

CARTEN[®]
Ultra High Purity Valves

UNIPLUX SERIES

Ultra-High Purity Diaphragm Valves (UPC)

Ultra-High Purity Bellows Valves (UFC)

Ultra-High Purity Bellows Valves (UFCR)

Ultra-High Purity Tee Block Bellows Valves (UBC)



UNIPLUX SERIES



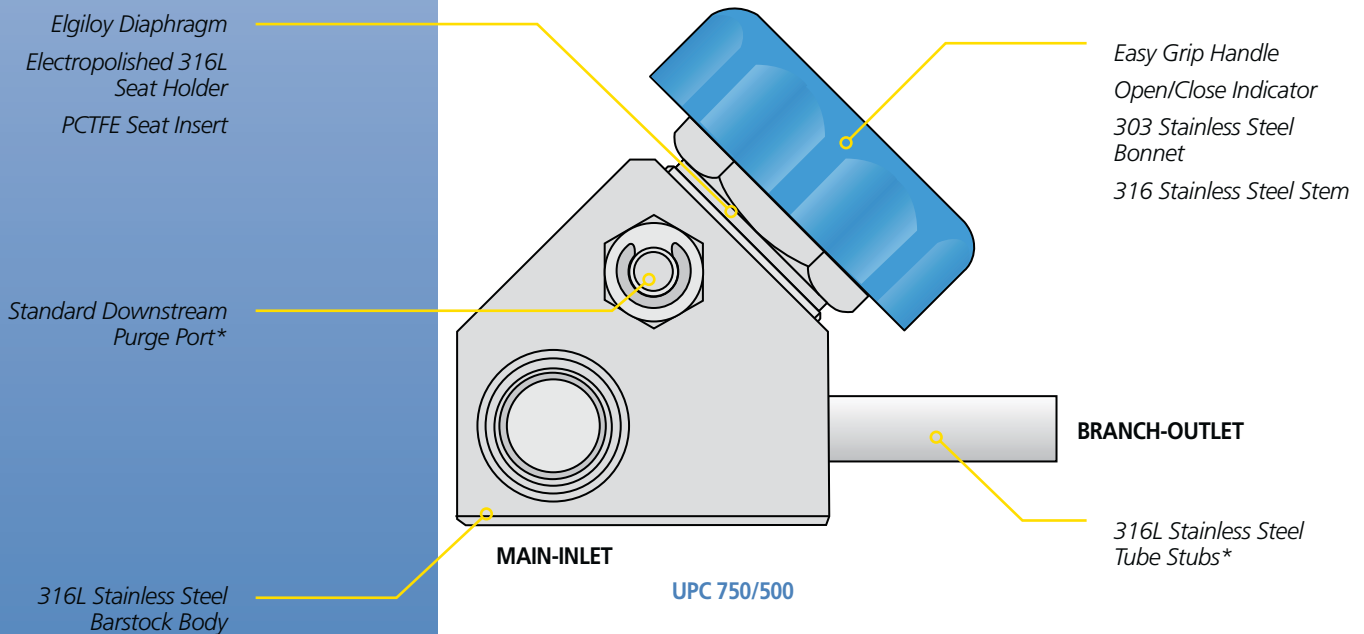
This compact Uniplex (diaphragm design) valve series is intended for bulk gas distribution service where containment, cleanliness and purity are of utmost importance. Applications for this valve include:

- **Ultra-high purity gas system control valves**
- **Ultra-high purity gas control for point-of-use or service for hookups**
- **Superior containment and cleanliness for your most critical valve applications**
- **Suitable for inert and most toxic gases**

UPC Series Product Features

- Diaphragm Design for Ultra-High Purity and Long Cycle Life
- Elgiloy Tied-Diaphragm for Maximum Flow and High Life Cycle
- Springless, Packless Design
- No Internal Particle Shedding Components
- Electropolished Wetted Surfaces to 10 Ra Max (Optional surface finishes available)
- Industry Leading Design in Ultra-High Purity Gas Containment
- Assembled and Tested in Class 10 Cleanroom
- Valve Bodies and Tube Stubs are Serialized for Material Certification
- Purge Connections and Purge Valves are Integral in Valve Body
- Inboard and Across the Seat Leak Tested with Helium
- Cleaned for Ultra-High Purity Gas Service
- Purged and Final Packaged in Class 1 Cleanroom. Double-Bag Packaging with Ultra-High Purity N₂ Gas Environment

UPC Construction Materials



*See corresponding Code Chart for available end connections.

† U.S Patent # D347,882 and other patents worldwide

UPC Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	Elgiloy, 316L Stainless Steel, PCTFE
	Non-Wetted Areas	316L Stainless Steel, 303 Stainless Steel
MAXIMUM OPERATING PRESSURE	UPC/UPV Series	Vacuum to 375 psig (25.8 bar)
OPERATING TEMPERATURE RANGE	UPC/UPV Series	-22°F (-30°C) to 180°F (82°C)
FLOW COEFFICIENT (C _v)	UPC Series	2.96
	UPV Series	3.10
HELIUM LEAK TEST	Inboard	1 x 10 ⁻¹¹ Pa-m 3/s (1 x 10 ⁻¹⁰ atm-cc (He) /s)
	Across the Seat	1 x 10 ⁻¹⁰ Pa-m 3/s (1 x 10 ⁻⁹ atm-cc (He) /s)
	Outboard Pressure Test	1 x 10 ⁻⁷ Pa-m 3/s (1 x 10 ⁻⁶ atm-cc (He) /s)
CLEANLINESS AND PACKAGING	Assembled and tested in CLASS 10 cleanroom. Purged and final packaged in Class 1 cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with Ultra-High Purity N ₂ gas environment.	
STANDARD FINISH	Electropolished to 10 Ra Max (0.25 Ra μm) on all wetted surfaces	
OPTIONS	Surface finish – 5 Ra, 20 Ra Particle, moisture, THC and O ₂ testing SEM and ESCA testing, Auger analysis Fitting connections available for up to 1.00" size – inlet/outlet Material: Vespel® seat Handle color (Std. White) JIS tube stubs and tube length Pneumatic actuators available - types: NC/NO/DA	

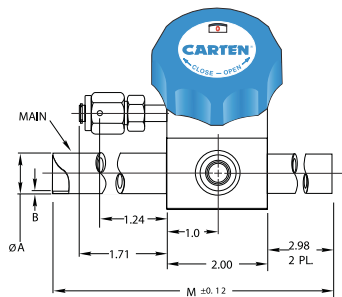
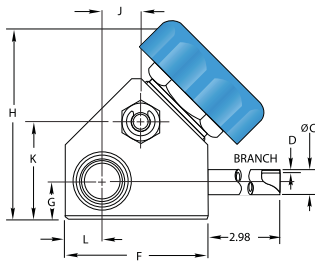
Specifications are subject to change without notice. Vespel® is a registered trademark of DuPont Company.

UPC Series Technical Dimensions

Size	A	B	C	D	F	G	H	J	K	L	M
UPC/UPV 750/500	Ø 0.75 (19.1mm)	0.065 (1.7mm)	0.50 (12.7mm)	0.049 (1.3mm)	2.83 (71.9mm)	0.75 (19.0mm)	3.81 (96.8mm)	0.75 (19.0mm)	1.92 (48.8mm)	0.75 (19.0mm)	7.96 (202.2mm)
UPC/UPV 750/750	Ø 0.75 (19.1mm)	0.065 (1.7mm)	0.75 (19.0mm)	0.065 (1.7mm)	2.83 (71.9mm)	0.75 (19.0mm)	3.81 (96.8mm)	0.75 (19.0mm)	1.92 (48.8mm)	0.75 (19.0mm)	7.96 (202.2mm)
UPC/UPV 1000/500	Ø 1.00 (25.4mm)	0.065 (1.7mm)	0.50 (12.7mm)	0.049 (1.3mm)	2.83 (71.9mm)	0.75 (19.0mm)	3.81 (96.8mm)	0.75 (19.0mm)	1.92 (48.8mm)	0.75 (19.0mm)	7.96 (202.2mm)
UPC/UPV 1000/750	Ø 1.00 (25.4mm)	0.065 (1.7mm)	0.75 (19.0mm)	0.065 (1.7mm)	2.83 (71.9mm)	0.75 (19.0mm)	3.81 (96.8mm)	0.75 (19.0mm)	1.92 (48.8mm)	0.75 (19.0mm)	7.96 (202.2mm)
UPC/UPV 1500/500	Ø 1.50 (38.1mm)	0.065 (1.7mm)	0.50 (12.7mm)	0.049 (1.3mm)	3.56 (90.4mm)	1.25 (31.8mm)	4.60 (116.8mm)	1.00 (25.4mm)	2.67 (67.8mm)	1.25 (31.8mm)	8.46 (214.9mm)
UPC/UPV 1500/750	Ø 1.50 (38.1mm)	0.065 (1.7mm)	0.75 (19.0mm)	0.065 (1.7mm)	3.56 (90.4mm)	1.25 (31.8mm)	4.60 (116.8mm)	1.00 (25.4mm)	2.67 (67.8mm)	1.25 (31.8mm)	8.46 (214.9mm)
UPC/UPV 2000/500	Ø 2.00 (50.8mm)	0.065 (1.7mm)	0.50 (12.7mm)	0.049 (1.3mm)	3.56 (90.4mm)	1.25 (31.8mm)	4.60 (116.8mm)	1.00 (25.4mm)	2.67 (67.8mm)	1.25 (31.8mm)	8.46 (214.9mm)
UPC/UPV 2000/750	Ø 2.00 (50.8mm)	0.065 (1.7mm)	0.75 (19.0mm)	0.065 (1.7mm)	3.56 (90.4mm)	1.25 (31.8mm)	4.60 (116.8mm)	1.00 (25.4mm)	2.67 (67.8mm)	1.25 (31.8mm)	8.46 (214.9mm)

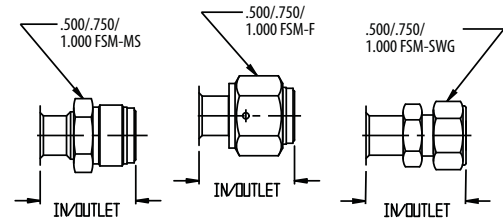
UPC Series Typical Valve Dimensions

UPC (UNIPLEX CROSS)

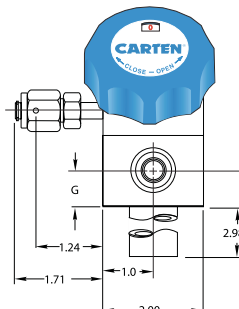
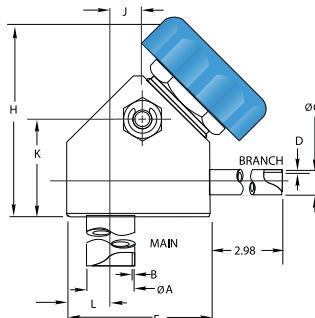


OPTIONAL VALVE END CONNECTIONS

AVAILABLE ON UPC/UFC/UFCR BODY SIZES



UPV (UNIPLEX VERTICAL)



Size	Length		
	FSM-M	FSM-F	SWG
500	1.54 (39.1mm)	1.54 (39.1mm)	2.10 (53.3mm)
750	2.04 (51.8mm)	2.04 (51.8mm)	2.03 (51.6mm)
1000	2.36 (59.9mm)	2.36 (59.9mm)	2.49 (63.2mm)

NOTE 1: All tolerances are ±0.06 in. (±1.52mm) unless otherwise stated.

NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.

UNIPLIX SERIES



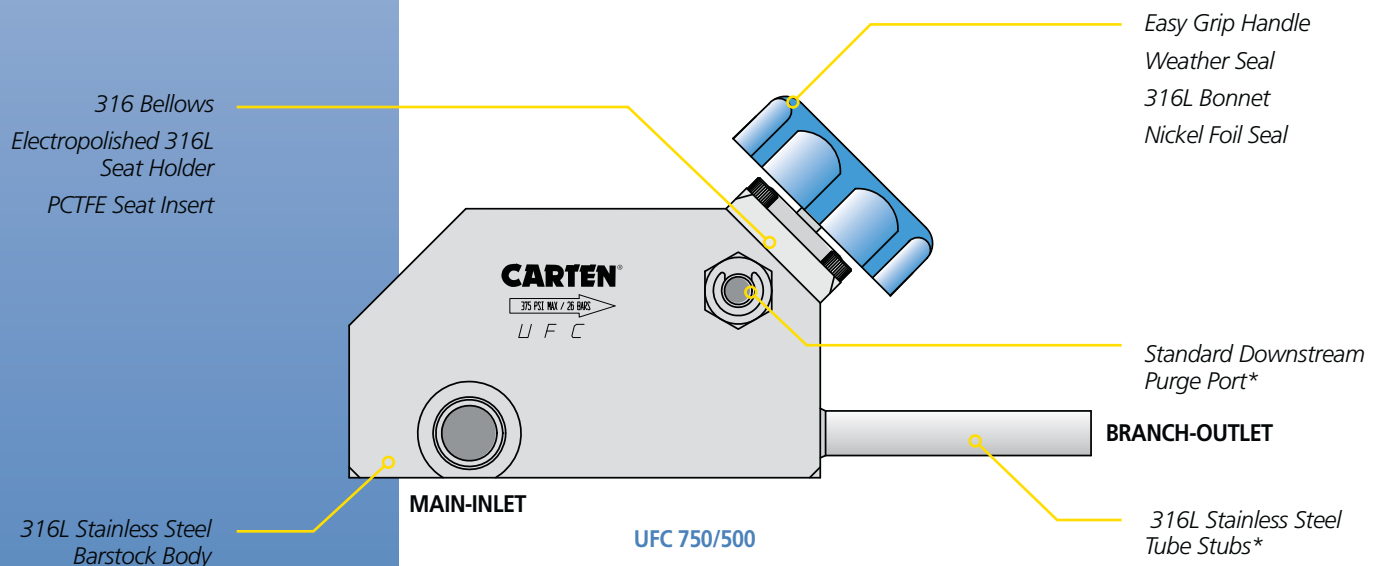
This Uniplex series is designed for high performance applications, which require high-flow rates and superior leak, moisture and particle capabilities. Applications for this valve include:

- **Ultra-High purity gas distribution system control valves**
- **Superior containment and cleanliness for your most critical valve applications**
- **Suitable for inert and most toxic gases**

UFC Series Product Features

- High Performance, Compact Design
- 316 Bellows Design for Ultra-High Purity and Long Cycle Life
- Electropolished Wetted Surfaces to 10 Ra Max (Optional surface finishes available)
- Industry Leading Design in High Purity Gas Containment
- Assembled and Tested in Class 10 Cleanroom
- Inboard and Across the Seat Leak Tested with 100% Helium
- Purge Connections and Purge Valves are Integral in Valve Body
- Valve Bodies and Tube Stubs are Serialized for Material Certification
- Purged and Final Packaged in Class 1 Cleanroom. Double-Bag Packaging with Ultra-High Purity N2 Gas Environment
- Highest Cv Available in the Ultra-High Purity Industry

UFC Construction Materials



*See corresponding Code Chart for available end connections.

UFC Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	316, 316L Stainless Steel, Nickel, PCTFE
	Non-Wetted Areas	316L Stainless Steel, 17-4 PH Stainless Turcite
MAXIMUM OPERATING PRESSURE	UFC Series	Vacuum to 375 psig (25.8 bar)
OPERATING TEMPERATURE RANGE	UFC Series	-22° F (-30°C) to 180° F (82°C)
FLOW COEFFICIENT (C _v)	UFC 750/750	6.08
	UFC 750/500	3.52
	UFC 1000/750	8.17
	UFC 1500/750	8.21
HELIUM LEAK TEST	Inboard	1 x 10 ⁻¹¹ Pa-m 3/s (1 x 10 ⁻¹⁰ atm.cc (He) /s)
	Across the Seat	1 x 10 ⁻¹⁰ Pa-m 3/s (1 x 10 ⁻⁹ atm.cc (He) /s)
	Outboard Pressure Test	1 x 10 ⁻⁷ Pa-m 3/s (1 x 10 ⁻⁶ atm.cc (He) /s)
CLEANLINESS AND PACKAGING	Assembled and Tested in Class 10 Cleanroom. Purged and Final Packaged in Class 1 Cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with Ultra-High Purity N ₂ gas environment.	
STANDARD FINISH	Electropolished to 10 Ra Max (0.25 µm) on all wetted surfaces	
OPTIONS	Surface finish – 5 Ra, 20 Ra Particle, moisture, THC and O ₂ testing SEM and ESCA testing, AES analysis Pneumatic actuators available - types: NC/NO/DA	Fitting connections available for up to 1.00" size – inlet/outlet Handle colors JIS tube stubs and tube length

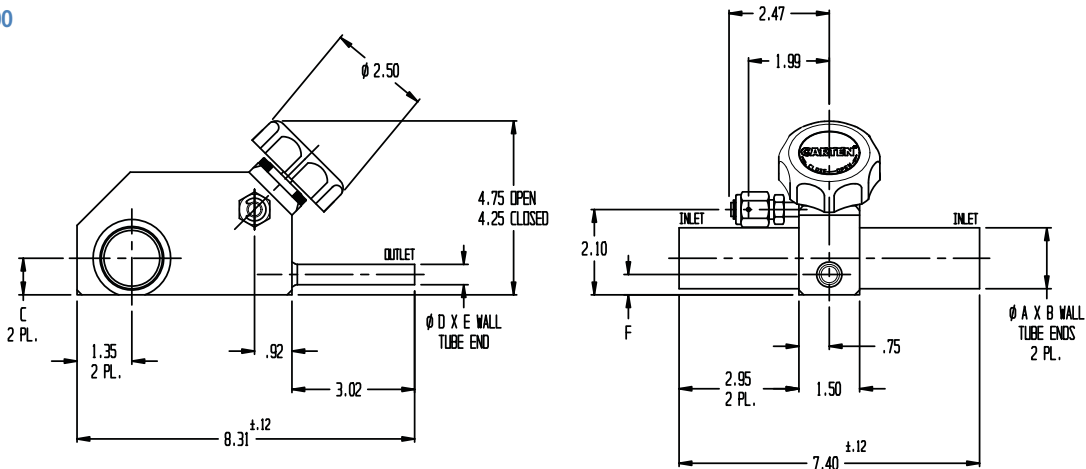
Specifications are subject to change without notice.

UFC Series Technical Dimensions

Size	A	B	C	D	E	F
UFC 500/500	Ø 0.50 (12.7mm)	0.049 (1.2mm)	0.50 (12.7mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)	0.50 (12.7mm)
UFC 750/500	Ø 0.75 (19.1mm)	0.065 (1.6mm)	0.50 (12.7mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)	0.50 (12.7mm)
UFC 1000/500	Ø 1.00 (25.4mm)	0.065 (1.6mm)	0.65 (16.5mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)	0.50 (12.7mm)
UFC 1500/500	Ø 1.50 (38.1mm)	0.065 (1.6mm)	0.90 (22.8mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)	0.50 (12.7mm)
UFC 2000/500	Ø 2.00 (50.8mm)	0.065 (1.6mm)	1.15 (29.2mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)	0.50 (12.7mm)
UFC 750/750	Ø 0.75 (19.1mm)	0.065 (1.6mm)	0.60 (15.2mm)	Ø 0.75 (19.1mm)	0.065 (1.6mm)	0.50 (12.7mm)
UFC 1000/750	Ø 1.00 (25.4mm)	0.065 (1.6mm)	0.65 (16.5mm)	Ø 0.75 (19.1mm)	0.065 (1.6mm)	0.60 (15.2mm)
UFC 1500/750	Ø 1.50 (38.1mm)	0.065 (1.6mm)	0.90 (22.8mm)	Ø 0.75 (19.1mm)	0.065 (1.6mm)	0.50 (12.7mm)
UFC 2000/750	Ø 2.00 (50.8mm)	0.065 (1.6mm)	1.15 (29.2mm)	Ø 0.75 (19.1mm)	0.065 (1.6mm)	0.61 (15.4mm)
UFC 1000/1000	Ø 1.00 (25.4mm)	0.065 (1.6mm)	0.65 (16.5mm)	Ø 1.00 (25.4mm)	0.065 (1.6mm)	0.65 (16.5mm)
UFC 1500/1000	Ø 1.50 (38.1mm)	0.065 (1.6mm)	0.99 (25.1mm)	Ø 1.00 (25.4mm)	0.065 (1.6mm)	0.75 (19.1mm)
UFC 2000/1000	Ø 2.00 (50.8mm)	0.065 (1.6mm)	1.325 (33.6mm)	Ø 1.00 (25.4mm)	0.065 (1.6mm)	0.75 (19.1mm)

UFC Series Typical Valve Dimensions

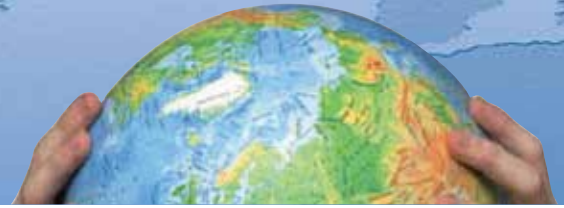
UFC 1500/500



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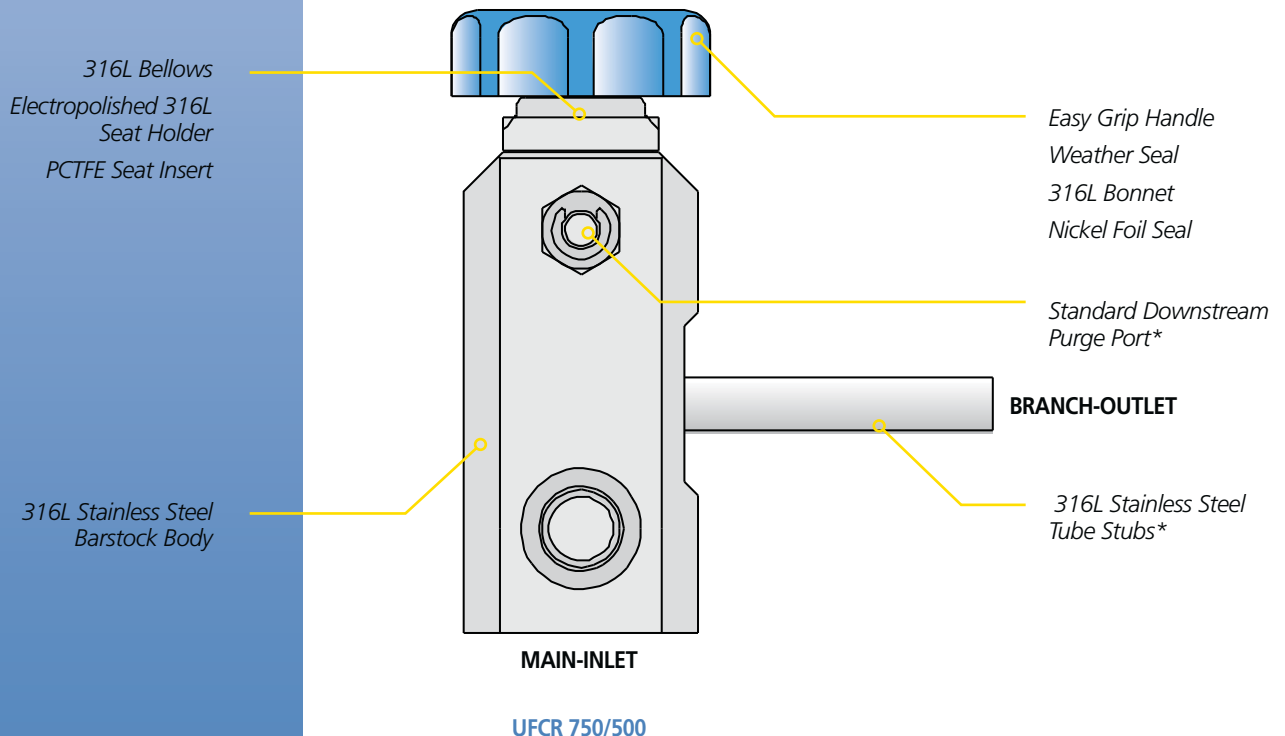
This Uniplex series is designed for high performance applications, which require high-flow rates and superior leak, moisture and particle capabilities. Applications for this valve include:

- **Ultra-High purity gas distribution system control valves**
- **Superior containment and cleanliness for your most critical valve applications**
- **Suitable for inert and most toxic gases**

UFCR Series Product Features

- High Performance, Compact Design
- Bellows Design for Ultra-High Purity and Long Cycle Life
- Electropolished Wetted Surfaces to 10 Ra Max (Optional surface finishes available)
- Industry Leading Design in High Purity Gas Containment
- Assembled and Tested in Class 10 Cleanroom
- Inboard and Across the Seat Leak Tested with 100% Helium
- Purge Connections and Purge Valves are Integral in Valve Body
- Valve Bodies and Tube Stubs are Serialized for Material Certification
- Purged and Final Packaged in Class 1 Cleanroom. Double-Bag Packaging with Ultra-High Purity N₂ Gas Environment
- Highest Cv Available in the Ultra-High Purity Industry
- Offset Branch Outlet
- Optional 360° Radial Branch Location

UFCR Construction Materials



*See corresponding Code Chart for available end connections.

UNIPLIX SERIES

UFCR Series Technical Data

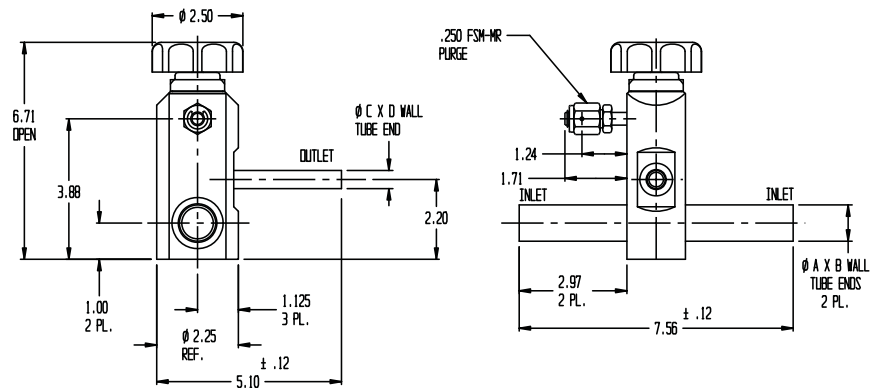
MATERIAL OF CONSTRUCTION	Wetted Areas	316L Stainless Steel, Nickel, PCTFE
	Non-Wetted Areas	316L Stainless Steel, 17-4 PH Stainless Turcite
MAXIMUM OPERATING PRESSURE	UFCR/UFVR Series	Vacuum to 375 psig (25.8 bar)
OPERATING TEMPERATURE RANGE	UFCR/UFVR Series	-22° F (-30°C) to 180° F (82°C)
FLOW COEFFICIENT (C _v)	UFCR 750/750	6.08
	UFCR 750/500	3.62
	UFCR 1000/750	8.17
	UFCR 1500/750	8.21
	UFVR 750/500	3.63
	UFVR 750/750	6.71
	UFVR 1000/750	10.00
	UFVR 1500/750	10.05
	UFVR 2000/500	3.97
HELIUM LEAK TEST	Inboard	1 x 10 ⁻¹¹ Pa-m 3/s (1 x 10 ⁻¹⁰ atm-cc (He)/s)
	Across the Seat	1 x 10 ⁻¹⁰ Pa-m 3/s (1 x 10 ⁻⁹ atm-cc (He)/s)
	Outboard Pressure Test	1 x 10 ⁻⁷ Pa-m 3/s (1 x 10 ⁻⁶ atm-cc (He)/s)
CLEANLINESS AND PACKAGING	Assembled and Tested in Class 10 Cleanroom. Purged and Final Packaged in Class 1 Cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with Ultra-High Purity N ₂ gas environment.	
STANDARD FINISH	Electropolished to 10 Ra Max (0.25 µm) on all wetted surfaces	
OPTIONS	Surface finish – 5 Ra, 20 Ra Particle, moisture, THC and O ₂ testing SEM and ESCA testing, AES analysis Pneumatic actuators available - types: NC/ NO/DA	Fitting connections available for up to 1.00" size – inlet/outlet Handle colors JIS tube stubs and tube length

Specifications are subject to change without notice.

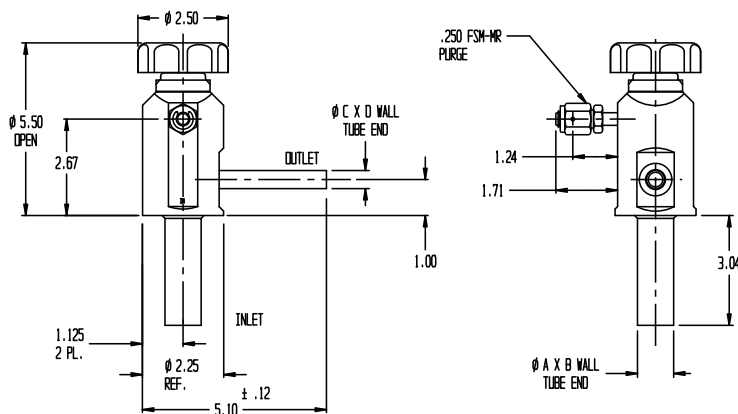
UFCR Series Technical Dimensions and Typical Valve Dimensions

Size	A	B	C	D
UFCR/UFVR 750/500	Ø 0.75 (19.1mm)	0.065 (1.6mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)
UFCR/UFVR 750/750	Ø 0.75 (19.1mm)	0.065 (1.6mm)	Ø 0.75 (19.0mm)	0.065 (1.6mm)
UFCR/UFVR 1000/500	Ø 1.00 (25.4mm)	0.065 (1.6mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)
UFCR/UFVR 1000/750	Ø 1.00 (25.4mm)	0.065 (1.6mm)	Ø 0.75 (19.0mm)	0.065 (1.6mm)
UFCR/UFVR 1500/500	Ø 1.50 (38.1mm)	0.065 (1.6mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)
UFCR/UFVR 1500/750	Ø 1.50 (38.1mm)	0.065 (1.6mm)	Ø 0.75 (19.0mm)	0.065 (1.6mm)
UFVR 2000/500	Ø 2.00 (50.8mm)	0.065 (1.6mm)	Ø 0.50 (12.7mm)	0.049 (1.2mm)
UFVR 2000/750	Ø 2.00 (50.8mm)	0.065 (1.6mm)	Ø 0.75 (19.0mm)	0.065 (1.6mm)

UFCR 1000/500



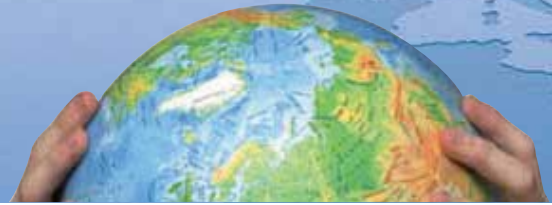
UFVR 1000/500



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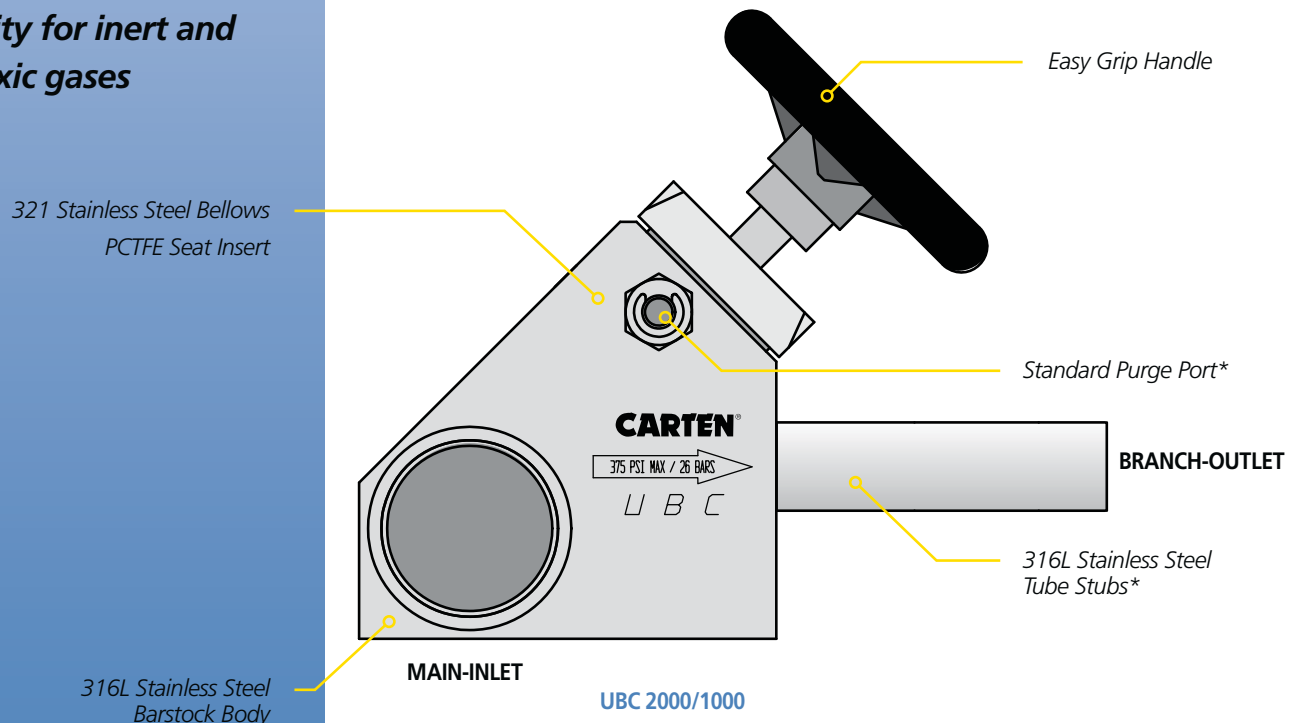
The compact UBC range of these TEE block bellows valves is intended for bulk gas distribution service where containment, cleanliness and purity are of the utmost importance. Our compact valve design minimises the space consideration over the conventional isolation valve and weld TEE option. Applications for this valve include:

- **Ultra-high purity gas system distribution**
- **Ultra-high purity gas control for point-of-use service or hook-up applications**
- **Suitability for inert and most toxic gases**

UBC Series Product Features

- High Performance, Compact Design
- 321 Stainless Steel Bellows for Maximum Flow
- Electropolished Wetted Surfaces to 10 Ra Max (Optional surface finishes available)
- Industry Leading Design in Ultra-High Purity Gas Containment
- Assembled and Tested in Class 10 Cleanroom
- Inboard and Across the Seat Leak Tested with Helium
- Purge Connections and Purge Valves are Integral in Valve Body
- Valve Body and Tube Stubs Are Serialized for Material Certification
- Purged and Final Packaged in Class 1 Cleanroom. Double-Bag Packaging with Ultra-High Purity N₂ Gas Environment

UBC Construction Materials



*See corresponding Code Chart for tube sizes, purge and locations.

UNIPLIX SERIES

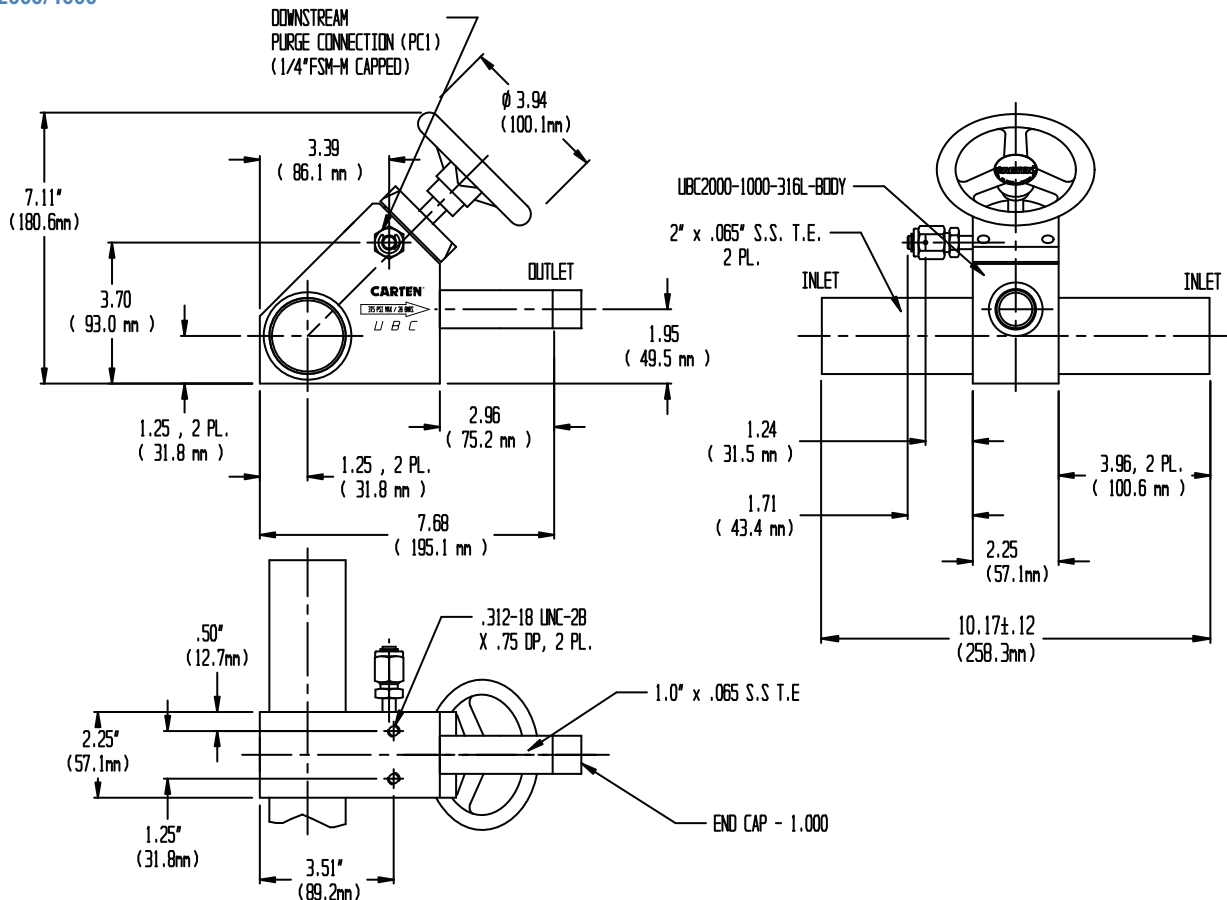
UBC Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	321, 316L Stainless Steel, PCTFE
	Non-Wetted Areas	316L Stainless Steel, Nickel Foil, 303 Stainless Steel
MAXIMUM OPERATING PRESSURE	UBC Series	Vacuum to 375 psig (25.8 bar)
MAXIMUM OPERATING TEMPERATURE	UBC Series	-22° F (-30°C) to 180° F (82°C)
FLOW COEFFICIENT (C _v)	UBC 1000/750	10.20
	UBC 1500/750	10.20
	UBC 1000/1000	14.30
	UBC 1500/1000	14.30
	UBC 2000/1000	14.30
	UBC 2000/1500	16.60
	UBC 3000/1000	14.30
HELIUM LEAK TEST	Inboard	1 x 10 ⁻¹¹ Pa-m 3/s (1 x 10 ⁻¹⁰ atm-cc (He) /s)
	Across the Seat	1 x 10 ⁻¹⁰ Pa-m 3/s (1 x 10 ⁻⁹ atm-cc (He) /s)
	Outboard Pressure Test	1 x 10 ⁻⁷ Pa-m 3/s (1 x 10 ⁻⁶ atm-cc (He) /s)
CLEANLINESS AND PACKAGING	Assembled and tested in Class 10 Cleanroom. Purged and Final Packaged in Class 1 Cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with Ultra-High Purity N ₂ gas environment.	
STANDARD FINISH	Electropolished to 10 Ra Max (0.25 μm) on all wetted surfaces	
OPTIONS	Surface finish – 5 Ra, 15 Ra, 20 Ra, 30 Ra	Fitting connections available for up to 1.00" size – inlet/outlet
	Testing: Particle, moisture, THC and O ₂ Handwheel color options available	
		Optional seat material available for higher temperature applications

Specifications are subject to change without notice.

UBC Series Typical Valve Dimensions

UBC 2000/1000



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NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.



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