

High-Purity Flow Control Solutions

Engineered for Critical Bioprocess Applications.

Acuflow brings Carten Controls' high-performance valves and flow solutions to pharmaceutical, biopharma and other critical-process environments. Carten designs and manufactures solutions for ultra-high-purity systems where cleanliness, containment, delivery, process efficiency and reliability are critical — from individual valves through to integrated flow solutions.

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OUR SOLUTIONS

Multi-Use + Single-Use Flow Control

BNW Diaphragm Valve Series

Sanitary diaphragm valves for multi-use bioprocessing.

Tandem / Custom Valve Solutions

Application-specific welded and multiport configurations.

Omnia Manual Pinch Valves

Manual reusable pinch valves for single-use tubing.

Omnia Fluid Transfer Modules

Turnkey integrated systems for automated single-use fluid transfer.

BNW Block Series

Custom block valves with minimum hold-up volume.

Omnia Pinch Valve Series

Pneumatic single-use pinch valves with interchangeable tubing holders.

Omnia Mini Pinch Valve

Compact single-use flow control for tubing up to 3/8 in OD.

BNW DIAPHRAGM VALVE SERIES

Sanitary Diaphragm Valves

Carten's BNW series uses a unique diaphragm design intended to eliminate constant diaphragm re-tightening after SIP and to enable rapid changeout at each batch change.

Features

- Available in line sizes up to 4 in
- Single-polymer bonnet external seal
- Pneumatic or manual interchangeability
- Standard and bespoke multiport / block options
- Shut-off, control and back-pressure functionality
- Automation and switching / signalling options
- Suitable across upstream and downstream bioprocess operations

Technical Specifications

Parameter	Verified Technical Data
Body	316L forged stainless steel body
Diaphragm	PTFE / EPDM; high-temperature capability up to 150 C

Alternative Diaphragm	TFM1600 / reinforced EPDM
Actuator	Stainless thin-wall, deep-drawn actuator
Manufacturing	Clean White Room
External Sealing	Helium leak-tight external sealing
Leak Testing	100% leak tested to ANSI FCI 70/2 Class VI
Biocompatibility	USP Class VI <87> <88>
SIP	SIP-validated
Surface Treatment	Electropolished and passivated per ASME BPE / ASTM A967
Flow Coefficient	6-200 Cv
Operation	Manual or pneumatic
Automation	4-20 mA switching / signalling automation

Typical Applications

- Bioreactor
- Filtration
- Chromatography
- Centrifugation
- Upstream shut-off / control
- Downstream shut-off / control

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BNW BLOCK SERIES

Sanitary Diaphragm Block Valves

The BNW Block Series carries the advantages of the standard BNW platform into bespoke block designs developed to minimize hold-up volume and compact multiple valve functions.

Features

- Available in line sizes up to 4 in
- Single-polymer bonnet external seal
- Pneumatic or manual interchangeability
- Standard and bespoke multiport / block options
- Multiple block orientations and configurations
- Minimum hold-up volume
- Instrumentation and signalling options

Technical Specifications

Parameter	Verified Technical Data
Body	316L stainless steel
Diaphragm	TFM1600 / reinforced EPDM
Material Source	Barstock / forging-only source
Actuator	Stainless thin-wall, deep-drawn actuator
Manufacturing	Clean White Room
External Sealing	Helium leak-tight external sealing
Leak Testing	100% leak tested to ASME BPE / ANSI FCI 70/2 Class VI
Biocompatibility	USP Class VI <87> <88>
SIP	SIP-validated
Surface Treatment	Electropolished per ASME BPE / ASTM A967; passivated per ASME BPE / ASTM B912
Flow Coefficient	6-200 Cv
Operation	Manual or pneumatic
Options	Multiple block orientations, instrumentation, 4-20 mA switching /

Benefits

- Reduces process pipework footprint
- Supports lower hold-up volume and reduced dead space
- Can consolidate multiple conventional valves into one compact block
- Reduces installation complexity
- Supports application-specific hygienic layouts

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TANDEM / CUSTOM VALVE SOLUTIONS

Application-Specific Multi-Valve Engineering

The Acuflo capabilities brochure describes Carten tandem valves as customized solutions in which an access valve is typically welded to a main valve to create GMP or SAP configurations. These are engineered to improve drainability and minimize dead legs. Carten's current website supports a broader engineer-to-order approach but does not provide a dedicated public Tandem Valve product page.

Features

- Application-specific configuration
- Designed to improve drainability
- Designed to minimize dead legs
- Welded access-valve / main-valve configurations
- GMP or SAP configurations
- Full material certification
- Can be developed within Carten's broader custom block / multiport engineering approach

Engineering Approach

Parameter	Verified Technical Data
Input	Customer process and piping requirement
Design	Application-specific valve geometry / configuration
Engineering	3D modeling and flow-path optimization where required
Manufacture	Custom welded or block construction
Verification	Material certification and project-specific testing
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OMNIA PINCH VALVE SERIES

Single-Use Pneumatic Pinch Valves

Carten's patented Omnia single-use pinch valves are engineered for biopharmaceutical manufacturing and can be used with multiple tubing brands and flow kits, including reinforced lines. Tubing line size can be changed on-site by changing a holder / insert component rather than replacing the complete valve.

Features

- For use with all tubing brands
- Line sizes from 1/16 in ID to 1 in ID on the current product page
- Integrated lockout feature with safety guard
- Interchangeable tubing holders for line-size changeout
- Reusable stainless-steel valve body
- Pneumatic or manual options across the Omnia family
- Automation, position sensing and solenoid options
- Designed for upstream, downstream and fill-finish single-use applications

Technical Specifications

Parameter	Verified Technical Data
Body Material	304 / 316 stainless steel

Material Source	Barstock-only source
Manufacturing	White Room
Tubing Insert Area	No lubricant or grease
Leak Performance	ANSI FCI 70/2 Class VI
Tubing Range	1/16 in ID to 1 in ID
Operating Pressure	6-7 bar / 88-101 psi
Tubing Qualification	Cycle-tested using customer-specified tubing
Options	Multiple brands, compounds and line sizes; manual or pneumatic
Automation	4-20 mA switching / signalling, position sensing, solenoid actuation

Typical Applications

- Upstream
- Downstream
- Fill-finish
- PUPSIT
- Sampling
- Fluid transfer
- High-pressure pump shut-off
- Applications requiring line-size interchangeability

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OMNIA MANUAL PINCH VALVES

Manual Single-Use Flow Control

The patented manual pinch valve series works with multiple tubing brands and flow kits, including reinforced tubing, and allows on-site tubing-size changes through interchangeable insert kits.

Features

- For use with all tubing brands
- Available from 1/16 in ID to 1 in ID
- On-site retrofit using interchangeable insert kits
- Two footprints: BP25 and BP50
- Reusable stainless-steel valve assembly
- Rapid tubing line-size changeout
- Suitable for continuous manufacturing

Technical Specifications

Parameter	Verified Technical Data
Valve Material	304 / 316 stainless steel
Body / Compressor	316L
Bonnet	PTFE-coated
Handwheel	Lightweight PPS
Manufacturing	Clean White Room
Tubing Insert Area	No lubricant or grease
Leak Testing	100% leak tested per ASME BPE / ANSI FCI 70/2 Class VI
Surface Treatment	Electropolished per ASME BPE / ASTM A967; passivated per ASME BPE / ASTM B912
Tubing Test	300 cycles without failure using flowing water
Options	Custom insert kits, multiple tube holders, custom stainless mounting
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OMNIA MINI PINCH VALVE

Compact Single-Use Pinch Valve

The Omnia Mini Pinch Valve is intended for small-bore single-use applications and can be used with tubing or flow kits up to 3/8 in OD.

Features

- Suitable for tubing up to 3/8 in OD
- Suitable for all tubing brands
- Multiple tubing sizes can be used within the same valve footprint
- Can be close-coupled to create multiport functionality
- Suitable for gene therapy, cell therapy and vaccine production
- Available within the broader manual / pneumatic Omnia family

Technical Specifications

Parameter	Verified Technical Data
Material	304 / 316 stainless steel

Spring / Bonnet	PTFE-coated spring for pneumatic version / bonnet for manual version
Material Source	Barstock-only source
Actuator	Stainless thin-wall actuator
Manufacturing	Clean White Room
Tubing Insert Area	No lubricant or grease
Leak Testing	100% leak tested per ASME BPE / ANSI FCI 70/2 Class VI
Tubing	Up to 3/8 in OD
Qualification	Cycle-tested versus specified tubing
Options	Multiport functionality, multiple tube holders, 4-20 mA switching / signalling

Typical Applications

- Gene therapy
- Cell therapy
- Vaccine production
- Upstream
- Downstream
- Fill-finish
- PUPSIT
- Sampling
- Fluid transfer
- Benchtop applications

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OMNIA FLUID TRANSFER MODULES

Integrated Systems for Single-Use Applications

Carten's Omnia Fluid Transfer Modules use the patented pinch-valve platform to create turnkey systems for plug-and-play automated fluid transfer between applications.

Features

- Fluid transfer across multiple applications without valve changeout
- Plug-and-play integrated mechanical system
- Integrated instrumentation
- Electrical and PLC hook-up
- Full FAT
- Multiple tubing-size holder options
- Manual, electric or pneumatic options
- Suitable for automated and mobile fluid-transfer applications

Technical Specifications

Parameter	Verified Technical Data
Structure	304 / 316 stainless steel
Product-Facing Side	Approved stainless or polymer materials
Conduit	Stainless or polymer options
Electrical Cabinet	Stainless steel
Manufacturing	Clean White Room
Tubing Insert Area	No lubricant or grease
Surface Treatment	Electropolished per ASME BPE / ASTM A967; passivated per ASME BPE / ASTM B912
Validation	Full FAT per site and project specification
Tubing Qualification	Cycle-tested versus specified tubing
Control	PLC and electrical components per user requirements
Operation	Manual, electric or pneumatic
Automation	4-20 mA switching / signalling

Typical Applications

- Upstream transfer
- Downstream transfer
- Fill-finish
- PUPSIT
- High-pressure pump shut-off
- Automated fluid transfer
- Mobile transfer systems
- Applications requiring multiple line sizes

[DISCUSS A TRANSFER MODULE](#)

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CUSTOM ENGINEERING

When Standard Valves Are Not Enough

Carten states that it supplies individual valves through to full integrated solutions and partners with customers from enquiry through design, manufacture, supply and after-sales service. The Acuflow brochure additionally highlights custom valve

development using 3D modeling and CFD analysis to optimize flow paths, minimize dead space and improve CIP / SIP efficiency.

Capabilities

- Custom multiport valves
- Block valve configurations
- Tandem / access-valve configurations
- Flow-path optimization
- Dead-leg reduction
- SolidWorks 3D drawing packages
- Computational fluid dynamics
- Finite element analysis
- OEM collaboration
- Custom integrated fluid-transfer systems

QUALITY & COMPLIANCE

Engineered for Critical Process Environments

- USP Class VI <87> / <88> for relevant BNW valve components
- ASME BPE referenced across leak testing, electropolishing and passivation practices
- ANSI FCI 70/2 Class VI leak-testing requirements on relevant bioprocess valve ranges
- Clean White Room manufacturing for Carten's bioprocess products
- PED / material certification and additional validation capabilities described in the Acuflow capabilities brochure
- Flow, pressure, durability, SIP thermal-cycle and drainability testing capabilities referenced in the Acuflow brochure

CARTEN IN-HOUSE ENGINEERING

- SolidWorks 3D design
- Computational fluid dynamics
- Finite element analysis
- Surface profilometry
- Borescope analysis
- Flow and pressure testing
- Durability testing
- SIP thermal-cycle testing
- Drainability analysis
- New-product validation

CHOOSE YOUR FLOW-CONTROL APPROACH

Requirement	Suggested Carten Solution
Sanitary multi-use process valve	BNW Diaphragm Valve Series
Compact multi-valve / low hold-up configuration	BNW Block Series
Drainability / dead-leg optimized custom configuration	Tandem / Custom Valve Solution
Automated single-use tubing control	Omnia Pinch Valve Series
Manual single-use tubing control	Omnia Manual Pinch Valve
Small-bore / benchtop control	Omnia Mini Pinch Valve
Automated single-use transfer system	Omnia Fluid Transfer Module

WHY CARTEN?

- Global specialist in high-performance valves and flow solutions
- Portfolio spans individual valves through integrated systems
- Multi-use and single-use bioprocess solutions
- Engineer-to-order capability for customer-specific applications
- In-house design, manufacturing, testing and validation expertise
- Strong focus on cleanliness, containment, delivery and process reliability

ACUFLOW + CARTEN

Global Valve Engineering. Local Application Support.

Acuflow helps translate the process requirement into the right Carten platform — multi-use, single-use, custom valve or integrated transfer solution.

Define Requirement Multi-Use / Single-Use Select Valve Platform Configure / Engineer Automate if Required Validate & Integrate

FINAL SECTION

Talk to an Expert

What Are You Trying to Control?

Whether you need a sanitary diaphragm valve, a compact block configuration, single-use pinch control or an integrated transfer module, start with your process requirement.

Name*
Company*
Mobile*
E-mail*
Process / Application*
Multi-Use / Single-Use*
Tell us about your flow-control requirement

SUBMIT