



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

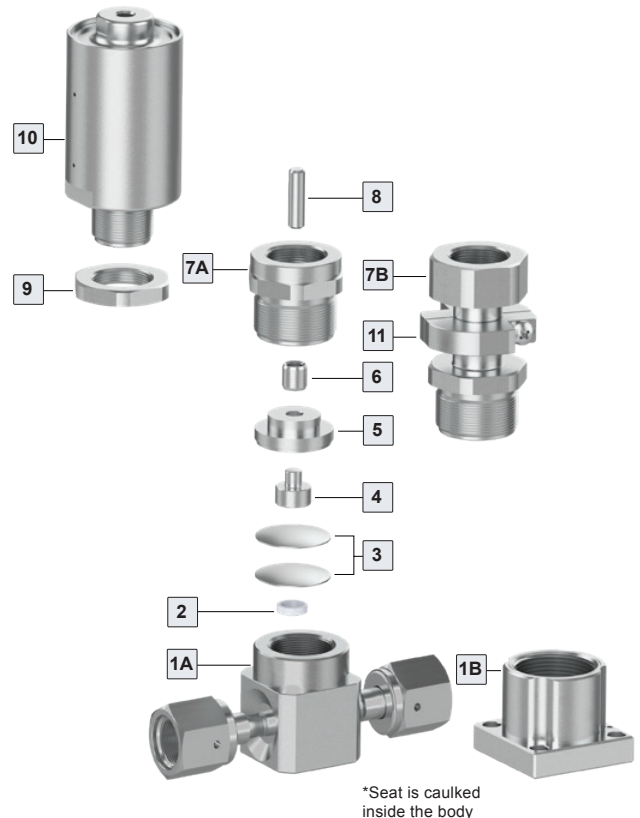
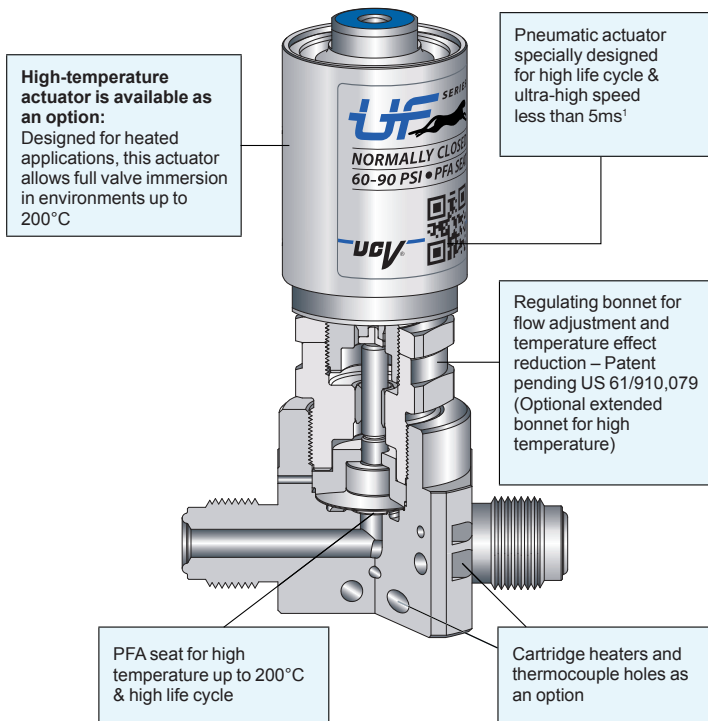
MATERIALS OF CONSTRUCTION

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

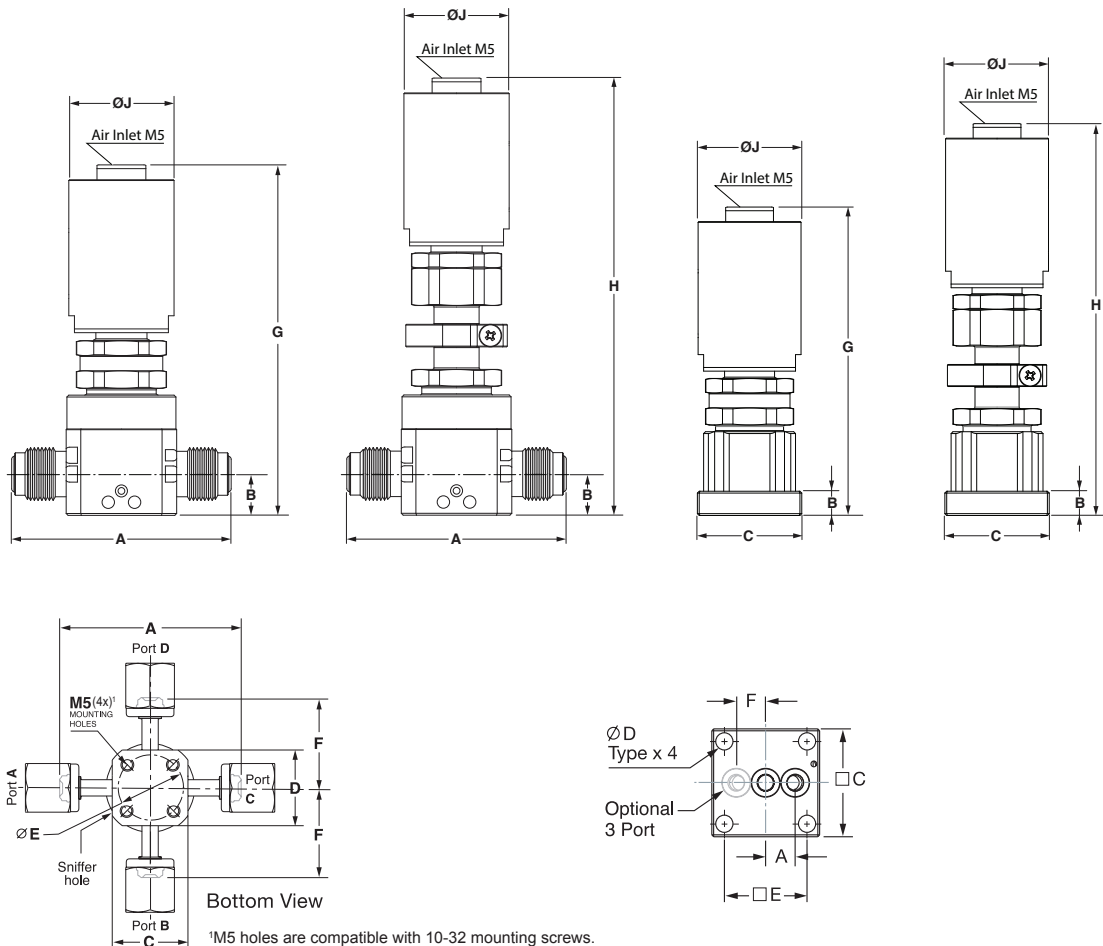
³Wetted parts



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

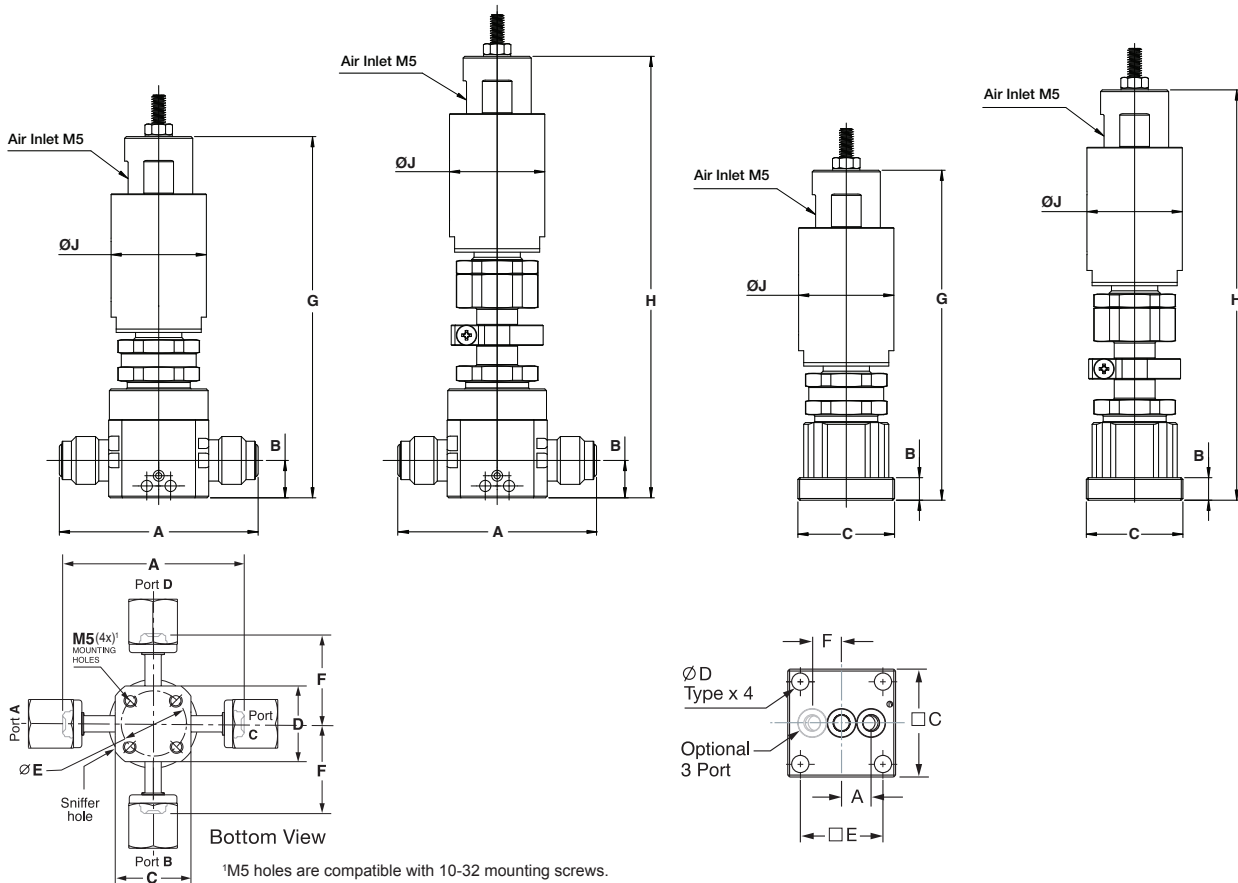
This optional actuator offers flow adjustment by a screw located on top of the actuator. This approach enables easy on-tool flow adjustments in hard-to-reach locations, without requiring special tools or removing the valve.



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									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	3.82	97.0	4.75	120.6	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	5.44	138.1	6.22	158.1	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	4.96	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:

UF

Valve Series

UF In Line
UFS Surface Mount

2

Port Designator

0, 1, 2, 3, 4, 5

1

Body Material

V SS316L VAR

4

Actuation Device

LC Air Operated N.C.

LC

End Size

4 1/4"
6² 3/8"
8 1/2"

4

End Connection

BW Butt weld
GF Swivel female face-seal
GM Swivel male face-seal
M¹ Male face-seal

4

Valve Type

2 2-Port Valve
3 3-Port Valve
4 4-Port Valve

4

Body Size

4 1/4" Body
8 1/2" Body

F

Seat Material

F PFA

LC

High Temp. Options

X Extender
F Extender with fin
KZ High temperature actuator³

4

Heating Option⁵

H Cartridge holes for thermocouple and heater

4

Control Options

D Solenoid valve, DC
LS Limit switch
AD Adjustable flow actuator⁴

Port A

Port B

OPTIONAL

Note: 1/8-27 NPT Air connection is available as an option.
Order example: UF20-4VFLC1/8-M4-KZ
*Not available with adjustable flow actuator!

¹For configuration 20 only

²For BW Only

³Not available with solenoid and limit switch

⁴Not available with a limit switch

⁵1/8 in. through holes for UF20 valves only

PORT DESIGNATOR - (TOP VIEW)

Valve Configuration

Port Designator

Schematic Flow Chart

Two Port Valve

UF2

0

1 L-Port

2 L-Port

Valve Configuration

Port Designator

Schematic Flow Chart

Three Port Valve

UF3

0

1

2

3

4

5

Valve Configuration

Port Designator

Schematic Flow Chart

Four Port Valve

UF4

0

1

2

3

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.

