JACK
ALUMINIUM SYSTEMS

TD 68 Thermally Improved Commercial Door & Framing System

Tested to and compliant with PAS 24 in a UKAS approved test rig.

SPECIFICATION MANUAL

All about Security . . .

All about Thermal Efficiency . . .

All about Performance . . .

Issue 15 v 15.05.26

JACK
ALUMINIUM SYSTEMS

Contents

Jack Thermally Improved Ground Floor Treatments

A door designed specifically to meet the demands of today and tomorrows commercial market

The Jack Thermal Door was designed with four key objectives in mind:

1 The Environment

To meet the standard required of the industry for thermal performance, durability and sustainability.

2 Security

Increasing Security is demanded and using **PAS24** and PAS23 one can measure improvement. Safety and security of doors in schools, hospitals, retail outlets and any number of public buildings is increasingly important.

The doors and framing system strength and robustness plus the ability to fit the latest architectural hardware is key to this improvement.

3 Versatility

The system will enable the architect or specifier to confidently design for new build or retro fit on refurbishment projects.

4 User Friendly

The fabricator and installer should use this product with the minimum of fuss. This is an often forgotten requirement. The work of the fabricator and installer is crucial to the success of all products and as such theirs input is gratefully received.

To achieve these ends we worked closely with our suppliers and our customers to identify customer needs and combining this with a UK supplier base for efficient lines of communication and logistics.

So what benefits have we achieved?

1 The current 'U' value requirement for Commercial doors is 3.5Wm2K. However using polyamide thermal improvement means that we can achieve a u value of 1.9W jm2K on a 1230mm wide door.

In 2013 the Document L revisions will lower the U value requirements so continuous improvements to the system are already in the design pipeline.

2 **PAS 24.** There can be no compromise in achieving this standard. We have designed intrinsic strength and security into the doors and framing. The TD68 passed **PAS 24** and PAS 23 at a UKAS approved test rig and can be deemed to comply with its standards.

Profile thickness is the first key area. We have retained over two mm wall thickness as a minimum, and more on some sections in key areas of potential weakness particularly on door sections.

We have designed a robust security bead (over 3 mm thick) to help resist attack on the glazing system. The door carries the latest security locking systems and its own armoured keep arrangements.

3 Hardware. We have design solutions for hardware issues including electric strikes, concealed panic bars, multi point locking and the Sentinel security hook lock, working closely with Adams Rite (AA).

4 Fabrication and Installation. Traditional, and familiar methods for both the fabrication of the product and installation have been employed wherever possible.

5 Reducing Waste. Sections can be supplied in halves and quarters already painted to a specified RAL finish. This saves on cost for the fabricator and reduces waste.

TD 68mm Thermally Broken Commercial and Entrance Door and Framing

Composition and Manufacture

The Aluminum profiles are extruded from aluminum alloy 6060 T6 complying with the recommendations of BS EN 755-9:2001.

Weather sealing is a combination of polypropylene backed woven pile and extruded synthetic rubber seals held in in undercut grooves in the aluminum extrusion.

The thermal barrier section within the TD 68 door is achieved using two separate aluminum profiles being joined mechanically to form a single compound section.

Frame sections are square cut for jointing with stainless steel self tapping screws fixing into screw splines extruded in the aluminum section. Door leaf profiles are square cut and assembled with extruded aluminum spigots. A tie bar facility has been designed into the door profiles to facilitate increase strength on corner joints. All joints are sealed against water penetration.

TD68 Performance

Improved Performance

The TD 68 has been tested to **PAS 23** in both single (1250 mm x 2300 mm) and double door (2400 mm x 2300 mm) configuration as a pivot door.

This arduous test includes **50,000 cycle** testing on opening and closing the doors. A weather test was included in **PAS23** and the door produced a result of **800 u**, which is an excellent result for a pivot door with a **DDA compliant** low threshold (maximum 15 mm height) and no rebate. There is also a manual intervention test which was easily accommodated by the door.

Improved Security

The real SECURITY test was **PAS 24**. The success in passing this testing assessment was achieved by the close co-operation with *Assa Abloy* and the excellent work of the designer in fulfilling the demanding requirements that are being increasingly placed on commercial doors.

The static loading the door has to withstand is a combined 4 KN load perpendicular to the plane of the door plus a 1.5 KN load parallel to the plane of the door. The purpose of the parallel load at the locking pint is to exert a force trying to separate the lock stile from the keep whilst also exerting the perpendicular load on the same position, thus simulating someone using a Jemmy or Crow Bar on the locking system. This test is also applied at other points on the door including the bottom pivot and top arm positions as these could be prone to the same level of attack.

This test sequence is carried out on single and double doors at various positions such as locking points, latches and hinge points. The door not only has to withstand these static loads but also come through them with sufficient integrity to progress on to the dynamic loads and manual intervention parts of the full test procedure.

It is a very onerous test combination for the door to pass. Dynamic loads were swung at the door. Both the 30 kg soft body and the 50 kg steel hard body objects were used.

The Manual Intervention Test is an aggressive attack on the door using controlled tools.

The single and double doors both withstood the tests even when their sequence was switched to try and test for weaknesses.

Improved Thermal Performance

It is normal now to supply a standard u value for a door 1230 mm wide and 2180 mm high with a mid rail. Using 28 mm double-glazed seal unit with soft coat glass with a centre pane value of 1.2 then an overall u value performance on the door of 1.9 is achieved. More specific sizes can be calculated by use of the *Logikal* computer program and we are happy to supply that information. Evidence of this performance can be found in a later section of this manual.

PAS 24 demands the use of a specified method of assembly and the particular use of *Assa Abloy* hardware, details of which can be supplied on application.

Sizes

Door leaf sizes will be determined by a combination of site exposure conditions.

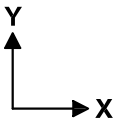
Performance Data

For centre pivot doors suitable strength closures must be fitted according to the width and height of the door Maximum door height has been tested to 2300 mm and width 1250 mm.

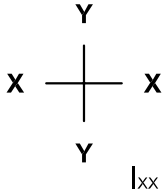
The use of heavy duty *Exidoor* bottom pivots are recommended.

Authorities

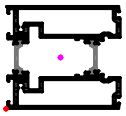
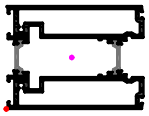
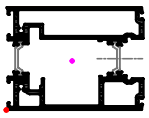
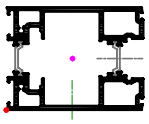
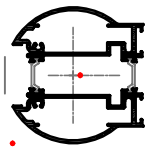
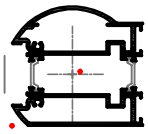
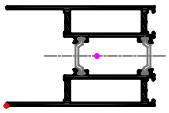
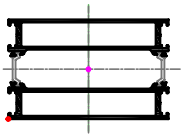
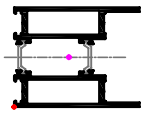
- BS6262 Code of practice for glazing buildings.
- BS EN 755-9 Aluminium and aluminium alloys. Profile tolerances on dimension and shape.
- BS 3987 Specification for anodic coatings and BS EN 12206-1:2004 for powder coated organic coating for application to aluminium alloy for external architectural applications.



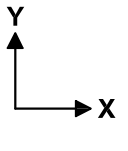
POSITION OF CENTROID FROM EXTREME BOTTOM LEFT OF PROFILE AS SHOWN.



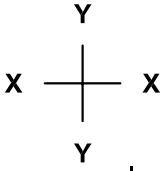
AXIS ORIENTATION.

		X (mm)	Y (mm)	I_{XX} (mm^4)	I_{YY} (mm^4)
TD000 SLIM LOCK STILE		36.086	34.000	420241	466816
TD001 STANDARD LOCK STILE		43.269	34.000	478102	767634
TD002 PANIC BAR LOCK STILE		43.558	32.433	525582	783575
TD003 MULTI POINT LOCK STILE		43.833	34.000	577374	799376
TD005 ANTI FINGER TRAP STILE		44.723	45.000	596266	639655
TD006 ANTI FINGER TRAP PANIC STILE		45.023	35.828	515148	621919
TD010 BOTTOM RAIL		59.903	32.900	430031	482863
TD012 MID RAIL		53.000	32.900	484475	1085496
TD014 TOP RAIL		36.621	32.900	424109	409508

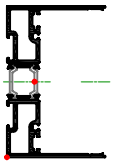
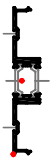
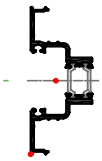
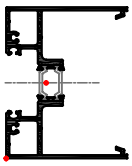
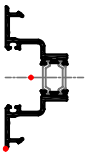
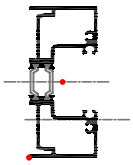
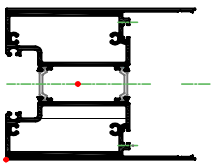
Inertia Data

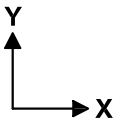


POSITION OF CENTROID FROM EXTREME BOTTOM LEFT OF PROFILE AS SHOWN.



AXIS ORIENTATION.

		X (mm)	Y (mm)	I_{XX} (mm^4)	I_{YY} (mm^4)
TD007 ANTI FINGER TRAP ADAPTOR		11.750	33.000	165454	22772
TD131 HEADER BAR		18.305	50.000	846895	151457
TD132 HEADER BAR PLATE		5.578	48.627	159175	6522
TD130 HEADER BAR POCKET PLATE		16.683	48.620	230753	62721
TD150 POCKET CHANNEL		26.479	50.000	1018604	349329
TD152 POCKET PLATE		16.768	47.103	220035	82706
TD155 SLIM DOOR JAMB		22.142	50.000	764587	150775
TD--- AUTO HEADER BAR		47.433	50.000	2082928	1428757



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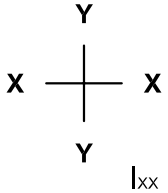
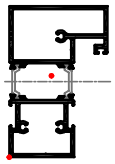
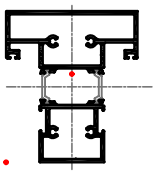
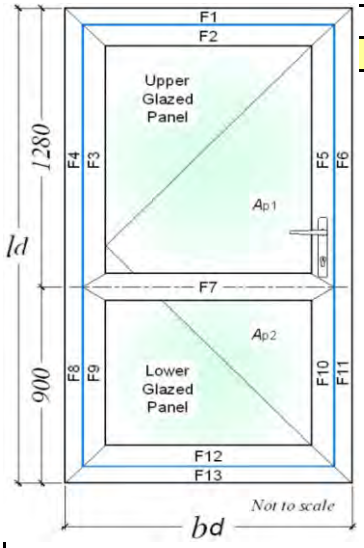


AXIS ORIENTATION.

		X (mm)	Y (mm)	I_{XX} (mm^4)	I_{YY} (mm^4)
TD151 CILL		27.845	53.897	914276	503140
TD153 TRANSOM		43.500	58.417	802372	297040



Sample Style:

Door Type 3

Fully glazed residential door with mid rail

Blue line illustrates opening light length (air leakage)

Report Number:

Report Date:

Project Details: Jack Aluminium Anti Finger system commercial-no foam

Report Issue Status: 7 (19/09//2011)

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Input Values:

Yellow input, green intermediary, blue finals — X' DP is no.of decimal places to enter

Parameter	Symbol		Units
Total door height 0DP	l_w	2180	mm
Total door width 0DP	b_w	1230	mm

Frame dimensions (All frame dimensions to nearest 0.5mm)	Frame heights, bf (mm) Internal	Combo
F1 fixed top rail	69.0	174.0
F2 moving top rail	105.0	
F3 top hinge (LH) jamb (moving sash)	110.0	182.5
F4 top hinge (LH) jamb (fixed frame)	72.5	
F5 top close (RH jamb (moving sash)	112.0	161.0
F6 top close (RH) jamb (fixed frame)	49.0	
F7 mid rail	150.0	150.0
F8 bottom hinge (LH) jamb (fixed frame)	72.5	182.5
F9 bottom hinge (LH) jamb (moving sash)	110.0	
F10 bottom close (RH) jamb (moving sash)	112.0	161.0
F11 bottom close (RH) jamb (fixed frame)	49.0	
F12 bottom moving rail	126.0	141.0
F13 bottom fixed rail	15.0	

Nominal 4mm etc to 0DP , others 1DP

Upper Panel dim's and properties:

Thickness of upper panel, $d_{g/p1}$	28.0	mm
Panel type:	Glazing panel	
Thermal Transmittance of panel - 3DP		
$U_{g/p1}$	1.219	W/(m²·K)

Lower Panel dim's and properties:

Thickness of lower panel, $d_{g/p2}$	28.0	mm
Panel type:	Glazing panel	
Thermal Transmittance of panel - 3DP		
$U_{g/p2}$	1.219	W/(m²·K)

Door Dimensions:

Panel	Length, l	Width, b	Area, A
	m	m	m²
Glazing panel	1.0310	0.8865	0.9140
Glazing panel	0.6840	0.8865	0.6064
Total of glazing + panel			1.5203
Frame	m	m	m²
F1	1.2300	0.0690	0.0807
F2	1.1085	0.1050	0.1047
F3	1.2110	0.1100	0.1233
F4	1.2800	0.0725	0.0903
F5	1.2110	0.1120	0.1256
F6	1.2800	0.0490	0.0610
F7	1.1085	0.1500	0.1496
F8	0.9000	0.0725	0.0647
F9	0.8850	0.1100	0.0863
F10	0.8850	0.1120	0.0879
F11	0.9000	0.0490	0.0437
F12	1.1085	0.1260	0.1257
F13	1.2300	0.0150	0.0175
Total Frame			1.1611
Total Door, A_d			2.6814
Percentage upper panel area			34.09%
Percentage lower panel area			22.61%

U_{door}	U_d	1.91	W/(m²·K)

Thermal transmittance of door from hot box testing — U_d - 2dp — W/(m²·K)

Where a U_d value from hot box testing is available, no L_f^{2D} or $L_!^{2D}$ values need to be entered

Frame conductance: All L values to 4DP. All b values to 0DP

	L_f^{2D} W/(m·K)	b_p (mm)	$L_!^{2D}$ W/(m·K)	b_g (mm)
F1+F2 top rail	0.7492	190	0.8078	190
F3+F4 top hinge (LH) jamb	0.7015	190	0.7609	190
F5+F6 top close (RH) jamb	0.5931	190	0.6519	190
F7 mid rail	0.7051	190	0.8283	190
		190		190
F8+F9 bottom hinge (LH) jamb	0.7015	190	0.7609	190
F10+F11 bottom close (RH) jamb	0.5931	190	0.6519	190
F12+F13 bottom rail	0.6037	190	0.6621	190

Frame:

Section	b_f m	U_f W/(m²·K)	A_f (no gaskets) m²	Frame Heat, HU W/K	! W/(m·K)	l_g m	Junction heat, H! W/K
F1+F2 top rail	0.1740	3.1800	0.1854	0.5896	0.0229	0.8865	0.0203
F3+F4 top hinge jamb	0.1825	2.7705	0.2136	0.5918	0.0237	1.0310	0.0244
F5+F6 top close jamb	0.1610	2.4672	0.1866	0.4603	0.0231	1.0310	0.0238
F7 mid rail	0.1500	2.0890	0.1496	0.3126	0.0517	0.8865	0.0459
F8+F9 btm. hinge jamb	0.1825	2.7705	0.1510	0.4184	0.0237	0.6840	0.0162
F10+F11 btm. Cls. jamb	0.1610	2.4672	0.1316	0.3247	0.0231	0.6840	0.0158
F12+F13 bottom rail	0.1410	2.8924	0.1432	0.4143	0.0227	0.8865	0.0201
		Totals	1.1611	3.1116		Total	0.1664

Air Leakage loss:

Air leakage at 50 Pa per hour & per unit length of opening light (BS 6375-1) - 2DP				0.03	m³/(m·h)
Opening light length	6.4090	m	Total air leakage	0.192	m³/h
L_{50}	0.07	m³/(m²#h)	Heat loss = 0.0165 L_{50}	0.00	W/(m²·K)

Other parameters needed for calculation, taken from simulations:

				$_p$ =	0.035	W/(m·K)	R_{se} =	0.04	m²·K /W	R_{se} =	0.13	m²·K/W
Glazing panel	Panel thickness, $d_{p1} = d_{g1}$ =	0.028	m	R_{p1} =	0.8000	m²·K /W	R_{tot1} =	0.9700	m²·K/ W	U_{p1} =	1.0309	W/(m²·K)
Glazing panel	Panel thickness, $d_{p2} = d_{g2}$ =	0.028	m	R_{p2} =	0.8000	m²·K /W	R_{tot2} =	0.9700	m²·K/ W	U_{p2} =	1.0309	W/(m²·K)

BFRC Rating kWh/(m²·yr)	Label index	EWER Rating Scale	Door Rating
" -70	-131	A	F
-85 to <-70		B	
-100 to <-85		C	
-115 to <-100		D	
-130 to <-115		E	
-145 to <-130 !		" F !	
<-145		G	

BFRC Rating =

-68.5 x (U_{door} + Effective L_{factor}) = **-131.09**

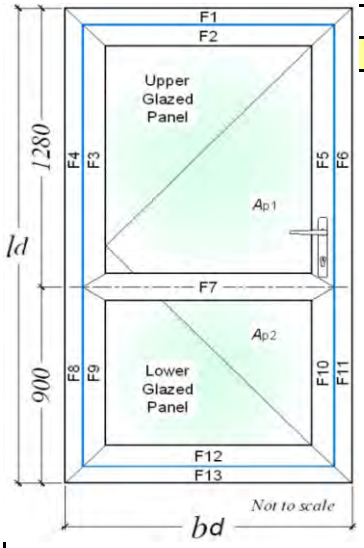
Climate zone is: UK

Thermal transmittance, W/(m²·K)	U_{door}	1.9
Door air leakage heat loss, W/(m²·K)	L_{factor}	0.00

Simulator Name:

British Fenestration Rating Council

BFRC Certified Simulator xxx



Sample Style:

Door Type 3

Fully glazed residential door with mid rail

Blue line illustrates opening light length (air leakage)

Report Number: #######

Report Date: 12 January 2012

Report Issue Status: 7 (19/09//2011)

Project Details: Jack Aluminium - Anti Finger Polyamide System

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Parameter	Symbol		Units
Total door height 0DP	l_w	2180	mm
Total door width 0DP	b_w	1230	mm

Frame dimensions (All frame dimensions to nearest 0.5mm)	Frame heights, bf (mm)	
	Internal	Combo
F1 fixed top rail	**69.0**	174.0
F2 moving top rail	**105.0**	
F3 top hinge (LH) jamb (moving sash)	**110.0**	182.5
F4 top hinge (LH) jamb (fixed frame)	**72.5**	
F5 top close (RH jamb (moving sash)	**112.0**	161.0
F6 top close (RH) jamb (fixed frame)	**49.0**	
F7 mid rail	**150.0**	150.0
F8 bottom hinge (LH) jamb (fixed frame)	72.5	182.5
F9 bottom hinge (LH) jamb (moving sash)	**110.0**	
F10 bottom close (RH) jamb (moving sash)	**112.0**	161.0
F11 bottom close (RH) jamb (fixed frame)	49.0	
F12 bottom moving rail	**126.0**	141.0
F13 bottom fixed rail	**15.0**	

Nominal 4mm etc to 0DP , others 1DP

Upper Panel dim's and properties:

Thickness of upper panel, $d_{g/p1}$	**28.0**	mm
Panel type:	**Glazing panel**	
Thermal Transmittance of panel - 3DP		
$U_{g/p1}$	**1.219**	W/(m²·K)

Lower Panel dim's and properties:

Thickness of lower panel, $d_{g/p2}$	**28.0**	mm
Panel type:	**Glazing panel**	
Thermal Transmittance of panel - 3DP		
$U_{g/p2}$	**1.219**	W/(m²·K)

Door Dimensions:

Panel	Length, l	Width, b	Area, A
	m	m	m²
Glazing panel	1.0310	0.8865	0.9140
Glazing panel	0.6840	0.8865	0.6064
Total of glazing + panel			1.5203
Frame	m	m	m²
F1	1.2300	0.0690	0.0807
F2	1.1085	0.1050	0.1047
F3	1.2110	0.1100	0.1233
F4	1.2800	0.0725	0.0903
F5	1.2110	0.1120	0.1256
F6	1.2800	0.0490	0.0610
F7	1.1085	0.1500	0.1496
F8	0.9000	0.0725	0.0647
F9	0.8850	0.1100	0.0863
F10	0.8850	0.1120	0.0879
F11	0.9000	0.0490	0.0437
F12	1.1085	0.1260	0.1257
F13	1.2300	0.0150	0.0175
Total Frame			1.1611
Total Door, A_d			2.6814
Percentage upper panel area			34.09%
Percentage lower panel area			22.61%

U_{door}	U_d	**1.74**	**W/(m²·K)**

Thermal transmittance of door from hot box testing — U_d - *2dp* — W/(m²·K)

Where a U_d value from hot box testing is available, no L_f^{2D} or L_ψ^{2D} values need to be entered

Frame conductance: All L values to 4DP . All b values to 0DP

	L_f^{2D} W/(m·K)	b_p (mm)	L_ψ^{2D} W/(m·K)	b_g (mm)
F1+F2 top rail	**0.5896**	**190**	**0.6514**	190
F3+F4 top hinge (LH) jamb	**0.6310**	190	**0.6924**	190
F5+F6 top close (RH) jamb	**0.5348**	190	**0.5949**	190
F7 mid rail	**0.7051**	190	**0.8283**	190
		190		190
F8+F9 bottom hinge (LH) jamb	**0.6310**	190	**0.6924**	190
F10+F11 bottom close (RH) jamb	**0.5348**	190	**0.5949**	190
F12+F13 bottom rail	**0.5490**	190	**0.6094**	190

Frame: Section	b_f m	U_f W/(m²·K)	A_f (no gaskets) m²	Frame Heat, HU W/K	Ψ W/(m·K)	l_g m	Junction heat, Hψ W/K
F1+F2 top rail	0.1740	2.2628	0.1854	0.4196	0.0261	0.8865	0.0231
F3+F4 top hinge jamb	0.1825	2.3842	0.2136	0.5093	0.0257	1.0310	0.0265
F5+F6 top close jamb	0.1610	2.1051	0.1866	0.3928	0.0244	1.0310	0.0251
F7 mid rail	0.1500	2.0890	0.1496	0.3126	0.0517	0.8865	0.0459
F8+F9 btm. hinge jamb	0.1825	2.3842	0.1510	0.3600	0.0257	0.6840	0.0176
F10+F11 btm. Cls. jamb	0.1610	2.1051	0.1316	0.2770	0.0244	0.6840	0.0167
F12+F13 bottom rail	0.1410	2.5044	0.1432	0.3587	0.0247	0.8865	0.0219
		Totals	1.1611	2.6299		Total	0.1766

Air Leakage loss:

Air leakage at 50 Pa per hour & per unit length of opening light (BS 6375-1) - 2DP				**0.03**	m³/(m·h)
Opening light length	6.4090	m	Total air leakage	0.192	m^3/h
L_{50}	0.07	$m^3/(m^2 \cdot h)$	Heat loss = 0.0165 L_{50}	0.00	W/(m²·K)

Other parameters needed for calculation, taken fromsimulations:

				λ_p =	0.035	W/(m·K)	R_{se} =	0.04	m²·K /W	R_{se} =	0.13	m²·K/W
Glazing panel	Panel thickness, $d_{p1} = d_{g1}$ =	0.028	m	R_{p1} =	0.8000	m²·K /W	R_{tot1} =	0.9700	m²·K/ W	U_{p1} =	1.0309	W/(m²·K)
Glazing panel	Panel thickness, $d_{p2} = d_{g2}$ =	0.028	m	R_{p2} =	0.8000	m²·K /W	R_{tot2} =	0.9700	m²·K/ W	U_{p2} =	1.0309	W/(m²·K)

BFRC Rating kWh/(m²·yr)	Label index	EWER Rating Scale	Door Rating
≥ -70	-119	A	E
-85 to <-70		B	
-100 to <-85		C	
-115 to <-100		D	
-130 to <-115 !		" E !	
-145 to <-130		F	
<-145		G	

BFRC Rating =

-68.5 **x (U_{door} + Effective L_{factor}) =** **-119.04**

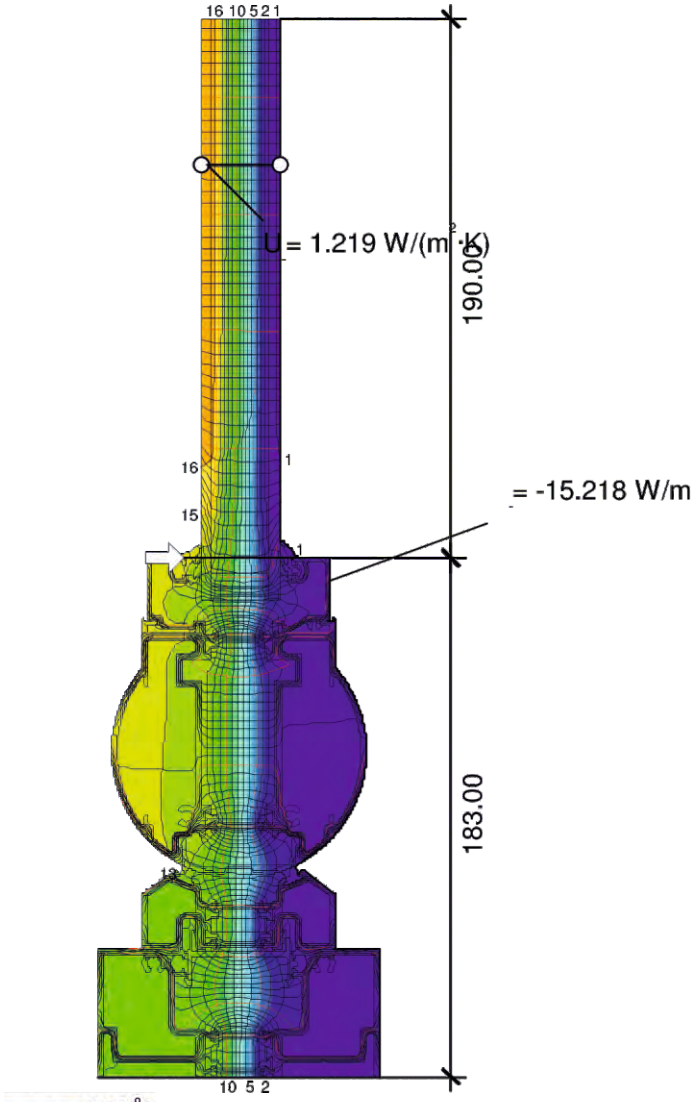
Climate zone is: **UK**

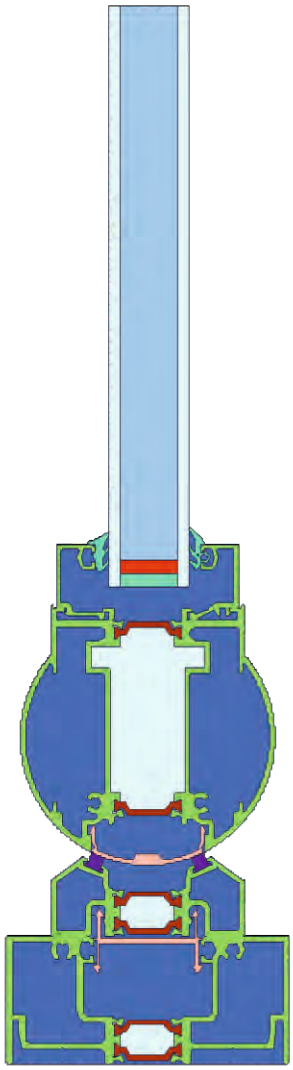
Thermal transmittance, W/(m²·K)	U_{door}	**1.7**
Door air leakage heat loss, W/(m²·K)	L_{factor}	**0.00**

Simulator Name: Kiran Bhudia

British Fenestration Rating Council

BFRC Certified Simulator 083

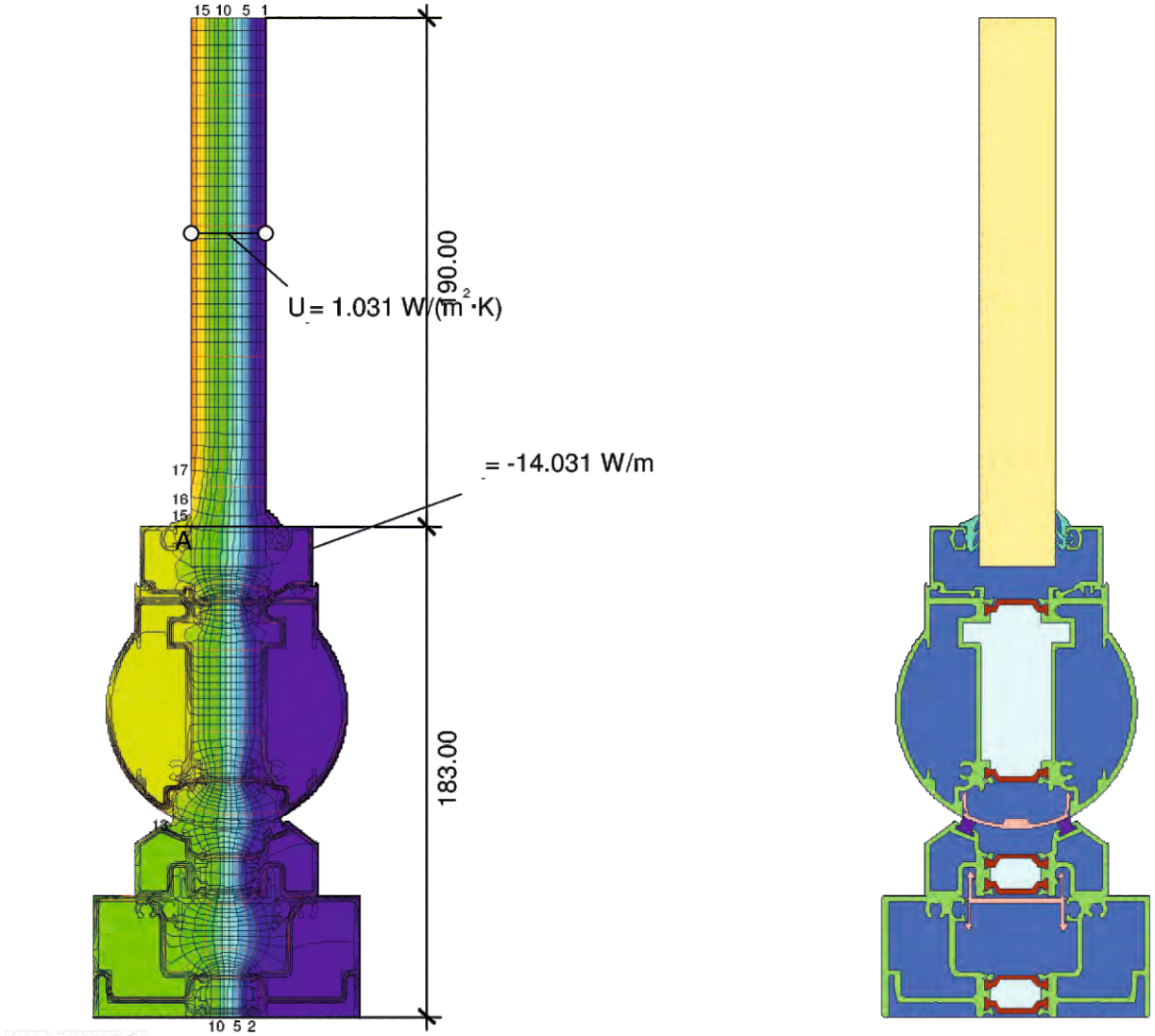




$$= \frac{}{T} - U_g \cdot b_g - U_f \cdot b_f = \frac{15.218}{20.000} - 1.219 \cdot 0.190 - 2.763 \cdot 0.183 = 0.024 \text{ W/(m·K)}$$

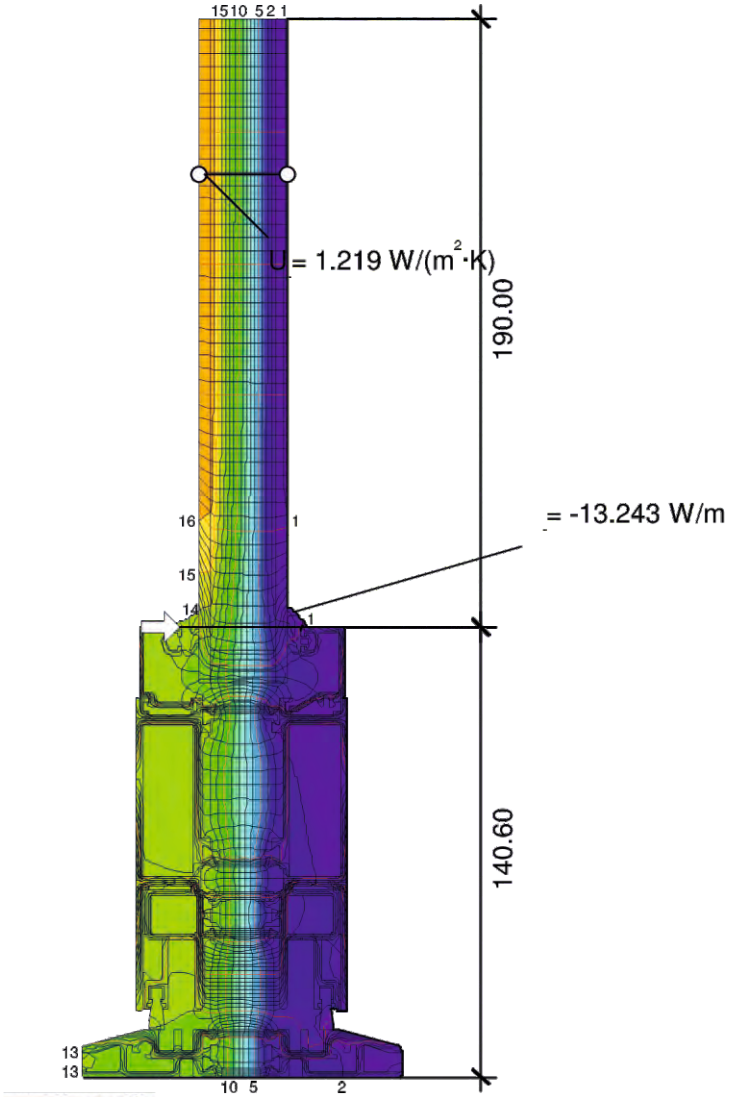
Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
Butyl (isobutene), solid / hot melt	0.240
EPDM (ethylene propylene diene monomer)	0.250
Gasfilling(3)	0.031
Mohair (polyester) sweep	0.140
PVC (polyvinylchloride), rigid	0.170
Polyamid 6.6 with 25% glassfibre	0.300
Soda lime glass	1.000
Super Spacer	0.122
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (0.2)	Eps=0.2/0.2

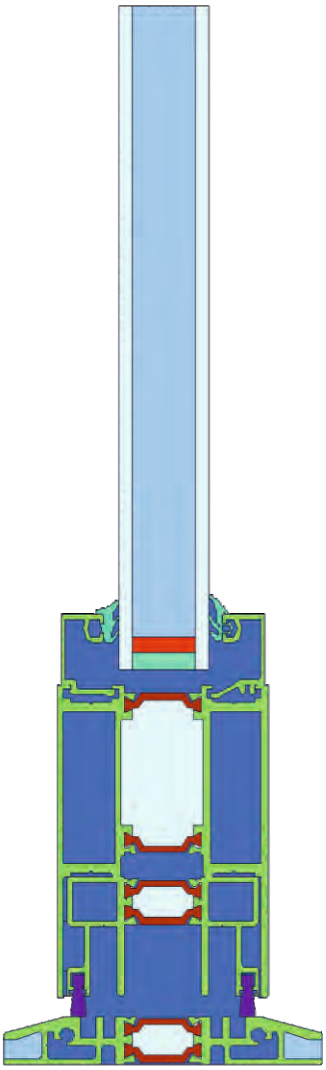
13/01/2012
G:\Simulation PA Door and Window\Jack Commercial Door\SGG Paniterm Total + 1.219 [new header bar]\antifinger - 1.219.flx



$$U_{fA} = \frac{\frac{}{T} - U_p \cdot b_p}{b_f} = \frac{\frac{14.031}{20.000} - 1.031 \cdot 0.190}{0.183} = 2.763 \text{ W/(m}^2\text{·K)}$$

Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
EPDM (ethylene propylene diene monomer)	0.250
Mohair (polyester) sweep	0.140
PVC (polyvinylchloride), rigid	0.170
Panel	0.035
Polyamid 6.6 with 25% glassfibre	0.300
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (0.2)	Eps=0.2/0.2

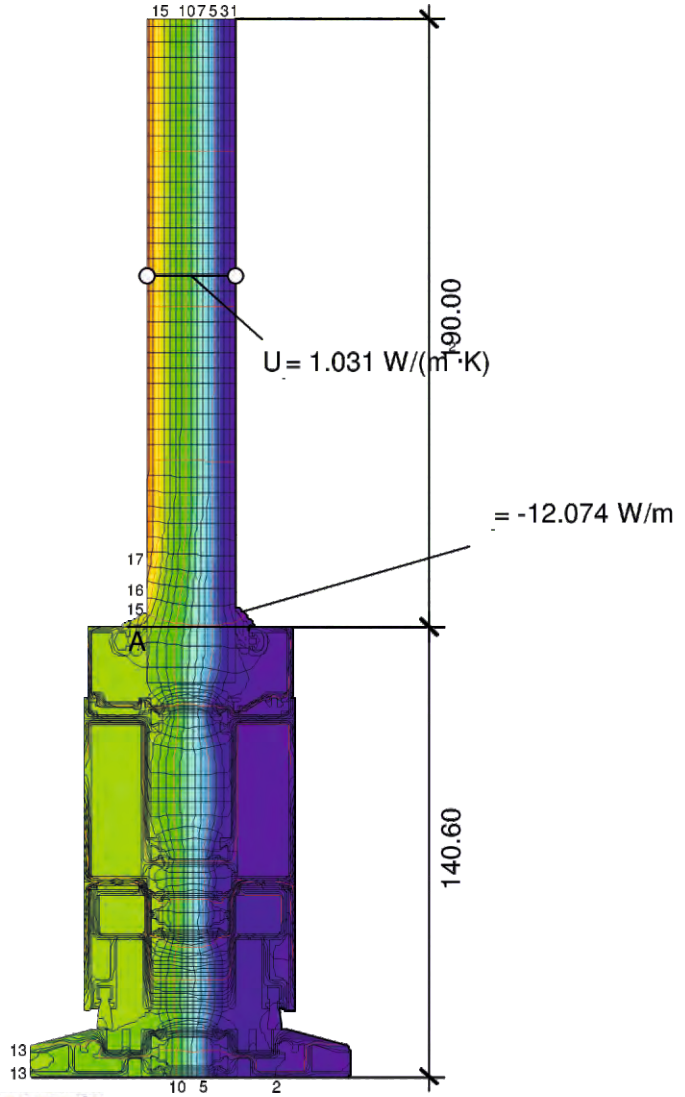


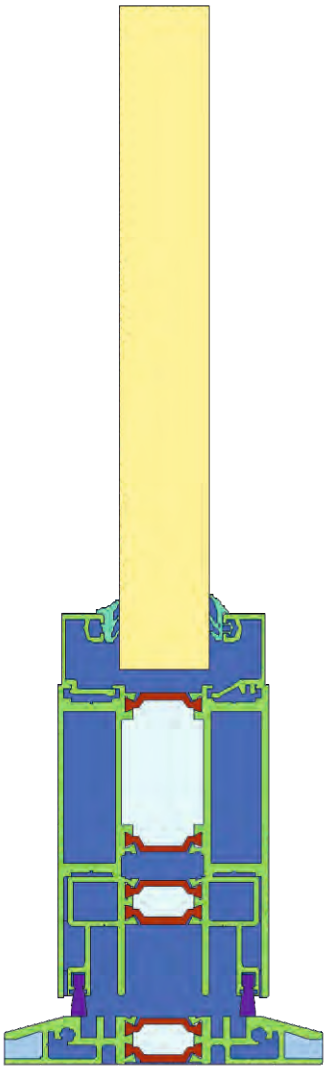


$$= \frac{}{T} - U_g \cdot b_g - U_f \cdot b_f = \frac{13.243}{20.000} - 1.219 \cdot 0.190 - 2.901 \cdot 0.141 = 0.023 \text{ W/(m·K)}$$

Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
Butyl (isobutene), solid / hot melt	0.240
EPDM (ethylene propylene diene monomer)	0.250
Gasfilling(1)	0.031
Mohair (polyester) sweep	0.140
Polyamid 6.6 with 25% glassfibre	0.300
Slightly ventilated air cavity	Eps=0.9/0.9
Soda lime glass	1.000
Super Spacer	0.122
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (0.2)	Eps=0.2/0.2

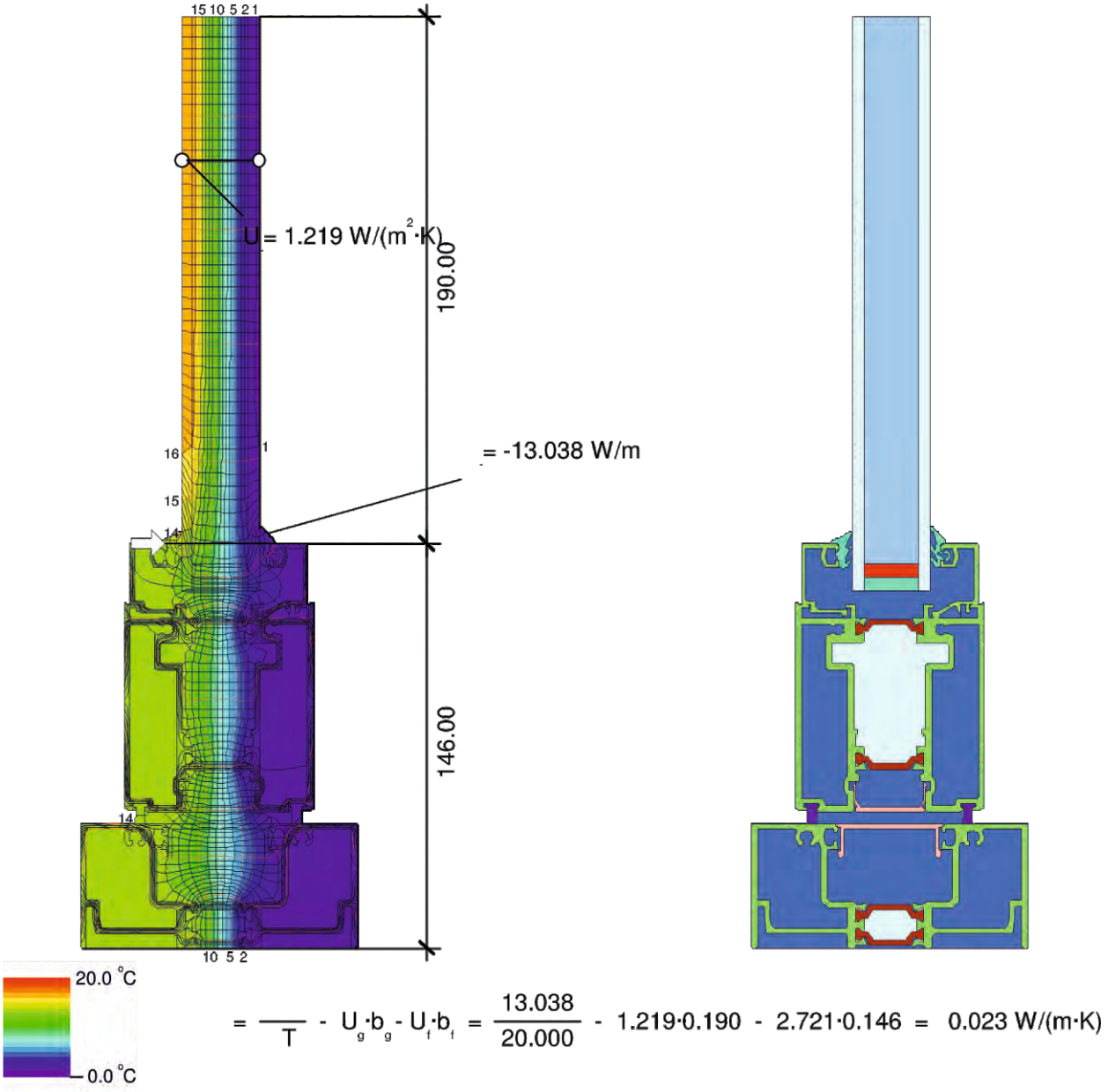
U-Value Calculations





$$U_{fA} = \frac{\overline{T} - U_p \cdot b_p}{b_f} = \frac{\frac{12.074}{20.000} - 1.031 \cdot 0.190}{0.141} = 2.901 \text{ W/(m}^2\text{·K)}$$

Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
EPDM (ethylene propylene diene monomer)	0.250
Mohair (polyester) sweep	0.140
Panel	0.035
Polyamid 6.6 with 25% glassfibre	0.300
Slightly ventilated air cavity	Eps=0.9/0.9
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (0.2)	Eps=0.2/0.2



$$= \frac{}{T} - U_g \cdot b_g - U_f \cdot b_f = \frac{13.038}{20.000} - 1.219 \cdot 0.190 - 2.721 \cdot 0.146 = 0.023 \text{ W/(m·K)}$$

Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
Butyl (isobutene), solid / hot melt	0.240
EPDM (ethylene propylene diene monomer)	0.211
Gasfilling(2)	0.031
Mohair (polyester) sweep	0.140
PVC (polyvinylchloride), rigid	0.170
Polyamid 6.6 with 25% glassfibre	0.300
Soda lime glass	1.000
Super Spacer	0.122
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (0.2)	Eps=0.2/0.2

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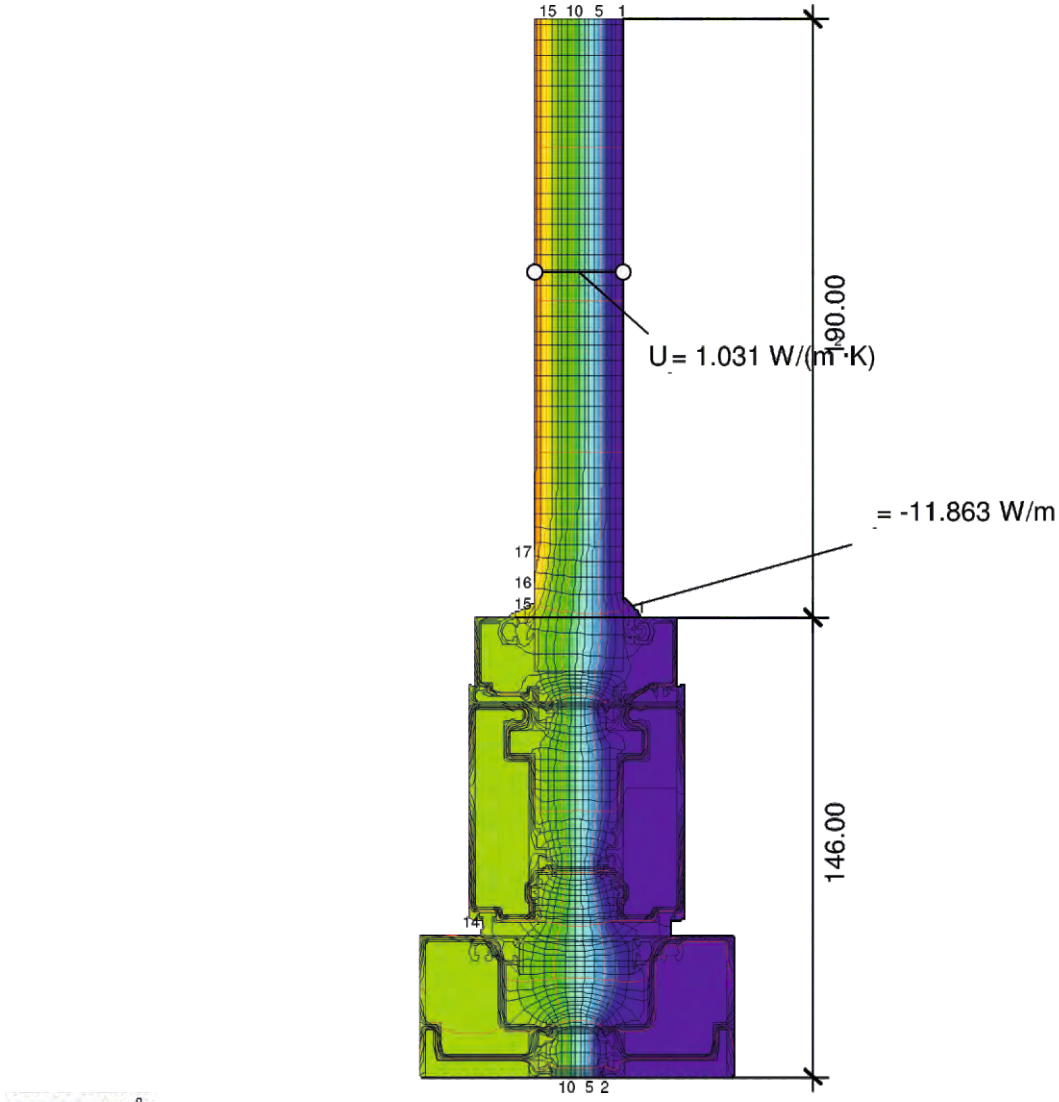
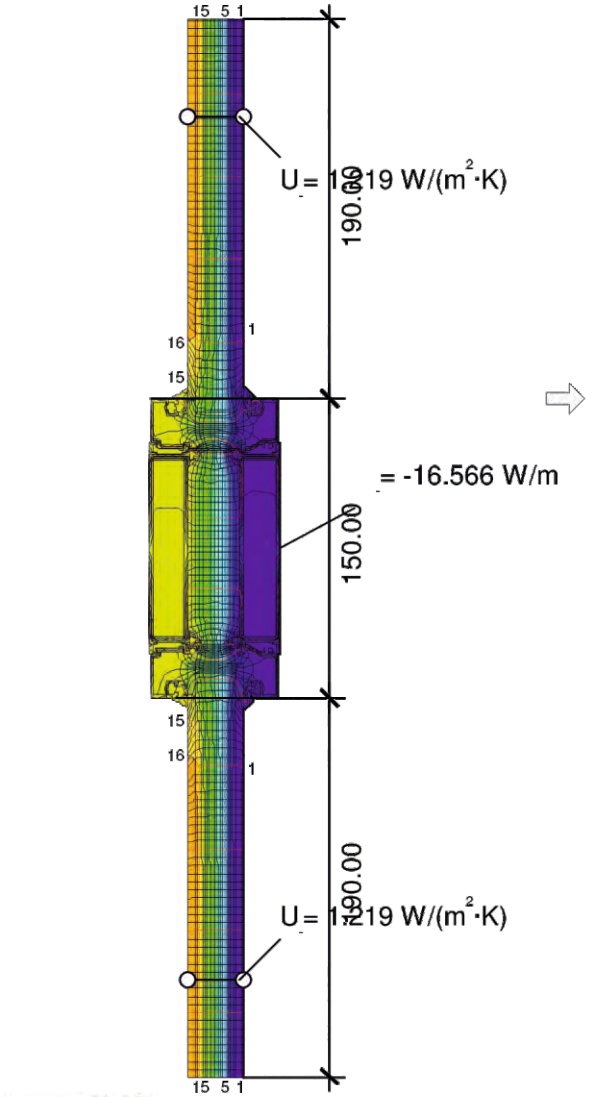
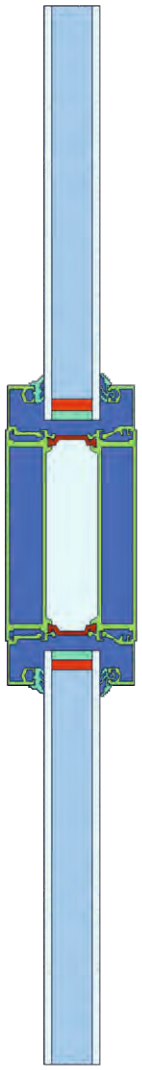


$$U_f = \frac{\overline{T} - U_p \cdot b_p}{b_f} = \frac{\frac{11.863}{20.000} - 1.031 \cdot 0.190}{0.146} = 2.721 \text{ W/(m}^2\text{·K)}$$

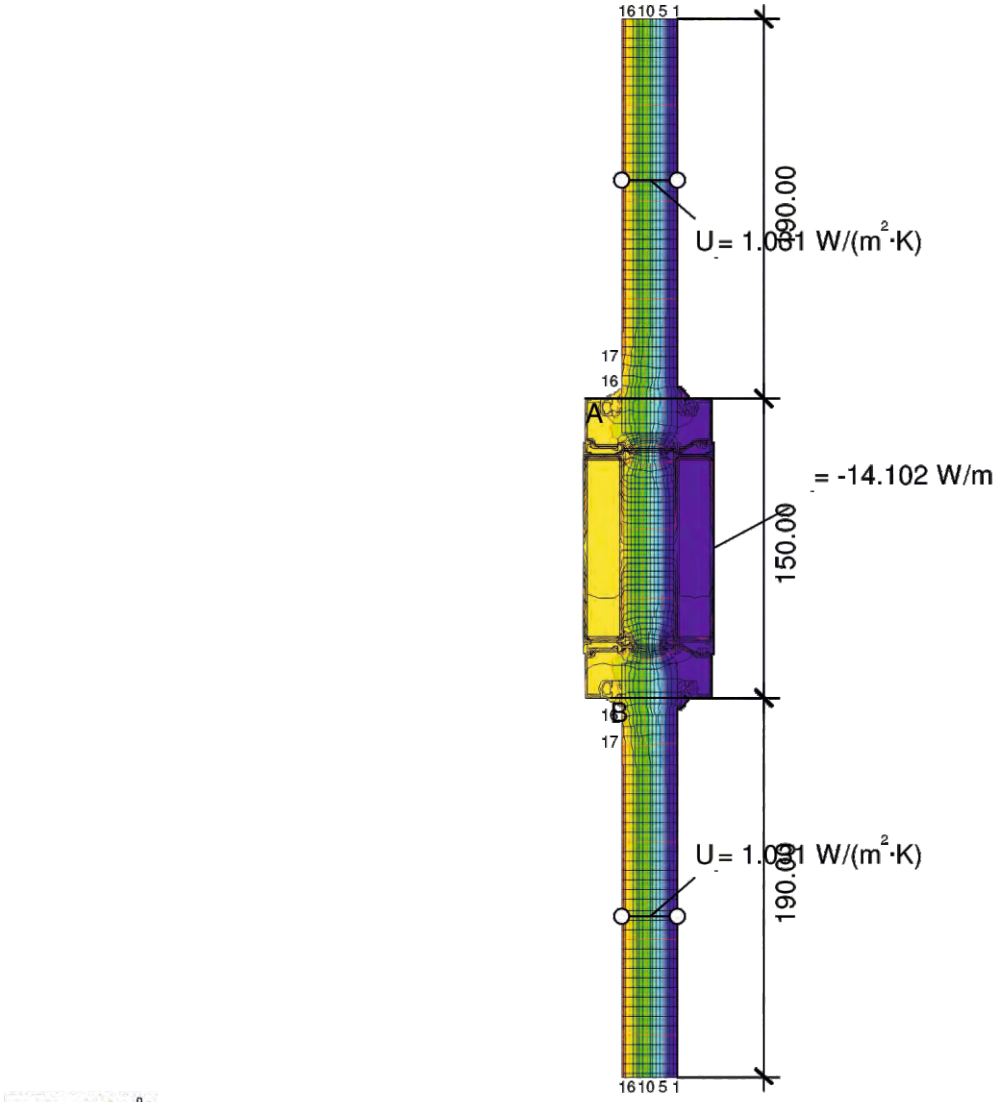
Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
EPDM (ethylene propylene diene monomer)	0.211
Mohair (polyester) sweep	0.140
PVC (polyvinylchloride), rigid	0.170
Panel	0.035
Polyamid 6.6 with 25% glassfibre	0.300
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (0.2)	Eps=0.2/0.2

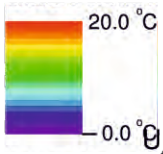




$$= \frac{\overline{T} - U_{g1} \cdot b_{g1} - U_f \cdot b_f - U_{g2} \cdot b_{g2}}{2} = \frac{\frac{16.566}{20.000} - 1.219 \cdot 0.190 - 2.089 \cdot 0.150 - 1.219 \cdot 0.190}{2} = 0.026 \text{ W/(m·K)}$$

Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
Butyl (isobutene), solid / hot melt	0.240
EPDM (ethylene propylene diene monomer)	0.211
Gasfilling(2)	0.031
Gasfilling(3)	0.031
Polyamid 6.6 with 25% glassfibre	0.300
Soda lime glass	1.000
Super Spacer	0.122
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (0.2)	Eps=0.2/0.2





$$U_{fA,B} = \frac{\overline{T} - U_{p1} \cdot b_{p1} - U_{p2} \cdot b_{p2}}{b_f} = \frac{\frac{14.102}{20.000} - 1.031 \cdot 0.190 - 1.031 \cdot 0.190}{0.150} = 2.089 \text{ W/(m}^2\text{·K)}$$

Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
EPDM (ethylene propylene diene monomer)	0.211
Panel	0.035
Polyamid 6.6 with 25% glassfibre	0.300
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (0.2)	Eps=0.2/0.2

31/12/2011
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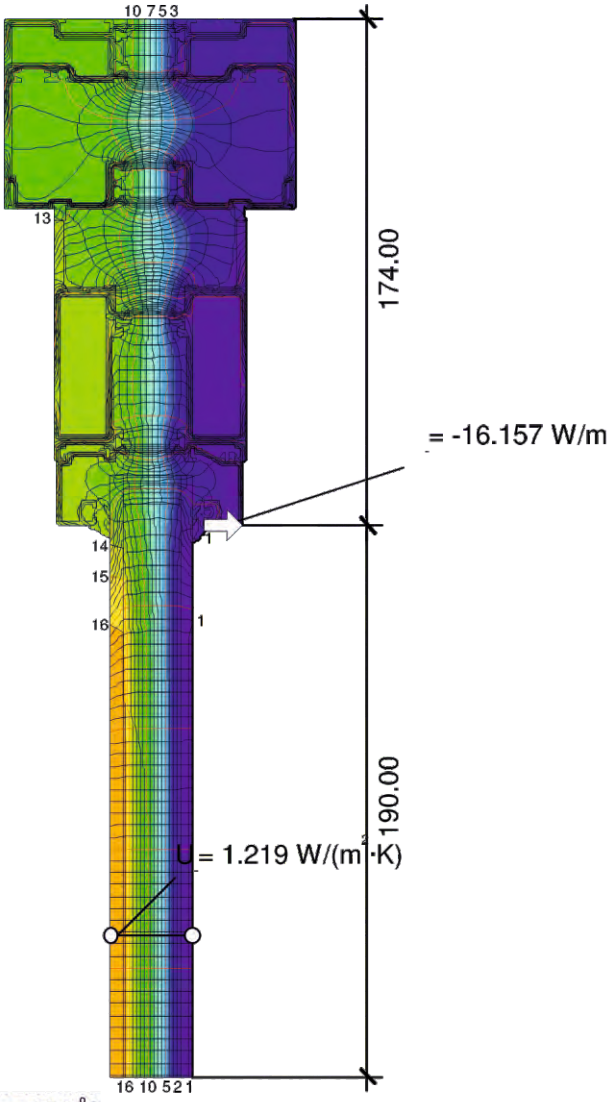

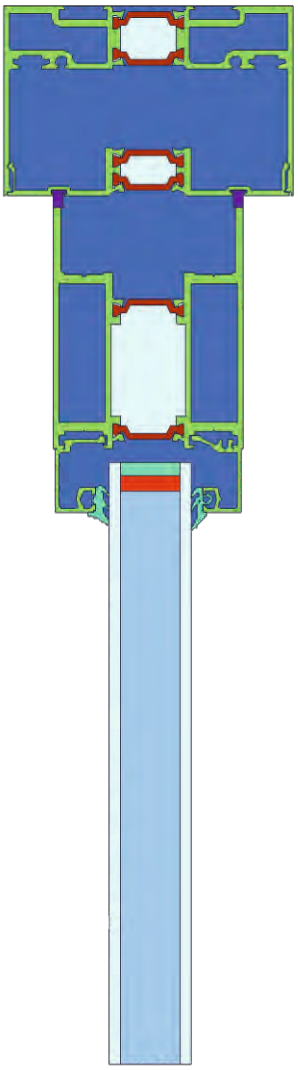

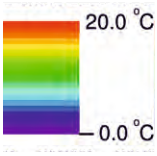

$$= \frac{}{T} - U_g \cdot b_g - U_f \cdot b_f = \frac{16.157}{20.000} - 1.219 \cdot 0.190 - 3.180 \cdot 0.174 = 0.023 \text{ W/(m·K)}$$

Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
Butyl (isobutene), solid / hot melt	0.240
EPDM (ethylene propylene diene monomer)	0.211
Gasfilling(1)	0.031
Mohair (polyester) sweep	0.140
Polyamid 6.6 with 25% glassfibre	0.300
Soda lime glass	1.000
Super Spacer	0.122
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (1)	Eps=0.2/0.2

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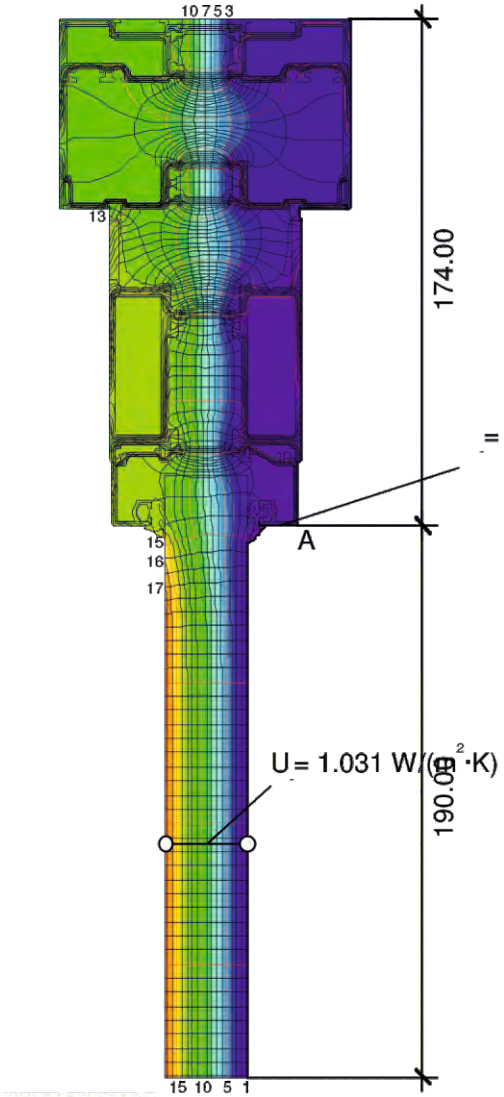

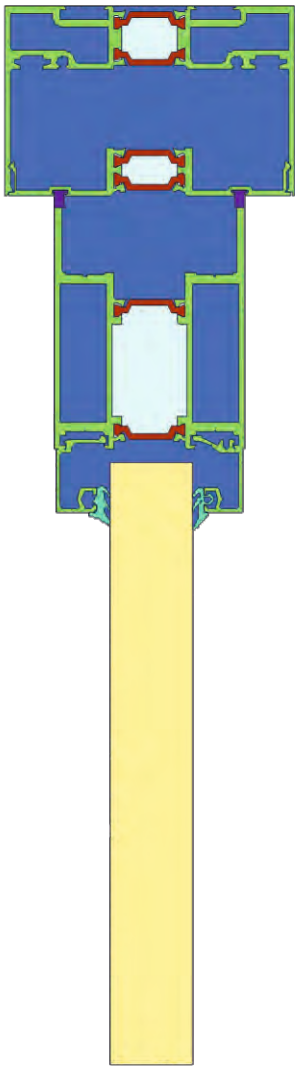

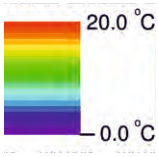

$$U_{fA} = \frac{\overline{T} - U_p \cdot b_p}{b_f} = \frac{\frac{14.984}{20.000} - 1.031 \cdot 0.190}{0.174} = 3.180 \text{ W/(m}^2\text{·K)}$$

Material	[W/(m·K)]
Aluminium (Si alloys)	160.000
EPDM (ethylene propylene diene monomer)	0.211
Mohair (polyester) sweep	0.140
Panel	0.035
Polyamid 6.6 with 25% glassfibre	0.300
Unventilated air cavity	Eps=0.9/0.9
Unventilated air cavity (1)	Eps=0.2/0.2

ASSA ABLOY LIMITED
Test Laboratory, Well Lane, Wednesfield, England. WV11 1TB

Phone: +44 (0) 1902 867730 • Fax: +44 (0)1902 867789
Registered Office : 2096505

TEST REPORT

No. TR 165-12

Test of: Door Set

Issue Date: 23rd July 2012

Test to: PAS 23 - 1:1999 clauses 5.3, 5.2.1, 5.2.2, 5.2.3, 5.3.1, 5.3.2, 5.3.3 and 5.3.8		
Client Details: Jack Aluminium Limited, Units 2A & 3 Curriers Close Industrial Park, Canley, Coventry. CV4 8AW **Contact:** Terry Hirons – Technical **Test Witnessed By:** Terry Hirons – Jack Aluminium and Tim Almond – Adams Rite		
Sample Details: Detailed below		
Samples Received: 24th April 2012	**Date Test Completed:** 14th May 2012	**Job Number:** 2012-129

Introduction

At the request of Jack Aluminium Limited the door assembly detailed below was tested and assessed to select clauses of the requirements of PAS 23-1:1999 General performance requirements for door assemblies – Part 1: Single leaf external door assemblies to dwellings. It is emphasised that assessments have not been made against other Clauses of the Specification

Test Samples

Sample 1– Jack Aluminium Limited double leaf pivot door assembly with midrail.

Sample was fabricated and supplied by Jack Aluminium Limited and submitted for test mounted in 75mm x 100mm timber sub frames

Conclusions

Clause No.	Description	Compliance
5.3	Operating forces before weather tightness tests	**No***
5.2.1	Air permeability	Yes
5.2.2	Water tightness	Yes
5.2.3	Wind Resistance	Yes
Classification	Exposure category	**800U**
5.3.1	Operating forces after weather tightness tests	**No***
5.3.2	Resistance to vertical loads	**No***
5.3.3	Resistance to static torsion	**No***
5.3.8	Door leaf resistance to hard body impact	Yes**

*Failed only due to action of the door closer which increased opening force in excess of the maximum permitted by the standard
**Results taken from single leaf door report reference TR 163-12

Notes

The results are valid only for the conditions under which the test was carried out and for the specific range of door assemblies.
The Jack Aluminium double door assembly has also been tested to PAS 24. Assa Abloy Test Laboratory Report TR 164-12 refers.

Disposal

The door will be retained for a minimum period of one month prior to disposal.

Senior Test Engineer: Richard Darrell

Authorised by: Ian Bridge (Laboratory Manager)

ASSA ABLOY LIMITED
Test Laboratory, Well Lane, Wednesfield, England. WV11 1TB

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Registered Office : 2096505

TEST REPORT

No. TR 163-12

Test of: Door Set

Issue Date: 23rd July 2012

Test to: PAS 23 - 1:1999 clauses 5.3, 5.2.1, 5.2.2, 5.2.3, 5.3.1, 5.3.2, 5.3.3, 5.3.8, 5.4.1 and 5.4.4		
Client Details: Jack Aluminium Limited, Units 2A & 3 Curriers Close Industrial Park, Canley, Coventry. CV4 8AW **Contact:** Terry Hirons - Technical **Tests Witnessed By:** Terry Hirons – Jack Aluminium and Tim Almond – Adams Rite		
Sample Details: Detailed below		
Samples Received: 24th April 2012	**Date Test Completed:** 20th June 2012	**Job Number:** 2012-136

Introduction

At the request of Jack Aluminium Limited the door assembly detailed below was tested and assessed to select clauses of the requirements of PAS 23-1:1999 General performance requirements for door assemblies – Part 1: Single leaf external door assemblies to dwellings. It is emphasised that assessments have not been made against other Clauses of the Specification.

Test Samples

Sample 1– Jack Aluminium Limited single leaf pivot door assembly with midrail

Sample was fabricated and supplied by Jack Aluminium Limited and submitted for test mounted in 75mm x 100mm timber sub frames

Conclusions

Clause No.	Description	Compliance
5.3	Operating forces before weather tightness tests	**No***
5.2.1	Air permeability	Yes
5.2.2	Water tightness	Yes
5.2.3	Wind Resistance	Yes
Classification	Exposure category	**800U**
5.3.1	Operating forces after weather tightness tests	**No***
5.3.2	Resistance to vertical loads	**No***
5.3.3	Resistance to static torsion	**No***
5.3.8	Door leaf resistance to hard body impact	**No***
5.4.1	Cyclic operation test	**No***
5.4.4	Basic security	Yes

*Failed only due to action of the door closer which increased opening force in excess of the maximum permitted within the standard

Notes

The results are valid only for the conditions under which the test was carried out and for the specific range of door assemblies.
The Jack Aluminium single door assembly has also been tested to PAS 24. Assa Abloy Test Laboratory Report TR 162-12 refers

Disposal

The door will be retained for a minimum period of one month prior to disposal

Senior Test Engineer: Richard Darrell

Authorised by: Ian Bridge (Laboratory Manager)

ASSA ABLOY

ASSA ABLOY LIMITED

Test Laboratory, Well Lane, Wednesfield, England. WV11 1TB

Phone: +44 (0) 1902 867730 • Fax: +44 (0)1902 867789
Registered Office : 2096505

TEST REPORT

No. TR 003-13

Test of: Doorset

Issue Date: 9th January 2013

Test to: PAS 23 - 1 : 1999 Clauses 5.3, 5.3.2, 5.3.3 and 5.4.1		
Client Details: Jack Aluminium Limited, Curriers Close, Charter Avenue Industrial Estate, Coventry, West Midlands, CV4 8AW. **Contact:** J Pearson – Jack Aluminium Limited		
Sample Details: Detailed below		
Sample Received: 6th December 2012	**Date Test Completed:** 21st December 2012	**Job Number:** 2012-396

Introduction

At the request of Jack Aluminium Limited the door assemblies detailed below were tested and assessed to the selected clauses of PAS 23-1:1999 General performance requirements for door assemblies – Part 1: Single leaf external door assemblies to dwellings. It is emphasised that assessments have not been made against other Clauses of the Specification.

Test Samples

Sample 1– Jack Aluminium Limited single leaf pivot door assembly with midrail.

Sample was fabricated and supplied by Jack Aluminium Limited and submitted for test mounted in 50mm x 100mm timber sub frames

Conclusions

Clause No.	Description	Compliance
5.3	Operating forces	Yes
5.3.2	Resistance to vertical loads	Yes
5.3.3	Resistance to static torsion	Yes
5.4.1	Cyclic operation test	Yes

Notes

The results are valid only for the conditions under which the test was carried out and for the specific range of door assemblies.

Disposal

The door will be retained for a minimum period of one month prior to disposal.

Senior Test Engineer: Richard Darrell

Authorised by: Ian Bridge (Laboratory Manager)

ASSA ABLOY	TEST REPORT No. TR 003-13

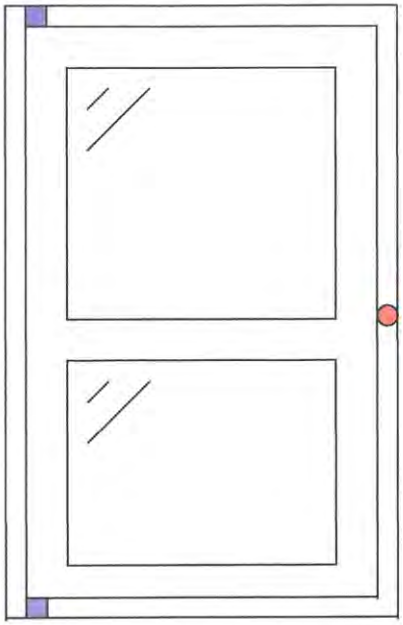
Sample Details

Type:	Single pivot door
Fabricator:	Jack Aluminium Systems Ltd
Material:	TD68 Thermal commercial door Outer frame and leaf: Alloy 6063 T6 M8 Tie bars and TDA 019 end plates fitted in top and bottom rails Threshold : TD134 thermally broken, drained double ramp
Finish:	Door Natural / Frame Natural
Lock:	Assa Abloy 2600-400 single point deadlock Keep : TDA 021
Hinges:	ASSA Abloy 5113-1010N over head concealed closer medium sprung. Non hold open. End load top arm mounted on TDA013 Heavy duty bottom pivot channel fixed into threshold arrangement TDA012
Cylinder:	ASSA AbloyCL-1-ED4545-SC-KA2 cylinder
Handle:	N/A
Letterplate:	N/A
Fixings:	Hinge to Frame : Assa Abloy fixings supplied with 5113-1010N Bottom pivot assembly M6 x 16 Csk SS screws Hinge to leaf : Assa Abloy fixings as supplied plus TDA 013 top arm and TDA 012 bottom pivot kits with No8 x 19.05 SS self tapping screws supplied by Cavalier Fasteners Ltd Lock : TDA 009 lock fitting kit comprising 2 SS lugs and 4 M5 x 25 SS screws supplied by Cavalier Fasteners Ltd Keeps : TDA 021 2 SS fixing tabs and 2 M5 x 20 SS screws. supplied by Cavalier Fasteners Ltd Security Escutcheon : M5 70 Csk SS screw. supplied by Cavalier Fasteners Ltd Glazing fixings : No8 SS self tapping screws. supplied by Cavalier Fasteners Ltd
Weather sealing:	Woven pile WP 5.1 x 6 door stile WP 6.6 x 6 anti finger trap JDA 101 brush seal TDA 020 AFT stile end plugs
Glass:	6mm / 16mm Air/ 6mm Toughened
Glazing system:	External aluminium beads with JDG007 captive outer gasket & shuffle internal bead with JDG003 internal wedge gasket
Sample dimensions:	Frame : 1500mm W x 2300 H Door : 1380mm W x 2210mm H

ASSA ABLOY	**TEST REPORT** **No.** TR 003-13

Drawing of Door Assembly

Door Layout



Hinge

Lock

Laboratory Temperature: 20°C

All hardware was checked for correct operation prior to the commencement of the test

Sequence of Tests

Sample 1 – Clauses 6.3 operating forces, 6.11 cycle operation test, 6.4 resistance to vertical loads & 6.5 resistance to static.

Performance Requirements

The performance of the sample was assessed against the requirements detailed in clause 5 of the Specification.

Test Methods

The sample was prepared for, and tested in accordance with clause 6 of the Specification.

ASSA ABLOY	TEST REPORT No. TR 003-13

Results

6.3 - Operating Forces (before cyclic operation test)

The door was tested in accordance with Clause 6.3.1
The tests were performed after manual operation of all moving parts 5 times

Test	Requirement	Actual	Assessment
6.3.3 – Latching test	Door latches when closed through a distance of 100mm under a 70N closing force. Test to be carried out 5 times	N/A	N/A

Test	Requirement	Actual - Lock	Actual - Unlock	Assessment
6.3.4 – Hardware operating test	Maximum 100N to lock and unlock the handle. Test carried out 5 times	N/A	N/A	N/A

Test	Requirement	Actual - Lock	Actual - Unlock	Assessment
6.3.4 – Hardware operating test	Maximum 2Nm to lock and unlock the cylinder. Test carried out 5 times	0.14Nm 0.15Nm 0.15Nm 0.14Nm 0.15Nm	0.20Nm 0.21Nm 0.21Nm 0.20Nm 0.19Nm	Pass Pass Pass Pass Pass

Test	Requirement	Actual	Assessment
6.3.5 – Initiate movement test	With hardware disengaged, the door opens with a load of 50N applied in the direction of opening. Test carried out 5 times	On each of five times the door opened	Pass

Cycle Test

The door completed 50,000 cycles of operation Pass

Operating Forces (after cyclic operation test)

Test	Requirement	Actual	Assessment
6.3.3 – Latching test	Door latches when closed through a distance of 100mm under a 70N closing force. Test to be carried out 5 times	N/A	N/A

Test	Requirement	Actual - Lock	Actual - Unlock	Assessment
6.3.4 – Hardware operating test	Maximum 100N to lock and unlock the handle. Test carried out 5 times	N/A	N/A	N/A

Test	Requirement	Actual - Lock	Actual - Unlock	Assessment
6.3.4 – Hardware operating test	Maximum 2Nm to lock and unlock the cylinder. Test carried out 5 times	0.14Nm 0.14Nm 0.15Nm 0.15Nm 0.15Nm	0.19Nm 0.19Nm 0.20Nm 0.21Nm 0.21Nm	Pass Pass Pass Pass Pass

Test	Requirement	Actual	Assessment
6.3.5 – Initiate movement test	With hardware disengaged, the door opens with a load of 50N applied in the direction of opening. Test carried out 5 times	On each of the five times the door opened	Pass

ASSA ABLOY	TEST REPORT No. TR 003-13

6.4 – Resistance to Vertical Loads

The door leaf, fixed in its own frame and without any vertical restraint, was positioned at an angle of 90° to the plane of the frame. A vertical downward load of 500N was applied to the free edge of the open door leaf. The load was applied and removed in 100N increments over a minimum of 1 second for each increment.

Operating Forces (after resistance to vertical loads)

Test	Requirement	Actual	Assessment
6.3.3 – Latching test	Door latches when closed through a distance of 100mm under a 70N closing force. Test to be carried out 5 times	N/A	N/A

Test	Requirement	Actual - Lock	Actual - Unlock	Assessment
6.3.4 – Hardware operating test	Maximum 100N to lock and unlock the handle. Test carried out 5 times	N/A	N/A	N/A

Test	Requirement	Actual - Lock	Actual - Unlock	Assessment
6.3.4 – Hardware operating test	Maximum 2Nm to lock and unlock the cylinder. Test carried out 5 times	0.15Nm 0.16Nm 0.15Nm 0.14Nm 0.16Nm	0.20Nm 0.21Nm 0.19Nm 0.20Nm 0.20Nm	Pass Pass Pass Pass Pass

Test	Requirement	Actual	Assessment
6.3.5 – Initiate movement test	With hardware disengaged, the door opens with a load of 50N applied in the direction of opening. Test carried out 5 times	On each of the five times the door opened	Pass

6.5 – Resistance to Static Torsion

The door leaf, fixed in its own frame, was closed and all locking hardware including the latch mechanism, disengaged. The lower corner of the opening side of the door leaf was restrained using a block which covered the door leaf 50mm from the edge. A load of 350N was applied in the direction of opening, on the unrestrained corner of the opening side, at a point 50mm from both edges of the door frame, and held for 1 minute.

Operating Forces (after resistance to static torsion test)

Test	Requirement	Actual	Assessment
6.3.3 – Latching test	Door latches when closed through a distance of 100mm under a 70N closing force. Test to be carried out 5 times	N/A	N/A

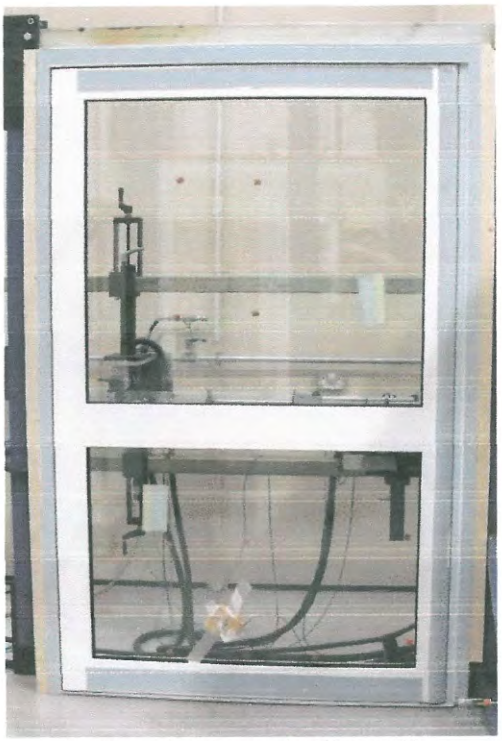
Test	Requirement	Actual - Lock	Actual - Unlock	Assessment
6.3.4 – Hardware operating test	Maximum 100N to lock and unlock the handle. Test carried out 5 times	N/A	N/A	N/A

Test	Requirement	Actual - Lock	Actual - Unlock	Assessment
6.3.4 – Hardware operating test	Maximum 2Nm to lock and unlock the cylinder. Test carried out 5 times	0.15Nm 0.14Nm 0.14Nm 0.15Nm 0.15Nm	0.20Nm 0.20Nm 0.20Nm 0.21Nm 0.20Nm	Pass Pass Pass Pass Pass

ASSA ABLOY	**TEST REPORT** **No.** TR 003-13

Test	Requirement	Actual	Assessment
6.3.5 – Initiate movement test	With hardware disengaged, the door opens with a load of 50N applied in the direction of opening. Test carried out 5 times	On each of the five times the door opened	Pass

Pictures of sample



Sample received in a good working condition

Sample during clause 6.4 – Resistance to Vertical Loads

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TEST REPORT

No. TR 162 -12

Test of: Door Set

Issue Date: 23rd July 2012

Test to: PAS 24:2007 + A2:2012		
Client Details: Jack Aluminium Limited, Units 2A & 3 Curriers Close Industrial Park, Canley, Coventry. CV4 8AW **Contact:** Terry Hirons – Technical **Tests Witnessed by:** Terry Hirons – Jack Aluminium and Tim Almond – Adams Rite		
Sample Details: Detailed below		
Samples Received: 24th April 2012	**Date Test Completed:** 27th April 2012	**Job Number:** 2012-136

Introduction

At the request of Jack Aluminium Limited the door assembly detailed below was tested to the requirements of PAS 24:2007 + A2:2011 – Enhanced Security Performance Requirements For Door Assemblies – Single leaf and double door leaf, hinged external door assemblies to dwellings.

Test Samples

Sample 1 – Jack Aluminium Limited single leaf pivot door assembly with midrail

The sample was fabricated and supplied by Jack Aluminium Limited and submitted for test mounted in a 75mm x 100mm timber sub frame

Conclusions

Clause No.	Description	Compliance
A.4	Manipulation test	Yes
A.5.2	Infill medium removal test – manual	Yes
A.5.3	Infill medium removal test – mechanical	Yes
A.5.4	Infill Medium Removal test – Manual Cutting	Yes
A.6	Mechanical loading test	Yes
A.7	Manual check test	Yes
A.8	Additional mechanical loading test	N/A
A.9	Soft body impact test	Yes
A.10	Hard body test	Yes
A.11	Security hardware and cylinder test	Yes

Notes

The results are valid only for the conditions under which the test was carried out and for the specific range of door assemblies.
The Jack Aluminium single door assembly has also been tested to PAS 23. Assa Abloy Test Laboratory Report TR 163-12 refers.

Disposal

The door will be retained for a minimum period of one month prior to disposal.

Senior Test Engineer: Richard Darrell

Authorised by: Ian Bridge (Laboratory Manager)

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Test Laboratory, Well Lane, Wednesfield, England. WV11 1TB

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Registered Office : 2096505

TEST REPORT

No. TR 164-12

Test of: Door Set

Issue Date: 23rd July 2012

Test to: PAS 24:2007 + A2 : 2011		
Client Details: Jack Aluminium Limited, Units 2A & 3 Curriers Close Industrial Park, Canley, Coventry. CV4 8AW **Contact:** Terry Hirons – Technical **Test Witnessed By:** Terry Hirons – Jack Aluminium and Tim Almond – Adams Rite		
Sample Details: Detailed below		
Samples Received: 24th April 2012	**Date Test Completed:** 25th April 2012	**Job Number:** 2012-129

Introduction

At the request of Jack Aluminium Limited the door assembly detailed below was tested to the requirements of PAS 24:2007 + A2 : 2011 – Enhanced Security Performance Requirements For Door Assemblies – Single leaf and double door leaf, hinged external door assemblies to dwellings.

Test Samples

Sample 1 – Jack Aluminium Limited double leaf pivot door assembly with midrail

The sample was fabricated and supplied by Jack Aluminium Limited and submitted for test mounted in a 75mm x 100mm timber sub frame.

Conclusions

Clause No.	Description	Compliance
A.4	Manipulation test	Yes
A.5.2	Infill medium removal test – manual	Yes
A.5.3	Infill medium removal test – mechanical	Yes
A.5.4	Infill Medium Removal test – Manual Cutting	Yes
A.6	Mechanical loading test	Yes
A.7	Manual check test	Yes
A.8	Additional mechanical loading test	N/A
A.9	Soft body impact test	Yes
A.10	Hard body test	Yes
A.11	Security hardware and cylinder test	Yes

Notes.

The results are valid only for the conditions under which the test was carried out and for the specific range of door assemblies

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Disposal

The door will be retained for a minimum period of one month prior to disposal

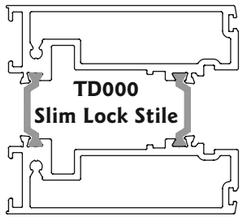
Senior Test Engineer: Richard Darrell

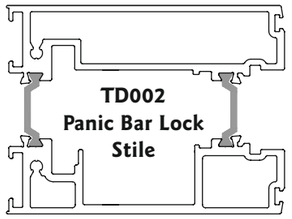
Authorised by: Ian Bridge (Laboratory Manager)

JACK ALUMINIUM SYSTEMS

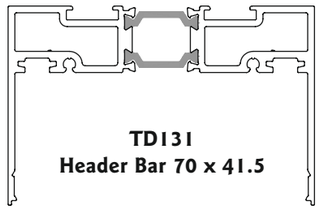
TD68 THERMAL IMPROVED SHOPFRONT PROFILES

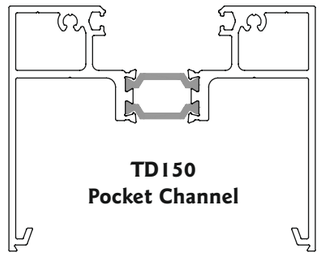
JACK ALUMINIUM SYSTEMS

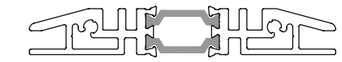

TD000
Slim Lock Stile

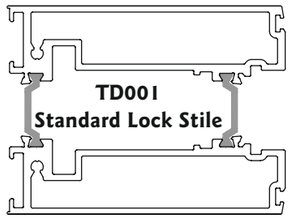

TD002
Panic Bar Lock Stile

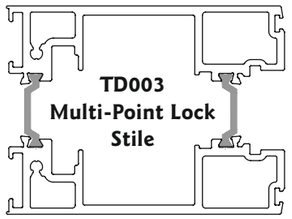

TD120
Shuffle Bead


TD131
Header Bar 70 x 41.5

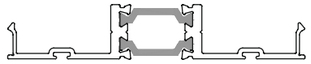

TD150
Pocket Channel

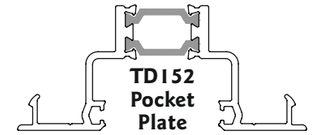

TD134
Thermal Drained Double Ramp Threshold

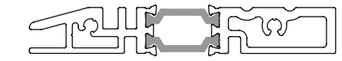

TD001
Standard Lock Stile


TD003
Multi-Point Lock Stile

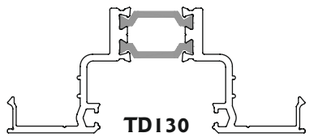

TD121
Fixed Security Bead

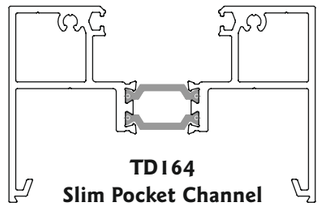

TD132
Header Bar Plate

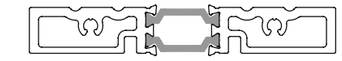

TD152
Pocket Plate

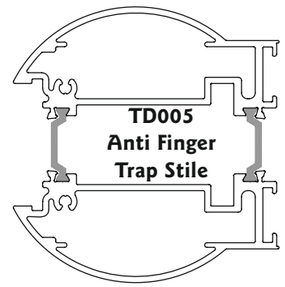

TD135
Thermal Drained Single Ramp Threshold


TD158
Triple Glaze Shuffle Bead


TD130
Header Bar Pocket Plate

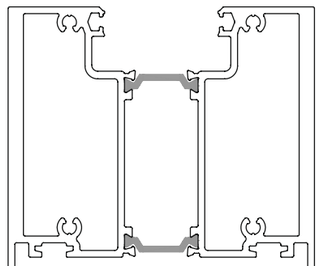

TD164
Slim Pocket Channel

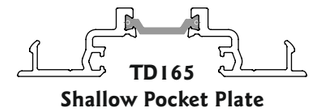

TD136
Thermal Square Threshold


TD005
Anti Finger Trap Stile

TD006
Anti Finger Trap Panic Stile

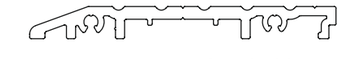

TD159
Triple Glaze Fixed Bead

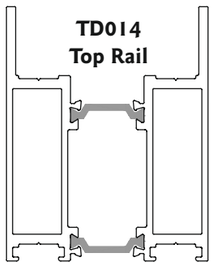

TD149
Automatic Door Header Bar

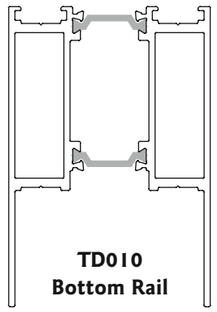

TD165
Shallow Pocket Plate

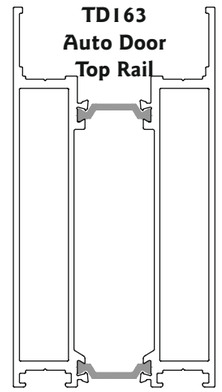

TD138
NT Double Ramp Threshold


TD137
NT Single Ramp Threshold

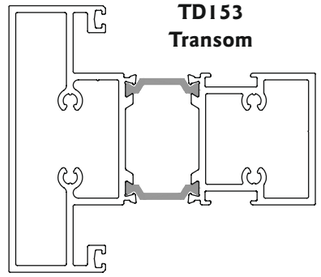

TD161 Low Threshold


TD014
Top Rail

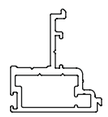

TD010
Bottom Rail

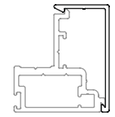

TD163
Auto Door Top Rail

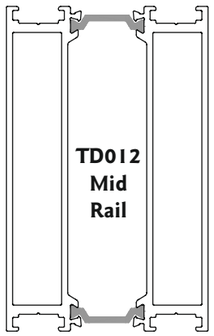
TDA133
Concealed Closer NTB Machined Cover Plate (350 mm long)

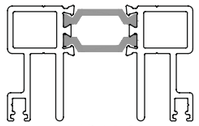

TD153
Transom


TD162 Low Threshold Extension

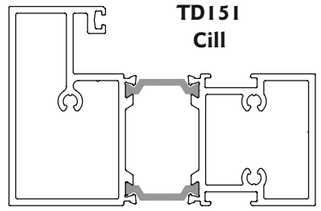

TD160
Rebate Adaptor

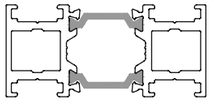

JD147
Rebate Adaptor Cover


TD012
Mid Rail

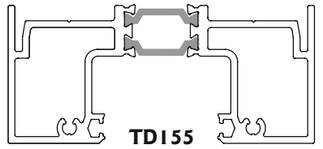

TD125
Slide Door Guide Channel


TD007
Anti Finger Trap Adaptor


TD151
Cill


TD157 Lay Bar

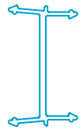

TD127
Brush Seal Carrier


TD155
Slim Door Jamb

TDA014
Stile Infill

TDA015
Pocket Closer

TDA016
AFT Connector



TDA017
AFT Stile Infill

TDA018
Hinge Stile Nosing Profile

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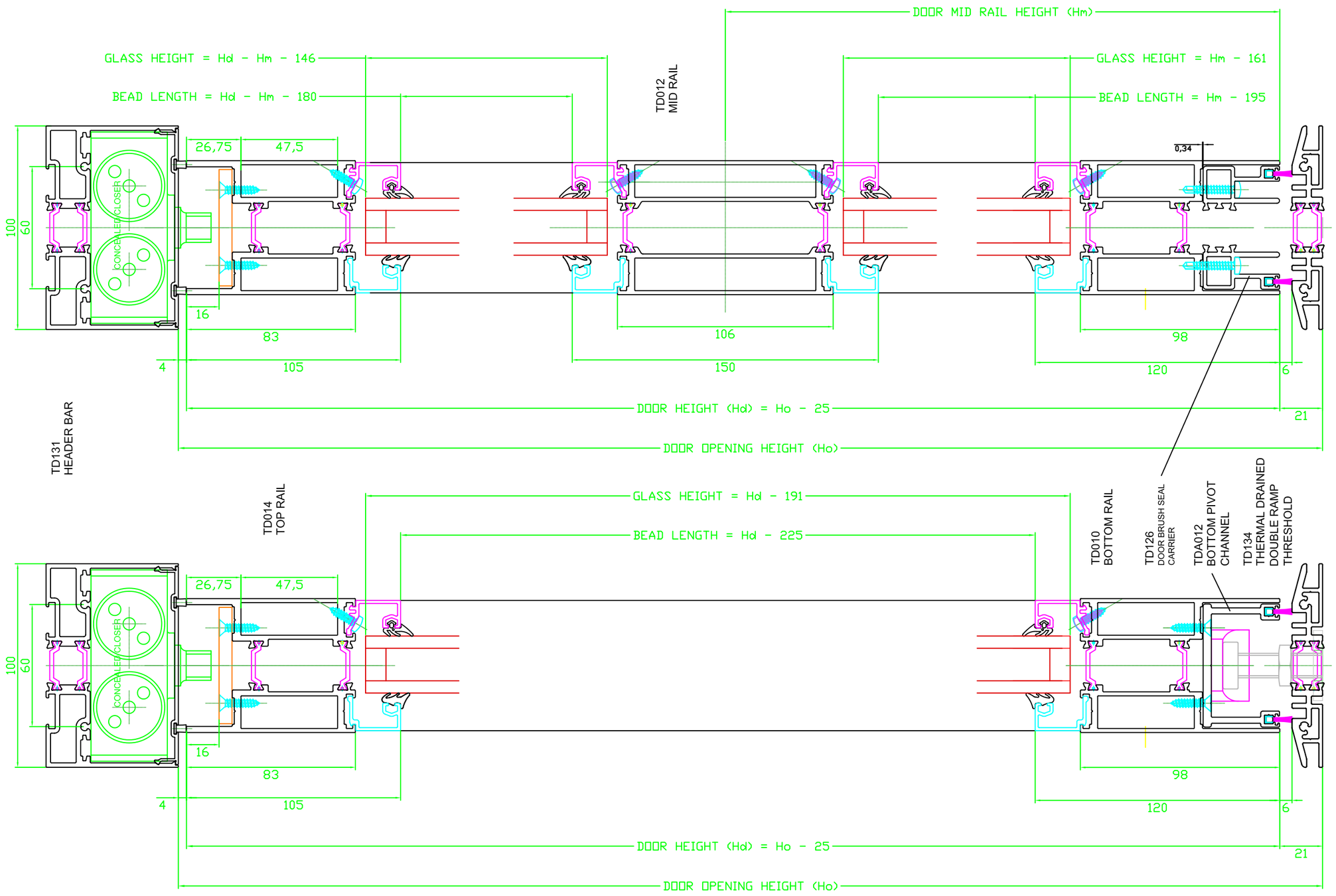
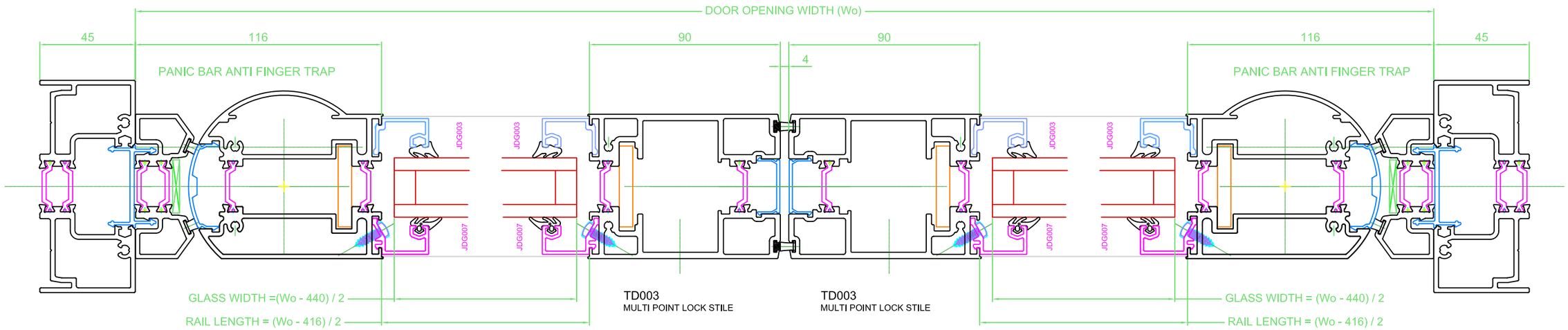
Issue 15 15.05.08


DOOR MID RAIL HEIGHT (Hm)
GLASS HEIGHT = Hd - Hm - 146
BEAD LENGTH = Hd - Hm - 180
GLASS HEIGHT = Hm - 161
BEAD LENGTH = Hm - 195
TD012
MID RAIL
26,75
47,5
0,34
100
60
CONCEALED CLOSER
16
83
4
105
106
150
98
120
6
21
DOOR HEIGHT (Hd) = Ho - 25
DOOR OPENING HEIGHT (Ho)
TD131
HEADER BAR
TD014
TOP RAIL
GLASS HEIGHT = Hd - 191
BEAD LENGTH = Hd - 225
TD010
BOTTOM RAIL
TD126
DOOR BRUSH SEAL
CARRIER
TDA012
BOTTOM PIVOT
CHANNEL
TD134
THERMAL DRAINED
DOUBLE RAMP
THRESHOLD

HORIZONTAL CROSS SECTION, ANTI FINGER TRAP PANIC LOCK STILE



TD155
SLIM DOOR JAMB

TD006
ANTI FINGER TRAP PANIC STILE

TD003
MULTI POINT LOCK STILE

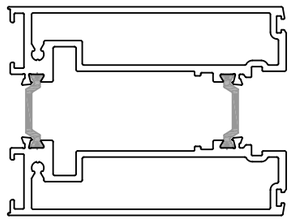
TD003
MULTI POINT LOCK STILE

TD006
ANTI FINGER TRAP PANIC STILE

TD155
SLIM DOOR JAMB

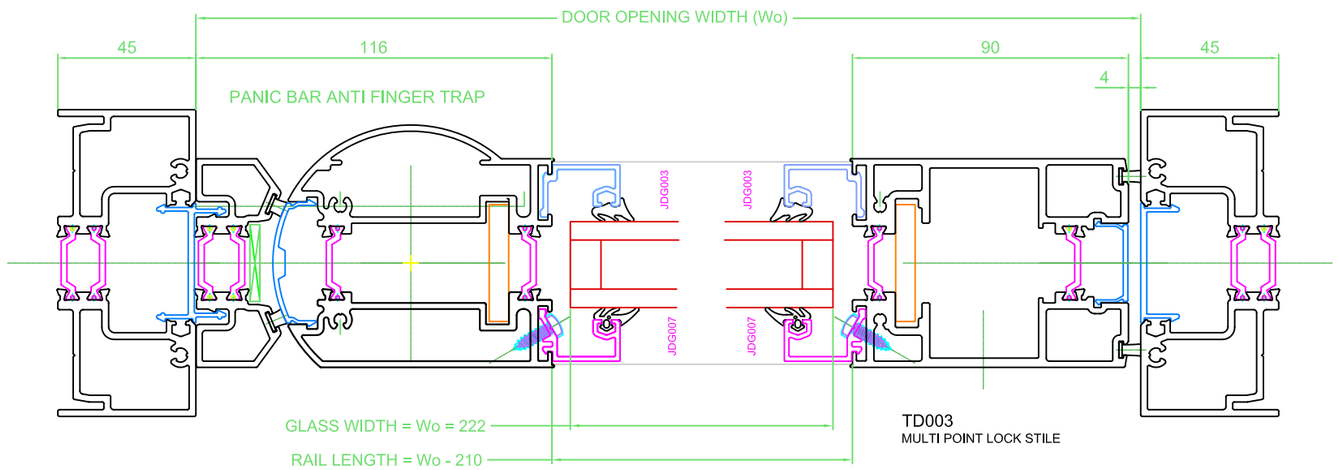
TD007
ANTI FINGER TRAP ADAPTOR

TD007
ANTI FINGER TRAP ADAPTOR



TD001
STANDARD LOCK STILE

THE CHOICE OF STILE PROFILE MAY DEPEND ON THE CHOSEN LOCKING OR PANIC HARDWARE. TD003 WILL BE MORE SUITED TO CONCEALED MECHANISMS WHERE AN INTERNAL FREE AREA IS REQUIRED. TD001 MAY BE CHOSEN FOR OTHER LOCKING.



TD155
SLIM DOOR JAMB

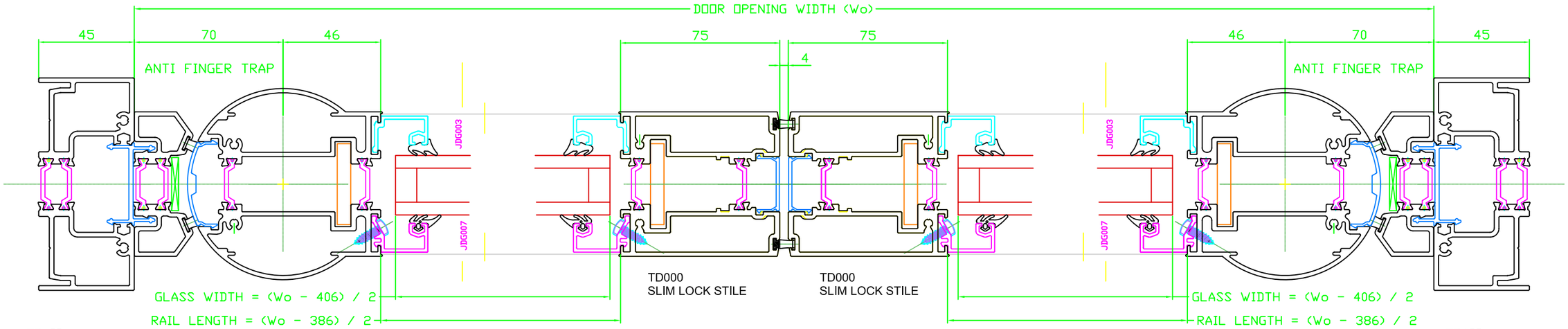
TD006
ANTI FINGER TRAP PANIC STILE

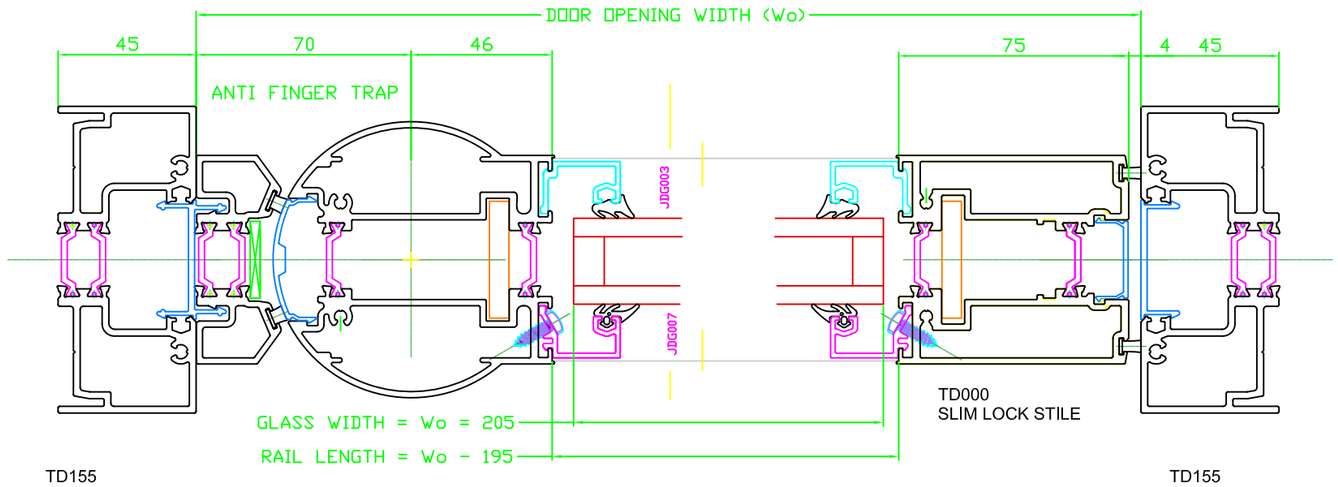
TD003
MULTI POINT LOCK STILE

TD155
SLIM DOOR JAMB

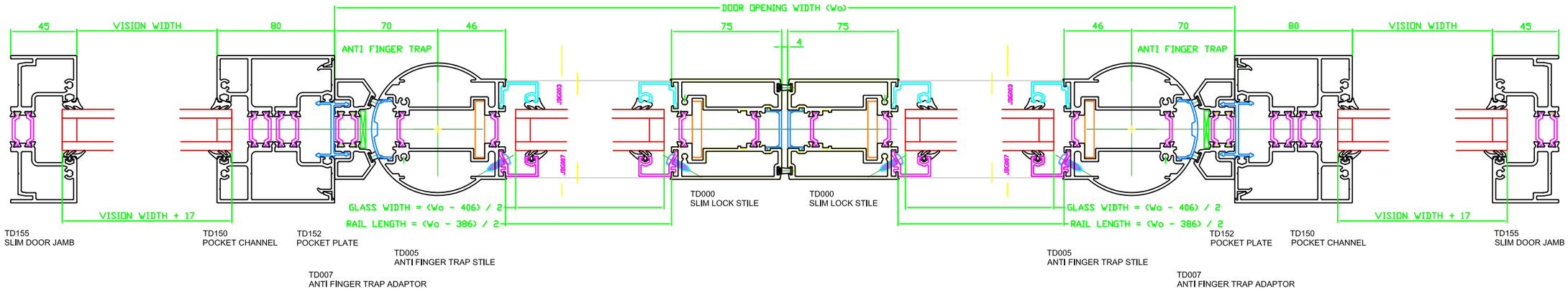
TD007
ANTI FINGER TRAP ADAPTOR

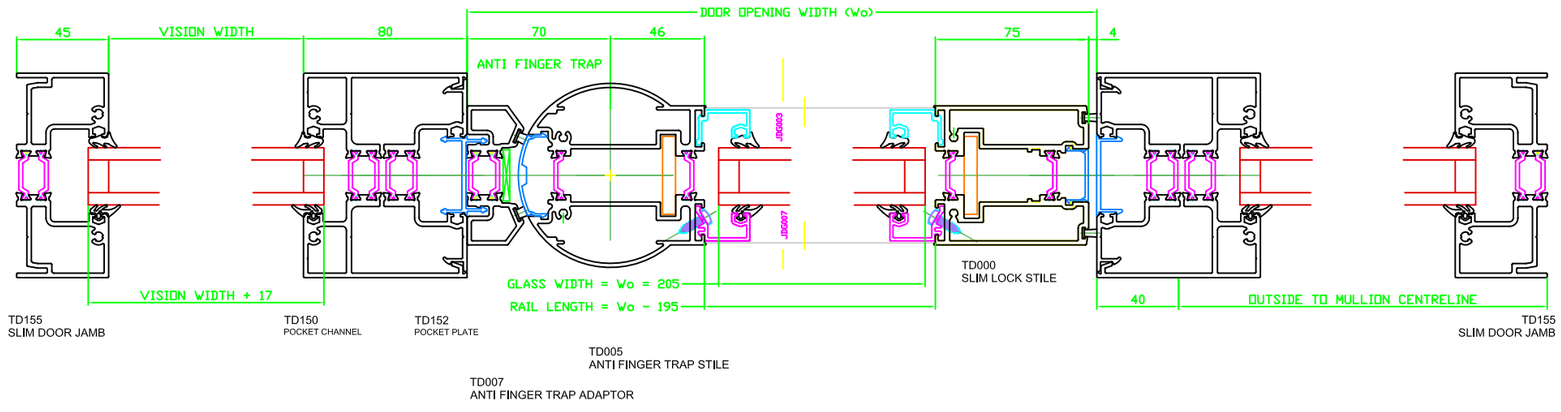
PIVOT DOOR


DOOR OPENING WIDTH (Wo)
45
70
46
75
4
75
46
70
45
ANTI FINGER TRAP
ANTI FINGER TRAP
JDG003
JDG007
JDG003
JDG007
GLASS WIDTH = (Wo - 406) / 2
RAIL LENGTH = (Wo - 386) / 2
GLASS WIDTH = (Wo - 406) / 2
RAIL LENGTH = (Wo - 386) / 2
TD000
SLIM LOCK STILE
TD000
SLIM LOCK STILE
TD155
SLIM DOOR JAMB
TD155
SLIM DOOR JAMB
TD005
ANTI FINGER TRAP STILE
TD005
ANTI FINGER TRAP STILE
TD007
ANTI FINGER TRAP ADAPTOR
TD007
ANTI FINGER TRAP ADAPTOR


DOOR OPENING WIDTH (Wo)
45
70
46
75
4
45
ANTI FINGER TRAP
JDG003
JDG007
GLASS WIDTH = Wo = 205
RAIL LENGTH = Wo - 195
TD000
SLIM LOCK STILE
TD155
SLIM DOOR JAMB
TD155
SLIM DOOR JAMB
TD005
ANTI FINGER TRAP STILE
TD007
ANTI FINGER TRAP ADAPTOR

PIVOT DOOR





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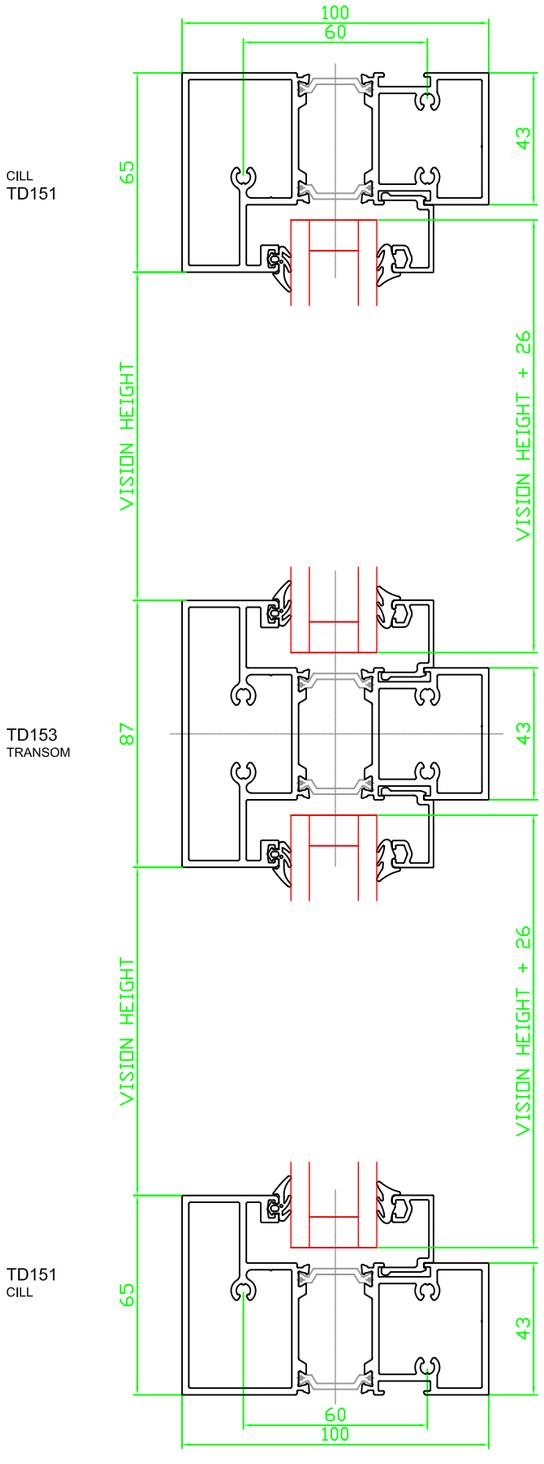
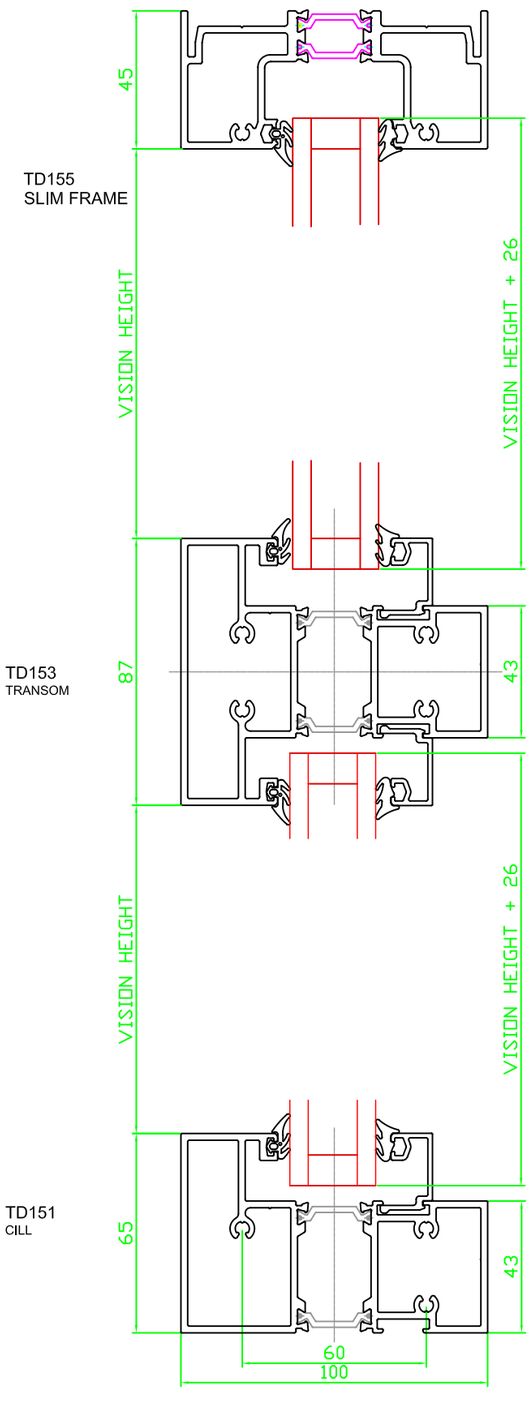
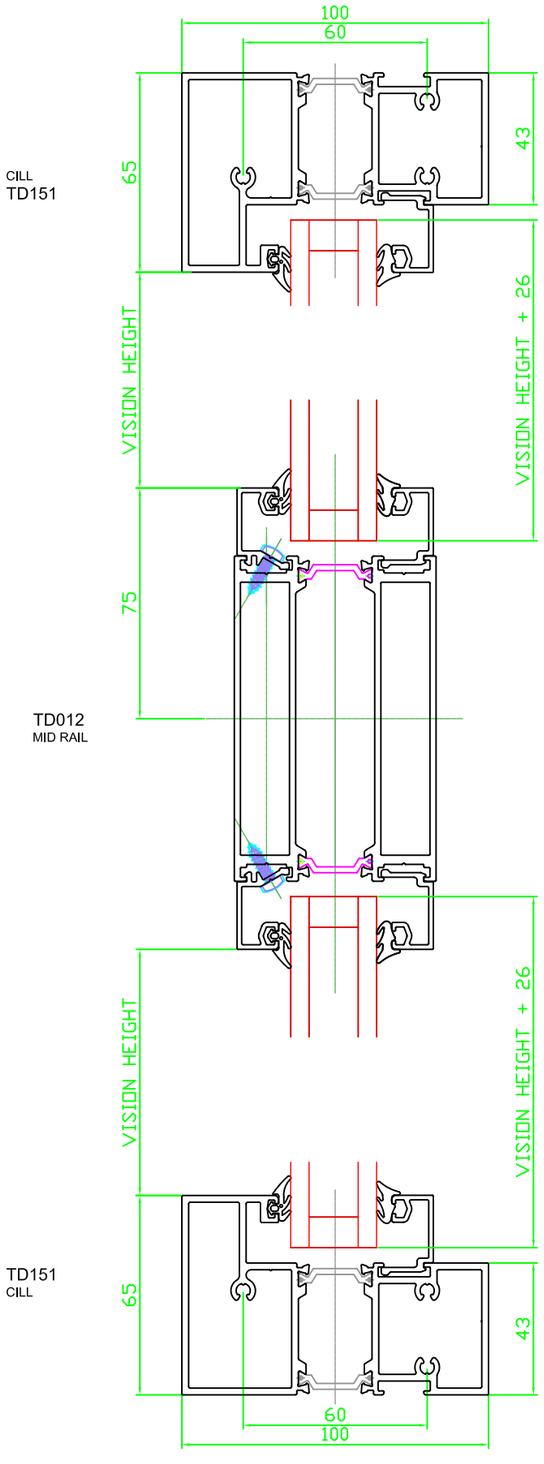
PIVOT DOOR


100
60
CILL
TD151
65
43
VISION HEIGHT
VISION HEIGHT + 26
TD153
TRANSOM
87
43
VISION HEIGHT
VISION HEIGHT + 26
TD151
CILL
65
43
60
100


TD155
SLIM FRAME
45
VISION HEIGHT
VISION HEIGHT + 26
TD153
TRANSOM
87
43
VISION HEIGHT
VISION HEIGHT + 26
TD151
CILL
65
43
60
100


100
60
CILL
TD151
65
43
VISION HEIGHT
VISION HEIGHT + 26
75
TD012
MID RAIL
VISION HEIGHT
VISION HEIGHT + 26
TD151
CILL
65
43
60
100

JACK
ALUMINIUM SYSTEMS

Jack Aluminium Systems Ltd. commenced trading in 2007.

The company was created to supply an excellent service to its customers so as to facilitate growth for its customers and consequently growth for Jack Aluminium.

This growth would be in a chosen range of products which would steadily grow as the company grew. Jack Aluminium offers commercial doors and framing in standard aluminium (the JD47 range) and a thermally improved commercial door and framing system, namely the TD68 mm range. Jack Aluminium also offer low rise curtain walling, an aluminium window range, louvres and glaze in vents. Frameless glazing is another product they market.

Jack positioned themselves on the site of SP and PC Powder Coaters who are a Qualicoat approved painter. Offering an excellent painted product formed part of Jack Aluminium's strategic intent in providing a service to its customers.

Jack is not driven by a desire to be the biggest but by a desire to be the best in its chosen markets. If Jack can achieve this then they will maintain a sustainable growth curve. In spite of the troubled market conditions Jack has grown steadily over the past five years.

Enhanced Security Door BM TRADA UKAS PRODUCT CERTIFICATION

CAB

CENTRE FOR WINDOW AND CLADDING TECHNOLOGY

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