INACOM INSTRUMENTS

industrial and analytical components

PROCES CATALOGUS 2025

At Inacom Instruments, we provide more than components—we deliver complete solutions that keep critical processes running reliably and efficiently. For over 40 years, we have specialized in supplying instrumentation, valves, regulators, flow controllers, filters, and other precision components that play a vital role in demanding process applications.

Our role within the process industry is clear: we ensure that engineers, operators, and project teams have access to the right products at the right time. Whether it's for process gas analysis, sampling systems, laboratory setups, or fluid control in production environments, we combine high-quality products with expert support to help our customers achieve consistent results and compliance with stringent standards.

Our process is built upon three core pillars:

Swift Communication
Direct, transparent, and responsive contact ensures that your questions and technical needs are addressed without delay.

Technically Superior Products
We supply high-performance, innovative components from leading manufacturers—tailored to meet the challenges of complex and mission-critical applications.

Prompt Delivery
We understand how important timing is for your projects. That's why we provide clear delivery times, maintain fast communication in case of changes, and ensure stock availability whenever needed. This way, you can rely on us to keep your operations on schedule without unnecessary interruptions.

Index

FLOW CONTROL SOLUTIONS

FLOW MONITORS: Detect flow/no-flow conditions in liquid and gas systems for protection and automation.

Line Size:
1/8" – 1-1/2" NPT

Flow Range:
Liquids: 1 ML/M – 75 L/min
Gases: 50 SCCM – 120 SCFM

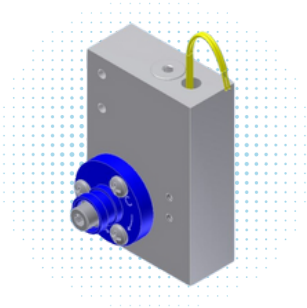
Temperature:
-18°C to 105°C
(upto340°Fwithoptional materials)

Voltage:
5–240 VAC/VDC
(varies by switch)

Materials:
Brass, 316SS, PVC,
Polypropylene, Acrylic, Teflon®

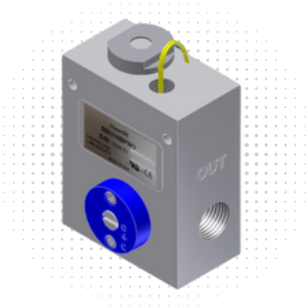
125 Series

Adjustable mechanical flow switch for liquids and gases



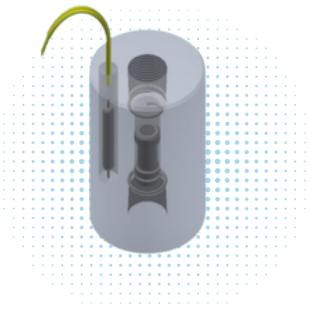
125 BP Series

Adjustable mechanical flow monitor with bypass design for liquids and gases



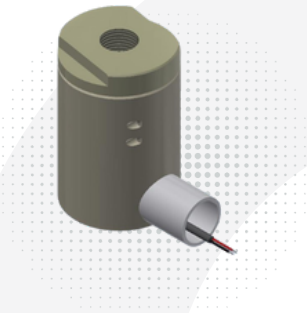
500 BP Series

Adjustable mechanical flow monitor with bypass design for liquids and gases of higher flowrates



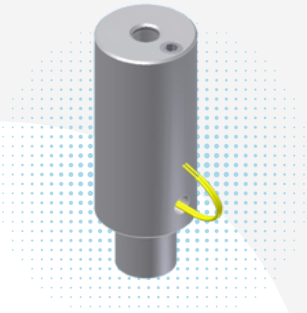
LPH Series

Flow switch for low-pressure hydraulic applications



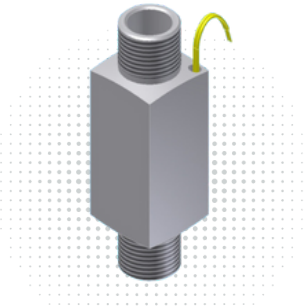
LFS Series

Flow switch for ultra-low flow rates with fixed setpoint



CCM Series

Adjustable flow switch with welded stainless steel construction, designed for ultra-clean applications

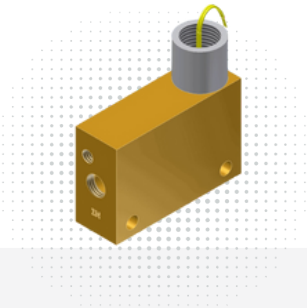


FS Series

Flow switch with fixed setpoint for liquids and gases

LCA Series

Adjustable flow switch with electronic output (alarm function)



FAV Series

Adjustable flow monitor

ChemTec Equipment Company, Inc.
3077 S.W. 13th Dr., Deerfield Beach, Florida 33442
Toll-Free: (800)222-2177 | **Local/Int'l:** +1(954)428-8259
Email: info@chemtec.com

Watch Crash Course

See Catalog

ChemTec

FLOW METERS: Measure and report flow rates for system monitoring and control.

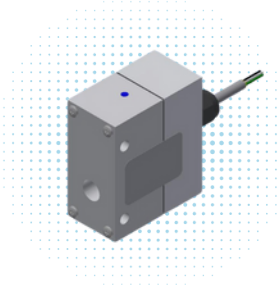
Line Size:
1/4" – 1/2" NPT

Flow Range:
Liquids: 20 ML/M – 13 L/min
Gases: 0.5 – 100 SCFM

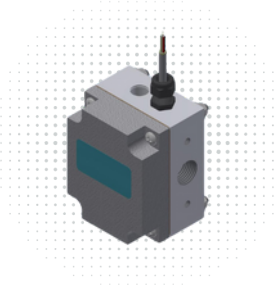
Temperature:
-18°C to 80°C

Voltage:
24 VDC

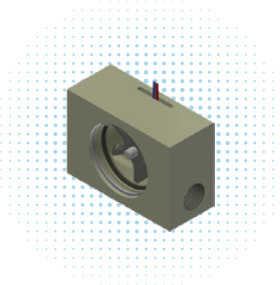
Materials:
Teflon®



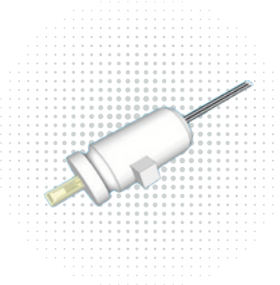
MAO 125/250 Series



MAO 500 Series



Paddle Meter



OEM Mass Flow Sensor

EXCESS FLOW VALVES: Automatically stop flow in case of sudden surge or line break—critical for safety systems.

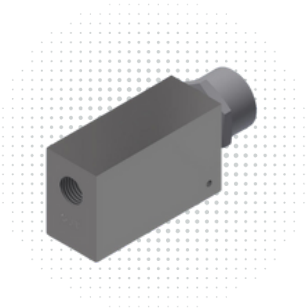
Line Size:
1/8" – 1-1/2" NPT

TripFlow Rates:
Liquids: 0.1 – 20 GPM *(custom calibrated)*
Gases: 0.5 SLPM – 120 SCFM

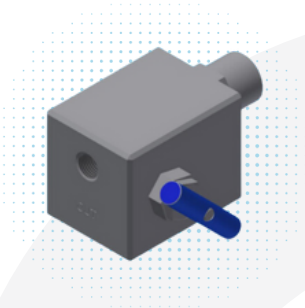
Temperature:
0°F to 180°F
(higherwithspecial materials)

Voltage:
Not required
(mechanically operated)

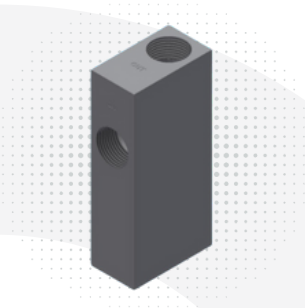
Materials:
Brass, 316SS
(custom upon request)



EFV Series



EFV MRS Series



HPEFV Series

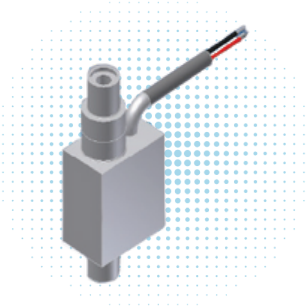
ULTRA-HIGH PURITY: Provide precision flow monitoring in ultra-clean environments such as semiconductor, pharmaceutical,andspecialtygasapplications.

Line Size:
1/4" – 1/2" Tube

Flow Range:
Gases: Custom ranges available
(optimized for low-flow precision)

Pressure:
Up to 3,000 PSIG

Temperature: 18°C to 105°C **Materials:** 316LSS
Accuracy: ±10% of actuation point Repeatability: ±1%
Power: Switch contact output



LPH UHP 250/375 Series

LPH UHP 8 Series

ChemTec Equipment Company, Inc.
3077 S.W. 13th Dr., Deerfield Beach, Florida 33442
Toll-Free: (800)222-2177 | **Local/Int'l:** +1(954)428-8259
Email: info@chemtec.com

Watch Crash Course

See Catalog

Cartridge Solenoid Valves (CSV 10 mm & 12 mm)

Compact control valves for manifold-based automation systems.

- Optimal flow and integration into compact spaces
- Compact cartridge design – easy manifold integration
- 2- or 3-way, NC or NO
- Fast response: 6–10 ms
- Flow: up to 40 SLPM (CSV10) /125 SLPM (CSV12)
- Low power: 2–5 W

HK 5 Series

High-performance miniature valve for compact devices and instruments.

- Miniature 2- or 3-way, 12 mm wide
- High flow: up to 85 SLPM
- Low leakage: <2 cc/min @ 100 psi
- Options: 0.9 W low-power or 1.7 W standard
- Multi-million cycle life

Pilot Valve A10/A15

Pilot control valve for operating larger pneumatic systems.

- 10/15 mm wide, 2- or 3-way NC
- Flow Cv 0.01-0.05 – pilot supply
- Low power: 1.0/2.5 W
- Life expectancy: up to 50 million cycles
- Compact subbase design

Mini Mizer Solenoid Valves

Energy-efficient miniature valve for compact automation, pilot actuation, and vacuum applications.

- 2- or 3-way direct-acting
- Ultra low power: 0.5 W
- Fast response: ~5 ms
- Flow: Cv 0.01 (~1 SCFM @ 100 psi)
- Compact, lightweight

Humphrey® **Precision Valves & Flow Control**

Balanced Solenoid Valve Series

153, 154
SMALL 3- & 4-WAY VALVES

153
DIN
TYPE

M154
PLUG-IN
LEAD
WIRE
TYPE

M153 PLUG-IN
LEAD WIRE TYPE
ON MANIFOLD

- Compact – 15mm valve width
- 1/8 PIPE ports; Metric ports optional
- Excellent flow –
  - * 3-port 153: 15 scfm @100 PSIG
  - * 4-port 154: 10 scfm @100 PSIG
- 5 watt Power Consumption

193, 194
MID-SIZE 3- & 4-WAY VALVES

193
PLUG-IN
W/LEAD
WIRE
TYPE

M194
DIN
TYPE

M193-M194
ON MANIFOLD

- Compact – 19mm valve width
- 1/4 PIPE ports; Metric ports optional
- Excellent flow –
  - * 3-port 193: 38 scfm @100 PSIG
  - * 4-port 194: 28 scfm @100 PSIG
- 6 watt Power Consumption

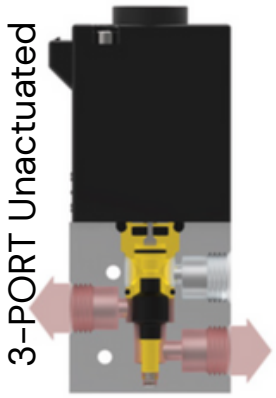
253, 254
LARGE 3- & 4-WAY VALVES

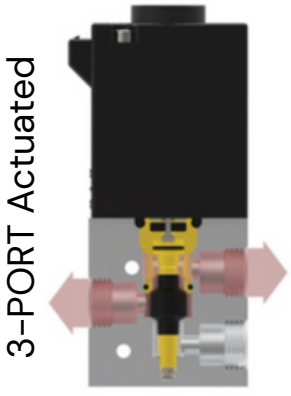
253
DIN
TYPE

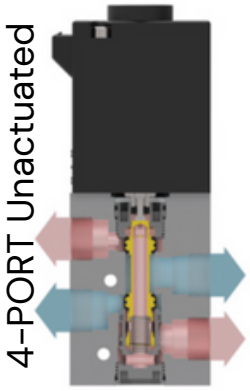
254
W/LEAD
WIRES

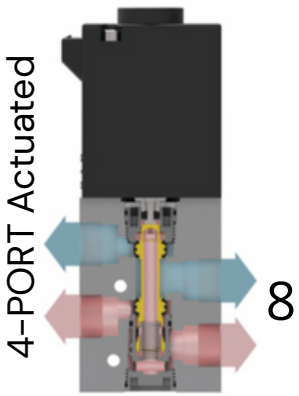
M253-M254
ON MANIFOLD

- Compact – 25mm valve width
- 3/8 PIPE ports; Metric ports optional
- Excellent flow –
  - * 3-port 253: 72 scfm @100 PSIG
  - * 4-port 254: 68 scfm @100 PSIG
- 8 watt Power Consumption



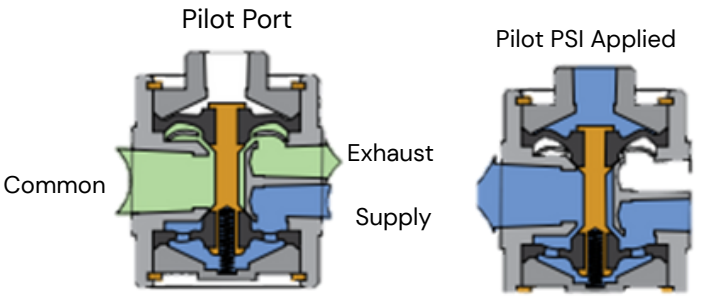






Classic Diaphragm-Poppet Series

- Valves seal tight/not sliding
- No lubricant required
- 2-, 3, 4 way types
- Solenoid, Air-Piloted, manual, mechanical and vacuum models



SPECIFICATIONS	125 SERIES 1/8 PIPE	250 SERIES 1/4 PIPE	500 SERIES 1/2 PIPE	590 SERIES 3/4 PIPE
MEDIA	Compressed Air and Inert Gases (consult factory for others)			
MAXIMUM PRESSURE	125 PSI			
FLOW - SCFM	18	50	160	260
FLOW - CV	0.3	0.8	2.7	3.7
OPERATING SPEEDS	600 CPM			
LUBRICATION	Not Required			
TEMPERATURE RANGE	0-225° F			
WETTED MATERIALS	Zinc Plated Steel, Brass, Buna, SST	Zinc Diecast, Brass, Buna, SST	Brass, Buna, SST	Aluminum, Buna, Brass, SST
STANDARD VOLTAGES (VOLT)	12VDC, 24VDC, 120/50/60, 240/50/60, 24/50/60			

Air Piloted 3- and 4-Way Valves

ORDERING CODE	FUNCTION	TYPE-OPERATOR
125A-3-10-21	3-way, NC	Air Piloted
125A-3-11-21	3-way, NO	Air Piloted
125AA-3-10-21	3-way, NC	Air Piloted - Interlock
250A-3-10-21	3-way, NC	Air Piloted
250A-3-11-21	3-way, NO	Air Piloted
250AA-3-10-21	3-way, NC	Air Piloted - Interlock
SS250A	3-way, NC	Single Pilot, SST Materials
250-4A-21	4-way	Air Piloted
250-4AA-21	4-way	Air Piloted - Interlock
500A-3-10	3-way, NC	Air Piloted
590A-3-10	3-way, NC	Air Piloted

Mechanical 3-Way Valves

ORDERING CODE	FUNCTION	TYPE-OPERATOR
125B-3-10-21	NC	Ball - Mechanical
125MP-3-10-21	NC	Plunger - Mechanical
125MC-3-10-21	NC	Cam - Mechanical
250C-3-10-21	NC	Cam - Mechanical
500C-3-10	NC	Cam - Mechanical

Manual 3- and 4-Way Valves

ORDERING CODE	FUNCTION	TYPE-OPERATOR
125PLG	3-way, NC	Easy Push w/Shroud
125P-3-10-21-40	3-way, NC	Push Button
125P-3-11-21-40	3-way, NO	Push Button
125V-3-10-21	3-way	Toggle - Detent
125HO-3-10-21	3-way	Push Turn - Detent
125T-3-10-21	3-way, NC	Lever
250P-3-10-21	3-way, NC	Push Button
250P-3-11-21	3-way, NO	Palm Button
250PL-3-10-21	3-way, NC	Palm Button
250HO-3-10-21	3-way	Hold On - Detent
250F-3-10	3-way, NC	Foot
250F-3-11	3-way, NO	Foot
250V-3-10-21	3-way	Toggle - Detent
250T-3-10-21	3-way, NC	Lever
250-4F	4-way	Foot
250-4H-21	4-way	3 Position Lever - Detent

Vacuum Service (Consult factory for order codes)

- Diaphragm Poppet valves can be configured at the factory to be outstanding vacuum valves.
- All Air Piloted and Solenoid 3-Way Valves, and some Manual 3-Way valves, can be available as vacuum valves.

Solenoid 3- and 4-Way Valves

BASE MODEL	FUNCTION	TYPE-OPERATOR
250E1-3-10-21-36-(V)	3-way, NC	Single Solenoid
250E2-3-21-(V)	3-way	Double Solenoid - Detent
250AE1-3-10-21-(V)	3-way, NC	Single Solenoid
250AE2-3-21-(V)	3-way	Double Solenoid - Detent
250-4E1-21-(V)	4-way	Single Solenoid
250-4E2-21-(V)	4-way	Double Solenoid - Detent
500E1-3-10-36-(V)	3-way, NC	Single Solenoid
500E2-3-36-(V)	3-way	Double Solenoid - Detent
500AE1-3-10-36-(V)	3-way, NC	Single Solenoid
500AE2-3-36-(V)	3-way	Double Solenoid - Detent
590E1-3-10-36-(V)	3-way, NC	Single Solenoid
590E2-3-36-(V)	3-way	Double Solenoid - Detent
590AE1-3-10-36-(V)	3-way, NC	Single Solenoid
590AE2-3-36-(V)	3-way	Double Solenoid - Detent

Certified: ISO 9001:2015

(Super)Quick Exhaust Valves

- Boosts cylinder speed via rapid venting at actuator ports
- High flow capacity – up to 395 SCFM at 100 psi
- Operating pressure: vacuum to 150 psi
- Versatile design – functions as exhaust, shuttle, check or speed control
- Compact, inline mounting – simplifies pneumatic circuits

Shuttle Valves

- Automatic higher-pressure selection between two sources
- Operating pressure: vacuum to 150 psi
- Flow capacity – Cv up to 1.6 depending on size
- Applications – dual supply switching, high/low pressure circuits, emergency backup
- Durable brass, aluminum or stainless construction

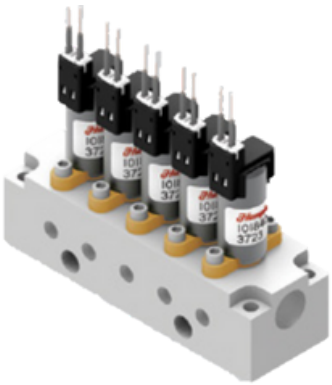
Check Valves

- One-way flow control – prevents reverse flow in pneumatic circuits
- Operating pressure: vacuum to 150 psi
- High flow efficiency – Cv up to ~1.2 depending on size
- Compact inline construction – easy integration into manifolds or tubing
- Durable materials – brass, aluminum or stainless steel options

101 Series 10mm 2-Port Manifold iDP Valve

Introducing Miniature iDP. Just 10 millimeters in width, this diaphragm separated, 2-port aggressive media valve delivers precise control, reliable performance and low internal volume for micro-dosing applications in the medical technology and analytical fields. Applications include the control of fluids and chemical reagents used in microfluidics, DNA analysis, and blood, urine and tissue sampling. This simple, straightforward design delivers trouble-free performance for millions of cycles.

SPECIFICATIONS	10MM
TYPE OF OPERATION	Direct Solenoid, Media Separated
FUNCTION	2-Way, Normally Closed
MEDIA	Aggressive Liquids (Gases)
PIPING TYPE	Manifold
WETTED PARTS	Radel® and FKM or EPDM
INLET PRESSURE – PSI (BAR)	0–30 PSI (2.07) *Consult factory for higher pressure or vacuum application.*
MAX BACK PRESSURE – PSI (BAR)	15 (1.03)
WATER FLOW @ 30 PSI	550 mL/min
AIR FLOW @ 30 PSI	20 SLPM
FLUID TEMPERATURE	EPDM: -4°-203°F (-20°-95°C) FKM: 32°-203°F (0-95°C)
AMBIENT TEMPERATURE	EPDM: -4°-149°F (-20°-65°C) FKM: 32°-149°F (0-65°C)
CYCLES/MIN @ 30 PSI	600
RESPONSE TIME @ 30 PSI	15 msec
ELECTRICAL ENTRY – PLUG-IN	ZHR-3 connector 26 AWG x 18" wire supplied.
VOLTAGES	12VDC, 24VDC
VOLTAGE TOLERANCE	±10%
POWER CONSUMPTION (WATTS)	1.5
WEIGHT (OZ)	0.4



iDP Valves 300 Series 2/3-Port

Introducing Humphrey's 300 series iDP 3-way inline valve. Inert solenoid valves are designed to control aggressive media in most harsh environments. When size and space require a more compact design consider the 300 series iDP. The flexing diaphragmpoppet design isolates the solenoid from media ensuring sustained performance and long life.

SPECIFICATIONS	IDP 300 3-PORT INLINE
TYPE OF OPERATION	Direct Solenoid, Media Separated
NUMBER OF POSITIONS	2
FUNCTION	Normally Closed
MEDIA	Aggressive Liquids and Gases
WETTED PARTS: BODY AND DIAPHRAGM-POPPET	PEEK, Viton®GF or EPDM
PRESSURE RANGE: DIVERTER – PSI (BAR)	Vacuum to 40 PSI (2.76)
REVERSE PRESSURE RANGE: SELECTOR – PSI (BAR)	Vacuum to 10 PSI (0.7)
PIPING TYPE	Inline, Direct Piping
WATER FLOW @ 40 PSI (TYP)	1.45 SLPM
AIR FLOW @ 40 PSI (TYP)	50 SLPM
FLUID TEMPERATURE	-20°C to 95°C
AMBIENT TEMPERATURE	-20°C to 65°C
CYCLES/MIN	300
RESPONSE TIME @ 40 PSI (TYP)	25 msec
PORT SIZE	1/16", 3/32" or 1/8"
ELECTRICAL ENTRY	Plug-In or Lead Wires
VOLTAGES	12VDC, 24VDC
VOLTAGE TOLERANCE	±10%
POWER CONSUMPTION (WATTS)	3.5
WEIGHT	0.22 lbs

300 SERIES, 3-WAY INTERNAL VOLUMES	1/16" Barb Body	3/32" Barb Body	1/8" Barb Body
UNACTUATED (COMMON & NO)	0.010in³	0.012in³	0.014in³
ACTUATED (COMMON & NC)	0.009in³	0.010in³	0.022in³

iDP Valves 2-Port 350/351 Series

Introducing Humphrey 350/351 series iDP valves. These 2-way inert solenoid valves are purposely engineered to control aggressive liquids and gases in the most harsh environments. The flexing diaphragmpoppet design isolates the solenoid from media penetration, while the inert body material ensures long life and sustained performance.

SPECIFICATIONS	IDP 350	IDP 351
TYPE OF OPERATION	Direct Solenoid, Media Separated	
FUNCTION	2-Way, Normally Closed	
MEDIA	Aggressive Liquids (Gases)	
WETTED PARTS: BODY AND SEALS (DIAPHRAGM-POPPET)	Radel® and FFKM, Viton®GF or EPDM	
PRESSURE RANGE – PSI (BAR)	Vacuum to 40 PSI (2.76) *Consult factory for higher pressure.*	
PIPING TYPE	Inline, Direct Piping	Manifold Mount
INTERNAL VOLUME: BARB BODY	Unactuated Under Poppet: 0.026in³ Actuated: 0.062in³	Unactuated Under Poppet: 0.004in³ Actuated: 0.037in³
WATER FLOW @ 40 PSI (TYP)	5.3 SLPM	
AIR FLOW @ 40 PSI (TYP)	220 SLPM	
FLUID TEMPERATURE	-20°C to 95°C	
AMBIENT TEMPERATURE	-20°C to 65°C	
CYCLES/MIN	300	
RESPONSE TIME @ 40 PSI (TYP)	16 msec	
PORT SIZE	5/16" Barb; 8mm Quick Disconnection	--
ELECTRICAL ENTRY	Spade Terminals or Lead Wires	
VOLTAGE	24VDC	
VOLTAGE TOLERANCE	±10%	
POWER CONSUMPTION (WATTS)	8.3	
WEIGHT	0.38 lbs	0.39 lbs

iDP Valves 3-Port 370/371 Series

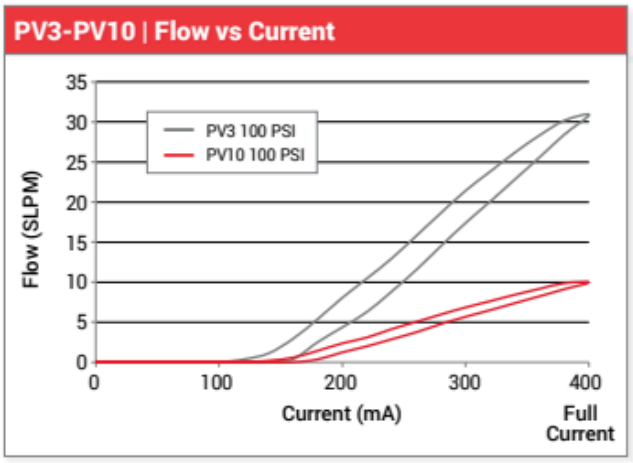
Introducing Humphrey 370/371 series iDP valves. These 3-way inert solenoid valves are purposely engineered to control aggressive liquids and gases in the most harsh environments. The flexing diaphragm-poppet design isolates the solenoid from media penetration, while the inert body material ensures long life and sustained performance. The 370/371 series of valves may be used as a selector valve or diverter valve. In a selector application the rated pressure will be 30 PSI Max.

SPECIFICATIONS	IDP 370	IDP 371
TYPE OF OPERATION	Direct Solenoid, Media Separated	
FUNCTION	3-Way, Normally Closed	
MEDIA	Aggressive Liquids (Gases)	
WETTED PARTS: BODY AND SEALS (DIAPHRAGM-POPPET)	Radel® and FFKM, Viton®GF or EPDM	
PRESSURE RANGE – PSI (BAR)	0–40 PSI (2.76) *Consult factory for higher pressure or vacuum application.*	
PIPING TYPE	Inline, Direct Piping	Manifold Mount
INTERNAL VOLUME: BARB BODY	Unactuated Under Poppet: 0.026in³ Actuated: 0.062in³	Unactuated Under Poppet: 0.004in³ Actuated: 0.037in³
WATER FLOW @ 40 PSI (TYP)	5.3 SLPM	
AIR FLOW @ 40 PSI (TYP)	220 SLPM	
FLUID TEMPERATURE	EPDM: -20°C to 95°C FKM: 0-95°C | FFKM: 0-95°C	
AMBIENT TEMPERATURE	EPDM: -20°C to 65°C FKM: -10°C to 65°C | FFKM: 10-65°C	
CYCLES/MIN	300	
RESPONSE TIME @ 40 PSI (TYP)	20 msec	
PORT SIZE	5/16" Barb; 8mm Quick Disconnection	--
ELECTRICAL ENTRY	Spade Terminals or Lead Wires	
VOLTAGE	24VDC	
VOLTAGE TOLERANCE	±10%	
POWER CONSUMPTION (WATTS)	8.3	
WEIGHT	0.40 lbs	0.42 lbs

ProControl Series

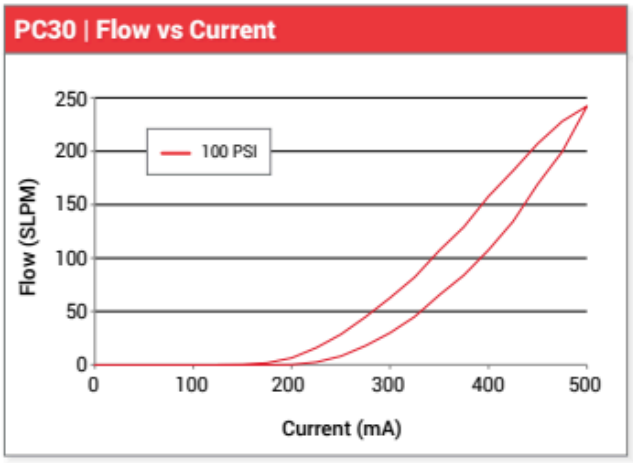
MINIATURE – 2-port PV3 and PV10 Series; 10-32 UNF ports; Select from standard* pressure calibration settings of 25, 50, 75 and 100 PSI.

PV10 PV3



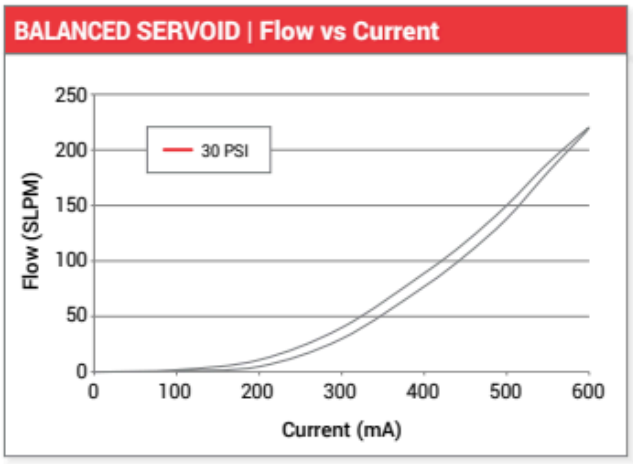
SMALL – Rugged 2-port PC30 Series; 1/4 PIPE ports; Select from standard* pressure calibration settings of 25, 50 and 100 PSI.

PC30



HIGH FLOW, SERVOID SERIES – Features perfected cartridge style, flat spring armature, achieving unmatched precise control to high flows. Long history of reliability in hospital critical care patient ventilation systems. The flexible design of the balanced servoid allows custom calibration for optimal performance and resolution in your application.

Balanced Servoid



PERMA PURE

BE Series Moisture Exchanger

Improve Gas Detection Sensor Accuracy by Adding Humidity to Your Calibration Gases

Humidifying calibration gas has been shown to improve Gas Detector accuracy and reduce false alarms for many sensor and gas types. Perma Pure's BE Series of Moisture Exchangers has been tested and characterized for users and installers of Gas Detection Systems to make it easy to humidify their calibration gas during the system calibration and set up procedure. A range of lengths is available for the most common flow requirements.

Features and Benefits

Simple Installation — Place the BE moisture exchanger in line with the calibration gas before the sensor with the outside of the moisture exchanger fully exposed to the surrounding atmosphere. The moisture exchanger will extract moisture from the surrounding ambient environment, automatically humidifying your calibration gas to the required level.

Continuously Regenerating — The Moisture exchanger continuously regenerates, providing consistent performance over time.

Low Service Costs and Long Service Life — Product does not "wear out" or lose performance with repeated use.

Corrosion Resistant Construction— The moisture exchanger materials are chemically resistant to most gases being detected.

Performance Graphs - RH v Calibration Gas Flow Rate

Performance data is shown in two ways:

- Figure 1 and 2 show the resultant outlet humidity's at various flow rates for two controlled environments—one at 20 °C with a 15 °C dew point (a standard mild climate) and one at 35 °C with a 27 °C dew point (a typical hot and humid tropical climate)
- Figure 3 shows the outlet RH vs. inlet RH at the common flow rate of 1 LPM for a range of lengths.

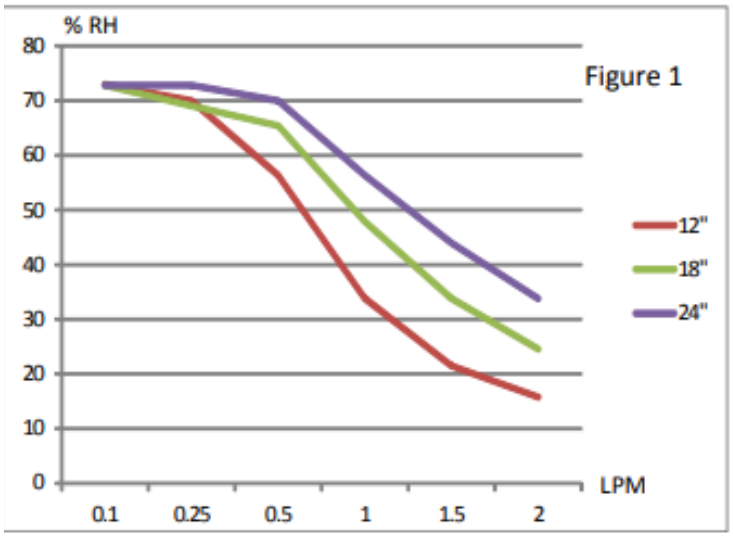


Fig. 1 - Ambient conditions of 20 °C w/15 °C Dew Point (73% RH)

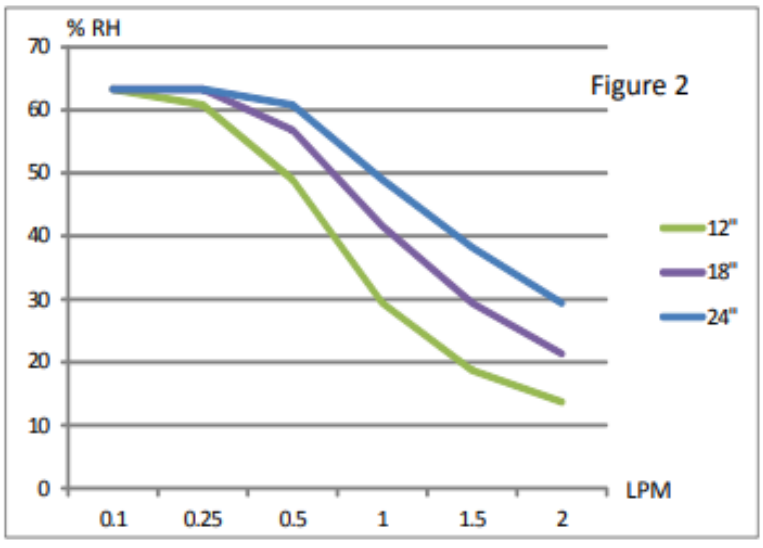
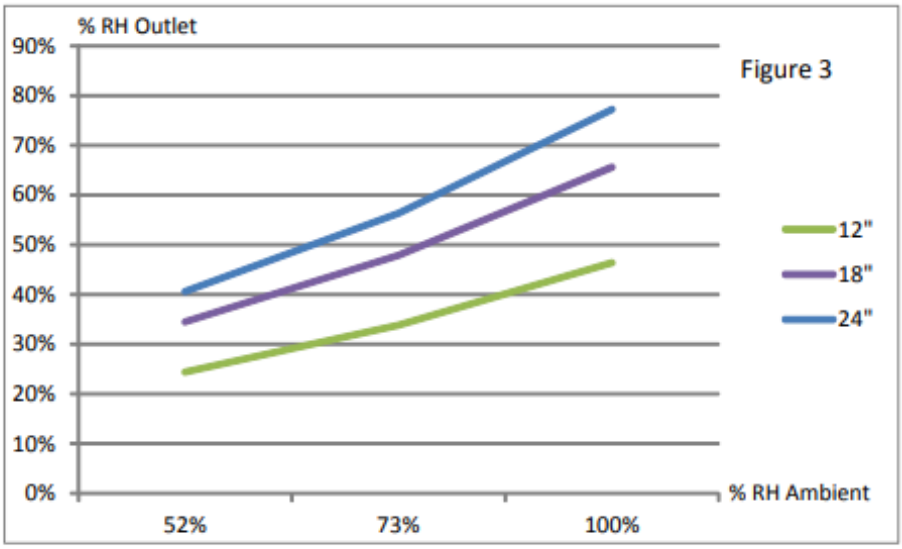


Fig. 2 - Ambient conditions of 35 °C w/ 27 °C Dew Point (63% RH)

PERMA PURE BE Series Moisture Exchanger

Performance Graphs - Resultant RH v Ambient RH

Figure 3: Flow Rate of 1 LPM, 3 lengths (12, 18 and 24"), 20 °C Ambient Conditions, RHs from 50-100%



Operating Specifications

Temperature	0-80°C
Pressure	Maximum 90 psi (6 bar)
Humidity (Ambient)	0-100% RH
Tubing Material	Nafion
Braided Material	Polypropylene Line
Connector Material	Molded Polypropylene

	Flow Rate	*Recommended Active Length*
Size Selection	0—0.5 lpm	12"(15cm)
	0.5-1 lpm	18"(30cm)
	1-2 lpm	24"(60cm)
	2-4 lpm	48"(90cm)

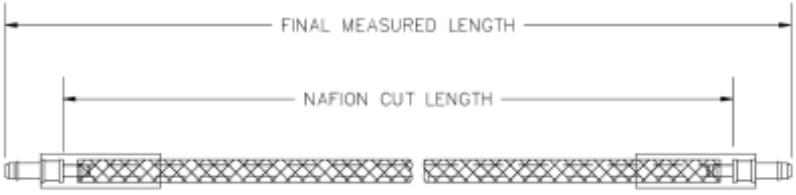
Intelligent Product Numbering System

BE - 110 - 24 BB

1. Series 2. Tubing Size 3. Length 4. Connection

1. Series	
Braided Moisture Exchanger	BE
2. Tubing Size	
0.110" Nafion® Tubing	110
3. Dryer Active Length	
6" (15 cm)	6
12" (30 cm)	12
18" (45 cm)	18
24" (60 cm)	24
48" (120 cm)	48
4. Connection Ends	
1/4" molded headers for compression fittings	COMP4
1/8" Barbed fittings	BB

Dimensions



Dryer Active Length	12" (30 cm)	18" (45 cm)	24" (60 cm)	48" (120 cm)
Total Length ('L')	13.1" (33.3 cm)	19.1" (48.6 cm)	25.1" (63.8 cm)	49.1" (124.8 cm)

MD Series Gas Dryers

Protect Moisture-Sensitive Equipment by Selectively Drying Sample or Carrier Gas

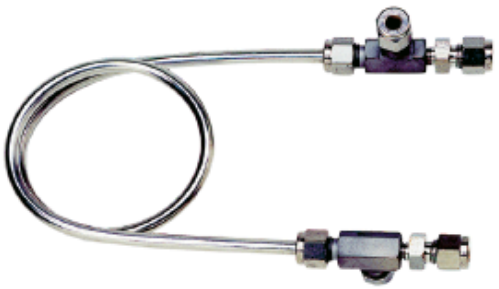
Perma Pure MD Series gas dryers use exclusive Nafion™ selectively permeable membrane tubing to continuously remove only water vapor from gas streams. These dryers operate over a wide range of temperatures, pressures and flow rates while drying to very low dew points.

Key Features

- Dries continuously
- Removes only water vapor
- Achieves low dew points
- Requires no electricity
- Maintenance-free operation
- No moving parts
- Excellent corrosion resistance
- Short residence time

Principle of Operation

MD Series gas dryers transfer moisture from one gas stream to a counter-flowing purge gas, much like a shell-and-tube heat exchanger transfers heat. Water molecules permeate through the Nafion™ tube wall, evaporating into the purge gas stream. The water concentration differential between the two gas streams drives the reaction, quickly drying the air or gas.



Purge gas should be instrument air or other dry gas. If no dry gas is available, a portion of the gas dried by the MD Series dryer can act as the purge gas in a split-stream or reflux method.

Model	MD-050	MD-070	MD-110
Nafion™ Tube O.D.	0.053″	0.072″	0.108″
Nafion™ Tube I.D.	0.042″	0.060″	0.086″
Available Lengths[1]	12, 24, 48, 72, 96, or 144 inches		
Housing Materials	Stainless Steel or Fluorocarbon or Polypropylene		
Maximum Flow Rate	200 cc/min.	2 liters/min.[2]	4 liters/min.[2]

[1] MD-050 Series dryers are not offered in 96 and 144-inch lengths.

[2] MD-070 and MD-110 offer approximately the same drying performance. Specify MD-110 when pressure drop is a concern, MD-070 to minimize dead volume. For higher flow rates,please see our PD Series dryers.

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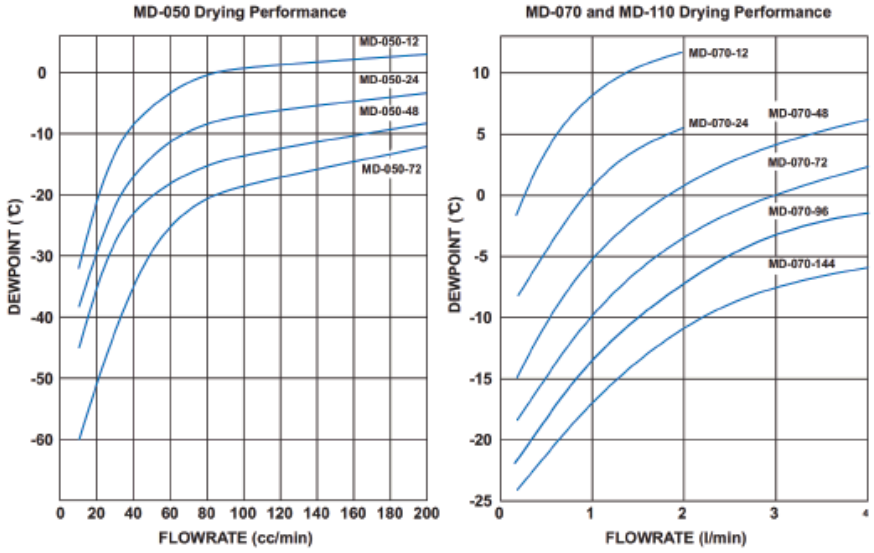
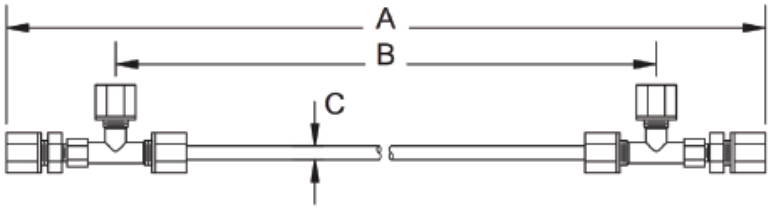




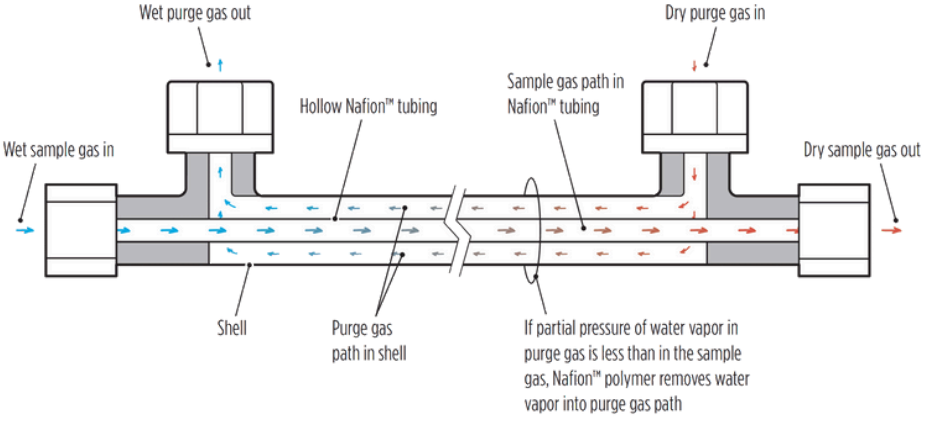
Model	A	B	C
Single Tube of 0.050″ O.D. Nafion™ Fittings are 1/8″ compression, optional 1/16″ sample fittings are available on stainless model only.			
MD-050-12	14 ± 3/8″	11-1/8″	1/8″
MD-050-24	26 ± 3/8″	23-1/8″	1/8″
MD-050-48	50 ± 3/8″	47-1/8″	1/8″
MD-050-72	74 ± 3/8″	71-1/8″	1/8″
Single Tube of 0.070″ or 0.110″ O.D. Nafion™ Sample fittings are 1/8″ or 1/4″ compression, all purge fittings are 1/4″ compression			
MD-(070 or 110)-12	14 ± 1/4″	10″	1/4″
MD-(070 or 110)-24	26 ± 1/4″	22″	1/4″
MD-(070 or 110)-48	50 ± 1/4″	46″	1/4″
MD-(070 or 110)-72	74 ± 1/4″	70″	1/4″
MD-(070 or 110)-96	98 ± 1/4″	94″	1/4″
MD-(070 or 110)-144	142 ± 1/4″	142″	1/4″

Pressure Drop Calculations:

Δ P for MD-050 (inches of water) = Sample flow rate (lpm) x length of dryer (inches)

Δ P for MD-070 (inches of water) = Sample flow rate (lpm) x 0.14 x length of dryer (inches)

Δ P for MD-110 (inches of water) = Sample flow rate (lpm) x 0.07 x length of dryer (inches)



PD Series Gas Dryers

Continuously Dry Gases For High-Performance, High-Flow Applications

Perma Pure PD Series gas dryers use exclusive Nafion™ tubing technology to continuously dry gases to very low dew points. The PD Series dryers operate over a wide range of temperatures, pressures and flow rates for high-performance, high-flow gas drying applications.

Key Features

- Achieves low dew points
- Removes only water vapor
- Dries continuously
- Requires no electricity
- Maintenance-free operation
- No moving parts
- Excellent corrosion resistance
- Low pressure drop

Principle of Operation

PD Series gas dryers transfer moisture from one gas stream to a counter-flowing purge gas, much like a shell-and-tube heat exchanger transfers heat. Water molecules permeate through the Nafion™ tube wall, evaporating into the purge gas stream. The water concentration differential between the two gas streams drives the reaction, quickly drying the air or gas.

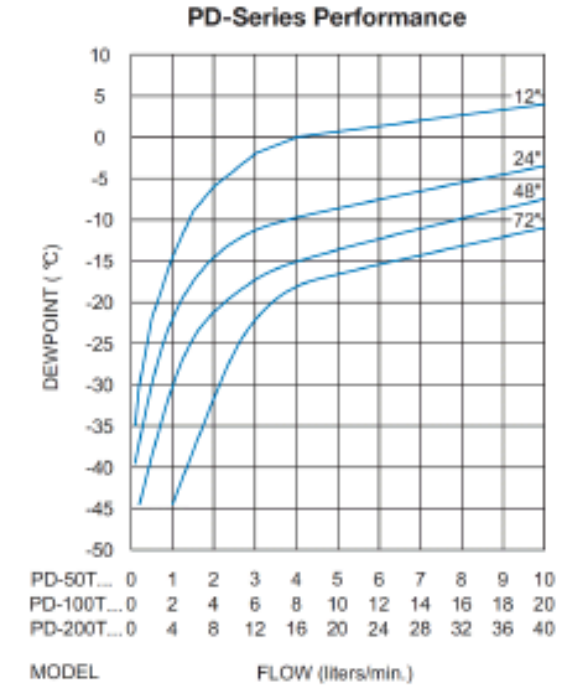
Purge gas should be instrument air or other dry gas. If no dry gas is available, a portion of the gas dried by the PD Series dryer can act as the purge gas in a split-stream or reflux method.

Model	PD-50T	PD-100T	PD-200T
Number of Nafion™ Tubes	50	100	200
Available Lengths	12, 24, 48, or 72 inches		
Housing Materials	Polypropylene or Fluorocarbon or Stainless Steel		
Recommended Flow Rates[1]	4 slpm	8 slpm	15 slpm

[1] Flow rates based upon unheated, 24" dryer achieving a -10°C dew point. Consult curves on back page for other flow rates.

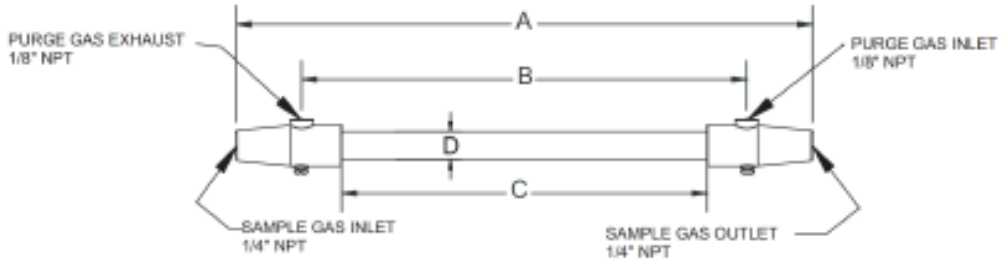
PERMA PURE

PD Series Gas Dryers



Conditions: Inlet dew point of 20°C, purge flow rate 2 times sample flow

For inlet dew point greater than 20°C, assume that the first half of the dryer will be used to bring the dew point down to ambient, then read the value of the next shorter dryer. For example, in a stream with an initial dew point of 50°C, flowing at 2 slpm, a PD-50T-24 should yield an outlet dew point of -6°C, the performance of the 12" unit.



Model	A	B	C	D
PD-50T-12(MPP,MPS,MKS,MKA,SS,SA)	15.3"	11.8"	9.7"	0.75"
PD-50T-24(MPP,MPS,MKS,MKA,SS,SA)	23.3"	19.8"	17.7"	0.75"
PD-50T-48(MPP,MPS,MKS,MKA,SS,SA)	47.3"	43.8"	41.7"	0.75"
PD-50T-72(MPP,MPS,MKS,MKA,SS,SA)	71.3"	67.8"	65.7"	0.75"
PD-100T-12(MPS,MKS,MKA,SS,SA)	15.3"	11.8"	9.7"	0.875"
PD-100T-24(MPS,MKS,MKA,SS,SA)	23.3"	19.8"	17.7"	0.875"
PD-100T-48(MPS,MKS,MKA,SS,SA)	47.3"	43.8"	41.7"	0.875"
PD-100T-72(MPS,MKS,MKA,SS,SA)	71.3"	67.8"	65.7"	0.875"
PD-200T-12(MPS,MKS,MKA,SS,SA)	15.3"	11.8"	9.7"	1.000"
PD-200T-24(MPS,MKS,MKA,SS,SA)	23.3"	19.8"	17.7"	1.000"
PD-200T-48(MPS,MKS,MKA,SS,SA)	47.3"	43.8"	41.7"	1.000"
PD-200T-72(MPS,MKS,MKA,SS,SA)	71.3"	67.8"	65.7"	1.000"

Pressure Drop Calculations:

Δ P for PD-50T (psid) = Sample flow rate (lpm) x length of dryer (inches) x (0.0056)

Δ P for PD-100T (psid) = Sample flow rate (lpm) x length of dryer (inches) x (0.0028)

Δ P for PD-200T (psid) = Sample flow rate (lpm) x length of dryer (inches) x (0.0014)

MH Series Humidifier

Provides Consistent Humidification in a Compact, Flexible Design

Perma Pure MH Series humidifiers use an exclusive Nafion™ selectively permeable membrane tubing and liquid water to continuously humidify gas streams. These humidifiers operate over a wide range of flow rates, and humidify up to 98% RH using deionized water as the humidification source.

Key Features

- Humidifies continuously
- Transfers only water vapor
- Self-regulating
- High level of humidification
- Maintenance-free operation
- No moving parts
- Excellent corrosion resistance
- Fast response time

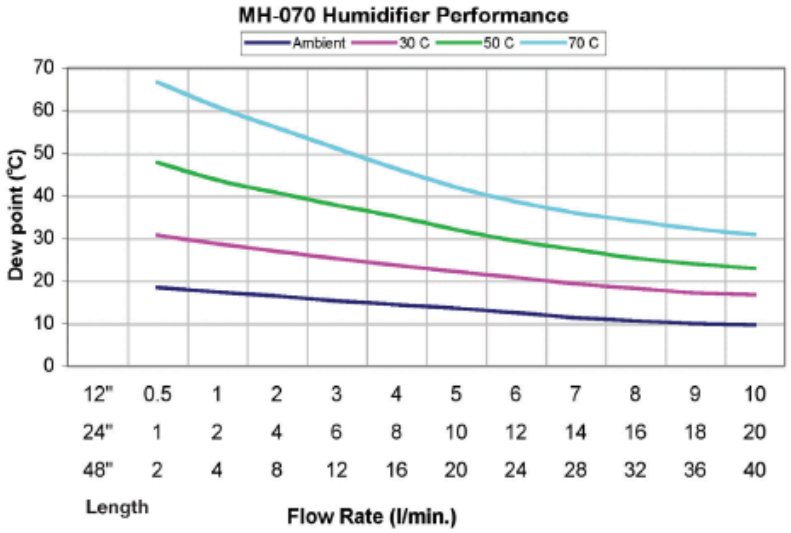
Principle of Operation

MH Series gas humidifiers are tube-in-shell moisture exchangers that allow the transfer of heat and water vapor between a liquid water supply and a gas stream. The water permeates through the walls of the Nafion™ tube and then evaporates into the gas stream. This transfer is driven by the difference in water vapor pressure between the water and dry gas stream.

Because only water molecules are transferred through the tubing, bacterial growth and subsequent contamination of the gas stream cannot occur. All MH Series humidifiers are shipped sealed with deionized water, ready for use.

Model	MD-070	MD-110
Nafion™ Tube O.D.	0.072"	0.108"
Nafion™ Tube I.D.	0.060"	0.086"
Available Lengths	12, 24 or 48 inches	
Housing Materials	Stainless Steel or Flourocarbon or Polypropylene	

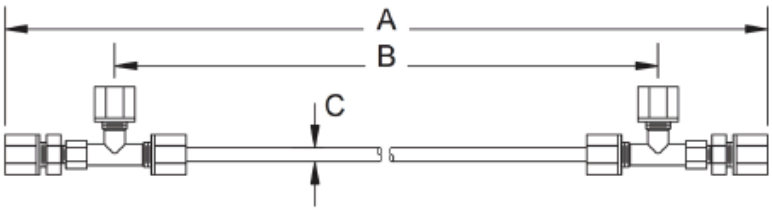
MH Series



The above performance curves are for the MH-070. The MH-110 gives roughly a 3 degree higher outlet dew point than the MH-070. The MH-110 should be selected when a lower pressure drop is desired.

The MH Series humidifier performance curves were performed under the following conditions:

- Temperature-controlled water circulating in shell side of the humidifier
- The humidifier housing was insulated.
- The inlet air stream was at 24°C, <-40°C dew point and ambient pressure



Model	A	B	C
Single Tube of 0.070" or 0.110" O.D. Nafion™ Sample fittings are 1/8" or 1/4" compression, all purge fittings are 1/4" compression			
MD-(070 or 110)-12	14 ± 1/4"	10"	1/4"
MD-(070 or 110)-24	26 ± 1/4"	22"	1/4"
MD-(070 or 110)-48	50 ± 1/4"	46"	1/4"

Pressure Drop Calculations:

Δ P for MD-070 (inches of water) = Sample flow rate (lpm) x 0.14 x length of dryer (inches)

Δ P for MD-110 (inches of water) = Sample flow rate (lpm) x 0.07 x length of dryer (inches)

FC Series Humidifiers

Consistent Humidification for High-Flow Applications

Perma Pure FC Series humidifiers use an exclusive Nafion™ membrane tubing to continuously humidify gas streams. These humidifiers operate over a wide range of flow rates and can use either liquid water or a humid gas stream as a source of humidity.

Key Features

- Humidifies continuously
- Transfers only water vapor
- Self-regulating
- High level of humidification
- Maintenance-free operation
- No moving parts
- Excellent corrosion resistance
- Humidifies high flow rates

Principle of Operation

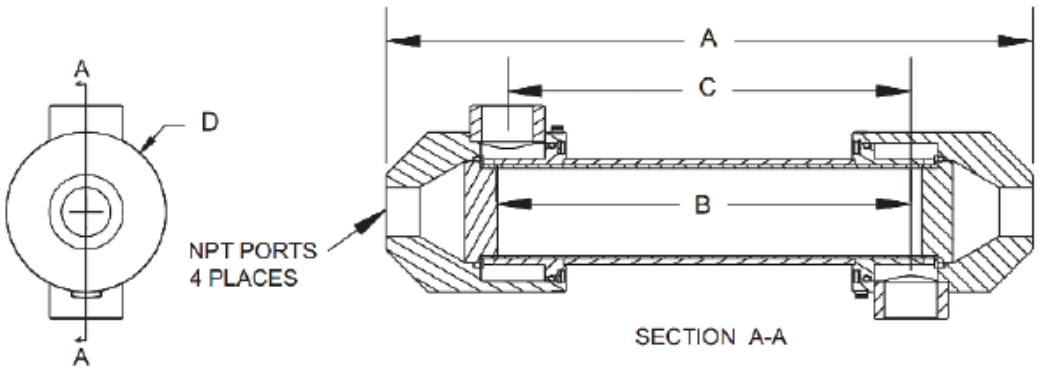
Perma Pure's FC Series gas humidifiers are tube-in-shell humidity exchangers that transfer heat and water vapor between two gas streams. They may operate as either water-to-gas or gas-to-gas humidity exchangers.

Water-to-gas humidifiers have liquid water on one side of the tube wall and a dry gas on the other. This arrangement offers the greatest amount of humidification; however, the reaction of the water molecules moving through the tubing wall absorbs heat. To counter this cooling effect, the inlet water must be heated. Hot, circulated deionized water should be used to optimize performance.

Gas-to-gas humidifiers use counter-flowing wet and dry gas streams to move heat and humidity from one stream to the other. These units are energy efficient, as they do not require any additional power or heat. When gas passes inside the Nafion™ tubing, water is absorbed by and moves through the walls of the tubing. The movement of water is driven by the humidity gradient between the inside and outside of the tubing. Since only water molecules move through the tubing walls, liquid water is prevented from becoming entrained in the gas stream.

PERMA PURE

FC Series



Model	A		B		C		D	Port Sizes	Operating Fluid Pressure Range	
	inches	mm	inches	mm	inches	mm	inches	inches	kPa	psig
FC100-80	8.8	223	?	?	5.4	135	1.3	1/4 air inlet 1/8 wet stream	0 to 35 @ 80°C (176°F)	0 to 5 @ 80°C (176°F)
FC125-240-5MP	7.9	200.7	5	127	4.6	116.8	2.5	1/2	0 to 172 @ 80°C (176°F)	0 to 25 @ 80°C (176°F)
FC125-240-7MP	9.9	251.5	7	177.8	6.6	167.6				
FC125-240-10MP	12.9	327.7	10	254	9.6	243.8				
FC150-480-7PP	11.5	292.1	7	177.8	6.75	171.5	3.5	3/4	0 to 172 @ 80°C (176°F)	0 to 25 @ 80°C (176°F)
FC150-480-10PP	14.5	368.3	10	254	975	247.7				
FC150-480-15PP	19.5	495.3	15	381	14.75	374.7				
FC200-780-7MP	11.1	281.9	7	177.8	6.16	156.5	3.52	?	?	?
FC200-780-10MP	14.1	358.1	10	254	7.16	181.9				
FC300-1660-7LP	12.1	307.3	7	177.8	5.6	142.2	5.2	1 1/2	?	?
FC300-1660-10LP/HP	15.1	383.5	10	254	8.6	218.4				
FC300-1660-15LP	20.1	510.5	15	381	13.6	345.4				
FC400-2500-7LP/HP	12.8	325.1	7	177.8	5.0	127	6.11	1 (2 optional)	?	?
FC400-2500-10LP	15.8	401.3	10	254	8.0	203.2				
FC600-7000-7PP	14.75	374.7	7	177.8	5.75	146.1	8.5	2	0 to 35 @ 80°C (176°F)	0 to 5 @ 80°C (176°F)
FC600-7000-10PP	17.75	450.9	10	254	8.75	222.3				
FC600-7000-15PP	22.75	577.9	15	381	13.75	349.3				

PERMA PURE

Perma Pure's CEMS and process analysis solutions include coolers, probes, highly-selective permeation tubing, and integrated sampling systems, which are used by leading continuous emissions monitoring systems suppliers, industries and governments. We are proud to partner with our broad and diverse customer base to meet the latest SOx and NOx requirements, making the world healthier and cleaner. Our commitment to protect life starts with a focus on quality and partnership with our customers to meet the challenges of a dynamic global marketplace while making the world safer and healthier.

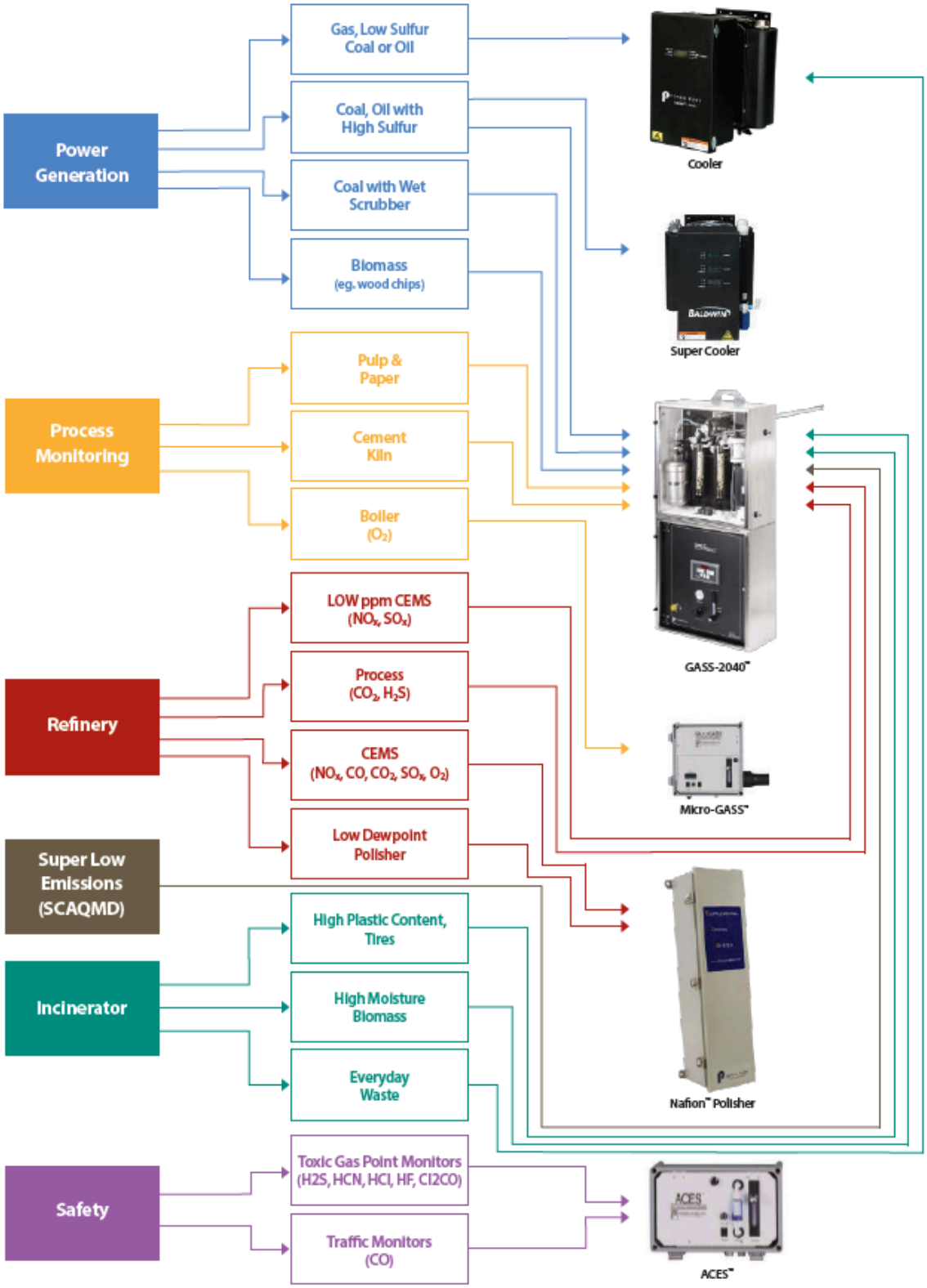
Gas Sample Conditioning Systems

Model Number	Maximum Water In Gas Stream - %				Maximum Rated Flow - LPM									XP	Requires Drain Pump		Requires Heated Sample Line	Requires Climate Controlled Environment	Optimized for Corrosion & Measurement of Low Levels of SO_2, NO, NO_2, H_2S, HCL	Integral Probe Mount
	0-12%	12-20%	20-30%	30-50%+	1	2	2-3	3-4	4-5	5-6	6-8	8-10	10+		Yes	No				
Baldwin-Series Coolers																				
ICOOL-A-1	•				•	•									•		•	•		
ICOOL-A-2	•				•	•	•	•							•		•	•		
4C-M115S	•	•			•										•		•	•		
4C-225S	•	•			•	•									•		•	•		
4C-M325S	•	•			•	•	•								•		•	•		
4C-M425S	•	•			•	•	•	•							•		•	•		
4C-5210S	•	•			•	•	•	•	•						•		•			
4C-8210S	•	•			•	•	•	•	•	•	•				•		•			
4C-10410K	•	•			•	•	•	•	•	•	•	•			•		•			
4C-20410S	•	•			•	•	•	•	•	•	•	•	•		•		•			
4E-5500XP	•	•			•	•	•	•	•	•				•	•		•			
4E-5800XP	•	•			•	•	•	•	•	•	•			•	•		•			
4E-5900XP	•	•			•	•	•	•	•	•	•	•		•	•		•			
Baldwin-Series Cooler Sample Conditioning Systems																				
4S-9A	•	•			•												•			
4S-MP5400 (Portable)	•	•			•	•	•	•									•			
4S-9PA	•	•			•	•	•	•	•								•			
4S-9AA	•	•			•	•	•	•	•	•	•						•			
4S-M8B (Portable)	•	•			•	•	•	•	•	•	•						•			
4S-9-10410K	•	•			•	•	•	•	•	•	•	•					•			
4S-9PAPA	•	•			•	•	•	•	•	•	•	•	•				•			
Gas Analysis Sampling Systems with High Performance Nafion™ Technology																				
UG-1212-F1	•				•											•				
GM-1024	•	•			•	•	•	•	•							•			•	
MG-1228W	•	•	•		•	•	•	•	•	•						•			•	
MG-2812T (Portable)	•	•	•		•	•	•	•	•	•						•			•	
MG-1228P	•	•	•		•	•	•	•	•	•						•			•	•
GS2040W	•	•	•	•	•	•	•	•	•	•	•	•	•			•			•	
GS2040P	•	•	•	•	•	•	•	•	•	•	•	•	•			•			•	•

PERMA PURE

Gas Sample Conditioning Systems

Choosing Thermo-Electric Coolers or Nafion™ Membrane Dryers



BIO-CHEM FLUIDICS

85 Fulton Street, Ste 12, Boonton, NJ 07005 • USA
Phone +1 973 263 3001 • Fax +1 973 263 2880
www.biochemfluidics.com

Micro-Pumps

Micro-Pumps are designed to provide a precise, repeatable, and discrete dispense volume of high purity and aggressive fluids. The flow path is isolated from the operating mechanism by a flexible diaphragm.

Features and Specifications:

- **Precise Dispense Volumes:** Dispense volumes range from 20µl to 250µl per cycle with ±5% repeatability across the range.
- **Continuous Duty:** Pump actuation mechanisms are designed for continuous duty up to 20 million actuations, corresponding to nearly 3,000 hours of continuous use at a 2 Hz cycle rate. Pump life may vary depending on application.
- **Inert Materials:** Pumps provide a non-metallic, completely inert flow path for dispensing high purity and aggressive fluids. The body is available in PPS, PTFE, PEEK, and POM materials.
- **Self-Priming:** Pumps with dispense volumes greater than 20µl are able to draw air and pull liquid from an unpressurized container located over 4 feet beneath the pump.
- **Voltages and Connections:** 12 VDC and 24VDC standard. $^1/_4$" - 28 and $^5/_{16}$" - 24 UNF. Other voltages and connections available upon request.

Isolation Valves

Isolation Valves provide a flow path that is completely isolated from the valve actuation mechanisms. With only the valve diaphragm and body wetted, the electrical components remain isolated.

Features and Specifications:

- **Multiple Body Styles:** 2-way normally open, 2-way normally closed, and 3-way styles are available to meet your application needs.
- **Long Service Life:** The valve actuation mechanisms are designed for up to 20 million actuations. Valve life may vary depending on application.
- **Inert Materials:** Valves provide a non-metallic, completely inert flow path for dispensing high purity and aggressive fluids. The body is available in PPS, PTFE, PEEK, and PSU materials.
- **Voltages and Connections:** 12 VDC and 24VDC standard. $^1/_4$" – 28 UNF, $^1/_{16}$" soft tube, $^1/_8$" NPT, Luer fittings, and manifold mountable. Other voltages and connections available upon request.

Flow Selection Valves

Flow Selection Valves allow multiple solenoid operated valve elements to be combined into a single, compact unit. Each element is operated independently to accurately define a combined outlet flow between 2 and 8 individual source streams.

Features and Specifications:

- **Long Service Life:** The valve actuation mechanisms are designed for up to 20 million actuations. Valve life may vary depending on application.
- **Inert Materials:** Valves provide a non-metallic, completely inert flow path for dispensing high purity and aggressive fluids. The body is available in PTFE and PEEK.
- **Voltages and Connections:** 12 VDC and 24VDC standard. $^1/_4$" – 28 UNF. Other voltages and connections available upon request.

BIO•CHEM FLUIDICS
85 Fulton Street, Ste 12, Boonton, NJ 07005 • USA
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www.biochemfluidics.com

Pinch Valves

Pinch Valves provide a full-bore flow passage through a flexible tube which is pinched by the solenoid mechanism to produce a tight seal. The fluid only interacts with easily replaceable tubing making this style of valve ideal for applications requiring frequent maintenance of the flow path.

Features and Specifications:

- **Long Service Life:** The valve actuation mechanisms are designed for up to 20 million actuations. Tubing will experience some wear and should be replaced at 500,000 actuations or sooner. Valve and tubing life may vary depending on application.
- **Tubing Materials:** Standard pinch valves are supplied with Silicone or C-Flex™ tubing that both comply with USP XXII, Class VI, FDA and USDA standards. Additional tubing materials are available upon request.
- **Multiple Body Styles:** 2-way normally closed, 2-way normally open, and 3-way styles are available to meet your application needs and support single and dual tubing paths.
- **Voltages and Tubing Sizes:** 12 VDC and 24VDC standard. A range of tubing are available with internal diameters from 0.010″ (0.3mm) to $^{1}/_{8}$″ (3.2mm).

Rotary Valves

Rotary Valves are used for sample injection and flow selection in chromatography systems and other analytical instrumentation. The stepper motor drives a rotor inside the valve body to align the desired flow paths and provide an unobstructed flow path with minimal pressure drop.

Features and Specifications:

- **Wide Variety of Flow Configuration:** 4 and 6 port models are available for both flow selection and loop injection configurations.
- **Highly Resistant Wetted Materials:** Highly inert PTFE / PCTFE body and rotor withstand organic solvents and most other aggressive chemicals.
- **Pressured Applications:** Differential pressures up to 14 bar / 200 psi.
- **Easy to Use:** Sophisticated electronics, including a micro-processor control board featuring automatic initialization, an EEPROM, and an optoelectronic position sensor, allow for program storage and ensure port alignment.

Piston Pumps

Piston Pumps provide a highly durable and accurate dispense solution for low-pressure applications. Engineered to withstand the impact of aggressive salt solutions, our unique technology allows for longer service life compared to other pumps.

Features and Specifications:

- **Long Service Life:** The pumps are designed for up to industry-leading 5 million cycles running aggressive fluids such as NaOH. Pump life may vary depending on application.
- **Variety of Materials:** The pumps are available with Ultem®, PEEK, and Acrylic heads.
- **Reduced Operating Costs:** By removing the risk of sample contamination and lowering the cost of ownership through an extended life, our piston pumps improve uptime and throughput while providing the safe and reliable dispense of aggressive salt solutions.
- **Non-Stick Solution:** Through our patent-pending technology, our piston pumps are immune from seal degradation associated with salt solution residue.

2500 Series

QuickShip

2500 Series

Precision-Machined Acrylic Variable Area Flow (Purge) Meters for Gases & Liquids

Series 2500 is a standard precision-machined acrylic flow meter for liquids and gases, with direct reading air or water scales and is available in either English or metric scales.

Models 2510/2520/2530 can be configured with a control valve on the inlet or no valve. Fittings and valve can be specified in either brass or stainless steel. O-rings are available in Buna-N, Viton® fluoroelastomer or other optional elastomers.

Model 2540 flowmeters have standard 1" FNPT PVC fittings with either an in-line

Model 2540-I or panel mount Model 2540-S configuration. The panel mount version is available with an integral valve on the inlet Model 2540-V or no valve.

Typical applications include:

- Air sampling equipment aquaculture
- Gas analyzers
- Photo processing equipment systems
- Desalinization equipment
- Medical systems
- Water treatment and distribution

Features:

- Easy-to-read English or metric scales
- Air ranges from 40 ccm to 4000 LPM
- Easy disassembly/assembly for installation
- Stable easy-to-read float
- Water ranges from 4 ccm to 20 GPM
- Threaded brass inserts for quick maintenance

Product Specifications

	2510	2520	2530	2540
PERFORMANCE				
Accuracy Flow Rates Floats	±5% full scale[1]	±3% full scale[1]		±2% full scale[1]
Body Seals	See Table A	See Table B	See Table C	See Tables D & E
	Stainless Steel			
	Clear Acrylic			
	Buna-N O-rings with Brass fittings; Viton® O-rings with 303 Stainless Steel fittings			Buna-N O-rings w/Brass or PVC fittings Viton O-rings w/Stn Stl fittings
Pressure	100 PSIG Max.			
Temperature	150°F/65°C Max.			
Fittings Valves	Brass, 303 Stainless Steel Brass			PVC FNPT Pipe Connections (Std.)
	or Stainless Steel			Integral Valve on "V" models Inline Gate Valve is available for "S and I" models
Certifications	International Calibration Certificate (ICC); Pressure Equipment Directive (97/23/EC); RoHS			

[1] At reference conditions of 70°F (21.1°C)/14.7 psia (1 Bar A)

KEY INSTRUMENTS

Model 2510 Flow Rates - Table A

Range SCFHofAir	Tube Code	Range LPMofAir	Tube Code
.1-1	2A00	0.04-0.5	2A12**
.2-2	2A01	.1-1	2A13**
.4-5	2A02	.2-2.5	2A29**
0.5-10	2A03	.4-5	2A14**
4-50	2A06	1-10	2A15**
10-100	2A07	2-25	2A16**
20-200	2A08	6-50	2A17
		10-100	2A18
CCMofWater	**TubeCode**	**GPHofWater**	**Tube Code**
10-100	2L10	.2-2	2L28
20-240	2L11	.4-5	2L19
		1-10	2L20**
		2-20	2L21
		4-40	2L22

** QuickShip

Select meters ship in 3 days.
Max order quantity = 15 meters.
Consult factory on orders of more than 15 me-

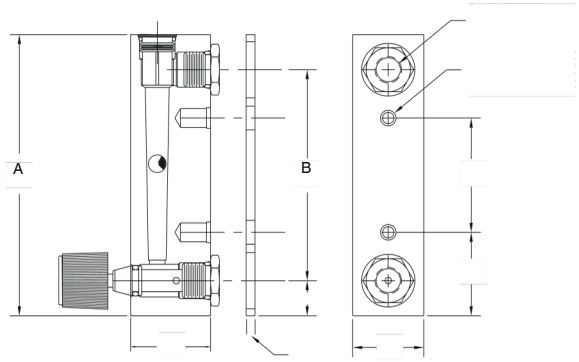
Model 2520 Flow Rates - Table B

Range SCFH of Air	Tube Code	Range CCM of Water	Tube Code
.4-5	4A30	4-50	4L38
1-10	4A31	10-120	4L56
4-40	4A33	25-225	4L51
10-100	4A34**	40-400	4L50
20-200	4A36	40-660	4L52
		100-1500	4L53**
CCM of Air	Tube Code	200-3000	4L54
100-1000	4A39*	300-3700	4L55
LPM of Air	Tube Code	GPH of Water	Tube Code
.4-5	4A40**	1-10	4L45**
1-10	4A41**	2-25	4L48**
2-20	4A42**	6-60	4L46**
3-30	4A43		
4-50	4A44	SCFM of Air	Tube Code
10-100	4A47**	.3-3	4A37**

*Uses Delrin® float.

** QuickShip *Select meters ship in 3 days.*
Max order quantity = 15 meters.
Consult factory on orders of more than 15

Dimensions: Models 2510, 2520 & 2530



Dimensions - Inches (MM)

Model	A	B	C	D	E	F	G
2510	4" (102)	3" (76.2)	1" (25.4)	1-5/8" (41.3)	1-3/16" (30.2)	1-1/8" (28.6)	1/8" FNPT
2520	6-1/2" (165)	5-1/2" (140)	1-3/8" (34.9)	3-1/2" (88.9)	1-1/2" (38.10)	1-1/8" (28.6)	1/8" FNPT
2530*	6-5/8" (168)	5-1/2" (140)	1-1/8" (28.6)	3-1/2" (88.9)	1-1/2" (38.1)	1-3/8" 34.9)	1/4" FNPT

*Does not include 1/8" back plate

Model 2530 Flow Rates - Table C

Range SCFM of Air	Tube Code	Range GPM of Water	Tube Code
.5-5	4A67	.25-2.5	4L64
1-10	4A65	.5-5	4L66
4-20	4A68	LPM of Water	Tube Code
LPM of Air	Tube Code	1-10	4L69
14-140	4A72	2-20	4L71
30-300	4A70	Dual Scales: SCFM/SCFH, GPM/GPH and LPM/LPH	
100-560	4A73		

Ordering Information / Typical Model Code for Models 2510, 2520 & 2530

Code Description		Code Option	Option Description
I.	Base Model Number	2510	Acrylic Flowmeter: ±5% Full Scale Acrylic Flowmeter: ±3%
		2520	Full Scale Acrylic Flowmeter: ±3% Full Scale
		2530	Revision Level
II.	Revision	A	From Table A, B or C
III.	Tube Code	XXXX	Brass
IV.	Fittings	B**	Stainless Steel
		S**	No Valve
V.	Valves	N**	Standard Inlet Valve
		V**	Outlet Valve (Vacuum service 2510 & 2520 only)
		O	Buna N (Standard with brass fittings) Brass only Viton®
VI.	Seals	BN**	fluoroelastomer (Std. with SS) SS only
		VT**	No Logo
VII.	Options	-NL	

Additional Options
- Certificate of Conformance
- ICC
- Paper Tag
- Stainless Steel Tag
- Degrease for O 2 Cleaning

Sample Standard Model Code

I	II	III	IV	V	VI	VII -
2510	A	2A03	B	V	BN	NL

** QuickShip *Select meters ship in 3 days.*
Max order quantity = 15 meters.
Consult factory on orders of more than 15 meters.

Model 2540 - S Flow Rates - Table D

Range SCFM of Air	Tube Code	Range GPM of Water	Tube Code
3-25	5A50	.4-5	5L56
4-50	5A51	1-10	5L57
10-100	5A52	2-20	5L58
LPM of Air	**Tube Code**	**LPM of Water**	**Tube Code**
100-700	5A53	1-19	5L59
100-1400	5A54	4-36	5L60
400-3000	5A55	5-75	5L61

Model 2540 - I Flow Rates - Table E

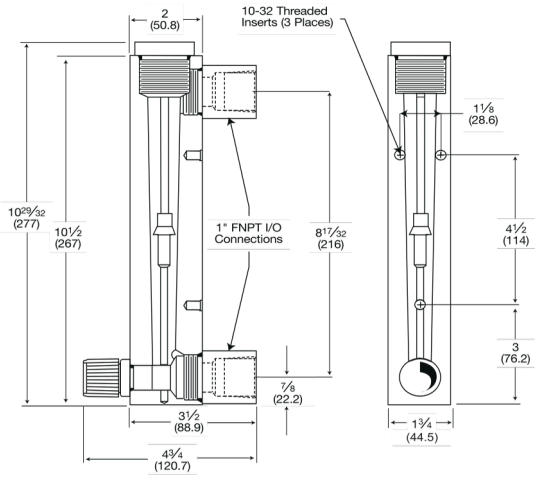
Range SCFM of Air	Tube Code	Range GPM of Water	Tube Code
3-25	5A50	.4-5	5L56
4-50	5A51	1-10	5L57
10-100	5A52	2-20	5L58
LPM of Air	**Tube Code**	**LPM of Water**	**Tube Code**
100-700	5A53	1-19	5L59
100-1400	5A54	4-36	5L60
400-4000	5A55	5-75	5L61

Periodically product revisions occur. Please consult the factory for the latest specifications.

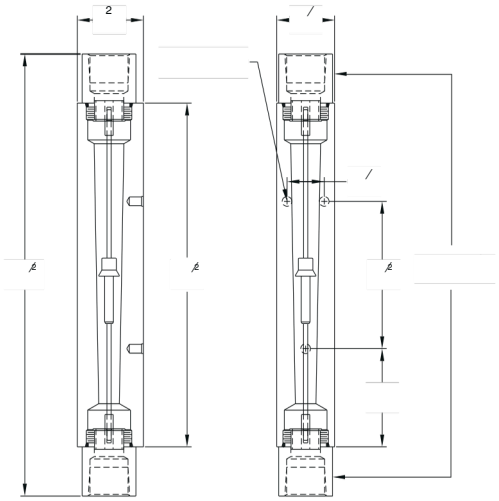
Model 2540 - V Flow Rates - Table F

Range SCFM of Air	Tube Code	Range GPM of Water	Tube Code
3-25	5A50	.8-5	5L56
4-50	5A51	1.5-10	5L57
10-100	5A52	3-20	5L58
LPM of Air	**Tube Code**	**LPM of Water**	**Tube Code**
100-700	5A53	3-19	5L59
100-1400	5A54	6-36	5L60
400-3000	5A55	10-75	5L61

Dimensions: Model 2540 S, V & I



Model 2540-S or V



Model 2540-I

Ordering Information / Typical Model Code for Model 2540

Code Description	Code Option	Option Description
I. Base Model Number	2540	Acrylic Flowmeter: ±2% Full Scale
II. Revision	A	Revision Level From
III. Tube Code Fitting	XXXX	Table D or E PVC
IV. Material	P	(Standard)
	S	Stainless Steel
V. Fitting / Valve	S	Back Connections (Standard)
	I	End Connection
	V	Valve (Back connection only)
VII. Options	-NL	No Logo

Additional Options • Certificate of Conformance • ICC • Paper Tag • Stainless Steel Tag

• Degrease for O 2 Cleaning

Sample Standard Model Code

I	II	III	IV	V	VI
2540	A	5A53	P	V	-NL

2500 Series Custom Solutions

Start with precision machining. Add customized options.
For applications where measuring air, water or gas flow requires non-standard features, our 2500 Series Custom Solutions gives you three levels of customization and price points to meet your specific project or OEM requirements.

The 2500 Series Custom Solutions start with the same precision-machined, unibody, acrylic construction used in our standard 2500 Series design. Then you can choose from a range of customization options – changing basic features like scale and logo and even physical attributes like body shape and inlet/outlet orientation.

Level 1 customization options include:
- Custom scale (for standard ranges) and logo
- Custom backing (clear, printed white, or printed one or more colors)
- Pressure compensated scale
- Choice of fittings or no fittings
- Non-standard mounting holes (bushings)

Level 2 customization includes Level 1 options, plus:
- Custom ranges (includes custom scales)
- Standard valve on outlet
- Custom valve stem or knob on inlet or outlet
- Non-standard threads
- Non-standard fittings (choice of materials and sizes)
- Beveled edges or faces

Level 3 customization includes any Level 1 and 2 options, plus:
- More than one tube, float or scale (mixing, inlet or outlet manifolds)
- Cylindrical body (any length, material or diameter)
- Rectangular body (different dimensions that standard 2500 Series stock)
- Special inlet and outlet orientations and machining operations
- Special features, such as lighted scale or glass tube insert

KEY INSTRUMENTS

300 Series

DATA SHEET

Variable Area

QuickShip

3000 Series

Molded, Polycarbonate Purgemeters

The Key Instruments 3000 Series is molded of high-impact resistant polycarbonate. These purgemeters are available with 24 different air and water ranges and are supplied with scales in LPM Air, SCFH Air, CCM Water and GPH Water, all with 10:1 turndown ratios. The 3000 has been designed to maintain maximum pressures to 100 psig and temperatures to 150°F. These meters are particularly suited for purge applications. These economically engineered units have been designed to provide the highest quality with precision accuracy. These flowmeters are fitted with 1/8" FNPT inlet and outlet connections. An optional inlet or outlet control valve can be specified.

- Flow tube and body molded of high-impact polycarbonate
- High quality construction
- Economy combined with accuracy
- Monitor or control air and water flows
- Flow ranges: Air 50 CCM to 100 LPM; Water 4 CCM to 40 GPH
- Supplied with easy-to-read 10:1 turn direct reading scales
- Ideally suited for OEM panel-mount applications
- Standard black body, custom colors available upon request

Specifications	
Accuracy	± 4% Full Scale
Temperature	150°F/65°C Maximum
Pressure	100 PSI / 6.9 Bar Maximum

Materials of Construction:	
Body & Tube	Polycarbonate
Floats	Black Glass, Carbide, Stainless Steel or Aluminum
Fittings	Brass or 303 Stainless Steel
Seal Material	Buna-N or Viton® fluoroelastomer
Valve (Optional)	Cartridge Type: Brass or 303 Stainless Steel

3000 Series Flow Ranges

SCFH of Air	Tube Code	LPM of Air	Tube Code
.1-1	3A00	0.05-0.5	3A12
.2-2.5	3A01	.1-1.2	3A13**
.4-5	3A02	.4-5	3A14**
1-11	3A03	.2-2.5	3A23
2-22	3A04	1-10	3A15**
4-60	3A06	2-30	3A16**
10-110	3A07	4-50	3A17**
20-200	3A08	10-100	3A18**
CCM of Water	**Tube Code**	**GPH of Water**	**Tube Code**
5-110	3L10	.2-2.5	3L28
20-300	3L11**	.4-5	3L19
		1-10	3L20
		2-25	3L21
		4-40	3L22

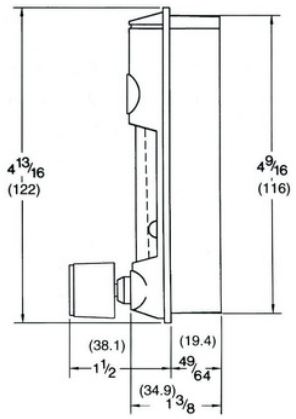
** QuickShip *Select meters ship in 3 days.*
Max order quantity = 10 meters.
Consult factory on orders of more than 10 meters.

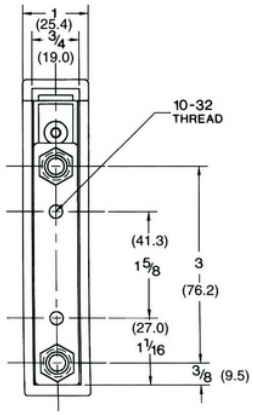
Model Code

Code Description	Code Option	Option Description
I. Base Model Number	MR	Molded Polycarbonate
II. Tube Code	XXXX	From Table
III. Fittings	B**	Brass
	S**	Stainless Steel
IV. Valve	N**	None
	V**	Valve
	O**	Outlet Valve (Vacuum Service only)
V. Seals	BN**	Buna-N w/Brass
	VT**	Biton w/Stainless Steel
VI. Options	-NL	No logo

Sample Standard Model Code	I	II	III	IV	V	VI
	MR	3A07	B	V	BN	-NL

Product Dimensions





INCHES
(MILLIMETERS)

Additional Options
- Certificate of Conformance
- ICC
- Paper Tag
- Stainless Steel Tag

ISO 9001 QUALITY SYSTEM

Headquarters:
Key Instruments
500 Coventry Lane
Croydon, PA 19021

voice: 215-788-5523

fax: 215-788-2618
sales@keyinstruments.com

CRANE GO REGULATOR

Single stage regulators

The PR series is used to reduce high inlet pressures to the desired lower outlet pressures as required by the application. Variations include high flow, high pressure, high sensitivity, sub-atmospheric, and compact/ miniature models.

- 316L SS, Brass, and Aluminum (Monel, Titanium, Hastelloy optional)
- Inlet Pressures up to 10,000 PSIG
- Control Pressures from 1-30 PSIA to 10,000 PSIG
- Cv's from .004 to 1.2
- Max temperatures up to 500'F (650'F and 1000'F optional)
- Internal volume from less than 3cc's

Back Pressure Regulators

The BP series back pressure regulators are used to control upstream or back pressure.
In low flow or closed systems, over-pressures are often accommodated by pressure relief valves.
This type of relief is traditionally on-off with little to no throttling control.
In contrast to relief valves, the back pressure regulator with its throttling action substantially improves system pressure regulation.
Variations include high flow, high pressure, high sensitivity, sub-atmospheric, and compact/ miniature models.

- 316L SS, Brass, and Aluminum (Monel, Titanium, Hastelloy optional)
- Control Pressures from 1-30 PSIA to 10,000 PSIG
- Cv's from .005 to 3.0
- Max temperatures up to 500'F
- Internal volume from less than 3cc's

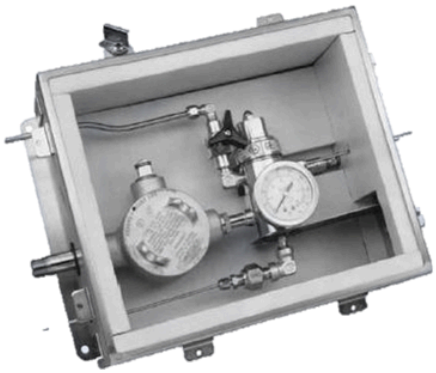
Cylinder Pressure Regulators

The CYL series provides for single or dual stage pressure control to accommodate a wide variety of specialty gas/cylinder bottle applications. This product can be ordered with the appropriate pressure gauges and CGA inlet fi tting as required by the application.

- 316L SS, Brass, and Aluminum (Monel optional)
- Inlet Pressures up to 6,000 PSIG
- Control Pressures from 10 to 2000 PSIG
- Cv's from .025 to 0.5
- Max temperatures up to 500'F

Heated Vaporizing Pressure Regulators

The GO line of heated pressure regulators was designed to introduce heat and elevate the temperature of a sample during the sample conditioning phases of sample analysis. Essentially they are used to preheat/vaporize liquids, and/or prevent sample stream condensation prior to gas analysis. Both electric (120 or 240 VAC) and steam versions are available. The modular pressure control and heat exchanger assemblies are designed for easy maintenance. The unique spiral wrapped heat exchange element provides up to 100 square inches of heat transfer area. Variations include single stage, dual stage, miniature, and turn-key insulated LNG box confi gurations.



- 316L SS, (monel, Hastelloy optional)
- Inlet Pressures up to 6,000 PSIG
- Control Pressures from 10 to 1000 PSIG
- Electrically and Steam Heated.
- CV's from .025 CV to .2CV
- 110VAC and 240VAC,
- Temperature Control ranges from 55'F to 380'F
- Heater wattages from 40W to 250W
- Max temperatures to 380'F

CRANE GO REGULATOR

Dome-loaded Regulators

Much like the PR series, the DL series is used to reduce high inlet pressures to the desired lower outlet pressures as required by the application.

The dome loading feature allows the set pressure to be controlled via low pressure pilot air and/or a customer supplied I/P controller.

CV's from .05CV to 1.2 CV
Dome Ratio's from 11:1 to 172:1
Outlet Pressures from 500PSIG to 10000 PSIG
Max temperatures to 350'F
Back Pressure confi gurations - optional

High Pressure Regulators

The High Pressure (PR) series is designed to reduce very high inlet pressures to stable, lower outlet pressures as required by the application. These regulators provide reliable performance in demanding gas and liquid service where safety and accuracy are critical.

-Inlet pressures up to 15,000 PSIG (depending on model)
-Outlet pressure ranges from 0–10 PSIG to 6,000 PSIG
-Flow coefficients (Cv) available up to 1.2 for high-flow models
-Temperature capabilities from –40 °F to +175 °F
-Body materials include 316L stainless steel, brass, Monel® and more
-Optional self-relieving designs and back-pressure configurations

F-4 Series In-line Filter

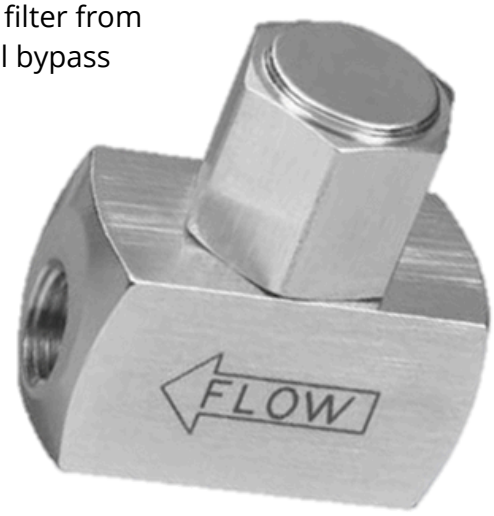
This filter is designed to be used as a standard in-line filter or it may easily be threaded into a pressure regulator or valve body for inlet protection. If desired, we will install this fi lter for you into any of our standard pressure control products prior to shipment.

For your special requirements, this filter can be custom manufactured from almost any machinable alloy. Let us know your requirement.

F-6K In-line or Bypass Filter

The F-6K in-line or bypass filter has been designed with bar stock construction to provide reliable and economical filtration of streams having pressures up to 6,000 psig (41.37 MPa) at 70° F (20° C).

Materials of construction (standard) are 316 stainless steel and PTFE for maximum service capability at economical prices. If a greater level of corrosion protection is required, this unit can be made (option) from MONEL® or HASTELLOY® C-276. The sintered 316 stainless steel filter element, with filtration ranges between 2 and 55 microns (µ), can be easily changed without removing the filter from the line. Standard connections are ¼˝ FNPT. The optional bypass port is standard as 1⁄8˝ FNPT



MICRAFILTER

MicraSteel Series

The MicraSteel Series is a range of high pressure housings manufactured from 316L stainless steel, specifically for specialist gas applications.

- Materials of construction comply with NACE MR-01-75 and ISO 15156
- Corrosion, high temperature and broad chemical resistance for high pressure applications
- Available in 100 and 350 barg pressure ranges
- All pipe connections are NPT taper threads as standard, other thread forms are available on request
- All housings are supplied without a drain and a Viton seal unless otherwise specified

All MicraSteel housings are suitable for use with MicraTube, MicraLescer and MicraMesh, dependent on the specific application.

- MicraTube offers a wide range of filtration efficiency
- MicraLescer is a coalescing filter cartridge which removes oil aerosols and particulate matter
- MicraMesh offers excellent corrosion and high pressure differential resistance for heavily contaminated applications
- All filter cartridges offer high temperature tolerance and broad chemical resistance*
- Outstanding durability in high pressure and high temperature environments

* see chemical resistance table at www.micrafilter.com for details of chemical suitability or contact Micrafilter on :-

Tel: +44 (0)191 416 4067 Fax: +44 (0)191 415 3748 Email: sales@micrafilter.com
www.micrafilter.com

Applications

- Gas analysis
- Liquid analysis
- Emission monitoring and analysis
- Sample analysis
- Stack gas sampling
- Gas and chemical filtration
- Fume cupboard filtration
- Instrument filtration
- Laboratory point of use protection
- Critical instrumentation protection
- General I in-line and process protection

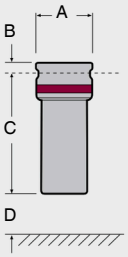
Industries

- Alternative fuels
- Automotive
- Chemical manufacturing
- CNG services
- Compressed air and gas
- Electronics
- Food processing and packaging
- Laboratories
- Oil refinery
- Phamaceutical
- Power generation
- Waste disposal

Technical Specification

MicraSteel Series

Filter Model	Pipe Size (NPT)	Flow Rate (seenote 1) Nm³/h	L/min	SCFM	Dimensions mm (Inches) A	B	C	D	Cartridge Size mm (Inches)	Mounting Bracket
MST-102-2564-[Grade]	1/4	29	481	17	65 (2.6")	20 (0.8")	135 (5.3")	70 (2.8")	25 x 64 (1" x 2.5")	MBK2
MST-104-2564-[Grade]	1/2	60	991	35	65 (2.6")	20 (0.8")	135 (5.3")	70 (2.8")	25 x 64 (1" x 2.5")	MBK2
MST-102-2178-[Grade]	1/4	34	566	20	65 (2.6")	20 (0.8")	250 (9.8")	180 (7.1")	25 x 178 (1" x 7")	MBK2
MST-104-2178-[Grade]	1/2	90	1500	53	65 (2.6")	20 (0.8")	250 (9.8")	180 (7.1")	25 x 178 (1" x 7")	MBK2
MST-351-1232-[Grade]	1/8	8.5	141	5	41 (1.6")	10 (0.4")	78 (3.1")	35 (1.4")	12 x 32 (0.5" x 1.2")	MBK1
MST-352-1232–[Grade]	1/4	11	169	6	41 (1.6")	10 (0.4")	78 (3.1")	35 (1.4")	12 x 32 (0.5" x 1.2")	MBK1
MST-351-1257-[Grade]	1/8	12	198	7	41 (1.6")	10 (0.4")	103 (4.1")	60 (2.4")	12 x 57 (0.5" x 2.2")	MBK1
MST-352-1257-[Grade]	1/4	29	481	17	41 (1.6")	10 (0.4")	103 (4.1")	60 (2.4")	12 x 57 (0.5" x 2.2")	MBK1
MST-354-2564-[Grade]	1/2	60	991	35	65 (2.6")	20 (0.8")	135 (5.3")	70 (2.8")	25 x 64 (1" x 2.5")	MBK2
MST-354-2178-[Grade]	1/2	90	1500	53	65 (2.6")	20 (0.8")	250 (9.8")	180 (7.1")	25 x 178 (1" x 7")	MBK2



Ordering:

Eachfilter housing is supplied individually. Filter cartridges must be ordered separately.

For more information consult the MicraTube, MicraLescer and MicraMesh data sheets.

If a PTFE seal is required include suffix [F].

Technical Notes

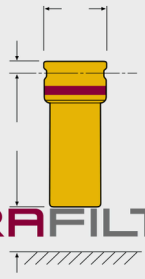
1 The drain connection size is the same as the pipe size expect for the MST-354 models which are all 1/4" NPT

Specification	100 Barg		350 Barg	
Model	MST-102 & 104		MST-351, 352, 354	
Filter housing material	316L stainless steel		316L stainless steel	
Maximum operating pressure	100 barg (1450 psig)		350 barg (5075 psig)	
Seal material	Viton (standard)	PTFE (optional)	Viton (standard)	PTFE (optional)
Temperature range*	0°C to 200°C (32°F to 392°F)		0°C to 200°C (32°F to 250°F)	

* Max temperature is dependent upon final configuration, filter cartridges and seals

Flow Conversion Chart	For maximum flow rate multiply model 'flow rate' in the table by the correction factor closest to the actual working pressure												
Operating pressure	barg	1	2	4	7	10	15	20	50	100	150	250	350
	psig	15	30	60	100	150	200	300	750	1500	2000	3500	5000
Correction factor		0.3	0.2	0.75	1	1.2	1.5	1.7	2.5	3.5	4.5	6	7

For MicaSteel 350 Barg models only



INACOM INSTRUMENTS

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