DEDICATED TO DISCOVERY. INSPIRED BY INNOVATION.

HAWKINS
LABORATORY FUME HOODS

LABORATORY FUME HOOD CATALOG | 05/01/23

We are HH Hawkins – an innovative fume hood manufacturing, testing and product development company

We have been a leading supplier of fume hoods for over 30 years. Our premium products can be found in laboratories, research facilities and education institutions throughout North America.
In-house design and manufacturing capabilities provide flexibility and innovation while maintaining quality control and expediting delivery.

VALUES

Integrity
Innovation
Care
Commitment

I_2C_2

LABORATORY FUME HOOD CATALOG

HAWKINS
LABORATORY FUME HOODS

MAIN CATALOG INDEX

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BENCH MOUNT
FUME HOOD — VERTICAL RISING SASH

| STANDARD FEATURES — BENCH MOUNT VERTICAL RISING SASH

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Full By-Pass
- Variable Air Volume (VAV), Restricted By-Pass
- 915mm (36”), 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide
- Bench Mount

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 INTERIOR ACCESS PANELS

Fully framed, self supporting

- Flush mount
- Fully framed and air tight
- No gaskets required

3 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 930mm (36.5”) high
- Type 316 stainless steel full length sash pull
- Maximum sash opening height 685mm (27”)
- Vertical rising

4 FRONT FACE OPENING

- Aerodynamically angled top, bottom and side openings reduce turbulence and eliminate reverse flows
- Lower air foils are fabricated from 16ga type 316 stainless steel, number 4 finish

5 INTERIOR LINER MATERIALS

- Polyresin
- Stainless Steel
- PVC
- Polypropylene
- Custom materials available to fit specific requirements

6 BAFFLES

- Three section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

7 ELECTRICAL

Standard electrical fixtures comprise:

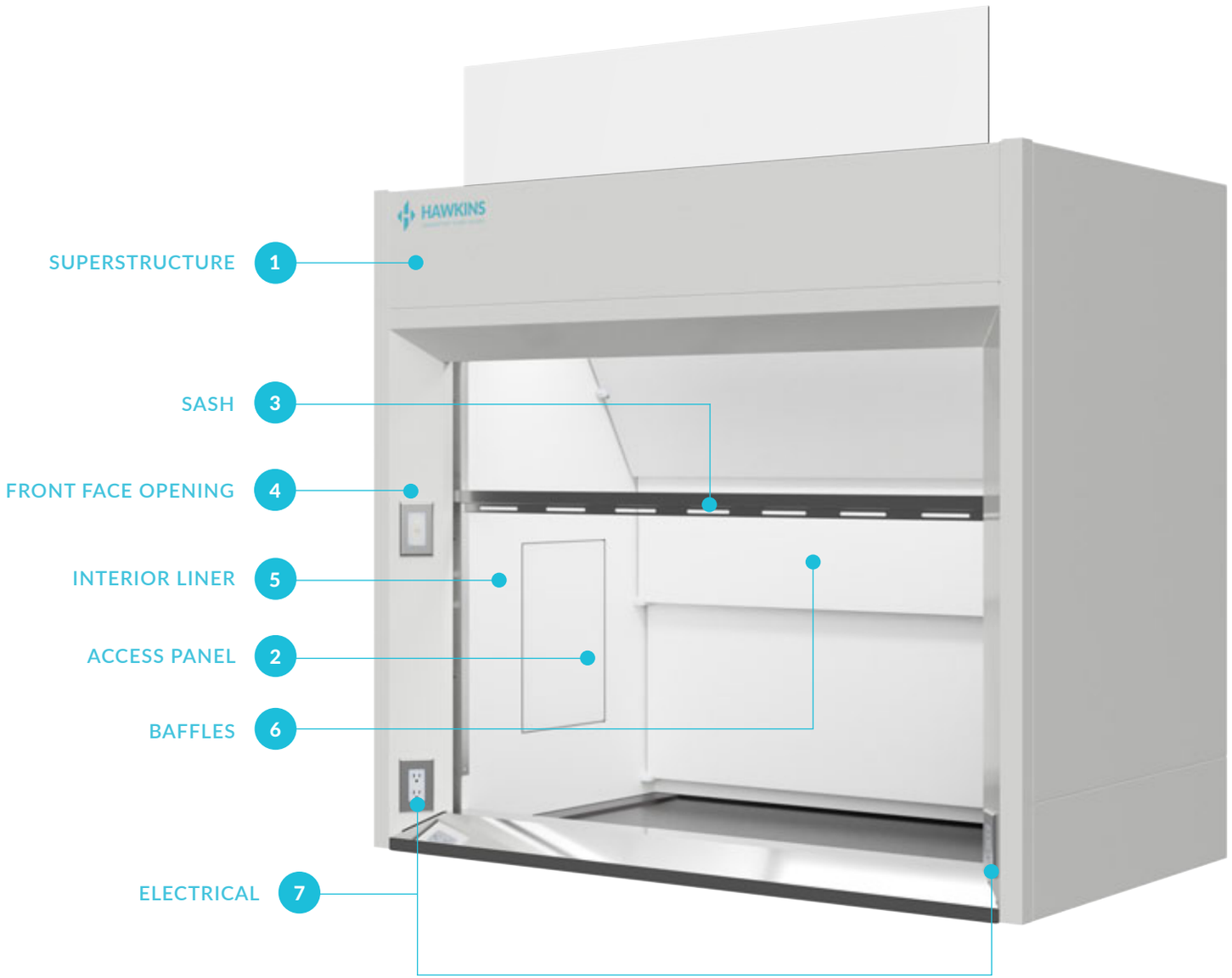
- Two 120V/20A T-slot duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

TRACER GAS TESTING

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.


SUPERSTRUCTURE 1
SASH 3
FRONT FACE OPENING 4
INTERIOR LINER 5
ACCESS PANEL 2
BAFFLES 6
ELECTRICAL 7
HAWKINS

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings
- Approved for use in North America

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination
- Materials approved for use in North America

4 LOW AIRFLOW ALARM/MONITORS

- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 WORK SURFACES

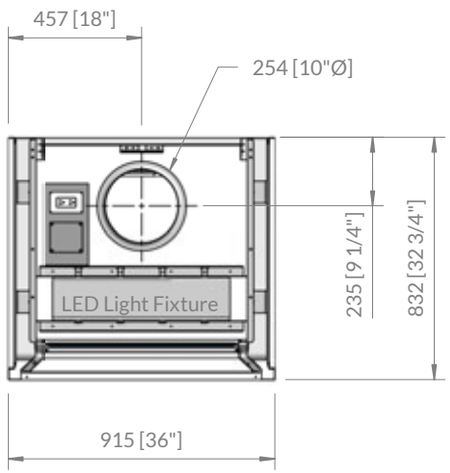
- Molded dished black solid epoxy
- Type 304 or type 316 stainless steel with anti spill edges
- Custom materials to suit specific requirements

6 BASE CABINETS

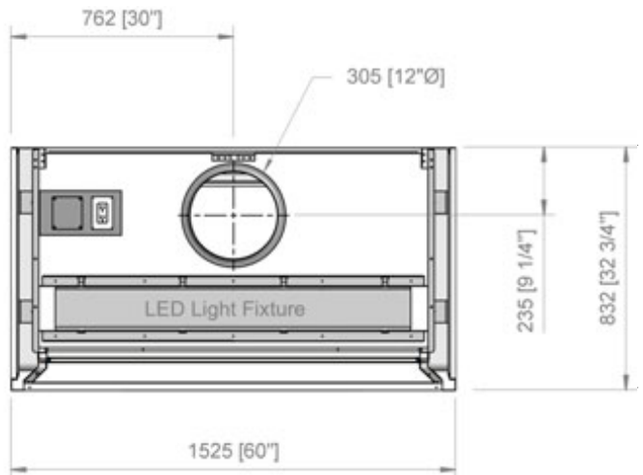
- General storage non-lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, polypropylene lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, all polypropylene construction.
- Flammable/solvent storage. All metal double wall construction.
  - FM, UL or ULC approved
- Tubular steel table support frames


CEILING CLOSURE PANEL
1
MECHANICAL SERVICE FIXTURES
2
WORK SURFACE
5
BASE CABINETS
6
3
PRE-PIPING
4
LOW AIRFLOW ALARM/MONITOR
HAWKINS
FLAMMABLE
CORROSIVE

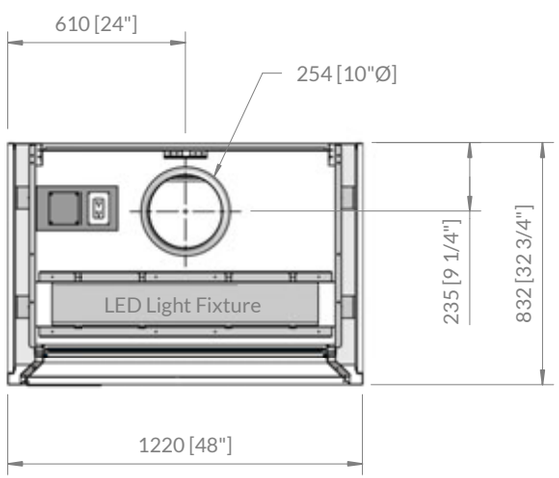
| EXHAUST COLLARS | LOCATIONS / DIAMETERS
VERTICAL RISING SASH



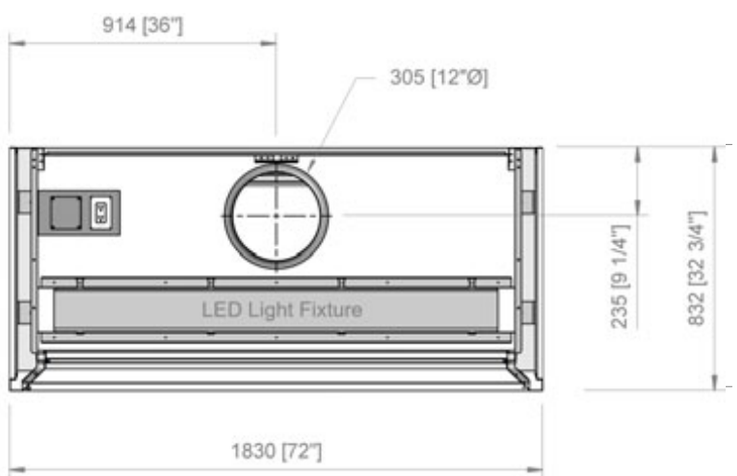
915mm
(36”) WIDE



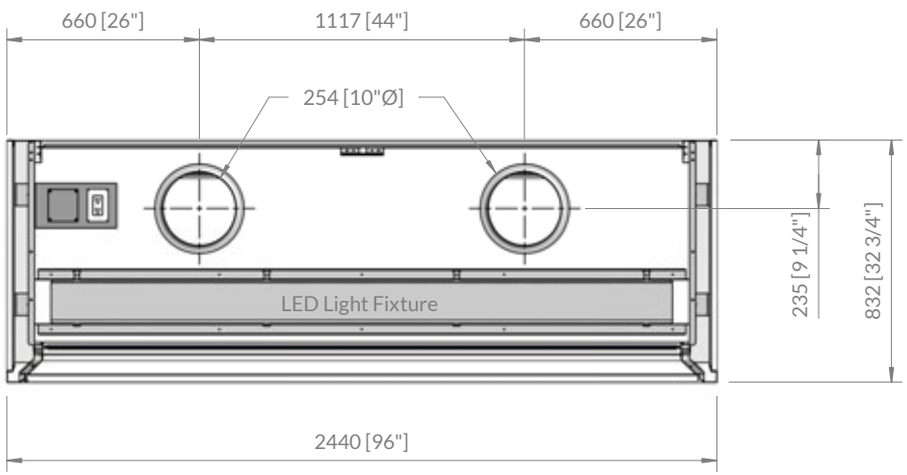
1524mm
(60”) WIDE



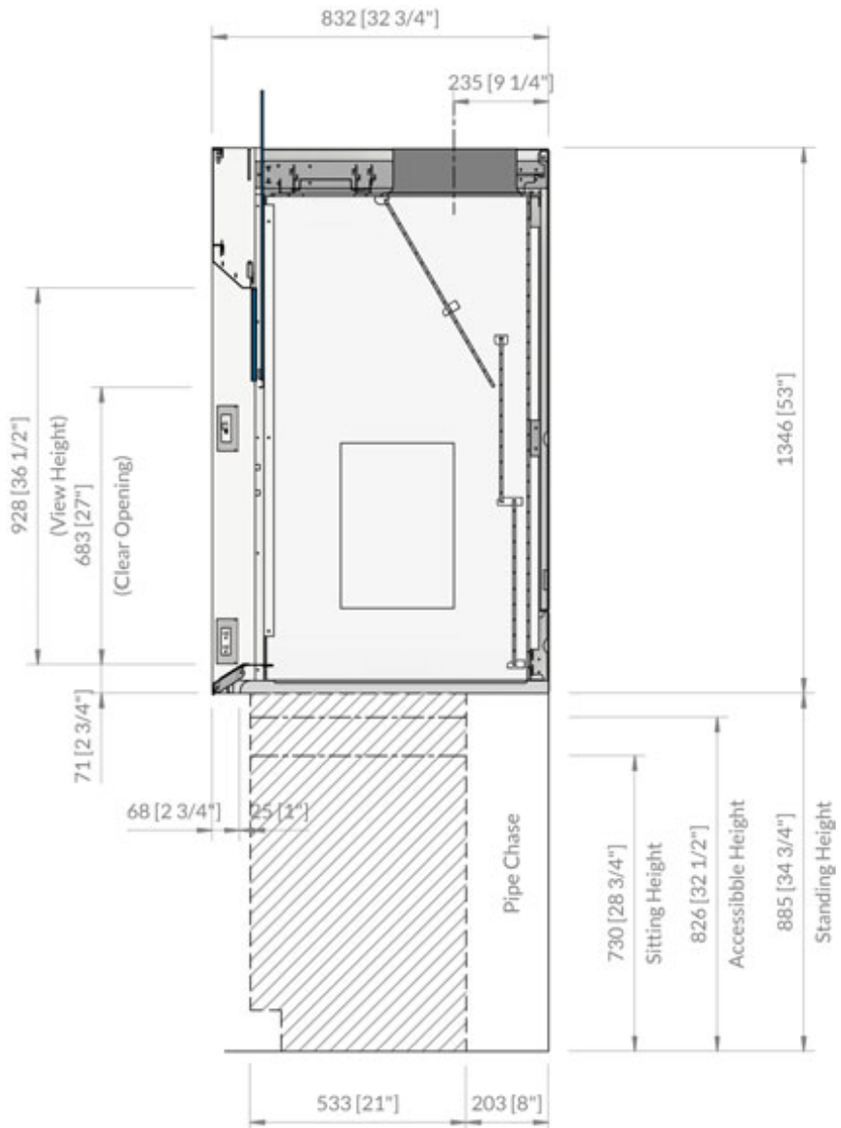
1220mm
(48”) WIDE



1830mm
(72”) WIDE



2440mm
(96”) WIDE



INTERIOR LINER MATERIALS

1 2 3 - 48 PR

HOOD EXHAUST TYPE

1 - Constant Air Volume (CAV), Full By-Pass
3 - Constant Air Volume (CAV), Reduced By-Pass
3 - Variable Air Volume (VAV), Restricted By-Pass

SASH TYPE

1 - Full View Sash With Fixed View Panel
2 - Full View Sash
3 - Horizontal Sliding Sash Panels
4 - Combination Vertical Rising Sash/Horizontal Sliding Panes

SUPERSTRUCTURE TYPES

1 - Bench Mount - Standard Height
3 - Floor Mount (Walk-In)
4 - Radioisotope
5 - Perchloric Acid
6 - Accessible
7 - Distillation
12 - Pass Through (Double Sided)

HOOD WIDTH

915mm (36”)
1220mm (48”)
1525mm (60”)
1830mm (72”)
2440mm (96”)

INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

SW Stainless Steel: Type 316 (SW6) or Type 304 (SW4) stainless steel, 16 gauge, number 4 finish, all welded seamless construction. Interior corners have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Work surface is factory installed, mechanically fastened and silicone sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| CONSTANT AIR VOLUME (CAV), FULL BY-PASS VERTICAL RISING SASH

An automatic by-pass system maintains a relatively constant exhaust volume. Face velocity is limited from increasing by more that four times when the vertical sash is lowered from full open to 6" open.

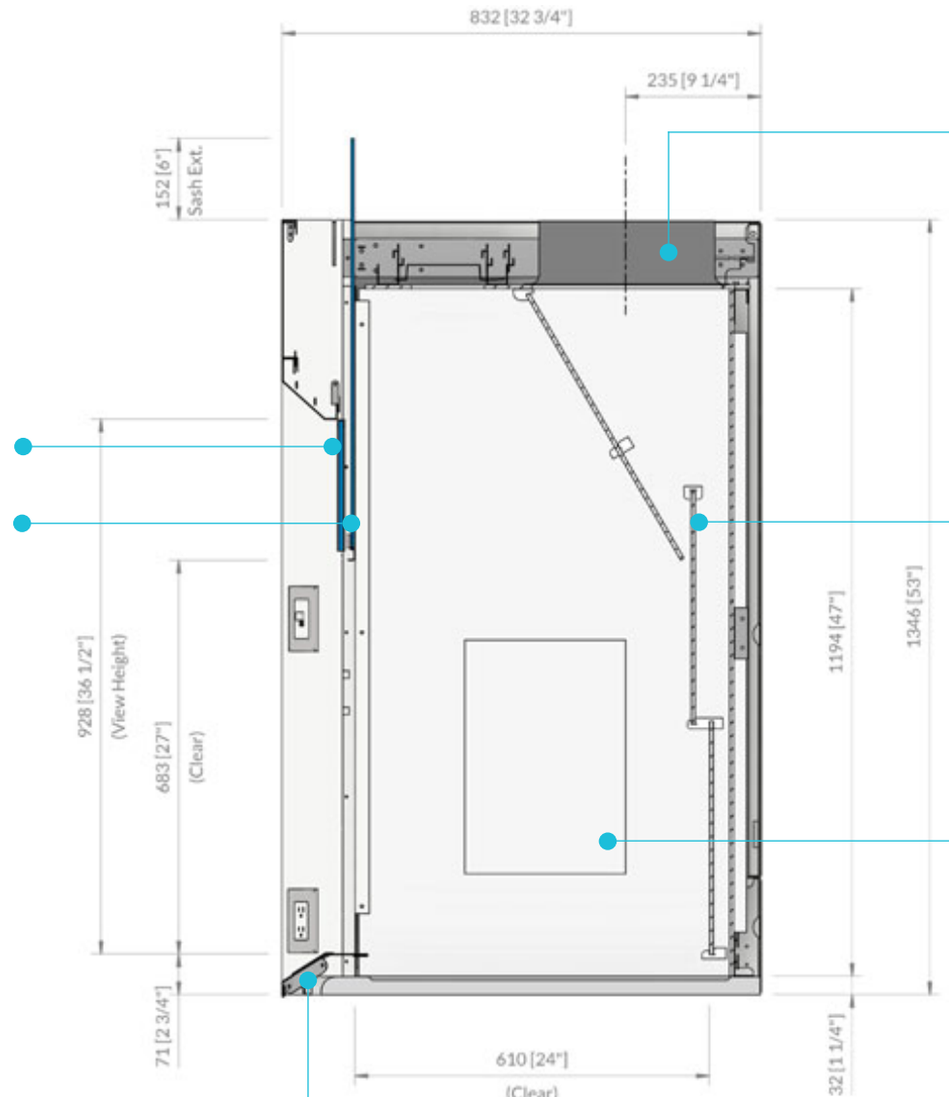
Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

| CONSTANT AIR VOLUME (CAV), FULL BY-PASS VERTICAL RISING SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002



Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Fixed View Panel

Vertical rising 6mm (1/4") laminated safety glass sash is frameless "Full View" type with fixed view panel running in PVC guides. It is fully counter balanced using a single centre hung weight behind the hood with a continuous stainless steel sash cable and nylon ball bearing rollers. Sash pull is stainless steel, full length, low profile slotted design, 18 gauge type 316, number 4 finish..

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| CONSTANT AIR VOLUME (CAV), FULL BY-PASS VERTICAL RISING SASH

915mm (36”) WIDE

Polyresin	111-36PR
Stainless Steel Type 316 (All Welded)	111-36SW6
Stainless Steel Type 304 (All Welded)	111-36SW4
Stainless Steel Type 316 (Stitch Welded)	111-36ST6
Stainless Steel Type 304 (Stitch Welded)	111-36ST4
PVC	111-36PV
Polypropylene	111-36PP

1525mm (60”) WIDE

Polyresin	111-60PR
Stainless Steel Type 316 (All Welded)	111-60SW6
Stainless Steel Type 304 (All Welded)	111-60SW4
Stainless Steel Type 316 (Stitch Welded)	111-60ST6
Stainless Steel Type 304 (Stitch Welded)	111-60ST4
PVC	111-60PV
Polypropylene	111-60P

1220mm (48”) WIDE

Polyresin	111-48PR
Stainless Steel Type 316 (All Welded)	111-48SW6
Stainless Steel Type 304 (All Welded)	111-48SW4
Stainless Steel Type 316 (Stitch Welded)	111-48ST6
Stainless Steel Type 304 (Stitch Welded)	111-48ST4
PVC	111-48PV
Polypropylene	111-48PP

1830mm (72”) WIDE

Polyresin	111-72PR
Stainless Steel Type 316 (All Welded)	111-72SW6
Stainless Steel Type 304 (All Welded)	111-72SW4
Stainless Steel Type 316 (Stitch Welded)	111-72ST6
Stainless Steel Type 304 (Stitch Welded)	111-72ST4
PVC	111-72PV
Polypropylene	111-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*

2440mm (96") WIDE

Polyresin	111-96PR
Stainless Steel Type 316 (All Welded)	111-96SW6
Stainless Steel Type 304 (All Welded)	111-96SW4
Stainless Steel Type 316 (Stitch Welded)	111-96ST6
Stainless Steel Type 304 (Stitch Welded)	111-96ST4
PVC	111-96PV
Polypropylene	111-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		36"	48"	60"	72"	96"
SASH OPENING*		5.00 sq. ft.	7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
SASH FULL OPEN (27")	80 FPM	400 @ .05	685 @ .14	770 @ .15	945 @ .22	1300 @ .18
	100 FPM	500 @ .08	730 @ .16	960 @ .22	1180 @ .29	1630 @ .24
SASH OPENING*		3.4 sq. ft.	4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
SASH 18" OPEN	80 FPM	270 @ .02	390 @ .06	510 @ .09	630 @ .13	870 @ .06
	l00 FPM	340 @ .04	490 @ .08	640 @ .13	790 @ .17	1090 @ .10

** Measured off the top of the work surface*

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS VERTICAL RISING SASH

Variable Air Volume fume hoods are used in conjunction with an electronic control system* which will maintain a constant face velocity regardless of sash height. As the sash is raised and lowered, the VAV system will vary the exhaust volume of the hood in direct response to the sash position.

** SUPPLIED BY OTHERS.*

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS VERTICAL RISING SASH

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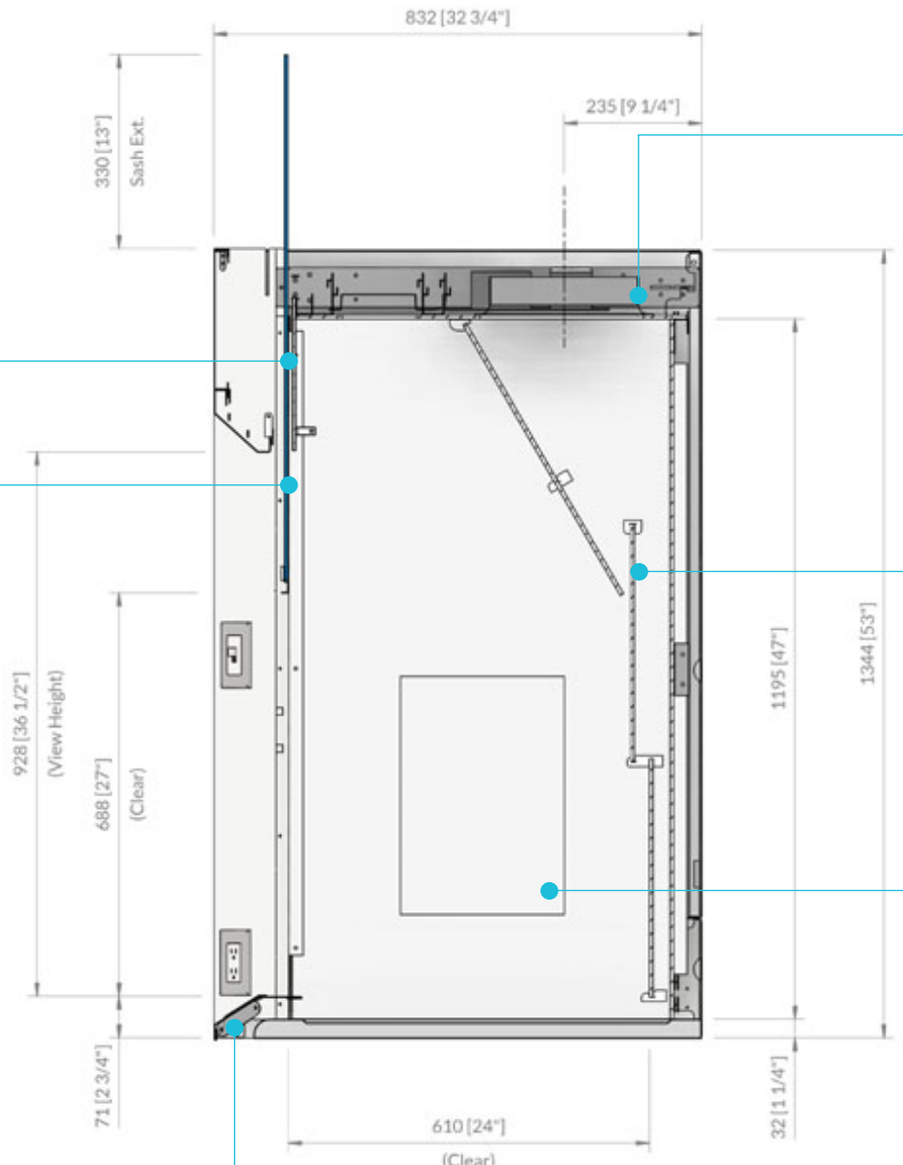
By-pass blocker

Vertical rising 6mm (1/4") laminated safety glass sash is frameless "Full View" type with fixed view panel running in PVC guides. It is fully counter balanced using a single centre hung weight behind the hood with a continuous stainless steel sash cable and nylon ball bearing rollers. Sash pull is stainless steel, full length, low profile slotted design, I8 gauge type 316, number 4 finish..

Sash pull is slotted Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.



Exhaust collars are bell shaped, round in configuration and does not require a rectangular-to-round transition.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS VERTICAL RISING SASH

915mm (36”) WIDE

Polyresin	321-36PR
Stainless Steel Type 316 (All Welded)	321-36SW6
Stainless Steel Type 304 (All Welded)	321-36SW4
Stainless Steel Type 316 (Stitch Welded)	321-36ST6
Stainless Steel Type 304 (Stitch Welded)	321-36ST4
PVC	321-36PV
Polypropylene	321-36PP

1525mm (60”) WIDE

Polyresin	321-60PR
Stainless Steel Type 316 (All Welded)	321-60SW6
Stainless Steel Type 304 (All Welded)	321-60SW4
Stainless Steel Type 316 (Stitch Welded)	321-60ST6
Stainless Steel Type 304 (Stitch Welded)	321-60ST4
PVC	321-60PV
Polypropylene	321-60PP

1220mm (48”) WIDE

Polyresin	321-48PR
Stainless Steel Type 316 (All Welded)	321-48SW6
Stainless Steel Type 304 (All Welded)	321-48SW4
Stainless Steel Type 316 (Stitch Welded)	321-48ST6
Stainless Steel Type 304 (Stitch Welded)	321-48ST4
PVC	321-48PV
Polypropylene	321-48PP

1830mm (72”) WIDE

Polyresin	321-72PR
Stainless Steel Type 316 (All Welded)	321-72SW6
Stainless Steel Type 304 (All Welded)	321-72SW4
Stainless Steel Type 316 (Stitch Welded)	321-72ST6
Stainless Steel Type 304 (Stitch Welded)	321-72ST4
PVC	321-72PV
Polypropylene	321-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available*

2440mm (96") WIDE

Polyresin311-96PR	
Stainless Steel Type 316 (All Welded)	321-96SW6
Stainless Steel Type 304 (All Welded)	321-96SW4
Stainless Steel Type 316 (Stitch Welded)	321-96ST6
Stainless Steel Type 304 (Stitch Welded)	321-96ST4
PVC	321-96PV
Polypropylene	321-96PP

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SASH 18" OPEN	80 FPM	270 @ .02	390 @ .06	510 @ .15	630 @ .13	870 @ .06
	l00 FPM	340 @ .04	490 @ .08	640 @ .13	790 @ .17	1090 @ .10

** Measured off the top of the work surface*

HAWKINS
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VERTICAL RISING SASH
BUILD YOUR FUME HOOD

FILLABLE PDF

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Adobe Acrobat

PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW

- ☐ Constant Air Volume (CAV)
- ☐ Variable Air Volume (VAV)

2 FUME HOOD TYPE

- ☑ General Chemistry

3 LINER MATERIAL

- ☐ Polyresin (PR)
- ☐ S/S All Welded T316 (SW6)
- ☐ S/S Stitch Welded T316 (ST6)
- ☐ S/S All Welded T304 (SW4)
- ☐ S/S Stitch Welded T304 (ST4)
- ☐ Other

Refer to page 11 of the catalog for liner material description.

- ☐ Ceiling Closure Panels
- ☐ Blower Switch (Wiring NIC)
- ☐ Sash Stop at 18”

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ☐ 6”x3” Polyethylene
- ☐ 6”x3” T316 Stainless Steel

Base Cabinets Left Side

- ☐ Acid Storage
- ☐ Flammable Storage
- ☐ General Storage
- ☐ Table Frame

Additional Options

_____
_____
_____

Pre-piping

- ☐ Above the hood
- ☐ Below the hood

Low Air Flow Alarm

- ☐ AFA500 (CAV Only)
- ☐ AFA1000 (CAV Only)
- ☐ AFA4000 (CAV Only)

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ☐ 6”x3” Polyethylene
- ☐ 6”x3” T316 Stainless Steel

Work Surface

- ☐ Epoxy
- ☐ Stainless Steel, T316

Base Cabinets Right Side

- ☐ Acid Storage
- ☐ Flammable Storage
- ☐ General Storage
- ☐ Table Frame

Additional Options

_____
_____
_____

BENCH MOUNT
FUME HOOD — HORIZONTAL SLIDING SASH

| STANDARD FEATURES — BENCH MOUNT HORIZONTAL SLIDING SASH

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Reduced By-Pass
- Variable Air Volume (VAV), Restricted By-Pass
- 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide
- Bench Mount

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 INTERIOR ACCESS PANELS

Fully framed, self supporting

- Flush mount
- Fully framed and air tight
- No gaskets required

3 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 930mm (36.5”) high
- Maximum sash opening height 915mm (36”)
- Horizontal sliding

4 FRONT FACE OPENING

- Aerodynamically angled top, bottom and side openings reduce turbulence and eliminate reverse flows
- Lower air foils are fabricated from 16ga type 316 stainless steel, number 4 finish

5 INTERIOR LINER MATERIALS

- Polyresin
- Stainless Steel
- PVC
- Polypropylene
- Custom materials available to fit specific requirements

6 BAFFLES

- Three section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

7 ELECTRICAL

Standard electrical fixtures comprise:

- Two 120V/20A T-slot duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

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TRACER GAS TESTING

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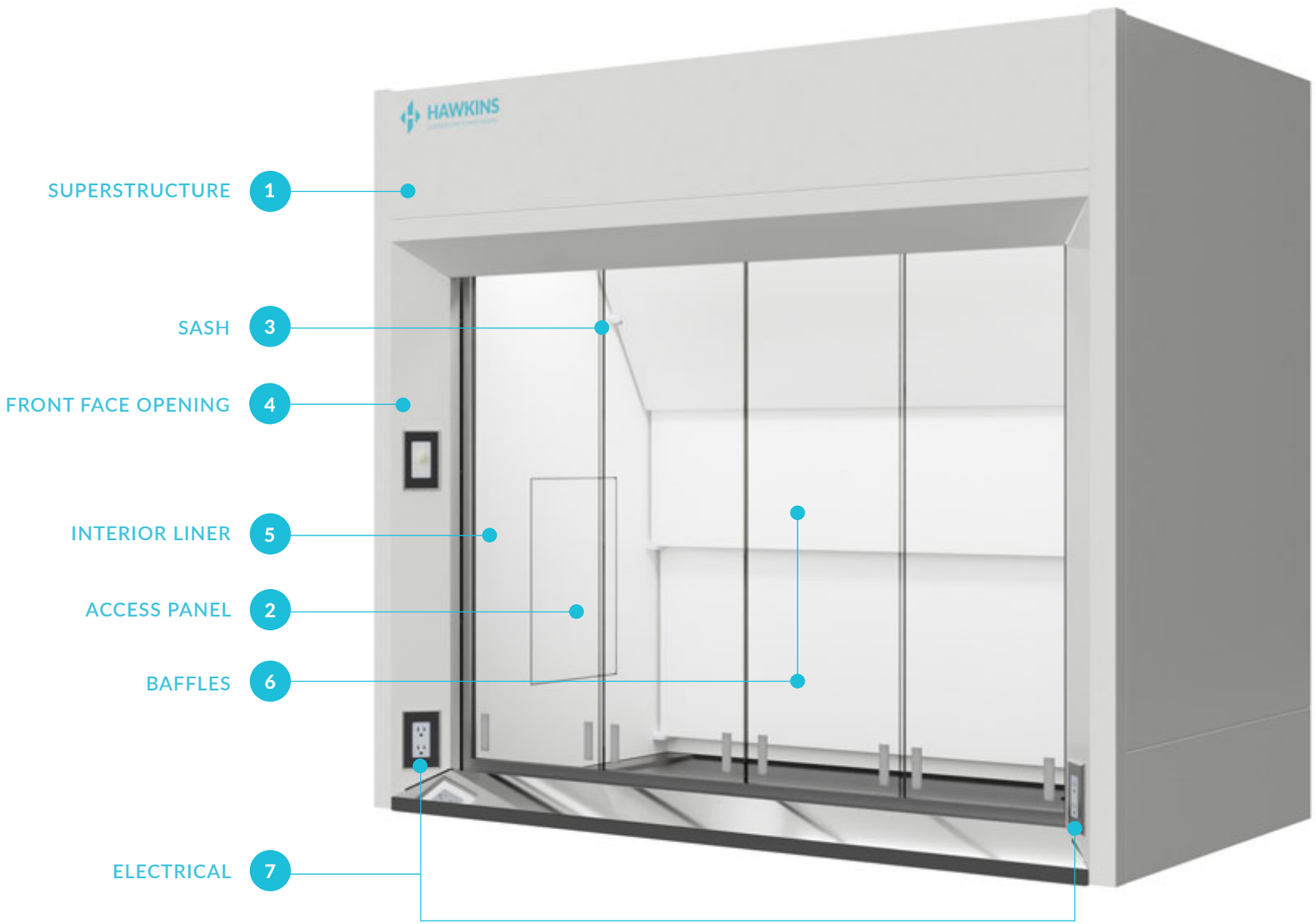

SUPERSTRUCTURE
1
SASH
3
FRONT FACE OPENING
4
INTERIOR LINER
5
ACCESS PANEL
2
BAFFLES
6
ELECTRICAL
7
HAWKINS

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings
- Approved for use in North America

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination
- Materials approved for use in North America

4 LOW AIRFLOW ALARM/MONITORS

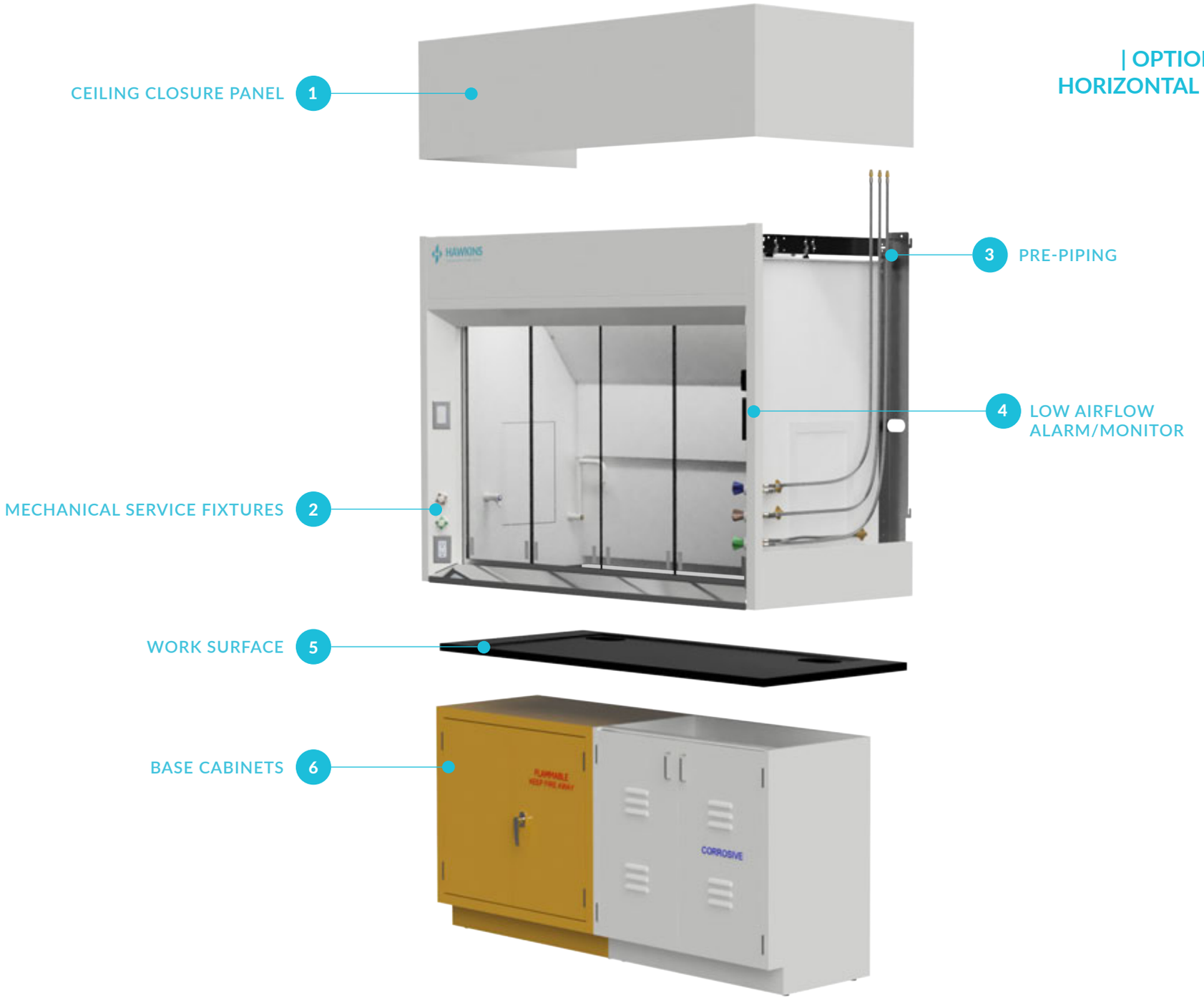
- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 WORK SURFACES

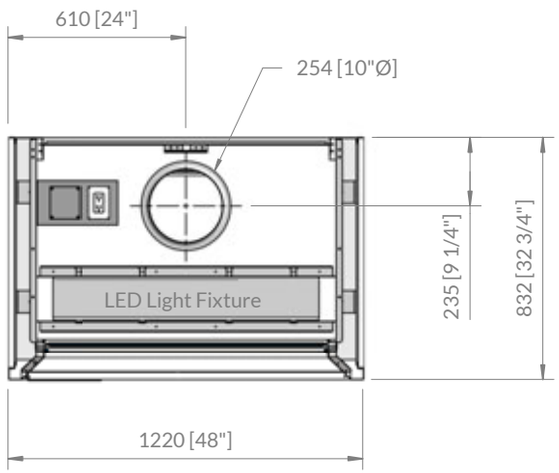
- Molded dished black solid epoxy
- Type 304 or Type 316 stainless steel with anti spill edges
- Custom materials to suit specific requirements

6 BASE CABINETS

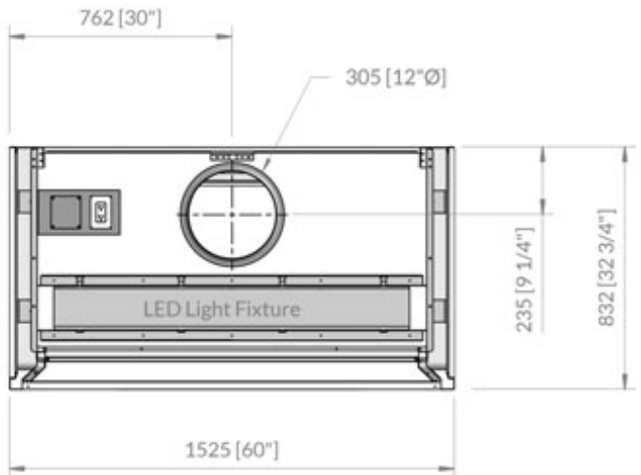
- General storage non-lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, polypropylene lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, all polypropylene construction.
- Flammable/solvent storage. All metal double wall construction.
  - FM, UL or ULC approved
- Tubular steel table support frames


CEILING CLOSURE PANEL
1
3
PRE-PIPING
4
LOW AIRFLOW
ALARM/MONITOR
MECHANICAL SERVICE FIXTURES
2
WORK SURFACE
5
BASE CABINETS
6
HAWKINS
CORROSIVE

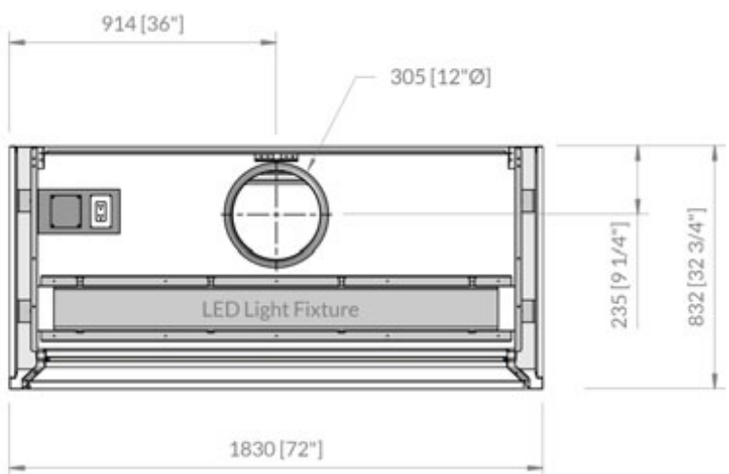
| EXHAUST COLLARS | LOCATIONS / DIAMETERS
HORIZONTAL SLIDING SASH



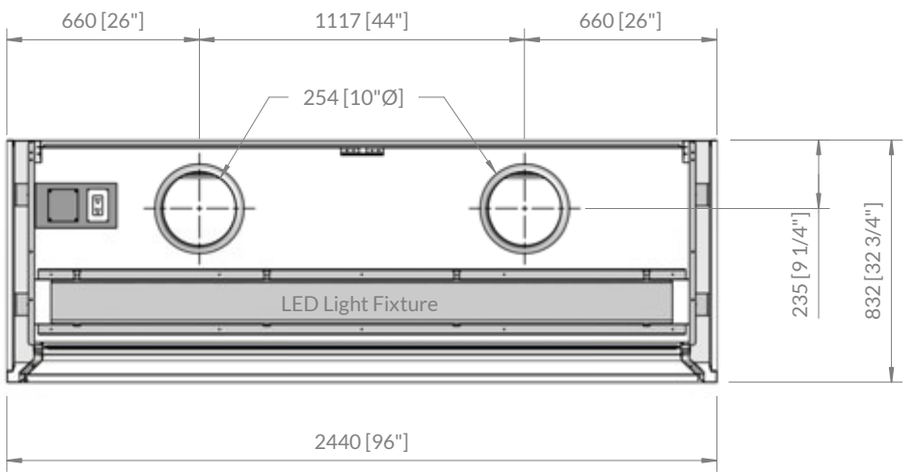
1220mm
(48”) WIDE



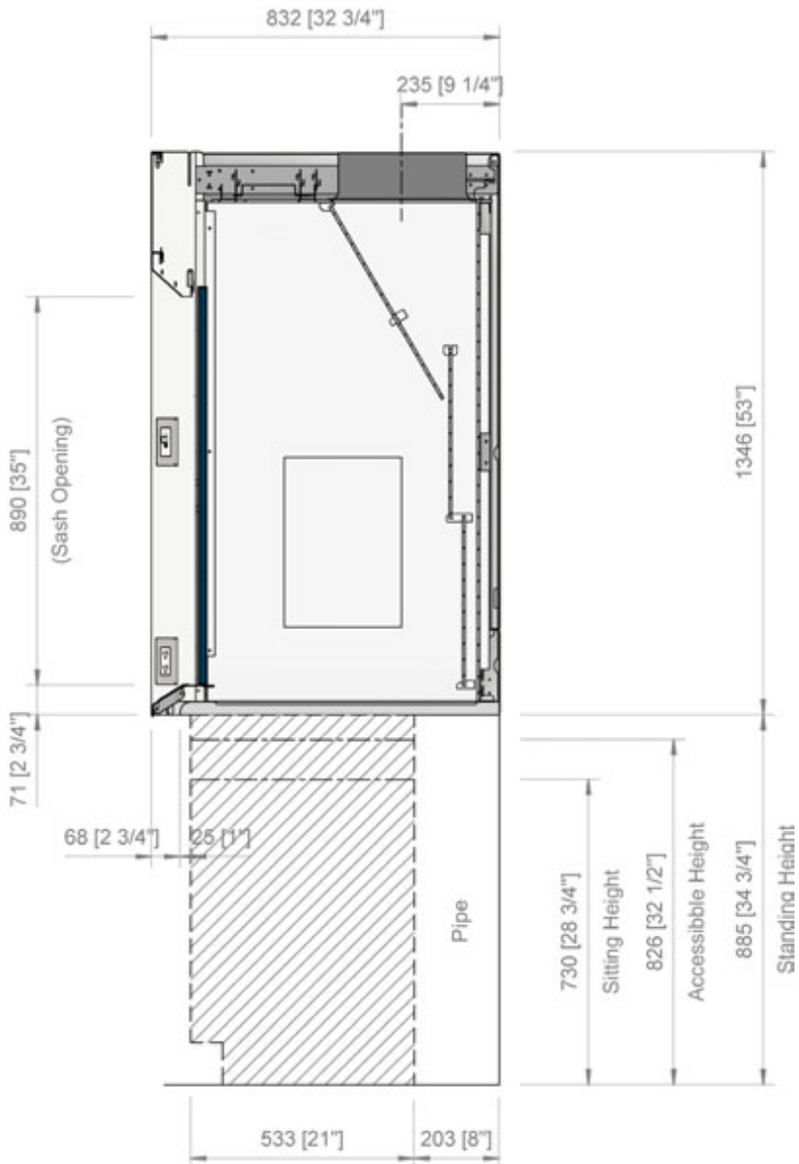
1524mm
(60”) WIDE



1830mm
(72”) WIDE



2440mm
(96”) WIDE



INTERIOR LINER MATERIALS

1 2 3 - 48 PR

HOOD EXHAUST TYPE

1 - Constant Air Volume (CAV), Full By-Pass
2 - Constant Air Volume (CAV), Reduced By-Pass
3 - Variable Air Volume (VAV), Restricted By-Pass

SASH TYPE

1 - Full View Sash with Fixed View Panel
2 - Full View Sash
3 - Horizontal Sliding Sash Panels
4 - Combination Vertical Rising Sash/Horizontal Sliding Panes

SUPERSTRUCTURE TYPES

1 - Bench Mount - Standard Height
3 - Floor Mount (Walk-In)
4 - Radioisotope
5 - Perchloric Acid
6 - Accessible
7 - Distillation
12 - Pass Through (Double Sided)

HOOD WIDTH

1220mm (48”)
1525mm (60”)
1830mm (72”)
2440mm (96”)

INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

SW Stainless Steel: Type 316 (SW6) or Type 304 (SW4) stainless steel, 16 gauge, number 4 finish, all welded seamless construction. Interior corners have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Work surface is factory installed, mechanically fastened and silicone sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS HORIZONTAL SLIDING SASH

Reduced By-Pass Constant Air Volume Fume Hoods incorporate a partial upper by-pass between the roof of the hood and the top of the horizontal sash frame. This by-pass will draw air over the top of the sash assembly reducing the face velocity through the sash opening as the sash panes are being closed.
The horizontal sash panes should not be closed completely as this may force most of the exhaust air through the lower air foil opening reducing the efficiency of the hood.

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

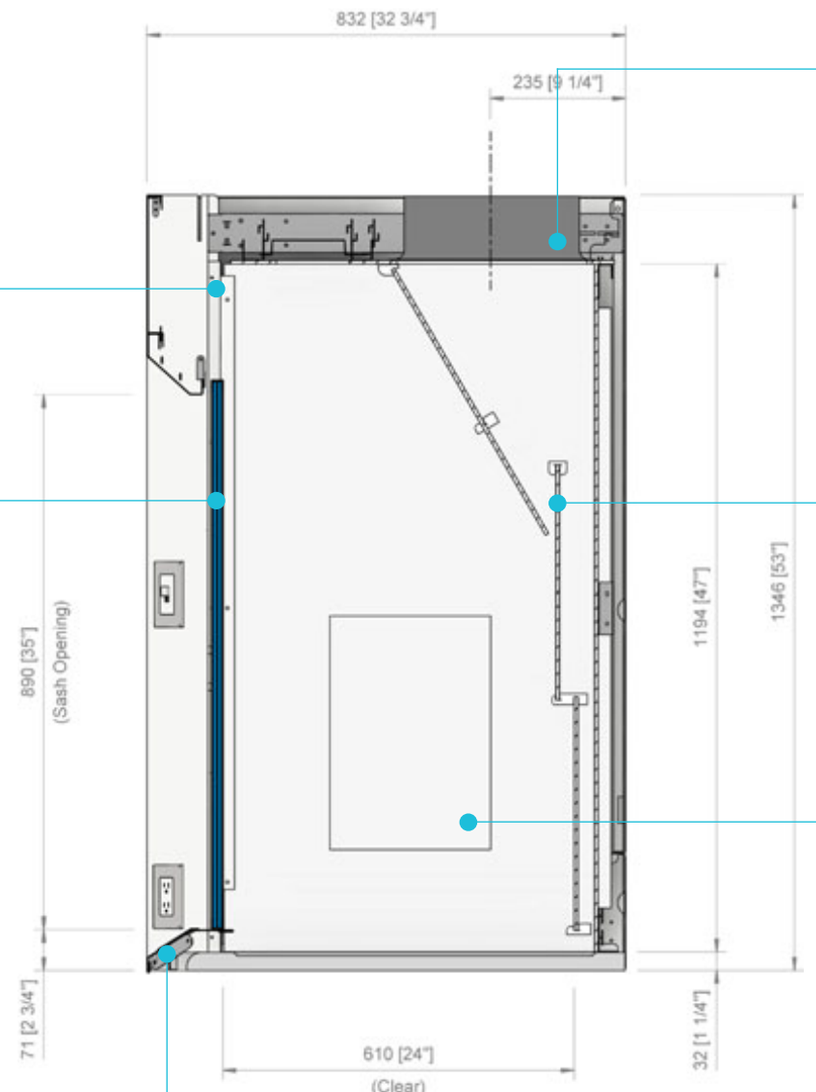
Standard electrical fixtures comprise two 120V/20A T-slot duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

Reduced by pass

Sash assembly is “Full View” type with full height panes set in an 18 gauge, Type 316 stainless steel, number 4 finish full frame. Top hang horizontal sliding panes are unframed 6mm (1/4”) laminated safety glass with polished edges .**They are designed so that only a maximum of 50% of the sash can be opened at any one time. Sash panels are designed and sized to be used as a full height safety shield.**

Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.



Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS HORIZONTAL SLIDING SASH

1220mm (48”) WIDE

Polyresin	231-48PR
Stainless Steel Type 316 (All Welded)	231-48SW6
Stainless Steel Type 304 (All Welded)	231-48SW4
Stainless Steel Type 316 (Stitch Welded)	231-48ST6
Stainless Steel Type 304 (Stitch Welded)	231-48ST4
PVC	231-48PV
Polypropylene	231-48PP

1525mm (60”) WIDE

Polyresin	231-60PR
Stainless Steel Type 316 (All Welded)	231-60SW6
Stainless Steel Type 304 (All Welded)	231-60SW4
Stainless Steel Type 316 (Stitch Welded)	231-60ST6
Stainless Steel Type 304 (Stitch Welded)	231-60ST4
PVC	231-60PV

1830mm (72”) WIDE

Polyresin	231-72PR
Stainless Steel Type 316 (All Welded)	231-72SW6
Stainless Steel Type 304 (All Welded)	231-72SW4
Stainless Steel Type 316 (Stitch Welded)	231-72ST6
Stainless Steel Type 304 (Stitch Welded)	231-72ST4
PVC	231-72PV
Polypropylene	231-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*

2440mm (96") WIDE

Polyresin	231-96PR
Stainless Steel Type 316 (All Welded)	231-96SW6
Stainless Steel Type 304 (All Welded)	231-96SW4
Stainless Steel Type 316 (Stitch Welded)	231-96ST6
Stainless Steel Type 304 (Stitch Welded)	231-96ST4
PVC	231-96PV
Polypropylene	231-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		4.8 sq. ft.	7.2 sq. ft.	10.5 sq. ft.	12.5 sq. ft.
HORIZONTAL SASH PANES 50% OPEN	80 FPM	385 @ 0.5	575 @ .12	840 @ .18	1000 @ .10
	100 FPM	480 @ .08	720 @ .13	1050 @ .24	1250 @ .18

**MEASURED OFF THE TOP OF THE WORK SURFACE*
INCLUDES UPPER BY-PASS

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS HORIZONTAL SLIDING SASH

Restricted By-Pass Variable Air Volume fume hoods are used in conjunction with an electronic control system* which will maintain a constant face velocity regardless of sash opening. As the sash panes are opened and closed, the VAV system will vary the exhaust volume of the hood in direct response to the sash opening. * supplied by others. **The horizontal sash panes should not be closed completely as this may force most of the exhaust air through the lower air foil opening reducing the efficiency of the hood.**
**SUPPLIED BY OTHERS*

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

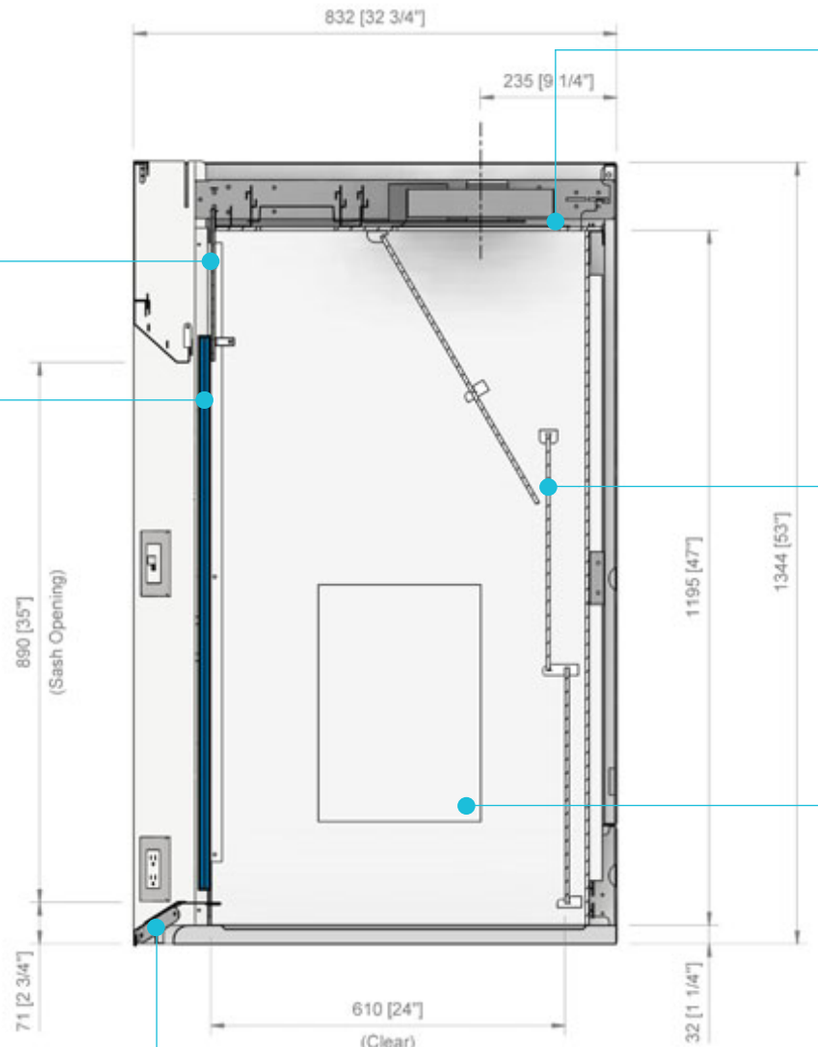
Standard electrical fixtures comprise two 120Vac/20A T-slot duplex receptacles, vapour sealed low voltage LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

By-pass blocker

Sash assembly is “Full View” type with full height panes set in an I8 gauge, Type 316 stainless steel, number 4 finish full frame. Top hang horizontal sliding panes are unframed 6mm (1/4”) laminated safety glass with polished edges. **They are designed so that only a maximum of 50% of the sash can be opened at any one time Sash panels are designed and sized to be used as a full height safety shield.**

Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.



Exhaust collars are bell shaped, round in configuration and does not require a rectangular-to-round transition.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS HORIZONTAL SLIDING SASH

1220mm (48”) WIDE

Polyresin	331-48PR
Stainless Steel Type 316 (All Welded)	331-48SW6
Stainless Steel Type 304 (All Welded)	331-48SW4
Stainless Steel Type 316 (Stitch Welded)	331-48ST6
Stainless Steel Type 304 (Stitch Welded)	331-48ST4
PVC	331-48PV
Polypropylene	331-48PP

1525mm (60”) WIDE

Polyresin	331-60PR
Stainless Steel Type 316 (All Welded)	331-60SW6
Stainless Steel Type 304 (All Welded)	331-60SW4
Stainless Steel Type 316 (Stitch Welded)	331-60ST6
Stainless Steel Type 304 (Stitch Welded)	331-60ST4
PVC	331-60PV
Polypropylene	331-60PP

1830mm (72”) WIDE

Polyresin	331-72PR
Stainless Steel Type 316 (All Welded)	331-72SW6
Stainless Steel Type 304 (All Welded)	331-72SW4
Stainless Steel Type 316 (Stitch Welded)	331-72ST6
Stainless Steel Type 304 (Stitch Welded)	331-72ST4
PVC	331-72PV
Polypropylene	331-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available*

2440mm (96") WIDE

Polyresin311-96PR	
Stainless Steel Type 316 (All Welded)	331-96SW6
Stainless Steel Type 304 (All Welded)	331-96SW4
Stainless Steel Type 316 (Stitch Welded)	331-96ST6
Stainless Steel Type 304 (Stitch Welded)	331-96ST4
PVC	331-96PV
Polypropylene	331-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		4.25 sq. ft.	6.5 sq. ft.	9.6 sq. ft.	11.3 sq. ft.
HORIZONTAL SASH PANES 50% OPEN	80 FPM	340 @ 0.4	520 @ .10	770 @ .17	900 @ .10
	100 FPM	425 @ .07	650 @ .11	960 @ .22	1130 @ .17

**MEASURED OFF THE TOP OF THE WORK SURFACE*

HAWKINS
LABORATORY FUME HOODS

HORIZONTAL SLIDING SASH
BUILD YOUR FUME HOOD

FILLABLE PDF

To view the PDF properly download Adobe Acrobat Reader

Adobe Acrobat

PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW

- ☐ Constant Air Volume (CAV)
- ☐ Variable Air Volume (VAV)

2 FUME HOOD TYPE

- ☑ General Chemistry

3 LINER MATERIAL

- ☐ Polyresin (PR)
- ☐ S/S All Welded T316 (SW6)
- ☐ S/S Stitch Welded T316 (ST6)
- ☐ S/S All Welded T304 (SW4)
- ☐ S/S Stitch Welded T304 (ST4)
- ☐ Other

Refer to page 11 of the catalog for liner material description.

- ☐ Ceiling Closure Panels
- ☐ Blower Switch (Wiring NIC)
- ☐ Sash Stop at 18”

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ☐ 6”x3” Polyethylene
- ☐ 6”x3” T316 Stainless Steel

Base Cabinets Left Side

- ☐ Acid Storage
- ☐ Flammable Storage
- ☐ General Storage
- ☐ Table Frame

Additional Options

_____
_____
_____

Pre-piping

- ☐ Above the hood
- ☐ Below the hood

Low Air Flow Alarm

- ☐ AFA500 (CAV Only)
- ☐ AFA1000 (CAV Only)
- ☐ AFA4000 (CAV Only)

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ☐ 6”x3” Polyethylene
- ☐ 6”x3” T316 Stainless Steel

Work Surface

- ☐ Epoxy
- ☐ Stainless Steel, T316

Base Cabinets Right Side

- ☐ Acid Storage
- ☐ Flammable Storage
- ☐ General Storage
- ☐ Table Frame

Additional Options

_____
_____
_____

BENCH MOUNT
FUME HOOD — COMBINATION SASH

| STANDARD FEATURES — BENCH MOUNT COMBINATION SASH

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Reduced By-Pass
- Variable Air Volume (VAV), Restricted By-Pass
- 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide
- Bench Mount

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 INTERIOR ACCESS PANELS

Fully framed, self supporting

- Flush mount
- Fully framed and air tight
- No gaskets required

3 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 930mm (36.5”) high
- Type 316 stainless steel full length sash pull
- Maximum Vertical sash opening height 685mm (27”)
- Combination vertical opening/horizontal sliding

4 FRONT FACE OPENING

- Aerodynamically angled top, bottom and side openings reduce turbulence and eliminate reverse flows
- Lower air foils are fabricated from 16ga Type 316 stainless steel, number 4 finish

5 INTERIOR LINER MATERIALS

- Polyresin
- Stainless Steel
- PVC
- Polypropylene
- Custom materials available to fit specific requirements

6 BAFFLES

- Three section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

7 ELECTRICAL

Standard electrical fixtures comprise:

- Two 120V/20A duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

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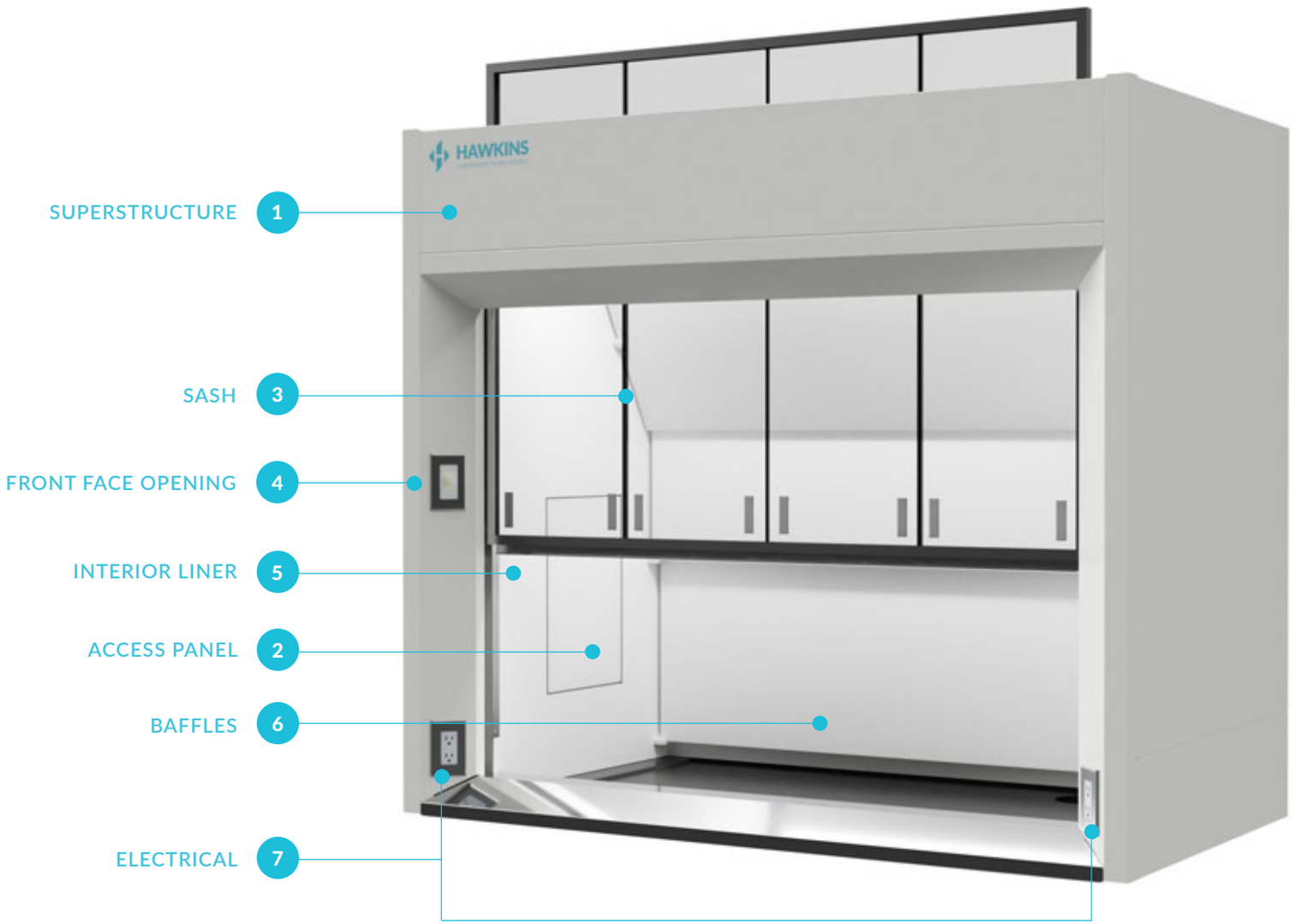

SUPERSTRUCTURE 1
SASH 3
FRONT FACE OPENING 4
INTERIOR LINER 5
ACCESS PANEL 2
BAFFLES 6
ELECTRICAL 7
HAWKINS

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings
- Approved for use in North America

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination
- Materials approved for use in North America

4 LOW AIRFLOW ALARM/MONITORS

- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 WORK SURFACES

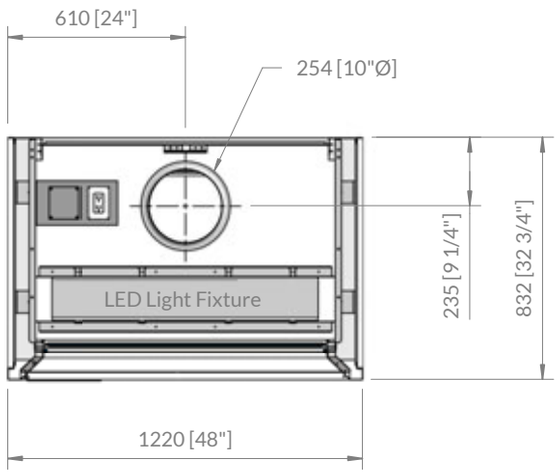
- Molded dished black solid epoxy
- Type 304 or Type 316 stainless steel with anti spill edges
- Custom materials to suit specific requirements

6 BASE CABINETS

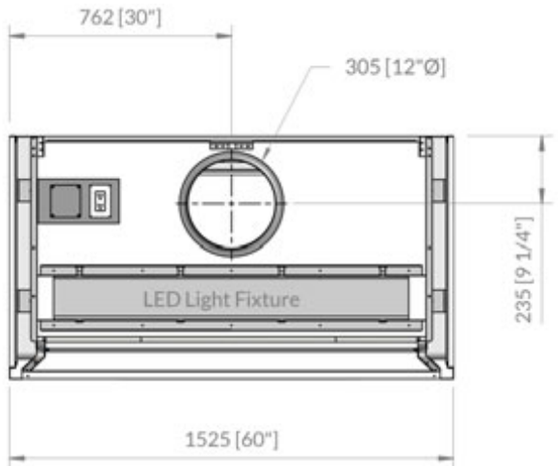
- General storage non-lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, polypropylene lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, all polypropylene construction.
- Flammable/solvent storage. All metal double wall construction.
  - FM, UL or ULC approved
- Tubular steel table support frames


CEILING CLOSURE PANEL
1
MECHANICAL SERVICE FIXTURES
2
WORK SURFACE
5
BASE CABINETS
6
3
PRE-PIPING
4
LOW AIRFLOW ALARM/MONITOR
HAWKINS
FLAMMABLE
CORROSIVE

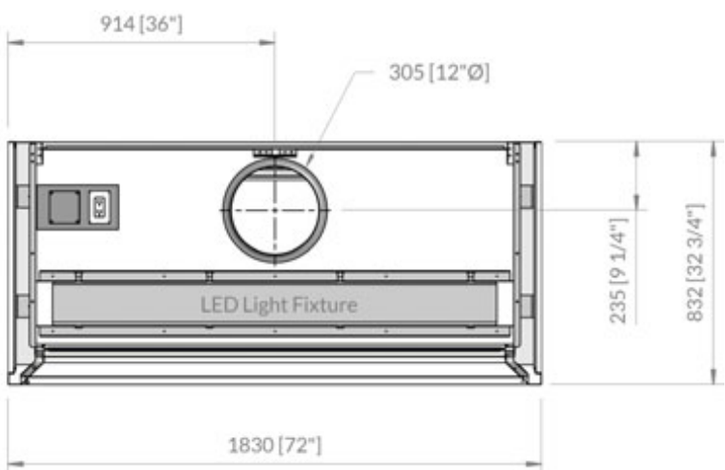
| EXHAUST COLLARS | LOCATIONS / DIAMETERS
COMBINATION SASH



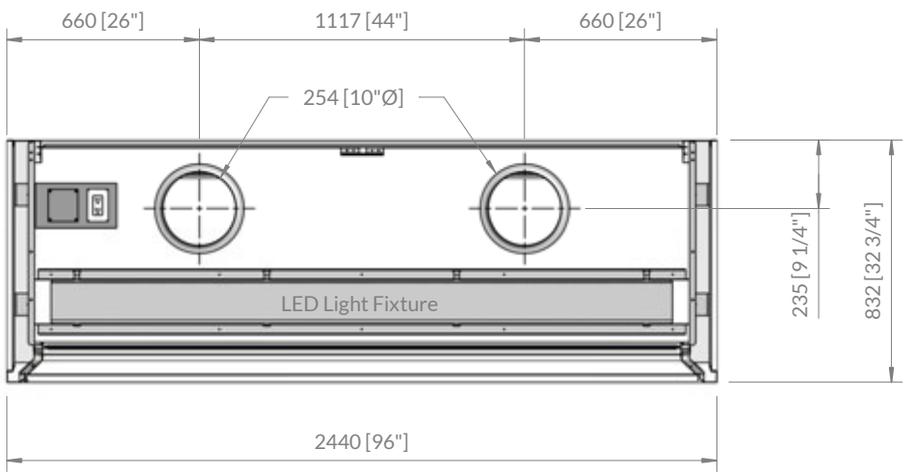
1220mm
(48”) WIDE



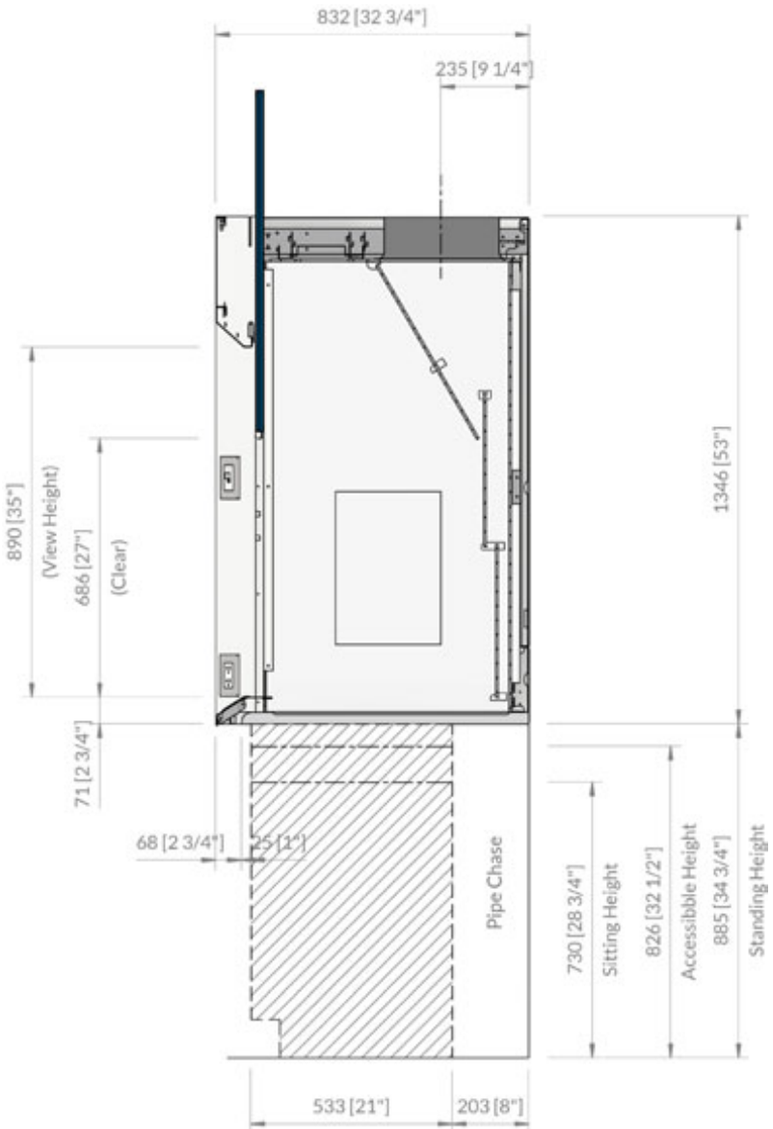
1524mm
(60”) WIDE



1830mm
(72”) WIDE



2440mm
(96”) WIDE



1 2 3 - 48 PR

INTERIOR LINER MATERIALS

HOOD EXHAUST TYPE

1 - Constant Air Volume (CAV), Full By-Pass
2 - Constant Air Volume (CAV), Reduced By-Pass
3 - Variable Air Volume (VAV), Restricted By-Pass

SASH TYPE

1 - Full View Sash With Fixed View Panel
2 - Full View Sash
3 - Horizontal Sliding Sash Panels
4 - Combination Vertical Rising Sash/Horizontal Sliding Panes- Full View
5 - Split Veritcally Rising Sashes

SUPERSTRUCTURE TYPES

1 - Bench Mount - Standard Height
3 - Floor Mount (Walk In)
4 - Radioisotope
5 - Perchloric Acid
6 - Accessible
7 - Distillation
8 - Low Flow/High Performance
12 - Pass Through (Double Sided)

HOOD WIDTH

1220mm (48”)
1525mm (60”)
1830mm (72”)
2440mm (96”)

INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

SW Stainless Steel: Type 316 (SW6) or Type 304 (SW4) stainless steel, 16 gauge, number 4 finish, all welded seamless construction. Interior corners have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Work surface is factory installed, mechanically fastened and silicone sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| CONSTANT AIR VOLUME (CAV), FULL REDUCED-PASS COMBINATION SASH

Reduced By-Pass Constant Air Volume Fume Hoods incorporate a partial upper by-pass between the roof of the hood and the fully closed vertical sash assembly. This by-pass will draw air over the top of the sash assembly when the hood is being operated using the horizontal sliding sashes. This reduces the face velocity through the open horizontal sash openings. When the fume hood is being operated with the horizontal sliding sashes, the horizontal sash panes should not be closed completely. **This will force the exhaust air through the lower air foil opening reducing the efficiency of the hood. When using the fume hood in the vertical sash configuration, the horizontal sash panes must be closed.**

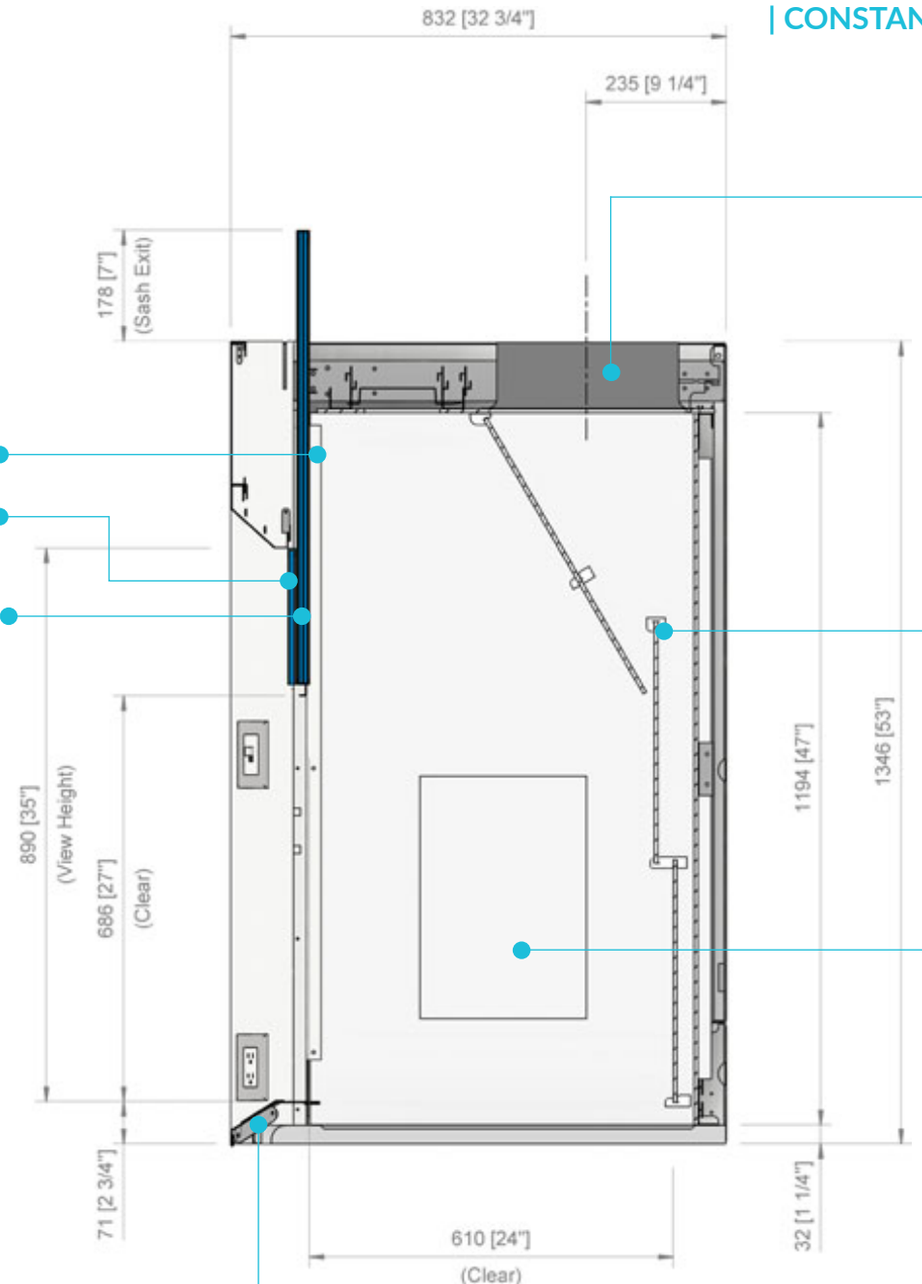
Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS COMBINATION SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002



Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Reduced By- Pass

Fixed View Panel

Sash assembly is a "Full View" type with full height panes set in an I8 gauge, Type 316 stainless number 4 finish frame. It is fully counter balanced using a single center hung weight running behind the behind the hood and a continuous stainless steel sash cable and nylon ball bearing rollers. **Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time**. Panes have polished vertical edges and run on top hung ball bearing plastic rollers in an aluminum track. Sash pull is a low profile design, is full length and fabricated I8 gauge Type 316, number 4 finish stainless steel. **Horizontal sash panes are designed and sized to be as a full height safety sash**

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS COMBINATION SASH

1220mm (48”) WIDE

Polyresin	241-48PR
Stainless Steel Type 316 (All Welded)	241-48SW6
Stainless Steel Type 304 (All Welded)	241-48SW4
Stainless Steel Type 316 (Stitch Welded)	241-48ST6
Stainless Steel Type 304 (Stitch Welded)	241-48ST4
PVC	241-48PV
Polypropylene	241-48PP

1525mm (60”) WIDE

Polyresin	241-60PR
Stainless Steel Type 316 (All Welded)	241-60SW6
Stainless Steel Type 304 (All Welded)	241-60SW4
Stainless Steel Type 316 (Stitch Welded)	241-60ST6
Stainless Steel Type 304 (Stitch Welded)	241-60ST4
PVC	241-60PV
Polypropylene	241-60P

1830mm (72”) WIDE

Polyresin	241-72PR
Stainless Steel Type 316 (All Welded)	241-72SW6
Stainless Steel Type 304 (All Welded)	241-72SW4
Stainless Steel Type 316 (Stitch Welded)	241-72ST6
Stainless Steel Type 304 (Stitch Welded)	241-72ST4
PVC	241-72PV
Polypropylene	241-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*

2440mm (96") WIDE

Polyresin	241-96PR
Stainless Steel Type 316 (All Welded)	241-96SW6
Stainless Steel Type 304 (All Welded)	241-96SW4
Stainless Steel Type 316 (Stitch Welded)	241-96ST6
Stainless Steel Type 304 (Stitch Welded)	241-96ST4
PVC	241-96PV
Polypropylene	241-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
VERTICAL SASH FULL OPEN (27")	80 FPM	685 @ .14	770 @ .15	945 @ .22	1300 @ .18
	100 FPM	730 @ .16	960 @ .22	1180 @ .29	1630 @ .24
SASH OPENING*		4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
VERTICAL SASH 18" OPEN	80 FPM	390 @ .06	510 @ .09	630 @ .13	870 @ .06
	l00 FPM	490 @ .08	640 @ .14	790 @ .17	1090 @ .10

** Measured off the top of the work surface*

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS COMBINATION SASH

Restricted By-Pass Variable Air Volume fume hoods are used in conjunction with an electronic control system*which will maintain a constant face velocity regardless of the sash opening. As the vertical rising sash and the horizontal sliding panes are opened and closed, the VAV system will vary the exhaust volume of the hood in direct response to the sash opening.
When the hood is being used in the vertical sash configuration the horizontal sash panes need to be fully closed. When the fume hood is being operated with the horizontal sliding sashes, the vertical sash assembly needs to be fully closed. The horizontal sash panes should not be closed completely as this will force all the exhaust air through the lower air foil opening reducing the efficiency of the hood.
**SUPPLIED BY OTHERS*

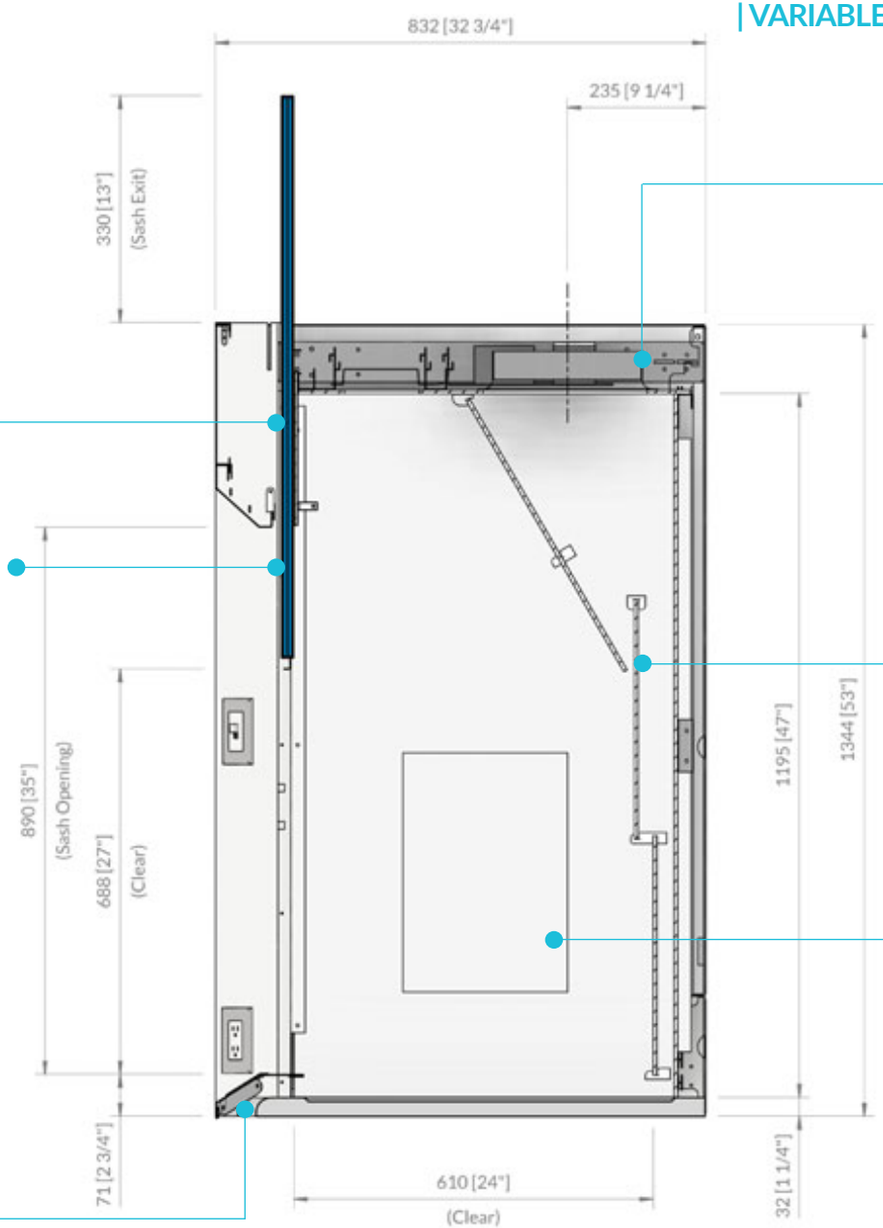
Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120Vac/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS COMBINATION SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002



By-pass blocker

Sash assembly is a "Full View" type with full height panes set in an I8 gauge Type 316 stainless number 4 finish frame. It is fully counter balanced using a single center hung weight running behind the hood and a continuous stainless steel sash cable and nylon ball bearing rollers. **Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time**. Panes have polished vertical edges and run on ball bearing plastic rollers in an aluminum track. Sash pull is a low profile design, is full length and fabricated I8 gauge Type 316 number 4 finish stainless steel. **Horizontal sash panes are designed and sized to be as a full height safety sash**

Type 316 16 gauge stainless steel lower airfoil incorporates a slot between airfloil and work surfaces to provide a sweep of air over the work surface

Exhaust collars are bell shaped, round in configuration and does not require a rectangular-to-round transition.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS COMBINATION SASH

1220mm (48”) WIDE

Polyresin	341-48PR
Stainless Steel Type 316 (All Welded)	341-48SW6
Stainless Steel Type 304 (All Welded)	341-48SW4
Stainless Steel Type 316 (Stitch Welded)	341-48ST6
Stainless Steel Type 304 (Stitch Welded)	341-48ST4
PVC	341-48PV
Polypropylene	341-48PP

1525mm (60”) WIDE

Polyresin	341-60PR
Stainless Steel Type 316 (All Welded)	341-60SW6
Stainless Steel Type 304 (All Welded)	341-60SW4
Stainless Steel Type 316 (Stitch Welded)	341-60ST6
Stainless Steel Type 304 (Stitch Welded)	341-60ST4
PVC	341-60PV
Polypropylene	341-60PP

1830mm (72”) WIDE

Polyresin	341-72PR
Stainless Steel Type 316 (All Welded)	341-72SW6
Stainless Steel Type 304 (All Welded)	341-72SW4
Stainless Steel Type 316 (Stitch Welded)	341-72ST6
Stainless Steel Type 304 (Stitch Welded)	341-72ST4
PVC	341-72PV
Polypropylene	341-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available*

2440mm (96") WIDE

Polyresin 311-96PR	
Stainless Steel Type 316 (All Welded)	341-96SW6
Stainless Steel Type 304 (All Welded)	341-96SW4
Stainless Steel Type 316 (Stitch Welded)	341-96ST6
Stainless Steel Type 304 (Stitch Welded)	341-96ST4
PVC	341-96PV
Polypropylene	341-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
VERTICAL SASH FULL OPEN (27")	80 FPM	685 @ .14	770 @ .15	945 @ .22	1300 @ .18
	100 FPM	730 @ .16	960 @ .22	1180 @ .29	1630 @ .24
SASH OPENING*		4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
VERTICAL SASH 18" OPEN	80 FPM	390 @ .06	510 @ .15	630 @ .13	870 @ .06
	l00 FPM	490 @ .08	640 @ .13	790 @ .17	1090 @ .10

** Measured off the top of the work surface*

HAWKINS
LABORATORY FUME HOODS

COMBINATION SASH
BUILD YOUR FUME HOOD

FILLABLE PDF

To view the PDF properly download Adobe Acrobat Reader

Adobe Acrobat

PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW

- ☐ Constant Air Volume (CAV)
- ☐ Variable Air Volume (VAV)

2 FUME HOOD TYPE

- ☑ General Chemistry

3 LINER MATERIAL

- ☐ Polyresin (PR)
- ☐ S/S All Welded T316 (SW6)
- ☐ S/S Stitch Welded T316 (ST6)
- ☐ S/S All Welded T304 (SW4)
- ☐ S/S Stitch Welded T304 (ST4)
- ☐ Other

Refer to page 11 of the catalog for liner material description.

- ☐ Ceiling Closure Panels
- ☐ Blower Switch (Wiring NIC)
- ☐ Sash Stop at 18”

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ☐ 6”x3” Polyethylene
- ☐ 6”x3” T316 Stainless Steel

Base Cabinets Left Side

- ☐ Acid Storage
- ☐ Flammable Storage
- ☐ General Storage
- ☐ Table Frame

Additional Options

_____
_____
_____

Pre-piping

- ☐ Above the hood
- ☐ Below the hood

Low Air Flow Alarm

- ☐ AFA500 (CAV Only)
- ☐ AFA1000 (CAV Only)
- ☐ AFA4000 (CAV Only)

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ☐ 6”x3” Polyethylene
- ☐ 6”x3” T316 Stainless Steel

Work Surface

- ☐ Epoxy
- ☐ Stainless Steel, T316

Base Cabinets Right Side

- ☐ Acid Storage
- ☐ Flammable Storage
- ☐ General Storage
- ☐ Table Frame

Additional Options

_____
_____
_____

RADIOISOTOPE
BENCH MOUNT
FUME HOOD — VERTICAL RISING SASH
— CONSTANT AIR VOLUME (CAV)

| RADIOISOTOPE — CONSTANT AIR VOLUME (CAV)
STANDARD FEATURES
VERTICAL RISING SASH

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Full By-Pass
- 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide
- Bench Mount

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 930mm (36.5”) high with fixed view panel
- Type 316 stainless steel full length sash pull
- Maximum sash opening height 685mm (27”)
- Vertical rising

3 FRONT FACE OPENING

- Aerodynamically angled top, bottom and side openings reduce turbulence and eliminate reverse flows
- Lower air foils are fabricated from 16ga type 316 stainless steel, number 4 finish

4 INTERIOR LINER MATERIAL

- Type 316 (SW-RI6) or Type 304 (SW-RI4) stainless steel, 16 gauge, number 4 finish.
- All welded seamless construction.
- Interior corners have a 3/4” radius with all welds ground and polished.
- Work surface is integrally welded with a 1/2” high anti-spill front lip It is reinforced with metal channels to support lead shielding.
- Interior access panels are not included unless specifically required.

5 BAFFLES

- Three section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

6 ELECTRICAL

Standard electrical fixtures comprise:

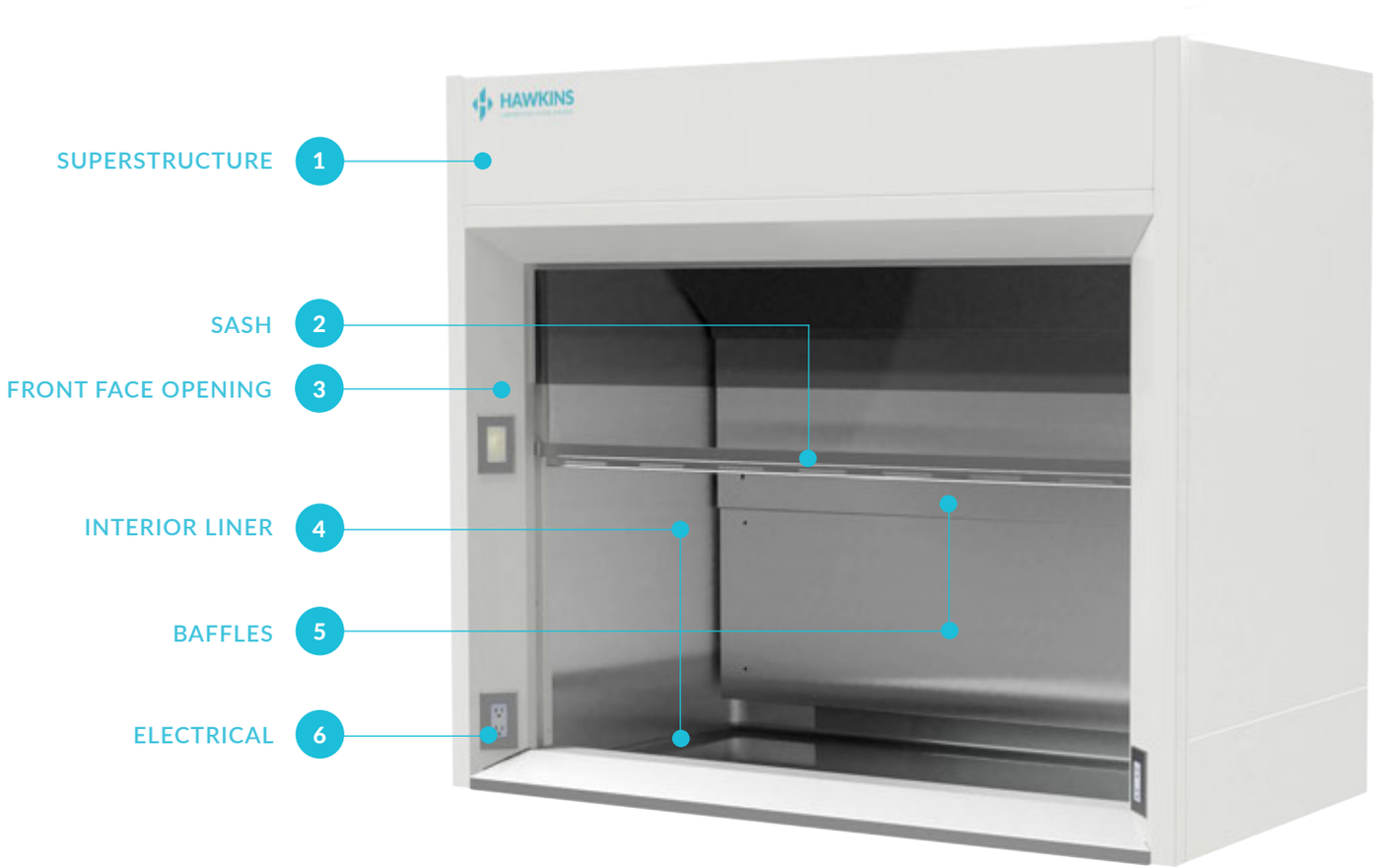
- Two 120V/20A T-slot duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

TRACER GAS TESTING

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.


SUPERSTRUCTURE
1
SASH
2
FRONT FACE OPENING
3
INTERIOR LINER
4
BAFFLES
5
ELECTRICAL
6
HAWKINS

| RADIOISOTOPE — CONSTANT AIR VOLUME (CAV) OPTIONS OVERVIEW VERTICAL RISING SASH

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination

4 LOW AIRFLOW ALARM/MONITORS

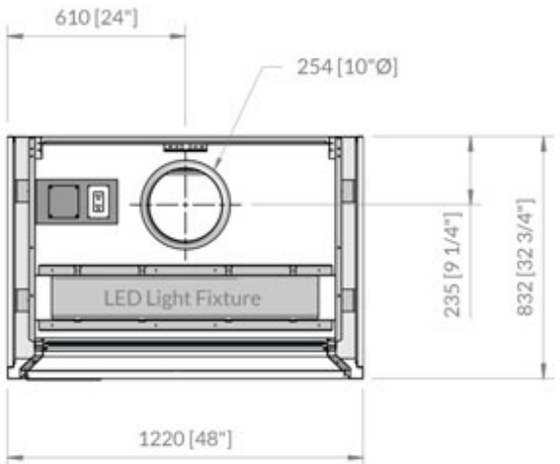
- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 BASE CABINETS

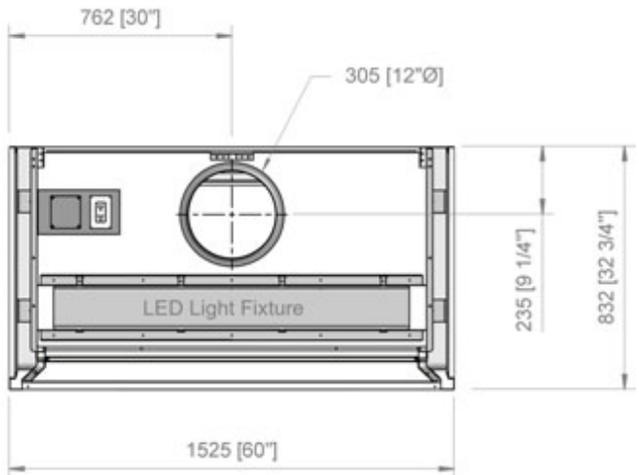
- General storage non-lined. Exterior fabricated from:
  - Baked enamel steel
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, polypropylene lined. Exterior fabricated from:
  - Baked enamel steel
- Flammable/solvent storage. All metal double wall construction.
  - FM, UL or ULC approved
- Tubular steel table support frames


CEILING CLOSURE PANEL
1
MECHANICAL SERVICE FIXTURES
2
BASE CABINETS
5
3
PRE-PIPING
4
LOW AIRFLOW ALARM/MONITOR
HAWKINS
FLAMMABLE
KEEP FIRE AWAY
CORROSIVE

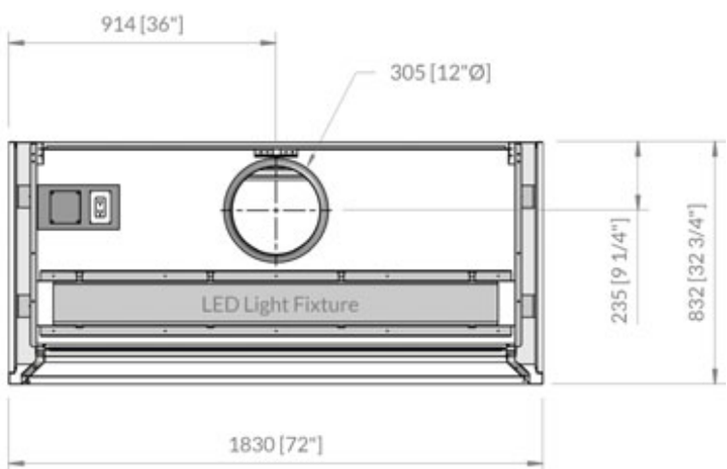
| RADIOISOTOPE — CONSTANT AIR VOLUME (CAV)
EXHAUST COLLARS | LOCATIONS / DIAMETERS
VERTICAL RISING SASH



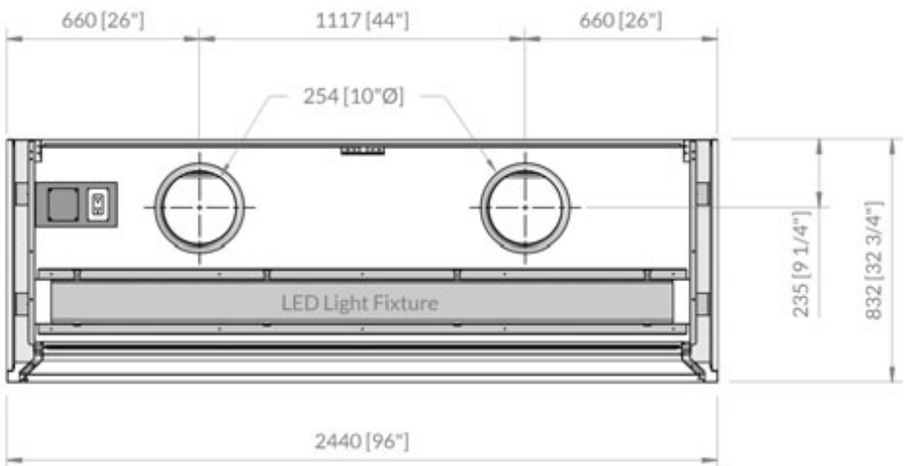
1220mm
(48") WIDE



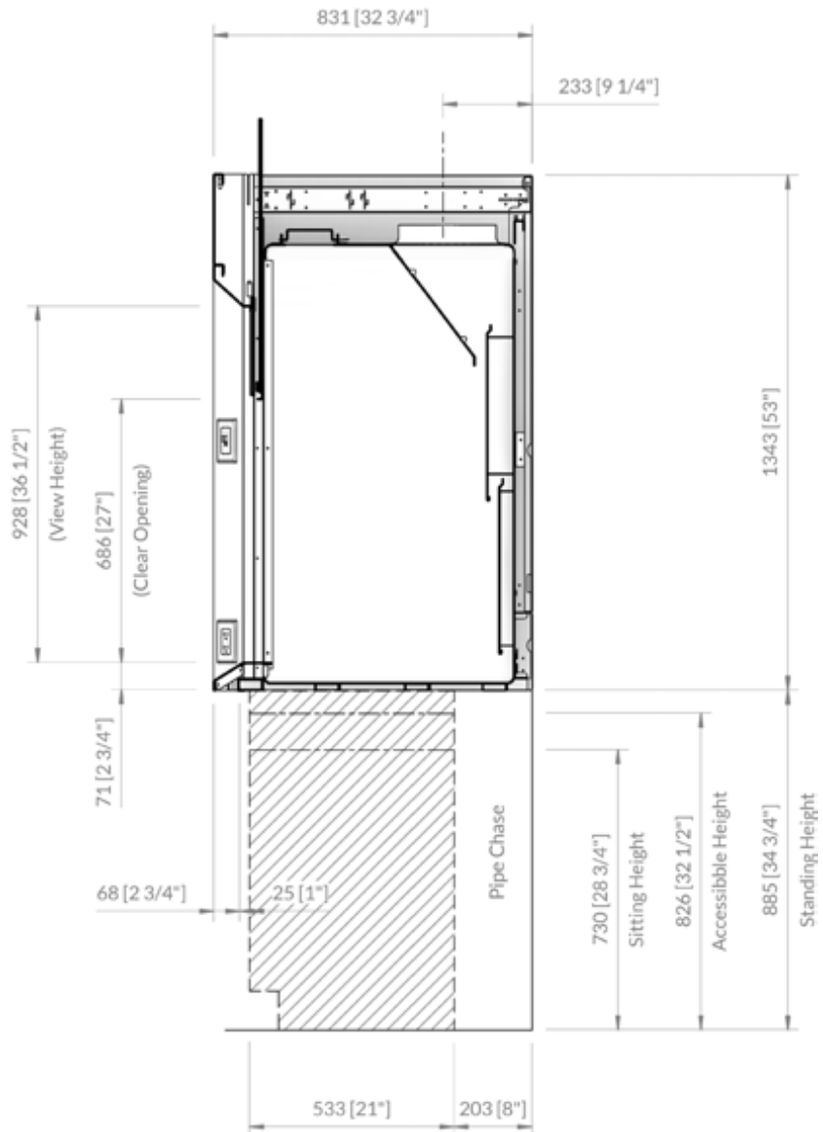
1524mm
(60") WIDE



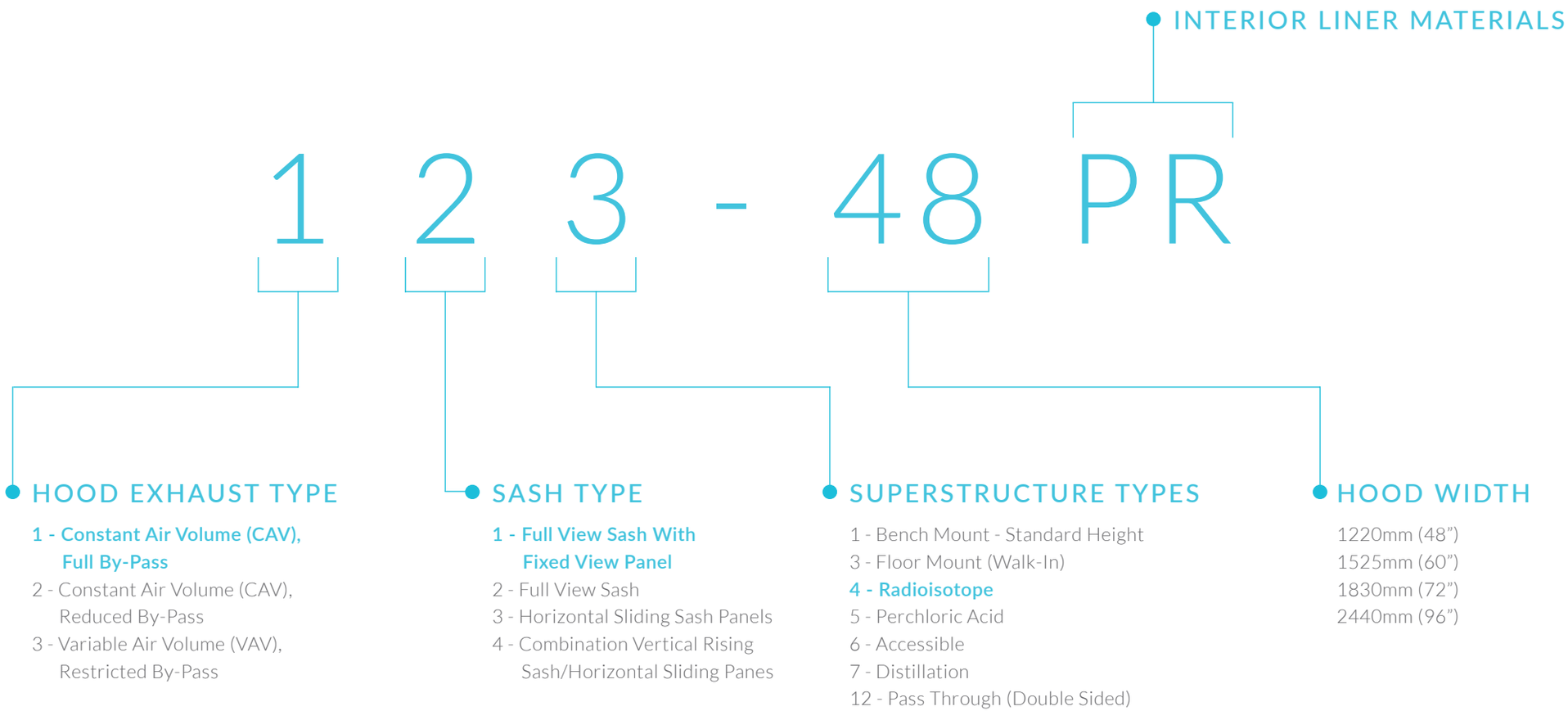
1830mm
(72") WIDE



2440mm
(96") WIDE



| RADIOISOTOPE — CONSTANT AIR VOLUME (CAV)
CATALOG NUMBER EXPLANATION | INTERIOR LINER MATERIAL
VERTICAL RISING SASH



INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

SW-RI Liner is Type 316 (R16) or Type 304 (R14) stainless steel, 16 gauge, number 4 finish, all welded seamless construction. Interior corners have a 3/4" radius with all welds are ground and polished. Work surface is integrally welded to the liner with a 1/2" high anti-spill front lip. It is reinforced on the underside with metal channels to support the weight of lead shielding. Exhaust collar is type 316 stainless steel. Interior access panels are not included unless specifically required. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80%.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Work surface is factory installed, mechanically fastened and silicone sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| RADIOISOTOPE — CONSTANT AIR VOLUME (CAV)
FULL BY-PASS VERTICAL RISING SASH

An automatic by-pass system maintains a relatively constant exhaust volume. Face velocity is limited from increasing by more that four times when the vertical sash is lowered from full open to 6” open.

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A T-slot duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

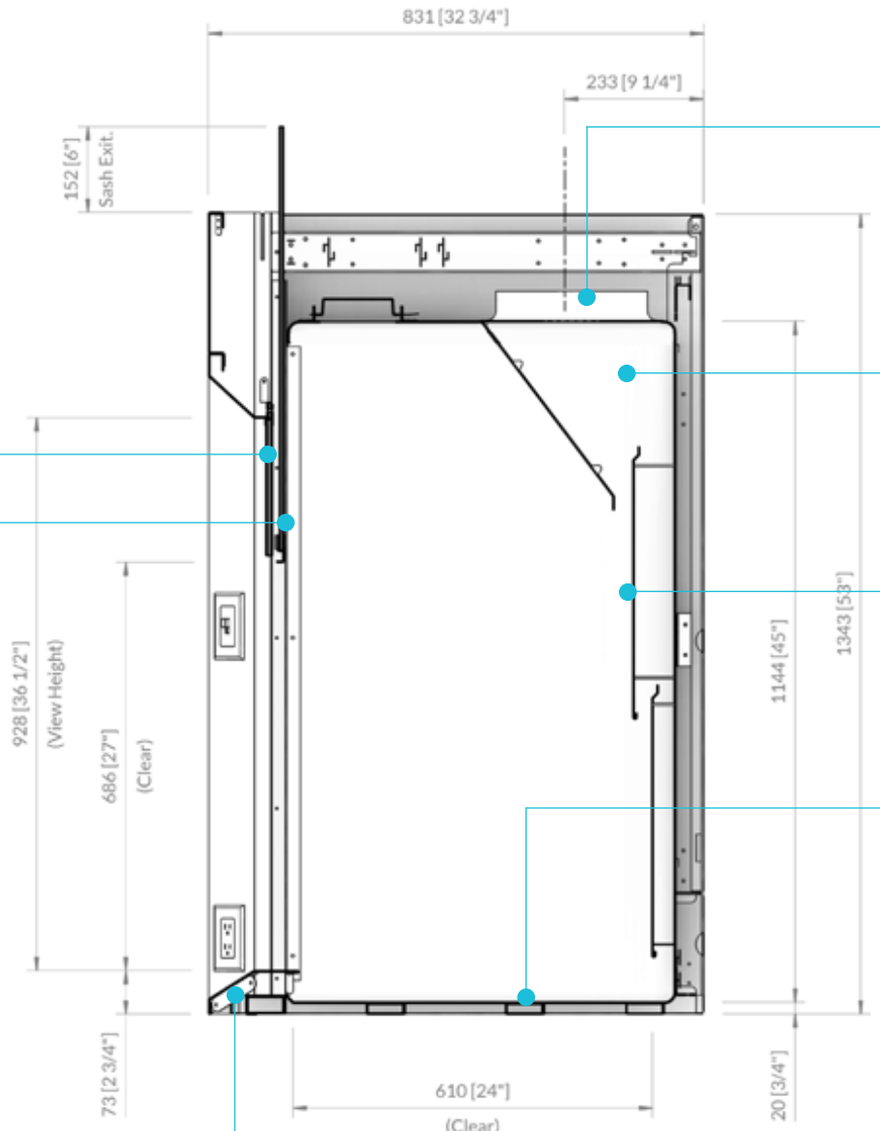
| RADIOISOTOPE — CONSTANT AIR VOLUME (CAV), FULL BY-PASS VERTICAL RISING SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

Fixed View Panel

Vertical rising 6mm (1/4") laminated safety glass sash is frameless "Full View" type with fixed view panel running in PVC guides. It is fully counter balanced using a single centre hung weight behind the hood with a continuous stainless steel sash cable and nylon ball bearing rollers. Sash pull is stainless steel, full length, low profile slotted design, I8 gauge type 316, number 4 finish..

Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.



Exhaust collar is Type 316 stainless steel bell shaped, round in configuration and does not require a rectangular-to-round transition.

Stainless steel liner is Type 316 (SW6) or Type 304 (SW4) stainless steel, 16 gauge, number 4 finish, all welded seamless construction. Interior corners have 3/4" radius with all welds are ground and polished

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without special tools to facilitate ease of cleaning.

Work surface is integrally welded to the liner with a 1/2" high anti-spill front lip. It is reinforced on the underside with metal channels to support the weight of lead shielding.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| RADIOISOTOPE
CONSTANT AIR VOLUME (CAV), FULL BY-PASS
VERTICAL RISING SASH

1220mm
(48”) WIDE

Stainless Steel Type 316 (All Welded)	114-48SW6
Stainless Steel Type 304 (All Welded)	114-48SW4

1525mm
(60”) WIDE

Stainless Steel Type 316 (All Welded)	114-60SW6
Stainless Steel Type 304 (All Welded)	114-60SW4

1830mm
(72”) WIDE

Stainless Steel Type 316 (All Welded)	114-72SW6
Stainless Steel Type 304 (All Welded)	114-72SW4

- *Base cabinets, work surfaces and plumbing fixtures are optional.*

2440mm (96”) WIDE

Stainless Steel Type 316 (All Welded)	114-96SW6
Stainless Steel Type 304 (All Welded)	114-96SW4

RADIOISOTOPE AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48”	60”	72”	96”
SASH OPENING*		7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
SASH FULL OPEN (27”)	100 FPM	730 @ .16	960 @ .22	1180 @ .29	1630 @ .23
	125 FPM	910 @ .30	1200 @ .29	1475 @ .35	2040 @ .32
SASH OPENING*		4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
SASH 18” OPEN	100 FPM	490 @ .08	640 @ .12	790 @ .17	1090 @ .10
	120 FPM	610 @ .13	800 @ .18	990 @ .23	1360 @ .17

** Measured off the top of the work surface*

HAWKINS
LABORATORY FUME HOODS

RADIOISOTOPE
VERTICAL RISING SASH
BUILD YOUR FUME HOOD

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PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW

☑ Constant Air Volume (CAV)

2 FUME HOOD TYPE

☑ Radioisotope

3 LINER MATERIAL

☐ S/S All Welded T316 (SW6)

☐ S/S All Welded T304 (SW4)

Refer to page 11 of the catalog for liner material description.

☐ Ceiling Closure Panels

☐ Blower Switch (Wiring NIC)

☐ Sash Stop at 18”

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

☐ 6”x3”Internally Welded. T316 Stainless Steel

Base Cabinets Left Side

☐ Acid Storage
☐ Flammable Storage
☐ General Storage
☐ Table Frame

Additional Options

_____
_____
_____

Pre-piping

☐ Above the hood
☐ Below the hood

Low Air Flow Alarm

☐ AFA500 (CAV Only)
☐ AFA1000 (CAV Only)
☐ AFA4000 (CAV Only)

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

☐ 6”x3” Internally Welded. T316 Stainless Steel

Base Cabinets Right Side

☐ Acid Storage
☐ Flammable Storage
☐ General Storage
☐ Table Frame

Additional Options

_____
_____
_____

PERCHLORIC ACID
BENCH MOUNT FUME HOOD
CONSTANT AIR VOLUME (CAV)
VERTICAL RISING SASH

| PERCHLORIC ACID — CONSTANT AIR VOLUME (CAV)
STANDARD FEATURES — BENCH MOUNT
VERTICAL RISING SASH

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Full By-Pass
- 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide
- Bench Mount

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 930mm (36.5”) high with fixed view panel
- Type 316 stainless steel full length sash pull
- Maximum sash opening height 685mm (27”)
- Vertical rising

3 FRONT FACE OPENING

- Aerodynamically angled top, bottom and side openings reduce turbulence and eliminate reverse flows
- Lower air foils are fabricated from 16ga type 316 stainless steel, number 4 finish

4 INTERIOR LINER MATERIAL

- Type 316 (SW-PA6) stainless steel, 16 gauge, number 4 finish.
- All welded seamless construction.
- Interior corners have a 3/4” radius with all welds ground and polished.
- Work surface is integrally welded with a 1/2” high anti-spill front lip.
- Interior access panels are not included unless specifically required.

5 BAFFLES

- Three section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing
- A full length spray header is factory installed behind the rear upper baffle with a manually operated water control valve.

6 ELECTRICAL

Standard electrical fixtures comprise:

- Two 120V/20A duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

TRACER GAS TESTING

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

1 SUPERSTRUCTURE

2 SASH

3 FRONT FACE OPENING

4 INTERIOR LINER

5 BAFFLES

6 ELECTRICAL

BAFFLE WASHDOWN WATER CONTROL VALVE

INTEGRAL REAR DRAIN TROUGH

| PERCHLORIC ACID — CONSTANT AIR VOLUME (CAV) OPTIONS OVERVIEW VERTICAL RISING SASH

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination

4 LOW AIRFLOW ALARM/MONITORS

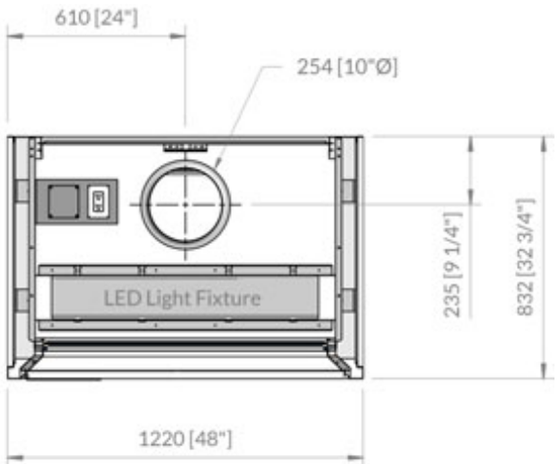
- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 BASE CABINETS

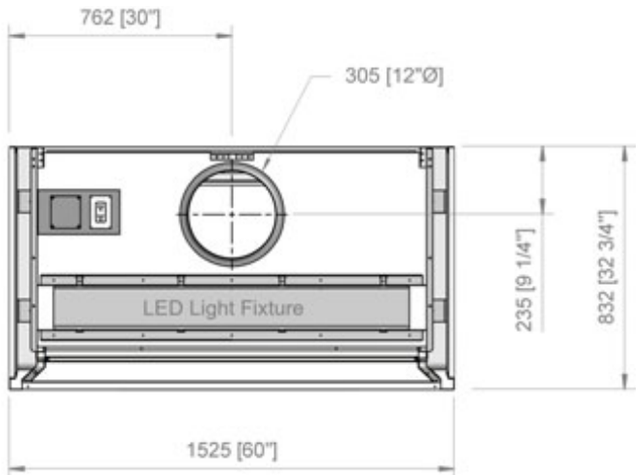
- General storage non-lined. Exterior fabricated from:
  - Baked enamel steel
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, polypropylene lined. Exterior fabricated from:
  - Baked enamel steel
- Flammable/solvent storage. All metal double wall construction.
  - FM, UL or ULC approved
- Tubular steel table support frames

| PERCHLORIC ACID — CONSTANT AIR VOLUME (CAV) OPTIONS OVERVIEW VERTICAL RISING SASH

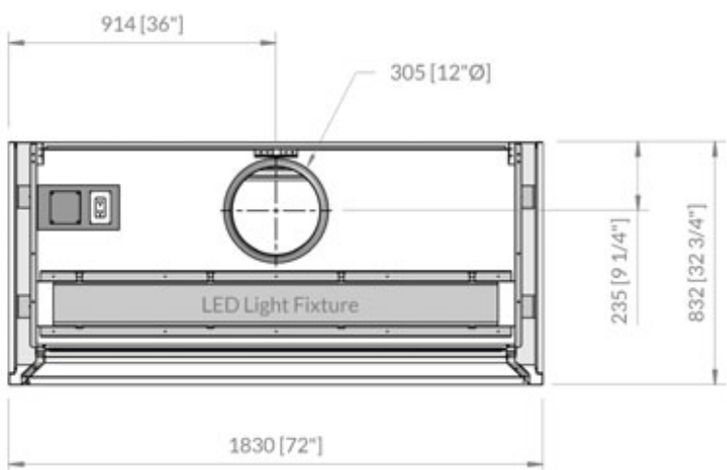
| PERCHLORIC ACID — CONSTANT AIR VOLUME (CAV)
EXHAUST COLLARS | LOCATIONS / DIAMETERS
VERTICAL RISING SASH



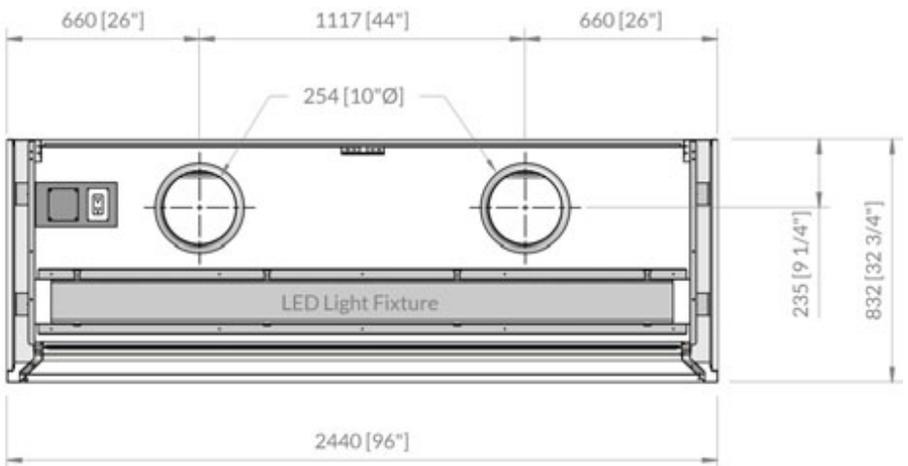
1220mm
(48”) WIDE



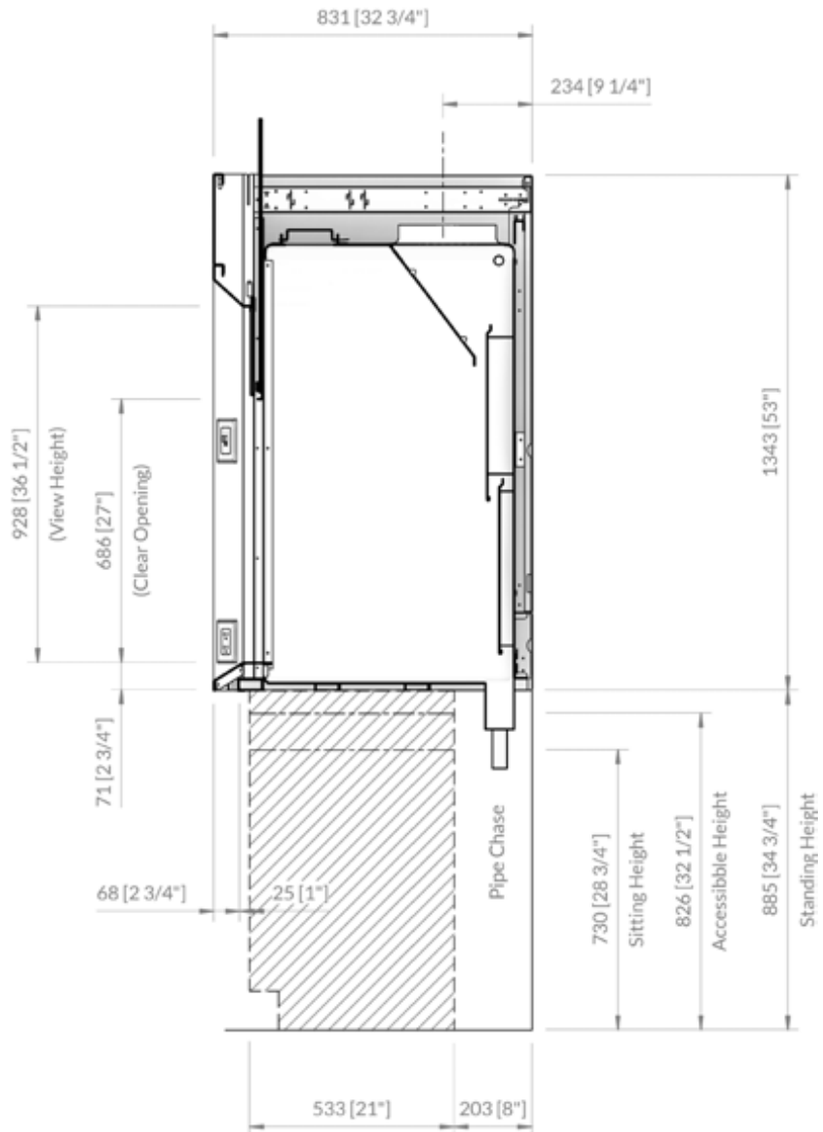
1524mm
(60”) WIDE



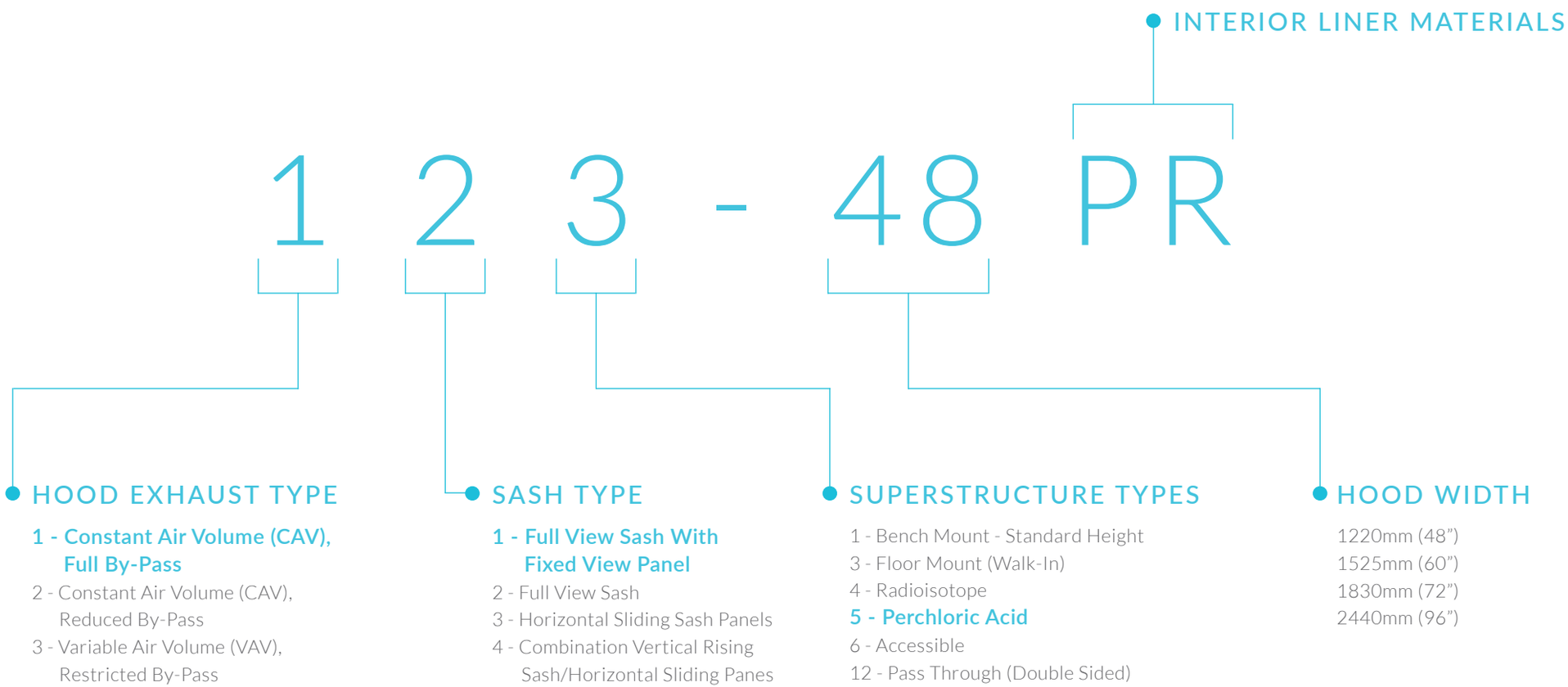
1830mm
(72”) WIDE



2440mm
(96") WIDE



| PERCHLORIC ACID — CONSTANT AIR VOLUME (CAV)
CATALOG NUMBER EXPLANATION | INTERIOR LINER MATERIAL
VERTICAL RISING SASH



INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

SW-PA Stainless Steel: Type 316 (SW6-PA) stainless steel, 16 gauge, number 4 finish, all welded seamless construction. Interior corners have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip and a full length rear integral drain trough with waste fitting. It is reinforced on the underside with plywood. Exhaust collar is type 316 stainless steel. Interior access panels are not included unless specifically required.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Work surface is factory installed, mechanically fastened and silicone sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| PERCHLORIC ACID CONSTANT AIR VOLUME (CAV), FULL BY-PASS VERTICAL RISING SASH

An automatic by-pass system maintains a relatively constant exhaust volume. Face velocity is limited from increasing by more that four times when the vertical sash is lowered from full open to 6" open.

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

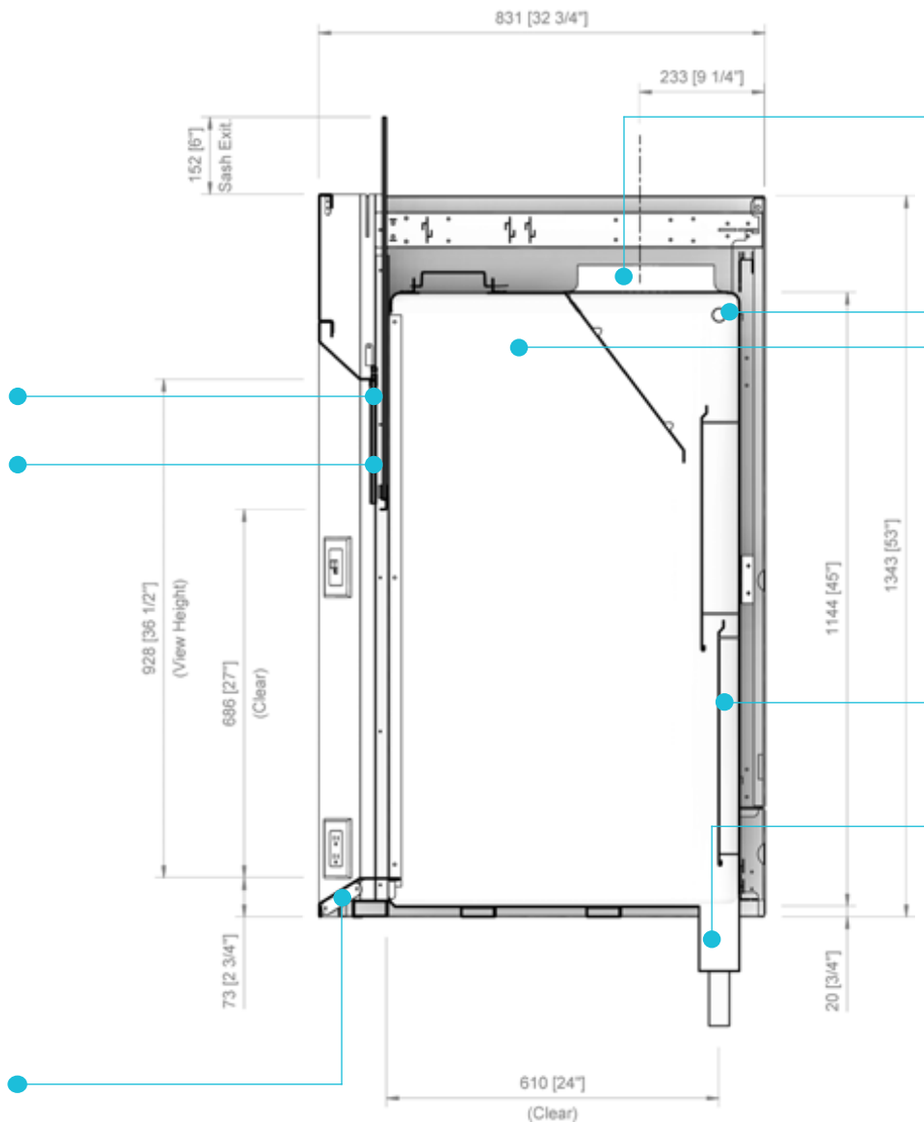
| PERCHLORIC ACID
CONSTANT AIR VOLUME (CAV), FULL BY-PASS
VERTICAL RISING SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

Fixed View Panel

Vertical rising 6mm (1/4") laminated safety glass sash is frameless "Full View" type with fixed view panel running in PVC guides. It is fully counter balanced using a single centre hung weight behind the hood with a continuous stainless steel sash cable and nylon ball bearing rollers. Sash pull is stainless steel, full length, low profile slotted design, I8 gauge type 316, number 4 finish..

Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.



Exhaust collar is Type 316 stainless steel bell shaped, round in configuration and does not require a rectangular-to-round transition.

Full length spray header factory installed behind the rear upper baffle with manually operated water control valve.

Liner is Type 316 (SW6) stainless steel, 16 gauge, number 4 finish, all welded seamless construction with rear baffle washdown spray header. Work surface is Integrally welded with a 1/2" high anti-spill front lip and a full length rear integral drain trough with waste fitting.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without special tools to facilitate ease of cleaning.

Integrally welded work surface with a 1/2" high anti-spill front lip and a full length rear integral drain trough with waste fitting.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| PERCHLORIC ACID
CONSTANT AIR VOLUME (CAV), FULL BY-PASS
VERTICAL RISING SASH

1220mm
(48”) WIDE

Stainless Steel Type 316 (All Welded)	115-48SW6
Stainless Steel Type 304 (All Welded)	115-48SW4

1525mm
(60”) WIDE

Stainless Steel Type 316 (All Welded)	115-60SW6
Stainless Steel Type 304 (All Welded)	115-60SW4

1830mm
(72”) WIDE

Stainless Steel Type 316 (All Welded)	115-72SW6
Stainless Steel Type 304 (All Welded)	115-72SW4

2440mm
(96”) WIDE

Stainless Steel Type 316 (All Welded)	115-96SW6
Stainless Steel Type 304 (All Welded)	115-96SW4

- *Base cabinets, work surfaces and plumbing fixtures are optional.*

RADIOISOTOPE
AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48”	60”	72”	96”
SASH OPENING*		7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
SASH FULL OPEN (27”)	100 FPM	730 @ .16	960 @ .22	1180 @ .29	1630 @ .23
	125 FPM	910 @ .30	1200 @ .29	1475 @ .35	2040 @ .32
SASH OPENING*		4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
SASH 18” OPEN	100 FPM	490 @ .08	640 @ .12	790 @ .17	1090 @ .10
	120 FPM	610 @ .13	800 @ .18	990 @ .23	1360 @ .17

** Measured off the top of the work surface*

HAWKINS
LABORATORY FUME HOODS

PERCHLORIC ACID
VERTICAL RISING SASH
BUILD YOUR FUME HOOD

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PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW
- ✔ Constant Air Volume (CAV)

2 FUME HOOD TYPE
- ✔ Perchloric Acid

3 LINER MATERIAL
- ✔ S/S All Welded T316 (SW-PA6)

Refer to page 11 of the catalog for liner material description.

- ○ Ceiling Closure Panels
- ○ Blower Switch (Wiring NIC)
- ○ Sash Stop at 18”

Mechanical Services
_____
_____
_____
_____
_____

Cup Sink
- ○ 6”x3”Internally Welded. T316 Stainless Steel

Base Cabinets Left Side
- ○ Acid Storage
- ○ Flammable Storage
- ○ General Storage
- ○ Table Frame

Additional Options
_____
_____
_____

Pre-piping
- ○ Above the hood
- ○ Below the hood

Low Air Flow Alarm
- ○ AFA500 (CAV Only)
- ○ AFA1000 (CAV Only)
- ○ AFA4000 (CAV Only)

Mechanical Services
_____
_____
_____
_____
_____

Cup Sink
- ○ 6”x3” Internally Welded. T316 Stainless Steel

Base Cabinets Right Side
- ○ Acid Storage
- ○ Flammable Storage
- ○ General Storage
- ○ Table Frame

Additional Options
_____
_____
_____

ACCESSIBLE - ADA FUME HOOD
VERTICAL RISING SASH

| ACCESSIBLE - ADA
ACCESSIBLE FUME HOODS
OVERVIEW

What Makes A fume Hood “Accessible”

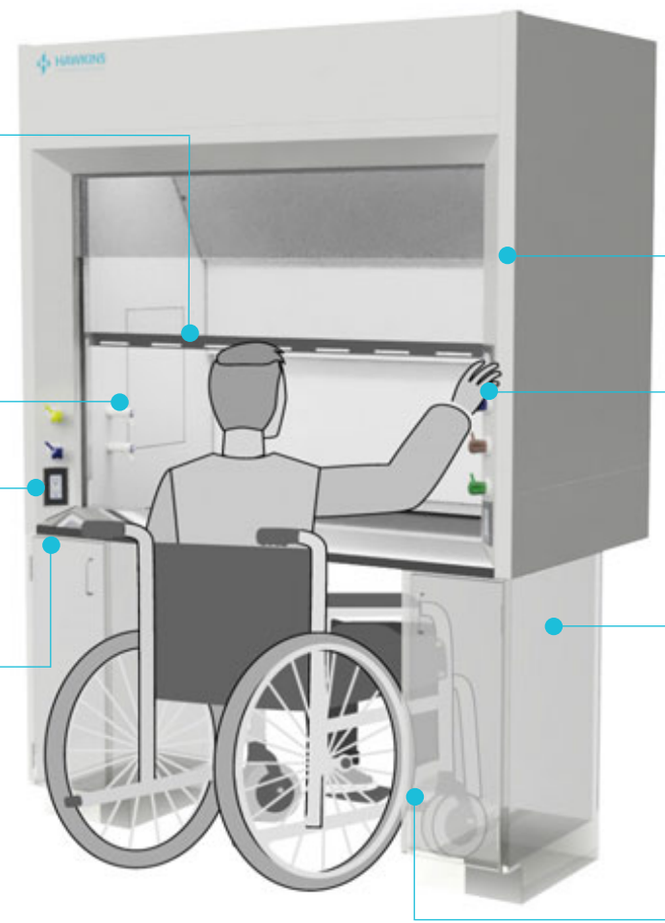
Canadian Federal and Provincial Accessibility Regulations and the Americans with Disabilities Act (ADA) objectives are to provide UNIVERSAL ACCESSIBILITY for disabled persons in the workplace. It should be noted that these jurisdictions **do not list or describe** (at the time of this publishing) any reference **specifically to fume hoods** as a product group or as a work area. The Regulations deal generally with wheelchair accessibility, under counter accessibility and minimum/maximum **forward, side** and **inside reach** when accessing controls or fixtures in a building. In order to meet these general requirement, H. H. Hawkins Ltd. interpretation of Accessible Fume Hoods have been designed with:

Maximum sash opening height has a maximum **side reach** of 1370mm (54”) off finished floor.

Mechanical fixtures are installed for a maximum **forward reach** of 1220mm (48”) off finished floor.

Electrical fixtures are installed for a maximum **forward reach** of 1220mm (48”) off finished floor.

Work surface height is to be a **minimum** of 685mm (27”) to a **maximum** of 865mm (34”) off finished floor



Low air flow alarm/monitors are installed for a maximum **side reach** of 1370mm (54”) off the floor.

Interior mounted mechanical goosenecks and outlets are installed toward the front of hood to limit interior **inside reach** to less than 610mm (24”).

Accessible-ADA fixed height base cabinets are 825mm (32 ½”) high. Sit down fixed height base cabinets are 730mm (28 ¾”) high

Clear floor space between supporting base cabinets is to be a **minimum** of 480mm (19”) deep by 760mm (32”) wide.

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Full By-Pass
- Variable Air Volume (VAV), Restricted By-Pass
- 915mm (36”), 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide
- Bench Mount

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 INTERIOR ACCESS PANELS

Fully framed, self supporting

- Flush mount
- Fully framed and air tight
- No gaskets required

3 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 930mm (36.5”) high
- Type 316 stainless steel full length sash pull
- Maximum sash opening height 685mm (27”)
- Vertical rising
- Defeatable sash stop at 250mm (18”) open

4 FRONT FACE OPENING

- Aerodynamically angled top, bottom and side openings reduce turbulence and eliminate reverse flows
- Lower air foils are fabricated from 16ga type 316 stainless steel, number 4 finish

5 INTERIOR LINER MATERIALS

- Polyresin
- Stainless Steel
- PVC
- Polypropylene
- Custom materials available to fit specific requirements

6 BAFFLES

- Three section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

7 ELECTRICAL

Standard electrical fixtures comprise:

- Two 120V/20A T-slot duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

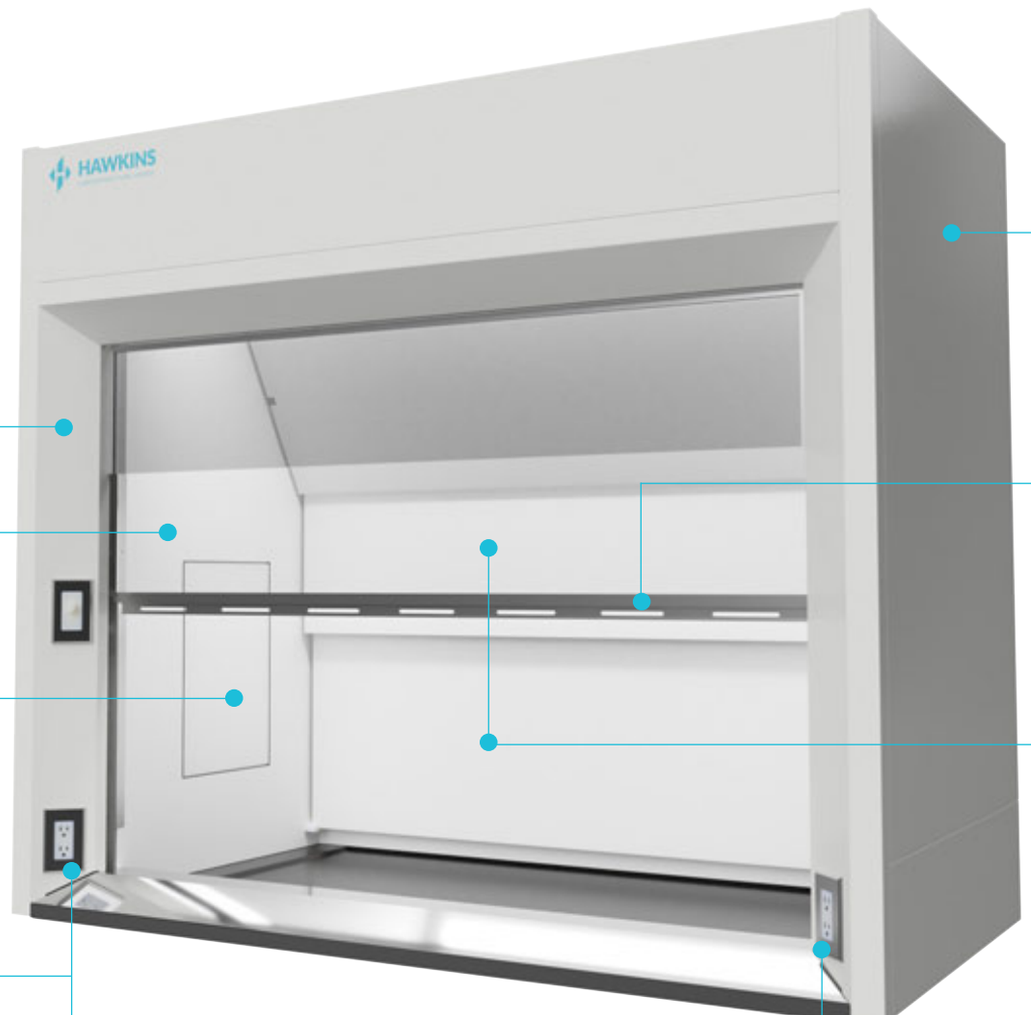
APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

TRACER GAS TESTING

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| ACCESSIBLE - ADA
STANDARD FEATURES
VERTICAL RISING SASH



1 SUPERSTRUCTURE

FRONT FACE OPENING 4

3 SASH

INTERIOR LINER 5

ACCESS PANEL 2

6 BAFFLES

ELECTRICAL 7

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).
- Colour coded accessible - ADA compliant handles and interior fittings
- Approved for use in North America

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination
- Materials approved for use in North America

4 LOW AIRFLOW ALARM/MONITORS

- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

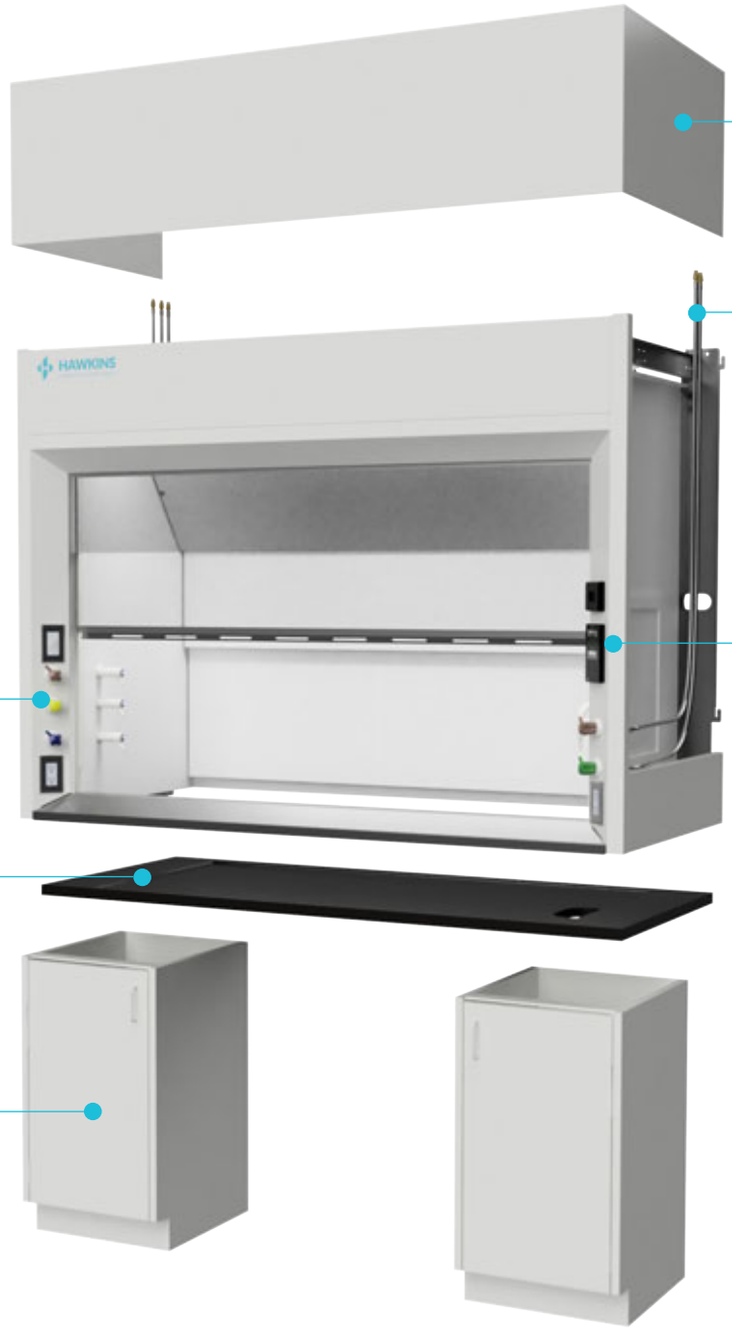
5 WORK SURFACES

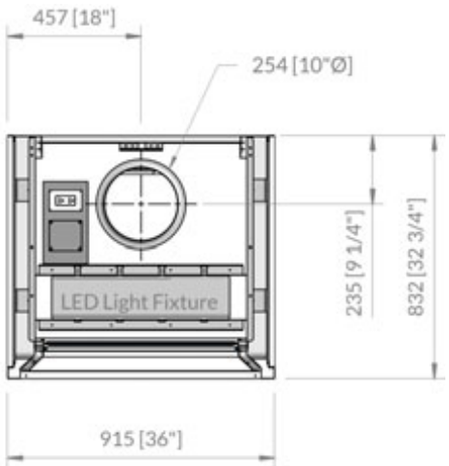
- Molded dished black solid epoxy
- Type 304 or type 316 stainless steel with anti spill edges
- Custom materials to suit specific requirements

6 BASE CABINETS

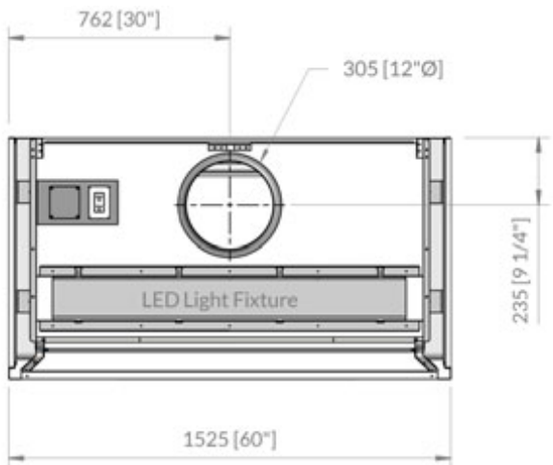
- Fixed Height - Accessible cabinets are - 825mm (32 1/2”) high
- General storage non-lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, polypropylene lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, all polypropylene construction.
- Flammable/solvent storage. All metal double wall construction.
  - FM, UL or ULC approved
- Tubular steel table support frames
  - Fixed Height
  - Adjustable - Electric

| ACCESSIBLE - ADA OPTIONS OVERVIEW VERTICAL RISING SASH

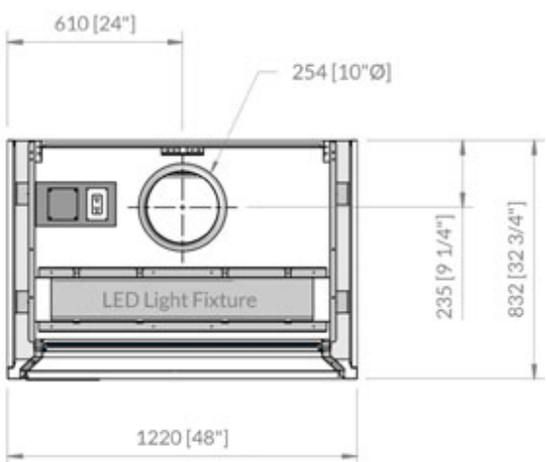




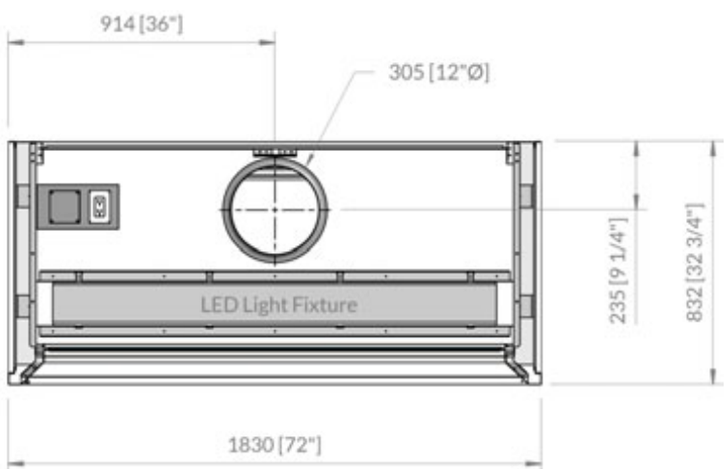
915mm
(36”) WIDE



1524mm
(60”) WIDE

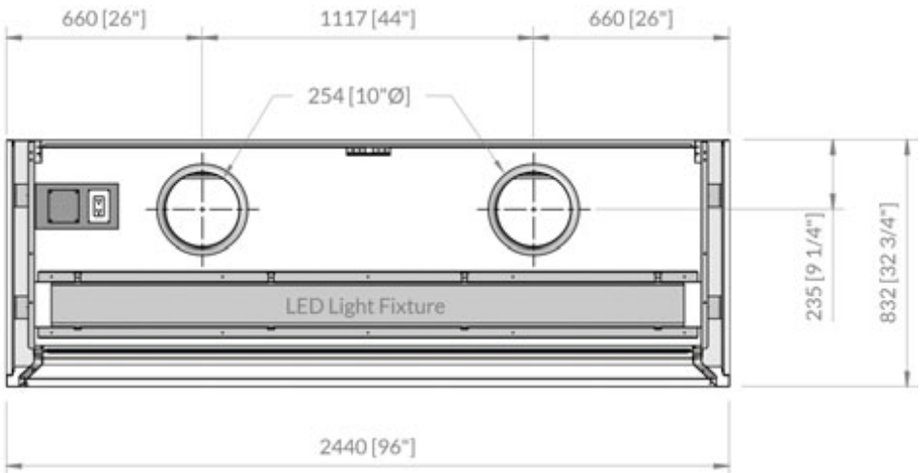


1220mm
(48”) WIDE

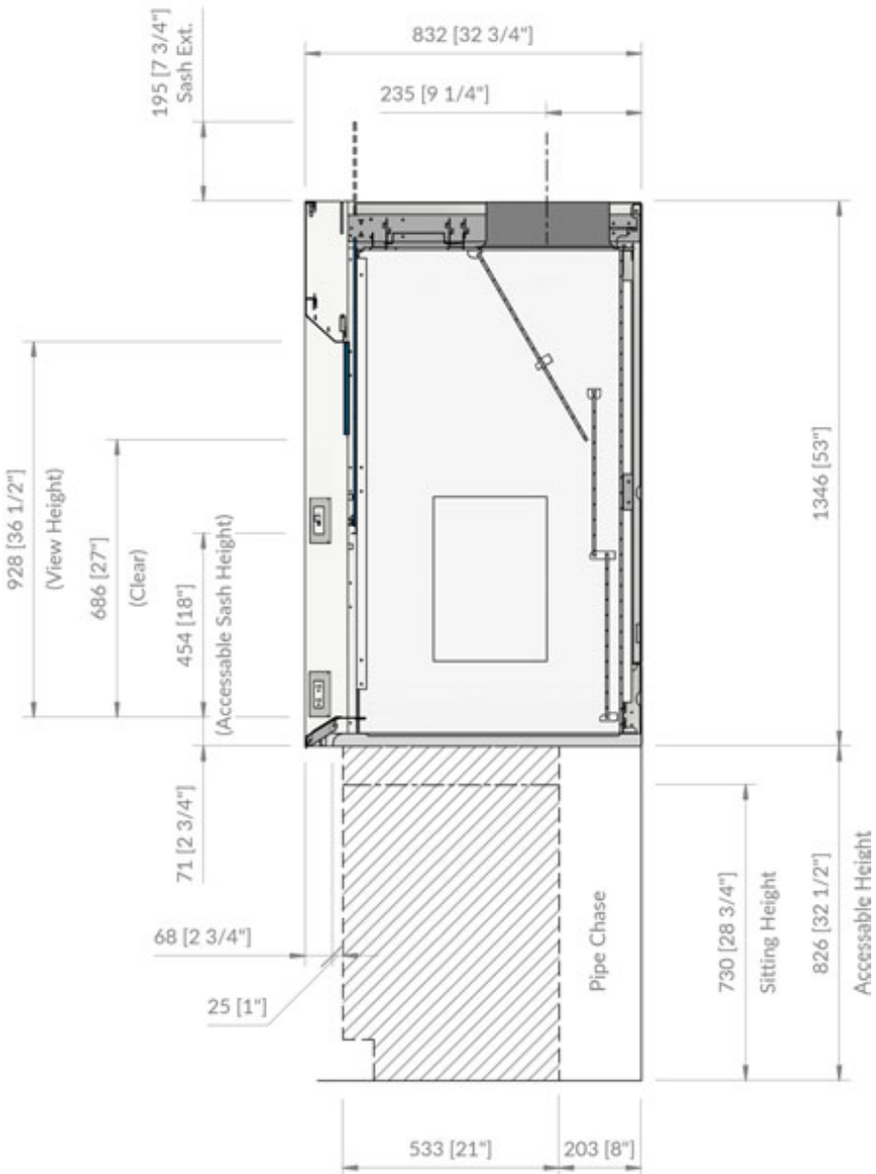


1830mm
(72”) WIDE

| ACCESSIBLE - ADA
EXHAUST COLLARS | MECHANICAL PIPING ROUGH-INS
VERTICAL RISING SASH



2440mm
(96") WIDE



INTERIOR LINER MATERIALS

1 2 3 - 48 PR

HOOD EXHAUST TYPE

1 - Constant Air Volume (CAV), Full By-Pass
2 - Constant Air Volume (CAV), Reduced By-Pass
3 - Variable Air Volume (VAV), Restricted By-Pass

SASH TYPE

1 - Full View Sash With Fixed View Panel
2 - Full View Sash
3 - Horizontal Sliding Sash Panels
4 - Combination Vertical Rising Sash/Horizontal Sliding Panes

SUPERSTRUCTURE TYPES

1 - Bench Mount - Standard Height
3 - Floor Mount (Walk-In)
4 - Radioisotope
5 - Perchloric Acid
6 - Accessible
7 - Distillation
12 - Pass Through (Double Sided)

HOOD WIDTH

915mm (36”)
1220mm (48”)
1525mm (60”)
1830mm (72”)
2440mm (96”)

INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

SW Stainless Steel: Type 316 (SW6) or Type 304 (SW4) stainless steel, 16 gauge, number 4 finish, all welded seamless construction. Interior corners have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Work surface is factory installed, mechanically fastened and silicone sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| ACCESSIBLE - ADA
| CONSTANT AIR VOLUME (CAV), FULL BY-PASS VERTICAL RISING SASH

An automatic by-pass system maintains a relatively constant exhaust volume. Face velocity is limited from increasing by more that four times when the vertical sash is lowered from full open to 6" open.

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

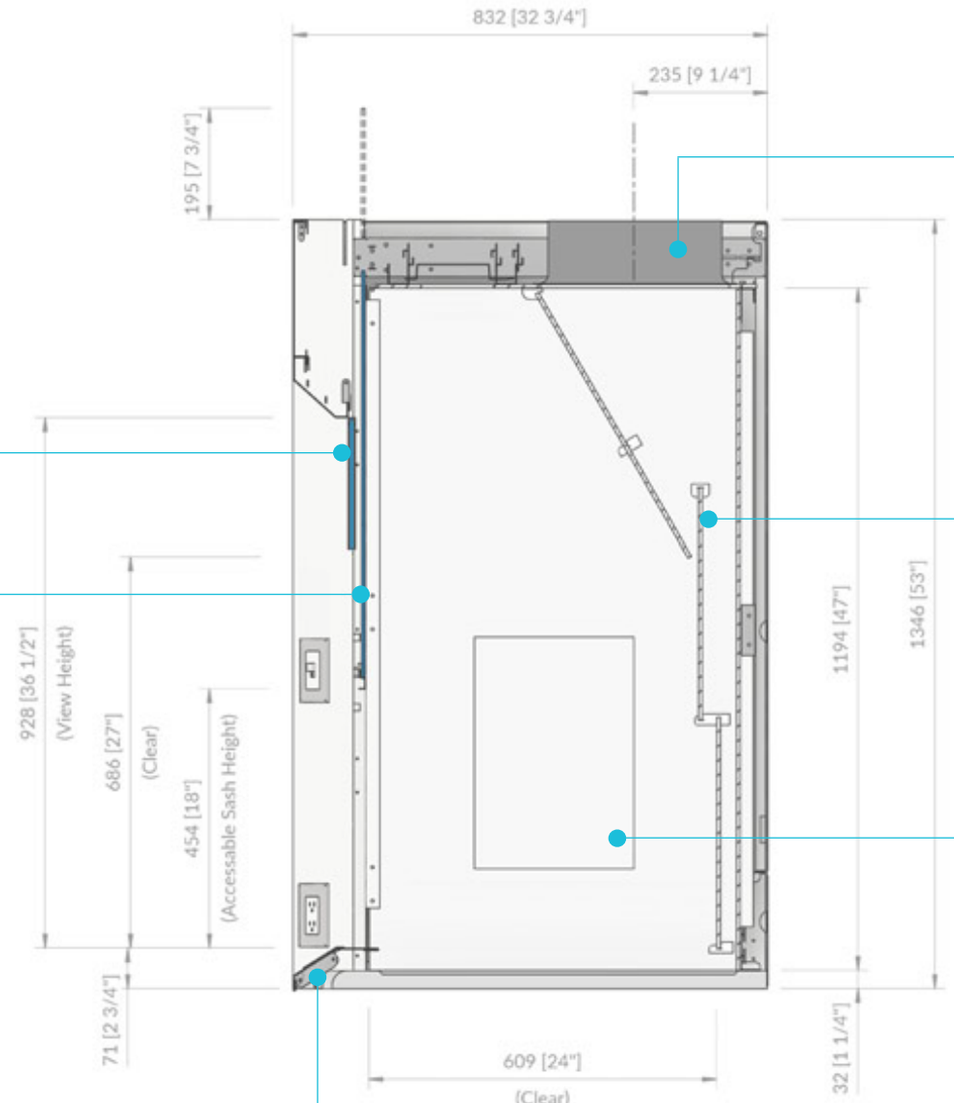
| ACCESSIBLE - ADA
CONSTANT AIR VOLUME (CAV), FULL BY-PASS
VERTICAL RISING SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

Fixed View Panel

Vertical rising 6mm (1/4") laminated safety glass sash is frameless "Full View" type with fixed view panel running in PVC guides. It is fully counter balanced using a single centre hung weight behind the hood with a continuous stainless steel sash cable and nylon ball bearing rollers. Sash pull is stainless steel, full length, low profile slotted design, I8 gauge type 316, number 4 finish.
A defeatable sash stop is provided at 250mm (18") open.

Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.



Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

915mm (36”) WIDE

Polyresin	116-36PR
Stainless Steel Type 316 (All Welded)	116-36SW6
Stainless Steel Type 304 (All Welded)	116-36SW4
Stainless Steel Type 316 (Stitch Welded)	116-36ST6
Stainless Steel Type 304 (Stitch Welded)	116-36ST4
PVC	116-36PV
Polypropylene	116-36PP

1525mm (60”) WIDE

Polyresin	116-60PR
Stainless Steel Type 316 (All Welded)	116-60SW6
Stainless Steel Type 304 (All Welded)	116-60SW4
Stainless Steel Type 316 (Stitch Welded)	116-60ST6
Stainless Steel Type 304 (Stitch Welded)	116-60ST4
PVC	116-60PV
Polypropylene	116-60P

1220mm (48”) WIDE

Polyresin	116-48PR
Stainless Steel Type 316 (All Welded)	116-48SW6
Stainless Steel Type 304 (All Welded)	116-48SW4
Stainless Steel Type 316 (Stitch Welded)	116-48ST6
Stainless Steel Type 304 (Stitch Welded)	116-48ST4
PVC	116-48PV
Polypropylene	116-48PP

1830mm (72”) WIDE

Polyresin	116-72PR
Stainless Steel Type 316 (All Welded)	116-72SW6
Stainless Steel Type 304 (All Welded)	116-72SW4
Stainless Steel Type 316 (Stitch Welded)	116-72ST6
Stainless Steel Type 304 (Stitch Welded)	116-72ST4
PVC	116-72PV
Polypropylene	116-72PP

| ACCESSIBLE - ADA
CONSTANT AIR VOLUME (CAV), FULL BY-PASS
VERTICAL RISING SASH

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*

2440mm
(96") WIDE

Polyresin	116-96PR
Stainless Steel Type 316 (All Welded)	116-96SW6
Stainless Steel Type 304 (All Welded)	116-96SW4
Stainless Steel Type 316 (Stitch Welded)	116-96ST6
Stainless Steel Type 304 (Stitch Welded)	116-96ST4
PVC	116-96PV
Polypropylene	116-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		36"	48"	60"	72"	96"
SASH OPENING*		5.00 sq. ft.	7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
SASH FULL OPEN (27")	80 FPM	400 @ .05	685 @ .14	770 @ .15	945 @ .22	1300 @ .18
	100 FPM	500 @ .08	730 @ .16	960 @ .22	1180 @ .29	1630 @ .24
SASH OPENING*		3.4 sq. ft.	4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
SASH 18" OPEN	80 FPM	270 @ .02	390 @ .06	510 @ .09	630 @ .13	870 @ .06
	l00 FPM	340 @ .04	490 @ .08	640 @ .13	790 @ .17	1090 @ .10

** Measured off the top of the work surface*

| ACCESSIBLE - ADA
VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS VERTICAL RISING SASH

Variable Air Volume fume hoods are used in conjunction with an electronic control system* which will maintain a constant face velocity regardless of sash height. As the sash is raised and lowered, the VAV system will vary the exhaust volume of the hood in direct response to the sash position.

** SUPPLIED BY OTHERS.*

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

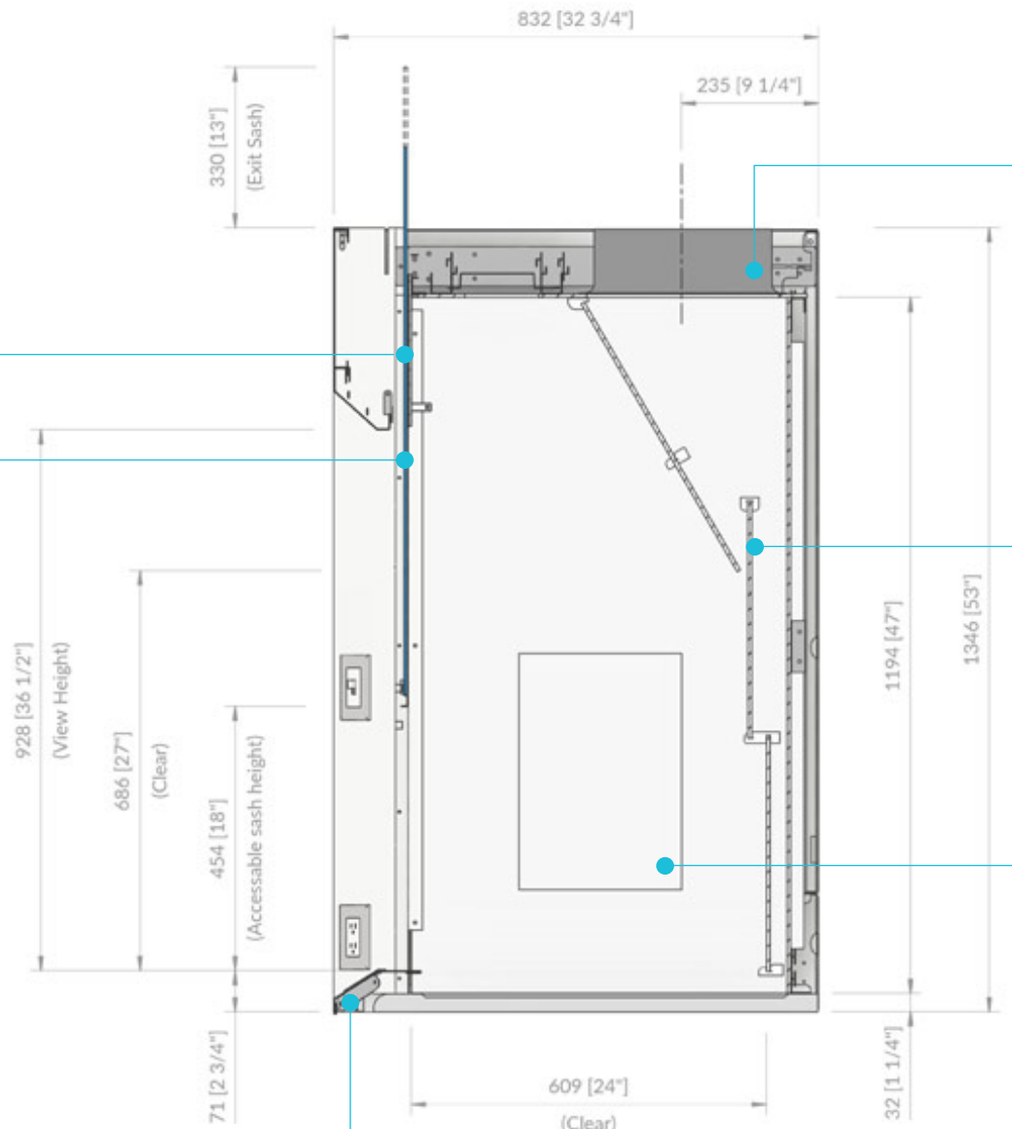
| ACCESSIBLE - ADA
VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS
VERTICAL RISING SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

By-pass blocker

Vertical rising 6mm (1/4") laminated safety glass sash is frameless "Full View" type with fixed view panel running in PVC guides. It is fully counter balanced using a single centre hung weight behind the hood with a continuous stainless steel sash cable and nylon ball bearing rollers. Sash pull is stainless steel, full length, low profile slotted design, I8 gauge type 316, number 4 finish..

Sash pull is slotted Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.



Exhaust collars are bell shaped, round in configuration and does not require a rectangular-to-round transition.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

915mm (36”) WIDE

Polyresin	326-36PR
Stainless Steel Type 316 (All Welded)	326-36SW6
Stainless Steel Type 304 (All Welded)	326-36SW4
Stainless Steel Type 316 (Stitch Welded)	326-36ST6
Stainless Steel Type 304 (Stitch Welded)	326-36ST4
PVC	326-36PV
Polypropylene	326-36PP

1525mm (60”) WIDE

Polyresin	326-60PR
Stainless Steel Type 316 (All Welded)	326-60SW6
Stainless Steel Type 304 (All Welded)	326-60SW4
Stainless Steel Type 316 (Stitch Welded)	326-60ST6
Stainless Steel Type 304 (Stitch Welded)	326-60ST4
PVC	326-60PV
Polypropylene	326-60PP

1220mm (48”) WIDE

Polyresin	326-48PR
Stainless Steel Type 316 (All Welded)	326-48SW6
Stainless Steel Type 304 (All Welded)	326-48SW4
Stainless Steel Type 316 (Stitch Welded)	326-48ST6
Stainless Steel Type 304 (Stitch Welded)	326-48ST4
PVC	326-48PV
Polypropylene	326-48PP

1830mm (72”) WIDE

Polyresin	326-72PR
Stainless Steel Type 316 (All Welded)	326-72SW6
Stainless Steel Type 304 (All Welded)	326-72SW4
Stainless Steel Type 316 (Stitch Welded)	326-72ST6
Stainless Steel Type 304 (Stitch Welded)	326-72ST4
PVC	326-72PV
Polypropylene	326-72PP

| ACCESSIBLE - ADA
VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS
VERTICAL RISING SASH

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available*

2440mm (96") WIDE

Polyresin 311-96PR	
Stainless Steel Type 316 (All Welded)	326-96SW6
Stainless Steel Type 304 (All Welded)	326-96SW4
Stainless Steel Type 316 (Stitch Welded)	326-96ST6
Stainless Steel Type 304 (Stitch Welded)	326-96ST4
PVC	326-96PV
Polypropylene	326-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		36"	48"	60"	72"	96"
SASH OPENING*		5.00 sq. ft.	7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
SASH FULL OPEN (27")	80 FPM	400 @ .05	685 @ .14	770 @ .15	945 @ .22	1300 @ .18
	100 FPM	500 @ .08	730 @ .16	960 @ .22	1180 @ .29	1630 @ .24
SASH OPENING*		3.4 sq. ft.	4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
SASH 18" OPEN	80 FPM	270 @ .02	390 @ .06	510 @ .15	630 @ .13	870 @ .06
	l00 FPM	340 @ .04	490 @ .08	640 @ .13	790 @ .17	1090 @ .10

** Measured off the top of the work surface*

HAWKINS
LABORATORY FUME HOODS

ACCESSIBLE - ADA
BUILD YOUR FUME HOOD

FILLABLE PDF
To view the PDF properly download Adobe Acrobat Reader
Adobe Acrobat

PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW
- ○ Constant Air Volume (CAV)
- ○ Variable Air Volume (VAV)

2 FUME HOOD TYPE
- ✓ General Chemistry
  Accessible - ADA

3 SASH TYPE
- ○ Vertical Rising
- ○ Combination

4 LINER MATERIAL
- ○ Polyresin (PR)
- ○ S/S All Welded T316 (SW6)
- ○ S/S Stitch Welded T316 (ST6)
- ○ S/S All Welded T304 (SW4)
- ○ S/S Stitch Welded T304 (ST4)
- ○ Other

Refer to page 12 of the catalog for liner material description.

- ○ Ceiling Closure Panels
- ○ Blower Switch (Wiring NIC)
- ○ Sash Stop at 18”

Mechanical Services
_____
_____
_____
_____
_____

Cup Sink
- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Base Cabinets Left Side
- ○ Acid Storage*
- ○ Flammable Storage*
- ○ General Storage*

Additional Options
_____
_____
_____

* 826mm (32½”) high

Pre-piping
- ○ Above the hood
- ○ Below the hood

Low Air Flow Alarm
- ○ AFA500 (CAV Only)
- ○ AFA1000 (CAV Only)
- ○ AFA4000 (CAV Only)

Mechanical Services
_____
_____
_____
_____
_____

Cup Sink
- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Work Surface
- ○ Epoxy
- ○ Stainless Steel, T316

Base Cabinets Right Side
- ○ Acid Storage*
- ○ Flammable Storage*
- ○ General Storage*
- ○ Table Frame - Fixed Height*

Additional Options
_____
_____
_____

HAWKINS
LABORATORY FUME HOODS

BACK TO MAIN

ACCESSIBLE - ADA FUME HOOD COMBINATION RISING SASH

| ACCESSIBLE - ADA
ACCESSIBLE FUME HOODS
OVERVIEW

What Makes A fume Hood “Accessible”

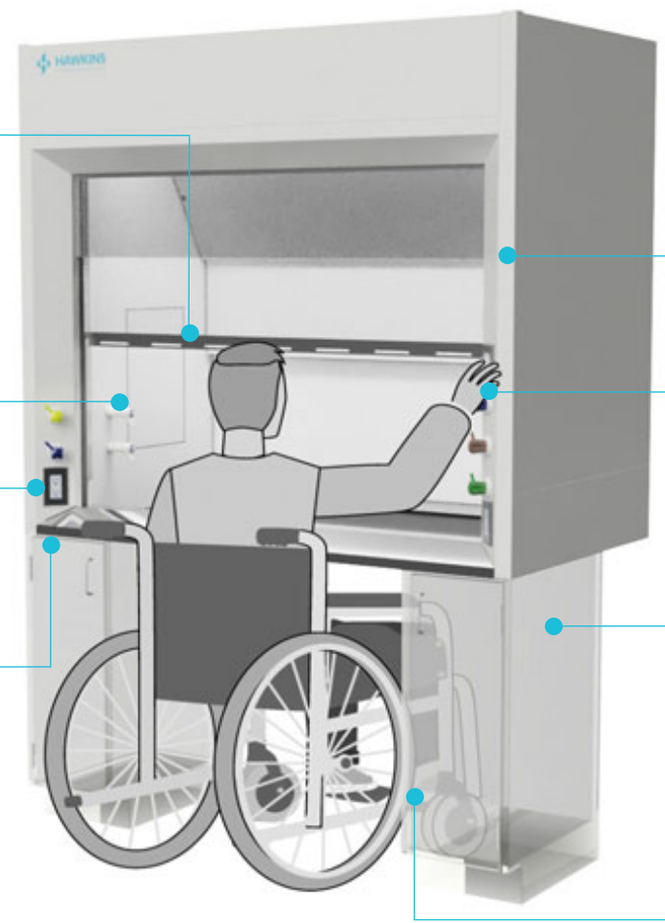
Canadian Federal and Provincial Accessibility Regulations and the Americans with Disabilities Act (ADA) objectives are to provide UNIVERSAL ACCESSIBILITY for disabled persons in the workplace. It should be noted that these jurisdictions **do not list or describe** (at the time of this publishing) any reference **specifically to fume hoods** as a product group or as a work area. The Regulations deal generally with wheelchair accessibility, under counter accessibility and minimum/maximum **forward, side** and **inside reach** when accessing controls or fixtures in a building. In order to meet these general requirement, H. H. Hawkins Ltd. interpretation of Accessible Fume Hoods have been designed with:

Maximum sash opening height has a maximum **side reach** of 1370mm (54”) off finished floor.

Mechanical fixtures are installed for a maximum **forward reach** of 1220mm (48”) off finished floor.

Electrical fixtures are installed for a maximum **forward reach** of 1220mm (48”) off finished floor.

Work surface height is to be a **minimum** of 685mm (27”) to a **maximum** of 865mm (34”) off finished floor



Low air flow alarm/monitors are installed for a maximum **side reach** of 1370mm (54”) off the floor.

Interior mounted mechanical goosenecks and outlets are installed toward the front of hood to limit interior **inside reach** to less than 610mm (24”).

Accessible-ADA fixed height base cabinets are 825mm (32 ½”) high. Sit down fixed height base cabinets are 730mm (28 ¾”) high

Clear floor space between supporting base cabinets is to be a **minimum** of 480mm (19”) deep by 760mm (32”) wide.

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Full By-Pass
- Variable Air Volume (VAV), Restricted By-Pass
- 915mm (36”), 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide
- Bench Mount

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 INTERIOR ACCESS PANELS

Fully framed, self supporting

- Flush mount
- Fully framed and air tight
- No gaskets required

3 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 930mm (36.5”) high
- Type 316 stainless steel full length sash pull
- Maximum sash opening height 685mm (27”)
- Combination vertical rising/ Horizontal sliding
- Defeatable sash stop at 250mm (18”) open

4 FRONT FACE OPENING

- Aerodynamically angled top, bottom and side openings reduce turbulence and eliminate reverse flows
- Lower air foils are fabricated from 16ga type 316 stainless steel, number 4 finish

5 INTERIOR LINER MATERIALS

- Polyresin
- Stainless Steel
- PVC
- Polypropylene
- Custom materials available to fit specific requirements

6 BAFFLES

- Three section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

7 ELECTRICAL

Standard electrical fixtures comprise:

- Two 120V/20A T-slot duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

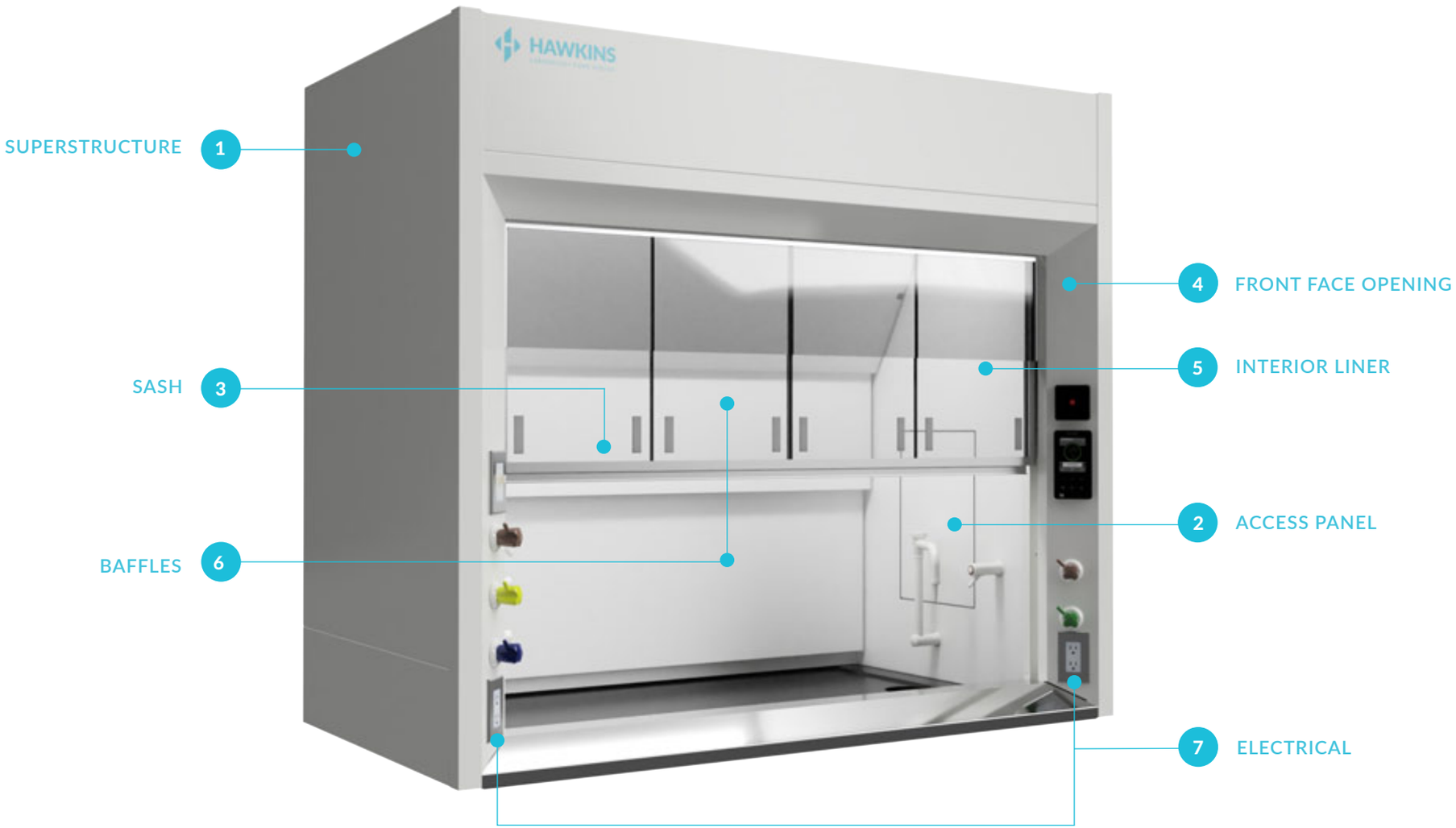
APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

TRACER GAS TESTING

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| ACCESSIBLE - ADA STANDARD FEATURES COMBINATION SASH



1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).
- Colour coded accessible - ADA compliant handles and interior fittings
- Approved for use in North America

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination
- Materials approved for use in North America

4 LOW AIRFLOW ALARM/MONITORS

- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

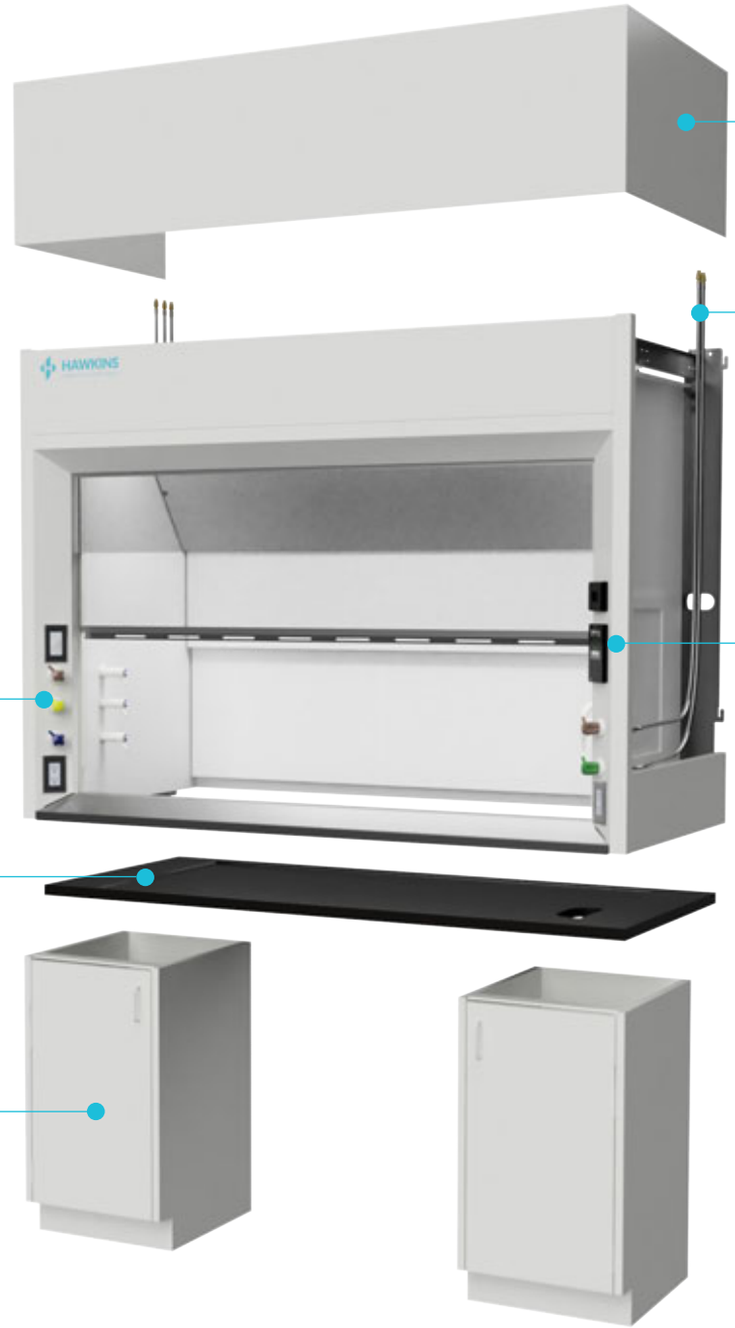
5 WORK SURFACES

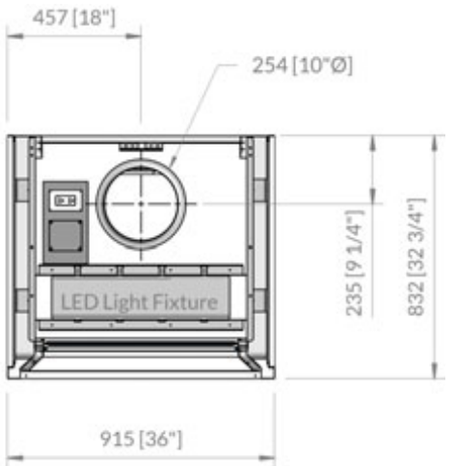
- Molded dished black solid epoxy
- Type 304 or type 316 stainless steel with anti spill edges
- Custom materials to suit specific requirements

6 BASE CABINETS

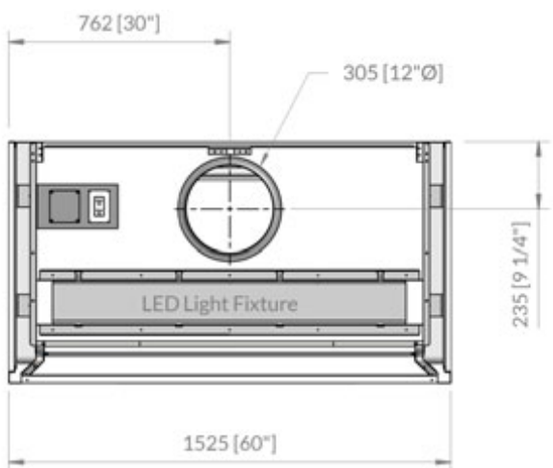
- Fixed Height - Accessible cabinets are - 825mm (32 1/2”) high
- General storage non-lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, polypropylene lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, all polypropylene construction.
- Flammable/solvent storage. All metal double wall construction.
  - FM, UL or ULC approved
- Tubular steel table support frames
  - Fixed Height
  - Adjustable - Electric

| ACCESSIBLE - ADA OPTIONS OVERVIEW COMBINATION SASH

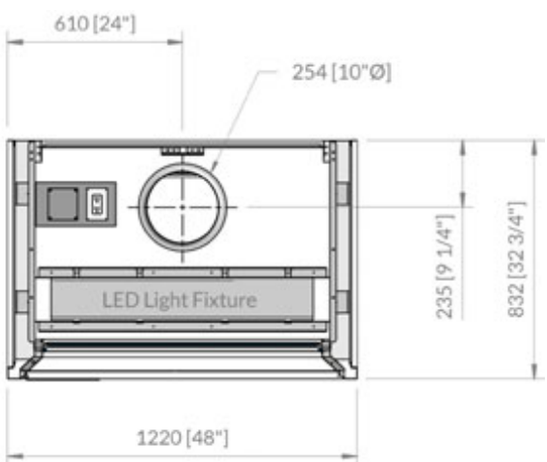




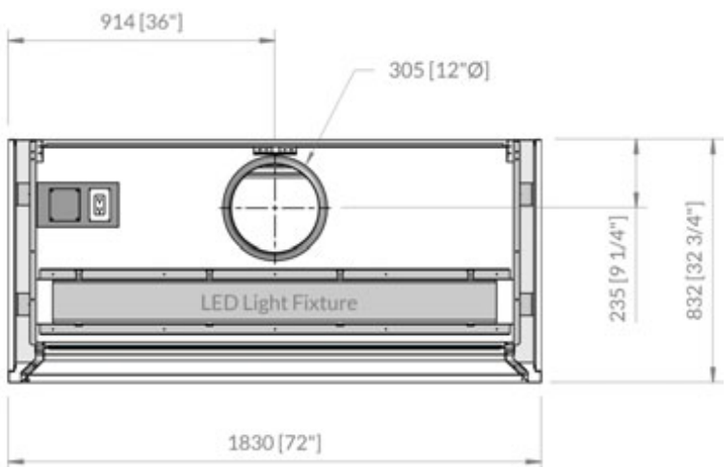
915mm
(36”) WIDE



1524mm
(60”) WIDE

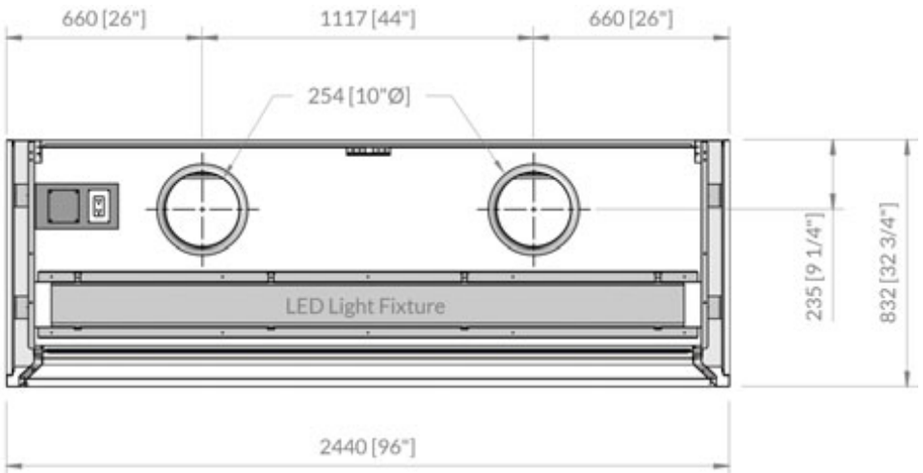


1220mm
(48”) WIDE

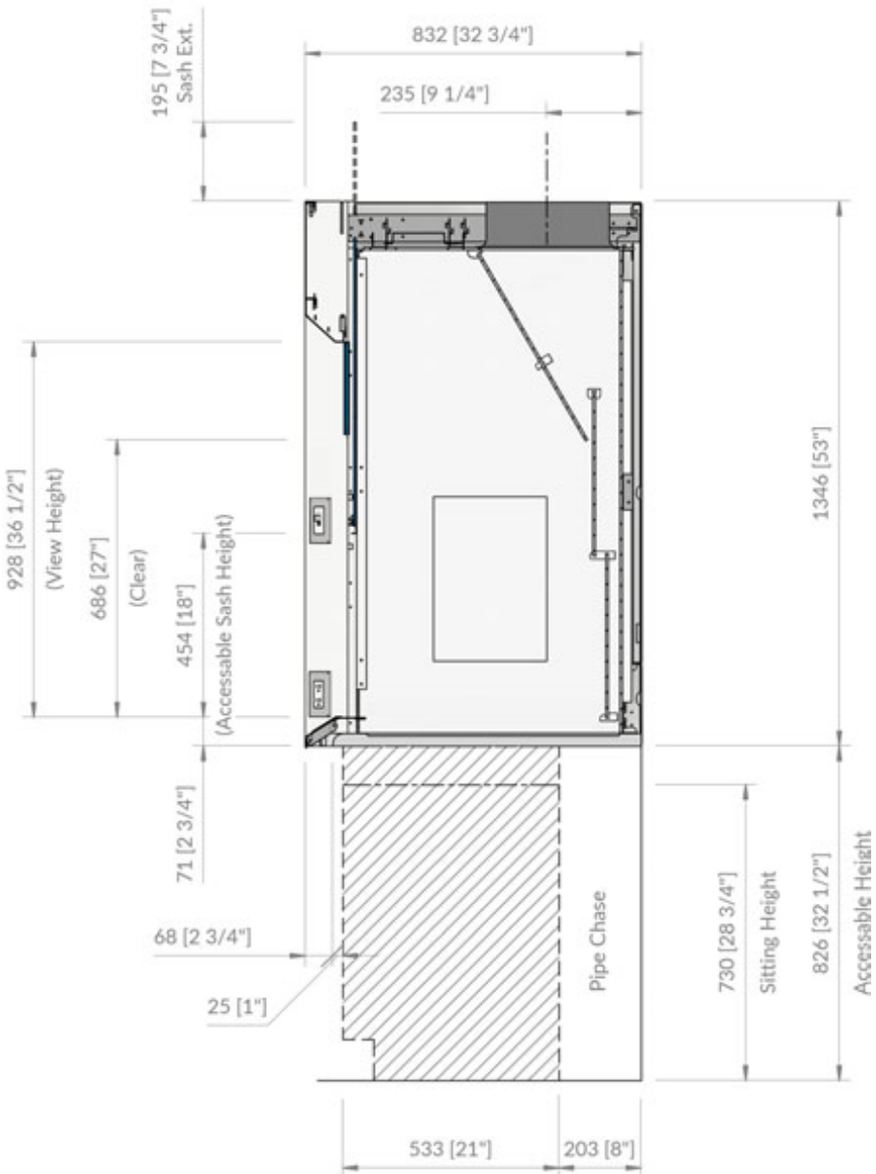


1830mm
(72”) WIDE

| ACCESSIBLE - ADA
EXHAUST COLLARS | MECHANICAL PIPING ROUGH-INS
COMBINATION SASH



2440mm
(96") WIDE



INTERIOR LINER MATERIALS

1 2 3 - 48 PR

HOOD EXHAUST TYPE

1 - Constant Air Volume (CAV), Full By-Pass
2 - Constant Air Volume (CAV), Reduced By-Pass
3 - Variable Air Volume (VAV), Restricted By-Pass

SASH TYPE

1 - Full View Sash With Fixed View Panel
2 - Full View Sash
3 - Horizontal Sliding Sash Panels
4 - Combination Vertical Rising Sash/Horizontal Sliding Panes

SUPERSTRUCTURE TYPES

1 - Bench Mount - Standard Height
3 - Floor Mount (Walk-In)
4 - Radioisotope
5 - Perchloric Acid
6 - Accessible
7 - Distillation
12 - Pass Through (Double Sided)

HOOD WIDTH

915mm (36”)
1220mm (48”)
1525mm (60”)
1830mm (72”)
2440mm (96”)

INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

SW Stainless Steel: Type 316 (SW6) or Type 304 (SW4) stainless steel, 16 gauge, number 4 finish, all welded seamless construction. Interior corners have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Work surface is factory installed, mechanically fastened and silicone sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is Type 316 stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| ACCESSIBLE - ADA
CONSTANT AIR VOLUME (CAV), FULL REDUCED-PASS COMBINATION SASH

Reduced By-Pass Constant Air Volume Fume Hoods incorporate a partial upper by-pass between the roof of the hood and the fully closed vertical sash assembly. This by-pass will draw air over the top of the sash assembly when the hood is being operated using the horizontal sliding sashes. This reduces the face velocity through the open horizontal sash openings. When the fume hood is being operated with the horizontal sliding sashes, the horizontal sash panes should not be closed completely. **This will force the exhaust air through the lower air foil opening reducing the efficiency of the hood. When using the fume hood in the vertical sash configuration, the horizontal sash panes must be closed.**

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

| ACCESSIBLE - ADA
CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS COMBINATION SASH

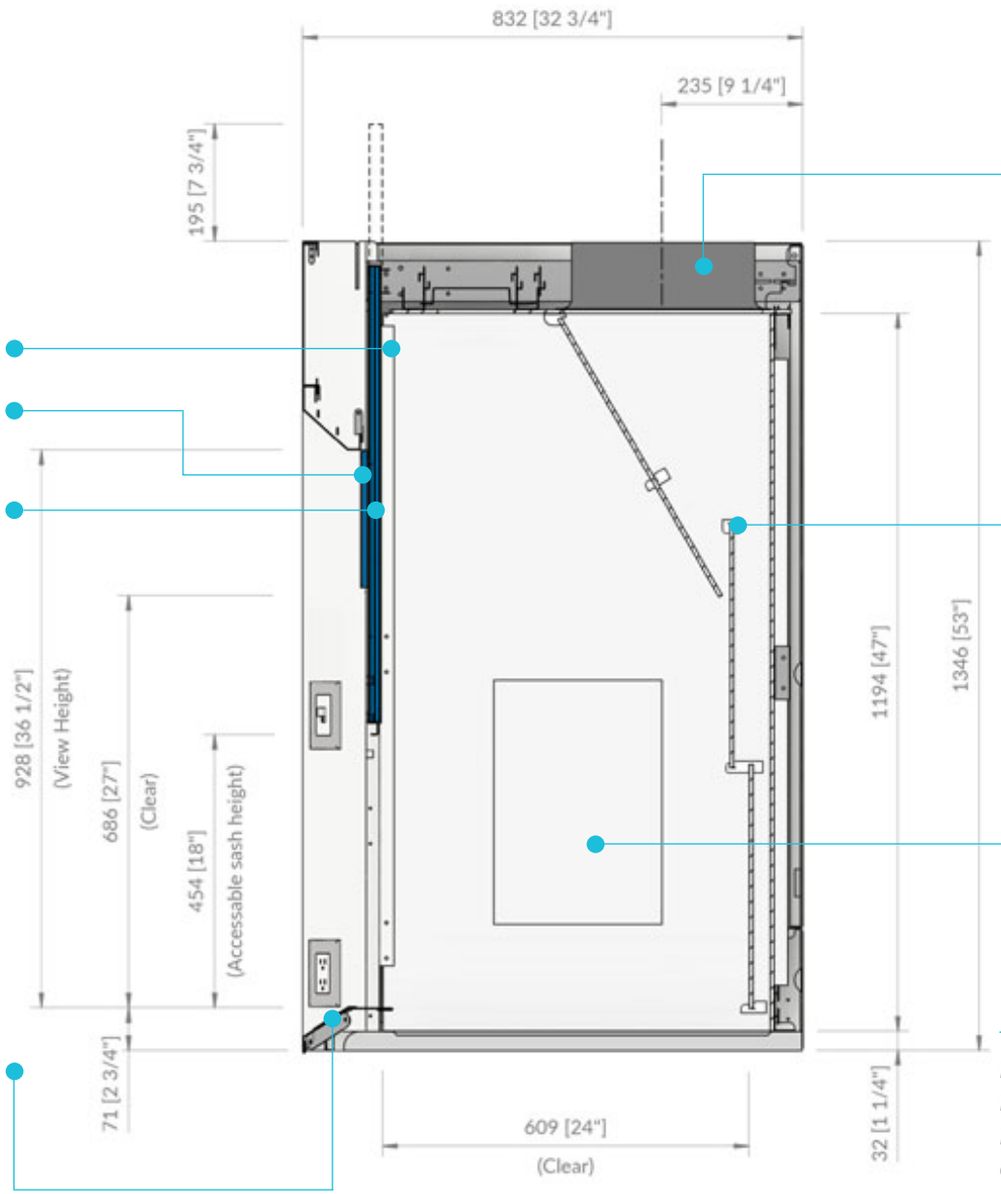
H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

Reduced By- Pass

Fixed View Panel

Sash assembly is a "Full View" type with full height panes set in an I8 gauge, Type 316 stainless number 4 finish frame. It is fully counter balanced using a single center hung weight running behind the behind the hood and a continuous stainless steel sash cable and nylon ball bearing rollers. **Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time**. Panes have polished vertical edges and run on top hung ball bearing plastic rollers in an aluminum track. Sash pull is a low profile design, is full length and fabricated I8 gauge Type 316, number 4 finish stainless steel. **Horizontal sash panes are designed and sized to be as a full height safety sash**

Type 316, 16 gauge stainless steel lower airfoil incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.



Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

1220mm (48”) WIDE

Polyresin	246-48PR
Stainless Steel Type 316 (All Welded)	246-48SW6
Stainless Steel Type 304 (All Welded)	246-48SW4
Stainless Steel Type 316 (Stitch Welded)	246-48ST6
Stainless Steel Type 304 (Stitch Welded)	246-48ST4
PVC	246-48PV
Polypropylene	246-48PP

1525mm (60”) WIDE

Polyresin	246-60PR
Stainless Steel Type 316 (All Welded)	246-60SW6
Stainless Steel Type 304 (All Welded)	246-60SW4
Stainless Steel Type 316 (Stitch Welded)	246-60ST6
Stainless Steel Type 304 (Stitch Welded)	246-60ST4
PVC	246-60PV
Polypropylene	246-60P

1830mm (72”) WIDE

Polyresin	246-72PR
Stainless Steel Type 316 (All Welded)	246-72SW6
Stainless Steel Type 304 (All Welded)	246-72SW4
Stainless Steel Type 316 (Stitch Welded)	246-72ST6
Stainless Steel Type 304 (Stitch Welded)	246-72ST4
PVC	246-72PV
Polypropylene	246-72PP

| ACCESSIBLE - ADA
CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS
COMBINATION SASH

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*

2440mm
(96") WIDE

Polyresin	246-96PR
Stainless Steel Type 316 (All Welded)	246-96SW6
Stainless Steel Type 304 (All Welded)	246-96SW4
Stainless Steel Type 316 (Stitch Welded)	246-96ST6
Stainless Steel Type 304 (Stitch Welded)	246-96ST4
PVC	246-96PV
Polypropylene	246-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
VERTICAL SASH FULL OPEN (27")	80 FPM	685 @ .14	770 @ .15	945 @ .22	1300 @ .18
	100 FPM	730 @ .16	960 @ .22	1180 @ .29	1630 @ .24
SASH OPENING*		4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
VERTICAL SASH 18" OPEN	80 FPM	390 @ .06	510 @ .09	630 @ .13	870 @ .06
	l00 FPM	490 @ .08	640 @ .14	790 @ .17	1090 @ .10

** Measured off the top of the work surface*

| ACCESSIBLE - ADA
VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS COMBINATION SASH

Restricted By-Pass Variable Air Volume fume hoods are used in conjunction with an electronic control system*which will maintain a constant face velocity regardless of the sash opening. As the vertical rising sash and the horizontal sliding panes are opened and closed, the VAV system will vary the exhaust volume of the hood in direct response to the sash opening.
When the hood is being used in the vertical sash configuration the horizontal sash panes need to be fully closed. When the fume hood is being operated with the horizontal sliding sashes, the vertical sash assembly needs to be fully closed. The horizontal sash panes should not be closed completely as this will force all the exhaust air through the lower air foil opening reducing the efficiency of the hood.
**SUPPLIED BY OTHERS*

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120Vac/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

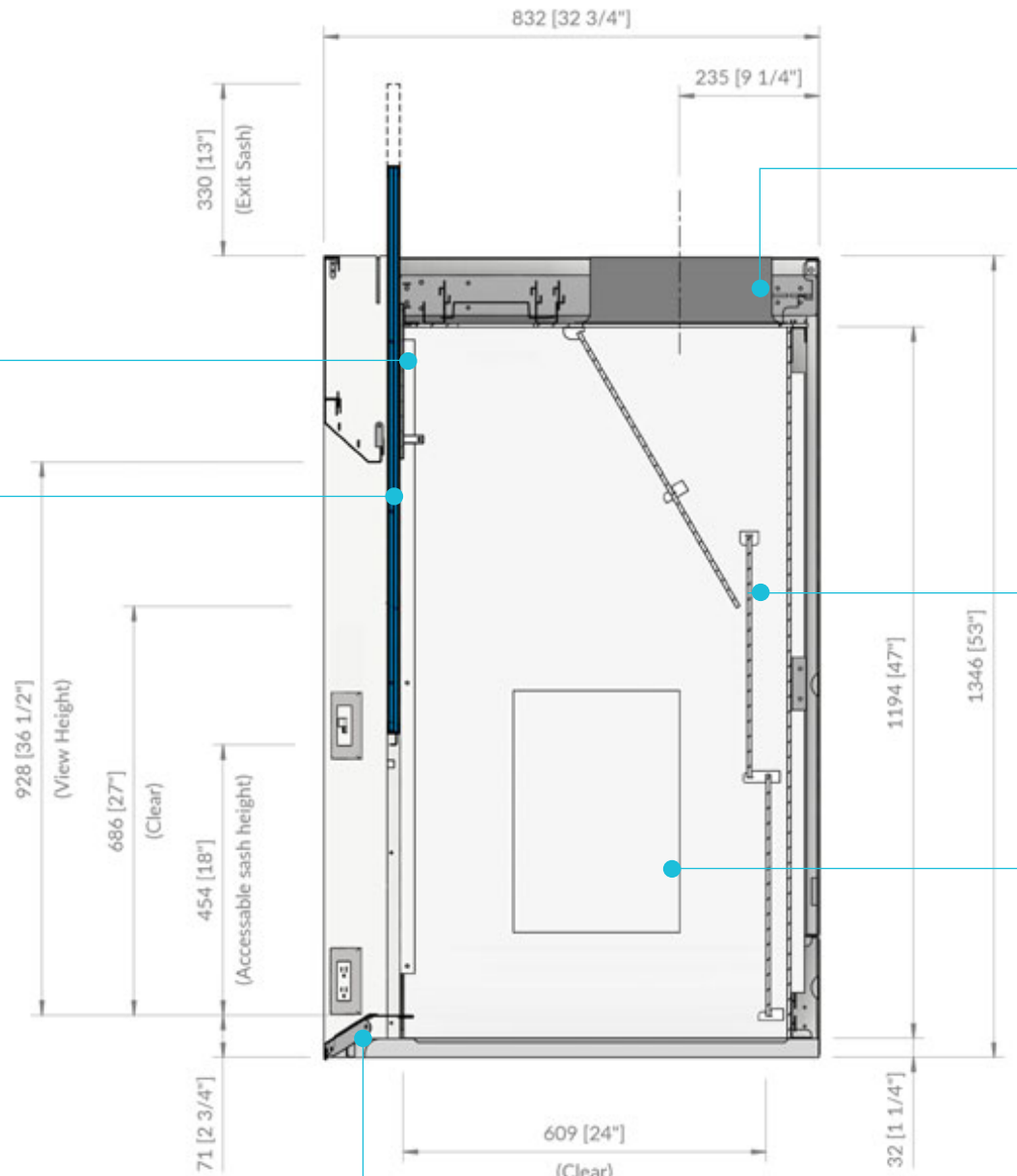
| ACCESSIBLE - ADA
VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS
COMBINATION SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

By-pass blocker

Sash assembly is a "Full View" type with full height panes set in an 18 gauge Type 316 stainless number 4 finish frame. It is fully counter balanced using a single center hung weight running behind the hood and a continuous stainless steel sash cable and nylon ball bearing rollers. **Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time**. Panes have polished vertical edges and run on ball bearing plastic rollers in an aluminum track. Sash pull is a low profile design, is full length and fabricated 18 gauge Type 316 number 4 finish stainless steel. **Horizontal sash panes are designed and sized to be as a full height safety sash**

Type 316 16 gauge stainless steel lower airfoil incorporates a slot between airfloil and work surfaces to provide a sweep of air over the work surface



Exhaust collars are bell shaped, round in configuration and does not require a rectangular-to-round transition.

Three piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

1220mm (48”) WIDE

Polyresin	346-48PR
Stainless Steel Type 316 (All Welded)	346-48SW6
Stainless Steel Type 304 (All Welded)	346-48SW4
Stainless Steel Type 316 (Stitch Welded)	346-48ST6
Stainless Steel Type 304 (Stitch Welded)	346-48ST4
PVC	346-48PV
Polypropylene	346-48PP

1525mm (60”) WIDE

Polyresin	346-60PR
Stainless Steel Type 316 (All Welded)	346-60SW6
Stainless Steel Type 304 (All Welded)	346-60SW4
Stainless Steel Type 316 (Stitch Welded)	346-60ST6
Stainless Steel Type 304 (Stitch Welded)	346-60ST4
PVC	346-60PV
Polypropylene	346-60PP

1830mm (72”) WIDE

Polyresin	346-72PR
Stainless Steel Type 316 (All Welded)	346-72SW6
Stainless Steel Type 304 (All Welded)	346-72SW4
Stainless Steel Type 316 (Stitch Welded)	346-72ST6
Stainless Steel Type 304 (Stitch Welded)	346-72ST4
PVC	346-72PV
Polypropylene	346-72PP

| ACCESSIBLE - ADA
VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS
COMBINATION SASH

- *Other liner materials can be supplied to meet specific requirements.*
- *Base cabinets, work surfaces and plumbing fixtures are optional.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available*

2440mm (96") WIDE

Polyresin 311-96PR	
Stainless Steel Type 316 (All Welded)	346-96SW6
Stainless Steel Type 304 (All Welded)	346-96SW4
Stainless Steel Type 316 (Stitch Welded)	346-96ST6
Stainless Steel Type 304 (Stitch Welded)	346-96ST4
PVC	346-96PV
Polypropylene	346-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
VERTICAL SASH FULL OPEN (27")	80 FPM	685 @ .14	770 @ .15	945 @ .22	1300 @ .18
	100 FPM	730 @ .16	960 @ .22	1180 @ .29	1630 @ .24
SASH OPENING*		4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
VERTICAL SASH 18" OPEN	80 FPM	390 @ .06	510 @ .15	630 @ .13	870 @ .06
	l00 FPM	490 @ .08	640 @ .13	790 @ .17	1090 @ .10

** Measured off the top of the work surface*

HAWKINS
LABORATORY FUME HOODS

ACCESSIBLE - ADA
BUILD YOUR FUME HOOD

FILLABLE PDF
To view the PDF properly download Adobe Acrobat Reader
Adobe Acrobat

PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW
- ○ Constant Air Volume (CAV)
- ○ Variable Air Volume (VAV)

2 FUME HOOD TYPE
- ✓ General Chemistry
  Accessible - ADA

3 SASH TYPE
- ○ Vertical Rising
- ○ Combination

4 LINER MATERIAL
- ○ Polyresin (PR)
- ○ S/S All Welded T316 (SW6)
- ○ S/S Stitch Welded T316 (ST6)
- ○ S/S All Welded T304 (SW4)
- ○ S/S Stitch Welded T304 (ST4)
- ○ Other

Refer to page 12 of the catalog for liner material description.

- ○ Ceiling Closure Panels
- ○ Blower Switch (Wiring NIC)
- ○ Sash Stop at 18”

Mechanical Services
_____
_____
_____
_____
_____

Cup Sink
- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Base Cabinets Left Side
- ○ Acid Storage*
- ○ Flammable Storage*
- ○ General Storage*

Additional Options
_____
_____
_____

* 826mm (32½”) high

Pre-piping
- ○ Above the hood
- ○ Below the hood

Low Air Flow Alarm
- ○ AFA500 (CAV Only)
- ○ AFA1000 (CAV Only)
- ○ AFA4000 (CAV Only)

Mechanical Services
_____
_____
_____
_____
_____

Cup Sink
- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Work Surface
- ○ Epoxy
- ○ Stainless Steel, T316

Base Cabinets Right Side
- ○ Acid Storage*
- ○ Flammable Storage*
- ○ General Storage*
- ○ Table Frame - Fixed Height*

Additional Options
_____
_____
_____

HAWKINS
LABORATORY FUME HOODS

BACK TO MAIN

PASS THROUGH (DOUBLE SIDED) FUME HOOD — VERTICAL RISING SASHES — CONSTANT AIR VOLUME

HOOD DESIGN

- Pass-through (double sided) fume hoods are designed to be used for teaching and demonstration where experiments can be observed and performed from both sides of the hood.
- Fume hood can also be used as a pass-through from two classrooms or the prep room to the classroom.

HOOD TYPE

- Fume hood is a Constant Air Volume Restricted By-pass type with two vertical rising sashes .
- Bench Mount
- 914mm (36”), 1218mm (48”), 1524mm (60”) and 1829mm (72”) wide

FINISH

- Finish is an electrostatic powder coating applied to all surfaces.
- Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has hard and smooth chemical resisting high-grade finish.

1 SUPERSTRUCTURE

- Heavy-duty galvanized steel framework, double wall construction, is rigid and self-supporting. Maximum wall thickness shall be 4 3/4”.
- Exterior shell: Front 45° posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.
- Access to mechanical service valves and electrical fixture boxes is by removable exterior side panels and an interior access panel.

2 INTERIOR ACCESS PANELS

- Fully framed and self-supporting
- Fabricated of the same material as the liner
- Flush mount and air tight
- Do not require gaskets.

3 SASHES

- Vertically rising sashes are 6mm (1/4”) laminated safety glass, full view type, 930mm high (36 1/2”) with a maximum opening of 710mm (27 1/2”).
- They are equipped with a sash interlock which will only allow one sash to opened at a time.
- Each sash is fitted with a sash stop at 450mm (18”) open.
- Each sash is independently counter balanced using a counterweight running on plastic ball bearing pulleys and a stainless steel cable.

4 FRONT FACE OPENING

- Airfoil type, angled to eliminate eddies and promote smooth entry of air into the hood.
- Lower air foils are fabricated from I6 gauge, type 3I6 stainless steel, number 4 finish.

5 INTERIOR LINER MATERIALS

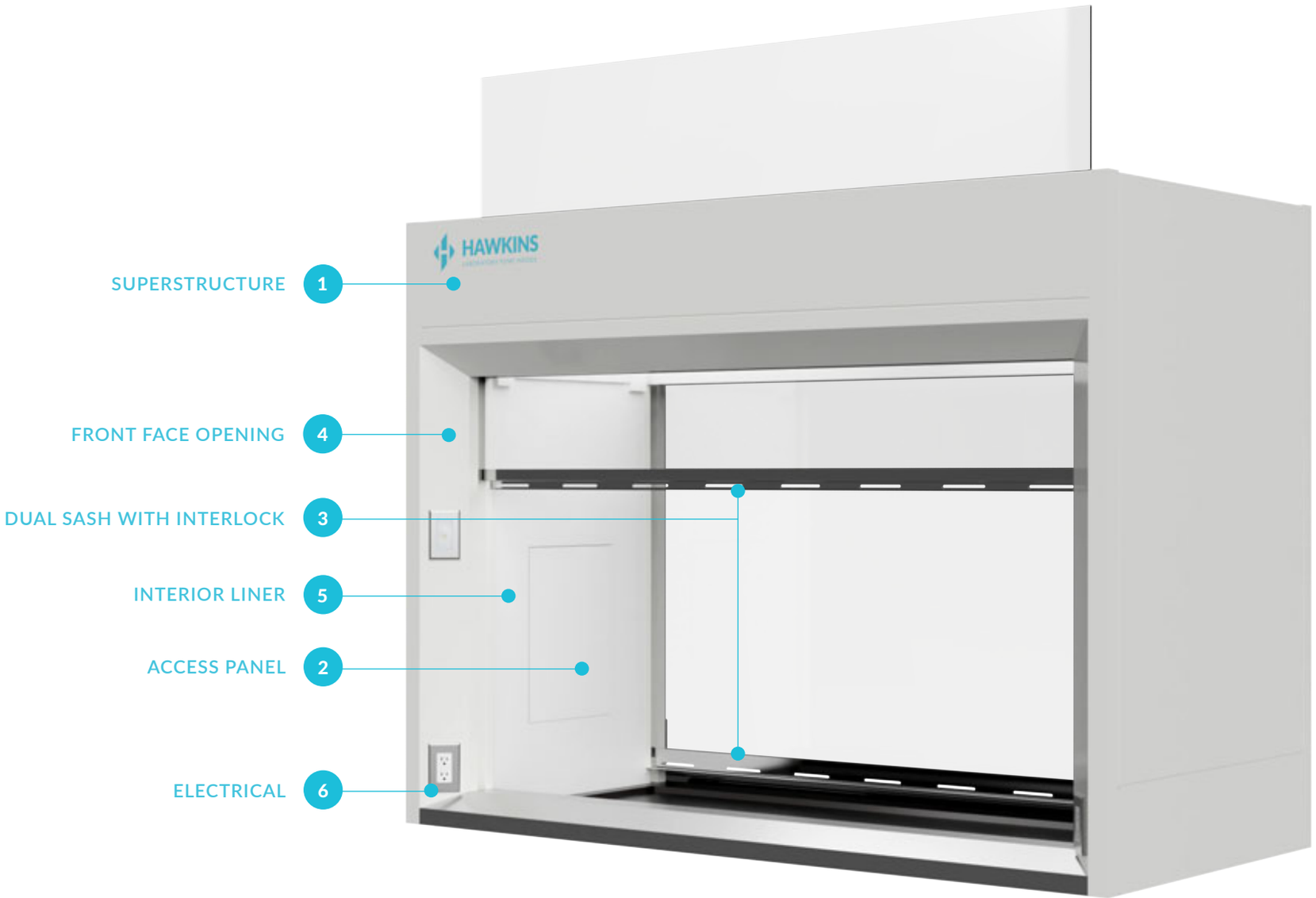
- Polyresin (PR): 6mm(1/4”) thick, solid fibreglass reinforced pressed thermoset resin board.
- Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption.
- Flame spread is less than 20, smoke spread is less than 300 (UL 723/ ASTM E84-80). Flexural strength is a minimum of I9,000 PSI (D790).
- Material is white in colour throughout its thickness thereby offering superior light levels.

6 ELECTRICAL

- Vapour sealed LED light fixture is installed on the outside top of fume hood interior with a removable housing for ease of lamp replacement.
- Light fixture is isolated from the fumehood interior by means of a laminated safety glass panel cemented and sealed in place.
- Four I20 volt 20 amp T-slot duplex grounding type receptacles, two on each face of the hood, are factory installed on the front posts of the hoods.
- A three way light switch is factory installed on each face of the hood.
- All fume hoods are factory pre-wired in a single circuit to a roof mounted junction box using only CSA/UL certified electrical components

APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002


SUPERSTRUCTURE
1
FRONT FACE OPENING
4
DUAL SASH WITH INTERLOCK
3
INTERIOR LINER
5
ACCESS PANEL
2
ELECTRICAL
6
HAWKINS

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the underside ceiling
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination

4 LOW AIRFLOW ALARM/MONITORS

- Factory Installed on one face of hood only
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 WORK SURFACES

- Molded dished black solid epoxy
- Type 304 or type 316 stainless steel with anti spill edges
- Custom materials to suit specific requirements

6 BASE CABINETS

- General storage non-lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, polypropylene lined. Exterior fabricated from:
  - Baked enamel steel
  - Wood veneer
  - SEFA 8M and 8W-2010 certified
- Acid/corrosives storage, all polypropylene construction.
- Flammable/solvent storage. All metal double wall construction.
  - FM, UL or ULC approved
- Tubular steel table support frames

1 CEILING CLOSURE PANEL

3 PRE-PIPING

2 MECHANICAL SERVICE FIXTURES (ONE SIDE OF HOOD ONLY)

4 LOW AIRFLOW ALARM/MONITOR

7 KEYED SASH LOCKS TO LOCK SASHES IN CLOSED POSITION

5 WORK SURFACE

6 BASE CABINETS

8 EXTENDED DEPTH FINISHED BACK PANEL

| CONSTANT AIR VOLUME (CAV), RESTRICTED BY-PASS

Restricted By-Pass has the By-Pass blocked off so that all supply air will go through the open sash area.

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

Standard electrical fixtures comprise two 120V/20A T-slot duplex receptacles on each face of the hood, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

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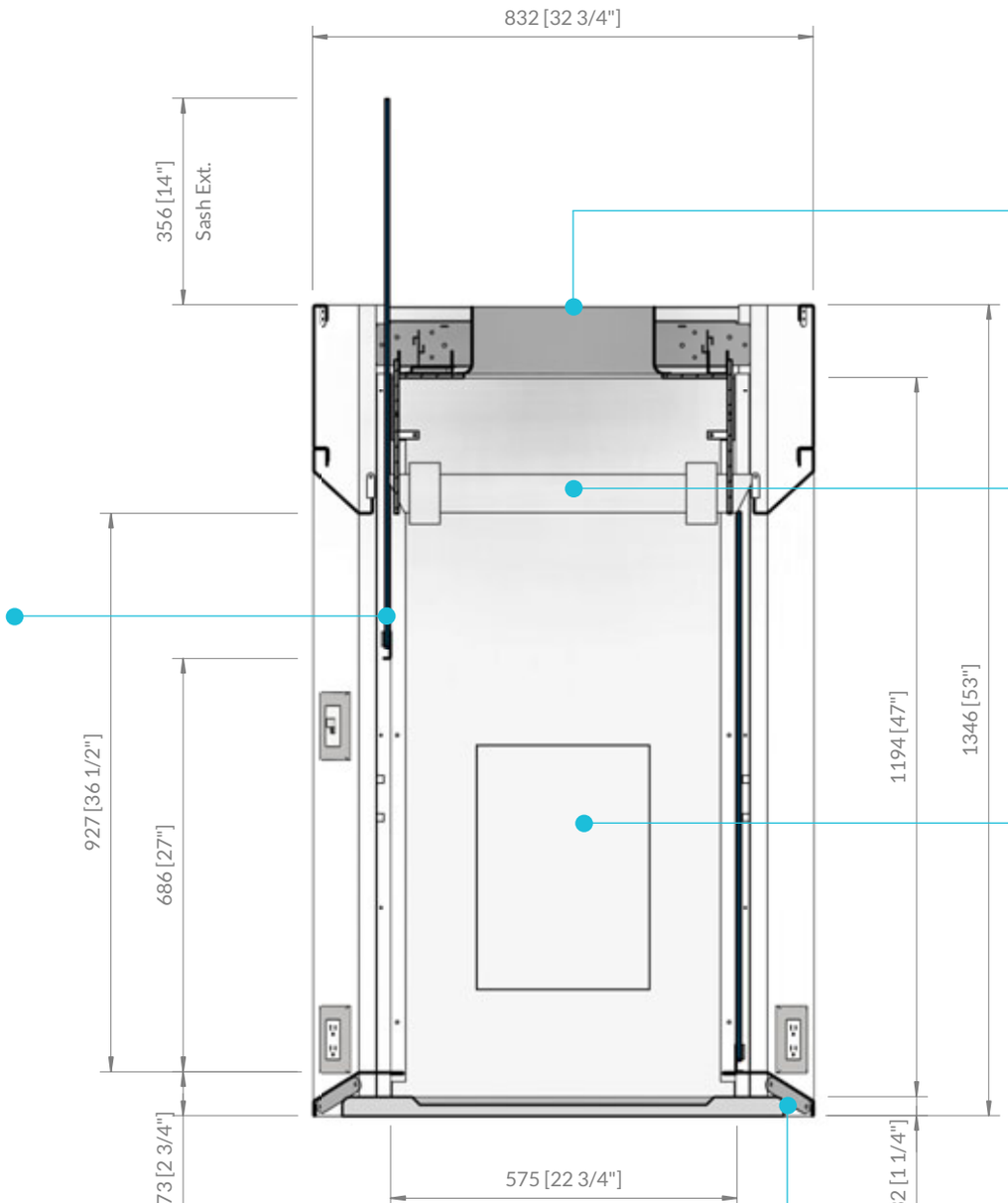


Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Sash interlock which will only allow one sash to opened at a time.

Dual sashes are 6mm (1/4") laminated safety glass, full view type, 930mm high (36 1/2") with a maximum opening of 710mm (27 1/2"). Each sash is fitted with a sash stop at 450mm (18") open. Each sash is independently counter balanced using a counterweight running on plastic ball bearing pulleys and a stainless steel cable. Sash pull is stainless steel, full length, low profile slotted design, 18 gauge, type 316, number 4 finish.

NOTE : Hood is designed and intended to be used with only ONE sash open at on time

Interior access panels is flush mounted, fully framed and air tight. No gaskets required.

Type 316, 16 gauge stainless steel lower airfoils incorporates a slot between airfoil and work surface to provide a sweep of air over the work surface.

915mm (36”) WIDE

Polyresin 2212-36PR

1525mm (60”) WIDE

Polyresin 2212-60-PR

1830mm (72”) WIDE

Polyresin 2212-72-PR

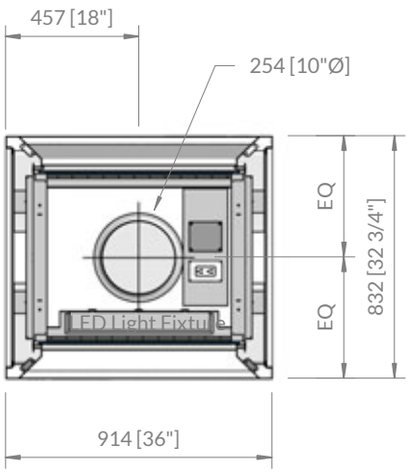
1220mm (48”) WIDE

Polyresin 2212-48-PR

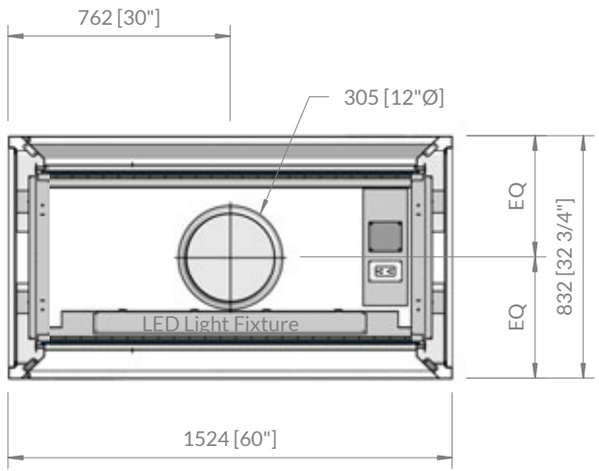
HOOD WIDTH		36"	48"	60"	72"
SASH OPENING *		5.00 sq. ft.	7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.
SASH FULL OPEN (27”)	80 FPM	400 @ .05	685 @ .14	770 @ .15	945 @ .22
	100 FPM	500 @ .08	730 @ .16	960 @ .22	1180 @ .29
SASH OPENING *		3.40 sq. ft.	4.90 sq. ft.	6.40 sq. ft.	7.90 sq. ft.
SASH 18” OPEN	80 FPM	270 @ .02	390 @ .06	510 @ .09	630 @ .13
	100 FPM	340 @ .04	490 @ .08	640 @ .13	790 @ .17

* *Measured off the top of the work surface.*

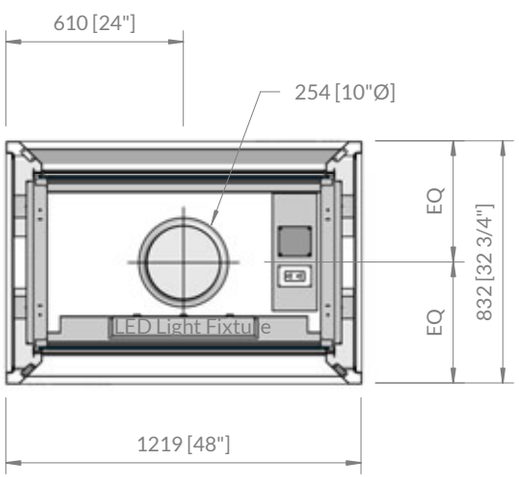
* ***Calculated with one sash fully closed.***



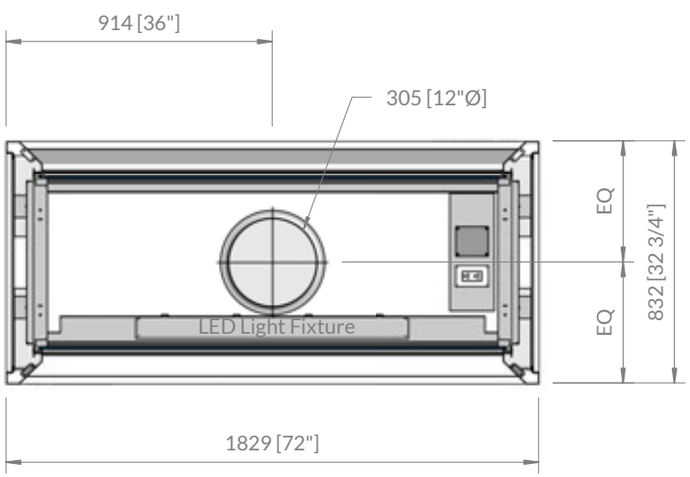
915mm (36”) WIDE



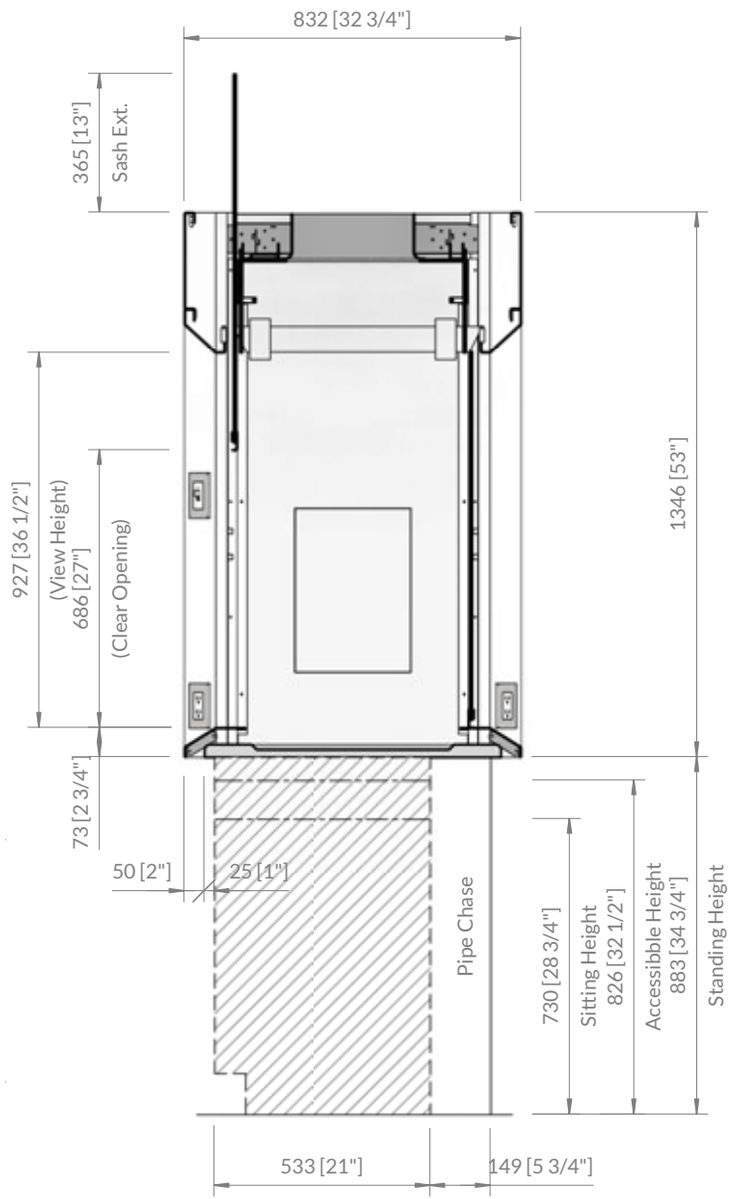
1525mm (60”) WIDE



1220mm (48”) WIDE



1830mm (72”) WIDE



HAWKINS
LABORATORY FUME HOODS

PASS THROUGH (DOUBLE SIDED) BUILD YOUR FUME HOOD

FILLABLE PDF

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Adobe Acrobat

PROJECT _____

_____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW

✔ Constant Air Volume

2 FUME HOOD TYPE

✔ Pass Through (Double Sided)

3 LINER MATERIAL

✔ Polyresin (PR)

Refer to page 04 of the catalog for liner material description.

Pre-piping
- ○ Above the hood
- ○ Below the hood

Low Air Flow Alarm
- ○ (Both Faces of Hood)
- ○ (One Face of Hood Only)
  - ○ AFA500
  - ○ AFA1000

Mechanical Services Operated From
- ○ (Both Faces of Hood)
- ○ (One Face of Hood Only)

_____
_____
_____
_____
_____

Cup Sink
- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

○ Sash Stop at 18”

Base Cabinets Left Side
- ○ Acid Storage
- ○ Flammable Storage
- ○ Standard Storage
- ○ Table Frame

Additional Options
_____
_____
_____

○ Ceiling Closure Panels

Blower Switch (Wiring NIC)
- ○ (Both Faces of Hood)
- ○ (One Face of Hood Only)

Mechanical Services Operated From
- ○ (Both Faces of Hood)
- ○ (One Face of Hood Only)

_____
_____
_____
_____
_____

Cup Sink
- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Keyed Sash Locks
- ○ (One Face of Hood Only)

Work Surface
- ○ Epoxy
- ○ Stainless Steel, T316

Base Cabinets Right Side
- ○ Acid Storage
- ○ Flammable Storage
- ○ Standard Storage
- ○ Table Frame
- ○ Extended Depth Back Panels

FLOOR MOUNT (WALK-IN)
FUME HOOD — DUAL VERTICAL RISING SASHES

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Full By-Pass
- Variable Air Volume (VAV), Restricted By-Pass
- 915mm (36”), 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and upper side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 INTERIOR ACCESS PANELS

Fully framed, self supporting

- Flush mount
- Fully framed and air tight
- No gaskets required

3 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 1880mm (74”) high
- Type 316 stainless steel full length sash pulls
- Maximum sash opening height 1625mm (64”)
- Dual vertical rising

4 FRONT FACE OPENING

- Aerodynamically angled top, and side openings reduce turbulence and eliminate reverse flows

5 INTERIOR LINER MATERIALS

- Polyresin
- Stainless Steel
- PVC
- Polypropylene
- Custom materials available to fit specific requirements

6 BAFFLES

- Five section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

7 LEVELING FEET

- Built in for ease of installation

8 ELECTRICAL

Standard electrical fixtures comprise:

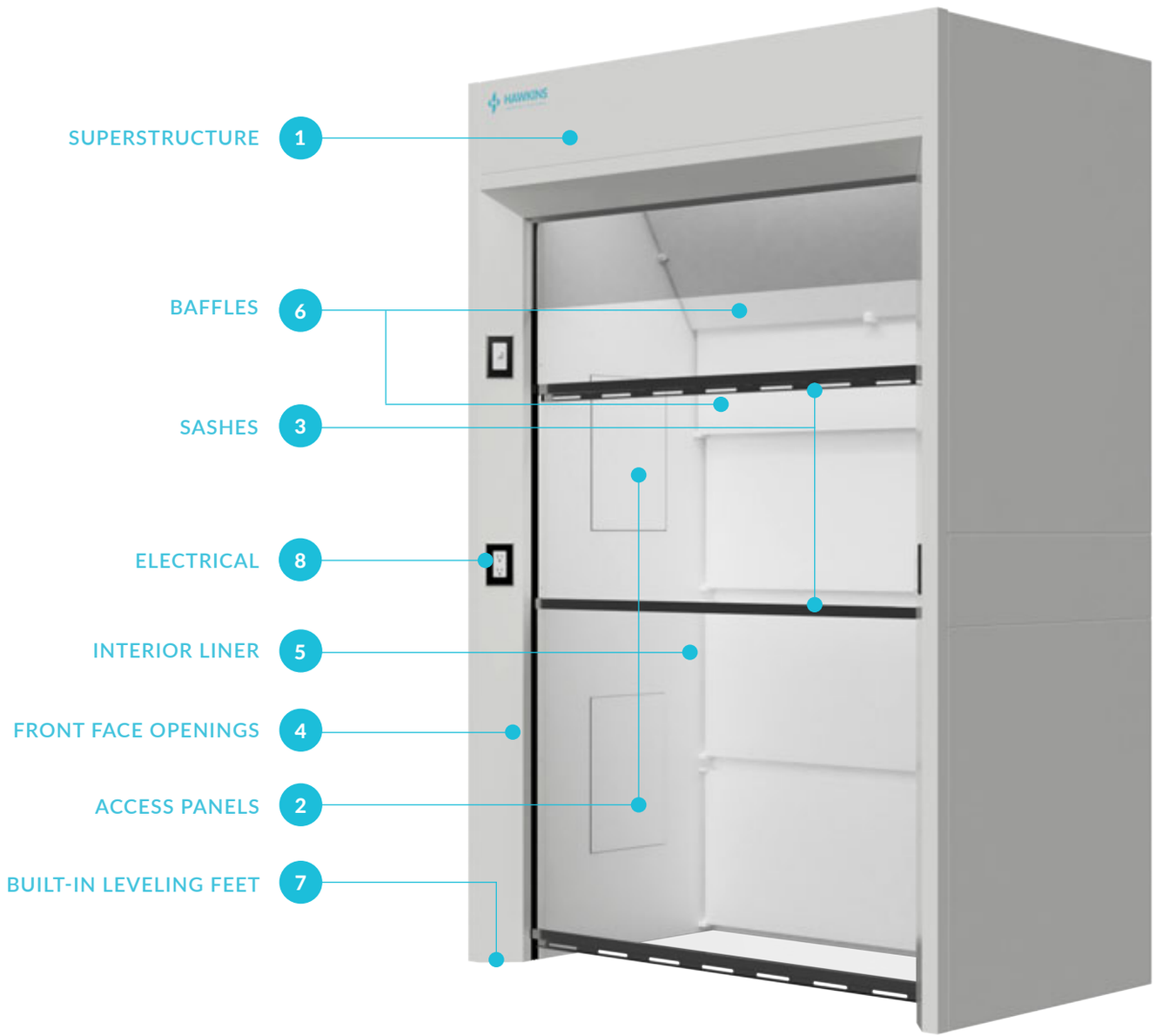
- Two 120V/20A duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

TRACER GAS TESTING

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.


SUPERSTRUCTURE 1
BAFFLES 6
SASHES 3
ELECTRICAL 8
INTERIOR LINER 5
FRONT FACE OPENINGS 4
ACCESS PANELS 2
BUILT-IN LEVELING FEET 7

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination

4 LOW AIRFLOW ALARM/MONITORS

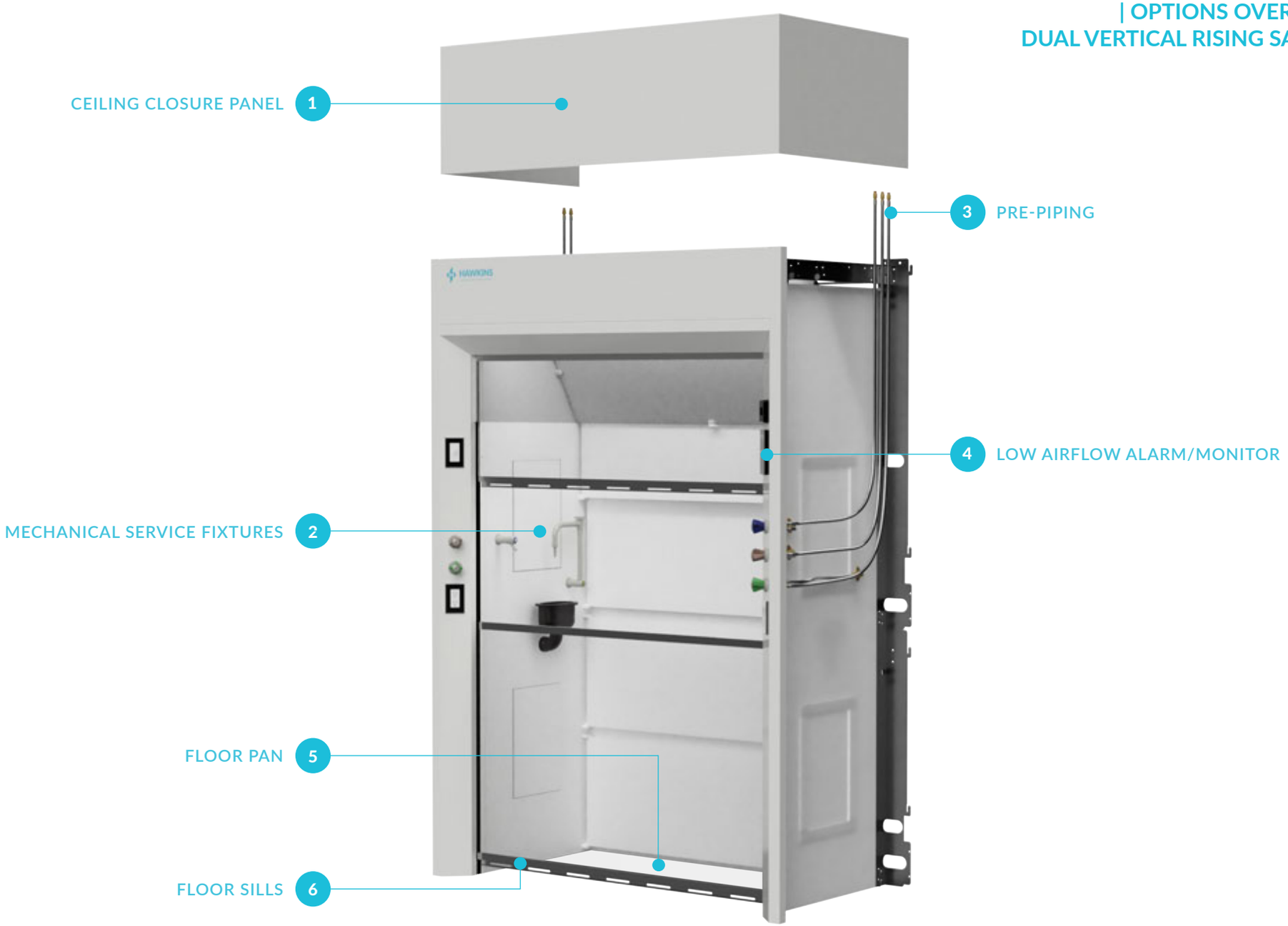
- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 FLOOR PANS

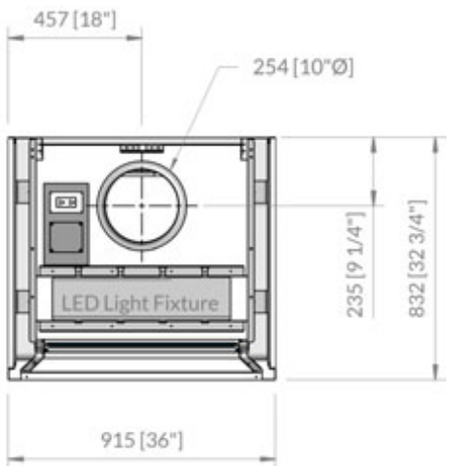
- To contain spills
- Raised edges 12mm (1/2”)
- Liquid tight
- Type 304 or Type 316 18 gauge stainless steel
- Galvanized, 18 gauge
- Polyethylene

6 FLOOR SILLS

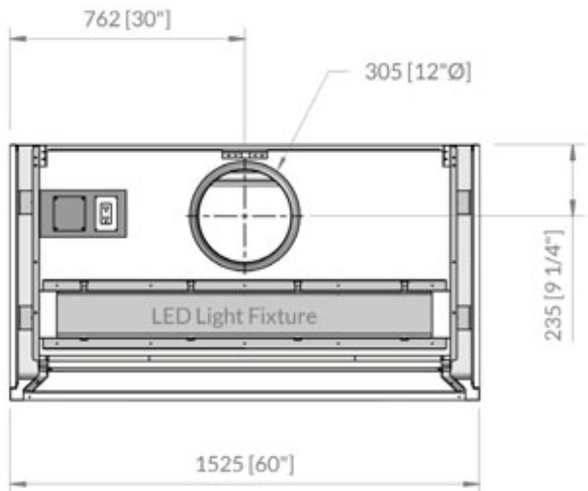
- Type 304 or Type 316 angled sill with floor pan for rolling equipment in and out of hood


CEILING CLOSURE PANEL
1
3
PRE-PIPING
4
LOW AIRFLOW ALARM/MONITOR
MECHANICAL SERVICE FIXTURES
2
FLOOR PAN
5
FLOOR SILLS
6

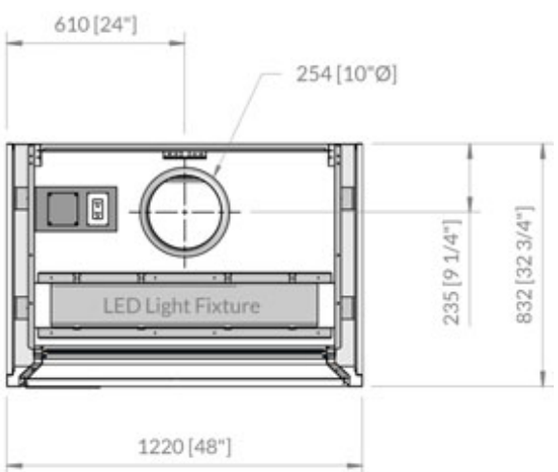
| EXHAUST COLLAR LOCATIONS / DIAMETERS
DUAL VERTICAL RISING SASHES



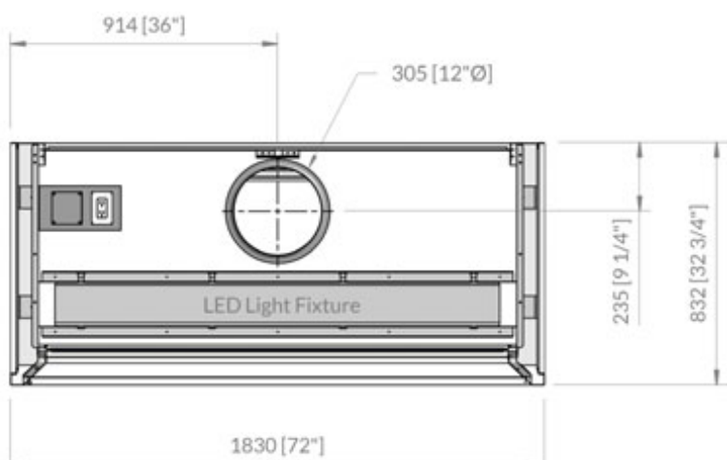
915mm
(36") WIDE



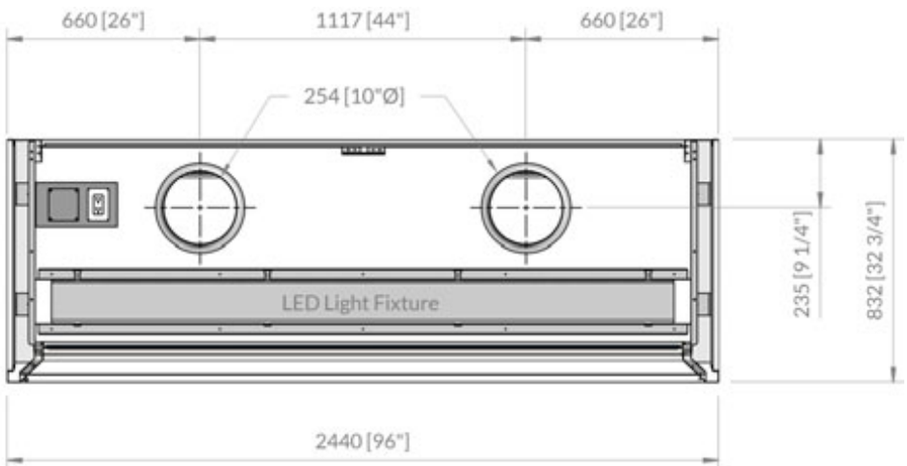
1525mm
(60") WIDE



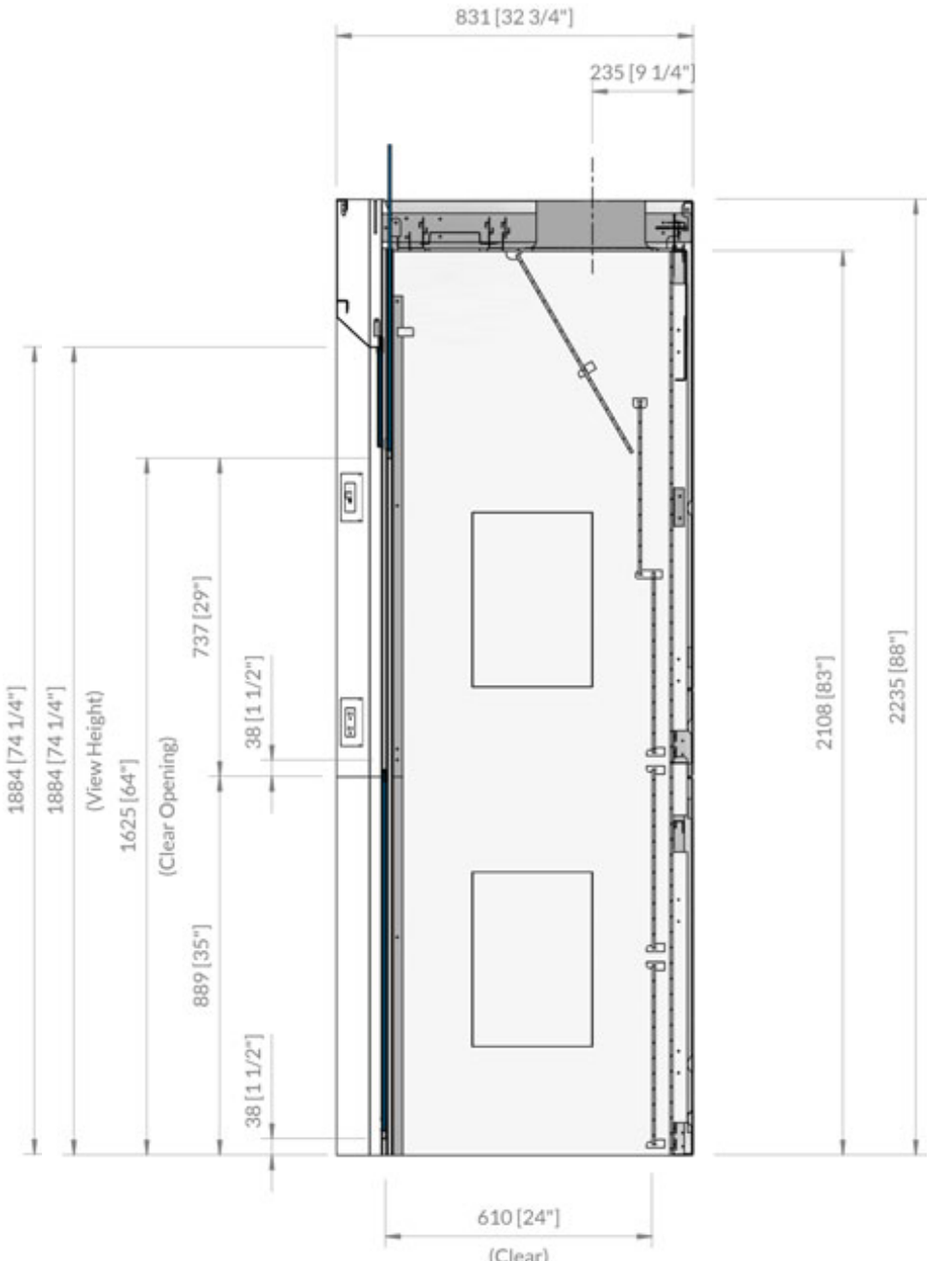
1220mm
(48") WIDE



1830mm
(72") WIDE



2440mm
(96") WIDE



1 2 3 - 48 PR

INTERIOR LINER MATERIALS

HOOD EXHAUST TYPE

1 - Constant Air Volume (CAV), Full By-Pass
2 - Constant Air Volume (CAV), Reduced By-Pass
3 - Variable Air Volume (VAV), Restricted By-Pass

SASH TYPE

1 - Full View Dual Sash Assembly With Upper Fixed View Panel
2 - Full View Sash
3 - Horizontal Sliding Sash Panels
4 - Combination Vertical Rising Sash/Horizontal Sliding Panes
5 - Split Vertically Rising Sashes

SUPERSTRUCTURE TYPES

1 -Bench Mount - Standard Height
3 - Floor Mount (Walk-In)
4 - Radioisotope
5 - Perchloric Acid
6 - Accessible
7 - Distillation
8 - Low Flow/High Performance
12 - Pass Through (Doubled Sided)

HOOD WIDTH

915mm (36”)
1220mm (48”)
1525mm (60”)
1830mm (72”)
2440mm (96”)

INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Upper and lower sections are mechanically fastened together and sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| CONSTANT AIR VOLUME (CAV), FULL BY-PASS DUAL VERTICAL RISING SASH

An automatic by-pass system maintains a relatively constant exhaust volume.

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

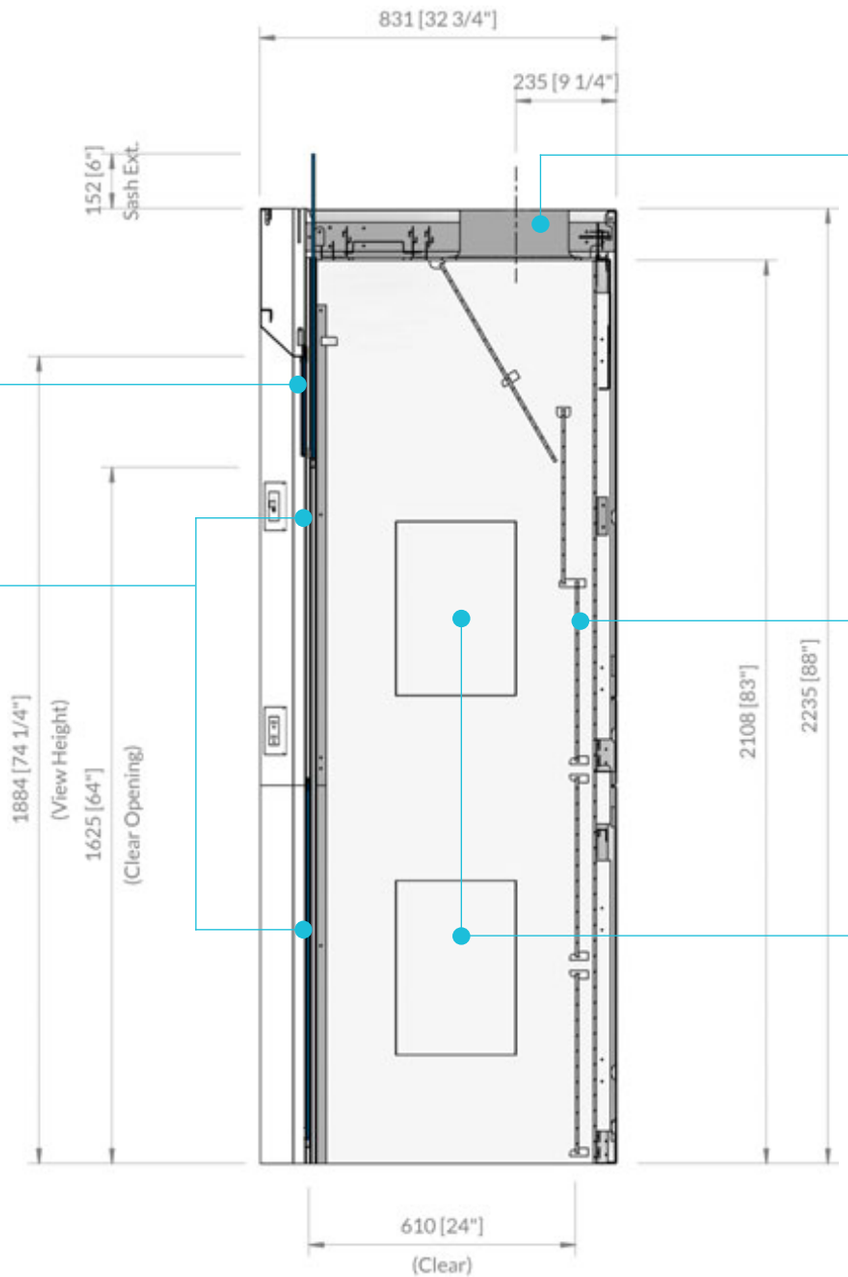
Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

Face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

Fixed View Panel

Dual upper and lower vertical rising 6mm (7/32") laminated safety glass, "Full View" type. Sash pulls are full length type 316 stainless steel.
Front opening view height is 1884mm (74¼") including a 225mm (9") high fixed view panel. Maximum sash opening is 1625mm (64"). Counterbalance System: Each sash assembly is counterbalanced with a single weight, ball bearing nylon roller pulleys and uncoated stainless steel cables.
NOTE: Hood is designed and intended to be used with only the upper sash open at the required sash operating height



Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Five piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| CONSTANT AIR VOLUME (CAV), FULL BY-PASS DUAL VERTICAL RISING SASH

915mm (36”) WIDE

Polyresin	113-36PR
Stainless Steel Type 316 (Stitch Welded)	113-36ST6
Stainless Steel Type 304 (Stitch Welded)	113-36ST4
PVC	113-36PV
Polypropylene	113-36PP

1525mm (60”) WIDE

Polyresin	113-60PR
Stainless Steel Type 316 (Stitch Welded)	113-60ST6
Stainless Steel Type 304 (Stitch Welded)	113-60ST4
PVC	113-60PV
Polypropylene	113-60P

1220mm (48”) WIDE

Polyresin	113-48PR
Stainless Steel Type 316 (Stitch Welded)	113-48ST6
Stainless Steel Type 304 (Stitch Welded)	113-48ST4
PVC	113-48PV
Polypropylene	113-48PP

1830mm (72”) WIDE

Polyresin	113-72PR
Stainless Steel Type 316 (All Welded)	113-72SW6
Stainless Steel Type 304 (Stitch Welded)	113-72ST4
PVC	113-72PV
Polypropylene	113-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*
- *Custom designs available.*

2440mm (96") WIDE

Polyresin	113-96PR
Stainless Steel Type 316 (Stitch Welded)	113-96ST6
Stainless Steel Type 304 (Stitch Welded)	113-96ST4
PVC	113-96PV
Polypropylene	113-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		36"	48"	60"	72"	96"
SASH OPENING*		5.00 sq. ft.	7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
UPPER SASH FULL OPEN (27")	80 FPM	425 @ .05	710 @ .14	815 @ .15	990 @ .22	1375 @ .18
	100 FPM	530@ .08	760 @ .16	1000 @ .22	1220 @ .34	1700 @ .24
SASH OPENING*		3.4 sq. ft.	4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
UPPER SASH 18" OPEN	80 FPM	295 @ .02	415 @ .06	555 @ .09	675 @ .10	945@ .06
	l00 FPM	370 @ .04	520 @ .08	695 @ .14	845 @ .17	1180 @ .10

** Includes middle and lower slots*

*** Exhaust Volume are calculated With the lower sash closed**

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS VERTICAL RISING SASH

Variable Air Volume fume hoods are used in conjunction with an electronic control system* which will maintain a constant face velocity regardless of sash height. As the sashes are raised and lowered, the VAV system will vary the exhaust volume of the hood in direct response to the sash position.

** supplied by others.*

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

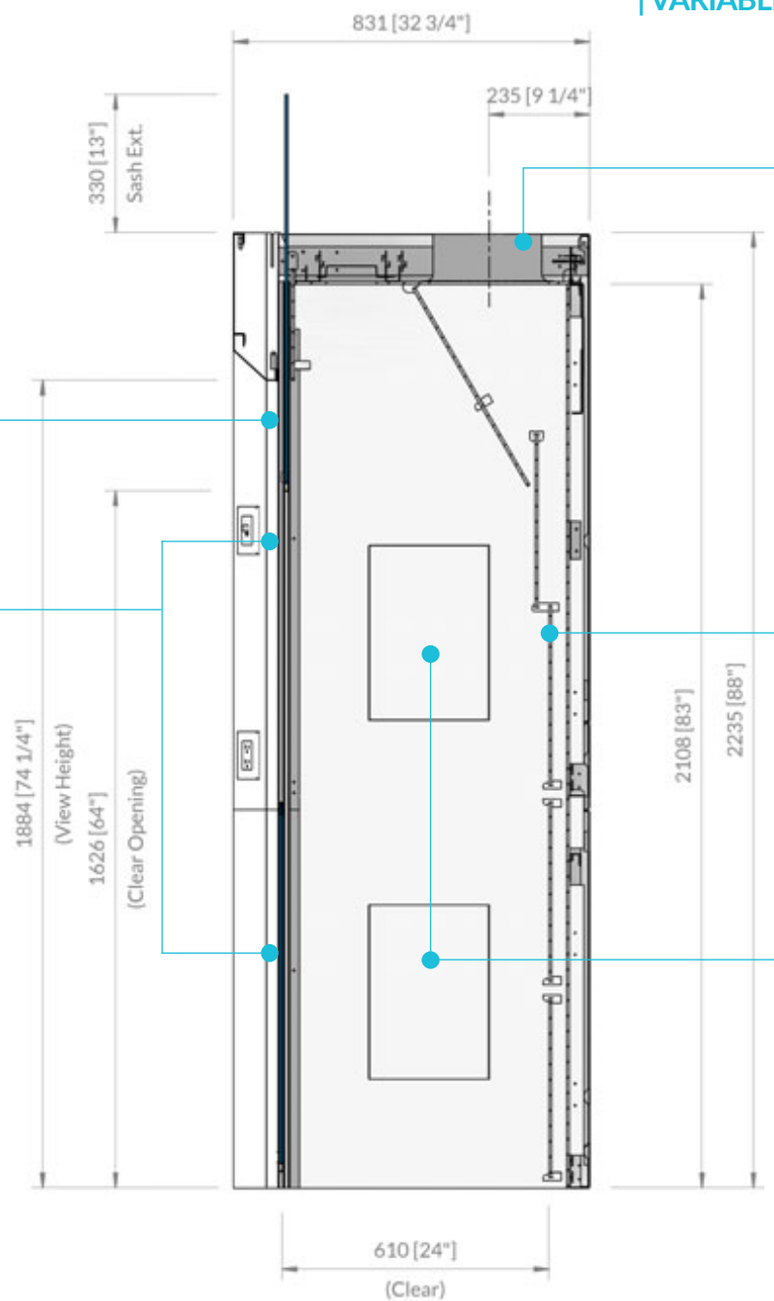
| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS DUAL VERTICAL RISING SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

By-pass Blocker

Dual upper and lower vertical rising 6mm (7/32") laminated safety glass, "Full View" type. Sash pulls are full length type 316 stainless steel.
Front opening view height is 1885mm (74¼")
Maximum sash opening is 1625mm (64").
Counterbalance System: Each sash assembly is counterbalanced with a single weight, ball bearing nylon roller pulleys and uncoated stainless steel cables.

NOTE: Hood is designed and intended to be used with only the upper sash open at the required sash operating height.



Exhaust collars are bell shaped, round in configuration and does not require a rectangular-to-round transition.

Five piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS VERTICAL RISING SASH

915mm (36”) WIDE

Polyresin	323-36PR
Stainless Steel Type 316 (Stitch Welded)	323-36ST6
Stainless Steel Type 304 (Stitch Welded)	323-36ST4
PVC	323-36PV
Polypropylene	323-36PP

1525mm (60”) WIDE

Polyresin	323-60PR
Stainless Steel Type 316 (Stitch Welded)	323-60ST6
Stainless Steel Type 304 (Stitch Welded)	323-60ST4
PVC	323-60PV
Polypropylene	323-60PP

1220mm (48”) WIDE

Polyresin	323-48PR
Stainless Steel Type 316 (Stitch Welded)	323-48ST6
Stainless Steel Type 304 (Stitch Welded)	323-48ST4
PVC	323-48PV
Polypropylene	323-48PP

1830mm (72”) WIDE

Polyresin	323-72PR
Stainless Steel Type 316 (Stitch Welded)	323-72ST6
Stainless Steel Type 304 (Stitch Welded)	323-72ST4
PVC	323-72PV
Polypropylene	323-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*
- *Custom designs available.*

2440mm (96") WIDE

Polyresin 311-96PR	
Stainless Steel Type 316 (Stitch Welded)	323-96ST6
Stainless Steel Type 304 (Stitch Welded)	323-96ST4
PVC	323-96PV
Polypropylene	323-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		36"	48"	60"	72"	96"
SASH OPENING*		5.00 sq. ft.	7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
UPPER SASH FULL OPEN (27")	80 FPM	425 @ .05	710 @ .14	815 @ .15	990 @ .22	1375 @ .18
	100 FPM	530@ .08	760 @ .16	1000 @ .22	1220 @ .34	1700 @ .24
SASH OPENING*		3.4 sq. ft.	4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
UPPER SASH 18" OPEN	80 FPM	295 @ .02	415 @ .06	555 @ .09	675 @ .10	945@ .06
	l00 FPM	370 @ .04	520 @ .08	695 @ .14	845 @ .17	1180 @ .10

** Includes middle and lower slots*

*** Exhaust Volume are calculated With the lower sash closed**

HAWKINS
LABORATORY FUME HOODS

VERTICAL RISING DUAL SASHES
BUILD YOUR FUME HOOD

FILLABLE PDF
To view the PDF properly download Adobe Acrobat Reader
Adobe Acrobat

PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW

- ○ Constant Air Volume (CAV)
- ○ Variable Air Volume (VAV)

2 LINER MATERIAL

- ○ Polyresin (PR)
- ○ Stainless Steel Stitch Welded T316 (ST6)
- ○ Stainless Steel Stitch Welded T304 (ST4)
- ○ Other

Refer to page 11 of the catalog for liner material description.

- ○ Ceiling Closure Panels
- ○ Blower Switch (Wiring NIC)
- ○ Sash Stop at 18”

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Floor Pans (Raised Edges)

- ○ Type 316 18 gauge stainless steel
- ○ Type 304 18 gauge stainless steel
- ○ Galvanized 18 gauge
- ○ Polyethylene

Additional Options

_____
_____
_____

Pre-piping

- ○ Above the hood

Low Air Flow Alarm

- ○ AFA500 (CAV Only)
- ○ AFA1000 (CAV Only)
- ○ AFA4000 (CAV Only)

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink (Wall Mount)

- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Floor Sill

- ○ Type 316 18 gauge stainless steel
- ○ Type 304 18 gauge stainless steel

Additional Options

_____
_____
_____

FLOOR MOUNT (WALK-IN) FUME HOOD — HORIZONTAL SLIDING SASHES

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Full By-Pass
- Variable Air Volume (VAV), Restricted By-Pass
- 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and upper side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 INTERIOR ACCESS PANELS

Fully framed, self supporting

- Flush mount
- Fully framed and air tight
- No gaskets required

3 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 1880mm (74”) high
- Horizontal sliding

4 FRONT FACE OPENING

- Aerodynamically angled top, and side openings reduce turbulence and eliminate reverse flows

5 INTERIOR LINER MATERIALS

- Polyresin
- Stainless Steel
- PVC
- Polypropylene
- Custom materials available to fit specific requirements

6 BAFFLES

- Five section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

7 LEVELING FEET

- Built in for ease of installation

8 ELECTRICAL

Standard electrical fixtures comprise:

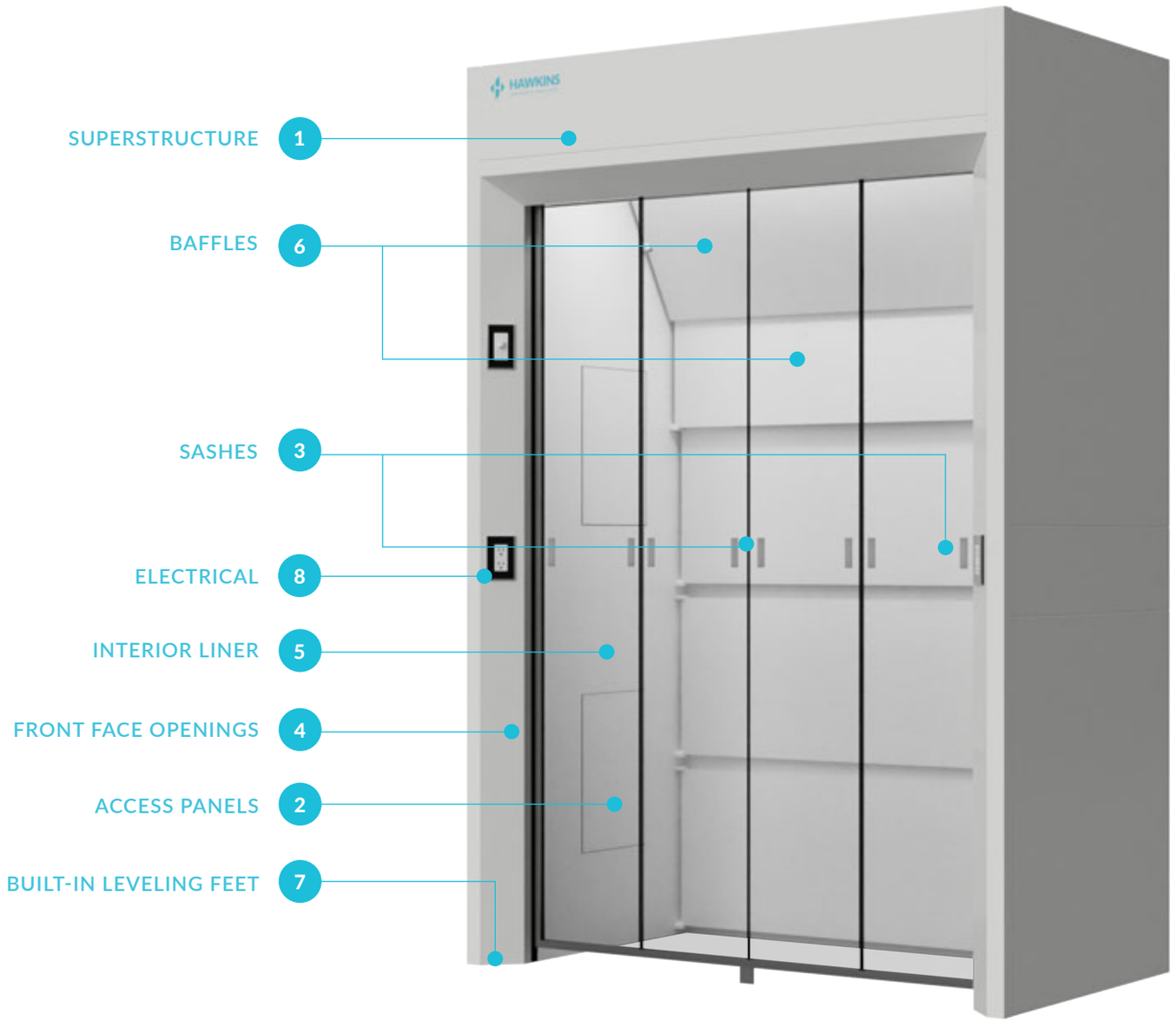
- Two 120V/20A duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

APPROVALS

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

TRACER GAS TESTING

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.


SUPERSTRUCTURE 1
BAFFLES 6
SASHES 3
ELECTRICAL 8
INTERIOR LINER 5
FRONT FACE OPENINGS 4
ACCESS PANELS 2
BUILT-IN LEVELING FEET 7
HAWKINS

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination

4 LOW AIRFLOW ALARM/MONITORS

- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 FLOOR PANS

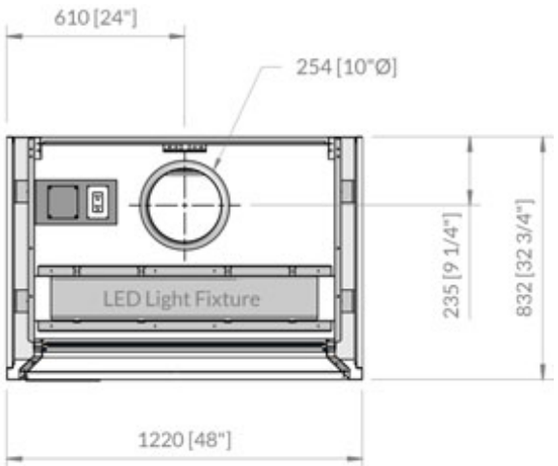
- To contain spills
- Raised edges 12mm (1/2”)
- Liquid tight
- Type 304 or Type 316 18 gauge stainless steel
- Galvanized, 18 gauge
- Polyethylene

6 FLOOR SILLS

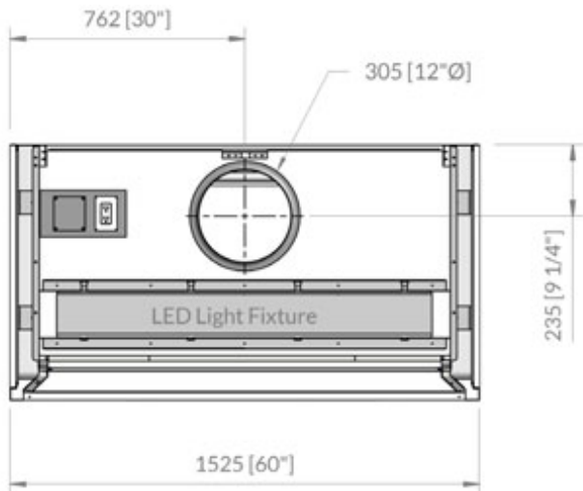
- Type 304 or Type 316 angled sill with floor pan for rolling equipment in and out of hood


CEILING CLOSURE PANEL
1
3
PRE-PIPING
4
LOW AIRFLOW ALARM/MONITOR
MECHANICAL SERVICE FIXTURES
2
FLOOR PAN
5
FLOOR SILLS
6

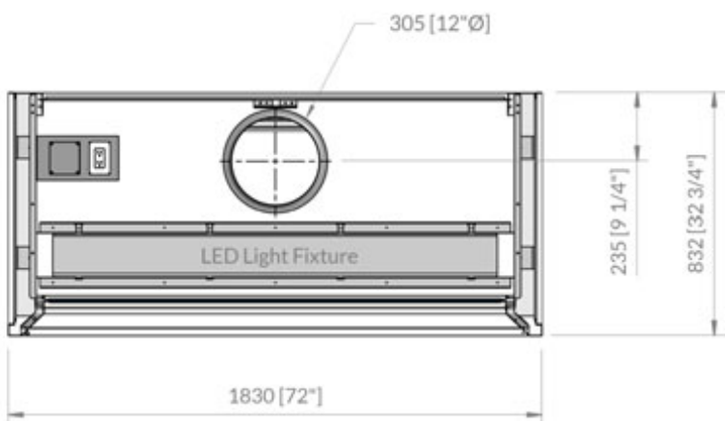
| EXHAUST COLLAR LOCATIONS / DIAMETERS
HORIZONTAL SLIDING SASH



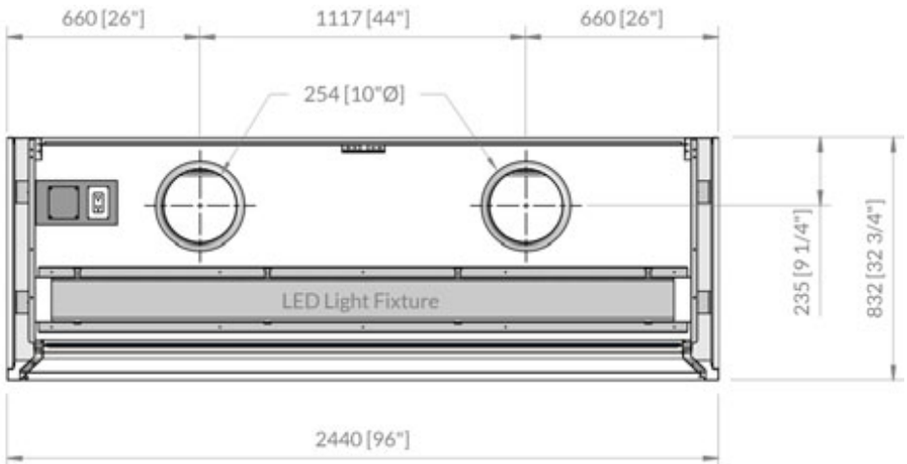
1220mm
(48") WIDE



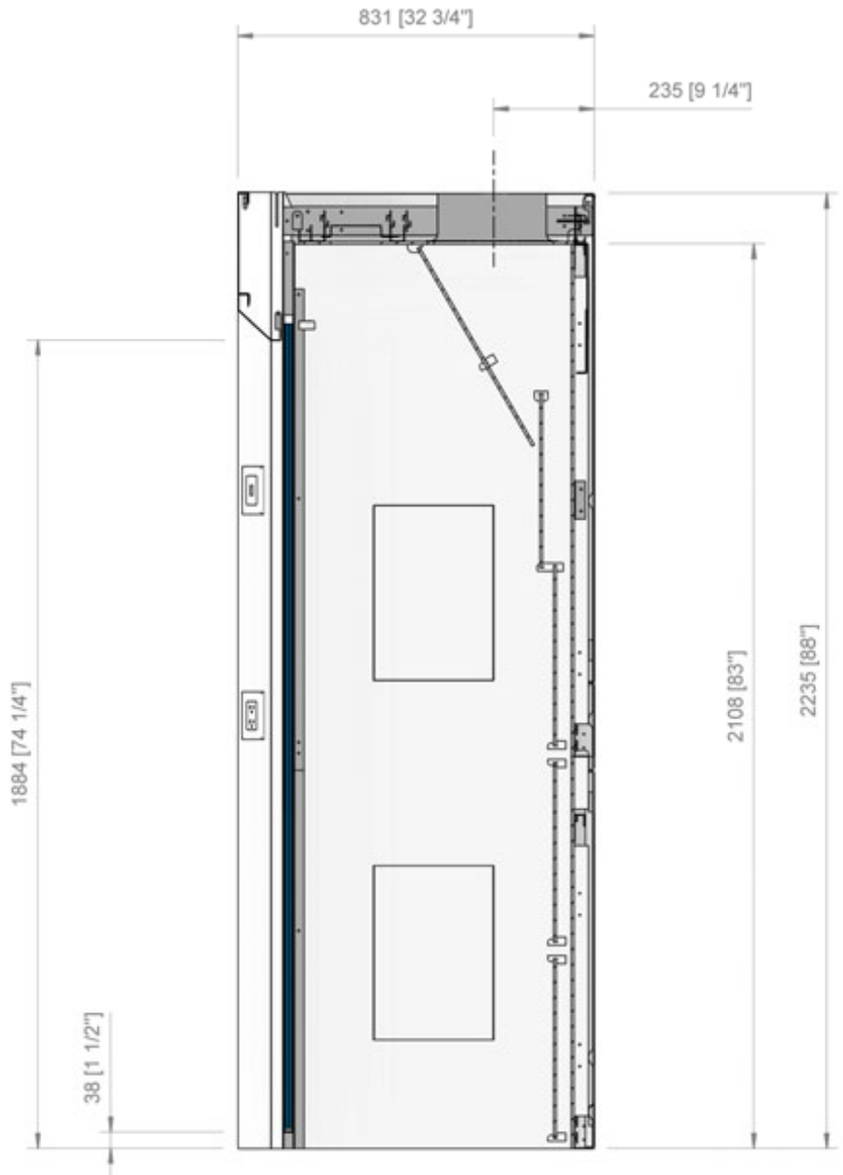
1525mm
(60") WIDE



1830mm
(72") WIDE



2440mm
(96") WIDE



INTERIOR LINER MATERIALS

1 2 3 - 48 PR

HOOD EXHAUST TYPE

1 - Constant Air Volume (CAV), Full By-Pass
2 - Constant Air Volume (CAV), Reduced By-Pass
3 - Variable Air Volume (VAV), Restricted By-Pass

SASH TYPE

1 - Full View Sash With Fixed View Panel
2 - Full View Sash
3 - Horizontal Sliding Sash Panels
4 - Combination Vertical Rising Sash/Horizontal Sliding Panes

SUPERSTRUCTURE TYPES

1 -Bench Mount - Standard Height
3 - Floor Mount (Walk-In)
4 - Radioisotope
5 - Perchloric Acid
6 - Accessible
12 - Pass Through (Doubled Sided)

HOOD WIDTH

1220mm (48")
1525mm (60")
1830mm (72")
2440mm (96")

INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Upper and lower sections are mechanically fastened together and sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS HORIZONTAL SLIDING SASH

Reduced By-Pass Constant Air Volume Fume Hoods incorporate a partial upper by-pass between the roof of the hood and the top of the horizontal sash frame.
This by-pass will draw air over the top of the sash assembly reducing the face velocity through the sash openings as the sash panes are being closed.
The horizontal sash panes should not be closed completely as this may force most of the exhaust air through the lower air foil opening reducing the efficiency of the hood.

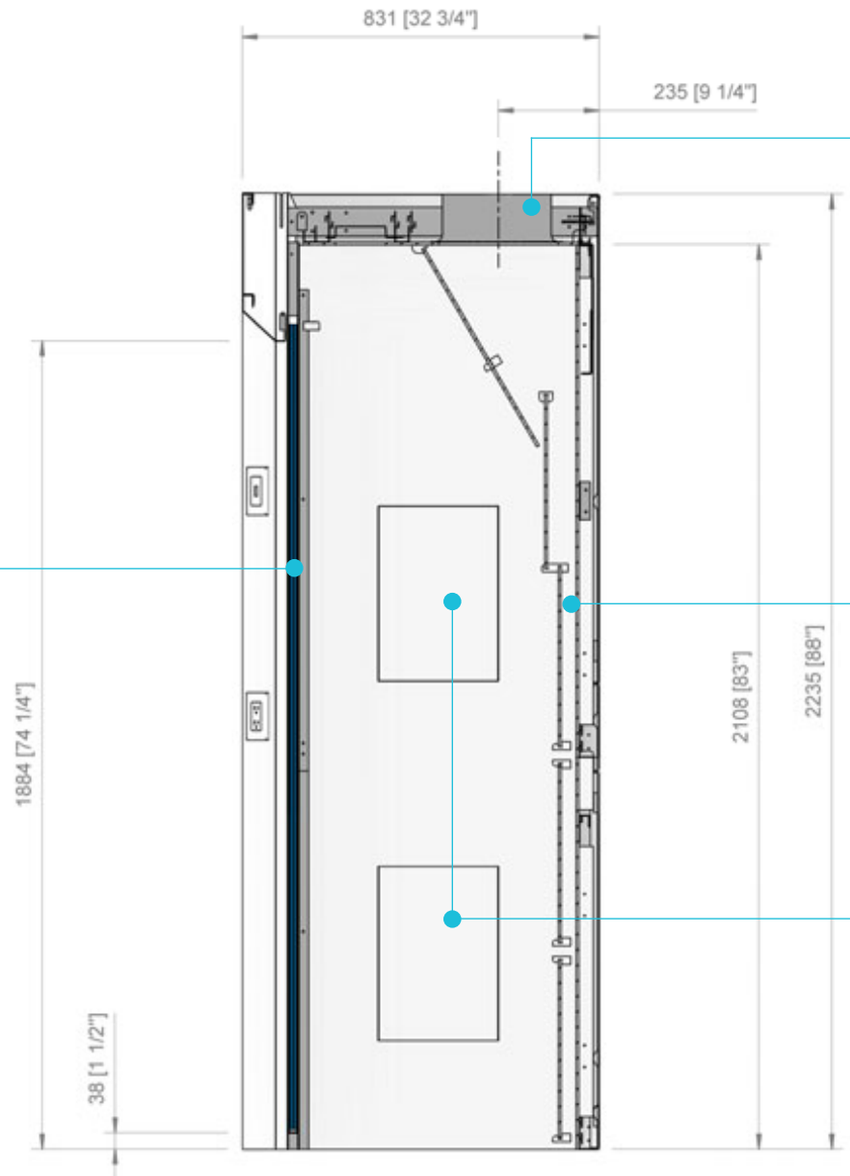
Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

Face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS HORIZONTAL SLIDING SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002



Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Sash assembly is "Full View" type with full height panes set in an 18 gauge, Type 316 stainless steel, number 4 finish full frame. Top hung horizontal sliding panes are unframed 6mm (1/4") laminated safety glass with polished edges. **They are designed so that only a maximum of 50% of the sash can be opened at any one time. Sash panels are designed and sized to be used as a full height safety shield.**

Five piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS HORIZONTAL RISING SASH

1220mm (48”) WIDE

Polyresin	233-48PR
Stainless Steel Type 316 (Stitch Welded)	233-48ST6
Stainless Steel Type 304 (Stitch Welded)	233-48ST4
PVC	233-48PV
Polypropylene	233-48PP

1525mm (60”) WIDE

Polyresin	233-60PR
Stainless Steel Type 316 (Stitch Welded)	233-60ST6
Stainless Steel Type 304 (Stitch Welded)	233-60ST4
PVC	233-60PV
Polypropylene	233-60P

1830mm (72”) WIDE

Polyresin	233-72PR
Stainless Steel Type 316 (All Welded)	233-72SW6
Stainless Steel Type 304 (Stitch Welded)	233-72ST4
PVC	233-72PV
Polypropylene	233-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*
- *Custom designs available.*

2440mm (96") WIDE

Polyresin	233-96PR
Stainless Steel Type 316 (Stitch Welded)	233-96ST6
Stainless Steel Type 304 (Stitch Welded)	233-96ST4
PVC	233-96PV
Polypropylene	233-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		10.4 sq. ft.	13.7 sq. ft.	16.9 sq. ft.	23.2 sq. ft.
HORIZONTAL SASH PANELS 50% OPEN	80 FPM	830 @ .18	1100 @ .28	1350 @ .33	1860 @ .33
	100 FPM	640 @ .23	1370 @ .34	1690 @ .39	2320 @ .45

** Measured off the floor. Includes lower opening and upper reduced by-pass.*

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS HORIZONTAL SLIDING SASH

Restricted By-Pass Variable Air Volume fume hoods are used in conjunction with an electronic control system* which will maintain a constant face velocity regardless of sash openings.

As the sash panes are opened and closed, the VAV system will vary the exhaust volume of the hood in direct response to the sash opening.

** SUPPLIED BY OTHERS.*

The horizontal sash panes should not be closed completely as this may force most of the exhaust air through the lower air foil opening reducing the efficiency of the hood.

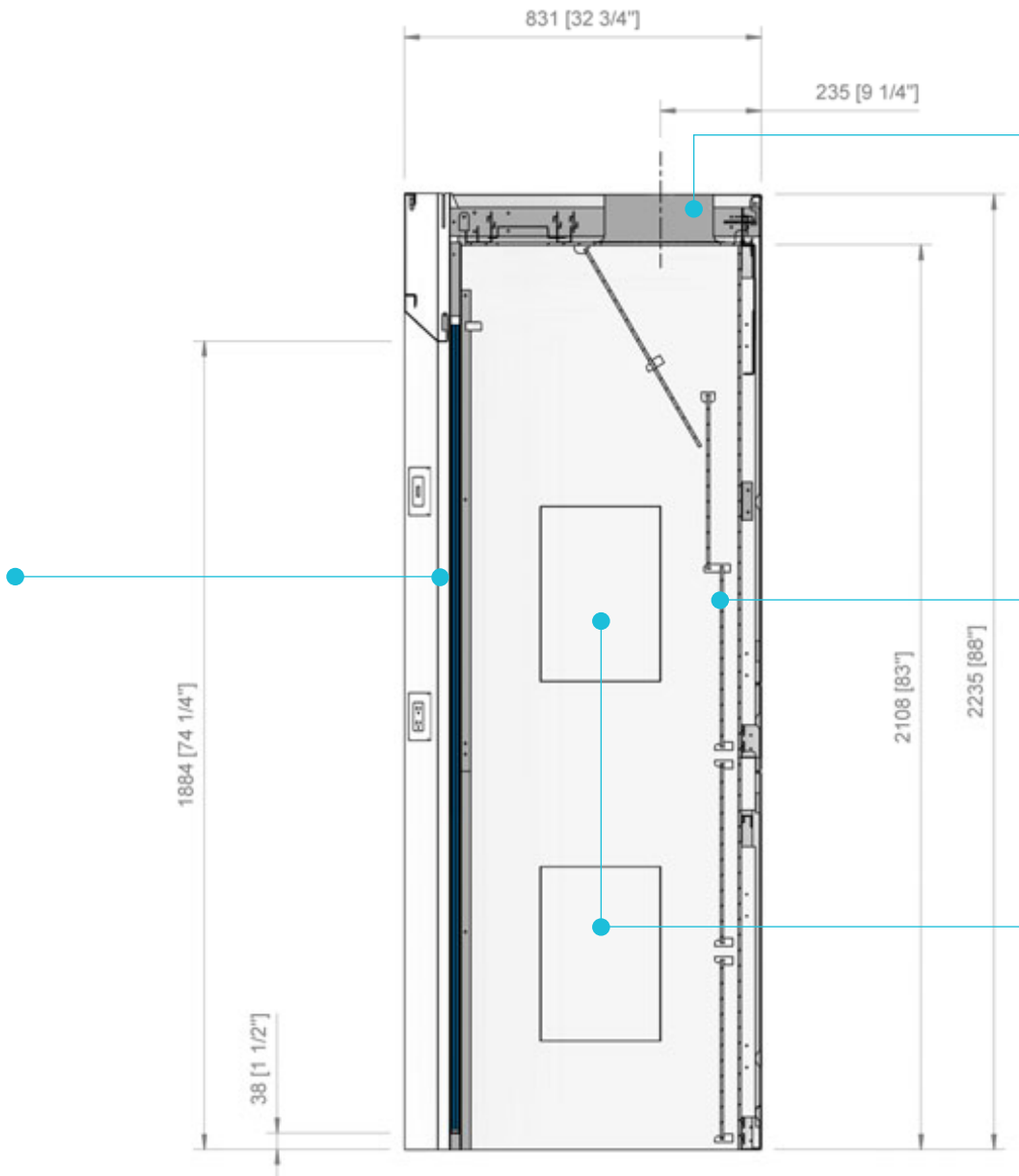
Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS HORIZONTAL SLIDING SASH

H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002



Exhaust collars are bell shaped, round in configuration and does not require a rectangular-to-round transition.

Sash assembly is “Full View” type with full height panes set in an 18 gauge, Type 316 stainless steel, number 4 finish full frame. Top hung horizontal sliding panes are unframed 6mm (1/4”) laminated safety glass with polished edges. **They are designed so that only a maximum of 50% of the sash can be opened at any one time. Sash panels are designed and sized to be used as a full height safety shield.**

Five piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS HORIZONTAL SLIDING SASH

1220mm (48”) WIDE

Polyresin	333-48PR
Stainless Steel Type 316 (Stitch Welded)	333-48ST6
Stainless Steel Type 304 (Stitch Welded)	333-48ST4
PVC	333-48PV
Polypropylene	333-48PP

1525mm (60”) WIDE

Polyresin	333-60PR
Stainless Steel Type 316 (Stitch Welded)	333-60ST6
Stainless Steel Type 304 (Stitch Welded)	333-60ST4
PVC	333-60PV
Polypropylene	333-60PP

1830mm (72”) WIDE

Polyresin	333-72PR
Stainless Steel Type 316 (Stitch Welded)	333-72ST6
Stainless Steel Type 304 (Stitch Welded)	333-72ST4
PVC	333-72PV
Polypropylene	333-72PP

2440mm (96") WIDE

Polyresin 311-96PR	
Stainless Steel Type 316 (Stitch Welded)	323-96ST6
Stainless Steel Type 304 (Stitch Welded)	323-96ST4
PVC	323-96PV
Polypropylene	323-96PP

- *Other liner materials can be supplied to meet specific requirements.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*
- *Custom designs available.*

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		10.4 sq. ft.	13.7 sq. ft.	16.9 sq. ft.	23.2 sq. ft.
HORIZONTAL SASH PANELS 50% OPEN	80 FPM	830 @ .18	1100 @ .28	1350 @ .33	1860 @ .33
	100 FPM	640 @ .23	1370 @ .34	1690 @ .39	2320 @ .45

** Measured off the floor. Includes lower opening and upper reduced by-pass.*

HAWKINS
LABORATORY FUME HOODS

HORIZONTAL SLIDING SASH
BUILD YOUR FUME HOOD

FILLABLE PDF
To view the PDF properly download Adobe Acrobat Reader
Adobe Acrobat

PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW

- ☐ Constant Air Volume (CAV)
- ☐ Variable Air Volume (VAV)

2 LINER MATERIAL

- ☐ Polyresin (PR)
- ☐ Stainless Steel Stitch Welded T316 (ST6)
- ☐ Stainless Steel Stitch Welded T304 (ST4)
- ☐ Other

Refer to page 11 of the catalog for liner material description.

- ☐ Ceiling Closure Panels
- ☐ Blower Switch (Wiring NIC)
- ☐ Sash Stop at 18”

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ☐ 6”x3” Polyethylene
- ☐ 6”x3” T316 Stainless Steel

Floor Pans (Raised Edges)

- ☐ Type 316 18 gauge stainless steel
- ☐ Type 304 18 gauge stainless steel
- ☐ Galvanized 18 gauge
- ☐ Polyethylene

Additional Options

_____
_____
_____

Pre-piping

- ☐ Above the hood

Low Air Flow Alarm

- ☐ AFA500 (CAV Only)
- ☐ AFA1000 (CAV Only)
- ☐ AFA4000 (CAV Only)

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink (Wall Mount)

- ☐ 6”x3” Polyethylene
- ☐ 6”x3” T316 Stainless Steel

Floor Sill

- ☐ Type 316 18 gauge stainless steel
- ☐ Type 304 18 gauge stainless steel

Additional Options

_____
_____
_____

FLOOR MOUNT (WALK-IN)
FUME HOOD — COMBINATION SASHES

HOOD TYPES

Hoods are available as:

- Constant Air Volume (CAV), Reduced By-Pass
- Variable Air Volume (VAV), Restricted By-Pass
- 1220mm (48”), 1525mm (60”), 1830mm(72”), 2440mm (96”) wide

FINISH

- Finish is an electrostatic powder coating applied to all surfaces. Parts are baked in a controlled high temperature gas oven with infrared preheat.
- Resultant finish has a hard and smooth laboratory grade chemical resisting finish.

1 SUPERSTRUCTURE

- Fully framed, self supporting
- Exterior panels fabricated from sheet steel with baked electrostatic powder coating
- Exterior front and upper side panels have hidden fasteners and are removable without tools
- Exhaust collars are round in configuration and do not require rectangular-to-round transitions

2 INTERIOR ACCESS PANELS

Fully framed, self supporting

- Flush mount
- Fully framed and air tight
- No gaskets required

3 SASHES

- 6mm (7/32”) laminated safety glass
- Full view type 1880mm (74”) high
- Type 316 stainless steel full length sash pulls
- Maximum sash opening height 1625mm (64”)
- Dual vertical rising with combination upper sash

4 FRONT FACE OPENING

- Aerodynamically angled top, and side openings reduce turbulence and eliminate reverse flows

5 INTERIOR LINER MATERIALS

- Polyresin
- Stainless Steel
- PVC
- Polypropylene
- Custom materials available to fit specific requirements

6 BAFFLES

- Five section baffle design with side, upper, center and lower exhaust slots
- Baffle plates are fixed and factory set for optimum containment per ASHRAE 110-2016 Tracer Gas Testing

7 LEVELING FEET

- Built in for ease of installation

8 ELECTRICAL

Standard electrical fixtures comprise:

- Two 120V/20A duplex receptacles
- Vapour sealed LED lighting with light switch
- All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components

APPROVALS

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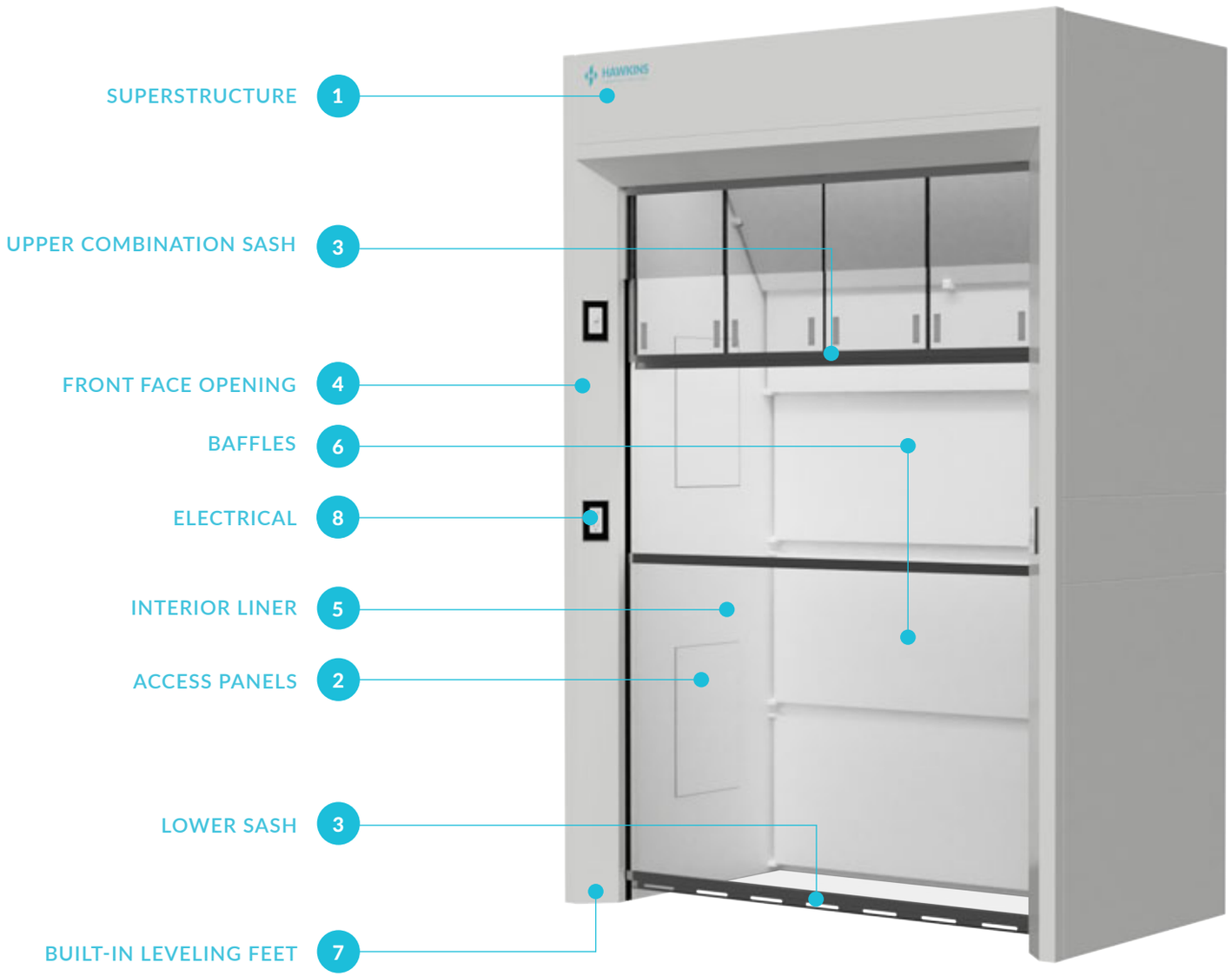

SUPERSTRUCTURE 1
UPPER COMBINATION SASH 3
FRONT FACE OPENING 4
BAFFLES 6
ELECTRICAL 8
INTERIOR LINER 5
ACCESS PANELS 2
LOWER SASH 3
BUILT-IN LEVELING FEET 7

1 CEILING CLOSURE PANEL

- Designed to enclose the top of the hood to the ceiling
- Encloses both sides and front
- Front panel is removable for access to the top of the fume hood
- Fabricated from the same material as the fume hood exterior
- Colour matched to the hood exterior colour

2 MECHANICAL SERVICES FIXTURES

- Remote controlled from the front face of the fume hood
- Front loaded valves
- Factory pre-piped, conforming to applicable codes
- Colour coded handles and interior fittings

3 PRE-PIPING

- Factory installed terminating above or below the hood superstructure
- Burning gas: corrugated stainless steel flexible tubing with connector, conforming to applicable codes
- Water and technical gases: SPX hose with stainless steel braiding and connector termination

4 LOW AIRFLOW ALARM/MONITORS

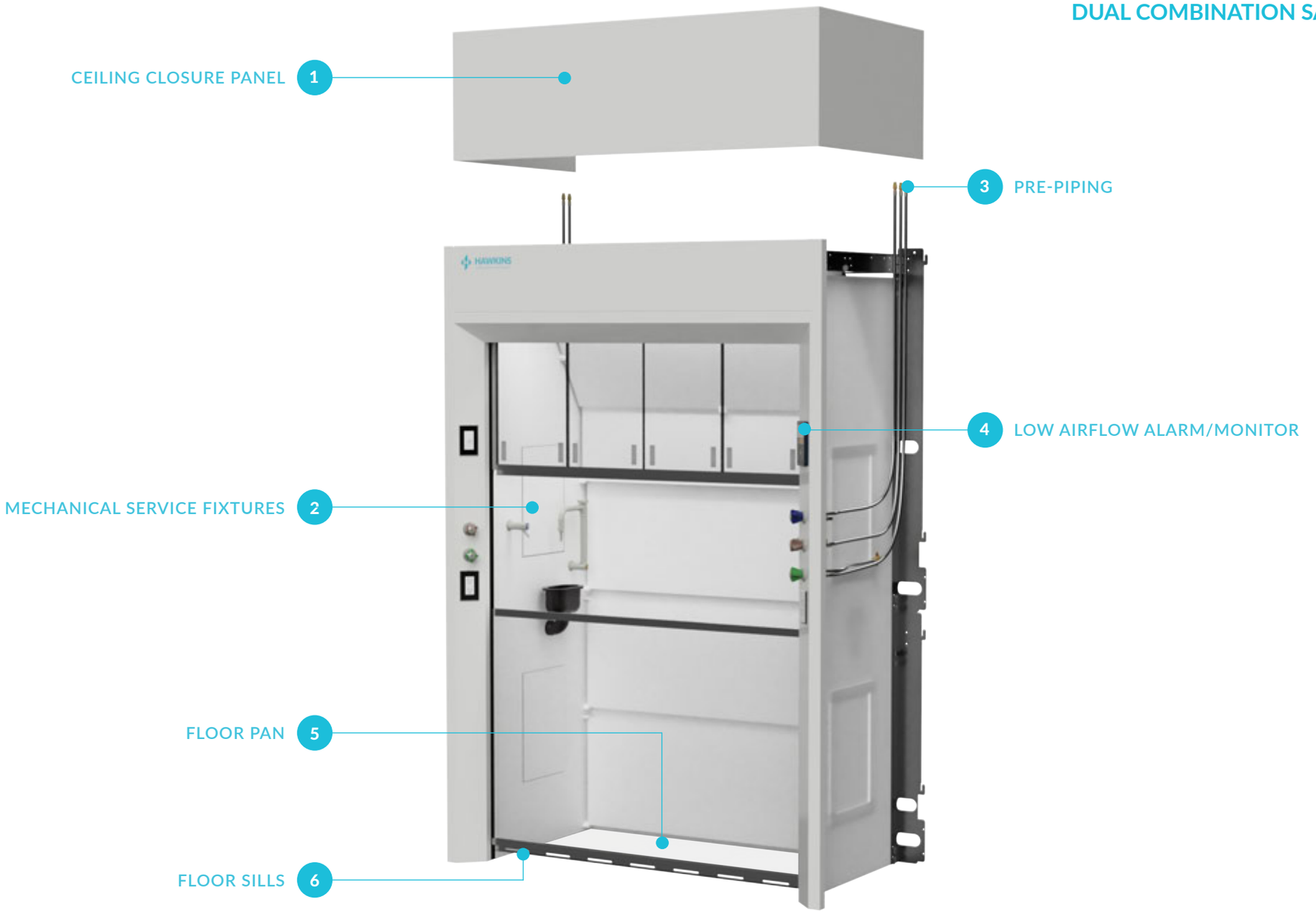
- Factory Installed
- Built in airflow sensor continuously monitors face velocity
- LED display indicates Safe and Alarm conditions
- Pushbutton calibration and configuration, password protection

5 FLOOR PANS

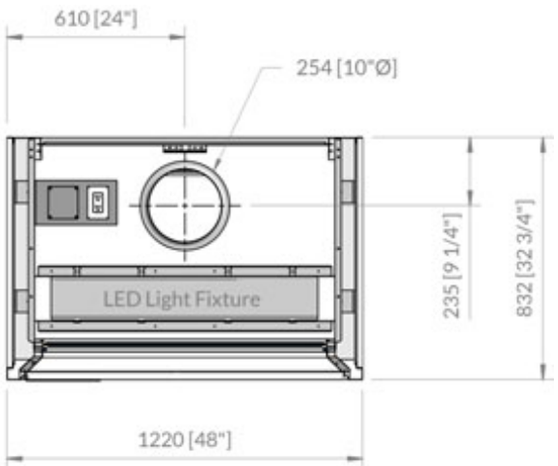
- To contain spills
- Raised edges 12mm (1/2")
- Liquid tight
- Type 304 or Type 316 18 gauge stainless steel
- Galvanized, 18 gauge
- Polyethylene

6 FLOOR SILLS

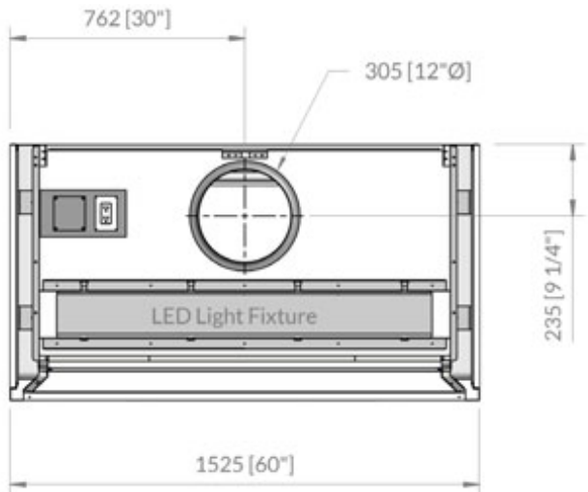
- Type 304 or Type 316 angled sill with floor pan for rolling equipment in and out of hood


CEILING CLOSURE PANEL
1
3
PRE-PIPING
4
LOW AIRFLOW ALARM/MONITOR
MECHANICAL SERVICE FIXTURES
2
FLOOR PAN
5
FLOOR SILLS
6

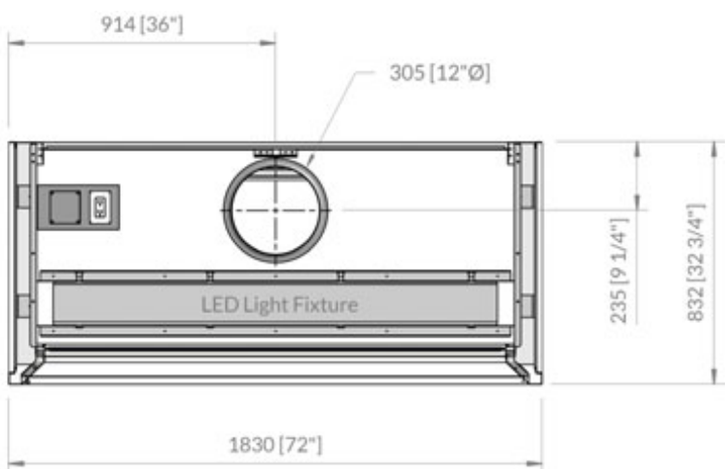
| EXHAUST COLLAR LOCATIONS / DIAMETERS
DUAL COMBINATION SASH



1220mm
(48”) WIDE

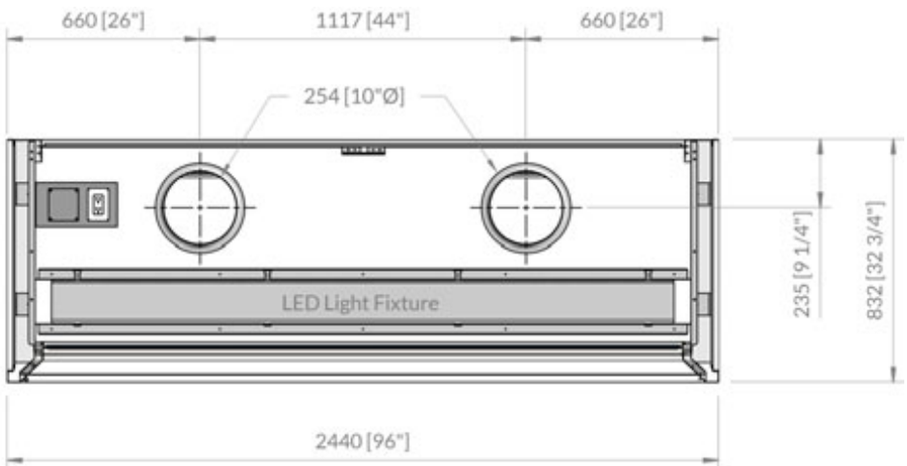


1525mm
(60”) WIDE

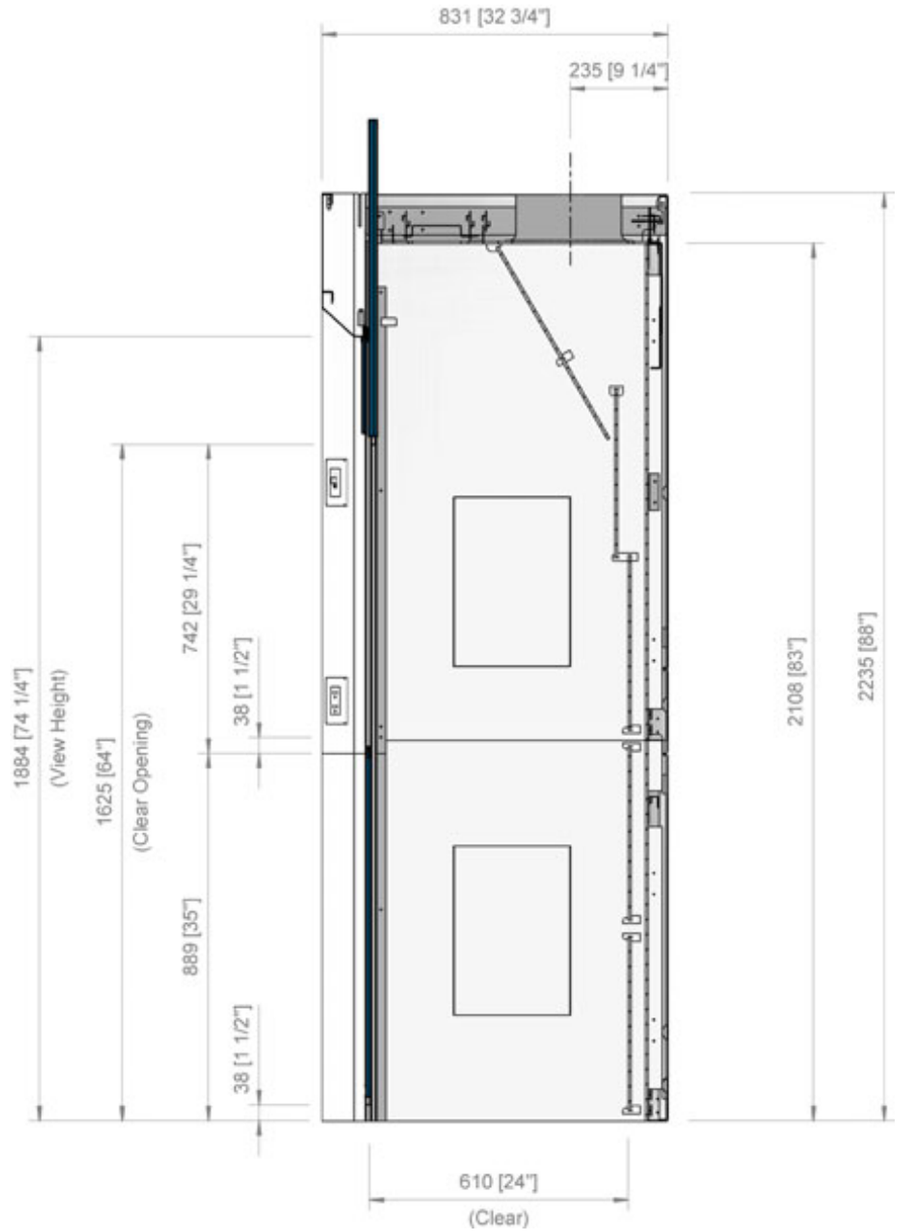


1830mm
(72”) WIDE

| EXHAUST COLLAR LOCATION



2440mm
(96") WIDE



INTERIOR LINER MATERIALS

1 2 3 - 48 PR

HOOD EXHAUST TYPE

1 - Constant Air Volume (CAV), Full By-Pass
2 - Constant Air Volume (CAV), Reduced By-Pass
3 - Variable Air Volume (VAV), Restricted By-Pass

SASH TYPE

1 - Full View Dual Sash Assembly With Upper Fixed View Panel
2 - Full View Sash
3 - Horizontal Sliding Sash Panels
4 - Combination Vertical Rising Sash/Horizontal Sliding Panes Full View

SUPERSTRUCTURE TYPES

1 - Bench Mount - Standard Height
3 - Floor Mount (Walk-In)
4 - Radioisotope
5 - Perchloric Acid
6 - Accessible
7 - Distillation
12 - Pass Through (Double Sided)

HOOD WIDTH

1220mm (48")
1525mm (60")
1830mm (72")
2440mm (96")

INTERIOR LINER MATERIALS

PR Polyresin: 1/4" thick, solid fibreglass reinforced pressed thermoset resin board. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 7231 ASTM E84-80). Flexural strength is a minimum of 19,000 PSI (D790). Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F). Exhaust collar is type 316 stainless steel.

ST Stainless Steel: Type 316 (ST6) or Type 304 (ST4) stainless steel, 16 gauge, number 4 finish. The sides and back of interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides. Upper and lower sections are mechanically fastened together and sealed. Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Exhaust collar is stainless steel.

PP Polypropylene: 1/4" thick, solid, flame retardant, self extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F). Exhaust collar is PVC.

PV PVC: 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self supporting. Interior is metal-free. Material is white in colour throughout its thickness. Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F). Exhaust collar is PVC.

Technical specifications and chemical resistance chart are available upon request.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS DUAL COMBINATION SASH

Reduced By-Pass Constant Air Volume Fume Hoods incorporate a partial upper by-pass between the roof of the hood and the fully closed vertical sash assembly. This by-pass will draw air over the top of the sash assembly when the hood is being operated using the horizontal sliding sashes. This reduces the face velocity through the open horizontal sash openings. When the fume hood is being operated with the horizontal sliding sashes, the horizontal sash panes should not be closed completely. This will force the exhaust air through the lower air foil opening reducing the efficiency of the hood. **When using the fume hood in the vertical sash configuration, the horizontal sash panes must be closed.**

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

Face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

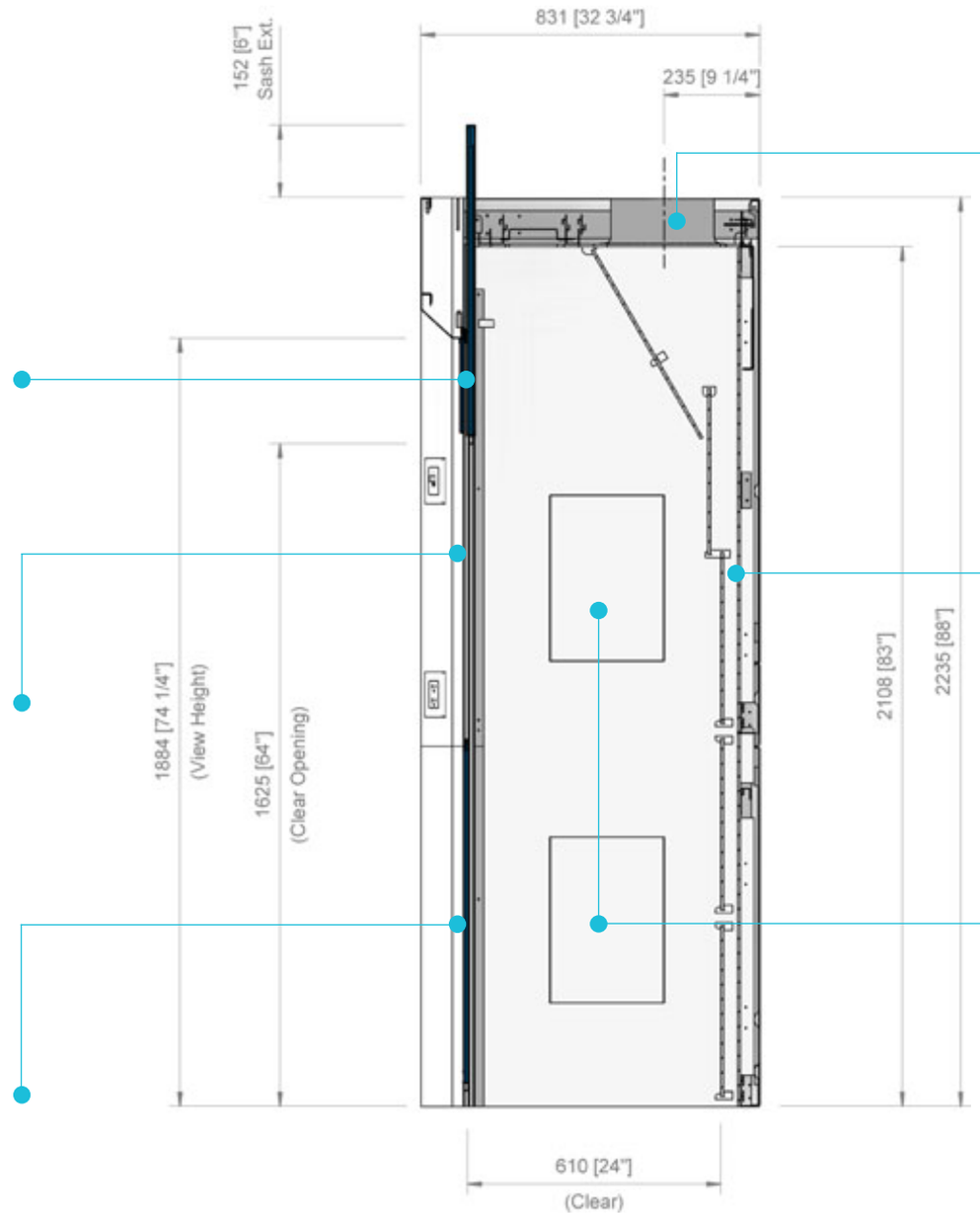
H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

Fixed View Panel

Upper and lower sash assemblies are "Full View" type. Each are fully counter balanced using a single center hung weight Weight runs behind the hood with a continuous stainless steel cable on nylon ball bearing rollers. Assembly runs in full height PVC tracks.

Upper sash is a combination vertically rising assembly with horizontal sliding panes set in an I8 gauge, type 316 stainless number 4 finish frame. **Top hung horizontal sliding panes are unframed 6mm (1/4") laminated safety glass with polished edges. They are designed so that only a maximum of 50% of the sash can be opened at any one time. Sash panels are designed and sized to be used as a full height safety shield**

Lower sash assembly is a vertical rising single pane. Sash pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.



NOTE: Hood is designed and intended to be used with only the upper sash open at the required sash operating height

Exhaust collar is bell shaped, round in configuration and does not require a rectangular-to-round transition.

Five piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| CONSTANT AIR VOLUME (CAV), REDUCED BY-PASS DUAL COMBINATION SASH

1220mm (48”) WIDE

Polyresin	243-48PR
Stainless Steel Type 316 (Stitch Welded)	243-48ST6
Stainless Steel Type 304 (Stitch Welded)	243-48ST4
PVC	243-48PV
Polypropylene	243-48PP

1525mm (60”) WIDE

Polyresin	243-60PR
Stainless Steel Type 316 (Stitch Welded)	243-60ST6
Stainless Steel Type 304 (Stitch Welded)	243-60ST4
PVC	243-60PV
Polypropylene	243-60P

1830mm (72”) WIDE

Polyresin	243-72PR
Stainless Steel Type 316 (Stitch Welded)	243-72ST6
Stainless Steel Type 304 (Stitch Welded)	243-72ST4
PVC	243-72PV
Polypropylene	243-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*
- *Custom designs available.*

2440mm (96") WIDE

Polyresin	243-96PR
Stainless Steel Type 316 (Stitch Welded)	243-96ST6
Stainless Steel Type 304 (Stitch Welded)	243-96ST4
PVC	243-96PV
Polypropylene	243-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
UPPER SASH FULL OPEN (27")	80 FPM	710 @ .14	815 @ .15	990 @ .22	1375 @ .18
	100 FPM	760 @ .16	1000 @ .22	1220 @ .34	1700 @ .24
SASH OPENING*		4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
UPPER SASH 18" OPEN	80 FPM	415 @ .06	555 @ .09	675 @ .10	945@ .06
	l00 FPM	520 @ .08	695 @ .14	845 @ .17	1180 @ .10

** Includes middle and lower slots*

*** Exhaust Volume is calculated with the lower sash closed**

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS COMBINATION SASH

Restricted By-Pass Variable Air Volume fume hoods are used in conjunction with an electronic control system* which will maintain a constant face velocity regardless of the sash opening.
As the vertical rising sash and the horizontal sliding panes are opened and closed, the VAV system will vary the exhaust volume of the hood in direct response to the sash opening.

* SUPPLIED BY OTHERS.

When the fume hood is being operated with the horizontal sliding sashes, the vertical sash assembly needs to be fully closed. The horizontal sash panes should not be closed completely as this will force all the exhaust air through the lower air foil opening reducing the efficiency of the hood.

Superstructure is fully framed and self supporting with 45° front posts. Exterior panels are 18 gauge cold rolled steel, are attached with hidden fasteners and removable without tools. Finish is an electrostatic baked powder paint for maximum scratch and chemical resistance.

Standard electrical fixtures comprise two 120V/20A duplex receptacles, vapour sealed LED lighting and light switch. All fume hoods are factory pre-wired to a roof mounted junction box using only CSA/UL certified electrical components.

All face openings are angled to reduce turbulence and maintain smooth airflow into the hood.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS COMBINATION SASH

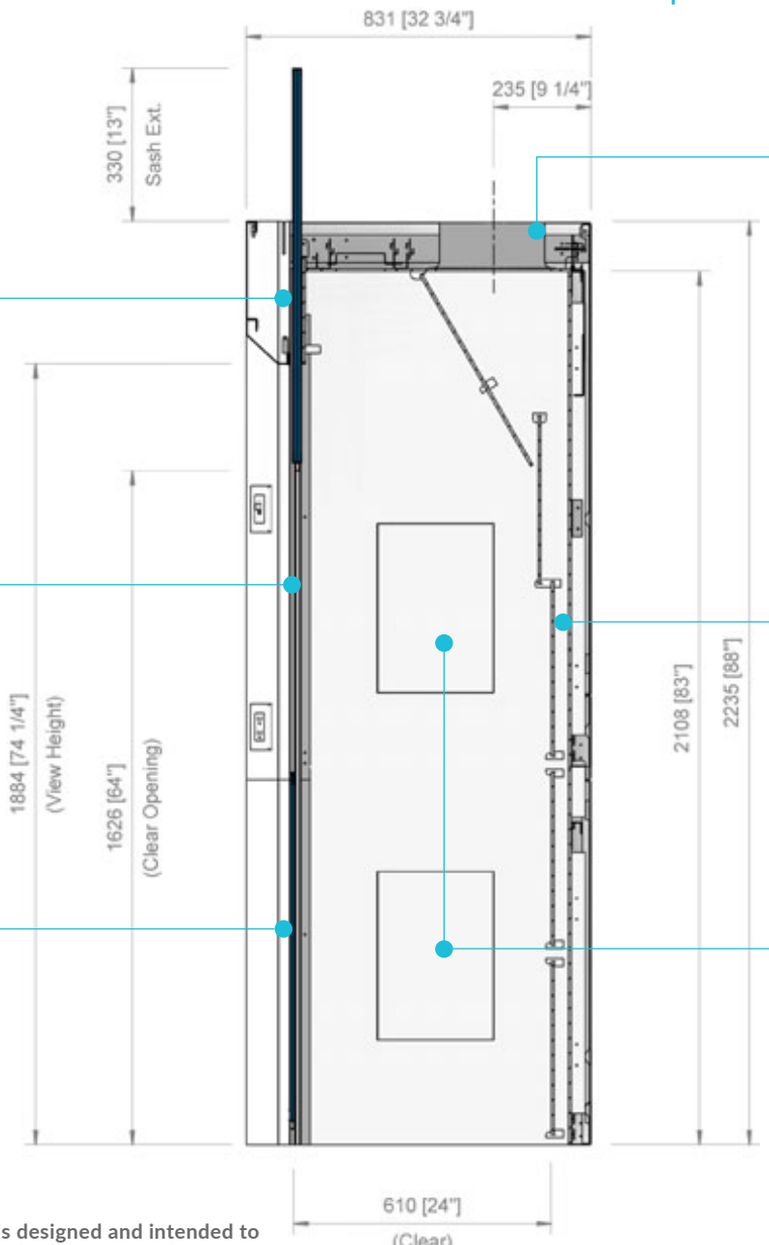
H.H.Hawkins Fume Hoods have been tested and certified for use in North America by Intertek Canada and designated with the cETLus mark. Certified to the following standards: CAN/CSA-C22.2 No. 61010-1-12 + UI; U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 and UL 1805:2002

By-pass Blocker

Upper and lower sash assemblies are "Full View" type. Each are fully counter balanced using a single center hung weight Weight runs behind the hood with a continuous stainless steel cable on nylon ball bearing rollers. Assembly runs in full height PVC tracks.

Upper sash is a combination vertically rising assembly with horizontal sliding panes set in an 18 gauge, type 316 stainless number 4 finish frame. **Top hung horizontal sliding panes are unframed 6mm (1/4") laminated safety glass with polished edges. They are designed so that only a maximum of 50% of the sash can be opened at any one time. Sash panels are designed and sized to be used as a full height safety shield**

Lower sash assembly is a vertical rising single pane. Sash pull is a slotted low profile design, is full length and fabricated 18 gauge type 316, number 4 finish stainless steel.



NOTE: Hood is designed and intended to be used with only the upper sash open at the required sash operating height

Exhaust collars are bell shaped, round in configuration and does not require a rectangular-to-round transition.

Five piece baffles are factory set and fixed for optimum containment. Removable from interior of hood without tools to facilitate ease of cleaning.

Interior access panels are flush mounted, fully framed and air tight. No gaskets required.

Fume Hoods are tested to the ASHRAE 110-2016 Method of Testing Performance of Laboratory Fume Hoods and exceed ANSI/AIHA Z9.5, CSA Z316.5-15 and MD15128-2013 recommendations.

| VARIABLE AIR VOLUME (VAV), RESTRICTED BY-PASS COMBINATION SASH

1220mm (48”) WIDE

Polyresin	343-48PR
Stainless Steel Type 316 (Stitch Welded)	343-48ST6
Stainless Steel Type 304 (Stitch Welded)	343-48ST4
PVC	343-48PV
Polypropylene	343-48PP

1525mm (60”) WIDE

Polyresin	343-60PR
Stainless Steel Type 316 (Stitch Welded)	343-60ST6
Stainless Steel Type 304 (Stitch Welded)	343-60ST4
PVC	343-60PV
Polypropylene	343-60PP

1830mm (72”) WIDE

Polyresin	343-72PR
Stainless Steel Type 316 (Stitch Welded)	343-72ST6
Stainless Steel Type 304 (Stitch Welded)	343-72ST4
PVC	343-72PV
Polypropylene	343-72PP

- *Other liner materials can be supplied to meet specific requirements.*
- *2745mm (108") wide and 3050mm (120") wide fume hoods also available.*
- *Custom designs available.*

2440mm (96") WIDE

Polyresin 311-96PR	
Stainless Steel Type 316 (Stitch Welded)	343-96ST6
Stainless Steel Type 304 (Stitch Welded)	343-96ST4
PVC	343-96PV
Polypropylene	343-96PP

AIR EXHAUST VOLUME (CFM) AND STATIC PRESSURE LOSSES (SP)

HOOD WIDTH		48"	60"	72"	96"
SASH OPENING*		7.30 sq. ft.	9.60 sq. ft.	11.80 sq. ft.	16.30 sq. ft.
UPPER SASH FULL OPEN (27")	80 FPM	710 @ .14	815 @ .15	990 @ .22	1375 @ .18
	100 FPM	760 @ .16	1000 @ .22	1220 @ .34	1700 @ .24
SASH OPENING*		4.9 sq. ft.	6.4 sq. ft.	7.9 sq. ft.	10.9 sq. ft.
UPPER SASH 18" OPEN	80 FPM	415 @ .06	555 @ .09	675 @ .10	945@ .06
	l00 FPM	520 @ .08	695 @ .14	845 @ .17	1180 @ .10

** Includes middle and lower slots*

*** Exhaust Volume is calculated with the lower sash closed**

HAWKINS
LABORATORY FUME HOODS

VERTICAL RISING COMBINATION SASH
BUILD YOUR FUME HOOD

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Adobe Acrobat

PROJECT _____

WIDTH _____

QUANTITY _____

1 FUME HOOD AIRFLOW

- ○ Constant Air Volume (CAV)
- ○ Variable Air Volume (VAV)

2 LINER MATERIAL

- ○ Polyresin (PR)
- ○ Stainless Steel Stitch Welded T316 (ST6)
- ○ Stainless Steel Stitch Welded T304 (ST4)
- ○ Other

Refer to page 11 of the catalog for liner material description.

- ○ Ceiling Closure Panels
- ○ Blower Switch (Wiring NIC)
- ○ Sash Stop at 18”

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink

- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Floor Pans (Raised Edges)

- ○ Type 316 18 gauge stainless steel
- ○ Type 304 18 gauge stainless steel
- ○ Galvanized 18 gauge
- ○ Polyethylene

Additional Options

_____
_____
_____

Pre-piping

- ○ Above the hood

Low Air Flow Alarm

- ○ AFA500 (CAV Only)
- ○ AFA1000 (CAV Only)
- ○ AFA4000 (CAV Only)

Mechanical Services

_____
_____
_____
_____
_____

Cup Sink (Wall Mount)

- ○ 6”x3” Polyethylene
- ○ 6”x3” T316 Stainless Steel

Floor Sill

- ○ Type 316 18 gauge stainless steel
- ○ Type 304 18 gauge stainless steel

Additional Options

_____
_____
_____

OPTIONS/ACCESSORIES

Epoxy

915mm (36”) wide fume hood	36-BMEP
1220mm (48”) wide fume hood	48-BMEP
1525mm (60”) wide fume hood	60-BMEP
1830mm (72”) wide fume hood	72-BMEP
2440mm (96”) wide fume hood	96-BMEP

Epoxy

- Work surfaces are moulded in one piece from a modified epoxy resin with a raised 10mm (3/8”) anti-spill edge on all four sides and drip groove on the underside of the front edge.
- Front edge is radiused for more efficient airflow
- Overall thickness shall be 32mm (1 1/4”).
- Material will offer good stain resistance and excellent chemical heat and moisture resistance.
- Sinks should be fabricated from the same material.
- Colour of top shall be black unless otherwise specified.
- Work surface is factory installed.

Stainless Steel

- Work surfaces are fabricated from Type 316 OR Type 304 stainless steel, 16 gauge, number 4 finish.
- A raised 10mm (3/8”) anti-spill edge is on all four sides.
- Sinks should be fabricated from the same material and can be integral welded into the work surface.
- It shall be reinforced on the underside by 16 gauge galvanized-steel channels spaced to prevent twisting, oil-canning or buckling.
- Overall thickness shall be 32mm (1 1/4”).
- Material offers excellent heat and solvent resistance and good chemical resistance to most acids.
- Stainless steel is not recommended for use with chemicals such as 18 Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Work surface shall be factory installed.
- Work surface is factory installed.

Stainless Steel – type 316

915mm (36”) wide fume hood	36-BMSS-6
1220mm (48”) wide fume hood	48-BMSS-6
1525mm (60”) wide fume hood	60-BMSS-6
1830mm (72”) wide fume hood	72-BMSS-6
2440mm (96”) wide fume hood	96-BMSS-6

Stainless Steel – type 304

915mm (36”) wide fume hood	36-BMSS-4
1220mm (48”) wide fume hood	48-BMSS-4
1525mm (60”) wide fume hood	60-BMSS-4
1183mm (72”) wide fume hood	72-BMSS-4
2440mm (96”) wide fume hood	96-BMSS-4

General Storage Cabinets, Steel Construction (-S)

- Are non-lined and have a full depth adjustable shelf.
- Cabinets are all-welded steel construction, are rigid and self supporting.
- The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
  - 11 gauge (3.2mm) for top and front rails
  - 14 gauge (1.7 mm) for leveling devices
  - 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.
- Leveling devices are installed on each corner and are accessible from the inside of the cabinet
- Cabinets are 535mm (21") deep.
- Also available 460mm deep (18").
- Also available in wood veneer construction **(-W)**.

	880mm (34 3/4") high Stand-up Height	825mm (32 ½") high ADA Height
380mm wide (15")	No. A1-15 -S	No. ADA1-15 -S
460mm wide (18")	No. A1-18 -S	No. ADA1-18 -S
610mm wide (24")	No. A1-24 -S	No. ADA1-24 -S
760mm wide (30")	No. A2-30 -S	No. ADA2-30 -S
915mm wide (36")	No. A2-30 -S	No. ADA2-36 -S
1220mm wide (48")	No. A2-48 -S	No. ADA2-48 -S

	880mm (34 3/4") high Stand-up Height	825mm (32 ½") high ADA Height
460mm wide (18")	No. A25-18 -S	No. ADA25-18 -S
610mm wide (24")	No. A25-24 -S	No. ADA25-24 -S
760mm wide (30")	No. A25-30 -S	No. ADA25-30 -S
915mm wide (36")	No. A25-30 -S	No. ADA25-36 -S
1220mm wide (48")	No. A25-48 -S	No. ADA25-48 -S

Acid/Corrosive Storage Cabinets, Steel Construction (-S)

- Are designed and constructed for the storage of acids and corrosive chemicals, not flammable or combustible chemicals. Door fronts to be labeled "ACIDS" or "CORROSIVE".
- Cabinet exteriors are all-welded steel construction, are rigid and self-supporting.
- Interior lining is all welded one piece construction fabricated of 6mm (1/4") thick from white low-density polyethylene. Interior of doors are lined with the same material and have upper and lower vent slots.
- Shelf is reinforced, full depth, two position, high density polyethylene.
- The floor of the cabinet has a 25mm (1") anti-spill front edge.
- Cabinet will be provided with 40mm (1 1/2") PVC fittings and tubing for venting the cabinet into the fume hood.
- Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
- Cabinets are 535mm (21") deep.
- Also available 460mm deep (18").
- Also available in wood veneer construction **(-W)**.

	880mm (34 3/4") high Stand-up Height	825mm (32 ½") high ADA Height
460mm wide (18")	No. A23-18 -S	No. ADA23-18 -S
610mm wide (24")	No. A23-24 -S	No. ADA23-24 -S
760mm wide (30")	No. A23-30 -S	No. ADA23-30 -S
915mm wide (36")	No. A23-30 -S	No. ADA23-36 -S
1220mm wide (48")	No. A23-48 -S	No. ADA23-48 -S

Solvent/Flammable Storage Cabinets, Steel Construction (-S)

- Designed for the storage flammable and combustible liquids and not for the storage of acids and corrosives.
- Door fronts to be labeled "FLAMMABLE- KEEP FIRE AWAY"
- Cabinets meet O.S.H.A. Standard 1910-106 (d)(3) and comply with NFPA 30 Flammable and Combustible Liquids. They are UL 1275/ UL1275C UL labeled.
- Cabinets is fabricated from 1.2mm (18 gauge) steel with a baked electrostatic powder coating. The top, sides, floor and doors are double wall construction with fire-proof insulation between providing a 40mm (1 1/2") insulating air space all around.
- The floor is recessed 50mm (2") to contain spills.
- Doors are manual-closing with lever handle a three point locking devise. Self closing doors are optional
- Upper and lower air vents with spark arrestors and removable threaded covers are installed on the back of the cabinets.
- Cabinet is painted Caution Yellow.
- Cabinets are 535mm (21") deep. • Also available 460mm deep (18").
- Also available in wood veneer construction. (-W)

NOTE: It is not recommended to vent the cabinets into fume hood or fume hood exhaust ducting.

Pump Cabinets, Steel Construction (-S)

- Construction is to UL962A/CSA22.2 #203 certified.
- Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
- Inside of cabinet (back, sides and top) are lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining is welded to the cabinet doors, back, sides and top.
- A 100lb capacity full extension pull out pan on the bottom of the cabinet is standard.
- One duplex electrical outlet 120V/15–20 A is located on the inside back of the cabinet, one 15A pump switch with a 4.90A thermal overload is located on the exterior top panel of the cabinet.
- A 2" (51mm) diameter vent port at the top left corner of the cabinet back and a 1 1/2" (38mm) pipe on the back right side of the cabinet top for end-user supplied piping is standard.
- Cabinets are 535mm (21") deep.
- Optional "CPU" for additional venting available
- Also available 460mm deep (18").
- Also available in wood veneer construction (-W).

	880mm (34 3/4") high Stand-up Height	825mm (32 ½") high ADA Height
380mm wide (15")	No. A41-15 -S	No. ADA41-15 -S
460mm wide (18")	No. A41-18 -S	No. ADA41-18 -S
610mm wide (24")	No. A41-24 -S	No. ADA41-24 -S
760mm wide (30")	No. A41-30 -S	No. ADA41-30 -S
915mm wide (36")	No. A41-30 -S	No. ADA41-36 -S
1220mm wide (48")	No. A41-48 -S	No. ADA41-48 -S

Factory installed service fixtures and fittings:

- Mechanical service fixtures and fittings are front loading type, factory installed and piped from valve to outlet in the fume hood.
- Rod type valve assembles are also available
- Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
- Fittings are CSA and CGA approved

Valves

- Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.
- Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.
- Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.
- Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.
- Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

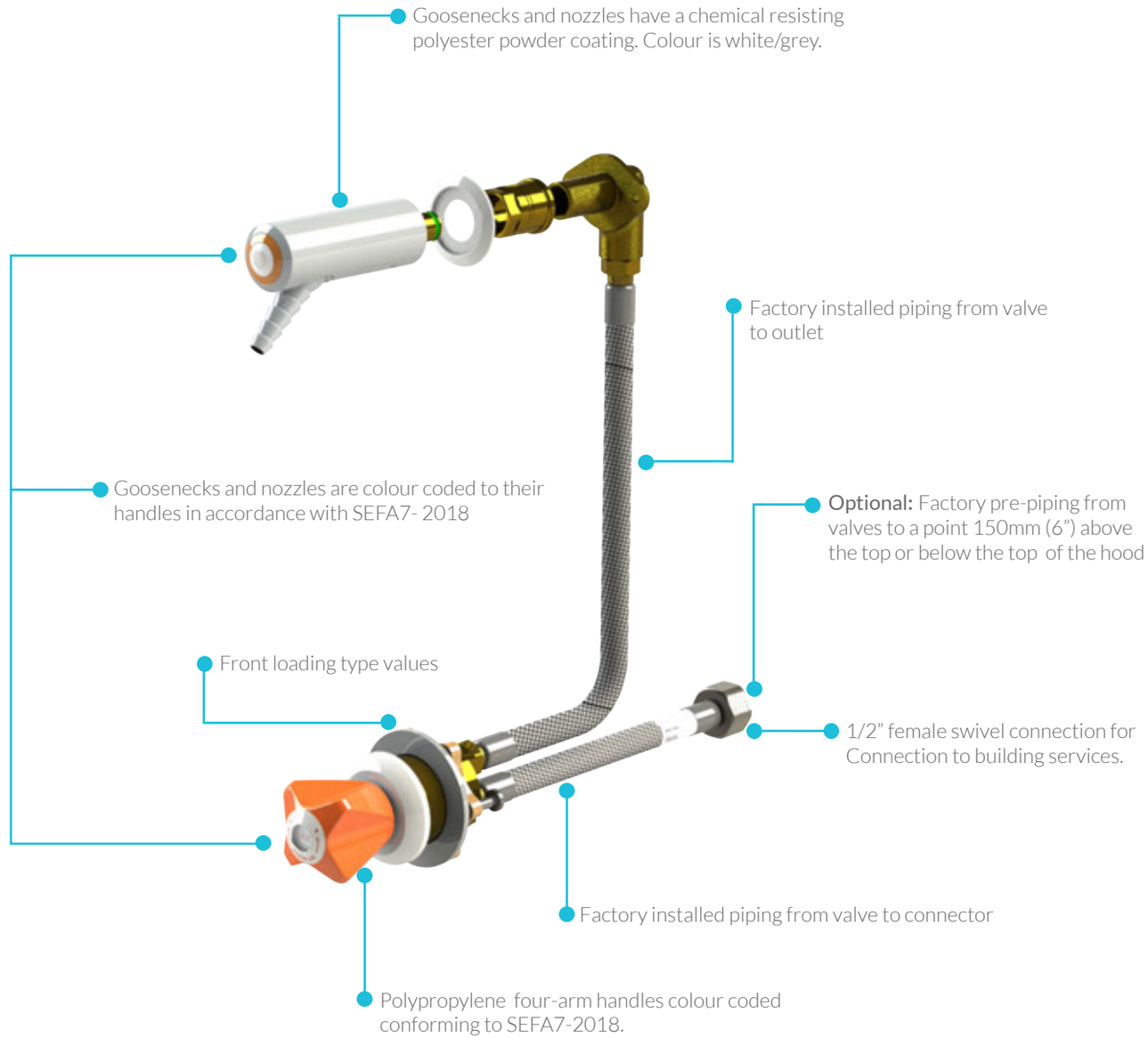
Fixtures exposed to hood interior:

- One piece construction, cast or forged brass with a minimum copper content of 57%.
- Finish is a chemical resisting polyester powder coating. Colour is white/ grey.

Handles:

- Remote control handles: Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.

- Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).



600-FL Cold water gooseneck
602-FL Hot water gooseneck

601-FL Cold water gooseneck
w/ vacuum breaker
603-FL Hot water gooseneck
w/ vacuum breaker

606-FL Cold water nozzle
607-FL Hot water nozzle
608-FL Cold/hot water mixing nozzle
609-FL Steam nozzle

604-FL Cold/hot water
mixing gooseneck

605-FL Cold/hot water mixing
gooseneck w/ vacuum breaker

610-FL Atmospheric
vacuum breaker

620-FL Burning gas

621-FL Air

622-FL Vacuum

623-FL Nitrogen

624-FL Carbon Dioxide
625-FL Hydrogen
626-FL Argon
627-FL Oxygen
628-FL Propane
629-FL Helium
630-RT Low Vacuum
635-FL Special gas (specify)
636-FL Special gas (specify)

| MECHANICAL SERVICE FIXTURE DISTILLED/REVERSE OSMOSIS WATER

Factory installed service fixtures and fittings:

- Mechanical service fixtures and fittings are front loading type, factory installed and piped from valve to outlet in the fume hood.
- Piping for low temperature water, 0°c to 65°c (Polyethylene and Polypropylene valves)
- Piping for high temperature water, 0°c to 90°c (Stainless steel valves and hoses)
- Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
- Fittings are CSA approved

Valves

- Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.
- Ceramic compression ball valve?? with double sealed Uniflex connection, 1,5X360 degree turn open to close.

Material in contact with water:

- Polypropylene for low temperature water, 0°c to 65°c
- Type 316 stainless steel for high temperature, 0°c to 90°c

Fixtures exposed to hood interior:

- One piece construction, cast or forged brass with a minimum copper content of 57%.
- Nozzles:

o Polypropylene for low temperature water, 0°c to 65°c
o Type 316 stainless steel for high temperature, 0°c to 90°c

Finish:

- Chemical resisting polyester powder coating. Colour is white/ grey.

Handles:

- Remote control handles: Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.
- Accessible Use (ADA): One hand operated remote control handles. 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N). .

611-FL Distilled water gooseneck 0°c to 65°c
612-FL Distilled water gooseneck 0°c to 90°c

613-FL reverse osmosis gooseneck 0°c to 65°c
614-FL reverse osmosis gooseneck 0°c to 90°c

615-FL distilled water nozzle 0°c to 90°c
616-FL distilled water nozzle 0°c to 90°c

617-FL reverse osmosis water nozzle 0°c to 90°c
618-FL reverse osmosis water nozzle 0°c to 90°c

Pre-piping 150 (6”)
Above Hood

Factory Pre-Piping - Optional

- Pre-piping from valves to a point 150mm (6”) above OR below the hood superstructure complete with 1/2” female nut connector for service connection.

Material:

- Water: SPX (Soft PEX-A) hose with stainless steel braiding. Outside diameter is 0.47” with a minimum inner bending radius of 1 37/64”.
- Technical gases: SPX (Soft PEX-A) with (describe) stainless steel braiding . Outside diameter is 0.47” with a minimum inner bending radius of 1 37/64”.
- Burning Gases: Corrugated type 316 Stainless steel hose. Outside diameter is 0.47” with a minimum inner bending radius of 0.33”.

Pressure Ratings:

- Fittings are to be constructed to operate with the following maximum working pressure without leak or failure.

  Water Fittings: 145 PSI
  Non-Burning Gas: 145 PSI - 231 PSI
  Burning Gases: 100 PSI
  Special Water Fittings: 145 PSI
  Oxygen Fittings: 145 PSI - 232 PSI

Pre-piping 150 (6”)
Below Hood

Acid Storage Cabinet Vent Kit

- Designed to vent the acid storage base cabinet into the rear upper baffle area of the fumehood without perforating the work surface.
- Assembly consists of 40mm (1 ½”) diameter PVC tubing and PVC fittings.
- Tubing is connected to the back of the cabinet and the rear baffle area of the hood with PVC elbows and flanges.
- PVC tubing runs between the inside and outside wall of the fume hood superstructure.

EPOXY SINKS AND CUP SINKS

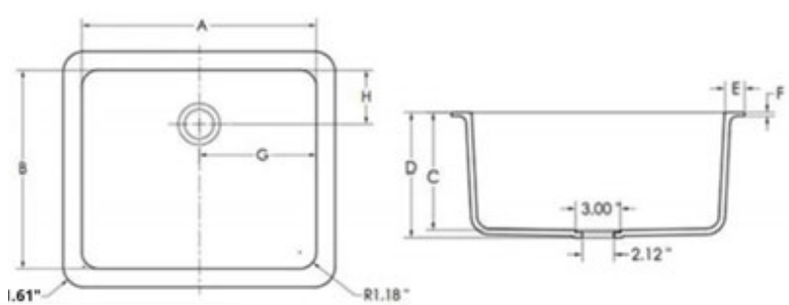
- Moulded seamless epoxy construction.
  Standard colour is black.
  Grey and slate grey are optional colours.
- Sinks are Drop-in type with moulded rim.
  Can be flush mounted in the counter top or with raised rim 1/4" above the above countertop surface.
- Waste fitting is polyethylene with 1 1/2" diameter threaded tail piece and strainer.
  Overflow tube is optional.

White, grey and slate grey are available to order with no up-charge.

Model	Internal Length	Internal Width	Internal Depth	External Height	Flange Width	Internal Thickness
	A	B	C	D	E	F
#3	12	8	8	9	0.8	0.3
#5A**	14	10	6	7	0.8	0.3
#10**	16	8	7	8	0.8	0.3
#15**	16	12	8	9	0.8	0.3
#25A	18	15	5	6	1.1	0.3
#25	18	15	8	9	1.1	0.3
#30**	18	15	11	12	0.8	0.3
#33**	21	17	10	11	0.8	0.3
#50	24	16	8	9	0.8	0.3
#55A	25	15	5	6	0.8	0.3
#55**	25	15	10	11	0.8	0.3
#59	28	15	12	13	0.8	0.3
#70	24	16	16	17	0.8	0.3

Available in black.

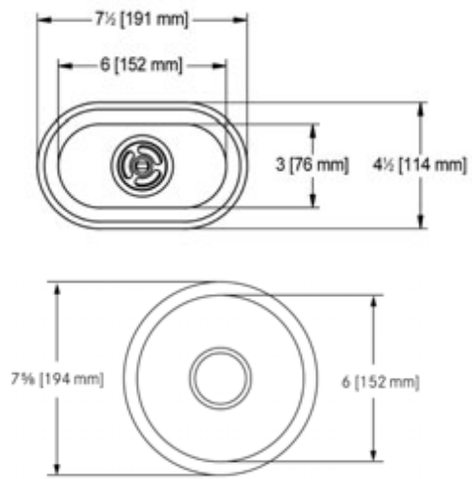
Model	Internal Length	Internal Width	Internal Depth	External Height	Flange Width	
S497	9	3	5.8	6	0.63	Deck Mount
S499	6	3	4.5	5	0.63	Deck Mount
S500	5.4" Diameter	5.4" Diameter	3.7	4	0.63	Deck Mount
S502	6	3	3.7	4	0.63	Wall Mount



- Stamped seamless construction, type 316, 20 gauge. Number 4 satin finish on exposed surfaces.
- All corners are radiused for ease of cleaning.
- Self rimming with integral rim. Can be integrally welded into stainless steel work surface.
- Undercoated for sound deadening and reduced condensation
- Waste fitting is a 3 1/2” crumb cup stainer with stopper and 1 1/2” diameter stainless steel tailpiece

INSIDE DIMENSION

NO.SS1	14½” x 9½” x 7”
NO.SS3	16” x 14” x 10”
NO.SS4	18” x 16” x 7”
NO.SS5	18” x 16” x 10”



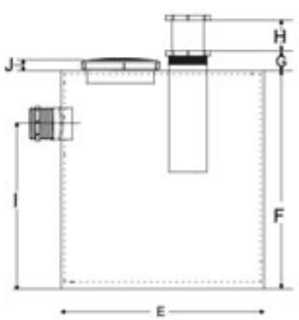
INSIDE DIMENSION

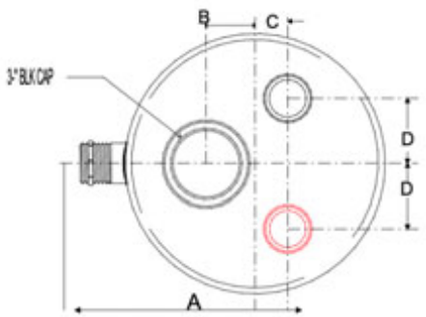
NO.SS30	6” x 3” Oval
NO.SS30	6” Diameter

- Stamped seamless construction, type 316, 20 gauge. Number 4 satin finish on exposed surfaces.
- All corners are radiused for ease of cleaning.
- Self rimming with integral rim. Can be integrally welded into stainless steel work surface.
- Undercoated for sound deadening and reduced condensation Stainer is built in with 1 1/2” diameter stainless steel tailpiece

DILUTION TANK/TRAP - 2 GALLONS

- Design allows for easy fitting in tight spaces.
- Standard connections are 1-1/2” female threaded inlet and 1-1/2” male threaded outlet.
- A 3” cleanout is mounted on the tank top to facilitate inspection and maintenance.
- Single or dual inlets can be provided. The standard tank configuration is shown.
- May be used as sedimentation traps.





WHEN TANK IS ORDERED WITH 1 INLET

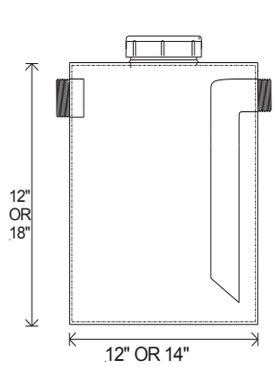
THE STD LOCATION IS MARKED IN RED.

COLOR	PART #	A	B	C	D	E	F	G	H	I	J	INLET	# OF INLET	OUT-LET
BLACK	W59155-200	7-5/16"	2-1/2"	1-3/16"	2-1/16"	9"	10-5/32"	1-15/16"	0-10	6-13/16"	1-5/8"	1-1/2"	2	2"
BLACK	W59155-201	7-5/16"	2-1/2"	1-3/16"	2-1/16"	9"	10-5/32"	1-15/16"	0-10	6-13/16"	1-5/8"	1-1/2"	1	2"
BLACK	W5915-202	7-5/16"	2-1/2"	1-3/16"	2-1/16"	9"	10-5/32"	1-15/16"	0-10	6-13/16"	1-5/8"	2"	1	2"
BLACK	W59155-203	7-5/16"	2-1/2"	1-3/16"	2-1/16"	9"	10-5/32"	1-15/16"	0-10	6-13/16"	1-5/8"	2"	2	2"

ALSO AVAILABLE IN TRANSLUCENT WHITE W59156

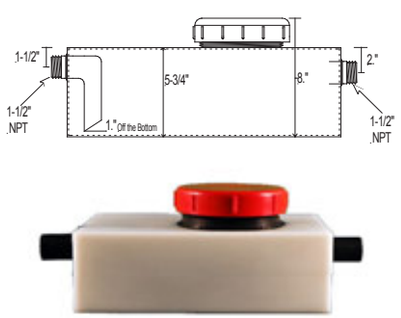
BOOKSHELF/BOILER TANK

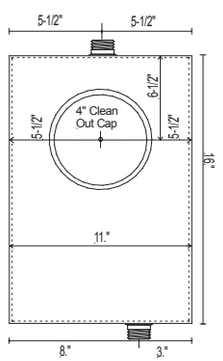
Confined space tanks all dimensions are in inches



ONE PEICE ROTATIONALLY MOLDED
1 1/2" OR 2" MALE / FEMALE
OR PLAIN END INLET AND OUTLET
3" TOP CLEANOUT CAP

A	B	C	D= GALLONS	PART NUMBER
6"	12"	12"	3	W121206-001
6"	18"	14"	5	W181406-001





AFA 500

Model AFA500 factory installed low airflow monitor and alarm system.

- Built in sidewall airflow sensor for measuring and monitoring face velocity.
- Audible alarm with mute button.
- Visual alarm with Green LED = Safe and Red LED light = Alarm.
- Audible alarm can be silenced but Red LED will stay active until alarm condition is corrected.
- Single Alarm Point Capture pushbutton calibration.
- Relay input for Night Setback to mute audible alarm.
- Alarm is low voltage and is supplied with a transformer.

AFA 1000

Model AFA1000 factory installed low airflow monitor and alarm system

- Built in sidewall airflow sensor for measuring and monitoring face velocity
- Back-lit LCD display.
- Digital face velocity display in fpm or m/s.
- Visual and audible alarms.
- Indicator display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
- Alarm Indiction: Red graphic with audible alarm.
- Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
- Two point alarm capture push button calibration.
- BACnet and Modbus on board available with optional comms adaptor.
- Alarm is low voltage and is supplied with a transformer.

AFA 4000

Model AFA4000/1 factory installed low airflow monitor and alarm system

- Built in sidewall airflow sensor for measuring and monitoring face velocity
- Full-colour 3.5” LCD display.
- Digital face velocity display in fpm or m/s.
- Visual and audible alarms.
- Graphic display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
- Alarm Indiction: Red graphic with audible alarm.
- Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
- Two point alarm capture pushbutton calibration.
- BACnet and Modbus on board available with optional comms adaptor.
- Alarm is low voltage and is supplied with a transformer.
- Compatible with TEL Variable Air Volume Auto Sash Return System

| DISTILLATION RACKING

Assemblies

- Nominal 300mm X 300mm (12” X 12”) grid pattern
- Adjustable by users as apparatus requirement change
- Available in three materials to better suit user needs
- Available for bench mount and floor mount hoods
- Custom sizes to customer requirements

Stainless Steel, type 316, satin finish (S)

- ½” diameter stainless steel rounded edge type rods
- Open end style stainless steel clamps with set screw
- Stainless steel flanges with set screw

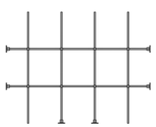
Aluminum, satin finish (A)

- ½” diameter aluminum rounded edge type rods
- Open end style aluminum clamps with set screw
- Aluminum flanges with set screw

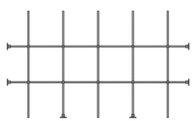
Plastic (P)

- ½” diameter white fiberglass rounded edge type rods
- Open end style black nylon clamps with set screw
- Black nylon flanges with set screw

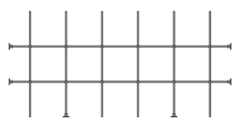
BENCH MOUNT



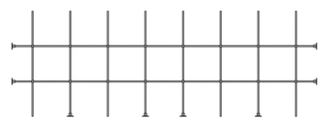
BMDR-48(A)
BMDR-48(S)
BM DR-48(P)



BMDR-60(A)
BMDR-60(S)
BMDR-60(P)

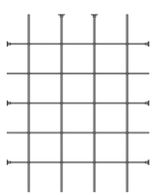


BMDR-72(A)
BMDR-72(S)
BMDR-72(P)

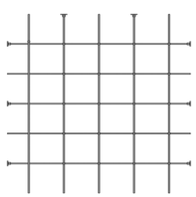


BMDR-96(A)
BMDR-96(S)
BMDR-96(P)

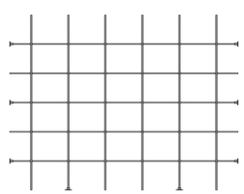
FLOOR MOUNT



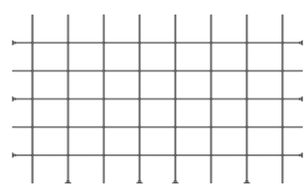
FMDR-48(A)
FMDR-48(S)
FMDR-48(P)



FMDR-60(A)
FMDR-60(S)
FMDR-60(P)



FMDR-72(A)
FMDR-72(S)
FMDR-72(P)



FMDR-96(A)
FMDR-96(S)
FMDR-96(P)

Ceiling Closure Panels

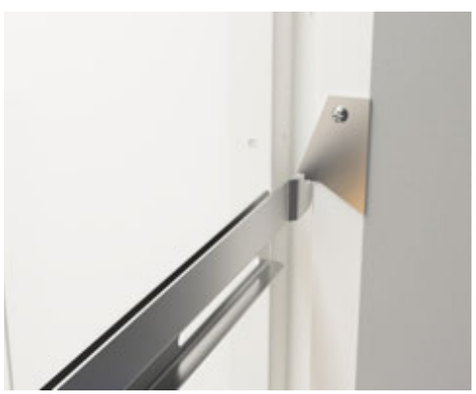
- Ceiling Closure Panels are intended enclose the top of the fume to the underside of ceiling in doing so hiding the exhaust ducting from view.
- Fabricated from the same material and gauges as the fume hood exterior.
- Panels are set-back design to allow for proper by-pass air operation and to allow for the removal of the fume hood front and side panels.
- Maximum height is 610mm (24").
- Colour to match fume hood exterior.

Finished Back Panels

- Finished Back Panels are intended to enclose the back of fume hood when the hood is sitting on an island or peninsula cabinet assembly.
- Panels are two piece construction and are removable.
- Colour to match fume hood exterior.

Sash Stops

- Sash stops can be provided at the specified Sash Operating Height.
- They have a manual override when lowering the sash below the Sash Operating Height and an automatic reset when the sash is raised above the Sash Operating Height



YOUR RESEARCH DRIVES OUR INNOVATION.

SPECIFICATIONS

CONSTANT AIR VOLUME
BENCH MOUNT FUME HOODS

1.04 REFERENCE STANDARDS

.1 ANSI/ASHRAE 110 Latest Edition: Method of Testing Performance of Laboratory Fume Hoods

.2 SEFA 1 Latest Edition: Laboratory Fume Hoods

.3 SEFA 8-M Latest Edition: Laboratory Grade Metal Casework

.4 SEFA 8-W Latest Edition: Laboratory Grade Wood Furniture, Casework, Shelving and Tables

.5 MD15128 Latest Edition: Laboratory Fume Hoods

.6 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.7 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.8 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.9 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.10 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.11 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 **Bench Mount Fume Hoods:**

.1 Are designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition.

.2 It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.3 **Accessibility for Person With Disabilities (ADA:**

.1 Where shown on the laboratory drawings, provide fume hoods accommodating persons with disabilities in accordance to Federal, Provincial and local regulations having jurisdiction.

.2 The height of the highest point of access to the work surface above finished floor shall not exceed (860mm (34").

.3 Sash operation, mechanical fixtures, both handles and nozzles, sinks, electrical receptacles, switches and low air flow alarm shall be at a location and height off finished floor to be considered accessible.

.4 Refer to the H.H. Hawkins Ltd. Accessible – ADA fume hood catalog section for wheel chair accessibility requirements.

.3 Fume hoods will be complete with supporting base cabinets, if specified under this section, factory installed electrical fittings, mechanical service fixtures, low airflow alarm/ monitor and accessories as listed under this section. See 2.05.

.4 Supply and Installation of the fume hood and supporting base cabinets, are to be by the hood manufacturer as described under this section. Final mechanical and electrical connections to the building utilities are by others.

.5 **Constant Air Volume (CAV) Full By-Pass type:** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hoods shall maintain a relative constant exhaust volume at any sash opening from 685mm (27") full open to 150mm (6") open.

.1 Maximum variation as a result of sash position shall not exceed 5% of the specified exhaust volume.

.2 By-Pass shall limit face velocity from increasing more than fourfold as sash is lowered from full open 685mm (27") to 150mm (6") open.

.3 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72") wide unit, average static pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

1. Sash full open 680mm (27”);

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	55Pa (0.22 inches)
0.50m/s (100 FPM)	85Pa (0.34 inches)

2. Sash open 450mm (18”)

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.10 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.2 Noise Level: When measured on the ‘A’ scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.3 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.4 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and electrical fittings will be pre-wired to a junction box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6”) above or below the fume hood superstructure is **optional.**

.5 Fume hoods shall be available in standard widths of 915mm (36”), 1220mm (48”) 1525mm (60”), 1830mm (72”) and 2440mm (96”).

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]

.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]

.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].

.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.

.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.

.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

.2 Containment Testing - “As Manufactured” (AM):

.1 Single sided bench mount fume hoods will be performance tested to the ASHRAE 110 - Latest Edition, Method of Testing Performance of Laboratory Fume Hoods. The method of testing consists of the following three tests:

.1 Flow Visualization using Local and Large volume smoke challenges

.2 Face Velocity Measurements/Profile

.3 Tracer Gas Containment

.2 The manufacture’s fume hood shall be capable of achieving an “As Manufactured” (AM) rating of better than 0.05 PPM at 4 litres per minute (4 AM 0.05) with the vertically rising sash in the full open (27”) position.

.3 Unless otherwise specified, previous test results obtained on the manufacture’s identical hood design and size to the ones specified herein will be acceptable.

.4 Test reports shall be made available on request.

.3 Manufacture's Test Facility:

.1 All "As Manufactured" (AM) tests shall be performed in the manufacture's fume hood testing facility.

.2 Room shall be of adequate size to provide unobstructed clearance of at least five feet each side and ten feet in front of fume hood.

.3 Make-up air will be provided to replace the room air exhausted through the fume hood and be capable of maintaining 0.02" w.g. negative pressure.

.4 Make-up air will be provided in a manner that keeps cross drafts in front of hood to less than 0.15m/s (30fpm).

.5 Room ventilation system will be capable of testing fume hoods to face velocities of between 0.30m/s (60 fpm) through 0.51 (100 fpm).

.6 All testing and reports shall be performed and submitted by a third party testing company specializing in this type of certification.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.

.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity.
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture's colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3" X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4" X 4") sample of liner lining material(s).
.3 100mm X 100mm (4" X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.

.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

.2 Performance Test Reports:

.1 Submit a test report from a third party fume hood testing agency listing testing criteria that the fume hood types and sizes on this project have been tested to ANSI/ASHRAE-110 Latest Edition "As Manufactured" (AM).

.2 Submit a written report on each hood type and size certification that the fume hood(s) to be provided passed the tests defined in 1.06 PERFORMANCE.

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE'S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years' experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Lower air foil: Stainless steel, 16 gauge, type 316, number 4 finish.

.9 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.10 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 Bench Mount Laboratory Fume Hoods

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner. Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.3 Exterior End Panels: Two piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable with without tools.

.4 Front Upper Panel: Secured with hidden metal fasteners and are removable without tools.

.5 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed.

.6 Front Opening: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.7 Lower Air Foil Opening: Fabricated of I6 gauge, type 3I6 stainless steel, number 4 finish. A slot between its underside and the work surface shall provide a constant flow of air across the work surface and allowing access for oversize electrical plugs.

.2 **Interior Liner**: Refer to 2.05.4

.1 Will be of a corrosion and acid resisting material as listed and specified herein.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access panels: Will be fabricated of the same material as the liner, are flush mount, air tight and therefore do not require gaskets.

.3 **Sash(es):** (Delete those **NOT** required)

.1 **Vertically Rising**:

.1 Sash is a “Full View” type with the front vertical view height being 915 mm (36’) including the fixed view panel. The maximum sash opening is 685 mm (27”).

.2 Fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys.

Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. .4 Sash shall open and close against rubber bumpers.

.4 Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.2 **Horizontal Sliding:**

.1 Sash assembly is "Full View" type with a front vertical view height of 915 mm (36"). Maximum vertical sash opening is 890mm (35").

.2 Sash assembly is set in an I8 gauge, type 316 stainless steel, number 4 finish full frame. Horizontal sliding panes are unframed and are designed so that only a maximum of 50% of the sash can be opened at any one time.

.3 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16").

.3 **Combination Horizontal Sliding/Vertical Rising:**

.1 Sash is a "Full View" type with the front vertical view height being 915 mm (36'). The maximum sash opening is 840 mm (33").

.2 Sash assembly is set in an I8 gauge, type 316 stainless number 4 finish frame. It is fully counter balanced using a single centre hung weight running behind the hood and a continuous stainless steel sash cable. It is designed to offer exact and positive operation and to prevent sash drop in the event of the failure of the sash cable. Pulleys are complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.3 Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time.

.4 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16”).

.5 Sash Pull is a low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.6 Sash stops shall be provided at the 450mm (18”) open position unless otherwise specified. They shall be have a manual override when lowering the sash below the 450mm (18”) opening and an automatic reset when the sash is raised above the 450 (18”) open position.

.4 **Liner Material(s):** (Delete those **NOT** required)

.1 **Polyresin (PR):**

.1 6mm (1/4") thick, solid fiberglass reinforced pressed thermoset resin board, is flame retardant and self-extinguishing. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 723 ASTM E84-80). Flexural strength is a minimum of 14,000 PSI (D790).

.2 Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F).

.3 Exhaust collar is type 316 stainless steel.

.2 **Stainless Steel, all welded (SW):**

.1 Type 316 (SW6) OR Type 304 (SW4) stainless steel (choose one), 16 gauge, number 4 finish, all welded seamless construction. Interior comers have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.2 Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.
.3 Exhaust collar is type 316 stainless steel.

.3 **Stainless Steel, stitched welded (ST):**

.1 Type 316 (ST6) OR Type 304 (ST4) stainless steel (choose one), 16 gauge, number 4 finish. The sides and back of the interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides.
.2 Liner has a factory installed mechanically fastened and silicon sealed work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.
.3 Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.
.4 Exhaust collar is stainless steel.

.4 **Polypropylene (PP):**

.1 1/4” thick, solid, flame retardant, self-extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.
.2 Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F).
.3 Exhaust collar is PVC.

.5 **PVC (PV)** :

.1 1/4” thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.
.2 Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has

little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F).

.3 Exhaust collar is PVC.

.5 **Baffles:**

.1 Three-piece construction, fabricated from the same material as the fume hood liner. Full width horizontal exhaust slots are located at the top, bottom and midpoint with side vertical slots running full height.

.2 Are factory sized and fixed in place for optimum containment per ASHRAE II0 Latest Edition Tracer Gas Testing.

.6 **Exhaust Collar(s) :**

.1 Type 316 stainless steel, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.2 PVC, 6mm (1/4") thick, beveled entry edge, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.7 **Ceiling Closure Panels:** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.

.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.

.3 Colour to match fume hood exterior.

.8 **Seismic Anchors:** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.9 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.
.2 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.
.3 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".
.4 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts of the hood exterior.
.5 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.
.6 Fume hood shall be certified to the following Standards: CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012 Ed.3+R:21Nov2018 and UL1805:2002

.5 .10 **Work Surfaces:** (Delete those **NOT** required)

.1 **Epoxy:**

.1 Work surfaces are moulded in one piece from a modified epoxy resin with a raised 12 mm (1/2”) anti-spill edge on all four sides and drip groove on the underside of the front edge. Overall thickness shall be 32mm (1 1/4”).
.2 Material will offer good stain resistance and excellent chemical, heat and moisture resistance.
.3 Sinks should be fabricated from the same material.
.4 Colour of top shall be black unless otherwise specified.
.5 Work surface shall be factory installed and secured to the fume hood superstructure.
.6 Epoxy sinks can be Drop-in flush mount type OR raised 6mm (1/4”) above the top of the work surface. (Choose one)

.2 **Stainless Steel:**

.1 Work surfaces are fabricated from Type 316 OR Type 304 stainless steel (choose one), 16 gauge, number 4 finish.

.2 Work surface has a 12mm (1/2") high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.3 Material offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Work surface shall be factory installed.

.4 Sinks are flush mount and integrally welded into the work surface.

.11 **Base Cabinets:** Delete those **NOT** required

.1 **General Storage:**

.1 Steel construction.

.2 Are non-lined and have a full depth adjustable shelf.

.3 Cabinets are welded steel construction, are rigid and self-supporting.

.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

.1 11 gauge (3.2mm) for top and front rails

.2 14 gauge (1.7 mm) for leveling devices

.3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.5 Leveling devices are installed on each corner and are accessible from the inside of the cabinet

.6 Cabinets are 535mm (21”) deep.

.7 Cabinet widths as shown on drawings.

.8 Finish to be per 2.06 Exterior Finish.

.2 **Acid Storage:**

.1 Steel construction.

.2 Are designed and constructed for the storage of acids and corrosive chemicals, not flammable or combustible chemicals. Door fronts to be labeled “ACIDS” or “BASES”.

.3 Cabinet exteriors are welded steel construction, are rigid and self-supporting.

.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.5 Interior lining is all welded one piece construction fabricated of 6mm (1/4") thick from white low-density polyethylene. Interior of doors are lined with the same material and have upper and lower vent slots.

.6 Shelf is reinforced, full depth, two position, high density polyethylene.

.7 The floor of the cabinet has a 25mm (1") anti-spill front edge. Cabinet will be provided with 40mm (1 1/2") PVC fittings and tubing for venting the cabinet into the fume hood.

.8 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.

.9 Cabinets are 535mm (21") deep.

.10 Also available 460mm deep (18").

.11 Finish to be per 2.06 Exterior Finish.

.3 **Solvent/Flammable Storage:**

.1 Steel construction.

.2 Designed for the storage flammable and combustible liquids and not for the storage of acids and corrosives. Door fronts to be labeled "FLAMMABLE- KEEP FIRE AWAY".

.3 Cabinets meet O.S.H.A. Standard 1910-106 (d)(3) and comply with NFPA 30 Flammable and Combustible Liquids. They are UL 1275/UL1275C UL labeled.

.4 Cabinets is fabricated from 1.2mm (18 gauge) steel with a baked electrostatic powder coating. The top, sides, floor and doors are double wall construction with fire-proof insulation between providing a 40mm (1 1/2") insulating air space all around.

.5 The floor is recessed 50mm (2") to contain spills. Doors are manual-closing with lever handle and are three point locking devise. Self-closing doors are optional.
.6 Upper and lower air vents with spark arrestors and removable threaded covers are installed on the back of the cabinets. NOTE: It is not recommended to vent the cabinets into fume hood or fume hood exhaust ducting.
.7 Cabinets are 535mm (21") deep.
.8 Also available 460mm deep (18").
.9 Standard colour is "Caution Yellow".
.10 Finish to be per 2.06 Exterior Finish.

.4 **Vacuum Pump:**

.1 Steel construction.
.2 Construction is to UL962A/CSA22.2 #203 certified.
.3 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
  .1 11 gauge (3.2mm) for top and front rails
  .2 14 gauge (1.7 mm) for leveling devices
  .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.4 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
.5 Inside of cabinet (back, sides and top) are lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining is welded to the cabinet doors, back, sides and top.
.6 A 100lb capacity full extension pull out pan on the bottom of the cabinet is standard.
.7 One duplex electrical outlet 120V/15–20 A is located on the inside back of the cabinet, one 15A pump switch with a 4.90A thermal overload is located on the exterior top panel of the cabinet.
.8 A 2" (51mm) diameter vent port at the top left corner of the cabinet back and a 1 1⁄2" (38mm) pipe on the back right side of the cabinet top for end-user supplied piping is standard.
.9 Optional "CPU" for additional venting available

.10 Cabinets are 535mm (21") deep.
.11 Also available 460mm deep (18").

.12 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.
.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.3 Fittings are CSA and CGA approved.
.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.
  .1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.
  .2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.
  .3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.
  .4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:
  .1 One piece construction, cast or forged brass with a minimum copper content of 57%.
  .2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.
  .3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.

.6 Handles:
  .1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.
  .2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

.13 **Low Airflow Alarm/Monitor:** Delete those **NOT** required

.1 **Model AFA4000/1** factory installed low airflow monitor and alarm system:

- .1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
- .2 Full-colour 3.5” LCD display.
- .3 Digital face velocity display in fpm or m/s.
- .4 Visual and audible alarms.
  - .1 Graphic display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
  - .2 Alarm Indication: Red graphic with audible . alarm.
  - .3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
- .5 Two point alarm capture pushbutton calibration.
- .6 BACnet and Modbus on board available with optional comms adaptor.
- .7 Alarm is low voltage and is supplied with a transformer.

.2 **Model AFA1000** factory installed low airflow monitor and alarm system:

- .1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
- .2 Back-lit LCD display.
- .3 Digital face velocity display in fpm or m/s.
- .4 Visual and audible alarms.
  - .1 Indicator display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
  - .2 Alarm Indication: Red graphic with audible alarm.
  - .3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
- .5 Two point alarm capture pushbutton calibration.
- .6 BACnet and Modbus on board available with optional comms adaptor.
- .7 Alarm is low voltage and is supplied with a transformer.

.3 **Model AFA500** factory installed low airflow monitor and alarm system:
- .1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
- .2 Audible alarm with mute button.
  - .1 Visual alarm with Green LED = Safe and Red LED light = Alarm.
  - .2 Audible alarm can be silenced but Red LED will stay active until alarm condition is corrected.
- .3 Single Alarm Point Capture pushbutton calibration.
- .4 Relay input for Night Setback to mute audible alarm.
- .5 Alarm is low voltage and is supplied with a transformer.

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be ground smooth.

2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the “Scientific Equipment and Furniture Association”.

.5 Metal Surface Finish Testing:
- .1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

BACK TO MAIN

SPECIFICATIONS

VARIABLE AIR VOLUME
BENCH MOUNT FUME HOODS

1.04 REFERENCE STANDARDS

.1 ANSI/ASHRAE 110 Latest Edition: Method of Testing Performance of Laboratory Fume Hoods

.2 SEFA 1 Latest Edition: Laboratory Fume Hoods

.3 SEFA 8-M Latest Edition: Laboratory Grade Metal Casework

.4 SEFA 8-W Latest Edition: Laboratory Grade Wood Furniture, Casework, Shelving and Tables

.5 MD15128 Latest Edition: Laboratory Fume Hoods

.6 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.7 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.8 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.9 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.10 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.11 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 **Bench Mount Fume Hoods:**

.1 Are designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition.

.2 It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.2 **Accessibility for Person With Disabilities (ADA:**

.1 Where shown on the laboratory drawings, provide fume hoods accommodating persons with disabilities in accordance to Federal, Provincial and local regulations having jurisdiction.

.2 The height of the highest point of access to the work surface above finished floor shall not exceed (860mm (34").

.3 Sash operation, mechanical fixtures, both handles and nozzles, sinks, electrical receptacles, switches and low air flow alarm shall be at a location and height off finished floor to be considered accessible.

.4 Refer to the H.H. Hawkins Ltd. Accessible – ADA fume hood catalog section for wheel chair accessibility requirements.

.3 Fume hoods will be complete with supporting base cabinets, if specified under this section, factory installed electrical fittings, mechanical service fixtures and accessories as listed under this section. See 2.05.11.

.4 Supply and Installation of the fume hood and supporting base cabinets, are to be by the hood manufacturer as described under this section. Final mechanical and electrical connections to the building utilities are by others.

.5 **Variable Air Volume (VAV) Restricted By-Pass type.** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hood shall not have a by-pass to will insure that all exhaust air will go through the open sash area and lower airfoil.

.2 Fume hoods shall maintain a constant face velocity regardless of the sash position and/or sash opening area. As the sash is raised or lowered, the VAV system and alarm monitor (supplied and installed by others) will increase and decrease the exhaust volume for the fume hood accordingly.

.3 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72") wide unit, average static pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

1. Sash full open 680mm (27”);

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	55Pa (0.22 inches)
0.50m/s (100 FPM)	85Pa (0.34 inches)

2. Sash open 450mm (18”)

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.10 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.2 Noise Level: When measured on the ‘A’ scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.3 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.4 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and electrical fittings will be pre-wired to a junction box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6”) above or below the fume hood superstructure is **optional.**

.5 Fume hoods shall be available in standard widths of 915mm (36”), 1220mm (48”) 1525mm (60”), 1830mm (72”) and 2440mm (96”).

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]

.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]

.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].

.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.

.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.

.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

.2 Containment Testing - “As Manufactured” (AM):

.1 Single sided bench mount fume hoods will be performance tested to the ASHRAE 110 - Latest Edition, Method of Testing Performance of Laboratory Fume Hoods. The method of testing consists of the following three tests:

.1 Flow Visualization using Local and Large volume smoke challenges

.2 Face Velocity Measurements/Profile

.3 Tracer Gas Containment

.2 The manufacture’s fume hood shall be capable of achieving an “As Manufactured” (AM) rating of better than 0.05 PPM at 4 litres per minute (4 AM 0.05) with the vertically rising sash in the full open (27”) position.

.3 Unless otherwise specified, previous test results obtained on the manufacture’s identical hood design and size to the ones specified herein will be acceptable.

.4 Test reports shall be made available on request.

.3 Manufacture's Test Facility:

.1 All "As Manufactured" (AM) tests shall be performed in the manufacture's fume hood testing facility.

.2 Room shall be of adequate size to provide unobstructed clearance of at least five feet each side and ten feet in front of fume hood.

.3 Make-up air will be provided to replace the room air exhausted through the fume hood and be capable of maintaining 0.02" w.g. negative pressure.

.4 Make-up air will be provided in a manner that keeps cross drafts in front of hood to less than 0.15m/s (30fpm).

.5 Room ventilation system will be capable of testing fume hoods to face velocities of between 0.30m/s (60 fpm) through 0.51 (100 fpm).

.6 All testing and reports shall be performed and submitted by a third party testing company specializing in this type of certification.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.

.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity.
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture's colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3" X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4" X 4") sample of liner lining material(s).
.3 100mm X 100mm (4" X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.

.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

.2 Performance Test Reports:

.1 Submit a test report from a third party fume hood testing agency listing testing criteria that the fume hood types and sizes on this project have been tested to ANSI/ASHRAE-110 Latest Edition "As Manufactured" (AM).

.2 Submit a written report on each hood type and size certification that the fume hood(s) to be provided passed the tests defined in 1.06 PERFORMANCE.

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE'S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years' experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Lower air foil: Stainless steel, 16 gauge, type 316, number 4 finish.

.9 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.10 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 Bench Mount Laboratory Fume Hoods

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner. Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.3 Exterior End Panels: Two piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable with without tools.

.4 Front Upper Panel: Secured with hidden metal fasteners and are removable without tools.

.5 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed.

.6 Front Opening: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.7 Lower Air Foil Opening: Fabricated of I6 gauge, type 3I6 stainless steel, number 4 finish. A slot between its underside and the work surface shall provide a constant flow of air across the work surface and allowing access for oversize electrical plugs.

.2 **Interior Liner**: Refer to 2.05.4

.1 Will be of a corrosion and acid resisting material as listed and specified herein.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access panels: Will be fabricated of the same material as the liner, are flush mount, air tight and therefore do not require gaskets.

.3 **Sash(es):** (Delete those **NOT** required)

.1 **Vertically Rising**:

.1 Sash is a “Full View” type with the front vertical view height being 915 mm (36’) including the fixed view panel. The maximum sash opening is 685 mm (27”).

.2 Fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys.

Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. .4 Sash shall open and close against rubber bumpers.

.4 Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.2 **Horizontal Sliding:**

.1 Sash assembly is "Full View" type with a front vertical view height of 915 mm (36"). Maximum vertical sash opening is 890mm (35").

.2 Sash assembly is set in an I8 gauge, type 316 stainless steel, number 4 finish full frame. Horizontal sliding panes are unframed and are designed so that only a maximum of 50% of the sash can be opened at any one time.

.3 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16").

.3 **Combination Horizontal Sliding/Vertical Rising:**

.1 Sash is a "Full View" type with the front vertical view height being 915 mm (36'). The maximum sash opening is 840 mm (33").

.2 Sash assembly is set in an I8 gauge, type 316 stainless number 4 finish frame. It is fully counter balanced using a single centre hung weight running behind the hood and a continuous stainless steel sash cable. It is designed to offer exact and positive operation and to prevent sash drop in the event of the failure of the sash cable. Pulleys are complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.3 Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time.

.4 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16”).

.5 Sash Pull is a low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.6 Sash stops shall be provided at the 450mm (18”) open position unless otherwise specified. They shall be have a manual override when lowering the sash below the 450mm (18”) opening and an automatic reset when the sash is raised above the 450 (18”) open position.

.4 **Liner Material(s):** (Delete those **NOT** required)

.1 **Polyresin (PR):**

.1 6mm (1/4") thick, solid fiberglass reinforced pressed thermoset resin board, is flame retardant and self-extinguishing. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 723 ASTM E84-80). Flexural strength is a minimum of 14,000 PSI (D790).

.2 Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F).

.3 Exhaust collar is type 316 stainless steel.

.2 **Stainless Steel, all welded (SW):**

.1 Type 316 (SW6) OR Type 304 (SW4) stainless steel (choose one), 16 gauge, number 4 finish, all welded seamless construction. Interior comers have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.2 Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.
.3 Exhaust collar is type 316 stainless steel.

.3 **Stainless Steel, stitched welded (ST):**

.1 Type 316 (ST6) OR Type 304 (ST4) stainless steel (choose one), 16 gauge, number 4 finish. The sides and back of the interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides.
.2 Liner has a factory installed mechanically fastened and silicon sealed work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.
.3 Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.
.4 Exhaust collar is stainless steel.

.4 **Polypropylene (PP):**

.1 1/4” thick, solid, flame retardant, self-extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.
.2 Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F).
.3 Exhaust collar is PVC.

.5 **PVC (PV)** :

.1 1/4” thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.
.2 Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has

little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F).

.3 Exhaust collar is PVC.

.5 **Baffles:**

.1 Three-piece construction, fabricated from the same material as the fume hood liner. Full width horizontal exhaust slots are located at the top, bottom and midpoint with side vertical slots running full height.

.2 Are factory sized and fixed in place for optimum containment per ASHRAE II0 Latest Edition Tracer Gas Testing.

.6 **Exhaust Collar(s) :**

.1 Type 316 stainless steel, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.2 PVC, 6mm (1/4") thick, beveled entry edge, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.7 **Ceiling closure panels:** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.

.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.

.3 Colour to match fume hood exterior.

.8 **Seismic Anchors:** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.9 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.
.2 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.
.3 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".
.4 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts of the hood exterior.
.5 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.
.6 Fume hood shall be certified to the following Standards: CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012 Ed.3+R:21Nov2018 and UL1805:2002

.5 .10 **Work Surfaces:** (Delete those **NOT** required)

.1 **Epoxy:**

.1 Work surfaces are moulded in one piece from a modified epoxy resin with a raised 12 mm (1/2”) anti-spill edge on all four sides and drip groove on the underside of the front edge. Overall thickness shall be 32mm (1 1/4”).
.2 Material will offer good stain resistance and excellent chemical, heat and moisture resistance.
.3 Sinks should be fabricated from the same material.
.4 Colour of top shall be black unless otherwise specified.
.5 Work surface shall be factory installed and secured to the fume hood superstructure.
.6 Epoxy sinks can be Drop-in flush mount type OR raised 6mm (1/4”) above the top of the work surface. (Choose one)

.2 **Stainless Steel:**

.1 Work surfaces are fabricated from Type 316 OR Type 304 stainless steel (choose one), 16 gauge, number 4 finish.
.2 Work surface has a 12mm (1/2") high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.
.3 Material offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Work surface shall be factory installed.
.4 Sinks are flush mount and integrally welded into the work surface.

.11 **Base Cabinets:** Delete those **NOT** required

.1 **General Storage:**

.1 Steel construction.
.2 Are non-lined and have a full depth adjustable shelf.
.3 Cabinets are welded steel construction, are rigid and self-supporting.
.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
    .1 11 gauge (3.2mm) for top and front rails
    .2 14 gauge (1.7 mm) for leveling devices
    .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.
.5 Leveling devices are installed on each corner and are accessible from the inside of the cabinet
.6 Cabinets are 535mm (21”) deep.
.7 Cabinet widths as shown on drawings.
.8 Finish to be per 2.06 Exterior Finish.

.2 **Acid Storage:**

.1 Steel construction.
.2 Are designed and constructed for the storage of acids and corrosive chemicals, not flammable or combustible chemicals. Door fronts to be labeled “ACIDS” or “BASES”.
.3 Cabinet exteriors are welded steel construction, are rigid and self-supporting.
.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
    .1 11 gauge (3.2mm) for top and front rails
    .2 14 gauge (1.7 mm) for leveling devices
    .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.
.5 Interior lining is all welded one piece construction fabricated of 6mm (1/4”) thick from white low-density polyethylene. Interior of doors are lined with the same material and have upper and lower vent slots.
.6 Shelf is reinforced, full depth, two position, high density polyethylene.
.7 The floor of the cabinet has a 25mm (1”) anti-spill front edge. Cabinet will be provided with 40mm (1 1/2”) PVC fittings and tubing for venting the cabinet into the fume hood.
.8 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
.9 Cabinets are 535mm (21”) deep.
.10 Also available 460mm deep (18”).
.11 Finish to be per 2.06 Exterior Finish.

.3 **Solvent/Flammable Storage:**

.1 Steel construction.
.2 Designed for the storage flammable and combustible liquids and not for the storage of acids and corrosives. Door fronts to be labeled “FLAMMABLE- KEEP FIRE AWAY”.

.3 Cabinets meet O.S.H.A. Standard 1910-106 (d)(3) and comply with NFPA 30 Flammable and Combustible Liquids. They are UL 1275/UL1275C UL labeled.

.4 Cabinets is fabricated from 1.2mm (18 gauge) steel with a baked electrostatic powder coating. The top, sides, floor and doors are double wall construction with fire-proof insulation between providing a 40mm (1 1/2") insulating air space all around.

.5 The floor is recessed 50mm (2") to contain spills. Doors are manual-closing with lever handle and are three point locking devise. Self-closing doors are optional.

.6 Upper and lower air vents with spark arrestors and removable threaded covers are installed on the back of the cabinets. NOTE: It is not recommended to vent the cabinets into fume hood or fume hood exhaust ducting.

.7 Cabinets are 535mm (21") deep.

.8 Also available 460mm deep (18").

.9 Standard colour is "Caution Yellow".

.10 Finish to be per 2.06 Exterior Finish.

.4 **Vacuum Pump:**

.1 Steel construction.

.2 Construction is to UL962A/CSA22.2 #203 certified.

.3 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.4 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.

.5 Inside of cabinet (back, sides and top) are lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining is welded to the cabinet doors, back, sides and top.

.6 A 100lb capacity full extension pull out pan on the bottom of the cabinet is standard.

.7 One duplex electrical outlet 120V/15–20 A is located on the inside back of the cabinet, one 15A pump switch with a 4.90A thermal overload is located on the exterior top panel of the cabinet.
.8 A 2" (51mm) diameter vent port at the top left corner of the cabinet back and a 1 1⁄2" (38mm) pipe on the back right side of the cabinet top for end-user supplied piping is standard.
.9 Optional "CPU" for additional venting available
.10 Cabinets are 535mm (21") deep.
.11 Also available 460mm deep (18").

.12 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.
.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.3 Fittings are CSA and CGA approved.
.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.
.1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.
.2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.
.3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.
.4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:
.1 One piece construction, cast or forged brass with a minimum copper content of 57%.
.2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.
.3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.

.6 Handles:

.1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.

.2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be ground smooth.

2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the “Scientific Equipment and Furniture Association”.

.5 Metal Surface Finish Testing:

.1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

SPECIFICATIONS

PASS THROUGH (DOUBLE SIDED)
FUME HOOD – VERTICAL RISING SASHES

1.04 REFERENCE STANDARDS

.1 SEFA 1 Latest Edition: Laboratory Fume Hoods

.2 SEFA 8-M Latest Edition: Laboratory Grade Metal Casework

.3 SEFA 8-W Latest Edition: Laboratory Grade Wood Furniture, Casework, Shelving and Tables

.4 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.5 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.6 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.7 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.8 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.9 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 Pass-through (double sided) fume hoods are designed to be used as a teaching and demonstration hood where experiments can be observed and performed from both sides of the hood.

.2 Hood can also be used as a pass-through from the prep room to the classroom.

.3 Fume hood shall be designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition. It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.3 **Accessibility for Person With Disabilities (ADA:**

.1 Where shown on the laboratory drawings, provide fume hoods accommodating persons with disabilities in accordance to Federal, Provincial and local regulations having jurisdiction.

.2 The height of the highest point of access to the work surface above finished floor shall not exceed (860mm (34").

.3 Sash operation, mechanical fixtures, both handles and nozzles, sinks, electrical receptacles, switches and low air flow alarm shall be at a location and height off finished floor to be considered accessible.

.4 Refer to the H.H. Hawkins Ltd. Accessible – ADA fume hood catalog section for wheel chair accessibility requirements.

.3 Fume hoods will be complete with supporting base cabinets, if specified under this section, factory installed electrical fittings, mechanical service fixtures, low airflow alarm/ monitor and accessories as listed under this section. See 2.05.11.

.4 Supply and Installation of the fume hood and supporting base cabinets, are to be by the hood manufacturer as described under this section. Final mechanical and electrical connections to the building utilities are by others.

.3 Fume hoods will be complete with supporting base cabinets, if specified under this section, factory installed electrical fittings, mechanical service fixtures, low airflow alarm/ monitor and accessories as listed under this section.

.4 Supply and Installation of the fume hood and supporting base cabinets are to be by the hood manufacturer as described under this section.

.1 Final mechanical and electrical connections to the building utilities are by others.

.5 **Constant Air Volume (CAV) Full By-Pass type.** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hoods shall maintain a relative constant exhaust volume when tested in the manufactures test facility. The fume hood, at any sash opening, from 685mm (27") full open to 150mm (6") open will be capable of maintaining a relatively constant exhaust volume.

.2 Maximum variation as a result of sash position shall not exceed 5% of the specified exhaust volume.

.3 By-Pass shall limit face velocity from increasing more than fourfold as sash is lowered from full open 685mm (27”) to 150mm (6”) open.

.4 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72”) wide unit, average static pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

1. Sash open 450mm (18”), one side of hood only.

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.13 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.2 Noise Level: When measured on the ‘A’ scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.3 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 760mm (30").

.4 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and operatable from one side of the hood only. Electrical fittings will be pre-wired to a junction box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6”) above or below the fume hood superstructure is **optional.**

.5 Fume hoods shall be available in standard widths of 915mm (36”), 1220mm (48”) 1525mm (60”) and 1830mm (72”).

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]
.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]
.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].
.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.
.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.
.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.
.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture’s colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3” X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4” X 4") sample of liner lining material(s).
.3 100mm X 100mm (4” X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.
.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE'S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years' experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.9 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner.

.3 Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.4 Overall exterior depth shall not exceed 830mm (32 ¾") in order to fit through standard doors.

.5 Exterior End Panels: Two piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable with without tools.

.6 Front Upper Panels: Secured with hidden metal fasteners and are removable without tools.

.7 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed.

.8 Front Openings: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.9 Lower Air Foil Openings: Fabricated of I6 gauge, type 3I6 stainless steel, number 4 finish. A slot between its underside and the work surface shall provide a constant flow of air across the work surface and allowing access for oversize electrical plugs

.2 **Interior Liner**: Refer to 2.05.4

.1 Polyresin (PR) liner to be corrosion and acid resisting as listed under 2.05.4.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access panels: Will be fabricated of the same material as the liner, are flush mount, air tight and therefore do not require gaskets.

.3 **Sashes:**

.1 Vertically Rising:

.1 Sashes are “Full View” type with the front vertical view height being 915 mm (36’) including the fixed view panel. The maximum sash opening is 685 mm (27”).

.2 Fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys. Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.4 Sash Pulls are a slotted low profile design, are full length and fabricated of I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18”) open position on each face of the hood unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18”) opening and an automatic reset when the sash is raised above the 450 (18”) open position.

.6 A sash interlock will be provided as standard which will only allow one sash to be opened at a time.

.4 **Liner Material:**

.1 **Polyresin (PR):**

.1 6mm (1/4") thick, solid fiberglass reinforced pressed thermoset resin board, is flame retardant and self-extinguishing. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 723 ASTM E84-80). Flexural strength is a minimum of 14,000 PSI (D790).

.2 Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F).

.5 **Exhaust Collar:**

.1 Type 316 stainless steel, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.6 **Ceiling Closure Panels** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.

.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.

.3 Colour to match fume hood exterior.

.7 **Seismic Anchors** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.8 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.

.1 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.

.2 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.2 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts on each side of the fume hood.

.3 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.

.4 Fume hood shall be certified to the following Standards:

.1 CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012
Ed.3+R:21Nov2018 and UL1805:2002

.9 **Work Surfaces:**

.1 **Epoxy**

.1 Work surfaces are moulded in one piece from a modified epoxy resin with a raised 12 mm (1/2”) anti-spill edge on all four sides and drip groove on the underside of the front edge. Overall thickness shall be 32mm (1 1/4”).

.2 Material will offer good stain resistance and excellent chemical, heat and moisture resistance.

.3 Sinks should be fabricated from the same material.
.4 Colour of top shall be black unless otherwise specified.
.5 Work surface shall be factory installed and secured to the fume hood superstructure.
.6 Epoxy sinks can be Drop-in flush mount type OR raised 6mm (1/4") above the top of the work surface. **(Choose one)**

.2 **Stainless Steel**

.1 Work surfaces are fabricated from Type 316 OR Type 304 stainless steel (choose one), 16 gauge, number 4 finish.
.2 Work surface has a 12mm (1/2") high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.
.3 Material offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Work surface shall be factory installed.
.4 Sinks are flush mount and integrally welded into the work surface.

.10 **Base Cabinets:** Delete those **NOT** required

.1 **General Storage:**

.1 Steel construction.
.2 Are non-lined and have a full depth adjustable shelf.
.3 Cabinets are welded steel construction, are rigid and self-supporting.
.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
    .1 11 gauge (3.2mm) for top and front rails
    .2 14 gauge (1.7 mm) for leveling devices
    .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.
.5 Leveling devices are installed on each corner and are accessible from the inside of the cabinet
.6 Cabinets are 535mm (21") deep.

.7 Cabinet widths as shown on drawings.
.8 Extra depth three sided filler panels to be provided when required.
.9 Finish to be per 2.06 Exterior Finish.

.2 **Acid Storage:**

.1 Steel construction.
.2 Are designed and constructed for the storage of acids and corrosive chemicals, not flammable or combustible chemicals. Door fronts to be labeled “ACIDS” or “BASES”.
.3 Cabinet exteriors are welded steel construction, are rigid and self-supporting.
.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
    .1 11 gauge (3.2mm) for top and front rails
    .2 14 gauge (1.7 mm) for leveling devices
    .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.
.5 Interior lining is all welded one piece construction fabricated of 6mm (1/4”) thick from white low-density polyethylene. Interior of doors are lined with the same material and have upper and lower vent slots.
.6 Shelf is reinforced, full depth, two position, high density polyethylene.
.7 The floor of the cabinet has a 25mm (1”) anti-spill front edge. Cabinet will be provided with 40mm (1 1/2”) PVC fittings and tubing for venting the cabinet into the fume hood.
.8 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
.9 Cabinets are 535mm (21”) deep.
.10 Also available 460mm deep (18”).
.11 Extra depth three sided filler panels to be provided when required.
.12 Finish to be per 2.06 Exterior Finish.

.3 **Solvent/Flammable Storage:**

.1 Steel construction.
.2 Designed for the storage flammable and combustible liquids and not for the storage of acids and corrosives. Door fronts to be labeled “FLAMMABLE- KEEP FIRE AWAY”.
.3 Cabinets meet O.S.H.A. Standard 1910-106 (d)(3) and comply with NFPA 30 Flammable and Combustible Liquids. They are UL 1275/UL1275C UL labeled.
.4 Cabinets is fabricated from 1.2mm (18 gauge) steel with a baked electrostatic powder coating. The top, sides, floor and doors are double wall construction with fire-proof insulation between providing a 40mm (1 1/2”) insulating air space all around.
.5 The floor is recessed 50mm (2”) to contain spills. Doors are manual-closing with lever handle and are three point locking devise. Self-closing doors are optional.
.6 Upper and lower air vents with spark arrestors and removable threaded covers are installed on the back of the cabinets. NOTE: It is not recommended to vent the cabinets into fume hood or fume hood exhaust ducting.
.7 Cabinets are 535mm (21”) deep.
.8 Also available 460mm deep (18”).
.9 Standard colour is “Caution Yellow”.
.10 Extra depth three sided filler panels to be provided when required.
.11 Finish to be per 2.06 Exterior Finish.

.4 **Vacuum Pump:**

.1 Steel construction.
.2 Construction is to UL962A/CSA22.2 #203 certified.
.3 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
  .1 11 gauge (3.2mm) for top and front rails
  .2 14 gauge (1.7 mm) for leveling devices
  .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.4 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
.5 Inside of cabinet (back, sides and top) are lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining is welded to the cabinet doors, back, sides and top.
.6 A 100lb capacity full extension pull out pan on the bottom of the cabinet is standard.
.7 One duplex electrical outlet 120V/15–20 A is located on the inside back of the cabinet, one 15A pump switch with a 4.90A thermal overload is located on the exterior top panel of the cabinet.
.8 A 2" (51mm) diameter vent port at the top left corner of the cabinet back and a 1 1⁄2" (38mm) pipe on the back right side of the cabinet top for end-user supplied piping is standard.
.9 Optional "CPU" for additional venting available
.10 Cabinets are 535mm (21") deep.
.11 Extra depth three sided filler panels to be provided when required.
.12 Also available 460mm deep (18").

.11 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.
.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.3 Fittings are CSA and CGA approved.
.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.
.1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.
.2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.
.3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.
.4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:
- .1 One piece construction, cast or forged brass with a minimum copper content of 57%.
- .2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.
- .3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.

.6 Handles:
- .1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.
- .2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

.7 **NOTE:** Specify if service fixtures are to operated from **one face** of the hood OR **both faces** of the hood.

.12 **Low Airflow Alarm/Monitor:** Delete those **NOT** required

.1 **Model AFA4000/1** factory installed low airflow monitor and alarm system:
- .1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
- .2 Full-colour 3.5” LCD display.
- .3 Digital face velocity display in fpm or m/s.
- .4 Visual and audible alarms.
  - .1 Graphic display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
  - .2 Alarm Indication: Red graphic with audible . alarm.
  - .3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
- .5 Two point alarm capture pushbutton calibration.
- .6 BACnet and Modbus on board available with optional comms adaptor.
- .7 Alarm is low voltage and is supplied with a transformer.

.8 **NOTE:** Specify if monitor is to be installed on **one face** of the hood OR **both faces** of the hood.

.2 **Model AFA1000** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Back-lit LCD display.
.3 Digital face velocity display in fpm or m/s.
.4 Visual and audible alarms.
  .1 Indicator display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
  .2 Alarm Indication: Red graphic with audible alarm.
  .3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
.5 Two point alarm capture pushbutton calibration.
.6 BACnet and Modbus on board available with optional comms adaptor.
.7 Alarm is low voltage and is supplied with a transformer.
.8 **NOTE:** Specify if monitor is to be installed on **one face** of the hood OR **both faces** of the hood.

.3 **Model AFA500** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Audible alarm with mute button.
  .1 Visual alarm with Green LED = Safe and Red LED light = Alarm.
  .2 Audible alarm can be silenced but Red LED will stay active until alarm condition is corrected.
.3 Single Alarm Point Capture pushbutton calibration.
.4 Relay input for Night Setback to mute audible alarm.
.5 Alarm is low voltage and is supplied with a transformer.
.6 **NOTE:** Specify if monitor is to be installed on **one face** of the hood OR **both faces** of the hood.

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be be ground smooth.

.2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the “Scientific Equipment and Furniture Association”

.5 Metal Surface Finish Testing:

.1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

.2 Third party, independent test reports will be available upon request.

SPECIFICATIONS

RADIOISOTOPE
CONSTANT AIR VOLUME
BENCH MOUNT FUME HOODS

1.04 REFERENCE STANDARDS

.1 Canadian Nuclear Safety Commission: GD – 52 Design Guide for Nuclear Substance, Laboratories and Nuclear Medicine Rooms.

.2 ANSI/ASHRAE 110 Latest Edition: Method of Testing Performance of Laboratory Fume Hoods

.3 SEFA 1 Latest Edition: Laboratory Fume Hoods

.4 SEFA 8-M Latest Edition: Laboratory Grade Metal Casework

.5 MD15128 Latest Edition: Laboratory Fume Hoods

.6 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.7 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.8 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.9 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.10 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.11 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 Fume hood shall be designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition.

.2 It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.3 Fume Hood shall be for Radioisotope use only and will not be connected other exhaust systems.

.4 **Accessibility for Person With Disabilities (ADA):**

.1 Where shown on the laboratory drawings, provide fume hoods accommodating persons with disabilities in accordance to Federal, Provincial and local regulations having jurisdiction.

.2 The height of the highest point of access to the work surface above finished floor shall not exceed (860mm (34").

.3 Sash operation, mechanical fixtures, both handles and nozzles, sinks, electrical receptacles, switches and low air flow alarm shall be at a location and height off finished floor to be considered accessible.

.4 Refer to the H.H. Hawkins Ltd. Accessible – ADA fume hood catalog section for wheel chair accessibility requirements.

.3 Fume hoods will be complete with supporting base cabinets, if specified under this section, factory installed electrical fittings, mechanical service fixtures, low airflow alarm/ monitor and accessories as listed under this section. See 2.05.11.

.4 Supply and Installation of the fume hood and supporting base cabinets, are to be by the hood manufacturer as described under this section. Final mechanical and electrical connections to the building utilities are by others.

.5 **Constant Air Volume (CAV) Full By-Pass type:** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hoods shall maintain a relative constant exhaust volume at any sash opening from 685mm (27") full open to 150mm (6") open.

.1 Maximum variation as a result of sash position shall not exceed 5% of the specified exhaust volume.

.2 By-Pass shall limit face velocity from increasing more than fourfold as sash is lowered from full open 685mm (27") to 150mm (6") open.

.3 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72") wide unit, average static

pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

1. Sash full open 680mm (27”);

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	55Pa (0.22 inches)
0.50m/s (100 FPM)	85Pa (0.34 inches)

2. Sash open 450mm (18”)

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.10 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.4 Noise Level: When measured on the ‘A’ scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.5 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.6 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and electrical fittings will be pre-wired to a junction box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6”) above or below the fume hood superstructure is **optional.**

.7 Fume hoods shall be available in standard widths of 1220mm (48”) 1525mm (60”), 1830mm (72”) and 2440mm (96”).

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]
.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]
.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].
.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.
.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.
.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

.2 Containment Testing - “As Manufactured” (AM):

.1 Single sided bench mount fume hoods will be performance tested to the ASHRAE 110 - Latest Edition, Method of Testing Performance of Laboratory Fume Hoods. The method of testing consists of the following three tests:
    .1 Flow Visualization using Local and Large volume smoke challenges
    .2 Face Velocity Measurements/Profile
    .3 Tracer Gas Containment

.2 The manufacture’s fume hood shall be capable of achieving an “As Manufactured” (AM) rating of better than 0.05 PPM at 4 litres per minute (4 AM 0.05) with the vertically rising sash in the full open (27”) position.

.3 Unless otherwise specified, previous test results obtained on the manufacture's identical hood design and size to the ones specified herein will be acceptable.

.4 Test reports shall be made available on request.

.3 Manufacture's Test Facility:

.1 All "As Manufactured" (AM) tests shall be performed in the manufacture's fume hood testing facility.

.2 Room shall be of adequate size to provide unobstructed clearance of at least five feet each side and ten feet in front of fume hood.

.3 Make-up air will be provided to replace the room air exhausted through the fume hood and be capable of maintaining 0.02" w.g. negative pressure.

.4 Make-up air will be provided in a manner that keeps cross drafts in front of hood to less than 0.15m/s (30fpm).

.5 Room ventilation system will be capable of testing fume hoods to face velocities of between 0.30m/s (60 fpm) through 0.51 (100 fpm).

.6 All testing and reports shall be performed and submitted by a third party testing company specializing in this type of certification.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.
.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity.
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture’s colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3” X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4” X 4") sample of liner lining material(s).
.3 100mm X 100mm (4” X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.

.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

.2 Performance Test Reports:

.1 Submit a test report from a third party fume hood testing agency listing testing criteria that the fume hood types and sizes on this project have been tested to ANSI/ASHRAE-110 Latest Edition "As Manufactured" (AM).

.2 Submit a written report on each hood type and size certification that the fume hood(s) to be provided passed the tests defined in 1.06 PERFORMANCE.

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE'S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years' experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Lower air foil: Stainless steel, 16 gauge, type 316, number 4 finish.

.9 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.10 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 Bench Mount Radioisotope Fume Hoods

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner. Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.3 Exterior End Panels: Two piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable with without tools.

.4 Front Upper Panel: Secured with hidden metal fasteners and are removable without tools.

.5 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed.

.6 Front Opening: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.7 Lower Air Foil Opening: Fabricated of I6 gauge, type 3I6 stainless steel, number 4 finish. A slot between its underside and the work surface shall provide a constant flow of air across the work surface and allowing access for oversize electrical plugs.

.2 **Interior Liner**: Refer to 2.05.4

.1 Type 304 **or** type 316 stainless steel.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access Panels: Will not be provided unless specifically required. If required they will be air tight and will not require gaskets.

.3 **Sash:**

.1 **Vertically Rising**:

.1 Sash is a "Full View" type with the front vertical view height being 915 mm (36') including the fixed view panel. The maximum sash opening is 685 mm (27").

.2 Fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys. Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.4 Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.4 **Liner Material:**

.1 **Stainless Steel, all welded (SW-RI)**

.1 Type 316 (SW-RI6) OR Type 304 (SW-RI4) stainless steel (choose one), 16 gauge, number 4 finish, all welded seamless construction. Interior comers have a 3/4" radius and all welds are ground and polished.

.2 Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. The underside is reinforced with metal channels to support lead shielding and to prevent twisting, oil-canning or buckling.

.3 Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.

.4 Exhaust collar is integrally welded type 316 stainless steel.

.5 **Baffles:**

.1 Three-piece construction, fabricated from the same material as the fume hood liner. Full width horizontal exhaust slots are located at the top, bottom and midpoint with side vertical slots running full height.

.2 Are factory sized and fixed in place for optimum containment per ASHRAE II0 Latest Edition Tracer Gas Testing.

.6 **Exhaust Collar:**

.1 Type 316 stainless steel integrally welded, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.7 **Ceiling closure panels** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.

.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.

.3 Colour to match fume hood exterior.

.8 **Seismic Anchors** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.9 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.

.1 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.

.2 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.2 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts of the hood exterior.

.3 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.

.4 Fume hood shall be certified to the following Standards:

.1 CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012
Ed.3+R:21Nov2018 and UL1805:2002

.10 **Work Surfaces:**

.1 **Stainless Steel**

.1 Work Surface is integrally welded to the liner and has a 1/2" high anti-spill front lip. The underside is reinforced with metal channels to support lead shielding and to prevent twisting, oil-canning or buckling.

.2 Sinks are flush mount and integrally welded into the work surface.

.11 **Base Cabinets:** Delete those **NOT** required

.1 **General Storage:**

.1 Steel construction.
.2 Are non-lined and have a full depth adjustable shelf.
.3 Cabinets are welded steel construction, are rigid and self-supporting.
.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
    .1 11 gauge (3.2mm) for top and front rails
    .2 14 gauge (1.7 mm) for leveling devices
    .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.
.5 Leveling devices are installed on each corner and are accessible from the inside of the cabinet
.6 Cabinets are 535mm (21”) deep.
.7 Cabinet widths as shown on drawings.
.8 Finish to be per 2.06 Exterior Finish.

.2 **Acid Storage:**

.1 Steel construction.
.2 Are designed and constructed for the storage of acids and corrosive chemicals, not flammable or combustible chemicals. Door fronts to be labeled “ACIDS” or “BASES”.
.3 Cabinet exteriors are welded steel construction, are rigid and self-supporting.

.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.5 Interior lining is all welded one piece construction fabricated of 6mm (1/4") thick from white low-density polyethylene. Interior of doors are lined with the same material and have upper and lower vent slots.

.6 Shelf is reinforced, full depth, two position, high density polyethylene.

.7 The floor of the cabinet has a 25mm (1") anti-spill front edge. Cabinet will be provided with 40mm (1 1/2") PVC fittings and tubing for venting the cabinet into the fume hood.

.8 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.

.9 Cabinets are 535mm (21") deep.

.10 Also available 460mm deep (18").

.11 Finish to be per 2.06 Exterior Finish.

.3 **Solvent/Flammable Storage:**

.1 Steel construction.

.2 Designed for the storage flammable and combustible liquids and not for the storage of acids and corrosives. Door fronts to be labeled "FLAMMABLE- KEEP FIRE AWAY".

.3 Cabinets meet O.S.H.A. Standard 1910-106 (d)(3) and comply with NFPA 30 Flammable and Combustible Liquids. They are UL 1275/UL1275C UL labeled.

.4 Cabinets is fabricated from 1.2mm (18 gauge) steel with a baked electrostatic powder coating. The top, sides, floor and doors are double wall construction with fire-proof insulation between providing a 40mm (1 1/2") insulating air space all around.

.5 The floor is recessed 50mm (2") to contain spills. Doors are manual-closing with lever handle and are three point locking devise. Self-closing doors are optional.

.6 Upper and lower air vents with spark arrestors and removable threaded covers are installed on the back of the cabinets. NOTE: It is not recommended to vent the cabinets into fume hood or fume hood exhaust ducting.

.7 Cabinets are 535mm (21") deep.

.8 Also available 460mm deep (18").

.9 Standard colour is "Caution Yellow".

.10 Finish to be per 2.06 Exterior Finish.

.4 **Vacuum Pump:**

.1 Steel construction.

.2 Construction is to UL962A/CSA22.2 #203 certified.

.3 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.4 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.

.5 Inside of cabinet (back, sides and top) are lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining is welded to the cabinet doors, back, sides and top.

.6 A 100lb capacity full extension pull out pan on the bottom of the cabinet is standard.

.7 One duplex electrical outlet 120V/15–20 A is located on the inside back of the cabinet, one 15A pump switch with a 4.90A thermal overload is located on the exterior top panel of the cabinet.

.8 A 2" (51mm) diameter vent port at the top left corner of the cabinet back and a 1 1⁄2" (38mm) pipe on the back right side of the cabinet top for end-user supplied piping is standard.

.9 Optional "CPU" for additional venting available
.10 Cabinets are 535mm (21") deep.
.11 Also available 460mm deep (18").

.12 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.
.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.3 Fittings are CSA and CGA approved.
.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.
.1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.
.2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.
.3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.
.4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:
.1 One piece construction, cast or forged brass with a minimum copper content of 57%.
.2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.
.3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.6 Handles:
.1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.
.2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

.13 **Low Airflow Alarm/Monitor:** Delete those **NOT** required

.1 **Model AFA4000/1** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Full-colour 3.5" LCD display.
.3 Digital face velocity display in fpm or m/s.
.4 Visual and audible alarms.
.1 Graphic display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
.2 Alarm Indication: Red graphic with audible . alarm.
.3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
.5 Two point alarm capture pushbutton calibration.
.6 BACnet and Modbus on board available with optional comms adaptor.
.7 Alarm is low voltage and is supplied with a transformer.

.2 **Model AFA1000** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Back-lit LCD display.
.3 Digital face velocity display in fpm or m/s.
.4 Visual and audible alarms.
.1 Indicator display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
.2 Alarm Indication: Red graphic with audible alarm.
.3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.

.5 Two point alarm capture pushbutton calibration.
.6 BACnet and Modbus on board available with optional comms adaptor.
.7 Alarm is low voltage and is supplied with a transformer.

.3 **Model AFA500** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.

.2 Audible alarm with mute button.

.1 Visual alarm with Green LED = Safe and Red LED light = Alarm.

.2 Audible alarm can be silenced but Red LED will stay active until alarm condition is corrected.

.3 Single Alarm Point Capture pushbutton calibration.

.4 Relay input for Night Setback to mute audible alarm.

.5 Alarm is low voltage and is supplied with a transformer.

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be ground smooth.

.2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the “Scientific Equipment and Furniture Association”

.5 Metal Surface Finish Testing:

.1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

.2 Third party, independent test reports will be available upon request.

BACK TO MAIN

SPECIFICATIONS

PERCHLORIC ACID
CONSTANT AIR VOLUME
BENCH MOUNT FUME HOODS

1.04 REFERENCE STANDARDS

.1 MD15129 Latest Edition: Perchloric Acid Fume Hoods and Their Exhaust Systems

.2 Government of British Columbia: A Guideline for the Use of Perchloric Acid and Perchloric Acid Fume Hoods

.3 ANSI/ASHRAE 110 Latest Edition: Method of Testing Performance of Laboratory Fume Hoods

.4 SEFA 1 Latest Edition: Laboratory Fume Hoods

.5 SEFA 8-M Latest Edition: Laboratory Grade Metal Casework

.6 MD15128 Latest Edition: Laboratory Fume Hoods

.7 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.8 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.9 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.10 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.11 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.12 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 Fume hood shall be designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition.

.2 It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.3 Fume Hood shall be designated solely for Perchloric Acid use. It will incorporate a factory installed rear baffle washdown spray header and manual control valve working in conjunction with the ducting and exhaust fan washdown system (by

.4 **Accessibility for Person With Disabilities (ADA):**

.1 Where shown on the laboratory drawings, provide fume hoods accommodating persons with disabilities in accordance to Federal, Provincial and local regulations having jurisdiction.

.2 The height of the highest point of access to the work surface above finished floor shall not exceed (860mm (34”).

.3 Sash operation, mechanical fixtures, both handles and nozzles, sinks, electrical receptacles, switches and low air flow alarm shall be at a location and height off finished floor to be considered accessible.

.4 Refer to the H.H. Hawkins Ltd. Accessible – ADA fume hood catalog section for wheel chair accessibility requirements.

.3 Fume hoods will be complete with supporting base cabinets, if specified under this section, factory installed electrical fittings, mechanical service fixtures, low airflow alarm/ monitor and accessories as listed under this section. See 2.05.11.

.4 Supply and Installation of the fume hood and supporting base cabinets, are to be by the hood manufacturer as described under this section. Final mechanical and electrical connections to the building utilities are by others.

.5 **Constant Air Volume (CAV) Full By-Pass type:** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hoods shall maintain a relative constant exhaust volume at any sash opening from 685mm (27”) full open to 150mm (6”) open.

.1 Maximum variation as a result of sash position shall not exceed 5% of the specified exhaust volume.

.2 By-Pass shall limit face velocity from increasing more than fourfold as sash is lowered from full open 685mm (27”) to 150mm (6”) open.

.3 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72") wide unit, average static pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

1. Sash full open 680mm (27");

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	55Pa (0.22 inches)
0.50m/s (100 FPM)	85Pa (0.34 inches)

2. Sash open 450mm (18")

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.10 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.4 Noise Level: When measured on the 'A' scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.5 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.6 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and electrical fittings will be pre-wired to a junction box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6") above or below the fume hood superstructure is **optional.**

.7 Fume hoods shall be available in standard widths of 1220mm (48") 1525mm (60"), 1830mm (72") and 2440mm (96").

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]
.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]
.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].
.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.
.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.
.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

.2 Containment Testing - “As Manufactured” (AM):

.1 Single sided bench mount fume hoods will be performance tested to the ASHRAE 110 - Latest Edition, Method of Testing Performance of Laboratory Fume Hoods. The method of testing consists of the following three tests:
.1 Flow Visualization using Local and Large volume smoke challenges
.2 Face Velocity Measurements/Profile
.3 Tracer Gas Containment

.2 The manufacture's fume hood shall be capable of achieving an "As Manufactured" (AM) rating of better than 0.05 PPM at 4 litres per minute (4 AM 0.05) with the vertically rising sash in the full open (27") position.

.3 Unless otherwise specified, previous test results obtained on the manufacture's identical hood design and size to the ones specified herein will be acceptable.

.4 Test reports shall be made available on request.

.3 Manufacture's Test Facility:

.1 All "As Manufactured" (AM) tests shall be performed in the manufacture's fume hood testing facility.

.2 Room shall be of adequate size to provide unobstructed clearance of at least five feet each side and ten feet in front of fume hood.

.3 Make-up air will be provided to replace the room air exhausted through the fume hood and be capable of maintaining 0.02" w.g. negative pressure.

.4 Make-up air will be provided in a manner that keeps cross drafts in front of hood to less than 0.15m/s (30fpm).

.5 Room ventilation system will be capable of testing fume hoods to face velocities of between 0.30m/s (60 fpm) through 0.51 (100 fpm).

.6 All testing and reports shall be performed and submitted by a third party testing company specializing in this type of certification.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.
.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity.
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture's colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3" X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4" X 4") sample of liner lining material(s).
.3 100mm X 100mm (4" X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.

.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

.2 Performance Test Reports:

.1 Submit a test report from a third party fume hood testing agency listing testing criteria that the fume hood types and sizes on this project have been tested to ANSI/ASHRAE-110 Latest Edition "As Manufactured" (AM).

.2 Submit a written report on each hood type and size certification that the fume hood(s) to be provided passed the tests defined in 1.06 PERFORMANCE.

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE'S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years' experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Lower air foil: Stainless steel, 16 gauge, type 316, number 4 finish.

.9 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.10 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 Bench Mount Radioisotope Fume Hoods

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner. Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.3 Exterior End Panels: Two piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable with without tools.

.4 Front Upper Panel: Secured with hidden metal fasteners and are removable without tools.

.5 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed.

.6 Front Opening: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.7 Lower Air Foil Opening: Fabricated of I6 gauge, type 3I6 stainless steel, number 4 finish. A slot between its underside and the work surface shall provide a constant flow of air across the work surface and allowing access for oversize electrical plugs.

.2 **Interior Liner**: Refer to 2.05.4

.1 Type 316 stainless steel.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access Panels: Will not be provided unless specifically required. If required they will be air tight and will not require gaskets.

.3 **Sash:**

.1 **Vertically Rising**:

.1 Sash is a "Full View" type with the front vertical view height being 915 mm (36') including the fixed view panel. The maximum sash opening is 685 mm (27").

.2 Fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys. Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.4 Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.4 **Liner Material:**

.1 **Stainless Steel, all welded (SW-PA)**

.1 Type 316 (SW-PA6) stainless steel (choose one), 16 gauge, number 4 finish, all welded seamless construction. Interior comers have a 3/4" radius and all welds are ground and polished.

.2 Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.3 A full length rear baffle washdown spray header is provided with a factory installed remote controlled front

.4 Exhaust collar is integrally welded type 316 stainless steel.

.5 **Baffles:**

.1 Three-piece construction, fabricated from the same material as the fume hood liner. Full width horizontal exhaust slots are located at the top, bottom and midpoint with side vertical slots running full height.

.2 Are factory sized and fixed in place for optimum containment per ASHRAE II0 Latest Edition Tracer Gas Testing.

.6 **Exhaust Collar:**

.1 Type 316 stainless steel integrally welded, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.7 **Ceiling closure panels** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.

.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.

.3 Colour to match fume hood exterior.

.8 **Seismic Anchors** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.9 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.

.1 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.

.2 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.2 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts of the hood exterior.

.3 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.

.4 Fume hood shall be certified to the following Standards:

.1 CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012
Ed.3+R:21Nov2018 and UL1805:2002

.10 **Work Surface:**

.1 **Stainless Steel**

.1 Work Surface is integrally welded to the liner and has a 1/2" high anti-spill front lip. The underside is reinforced with plywood to prevent twisting, oil-canning or buckling.

.2 A full length drain trough with 38mm (1 ½") outlet is integrally welded into the rear of the work surface.
.3 Sinks are flush mount and integrally welded into the work surface.

.11 **Base Cabinets:** Delete those **NOT** required

.1 **General Storage:**

.1 Steel construction.
.2 Are non-lined and have a full depth adjustable shelf.
.3 Cabinets are welded steel construction, are rigid and self-supporting.
.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
.1 11 gauge (3.2mm) for top and front rails
.2 14 gauge (1.7 mm) for leveling devices
.3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.
.5 Leveling devices are installed on each corner and are accessible from the inside of the cabinet
.6 Cabinets are 535mm (21") deep.
.7 Cabinet widths as shown on drawings.
.8 Finish to be per 2.06 Exterior Finish.

.2 **Acid Storage:**

.1 Steel construction.
.2 Are designed and constructed for the storage of acids and corrosive chemicals, not flammable or combustible chemicals. Door fronts to be labeled "ACIDS" or "BASES".
.3 Cabinet exteriors are welded steel construction, are rigid and self-supporting.
.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
.1 11 gauge (3.2mm) for top and front rails
.2 14 gauge (1.7 mm) for leveling devices
.3 18 gauge (1.2mm) for all remaining cabinet

component including cabinet frame and shelves.

.5 Interior lining is all welded one piece construction fabricated of 6mm (1/4") thick from white low-density polyethylene. Interior of doors are lined with the same material and have upper and lower vent slots.

.6 Shelf is reinforced, full depth, two position, high density polyethylene.

.7 The floor of the cabinet has a 25mm (1") anti-spill front edge. Cabinet will be provided with 40mm (1 1/2") PVC fittings and tubing for venting the cabinet into the fume hood.

.8 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.

.9 Cabinets are 535mm (21") deep.

.10 Also available 460mm deep (18").

.11 Finish to be per 2.06 Exterior Finish.

.3 **Solvent/Flammable Storage:**

.1 Steel construction.

.2 Designed for the storage flammable and combustible liquids and not for the storage of acids and corrosives. Door fronts to be labeled "FLAMMABLE- KEEP FIRE AWAY".

.3 Cabinets meet O.S.H.A. Standard 1910-106 (d)(3) and comply with NFPA 30 Flammable and Combustible Liquids. They are UL 1275/UL1275C UL labeled.

.4 Cabinets is fabricated from 1.2mm (18 gauge) steel with a baked electrostatic powder coating. The top, sides, floor and doors are double wall construction with fire-proof insulation between providing a 40mm (1 1/2") insulating air space all around.

.5 The floor is recessed 50mm (2") to contain spills. Doors are manual-closing with lever handle and are three point locking devise. Self-closing doors are optional.

.6 Upper and lower air vents with spark arrestors and removable threaded covers are installed on the back of the cabinets. NOTE: It is not recommended to vent the cabinets into fume hood or fume hood exhaust ducting.

.7 Cabinets are 535mm (21") deep.

.8 Also available 460mm deep (18”).
.9 Standard colour is “Caution Yellow”.
.10 Finish to be per 2.06 Exterior Finish.

.4 **Vacuum Pump:**

.1 Steel construction.
.2 Construction is to UL962A/CSA22.2 #203 certified.
.3 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
  .1 11 gauge (3.2mm) for top and front rails
  .2 14 gauge (1.7 mm) for leveling devices
  .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.4 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
.5 Inside of cabinet (back, sides and top) are lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining is welded to the cabinet doors, back, sides and top.
.6 A 100lb capacity full extension pull out pan on the bottom of the cabinet is standard.
.7 One duplex electrical outlet 120V/15–20 A is located on the inside back of the cabinet, one 15A pump switch with a 4.90A thermal overload is located on the exterior top panel of the cabinet.
.8 A 2” (51mm) diameter vent port at the top left corner of the cabinet back and a 1 1⁄2” (38mm) pipe on the back right side of the cabinet top for end-user supplied piping is standard.
.9 Optional “CPU” for additional venting available
.10 Cabinets are 535mm (21”) deep.
.11 Also available 460mm deep (18”).

.12 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.
.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.3 Fittings are CSA and CGA approved.
.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.
  .1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.
  .2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.
  .3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.
  .4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:
  .1 One piece construction, cast or forged brass with a minimum copper content of 57%.
  .2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.
  .3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.6 Handles:
  .1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.
  .2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

.13 **Low Airflow Alarm/Monitor:** Delete those **NOT** required

.1 **Model AFA4000/1** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Full-colour 3.5" LCD display.
.3 Digital face velocity display in fpm or m/s.
.4 Visual and audible alarms.
.1 Graphic display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
.2 Alarm Indication: Red graphic with audible . alarm.
.3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
.5 Two point alarm capture pushbutton calibration.
.6 BACnet and Modbus on board available with optional comms adaptor.
.7 Alarm is low voltage and is supplied with a transformer.

.2 **Model AFA1000** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Back-lit LCD display.
.3 Digital face velocity display in fpm or m/s.
.4 Visual and audible alarms.
.1 Indicator display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
.2 Alarm Indication: Red graphic with audible alarm.
.3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.
.5 Two point alarm capture pushbutton calibration.
.6 BACnet and Modbus on board available with optional comms adaptor.
.7 Alarm is low voltage and is supplied with a transformer.

.3 **Model AFA500** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.

.2 Audible alarm with mute button.

.1 Visual alarm with Green LED = Safe and Red LED light = Alarm.

.2 Audible alarm can be silenced but Red LED will stay active until alarm condition is corrected.

.3 Single Alarm Point Capture pushbutton calibration.

.4 Relay input for Night Setback to mute audible alarm.

.5 Alarm is low voltage and is supplied with a transformer.

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be ground smooth.

.2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the “Scientific Equipment and Furniture Association”

.5 Metal Surface Finish Testing:

.1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

.2 Third party, independent test reports will be available upon request.

BACK TO MAIN

SPECIFICATIONS

CONSTANT AIR VOLUME
ACCESSIBLE-ADA
BENCH MOUNT FUME HOODS

1.04 REFERENCE STANDARDS

.1 ANSI/ASHRAE 110 Latest Edition: Method of Testing Performance of Laboratory Fume Hoods

.2 SEFA 1 Latest Edition: Laboratory Fume Hoods

.3 SEFA 8-M Latest Edition: Laboratory Grade Metal Casework

.4 SEFA 8-W Latest Edition: Laboratory Grade Wood Furniture, Casework, Shelving and Tables

.5 MD15128 Latest Edition: Laboratory Fume Hoods

.6 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.7 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.8 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.9 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.10 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.11 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 **Bench Mount Fume Hoods:**

.1 Are designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition.

.2 It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.3 **Accessibility for Person With Disabilities (ADA:**

.1 Where shown on the laboratory drawings, provide fume hoods accommodating persons with disabilities in accordance to Federal, Provincial and local regulations having jurisdiction.

.2 The height of the highest point of access to the work surface above finished floor shall not exceed (860mm (34").

.3 Sash operation, mechanical fixtures, both handles and nozzles, sinks, electrical receptacles, switches and low air flow alarm shall be at a location and height off finished floor to be considered accessible.

.4 Refer to the H.H. Hawkins Ltd. Accessible – ADA fume hood catalog section for wheel chair accessibility requirements.

.3 Fume hoods will be complete with supporting base cabinets, if specified under this section, factory installed electrical fittings, mechanical service fixtures, low airflow alarm/ monitor and accessories as listed under this section. See 2.05.

.4 Supply and Installation of the fume hood and supporting base cabinets, are to be by the hood manufacturer as described under this section. Final mechanical and electrical connections to the building utilities are by others.

.5 **Constant Air Volume (CAV) Full By-Pass type:** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hoods shall maintain a relative constant exhaust volume at any sash opening from 685mm (27") full open to 150mm (6") open.

.1 Maximum variation as a result of sash position shall not exceed 5% of the specified exhaust volume.

.2 By-Pass shall limit face velocity from increasing more than fourfold as sash is lowered from full open 685mm (27") to 150mm (6") open.

.3 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72") wide unit, average static pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

1. Sash full open 680mm (27”);

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	55Pa (0.22 inches)
0.50m/s (100 FPM)	85Pa (0.34 inches)

2. Sash open 450mm (18”)

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.10 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.2 Noise Level: When measured on the ‘A’ scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.3 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.4 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and electrical fittings will be pre-wired to a junction box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6”) above or below the fume hood superstructure is **optional.**

.5 Fume hoods shall be available in standard widths of 915mm (36”), 1220mm (48”) 1525mm (60”), 1830mm (72”) and 2440mm (96”).

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]

.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]

.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].

.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.

.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.

.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

.2 Containment Testing - “As Manufactured” (AM):

.1 Single sided bench mount fume hoods will be performance tested to the ASHRAE 110 - Latest Edition, Method of Testing Performance of Laboratory Fume Hoods. The method of testing consists of the following three tests:

.1 Flow Visualization using Local and Large volume smoke challenges

.2 Face Velocity Measurements/Profile

.3 Tracer Gas Containment

.2 The manufacture’s fume hood shall be capable of achieving an “As Manufactured” (AM) rating of better than 0.05 PPM at 4 litres per minute (4 AM 0.05) with the vertically rising sash in the full open (27”) position.

.3 Unless otherwise specified, previous test results obtained on the manufacture’s identical hood design and size to the ones specified herein will be acceptable.

.4 Test reports shall be made available on request.

.3 Manufacture's Test Facility:

.1 All "As Manufactured" (AM) tests shall be performed in the manufacture's fume hood testing facility.

.2 Room shall be of adequate size to provide unobstructed clearance of at least five feet each side and ten feet in front of fume hood.

.3 Make-up air will be provided to replace the room air exhausted through the fume hood and be capable of maintaining 0.02" w.g. negative pressure.

.4 Make-up air will be provided in a manner that keeps cross drafts in front of hood to less than 0.15m/s (30fpm).

.5 Room ventilation system will be capable of testing fume hoods to face velocities of between 0.30m/s (60 fpm) through 0.51 (100 fpm).

.6 All testing and reports shall be performed and submitted by a third party testing company specializing in this type of certification.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.

.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity.
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture's colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3" X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4" X 4") sample of liner lining material(s).
.3 100mm X 100mm (4" X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.

.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

.2 Performance Test Reports:

.1 Submit a test report from a third party fume hood testing agency listing testing criteria that the fume hood types and sizes on this project have been tested to ANSI/ASHRAE-110 Latest Edition "As Manufactured" (AM).

.2 Submit a written report on each hood type and size certification that the fume hood(s) to be provided passed the tests defined in 1.06 PERFORMANCE.

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE'S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years' experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Lower air foil: Stainless steel, 16 gauge, type 316, number 4 finish.

.9 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.10 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 Bench Mount Laboratory Fume Hoods

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner. Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.3 Exterior End Panels: Two piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable with without tools.

.4 Front Upper Panel: Secured with hidden metal fasteners and are removable without tools.

.5 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed.

.6 Front Opening: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.7 Lower Air Foil Opening: Fabricated of I6 gauge, type 3I6 stainless steel, number 4 finish. A slot between its underside and the work surface shall provide a constant flow of air across the work surface and allowing access for oversize electrical plugs.

.2 **Interior Liner**: Refer to 2.05.4

.1 Will be of a corrosion and acid resisting material as listed and specified herein.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access panels: Will be fabricated of the same material as the liner, are flush mount, air tight and therefore do not require gaskets.

.3 **Sash(es):** (Delete those **NOT** required)

.1 **Vertically Rising**:

.1 Sash is a “Full View” type with the front vertical view height being 915 mm (36’) including the fixed view panel. The maximum sash opening is 685 mm (27”).

.2 Fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys.

Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. .4 Sash shall open and close against rubber bumpers.

.4 Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.2 **Combination Horizontal Sliding/Vertical Rising:**

.1 Sash is a "Full View" type with the front vertical view height being 915 mm (36'). The maximum sash opening is 840 mm (33").

.2 Sash assembly is set in an I8 gauge, type 316 stainless number 4 finish frame. It is fully counter balanced using a single centre hung weight running behind the hood and a continuous stainless steel sash cable. It is designed to offer exact and positive operation and to prevent sash drop in the event of the failure of the sash cable. Pulleys are complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.3 Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time.

.4 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16").

.5 Sash Pull is a low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.6 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall be have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.4 **Liner Material(s):** (Delete those **NOT** required)

.1 **Polyresin (PR):**

.1 6mm (1/4") thick, solid fiberglass reinforced pressed thermoset resin board, is flame retardant and self-extinguishing. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 723 ASTM E84-80). Flexural strength is a minimum of 14,000 PSI (D790).

.2 Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F).

.3 Exhaust collar is type 316 stainless steel.

.2 **Stainless Steel, all welded (SW):**

.1 Type 316 (SW6) OR Type 304 (SW4) stainless steel (choose one), 16 gauge, number 4 finish, all welded seamless construction. Interior comers have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.2 Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.

.3 Exhaust collar is type 316 stainless steel.

.3 **Stainless Steel, stitched welded (ST):**

.1 Type 316 (ST6) OR Type 304 (ST4) stainless steel (choose one), 16 gauge, number 4 finish. The sides and back of the interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides.

.2 Liner has a factory installed mechanically fastened and silicon sealed work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.3 Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals containing chlorides

such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.

.4 Exhaust collar is stainless steel.

.4 **Polypropylene (PP):**

.1 1/4" thick, solid, flame retardant, self-extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.

.2 Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F).

.3 Exhaust collar is PVC.

.5 **PVC (PV)** :

.1 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.

.2 Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F).

.3 Exhaust collar is PVC.

.5 **Baffles:**

.1 Three-piece construction, fabricated from the same material as the fume hood liner. Full width horizontal exhaust slots are located at the top, bottom and midpoint with side vertical slots running full height.

.2 Are factory sized and fixed in place for optimum containment per ASHRAE II0 Latest Edition Tracer Gas Testing.

.6 **Exhaust Collar(s) :**

.1 Type 316 stainless steel, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.
.2 PVC, 6mm (1/4") thick, beveled entry edge, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.7 **Ceiling Closure Panels:** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.
.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.
.3 Colour to match fume hood exterior.

.8 **Seismic Anchors:** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.9 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.
.2 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.
.3 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".
.4 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts of the hood exterior.
.5 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.
.6 Fume hood shall be certified to the following Standards: CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012 Ed.3+R:21Nov2018 and UL1805:2002

.10 **Work Surfaces:** (Delete those **NOT** required)

.1 **Epoxy:**

.1 Work surfaces are moulded in one piece from a modified epoxy resin with a raised 12 mm (1/2”) anti-spill edge on all four sides and drip groove on the underside of the front edge. Overall thickness shall be 32mm (1 1/4”).
.2 Material will offer good stain resistance and excellent chemical, heat and moisture resistance.
.3 Sinks should be fabricated from the same material.
.4 Colour of top shall be black unless otherwise specified.
.5 Work surface shall be factory installed and secured to the fume hood superstructure.
.6 Epoxy sinks can be Drop-in flush mount type OR raised 6mm (1/4”) above the top of the work surface. (Choose one)

.2 **Stainless Steel:**

.1 Work surfaces are fabricated from Type 316 OR Type 304 stainless steel (choose one), 16 gauge, number 4 finish.
.2 Work surface has a 12mm (1/2") high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.
.3 Material offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Work surface shall be factory installed.
.4 Sinks are flush mount and integrally welded into the work surface.

.11 **Base Cabinets:** Delete those **NOT** required

.1 **General Storage:**

.1 Steel construction.
.2 Are non-lined and have a full depth adjustable shelf.
.3 Cabinets are welded steel construction, are rigid and self-supporting.

.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.5 Leveling devices are installed on each corner and are accessible from the inside of the cabinet

.6 Cabinet heights to be Accessible-ADA compatible

.7 Cabinets are 535mm (21") deep.

.8 Cabinet widths as shown on drawings.

.9 Finish to be per 2.06 Exterior Finish.

.2 **Acid Storage:**

.1 Steel construction.

.2 Are designed and constructed for the storage of acids and corrosive chemicals, not flammable or combustible chemicals. Door fronts to be labeled "ACIDS" or "BASES".

.3 Cabinet exteriors are welded steel construction, are rigid and self-supporting.

.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.5 Interior lining is all welded one piece construction fabricated of 6mm (1/4") thick from white low-density polyethylene. Interior of doors are lined with the same material and have upper and lower vent slots.

.6 Shelf is reinforced, full depth, two position, high density polyethylene.

.7 The floor of the cabinet has a 25mm (1") anti-spill front edge. Cabinet will be provided with 40mm (1 1/2") PVC fittings and tubing for venting the cabinet into the fume hood.

.8 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
.9 Cabinet heights to be Accessible-ADA compatible
.10 Cabinets are 535mm (21") deep.
.11 Also available 460mm deep (18").
.12 Finish to be per 2.06 Exterior Finish.

.3 **Solvent/Flammable Storage:**

.1 Steel construction.
.2 Designed for the storage flammable and combustible liquids and not for the storage of acids and corrosives. Door fronts to be labeled "FLAMMABLE- KEEP FIRE AWAY".
.3 Cabinets meet O.S.H.A. Standard 1910-106 (d)(3) and comply with NFPA 30 Flammable and Combustible Liquids. They are UL 1275/UL1275C UL labeled.
.4 Cabinets is fabricated from 1.2mm (18 gauge) steel with a baked electrostatic powder coating. The top, sides, floor and doors are double wall construction with fire-proof insulation between providing a 40mm (1 1/2") insulating air space all around.
.5 The floor is recessed 50mm (2") to contain spills. Doors are manual-closing with lever handle and are three point locking devise. Self-closing doors are optional.
.6 Upper and lower air vents with spark arrestors and removable threaded covers are installed on the back of the cabinets. NOTE: It is not recommended to vent the cabinets into fume hood or fume hood exhaust ducting.
.7 Cabinet heights to be Accessible-ADA compatible
.8 Cabinets are 535mm (21") deep.
.9 Also available 460mm deep (18").
.10 Standard colour is "Caution Yellow".
.11 Finish to be per 2.06 Exterior Finish.

.4 **Vacuum Pump:**

.1 Steel construction.
.2 Construction is to UL962A/CSA22.2 #203 certified.
.3 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
  .1 11 gauge (3.2mm) for top and front rails
  .2 14 gauge (1.7 mm) for leveling devices
  .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.4 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
.5 Inside of cabinet (back, sides and top) are lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining is welded to the cabinet doors, back, sides and top.
.6 A 100lb capacity full extension pull out pan on the bottom of the cabinet is standard.
.7 One duplex electrical outlet 120V/15–20 A is located on the inside back of the cabinet, one 15A pump switch with a 4.90A thermal overload is located on the exterior top panel of the cabinet.
.8 A 2” (51mm) diameter vent port at the top left corner of the cabinet back and a 1 1⁄2” (38mm) pipe on the back right side of the cabinet top for end-user supplied piping is standard.
.9 Optional “CPU” for additional venting available
.10 Cabinet heights to be Accessible-ADA compatible
.11 Cabinets are 535mm (21”) deep.
.12 Also available 460mm deep (18”).

.12 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.
.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.3 Fittings are CSA and CGA approved.

.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.

.1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.

.2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.

.3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.

.4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:

.1 One piece construction, cast or forged brass with a minimum copper content of 57%.

.2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.

.3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.

.6 Handles:

.1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.

.2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

.13 **Low Airflow Alarm/Monitor:** Delete those **NOT** required

.1 **Model AFA4000/1** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.

.2 Full-colour 3.5” LCD display.

.3 Digital face velocity display in fpm or m/s.

.4 Visual and audible alarms.

.1 Graphic display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm

.2 Alarm Indication: Red graphic with audible alarm.
.3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.

.5 Two point alarm capture pushbutton calibration.
.6 BACnet and Modbus on board available with optional comms adaptor.
.7 Alarm is low voltage and is supplied with a transformer.

.2 **Model AFA1000** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Back-lit LCD display.
.3 Digital face velocity display in fpm or m/s.
.4 Visual and audible alarms.
.1 Indicator display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
.2 Alarm Indication: Red graphic with audible alarm.
.3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.

.5 Two point alarm capture pushbutton calibration.
.6 BACnet and Modbus on board available with optional comms adaptor.
.7 Alarm is low voltage and is supplied with a transformer.

.3 **Model AFA500** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Audible alarm with mute button.
.1 Visual alarm with Green LED = Safe and Red LED light = Alarm.
.2 Audible alarm can be silenced but Red LED will stay active until alarm condition is corrected.
.3 Single Alarm Point Capture pushbutton calibration.
.4 Relay input for Night Setback to mute audible alarm.
.5 Alarm is low voltage and is supplied with a transformer.

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be ground smooth.

2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the “Scientific Equipment and Furniture Association”.

.5 Metal Surface Finish Testing:

.1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

BACK TO MAIN

SPECIFICATIONS

VARIABLE AIR VOLUME
ACCESSIBLE-ADA
BENCH MOUNT FUME HOODS

1.04 REFERENCE STANDARDS

.1 ANSI/ASHRAE 110 Latest Edition: Method of Testing Performance of Laboratory Fume Hoods

.2 SEFA 1 Latest Edition: Laboratory Fume Hoods

.3 SEFA 8-M Latest Edition: Laboratory Grade Metal Casework

.4 SEFA 8-W Latest Edition: Laboratory Grade Wood Furniture, Casework, Shelving and Tables

.5 MD15128 Latest Edition: Laboratory Fume Hoods

.6 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.7 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.8 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.9 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.10 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.11 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 **Bench Mount Fume Hoods:**

.1 Are designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition.

.2 It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.2 **Accessibility for Person With Disabilities (ADA:**

.1 Where shown on the laboratory drawings, provide fume hoods accommodating persons with disabilities in accordance to Federal, Provincial and local regulations having jurisdiction.

.2 The height of the highest point of access to the work surface above finished floor shall not exceed (860mm (34").

.3 Sash operation, mechanical fixtures, both handles and nozzles, sinks, electrical receptacles, switches and low air flow alarm shall be at a location and height off finished floor to be considered accessible.

.4 Refer to the H.H. Hawkins Ltd. Accessible – ADA fume hood catalog section for wheel chair accessibility requirements.

.3 Fume hoods will be complete with supporting base cabinets, if specified under this section, factory installed electrical fittings, mechanical service fixtures and accessories as listed under this section. See 2.05.11.

.4 Supply and Installation of the fume hood and supporting base cabinets, are to be by the hood manufacturer as described under this section. Final mechanical and electrical connections to the building utilities are by others.

.5 **Variable Air Volume (VAV) Restricted By-Pass type.** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hood shall not have a by-pass to will insure that all exhaust air will go through the open sash area and lower airfoil.

.2 Fume hoods shall maintain a constant face velocity regardless of the sash position and/or sash opening area. As the sash is raised or lowered, the VAV system and alarm monitor (supplied and installed by others) will increase and decrease the exhaust volume for the fume hood accordingly.

.3 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72") wide unit, average static pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

1. Sash full open 680mm (27”);

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	55Pa (0.22 inches)
0.50m/s (100 FPM)	85Pa (0.34 inches)

2. Sash open 450mm (18”)

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.10 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.2 Noise Level: When measured on the ‘A’ scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.3 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.4 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and electrical fittings will be pre-wired to a junction box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6”) above or below the fume hood superstructure is **optional.**

.5 Fume hoods shall be available in standard widths of 915mm (36”), 1220mm (48”) 1525mm (60”), 1830mm (72”) and 2440mm (96”).

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]

.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]

.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].

.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.

.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.

.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

.2 Containment Testing - “As Manufactured” (AM):

.1 Single sided bench mount fume hoods will be performance tested to the ASHRAE 110 - Latest Edition, Method of Testing Performance of Laboratory Fume Hoods. The method of testing consists of the following three tests:

.1 Flow Visualization using Local and Large volume smoke challenges

.2 Face Velocity Measurements/Profile

.3 Tracer Gas Containment

.2 The manufacture’s fume hood shall be capable of achieving an “As Manufactured” (AM) rating of better than 0.05 PPM at 4 litres per minute (4 AM 0.05) with the vertically rising sash in the full open (27”) position.

.3 Unless otherwise specified, previous test results obtained on the manufacture’s identical hood design and size to the ones specified herein will be acceptable.

.4 Test reports shall be made available on request.

.3 Manufacture's Test Facility:

.1 All "As Manufactured" (AM) tests shall be performed in the manufacture's fume hood testing facility.

.2 Room shall be of adequate size to provide unobstructed clearance of at least five feet each side and ten feet in front of fume hood.

.3 Make-up air will be provided to replace the room air exhausted through the fume hood and be capable of maintaining 0.02" w.g. negative pressure.

.4 Make-up air will be provided in a manner that keeps cross drafts in front of hood to less than 0.15m/s (30fpm).

.5 Room ventilation system will be capable of testing fume hoods to face velocities of between 0.30m/s (60 fpm) through 0.51 (100 fpm).

.6 All testing and reports shall be performed and submitted by a third party testing company specializing in this type of certification.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.
.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity.
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture's colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3" X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4" X 4") sample of liner lining material(s).
.3 100mm X 100mm (4" X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.

.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

.2 Performance Test Reports:

.1 Submit a test report from a third party fume hood testing agency listing testing criteria that the fume hood types and sizes on this project have been tested to ANSI/ASHRAE-110 Latest Edition "As Manufactured" (AM).

.2 Submit a written report on each hood type and size certification that the fume hood(s) to be provided passed the tests defined in 1.06 PERFORMANCE.

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE'S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years' experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Lower air foil: Stainless steel, 16 gauge, type 316, number 4 finish.

.9 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.10 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 Bench Mount Laboratory Fume Hoods

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner. Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.3 Exterior End Panels: Two piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable with without tools.

.4 Front Upper Panel: Secured with hidden metal fasteners and are removable without tools.

.5 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed.

.6 Front Opening: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.7 Lower Air Foil Opening: Fabricated of I6 gauge, type 3I6 stainless steel, number 4 finish. A slot between its underside and the work surface shall provide a constant flow of air across the work surface and allowing access for oversize electrical plugs.

.2 **Interior Liner**: Refer to 2.05.4

.1 Will be of a corrosion and acid resisting material as listed and specified herein.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access panels: Will be fabricated of the same material as the liner, are flush mount, air tight and therefore do not require gaskets.

.3 **Sash(es):** (Delete those **NOT** required)

.1 **Vertically Rising**:

.1 Sash is a “Full View” type with the front vertical view height being 915 mm (36’) including the fixed view panel. The maximum sash opening is 685 mm (27”).

.2 Fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys.

Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. .4 Sash shall open and close against rubber bumpers.

.4 Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.2 **Combination Horizontal Sliding/Vertical Rising:**

.1 Sash is a "Full View" type with the front vertical view height being 915 mm (36'). The maximum sash opening is 840 mm (33").

.2 Sash assembly is set in an I8 gauge, type 316 stainless number 4 finish frame. It is fully counter balanced using a single centre hung weight running behind the hood and a continuous stainless steel sash cable. It is designed to offer exact and positive operation and to prevent sash drop in the event of the failure of the sash cable. Pulleys are complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.3 Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time.

.4 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16").

.5 Sash Pull is a low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.6 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall be have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.4 **Liner Material(s):** (Delete those **NOT** required)

.1 **Polyresin (PR):**

.1 6mm (1/4") thick, solid fiberglass reinforced pressed thermoset resin board, is flame retardant and self-extinguishing. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 723 ASTM E84-80). Flexural strength is a minimum of 14,000 PSI (D790).

.2 Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F).

.3 Exhaust collar is type 316 stainless steel.

.2 **Stainless Steel, all welded (SW):**

.1 Type 316 (SW6) OR Type 304 (SW4) stainless steel (choose one), 16 gauge, number 4 finish, all welded seamless construction. Interior comers have a 3/4" radius and all welds are ground and polished. Liner has an integrally welded work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.2 Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.

.3 Exhaust collar is type 316 stainless steel.

.3 **Stainless Steel, stitched welded (ST):**

.1 Type 316 (ST6) OR Type 304 (ST4) stainless steel (choose one), 16 gauge, number 4 finish. The sides and back of the interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides.

.2 Liner has a factory installed mechanically fastened and silicon sealed work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.3 Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals containing chlorides

such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.

.4 Exhaust collar is stainless steel.

.4 **Polypropylene (PP):**

.1 1/4" thick, solid, flame retardant, self-extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.

.2 Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water absorption. Maximum operating temperature is 82C (180F).

.3 Exhaust collar is PVC.

.5 **PVC (PV)** :

.1 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.

.2 Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F).

.3 Exhaust collar is PVC.

.5 **Baffles:**

.1 Three-piece construction, fabricated from the same material as the fume hood liner. Full width horizontal exhaust slots are located at the top, bottom and midpoint with side vertical slots running full height.

.2 Are factory sized and fixed in place for optimum containment per ASHRAE II0 Latest Edition Tracer Gas Testing.

.6 **Exhaust Collar(s) :**

.1 Type 316 stainless steel, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.
.2 PVC, 6mm (1/4") thick, beveled entry edge, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.7 **Ceiling closure panels:** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.
.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.
.3 Colour to match fume hood exterior.

.8 **Seismic Anchors:** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.9 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.
.2 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.
.3 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".
.4 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts of the hood exterior.
.5 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.
.6 Fume hood shall be certified to the following Standards: CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012 Ed.3+R:21Nov2018 and UL1805:2002

.10 **Work Surfaces:** (Delete those **NOT** required)

.1 **Epoxy:**

.1 Work surfaces are moulded in one piece from a modified epoxy resin with a raised 12 mm (1/2”) anti-spill edge on all four sides and drip groove on the underside of the front edge. Overall thickness shall be 32mm (1 1/4”).
.2 Material will offer good stain resistance and excellent chemical, heat and moisture resistance.
.3 Sinks should be fabricated from the same material.
.4 Colour of top shall be black unless otherwise specified.
.5 Work surface shall be factory installed and secured to the fume hood superstructure.
.6 Epoxy sinks can be Drop-in flush mount type OR raised 6mm (1/4”) above the top of the work surface. (Choose one)

.2 **Stainless Steel:**

.1 Work surfaces are fabricated from Type 316 OR Type 304 stainless steel (choose one), 16 gauge, number 4 finish.
.2 Work surface has a 12mm (1/2") high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.
.3 Material offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals such as Hydrochloric Acid, Hydrofluoric Acid, and Sulphuric Acid to 80% solution. Work surface shall be factory installed.
.4 Sinks are flush mount and integrally welded into the work surface.

.11 **Base Cabinets:** Delete those **NOT** required

.1 **General Storage:**

.1 Steel construction.
.2 Are non-lined and have a full depth adjustable shelf.
.3 Cabinets are welded steel construction, are rigid and self-supporting.

.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.5 Leveling devices are installed on each corner and are accessible from the inside of the cabinet

.6 Cabinet heights to be Accessible-ADA compatible

.7 Cabinets are 535mm (21") deep.

.8 Cabinet widths as shown on drawings.

.9 Finish to be per 2.06 Exterior Finish.

.2 **Acid Storage:**

.1 Steel construction.

.2 Are designed and constructed for the storage of acids and corrosive chemicals, not flammable or combustible chemicals. Door fronts to be labeled "ACIDS" or "BASES".

.3 Cabinet exteriors are welded steel construction, are rigid and self-supporting.

.4 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:

- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.5 Interior lining is all welded one piece construction fabricated of 6mm (1/4") thick from white low-density polyethylene. Interior of doors are lined with the same material and have upper and lower vent slots.

.6 Shelf is reinforced, full depth, two position, high density polyethylene.

.7 The floor of the cabinet has a 25mm (1") anti-spill front edge. Cabinet will be provided with 40mm (1 1/2") PVC fittings and tubing for venting the cabinet into the fume hood.

.8 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.
.9 Cabinet heights to be Accessible-ADA compatible
.10 Cabinets are 535mm (21") deep.
.11 Also available 460mm deep (18").
.12 Finish to be per 2.06 Exterior Finish.

.3 **Solvent/Flammable Storage:**

.1 Steel construction.
.2 Designed for the storage flammable and combustible liquids and not for the storage of acids and corrosives. Door fronts to be labeled "FLAMMABLE- KEEP FIRE AWAY".
.3 Cabinets meet O.S.H.A. Standard 1910-106 (d)(3) and comply with NFPA 30 Flammable and Combustible Liquids. They are UL 1275/UL1275C UL labeled.
.4 Cabinets is fabricated from 1.2mm (18 gauge) steel with a baked electrostatic powder coating. The top, sides, floor and doors are double wall construction with fire-proof insulation between providing a 40mm (1 1/2") insulating air space all around.
.5 The floor is recessed 50mm (2") to contain spills. Doors are manual-closing with lever handle and are three point locking devise. Self-closing doors are optional.
.6 Upper and lower air vents with spark arrestors and removable threaded covers are installed on the back of the cabinets. NOTE: It is not recommended to vent the cabinets into fume hood or fume hood exhaust ducting.
.7 Cabinet heights to be Accessible-ADA compatible
.8 Cabinets are 535mm (21") deep.
.9 Also available 460mm deep (18").
.10 Standard colour is "Caution Yellow".
.11 Finish to be per 2.06 Exterior Finish.

.4 **Vacuum Pump:**

.1 Steel construction.
.2 Construction is to UL962A/CSA22.2 #203 certified.

.3 The minimum metal gauges used in the casework fabrication shall be as follows and as recognized by North American standards:
- .1 11 gauge (3.2mm) for top and front rails
- .2 14 gauge (1.7 mm) for leveling devices
- .3 18 gauge (1.2mm) for all remaining cabinet component including cabinet frame and shelves.

.4 Leveling devices are installed on each corner and are accessible from the inside of the cabinet.

.5 Inside of cabinet (back, sides and top) are lined with CB-300 sound deadening insulation. To protect the sound deadening insulation, a perforated painted steel lining is welded to the cabinet doors, back, sides and top.

.6 A 100lb capacity full extension pull out pan on the bottom of the cabinet is standard.

.7 One duplex electrical outlet 120V/15–20 A is located on the inside back of the cabinet, one 15A pump switch with a 4.90A thermal overload is located on the exterior top panel of the cabinet.

.8 A 2” (51mm) diameter vent port at the top left corner of the cabinet back and a 1 1⁄2” (38mm) pipe on the back right side of the cabinet top for end-user supplied piping is standard.

.9 Optional “CPU” for additional venting available

.10 Cabinet heights to be Accessible-ADA compatible

.11 Cabinets are 535mm (21”) deep.

.12 Also available 460mm deep (18”).

.12 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.

.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.

.3 Fittings are CSA and CGA approved.

.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.
- .1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.

.2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.

.3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.

.4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:

.1 One piece construction, cast or forged brass with a minimum copper content of 57%.

.2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.

.3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.

.6 Handles:

.1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.

.2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be ground smooth.

2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the "Scientific Equipment and Furniture Association".

.5 Metal Surface Finish Testing:

.1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

SPECIFICATIONS

CONSTANT AIR VOLUME
FLOOR MOUNT FUME HOODS

1.04 REFERENCE STANDARDS

.1 ANSI/ASHRAE 110 Latest Edition: Method of Testing Performance of Laboratory Fume Hoods

.2 SEFA 1 Latest Edition: Laboratory Fume Hoods

.3 MD15128 Latest Edition: Laboratory Fume Hoods

.4 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.5 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.6 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.7 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.8 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.9 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 **Floor Mount Fume Hoods:**

.1 Are intended to be used when large pieces of apparatus or equipment cannot be accommodated in a bench mount fume hood.

.2 Fume hood shall be designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition.

.3 It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.4 Fume hoods will be complete with factory installed electrical fittings, mechanical service fixtures, low airflow alarm/ monitor and accessories as listed under this section.

.5 Supply and Installation of the fume hood are to be by the hood manufacturer as described under this section.

.4 Final mechanical and electrical connections to the building utilities are by others.

.5 **Constant Air Volume (CAV) Full By-Pass type.** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hoods shall maintain a relative constant exhaust volume when tested in the manufactures test facility. The upper vertical sash opening, from 685mm (27") full open to 150mm (6") open, will be capable of maintaining a relatively constant exhaust volume. The lower sash shall be closed.

.5 Maximum variation as a result of sash position shall not exceed 5% of the specified exhaust volume.

.6 For vertical sliding sash hoods, By-Pass shall limit face velocity of the upper sash from increasing more than fourfold as the sash is lowered from full open 685mm (27") to 150mm (6") open. The lower sash shall be closed.

.7 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72") wide unit, average static pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

1. Upper sash at full open 680mm (27");

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	55Pa (0.22 inches)
0.50m/s (100 FPM)	85Pa (0.34 inches)

2. Upper sash at open 450mm (18")

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.10 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.2 Noise Level: When measured on the 'A' scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.3 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.4 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and electrical fittings will be pre-wired to a junction box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6") above the fume hood superstructure is **optional.**

.5 Fume hoods shall be available in standard widths of 1220mm (48") 1525mm (60"), 1830mm (72") and 2440mm (96").

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]
.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]
.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].
.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.
.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory

Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.

.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

.2 Containment Testing - "As Manufactured" (AM):

.1 Flow Visualization using local and large volume smoke challenges
.2 Face Velocity Measurements/Profile
.3 Tracer Gas Containment

.2 The manufacture's fume hood shall be capable of achieving an "As Manufactured" (AM) rating of better than 0.05 PPM at 4 litres per minute (4 AM 0.05) with the vertically rising sash in the full open (27") position.

.3 Unless otherwise specified, previous test results obtained on the manufacture's identical hood design and size to the ones specified herein will be acceptable.

.4 Test reports shall be made available on request.

.3 Manufacture's Test Facility:

.1 All "As Manufactured" (AM) tests shall be performed in the manufacture's fume hood testing facility.

.2 Room shall be of adequate size to provide unobstructed clearance of at least five feet each side and ten feet in front of fume hood.

.3 Make-up air will be provided to replace the room air exhausted through the fume hood and be capable of maintaining 0.02" w.g. negative pressure.

.4 Make-up air will be provided in a manner that keeps cross drafts in front of hood to less than 0.15m/s (30fpm).

.5 Room ventilation system will be capable of testing fume hoods to face velocities of between 0.30m/s (60 fpm) through 0.51 (100 fpm).

.6 All testing and reports shall be performed and submitted by a third party testing company specializing in this type of certification.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.
.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity.
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture's colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3” X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4” X 4") sample of liner lining material(s).
.3 100mm X 100mm (4” X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.

.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

.2 Performance Test Reports:

.1 Submit a test report from a third party fume hood testing agency listing testing criteria that the fume hood types and sizes on this project have been tested to ANSI/ASHRAE-110 Latest Edition “As Manufactured” (AM).
.2 Submit a written report on each hood type and size certification that the fume hood(s) to be provided passed the tests defined in 1.06 PERFORMANCE.

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE’S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years’ experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.9 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 Floor Mount Laboratory Fume Hoods

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner. Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.3 Exterior End Panels: Three piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable without tools.

.4 Front Upper Panel: Secured with hidden metal fasteners and is removable without tools.

.5 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed. Integrated leveling feet will be installed in the front and rear of each post.

.6 Front Opening: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.2 **Interior Liner**: Refer to 2.05.4

.1 Will be of a corrosion and acid resisting material as listed and specified herein.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access panels: Will be fabricated of the same material as the liner, are flush mount, air tight and therefore do not require gaskets.

.3 **Sashes:** (Delete those **NOT** required)

.1 **Dual Vertically Rising**:

.1 Sash assembly is a dual independent "Full View" type with the front vertical view height being 1884 mm (74") including the fixed view panel. The maximum sash opening is 1625 mm (64").

.2 Both vertical rising sashes are fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys. Sash assemblies will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.4 Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18") open position on the upper sash unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.2 **Horizontal Sliding:**

.1 Sash assembly is "Full View" type with a front vertical view height of 1884mm (74"). Maximum vertical sash opening is 1625mm (64").

.2 Sash assembly is set in an I8 gauge, type 316 stainless steel number 4 finish fully welded frame. Horizontal sliding panes are unframed and are designed so that only a maximum of 50% of the sash can be opened at any one time.

.3 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an

aluminum track. Maximum width of panels shall not exceed 400mm (16”).

.3 **Combination Horizontal Sliding/Vertical Rising:**

.1 Sash assembly is a dual independent “Full View” type with the front vertical view height being 1884 mm (74’) including the fixed view panel. The maximum sash opening is 1625 mm (64”).

.2 Upper vertical sash assembly is set in an I8 gauge, type 316 stainless number 4 finish welded frame. It is fully counter balanced using a single centre hung weight running behind the hood and a continuous stainless steel sash cable. It is designed to offer exact and positive operation and to prevent sash drop in the event of the failure of the sash cable. Pulleys are complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.3 Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time.

.4 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16”).

.5 Sash stops shall be provided at the 450mm (18”) open position unless otherwise specified. They shall be have a manual override when lowering the sash below the 450mm (18”) opening and an automatic reset when the sash is raised above the 450 (18”) open position.

.6 Lower sash assembly is a single pane, vertically rising and is fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys. Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.7 Pulleys shall be complete with cable retaining devices. Sash shall open and close against rubber bumpers. Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.4 **Liner Material(s):** (Delete those **NOT** required)

.1 **Polyresin (PR):**

.1 6mm (1/4") thick, solid fiberglass reinforced pressed thermoset resin board, is flame retardant and self-extinguishing. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 723 ASTM E84-80). Flexural strength is a minimum of 14,000 PSI (D790).

.2 Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F).

.3 Exhaust collar is type 316 stainless steel.

.2 **Stainless Steel, stitched welded (ST):**

.1 Type 316 (ST6) OR Type 304 (ST4) stainless steel (choose one), 16 gauge, number 4 finish. The sides and back of the interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides.

.2 Liner has a factory installed mechanically fastened and silicon sealed work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.3 Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.

.4 Exhaust collar is stainless steel.

.3 **Polypropylene (PP):**

.1 1/4” thick, solid, flame retardant, self-extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.

.2 Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water

absorption. Maximum operating temperature is 82C (180F).

.3 Exhaust collar is PVC.

.5 **PVC (PV)** :

.1 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.

.2 Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F).

.3 Exhaust collar is PVC.

.5 **Baffles:**

.1 Five-piece construction, fabricated from the same material as the fume hood liner. Full width horizontal exhaust slots are located at the top, bottom and midpoint with side vertical slots running full height.

.2 Are factory sized and fixed in place for optimum containment per ASHRAE II0 Latest Edition Tracer Gas testing.

.6 **Exhaust Collar(s):**

.1 Type 316 stainless steel, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.2 PVC 6mm (1/4") beveled entry edge, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.7 **Ceiling Closure Panels** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.

.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.
.3 Colour to match fume hood exterior.

.8 **Seismic Anchors** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.9 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.
.2 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.
.3 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".
.4 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts of the hood exterior.
.5 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.
.6 Fume hood shall be certified to the following Standards: CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012 Ed.3+R:21Nov2018 and UL1805:2002

.12 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.
.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.3 Fittings are CSA and CGA approved.
.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.

.1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.
.2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.
.3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.
.4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:
.1 One piece construction, cast or forged brass with a minimum copper content of 57%.
.2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.
.3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.

.6 Handles:
.1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.
.2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

.13 **Low Airflow Alarm/Monitor:** Delete those **NOT** required

.1 **Model AFA4000/1** factory installed low airflow monitor and alarm system:
.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.
.2 Full-colour 3.5” LCD display.
.3 Digital face velocity display in fpm or m/s.
.4 Visual and audible alarms.
.1 Graphic display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm
.2 Alarm Indication: Red graphic with audible . alarm.
.3 Audible alarm can be silenced but Red graphic

will stay active until alarm condition is corrected.

.5 Two point alarm capture pushbutton calibration.

.6 BACnet and Modbus on board available with optional comms adaptor.

.7 Alarm is low voltage and is supplied with a transformer.

.2 **Model AFA1000** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.

.2 Back-lit LCD display.

.3 Digital face velocity display in fpm or m/s.

.4 Visual and audible alarms.

.1 Indicator display: Green LED = Safe, Amber LED = Caution, Red LED = Alarm

.2 Alarm Indication: Red graphic with audible alarm.

.3 Audible alarm can be silenced but Red graphic will stay active until alarm condition is corrected.

.5 Two point alarm capture pushbutton calibration.

.6 BACnet and Modbus on board available with optional comms adaptor.

.7 Alarm is low voltage and is supplied with a transformer.

.3 **Model AFA500** factory installed low airflow monitor and alarm system:

.1 Built in sidewall airflow sensor for measuring and monitoring face velocity.

.2 Audible alarm with mute button.

.1 Visual alarm with Green LED = Safe and Red LED light = Alarm.

.2 Audible alarm can be silenced but Red LED will stay active until alarm condition is corrected.

.3 Single Alarm Point Capture pushbutton calibration.

.4 Relay input for Night Setback to mute audible alarm.

.5 Alarm is low voltage and is supplied with a transformer.

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be ground smooth.

.2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the “Scientific Equipment and Furniture Association”.

.5 Metal Surface Finish Testing:

.1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

.2 Third party, independent test reports will be available upon request.

BACK TO MAIN

SPECIFICATIONS

VARIABLE AIR VOLUME
FLOOR MOUNT FUME HOODS

1.04 REFERENCE STANDARDS

.1 ANSI/ASHRAE 110 Latest Edition: Method of Testing Performance of Laboratory Fume Hoods

.2 SEFA 1 Latest Edition: Laboratory Fume Hoods

.3 MD15128 Latest Edition: Laboratory Fume Hoods

.4 CSA Z316.5 Latest Edition: Fume hoods and associated exhaust systems

.5 ANSI/AIHA Z9.5 Latest Edition: Laboratory Ventilation

.6 CAN/CSA-C22.2 No. 61010-1-12 + UI;U2; AI UL61010-1:2012 Ed. 3+R21 Nov2018 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use -Part 1: General Requirements.

.7 UL1805 Latest Edition: Laboratory Hoods and Cabinets

.8 NFPA 45 Latest Edition: Protection for Laboratories Using Chemicals, Chapter 6, Laboratory Ventilating Systems and Hood Requirements

.9 WorkSafeBC Latest Edition: Policies Part 30, Fume Hood (Ventilation Systems)

1.05 DESIGN REQUIREMENTS

.1 **Floor Mount Fume Hoods:**

.1 Are intended to be used when large pieces of apparatus or equipment cannot be accommodated in a bench mount fume hood.

.2 Fume hood shall be designed to function as an enclosed ventilated workspace. Its purpose is to protect the operator from harmful fumes and vapors generated within the enclosure and from a fire or explosion as the result of an ignition.

.3 It shall perform these functions by capturing, containing and exhausting the fumes safely and efficiently out the enclosure and by utilizing the sliding safety glass sash as a shield for the operator's face and body.

.4 Fume hoods will be complete with factory installed electrical fittings, mechanical service fixtures, low airflow alarm/ monitor and accessories as listed under this section.

.5 Supply and Installation of the fume hood are to be by the hood manufacturer as described under this section.

.4 Final mechanical and electrical connections to the building utilities are by others.

.5 **Variable Air Volume (VAV) Restricted By-Pass type.** Face Velocity and sash operating height to be determined by the project design group and owner.

.1 Fume hood shall not have a by-pass to insure that all exhaust air will go through the open sash area and lower airfoil.

.2 Fume hoods shall maintain a constant face velocity regardless of the sash position and/or sash opening area. As the sash is raised or lowered, the VAV system and alarm monitor (supplied and installed by others) will increase and decrease the exhaust volume for the fume hood accordingly.

.3 Static Pressure Loss: Fume hood shall be designed to minimize static pressure loss. Based on an 1825mm (72") wide unit, average static pressure loss, taken at four points 90 degrees apart, at least two duct diameters above the fume hood exhaust collar, shall not exceed:

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	55Pa (0.22 inches)
0.50m/s (100 FPM)	85Pa (0.34 inches)

1. Upper sash at open 450mm (18")

Face Velocity	Static Pressure (W.G.)
0.40m/s (80 FPM)	25Pa (0.10 inches)
0.50m/s (100 FPM)	42Pa (0.17 inches)

.2 Noise Level: When measured on the 'A' scale noise generated by the fume hood shall not exceed 60dBA when measured 6" in front of the sash.

.3 Illumination: Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".

.4 Fume hood shall be have front loading type mechanical service fixtures and electrical fittings as specified herein. Mechanical fixtures will be factory pre-piped from outlet to valve and electrical fittings will be pre-wired to a junction

box on the top of the fume hood. All mechanical and electrical hookup to building services will be by the respective sub-trades.

.1 Factory pre-piping of mechanical services from valves to a point 150mm (6") above the fume hood superstructure is **optional.**

.5 Fume hoods shall be available in standard widths of 1220mm (48") 1525mm (60"), 1830mm (72") and 2440mm (96").

1.06 PERFORMANCE REQUIREMENTS

.1 Fume hoods shall be tested and certified and accordingly labeled to Canadian Standards Association (CSA), Underwriters Laboratories (UL) and UL1805 Latest Addition.

.1 CSA/UL:

.1 Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:16Nov2018]
.2 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1]
.3 Proper labeling must be affixed to the front of each fume hood listing the classification approvals.

.2 UL1805:

.1 Laboratory Hoods and Cabinets [UL 1805:2002 Ed.1+R:02Jun2006].
.2 The UL1805 standard covers both electrical and mechanical hazards in addition to the flammability of materials and the airflow characteristics.
.3 Proper labeling must be affixed to the front of each fume hood listing the classification to the UL 1805 standard for Laboratory Fume Hoods. UL listings covering electrical fittings only and which do not include all items covered in UL 1805 will not be accepted.
.4 All testing shall be performed in an accredited National Recognized Testing Laboratory (NRTL) test facility.

.2 Containment Testing - “As Manufactured” (AM):

.1 Flow Visualization using local and large volume smoke challenges
.2 Face Velocity Measurements/Profile
.3 Tracer Gas Containment

.2 The manufacture’s fume hood shall be capable of achieving an “As Manufactured” (AM) rating of better than 0.05 PPM at 4 litres per minute (4 AM 0.05) with the vertically rising sash in the full open (27”) position.

.3 Unless otherwise specified, previous test results obtained on the manufacture’s identical hood design and size to the ones specified herein will be acceptable.

.4 Test reports shall be made available on request.

.3 Manufacture’s Test Facility:

.1 All “As Manufactured” (AM) tests shall be performed in the manufacture’s fume hood testing facility.

.2 Room shall be of adequate size to provide unobstructed clearance of at least five feet each side and ten feet in front of fume hood.

.3 Make-up air will be provided to replace the room air exhausted through the fume hood and be capable of maintaining 0.02" w.g. negative pressure.

.4 Make-up air will be provided in a manner that keeps cross drafts in front of hood to less than 0.15m/s (30fpm).

.5 Room ventilation system will be capable of testing fume hoods to face velocities of between 0.30m/s (60 fpm) through 0.51 (100 fpm).

.6 All testing and reports shall be performed and submitted by a third party testing company specializing in this type of certification.

1.07 WARRANTY

.1 Provide a written 1-year warranty for parts, materials, workmanship and labour. Product will be free of defects from date of final acceptance of the fume hood.

.2 Warranty shall not cover damage due to misuse, chemical attack or using the hood not for its design and intended use.

.3 The manufacturer or fume hood supplier shall repair or replace any products found to be defective at no cost to the owner.

.4 Replacement will include any parts, labor, shipping, and travel expenses involved.

1.08 SUBMITTALS

.1 Shop drawings:

.1 Fume hood manufacturer will provide shop drawings, in Autodesk Rivet showing:

.1 Front, top and section views.
.2 Exhaust volumes/static pressures at design Sash Operating Height and face velocity.
.3 Complete dimensioning.
.4 Mechanical rough-in locations.
.5 Product materials overview.
.6 Liner material description.
.7 Work surface description.
.8 Seismic fastening/bracing, if required.
.9 Wiring diagram.
.10 Location and type of mechanical and electrical service fixtures, connection points.
.11 Mechanical service fixture pre-piping.
.12 Exhaust collar locations and diameters.
.13 Supporting base cabinets, if by this section.

.2 Samples:

.1 One set manufacture’s colour chips for the full range of standard colours. Submit the following.

.1 76mm X 76mm (3” X 3") sample of manufactures standard colours.
.2 100mm X 100mm (4” X 4") sample of liner lining material(s).
.3 100mm X 100mm (4” X 4") sample of counter top material(s).

.3 Product data sheets:

.1 Submit manufacturer's product data sheets and/or catalog pages for each mechanical and electrical component.

.1 Electrical Device Listing: All electrical components shall be listed and labeled as being approved a Nationally Recognized Testing Laboratory (NRTL).

.2 Performance Test Reports:

.1 Submit a test report from a third party fume hood testing agency listing testing criteria that the fume hood types and sizes on this project have been tested to ANSI/ASHRAE-110 Latest Edition “As Manufactured” (AM).

.2 Submit a written report on each hood type and size certification that the fume hood(s) to be provided passed the tests defined in 1.06 PERFORMANCE.

2.0 PRODUCTS

2.01 Specification based on products manufactures and supplied by:

H.H. Hawkins Ltd.
107 - 19298 21st Avenue
Surrey, British Columbia, Canada V3Z 3M3
1.800.661.4454 www.hhhawkins.com

2.02 MANUFACTURE’S QUALIFICATIONS

.1 Work under this Section will be by a single manufacturer or supplier in accordance with best industry practices.

.1 Manufacturer shall have a minimum of 5 years’ experience in the manufacture, supply and installation of Laboratory Fume Hoods and their related components.

2.03 ALTERNATES TO SPECIFIED PRODUCT(S)

.1 Proposals for substitutions of Products and Materials must be submitted in accordance with consultant and/or owner requirements.

.2 Consultant will review submissions with-in the time frame listed under Division 1 General Requirements. Bid Closing Date will not be extended due to the time required by the Consultant to review the submission and issue an any Addenda.

.3 Submission requirements:

.1 Description of proposed Alternate with detailed comparison specification of proposed substitution with the specified Product listing any deviations to the specified Product(s).

.2 Manufacturer's Product data sheets and catalog pages for proposed Products.

.3 "As Manufactured" (AM) test report for each size and type of fume hood required for this project, per 1.06.3.

2.04 MATERIALS

.1 Steel: High quality cold rolled mild steel conforming to ASTM A366. Gauges shall be U.S. standard.

.2 Stainless steel: Type 304 or 3I6, number 4 finish. Gauges shall be U.S. standard.

.3 Safety glass: 6mm (7/32") laminated safety glass.

.4 Sash cables: Stainless steel, aircraft grade, uncoated, 3 mm (1/8") diameter.

.5 Cable pulleys: Plastic, ball bearing type, 40 mm (1 1/2") diameter, complete with cable retaining device.

.6 Sash tracks: Poly-vinyl chloride (PVC), corrosion resisting.

.7 Sash pull: Stainless steel, full length, low profile slotted design, I8 gauge, type 316, number 4 finish.

.8 Fasteners:

.1 Interior fastener devices: Stainless steel.

.2 Exterior panel fastener devices: Concealed.

.3 Hidden exterior structure members: Sheet metal screws, zinc coated.

.9 Operating/ Safety Instruction Label:

.1 Plastic label attached to the front exterior of the hood superstructure listing suggested operating instructions and safety information.

2.05 CONSTRUCTION

.1 Floor Mount Laboratory Fume Hoods

.1 **Superstructure:**

.1 Heavy-duty galvanized steel framework, double wall construction, rigid and self-supporting. Maximum wall thickness shall be 120 mm (4¾").

.2 Double Wall Construction: Double wall is made up of a powder coated baked enamel steel exterior and a chemical resisting inner liner. Double wall houses and conceals framing, electrical boxes and wiring and mechanical service fixture valves and piping.

.3 Exterior End Panels: Three piece construction, are independently mounted with the upper side panels being secured with hidden fasteners and are removable without tools.

.4 Front Upper Panel: Secured with hidden metal fasteners and is removable without tools.

.5 Front Posts: House electrical receptacles, light switch, low airflow alarm and mechanical service fixture handles. Cutouts for electrical and mechanical services are only provided where there are needed. Blank cover plates and plastic plugs shall not be allowed. Integrated leveling feet will be installed in the front and rear of each post.

.6 Front Opening: Front air foil style opening with 45° front posts, side and upper fascia panels fabricated from I8 gauge sheet steel with a baked electrostatic powder coat finish.

.2 **Interior Liner**: Refer to 2.05.4

.1 Will be of a corrosion and acid resisting material as listed and specified herein.

.2 Liner shall be attached to the concealed steel framework forming a rigid and completely sealed chamber.

.3 Interior Access panels: Will be fabricated of the same material as the liner, are flush mount, air tight and therefore do not require gaskets.

.3 **Sashes:** (Delete those **NOT** required)

.1 **Dual Vertically Rising**:

.1 Sash assembly is a dual independent "Full View" type with the front vertical view height being 1884 mm (74") including the fixed view panel. The maximum sash opening is 1625 mm (64").

.2 Both vertical rising sashes are fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys. Sash assemblies will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.3 Pulleys shall be complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.4 Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.5 Sash stops shall be provided at the 450mm (18") open position on the upper sash unless otherwise specified. They shall have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.2 **Horizontal Sliding:**

.1 Sash assembly is "Full View" type with a front vertical view height of 1884mm (74"). Maximum vertical sash opening is 1625mm (64").

.2 Sash assembly is set in an I8 gauge, type 316 stainless steel number 4 finish fully welded frame. Horizontal sliding panes are unframed and are designed so that only a maximum of 50% of the sash can be opened at any one time.

.3 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16").

.3 **Combination Horizontal Sliding/Vertical Rising:**

.1 Sash assembly is a dual independent "Full View" type with the front vertical view height being 1884 mm (74') including the fixed view panel. The maximum sash opening is 1625 mm (64").

.2 Upper vertical sash assembly is set in an I8 gauge, type 316 stainless number 4 finish welded frame. It is fully counter balanced using a single centre hung weight running behind the hood and a continuous stainless steel sash cable. It is designed to offer exact and positive operation and to prevent sash drop in the event of the failure of the sash cable. Pulleys are complete with cable retaining devices. Sash shall open and close against rubber bumpers.

.3 Horizontal sliding panes are unframed and designed so that a maximum of 50% of the sash can be opened at any one time.

.4 Glass panels will have polished vertical edges and shall be top hung with ball bearing plastic rollers running in an aluminum track. Maximum width of panels shall not exceed 400mm (16").

.5 Sash stops shall be provided at the 450mm (18") open position unless otherwise specified. They shall be have a manual override when lowering the sash below the 450mm (18") opening and an automatic reset when the sash is raised above the 450 (18") open position.

.6 Lower sash assembly is a single pane, vertically rising and is fully counter balanced using a single center hung weight running behind the hood and utilizing a continuous stainless steel sash cable with plastic ball bearing pulleys. Sash assembly will provide exact and positive operation and prevent sash drop in the event of the failure of the sash cable.

.7 Pulleys shall be complete with cable retaining devices. Sash shall open and close against rubber bumpers. Sash Pull is a slotted low profile design, is full length and fabricated I8 gauge type 316, number 4 finish stainless steel.

.4 **Liner Material(s):** (Delete those **NOT** required)

.1 **Polyresin (PR):**

.1 6mm (1/4") thick, solid fiberglass reinforced pressed thermoset resin board, is flame retardant and self-extinguishing. Material offers superior chemical, solvent and corrosion resistance, negligible moisture absorption and a flame spread of less than 20 (UL 723 ASTM E84-80). Flexural strength is a minimum of 14,000 PSI (D790).

.2 Material is white in colour throughout its thickness offering superior light levels. Maximum service temperature is 130 C (266 F).

.3 Exhaust collar is type 316 stainless steel.

.2 **Stainless Steel, stitched welded (ST):**

.1 Type 316 (ST6) OR Type 304 (ST4) stainless steel (choose one), 16 gauge, number 4 finish. The sides and back of the interior liner are formed in one piece with the top of the liner being stitch welded to the back and sides.

.2 Liner has a factory installed mechanically fastened and silicon sealed work surface with a 1/2" high anti-spill front lip. The underside is reinforced with plywood for sound deadening and to prevent twisting, oil-canning or buckling.

.3 Offers excellent heat and solvent resistance and good chemical resistance to most acids. Stainless steel is not recommended for use with chemicals containing chlorides such as Hydrochloric Acid, Hydrofluoric Acid and Sulphuric Acid to 80% solution.

.4 Exhaust collar is stainless steel.

.3 **Polypropylene (PP):**

.1 1/4” thick, solid, flame retardant, self-extinguishing and stressed relieved polypropylene sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.

.2 Offers excellent corrosion resistance to a wide range of acids and solvents. Material has good impact resistance and structural integrity and has little or no water

absorption. Maximum operating temperature is 82C (180F).

.3 Exhaust collar is PVC.

.5 **PVC (PV)** :

.1 1/4" thick, solid, flame retardant poly vinyl chloride sheet. Liner is rigid and self-supporting. Interior is metal-free. Material is white in colour throughout its thickness.

.2 Offers excellent corrosion resistance to a wide range of acids but is not recommended for use with solvents. It has little or no water absorption and possesses natural flame resistant qualities. Flame resistance is rated at UL94V-O. Maximum service temperature is 60C (140F).

.3 Exhaust collar is PVC.

.5 **Baffles:**

.1 Five-piece construction, fabricated from the same material as the fume hood liner. Full width horizontal exhaust slots are located at the top, bottom and midpoint with side vertical slots running full height.

.2 Are factory sized and fixed in place for optimum containment per ASHRAE II0 Latest Edition Tracer Gas testing.

.6 **Exhaust Collar(s):**

.1 Type 316 stainless steel, bell shaped, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.2 PVC 6mm (1/4") beveled entry edge, is round in configuration and does not require transitions from rectangular to round. Diameters will be as detailed.

.7 **Ceiling Closure Panels** (Optional):

.1 Fabricated from the same material and gauges as the fume hood exterior.

.2 Panels are set-back design to allow for proper by-pass air operation and to allow the for the removal of the front panel and side panels.
.3 Colour to match fume hood exterior.

.8 **Seismic Anchors** (Where asked for):

.1 Provide seismic anchors for fume hoods and cabinets below fume hoods (if supplied by this section). Anchors will be designed to be removable where access is required for persons with disabilities.

.9 **Electrical:**

.1 LED light fixture is installed on the outside top of fume hood interior with removable housing for ease of lamp replacement.
.2 Light fixture is isolated from the fume hood interior by means of a vapour sealed laminated safety glass panel cemented and sealed in place.
.3 Average illumination in the work area will be a minimum of 80 candles where the work area is defined as being from side to side, from back baffle to sash line and from work surface to a height of 30".
.4 Two I20 volt 20 amp duplex grounding type receptacles and light switch are provided on the front posts of the hood exterior.
.5 All electrical fixtures are to be factory installed and pre-wired to a junction box on top of the hood.
.6 Fume hood shall be certified to the following Standards: CAN/CSA-C22.2 No. 61010-1-12 + U1; U2;A1 UL 61010-1:2012 Ed.3+R:21Nov2018 and UL1805:2002

.12 **Mechanical Service Fittings: Broen-Lab**

.1 Valves are front loading type and factory pre-piped from valve to outlet in the fume hood.
.2 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.
.3 Fittings are CSA and CGA approved.
.4 Valve Bodies: One piece construction, cast or forged brass with a minimum copper content of 57%.

.1 Cold Water: Ceramic compression ball valve with double sealed Uniflex connection, 1X180 degree turn open to close.

.2 Technical Gases (except vacuum): Brass needle valve, 3X360 degree turn open to close. Double sealed Uniflex connection.

.3 Vacuum: Brass needle valves, 1/4 turn open to close function. Double sealed Uniflex connection.

.4 Burning gases: Brass needle valve, 1/4 turn open to close with Push-In POP-UP safety handle for visual safety.

.5 Fixtures exposed to hood interior:

.1 One piece construction, cast or forged brass with a minimum copper content of 57%.

.2 Finish is a chemical resisting polyester powder coating. Colour is white/ grey.

.3 Goosenecks and nozzles are colour coded to their handles in accordance with SEFA7 - 2018.

.6 Handles:

.1 Polypropylene construction four-arm handle colour coded conforming to SEFA7-2018.

.2 Accessible Use (ADA): One hand operated remote control handles with brass ball valve, 1/4 turn open to close. Maximum pressure to active shall not exceed 5 pounds (22.2N).

2.06 EXTERIOR FINISH

.1 Prior to the start of the painting process, all surfaces will be cleaned and be free of scratches, spot weld marks or other material imperfections. Welds shall be ground smooth.

.2 Components will be thoroughly washed using a three stage metallic phosphate process for proper surface preparation, superior bonding and to eliminate humidity.

.3 An electrostatically applied chemical resistant powder coat finish will then be applied to all individual parts including the interior of door and drawer panels. Components will pass through a baking process with the time and temperature as recommended by the paint manufacturer.

.4 Painted surfaces shall conform to A.A.M.A. 2603 and shall meet or exceed the SEFA 8 specification for chemical resistance as specified by the “Scientific Equipment and Furniture Association”.

.5 Metal Surface Finish Testing:

.1 All metal finishing testing will be to the latest SEFA 8 standards, item 10.0 Cabinet Surface Finish Tests.

.2 Third party, independent test reports will be available upon request.

Accessible (fume hood): Fume hood specifically designed to meet the needs of wheel chair operators.

ACGIH: American Conference of Governmental Industrial Hygienists

ADA: Americans with Disabilities Act

ADAG: Americans with Disabilities Act Guidelines

ADA (fume hood): Fume hood specifically designed to meet the ADAG for universal accessibility.

AIHA: American Industrial Hygiene Association

Air Flow Alarm: A safety device installed on the fume hood that continually monitors air volume through the fume hood and that will alarm both audibly and visually when the air flow drops to an unsafe level.

Air Flow Monitor: A safety device installed on the fume hood that continually monitors air volume through the fume hood.

Air Foil: Curved or angular member(s) at the fume hood entrance designed to minimize eddies and to promote smooth entry of air into the hood. Located at the bottom of the hood and all three sides of the sash opening

Air Volume: Quantity of air measured in cubic feet or cubic meters

ANSI: American National Standards Institute

ANSI/AIHA Z9.5: Laboratory Ventilation standard for laboratories and fume hoods.

ANSI/ASHRAE 110: A method of testing for fume hood containment and performance. Developed by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) and the American National Standards Institute (ANSI**)**

ASHRAE: American Society of Heating, Refrigerating, and Air Conditioning Engineers

Baffle(s): Panels located across the back of the fume hood interior which control the pattern of air moving into and through the hood.

Balanced Air (fume hood): See By-Pass fume hood.

Barrier Free (fume hood): An ADA or accessible type fume hood

Bench Mount (fume hood): A fume hood that is supported by a work surface and base cabinet or support stand.

Biological Safety Cabinet (BSC): An enclosure used to handle infectious pathogenic micro-organisms and toxins. This is not a fume hood.

Blower: An air moving device, sometimes called a exhaust fan, consisting of a motor, impeller and housing.

By-Pass (Fume Hood): Compensating opening that maintains a relatively constant volume of exhaust air through a fume hood regardless of the sash opening. It's function is also to limit the increase in face velocity as the sash is lowered below the roof of the fume hood. Also know as a Constant Air Volume (CAV) fume hood.

CAV: Constant Air Volume

Capture Velocity: The air velocity at the hood face necessary to overcome opposing air currents, and to contain contaminated air within the fume hood. Usually measured in feet per minute (fpm) or meters per second (m/s).

CFM: Cubic Feet per Minute; measurement unit of air volume

CSA: Canadian Standards Association

Combination Sash: A fume hood sash assembly that can be raised and lowered vertically and be operated with two or more horizontally sliding safety glass panels.

Constant Air Volume (CAV) Fume Hood: A fume hood which exhausts relatively the same volume of air regardless of the sash opening. See By-Pass Fume Hood.

Containment: Containment of agent transmission (dusts, fumes, gases, vapours, aerosols, particulate matter) within the fume hood interior.

Cross Currents: A flow of air that blows in or across the face of the fume hood (usually measured in fpm or m/s). The velocity of this air should not exceed 30% of the average fume hood face velocity.

Diffuser: A device used to distribute air flow into a room evenly.

Differential Pressure: Difference in static pressures between two locations.

Dilution: The process where fume hood air exhaust volume decreases the concentration of the chemical vapours generated the in fume hood.

Digestion (fume hood): Hood used with corrosive chemicals at elevated temperatures. Interior liner and sash glass material must be compatible with the chemicals being used and the temperatures at which they are being heated to. Examples of some of these acids are Hydrochloric, Sulphuric, Nitric and Hydrofluoric

Distillation (fume hood): A bench mount fume hood with the interior working height extended to accommodate taller pieces of apparatus.

Diversity: Percentage of the total number of fume hoods that are in operation at the same time.

Double Sided Hood: A bench mount fume hood with two sash openings facing each other. Can be referred to as a dual entry fume hood. Used primarily in schools. Also know as a Pass Through hood.

Duct Velocity: Speed of moving air in a duct. Usually measured in fpm or m/s.

Exhaust Air Volume: Quantity of air required by a fume hood to maintain the predetermined face velocity (usually expressed in cfm or l/s). Calculated by multiplying the sash operating area (sq. ft. or sq.m) by the required face velocity (fpm or l/s)

Exhaust Collar: Connection point between the fume hood exhaust ducting and the fume hood through which all exhaust air passes.

Exhaust Fan: An air moving device, sometimes called a exhaust fan consisting of a motor, impeller and housing.

Face: The front or access opening of the hood.

Face Velocity: Speed of air moving into the fume hood entrance (usually measured in fpm).

Floor Mount Fume Hood: A fume hood designed for use with large pieces of apparatus and roll in equipment.

FPM: Feet per Minute; measurement unit of air velocity.

Fume Hood (as defined by SEFA): A Laboratory Fume Hood is a safety device specifically designed to carry undesirable effluents (generated within the Hood during a laboratory procedure) away from laboratory personnel and out of the building, when connected to a properly designed laboratory ventilation system.
A Laboratory Fume Hood shall be made primarily from flame resistant materials including the top, three fixed sides, and a single face opening. Face opening is equipped with a sash and sometimes an additional protective shield. Face opening will have a profiled entry and usually an airfoil designed to sweep and reduce reverse airflows on the lower surface.
A Laboratory Fume Hood will be equipped with a baffle and, in most cases, a bypass system designed to control airflow patterns within the hood and manage the even distribution of air at the opening. The bypass system may be partially blocked to accommodate Variable Air Volume (VAV) Systems.
A Laboratory Fume Hood will be set on a bench, a pedestal or on the laboratory floor.

Inches of Water Gauge: Measurement unit of pressure equal to the weight of a column of liquid water at one inch high at 20°C. 1" W.G. = 0.036 psi. See Static Pressure.

kiloPascals (kPh): unit of air pressure.

kPh: kiloPascals - unit of air pressure.

Liner: Interior liner of the fume hood comprising a back, sides, top, exhaust plenum and baffle system fabricated from a corrosion and heat resisting material.

Laminar Flow: Airflow having generally parallel streamlines, operating in a single direction and with uniform velocity over its cross section. See Unidirectional Airflow.

Laminar Flow Cabinet: Name applied to clean bench or biological safety enclosures that use a smooth directional flow of air to capture and carry away airborn particles. Not a fume hood.

Make-Up Air: Air needed to replace the air exhausted from the room by the fume hood.

Magnehelic Gauge: Device used to measure air pressure differential. Usually measured in inches of water (WC) or kiloPascals (kPa).

Meters Per Second (MPS): Measurement unit of air velocity.

MPS: Meters per second, measurement unit of air velocity.

Negative Air Pressure: Air pressure lower than ambient which causes an inward flow of air. A fume hood can be classified as a negative pressure enclosure

NFPA: National Fire Protection Association

NRTL: Nationally Recognized Testing Laboratory

OSHA: Occupational Safety and Health Administration

Particulate Matter: When used in relation to fume hoods, small, light weight particles that will be air-born in low velocity air (approximately 50 fpm).

Pass Through fume Hood: A bench mount fume hood with two sash openings facing each other. Can be referred to as a double sided fume hood. Used primarily in schools.

Positive Air Pressure: Air pressure higher than ambient which causes an outward flow of air

Reduced By-pass (fume hood): A partial upper by-pass used in horizontal sash Constant Air Volume fume hoods. By-pass will draw air over the top of the sash assembly reducing the face velocity through the sash openings as the sash panes are being closed.

Restricted By-pass (fume hood): Used with Variable Air Volume fume hoods where the by-pass is permanently closed off.

Room Air: The portion of the fume hood exhaust air taken from the room.

Safety Shield: Horizontal safety glass or polycarbonate panel used with vertical rising sash fume hoods to give added face and chest protection for the user.

Sash: A transparent movable laminated safety glass panel at the fume hood entrance between the operator and the hood interior. It can be adjusted vertically or horizontally and is designed to provide protection for the operator

Sash Operating Height/Opening: Predetermined working position of the sash at which the fume hood will be operated at. Exhaust air volume can be calculated from this opening. See Exhaust Air Volume.

Sash Set Up Height: Height of the sash opening used to load and unload the fume hood.

SEFA: Scientific Equipment and Furniture Association.

Service Fixtures: Plumbing or electrical fixtures mounted on the fume hood

Slot Velocity: Speed of air moving through fume hood baffle openings. Usually measured in m/s or fpm.

SP: Static Pressure

Static Pressure: Air pressure in a fume hood or duct. Usually measured in inches of water or kiloPasals.

Static Pressure Loss: Measurement of the resistance to air movement created when air moves through a fume hood or duct. Usually measured in inches of water (WC) or kiloPasals (kPa).

Student Workstation: Fume hood designed for entry level instructional laboratories that allows for viewing of the hood interior from three or four sides

Superstructure: Part of the fume hood assembly that is supported by the work surface and base cabinets. Does not include optional features such as ceiling closure panels, sash pockets, plumbing fixtures, low flow alarms, etc.

Supply Air: Air needed to replace the air exhausted from the room by the fume hood.

Threshold Limit Value-Time Weighted Average (TLV-TWA): The time weighted average concentration for a normal 8 hour workday or 40 hour work week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effects

Titanium Tetrachloride (TCLA): A chemical that generates white fumes that can be used in testing fume hood air patterns. Caution: Titanium Tetrachloride fumes are toxic and corrosive. Use sparingly, avoid inhalation and exposure to body, clothing and equipment and use only in the interior of the fume hood when the blower is on.

Transport Velocity: Minimum speed of air required to support and carry vapour or particulates in an airstream. Usually measured in m/s or fpm.

Unidirectional Airflow: Airflow having generally parallel streamlines, operating in a single direction and with uniform velocity over its cross section.

UL: Underwriters Laboratory

UL1805: Standard for laboratory fume hoods pertaining to performance, construction and electrical.

VAV: Variable Air Volume.

Variable Air Volume (fume hood): A type of fume hood which utilizes electronic controllers to maintain a constant face velocity by adjusting blower motors or duct balancing dampers in response to changes in the sash height

Volume: Quantity of air. Usually expressed in cfm or L/s.

WC: (Inches of) Water Column - Measurement of static pressure in a fume hood or duct.

Walk-In Fume Hood: A floor mounted fume hood designed for use with large pieces of apparatus and roll in equipment. Also know as a Floor Mount Hood.

Work Surface: Chemical and heat resisting surface that the fume hood superstructure is mounted on and that is supported by a base cabinet or support stand.

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LABORATORY FUME HOODS

Unit 107 - 19298 21st Ave Surrey, BC V3Z 3M3

1-800-661-4454