ASHRAE-110 Type-Test Report for 1.2m Wide Bench-Type fumetop1200 FH-120-PP Fume Hood of TopAir, USA

Ref: ANSI/ASHRAE 110-1995

by

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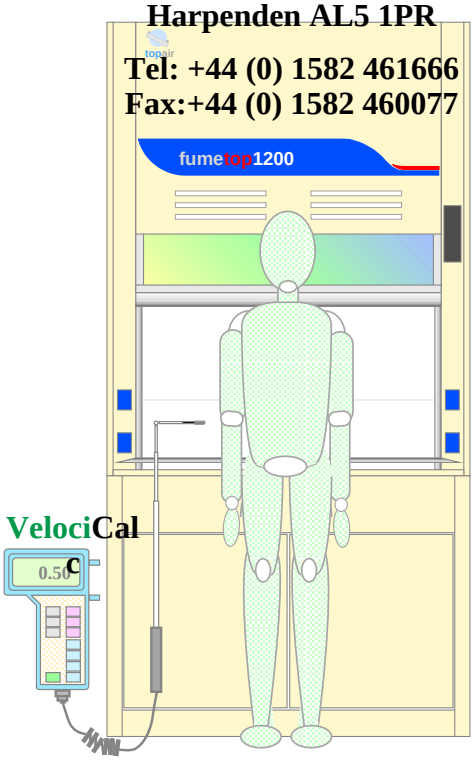


Tested by: Dr A F Bicen
Date of Tests: 28th June - 1st July 2011

INV/ASHRAE110/565-A *Issue Date: 23rd April 2013*

1. INTRODUCTION

ANSI/ASHRAE 110-1995 type tests carried out for 1.2m wide bench-type fumetop1200 FH-120-PP fume hood of TopAir, USA are reported. The detailed information on test methods and procedures can be found in reference 1.

2. DESCRIPTION OF FUME HOOD

The fume hood tested was 1.2m wide bench-type hood designed & built by TopAir, USA. The sash opening width was 1010mm and the test height 500mm from the bottom cill airfoil. Other geometric details of the hood are shown in Figure 1.

3. DESCRIPTION OF TEST ROOM FACILITIES

The test room was at least 7.0m long, 6.0m wide and 4.0m high. The tests facilities include a variable-volume extract air system to adjust the extract volume flow rate to the required value. The make-up air was brought in through the perforated wall/ceiling tiles opposite the tested unit so as to allow a test room pressure in the range of typically -1Pa to -3Pa. The test room differential pressure, temperature, relative humidity and velocity during tests were:

Room differential pressure:	-1Pa
Room air temperature:	25˚C - 27˚C
Room air relative humidity:	50%
Room air velocity:	much less than 0.1 m/s

4. VELOCITY TESTS

Velocity tests were performed with the sash set at 500mm from the bottom cill airfoil. The velocity type-test grid for the test opening is shown in Figure 2 which also shows the velocity test results.

5 FLOW VISUALISATION TESTS

5.1 Local Visualisation (Low Volume Smoke) Tests

The following observations were made:
Along the opening edge = GOOD
Top LHS corner = GOOD
Top RHS corner = GOOD
Bottom LHS corner = GOOD
Bottom RHS corner = GOOD

5.2 Large Volume Smoke Test

The entry flow to the hood is good. The internal smoke clears within less than 30 sec.

6 CONTAINMENT TESTS

6.1 Static Sash Tests

The containment tests were performed for the same opening as in the velocity tests. Figure 3 shows the positioning of the containment test system with respect to the test opening. Figure 3 also summarises the containment results and show that the fume hood containment performance is very good.

6.2 Probe Traversing Tests at Static Sash Openings

Traversing of the sampling probe along the edges of the test opening resulted in SF6 levels less than 0.010ppm.

REFERENCES

1. **ANSI/ASHRAE 110-1995**, *ASHRAE Guideline, Method of Testing Performance of Laboratory Fume Hoods*, 1995.

List of instrumentation used during tests:

1. Miran 203 infrared gas analyser - SN: 8278 *(containment tests)*
2. VelociCalc 9545-A - SN: 0713014 *(velocity tests)*
3. Drager Flow Check tracer smoke generator *(smoke visualisation)*

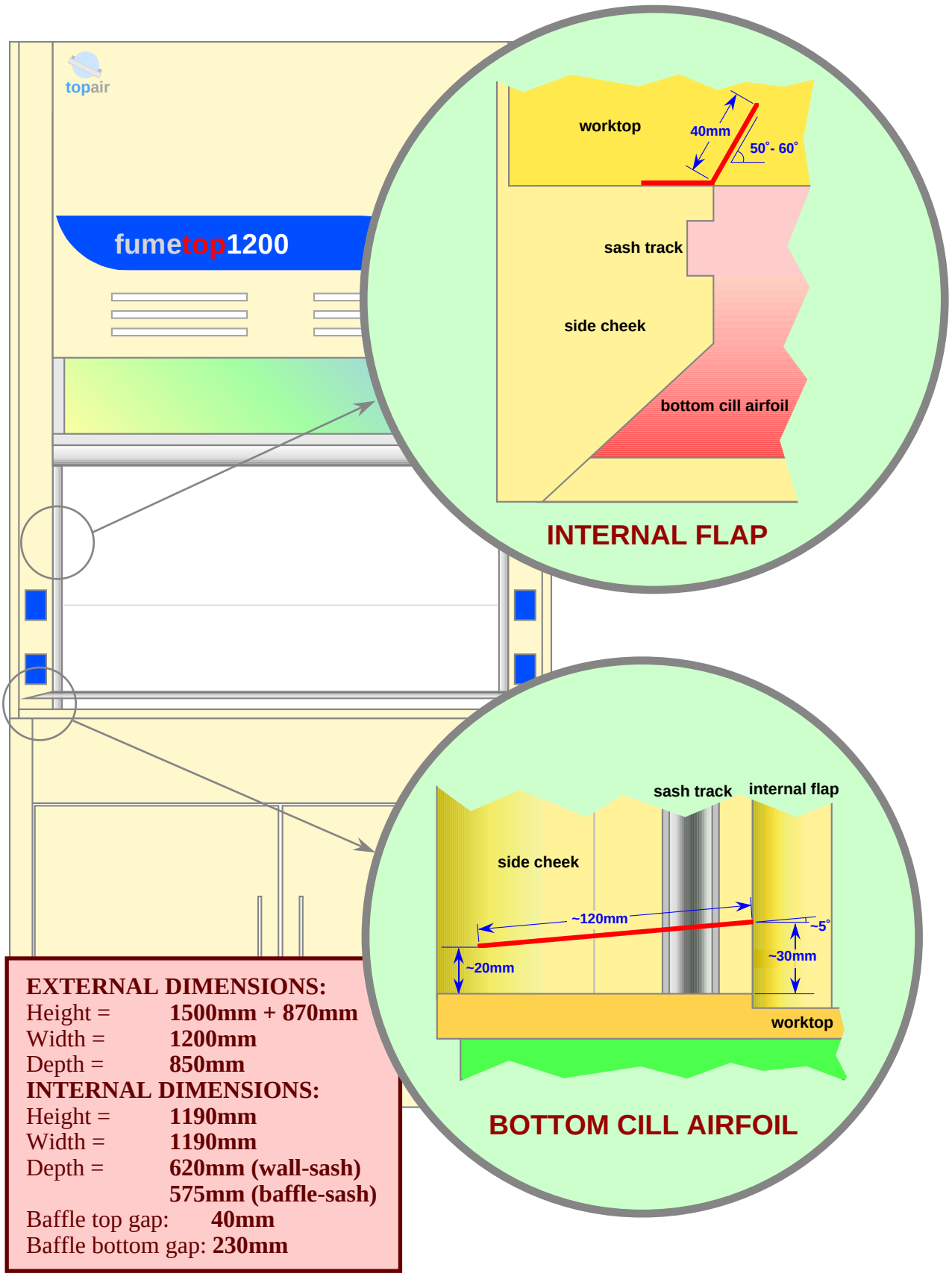
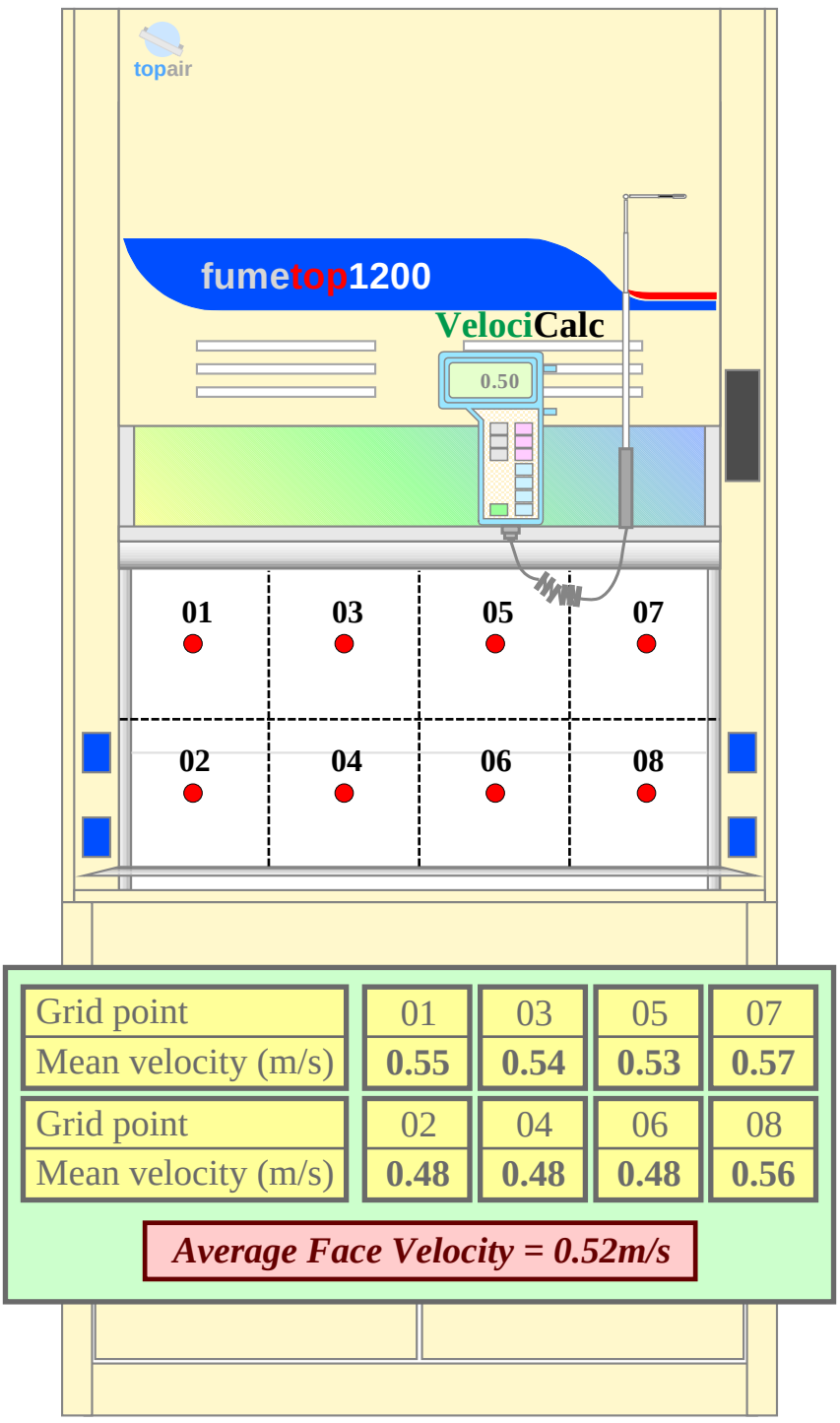


Figure 1 Geometric features of 1.2m wide bench-type fumetop1200 FH-120-PP fume hood of TopAir.



Grid point	01	03	05	07
Mean velocity (m/s)	**0.55**	**0.54**	**0.53**	**0.57**
Grid point	02	04	06	08
Mean velocity (m/s)	**0.48**	**0.48**	**0.48**	**0.56**

Average Face Velocity = 0.52m/s

Figure 2 Velocity type-test grid and results.

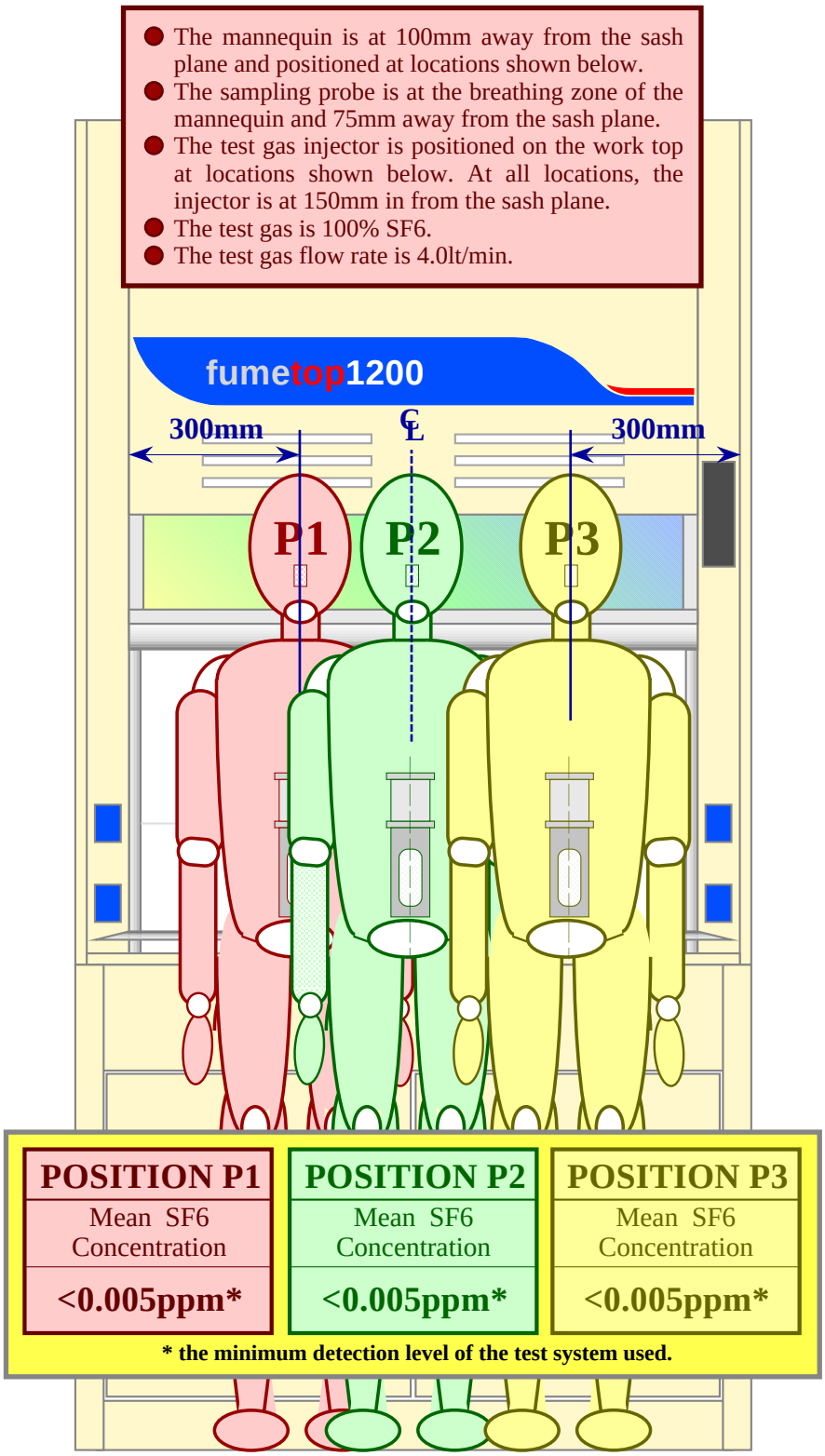


Figure 3 Positioning of ASHRAE containment test system and results.

ANSI/ASHRAE 110-1995 Flow Containment & Instrumentation

CERTIFICATE OF TYPE TESTING IN ACCORDANCE WITH ASHRAE 110-1995

CERTIFICATE & REPORT NO: INV/ASHRAE110/565-A
ISSUE DATE: 23rd April 2013

Fume Hood Type:
fumetop1200
FH-120-PP bench type
External Dimensions:
Height = ***2370mm***
(1500mm + 870mm)
Width = ***1200mm***
Depth = ***850mm***
Internal Dimensions:
Height = ***1190mm***
Width = ***1190mm***
Depth = ***620mm (wall-sash)***
575mm (baffle-sash)
Baffle Gap Dimensions:
Top gap: ***40mm***
Bottom gap: ***230mm***

Fume Hood Manufacturer:
TopAir USA
3182 Monterey Drive
Merrick
NY 11566
USA

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Fume Hood Flow:
Test opening width: **1010mm**
Test opening height: **500mm**
Face velocity: **0.52m/s**

This is to certify that the fume hood described above has been type-tested in accordance with ASHRAE 110-1995 and resulted in performance characteristics given in the corresponding test report.

Tested and Certified by: **Dr A F Bicen**
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