



RDL Series Carbon Bed Manual



The HP Series Carbon units are used on treatment applications where standard flow volumes are required with minimal backpressure. This family of vessels includes HP500RDL - HP2000RDL vessels.

These units offer a 25%+/- freeboard area for excellent backwash ratios. Typical applications are groundwater remediation for VOCs or industrial sites with similar applications. Several media types are available for removal of more specific compounds such as metals and other contaminants. Aggregate media specifically designed to be backwashed is also available.

Important: De-gas Carbon Vessels before use, gas can build up within the vessel and damage the internals or cause vessel failure due to pressure build up. Please refer to the appropriate vessel datasheet for pressure ratings.

PRM accepts no liability for system degassing and safety relief systems nor any damages that may arise from them. It is the project engineer's responsibility to ensure that the design includes these devices and that adequate degassing is installed to mitigate the potential buildup of gasses inside of vessels. If these are not installed, serious damages or injury could occur. PRM is expressly not responsible for all installations and any damages due to leaks, ruptures, bursting or other damages caused by improper installation or pressure maintenance.

De-Gas Carbon Vessels

Proper degassing of a vessel is a couple of simple steps.

1. Hook up a freshwater source to the effluent port (discharge) of the carbon vessel or fill the vessel from the top with the lid open.
2. Open the top vent (if filling from the bottom) and the influent port to allow for proper airflow.
3. Turn water on to push water and air up and out the top of the vessel.
4. Turn off the water source and close ball valves.
5. Arrange hose in proper arrangement with the influent and effluents connected.
6. Once water is pumping through the vessel, the operator must open the vent on the lid. Be careful as water will shoot out once full. This step allows the system to remove any additional air from the vessel and to ensure the vessel is completely full of water with no vapor traps.

PRM is expressly not responsible for all installations and any damages due to leaks, ruptures, bursting or other damages caused by improper installation or pressure maintenance.

Vessel Lid Closing

The RDL series vessels are unique in that they have a removable dome top. The vessel domes can be swung out of the way to service the interior media or laterals. When closing the dome, please ensure that the bolts are torqued evenly onsite to prevent leakage. Never overtorque the vessels. Maximum Torque ratings are as follows: 220 Nm. Vessel lids should be torqued with an appropriate torque wrench and ratings should not be exceeded. PRM recommends that eyebolts be periodically lubricated with an anti corrosion thread lubricant to extend life.

Inspections

Annually have an inspection performed and documented on the vessel. The vessel internal linings as well as exterior coating should be inspected. Lining inspections during changeouts is always best. Repair or replace defective components or repair linings as required.

Backwashing Carbon Vessels

As the volume of water treated increases, pressure drop across a carbon vessel may increase thus decreasing flow rate. If this occurs, each vessel can be back washed to remove any fine sediments. This will reduce the pressure drop and increase the flow rate. The system must be shut down before a backwash can begin. Backwash water should be discharged into a storage tank where it can be reprocessed. It is recommended to use clean water to perform backwash operations, but it is not required.

The procedure for backwashing is as follows:

1. Turn off the feed pump and shut down the water treatment system.
2. Close influent and effluent valves on the vessel to be backwashed.
3. Disconnect the influent hose from the vessel to be backwashed.
4. Connect backwash discharge hose.
5. Connect hose from the back wash feed pump (customer supplied) to the backwash influent for the vessel.
6. Ensure appropriate valves are opened and closed before activating the backwash feed pump.
7. Turn on the backwash feed pump to commence backwash.
8. Observe clarity of backwash discharge.
9. Back wash for 5 to 20 minutes (depending on clarity)
10. Once complete, shut down the backwash feed pump and return system to original configuration. The duration of the backwash is determined by the clarity of the backwash discharge. The more clarity present, the better the back wash.

Please consult with engineering to ensure that proper flow is achieved based on the size of the carbon bed. This is typically done by reviewing the specific carbon type to ensure that the proper superficial velocity is achieved for carbon backwashing.

Additional Notes:

- Vessels should not be accessed and closed in by site personnel. Carbon absorbs oxygen and an enclosed vessel will deprive the atmosphere of oxygen.
- Only service carbon beds with a 2 or more person buddy system.
- Handle spent carbon using appropriate PPE. Absorbed contaminants could be dangerous.
- Make sure the O-ring seal is always intact. Replace as necessary.
- Never under any circumstances are the vessels to be charged with air or gasses. The vessel is only designed to be filled with media and water for treatment.

VESSEL NOTES:

Please keep track of your vessel operation

DATE OF VESSEL INSTALLATION: _____

PRM CONTACT: _____

DATE OF STARTUP: _____

OPERATING PRESSURE / FLOW: _____

Additional Notes
