HAM-LET ULTRA-FAST DIAPHRAGM VALVE

UF SERIES

Patent pending
US 61/910,079

ULTRA-HIGH PURITY DIAPHRAGM VALVES FOR ATOMIC LAYER DEPOSITION AND FAST ACTUATION APPLICATIONS

UF SERIES

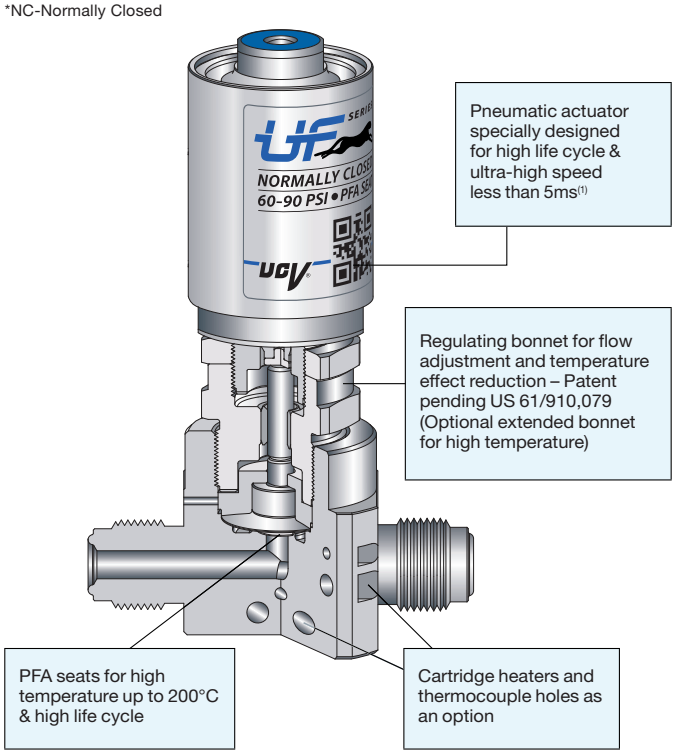
IN-LINE METAL DIAPHRAGM PNEUMATICALLY OPERATED ULTRA-FAST VALVES

The Ultra-Fast series is designed for atomic layer deposition applications, high cycling, high temperature and ultra-high purity processes under severe repeatability demands. With its unique (patent pending No. US61/910,079) flow adjustment mechanism, this series allows onsite fine-tuning. Optional extended bonnet and cooling fin provide a superb solution for high temperature applications.

IN-LINE VALVE 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)
Temperature: Standard Bonnet	14 to 248°F (-10 to 120°C)
Extended Bonnet	14 to 392°F (-10 to 200°C)
Leakage: Inboard Leakage	≤ $3x10^{-11}$ atm cc He/sec
Across the Seat	≤ $1x10^{-9}$ atm cc He/sec
Particle	No particle detected above 0.1µm.
Operated	High speed Pneumatic, NC*
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 (1)
Air Connection	M5

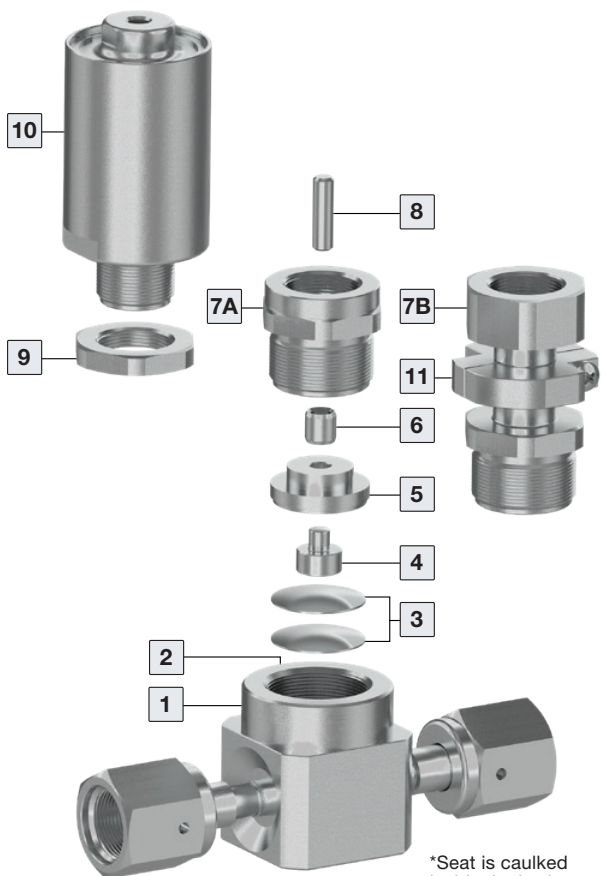
[1]For 1/4" body size, for valve only
*NC-Normally Closed



STRUCTURE

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

*Wetted parts **Per SEMI F20



*Seat is caulked inside the body

UF SERIES

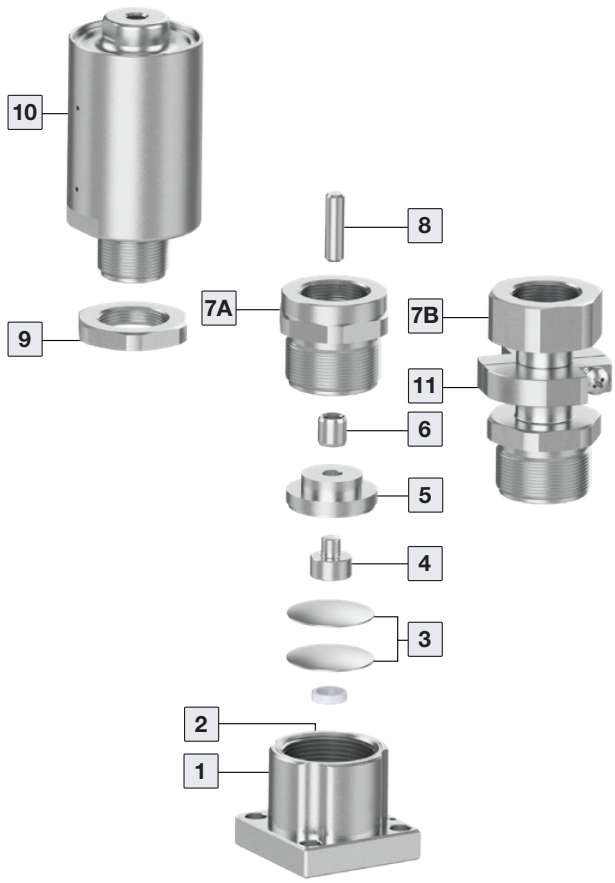
SURFACE-MOUNT, METAL DIAPHRAGM PNEUMATICALLY OPERATED ULTRA-FAST VALVES

The surface mount design complies with SEMI PR 3.1 for 1.125", 1.5" C-seal. This series is manufactured according to UHP specifications of SEMI F-20 with pneumatic operating mechanisms.

SURFACE-MOUNT VALVE 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)
Temperature: Standard Bonnet	14 to 248°F (-10 to 120°C)
Extended Bonnet	14 to 392°F (-10 to 200°C)
Leakage: Inboard Leakage	≤ $3x10^{-11}$ atm cc He/sec
Across the Seat	≤ $1x10^{-9}$ atm cc He/sec
Particle	No particle detected above 0.1µm.
Operated	High Speed Pneumatic, NC*
CV Value (1/4" / 1/2")	0.25 / 0.6, Adjustable
Port Configurations	2-Port, 3-Port
Surface Finish Ra (Ave)-Standard	5µin, Electropolished Surface
Air Supply	60-90 psig (4 - 6 bar)

[1]For 1/4" body size, for valve only
*NC-Normally Closed



STRUCTURE

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

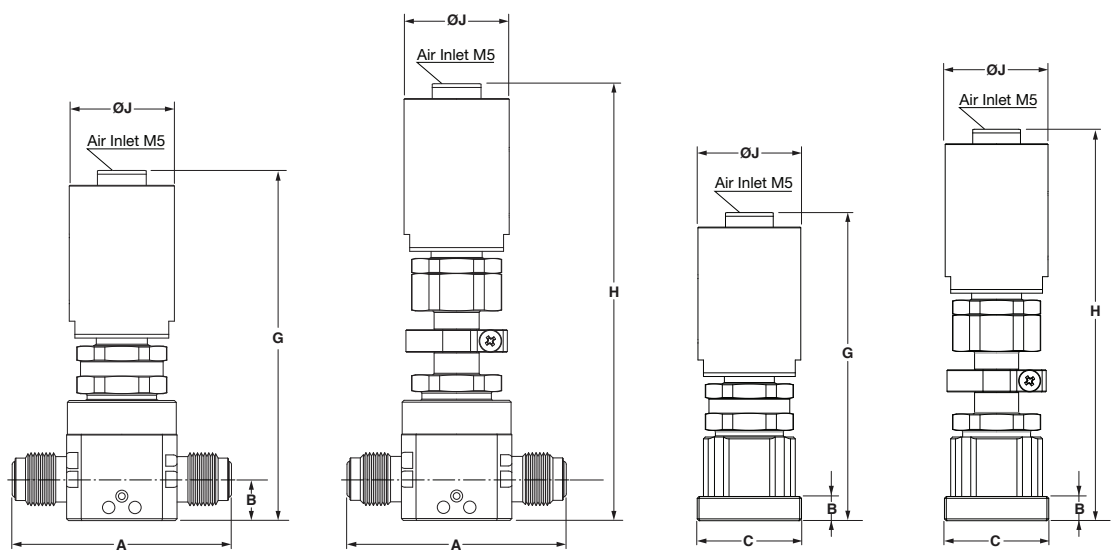
*Wetted parts **Per SEMI F20

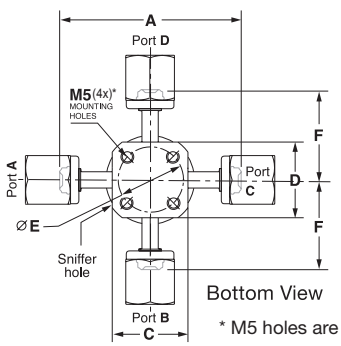
STANDARD CONFIGURATION DIMENSIONS

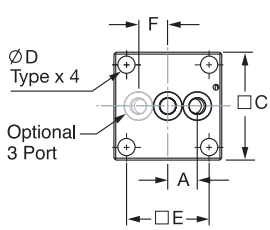
VALVE DIMENSIONS - INCH (MM)

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.



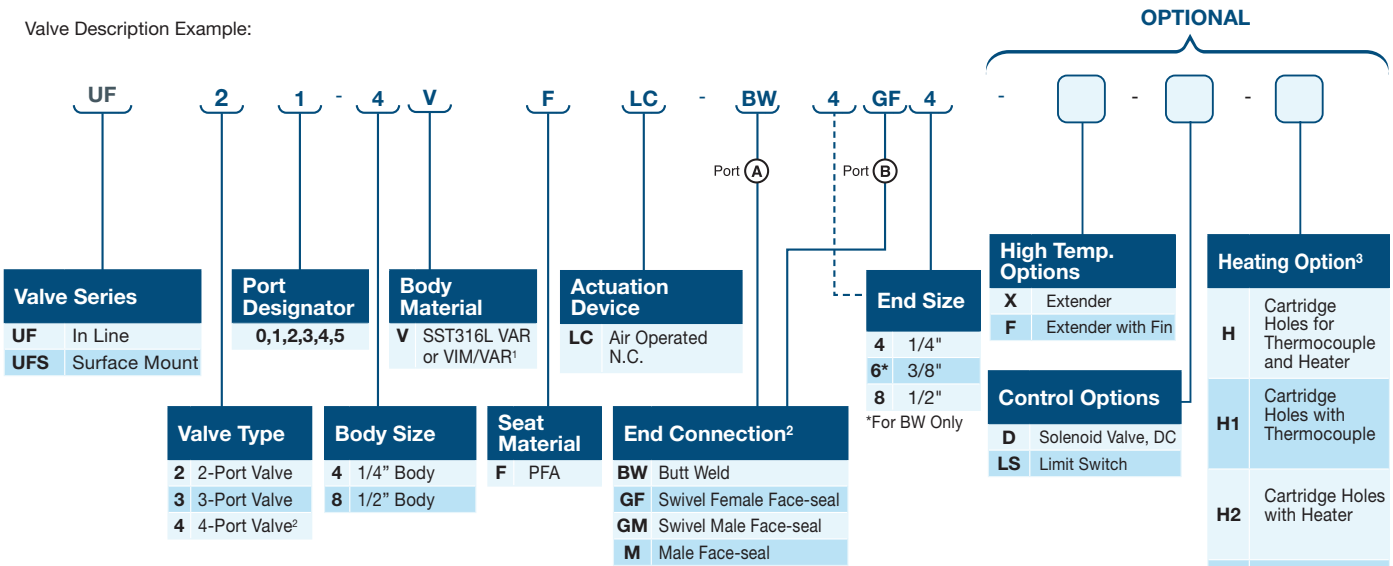




* M5 holes are compatible with 10-32 mounting screws.

ORDERING INFORMATION UF SERIES

Valve Description Example:



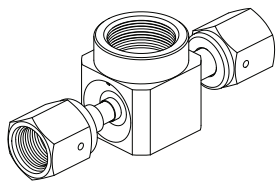
[1]Per SEMI F20-0305 | [2]For inline vlaves only | [3]1/8 in. through holes for UF20 valves only

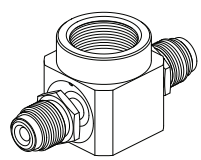
PORT DESIGNATOR - (TOP VIEW)

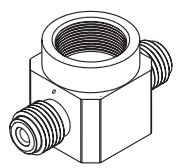
Valve Configuration	Port Designator	Schematic Flow Chart
2 Port Valve UF2_	0	
	1 L-Port	
	2 L-Port	

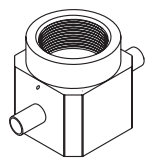
Valve Configuration	Port Designator	Schematic Flow Chart
3 Port Valve UF3_	0	
	1	
	2	
	3	
	4	
	5	

Valve Configuration	Port Designator	Schematic Flow Chart
4 Port Valve UF4_	0	
	1	
	2	
	3	


Swivel Female Face-Seal Ends


Swivel Male Face-Seal Ends


Male Face-Seal Ends


Butt Weld Ends

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.