

Protector® Controlled Atmosphere Glove Boxes

INTRODUCTION

Protector Controlled Atmosphere Glove Boxes provide a leak-tight environment for work with contamination-sensitive materials. Organometallic chemistry, lithium battery handling, hemoglobin research and other procedures using oxygen- or moisture-sensitive materials may be performed in these boxes.

Stainless steel-lined glove boxes have ultralow oxygen permeation rates (<0.16 ppm/min) while fiberglass-lined models have rates as low as <0.3 ppm/min, both achieving Class I atmosphere conditions. On Auto Pressure Controller models, the evacuation and filling cycles may be automated and monitored.



Exclusive Feature



Protector® Controlled Atmosphere Glove Boxes


FEATURES & BENEFITS


Leak-tight. Each box is factory-tested with a mass spectrometer while pressurized with helium at 5 inches of water gauge and found to have no detectable leaks greater than 1×10^{-6} ml/sec.

Low oxygen and moisture levels maintained*. Fiberglass models maintained oxygen levels as low as 0.4 ppm and moisture levels as low as 2 ppm. Stainless steel models maintained oxygen levels as low as 0.2 ppm and moisture levels as low as 1 ppm.

Exceed Class I atmosphere containment conditions for low oxygen permeation per ISO 10648-2. Fiberglass models achieve <0.3 ppm/min. Stainless steel models achieve the lowest permeation at <0.16 ppm/min.


Four inlet/outlet valves, two on the main chamber and two on the transfer chamber, allow for evacuating and filling the chambers via an accessory vacuum pump and inert gas.


 **Two 3/4" OD rear-mounted inlet and outlet compression fittings** allow for easy connection to optional AtmosPure Re-Gen Gas Purifier or other accessory drying train.


 **Auto pressure controller,** on models without analog gauges, provides monitor and control of the main chamber pressure, main chamber evacuation and filling cycles (up to 499) and transfer chamber evacuation and filling cycles (up to 199).

- The controller regulates vacuum/pressure between -5 and +5 water gauge in the main chamber and between 0 and -29.5 inches mercury in the transfer chamber.
- An audible alarm sounds when pressure/vacuum level is outside set limits.
- The LCD displays main and transfer chamber pressure.
- Three-position foot pedal provides hands-free control: increase gas/fill, off, and evacuate/decrease gas.
- Input/output port provides connection to optional AtmosPure Re-Gen Gas Purifier.

Main and transfer chamber analog pressure gauges, on models without auto pressure controller, provide a means to monitor pressure levels inside the box.

 **Factory-installed, rear-mounted, low profile stainless steel pressure relief bubbler** helps to protect against over or under pressurization. Pressure is maintained between -6 and +6 inches water gauge.

 **Bright interior.** Fluorescent illumination exceeds 120 foot-candles on fiberglass-lined models and 80 footcandles on stainless steel-lined models.

 **Interior, left-hand side, wall-mounted pass-through with plug** allows for on-site installation of an optional electrical receptacle or optional pass-through port for RS-232, gas/liquid or oxygen or moisture monitor.

 Exclusive Feature


Large laminated safety glass viewing window provides maximum visibility (36" wide x 27.7" high) and is removable to allow for placement of large equipment. A powder-coated steel frame and neoprene gasket form a tight seal.

Space-saving inner and outer transfer chamber doors pivot upward to conserve space and are counterbalanced and equipped with quick latches for easy operation.

Interior right-hand side wall-mounted electrical receptacle (duplex on 100/115 volt models, single on 230 volt models), with 10 amp maximum circuit load, provides power for instruments inside box. Double glove boxes also include a centrally-mounted interior receptacle.

Neoprene gloves, size 9 3/4, 30" long, are impermeable to water vapor, gases and toxic chemicals.

Large transfer chamber allows quick transfer of materials and equipment between the laboratory and main chamber.

 **One-piece molded fiberglass or type 304 stainless steel liner** provides a smooth, durable surface that resists chemical corrosion and simplifies cleaning.

Dry-powder epoxy-coated steel exterior has superior corrosion resistance.

ETL-listed. All North America models carry the ETL mark signifying they are certified to UL 61010-1 and CAN/CSA C22.2 No. 1010.1.

CE mark. All international models conform to the CE (European Community) requirements for electrical safety and electromagnetic compatibility.

Full one-year warranty on parts and labor.

Optional AtmosPure Re-Gen Gas Purifier, sold separately, maintains low oxygen/moisture atmosphere by circulating the glove box's gas through an oxygen/moisture scavenger that can be regenerated with a reducing gas and heat cycle. See pages 16-18 for more information.



The **Protector Combination Glove Box functions** as a controlled atmosphere glove box with the added ability to be switched to a filtered box as needed. See pages 13-14 for more information.

*Oxygen and moisture levels were achieved using the accessory AtmosPure Re-Gen Gas Purifier. See pages 16-18 for more information.

Protector® Controlled Atmosphere Glove Boxes

SPECIFICATIONS



Protector Controlled Atmosphere Glove Box 5080110 on Adjustable Height Mobile Base Stand 5235500.



All models feature:

- Factory leak-tested with a mass spectrometer while pressurized with helium at 5 inches of water gauge. No detectable leaks greater than 1×10^{-6} ml/sec.
- Exceed Class 1 atmosphere containment conditions for oxygen permeation <1.67 ppm/min per ISO 10648-2 test method.
- Laminated safety glass, 3/8" thick, viewing window. Viewing area, 36" w x 27.7" high (91 x 70 cm).
- Inner and outer pivoting transfer chamber doors, counterbalanced and equipped with quick-latches.
- Four manual valves with 3/8" compression fittings—two on the main chamber and two on the transfer chamber.
- Factory-installed, rear-mounted stainless steel pressure relief bubbler at ± 6 inches of water gauge.
- Two rear-mounted inlet and outlet 3/4" OD compression fittings for connection to optional AtmosPure™ Re-Gen Gas Purifier or other accessory drying train.
- Interior right-hand side wall-mounted electrical receptacle (duplex on 100/115 volt models) with 10 amp maximum.
- Interior left-hand side wall-mounted pass-through with plug.
- Pair of neoprene gloves, 0.015" thick, 30" long, size 9¾.
- Switches for light and electrical receptacle.

Exclusive Feature

- Two 8" ID, epoxy-coated aluminum, double-grooved glove ports with neoprene gaskets.
- Two 25-watt fluorescent lights.
- Dry-powder epoxy-coated, 18 and 20 gauge steel exterior panels.
- ETL listing, UL 61010-1 and CAN/CSA C22.2 No. 1010.1 conformity (North America models).
- CE Conformity Marking (International models).

Fiberglass-lined models feature:

- One-piece molded fiberglass liner with clear acrylic inner and outer transfer chamber doors.
- Performance tested to maintain oxygen levels as low as 0.4 ppm and moisture levels as low as 2 ppm.
- Oxygen permeation <0.3 ppm/min per ISO 10648-2.
- Illumination exceeds 120 footcandles.

Stainless steel-lined models feature:

- Type 304 stainless steel liner with Type 304 stainless steel inner and outer transfer chamber doors. Type 304 stainless steel front panel.
- Performance tested to maintain oxygen levels as low as 0.2 ppm and moisture levels as low as 1 ppm.

- Oxygen permeation <0.16 ppm/min per ISO 10648-2.
- Illumination exceeds 80 footcandles.

Basic Models also feature:

- Main chamber pressure analog gauge with readings from -5 to +5 inches of water gauge.
- Transfer chamber pressure analog gauge with readings from 0 to -29.5 inches of mercury.

Auto Pressure Controller Models also feature:

- Automatic control of the main chamber pressure (-5 to +5 inches of water gauge), main chamber evacuation and filling cycles (up to 499 cycles), and transfer chamber evacuation and filling cycles (up to 199 cycles).
- Regulation of vacuum/pressure between -5 and +5 inches of water gauge in the main chamber and between 0 and -29.5 inches of mercury in the transfer chamber.
- Mutable, audible/visual alarm that sounds when pressure/vacuum level is outside set limits.
- LCD display of main chamber and transfer chamber pressure in inches of water, inches of mercury and mBar.
- Three-position foot pedal (increase gas/fill, off, evacuate/decrease gas).
- Input/output port for optional AtmosPure™ Re-Gen Gas Purifier.

Double width models feature:

- Type 304 stainless steel liner.
- Type 304 stainless steel inner and outer transfer chamber doors.
- Type 304 stainless steel front panel.
- Four fluorescent lights.
- Illumination exceeds 80 footcandles.
- Centrally-mounted electrical receptacle.
- Two viewing windows.
- Four neoprene gloves and glove ports.

All models require:

- Supporting base. Adjustable Height Mobile and Stationary Base Stands are available. See pages 23-24.
- Vacuum pump for evacuating. Rotary Vane Vacuum Pumps are available. See page 19.
- Inert gas for filling. Contact your laboratory supply distributor.

Options include:

- Factory installed left side door. See page 24.

See pages 18-22 for ordering information on optional accessories. See pages 16-18 for ordering information on the AtmosPure Re-Gen Gas Purifier.

See page 15 for dimensional data.

Protector® Combination Glove Boxes

SPECIFICATIONS



Protector Combination Glove Box 5080060 on Adjustable Height Mobile Base Stand 5235500.

All models feature:

- Factory leak-tested with a mass spectrometer while pressurized with helium at 5 inches of water gauge. No detectable leaks greater than 1×10^{-6} ml/sec.
- LCD dual display. One regulates and displays pressure of both chambers. The second displays airflow (CFM), air changes/minute (ACM), and main chamber pressure (inches of water).
- Laminated safety glass, 3/8" thick, viewing window. Viewing area: 36.0" w x 27.6" high (91 x 70 cm).
- Inner and outer pivoting transfer chamber doors, counterbalanced and equipped with quick-latches.
- Interior right-hand side wall-mounted electrical receptacle (duplex on 100/115 volt models) with 10 amp maximum.
- Interior left-hand side wall-mounted pass-through with plug.
- Two internal valves to convert the glove box from a flow-through filtered box to an inert atmosphere glove box.
- Pair of neoprene gloves, 0.015" thick, 30" long, size 9 3/4.
- Switches for light, blower and electrical receptacle.
- Two 8" ID, epoxy-coated aluminum, double-grooved glove ports with neoprene gaskets.
- Two 25-watt fluorescent lights.
- Dry-powder epoxy-coated, 18 and 20 gauge steel exterior panels.
- ETL listing, UL 61010-1 and CAN/CSA C22.2 No. 1010.1 conformity (North America models).
- CE Conformity Marking (International models).

Filtered glove box features:

- Particulate containment <20 nano-grams per cubic meter (naproxen sodium surrogate) as confirmed by SafeBridge Consultants, Incorporated.
- Fast "clean up" time. 0.05 ppm average tracer gas levels or less detected during perimeter scan testing (surpasses ASHRAE 110 standards) after 5 minute dilution.
- Airborne particulate cleanliness (measured under positive and negative pressures per ISO 14644-1 test method) exceeds ISO Class 4 conditions and achieves ISO Class 3 conditions.
- Inlet and outlet particulate (HEPA or ULPA) filters to prevent contaminants from entering or leaving the glove box chamber.
- Test port for challenging HEPA or ULPA filter integrity.
- True Bag-In/Bag-Out Filter Disposal System for safe filter removal and replacement.
- Built-in blower with speed control capable of airflow from 15 CFM to 85 CFM depending on voltage and frequency.
- Mutable, audible/visual low airflow/pressure alarm.

Controlled atmosphere glove box features:

- Exceed Class 1 atmosphere containment conditions for oxygen permeation <1.67 ppm/min per ISO 10648-2 test method.
- Four manual valves with 3/8" compression fittings—two on the main chamber and two on the transfer chamber.
- Automatic control of the main chamber pressure (-5 to +5 inches of water gauge), main chamber evacuation and filling cycles (up to 499 cycles), and transfer chamber evacuation and filling cycles (up to 199 cycles).
- Regulation of vacuum/pressure between -5 and +5 inches of water gauge in the main chamber and between 0 and -29.5 inches of mercury in the transfer chamber.
- Mutable, audible/visual alarm that sounds when pressure/vacuum level is outside set limits.
- Three-position foot pedal (increase gas/fill, off, evacuate/decrease gas).
- Input/output port for optional AtmosPure® Re-Gen Gas Purifier.
- Factory-installed, rear-mounted, low profile stainless steel pressure relief bubbler at ± 6 inches of water gauge.
- Two rear-mounted inlet and outlet 3/4" OD compression fittings for easy connection to optional AtmosPure® Re-Gen Gas Purifier or other accessory drying train.

Fiberglass-lined models feature:

- Inlet and outlet HEPA filters, 99.99% efficient on 0.3 micron particulates.
- One-piece molded fiberglass liner with clear acrylic inner and outer transfer chamber doors.
- Performance tested to maintain oxygen levels as low as 0.4 ppm and moisture levels as low as 2 ppm.
- Oxygen permeation <0.3 ppm/min per ISO 10648-2.
- Illumination exceeds 120 footcandles.

Stainless steel-lined models feature:

- Inlet and outlet ULPA filters, 99.999% efficient on 0.12 micron particulates.
- Type 304 stainless steel liner with Type 304 stainless steel inner and outer transfer chamber doors. Type 304 stainless steel front panel.
- Performance tested to maintain oxygen levels as low as 0.2 ppm and moisture levels as low as 1 ppm.
- Oxygen permeation <0.16 ppm/min per ISO 10648-2.
- Illumination exceeds 80 footcandles.

Double width models feature:

- Inlet and outlet ULPA filters, 99.999% efficient on 0.12 micron particulates.
- Type 304 stainless steel liner.
- Type 304 stainless steel inner and outer transfer chamber doors.
- Type 304 stainless steel front panel.
- Four fluorescent lights.
- Illumination exceeds 80 footcandles.
- Centrally-mounted electrical receptacle.
- Two viewing windows.
- Four neoprene gloves and glove ports.

All models require:

- Supporting base. Adjustable Height Mobile and Stationary Base Stands are available. See pages 23-24.
- Vacuum pump for evacuating. Rotary Vane Vacuum Pumps are available. See page 19.
- Inert gas for filling. Contact your laboratory supply distributor.

Options include:

- Factory installed left side door. See page 24.

See pages 9 and 18-22 for ordering information on optional accessories. See pages 16-18 for ordering information on the AtmosPure Re-Gen Gas Purifier.

See page 15 for dimensional data.

■ Exclusive Feature

Protector® Controlled Atmosphere & Combination Glove Boxes

ORDERING INFORMATION

Use this key to configure the **seven digit catalog number** to order your Protector Controlled Atmosphere or Combination Glove Box. For example, a **5080110** is a Protector Controlled Glove Box with Automatic Pressure Control, stainless steel liner and North America, 100-115 volts receptacle and plug type.

Configure Your Protector Controlled Atmosphere or Combination Glove Box Catalog Number:

5 0 8 0 1 1 0

The first four digits indicate operation type.

The last two digits indicate receptacle and plug type.

The fifth digit indicates liner type.

Step 1. Choose one of two options:

Option 1:

Manual valve operation. The first four digits are **5060**.

Option 2:

Auto Pressure Control operation. The first four digits are **5080**.

Step 2. Choose one of two options:

Option 1:

Fiberglass lined. The fifth digit is **0**.

Option 2:

Stainless steel lined. The fifth digit is **1**.

Step 3.

Select your Receptacle and Plug Type.

Option 1: North America, 100-115 volts. The last two digits are **10** for single width controlled atmosphere, **12** for double width controlled atmosphere, **60** for single width combination, **62** for double width combination.

Option 2: British (UK). The last two digits are **31** for single width controlled atmosphere, **33** for double width controlled atmosphere, **65** for single width combination, **67** for double width combination.

Option 3: Schuko. The last two digits are **35** for single width controlled atmosphere, **37** for double width controlled atmosphere, **70** for single width combination, **72** for double width combination.

Option 4: China/Australia. The last two digits are **40** for single width controlled atmosphere, **42** for double width controlled atmosphere, **75** for single width combination, **77** for double width combination.

Option 5: North America, 208-230 volts. The last two digits are **45** for single width controlled atmosphere, **47** for double width controlled atmosphere, **80** for single width combination, **82** for double width combination.

Protector Controlled Atmosphere Glove Boxes

Base Catalog Number	Glove Box Width	Operation Type	Liner Material	Shipping Weight lbs./kg	Electrical Receptacle & Plug Type				
					North America 115 Volts	British (UK)*	Schuko*	China/Australia*	North America 230 Volts
50600	Single	Manual	Fiberglass	500/227	10	31	35	40	45
50601	Single	Manual	Stainless Steel	650/295	10	31	35	40	45
50601	Double	Manual	Stainless Steel	1300/590	12	33	37	42	47
50800	Single	Auto	Fiberglass	500/227	10	31	35	40	45
50801	Single	Auto	Stainless Steel	650/295	10	31	35	40	45
50801	Double	Auto	Stainless Steel	1300/590	12	33	37	42	47

*International electrical configuration

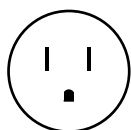
Protector Combination Glove Boxes

Base Catalog Number	Glove Box Width	Filter Type	Liner Material	Shipping Weight lbs./kg	Electrical Receptacle & Plug Type				
					North America 115 Volts	British (UK)*	Schuko*	China/Australia*	North America 230 Volts
50800	Single	HEPA	Fiberglass	500/227	60	65	70	75	80
50801	Single	ULPA	Stainless Steel	650/295	60	65	70	75	80
50801	Double	ULPA	Stainless Steel	1300/590	62	67	72	77	82

*International electrical configuration

Electrical Receptacle & Plug Configurations & Electrical Requirements

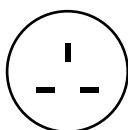
North America, 110-115 volts
100-115 volts, 50/60 Hz,
10 amps



For Catalog Numbers ending in 10, 12, 60 or 62



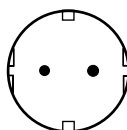
British (UK)
208-230 volts, 50/60 Hz,
10 amps



For Catalog Numbers ending in 31, 33, 65 or 67



Schuko
208-230 volts, 50/60 Hz,
10 amps



For Catalog Numbers ending in 35, 37, 70 or 72



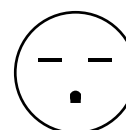
China/Australia
208-230 volts, 50/60 Hz,
10 amps



For Catalog Numbers ending in 40, 42, 75 or 77



North America, 208-230 volts
208-230 volts, 60 Hz,
10 amps

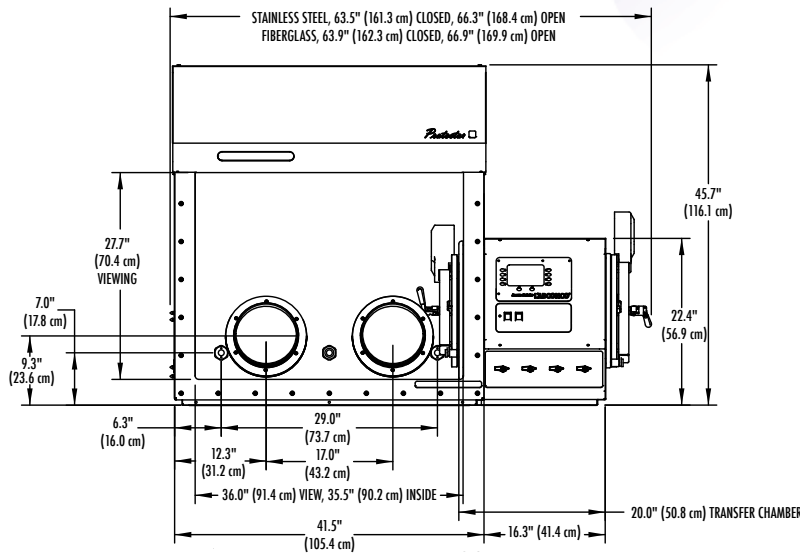


For Catalog Numbers ending in 45, 47, 80 or 82

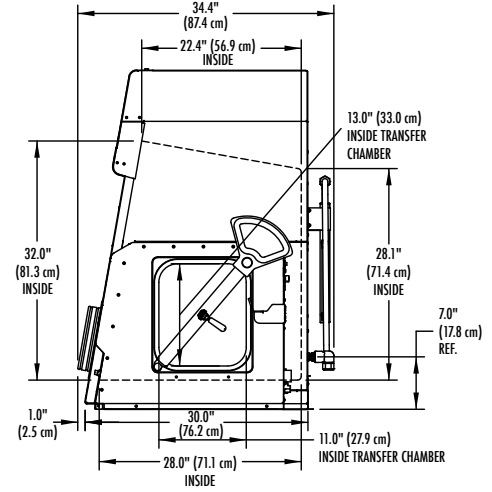


Protector® Controlled Atmosphere & Combination Glove Boxes

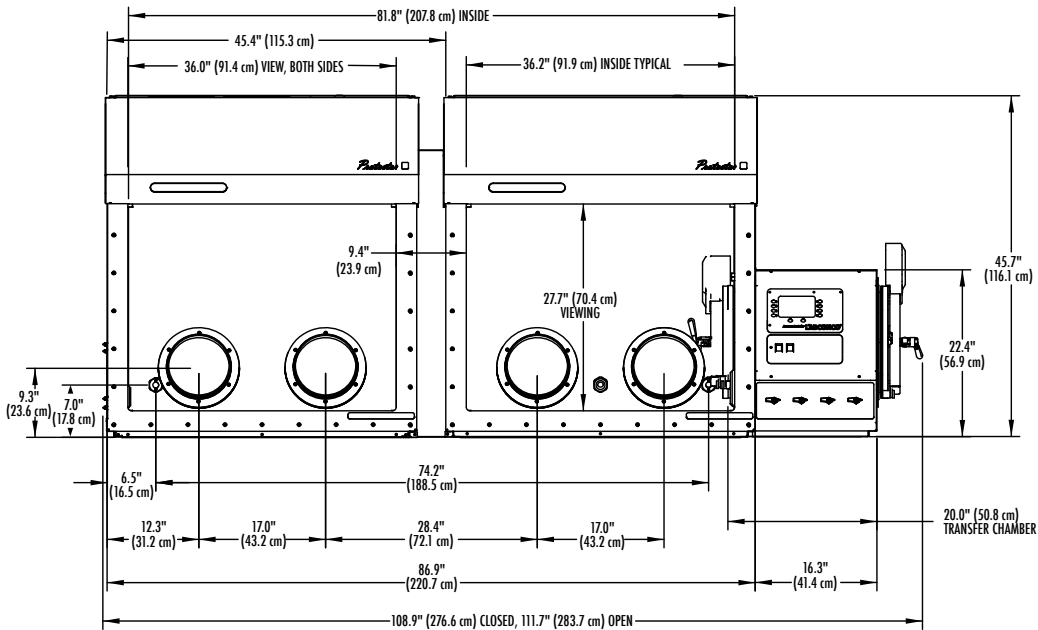
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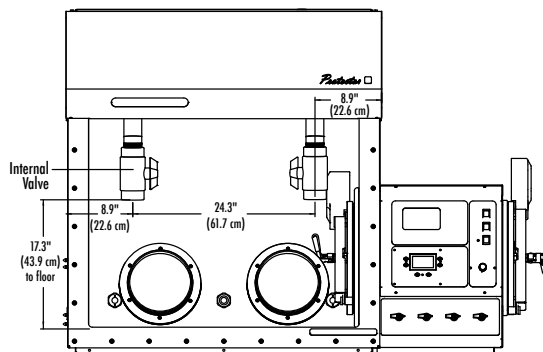
FRONT VIEW—SINGLE WIDTH MODELS



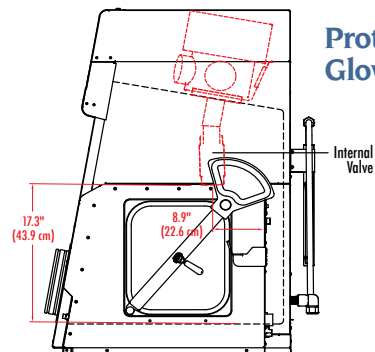
SIDE VIEW—ALL MODELS



FRONT VIEW—DOUBLE WIDTH MODELS



FRONT VIEW



SIDE VIEW

Protector Combination Glove Box Detail