



JENSEN HUGHES



Master door hardware assessment

Report sponsor: McGrath locks Pty Ltd

Products: McGraths door hardware in Fircore doorsets

Report number: 120207 Revision: DHAR1.0



Quality management

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<p>Note– The stated expiry date is dependent on the continued validity of report FCO 3428 throughout the duration of this report's validity period. Therefore, it is essential to read this report in conjunction with FCO 3428.</p>					

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1. Introduction

This report documents the findings of the assessment to determine the expected fire resistance level (FRL) of McGraths door hardware installed in Firecore doorsets in accordance with AS 1530.4:2005², AS 1530.4:2014³, and AS 1905.1:2015⁴ as applicable.

Jensen Hughes performed this assessment at the request of the report sponsors listed in Table 1.

Table 1 Report sponsor details

Report sponsor	Address
McGrath locks	140-158 Dryburgh Street, North Melbourne, Victoria 3051 Australia

2. Baseline test data for full scale doorset

Firecore doorsets were tested in accordance with AS 1530.4:2005 and AS 1530.4:2014. Based on the test data– the achieved performance is summarised in Table 2.

Table 2 Referenced test reports and assessments

Test / assessment reference	Doorset description	Reference doorset	Test standard	FRL
FSV 1382a	Single leaf TVC30 core Firecore doorset, nominally 38 mm thick	A	AS 1530.4:2005	-/120/30
FSV 1418a	Single leaf TVC40 core Firecore doorset, nominally 48 mm thick	B		-/240/30
FSV 1391a	Double leaf TVC40 core Firecore doorset, nominally 48 mm thick	C		-/240/30
FCO 3428	Single leaf TVC30 core Firecore doorset, nominally 38 mm thick	D	AS 1530.4:2014	Up to -/120/30
	Single leaf TVC40 core Firecore doorset, nominally 48 mm thick	E		Up to -/240/30
	Double leaf TVC40 core Firecore doorset, nominally 48 mm thick	F		
Notes:				
<ul style="list-style-type: none"> It should be noted that the performance of the doorset varied based on their construction and test standards. The relevant doorsets were referenced in section 5 as defined in this table. Please contact Firecore Pty Ltd for the latest version of FCO 3428. 				

3. Hardware considered in this report

A range of door hardware was considered in this report. The considered hardware is listed in Table 3 to Table 4.

² Standards Australia, 2005, Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests for elements of construction, AS 1530.4:2005, Standards Australia, NSW.

³ Standards Australia, 2014, Methods for fire tests on building materials, components and structures – Part 4: Fire-resistance tests for elements of construction, AS 1530.4:2014, Standards Australia, NSW.

⁴ Standards Australia, 2015, Components for the protection of openings in fire-resistant walls Fire-resistant doorsets, AS 1905.1:2015, Standards Australia, NSW.

Table 3 List of locksets with or without additional furniture

Item	Model	Description	Reference test/assessment
1.	McGrath ML Hamilton FM575 outdoor smart lock	ML Hamilton FM575 outdoor smart lock with <ul style="list-style-type: none"> McGrath locks adjustable backset tubular latch – backset 60/70 mm Dormakaba MS2902-SSS mortice lock with backset up to 95 mm Dormakaba MS2602 series mortice lock with backset up to 60 mm 	FRT240065 R1.0 FRT240066 R1.0 FRT210244 R1.0 FAS230019 DHAR 1.0
2.	McGrath Locks ML-Windsor Smart Lock	McGrath Locks ML-Windsor Smart Lock with <ul style="list-style-type: none"> Dormakaba MS2900 series mortice lock with backset up to 95 mm Dormakaba MS2602 series mortice lock with backset up to 60 mm McGrath locks adjustable backset tubular latch – backset 60/70 mm 	FRT210244 R1.0 FAS230019 DHAR 1.0 FRT240065 R1.0
		McGrath Locks ML-Windsor Smart Lock with a Lockwood 530 tubular latch with 60/70/127 mm backset	FRT220234 R1.0 FAS220380 DHAR 1.0

Table 4 List of door closer

Item	Model	Description	Reference test/assessment
1.	McGrath Locks ML-DSW-100N	Door closer installed with slide arm	FRT220234 R1.0

4. Additional supporting data considered in this report

The proposed hardware was assessed based on supporting test data listed in Table 5 and in compliance with AS 1905.1:2015.

Table 5 Additional supporting test data

Test report	Test date	Test scale	Doorset description	Tested hardware	Test duration	Test standard
FRT210244 R1.0	6 September 2021	Pilot scale	Single leaf, TVC30 core Firecore doorset, nominally 38 mm thick	<ul style="list-style-type: none"> DAC systems smart lock with Dormakaba MS2900 series mortice lock AC7303 door closer Dormakaba ball bearing SS hinges 100 mm × 75 mm × 2.5 mm hinges. 	121 minutes	AS 1530.4:2014
FRT220234 R1.0	6 February 2023	Pilot scale	Single leaf, TVC40 core Firecore doorset, nominally 48 mm thick	<ul style="list-style-type: none"> McGrath Locks DACS Systems Smart Lock with a Lockwood 530 tubular latch with a 70 mm backset McGrath Locks ML-DSW-100N door operator Dormakaba Ball Bearing Hinges stainless steel 2.5 mm x 100 mm x 100 mm McGrath Locks ML-DSW-100N door operator - slide arm track 	121 minutes	AS 1530.4:2014

Test report	Test date	Test scale	Doorset description	Tested hardware	Test duration	Test standard
FRT240066 R1.0	16 May 2024	Pilot scale	Single leaf, TVC30 core Firecore doorset, nominally 38 mm thick	<ul style="list-style-type: none"> • ML Hamilton FM575 outdoor smart lock with McGarth MS2902-SSS mortice lock. • AC7303 door closer • Assa Abloy SS304/24 100 mm × 75 mm hinges. 	120 minutes	AS 1530.4:2014
FRT240065 R1.0	7 June 2024	Pilot scale	Single leaf, TVC30 core Firecore doorset, nominally 38 mm thick	<ul style="list-style-type: none"> • ML Hamilton FM575 outdoor smart lock with McGarth locks adjustable backset tubular latch. • Neptune 280 series maglock • Assa Abloy SS304/24 100 mm × 75 mm fixed pin hinges. 	120 minutes	AS 1530.4:2014

5. Assessment

5.1 Door hardware assessment in accordance with AS 1905.1:2015

The performance of Firecore doors in accordance with AS 1530.4:2005 and AS 1530.4:2014 was established based on a number of fire resistance tests. The outcomes of these tests and a subsequent assessment report – FCO 3428 – are summarised in Table 2. It should be noted that FCO 3428 was issued by Infrastructure Technologies on 24 December 2021. Jensen Hughes has not verified the outcome of this assessment report. However, for the purpose of this report, it is assumed that the outcome is accurate. This report must be read in conjunction with test and assessment report listed in Table 2. Therefore, the validity of this report is conditional upon the validity of FCO 3428. Any changes or updates to FCO 3428 may therefore impact the outcome of this report.

As per section 4 of AS 1905.1:2015, door hardware can be assessed based on additional pilot scale or full-scale tests when conducted in accordance with AS 1530.4. The proposed hardware listed in section 3 was tested in pilot scale. The test outcomes are summarised in Table 5. Based on the above, the proposed hardware is assessed in this assessment.

This assessment is conditional upon the operational characteristics and materials of the doorset complying with section 2 of AS 1905.1:2015. The field of application of the hardware included in this report is defined by the field of application of the doorset that the door hardware is installed on.

5.2 Lockset with or without additional furniture

5.2.1 Assessment based on pilot/full scale test

Section 4.5 of AS 1905.1:2015 permits the assessment of locksets based on a pilot scale or full-scale fire resistance test in accordance with AS 1530.4. As such, in addition to the full-scale tests listed in Table 2, pilot scale test listed in Table 5 form the basis of this assessment.

It is noted that, some locksets included additional furniture. In such case, the furniture was tested as part of the pilot scale tests. Any variation in surface mounted furniture is discussed in section 5.2.2.

AS 1530.4:2014 states that either sustained flaming on the surface of the unexposed face for 10 seconds or longer, ignition of a cotton pad, gap gauge failure, or the latching mechanism being disengaged at the end of the test constitute integrity failure. From the pilot scale tests, the attained duration of integrity performance of each lockset based on the above criteria is noted.

As the proposed locksets with or without additional furniture (as applicable) did not cause failure up to the noted timeframes in the pilot scale tests, substituting the locksets with or without additional furniture (as applicable) for the hardware tested in the referenced doorsets listed in Table 3 is not expected to affect their performance. Based on the above, the proposed locksets listed in Table 3 are positively assessed.

5.2.2 Variation in backset

It is proposed that backset of locksets will be varied. AS 1530.4:2014, clause 7.9.7 states that:

- (a) The backset of the mortice lockset or latchset may be reduced.
- (b) The backset of a cylindrical lockset or latchset may be varied, provided no additional encroachment is made on any structural framework of the door leaf and the fixing method remains identical.

Based on the above, the reduction in backset of mortice lock is positively assessed.

In the referred test, FRT240066 R1.0, McGrath ML Hamilton FM575 outdoor smart lock was tested with a mortice lock with 95 mm backset. It performed up to 120 minutes without failure. Giving that the mortice lock installation requires removal of significant amount of the door core comparing to the tubular latch. So replacing it with a tubular latch of 127 mm is not expected to have any deteriorating effect on the doorset. Hence, it is positively assessed.

For cylindrical locksets, the fixing method remained identical to the tested tubular latch. Based on the above, variation in the backset of the cylindrical lock is also positively assessed.

5.2.3 Conclusion

Based on the discussion above, it is the opinion of this laboratory that the proposed locksets listed in Table 6 are capable of achieving the FRLs listed in Table 6 – if they are fitted in the referenced Firecore doorsets.

Table 6 Fire resistance level of locksets installed in Firecore doorset

Item	Model	Description	Reference doorset as listed in Table 2	FRL
1.	McGrath ML Hamilton FM575 outdoor smart lock	ML Hamilton FM575 outdoor smart lock with <ul style="list-style-type: none"> McGrath locks adjustable backset tubular latch – backset 60/70 mm Dormakaba MS2902-SSS mortice lock with backset up to 95 mm Dormakaba MS2602 series mortice lock with backset up to 60 mm 	A, B, C, D, E, F	- /120/30
2.	McGrath Locks ML-Windsor Smart Lock	McGrath Locks ML-Windsor Smart Lock with <ul style="list-style-type: none"> Dormakaba MS2900 series mortice lock with backset up to 95 mm Dormakaba MS2602 series mortice lock with backset up to 60 mm McGrath locks adjustable backset tubular latch – backset 60/70 mm McGrath Locks ML-Windsor Smart Lock with a Lockwood 530 tubular latch with 60/70/127 mm backset 	A, B, C, D, E, F	- /120/30
		McGrath Locks ML-Windsor Smart Lock with a Lockwood 530 tubular latch with 60/70/127 mm backset	B, C, E, F	- /120/30

Notes:

- The listed FRL is the maximum FRL assigned to the hardware. The system FRL needs to be determined in conjunction with the FRL of the referenced doorset. The lowest index between the FRL of the hardware and doorset will be the applicable FRL of any particular combination. Therefore, this report needs to be read in conjunction with the referenced reports listed in Table 2.
- The FRLs provided in this table are contingent upon the validity of the assessment report FCO 3428.

6. Door closer with slider arm

6.1.1 Assessment based on pilot scale tests.

Section 4.5 of AS 1905.1:2015 permits the assessment of door closers based on a pilot scale or full-scale fire resistance test in accordance with AS 1530.4. As such, in addition to the full-scale tests listed in Table 2, pilot scale tests listed in Table 5 form the basis of this assessment.

AS 1530.4:2014 states that either sustained flaming on the surface of the unexposed face for 10 seconds or longer, ignition of a cotton pad, gap gauge failure, or the latching mechanism being disengaged at the end of the test constitutes integrity failure. From the pilot scale tests, the attained duration of integrity performance of the closer with slide arm based on the above criteria is noted.

As the proposed closer did not cause failure up to the noted timeframe in the pilot scale tests, substituting them for the hardware tested in the referenced doorsets listed in Table 4, is not expected to affect their performance. Based on the above, the proposed door closers listed in Table 4 are positively assessed.

6.1.2 Conclusion

Based on the discussion above, it is the opinion of this laboratory that the proposed locksets listed in Table 7 are capable of achieving the FRLs listed in Table 7 – if they are fitted in the referenced Firecore doorsets.

Table 7 Fire resistance level of door closer installed in Firecore doorset

Item	Model	Description	Reference doorset as listed in Table 2	FRL
1.	McGrath Locks ML-DSW-100N	Door closer installed with slide arm	B, C, E, F	- /120/30

7. Summary of assessments

The door hardware assessed in this report and their reference outcome table are summarised in Table 8.

Table 8 Summary of assessment

Hardware	Reference table
Locksets	Table 6
Door closer	Table 7

8. Conditions and 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 of the result. 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 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 preparing this report. The published procedures for the conduct of tests and the assessment of the test results are the subject of constant review and improvement and it is recommended that this report be reviewed by Jensen Hughes before the end of the validity date.
- The information in this report must 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.
- The data, methodologies, calculations and results documented in this report specifically relate to the tested specimen/s and must not be used for any other purpose. This report may only be reproduced in full. Extracts or abridgements must not be published without permission from Jensen Hughes.