

# Pharmacon™ Downflow Booths



Esco Pharmacon Downflow Booth,  
Model DFB-G2

## Introduction

Downflow booths provide operator, process and / or product protection by utilizing HEPA filtered unidirectional laminar downflow to maintain an ISO 5 environment at rest within the work zone and capture particulates during open handling processes.

The standard Esco DFBG2 has over 420 possible dimensional models and approximately 3.5 million possible system configurations ensuring that Esco can provide a standard solution to fit your specific process and facility requirements. Should a standard option not fit your requirements Esco can offer a customized solution.

The DFBG2 is designed such that through the different configurations it can be applied; but not limited to, the following markets:

- |                  |              |
|------------------|--------------|
| – Pharmaceutical | – Biological |
| – Cosmetic       | – Animal'    |
| – Nutraceutical  | – Robotic    |
| – Food           | – Electronic |

## Basic Principles

- Laminar airflow velocity of  $0.45\text{m/s} \pm 20\%$  (89 ft/min) measured 150 mm (6") from terminal HEPA filter or diffuser face
- Containment Performance Target (CPT's)  $\leq 100 \mu\text{g}/\text{m}^3$  over an 8 hour Time Weighted Average (TWA) when used with proper operator techniques.
- CPT's of  $\leq 10 \mu\text{g}/\text{m}^3$  over an 8 hour TWA are achievable with the use of a high containment screen

- ISO 5 work space environment at rest conditions
- Enhanced cGMP practices
- Cross contamination control through negative pressure

## Standard Features

- cGMP modular design with minimized joints and seams
- 6 different filter configurations available utilizing combinations of G4, F8, Carbon, H13, and H14
- Gel Seal HEPA Filters
- Integrated Filter challenge ports

## Features

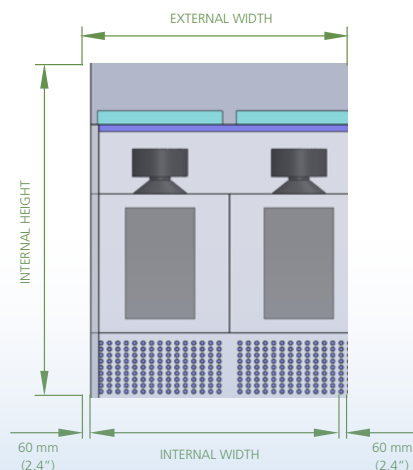
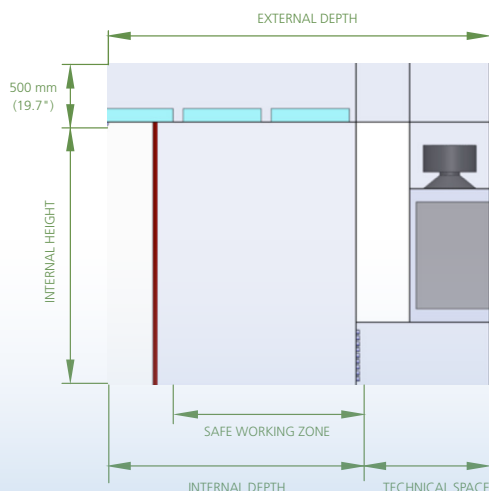
- Safe Change filter configurations are available for potent products, selectable to change either internally or externally to the booth
- Open loop or Closed Loop fan control configurations
- Recirculating airflow configurations allowing use for powder or solvent applications
- Optional cooling coil systems to provide operator comfort
- PVC strip curtains available
- Energy efficient EC fan units available to minimize operating costs
- Optional hazardous area configurations to meet ATEX rated requirements (NEC 505/NEC 500)
- Multiple control system options (HMI, Push Button or Sentinel Gold Microprocessor interfaces)
- Modular design allows future system adjustment without full booth replacement

Model	Series	Explosive Rating	Inside Height	Outside Width	Inside Depth	Back Stack Depth	Filter Group	Fan/Filter Access	Recirculating or Single Pass Airflow	LOP Location	Bleed Position	Powder Coated Components	Stainless Steel Components	PVC Group	Supply Voltage	MCP Location	Control Type	Cooling Type	Other Options
DFBG2																			

Note: Refer to the configuration table below for parameter selection options and input them into the cells above. For example: DFBG2-SC-SA-21-24-20-B-A-R-F-PQ-RS-NILL-D-RM-3-CC-02-03-05 would be a safe change, safe area booth that has an internal height of 2.1m, an external width of 2.4m and an internal depth of 2.0m and so on. For any option that you may not desire (PVC curtains, cooling options or other options) insert NILL into the cell.

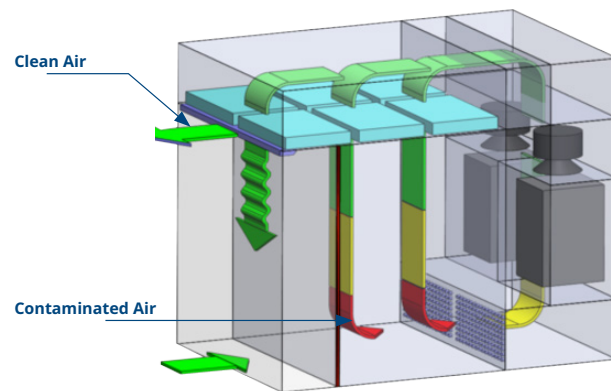
		0.3 m Back Stack	0.6 m Back Stack	1.0 m Back Stack
Series	Option SC: Safe Change			✓
	Option SCNB: Safe Change No-Bag			✓
	Option ST: Standard	✓	✓	
Explosive Rating	Option SA : Safe Area	✓	✓	✓
	Option ED: Explosive Dust		✓	✓
	Option EG: Explosive Gas		✓	✓
Dimensional Option	Internal Height Options (m)	2.1, 2.5	2.1, 2.5	2.1, 2.5
	External Width Options (m)	1.6, 1.8, 2.0, 2.4, 2.6, 2.8, 3.0, 3.2, 3.4, 3.6, 3.8, 4.0, 4.2, 4.4, 4.6, 4.8, 5.0	1.6, 1.8, 2.0, 2.4, 2.6, 2.8, 3.0, 3.2, 3.4, 3.6, 3.8, 4.0, 4.2, 4.4, 4.6, 4.8, 5.0	1.6, 1.8, 2.0, 2.4, 2.6, 2.8, 3.0, 3.2, 3.4, 3.6, 3.8, 4.0, 4.2, 4.4, 4.6, 4.8, 5.0
	Internal Depth Options (m)	0.8, 1.2, 1.6	0.8, 1.2, 1.6, 2.0, 2.4	0.8, 1.2, 1.6, 2.0, 2.4, 2.8
Filter Arrangement Options	Option A - G4,F8,H13,H14,PLF			✓
	Option B - G4,F8,H13,H14			✓
	Option C - G4,F8,H13,PLF			✓
	Option D - G4,F8,H14		✓	✓
	Option E - Carbon,H14	✓		✓
Fan / Filter Access	Option A - Internal to Booth	✓	✓	✓
	Option B - External Area			✓
Airflow Arrangement	Option R - Recirculating	✓	✓	✓
	Option S - Single Pass with Downflow Air			✓
Bleed Position	Option T - Top			✓
	Option F - Front	✓	✓	✓
M.O.C. Options	Option P: Ceiling Plenum	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel
	Option Q: Side Panels, Rear Wall	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel
	Option R: Filter Housings, Fan Boxes, Spacer (if present) & Transition	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel
	Option S: Plinth	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel
	Option T: Exhaust Grills	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel
	Option U: Exterior Side Panels	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel	A: 316SS, B: 304 SS, C: White P.C. EG Steel
PVC Curtains	Option T - Top			✓
	Option F - Front	✓	✓	✓

Notes: \* Explosive Rating requires full definition at the time of enquiry



		0.3 m Back Stack	0.6 m Back Stack	1.0 m Back Stack
<b>Voltage Supply</b>	Option A: 230 V, 50 Hz, 1 Ph	✓		
	Option B: 400 V, 50 Hz, 3 Ph		✓	✓
	Option C: 208 V, 60 Hz, 3Ph		✓	
	Option D: 480 V, 60 Hz, 3 Ph		✓	✓
	Option E: 120 V, 60 Hz, 1 Ph	✓		
<b>MCP Location</b>	OR: Onboard Right Access	✓	✓	✓
	OL: Onboard Left Access	✓	✓	✓
	OF: Onboard Front Access	✓		
	RM: Remote Mounted	✓	✓	✓
<b>Control Type</b>	Option 1: PLC/PB's/PDI/PDT - Allen Bradley Components - Closed Loop		✓	✓
	Option 2: PLC/PB's/PDI/PDT - Siemens Components - Closed Loop		✓	✓
	Option 3: PLC/HMI/PDT - Allen Bradley Components - Closed Loop		✓	✓
	Option 4: PLC/HMI/PDT - Siemens Components - Closed Loop		✓	✓
	Option 5: Sentinel Gold/PDI/PDT - Open Loop/Closed Loop	✓	✓	✓
<b>Cooling Type</b>	Option CC: Chilled Water		✓	✓
	Option DX: Direct Expansion		✓	✓
	Option GL: Glycol		✓	✓

<b>Mechanical</b>	Many standard offerings to fit our client's needs result in reduced project start-up and fabrication times resulting in quicker equipment deliveries
	Modular design provides the option of increasing / decreasing booth size on-site without purchasing a new piece of equipment
<b>Controls</b>	DFB control system is pre-programmed for all possible options so existing DFBs can be easily adapted to suit changing customer needs
	Control system offerings (Siemens, AB, Sentinel Controller) provide options for international compliance and true closed loop control
<b>Sales</b>	Automated DFBG2 sales tool allows for instant quoting and drawing generation to greatly reduce the time between RFQ and quote submittal



Airflow Schematic

## OPTIONS



1. **High Containment Screen**



2. **Bench; SST or Granite Tables, W x D, Fixed to Booth or Stand Alone**



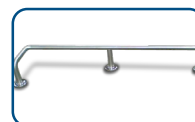
- Pass Through Connections



3. **Computer Monitor Mounting Screen**



7. **Side Wall Fire Sprinkler Penetration**



11. **Bumper Rails**



4. **Airlock**



8. **Material Handling**



12. **Temperature & .H. Local Display**



5. **Standard woodhead Duplex Outlet**



9. **Vision Panel**



13. **Drum Tipper**

6. **Pass Through**

10. **Eternet & RS-232**

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Dynamic Pass Box  
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Garment Storage Cabinet  
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Laminar Flow Straddle Units, Single and Double  
Laminar Flow Vertical Trolley  
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Weighing and Dispensing Containment Isolator (WDCI)

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