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Test Sponsors	Issue Date
Salto Systems Australia Pty Limited Suite 2, Level 8, 91 Phillip Street Sydney, NSW 2000 And Trafalgar Building Products 42 Lisbon Street, Villawood NSW 2163, Australia	**5/05/09**
	Validity Date
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The Fire Resistance Performance of Trafalgar Doorsets with nominated variations to the lock set.

Variations Considered in this Report

The target doorset shall be fitted with one of the following access control furniture options:

- Salto XS4 Ei4xx Series Access Control furniture
- Salto XS4 Ei6xx Series Access Control furniture
- Salto XS4 Ai6xx Series Access Control furniture

In conjunction with either of the following handle models : U, S, W, H, P, B, O, L, A

Figure 1 – Proposed Handles

Referenced Test Reports

Test Report	Doorset Description	Test Standard
FSV 0609	Single-leaf plywood faced E-core doorset, leaf nominally 45mm thick	AS 1530.4-1990
SI 2271	Two-leaf plywood faced E-core doorset, leaf nominally 45mm thick	AS 1530.4-1990
FSV 0608	Single-leaf plywood faced E-core doorset, leaf nominally 35mm thick	AS 1530.4-1990

TESTING AUTHORITY	Bodycote Warringtonfire (Aust) Pty Ltd
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Authorisation	Prepared By: Reviewed By:

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Additional Supporting Data

Test Report	Doorset Description	Test Duration	Test Standard
BWA 2217901	Single-leaf plywood faced E-core doorset, leaf nominally 35mm thick	136 minutes	AS 1530.4-2005

A pilot fire resistance test in accordance with Appendix B11 of AS 1530.4 2005 was conducted on a pilot doorset on 24th January 2008. It included Salto XS4 Ei65x Access Control furniture with a Lockwood 3572 series mortice lock set fitted to the door leaf.

Hardware Description

Product name(s) and manufacturer:	Salto XS4 Ei65x Access Control furniture manufactured by SALTO systems with a Lockwood 3572 series mortice lock set manufactured by ASSA ABLOY Australia Pty Ltd.
Leaf Thickness	35 mm

Figure 2 - Typical installation of a Salto XS4 Ei65x Access control furniture on the unexposed side of the door leaf

Discussion

Tested Hardware

It is expected that if a proposed lockset does not initiate failure of the pilot doorset before failure occurred on the referenced full-sized doorsets, substituting the proposed lockset for those tested on the full-sized doorsets will not be detrimental to their performance.

During the test the furnace pressure fell below the level that a similar full-size doorset would be subjected to if tested to the reference standard. A drop in pressure can be a less onerous condition for latches and locks prone to burn through or those in timber based doorsets. The tested construction incorporated leaf reinforcing plates and did not exhibit burn through during the test period of 136 minutes.

The latch therefore demonstrated the required 120-minute performance with some margin and without the formation of any localised gaps through the latch that could be vulnerable to erosion if the pressure had been higher. Based on the above discussion it is considered the lower furnace pressure would not have detrimentally affected the result of the test up to 120 minutes.

During the reference test WFRA 2217901 no sustained flaming of components associated with the lockset occurred. AS 1530.4-2005 states that sustained flaming on the surface of the unexposed face for 10 seconds or longer constitutes integrity failure.

Results from pilot scale test BWA 2217901 confirmed this performance and the Salto XS4 Ei65x Access Control furniture with a Lockwood 3572 series mortice lockset is positively assessed in terms of integrity for the test period of 120 minutes.

Proposed Salto XS4 Ai65x Access Control furniture

The proposed Ai65X access control furniture is generally similar to the tested items, being made from the same materials and using the same construction methods. The principle variation from the tested hardware is the location of the lever handle being below, rather than above, the latch

As the operation and materials are critically similar to the tested hardware the proposed variation is positively assessed subject to the discussion of other specific features below.

Proposed Salto XS4 Ei45x Access Control furniture

The proposed Ei45X access control furniture is generally similar, being made from the same materials and using the same construction methods. The principle variation from the tested hardware is the width of the escutcheon being 40mm rather than the tested 67mm width.

As the operation and materials are critically similar to the tested hardware, though smaller in area, the proposed variation is positively assessed subject to the discussion of other specific features below.

Proposed i-Button Technology in lieu of tested RFID contactless Smartcard

The hardware tested in WFRA221701 incorporated a Salto XS4 Ei65x series escutcheon, which incorporated RFID contactless Smartcard reader on the non-fire side of the door.

The RFID contactless Smartcard reader incorporates a plastic reader on the outside of the escutcheon which presents a notional ignition risk. During the fire test combustible components did not ignite or detrimentally affect the fire resistance of the door for a period in excess of 120 minutes.

The proposed variation to the test construction comprises i-Button technology which is constructed with a lesser volume combustible plastic materials exposed on the escutcheon. As this material poses the most apparent risk to ignition, the proposal represents less risk than the tested hardware.

Figure 3 - Salto XS4 Ai 65x Series with I button reader

Proposed Variation to Inside and Outside Covers

The proposed hardware incorporates variations to the cover plates for the escutcheons, these cover plates are made from brass or steel and are fitted over a steel execution body that supports the operating parts of the hardware. The proposed variation relates to non-combustible materials and consequently introduces no foreseeable additional integrity risk.

Optional Inclusion of Additional Locking Cylinder

It is proposed to include an additional non-essential brass locking cylinder on the inside, outside or, through cylinder for operation from both sides. The cylinders being made from brass, meets the material requirements for locking cylinders in AS1905.1-2005 for doors that require integrity up to 120 minutes. The cylinders are installed through close fitting openings in the brass or steel escutcheon plates and therefore do not provide a significant integrity weakness to the lockset or escutcheon.

Optional Inclusion of Round Cylinder Override

It is proposed to include an additional non-essential round cylinder override on one side of the lockset. The proposed cylinder being made from brass, meet the material requirements for required locking cylinders in AS1905.1-2005 for doors that require integrity up to 120 minutes. The cylinder is installed to the face of the steel escutcheon with close fitting openings in the brass/steel c plates. Based on the above it is considered the proposed additional cylinder does not introduce a significant integrity weakness to the doorset.

Optional inclusion of Thumbturn

It is proposed to include an additional non-essential thumb turn override on one side of the lockset. The proposed thumbturn and shaft are made from Zamak (a cast zinc alloy) and incorporate or, are housed in, a brass cylinder. The thumbturn is installed in close-fitting openings in the brass or steel escutcheon plates. Based on the above, it is considered the proposed additional thumbturn does not introduce a significant integrity weakness to the doorset.

Optional inclusion of a push button privacy

It is proposed to push button privacy override on one side of the lockset. The proposed item is made from plastic and presents a notional ignition risk. The arrangement of the proposed push button privacy override is such that it is on the opposite side of the door to the card reader. This arrangement means the additional plastic parts associated with the pushbutton are not increasing the amount of plastic on the non fire side of the doorset. The plastic parts of the pushbutton are smaller than the card reader and are primarily internal within the escutcheon. This location makes the plastic parts less likely exposed to hot oxygen rich air running up the latch edge of the door or, be subjected to significant heating through the lockset to initiate ignition. Based on the above, it is considered the proposed additional push button privacy does not introduce a significant integrity weakness to the doorset.

Optional handles models U, S, W, H, C, P, B, O, L, A.

The handle tested in WFRA 2217901 was a Model U on both sides of the door. This applied a turning moment to the lockset of 0.098Nm for the duration of the test. A survey of the proposed handles was undertaken and the turning moments for each are shown below.

Model	Turning Moment (N.m)
Model B	0.067
Model W	0.083
Model L	0.084
Model S	0.096
Model U	0.098
Model H	0.120
Model A	0.163
Model O	0.205
Model P	0.000

The handles for the proposed lockset are models U, W, B, S, P and L, which by observation exert less than 0.107N.m (less than 10% increase) and are therefore positively assessed The remaining handle models H, A and O are required to be tested with locksets that were tested with handles that exerted a turning moment of at least 0.182N.m.

Based on the above discussion it is considered that if the turning moment of the latch is less than or equal to the tested latch, the risk of the door unlatching during the test is not increased and the proposed handles are positively assessed.

Drawings

The following drawings were reviewed in the preparation of this assessment and an example* for each series is attached as an appendix to this report.

Ei 650 m dd ff t s*	Ai 650 m dd ff t s*	Ei 450 m dd ff t s*
Ei 651 m dd ff t s	Ai 656 m dd ff t s	Ei 451 m dd ff t s
Ei 652 m dd ff t s	Ai 658 m dd ff t s	Ei 452 m dd ff t s
Ei 653 m dd ff t s	Ai 660 m dd ff t s	Ei 453 m dd ff t s
Ei 654 m dd ff t s	Ai 666 m dd ff t s	Ei 454 m dd ff t s
Ei 656 m dd ff t s	Ai 668 m dd ff t s	Ei 456 m dd ff t s
Ei 657 m dd ff t s		Ei 457 m dd ff t s
Ei 658 m dd ff t s		Ei 460 m dd ff t s
Ei 660 m dd ff t s		Ei 461 m dd ff t s

Ei 661 m dd ff t s Ei 666 m dd ff t s Ei 668 m dd ff t s		Ei 466 m dd ff t s

Conclusions

On the basis of the above discussion it is the opinion of this laboratory that the doorsets listed below would be likely to achieve the FRL listed below if they are fitted the proposed door furniture in figure 1 in conjunction with mortice locks described below in lieu of the tested lockset

- For models U, W, P, B, S and L, a mortice lock that has been tested and achieved 120 minutes integrity in accordance with AS1530,4 on the target doorset with a handle that introduces a turning moment about the operating shaft (due to weight of the handle) of at least 0.10Nm.
- For models H, O and A, a mortice lock that has been tested and achieved 120 minutes integrity in accordance with AS1530,4 on the target doorset with a handle that introduces a turning moment about the operating shaft (due to weight of the handle) of at least 0.21Nm.

This assessment has been prepared in accordance with Section 4.2 of AS 1905.1:2005 and is conditional upon the operational characteristics and materials of the doorset complying with Section 2 of AS 1905.1:2005. The field of application of the lockset is defined by the field of application of the doorset to which the lockset is fitted.

Test Ref	Description	FRL
FSV 0609	Single-leaf plywood faced E-core doorset, leaf nominally 45mm thick	**-/120/30**
SI 2271	Two-leaf plywood faced E-core doorset, leaf nominally 45mm thick	**-/120/30**
FSV 0608	Single-leaf plywood faced E-core doorset, leaf nominally 35mm thick	**-/120/30**

Conditions/Validity

The conclusions of this assessment may be used to directly assess the fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all conditions.

Because of the nature of fire resistance testing, and the consequent difficulty in quantifying

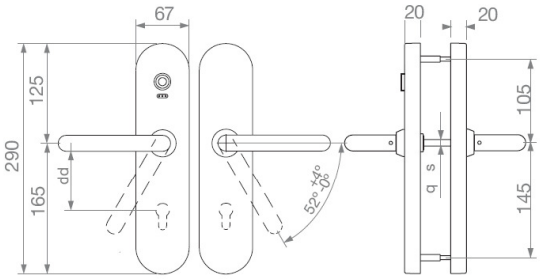
the uncertainty of measurement, it is not possible to provide a stated degree of accuracy. The inherent variability in test procedures, materials and methods of construction, and installation may lead to variations in performance between elements of similar construction.

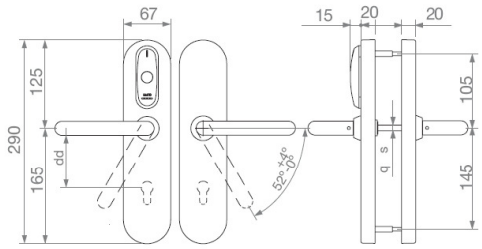
The assessment can therefore only relate only to the actual prototype test specimens, testing conditions, and methodology described in the supporting data, and does not imply any performance abilities of constructions of subsequent manufacture.

This assessment is based on information and experience available at the time of preparation. The published procedures for the conduct of tests and the assessment of test results are the subject of constant review and improvement and it is recommended that this report be reviewed by the review date by Bodycote Warringtonfire (Aus) Pty Ltd.

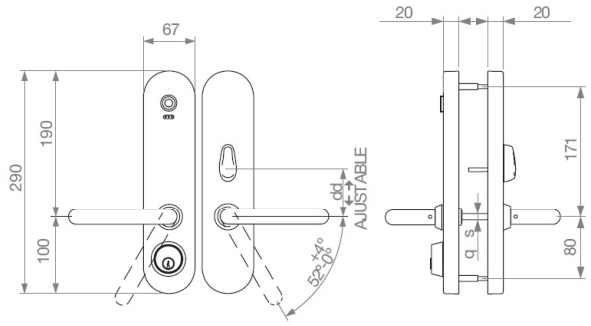
The information contained in this report shall not be used for the assessment of variations other than those stated in the conclusions above. The assessment is valid provided no modifications are made to the systems detailed in this report. All details of construction should be consistent with the requirements stated in the relevant test reports and all referenced documents.

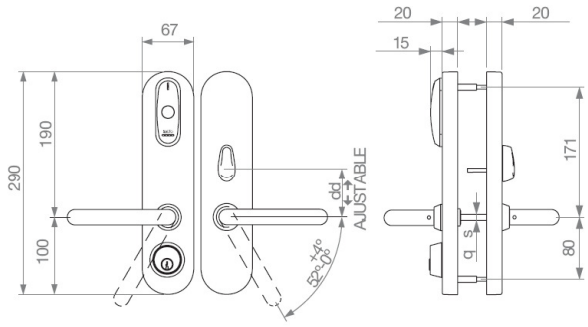
Example Drawings Ei650 Series





Example Drawings Ai650 Series





Example Drawings Ei450 Series