TO-Can Canister with RAVE Valve

Overview
A Restek TO-Can canister offers several important features. The inside surface is electropolished and passivated for excellent inertness. The unique holder attaches the handle and base to the canister without welds, and it protects the canister, tube stub, and valve. The diaphragm valve has a metal-to-metal seat, and all canisters and valves are leak checked to $1 \times 10^{-6}$ mL/sec. Each canister is slightly pressurized with contaminant-free nitrogen to approximately 15 psig (1.0 bar) prior to shipment.

Prior to Use
Restek TO-Can canisters are shipped under pressure!
1. Unpack the TO-Can canister from its box. Remove the ¼-inch brass cap from the top of the valve.
2. Turn the knob to the open position. Nitrogen should be released. If not, the system is not leak tight and should be returned. Please contact Technical Service, or your Restek representative, for a return material authorization (RMA) number. Please do not return the canister, or any other Restek product, without an RMA number and a completed health and safety declaration.
3. We recommend that you certify your canister is clean, according to U.S. EPA Compendium Methods, such as TO-12, TO-14A, TO-15, TO-15A, NJ Low Level TO-15, and China NEPS HJ 759, prior to use.

Cleaning for Reuse*
To clean a TO-Can canister and valve, we recommend a procedure such as that summarized here. We also recommend performing a blank analysis according to your method; for example, TO-15, after cleaning the canister to certify the canister is clean prior to reuse.

IMPORTANT PRECAUTIONS!
- Only hand tighten knob to close valve. Overtightening will damage the seat, causing leakage.
- Tighten compression fitting on valve inlet only ¼ turn past finger tight. Overtightening will cause leakage.
- Always use a prefilter during sampling to prevent particulate damage to valve.
- Do not disassemble valve—disassembly will void warranty.
- Protect valve inlet by replacing brass cap when not in use.
- Do not exceed canister maximum pressure of 40 psig (2.75 bar).

Typical Cleaning Method
1. Connect the canisters to the cleaning system, release any pressure within any of them, and evacuate them. Based on EPA Method TO-15, the ultimate vacuum achieved during cleaning should always be $<0.2$ mm Hg.
2. After the canisters have been under vacuum for approximately 1 hour, pressurize them with humidified air or nitrogen to 5 psig (0.34 bar) (if they will be heated during cleaning) or to 30 psig (2.0 bar) (if they will not be heated). Pressurization will dilute the contaminants and the water vapor will hydrolyze them. When the system has equilibrated at the designated pressure, proceed to step 3 (heating), or step 4 (no heat).
3. Heat the pressurized canisters to the appropriate temperature. A Restek TO-Can canister fitted with a gauge can be heated to 120 °C; a canister without a gauge can be heated to 140 °C.**
4. Allow the canisters to equilibrate for at least 1 hour. Evacuate the canisters to remove the impurities, then allow them to equilibrate for 1 hour.
Repeat steps 2–4 as necessary. The number of cycles will be determined by how dirty the canisters are and how easily they clean. Without heat, the number of cycles required to clean the canisters may be higher.

Certifying a Cleaned Canister
We recommend certifying canisters for both cleanliness and analyte stability. To certify a canister is clean, pressurize the cleaned canister to 30 psig (2.0 bar) with humidified, certified ultra-high purity air or nitrogen. Analyze an aliquot of the canister content by GC-MS, GC-FID, or GC-ECD. If a canister does not meet specification, it must be recleaned and retested.

Optional gauge
- Quickly confirm vacuum or pressure inside canister.
- Monitor pressure changes.
- Fully protected by canister frame.

Enhanced valve and canister bracket
Canister holder and valve bracket protect canister, tube stub, and valve.

Serial controlled
For quick, sure identification.

1¼" Tube stub
Allows user to interchange valves.

*For detailed information about cleaning, certifying, and using canisters, request A Guide to Whole Air Canister Sampling (lit. cat.# EVTG1073A) or search www.restek.com for “EVTG1073A.”

**To use temperatures above 120 °C to clean a TO-Can canister fitted with a gauge, you must remove the gauge and plug the gauge port prior to cleaning.
Reconditioning Service
Normal wear and tear on a canister may result in valve damage and leakage. We offer a reconditioning service in which we will replace the valve, clean, and leak test the canister for much less than the cost to replace the entire canister. If you would like this service, please follow the instructions below:
1. Contact Restek or your local Restek representative and place an order for cat.# 569419 (RAVE diaphragm valve) using your company purchase order.
2. Obtain a Service Authorization No. (SRV) to affix on the outside of the shipping container.
3. Clean canister before shipment to Restek and include a completed health and safety declaration.
4. Return canister intact. Do not remove valves or gauges that were part of the original canister.

TO-Can Air Sampling Canisters with RAVE Valve

<table>
<thead>
<tr>
<th>Description</th>
<th>1 L Volume cat.#</th>
<th>3 L Volume cat.#</th>
<th>6 L Volume cat.#</th>
<th>15 L Volume cat.#</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Port RAVE Valve</td>
<td>27416</td>
<td>27418</td>
<td>27420</td>
<td>27422</td>
</tr>
<tr>
<td>3 Port RAVE Valve with Gauge*</td>
<td>27417</td>
<td>27419</td>
<td>27421</td>
<td>27423</td>
</tr>
<tr>
<td>without Valve</td>
<td>22094</td>
<td>22095</td>
<td>22096</td>
<td>22097</td>
</tr>
</tbody>
</table>

*Range of standard gauge is -30” Hg to 60 psi.
Do not exceed canister maximum pressure of 40 psig (2.75 bar).

RAVE Diaphragm Valves

<table>
<thead>
<tr>
<th>Description</th>
<th>qty.</th>
<th>Siltek-treated cat.</th>
<th>Stainless Steel cat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4” Diaphragm Valve, RAVE (2-port)</td>
<td>ea.</td>
<td>26386</td>
<td>26385</td>
</tr>
<tr>
<td>1/2” Diaphragm Valve, RAVE (3-port)</td>
<td>ea.</td>
<td>26388</td>
<td>26387</td>
</tr>
<tr>
<td>RAVE Diaphragm Rebuild Kit (includes: 3 diaphragms)</td>
<td>kit</td>
<td>26390</td>
<td>26389</td>
</tr>
</tbody>
</table>

TO-Clean Canister Cleaning System
High capacity, fully automated, easy-to-use canister cleaning oven dramatically increases lab efficiency.

- Oil-free pump lowers risk of contamination.
- Compliant to most documented government and standard methods.
- Powerful 6i pump can achieve 50 mTorr in <25 minutes for twelve 6 L canisters; higher power 10i option also available.
- Custom-built trays for different canister sizes.
- Humidifier provides humidified nitrogen to improve cleaning process.
- One-year limited warranty.
- Fully assembled and ready to use.

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Voltage</th>
<th>qty.</th>
<th>cat.#</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO-Clean Oven w/Oil Free Pump</td>
<td>Edwards nXDS6i Dry Scroll Pump</td>
<td>120 V, 60 Hz</td>
<td>ea.</td>
<td>26379</td>
</tr>
<tr>
<td>TO-Clean Oven w/Oil Free Pump</td>
<td>Edwards nXDS6i Dry Scroll Pump</td>
<td>220/230 V, 50/60 Hz</td>
<td>ea.</td>
<td>26380</td>
</tr>
</tbody>
</table>

Shipping: FedEx Ground, unless otherwise requested. Costs vary depending on ship-to location.
Note: Ovens are built on demand; therefore, a ten-week lead time is required on all orders. A limited cancellation and return policy applies to TO-Clean ovens; contact Restek Customer Service for details.