

# Fiberglass Vessels: Vacuum Cleaning and Resin Installation Guidelines

Learn tips to performing a vacuum out, parts replacement and resin installation in fiberglass vessels.

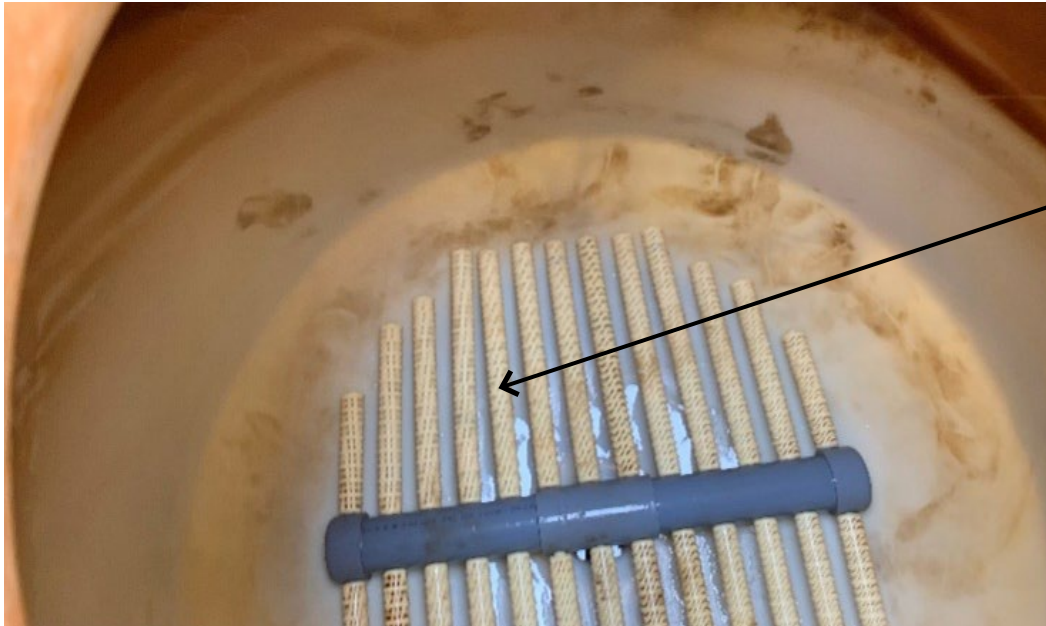
# Fiberglass Vessels: Vacuum Cleaning and Resin Installation Guidelines

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## Introduction

The Ecolab team was tasked with performing a vacuum out, and installation of [FerrIX™ A33E](#) polystyrenic macroporous resins in fiberglass vessels.



Pictured is the original hub and lateral system located at the bottom of the fiberglass tank.

Broken lateral

## Vacuumping the Vessels

In this example, the system treated arsenic for drinking water with Ferrix A33E resin. Removing all of the resin is essential during a resin exchange so that no spent resin contaminates the effluent of the new resin. A standard vacuum nozzle is three inches (7.6 cm). In order to get between the laterals to remove all of the spent resin out of the vessel, an attachment was constructed to reduce the nozzle size to 3/4 inch (1.9 cm).

Collection systems which sit on the bottom of the tank are challenging because the laterals are fragile. During extraction of resin in this case, one lateral was broken as shown in Figure 1. Subsequently, the collection system needed to be replaced to prevent resin beads from escaping the vessel and getting into the city's distribution system.

# Hub and Lateral Replacement

A replacement hub and lateral was constructed from Schedule 80 pipe and fittings. The new laterals had 300-micron laser cut slots along its length.

## Advantages

- A stronger, more robust lateral system.
- Improved ability to access the bottom of the vessel with a standard vacuum nozzle as compared to the original configuration.
- Creation of additional space on the bottom of the vessel was taken advantage of to install a small sump pump to pump out the wash water and the last bit of resin.
- Provided a “safe” zone to aim the slurry hose while refilling the vessel instead of being as concerned about the fragile laterals in the previous configuration.

## Disadvantages

- Useful bed depth is lost, but the loss is minimal compared to the advantages of a stronger collection system.



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Replacement hub  
and lateral.

Stainless steel laterals can be installed instead of the plastic ones for increased strength; however, the issue of complete removal remains if the laterals extend across the full bottom of the vessel.

## Installation of Resin

The vessel was filled with a water “cushion” to a level above the collector system prior to installing the new resin. The resin was mixed with water to form a slurry, then using an air operated diaphragm (AOD) pump, the resin was pumped into the treatment vessel. The open spaces between the crossed laterals provided a safe place to aim the incoming flow and prevent damage to the collection system.

The installation of resin is covered in detail on our website.  
To learn more, visit [Loading and Commissioning Ion Exchange Resins](#).

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