CIRCOR Tech

Diaphragm Valves

Index

diaphragm valves

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

DV1 Series

2-way Diaphragm Valves

The DV1 Series diaphragm valves are totally free of springs, bellows, packing, dynamic o-rings 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 and no leakage of process material into the atmosphere. Elgiloy® diaphragms ensure the utmost in corrosion resistance and life span. For Elgiloy® chemical compatibility information, visit the *Technical Support* section of the CIRCOR Tech website (www.circortech.com).

Features & Benefits

- 2-way on/off control
- Metal-to-metal seals to atmosphere
- Wide variety of materials for virtually all applications
- No dynamic o-rings, springs, or lubricant in wetted flow path
- Very low internal volume (0.16 cc)
- Manual ¼-plus turn or pneumatic actuation
- Pressures from vacuum (50 torr) to 3,600 psig (248 BAR)

diaphragm valves

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DV1 Series

Technical Data

Manual ¼-plus turn Valves

BODY	316L stainless steel, Monel® and 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	0.17 Cv
VALVE INTERNAL VOLUME*	0.16 cc
LEAKAGE	1×10^{-5} cc/sec helium (inboard)

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

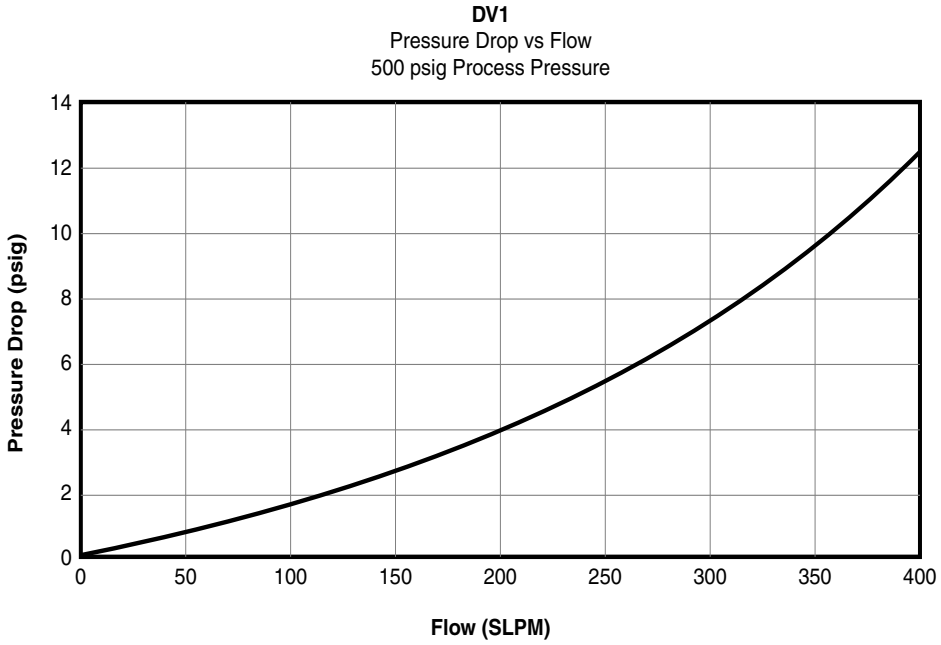
Operating Temperatures

SEAT MATERIAL	¼-PLUS TURN 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

Operating Pressures

OPERATING PRESSURE	Vacuum (50 torr) to 3,600 psig (248 BAR)
PROOF PRESSURE	7,200 psig
BURST PRESSURE	14,400 psig

Pressure vs. Flow Curve

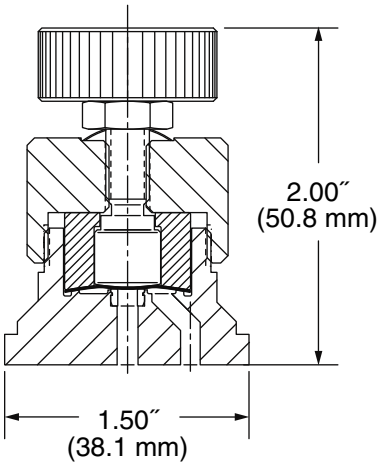


Note: Flow chart applies to all 2-way DV1 Series diaphragm valves

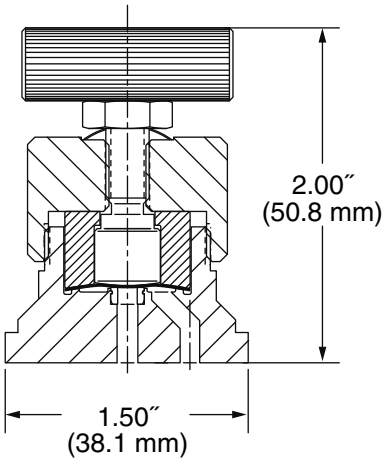
DV1 Series

Dimensions

Circular Handle
Manual ¼-plus turn Valves



T-handle
Manual ¼-plus turn Valves

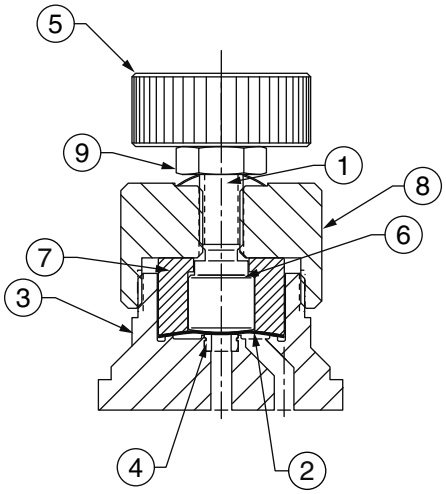


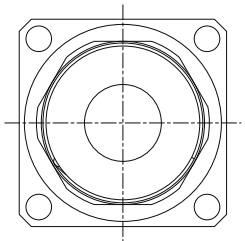
Materials of Construction

#	PART	MATERIALS
1	Stem	17-4PH stainless steel, condition H900
2	Diaphragm*	Elgiloy® AMS 5876
3	Body*	316L stainless steel, Monel®, brass, Hastelloy® C-276
4	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®) and PEEK™
5	Handle	316 stainless steel
6	Thrust plug	Brass
7	Diaphragm retainer	316 stainless steel
8	Bonnet	316L stainless steel, Monel®, brass, Hastelloy® C-276
9	Handle nut	18-8 stainless steel

* *Wetted components*

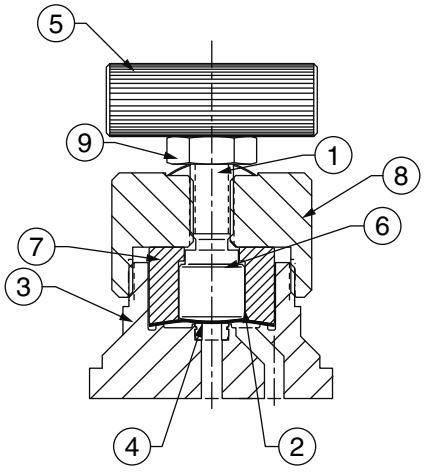
Circular Handle
Manual ¼-plus turn Valves

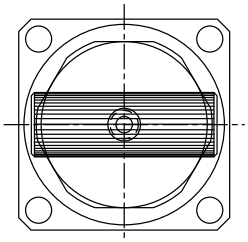




Top view

T-handle
Manual ¼-plus turn Valves





Top view

DV1 Series

Technical Data

Pneumatic Actuated Valves

BODY	316L stainless steel, Monel® and 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	0.17 Cv
VALVE INTERNAL VOLUME*	0.16 cc
LEAKAGE	1×10^{-5} cc/sec helium (inboard)
PNEUMATIC ACTUATOR	Anodized aluminum standard (other materials optional) 40µ sintered stainless steel inlet air filter

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

Operating Pressures Ratings

	SMALL DIAMETER
VALVE WORKING PRESSURE	Vacuum (50 torr) to 500 psig (34.5 BAR)
VALVE PROOF PRESSURE	1,000 psig
VALVE BURST PRESSURE	2,000 psig

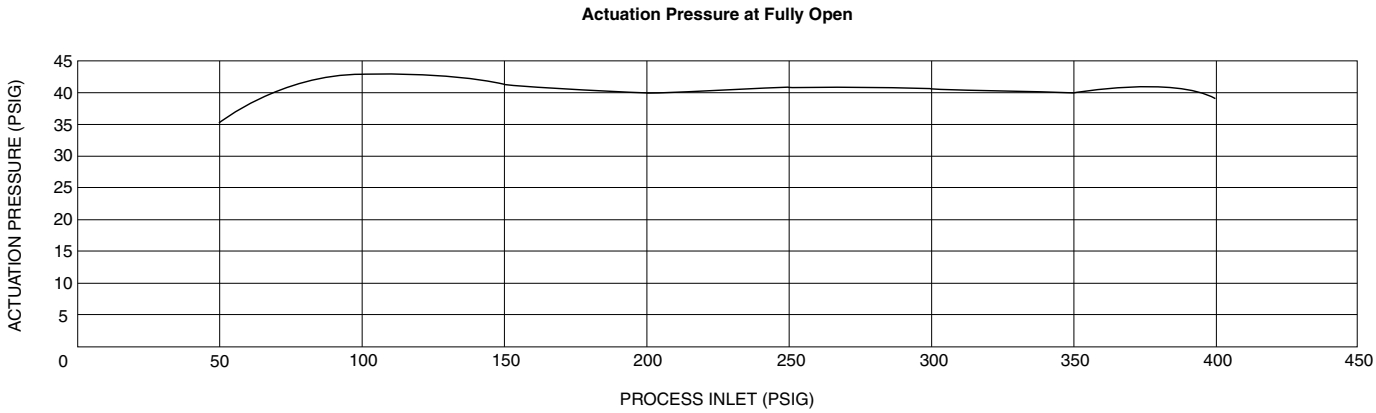
Operating Temperatures

SEAT MATERIAL	¼-PLUS TURN 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

Air Actuation Pressure Requirements (psig nominal)

	SYSTEM PRESSURE	ACTUATION PRESSURE
NORMALLY CLOSED	0–250 psig	19 psig
	251–500 psig	39 psig
NORMALLY OPEN	500 psig	36 psig

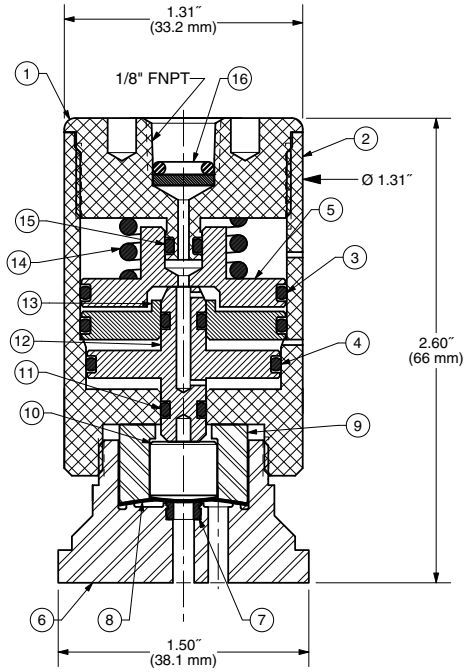
Actuation Pressure Curve



DV1 Series

Dimensions & Materials of Construction

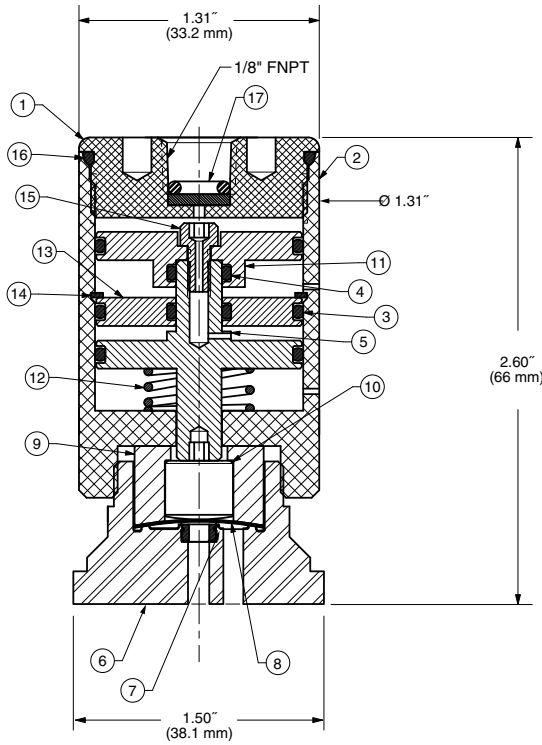
Normally Closed



#	PART	MATERIALS
1	Housing cap	Aluminum, 316L stainless steel, Monel® & Hastelloy® C-276
2	Housing	Aluminum, 316L stainless steel, Monel® & Hastelloy® C-276
3	O-rings	Viton®
4	O-rings	Viton®
5	Upper piston	Brass
6	Body*	316L stainless steel, brass, Monel® & Hastelloy® C-276
7	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®) and PEEK™
8	Diaphragm*	Elgiloy® AMS 5876
9	Diaphragm retainer	316 stainless steel
10	Thrust plug	Brass
11	O-ring	Viton®
12	Lower piston	Brass
13	Chamber separator	Brass
14	Spring	NISPAN
15	O-ring	Viton®
16	Sintered filter	316 stainless steel, 40µ

* *Wetted components*

Normally Open



#	PART	MATERIALS
1	Housing cap	Aluminum, 316L stainless steel, Monel® & Hastelloy® C-276
2	Housing	Aluminum, 316L stainless steel, Monel® & Hastelloy® C-276
3	O-rings	Viton®
4	O-rings	Viton®
5	Piston	Brass
6	Body*	316L stainless steel, brass, Monel® & Hastelloy® C-276
7	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), and PEEK®
8	Diaphragm*	Elgiloy® AMS 5876
9	Diaphragm retainer	316 stainless steel
10	Thrust plug	Brass
11	Upper piston	Brass
12	Spring	302 stainless steel
13	Chamber separator	Brass
14	Retaining ring	302 stainless steel
15	Cap screw	Alloy steel
16	O-ring	Viton®
17	Sintered filter	316 stainless steel, 40µ

* *Wetted components*

DV1 Series

How to Order

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

DV1 – 1 C 1 5 A SM SM H 0

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

ACTUATION METHOD
- **C** Air actuated – normally closed
- **M** Manual ¼-plus turn round handle
- **O** Air actuated – normally open
- **T** Manual ¼-plus turn T-handle

ACTUATOR SIZE
- **X** Manually operated
- **1** Air actuated – (500 psig max.)

ACTUATOR MATERIAL
- **X** Manually operated
- **1** 316L stainless steel
- **4** Monel®
- **5 Aluminum**
- **6** Hastelloy® C-276

MAXIMUM PROCESS PRESSURE
- **A 250 psig**
- **B** 500 psig
- **D** 3600 psig (manual valves only)

INLET CONNECTION TYPE
- **SM Surface mount (ANSI/ISA-76 compliant)**

OUTLET CONNECTION TYPE
- **SM Surface mount (ANSI/ISA-76 compliant)**

SEAT MATERIAL
- **A** Tefzel® (800 psig max.)
- **C** Polyimide (Vespel®)
- **H PCTFE (Kel-F®)**
- **Q** PEEK™

OPTION
- **0 None**
- **1** Cleaned for oxygen service
- **5** Silcosteel® passivated**

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

DV5 Series

3-way Switching Diaphragm Valves

Available as…
- Stand-alone: *page 8*
- Multi-stream modular: *page 11*
- Surface mount (ANSI/ISA-76 µMS³™): *page 12*

The DV5 Series diaphragm valve is a modular, flexible 3-way valve assembly available in three configurations: 1) stand-alone, 2) modular multi-stream, swept manifold, and 3) ANSI/ISA-76 compliant configuration. (See µMS³™ Modular Substrate System brochure for more data). The DV5 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

- 3-way switching
- Surface mount ANSI/ISA-76 compliant*
- Metal-to-metal seals to atmosphere
- Wide variety of materials for virtually all applications
- No o-rings, springs, or lubricant in wetted flow path
- Very low internal volume (0.64 cc)
- Pneumatic actuation
- Pressures from vacuum (50 torr) to 400 psig (27.6 BAR)
- Compact package (3˝ L × 2.3˝ H × 1.5˝ W)

* *with µMS³™adapter plate*

Technical Data

BODY	316L stainless steel, Monel® and 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*	0.64 cc
LEAKAGE	1×10^{-5} cc/sec helium (inboard)
MIN. ACTUATION PRESSURE	35 psig @ 50 psig process

* *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	1,000 psig
BURST PRESSURE	2,000 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

diaphragm valves

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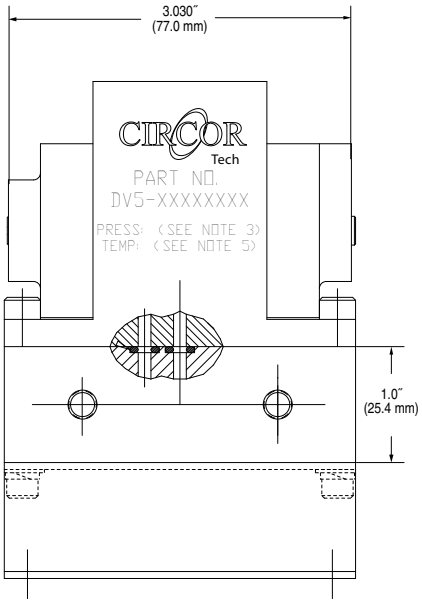
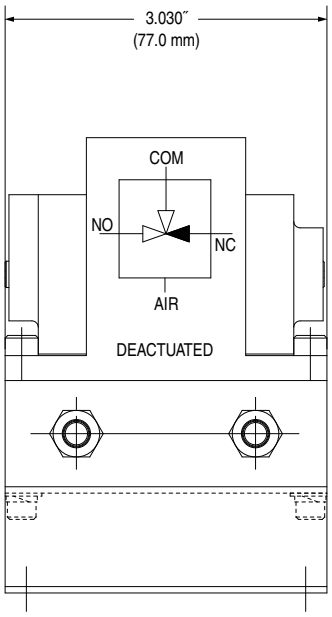
Dimensions

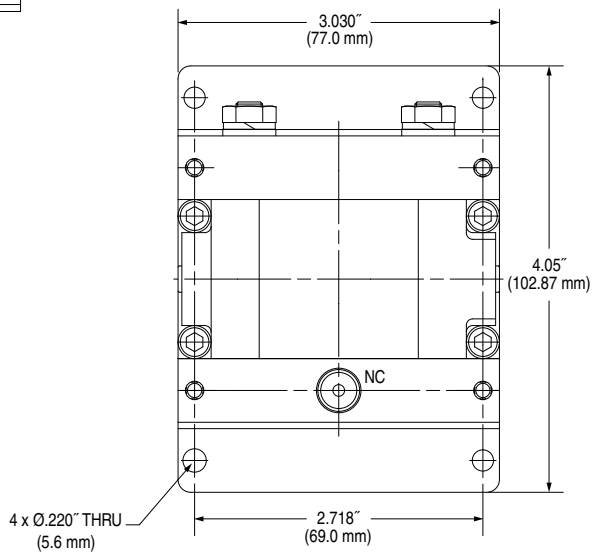
Stand-alone, 3-way Switching Valve



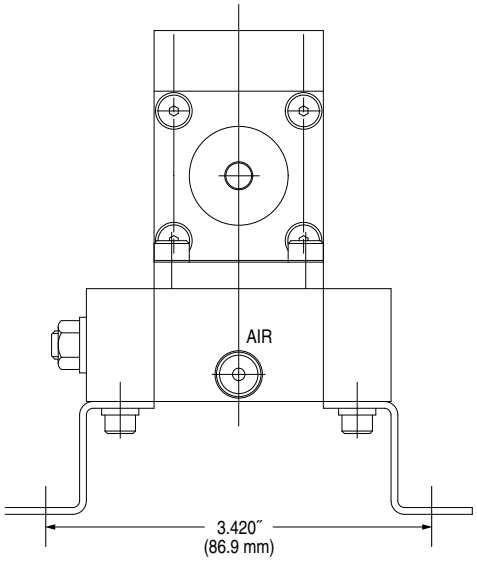
Front view



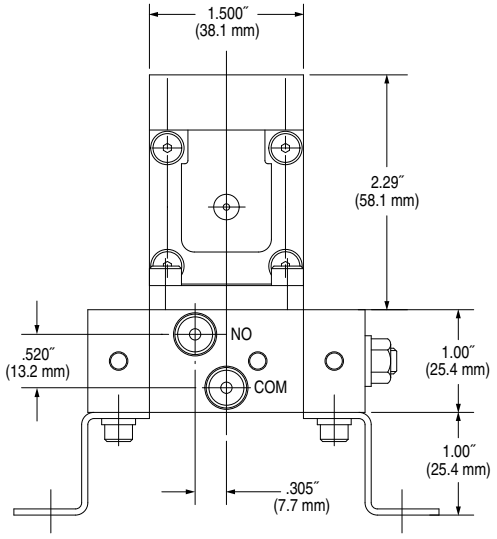
Back view



Top view

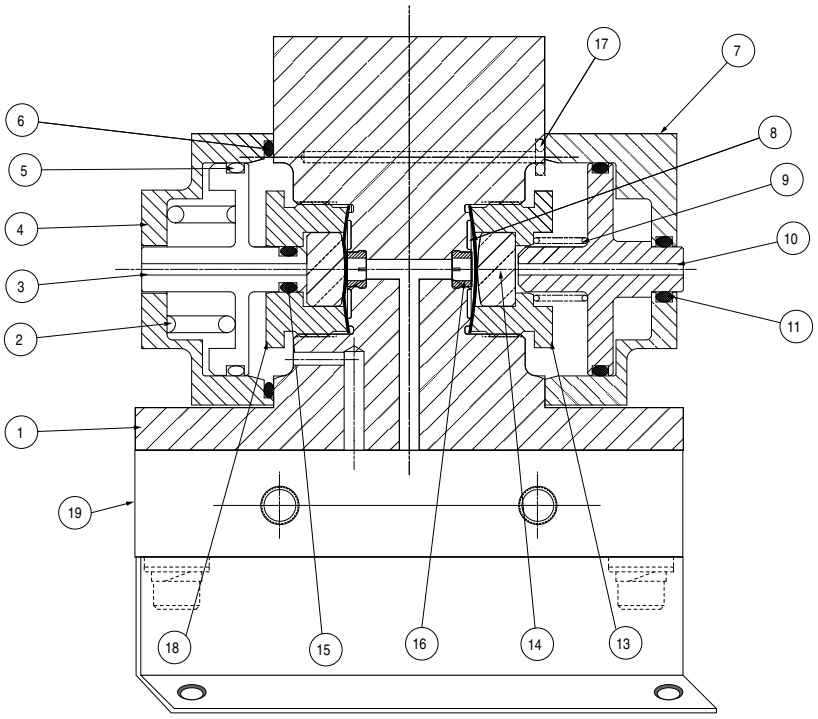


Side view

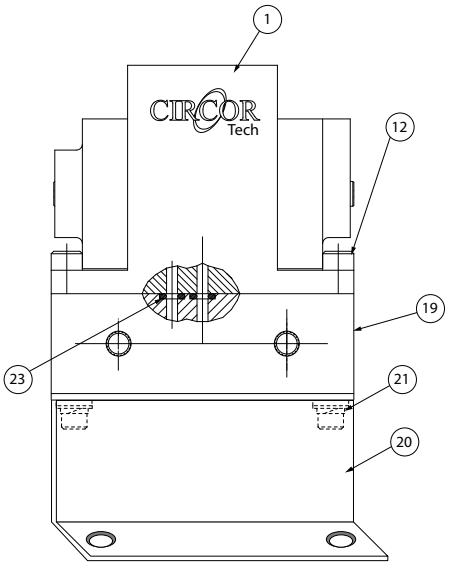


Back side view

Materials of Construction



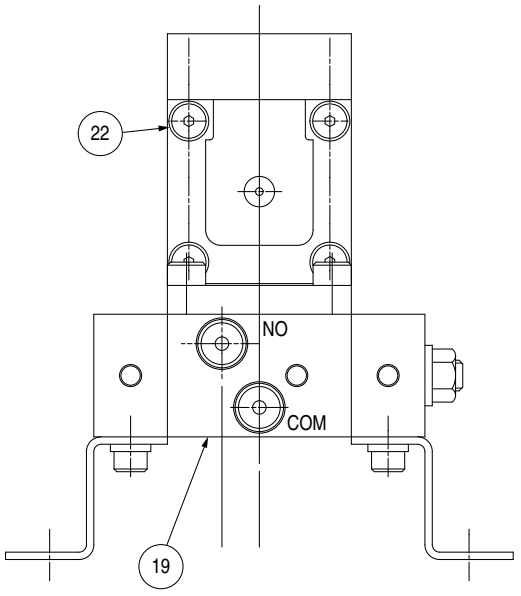
Side view, sectioned



Side view

#	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	Cap	316 stainless steel
8	Diaphragm*	Elgiloy® AMS 5876
9	Spring	17-7PH stainless steel
10	Piston	316 stainless steel
11	O-ring	Viton®
12	Screw	300 stainless steel
13	Retainer	316 stainless steel
14	Thrust plug	Brass
15	O-ring*	Viton®
16	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), and PEEK™
17	O-ring	Viton®
18	Retainer	316 stainless steel
19	Manifold baseplate*	316L stainless steel, Monel® & Hastelloy® C-276
20	Mounting bracket	316 stainless steel
21	Screw	18-8 stainless steel
22	Screw	316 stainless steel
23	O-ring*	Viton®, Kalrez® or Teflon®

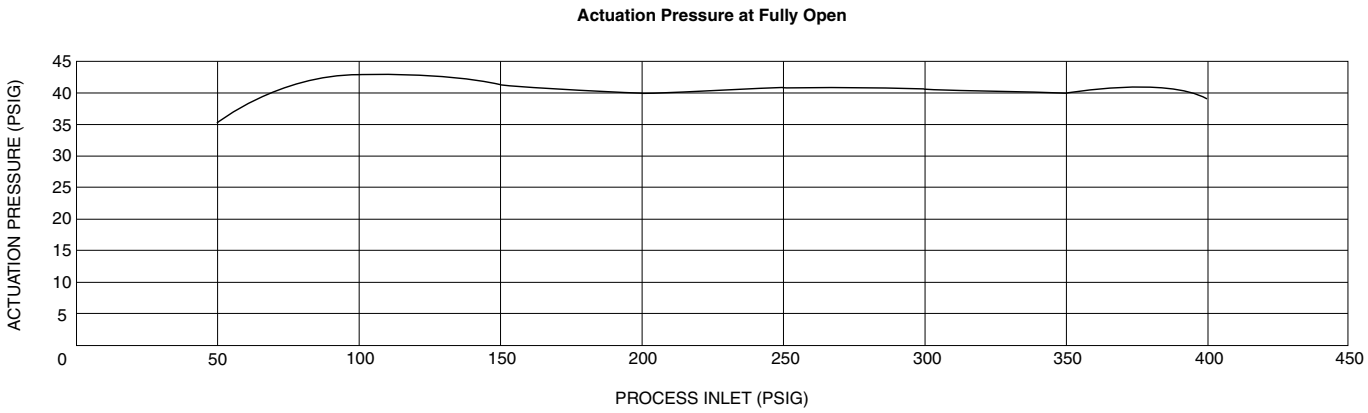
* *Wetted components*



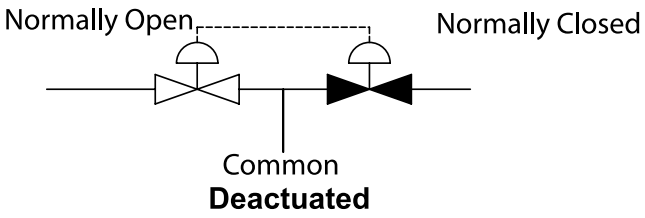
Front view

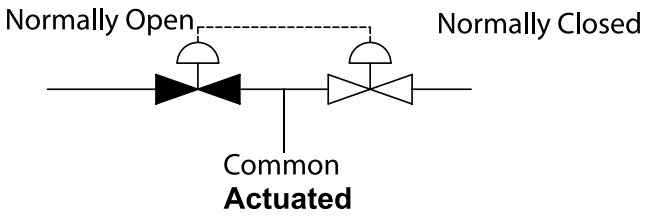
Actuation Pressure Curve

Stand-alone, 3-way Switching Valve



Typical Flow Schematic



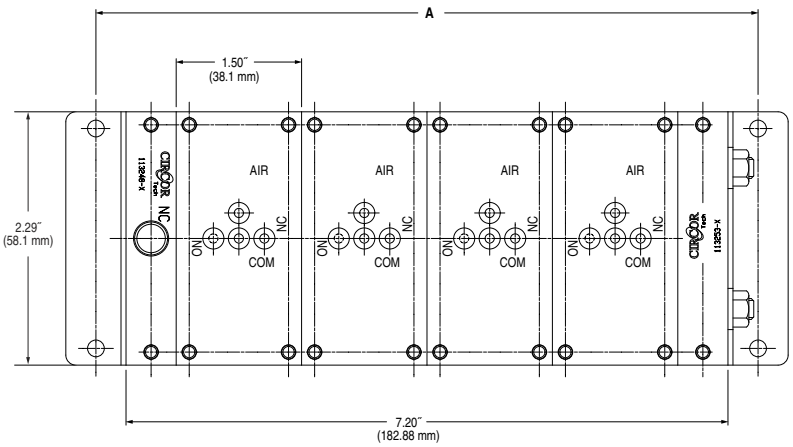


Dimensions & Materials of Construction

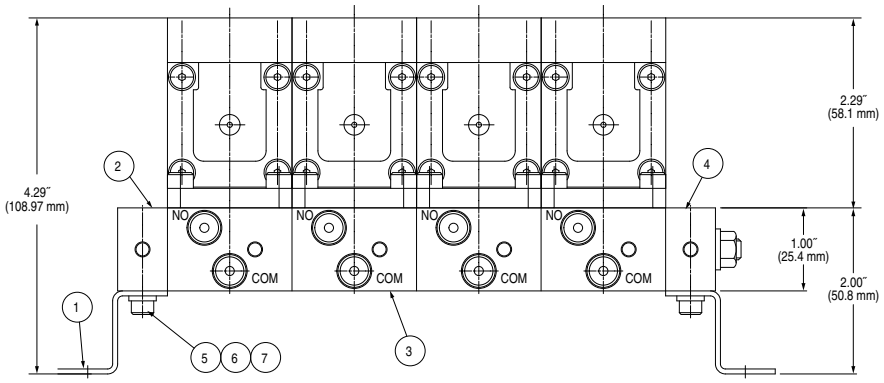
Modular Multi-stream, 3-way Switching Valve with Swept Manifold

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

* *Wetted components*



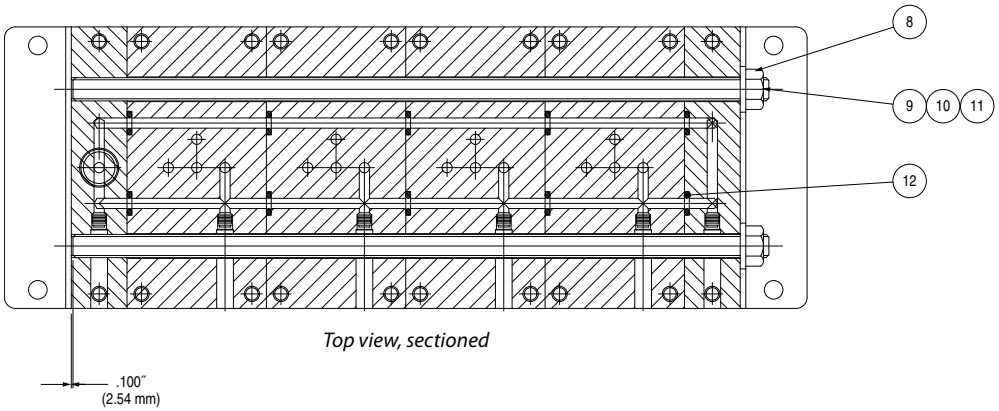
Top view



Manifold Plate Assembly (with Valves)
(4 streams shown, can be 2 to 12 streams)

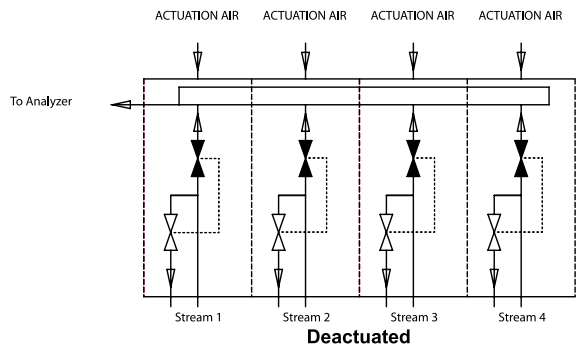
Side view

NUMBER OF VALVES (A)	INCH	MM
1	3.42	86.9
2	4.92	125
3	6.42	163
4	7.92	201.2
5	9.42	239.3
6	10.92	277.4
7	12.42	315.5
8	13.92	353.6
9	15.42	391.7
10	16.92	420.8
11	18.42	467.9
12	19.92	506

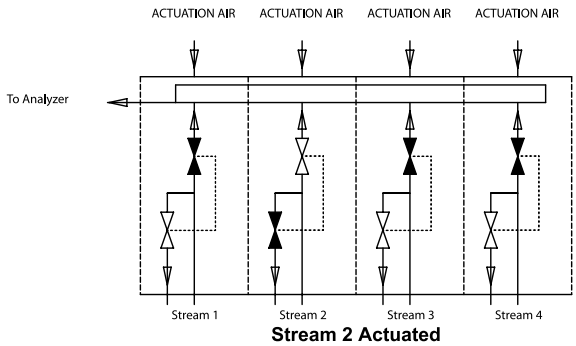


Top view, sectioned

Typical Flow Schematic



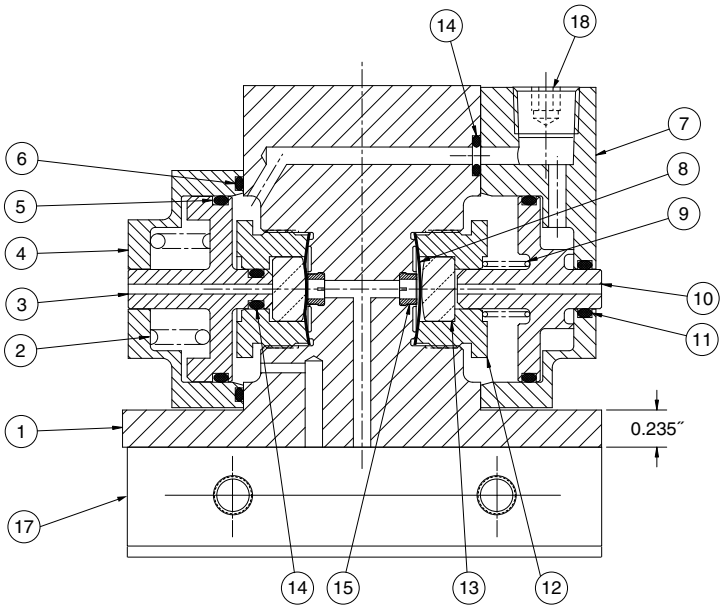
Deactuated



Stream 2 Actuated

Dimensions & Materials of Construction

Surface Mount (ANSI/ISA-76 compliant) – Valve Only with optional top air inlet

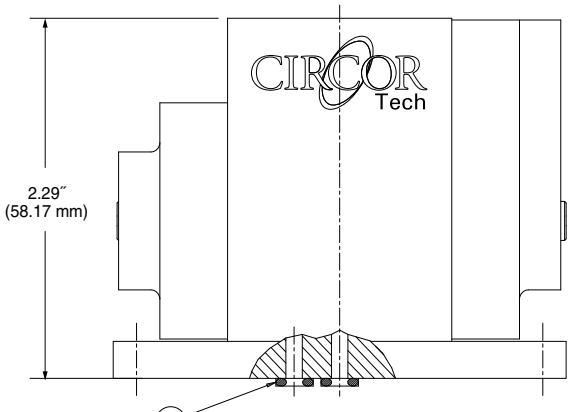


Side view, sectioned

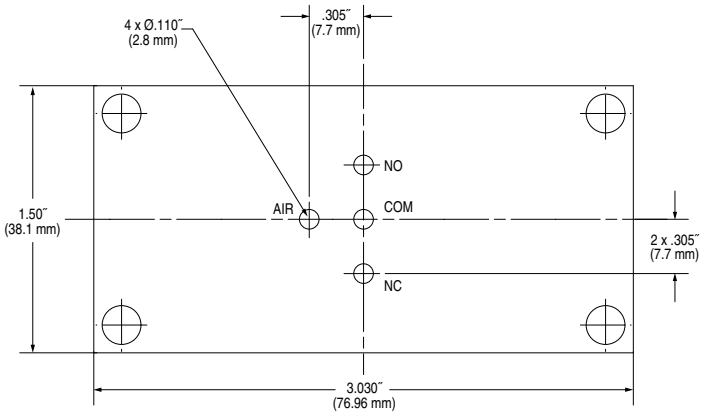
#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® & Hastelloy® C-276
2	Spring	316 stainless steel
3	Piston	316 stainless steel
4	Cap	316 stainless steel
5	O-ring	Viton®
6	O-ring	Viton®
7	Cap	316 stainless steel
8	Diaphragm*	Elgiloy® AMS 5876
9	Spring	17-7PH stainless steel
10	Piston	316 stainless steel
11	O-ring	Viton®
12	Retainer	316 stainless steel
13	Thrust plug	Brass
14	O-ring	Viton®
15	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), and PEEK™
16	O-ring*	Viton®, Kalrez®, or Teflon®
17	µMS³™ Adapter plate*† (ANSI/ISA-76 compliant) supplied separately	316L stainless steel
18	Top air inlet (optional)	

* *Wetted components*

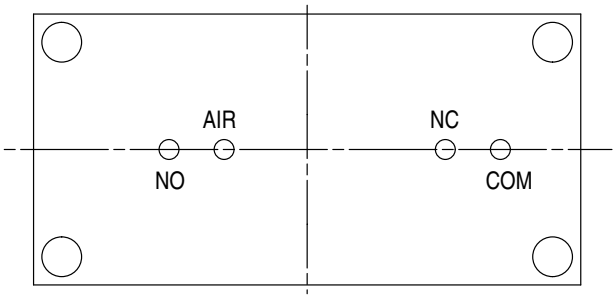
† *Required when mounting to an ANSI/ISA-76 platform*



3-way Switching Valve – side view

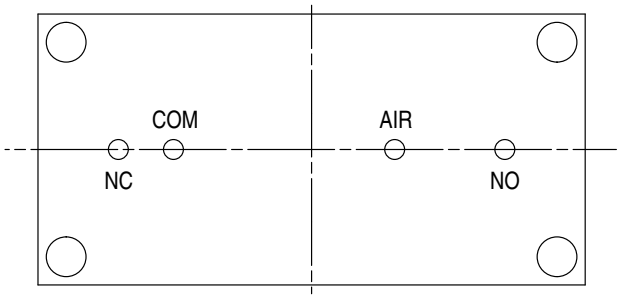


3-way Switching Valve – bottom view



Surface mount – bottom view
(ANSI/ISA-76 compliant)
µMS³™ adapter plate part #CT113159-[ ]

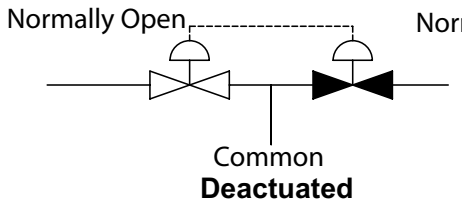
OR

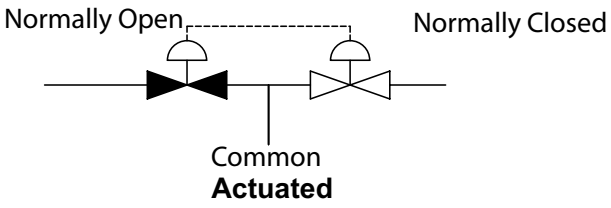


Surface mount – bottom view
(ANSI/ISA-76 compliant)
µMS³™ adapter plate part #CT112687-[ ]

DV5 Series

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 14.

DV5 – 1 F2 H D 0 01

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

CONNECTION TYPE
- **00** Surface mount only***
- **B2** ⅛″ female BSP/ISO 7/1
- **F2 ⅛″ female NPT**
- **G2** ⅛″ Gyrolok® male nut
- **G4** ¼″ Gyrolok® male nut
- **M2** Expansion module (1/8″ female NPT)****

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

NUMBER OF STREAMS
Specify from one (01) to twelve (12) valves

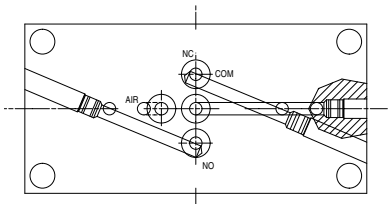
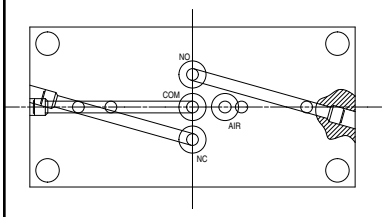
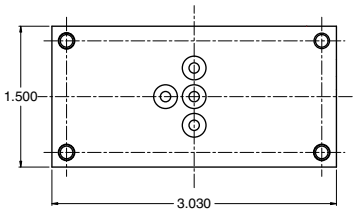
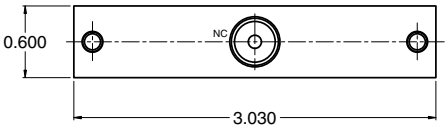
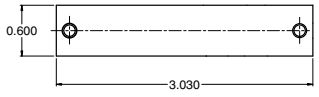
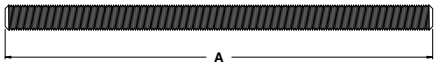
OPTIONS
- **0 None**
- **1** Cleaned for oxygen service
- **5** Silcosteel® passivated**
- **8** Top air inlet

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

M2 EXPANSION MODULE (O-RINGS NOT SHOWN)

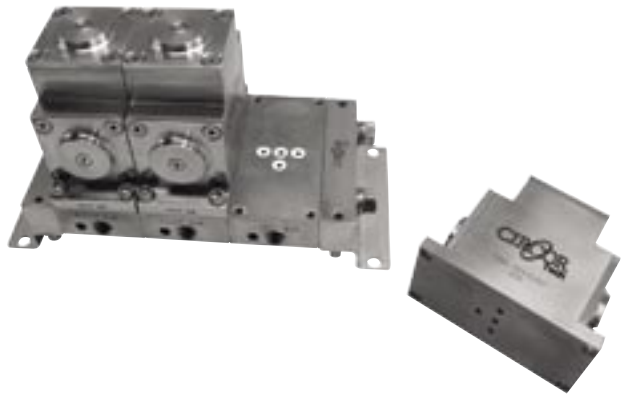
* *Available as special (not suitable for all applications)*
** *Other Restek Corp. coatings (Sulfinert®, Silcosteel®-CR) available on request.*
*** *Required for surface mount units.*
**** *Expansion module is a turn-key package for adding streams to the DV5. Module consists of one (1) surface mount valve, one (1) manifold baseplate, and seven (7) o-rings.*

DV5 Spare Parts

	Description	Part #	Material
 *Top View*	**µMS³™ adapter plate** *ANSI/ISA-76 compliant* BLANK-NC-AIR-BLANK-NO-COM	CT112687–[ ]	–1: 316L stainless steel –4: Monel® –6: Hastelloy® C-276
 *Top View*	**µMS³™ adapter plate** *ANSI/ISA-76 compliant* NC-COM-BLANK-AIR-BLANK-NO	CT113159–[ ]	–1: 316L stainless steel –4: Monel® –6: Hastelloy® C-276
 *Top View*	Manifold baseplate	G113245–[ ]	–1: 316L stainless steel –4: Monel® –6: Hastelloy® C-276
 *Side View*	End plate with outlet	G113248–[ ]	–1: 316L stainless steel –4: Monel® –6: Hastelloy® C-276
 *Side View*	End plate without outlet	G113253–[ ]	–1: 316L stainless steel –4: Monel® –6: Hastelloy® C-276
	All-thread rod: • 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, ¼″–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)

DBB Series

Double-Block-and-Bleed Diaphragm Valves



Available as:
- Stand-alone: *page 16*
- Multi-stream modular: *page 19*
- Surface mount (ANSI/ISA-76 µMS³™): *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 µMS³™ 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 × 1.5˝ W × 2.63˝ H)

* *with µMS³™ 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

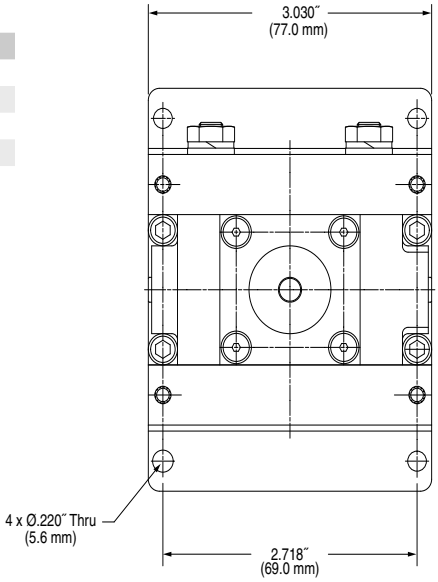
DBB Series

Dimensions

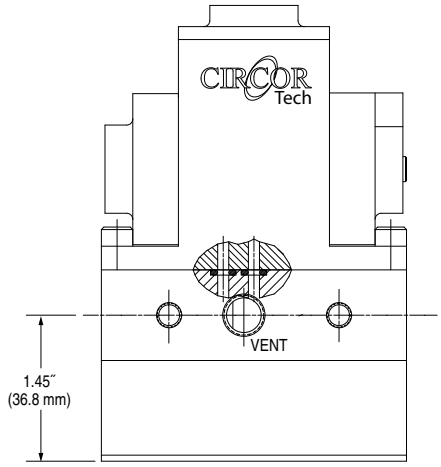
Stand-alone

TYPE	A	B	C	D	E	F	G	H	J	K
⅛″ female NPT	3.90	1.31	0.89	1.74	0.80	0.75	0.94	1.13	1.95	3.42
⅛″ female BSP	3.90	1.31	0.89	1.81	0.80	0.75	0.94	1.18	1.95	3.42
⅛″ male Gyrolok®	3.90	1.31	0.89	1.80	0.76	0.75	0.89	1.24	1.97	3.72
¼″ male Gyrolok®	4.15	1.56	1.06	1.80	0.84	0.75	1.06	1.24	1.97	3.85

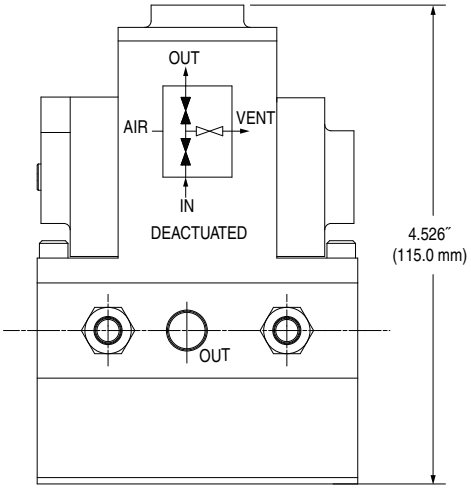
For dimension of multi-stream assembly, all dimensions are the same except dimension 'K'. For dimension 'K', add 1.5″ for each valve module (over one) in the assembly.



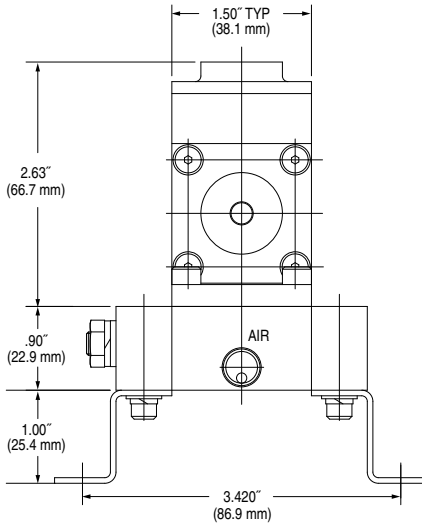
Top view



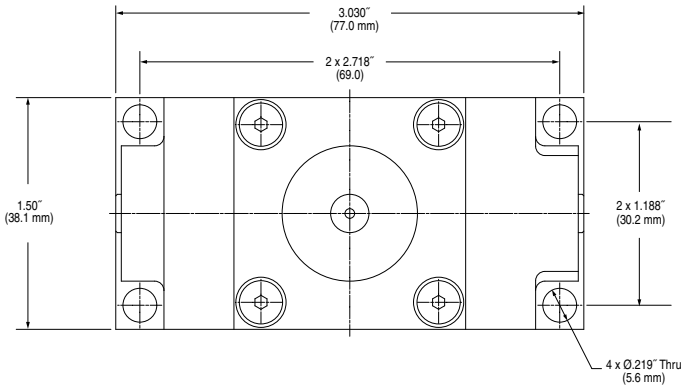
Front view



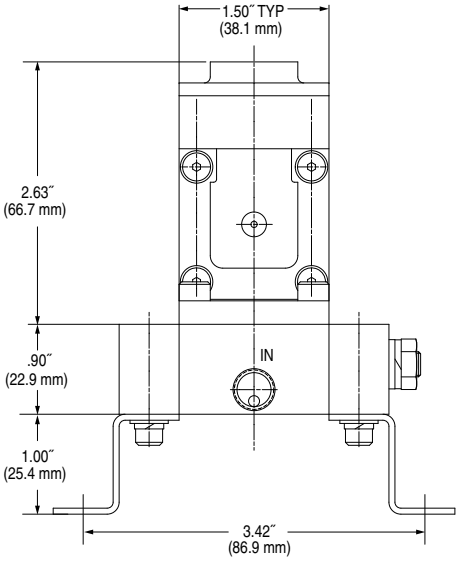
Back view



Back side view



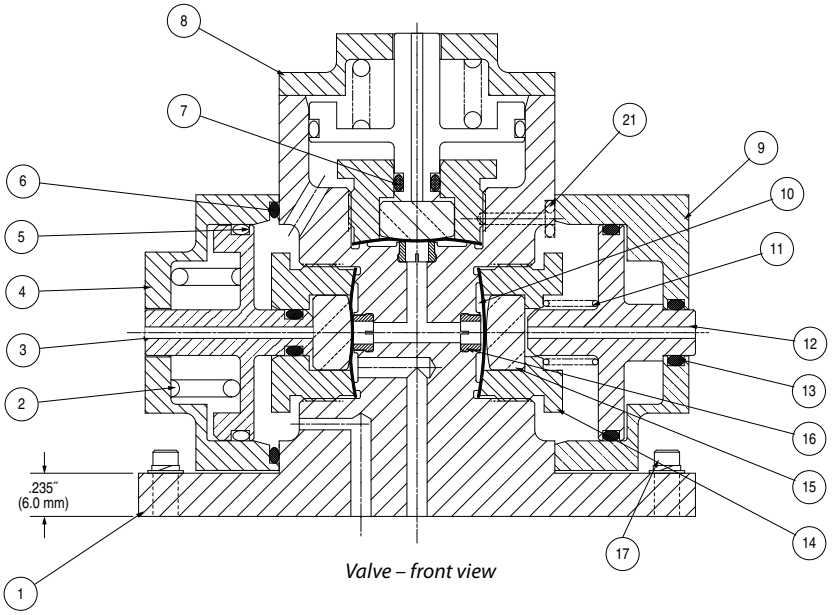
Valve – top view



Front side view

DBB Series

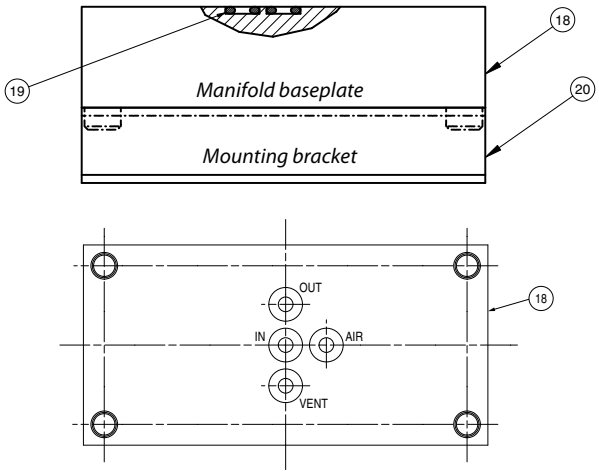
Materials of Construction



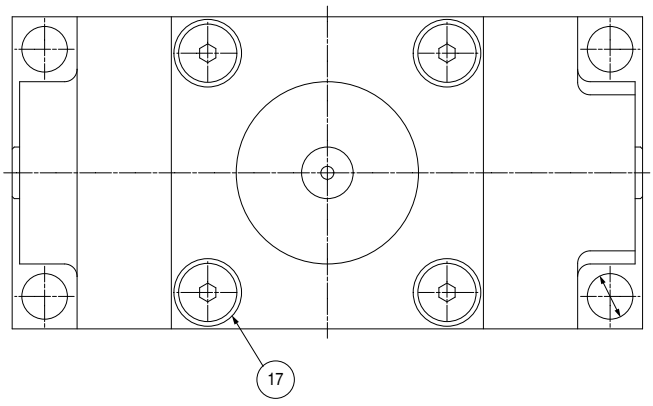
Valve – front view

#	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-[ ]

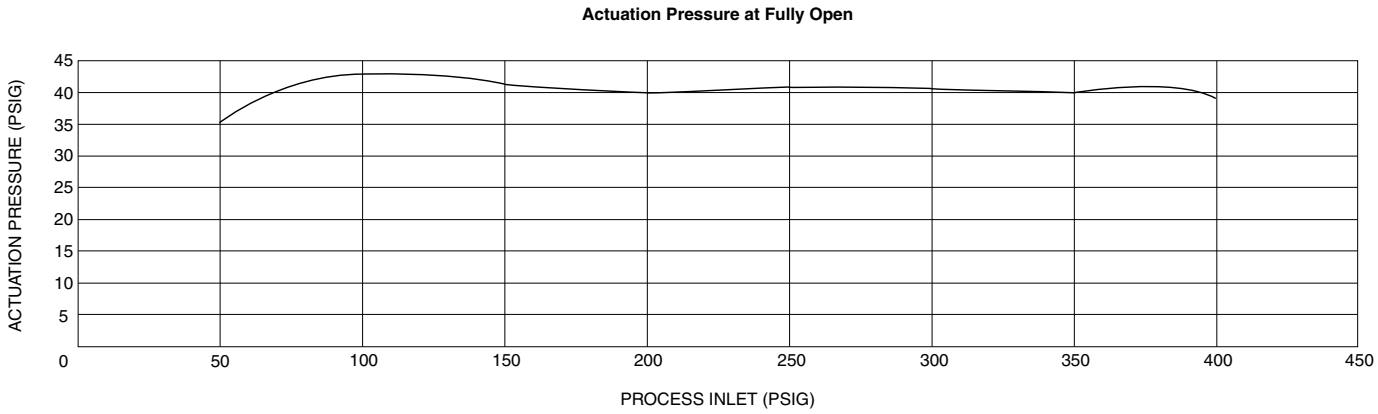


Valve – top view

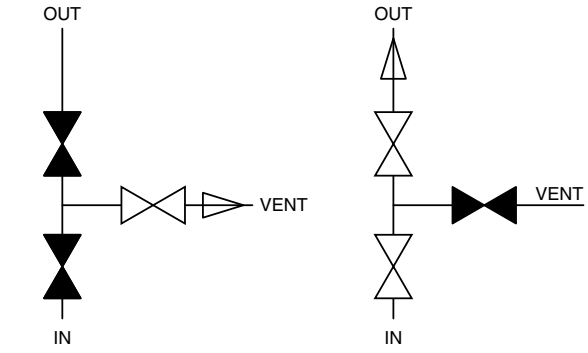
DBB Series

Actuation Pressure Curve

Stand-alone



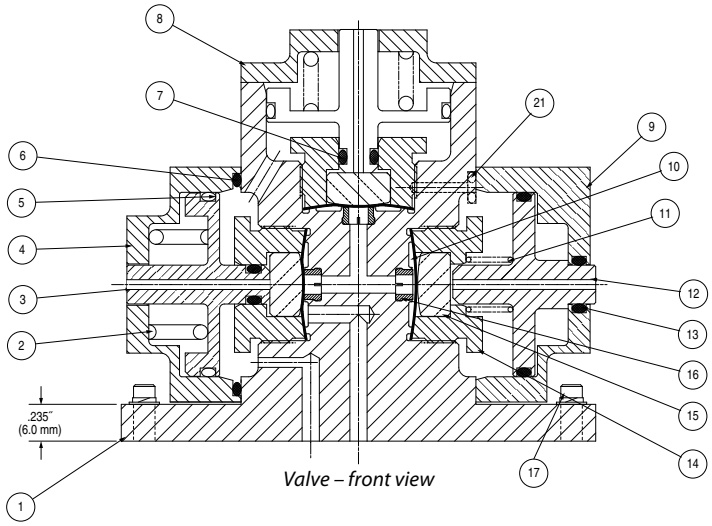
Typical Flow Schematic



Deactuated **Actuated**

Dimensions & Materials of Construction

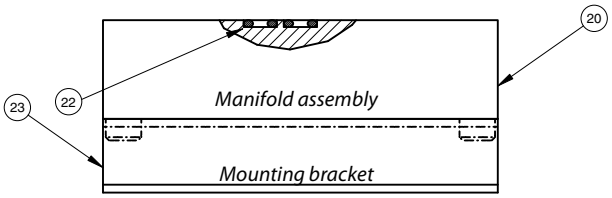
Multi-stream Modular Manifold Assembly

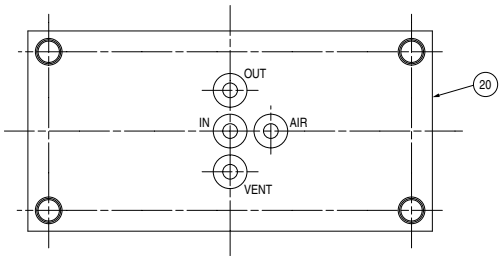


Valve – front view

#	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	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

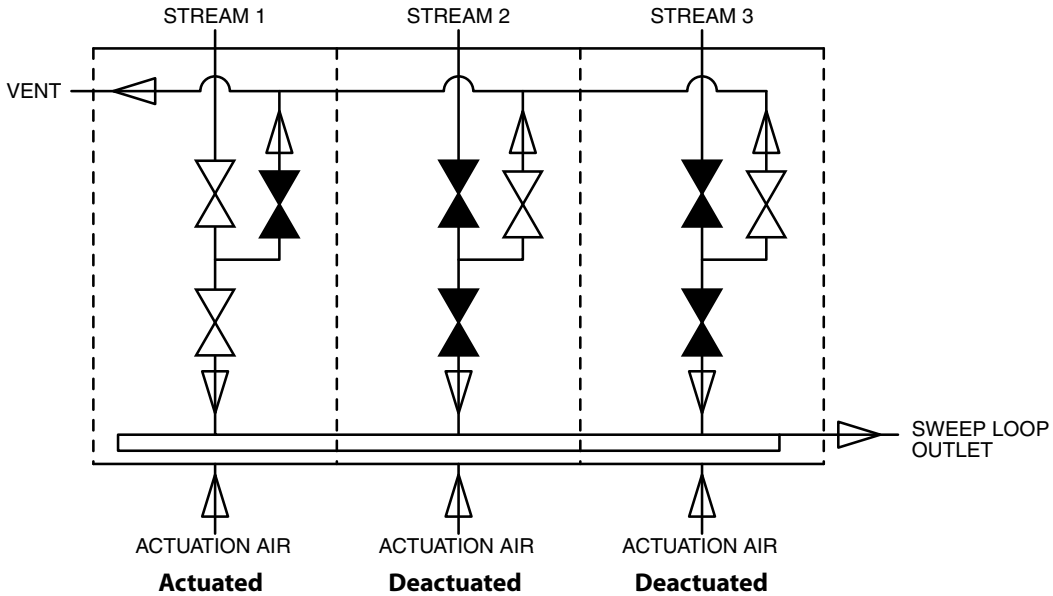
* *Wetted components*





Manifold baseplate – top view
Part #CT113304-[ ]

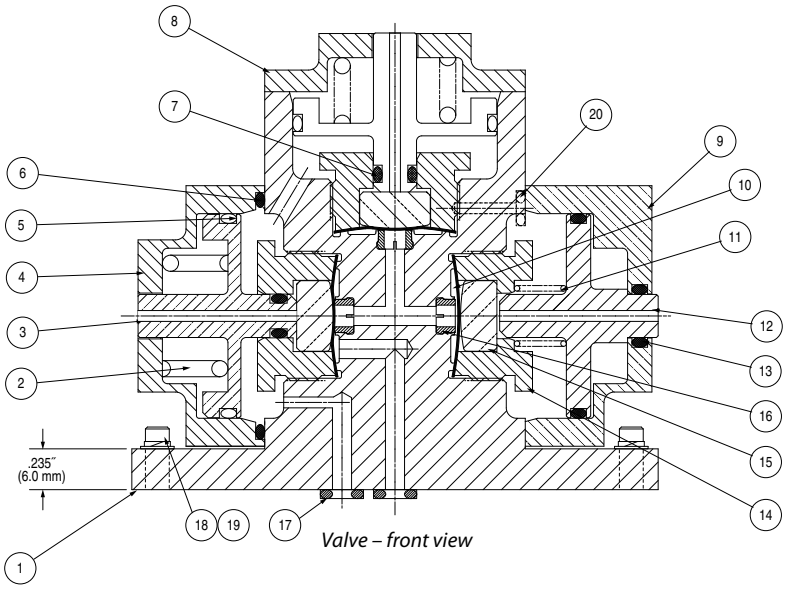
Typical Flow Schematic



DBB Series

Dimensions & Materials of Construction

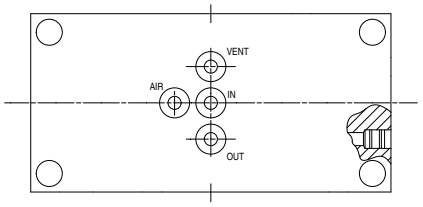
Surface Mount (ANSI-ISA-76 compliant) - Valve Only



Valve – front view

#	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	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*

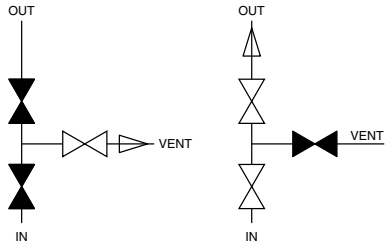


Surface mount – top view
(ANSI/ISA-76 compliant)
μMS³™ Adapter plate – Part # CT113558-[ ]

μMS³™ Adapter plate
Part # CT113558-[ ]

M2 Expansion module (O-rings not shown)

Typical Flow Schematic



Deactuated **Actuated**

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** ⅛″ female BSP/ISO 7/1
- **F2 ⅛″ female NPT**
- **G2** ⅛″ Gyrolok® male nut
- **G4** ¼″ Gyrolok® male nut
- **M2** Expansion module (1/8" female NPT)****

SEAT MATERIAL
- **A** Tefzel®
- **C** Polyimide (Vespel®)
- **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

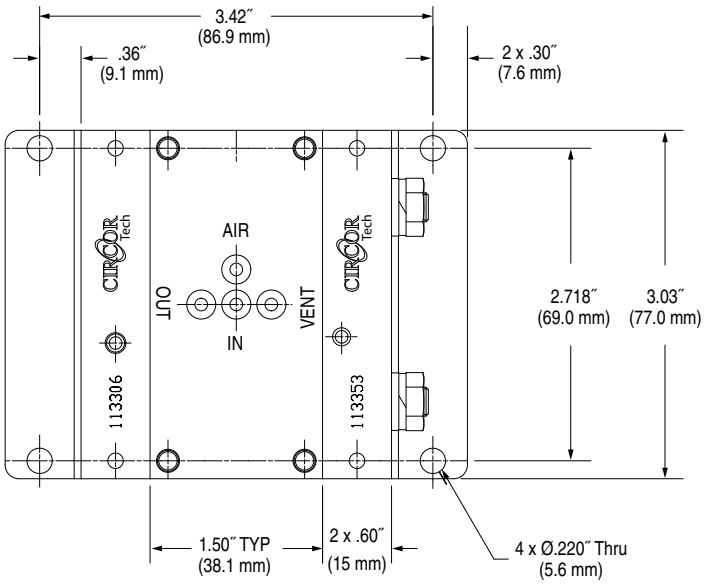
Dimensions & Materials of Construction

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.

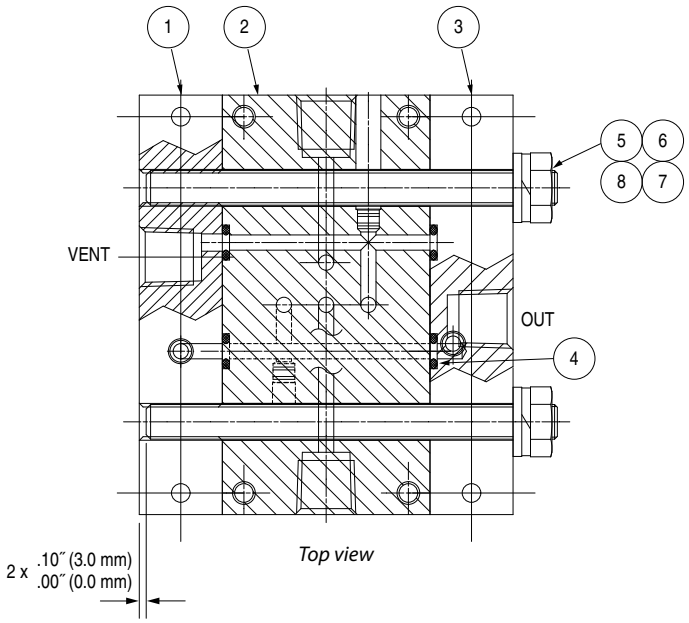
#	PART	MATERIALS
1	End plate with vent*	316L stainless steel, Monel® & Hastelloy® C-276
2	Manifold baseplate*	316L stainless steel, Monel® & Hastelloy® C-276
3	End plate*	316L stainless steel, Monel® & Hastelloy® C-276
4	O-ring*	Viton®, Kalrez®, or Teflon®
5	Flat washer	18-8 stainless steel
6	Lock washer	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*

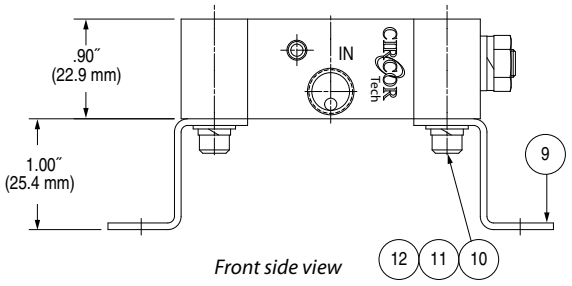
CONNECTION TYPE		A	B	C
⅛″ female NPT	inch	2.70	3.42	0.75
	mm	68.58	86.87	19.05
⅛″ female BSP	inch	2.70	3.42	0.75
	mm	68.58	86.87	19.05
⅛″ male Gyrolok®	inch	3.00	3.72	0.75
	mm	76.2	94.49	19.05
¼″ male Gyrolok®	inch	3.125	3.845	1.00
	mm	79.375	97.66	25.4



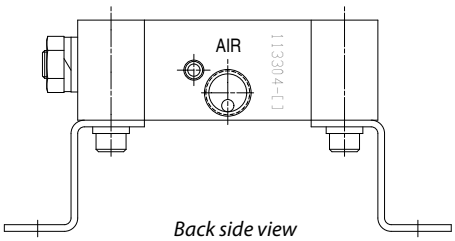
Top view



Top view



Front side view



Back side view

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®

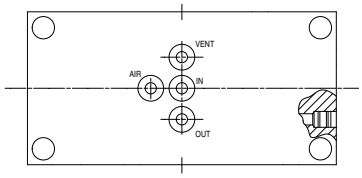
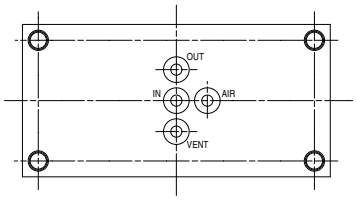
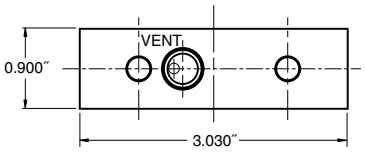
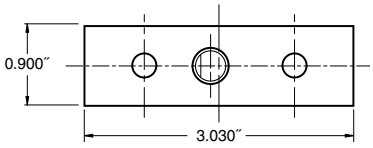
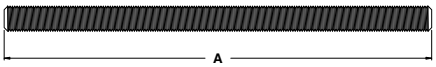
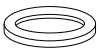
NUMBER OF MANIFOLDS
- 01 (minimum) to 12

O-RING MATERIAL
- **D Viton®**
- **K** Kalrez®
- **F** Teflon®*

* *Available as special (not suitable for all applications)*

DBB Series

Spare Parts for Manifold Expansion

	Description	Part #	Material
 *Top View*	**µMS³™ adapter plate** *ANSI/ISA-76 compliant*	CT113558–[ ]	–1: 316L stainless steel –4: Monel® –6: Hastelloy® C-276
 *Top View*	Manifold baseplate	CT113304–[ ]	–1: 316L stainless steel –4: Monel® –6: Hastelloy® C-276
 *Side View*	End plate with outlet	CT113306–[ ]	–1: 316L stainless steel –4: Monel® –6: Hastelloy® C-276
 *Side View*	End plate without outlet	CT113353 –[ ]	–1: 316 stainless steel –4: Monel® –6: Hastelloy® C-276
	All-thread rod: • 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, ¼″–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)

DSV Series

GC Diaphragm Valve, Normally Closed, with Atmospheric Reference

Available as:
- Stand-alone: *page 24*
- Surface mount (ANSI/ISA-76 µMS³™): *page 27*

The DSV Series diaphragm valve is a GC module with two normally closed shut-off valves and an atmospheric reference. It is available in two configurations: 1) stand-alone, and 2) ANSI/ISA-76 compliant configuration. It is also available as an integral piece of the DBA Series stream-switching valve manifold assembly (see page 30). Stand-alone DSV valve assemblies can be easily integrated into the ANSI/ISA-76 compliant system with the use of a simple adapter plate (see our µMS³™ Modular Substrate System brochure for additional information). The DSV 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

- GC fast loop with atmospheric reference
- Surface mount ANSI/ISA-76 compliant*
- Metal-to-metal seals to atmosphere
- Wide variety of materials for virtually all applications
- No dynamic o-rings, springs, or lubricant in wetted flow path
- Very low internal volume (1.19 cc)
- Pneumatic actuation
- Pressures from vacuum (50 torr) to 400 psig (27.6 BAR)
- Compact package (3″ L × 2.6″ H × 1.5″ W)

* *with µMS³™ adapter plate*

Technical Data

BODY	316L stainless steel, Monel® or Hastelloy® C-276
SEATS	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), or PEEK™
DIAPHRAGMS	Elgiloy® AMS 5876
ORIFICE SIZE	0.110″ (2.8 mm)
FLOW CAPACITY	0.13 Cv
VALVE INTERNAL VOLUME*	1.19 cc
LEAKAGE	1×10^{-5} cc/sec helium (inboard)
ACTUATION PRESSURE	35 psig (see chart page 27)

* *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	1,000 psig
BURST PRESSURE	2,000 psig

Operating Temperatures

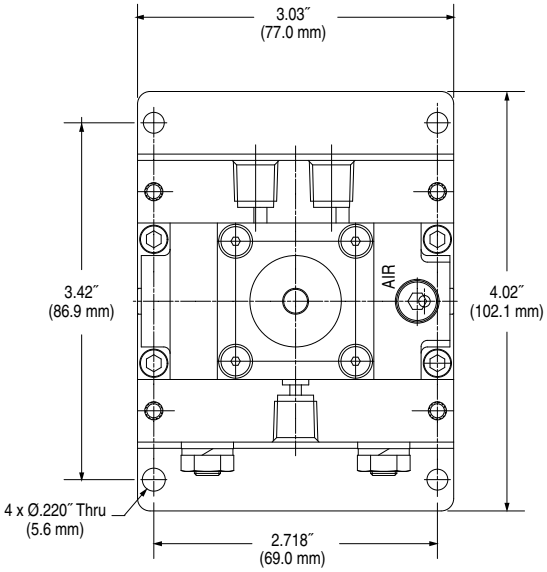
SEAT MATERIAL	TEMPERATURE	
Tefzel®	-40° F to +140° F	-40° C to +60° C
PCTFE (Kel-F®)	-40° F to +300° F	-40° C to +149° C
Polyimide (Vespel®)	-40° F to +400° F	-40° C to +204° C
PEEK™	-40° F to +400° F	-40° C to +204° C

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

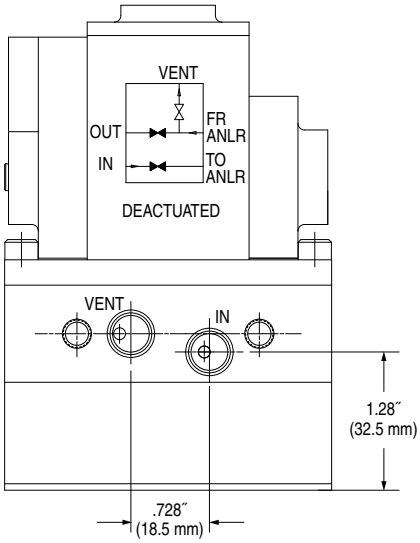
DSV Series

Dimensions

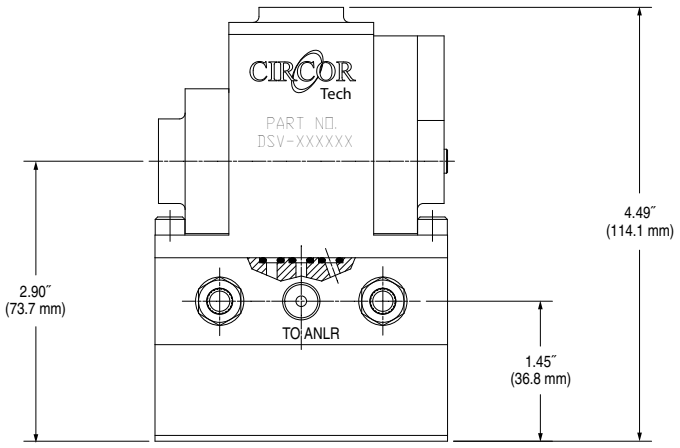
Stand-alone



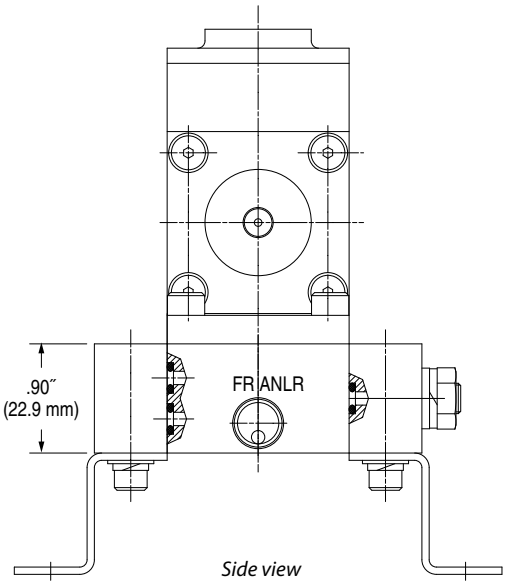
Top view



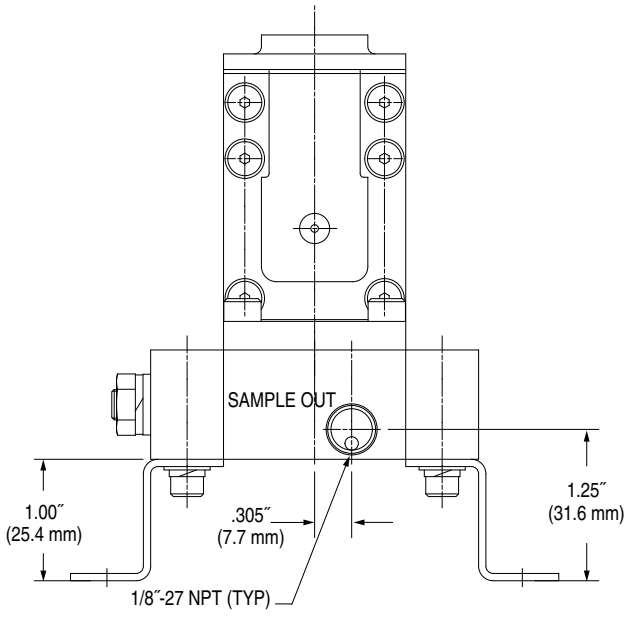
Back view



Front view



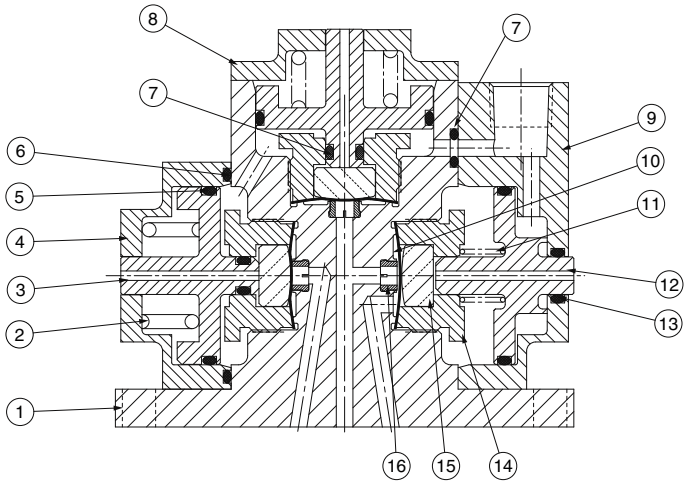
Side view



Back side view

DSV Series

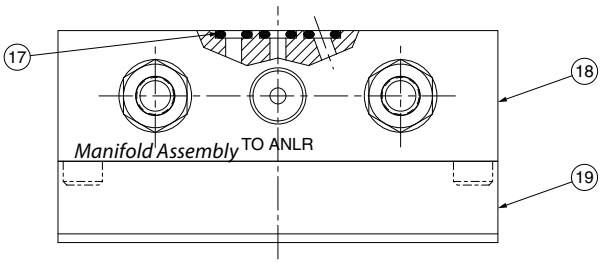
Materials of Construction



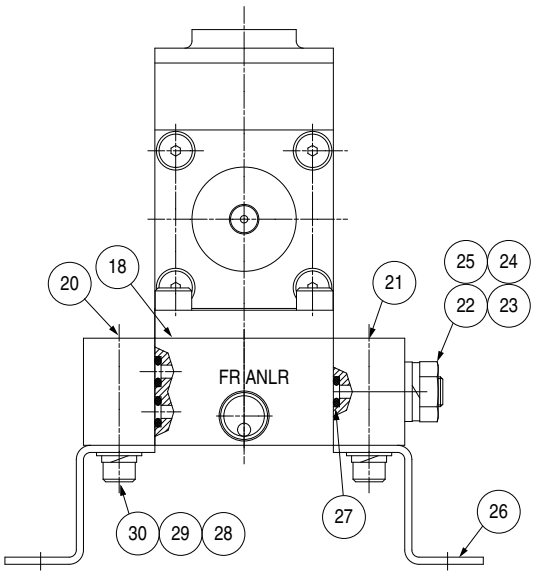
Valve – front view

#	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	O-ring*	Viton®, Kalrez®, or Teflon®
18	Manifold baseplate*	316L stainless steel, Monel® & Hastelloy® C-276
19	Mounting bracket (optional)	316 stainless steel
20	End plate*	316L stainless steel, Monel® & Hastelloy® C-276
21	End plate with vent*	316L stainless steel, Monel® & Hastelloy® C-276
22	Flat washer	18-8 stainless steel
23	Lock washer	18-8 stainless steel
24	Nut	18-8 stainless steel
25	Thread rod	18-8 stainless steel
26	Bracket	316 stainless steel
27	O-ring*	Viton®, Kalrez®, or Teflon®
28	Screw	18-8 stainless steel
29	Flat washer	18-8 stainless steel
30	Lock washer	18-8 stainless steel
31	Screw	18-8 stainless steel

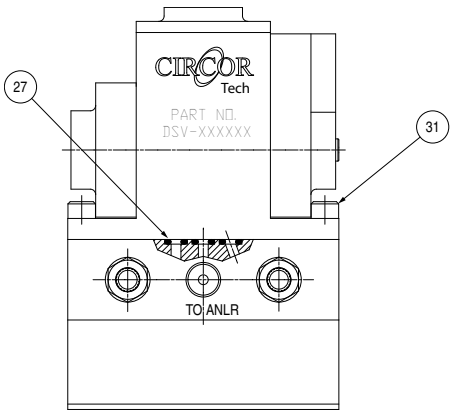
* *Wetted components*



Mounting bracket



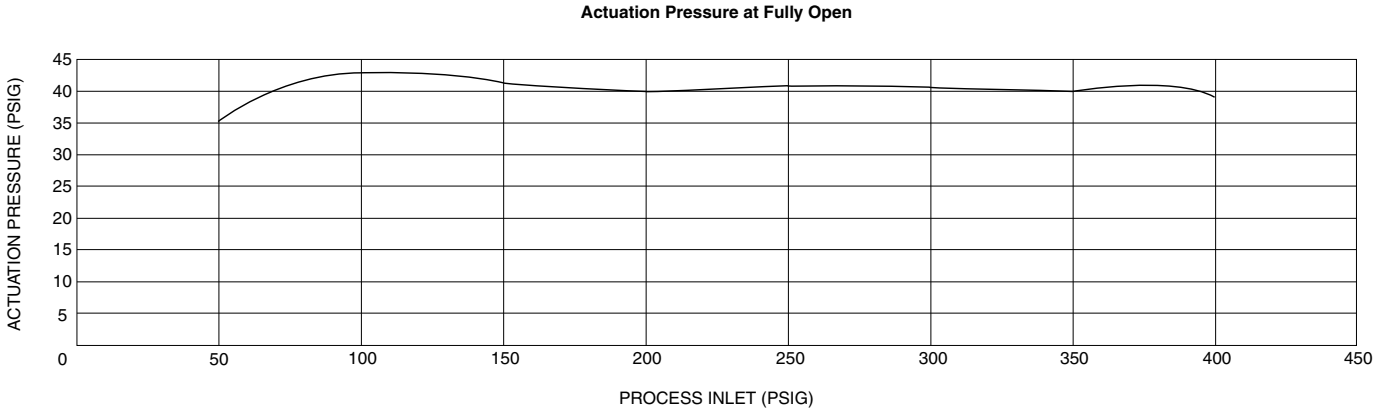
Side view



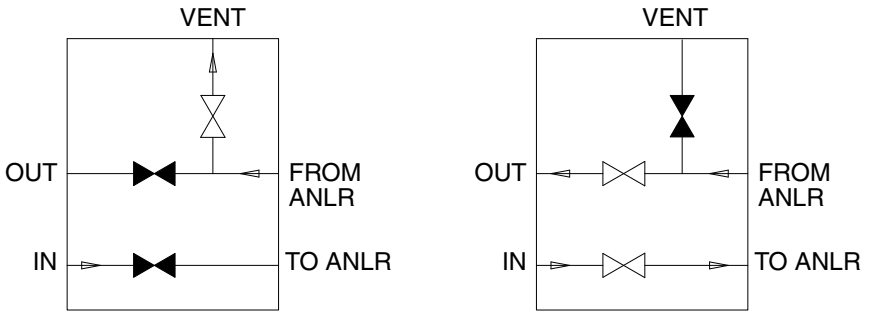
Front view

Actuation Pressure Curve

Stand-alone

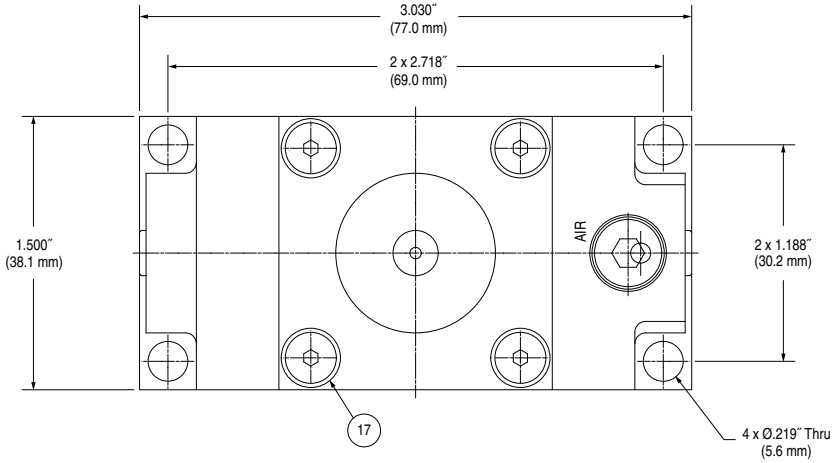


Typical Flow Schematic

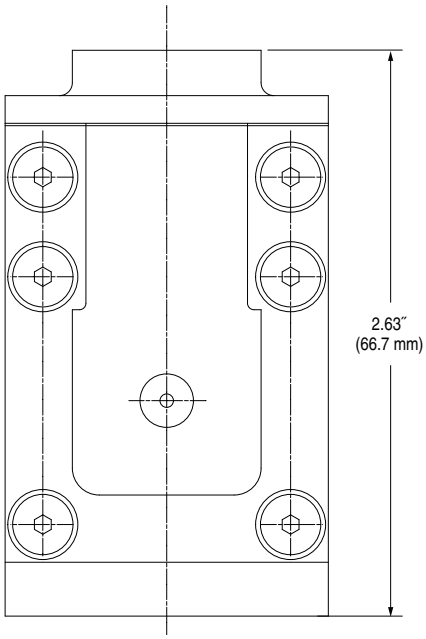


Dimensions

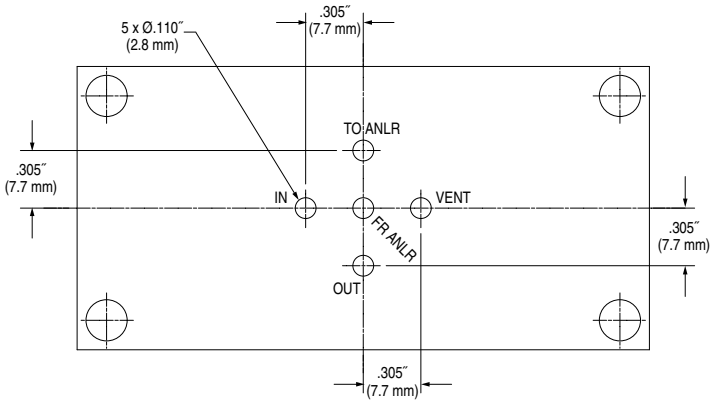
Surface Mount (ANSI/ISA-76 compliant)



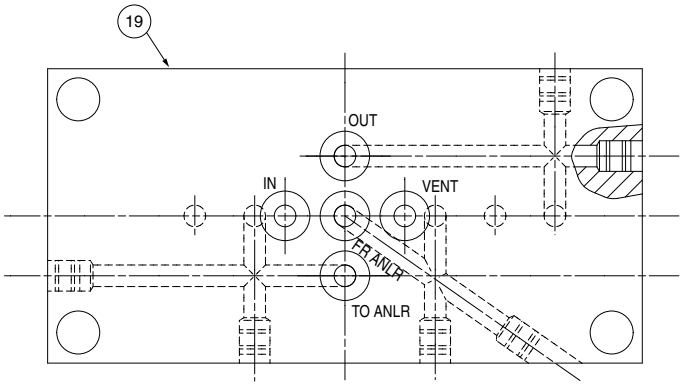
Valve – top view



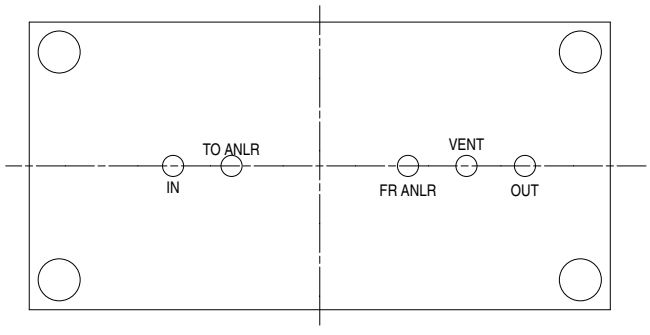
Valve – side view



Valve – bottom view



Surface mount – top view
(ANSI/ISA-76 compliant)
µMS³™ Adapter plate - Part # CT113561-[ ]

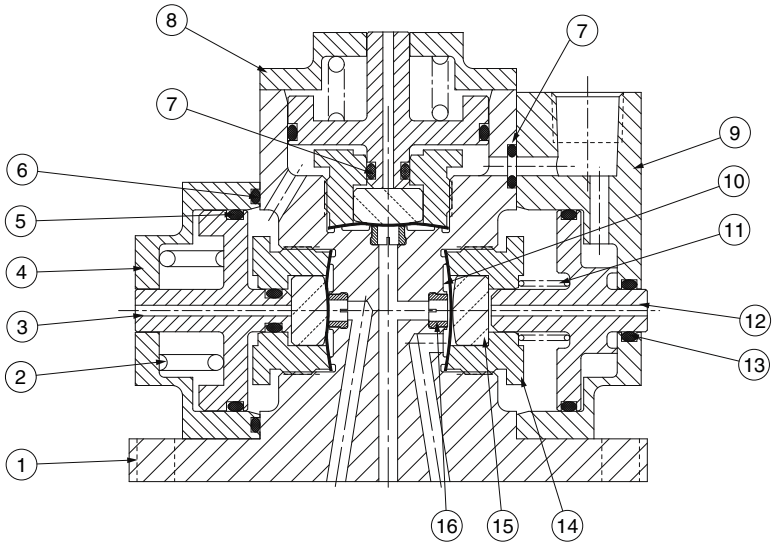


Surface mount - bottom view
(ANSI/ISA-76 compliant)
µMS³™ Adapter plate - Part # CT113561-[ ]

DSV Series

Materials of Construction

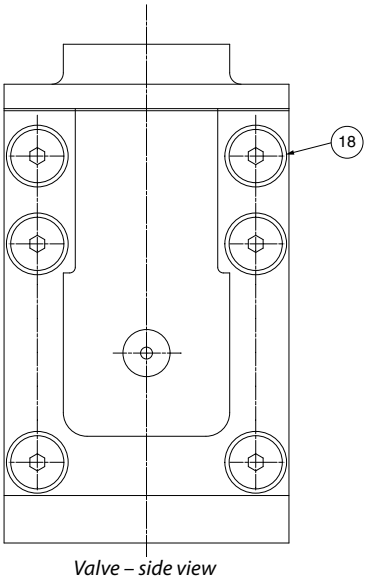
Surface Mount (ANSI/ISA-76 compliant)



Valve – front view

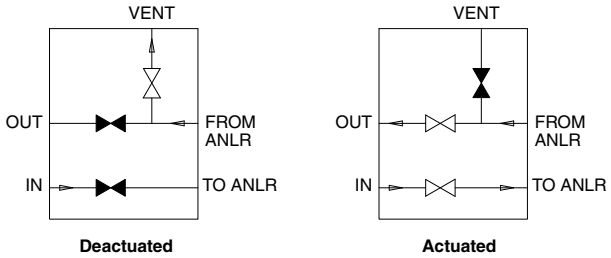
#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® & Hastelloy® C-276
2	Spring	316 stainless steel
3	Piston	316 stainless steel
4	Cap	316 stainless steel
5	O-ring	Viton®
6	O-ring	Viton®
7	O-ring	Viton®
8	Cap	316 stainless steel
9	Cap	316 stainless steel
10	Diaphragm*	Elgiloy® AMS 5876
11	Spring	17-7PH 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	SHC Screw – *see pg. 27*	18-8 stainless steel
18	SHC Screw	18-8 stainless steel
19	µMS³™ Adapter plate* – *see pg. 27* (ANSI/ISA-76 compliant) supplied separately	316L stainless steel
20	O-ring* – *not shown*	Viton®, Kalrez®, or Teflon®

* *Wetted components*



Valve – side view

Typical Flow Schematic



How to Order

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

DSV – 1 F2 H D 0 01

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

CONNECTION TYPE
- **00** Surface mount only***
- **F2 ⅛˝ female NPT**

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

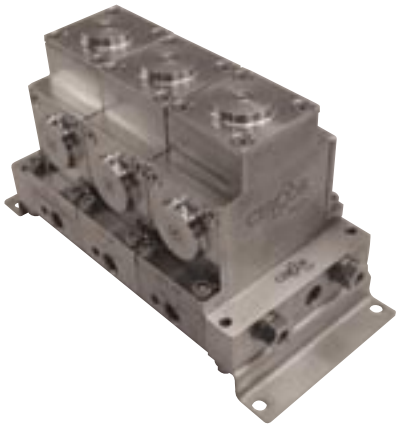
OPTIONS
- **0 None**
- **1** Cleaned for oxygen service
- **5** Silcosteel® passivated**

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.*

DBA Series

GC Manifold Assembly with DBB and DSV Series



Combines:
- Multiple DBB Series (Double-Block-and-Bleed Diaphragm Valve): *page 19* and
- One DSV Series (GC Diaphragm Valve, normally closed, with atmospheric reference): *page 24*

Available as:
- Multi-stream modular: *page 31*

The DBA Series diaphragm valve is a modular, stream-switching, manifold assembly containing double-block-and-bleed valves and a fast loop shut-off with an atmospheric reference. The DBA Series consists of DBB Series valves stacked with a single DSV Series valve. The individual valves can easily be integrated into an ANSI/ISA-76 compliant system with the use of a simple adapter plate (see our μMS³™ Modular Substrate System brochure for additional information). The DBA 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

- Stream select manifold assembly
- Surface mount ANSI/ISA-76 compliant*
- Metal-to-metal seals to atmosphere
- Wide variety of materials for virtually all applications
- No dynamic o-rings, springs, or lubricant in wetted flow path
- Very low internal volume (1.94 cc)
- Pneumatic actuation
- Pressures from vacuum (50 torr) to 400 psig (27.6 BAR)
- Compact package (3″ L × 2.6″ H × 1.5″ W)

* *with μMS³™ adapter plate*

Technical Data

BODY	316L stainless steel, Monel® or Hastelloy® C-276
SEATS	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), or PEEK™
DIAPHRAGMS	Elgiloy® AMS 5876
WORKING TEMPERATURE RANGE	-40° F to +400° F (-40° C to +204° C)
WORKING PRESSURE RANGE	Vacuum (50 torr) to 400 psig (27.6 BAR)
ORIFICE SIZE	0.110″ (2.8 mm)
FLOW CAPACITY	0.13 Cv
VALVE INTERNAL VOLUME*	1.94 cc
LEAKAGE	1×10^{-5} cc/sec helium (inboard)
ACTUATION PRESSURE	50 psig

* *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	1,000 psig
BURST PRESSURE	2,000 psig

Operating Temperatures

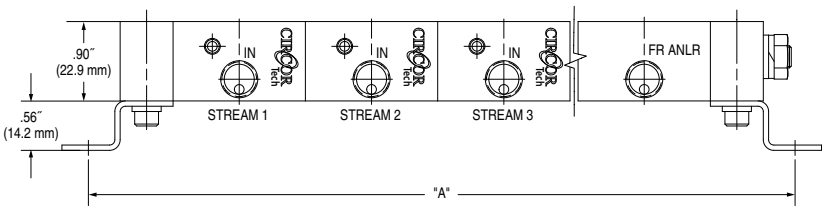
SEAT MATERIAL	TEMPERATURE	
Tefzel®	-40° F to +140° F	-40° C to +60° C
PCTFE (Kel-F®)	-40° F to +300° F	-40° C to +149° C
Polyimide (Vespel®)	-40° F to +400° F	-40° C to +204° C
PEEK™	-40° F to +400° F	-40° C to +204° C

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

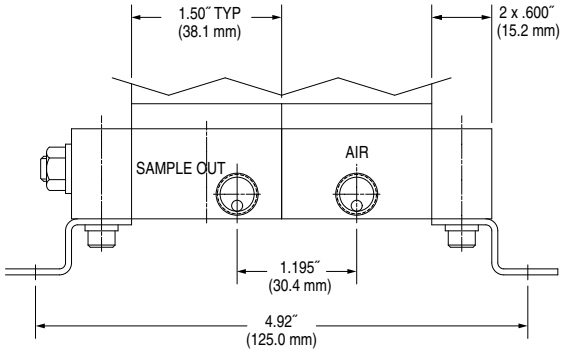
DBA Series

Dimensions

Multi-stream Modular Manifold Assembly (with Mounting Brackets)

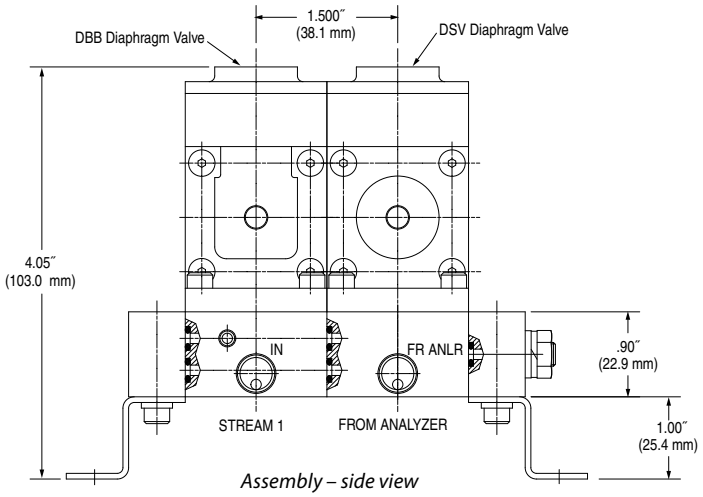


Front side view

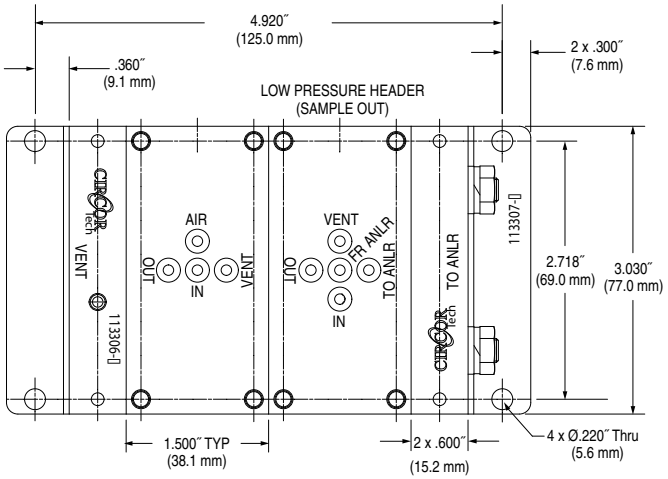


Back side view

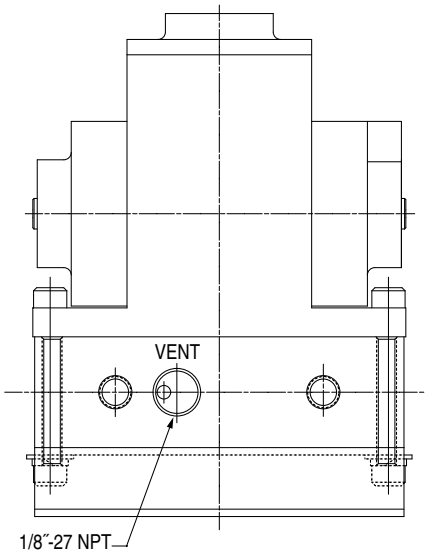
NUMBER OF MANIFOLDS		2	3	4	5	6	7	8	9	10	11	12
A	inches	4.92	6.42	7.92	9.42	10.92	12.42	13.92	15.42	16.92	18.42	19.92
	mm	125	163	201.2	239.3	277.4	315.5	353.6	391.7	429.8	467.9	506



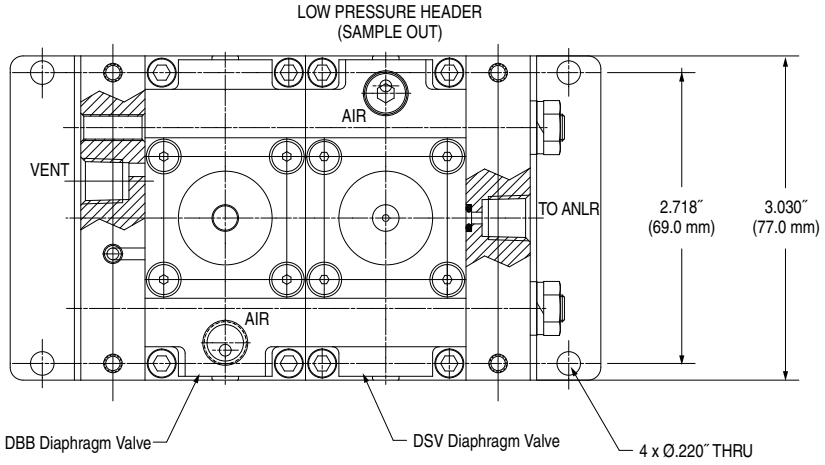
Assembly – side view



Top view



Assembly – left end view



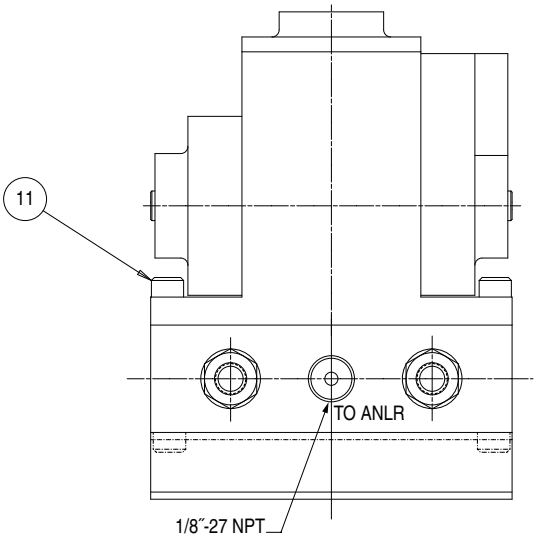
Assembly – top view
(optional top air inlets shown)

DBA Series

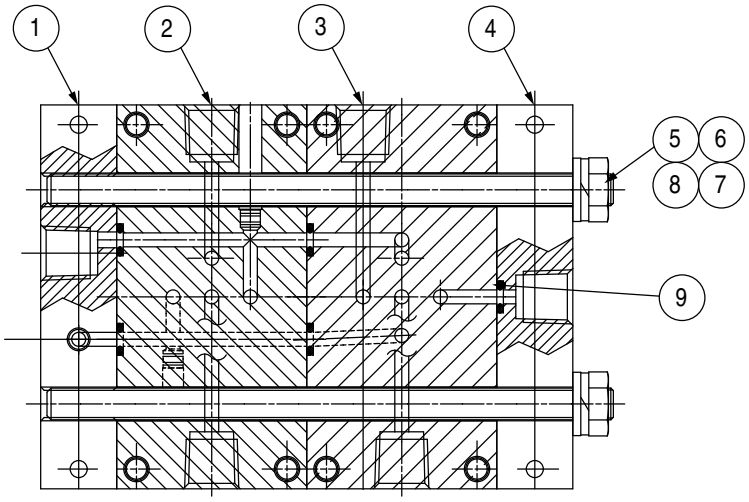
Materials of Construction

#	PART	MATERIALS
1	End plate with vent*	316L stainless steel, Monel® & Hastelloy® C-276
2	Manifold baseplate (DBB)*	316L stainless steel, Monel® & Hastelloy® C-276
3	Manifold baseplate (DSV)*	316L stainless steel, Monel® & Hastelloy® C-276
4	End plate to analyzer*	316L stainless steel, Monel® & Hastelloy® C-276
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	O-ring*	Viton®, Kalrez®, or Teflon®
10	Bracket	316 stainless steel
11	Screw	18-8 stainless steel
12	Flat washer	18-8 stainless steel
13	Lock washer	18-8 stainless steel

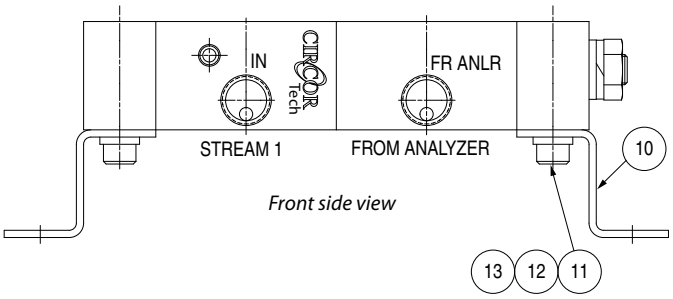
* *Wetted components*



Assembly – right end view



Top view, sectioned
(2 streams)

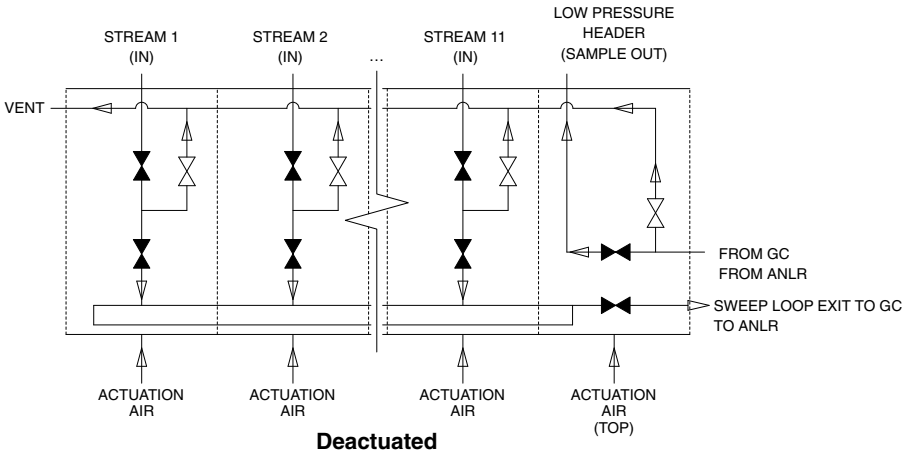


Front side view

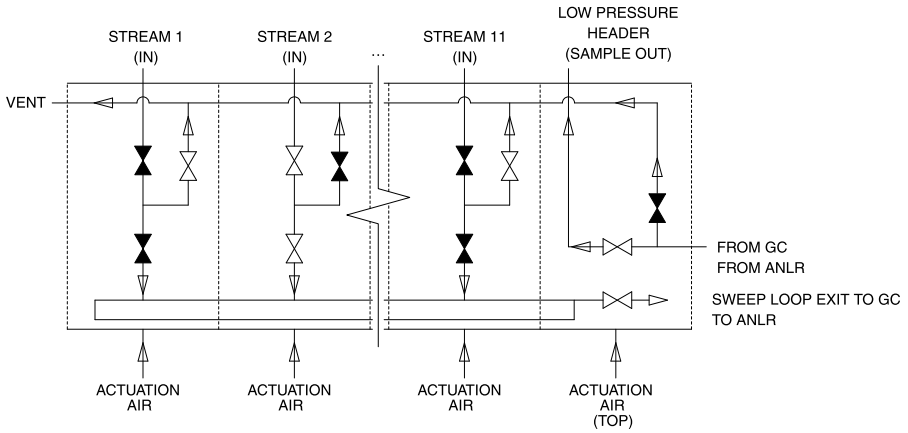
DBA Series

Typical Flow Schematic

Multi-stream Modular Manifold Assembly



Deactuated



Stream 2 & GC Module (DSV Valve) Actuated

How to Order

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

DBA – 1 F2 H D 0 02

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

CONNECTION TYPE
- **F2 ⅛˝ female NPT**

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

O-RING MATERIAL
- **D Viton®**
- **F** Teflon®*
- **K** Kalrez®

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

NUMBER OF STREAMS

Specify from two manifolds (02) to twelve (12)

* *Available as special (not suitable for all applications)*

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

DSS Series

GC Diaphragm Valve, Normally Open, with Atmospheric Reference

Available as:
- Stand-alone: *page 34*
- Surface mount (ANSI/ISA-76 µMS³™): *page 37*

The DSS Series diaphragm valve is a GC module with two normally open shut-off valves and an atmospheric reference. It is available in two configurations: 1) stand-alone, and 2) ANSI/ISA-76 compliant configuration. Stand-alone DSS valve assemblies can be easily integrated into the ANSI/ISA-76 compliant system with the use of a simple adapter plate (see our µMS³™ Modular Substrate System brochure for additional information). The DSS 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

- Stream select
- Surface mount ANSI/ISA-76 compliant*
- Metal-to-metal seals to atmosphere
- Wide variety of materials for virtually all applications
- No dynamic o-rings, springs, or lubricant in wetted flow path
- Very low internal volume (1.00 cc)
- Pneumatic actuation
- Pressures from vacuum (50 torr) to 400 psig (27.6 BAR)
- Compact package (3″ L × 2.6″ H × 1.5″ W)

* *with µMS³™adapter plate*

Technical Data

BODY	316L stainless steel, Monel® or Hastelloy® C-276
SEATS	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), or PEEK™
DIAPHRAGMS	Elgiloy® AMS 5876
ORIFICE SIZE	0.110″ (2.8 mm)
FLOW CAPACITY	0.13 Cv
VALVE INTERNAL VOLUME*	1.00 cc
LEAKAGE	1×10^{-5} cc/sec helium (inboard)
ACTUATION PRESSURE	35 psig (see chart page 37)

* *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	1,000 psig
BURST PRESSURE	2,000 psig

Operating Temperatures

SEAT MATERIAL	TEMPERATURE	
Tefzel®	-40° F to +140° F	-40° C to +60° C
PCTFE (Kel-F®)	-40° F to +175° F	-40° C to +79° 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
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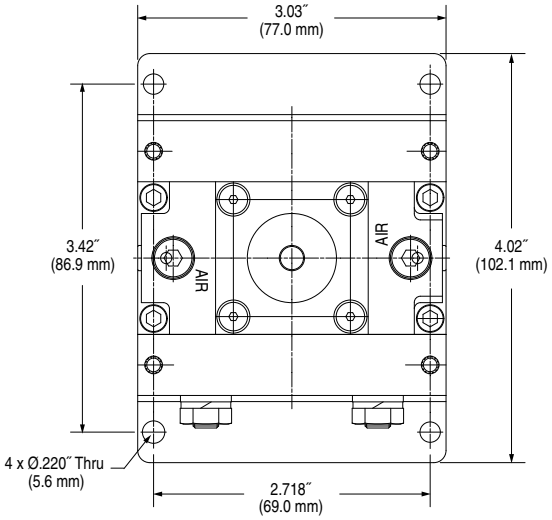
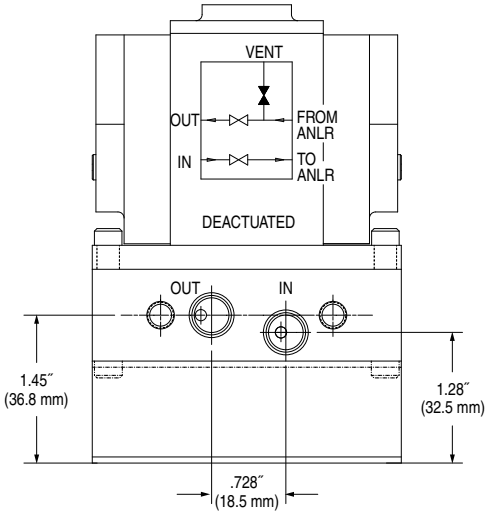
Phone (864) 574-7966 • Fax (864) 574-5608
www.circortech.com

Dimensions

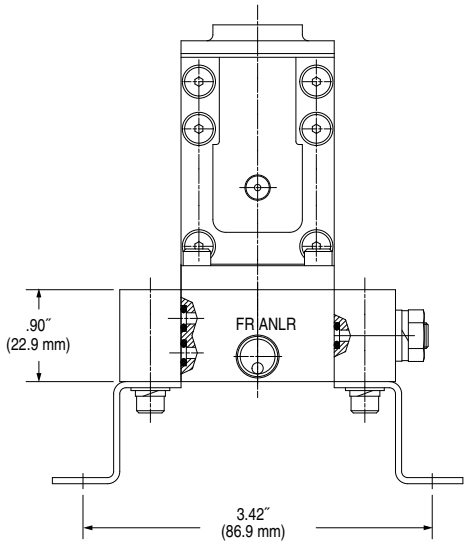
Stand-alone



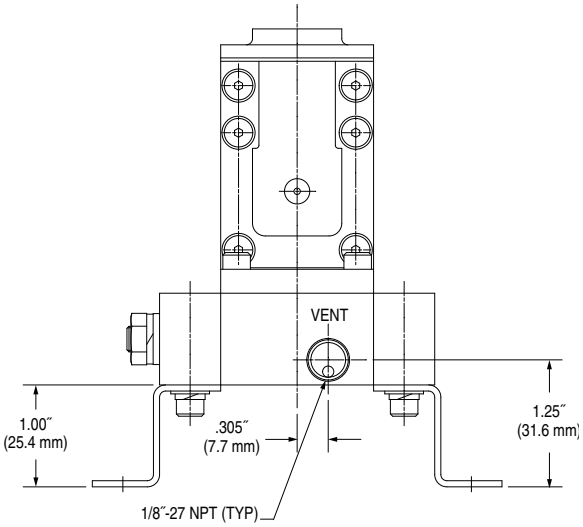
Top view



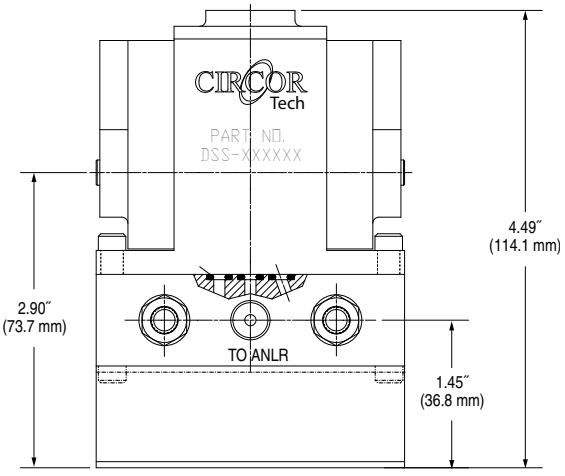
Back view



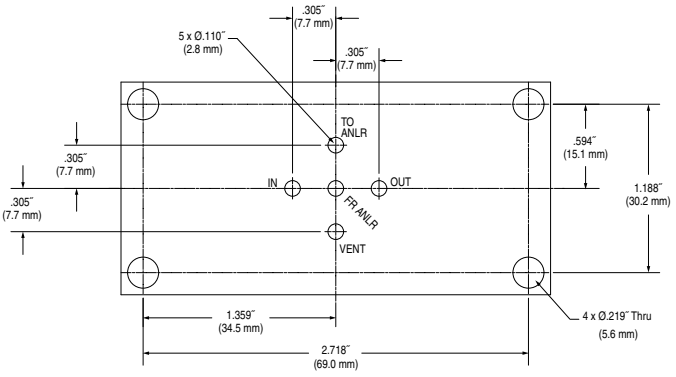
Side view



Back side view

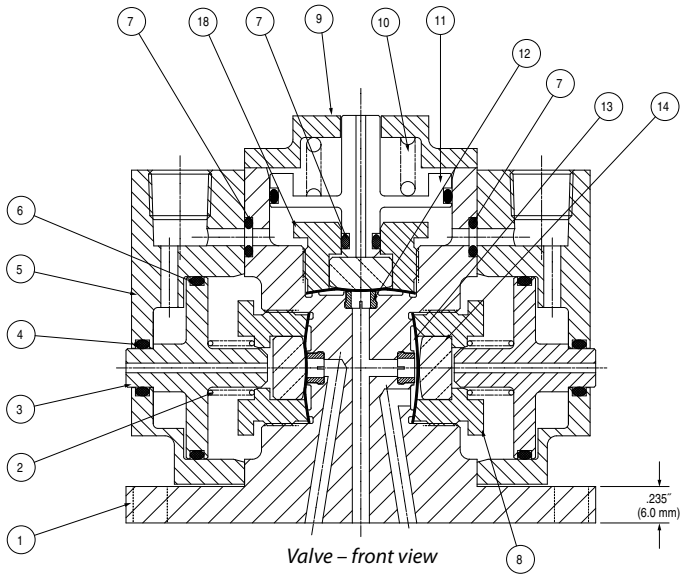


Front view

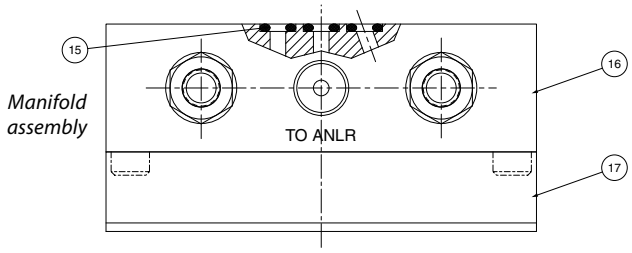


Valve – bottom view

Materials of Construction



Valve – front view

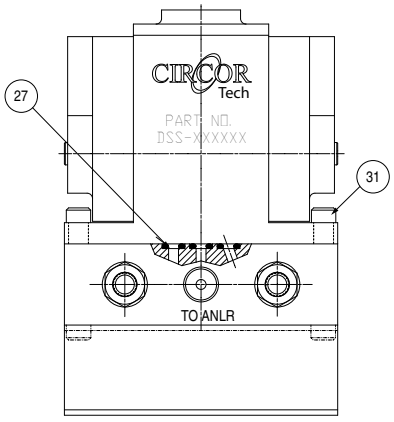


Manifold assembly

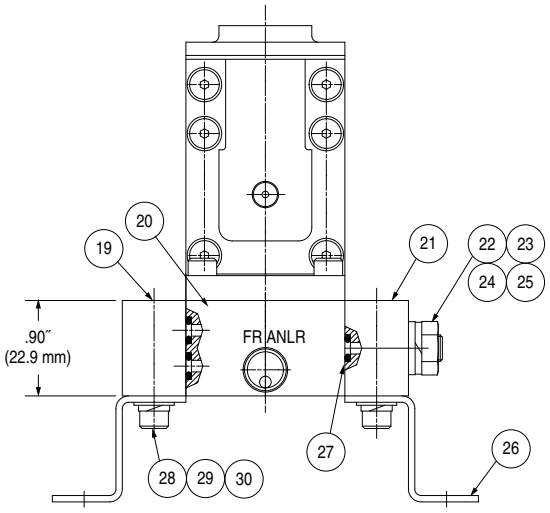
Mounting bracket

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

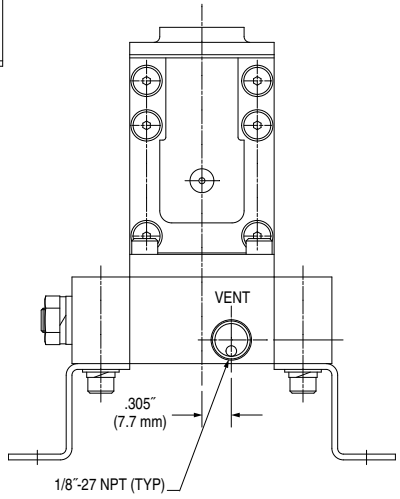
** Wetted components*



Front view



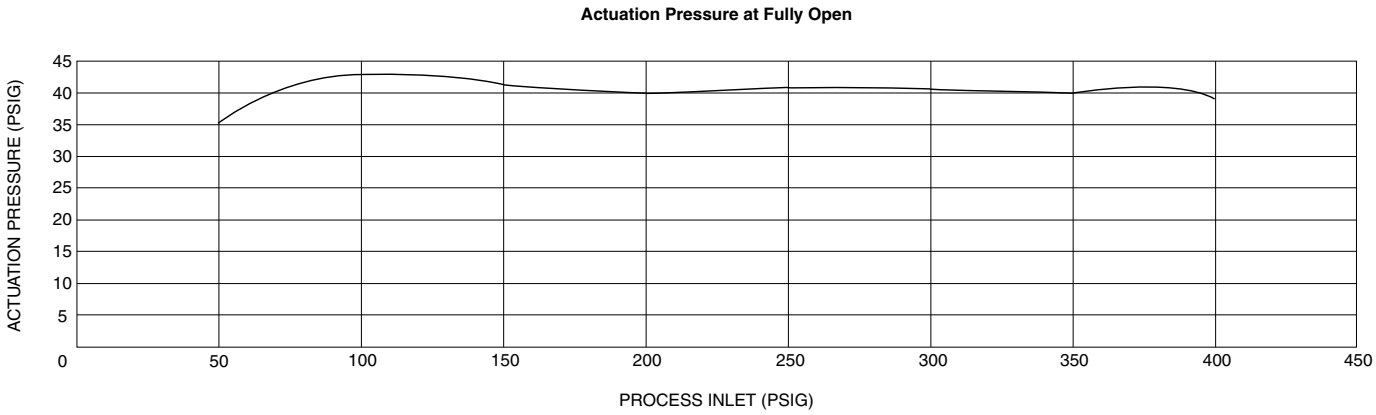
Side view



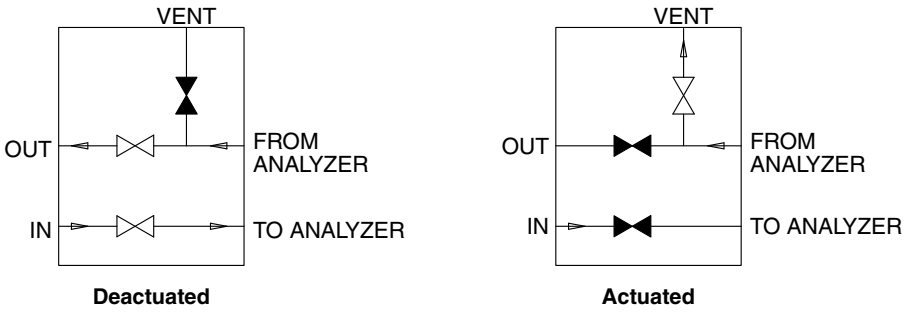
Back side view

Actuation Pressure Curve

Stand-alone

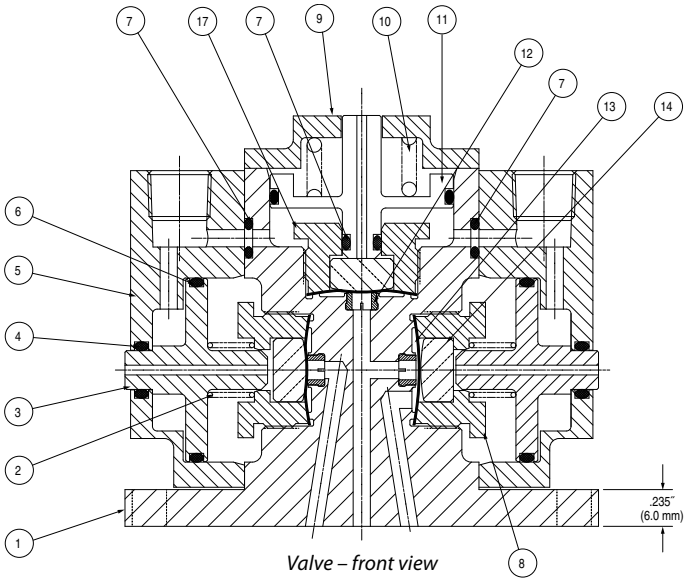


Typical Flow Schematic



Dimensions & Materials of Construction

Surface Mount (ANSI/ISA-76 compliant)

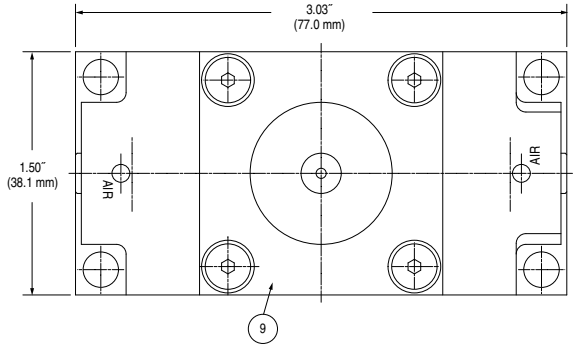


Valve – front view

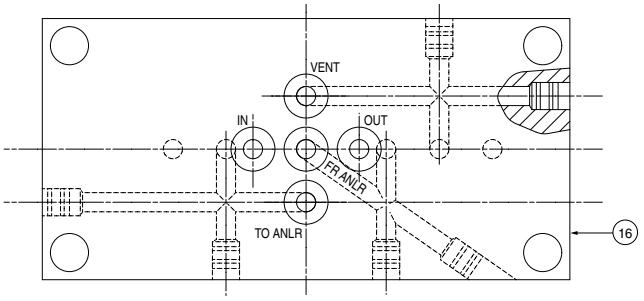
#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® & Hastelloy® C-276
2	Spring	17-7PH stainless steel
3	Piston	316 stainless steel
4	O-ring	Viton®
5	Cap	316 stainless steel
6	O-ring	Viton®
7	O-ring	Viton®
8	Retainer	316 stainless steel
9	Cap	316 stainless steel
10	Spring	316 stainless steel
11	Piston	316 stainless steel
12	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), and PEEK™
13	Diaphragm*	Elgiloy® AMS 5876
14	Thrust plug	Brass
15	SHC screw	18-8 stainless steel
16	µMS³™ Adapter plate*† (ANSI/ISA-76 compliant) supplied separately	316L stainless steel
17	Retainer	316 stainless steel

* *Wetted components*

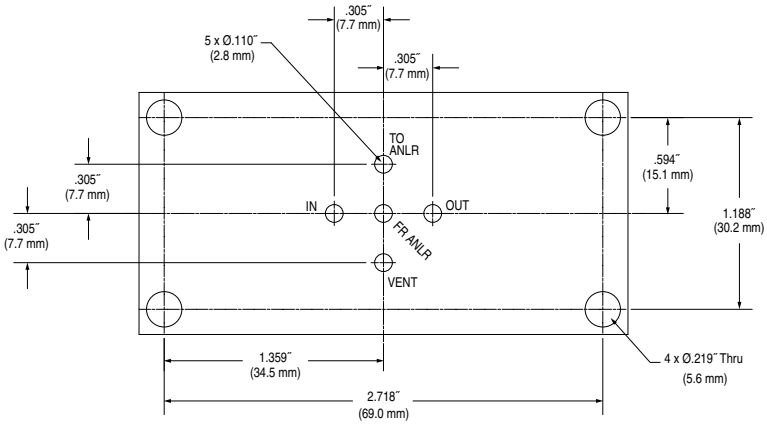
† *Required when mounting to an ANSI/ISA-76 platform.*



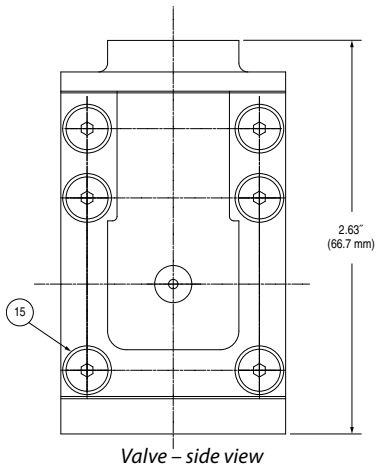
Valve – top view



Top view – Surface mount
ANSI/ISA-76 compliant
µMS³™ Adapter plate - Part # CT113560-[ ]



Valve – bottom view



Valve – side view

DSS Series

How to Order

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

DSS – 1 F2 H D 0 01

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

CONNECTION TYPE
- **00** Surface mount only**
- **F2 ⅛˝ female NPT**

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

OPTIONS
- **0 None**
- **1** Cleaned for oxygen service
- **5** Silcosteel® passivated

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)*
** *Required for surface mount units.*

DBC Series

Probe Blowback/Sample Line Calibration Valves

Available as:
- Stand-alone: *page 40*
- Surface mount (ANSI/ISA-76 µMS³™): *page 43*

The DBC Series diaphragm valve is a probe blowback/sample line calibration valve. It is available in two configurations: 1) stand-alone, and 2) ANSI/ISA-76 compliant configuration. Stand-alone DBC valve assemblies can be easily integrated into the ANSI/ISA-76 compliant system with the use of a simple adapter plate (see our µMS³™ Modular Substrate System brochure for additional information). The DBC 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

- Stream select
- Surface mount ANSI/ISA-76 compliant*
- Metal-to-metal seals to atmosphere
- Wide variety of materials for virtually all applications
- No dynamic o-rings, springs, or lubricant in wetted flow path
- Very low internal volume (1.04 cc)
- Pneumatic actuation
- Pressures from vacuum (50 torr) to 400 psig (27.5 BAR)
- Compact package (3˝ L × 2.6˝ H × 1.5˝ W)

* *with µMS³™adapter plate*

Technical Data

BODY	316L stainless steel, Monel® or Hastelloy® C-276
SEATS	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), or PEEK™
DIAPHRAGMS	Elgiloy® AMS 5876
ORIFICE SIZE	0.110˝ (2.8 mm)
FLOW CAPACITY	0.13 Cv
VALVE INTERNAL VOLUME*	1.04 cc
LEAKAGE	1×10^{-5} cc/sec helium (inboard)
ACTUATION PRESSURE	35 psig (see chart page 42)

* *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	1,000 psig
BURST PRESSURE	2,000 psig

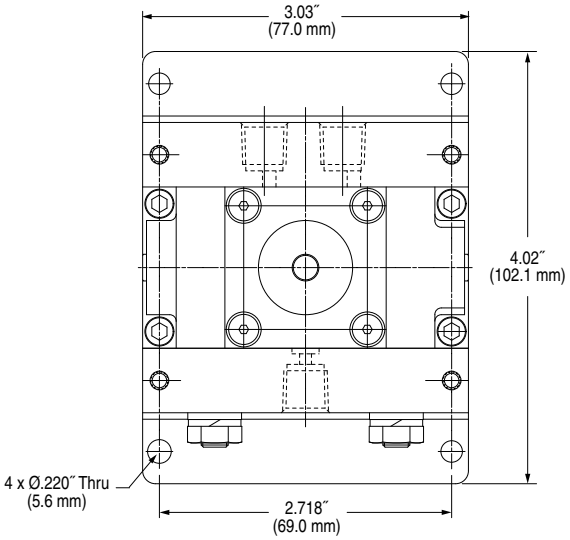
Operating Temperatures

SEAT MATERIAL	TEMPERATURE	
Tefzel®	-40° F to +140° F	-40° C to +60° C
PCTFE (Kel-F®)	-40° F to +175° F	-40° C to +79° C
Polyimide (Vespel®)	-40° F to +400° F	-40° C to +204° C
PEEK™	-40° F to +400° F	-40° C to +204° C

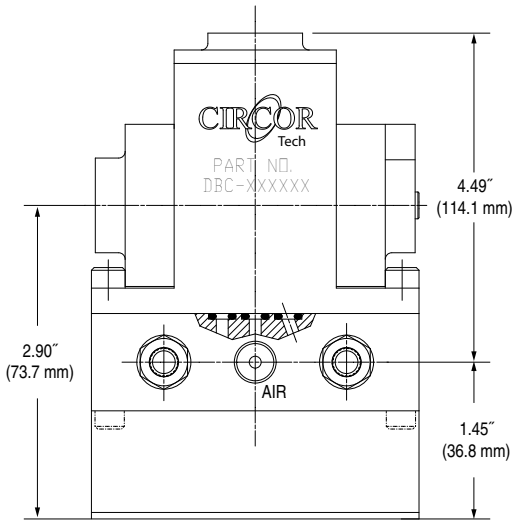
CIRCOR Tech
405 Centura Court • PO Box 4866 (29305) • Spartanburg, SC 29303
Phone (864) 574-7966 • Fax (864) 574-5608
www.circortech.com

Dimensions

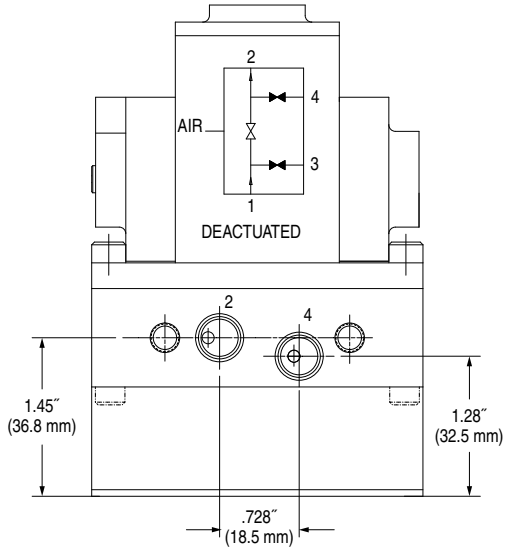
Stand-alone



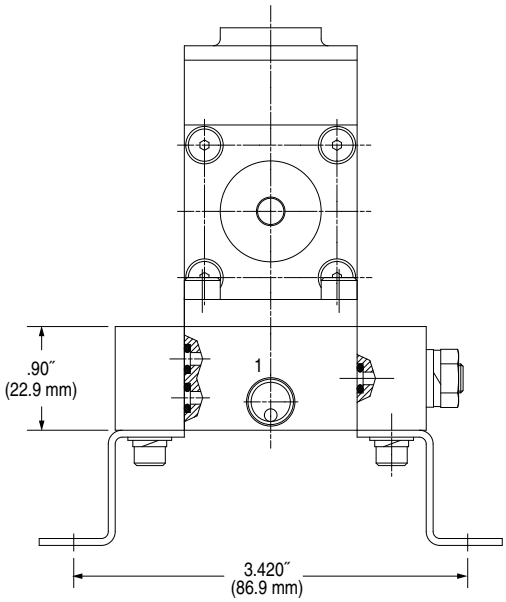
Top view



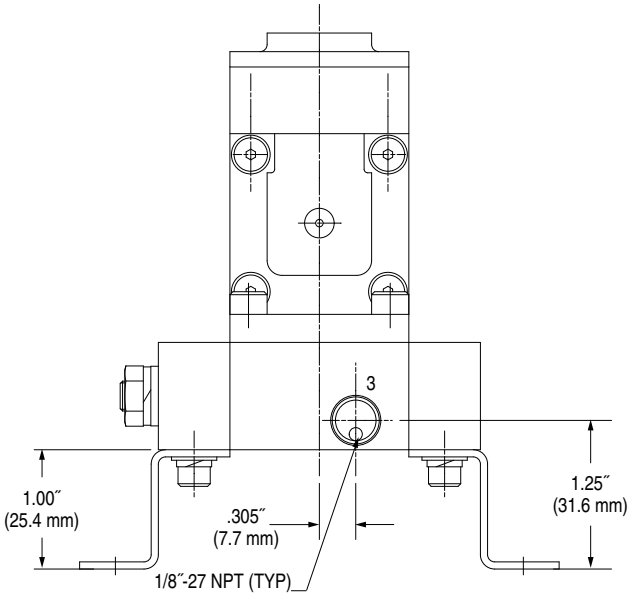
Front view



Back view



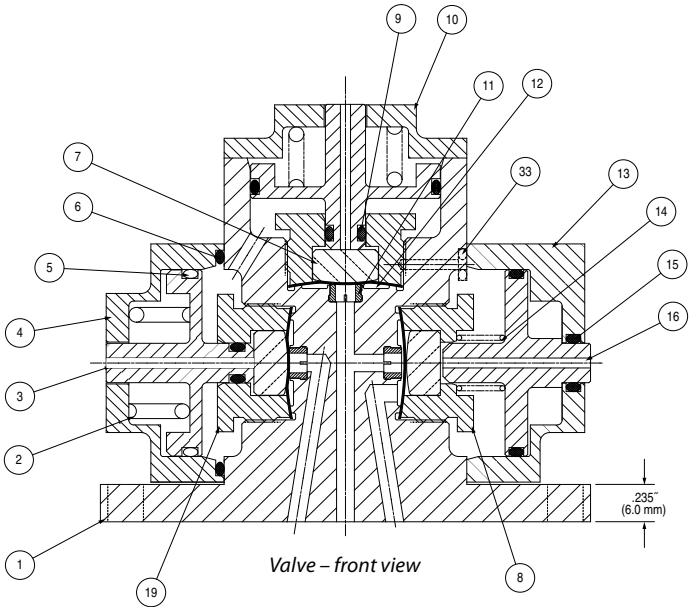
Side view



Backside view

DBC Series

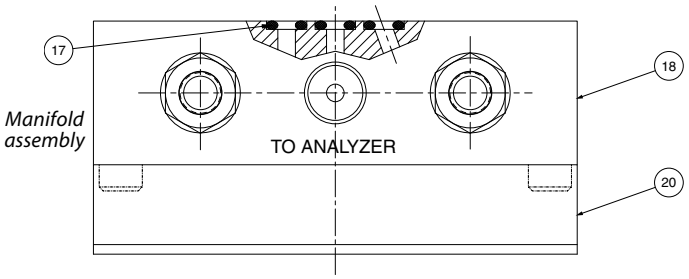
Materials of Construction



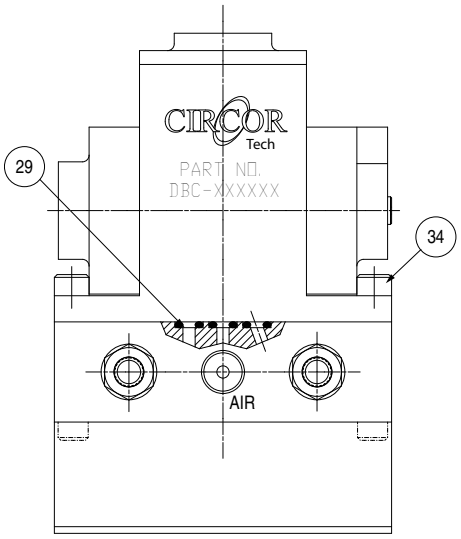
Valve – front view

#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® & Hastelloy® C-276
2	Spring	17-7PH stainless steel
3	Piston	316 stainless steel
4	Cap	316 stainless steel
5	O-ring	Viton®
6	O-ring	Viton®
7	Thrust plug	Brass
8	Retainer	316 stainless steel
9	O-ring	Viton®
10	Cap	316 stainless steel
11	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), and PEEK™
12	Diaphragm*	Elgiloy® AMS 5876
13	Cap	316 stainless steel
14	Spring	316 stainless steel
15	O-ring	Viton®
16	Piston	316 stainless steel
17	O-ring*	Viton®, Kalrez®, or Teflon®
18	End plate*	316L stainless steel, Monel® & Hastelloy® C-276
19	Retainer	316 stainless steel
20	Mounting bracket	316 stainless steel
21	End plate*	316L stainless steel, Monel® & Hastelloy® C-276
22	Manifold baseplate*	316L stainless steel, Monel® & Hastelloy® C-276
23	End plate with vent*	316L stainless steel, Monel® & Hastelloy® C-276
24	Flat washer	18-8 stainless steel
25	Lock washer	18-8 stainless steel
26	Nut	18-8 stainless steel
27	Thread rod	18-8 stainless steel
28	Mounting bracket	316 stainless steel
29	O-ring*	Viton®, Kalrez®, or Teflon®
30	Screw	18-8 stainless steel
31	Flat washer	18-8 stainless steel
32	Lock washer	18-8 stainless steel
33	O-ring	Viton®
34	Screw	18-8 stainless steel

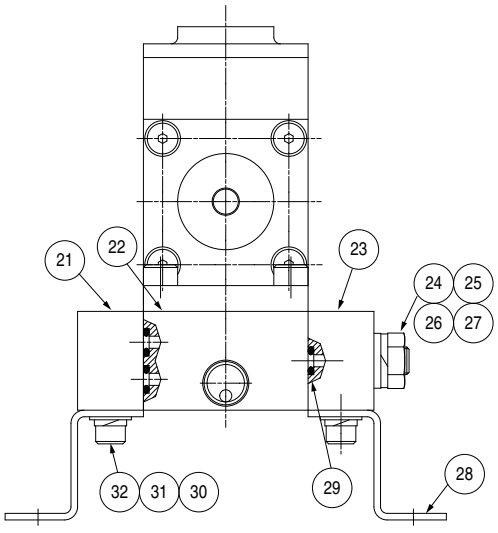
* *Wetted components*



Mounting bracket



Front view

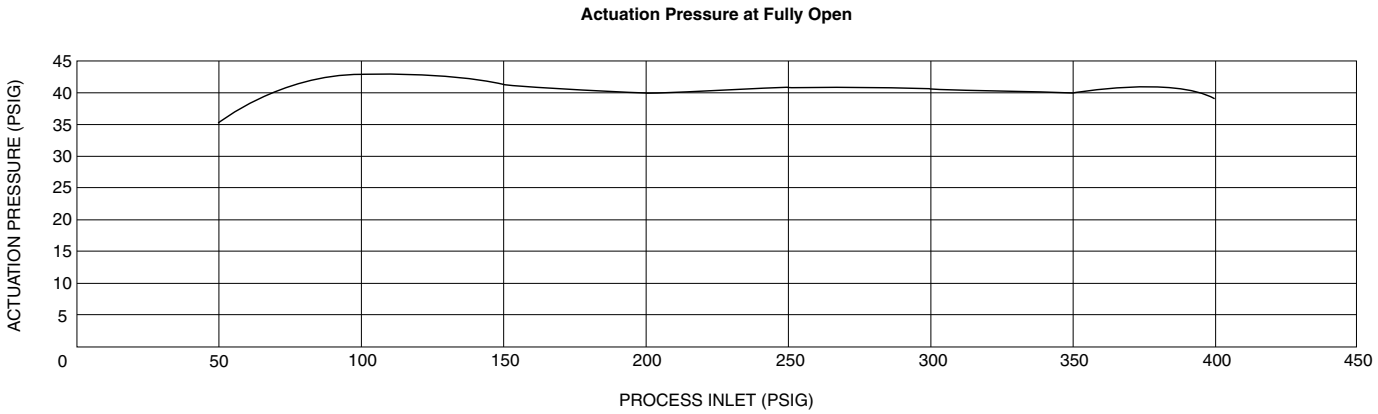


Side view

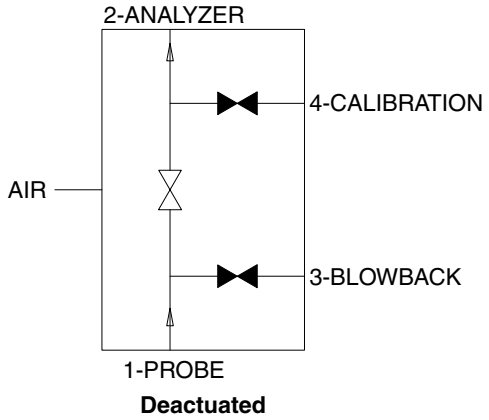
DBC Series

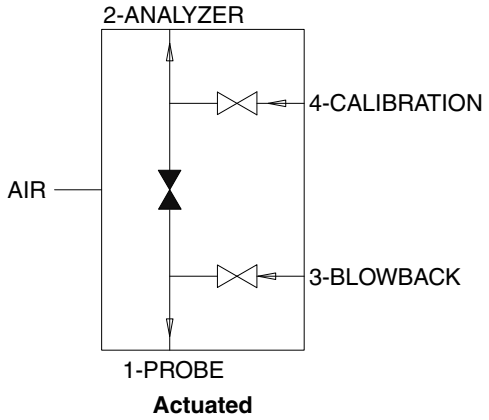
Actuation Pressure Curve

Stand-alone



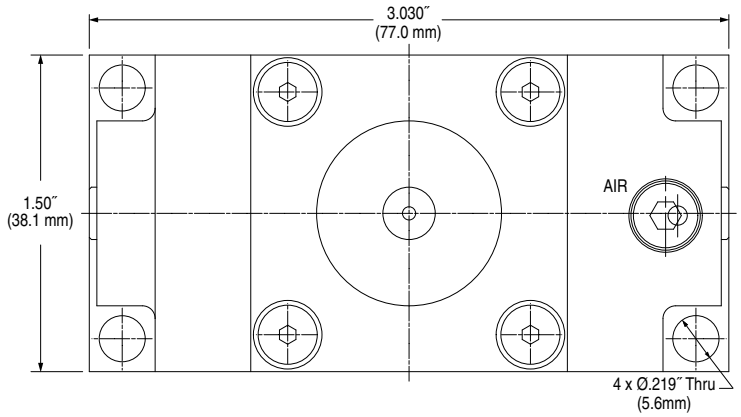
Typical Flow Schematic



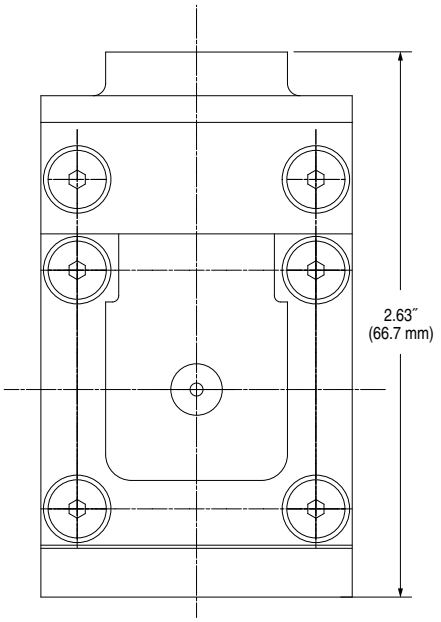


Dimensions

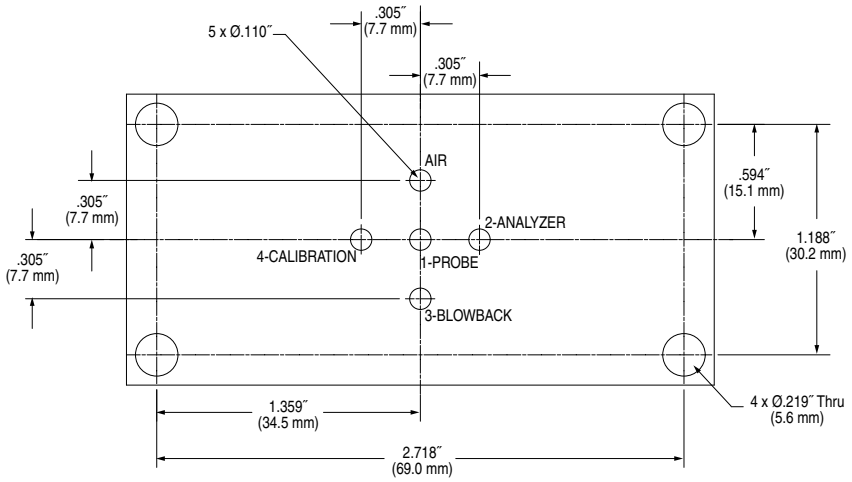
Surface Mount (ANSI/ISA-76 compliant)



Valve (with top air option) – top view



Valve – side view

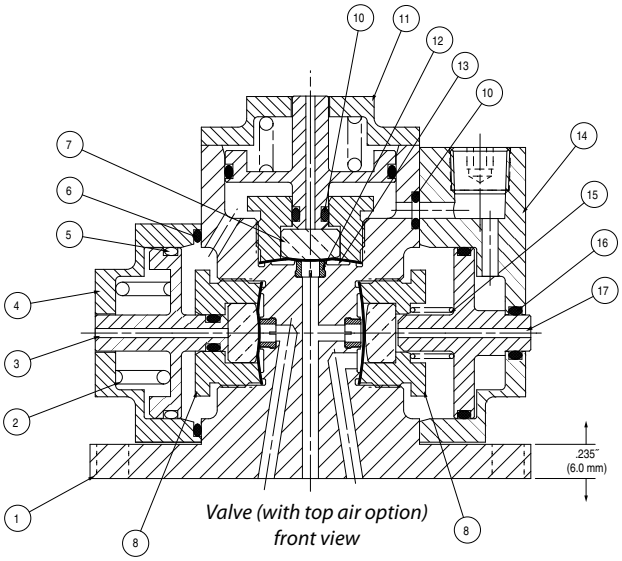


Valve – bottom view

DBC Series

Dimensions & Materials of Construction

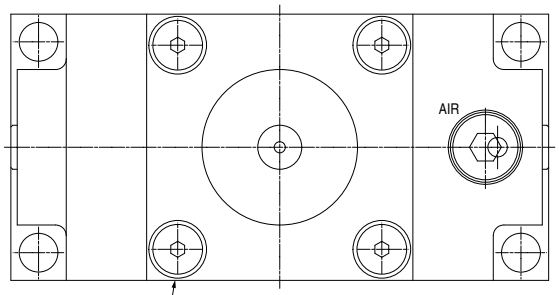
Surface Mount (ANSI/ISA-76 compliant)



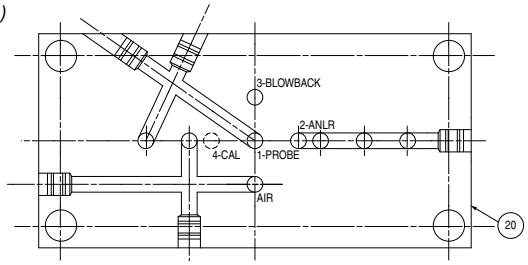
Valve (with top air option)
front view

#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® & Hastelloy® C-276
2	Spring	17-7PH stainless steel
3	Piston	316 stainless steel
4	Cap	316 stainless steel
5	O-ring	Viton®
6	O-ring	Viton®
7	Thrust plug	Brass
8	Retainer	316 stainless steel
9	SHC screw	Stainless steel
10	O-ring	Viton®
11	Cap	316 stainless steel
12	Seat*	Tefzel®, PCTFE (Kel-F®), Polyimide (Vespel®), and PEEK™
13	Diaphragm*	Elgiloy® AMS 5876
14	Cap	316 stainless steel
15	Spring	316 stainless steel
16	O-ring	Viton®
17	Piston	316 stainless steel
18	SHC screw	18-8 stainless steel
19	Hex socket plug	316 stainless steel
20	µMS³™ Adapter plate*† (ANSI/ISA-76 compliant) supplied separately	316L stainless steel
21	O-ring* – *not shown*	Viton®, Kalrez®, or Teflon®

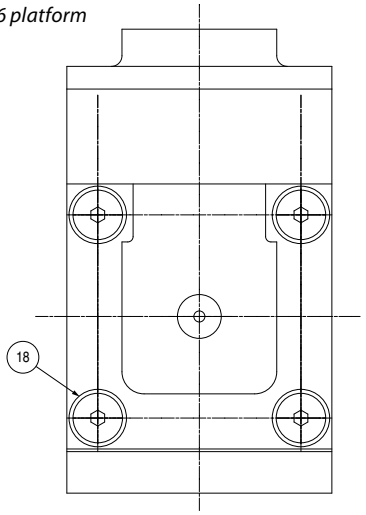
* *Wetted components*
† *Required when mounting to an ANSI/ISA-76 platform*



Valve (with top air option)
top view



Surface mount – top view
(ANSI/ISA-76 compliant)
µMS³™ Adapter plate Part # CT113559-[ ]



Valve – side view

How to Order

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

DBC – 1 F2 H D 0 01

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

CONNECTION TYPE
- **00** Surface mount only**
- **F2 ⅛″ female NPT**

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

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

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

* *Available as special (not suitable for all applications)*
** *Required for surface mount units.*

For Your Safety

It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

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Fax (909) 923-2550

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