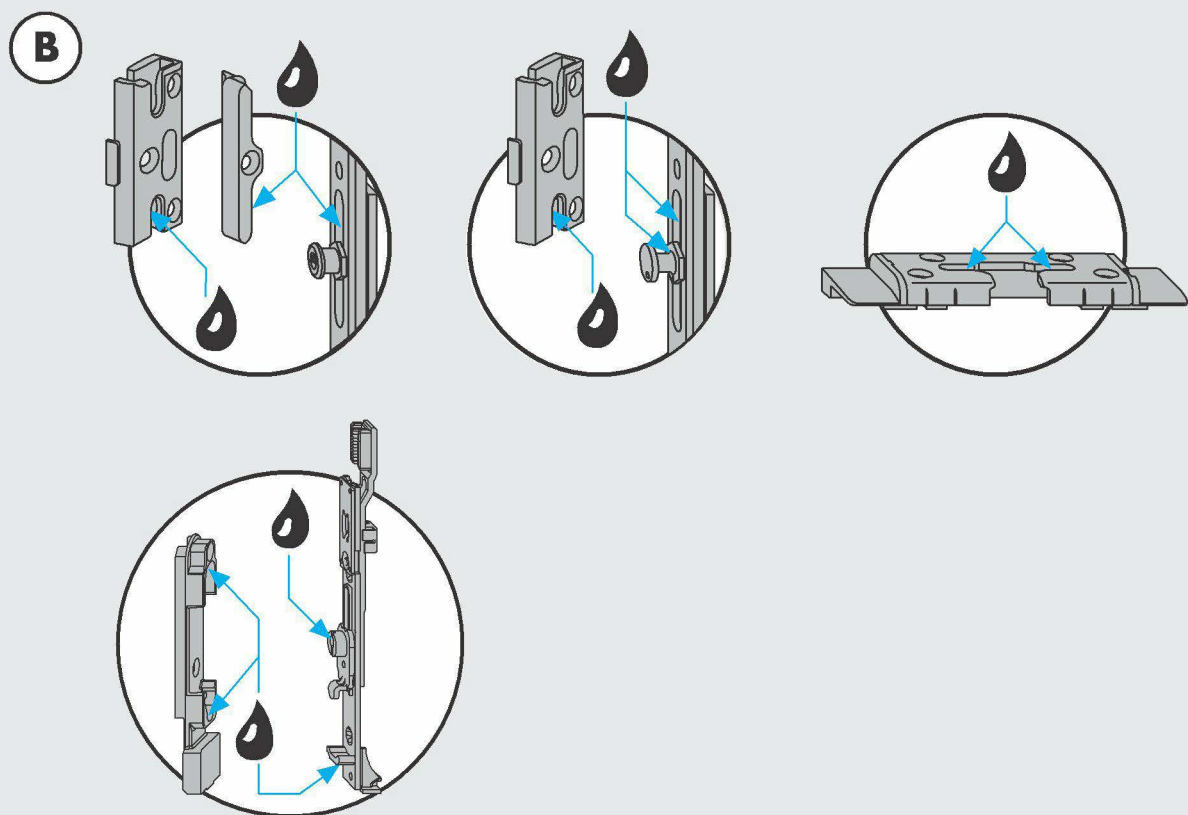
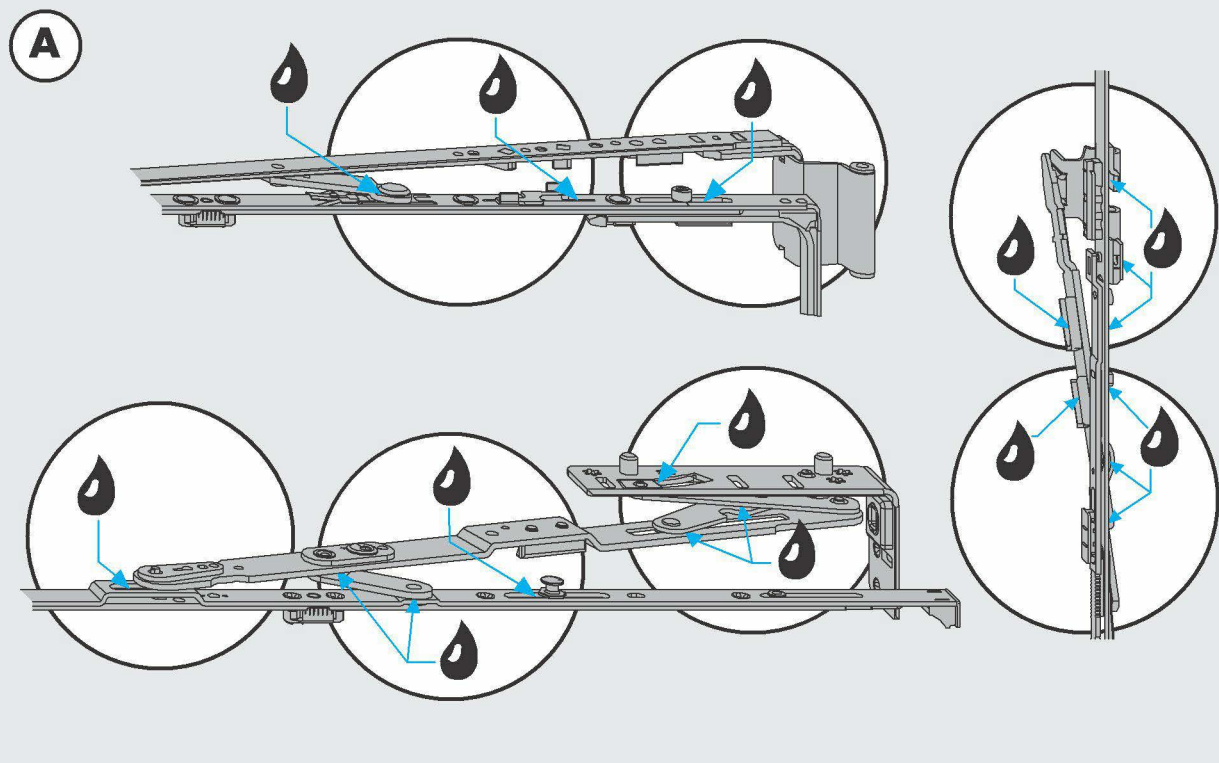
- Use only acid-free and resin-free oil or grease.
- Use a grease spray on the movable parts in the window sash and spray into all openings in the fittings. Then move the fittings into position several times until the grease is distributed. Wipe off any excess oil or grease.
- Grease the striker plates in the window frame using a firmer grease (consistency class 2 in accordance with DIN 51818) in the places where the locking cam engages with the striker plate.

Our maintenance grease is particularly suited for this. You can order it from SIEGENIA under material number ZX SX0120-093010.





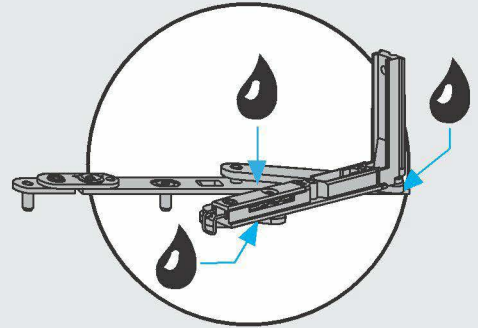
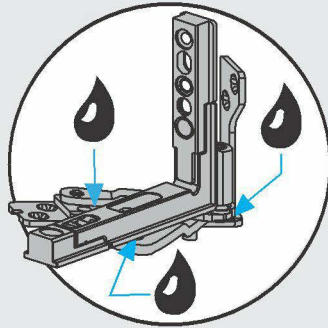
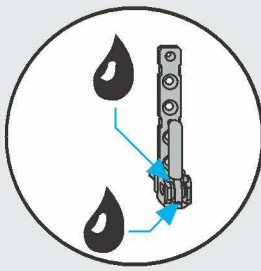
## Maintenance - Lubrication Points



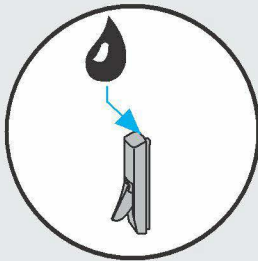


## Maintenance - Lubrication Points

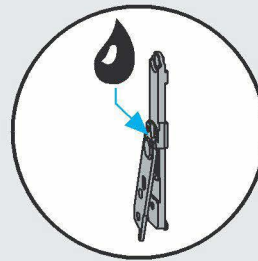
C



D



E

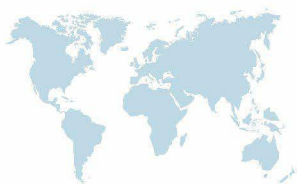




# SIEGENIA®

Head Office:  
Industriestraße 1-3  
57234 Wilnsdorf  
GERMANY

Phone: [REDACTED]  
Telefax: [REDACTED]  
info@siegenia.com  
www.siegenia.com



You can find address details for our  
international sites at: [www.siegenia.com](http://www.siegenia.com)

## SIEGENIA worldwide:

**Austria** Phone: [REDACTED]  
**Belarus** Phone: [REDACTED]  
**Benelux** Phone: [REDACTED]  
**China** Phone: + [REDACTED]  
**France** Phone: [REDACTED]  
**Germany** Phone: [REDACTED]  
**Great Britain** Phone: [REDACTED]

**Hungary** Phone: [REDACTED]  
**Italy** Phone: [REDACTED]  
**Poland** Phone: [REDACTED]  
**Russia** Phone: [REDACTED]  
**South Korea** Phone: [REDACTED]  
**Switzerland** Phone: [REDACTED]  
**Turkey** Phone: [REDACTED]  
**Ukraine** Phone: [REDACTED]

Contact your dealer:

**THERMAL™**

**5-20Hi+**

High Insulation (Hi+)  
Window and Door Systems



# THERMAL<sup>TM</sup>

To comply with the latest building regulations Metal Technology has developed a range of high performance window and door systems. Using the latest technology the company has developed bespoke thermal gaskets, cellular foams and polyamide thermal isolators which will allow architects and designers to achieve low U values.

## 50mm Frame Systems

**4-20Hi+**

Casement

**5-20D Hi+**

Door

**5-20Hi+**

Tilt and Turn  
Tilt and Slide

**7-20Hi+**

Pivot

## 75mm Frame Systems (Available in Hi and Hi+ Formats)

**4-35Hi+**

Casement

**5-35Hi+**

Tilt and Turn  
Tilt and Slide



## Technical Support

Metal Technology offers a comprehensive design and specification service to architects, developers and main contractors through its team of dedicated architectural advisors. Tailored specifications are provided in NBS format and are also available online along with CAD details and full test data. Thermal modelling and free air flow software allows accurate information to be analysed at early design stage assisting with WER (window energy ratings) and Breeam assessments.

# High performance systems offering bespoke solutions and total design flexibility.



### Nationwide Fabricator Coverage

Metal Technology has an approved network of fabricators throughout the UK and Ireland to ensure geographical continuity and capacity, with companies specialising in all market sectors.



### Market Sectors

Metal Technology products are designed for a diverse range of buildings within the construction market. Key sectors include: Commercial, Retail, Education, Health, Residential/Housing, Hotel/Leisure.



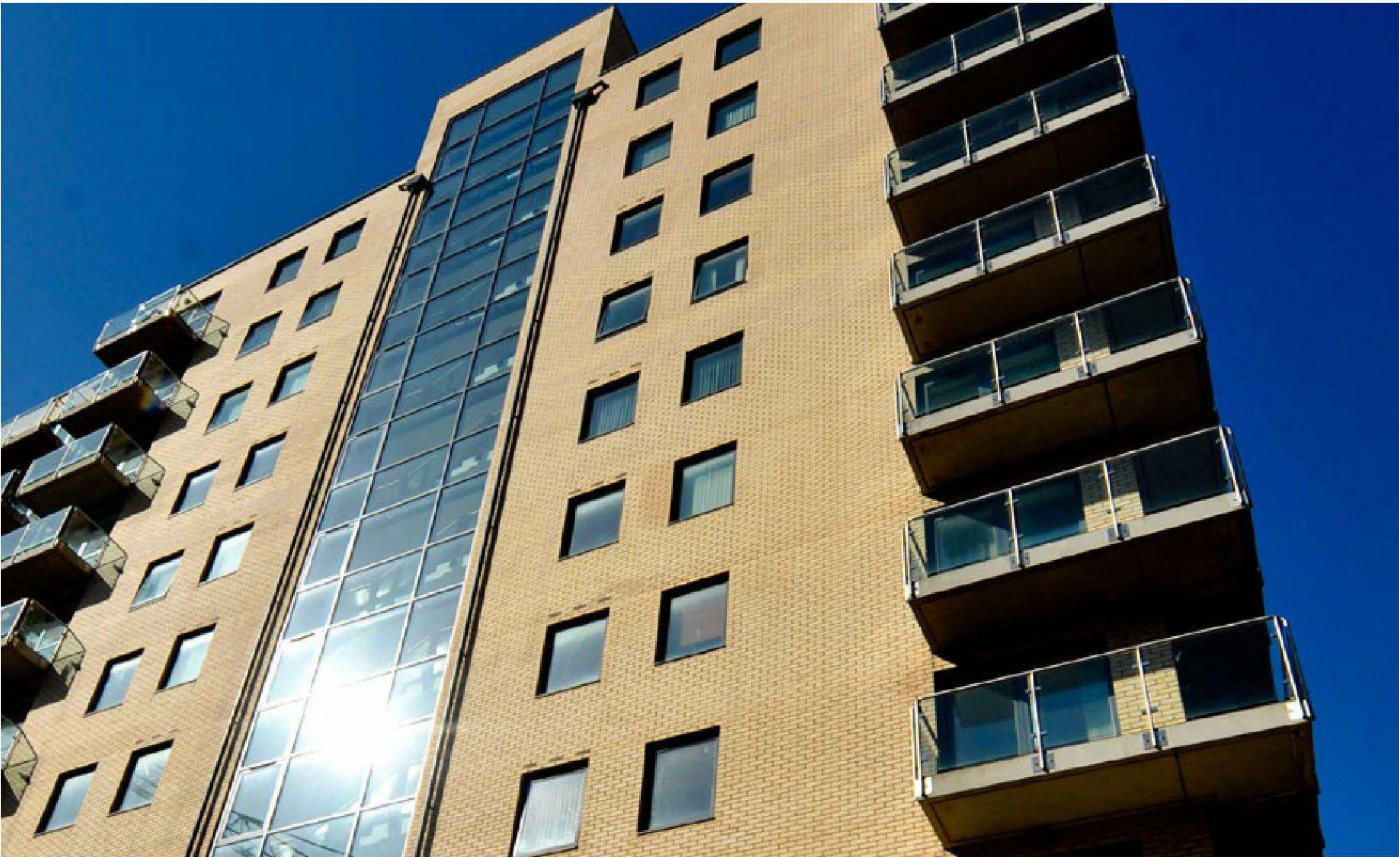
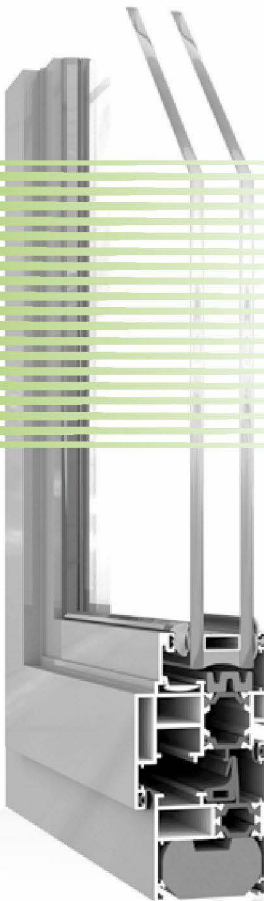


# THERMAL<sup>TM</sup> 5-20Hi+

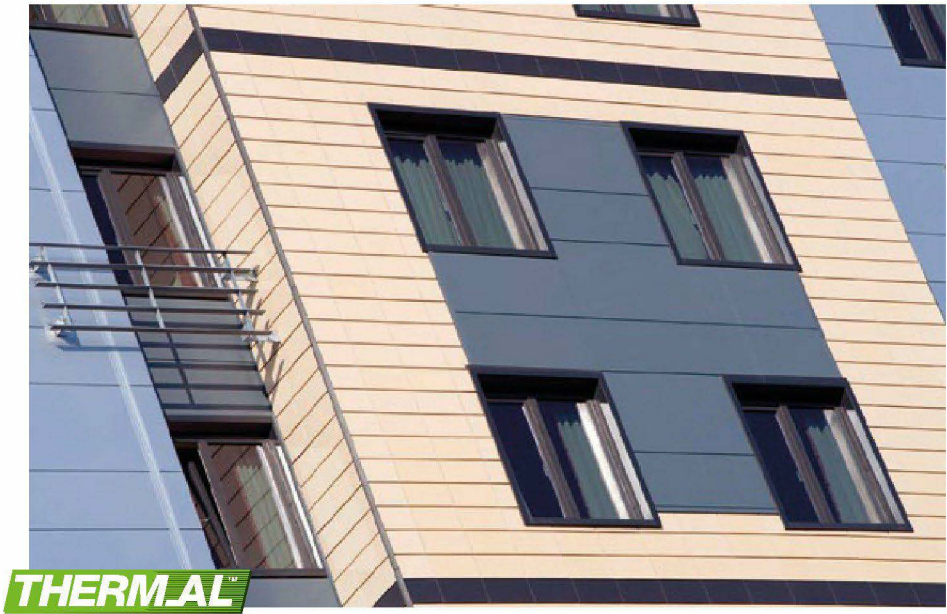
Metal Technology's System 5-20Hi+ offers the designer a wide and diverse range of profiles that will provide structural integrity, weather performance, thermal enhancement, and security. Now a highly cost-effective glazing solution, the System 5-20Hi+ complies with the following standards: BS 6375 pt 1, 2 and 3, PAS 24 and is acoustically tested in accordance with BS EN ISO 140-3 and BS EN ISO 717-1.

Independently Weather Performance Tested to BS 6375-1

Air Infiltration BS EN 1026	Class 4
Watertightness BS EN 1027	Class E750
Wind Resistance BS EN : 12211	E2400







Thermal Performance

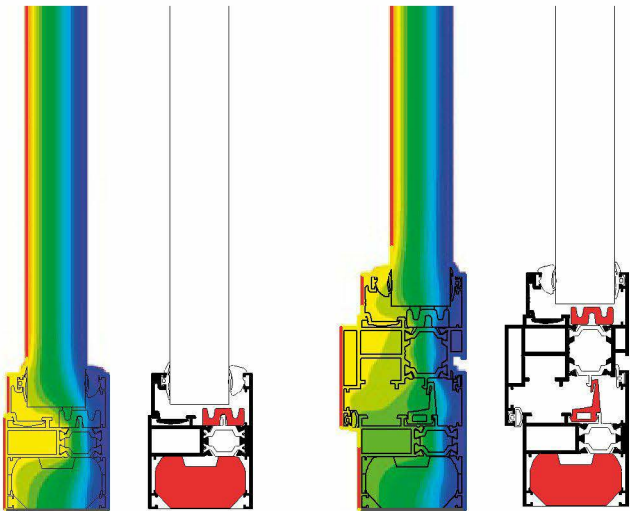
Metal Technology's **THERMAL** range, in conjunction with the correct glass specification, is designed to aid compliance with the latest thermal requirements of the current building regulations. The polyamide thermal break profiles have been specifically designed to minimise heat transfer across the window profiles.

Thermal performance is further improved through the introduction of specially designed thermal gaskets and foam profiles. These reduce radiation heat loss across the air cavities within the window profiles to provide additional thermal enhancement.

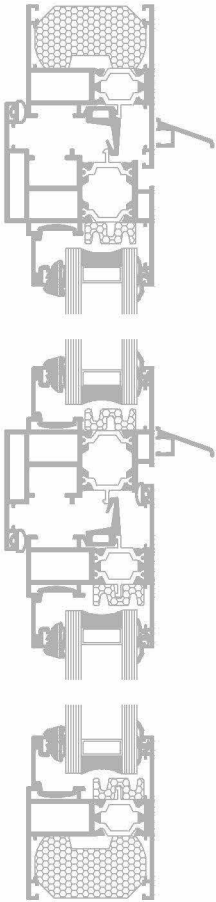
5-20Hi+	U-frame values
Fixed light outer frame	1.91 W/m²K
Outer frame and sash	2.123 W/m²K

The following table, based on a standard commercial GGF window configuration and warm edge spacers, demonstrates how such improved U-frame values then contribute to improving the overall thermal performance of a complete window.

Achievable whole window U-value	Centre pane U-value	
	1.1 W/m²K	0.6 W/m²K
5-20Hi+ glazed-in tilt and turn	1.54 W/m²K	1.18 W/m²K



Metal Technology can provide tailored U-value calculations using their dedicated estimating software to calculate overall project average window U-values for their full range of systems.



Breeam Sustainability Rating

When assessed in accordance with the profile mass formula, as set out in the BRE's Green Guide for sustainable design and environmental performance, Metal Technology's 5-20Hi+ System achieved an **'A' rating**.

Window Energy Rating

Metal Technology's 5-20Hi+ System has been assessed by an approved simulator in accordance with the BFR's guidelines, using their official Window Energy Rating software and has been proven to be capable of achieving a **'B' rating**.

EWER Rating Scale	Window Rating
A	B
• B •	
C	
D	
E	
F	
G	



Specification Overview

Introduction

The Metal Technology 5-20Hi+ polyamide tilt and turn window suite has been developed with a diverse range of profile options. Bespoke thermal isolators and insulation combined with structural mullions, vents and outer frames offer architects and designers the ability to achieve flexible design solutions.

Scope

This specification defines materials, construction, finishes and size limits for the Tilt and Turn Window.

Materials

Aluminium profiles are extruded from aluminium alloy 6060T6, T5, or T4 complying with the recommendations of BS EN 12020-2 / BS EN 755-Parts 1 to 9. Polyamide thermal breaks are produced from glass reinforced nylon sections designed to withstand temperatures in excess of 200°C, allowing the sections to be powder coated after thermally breaking.

Construction

Frame members are mitre cut at 45°, corners are reinforced with extruded aluminium crimping cleats and corner braces. A secure joint is formed by pneumatically crimping into the extruded crimping cleat. Mullion and transom bars are square cut shaped and fixed securely to the frame by means of stainless steel screws and fixing cleats. All frame joints are sealed during construction against entry of water using Metal Technology's single and two part adhesive. Extruded weatherstrips and glazing gaskets are provided to resist the ingress of water. Metal Technology recommend that only A2 or A4 Austenitic (300 series/class 70) stainless steel fixing screws are used in the assembly of their products.

Finishes

The range of sections can be provided in either of the following range of finishes: Anodised to BS EN 12373-1 or BS 3987. Powder organic coated to BS 6496 or BS EN 12206-1. The System 5-20Hi+ window can accommodate a different colour/finish internally to that used externally.

Glazing

This system offers internally glazed sashes and can accommodate glazing units from 24mm to 34mm units. Fixed panes may be externally glazed with the addition of a liner bar profile.

Open In Window Fittings

The sections are designed to suit tilt before turn fittings, turn only fittings (side hung) and tilt only fittings (bottom hung) and a variety of handle options. Metal Technology are able to supply a full range of fittings and accessories. See the relevant section of Metal Technology technical literature for details of ironmongery hardware options for specific window sizes. Metal Technology should be contacted for any special operating requirements. Metal Technology strongly recommend the use of restrictors to prevent the window opening more than 90° in the side hung mode.

Security

System 5-20Hi+ has passed PAS 24 "Specification for Enhanced Security Performance" as generally accepted on Secure by Design projects. To conform, the window hardware must be in accordance with the tested sample as detailed in Metal Technology's technical literature. Security products should be labelled by the fabricator in accordance with BS 4873.

Installation

Detailed installation instructions are provided in Metal Technology's technical literature which should be strictly followed.

Max Size Limitation

	Vent Width	Vent Height
Tilt Before Turn	1400mm	2500mm
Tilt Only Sashes	2400mm	2000mm
Turn Only Sashes	1400mm	2400mm

Note that maximum height and maximum width cannot be achieved simultaneously. For complete details of maximum/minimum sizes, handle positions and weight restrictions, see the size limitation charts in Metal Technology's technical literature.





Metal Technology has a clear commitment to sustainable products that can offer the best available carbon footprint and Global Warming Potential (GWP) for each particular product. Embodied energy (energy to produce, transport and manufacture) and environmental impact are also considered as part of the procurement package.



# Our commitment to sustainable products

## Recycling and Waste Reduction

Where we can influence the design and use of our products in developments, we will base decisions on a sustainable basis where the health and safety of the occupants can be combined with the conserving of resources for future generations. As an industry we are using resources more efficiently with the minimum of energy consumption, to deliver a project that is flexible, durable, has longevity, and where practical, using fixtures and fittings that can be reused.

## Meeting Standards - ISO 14001

ISO 14001 is an international quality system for environmental management, providing a framework to allow businesses to minimise the impact of their operations on the environment. It seeks to establish a company policy for planning environmental objectives and for complying with laws, directives and regulations.

## Aluminium

The intrinsic qualities of aluminium, its infinite recyclability, strength and lightness, durability and low maintenance qualities mean it is one of the most sustainable building materials to be used.

Aluminium is the earth's third most abundant element after oxygen and silicon (ahead of iron).

Aluminium does not emit dust, vapour or particles and is not toxic to touch.

Given its durability and resistance due to applied surface treatments such as anodising or powder coating, aluminium structures need only regular cleaning with neutral detergents followed by rinsing with water.

Aluminium is non-flammable and, when it reaches its melting point in the event of a fire (about 650°C), it gives off no flammable gases or vapours.

## Life Cycles

Recycling is a valuable asset in the battle against the greenhouse effect. The global aluminium industry has made great strides during the last century to reduce its environmental impact at all stages of the supply chain. Aluminium extraction and refining companies have reduced their energy requirements by almost 70% since 1900.

This has seen the growing use of hydro-electric energy coupled with a vast increase in aluminium that is recycled. At present more than a third of global aluminium production is from recycled metal, a figure that is growing. Recycled aluminium takes just 5% of the energy needed to produce primary metal with a consequent reduction of 95% in the greenhouse gases produced. The recycling process is economically attractive and viable. Recycled aluminium meets almost 40% of the demand for the metal in Europe. Approximately 70% of the material used to produce Metal Technology extrusions is recycled.

Aluminium is infinitely recyclable with no loss of its properties: The aluminium cycle is a closed life cycle.

The Delft University of Technology in the Netherlands has investigated the collection rate of aluminium in buildings. Demolition case studies in six different European countries (France, Germany, Italy, Spain, the Netherlands and the United Kingdom) were carried out and the data gathered shows that collection rates are over 95%.

## Our products are 100% recyclable





**Metal Technology Limited**  
Steeple Road Industrial Estate  
Steeple Road | Antrim  
Northern Ireland | BT41 1AB

Telephone [REDACTED]  
[sales@metaltechnology.com](mailto:sales@metaltechnology.com)  
[metaltechnology.com](http://metaltechnology.com)

This document has been printed on 100% recycled paper.



# QUASAR L

24v

**300N**

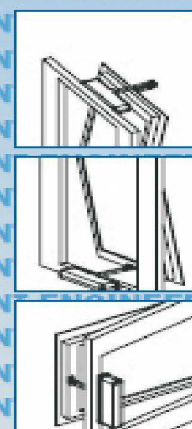
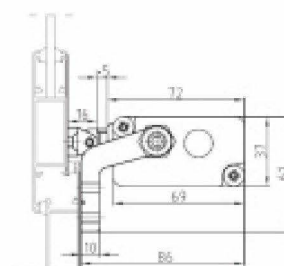
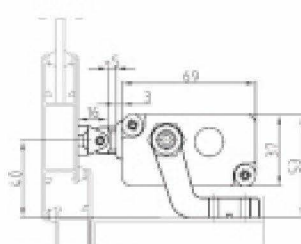
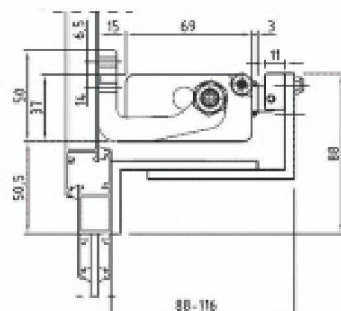
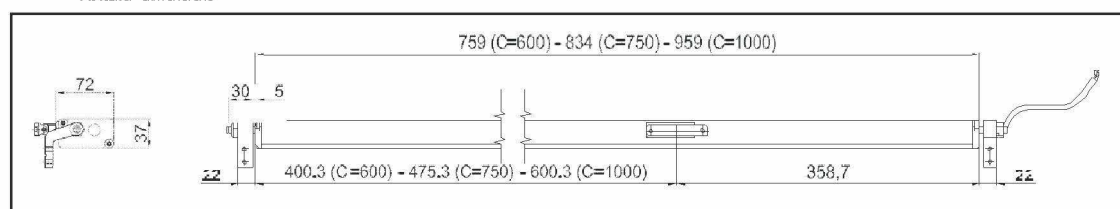
30kg

**600mm 750mm 1000mm**



# CHAIN ACTUATOR

### Actuator dimensions





# QUASAR L

24v

300N

30kg

600mm 750mm 1000mm

CHAIN  
ACTUATOR



## TECHNICAL SPECIFICATIONS

**UPGRADE  
available**

- Can be powder coated to any RAL colour

VOLTAGE SUPPLY  
ELECTRIC CONNECTION  
OPERATION  
STROKE  
FORCE IN PULL ACTION  
FORCE IN PUSH ACTION

QUASAR  
24 Vdc  $\pm$  10%  
2 wires  
by polarity inversion  
600\_750\_1000mm  
300N  
300N (600mm)  
150N (750mm)  
100N (1000mm)

SPEED  
CURRENT ABSORPTION (with Max load)  
PARALLEL CONNECTION  
LIMIT STOP  
SAFTEYSTOP  
FEEDBACK SIGNAL  
PROTECTION CLASS

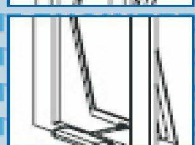
$\sim$ 15mm/s  
0,9 A  
YES  
Electronic  
Electronic

IP40



## PRODUCT SUMMARY

- Supplied with inclusive swivel brackets
- Available 3 different series strokes:  
600 mm – 750 mm – 1000 mm  
(750 and 1000 mm only for bottom hinged windows).
- Supplied with swivel brackets
- Chain in double stainless steel links
- Quick and easy installation: the manual closing position regulation is not required, avoiding possible mistake. The stop in closing position is regulated by an electronic limit switch control.
- Electronic stop in the intermediate positions in case of overload.
- Supplied with 1,5 m cable
- 24 Vdc version is suitable for installation on Smoke and Heat Extraction Ventilation in conformity to EN 12101-2
- Silver Anodized and White available as standard



**vvent**  
engineering

NO ONE OPENS MORE VENTS

tel [REDACTED] fax [REDACTED]

email [info@vent.co.uk](mailto:info@vent.co.uk) website [www.vent.co.uk](http://www.vent.co.uk)

Units 16c & 16f, Chalwyn Industrial Estate, Poole BH12 4PE

**THERMAL™**

**5-20Hi+**

High Insulation (Hi+)  
Window and Door Systems





# THERMAL™

To comply with the latest building regulations Metal Technology has developed a range of high performance window and door systems. Using the latest technology the company has developed bespoke thermal gaskets, cellular foams and polyamide thermal isolators which will allow architects and designers to achieve low U values.

## 50mm Frame Systems

**4-20Hi+**

Casement



**5-20D Hi+**

Door



**5-20Hi+**

Tilt and Turn  
Tilt and Slide



**7-20Hi+**

Pivot



## 75mm Frame Systems (Available in Hi and Hi+ Formats)

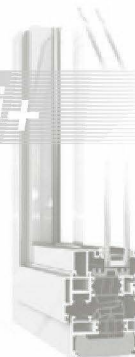
**4-35Hi+**

Casement



**5-35Hi+**

Tilt and Turn  
Tilt and Slide



## Technical Support

Metal Technology offers a comprehensive design and specification service to architects, developers and main contractors through its team of dedicated architectural advisors. Tailored specifications are provided in NBS format and are also available online along with CAD details and full test data. Thermal modelling and free air flow software allows accurate information to be analysed at early design stage assisting with WER (window energy ratings) and Breeam assessments.

# High performance systems offering bespoke solutions and total design flexibility.



### Nationwide Fabricator Coverage

Metal Technology has an approved network of fabricators throughout the UK and Ireland to ensure geographical continuity and capacity, with companies specialising in all market sectors.



### Market Sectors

Metal Technology products are designed for a diverse range of buildings within the construction market. Key sectors include: Commercial, Retail, Education, Health, Residential/Housing, Hotel/Leisure.



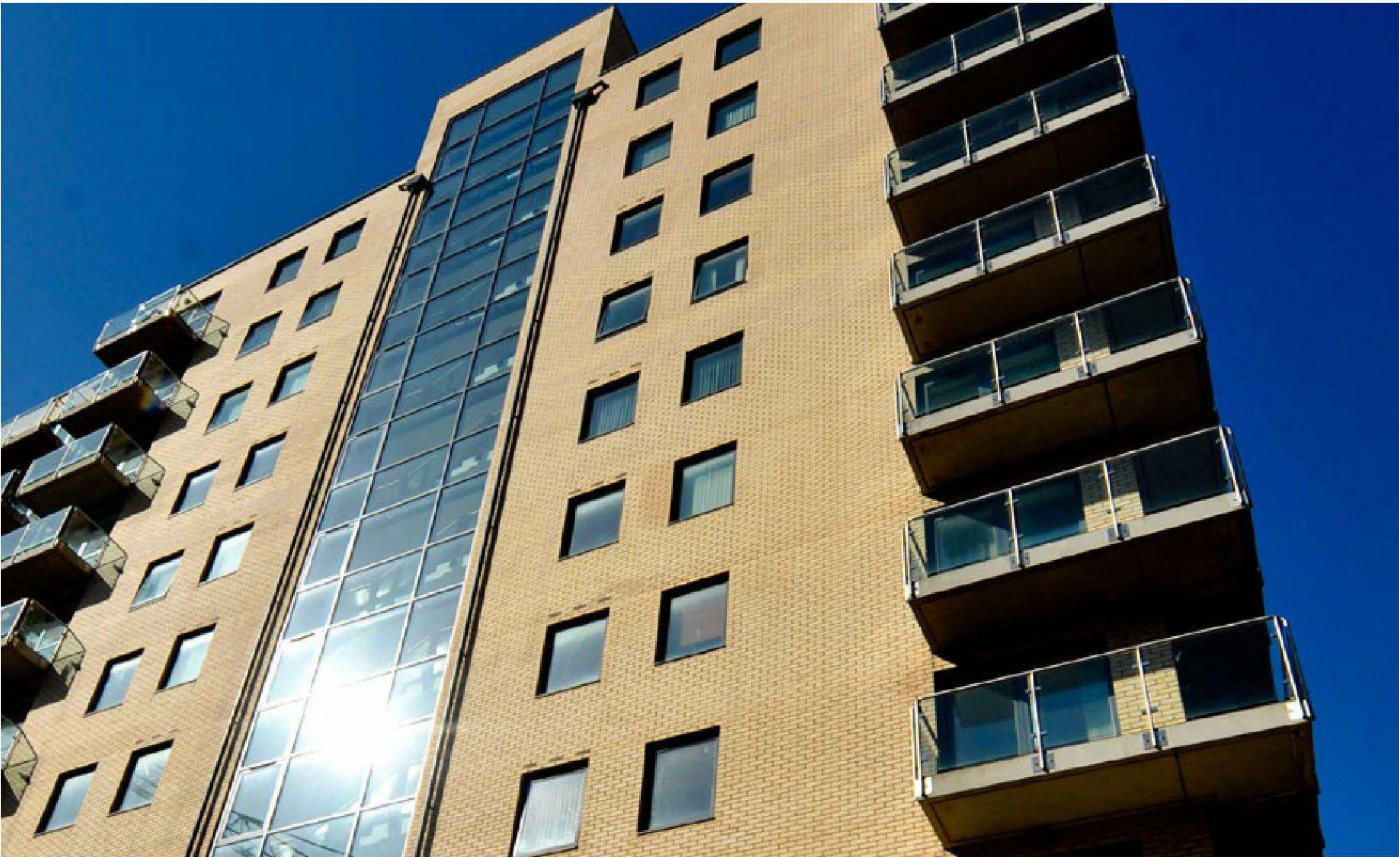
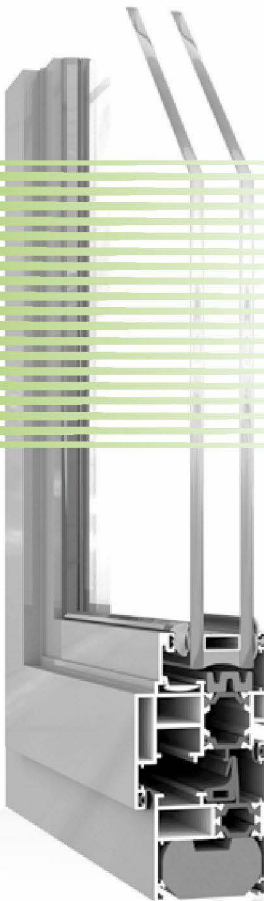


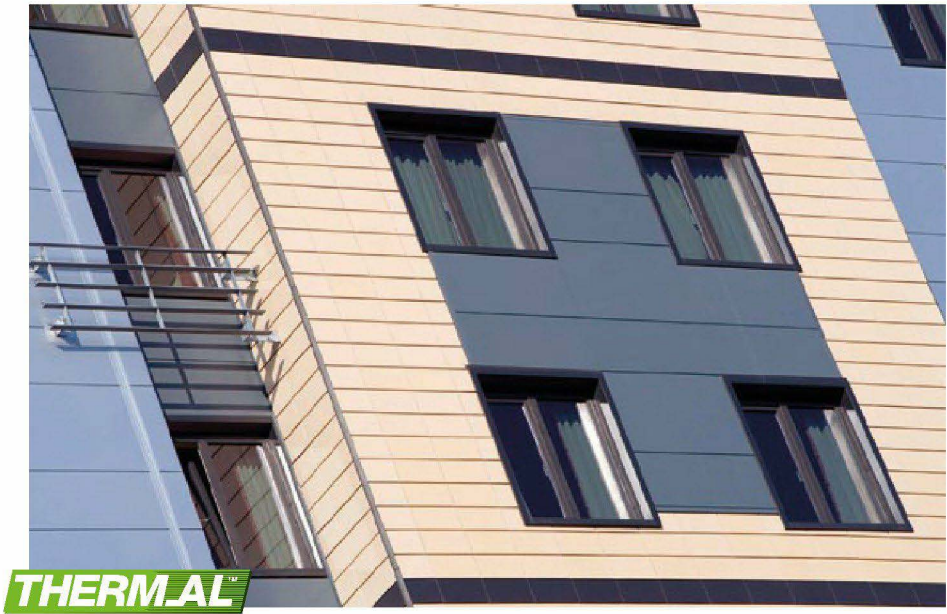
# THERMAL<sup>TM</sup> 5-20Hi+

Metal Technology's System 5-20Hi+ offers the designer a wide and diverse range of profiles that will provide structural integrity, weather performance, thermal enhancement, and security. Now a highly cost-effective glazing solution, the System 5-20Hi+ complies with the following standards: BS 6375 pt 1, 2 and 3, PAS 24 and is acoustically tested in accordance with BS EN ISO 140-3 and BS EN ISO 717-1.

Independently Weather Performance Tested to BS 6375-1

Air Infiltration BS EN 1026	Class 4
Watertightness BS EN 1027	Class E750
Wind Resistance BS EN : 12211	E2400





Thermal Performance

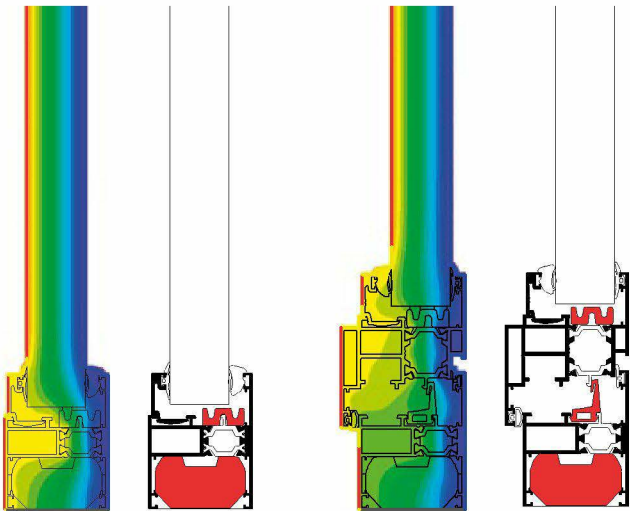
Metal Technology's **THERMAL** range, in conjunction with the correct glass specification, is designed to aid compliance with the latest thermal requirements of the current building regulations. The polyamide thermal break profiles have been specifically designed to minimise heat transfer across the window profiles.

Thermal performance is further improved through the introduction of specially designed thermal gaskets and foam profiles. These reduce radiation heat loss across the air cavities within the window profiles to provide additional thermal enhancement.

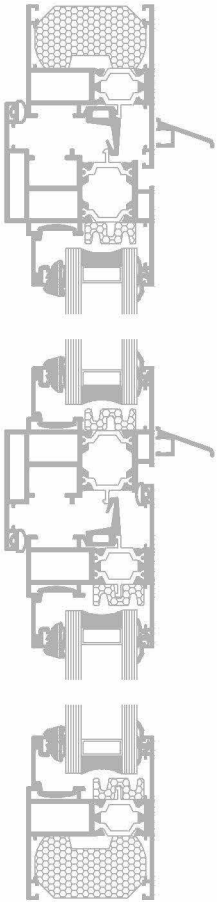
5-20Hi+	U-frame values
Fixed light outer frame	1.91 W/m²K
Outer frame and sash	2.123 W/m²K

The following table, based on a standard commercial GGF window configuration and warm edge spacers, demonstrates how such improved U-frame values then contribute to improving the overall thermal performance of a complete window.

Achievable whole window U-value	Centre pane U-value	
	1.1 W/m²K	0.6 W/m²K
5-20Hi+ glazed-in tilt and turn	1.54 W/m²K	1.18 W/m²K



Metal Technology can provide tailored U-value calculations using their dedicated estimating software to calculate overall project average window U-values for their full range of systems.



Breeam Sustainability Rating

When assessed in accordance with the profile mass formula, as set out in the BRE's Green Guide for sustainable design and environmental performance, Metal Technology's 5-20Hi+ System achieved an **'A' rating**.

Window Energy Rating

Metal Technology's 5-20Hi+ System has been assessed by an approved simulator in accordance with the BFRG's guidelines, using their official Window Energy Rating software and has been proven to be capable of achieving a **'B' rating**.

EWER Rating Scale	Window Rating
A	B
• B •	
C	
D	
E	
F	
G	





Specification Overview

Introduction

The Metal Technology 5-20Hi+ polyamide tilt and turn window suite has been developed with a diverse range of profile options. Bespoke thermal isolators and insulation combined with structural mullions, vents and outer frames offer architects and designers the ability to achieve flexible design solutions.

Scope

This specification defines materials, construction, finishes and size limits for the Tilt and Turn Window.

Materials

Aluminium profiles are extruded from aluminium alloy 6060T6, T5, or T4 complying with the recommendations of BS EN 12020-2 / BS EN 755-Parts 1 to 9. Polyamide thermal breaks are produced from glass reinforced nylon sections designed to withstand temperatures in excess of 200°C, allowing the sections to be powder coated after thermally breaking.

Construction

Frame members are mitre cut at 45°, corners are reinforced with extruded aluminium crimping cleats and corner braces. A secure joint is formed by pneumatically crimping into the extruded crimping cleat. Mullion and transom bars are square cut shaped and fixed securely to the frame by means of stainless steel screws and fixing cleats. All frame joints are sealed during construction against entry of water using Metal Technology's single and two part adhesive. Extruded weatherstrips and glazing gaskets are provided to resist the ingress of water. Metal Technology recommend that only A2 or A4 Austenitic (300 series/class 70) stainless steel fixing screws are used in the assembly of their products.

Finishes

The range of sections can be provided in either of the following range of finishes: Anodised to BS EN 12373-1 or BS 3987. Powder organic coated to BS 6496 or BS EN 12206-1. The System 5-20Hi+ window can accommodate a different colour/finish internally to that used externally.

Glazing

This system offers internally glazed sashes and can accommodate glazing units from 24mm to 34mm units. Fixed panes may be externally glazed with the addition of a liner bar profile.

Open In Window Fittings

The sections are designed to suit tilt before turn fittings, turn only fittings (side hung) and tilt only fittings (bottom hung) and a variety of handle options. Metal Technology are able to supply a full range of fittings and accessories. See the relevant section of Metal Technology technical literature for details of ironmongery hardware options for specific window sizes. Metal Technology should be contacted for any special operating requirements. Metal Technology strongly recommend the use of restrictors to prevent the window opening more than 90° in the side hung mode.

Security

System 5-20Hi+ has passed PAS 24 "Specification for Enhanced Security Performance" as generally accepted on Secure by Design projects. To conform, the window hardware must be in accordance with the tested sample as detailed in Metal Technology's technical literature. Security products should be labelled by the fabricator in accordance with BS 4873.

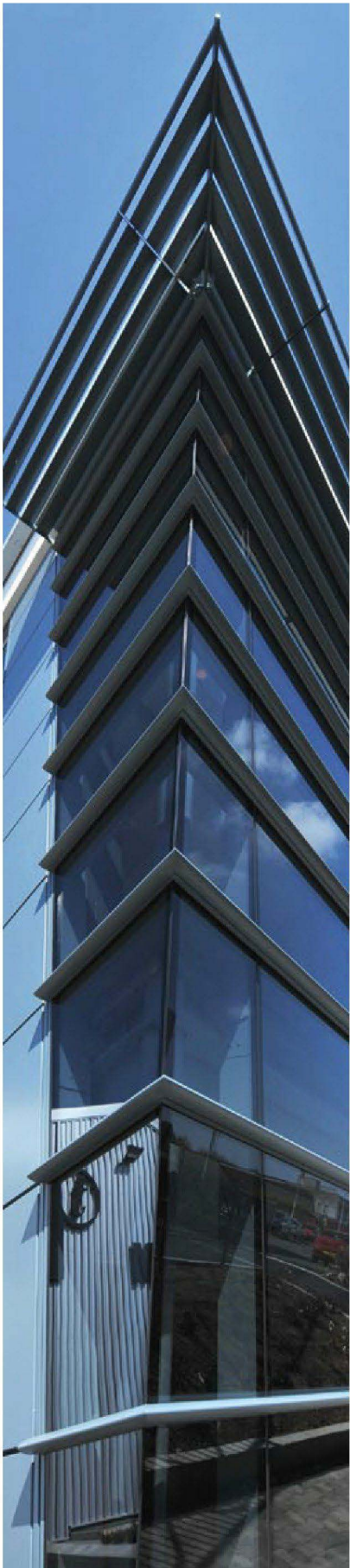
Installation

Detailed installation instructions are provided in Metal Technology's technical literature which should be strictly followed.

Max Size Limitation

	Vent Width	Vent Height
Tilt Before Turn	1400mm	2500mm
Tilt Only Sashes	2400mm	2000mm
Turn Only Sashes	1400mm	2400mm

Note that maximum height and maximum width cannot be achieved simultaneously. For complete details of maximum/minimum sizes, handle positions and weight restrictions, see the size limitation charts in Metal Technology's technical literature.





Metal Technology has a clear commitment to sustainable products that can offer the best available carbon footprint and Global Warming Potential (GWP) for each particular product. Embodied energy (energy to produce, transport and manufacture) and environmental impact are also considered as part of the procurement package.



# Our commitment to sustainable products

## Recycling and Waste Reduction

Where we can influence the design and use of our products in developments, we will base decisions on a sustainable basis where the health and safety of the occupants can be combined with the conserving of resources for future generations. As an industry we are using resources more efficiently with the minimum of energy consumption, to deliver a project that is flexible, durable, has longevity, and where practical, using fixtures and fittings that can be reused.

## Meeting Standards - ISO 14001

ISO 14001 is an international quality system for environmental management, providing a framework to allow businesses to minimise the impact of their operations on the environment. It seeks to establish a company policy for planning environmental objectives and for complying with laws, directives and regulations.

## Aluminium

The intrinsic qualities of aluminium, its infinite recyclability, strength and lightness, durability and low maintenance qualities mean it is one of the most sustainable building materials to be used.

Aluminium is the earth's third most abundant element after oxygen and silicon (ahead of iron).

Aluminium does not emit dust, vapour or particles and is not toxic to touch.

Given its durability and resistance due to applied surface treatments such as anodising or powder coating, aluminium structures need only regular cleaning with neutral detergents followed by rinsing with water.

Aluminium is non-flammable and, when it reaches its melting point in the event of a fire (about 650°C), it gives off no flammable gases or vapours.

## Life Cycles

Recycling is a valuable asset in the battle against the greenhouse effect. The global aluminium industry has made great strides during the last century to reduce its environmental impact at all stages of the supply chain. Aluminium extraction and refining companies have reduced their energy requirements by almost 70% since 1900.

This has seen the growing use of hydro-electric energy coupled with a vast increase in aluminium that is recycled. At present more than a third of global aluminium production is from recycled metal, a figure that is growing. Recycled aluminium takes just 5% of the energy needed to produce primary metal with a consequent reduction of 95% in the greenhouse gases produced. The recycling process is economically attractive and viable. Recycled aluminium meets almost 40% of the demand for the metal in Europe. Approximately 70% of the material used to produce Metal Technology extrusions is recycled.

Aluminium is infinitely recyclable with no loss of its properties: The aluminium cycle is a closed life cycle.

The Delft University of Technology in the Netherlands has investigated the collection rate of aluminium in buildings. Demolition case studies in six different European countries (France, Germany, Italy, Spain, the Netherlands and the United Kingdom) were carried out and the data gathered shows that collection rates are over 95%.

## Our products are 100% recyclable



High Insulation (Hi+)  
Window and Door Systems



**Metal Technology Limited**  
Steeple Road Industrial Estate  
Steeple Road | Antrim  
Northern Ireland | BT41 1AB

Telephone [REDACTED]  
sales@metaltechnology.com  
metaltechnology.com

This document has been printed on 100% recycled paper.

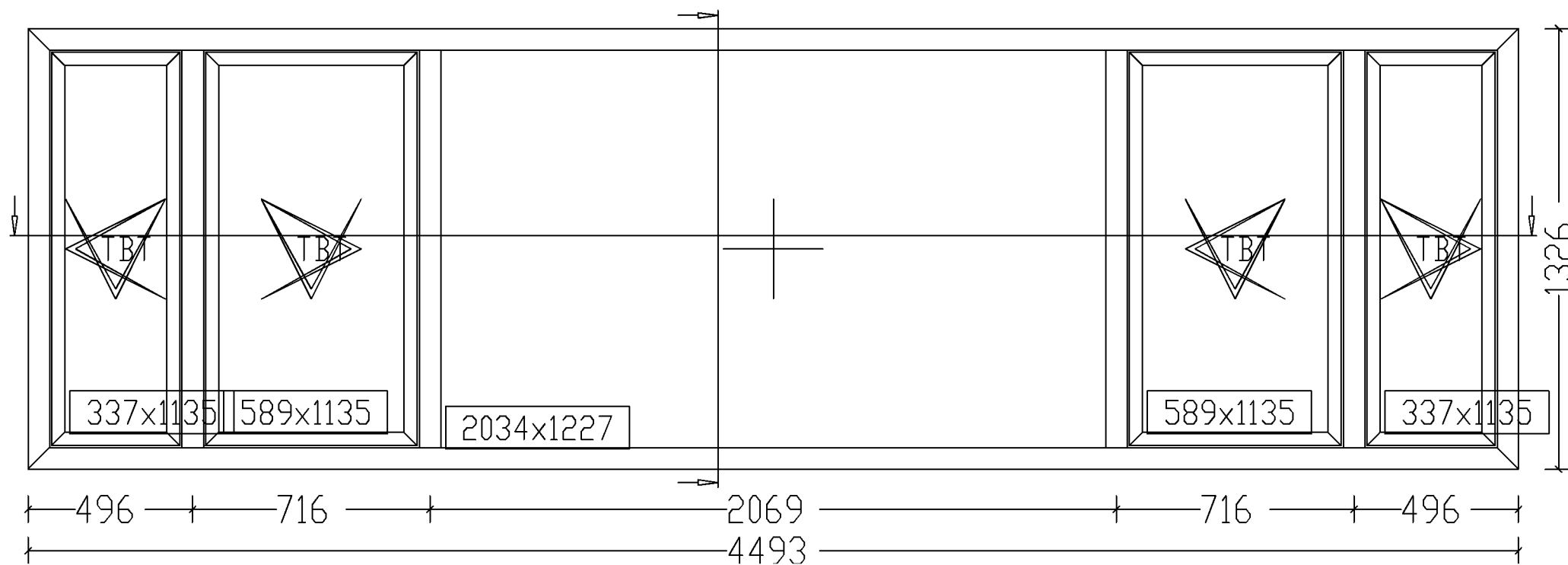




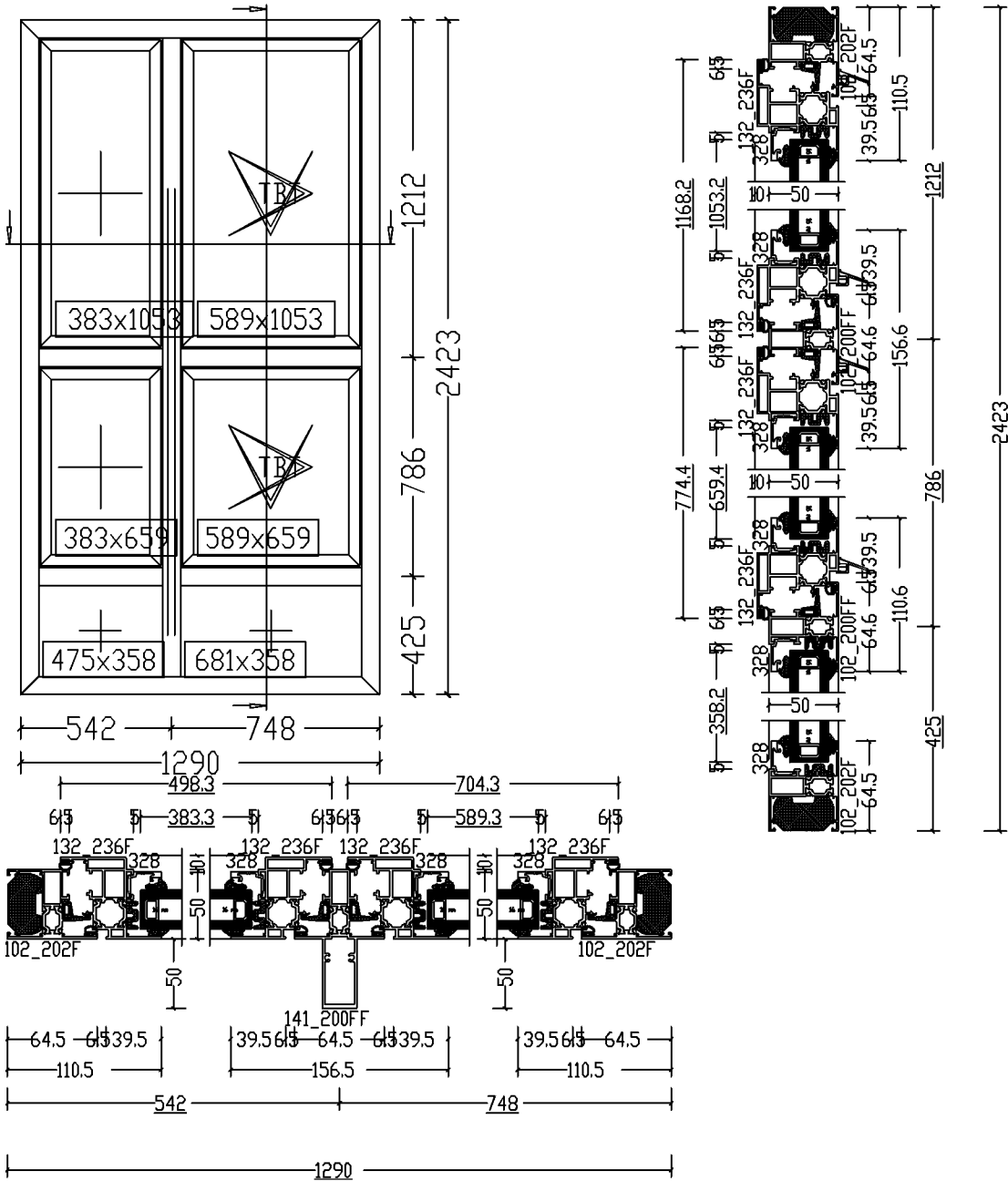
Pos. Type 1, Quantity: 80

Colour: /P STD RAL

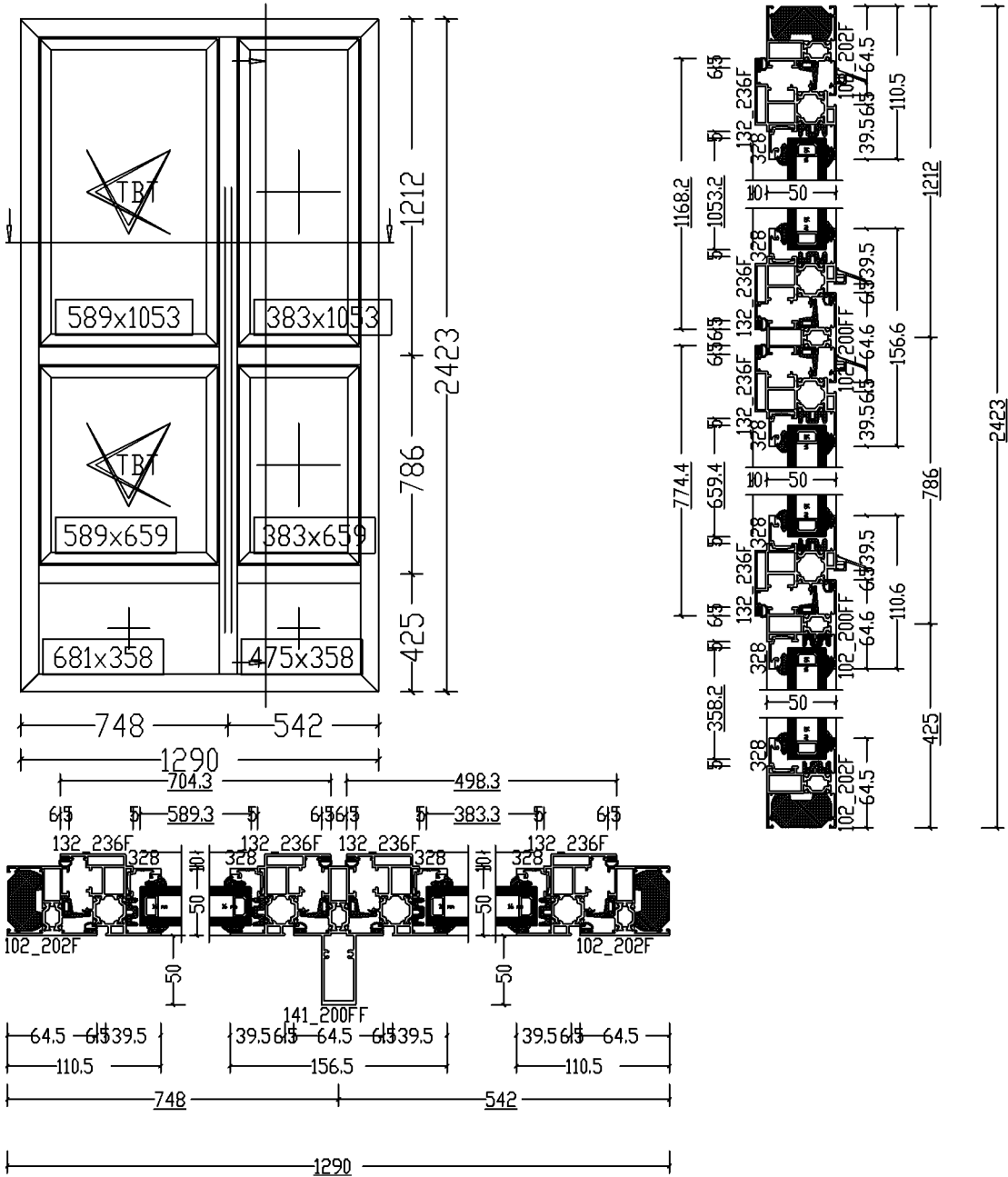
Job: GrenFell - 5-20Hi Sep 2014 - Order No 1



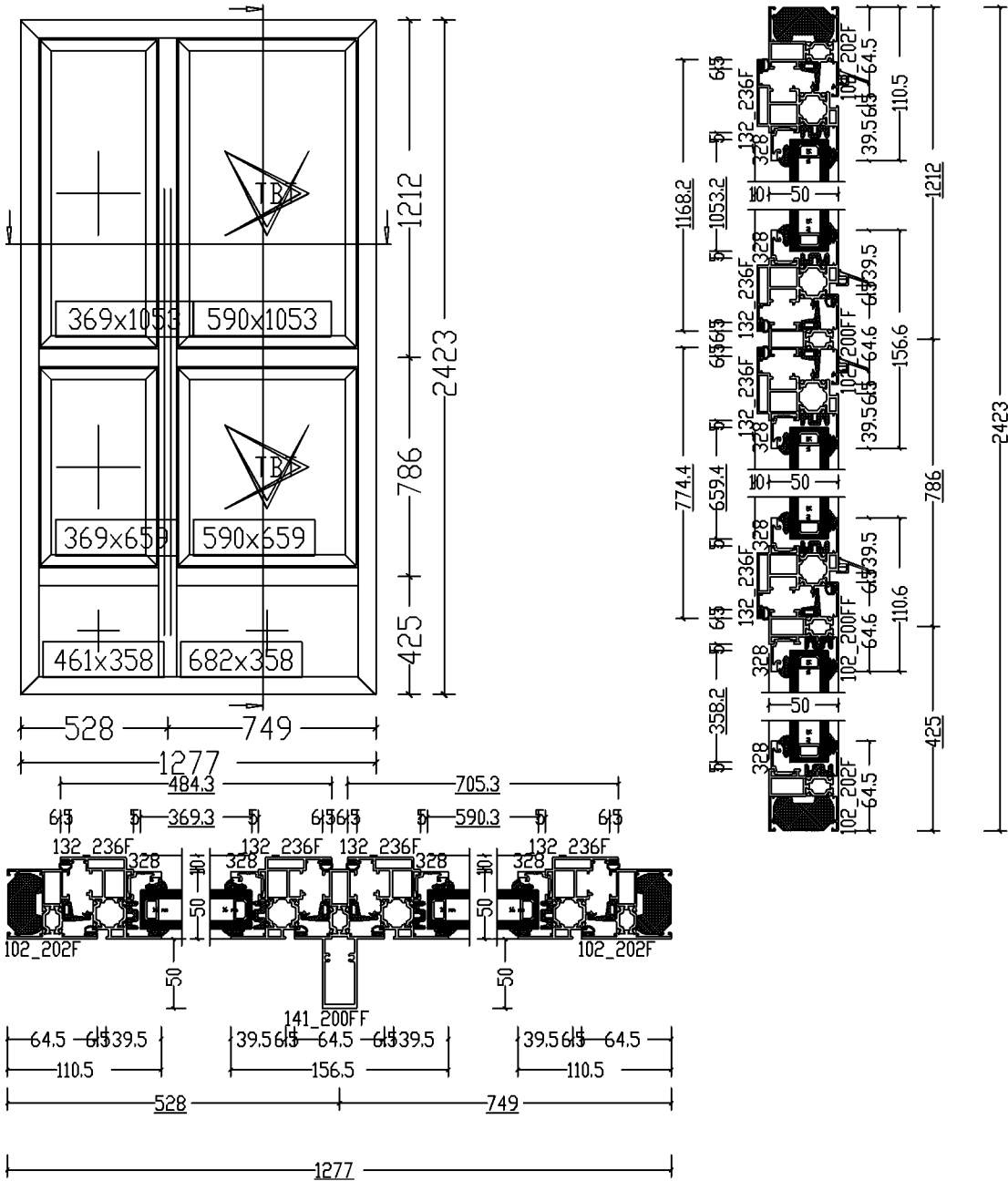
Pos. Type 2A, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows



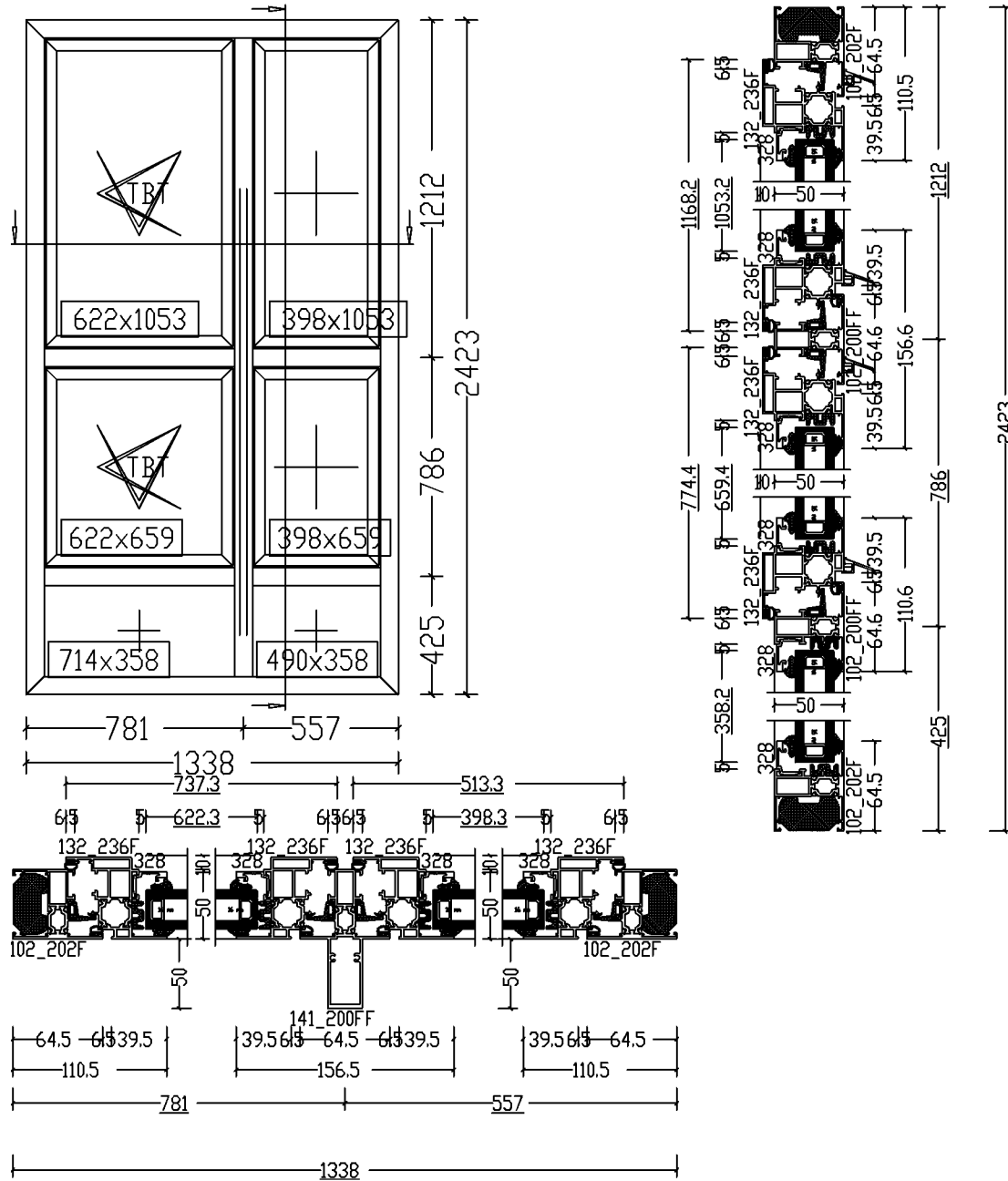
Pos. Type 2B, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows



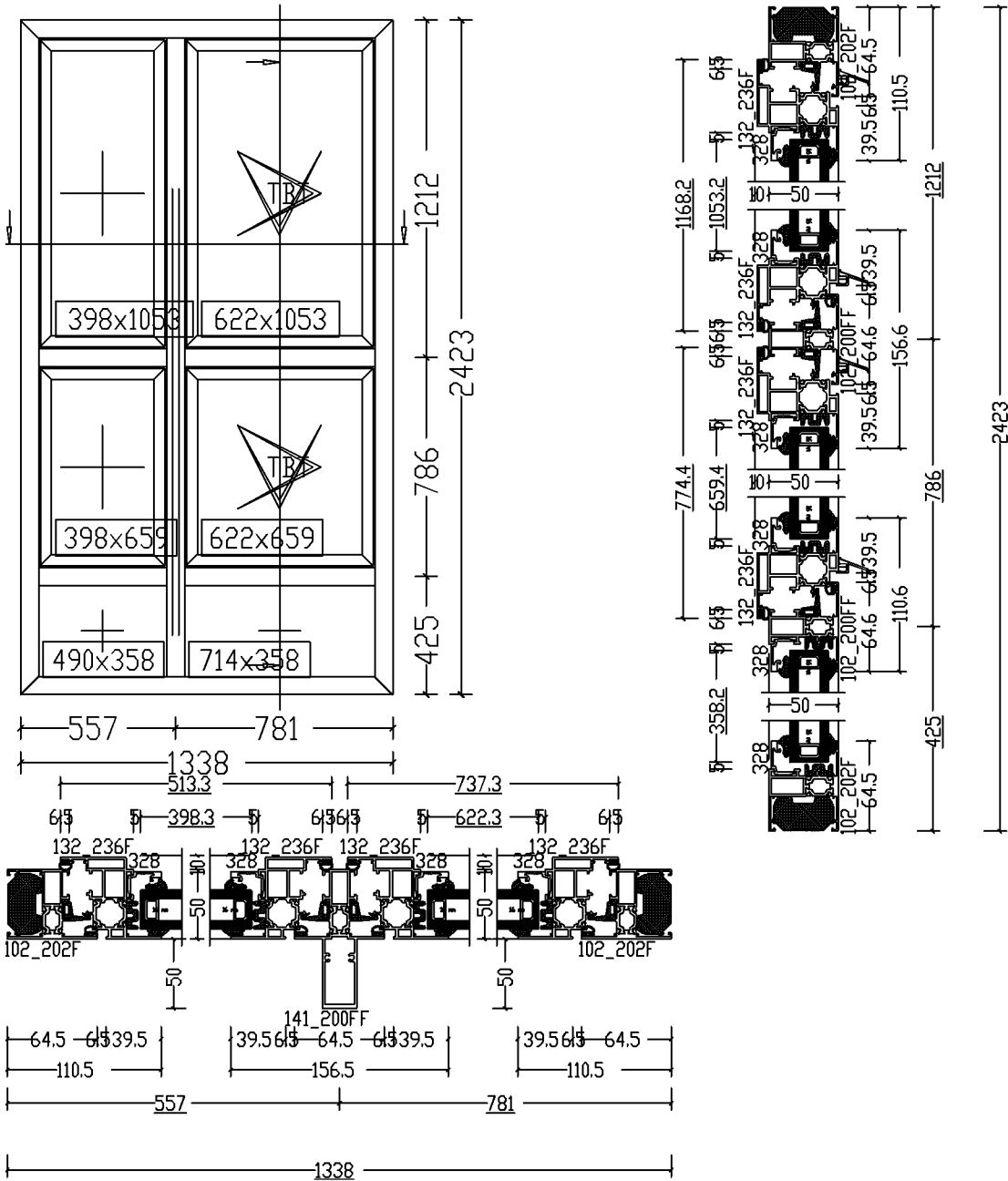
Pos. Type 2C, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows



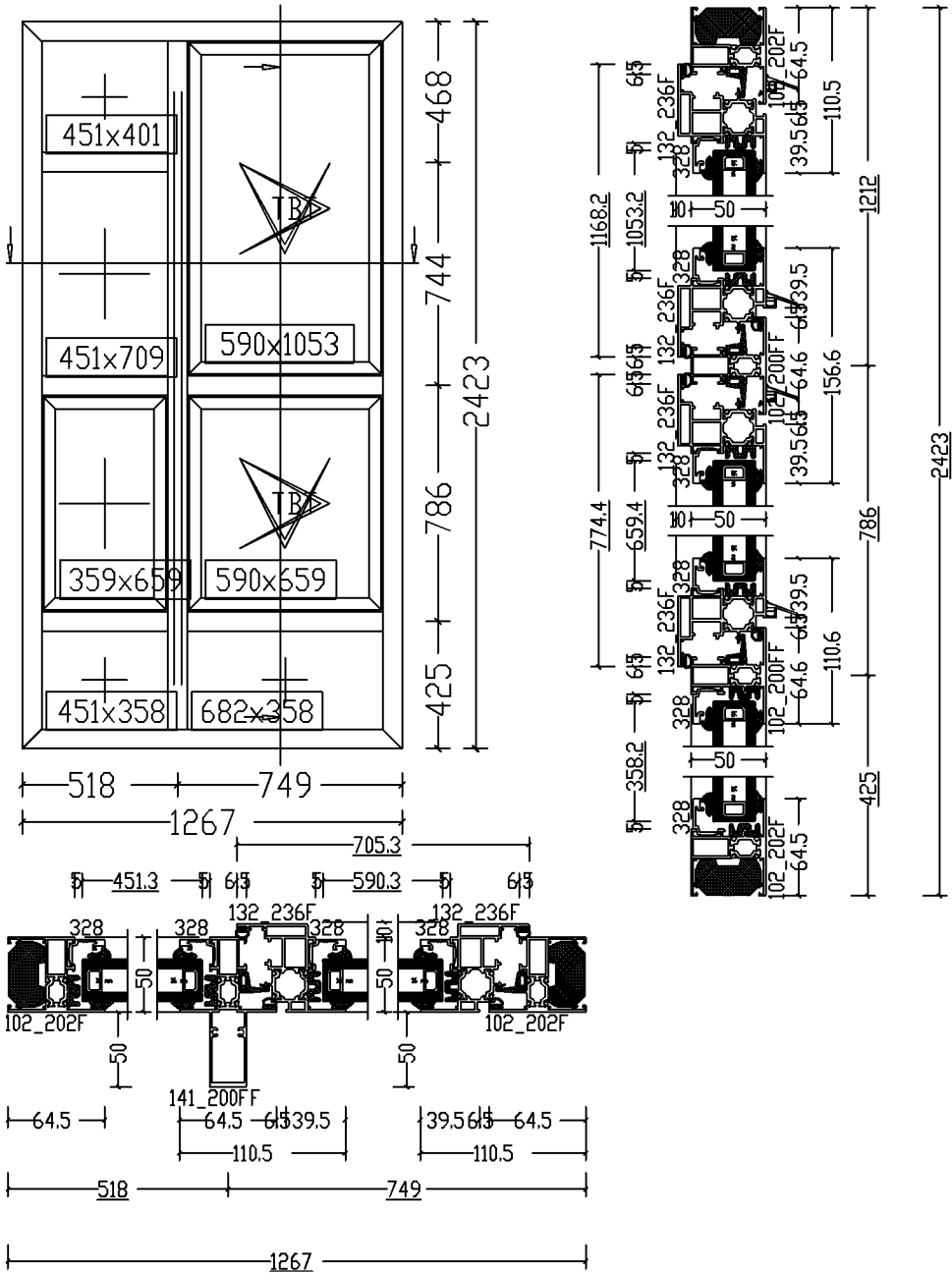
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows



Pos. Type 2E, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows

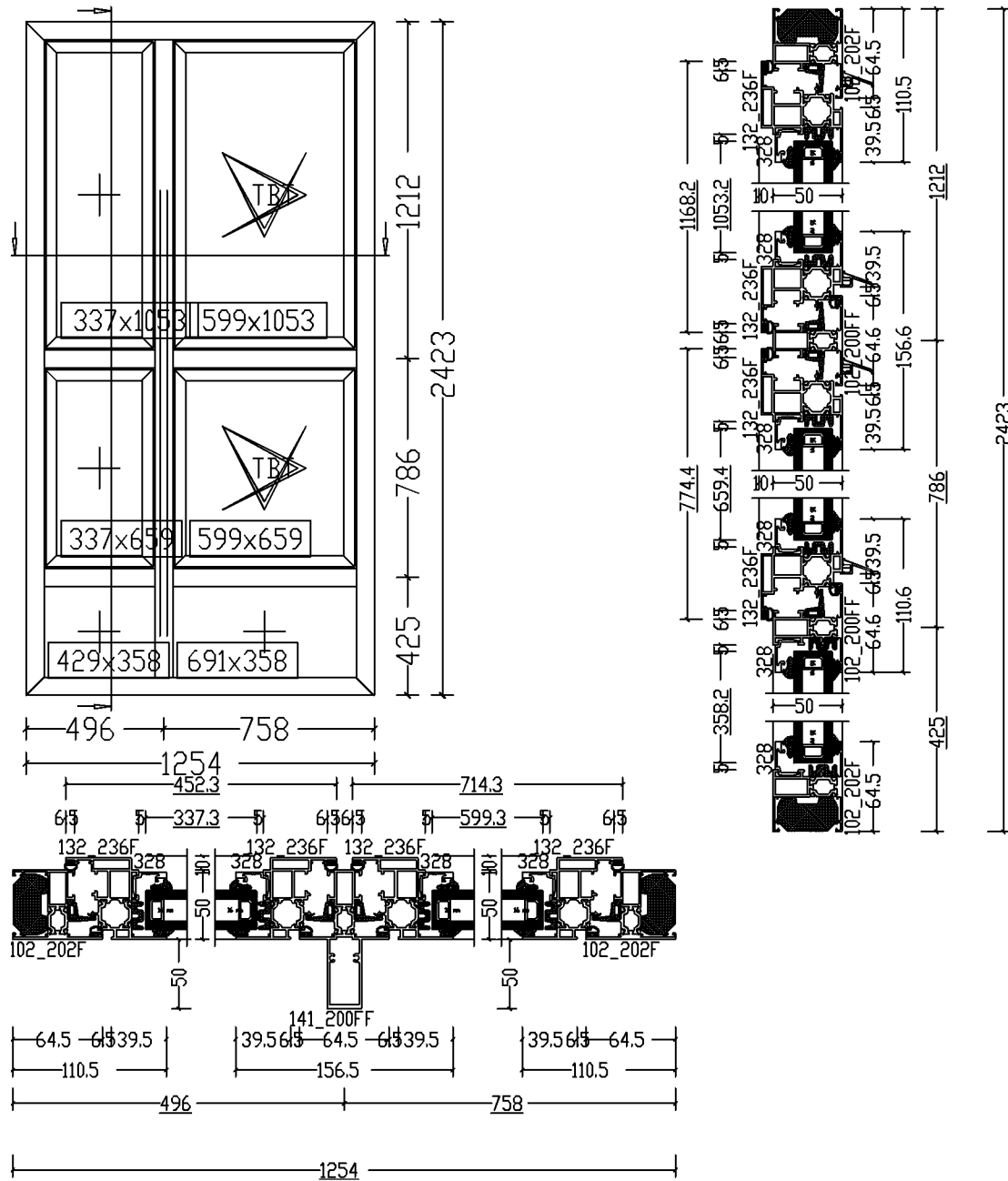


Pos. Type 2F, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows

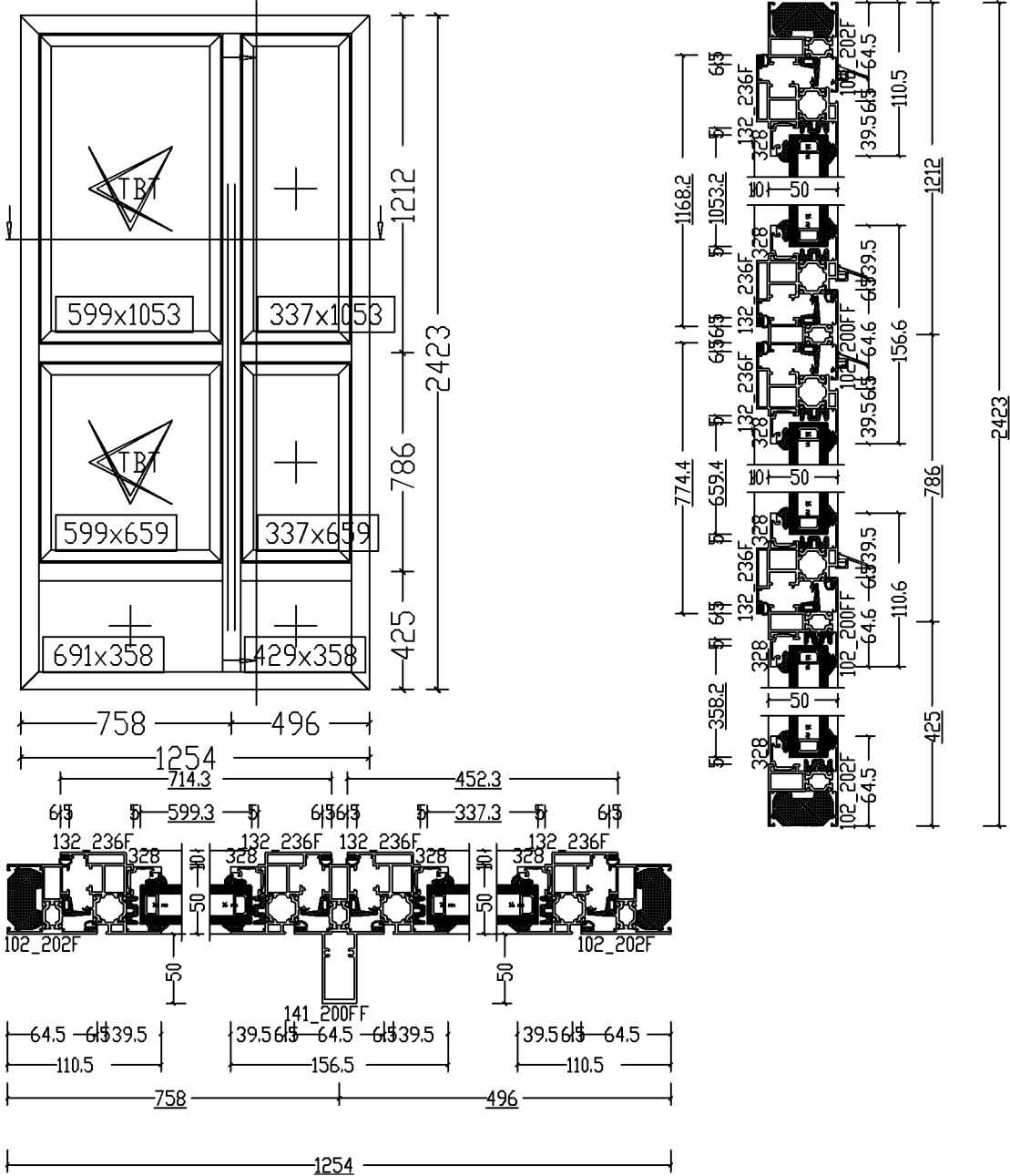




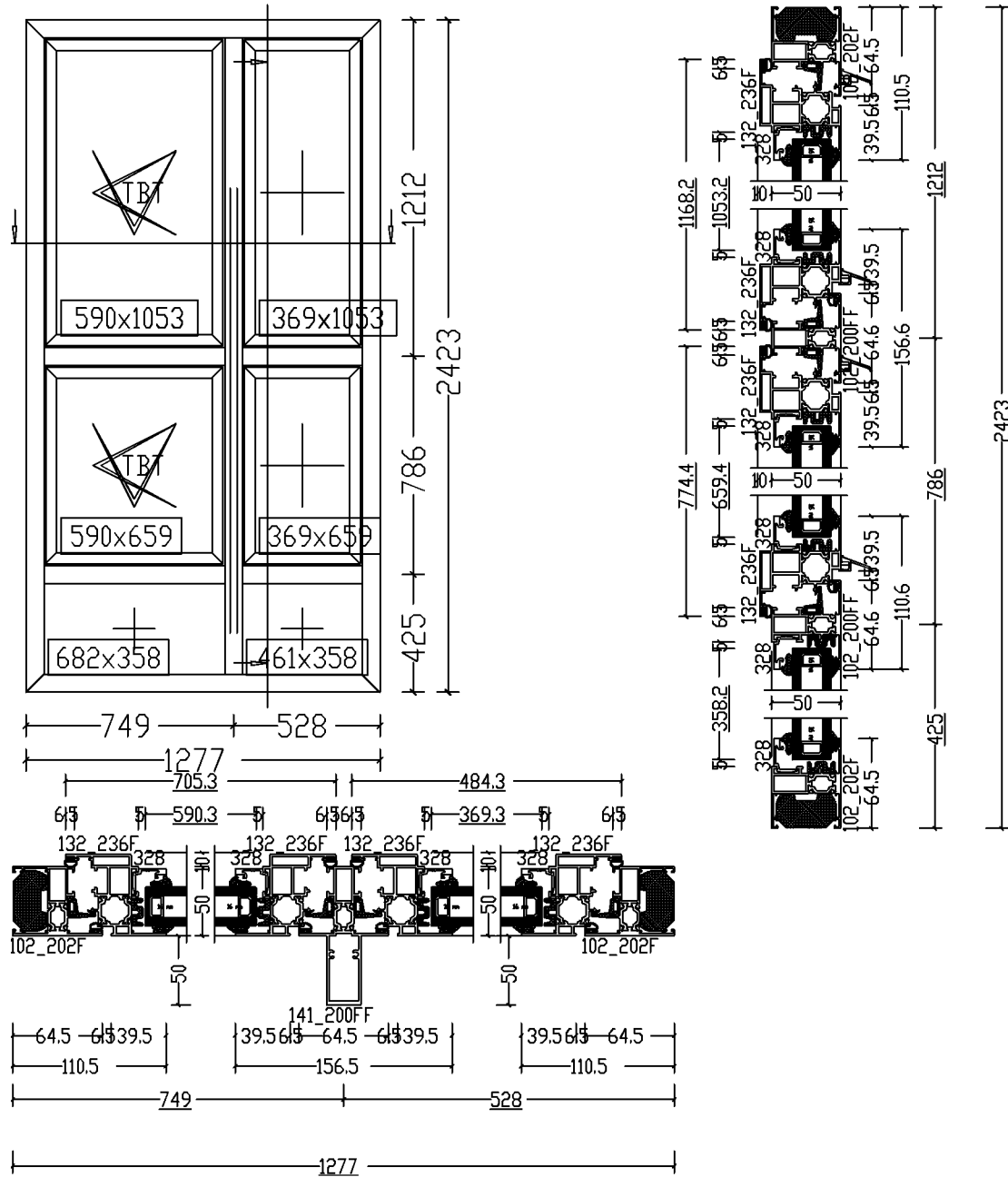
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows



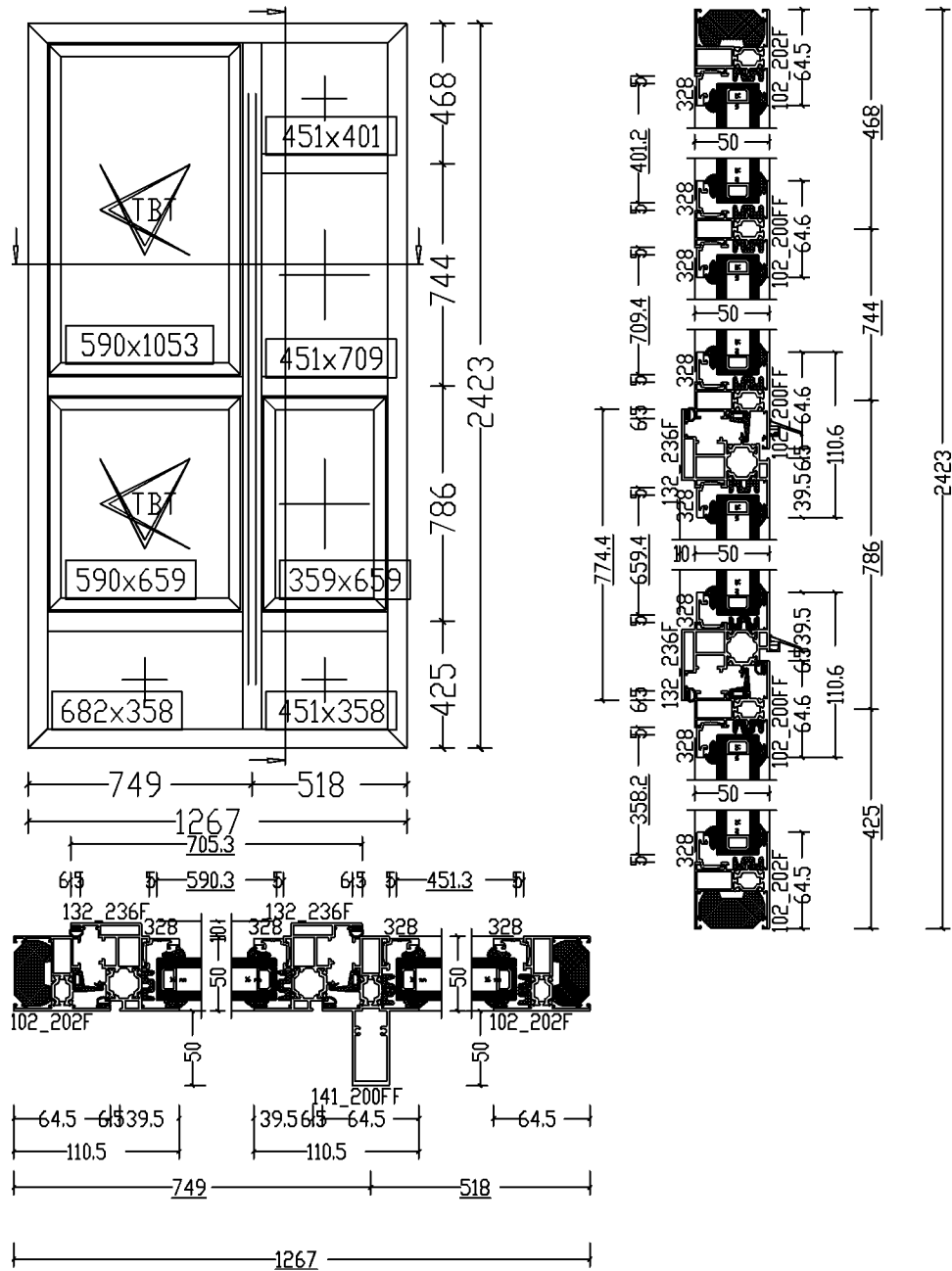
Pos. Type 2H, Quantity: 8  
Finish: /P STD RAL  
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows



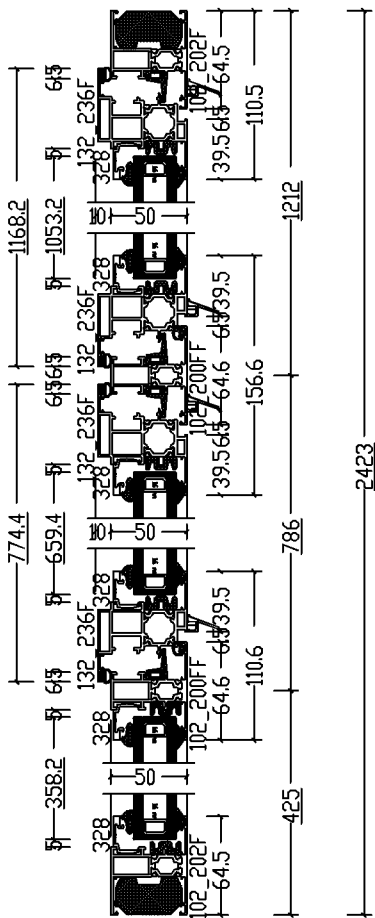
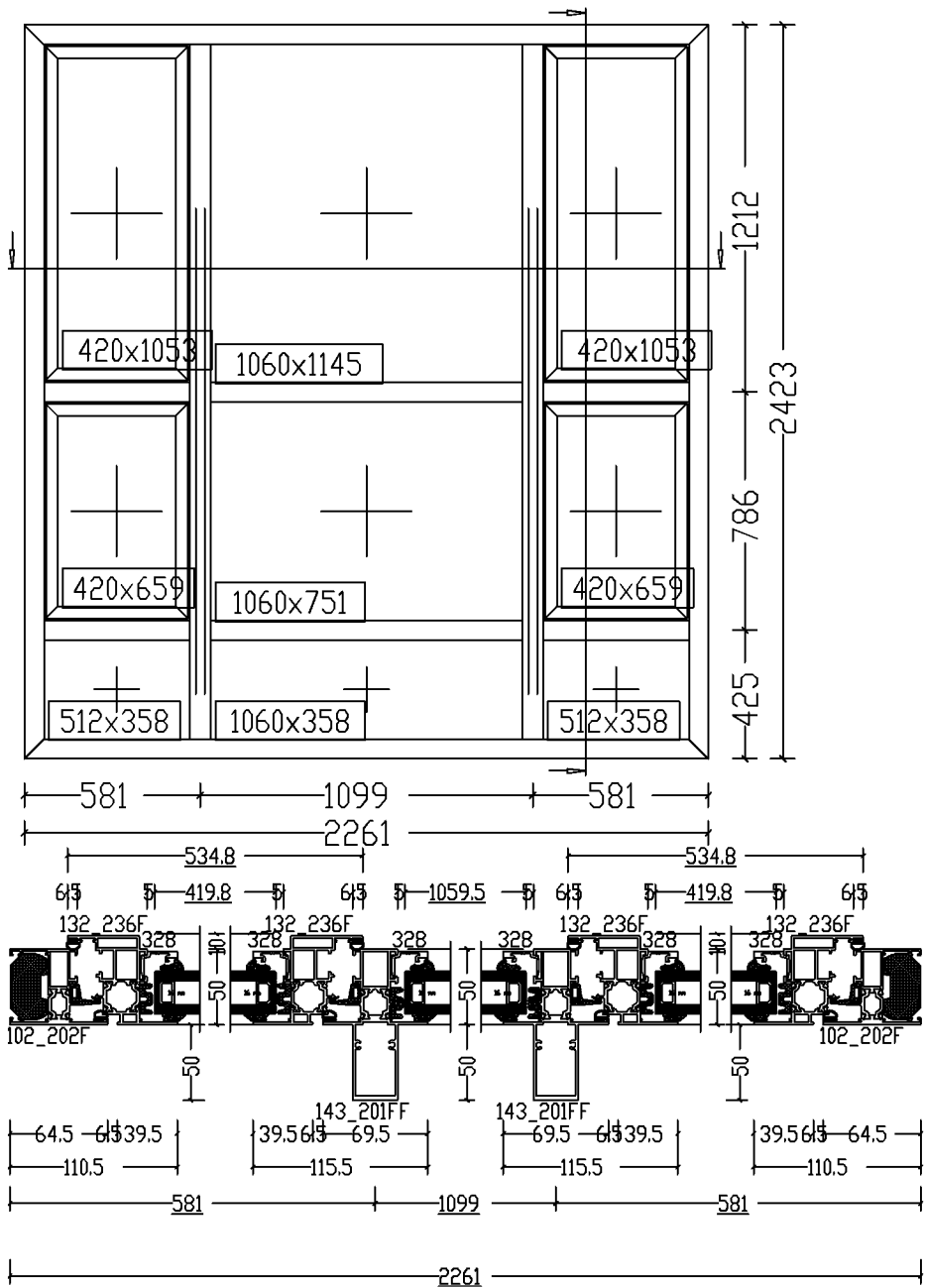
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows



Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows

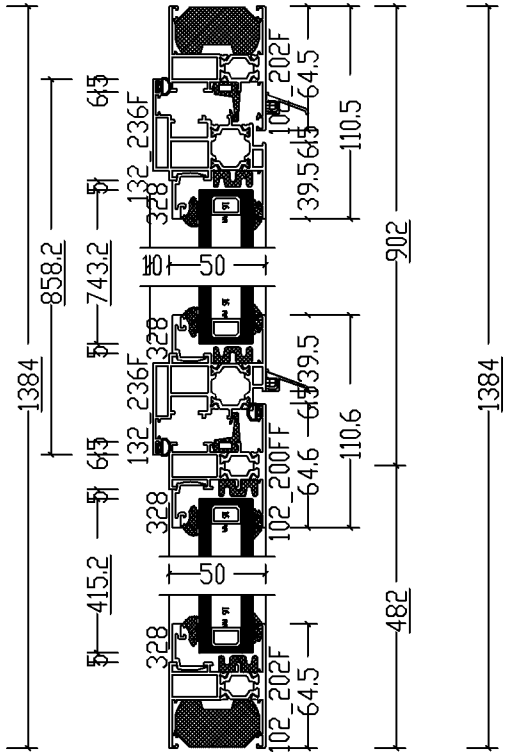
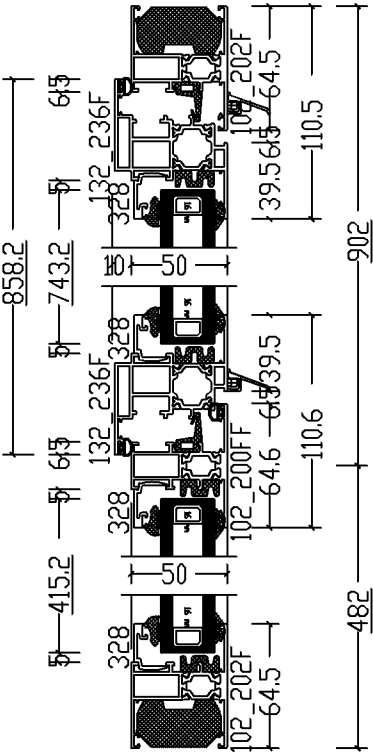
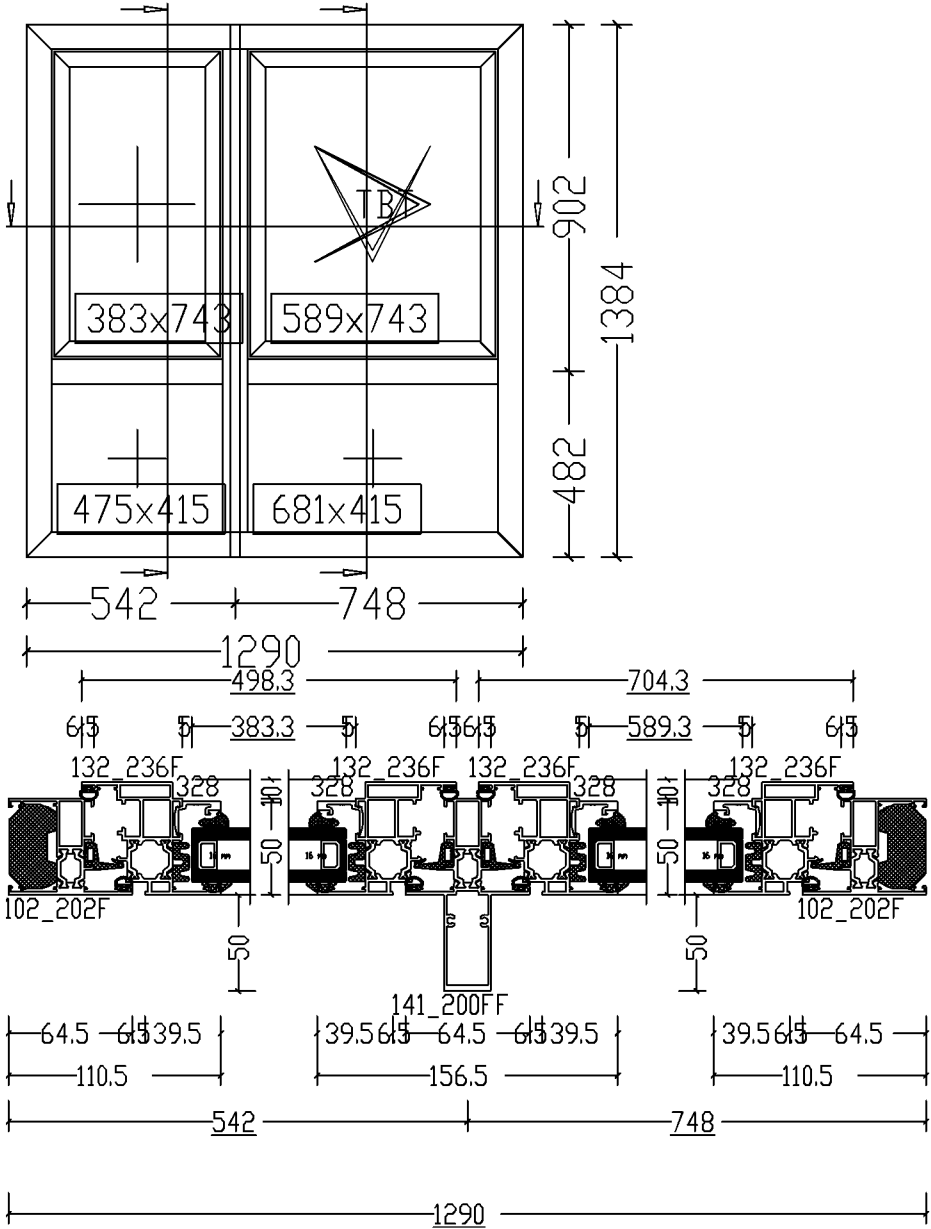


Pos. Type 4, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20Hi Sep 2014 - Order Extra Windows

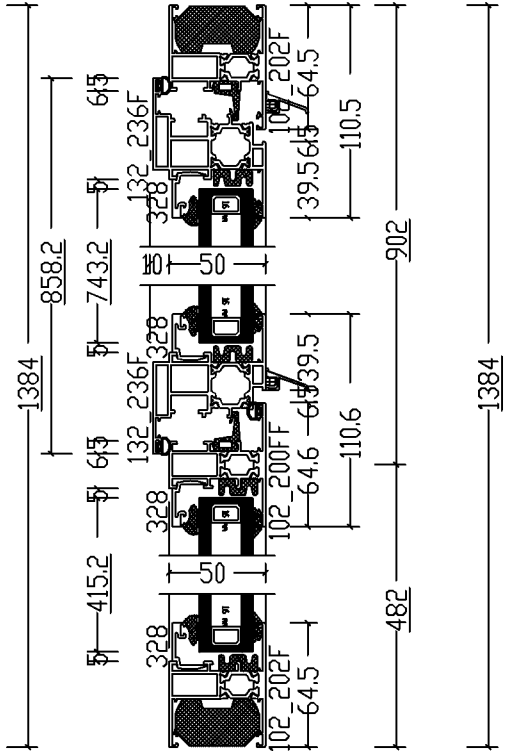
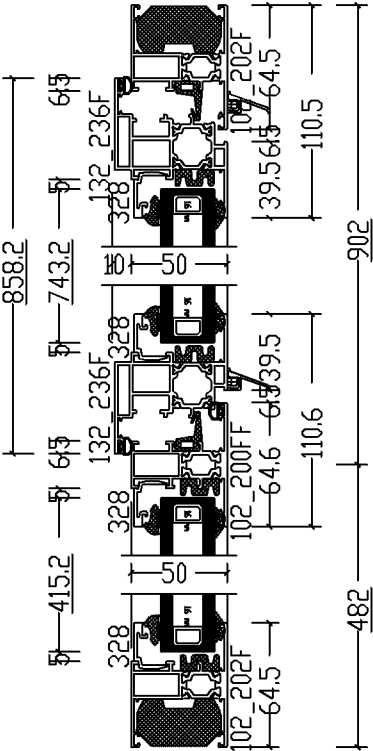
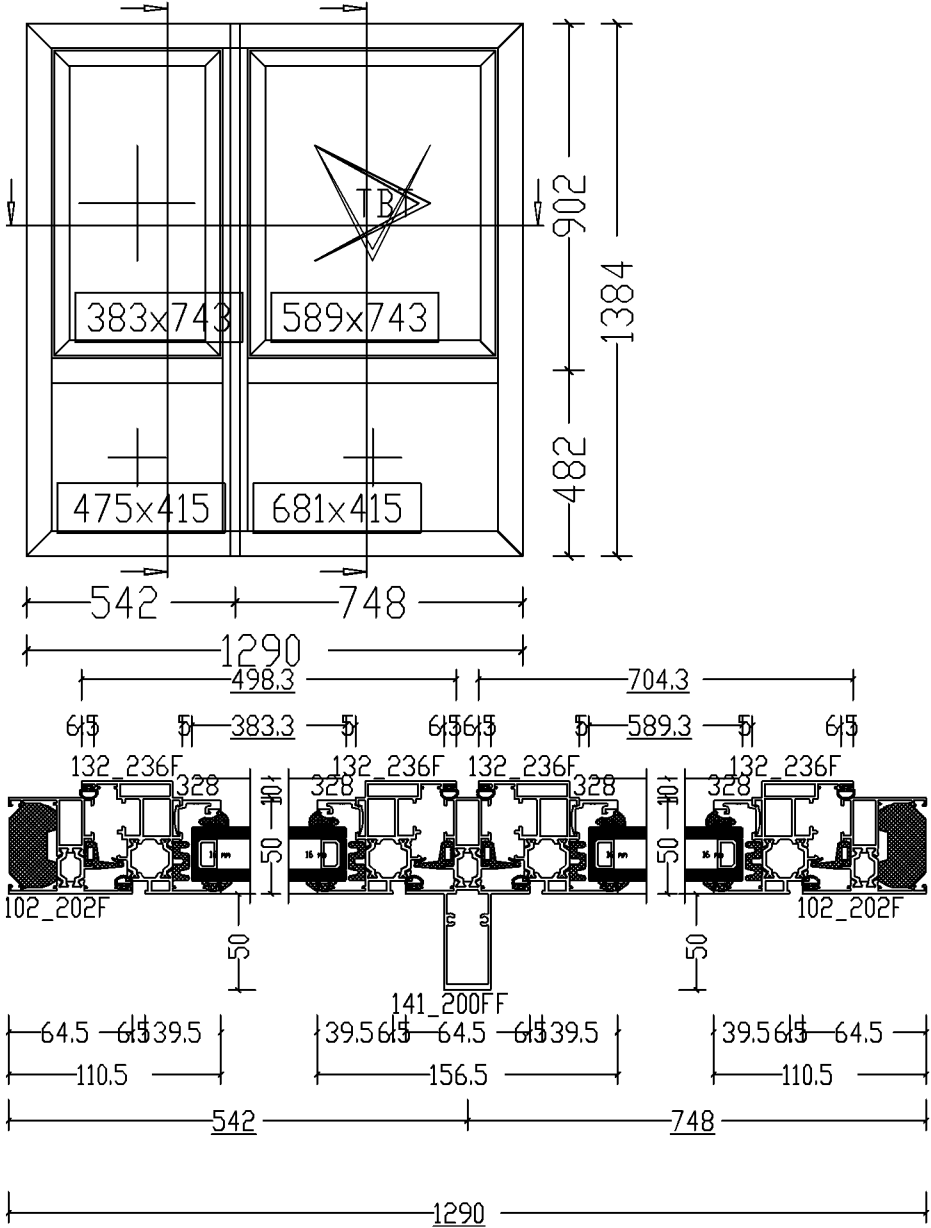




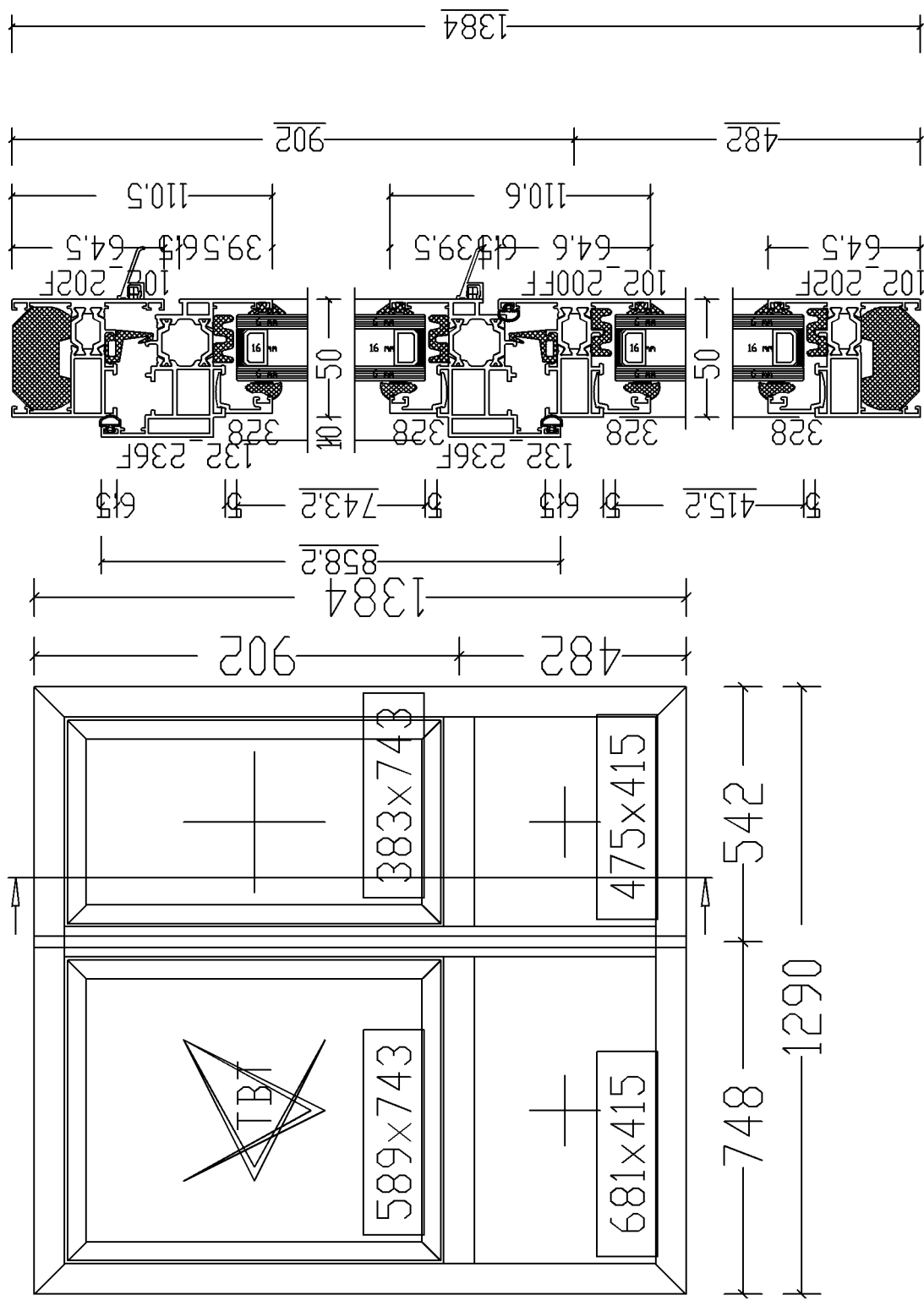
Pos. Type 7A - Mid Bay Mezz, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



Pos. Type 7A - Mid Bay Mezz West, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



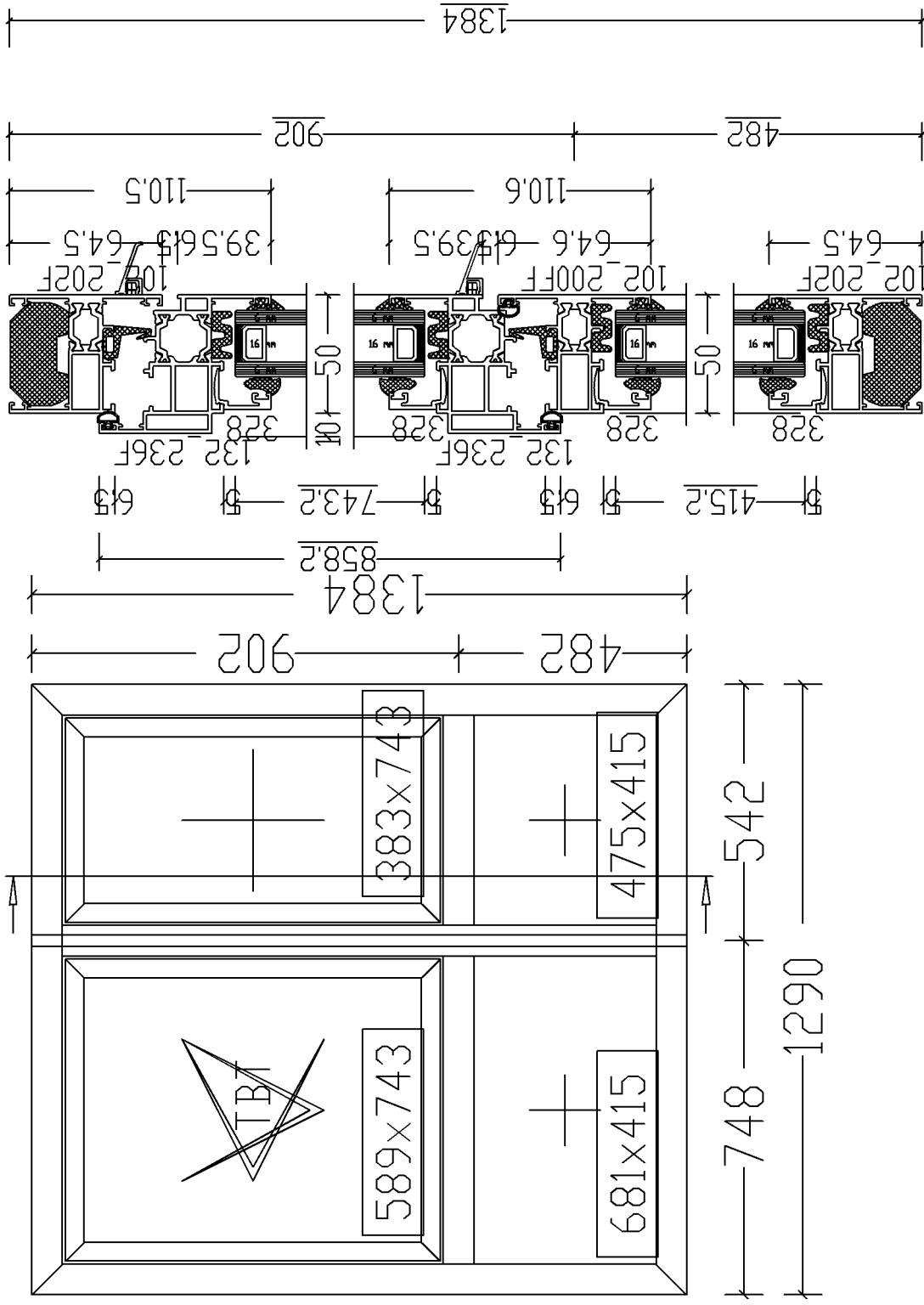
Pos. Type 7B - Mid Bay Mezz West, Quantity: 1  
Finish: /P STD RAL  
Job: Grenfell - 5-20H Mez



Pos. Type 7B - Mid Bay Mezz, Quantity: 1

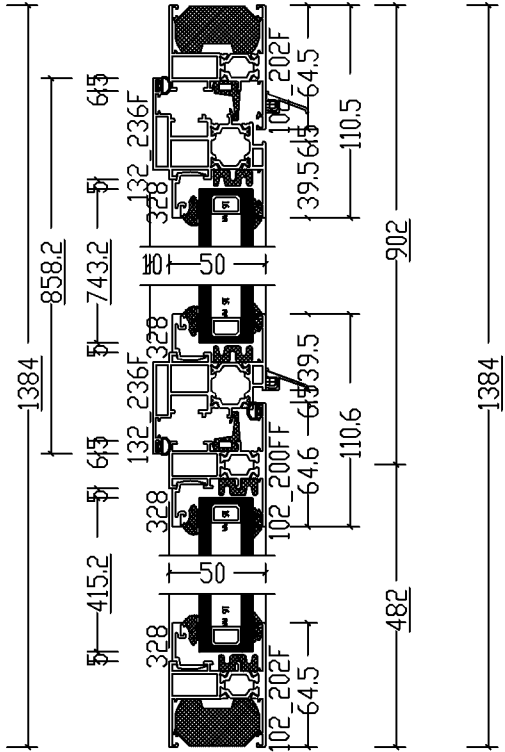
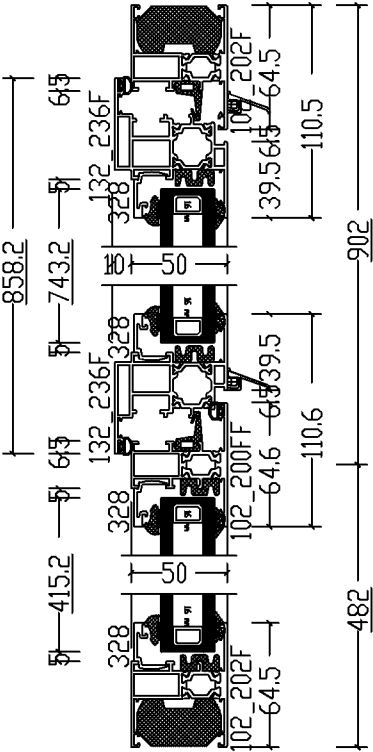
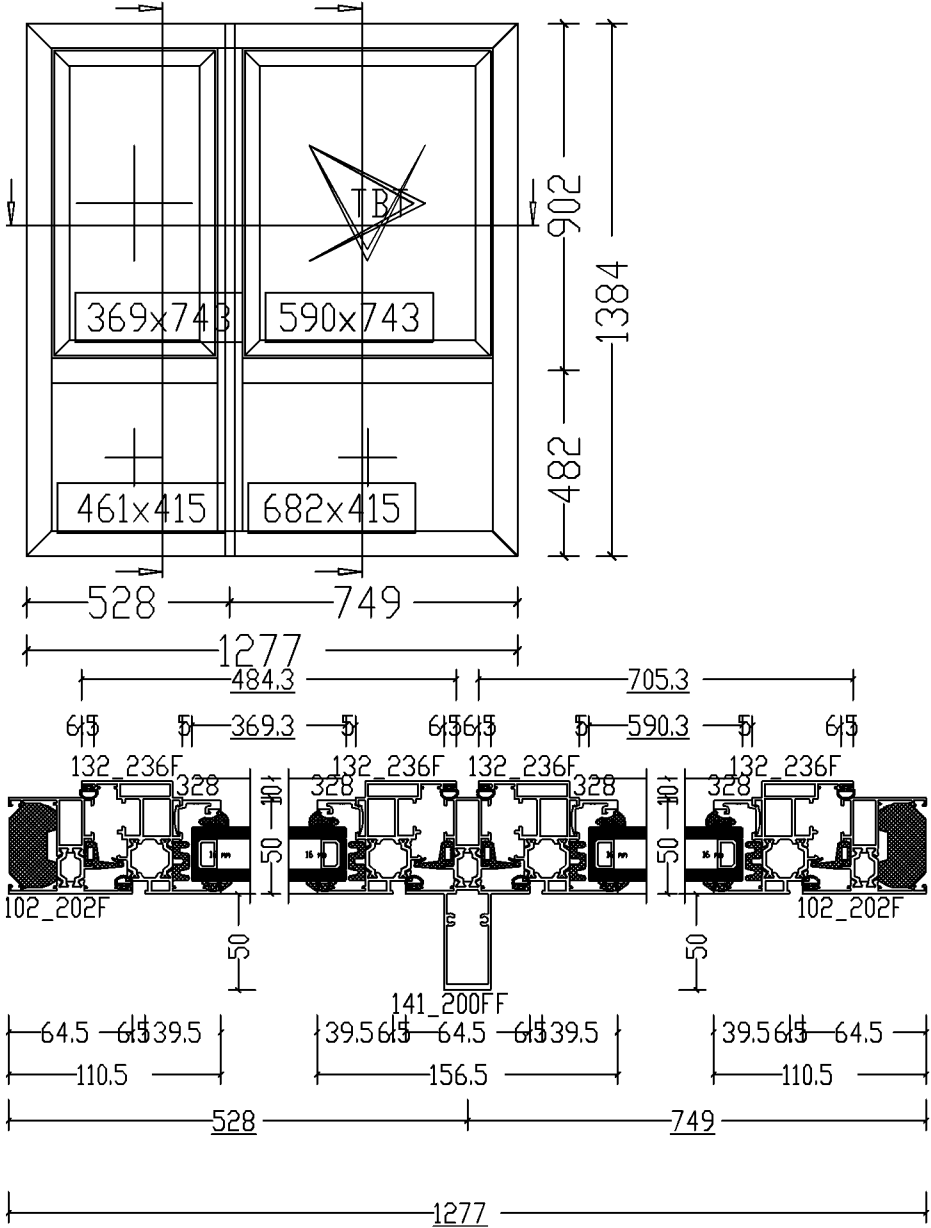
# Finish: /P STD RAL

Job: Grenfell - 5-20H Mez

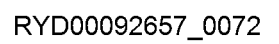




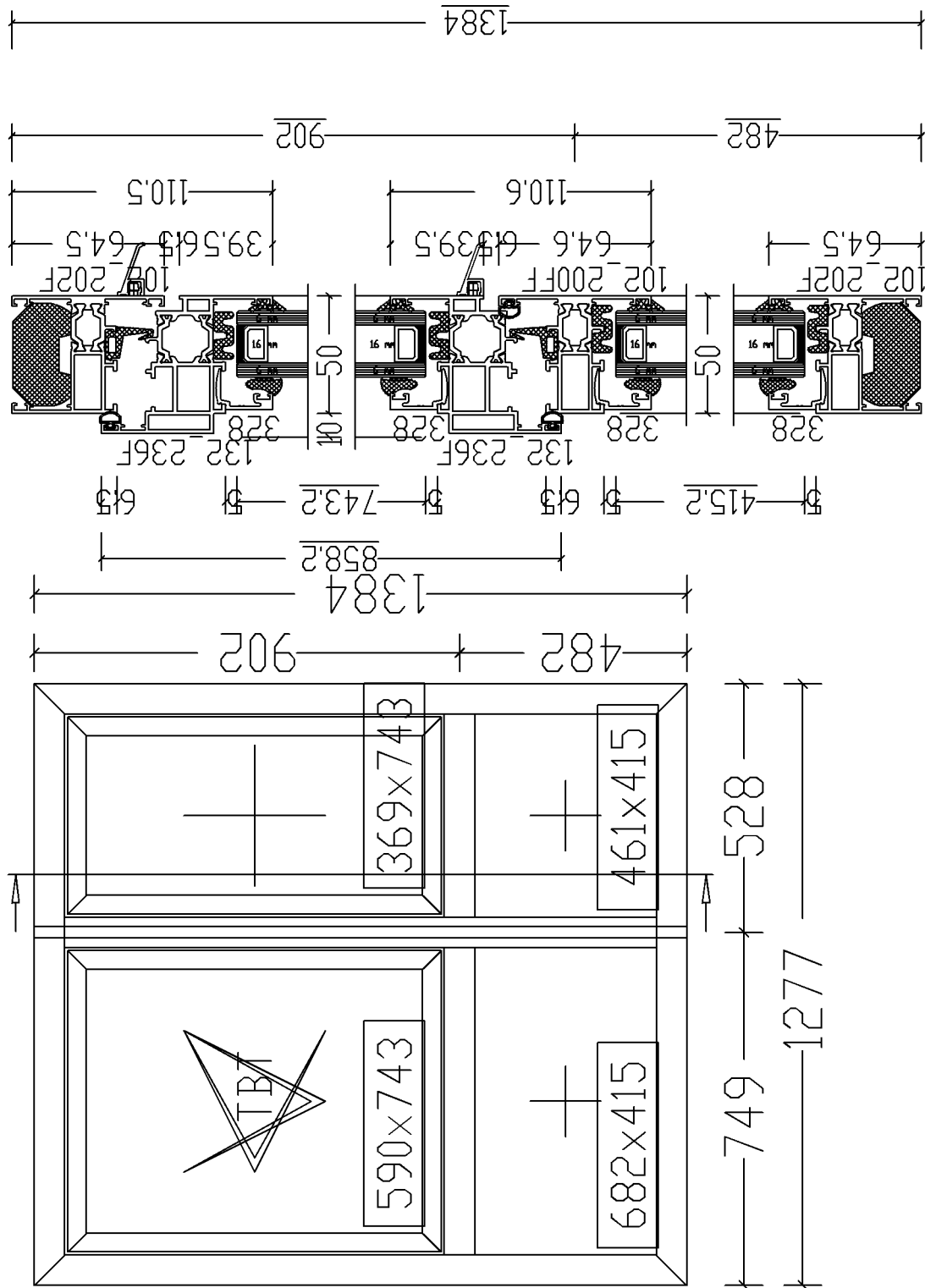
Pos. Type 7C - End Bay Mezz East & West, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



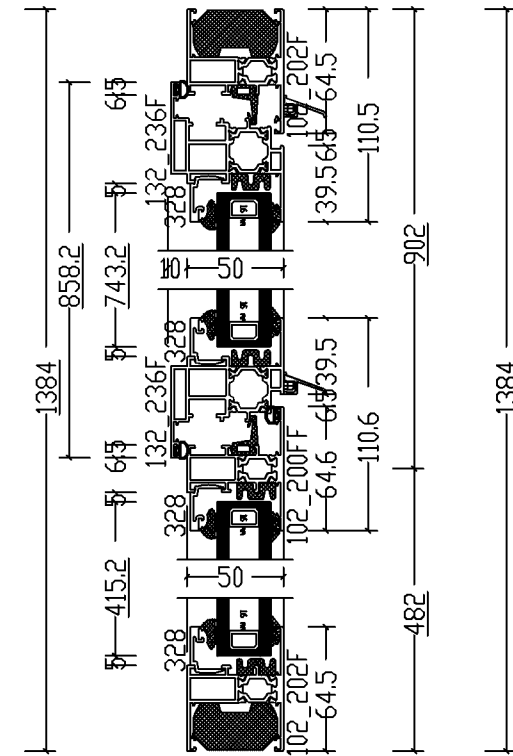
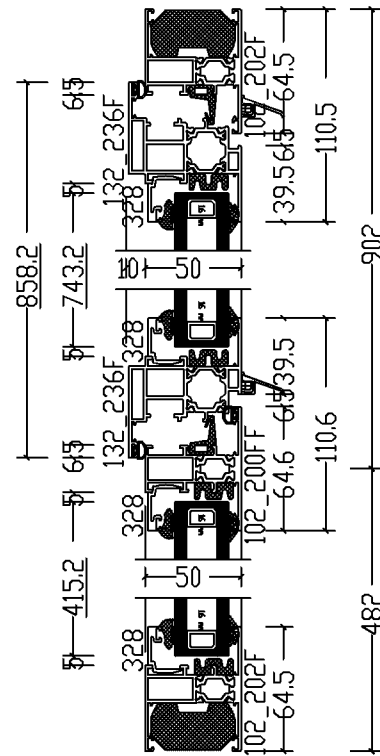
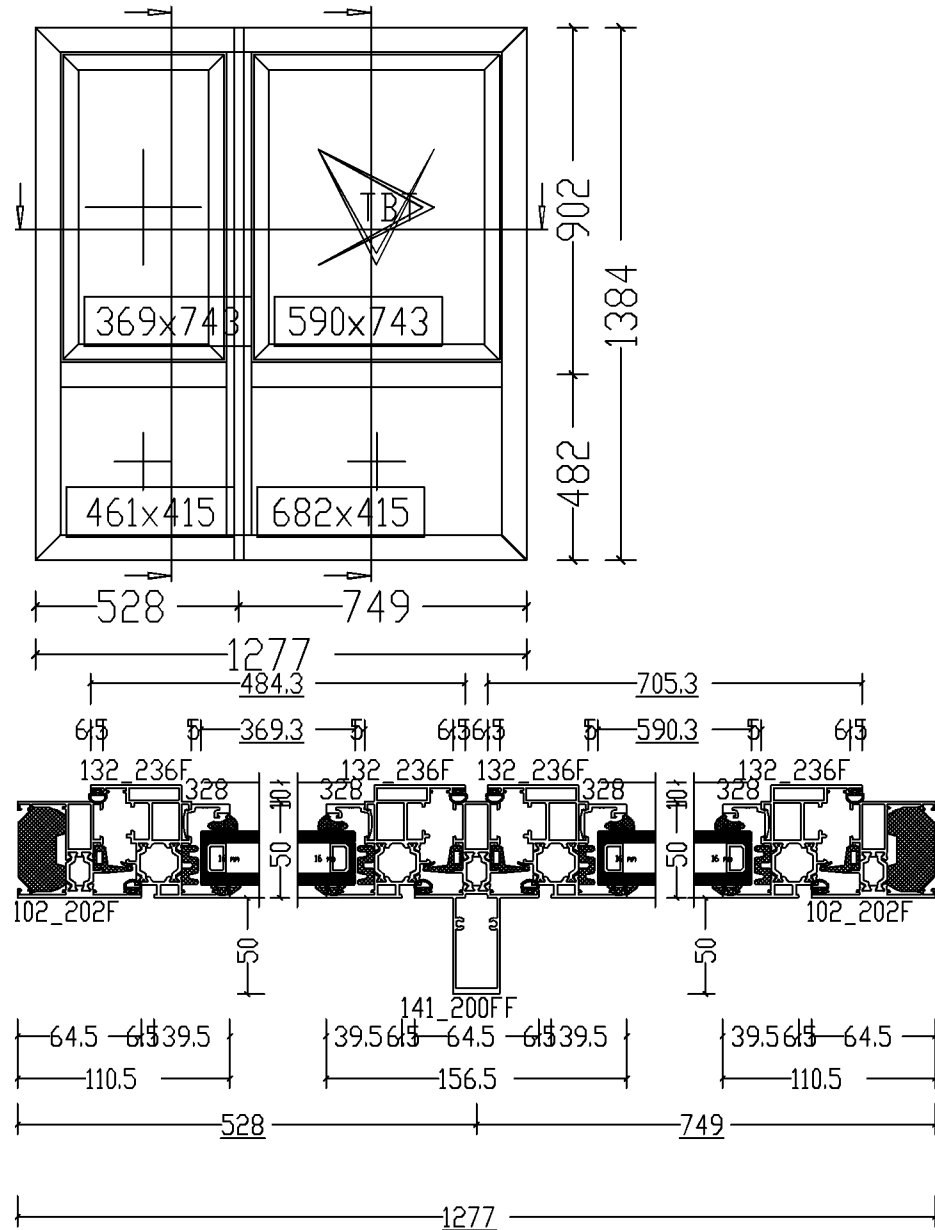
Job: Grenfell - 5-20H Mez



Pos. Type 7E - End Bay Mezz East & West, Quantity: 1  
Finish: /P STD RAL  
Job: Grenfell - 5-20H Mez

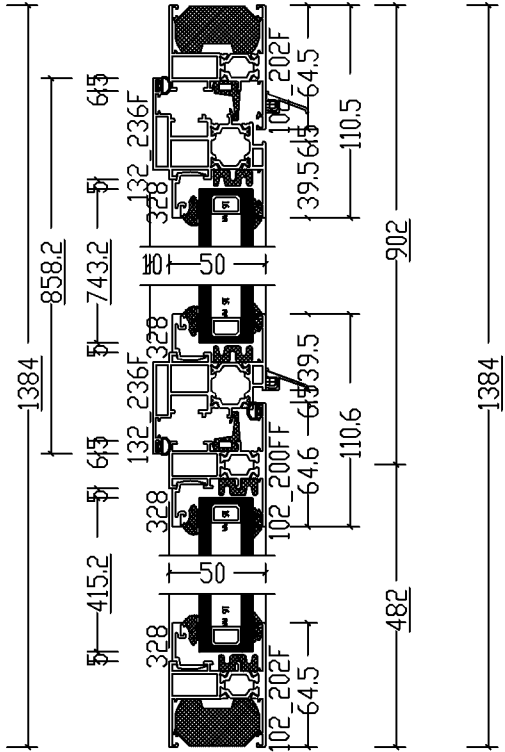
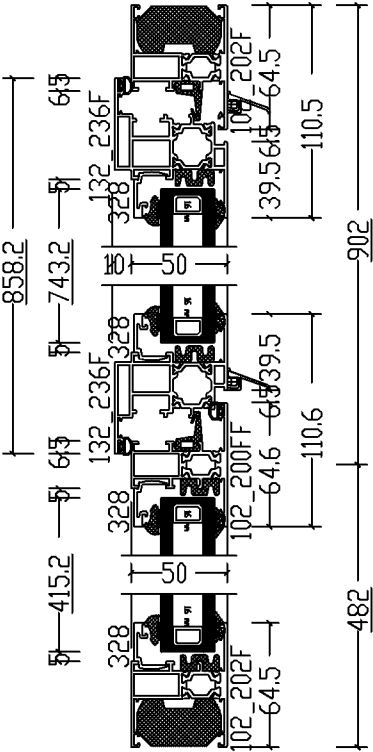
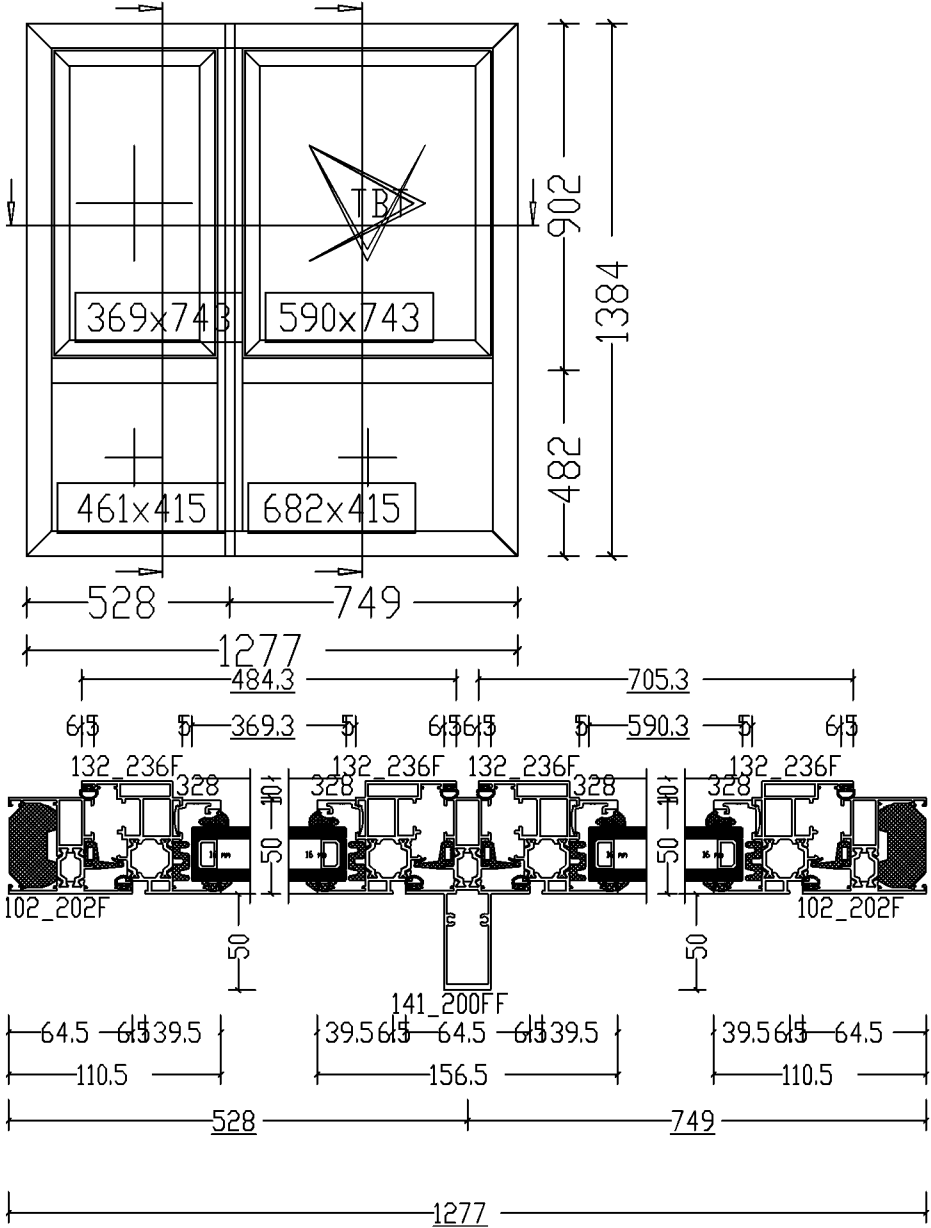


Job: GrenFell - 5-20H Mez

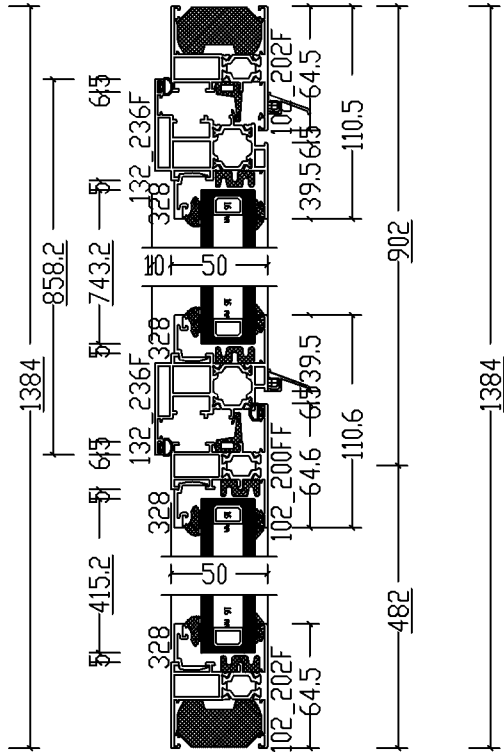
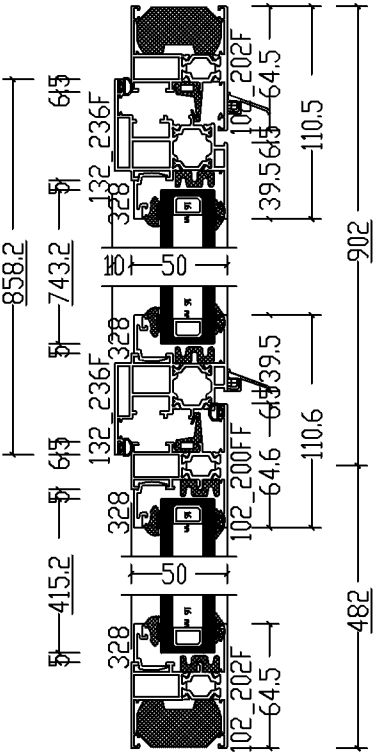
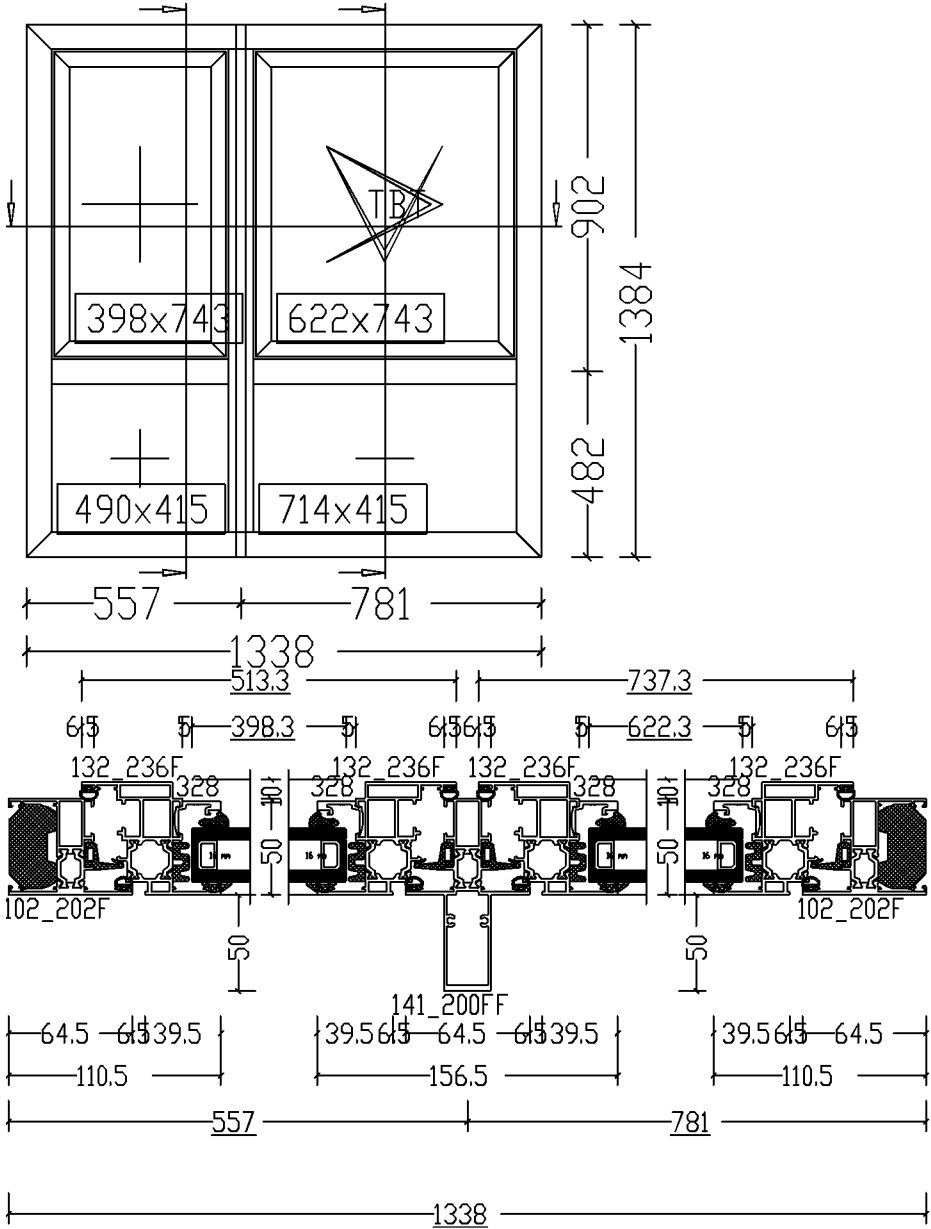




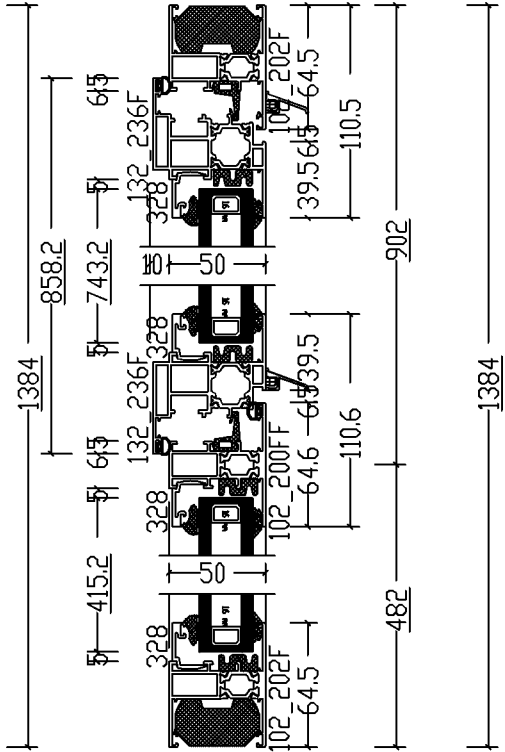
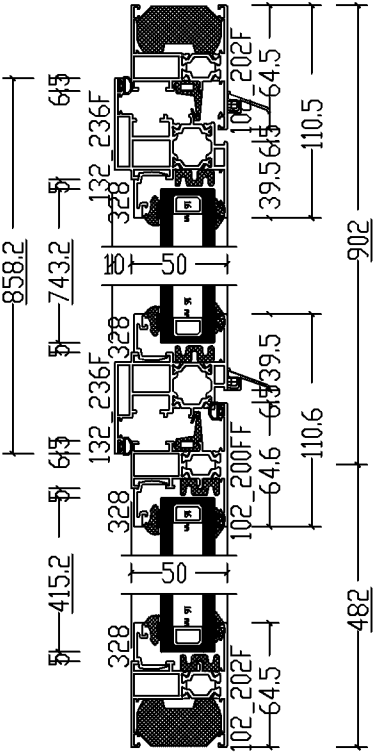
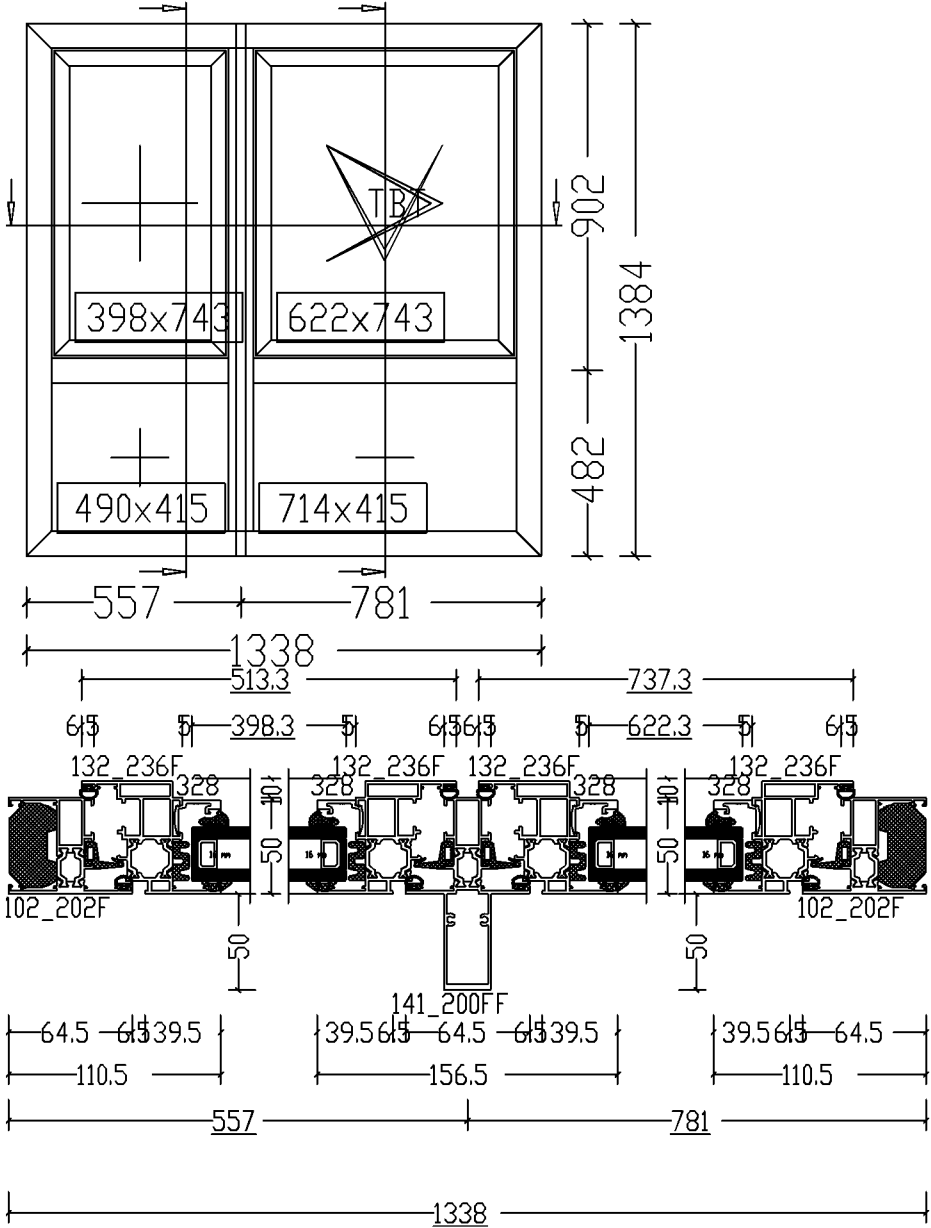
Pos. Type 7F End Bay Mezz East & West, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



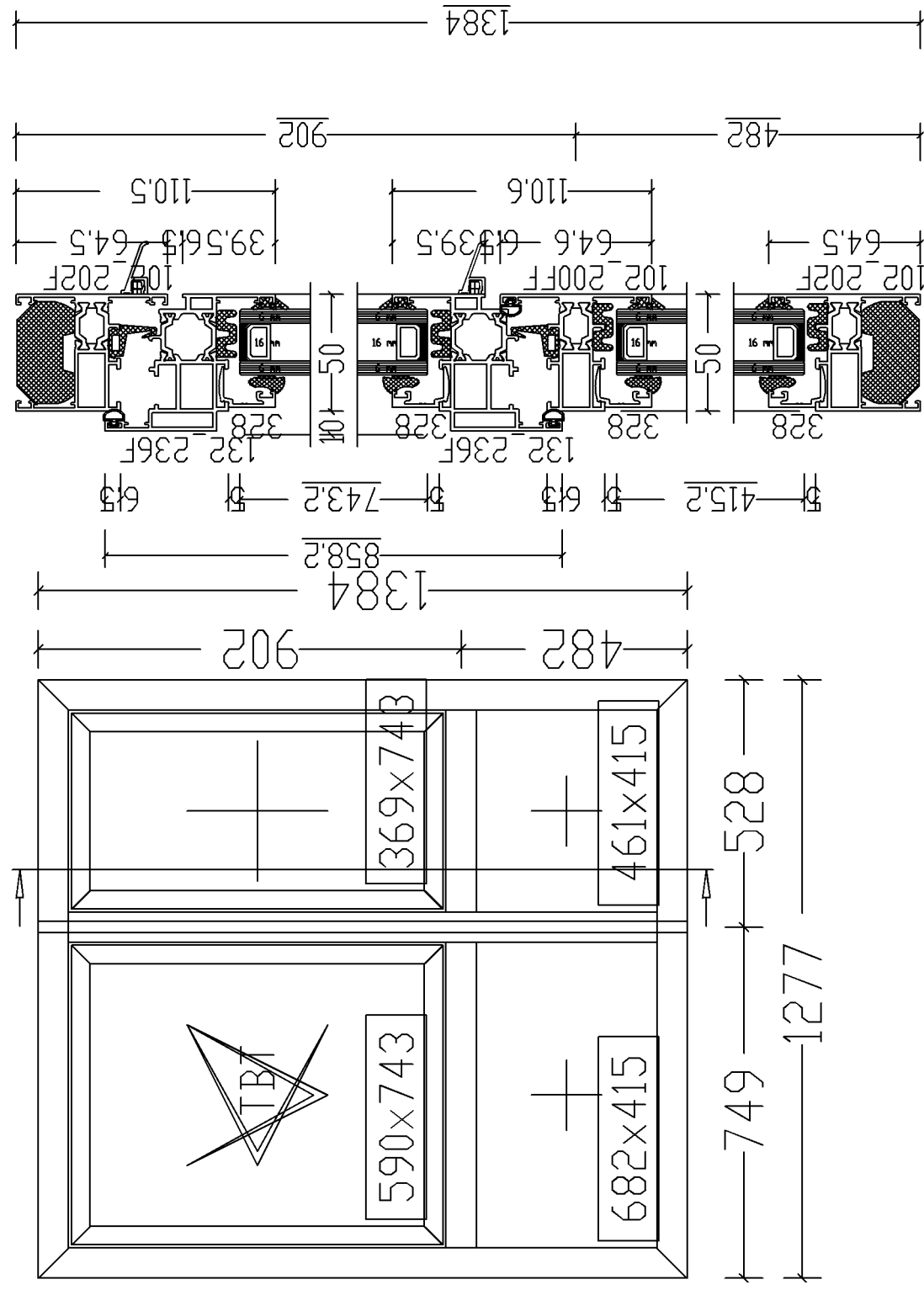
Pos. Type 7G - End Bay Mezz RH West, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



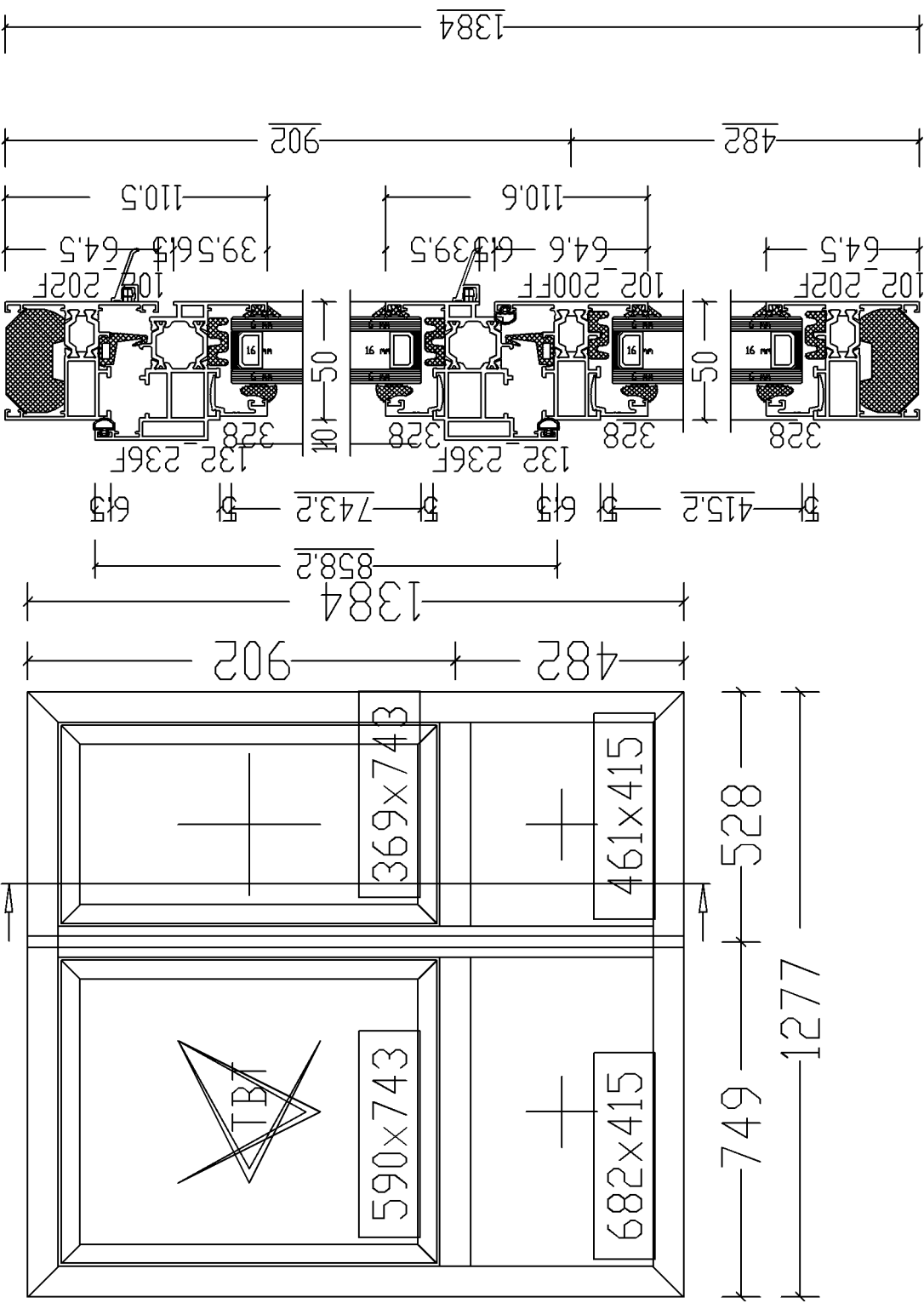
Pos. Type 7G - End Bay Mezz East & West, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



Pos. Type 7H - End Bay Mezz RH West, Quantity: 1  
Finish: /P STD RAL  
Job: Grenfell - 5-20H Mez

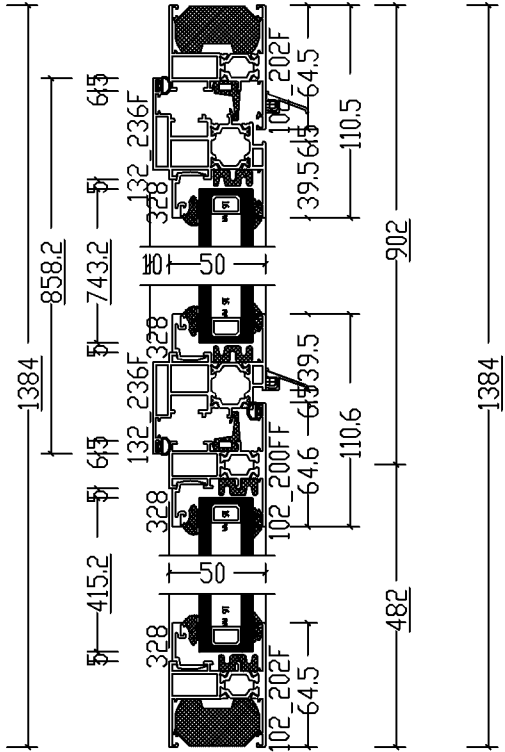
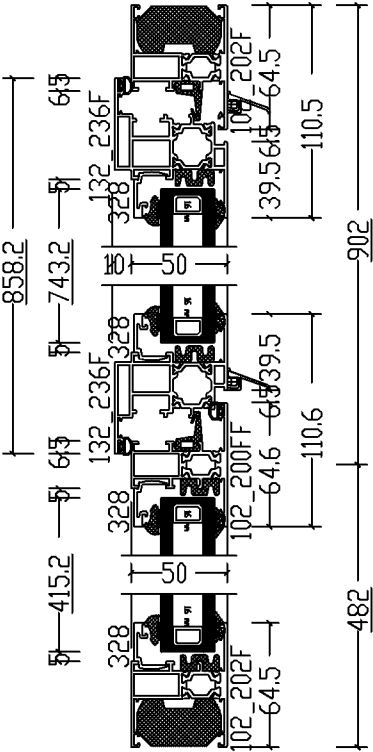
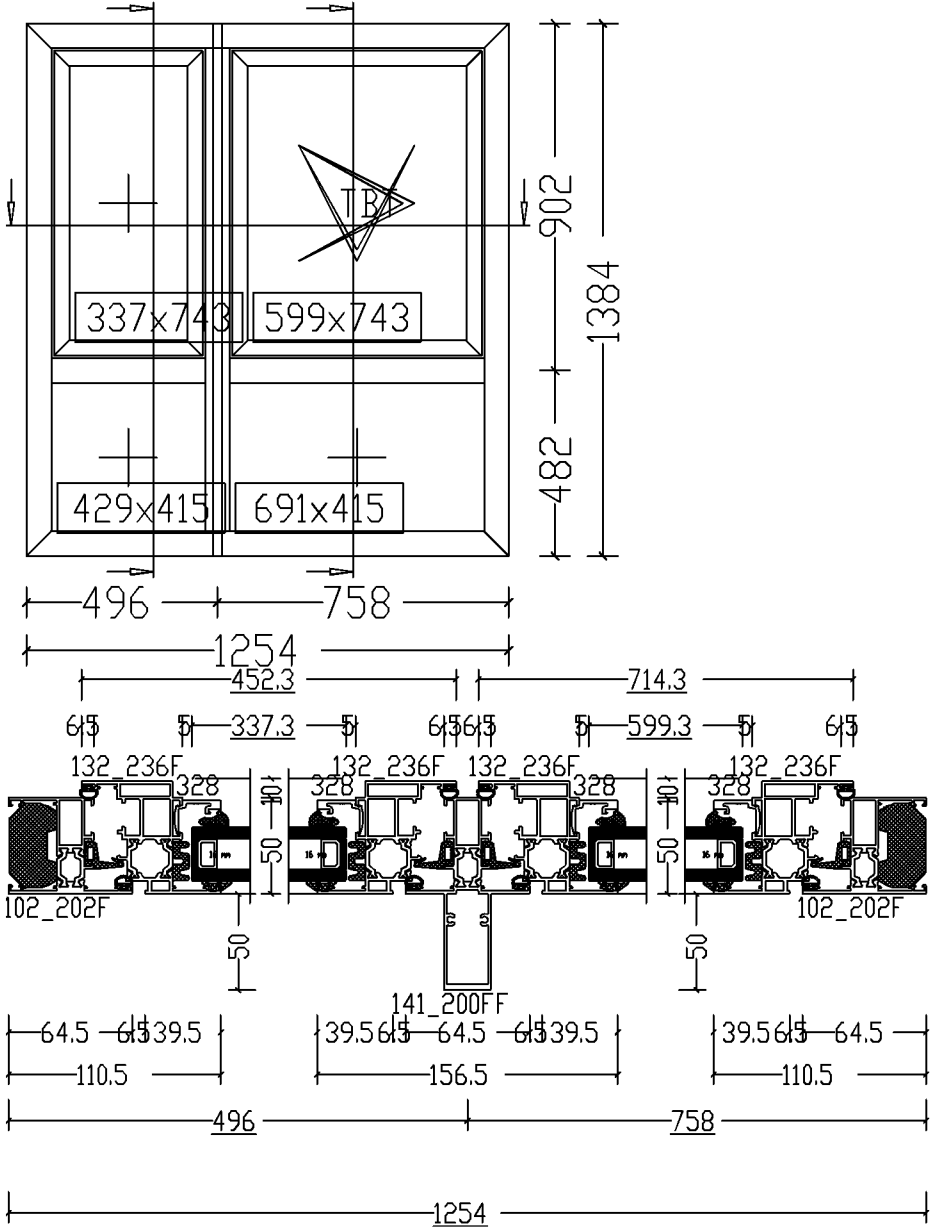


Job: Grenfell - 5-20H Mez

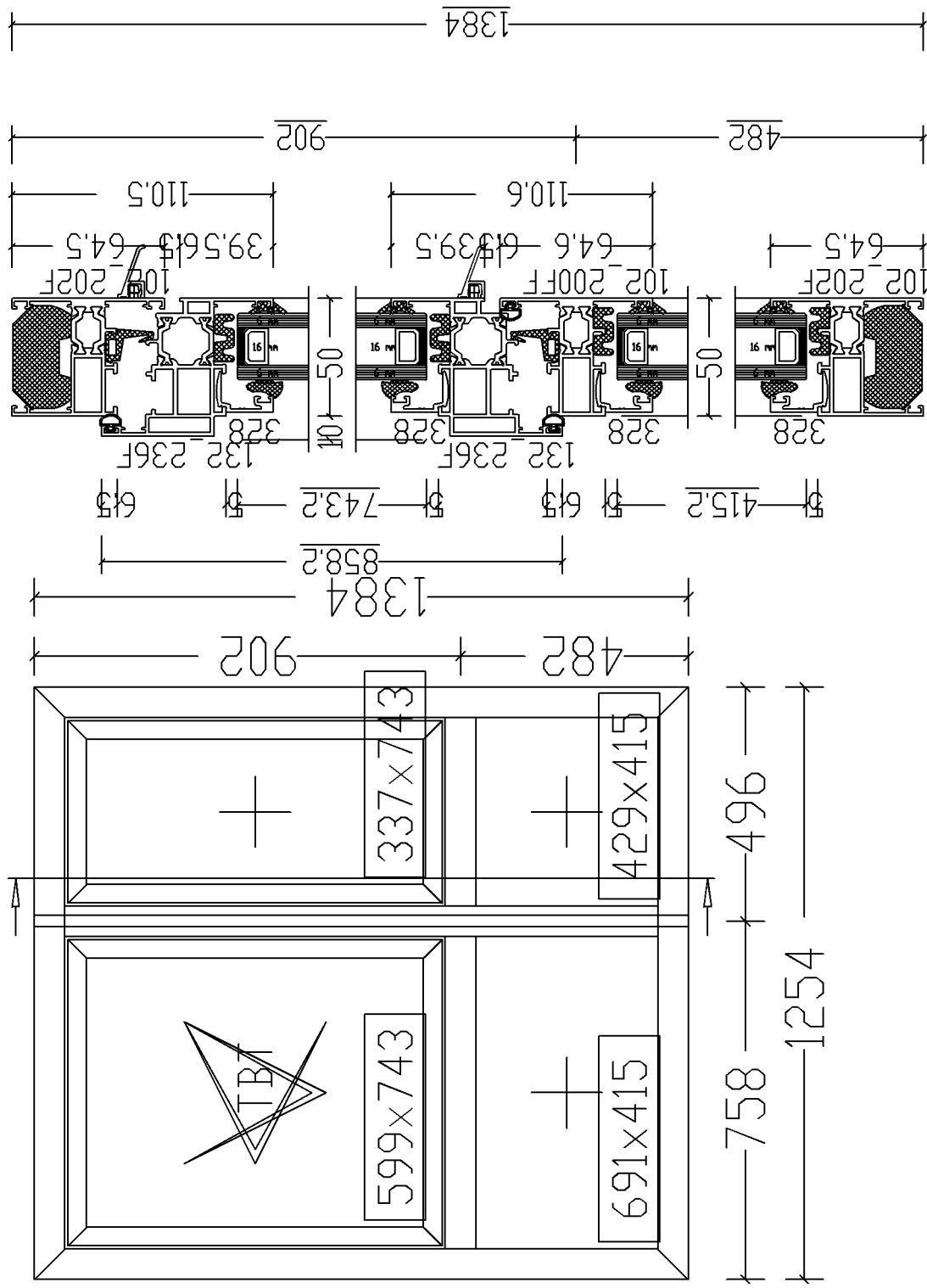




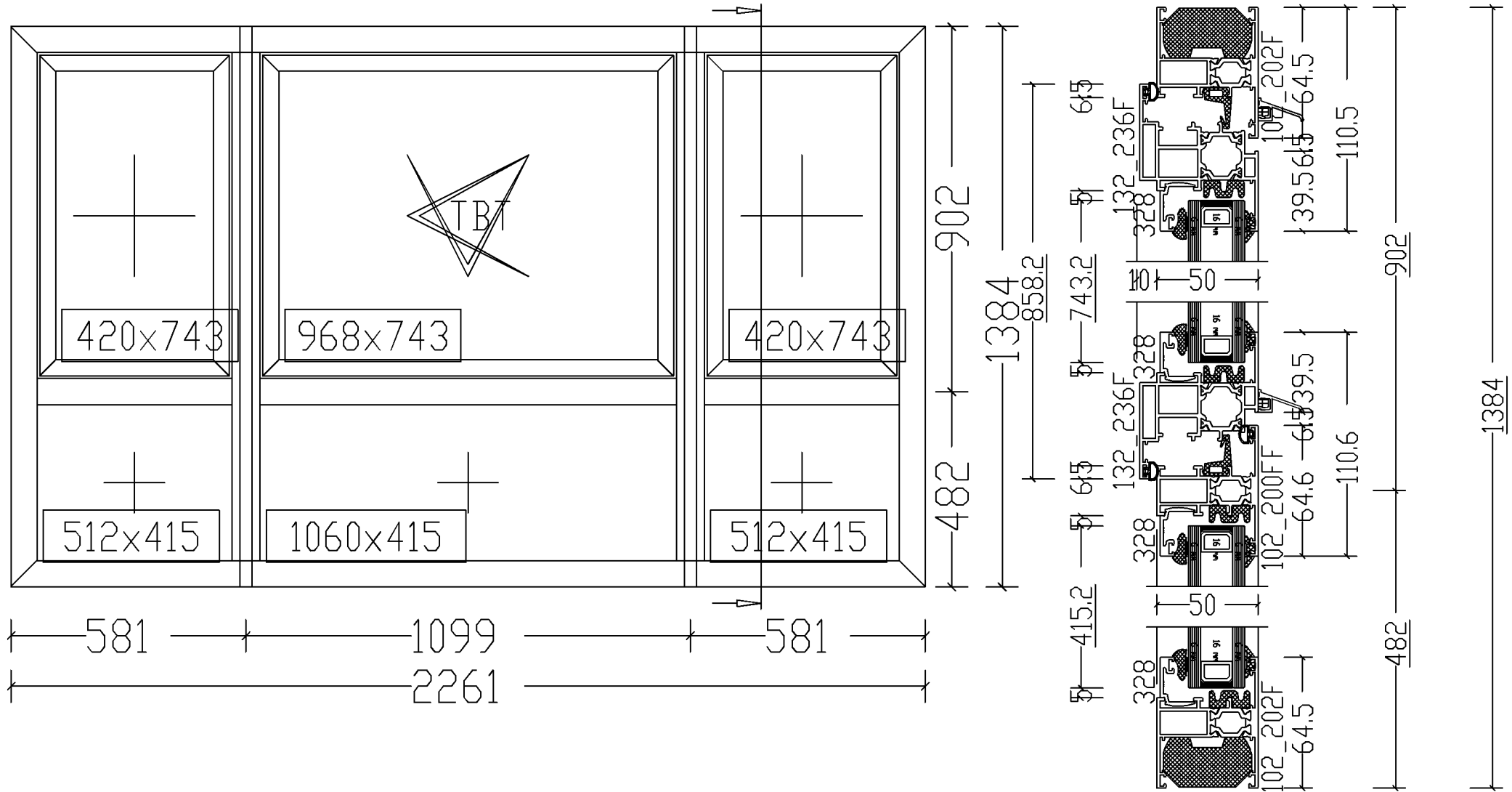
Pos. Type 7I - Mezz North & South, Quantity: 5  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



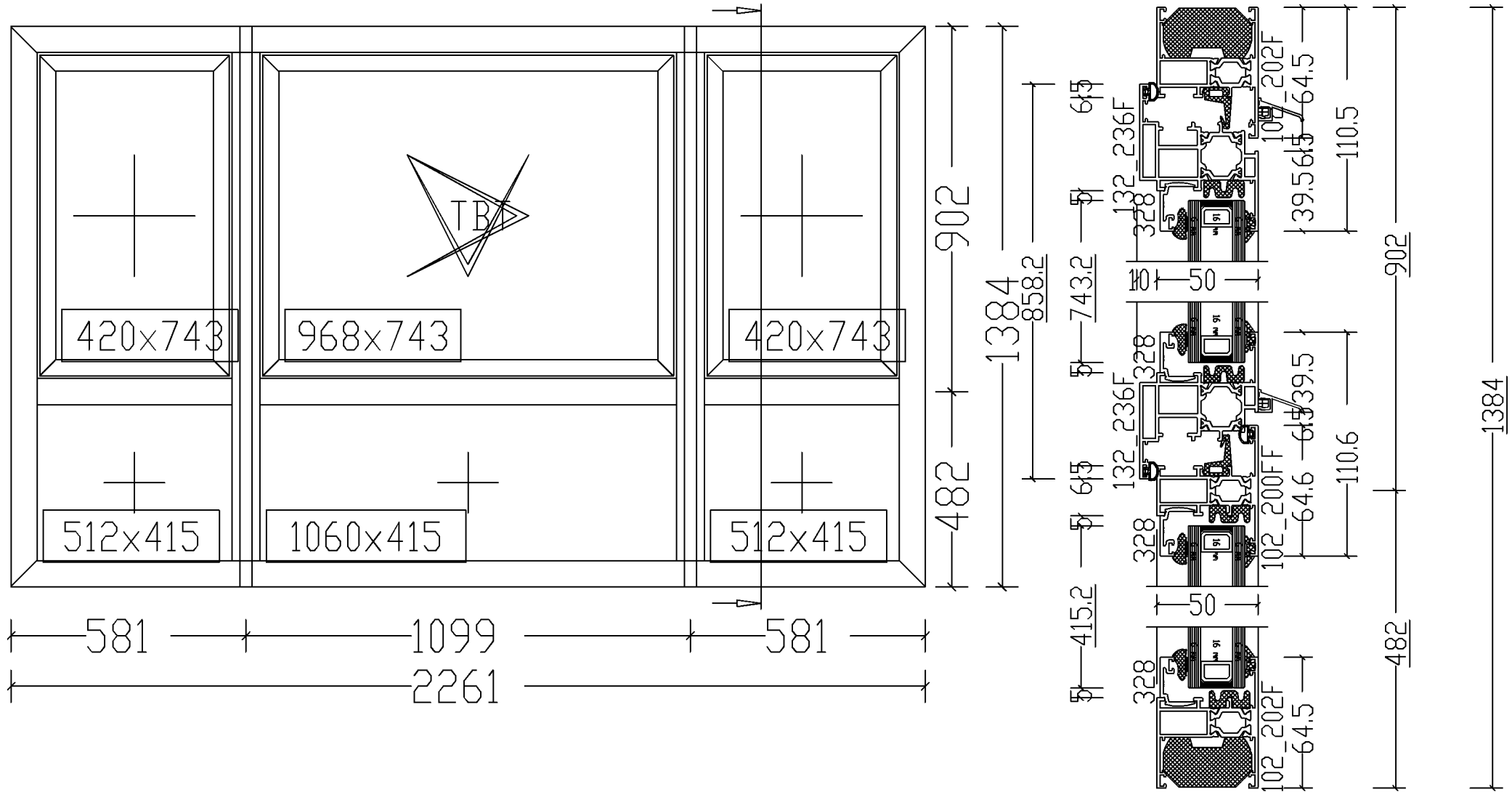
Pos. Type 7J - Mezz North & South, Quantity: 5  
Finish: /P STD RAL  
Job: Grenfell - 5-20H Mez



Pos. Type 9A - Mid Bay Mezz, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



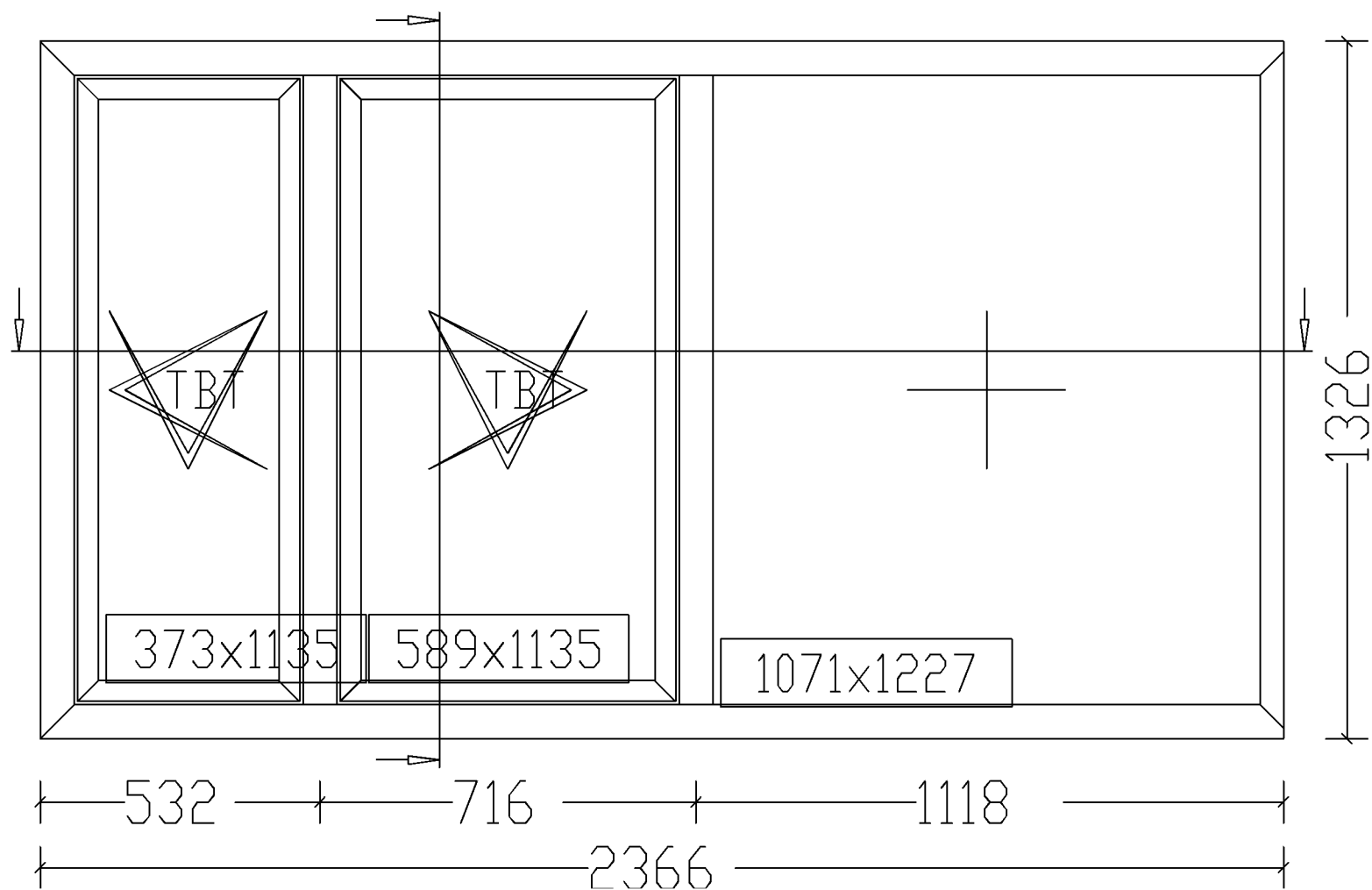
Pos. Type 9B - Mid Bay Mezz, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



Pos. Type 10A, Quantity: 20

Colour: /P STD RAL

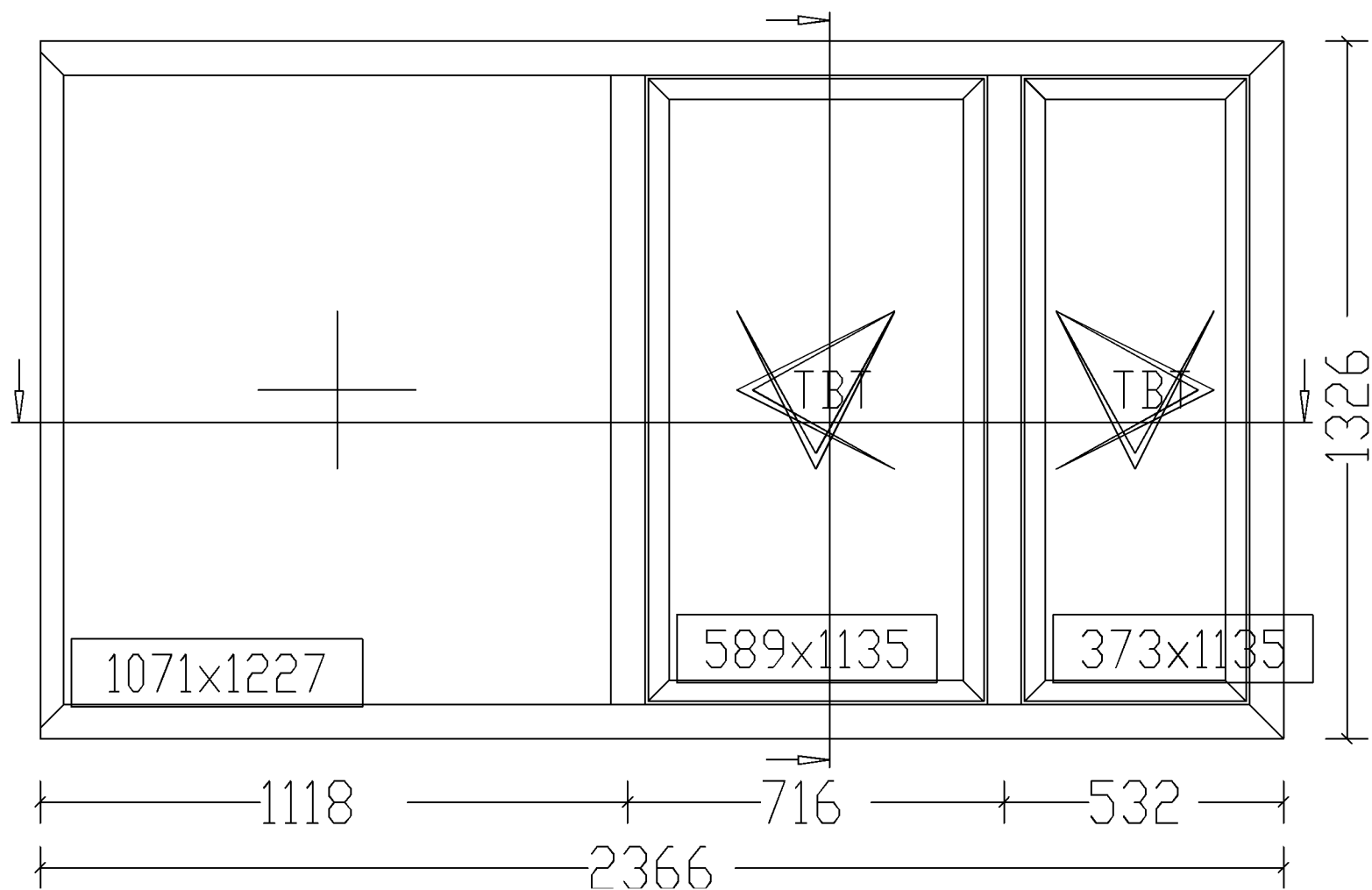
Job: GrenFell - 5-20Hi Sep 2014 - Order No 1



Pos. Type 10C, Quantity: 20

Colour: /P STD RAL

Job: GrenFell - 5-20Hi Sep 2014 - Order No 1

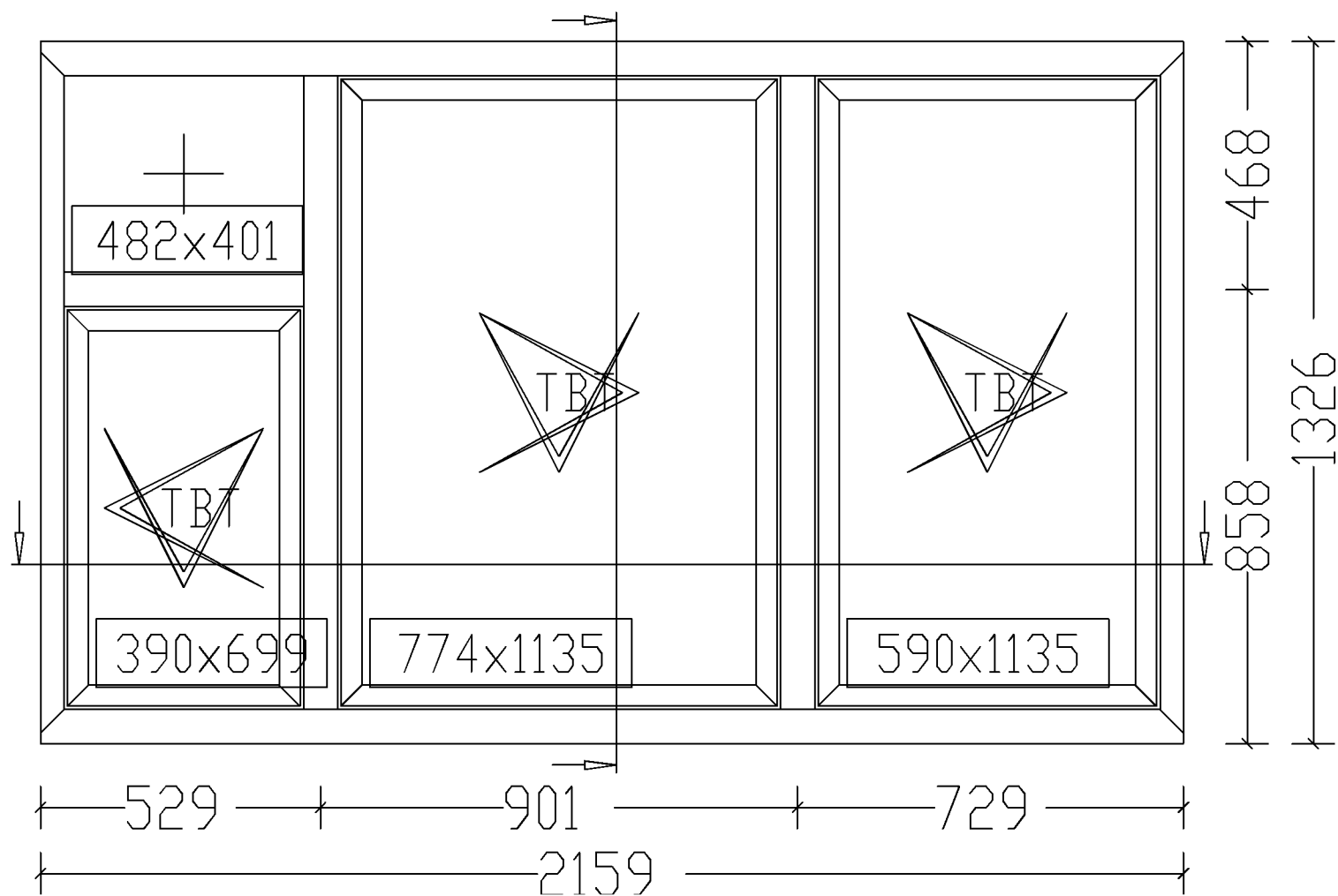




Pos. Type 10D, Quantity: 20

Colour: /P STD RAL

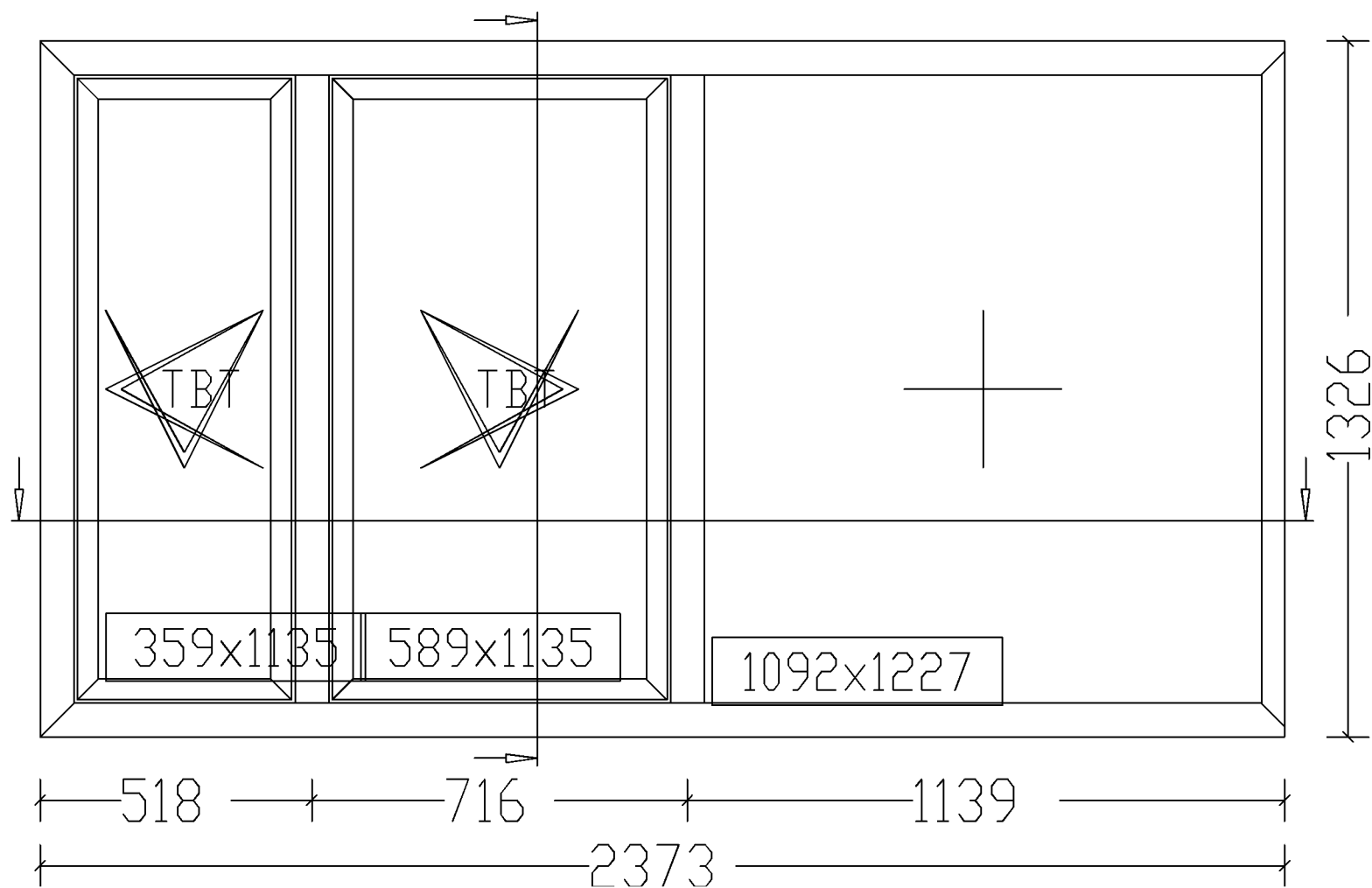
Job: GrenFell - 5-20Hi Sep 2014 - Order No 1



Pos. Type 11A, Quantity: 20

Colour: /P STD RAL

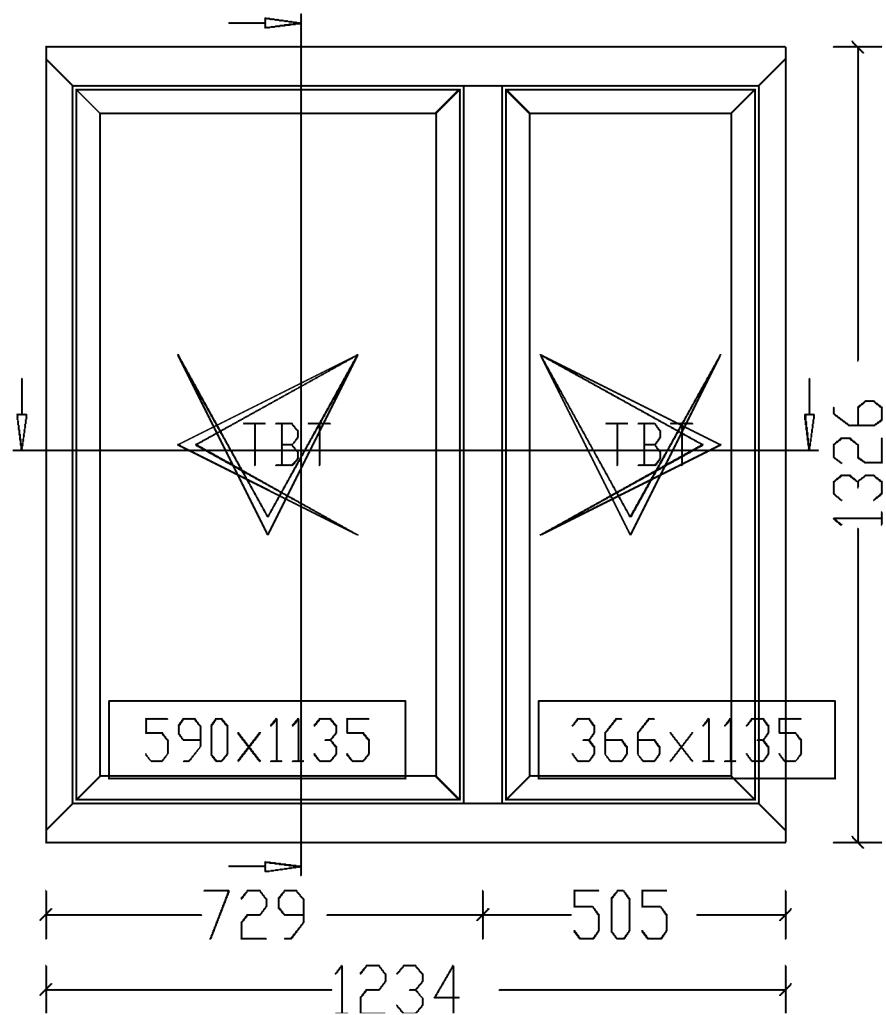
Job: GrenFell - 5-20Hi Sep 2014 - Order No 1



Pos. Type 11B, Quantity: 20

Colour: /P STD RAL

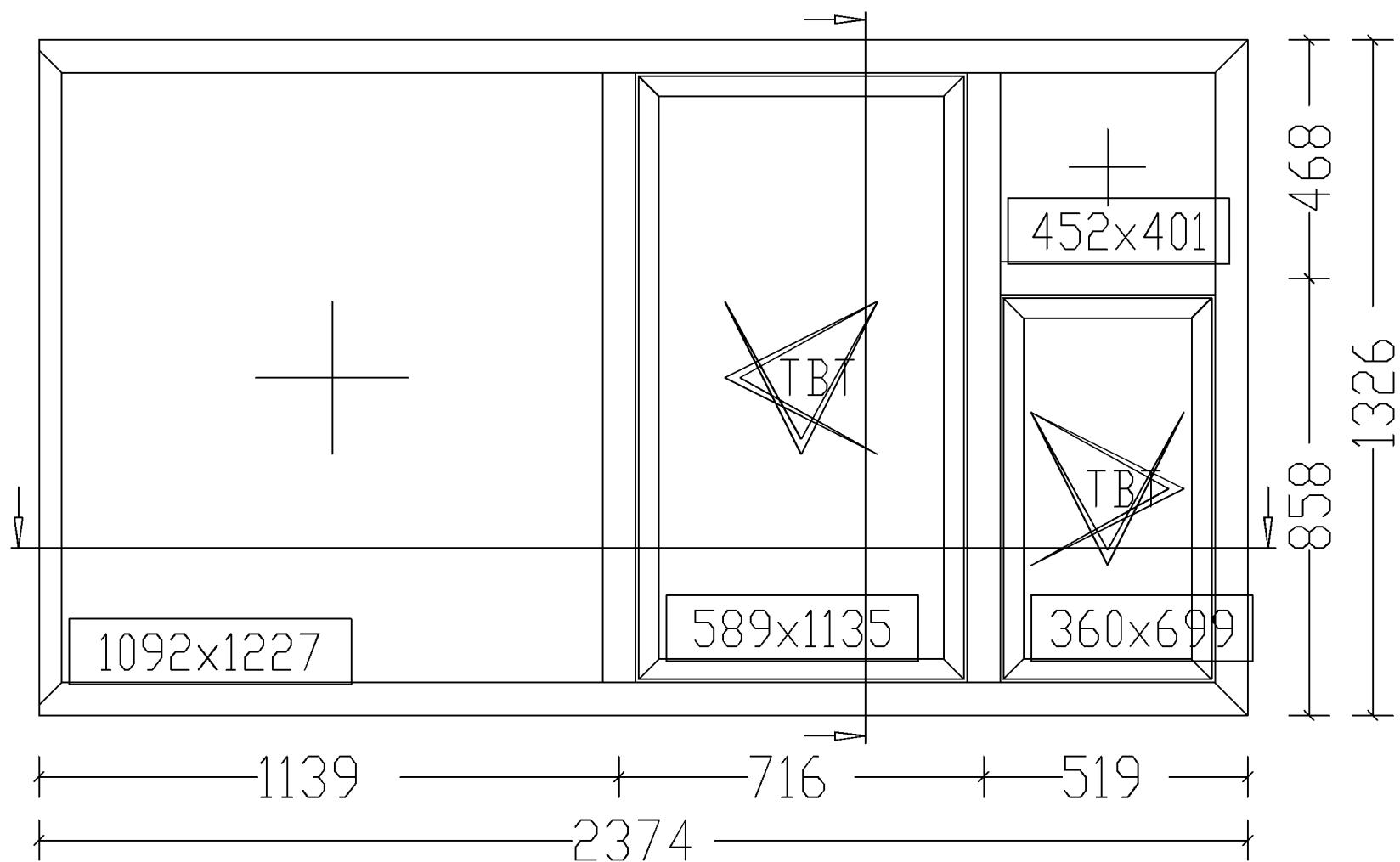
Job: GrenFell - 5-20Hi Sep 2014 - Order No 1



Pos. Type 11C, Quantity: 20

Colour: /P STD RAL

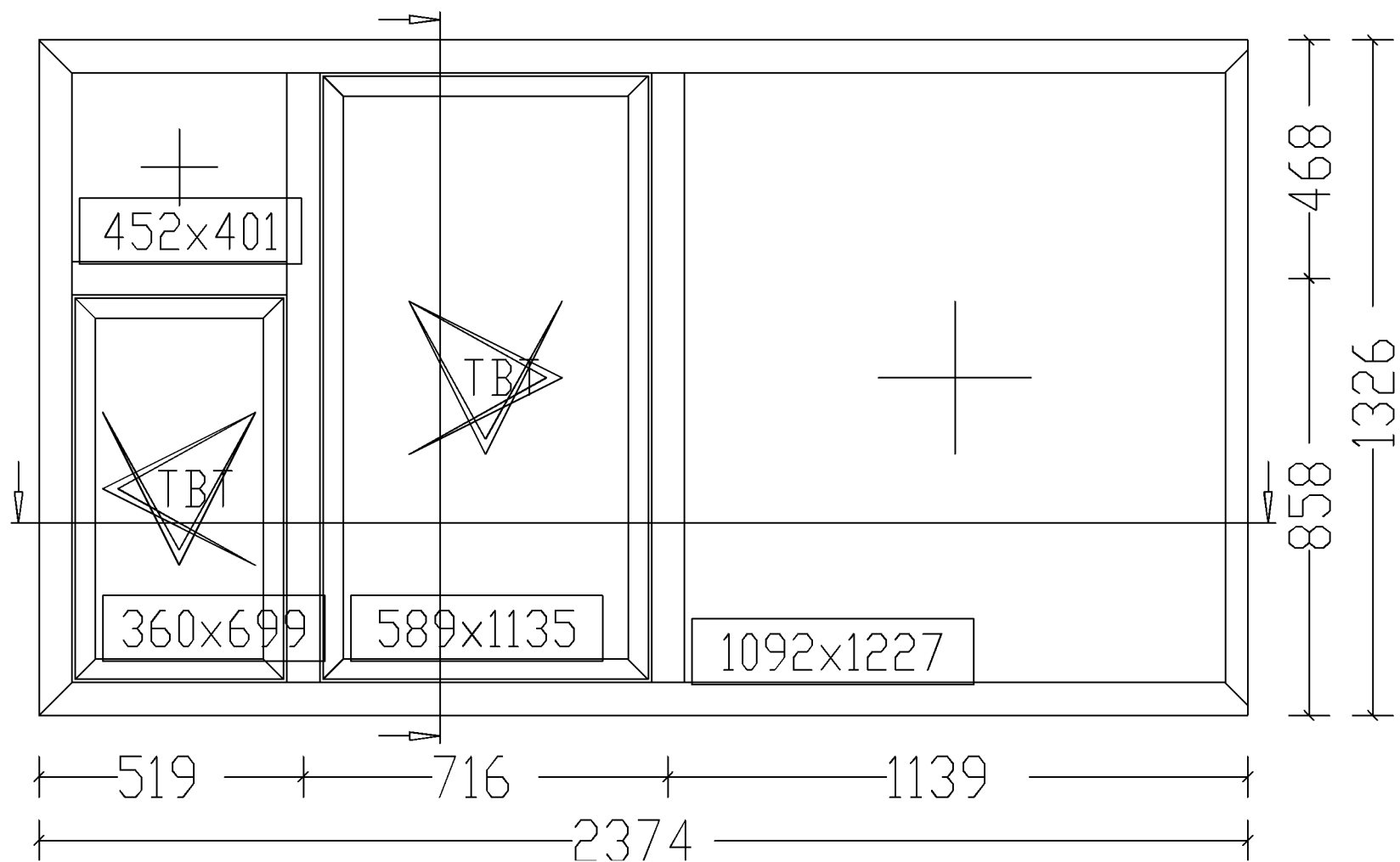
Job: GrenFell - 5-20Hi Sep 2014 - Order No 1



Pos. Type 11D, Quantity: 20

Colour: /P STD RAL

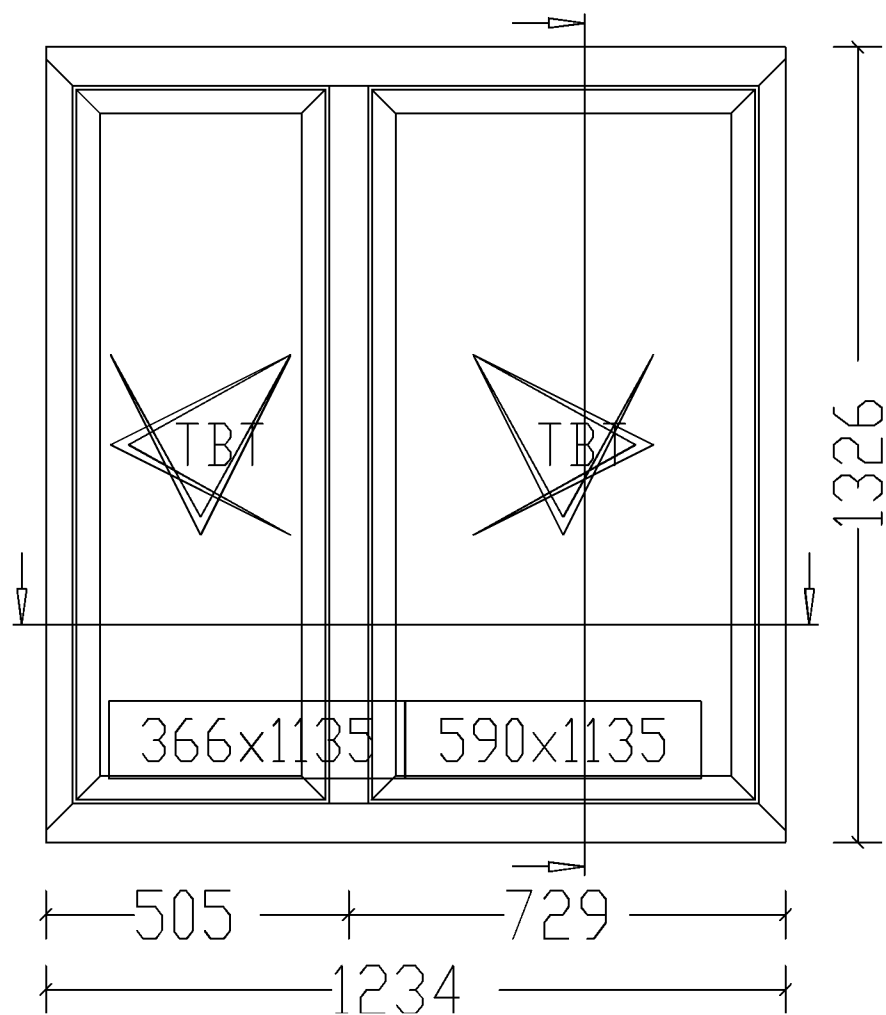
Job: GrenFell - 5-20Hi Sep 2014 - Order No 1



Pos. Type 11E, Quantity: 20

Colour: /P STD RAL

Job: GrenFell - 5-20Hi Sep 2014 - Order No 1

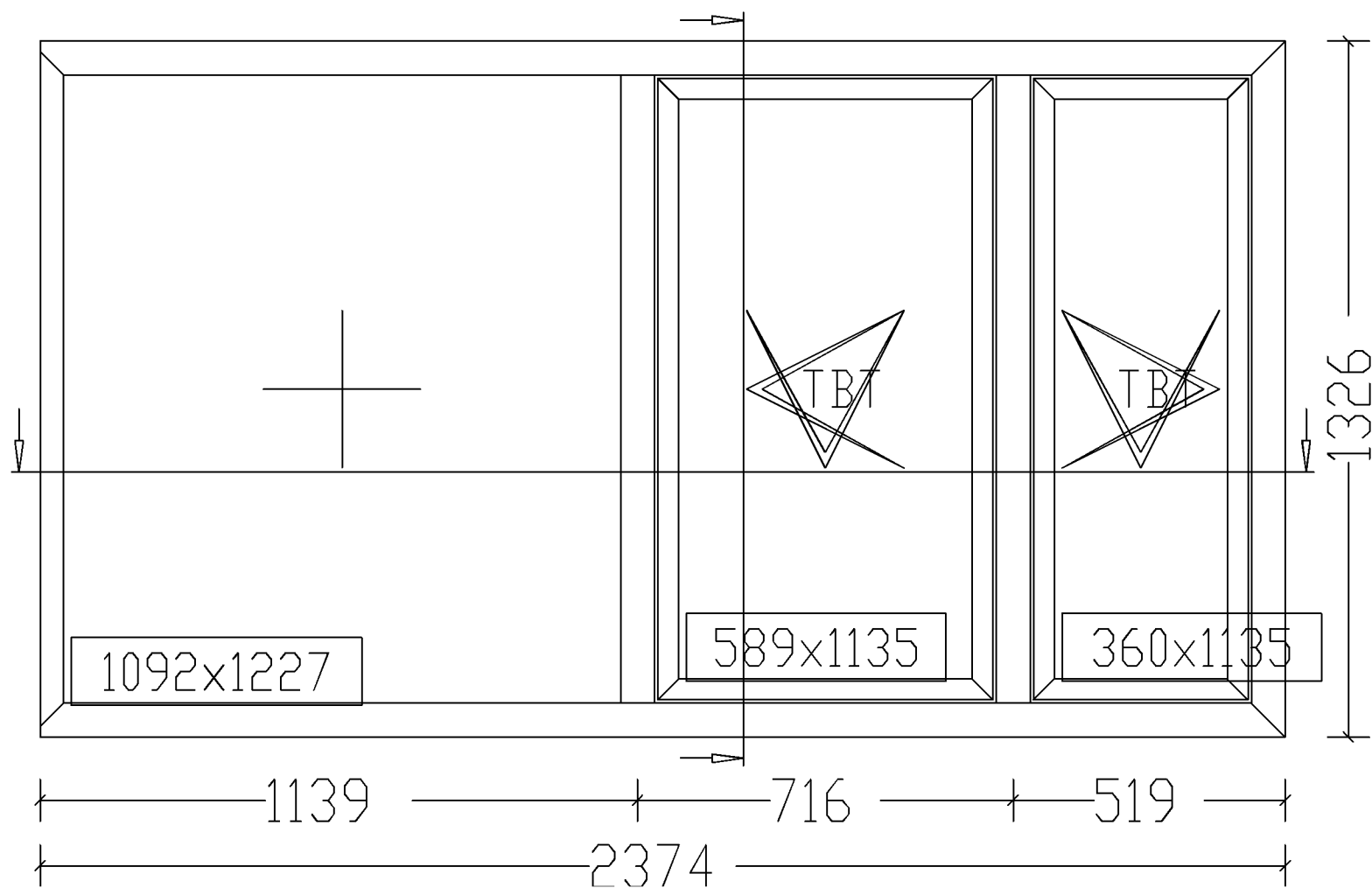




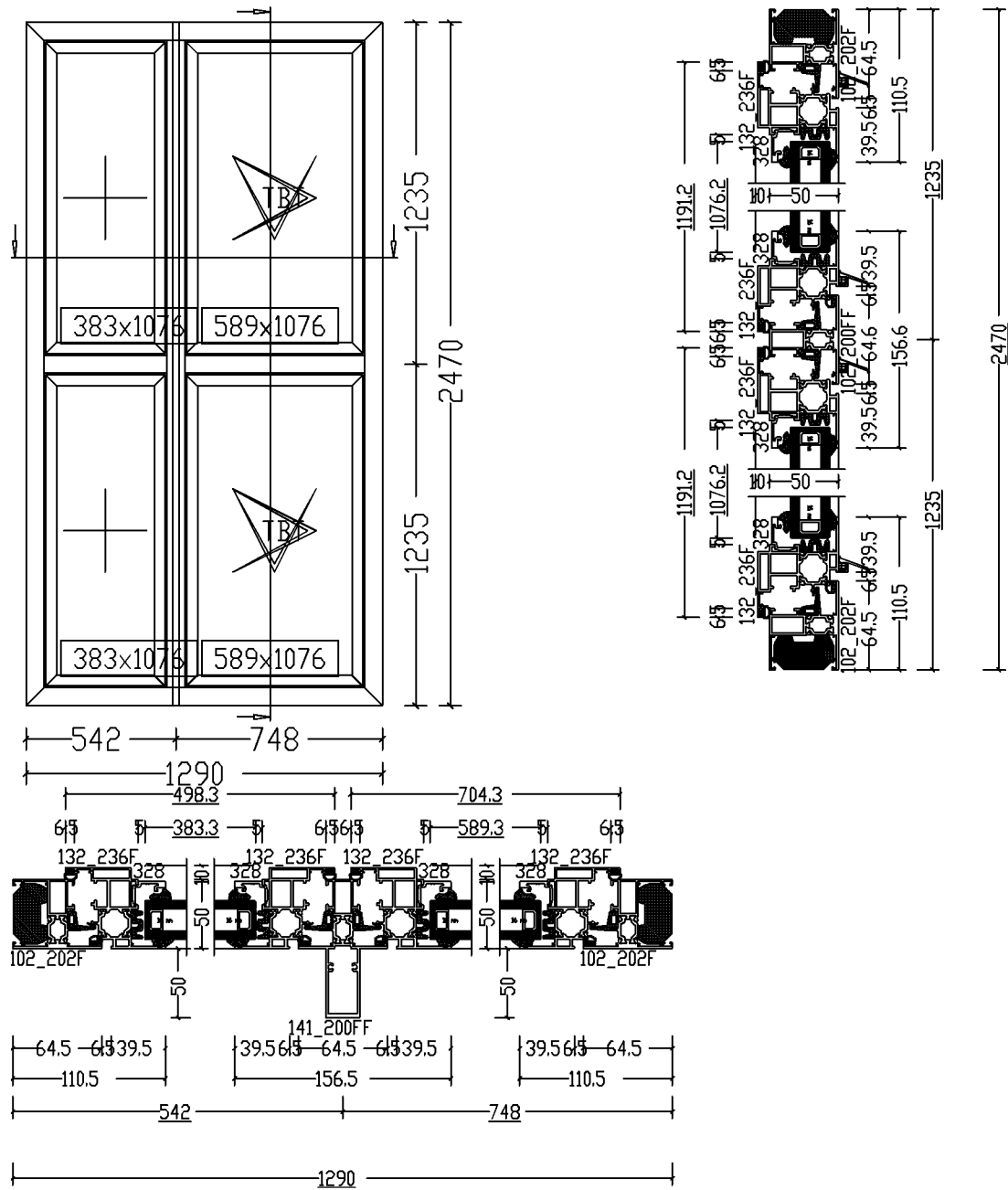
Pos. Type 11F, Quantity: 20

Colour: /P STD RAL

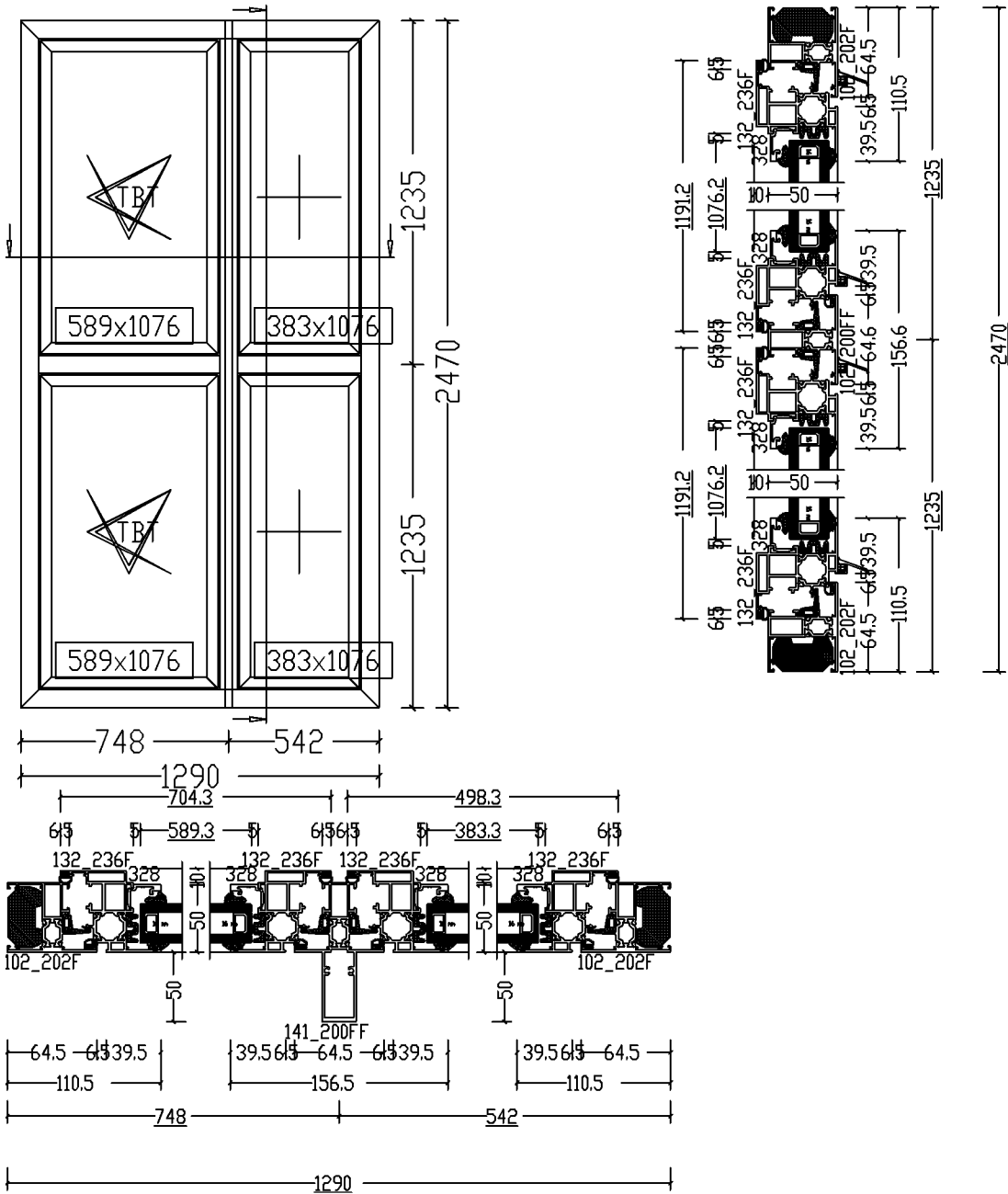
Job: GrenFell - 5-20Hi Sep 2014 - Order No 1



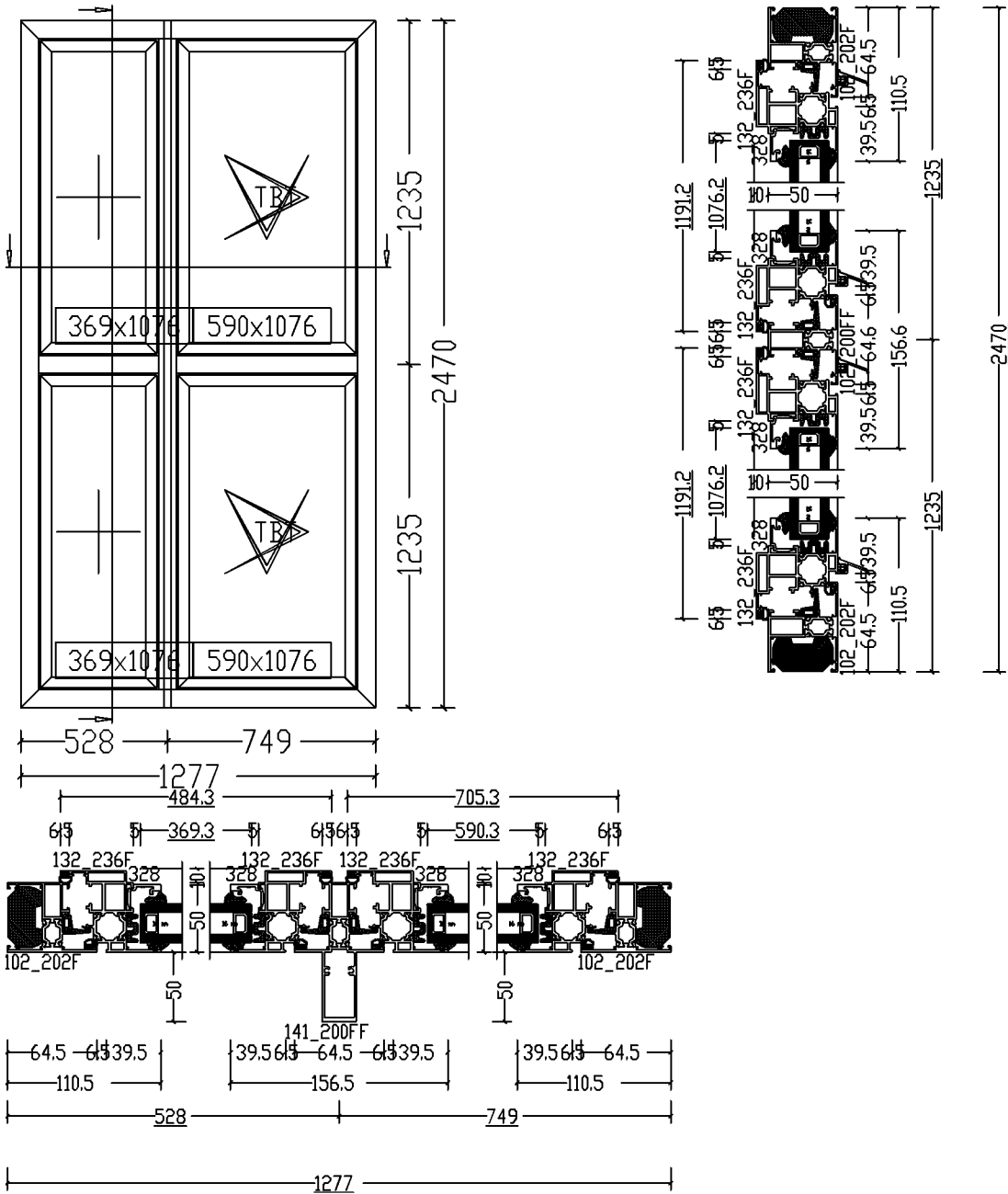
Job: GrenFell - 5-20H Mez



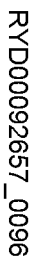
Pos. Mid Bay Walkway East & West Type 2D, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



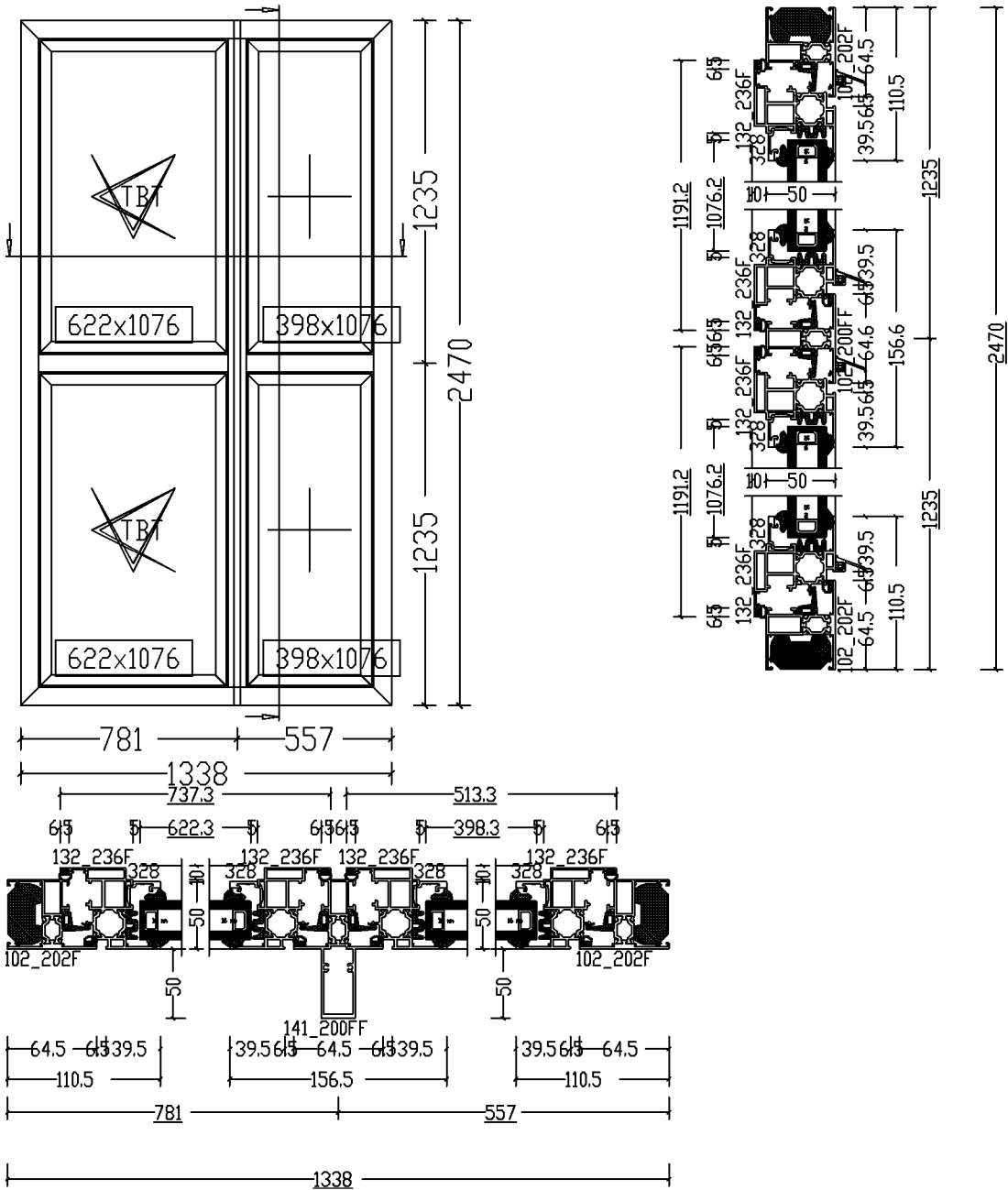
Pos. End Bay Walkway East & West Type 2E, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



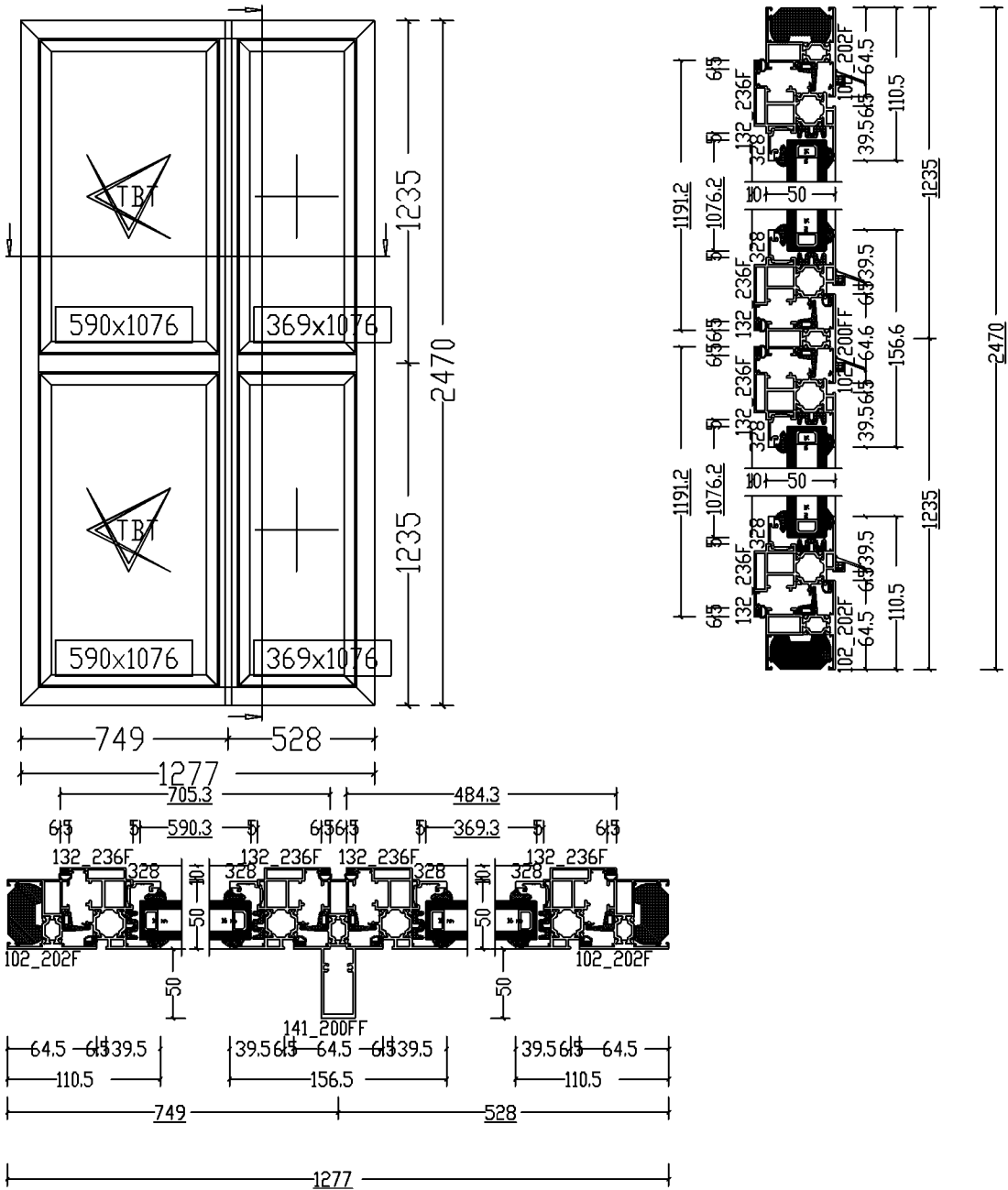
Job: GrenFell - 5-20H Mez



Pos. End Bay - Type 2F R/h East & L/h Wes, Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez

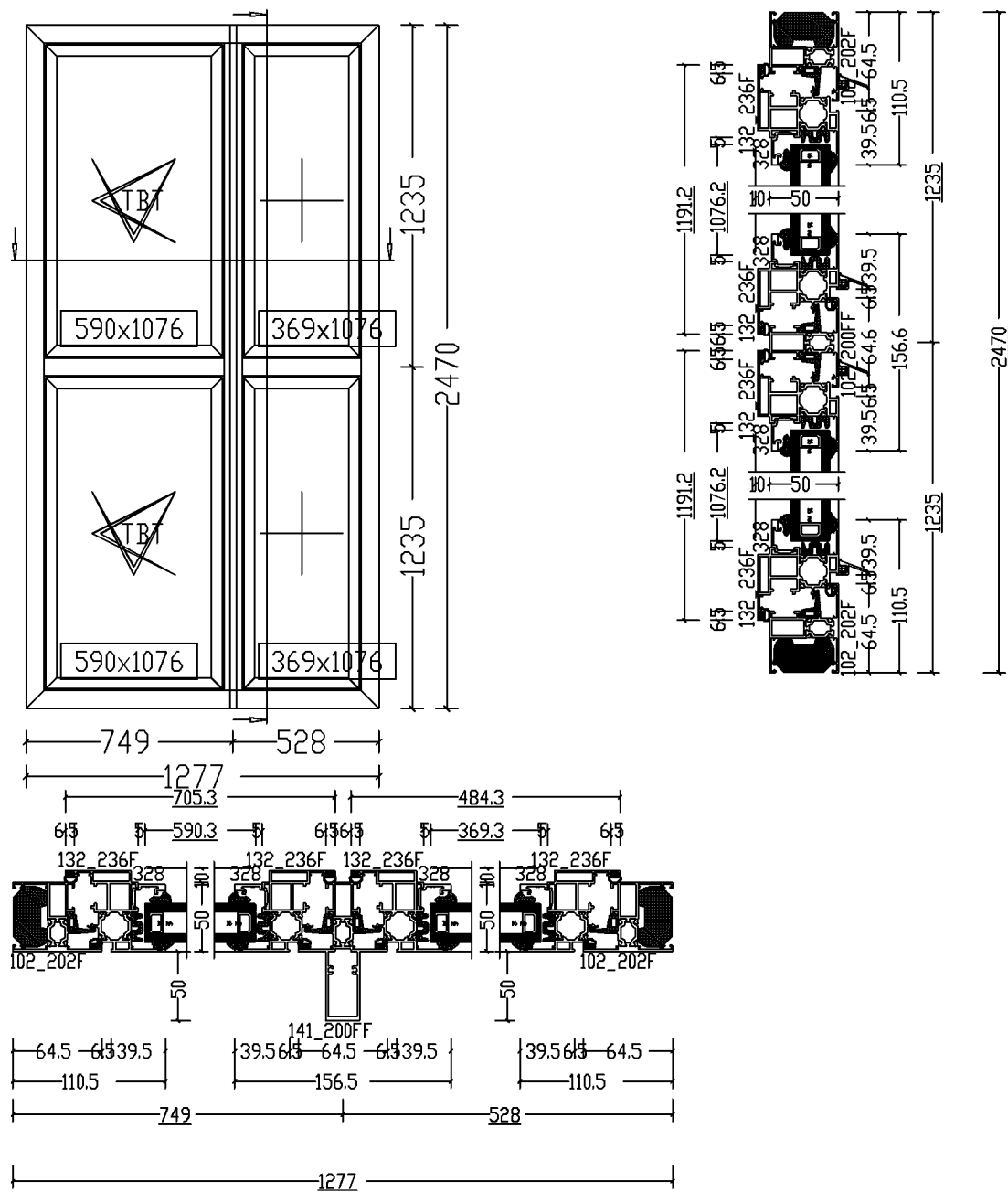


Pos. Type 2G - End Bay Walkway, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez

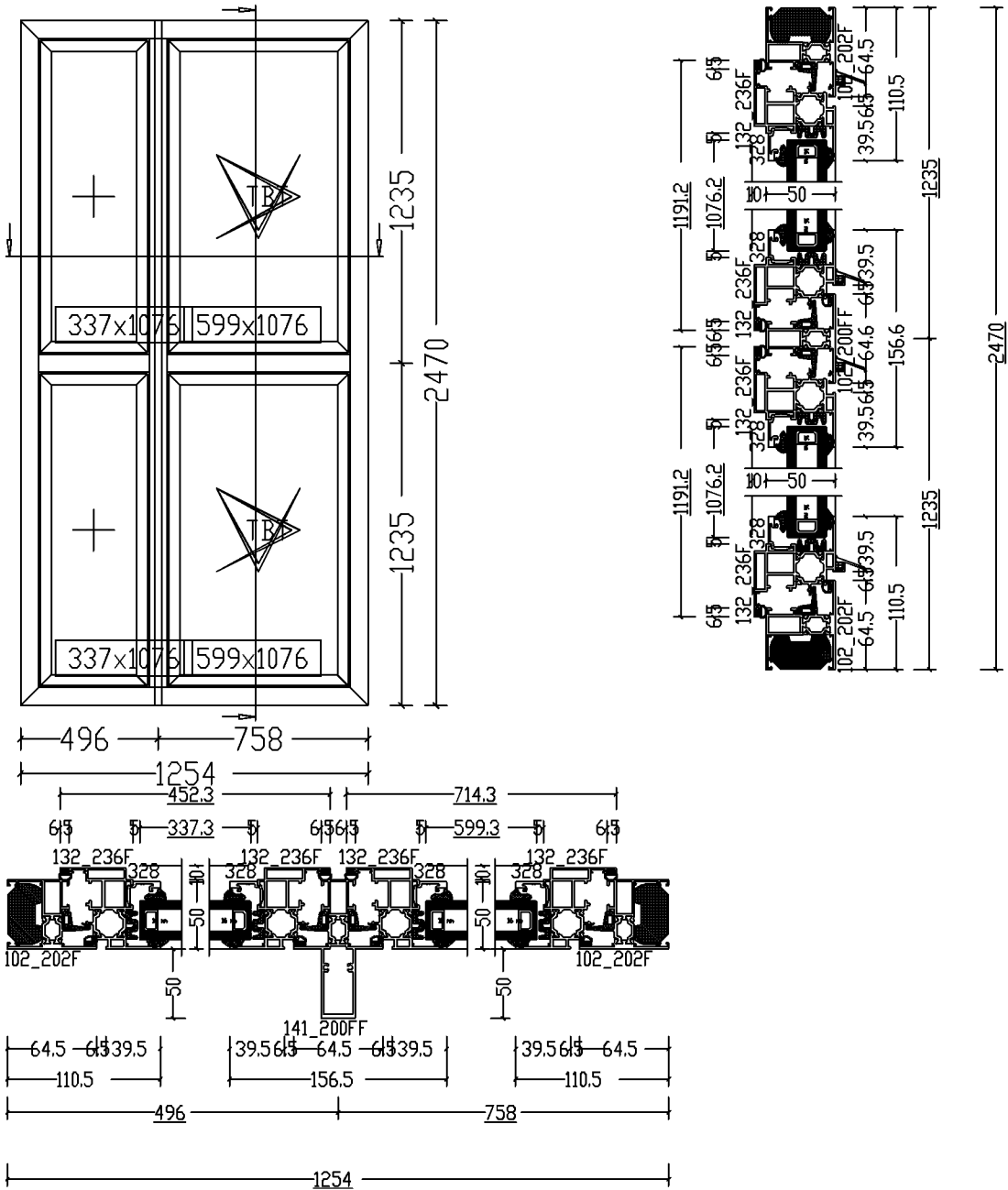




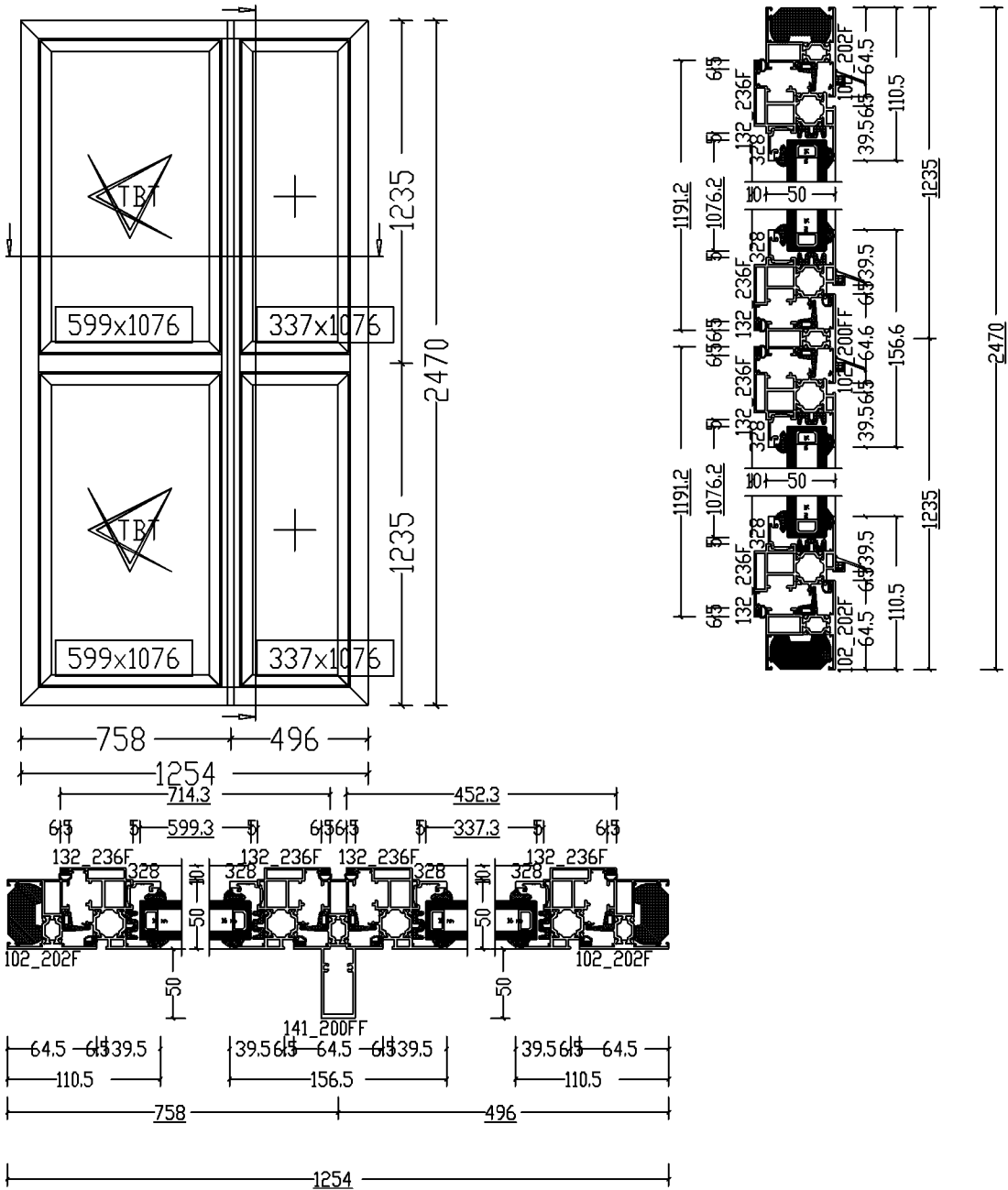
Job: GrenFell - 5-20H Mez



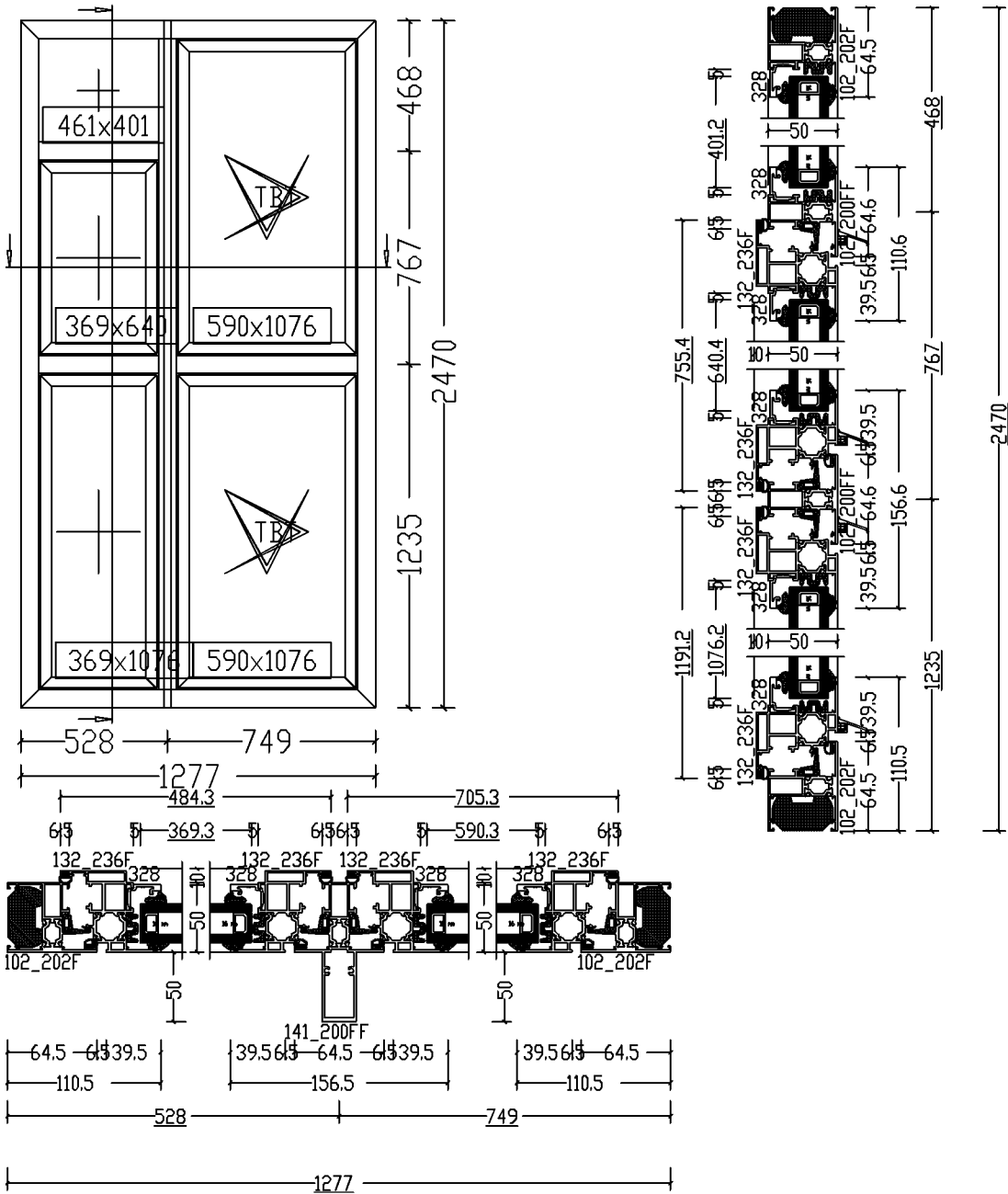
Pos. Type 2H, Quantity: 6  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



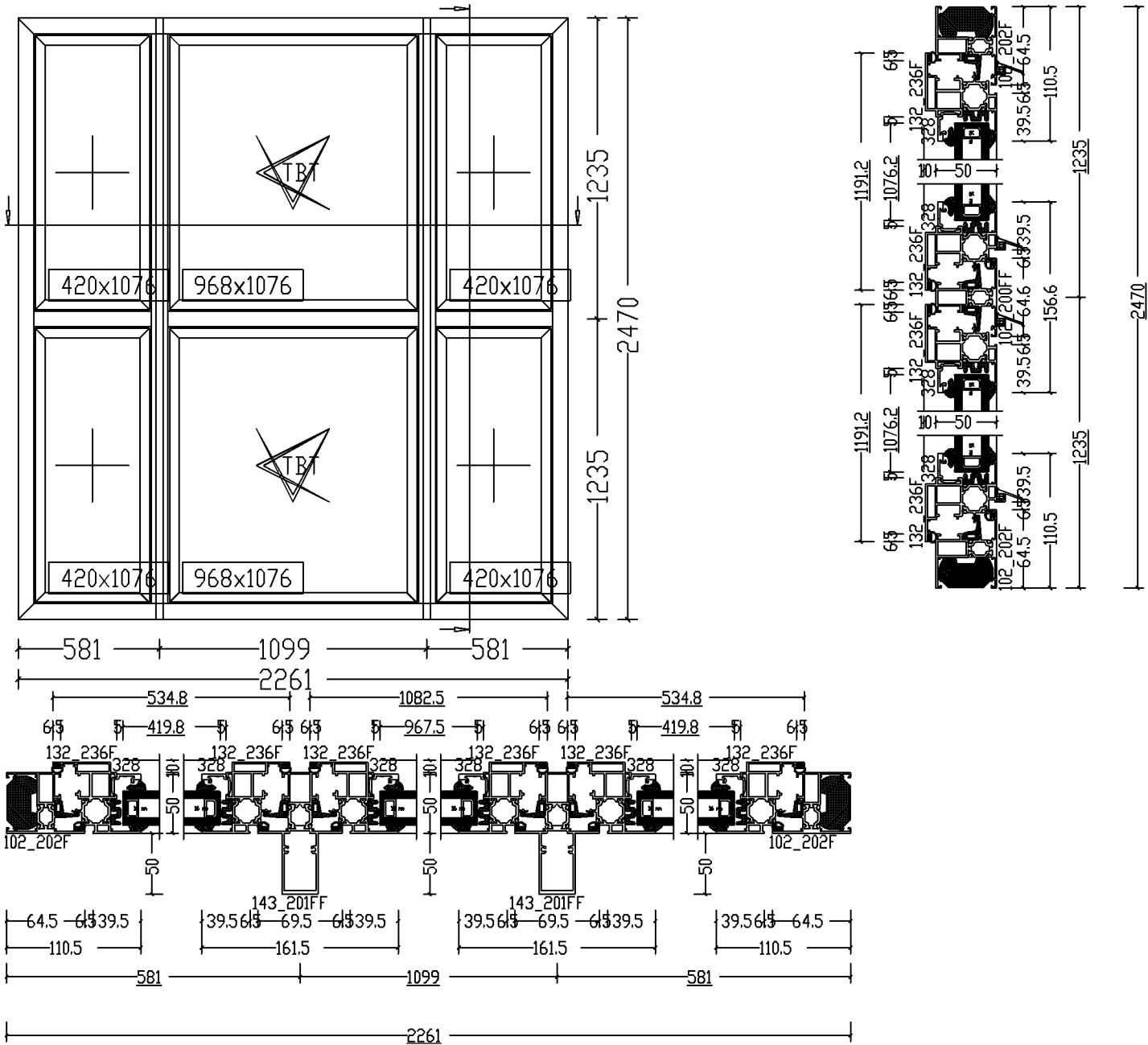
Pos. Type 2I, Quantity: 6  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



Pos. Type 2J - End Bay Walkway R/H West, Quantity: 1  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



Pos. Type 5 - Mid Bay LVL Walkway East & , Quantity: 2  
Finish: /P STD RAL  
Job: GrenFell - 5-20H Mez



## 4 – Curtain Wall System

Metal Technology System 17 Curtain Walling with Glazed in Metal Technology System 10 Commercial doors and glazed in Metal Technology System ## tilt turn opening windows.

Enclosed (in Appendix)

### a. System 17 Curtain Walling:

Brochure  
Maintenance Manual  
Glass Replacement Sizes

### b. System 10 Commercial Doors:

Brochure

### c. System ## (Glazed in windows):

Brochure

### d. Curtain Wall Glass Replacement Strategy

Note: glazing should only be handled and replaced by a competent person(s).

The curtain wall system installed at Grenfell Tower is a pressure plate and face cap design, which means removal and replacement does not require specialist materials or labour (eg. Mastic Pointers).

1. Identify the location and size of the glass unit that needs replacing by cross referencing the window type and glass size drawings (enclosed).
2. Refer to drawing C1059-100G to determine the specification of the glass to be replaced depending on location within the building.
3. When the replacement unit is ready, contractors should remove the unit being replaced by removing the face cap and pressure plates surrounding the unit. The pressure plates around the ground floor will be fixed with Securitorx screws and will require the relevant driver bit in order to remove the screws. Other areas will use a standard Philips head screw.
4. Temporary stitch plates should be used to retain units that are not being removed.
5. Depending on the size and location of the unit, differing equipment may be needed to assist in the exchange (see table below).

Size	Weight	Location	Equipment
$<1.4\text{m}^2$	$<50\text{kg}$	Ground floor	Hop up & hand suckers
$\geq 1.4\text{m}^2$	$50\text{kg}+$	Ground floor	Hop up, Vacuum lifter & Glass max
$<1.4\text{m}^2$	$<50\text{kg}$	Above ground floor	MEWP & hand suckers
$\geq 1.4\text{m}^2$	$50\text{kg}+$	Above ground floor	MEWP, vacuum lifter & Spider Crane



Fig. 3



Fig. 4



Fig. 5



Fig. 6

*Note: Equipment shown are suggestions only. A competent person should survey the area and task to select the correct equipment.*



Fig. 7





CHAIN  
ACTUATOR

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

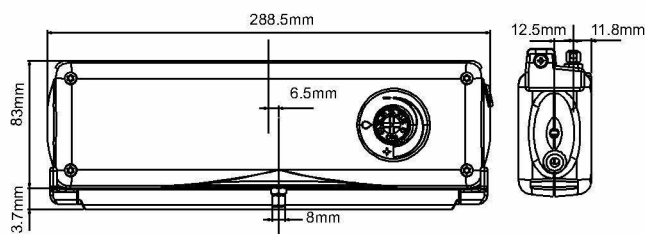
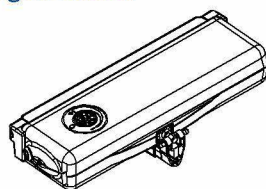
VENT ENGINEERING

VENT ENGINEERING

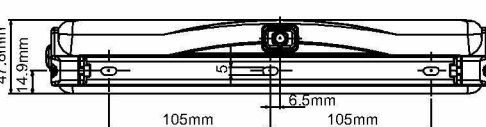
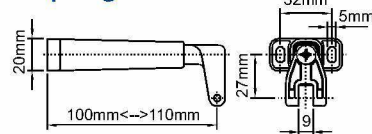


## DIMENSIONS, FIXINGS AND BRACKETS

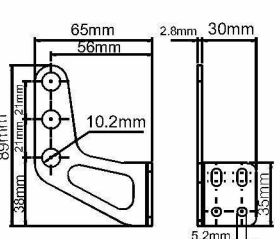
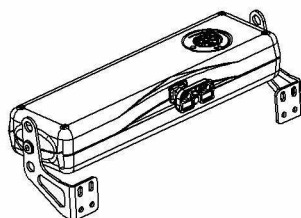
long bar bracket



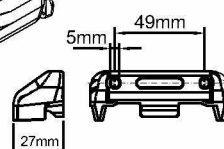
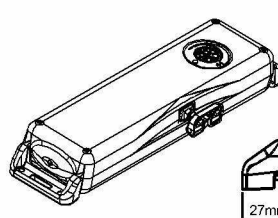
internal opening bracket



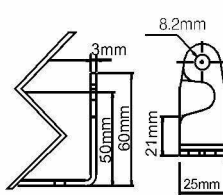
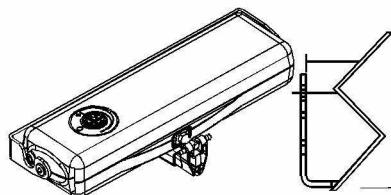
large swivel bracket



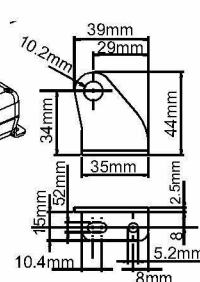
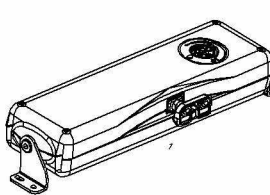
u-shape bracket



long bar swivel bracket



swivel bracket



# ACK4

**300N**

**100-400**mm  
adjustable

## TECHNICAL SPECIFICATIONS

**UPGRADE**  
available

- Can be powder coated to any RAL colour

	<b>ACK4 230v</b>	<b>ACK4 24v</b>
<b>Voltage Supply</b>	230v	24v
<b>Thrust Force</b>	350N	350N
<b>Traction Force</b>	350N	350N
<b>Stroke</b>	100 -400mm adjustable	100-400mm adjustable
<b>Absorbed Current</b>	0.32 amps	2.1 amps
<b>Time Rating</b>	S2 2mins	S2 3mins
<b>Limit Stop</b>	electronic	electronic
<b>Safety Stop</b>	electronic	electronic
<b>Wiring</b>	3 core	2 core
<b>Speed</b>	~ 28mm/s	~ 18mm/s
<b>Double Insulated</b>	yes	no
<b>Protection Class</b>	IP55	IP55
<b>Parallel Connection Option</b>	ACK4-USA2/3	ACK4-USA2/3
<b>Weight</b>	1.9kg	1.9kg
<b>Colours Available</b>	white / black / silver	white / black / silver

## PRODUCT SUMMARY

- Adjustment of stroke in 7 positions from 100 to 400mm
- Central exit of double link chain.
- Double insulated electrics
- Simple swivel back planes, fast and suitable for windows of any type and size (not included in the packaging).
- Buzzer to indicate wrong installation.
- High protection degree IP 55.
- Collection and synchronisation possibility for 2 or 3 actuators on the same window (USA2 or USA3 control unit).
- Available in black, silver and white.
- The actuator complies with **CE** regulations CEE EN 60335-1, 89/336 CEE (electromagnetic compatibility).

## PRODUCT CODES

PRODUCT CODE	PRODUCT DESCRIPTION
AT-ACK-42	ACK4 230v
AT-ACK-44	ACK4 24v

BRACKET CODE	BRACKET DESCRIPTION
BRAT-L	ACK4 long bracket
BRAT-LS	ACK4 large swivel bracket
BRAT-S	ACK4 small swivel brackets
BRAT-U	ACK4 'u' shaped brackets



tel [REDACTED] fax [REDACTED]  
email [info@vent.co.uk](mailto:info@vent.co.uk) website [www.vent.co.uk](http://www.vent.co.uk)

**Units 16c & 16f, Chalwyn Industrial Estate, Poole BH12 4PE**



.....  
WINDOWS, DOORS &  
CURTAIN WALLING  
.....

# Recommendations for Maintenance

.....

**Finishes, Hardware & Gaskets**







# Recommendations for Maintenance

**Metal Technology Ltd. are keen to ensure that their products offer the desired aesthetics and function properly for many years. In order to achieve this consideration has to be given to the regular maintenance of both the surface finishes and the moving parts of the window.**

**This guide is intended to assist all personnel concerned with the maintenance of the building, in designing a recommended programme of maintenance in order to give the building's windows maximum life and ensure that product warranties are not invalidated.**

**Where specific information on products is not available in this document, please contact Metal Technology.**

**If required the project fabricator may provide an annual maintenance service or alternatively a specialist maintenance company may be employed to carry out the work.**

## **THE CLEANING OF ALUMINIUM WINDOWS**

### **Introduction**

The strength and weather resistance of aluminium windows are not seriously impaired by oxidisation or dirt deposits. When exposed to air the untreated surface of aluminium combines with oxygen to form a tough, protective oxide coating. Aluminium windows are supplied with anodised or painted finishes to decorate and protect the surface quality of the product. Cleaning is only necessary for appearance and, particularly in the case of sliding windows, for the continued smooth operation of the window.

### **Recommendations for the routine cleaning of Aluminium windows**

#### **Finishes**

##### **ANODISED FINISHES**

Anodising, an electrochemical process, provides a uniform oxide coating on the surface of the aluminium. The resistance of the surface to natural weathering is substantially improved and the texture preserved. The anodic coating may be transparent, integrally coloured, pigmented, or dyed and the metal's natural lustre will be visible.

##### **PAINT FINISHES**

Decorative and protective organic coatings of various kinds are applied to the surface of aluminium. In the factory these coatings are applied to surfaces which have been appropriately pre-treated.

### **Determining the finish**

Before cleaning it is important to determine what finish has been applied to the aluminium. Normally the supplier should be consulted but if this information is not available or if the aluminium has been finished on site and the supplier has no knowledge of this the following tests are suggested for selection of the finish.

#### **FOR ANODISED ALUMINIUM**

A needle may be used to test the hardness of the surface. Anodic coatings are hard and glossy



# Recommendations for Maintenance

and considerable pressure will be necessary to penetrate them. The scratch will be wider than the needle point and the noise made by the operation will be audible. Sometimes the anodic surface is treated with organic coatings and these can be detected by scratching a small area of the surface with a knife edge.

## FOR PAINTED ALUMINIUM

All paints, even the hardest stoved surfaces, are soft compared with the surface of the metal. The plastic, gum-like texture can be detected with the point of a needle.

## Selection of cleaner

Non-alkaline detergent and warm water may be safely applied to any of the aluminium finishes using a soft cloth or sponge. If there is any doubt, a few moments testing the cleaner on an unobtrusive area of the aluminium is advised. This cleaner should be in the same concentration and be applied in the manner intended for the job. It should remain in the place for some time so that it dries, after which the area should be inspected for stains or for softening or dissolution of organic finishes.

Steel wool, strong acids and alkalis, and abrasive cleaners should never be used.

## Frequency of cleaning

The accumulation of atmospheric grime makes it necessary to clean the surface of aluminium regularly to maintain its appearance. In polluted industrial, marine or large city locations it is recommended that cleaning be carried out at least once every three months and in cleaner rural locations at least once every six months.

Cleaning of the metal work can usually be conveniently carried out when the window glass is cleaned.

The frequency of cleaning will also depend upon the standard of appearance that is required. It may be, for example, that windows that can be closely inspected at ground level or immediately higher will need to be cleaned more frequently than windows at higher levels.

Providing this recommended frequency is maintained it should never be necessary to use cleaners which are more aggressive than a non-alkaline detergent in warm water in concentrations which can be handled with bare hands. After application these cleaners should be removed with clear water and the area wiped dry.

It is wrong to assume that if cleaning is carried out less frequently than recommended, the surface of aluminium can be restored with the occasional use of more aggressive cleaners.

Such cleaners could damage the finish, the metal, the glazing and sealing systems, and even the glass. Therefore such practice must be avoided.

## Gaskets

The correct method for cleaning glazing gaskets and seals is to use warm water with a mild detergent. Abrasive compounds which may affect the outer surface of the seal should be avoided, as any deterioration of the outer surface enables dirt and grime to collect in the porosity of the surface.

The use of solvents is not recommended .

## Maintenance of sealants and gaskets

### WET APPLIED SEALS USED FOR THE PERIMETER JOINTS

Generally the mastics and sealants available have a shorter life than that of the windows and will therefore require periodic inspection. Where the seal has deteriorated it should be raked out and replaced using either the same type of material as before, or an alternative one which is compatible with any remaining material. Advice on suitable materials should be obtained from a sealant manufacturer if the original material is unknown, or if it is intended to use a different material than the original.

Where sealants appear to have failed prematurely (within 5 years) the advice of a sealant manufacturer should be sought since this may be due to incorrect design/selection of sealant.

## MAINTENANCE OF GLAZING GASKETS AND WEATHER SEALS

Glazing gaskets and weather seals should be inspected annually and where damage to the gaskets or shrinkage from the corners of the glazing has occurred, gaskets should be replaced. Where small gaps have opened, these may be filled with black neutral cure silicone.

## Maintenance of window and door fittings

### TOP SWING GEAR

The aluminium slider rails housing the top swing gearing must not be painted after installation. The slide tracks should be lightly lubricated with a white neutral grease (Vaseline) as required. This should be at six to twelve month intervals, depending on local conditions (e.g. temperature, usage, environment etc.)

Metal Technology recommend and can provide an optional 15g tube of lubricant for the end user.

All pivot points in the hinge (i.e. long arms and glider assembly) should be kept lightly oiled to ensure long life of the components.

### FRICTION STAYS

The hinge in general and particularly the pivots, sliding shoe and track must be kept free from dirt, debris and any obstructions at all times. At the time of installation lubricate all pivot points with light machine oil and wipe away excess - one drop per pivot is sufficient. The manufacturer suggests one of the following lubricants or equivalent:

- a) E.R.Howard 3 in 1 oil
- b) Castrol Everyman

Every five years clean any dirt or debris from the hinge and clear any obstructions from the pivots, sliding shoe and track. Apply lubrication as above. Check the tightness and security of all fixing screws and rivets.

If a hinge is fitted in an area where it is exposed to a corrosive atmosphere, (e.g. salt-laden sea air in coastal locations) we recommend in addition to the general maintenance and

# Recommendations for Maintenance

lubrication, that all metal surfaces are lightly coated with lubrication oil or sprayed with a proprietary anti-corrosion spray. It is important to follow the manufacturers instructions for any products used. Maintenance operations may need to be carried out more frequently in corrosive atmospheres. This is dependant on the severity of the prevailing conditions. If conditions are severe (e.g. Salt-laden sea spray) it would be advisable to specify Austenitic stainless steel friction stays.

## Handles

The handle is virtually maintenance free. It may be cleaned using water or a mild detergent on a damp cloth. Acid, alkaline, solvent or abrasive cleaning agents or materials should not be used.

## Butt Hinges

Butt hinges have nylon bushes to ensure continuous easy operation and should not be oiled.

## Tilt and Turn Gearing

Once a year the corner deviation, top stays and slide rods should be cleaned and lightly oiled using a non-resinous grease or oil.

Sash closing pressure may be adjusted by turning the eccentric rollers around the moving frame to increase the pressure on the locking point (care must be taken not to over tighten the gear as this could lead to damage to the handle/gear).

The screws holding the handles should be checked to ensure the handle is tightly fitted to the frame.

No attempt should be made to adjust the hinges as this may cause the window to become dangerously detached from the outer frame.

## Spring Balances

The sash balances are lubricated during the manufacturing process, and are designed to be self lubricating during the operation of the window sashes. Therefore the balances only require a minimum of maintenance.

The following checks may be carried out during the cleaning of the windows:

- Check that the balance fixing screw is secure (do not over tighten).
- Check that the bottom fixing bracket is secured to the sash and not damaged or distorted in any way.
- Check that the cross pin in the spiral is correctly seated in the fixing bracket (spirex/spiralift [Standard 58/Heavy Duty] balances only).
- Is the balance tube damaged in any way.
- If dirt and debris has built up at the bottom end of the balance, it can be cleaned with a cloth and regreased with the following:
  - Torso balances: use Castrol spray Spheerol AP2.
  - Spirex/Spiralift (Standard 58/ Heavy Duty) and ultralift (Lite Lift) balances: Multi-purpose grease can be used and we suggest that the brackets are coated at the same time.
- Check that the balance stops are in place, and that the sash moves to contact the balance stop without any undue force. This will ensure the balances are not being over extended or crushed. Finally check for smooth running of the sashes and adjust balances if required (please note Torso balances are not adjustable).
- In order to keep the balances working satisfactorily, the balances should be properly maintained. Metal Technology recommend that a few drops of light machine oil are applied through the top of the balance and the sash is worked up and down 2 or 4 times. This treatment should occur at least once a year.

**IF FOR ANY REASON THE BALANCE SHOULD BREAK, THE WINDOW SHOULD BE SEALED SHUT. A NOTICE SHOULD BE POSTED ADVISING THAT THE WINDOW SHOULD NOT BE USED UNTIL A NEW PAIR OF BALANCES IS FITTED.**

## Concealed Pivot/Locking Mechanism

The spinner pivot is fundamentally a simple window and its performance is critically dependant on the flipper seals around the outside of the moving frame.

Correct alignment to ensure these seals are in contact with the outer frame is essential to ensure the window is air and water resistant. Special care should be taken to ensure there are no gaps in the corner gaskets.

Adjustment of the position of the sash in the outer frame can be made by adjusting the screw above and below the pivot boss (i.e. to move a horizontally pivoted window down loosen the screw below the pivot boss and tighten the one above).

The friction on the pivot is achieved by the clamping forces on the pivot boss, therefore care must be taken to ensure the pivot is correctly adjusted to give the required level of friction to hold the window open.

The concealed locking gear does not require oiling and the use of oils in the area of the plastic casing is likely to be detrimental to the performance of the locking system.

## Commercial Door Fittings

As with all mechanical products, regular 'preventative maintenance' is necessary if trouble free operation is required. It is strongly recommended that such a programme is arranged either with a competent door maintenance company or with the maintenance staff of the building where the doors are installed. Items such as overhead closers, hinges, locks



# Recommendations for Maintenance

and weather-stripping need regular care to keep them functioning correctly and adjustment is especially necessary in the first few months when the doors are 'bedding in'. Particular attention should be paid to the overhead transom closer.

## CONCEALED OVERHEAD TRANSOM CLOSERS

Axim door closers and accessories are guaranteed for a period of 30 months from the date of manufacture against defect in material and workmanship. The guarantee is void if the product has been incorrectly installed or damaged in use. The following notes on maintenance should ensure that the closer will operate trouble free for many years.

The set of door controls comprise three main items. Firstly, a sealed unit 'the closer body' which is fitted inside the transom bar above the door and concealed with a removeable cover plate. Secondly a steel drive arm with a steel fixing channel fitted inside the top rail of the door 'the top arm' which may be side or end loading. Finally the door is supported by a 'bottom pivot assembly'. This consists of a shoe fitted to the underside of the door and a pivot bolt, either fitted to a floor-fixed plate or directly fixed to an aluminium threshold.

## CLOSER BODY

Broadly speaking there are six different closer options with the same external appearance. Closers are fitted with different size internal springs to give light, medium or heavy closing forces. Depending on varying factors such as weather conditions and width and height of the door, the correct strength closer should be selected. Closers are specified 'retention' or 'non-retention'. The former, sometimes referred to as 'hold-open', hold the door open at 90 degrees whilst the latter, sometimes named 'no hold-open', will return the door to a closed position regardless of the angle at which it is released. It is important not to wedge the door open, as the wedge or stop will oppose the door closer and in time will twist the door.

It is important to realise that closers can not be altered in the field, and if necessary the closer would require to be exchanged for an alternative option.

Doors using this type of door closer are generally centre hung and double action (i.e. the door will open in and out unless prevented from doing so by an applied stop). Door closers will open to 130 degrees. Door stops should not be fitted to prevent the door opening past this angle as damage could occur to the door, frame, and/or closer.

## REMOVING THE DOOR

*(This should be carried out only by experienced fitters)*

## FAULT DIAGNOSIS

The following notes should enable a competent maintenance manager to rectify any problems that might occur. If in any doubt please contact the manufacturer as the wrong action could invalidate the warranty.

1. *The door does not centre firmly but swings freely perhaps for a centimetre either side of the closed position.* This is usually due to the clamp block not being fully tightened. Remove the small aluminium name plate from the door to expose the clamp block and screws. With an allen key wind in the two or three screws, depending on the arm type, very tightly. Refit the name plate.
2. *The door does not centre firmly as in item 1 and has even more free play.* It is possible the clamp block has been too loose for too long and the closer spindle has worn. If this is the case carry out the remedy as in item 1. If the problem persists the closer and/or top drive arm in the door will need to be replaced. Note this is not a fault of the closer or accessories but is due to incorrect installation.
3. *The door comes to rest firmly but is up to 25mm off centre.* Using a step ladder, look down on to the top rail of the door. Loosen the hold-down, countersunk screw, securing the top arm, with an allen key. Adjust the hexagonal bolts against the sides of the steel channel until the door centres are in the correct position. Tighten the hold-down screw and check other fixings.
4. *The door drags on the floor/threshold or rubs on the underside of the transom.* Using a

step ladder, look down on to the top rail of the door. Loosen the hold-down, countersunk screw, securing the top arm, with an allen key and loosen off the hexagonal bolts slightly.

### a. Standard top arm type:

With the door open use a flat bladed screwdriver to turn the screw clockwise, lifting the door; or anticlockwise, lowering the door.

### b. End load arm or special side loading:

Loosen the locknut against the upstand of the channel and turn the socket head screw with an allen key, clockwise, lifting the door; or anticlockwise, lowering the door. Tighten the hold-down screw and check other fixings.

5. *The door moves loosely off-centre apparently without control.* The closer has been forced and strained for some reason and the internal parts have been damaged. The closer will need to be replaced.
6. *Oil Leaking.* Before dispatch each closer is subjected to stringent tests to ensure against leakage. If oil appears to be leaking from the closer try to pin-point the source. If leaking from around the spindle, the seal may be damaged. If leaking from around one of the valve screws, the same could apply. Providing the closer is within the warranty period and has not been subjected to misuse it will be replaced. A frequent cause of oil leaks is due to the closer being drilled by an installer fitting alarms, louvres or fanlights. If this is the case the closer will need to be replaced.

## SIX MONTHLY MAINTENANCE

Detach the door as previously described, remove the coverplate and expose the closer. Tighten all fixing screws and bolts. Inspect the floor bearing and wipe away any debris. Check the bearing rotates freely and the bolt is secured firmly in the plate or threshold. Tighten all fixings, including the three screws to the bottom rail of the door securing the pivot shoe. Replace the coverplate and remount the door. Tighten all the top arm fixings, particularly the clamp block screws and centre locking screw. Replace the name plate and clean down the door as per recommendations.



# Recommendations for Maintenance

## CLOSING SPEED ADJUSTMENTS

Providing the closing and final latching speeds of the door closer have been correctly set on installation it should not be necessary to readjust at a later date. However, after the door closer has completed a short settling in period, minor adjustment may be required. It should be noted that inexperienced tampering with the valve screws could cause irreparable damage. The following notes will enable the operator to make simple adjustments – if in any doubt please seek advice from the manufacturer.

It is important to realise that the two valve screws will adjust the closing and latching speeds of the door closer, but they will not adjust the closing or opening forces in any way. It is very likely the door closer will require only very minor adjustment, perhaps only one half turn of the valve screw. After any adjustment the door closing speed should be checked twice, by opening the door fully and allowing it to close, before proceeding.

Care must be taken not to unscrew the valve head beyond the level of the closer body when increasing the closer speed. Turning the valve past this limit will allow oil to escape and the closer will need to be replaced. On the other hand if the valve is turned clockwise, decreasing the closing speed, adjustment may cease when resistance is felt, as the valves are manufactured from soft metal and will be damaged along with the oil seal if excessive force is used.

## Rebate Pivot Hardware / Commercial Casement

Metal Technology recommend that if the windows are seriously out of adjustment the fabricator should carry out necessary adjustment to the pivots, hinges, or espagnolette gear.

Every year the corner deviation, top stays and slide rods should be cleaned and lightly oiled using a non-resinous grease or oil.

Sash closing pressure may be adjusted by turning the eccentric rollers around the moving frame to increase the pressure on the locking point (care must be taken not to over tighten the

gear as this could lead to damage to the handle/gear).

The screws holding the handles should be checked to ensure the handle is tightly fitted to the frame.

No attempt should be made to adjust the pivots as this could cause the window to become dangerously detached from the outer frame. The pivots should not be oiled or greased since this may damage the plastic component.

Friction on the pivot can be adjusted via a 4mm Allen screw (on the vent side of the pivot). This should be adjusted sufficiently to ensure the window remains open in the required position, but not over tightened, such that undue force has to be used to open the window.

## Folding Openers & Restrictors

These have nylon bushes to ensure continuous easy operation and should not be oiled. Fixings should be examined regularly and checked for loose screws and fixings, which should be tightened as necessary.

## Espagnolette System

All espagnolettes should be examined on a regular basis. All moving parts should be oiled with light oil, except where nylon bushes are provided. Keeps should be checked to ensure they have not moved and if necessary should be re-aligned to ensure adequate engagement and compression on the perimeter seals.



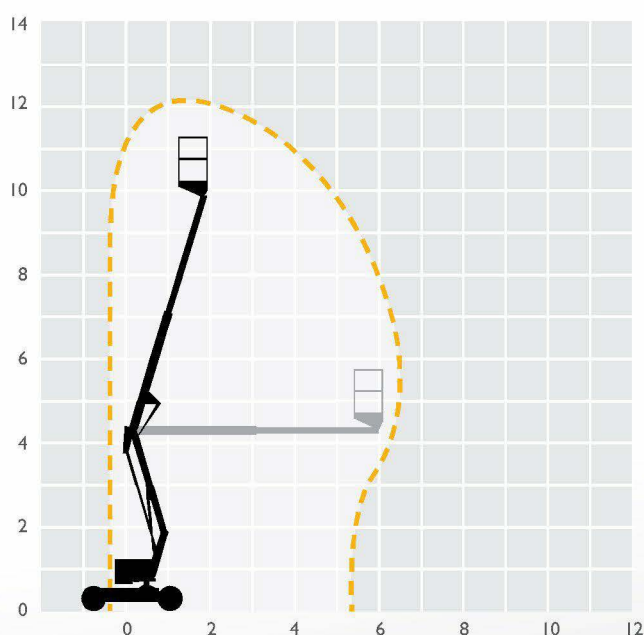
# Articulating Booms Bi-Energy

## MACHINE SPECIFICATION SHEET

### BA34NB 12.20m

REACH HEIGHT	12.20m	PLATFORM HEIGHT	10.20m
CLOSED LENGTH	4.10m	CLOSED HEIGHT	1.90m
WIDTH	1.50m	HORIZONTAL REACH	6.10m
LIFTING CAPACITY	200kg	WEIGHT	2950kg
CAGE DIMENSIONS	0.65x1.10m	TURNING RADIUS	4.20m
ROTATION	360°	IPAF CATEGORY	3b
POWER	BI-ENERGY		

FEATURED MODEL	NIFTYLIFT HR12 (SIOPS)
ALTERNATIVE MODELS	NIFTYLIFT HR12 & HR12RT



We offer a safe, modern, reliable and cost-effective way of working at height, matching first-class service and delivery. Our fleet is extremely well maintained, which helps avoid delays to your job, and our professional staff are always on hand to give advice on selecting the best access platform for your specific needs.

Our versatile fleet has working heights ranging from 3.60m to 53.00m so even the most awkward jobs are simple when you put your trust in us.

**For further information  
call 08707 511 005 or  
visit [afi-uplift.co.uk](http://afi-uplift.co.uk)**

 like us on [facebook.com/AFIHire](https://facebook.com/AFIHire)  
 [@afiUplift](https://twitter.com/afiUplift)

The information provided is for guidance only.  
It may change at any time in accordance with  
manufacturer's specification.



**t**   
**e** [info@afi-uplift.co.uk](mailto:info@afi-uplift.co.uk)  
**w** [afi-uplift.co.uk](http://afi-uplift.co.uk)

**AFI**  
group of companies

**Hire | Sales | Training | Safety**



# System 10 Commercial Door

The Metal Technology Commercial Door System has been designed to act as a single door or as multi-acting doors. In combination with the other Metal Technology Systems, a variety of door jamb and stile formats can be achieved to give the entrance required.



Introduction

The basic suite of profiles comprises main and slave stiles, top rail, mid rail, bottom rail and thresholds. To these can be added additional profiles to meet every possible application, all with the benefits of minimal fabrication. Glazing options accommodate single glazed through to 28mm glazing units and infill panels. With the double glazed, alternative provision has been made for the outer bead to be secured to the frame, thus enhancing the door's security. A drained threshold option is available, which is designed for general usage.

Where there is a requirement for disabled use, the application should be discussed and confirmed with the relevant Building Control Officer. As with all Metal Technology systems the commercial door system has been manufactured to exacting standards giving the required strength necessary for its heavy usage but with economy, allowing many years of aesthetic trouble-free operation.

Scope

This specification defines materials, construction, finishes and size limits for the commercial door system.

Materials

Aluminium profiles are extruded from aluminium alloy 6060T6, T5 or T4 complying with the recommendations of BS EN 12020-2 / BS EN 755 - Parts 1 to 9.

Finishes

The range of sections can be provided in either of the following ranges of finishes:

1. Anodised to BS EN12373-1 or BS3987
2. Powder organic coated to BS6496 or BS EN 12206-1

It is recommended that threshold sections are always supplied in natural anodised finish particularly where heavy traffic is expected through the door.

Construction

Frame members are square cut fixed securely together by means of aluminium cleats and stainless steel screws and bolts. Frame joints are sealed during construction against entry of water. Extruded glazing gaskets and woolpiles are provided to resist the ingress of water.

Glazing

Glass is set against co-extruded (PVC nitrile) gasket externally which is fitted into the bead and an extruded colour coded wedge internally. Setting blocks and location pieces are fitted in accordance with BS6262 in order to ensure the doors are maintained square and rigid.

Kits

In addition to providing commercial door sections in bar lengths, along with their accessories, Metal Technology can provide standard size or made to measure door and midrail kits.

Standard size locking and slave kits (metal size only) measure 906mm wide x 2120mm high.

Standard midrail kits are to suit the above door sizes. Reference number for standard kits are as follows:

Description	Mill	Satin	White
Locking Door Kit	SD162/M	SD162/S	SD162/W
Slave Door Kit	SD163/M	SD163/S	SD163/W
Plain Midrail Kit	SD91	SD92	SD93
Midrail Kit with Letter Plate	-	SD96	SD97

Size Limits

	Max. Width	Max. Height	Max. Weight
External Doors	1.05m	2.4m	90Kg
Internal Door	1.20m	3.0m	90Kg

Installation

Detailed installation instructions are provided in the System 10 fabrication manual which should be strictly followed.

Performance

Commercial pivoting doors are designed for use at ground floor in moderately exposed areas only. Where the site is exposed or above ground floor consideration should be given to using the commercial hinged door which being fully rebated will offer improved performance.

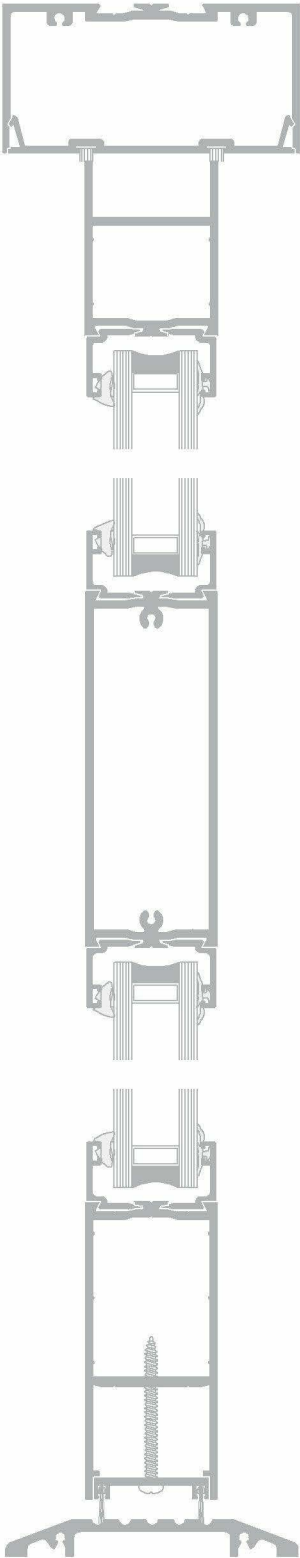
Maintenance

As with all mechanical products regular "preventative maintenance" is necessary if trouble-free operation is required and it is strongly recommended that such a programme is arranged either with a competent door maintenance company or with the maintenance staff of the building where the doors are installed. Items such as overhead closers, hinges, locks and weather-stripping need regular care to keep them functioning correctly and adjustment is especially necessary in the first few months when the doors are "bedding in".

Development

Our policy is to continually research the market for new and improved products. We must therefore retain the right to amend specifications without prior notice. It is recognised at Metal Technology that in some instances special sections may be required for particular projects. When this occurs

it may be possible to produce special sections subject to there being sufficient quantity and adequate time.



**Metal Technology Limited**  
Steeple Road Industrial Estate  
Steeple Road | Antrim  
Northern Ireland | BT41 1AB  
  
Telephone : [REDACTED]  
sales@metaltechnology.com  
metaltechnology.com

This document has been printed on 100% recycled paper.





**The Metal Technology Commercial Door System has been designed to act as a single door or as multi-acting doors. In combination with the other Metal Technology Systems, a variety of door jamb and stile formats can be achieved to give the entrance required.**

### Introduction

The basic suite of profiles comprises main and slave stiles, top rail, mid rail, bottom rail and thresholds. To these can be added additional profiles to meet every possible application, all with the benefits of minimal fabrication. Glazing options accommodate single glazed through to 28mm glazing units and infill panels. With the double glazed alternative provision has been made for the outer bead to be secured to the frame, thus enhancing the door's security. A drained threshold option is available, which is designed for general usage.

Where there is a requirement for disabled use, the application should be discussed and confirmed with the relevant Building Control Officer. As with all Metal Technology systems the commercial door system has been manufactured to exacting standards giving the required strength necessary for it's heavy usage but with economy, allowing many years of aesthetic trouble-free operation.

### Scope

This specification defines materials, construction, finishes and size limits for the commercial door system.

### Materials

Aluminium profiles are extruded from aluminium alloy 6060T6, T5 or T4 complying with the recommendations of BS1474.

### Finishes

The range of sections can be provided in either of the following ranges of finishes:

1. Anodised to BS1615 or BS3987
2. Powder organic coated to BS6496

It is recommended that threshold sections are always supplied in natural anodised finish particularly where heavy traffic is expected through the door.

### Construction

Frame members are square cut fixed securely together by means of aluminium cleats and stainless steel screws and bolts. Frame joints are sealed during construction against entry of water. Extruded glazing gaskets and woolpiles are provided to resist the ingress of water.

### Glazing

Glass is set against co-extruded (PVC nitrile) gasket externally which is fitted into the bead, and an extruded colour coded wedge internally. Setting blocks and location pieces are fitted in accordance with BS6262 in order to ensure the doors are maintained square and rigid.

### Kits

In addition to providing commercial door sections in bar lengths, along with their accessories, Metal Technology can provide standard size or made to measure door and midrail kits.

Standard size locking and slave kits (metal size only) measure 906mm wide x 2120mm high.

Standard midrail kits are to suit the above door sizes. Reference number for standard kits are as follows:

Description	Mill	Satin	White
Locking Door Kit	SD162/M	SD162/S	SD162/W
Slave Door Kit	SD163/M	SD163/S	SD163/W
Plain Midrail Kit	SD91	SD92	SD93
Midrail Kit with Letter Plate	-	SD96	SD97

### Size Limits

	Max. Width	Max. Height	Max. Weight
External Doors	1.05m	2.4m	90Kg
Internal Doors	1.20m	3.0m	90Kg

### Installation

Detailed installation instructions are provided which should be strictly followed.

### Performance

Commercial pivoting doors are designed for use at ground floor in moderately exposed areas only. Where the site is exposed or above ground floor consideration should be given to using the commercial hinged door which being fully rebated will offer improved performance.

### Maintenance

As with all mechanical products regular "preventative maintenance" is necessary if trouble free operation is required and it is strongly recommended that such a programme is arranged either with a competent door maintenance company or with the maintenance staff of the building where the doors are installed. Items such as overhead closers, hinges, locks and weather-stripping need regular care to keep them functioning correctly and adjustment is especially necessary in the first few months when the doors are "bedding in".

### Development

Our policy is to continually research the market for new and improved products. We must therefore retain the right to amend specifications without prior notice. It is recognised at Metal Technology that in some instances special sections may be required for particular projects. When this occurs it may be possible to produce special sections subject to there being sufficient quantity and adequate time.





## Profile Index






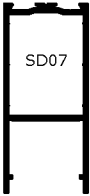
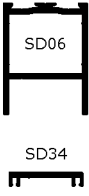







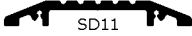
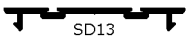
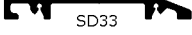


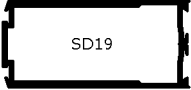



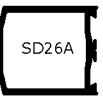
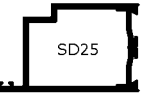
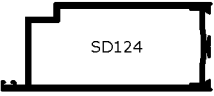

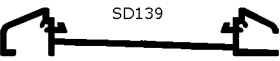
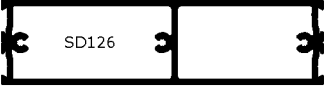



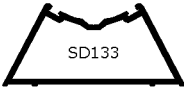

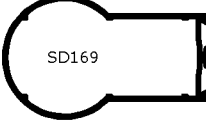

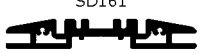


## System 10

COMMERCIAL DOOR

## Profile illustration

## Section Properties

ILLUSTRATION DIMENSIONS	SHEET REF NUMBER	COMPUTER REF NUMBER	WEIGHT Kg/m	PERIMETER mm	XX mm <sup>4</sup>	YY mm <sup>4</sup>
    	Sheet 5	SD01	0.67	166.0		
	Sheet 5	SD02	0.17	124.0		
	Sheet 6	SD03	2.54	404.0		
    	Sheet 2	SD06	1.32	273.0		
	Sheet 2	SD07	1.956	402.0		
   	Sheet 5	SD10	0.18	93.8		
	Sheet 4	SD11	1.14	277.0		
	Sheet 1	SD12A	1.322	243.0		
	Sheet 5	SD13	0.83	261.0		
 	Sheet 5	SD14	0.14	98.8		
 	Sheet 6	SD16	3.26	164.0		
	Sheet 4	SD17	1.33	428.0		
	Sheet 1	SD19	2.28	336.0		
 	Sheet 6	SD20	2.73	385.0		
	Sheet 1	SD21	1.47	250.0		
 	Sheet 4	SD22	0.51	115.0		
	Sheet 3	SD24	2.37	472.0		
  	Sheet 2	SD25	1.55	281.0		
	Sheet 6A	SD26A	1.242	222.0		
	Sheet 6A	SD33	1.26	300.0		
	Sheet 6A	SD34	0.315	121.0		
 	Sheet 5	SD35	0.178	94.0		
	Sheet 2	SD124	2.05	358.0		
	Sheet 2	SD125	2.242	315.0		
	Sheet 3	SD126	3.615	600.0		
	Sheet 6A	SD127	2.406	382.0		
 	Sheet 6	SD128	2.431	396.0		
	Sheet 4	SD132	1.479	247.0		
  	Sheet 4	SD133	1.184	396.0		
	Sheet 6B	SD139	1.751	524.0		
	Sheet 2	SD140	0.49	176.0		
	Sheet 3	SD141	0.99	197.0		
	Sheet 3	SD157	1.849	353.0		
  	Sheet 5	SD158	0.302	133.0		
	Sheet 6B	SD160	1.61	321.0		
	Sheet 6B	SD161	1.78	343.0		
	Sheet 5	SD169	2.095	334.0		

Not to Scale

© METAL TECHNOLOGY LIMITED. This data sheet is issued subject to the condition that it shall not be reproduced without the consent of Metal Technology in writing. 06/07

SHEET 10 / 0 / 20

rev 1      13/03/09

RYD00092657\_0121

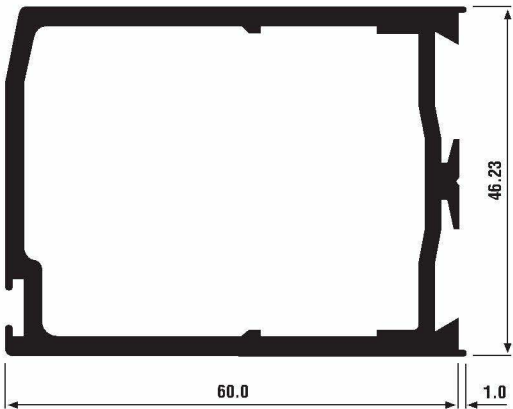


System 10

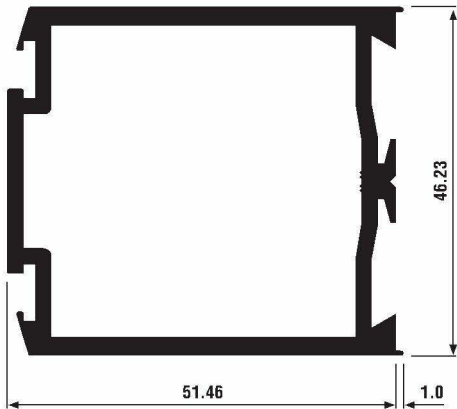
COMMERCIAL  
DOOR

Section Drawings

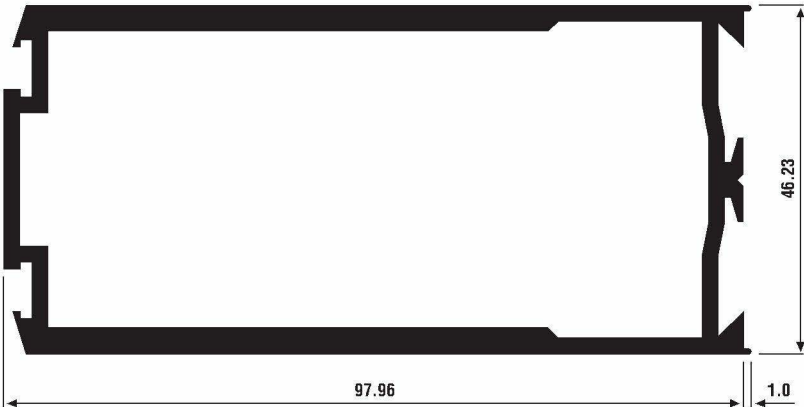
SD21  
HINGED STILE



SD12A  
DOUBLE WOOLPILE STILE

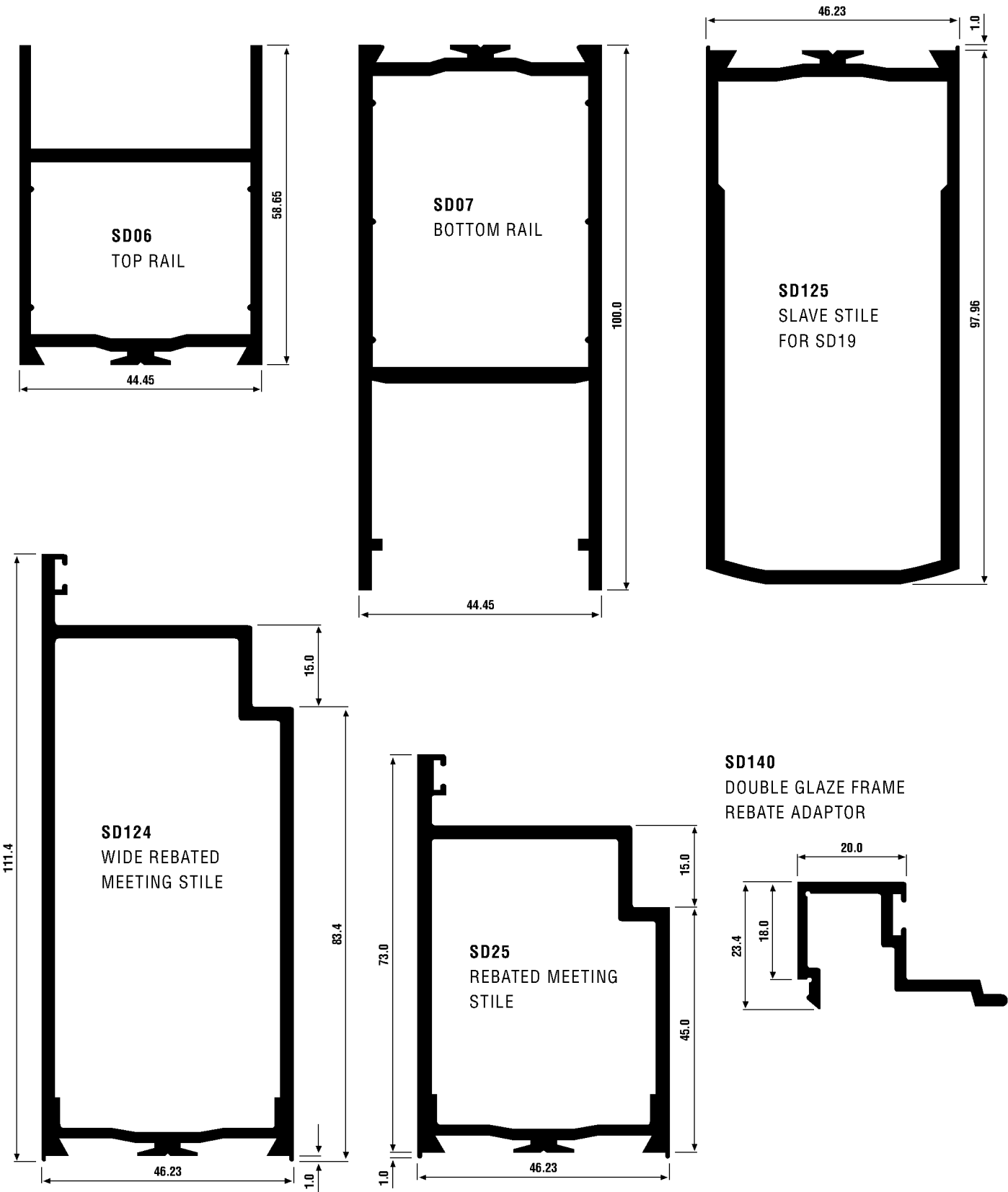


SD19  
WIDE DOOR STILE



# Section Drawings

**m<sup>l</sup>**  
**System 10**  
.....  
COMMERCIAL  
DOOR  
.....



**Scale 1:1**

© METAL TECHNOLOGY LIMITED. This data sheet is issued subject to the condition that it shall not be reproduced without the consent of Metal Technology in writing. 4/00

**Sheet 2**  
.....

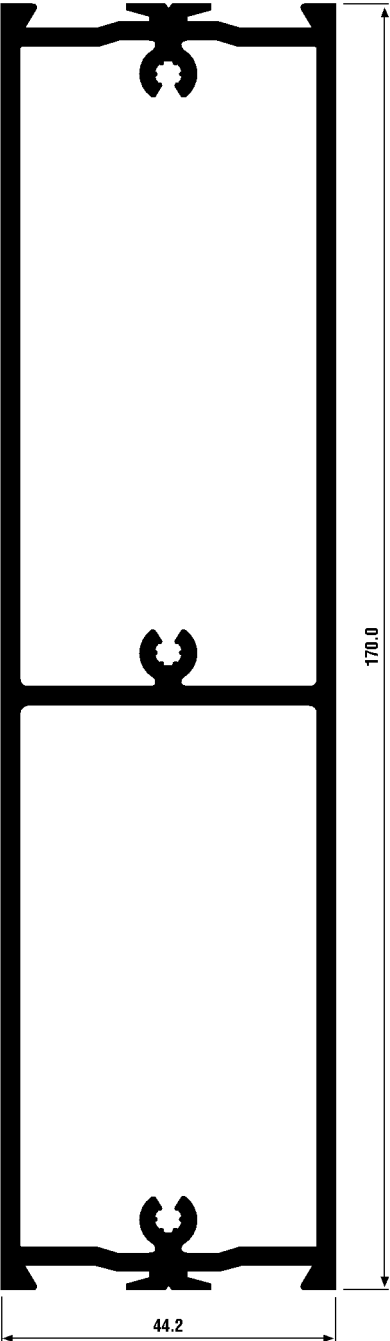


System 10

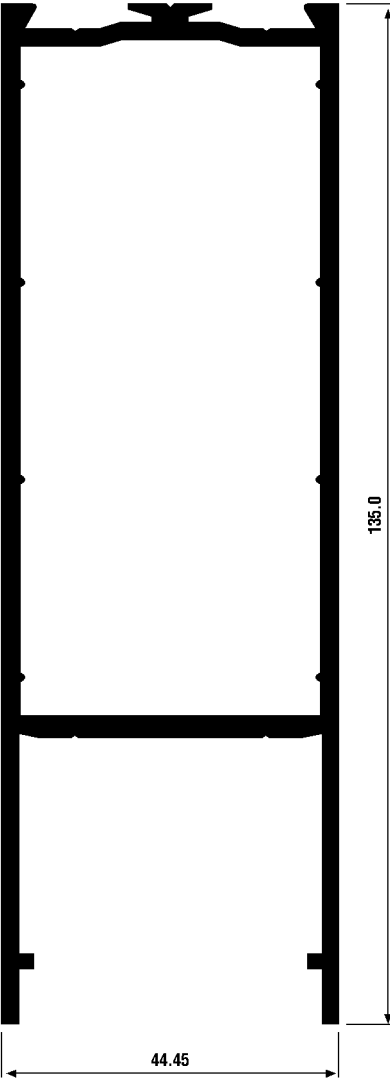
COMMERCIAL  
DOOR

Section Drawings

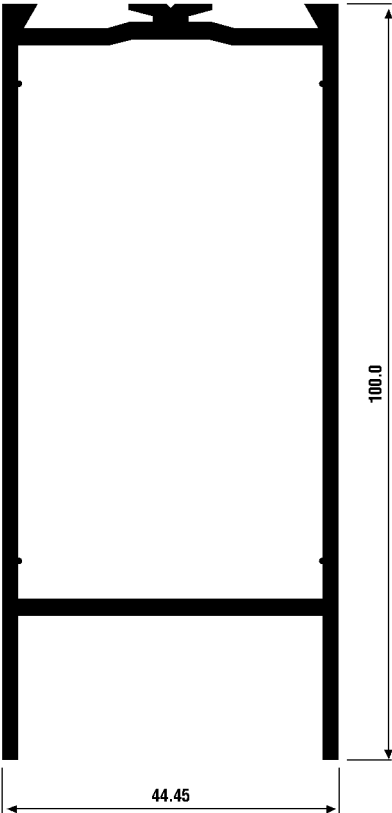
SD126  
ONE PIECE DEEP MID-RAIL



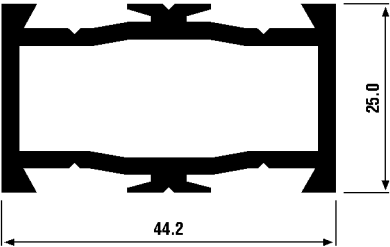
SD24  
DEEP BOTTOM RAIL



SD157  
100mm TOP RAIL

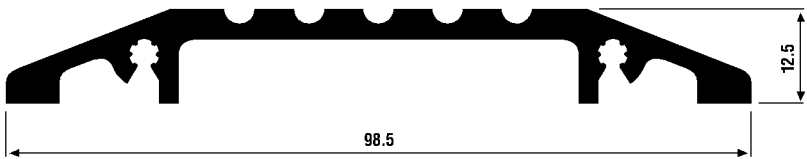


SD141  
25mm LAYBAR

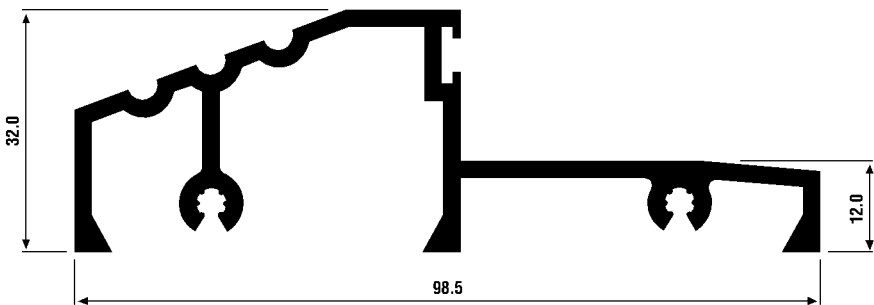


# Section Drawings

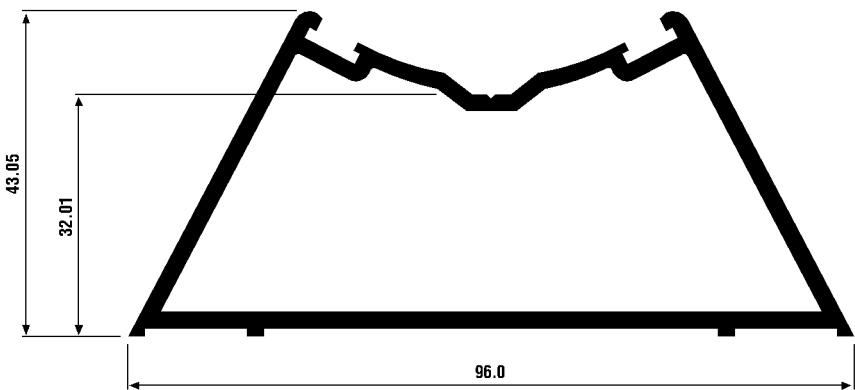
**SD11**  
STANDARD THRESHOLD



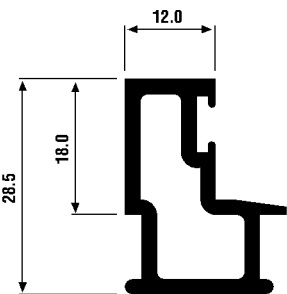
**SD17**  
REBATED THRESHOLD



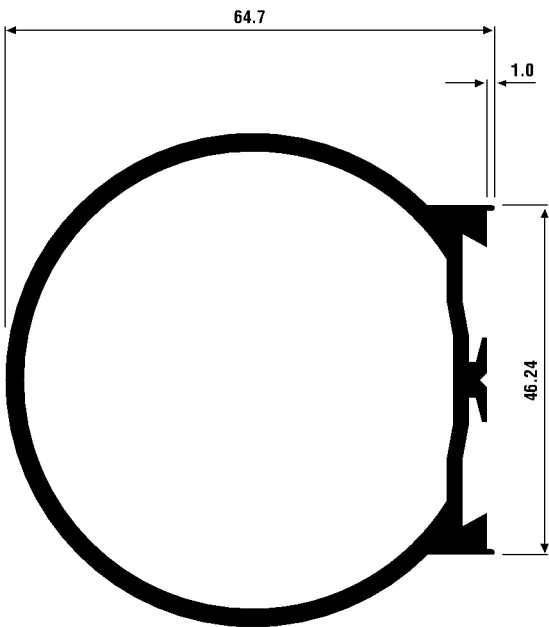
**SD133**  
ANTI-FINGERTRAP  
FRAME PIECE



**SD22**  
REBATE ADAPTOR



**SD132**  
STANDARD  
ANTI-FINGERTRAP  
STILE

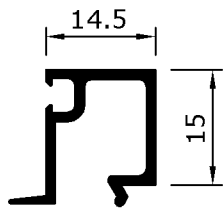


**Scale 1:1**

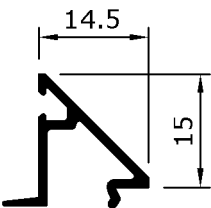


# Section Drawings

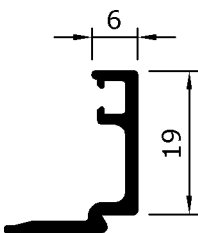
**SD02**  
SINGLE  
GLAZE BEAD



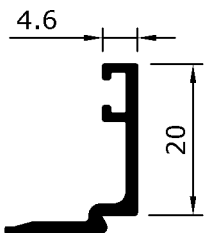
**SD14**  
SINGLE GLAZE  
BEVEL BEAD



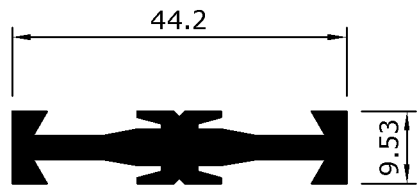
**SD10**  
24mm DOUBLE  
GLAZE BEAD



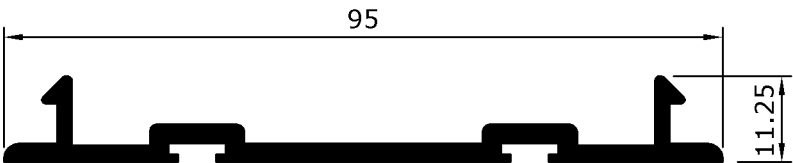
**SD35**  
28mm DOUBLE  
GLAZE BEAD



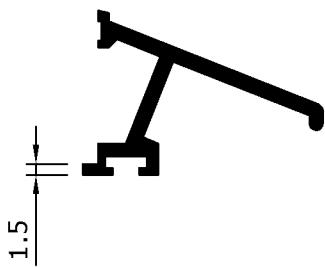
**SD01**  
BEAD CARRIER



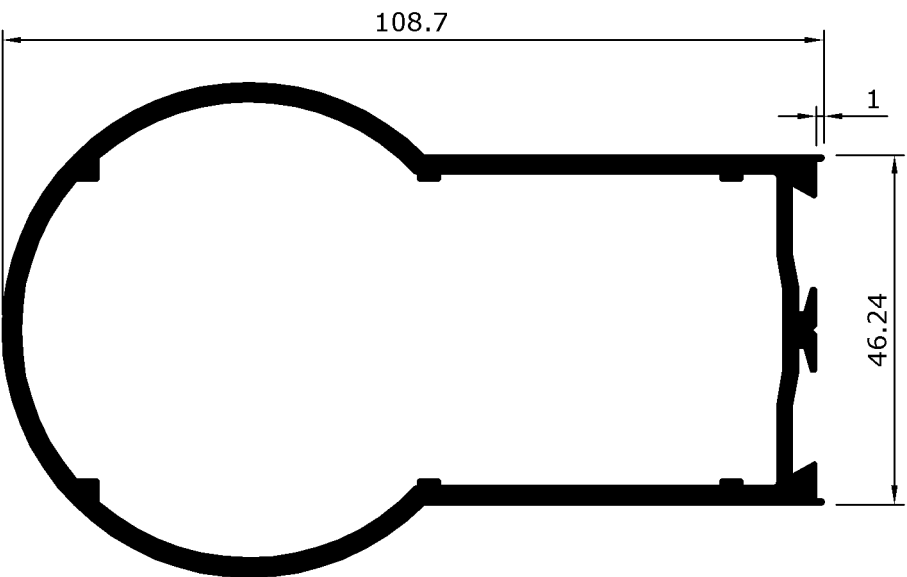
**SD13**  
WOOLPILE PLATE



**SD158**  
SCREW FIXED DRIP RAIL



**SD169**  
WIDE ANTI-FINGERTRAP STILE



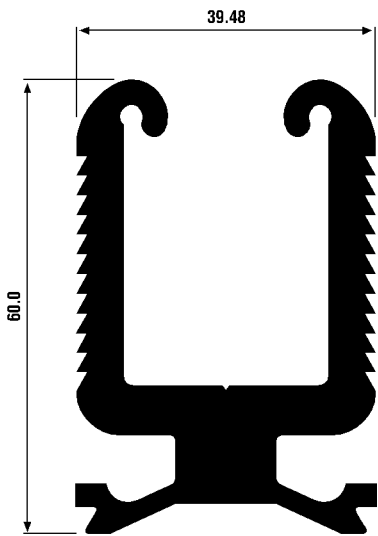
Scale 1:1

© METAL TECHNOLOGY LIMITED. This data sheet is issued subject to the condition that it shall not be reproduced without the consent of Metal Technology in writing. 06/98

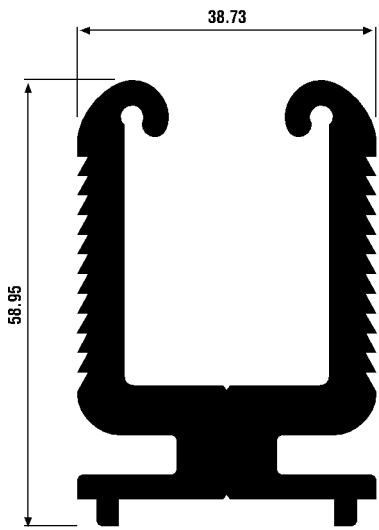
SHEET 5  
rev 2 13/03/09

# Section Drawings

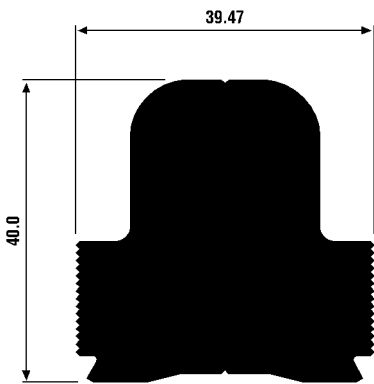
SD03  
CLEAT



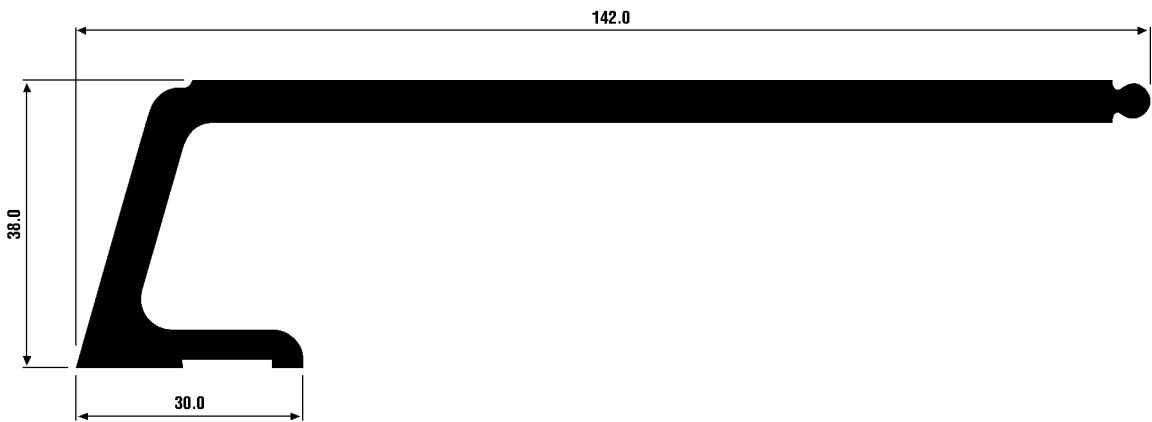
SD128  
DOOR CLEAT



SD16  
WELDED CLEAT



SD20  
HANDLE



Scale 1:1

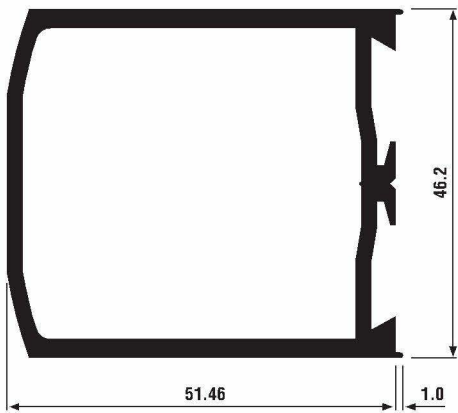


**System 10**

COMMERCIAL  
DOOR

**Section Drawings**

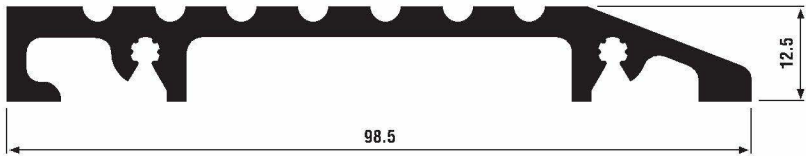
**SD26A**  
SLAVE DOOR MEETING STILE (FOR SD12)



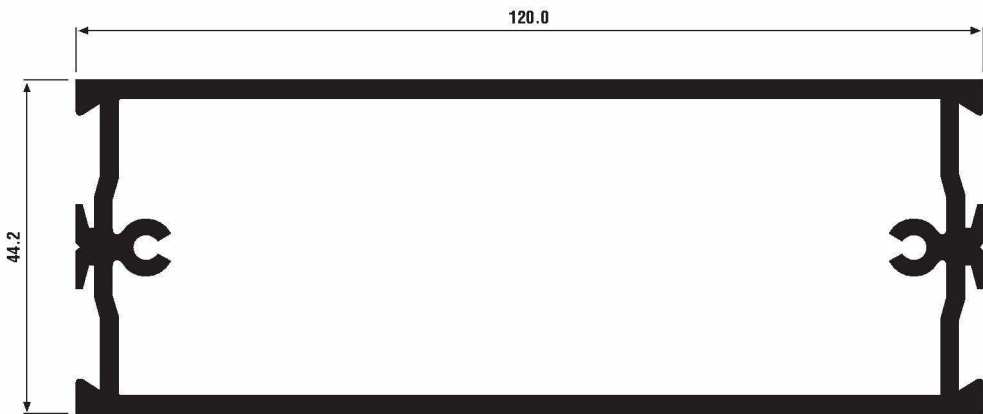
**SD34**  
NEW WOOLPILE INSERT



**SD33**  
FLAT BACK THRESHOLD

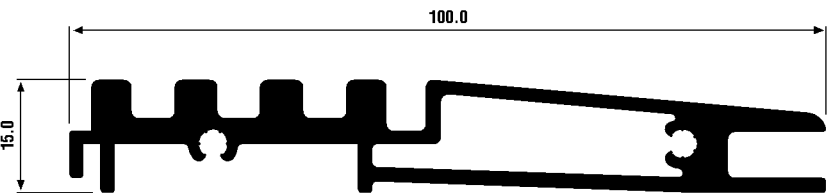


**SD127**  
120mm MIDRAIL

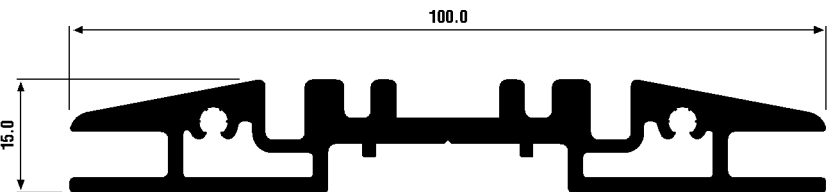


# Section Drawings

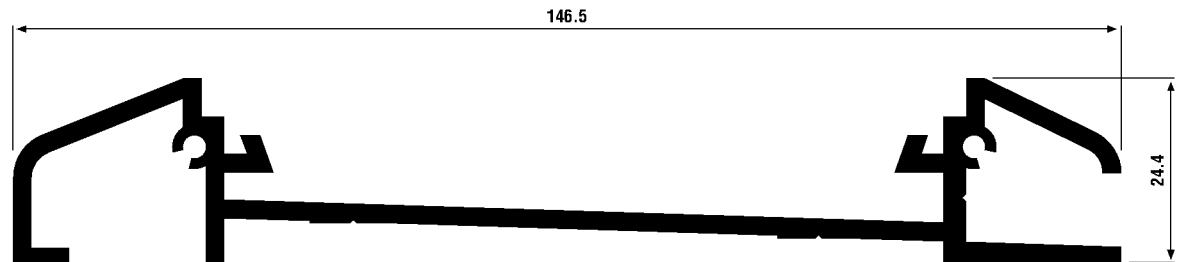
**SD160**  
DRAINED THRESHOLD (Rebated Door)



**SD161**  
DRAINED THRESHOLD (Pivot Door)



**SD139**  
DRAINED BASE PLATE



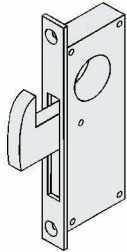
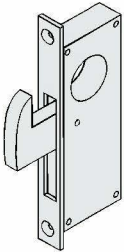
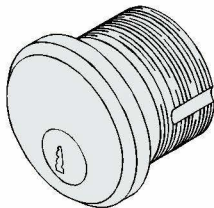

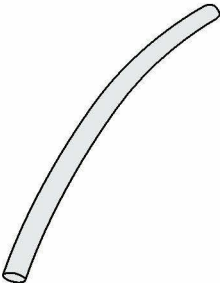
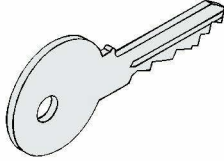
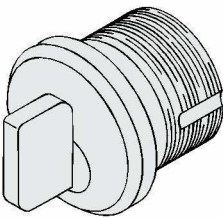
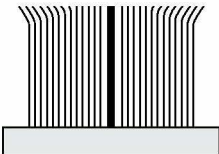
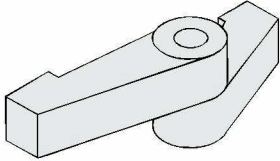
**Scale 1:1**








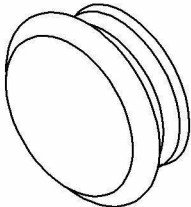
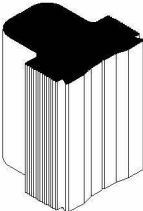
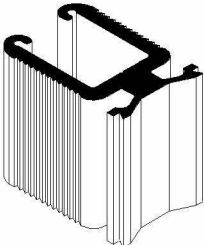
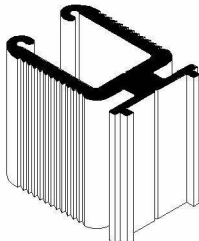


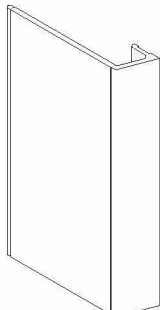
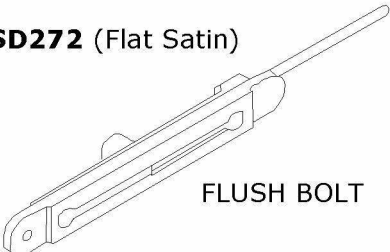
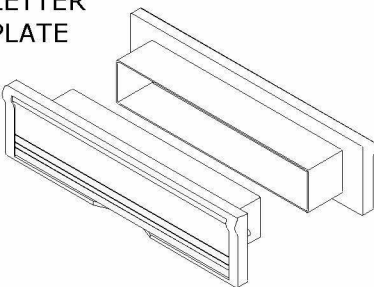
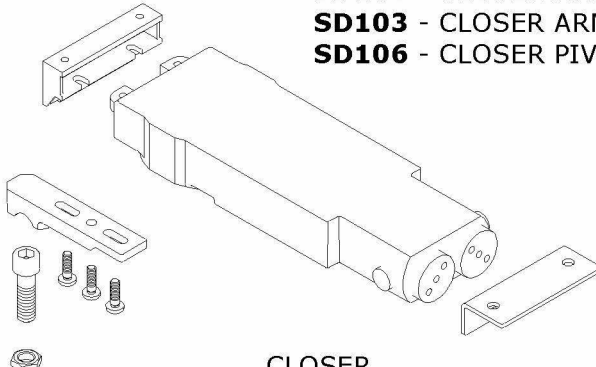
System 10

COMMERCIAL  
DOOR

Component Identification

																																									
HOOK LOCK FOR SD21 & SD25 - <b>SD69</b>	HOOK LOCK FOR SD12 & SD19 - <b>SD70</b>	CYLINDER (Pairs) - <b>SD71</b>																																							
																																									
FLAT COVER PLATE Satin - <b>SD68</b> , Bronze - <b>SD67</b>	Cord for use with infill - <b>DGFG20</b>	KEY BLANKS - <b>SD77</b>																																							
	<div>WOOLPILES</div> 																																								
THUMB TURN - <b>SD76</b>	<table><tr><th>Section Number</th><th>Woolpile Description</th><th>Woolpile Ref.</th></tr><tr><td><b>SD12</b></td><td>6.9 x 900</td><td><b>VS118</b></td></tr><tr><td><b>SD13</b></td><td>6.9 x 900</td><td><b>VS118</b></td></tr><tr><td><b>SD19</b></td><td>6.9 x 900</td><td><b>VS118</b></td></tr><tr><td><b>SD17</b></td><td>6.9 x 700</td><td><b>SD43</b></td></tr><tr><td><b>SD21</b></td><td>6.9 x 900</td><td><b>VS118</b></td></tr><tr><td><b>SD22</b></td><td>6.7 x 600</td><td><b>VS119</b></td></tr><tr><td><b>SD25</b></td><td>4.8 x 550</td><td><b>TT30</b></td></tr><tr><td><b>SD34</b></td><td>Fringe Weatherstrip 2.9 x 13mm</td><td><b>SD44</b></td></tr><tr><td><b>SD124</b></td><td>4.8 x 550</td><td><b>TT30</b></td></tr><tr><td><b>SD133</b></td><td>6.9 x 900</td><td><b>VS118</b></td></tr><tr><td><b>SD138</b></td><td>6.9 x 700</td><td><b>SD43</b></td></tr><tr><td><b>SD140</b></td><td>6.7 x 600</td><td><b>VS119</b></td></tr></table>		Section Number	Woolpile Description	Woolpile Ref.	<b>SD12</b>	6.9 x 900	<b>VS118</b>	<b>SD13</b>	6.9 x 900	<b>VS118</b>	<b>SD19</b>	6.9 x 900	<b>VS118</b>	<b>SD17</b>	6.9 x 700	<b>SD43</b>	<b>SD21</b>	6.9 x 900	<b>VS118</b>	<b>SD22</b>	6.7 x 600	<b>VS119</b>	<b>SD25</b>	4.8 x 550	<b>TT30</b>	<b>SD34</b>	Fringe Weatherstrip 2.9 x 13mm	<b>SD44</b>	<b>SD124</b>	4.8 x 550	<b>TT30</b>	<b>SD133</b>	6.9 x 900	<b>VS118</b>	<b>SD138</b>	6.9 x 700	<b>SD43</b>	<b>SD140</b>	6.7 x 600	<b>VS119</b>
Section Number	Woolpile Description	Woolpile Ref.																																							
<b>SD12</b>	6.9 x 900	<b>VS118</b>																																							
<b>SD13</b>	6.9 x 900	<b>VS118</b>																																							
<b>SD19</b>	6.9 x 900	<b>VS118</b>																																							
<b>SD17</b>	6.9 x 700	<b>SD43</b>																																							
<b>SD21</b>	6.9 x 900	<b>VS118</b>																																							
<b>SD22</b>	6.7 x 600	<b>VS119</b>																																							
<b>SD25</b>	4.8 x 550	<b>TT30</b>																																							
<b>SD34</b>	Fringe Weatherstrip 2.9 x 13mm	<b>SD44</b>																																							
<b>SD124</b>	4.8 x 550	<b>TT30</b>																																							
<b>SD133</b>	6.9 x 900	<b>VS118</b>																																							
<b>SD138</b>	6.9 x 700	<b>SD43</b>																																							
<b>SD140</b>	6.7 x 600	<b>VS119</b>																																							
																																									
DOOR HINGE, Mill, Satin, White - <b>PCD58</b>																																									

# Component Identification

<p>WEDGES</p> <p><b>CA26</b>  Orange</p> <p><b>CA27</b>  White</p> <p><b>SD134</b>  Blue</p>	<p> <b>SD37</b> 'E' GASKET</p> <p> <b>CA25</b> CAPTIVE GASKET (Red)</p>	<p> <b>SD40</b> STILE GROMMETS (Black)</p>												
<p> SD16</p> <p><b>SD58</b> - TO SUIT <b>SD24</b> <b>SD62</b> - TO SUIT <b>SD06</b> <b>SD60</b> - TO SUIT <b>SD07</b> <b>SD154</b> - TO SUIT <b>SD157</b></p>	<p> SD03</p> <p><b>SD63</b> - TO SUIT <b>SD06</b> <b>SD61</b> - TO SUIT <b>SD07</b> <b>SD64</b> - TO SUIT <b>SD24</b> <b>SD55</b> - TO SUIT <b>SD157</b></p>	<p> SD128</p> <p><b>SD150</b> - TO SUIT <b>SD06</b> <b>SD151</b> - TO SUIT <b>SD07</b> <b>SD152</b> - TO SUIT <b>SD141</b> <b>SD153</b> - TO SUIT <b>SD24</b> <b>SD56</b> - TO SUIT <b>SD157</b></p>												
<p> <b>SD32</b> - PAD HANDLE ZINC STUD</p> <p> <b>SD273</b> END CAP FOR BASE PLATE</p>	<p>PAD HANDLE</p> <p><b>SD30</b> (White) <b>SD31</b> (Mill) <b>SD27</b> (Satin)</p> <p></p>	<p><b>SD272</b> (Flat Satin)</p> <p> FLUSH BOLT</p>												
<p>LETTER PLATE</p> <p></p> <p><b>SD50</b> (Gold) <b>SD51</b> (Satin) <b>SD52</b> (White) <b>SD53</b> (Black) <b>SD54</b> (Bronze)</p>	<p></p> <p><b>SD100</b> - CLOSER ARM (Anti-Fingertrap) <b>SD103</b> - CLOSER ARM (Standard) <b>SD106</b> - CLOSER PIVOT</p> <p>CLOSER</p> <table><tr><th>Strength</th><th>90° Hold Open</th><th>No Hold</th></tr><tr><td>Light</td><td>SD109</td><td>SD108</td></tr><tr><td>Medium</td><td>SD90</td><td>SD104</td></tr><tr><td>Heavy</td><td>SD114</td><td>SD110</td></tr></table>		Strength	90° Hold Open	No Hold	Light	SD109	SD108	Medium	SD90	SD104	Heavy	SD114	SD110
Strength	90° Hold Open	No Hold												
Light	SD109	SD108												
Medium	SD90	SD104												
Heavy	SD114	SD110												

Not to scale

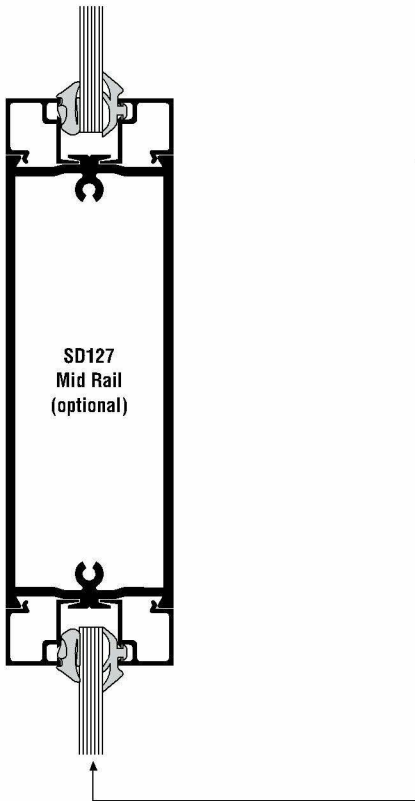
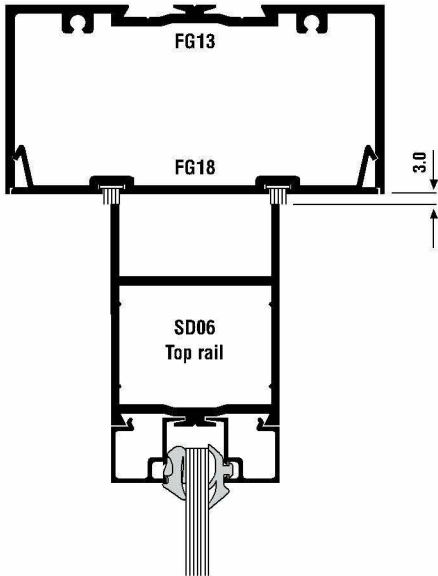


System 10

COMMERCIAL  
DOOR

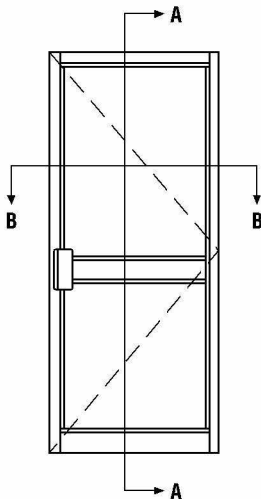
General Arrangement

SECTION A-A

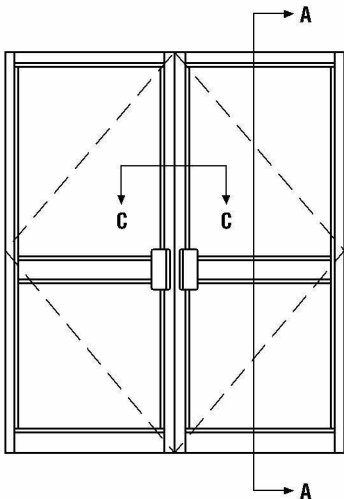


Note that when using SD13 as header plate, 1.0mm must be milled from the woolpile grooves in order to give clearance for the Door closer.

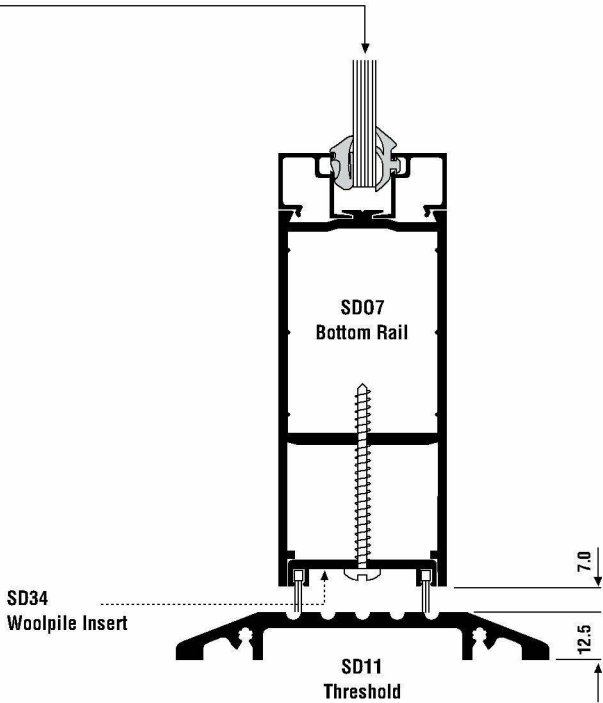
\* If fixed light required above door sections FG13 and FG18 should be used.



TYPICAL SINGLE GLAZED  
SINGLE LEAF PIVOT DOOR



TYPICAL SINGLE GLAZED  
DOUBLE LEAF PIVOT DOOR

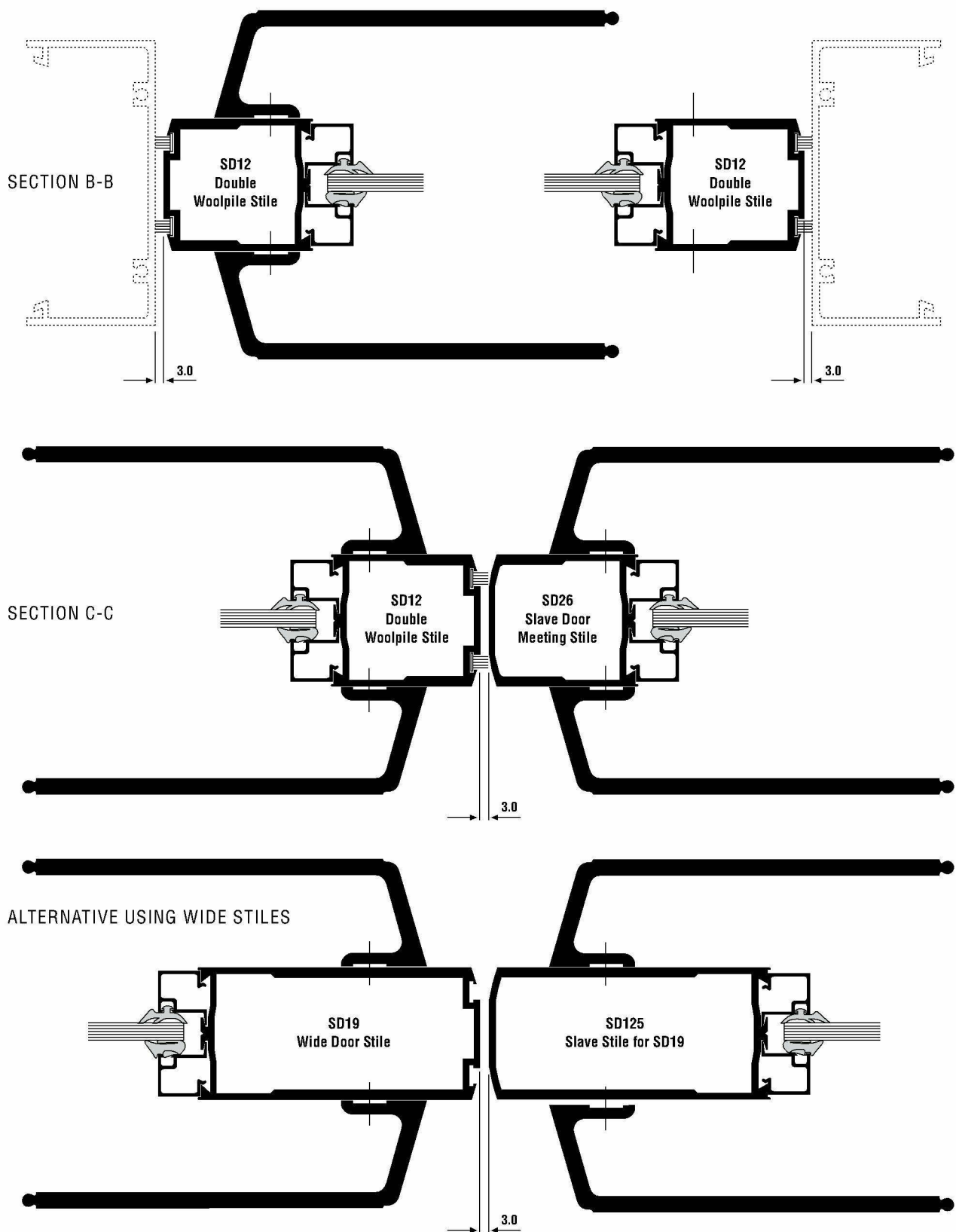




# General Arrangement

**m<sup>®</sup>**  
**System 10**

COMMERCIAL  
DOOR



**Scale 1:2**

© METAL TECHNOLOGY LIMITED. This data sheet is issued subject to the condition that it shall not be reproduced without the consent of Metal Technology in writing. 11/01

**Sheet 8**

RYD00092657\_0133

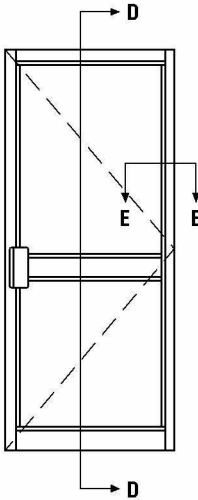
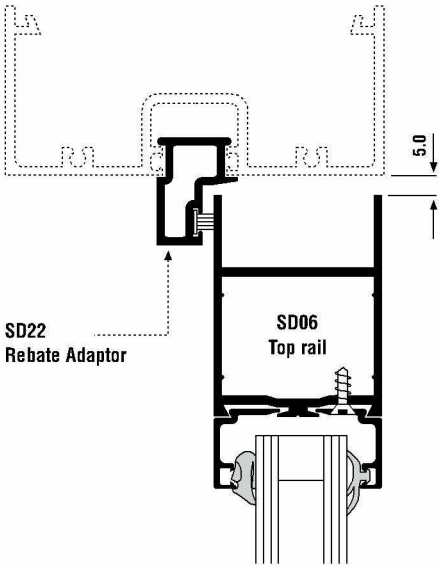


**System 10**

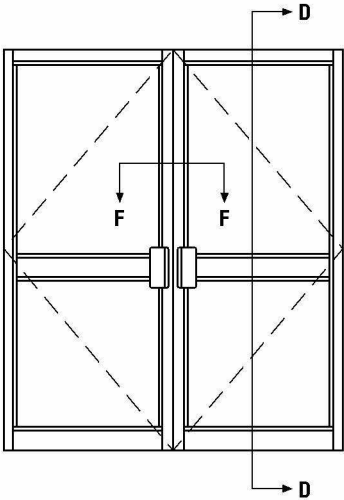
COMMERCIAL  
DOOR

**General Arrangement**

SECTION D-D

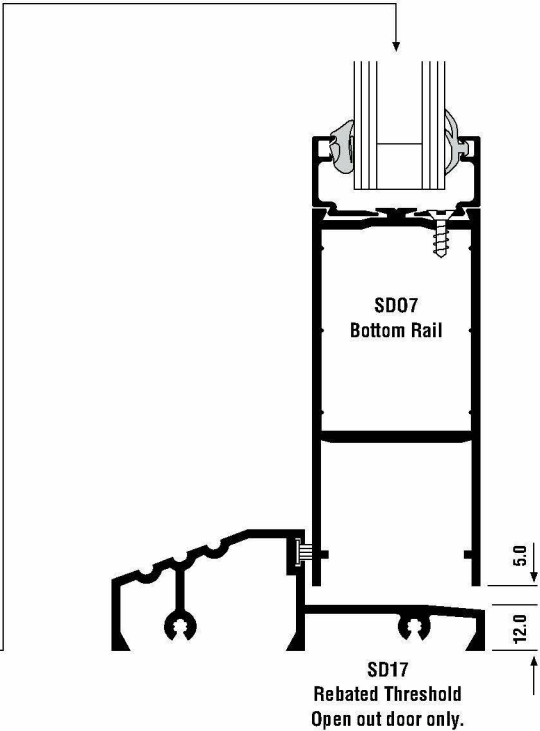
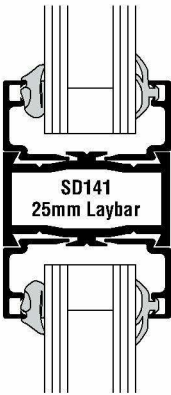


TYPICAL DOUBLE  
GLAZED SINGLE LEAF  
HINGED DOOR



TYPICAL DOUBLE  
GLAZED DOUBLE LEAF  
HINGED DOOR

OPTIONAL SD141  
LAYBAR



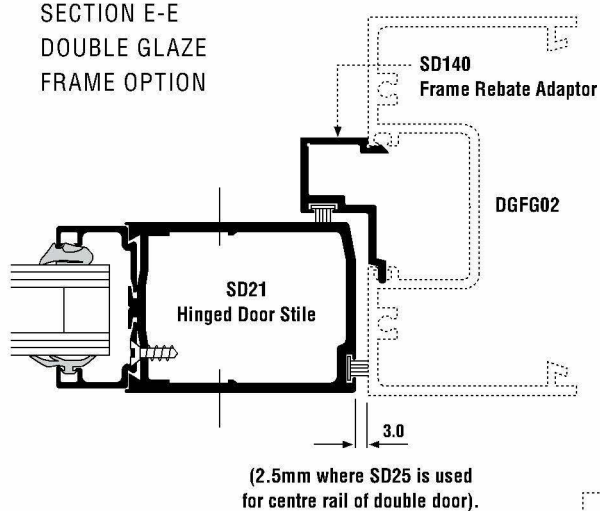
# General Arrangement



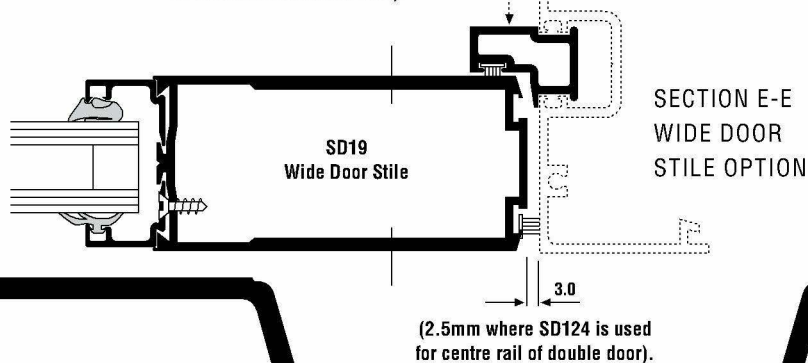
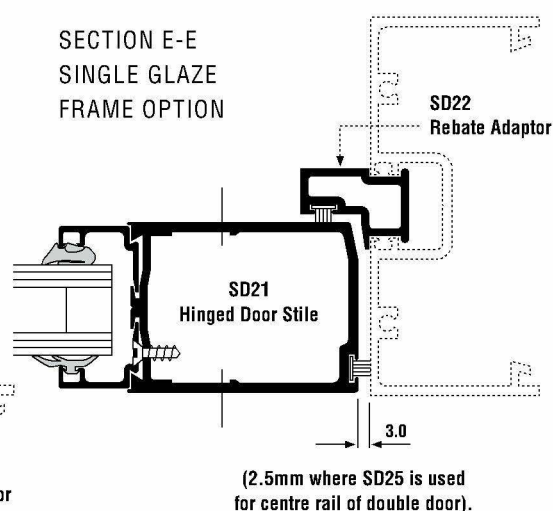
## System 10

COMMERCIAL  
DOOR

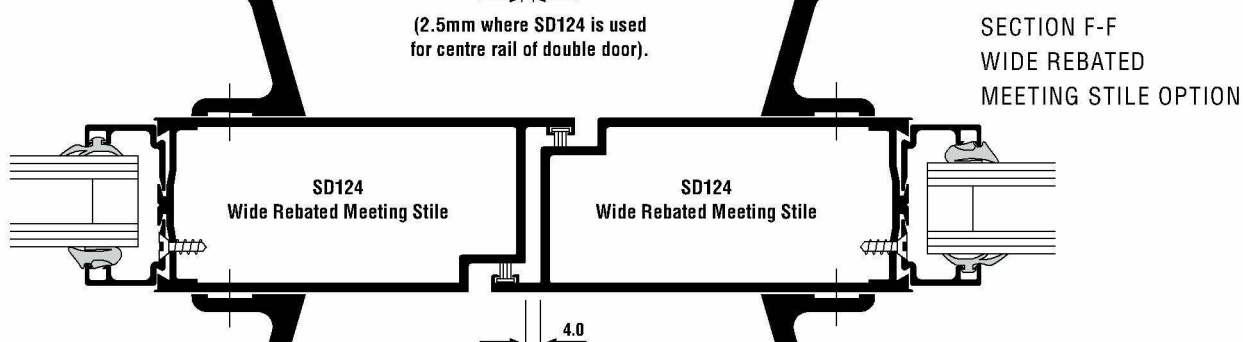
SECTION E-E  
DOUBLE GLAZE  
FRAME OPTION



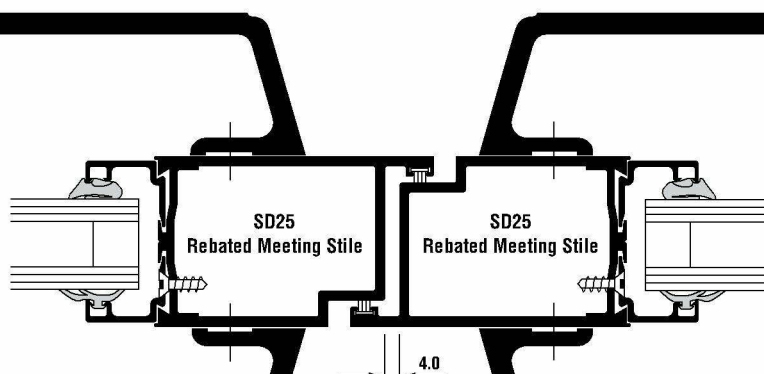
SECTION E-E  
SINGLE GLAZE  
FRAME OPTION



SECTION E-E  
WIDE DOOR  
STILE OPTION



SECTION F-F  
WIDE REBATED  
MEETING STILE OPTION



SECTION F-F  
STANDARD REBATED  
MEETING STILE OPTION

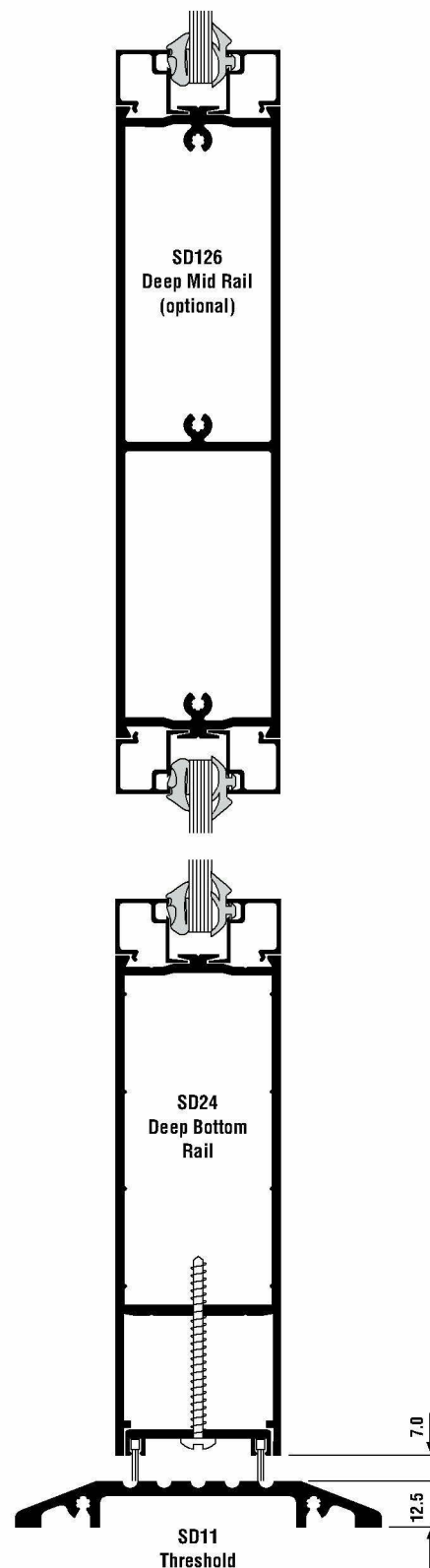
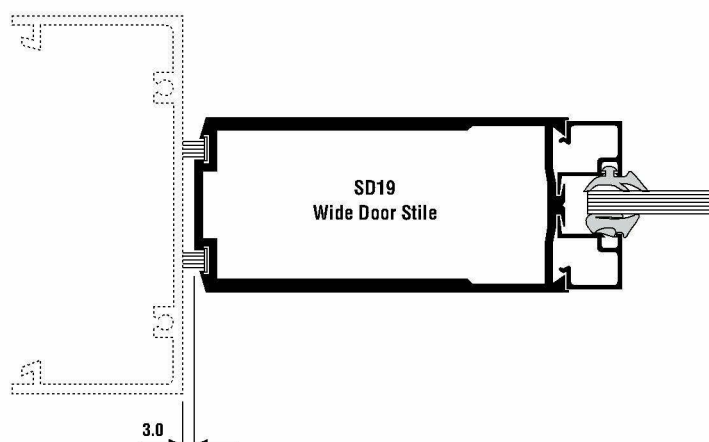
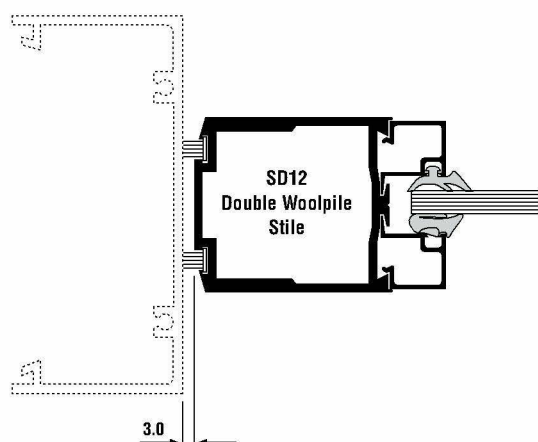
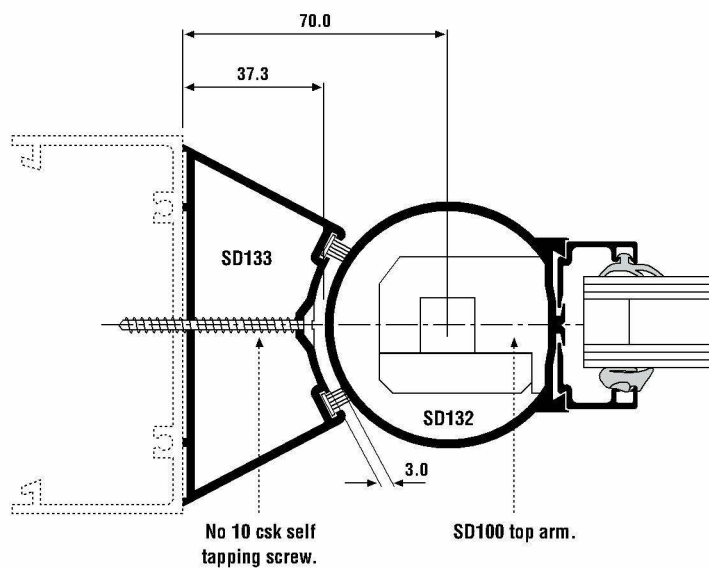
Scale 1:2



## System 10

COMMERCIAL  
DOOR

## General Arrangement



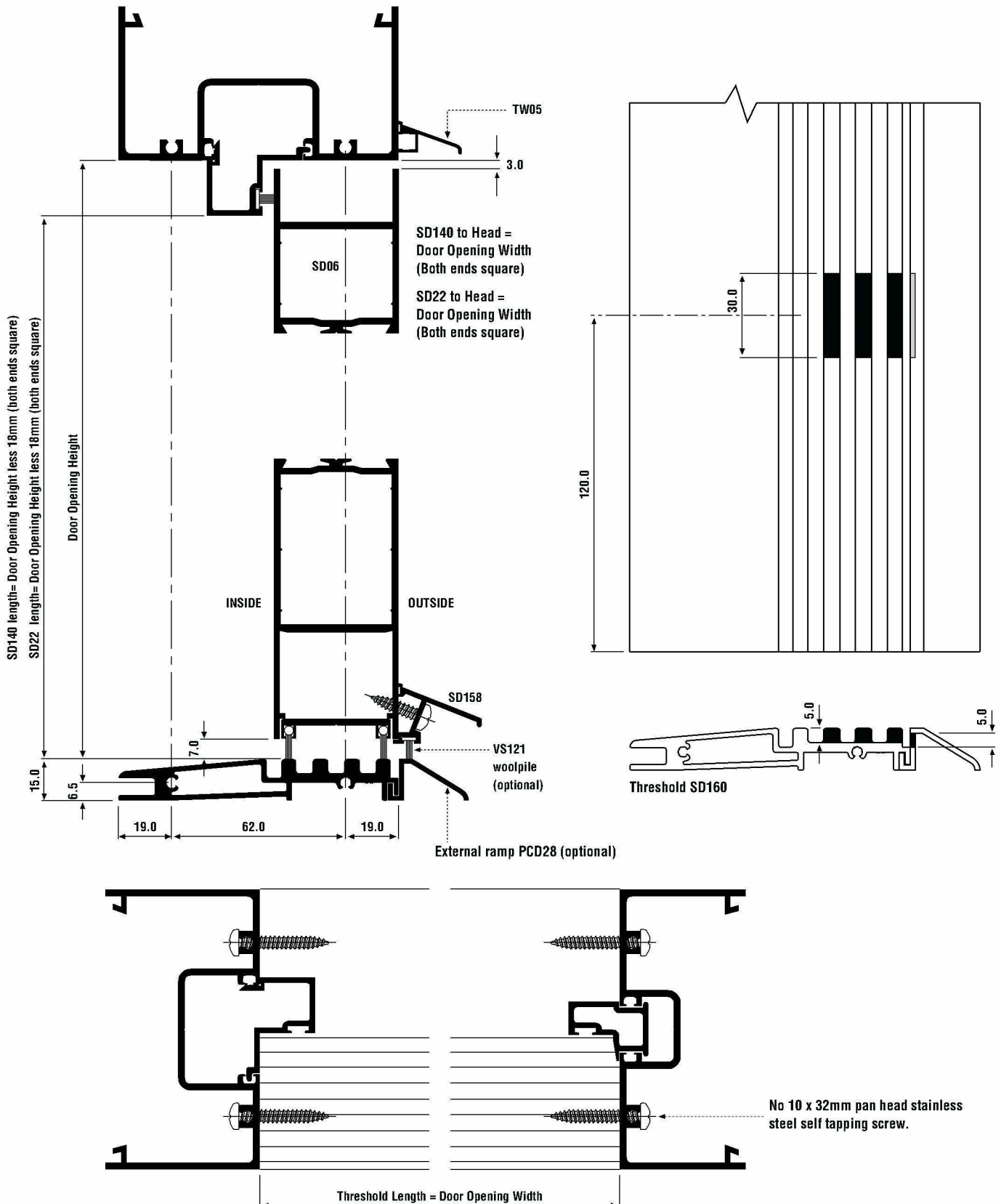
# General Arrangement



## System 10

COMMERCIAL  
DOOR

DRAINED THRESHOLDS - OPEN OUT HINGED



Scale 1:2

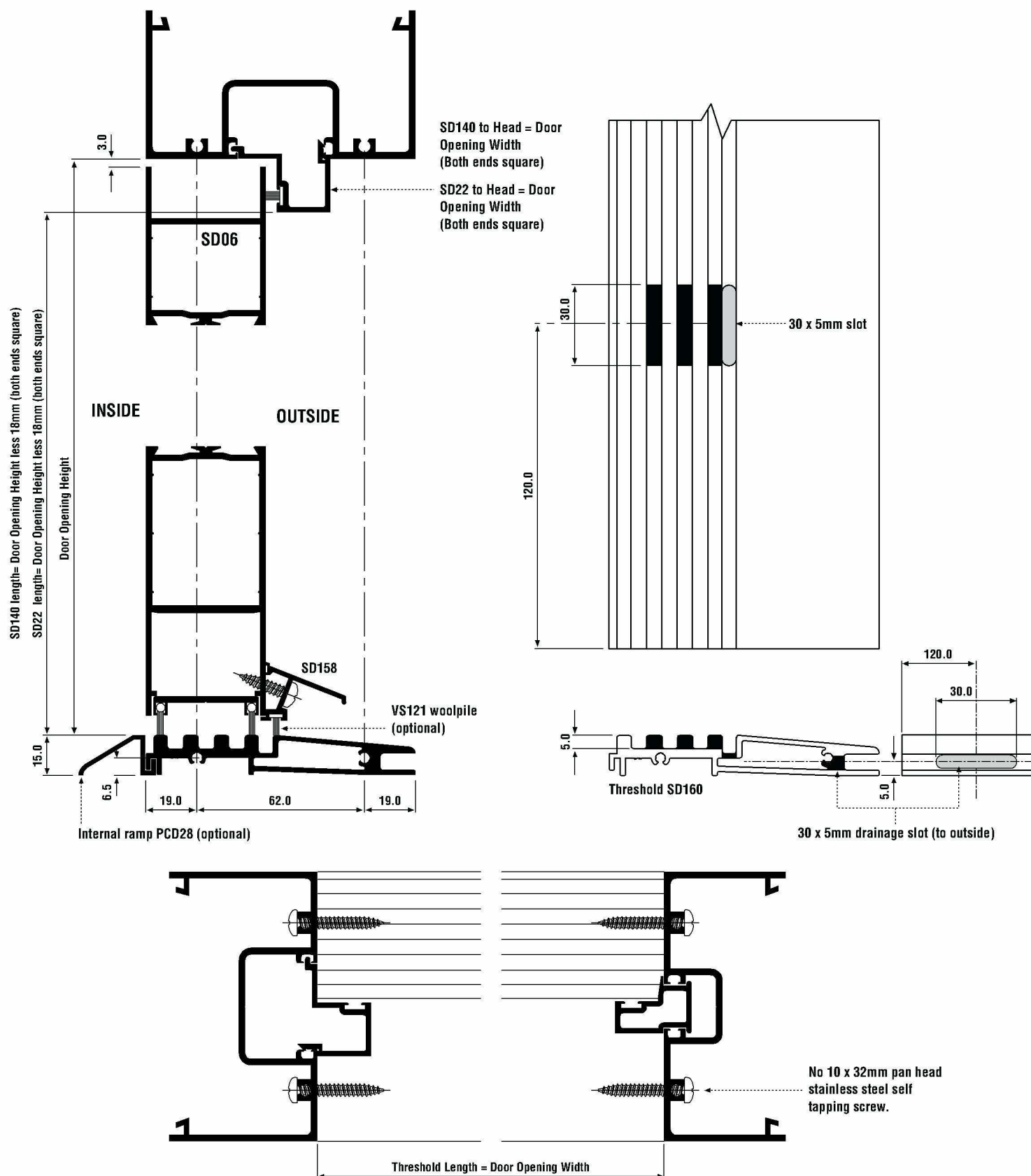
© METAL TECHNOLOGY LIMITED. This data sheet is issued subject to the condition that it shall not be reproduced without the consent of Metal Technology in writing. 03/04

Sheet 12

rev 2 19/03/04

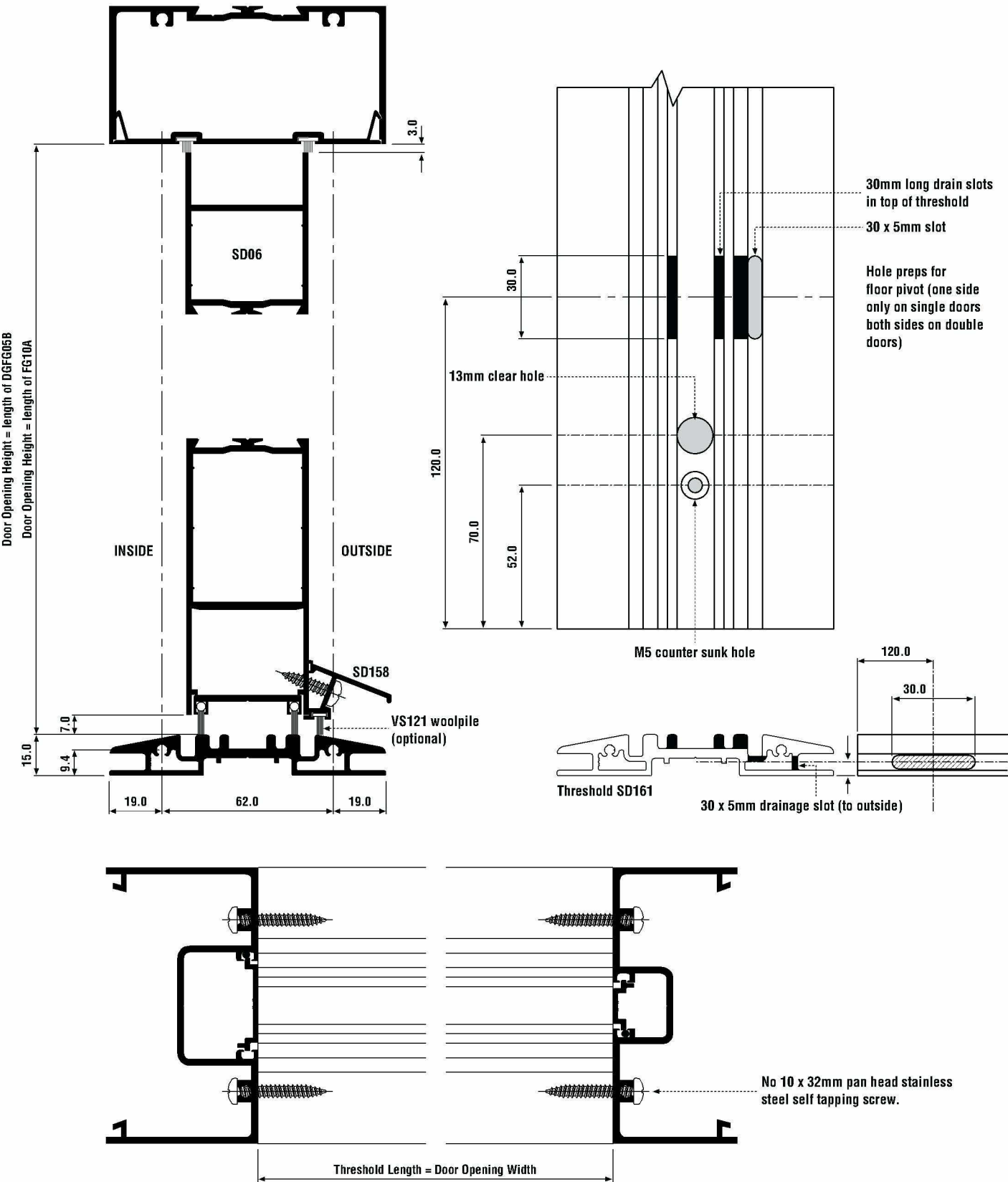
RYD00092657\_0137

## General Arrangement



# Fabrication Details

## DRAINED THRESHOLDS - SWING DOOR



Scale 1:2



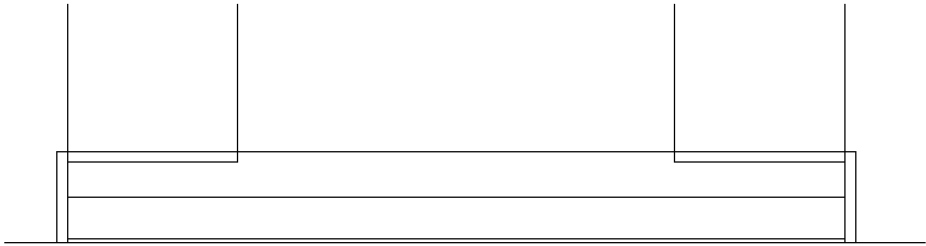


System 10

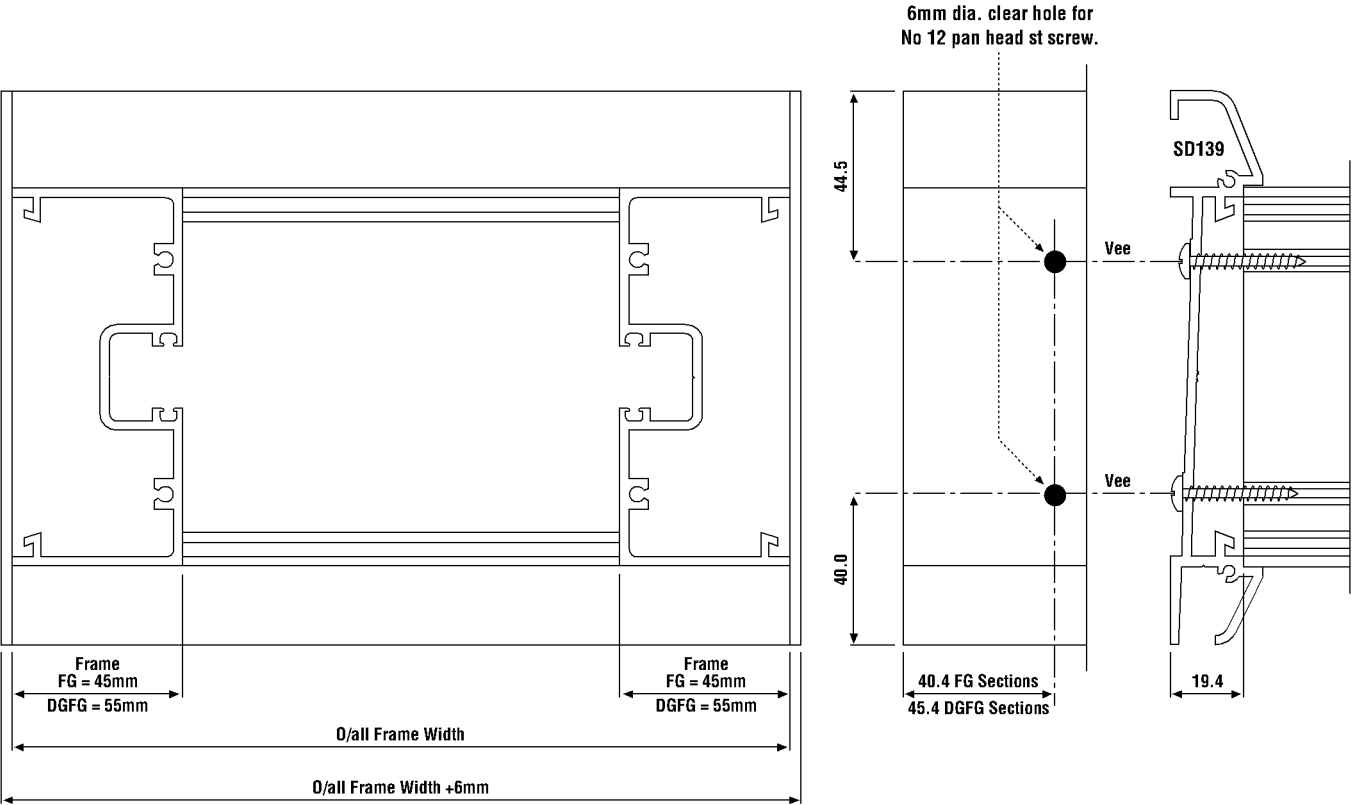
COMMERCIAL  
DOOR

Fabrication Details

DRAINED BASE PLATE DETAIL TO FLUSH GLAZED SCREEN

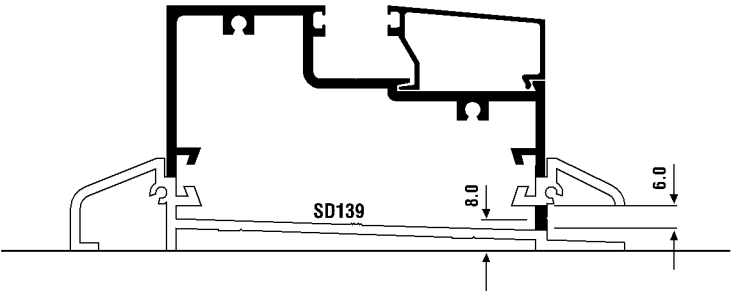


DRAINED BASE PLATE END PREP FOR MAIN FRAME SECTION

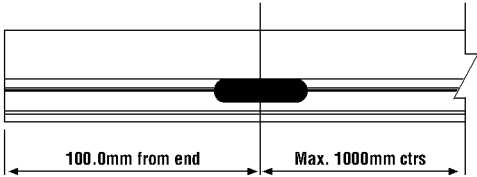


End caps SD273 available to suit base plate.

BASE PLATE TO FLUSH GLAZED SCREEN



DRAINAGE TO BASE PLATE



# Hinge Prep Details

## HINGE FITTING

The following details are for PCD98 door hinges only.

1. Drill the holes for the hinges at the centres shown ensuring lower set of holes is on the outer frame. Metal Technology recommend the use of drilling jigs JIG10001 & JIG10024 to ensure the correct positioning of the holes.
2. Metal Technology recommend 2 hinges per door leaf up to 2100mm high and 3 hinges per leaf between 2100mm and 2400mm high or over 850mm wide. For vertical positions of hinges on frame & stile see sheet 'Hinge Positions'.
3. Where added security is required to prevent leaf being lifted off when open, an additional hinge may be installed upside down. Refer to Metal Technology's Technical Department for details.
4. The hinges must be secured to the frame and the stile via tapping plates with integral leaf spring, supplied with the hinge. The correct positioning of tapping plates is essential.
5. When the hinges have been installed and the doors are hung, adjustment can be made to the doors position by screw adjustment with 5mm hex allen key.

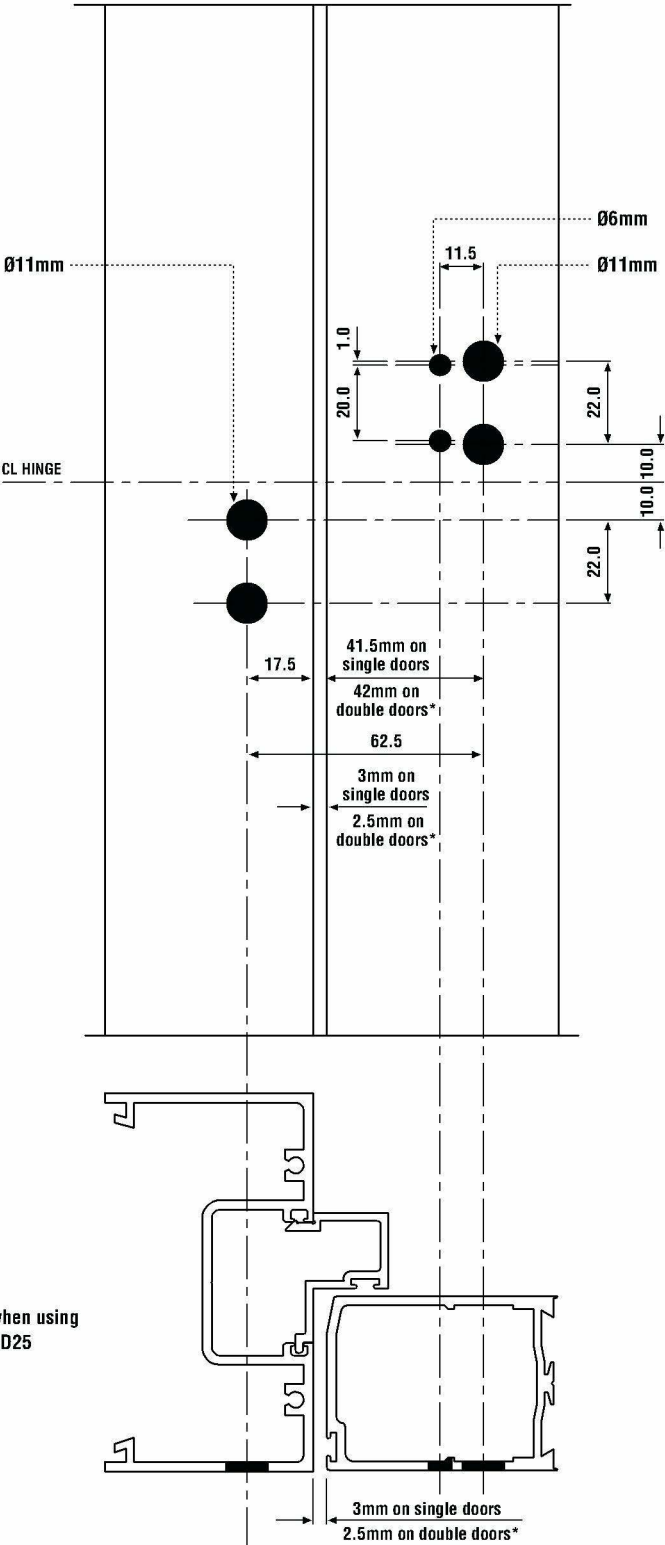
Lateral adjustment  $\pm 3\text{mm}$ . Access before screw cover cap is fitted.

Gasket pressure fine adjustment  $\pm 0.75\text{mm}$ . Access before top cover cap is fitted.

Height adjustment + 4mm. Access before bottom cover cap is fitted.

(Plastic cover caps must be fitted after adjustment to offer protection against dirt/moisture and to secure bush inside the hinge )

\* 2.5mm gap is only applicable when using rebated meeting stiles SD124/SD25



## Scale 1:2



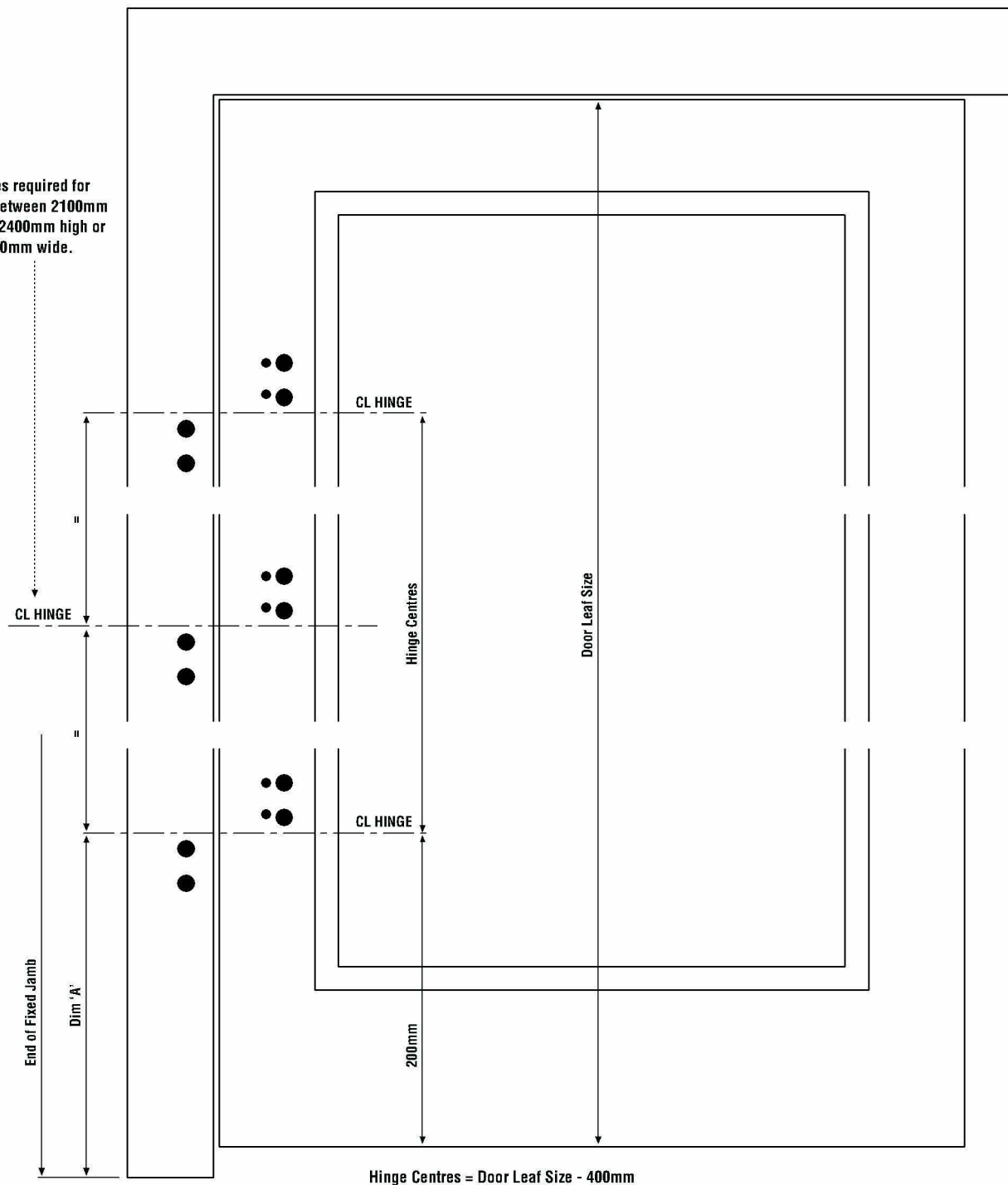
## System 10

COMMERCIAL  
DOOR

## Hinge Positions

For details of hinge preparations and  
fabrication see 'Hinge Prep Details'

3 Hinges required for  
doors between 2100mm  
high & 2400mm high or  
over 850mm wide.



To minimise problems with tolerances,  
top hinge position (and centre hinge when  
required) should be measured from the  
centre line of the lower hinge.

Dim 'A' ( SD11 Threshold ) = 219.5mm  
Dim 'A' ( SD17 Threshold ) = 217mm  
Dim 'A' ( SD33 Threshold ) = 219.5mm  
Dim 'A' ( SD160 Threshold ) = 222mm

Sheet SYS10/7/20

rev 3 19/03/04

Scale 1:2

© METAL TECHNOLOGY LIMITED. This data sheet is issued subject to the condition that  
it shall not be reproduced without the consent of Metal Technology in writing. 03/04

RYD00092657\_0142



**System 10**

.....  
COMMERCIAL  
DOOR  
.....

# Fabrication & Installation

.....

**Frame, Glass & Fabrication  
Glazing, and Drainage Details**





# Introduction

COMMERCIAL DOOR SYSTEM

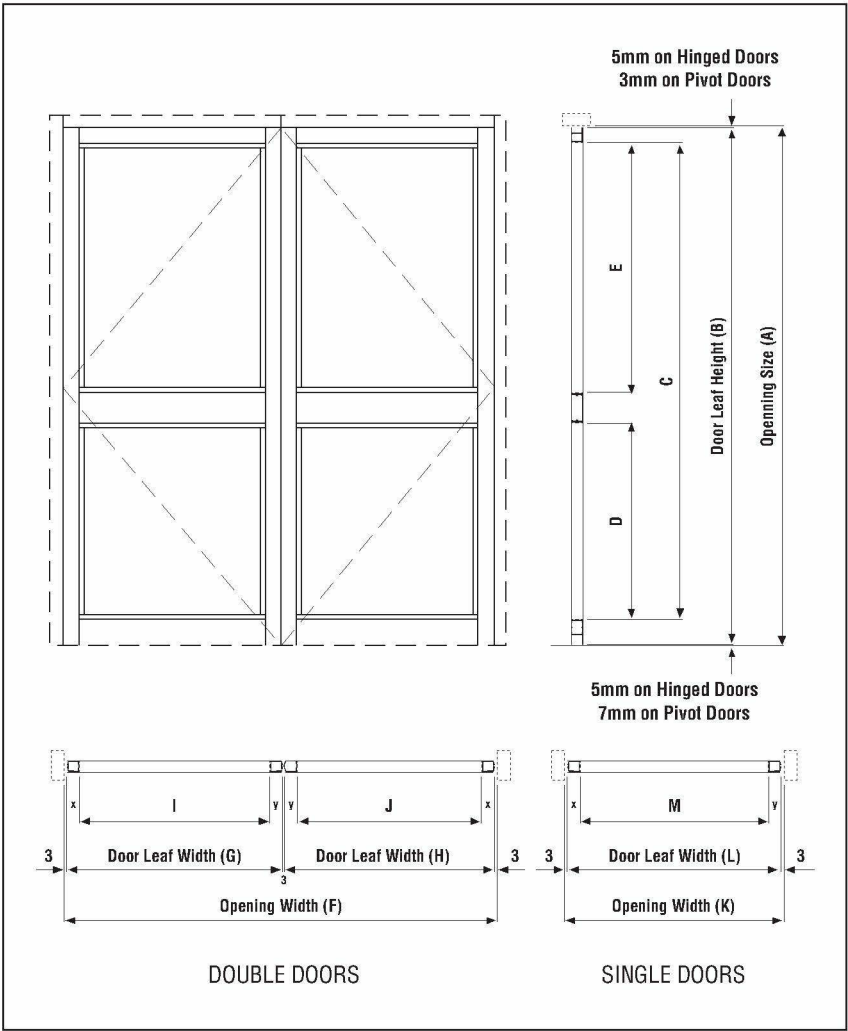
The Metal Technology Commercial Door System has been so designed as to accept all of the commonly available types of closers, locks, bolts, handles and letterplates.

Because of the wide variety of types of ironmongery available, it would be inappropriate here to detail the preparations required to secure them to the door.

## Assembly & Fixing Details

While the fabrication of the door is taking place the appropriate manufacturers instructions must be consulted at the required stage. Any system is dependent on good workmanship to ensure correct fabrication and fitting. The various sections must be cut and prepared accurately, all joints must be sealed completely and cleanly, removing any excess. Weatherstrips and gaskets must be mitre cut at corners and fixed into their appropriate channels without stretching, and finally sealed at the corners. Cement and plaster can damage the finish of this product. If they are not removed promptly with clean soapy water. Caution must be exercised with the use of any abrasive tools or materials. Any excess mastic must be removed as so as not to detract from the finished product.

## Frame Details



Not to Scale

**m<sup>t</sup>**  
**System 10**  
.....  
COMMERCIAL DOOR  
.....

RYD00092657 0145

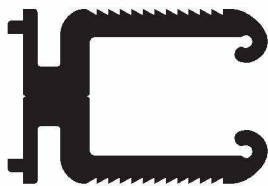
## Fabrication Details

The following points detail the minimal fabrication required to form the frames.

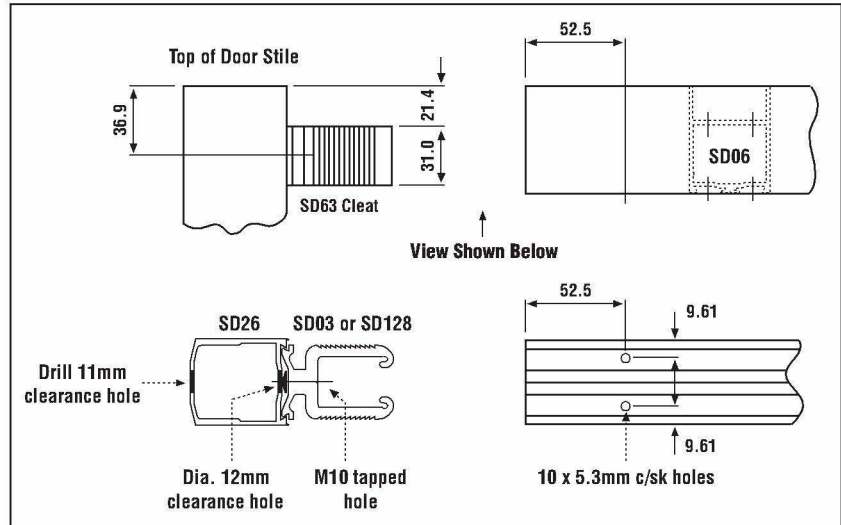
- 1 Cut the chosen sections to length as required (See Glass & Fabrication Details), and select the necessary components. All lengths to be square cut. (Except SD14 bead where indicated)
- 2 Drill 11mm dia. holes through the stiles so that they align with the tapped hole when the rail cleats are positioned as shown (see sketch).
- 3 Slide the cleats into position as shown and secure using 30mm x M10 socket head screw.
- 4 Using the 'V' grooves in the top and bottom rails, drill a series of 10 x 5.3mm c/sk holes 52.5mm in from each end. (These holes are slightly offset in relation to the screw port splines of the cleats, enabling the rails to be tightly drawn to the stiles when secured). Accurate drilling of the holes is important to achieve a good final product, therefore the use of proper drilling jigs is recommended.
- 5 Slide the rails onto their respective cleats (the rail pins will offer some resistance as they engage with the serrations on the cleat), and secure using No. 8 x 5/8" csk self-tapping.
- 6 Ensure all joints are sealed with "small gap" type sealant during fabrication.
- 7 Fit the stile grommet (SD40) into the hole in the stile.

**NOTE:** The above procedure is based on the use of SD03 cleat which is a dovetail fit into the stile. A non-dovetailed cleat (SD128) is also available.

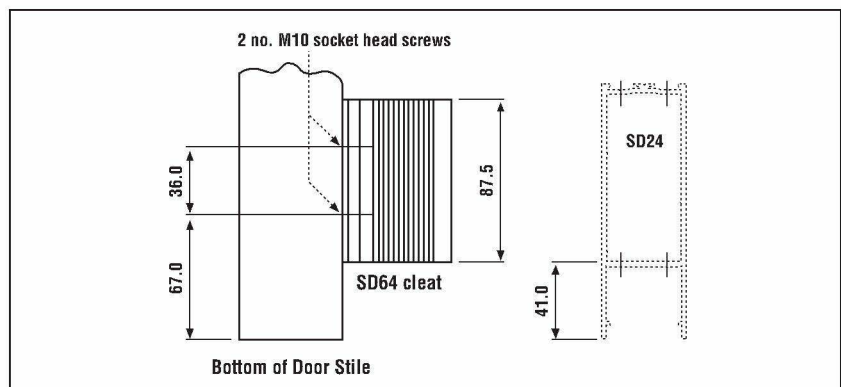
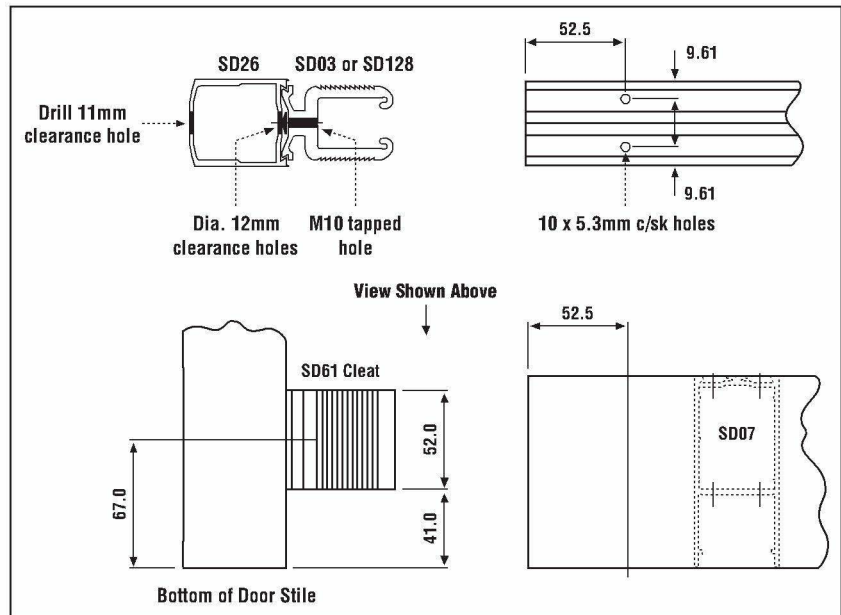
### ALTERNATIVE CLEAT SECTION SD128



All preparations as for SD03.



Drawings - Not to Scale





# Frame Details - Tie Bar Option

COMMERCIAL DOOR SYSTEM

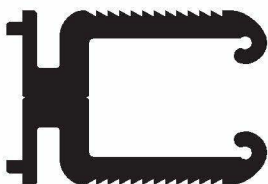
## Fabrication Details

Should a particular application require greater than normal strength from the door, provision has been made for the addition of a tie bar to the top and bottom rails.

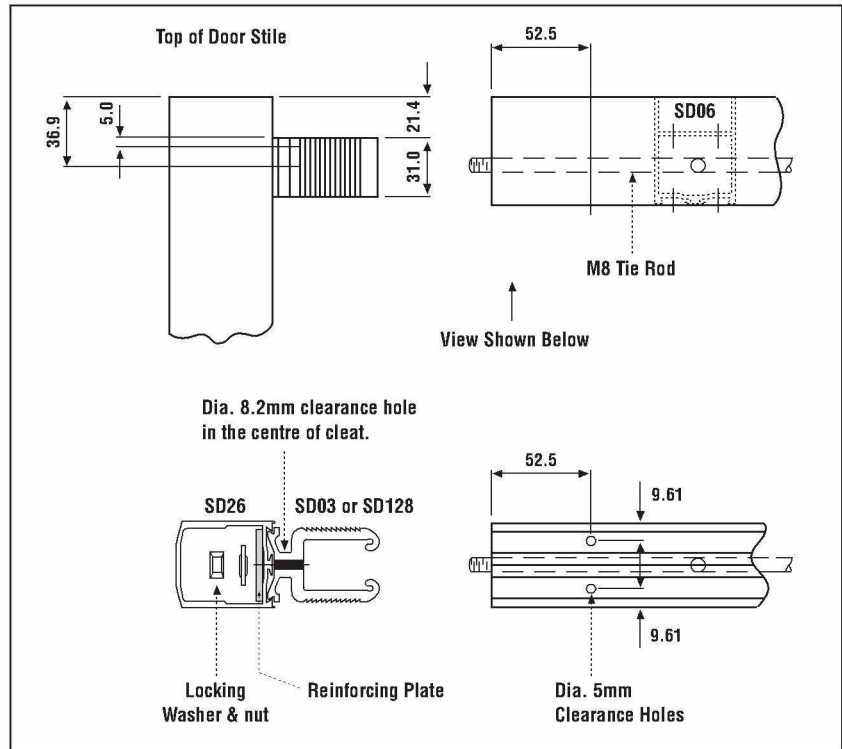
- 1 Cut the chosen sections to length as required (See Glass & Fabrication Details), and select the necessary components. All lengths to be square cut, (except SD14 bead where indicated).
- 2 Using the 'V' groove, drill an 8.2mm clearance hole in the centre of each cleat as shown. Also drill a 5mm clearance hole 5mm from the top of the top rail cleats and 10mm from the top of the bottom rail cleats.
- 3 Drill 8.2mm clearance holes in the door stiles to align with the 8.2mm hole in the cleats (See sketch) and drill 3mm pilot holes to align with the 5mm hole in the cleats. Accurate drilling of the holes is important to achieve a good final product, therefore the use of proper drilling jigs is recommended.
- 4 Slide the cleats into position as shown and secure using 25mm x No. 8 pan head self-tapping screws.
- 5 Feed the tie bars through the rails and slide the rails over the cleats. Tension the tie bars onto the reinforcing plates with the locking washers and nuts.
- 6 Secure the rails to the cleats as normal and tighten the tie bars to 15Nm (torque must be adjusted if the tie bar dia. differs from that shown).
- 7 Ensure all joints are sealed with "small gap" type sealant during fabrication.

**NOTE:** The above procedure is based on the use of SD03 cleat which is a dovetail fit into the stile. A non-dovetailed cleat (SD128) is also available.

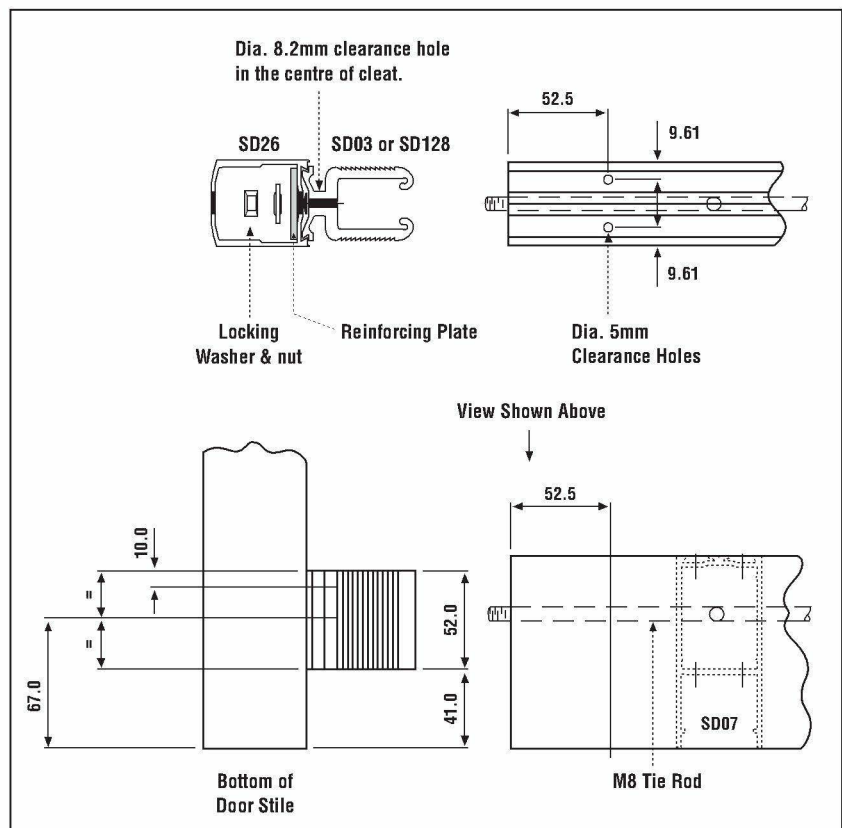
### ALTERNATIVE CLEAT SECTION SD128



All preparations as for SD03.



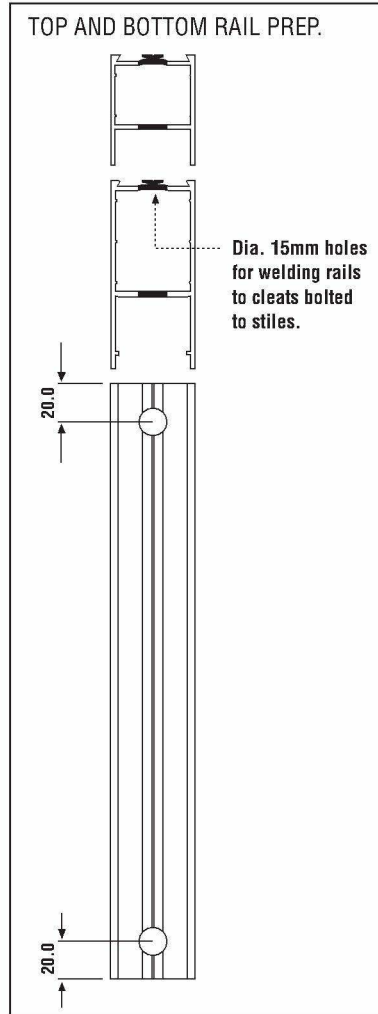
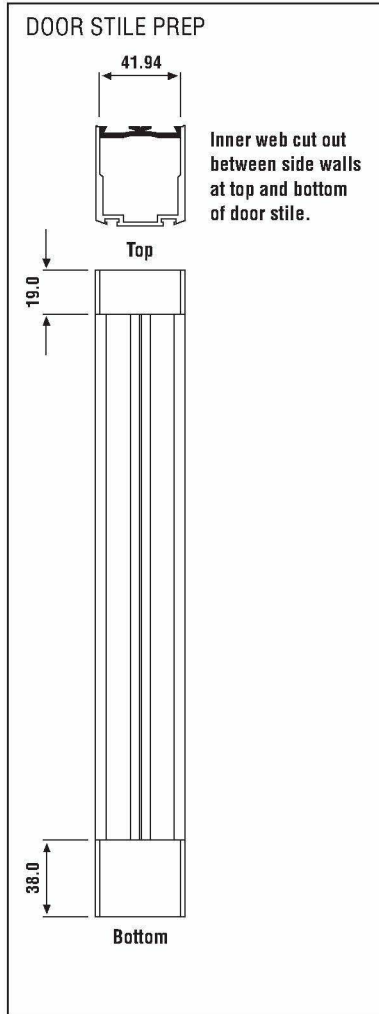
Drawings - Not to Scale



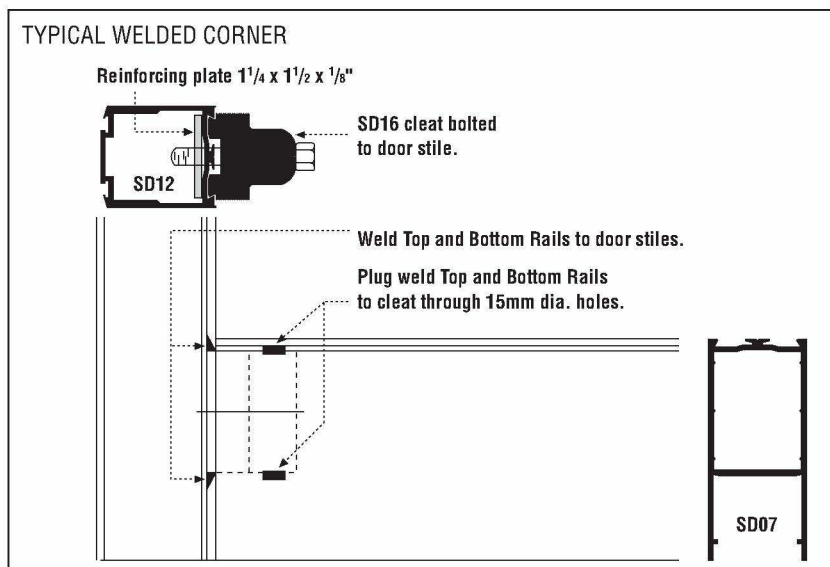


# Frame Details - Welded Option

COMMERCIAL DOOR SYSTEM



Drawings - Not to Scale



## Fabrication Details

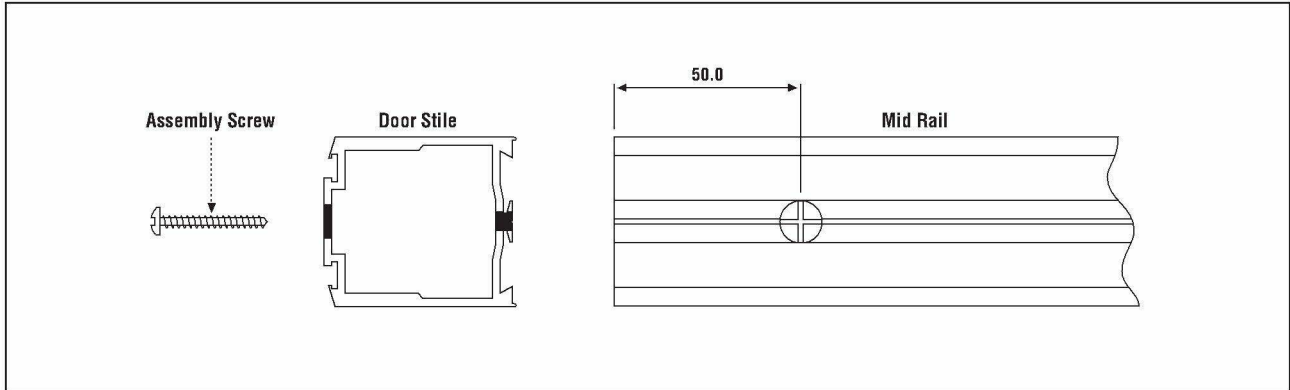
- 1 Cut the chosen sections to length as required (See Glass & Fabrication Details), and select the necessary components. All lengths to be square cut, (except SD14 bead where indicated).
- 2 Use the special cleats (top cleats are SD16 x 31mm long, bottom cleats are SD16 x 52mm long).
- 3 Drill 8.2mm clearance holes in the door stiles so that they align with the 8.2mm clearance hole in the cleat when it is in position.
- 4 Mill away the bead platform flush to the inner walls of the rail (see sketch).
- 5 Slide the cleats into position, locate the reinforcing plates and then secure using the M8 bolts.
- 6 Drill dia. 15mm holes 20mm in from each end of the top and bottom rails through the cleat cavity (see sketch).
- 7 Position the rails on the cleats and securely clamp the frame together, ensuring that the frame is perfectly square and that the top and bottom rails are flush with the top and bottom of the door stiles.
- 8 Plug weld the top and bottom rails to the cleats using the holes drilled in step 6.
- 9 Weld the top and bottom rails to the door stiles above and below the cleat cavity.
- 10 Ensure all joints are sealed with "small gap" type sealant during fabrication.

**Note:** Metal Technology do not recommend this method of construction be used with pre-finished material.



# Mid Rail Fabrication - Standard

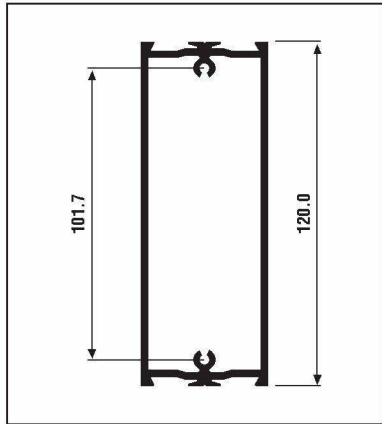
COMMERCIAL DOOR SYSTEM



Drawings - Not to Scale

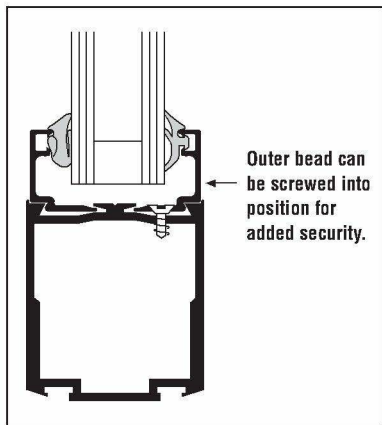
## Fabrication Details

- 1 Cut the required lengths from the mid rail profile (see formulae). Square cut ends.
- 2 Drill two 5mm clearance holes at 101.7mm centres along the 'V' groove of the door stiles to align with the mid rail screw ports. On the opposite side of the stile drill two 8.25mm clearance holes to align with the above.
- 3 Ensure the frame is square and secure the mid rail using 25mm x No. 8 pan head self - tapping screws.
- 4 Ensure "small gap" type sealant is applied to all joint faces during fabrication.



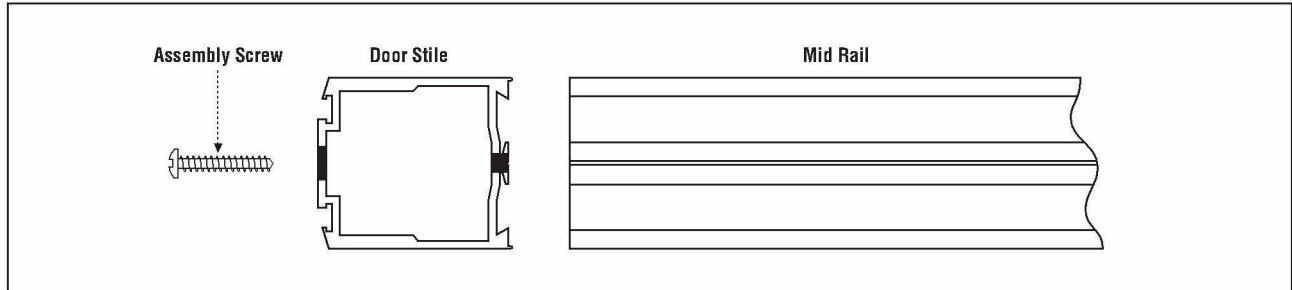
## Security Option (DG Bead only)

With the double glazed option the outer bead may be secured to the door frame using 6.5mm x No. 6 csk head self-tapping screws to enhance the security of the system. (Drill 4mm csk holes in the bead and 2.5mm pilot holes in the door frame.)



# Mid Rail Fabrication - Deep

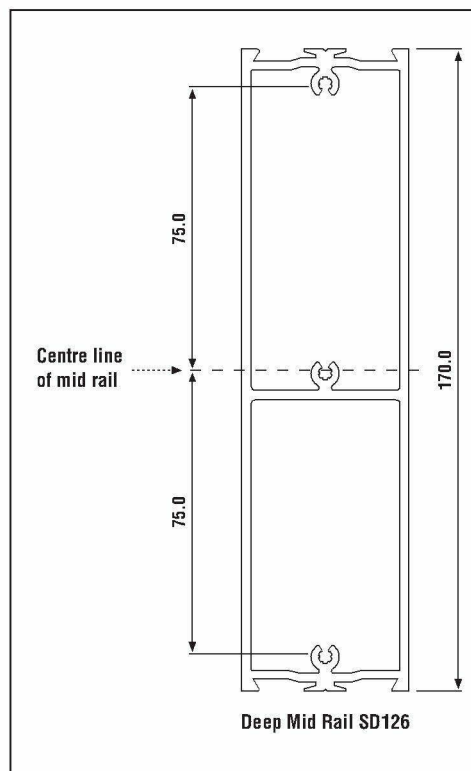
COMMERCIAL DOOR SYSTEM



**Drawings - Not to Scale**

## Fabrication Details

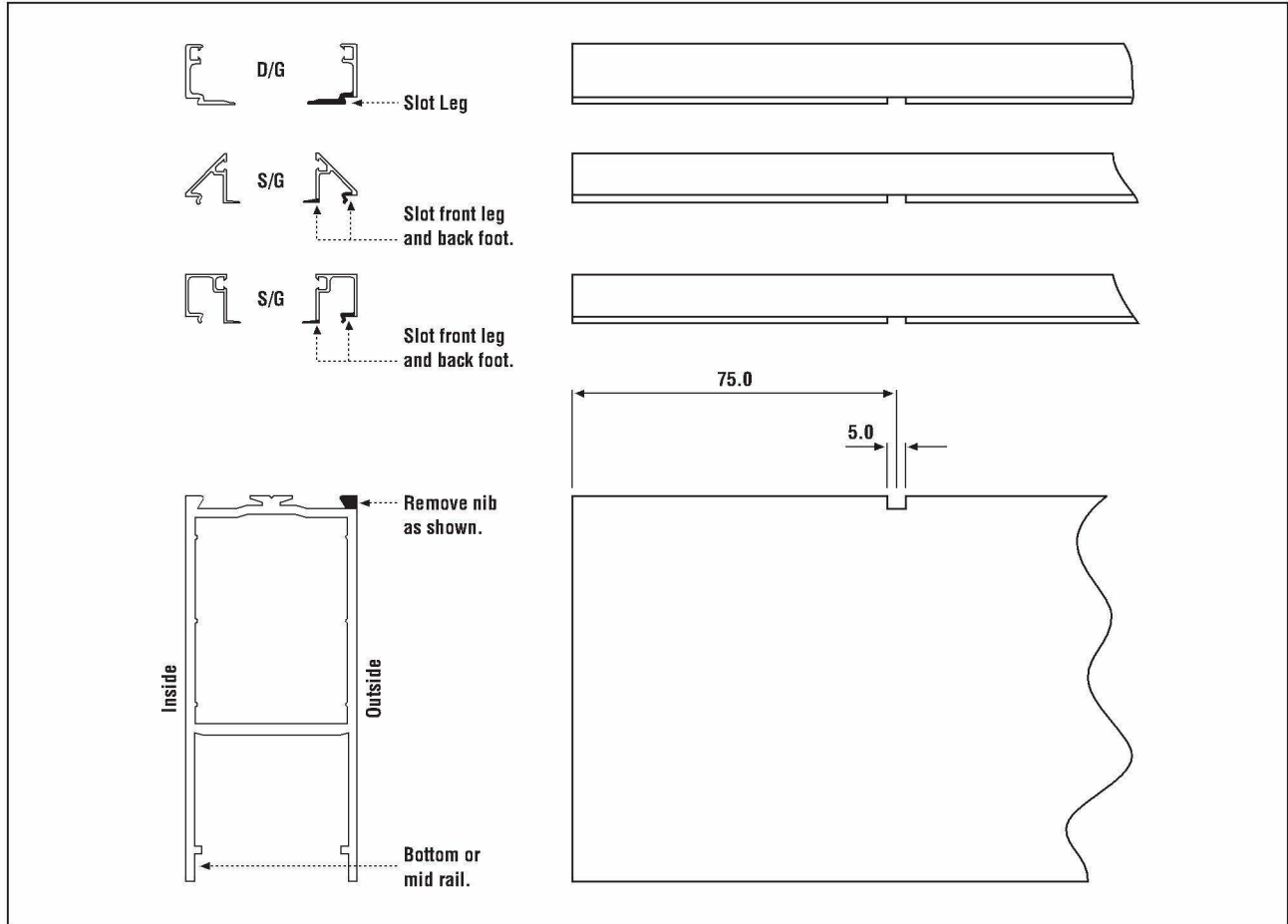
- 1** Cut the required lengths from the mid rail profile (see formulae). Square cut ends.
- 2** Drill three 5.5mm clearance holes at 75mm centres about the centre of the mid rail along the 'V' groove of the door stiles so that they align with the mid rail screw ports. On the opposite side of the stile drill three 10mm clearance holes to align with the above.
- 3** Ensure the frame is square and secure the mid rail using 3 No. 10 x 45mm pan head self-tap pozi screws.
- 4** Ensure "small gap" type sealant is applied to all joint faces during fabrication.





# Drainage Details

COMMERCIAL DOOR SYSTEM

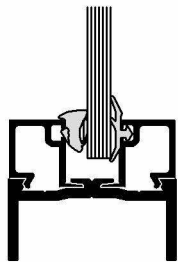


Scale 1:2

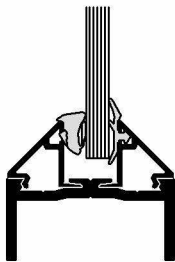
## Drainage Preparation Details

Drainage for the commercial door system is achieved quite simply. Where other Metal Technology Systems are being used in conjunction the appropriate section in their installation and fabrication guides must be consulted.

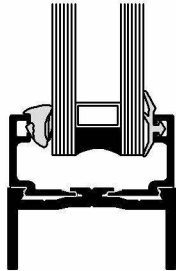
- 1 Notch the front of the bottom rail (and mid rail if used) bead channel as shown, 75mm from each end.
- 2 Cut the slots in the outer beads to align with the notches in the rails, as shown.
- 3 Ensure that the end of the bead channel is completely sealed against the door stiles with "small gap" type sealant.
- 4 For successful drainage to be completed, ensure all the glazing and infill panels are correctly seated on their setting blocks.



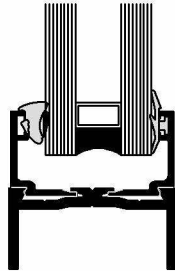
A - Single Glaze Bead SD02



B - Single Glaze Bead (bevel) SD14



C - 24mm Double Glaze Bead SD10

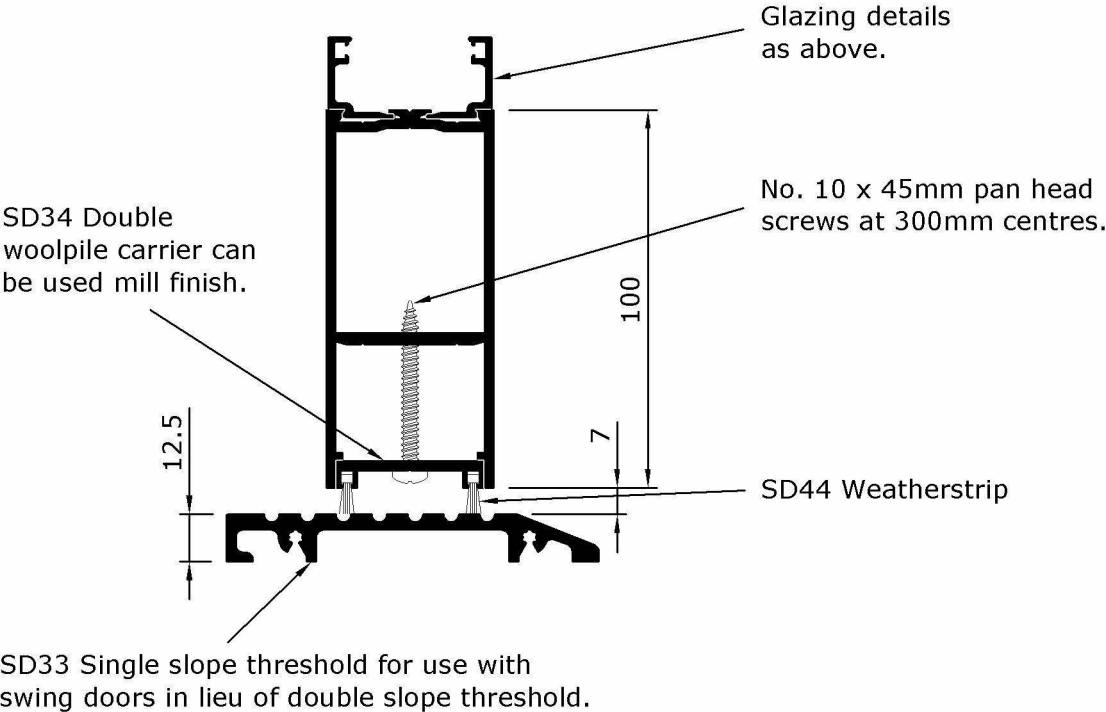


D - 28mm Double Glaze Bead SD35

Ref.	Glass	Description	Inside	Outside
A	6mm 10mm	Single Glaze Bead SD02	CA27 (white wedge) CA26* (orange wedge)	SD37 SD37
B	6mm 10mm	Single Glaze Bead (bevel) SD14	CA27 (white wedge) CA26* (orange wedge)	SD37 SD37
C	24mm	Double Glaze Bead SD10	CA27 (white wedge)	SD37
D	28mm	Double Glaze Bead SD35	CA27 (white wedge)	CA25

\* With strip torn off.

DETAIL SHOWING FLAT BACK THRESHOLD AND DOUBLE WOOLPILE CARRIER



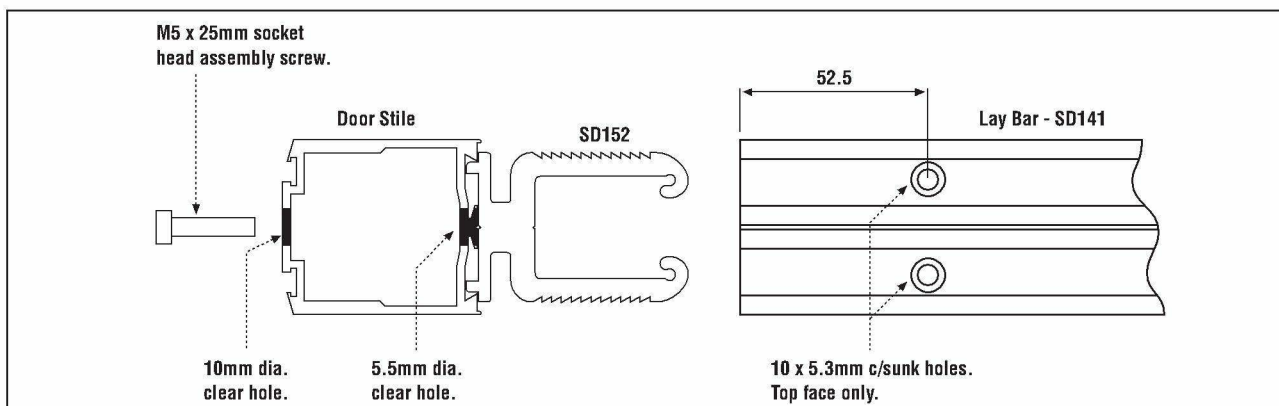
Scale 1:2



# Fabrication Details - SD34 Woolpile Carrier

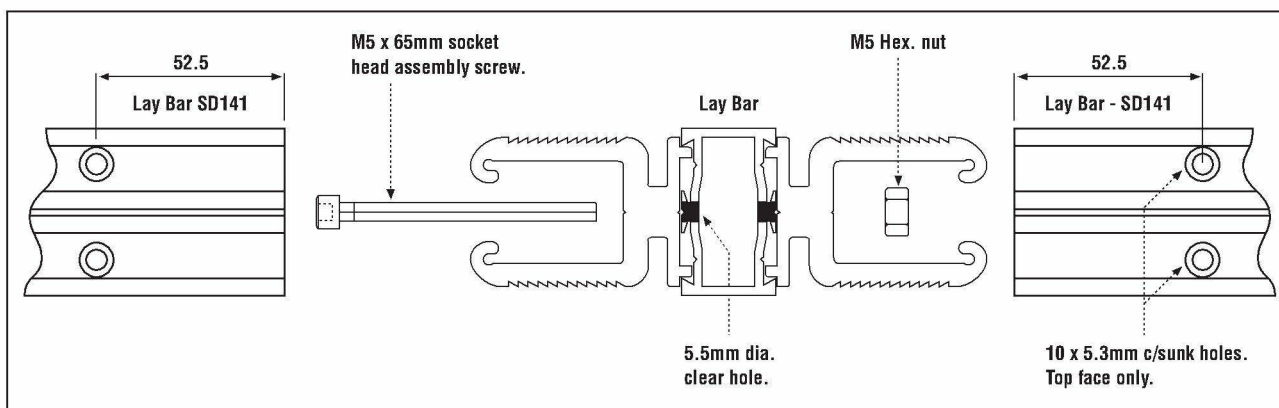
COMMERCIAL DOOR SYSTEM

## Details at Lay Bar Junction with Stile Bar



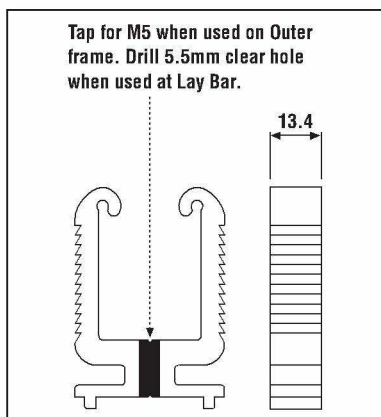
Scale 1:2

## Details at Cruciform Junction of Lay Bar



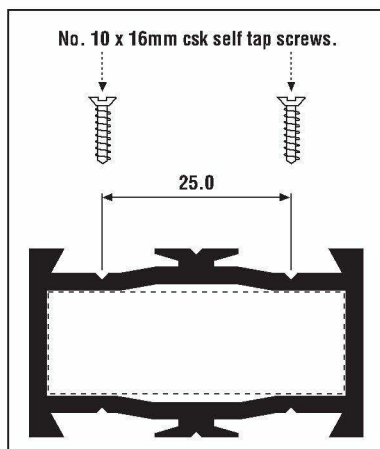
Scale 1:2

## SD152 Fixing Cleat for 25mm Lay Bar



Scale 1:2

## SD141 25mm Lay Bar



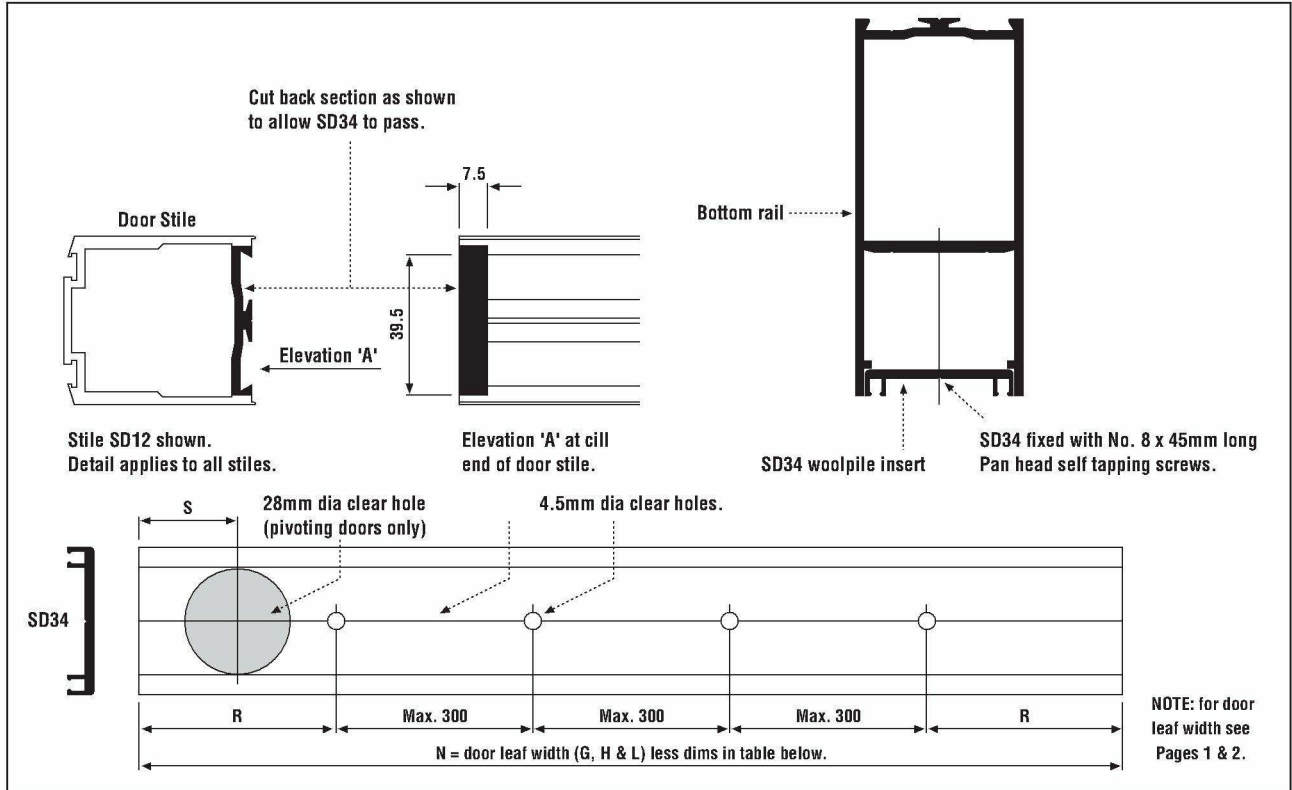
Scale 1:1





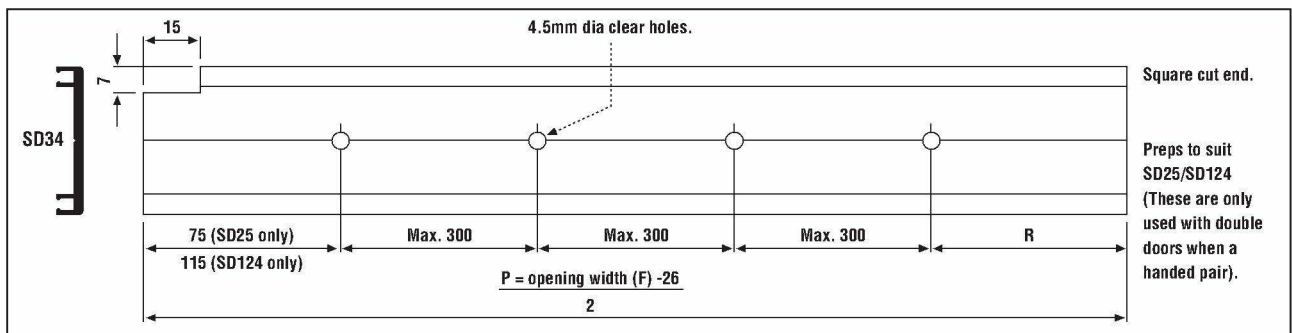
# Frame Details

COMMERCIAL DOOR SYSTEM



Drawings - Not to Scale

Hinged / Pivotted Stiles			Meeting / Handle Stiles				
Profile	Dim	Dim	Woolpile Stiles			Slave Stiles	
	'R'	'S'	SD12	SD19	SD21	SD26	SD125
SD12	85	61	12	12	-	12	12
SD19	132	108	12	12	-	12	12
SD21	65	-	-	-	12	See Below	
					Dim 'R'	65	115



# System 17

## High Rise Curtain Walling

Metal Technology, an acknowledged leader in window and door systems has designed System 17 curtain walling for high rise applications. Its attractive and clean lines will enhance all types of office and commercial façades, with the added benefit of simple fabrication.





Introduction

This system is designed for use in multi-storey and roof glazing applications and is capable of accommodating a variety of glazing, panel and opening options. As with all curtain walling systems, intermediate tie backs to the structure may be required subject to site conditions. The basic suite is comprised of structural profiles, spigots, pressure plates and thermal isolators. A wide range of caps allows the designer to select from a variety of aesthetic solutions. Alternative silicone pointed and frameless vent options are available using System 17 Latitude, SSB and SP. A further unitised modular option is available using System 17 Cassette. Various other bespoke profiles can be produced allowing architects to achieve flexible designs. Glazing options are available for a variety of unit thicknesses. As with all other Metal Technology products, manufacturing is to exacting standards giving economy with required strength, and many years of aesthetic, trouble-free operation.

Thermal Performance

Metal Technology System 17 Curtain Walling in conjunction with the correct glass specification, is designed to aid compliance with the latest thermal requirements of the current building regulations.

Scope

This specification defines materials, construction and finishes for curtain walling.

Materials

Aluminium profiles are extruded from aluminium alloy 6060T6, T5 or T4 complying with the recommendations of BS EN 12020-2/BS EN 755-Parts 1 to 9

Finishes

The range of sections can be provided in either of the following ranges of finishes:

- 1. Anodised to BS 1615 or BS 3987
- 2. Powder organic coated to BS 6496 or BS EN 12206-1

Where required, a different colour/finish can be provided internally and externally.

Construction

Mullions are square cut and jointed using specially designed jointing spigots. Transoms have notched ends to ensure an easily weather-proofed joint can be provided between mullion and transom. The system is mullion drained and provision is made to drain water out of the mullion at regular intervals.

The system offers the facility to produce screens façetted on plan. Gaskets provide the facility of façetting up to ± 5°. When combined with the adaptor profiles and pressure caps any angle from 90° to 180° can be achieved.

Metal Technology do not recommend façetting curtain walling screens when incorporating intermediate mullion expansion joints. To facilitate more efficient fabrication of the system Metal Technology can supply punch tooling and jigs to ensure the accurate and efficient preparation of mullions and transoms. Metal Technology recommend that A2 or A4 Austenitic (300 series/class 70) stainless steel fixing screws are used in the assembly of their products.

Installation

The Metal Technology High Rise Curtain Wall system is designed as a 'Stick' built system, therefore mullions and transoms are transported to site as prepared components and the grid work is assembled onto the building in stick form.

Extruded profiles for manufacturing adjustable structural brackets capable of accommodating site tolerance, thermal and structural movement are available. These allow the curtain walling to be fixed to the structure easily and securely so that all loads are transferred back to the building's main structural form.

Expansion joints are allowed on every floor or every other floor to accommodate any building movement.

Glazing

Glass is set against extruded gaskets internally which are fitted into gasket grooves in the mullions and transoms. Special care has been taken to design high performance gaskets which will ensure the long term weather-tightness of the system. Internal gaskets have pre-formed vulcanised corner pieces to aid continuity of the internal seal.

Horizontal and vertical unit edges are then retained using pressure plates and gaskets screw fixed into the structural members. Cover caps are applied to conceal the pressure plate fixings.

Curved Sections

In accordance with Metal Technology's policy of offering the maximum flexibility to the designer, Metal Technology have special facilities available to enable profile to be supplied curved.

Requirements for curved sections should be discussed with Metal Technology at an early stage in the project.

Opening Vents

Details and specifications for the opening vents can be found in the Metal Technology Thermally Enhanced and Window manuals. For frameless vents refer to System 17 Latitude manual.

Performance

The curtain walling has been impact tested to BS EN 14019 and tested for weather tightness to EN 13050 and in accordance with the CWCT dynamic test for curtain walling and achieved the following results:

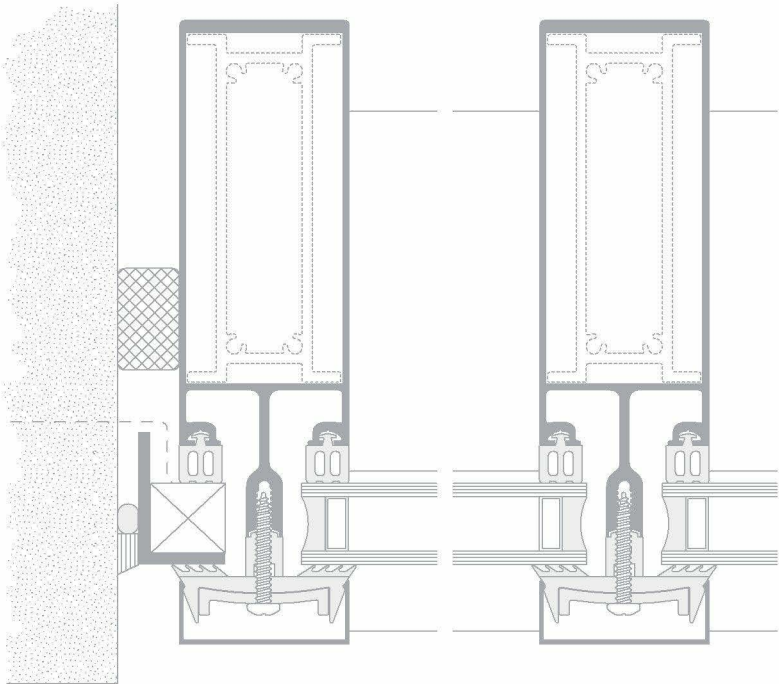
Air permeability -	600 Pa
Water tightness -	600 Pa
Wind resistance -	2400 Pa
Dynamic water tightness -	600 Pa
Wind load (safety) -	3600 Pa

Full test report details are available on request.

These levels of performance should be sufficient for any location within the UK and Ireland. For further information on testing and performance contact Metal Technology's Technical Department. Where overall screen height exceeds 20 storeys or screen requirements differ from those stated in this literature refer to Metal Technology's Technical Department.

Development

Our policy is to continually research the market for new and improved products. We must therefore retain the right to amend specifications without prior notice. It is recognised at Metal Technology that in some instances special sections may be required for particular projects. When this occurs it may be possible to produce special sections subject to there being sufficient quantity and adequate time. These requirements should be discussed with Metal Technology.





# Vision 50

High traffic applications

**R**  
**REYNAERS**  
aluminium



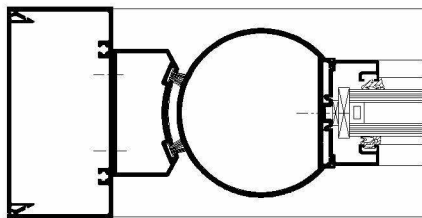
Vision 50 is a range of non-thermally insulated profiles, designed specifically for ground-floor treatments. The system has been designed to offer the highest level of performance whilst being efficient in manufacture. Vision 50 ground floor treatments are designed for high traffic applications in both office and retail developments and can offer a threshold detail that conforms to UK building regulations.

The glass panels can be placed both on the outside and on the inside, with a flush appearance. Swing doors can easily be integrated into the façade. To aid safety, all doors can be fitted with an integrated anti-finger trap.

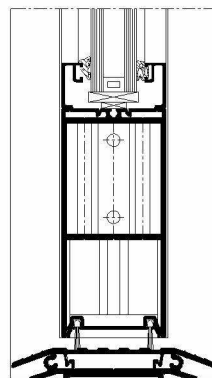
A simple butt jointed framing construction allows maximum flexibility. The system can be designed with single and double swing doors or doors can be restricted to just open to one side via a hinged and rebate construction. Various devices can be fitted allowing the door to pivot or slide automatically.



TECHNICAL CHARACTERISTICS				
Style variants		STANDARD DOOR	PIVOT DOOR	AUTOMATIC DOOR
Min. visible width	Frame + Vent	149 mm	175 mm	125 mm
Overall system depth	Frame	100 mm	100 mm	150 mm
	Vent	50 mm	50 mm	50 mm
Glass thickness		max. 37 mm		
Beaded sections		4 to 37 mm		
Pocket sections		4 to 24 mm		
Glazing method		Beaded door vent or in case of screens a shuffled pocket frame		



ANTI-FINGER TRAP



FLAT BOTTOM SOLUTION



REYNAERS ALUMINIUM NV/SA • [www.reynaers.com](http://www.reynaers.com) • [info@reynaers.com](mailto:info@reynaers.com)  
07/2012 - OH013C2.00 - Publisher Responsible at Law: E. Fonteyne, Oude Liersebaan 266, B-2570 Duffel



The World's Number 1

MRT4 Dual Circuit [320kg]

The popular MRT4, with dual circuit vacuum system technology, is built for versatility.

It delivers 360° rotation and 90° tilt from any position. Using the extension arms and movable pads, at least four frame configurations are possible to cover most load sizes on site or in the workshop.

A variable length lifting arm may be added, allowing easy fitting under soffits and overhangs.

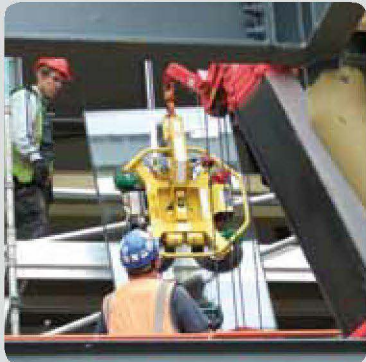
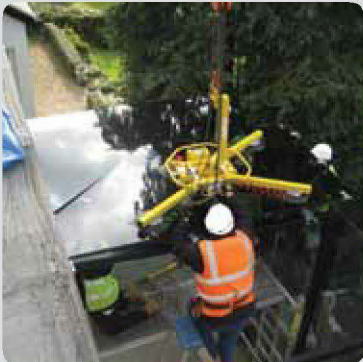
Key Features

- Capacity: 320kg
- Dual circuit vacuum system with reserve tank, non-return valve and vacuum gauge for each circuit
- 90° manual tilting from vertical to horizontal
- Manual 360° lockable rotation (continuous)
- Integral maintenance-free vacuum pump
- 12v rechargeable battery with integral 110v or 240v charger and battery energy gauge
- Audio-visual low vacuum warning
- Four extension arms allow alternative configurations
- On-board control panel

Reference Codes

MRT4 - VGL17

MRT4 variable length lifting arm - VGL18



MRT4 with G20 Pick & Carry crane see page 245

Technical Specifications

<b>Safe working load</b> (smooth, clean surface at 60% vacuum)	capacity:	320kg
<b>Number of suction cups</b>	cups:	4
<b>Suction cup</b>	description:	black rubber, not abrasion resistant, heat resistant up to 100°F
<b>Suction cup diameter</b>	approx diameter:	305mm
<b>Suitable for lifting</b>	material properties: surface: example:	gastight / non-porous smooth glass, plastic boards, ceramic plates, sheet metals, coated boards
<b>Weight of lifter</b>	approx:	58kg with extension arms, (42kg without arms)
<b>Depth of lifter</b>	depth:	292mm
<b>Rotation</b>	rotation:	360° manual continuous lockable
<b>Tilt</b>	tilt:	90° manual
<b>Vacuum system</b>	dual circuit:	1 pump, 2 vacuum reserve tanks
<b>Voltage</b>	pump: battery charger:	12v DC from rechargeable battery 110v/240v 50/60Hz single phase factory selectable
<b>Standard accessories</b>	standard	4 x extension arms
<b>Optional accessories</b>	optional:	variable length lifting arm, extra length extension arms, curved pads (270kg capacity), stone pads (270kg capacity), low marking pads, heat resistant pads, woods pad mount extensions



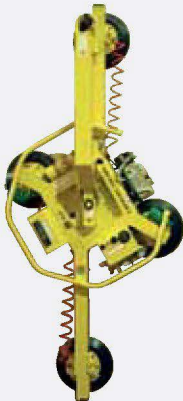
# MRT4 Dual Circuit



MRT4 - Variable length lifting arm - 600 (min) - 900mm (max)



MRT4 - Compact

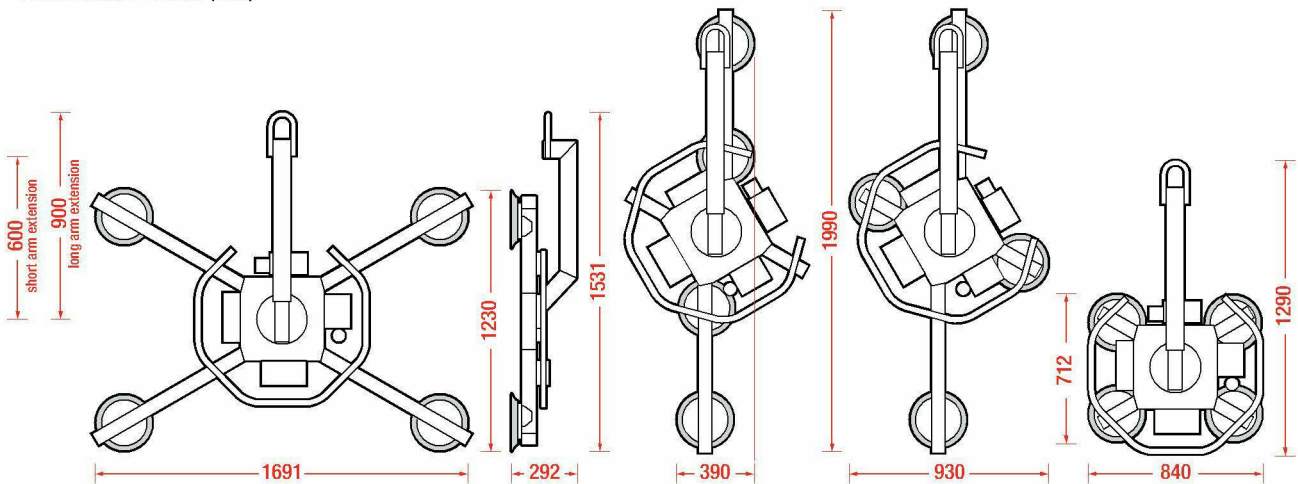


MRT4 - Linear 1



MRT4 - Linear 2

## Technical Data (mm)





Glassmax 250 [250kg x 7.5m]

The lightweight manual Glassmax hoist can be combined with a GGR vacuum lifter for quick and effective installation of vertical glazing.

The Glassmax hoist can handle loads of up to 250kg to a hook height of 7.5 metres. The Glassmax is simple to build and dismantle, with removable counterweights, making it easy to transport to site.

An optional fork attachment can be used for the installation of HVAC units, pipes, ducts and palletised loads.

Technical Specifications

Capacity	250kg
Max. hook height	7.5m
Width	800mm
Length	2130mm
Weight (exc. counterweights)	230kg
Weight (inc. counterweights)	330kg

Key Features

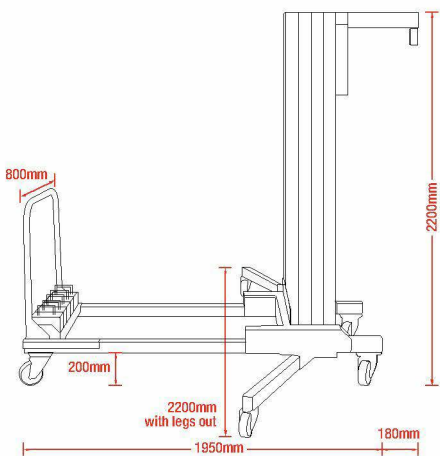
- Capacity: 250kg
- Multi-functional lightweight manual hoist
- Easily assembles and disassembles for transport by van
- Counterweight system
- Ideal for vertical glazing when combined with a vacuum lifter
- Optional 240v powered winch available
- Vacuum lifter sold/hired separately

Reference Code

MCO07



Technical Data (mm)



Note: Weights must be secured before lifting





# Glassmax 500 [500kg x 4.8m]

The robust Glassmax 500 hoist can lift 500kg to 4.8m and is easy to assemble and disassemble with a removable counterweight system.

This multi-functional manual hoist is perfect for overhead or vertical glazing when combined with one of our vacuum lifters.

An optional fork attachment can be used for the installation of HVAC units, pipes, ducts and palletised loads.

## Technical Specifications

Capacity	500kg
Max. hook height	4.8m
Width	800mm
Length	2150mm
Weight (exc. counterweights)	270kg
Weight (inc. counterweights)	470kg

## Key Features

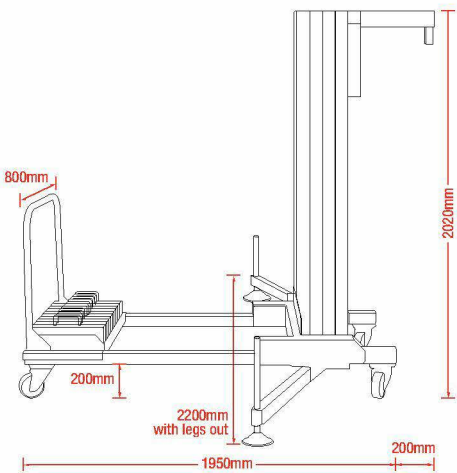
- Capacity: 500kg
- Multi-functional lightweight manual hoist
- Easily assembles and disassembles for transport by van
- Counterweight system
- Ideal for vertical glazing when combined with a vacuum lifter
- Vacuum lifter sold/hired separately

## Reference Code

MCO09



## Technical Data (mm)



Note: Weights must be secured before lifting



Optional Fork Attachment  
560mm (w) x 700mm (h)



# Mini Spider Cranes

277

- Total width 1.3m
- Max working radius 14.45m
- Diesel engine and optional mains electric
- Zero length increase with electric option
- Operator control of outrigger extension
- Intelligent voice warning system
- Radio remote control as standard
- Working area limitation
- Slew limitation (optional)
- Intelligent throttle activation for economy and ecology



Safe load indicator

Max Boom Length 14.61m

Max Lifting Height 14.9m

Capacity 2.9t x 2.5m

Weight 3850 - 4000kg

Optional fly jib & searcher hook

Lifting capacity	700kg (max)
Length	2017mm
Weight	50kg
Tilt angles	0°, 20°, 40°, 60°



## URW-376 [2.9t x 2.5m]

The URW-376 UNIC mini crane features a six-section hydraulic boom to allow a maximum working radius of 14.45m.

This mid-capacity spider crane can be controlled either from the onboard operators seat or from a distance using a radio remote control, or optional radio remote control with digital feedback.

### Reference Code

MCU376

#### Remotes



Standard radio remote control



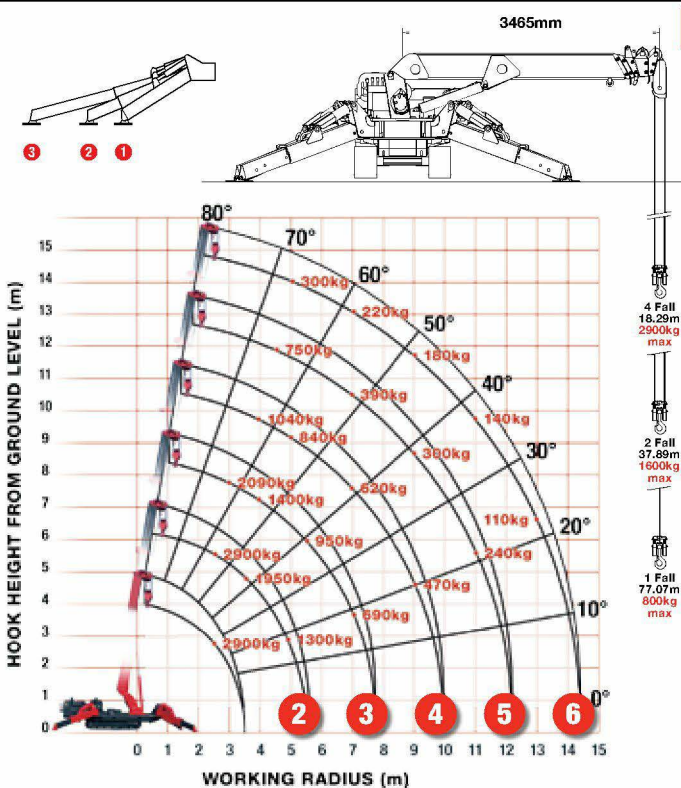
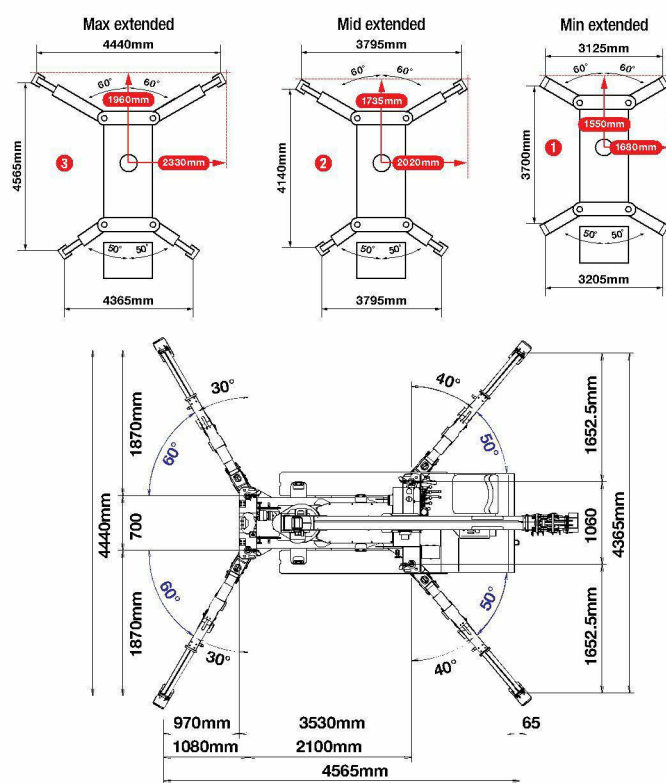
Optional radio remote control with digital feedback

#### Crane Specifications

Crane capacity	capacity:	2.9t x 2.5m
Max working radius	max:	14.45m
Max lifting height	approx:	14.9m (16.63m with fly jib, 17.33m with searcher hook)
Rope length	max:	18.29m (4 fall), 37.89m (2 fall), 77.07m (1 fall)
Dimensions	folded:	4340mm (l) x 1300mm (w) x 1800mm (h)
Weight	unladen:	3850kg (4000kg with electric option)
Point loadings	Due to the many variables involved, point loadings are only available on request	
Hook speed	approx:	17m/min (with 4 layers and 4 falls)
Telescopic system	boom length: telescoping speed: boom type:	3.63 - 14.61m 10.98m/23 seconds 6 section hydraulically telescoping boom, hexagonal box construction
Derricking angle/speed	approx:	0 - 80°/10 seconds
Slewing angle/speed	approx:	360° (continuous) 2.5 rpm
Traction system	drive: travel speed: gradeability: track ground length: track ground pressure: track width:	hydrostatic 2-speed, stepless forward and reverse 0-3km/h ±(23)° 1750mm 36kPa (0.37kg/cm²) 300mm
Engine	manufacturer: fuel: maximum output: starting method: tank capacity:	Mitsubishi / Yanmar diesel (electric dual power option) 18kW (24.5PS) / 2100min rpm electric 40 litres
Electric motor	power: voltage:	7.5kW 400v AC 50/60Hz
Standard equipment	computer controlled moment limiter (safe load indicator), radio remote control, overwinding alarm, computer controlled intelligent voice warning system, multi-function operation by radio remote control, intelligent throttle activation, automatic hook stow, overload warning alarms, overload warning lamps, working area limitation	
Optional equipment	1 fall hook block, 2 fall hook block, mains electric dual power (400v), low marking tracks, slew limitation, 500kg capacity small searcher hook, 700kg maximum capacity searcher hook, 700kg maximum capacity fly jib with single part line, radio remote control with feedback display, data logging	



## Rated Loads & Outrigger Positions



278

# URW-376 Spider Crane

**SECOND STAGE EXTENDED 3.63 - 5.85 BOOM LENGTH**

SECOND STAGE EXTENDED										
Working radius		m	up to 2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.69
Outrigger	Max-extended	kg	2,900	2,900	2,350	1,950	1,670	1,450	1,300	1,070
	Mid-extended	kg	2,900	2,900	2,320	1,920	1,570	1,250	990	770
	Min-extended	kg	2,900	2,900	2,170	1,500	1,120	900	720	470

**THIRD STAGE EXTENDED 5.85 - 8.04M BOOM LENGTH**

		m	up to 2.7	3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0	7.88
<b>Working radius</b>												
<b>Outrigger</b>	Max-extended	kg	2,240	2,090	1,650	1,400	1,220	1,070	950	840	690	590
	Mid-extended	kg	2,240	2,060	1,650	1,390	1,170	1,000	820	640	450	370
	Min-extended	kg	2,240	2,060	1,570	1,220	1,020	830	650	510	300	190

**FOURTH STAGE EXTENDED 8.04 - 10.23M BOOM LENGTH**

		m	up to 4.0	4.5	5.0	6.0	7.0	8.0	9.0	10.07
<b>Working radius</b>										
<b>Outrigger</b>	Max-extended	kg	1,040	930	840	730	620	520	470	380
	Mid-extended	kg	1,030	920	830	670	500	380	280	200
	Min-extended	kg	1,030	820	640	470	310	220	130	90

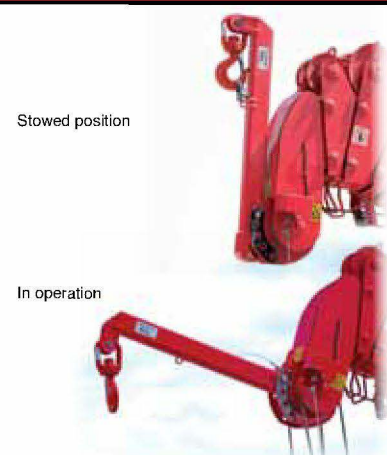
**FIFTH STAGE EXTENDED 10.23 - 12.42M BOOM LENGTH**

		m	up to 4.5	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.26
<b>Working radius</b>											
<b>Outrigger</b>	Max-extended	kg	750	620	480	390	340	300	270	240	230
	Mid-extended	kg	750	620	470	390	320	270	220	170	130
	Min-extended	kg	750	620	400	250	180	130	90	60	10

### SIXTH STAGE EXTENDED 12.42 - 14.61M BOOM LENGTH

Working radius		m	up to 4.9	5.5	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.45
Outrigger	Max-extended	kg	300	270	250	220	200	180	160	140	130	110	100
	Mid-extended	kg	300	270	250	220	200	180	160	120	90	60	40
	Min-extended	kg	300	270	250	220	170	110	80	50	30	20	10

### Searcher Hook Small - 500kg



**Lifting capacity** 500kg sections 1-5  
280kg section 6

<b>Length</b>	800mm
---------------	-------

Length	990mm
Weight	20kg

Weight	20kg
Tilt angles	0°, 20°, 40°, 60°

**Tilt angles** 0°, 20°, 40°, 60°

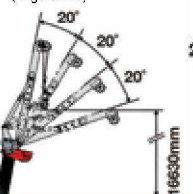
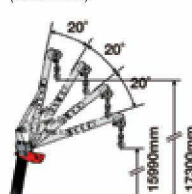
## Searcher Hook

## Fly Jib

## Dimensions

Maximum Load 150kg - 700kg  
(radius rated)

Maximum Load 150kg - 700kg  
(angle rated)



ACK4

24v

300N

30kg

100-400mm  
adjustableCHAIN  
ACTUATOR

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

VENT ENGINEERING

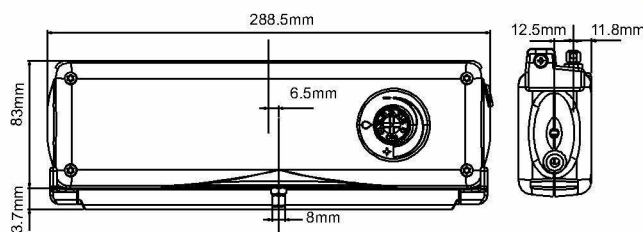
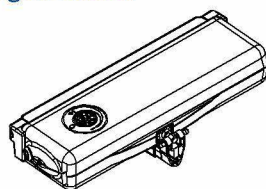
VENT ENGINEERING

VENT ENGINEERING

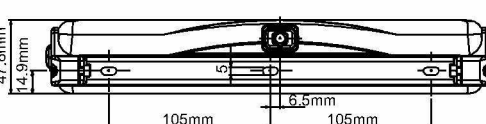
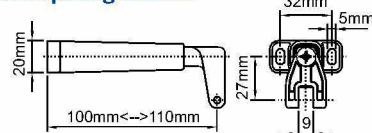


## DIMENSIONS, FIXINGS AND BRACKETS

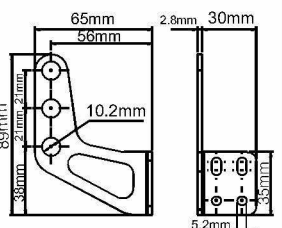
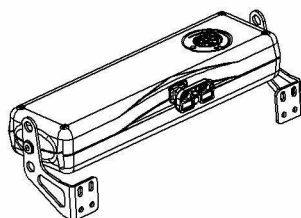
long bar bracket



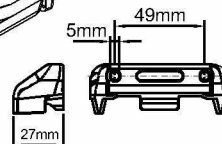
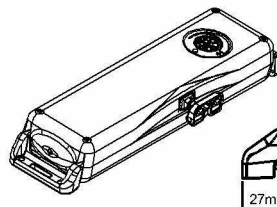
internal opening bracket



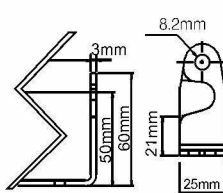
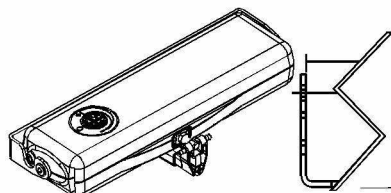
large swivel bracket



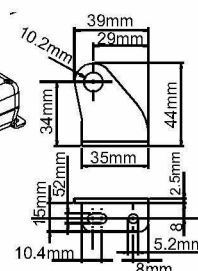
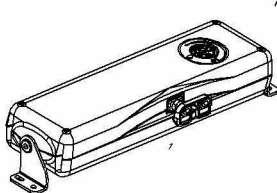
u-shape bracket



long bar swivel bracket



swivel bracket





# ACK4

**300N**

**100-400**mm  
adjustable

## TECHNICAL SPECIFICATIONS

**UPGRADE**  
available

- Can be powder coated to any RAL colour

	<b>ACK4 230v</b>	<b>ACK4 24v</b>
<b>Voltage Supply</b>	230v	24v
<b>Thrust Force</b>	350N	350N
<b>Traction Force</b>	350N	350N
<b>Stroke</b>	100 -400mm adjustable	100-400mm adjustable
<b>Absorbed Current</b>	0.32 amps	2.1 amps
<b>Time Rating</b>	S2 2mins	S2 3mins
<b>Limit Stop</b>	electronic	electronic
<b>Safety Stop</b>	electronic	electronic
<b>Wiring</b>	3 core	2 core
<b>Speed</b>	~ 28mm/s	~ 18mm/s
<b>Double Insulated</b>	yes	no
<b>Protection Class</b>	IP55	IP55
<b>Parallel Connection Option</b>	ACK4-USA2/3	ACK4-USA2/3
<b>Weight</b>	1.9kg	1.9kg
<b>Colours Available</b>	white / black / silver	white / black / silver

## PRODUCT SUMMARY

- Adjustment of stroke in 7 positions from 100 to 400mm
- Central exit of double link chain.
- Double insulated electrics
- Simple swivel back planes, fast and suitable for windows of any type and size (not included in the packaging).
- Buzzer to indicate wrong installation.
- High protection degree IP 55.
- Collection and synchronisation possibility for 2 or 3 actuators on the same window (USA2 or USA3 control unit).
- Available in black, silver and white.
- The actuator complies with **CE** regulations CEE EN 60335-1, 89/336 CEE (electromagnetic compatibility).

## PRODUCT CODES

PRODUCT CODE	PRODUCT DESCRIPTION
AT-ACK-42	ACK4 230v
AT-ACK-44	ACK4 24v

BRACKET CODE	BRACKET DESCRIPTION
BRAT-L	ACK4 long bracket
BRAT-LS	ACK4 large swivel bracket
BRAT-S	ACK4 small swivel brackets
BRAT-U	ACK4 'u' shaped brackets

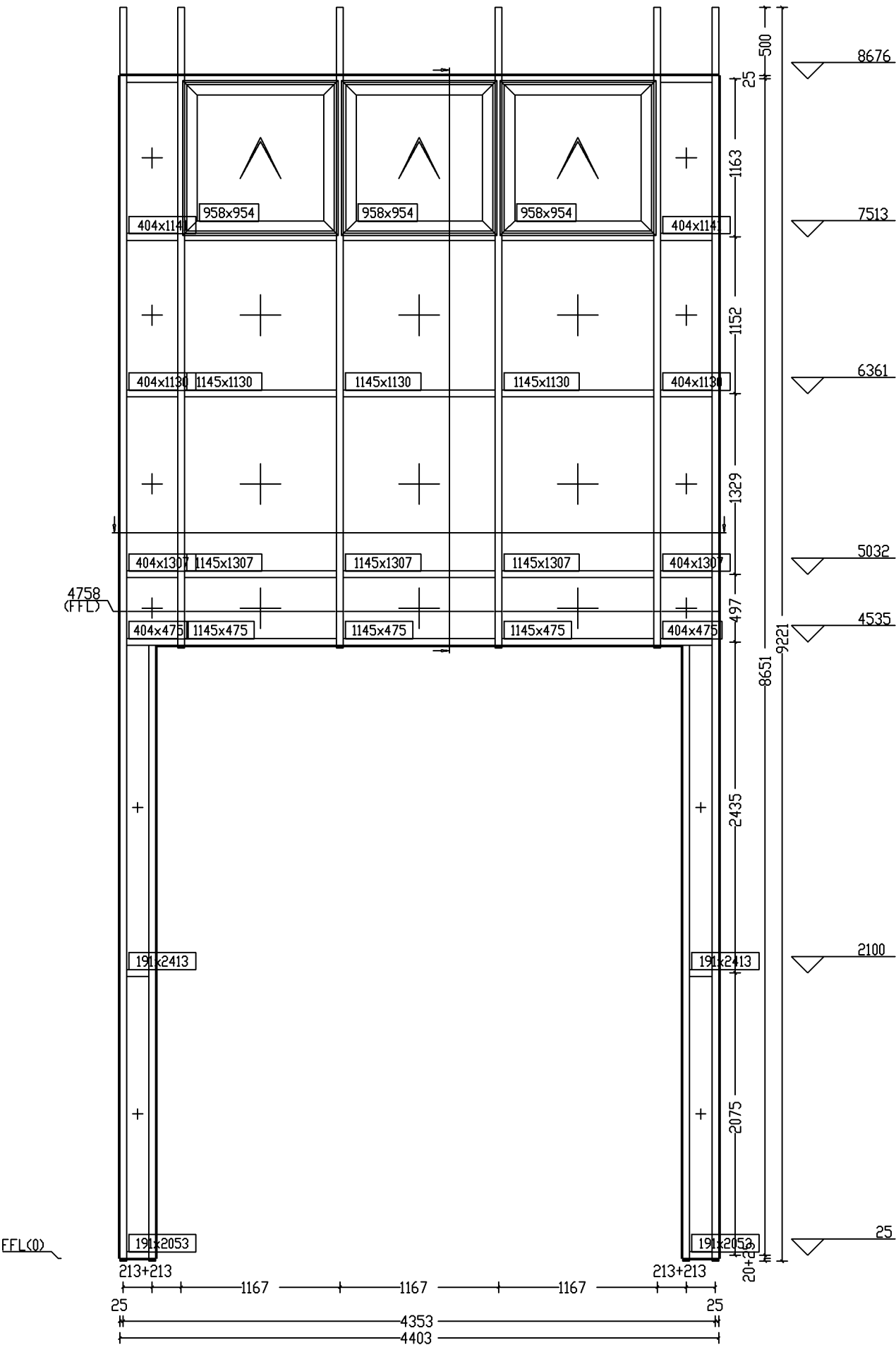


tel [REDACTED] fax [REDACTED]  
email [info@vent.co.uk](mailto:info@vent.co.uk) website [www.vent.co.uk](http://www.vent.co.uk)

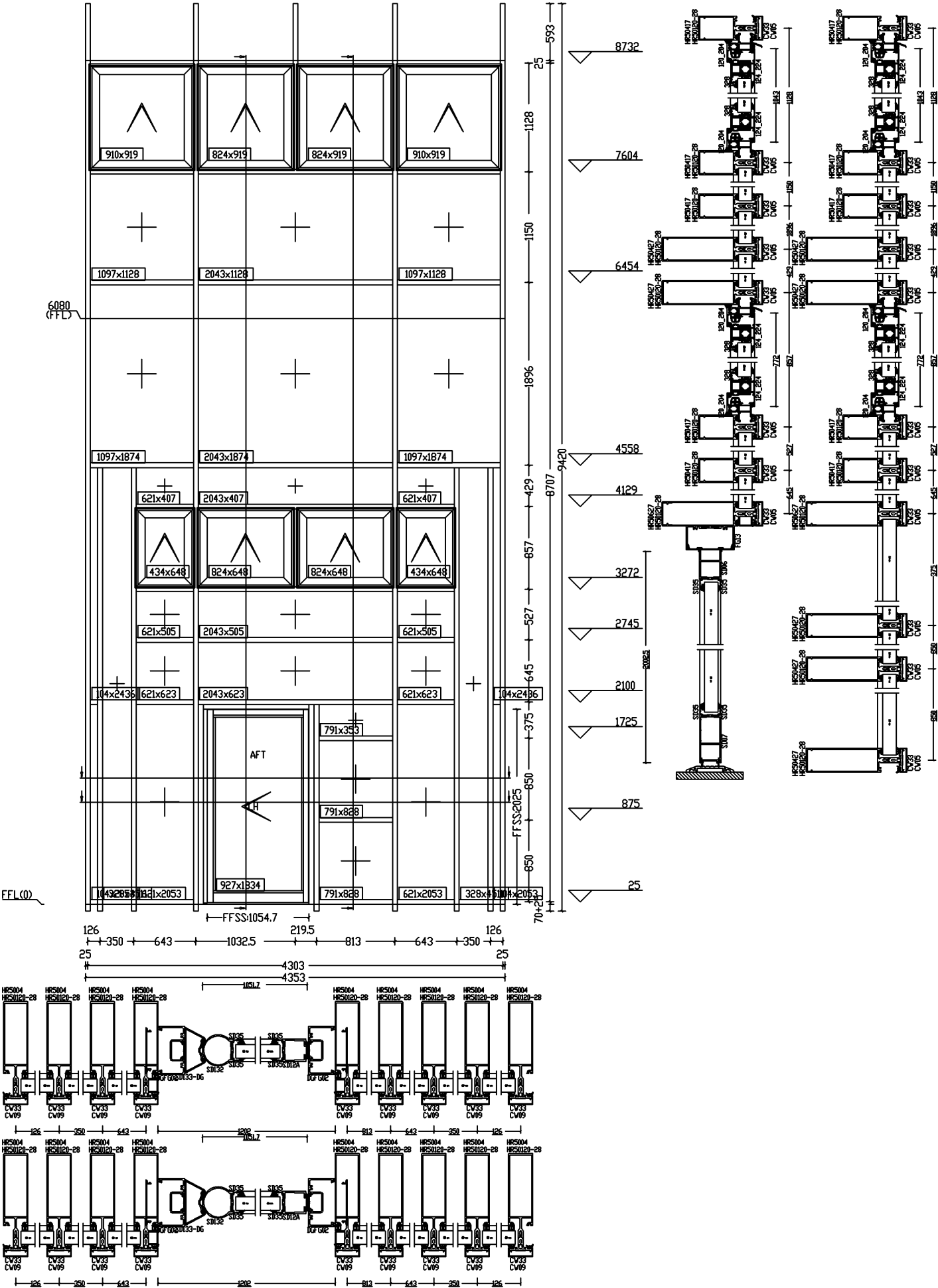
**Units 16c & 16f, Chalwyn Industrial Estate, Poole BH12 4PE**



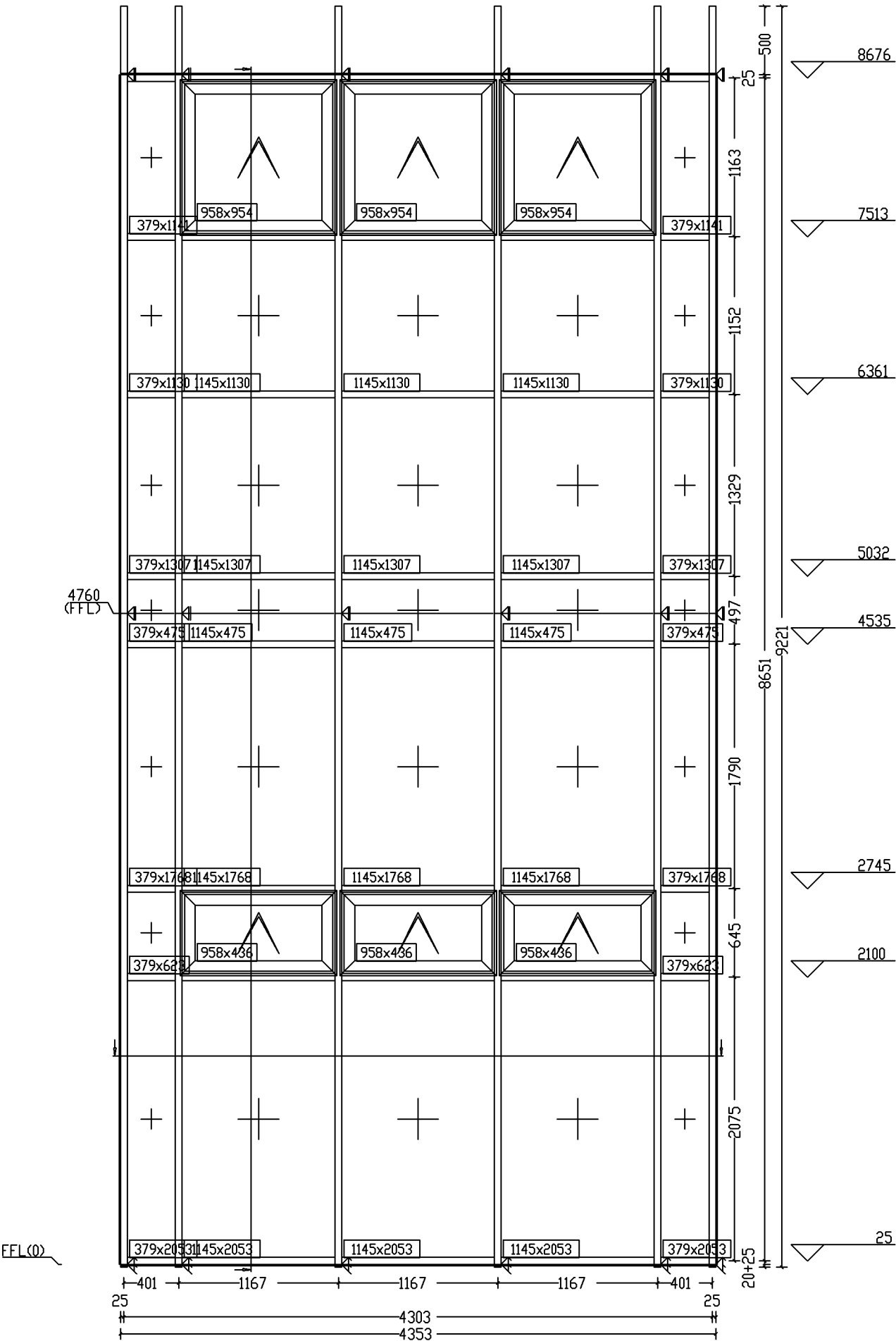
Pos. CW1 - Part 1 South, Quantity: 1  
Finish: /P STD RAL, Insertions: /P STD RAL  
Job: Curtain Walling



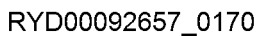
Pos. CW1 Fabrication, Quantity: 1  
Finish: /P STD RAL, Insertions: /P STD RAL  
Job: Curtain Walling



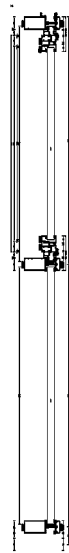
Pos. CW2 - South, Quantity: 1  
Finish: /P STD RAL, Insertions: /P STD RAL  
Job: Curtain Walling



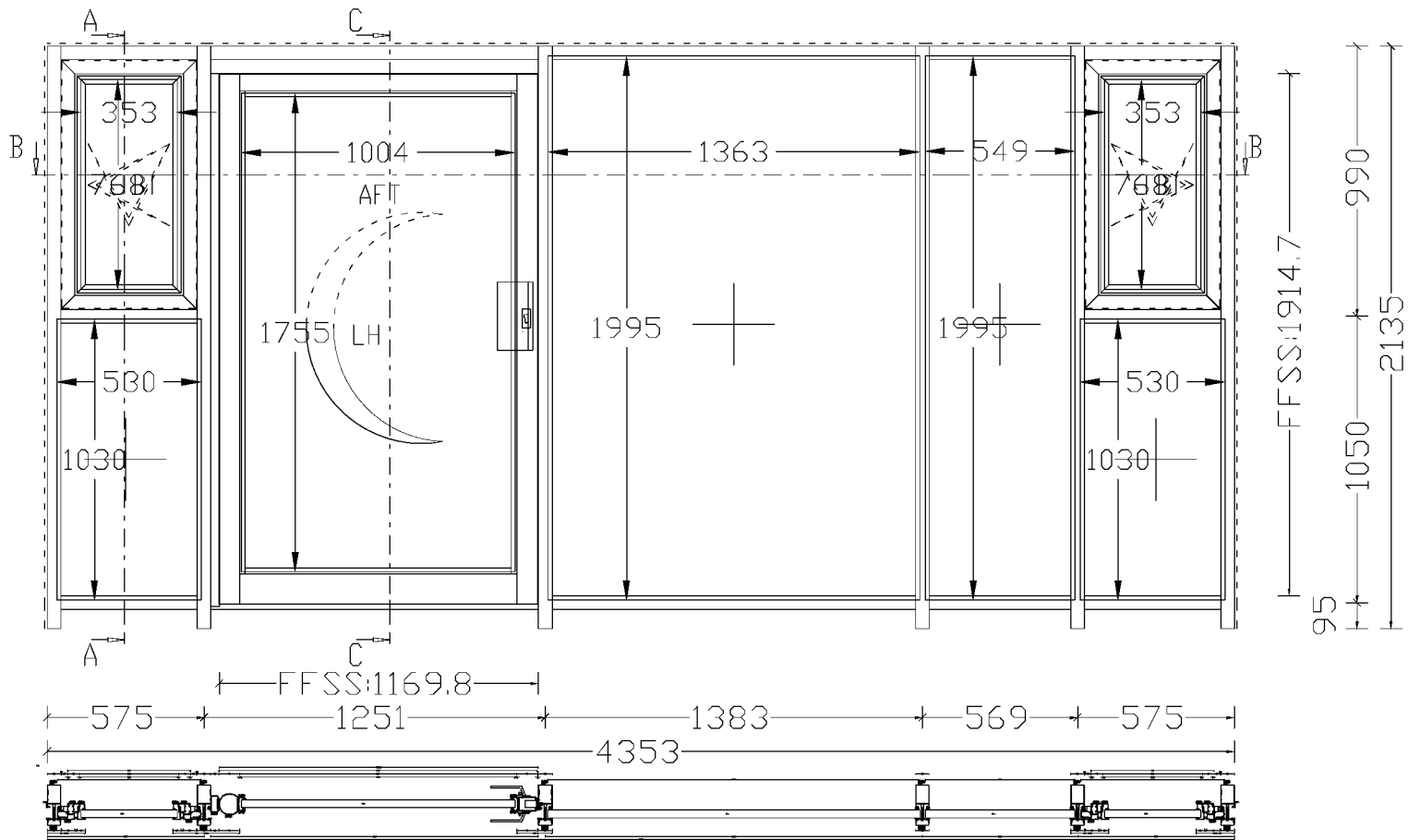
FFL(0)



RYPD000092657\_0171

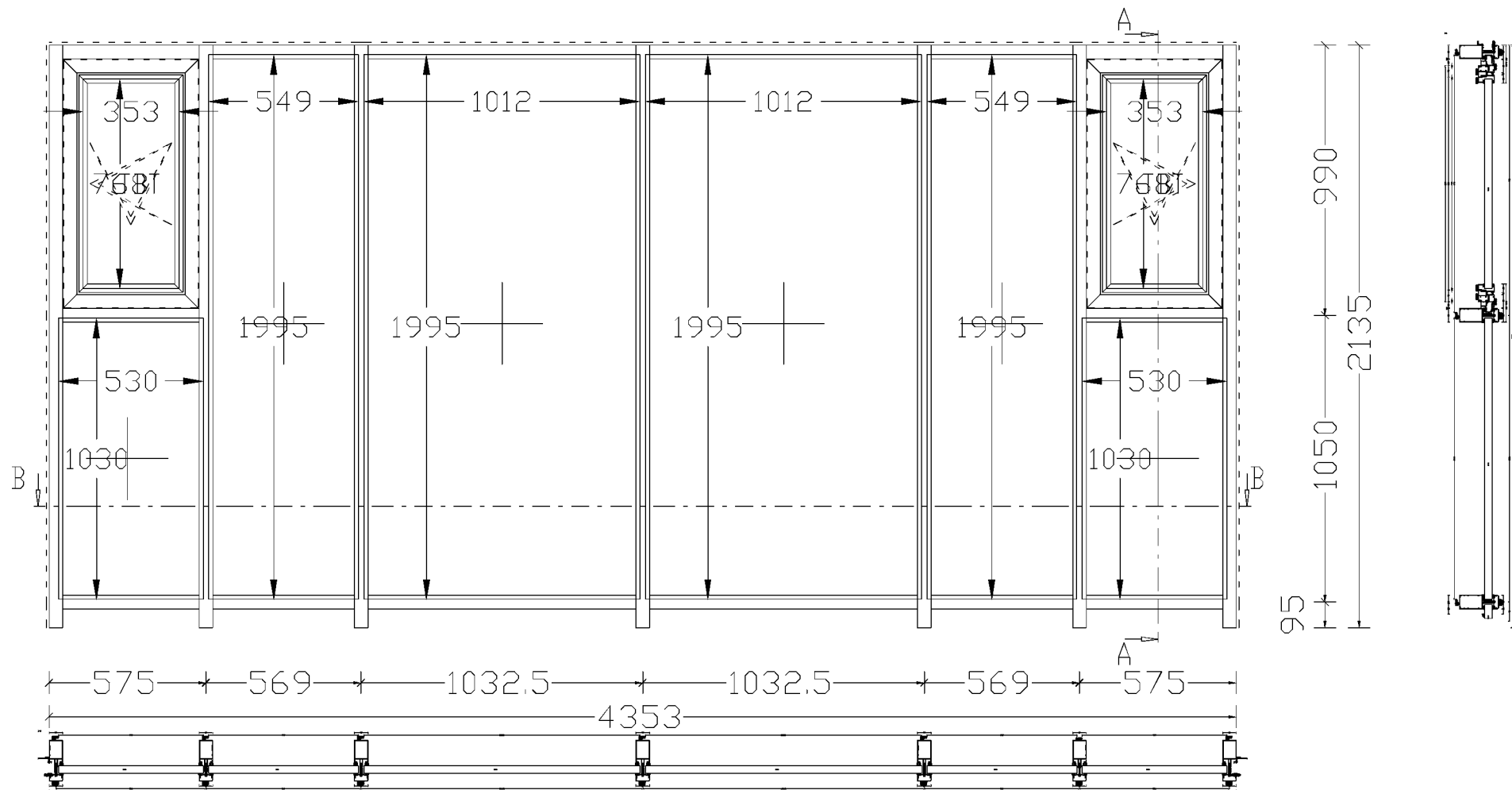


Exterior View

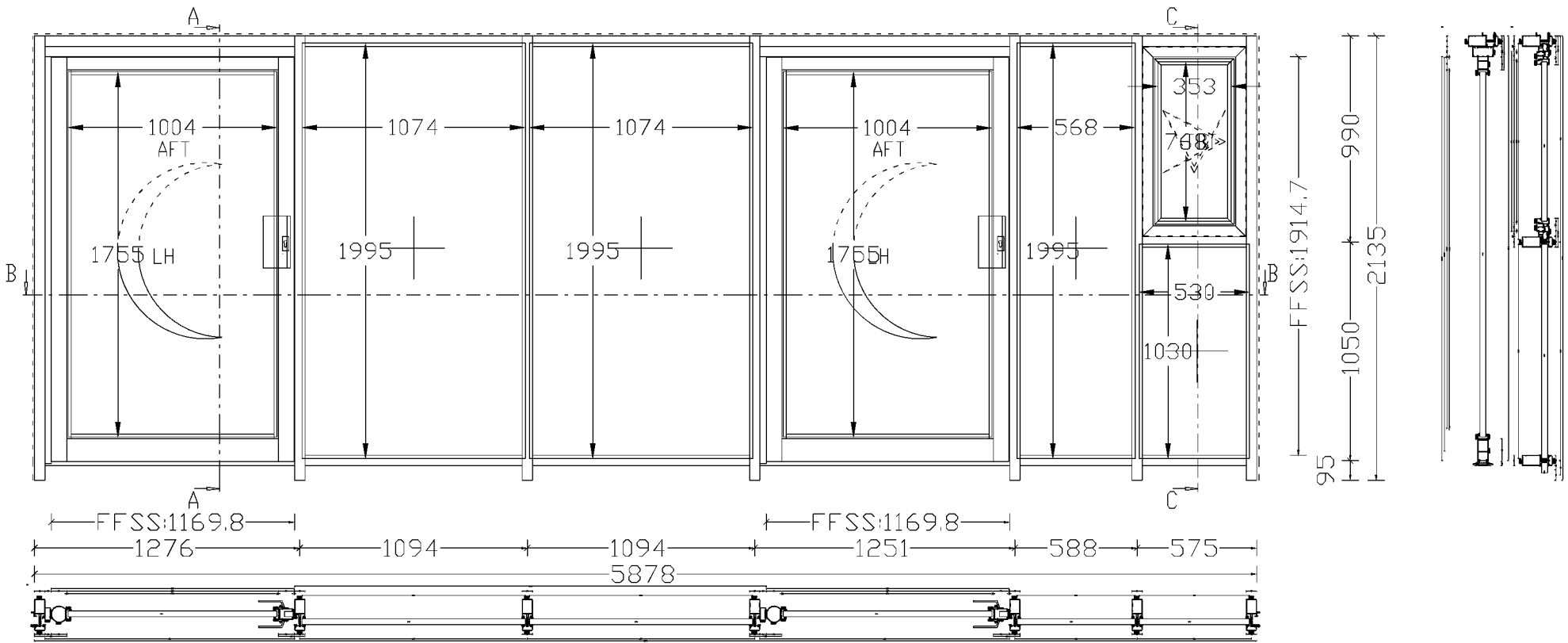




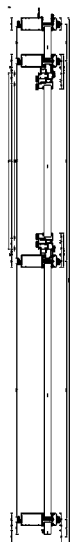
Pos. CW6 North, Quantity: 1  
Job: Grenfell Tower  
System: Reynaers CW 50 redesign ALU Standard gasket  
Exterior View



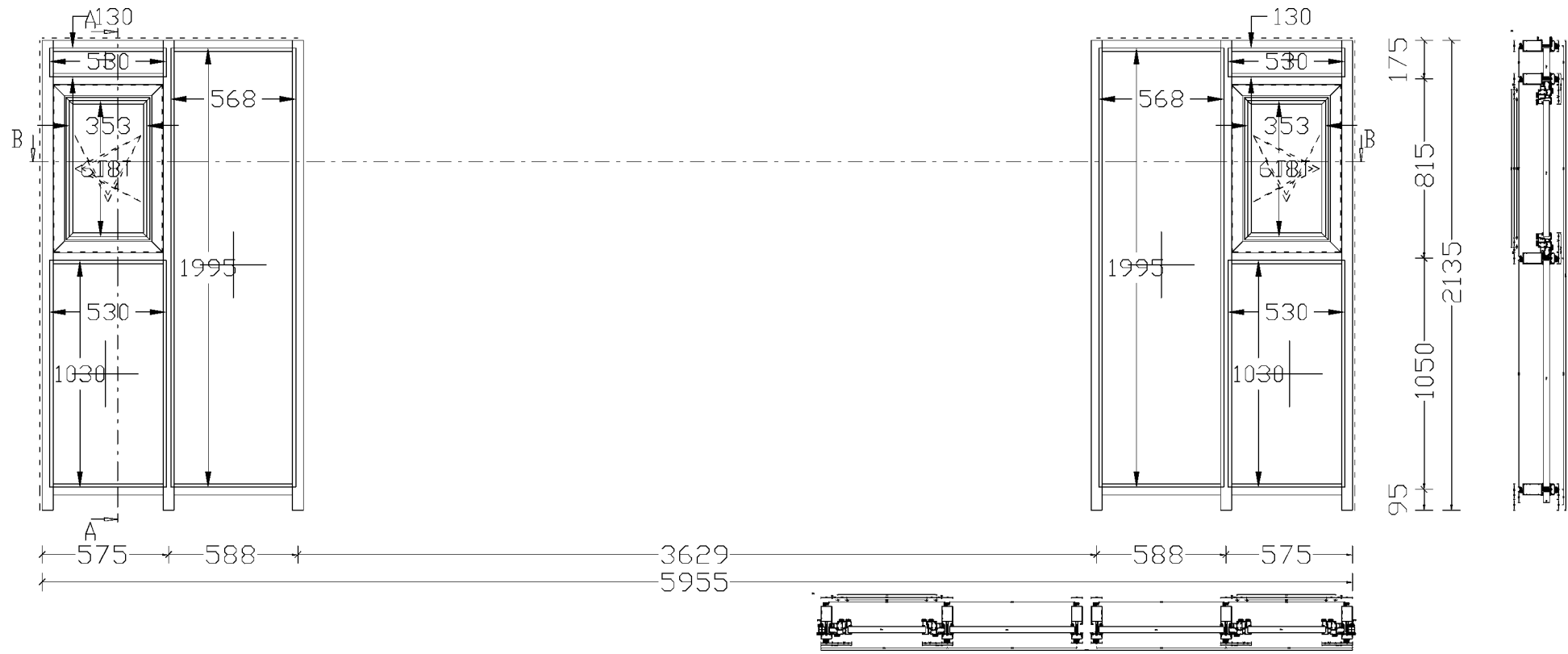
Pos. CW7 West, Quantity: 1  
Job: Grenfell Tower  
System: Reynoers CW 50 redesign ALU Standard gasket  
Exterior View



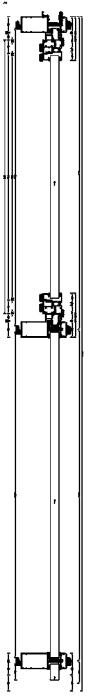
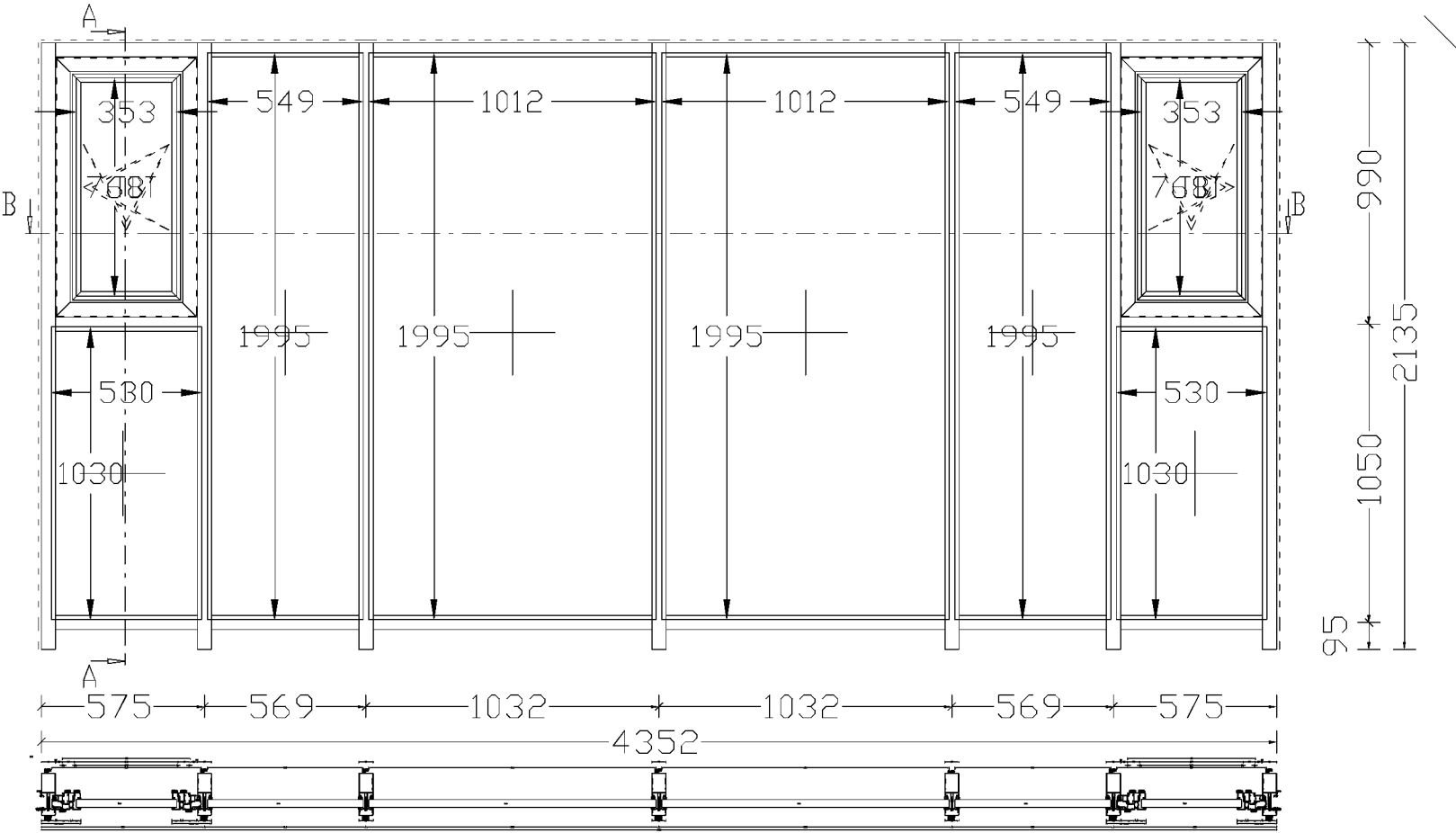
Exterior View



Pos. CW9 WEST., Quantity: 1  
Job: Grenfell Tower  
System: Reynaers CW 50 redesign ALU Standard gasket  
Exterior View



Pos. CW11 - South, Quantity: 1  
Job: Grenfell Tower  
System: Reynaers CW 50 redesign ALU Standard gasket  
Exterior View



## 5 – Cladding System

### 5.1a. Cladding Panel Details

Brochure  
Warranty  
EN Certification  
Cleaning/Maintenance?

### 5.1b. Insulation Details

Brochure (Celotex RS5000)

### 5.1c. Fire Barrier Details

Brochure  
Technical Data Sheet

### 5.2a GRC Cladding Panels

Cleaning Agent





## Celotex RS5000

Premium Rainscreen Cladding Board  
(suitable for buildings above 18 metres in height)

**Celotex**  
SAINT-GOBAIN

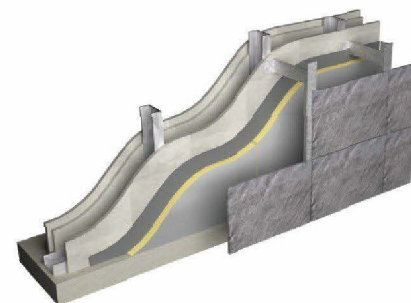
### Introduction

Celotex RS5000 is our premium performance PIR solution for use in rainscreen cladding systems. Developed specifically to enhance the thermal performance of external facade constructions, RS5000 represents an ongoing commitment to product innovation and is the first PIR insulation board to meet the performance criteria in BR 135 for insulated rainscreen cladding systems and therefore is acceptable for use in buildings above 18 metres in height.

Featuring a premium lambda performance of 0.021 W/mK and textured aluminium foil facings, Celotex RS5000 offers enhanced thermal performance, an A+ rating when compared to the BRE Green Guide and Class O fire performance.

With Celotex RS5000 you are specifying an insulation board that:

- Features a super low lambda value of 0.021W/mK offering enhanced thermal performance
- Is the first PIR insulation board to successfully test to BS 8414-2:2005, meet the criteria set out in BR 135 and therefore is acceptable for use in buildings above 18 metres in height
- Has Class O fire performance throughout the entire product in accordance with BS 476
- Achieves an A+ rating when compared to the BRE Green Guide
- Is supported by LABC approval



Celotex RS5000 in a rainscreen cladding application

### Applications

Celotex RS5000 is specifically designed for use in rainscreen cladding systems for both new build and refurbishment projects.

### Specification Clause

The rainscreen cladding insulation shall be Celotex RS5000 \_\_\_\_\_mm thick, comprising a polyisocyanurate (PIR) rigid foam insulation core featuring Celotex IQ providing super low emissivity textured aluminium foil facings on both sides and Class O fire performance throughout the product in accordance with BS 476. RS5000 has been successfully tested to BS8414-2 and meets the performance criteria of BR135. RS5000 is A+ rated when compared to the BRE Green Guide and is CFC/HCFC free with low GWP and zero ODP. RS5000 is manufactured in accordance with quality management systems ISO 9001 and environmental management system ISO 14001. All products must be installed in accordance with instructions issued by Celotex.

### Sustainable Insulation

Celotex PIR insulation has been independently assessed by BRE Global and has been accredited with an A+ rating when compared to the BRE Green Guide.

The results also show that Celotex offers a lower environmental impact than other typical PIR manufacturers.

For further information about Celotex' sustainable insulation solutions, visit the sustainability pages of the website at [celotex.co.uk](http://celotex.co.uk)

cont...



# Celotex RS5000

Premium Rainscreen Cladding Board  
(suitable for buildings above 18 metres in height)



## Celotex RS5000 Technical Data

Product Code	Thickness (mm)	R-value (m²K/W)	Weight (kg/m²)
RS5050	50	2.35	1.81
RS5060	60	2.85	2.16
RS5070	70	3.30	2.48
RS5075	75	3.55	2.64
RS5080	80	3.80	2.80
RS5090	90	4.25	3.12
RS5100	100	4.75	3.38
RS5120	120	5.70	4.02
RS5150	150	7.10	4.98

## Physical Properties

	Method	RS5000
Compressive strength	BS EN 826	≥120kPa
Dimensional stability	BS EN 1604	DS(TH)8
Water vapour resistance	BS EN 12086	>150 MNs/g
Thermal conductivity	BS EN 12667	0.021 W/mK
Fire propagation	BS 476: Part 6	Pass
Surface spread of flame	BS 476: Part 7	Class 1

## Typical U-values

U-values will vary depending on application. To calculate a specific U-value, please visit our online U-value calculator at [celotex.co.uk](https://celotex.co.uk)

## Installation Guidelines

Installation of Celotex RS5000 will depend on application type. For full details of the installation of Celotex RS5000, please refer to the 'applications' pages of the website at [celotex.co.uk](https://celotex.co.uk) and select the application of interest.

cont...



## Celotex RS5000

Premium Rainscreen Cladding Board  
(suitable for buildings above 18 metres in height)

**Celotex**  
SAINT-GOBAIN

### Certification

Celotex RS5000 is a premium performance solution and is the first PIR board to successfully meet the performance criteria set out in BR 135 for rainscreen cladding systems.

The system tested was as follows:

12mm Fibre Cement Panels

Supporting aluminium brackets and vertical rails

100mm Celotex RS5000

12mm Non-combustible sheathing board

100mm SFS System

2 x 12.5mm plasterboard

The fire performance and classification report issued only relates to the components detailed above. Any changes to the components listed will need to be considered by the building designer.

### Further Information

If you wish to contact Celotex, please visit [celotex.co.uk](http://celotex.co.uk) and click on the 'contact us' page.

Health & Safety information can be found by visiting the 'Resources' pages of the website at [celotex.co.uk](http://celotex.co.uk).

Celotex has a policy of continuous product development and reserves the right to alter product designs or specifications without prior notice.



## Reynobond® Architecture and Reynolux® Building **certifications.**

### Reynobond® Architecture certifications in Europe

France	<b>Cassette:</b> cCSTBc 122-47-36 <b>Riveted/screwed:</b> cCSTBc 37-47-37
Germany	ÜZ-3/837/06
Poland	ITB – 1592/W Atest Higieniczny HK/B/0665/01/2007

### Fire certificates for Reynobond® Architecture

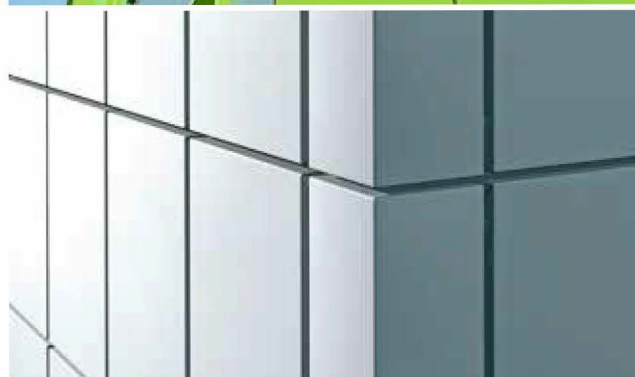
Europe	EN 13501	<b>FR:</b> B-s1, d0
France	NF P 92-501	<b>PE &amp; FR:</b> M1 Combustible non-inflammable
Germany	DIN 4102	<b>PE:</b> B2 – <b>FR:</b> B1
Switzerland	Directive VKF	<b>PE:</b> 4.2 – <b>FR:</b> 5.3
Great Britain	BS476 part 6 & 7	<b>PE &amp; FR:</b> Class 0
Poland	PN-90/B-02867	<b>FR:</b> NRO
USA	ASTM E 84	Meets requirements
Austria	ÖNORM 3800	PASS
Russia	TR	<b>FR:</b> G1

### Fire certificates for Reynolux® Building

Europe	EN 13501	A1
France	NF P 92-501	M0 incombustible

### Mechanical certifications for Reynobond® Architecture systems in Europe

France	Avis technique système cassette	2/11-1440
France	Avis technique système riveté et vissé	2/11-1442
France	Avis technique système vissé ossature bois	2/12-1497
Germany	Allgemeine bauaufsichtliche Zulassung	Z-33.2-1012
Poland	Aprobata Techniczna	AT-15-3524/2006
Spain	Sistema de revestimiento de fachadas	DIT 485
Russia		TC/TO-3739-12
Great Britain	BBA agreement	BBA 08/4510
Czech Republic	Certificaci	č. 216/ C5a/2012/0093







# Technical Bulletin

## Cleaning recommendations for Alcoa Architectural Products aluminum panels

Alcoa's painted Reynobond® Aluminum Composite Panels come with similar organic coatings designed for premium aesthetic appearance and minimum maintenance. We do recommend cleaning the painted surface to maintain the best appearance.

The amount and frequency of dirt accumulation on Reynobond panels depends, among other factors, upon the building's geographic location, the Reynobond panel location on the structure, local soil type, weather, pollution and air conditions.

Do not use steel wool, abrasives or anything likely to abrade the painted surface. Some cleaning chemicals can damage the surface. If unsure, test the application method and cleaning agents in an inconspicuous area. Start with the mildest cleaning methods first and, only if necessary, proceed to more stringent methods.

If dirt and stains are water soluble, such as soil, soot or particles, then a water rinse is the alternative least likely to degrade the painted surface. Do not, however, use a mechanical pressure washer. For areas of heavier or more tenacious dirt deposit, especially those near the grade level, a mild solution of detergent (5%) diluted with warm water is the best cleaning alternative. As with automobiles, streaking will be minimized if Reynobond panels are cleaned on a mild, overcast day or in the shade.

More frequent cleaning with water or mild detergents is preferable to using harsher or concentrated cleaning solutions, or abrasive methods at less frequent intervals. Mild detergents are those which do not irritate bare hands. It is preferred that Reynobond panels be cleaned from bottom to top (opposite that of glass) so that streaking and standing solutions be minimized.

In cases where Reynobond panels are soiled with non-water soluble dirt such as tar, oil, paint, graffiti or sealant material, solvents may be the only effective cleaning alternative. Common solvent categories are:

### Alcohols

- Denatured Alcohol or Ethanol
- Isopropyl or Rubbing Alcohol
- Methanol



## Technical Bulletin – Continued

### Petroleum Solvents

- Naptha Spirits
- Mineral Spirits
- Turpentine

### Aromatic Solvents

- Xylene
- Toluene

### Ketones, Esters

- MEK (methyl ethyl ketone)
- MIBK (methyl isobutyl ketone)
- Ethyl Acetate or Nail Polish Remover
- Lacquer Thinner

### Acetone and Paint Removers

- DO NOT USE ON PAINTED Reynobond®

In all cases of above cleaner use, personal safety and protection is the top priority. Use appropriate skin and eye protection to prevent chemical irritation or burns. Test any cleaner in an inconspicuous area prior to general application. Be aware that mixing certain chemicals may produce exothermic reactions (explosions) or toxic gas (chlorine bleach and ammonia can produce an extremely dangerous gas). Use mild or non-abrasive applicators.

Hydrochloric acid (10% muriatic acid) diluted with ten parts water may be useful in removing rust stains or dried mortar or concrete. However, contact of acids or alkalis with bare aluminum can quickly destroy the metal.

Mildew removal can be accomplished with:

- 1/3 cup detergent
- 2/3 cup trisodium phosphate (TSP)
- 1 quart sodium hypochloride, 5% solution (liquid bleach)

Apply and rinse immediately with clear water.

Be cautious of pooling of cleaners on any horizontal joint or surface. Remember that hot panels will speed up any chemical reaction and may cause damage to paint more quickly. Don't apply cleaners to an area that you cannot rinse prior to the chemical drying. Be aware of your surroundings and always think of safety first: your safety and that of persons using the building.





**Reynobond®**  
Architecture

## Reynobond® Aluminum Composite Material





## Versatile Solutions for Any Project.

Whether you're an architect, engineer, designer, fabricator, installer or contractor, each new project presents a fresh set of challenges. And your ability to meet those unique challenges is how your clients measure your work. That's why we are committed to finding new ways to help you achieve your vision with the beauty, affordability and ease of installation of Reynobond®.

Discover stylish and functional cladding solutions for both interior and exterior applications with our innovative products, including Reynobond Aluminum Composite Material, Reynobond Natural Metal Composite Material, Reynobond with KEVLAR® hurricane impact panels, Reynobond with EcoClean™, Reynobond Design Line, Anodized Reynobond and Reynolux®. And each of our product offerings provide the durability to ensure your project will look pristine for years to come—with minimal maintenance.

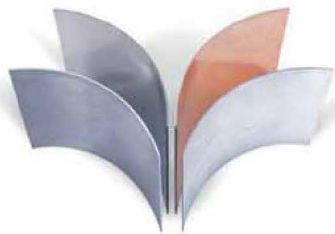
We're constantly extending our range of support services, such as comprehensive CAD drawings, custom design solutions, on-site consultation and more. Discover how we can help expand your design possibilities with many versatile solutions for any project—from inspiration to implementation.

Chihuahua's Businessmen Foundation (FECHAC) Regional Office  
Ciudad Juárez, Chihuahua, Mexico





## Reynobond® – Make a Statement.



### Exceptionally Flat

The strong, rigid construction of Reynobond® composite material consists of a polyethylene or fire-retardant compound core between two sheets of aluminum, brushed aluminum, zinc or copper. This creates a flat surface that virtually eliminates dimpling, buckling and oil canning—even retaining its flatness after folding!

### Daringly Formable

Achieve small-radius curves, reverse curves, angles, tessellated geometric shapes and other contours you never thought possible. Reynobond is easily routed, drilled, punched, cut, bent, curved and formed.

### Distinctively Colorful

Get outstanding color and gloss retention in a virtually limitless range of hues. Standard and custom finishes are available, including anodic colors and even nature-inspired Design Line advanced polymer finishes. Continuous coil application ensures consistent, long-lasting color.

### Surprisingly Light

The light weight of Reynobond allows a wide variety of design options, and installation is quick and easy. For renovation work, cladding can often be installed with little or no alteration to existing structural elements.



United Therapeutics Corporation  
Silver Spring, Maryland



### Easily Integrated

Reynobond integrates easily with the curtain wall provided by most manufacturers. The result is a seamless look for a building's façade – with the added design characteristics that only Reynobond can offer.

### Beautiful Accents

Reynobond's family of Natural Metal products allows every component of the structure to become a design element. Reynobond's strength, weight and formability allow you to achieve designs that are not feasible with other materials.

### A Perfect Match

Reynolux® Aluminum Wall Panels and Flashing Sheets are the perfect complement to our family of Reynobond Aluminum Composite Material products. The ability to combine these high-quality products in pre-matched or custom colors gives you a number of distinct design advantages.

### Safe & Compliant

Reynobond is designed and tested to meet safety and environmental building codes around the world. It is available with either a polyethylene (PE) core or a fire-resistant (FR) core material, both of which provide the flatness and formability required for your most demanding applications.



## Reynobond® Natural Metals – Strikingly Beautiful. Naturally Bold.

Get all the functional benefits of Reynobond® along with the aesthetic appeal of nature with our Reynobond Natural Metals. Our Brushed Aluminum, Zinc, and Copper composite panels give you bold options for interior and exterior walls and accents. And since it's Reynobond, you get the flatness and formability you demand that may not be possible with other building products.

### **Reynobond Natural Brushed Aluminum**

Reynobond Natural Brushed Aluminum combines the natural beauty of brushed aluminum with a high-performance protective coating to meet your consistency and durability requirements. It's ideal for exterior architectural wall panel applications, and is fingerprint resistant, making it perfectly suited for interior applications.

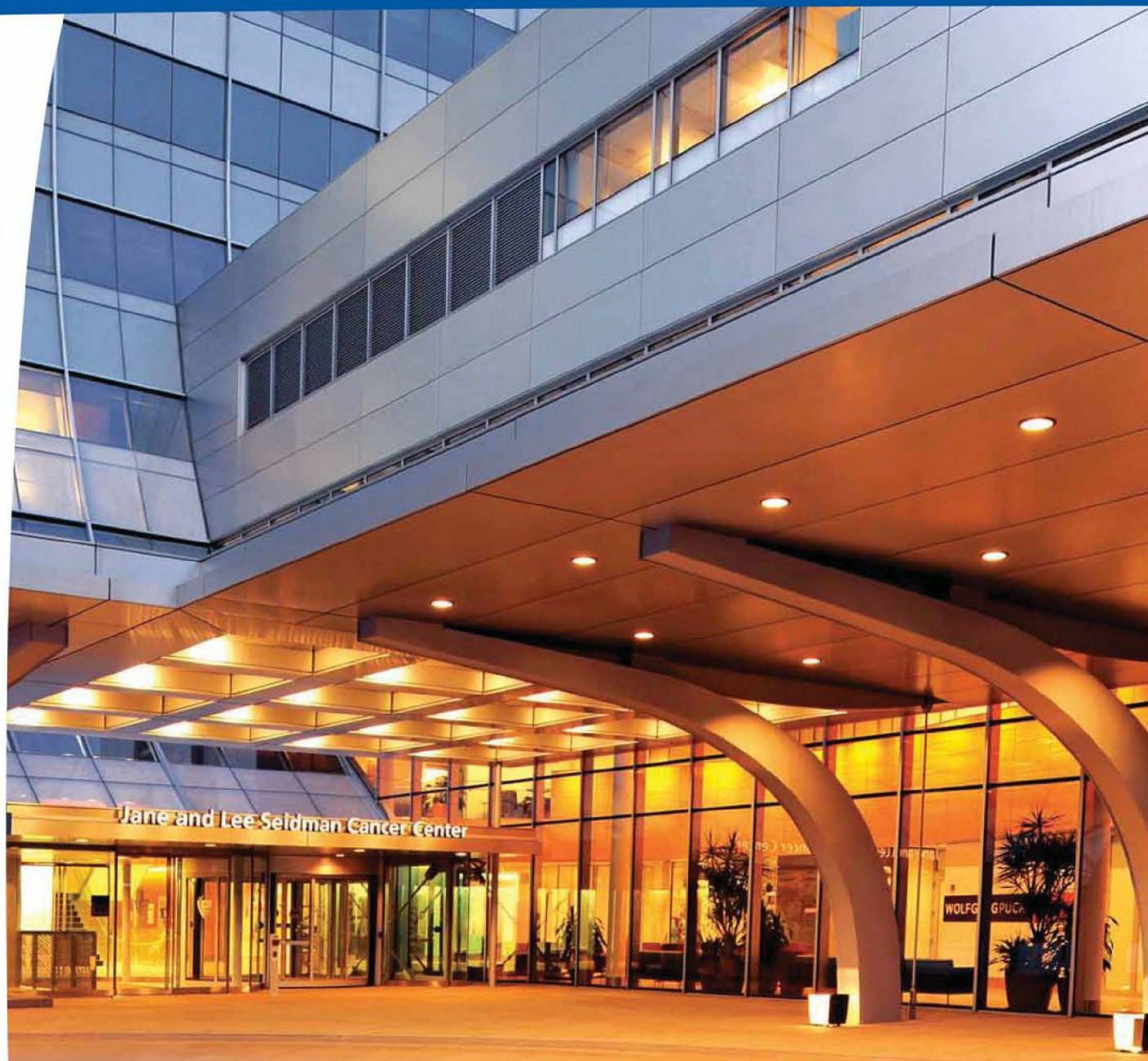
### **Reynobond Zinc Composite Material**

Made with a metal-zinc alloy that's stronger than common zinc, ZCM weathers naturally with no coatings required – scratches and imperfections melt away over time. It greatly expands the number of architectural applications where zinc façades and accents can be used on your building's envelope.

### **Reynobond Copper**

Created specifically for use as an interior or exterior wall accent panel, Reynobond Copper blends the natural beauty of copper with the flatness and formability of composite panels. With a natural green patina that develops over time, Reynobond Copper lends a classic look to any architectural project.

University Hospitals Seidman Cancer Center  
Cleveland, Ohio





## Innovation Meets Functionality.

### **Reynobond® with KEVLAR® – Lightweight. Flexible. Impact resistant.**

When you combine the benefits of Reynobond® with the impact-resistant strength of KEVLAR® you get the first and only aluminum composite panel system that eliminates the need for protective heavy backer materials such as plywood, steel or concrete behind the panel system. DuPont™ KEVLAR® is five times stronger than steel on an equal weight basis, making Reynobond with KEVLAR® the only standalone aluminum composite material that meets the stringent requirements of the Miami-Dade County Building Code. It's the only light, flexible aluminum composite panel that can withstand hurricane-propelled debris and similar types of impact.



### **Reynobond with EcoClean™ – Innovation for a greener, cleaner planet.**

EcoClean™ is an advanced titanium dioxide coating that, when applied to Reynobond, reacts with NOx (nitrogen oxide), the primary component of smog, breaking it down into harmless nitrates. This proprietary process enables the slightest bit of moisture, such as light rain or morning dew, to wash away organic particles. EcoClean™ is a photocatalytic coating that also destroys organic pollutants in reaction with UV light. Architects and building owners who are looking for positive ways to impact the environment and keep building surfaces looking fresh over time will find Reynobond with EcoClean™ the smart, innovative way to combine form with function.



### **Reynobond Face Fastened Solution – Utility meets style.**

Now you can get all the durability, versatility and flexibility of Reynobond in an economical face fastened solution. It's perfect for new and retrofit projects less than 40 feet (three stories) high. Since it can withstand extreme temperatures and humidity, there are no geographic limitations on where Reynobond Face Fastened Solution can be used. And it's 100% recyclable.



## Reynobond Architectural Finishes – Variety and Durability.

### **Colorweld® 500 – High-performance color that lasts.**

Reynobond Aluminum Composite Material is protected and colored with enhanced, high-performance Colorweld® 500 coatings, the premier architectural coatings for metal. These finishes feature 70% Kynar 500®/Hylar 5000® polyvinylidene fluoride (PVDF) resins with Fluoropolymer technology, coil coated to ensure the highest color uniformity and quality. They provide excellent flexibility and film adhesion for forming and offer superior resistance to humidity, impact, salt spray, pollution and abrasion. With a 30-year finish warranty, Colorweld 500 coatings exhibit outstanding color and gloss retention and improved hardness and durability.



### **Reynobond Design Line – Nature. Now available in aluminum.**

Now you can enjoy the aesthetic appeal of wood, mineral, granite, stone and natural patina with the durability, flexibility and strength of Reynobond in our nature-inspired Design Line finishes. These striking advanced polymer finishes create endless design possibilities, for both interior and exterior applications. All Design Line coatings are exterior grade and are backed by a 20-year finish warranty.



### **Anodized Reynobond – Beauty that's much more than skin deep.**

Discover a harder, smoother surface with superior resistance to abrasion and corrosion with our Anodized Reynobond. This environmentally friendly product features an inorganic anodic coating that fully integrates with the aluminum for total bonding and is unaffected by ultraviolet rays. Anodized Reynobond is available in a variety of standard and custom colors.



# General Technical Data

## Reynobond® ACM Technical Overview

Property	Units	RB120PE-3 mm	RB160PE-4 mm	RB240PE-6 mm	RB160FR-4 mm	Reynobond® with KEVLAR®
Thickness	Inches mm	0.118 3.0	0.157 4.0	0.236 6.0	0.157 4.0	0.157 4.0
Weight	lb/ft² Kg/m²	0.94 4.59	1.12 5.47	1.51 7.37	1.53 7.48	1.10 5.37
BOND INTEGRITY	Min. Bond Strength ASTM D1781	25 178	25 178	25 178	22.5 100	25 178
	Flatwise Shear ASTM D1002	1,297 8.94	1,221 8.42	2,055 14.17	928 6.4	735 5.07
	Allowable Bending Stress (1)	11,500 79.3	11,500 79.3	11,500 79.3	11,500 79.3	11,500 79.3
	Coefficient of Expansion ASTM E228	1.31x10 <sup>-5</sup> 2.36x10 <sup>-5</sup>	1.31x10 <sup>-5</sup> 2.36x10 <sup>-5</sup>	1.31x10 <sup>-5</sup> 2.36x10 <sup>-5</sup>	1.31x10 <sup>-5</sup> 2.36x10 <sup>-5</sup>	1.31x10 <sup>-5</sup> 2.36x10 <sup>-5</sup>
	Stiffness (EI)	807 9.1x10 <sup>3</sup>	1,140 12.8x10 <sup>3</sup>	1,896 21.4x10 <sup>3</sup>	1,262 14.3x10 <sup>3</sup>	776 8.7x10 <sup>3</sup>
	Flexural Modulus Aged per ASTM C393 (2)	8.3x10 <sup>6</sup> 57.2x10 <sup>3</sup>	6.0x10 <sup>6</sup> 41.4x10 <sup>3</sup>	4.0x10 <sup>6</sup> 27.6x10 <sup>3</sup>	6.7x10 <sup>6</sup> 46.2x10 <sup>3</sup>	4.08x10 <sup>6</sup> 28.2x10 <sup>3</sup>
	Moment of Inertia	0.97x10 <sup>-4</sup> 0.159	1.89x10 <sup>-4</sup> 0.310	4.58x10 <sup>-4</sup> 0.751	1.89x10 <sup>-4</sup> 0.310	1.89x10 <sup>-4</sup> 0.310
	Section Modulus	1.65x10 <sup>-8</sup> 1.065	2.41x10 <sup>-8</sup> 1.555	3.88x10 <sup>-8</sup> 2.503	2.41x10 <sup>-8</sup> 1.555	2.41x10 <sup>-8</sup> 1.555
	Tensile Yield ASTM D638	8,300 57.23	6,405 44.16	5,314 36.64	6,367 43.90	15,700 109.25
	Flatwise Tensile ASTM C297	1,483 10.22	1,371 9.45	1,099 7.58	961 6.62	513 3.53

(1) Allowable stress may be increased by 33% for wind load.

(2) Reynobond with KEVLAR® flex modulus fabric side up.

Information contained herein or related hereto is intended only for evaluation by technically skilled persons, with any use thereof to be at their independent discretion and risk. Such information is believed to be reliable, but Alcoa Architectural Products ("Alcoa") shall have no responsibility or liability for results obtained or damages resulting from such use. Alcoa grants no license under, and shall have no responsibility or liability for infringement of, any patent or other proprietary right. Nothing in this document should be construed as a warranty or guarantee by Alcoa, and the only applicable warranties will be those set forth in Alcoa acknowledgement or in any printed warranty documents issued by Alcoa. The foregoing may be waived or modified only in writing by an Alcoa officer.

## Paint Finish Quick Specification Reference

	CW 500/CW 500XL	DURAGLOSS® 5000	DURAGLOSS® 3000	CORAFLO®	FLUOROBRITE™	COLORWELD® 100
Warranty	30 yrs.	15 yrs.	10 yrs.	20 yrs.	5 yrs.	5 yrs.
Resin Type	70% PVDF	Modified Polyester	Modified Polyester	FEVE	FEVE	Polyester
UV Performance	*****	****	***	***	**	*
Gloss Range	20% – 35%	25% – 35%	20% – 80%	20% – 35%	20% – 80%	20% – 80%
Colors	Opagues Metallics	Opagues Metallics	Opagues Metallics Bright Colors	Opagues Metallics	Bright Colors	Opagues Metallics Bright Colors
Economics	\$\$\$\$	\$\$\$	\$	\$\$\$\$\$	\$\$\$\$\$	\$

## Product Availability

	Thickness	Standard Widths**	Standard Lengths*
RB120PE-3 mm	3 mm (0.118")	Consult for program widths including: 1000 mm (39.37") 1220 mm (48") 1270 mm (50") 1295 mm (51") 1524 mm (60") 1575 mm (62")	1220 mm (48") to 6172 mm (20' 3")
RB160PE-4 mm	4 mm (0.157")	1270 mm (50") 1575 mm (62")	1220 mm (48") to 6172 mm (20' 3")
RB240PE-6 mm	6 mm (0.236")	1270 mm (50") 1575 mm (62")	1220 mm (48") to 6172 mm (20' 3")
RB160FR-4 mm	4 mm (0.157")	1270 mm (50") 1575 mm (62")	1220 mm (48") to 6172 mm (20' 3")
Reynobond with KEVLAR®	4 mm (0.157")	1270 mm (50") 1575 mm (62")	1220 mm (48") to 6172 mm (20' 3")

\*Consult for standard lengths.

\*\*Consult for color & finish availability.

## Building Code Recognition

Southwest Research Institute Design Listing	No. 01.25000.02.197
IBC 2009	MEA 75-91-M, MEA 390-99-M
ICC-ES AC208 Report	Pending
State of Wisconsin Approval	No. 990033-I
Miami-Dade N.O.A.*	No. 09-0625.01, No. 10-1118.05, No. 11-1102.01
Florida Product Approval	FL10220 Validated
Canadian Fire Test	CAN S101
Canadian Fire Test	CAN S102
Canadian Fire Test	CAN S134

Chicago • Canada • United Kingdom • Singapore  
Australia • New Zealand • Malaysia • France  
Germany • China • Hong Kong • Poland • Israel

\*The Miami-Dade County Building Code stipulates that panel systems withstand the impact of a 9-pound, 2x4 timber traveling at 50 feet per second.

## Safety/Class A Rating Per ASTM E84

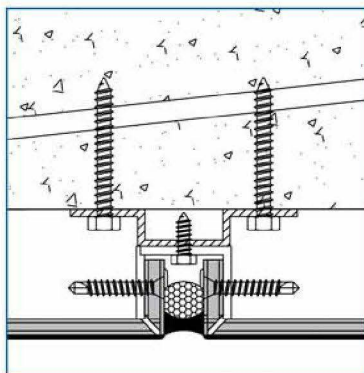
	Flame Spread	Smoke Developed
Reynobond PE without Joint	PASS* CLASS A	PASS* CLASS A
Reynobond PE with Joint	PASS* CLASS A	PASS* CLASS A
Reynobond FR with Joint	PASS* CLASS A	PASS* CLASS A
Reynobond with KEVLAR®	PASS* CLASS A	PASS* CLASS A

\*Flame spread ≤ 25, smoke developed ≤ 450.

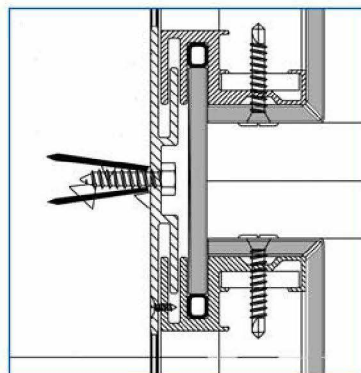
For a complete technical overview of all Reynobond products, visit [reynobond.com](http://reynobond.com).



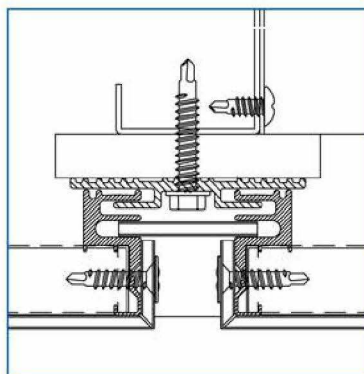
# Common Installation Methods



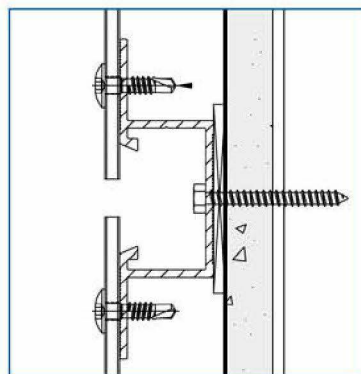
**Wet-Seal System**



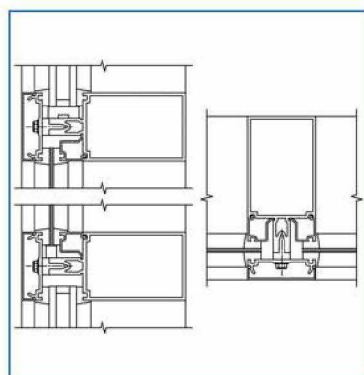
**Dry-Seal Installation System**



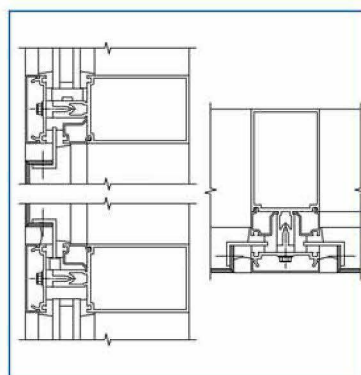
**Rainscreen**



**Face Fastened Solution**



**Curtain Wall Glazed-In Panel**



**Curtain Wall Flush Panel**

## Alcoa Architectural Products

50 Industrial Boulevard  
Eastman, GA 31023-4129

Tel. [REDACTED]

reynobond.com



©2012 Alcoa Architectural Products. Reynobond® is a registered trademark of Alcoa Inc. EcoClean™ is a trademark of Alcoa Inc.  
TOTO® is a registered trademark of TOTO LTD. HYDROTECT™ is a trademark of TOTO LTD.  
KEVLAR® is a registered trademark of E. I. du Pont de Nemours and Company and is used under license by Alcoa Architectural Products.

12AAP3407 November 2012 ver. 2.0 20000



# SIDERISE RH and RV cavity barriers for use in the external envelope or fabric of buildings

The SIDERISE RH 'Open State' horizontal and RV vertical cavity barrier range represents the default choice for market leading, high performance Rainscreen Cavity Barrier applications.

## Application

**SIDERISE RH 'Open State' horizontal cavity barriers** have been specifically developed to meet the requirements for cavity barriers used in drained and ventilated facades. Their use ensures that the system will drain any moisture within the façade construction, whilst maintaining airflow and, in the event of fire, provide an effective hot smoke and fire seal.

SIDERISE has developed two 'Open State' (open void) horizontal solutions: RH25(G/S) for air gaps up to 25mm and RH50(G/S) for air gaps up to 50mm.

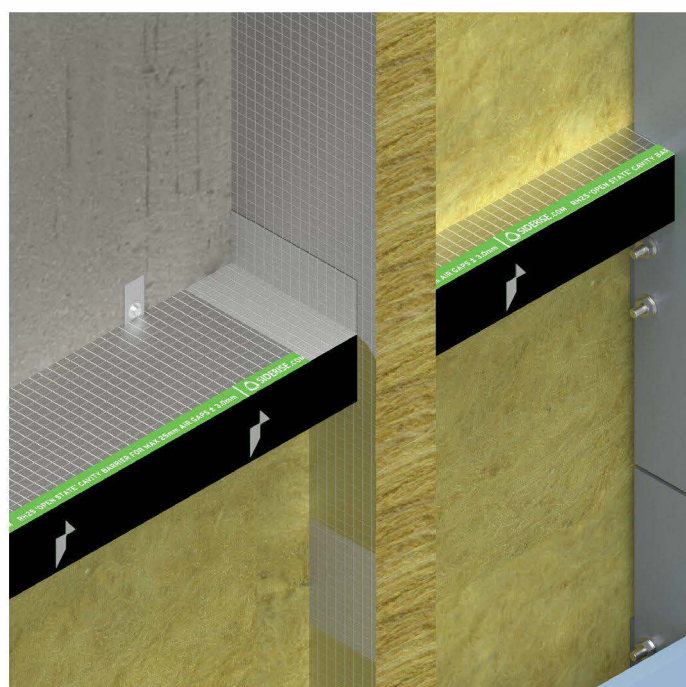
The product range is fully compliant to current market requirements and additionally has been tested to recent ASFP Guidance: 'Open State' Cavity Barrier used in External Envelope or Fabric of Buildings, utilising principles of EN 1363-1.

**SIDERISE RV vertical cavity barriers** for rainscreen cladding are used to full fill the void between the external envelope and internal structure.

By fully sealing the void, they assist ventilated facades to function by maintaining air-pressurisation compartmentation.

Importantly, their unique stonewool lamella core construction enables the vertical barriers to accommodate the serviceability movement normally associated with rainscreen facades.

Intersections between horizontal and vertical cavity barriers are simply abutted.



## Benefits

- Allows continuous ventilation and drainage behind external envelope
- Market leading fire resistance
- Rapid seal closure times
- Fully compliant and meets ASFP and CWCT guidelines
- Horizontal barriers can incorporate up to 50mm continuous ventilated air space
- Vertical barriers accommodate cladding movement



## SIDERISE RH 'Open State' horizontal cavity barriers

### PRODUCT DESCRIPTION

**SIDERISE RH** 'Open State' horizontal cavity barriers consist of a non-combustible stonewool lamella core, with reinforced aluminium foil faces, giving an overall reaction to fire performance to Class A1. The exposed leading edge is also sealed with aluminium foil. Whilst the base material is water repellent and non-hydroscopic, this predominantly enclosed arrangement affords an added degree of weather protection to the core material.

SIDERISE RH 'Open State' horizontal cavity barriers incorporate a continuous high performance intumescent strip which is bonded to the leading edge. In the event of exposure to fire, the intumescent rapidly expands and fully seals the purposely designed ventilation gap, formed at the time of installation, between barrier and the rear of the cladding. This unique construction offers an excellent resistance to the passage of both smoke and fire.

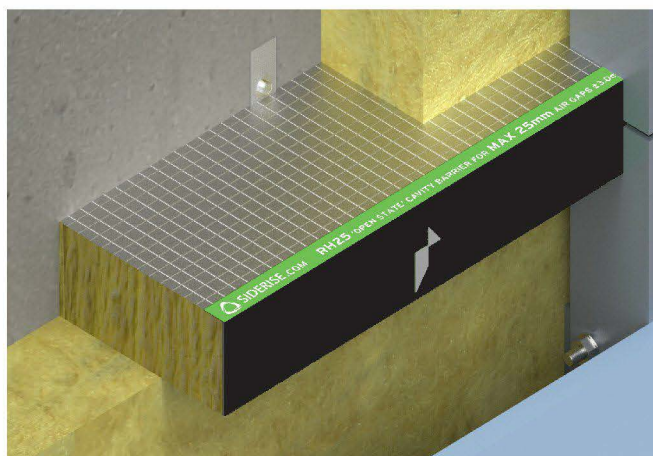
As standard, the range includes a choice of products to suit either 25mm air gaps - referred to as RH25 - or 50mm air gaps - referred to as RH50.

Both options are available with either galvanised mild steel or stainless steel fixing brackets as part of the system.

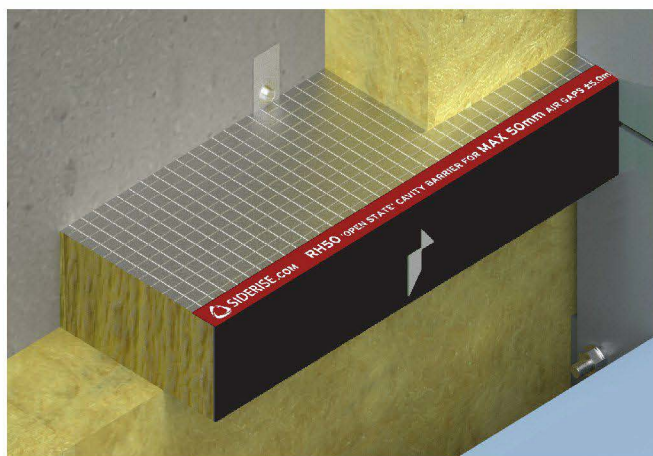
The specific horizontal cavity barrier system is then referred to as either RH25G, RH25S, RH50G or RH50S accordingly. The choice of bracket is usually determined by the rainscreen system designer according to project exposure and/or location.

The leading edge of the horizontal cavity barriers is encapsulated in a weather resistant polymer film. As standard, the film is black so as to register as a 'shadow-line' behind open joints in the cladding.

For product identification purposes, the top edges of the film used on the RH25 and RH50 systems are colour-coded green and red respectively.



SIDERISE RH 'Open State' horizontal cavity barrier for air gaps up to 25mm: RH25(G/S)



SIDERISE RH 'Open State' horizontal cavity barrier for air gaps up to 50mm: RH50(G/S)

# SIDERISE RH 'Open State' horizontal cavity barriers

## STANDARDS AND APPROVALS

**SIDERISE 'Open State' horizontal cavity barriers** satisfy the requirements of:

- England and Wales - the Building Regulations 2000, Approved Document B (2006 edition), Appendix A, Table A1, item 10 (Volume 1) & item 15 (Volume 2) and diagram 33
- Scotland - Technical Handbook 2
- Northern Ireland - Technical Document E
- Ireland - Technical Guidance Document B

They also meet the higher minimum fire resistance standard (30/30) for cavity barriers outlined in the LPC Design Guide for the Fire Protection of Buildings.

## FIRE PERFORMANCE

**SIDERISE 'Open State' horizontal cavity barriers** have been successfully tested up to 120 minutes (E) Integrity and 60 minutes (I) Insulation, when tested to the temperature and pressure conditions of BS EN 1363 Part 1: 2012. . Test conducted in accordance with the test standard: ASFP 'Open State' Cavity Barrier used in External Envelope or Fabric of Buildings.

### SIDERISE RH25(G/S) 'Open State' horizontal cavity barrier for maximum 25mm air gaps

SIDERISE have tested a range of horizontal cavity barriers with 25mm air gap to the above mentioned standards with seal reaction times of <1 minute which resulted in effective seal closure <1 minute.

Seal temperatures remained below 180°C during this activation period, and maintained the EI requirements as detailed in Tables 1 and 2 for up to E 120 and I 60. Test report WF 328279/A shows evidence of this.

### SIDERISE RH50(G/S) 'Open State' horizontal cavity barrier for maximum 50mm air gaps

SIDERISE have tested a range of horizontal cavity barriers with 50mm air gap to the above mentioned standards with seal reaction times of <1 minute and full closure at 2 minutes 22 seconds and they maintained the EI requirements as detailed in Tables 1 and 2 for EI 30. Test report BMT/FEI/F114007 shows evidence of this.

### Small voids <50mm

For small voids <50mm please refer to Table 3 for up to E 120 and I 90. Test report WF 328279/A shows evidence of this.

SIDERISE RH ‘Open State’ horizontal cavity barriers

Table 1

Fire performance for SIDERISE RH25G ‘Open State’ horizontal cavity barriers with galvanised brackets for voids between 50 - 300mm

Product Type	Fire Rating		Dimensions (mm)	Void Range (mm)	Air Gap (mm)
	Integrity (E)	Insulation (I)			
RH25G-90/30	90	30	75 x void -25	49 - 300	25±3.0
RH25G-90/60	90	60	90 x void -25	49 - 300	25±3.0
RH25G-120/60	120	60	120 x void -25	49 - 300	25±3.0
RH50G-30/30	30	30	75 x void -50	60 - 300	50±5.0

Table 2

Fire performance for SIDERISE RH25S ‘Open State’ horizontal cavity barriers with stainless steel brackets for voids between 50 - 300mm

Product Type	Fire Rating		Dimensions (mm)	Void Range (mm)	Air Gap (mm)
	Integrity (E)	Insulation (I)			
RH25S-90/30	90	30	75 x void -25	49 - 300	25±3.0
RH25S-90/60	90	60	90 x void -25	49 - 300	25±3.0
RH25S-120/60	120	60	120 x void -25	49 - 300	25±3.0
RH50S-30/30	30	30	75 x void -50	60 - 300	50±5.0

## SIDERISE RH 'Open State' horizontal cavity barriers

Table 3

Fire performance for SIDERISE 'Open State' horizontal cavity barriers for voids up to 50mm

Product Type	Fire Rating		Dimensions (mm)	Void Range (mm)	Air Gap (mm)
	Integrity (E)	Insulation (I)			
RH25-120/90	120	90	15 x 75	0 - 26	25±3.0
RH25-90/30	90	30	20 x 75	42 - 48	25±3.0
			15 x 75	37 - 41	25±3.0
			15 x 75	32 - 36	20±3.0
			15 x 75	27 - 31	15±3.0
RH25-90/60	90	60	20 x 90	42 - 48	25±3.0
			15 x 90	37 - 41	25±3.0
			15 x 90	32 - 36	20±3.0
			15 x 90	27 - 31	15±3.0
RH25-120/60	120	60	20 x 120	42 - 48	25±3.0
			15 x 120	37 - 41	25±3.0
			15 x 120	32 - 36	20±3.0
			15 x 120	27 - 31	15±3.0

NOTE: For voids greater than 300mm please contact the Facades team.



## SIDERISE RH 'Open State' horizontal cavity barriers

### INSTALLATION RECOMMENDATIONS

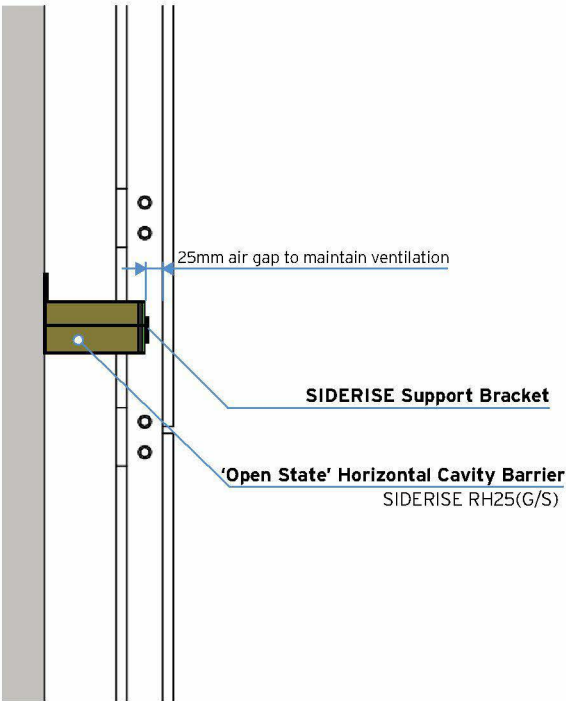
#### SIDERISE RH25(G/S) 'Open State' horizontal cavity barrier for maximum 25mm air gaps

These cavity barriers are installed in the void formed between the rainscreen facade and the inner structural wall, using the appropriate **SIDERISE support brackets** (see Tables 4-6).

To prevent fire flanking to the rear of the fire stop, any thermal insulation fitted to the outer face of the structural wall must be completely cut away to accommodate the thickness of this product.

The RH25(G/S) horizontal cavity barrier is fitted with the plain mineral fibre edge against the structural wall. A 25mm  $\pm 3$ mm (dimension may alter with specific design criteria) clear air gap should be left between the front edge of the cavity barrier and the rear surface of the rainscreen facade.

Adjacent lengths of the horizontal cavity barrier should be tightly abutted to prevent gaps. The top surface of the joint should be sealed with **SIDERISE foil tape** RFT 120/45.

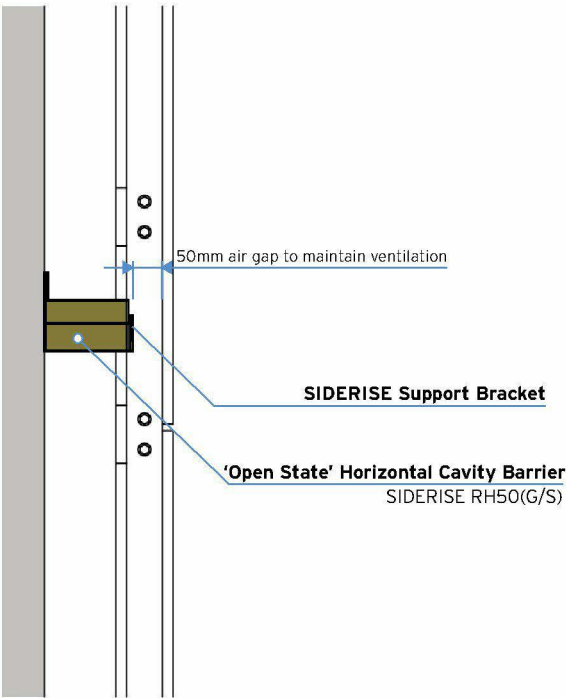


#### SIDERISE RH50(G/S) 'Open State' horizontal cavity barrier for maximum 50mm air gaps

These are installed in the void formed between the rainscreen facade and the inner structural wall using the appropriate **SIDERISE support brackets** (see Tables 5 & 6). To prevent fire flanking to the rear of the fire stop, any thermal insulation fitted to the outer face of the structural wall must be completely cut away to accommodate the thickness of this product.

The RH50(G/S) horizontal cavity barrier is fitted with the plain mineral fibre edge against the structural wall. A 50mm  $\pm 5$ mm (dimension may alter with specific design criteria) clear air gap should be left between the front edge of the cavity barrier and the rear surface of the rainscreen facade.

Adjacent lengths of the horizontal cavity barrier should be tightly abutted to prevent gaps. The top surface of the joint should be sealed with **SIDERISE foil tape** RFT 120/45.



# SIDERISE RH 'Open State' horizontal cavity barriers

## SUPPORT BRACKETS

A range of **SIDERISE support brackets** for horizontal cavity barriers are available for void widths of up to 300mm (see Tables 4-6). Lengths of the barrier are secured with these dedicated 'split' fixing brackets, which are impaled through the product at mid thickness.

The brackets are drilled on site and secured to the inner structural wall using non-combustible steel anchors or screws.

**Please note:**

For cut lengths a minimum of 2 brackets per length must be used. When using **SIDERISE support brackets**, pre-fitting the brackets to the product is recommended prior to fixing to the wall. For cut lengths <100mm one bracket/length.

'Screws' refers to the fixing and a washer with a 15mm (max.) head diameter. They should be non-combustible and suitable for substrate. The fixing is not supplied by SIDERISE.

SIDERISE RH25(G/S) 'Open State' horizontal cavity barrier for maximum 25mm air gaps (See Tables 4-6)

To facilitate bracket penetration, a small horizontal cut should be made in the face intumescent strip coinciding with the bracket's exit point. The protruding split ends should be trimmed to 10-20mm and counter-folded to retain the product. **SIDERISE galvanised brackets** and **SIDERISE stainless steel brackets** are available for purchase.

SIDERISE RH50(G/S) 'Open State' horizontal cavity barrier for maximum 50mm air gaps (See Tables 5 & 6)

SIDERISE RH50(G/S) - 30/30 must be installed with product logo tape on the top face, this is to ensure that the intumescent is located at the bottom of the barrier, thus closest to fire.

The protruding split ends should be trimmed to 10-20mm and counter-folded to retain the product.

**SIDERISE galvanised brackets** and **SIDERISE stainless steel brackets** are available for purchase.

**Table 4**

Fixing requirements for installation of SIDERISE RH 'Open State' horizontal cavity barriers for small voids

Product Type	Voids		
	0 - 50		
	Quantity	Type	Centres (mm)
RH25-120/90	3	Screw	400
RH25-90/30	3	Screw	400
RH25-90/60	3	Screw	400
RH50G-120/60	3	Screw	400

NOTE: Fixing screws are not supplied by SIDERISE.

**Table 5**

Fixing requirements for installation of SIDERISE RH 'Open State' horizontal cavity barriers with galvanised brackets

Product Type	Voids (mm)									
	51 - 75			76 - 250			251 - 300			> 300
	Quantity	Type	Centres (mm)	Quantity	Type	Centres (mm)	Quantity	Type	Centres (mm)	
RH25G-90/30	3	Screw	400	2	RS 350	600	3	RS 450	400	For Voids in excess of 300mm please contact SIDERISE Technical Department for details, extended range of application up to 450mm, >450mm subject to Engineering Appraisal. Based on project detail.
RH25G-90/60	3	Screw	400	3	RS 350	400	3	RS 450	400	
RH25G-120/60	3	Screw	400	3	RS 350	400	3	RS 450	400	
	60 - 75			76 - 250			251 - 300			
RH50G-30/30	2	RS 350	600	3	RS 350	400	3	RS 450	400	

NOTE: Fixing screws are not supplied by SIDERISE

**Table 6**

Fixing requirements for installation of SIDERISE RH 'Open State' horizontal cavity barriers with stainless steel brackets

Product Type	Voids (mm)									> 300
	51 - 75			76 - 250			251 - 300			
	Quantity	Type	Centres (mm)	Quantity	Type	Centres (mm)	Quantity	Type	Centres (mm)	
RH25S-90/30	3	Screw	400	2	RS 350 SS	600	3	RS 450 SS	400	For Voids in excess of 300mm please contact SIDERISE Technical Department for details, extended range of application up to 450mm, >450mm subject to Engineering Appraisal. Based on project detail.
RH25S-90/60	3	Screw	400	3	RS 350 SS	400	3	RS 450 SS	400	
RH25S-120/60	3	Screw	400	3	RS 350 SS	400	3	RS 450 SS	400	
	60 - 75			76 - 250			251 - 300			
RH50S-30/30	2	RS 350 SS	600	3	RS 350 SS	400	3	RS 450 SS	400	

NOTE: Fixing screws are not supplied by SIDERISE

## SIDERISE RV vertical cavity barriers

### PRODUCT DESCRIPTION

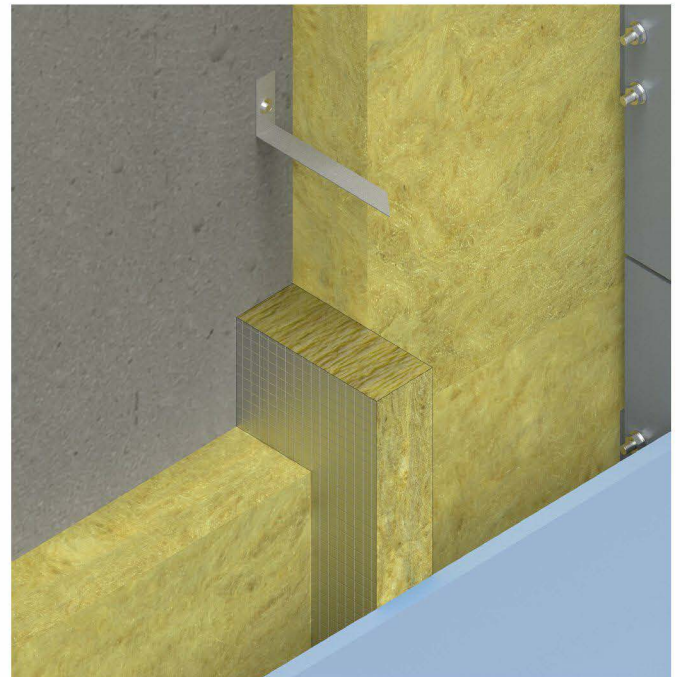
**SIDERISE RV vertical cavity barriers** for rainscreen cladding applications consist of a non-combustible stonewool lamella core, with reinforced aluminium foil faces, giving an overall reaction to fire performance to Class A1.

They are used to full fill the void between the external envelope and internal structure.

The construction offers an excellent resistance to the passage of both smoke and fire. Additionally, by fully sealing the void, they assist ventilated facades to function by maintaining air-pressurisation compartmentation.

Importantly, their unique stonewool lamella core construction enables the vertical barriers to accommodate the serviceability movement normally associated with rainscreen facades.

The leading edge compresses directly against the external envelope. No intumescent strip is required.



SIDERISE RV vertical cavity barrier



## SIDERISE RV vertical cavity barriers

### STANDARDS AND APPROVALS

**SIDERISE RV vertical cavity barriers** satisfy the the requirements of:

- England and Wales - the Building Regulations 2000, Approved Document B (2006 edition), Appendix A, Table A1, item 10 (Volume 1) & item 15 (Volume 2) and diagram 33
- Scotland - Technical Handbook 2
- Northern Ireland - Technical Document E
- Ireland - Technical Guidance Document B

They also meet the higher minimum fire resistance standard (EI 30/30) for cavity barriers outlined in the LPC Design Guide for the Fire Protection of Buildings.

### FIRE PERFORMANCE

**SIDERISE RV vertical cavity barriers** is based on proven fire performance to EN1366-4:2006 based on multiple tests with integrity ratings of 120 minutes and insulation rating of up to 120 minutes, (details on the extended performance are available on request).

## SIDERISE RV vertical cavity barriers

**Table 7**

Fire performance for SIDERISE RV vertical cavity barriers

Product Type	Fire Rating		Thickness (mm)	Void Range (mm)
	Integrity (E)	Insulation (I)		
RV-90/30	90	30	75	26 - 300
RV-90/60	90	60	90	26 - 300
RV-120/120	120	120	120	26 - 300



SIDERISE RV vertical cavity barriers

INSTALLATION RECOMMENDATIONS

**SIDERISE RV vertical cavity barriers:** are installed within the cavity formed between the rainscreen façade and the inner structural wall, using the appropriate **SIDERISE support brackets** (see Table 8).

The RV cavity barrier is fitted vertically under nominal 10mm compression, completely filling the void. The product is installed with the plain mineral fibre edge positioned against the structural wall.

To prevent fire flanking to the rear of the fire stop, any thermal insulation fitted to the outer face of the structural wall, must be completely cut away to accommodate the thickness of vertical cavity barrier.

Adjoining lengths of this product should be tightly abutted to prevent gaps. Joints should be sealed with **SIDERISE foil tape RFT 120/45**.

Thanks to the unique internal ‘lamella’ construction, facade deflection can be accommodated, even at the mid-position of the panel system.

SUPPORT BRACKETS

A range of **SIDERISE support brackets** for the vertical cavity barriers are available for cavity widths of up to 300mm (see Table 8). Lengths of the barrier are supported with these dedicated brackets, which impale the product at mid thickness to depth 75% of void.

The brackets are supplied as standard in 1mm galvanised mild steel in a flat form for site folding. They incorporate pre-notched indents to aid this process.

The brackets are drilled on site and secured to the inner structural wall using non-combustible steel anchors or screws.

Brackets are installed at 600mm fixing centres (300mm from each end).

Please note:

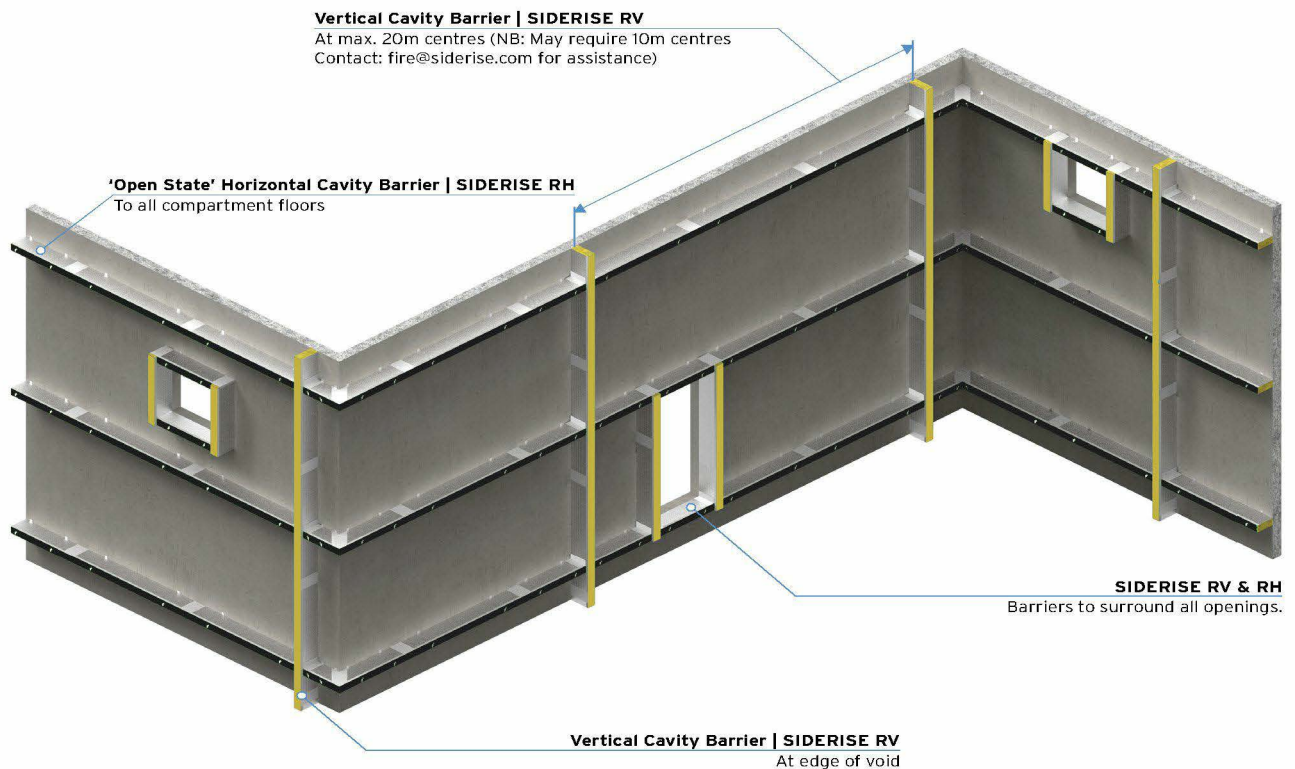
For voids less than 100mm: measured cavity + 5mm compression is required; for voids greater than 100mm: measured cavity +10mm compression is required.

Table 8

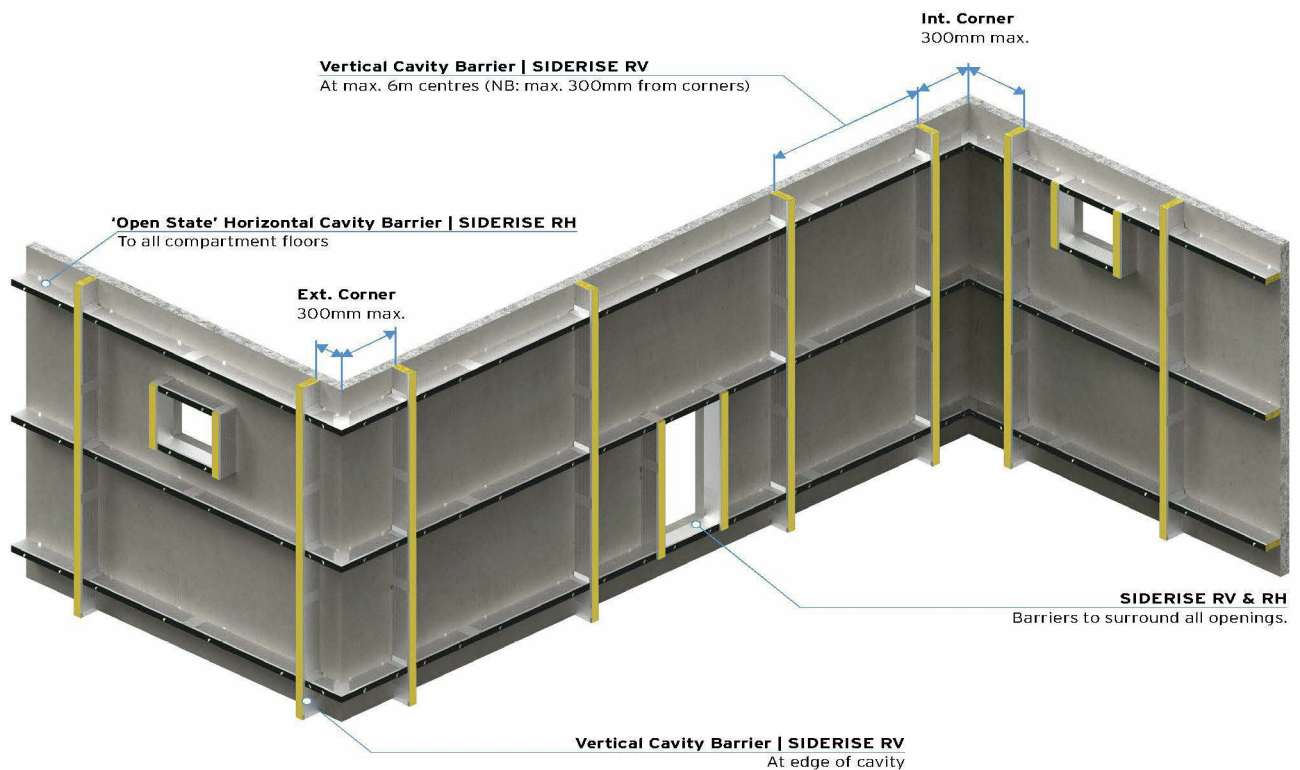
Brackets and centres for installation of SIDERISE vertical cavity barriers

Product Type	Voids (mm)							
	0 - 50		51 - 150		151 - 240		241 - 300	
RV-90/30	N/A	N/A	B65/110	600 Ctrs	B195	600 Ctrs	B355	600 Ctrs
RV-90/60	N/A	N/A	B65/110	600 Ctrs	B195	600 Ctrs	B355	600 Ctrs
RV-120/120	N/A	N/A	B65/110	600 Ctrs	B195	600 Ctrs	B355	600 Ctrs

## Compartmentation: Approved Document B, 2006 edition, Volume 2. England and Wales



## Compartmentation: NHBC guidelines



Extract from Approved Document B Table 13

Maximum dimensions of cavities in non-domestic buildings (Purpose Groups 2-7)

Location of cavity	Class of surface/product exposed in cavity (excluding the surface of any pipe, cable or conduit, or any insulation to any pipe)		Maximum dimensions in any direction (m)
	National class	European class	
Between roof and a ceiling	Any	Any	20
Any other cavity	Class 0 or Class 1	Class A1 or Class A2-s3, d2 or Class B-s3, d2 or Class C-s3, d2	20
	Not Class 0 or Class 1	Not any of the above classes	10

**NB:** The facade designer needs to satisfy themselves that the insulation being used complys with the correct European class, i.e. the four listed above.

Details of the European class can be obtained from the insulation manufacturer from their Declaration of Performance (DoP), following Construction Products Directives (CPD) and Product Standard EN 13162.

# Technical specification

## SIDERISE RH 'Open State' horizontal cavity barriers

Form supplied	1200mm long. Supplied pre-cut in width to suit advised void size
Colour	Horizontal - RH50(G/S) black/red tape; RH25(G/S) black/green tape
Finish	Aluminium foil
Density	Nominal 75Kg/m³
Thermal conductivity	$\lambda_{20} = 0.039\text{w/mK}$
Void sizes	0-300 mm. For > 300mm option contact SIDERISE facades technical team
Fire resistance	See Tables 1, 2 and 3
Reaction to fire	Euro Class 'A1'

## SIDERISE RV vertical cavity barriers

Form supplied	1200mm long. Supplied pre-cut in width to suit advised void size
Colour	No colour. Stonewool exposed to leading edge
Finish	Aluminium foil
Density	Nominal 75Kg/m³
Thermal conductivity	$\lambda_{20} = 0.039\text{w/mK}$
Void sizes	0-300 mm. For > 300mm option contact SIDERISE facades technical team
Fire resistance	See Tables 7
Reaction to fire	Euro Class 'A1'





## Further information

### PRODUCTS AVAILABLE

The following SIDERISE products are available.

- **SIDERISE RH 'Open State' horizontal cavity barriers** - RH50(G/S) and RH25(G/S)
- **SIDERISE RV vertical cavity barriers**
- **SIDERISE foil tape**: Type RFT 120/45
- **SIDERISE support brackets** - galvanised or stainless steel options

### DOCUMENTS AVAILABLE

The following information is available upon request or via download from the website:

- NBS Specification Clause
- Safety Data Sheet
- Cutting and Installation instructions
- White paper

### ENVIRONMENTAL

SIDERISE RH 'Open State' horizontal cavity barriers and SIDERISE RV vertical cavity barriers are environmentally friendly.

- They contain no Volatile Organic Compounds (VOCs) and no very Volatile Organic Compounds (vVOCs).
- Zero Ozone Depleting Potential
- Zero Global Warming Potential
- Recyclable

### SPECIFICATION

SIDERISE offer specifiers support from initial enquiry and technical consultation to project realisation. NBS draft specifications are provided for standard products and applications and can be tailored to suit specific project performance requirements.

### TECHNICAL SUPPORT

SIDERISE provides a comprehensive range of technical support services including:

- Project specific or application specific technical support at initial tender or full detailed design stage.
- Training and formal accreditation your staff or sub-contractors as competent installers.
- Introduction of formally accredited, third party approved fire protection installers.
- Attendance at site meetings in a consultative capacity for either firestopping or acoustic design support.
- Consultation with Building Control Officers, Architects, Main Contractors or Noise Consultants to provide support at any stage of the project.
- Co-ordination of site visits with BCO or other stakeholders to inspect and sign off installations, putting the Client or Main Contractor at ease.
- Production of formal letters, confirming the details of site inspections and findings.



#### SIDERISE GROUP

Forge Industrial Estate,  
Maesteg, UK, CF34 0AY

T: [REDACTED]

F: [REDACTED]

E: [facades@siderise.com](mailto:facades@siderise.com)

W: [www.siderise.com](http://www.siderise.com)





# PRODUCT DATA SHEET **HPC 200 &201**

CI/SfB Vv4

January 2013

## **AG 2 GRAFFITI REMOVER**

**Low odour formulation for sensitive surfaces.**

**DESCRIPTION:** A specially formulated blend of solvents developed to remove all forms of graffiti from sensitive surfaces and anti graffiti coatings

**ADVANTAGES:** Will effectively remove aerosol graffiti, permanent marker pen, crayon and lipstick from sensitive surfaces such as signs, polycarbonate glazing and plastics without affecting transparency or damaging the surface. Its 'low odour' formulation will permit interior graffiti removal without a build up of obnoxious fumes.

## **AG 3 GRAFFITI REMOVER**

**for non-porous surfaces.**

**DESCRIPTION:** A specially formulated blend of solvents developed to remove all forms of graffiti from non-porous surfaces

**ADVANTAGES:** Will effectively remove aerosol graffiti, permanent marker pen, crayons and lipstick from non-porous surfaces such as gloss paint, tiles and metalwork.

### **AG2 & AG3**

**PACK SIZE:** Supplied in cases of 10 x 500 ml Trigger Sprays. Can also be supplied in 5 and 25 Litre Drums.

**APPLICATION:** Turn nozzle of trigger spray to on. Spray affected area and wipe away with a soft cloth. On un-even surfaces or to remove stubborn graffiti use a soft bristled brush to agitate. Neutralise by rinsing with water. A full method statement is detailed overleaf.

**STORAGE:** Store away from direct sunlight and sources of heat. Protect from frost.

**SHELF LIFE:** 12 months (in original sealed container).

**HEALTH & SAFETY:** Refer to health and safety sheets.

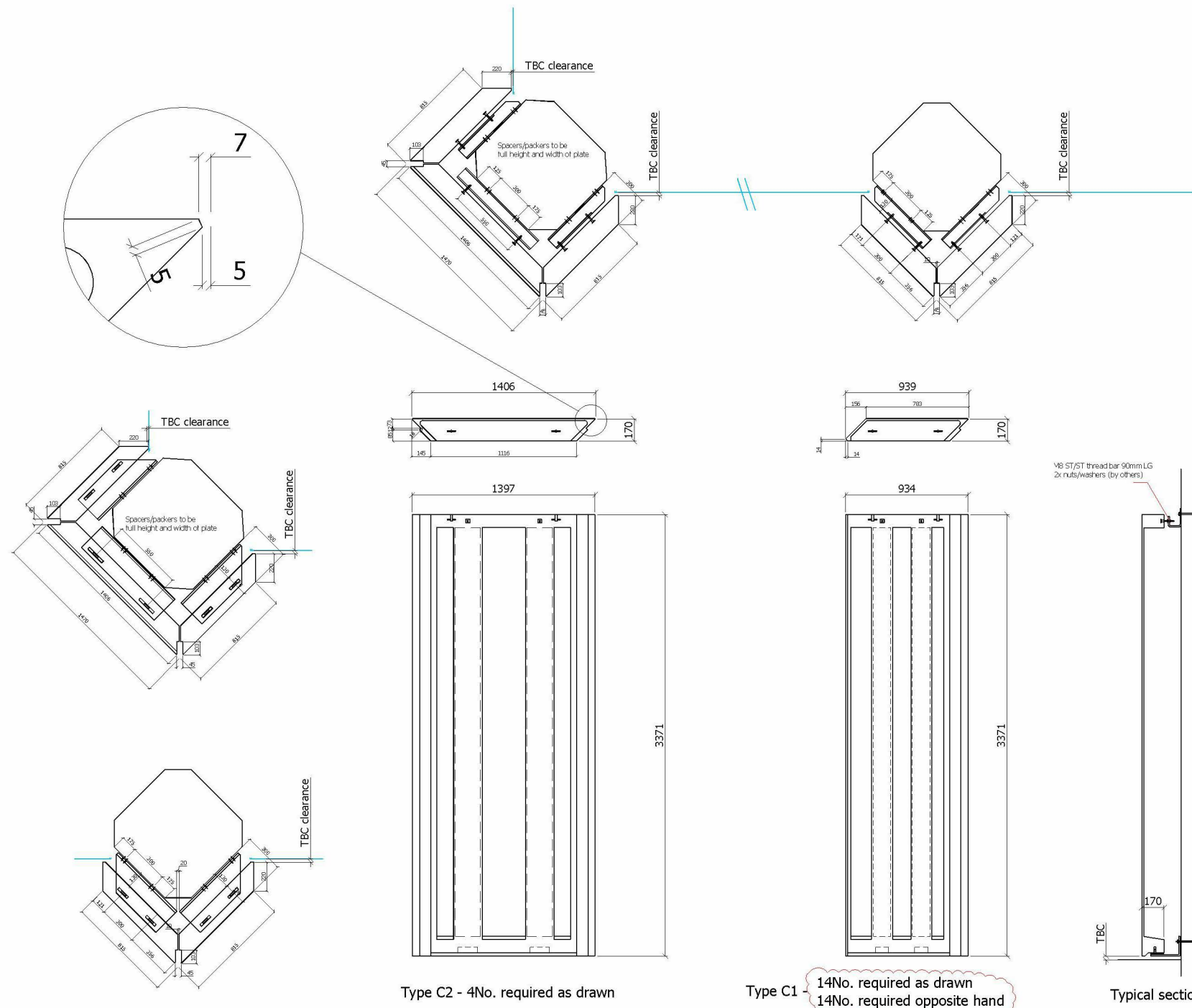


**HYDRON**  
Protective Coatings Ltd

Telephone: [REDACTED] Fax: [REDACTED]



Certificate No. 20494



Type C2 - 4No. required as drawn

Type C1 - 14No. required as drawn  
14No. required opposite hand

Typical section

1. Do not scale.
2. This drawing is the property of BCM GRC Ltd and may not be copied altered or distributed without the consent of BCM GRC Ltd.
3. Tolerances -3mm/+3mm.
4. All cast in sockets are stainless steel, therefore stainless steel bolts are required in all cases. Isolation washers will need to be implemented where galvanised steel occurs.
5. Torque setting for standard M8 ST/ST cast in sockets is 10.0Nm.

## NOTES

Items considered during detailing:	Dwg checked:
Lifting method.....	CAD.....
Fixing method.....	Design.....
Manufacturing methods.....	BCM GRC Ltd.....

Rev	Description	Date
D	Qty increased 12 to 14No.	8/10/15
C	Panel width increased.	25/9/15
B	Vertical ribs added + general amendments	20/7/15
A	Bottom rib revised.	6/7/15

BCM GRC Limited  
Unit 22 Civic Industrial Park  
Whitchurch  
Shropshire  
SY13 1TT  
Visit [www.bcmgrc.com](http://www.bcmgrc.com)  
Tel: [REDACTED]  
Fax: [REDACTED]  
E-mail: [info@bcmgrc.com](mailto:info@bcmgrc.com)

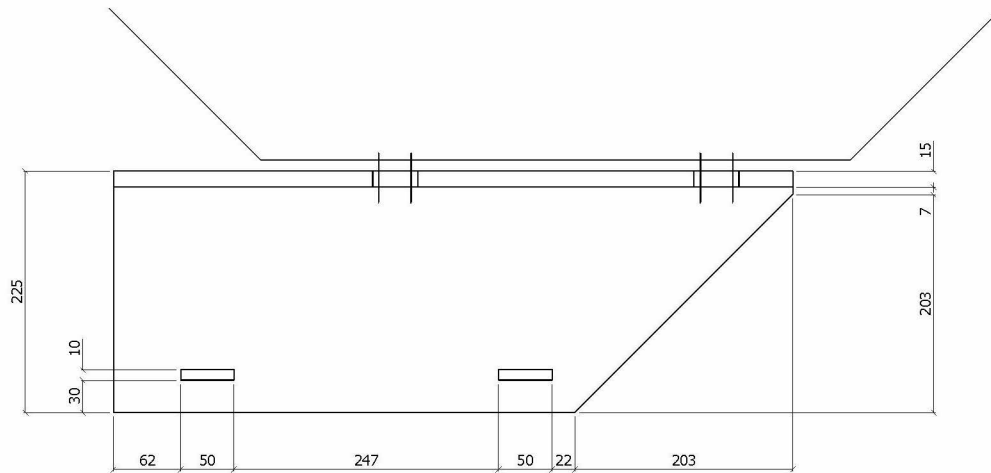


Harley CW

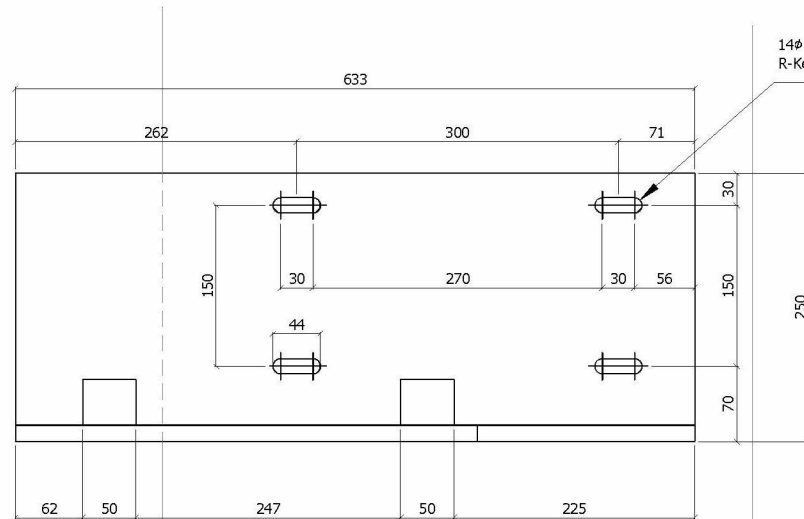
Grenfell Tower  
London  
Column Encasements

Drawing Title:  
General Details

Dwg Status:	PRELIMINARY	Date:	28/04/15
Product code:		Drawn By:	CA
Scale:	NTS	Dwg No.:	Z-HW-2881-GA1
		Rev:	D

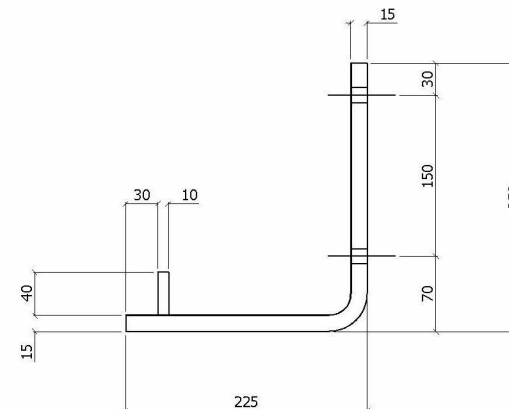


PLAN VIEW



**BOTTOM BRACKET TYPE 1**  
14No. required as drawn  
14No. required opp hand

14Ø slot to suit M12 Threaded Bar secured using R-Kem+ as by RAWL fixing (by others)



SECTION ON BTM BRACKET

1. Do not scale.
2. This drawing is the property of BCM GRC Ltd and may not be copied altered or distributed without the consent of BCM GRC Ltd.
3. Tolerances -3mm/+3mm.
4. All cast in sockets are stainless steel, therefore stainless steel bolts are required in all cases. Isolation washers will need to be implemented where galvanised steel occurs.
5. Torque setting for standard M8 ST/ST cast in sockets is 10.0Nm.

## NOTES

Items considered during detailing:	Dwg checked:
..fitting method.....	CAD.....
Fixing method.....	Design.....
Manufacturing methods	BCM GRC Ltd.....

A	Qty increased 12 to 14No.	8/10/15
Rev	Description	Date

**BCM GRC Limited**  
Unit 22 Civic Industrial Park  
Whitchurch  
Shropshire  
SY13 1TT  
Visit: [www.bcmgrc.com](http://www.bcmgrc.com)  
Tel: [REDACTED]  
Fax: [REDACTED]  
E-mail: [info@bcmgrc.com](mailto:info@bcmgrc.com)

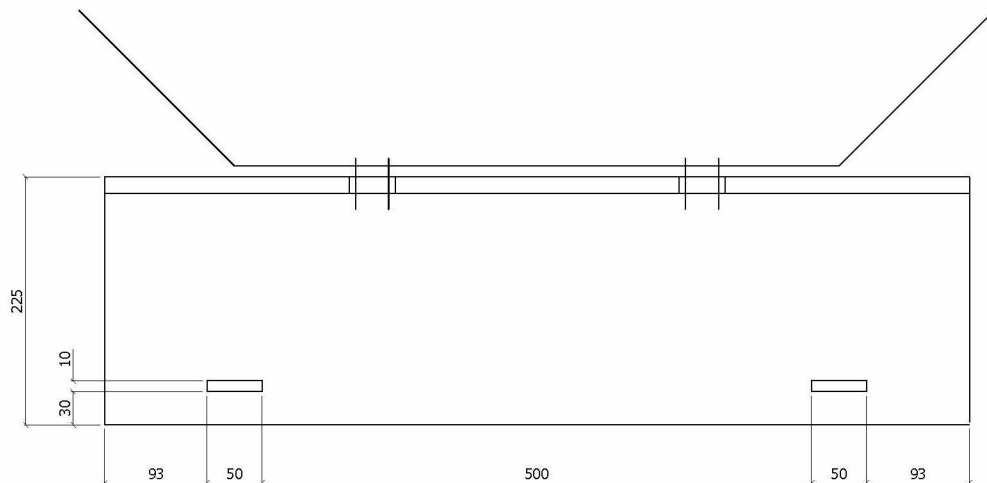
**BCM GRC Limited**

**Harley CW**

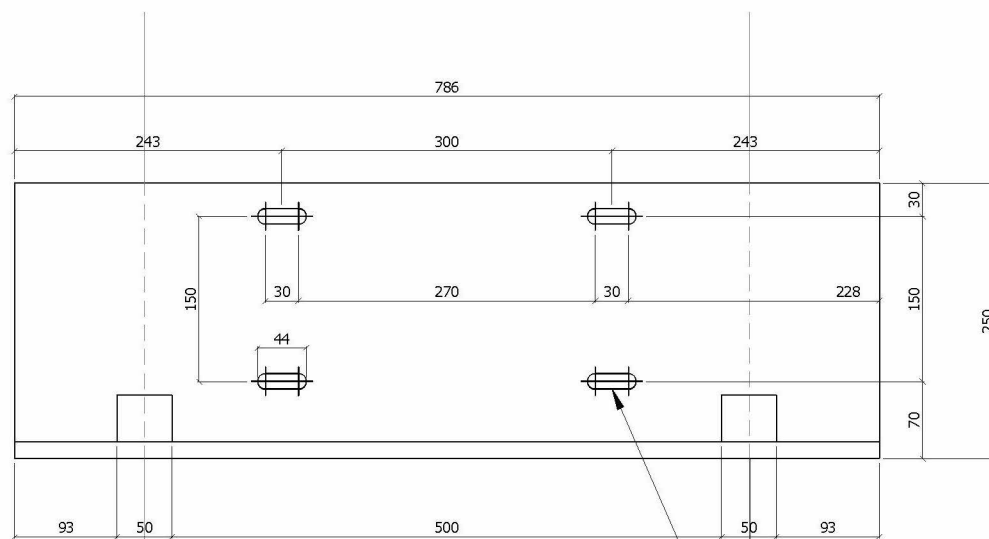
**Grenfell Tower  
London  
Column Encasements**

Drawing Title:  
Bracket Type 1

Dwg Status:	MANUFACTURE	Date:	27/07/15
Product code:	Z-HW-2881-B1	Drawn By:	CA
Scale:	NTS	Dwg No.:	Z-HW-2881-B1
		Rev:	A

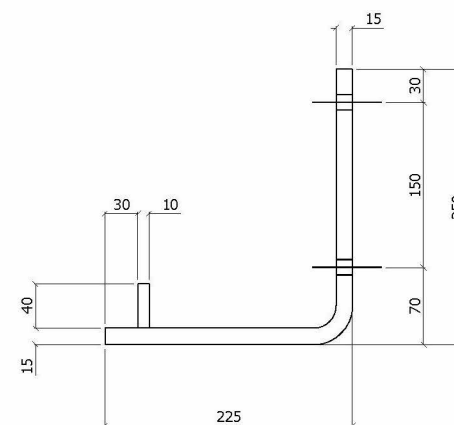


PLAN VIEW



14 $\emptyset$  slot to suit M12 Threaded Bar secured using R-Kem+ as by RAWL fixing (by others)

BOTTOM BRACKET TYPE 2  
4No required as drawn



SECTION ON BTM BRACKET

1. Do not scale.
2. This drawing is the property of BCM GRC Ltd and may not be copied altered or distributed without the consent of BCM GRC Ltd.
3. Tolerances -3mm/+3mm.
4. All cast in sockets are stainless steel, therefore stainless steel bolts are required in all cases. Isolation washers will need to be implemented where galvanised steel occurs.
5. Torque setting for standard M8 ST/ST cast in sockets is 10.0Nm.

## NOTES

Items considered during detailing:	Dwg checked:
Lifting method..... <input type="checkbox"/>	CAD..... <input type="checkbox"/>
Fixing method..... <input type="checkbox"/>	Design..... <input type="checkbox"/>
Manufacturing methods..... <input type="checkbox"/>	BCM GRC Ltd..... <input type="checkbox"/>

Rev	Description	Date
-----	-------------	------

**BCM GRC Limited**  
Unit 22 Civic Industrial Park  
Whitchurch  
Shropshire  
SY13 1TT  
Visit [www.bcmgrc.com](http://www.bcmgrc.com)  
Tel: [Redacted]  
Fax: [Redacted]  
E-mail: [info@bcmgrc.com](mailto:info@bcmgrc.com)

**BCM GRC Limited**

**Harley CW**

**Grenfell Tower  
London  
Column Encasements**

Drawing Title:  
Bracket Type 2

Dwg Status:	MANUFACTURE	Date:	27/07/15
Product code:	Z-HW-2881-B2	Drawn By:	CA
Scale:	NTS	Dwg No:	Z-HW-2881-B2
		Rev:	-

1. Do not scale.
2. This drawing is the property of BCM GRC Ltd and may not be copied altered or distributed without the consent of BCM GRC Ltd.
3. Tolerances -3mm/+3mm.
4. All cast in sockets are stainless steel, therefore stainless steel bolts are required in all cases. Isolation washers will need to be implemented where galvanised steel occurs.
5. Torque setting for standard M8 ST/ST cast in sockets is 10.0Nm.

## NOTES

Items considered during detailing:	Dwg checked:
Lifting method..... <input type="checkbox"/>	CAD..... <input type="checkbox"/>
Fixing method..... <input type="checkbox"/>	Design..... <input type="checkbox"/>
Manufacturing methods <input type="checkbox"/>	BCM GRC Ltd..... <input type="checkbox"/>

A Qty increased 12 to 14No. 8/10/15

Rev Description Date

**BCM GRC Limited**  
Unit 22 Civic Industrial Park  
Whitchurch  
Shropshire  
SY13 1TT  
Visit [www.bcmgrc.com](http://www.bcmgrc.com)  
Tel: 01902 555555  
Fax: 01902 555555  
E-mail: [info@bcmgrc.com](mailto:info@bcmgrc.com)

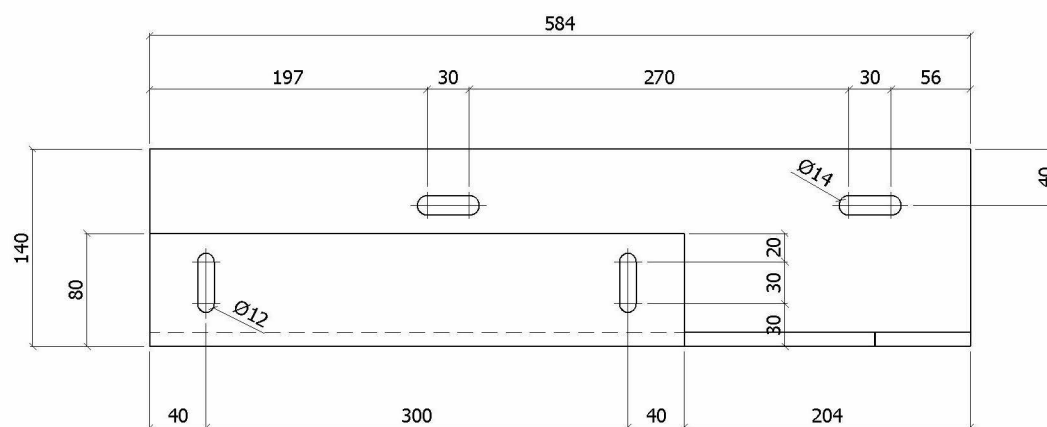
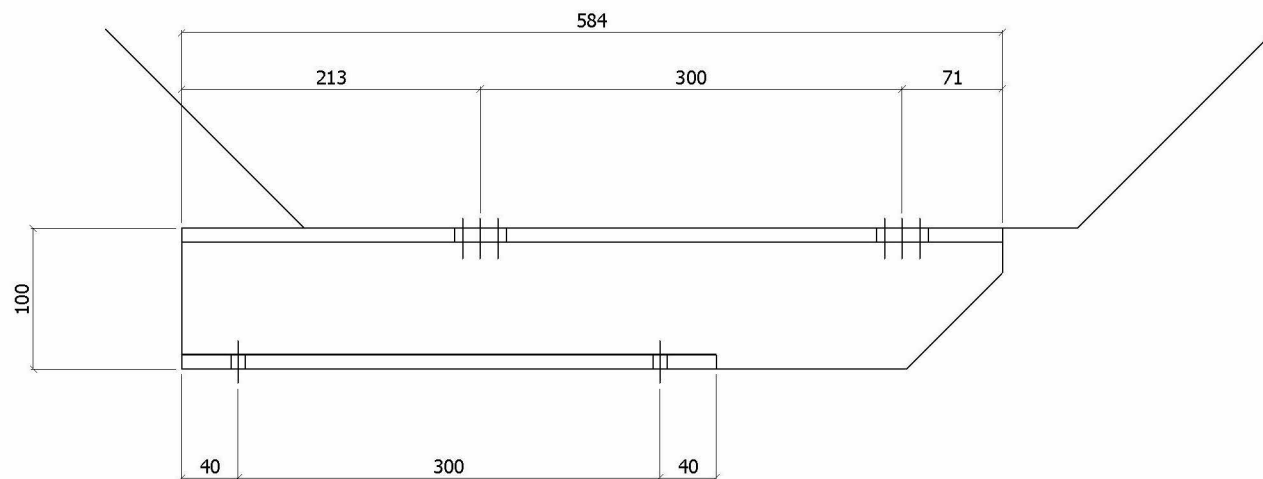


**Harley CW**

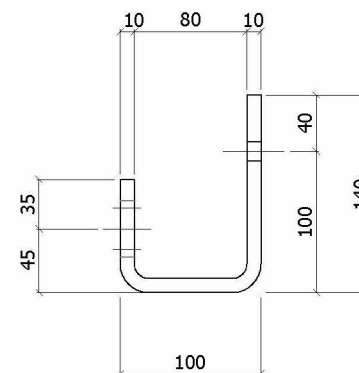
**Grenfell Tower  
London  
Column Encasements**

Drawing Title:  
Bracket Type 3

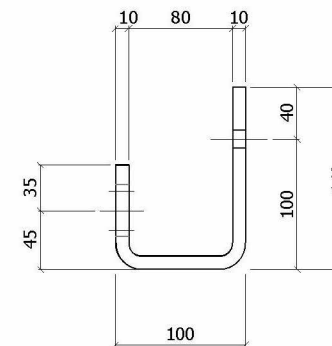
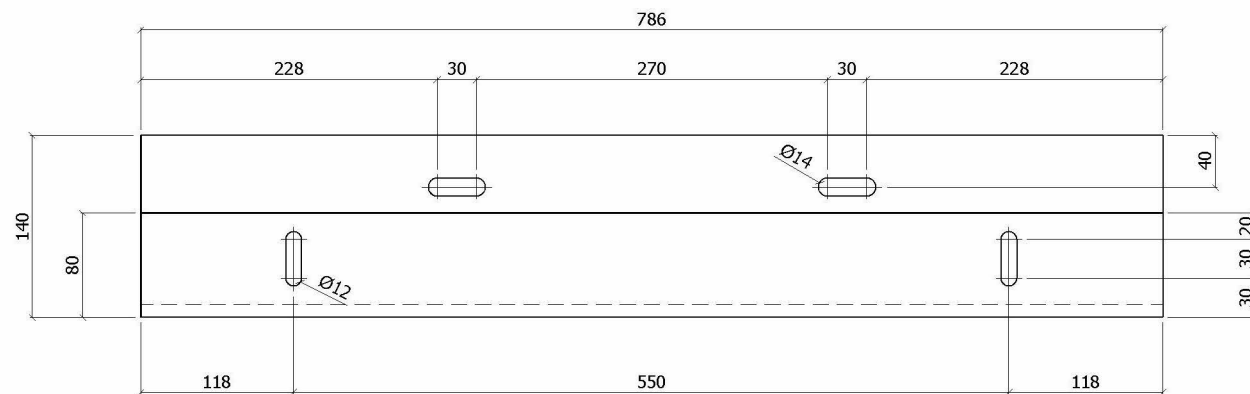
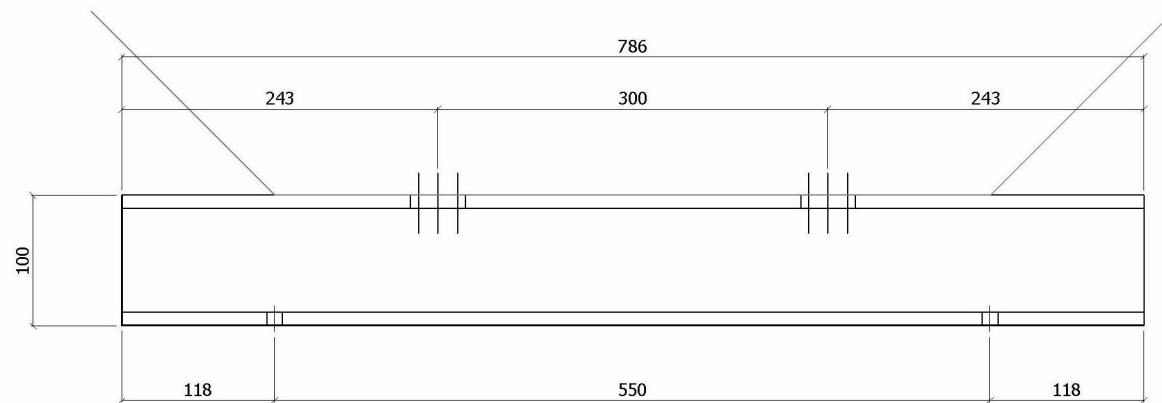
Dwg Status:	MANUFACTURE	Date:	27/07/15
Product code:	Z-HW-2881-B3	Drawn By:	CA
Scale:	NTS	Dwg No:	Z-HW-2881-B3
		Rev:	A



**RESTRAINT BRACKET - TYPE 3**  
14No required as drawn  
14No required opp hand








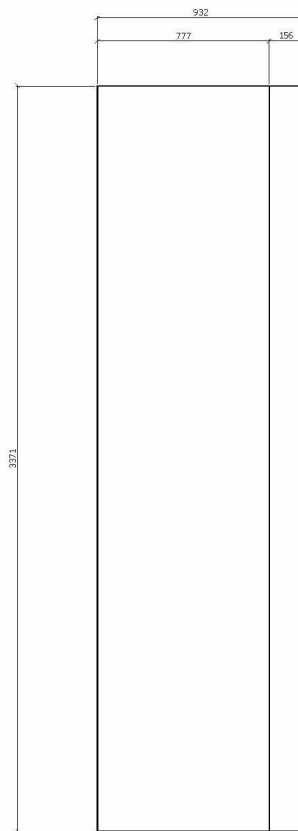
RESTRAINT BRACKET - TYPE 4  
4No required as drawn

1. Do not scale.
2. This drawing is the property of BCM GRC Ltd and may not be copied altered or distributed without the consent of BCM GRC Ltd.
3. Tolerances -3mm/+3mm.
4. All cast in sockets are stainless steel, therefore stainless steel bolts are required in all cases. Isolation washers will need to be implemented where galvanised steel occurs.
5. Torque setting for standard M8 ST/ST cast in sockets is 10.0Nm.

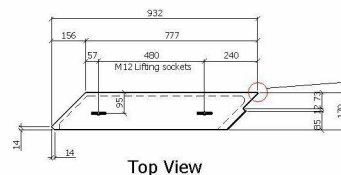
## NOTES

Items considered during detailing:	Dwg checked:
Lifting method..... <input type="checkbox"/>	CAD..... <input type="checkbox"/>
Fixing method..... <input type="checkbox"/>	Design..... <input type="checkbox"/>
Manufacturing methods <input type="checkbox"/>	BCM GRC Ltd..... <input type="checkbox"/>

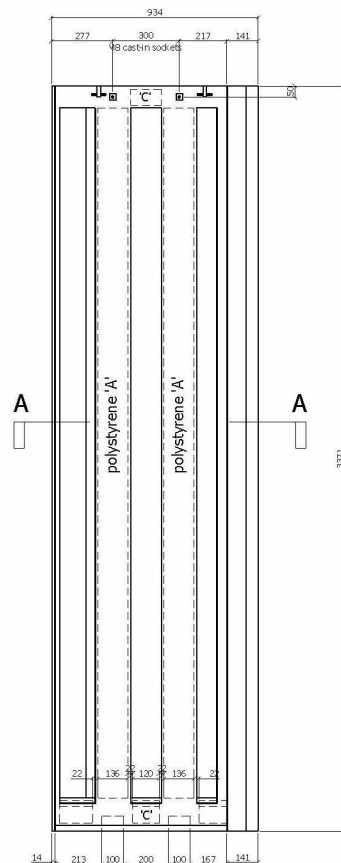
Rev	Description	Date
<b>BCM GRC Limited</b> Unit 22 Civic Industrial Park Whitchurch Shropshire SY13 1TT  Visit <a href="http://www.bcmgrc.com">www.bcmgrc.com</a> Tel. [REDACTED] Fax [REDACTED] E-mail <a href="mailto:info@bcmgrc.com">info@bcmgrc.com</a>		
<h1>Harley CW</h1> <h2>Grenfell Tower</h2> <h3>London</h3> <h3>Column Encasements</h3>		
Drawing Title <b>Bracket Type 4</b>		
Dwg Status: <b>MANUFACTURE</b>		Date: <b>27/07/15</b>
Product code: <b>Z-HW-2881-B4</b>		Drawn By: <b>CA</b>
Scale: <b>NTS</b>	Dwg No: <b>Z-HW-2881-B4</b>	Rev: <b>-</b>



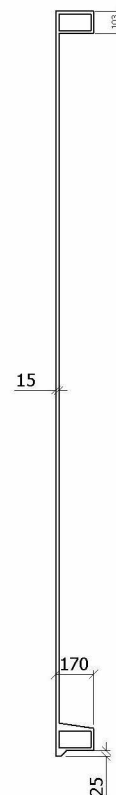
Front View



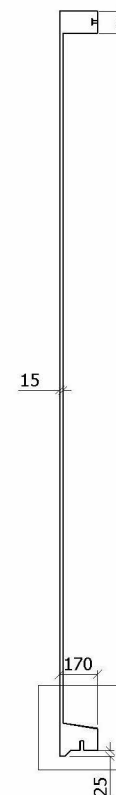
Top View



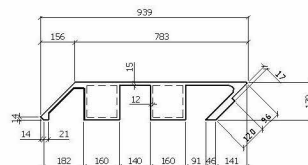
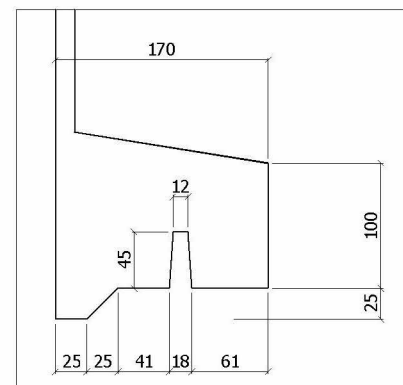
Rear View



Vertical section  
thru' rib

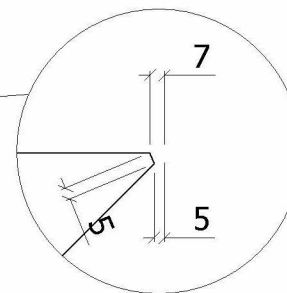


Vertical section  
thru' block



Section A-A

14No. required as drawn  
14No. required opposite hand



1. Do not scale.
2. This drawing is the property of BCM GRC Ltd and may not be copied altered or distributed without the consent of BCM GRC Ltd.
3. Tolerances -3mm/+3mm.
4. All cast in sockets are stainless steel, therefore stainless steel bolts are required in all cases. Isolation washers will need to be implemented where galvanised steel occurs.
5. Torque setting for standard M8 ST/ST cast in sockets is 10.0Nm.

## NOTES

Items considered during detailing:	Dwg checked:
Lifting method.....	CAD.....
Fixing method.....	Design.....
Manufacturing methods.....	BCM GRC Ltd.....

Rev	Description	Date
A	Qty increased 12 to 14No.	8/10/15

**BCM GRC Limited**  
Unit 22 Civic Industrial Park  
Whitchurch  
Shropshire  
SY13 1TT

Visit [www.bcmgrc.com](http://www.bcmgrc.com)  
Tel: [Redacted]  
Fax: [Redacted]  
E-mail: [info@bcmgrc.com](mailto:info@bcmgrc.com)

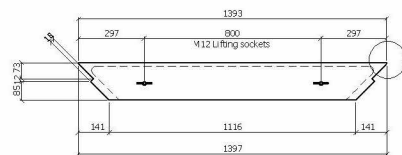
**BCM GRC Limited**

## Harley CW

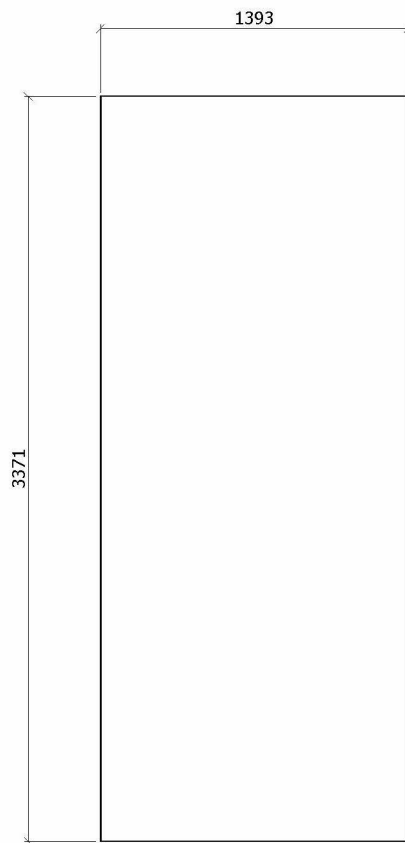
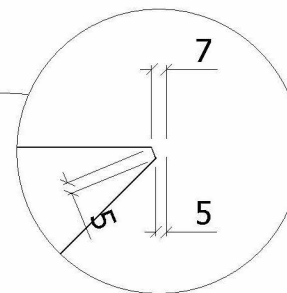
Grenfell Tower  
London  
Column Encasements

Drawing Title  
Column Encasement - Type 1  
Production Drawing

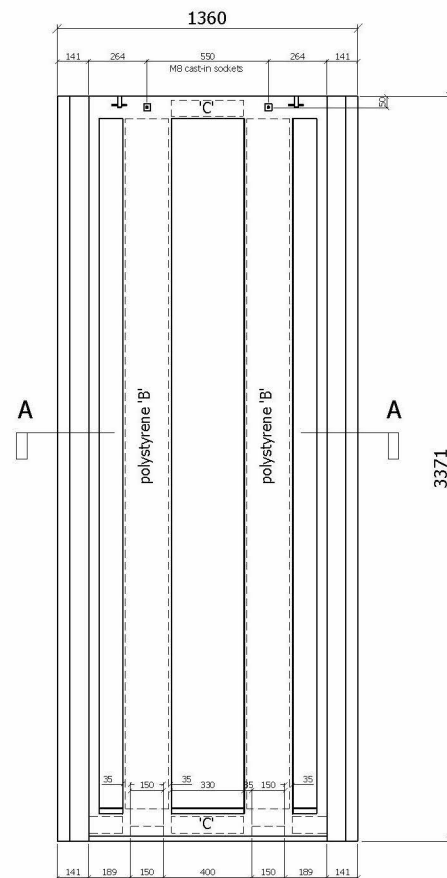
Dwg Status:	PRELIMINARY	Date:	21/07/15
Product code:	Z-HW-2881-C1	Drawn By:	CA
Scale:	NTS	Dwg No:	Z-HW-2881-C1
		Rev:	A



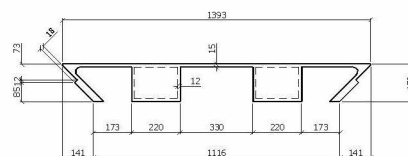
Top View



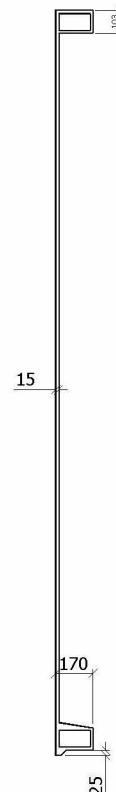
Front View



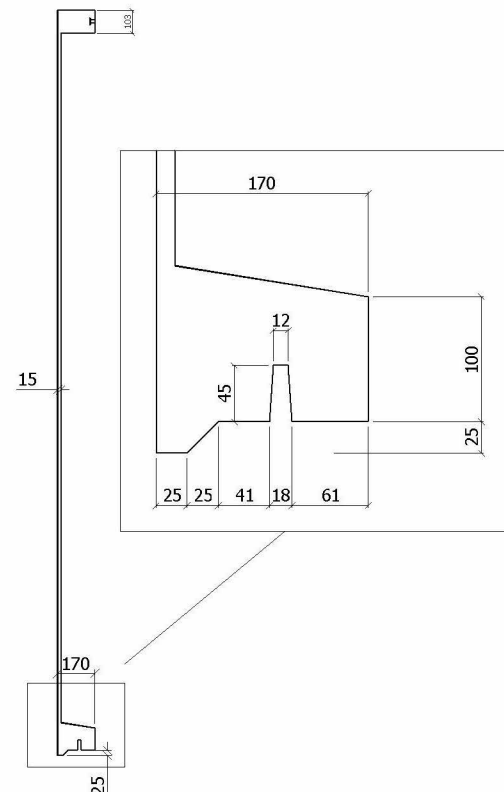
Rear View



Section A-A



Vertical section thru' rib



Vertical section thru' block

4No. required as drawn

1. Do not scale.
2. This drawing is the property of BCM GRC Ltd and may not be copied altered or distributed without the consent of BCM GRC Ltd.
3. Tolerances -3mm/+3mm.
4. All cast in sockets are stainless steel, therefore stainless steel bolts are required in all cases. Isolation washers will need to be implemented where galvanised steel occurs.
5. Torque setting for standard M8 ST/ST cast in sockets is 10.0Nm.

## NOTES

Items considered during detailing:	Dwg checked:
Lifting method..... <input type="checkbox"/>	CAD..... <input type="checkbox"/>
Fixing method..... <input type="checkbox"/>	Design..... <input type="checkbox"/>
Manufacturing methods <input type="checkbox"/>	BCM GRC Ltd..... <input type="checkbox"/>

Rev	Description	Date
-----	-------------	------

BCM GRC Limited  
Unit 22 Civic Industrial Park  
Whitchurch  
Shropshire  
SY13 1TT

Visit [www.bcmgrc.com](http://www.bcmgrc.com)  
Tel: [01952551111](tel:01952551111)  
Fax: [01952551111](tel:01952551111)  
E-mail: [info@bcmgrc.com](mailto:info@bcmgrc.com)

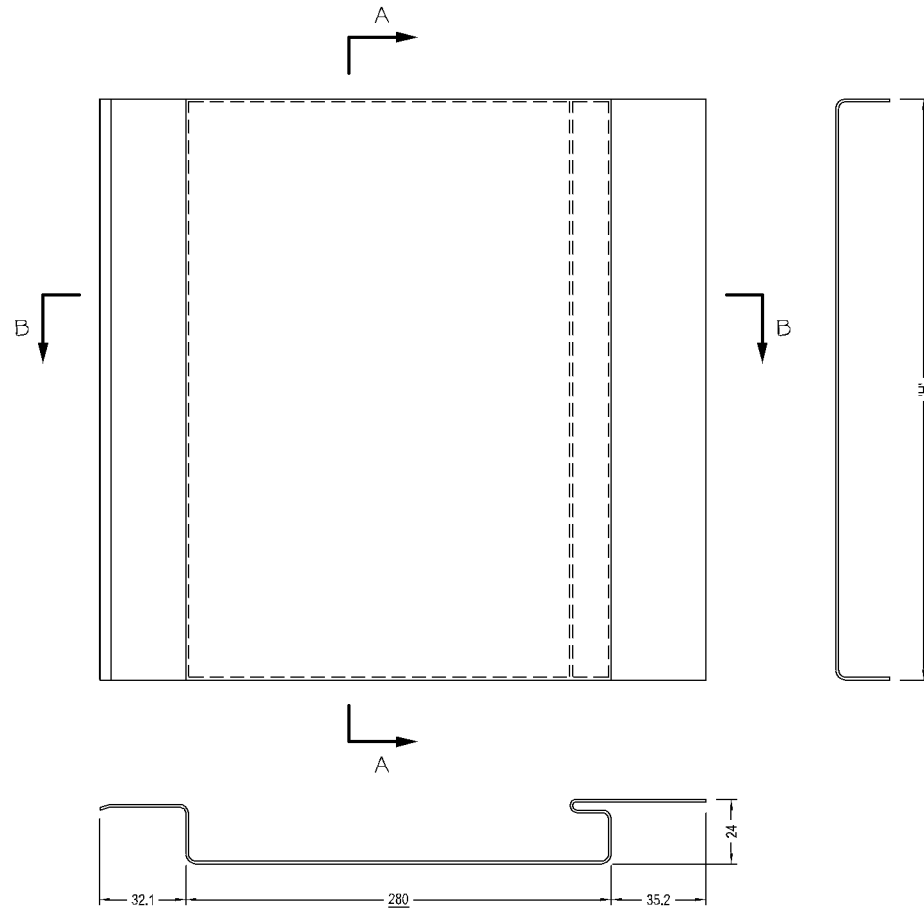
**BCM**  
GRC Limited

Harley CW

Grenfell Tower  
London  
Column Encasements

Drawing Title:  
Column Encasement - Type 2  
Production Drawing

Dwg Status:	PRELIMINARY	Date:	21/07/15
Product code:	Z-HW-2881-C2	Drawn By:	CA
Scale:	NTS	Dwg No:	Z-HW-2881-C2
		Rev:	-



## STD PLANK CLADDING

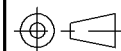
SITE FITTED

REF	QTY	H	RAL COLOUR	LOCN
WS59/1	82 OFF	2553	7005	W+0 UPPER
WS59/2	174 OFF	1540	7005	W+0 LOWER
WS59/3	75 OFF	1464	7012	MEZZ UPPER
WS59/4	161 OFF	663	7012	MEZZ LOWER

APPROVED FOR  
MANUFACTURE

FILE 855..

Rev	Date	Notes
A	25.08.15	QTY & SIZES FOR MANUFACTURE



R14.1

General notes - Where applicable:-

-  
No additional jigging holes to be drilled.  
Joint straps and stop ends to be finished to match.  
Finished faces to be protected with low tack tape or film.  
Welds to be continuous and smooth or fettled flush.  
Unmarked angles 90 degrees.

Material

ALUMINIUM SHEET

Finish

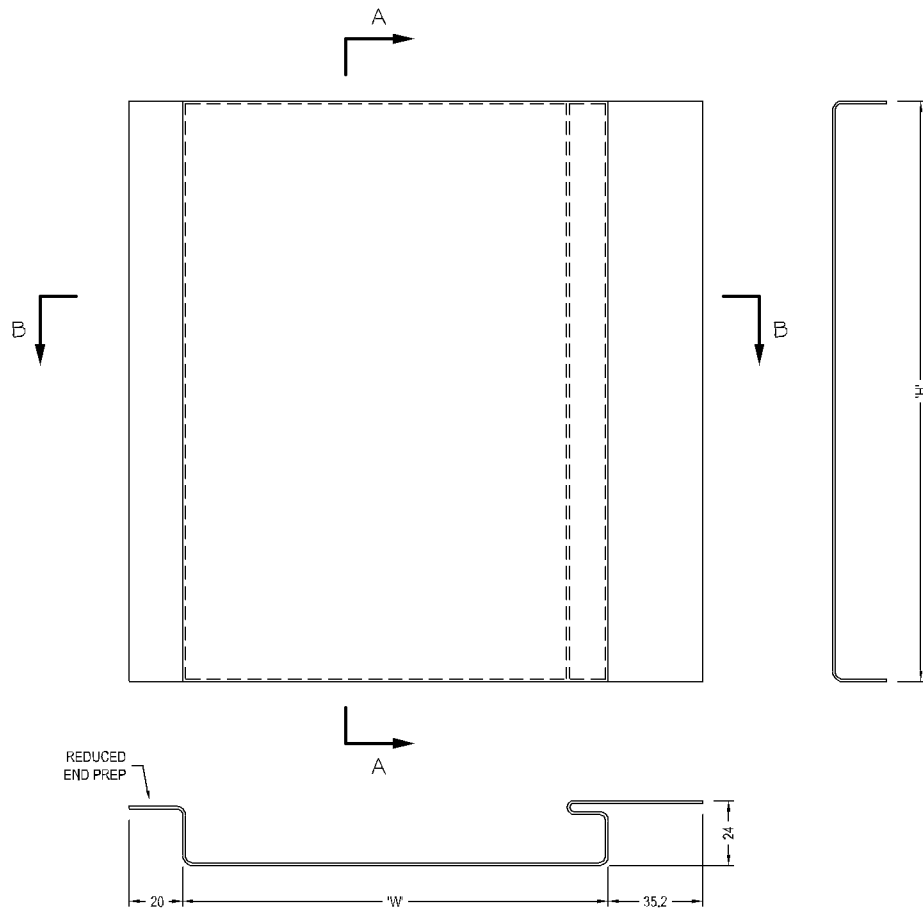
PPC MATT (30% GLOSS), RAL VARIES, SEE TABLE

GENERAL TOLERANCE  $\pm 1.0\text{mm}$ , ANGULAR  $\pm 1.0^\circ$

**harley**  
HARLEY HOUSE  
BROOKLANDS PARK  
FARNINGHAM ROAD  
CROWBOROUGH  
EAST SUSSEX  
TN16 2JD  
Tel: [REDACTED]

Title  
GRENFELL TOWER  
CGL CLADDING

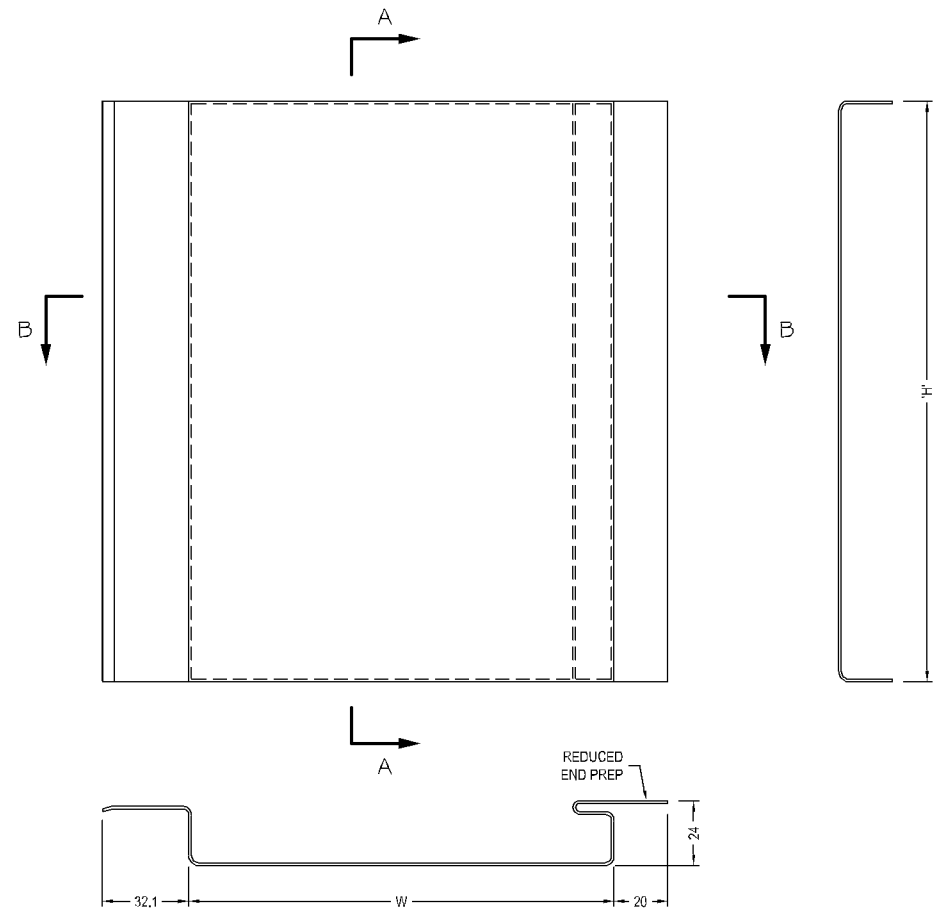
Drwn	bd KVL	Date	02.08.15	Scale	1:2 @ A3
Drg No	C1059-WS-59	Rev	A		



### LH SPECIAL PLANK CLADDING

SITE FITTED

REF	QTY	W	H	RAL COLOUR	LOCN
WS60/1	1 OFF	253	1540	7005	W+0 EAST & WEST MID
WS60/2	4 OFF	249	1540	7005	W+0 EAST & WEST ENDS
WS60/3	6 OFF	235	1540	7005	W+0 NORTH & SOUTH
WS60/4	2 OFF	253	663	7012	MEZZ EAST & WEST MID
WS60/5	3 OFF	249	663	7012	MEZZ EAST & WEST ENDS
WS60/6	5 OFF	235	663	7012	MEZZ NORTH & SOUTH



### RH SPECIAL PLANK CLADDING

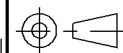
SITE FITTED

REF	QTY	W	H	RAL COLOUR	LOCN
WS60/7	1 OFF	253	1540	7005	W+0 EAST & WEST MID
WS60/8	4 OFF	249	1540	7005	W+0 EAST & WEST ENDS
WS60/9	6 OFF	235	1540	7005	W+0 NORTH & SOUTH
WS60/10	2 OFF	253	663	7012	MEZZ EAST & WEST MID
WS60/11	3 OFF	249	663	7012	MEZZ EAST & WEST ENDS
WS60/12	5 OFF	235	663	7012	MEZZ NORTH & SOUTH

APPROVED FOR  
MANUFACTURE

FILE 855..

Rev	Date	QTY & SIZES FOR MANUFACTURE
A	25.08.15	
		Notes



R14.1

General notes - Where applicable:-

No additional jiggling holes to be drilled.  
Joint straps and stop ends to be finished to match.  
Finished faces to be protected with low tack tape or film.  
Welds to be continuous and smooth or fettled flush.  
Unmarked angles 90 degrees.

Material  
ALUMINIUM SHEET

Finish  
PPG MATT (30% GLOSS), RAL VARIES, SEE TABLE

GENERAL TOLERANCE  $\pm 1.0\text{mm}$ , ANGULAR  $\pm 1.0^\circ$

**harley**  
HARLEY HOUSE  
BROOKLANDS PARK  
FARNINGHAM ROAD  
CROWBOROUGH  
EAST SUSSEX  
TN6 2JD  
Tel: [REDACTED]

Title  
GRENELL TOWER  
CGL CLADDING

Drwn	bd KVL	Date	02.08.15	Scale	1:2 @ A3
Drg No	C1059-WS-60	Rev	A		



## 6 – Doors

THE STRUCTURE OF THE OPENING MUST BE ADEQUATE TO TAKE THE  
 WEIGHT OF THE DOOR & SUITABLE TO RECEIVE M8 TYPE FIXING BOLTS.  
 APPROX DOOR WEIGHT OF DOOR = 35 KGS/M2

FRAME TYPE 130MM  
 LEAF TYPE L5 GALVANISED LOUVRE 400 X 1512 + MESH

STRUCTURAL WIDTH = 1600  
 STRUCTURAL HEIGHT = 2100  
 COLOUR REFERENCE GREY RAL 7012 30% GLOSS  
 SEALS PRIMA STANDARD  
 LOCATION TRANSFORMER CHAMBER  
 MASTIC NOT BY PRIMA  
 DOOR REFERENCE D1-17

LEFT HAND EXTERNAL OUTWARD OPENING

QTY	DESCRIPTION
2	ARR EUROPROFILE DEAD LOCK
2	EUROPROFILE DOUBLE CYLINDER KEYED ALIKE
4	EUROPROFILE ESCUTCHEON
4	19x300 PULL HANDLE / 75 X 300 PUSHPLATE
2	FLUSH BOLTS
2	KICKPLATE 706 x 150MM

### COMMENTS

REV A) CHANGES MADE AS PER EMAIL	21/08/15
REV B) 2 POINTS OF LOCKING ADDED	14/19/15

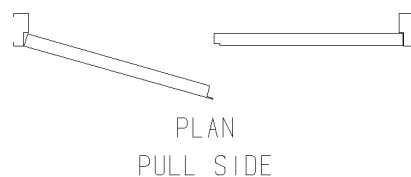
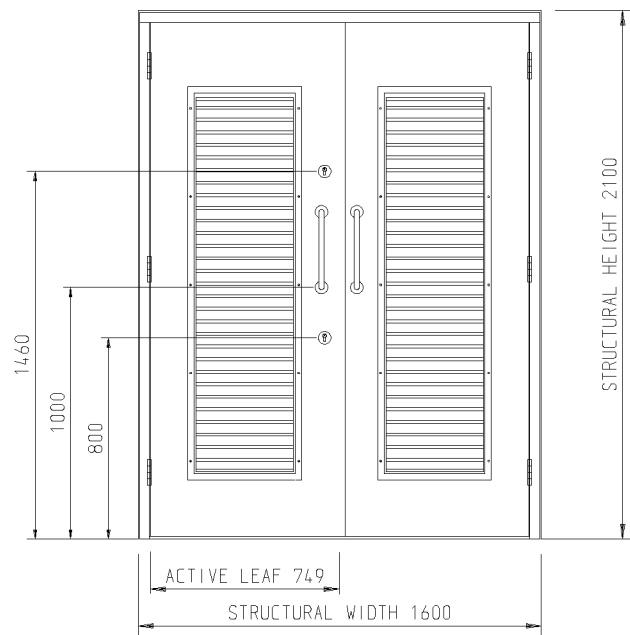
### CLIENT

HARLEY CURTAIN WALL LTD  
 SITE ADDRESS  
 GRENELL TOWER  
 LANCASTER WEST ESTATE  
 KENSINGTON

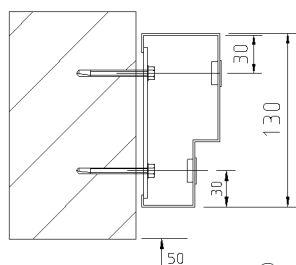
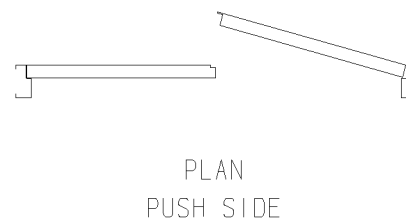
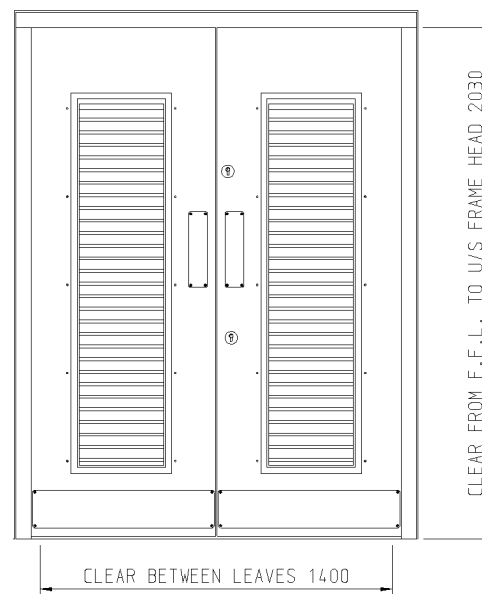
W11 1TQ

DRAWN BY P. CAMSELL	CHECKED BY
DATE 14/09/15	DRAWING No. 10239L/02
REVISION B	

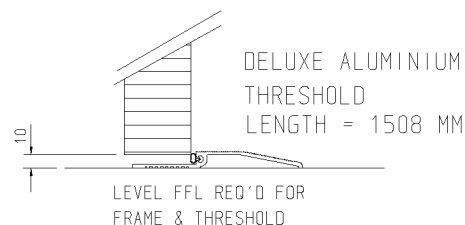
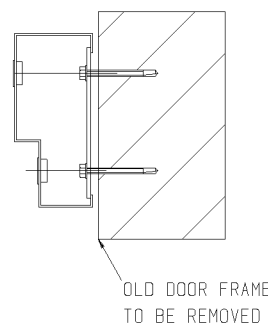
①  
PULL SIDE ELEVATION



②  
PUSH SIDE ELEVATION



③ JAMB DETAIL



④ THRESHOLD DETAIL



TEL [REDACTED]  
FAX [REDACTED]  
email : info@primadoors.co.uk  
web : www.primadoors.co.uk

# STEELGUARD

THE STRUCTURE OF THE OPENING MUST BE ADEQUATE TO TAKE THE  
WEIGHT OF THE DOOR & SUITABLE TO RECEIVE M8 TYPE FIXING BOLTS.  
APPROX DOOR WEIGHT OF DOOR = 35 KGS/M2

## CLIENT CHECK LIST

⑤

## DETAILS

FRAME TYPE 130MM  
LEAF TYPE A

STRUCTURAL WIDTH = 1000  
STRUCTURAL HEIGHT = 2100  
COLOUR REFERENCE GREY RAL 7012 30% GLOSS  
SEALS PRIMA STANDARD  
LOCATION STAIR C  
MASTIC NOT BY PRIMA  
DOOR REFERENCE D1-18

LEFT HAND EXTERNAL OUTWARD OPENING

⑥

## IRONMONGERY

QTY	DESCRIPTION
1	ARR EUROPROFILE SASH LOCK
2	EUROPROFILE PULLSIDE CYL / PUSHIDE TURN
4	EUROPROFILE ESCUTCHEON
1	ARR EUROPROFILE DEAD LOCK
2	LEVERS (PULLSIDE/PUSHIDE)
1	KICKPLATE 856 x 150MM

⑦ PLEASE SIGN AND DATE

## COMMENTS

REV A) CHANGES MADE AS PER EMAIL	21/08/15
REV B) STRUCTURAL WIDTH REVISED	27/08/15

PHASE REF : MASTER

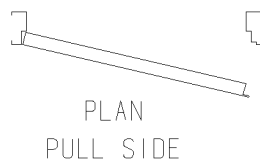
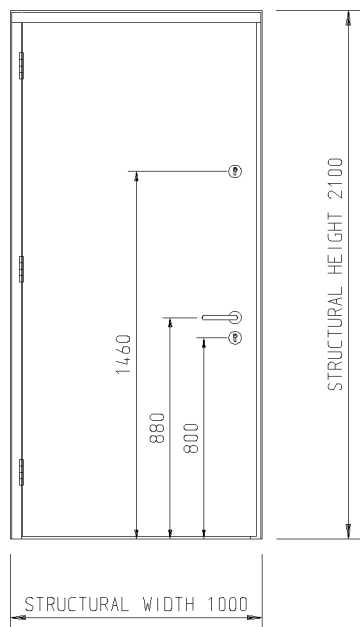
## CLIENT

HARLEY CURTAIN WALL LTD  
SITE ADDRESS  
GRENELL TOWER  
LANCASTER WEST ESTATE  
KENSINGTON

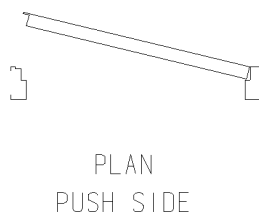
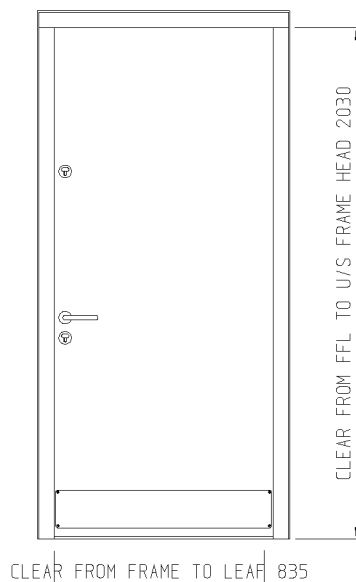
W11 1TQ

DRAWN BY P. CAMSELL	CHECKED BY
DATE 27/08/15	DRAWING No. 10239L/03
REVISION	B

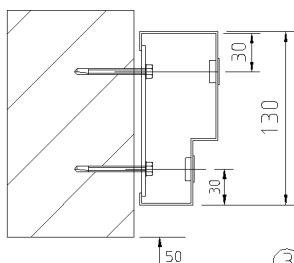
① PULL SIDE  
ELEVATION



② PUSH SIDE  
ELEVATION

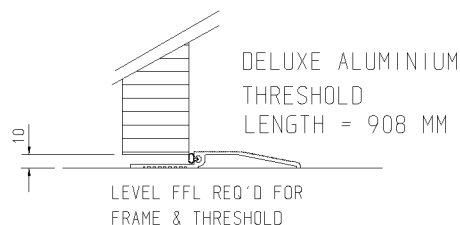


③ JAMB DETAIL



OLD DOOR FRAME  
TO BE REMOVED

④ THRESHOLD DETAIL



RYD00092657\_0220

APPROVED FOR MANUFACTURE:

DATE:

INITIALS:

HARDWARE

ARRONE AR912 DIN STD DEADLOCK (SET 970MM FROM FFL TO CYLINDER)  
DOUBLE EURO PROFILE CYLINDER  
ESCUTCHEON PLATE (PAIR)  
FULLY LOUVRED DOOR PANEL  
CYLINDER PULL

VISION PANEL/LOUVRES

NOTES

FINISH

LEAF: PPC FROM STD RANGE  
TBC

FRAME: PPC FROM ROBUST STD RANGE  
TBC

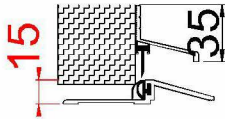
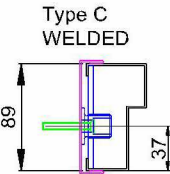
TYPE: TUFF-VENT

FIRE RATING: NIL

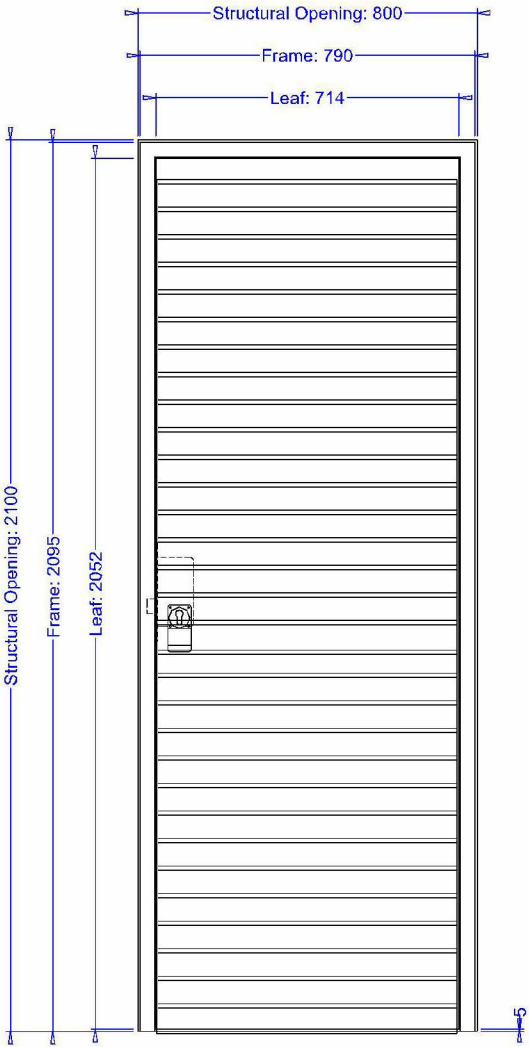
INFILL: NONE npd

FRAME DETAIL

THRESHOLD DETAIL



D1



INSIDE

6

LH

OUTSIDE

VIEWED FROM OUTSIDE



TITLE: Q10633/16-R1 - RD4138 RAYNER DOORS LTD

DRAWING NO: Q10633/16-R1-1

INITIALS: VL

SCALE: NTS

DATE: 02/02/2016





**PRIMA**

**Prima Doors Limited**

# Secureguard SR2





### Description

Prima's Secureguard SR2 doors are independently tested and certified by the Loss Prevention Certification Board to the latest Issue 7 criteria.

These high end security doors are designed to resist a deliberate forced entry of well protected premises using bodily physical force & a wide selection of attack options.

Used extensively by the Energy Production, National Infrastructure, Rail and Retail sectors and are suitable for applications such as housing, leisure facilities, retail outlets and commercial property. Many hardware options are available from the tested range of ironmongery.

### Key Features

- 47mm thick solid composite fire rated core.
- 2 Independent frame dogbolts.
- Stainless steel hinges.
- Flush lipped astragal.
- Integral frame reinforcement.
- Internal leaf anti drill protection plates.

### Leaf Construction

50mm thick door leaf with flush lipped astragal constructed from two 1.2mm thick zinc coated steel sheets.

### Frame

Single rebate frame.  
130mm frame as standard (100, 200 & 250 options available).  
1.6mm zintec steel.  
Rebate & rear fixings (7 no in total) to each jamb.  
Fully welded frames for single doorsets.  
Bolt together frames for double doorsets.

### Attack Resistance

Our Grade 2 security doors have been tested in accordance to LPS 1175 tool category B, for a total working time of 20 minutes. Tools include axe, scissor jack, 1.5kg hammer, crowbars and cordless power drill.

### Over/side panels

We are able to provide LPS certified and tested over panels or side panels in solid or louvered designs.

Available in fixed or demountable format, an ideal solution for very large openings or for maintaining user friendly door size but offering the ability to provide a full sized opening when needed.

### Vision Panels

Independently tested with a selection of size options.

### Louvres

Our louvres have been tested and are certified for use in a door, side or over panels and in wall applications.

With upto 40% free air ventilation, optional bird and insect mesh ideal for sub stations and plant rooms or with the use of blanking plate can be integrated with mechanical duct systems.

### Ironmongery

Europrofile sashlock & deadlock option incorporating the Prima SR2 external cylinder guard for external locking facility. Cylinder on both sides or internal thumbturn available for personnel use. Two point panic systems for emergency exit as standard with horizontal full width bars or push pads. Panic actuator used in conjunction with an escape sashlock is available as an alternative method where both leaves are required to provide emergency escape. (Full details are available from our technical section on our website). Where the clients' specified ironmongery is required, although this can be accommodated, our certification only covers ranges tested with our doors.



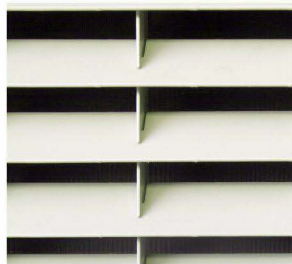
Type	Maximum Certified Doorset Structural Opening (S/O)		Maximum Non Certified Doorset Structural Opening (S/O)		Maximum Side Panel Size	Maximum Over Panel Size
	Width	Height	Width	Height	Width	Height
Single	1200	2500	1200	2600	2000	2000
Double	2500	2500	2400	2600	2000	2000



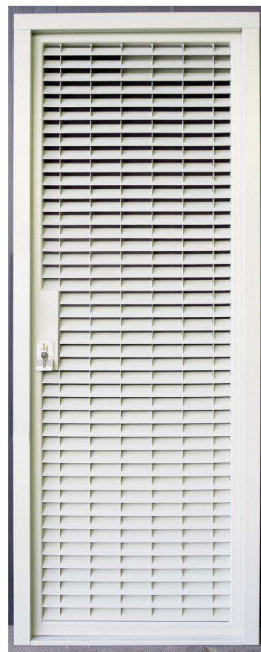
## TUFF-VENT DOORS

Fully **CE** compliant.  
Tested to EN14351-1 product compliant standard

*The Robust "TUFF-VENT" doorset offers the maximum free airflow whilst maintaining security.  
Side panels and overpanels can be manufactured to make up large openings where large doors may be impractical.*



Front Detail



Rear Detail

### DOOR LEAF

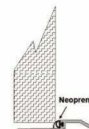
- Production Sizes:** "TUFF\_VENT" doors are manufactured in 1000 x 2100mm and 2000 x 2100mm sizes.
- Thickness:** A standard 2mm steel louvre vane is used throughout, welded at every junction.
- Material:** 2mm galvanised steel sections as standard.
- Construction:** Constructed using hollow metal standardised sections.

### DOOR FRAME

- Construction:** Fully welded construction with 4no. adjustable fixing feet per jamb, variable sub-frame supplied as standard to accommodate site tolerance of -0/+30mm.  
The frame is fitted with 4no. surface mounted adjustable hinges, painted to match door.
- Opening:** Single Swing Latched as standard. Other combinations available.

### THRESHOLD

- Standard:** 12.5mm 564A Aluminium (DDA compliant)  
*Click on images for full details.*



### FINISHES

- Standard:** Polyester Powder Coating from standard colour range.

### FREE AIRFLOW

Calculated on a 1000 x 2100 over frame door a free area of 55% is achieved (based on the area of louvres only this equates to 72%).

### OPTIONS

The "Tuff-Vent" grid is also available as a panel to fit FDA doors in two standard sizes 457 x 457mm and 457 x 1524 sizes giving approximately 0.15m<sup>2</sup> and 0.5m<sup>2</sup> free area respectively.



ROBUST UK LTD Brookhouse Way, Brookhouse Industrial Estate, Cheadle, Staffordshire, ST10 1SR  
Tel: [REDACTED] • Fax: [REDACTED] • Email: sales@robust-uk.com

## 7 – Balustrades

Glass Schedule 8 - Balustrade Infills

Glass Specification: (B1)

10mm Clear Toughened  
Heat Soak Tested  
All Edges Polished  
Dubbed Corners

Created By:	BJB
Checked By:	BJB
Date:	03/02/2016

\*Note: Kitemarks to be placed in left hand corner (viewed from outside)

UNIT REFERENCE	WIDTH	HEIGHT	QTY	GLASS SPEC	M²	UNIT RATE	TOTAL COST
B-1/2/3/4/5	1270	965	5	B1	6.13		
B-6	860	965	1	B1	0.83		
B-7	905	965	1	B1	0.87		
B-8	1285	965	1	B1	1.24		
B-9	1195	655	1	B1	0.78		
B-10	915	655	1	B1	0.60		
B-11/12	1075	655	2	B1	1.41		
B-13 - SEE DWG			1	B1	0.00		
B-14 - SEE DWG			1	B1	0.00		
B-15 - SEE DWG			1	B1	0.00		
B-16	1175	665	1	B1	0.78		
B-17	1165	665	1	B1	0.77		
B-18	1210	665	1	B1	0.80		
B-19 - SEE DWG			1	B1			
B-20 - SEE DWG			1	B1			
B-21 - SEE DWG			1	B1			
B-22/23/24/25	1265	965	4	B1	4.88		
B-26	905	965	1	B1	0.87		
B-27	1340	965	1	B1	1.29		
B-28	1170	640	1	B1	0.75		



Glass Schedule 8 - Balustrade Infills							
B-29	900	640	1	B1	0.58		
B-30/31	1065	640	2	B1	1.36		
B-32 - SEE DWG			1	B1	0.00		
B-33 - SEE DWG			1	B1	0.00		
B-34 - SEE DWG			1	B1	0.00		
B-35	1175	635	1	B1	0.75		
B-36	1165	635	1	B1	0.74		
B-37	1210	635	1	B1	0.77		
B-38	1150	960	1	B1	1.10		

38

Delivery Date:	18/02/2016
Delivery Location:	Harley Facades Ltd C/O Rydon Grenfell Tower Grenfell Road London W11 1TQ
Site Contact:	Ben - [REDACTED]

Energy Surcharge	INCL.
Net Value	£0.00
VAT	£0.00
Total	£0.00

**DRIVER MUST HAVE A COPY OF, AND FOLLOW, THE TRAFFIC MANAGEMENT PLAN. NO ARTICULATED VEHICLES**





# PRO-RAILING®

*The Stainless Steel Handrail Component System*

- RANGE OF GLASS PANELS
- ON - SITE ASSEMBLY
- FAST NATIONWIDE DELIVERY
- ANY QUANTITY SUPPLIED
- COMPETITIVE PRICES
- AVAILABLE FROM STOCK

[www.fhbrundle.co.uk](http://www.fhbrundle.co.uk)







# PRO-RAILING®

## *The Stainless Steel Handrail Component System*

**Pro-Railing** is a stylish, durable and cost effective stainless steel handrailing component system designed with ease of installation in mind.

The comprehensive range of components allows you to specify and install without the need for fabrication and maximises on-site flexibility for those changes that inevitably arise.

The system enables the most stylish of handrailing and balustrades to be constructed quickly and simply by the contractor. All you have to do is cut, glue or screw to create professional results every time.

Specifiers can be assured that component design and range flexibility means installation by a competent installer is a straight forward process.

We offer a range of infill solutions using glass with glass clamps, wire rope, round bar and decorative bars. We can also manufacture infill panels incorporating perforated metal, wire mesh and wire rope netting.

Available in Type 304 and Type 316 to suit internal and external applications, you can be sure Pro-Railing quality and product care will ensure stunning results.

## ***Take a look at what we have to offer:***

### **From Stock Nationally**

Delivery within 24 hours.

### **Ease of Installation**

A competent installer will be able to install our component handrail system safely and efficiently.

### **Technical Support**

When you need it and where you need it, on the phone, on line and on-site.

### **Pro The Mark of Quality**

Product testing and 2mm tube wall thickness as standard ensures you peace of mind.

### **Specify with Confidence**

Advisory service on best practice design, drawings and drawing requirements including loading information.

### **Specials without Delays**

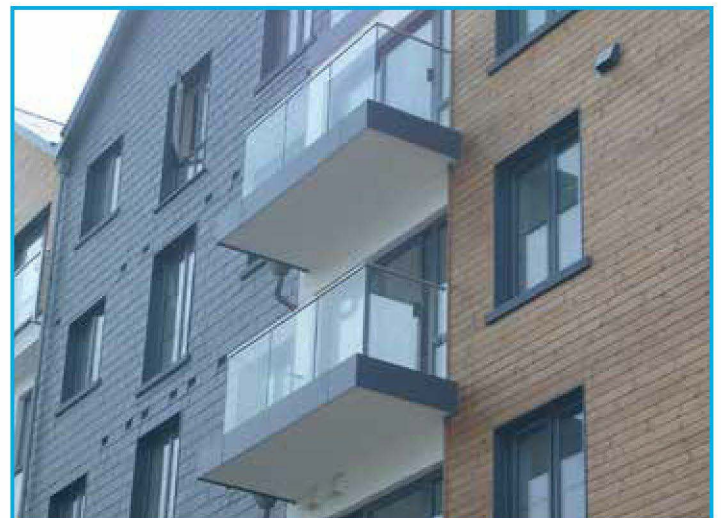
Drilling, welding, bending and pre-assembled components can be supplied within days.

### **Glass Supplied**

We offer what you want, where you want it.








### **Flexibility in Design**

The extensive range of components maximises on-site flexibility and minimises delays.



All fittings are Stainless unless otherwise stated  
All tube is 2mm wall thickness unless otherwise stated  
Satin Polish finish is 320 Grit and Mirror Finish is 800 Grit

#### **Pro-Railing Colour Guide**

	Grade 304 stainless steel (internal)		Mild steel
	Grade 316 stainless steel (external)		Galvanised steel
	Zinc coated steel		Aluminium
	Zamac (zinc aluminium alloy)		



**BRITISH STAINLESS STEEL ASSOCIATION**  
*Making the Most of Stainless Steel*

#### **Disclaimer:**

F.H.Brundle wishes to make clear that the dimensions and illustrations in this catalogue are for guidance purposes only and that there may be slight differences in the product actually supplied. F.H.Brundle will not accept liability, on whatever legal grounds, for the way the product is used. No product will be accepted back unless it is unused, unmarked and in its original packaging. Following satisfactory inspection, all returns are subject to a 20% re-stocking charge. This does not affect your statutory rights.



<b>Accessories</b>	Adhesives	52
	Allen Key	52
	Cleaning Supplies	52
	Sealant	52
	Threaded Lengths	52
<b>Balustrade Infills</b>	Expanded Metal	40
	Fittings	40 - 41
	Perforated Metal	40
	Split Tube	41
	Welded Wire Mesh	40
<b>Bar System</b>	Bars	19 - 20
	Fittings	19
	Tube	19
<b>Fittings</b>	Baluster Brackets	9
	End Caps	9, 44 - 45, 47
	Flange and Base Plates	8, 46
	Mirror Polished	16
	Tube	6 - 7
<b>Fixings</b>	Bolts	54 - 55
	Chemical Fixings	53
	Drill Bits	55
	Mesh Sleeve	53
	Nuts	54
	Rivets	53
	Screws	54
	Tools	53
	Washers	54
<b>Forged Polished Stainless - Weldable</b>	Balusters	50
	Handrails	51
	Handrail Ends	51
	Newel Posts	50
	Plates	51
	Post Tops	51
	Spheres	51
<b>Gate Hardware</b>	Hinges	49
	Latch and Catch	49
	Weldable Hinges	49



<b>Glass Clamp System</b>	Coloured Glass Clamps	16
	Fixing Information	10
	Glass Clamps	11 - 13
	Glass Connectors & Adaptors	14
	Loading Table	11
	Weldable Glass Clamps	17 - 18
<b>Handrail Brackets</b>	Adjustable Height, Fixed Spigot	4
	Bracket Plate	4
	Fixed Spigot	4
	Single Wall Mount	4
	Tubular	48
	Weldable	4, 48
<b>Juliette Balcony</b>		14
<b>Lumenrail®</b>	Components	35 - 37
	Introduction	30
	Lighting Details	33
	Post Mounting Guide	34
	Post Mounting Wiring	32
	Split Tube	37
	Technical Specifications	31
	Wall Mounting Guide	34
	Wall Mount Wiring	32
<b>Frameless Glass Balustrade</b>	PanelGrip™ Balustrade System	21 - 22
	PanelWedge Balustrade System	23 - 24
<b>Pre - Assembled Handrails</b>		43
<b>Pre - Assembled Posts</b>	7 Hole Post	15
	Corner Post	15
	End Post	15
	Mid Post	15
<b>Pro Glass</b>	Introduction	27
	Non-Standard Panels	29
	Standard Panels	28
<b>Railing Saddles</b>	Adjustable Spigot	5, 47
	Fixed Saddle	5
	Fixed Spigot	5, 47
<b>Split Tube Fittings</b>	Assembly Guide	25
	Fittings	26, 35 - 36
	Tube	26, 37, 41 - 42

<b>Technicals</b>	Approach to Buildings Other than Dwellings	59
	Cleaning Intervals	57
	Cleaning Methods	58
	Glass Clamp System BS EN 12600 Loading Table	11
	Glass Fixing Information	10
	Handrails and Guardrails	60
	Lumenrail®	30 - 34
	Minimum Horizontal Loads for Balustrades	61
	PanelGrip™ Installation Guide	21
	PanelWedge Installation Guide	23
	Product Selection	56
	Split Tube Assembly Guide	25
	Standards Relevant for Surface Finish - BS 1449	56
<b>Tube and Bar</b>	Hollow	42
	Solid	42
	Split	42
	Zinc Plated	42, 47
<b>Wire Rope System</b>	Components	38 - 39
	Tools	39
	Wire Rope	39
<b>Wooden Handrail System</b>	Ø 45mm Fittings	44
	Ø 48.3mm Fittings	45
	Hardwood Handrail	45
	Introduction	43
	Softwood Handrail	44
<b>Zinc Plated Mild Steel Handrail</b>	Crossbar System	47
	Flanges and Base Plates	46
	Handrail Saddles	47
	Handrail Brackets	48
	Tube & Bar	47





Adjustable Height - Fixed Spigot

Flat/Tube



Code	Ø mm
1804301FC	42.4
1804301FD	48.3
1806301FC	42.4
1806301FD	48.3

65mm distance from flat to centre of bracket

Tube/Tube



Code	Ø mm
1804301CC	42.4
1804301DD	48.3
1806301CC	42.4
1806301DD	48.3

65mm distance from tube to centre of bracket

Wall/Tube



Code	Ø mm
1804303FC	42.4
1804303FD	48.3
1806303FC	42.4
1806303FD	48.3

68mm distance from wall to centre of bracket

Glass/Tube



Code	Ø mm
1804333FC	42.4
1804333FD	48.3
1806333FC	42.4
1806333FD	48.3

69mm distance from glass to centre of bracket

Glass thickness for 333's is 20mm. For thicker glass longer threaded lengths can be purchased

Fixed Spigot

Wall/Tube



Code	Ø mm
1804305FC	42.4
1804305FD	48.3
1806305FC	42.4
1806305FD	48.3

63.5mm distance from wall to centre of bracket

Wall/Tube



Code	Ø mm
1804305FCB	42.4
1804305FDB	48.3
1806305FCB	42.4
1806305FDB	48.3

80mm distance from wall to centre of bracket

Wall/Flat



Code
1804305FF

63.5mm distance from wall to centre of bracket



Example of Glass Fix, Adjustable Height and Fixed Spigot

Single Wall Mount  
Wall/Tube



Code	Ø mm
1804315FC	42.4
1804315FD	48.3
1806315FC	42.4
1806315FD	48.3

72mm distance from wall to centre of bracket. Supplied with 8mm screw thread for wall fixing

Satin Polish Weldable Handrail  
Bracket and Cover Plate



Code
171166

78mm distance from wall to centre of bracket

171169
--------

86mm distance from wall to centre of bracket

Handrail Bracket Plate and Rubbers  
to Suit Glass Balustrading



Code	Ø mm	Glass mm
1804358G	50	8 - 19
1806358G	50	8 - 19

8mm thread

Tops come with 5mm clearance holes. For fixing screws, see page 5.

## Fixed Spigot

Flat/Tube



Code	Ø mm
1804307FC	42.4
1804307FD	48.3
1806307FC	42.4
1806307FD	48.3

Height 60mm. Also available in heights of 71, 83 and 95mm

## Fixed Spigot

Tube/Tube



Code	Ø mm
1804310CC	42.4
1804310DD	48.3
1806310CC	42.4
1806310DD	48.3

## Fixed Spigot

90° Tube/Tube



Code	Ø mm
1804311CC	42.4
1804311DD	48.3
1806311CC	42.4
1806311DD	48.3

For 202 type elbows used with handrails

## Adjustable Spigot

Tube/Tube



Code	Ø mm
1804312CC	42.4
1804312DD	48.3
1806312CC	42.4
1806312DD	48.3

## FIXED SADDLE

## 90° Round Corner Top



Code	Ø mm
1804356C	42.4
1804356D	48.3
1806356C	42.4
1806356D	48.3

For 202 type elbows used with handrails

## 135° Round Corner Top



Code	Ø mm
1804354C	42.4
1804354D	48.3
1806354C	42.4
1806354D	48.3

For 220 type elbows used with handrails

## 135° Flat Corner Top



Code
1804354F
1806354F

## 90° Flat Corner Top



Code
1804356F
1806356F

## Round Top



Code	Ø mm
1804351C	42.4
1804351D	48.3
1806351C	42.4
1806351D	48.3

## Flat Top



Code
1804351F
1806351F

## Countersunk Fixing



## Pan Head Fixing



There are 2 types of fixings available for Handrail Brackets and Saddles to tube.  
Countersunk screw (5 x 20mm) - **Code: 189900619**  
(For Flat Saddles)  
Pan head screw - **Code: 189900620**  
(For Ø 42.4 and 48.3mm Saddles)  
See page 54 for our range of fixings.

Fixed Saddles require an 8mm bolt to secure,  
Code: 189900604. See page 54.

All fittings detailed in the stainless steel section of this catalogue can be supplied in a mirror finish.

Tops come with 5mm clearance holes.  
For fixing screws, see above.

 Aluminium

 Mild steel

 Galvanised steel



PanelGrip®



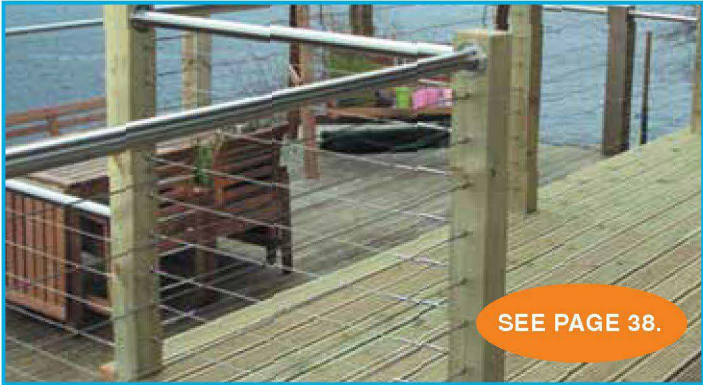
SEE PAGE 21.

Lumenrail®



SEE PAGE 30.

Wire Rope



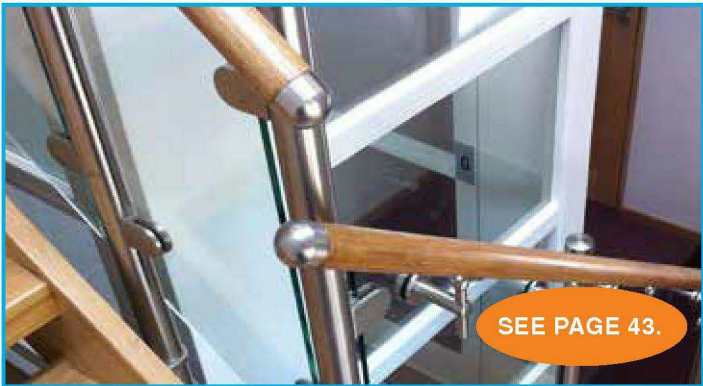
SEE PAGE 38.

Glass Clamps



SEE PAGE 10.

Wooden Handrail



SEE PAGE 43.

Rod and Bar



SEE PAGE 19.

TUBE FITTINGS



2 Way Adjustable Flush Angle

NEW



3 Way Adjustable Flush Angle

NEW



Code	Ø mm
1804223C	42.4
1804223D	48.3
1806223C	42.4
1806223D	48.3

Code	Ø mm
1804224C	42.4
1804224D	48.3
1806224C	42.4
1806224D	48.3

304

 Internal

316

 External

Zinc

**90° Elbow,  
Radiused Corner**



Code	Ø mm
1804200C	42.4
1804200D	48.3
1806200C	42.4
1806200D	48.3

**90° Elbow,  
Round Corner**



Code	Ø mm
1804201C	42.4
1804201D	48.3
1806201C	42.4
1806201D	48.3

**90° Elbow,  
Square Corner**



Code	Ø mm
1804202C	42.4
1804202D	48.3
1806202C	42.4
1806202D	48.3

**135° Elbow**



Code	Ø mm
1804220C	42.4
1804220D	48.3
1806220C	42.4
1806220D	48.3

**3 Way Corner**



Code	Ø mm
1804204C	42.4
1804204D	48.3
1806204C	42.4
1806204D	48.3

**Long Tee**



Code	Ø mm
1804205C	42.4
1804205D	48.3
1806205C	42.4
1806205D	48.3

**4 Way Cross**



Code	Ø mm
1804222C	42.4
1804222D	48.3
1806222C	42.4
1806222D	48.3

**Stainless Weldable Elbow**



Code	Ø mm
1804E42	42.4
1804E48	48.3
1806E42	42.4
1806E48	48.3

**Adjustable Elbow**



Code	Ø mm
1804203C	42.4
1804203D	48.3
1806203C	42.4
1806203D	48.3

**Adjustable Elbow -  
Smooth**



Code	Ø mm
1804227C	42.4
1804227D	48.3
1806227C	42.4
1806227D	48.3

**Rotating Elbow**



Code	Ø mm
1804233C	42.4
1804233D	48.3
1806233C	42.4
1806233D	48.3

**Scroll End**



Code	Ø mm
1804221C	42.4
1804221D	48.3
1806221C	42.4
1806221D	48.3

**Tube Adaptor**



Code	Ø mm
1804313CC	42.4
1804313DD	48.3
1806313CC	42.4
1806313DD	48.3

**In Line Connector**



Code	Ø mm
1804206C	42.4
1804206D	48.3
1806206C	42.4
1806206D	48.3

**Fixing Bracket - Single**



Code	Ø mm
1804511C	42.4
1804511D	48.3
1806511C	42.4
1806511D	48.3

**Fixing Bracket - Double**



Code	Ø mm
1804512C	42.4
1804512D	48.3
1806512C	42.4
1806512D	48.3

Aluminium

Mild steel

Galvanised steel



**External Round Tube Flange**



Code	Ø mm
1804209C	42.4
1804209D	48.3
1806209C	42.4
1806209D	48.3

**Square Edge Tube Flange**



Code	Ø mm
1804210C	42.4
1804210D	48.3
1806210C	42.4
1806210D	48.3

**Weldable Round Wall Flange**



Code	Ø mm
1804217C	42.4
1804217D	48.3
1806217C	42.4
1806217D	48.3

**Cover Plate to Suit 217**



Code	Ø mm
1804218C	42.4
1804218D	48.3
1806218C	42.4
1806218D	48.3

**Internal Fit Floor Base**



Code	Ø mm
1804225C	42.4
1804225D	48.3
1806225C	42.4
1806225D	48.3

**Weld on Round Base Plate with 'O' Ring and Cover**



Code	Ø mm
1804228C	42.4
1804228D	48.3
1806228C	42.4
1806228D	48.3

**3 Part Hammer and Glue Fit**



Code	Ø mm
1804211C	42.4
1804211D	48.3
1806211C	42.4
1806211D	48.3

**Internal Fit Tube Flange**



Code	Ø mm
1804237C	42.4
1804237D	48.3
1806237C	42.4
1806237D	48.3

No cover plate required

**Adjustable Elbow Tube Flange**



Code	Ø mm
1804229C	42.4
1804229D	48.3
1806229C	42.4
1806229D	48.3

**Internal Fit Tube Flange**



Code	Ø mm
1804235C	42.4
1804235D	48.3
1806235C	42.4
1806235D	48.3

**Weld on Round Base Plate**



Code	Ø mm
1804207C	42.4
1804207D	48.3
1806207C	42.4
1806207D	48.3

**Cover Plate**



Code	Ø mm
1804208C	42.4
1804208D	48.3
1806208C	42.4
1806208D	48.3

To suit 207

**Glass Support Spigot**



Code	Glass mm
1804230	10 - 12
1806230	10 - 12

**Glass Support Spigot with Base**



Code	Glass mm
1804231	10 - 12
1806231	10 - 12

Not recommended for use where drop is greater than 600mm

**Through Stair Fixing Kit**



Code	Glass mm
1804232C	42.4
1804232D	48.3

Maximum tread thickness is 40mm.  
For thicker treads longer threaded lengths can be purchased

Code	Ø mm
1804226C	42.4
1804226D	48.3
1806226C	42.4
1806226D	48.3

To suit 225

Code	Ø mm
1804236C	42.4
1804236D	48.3
1806236C	42.4
1806236D	48.3

To suit 235

16mm stud required, see page 53

304 Internal

316 External

Zinc

2 Hole Round



Code	Ø mm
1804212C	42.4
1804212D	48.3
1806212C	42.4
1806212D	48.3

2 Hole Round with  
Tube Support Spigot

Code	Ø mm
1804219C	42.4
1804219D	48.3
1806219C	42.4
1806219D	48.3

4 Hole Round



Code	Ø mm
1804242C	42.4
1804242D	48.3
1806242C	42.4
1806242D	48.3

4 Hole Round with  
Tube Support Spigot

Code	Ø mm
1804249C	42.4
1804249D	48.3
1806249C	42.4
1806249D	48.3

4 Hole Round Baluster  
Backing Plate

Code
1804254
1806254

Suitable for Ø 42.4 and Ø 48.3mm

Tube Clamp



Code	Ø mm
1804252C	42.4
1804252D	48.3
1806252C	42.4
1806252D	48.3

Tube Support Spigot



Code	Ø mm
1804259C	42.4
1804259D	48.3
1806259C	42.4
1806259D	48.3

Rectangular Back



Code	Ø mm
1804213C	42.4
1804213D	48.3
1806213C	42.4
1806213D	48.3

Rectangular Back  
2 Part Type

Code	Ø mm
1804213CX	42.4
1804213DX	48.3
1806213CX	42.4
1806213DX	48.3

Adjustable Corner -  
Internal / External

Code	Ø mm
1804253C	42.4
1804253D	48.3
1806253C	42.4
1806253D	48.3

## END CAPS

Flat Top



Code	Ø mm
1804214C	42.4
1804214D	48.3
1806214C	42.4
1806214D	48.3

Raised Top



Code	Ø mm
1804215C	42.4
1804215D	48.3
1806215C	42.4
1806215D	48.3

Dome Top



Code	Ø mm
1804216C	42.4
1804216D	48.3
1806216C	42.4
1806216D	48.3

Raised Top - Hammer Fit



Code	Ø mm
1804215CP	42.4
1804215DP	48.3
1806215CP	42.4
1806215DP	48.3

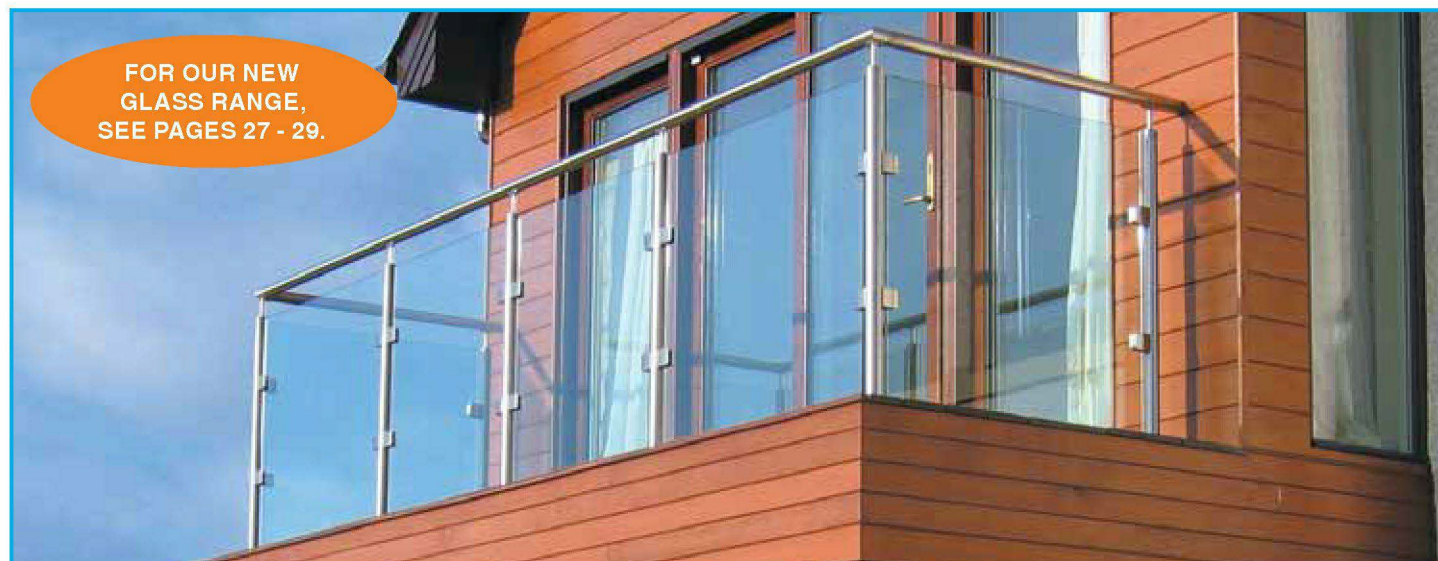
Aluminium

Mild steel

Galvanised steel

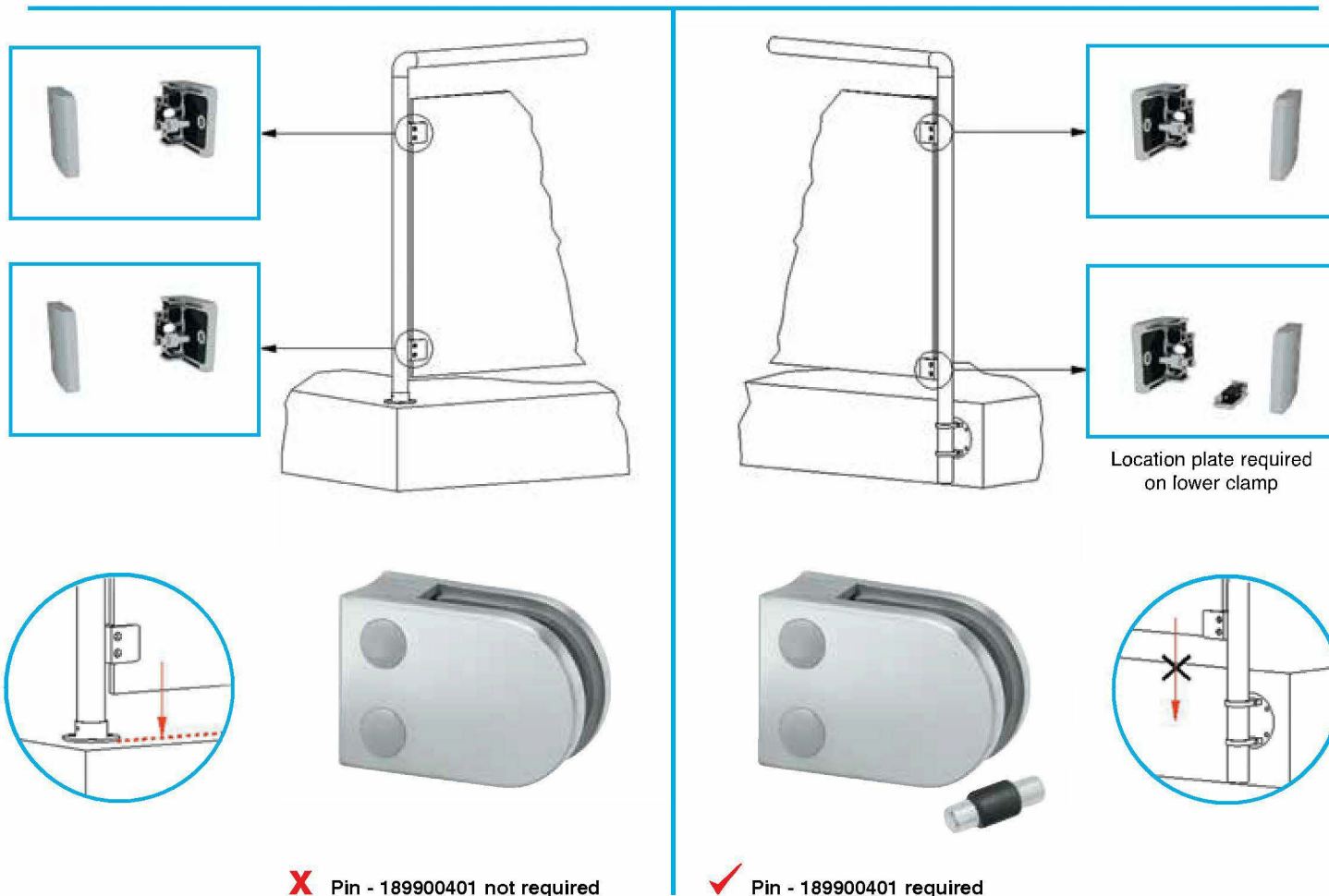


The most popular method for providing a glazed balustrade, while at the same time keeping the outlook open and views beyond visible. Glass Clamps are simple to install and are offered in either a square or radiused option, providing a glazed system between posts. Compatible with 8 to 12mm thick glass, clamps can be used over any length of installation as well as slopes and staircases.



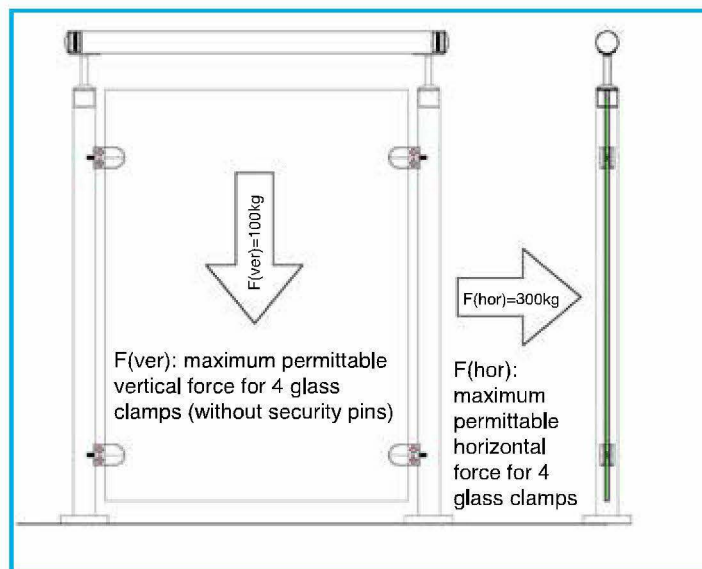
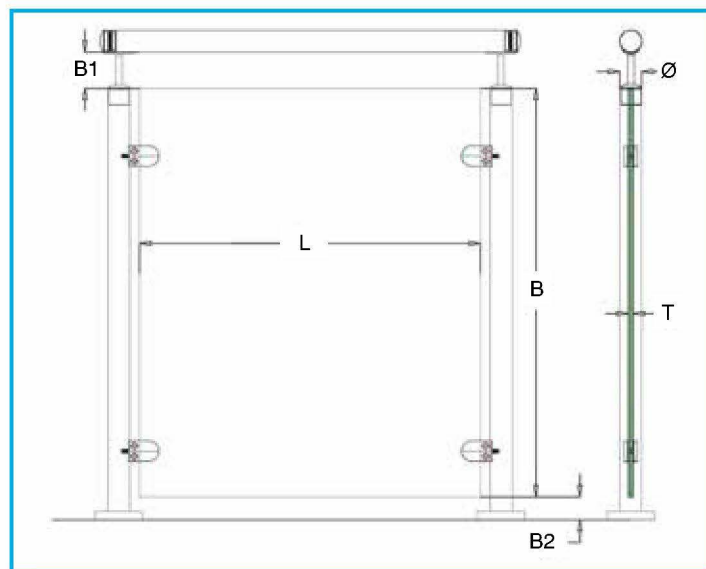
## GLASS FIXING INFORMATION

If using glass clamps in any installation where the glass is fixed to the outside of a staircase and overhanging, then security pins (189900401) and drilled glass must be used. Alternatively use our square glass clamps which come with a bottom location plate, so no drilling is required.





Extract from BS EN 12600 Loading Tables;



Dimensions	Min.	Max.
L - Width of Glass	500mm	See Table Below
T - Glass Thickness	See Table Below	See Table Below
B - Height of Glass	800mm	1 metre
B1 - Distance - Handrail to Glass	10mm	50mm without edge protection 120mm with edge protection
B2 - Distance - Bottom to Glass	10mm	50mm without edge protection 120mm with edge protection



Code Group	Style	Fix Type Ø mm	Glass Clamp Size L x W x D mm	Glass Thickness mm	Glass Width mm
401		<ul style="list-style-type: none"> <li>• 42.4</li> <li>• 48.3</li> <li>• Flat</li> </ul>	63 x 45 x 28	8*, 10 & 12*	1500
4012		<ul style="list-style-type: none"> <li>• 42.4</li> <li>• 48.3</li> <li>• Flat</li> </ul>	67 x 45 x 32	12	1500
440		<ul style="list-style-type: none"> <li>• Flat</li> </ul>	60 x 70 x 41	15, 17.5*, 19* & 21.5*	1500
402		<ul style="list-style-type: none"> <li>• 42.4</li> <li>• 48.3</li> <li>• Flat</li> </ul>	60 x 55 x 35	8*, 10 & 12*	1500
403		<ul style="list-style-type: none"> <li>• 42.4</li> <li>• 48.3</li> <li>• Flat</li> </ul>	Ø 60 x 28	8*, 10 & 12*	1500

\*Requires special glass rubbers, see pages 12 - 13

**Satin Polish Effect  
Small Glass Clamp  
Flat Back - Round Front**

NEW



Code	Glass mm
1806400F	6 - 8

Not suitable for handrailing applications.  
Typical uses are for display and shelving.  
Supplied with 8mm rubbers. 6mm available  
to order, Code: 1899001S06

**Small 'D' Rubbers**

NEW



Code	Glass mm
1899001S06	6
1899001S08	8

**Satin Polish Effect  
Stamped Glass Clamp  
Flat Back - Round Front**

NEW



Code	Glass mm
1806441F	10

Not suitable for handrailing applications.  
Typical uses are for display and shelving.  
Supplied with 10mm rubber

**Satin Polish Effect  
Flat Back - Round Front**



Code	Glass mm
1802401F	8 - 10
18024012F	12
1804401F	8 - 12
1806401F	8 - 12

Clamps supplied with 10mm rubbers.  
Order 8 or 12mm if required using separate  
codes, please refer to 'D' Rubbers

**Satin Polish Effect  
Round Back - Round Front**



Code	Glass mm	Ø mm
1802401C	8 - 10	42.4
18024012C	12	42.4
1802401D	8 - 10	48.3
18024012D	12	48.3
1804401C	8 - 12	42.4
1804401D	8 - 12	48.3
1806401C	8 - 12	42.4
1806401D	8 - 12	48.3

Clamps supplied with 10mm rubbers.  
Order 8 or 12mm if required using separate  
codes, please refer to 'D' Rubbers

**Raw Finish  
Round/Flat Back - Round Front**



Code	Glass mm	Ø mm
1802401CZ	8 - 10	42.4
1802401DZ	8 - 10	48.3
1802401FZ	8 - 10	-

Clamps supplied with 10mm rubbers.  
Order 8mm if required using separate  
code, please refer to 'D' Rubbers.  
Suitable for powder coating

**Chrome Effect  
Round/Flat Back - Round Front**



Code	Glass mm	Ø mm
1802401CP	8 - 10	42.4
1802401DP	8 - 10	48.3
1802401FP	8 - 10	Flat

Clamps supplied with 10mm rubbers.  
Order 8mm if required using separate  
code, please refer to 'D' Rubbers

**'D' Rubbers**



Code	Glass mm
189900108	8
189900110	10
189900112	12

FOR OUR FULL RANGE OF  
WELDABLE GLASS CLAMPS,  
SEE PAGES 17 - 18.

304 Internal

316 External

Zamac

Satin Polish Effect  
Flat Back - Square Front



Code	Glass mm
1802402F	8 - 12
1804402F	8 - 12
1806402F	8 - 12

Clamps supplied with 10mm rubbers.  
Order 8 or 12mm if required using separate codes, please refer to Square Rubbers

Satin Polish Effect  
Round Back - Square Front



Code	Glass mm	Fix Type Ø mm
1802402C	8 - 12	42.4
1802402D	8 - 12	48.3
1804402C	8 - 12	42.4
1804402D	8 - 12	48.3
1806402C	8 - 12	42.4
1806402D	8 - 12	48.3

Clamps supplied with 10mm rubbers.  
Order 8 or 12mm if required using separate codes, please refer to Square Rubbers

Square Rubbers



Code	Glass mm
189900208	8
189900210	10
189900212	12

Satin Polish Effect  
180° Double Glass Clamp



Code	Glass mm
1804401180	8 - 12
1806401180	8 - 12

Clamps supplied with 10mm rubbers.  
Order 8 or 12mm if required using separate codes, please refer to 'D' Rubbers

Satin Polish Effect  
90° Double Glass Clamp



Code	Glass mm
180440190	8 - 12
180640190	8 - 12

Clamps supplied with 10mm rubbers.  
Order 8 or 12mm if required using separate codes, please refer to 'D' Rubbers

Satin Polish Effect  
Large Glass Clamp  
Flat Back - Round Front



Code	Glass mm
1806440F	15 - 21.5

Clamps supplied with 15mm rubbers.  
Order 17.5, 19 or 21.5mm if required using separate codes, please refer to Large 'D' Rubbers

FOR VARIABLE FIXING  
BOLT CODE: 189900602A,  
SEE PAGE 54.

Large 'D' Rubbers



Code	Glass mm
1899001L15	15
1899001L175	17.5
1899001L19	19
1899001L215	21.5

Plastic Screw Cover Caps



Code	Colour
189900501	Grey
189900502	Silver

Metal Security Pins For Glass



Code	Glass mm
189900401	8 - 10
189900402	12



## In Line Glass Connector

Satin Polish  
Flat BackSatin Polish  
Round Back

In Line Rubbers



Code	Glass mm
1806403F	8 - 12

Connectors supplied with 10mm rubbers. Order 8 or 12mm if required using separate codes, please refer to Fitting Rubbers

Code	Ø mm
1806403C	42.4
1806403D	48.3

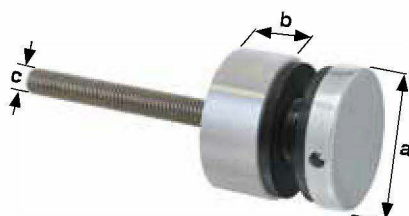
Glass 8 - 12mm

Connectors supplied with 10mm rubbers. Order 8 or 12mm if required using separate codes, please refer to Fitting Rubbers

Code	Glass mm
189900308	8
189900310	10
189900312	12

## Glass Stand-Off Adaptor

Flat Back

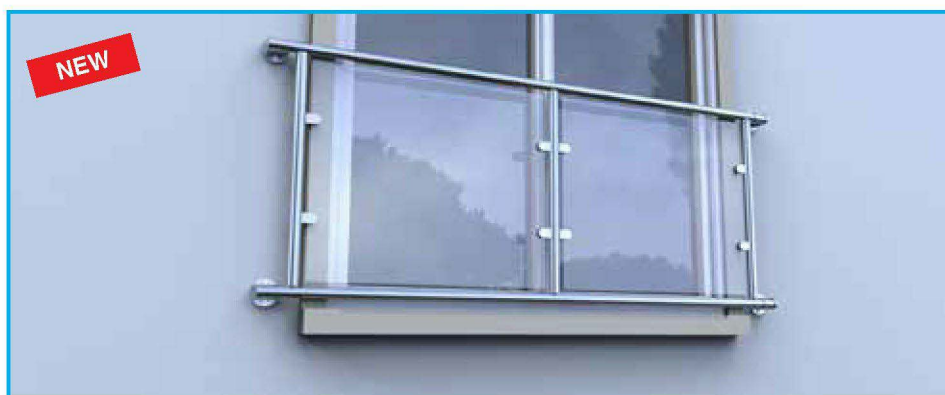


Round Back



Code	Fix Type Ø mm	a Ø mm	b mm	c mm	Glass mm	Glass Hole Ø mm
1802404F	Flat	30	15	8	6 - 12	15
1802404C		42.4	30	15	8	6 - 12
1802404D		48.3	30	15	8	6 - 12
1804454F	Flat	50	10	10	8 - 19	22
1804454C		42.4	50	10	10	8 - 19
1804454D		48.3	50	10	10	8 - 19
1806404F	Flat	30	15	8	6 - 12	15
1806454F	Flat	50	10	10	8 - 19	22
1806455	Flat	50	20	10	8 - 19	22
1806456	Flat	50	30	10	8 - 19	22
1806458	Flat	50	50	10	8 - 19	22
1806404C		42.4	30	15	8	6 - 12
1806454C		48.3	50	10	10	8 - 19
1806404D		48.3	30	15	8	6 - 12
1806454D		48.3	50	10	10	8 - 19

## JULIETTE BALCONY DOUBLE DOOR KIT



Code	Ø mm	Max Opening m
1806812D	48.3	2.3

Not supplied with glass. If glass is required please order Code: 1855101100925 x 2

304 Internal

316 External

Zamac

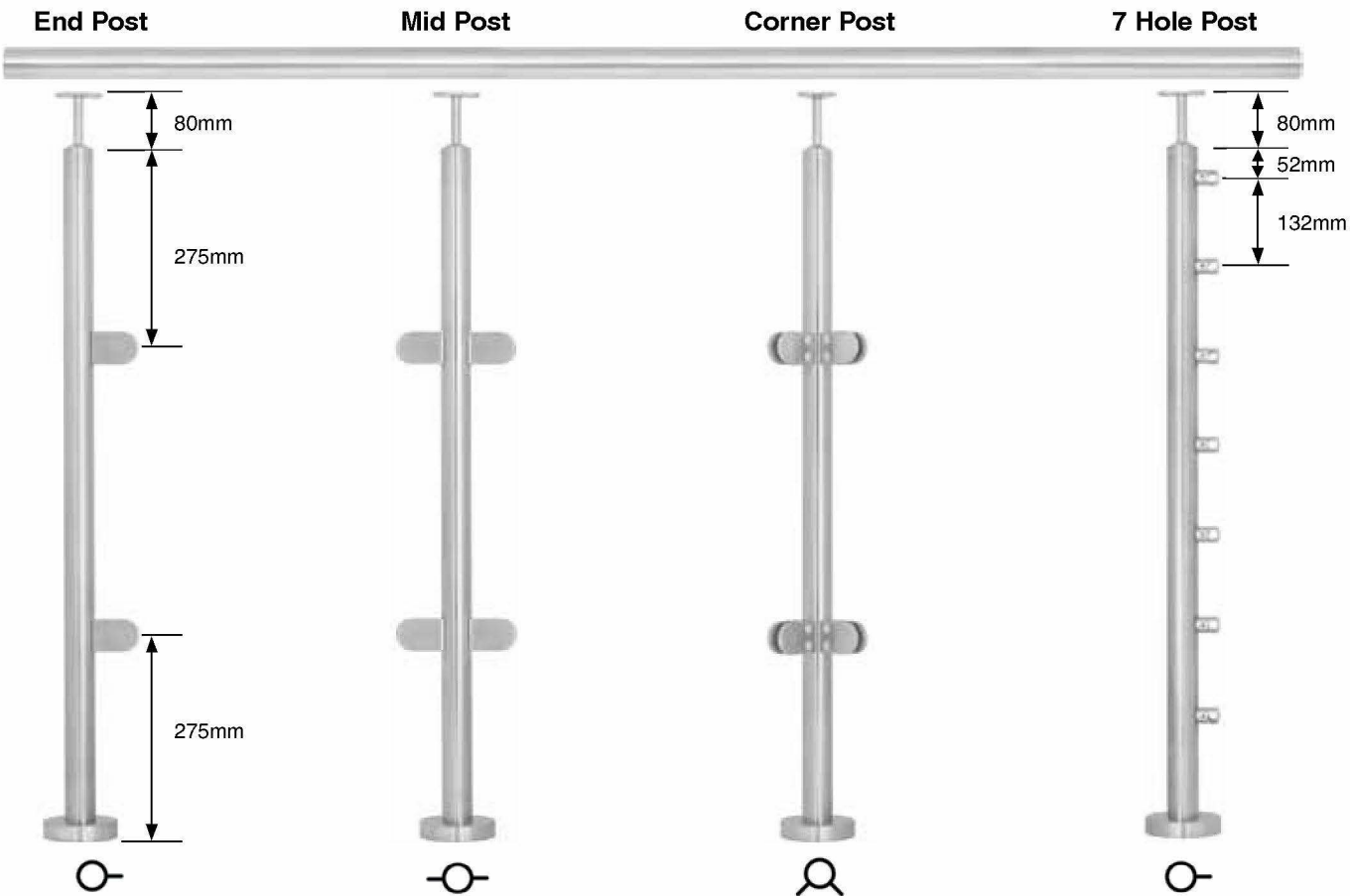


FOR OUR FULL RANGE  
OF GLASS PANELS,  
SEE PAGES 28-29.

< Scan here for the Juliette  
balcony full technical details

A range of pre-assembled posts designed to cut installation times

- All stainless posts are satin polished
- Tested to 1.5kN with a welded base fitting
- Designed to give 1100mm handrail height when installed with our components on flat surfaces
- Welded base fitting with cover plate & rubber 'O' ring to secure cover plate
- Adjustable spigot for flat or raked applications
- Post with glass clamps are ready to accept 10mm glass. 8mm rubbers available
- We sell glass from stock to suit 1200mm post centres
- Additional rubbers for different glass thickness available to purchase if required
- Special 5° variable fixing bolt to allow flexibility of alignment when fixing glass
- 7 hole post fitted with 12mm bar/tube holders



Code	Ø mm
1804731C	42.4
1804731D	48.3
1806731C	42.4
1806731D	48.3

Code	Ø mm
1804732C	42.4
1804732D	48.3
1806732C	42.4
1806732D	48.3

Code	Ø mm
1804733C	42.4
1804733D	48.3
1806733C	42.4
1806733D	48.3

Code	Ø mm
1804737C	42.4
1804737D	48.3
1806737C	42.4
1806737D	48.3

ALL POSTS FOR GLASS CLAMPS HAVE:



Welded Base Fitting complete with Rubber 'O' Ring + Cover



Adjustable Spigot



Glass Clamp (for 10mm Glass)



Variable Fixing Bolt

Aluminium

Mild steel

Galvanised steel



## COLOURED GLASS CLAMPS



To blend in and co-ordinate with interior designs, glass clamps can be supplied in any RAL colour or alternative finish you require.

**Grey**



**Brass**



**Chrome**



**Stainless Effect**



**Blue**



**Red**



**Green**



**Black**



## MIRROR POLISHED FITTINGS

All fittings detailed in the stainless steel section of this catalogue can be supplied in a mirror finish 800 Grit.

**Adjustable Elbows**



**Base Flanges**



**Fixed Elbows**



**Glass Clamps**



**Handrail Brackets**



**Handrail Saddles**



**Scroll Ends**



**Tube Fittings**

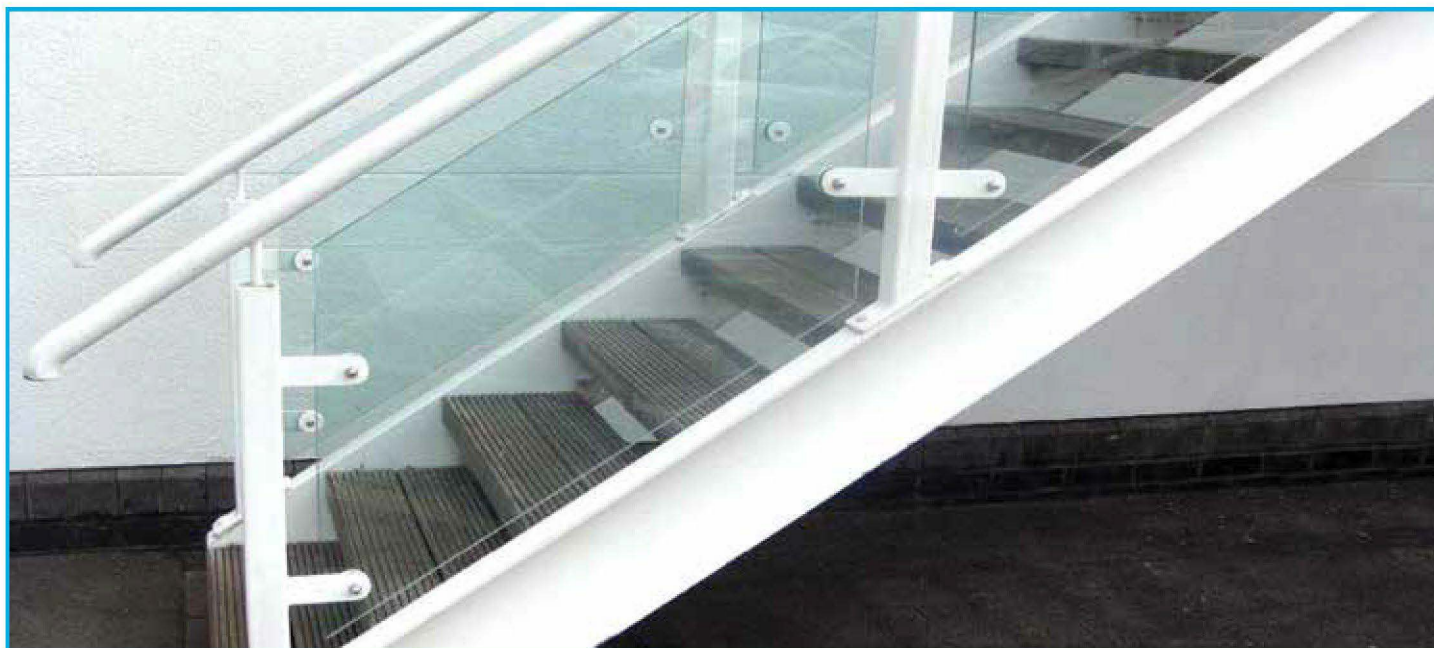


304 Internal

316 External

Zinc

An economic alternative to the traditional glass clamp system. They not only look good, but are easy to install with no on-site fixing and if required the mild steel clamps can be galvanised after fabrication and powder coated.



Short Single



Long Single



Straight Double



Code	Size mm
1801405F	80 x 40 x 6
1801407F*	80 x 40 x 6
1806405F	80 x 40 x 6

\*With stainless steel discs

Code	Size mm
1801406F	120 x 40 x 6
1801408F*	120 x 40 x 6
1806406F	120 x 40 x 6

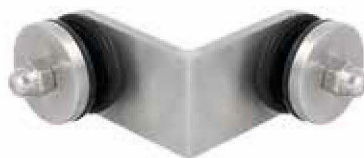
\*With stainless steel discs

Code	Size mm
1801409F	160 x 40 x 6
1806409F	160 x 40 x 6

Internal Corner



External Corner



Code	Size mm
1801409IC	80 x 80 x 40 x 6
1806409IC	80 x 80 x 40 x 6

Code	Size mm
1801409EC	80 x 80 x 40 x 6
1806409EC	80 x 80 x 40 x 6

#### Specification:

- 316 Dome Nut
- Rubber Washer
- 6mm Plate + Disc
- Suits 8 - 10mm Thick Glass
- Mild Steel + Stainless Steel
- Countersunk Stainless 316 8mm Bolt

#### Additional Accessories:

**Code: 1899405NS**

Nylon Spacer

**Code: 1899405RD**

Round Disc (S/S 316)

**Code: 1899405RI**

Rubber Inlay

**Code: 1899405TA**

Threaded Assembly (S/S 316)  
(Includes bolt and hex dome nut)



Aluminium

Mild steel

Galvanised steel



No Need For Pre-Drilled Glass!



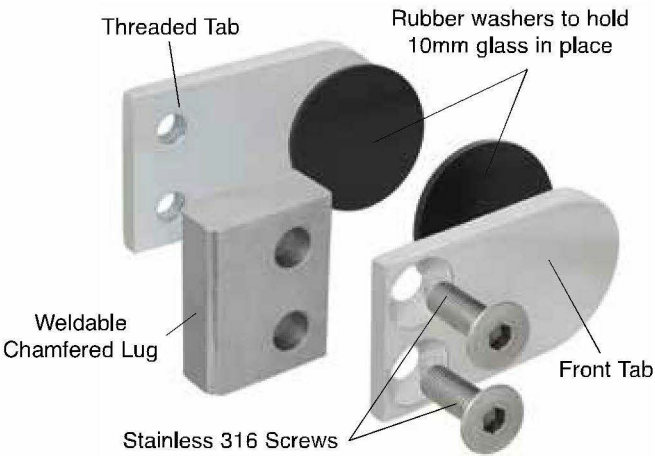
Specification:

- Weldable lug
  - Suitable for square or round steel posts
  - Size 40 x 80 x 25mm
- No pre-drilled glass required
  - Stainless steel 316 flush M8 screw
  - Suitable for 10mm glass



Code	Description
1801401F	BZP tabs with cast steel lug
1801401F316	Satin polished 316 tabs with cast steel lug
1806401W	Satin polished 316 tabs with cast stainless steel 316 lug

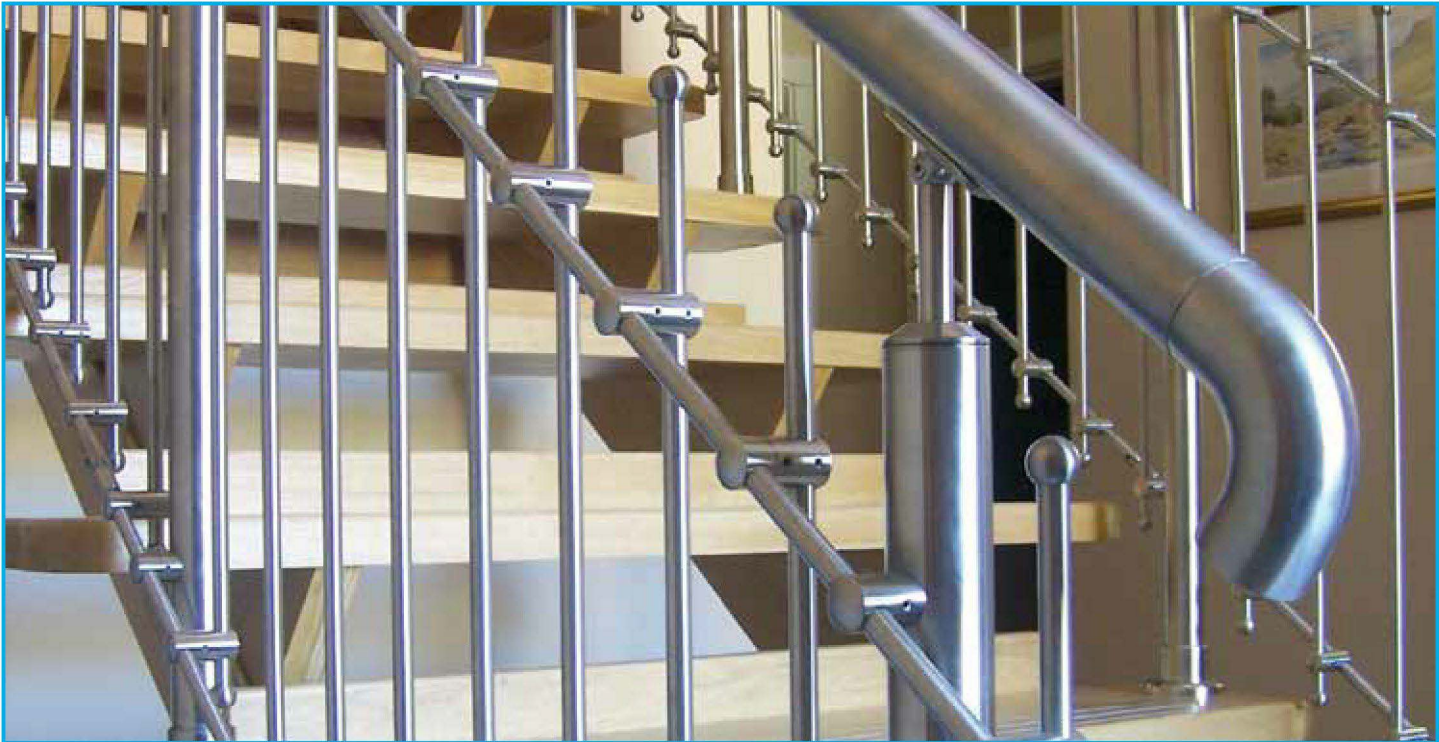
Should only be used where glass does not overhang an edge/balcony



Radius bends on handrail and balustrade can be supplied within days!



Our crossbar system can provide a modern handrail and balustrade for many applications. Providing another practical alternative to a glazed balustrade. Flexible components allow for 7 rails to be fitted as standard and it can also work with plain or decorative vertical bars using a simple 2 part adaptor.



Hollow Tube



Code	Ø mm
1804510	12
1806510	12

3m length

Solid Bar



Code	Ø mm
1804500	12
1806500	12

3m length

Solid End Ball



Code	Ø mm
1804502	20
1806502	20

Angle Joint Connector



Code
1804507
1806507

Crossbar Holder  
Flat Mounting



Code
1804501F
1806501F

12.2mm through hole requires  
6mm fixing bolt Code: 189900621

Crossbar Holder  
Tube Mounting



Code	Ø mm
1804501C	42.4
1804501D	48.3
1806501C	42.4
1806501D	48.3

12.2mm through hole requires  
6mm fixing bolt Code: 189900621

Crossbar Holder  
Two Part



Code
1804508
1806508

12.2mm through hole

Crossbar Holder  
Adjustable



Code	Ø mm
1804509C	42.4
1804509D	48.3
1804509F	Flat
1806509C	42.4
1806509D	48.3
1806509F	Flat


Requires 6mm fixing bolt  
Code: 189900621

See page 15 for our range of pre-assembled posts.




Ø 12mm Decorative and Plain Bars - 950mm High

Bush Single




Code
1821006X04S

Bush Double




Code
1821008X04S

Brass Bush Single




Code
1821002X04S

Brass Bush Double



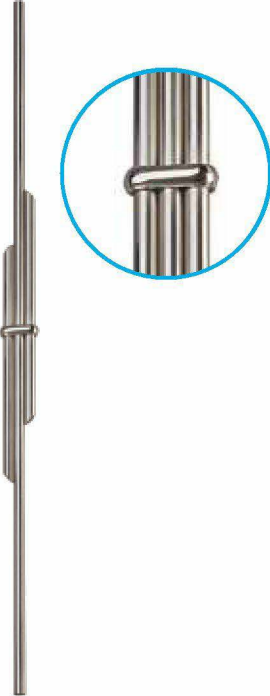
Code
1821004X04S

Plain Bar




Code
1821010X04S

Clip




Code
1821022X04S

Clip and Sphere




Code
1821038X04S

Forged Bar



Code
1821056X04S

Forged Bar



Code
1821058X04S

304

 Internal

316

 External

Zinc



The PanelGrip® System utilises a unique locking mechanism of high-strength aluminium and PVC isolators combined with a specially designed aluminium Shoe Moulding. When assembled with 15 - 21.5mm tempered monolithic, or tempered laminated glass, PanelGrip enables the installer to fabricate a structural Glass Railing System with a significant reduction in labour.



U.S. Patent 7,730,682; Other patents pending

## The benefits of PanelGrip are:

- **Adjustable**

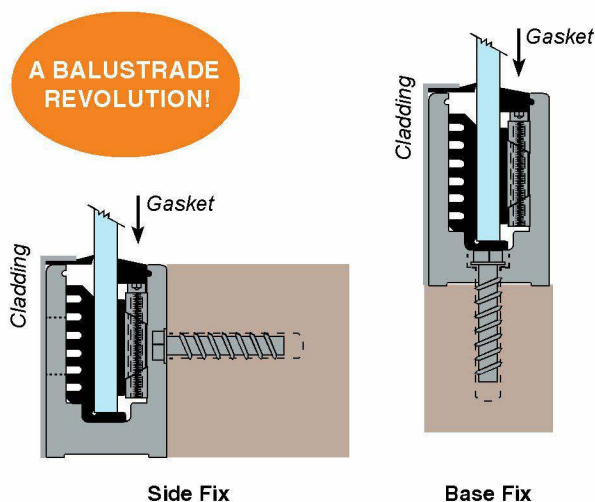
The PanelGrip design enables the system to be simply adjusted and readjusted when installed

- **Reduce labour costs**

No sealing of the shoe, no setting blocks, no plumbing of glass, no multiple pours of cement, no waiting for cement to cure; no messy clean-up

- **Simple to install**

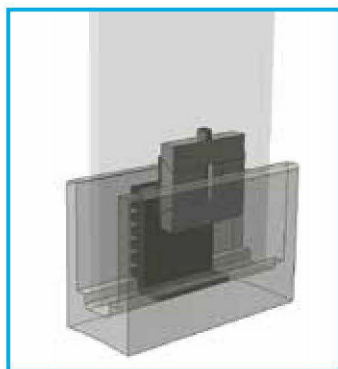
All you need is an Allen key for installation or removal of glass



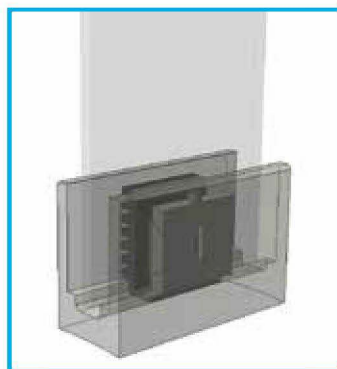
Visit our website to see how simple this system is to install and also for test data and loading calculations.



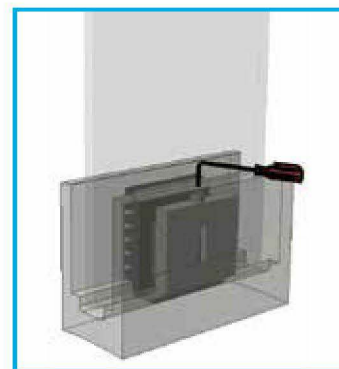
1. Place Dry Mount Grips into shoe moulding



2. Insert PanelGrip on the opposite side



3. Tighten PanelGrip mechanism



4. Confirm alignment and fully tighten

Aluminium

Mild steel

Galvanised steel



Aluminium Channel + Grip Selector

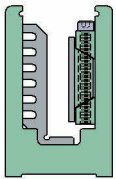
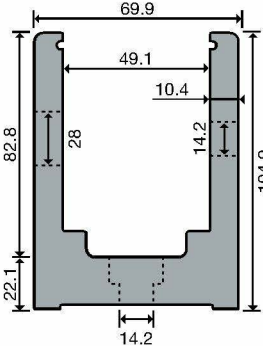
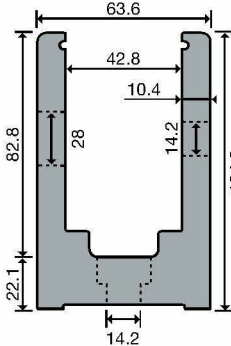
460 Series

Suitable for 12 & 15mm glass

466 Series

Suitable for 17.5, 19 & 21.5mm glass

Grip



Glass Thickness mm	Length	Base Fix Channel	Side Fix Channel	Grip
12	3.048m (10ft)	1805460B	1805460S	1805461B
15		1805460B	1805460S	1805461
17.5		1805466B	1805466S	1805461B
19 & 21.5		1805466B	1805466S	1805461
Channel fixing holes are 14mm at 203.2mm (8") centres to suit a 12mm bolt				Please order 5 grips per metre

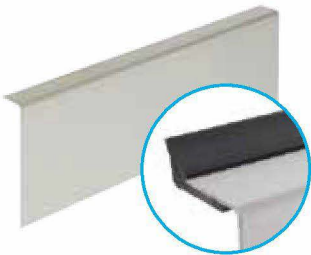
PanelGrip is supplied non-anodised

Cladding + Gasket Selector

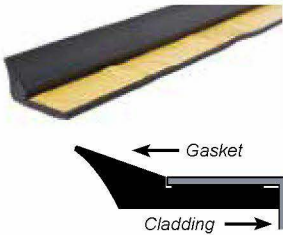
Cladding End Cap



Cladding



Gasket for use with Cladding

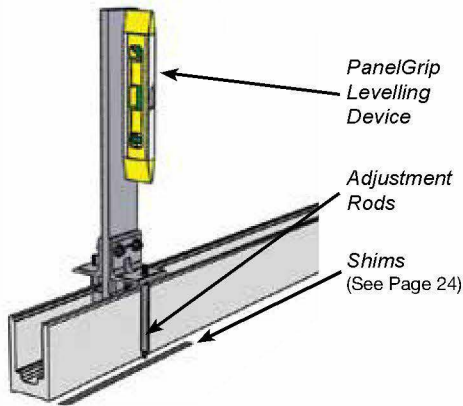


Gasket for use without Cladding



Code	Product	Length m	Size mm/Type
18054653	Stainless Cladding	3.0	105 x 20.6 x 0.8
1805467	460 Series End Cap	-	Satin
1805468	466 Series End Cap	-	Satin
1805453	Cladding Tape	50	Double Sided
1805463	Gasket - Full Roll for use with cladding	30.48	28 x 6
18054631	Gasket - Metre for use with cladding	1.0	26 x 6
1805462	Gasket - Full Roll for use without cladding	76.2	18 x 14
18054621	Gasket - Metre for use without cladding	1.0	18 x 4

Levelling Device



SEE PAGE 61 FOR GLASS LOADING GUIDELINES.

Code	Product
1805464	Plumbing Bar with Spirit Level
1805456	Shims 1m long 3mm thick (pack of 9)

For all fixings and Allen keys see pages 52 - 55.

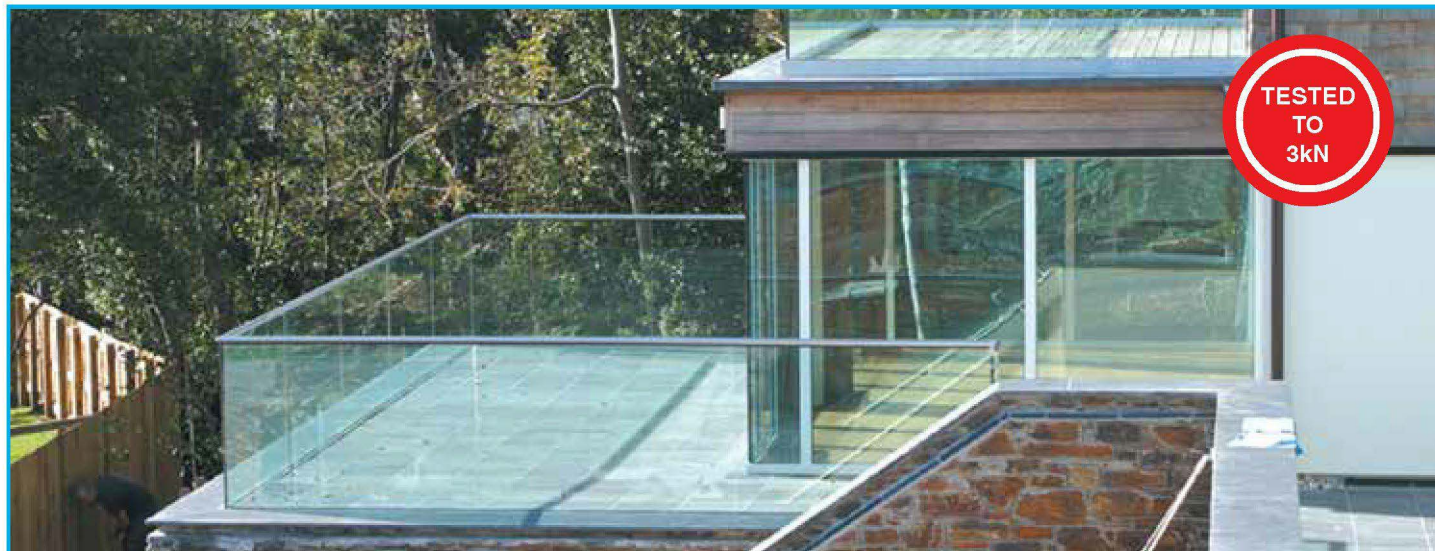
304 Internal

316 External

Zinc



Frameless Glass Balustrade provides stunning results everytime. Our patented systems, PanelGrip and PanelWedge offer clean lines and simple installation, making the most of the views.



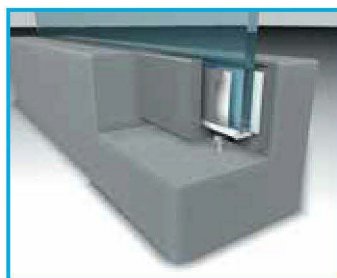
A flexible system allowing installation of glass panels from 15 to 25mm thick to achieve up to 3kN/m loadings (subject to specialist installation). Various fixing options result in a system for almost every application you will come across.

## PANELWEDGE BALUSTRADE SYSTEM

**Base Fix to Concrete**



**Rebate in Concrete**



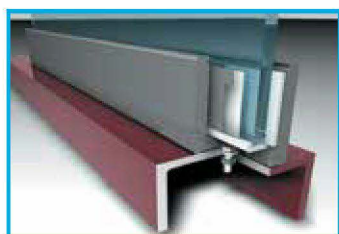
**Side Fix to Concrete**



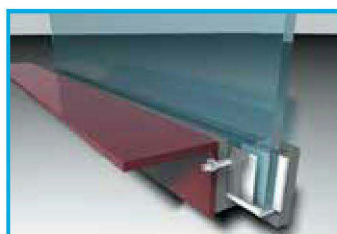
**Edge Fix to Concrete**



**Base Fix to Steel**



**Side Fix to Steel**



Details for glass loadings can be found at [www.fhbrundle.co.uk](http://www.fhbrundle.co.uk) or scan the barcode with your Smartphone.



1. Insert bottom/side plastic isolator



2. Insert glass and aluminium wedge - check alignment



3. Hammer in the aluminium wedges



4. Apply the cladding

Aluminium

Mild steel

Galvanised steel



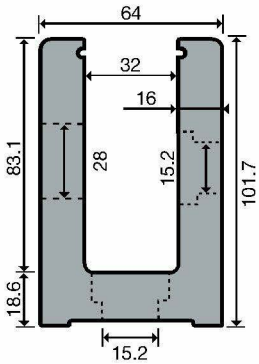
Aluminium Channel



For fixings see page 54

Code	Fixing	Length m
1805450B	Base	3
1805450S	Side	3

450 Series



Bottom/Side Isolator & Aluminium Wedges



Code	Glass Thickness mm	Sets
180545115	15	4 per metre
1805451175	17.5	4 per metre
180545119	19.0	4 per metre
1805451215	21.5	4 per metre
180545125	25.0	4 per metre

Stainless Cladding



Mirror finish available to order

Code	Finish m	x mm	Length m
180545216	Satin	16	3
180545222	Satin	22	3
180545226	Satin	26	3

15mm glass requires 22mm cladding (wedge side) and 26mm (packer side)  
17.5 - 19mm glass requires 22mm cladding on both sides  
21.5 - 25mm glass requires 22mm cladding (wedge side) and 16mm (packer side)

Please consult a structural engineer to ensure your designs test data conforms to loading requirements.

Tape for Fixing Cladding  
50m roll



Code
1805453

Channel Spacer  
5 per metre



Code
1805454

Cladding End Cap  
Satin finish



Code
1805455

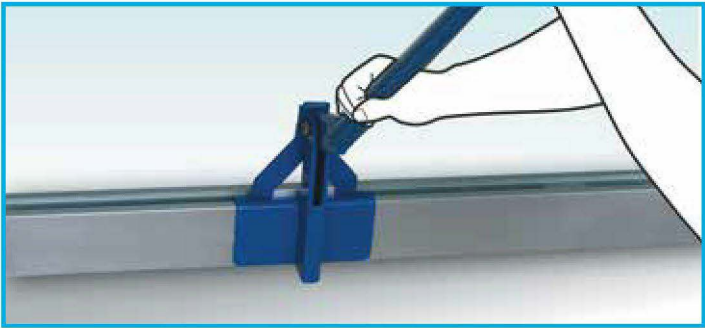
Shims  
1m length, pack of 9



Code
1805456



Side profile of an installation



Code	Description
180599001BUY	Wedge Removal Tool to Buy

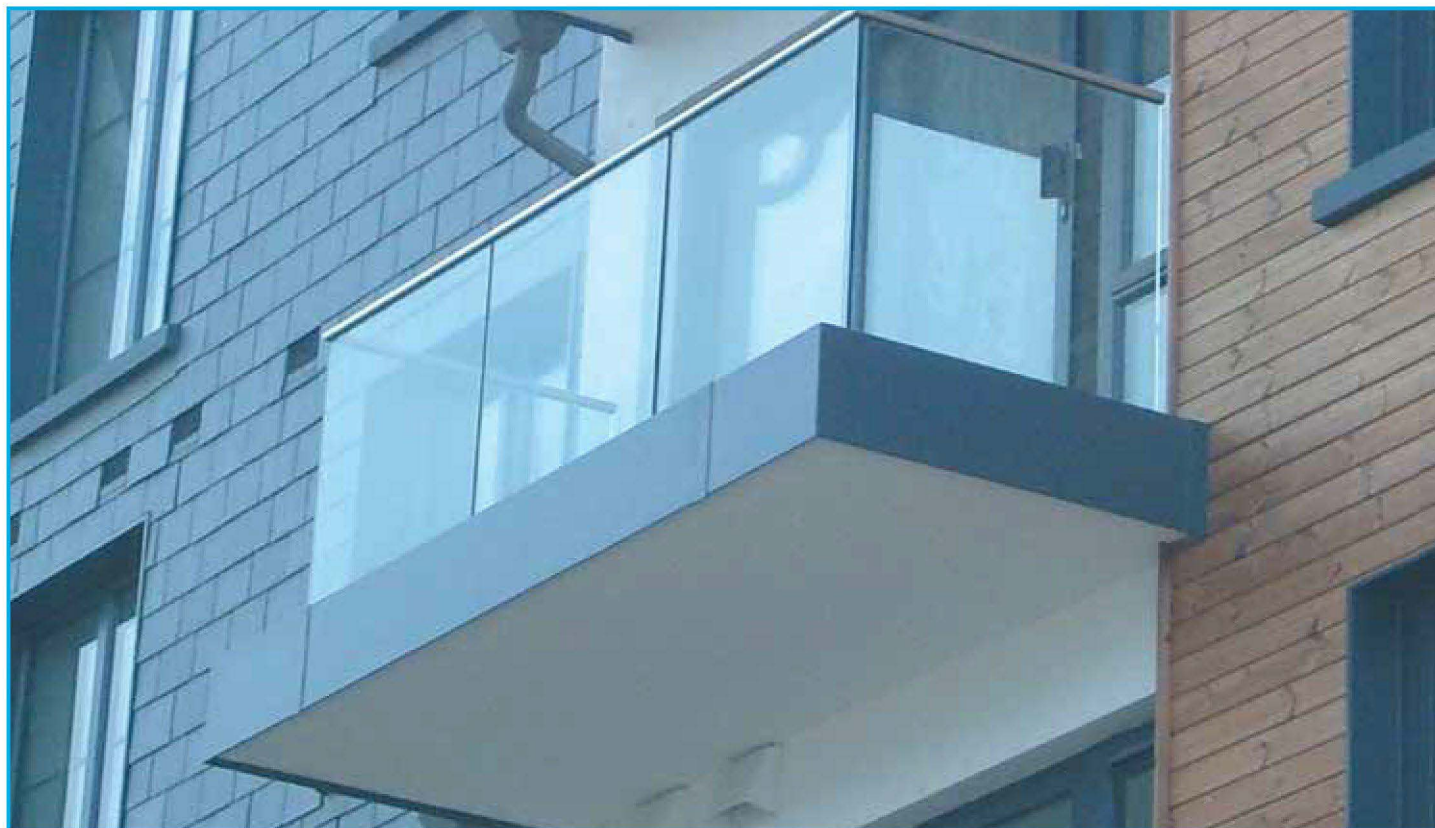
304 Internal

316 External

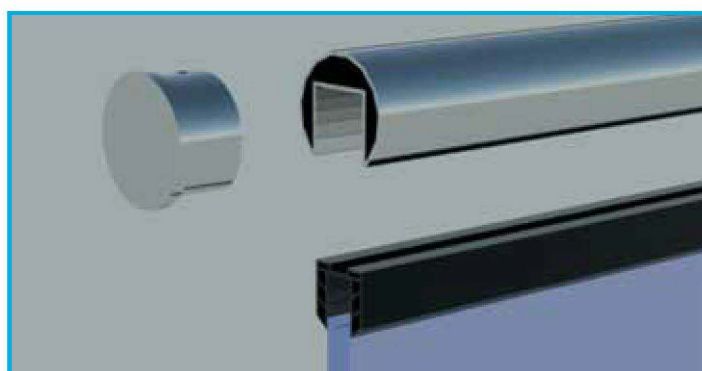
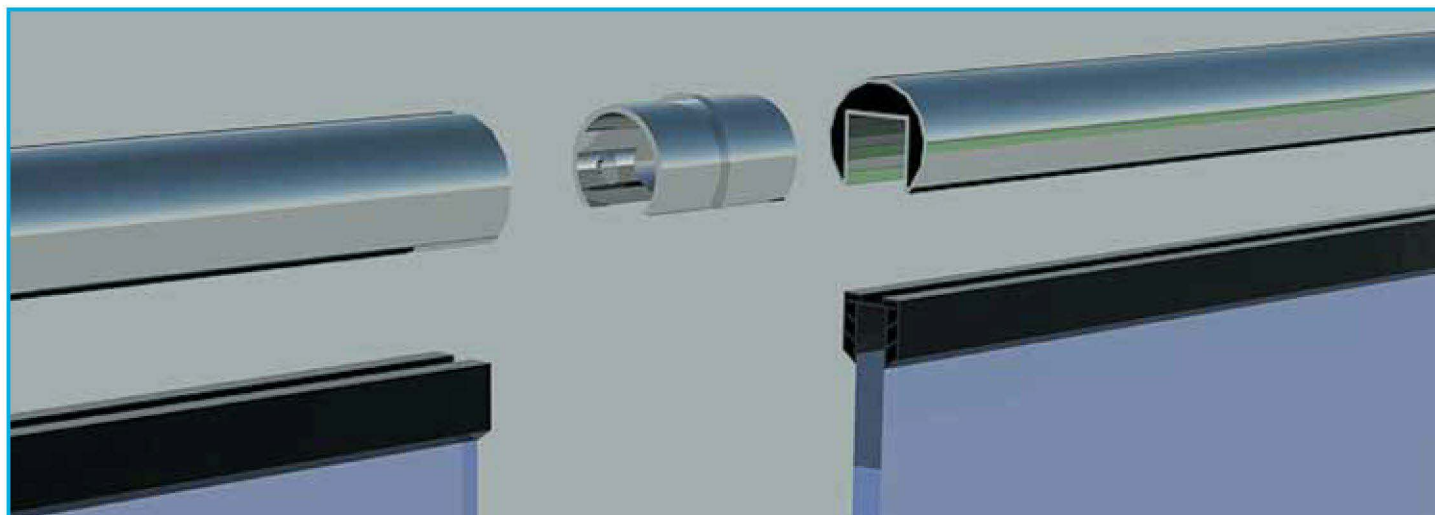
Zinc



Split tube fittings offer a stylish solution to the top of any glass balustrade and also provide a visual break. If you're planning radiused glass in your design not a problem, as we can shape to match.



**Split Tube Handrail Component Assembly**



 Aluminium

 Mild steel

 Galvanised steel



## 90° Vertical Corner



## 90° Horizontal Corner



## In Line Connector



Code	Ø mm
1804410C	42.4
1804410D	48.3
1806410C	42.4
1806410D	48.3

Code	Ø mm
1804411C	42.4
1804411D	48.3
1806411C	42.4
1806411D	48.3

Code	Ø mm
1804412C	42.4
1804412D	48.3
1806412C	42.4
1806412D	48.3

## 25° to 55° Adjustable Connector - Downwards



## 25° to 55° Adjustable Connector - Upwards



## End Cap



Code	Ø mm
1804416C	42.4
1804416D	48.3
1806416C	42.4
1806416D	48.3

Code	Ø mm
1804417C	42.4
1804417D	48.3
1806417C	42.4
1806417D	48.3

Code	Ø mm
1804413C	42.4
1804413D	48.3
1806413C	42.4
1806413D	48.3

## Tube Adaptor



## Wall/Floor Flange



## Split Tube

1.5mm wall thickness



Code	Ø mm
1804414C	42.4
1804414D	48.3
1806414C	42.4
1806414D	48.3

Code	Ø mm
1804415C	42.4
1804415D	48.3
1806415C	42.4
1806415D	48.3

3m length

Code	Ø mm
18047053C	42.4
18047053D	48.3
18067053C	42.4
18067053D	48.3

6m length

Code	Ø mm
1804705C	42.4
1804705D	48.3
1806705C	42.4
1806705D	48.3

## Rubber Profile for Glass

Ø 42.4mm



Code	Glass Thickness mm
189903811C	8 - 11
189903115135C	11.5 - 13.5
18990315C	15
18990316175C	16 - 17.5
18990319C	19
18990320215C	20 - 21.5

Ø 48.3mm

Code	Glass Thickness mm
189903811D	8 - 11
189903115135D	11.5 - 13.5
18990315D	15
18990316175D	16 - 17.5
18990319D	19
18990320215D	20 - 21.5

All fittings suit 1.5mm tube.

304 Internal

316 External

Zinc

# One Stop Shop for Glass and Handrailing

Choosing Pro-Railing for your residential or commercial project just got easier with the addition of stocked glass to the range. Our standard and non-standard panels come in a variety of different glass types, with delivery direct to your site. You can specify and install Pro-Railing with confidence as your partner of choice.

## Our range of standard glass panels

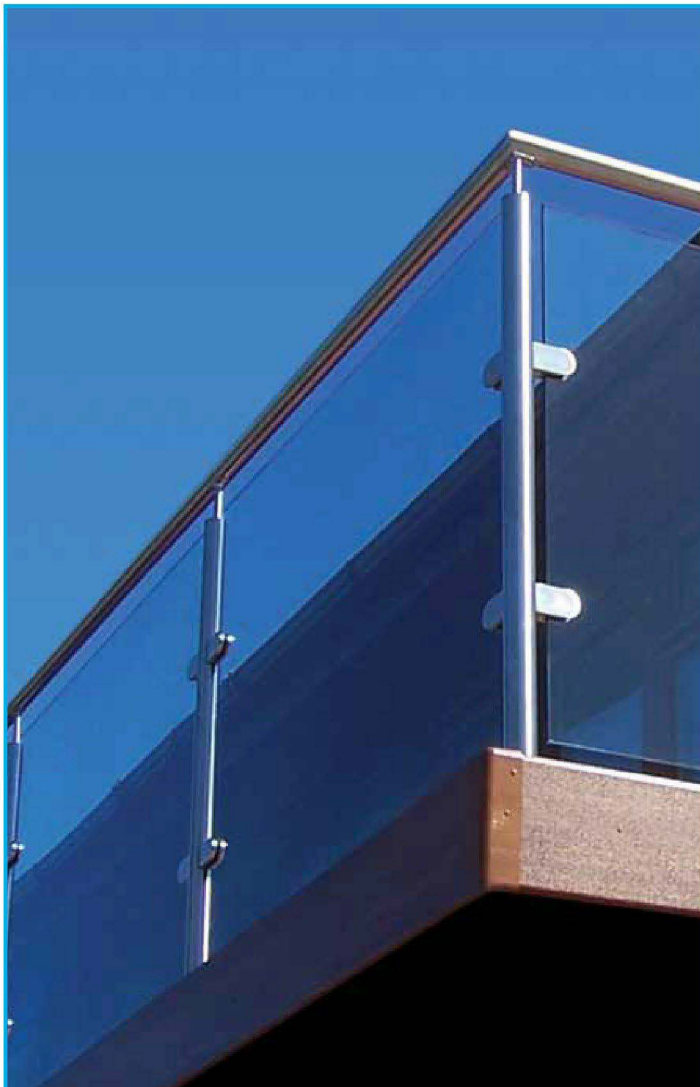
- Suits our various Pro-Railing systems
- Offers 'off the shelf' solutions
- Complies with height constraints of Building Regs
- Comes in standard widths to ease specifying and handling
- Is toughened or toughened & laminated

## Our range of Make-Up and Non-Standard glass panels

- Complements our stock panels to complete any layout
- Can be any shape or profile
- Is easily ordered
- Can be made to match your own templates



If it doesn't say Pro-Railing,  
it's not Pro-Railing!



Aluminium



Mild steel

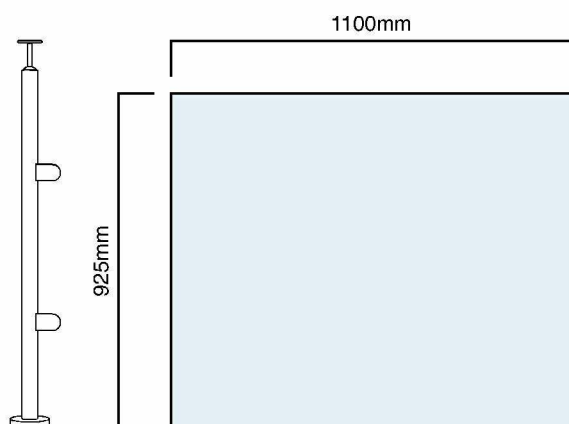


Galvanised steel



## 10mm Thick Toughened Monolithic Clear Float Glass

Use with our fully assembled glass clamp posts

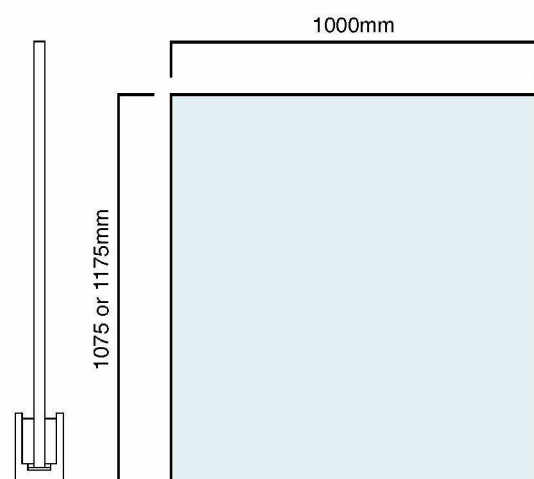


- Suits standard height uprights installed at 1200mm centre to centre
- Polished edges
- 3mm radiussed corners
- No security pin holes required
- Use with type 401 & 402 glass clamps
- See next page for fitting advice

Code	Weight Kg	For Use With	Size mm
1855101100925	25.44	Fully assembled posts or 401 or 402 series clamp	1100 x 925 x 10

## 15 & 19mm Thick Toughened Monolithic Clear Float Glass

Use with our aluminium glass channel systems such as PanelGrip & PanelWedge

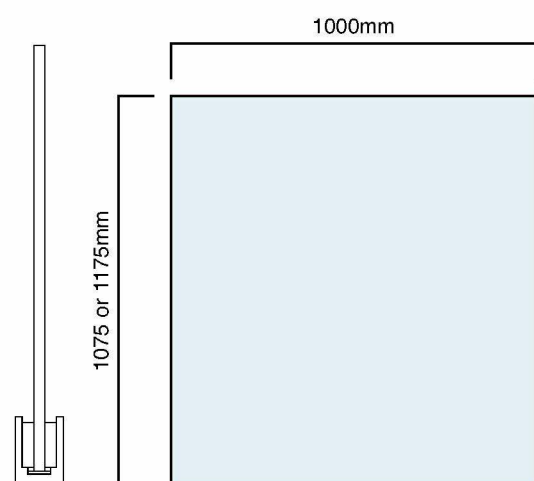


- Suits our PanelGrip & PanelWedge types of channel – base or side fixed
- Polished edges
- 5mm radiussed corners
- Handrail will be required
- See next page for fitting advice

Code	Weight Kg	For Use With	Size mm
18551510001075	40.32	Base fixed channels set onto finished floor line	1000 x 1075 x 15
18551910001075	51.42		1000 x 1075 x 19
18551510001175	44.07	Side fixed channels set 100mm below finished floor line	1000 x 1175 x 15
18551910001175	56.20		1000 x 1175 x 19

## 17.5 & 21.5mm Thick Toughened & Laminated Clear Float Glass

Use with our aluminium glass channel systems such as PanelGrip & PanelWedge

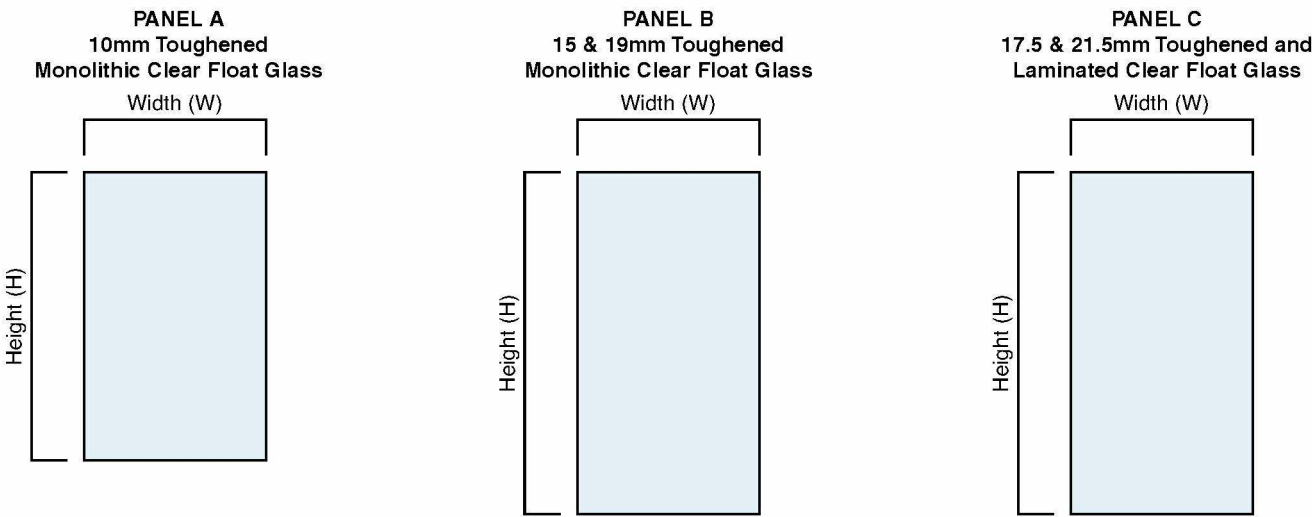


- Suits our PanelGrip & PanelWedge types of channel – base or side fixed
- Polished edges
- 3mm radiussed corners
- See next page for fitting advice

Code	Weight Kg	For Use With	Size mm
185617510001075	47.04	Base fixed channel set onto finished floor line	1000 x 1075 x 17.5
185621510001075	57.76		1000 x 1075 x 21.5
185617510001175	51.41	Side fixed channel set 100mm below finished floor line	1000 x 1175 x 17.5
185621510001175	63.15		1000 x 1175 x 21.5



Use this guide for ordering make-up panels to match our standard panels and complete your installation.



Ordering Guide:

Name: \_\_\_\_\_ Contact Number: \_\_\_\_\_

Panel Reference	Panel Type			Glass Thickness	Panel Height	Width Required	Quantity
Example	A	B	C	21.5	1075	830	2
1	A	B	C				
2	A	B	C				
3	A	B	C				
4	A	B	C				
5	A	B	C				
6	A	B	C				
7	A	B	C				

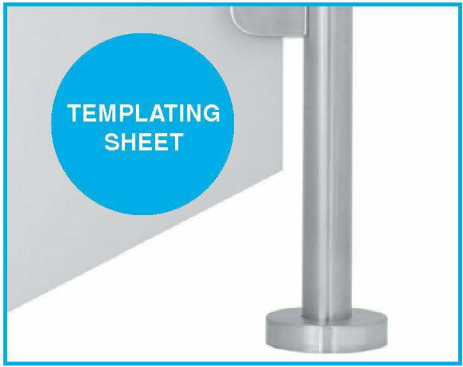
Complete as required and return to your local sales office for processing

Where our standard panels cannot be used, we can offer costs for the production of fully bespoke panels if required.

Our bespoke panels can be:

- Toughened and laminated
- Produced in any shape using state-of-the-art CNC machines
- Produced from many different types of glass
- Coloured or curved
- Drilled and notched
- Made to suit almost all applications

We can provide suitable templating material that can be cut to suit any special shapes on site and sent to our processors for production to match the template exactly, using modern imaging scanning technology to duplicate your design. Price and availability for bespoke panels are available on request.



< Scan here for the Pro-Glass order form

Code	Size mm	Description
185900201	2440 x 1220 x 4	Templating sheet

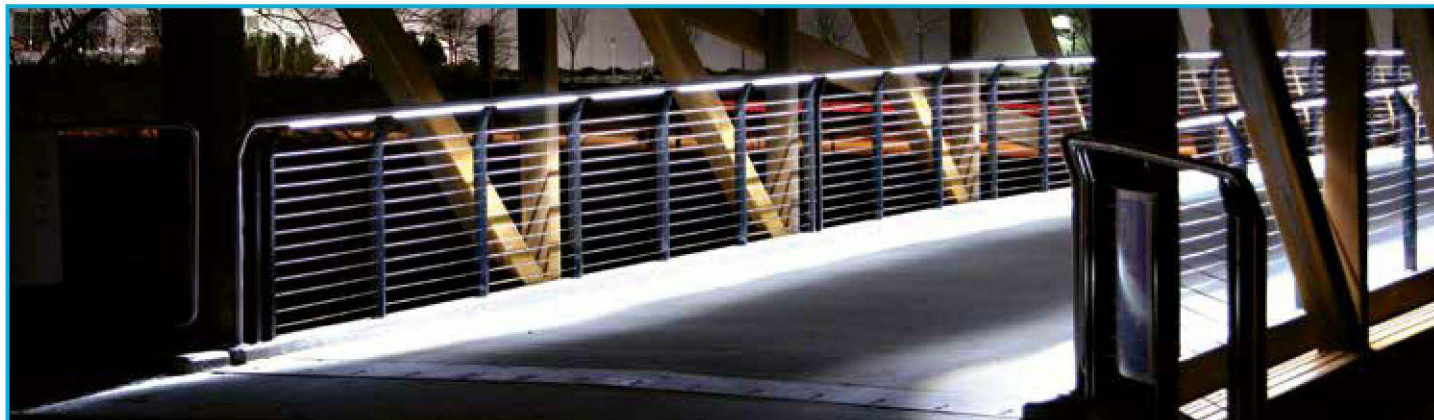
Advice on Fitting Glass

Where a run of glass is made up of multiple panels, we recommend spacing between panels of 25mm.

The reasons for this are:

- 25mm is wide enough for most fingers to pass through easily without getting trapped
- Lining up the glass is much easier, as the smaller the gap, the more noticeable a small +/- difference becomes

Lumenrail® provides the finishing touch to your design or installation with brilliant cool white light produced by high brightness LEDs. Ideal for stairwells and walkways in restaurants, offices, leisure, retail and any location requiring illumination for safety and security. Fully dimmable and only 19mm (3/4") wide, it fits discreetly and securely into our split tube range of handrail and fittings for use either inside or outside in both wet and dry locations and is IP66 rated.



## Application

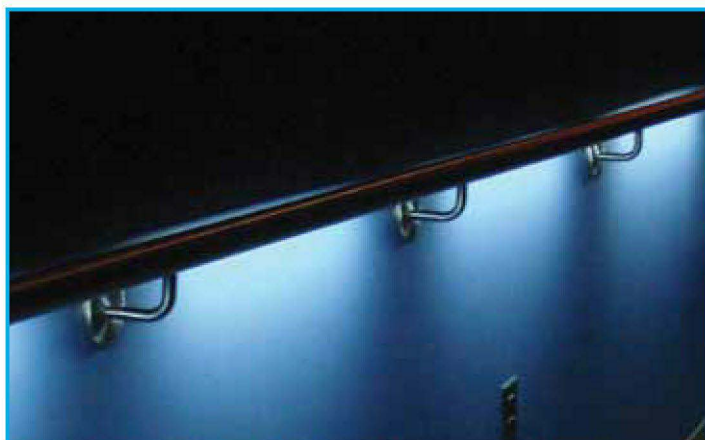
- ETL listed LED illuminated railing system delivering pathway and wall illumination for indoor and outdoor use
- Designed to satisfy ANSI, ADA and IBC codes when properly specified and installed
- Railings are manufactured in Stainless Steel Type 316
- May be used for exit lighting and emergency lighting with backup system

## Lighting Options

- Lumenrail is available from stock with brilliant cool white light (4000K) but is also available in warm white (3000K) to order
- Lumenrail LED light sticks are available in lengths from 150mm (6") to 1500mm (60") in 150mm (6") increments. Standard length is 1067mm
- Standard Lumenrail LED Light sticks are supplied with transparent lens but are also available in matte to order

## Construction

- Guardrail or Handrail
- Wall or Post Mount
- Posts & brackets are typically spaced no further than 1200mm on centre to meet structural load requirements
- Post mounted railings have several infill panel options available including glass, wire & a variety of flat sheets



**Light Stick Installation**  
Exploded View







Transparent Lens



Electrical Specification For LED Light Stick

- 24VDC, 100W Power requirement
- Power consumption is 2W per 300mm
- Class 2 - 24VDC power supply
- Use an approved means of connection
- -20° to +50° C operating temperature
- 50,000 Hours (approximately) of LED life
- NEMA 3R rating
- Power supply is 240VAC 50Hz

LED Specification

- 5400K colour temperature
- Selected high brightness LEDs
- Lens angle is 65°
- Brightness of transparent lens: 109.3/300mm
- Aluminium housing
- 1067mm Long
- IP66 Listing
- Approximately 21° C (70° F) ambient temperature

Code	Description
1809001	LED Light Stick with Transparent Lens

LED Driver



Lumenrail low voltage LEDs require a power supply to transform and regulate the voltage. This compact electronic driver is protected against open circuit, short circuit, overload and overheating.

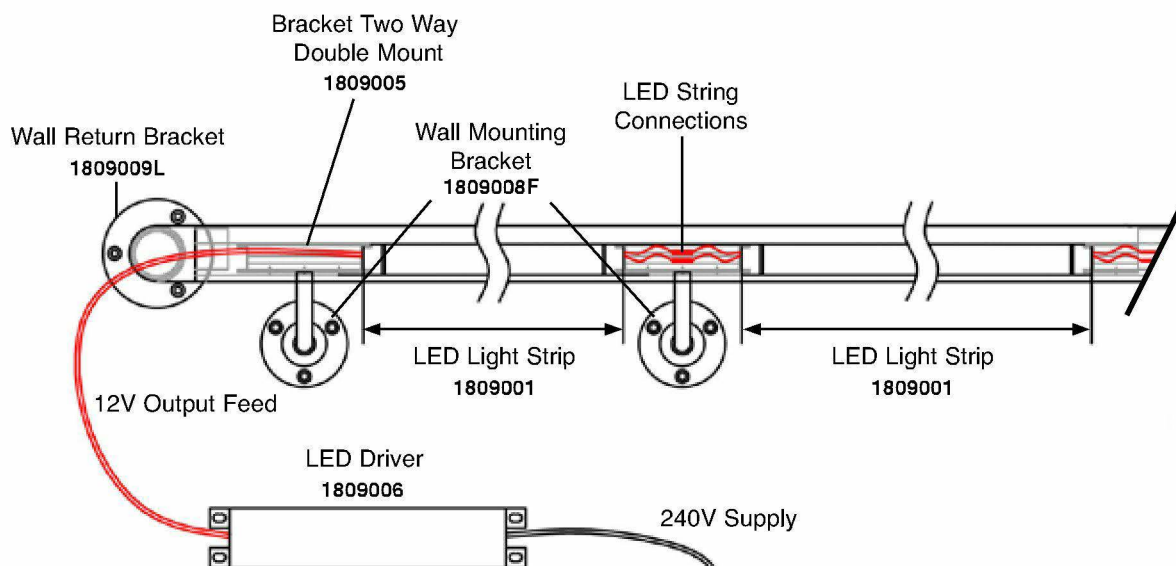
24VDC 100 W DRIVER	MAXIMUM DISTANCE FROM DRIVER TO LED				
Cross sectional Area mm <sup>2</sup>	5.26	3.31	2.08	1.31	0.82
Distance m	36	21	14	8.0	5.0

Code	Type	Description
1809006	24V/100W	Suitable for 10 LED Light Sticks

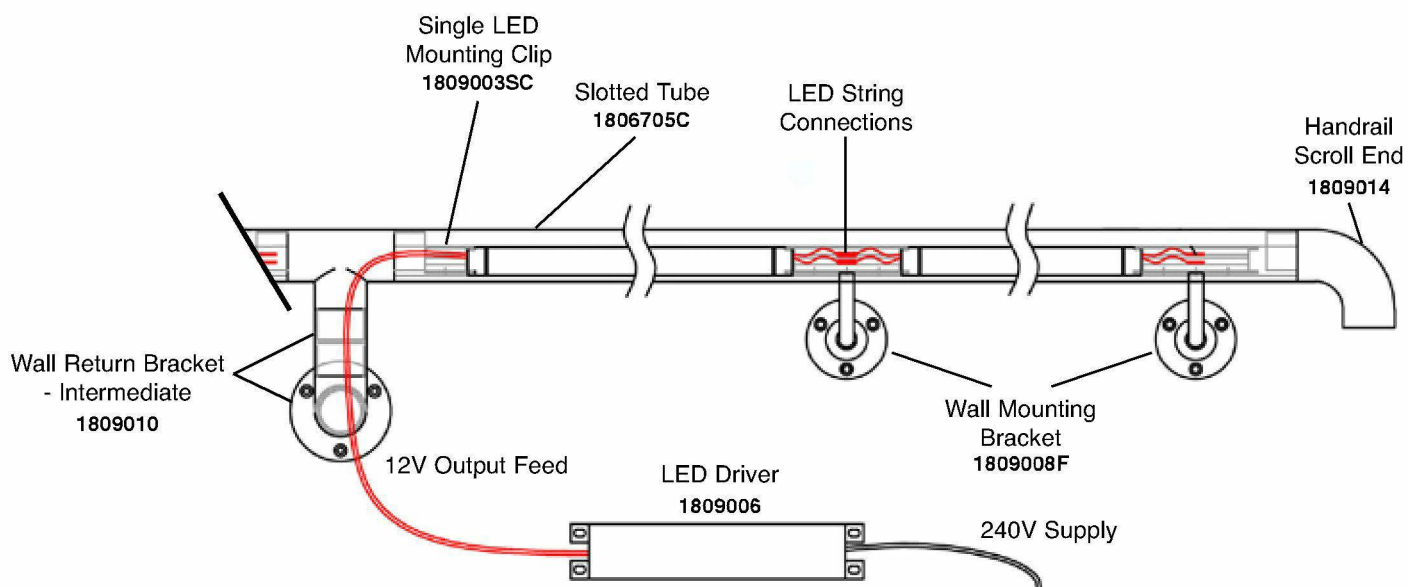
LED Driver Specification

- 240 (L) x 45 (W) x 30mm (H)
- IP66 classification
- -30° to +60° C temperature
- 1% line, 5% load regulated output
- 240V voltage
- 90% minimum power factor
- Total harmonic distortion is 20% maximum
- 1.5 max current crest factor
- 3 drivers may be daisy chained together for longer runs
- Up to 10m of lights may be powered off each individual driver

## Powering LEDs From End Wall Connection

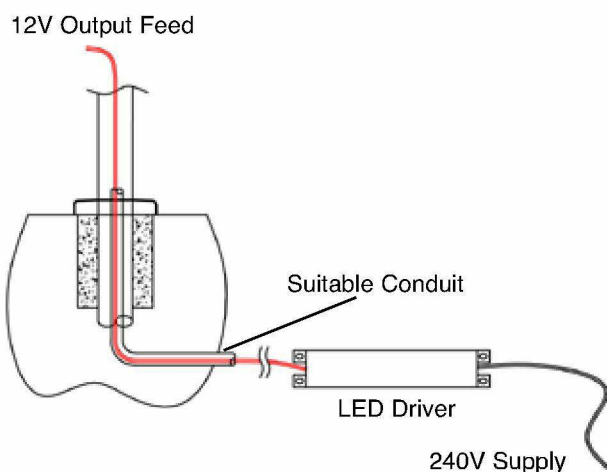


## Powering LEDs From Mid Rail Position

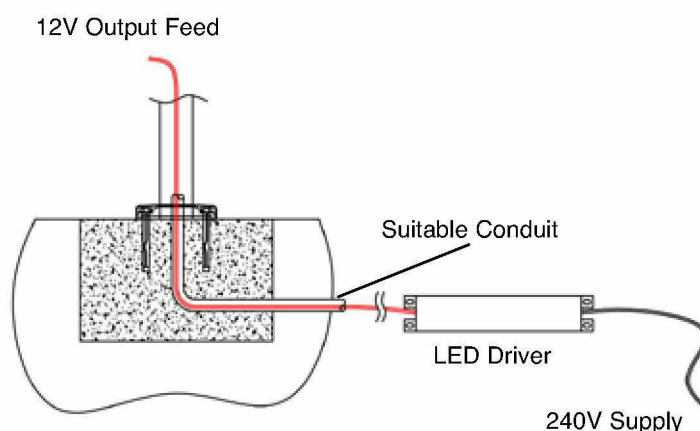


# LUMENRAIL - POST MOUNT WIRING

## Extended Post Mounted Into Pocket



## Post Mounted Onto Concrete



**lighting facts®**  
A Program of the U.S. DOE

Light Output (Lumens) **348**  
Watts **7.019**  
Lumens per Watt (Efficacy) **49**

Color Accuracy **61**  
Color Rendering Index (CRI)

Light Color **3082 (Bright White)**  
Correlated Color Temperature (CCT)



All results are according to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting. The U.S. Department of Energy (DOE) verifies product test data and results.

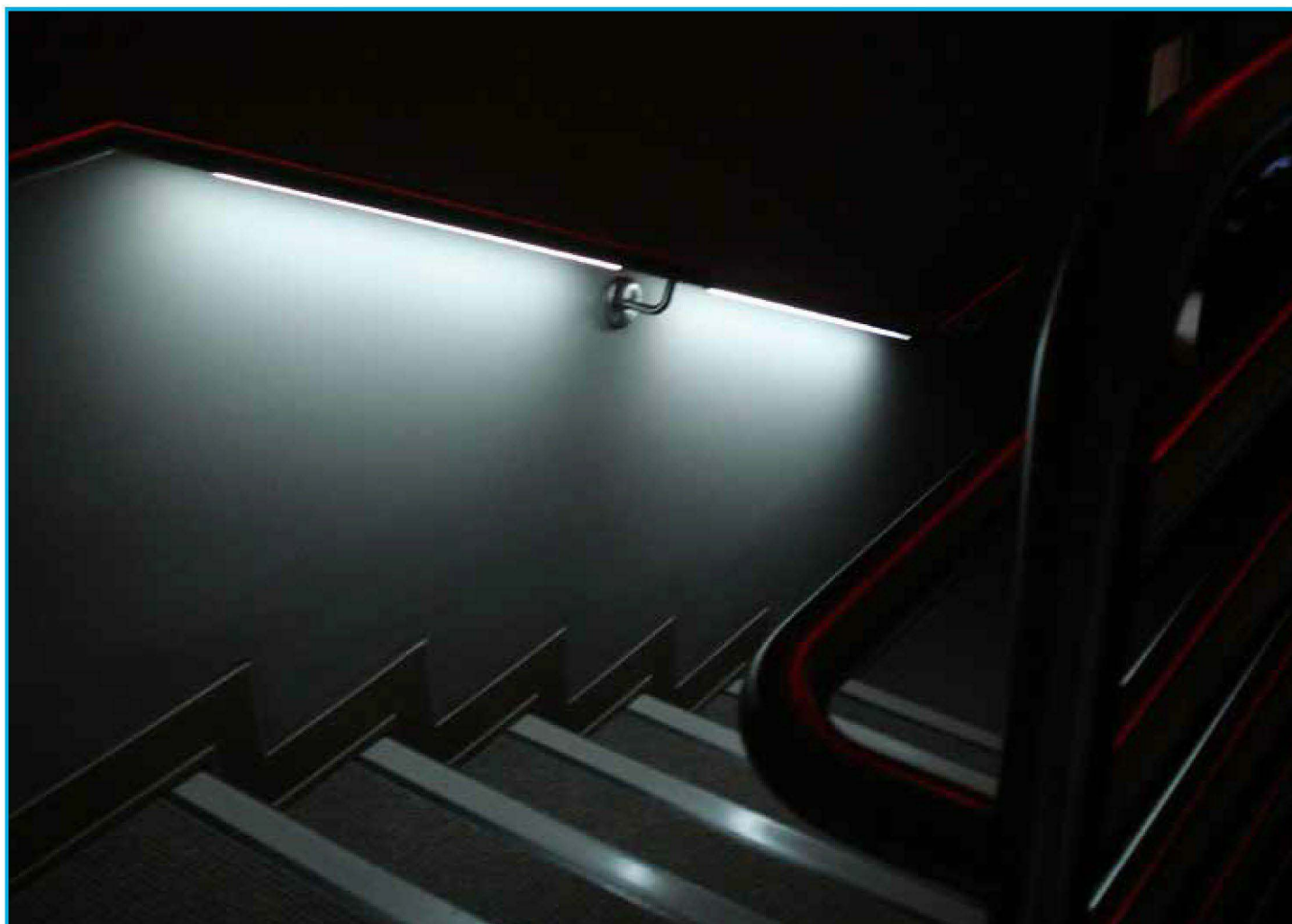
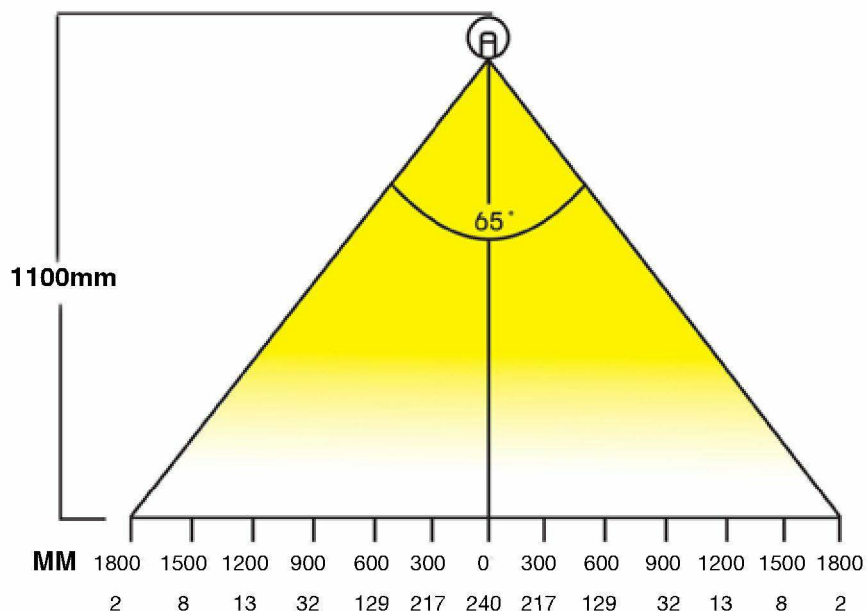
Visit [www.lightingfacts.com](http://www.lightingfacts.com) for the Label Reference Guide.

Registration Number: C1A1-M357DJ

Model Number: LUL54K70TF - 42

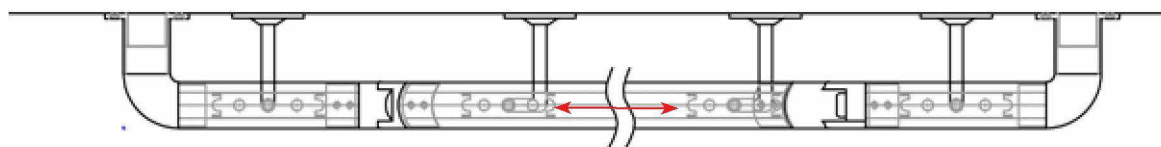
Type: Cove light

### LUX Measurement - Transparent Lens

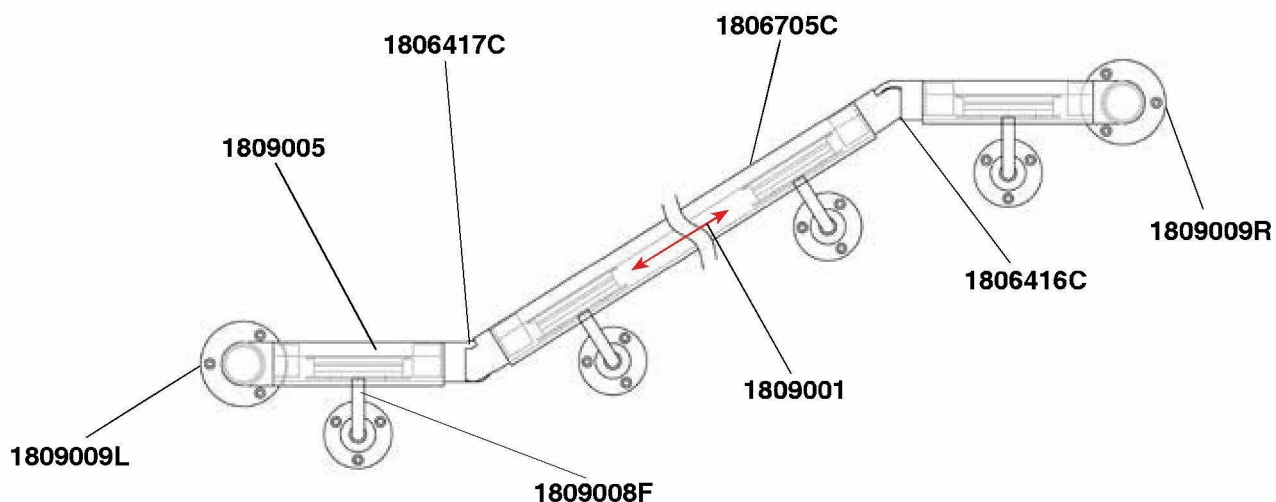




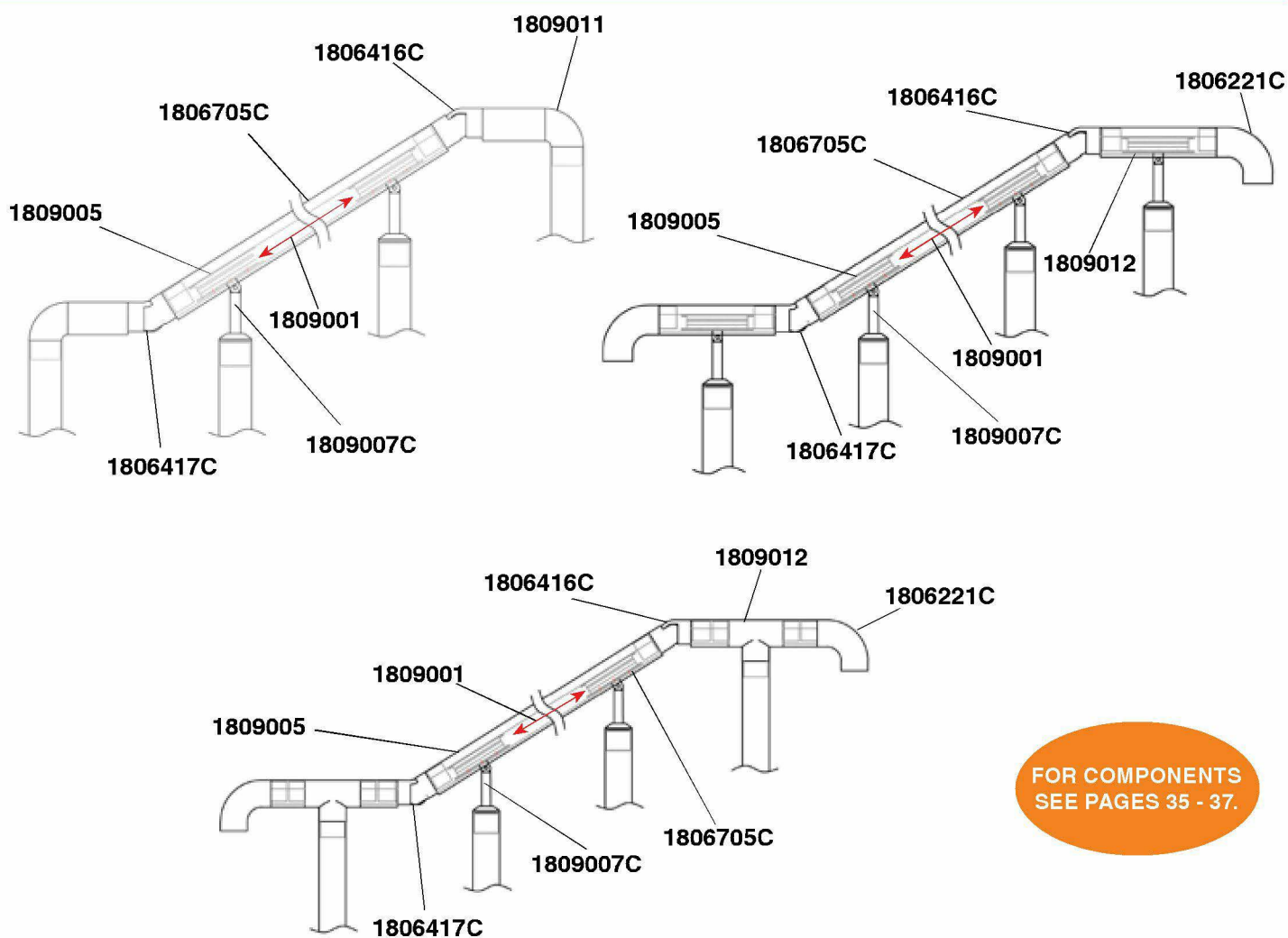
Plan View



Front View



## LUMENRAIL - POST MOUNTING GUIDE



FOR COMPONENTS  
SEE PAGES 35 - 37.

304 Internal

316 External

Zinc

## Bracket Single Mount

To hold light stick in position



10mm

Code	Ø mm
1809003SC	42.4

## Bracket Two Way Double Mount

For use with cranked elbow or handrail adaptor



10mm

8mm

10mm

Code	Ø mm
1809005	42.4

## Handrail Adaptor and Stem

For use with single and double mount



8mm

Code	Ø mm
1809007C	42.4

## Cranked Elbow and Wall Plate

For use with double mount



8mm

Code
1809008F

## Wall Return Bracket - Left

For use at the end of a run to return wires to the wall



Code	Ø mm
1809009L	42.4



Code	Ø mm
1809009R	42.4

## Post Tee - Universal



Code	Ø mm
1809012	42.4

## Corner Post Fitting - Universal



Code	Ø mm
1809013	42.4

Aluminium

Mild steel

Galvanised steel



## Post Elbow - Universal



Code	Ø mm
1809011	42.4

## 90° Flush Angle Scroll End

For use with round tube only



Code	Ø mm
1806221C	42.4

## Handrail Scroll End - Universal



Code	Ø mm
1809014	42.4

## 25 to 55° Adjustable Connector - Downwards



Code	Ø mm
1806416C	42.4

## 25 to 55° Adjustable Connector - Upwards



Code	Ø mm
1806417C	42.4

## Handrail Connector

To connect a handrail from split tube to round tube



Code	Ø mm
1809015	42.4

## Handrail Saddle

With cable hole

NEW



Code	Ø mm
1809310CC	42.4

## Wall Bracket

With cable hole

NEW



Code	Ø mm
1809305FC	42.4

## Tube Connector

With cable hole

NEW



Code	Ø mm
1809313CC	42.4

## Wall End Connector

With cable hole

NEW



Code	Ø mm
1809209C	42.4

304 Internal

316 External

Zinc

LED Driver

24V/100W - IP66 Rated



LED Light Stick

1067mm long - cool white light.  
Other lengths available to order



Code	Description
1809006	Suitable for 10 LED Light Sticks

Code	Description
1809001	LED Light Stick with Transparent Lens

Split Tube

1.5mm wall thickness



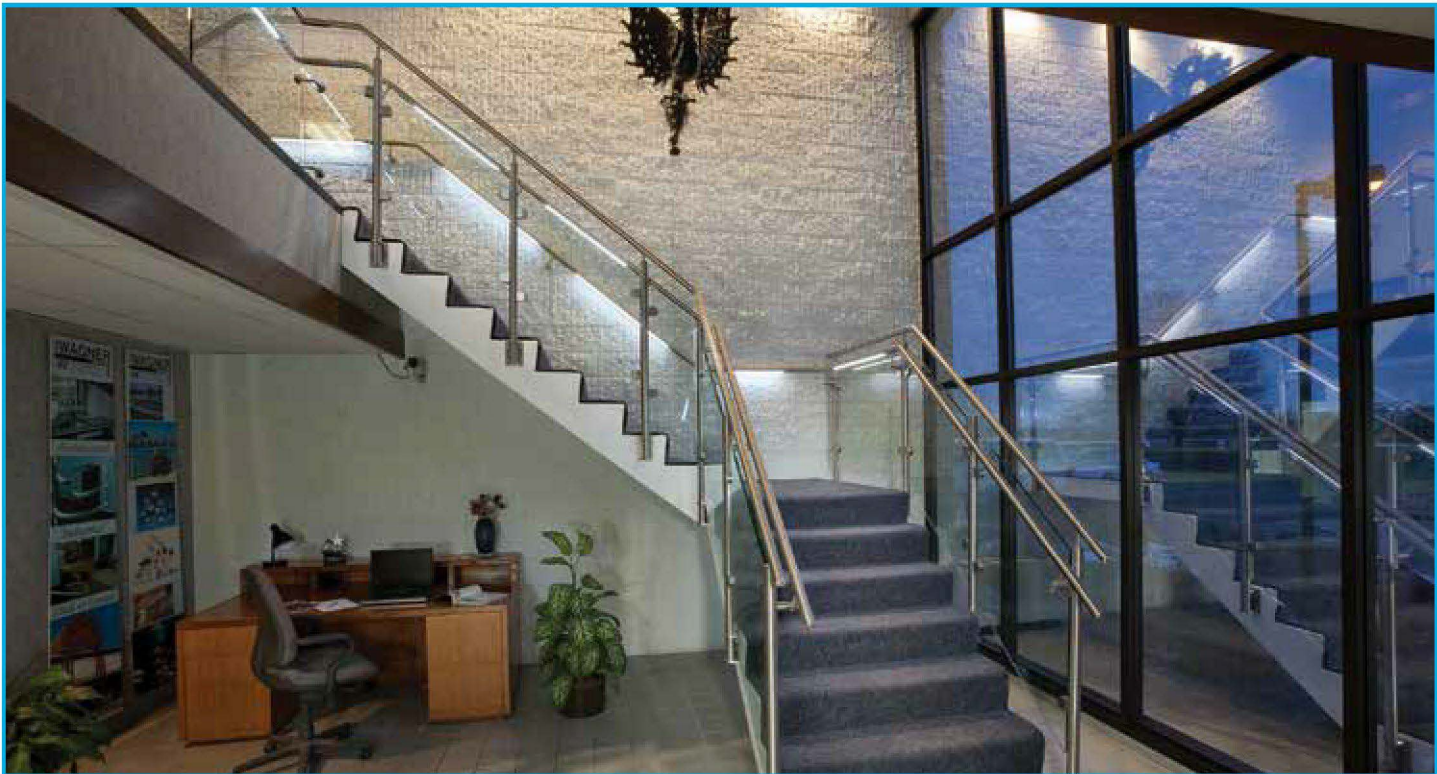
FOR Ø 48.3mm TUBE,  
SEE PAGE 42.

3m length

Code	Ø mm
18047053C	42.4
18067053C	42.4

6m length

Code	Ø mm
1804705C	42.4
1806705C	42.4



Aluminium

Mild steel

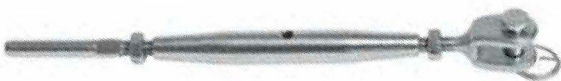
Galvanised steel



Stainless steel 3mm strand wire rope system is a simple and cost effective alternative to our crossbar system. It can be fixed to most surfaces including wood, metal and brick and is ideal for external applications in residential and commercial environments. Suitable for self assembly and simple to install using self locking, crimped or glued connectors.



Turn Buckle Connector



Code
1806601

Plain Buckle Connector



Code
1806602

Post Fitting Adaptor Ring



Example of post fitting adaptor ring for use with 6mm eyebolt  
Code: 1806603



6mm thread



Turn buckle connector exploded view

Swageless Turn Buckle Connector



Code
1806611

Swageless Turn Buckle



Code
1806612

Articulated Wire Tensioner



Code	Ø mm
1806607C	42.4
1806607D	48.3

304 Internal

316 External

Zinc

Wire Rope

1 x 19, 3mm thick



Code	Length m
180660510	10
180660550	50
1806605100	100

Eyebolt - Woodscrew Thread



Code
1806606

Eyebolt Connector



Code
1806603

Locking Collar



Code
1806604

Pad Eye



Code
1806608

Nickle Plated Ferrule



Code
1806609

Thimble



Code
1806610

Crimping Tool



Code
189900102

Hydraulic Crimping Tool



Code
189900103

Wire Cutting Tool



Code
080569

Instant Adhesive (50ml)

Supplied with plunger and needle for accurate application.  
For use as thread lock adhesive



Code
1899007454



Aluminium



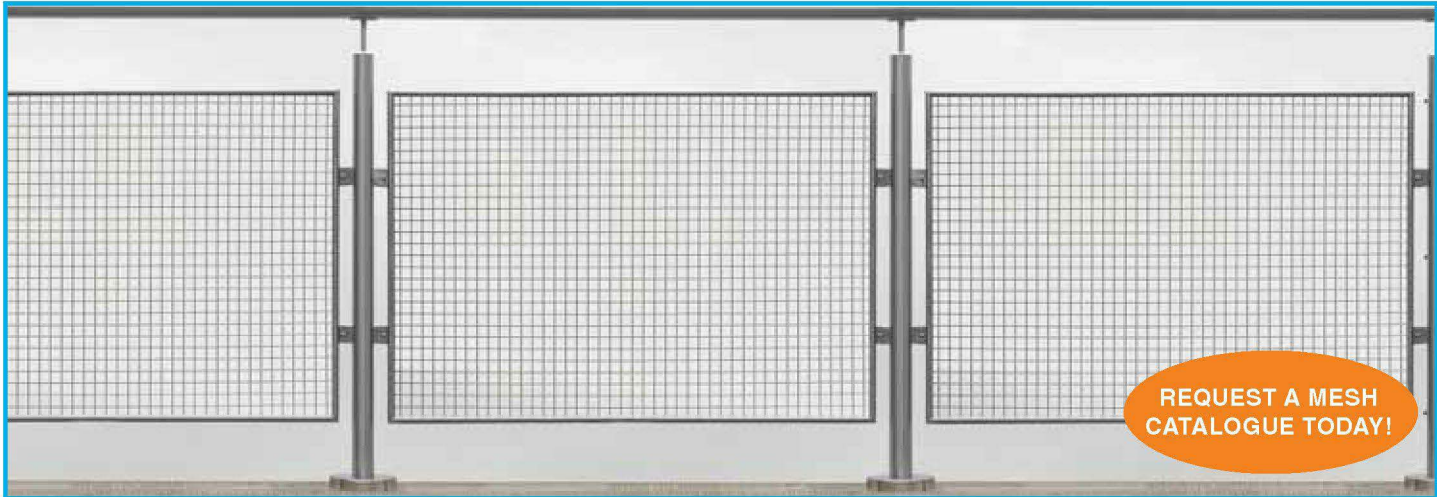
Mild steel



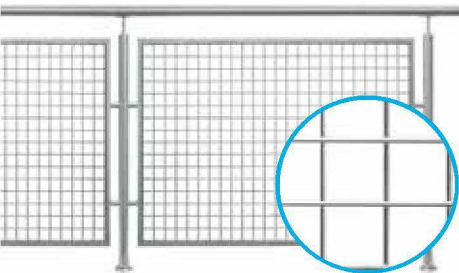
Galvanised steel



Infill solutions can include the use of Architectural Net, Welded Wire Mesh, Perforated and Expanded Metal. Amongst the materials offered is stainless steel, aluminium and mild steel, with a choice of thicknesses, aperture styles and edging section profiles. Zinc plating and powder coating for mild steel products is an option.

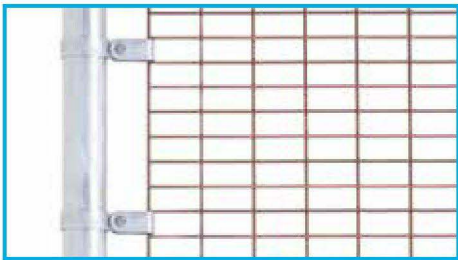


Welded Wire Mesh

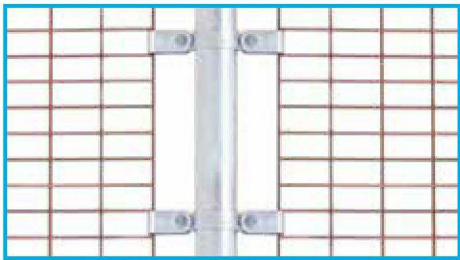


Mesh Clips

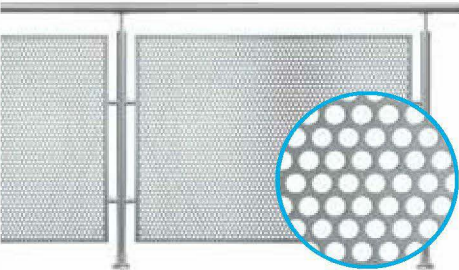
Mesh Panel Clip - Single



Mesh Panel Clip - Double



Perforated Metal

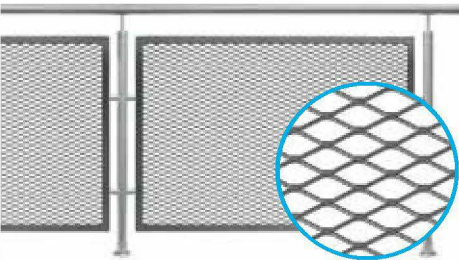


Code	Ø mm
16170C	42.4
16170D	48.3
1806170C	42.4
1806170D	48.3



Code	Ø mm
16171C	42.4
16171D	48.3
1806171C	42.4
1806171D	48.3

Expanded Metal



Fixing Bracket - Single



Code	Ø mm
1804511C	42.4
1804511D	48.3
1806511C	42.4
1806511D	48.3

Fixing Bracket - Double



Code	Ø mm
1804512C	42.4
1804512D	48.3
1806512C	42.4
1806512D	48.3

Fixing brackets can be used for fixing many different sheet material types to Pro-Railing



Panel Infill Adaptor



Code	Ø mm
1804503C	42.4
1804503D	48.3
1806503C	42.4
1806503D	48.3

Requires 6mm fixing bolt  
Code: 189900621  
Suits material 1.5 - 10mm thick

Split Tube



Code	Ø mm
1504P011	18

3m length

90° Infill Frame Corner



Code
1804506

Mesh Infill Support Clamp



Code
1804505



CALL YOUR  
LOCAL BRANCH FOR  
MORE INFORMATION  
ON WEBNET!



WE NOW  
STOCK GLASS,  
SEE PAGES 27-29!



### Tube and Bar for Handrails and Posts



950mm length

Code	Ø mm
1804708CB	42.4
1804708DB	48.3
1806708CB	42.4
1806708DB	48.3

1200mm length

Code	Ø mm
1804708CL	42.4
1804708DL	48.3
1806708CL	42.4
1806708DL	48.3

3m length

Code	Ø mm
1804704C	42.4
1804704D	48.3
1806704C	42.4
1806704D	48.3

6m length

Code	Ø mm
1804700C	42.4
1804700D	48.3
1806700C	42.4
1806700D	48.3

#### Hollow Tube

1mm wall thickness



3m length

Code	Ø mm
1804510	12
1806510	12

#### Solid Bar



3m length

Code	Ø mm
1804500	12
1806500	12

#### Split Tube

1.5mm wall thickness



3m length

Code	Ø mm
18047053C	42.4
18047053D	48.3
18067053C	42.4
18067053D	48.3

6m length

Code	Ø mm
1804705C	42.4
1804705D	48.3
1806705C	42.4
1806705D	48.3

## ZINC PLATED TUBE AND BAR FOR HANDRAILS AND POSTS

#### Handrail Tube

2mm wall thickness



Code	Ø mm	Length m
13i001	42.4	3.0
13i0016000	42.4	6.0

#### Round Bar



Code	Ø mm	Length m
13i005	12	3.0
13i0056000	12	6.0



The Mark You Can Trust

All stainless fittings are supplied in a satin polish finish grit 320. They can also be supplied in a variety of finishes.

304 Internal

316 External

Zinc



## Pre-Assembled Stainless Steel Handrail with End Caps

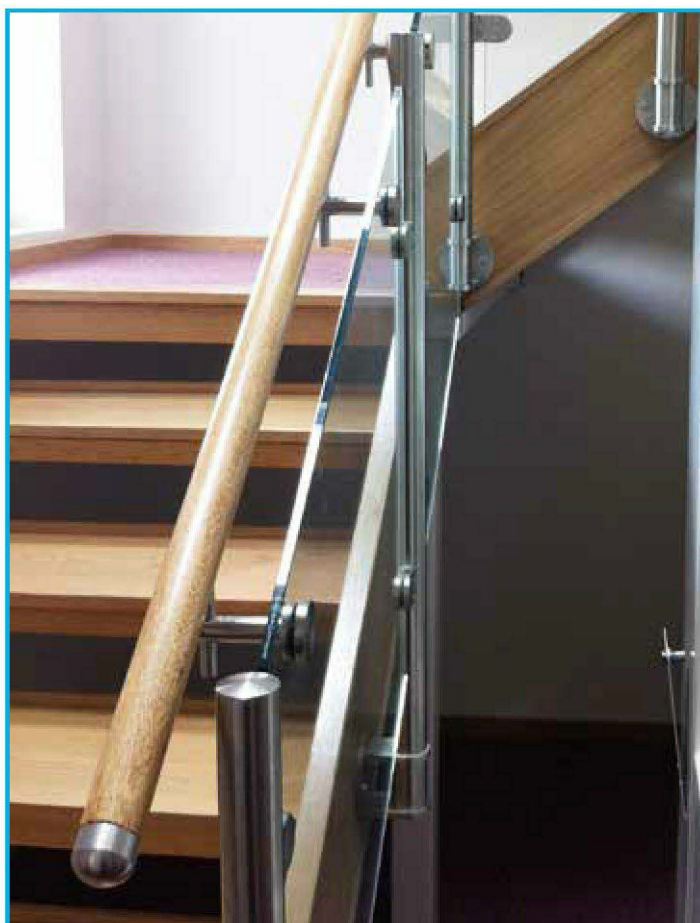


Code	Ø mm	Length m
1804801C	42.4	1
1804801D	48.3	1
1806801C	42.4	1
1806801D	48.3	1

WE OFFER  
PRE-ASSEMBLED HANDRAILS  
AT LENGTHS SPECIFIC TO YOUR  
EXACT REQUIREMENTS.

## WOODEN HANDRAIL SYSTEM

If you would prefer the benefits of a wooden handrail system, the fusion of wood with stainless steel is possible with our integration range of components with handrails available in hard or softwood.



 Aluminium

 Mild steel

 Galvanised steel



To Suit Ø 45mm Wooden Handrails

Flat End Cap



Code
1807214C

Rounded End Cap



Code
1807215C

"T" Fitting



Code
1807205C

Handrail Connector



Code
1807206C

Elbow - Round Corner



Code
1807201C

Elbow - Square Corner



Code
1807202C

Adjustable Elbow



Code
1807203C

Elbow - Pivotal



Code
1807223C

Straight Handrail Support



Code
1807303FC

Cranked Handrail Support



Code
1807305FC

Spare Plastic Support



Code
189900701

Drilling Guide for Fitting Endstops



Code
189900702

Drilling Template for Ø 33.7 and 42.4mm



Code
13E40580

Drilling Template for Ø 45mm Wood Handrail



Code
189900101

Untreated



Code	Ø mm	Length m
18077032	45	2
18077033	45	3

Beech Effect



Code	Ø mm	Length m
18077002	45	2
18077003	45	3

SOFTWOOD FOR INTERNAL USE.

Varnished



Code	Ø mm	Length m
18077012	45	2
18077013	45	3

Wengé Effect



Code	Ø mm	Length m
18077022	45	2
18077023	45	3

304 Internal

316 External

Zinc





These three fittings have been developed to allow a smooth transition between Ø 48.3mm solid wooden handrail and all of the standard Ø 48.3mm Pro-Rail tube and fittings. They allow for wood-to-wood and wood-to-stainless balustrades to be created.

End Cap



Connector



Adaptor



Hole Ø 6mm.  
See page 54 for fixings,  
Code: 13i0381 or 13i0382

Code	Ø mm
1807230D	48.3

Requires Code: 1807232D

Code	Ø mm
1807231D	48.3

Code	Ø mm
1807232D	48.3

Not supplied with screws

How to use these fittings

End Cap      Adaptor      Connector

Stainless/Wood Fusion      Scroll End to Wood      End Cap      Wood to Wood Connector      90° Elbow to Wood

Ø 48.3mm solid wood is available in varying lengths and types. Please ask for details.

We are able to offer a wide range of solid hardwood handrails which are available unfinished for a final stain or lacquer to be applied after installation. High grade raw materials ensure consistent top quality handrails and our unique adaptor allows the use of our stainless steel components to simplify the installation.

Steamed Beech

Code	Ø mm	Length m
18077042	48.3	2
18077043	48.3	3

HARDWOOD FOR INTERNAL OR EXTERNAL USE.

Sapele

Code	Ø mm	Length m
18077052	48.3	2
18077053	48.3	3

American White Oak

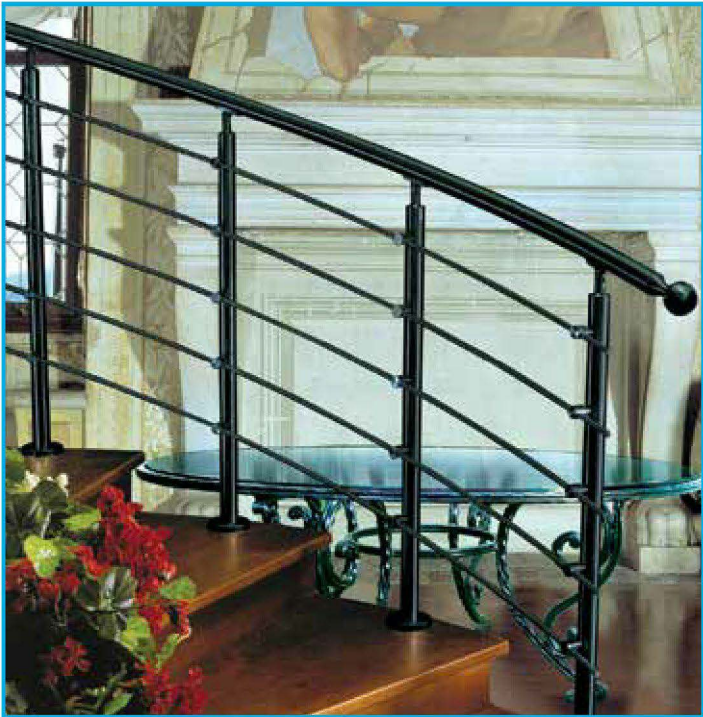
Code	Ø mm	Length m
18077062	48.3	2
18077063	48.3	3

European Brown Oak

Code	Ø mm	Length m
18077072	48.3	2
18077073	48.3	3



For an economical alternative to our stainless steel system, we have zinc plated mild steel handrails. Offering the same flexibility as the rest of the range, the modular component system will add a stylish finish to any handrail installation.



ZINC PLATED FLANGES AND BASE PLATES

Base Fitting to suit Tube  
13i001 and 13i0016000



Code
13iBF

Base Fitting



Code
13iBNP

FOR OUR  
FULL RANGE OF  
ZAMAC GLASS CLAMPS,  
SEE PAGES  
12 - 13.

Cover Plate



Code	Height mm
13i020	15

Wall Flange



Code	Ø mm
13i111	42.4

Base Flange



Code
13i0213

A coating is required to finish zinc plated items.

304 Internal      316 External      Zinc



**Holed Sphere**



**Post Top to suit Tube  
13i001 and 13i0016000**



**Domed End Cap**



Code	Ø mm	Hole Ø mm
13i0127	25	12.2 Half Drilled
13i0129	25	12.2 Through Hole
13i0130	30	12.2 Through Hole
13i012	60	10 Thread Half Drilled

Code
13IPT

Code	Ø mm
13i01112	42.4

**End Cap**



**Handrail Tube**



**Round Bar**



Code	Ø mm
13i0119	42.4

Code	Ø mm	Length m
13i001	42.4	3
13i0016000	42.4	6

Code	Ø mm	Length m
13i005	12	3
13i0056000	12	6

2mm wall thickness

**Crossbar Holder  
Tube Mounting**



**Crossbar Holder  
Tube Fix**



**Crossbar Holder  
Two Part**



Code	Ø mm	Hole Ø mm
13i0069	42.4	12.2

Requires 6mm fixing screw  
Code: 189900603

Code	Hole Ø mm
13i006	12.2

Code	Hole Ø mm
13i006966	12.2

## ZINC PLATED HANDRAIL SADDLES

**Fixed Spigot**



**Adjustable Spigot**



Code	Ø mm	Height mm
13i031S1	42.4	75

Code	Ø mm	Height mm
13i030S	42.4	75



**The Mark You Can Trust**

A coating is required to finish zinc plated items.

 Aluminium

 Mild steel

 Galvanised steel

Mild Steel



Mild Steel



Satin Polish



Code	Description
171162	Cover plate and bracket
171162B	Bracket only
171162C	Cover plate only

76mm distance from wall to centre of bracket

Code	Description
171167	Cover plate and bracket
171167B	Bracket only
171167C	Cover plate only

90mm distance from wall to centre of bracket

Code	Description
171166	Cover plate and bracket

78mm distance from wall to centre of bracket

171169	Cover plate and bracket
--------	-------------------------

86mm distance from wall to centre of bracket

## FIXED SPIGOT HANDRAIL BRACKETS

Bright Zinc Plated  
Wall/Flat



Code
171164

63mm distance from wall to centre of bracket. Solid disc fixing plate

Bright Zinc Plated  
Wall/Flat



Code
171161

63mm distance from wall to centre of bracket. Dished stamped fixing plate

171163
--------

75mm distance from wall to centre of bracket. Dished stamped fixing plate

Aluminium  
Wall/Flat



Code
171165

63mm distance from wall to centre of bracket

Galvanised  
Wall/Tube



Code	Ø mm
13i0223	42.4

72mm distance from wall to centre of bracket

## TUBULAR HANDRAIL BRACKETS

Galvanised



Galvanised



WE ALSO STOCK GALVANISED TUBE!

Code	Ø mm
171168B	33.7
171168C	42.4
171168D	48.3

92mm distance from wall to centre of bracket

Code	Ø mm
16143A	26.9
16143B	33.7
16143C	42.4
16143D	48.3

## TUBULAR HANDLES

Weld Fix



Code	Size mm
171172	180 x 62

Ø 20mm tube

171173	280 x 78
--------	----------

Ø 28mm tube

Flanged



Code	Size mm
171170	230 x 64

Ø 20mm tube

171171	345 x 80
--------	----------

Ø 28mm tube

304 Internal

316 External

Zinc



Latch and Catch



Code	Ø mm
1804513C	42.4
1804513D	48.3
1806513C	42.4
1806513D	48.3

Gate Hinge Pin and Bolt



Code	Ø mm
1804514C	42.4
1804514D	48.3
1806514C	42.4
1806514D	48.3

Self Closing Glass Gate Hinge

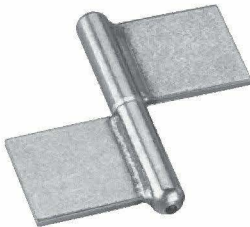


Code	Type	Ø mm
05GC09	Vinyl	48.3

For fixing 8 and 10mm glass weighing up to 25kg on to round posts. Supplied with brushed stainless hinge covers

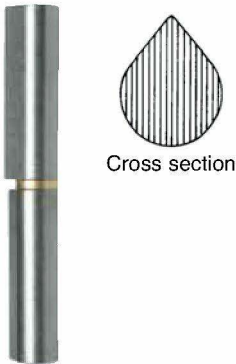
WELDABLE HARDWARE

Off Set Flag Hinge



Code	Size mm
0515FLAG80S	80
0515FLAG100S	100

Universal Hinges

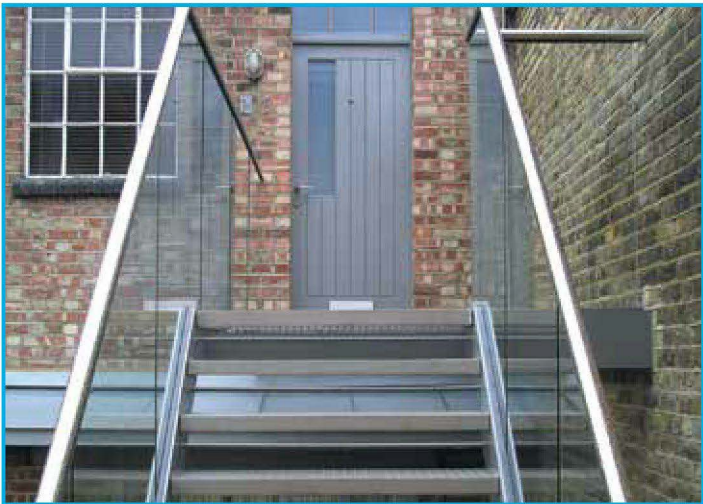


Code	Size mm
05GAH100S	100
05GAH120S	120

Self Closing Safety Gate Hinge



Code	Description
18SGH	For Stainless Tube

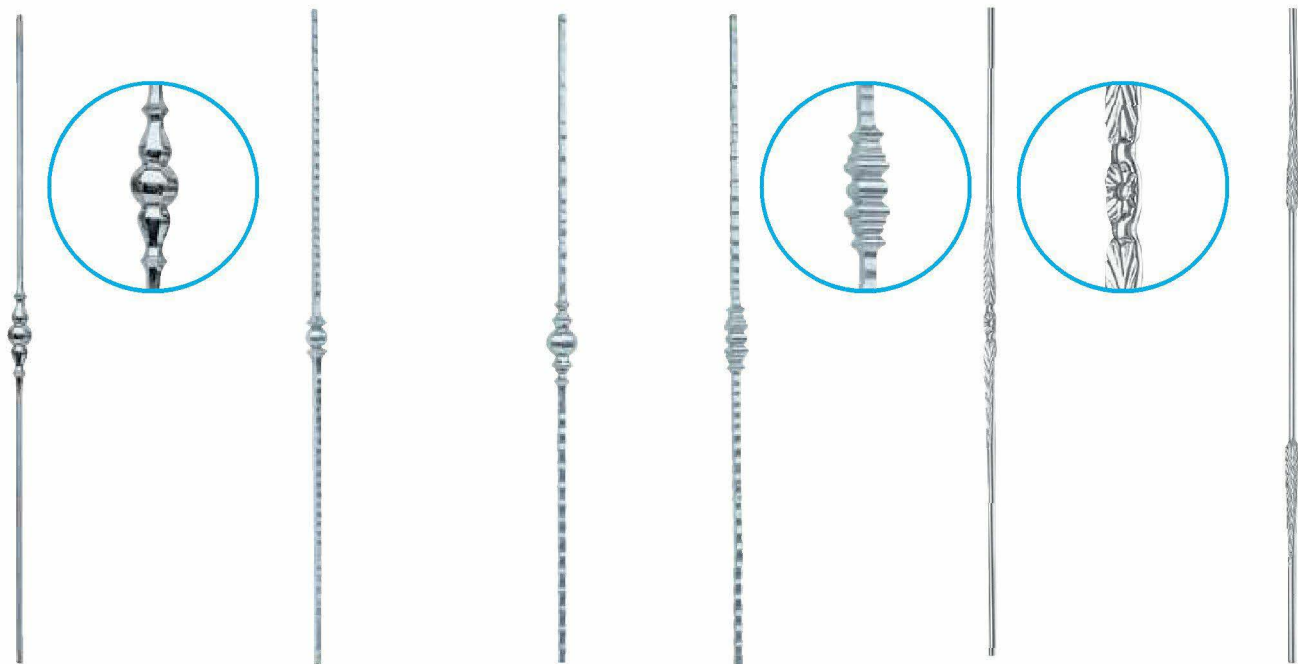


Aluminium glass balustrade combined with split tube handrail provides a stunning finish inside or out every time



Code: 05GC09 installation image

Balusters - 1m High



Code
0500014171X
Ø 12mm

Code
0500014191X
■ 12 x 12mm

Code
0500014192X
■ 12 x 12mm

Code
0500014201X
■ 12 x 12mm

Code
0500014223
Ø 12mm

Code
0500014224
Ø 12mm

Newel Posts - 1.2m High

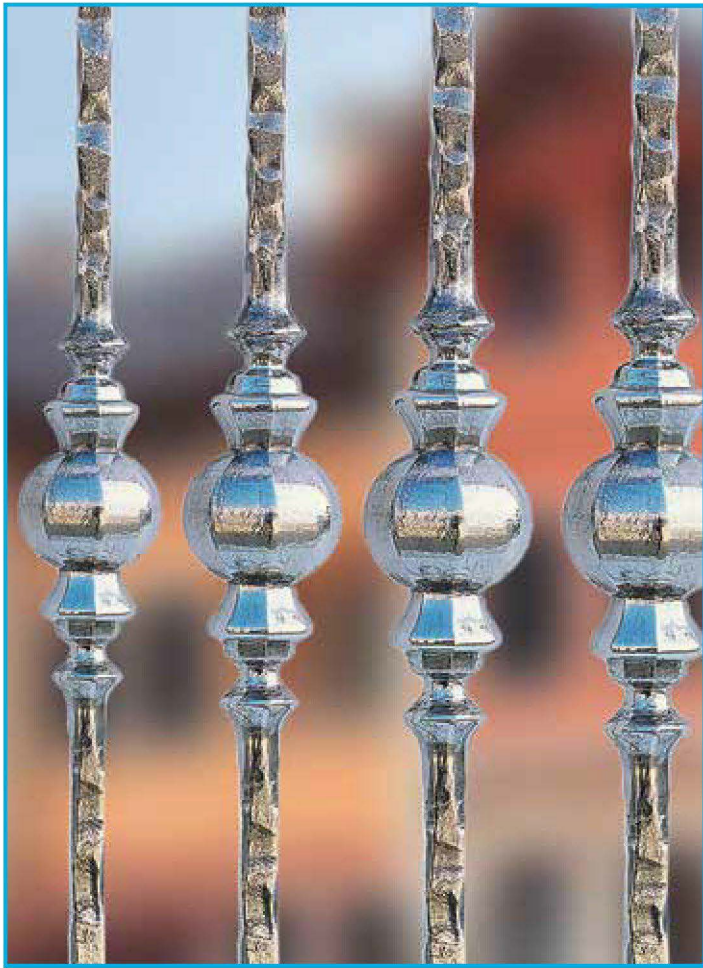


Code
0500014161X
■ 25 x 25mm

Code
0500014165X
Ø 25mm

Code
0500014162X
■ 30 x 30mm

Code
0500014166X
Ø 30mm



304 Internal

316 External

Zinc



## Handrails - 3m Long



Code
0500014231
≠ 40 x 8mm

Code
0500014238
≠ 40 x 8mm

Code
0500014239
≠ 30 x 8mm

Code
05000142310
≠ 30 x 8mm

Code
05000142311
≠ 53 x 9mm

Code
05000142312
≠ 47 x 14mm

## Forged Spheres



Code
0500014256
Ø 30mm

Code
0500014257
Ø 35mm

0500014258
Ø 40mm

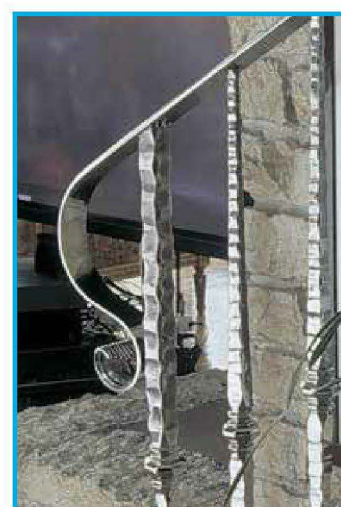
0500014259
Ø 50mm

## Handrail Ends



Code
0500014241
For use with Code: 0500014231

0500014248
For use with Code: 0500014238



## Post Tops



Code
0500014251
Ø 70mm Height 120mm

## Plate



Code
0500014266
■ 80mm

8mm thick

## Flower



Code
0500014267
Ø 90mm Ø 12mm hole

4mm thick

## Plate



Code
0500014268
■ 75mm □ 12mm hole

4mm thick



Aluminium

Mild steel

Galvanised steel

## High Strength Retainer

For use with tube fittings



Code	ml
1899007638XS	3
1899007638	50

## Adhesive Activator (150ml)

Reduces curing time when used with Loctite 638



Code
18990087649

## Instant Adhesive (50ml)

Supplied with plunger and needle for accurate application. For use as thread lock adhesive



Code
1899007454

## Stainless Steel Cleaner (400ml)

Degreases and cleans surfaces ready for gluing



Code
18990097063

## Stainless Cleaning Wipe

Removes finger and hand marks left over after installation



Code
189900901

## After Care Tea Staining 3-Part Cleaner Kit

Keeps stainless handrail and fittings in top condition long after installation



Code
189900902

## Stainless Cleaning Gel (2kg)

Pickling gel helps remove rust, dirt and grime from stainless steel



Code
18990094023

## Polishing Cloths

For removal of light scratches on stainless tube and fittings



Code	Description
189901101	Fine (Grey)
189901102	Medium (Red)

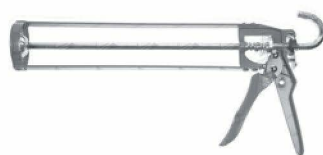
## Silicone Sealant (310ml)

Gives an all-round waterproof seal



Code	Description
18990125366	Clear Sealant
18990125368	Black Sealant

## Sealant Gun



Code	Description
189900666	Sealant Gun

## Allen Key

For use with all glass clamps



Code	Description
189900605	For 8mm bolts
189900606	For glass clamp post bolt
189900607	Grub screws on handrail brackets
189900608	For 6mm bolts
189900627	For PanelGrip (size 3/16")

## Threaded Lengths



Code	Size mm
189900615	8 x 20
189900640*	10 x 150
189900641*	12 x 150
189900625	6 x 25
189900685	8 x 110
189900688	16 x 300

\*For use with RKEM+ Chemical Fixing Compound

304 Internal

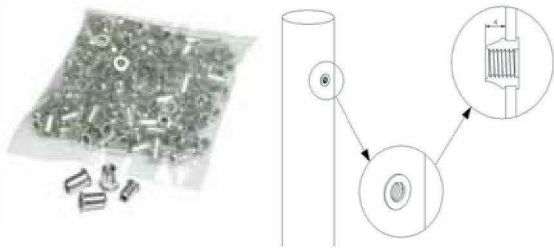
316 External

Zinc



Threaded Inserts and Mandrels

Threaded inserts with cylindrical flat head



Code	Thread mm
13i40591	5
13i40592	6
13i40593	8
189900611	5
189900609	6
189900610	8

Threaded Insert/Mandrel Tool

For fixing 5, 6 and 8mm bolt to posts when used with the correct mandrel

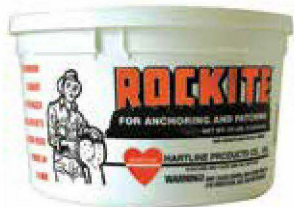


Code
1899E40590
13E40590*

\*Comes with box



Rockite Concrete Compound (2.2kg)  
Re-sealable tub



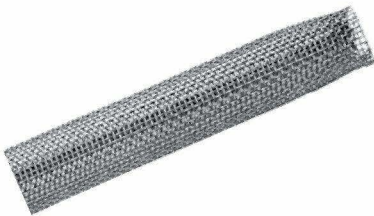
Code
189900665

Polyester Resin (300ml)  
Polyester styrene free



Code
189900663

Wire Mesh Sleeve  
Cut to required length  
Use with Polyester Resin



Code
189900664

1m Wire Mesh Sleeve  
For 10/12mm Studs

RKEM+ Chemical Fixing (300ml)



Code
05RKEM

Hand Plier Riveter



Code	Size mm
189900667	3.2 - 6.4

Lazy Tong Riveter



Code	Size mm
189900668	3.2 - 6.4

Dome Aluminium Rivets



Code	Size mm
189900671	3.2 x 10
189900672	3.2 x 12
189900673	4.0 x 6
189900674	4.0 x 12
189900675	4.8 x 6
189900676	4.8 x 12

Dome Stainless Steel A2 Rivets



Code	Size mm
189900679	3.2 x 6
189900680	3.2 x 12
189900681	4.0 x 6
189900682	4.0 x 12
189900683	4.8 x 8
189900684	4.8 x 12

Aluminium

Mild steel

Galvanised steel

**Wood Screws**

For fixing wooden handrails  
stainless handrail brackets



Code	Size mm
13i0382	5 x 20
13i0381	6 x 20

**Countersunk Screws**

For fixing handrail saddles



Code	Size mm
13i0383	5.5 x 22
13i0384	6.3 x 22
189900619	5 x 20

**Pan Head Screw**

For fixing handrail saddles  
to stainless tube



Code	Size mm
189900620	5 x 20

**Threaded Dowel**

For use with handrail brackets



Code	Size mm
189900622	8 x 50

**Countersunk Screws**

For general fixing



Code	Size mm
13i0385	5 x 25
13i0322	6 x 10
13i03851	6 x 25
13i032	10 x 25
189900603	6 x 20
189900604	8 x 20

**Button Head Bolts**

For fixing handrail brackets  
and rod holders 705/707



Code	Size mm
189900618	5 x 20
189900621	6 x 20

**Socket Head Cap Screws**

For fixing glass clamps into posts



Code	Size mm
13i0323	8 x 20
189900601	6 x 20
189900602	8 x 20

**Variable Fixing Bolts**

To give +/- 5° adjustment



Code	Size mm
189900602A	8 x 20

**Thread Insert & Set Screws**

For fixing wood handrail  
to stainless fittings



Code
189900626
To suit 6mm Stud

Code
189900625
Threaded Stud 6 x 25mm

**Plain Washers**


Code	Size mm
189900631	8
189900632	10
189900633	12

**Spring Washers**


Code	Size mm
189900634	8
189900635	10
189900636	12

**Pan Head Thread Rolling Bolts**

For fixing handrail saddles  
to stainless tube



Code	Size mm
189900686	5
189900687	6

**Hexagonal Full Nuts**


Code	Size mm
189900637	8
189900638	10
189900639	12

**Hexagonal Nyloc Nuts**


Code	Size mm
189900628	8
189900629	10
189900630	12

**Hexagonal Domed Head Nuts**


Code	Size mm
189900617	8
189900650	10
189900616	12

**Plastic Nut Caps**


Code	Size mm
3204M8	8
3204M10	10
3204M12	12
Black Colour	

3204M8S	8
3204M10S	10
3204M12S	12
Silver Colour	

All fixings are sold individually.

304 Internal

316 External

Zinc



## Through Bolts



Code	Thread Ø mm	Anchor Length mm	Hole Ø mm	Max Fixture Thickness mm	Fixture Clearance mm	Embedment Depth mm	Hole Depth mm	Min Structure Thickness mm	Tightning Torque Nm
16248	8	90	8	45	9	35	40	100	10
162410	10	95	10	33	12	45	50	100	28
162412	12	100	12	25	14	60	65	100	34
162416	16	105	16	10	18	75	85	110	85
162420	20	120	20	20	22	85	100	130	160
189900613 Thread Length - 35mm	8	100	8	35	9	55	65	100	15
189900614 Thread Length - 35mm	12	100	12	50	14	80	90	130	50

## Loose Bolts with Shield Anchor



Code	Thread Ø mm	Anchor Length mm	Hole Ø mm	Max Fixture Thickness mm	Fixture Clearance Hole mm	Embedment Depth mm	Hole Depth mm	Min Structure Thickness mm	Tightning Torque Nm
189900645	8	60	14	10	10	50	55	100	14
189900646	10	85	16	25	12	60	65	120	27
189900647	12	100	20	25	14	75	85	160	46

## Sleeve Anchor - BZP



Code	Thread Ø mm	Anchor Length mm	Hole Ø mm	Max Fixture Thickness mm	Fixture Clearance Hole mm	Embedment Depth mm	Hole Depth mm	Min Structure Thickness mm	Tightning Torque Nm
189900642	8	75	10	35	11	45	50	70	40
189900643	10	80	12	22	13	50	65	90	65
189900644	12	110	16	50	17	60	70	100	90

## Anchor Bolts - BZP



Code	Thread Ø mm	Anchor Length mm	Hole Ø mm	Max Fixture Thickness mm	Fixture Clearance Hole mm	Embedment Depth mm	Hole Depth mm	Min Structure Thickness mm	Tightning Torque Nm
189900648	10	100	8	60	12	40	55	90	40
189900649	12	100	10	50	14	50	70	110	60

## Colbalt Drill Bits

Masonry Drill Bits  
Straight Shank

## SDS Masonry Drill Bits



Code	Description
189901001	7.2mm drill for 5mm insert/mandrel
189901002	9.6mm drill for 6mm insert/mandrel
189901003	10.5mm drill for 8mm insert/mandrel
189901004	4.3mm drill for 5mm self tapping screw
189901005	4.5mm drill for 5mm thread rolling bolt
189901006	5.5mm drill for 6mm thread rolling bolt

Code	Size mm
189900651	8 x 80
189900652	10 x 80
189900653	12 x 90
189900654	14 x 90
189900655	16 x 90
189900656	20 x 100

Code	Size mm
189900657	8 x 100
189900658	10 x 100
189900659	12 x 100
189900660	14 x 100
189900661	16 x 150
189900662	20 x 150

 Aluminium

 Mild steel

 Galvanised steel

Grade	Carbon	Silicon	Manganese	Phosphorous	Sulphur	Nickel	Chromium	Molybdenum
304 DIN 1.4301	<=0.08	<=1.00	<=2.00	<=0.035	<=0.035	8.00 - 10.50	18.00 - 20.00	-
316 DIN 1.4401	<=0.09	<=1.00	<=2.00	<=0.035	<=0.035	10.00 - 14.00	16.00 - 18.00	2.00 - 3.00

There are many grades of stainless steel, but the majority of stainless steel items in this catalogue are 304 and 316.

Grade 304 is the most common stainless steel, and satisfies a broad demand for adequate performance at an affordable price. It has good corrosion resistance in a wide variety of environments. It is the best choice for indoor use (except swimming pools).

Grade 316 has a higher level of corrosion resistance and is often referred to as marine grade. Typical applications are architectural components where they are exposed to extreme weather and climatic conditions, such as near the coast, near heavy industrial sites or in/ around swimming pools.

Stainless steel is not maintenance free but maintenance friendly and when using stainless

steel material outdoors, you need to clean periodically, especially in aggressive environments like coastal areas or swimming pools. The chlorine rich atmosphere driven in from the sea can affect in-land stainless as far as 20 miles from the coast.

Choosing the correct grade can dramatically improve the corrosion resistance against chlorine, but other things should be taken into consideration.

Surface finish is a critical element in the battle against corrosion. The British Stainless Steel Association (BSSA) recommend that a surface finish of no less than 0.5µm Ra (320 Grit) is used on all applications subjected to a chlorine rich environment. A surface any rougher than this will retain corrosive particles and rust will inevitably follow.

## STANDARDS RELEVANT TO SURFACE FINISH - BS 1449

**Part 1 - 1991** (Sections 1.1 to 1.15 replaced by EN 1088) - This standard specifies the properties of various stainless steels, and includes a general reference of six mechanically polished surfaces of different nominal grit sizes.

**Part 2 - 1983** (Amended in 1985 & 1991 and 683/13 Euronorm 88)

Nominal Grit Size	BS 1449 Pt 2	EN 1088	Description
80 -100	3A	1G/2G	Ground Ra nom 2.5 µm
180	3B	2J	Ground Ra nom 1.25 µm
240	4	1J/2J	Dull Polish Ra nom 0.6 µm
320	5	1K/2K	Satin Polish Ra > 0.5 µm
590 - 630	7	2P	Bright Polish Ra nom 0.05 µm
800	8	1P/2P	Mirror Finish Ra nom 0.05 µm



## Degreasing

Dirt left on the surface after a fabrication process can have a serious affect on the corrosion resistance of stainless steel. Not only will it prevent the steel from oxidizing, it can contain corrosive particles, which will start rusting at a later date.

## Pickling

Pickling requires the use of strong chemicals (hydrofluoric acid and nitric acid) to dissolve the surface of the steel. This process completely removes any surface contaminants and will help to restore the chromium level to the weld affected areas.

The heat from the welding process drives chromium away from the weld area. The area adjacent to the weld is often low in chromium and high in iron. These areas are always the most susceptible to corrosion once the component is in use.

Iron dissolves more readily than chromium, therefore, the pickling process leaves the surface chromium-rich and in a condition where it can form a dense oxide layer.

## Passivation

Stainless steel will passivate in the open atmosphere - assuming that it is spotlessly clean to begin with and so is the air it is sat in. It is a slow process and, depending on the grade of stainless, can take between 24-48 hours to occur.

The chromium-oxide layer that protects stainless from corrosion is relatively fragile. It can be broken or damaged during fabrication, if scratched and/or surface contamination is allowed to settle on the surface.

The most effective way to form the passive layer is to force it by subjecting the steel to an oxidizing chemical. These are typically acid solutions containing nitric acid or citric acid. This process speeds up the reaction time and typically takes around 2-3 hours contact time to fully form a dense and effective layer.

Simply cleaning a corroded piece of stainless steel with a stainless steel cleaner and a scouring pad (usually phosphoric acid or citric acid based) does not passivate it. These acids will help to dissolve the corrosion (iron oxides) and leave the surface in a condition in which it can self-passivate.

Rain washing regularly will reduce the risk of tea staining (brown discolouration). This is a visual impairment only, and does not affect the structural integrity or longevity of the material. The best way to prevent it is to follow the cleaning chart below, but as a general rule of thumb the recommendation is that the stainless needs cleaning as often as the glass.

Remember bad design can result in poor performance e.g. partially sheltered systems will greatly reduce the benefit of natural washing by rain. Maintenance of stainless steel should be considered in the design process.

## Recommended cleaning intervals for stainless steel handrail systems

Building	Roof or wall washed by rain		Eaves, Soffits or sheltered areas not washed by rain	
	No deposits	Deposits accumulate	No deposits	Deposits accumulate
Structure				
Cleaning in rural, suburban and residential areas	4/year	6/year	12/year	24/year
Cleaning for seaside, industrial and severe areas	8/year	12/year	24/year	52/year
<b>Notes:</b> Cleaning frequency is dependant on surface finish, design details, environment, cleaning procedure and expectations of performance. Cleaning involves using Pro-Railing Enviro-Shield (189900902) - which comprises stainless steel cleaner, demineralised water and protection spray.				

**Stainless steel is not self-cleaning!**

Problem	Cleaning Method	Comments
Standard cleaning	Soap and water	Sponge, rinse with clean water and wipe dry
Fingerprints	Soap and warm water or stainless steel cleaner (18990097063)	Rinse with clean water and wipe dry
Oil/grease marks, other stains and light discolouration	Pro-Railing Enviro-Shield (189900902)	Follow instructions on the box
Heavy discolouration	Stainless cleaning gel (18990094023)	Rinse well with clean water then use Pro-Railing Enviro-Shield (189900902)
Scratches on satin finish (Mirror finish will need repolishing properly)	<u>Slight scratches</u> Use fine polishing cloth (189901101) coated with stainless steel cleaner (18990097063) <u>Deeper scratches</u> Use coarse cloth (189901102) first then fine cloth with cleaner (as above)	Do not use steel based cleaning products (wire wool) as this will embed in the surface and will cause further surface damage and discolouration
Paint/Graffiti	Use a generic paint stripper dependant on type of paint	Use soft bristle brush and treat afterwards with Pro-Railing Enviro-Shield (189900902)

## Polishing Cloths

For removal of light scratches on stainless tube and fittings



Code
189901101
Fine (Grey)
Code
189901102
Medium (Red)

## Stainless Steel Cleaner (400ml)

Degreases & cleans surfaces ready for gluing



Code
18990097063

## Stainless Cleaning Gel (2kg)

Pickling gel helps remove rust, dirt and grime from stainless steel



Code
18990094023

## After Care Tea Staining 3-Part Cleaner Kit

Keeps stainless handrail and fittings in top condition long after installation



Code
189900902

The following items should be considered and are available as part of the Pro-Glass range:

## Latex Gloves

Size 8



Code
185900101

The PGK10 glove from Marigold is based around a 10 gauge 100% Kevlar liner with a natural rubber latex crinkle coating that provides good grip in wet or dry conditions, abrasion and tear resistant. The thumb is fully coated to protect the most vulnerable part of the hand.

## Protective Sleeve For Wrist

14"



Code
185900102

Granite 5 Solo, seamless knitted high cut resistant Tensilite Sleeves with thumb slot. Suitable for use in the glazing and steel industries. The unique yarn provides level 5 cut resistance. The yarn is made with a soft finish to provide exceptional comfort to the wearer.

## Clear Protective Spectacles



Code
185900103

One piece clear polycarbonate lens with anti-mist treatment. Lightweight black nylon frame with built-in brow guard. Built-in side protection with integral nose bridge and adjustable temple length. Low energy impact protection with 400nm UV protection. Hang cord attachment points. Class 1.

## Double Head Suction Cup

2 x 120mm diameter rubber suction cups. Max. lift: 70kg



Code
185900104

For use in hand lift applications only. Multiple vacuums used on a single load can only improve handling. If using more than one vacuum tool the ratio of maximum lift capacity does not increase. To lift heavier weights a larger vacuum must be used. All are fitted with a rubber suction which will not damage contact surface during the lifting action.



Generally any raised area with an unprotected edge, such as a walkway, platform or staircase, from which a fall of more than 0.5m could happen, must be fitted with a guardrail. These may be of tubular or solid construction or a combination of both.

Handrails supplied from the Pro-Rail range follow the recommendations of BS 6399 Part 1, BS 5395 and BS 6180. Usually 2 horizontal rails, consisting of a top rail and a mid-rail or alternatively a top rail and an infill panel. For staircases or ladders bounded by a wall, only a single handrail is required with a minimum hand clearance of 65mm as recommended by EEUA.

Wherever possible handrails should be continuous and follow the exposed edge of the raised platform and / or staircase. The minimum height for handrails for platforms and walkways is 100mm above the surface and for staircases the handrail height is between 900 and 1100mm above the pitch line. Handrails should finish in a swept end, either to the wall, knee rail or return to the upright standard.

Sharp corners, protrusions and exposed ends should be avoided and return bends should not protrude more than 350mm from the centre line of the upright. At the foot of staircases no extrusion should extend beyond the maximum extension of the stringer.

BS 5395: Part 3 recommends the minimum design imposed lateral loads that should be used in industrial situations:

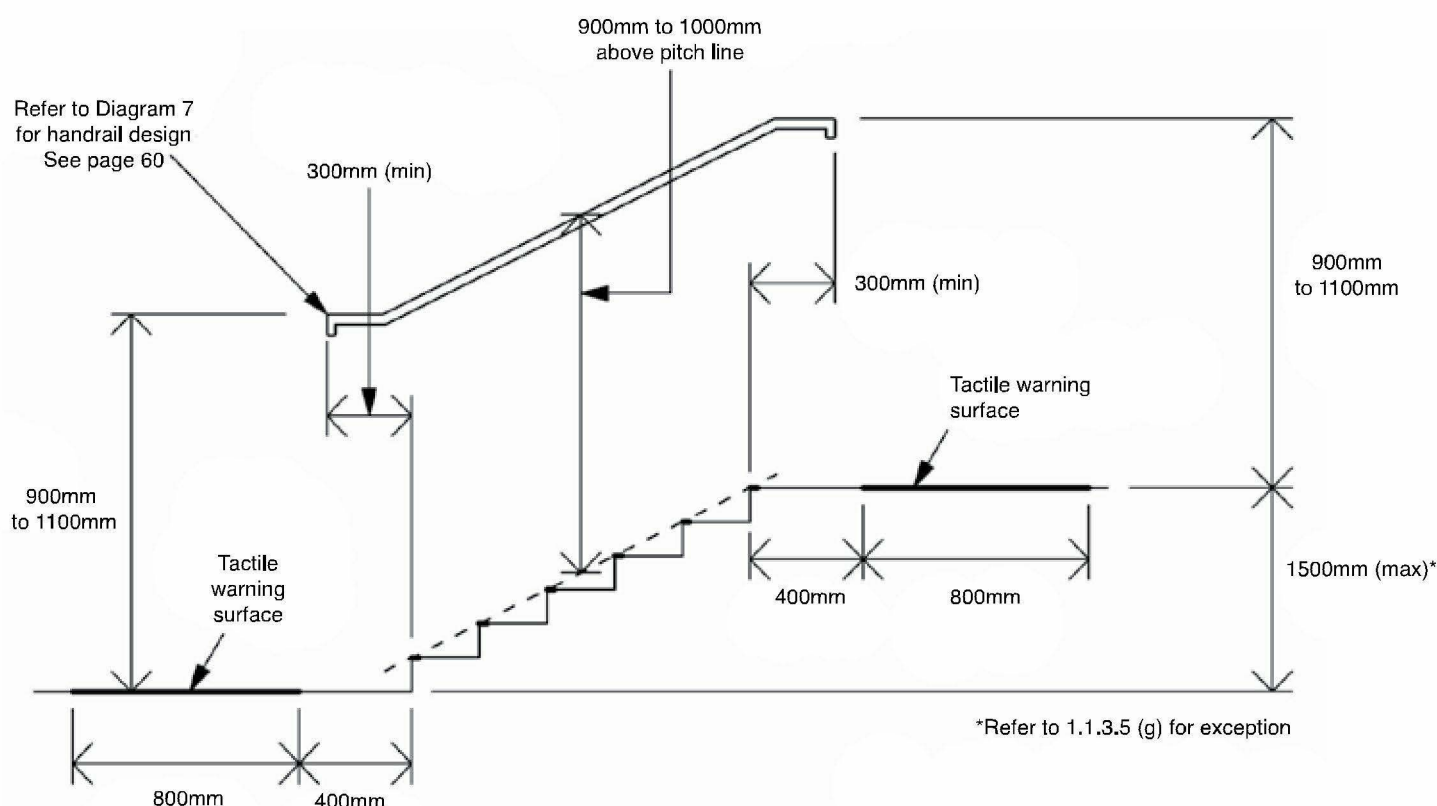
Light Duty – Access limited to one person:  
0.36kN/m

General Duty – Regular pedestrian traffic:  
0.36kN/m

Heavy Duty – High density traffic (escape route):  
0.74kN/m

Areas subject to crowding over 3m wide:  
3.00kN/m

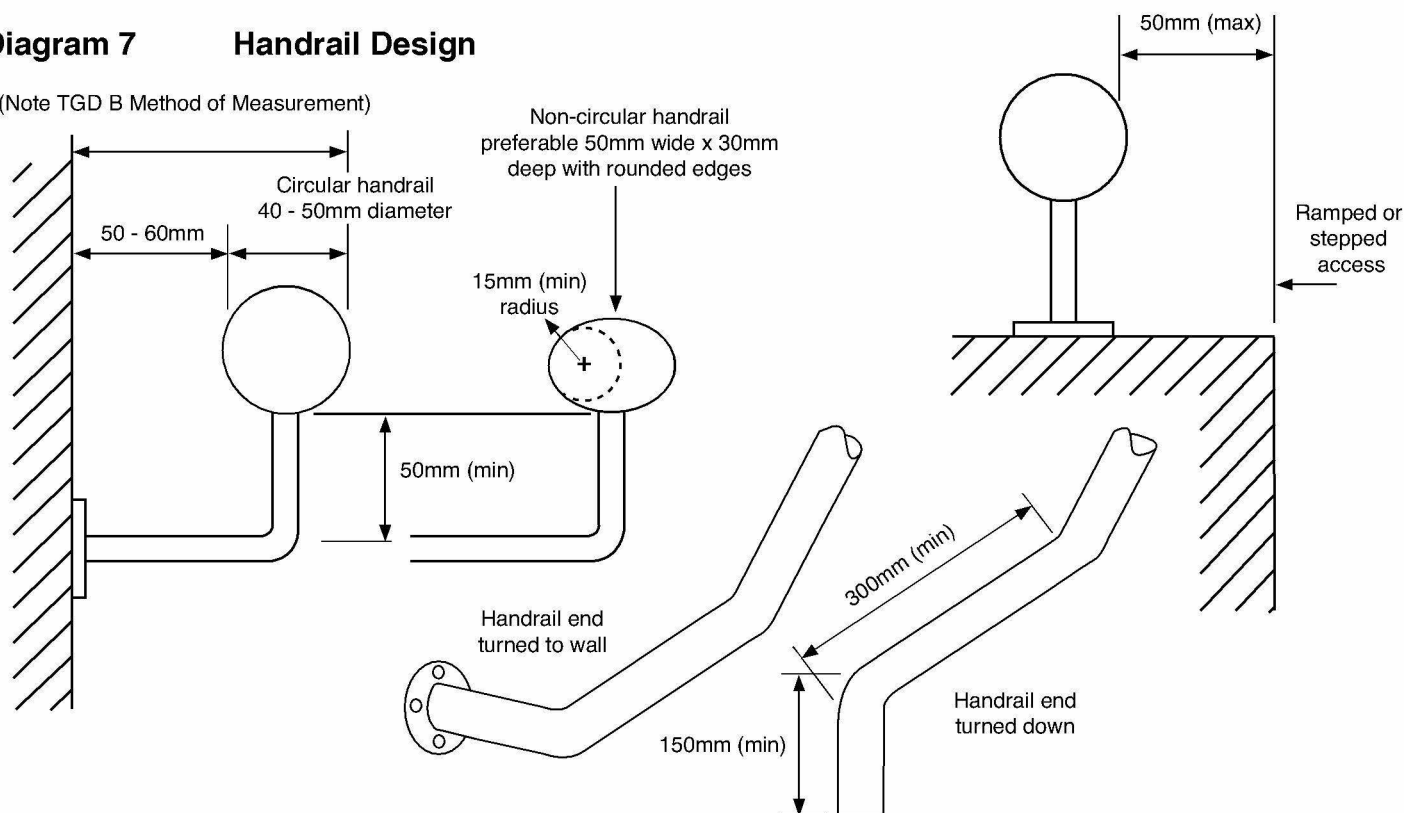
**Diagram 6 External steps and stairs - Key dimensions**



Extract from Building Regulations Part K and Part M can be found on our website.

**Diagram 7 Handrail Design**

(Note TGD B Method of Measurement)



## Extract from Building Regulations Part K and Part M;

### 1.1.3.6 Handrails

General guidance on handrails and guarding is given in TGD K, but the guidance that follows applies to handrails on accessible access routes.

Where handrails are provided on a ramped or stepped access route:

**(a)** The vertical height to the top of the upper handrail from the pitch line of the surface of a flight should be between 900 and 1000mm and from the surface of a landing should be between 900 and 1100mm (refer to Diagram 6). Where a second handrail on stairs is provided for children or those of short stature the vertical height to the top of a second lower handrail from the pitch line of the surface of a flight should be between 600 and 700mm;

**(b)** Where there are two or more flights separated by a landing or landings, the handrails should be continuous across flights and landings, except where broken by side access routes on landings;

**(c)** Where the handrail is not continuous the handrail should extend at least 300mm beyond the top and bottom of a ramped approach and the top and bottom risers of a stepped approach, and terminate in a closed end which does not project into a route of travel. Handrails should be terminated in such a way that reduces the risk of clothing being caught;

**(d)** The background against which the handrails are seen should contrast visually without being highly reflective (refer to 1.6.4);

**(e)** The profile should be either circular with a diameter of between 40 to 50mm or oval with a width of 50mm (refer to Diagram 7);

**(f)** Handrails should not protrude more than 100mm into the surface width of the access route where this would impinge on the stair width requirement of TGD B – Methods of Measurement;

**(g)** There should be a clearance of at least 50mm to 60mm between the handrail and any adjacent wall surface (refer to Diagram 7);

**(h)** There should be a clearance of at least 50mm between a cranked support and the underside of the handrail (refer to Diagram 7). The handrail support should meet the handrail centrally on its underside. Rationale: This will minimise the risk of the handrail supports interrupting the smooth running of a person's hand along the rail;

**(i)** The handrails inner face should be located no more than 50mm beyond the surface width of the access route (refer to Diagram 7);

**(j)** Handrail fixings should be designed to meet the loading recommendations of I.S. EN 1991-1-1:2002.



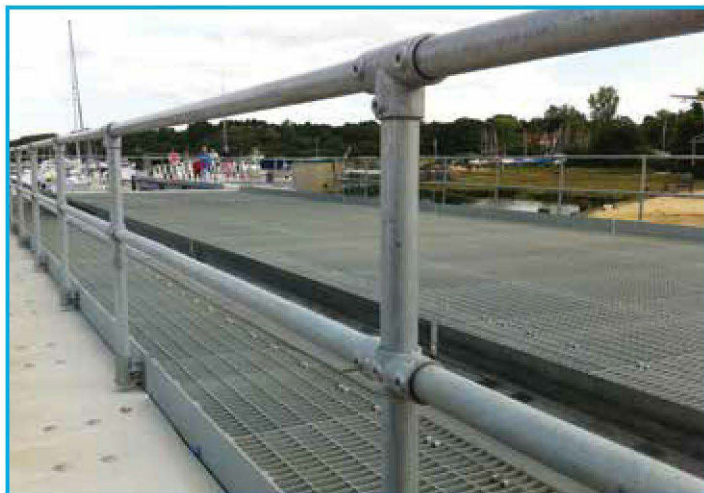
**Table 4 - Minimum horizontal imposed loads for parapets, barriers and balustrades, etc.  
Based on Page 9, Table 2 of the BS 6180:2011 publication Fourth edition March 2011**

Type of Application	Examples of specific use	Horizontal uniformly line load (kN/m²)	Infill Panel	PanelGrip or PanelWedge				
			10mm Monolithic	15mm Monolithic	19mm Monolithic	17.5mm Laminated	21.5mm Laminated	
Domestic and residential activities	(i) All areas within or serving exclusively one single family dwelling including stairs, landings, etc. but excluding external balconies and edges of roofs	0.36	✓	✓	✓	✓	✓	
	(ii) Other residential, i.e. houses of mulitple occupancy and balconies, including Juliette balconies and edges of roofs in single family dwellings	0.74	✓	✓	✓	n/a	✓	
Offices and work areas not included elsewhere including storage areas	(iii) Light access stairs and gangways not more than 600mm wide	0.22	✓	✓	✓	✓	✓	
	(iv) Light pedestrian traffic routes in industrial and storage buildings except designated escape routes	0.36	✓	✓	✓	✓	✓	
	(v) Areas not susceptible to overcrowding in office and institutional buildings, also industrial and storage buildings except as given above	0.74	✓	✓	✓	n/a	✓	
Areas where people may congregate	(vi) Areas having fixed seating within 530mm of the barrier, balustrade or parapet	1.5	✓	n/a	✓	n/a	n/a	
Areas with tables or fixed seating	(vii) Restaurants and bars	1.5	✓	n/a	✓	n/a	n/a	
Areas without obstacles for moving people and not susceptible to overcrowding	(viii) Stairs, landings, corridors, ramps	0.74	✓	✓	✓	n/a	✓	
	(ix) External balconies and edges of roofs. Footways and pavements within building curtilage adjacent to basement or sunken areas	0.74	✓	✓	✓	n/a	✓	
Areas susceptible to overcrowding	(x) Footways or pavements less than 3m wide adjacent to sunken areas	1.5	✓	n/a	✓	n/a	n/a	
	(xi) Theatres, cinemas, discotheques, bars, auditoria, shopping malls, assembly areas, studio. Footways or pavements greater than 3m wide adjacent to sunken areas	3.0	Specialist glass design required					
	(xii) Grandstands and stadia	See requirements of the appropriate certifying authority						
Retail areas	(xiii) All retail areas including public areas of banks/building societies or betting shops. For areas where overcrowding may occur, see “Areas susceptible to overcrowding”	1.5	✓	n/a	✓	n/a	n/a	
F/G Vehicular	(xiv) Pedestrian areas in car parks including stairs, landings, ramps, edges or internal floors, footways, edges of roofs	1.5	✓	n/a	✓	n/a	n/a	
	(xv) Horizontal loads imposed by vehicles	Refer to BS 6180:2011 standard 6.3.2 & Annex A (page 39)						

**F.H.Brundle cannot be held liable for the compliance of our components to Building Regulations and it remains the responsibility of the customer to ensure all current regulations are met.**



## Tube Clamps



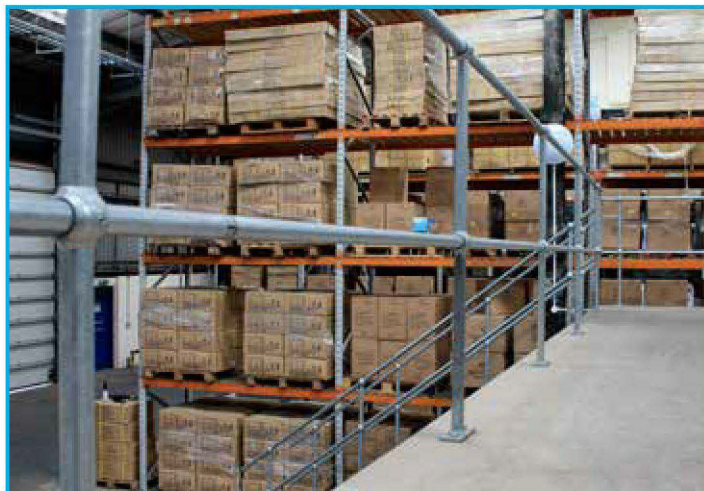
Handrail, guardrail or safety rail. Easily installed with galvanised tube available to suit.

## Warmagrip™



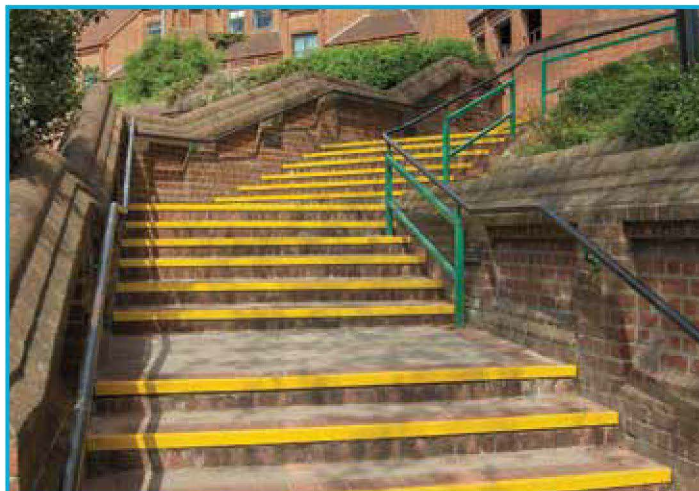
A "Warm to the Touch" DDA compliant handrail component system.

## Handrail Standards & Adjustarail



Self colour or galvanised to fit Ø 33.7, 42.4 & 48.3mm tube.

## Anti-Slip Flooring



Provides safe entry and exit routes to schools, hospitals, offices and many more applications.

## Roof Edge Protection



Quick easy solution to providing a safety edge around roof tops. No floor fixings required.

## Kick Plate Clamp System



Simple and easy to install. Provides a protective barrier on open sides of walkways and platforms.



## Wrought Iron Components



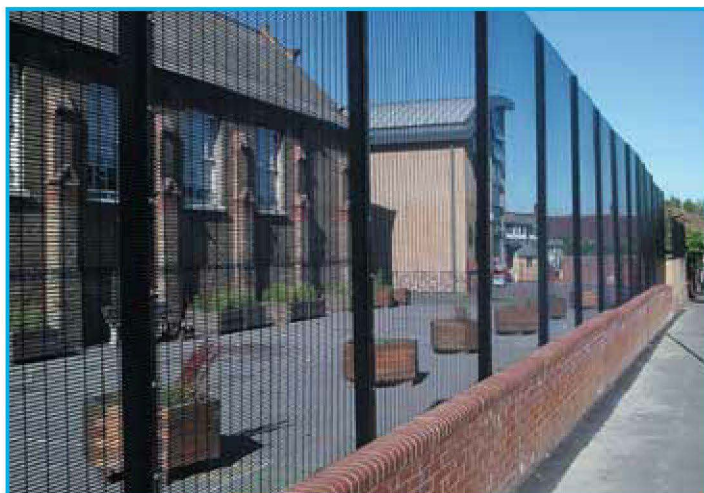
Endless design opportunities with our huge range of wrought iron components.

## Gate Automation



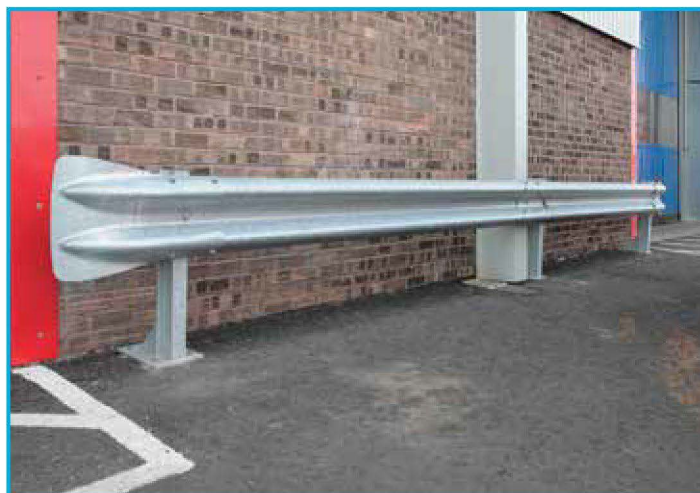
Full range of CAME gate kits, motors, intercoms and accessories available from stock.

## MeshMaster™



A full range of mesh panel fence systems to provide robust, good quality and secure solutions at a competitive price.

## Crash Barrier



Protect people, property and plant from the damage caused from moving machinery and vehicles.

## Vandgard - Anti Climb System



Robust, tough and corrosion resistant. Vandgard is lightweight, easy to handle and quick to install.

## Industrial Flooring



Open Steel Flooring, Durbar, Gratings, Chequer Plate and much more.





# PRO-RAILING®

The Stainless Steel Handrail Component System

Pro-Railing provides a stunning finish to residential, industrial or commercial properties at an affordable price.

Specification through to installation couldn't be simpler with 1500+ components to quickly construct smart, modern handrail and balustrades with components being glued or screwed on site.



**F.H.BRUNDLE**  
SERVING THE TRADE SINCE 1889



502 Millbrook Road  
Third Avenue  
Millbrook  
Southampton  
Hants SO15 0JX

Lamson Road  
Ferry Lane North  
Rainham  
Essex  
RM13 9YY

Condor Road  
Quarry Hill Ind. Est  
Ilkeston  
DE7 4RE

81-82 Middlemore Ind. Est  
Middlemore Road  
Smethwick  
Birmingham  
B66 2EP

Haydock Lane  
Haydock Ind. Est  
St. Helens  
Merseyside  
WA11 9XE

Huly Hill Road  
Edinburgh Interchange  
Newbridge  
Edinburgh  
EH28 8PH

28 Coxhill Street  
Springburn  
Glasgow  
G21 1HN

Tel:   
Fax:

Tel:   
Fax:

Tel:   
Fax:

Tel:   
Fax:

Tel:   
Fax:

Tel:   
Fax:

Tel:   
Fax:

Web: [www.fhbrundle.co.uk](http://www.fhbrundle.co.uk)

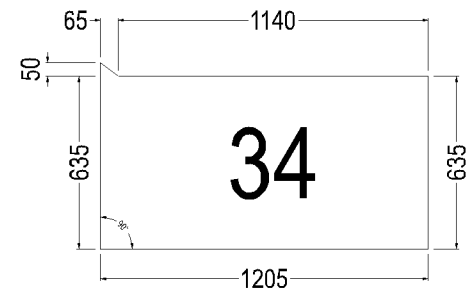
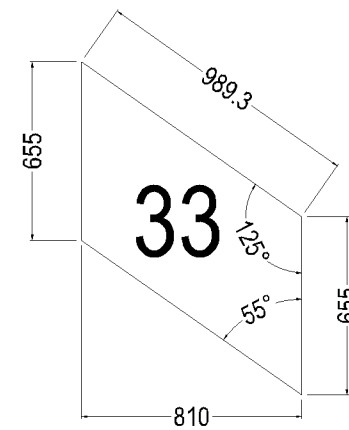
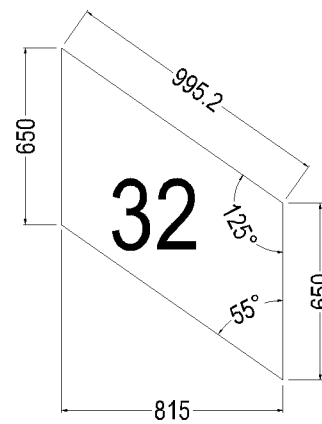
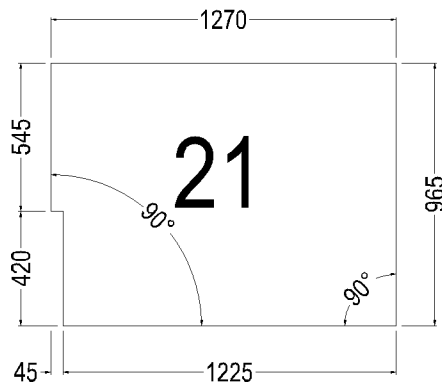
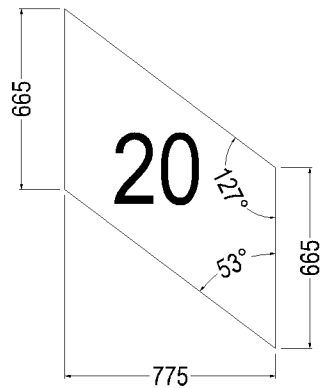
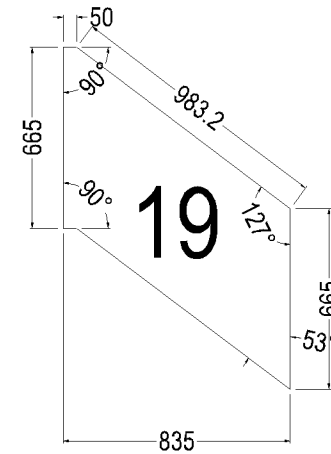
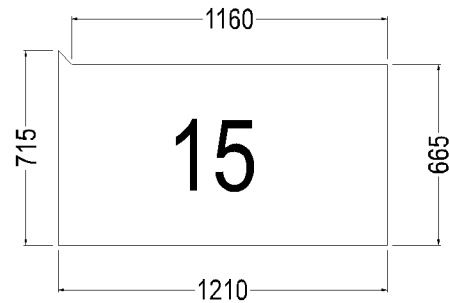
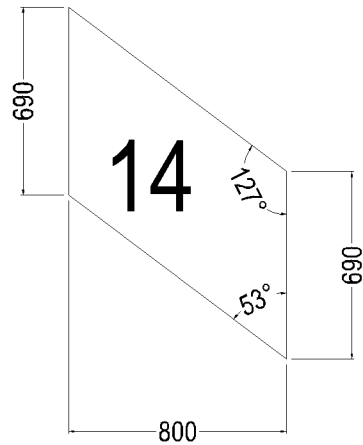
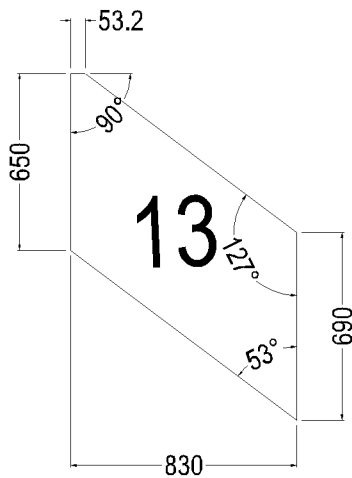
Email: [sales@brundle.com](mailto:sales@brundle.com)

Jan 2015



RYD00092657\_0291

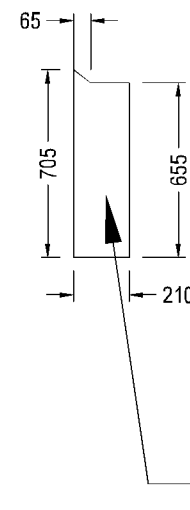
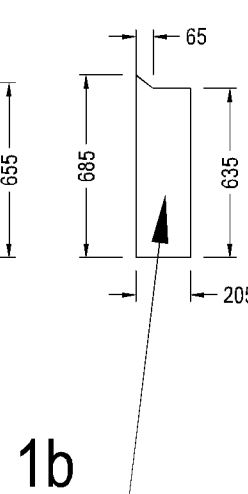
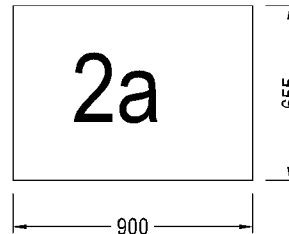
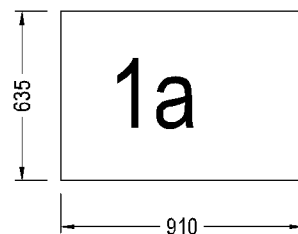
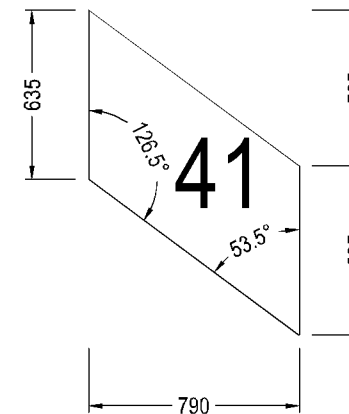
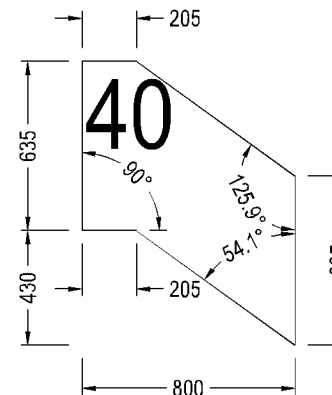
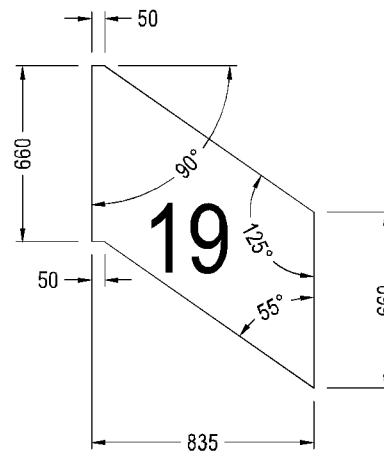
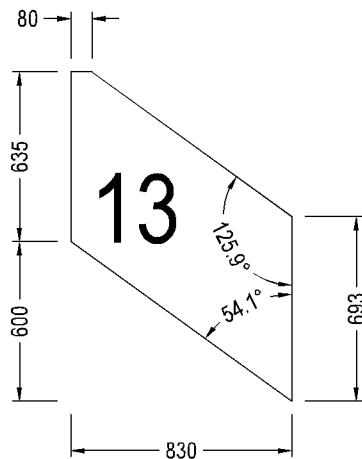


RYD00092657\_0292



WS200  
GRENFELL TOWER BALUSTRADE INFILLS  
QTY = 1 OFF EACH

<table><tr><td>-</td><td>-</td><td>-</td></tr><tr><td>A</td><td>11/2/16</td><td>DIMS CHANGED</td></tr><tr><td>Rev</td><td>Date</td><td>Notes</td></tr></table>			-	-	-	A	11/2/16	DIMS CHANGED	Rev	Date	Notes	 Third Angle Projection		<b>General notes - Where applicable:-</b> No additional jiggling holes to be drilled. Joint straps and stop ends to be finished to match. Finished faces to be protected with low tack tape or film. Welds to be continuous and smooth or fettled flush. Unmarked angles 90 degrees.		<b>Material</b> 10MM TOUGHENED <b>Finish</b> POLISHED EDGES GENERAL TOLERANCE $\pm 1.0\text{mm}$ . ANGULAR $\pm 1.0^\circ$		<b>Description:</b> GRENFELL TOWER BALUSTRADE INFILLS		<b>Project:</b> GRENFELL TOWER - LONDON			 HARLEY HOUSE BRICKLANDS PARK FARNINGHAM ROAD CROWBOROUGH EAST SUSSEX TN6 2JD Tel: [REDACTED]		<b>Drawing No:</b> C1059-WS200 A	<b>Rev:</b> A
-	-	-																								
A	11/2/16	DIMS CHANGED																								
Rev	Date	Notes																								
											<b>Drawn By:</b> BJB			<b>Date:</b> 30.01.16		<b>Scale:</b> NTS										



WS201  
GRENFELL TOWER BALUSTRADE INFILLS  
QTY = 1 OFF EACH

<div><div></div><div></div><div></div></div>			<div><div><div><div></div><div></div></div><div>Third Angle Projection</div></div><div>General notes - Where applicable:- No additional jiggling holes to be drilled. Joint stops and stop ends to be finished to match. Finished faces to be protected with low tack tape or film. Welds to be continuous and smooth or fettled flush. Unmarked angles 90 degrees.</div></div>	<div>Material</div> <div>16MM TOUGHENED</div>	<div>Description:</div> <div>GRENFELL TOWER BALUSTRADE INFILLS</div>	<div>Project:</div> <div>GRENFELL TOWER - LONDON</div>	<div><div><div><div></div><div></div></div><div>harley</div><div>HARLEY HOUSE BROOKLANDS PARK FARNINGHAM ROAD CROWBOROUGH EAST SUSSEX TN6 2JD Tel: 01892 516111</div></div><div><div>Drawing No.:</div><div>C1059-WS201</div></div><div><div>Rev:</div><div></div></div></div>			
<div>Rev</div> <div>A</div>	<div>Date</div> <div>11/2/16</div>	<div>Notes</div> <div>DIMS CHANGED</div>		<div>Finish</div> <div>FLUSHED EDGES, DUBBED CORNERS, HST</div>				<div>Drawn By:</div> <div>BJB</div>	<div>Date:</div> <div>29.02.16</div>	<div>Scale:</div> <div>NTS</div>
				<div>GENERAL TOLERANCE <math>\pm 1.0\text{mm}</math>, ANGULAR <math>\pm 1.0^\circ</math></div>						

## 8 – Internal Glazed Screens & Fire Screens



2 Bloors Lane, Rainham, Kent ME8 7EG  
Tel: [REDACTED] Fax: [REDACTED]  
email: sales@asbell.co.uk  
www.asbell.co.uk

INVOICE

Page 1

Customer

Harley Facades Ltd  
Harley House  
Brooklands Park  
Crowborough  
East Sussex  
TN6 2JD

Deliver To

Harley Facades Ltd C/O Roydon  
Grenfell Tower  
Grenfell Road  
London  
W11 1TQ

Order Date	Our Ref	Your Ref	Account No.	Date/Tax Point	Invoice No.
03/03/2016	H673	C1059/PO239	HARLEYF	03/03/2016	11074

Description	Tax Rate	Unit Price	Value
TO SUPPLY AND DELIVER GOODS IN ACCORDANCE WITH CUSTOMER REQUIREMENTS 7.2MM PYROGUARD GLASS 30MIN RATED 1 @ 994 X 2054	20.00	458.33	458.33

Goods Value	Discount	Taxable Amount	VAT	Amount Due
458.33	0.00	458.33	91.67	550.00



Proprietor A.S. Bell Ltd  
Company Registration No. 7283934  
V.A.T. Registration No. 992 7737 58

Deposit Paid	0.00
Balance Due	550.00





## CERTIFICATE OF APPROVAL No CF 257

This is to certify that, in accordance with  
TS00 General Requirements for Certification of Fire Protection Products  
The undermentioned products of

### PYROGUARD UK LIMITED

International House, Millfield Lane, Haydock, WA11 9GA

Tel: [REDACTED] Fax: [REDACTED]

Have been assessed against the requirements of the Technical Schedule(s)  
denoted below and are approved for use subject to the conditions  
appended hereto:

**CERTIFIED PRODUCT**  
**'Pyroguard'**  
**Fire Resisting Glass**

**TECHNICAL SCHEDULE**  
**TS 25 Fire Resistant Glass,**  
**Glazing Systems and Materials**

Signed and sealed for and on behalf of CERTIFIRE

Sir Ken Knight  
Chairman  
WCL Impartiality Committee

Paul Duggan  
Certification Manager  
Warrington Certification Ltd



Issued: 20<sup>th</sup> February 2006  
Reissued: 4<sup>th</sup> February 2016  
Valid to: 3<sup>rd</sup> February 2021

Page 1 of 49





## CERTIFICATE No CF 257 PYROGUARD UK LIMITED

### Pyroguard Fire Resisting Glass

This Certificate of Approval relates to the fire resistance of Pyroguard UK Limited's 'Pyroguard' laminated glass products when used in the following applications, as defined in BS 476: Part 22: 1987 subject to the undermentioned conditions.

Glass Specification	Application	Fire Resistance Performance (mins)		Page No.
		Integrity	Insulation	
Pyroguard EW30 clear/wired	Timber framed screens	30	0	4-10
Pyroguard EW30 clear/wired	IGUs in timber framed screens	30	0	11-13
Pyroguard EW30 clear/wired	Steel framed screens	30	0	14
Pyroguard EW30 clear/wired	IGUs in steel framed screens	30	0	15
Pyroguard EW30 clear/wired	Steel doorsets	30	0	16
Pyroguard EW30 clear/wired	IGUs in steel framed screens	60	0	17
Pyroguard EW30 clear/wired	Timber based doorsets	30	0	18-19
Pyroguard FD30 clear/wired	Timber based doorsets (Pyroguard FD60 glass)	60	0	20
Pyroguard EW30 clear/wired	Timber stile & rail doorsets	30	0	21-28
Pyroguard EW30 clear/wired	Secondary Glazed Screen	30	0	29
Pyroguard EW30 clear/wired	Glazed Partition	30	0	30
Pyroguard EW30 Clear/Wired with Priva-See film (total 11 mm)	Timber based doorsets	30	0	31
Pyroguard EW60 clear/wired	Timber framed screens	30 & 60	0	32-35
Pyroguard EW30 MAXI clear/wired	IGUs in timber framed screens	30	0	36
Pyroguard EW60 clear/wired	IGUs in timber framed screens	60	0	37
Pyroguard EW30 MAXI clear/wired	Steel framed screens	30	0	38
Pyroguard EW60 clear/wired	Steel framed screens	60	0	39
Pyroguard EW30 MAXI clear/wired	Aluminium framed screens	30	0	40
Pyroguard EW30 MAXI clear/wired	IGUs in steel framed screens	30	0	41
Pyroguard EW60 clear/wired	IGUs in steel framed screens	60	0	42
Pyroguard EW30 MAXI clear/wired	Timber based doorsets	30	0	43
Pyroguard EW60 clear/wired	Timber based doorsets	60	0	44-45
Pyroguard EW30 MAXI clear/wired	Timber stile & rail doorsets	30	0	46-47
Pyroguard EW30 MAXI clear/wired	IGUs/laminated in horizontal steel framed screens	30	0	48-49

Page 2 of 49 Signed  
E/056



Issued: 20<sup>th</sup> February 2006  
Reissued: 4<sup>th</sup> February 2016  
Valid to: 3<sup>rd</sup> February 2021



## CERTIFICATE No CF 257 PYROGUARD UK LIMITED

### Pyroguard Fire Resisting Glass

This product is approved on the basis of:

- a) Initial type testing
- b) A design appraisal against TS25
- c) Product surveillance under BS EN ISO 9001: 2008
- d) Audit testing

This Certificate of Approval must be read in conjunction with CERTIFIRE Technical Schedule TS25, Fire Resistant Glass, Glazing Systems and Materials.

### General Requirements

Where the glass is installed in a timber or steel framed screen, the orientation of the screen shall be no more than  $\pm 10^\circ$  from the vertical.

The edge cover to each pane shall be no less than 10 mm minimum.

### Options

All systems may include decorative self-adhesive leading or self adhesive timber slats (grid pattern)/ladder beads on either or both faces or may be frosted or patterned on one face.

The glass may have 3M – Ultra 400 clear or Llumar Window Film SCL SR PS4 applied to either face or an alternative film applied to the known fire risk side only. If the fire risk may be from either side or it cannot be determined which side of the glass will be on the fire risk side, then films other than 3M – Ultra 400 clear or Llumar Window Film SCL SR PS4 shall not be applied.

Pyroguard glass may be acid etched, bevelled or incorporate grooves subject to the minimum glass thickness being maintained i.e. by utilising thicker glass sheets bevelled at the edge or grooved to standard thickness.

Insulating Glass Units (IGUs) may incorporate Georgian bars within the cavity between inner and outer glass layers.

Insulating Glass Units (IGUs) may also have an integrated blind within the airspace provided the Pyroguard glass pane is glazed on the non fire side when combined with a non-fire rated laminated glass or either side when combined with a float or toughened glass.

Where IGUs are approved and the fire resistant pane is glazed to the non-fire side, the non-fire resistant glass on the fire side can be float, toughened or laminated glass. When the fire resistant pane is glazed to the fire side the non-fire resistant glass on the non-fire side can be any pane that does not contain a flammable organic material i.e. float glass or toughened glass but not a laminated or painted glass unless supported by test evidence not contained in this CF.

The non-fire glass counterpane within the IGU's options considered in this document can be of any thickness (subject to the conditions above and also subject to bead size being maintained).

Within this certification IGU airspace widths vary from 6mm to 12mm for different products. The airspace widths are interchangeable for any product within this range. For larger airspace width contact the owner of this Certification.

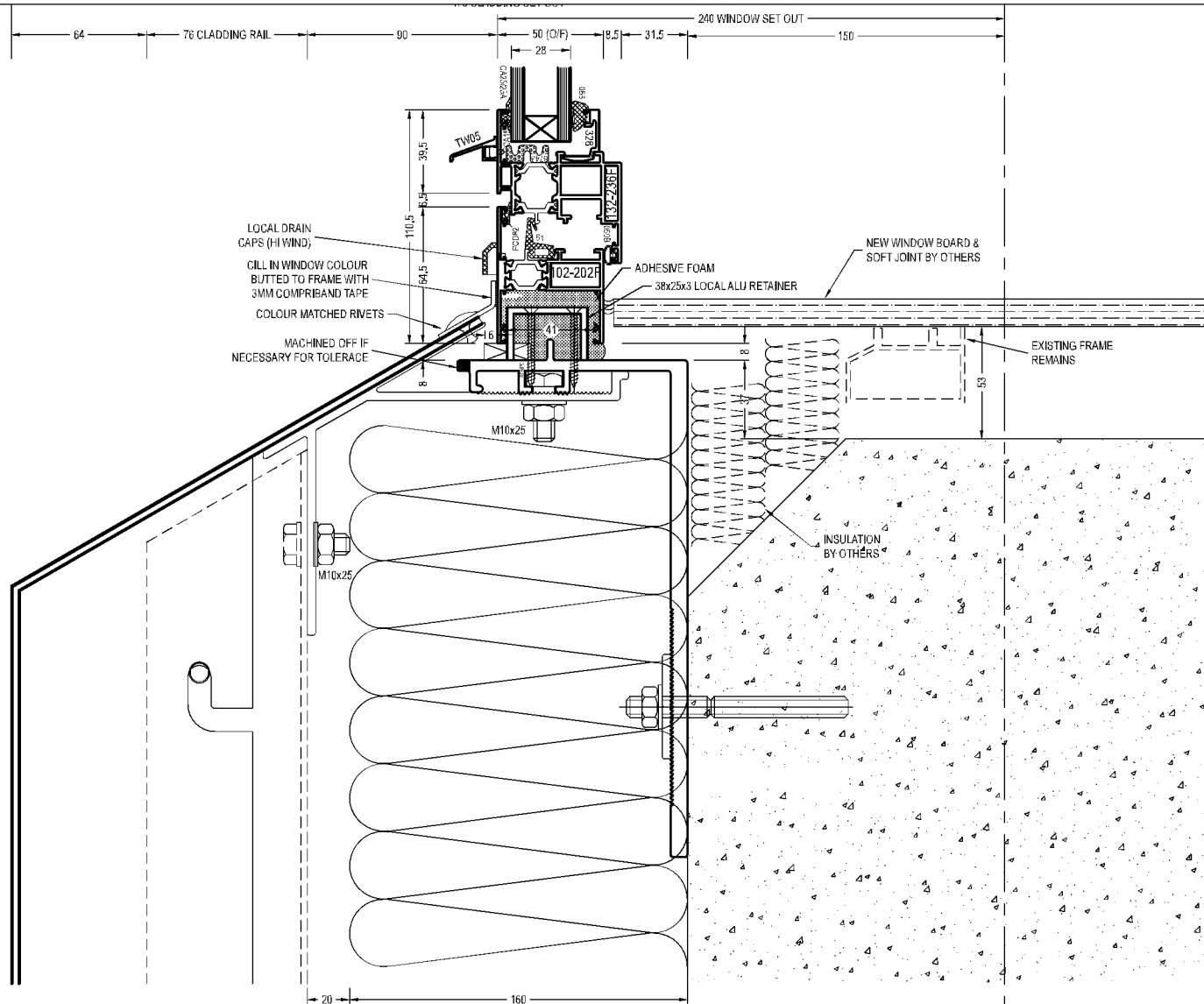
Page 3 of 49 Signed  
E/056



Issued: 20<sup>th</sup> February 2006  
Reissued: 4<sup>th</sup> February 2016  
Valid to: 3<sup>rd</sup> February 2021

9 -





①  
WINDOW CILL  
UPPER LEVELS

APPROVED FOR  
CONSTRUCTION

FILE 855.

F	24.11.15	CONSTRUCTION
E	13.01.15	CONSTRUCTION
D	25.11.14	SHELF ANGLE POSITION
C	28.10.14	WINDOW DROPPED 20MM
B	25.09.14	FRAME PACKING
A	29.08.14	NOTES ADDED, PANEL SET OUT+20
Rev	Date	Notes

Issued by:

## SECTIONS

Project:

GRENELL TOWER  
GRENELL RD, LONDON. W11 1TQ

Drawn By:  
bd KVL

Date:  
20.08.14

Scale:  
1:2@A3

**harley**  
HARLEY HOUSE  
BROOKLANDS PARK  
FARNINGHAM ROAD  
CROWBOROUGH  
EAST SUSSEX  
TN4 2JD  
Tel: [REDACTED]

Drawing No:  
C1059-300

Rev:  
F