



DBB SERIES

Double-Block-and-Bleed Diaphragm Valves



Available as:

- Stand-alone
- Multi-stream manifold
- Surface mount modular (ANSI/ISA-76 μ MS³[®] sampling system)
- Base manifold with mounting brackets

The DBB Series¹ diaphragm valve is a modular, double-block-and-bleed valve assembly. Stand-alone and multi-stream DBB Manifold assemblies can be easily integrated into an ANSI/ISA-76 compliant system with the use of a simple adapter plate. (see the μ MS³[®] Modular Substrate System CTMS3 catalog for additional information).

DBB series valves are totally free of springs, bellows, packing, and lubricants in the process wetted area. Metal-to-metal seals to atmosphere to prevent transport of undesirable elements into the flow stream.

Features & Benefits

- Integrated sweep loop in manifold
- Double-block-and-bleed on/off control
- Surface mount ANSI/ISA-76 compliant*
- Metal-to-metal seals to atmosphere to prevent leakage
- Replaceable seats for extended service life
- Wide choice of body and elastomer materials
- No dynamic o-rings, springs, or lubricant in process wetted area of valves to eliminate sample contamination
- Very low internal volume (0.16 cc)
- Pneumatic actuation from top or manifold
- Process pressure from vacuum (50 torr) to 500 psig (34 barg)
- Multiple stacked diaphragms for extended service life
- Compact valve body (3" L x 1.5" W x 2.56" H)
- Interlocking pins between valve body and manifold baseplate to ensure 100% correct reassembly (not applicable for surface mount models)

¹ Patent pending

* μ MS³[®] base adapter plate CT11358-[] required for non-CT76 manufactured surface mount systems - consult factory



Crane Instrumentation & Sampling

diaphragm valves

TECHNICAL DATA

BODY	316L stainless steel, Monel® and Hastelloy® C-276
SEATS	PCTFE or PEEK™
DIAPHRAGMS	Elgiloy® AMS 5876
ORIFICE SIZE	0.110" (2.8 mm)
FLOW CAPACITY	0.23 Cv
VALVE INTERNAL VOLUME**	0.16 cc
EXTERNAL LEAKAGE	1 × 10 ⁻⁵ cc/sec helium (inboard)
MIN. ACTUATION PRESSURE	50 psig @ 50 psig process

** Internal volume between double block valves.

Operating Temperatures

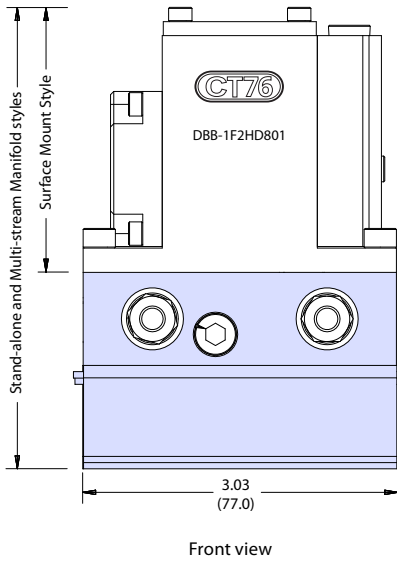
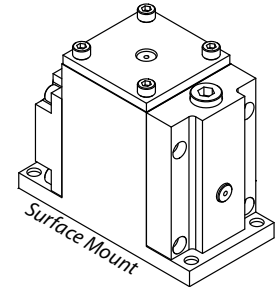
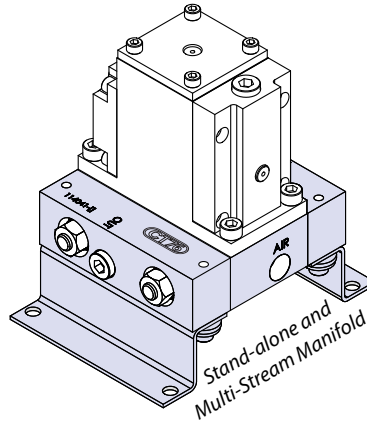
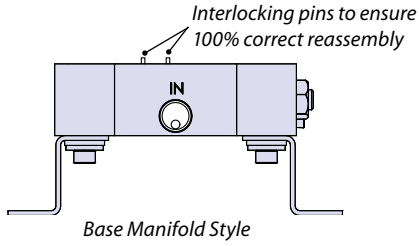
SEAT MATERIAL	TEMPERATURE	
PCTFE	-40° F to +212° F	-40° C to +100° C
PEEK™	0° F to +400° F	-18° C to +204° C

Operating Pressures

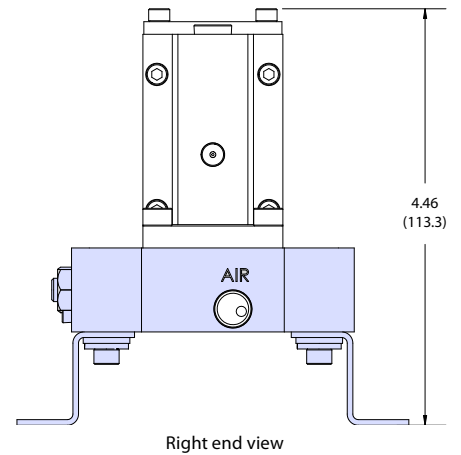
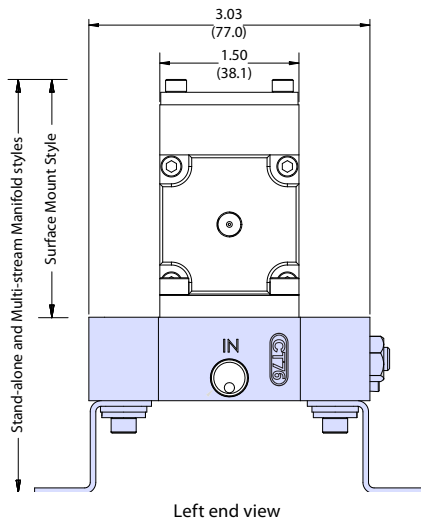
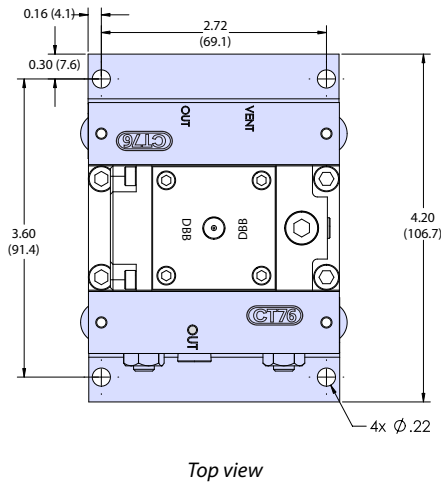
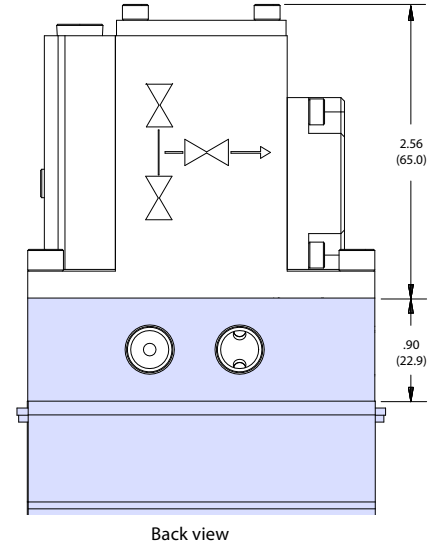
OPERATING PRESSURE	Vacuum (50 torr) to 500 psi (34 bar)
PROOF PRESSURE	2000 psig (138 barg)
BURST PRESSURE	8000 psig (552 barg)

DIMENSIONS—ALL STYLES

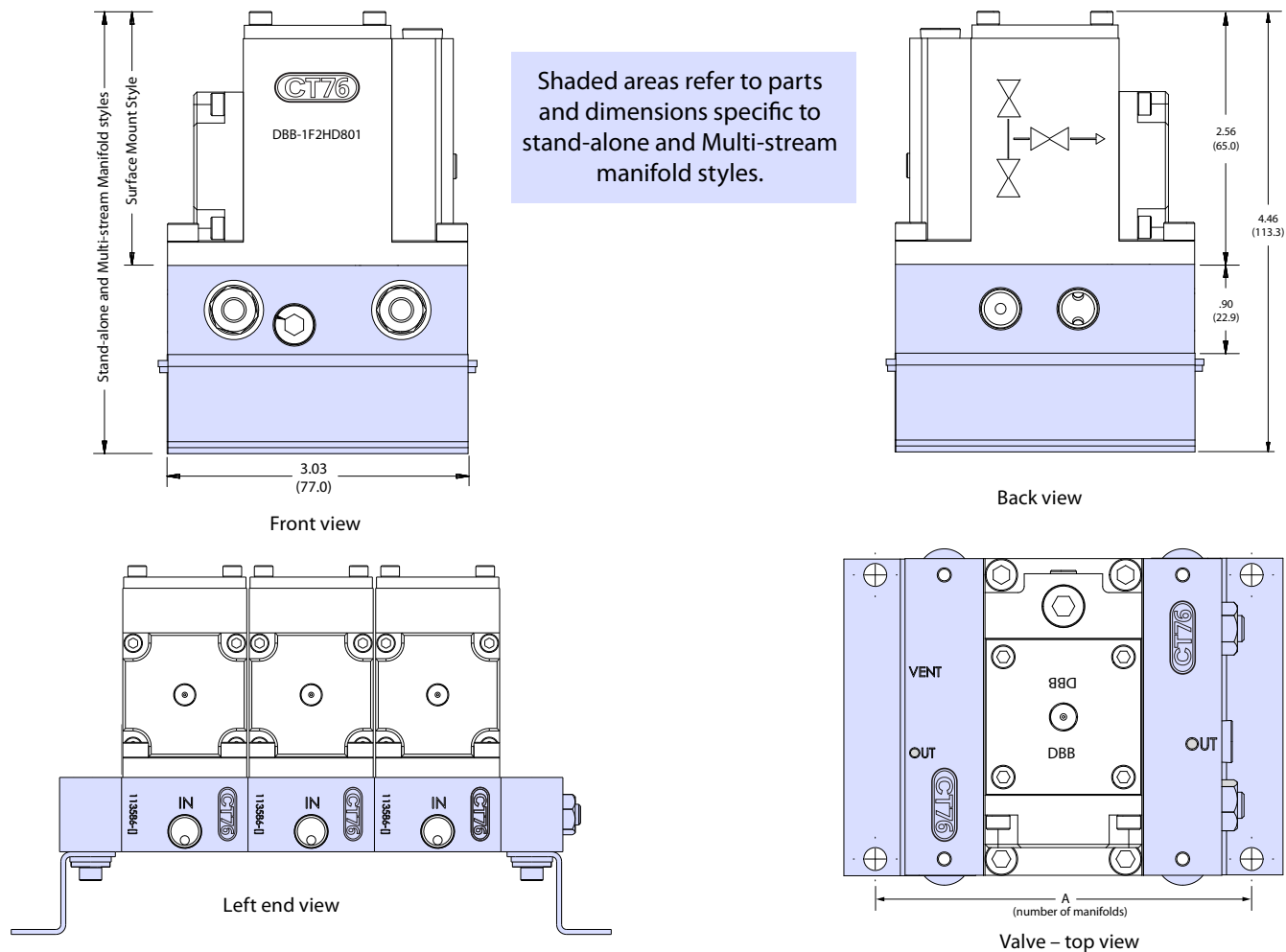
Dimensions are inches (millimeters) for reference only and are subject to change.



Shaded areas refer to parts and dimensions specific to stand-alone and Multi-stream manifold styles.



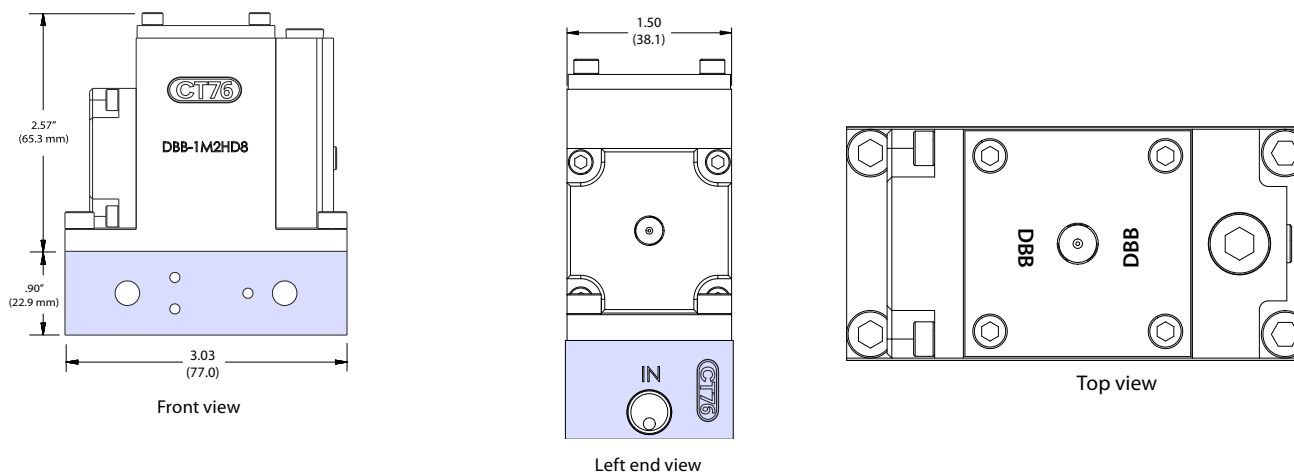
DIMENSIONS – MULTI-STREAM MANIFOLD & BASE MANIFOLD STYLES



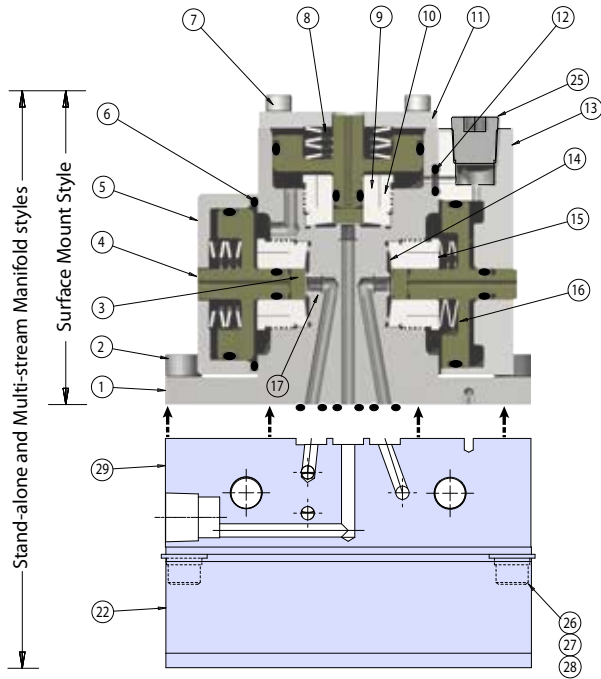
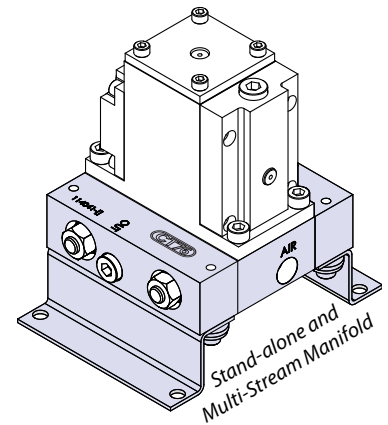
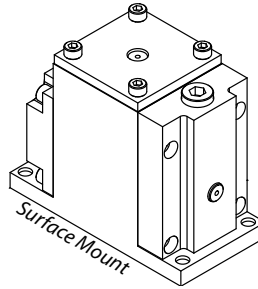
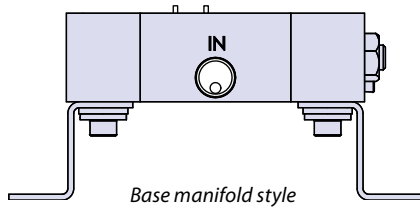
NUMBER OF MANIFOLDS		2	3	4	5	6	7	8	9	10	11	12
A	inches	5.13	6.66	8.19	9.72	11.25	12.78	14.31	15.84	17.37	18.90	20.43
	mm	130.3	169.2	208.0	246.9	285.8	324.6	363.5	402.3	441.2	480.1	518.9

DIMENSIONS – M2 EXPANSION MODULE

This module is a turn-key package for adding streams to the DBB. M2 Expansion Module includes one (1) surface mount valve, one (1) manifold baseplate, four (4) mounting screws, and seven (7) O-rings.



MATERIALS OF CONSTRUCTION-ALL STYLES



Shaded areas refer to parts and dimensions specific to stand-alone and Multi-stream manifold styles.

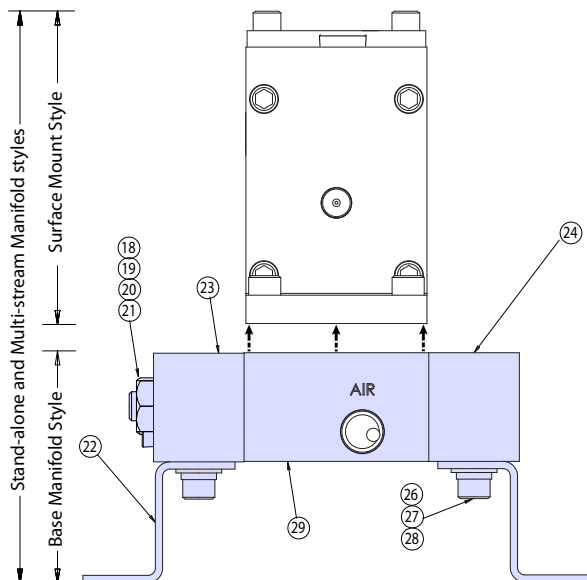
All Styles – Valve Body

#	PART	MATERIALS
1	Body*	316L stainless steel, Monel® or Hastelloy® C-276
2	10-32 x .50 screw	18-8 stainless steel
3	Thrust plug	Delrin® or PEEK™
4	N. C. Piston	Delrin® or PEEK™
5	N. C. Cap	316 stainless steel
6	O-ring	Viton®
7	6-32 x .375 screw	18-8 stainless steel
8	N. C. spring stack	316L stainless steel
9	Compression collet	316L stainless steel
10	Retainer nut	316L stainless steel
11	Top cap	316L stainless steel
12	O-ring	Viton® or Kalrez®
13	N. O. cap	316L stainless steel
14	Diaphragm*	Elgiloy®
15	N. O. spring washer	18-8 stainless steel
16	N. O. piston	Delrin® or PEEK™
17	Seat	PCTFE or PEEK™

Stand-alone, Multi-Stream Manifold, and Base Manifold styles

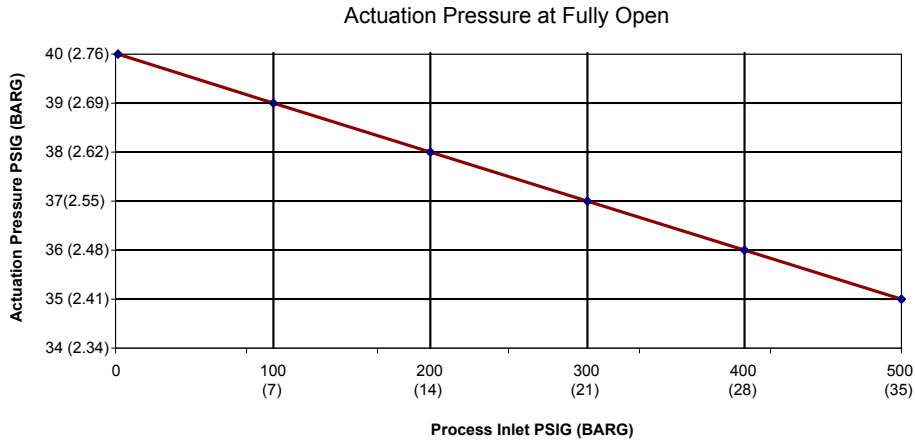
18	Threaded rod	18-8 stainless steel
19	.25" flat washer	301 stainless steel
20	.25" lock washer	18-8 stainless steel
21	.25" hex nut	18-8 stainless steel
22	Mounting bracket	316 stainless steel
23	Left end plate*	316L stainless steel, Monel® or Hastelloy® C-276
24	Right end plate*	316L stainless steel, Monel® or Hastelloy® C-276
25	Hex plug*	18-8 stainless steel
26	8-32 x .50 screw	18-8 stainless steel
27	#8 flat washer	18-8 stainless steel
28	#8 lock washer	18-8 stainless steel
29	Manifold baseplate*	316L stainless steel, Monel® or Hastelloy® C-276

* Wetted components



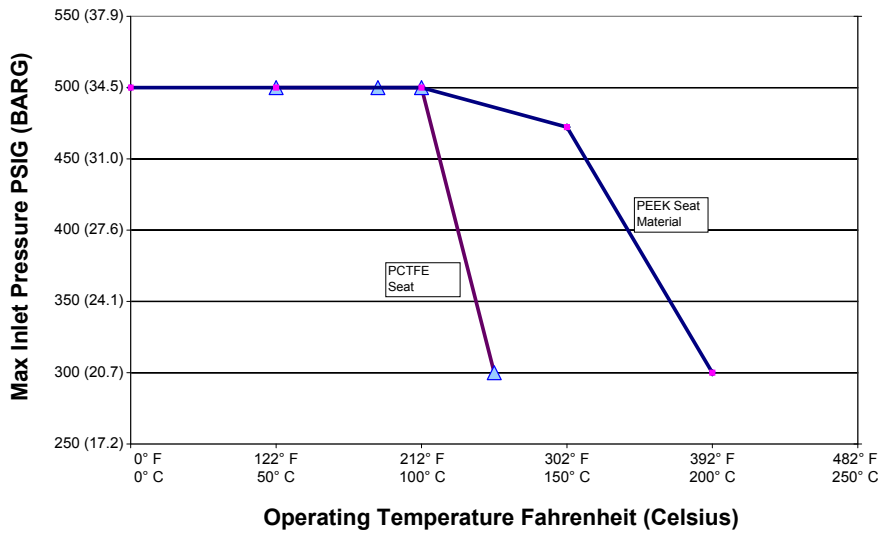
DBB SERIES

ACTUATION PRESSURE CURVE

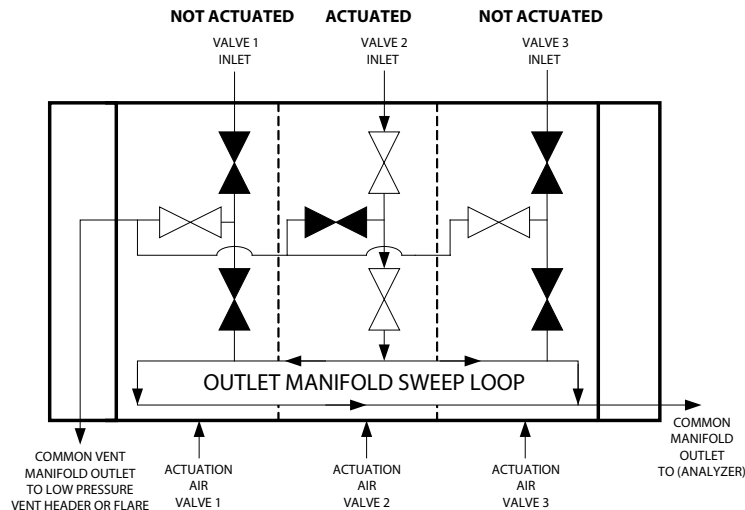


PRESSURE TEMPERATURE CURVE

Pressures in psig (barg)



TYPICAL FLOW SCHEMATICS



HOW TO ORDER

STANDARD ITEMS IN BOLD. Consult Customer Service for pricing and lead times for non-standard items. To order manifold components, see page 16.

Product Family	Material Designator	Process Connection Type	Seat Material	Process O-Ring Material	Surface Treatment	# of Streams	Description
DBB	-						Double Block and Bleed valve
	1						SST
	4						Monel
	6						Hastelloy
		00					Modular mount valve *1
		F2					1/8" FNPT process connection option
			H				Kel-F Seat
			Q				Peek Seat
				X			Surface mount valve
				D			Viton® o-rings
				K			Perfluoroelastomer (Kalrez®) o-rings
				F			PTFE o-rings *2
					0		Finish as processed
					1		Cleaned for O2
					5		Silco Steel coated
					9		Sulfinert coated
						01	1 Valve stack
						02	2 Valve stack
						03	3 Valve stack
						04	4 Valve stack
						05	5 Valve stack
						06	6 Valve stack
						07	7 Valve stack
						08	8 Valve stack
						09	9 Valve stack
						10	10 Valve stack
						11	11 Valve stack
						12	12 Valve stack

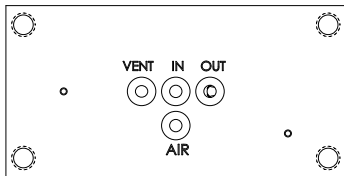
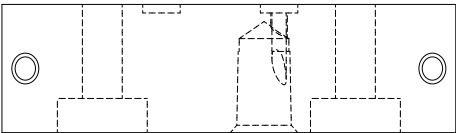
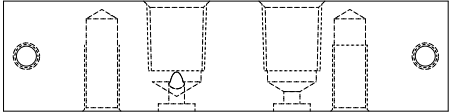
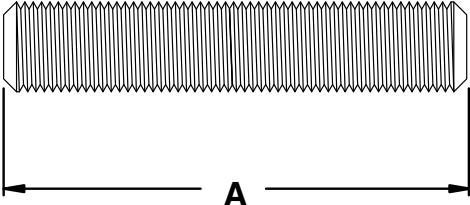




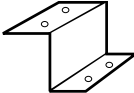
PART NUMBER EXAMPLE CONFIGURATION

Part Number	Description
DBB-1F2HD003	3 stream DBB stack with 1/8" FNPT process connection, Kel-F seats, and Viton process o-rings
DBB-100HD005	5 stream DBB stack with 1/4" tube stub connection, Kel-F seats, and Viton process o-rings
DBB-100HX0	Surface mount DBB valve with Kel-F seats, and Viton process o-rings
Note *1	The -100 part number designator is used to identify valves that will not contain the 1/8" FNPT connection for the valve. The valve can be purchased in stacks and is configured later in the part number starting with process o-ring material. If this value is anything but an X, the rest of the part number must be configured using the surface treatment as well as the # of streams. If this value is an X, the # of streams should be left blank.
Note *2	PTFE o-rings are available however over time they exhibit some element of cold flow under the pressure of sealing which can potentially lead to flow restrictions or envelope leakage. If PTFE o-rings are desired it is suggested by CT76 that the valves be placed on an o-ring replacement preventative maintenance program to help offset unplanned down time due to the sample valves.

DBB SERIES

Stand-alone Valve with Mounting Brackets

SPARE PARTS FOR BASE MANIFOLDS

IMAGE	DESCRIPTION	PART NUMBER	MATERIAL
 <p>Top view</p>	DBB Manifold baseplate	114024-[]	-1: 316L stainless steel -4: Monel® -6: Hastelloy® C-276
 <p>Top view</p>	Right end plate	114020-[]	-1: 316L stainless steel -4: Monel® -6: Hastelloy® C-276
 <p>Top view</p>	Left end plate	114019-[]	-1: 316L stainless steel -4: Monel® -6: Hastelloy® C-276
	Threaded 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, 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-[]	-50: Viton® -53: Kalrez®
	Mounting bracket	CT112609	316 stainless steel



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