



# HM EXTREME SERIES

EXTREME FULLY IMMERSIBLE  
ULTRA-CLEAN METAL DIAPHRAGM VALVES



HM  
SERIES

- ✓ Up to 225°C fully immersible
- ✓ Maintains high Cv under High temperature
- ✓ Serviceable



# HMX HM Extreme Series

- High-performance Ultra-Clean metal diaphragm valves featuring a high-quality bar stock body, a PFA seat for excellent chemical compatibility and heat resistance, and a unique serviceable design that helps extend valve service life.
- Designed for operation in extreme thermal immersion environments at temperatures of up to 225°C (fully immersed).
- Available in Inline 1/4" and Surface-Mount 1.125" with manual or pneumatic operation.
- Ideal for chemical precursor vessels used in ALD, ALE and CVD processes, as well as other demanding thermal immersion applications.



## SPECIFICATIONS

| Specification                          | Item Data                                                               |
|----------------------------------------|-------------------------------------------------------------------------|
| <b>Structure</b>                       | Direct-seal, metal-diaphragm valve, manually and pneumatically operated |
| <b>Working Pressure</b>                | Vacuum to 150 psi (10 bar)                                              |
| <b>Proof Pressure</b>                  | 225 psi (15.5 bar)                                                      |
| <b>Burst Pressure</b>                  | 4500 psi (310 bar)                                                      |
| <b>Working Temperature</b>             | Up to 437°F (225°C) - Fully Immersed                                    |
| <b>Leak Rate:</b> Inboard leakage      | $\leq 1 \times 10^{-9}$ atm cc He/sec                                   |
| Across the seat (at 23°C)              | $\leq 1 \times 10^{-9}$ atm cc He/sec                                   |
| Across the seat (at 220°C)             | $\leq 1 \times 10^{-9}$ atm cc He/sec                                   |
| <b>Flow Coefficient:</b> Surface-Mount | Cv 0.31 at 73.4°F (23°C) / Cv 0.23 at 428°F (220°C)                     |
| High-Flow 2-port straight              | Cv 0.32 at 73.4°F (23°C) / Cv 0.26 at 428°F (220°C)                     |
| <b>Actuation Pressure</b>              | 60 to 90 psi (4 to 6 bar)                                               |
| <b>Surface Finish</b>                  | Electropolished (Ra 5µin)                                               |

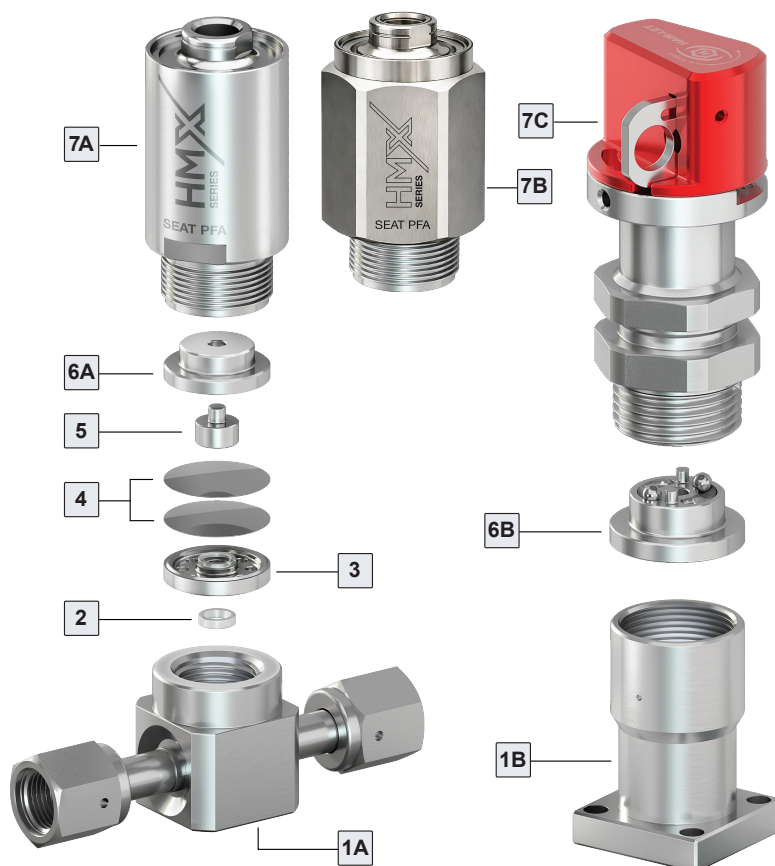
## MATERIALS OF CONSTRUCTION

| Item No. | Part No.                                              | Material            |
|----------|-------------------------------------------------------|---------------------|
| 1A       | Inline Body <sup>1</sup>                              | SS 316L VAR         |
| 1B       | Surface-Mount Body <sup>1</sup>                       | SS 316L VAR         |
| 2        | Bottom seat <sup>1</sup>                              | PFA                 |
| 3        | Seat-Holder with Upper seat (pressed-in) <sup>1</sup> | SS 316L VAR and PFA |
| 4        | Diaphragm <sup>1</sup>                                | Co-Cr-Ni Alloy      |
| 5        | Act. Button                                           | SS 316L             |
| 6A       | Act. Button Holder (air operated)                     | SS 17-4 PH          |
| 6B       | Act. Button Holder (manual operation)                 | SS 17-4 PH          |
| 7A       | Cylinder-Shaped Actuator                              | Aluminum 6061       |
| 7B       | Hexagonal-Shaped Actuator <sup>2,3</sup>              | SS 303              |
| 7C       | LOTO handle                                           | SS 316L             |

<sup>(1)</sup> Wetted parts

<sup>(2)</sup> For inline only

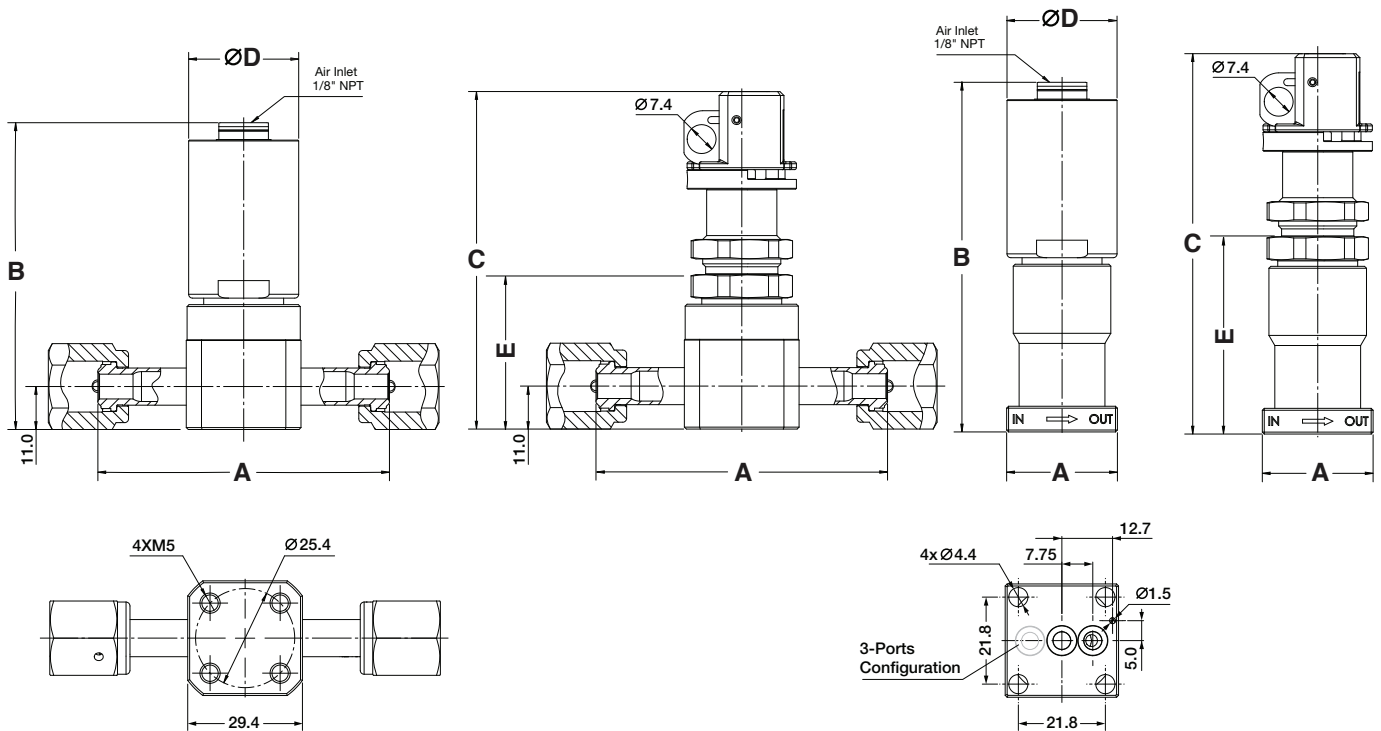
<sup>(3)</sup> Hexagonal-Shaped Actuator:  
Patent # Europe: EP3791096B1  
Patent # USA: US 11,331,778 B2



## STANDARD CONFIGURATIONS DIMENSIONS

| Series | End Connection                                 | A    |      | B    |      | C    |      | D    |      | E    |      |
|--------|------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
|        |                                                | in   | mm   | in   | mm   | in   | mm   | in   | mm   | in   | mm   |
| HMX    | Male Face-Seal - 1/4" HF <sup>1</sup>          | 2.30 | 58.4 | 3.09 | 78.6 | 3.41 | 86.5 | 1.10 | 28.2 | 1.55 | 39.6 |
|        | Swivel male Face-Seal - 1/4" HF <sup>1</sup>   | 2.94 | 74.7 |      |      |      |      |      |      |      |      |
|        | Swivel female Face-Seal - 1/4" HF <sup>1</sup> | 2.94 | 74.7 |      |      |      |      |      |      |      |      |
|        | Buttweld - 3/8"                                | 2.14 | 54.4 |      |      |      |      |      |      |      |      |
| HMXS   | Surface-Mount 1.125" C-Seal                    | 1.12 | 28.4 | 3.57 | 89.6 | 3.84 | 97.5 | 1.10 | 28.2 | 1.99 | 50.6 |

<sup>1</sup>HF = High flow



## ORDERING INFORMATION HMX SERIES

| Valve Series                 | Body Size                  | Body Material                              | Seat  | Actuation Device        | End Size                         |
|------------------------------|----------------------------|--------------------------------------------|-------|-------------------------|----------------------------------|
| HMX Inline                   | 4 1/4" Body                | V SS 316L VAR                              | F PFA | LC Air operated N.C     | 4-HF 1/4" High flow <sup>2</sup> |
| HMXS Surface-Mount           |                            |                                            |       | LQ Oval handle 1/4 turn | 6 3/8" <sup>3</sup>              |
| Valve Type                   | End Connection             | Features                                   |       |                         |                                  |
| 20 2-Port Valve              | BW Buttweld                | ISLT LOTO handle <sup>4</sup>              |       |                         |                                  |
| 30 3-Port Valve <sup>1</sup> | GF Swivel female Face-Seal | HEX Hexagonal Shaped actuator <sup>5</sup> |       |                         |                                  |
|                              | GM Swivel male Face-Seal   |                                            |       |                         |                                  |
|                              | M Male Face-Seal           |                                            |       |                         |                                  |

<sup>1</sup> For Surface-Mount only

**Note:** For valve service kits or other valve configurations, please contact your local UCT Fluid Solutions representative