

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

## 502 Series – Directional Control Valve Platform

### Featuring Higher Flow in a Compact Valve Package



ISO 15407-2 (18mm)  
ISO 15407-1 (18mm)

#### Features

- Solenoid air pilot actuated
- Low wattage 1.3 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

## 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

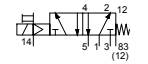
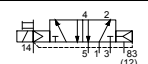

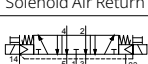
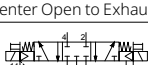
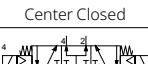
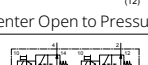
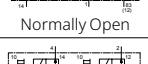
## Operating Data


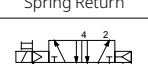
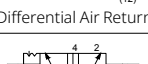
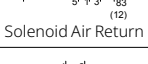
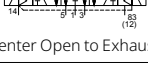

All Solenoids Are Continuous Duty Rated	24 VDC
Power (Watts)	1.3
Holding Current (Amps)	0.054
Ambient Temperature Range Min/Max °F (°C)	-14 °F (-10 °C)/122 °F (50 °C)

# AVENTICS™ Series 502 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	
				1 → 2 1 → 4	2 → 3 4 → 5						

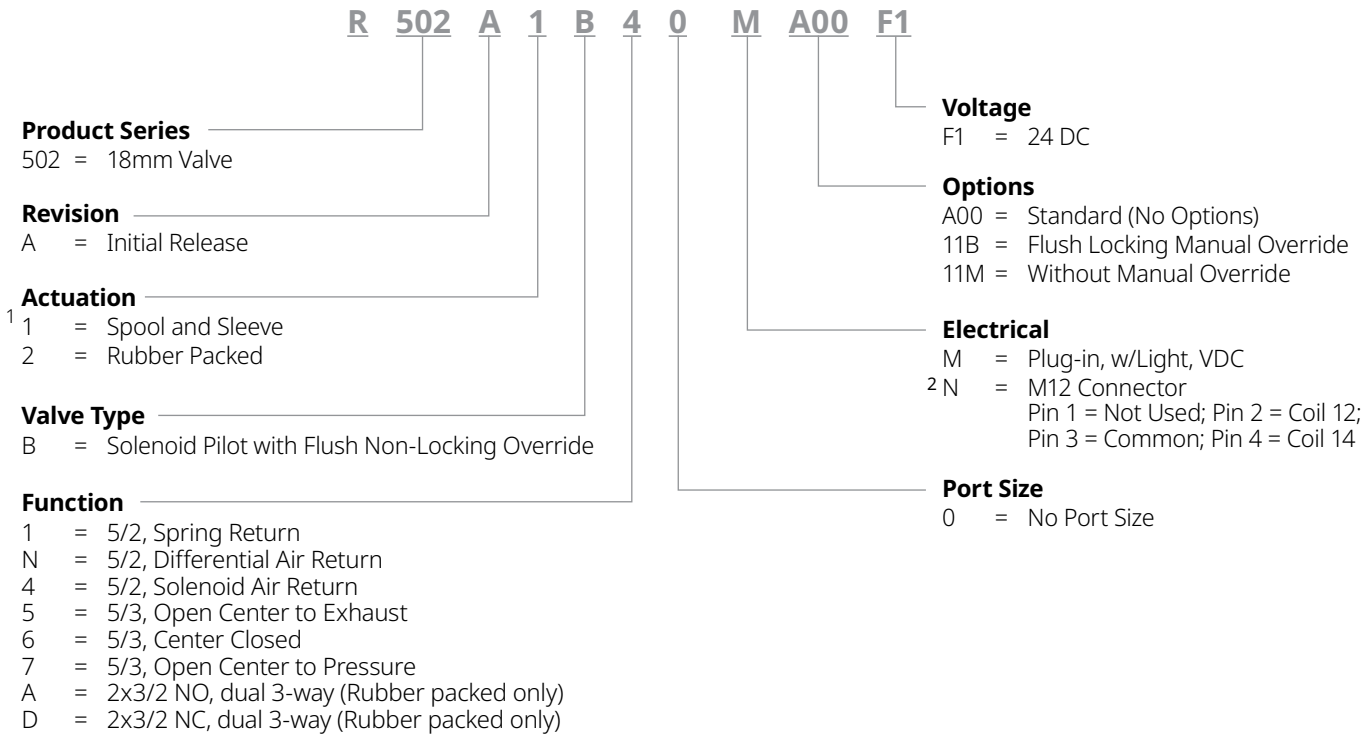
Rubber Packed Technology, with Manual Override											
5/2	B1	 Spring Return	Proprietary	0.630 (630)	0.660 (660)	17 / 38	43 (3)	115 (8)	28 (-0.95)	115 (8)	R502A2B10MA00F1
			ISO	0.510 (510)	0.510 (510)						
	BN	 Differential Air Return	Proprietary	0.630 (630)	0.660 (660)	17 / 44	29 (2)	115 (8)	28 (-0.95)	115 (8)	R502A2BN0MA00F1
			ISO	0.510 (510)	0.510 (510)						
	B4	 Solenoid Air Return	Proprietary	0.630 (630)	0.660 (660)	14 / 14	29 (2)	115 (8)	28 (-0.95)	115 (8)	R502A2B40MA00F1
			ISO	0.510 (510)	0.510 (510)						
5/3	B5	 Center Open to Exhaust	Proprietary	0.430 (430)	0.530 (530)	36 / 21	43 (3)	115 (8)	28 (-0.95)	115 (8)	R502A2B50MA00F1
			ISO	0.390 (390)	0.470 (470)						
	B6	 Center Closed	Proprietary	0.560 (560)	0.610 (610)	18 / 18	43 (3)	115 (8)	28 (-0.95)	115 (8)	R502A2B60MA00F1
			ISO	0.490 (490)	0.490 (490)						
	B7	 Center Open to Pressure	Proprietary	0.490 (490)	0.390 (390)	21 / 27	43 (3)	115 (8)	28 (-0.95)	115 (8)	R502A2B70MA00F1
			ISO	0.390 (390)	0.390 (390)						
"2 x 3/2 NO"	BA	 Normally Open	Proprietary	0.580 (580)	0.570 (570)	19 / 26	29 (2) (b)	115 (8)	36* (2)	115 (8)	R502A2BA0MA00F1
ISO			0.500 (500)	0.470 (470)							
2 x 3/2 NC	BD	 Normally Closed	Proprietary	0.650 (650)	0.600 (600)	36/15	58 (4.0)	115 (8)	36* (2)	115 (8)	R502A2BD0MA00F1
			ISO	0.500 (500)	0.440 (440)						

Spool and Sleeve Technology, with Manual Override											
5/2	B1	 Spring Return	Proprietary	0.470 (470)	0.530 (530)	16/49	29 (2)	115 (8)	28 (-0.95)	115 (8)	R502A1B10MA00F1
			ISO	0.410 (410)	0.390 (390)						
	BN	 Differential Air Return	Proprietary	0.470 (470)	0.530 (530)	11/26	22 (1.5)	115 (8)	28 (-0.95)	115 (8)	R502A1BN0MA00F1
			ISO	0.410 (410)	0.390 (390)						
	B4	 Solenoid Air Return	Proprietary	0.470 (470)	0.530 (530)	12/15	29 (2)	115 (8)	28 (-0.95)	115 (8)	R502A1B40MA00F1
			ISO	0.410 (410)	0.390 (390)						
5/3	B5	 Center Open to Exhaust	Proprietary	0.380 (380)	0.500 (500)	23/13	22 (1.5)	115 (8)	28 (-0.95)	115 (8)	R502A1B50MA00F1
			ISO	0.340 (340)	0.350 (350)						
	B6	 Center Closed	Proprietary	0.420 (420)	0.440 (440)	12/12	22 (1.5)	115 (8)	28 (-0.95)	115 (8)	R502A1B60MA00F1
			ISO	0.360 (360)	0.350 (350)						
	B7	 Center Open to Pressure	Proprietary	0.420 (420)	0.430 (430)	13/23	22 (1.5)	115 (8)	28 (-0.95)	115 (8)	R502A1B70MA00F1
			ISO	0.370 (370)	0.350 (350)						

\* Minimum pressure with external piloting

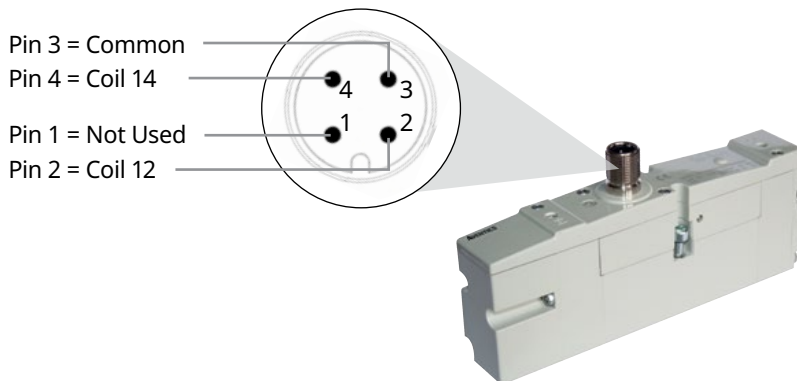
# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

## How to Order: Valve



<sup>1</sup> Not available with Function A and D

<sup>2</sup> See diagram:



# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

## How to Order: Regulator

**R 502 A R S 1 1 J A00 1 0**

**Product Series**  
502 = 18mm Valve

**Revision**  
A = Initial Release

**Product Type**  
R = Regulator

**Regulator Type**  
S = Single Reg. - Pressure to Port 1  
D = Double Reg. - Pressure to Ports 5 & 3  
E = Double Reg. - Pressure to Ports 4 & 2, w/o Valve  
T = Double Reg. - Pressure to Ports 1 & 3, 2 Pressure Selector

**Pressure Range**  
1 = 10 - 130 PSIG (0.7 - 9 bar)  
3 = 3 - 30 PSIG (0.2 - 2 bar)  
4 = 5 - 60 PSIG (0.3 - 4.1 bar)

**Interface**  
1 = Proprietary  
2 = ISO 15407-2  
3 = ISO 15407-1

**Options**  
A00 = Standard (No Options)  
14M = Temperproof Needle Cartridge Assembly or Regulator  
16N = Jumper for Supply Pressure to Valve, 14 End  
16P = Jumper for Supply Pressure to Valve, 12 End  
\* 61Y = Regulator with Gauge Extension Fitting

**Wiring Option**  
J = Plug-in, Receptacle Assembly  
0 = Non Plug-in

**Gauge Type**  
1 = PSI  
2 = bar  
8 = with 1/8" NPTF adaptor for external gauge  
G = with 1/8" G tap adaptor for external gauge

\* Regulator gauges must be offset with 61Y option on alternating stations to prevent interference.

## Sandwich Pressure Regulator Block

Types: RS / RD / RE / RT

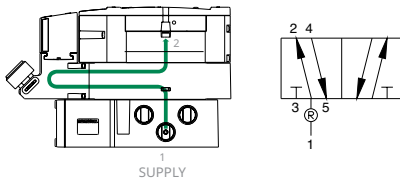


ISO 15407-2/15407-1 Interface



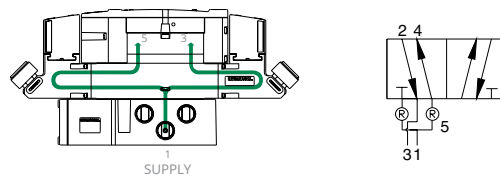
Proprietary Interface

### Type RS



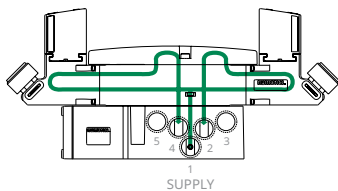
Single pressure from a single supply.

### Type RD



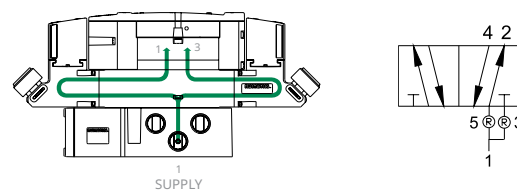
Dual pressure from a single supply.

### Type RE



External outlet regulator used with jumper plate for single or dual pressure.

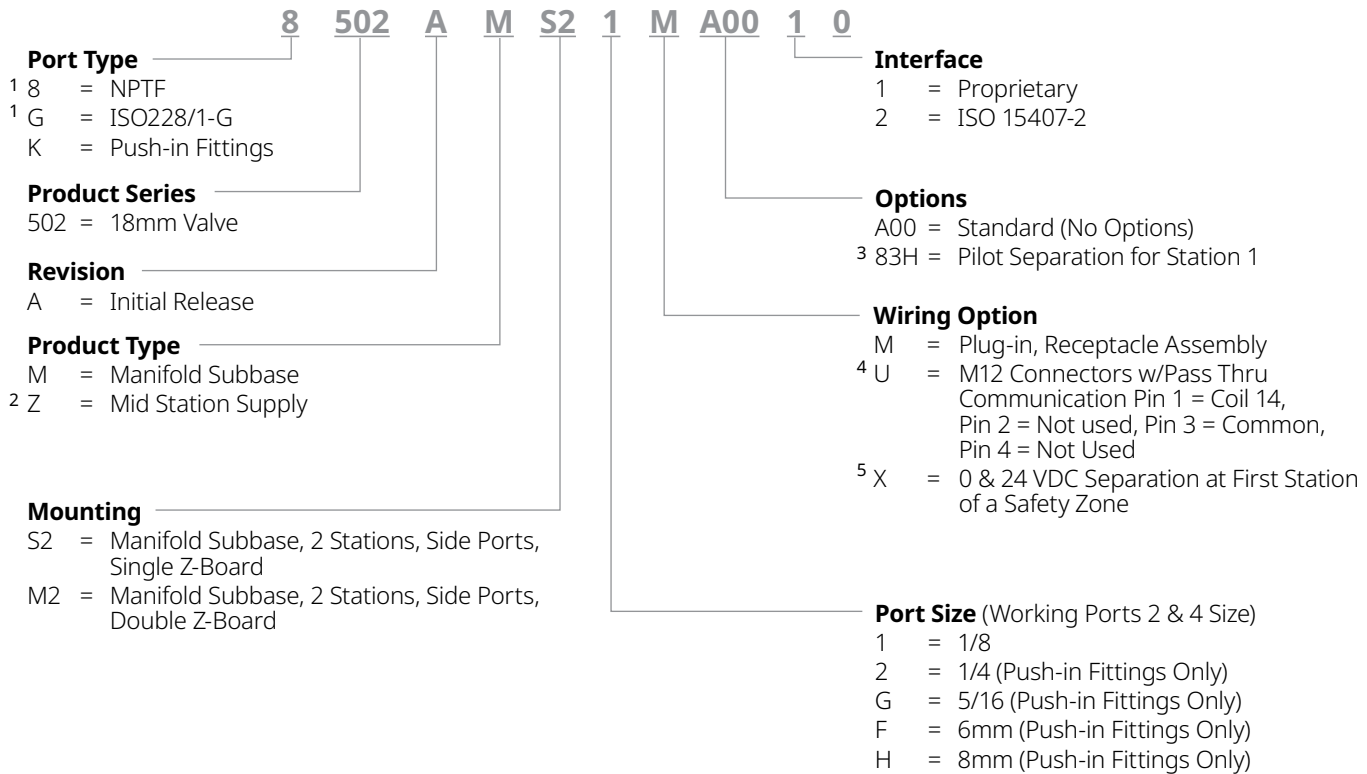
### Type RT



Two-pressure selector used for multi-pressure applications.

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

## How to Order: Mounting



<sup>1</sup> Port Type 8 & G available in 1/8 size for Product Type M and Z

<sup>2</sup> Only available with M2 mounting

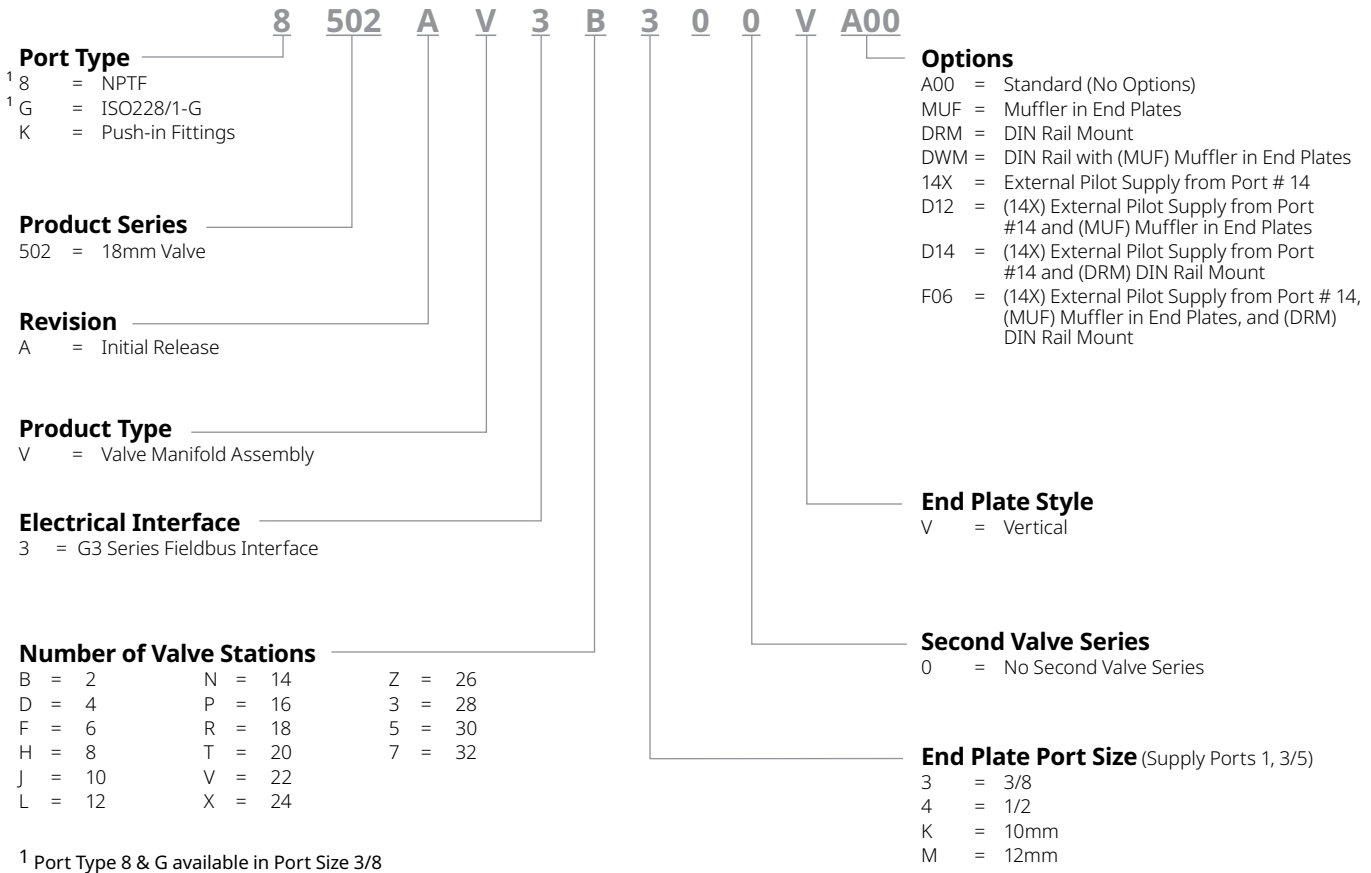
<sup>3</sup> Only available with 'X' Wiring

<sup>4</sup> Only available with Product Type 'M' and 'S2 Mounting'

<sup>5</sup> Only available with Product Type 'M' and 'M2' Mounting

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System





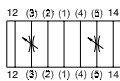
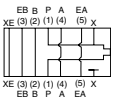
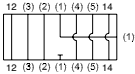
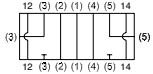
## How to Order: Manifold Assembly



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


# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

## Sandwich Option Kit

Valve Series	Type	Speed Control Kit	Shut Off Block Kit	Pressure Block Kit		Exhaust 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.		Used to isolate the exhaust of a single valve station from the manifold. It allows for faster exhaust response by re-routing exhaust externally from the manifold.	
							
				<b>1/8 NPTF</b>	<b>1/8 G</b>	<b>1/8 NPTF</b>	<b>1/8 G</b>
<b>502 Series</b> (18mm)	Proprietary	R502AS429395002	R502AY429409002	8502AW428685004	G502AW428685004	8502AX428685002	G502AX428685002
	ISO 15407-2	R502AS429395001	R502AY429409001	8502AW428685003	G502AW428685003	8502AX428685001	G502AX428685001

# AVENTICS™ Series 502 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
502 Series (18mm)		Add additional supply and exhaust capacity to large manifold assemblies.	ISO 15407-2	NPTF	1/8	8502AZM41TA0020
				G Tap	1/8	G502AZM41TA0020
			Proprietary	NPTF	1/8	8502AZM41TA0010
				G Tap	1/8	G502AZM41TA0010
			ISO 15407-2	Push-in Fittings	1/4	K502AZM42TA0020
					5/16	K502AZM4GTA0020
					6mm	K502AZM4FTA0020
					8mm	K502AZM4HTA0020
			Proprietary	Push-in Fittings	1/4	K502AZM42TA0010
					5/16	K502AZM4GTA0010
					6mm	K502AZM4FTA0010
					8mm	K502AZM4HTA0010



# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

## Internal/External Pilot Selection

### Manifold Assembly

Internal Pilot Supply Plug Location



External Pilot Supply Plug Location

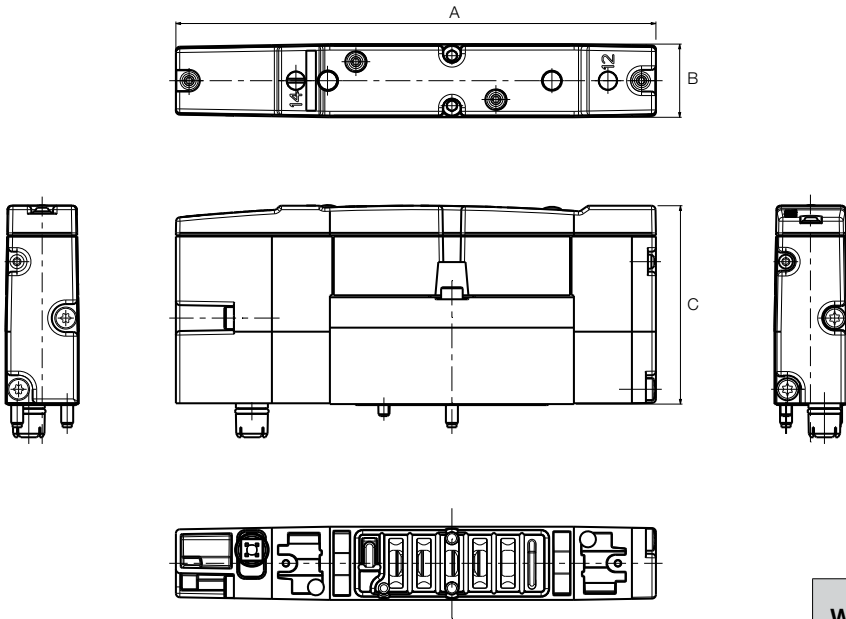


NOTE: Manifold Assemblies are factory set for internal pilot supply. To convert to external pilot supply install pilot supply seal screws 502 Series: 426188-001, as shown in the pictures.

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## 502 Series Plug-in Valve



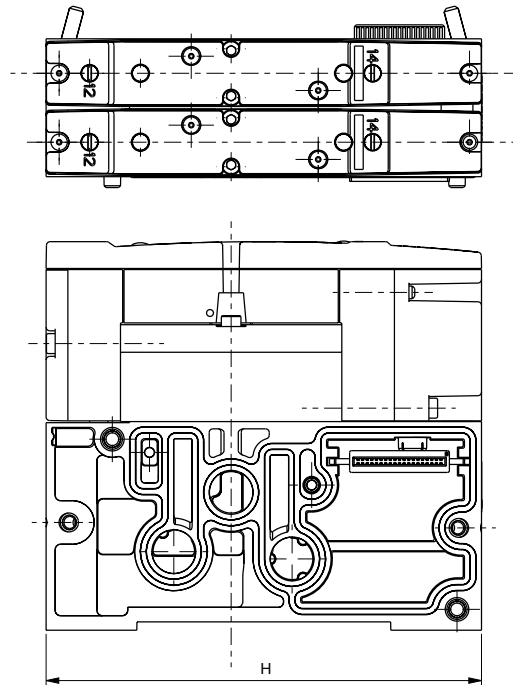
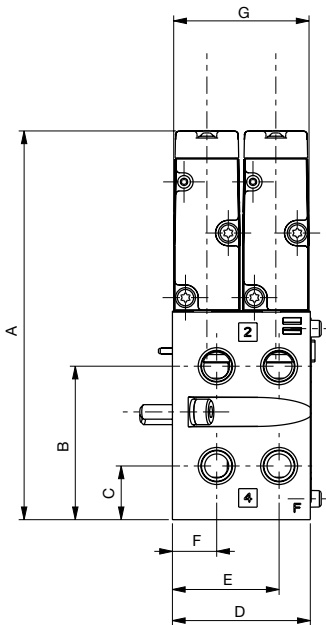
Weight	Valve Body	Manifold Block	End Plates
lbs (kg)	0.372 (0.169)	0.75 (0.34)	3.30 (0.45)

A	B	C
120 (4.72)	18 (0.71)	49.6 (1.95)

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

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



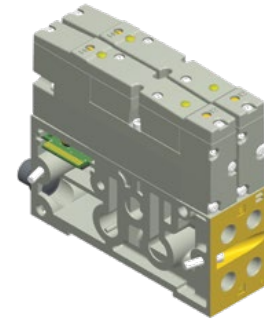
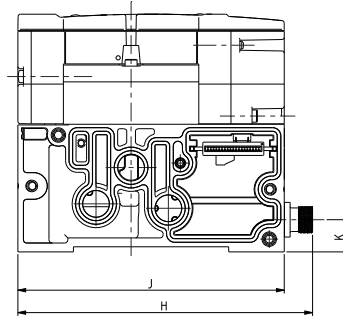
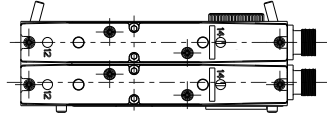
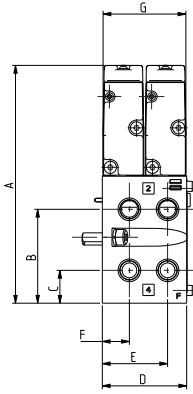
A	B	C	D	E	F	G	H
107.1 (4.217)	42.3 (1.665)	14.8 (0.583)	38 (1.496)	29.4 (1.157)	12.2 (0.48)	37.3 (1.469)	120 (4.724)

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

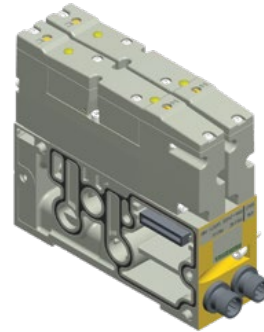
Dimensions: mm (inches)

## Plug-in Manifold Block

### U-Wiring Option



U-Wiring Manifold Block



A	B	C	D	E	F	G	H	J	K
107.1 (4.22)	42.3 (1.67)	14.8 (0.58)	38.0 (1.50)	29.4 (1.16)	12.2 (0.48)	37.3 (1.47)	132.8 (5.23)	120.0 (4.72)	14.5 (0.57)

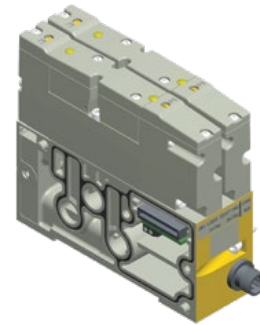
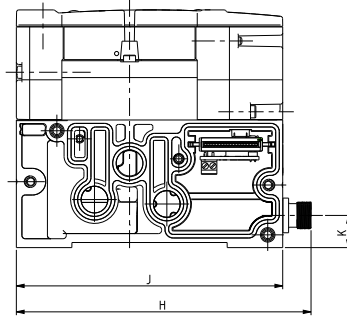
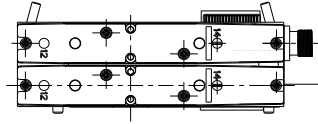
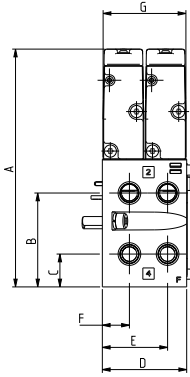
### Zoned Safety - Pilot Valve Manifold Base (“U” Wiring)

- 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

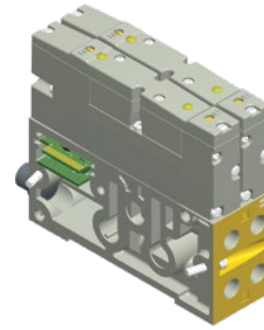
# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Plug-in Manifold Block X-Wiring Option



X-Wiring Manifold Block



A	B	C	D	E	F	G	H	J	K
107.1 (4.22)	42.3 (1.67)	14.8 (0.58)	38.0 (1.50)	29.4 (1.16)	12.2 (0.48)	37.3 (1.47)	132.8 (5.23)	120.0 (4.72)	14.5 (0.57)

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

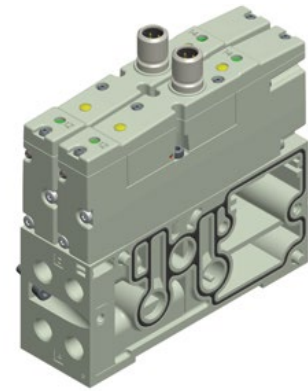
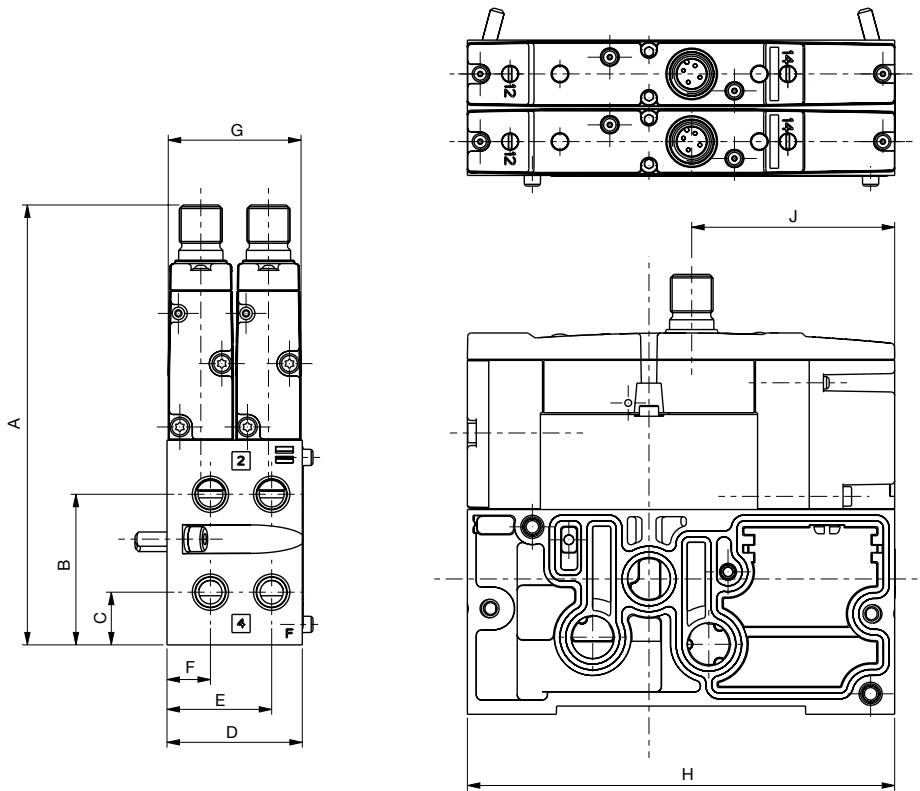
- The M12 Connector supplies power to up to 16 valve solenoid coils
- The G3 node provides communication to these valve solenoid coils
- When the M12 connector is externally supplied by a Safety Relay or Safety Output via a Safety PLC, the valves within the Safety Zone become one of the redundant channels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

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

M12 Valve Mounted

Non Plug-in Manifold Block (ISO 15407-1)

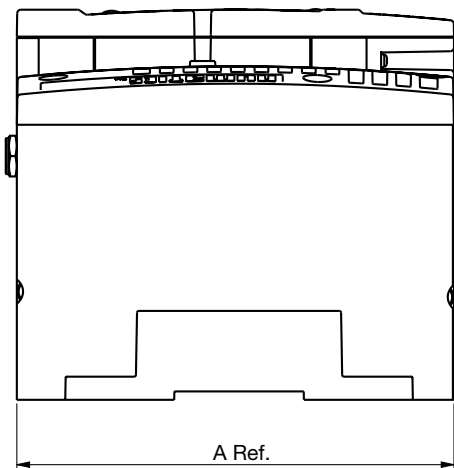
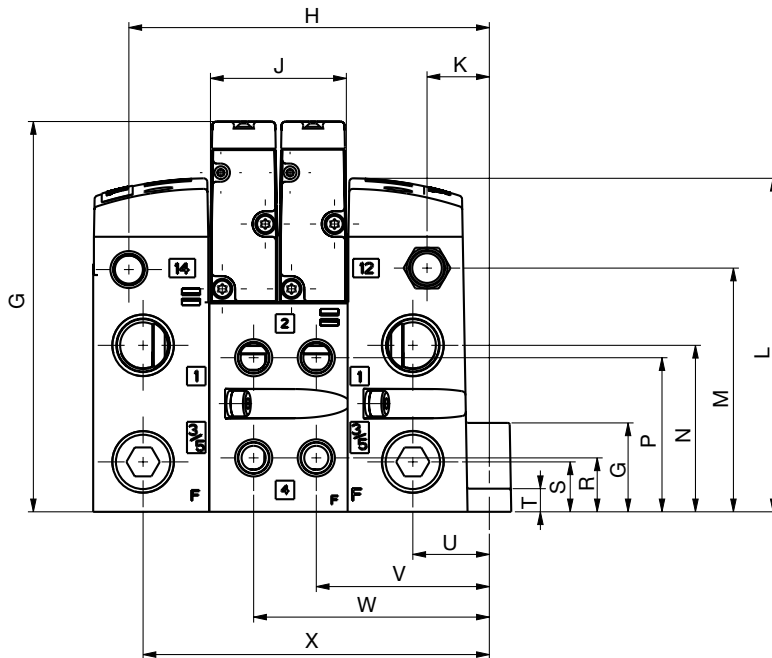
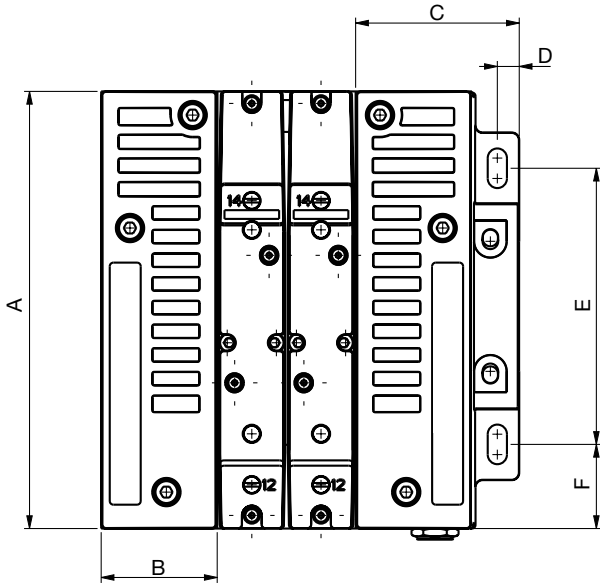


A	B	C	D	E	F	G	H	J
123.6 (4.866)	42.3 (1.665)	14.8 (0.583)	38 (1.496)	29.4 (1.157)	12.2 (0.48)	37.3 (1.469)	120 (4.724)	57 (2.244)

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Manifold Assembly with Vertical End Plates



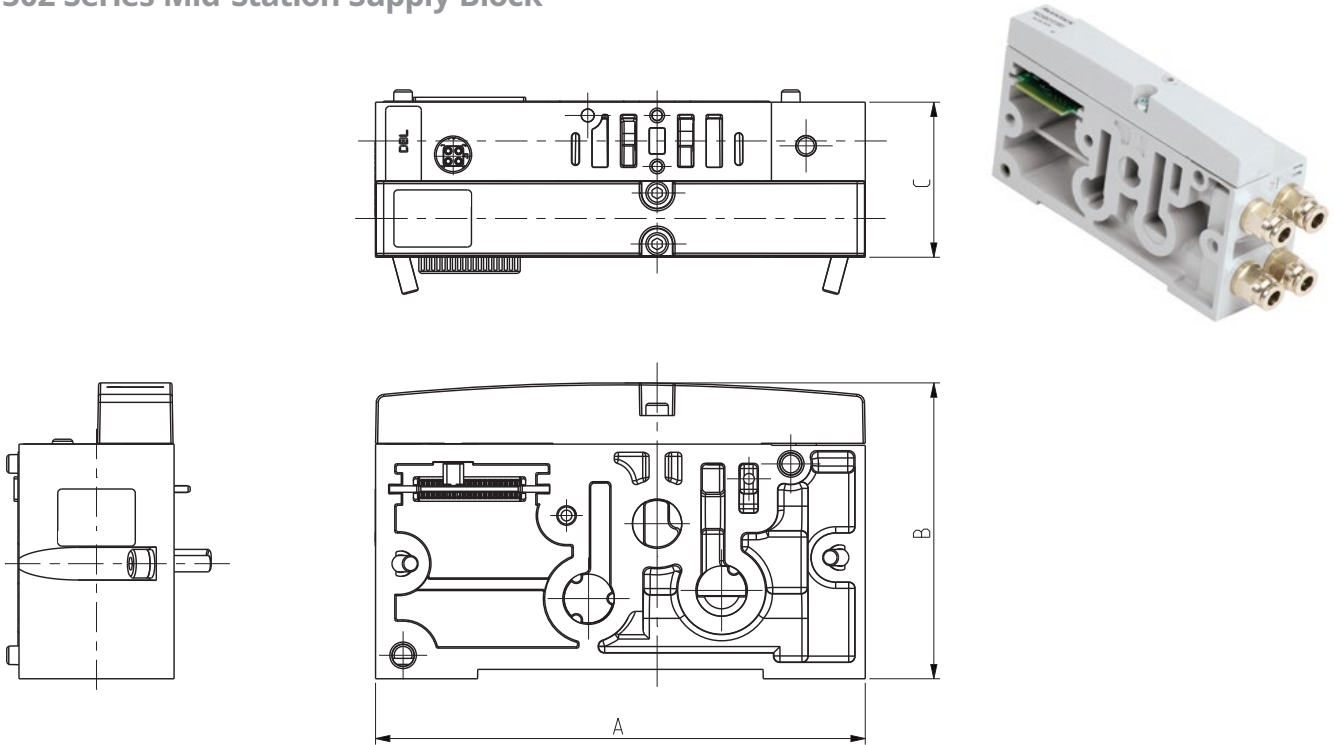
A	B	C	D	E	F	G	H	J	K	L
120 (4.724)	31.9 (1.256)	44.9 (1.768)	6 (0.236)	75.8 (2.984)	23.1 (0.909)	1071 (4.217)	98.9 (3.894)	37.3 (1.469)	17.1 (0.673)	91.6 (3.606)

M	N	P	Q	R	S	T	U	V	W	X
66.9 (2.634)	45.7 (1.799)	42.3 (1.665)	24.4 (0.961)	14.8 (0.583)	13.7 (0.539)	6.35 (0.25)	21 (0.827)	47.5 (1.87)	64.7 (2.547)	95 (3.74)

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## 502 Series Mid-Station Supply Block



A	B	C
120 (4.72)	72.5 (2.85)	38 (1.50)

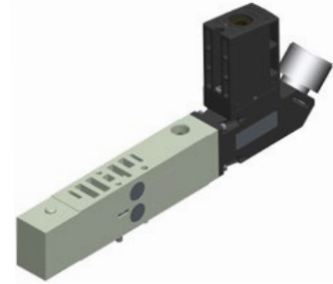
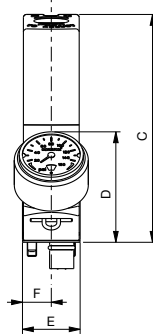
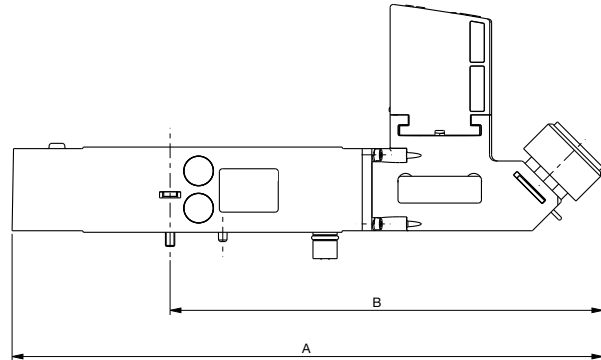
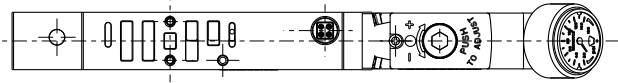


# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Sandwich Pressure Regulator

### Single Regulator

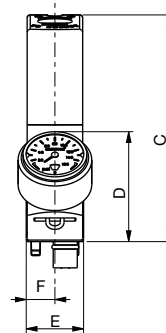
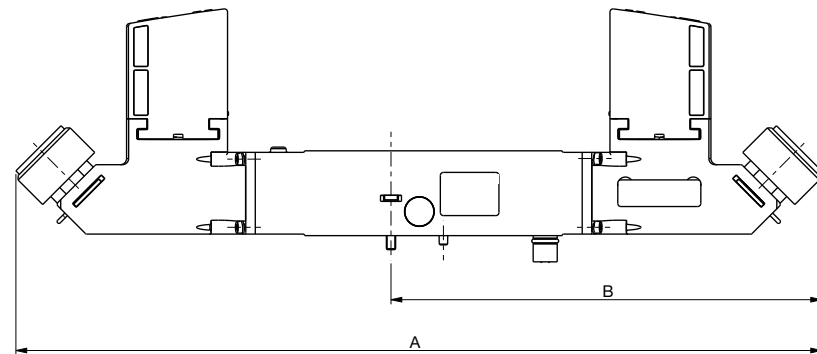
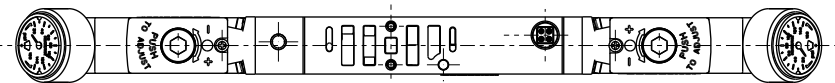


Weight
lbs (kg)
0.65 (0.30)

A	B	C	D	E	F
190.6 (7.504)	139.6 (5.496)	73.5 (2.894)	35.6 (1.402)	18.6 (0.732)	9.3 (0.366)

Dimensions: mm (inches)

### Double Regulator



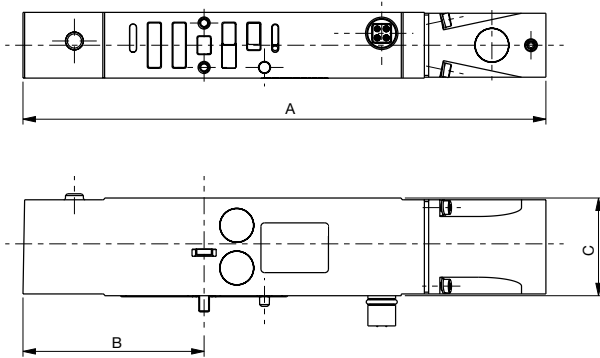
Weight
lbs (kg)
1.05 (0.48)

A	B	C	D	E	F
261.2 (10.283)	139.6 (5.496)	73.5 (2.894)	35.6 (1.402)	18.6 (0.732)	9.3 (0.366)

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Sandwich Shut Off Block Kit

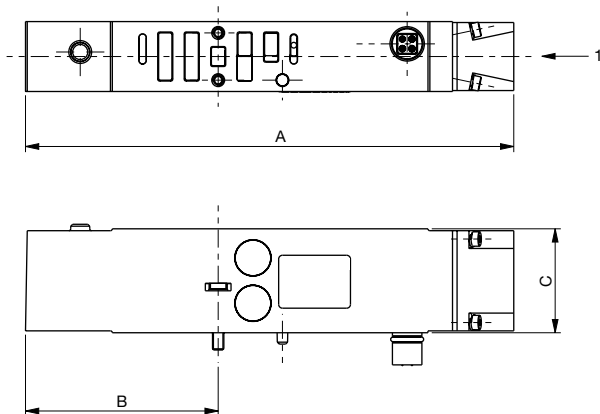


Weight	
lbs	(kg)
0.30	(0.14)

A	B	C	D
147.2 (5.795)	51 (2.008)	27.5 (1.083)	18.5 (0.728)

Dimensions: mm (inches)

## Sandwich Pressure Block Kit



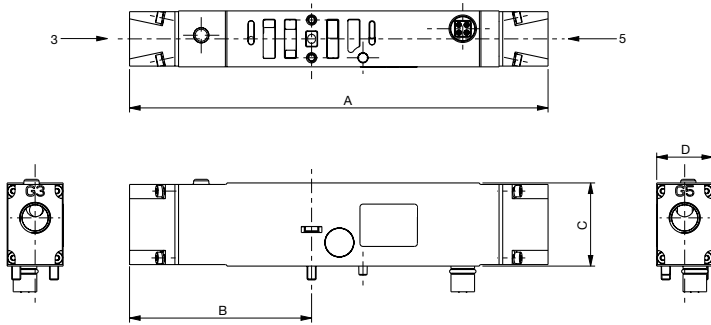
Weight	
lbs	(kg)
0.50	(0.23)

A	B	C	D
129.2 (5.087)	51 (2.008)	27.5 (1.083)	18.5 (0.728)

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Sandwich Exhaust Block Kit

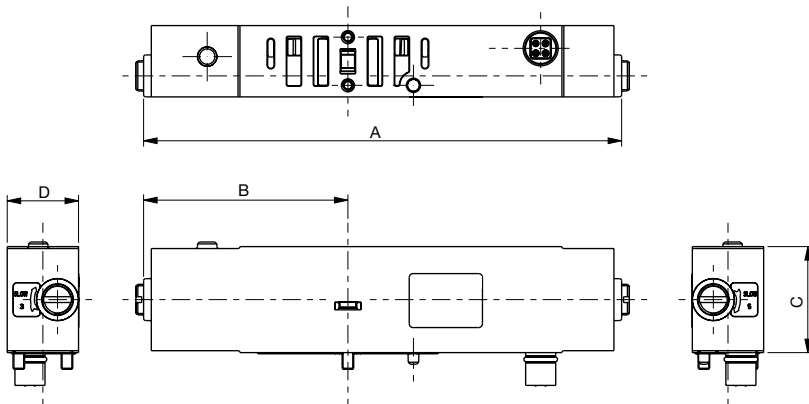


Weight	
lbs	(kg)
0.30	(0.14)

A	B	C	D
138.4 (5.449)	60.2 (2.37)	27.5 (1.083)	18.5 (0.728)

Dimensions: mm (inches)

## Sandwich Speed Control Kit



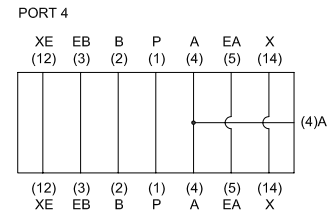
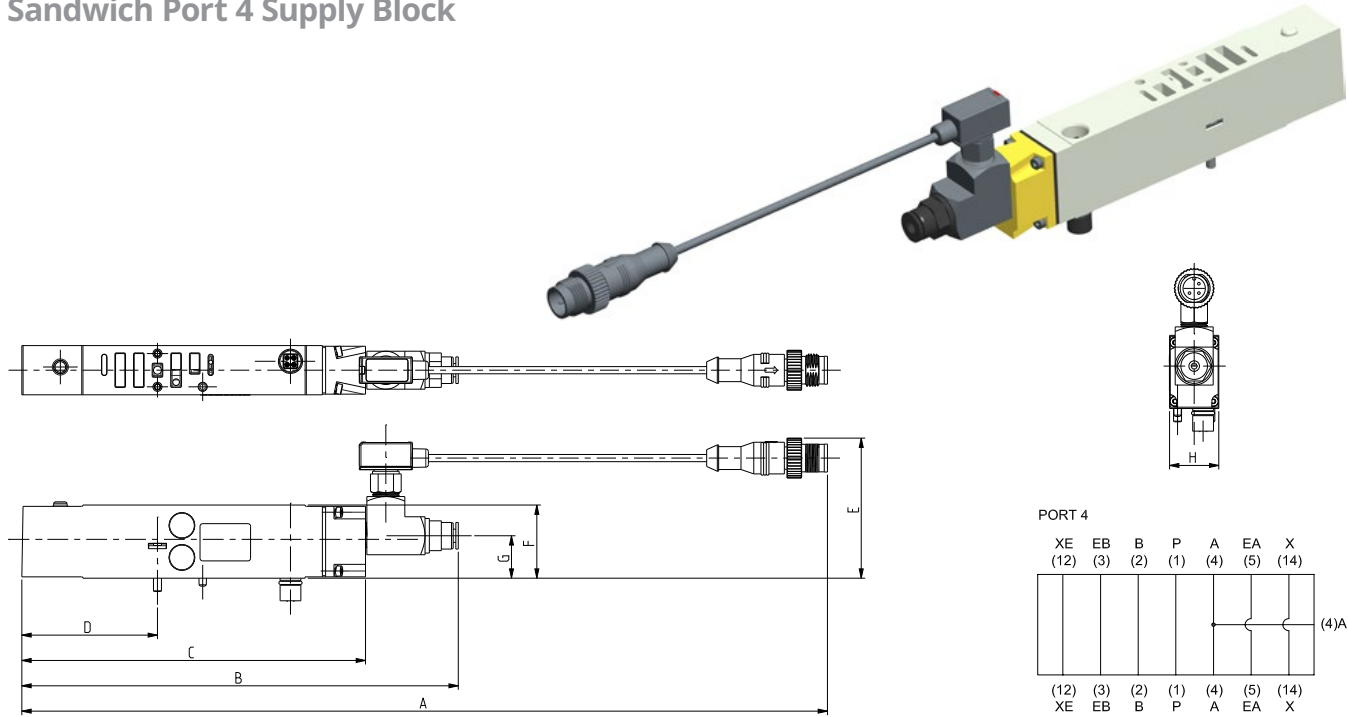
Weight	
lbs	(kg)
0.30	(0.14)

A	B	C	D
124 (4.882)	53 (2.087)	27.5 (1.083)	18.5 (0.728)

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Sandwich Port 4 Supply Block



A	B	C	D	E	F	G	H
302.8 (11.92)	164.1 (6.46)	129.2 (5.09)	51.0 (2.01)	52.7 (2.07)	27.5 (1.08)	16.0 (0.63)	18.5 (0.73)

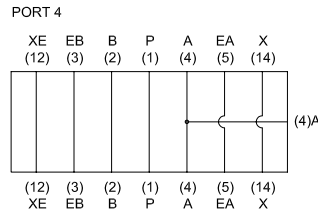
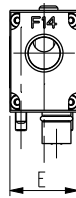
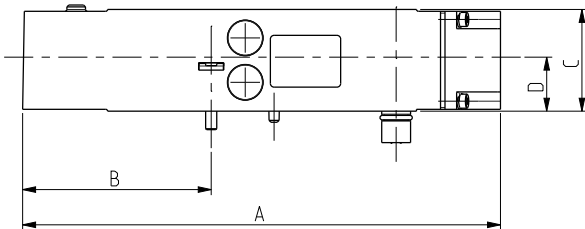
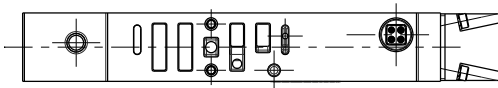
Part Number	Port for Pilot Supply	Description
K502AU514279014	5/32 (4mm) Push-in Fitting	Proprietary Port 4 supply block with AP10
8502AU514279013	Plugged	Proprietary Port 4 supply block with AP10
K502AU514279012	5/32 (4mm) Push-in Fitting	ISO15407-2 Port 4 supply block with AP10
8502AU514279011	Plugged	ISO15407-2 Port 4 supply block with AP10

- Monitors pressure to external devices by AP10 Pressure Switch
- Can be used to supply pressure from Port 4 of valve to pilot Safety zone of manifold via Pilot Separation Pilot block

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Sandwich Port 4 Supply Block



A	B	C	D	E
129.2 (5.09)	51.0 (2.01)	27.5 (1.08)	14.6 (0.57)	18.5 (0.73)

Part Number	Port for Pilot Supply	Description
8502AU514279002	1/4 NPT	Proprietary Port 4 supply block without pressure switch
G502AU514279016	G1/4 (BSPP)	Proprietary Port 4 supply block without pressure switch
8502AU514279001	1/4 NPT	ISO15407-2 Port 4 supply block without pressure switch
G502AU514279015	G1/4 (BSPP)	ISO15407-2 Port 4 supply block without pressure switch

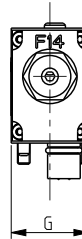
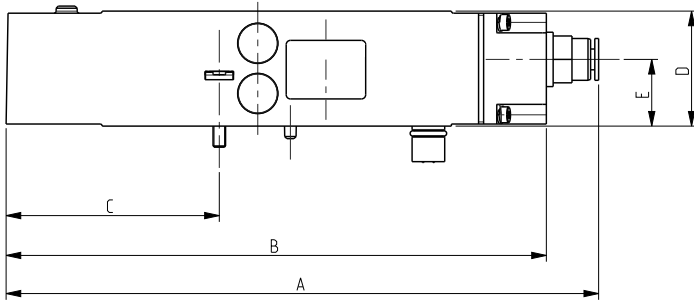
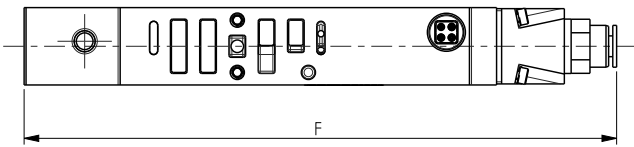
- Customer must integrate pressure feedback on this port in order to meet diagnostic coverage requirements for ISO 13849-1
- Can be used to supply pressure from Port 4 of valve to pilot Safety zone of manifold via Pilot Separation Pilot block

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

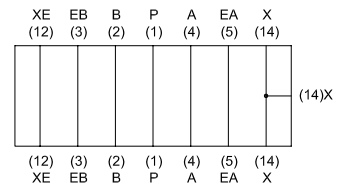
Dimensions: mm (inches)

## Sandwich Pilot Supply Block

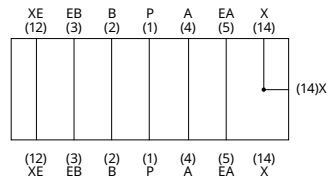
- Allows for introduction of secondary pilot supply to either an individual valve or zone of valves on manifold.
- Pilot Supply air can be from either an external valve or integrated into the manifold via the Port 4 Supply Block



### ZONED PILOT



### INDEPENDENT PILOT



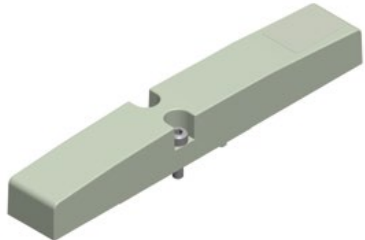
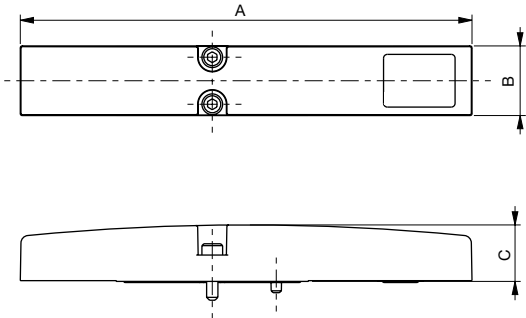
Part Number	Port for Pilot Supply	Description
8502AP428685008	1/8 NPTF	Proprietary Zoned Pilot Supply Block
G502AP428685008	G 1/8	Proprietary Zoned Pilot Supply Block
K502AP428685014	5/32 (4mm) Push-In Fitting	Proprietary Zoned Pilot Supply Block
8502AP428685007	1/8 NPTF	ISO15407-2 Zoned Pilot Supply Block
G502AP428685007	G 1/8	ISO15407-2 Zoned Pilot Supply Block
K502AP428685013	5/32 (4mm) Push-In Fitting	ISO15407-2 Zoned Pilot Supply Block
8502AP428685006	1/8 NPTF	Proprietary Independent Pilot Supply Block
G502AP428685006	G 1/8	Proprietary Independent Pilot Supply Block
8502AP428685005	1/8 NPTF	ISO15407-2 Independent Pilot Supply Block
G502AP428685005	G 1/8	ISO15407-2 Independent Pilot Supply Block

A	B	C	D	E	F	G
141.7 (5.58)	129.2 (5.09)	51.0 (2.01)	27.5 (1.08)	16.0 (0.63)	141.7 (5.58)	18.5 (0.73)

# AVENTICS™ Series 502 Zoned Safety Pneumatic Valve System

Dimensions: mm (inches)

## Blank Station Plate Kit



Weight	
lbs (kg)	
0.10	(0.05)

A	B	C
120 (4.724)	18.5 (0.728)	15 (0.591)