

# **VFT-15 Tube Length Reduction**

Application Note

2011

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## Preface

This Application Note provides guidelines in setting up new tube configuration(s) aimed to reduce excess tube “runs” for the VESDA VFT-15 detector.

## Related Products

VFT

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## Introduction

For reliable smoke detection and flow monitoring performance the VESDA VFT-15 detector **must** be connected to a balanced network (equal length tubes; each 50m (164ft)). This requirement, however, will result in the coiling of excess tubing when the distance between the detector and sampling hole is less than 50m (164ft).

This Application Note provides guidelines for the setup of new tube configuration(s) to eliminate coiling of excess tubing while maintaining a balanced network for reliable and consistent detector performance.

## New Tube Configuration

New tube configuration(s) use a shorter length *normal* tube connected to a *reduced diameter* tube as shown in Figure 1 – a connector is required for this transition. New tube configuration(s) have shorter overall length but impose the same impedance as the 50m (164ft) *normal* tube.

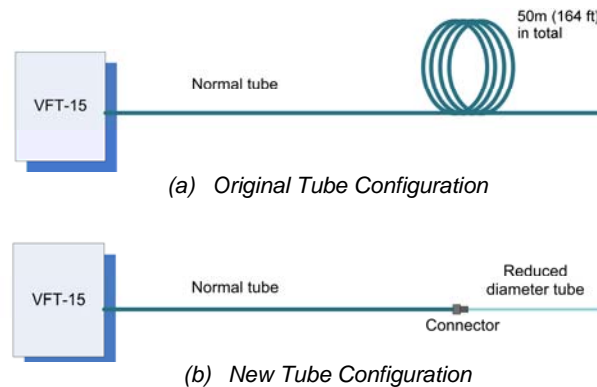


Figure 1 Tube Configurations

Table 1 lists the length requirements for the *normal* and *reduced diameter* tubes for different distances between the detector and the sampling location (hole).

Table 1 Tube Length Requirements

Distance between Detector & Sampling Location (Hole)	Tube Length	
	Normal	Reduced Diameter
7.5m (25ft)	0m (0ft)	7.5m (25ft)*
16m (52ft)	10m (33ft)	6m (20ft)
24.5m (80ft)	20m (66ft)	4.5m (15ft)
33m (108ft)	30m (98ft)	3m (10ft)
41.5m (136ft)	40m (131ft)	1.5m (5ft)
50m (164ft)	50m (164ft)	0m (0ft)

\* 0.1m (0.33ft) normal tube is required to connect the reduced diameter tube to the VFT inlet port

**Note:** Table 1 tube lengths are determined with tube and connector specifications listed in Table 2, 3

Example:

Determine New Tube Configuration for a 33m (108ft) distance to sampling location (hole)

Solution (as per Table 1):

- *Normal* Tube: 30m (98ft)
- *Reduced Diameter* Tube: 3m (10ft)

**Note:** When the sampling hole is fitted with a metallic meshed plate an additional connector is required to transition from *reduced diameter* tube to *normal* tube – the *normal* tube length connecting to the metallic sampling hole should be 0.1m (0.33ft)

To check for leakage use Xtralis VSC to set the VFT-15 to sample from one port and follow the steps below:

1. Connect a 50m (164ft) length *normal* tube and record detector Relative Pressure. This forms the baseline pressure for comparison with new tube configuration(s)
2. Record detector Relative Pressure for new tube configuration(s)
3. Difference between points 1 and 2 must be less than 3%. If above 3%, inspect to ensure tubes are tightly fit to connector

**Note:** Before leakage testing ensure VFT-15 is in operation for at least 30min.

Specification and typical suppliers for components (*normal* tube, *reduced diameter* tube, connector) are listed in Table 2 (Non US) and Table 3 (US).

*Table 2 Component Specification / Suppliers (Non US)*

Item	Description	Supplier	Website
Normal Tube	6mm OD, 4mm ID	RS Components Stock No: 483-5557	<a href="http://www.rs-components.com/index.html">http://www.rs-components.com/index.html</a>
Reduced Diameter Tube	4mm OD, 2.5mm ID	RS Components Stock No: 483-5535	
Connector	6mm ↔ 4mm	RS Components Stock No: 619-0840	

*Table 3 Component Specification / Suppliers (US)*

Parts	Description	Supplier	Website
Normal Tube	0.25"OD, 0.17"ID	Synflex* Part No. 1219-440	<a href="http://www.goodrichsales.com/products/pdfs/1219.pdf">http://www.goodrichsales.com/products/pdfs/1219.pdf</a>
Reduced Diameter Tube	0.16"OD, 0.096"ID	Synflex* Part No. 1219-130	
Connector	0.25" ↔ 0.16"	Allied Stock No: 499-1828 (Mfr. Part#: KQ2H03-07)	<a href="http://www.alliedelec.com">http://www.alliedelec.com</a>

\* Tubing can be installed in accordance with NFPA, Standard 90A "Installation of Air Conditioning and Ventilation Systems 1985"

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