

IndustrialTM Plankton

Installation Requirements PBR 1250L Algae Bioreactor



www.industrialplankton.com

PBR 1250L Installation Requirements

Customer is responsible for ensuring **all** the following requirements are met.
Contact support@industrialplankton.com with any questions or concerns.

Consumables

pH probe solutions

- ☐ 7 calibration solution
- ☐ 10 calibration solution
- ☐ Storage solutions
- ☐ Deionized water (for rinsing)

Cleaning solutions

- ☐ 70% alcohol (For any of rubbing, ethyl, or isopropyl alcohol)
- ☐ Biofilm removal agents (see User Manual for alternatives)
 - ☐ Muriatic Acid (33% HCl)
 - ☐ Steris CIP 100® (Sylvain Simard @: Sylvain_simard@steris.com for supply)
- ☐ Bleach (4-12% sodium hypochlorite)
- ☐ Sodium thiosulphate (bleach neutralization)

Culture reagents

- ☐ Compressed carbon dioxide gas cylinder (pH control). The regulator supplied with each PBR will be a CGA320 threading in North America and BS341#8 threading internationally (see order confirmation). Ensure cylinder thread matches regulator supplied. We recommend a 25kg (50lb) cylinder per PBR 1250L. This will usually last ~2 months before needing to be refilled.
- ☐ Nutrient stock solutions. For marine algae, the commercially available (Proline or Fritz) Guillard's F/2 concentrates are suitable: Part A, B & silicate (diatoms only) are all required. If using other nutrient stock solutions, please contact support@industrialplankton.com with your recipe.
 - ☐ The PBR is equipped with two nutrient stock solution filters. The right nutrient pump is not filtered, as Silica will clog the 0.2 µm filter.
- ☐ Clean algae culture (inoculum)
 - ☐ Equip inoculum vessel with a [Female Quick Disconnect Fitting](#) (two supplied per PBR with 3/8" ID barb) and 0.2 µm air inlet and vent filters (not supplied).

Supplies and Equipment

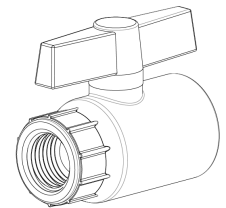
- ☐ Autoclave or steam sterilizer (sterilizing of inoculum-media, PBR's components, and non-filtered nutrient stocks)
- ☐ Aluminum foil and/or autoclavable bags (maintaining sterility of autoclaved components)
- ☐ Spray bottle(s) with adjustable mist setting (alcohol sanitizing fittings)
- ☐ 5 gal/20 L bucket (calibrating Harvest Pump)
- ☐ 1000 mL & 100 mL graduated cylinders (calibrating Nutrient Pumps)
- ☐ Soft cotton rags (wiping acrylic)
- ☐ 0 - 500 g capacity scale (weighing reagents)
- ☐ Stepladder
- ☐ Carbon dioxide monitor/alarm (recommended around any CO₂ source)
- ☐ Pallet jack and/or forklift (moving/placing empty PBR)

Infrastructure

- ☐ Room temperature
 - Ensure ambient room temperature is appropriate for the bioreactor's temperature control system Refer to [technical specifications](#) for details.
- ☐ Doorway clearance
 - Refer to [technical specifications](#) for **as shipped and minimum doorway dimensions**. Minimum doorway clearance requires uncrating equipment.
- ☐ Sturdy floor
 - ☐ Floor must safely support working weight of PBR.
 - ☐ Sealed concrete is recommended for biosecurity.
 - ☐ Floor should slope to drainage, to avoid standing water.
- ☐ Floor Drain
 - ☐ PBR is designed to gravity drain during cleaning.
 - ☐ Drain should be within 7 m of the PBR.
 - ☐ Cleaning fluids should drain to waste, not to waterways.
 - ☐ Never allow cleaning fluids to mix.
 - ☐ Most cleaners used are biodegradable through dilution, but check local discharge regulations to ensure compliance.


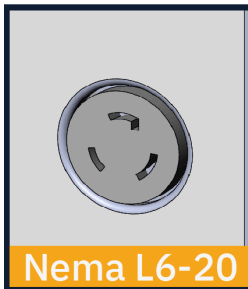

PBR 1250L Installation Requirements

- ☐ Wireless Router with internet connection in range of PBR
 - ☐ Network firewalls may interfere with remote connection. Contact your network administrator to ensure remote access will be usable if desired. Wired connection possible using USB to Ethernet adapter
- ☐ Protection from the elements
 - ☐ PBRs should be protected from direct sunlight, or rain. Greenhouses are acceptable, but may require a larger integrated chiller or shade cloth to maintain acceptable culture temperatures.
- ☐ Ventilation
 - ☐ PBRs should be well ventilated to disperse heat produced. Ventilation is beneficial when working with compressed gases and cleaning agents.
- ☐ Continuous water supply for culture media (salty or fresh water)
 - ☐ Customer to equip supply with ½" female national pipe thread ball valve. Industrial Plankton supplies [½" MNPT adapter](#).
 - ☐ Water Supply should be constant (24 hours/day, 7 days/week)
 - ☐ Pressure: 0.3-4.1 bar (5-60 PSI)
 - ☐ Water chemistry needs to be suitable for algae growth (free of chlorine or other chemicals which inhibit growth)
 - ☐ Water should be filtered down to 1µm (nominal) prior to header tank.
- ☐ Freshwater supply for cleaning
 - ☐ Free of particulate (<20 µm)
 - ☐ Municipal water is generally suitable
 - ☐ Equipped with a hose for filling PBR during cleaning process (¾" Garden hose threading). Industrial Plankton supplies [this](#).
- ☐ **Three (3)** Power Electrical Receptacles sized and installed in accordance with local regulations **per PBR 1250L**
 - ☐ In-use covers are recommended for all outlets installed around water sources. Ensure covers are large enough to accommodate plugs: 5 in for Nema L5-30 and L6-20 , 3 in for Type B (Nema 5-15)
 - ☐ Main PBR Plug is equipped with GFCI circuit breaker inside control box. Please notify support@industrialplankton.com if facility breaker has GFCI installed and the internal GFCI will be removed.



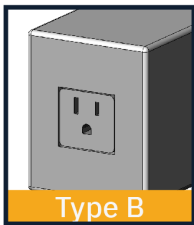
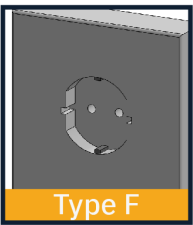
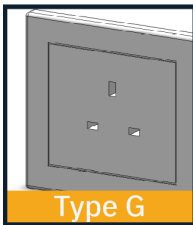
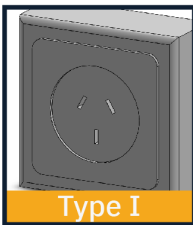

PBR 1250L Installation Requirements

☐ **1 x Main PBR Power Receptacle (Refer to Order Confirmation)**

Main PBR Options:	 Nema L5-30	 Nema L6-20	 IEC 60309
Circuit Requirement:	110-120 V 60Hz Max Draw: 2690W / 115V / 23.6A	220V-240V (NOT 208V) 60Hz Max Draw: 2910W / 230V / 13.8A	220V 50Hz Max Draw: 2600W / 220V / 12.2A

☐ **1 x Temperature Control System &**

☐ **1 x Header Power Receptacle (Refer to Order Confirmation)**

Outlet Option	 Type B	 Type F	 Type G	 Type I	 Type M
Temp. Control System	110-120 V 60 hz Max Draw: 810W / 115V / 9.1A	220-240 V 50 hz Max Draw: 1030W / 230V / 5.6A	220-240 V 50 hz Max Draw: 1030W / 230V / 5.6A	220-240 V 50 hz Max Draw: 1030W / 230V / 5.6A	220-240 V 50 hz Max Draw: 1030W / 230V / 5.6A
Header	110-120 V 60 hz Max Draw: 450W / 115V / 4.3A)	220-240 V 50 hz Max Draw: 450W / 230V / 2.2A)	220-240 V 50 hz Max Draw: 450W / 230V / 2.2A	220-240 V 50 hz Max Draw: 450W / 230V / 2.2A	220-240 V 50 hz Max Draw: 450W / 230V / 2.2A

☐ Both Header and Temperature Control System do not include an internal GFCI. Ensure all wall receptacles are equipped with GFCI style outlets and in-use covers around liquids.

PBR 1250L Installation Requirements

Specifications

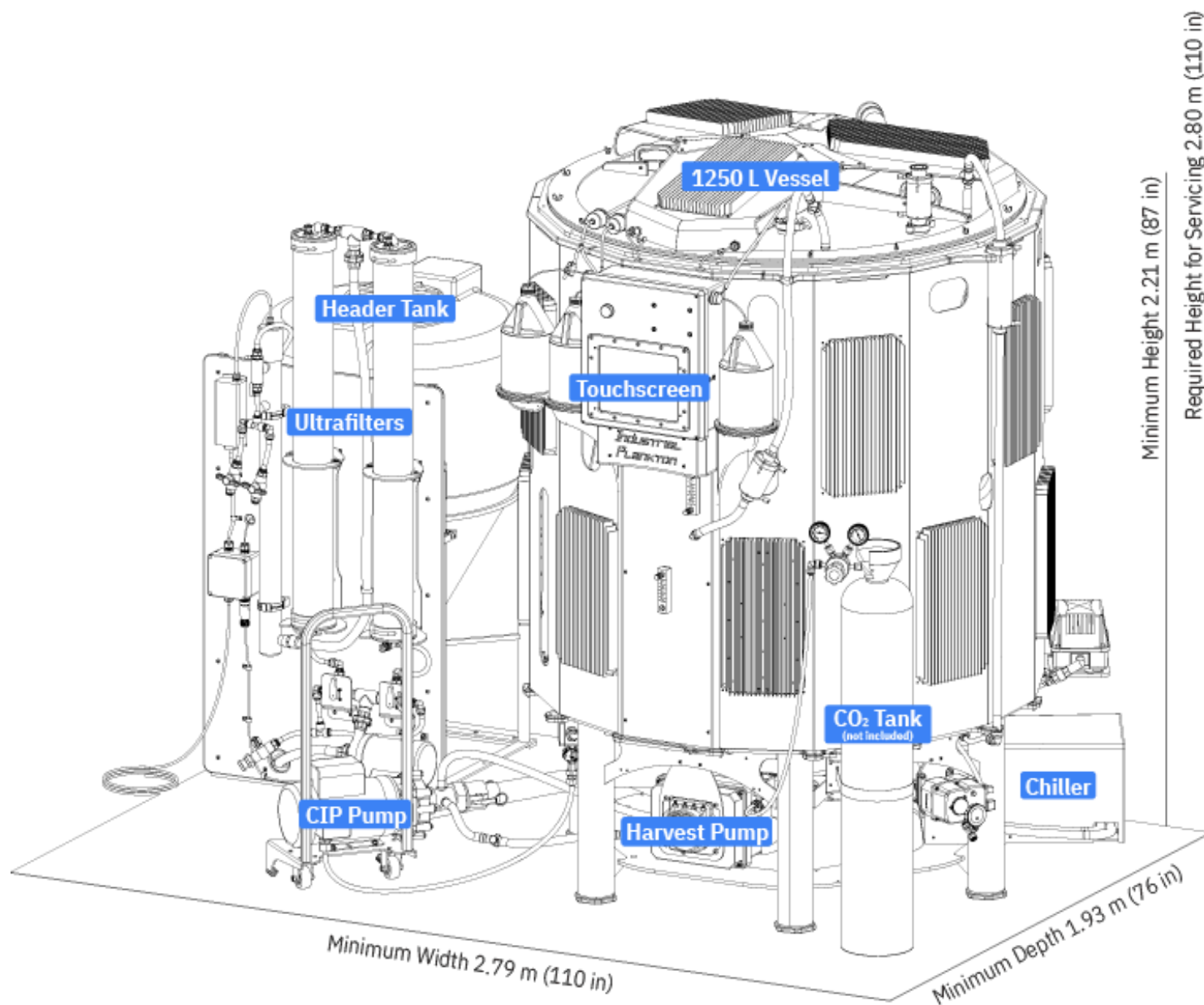
Volume	1250 L / 330 gal
Working Volume	1200 L / 317 gal
Minimum Volume	160 L / 42 gal
Max Power Consumption	4,170 W
Max Heat Energy	14,200 BTU / hr
Avg. Steady State Power Req.	3,160 W
Avg. Heat Energy	10,780 BTU / hr
Available Voltages (AC)	110-120 / 220-240 V
Available Frequencies	60 / 50 Hz
Ideal Working Space (LxWxH)	3.05 m x 2.44 m x 2.79 m 120 in x 96 in x 110 in
Operational Weight	2,130 kg / 4,700 lb
Doorway Clearance (WxH)	1.51 m x 2.02 m 59 ¹ / ₂ in x 79 ⁷ / ₈ in
PBR 1250L as shipped (LxWxH) (Wt)	1.93 m x 2.03 m x 2.18 m 76 in x 80 in x 86 in 910 kg / 2,000 lbs
Header Tank as shipped (LxWxH) (Wt)	1.19 m x 1.19 m x 1.80 m 47 in x 47 in x 71 in 140 kg / 300 lbs

Specifications subject to change without notice

The standard chiller can maintain a temperature drop of 3°C below ambient temperatures up to 28°C, yielding a 25°C culture. If ambient temperatures are above 28°C ask about the High Ambient Temperature Option

PBR 1250L Installation Requirements

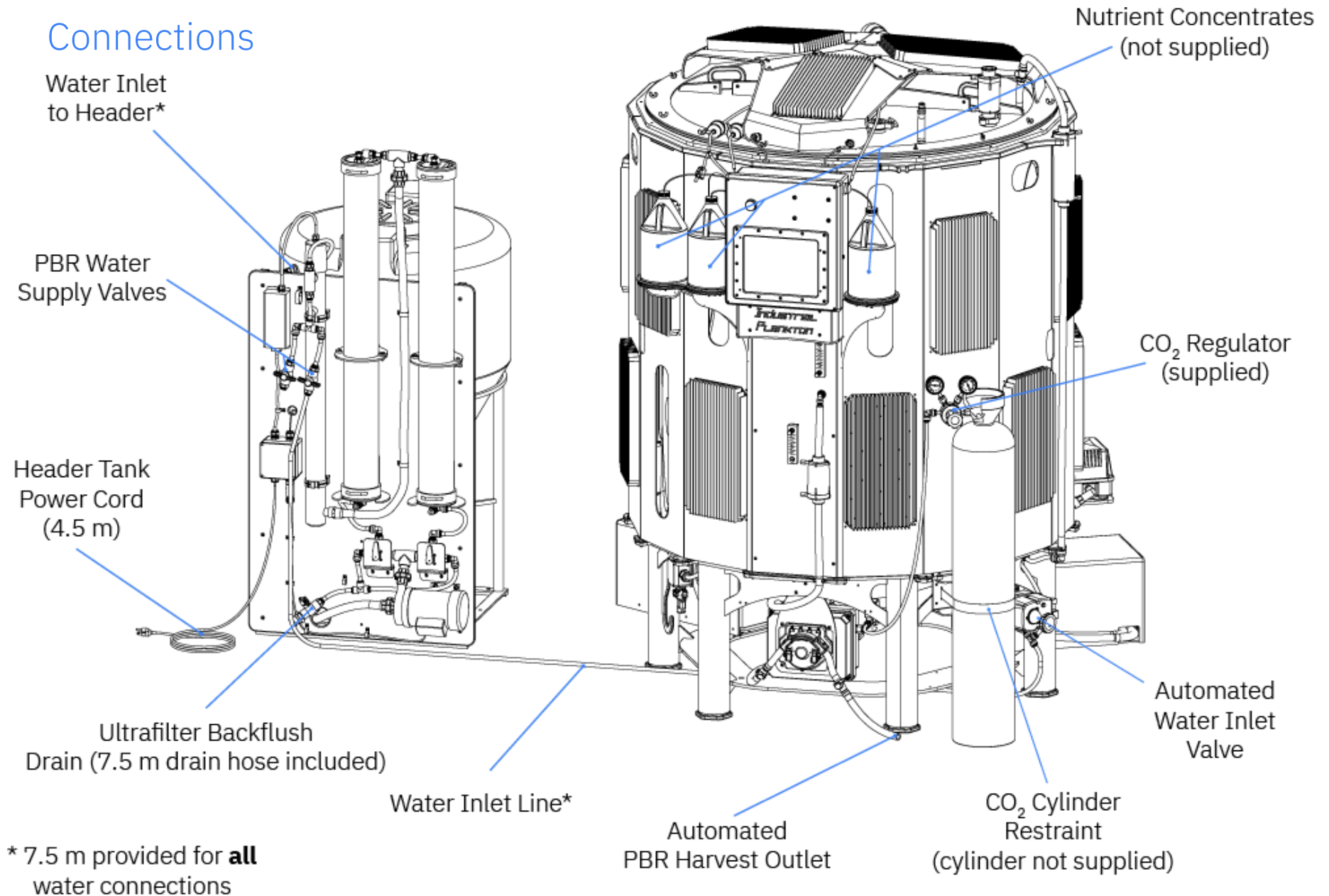
Dimensions



PBR 1250L Installation Requirements

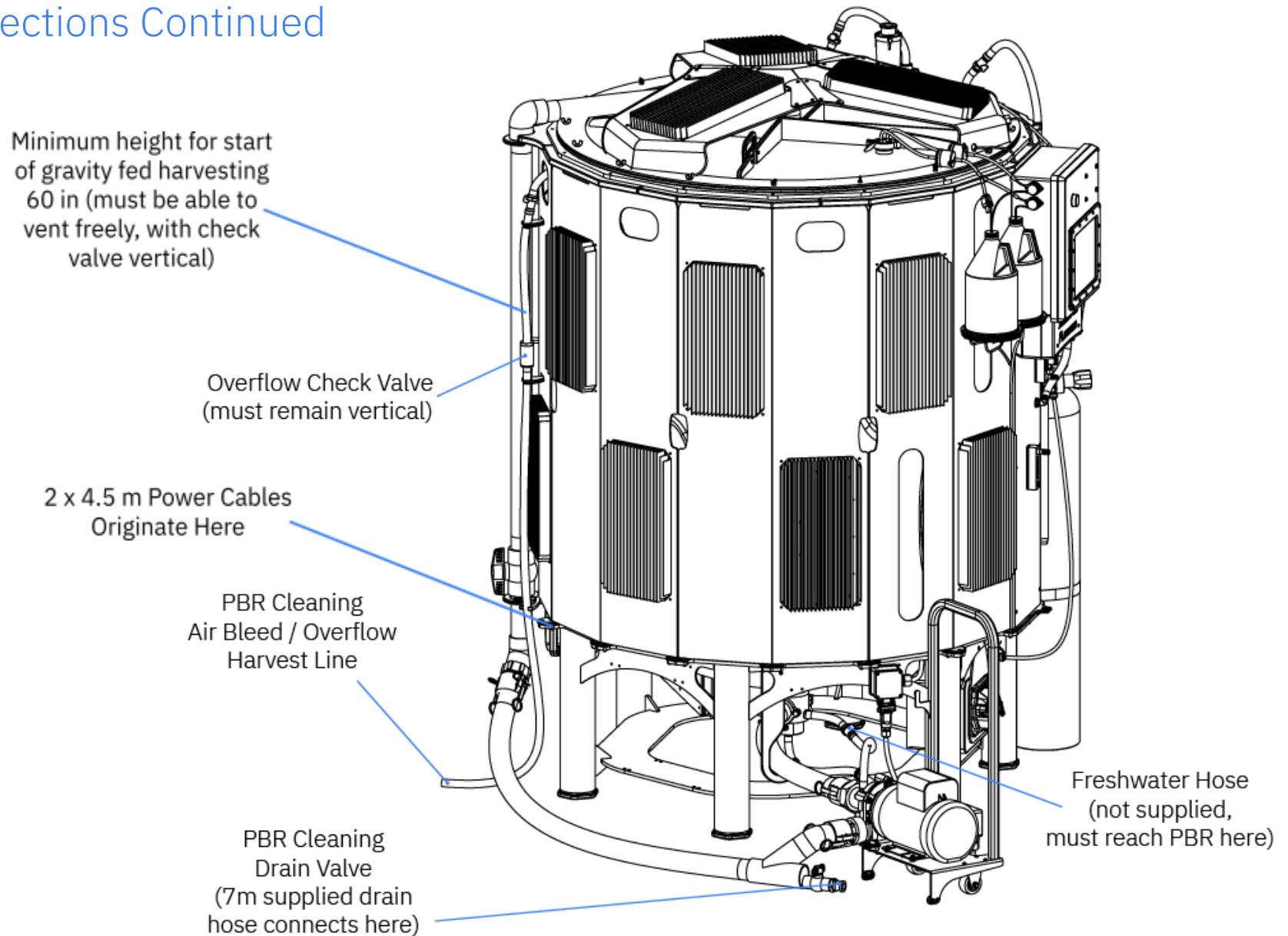
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Connections



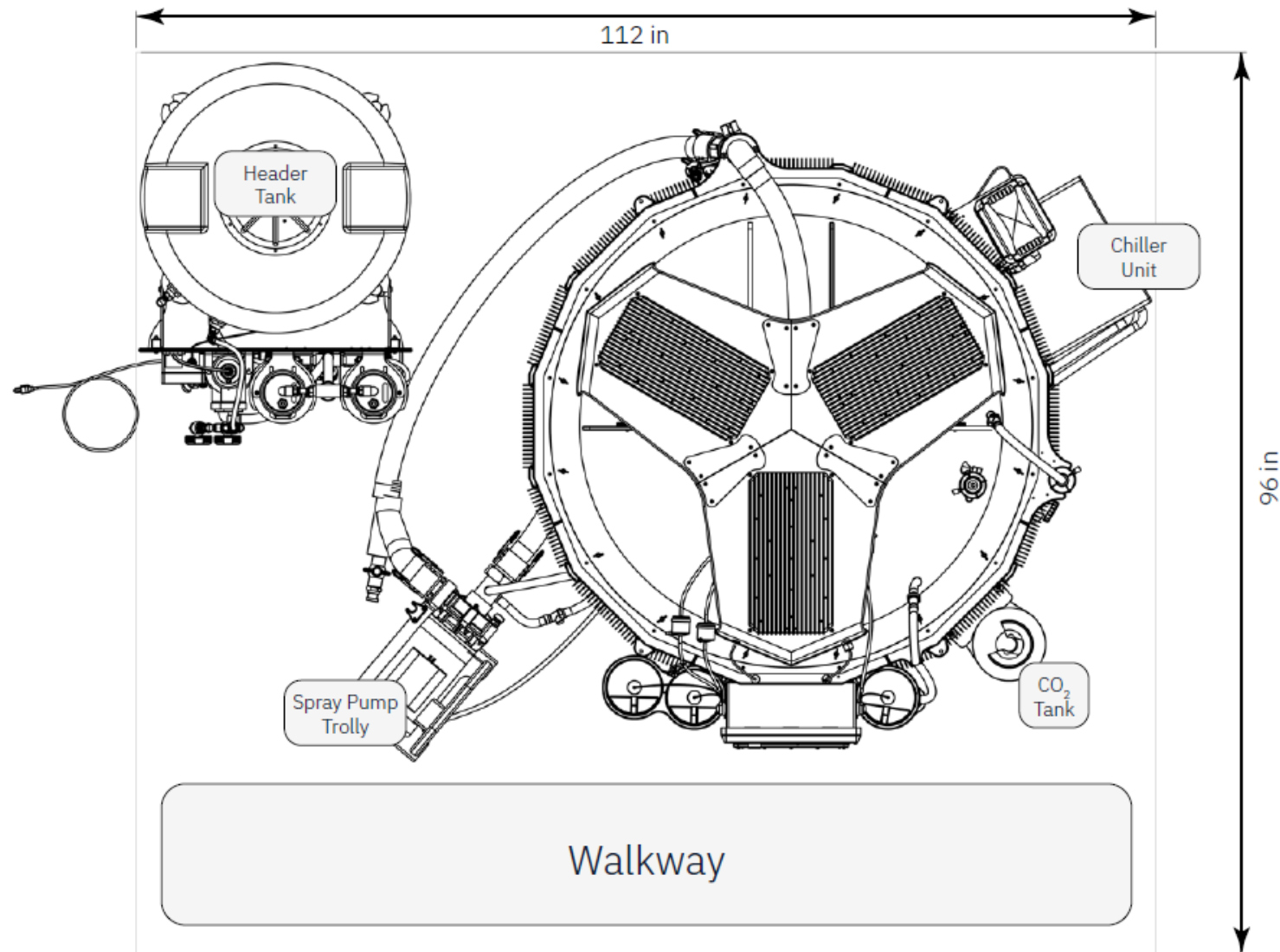
PBR 1250L Installation Requirements

Connections Continued



PBR 1250L Installation Requirements

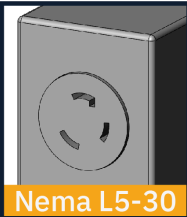


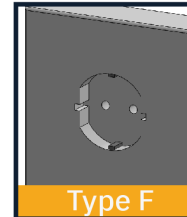
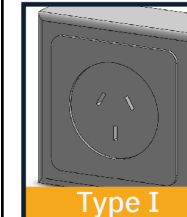
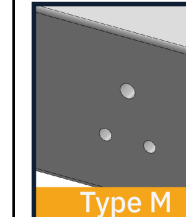
PBR 1250L Top View with Header Tank



PBR 1250L Installation Requirements

High Ambient Temperature Option PBR 1250L

- ☐ **Requires 1 x** High Ambient Temperature Control System Outlet
 - ☐ This larger outlet replaces the Temperature Control System Outlet indicated above, **ONLY** for High Ambient Temperature PBR 1250L.

Outlet Option	 Nema L5-30	 Nema L6-20	 IEC 60309	 Type F	 Type I	 Type M
High Ambient Temp. Control System	110-120 V 60 hz Max Draw: 2060W / 115V / 18.2A	220-240 V (NOT 208 V) 60 hz Max Draw: 2060W / 230V / 11A	220-240 V 50 hz Max Draw: 2060W / 230V / 10.6A	220-240 V 50 hz Max Draw: 2060W / 230V / 10.6A	220-240 V 50 hz Max Draw: 2060W / 230V / 10.6A	220-240 V 50 hz Max Draw: 2060W / 230V / 10.6A

High Ambient Specifications

Volume	1250 L / 330 gal	Ideal Working Space (LxWxH)	3.05 m x 2.44 m x 2.79 m 120 in x 96 in x 110 in
Working Volume	1200 L / 317 gal	Operational Weight	2,220 kg / 4,900 lb
Minimum Volume	160 L / 42 gal	Doorway Clearance (WxH)	1.70 m x 2.02 m 67 in x 79 ^{7/8} in
Max Power Consumption	5,200 W	PBR 1250L as shipped (LxWxH) (Wt)	1.93 m x 2.29 m x 2.18 m 76 in x 90 in x 86 in 1,000 kg / 2,200 lbs
Max Heat Energy	17,700 BTU / hr	Header Tank as shipped (LxWxH) (Wt)	1.19 m x 1.19 m x 1.80 m 47 in x 47 in x 71 in 140 kg / 300 lbs
Avg. Steady State Power Req.	4,130 W		
Avg. Heat Energy	14,100 BTU / hr		
Available Voltages (AC)	110-120 / 220-240 V		
Available Frequencies	60 / 50 Hz		

Specifications subject to change without notice

PBR 1250L Installation Requirements

High Ambient Temperature Dimensions

