JENSEN HUGHES

Regulatory information report

Circular fire damper in accordance with AS 1530.4:2014

Sponsor: Systemair New Zealand Ltd

Report number: FAS200328 Revision: RIR2.1

Issued date: 6 January 2025 Expiry date: 31 December 2029

Quality management

Version	Date	Information about the report		
RIR2.1	Issue: 06 Jan 2025	Reason for issue	Report issued to Systemair New Zealand Ltd for review and comment. Note: Earlier numbering was skipped to maintain consistency with the assessment report	
	Expiry: 31 Dec 2029	**Name**	**Prepared by**	**Reviewed by**
			Mohammed Mutafi	Alim Rasel

Jensen Hughes Fire Testing Pty Ltd
ABN 81 050 241 524

Formerly Warringtonfire Australia Pty Ltd[1]

[1] *Warringtonfire Australia Pty Ltd was acquired by Jensen Hughes in December 2023. Jensen Hughes Fire Testing Pty Ltd is not affiliated, associated, authorised, or endorsed by Warringtonfire Australia Pty Ltd, Warringtonfire Testing and Certification Limited or its "Warringtonfire" or "Certifire" brands.*

Executive summary

This report contains the minimum information required for regulatory compliance and refers to the referenced assessment report FAS200328 R2.1.

This report documents the findings of the assessment undertaken to determine the resistance level (FRL) of Ravenscroft circular fire damper in accordance with AS 1530.4:2014 and AS 4072.1:2005 (R2016).

The analysis in section 5 to 7 of the referenced report found that the proposed systems, together with the described variations, will achieve the FRL as shown in Table 1 and Table 2 – in accordance with section 11 of AS 1530.4:2014.

The variations and outcome of this assessment are subject to the limitations and requirements described in sections 2, 3 and 8 of the referenced report. The results of the referenced report are valid until 31 December 2029.

Table 1 Assessment outcome of the Ravenscroft BSD dampers installed in walls

Fire damper model	Size	Wall thickness and type	FRL in accordance with AS 1530.4:2014
BSD-PW (insulated) & BSD-PW/M	Ø125 mm to Ø400 mm	Double layer of 13 mm thick fire rated plasterboard wall system with established FRL of minimum 120/120/120 or -/120/120 The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL)	-/120/- (meets with air leakage rate limit)
		Single layer of 16 mm thick fire rated plasterboard wall system with established FRL of minimum 90/90/90 or -/90/90 The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL)	-/90/- (meets with air leakage rate limit)
		Single layer of 13 mm thick fire rated plasterboard wall system with established FRL of minimum 60/60/60 or -/60/60 The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL)	-/60/- (meets with air leakage rate limit)
BSD-C & BSD-C/M	Ø125 mm to Ø400 mm	≥ 116 mm masonry or concrete The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL) or designed in accordance with AS 3600 or AS 3700	-/120/- (meets with air leakage rate limit)
BSD-PW-Korork & BSD-PW/M-Korork	Ø125 mm to Ø400 mm	78 mm thick KOROK wall with 2 × 13 mm layers of plasterboard build up on both sides of the wall. The plasterboard buildup should extend 50 mm beyond the edges of the damper flange on all sides. Damper fixing details must be as tested in FRT200201 R1.1.	-/120/- (meets with air leakage rate limit)
		78 mm thick KOROK wall with 1 × 13 mm layers of plasterboard build up on both sides of the wall. The plasterboard buildup should extend 50 mm beyond the edges of the damper flange on all sides. Damper fixing details must be as tested in FRT240193 R1.0.	-/90/- (meets with air leakage rate limit)

Fire damper model	Size	Wall thickness and type	FRL in accordance with AS 1530.4:2014
		51 mm thick KOROK wall with 1 × 13 mm layers of plasterboard build up on both sides of the wall. The plasterboard buildup should extend 50 mm beyond the edges of the damper flange on all sides. Damper fixing details must be as tested in FRT240193 R1.0.	-/60/- (meets with air leakage rate limit)
BSD – PW & BSD – PW/M damper	Ø125 mm to Ø400 mm	Timber framed single layer of 13 mm thick plasterboard wall system. the distance from the damper body to the stud must be minimum 100 mm.	-/60/- (meets with air leakage rate limit)
The fire damper may be fabricated from Grade 316 stainless steel instead of galvanised steel for the standard and as tested range of BSD-PW, BSD-PW-Korok and BSD-C fire dampers.			

Table 2 Assessment outcome of the Ravenscroft BSD dampers installed in floors

Fire damper model	*Size	Wall thickness and type	FRL in accordance with AS 1530.4:2014
BSD-C & BSD-C/M	Ø125 mm to Ø400 mm	≥ 120 mm masonry or concrete The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL) or designed in accordance with AS 3600 or AS 3700	-/120/- (meets with air leakage rate limit)
The fire damper may be fabricated from Grade 316 stainless steel instead of galvanised steel for the standard and as tested range of BSD-C fire dampers.			

JENSEN HUGHES

Contents

1. Introduction

This report contains the minimum information sufficient for regulatory compliance and refers to the assessment report FAS200328 2.1.

This report documents the findings of the assessment undertaken to determine the resistance level (FRL) of Ravenscroft circular fire damper in accordance with AS 1530.4:2014[2].

This report may be used as evidence of suitability in accordance with the requirements of the relevant National Construction Code (NCC) to support the use of the material, product, form of construction or design as given within the scope of the referenced assessment report. It also references test evidence for meeting deemed-to-satisfy (DTS) provisions of the NCC that apply to the assessed systems.

This assessment was carried out at the request of Systemair New Zealand Ltd. The sponsor details are included in Table 3.

Table 3 Sponsor details

Sponsor	Address
Systemair New Zealand Ltd	52D Arrenway Drive Auckland, 0632 Rosedale Albany New Zealand

2. Framework for the assessment

2.1 Assessment approach

An assessment is a professional opinion about the expected performance of a component or element of structure subjected to a fire test.

No specific framework, methodology, standard or guidance documents exists in Australia for undertaking these assessments. We have therefore followed the 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the Passive Fire Protection Forum (PFPF) in the UK in 2021[3].

This guide provides a framework for undertaking assessments in the absence of specific fire test results. Some areas where assessments may be offered are:

- Where a modification is made to a construction which has already been tested
- The interpolation or extrapolation of results of a series of fire resistance tests, or utilisation of a series of fire test results to evaluate a range of variables in a construction design or a product
- Where, for various reasons – eg size or configuration – it is not possible to subject a construction or a product to a fire test.

Assessments can vary from relatively simple judgements on small changes to a product or construction through to detailed and often complex engineering assessments of large or sophisticated constructions.

This report uses established empirical methods and our experience of fire testing similar products to extend the scope of application by determining the limits for the design and performance based on the

[2] 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.

[3] Passive Fire Protection Forum (PFPF), 2021, Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, Passive Fire Protection Forum (PFPF), UK.

tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance of the elements in accordance with AS 1530.4:2014.

This report has been written in accordance with the general principles outlined in EN 15725:2023[4] for extended application on the fire performance of construction products and building elements: Principle of EXAP standards and EXAP reports.

This report has been written using appropriate test evidence generated at accredited laboratories to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturer's stated design.

2.2 Compliance with the National Construction Code

This report has been prepared to meet the evidence of suitability requirements of the NCC 2022[5] under A5G3(1)(d). It references test evidence for meeting deemed-to-satisfy (DTS) provisions of the NCC under A5G5 for fire resistance level that apply to the assessed systems based on Specifications 1 and 2 for fire resistance for building elements.

The proposed details and systems (building elements) in this report are confirmed to be assessed, without the aid of an active fire suppression system, based on prototype tests that are equivalent to or more severe than a standard fire test as specified in section 4.4, in accordance with NCC 2022 S1C2(b). It is also confirmed that the differences between the proposed systems and details compared to the tested prototypes are considered minor in accordance with NCC 2022 S1C2(c).

This report may also be used to demonstrate compliance with the requirements for evidence of suitability under the relevant sections of previous versions of the NCC.

2.3 Declaration

The 'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence' prepared by the PFPF in the UK requires a declaration from the client. By accepting our fee proposal on insert date, Systemair New Zealand Ltd confirmed that:

- To their knowledge, the variations to the component or element of structure, which is the subject of the referenced assessment, have not been subjected to a fire test to the standard against which the referenced assessment is being made.
- They agree to withdraw the referenced assessment from circulation if the component or element of structure is the subject of a fire test by a test authority in accordance with the standard against which the referenced assessment is being made and the results are not in agreement with the referenced assessment.
- They are not aware of any information that could adversely affect the conclusions of the referenced assessment and – if they subsequently become aware of any such information – they agree to ask the assessing authority to withdraw the assessment.

3. Requirements and limitations of the referenced assessment

- The scope of thisreport is limited to an assessment of the variations to the tested systems described in section 4.3.
- This report details the methods of construction, test conditions and assessed results in accordance with AS 1530.4:2014.

[4] European Committee for Standardization, 2023, Extended application on the fire performance of construction products and building elements: Principle of EXAP standards and EXAP reports, EN 15725:2023, European Committee for Standardization, Brussels, Belgium
[5] National Construction Code Volumes One and Two - Building Code of Australia 2022, Australian Building Codes Board, Australia

- This report applies to floor systems exposed to fire from below in accordance with the requirements of AS 1530.4:2014 where horizontal elements must be exposed to heat from the underside only.
- This report applies to wall systems exposed to fire from each side in accordance with the requirements of AS 1530.4:2014, where vertical elements must be exposed to heat from the direction required to resist fire exposure.
- This report has been prepared based on the fire resistance performance and condition of the systems at the time they were tested. Any deterioration of fire resistance performance due to external factors including but not limited to passage of time and exposure to elements – is not considered in the referenced assessment report.
- Jensen Hughes has provided the referenced assessment report on the fire performance of building elements in a controlled laboratory setting, strictly within the parameters allowed by the test standards and building regulations. The outcomes of the referenced assessment report are intended to assist in verifying the suitability of the product or system for practical use in specific applications.
- This report is only valid for the assessed systems and must not be used for any other purpose. Any changes with respect to size, construction details, loads, stresses, edge or end conditions – other than those identified in the referenced assessment report – may invalidate the findings of the referenced assessment. If there are changes to the system, a reassessment will need to be done by an Accredited Testing Laboratory (ATL) that is accredited to the same nominated standards of the referenced assessment report.
- This report has been prepared using information provided by others. Jensen Hughes has not verified the accuracy and/or completeness of that information and will not be responsible for any errors or omissions that may have been incorporated into the referenced assessment report as a result.
- The figures included in this report are provided for illustrative purposes only and may not reflect the latest design drawings. They should be read together with the latest drawings and other documentation prepared by the project team.
- This assessment is based on the proposed systems being constructed under comprehensive quality control practices and following appropriate industry regulations and Australian Standards on quality of materials, design of structures, guidance on workmanship and the expert handling, placing and finishing of the products on site. These variables are beyond the control and consideration of the referenced assessment report.
- The assessment provides results for fire dampers with adequate integrity performance and not insulation. In most installation, insulation performance will need to be addressed as required for the particular installation requirements.

4. Description of the specimen and variations

4.1 Description of assessed systems

The proposed system includes a BSD circular fire damper assembly with sizes ranging from 125 mm to 400 mm in diameter. BSD dampers are available in different types based on their function, including motorized and non-motorized fire dampers. The motorized dampers are equipped with a specially designed Belimo spring-return actuator and are identified by the suffix (/M) in their model's name.

Dampers are also categorized according to the type of separating element they are installed on. The proposed separating elements include plasterboard walls, concrete or masonry walls, and floors. The damper model varies depending on the separating element as follows:

- Ravenscroft BSD fire damper for plasterboard walls (BSD-PW)
- Ravenscroft BSD fire damper for concrete/masonry walls/ floors (BSD-C)
- Ravenscroft smoke/fire damper for plasterboard walls (BSD-PW/M)

- Ravenscroft smoke/fire damper for concrete/masonry walls/floors (BSD-C/M)

BSD-PW comes with insulation to protect the plasterboard wall from fire. This insulation is encapsulated in steel and therefore is protected from damage.

The proposed systems include installation of BSD damper in plasterboard wall, concrete wall, concrete floor and KOROK wall system. It is also proposed to assess the damper material variation from galvanized steel to stainless steel.

4.2 Referenced test data

The assessment of the variation to the tested systems and the determination of the performance are based on the results of the fire tests documented in the reports summarised in Table 4. Further details of the tested systems are included in Appendix B of the reference report.

Table 4 Referenced test data

Report number	Test sponsor	Test date	Testing authority
FRT200201 R1.1	Malcolm Ravenscroft Ltd	21 July 2020	Jensen Hughes Fire Testing Pty Ltd (Formerly known as Warringtonfire)
FRT220052 R1.1	Systemair NZ Limited	20 March 2023	
FRT230054 R1.0	Systemair NZ Limited	29 June 2023	
FRT240193 R1.0	Systemair NZ Limited	16 August 2024	
FP 2376	Malcolm Ravenscroft Ltd	27 May 1997	BRANZ

4.3 Variations to the tested systems

The tested systems and variations to those tested systems – together with the referenced standard fire tests – are described in Table 5.

Table 5 Variations to tested systems

Item	Reference test	Description	Variations
Ravenscroft motorised and non-motorised BSD damper	FRT200201 R1.1 FRT240193 R1.0 FRT220052 R1.1 FRT230054 R1.0 FP 2376	In test FRT200201 R1.1, a 400 mm diameter BSD-PW Series 2 fire damper was installed in a 116 mm thick of two layers of 13 mm thick CSR Fyrechek plasterboards on both faces. The system achieved an FRL of -/120/15. In test FRT220052, BSD-C-M fire/smoke damper was tested in a 120 mm thick reinforced concrete slab. The system achieved an FRL of -/120/0. In test FRT230054 R1.0, BSD2-PW-M, 400 mm diameter fire/smoke damper was tested in 116 mm thick wall system consists of two layers of 13 mm thick CSR Fyrechek plasterboards on both faces. The system achieved an FRL of -/120/15. In test FRT240193 R1.0, a 400 mm diameter BSD-PW Series 2 fire damper (insulated) was installed in a 90 mm thick of single layer of 13 mm thick plasterboards on both faces. The damper assembly has its outer body filled with a layer of ceramic mineral wool. The system achieved an FRL of -/60/15. In test FP 2376, a 400 mm diameter BSD damper was installed in 130 mm thick timber framed gypsum plasterboard lined wall. The system did not fail for 132 min.	Assessment of Ravenscroft motorised and non-motorised BSD damper with the following variations: • Installation in (steel and timber framed) Plasterboard wall, concrete wall and floor systems, and KOROK wall system. • Damper material options include galvanized steel and stainless steel.

4.4 Test and assessment standard

AS 1530.4:2014 sets out procedures and methods for fire tests on building materials, components, structures, and fire-resistance tests for elements of construction. Section 11 of the standard relates to fire damper and air transfer grille assemblies in ducts. The test for fire damper included an air leakage limit requirement in addition to the fire resistance test.

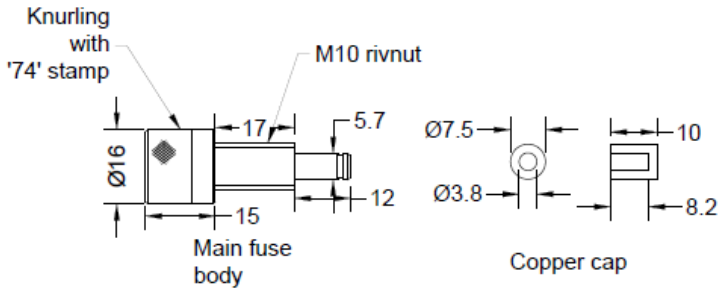
4.5 Schedule of components

Table 6 outlines the schedule of components for the assessed systems. We have based this schedule of component from the reference test report shown in Table 4.

Table 6 Schedule of components of assessed systems

Item	Description	
Separating element (SE). (Alternative separating element walls are described separately below)		
1.	Item name	Plasterboard
	Product name	13 mm CSR Fyrchek plasterboard. Thicker fire rated plasterboard lining may be installed except that the performance of the fire damper will be limited to that as tested. Other brands of certified fire rated plasterboards of the same thickness and equivalent FRL may be used.
	Density	833 kg/m^3 (nominal)
2.	Item name	Steel framing

Item	Description		
	Products	64 mm Rondo 0.50 BMT steel wall stud with 600 mm maximum centres spacing and 64 mm Rondo 0.50 BMT deflection head track deeper studs and frames with higher BMT and spaced no more than 600 mm apart may be used.	
3.	Item name	Timber studs	
	Product	Kiln dried No. 1 radiata framing	
	Thickness	90 mm	
SE	Size	1200 mm wide × 1200 mm high × 116 mm thick.	
	Restraint conditions	Restrained on all edges	
	Installation	A Ø440 mm aperture was cut in the plasterboard on both sides. The steel wall studs are to be spaced by maximum 600 mm provided the top and bottom steel trimmers across the studs at the opening remain as installed in the test to maintain stability of the fire damper installation. The head and sill should incorporate wall tracks (Item 2). For timber framed wall system, the timber studs are to be spaced by maximum 600 mm. Single layer or two layers of plasterboard (item 1) are to be installed on both the exposed and unexposed side of the framing.	
Alternative separating element.			
Concrete or masonry wall		The separating wall element may be a concrete or masonry construction of minimum 116 mm or thicker and designed in accordance with AS 3600 for concrete and AS 3700 for masonry.	
Concrete floor		The separating element may be a concrete floor of 116 mm minimum thickness of and designed in accordance with AS 3600. Where the separating element is a concrete floor, the fire damper must be installed on top of the concrete floor with extended extension passing through the floor opening and extending past the soffit of the slab.	
KOROK wall		The separating element may be a 51 mm or 78 mm thick Korok wall. Where the separating element is Korok wall, a local build up made of plasterboard must be added on both sides of the wall. Damper fixing details must be as tested in FRT240193.	
Fire damper			
4.	Item name	Fire damper	
	Product name	BSD 400 Series 2 fire damper (insulated)	
	Size	Nominal size	Ø400 mm
		Free opening size	Ø398 mm
		Overall size including flanges	650 mm wide × 650 mm high × 400 mm deep
	Main body	Ø400 mm × 400 mm deep × 0.8 mm thick galvanised steel	
	Outer body	Ø430 mm × 200 mm deep × 0.8 mm thick galvanised steel	
	Ceramic mineral wool	Material	Ceramic fibre
		Density	128 kg/m^3 (provided by test sponsor)
	Inner flange	480 mm wide × 480 mm high × 0.8 mm thick galvanised steel	
	Outer flange	650 mm wide × 650 mm high × 0.8 mm thick galvanised steel	
	Sealing lock plate	Ø390 mm × 0.8 mm thick galvanised steel with an inner diameter of Ø290 mm	

Item	Description		
	Damper blade	Ø390 mm × 0.8 mm think galvanised steel	
	Locking blade	1.2 mm thick galvanised steel (provided by test sponsor)	
	Fuse	Ø16 mm Knurling – face stamped with '74' – with M10 flanged rivnut and Ø7.5 mm copper cap  	
	Pivot bracket	2 mm thick galvanised steel (provided by test sponsor)	
	Handle	Ø6 mm bright rod silver passivated finish	
	Spring	Ø2.45 mm stainless steel with an inside diameter of Ø8.55 mm consisting of 7 turns and a total length of 33 mm (provided by test sponsor)	
	Ceramic rope	Size	3 × Ø8 mm (uncompressed) strands
		Total linear mass	0.09 kg/m
	Intumescent	Size	5 mm wide × 4 mm high
		Density	1167 kg/m^3
	Assembly	The damper blade which had a 'z' profile along the perimeter was installed in the main body of the damper at nominal 140 mm from exposed face of the main body. A layer of intumescent with a layer of ceramic rope was wrapped around the perimeter of the damper blade and capped on the exposed side of the damper blade with a sealing lock plate. The sealing lock plate was secured to the damper blade with eight evenly spaced Ø3 mm mild steel rivets. Two springs – one on each side (east and west) of the damper blade – were welded to the damper blade at mid-height. A locking blade was welded to the western exposed face of the damper blade at mid-height. The handle was inserted through a Ø6 mm hole on western side of the main body, nominal 140 mm from the exposed face and welded to the unexposed face of the damper blade. A pivot bracket along with the fusible link was installed on the eastern exposed side of the main body, linking the locking blade. A floating outer flange was installed on the unexposed side and adjusted to the depth of the separating element.	
Alternative damper material of construction.		The Ravenscroft dampers may be constructed from Grade 316 stainless steel for components that are listed herein as galvanised steel with the same thicknesses without any adverse impact on the overall fire resistance performance.	
Sealant			
5.	Item name	Sealant	
	Product name	Promat Promaseal®- A acrylic sealant	
	Density	1426 kg/m^3	
Fixings			

Item	Description	
6.	Item name	Screws
	Product description	6g × 25 mm long bugle head needle point coarse thread screw
7.	Item name	Rivet
	Product description	Ø3 mm × 10 mm mild steel rivet
Fire damper installation		
	Installation	A nominal Ø15 mm bead of sealant (item 5) was applied to the unexposed face of the interface of the outer flange and outer body of the fire damper (item 4). Another Ø6 mm bead of sealant was applied to the outer flange at nominal 20 mm from the Ø15 mm bead. The fire damper was then installed through the aperture from the exposed side of the separating element. Screws was then used to secure the outer flange to the separating element at nominal 50 mm from the outer edges and nominal 275 mm centres. A nominal bead of sealant was then applied at the interface between the outer body of the fire damper and the plasterboard (item 1) filling any gaps in the aperture. Another Ø6 mm bead of sealant was applied onto the plasterboard at nominal 20 mm from the Ø15 mm bead. The floating outer flange was installed onto the fire damper and flush onto the unexposed side plasterboard. Screws were used to secure the floating outer flange to the plasterboard like the fixed flange, while twelve rivets were used to secure the floating outer flange to the outer body of the fire damper. Fixings for the BSD-C fire damper shall be 6 × 55 mm Hilti HUS-HR hexagonal head stainless steel screw anchors for securing the external flange and fire damper onto the masonry or concrete separating element. Fixings for the BSD-PW-Korok damper, the plasterboard layer installed on the Korok wall should be adequately fixed to the Korok wall using appropriate screws with gauge equal or higher than 6g and embedment within the Korok wall of 15-20 mm.

Figure 1 to Figure 13 show the assessed systems.

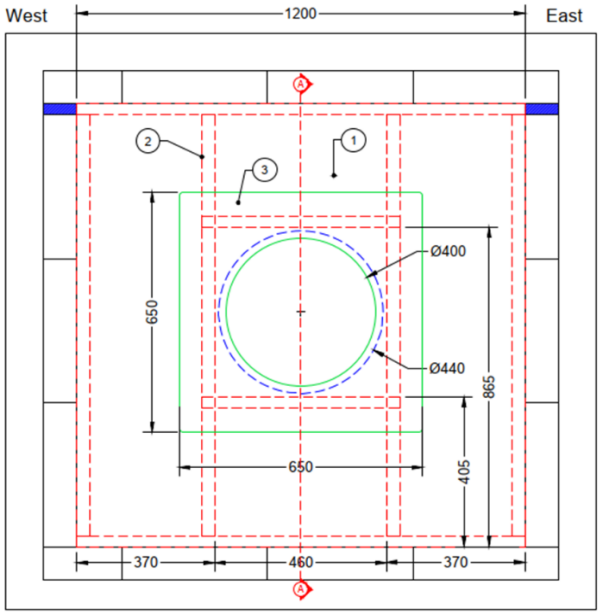


Figure 1 Elevation view of un-insulated side of BSD damper

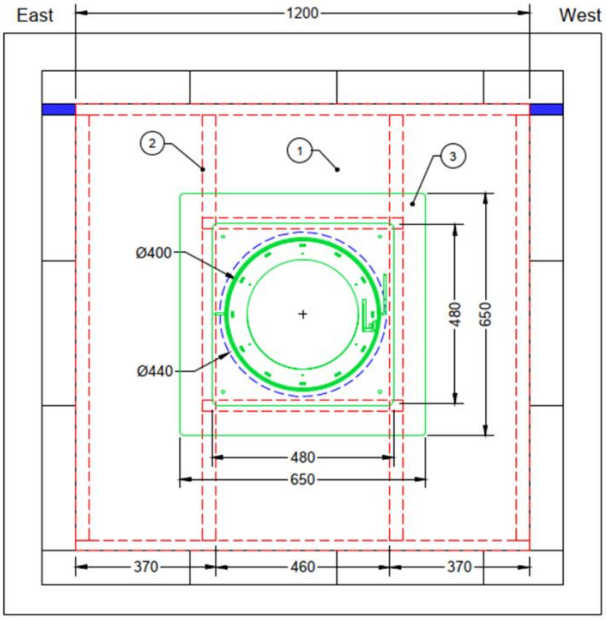


Figure 2 Elevation view of the insulated side of BSD damper

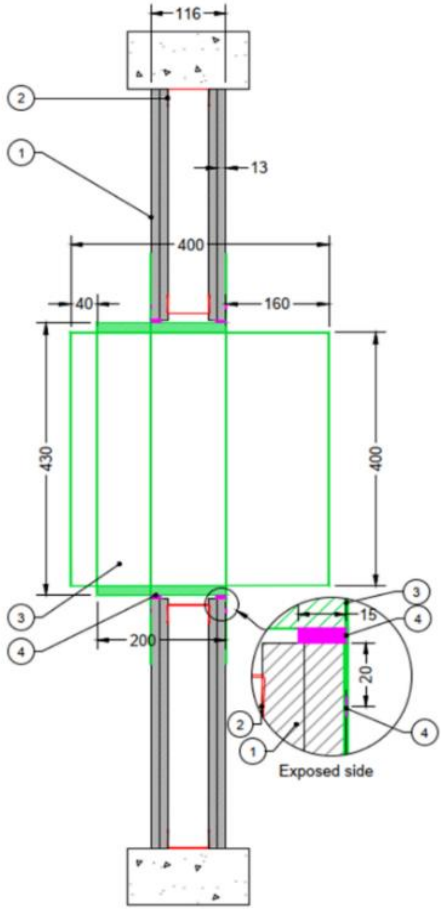


Figure 3 Section view of BSD damper in steel framed wall system

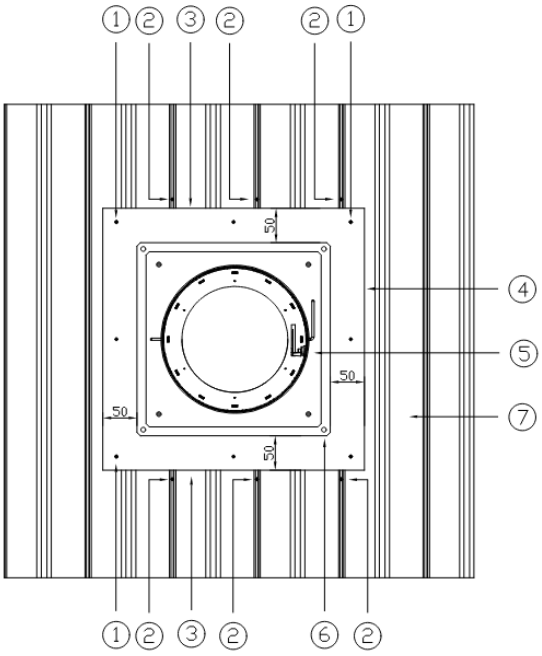


Figure 4 Elevation view of BSD-PW-KOROK (51 mm thick) damper

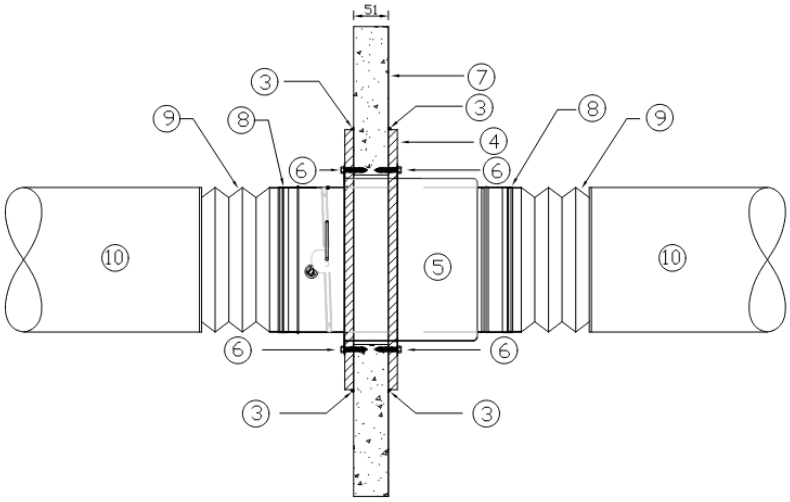


Figure 5 Section view of BSD-PW-KOROK (51 mm thick) damper

Table 7 Schedule of components of BSD-PW-KOROK damper installed on 51 mm Korok wall

Item	Description
1.	6g × 25 mm Plasterboard fixing screw
2.	10g × 16 mm Screw fixings on both sides
3.	Promat Promaseal A Acrylic sealant
4.	Fire rated plasterboard single layer 13 mm thick
5.	BSD-PW fire damper
6.	6g × 25 mm Plasterboard fixing screw
7.	Korok 51 mm thick Panel
8.	Retaining clamp
9.	Flexible duct
10.	Main ducting

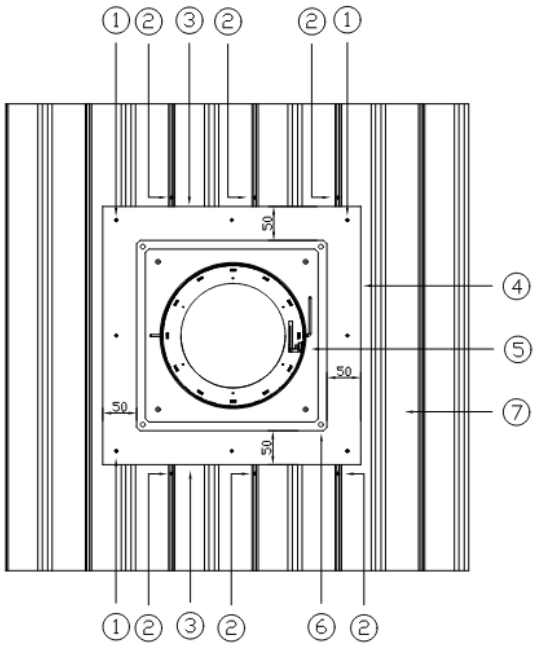


Figure 6 Elevation view of BSD-PW-KOROK (78 mm thick) damper

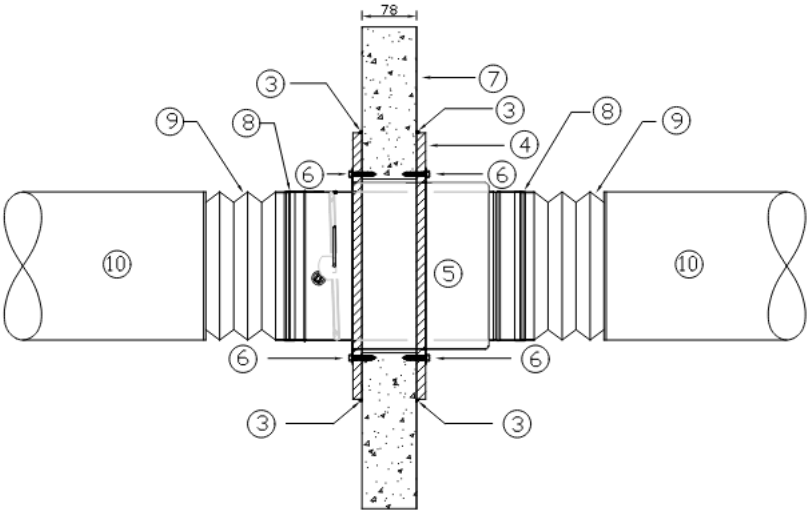


Figure 7 Section view of BSD-PW-KOROK (78 mm thick) damper

Table 8 Schedule of components of BSD-PW-KOROK damper installed on 78 mm Korok wall

Item	Description
1.	6g × 25 mm Plasterboard fixing screw
2.	10g × 16 mm Screw fixings on both sides
3.	Promat Promaseal A Acrylic sealant
4.	Fire rated plasterboard single layer 13 mm thick
5.	BSD-PW fire damper
6.	6g × 25 mm Plasterboard fixing screw

Item	Description
7.	Korok 78 mm thick Panel
8.	Retaining clamp
9.	Flexible duct
10.	Main ducting

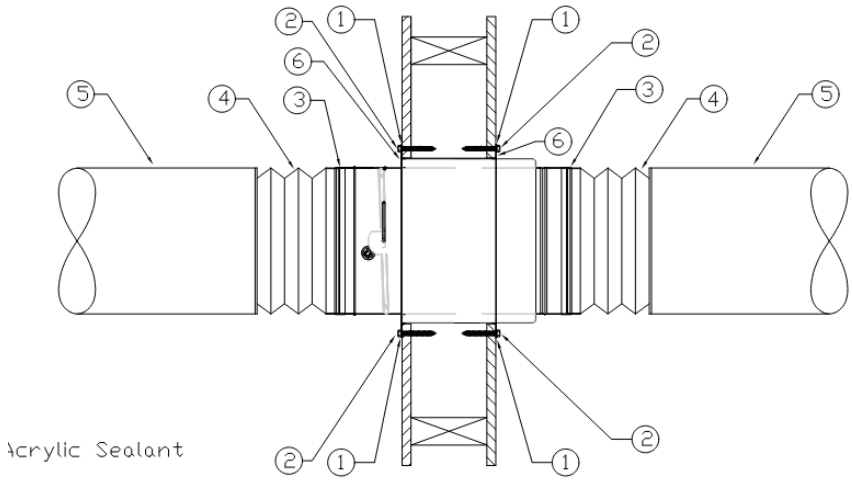


Figure 8 Section view of BSD-PW-Timber damper

Table 9 Schedule of components of BSD-PW damper installed on timber framed wall system

Item	Description
1.	6g × 25 mm Plasterboard fixing screw
2.	6g × 25 mm Plasterboard fixing screw
3.	Promat Promaseal A Acrylic sealant
4.	Fire rated plasterboard single layer 13 mm thick
5.	BSD-PW fire damper
6.	6g × 25 mm Plasterboard fixing screw
7.	Korok 78 mm thick Panel
8.	Retaining clamp
9.	Flexible duct
10.	Main ducting

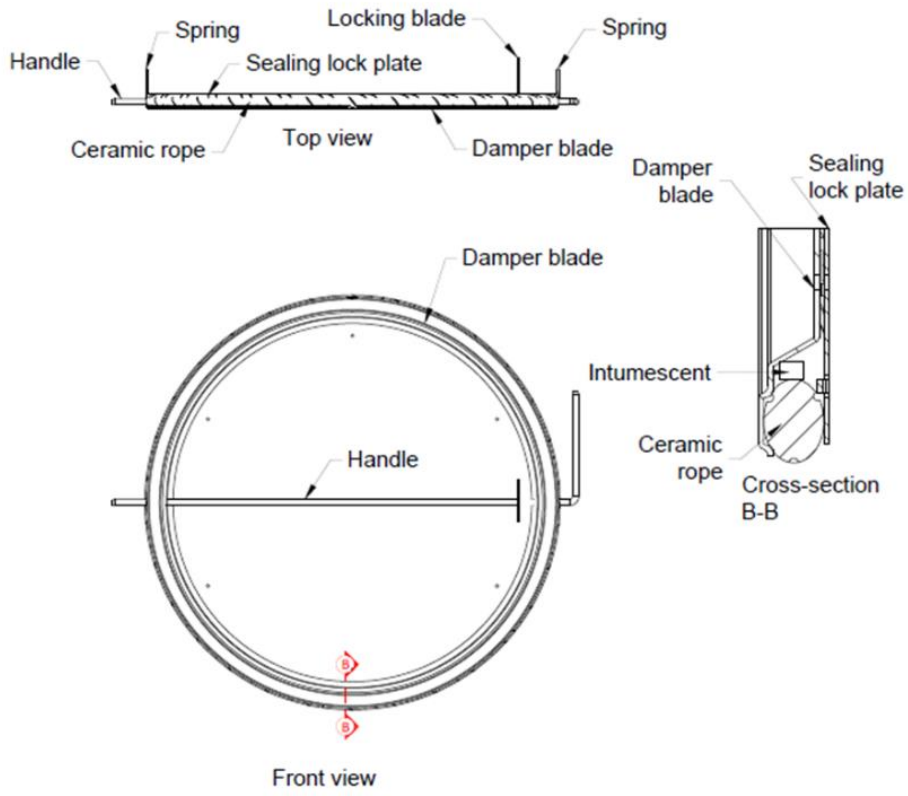
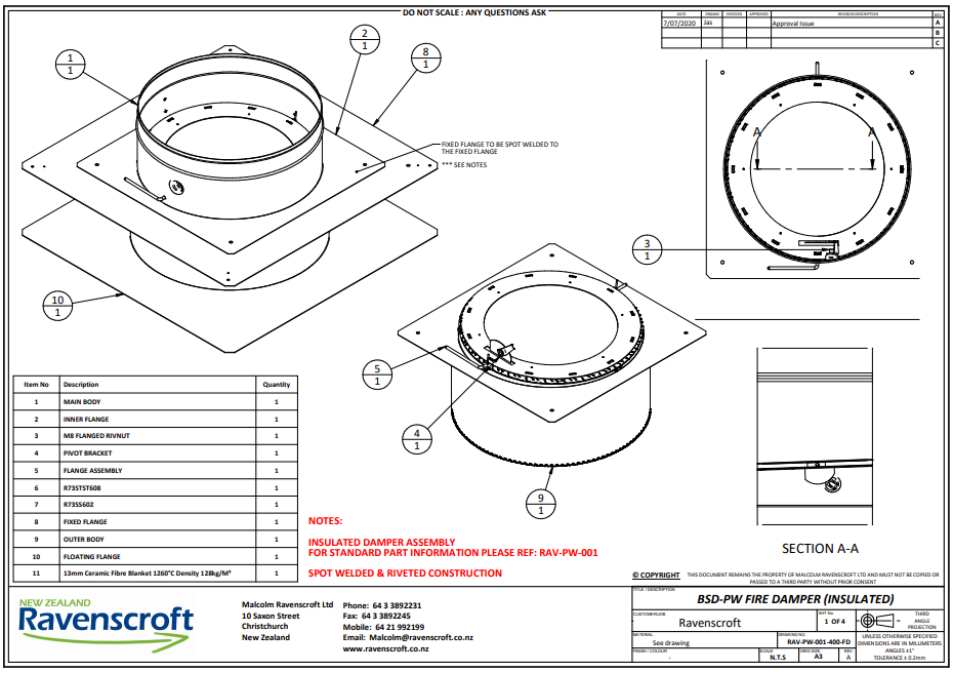
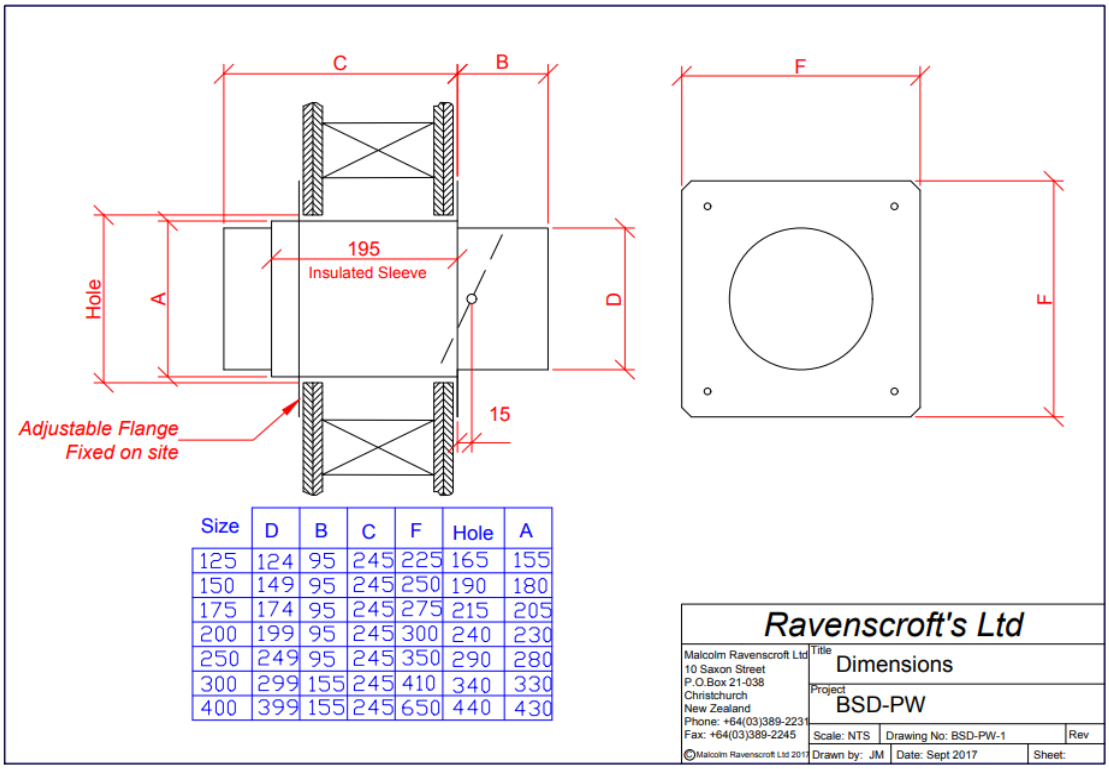


Figure 9 Damper body



Item No	Description	Quantity
1	MAIN BODY	1
2	INNER FLANGE	1
3	M8 FLANGED RIVNUT	1
4	PIVOT BRACKET	1
5	FLANGE ASSEMBLY	1
6	R73ST5T608	1
7	R73S5602	1
8	FIXED FLANGE	1
9	OUTER BODY	1
10	FLOATING FLANGE	1
11	13mm Ceramic Fibre Blanket 1260°C Density 128kg/M³	1

Figure 10 BSD-PW Fire damper assembly details (provided by Ravenscroft)



Size	D	B	C	F	Hole	A
125	124	95	245	225	165	155
150	149	95	245	250	190	180
175	174	95	245	275	215	205
200	199	95	245	300	240	230
250	249	95	245	350	290	280
300	299	155	245	410	340	330
400	399	155	245	650	440	430

Figure 11 Damper dimensions for BSD-PW range provided by Ravenscroft

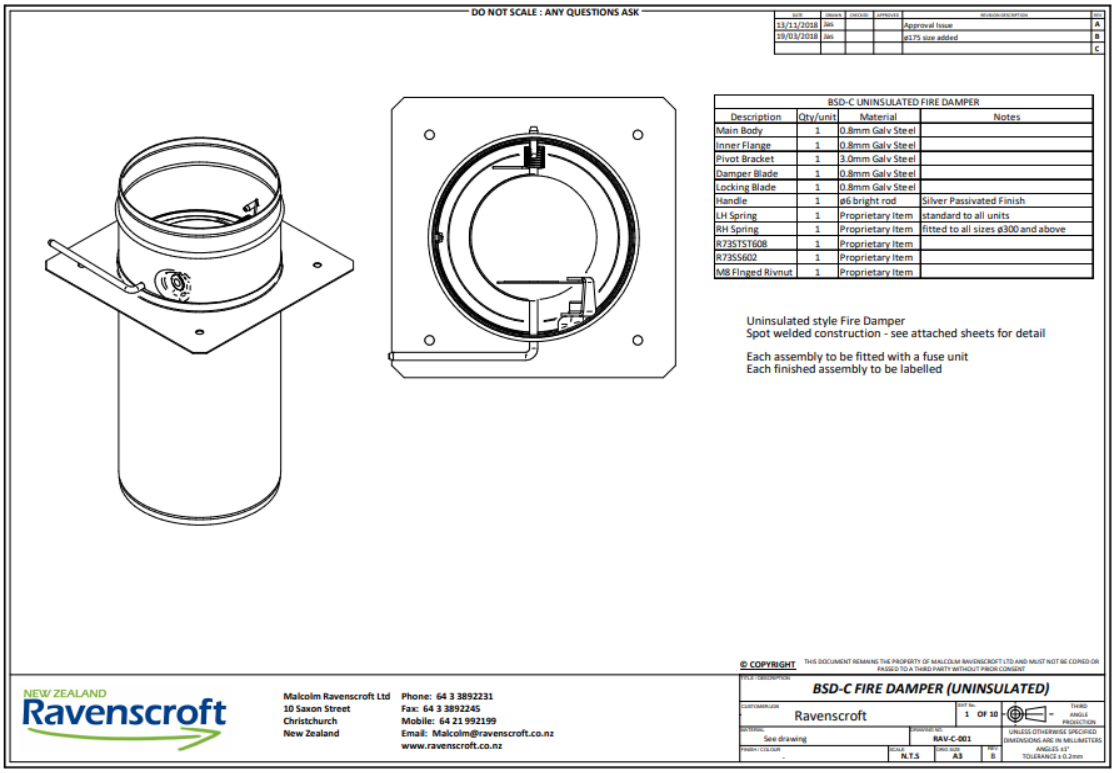


Figure 12 BSD-C uninsulated fire damper details – 1 (provided by Ravenscroft)

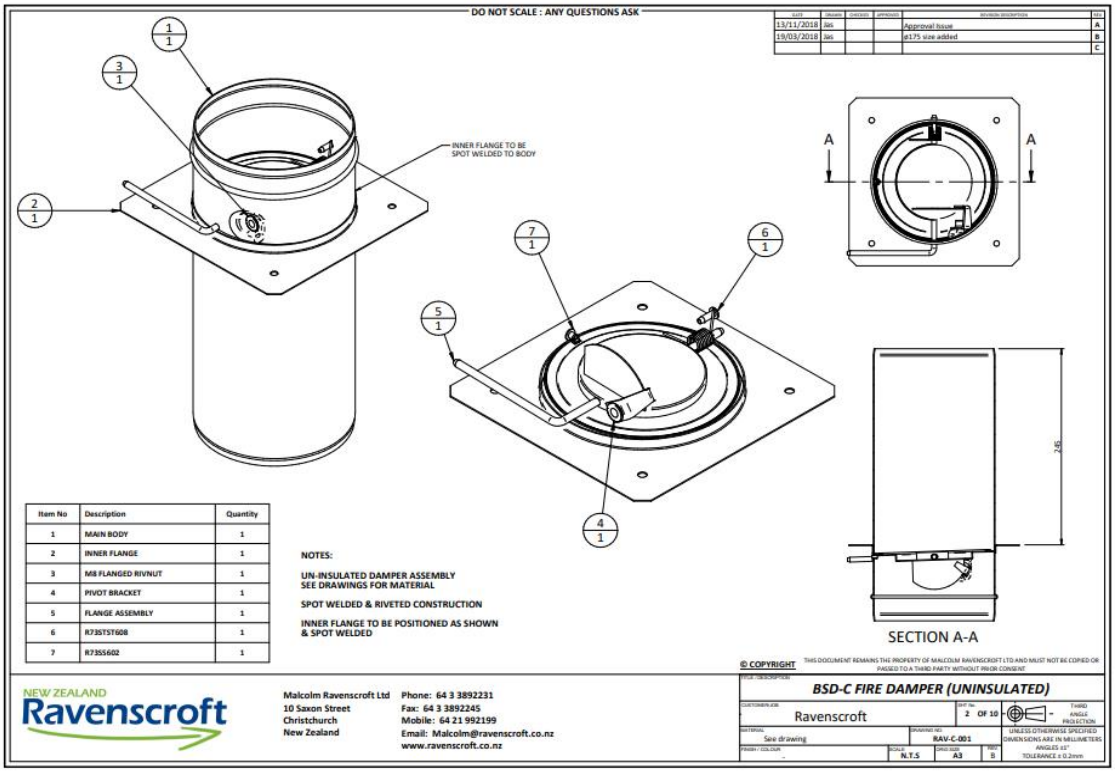


Figure 13 BSD-C uninsulated fire damper details – 2 (provided by Ravenscroft)

5. Assessment outcome

The referenced assessment demonstrates that the Ravenscroft dampers are expected to achieve the FRLs listed in Table 10 and

Table 11 if installed in a wall or floor systems in accordance with section 11 of AS 1530.4:2014.

Table 10 Summary of assessment of the Ravenscroft BSD dampers installed in walls

Fire damper model	*Size	Wall thickness and type	FRL in accordance with AS 1530.4:2014
BSD-PW (insulated) & BSD-PW/M	Ø125 mm to Ø400 mm	Double layer of 13 mm thick fire rated plasterboard wall system with established FRL of minimum 120/120/120 or -/120/120 The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL)	-/120/- (meets with air leakage rate limit)
		Single layer of 16 mm thick fire rated plasterboard wall system with established FRL of minimum 90/90/90 or -/90/90 The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL)	-/90/- (meets with air leakage rate limit)
		Single layer of 13 mm thick fire rated plasterboard wall system with established FRL of minimum 60/60/60 or -/60/60 The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL)	-/60/- (meets with air leakage rate limit)

Fire damper model	*Size	Wall thickness and type	FRL in accordance with AS 1530.4:2014
BSD-C & BSD-C/M	Ø125 mm to Ø400 mm	≥ 116 mm masonry or concrete The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL) or designed in accordance with AS 3600 or AS 3700	-/120/- (meets with air leakage rate limit)
BSD-PW-Korork & BSD-PW/M-Korork	Ø125 mm to Ø400 mm	78 mm thick KOROK wall with 2 × 13 mm layers of plasterboard build up on both sides of the wall. The plasterboard buildup should extend 50 mm beyond the edges of the damper flange on all sides. Damper fixing details must be as tested in FRT200201 R1.1.	-/120/- (meets with air leakage rate limit)
		78 mm thick KOROK wall with 1 × 13 mm layers of plasterboard build up on both sides of the wall. The plasterboard buildup should extend 50 mm beyond the edges of the damper flange on all sides. Damper fixing details must be as tested in FRT240193 R1.0.	-/90/- (meets with air leakage rate limit)
		51 mm thick KOROK wall with 1 × 13 mm layers of plasterboard build up on both sides of the wall. The plasterboard buildup should extend 50 mm beyond the edges of the damper flange on all sides. Damper fixing details must be as tested in FRT240193 R1.0.	-/60/- (meets with air leakage rate limit)
BSD – PW & BSD – PW/M damper	Ø125 mm to Ø400 mm	Timber framed single layer of 13 mm thick plasterboard wall system. the distance from the damper body to the stud must be minimum 100 mm.	-/60/- (meets with air leakage rate limit)
The fire damper may be fabricated from Grade 316 stainless steel instead of galvanised steel for the standard and as tested range of BSD-PW, BSD-PW-Korok and BSD-C fire dampers.			

Table 11 Summary of assessment of the Ravenscroft BSD fire dampers installed in concrete floor

Fire damper model	*Size	Wall thickness and type	FRL in accordance with AS 1530.4:2014
BSD-C & BSD-C/M	Ø125 mm to Ø400 mm	≥ 120 mm masonry or concrete The FRL must be established through test or assessment by an Accredited Testing Laboratory (ATL) or designed in accordance with AS 3600 or AS 3700	-/120/- (meets with air leakage rate limit)
The fire damper may be fabricated from Grade 316 stainless steel instead of galvanised steel for the standard and as tested range of BSD-C fire dampers.			

6. Validity

Jensen Hughes does not endorse the tested or assessed products and systems in any way. The conclusions of the referenced assessment may be used to directly assess fire resistance, but it should be recognised that a single test method will not provide a full assessment of fire resistance under all conditions.

Due to the nature of fire 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.

This report is based on test data, information and experience available at the time of preparation. If contradictory evidence becomes available to the assessing authority, the assessment will be unconditionally withdrawn and the report sponsor will be notified in writing. Similarly, the assessment should be re-evaluated, if the assessed construction is subsequently tested since actual test data is deemed to take precedence.

The sponsor is responsible for formally notifying Jensen Hughes of any additional testing performed on their product/system. This obligation applies regardless of where the test was conducted, the results of the test, or whether it was initially considered part of Jensen Hughes' ongoing assessment. The primary goal of this notification is to allow Jensen Hughes to review the changes and determine whether they require re-evaluation or re-testing to determine whether the changes have affected the product's performance. It is important that the client promptly notify Jensen Hughes if any such changes are implemented.

The procedures for the conduct of tests and the assessment of test results are subject to constant review and improvement. The sponsor is therefore recommended that the referenced assessment report be reviewed on, or before, the stated expiry date.

This report represents our opinion about the performance of the proposed system/s that is expected to be demonstrated when subjected to test conditions in accordance with AS 1530.4:2014, based on the evidence referred to in the referenced assessment report.

This report is provided to Systemair New Zealand Ltd for their own specific purposes. The referenced assessment report may be used as evidence of suitability in accordance with the requirements of the relevant National Construction Code. Building certifiers and other third parties must determine the suitability of the systems described in the referenced assessment report for a specific installation.