



FIRE Technical Opinion

FAR 4709 ISSUE 3

FIRE RESISTANCE OF INSPECTION HATCHES IN FIRE RATED FLOOR/CEILING SYSTEMS.

CLIENT

Firestop Centre Limited
657 Great South Road
Penrose
Auckland 1061
New Zealand



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ASSESSMENT OBJECTIVE

To assess the fire resistance of the Firestop Centre Inspection Hatch F1erated 300 (FSC 300) when installed in GIB® fire rated floor/ceiling systems in accordance with AS 1530.4-2005 or AS 1530.4:2014.

CONCLUSION

It is considered that the Hatch FSC 300 would maintain the stated FRR if installed in the following GIB® fire rated floor/ceiling systems if tested in accordance with AS 1530.4-2005 or AS 1530.4:2014 subject to the following conditions:

60/60/60

- GBFC 60 – 1 x 16 mm GIB Fyreline®
- GBCJ 60 – 1 x 16 mm GIB Fyreline®
- GBSC 60a – 2 x 13 mm GIB Fyreline®
- GBUC 60 – 2 x 13 mm GIB Fyreline®
- GBDFa 60b – 2 x 13 mm GIB Fyreline®
- GBDFa 60d – 2 x 13 mm GIB Fyreline®
- GBDFa 60e – 2 x 13 mm GIB Fyreline®
- GBSCA 60a – 1 x 16 mm + 1 x 13 mm GIB Fyreline®
- GBSJA 60 – 1 x 16 mm + 1 x 13 mm GIB Fyreline®

45/45/45

- GBFC 45* – 1 x 13 mm GIB Fyreline®
- GBCJ 45* – 1 x 13 mm GIB Fyreline®
- GBSCA 45 – 2 x 13 mm GIB Fyreline®
- GBSJA 45 – 2 x 13 mm GIB Fyreline®

30/30/30

- GBSJ 30* – 1 x 13 mm GIB Fyreline®
- GBCJ 30* – 1 x 13 mm GIB Fyreline®
- GBSC 30* – 1 x 13 mm GIB Fyreline®
- GBUC 30 – 1 x 16 mm GIB Fyreline®
- GBFC 30* – 1 x 13 mm GIB Fyreline®
- GBDFa 30a – 2 x 13 mm GIB® Standard plasterboard
- GBDFa 30d* – 1 x 13 mm GIB Braceline® or Noiseline®

15/15/15

- GBFC 15* – 1 x 13 mm GIB Fyreline®
- GBUC 15 – 1 x 13 mm GIB Fyreline®

* The inspection panels must be independently supported from the plasterboard.

Subject to the following:

- The Hatch FSC 300 may be hung directly from the plasterboard without supporting framing except for the systems noted with an "*" above.



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- The inspection panel can be installed in any location within the 600 mm x 600 mm area but is limited to only one within this area.
- The minimum cavity size shall not be less than tested at 200 mm in height as per the GIB® specification.

Variations to the construction of the inspection hatch

- The size of the inspection hatch can be reduced in length, width or both.
- The frame corner angles can be secured with M4 x 40 mm CSK screws or where the thickness of the lining is greater than 16 mm the same screw length as specified in the relevant GIB® fire rated floor/ceiling system.
- The screws securing the inspection panel cover are replaced with M4 x 10 STL pan head screws.
- Alternative contact adhesive with similar properties to that tested.

LIMITATION

This report is subject to the accuracy and completeness of the information supplied.

BRANZ reserves the right to amend or withdraw this assessment if information becomes available which indicates the stated fire performance may not be achieved.

This assessment report may only be quoted or reproduced in full.

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in BRANZ Services Agreement for this work.

The results reported here relate only to the item/s described in this report.



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DOCUMENT REVISION STATUS

ISSUE NO.	DATE ISSUED	REVIEW DATE	DESCRIPTION
1	29 May 2017	29 May 2022	Initial Issue
2	10 August 2017	10 August 2022	Amendment to system installation detail.
3	19 September 2022	19 September 2027	Validity extended for a further 5 years and update of GIB systems. (Project Ref: FC16587)



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1. INTRODUCTION

This report gives BRANZ's assessment of the fire resistance of the Firestop Centre Inspection Hatch Fire rated 300 (FSC 300) when installed in a GIB® fire rated floor/ceiling system for up to a fire resistance rating (FRR) of 60/60/60 if tested in accordance with AS 1530.4-2005 or AS 1530.4:2014.

2. BACKGROUND

2.1 Fire Resistance Tests

In fire resistance test FP 5958 two inspection hatches FSC 300 were tested in a fire rated floor/ceiling system except of reduced scale. The inspection hatches were nominally 300 mm x 300 mm installed in one layer of 16 mm thick GIB® Fyrelite® plasterboard. The floor/ceiling system consisted of 140 mm x 45 mm timber joists at 600 mm centres with full blocking which provided three cavities nominally 600 mm x 600 mm. To the top surface was nominal 20 mm thick particle board flooring. One of the hatches was positioned in the middle of the cavity while the other was secured to the framing on one side only.

In BRANZ fire resistance test FR 1370 a loadbearing floor/ceiling system was tested in accordance with AS 1530.4. The tested specimen consisted of joists at nominally 600 mm centres, 16 mm thick GIB® Fyrelite plasterboard to the underside and 20 mm thick particle board flooring. The floor/ceiling system maintained the failure criteria for in excess of 60 minutes.

Both the GIB® Fire rated system manual 2018 and GIB® Noise control systems manual 2017 have a current BRANZ appraisal certificate and have been reviewed to determine that the listed systems would achieve their stated fire resistance ratings (FRR).

3. DISCUSSION

3.1 General

In fire resistance test FP 5958 one of the hatches was installed in the centre of the unsupported area of ceiling lining created by the timber joists and solid blocking at nominally 600 mm x 600 mm centres. This is considered to be the most severe position with respect to causing failure of the ceiling due to pulling the lining off the timber during fire exposure. The other was positioned against one side of the framing and secured into the solid blocking.

The inspection hatch FSC 300 tested in FP 5958 consisted of a folded mild steel frame which was secured through the plasterboard facing to mild steel corner brackets above, effectively sandwiching the perimeter of the plasterboard. The removable hatch consisted of a mild steel cover with an insulating panel 14.5 mm thick with an intumescent seal around the perimeter. The cover was secured to the frame at the corners. The hatch was nominally 300 mm x 300 mm.



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3.2 GIB® GBFC 60 floor/ceiling system

The GIB® GBFC 60 floor/ceiling system consists of a single layer of 16 mm thick GIB Fyrelite® plasterboard with timber joists and a particle board flooring with a fire resistance rating (FRR) of 60/60/60.

In fire resistance test FP 5958 the inspection panels were tested in a reduced size GIB® GBFC 60 floor/ceiling system with a maximum un-supported area of 600 mm x 600 mm. A comparison has been made between the temperatures measured in the two cavities with inspection panels and the control cavity without any penetration. It is determined that the temperature on the plasterboard near the inspection panel frame is higher than the control plasterboard, however the panel itself had a lower temperature at 60 minutes. Temperatures were also measured on the side of the joists which indicated charring occurred approximately 4 minutes earlier than the control. Temperatures were also made to the underside of the flooring panel above, which were similar to the control.

In fire resistance test FR 1370 the load bearing floor ceiling system achieved a fire resistance in excess of 60 minutes. Based on the temperatures measured in fire resistance test FP 5958 the charring of the timber joists is likely to occur 4 minutes earlier with an inspection panel installed than without. When taking into account the performance achieved in FR 1370 in excess of the 60 minute requirement it is considered that the installation of the inspection panels is unlikely to prejudice the fire resistance before at least 60 minutes. Therefore it is considered the inspection panel can be installed into a GIB® GBFC 60 floor/ceiling system and maintain the FRR of at least 60/60/60 subject to the following:

- The inspection panel can be installed in any location within the 600 mm x 600 mm area but is limited to only one within this area.
- The minimum cavity size shall not be less than tested at 200 mm in height as per the GIB® specification.

3.3 Inspection Hatch design

The inspection hatch tested was nominally 300 mm x 300 mm. It is proposed to reduce the size of the inspection hatch in length or width or both. Based on the performance of the tested hatch it is considered that a reduction in dimension would not be detrimental to the fire performance of the inspection panel.

In fire resistance test FP 5958 the frame was secured to the corner angles with M4 screws and wing nuts. It is proposed to replace the screws/wing nuts with M4 x 40 mm CSK screws. It is considered that the stress on the screws would not be sufficient to pull out of the corner angles during fire exposure and therefore would not prejudice the fire performance of the inspection hatch. Where the thickness of the ceiling lining is increased the length of screw must be at least the same as specified in the GIB® fire rated floor/ceiling system for that lining configuration.

In FP 5958 the cover panel was secured with M4 screws and clinch nuts. It is proposed to replace these with an M4 x 10 STL pan head screw. It is considered the change in screw fixing is minor in nature and would not prejudice the fire performance of the inspection panel.



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The inspection panel was assembled using ADOS contact adhesive. It is considered that alternative contact adhesive may be used on the condition it has similar properties to that tested.

3.4 GIB® 60/60/60 floor/ceiling system

3.4.1 GIB® Fire rated system manual 2018

The GIB® Fire rated system manual 2018 includes floor/ceiling systems with an FRR of 60/60/60. The systems are as follows:

- GBCJ 60 – 1 x 16 mm GIB Fyrelite®
- GBSC 60a – 2 x 13 mm GIB Fyrelite®
- GBUC 60 – 2 x 13 mm GIB Fyrelite®

The floor/ceiling system tested in FP 5958 was selected as likely to be the most severely affected by the presence of the inspection panels compared to the other 60 minute systems. The systems with a single layer of 16 mm thick GIB Fyrelite® have deeper cavities which is likely to be beneficial or consist of more layers of plasterboard. Therefore it is considered that the inspection panels can be installed in the above GIB® fire rated floor/ceiling systems and maintain their FRR for at least 60/60/60 subject to the conditions stated in section 3.2.

3.4.2 GIB® Noise control systems manual 2017

The GIB® Noise control systems manual 2017 includes floor/ceiling systems with an FRR of 60/60/60. The systems are as follows:

- GB DFA 60b – 2 x 13 mm GIB Fyrelite®
- GB DFA 60d – 2 x 13 mm GIB Fyrelite®
- GB DFA 60e – 2 x 13 mm GIB Fyrelite®
- GB SCA 60a – 1 x 16 mm + 1 x 13 mm GIB Fyrelite®
- GB SJA 60 – 1 x 16 mm + 1 x 13 mm GIB Fyrelite®

As discussed above in section 3.4.1 above it is considered that the inspection panels can be installed in the above GIB® fire rated floor/ceiling systems and maintain their FRR for at least 60/60/60 subject to the conditions stated in section 3.2.

3.5 GIB® 45/45/45 floor/ceiling system

The GIB® Fire rated systems manual 2018 includes floor/ceiling systems with an FRR of 45/45/45. The systems are as follows:

- GBFC 45* – 1 x 13 mm GIB Fyrelite®
- GBCJ 45* – 1 x 13 mm GIB Fyrelite®

The GIB® Noise control systems manual 2017 includes floor/ceiling systems with an FRR of 45/45/45. The systems are as follows:

- GB SCA 45 – 2 x 13 mm GIB Fyrelite®
- GB SJA 45 – 2 x 13 mm GIB Fyrelite®



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As discussed above in section 3.4.1 the supporting data for each of the above systems have been compared with the performance of the inspection panels in FP 5958 with respect to their performance and temperatures obtained at 45 minutes. Based on this comparison it is considered that the inspection panels can be installed in the above GIB® fire rated floor/ceiling systems and maintain their FRR for at least 45/45/45 subject to the conditions stated in section 3.2.

* The inspection panels must be independently supported from the plasterboard.

3.6 GIB® 30/30/30 and 15/15/15 floor/ceiling system

The GIB® Fire rated systems manual 2018 includes floor/ceiling systems with an FRR of 15/15/15 and 30/30/30. The systems are as follows:

- GBFC 15* – 1 x 13 mm GIB® Standard plasterboard
- GBUC 15 – 1 x 13 mm GIB Fyrelite®
- GBSJ 30* – 1 x 13 mm GIB Fyrelite®
- GBCJ 30* – 1 x 13 mm GIB Fyrelite®
- GBSC 30* – 1 x 13 mm GIB Fyrelite®
- GBUC 30 – 1 x 16 mm GIB Fyrelite®
- GBFC 30* – 1 x 13 mm GIB Fyrelite®

The GIB® Noise control systems manual 2017 includes floor/ceiling systems with an FRR of 30/30/30. The systems are as follows:

- GB DFA 30a – 2 x 13 mm GIB® Standard plasterboard
- GB DFA 30d* – 1 x 13 mm GIB Bracelene® or Noiseline®

As discussed above in section 3.4.1 the supporting data for each of the above systems have been compared with the performance of the inspection panels in FP 5958 with respect to their performance and temperatures obtained at 15 and 30 minutes. Based on this comparison it is considered that the inspection panels can be installed in the above GIB® fire rated floor/ceiling systems and maintain their FRR for at least 15/15/15 or 30/30/30 as appropriate subject to the conditions stated in section 3.2.

* The inspection panels must be independently supported from the plasterboard.



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4. CONCLUSION

It is considered that the Hatch FSC 300 would maintain the stated FRR if installed in the following GIB® fire rated floor/ceiling systems if tested in accordance with AS 1530.4-2005 or AS 1530.4:2014 subject to the following conditions:

60/60/60

- GBFC 60 – 1 x 16 mm GIB Fyrelite®
- GBCJ 60 – 1 x 16 mm GIB Fyrelite®
- GBSC 60a – 2 x 13 mm GIB Fyrelite®
- GBUC 60 – 2 x 13 mm GIB Fyrelite®
- GBDFa 60b – 2 x 13 mm GIB Fyrelite®
- GBDFa 60d – 2 x 13 mm GIB Fyrelite®
- GBDFa 60e – 2 x 13 mm GIB Fyrelite®
- GBSCA 60a – 1 x 16 mm + 1 x 13 mm GIB Fyrelite®
- GBSJA 60 – 1 x 16 mm + 1 x 13 mm GIB Fyrelite®

45/45/45

- GBFC 45* – 1 x 13 mm GIB Fyrelite®
- GBCJ 45* – 1 x 13 mm GIB Fyrelite®
- GBSCA 45 – 2 x 13 mm GIB Fyrelite®
- GBSJA 45 – 2 x 13 mm GIB Fyrelite®

30/30/30

- GBSJ 30* – 1 x 13 mm GIB Fyrelite®
- GBCJ 30* – 1 x 13 mm GIB Fyrelite®
- GBSC 30* – 1 x 13 mm GIB Fyrelite®
- GBUC 30 – 1 x 16 mm GIB Fyrelite®
- GBFC 30* – 1 x 13 mm GIB Fyrelite®
- GBDFa 30a – 2 x 13 mm GIB® Standard plasterboard
- GBDFa 30d* – 1 x 13 mm GIB Bracelint® or Noiseline®

15/15/15

- GBFC 15* – 1 x 13 mm GIB Fyrelite®
- GBUC 15 – 1 x 13 mm GIB Fyrelite®

* The inspection panels must be independently supported from the plasterboard.

Subject to the following:

- The Hatch FSC 300 may be hung directly from the plasterboard without supporting framing except for the systems noted with an “*” above.
- The inspection panel can be installed in any location within the 600 mm x 600 mm area but is limited to only one within this area.
- The minimum cavity size shall not be less than tested at 200 mm in height as per the GIB® specification.

Variations to the construction of the inspection hatch



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- The size of the inspection hatch can be reduced in length, width or both.
- The frame corner angles can be secured with M4 x 40 mm CSK screws or where the thickness of the lining is greater than 16 mm the same screw length as specified in the relevant GIB® fire rated floor/ceiling system.
- The screws securing the inspection panel cover are replaced with M4 x 10 STL pan head screws.
- Alternative contact adhesive with similar properties to that tested.



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FAR 4709-C1 ISSUE 3

Technical Opinion Summary



This is to certify that the specimen described below has been examined by BRANZ on behalf of the sponsor.

Sponsor

Firestop Centre Limited
657 Great South Road
Penrose
Auckland 1061
New Zealand

Reference BRANZ Reports FAR 4709 Issue 3

Referenced Standard AS 1530.4-2005 and 2014

Specimen Name: Inspection Hatch FSC 300

Specimen Description: Steel framed inspection hatch up to 300 mm x 300 mm

Orientation: From the underside only

The assessed results were as follows

It is considered that the Hatch FSC 300 would maintain the stated FRR if installed in the following GIB® fire rated floor/ceiling systems if tested in accordance with AS 1530.4-2005 or AS 1530.4:2014 subject to the following conditions:

FRR	System
60/60/60	GBFC 60, GBCJ 60, GBSC 60a, GBUC 60, GBDFA 60b, GBDFA 60d, GBDFA 60e, GBSCA 60a and GBSJA 60
45/45/45	GBFC 45*, GBCJ 45*, GBSCA 45 and GBSJA 45
30/30/30	GBSJ 30*, GBCJ 30*, GBSC 30*, GBUC 30, GBFC 30*, GBDFA 30a and GBDFA 30d*
15/15/15	GBFC 15* and GBUC 15

* The inspection panels must be independently supported from the plasterboard.

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Regulatory authorities are advised to examine Technical Opinion FAR 4709 Issue 3 before approving any product.

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