



Semiconductor

Swagelok® ALD7A Ultrahigh-Purity Diaphragm Valve

Designed to Deliver Stable Flow Across Variable Conditions

Maximum yield enabled by repeatable performance and serviceable flow-adjustment capability over millions of production cycles.

The Swagelok® ALD7A ultrahigh-purity (UHP) diaphragm valve enables increased chip yield through improved flow consistency, increased flow capacity, enhanced actuator speed, and higher temperature performance. Purpose-built for ALD environments, this valve maintains stable flow performance across temperature and vacuum conditions while enabling greater field adjustability.

Built for Uncompromising Precision.

The ALD7A provides consistent performance from valve to valve, dose to dose, and chamber to chamber over an ultrahigh cycle life.



The ALD7A delivers precise dosing over the course of millions of cycles in ALD applications



Enhanced actuator technology allows the valve to operate faster than industry-standard technology, capable of actuation times of less than 3 ms



The standard valve body is immersible from 32°F (0°C) to 392°F (200°C); optional high-temperature body and actuator are immersible from 32°F (0°C) to 302°F (150°C)



A valve body comprised of proprietary ultrahigh-purity Swagelok 316L VIM-VAR stainless steel provides the ALD7A with resistance to corrosive gases



Field flow adjustability allows for up to a 25% decrease of C_v from factory flow set, from the factory flow set, enabling precise tuning and extending valve service life.



Higher Performance. Minimal Rework Required.

The ALD7A enables improved flow capacity compared to industry-standard valves but maintains the same footprint. Its compact design allows semiconductor manufacturers to upgrade the productivity of legacy tools without making significant process modifications.

- The standard ALD7A can deliver a flow coefficient (C_v) up to 0.7; custom flow coefficients available
- The ALD7A maintains the same 1.5-inch footprint as existing Swagelok ALD valves
- The valve features an integrated thermal isolator, shortening the valve's profile and allowing system designers to maximize limited space near the reaction chamber

Enhancing Yield with Greater Flow Stability.

Whether integrated into new or existing products, the ALD7A valve provides semiconductor tool OEMs with an uncomplicated means of enhancing productivity for chip manufacturers seeking ways to keep up with growing global demand for their products. It provides fabricators with the consistent performance under variable process conditions they need to maximize throughput without increasing their operating costs.

No matter their goals or geographic location, Swagelok customers can expect to receive a consistent experience when working with knowledgeable semiconductor industry specialists at authorized Swagelok sales and service centers and regional technology centers worldwide. Local service professionals offer industry-leading support and fluid system expertise, and Swagelok's global supply chain minimizes product delivery lead times so customers can receive what they need, when they need it.

The ALD7A UHP diaphragm valve delivers consistent, enhanced performance even when compared to our legacy valves:

	Performance Feature	ALD6T	ALD7A
 Consistent Flow	Flow capacity (C_v)	0.6	0.7
	Flow variation valve-to-valve (factory set)	±3%	±1%
	Flow variation over cycle life (in use)	6%	2%
	Adjustable flow option	N/A	Up to 25% flow adjustability
 Consistent Speed	Opening response time	<10 ms	<7 ms
	Closing response time	<15 ms	<7 ms
	Actuator response consistency	±1.5 ms	±1 ms
 Consistent Temperature	Actuator temperature rating	248°F (120°C)	302°F (150°C)
	Valve temperature rating	392°F (200°C)	392°F (200°C)
 Compact Design	Height (MSM)	4.76 in. (121 mm)	2.96 in. (75.1 mm)
	Footprint (MSM)	1.5 in. (38.1 mm)	1.5 in. (38.1 mm)

Based on laboratory testing conditions. Response time is defined as the elapsed time from command signal open/close to electronic position sensor signal open/close. ALD7A design is capable of a shorter response time than ALD6T, however, actual performance is dependent on other system variables.

For more information about the advantages offered by the ALD7A UHP valve in semiconductor production processes, including how it can help increase viable chip yields, contact your local authorized Swagelok sales and service center.