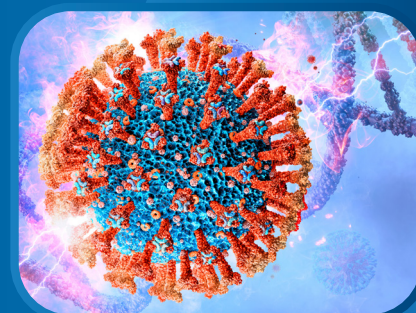# Labculture® G4

Class II Type A2 Biological Safety Cabinets

The Most Advanced Energy-efficient, Safe, and Ergonomic Biosafety Cabinet in the World

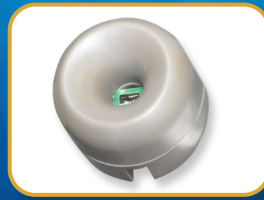# LABCULTURE® G4 (LA2 G4) CLASS II TYPE A2 BIOSAFETY

USB Port
- Export Data Logging
- Software Update
- Wired data transaction to BMS

Zero Volt Relay Contact
- Free Relay Contact
- Exhaust Free Relay Contact

Airflow Sensor
- Monitors real-time airflow for safety
- Alert the user if airflow is insufficient

Centurion 7" Capacitive Touchscreen Controller
- Displays all safety information on one large screen
- Shows cabinet parameters with intuitive 3D illustration
- Easy to use menu, similar to Smart Phone Apps
- Large buttons, easy to operate when wearing gloves
- Self-guidance to users to deal with specific situations
- Centered and angled down for easy reach and viewing
- Optional: 21 CFR Part 11 Compliance
- Wired data transaction to BMS

Single Piece Wall
- Easy to reach service fixtures and electrical outlets on sidewalls
- Large radius corners for easy cleaning

User-friendly Work Tray
- Largest useable area in the market
- Recessed to contain spillage
- Sloped perimeter for easy cleaning
- Large, easy to clean tray handle
- Work tray holder for drain pan cleaning

Raised Arm Rest
- Prevent grille blocking
- Comfortable working posture
- Durable stainless steel construction

Esco Labculture® G4 Class II Type A2 Biosafety Cabinet Available in 3 feet, 4 feet, 5 feet, and 6 feet models.

Ergonomic Work Zone
- 10° angle to optimize user comfort, reduce glare, and maximize reach into the work area
- Brightly illuminated with >1200 lux (111 ft. cd)
- Industry-leading dimmable LED for optimum work comfort
- Airtight seal port for cable/tube exit protected by a negative pressure side wall

Standards Compliance

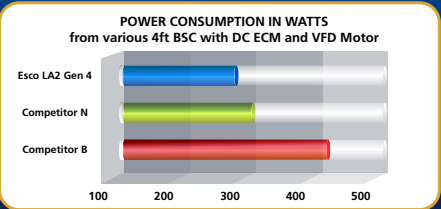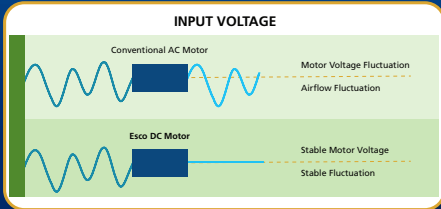# CABINET, FEATURING ADVANCED TOUCHSCREEN CONTROLLER

Power Inlet socket
- Electrically easy to install with plug and play design

Energy-efficient DC ECM Blower
- The leading energy efficient Class II Type A2 Biosafety Cabinet in the world with 70% energy savings compared to AC motor
- Stable airflow despite building voltage fluctuations and filter loading
- Standby mode to further reduce power consumption by 80%

INPUT VOLTAGE

Conventional AC Motor
- Motor Voltage Fluctuation
- Airflow Fluctuation

Esco DC Motor
- Stable Motor Voltage
- Stable Fluctuation

POWER CONSUMPTION IN WATTS
from various 4ft BSC with DC ECM and VFD Motor

| Esco LA2 Gen 4 |
| Competitor N |
| Competitor B |

100   200   300   400   500

Advanced ULPA Filtration System
- 10x Filtration efficiency of HEPA filter
- Creates ISO Class 3 work zone instead of industry-standard ISO Class 5
- Same 10 years filter life and replacement cost as HEPA filters

Note:
- *99.999% at 0.1 to 0.3 micron, ULPA as per IEST-RP-CC001.3 USA*
- *99.999% at MPPS, H14 as per EN 1822 EU*

Dimmable LED
- Save energy and optimize work comfort

Removable Paper Catch
- Prevent objects from being pulled into blower plenum
- Removable for easy cleaning
- Optional pre-filter can be fitted

User Modified Pass-Through / Cable Port
- 3" Port with ¼" hole on rubber membrane inside
- Surrounded by negative pressure
- Allows cables and tubes to exit with fully closed sash

Tray Support Beams
- Support work tray evenly for less vibration
- Cleaning holder to easily wipe the drain pan

ISOCIDE™ Powder Coat
- Silver-ion impregnated powder coat
- Inhibits microbial growth to improve safety
- Prevents the plenum from becoming biohazard landfill

Silver ions penetrate the bacterium

Destruction of the bacterium

Bacteria
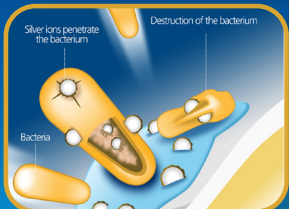
Certification

Performance	Air Quality	Filtration	Electrical Safety	Electromagnetic Compatibility (EMC)
NSF / ANSI 49, USA	ISO 14644.1, Class 3, Worldwide US Fed Std 209E, Class 1 USA JIS B9920, Class 3, Japan	EN-1822 (H14), Europe IEST-RP-CC001, USA	UL 61010-1 3rd Ed, USA CSA22.2, No.1010-192, Canada IEC61010-1, Worldwide	EN IEC 61326-1 Group 1 / Class A

Dynamic Chamber™
- Blower plenum and side walls are surrounded by negative pressure
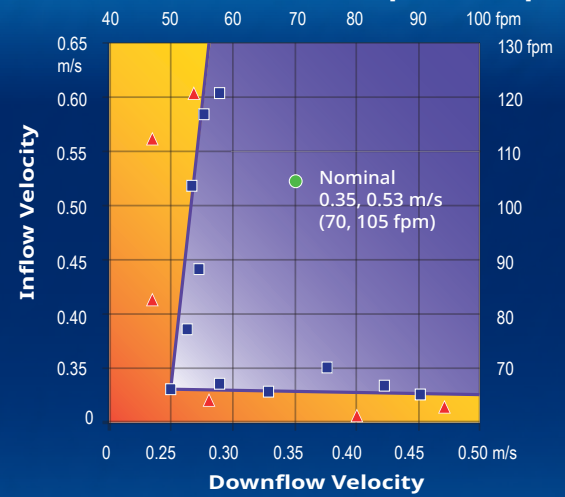- Prevent contaminants from escaping outside

▮ *Positive Pressure*
▮ *Negative Pressure*
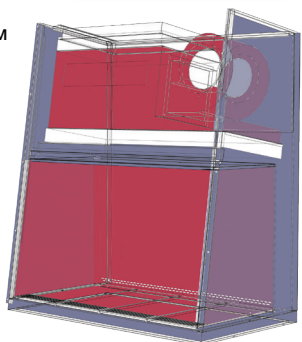
Cabinet Filtration System

- Ambient air is pulled through front grille to create inflow, without going into the work surface. Inflow is joined by half of the downflow, to create front air curtain that is fine-tuned to create a large performance envelope. The combined air stream travels through the back air column towards the blower.

- Approximately ⅓ of the air in the common plenum is exhausted through the ULPA filter to the room. The remaining ⅔ of the air is passed through the downflow ULPA filter and into the work area as a vertical laminar flow air to create ISO Class 3 work surface and prevents cross contamination.

- Near the work surface, the downflow splits. About half goes to the front grille, and half goes to the rear grille. A small portion enters the the side capture zones to prevent dead air corners (small blue arrows).

- The design was optimized to give large performance envelope, that provides operator and product protection at wide Inflow and Downflow variation from the Nominal point.
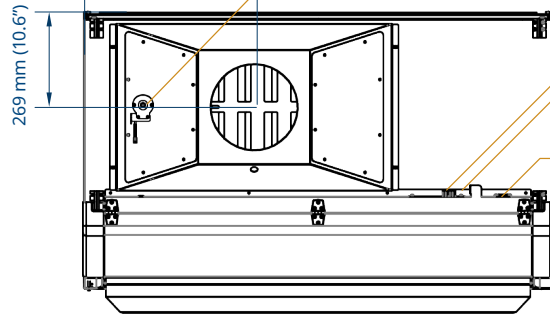
Dynamic air barrier, where inflow and downflow converge

Side capture zones

- ■ ULPA-filtered air
- ■ Unfiltered / potentially contaminated air
- ■ Room air / Inflow air

The Performance Envelope Concept

Nominal
0.35, 0.53 m/s
(70, 105 fpm)

- ● Nominal Airflow
- □ Personnel / Product Protection
- ■ Area of Personnel / Product Protection
- ▲ No Personnel / Product Protection
- ■ Area of no Personnel / Product Protection
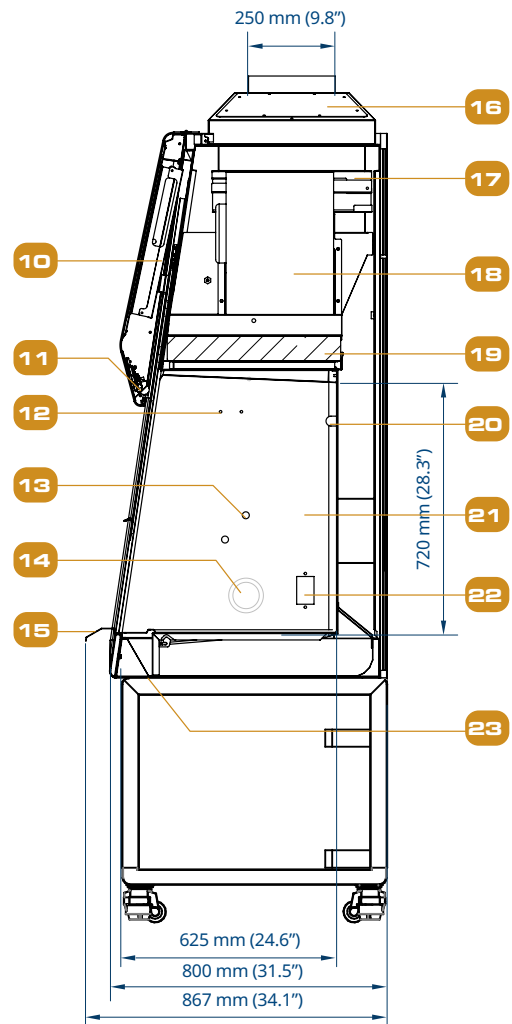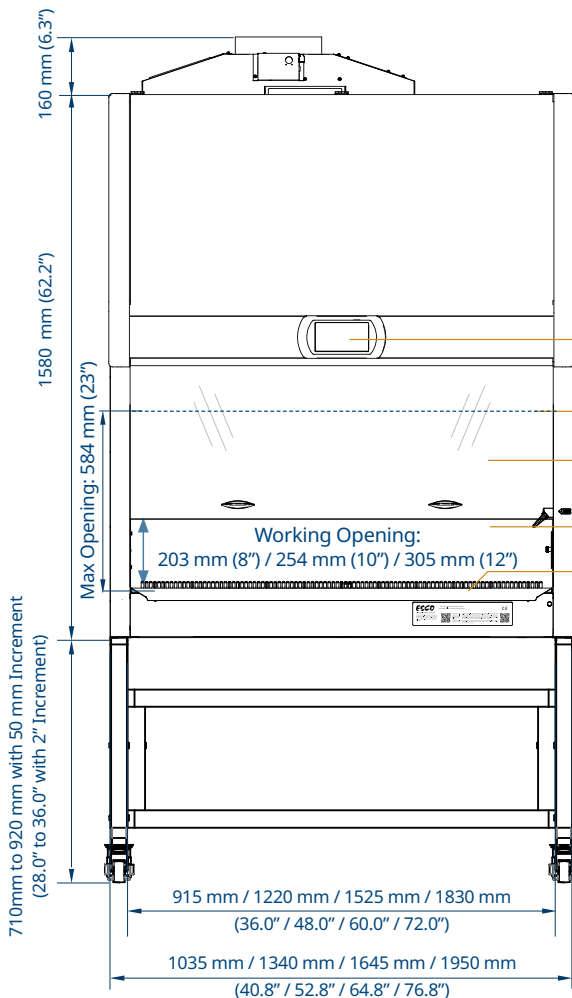
Engineering Drawing

439 mm / 488 mm / 5879 mm / 676 mm
(17.3" / 19.2" / 22.8" / 26.6")

269 mm (10.6")

USB Port

160 mm (6.3")

1580 mm (62.2")

Max Opening: 584 mm (23")

Working Opening:
203 mm (8") / 254 mm (10") / 305 mm (12")

915 mm / 1220 mm / 1525 mm / 1830 mm
(36.0" / 48.0" / 60.0" / 72.0")

1035 mm / 1340 mm / 1645 mm / 1950 mm
(40.8" / 52.8" / 64.8" / 76.8")

710mm to 920 mm with 50 mm Increment
(28.0" to 36.0" with 2" Increment)

250 mm (9.8")

720 mm (28.3")

625 mm (24.6")
800 mm (31.5")
867 mm (34.1")

1. Exhaust sensor
2. USB Port
3. Zero Volt Relay Contact
4. Power Inlet (1qty for 3-4 ft, 2qty for 5-6 ft)
5. Centurion Touchscreen Controller
6. Maximum Sash Opening
7. 10° Angled Sash Window
8. Single-piece Stainless Steel Back Wall
9. Single tray
10. Electrical Panel
11. Dimmable LED Lamp
12. IV Bar Retrofit Kit Provision
13. Service Fixture Retrofit Kit Provision
14. Cable Port (NSF Approved)
15. Stainless Steel Arm Rest
16. Exhaust Collar (optional)
17. Exhaust Filter
18. DC ECM Blower
19. Downflow Filter
20. UV Lamp Provision
21. Stainless steel side walls
22. Electrical Outlet Provision
23. Drain Valve Provision

TECHNICAL SPECIFICATIONS

Labculture® Class II	Stainless Steel Side Walls					
		220-240 VAC, 50/60 Hz	LA2-3S8 G4 8" 2011666	LA2-4S8 G4 8" 2011668	LA2-5S8 G4 8" 2011670	LA2-6S8 G4 8" 2011672
			LA2-3S8 G4 10" 2011682	LA2-4S8 G4 10" 2011684	LA2-5S8 G4 10" 2011686	LA2-6S8 G4 10" 2011688
			LA2-3S8 G4 12" 2011714	LA2-4S8 G4 12" 2011716	LA2-5S8 G4 12" 2011718	LA2-6S8 G4 12" 2011720
		110-130 VAC, 50/60 Hz	LA2-3S9 G4 8" 2011667	LA2-4S9 G4 8" 2011669	LA2-5S9 G4 8" 2011671	LA2-6S9 G4 8" 2011673
			LA2-3S9 G4 10" 2011683	LA2-4S9 G4 10" 2011685	LA2-5S9 G4 10" 2011687	LA2-6S9 G4 10" 2011689
			LA2-3S9 G4 12" 2011715	LA2-4S9 G4 12" 2011717	LA2-5S9 G4 12" 2011719	LA2-6S9 G4 12" 2011721

Nominal Size			0.9 meter (3')	1.2 meter (4')	1.5 meter (5')	1.8 meter (6')
External Dimensions (W x D x H)	Without Arm Rest		1035 x 800 x 1580 mm (40.8" x 31.5" x 62.2")	1340 x 800 x 1580 mm (52.8" x 31.5" x 62.2")	1645 x 800 x 1580 mm (64.8" x 31.5" x 62.2")	1950 x 800 x 1580 mm (76.8" x 31.5" x 62.2")
	With Arm Rest		1035 x 867 x 1580 mm (40.8" x 34.1" x 62.2")	1340 x 867 x 1580 mm (52.8" x 34.1" x 62.2")	1645 x 867 x 1580 mm (64.8" x 34.1" x 62.2")	1950 x 867 x 1580 mm (76.8" x 34.1" x 62.2")
Internal Dimensions (W x D x H)			915 x 625 x 720 mm (36.0" x 24.6" x 28.3")	1220 x 625 x720 mm (48.0" x 24.6" x 28.3")	1525 x 625 x 720 mm (60.0" x 24.6" x 28.3")	1830 x 625 x 720 mm (72.0" x 24.6" x 28.3")
Usable Work Area			0.47 m² (5.0 sq. ft.)	0.63 m² (6.8 sq. ft.)	0.79 m² (8.5 sq. ft.)	0.94 m² (10.3 sq. ft.)
Sash Opening			Available in 203 mm (8"), 254 mm (10"), and 305 mm (12")			
Maximum Sash Opening			575 mm (22.6")			
Average Airflow Velocity	Inflow	203 mm (8")	0.53 m/s (105 fpm)			
		254 mm (10")	0.53 m/s (105 fpm)			
		305 mm (12")	0.53 m/s (105 fpm)			
	Downflow	203 mm (8")	0.30 m/s (60 fpm)	0.30 m/s (60 fpm)	0.30 m/s (60 fpm)	0.30 m/s (60 fpm)
		254 mm (10")	0.33 m/s (65 fpm)	0.30 m/s (60 fpm)	0.33 m/s (65 fpm)	0.30 m/s (60 fpm)
		305 mm (12")	0.35 m/s (70 fpm)	0.30 m/s (60 fpm)	0.35 m/s (70 fpm)	0.35 m/s (70 fpm)
Airflow Volume	Inflow	203 mm (8")	356 m³/h (210 cfm)	473 m³/h (280 cfm)	593 m³/h (350 cfm)	709 m³/h (420 cfm)
		254 mm (10")	446 m³/h (263 cfm)	591 m³/h (350 cfm)	741 m³/h (438 cfm)	887 m³/h (525 cfm)
		305 mm (12")	535 m³/h (315 cfm)	710 m³/h (420 cfm)	890 m³/h (525 cfm)	1065 m³/h (629 cfm)
	Downflow	203 mm (8")	581 m³/h (345 cfm)	771 m³/h (461 cfm)	967 m³/h (567 cfm)	1156 m³/h (691 cfm)
		254 mm (10")	639 m³/h (374 cfm)	848 m³/h (499 cfm)	1063 m³/h (624 cfm)	1272 m³/h (748 cfm)
		305 mm (12")	678 m³/h (397 cfm)	771 m³/h (461 cfm)	1128 m³/h (662 cfm)	1349 m³/h (794 cfm)
	Exhaust	203 mm (8")	356 m³/h (210 cfm)	473 m³/h (280 cfm)	593 m³/h (350 cfm)	709 m³/h (420 cfm)
		254 mm (10")	446 m³/h (263 cfm)	591 m³/h (350 cfm)	741 m³/h (438 cfm)	887 m³/h (525 cfm)
		305 mm (12")	535 m³/h (315 cfm)	710 m³/h (420 cfm)	890 m³/h (525 cfm)	1065 m³/h (630 cfm)
Additional Static Pressure for Optional Thimble Exhaust Collar (Measured 360mm or 14" from the top of exhaust collar)		203 mm (8")	15-25 Pa	25-35 Pa	20-30 Pa	40-50 Pa
		254 mm (10")	20-30 Pa	35-45 Pa	25-35 Pa	55-65 Pa
		305 mm (12")	25-35 Pa	45-55 Pa	40-50 Pa	65-75 Pa
Required Exhaust with Optional Thimble Exhaust Collar		203 mm (8")	390 m³/h (230 cfm)	529 m³/h (311 cfm)	622 m³/h (366 cfm)	780 m³/h (459 cfm)
		254 mm (10")	480 m³/h (283 cfm)	637 m³/h (375 cfm)	770 m³/h (453 cfm)	944 m³/h (556 cfm)
		305 mm (12")	569 m³/h (335 cfm)	756 m³/h (445 cfm)	921 m³/h (542 cfm)	1133 m³/h (667 cfm)
ULPA Filter Typical Efficiency			>99.999% at 0.1 to 0.3 micron, ULPA as per IEST-RP-CC001.3 USA >99.999% at MPPS, H14 as per EN 1822 EU			
Sound Emission (dBA)*	NSF / ANSI 49	203 mm (8")	57	57	60	63
		254 mm (10")	60	59	63	63.3
		305 mm (12")	62	60	65	65.9
LED Lamp Light Intensity			≥ 1000 lux (≥ 93 ft-cd)			
Electrical Rating (8) 220-240 VAC 50/60Hz**	Nominal power (Watt)	203 mm (8")	160	190	350	366
		254 mm (10")	195	201	374	420
		305 mm (12")	228	236	455	550
	Heat Load (BTU/hr)	203 mm (8")	546	648	1194	1249
		254 mm (10")	665	686	1276	1433
		305 mm (12")	778	805	1553	1877
	Full Load Amps exclude 5A EO	203 mm (8")	6 A		10 A	
		254 mm (10")				
		305 mm (12")				
Electrical Rating (9) 110-130 VAC 50/60Hz**	Nominal power (Watt)	203 mm (8")	163	193	355	372
		254 mm (10")	203	205	380	421
		305 mm (12")	232	240	380	537
	Heat Load (BTU/hr)	203 mm (8")	556	659	1211	1269
		254 mm (10")	693	699	1297	1471
		305 mm (12")	792	819	1570	1832
	Full Load Amps exclude 5A EO	203 mm (8")	10 A		15 A	
		254 mm (10")				
		305 mm (12")				
	Optional Outlets FLA		5A			

*Noise reading in open field condition / anechoic chamber. Noise reading in normal room varies by room size, layout, and background noise, but may reach roughly 3-4 dBA above these values.
**Electrical power consumption is a measurement of new unit with clean filter operated within nominal setpoint. Result per unit may vary.

TECHNICAL SPECIFICATIONS

Labculture® Class II	Stainless Steel Side Walls	220-240 VAC, 50/60 Hz	LA2-3S8 G4 8" (2011666)	LA2-4S8 G4 8" (2011668)	LA2-5S8 G4 8" (2011670)	LA2-6S8 G4 8" (2011672)
			LA2-3S8 G4 10" (2011682)	LA2-4S8 G4 10" (2011684)	LA2-5S8 G4 10" (2011686)	LA2-6S8 G4 10" (2011688)
			LA2-3S8 G4 12" (2011714)	LA2-4S8 G4 12" (2011716)	LA2-5S8 G4 12" (2011718)	LA2-6S8 G4 12" (2011720)
		110-130 VAC, 50/60 Hz	LA2-3S9 G4 8" (2011667)	LA2-4S9 G4 8" (2011669)	LA2-5S9 G4 8" (2011671)	LA2-6S9 G4 8" (2011673)
			LA2-3S9 G4 10" (2011683)	LA2-4S9 G4 10" (2011685)	LA2-5S9 G4 10" (2011687)	LA2-6S9 G4 10" (2011689)
			LA2-3S9 G4 12" (2011715)	LA2-4S9 G4 12" (2011717)	LA2-5S9 G4 12" (2011719)	LA2-6S9 G4 12" (2011721)
Cabinet Construction	Main body		Electro-galvanized steel with white oven-baked epoxy-polyester Isocide™ antimicrobial powder-coated finish, 1.5 mm (0.06") / 16 gauge thick			
	Work Zone		Stainless steel type 304 with no.4B finish, 1.5 mm (0.06") / 16 gauge thick			
	Sash Window		6 mm UV-absorbing Tempered Glass			
Net Weight			243 kg (536 lbs)	287 kg (633 lbs)	381 kg (840 lbs)	400 kg (882 lbs)
Shipping Weight			304 kg (644 lbs)	360 kg (772 lbs)	451 kg (968 lbs)	506 kg (1116 lbs)
Shipping Dimensions, Maximum (W x D x H)			1150 x 900 x 1900 mm (45.3" x 35.4" x 75")	1400 x 900 x 1900 mm (55.1" x 35.4" x 75")	1750 x 900 x 1900 mm (69" x 35.4" x 75")	2050 900 x 1900 mm (81" x 35.4" x 75")
Shipping Volume			2.3 m³ (81.2 cu. ft.)	3 m³ (105.9 cu. ft.)	3.9 m³ (137.7 cu. ft.)	4.4 m³ (155.4 cu. ft.)

Options and Accessories

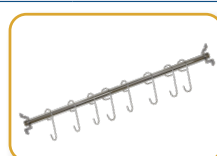| **Anti-blowback Valve 10 inches**	EG Powder-Coated	ANTI-BLOW BACK VALVE 10" ABBV-10P 5170352			
	304 Stainless Steel	ANTI-BLOW BACK VALVE 10" ABBV-10S 5170354			
Exhaust Collar		ECO-F1-LA2/AC2/LR2/AR-3FT G4 5171097	ECO-F1-LA2/AC2/LR2/AR2-4FT G4 5171098	ECO-F1-LA2/AC2/LR2/AR2-5FT G4 5171099	ECO-F1-LA2/AC2/LR2/AR2/VA2-6FT G4 5171100
UV Lamp		UV-15A (5170251)	UV-30A (5170255)		
IV Bar		IV-910 (5170499)	IV-1215 (5170231)	IV-1520 (5170500)	IV-1825 (5170501)
Electrical Outlet	Direct Mounted	EO-H_			
	GFCI	EO-GFCI (5170071)			
Service Fixtures	EU SF-Gas-20 mm and Solenoid Valve	SF-1G20 (5170410)			
	EU SF-Vacuum-20 mm	SF-1V20 (5170457)			
	EU SF-Air-20 mm	SF-1A20 (5170502)			
	EU SF-Nitrogen-20 mm	SF-1N20 (5170503)			
	EU SF-Water-20 mm	SF-1W20 (5170458)			
	US SF-Universal-20 mm	SF-2U22 (5170504)			
	Copper Piping for SF	CU-Pipe (5170026)			
Support Stand (710 mm to 920 mm with 50 mm increment / 28.0" to 36.0" with 2" increment, combination of caster wheels and leveling feet with lock)		STA-3A0 5131340	STA-4A0 5131341	STA-5A0 5131427	STA-6A0 5131389
Stainless Steel Pipette Storage Shelf		5260327			
Arm Rest Padding		MEWREST (5170127)			
Foot Rest		FT-REST (5170073)			
Laboratory Chair		ME-LD-AR360 (1150006)			
IQOQ Protocol		9010179			

ABBV-_

ECO-F-LA2-4 G4

UV-_A-L

IV-_

EO-H_

EO-GFCI
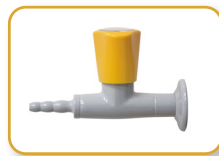
SF-1_

SF-2U_

STA-_

SS Pipette Storage Shelf

MEWREST

FT-REST

ME-LD-AR360

IQOQ

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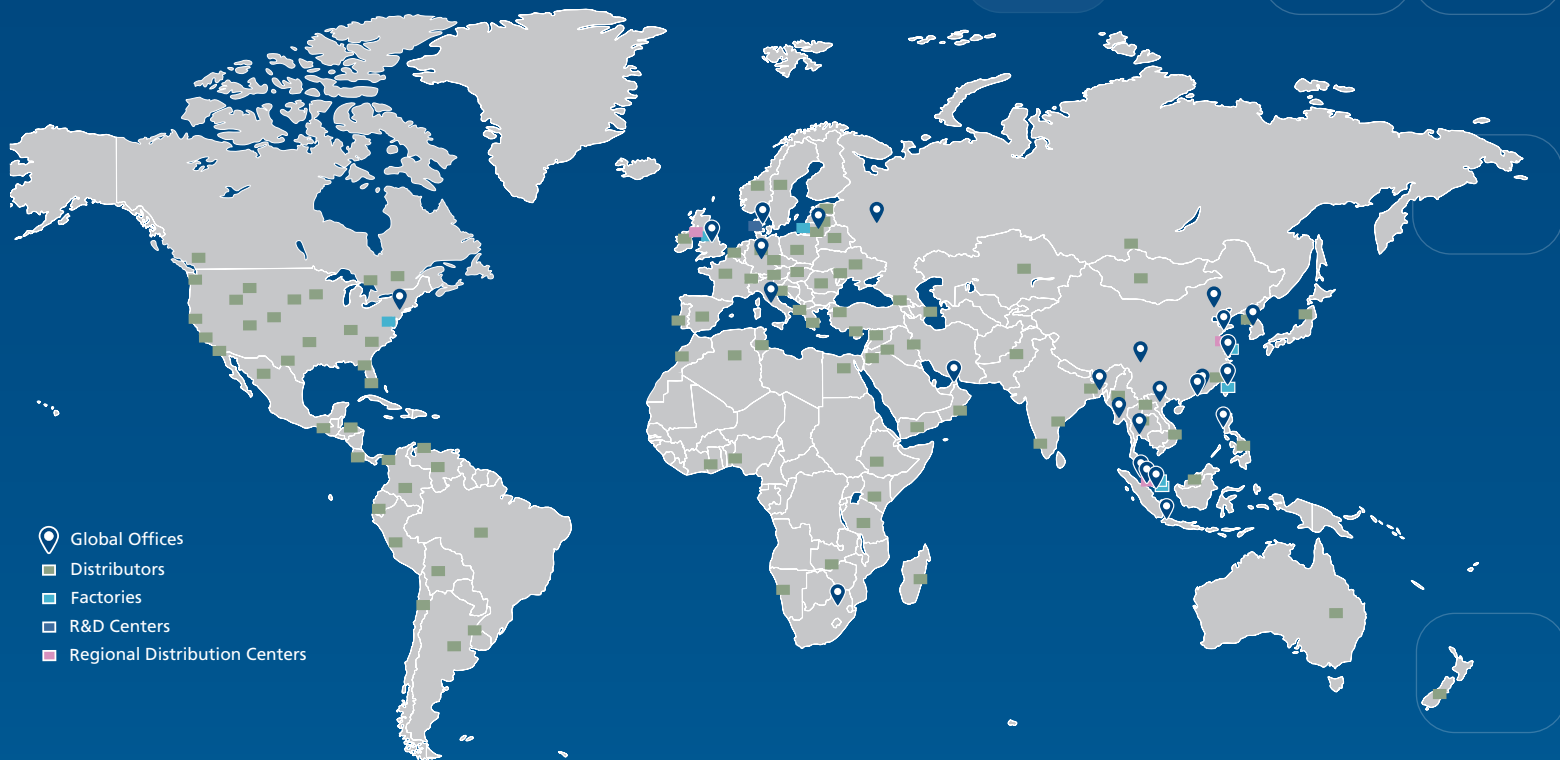
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