

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

## 501 Series – Directional Control Valve Platform Featuring Higher Flow in a Compact Valve Package



### Features

- Solenoid air pilot actuated
- Low wattage 0.8 Watt for DC application
- DC solenoids Polarity insensitive with surge suppression
- Plug together circuit boards eliminate internal wiring
- Integral recessed gaskets
- IN Fittings to accommodate various tube sizes
- Simple conversion from internal to external pilot
- IP65 Certified

### Sandwich and Manifold Accessories

- Pressure Regulators for supply pressure control at individual valve
- Speed control to control exhaust flow allows for control of actuator extend or retract speed
- Shut off block for individual valve to be isolated from pressure supply during operation and repair
- Mid Station Supply Manifold block allows for multiple pressure zones (with blocking discs) or additional air supply to a manifold


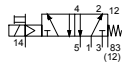
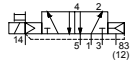

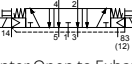
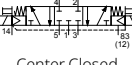


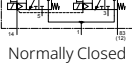
### Fieldbus Electronics Compatible

- G3 Fieldbus Electronics
  - Graphic Display for easy commissioning, visual status & diagnostics
  - Easy distribution of additional manifolds through Sub-bus communication
  - One Node supports up to 16 I/O modules
  - Available with Auto Recovery Module (ARM) which allows configuration information to be saved and reloaded to replacement module automatically



# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

## Performance Data

Function Type	Function Code	ISO Symbol Pilot (14) Return (12)	Interface	Rated Flow		Response Time (ms)	Pilot Pressure at 73°F/23°C PSI (bar)		Operating Pressure Port 1 PSI (bar)/inHg (-bar)		 Part Number
				at 90 PSI Cv (l/min (ANR))			min.	max.	min.	max.	
				↔ 2 ↔ 4	↔ 3 ↔ 5	Energize/ De-Energize					
<b>Rubber Packed Technology, with Manual Override</b>											
5/2	B1	 Spring Return	Proprietary	0.460 (460)	0.465 (465)	14/29	29 (2)	115 (8)	28 (-0.95)	115 (8)	R501A2B10MA00F1
	BN	 Differential Air Return		0.460 (460)	0.465 (465)	25/21	29 (2)	115 (8)	28 (-0.95)	115 (8)	R501A2BN0MA00F1
	B4	 Solenoid Air Return		0.460 (460)	0.465 (465)	11/11	29 (2)	115 (8)	28 (-0.95)	115 (8)	R501A2B40MA00F1
5/3	B5	 Center Open to Exhaust		0.420 (420)	0.470 (470)	27/12	29 (2)	115 (8)	28 (-0.95)	115 (8)	R501A2B50MA00F1
	B6	 Center Closed		0.460 (460)	0.465 (465)	13/12	29 (2)	115 (8)	28 (-0.95)	115 (8)	R501A2B60MA00F1
	B7	 Center Open to Pressure		0.460 (460)	0.411 (411)	17/38	36 (2.5)	115 (8)	28 (-0.95)	115 (8)	R501A2B70MA00F1
2 x 3/2 NO	BA	 Normally Open		0.450 (450)	0.450 (450)	18/18	0.3 x Operating Pressure + 13 PSI	115 (8)	30 (2)	115 (8)	R501A2BA0MA00F1
2 x 3/2 NC	BD	 Normally Closed		0.460 (460)	0.470 (470)	18/18	0.09 x Operating Pressure + 33.5 PSI	115 (8)	30 (2)	115 (8)	R501A2BD0MA00F1

## Construction

Materials in Contact w/Fluid	
Body	Aluminum, E-Coating treatment
Spool	Aluminum or Stainless Steel
Piston	POM
Spring	Steel
Spool Seals	NBR + PUR
Other Seals	NBR + FKM
Other materials	PAM (Polyarylamide) 50% Glass Fiber Reinforced
Valve to Subbase Gasket	NBR
Subbases	Aluminum, E-Coating treatment

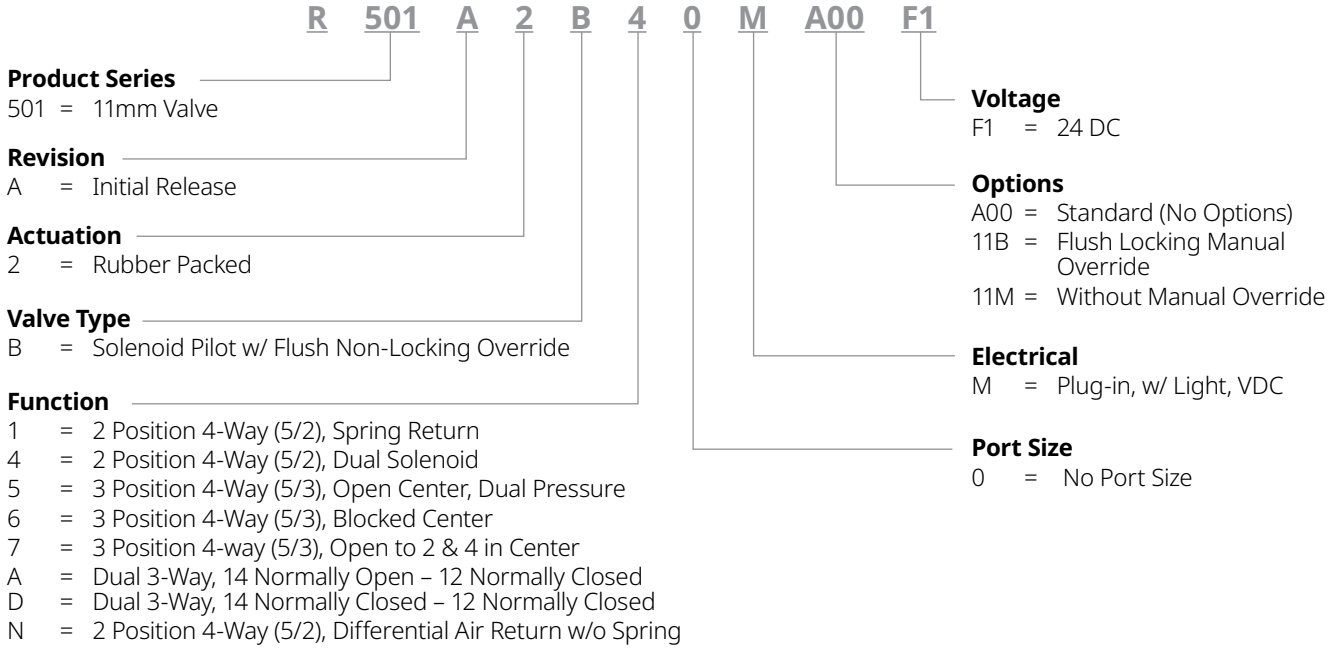
## Operating Data

All Solenoids Are Continuous Duty Rated	24 VDC
Power (Watts)	0.8
Holding Current (Amps)	0.025
Ambient Temperature Range Min/Max °F (°C)	-14° F (-10° C)/122° F (50° C)

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

## How to Order

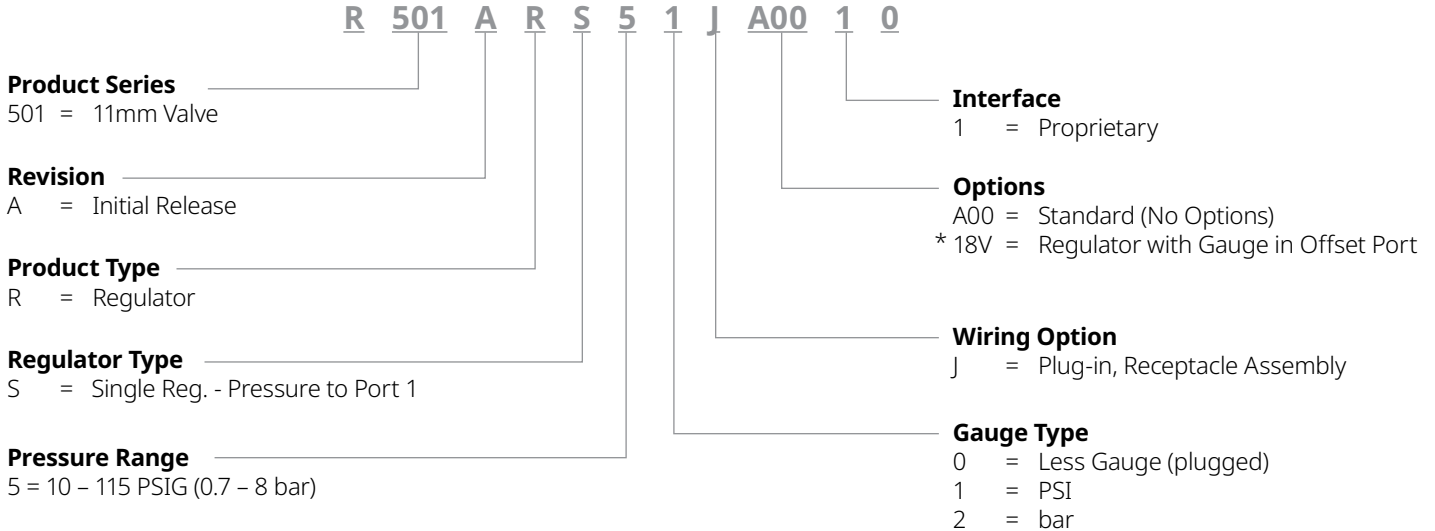
### Valve



# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

## How to Order

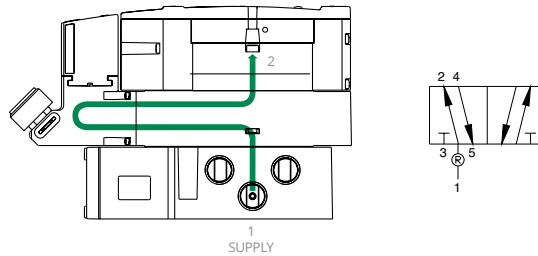
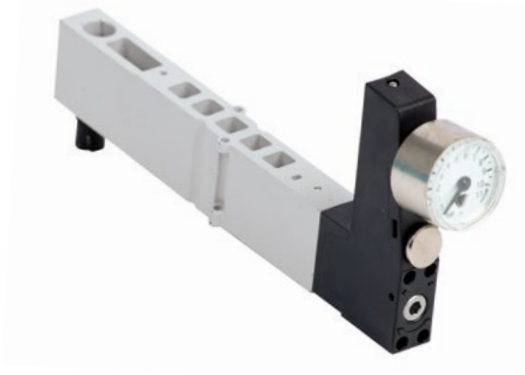
### Regulator



\* Regulator gauges must be offset with 18V option on alternating stations to prevent interference.

## Sandwich Pressure Regulator Block

### Type: RS



Single pressure from a single supply.

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

## How to Order

### Mounting

**K** **501** **A** **M** **S4** **2** **M** **A00** **1** **0**

#### Port Type

- H = Metric Thread
- K = Push-in Fittings

#### Product Series

- 501 = 11mm Valve

#### Revision

- A = Initial Release

#### Product Type

- M = Manifold Subbase
- <sup>1</sup>Z = Mid Station Supply

#### Mounting

- S4 = Manifold Subbase, 4 Stations, Side Ports, Single Z-Board
- M4 = Manifold Subbase, 4 Stations, Side Ports, Double Z-Board

#### Interface

- 1 = Proprietary

#### Options

- A00 = Standard (No Options)

#### Wiring Option

- M = Plug-in, Receptacle Assembly
- <sup>2</sup>U = M12 Connectors w/Pass Thru Communication Pin 1 = Coil 14, Pin 2 = Not used, Pin 3 = Common, Pin 4 = Not Used
- <sup>3</sup>X = 0 & 24 VDC Separation at First Station of a Safety Zone

#### Port Size (Working Ports 2 & 4)

- B = M7 (Threaded only)
- D = 4mm (5/32) (Push-in Fittings only)
- F = 6mm (Push-in Fittings only)
- 2 = 1/4 (Push-in Fittings only)

<sup>1</sup> Available with M4 mounting only

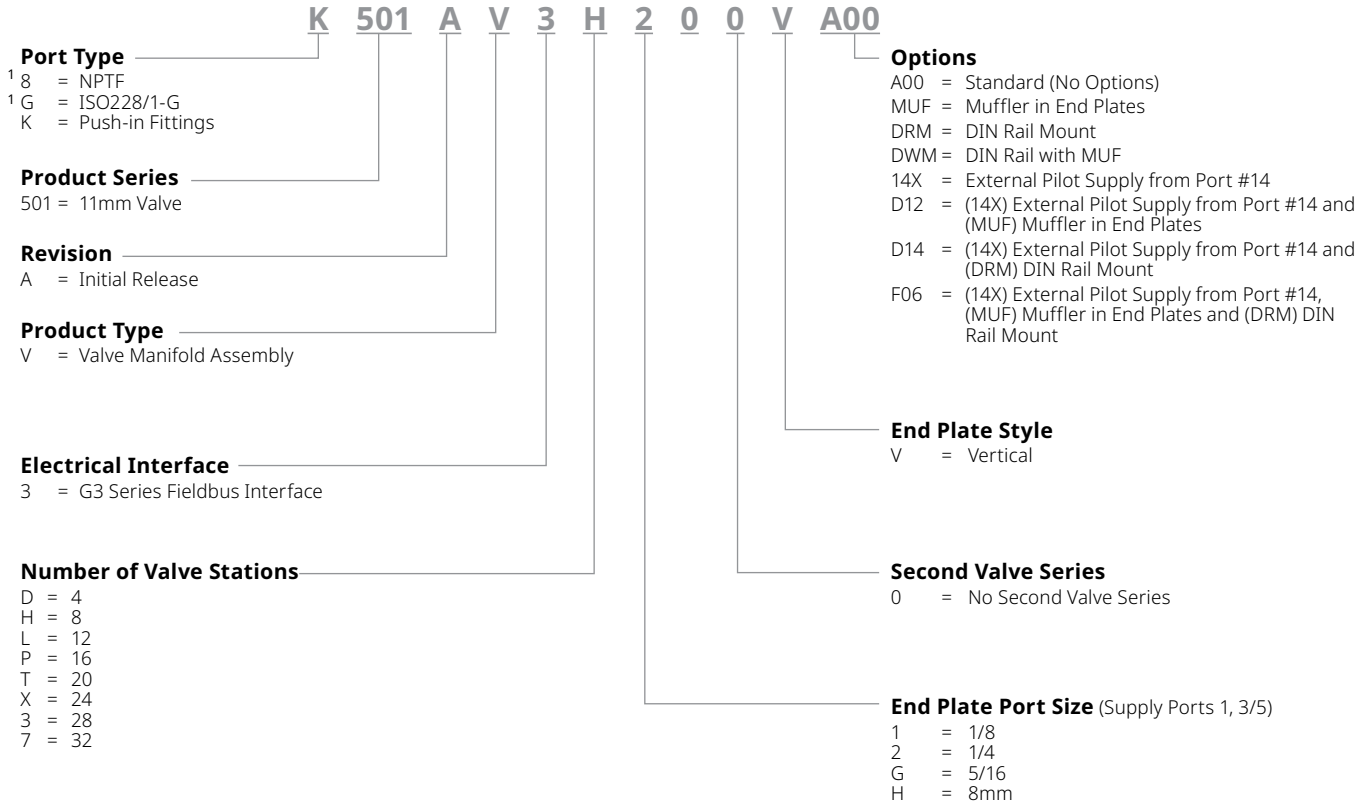
<sup>2</sup> Only available with Product Type 'M' and 'S4 Mounting'

<sup>3</sup> Only available with Product Type 'M' and 'M4' Mounting

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

## How to Order

### Manifold Assembly




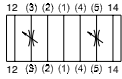
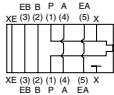
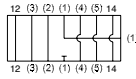


<sup>1</sup> Port Type 8 & G available in Port Size 1/8

NOTE: See the Multipin Electrical Interface table for Max Solenoid Outputs.

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

## Sandwich Option Kit

Valve Series	Type	Speed Control Kit	Shut Off Block Kit	Pressure Block Kit				
					Inserted between the valve and the mounting. It allows the user to adjust the flow out of the 3 & 5 ports of the valve. This will allow them to adjust the speed of the extend and retract of the cylinder.	Used to shut-off pressure when mounted below valve. It allows for easy maintenance without the need to shut-off pressure to the entire manifold.	Used to supply a separate pressure to a single valve station without needing blocking discs.	
								
				<b>4mm Push-in</b>	<b>6mm Push-in</b>	<b>1/4 Push-in</b>	<b>M7</b>	
<b>501 Series</b> (11mm)	Proprietary	R501AS428500001	R501AY428501001	K501AW517220004	K501AW517220003	K501AW517220002	H501AW517220001	

## End Plate Kit

End Plate Kit is used to stack multiple blocks together into a manifold assembly.



Vertical End Plates w/o DIN, w/o Muffer




Vertical End Plates w/o DIN, w/Muffer





Valve Series	Orientation	Port Type	NPTF			G			Push In					
		Port Number	1	3/5	14, 12	1	3/5	14, 12	1	3/5	14, 12	1	3/5	14, 12
		Port Size	1/8	1/8	M7	1/8	1/8	M7	1/4	5/16	5/16	1/4	8mm	8mm
<b>501 Series</b> (11mm)	Vertical	w/Muffer, w/DIN	8501AK429465006	G501AK429465014	K501AK429465032	K501AK429465008	K501AK429465016							
		w/Muffer, w/o DIN	8501AK429465005	G501AK429465013	K501AK429465031	K501AK429465007	K501AK429465015							
		w/o Muffer, w/DIN	8501AK429465002	G501AK429465010	K501AK429465030	K501AK429465004	K501AK429465012							
		w/o Muffer, w/o DIN	8501AK429465001	G501AK429465009	K501AK429465029	K501AK429465003	K501AK429465011							


# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

## Mid-Station Supply Manifold Block Kit

Valve Series	Product Image (Example Only)	Description	Interface	Thread Type	Supply Port 1 Size	Part Number
501 Series (11mm)		Add additional supply and exhaust capacity to large manifold assemblies.	Proprietary	Metric Thread	M7	H501AZM8BTA0010
					M7	H501AZM4BMA0010
				Push-in Fittings	1/4	K501AZM82TA0010
					6mm	K501AZM8FTA0010
					1/4	K501AZM42MA0010
					6mm	K501AZM4FMA0010
					4mm (5/32)	K501AZM4DMA0010

## Accessories Kit

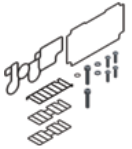

Accessories Kit	Product Image (Example Only)	Description	Port Number	Part Number 501 Series (11mm)
Blank Station Plate Kit		Used to block off a manifold station for future use.	-	P501AB429685001
DIN Rail Clamp Kit		Used to mount manifold assembly to a machine via DIN Rail. Kit includes hardware for each end of the manifold. NOTE: DIN Rail not included.	-	239-980
Blocking Disc Kit		Used to isolate 1, 3 & 5 galleries of the manifold internally. NOTE: Includes tag to label ports blocked.	1	P501AD431915001
			3	P501AD431915002
			5	P501AD431915003
			1 + 3	P501AD431915004
			1 + 5	P501AD431915005
			3 + 5	P501AD431915006
			1, 3, 5	P501AD431915007
Internal Muffler Element		Muffler element	-	427991-001

		Thread Type	Tube Size	Quantity	
Fittings		M7	4mm	10	H850A104B004B10
		M7	6mm	10	H850A104B006B10
		M7	1/4	10	H850A104B104B10




# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

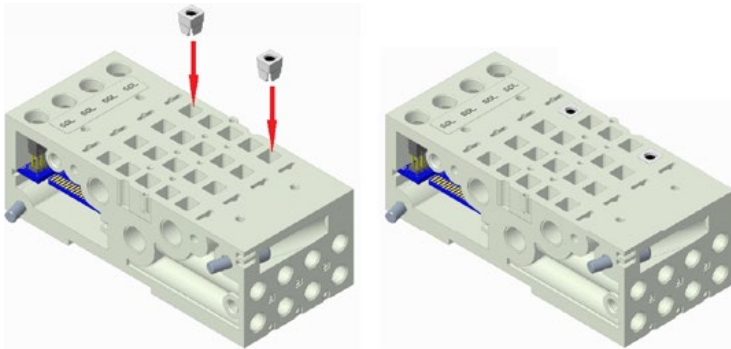
## Replacement Parts Kit

Replacement Parts Kit	Product Image (Example Only)	Description	Parts Included	Part Number 501 Series (11mm)
Interface Mounting Kit		Includes Mounting Gaskets ((1) valve to base, (2) Accessories to valve or base, (1) Manifold block, (1) End-Plate to electrical housing), (1) Body to base O-ring, (2) Manifold block mounting screws and lock washers, (4) Electrical housing mounting screws		M501AU521771001
Regulator Gauge Replacement Kit		0 – 160 PSIG Regulator Gauge Head	Includes gauge head, o-ring, and hitch-pin.	M501AG504541001
		0 – 11 bar Regulator Gauge Head		M501AG550540001

## 501 Back Pressure Check Kit

Replacement Parts Kit	Product Image (Example Only)	Description	Parts Included	Restrictions	Part Number
Back Pressure Checks		Back pressure checks installed in ports 3 and 5 of the manifold blocks. Used to reduce/prevent back pressure into the valve.	2x Check Bodies and 2x Balls	Pressure must come from port 1 and exhaust must leave ports 3 and 5. Not allowed with Dual Pressure setup or Pilot supply from port 14 (no option 14X or combination thereof)	M501AU535182001

## Manifold Assembly



## Internal/External Pilot Selection

### Manifold Assembly

Internal Pilot Supply Plug Location

External Pilot Supply Plug Location

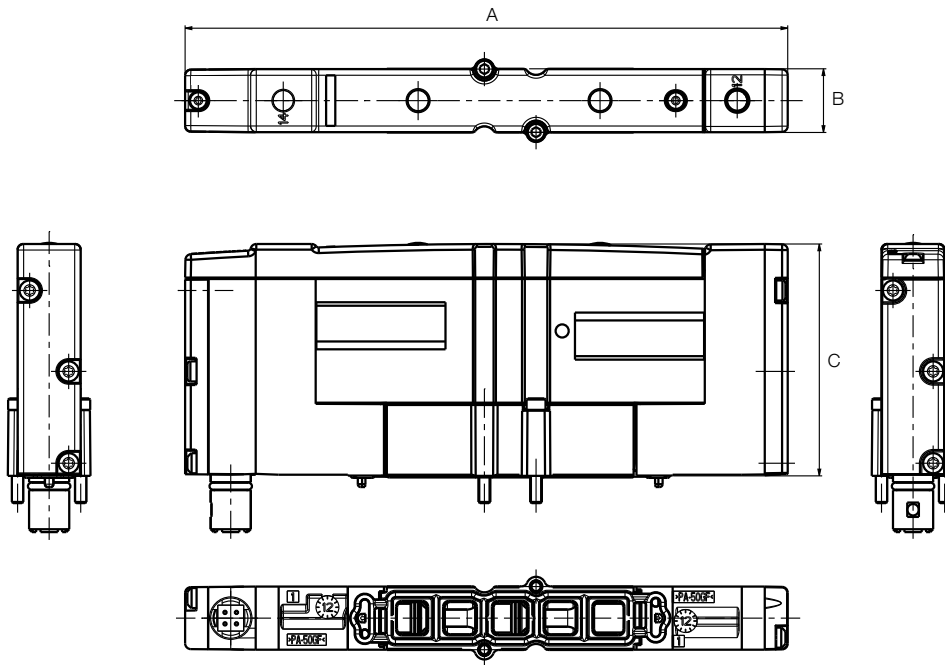


NOTE: Manifold Assemblies are factory set for internal pilot supply. To convert to external pilot supply install pilot supply seal screws 501 Series: 127-803.

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## 501 Series Plug-in Valve

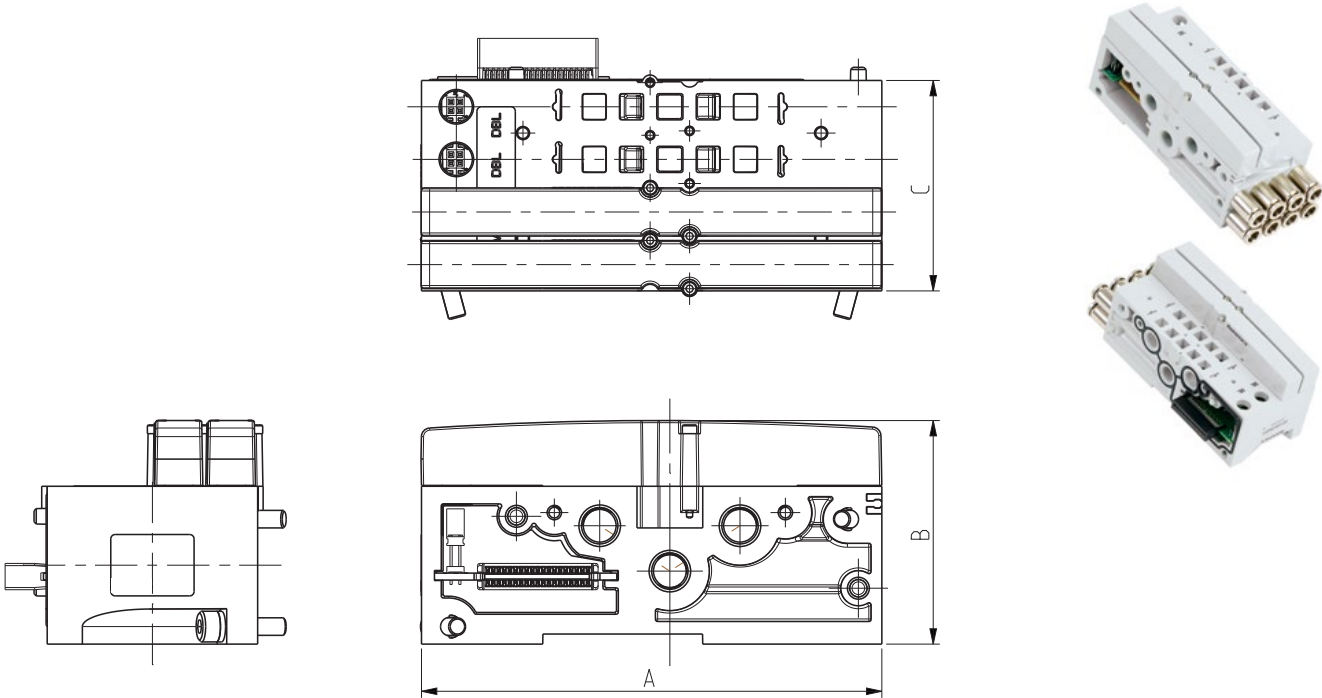


Weight	Valve Body	Manifold Block		End Plates
		3-Station	4-Station	
lbs (kg)	0.205 (0.093)	0.50 (0.23)	0.60 (0.27)	1.20 (0.54)
	<b>A</b>	<b>B</b>	<b>C</b>	
	105 (4.13)	11 (0.43)	40.4 (1.59)	

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## 501 Series Mid-Station Supply Block

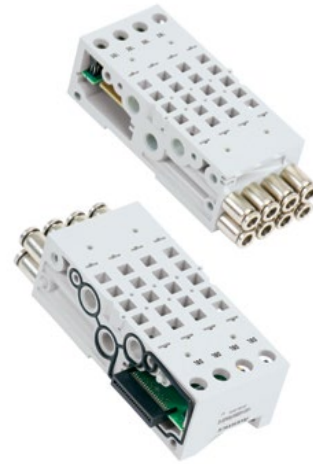
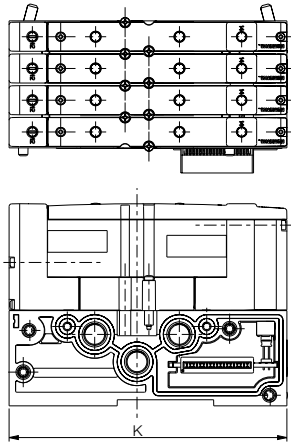
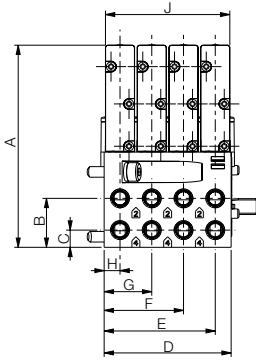


A	B	C
105 (4.13)	51 (2.01)	48 (1.89)

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Plug-in Valve Mounted 4-Station Manifold Block

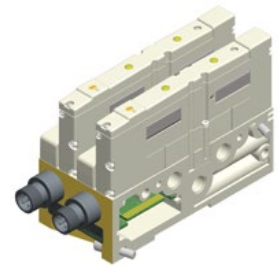
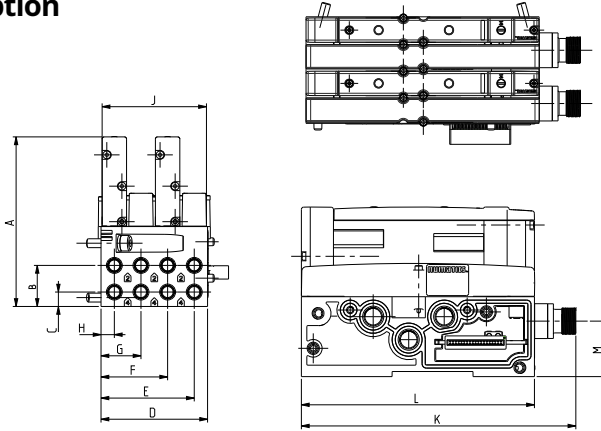


A	B	C	D	E	F	G	H	J	K
76.4 (3.008)	18.5 (0.728)	6.5 (0.256)	48 (1.890)	42 (1.653)	30 (1.181)	18 (0.709)	6 (0.236)	47 (1.850)	105 (4.134)

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Plug-in Valve Mounted U-Wiring Option



A	B	C	D	E	F	G	H	J	K	L	M
76.4 (3.01)	18.5 (0.73)	6.5 (0.26)	48.0 (1.89)	42.0 (1.65)	30.0 (1.18)	18.0 (0.71)	6.0 (0.24)	47.0 (1.85)	123.6 (4.87)	105.0 (4.13)	25.0 (0.98)

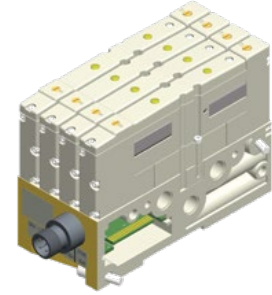
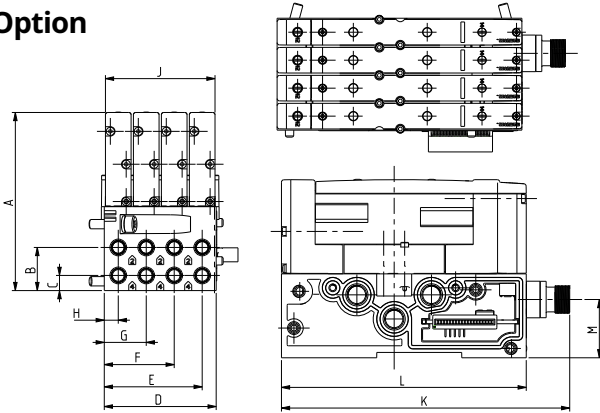
## Zoned Safety - Pilot Valve Manifold Base ("U" Wiring)

- The mounted pilot valves are electrically controlled via the M12 connector; power and communication are isolated from the G3 node
- Mounted pilot valves supply Pilot Operated Check Valves, Rod-Locks, Pilot Operated Spring Return Valves, etc.
- When the M12 connector is externally supplied by a Safety Relay or Safety Output via a Safety PLC, the pilot valves become one of the redundant channels required for Category 3 & 4 circuits

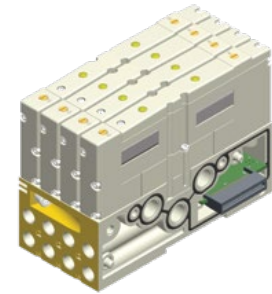
# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Plug-in Valve Mounted X-Wiring Option



X-Wiring Manifold Block



A	B	C	D	E	F	G	H	J	K	L	M
76.4 (3.01)	18.5 (0.73)	6.5 (0.26)	48.0 (1.89)	42.0 (1.65)	30.0 (1.18)	18.0 (0.71)	6.0 (0.24)	47.0 (1.85)	123.6 (4.87)	105.0 (4.13)	25.0 (0.98)

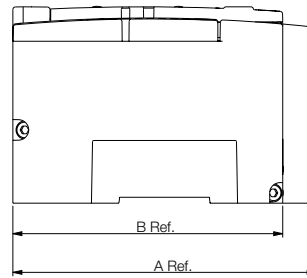
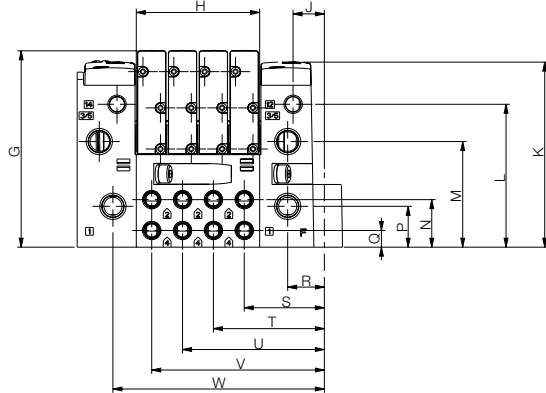
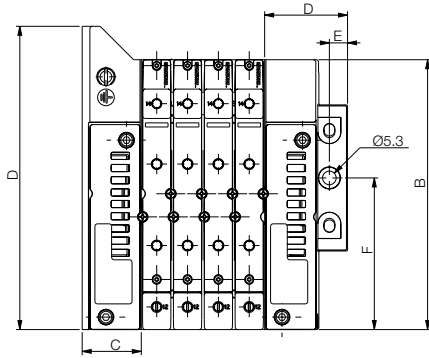
## Zoned Safety - Zoned Power Manifold Base ("X" Wiring)

- The M12 Connector supplies power to up to 16 valve solenoid coils
- The G3 node provides communication to these valve solenoid coils
- When the M12 connector is externally supplied by a Safety Relay or Safety Output via a Safety PLC, the valves within the Safety Zone become one of the redundant channels of a Category 3 or 4 circuit

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Plug-in Valve Mounted 4-Station Manifold Assembly

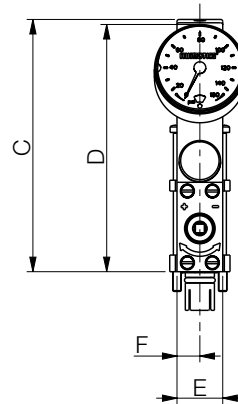
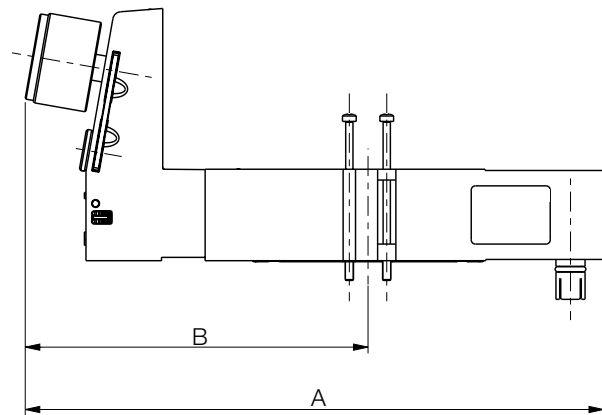
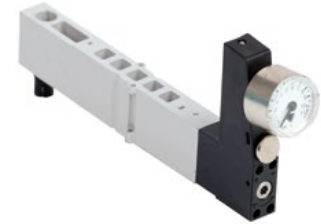
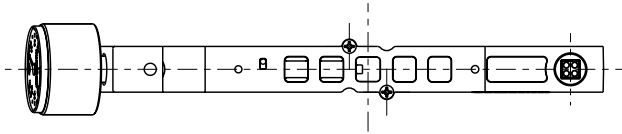


A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W
118 (4.65)	105 (4.13)	23 (0.90)	32.3 (1.27)	71 (2.79)	59 (2.32)	76.4 (3.01)	48 (1.89)	12.2 (0.48)	72 (2.83)	55.6 (2.19)	41.1 (1.62)	18.5 (0.73)	15.9 (0.63)	6.5 (0.26)	14.3 (0.56)	31.2 (1.23)	43.2 (1.70)	55.2 (2.17)	67.2 (2.65)	82.3 (3.24)

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Sandwich Pressure Regulator Single Regulator

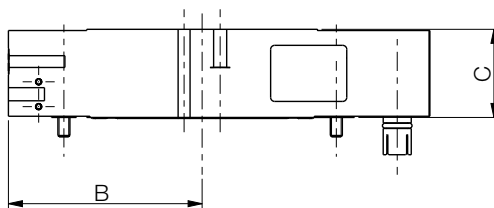
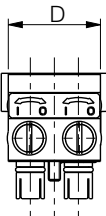
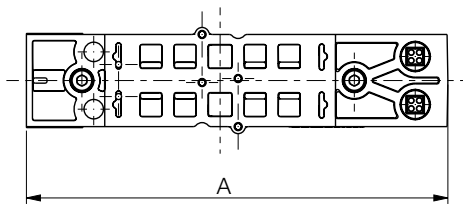


Weight
lbs (kg)
0.20 (0.09)

A	B	C	D	E	F
139.1 (5.476)	82.5 (3.248)	60.7 (2.390)	59.5 (2.342)	11 (0.433)	5.5 (0.216)

Dimensions: mm (inches)

## Sandwich Shut Off Block Kit



Weight
lbs (kg)
0.25 (0.11)

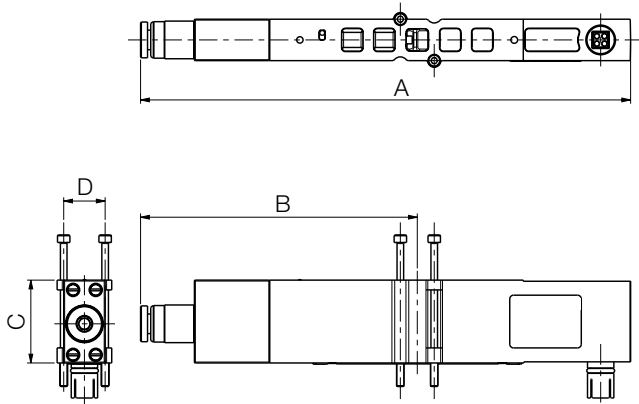
A	B	C	D
105.2 (4.142)	48.4 (1.905)	22 (0.866)	23 (0.905)



# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Sandwich Pressure Block Kit

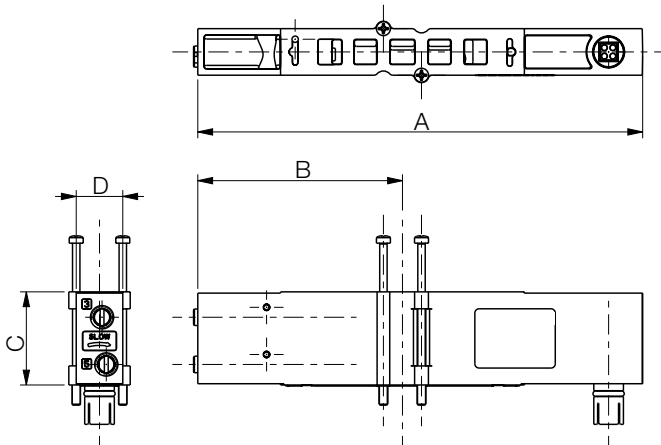


Weight	
lbs	(kg)
0.15	(0.07)

A	B	C	D
130.1 (5.12)	73.5 (2.89)	22.0 (0.87)	11.0 (0.43)

Dimensions: mm (inches)

## Sandwich Speed Control Kit



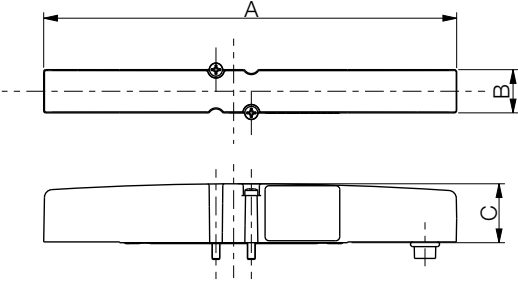
Weight	
lbs	(kg)
0.15	(0.07)

A	B	C	D
105.1 (4.137)	48.4 (1.905)	22 (0.866)	11 (0.433)

# AVENTICS™ Series 501 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Blank Station Plate Kit



Weight	
lbs (kg)	
0.10	(0.05)

A	B	C
105.1 (4.138)	11 (0.433)	15 (0.591)