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FIRE ASSESSMENT REPORT

FAR 3526 ISSUE 5

**FIRE RESISTANCE OF WITTUR HYDRA, HYDRA EVO, PEGASUS AND AUGUSTA
TYPE LIFT LANDING DOORS TO AS1530.4:2014**

CLIENT

WITTUR Holding GmbH
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Germany

PROJECT NUMBER:

FC10135-001

ISSUE DATE:

11 May 2018

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ASSESSMENT OBJECTIVE

This report gives BRANZ's assessment of variations to Wittur Hydra, Hydra EVO, Pegasus, Augusta and Augusta EVO lift landing doors in accordance with AS 1530.4:2014.

CONCLUSION

It is considered that based on the supplied Exova Warringtonfire, RED and CSIRO assessment and fire test reports on the Wittur Hydra, Hydra EVO, Pegasus, Augusta and Augusta EVO lift landing doors, if tested in accordance with AS 1530.4:2014, would achieve at least an Integrity of 120 minutes (FRL -/120/-).

Variations for 3201-Hydra door Types 01/C, 11/R-L, 41/C, and 43/R:

- panel edge variants (only for types 01/C, 41/C, 43/R)
- covered frame and panel variants
- contact variants
- mechanism cover plate variants
- sill and undersill variants
- push button variants
- Gap cover (calfeutrement) variant
- lateral front and upper frame variant
- frame variants
- cabinet installation variants
- LDU cabinet in side frames for centre and side opening configurations
- Reduced panel overlap to 17 mm
- Double skin Construction
- Inclusion of intumescent seals and weather seals
- Opening sizes as given in Table 2.

The Hydra Evo can be considered the same as the Hydra but with the following changes:

- Frame and panel thickness reduced.
- Closing door frame changed to a two piece construction
- Upper frame section variants
- Frame section fixing variants
- Doorset fixing bracket variants
- Opening sizes as given in Table 2.

The Pegasus can be considered the same as the Hydra but with the following changes:

- Panel fixing method variant
- Shoe guides variants
- Doorset mechanism variant

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Variations for 3215 Augusta door Types 01/C and 11/R-L:

- panel edge variants (only for type 01/C)
- covered frame and panel variants
- screwed guide variant
- sill variants
- frame variants
- header variant
- push button box variant
- Gap cover (calfeutrement) variant
- landing lock variant
- lateral front and cabinet installation variants
- LDU cabinet in side frames for centre and side opening configurations
- Reduced panel overlap to 17 mm
- Inclusion of intumescent seals and weather seals
- Opening sizes as given in Table 2.

Variations for Augusta Evo Types 01/C and 11/R-L:

- Sill reduced by 5 mm
- Door mechanism variants
- Modified lower bracket
- Riveted frame design
- Optional steel cladding
- Modified door frame construction
- Indicator panel inclusion in frame.
- Frame wall gap covering profile
- Sill material variation
- Electrical contact variation
- Roller materials
- Track from hollow steel section to solid steel
- Reduction in labyrinth (rebate) of meeting edges of centre opening doors
- Inclusion of intumescent seals and weather seals
- Opening sizes as given in Table 2.

Variations for Augusta and Augusta Evo:

- Use of 0.4 mm to 0.8 mm steel S-Trim to fix the jambs and header to the wall.
- Alternative wall and sill connections.

All Doors:

- Connections to structural steel as discussed in 2.8.



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DOCUMENT REVISION STATUS

ISSUE NO.	DATE ISSUED	DESCRIPTION
1	17 November 2010	Initial Issue
2	8 July 2013	Additional items included
3	20 January 2015	Updated referenced reports and included Hydra Evo and Pegasus doors
4	13 March 2017	Updated referenced reports and variations to Augusta Evo. Additional data on 3201 Hydra. Change of standard to AS 1530.4:2014 Inclusion of Weather Seals
5	11 May 2018	S-Trim for Augusta and August EVO, installation on structural steel, addition of S-trim, and changes to sill installation and jamb detail.



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1. BACKGROUND

The Hydra, Pegasus and Augusta doors have been subjected to fire resistance testing in accordance with range of test methods including BS 476: Part 22:1987, EN 81-58: 2003 or UNE 23-802-79. On the basis of this testing, the above listed variations have previously been assessed to BS 476: Part 22: 1987 in the Exova Warringtonfire reports given in Table 1.



Table 1: Exova Warringtonfire reports

Door Series	Door type	Exova Warringtonfire report No.	Issue date
3201-Hydra Hydra Evo Pegasus	01/C	190327A (Issue 4)	11 May 2015
	11/R-L	190327B (Issue 4)	11 May 2015
	41/C	190327C (Issue 6)	3 December 2015
	43/R	190327D (Issue 3)	11 May 2015
3215-Augusta	01/C	190328A (Issue 5)	13 September 2016
	11/R-L	190328B (Issue 5)	13 September 2016
Augusta Evo	01/C 11/R-L	376251 (Issue 4)	15 December 2017
Augusta and Augusta Evo	01/C 11/R-L	392702 (Issue 4)	26 March 2018
All	All	WF379283 (Issue 2)	4 April 2017

1.1 Exova Warringtonfire Assessment Report No 314521 dated 16 January 2012

Exova Warringtonfire Assessment report No 314521 included supplementary comments to WF assessment report Nos 190328A and 190328B. The inclusion of the LDU cabinet would not prejudice the previously assessed performance of the Augusta two panel doors including the centre and side opening variations.

Refer to the Exova Warringtonfire assessment reports for specific details on the variations and test data.

1.2 Exova Warringtonfire Assessment Report No 377435 dated 21 December 2016

Exova Warringtonfire Assessment report No 377435 included supplementary comments to WF Assessment report No 376251. The inclusion of the LDU or an LDU for FCU frame enclosure would not prejudice the previously assessed performance of the Augusta EVO two panel doors including the centre and side opening variations.

Refer to the Exova Warringtonfire assessment reports for specific details on the variations and test data.



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1.3 Research Engineering Development Façade Consultants Ltd (RED) Test Report No R13A05-1

Research Engineering Development Façade Consultants Ltd (RED) Test Report No R13A05-1 described a fire resistance test on a Wittur Augusta side opening lift landing door. The test was conducted to the heating conditions and criteria in BS 476: Part 22: 1987. The door maintained the integrity criteria of the standard for 120 minutes without failure. The door included a reduced panel overlap of 17 mm.

1.4 CSIRO Assessment Number FCO-0706

In CSIRO Assessment Number FCO-0706 it was considered that a two panel centre opening Series 3201 (Hydra) with an unlocking device and alternative latching mechanism would achieve a fire resistance level (FRL) of at least -/120/- in accordance with AS 1530.4:2005.

1.5 CSIRO Assessment Number FCO-1313

In CSIRO Assessment Number FCO-1313 it was considered that a two panel side opening Series 3201 (Hydra) if installed in a fully grouted frame would achieve a fire resistance level (FRL) of at least -/120/- in accordance with AS 1530.4:1997.

1.6 CSIRO Assessment Number FCO-1793

In CSIRO Assessment Number FCO-1793 it was considered that a four panel and six panel centre opening Series 3201 (Hydra 41/C and 61/C) with opening size of 2,800 mm wide x 3,000 mm high and if installed in a fully grouted frame would achieve a fire resistance level (FRL) of at least -/120/- in accordance with AS 1530.4:1997.

1.7 Exova Warringtonfire Assessment report No 334550 dated 7 November 2013

In Exova Warringtonfire Assessment report No 334550 it was considered that the inclusion of intumescent seals and a weather seals would not prejudice the previously assessed performance of various Wittur lift landing doors. These included Hydra, Pegasus and Augusta lift landing doors referenced in Table 1 above.

1.8 Exova Warringtonfire Assessment Report 392702 Issue 4 dated 15 December 2017

In Exova Warringtonfire, (WF), Assessment Report 392702 Issue 4 provided supplementary comments on WF assessment reports 190328A, 190328B and 376251. In WF 392702 Issue 4 it was considered that the Augusta and Augusta EVO doors could be installed using a continuous metal plate, the S-Trim, fixed to the door jamb and wall. No cement grouting or mineral wool filling is required.

Refer to the Exova Warringtonfire assessment reports for specific details on the variations and test data.

Figure 2 to Figure 4, extracted from Exova Warringtonfire Assessment report No 334550 show standard and modified details of the doors.

1.9 Fire resistance test report in accordance with EN 81.58:2004

In VTT fire resistance test report VTT-S-00082-13 a single skin steel lift landing door was tested in accordance with SFS-EN 81:58:2004 and found to achieve Integrity of 132 minutes. A 0.4 mm thick steel S-Trim was used to attach the door jamb and head to the wall. There was no cement grout or mineral wool filling between the jamb and the wall.

2. DISCUSSION

2.1 BS 476: Part 22 and AS 1530.4:2014 Test Method Comparison

In Exova Warringtonfire assessment reports and RED fire test reports listed in section 1 it was determined that Wittur Hydra and Augusta lift landing doors would achieve 120 minutes Integrity if they were tested in accordance with BS 476: Part 22: 1987. This assessment considers the differences between BS 476: Part 22: 1987 and AS 1530.4:2014 only. For specific construction or details on the assessed lift landing doors refer to the Exova Warringtonfire assessment reports listed in section 1.

A comparison between BS476: Part 22: 1987 and AS 1530.4:2014 has been made and determined with respect to lift landing doors. The significant differences are discussed below:

Both test standards use the same ISO fire resistance curve but differ slightly in the limits for the average furnace temperature. On the assumption that the fire resistance test curves complied with BS476 it is considered they would also likely comply with AS 1530.4:2014.

The other area with regards to furnace conditions is that in BS 476 the neutral pressure plane inside the furnace is set to nominally 1,000 mm high. In AS 1530.4:2014 the neutral pressure plane is nominally 500 mm high. With lift landing doors largely made from steel it is considered the difference in height would not impact on the performance of the tested lift landing doors.

In both BS 476 and AS 1530.4:2014 a cotton pad, flaming in excess of 10 seconds and gap gauges 6 mm x 150 mm and 25 mm diameter are used to determine Integrity failure. As the lift landing doors have been assessed by Exova Warringtonfire to BS 476: Part 22: 1987 it is considered the Integrity criteria of AS 1530.4:2014 would also be met.

Therefore based on the information supplied and a comparison between test methods it is considered that had the Wittur Hydra and Augusta lift landing doors been tested to AS 1530.4:2014 it is expected they would also achieve an Integrity of at least

120 minutes or a fire resistance level (FRL) of at least -/120/-. Specific items within the test reports are discussed below.

2.2 Frame Overlap Variation



In RED test report R13A05-1 an Augusta side opening lift landing door was tested with a variation to the leaf overlap to the frame member. Previously tested and assessed Hydra and Augusta doors had a 22 mm overlap. This was reduced to 17 mm for the above test. The specimen maintained the integrity criteria for 120 minutes without failure. It is considered that there is sufficient similarity between the Augusta and Hydra doors for the result to apply equally to the Hydra door.

In AS 1735.11:1986 Fire Rated Landing Doors the minimum overlaps between the door panels and jambs is 13 mm. Therefore the tested variation overlap described above complies with the Australian lift landing door specification.

Therefore based on the discussion in 2.1 and 2.2, it is considered that the previously tested and assessed Wittur Hydra and Augusta doors as listed in section 1 with the inclusion of the reduced panel jamb overlap of 17 mm as described above would also achieve an Integrity of at least 120 minutes or a fire resistance level (FRL) of at least -/120/- when tested in accordance with AS 1530.4:2014.

2.3 CSIRO Assessment Number FCO-0706, FCO-1313, FCO-1793

These assessments applied to variation to the 3201 Hydra and considered that the doors would achieve a fire resistance level (FRL) of at least -/120/-, when fitted with an unlocking device and alternative latching mechanism (FCO-0706), installed in a fully grouted frame (FCO-1313), and opening size of 2,800 mm wide x 3,000 mm high and if installed in a fully grouted frame for the four panel and six panel centre opening.

The assessments were carried out for compliance with AS 1530.4:2005 (FCO-0706) and AS 1530.4:1997 (FCO-1313 and FCO-1793). A comparison of AS 1530.4:2005 with AS 1530.4:2014 indicates that the procedures and criteria are sufficiently similar for the doors to achieve an FRL of -/120/- if tested in accordance with AS 1530.4:2014.

With reference to the original tests in accordance with BS 476: Part 22, on which FCO 1313 and FCO-1793 are based, as discussed in paragraph 2.1 above, it is considered that had the lift landing doors been tested to AS 1530.4:2014 it is expected they would also achieve an Integrity of at least 120 minutes or a fire resistance level (FRL) of at least -/120/-.

2.4 LDU Cabinet Variation

In Exova Warringtonfire (WF) Assessment report No 314521 a four sided cabinet variation to include lift control components in the vertical frame section for the Augusta lift landing doors was considered.

Exova Warringtonfire Assessment report No 377435 provides an assessment of further application of LDU or an LDU for FCU for the Augusta EVO.



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The assessments concluded that the inclusion of the LDU cabinet would not prejudice the established 120 minute integrity performance of the previously assessed lift landing doors in WF assessment report Nos. 190328A and 190328B for the Augusta door and No 377435 for the Augusta EVO door.

The above assessments provided supplementary comments to previously assessed Augusta and Augusta EVO centre and side opening lift landing doors. It is noted that the variations are associated with the frame side panels only and does not affect the actual door panels or running gear. It is considered that there is sufficient similarity between the Augusta and Augusta EVO doors and the Hydra lift landing door design for the LDU cabinet and LDU for FCU assemblies to be used on the Hydra lift landing doors provided the installation is as described in WF assessment reports No 314521, 377435 and associated reports.

2.5 Weather Seals

Based on a fire resistance test carried out on a four panel centre opening door with intumescent seals at the head, jambs and meeting edges, Exova Warringtonfire Assessment report No 334550 considered that the intumescent seals and weather seals would not be detrimental to the previously assessed performance of various Wittur lift landing doors. Although the weather seals are combustible it was considered that the intumescent seals would provide sufficient protection such that the weather seals would not be detrimental to the fire resistance of the doors.

That assessment included Hydra, Pegasus and Augusta lift landing doors referenced in Table 1 above. It is considered that there is sufficient similarity between the Hydra and Hydra EVO , and Augusta and Augusta EVO doors for the intumescent seals and weather seals to be used without being detrimental to the fire resistance of the doors included in this assessment.

2.6 S-Trim

The use of a 0.4 mm thick S-Trim was demonstrated in VTT fire resistance test report VTT-S-00082-13, and in subsequent Exova Warringtonfire, (WF), Assessment Report 392702 Issue 4 as not being detrimental the fire resistance of a lift landing door for at least 120 minutes. Whilst the VTT test was carried out in accordance with SFS EN 81-58, the heating conditions are similar if not more onerous than AS 1530.4 because of the increased furnace pressure in AS 1530.4. Also the criteria for flaming is similar so an equivalent performance would be expected.

Exova Warringtonfire Assessment Report 392702 Issue 4 also discusses compliance with BS 476: Part 22, which has similar criteria to AS 1530.4, in particular the use of gaps gauges. That report concluded that the use of an S-Trim manufactured from 0.4 mm to 0.8 mm would not be detrimental to the Integrity of the doors for at least 120 minutes. In that respect it is considered that the use of an S-Trim manufactured from 0.4 mm to 0.8 mm steel would not be detrimental to the Integrity of the doors for at least 120 minutes in accordance with AS 1530.4:2014. The S-Trim is fixed to the wall with masonry anchors and to the frame with steel screws at maximum 400 mm

centres as in the fire resistance test described in VTT fire resistance test report VTT-S-00082-13.

2.7 Edge and sill details

Assessment report WF 376251 (Issue 4) included additional variations to the edge and sill details. These are given in figures on pages 39 to 42 of that report. These details are not considered to be detrimental to the fire resistance of the doors as assessed herein.

2.8 Structural steel

Assessment report WF379283 (Issue 2) discusses the installation of Wittur lift landing doors in structural steel. It concluded that provided the installation was carried out as tested, then the doors would achieve their assigned fire resistance. These include the requirements that any connections to the structural steel and wall must maintain the fire resistance of the door and that the connection to the structural steel must not be detrimental to the fire resistance of the structural steel by providing a heat path from the door to the steelwork. Also any wall structure must be taken up to the door to meet the fire resistance requirements of the shaft wall.

2.9 Door sizes

A summary of the door sizes assessed in the reports given in Table 1 and paragraph 1.6 are given in Table 2.

Table 2: Assessed opening sizes

Door Series	Door type	Report No	Maximum opening size (width mm x height mm)
3201-Hydra Hydra Evo Pegasus	01/C	190327A (Issue 4)	1,800 x 2,400*
	11/R-L	190327B (Issue 4)	1,800 x 2,400
	41/C	190327C (Issue 6)	1,800 x 2,400*
	43/R	190327D (Issue 3)	1,400 x 2,400
3215-Augusta	01/C	190328A (Issue 5)	1,100 x 2,200
	11/R-L	190328B (Issue 5)	1,200 x 2,400+
Augusta EVO	01/C	376251 (Issue 4)	1,100 x 2,200
	11/R-L		1,200 x 2,300+
3201 Hydra	41/C and 61/C	FCO-1793	2,800 x 3,000

Note: * Maximum width 1400 mm with panel edge variant as shown in Figure 1.
+ Including intumescent seals

In the reports the height to width ratio of the smallest clear opening was 2.5 (2,000 mm: 800 mm). If the height to width ratio is less than or equal to the tested height to width ratio, or the doors are smaller than those tested, it is considered unlikely to affect the Integrity of the doorset. The proposed widths and heights are less than 2.5. For the panel edge variant, the construction is significantly different to the tested doors therefore the maximum width of 1,400 mm applies.

It is considered that the opening sizes are appropriate and that the doors installed in openings of those maximum widths and heights would achieve at least 120 minutes in accordance with AS 1530.4:2014.

3. CONCLUSION

It is considered that based on the supplied Exova Warringtonfire, RED and CSIRO assessment and fire test reports on the Wittur Hydra, Hydra EVO, Pegasus, Augusta and Augusta EVO lift landing doors, if tested in accordance with AS 1530.4:2014, would achieve at least an Integrity of 120 minutes (FRL -/120/-).

Variations for 3201-Hydra door Types 01/C, 11/R-L, 41/C, and 43/R:

- panel edge variants (only for types 01/C, 41/C, 43/R)
- covered frame and panel variants
- contact variants
- mechanism cover plate variants
- sill and undersill variants
- push button variants
- Gap cover (calfeutrement) variant
- lateral front and upper frame variant
- frame variants
- cabinet installation variants
- LDU cabinet in side frames for centre and side opening configurations
- Reduced panel overlap to 17 mm
- Double skin Construction
- Inclusion of intumescent seals and weather seals
- Opening sizes as given in Table 2.

The Hydra Evo can be considered the same as the Hydra but with the following changes:

- Frame and panel thickness reduced.
- Closing door frame changed to a two piece construction
- Upper frame section variants
- Frame section fixing variants
- Doorset fixing bracket variants
- Opening sizes as given in Table 2.
-

The Pegasus can be considered the same as the Hydra but with the following changes:

- Panel fixing method variant
- Shoe guides variants
- Doorset mechanism variant

Variations for 3215 Augusta door Types 01/C and 11/R-L:



- panel edge variants (only for type 01/C)
- covered frame and panel variants
- screwed guide variant
- sill variants
- frame variants
- header variant
- push button box variant
- Gap cover (calfeutrement) variant
- landing lock variant
- lateral front and cabinet installation variants
- LDU cabinet in side frames for centre and side opening configurations
- Reduced panel overlap to 17 mm
- Inclusion of intumescent seals and weather seals
- Opening sizes as given in Table 2.

Variations for Augusta Evo Types 01/C and 11/R-L:

- Sill reduced by 5 mm
- Door mechanism variants
- Modified lower bracket
- Riveted frame design
- Optional steel cladding
- Modified door frame construction
- Indicator panel inclusion in frame.
- Frame wall gap covering profile
- Sill material variation
- Electrical contact variation
- Roller materials
- Track from hollow steel section to solid steel
- Reduction in labyrinth (rebate) of meeting edges of centre opening doors
- Inclusion of intumescent seals and weather seals
- Opening sizes as given in Table 2.

Variations for Augusta and Augusta Evo:

- Use of 0.4 mm to 0.8 mm steel S-Trim to fix the jambs and header to the wall.
- Alternative wall and sill connections.

All Doors:

- Connections to structural steel as discussed in 2.8.

Figure 1: Alternative meeting edges

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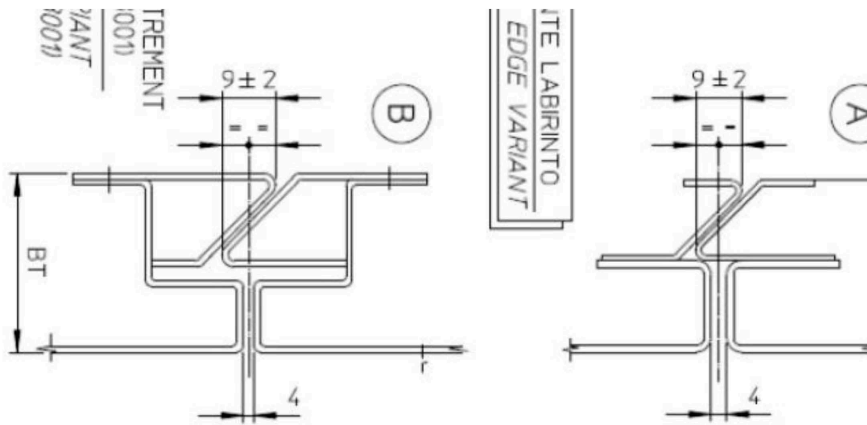
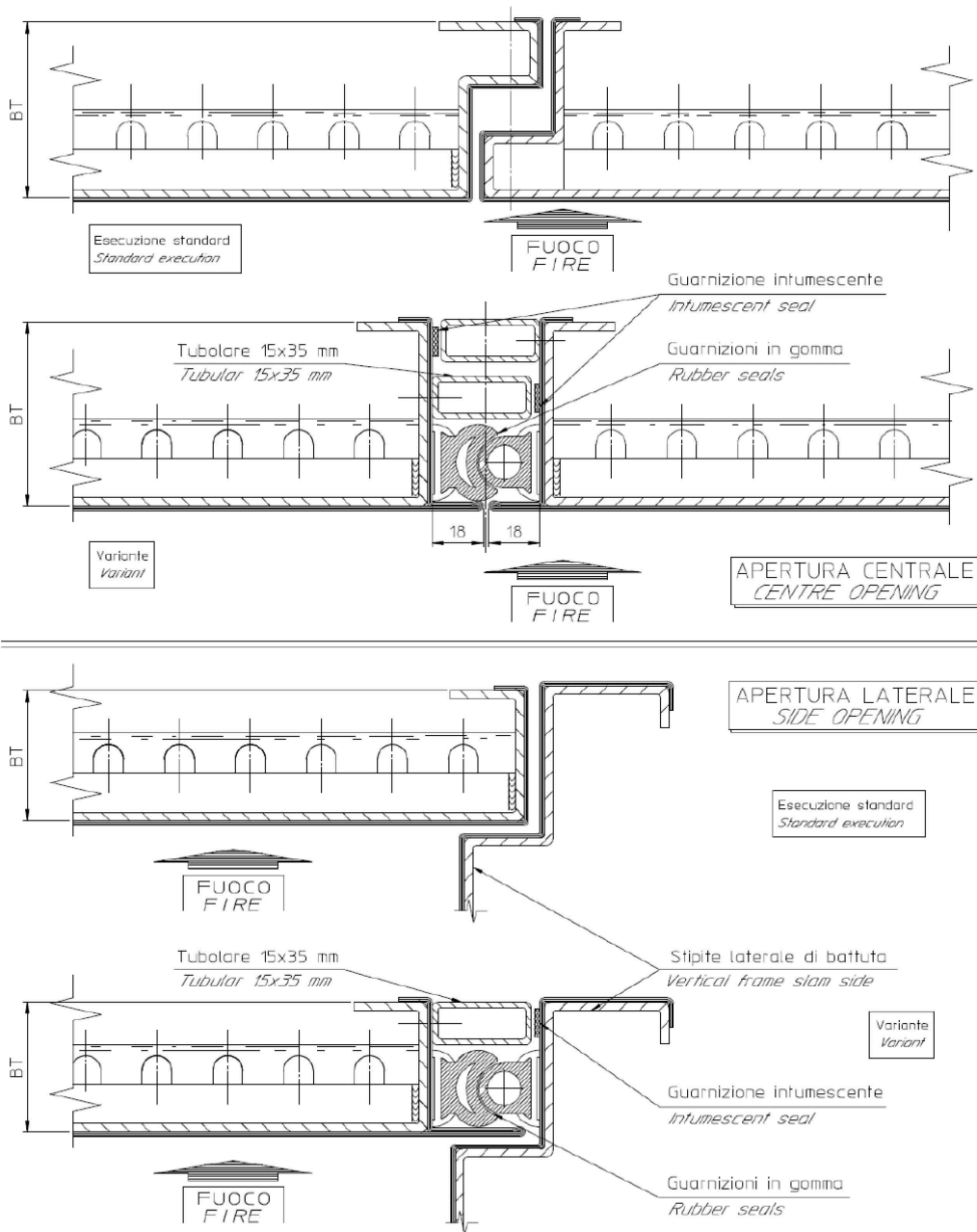


Figure 2: Meeting and strike edge detail

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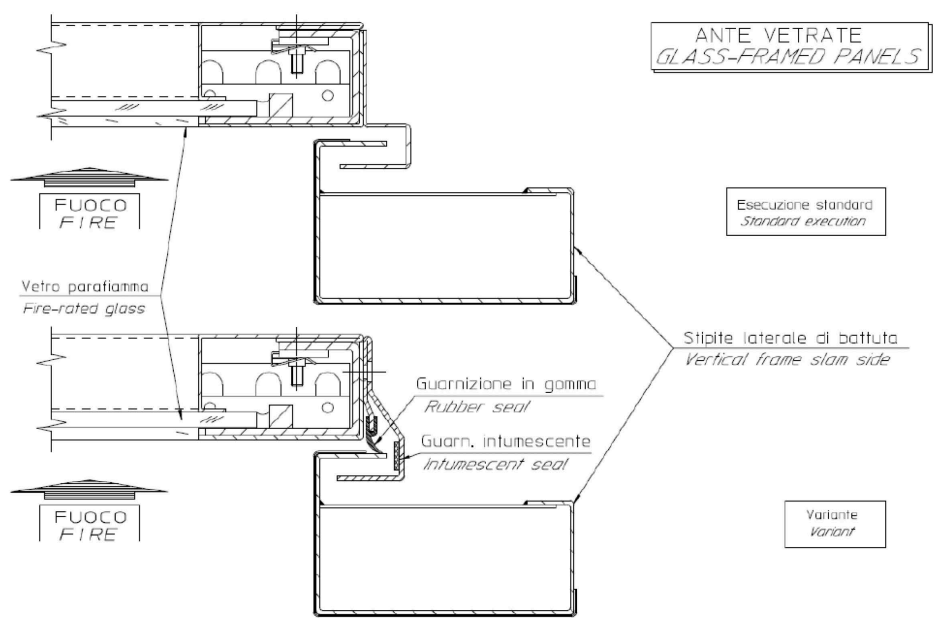
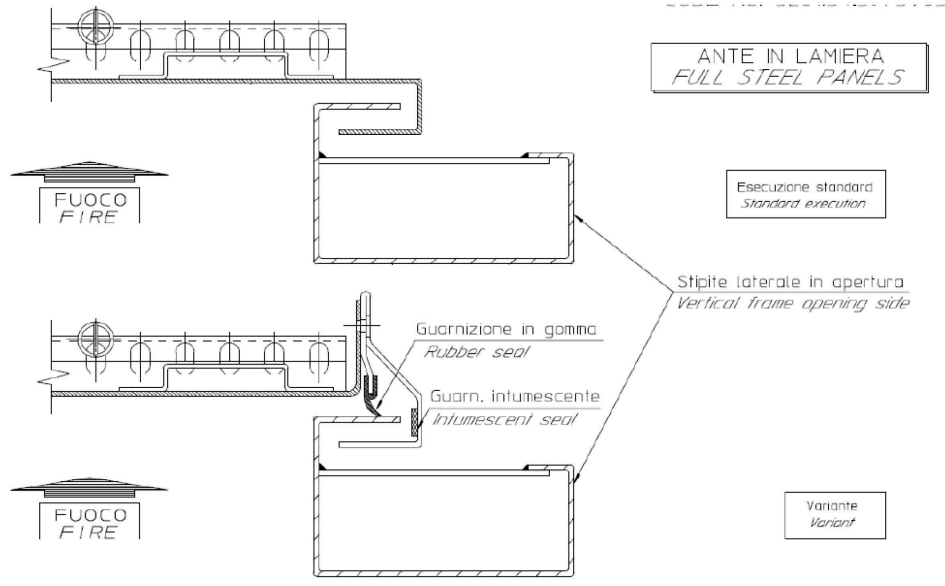
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Figure 3: Trailing jamb detail

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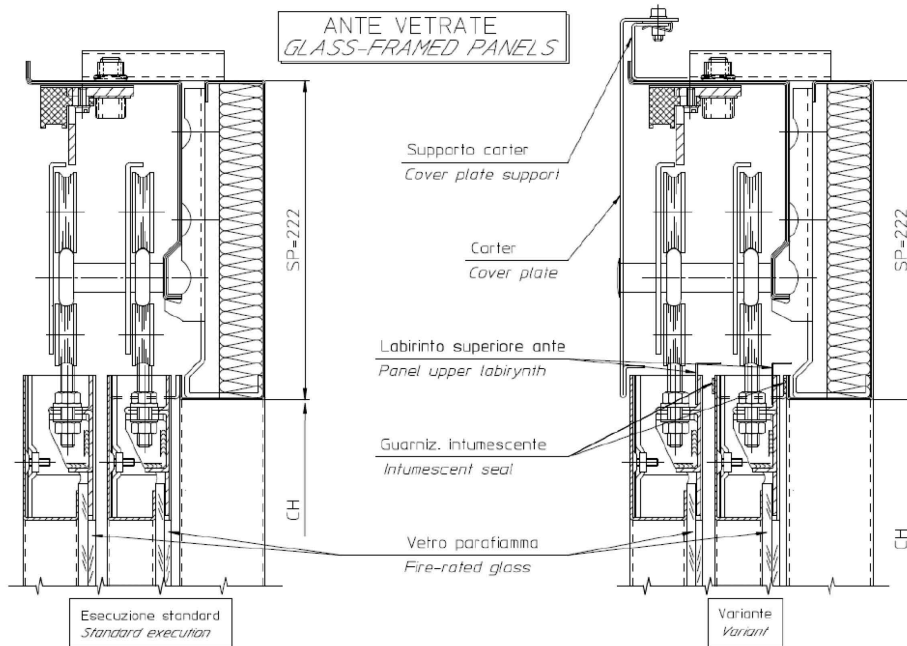
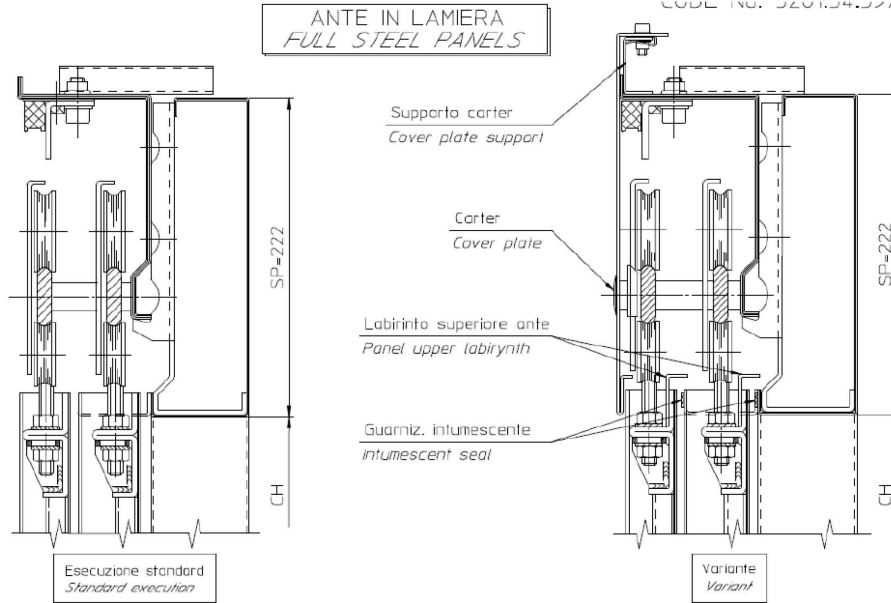
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Figure 4: Head detail

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