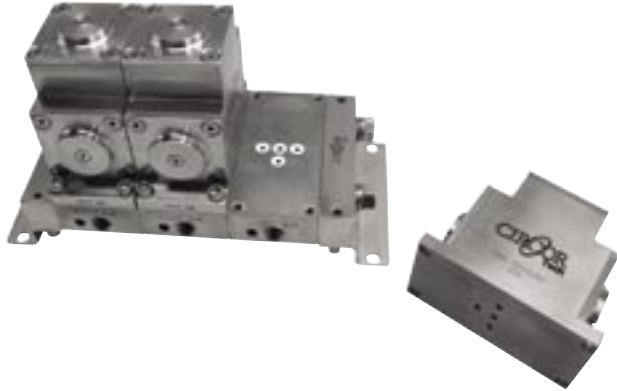


DBB Series

Double-Block-and-Bleed Diaphragm Valves



Available as:

- Stand-alone: *page 16*
- Multi-stream modular: *page 19*
- Surface mount (ANSI/ISA-76 μMS^3): *page 20*

The DBB Series diaphragm valve is a modular, double-block-and-bleed valve assembly available in three configurations: 1) stand-alone, 2) modular multi-stream manifold, and 3) ANSI/ISA-76 compliant configuration. Stand-alone and multi-stream DBB Manifold assemblies can be easily integrated into the ANSI/ISA-76 compliant system with the use of a simple adapter plate (see our μMS^3 Modular Substrate System brochure for additional information). The DBB Series is totally free of springs, bellows, packing and lubricants in the process wetted area. Metal-to-metal seals to atmosphere ensure that there is no leaching of undesirable elements into the flow stream. Elgiloy® diaphragms ensure the utmost in corrosion resistance and life span. For Elgiloy® chemical compatibility see the *Technical Support* section of the CIRCOR Tech website at www.circortech.com.

Features & Benefits

- Double-block-and-bleed on/off control
- Surface mount ANSI/ISA-76 compliant*
- Metal-to-metal seals to atmosphere
- Wide variety of body and elastomer materials
- No dynamic o-rings, springs, or lubricant in process wetted area of valves
- Very low internal volume (0.74 cc)
- Pneumatic actuation
- Process pressure from vacuum (50 torr) to 400 psig (27.6 BAR)
- Compact package (3" L x 1.5" W x 2.63" H)

* with μMS^3 adapter plate

Technical Data

BODY	316L stainless steel, Monel® or Hastelloy® C-276
SEATS	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), and PEEK™
DIAPHRAGMS	Elgiloy® AMS 5876
ORIFICE SIZE	0.110" (2.8 mm)
FLOW CAPACITY	0.15 Cv
VALVE INTERNAL VOLUME*	0.74 cc
LEAKAGE	1×10^{-5} cc/sec helium (inboard)
MIN. ACTUATION PRESSURE	35 psig (see chart on page 19)

* Dead volume in machined passages of the valve body between mounting surface and sealing diaphragm(s).

Operating Pressures

OPERATING PRESSURE	Vacuum (50 torr) to 400 psig (27.6 BAR)
PROOF PRESSURE	1000 psig
BURST PRESSURE	2000 psig

Operating Temperatures

SEAT MATERIAL	TEMPERATURE	
Tefzel®	-40° F to +140° F	-40° C to +60° C
PCTFE (Kel-F®)	-40° F to +300° F	-40° C to +149° C
Polyimide (Vespel®)	-40° F to +400° F	-40° C to +204° C
PEEK™	-40° F to +400° F	-40° C to +204° C

CIRCOR Tech

405 Centura Court • PO Box 4866 (29305) • Spartanburg, SC 29303
 Phone (864) 574-7966 • Fax (864) 574-5608
www.circortech.com

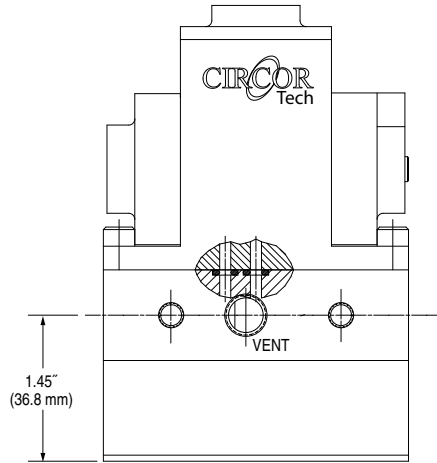
DBB Series

Dimensions

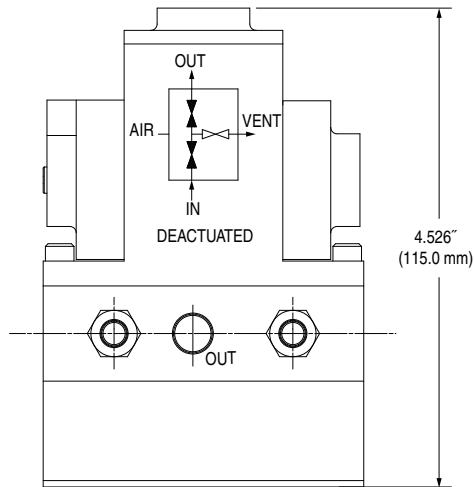
Stand-alone

TYPE	A	B	C	D	E	F	G	H	J	K
1/8" female NPT	3.90	1.31	0.89	1.74	0.80	0.75	0.94	1.13	1.95	3.42
1/8" female BSP	3.90	1.31	0.89	1.81	0.80	0.75	0.94	1.18	1.95	3.42
1/8" male Gyrolok®	3.90	1.31	0.89	1.80	0.76	0.75	0.89	1.24	1.97	3.72
1/4" male Gyrolok®	4.15	1.56	1.06	1.80	0.84	0.75	1.06	1.24	1.97	3.85

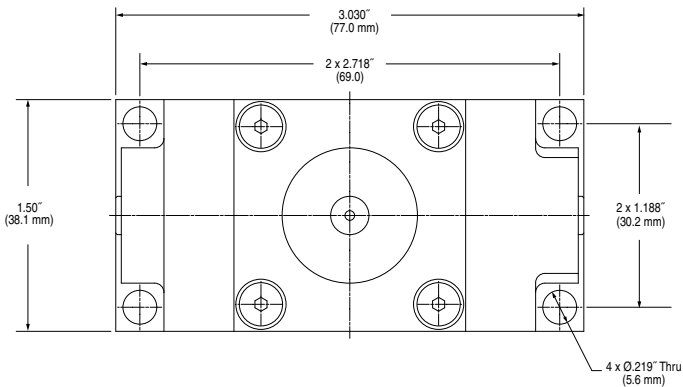
For dimension of multi-stream assembly, all dimensions are the same except dimension 'K'. For dimension 'K', add 1.5" for each valve module (over one) in the assembly.



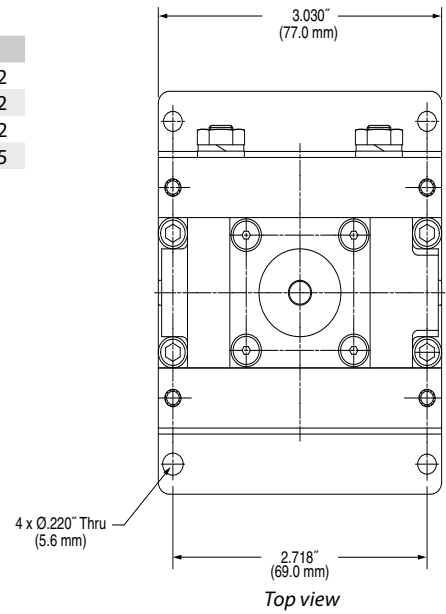
Front view



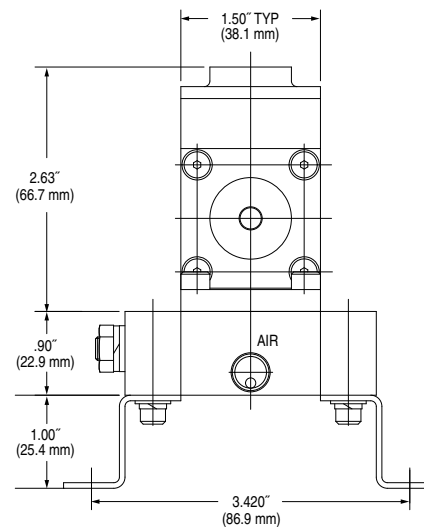
Back view



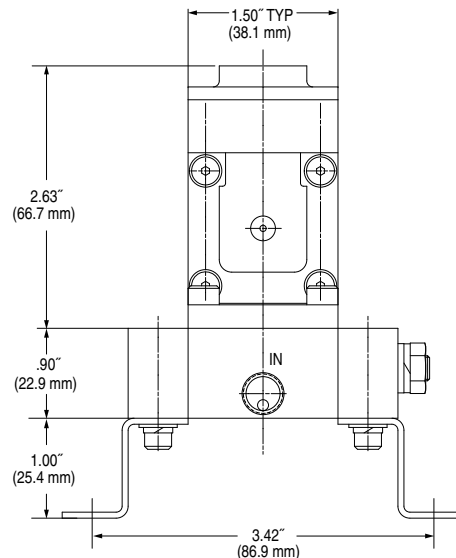
Valve - top view



Top view



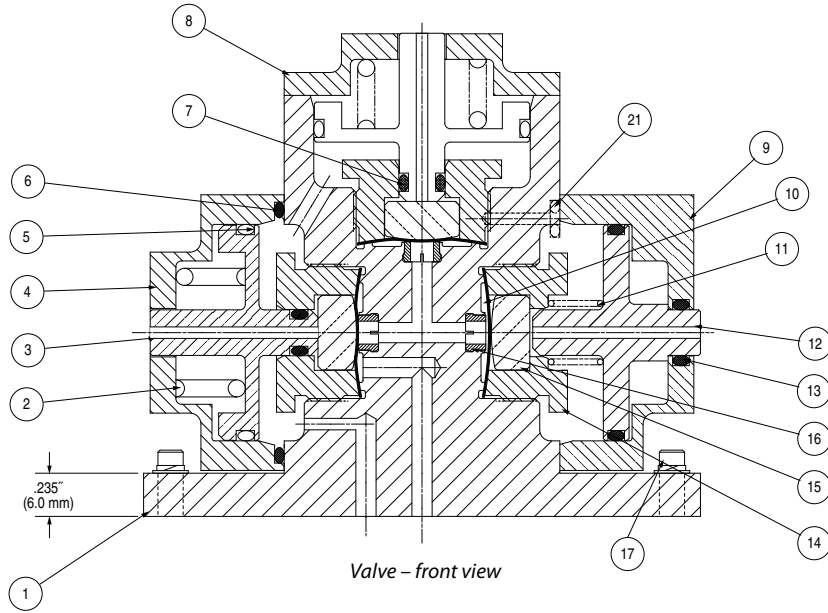
Back side view



Front side view

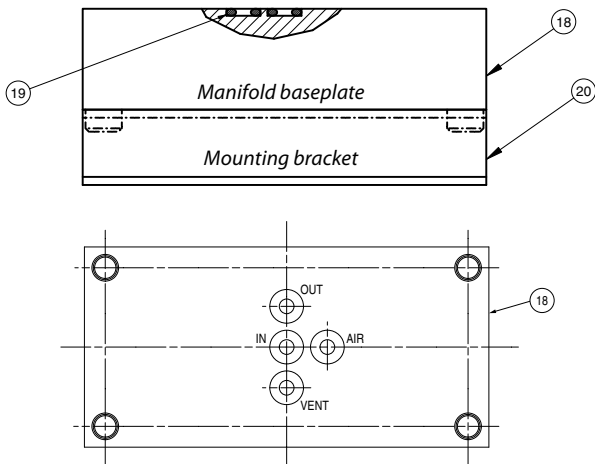
DBB Series

Materials of Construction

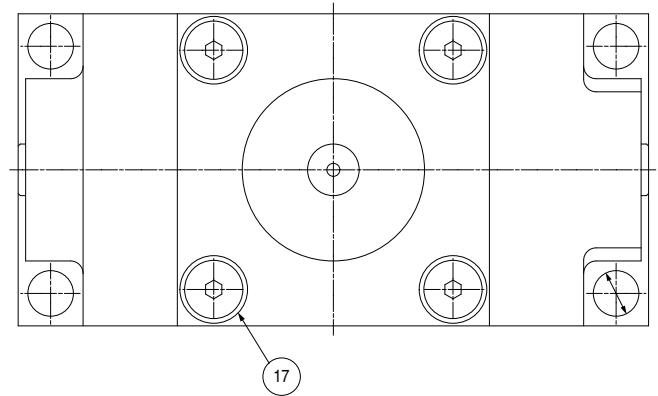


#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® & Hastelloy® C-276
2	Spring	316 stainless steel
3	Piston	316 stainless steel
4	Cap	316 stainless steel
5	O-ring	Viton®
6	O-ring	Viton®
7	O-ring	Viton®
8	Cap	316 stainless steel
9	Cap	316 stainless steel
10	Diaphragm*	Elgiloy® AMS 5876
11	Spring	17-7PH stainless steel
12	Piston	316 stainless steel
13	O-ring	Viton®
14	Retainer	316 stainless steel
15	Thrust plug	Brass
16	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), and PEEK™
17	Screw	18-8 stainless steel
18	Manifold baseplate*	316L stainless steel, Monel® & Hastelloy® C-276
19	O-ring*	Viton®, Kalrez®, or Teflon®
20	Mounting brackets	316 stainless steel
21	O-ring	Viton®

* Wetted components



Manifold baseplate - top view
Part #CT113304-[]



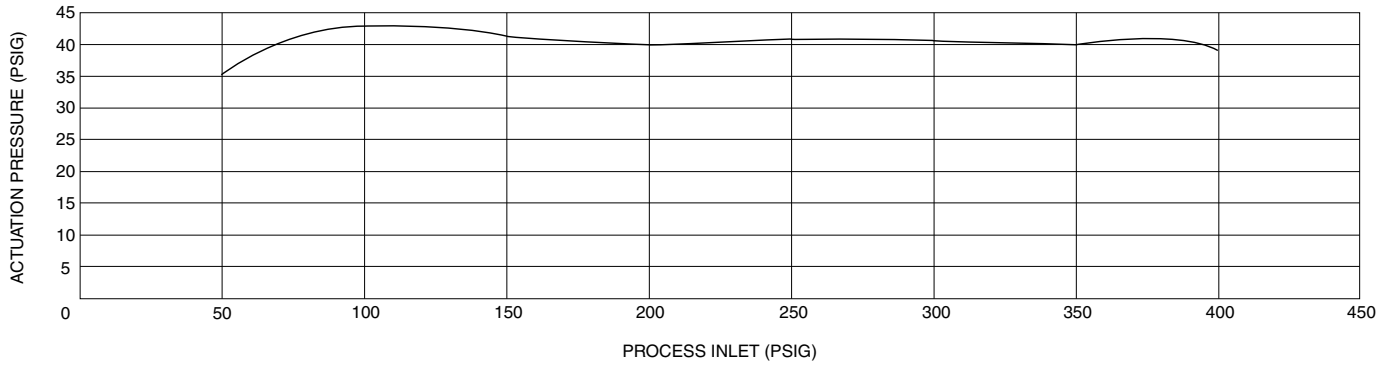
Valve - top view

DBB Series

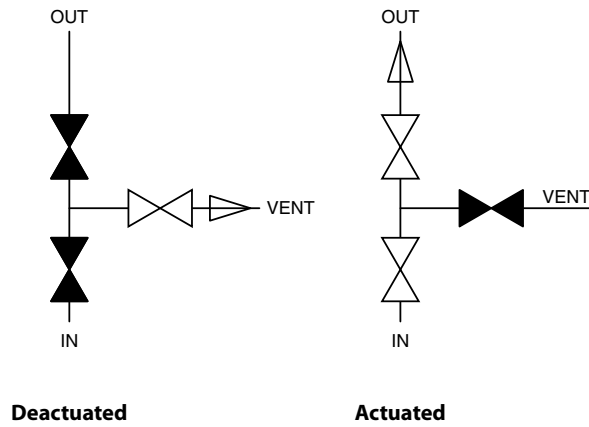
Actuation Pressure Curve

Stand-alone

Actuation Pressure at Fully Open



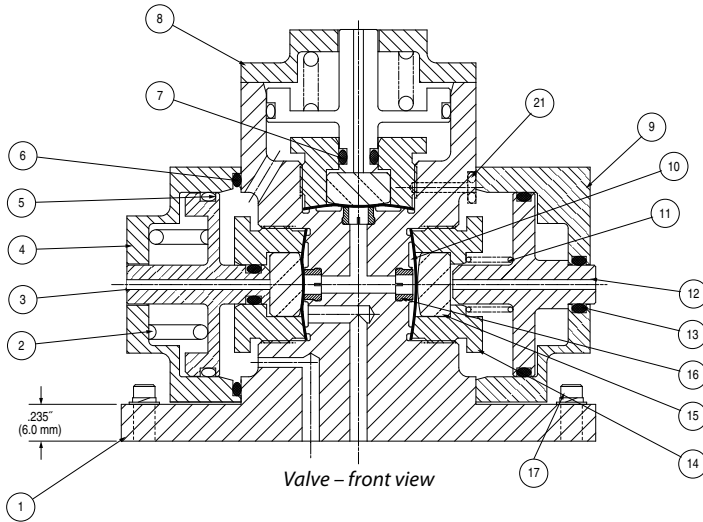
Typical Flow Schematic



DBB Series

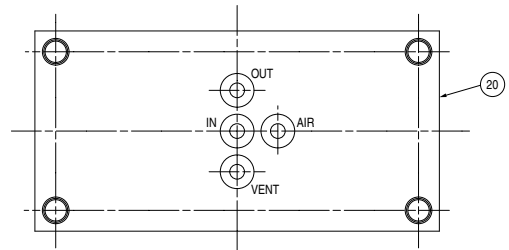
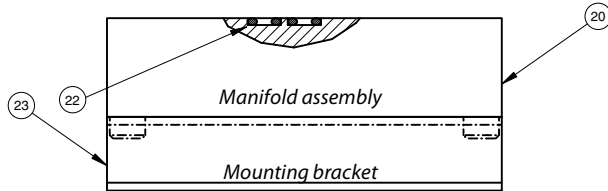
Dimensions & Materials of Construction

Multi-stream Modular Manifold Assembly



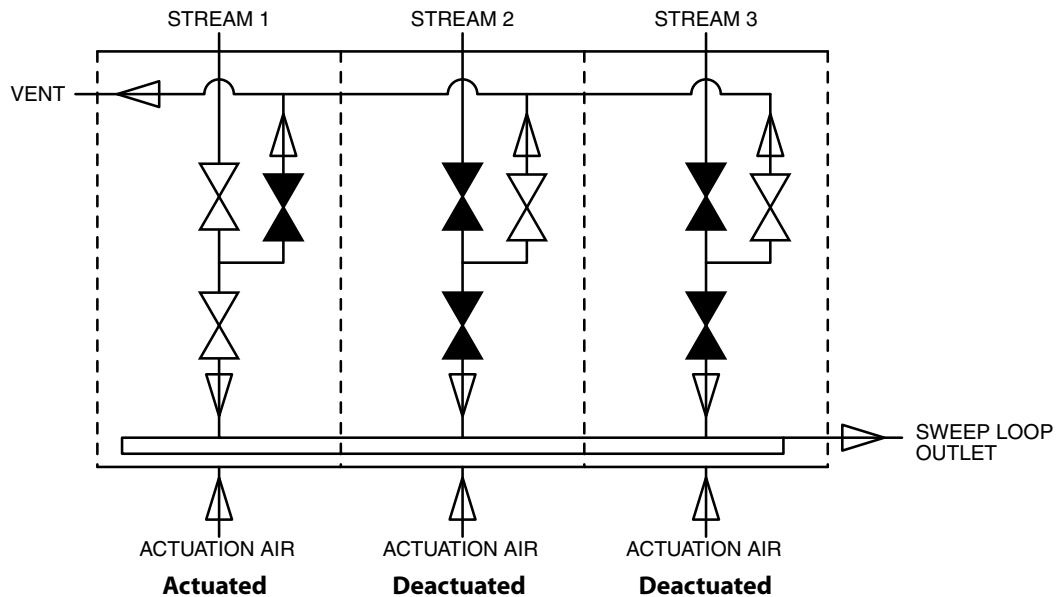
#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® & Hastelloy® C-276
2	Spring	316 stainless steel
3	Piston	316 stainless steel
4	Cap	316 stainless steel
5	O-ring	Viton®
6	O-ring	Viton®
7	O-ring	Viton®
8	Cap	316 stainless steel
9	Cap	316 stainless steel
10	Diaphragm*	Elgiloy® AMS 5876
11	Spring	17-7PH stainless steel
12	Piston	316 stainless steel
13	O-ring	Viton®
14	Retainer	316 stainless steel
15	Thrust plug	Brass
16	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespe!®), and PEEK™
17	Screw	18-8 stainless steel
18	Flat washer	18-8 stainless steel
19	O-ring	Viton®
20	Manifold baseplate*	316L stainless steel, Monel® & Hastelloy® C-276
21	O-ring	Viton®
22	O-ring	Viton®, Kalrez®, or Teflon®
23	Mounting brackets	316 stainless steel

* Wetted components



Manifold baseplate - top view
Part #CT113304-[]

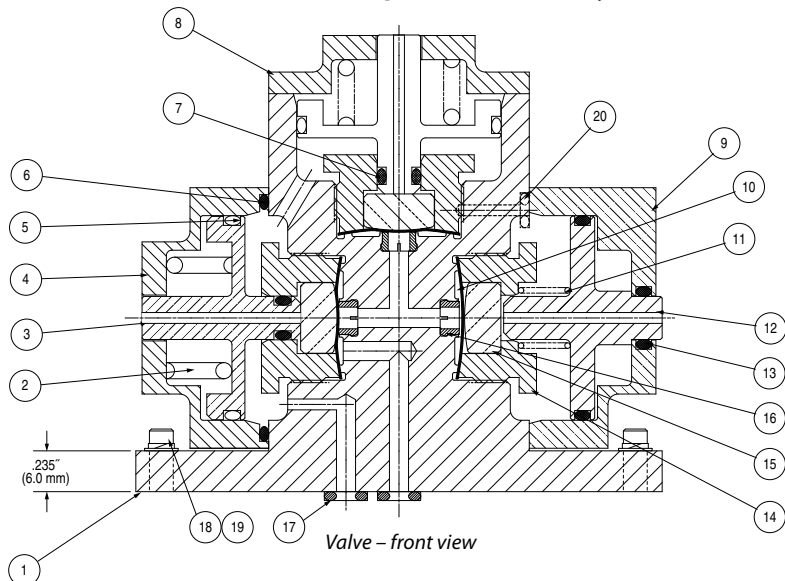
Typical Flow Schematic



DBB Series

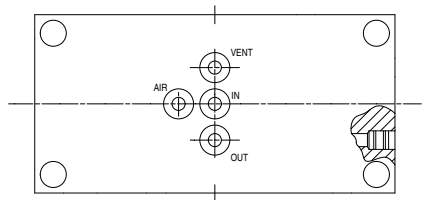
Dimensions & Materials of Construction

Surface Mount (ANSI-ISA-76 compliant) - Valve Only



#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® & Hastelloy® C-276
2	Spring	316 stainless steel
3	Piston	316 stainless steel
4	Cap	316 stainless steel
5	O-ring	Viton®
6	O-ring	Viton®
7	O-ring	Viton®
8	Cap	316 stainless steel
9	Cap	316 stainless steel
10	Diaphragm*	Elgiloy® AMS 5876
11	Spring	17-7PH stainless steel
12	Piston	316 stainless steel
13	O-ring	Viton®
14	Retainer	316 stainless steel
15	Thrust plug	Brass
16	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (VespeI®), and PEEK™
17	O-ring*	Viton®, Kalrez®, or Teflon®
18	Screw	18-8 stainless steel
19	Flat washer	18-8 stainless steel
20	O-ring	Viton®

* Wetted components



Surface mount - top view
(ANSI/ISA-76 compliant)
µMS³™ Adapter plate - Part # CT113558-[]

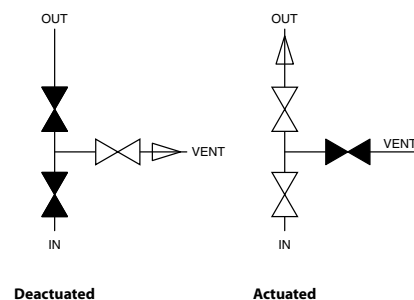


µMS³™ Adapter plate
Part # CT113558-[]



M2 Expansion module (O-rings not shown)

Typical Flow Schematic



How to Order

STANDARD ITEMS IN BOLD. Consult Customer Service for pricing and lead times for non-standard items. To order manifold components only, see page 22.

DBB - 1 F2 H D 0 06

BODY MATERIAL

- 1** 316 stainless steel
- 4** Monel®
- 6** Hastelloy® C-276

CONNECTION TYPE

- 00** Surface mount only***
- B2** 1/8" female BSP/ISO 7/1
- F2** 1/8" female NPT
- G2** 1/8" Gyrolok® male nut
- G4** 1/4" Gyrolok® male nut
- M2** Expansion module (1/8" female NPT)****

SEAT MATERIAL

- A** Tefzel®
- C** Polyimide (VespeI®)
- H** PCTFE (Kel-F®)
- Q** PEEK™

NUMBER OF STREAMS

Specify from one block (01) to twelve (12)

OPTIONS

- 0** None
- 1** Cleaned for oxygen service
- 5** Silcosteel® passivated**
- 8** Top air inlet

O-RING MATERIAL

- D** Viton®
- F** Teflon®*
- K** Kalrez®
- X** Surface mount o-ring***
(supplied with valve)

* Available as special (not suitable for all applications)

** Other Restek Corp. coatings (Sulfinert®, Silcosteel®-CR) available on request.

*** Required for surface mount units.

**** Expansion module is a turn-key package for adding streams to the DV5. Module consists of one (1) surface mount valve, one (1) manifold baseplate, and seven (7) o-rings. Please see page 13 for an example.

DBB Series

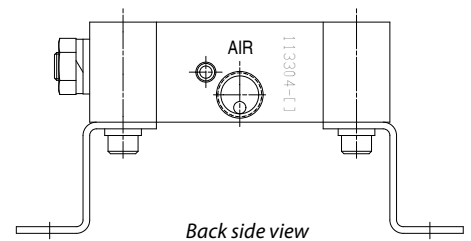
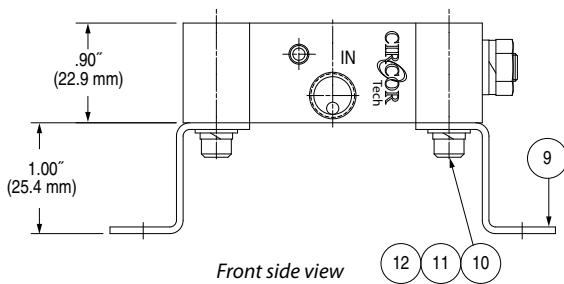
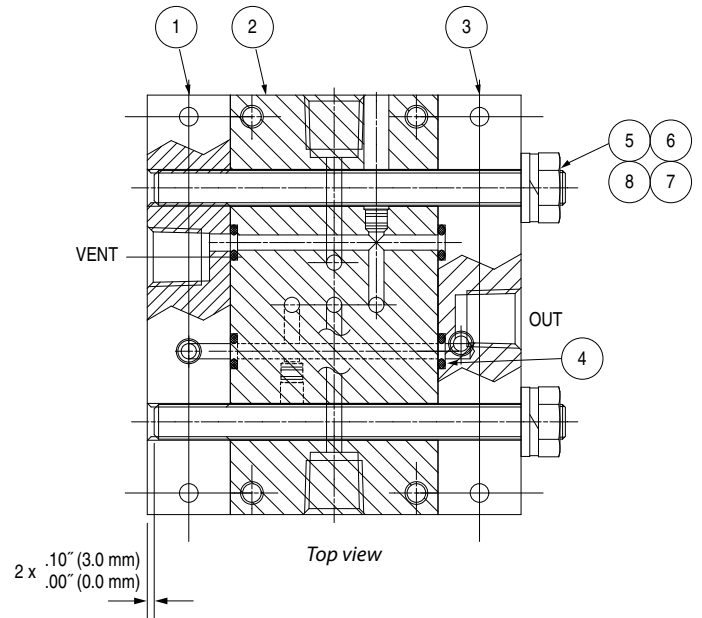
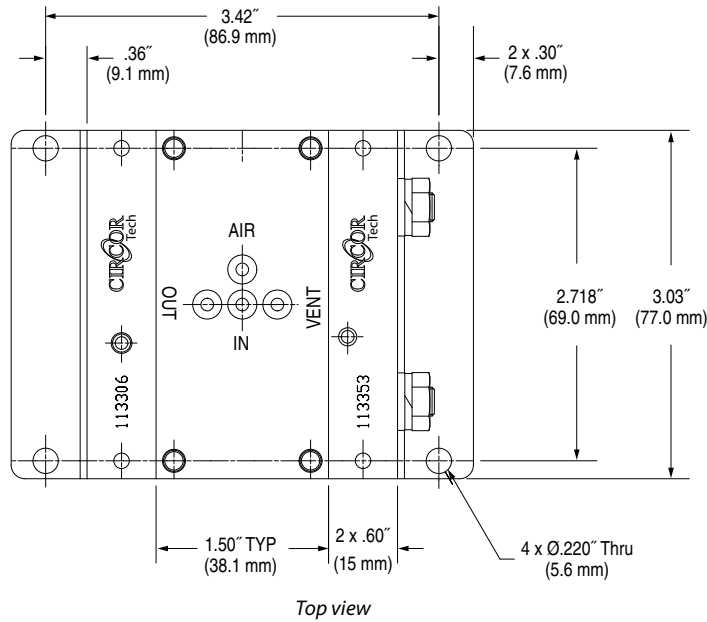
Dimensions & Materials of Construction

Manifold with Mounting Brackets - This option is available in the event the customer already possesses surface mount valves, or desires to order manifold assemblies separately from valves.

#	PART	MATERIALS
1	End plate with vent*	316L stainless steel, Monel® & Hastelloy® C-276
2	Manifold baseplate*	316L stainless steel, Monel® & Hastelloy® C-276
3	End plate*	316L stainless steel, Monel® & Hastelloy® C-276
4	O-ring*	Viton®, Kalrez®, or Teflon®
5	Flat washer	18-8 stainless steel
6	Lock washer	18-8 stainless steel
7	Nut	18-8 stainless steel
8	Threaded rod	18-8 stainless steel
9	Bracket	316 stainless steel
10	Screw	18-8 stainless steel
11	Flat washer	18-8 stainless steel
12	Lock washer	18-8 stainless steel

* *Wetted components*

CONNECTION TYPE	A	B	C	
1/8" female NPT	inch	2.70	3.42	0.75
	mm	68.58	86.87	19.05
1/8" female BSP	inch	2.70	3.42	0.75
	mm	68.58	86.87	19.05
1/8" male Gyrolok®	inch	3.00	3.72	0.75
	mm	76.2	94.49	19.05
1/4" male Gyrolok®	inch	3.125	3.845	1.00
	mm	79.375	97.66	25.4



How to Order

STANDARD ITEMS IN BOLD. Consult Customer Service for pricing and lead times for non-standard items.

113351 - 1 F2 01 D

BODY MATERIAL

- 1** 316L stainless steel
- 4** Monel®
- 5** Hastelloy® C-276

CONNECTION TYPE

- B2 1/8" female BSP
- F2** 1/8" female NPT
- G2 1/8" male Gyrolok®
- G4 1/4" male Gyrolok®

O-RING MATERIAL

- D** Viton®
- K** Kalrez®
- F** Teflon®*

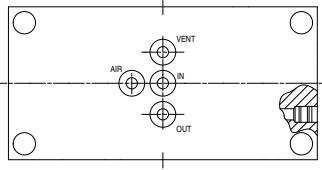
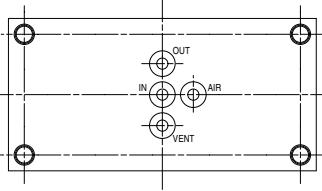
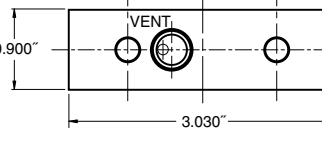
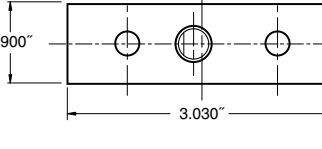
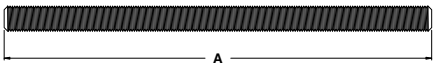




NUMBER OF MANIFOLDS

- 01 (minimum) to 12

* Available as special (not suitable for all applications)

DBB Series

Spare Parts for Manifold Expansion

	Description	Part #	Material
 <p>Top View</p>	μMS³™ adapter plate ANSI/ISA-76 compliant	CT113558-[]	-1: 316L stainless steel -4: Monel® -6: Hastelloy® C-276
 <p>Top View</p>	Manifold baseplate	CT113304-[]	-1: 316L stainless steel -4: Monel® -6: Hastelloy® C-276
 <p>Side View</p>	End plate with outlet	CT113306-[]	-1: 316L stainless steel -4: Monel® -6: Hastelloy® C-276
 <p>Side View</p>	End plate without outlet	CT113353-[]	-1: 316 stainless steel -4: Monel® -6: Hastelloy® C-276
	All-thread rod: <ul style="list-style-type: none"> • 2-module • 3-module • 4-module • 5-module • 6-module • 7-module • 8-module • 9-module • 10-module • 11-module • 12-module 	G111609-2 (A = 4.42") G111609-3 (A = 5.92") G111609-4 (A = 7.42") G111609-5 (A = 8.92") G111609-6 (A = 10.42") G111609-7 (A = 11.92") G111609-8 (A = 13.42") G111609-9 (A = 14.92") G111609-10 (A = 16.42") G111609-11 (A = 17.92") G111609-12 (A = 19.42")	18-8 stainless steel
	Nut, 1/4"-28	G074208	18-8 stainless steel
	Flat washer	G098023	18-8 stainless steel
	Lock washer	G098014	18-8 stainless steel
	O-ring	58-006-[]	-64: Kalrez® -50: Viton® -06: Teflon® (special)