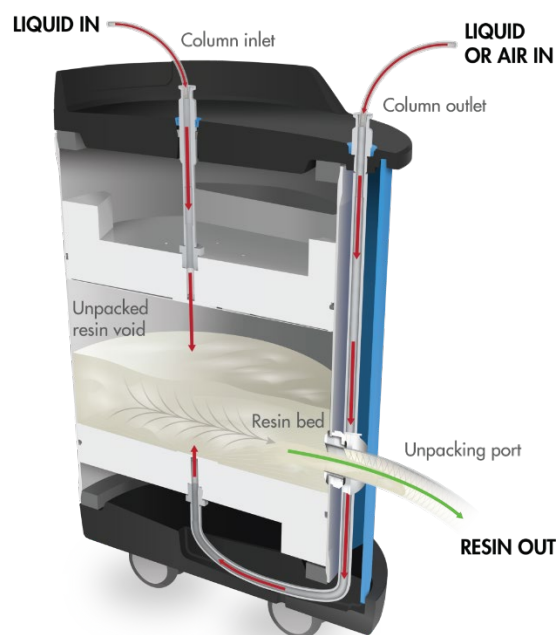


# OPUS<sup>®</sup> 36R – 80R Pre-packed Columns Resin Removal

## User Guide



OPUS 36R-80R Resin Removal Guide-4

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**Abbreviations**

|     |                        |
|-----|------------------------|
| cm  | centimeter             |
| CV  | column volume          |
| hr  | hour                   |
| L   | liter                  |
| min | minute                 |
| psi | pounds per square inch |

## 1. Introduction

This document provides instructions for removing the resin from OPUS® 36R – 80R Pre-packed Columns through the unpacking port, allowing the resin to be packed into other columns, if necessary.

## 2. Required materials

- Resin Recovery Tubing Assembly (CS-10524)
- Clamp (optional)
- Pump capable of  $\geq 25$  L/min flow
- Vessel to collect resin slurry (>100 L)
- Compressed air source (adjustable 2 – 5 psi)
- Approximately 5 column volumes (CV) of water or buffer to flush out resin

**Note:** An unpacking video is provided at [repligen.com](http://repligen.com). It is highly recommended that users view it prior to using the unpacking port.

## 3. Setup

1. Remove set screws with 3/16" hex key (**Figure 1**).

**Figure 1. Location of set screws**



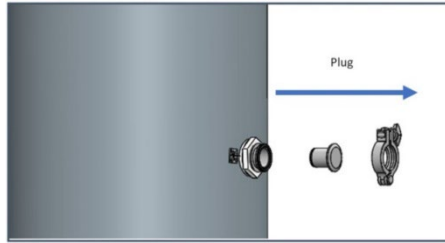
2. Remove sideguard by pulling down and lifting out. Cut tie-wrap on BioClamp® (**Figure 2**).

**Figure 2. Sideguard and tie-wrap removal**



- Remove BioClamp and pull out the OPUS R port plug, keeping inlet and outlet ports capped (**Figure 3**).

**Figure 3. Removal of BioClamp and plug**

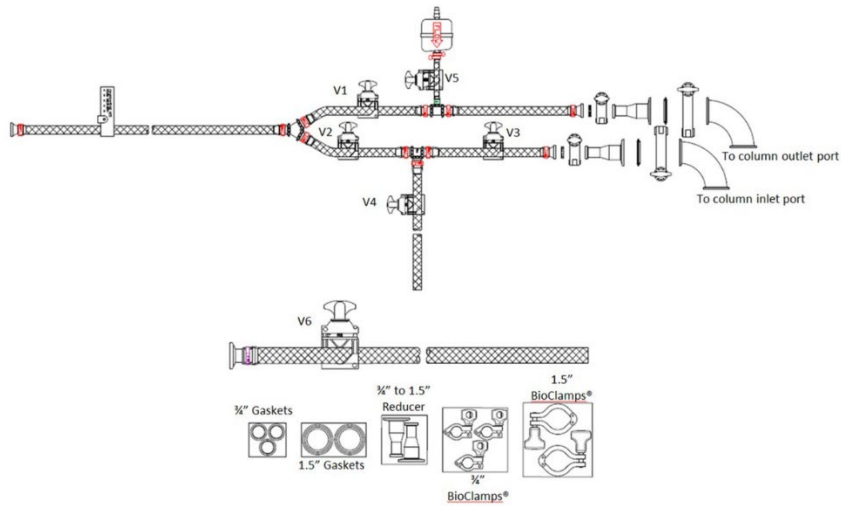


- Attach tube set (**Figure 4, Figure 5**).

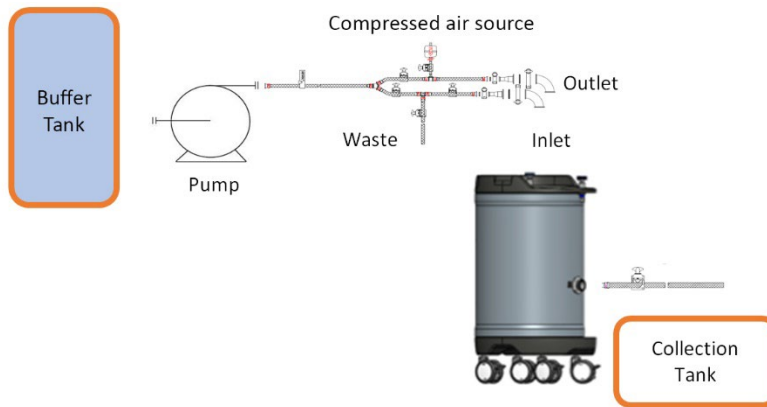
**Note:** The tube set is provided with labeled valves.

**Note:** Close all valves during setup.

**Figure 4. Tube set assembly**



**Figure 5. Diagram of tube set placement**



- a. Ensure compressed air source is in-line with the column outlet port.
- b. Attach tube set inlet to column inlet. Attach tube set outlet to column outlet
  - i. Use 1" reducers to connect to OPUS 36R or 45R inlet and outlet ports
  - ii. No reducers are required for OPUS 60R or 80R ports.
- c. Attach the tubing set to the inlet and outlet ports using clamps appropriate to the column size.
  - i. OPUS 36R or 45R Columns : ¾" BioClamps and gaskets
  - ii. OPUS 60R or 80R Columns: 1.5" BioClamps and gaskets
  - iii. All columns sizes: 1.5" BioClamp to connect the resin removal tube to the unpacking port

#### 4. Resin recovery procedure

**Note:** Please read and understand before removing the resin.

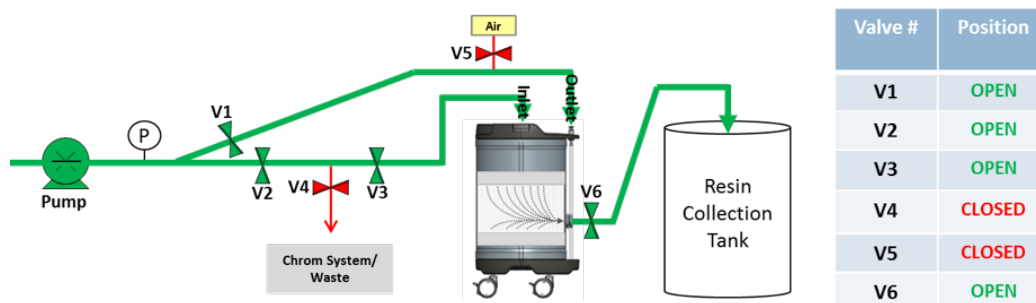
1. Attach the OPUS R tube set (Figure 5, Table 1).

**Table 1. Tube set valves**

| Valve     | Purpose                                  |
|-----------|--|
| V1        | Controls fluid flow to outlet port       |
| V2 and V3 | Control fluid flow to inlet port         |
| V4        | Controls fluid flow to waste             |
| V5        | Controls compressed air source           |
| V5        | Controls resin flow into collection tank |

2. Open valves V1, V2, V3, and V6 (Figure 6). Confirm valves V4 and V5 are closed.

**Figure 6. Valve positions (Step 2)**

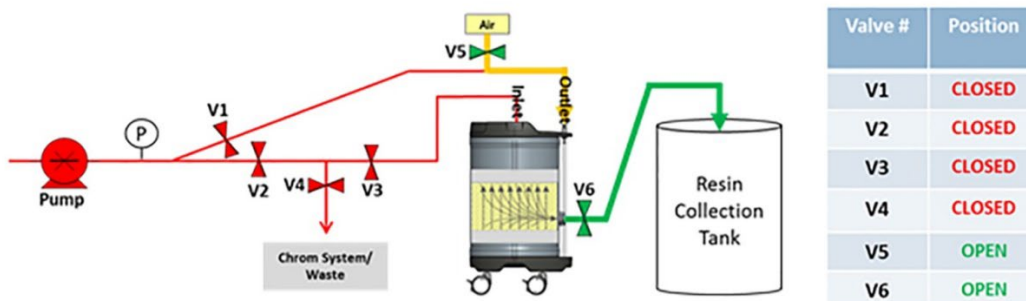


3. Using water (or preferred solution), ramp up the flow from 100 to 500 cm/hr over 1 – 2 minutes, providing flow to the inlet and outlet column ports simultaneously. The resin will begin to expel through the recovery side port.

**Note:** Do not exceed 1 bar pressure at the inlet port during this step.

- Stop the flow after 1 CV. Close valves V1, V2, V3, and V4. Open valve V5 and keep V6 open (**Figure 7**).

**Figure 7. Valve positions (Step 4)**



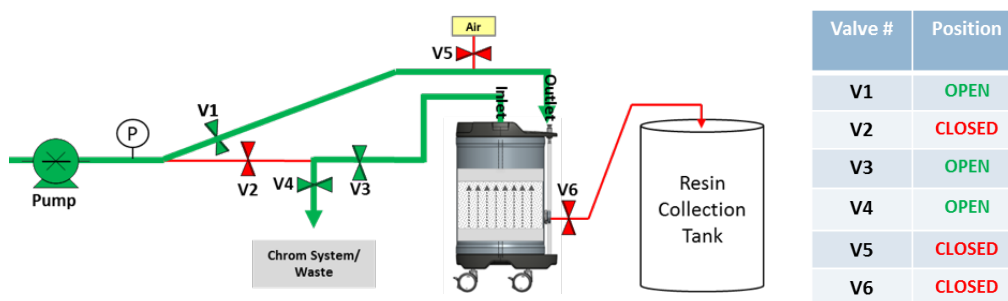
- Supply air at 0.5 bar through V5 (with V6 open) until all slurry has been removed through the port and only air is being evacuated.

**Note:** Ensure the recovery line is secured with a clamp to the resin collection tank. Pressure bursts of air mixed with slurry should be expected.

**Note:** It is not recommended to exceed 0.5 bar for the air supply.

- Open valves V1, V3, and V4. Close valves V2, V5, and V6 (**Figure 8**).

**Figure 8. Valve positions (Step 6)**



- Repeat steps 5 – 6 until all the resin (>90%, or what is deemed acceptable) has been removed. The amount of resin in the collection tank should be measured to determine the amount recovered.
- Follow resin manufacturer’s instructions for storage.

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