



HAM-LET ULTRA-FAST DIAPHRAGM VALVE

FOR ATOMIC LAYER DEPOSITION
AND FAST ACTUATION APPLICATIONS



- ✓ Suitable for ALD and many other fast response applications
- ✓ Up to 200°C
- ✓ Available in Inline and Surface-Mount configurations





PNEUMATICALLY OPERATED ULTRA-FAST METAL DIAPHRAGM VALVE

The Ultra-Fast series is purpose-built for atomic layer deposition (ALD) applications, where ultrahigh purity and reliability are critical. Designed to meet the toughest process demands, it delivers:

- * Outstanding chemical compatibility
- * Ultra-fast response times
- * Long cycle life with repeatable performance
- * High-temperature durability

A unique flow adjustment mechanism enables precise on-tool fine-tuning, while optional extended bonnet, cooling fin, and high-temperature actuator configurations ensure stable operation in elevated-temperature environments.



SPECIFICATIONS

Specification	Item Data
Structure	Direct seal, metal diaphragm valve without seal packing Pneumatically operated
Design pressure	Vacuum to 150 psi (10 bar)
Burst pressure	4500 psi (310 bar)
Proof pressure	225 psi (15.5 bar)
Media Temp.: Standard bonnet	14 to 248°F (-10 to 120°C)
Extended bonnet	14 to 392°F (-10 to 200°C)
Leakage: Inboard leakage	$\leq 3 \times 10^{-11}$ atm cc He/sec
Across the seat	$\leq 1 \times 10^{-9}$ atm cc He/sec
Particle	No particle detected above 0.1μm
Operated	High speed pneumatic, NC ¹
Cv value (1/4" / 1/2")	0.25 / 0.6, adjustable
Port configurations	2-port straight, 2-port L, 3-port, 4-port
Surface finish ra (ave)-standard	5μin, Electropolished surface
Air supply	60-90 psig (4 - 6 bar)
Valve response time	Less than 5ms ²
Air connection	M5

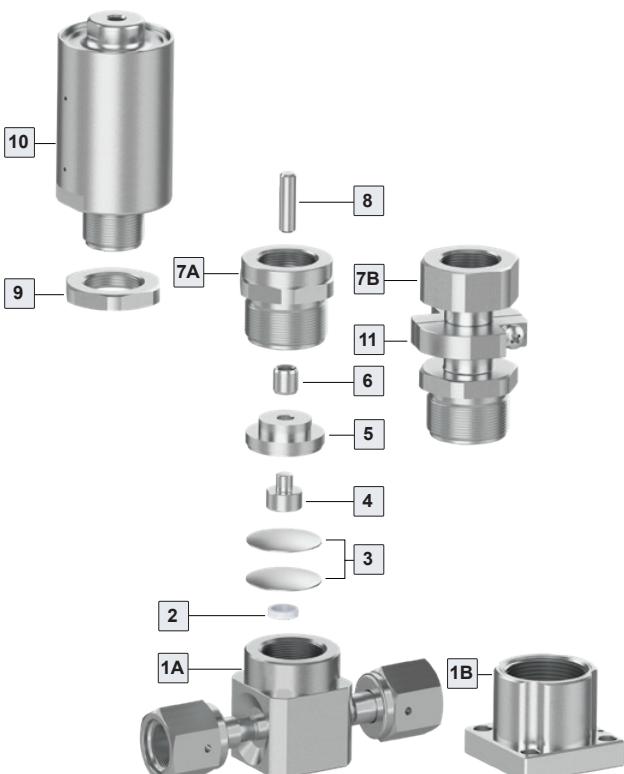
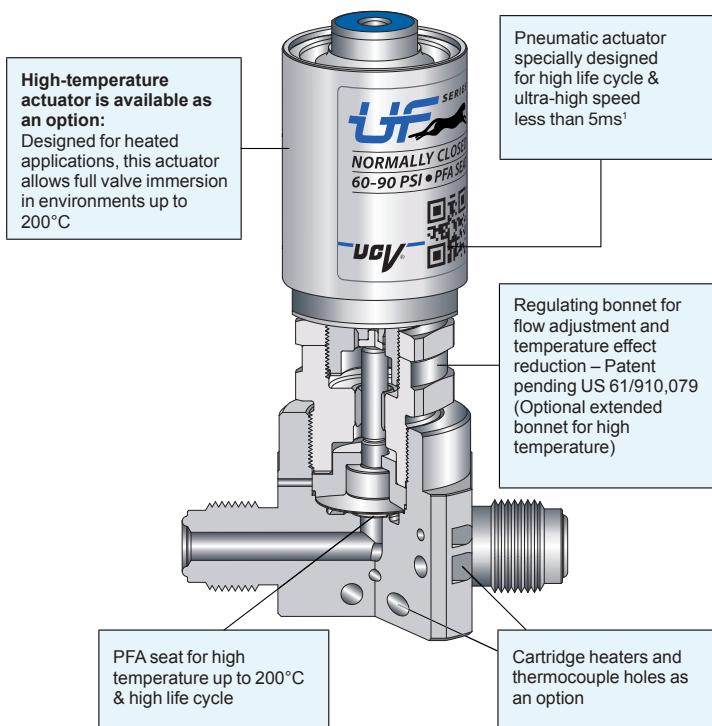
MATERIALS OF CONSTRUCTION

Item No.	Part No.	Material
1A	In-Line Body ³	Stainless Steel, 316L VAR
1B	Surface-Mount Body ³	Stainless Steel, 316L VAR
2	Seat (Pressed) ³	PFA
3	Diaphragm ³	Co-Cr-Ni Alloy
4	Act. Button	SS 316L
5	Act. Button Holder	SST, ASTM 630 H900
6	Bushing	Carbon Steel + PTFE
7A	Regulating Bonnet	SS 316L
7B	Extended Regulating Bonnet	SS 316L
8	Connection Rod	SS 304
9	Locking Nut	SS 304
10	Actuator Assembly	SS 316L
11	Cooling Fin	Aluminum 6061

¹NC-Normally Closed

²For 1/4" valve size only

³Wetted parts

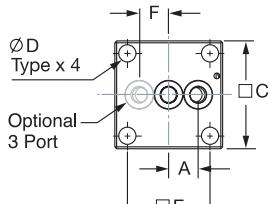
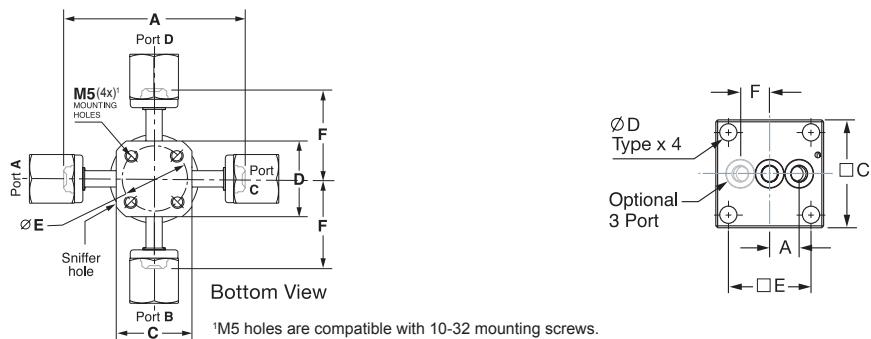
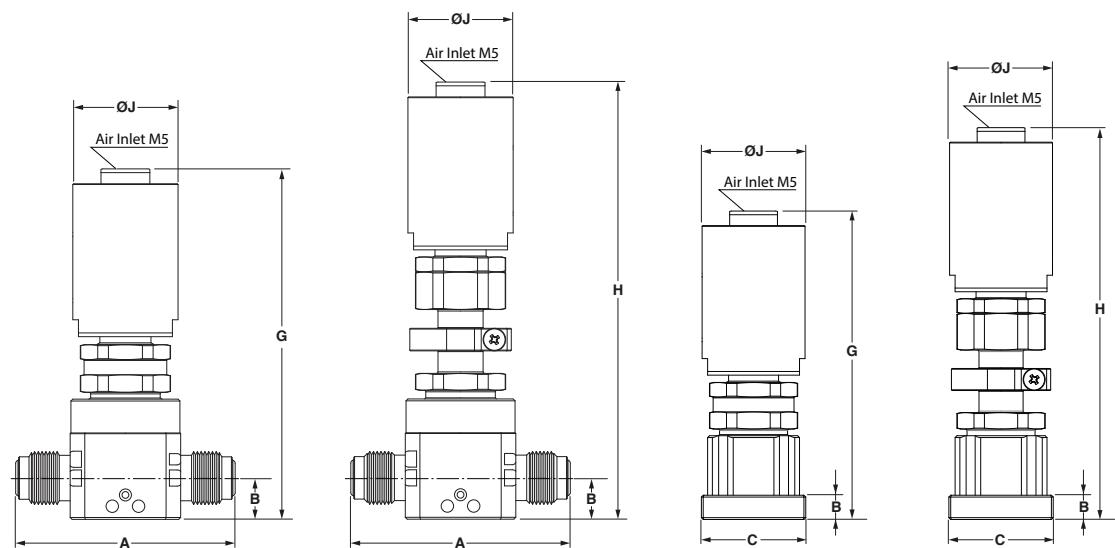


*Seat is caulked inside the body

STANDARD CONFIGURATION DIMENSIONS

Body Size	Series	End Connection	A		B		C		D		E		F		G		H		J	
			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/4"	UF	Male face seal	2.30	58.4	0.43	11.0	1.16	29.4	1.16	29.4	1.00	25.4	1.15	29.2	3.69	93.8	4.62	117.3	1.10	28.0
		Swivel male face seal	2.78	70.6									1.39	35.3						
		Swivel female face seal	2.78	70.6									1.39	35.3						
		Butt weld	1.75	44.4									0.88	22.2						
	UFS	Surface mount	0.30	7.7	0.26	6.6	1.12	28.4	0.17	4.4	0.85	21.7	0.30	7.7	3.33	84.6	4.26	108.1	1.10	28.0
1/2"	UF	Male face seal	2.99	76.0	0.69	17.5	1.46	37.0	1.46	37.0	1.10	28.0	1.50	38.0	5.07	128.8	5.86	148.8	1.34	34.0
		Swivel male face seal	4.17	106.0									1.97	50.0						
		Swivel female face seal	4.17	106.0									2.08	53.0						
		Butt weld	2.16	57.2									1.08	27.5						
	UFS	Surface mount	0.46	11.6	0.31	8.0	1.50	38.1	0.20	5.2	1.19	30.2	0.46	11.6	4.6	116.8	5.38	136.8	1.34	34.0

Dimensions are for reference only and subject to change.



ADJUSTABLE FLOW ACTUATOR

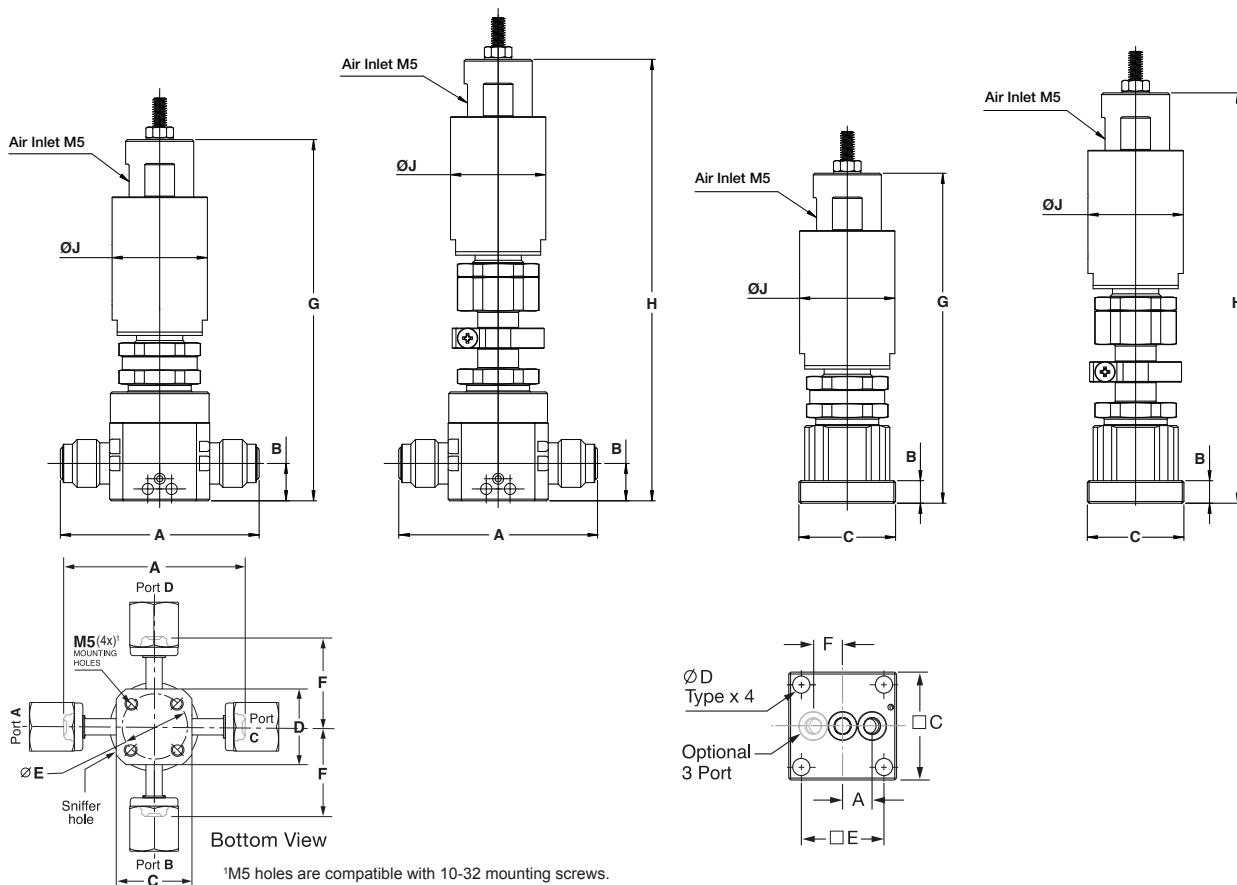
This optional actuator offers flow adjustment by a screw located on top of the actuator. This approach enables easy on-tool flow adjustments in hard-to-reach locations, without requiring special tools or removing the valve.



ADJUSTABLE FLOW ACTUATOR - STANDARD CONFIGURATIONS DIMENSIONS

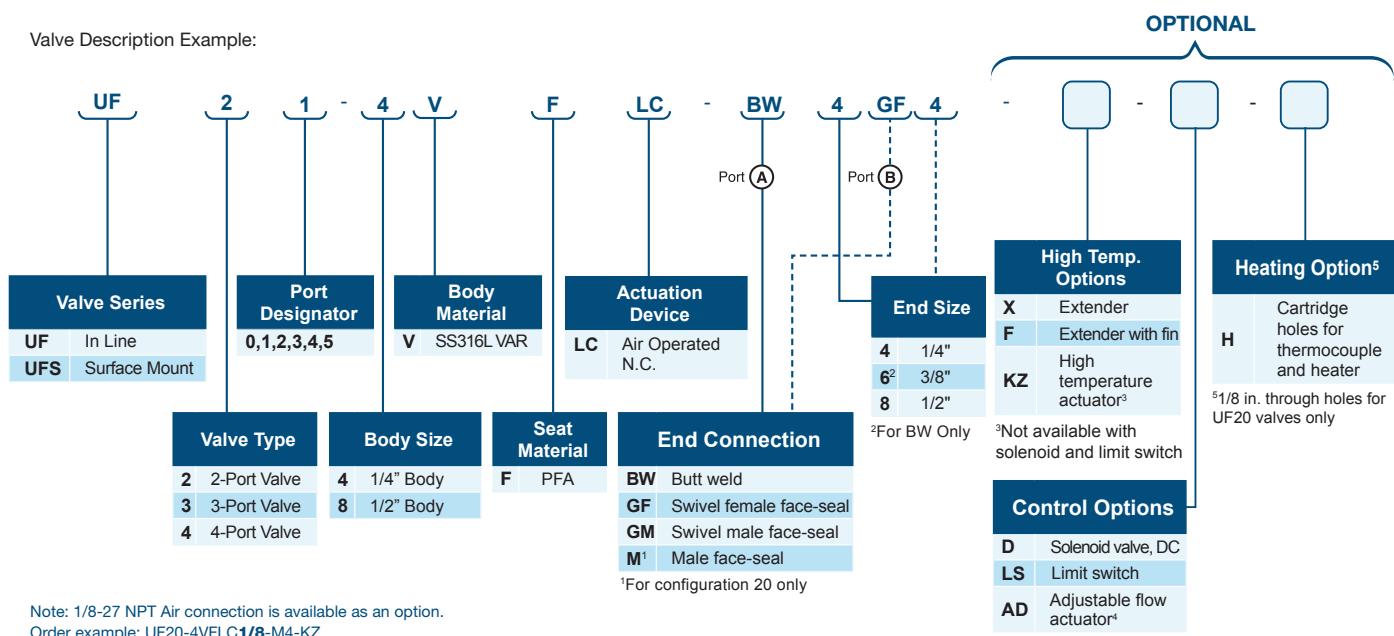
Body Size	Series	End Connection	A		B		C		D		E		F		G*		H*		J	
			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/4"	UF	Male face seal	2.30	58.4	0.43	11.0	1.16	29.4	1.16	29.4	1.00	25.4	1.15	29.2	4.18	106.2	5.11	129.8	1.10	28.0
		Swivel male face seal	2.78	70.6																
		Swivel female face seal	2.78	70.6																
		Butt weld	1.75	44.4																
1/2"	UF	Surface mount	0.30	7.7	0.26	6.6	1.12	28.4	0.17	4.4	0.85	21.7	0.30	7.7	3.82	97.0	4.75	120.6	1.10	28.0
		Male face seal	2.99	76.0	0.69	17.5	1.46	37.0	1.46	37.0	1.10	28.0	1.50	38.0	5.44	138.1	6.22	158.1	1.34	34.0
		Swivel male face seal	4.17	106.0																
		Swivel female face seal	4.17	106.0																
	UFS	Surface mount	0.46	11.6	0.31	8.0	1.50	38.1	0.20	5.2	1.19	30.2	0.46	11.6	4.96	126.1	5.75	146.1	1.34	34.0

* The flow adjustment screw protrudes to a maximum height of 12.4mm (0.48 in) from the actuator
Dimensions are for reference only and subject to change.



ORDERING INFORMATION - UF SERIES

Valve Description Example:



Note: 1/8-27 NPT Air connection is available as an option.

Order example: UF20-4VFLC1/B-M4-KZ

*Not available with adjustable flow actuator!

PORT DESIGNATOR - (TOP VIEW)

Valve Configuration	Port Designator	Schematic Flow Chart	Valve Configuration	Port Designator	Schematic Flow Chart	Valve Configuration	Port Designator	Schematic Flow Chart
Two Port Valve 	0		Three Port Valve 	0		Four Port Valve 	0	
UF2 			UF3 			UF4 		
	1 L-Port			1			1	
	2 L-Port			2			2	
				3			3	
				4				
				5				

Warning!

The system designer and user have the sole responsibility for selecting products suitable for their special application requirements, ensuring their safe and trouble-free installation, operation, and maintenance. Application details, material compatibility and product ratings should all be considered for each selected product. Improper selection, installation or use of products can cause property damage or personal injury.

