

**ESCO**  
LIFESCIENCES



# Airstream®

## **Class I Biological Safety Cabinets**

*The Leading Energy Efficient, Quiet, and Ergonomic Biosafety Cabinet*





# Welcome to Esco Lifesciences

Esco Lifesciences' vision is to provide enabling technologies for scientific discoveries to make human lives healthier and safer.

Esco Lifesciences is committed to delivering innovative solutions for the clinical, life sciences, research, industrial, laboratory, pharmaceutical, and IVF communities. With the most extensive product line in the industry, Esco has passed a number of international standards and certifications. Esco Lifesciences represents innovation and forward-thinking designs, that are of the highest standard quality since 1978.

**Availability and Accessibility.** Esco Lifesciences has headquarters in Singapore, Indonesia, and Philippines, with manufacturing facilities located in Asia and Europe. Research and Development (R&D) is conducted worldwide spanning the US, Europe and Asia. Sales, services, and marketing subsidiaries are located in 42 major markets including US, UK, Japan, China and India. Esco regional distribution centers are located in Singapore, Malaysia, Thailand, Vietnam, Myanmar, Indonesia, Philippines, Bangladesh, Hong Kong, Taiwan, South Korea, China, Japan, India, UAE, Central and South Africa, Denmark, Germany, Italy, Lithuania, Russia, United Kingdom, and USA. Because of our worldwide presence, you can be sure that Esco is within your reach.

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**High Quality, Reliable, and Dependable.** Esco Lifesciences products are of high quality, reliable, and dependable. Cross-functional teams from Esco Production, R&D, Quality Assurance, and Senior Management, are regularly assembled to review and implement areas for improvement.

**Esco Lifesciences Cares for Your Safety.** Esco Lifesciences focuses on providing safety not just for your samples, but also for you and the environment.

**Esco Lifesciences Cares for Your Comfort.** Building ergonomic designs and reducing noise levels of the units ensure comfort for our users.

**Esco Lifesciences Cares for the Environment.** Esco Lifesciences incorporates the latest proven technologically advanced components available. One in every four of Esco's employees is involved in Research and Development and are evaluating new components or designs for better efficiency. Whenever a new technology is available, Esco Lifesciences redesigns technology into our new products that will use lesser energy.

**Customer Service and Support.** Our service does not stop once purchase has been done. Esco Lifesciences gives on-time customer service such as service training, preventive maintenance, and re-certification, to respond to your equipment needs. Esco Lifesciences also offers free end-user seminars and provides educational materials and informative videos.

As Esco Lifesciences takes the opportunity to respond to the world's needs, we aim not only to contribute to the advancement of scientific discoveries but also in making the world a safer, healthier, and better place to live in.



# Products and Applications

## Life Sciences Laboratory Equipment

### Sample Preparation

- Class I Biological Safety Cabinets
- Class II Biological Safety Cabinets
- Class II Type A2 Biological Safety Cabinets
- Class II Type B1 Biological Safety Cabinets
- Class II Type B2 Biological Safety Cabinets
- Class III Biological Safety Cabinets
- Horizontal Laminar Flow Cabinets
- Vertical Laminar Flow Cabinets
- Laboratory Animal Research Workstations
- Laboratory Centrifuges

### Sample Cultivation

- CO<sub>2</sub> Incubators, Direct Heat Air-Jacketed
- CO<sub>2</sub> Incubators with Cooling System
- CO<sub>2</sub> Incubators with High Heat Sterilization
- Laboratory Shakers

### Amplification and Detection

- Conventional Thermal Cyclers
- Microplate Shakers
- PCR Cabinets

### Sample Storage & Sample Protection Solutions

- Laboratory Refrigerators and Freezers
- Ultra-low Temperature Freezers
- Remote Monitoring, Datalogging, and Programming Software
- Wireless Monitoring System

### Chemical Research

- Ducted Fume Hoods
- Ductless Fume Hoods
- Filtered Storage Cabinets
- Powder Weighing Balance Enclosure
- Exhaust Blowers
- Fume Hood Airflow Monitor

### General Equipment

#### Laboratory Thermostatic Products

- Forced Convection Laboratory Oven
- Forced Convection Laboratory Incubator
- Natural Convection Laboratory Incubator
- Refrigerated Laboratory Incubator

## Medical / IVF Equipment

### Sample Handling

- Esco Multi-Zone ART Workstation
- AVT Anti-Vibration Table
- Versati™ Tabletop Centrifuge Refrigerated

### Embryo Culture

- MIRI® Multiroom Incubator
- MIRI® II-12 Multiroom Incubator
- Mini MIRI® Humidity Incubator
- Mini MIRI® Dry Incubator
- CelCulture® CO<sub>2</sub> Incubator

### Innovative Time-Lapse Imaging

- MIRI® Time-lapse Incubator

### Accurate Quality Control

- MIRI® GA Gas and Temperature Validation Unit

### Unique Consumables

- CultureCoin®

## Healthcare

### Esco Pharma Products

#### Airflow Containment

- BioBooth®
- Ceiling Laminar Airflow (CLAF)
- Cytoculture® Cytotoxic Safety Cabinet (CYT)
- Pharmacon™ Downflow Booth
- Esco Garment Storage Cabinet
- Esco Glassware Hoods
- Laminar Flow Horizontal/Vertical Trolley (LFH/VT)
- Laminar Flow Straddle Units
- Evidence Drying Cabinet

#### Isolation Containment

- Advanced Processing Platform Isolator (APPI)
- Aseptic Containment Isolator (ACTI)
- Blood Cell Labelling Isolator
- Streamline® Closed Restricted Access Barrier System (SLC-RABS)
- Containment Barrier Isolator (CBI)
  - CBI-Unidirectional (CBI-U)
  - CBI-Turbulent (CBI-T)
  - CBI-Class III Biosafety Cabinet (CBI-III)
  - CBI-Hybrid (CBI-H)
- Isoclean® Healthcare Platform Isolator (HPI)
  - HPI-G3-Without Filter Below Work Zone
  - HPI-G3-With Filter Below Work Zone
  - HPI-Inflatable Seal (HPI-IS)
  - HPI - Inflatable Seal - BioVap™ (HPI-IS-BVP)
- General Processing Platform Isolator (GPPI)
  - GPPI-Inflatable Seal (GPPI-IS)
  - GPPI-Static Seal (GPPI-SS)
- Streamline® Compounding Isolator (SCI)
- Streamline® Containment Isolator - Class III (SCI-III)
- Technetium Dispensing Isolator
- Turbulent Flow Aseptic Isolator™ (TFAI™)
- Weighing and Dispensing Containment Isolator (WDCI)

#### Cross Contamination Facility Integrated Barrier

- BioPass™ Pass Through
- Cleanroom Air Showers
- Dynamic Pass Boxes/ Dynamic Floor Laminar Hatches
- Infinity® Air Shower Pass Box
- Esco Sputum Booth
- Infinity® Pass Boxes
- Infinity® Cleanroom Transfer Hatch
- Soft Capsule® Soft Wall Cleanroom

#### Ventilation Containment

- Ventilated Balance Enclosure

### Esco VacciXcell Products

#### Tide Motion Bioreactors

- CelXrocker™ (CXR)
- MiniTide®
- CelCradle™ (CC)
- CelCradle X® (CCX)
- TideXcell® (TXL)

#### Stirred Tank Bioreactors

- BioXcell®
- StirCradle™
- StirCradle™ PRO
- VXL™ Hybrid

#### Harvesting System

- CelShaker™
- CelCradle X® Semi-automated Harvester System (CCX-SAH)
- TideXcell® Harvester System (TXLHS)

#### Cell Culture Monitoring, Media and Consumables

- Super Plus™
- Plus™ Vero
- Plus™ MDCK
- Plus™ MDCK II
- BioNOC™ II macrocarriers
- GlucCell™ Glucose Monitoring System
- CVD Kit

#### Filling Line Equipment

- Traditional Filling Line
- cRABS (Closed Restricted Access Barrier System)
- oRABS (Open Restricted Access Barrier System)

#### Integrated Solutions

- Cell Processing Isolator (CPI)
- Cell Processing Center

### Esco TaPestle Rx Products and Services

#### Pharmacy Automation and Compounding Supply

- Compounding Pharmacy Isolators (SCI, HPI, CBI, GPPI)
- Safety Cabinets and Enclosures (CYT, Class II BSC, VBE, LFC)
- Aseptic Filling Systems

#### Radiopharmacy Equipment

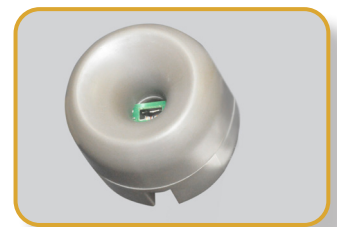
- Blood Cell Labeling Isolator
- Cytoculture® Lead-Shielded Class II Biosafety Cabinet
- Frontier® Radioisotope™ Fume Hood
- GMP-compliant Radioisotope Dispensing Isolator
- Radiopharmacy Hood (Lead Shielded Biological Safety Cabinet)
- Technetium Dispensing Isolator





## RS 232 Port and Zero Volt Relay Contact

- RS 232 Port to send operational information to Building Management System (BMS)
- Zero Volt Relay Contact to turn ON/OFF exhaust blower and signal the building alarm



## Optional Secondary H14 or Carbon Filter

### H14 Filter

- 10x filtration efficiency of HEPA filter



## Sentinel™ Gold Microprocessor Controller

- Displays all safety information on one screen
- Centered and angled down for easy reach & viewing



## Hinged Window

- 90° opening for an easy workzone access
- 8 mm UV Resistant Polycarbonate Window
- Gasket-surrounded window to provide airtight seal for better safety.



## Easy to Clean Back Wall

- Large back wall radius for easy cleaning
- With UV Lamp Provision



## UV Door

- Safety door against UV light
- Provides air-tight seal during decontamination
- Integrated with VHP Injection Port for easy connection to VHP/HPV generator



**EN12469**

Esco Class I Microbiological Safety Cabinets has been certified by PHE / Public Health England (formerly HPA) for compliance to EN 12469

**Airstream®**

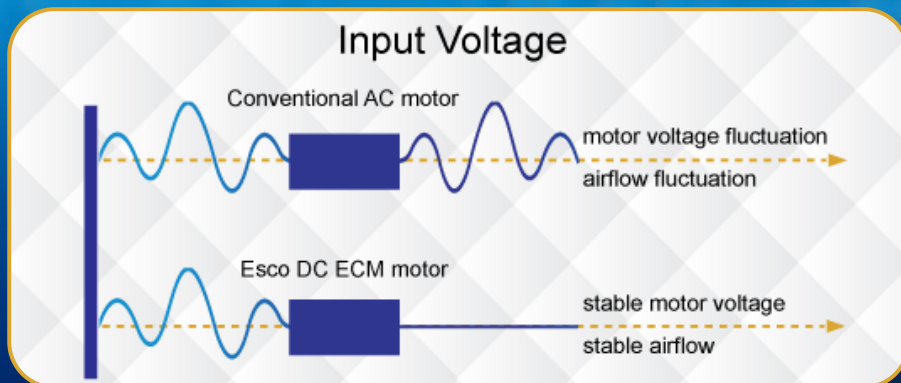
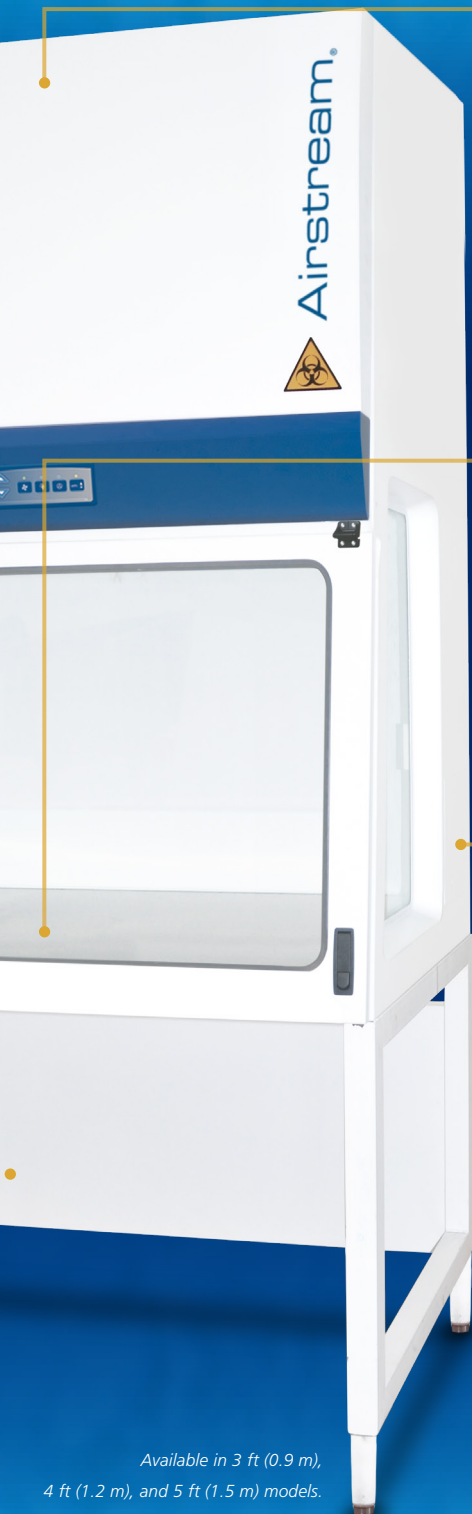
Class I Biological Safety Cabinets

## Airflow Sensor

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

## Energy Efficient DC ECM Motor

- 70% Energy savings from AC motor
- Stable airflow, despite building voltage fluctuations
- Standby Mode to further reduce power consumption by 60%



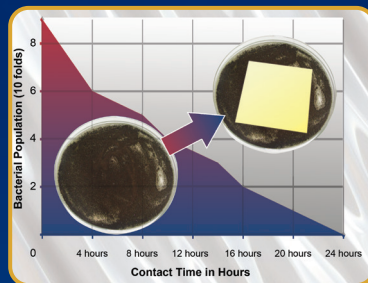
## Work Top

- 1.2 mm (0.05") 18 gauge SS 304, 4B Finish
- Spill-retaining work top design with a recessed central area contains accidental liquid spills.



## Isocide™ Powder Coat

- Silver-ion impregnated powder coat
- Inhibit microbial growth to improve safety



### Standards Compliance

#### Biological Safety Cabinets

EN 12469, Europe  
SANS12469, South Africa

#### Filtration

EN-1822 (H14), Europe  
IEST-RP-CC001.3, USA  
IEST-RP-CC007, USA  
IEST-RP-CC034.1, USA

#### Electrical Safety

IEC61010-1, Worldwide  
EN-61010-1, Europe

Available in 3 ft (0.9 m),  
4 ft (1.2 m), and 5 ft (1.5 m) models.

## TECHNICAL SPECIFICATIONS

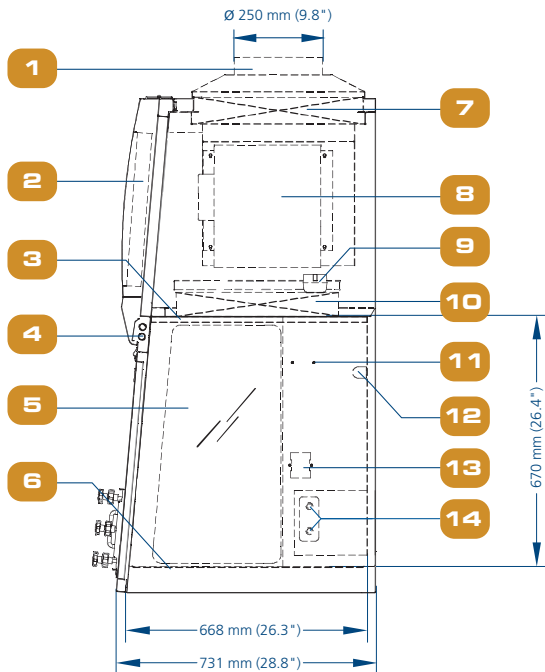
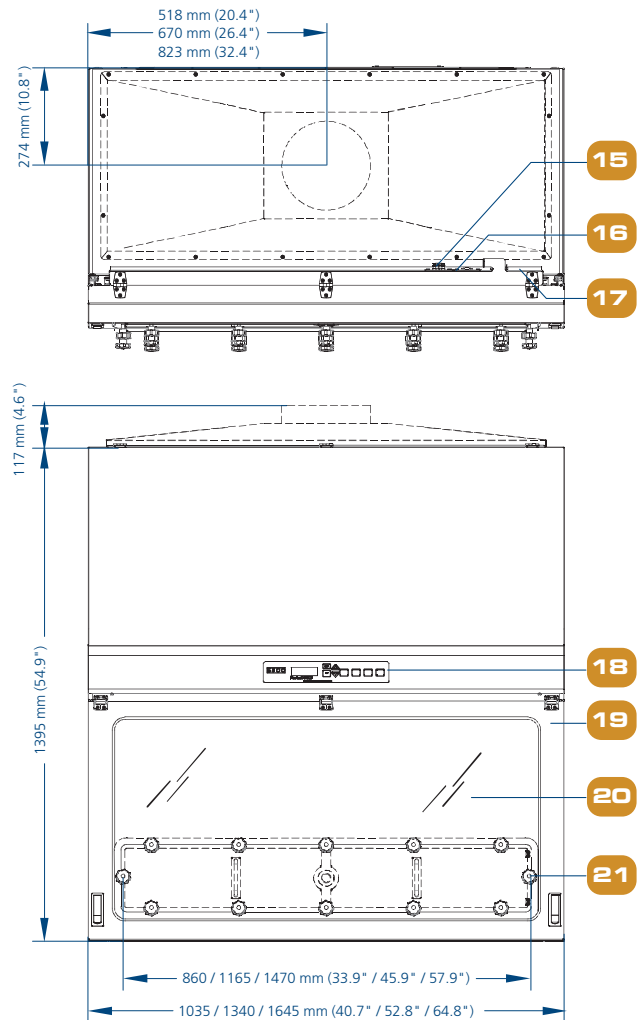
Model		AC1-3E8 (2010650)	AC1-4E8 (2010732)	AC1-5E8 (2010879)
External Dimensions (W x D x H)		1035 mm x 731 mm x 1395 mm (40.7" x 28.8" x 55")	1340 x 731 x 1395 mm (52.8" x 28.8" x 55")	1645 x 731 x 1395 mm (64.8" x 28.8" x 55")
Gross Internal Dimensions (W x D x H)		860 x 668 x 670mm (33.9" x 26.3" x 26.4")	1165 x 668 x 670 mm (45.9" x 26.3" x 26.4")	1470 x 668 x 670 mm (57.9" x 26.3" x 26.4")
Usable Work Area		0.57 m <sup>2</sup> (6.1 sq.ft)	0.76 m <sup>2</sup> (8.2 sq.ft)	0.95 m <sup>2</sup> (10.2 sq.ft)
Maximum Window Opening (at 90° opening)		556 mm (21.9")		
Working Opening/ Tested Opening		200 mm (7.9")		
Average Inflow Velocity		0.85 m/s (167 fpm)		
Airflow Volume	Inflow	562 m <sup>3</sup> /h (331 cfm)	747 m <sup>3</sup> /h (440 cfm)	933 m <sup>3</sup> /h (549 cfm)
	Exhaust	562 m <sup>3</sup> /h (331 cfm)	747 m <sup>3</sup> /h (440 cfm)	933 m <sup>3</sup> /h (549 cfm)
	Required Exhaust with Optional Thimble Exhaust Collar	730 m <sup>3</sup> /h (430 cfm)	971 m <sup>3</sup> /h (4572 cfm)	1213 m <sup>3</sup> /h (714 cfm)
	Static Pressure for Optional Thimble Exhaust Collar	70 Pa (0.28 in H <sub>2</sub> O)	85 Pa (0.34 in H <sub>2</sub> O)	100 Pa (0.40 in H <sub>2</sub> O)
HEPA 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 in Typical Lab Room per EN 12469		47.8 dBA	48.4 dBA	52 dBA
LED Lamp Intensity		>1000 lux (>92 ft.cd)		
Cabinet Construction	Main body	1.2 mm (0.05") /18 gauge EG Steel with Isocide™ Oven-Baked Epoxy-Polyester Powder Coating		
	Work Zone	Tray: 1.2 mm (0.05")/18 gauge, SS 304, 4B Finish		
	Side Walls	5 mm (0.2") UV Absorbing Tempered Glass		
Electrical	Cabinet Full Load Amps (FLA)	8.2 A		
	Heat Load (BTU / Hr)	341	450	556
Nominal Power Consumption		100 W	132 W	163 W
Net Weight *		241 kg (531 lbs)	301 Kg (664 lbs)	363 Kg (800 lbs)
Shipping Weight *		296 kg (625 lbs)	356 Kg (785 lbs)	418 Kg (922 lbs)
Shipping Dimensions, Maximum (W x D x H)*		1200 mm x 850 mm x 1950 mm (47.2" x 33.5" x 76.8")	1450 mm x 850 mm x 1950 mm (57.1" x 33.5" x 76.8")	1720 x 850 x 1950 mm (67.7" x 33.5" x 76.8")
Shipping Volume, Maximum *		2.0 m <sup>3</sup> (70.64 cu.ft)	2.5 m <sup>3</sup> (88.2 cu. ft)	3.0 m <sup>3</sup> (105.9 cu.ft)

\* Cabinet only, excludes optional stand.

## Accessories for AC1 Biological Safety Cabinets

		AC1-3E8	AC1-4E8	AC1-5E8
Optional Secondary Filter	Secondary H14 Filter	HP-AC1-3 5080228	HP-AC1-4 5080138	HP-AC1-5 5080229
	Secondary Carbon Filter	CRF/SEC-AC1-3 5080226	CRF/SEC-AC1-4 5080139	CRF/SEC-AC1-5 5080227
Exhaust Ducting	Exhaust Hard Ducting (with VHP out Port)	EHD AC1-3 5172154	EHD AC1-4 5170666	EHD AC1-5 5170796
	Anti-blowback Valve 10"	ABBV-10P 5170352		
	Tri-safe Exhaust Collar with Alarm	TEM-4 2010606		
	Exhaust Damper	B2-DAMPER 5170352		
Hydrogen Peroxide Decontamination Kit	UV Door (with VHP In Port)	UV DOOR AC1-3 5072158	UV DOOR AC1-4 5090044	UV DOOR AC1-5 5072003
	VHP Out Top Box for Cabinet WITHOUT Exhaust Collar Installed (Ø 1")	VHP OUT TOP BOX 3ft 5172156	VHP OUT TOP BOX 4ft 5170665	VHP OUT TOP BOX 5ft 5170900
Work Zone	UV Lamp	UV-15A-L 5170251	UV-30A-L 5170255	UV-30A-L 5170255
	IV Bar	IV-910 5170499	IV-1215 5170231	IV-1520 5170500
	Pre-filter	5090093	5090045	5090076
Electrical Outlet	Universal	EO-UNI 5170060		
Service Fixtures	EU SF-Gas-20 mm	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		
	EU SF-Universal-22 mm	SF-2U22 5170504		
Support Stands, Ships Flat	Fixed Stand with Leveling Feet, 28" height	SAL-3A0 Gen 2 5130170	SAL-4A0 Gen 2 5130134	SAL-5A0 Gen 2 5130171
	Fixed Stand with Leveling Feet, 34" height	SAL-3B0 Gen 2 5130174	SAL-4B0 Gen 2 5130175	SAL-5B0 Gen 2 5130176
	Fixed Stand with Caster Wheels, 28" height	SPC-3A0 Gen 2 5130013	SPC-4A0 Gen 2 5130152	SPC-5A0 Gen 2 5130162
	Fixed Stand with Caster Wheels, 34" height	SPC-3B0 Gen 2 5130018	SPC-4B0 Gen 2 5130166	SPC-5B0 Gen 2 5130167
	Motorized Height Stand with Caster Wheels	SPM-3A_	SPM-4A_	SPM-5A_
Misc	IQ OQ Protocol	9010179		

# AC1 Biological Safety Cabinet Engineering Drawing



- |                                   |   |  |  |
|-----------------------------------|---|--|--|
| 1. Exhaust Ducting (optional)     | 7. Optional Secondary H14 Filter / Carbon filter) | 13. Standard Electrical Outlet Kit Provision           | 18. Sentinel™ Gold Microprocessor System   |
| 2. Electrical Panel               | 8. DC ECM Blower                                  | 14. Service Fixtures Kit Provision<br>(2 on each side) | 19. Hinged Front Door                      |
| 3. Diffuser / Optional Pre-filter | 9. Inflow Sensor                                  | 15. 2 Sets Zero Volt Relay Contact                     | 20. 8 mm UV Resistant Polycarbonate Window |
| 4. LED Lamp                       | 10. Main H14 Filter                               | 16. RS 232 Port  | 21. Air Tight UV / Decontamination Panel   |
| 5. Side Tempered Glass            | 11. IV Bar Retrofit Kit Provision                 | 17. Power Inlet  |  |
| 6. Stainless Steel Table          | 12. UV Lamp Provision                             |  |  |

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Esco Micro Pte. Ltd. • 19 Changi South Street 1 • Singapore 486779  
Tel +65 6542 0833 • mail@escolifesciences.com  
www.escolifesciences.com

Esco Technologies, Inc. • 903 Sheehy Drive, Suite F, Horsham, PA 19044, USA  
Tel: +1 215-441-9661 • Fax 484-698-7757  
eti.admin@escolifesciences.com

Esco Lifesciences Group Offices: Bangladesh | China | Denmark | Germany | Hong Kong | India | Indonesia | Italy | Japan | Lithuania | Malaysia | Myanmar | Philippines | Russia | Singapore | South Africa | South Korea | Taiwan | Thailand | UAE | UK | USA | Vietnam

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