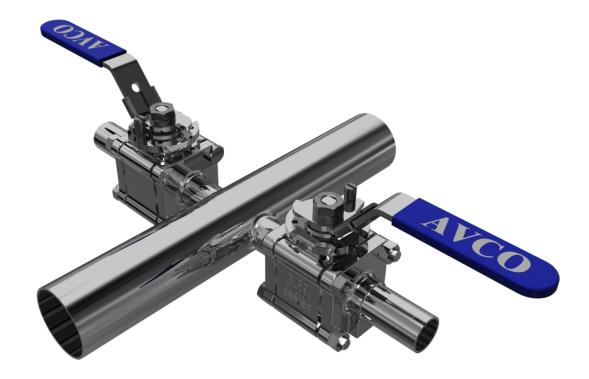


# **BALL VALVES CFOS Manifolds**



### Size

1/4" - 4" (Branch Valve) 1/4" - 12" (Main Line) 1000 WOG

### **End Connections**

Tube Butt Weld Pipe Butt Weld Female NPT Clamp Ends Face Seal Compression Fitting Vacuum Fitting

### **Materials**

316L Stainless Steel

### **Configurations**

Single Horizontal Cross (SHC)
Double Horizontal Cross (DHC)
Double Vertical Tee (DVT)
Double Horizontal Tee (DHT)

### **Features**

Mechanical Polish to 25 Ra Helium Leak Tested Locking Handles

### **Options**

Purge Ports Electropolished to 10 Ra Color Handles

### **Service Applications**

Biotech Clean Steam Cleaning Solutions Detergents Gas and Air Delivery High Purity Gases High Purity Water/Oils Pharmaceutical Vacuum Waxes

### **Applicable Standards**

ASME BPE



## **BALL VALVES CFOS Manifolds**

### **Features**

AVCO Prefabricated CFOS (Cleaned for Oxygen Service) Manifold sections are designed to reduce plant assembly costs and time whilst maintaining the demands for high quality systems. Our CFOS Manifolds can be supplied in lengths up to 24 feet and a variety of configurations to compliment the plant layout. The Manifolds are built around the popular industry proven 2100 series ball valves.

The AVCO Manifold system provides a number of benefits and features to the customer such as:

#### **Condensed Schedule**

- Parallel fabrication with plant construction
- · Reduction in on-site welding time
- · Reduction in on-site construction time
- Reduced risk of weld leakage during on-site testing
- No requirement for valve disassembly

### **Reduced Costs**

- · Significant reduction in on-site labor
- Reduced QA/QC weld inspection time
- Reduced material handling charges

### **Enhanced Quality**

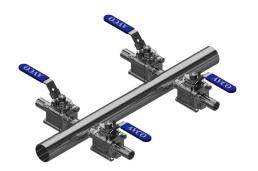
- Lower risk of metal particle contamination as on-site cutting reduced
- Manifolds are fabricated in a controlled environment
- 100% Helium leak tested to 1 x 10<sup>-7</sup> scc/sec
- QA/QC documentation provided
- Cleaned & Bagged



# BALL VALVES CFOS Manifolds



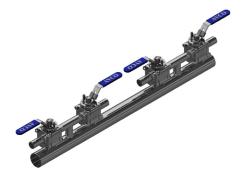
**Single Horizontal Cross (SHC)** 



**Double Horizontal Cross (DHC)** 



**Double Horizontal Tee (DHT)** 



**Double Vertical Tee (DVT)** 



# **BALL VALVES CFOS Manifolds**

### **HOW TO ORDER**

Steel CFOS   Manifold	SS SHC4		24	050	ETO		200	
DHC* - Double Horizontal Cross   DHC* - Double Horizontal Tee   DVT - Sulfation Filting With Cap   DVT - Dvalve With Quiptiness With Cap   DVT - Dvalve With Quiptiness	Series	Configu	ration	Valve Size	Valve Ends		Line Size	
DHC* - Double Horizontal Cross   DHT* - Double Horizontal Tee   DVT - TIVE   DVT - TIVE   DVT - TIVE   DVT - TIVE   DVT - DVT - TIVE   DVT - D		SHC* - Single Horizontal Cross		025 - 1/4"	ETO - Extended Tube OD	025 - 1/4	1"	
DVT - Double Horizontal Tee	Steel CFOS Manifold	DHC* - Double Horizontal Cross		038 - 3/8"	TR - Clamp Ends	038 - 3/8	3"	
# Insert number to indicate total number of valves (For example SHC4 = SHC configuration with 4 valves   100 - 1"   125 - 1 1/4"   150 - 1 1/2"   150 - 1 1/		DHT* - Double Horizontal Tee		050 - 1/2"	AL - Compression Fitting	050 - 1/2	2"	
*Insert number to indicate total number of valves (For example SHC4 = SHC configuration with 4 valves   150 - 1 1/2"   150 - 1 1 1/2"   150 - 1 1/2"   150 - 1 1 1/2"   150 -		DVT - Double Horizontal Tee		075 - 3/4"	ALC - Compression Fitting with C	ap 075 - 3/4	1"	
ber of valves (For example SHC4 = SHC configuration with 4 valves    150 - 1 1/2"					KF - Vacuum Fitting	100 - 1"		
SHC configuration with 4 valves    150 - 1 1/2"   200 - 2"   NPT - Threaded NPT   200 - 2"   250 - 2 1/2"   300 - 3"   150 - 150# Flanged   300 - 3"   400 - 4"   MF - Male Face Seal   400 - 4"   MFC - Capped Male Face Seal   500 - 5"   600 - 6"   800 - 8"   1000 - 10"   1200 - 12"   1200 -			ber of valves (For example SHC4 =		BW5 - Butt Weld Pipe, SCH 5	125 - 1 1	1/4"	
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Extended Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting ALC - Compression Fitting MF - Male Face Seal BW10 - Butt Weld Pipe, SCH 5 MF - Vacuum Fitting MF - Capped Male Face Seal BW10 - Butt Weld Pipe, SCH 5 MF - Capped Male Face Seal BW10 - Butt Weld Pipe, SCH 10 NPT - Threaded NPT SW - Socket Weld Indicate both upstream and downstream purge ports (for example X/ETC) = No upstream purge port and extended tube					BW10 - Butt Weld Pipe, SCH 10	150 - 1 1	1/2"	
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Standard Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting With Cap KF - Vacuum Fitting BWG - Sutt Weld Pipe, SCH 5 BWT - Male Face Seal BWT - Threaded NPT SW - Socket Weld Indicate both upstream and downstream purge ports (For example x/ETO = No upstream purge ports of the standard tube busteneds tube					NPT - Threaded NPT	200 - 2"		
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Butt Weld Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting ALC - Compression Fitting ALC - Compression Fitting WF - Male Face Seal MFC - Capped Male Face Seal MFC - Capped Male Face Seal Manifold Length Options RA10 - Electropolished to 10 R Blank - No Options Clated by number of valves  MF - Wale Face Seal MFC - Capped Male Face Seal BW10 - Butt Weld Pipe, SCH 5 BW10 - Butt Weld Pipe, SCH 10 NPT - Threaded NPT SW - Socket Weld Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge ports and extended tube upstream purge port and extended tube				250 - 2 1/2"	SW - Socket Weld	250 - 2 1	1/2"	
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Butt Weld Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting with Cap KF - Vacuum Fitting BWS - Butt Weld Pipe, SCH 5 BW10 - Butt Weld Pipe, SCH 5 BW10 - Butt Weld Pipe, SCH 10 BW5 - Butt Weld Pipe, SCH 10 BW6 - Butt Weld Pipe, SCH 10 BW7 - Socket Weld Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube				300 - 3"	150 - 150# Flanged	300 - 3"		
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Butt Weld Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting ALC - Compression Fitting With Cap KF - Vacuum Fitting BW5 - Butt Weld Pipe, SCH 5 MFC - Capped Male Face Seal BW10 - Butt Weld Pipe, SCH 10 X - No Purge Port  When the face Seal BW10 - Butt Weld Pipe, SCH 10 Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube of the state				400 - 4"	MF - Male Face Seal	400 - 4"		
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Butt Weld Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting with Cap KF - Vacuum Fitting BWS - Butt Weld Pipe, SCH 5 BW10 - Butt Weld Pipe, SCH 10 TR - Clampe Alc - Compression Fitting ALC - Compression Fitting With Cap MF - Male Face Seal BW10 - Butt Weld Pipe, SCH 10 TR - Clampe Alc - Compression Fitting with Cap MF - Male Face Seal BW10 - Butt Weld Pipe, SCH 10 TR - Clampe Alc - Compression Fitting with Cap MF - Male Face Seal BW10 - Butt Weld Pipe, SCH 10 Tr - Threaded NPT SW - Socket Weld Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube					MFC - Capped Male Face Seal	500 - 5"		
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Butt Weld Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting with Cap KF - Vacuum Fitting BWS - Butt Weld Pipe, SCH 5 BWY - Butt Weld Pipe, SCH 10 NPT - Threaded NPT SW - Socket Weld Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube)  X/ETO  August 1000 - 10° 1200 - 12°  Manifold Length Options RA10 - Electropolished to 10 R Blank - No Options RA10 - Electropolished to 10 R Blank - No Options						600 - 6"		
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Butt Weld Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting with Cap KF - Vacuum Fitting BW5 - Butt Weld Pipe, SCH 5 BW10 - Butt Weld Pipe, SCH 10 NPT - Threaded NPT SW - Socket Weld Indicate both upstream and downstream purge ports ( for example X/ETO = No upstream purge port and extended tube						800 - 8"		
BWO X/ETO 200  Line Ends Purge Port Manifold Length Options  BWO - Butt Weld Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting ALC - Compression Fitting WF - Male Face Seal BW5 - Butt Weld Pipe, SCH 5 BW10 - Butt Weld Pipe, SCH 10 NPT - Threaded NPT SW - Socket Weld Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube						1000 - 1	0"	
Line Ends  Purge Port  Manifold Length  Doptions  ETO - Extended Tube OD  TR - Clamp Ends  AL - Compression Fitting  ALC - Compression Fitting with Cap  KF - Vacuum Fitting  BW5 - Butt Weld Pipe, SCH 5  BW10 - Butt Weld Pipe, SCH 10  NPT - Threaded NPT  SW - Socket Weld  Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be dictated by number of valves  RA10 - Electropolished to 10 R  Blank - No Options  RA10 - Electropolished to 10 R  Blank - No Options  RA10 - Electropolished to 10 R  Blank - No Options  Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube						1200 - 1	2"	
BWO - Butt Weld Tube OD TR - Clamp Ends AL - Compression Fitting ALC - Compression Fitting ALC - Compression Fitting ALC - Compression Fitting AFF - Vacuum Fitting BWS - Butt Weld Pipe, SCH 5 BW10 - Butt Weld Pipe, SCH 10  NPT - Threaded NPT  SW - Socket Weld Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be dictated by number of valves  RA10 - Electropolished to 10 R Blank - No Options  RA10 - Electropolished to 10 R Blank - No Options  RA10 - Electropolished to 10 R Blank - No Options	В	WO	2	(/ETO	200			
TR - Clamp Ends AL - Compression Fitting with Cap  MF - Male Face Seal  BW5 - Butt Weld Pipe, SCH 5 BW10 - Butt Weld Pipe, SCH 10  NPT - Threaded NPT  SW - Socket Weld Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube	Line Ends		-			Options		
TR - Clamp Ends  AL - Compression Fitting  ALC - Compression Fitting with Cap  KF - Vacuum Fitting  BW5 - Butt Weld Pipe, SCH 5  BW10 - Butt Weld Pipe, SCH 10  NPT - Threaded NPT  SW - Socket Weld  Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube	Line	Elius	Pu	rge Port	Manifold Length	Opt	tions	
ALC - Compression Fitting ALC - Compression					Insert overall length in inches up			
MF - Male Face Seal  BW5 - Butt Weld Pipe, SCH 5  BW10 - Butt Weld Pipe, SCH 10  NPT - Threaded NPT  SW - Socket Weld  Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube	BWO - Butt Weld		ETO - Extended	Tube OD	Insert overall length in inches up to 288 inches maximum or XX if	RA10 - Electropolish		
BW5 - Butt Weld Pipe, SCH 5  BW10 - Butt Weld Pipe, SCH 10  NPT - Threaded NPT  SW - Socket Weld  Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube	BWO - Butt Weld T	Tube OD	ETO - Extended TR - Clamp Ends	Tube OD	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		
BW10 - Butt Weld Pipe, SCH 10 X - No Purge Port  NPT - Threaded NPT  SW - Socket Weld Indicate both upstream and downstream purge ports (for example X/ETO = No upstream purge port and extended tube	BWO - Butt Weld TR - Clamp Ends	Tube OD Fitting	ETO - Extended TR - Clamp Ends AL - Compressio	Tube OD s n Fitting	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		
NPT - Threaded NPT  SW - Socket Weld  Indicate both upstream and downstream purge ports ( for example X/ETO = No upstream purge port and extended tube	BWO - Butt Weld TR - Clamp Ends AL - Compression ALC - Compression	Tube OD  Fitting on Fitting with Cap	ETO - Extended TR - Clamp Ends AL - Compressio ALC - Compress	Tube OD  s n Fitting ion Fitting with Cap	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		
SW - Socket Weld Indicate both upstream and downstream purge ports ( for example X/ETO = No upstream purge port and extended tube	BWO - Butt Weld TR - Clamp Ends AL - Compression ALC - Compressio KF - Vacuum Fittin	Tube OD  Fitting on Fitting with Cap	ETO - Extended TR - Clamp Ends AL - Compressio ALC - Compress MF - Male Face	Trube OD  s in Fitting ion Fitting with Cap Seal	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		
purge ports ( for example X/ETO = No upstream purge port and extended tube	BWO - Butt Weld TR - Clamp Ends AL - Compression ALC - Compressio KF - Vacuum Fittin BW5 - Butt Weld F	Tube OD  Fitting on Fitting with Cap ng	ETO - Extended TR - Clamp Ends AL - Compressio ALC - Compress MF - Male Face : MFC - Capped M	Tube OD s n Fitting ion Fitting with Cap Seal lale Face Seal	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		
150 - 150# Flanged upstream purge port and extended tube	BWO - Butt Weld TR - Clamp Ends AL - Compression ALC - Compressio KF - Vacuum Fittin BW5 - Butt Weld F	Fitting on Fitting with Cap ng Pipe, SCH 5 Pipe, SCH 10	ETO - Extended TR - Clamp Ends AL - Compressio ALC - Compress MF - Male Face : MFC - Capped M	Tube OD s n Fitting ion Fitting with Cap Seal lale Face Seal	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		
Ob purge poir downstream	BWO - Butt Weld TR - Clamp Ends AL - Compression ALC - Compressio KF - Vacuum Fittin BW5 - Butt Weld F BW10 - Butt Weld NPT - Threaded N	Fitting on Fitting with Cap ng Pipe, SCH 5 Pipe, SCH 10	ETO - Extended TR - Clamp Ends AL - Compressio ALC - Compress MF - Male Face : MFC - Capped M X - No Purge Pol	Trube OD  an Fitting  ion Fitting with Cap  Seal  lale Face Seal  t	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		
	BWO - Butt Weld TR - Clamp Ends AL - Compression ALC - Compressio KF - Vacuum Fittin BW5 - Butt Weld F BW10 - Butt Weld NPT - Threaded N SW - Socket Weld	Fitting on Fitting with Cap ng Pipe, SCH 5 Pipe, SCH 10	ETO - Extended TR - Clamp Ends AL - Compressio ALC - Compress MF - Male Face : MFC - Capped M X - No Purge Poi	Trube OD  In Fitting In Fitting with Cap Seal It Iteram and downstream Example X/ETO = No Sort and extended tube	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		
	BWO - Butt Weld TR - Clamp Ends AL - Compression ALC - Compressio KF - Vacuum Fittin BW5 - Butt Weld F BW10 - Butt Weld NPT - Threaded N SW - Socket Weld	Fitting on Fitting with Cap ng Pipe, SCH 5 Pipe, SCH 10	ETO - Extended TR - Clamp Ends AL - Compressio ALC - Compress MF - Male Face : MFC - Capped M X - No Purge Poi	Trube OD  In Fitting In Fitting with Cap Seal It Iteram and downstream Example X/ETO = No Sort and extended tube	Insert overall length in inches up to 288 inches maximum or XX if length is unimportant and to be	RA10 - Electropolish		

### Example ordering code:

SS-SHC4-050-ETO-200-BWO-X/ETO-200 = 2" Tube OD single horizontal cross manifold with square cut weld ends, 200 inches long, four 1/2" extended tube OD ball valves with no upstream purge port and an extended tube OD downstream purge port, no options

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