Highly Engineered Valve Solutions for Life Science Applications




High Flow Low Wattage High Reliability Oxygen compatible High Accuracy Low Noise
Low Wattage High Accuracy Compact Package Extremely Low Leakage Rate
Extremely Low Leakage Rate High Repeatability **Reduced Weight**
Low Wattage High Accuracy Oxygen compatible High Flow Low Noise High Reliability
Compact Package High Accuracy Low Wattage Extremely Low Leakage Rate
High Flow High Repeatability Extremely Low Leakage Rate Low Wattage
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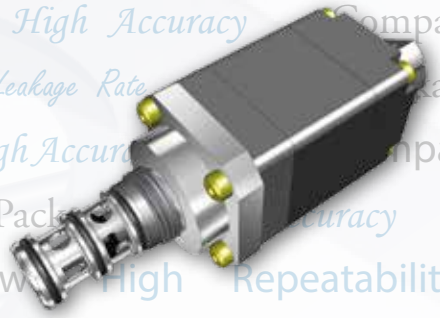
Low Wattage High Accuracy Oxygen compatible High Flow Low Noise High Reliability
Compact Package High Accuracy Low Wattage Extremely Low Leakage Rate
High Flow High Repeatability Extremely Low Leakage Rate Low




MAC Valves Highly engineered solutions for the highest performing applications since 1948

Highly Engineered Valve Solutions for Life Science Applications

MAC Valves

MAC Valves has been providing advanced technology solutions to the LIFE SCIENCE INDUSTRY for over 30 years. Our standard products and specially modified solutions provide increased RELIABILITY, equipment optimization and INNOVATIVE designs. The most common types of valves used are Small 3-way, Small 5-way, Bullet Valves®, Liquid Bullet Valves® D-Flex™ Technology, Bullet Valve® Pump, Proportional Pressure Control valves (PPCs) and Proportional Flow Control units (PFCs).

BULLET VALVE® PUMP
Air and liquid versions available

PROPORTIONAL FLOW CONTROL
LOW LEAK PERFORMANCE **& high precision**

LIQUID BULLET VALVE® **with** *D-FLEX™* **Technology**
for *LIQUID DISPENSING* **& low leakage applications**

INLINE BULLET VALVE® **integrated**
in plastic manifold *FLEXIBLE DESIGN*

PLASTIC BULLET VALVE® ***ASSEMBLED IN***
PLASTIC MANIFOLD ***RELIABILITY*** *&* *REDUCED WEIGHT*

BULLET VALVE®
high *PRECISION* **& compact package**

PROPORTIONAL PRESSURE CONTROL
very high precision in a *COMPACT PACKAGE*

35 Series *LIFTING* **Solenoid Technology**
for high repeatability & *LOW NOISE* **applications**

35 Series
STACKING **System**

3500 factory certified specialists in over 45 countries focused on optimizing customers needs

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The Power of the PFC for Medical Applications

MAC Valves Proportional Flow Control

THE PRECISION OF THE STEPPER MOTOR TECHNOLOGY

- High precision
- Accurate response times
- Low hysteresis

THE POWER OF THE LBV & BULLET VALVE®

- High repeatability
- Accurate response times
- High flow flexibility
- Wide range of gases & liquids
- Low leak performance

HIGH PRECISION PROPORTIONAL FLOW CONTROL

BENEFITS OF THE MAC PROPORTIONAL FLOW CONTROL (PFC) IN LIQUID DISPENSING ALREADY USED IN THE INDUSTRY

- ✓ Customized calibration available with optional driver circuit
- ✓ Very high flexibility in manifold footprint
- ✓ Food grade modification on request
- ✓ Small size for a better integration
- ✓ Drop-in solution

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The Power of the PFC for Medical Applications

MAC Valves Proportional Flow Control

*TECHNICAL DATA**

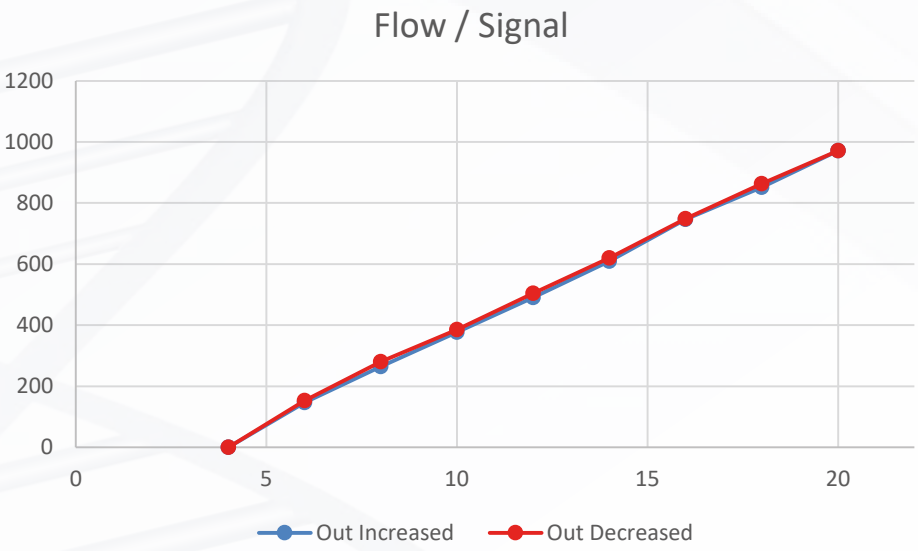
	Proportional Flow Control
Function:	2-way
Type:	Cartridge style - Balanced design
Command:	4 to 20 mA - 0 to 10 VDC (with optional driver circuit)
Manifold mounting:	Very flexible cartridge style
Media:	Liquids / fluids D-Flex™ (MAC patented diaphragm technology)

**Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at ambient temperature (20°C).*

Stepper motor quickly and precisely controls fluid flow through the Bullet Valve® maintaining application requirements.

MAC PROPORTIONAL FLOW CONTROL - LINEARITY

The very low hysteresis cycle of the MAC PFC guarantees a constant flow through the PFC for opening or closing signal.



	ml/min at 2 Bar	
Signal	Out incr.	Out decr.
4	0	0
6	146.4	153.4
8	264.6	280.2
10	377	385.4
12	490.8	504.2
14	609.8	620.4
16	746.4	748
18	851.2	863.2
20	971.8	

Note : Above values result from trials and are for illustration purposes only - Flow and calibration can be adapted to customer requirements.

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The Power of LBV®
for Medical Applications
MAC Valves Liquid Bullet Valve®

THE BULLET VALVE®...

- 2- or 3-way direct operated solenoid
- Very fast response times
- High repeatability
- Flexible design
- Balanced design

MAC Liquid Bullet Valve®

...ADAPTED TO LIQUID APPLICATIONS !

- A wide range of liquids already used
- The diaphragm technology perfectly isolates the liquid from the coil and guarantees a non-leaking valve
- Pressure range: 0 to 8 bar
- A wide range of orifices available adaptable to your requirements

BENEFITS OF THE MAC BV® TECHNOLOGY IN LIQUID DISPENSING

- ✓ Compact size for better integration
- ✓ Drop-in solution
- ✓ Minimum leakage
- ✓ Fast response times
- ✓ Adaptable for different liquids
- ✓ Different body materials in option
- ✓ Axial flow and side flow versions available
- ✓ Extreme repeatability from cycle to cycle
- ✓ Food grade modifications on request
- ✓ Balanced design - Unaffected by pressure variations
- ✓ High resistance to contamination
- ✓ Low friction design

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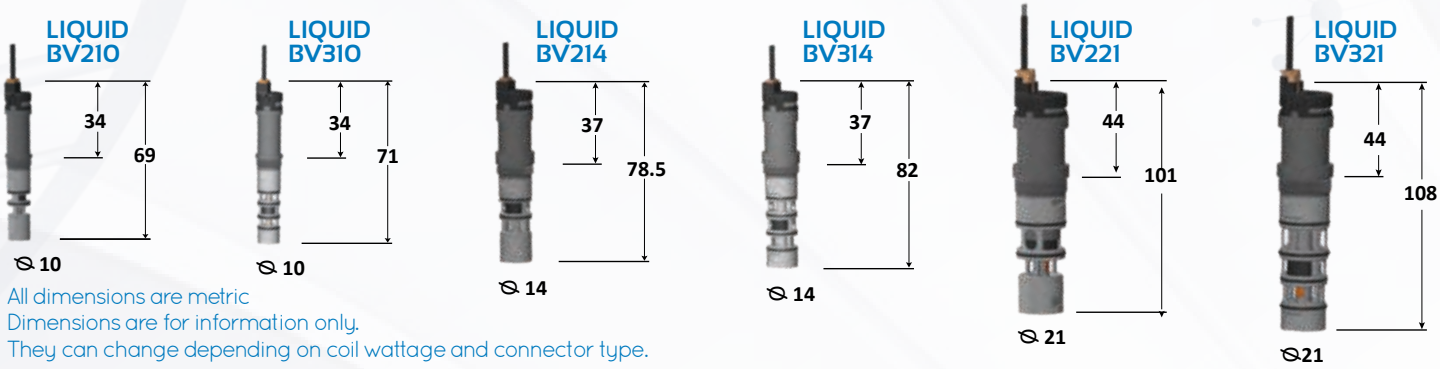
The Power of LBV®
for Medical Applications
MAC Valves Liquid Bullet Valve®

DIMENSIONS OVERVIEW



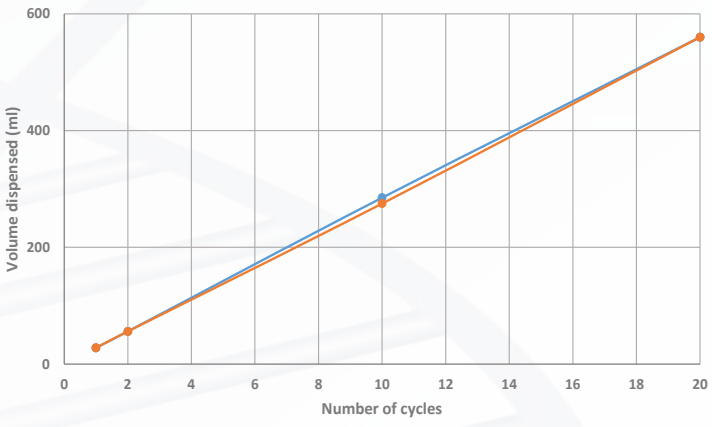
All dimensions are metric
Dimensions are for information only.
They can change depending on coil wattage and connector type.

ORIFICE SIZES

Model	Orifice (mm)
Liquid BV210 & BV310	From 1 to 3
Liquid BV214 & BV314	From 2.5 to 4
Liquid BV221 & BV321	From 3 to 6

The mentioned orifice sizes are indicative values for information only and can be adapted on customer request.

MAC BULLET VALVE® - REPEATABILITY



Thanks to the innovative design, the MAC Bullet Valve® provides an extremely repeatable flow from cycle to cycle and from valve to valve.

Number of cycles	Measured Volume Dispensed (ml)	Requested Volume to Dispense (ml)
1	28	28
2	56	56
10	285	280
20	560	560

CHECK OUT OUR MICRO-DOSING LIQUID BULLET VALVE® VIDEO ON YOUTUBE !

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LBV Single Diaphragm - O-Ring Seat for Medical Applications

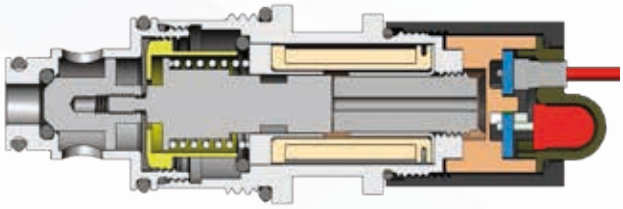
MAC Valves Series Liquid Bullet Valve®

- No dead space
- Use when there is consistent pressure
- Balanced on inlet
- Good for applications that flow to atmosphere
- 0-5.5 bar pressure range
- Liquids or gases
- Variety of metals
- Variety of rubbers – no poppet bonding required
- 2-way only
- No dead volumes at output
- No drops
- No molded poppets in the no diaphragm version
- Provide accuracy, precision and repeatability

*TECHNICAL DATA**

Wattage (W)	1.8 – 16.0
Pressure (bar)	0,7 - 8
Air flow (Nl/min)	30 – 150
Liquid flow (l/min)	0.38 – 4.92

LBV SINGLE DIAPHRAGM CUTAWAY



YOUTUBE

Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at ambient temperature (20°C).

OPERATIONAL BENEFITS

- ✓ Extreme repeatability from cycle to cycle
- ✓ No leakage
- ✓ Fast response times
- ✓ Balanced design - Unaffected by pressure variations
- ✓ High resistance to contamination
- ✓ Low friction design
- ✓ Axial flow and side flow versions available
- ✓ Compact size for better integration
- ✓ Drop-in solution
- ✓ Adaptable for different liquids
- ✓ Different body materials in option
- ✓ Food grade modifications on request

APPLICATIONS / MEDIA

- ✓ Food/Beverage – syrup/water
- ✓ Medical – aggressive media that require FFKM rubber and PEEK plastics

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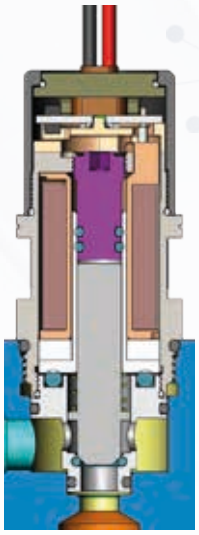
LBV No Diaphragm for Medical Applications

MAC Valves Series Liquid Bullet Valve®

- Good for passing contamination
- Used for Spray Dampening and Micro Dosing
- No dead volumes at output
- 2 way NC or NO
- Long stroke
- BV214 with (4) different bore options that will install into the same cavity
- Liquids or gases
- Variety of metals
- Variety of rubbers – no poppet bonding required
- 1.75 mm, 2.25 mm, 2.75 mm and 3.50 mm bore diameter options
- No drops
- No molded poppets in the no diaphragm version
- Provide accuracy, precision and repeatability



TECHNICAL DATA

Bore Size (mm)	1.75 Dia.	2.25 Dia.	2.75 Dia.	3.50 Dia.
Air Pressure (bar)	0-3.5	0-2.7	0-2	0-1.7
Wattage (W)	1.8-16	1.8-16	1.8-16	1.8-16
Air Flow (Nl/min)	20-120	20-160	30-180	40-230
Liquid Pressure (bar)	Gravity-3.5	Gravity-2.7	Gravity-2	Gravity-1.7
Liquid flow (l/min)	0.57-2.48	0.76-2.48	0.76-2.48	1.14-3.79

**Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at ambient temperature (20°C).*

OPERATIONAL BENEFITS

- ✓ Extreme repeatability from cycle to cycle
- ✓ No leakage
- ✓ Fast response times
- ✓ Balanced design - Unaffected by pressure variations
- ✓ High resistance to contamination
- ✓ Low friction design
- ✓ Axial flow and side flow versions available
- ✓ Compact size for better integration
- ✓ Drop-in solution
- ✓ Adaptable for different liquids
- ✓ Different body materials in option
- ✓ Food grade modifications on request

APPLICATIONS / MEDIA

- ✓ Spray Dampening – water
- ✓ Food & Beverage – water
- ✓ Medical – microdosing
- ✓ Medical – liquid/gas

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The Power of the BV® for Medical Applications

MAC Valves Bullet Valves®

- Flow up to 600 Nl/min (0.6 Cv)
- 2-way, 2-way axial flow, 3-way universal versions available
- Direct operated valves. Solenoid isolated from contaminated air
- Lifting solenoid technology
- Balanced design, unaffected by pressure variations
- High flow in a compact package
- Short response times with very high repeatability
- Extremely long life
- Wiping effect eliminates sticking
- Unique mounting - No fastener or screw required
- Multiple cover and electrical connection options - LED available
- Innovative design with very few parts
- Lifting coil ensuring low noise

MAC BV series 2-way plastic end, 3-way, 2-way & assembled on plastic manifold

OPTIONS

- ✓ Adjustment of flow and response times
- ✓ Very high flexibility in manifold footprints and materials
- ✓ Side or bottom cylinder ports
- ✓ Wide range of wattages available
- ✓ Bullet Valve® also available with plastic bodies (BVP versions)

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The Power of the BV® for Medical Applications

MAC Valves Bullet Valves®

TECHNICAL DATA

	Bullet Valve®
Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Vacuum to 8 bar / 0 to 120 PSI
Lubrication:	Not required. If used select a medium aniline point lubricant (between 80°C and 100°C / 180°F and 210°F)
Filtration:	40 microns
Flow (at 6 bar, ΔP=1bar):	Up to 600 Nl/min - 0.6 Cv
Temperature:	-18°C to +50°C / 0°F to 120°F (Wider temperature range available - Consult factory)
Voltage range:	-15% to +10% of nominal voltage

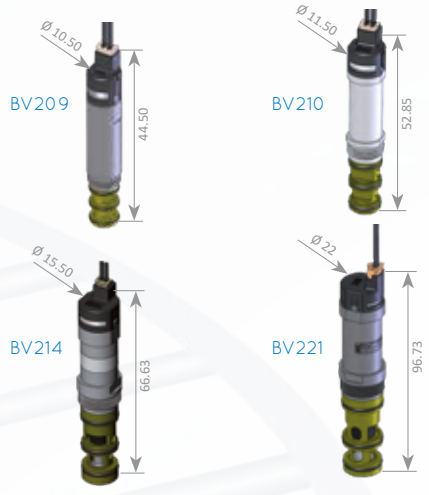
**Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at ambient temperature (20°C).*

FLOW RATE

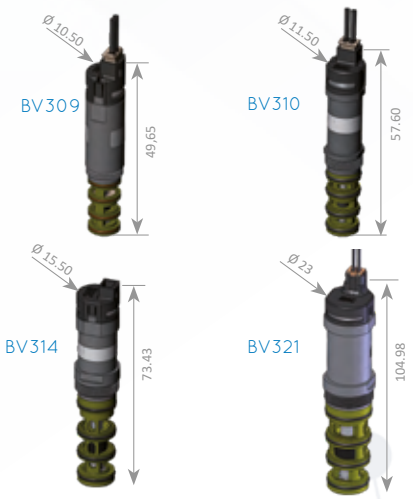
	BVX09	BVX10	BVX14	BVX21
Flow Nl/min	70	80	240	600
Cv	0.07	0.08	0.24	0.60

3D DRAWING OVERVIEWS

MAC BV 2/2 way valves



MAC BV 3/2 way valves



All dimensions are metric

MAC SOLUTIONS - HOW TO ORDER

According to your application requirements, your distributor will help you codify the appropriate valve to meet your needs. Very high flexibility in manifold footprint.

3500 factory certified specialists in over 45 countries focused on optimizing customers needs

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New 5/2-Way Bullet Valves® for Medical Applications

MAC Valves Bullet Valves® 410 - 414 - 421

- Flow up to 600 Nl/min (0.6 Cv)
- 5/2-way valves
- Direct operated valves. Solenoid isolated from contaminated air
- Lifting solenoid technology
- Balanced design, unaffected by pressure variations
- High flow in a compact package
- Short response times with very high repeatability
- Extremely long life
- Wiping effect eliminates sticking
- Unique mounting - No fastener or screw required (cartridge style)
- Multiple cover and electrical connection options - LED available
- Innovative design with very few parts

MAC 5/2-way Bullet Valve®

OPTIONS

- ✓ Adjustment of flow and response times
- ✓ Very high flexibility in manifold footprints and materials
- ✓ Manifolds options with side or bottom cylinder ports
- ✓ Wide range of wattages available
- ✓ Bullet Valves® also available with plastic bodies (BVP versions)

3D DRAWING OVERVIEW

Dimension of the BV421 for illustration purposes only
All dimensions are metric

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Compact High Precision Bullet Valves® for Medical Applications

MAC Valves Proportional Pressure Controllers

- Reliable operation, using two Bullet Valves® BV210 with lifting solenoid construction
- Balanced design
- Fast response times
- Long life
- Low power consumption
- Not affected by vibrations
- Accurate pressure control
- Analog command signal and output
- Compact package
- Reduced weight
- Individual, manifold and DIN rail mounting configurations available
- Covers available upon request

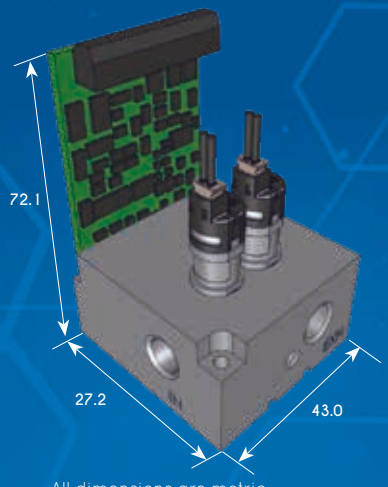
MAC Proportional Pressure Controllers

TECHNICAL DATA*

Flow rate:	Up to 50 Nl/min
Command signal:	0-10 VDC 4-20 mA
Pressure range:	Up to 8 bar
Accuracy options:	± 0.5% F.S. ± 1.5% F.S. ± 2.5% F.S.
Port sizes:	1/8", M4, 5/32

* Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at

3D DRAWING OVERVIEW



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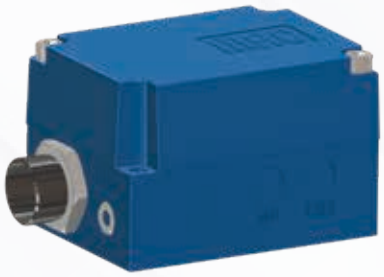
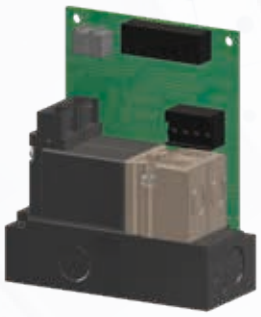
Compact High Precision Proportional Solutions for Medical Applications

MAC Valves Proportional Pressure Controllers

- Reliable operation, using two MAC 34 series with balanced poppet
- Fast response
- Long life
- High flow
- Low power consumption
- Not affected by vibrations
- Accurate pressure control
- Analog command signal and output
- Rugged enclosure (for PPC5C)
- Can be stand alone or used in combination with our remote air sandwich regulator (for PPC5C)



MAC PPC 5C

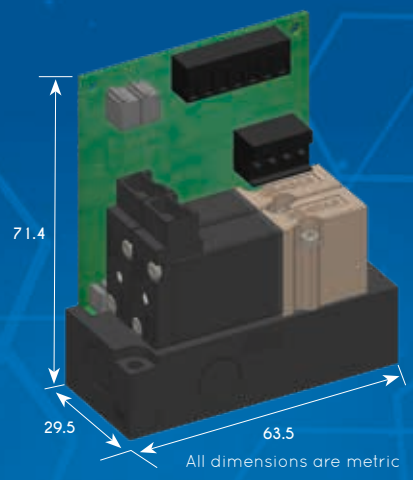


MAC PPC 34B

OPTIONS

- ✓ Single or dual transducer versions
- ✓ Analog or digital command signal
- ✓ Service configuration pressure or vacuum
- ✓ Covered or uncovered device
- ✓ Washdown enclosures available
- ✓ Two monitor signal options available: Analog Monitor Signal (AMS) and Logic Monitor Signal (LMS)

3D DRAWING OVERVIEW



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Compact High Precision Proportional Solutions for Medical Applications

MAC Valves Proportional Pressure Controllers

*TECHNICAL DATA**

General Data	
Ambiant temperature:	0 to 50°C / 32 to 120°F
LED indicators:	Red: power on - Green: pressure achieved
Vibration:	Not affected
Port size:	G 1/8", 1/8" NPTF - Option: bottom ports
Connector:	7 pin terminal block
Mounting:	Any plane

Electrical Data	
Supply voltage:	20.4 to 26.4 VDC
Supply current:	50 to 275 mA
Command signal:	0 to 10 V or 4 to 20 mA
Command type:	Single-ended or differential
Input impedance:	4.99 kΩ ± 1.0% (voltage) 316 Ω ± 0.1% (current)
Analog Monitor Signal (AMS):	0 to 10 volt
Logic Monitor Signal (LMS):	5 VDC or 24 VDC

Pneumatic Data	
Inlet pressure:	8 bar max (for 10-100 PSI output pressure) 120 PSI max (for 0.66-6.6 bar output pressure)
Fluids:	Compressed air or inert gases
Lubrication:	Not required. However, if used, a medium aniline point oil is recommended
Output pressure:	0 to 0.66, 2, 3, 4, 6.6 bar 0 to 10, 30, 45, 60, 100 PSI
Overall accuracy:	± 1.5% full scale ± 0.5% full scale ± 2.5% full scale
Flow:	70 Nl/min - Cv 0.07
Minimum closed end volume:	16 cm^3 - 1.0 cubic inch

** Note: The data shown are for standard PPC034 models*

**Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at ambient temperature (20°C).*

Small 3-Way Valves for Medical Applications

MAC Valves Series 31 - 33 - 34

- Flow between 20 Nl/min and 120 Nl/min
- 3/2 way NO or NC, 2/2 NO or NC
- 6, 8 and 10 mm direct solenoid operated valves
- MAC patented solenoid develops high shifting forces both ways
- Balanced design, unaffected by pressure variations
- Short stroke with high flow in a small package
- Very fast response times
- Extremely precise repeatability
- Reduced weight
- Extremely high cycle rate capability
- Superior reliability

MAC 34 series

MAC 33 series

MAC 31 series

OPTIONS

- ✓ Low wattage coils
- ✓ Low leakage rate modifications
- ✓ Noise reduction configurations available
- ✓ High temperature modifications
- ✓ Low temperature modifications
- ✓ Use on lube or non lube service
- ✓ Individual or manifold (plug in or non plug-in) mounting styles available

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Small 3-Way Valves for Medical Applications

MAC Valves Series 31 - 33 - 34

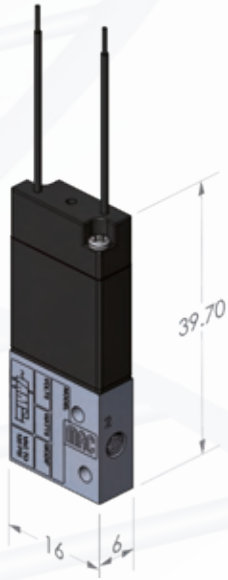
TECHNICAL DATA*

	31 series	33 series	34 series
Fluid:	Compressed air, vacuum, inert gases		
Pressure range:	Vacuum to 8 bar / 0 to 120 PSI		
Lubrication:	Not required if used select a medium aniline point lubricant (between 80°C and 100°C / 180°F and 210°F)		
Filtration:	40 microns		
Flow:	Up to 50 Nl/min (Cv 0.05)	Up to 80 Nl/min (Cv 0.08)	Up to 120 Nl/min (Cv 0.12)
Temperature:	-18°C to +50°C / 0°F to 120°F (Wider temperature range available - Consult factory)		
Voltage range:	-15% to +10% of nominal voltage		
Power:	1.8 to 4.0 W	1.0 to 4.0 W	1.8 to 4.0 W
Response times:	ERT: 1.8 ms - DRT: 0.8 ms	ERT: 2.2 ms - DRT: 1.1 ms	ERT: 3.4 ms - DRT: 1.5 ms

*Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at ambient temperature (20°C).

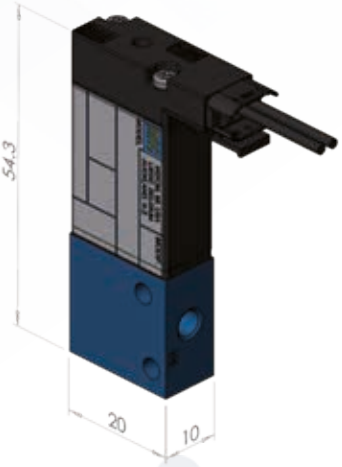
3D DRAWING OVERVIEWS

All dimensions are metric



31 series

33 series



34 series

MAC SOLUTIONS - HOW TO ORDER

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MAC Valves Europe Inc, Liège, Belgium - MAC Valves Asia Inc, Taiwan

To find your local distributor, visit www.macvalves.com

Small 5-Way Valves for Medical Applications

MAC Valves Series 41 - 43 - 44

- Flow between 22 Nl/min and 100 Nl/min
- 5/2 way valves
- 6, 8 and 10 mm direct solenoid operated valves
- MAC patented solenoid develops high shifting forces both ways
- Balanced design, unaffected by pressure variations
- Short stroke with high flow in a small package
- Very fast response times
- Extremely precise repeatability
- Reduced weight
- Extremely high cycle rate capabilities
- Superior reliability

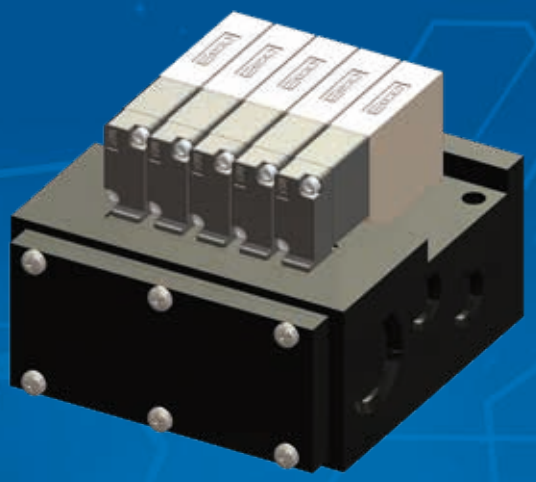
MAC 44 series

MAC 43 series

MAC 41 series

OPTIONS

- ✓ Low wattage coils
- ✓ Low leakage rate modifications
- ✓ Noise reduction configurations available
- ✓ High temperature modifications
- ✓ Low temperature modifications
- ✓ Use on lube or non lube service
- ✓ Individual or manifold (plug-in or non plug-in) mounting styles available



MAC Valves - Highly engineered solutions for the highest performing applications since 1948

Small 5-Way Valves for Medical Applications

MAC Valves Series 41 - 43 - 44

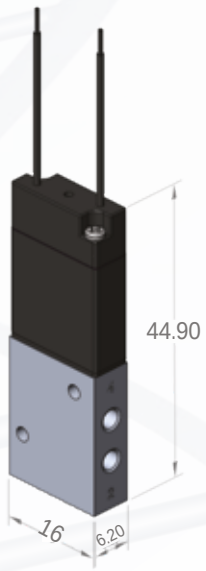
TECHNICAL DATA*

	41 series	43 series	44 series
Fluid:	Compressed air, vacuum, inert gases		
Pressure range:	Vacuum to 8 bar / 0 to 120 PSI		
Lubrication:	Not required if used select a medium aniline point lubricant (between 80°C and 100°C / 180°F and 210°F)		
Filtration:	40 microns		
Flow:	Up to 35 Nl/min (Cv 0.035)	Up to 70 Nl/min (Cv 0.07)	Up to 100 Nl/min (Cv 0.1)
Temperature:	-18°C to +50°C / 0°F to 120°F (Wider temperature range available - Consult factory)		
Voltage range:	-15% to +10% of nominal voltage		
Power:	1.8 to 4.0 W	1.8 to 4.0 W	1.0 to 4.0 W
Response times:	ERT: 3.5 ms - DRT: 2.0 ms	ERT: 3.5 ms - DRT: 2.0ms	ERT: 4.0 ms - DRT: 2.0 ms

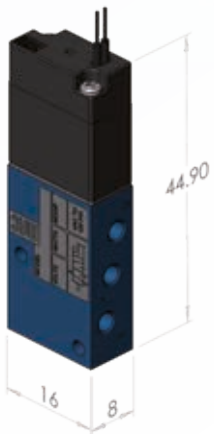
*Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at ambient temperature (20°C).

3D DRAWING OVERVIEWS

All dimensions are metric



41 series



43 series

44 series

MAC SOLUTIONS - HOW TO ORDER

According to your application requirements, your distributor will help you codify the appropriate valve to meet your needs.

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Lifting Solenoid Valve for Medical Applications

MAC Valves Series 35

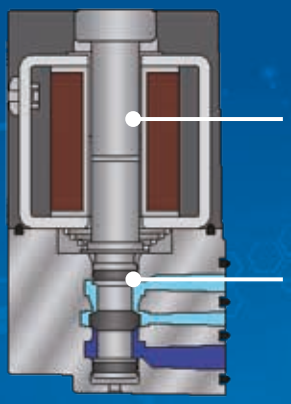
- Extremely low operating noise
- Balanced design, unaffected by pressure variations
- Very high repeatability
- Limited wear points
- Long life time
- Extremely high cycle rate capability
- Bonded balanced poppet for optimized flow and consistent operation
- Versatility in function - Can be used as 2- or 3-way, NO or NC, for vacuum, divertor or selector applications

MAC 35LA inline valve

MAC 35LA Manifold

BENEFITS OF THE LIFTING SOLENOID

- ✓ Repeatability benefits inherent in valve design resulting in longer life
- ✓ Fixed pole piece - Solenoid wear point virtually eliminated
- ✓ One piece armature poppet design



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Lifting Solenoid Valve for Medical Applications

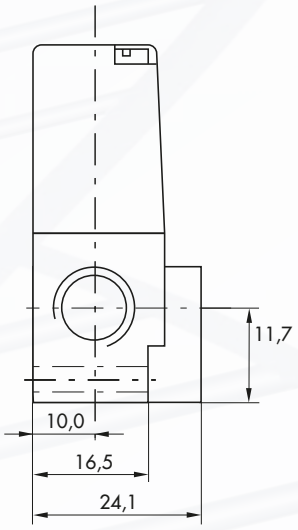
MAC Valves Series 35

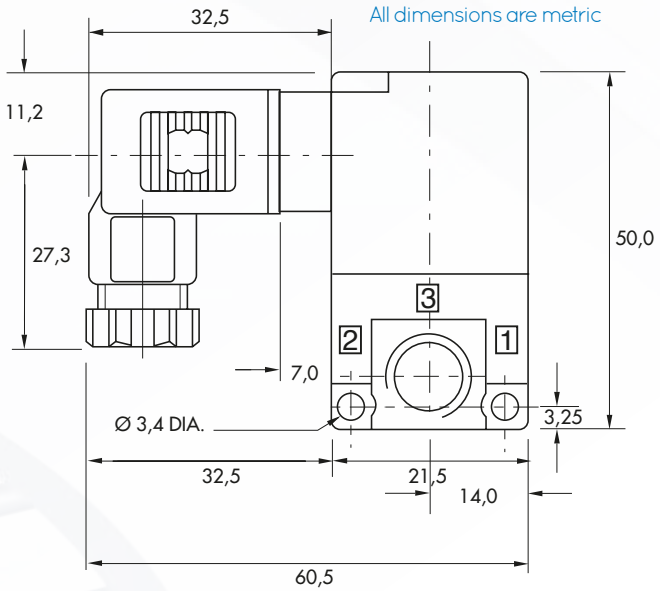
TECHNICAL DATA*

	35 series
Fluid:	Compressed air, vacuum, inert gases
Pressure range:	Vacuum to 8 bar / 120 PSI
Lubrication:	Not required. If used select a medium aniline point lubricant (between 80°C and 100°C / 180°F and 210°F)
Filtration:	40 microns
Flow:	-18°C to + 50°C - 0°F to 120°F (Wider temperature range available - Consult factory)
Temperature:	Up to 170 Nl/min - 0.17 Cv
Voltage range:	General purpose class A, continuous duty, encapsulated
Power:	-15% to +10% of nominal voltage
Response times:	Energized: 6 ms - De-energized: 2 ms

*Tested as per the conditions described in the MAC Valves standard test procedures, assembly instructions and modification. The values mentioned are valid exclusively for a new valve tested at ambient temperature (20°C).

DIMENSIONS





UNIVERSAL VALVE - 6 FUNCTIONS

- ⇨ 3-Way Normally Closed
- ⇨ 3-Way Normally Open
- ⇨ Selector Valve
- ⇨ 2-Way Normally Closed
- ⇨ 2-Way Normally Closed
- ⇨ Diverter Valve

Bullet Valve Pump for Medical Applications

MAC Valves Bullet Valve Pump

YOUTUBE

- Fixed dosing volume
- High frequency
- Fast response time
- Repeatability from cycle to cycle
- Adaptable for different liquid compositions
- Self priming
- Inline or base mount
- BV14 & BV21 Size coils & diaphragms
- Variety of metals / plastic & rubber compounds
- Liquid or gas

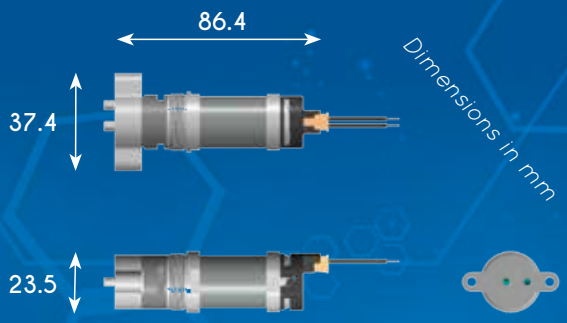
MAC Bullet Valve Pump

BULLET VALVE PUMP SPECS.

Wattage:	1.0 – 16.0
Flow:	Up to 100 ml/min (water)
Accuracy:	3%

** The above mentioned data are based on the test of a new valve as per the conditions described in the MAC Valves test procedures, assembly instructions and modification*

DIMENSIONAL DRAWING (BV21 size shown)



MATERIAL

Body	
Brass	316 Stainless Steel
Nickel Plated Brass	Delrin
303 Stainless Steel	PEEK (FDA & NSF)

Rubber	
Nitrile *(FDA Nitrile)*	EPDM
Silicone *(FDA)*	Aflas
FKM (Viton, Viton ETP, FDA Grade)	FFKM

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Highly Engineered Valve Solutions for Life Science Applications

MDN-MAC Distributor Network

The MDN is a global Organization of independent distributors and manufacturers with the common focus of customer service and support anywhere in the world

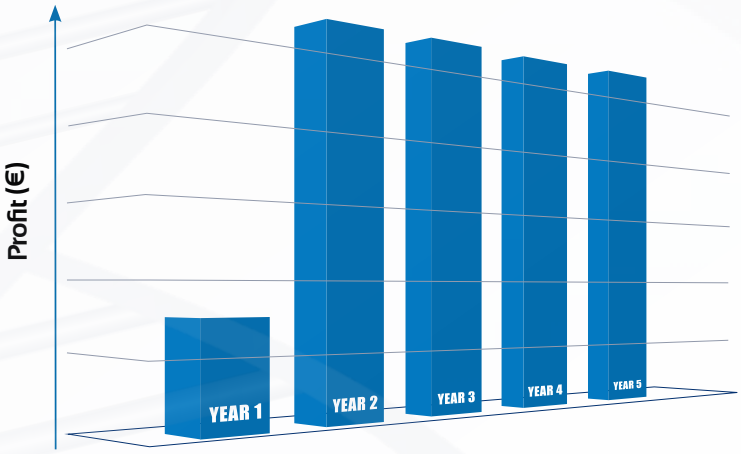
Globally Linked Network - Local Support I Over 3500 Employees Globally
Local Representation in 45 Countries I 200 Stocking and Service Locations
$ 50 Million in Global Inventory

CPR® - Customer Profit Reinforcement

CUSTOMER PROFIT REINFORCEMENT

MDN sales team uses our trademarked CPR® process to uncover and document savings and profit opportunities by comparing your existing situation to our proposed solutions. All of the information is entered into our custom built web application to illustrate the logical path your company can take to maximize profits. Each opportunity is ranked by ease of implementation so that you can choose where to start.

Solution Design Focused On Your ROI



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Highly Engineered Valve Solutions for Life Science Applications

MAC Valves, Inc. is a global manufacturing leader in pneumatic and fluid valves, proportional valves, flow control and regulator technology. MAC was founded in 1948 with a focus on establishing and maintaining our position as the technological leader in our market, having since amassed over 80 patents related to pneumatic valves and their auxiliary components.

With our presence on four continents globally, and representation in every major industrial market in the world through the MDN (MAC Distributor Network), MAC has a global presence to support our customers need to keep their machines running profitability around the clock, around the world.

MAC Valves, Inc.

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