

# TO-Can<sup>®</sup> Canister with RAVE<sup>™</sup> Valve

cat.# 27416, 27417, 27418, 27419, 27420,  
27421, 27422, 27423

## Overview

A Restek<sup>®</sup> TO-Can<sup>®</sup> 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 a temperature limit of 250 °C. Each canister is slightly pressurized with contaminant-free nitrogen prior to shipment.

## Prior to Use

Restek<sup>®</sup> TO-Can<sup>®</sup> canisters are shipped under pressure!

1. Unpack the TO-Can<sup>®</sup> 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<sup>®</sup> product, without an RMA number and a completed health and safety declaration.
3. We recommend that you certify your canister clean, according to U.S. EPA Compendium Method TO-12, TO-14A, or TO-15, prior to use.

## Cleaning for Reuse\*

To clean a TO-Can<sup>®</sup> canister and valve, we recommend a procedure such as that summarized here. We also recommend performing a blank analysis according to EPA Compendium Method TO-12, TO-14A, or TO-15 after cleaning the canister to certify the canister 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.

## 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 (if they will be heated during cleaning) or to 30 psig (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<sup>®</sup> TO-Can<sup>®</sup> canister fitted with a gauge can be heated to 110 °C; a canister without a gauge can be heated to 250 °C.\*\*
3. 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.

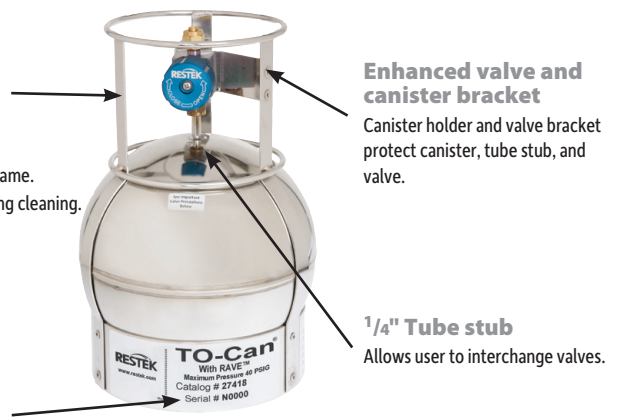
Repeat steps 2–4 as necessary. The number of cycles will be determined by how dirty the canisters are and how easily they clean. Without heat, the number of cycles required to clean the canisters may be higher.

## Optional gauge

- Quickly confirm vacuum or pressure inside canister.
- Monitor pressure changes.
- Fully protected by canister frame.
- Can be heated to 110 °C during cleaning.

## Serial controlled

For quick, sure identification.



## Certifying a Cleaned Canister

We recommend certifying canisters for both cleanliness and analyte stability. To certify a canister clean, pressurize the cleaned canister to 30 psig with humidified, certified ultra-high purity air or nitrogen. Analyze an aliquot of the canister content by GC-MS, GC-FID, or GC-ECD. U.S. EPA Methods TO-14A and TO-15 specify a canister must contain less than 0.2 ppbv of any target volatile organic compound; EPA Method TO-12 specifies less than 0.02 ppmC, as detected by GC-FID. If a canister does not meet specification, it must be recleaned and retested.

\*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](http://www.restek.com) for "EVTG1073A".

\*\*To use temperatures above 110 °C to clean a TO-Can<sup>®</sup> canister fitted with a gauge, you must remove the gauge and plug the gauge port prior to cleaning. Our air canister heating jacket (cat.# 24123) will save time and effort, and minimize potential for contamination, by enabling you to quickly and efficiently clean a canister at 75 °C with the gauge in place (at 150 °C without gauge).

## 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 return material authorization (RMA) number 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

Optimized for Methods TO-14A, TO-15, IP-1A, ASTM D5466, OSHA PV 2120, and NJ DEP Low Level TO-15

Description	1 L Volume cat.#	3 L Volume cat.#	6 L Volume cat.#	15 L Volume cat.#
2 Port RAVE Valve	27416	27418	27420	27422
3 Port RAVE Valve with Gauge*	27417	27419	27421	27423
without Valve	22094	22095	22096	22097

\*Range of standard gauge is -30" Hg to 60 psi.

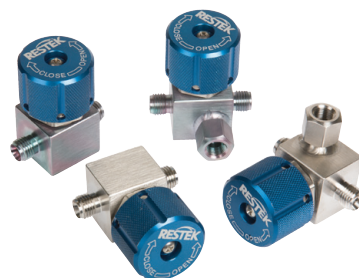
Do not exceed canister maximum pressure of 40 psig (2.75 bar).



Canisters are the gold standard for ambient VOC monitoring.

## Replacement RAVE™ Diaphragm Valves

Description	qty.	Siltek-treated cat.	Stainless Steel cat.
1/4" Replacement Diaphragm Valve, RAVE (2-port)	ea.	26386	26385
1/4" Replacement Diaphragm Valve, RAVE (3-port)	ea.	26388	26387
RAVE Diaphragm Rebuild Kit (includes: 3 diaphragms)	kit	26390	26389



## 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.
- EPA Method TO-14A/15 compliant.
- 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.

Description	Type	Voltage	qty.	cat.#
TO-Clean Oven w/Oil Free Pump	Edwards nXDS6i Dry Scroll Pump	120 V, 60 hz	ea.	26379
TO-Clean Oven w/Oil Free Pump	Edwards nXDS6i Dry Scroll Pump	220/230 V, 50/60 hz	ea.	26380

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.



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## Questions about this or any other Restek® product?

Contact us or your local Restek® representative ([www.restek.com/contact-us](http://www.restek.com/contact-us)).

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