TRAFALGAR FIRE

FAN ENCLOSURES AND DUCT SYSTEMS

FyreFLEX

FyreWrap

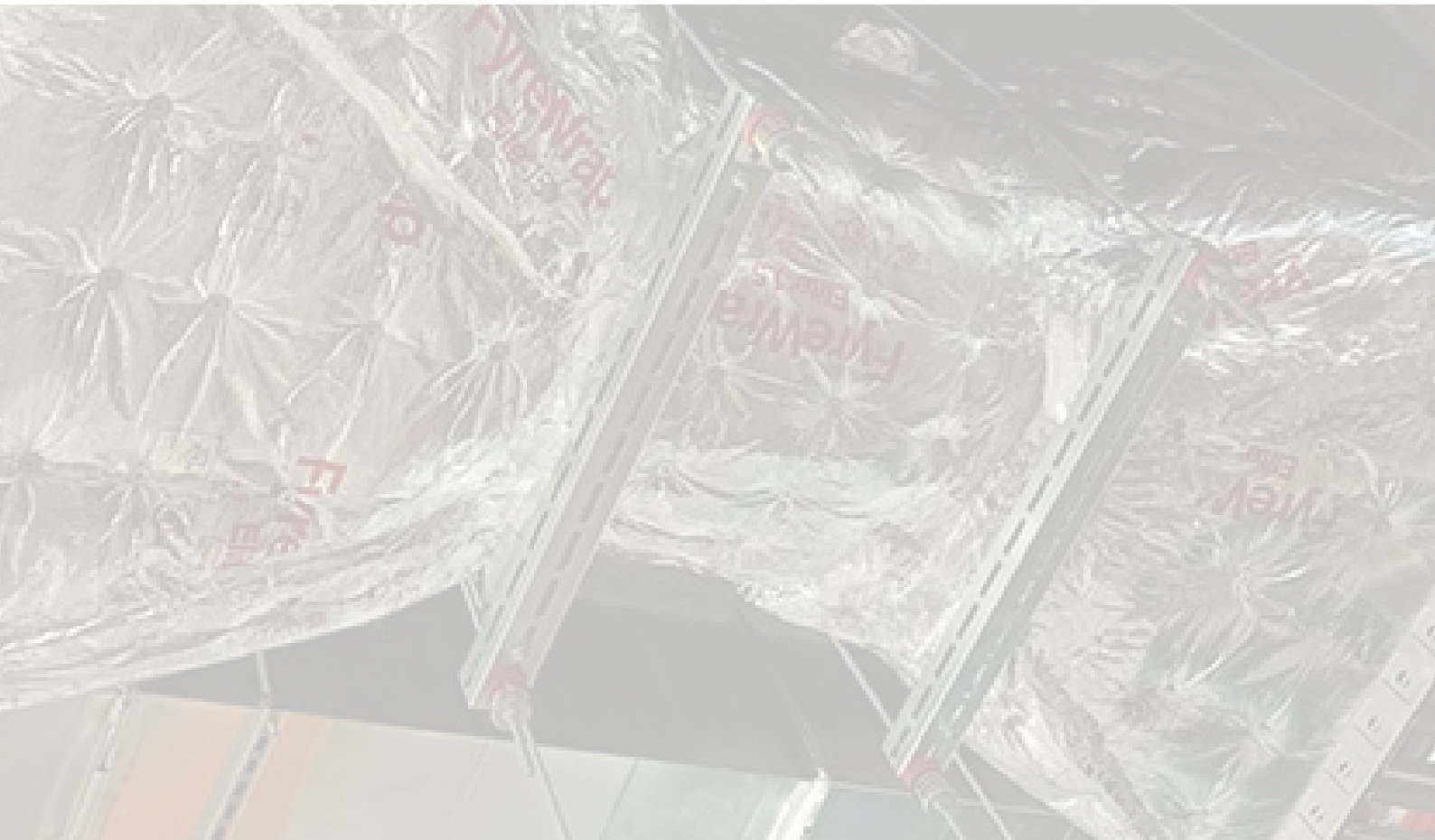
FyreDUCT Access Panel

HVAC&R

ARCHITECTS

BUILDERS

PASSIVE FIRE



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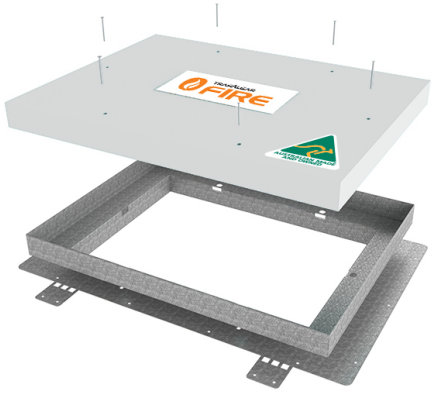
OVERVIEW



Fan Enclosures provide a unique problem as the fire stopping materials used have to dampen sound and vibrations, and be able to provide access into the enclosure for maintenance and servicing. Trafalgar's FyreWRAP tackles all these challenges in one compliant package.

COMPLIANCE

Smoke Control in buildings is a requirement of both the NCC & AS/NZS1668.1.

Whether it be a smoke exhaust system, stair, corridor or zone pressurisation system, the fans and ductwork must operate when the building is in fire mode.

The intricate network of ducts and fan enclosures, often spread across multiple floors and zones, makes it challenging to ensure comprehensive fire protection. Each section of the ductwork can have different requirements based on its location and function.

We must ensure the fans continue to operate during a fire, so if they are not located in a fire rated plant room, the fan will need its own fireproofing to make sure it continues to operate during the fire.

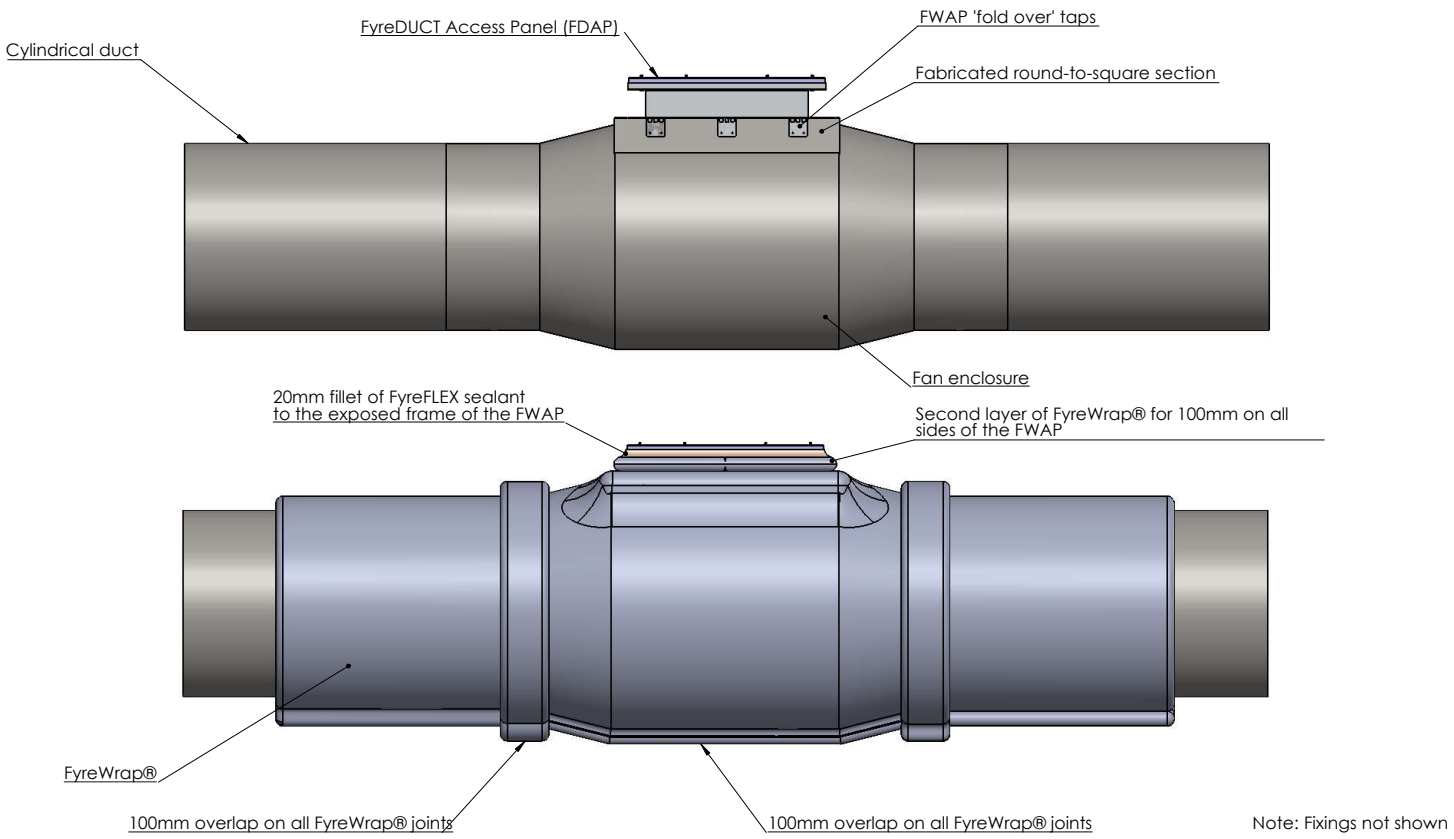
Amongst the numerous considerations, there are three main issues:

- Access
- Vibration and sound
- Shape of the duct

FyreWRAP & FyreDUCT ACCESS PANELS

To gain access to the fans, whether it be for maintenance testing, or servicing reasons, the fan enclosure must have an easy point of access. This point of access must also be fire rated and not be a weak point in the enclosure system.

Using FyreWrap to protect your fans allows you to use FyreDUCT Access Panels. These access panels can be incorporated into the FyreWrap assembly and provide an easy and simple point of access to all critical machinery under the enclosure. Please the technical drawing below for clarification.



Note: Fixings not shown

VIBRATIONS AND SOUND PROTECTION

Smoke control fans, especially axial fans, vibrate significantly when turned on. This also includes the ductwork attached to the fan.

As a result of this vibration and axial displacement, the fan needs flexible connections to attach it to the rest of the ductwork. These flexible connections also provide movement that must be considered.

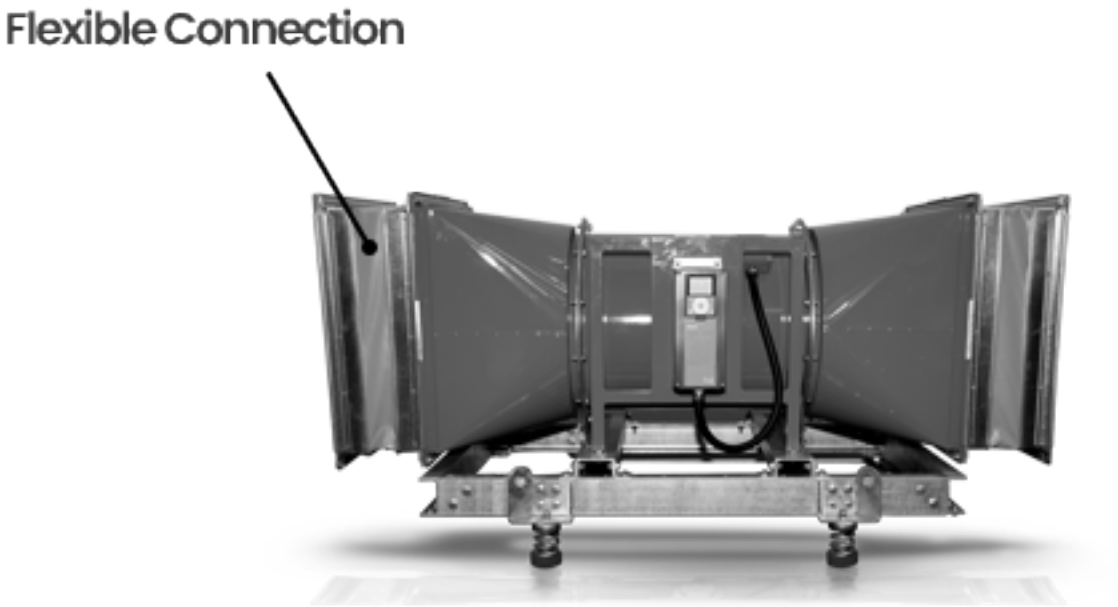
All this movement means that using a spray type protection is not viable. The hardened spray material will loosen and fall off when the fan is turned on, due to the extreme vibrations.

Additionally, when turned on, the fans are very loud.

Therefore, you need a solution which can withstand the movement and dampen the sound. FyreWrap does both!

Due to its flexible nature, a properly installed and compliant FyreWrap system can handle the vibrations of a smoke control fan and dampen its sound.

Example of an axial fan:



CIRCULAR/ROUND AND SQUARE DUCTS

FyreWrap can be used to protect both circular and square ducts. This also includes smoke control systems which transition from square ductwork into circular fans.

FyreWrap is the perfect product for protection for fans and ductwork as it provides a full FRL and is flexible.

Ducts and fan enclosures must be able to withstand high temperatures and prevent the spread of smoke, which can be just as dangerous as the flames. Effective fire protection must include measures to contain and control smoke, ensuring safe evacuation routes and protecting critical infrastructure.

Compliance with standards, such as AS 1530.4 and AS/NZS1668.1is essential.

AS/NZS1668.1 specifically sets out the requirements for air-handling systems to reduce smoke spread from an area affected by fire to other areas of the building.

Please see the diagram for paths of potential smoke leakage when the central system is not running.

FRL TABLES

EXHAUST DUCTS

AS1530.4-2014 section 9 defines two separate fire test methods to represent fire exposure from inside the duct or a fire outside of the duct, and makes distinctions on which exposure method applies to which type of duct application. Exhaust ducts are categorised as having fire exposures inside the duct (internal fire), however it is important to note that AS1668.1 does also add requirements based off the application in some instances. Trafalgar have compiled a list of typical applications, their governing clauses from AS1668.1, and our interpretation of the appropriate FRL and FyreWrap requirements for the applications.

PLEASE CONSULT WITH YOUR PROJECT SURVEYOR OR CERTIFIER TO CONFIRM THE ACCEPTABILITY OF THIS INTERPRETATION. WHERE ANY DIFFERENCES EXIST TRAFALGAR ARE HAPPY TO OFFER A SOLUTION TO MEET THE INTERPRETATION OF THE SITES CERTIFYING BODY.

Application	Fire risk	Compliance requirement	FRL To match the FRL of the compartment e.g. 120/120/120 in a 2 hour requirement		Fire test/ assessment report
			External fire (FyreWrap layers)	Internal Fire (FyreWrap layers)	
Kitchen Exhaust Only (ductwork outside of the kitchen)	Fire inside the kitchen and/ or ducting spreading to other compartments, and we need to make sure it stays inside the duct.	AS1668.1 Section 6 AS1668.1 Clause 3.4	Not required as per AS1530.4 FRL definitions (9.1b)	120/120/120 **(1x layer)***	FCO3226
Combined kitchen and smoke exhaust system	Fire inside the kitchen and/or ducting, integrity of the smoke exhaust systems of the building.	AS1668.1 Section 6 Clause 6.2.2 AS1668.1 Section 3 Clause 3.7.2	120/120/- **(1x layer)**	120/120/120 **(1x layer)***	FCO3226 & FC 17299
Smoke Exhaust	Fire in compartment causing smoke to rise and fill space quickly, integrity of the smoke exhaust systems of the building.	AS1668.1 Section 3.7.2	120/120/- **(1x layer)**	120/120/120 **(1x layer)***	FCO3226 & FC 17299
Diesel pump ventilation system	Fire in duct spreading to other compartments, or hot products of combustion escaping and igniting.	AS1668.1 3.3.3 e) AS1668.1 Clause 3.4	Not required as per AS1530.4 FRL definitions (9.1b)	120/120/120 **(1x layer)***	FCO3226 & FC 17299
Kitchen Exhaust ductwork inside the kitchen compartment	Fires inside the duct spreading to combustible materials within 300mm of the duct.	AS1668.1 section 6 Clause 6.2.3.3	Not required as per AS1530.4 FRL definitions (9.1b)	-/30/30 **(1x layer)**	FCO3226 & FC 17299
Fire Stair pressurization relief ducts	Fire & smoke passing through to fire escapes preventing safe evacuation.	AS1668.1 Clause 10.4.3	120/120/- **(1x layer)**	120/120/120 **(1x layer)***	FCO3226 & FC 17299
Any other exhaust duct e.g.	Fire in duct spreading to other compartments, or hot products of combustion escaping and igniting.	AS1668.1 Clause 3.4	Not required as per AS1530.4 FRL definitions (9.1b)	120/120/120 **(1x layer)***	FCO3226

*Additional layer locally where duct passes through fire barriers

For 3 and 4 hour FRL requirements please contact Trafalgar at technical@tgroup.com.au

FRL TABLES

PRESSURISATION DUCTS

This FRL table details what the FRL requirements are for pressurisation ducts.

Under AS1530.4-2014 section 9, pressurisation ducts are categorised as having fire exposures outside the duct (external fire) however it is important to note that AS1668.1 does also have additional requirements to consider based off the application.

PLEASE CONSULT WITH YOUR PROJECT SURVEYOR OR CERTIFIER TO CONFIRM THE ACCEPTABILITY OF THIS INTERPRETATION. WHERE ANY DIFFERENCES EXIST TRAFALGAR ARE HAPPY TO OFFER A SOLUTION TO MEET THE INTERPRETATION OF THE SITES CERTIFYING BODY.

Application	Fire Risk	Compliance Requirement	FRL To match the FRL of the compartment e.g. 120/120/120 in a 2 hour requirement		Fire Test/ Assessment Report
			External fire (FyreWrap layers)	Internal Fire (FyreWrap layers)	
Stair or fire escape pressurisation ducts	Fire & smoke passing through to fire escapes preventing safe evacuation.	NCC2019-C3.9 NC2022-C4D10 AS1668.1 section 10	120/120/60 **(2x layers)**	Not required as per AS1530.4 FRL definitions (9.1a)	FC 17299
Fire Stair pressurization relief ducts	Fire & smoke passing through to fire escapes preventing safe evacuation.	AS1668.1 Clause 10.4.3	120/120/- **(1x layer)**	120/120/120 **(1x layer)***	FCO3226 & FC 17299
Any other ducts that blow air to pressurize a compartment	Fire & smoke passing through fire compartments via the ducting system where fire dampers are not installed or permitted to be used.	AS1668.1 Clause 3.4	120/120/120 **(3x layers)**	Not required as per AS1530.4 FRL definitions (9.1a)	FC 17299

*Additional layer locally where duct passes through fire barriers

For 3 and 4 hour FRL requirements please contact Trafalgar at technical@tgroup.com.au

SYSTEM RANGE
FyreWrap®

- Lightweight fireproofing
- Fast, clean and easy to install
- Bio-soluble insulation material
- Up to 3 hour fire rating in accordance with AS1530.4-2014 for internal and external fire.

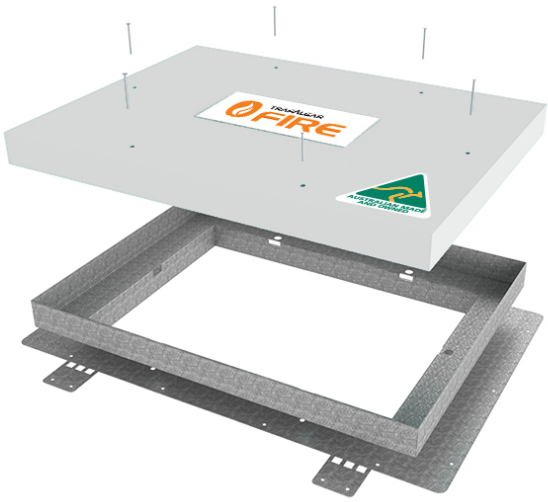
Item Number	Size	Thick	Qty	Pallet Qty
FyreWrap® Elite 610	610mm wide x 7620mm long	38mm	1 roll	12 rolls
FyreWrap® Elite 1220	1220mm wide x 7620mm long	38mm	1 roll	6 rolls

SYSTEM COMPONENTS

- This kit contains one of each item below.

Kit	Item Number	QTY
FyreWrap® Kit	FyreWrap® Premium Reinforced Tape 96mm x 50m Roll	1
	FyreWrap® Crimper	1
	FyreWrap® Tensioner	1
	Steel Banding Roll 12.7mm x 250m	1
	Snap on Seals 13mm (box of 1000)	1
	Dispenser	1

SYSTEM RANGE
FyreDUCT ACCESS PANEL



FyreDUCT Access Panel

FYREDUCT ACCESS PANELS (FDA

- Are a patented system designed for use on ducts protected by the innovative FyreWrap® system.
- Provide fire rating on ducts and allow access for the purpose of inspection,service, repair or replacement of internal equipment such as filters, volume control devices, dampers and fans.
- Patented design includes a number of features and benefits to ensure complete flexibility and ease of installation.
- Are simply installed by fitting directly over the existing 'non-rated duct access panel' and fixed to the duct using rivets through a series of pre-drilled holes.
- Provide additional flexibility on site as they can be either pre-installed or easily retro-fitted.
- Include patented, bendable fastening tabs for slimline ducts to allow access without the need for a full box encasement.

Item Number	Size	To Suit	FyreWrap® System
FD-AP-2L-AP0	708mm x 558mm	AP0	2 Layer
FD-AP-2L-AP1	558mm x 433mm	AP1	2 Layer
FW-AP-2L-AP2	433mm x 301mm	AP2	2 Layer
FD-AP-2L-AP2	304mm x 214mm	AP3	2 Layer
FD-AP-2L-CUSTOM	Custom Up to 708mm x 558mm	Custom	2 Layer

SYSTEM RANGE
FyreFLEX

FyreFLEX

Item number	Description	Min Order Qty	Pallet Qty
FyreFLEX 300W FyreFLEX 300G	FyreFLEX® Sealant Cartridge 300ml White or Grey	1	1920
FyreFLEX 600W FyreFLEX 600G	FyreFLEX® Sealant Sausage 600ml White or Grey	1	1040
FyreFLEX 10W FyreFLEX 10G	FyreFLEX® Sealant Pail 10L White or Grey	1	64

FAQ

Q Do I need to wrap the duct support hangers and trapeze?

A FyreWrap® is a lightweight system so in most cases there is no need.

Q Where can I purchase the appropriate equipment and pins required to stud weld the FyreWrap ?

A The equipment and pins can be purchased from KCD Studwelding

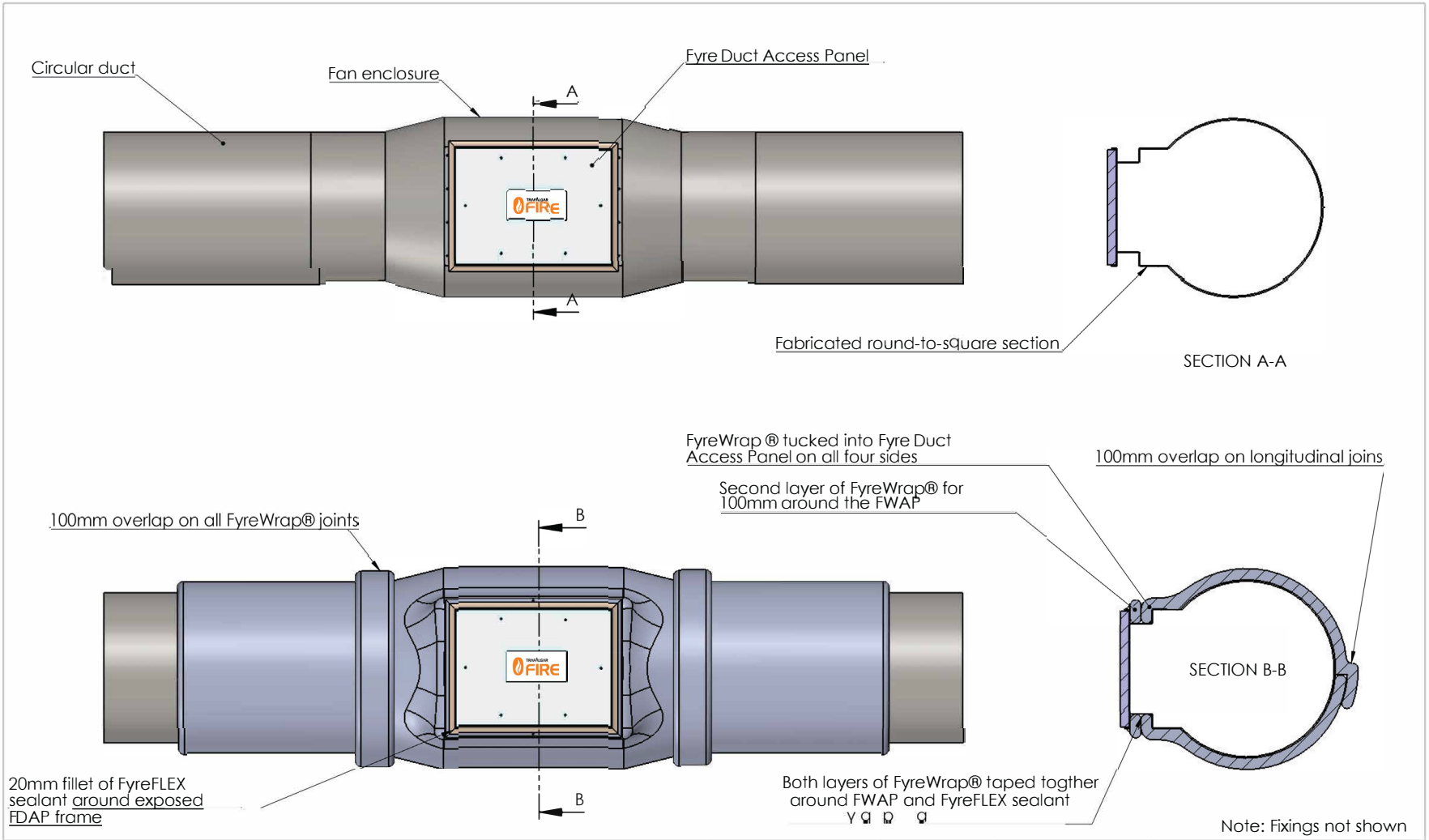
https://www.kcdstudwelding.com.au/

Q Can I wrap two ducts together?

A No, the ducts must be wrapped separately, and where they penetrate a fire barrier must be separated by at least 200mm in separate penetrations.

Q How do I finish FyreWrap against an external wall or roof?

A If the external wall or roof does not have an FRL, then all that is needed is a simple waterproofing seal to protect the FyreWrap from any weather exposure.



Drawing Name: FDAP - fan enclosure front view			**Test Standard:** AS1530.4	**Codes:**	**Revision:** Issued for Install	**Date:** 13/12/2016	**No.:** 1
Project Title: FyreWrap® for fan enclosures			**Fire resistance level:**	**Drawn By:** JH			**NOTICE:** NOTE: ALL DIMENSIONS ARE IN MILLIMETRES (mm)
Drawing No. : 2	**Sheet:** 2 of 2	**Date:** 13/12/2016	**Scale:**	**Based on Report No.:**	**Checked By:** CT	X STANDARD DRAWING PROJECT DRAWING	TRAFALGAR FIRE

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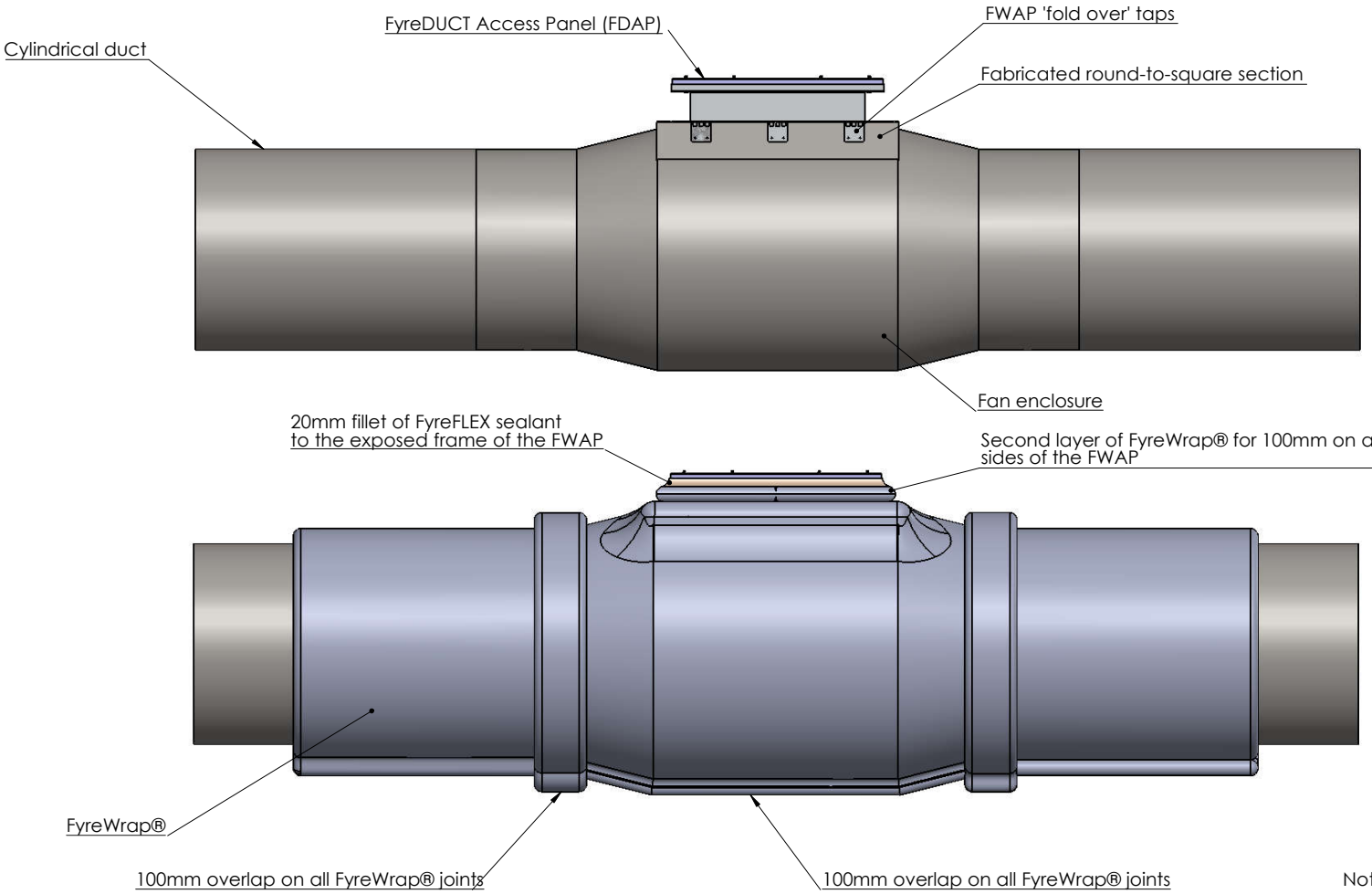

Drawing Name: FDAP - fan enclosure side view			**Test Standard:** AS1530.4	**Codes:**	**Revision:**	**Date:** 13/12/2016	**No.:** 1
Project Title: FyreWrap® for fan enclosures			**Fire resistance level:**	**Drawn By:** JH			
Drawing No.: 1	**Sheet:** 1 of 2	**Date:** 13/12/2016	**Scale:**	**Based on Report No.:**	**Checked By:** CT	☒ STANDARD DRAWING ☐ PROJECT DRAWING	

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