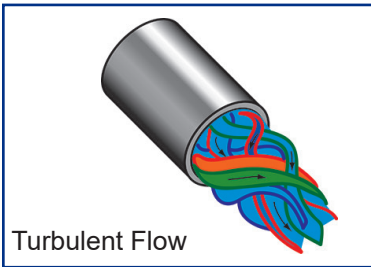


MANIFOLDS CATALOG

- ◆ *Aluminum*
- ◆ *Stainless Steel*
- ◆ *Duoflow[®] Aluminum*
- ◆ *High Pressure and Temperature Stainless Steel*
- ◆ *Custom Assembly Specifications*



SMARTFLOW® Tools of the Trade

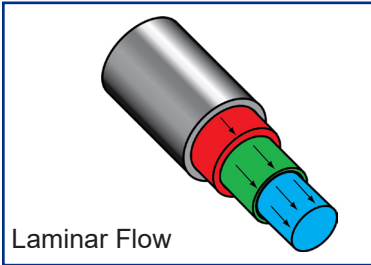


Turbulent Flow Basics

Turbulent water flow is much more efficient at removing heat in a cooling system than water flowing under laminar conditions. Once turbulent flow is achieved, increasing the flow rate does not significantly improve the cooling rate of the system.

In molding applications, many mold operators try to maximize the flow of water through their cooling systems to ensure turbulent flow. Doing so increases energy costs for pumping more water than necessary through the system. This practice may also limit the amount of cooling water available for cooling additional molds on the same cooling systems circuit.

By insuring turbulent flow using FCI (Fluid Characteristic Indication) Technology, less water can be used in the molding process, saving precious resources.



Try our on-line Turbulent Flow Calculator:

www.SMARTFLOW-USA.com/turbulent-flow-rate-calculator

Turbulent Flow Reference Charts

Approximate Minimum Flow required for turbulence in drilled water passages based on Reynolds Number of 4000

Passage Diameter	Nominal Pipe Size	Minimum Flow in GPM by Temperature		
		40°F	120°F	200°F
.44"	1/4"	0.88	0.31	0.18
.59"	3/8"	1.16	0.42	0.24
.72"	1/2"	1.41	0.51	0.29

Passage Diameter	Nominal Pipe Size	Minimum Flow in LPM by Temperature		
		4°C	49°C	93°C
11mm	1/4"	3.3	1.2	0.7
15mm	3/8"	4.4	1.6	0.9
18mm	1/2"	5.3	1.9	1.0

Expected Rates of Flow

60°F (15°C) Water through Schedule 40 Pipe

Nominal Pipe Size	Flow Rate	
	Gallons per Minute	Liters per Minute
1/4"	3	11
3/8"	6	23
1/2"	10	38
3/4"	15	57
1"	25	95
1-1/4"	45	171
1-1/2"	60	228
2"	100	380
3"	230	870

Sizing Up Manifolds

The best manifold design provides as much water flowing through all ports as flowing through the end.

of Ports x Flow Rate ≤ Flow Rate of the Manifold End

Using the tables on this page, it is possible to choose a well-balanced manifold. If you are pushing 4 gallons per minute through your ports, you will need 3/8" minimum port size. If you have 6 cooling circuits to feed, you need 24 gallons per minute (6 ports x 4 GPM) flowing into your manifold from a 1" connection on the end.

However, if you are optimizing water using flow regulators to balance each circuit while providing Turbulent Flow, you can supply more ports with a 1" manifold. Thereby saving cooling capacity for other presses down the line. We recommend a 2x safety factor when figuring Turbulent Flow Rate.

Burger & Brown Engineering recommends that flow regulators are installed on the return side of a cooling water loop for best performance.

www.SMARTFLOW-USA.com/turbulent-flow-rate-calculator

SMARTFLOW® Aluminum Manifolds

General Description

Smartflow aluminum manifolds are constructed from unique extruded material, precision machined, then anodized for corrosion protection. Many manifold sizes are stocked, however custom manifolds can be made to your specifications.

Standard red and blue colors denote supply and return for cooling water lines. 3/4", 1", and 1-1/2" manifolds are equipped with dovetail feature, pre-drilled mounting holes, and bolts for ease in pairing and installation. Each manifold with NPT threads includes one bronze end plug.

Features and Benefits

- ◆ **One-Piece Extruded Aluminum Construction** is lightweight with long-lasting durability.
- ◆ **Quality Anodizing** protects the manifolds from corrosion and signifies manifold function.
- ◆ **Different Port Size Options** provide connection flexibility.
- ◆ **Bronze End Plug** is included for customer convenience (NPT only).
- ◆ **Pre-Drilled Mounting Holes** make the manifolds ready to install.
- ◆ **3/4 thru 1-1/2 manifolds dovetail together** for ease in mounting.
- ◆ **Common Manifold Configurations Stocked** to provide quick delivery.

Specifications

Material.....Aluminum (6000 Series)
 Max. Pressure 150 psi (10 bar)
 Max. Temperature..... 300°F (149°C)
 Anodizing..... Mil Spec Type II Class 2
 Standard Colors.....Red, Blue
 Optional Colors..... Black, Green, Gold, Clear

Assembly

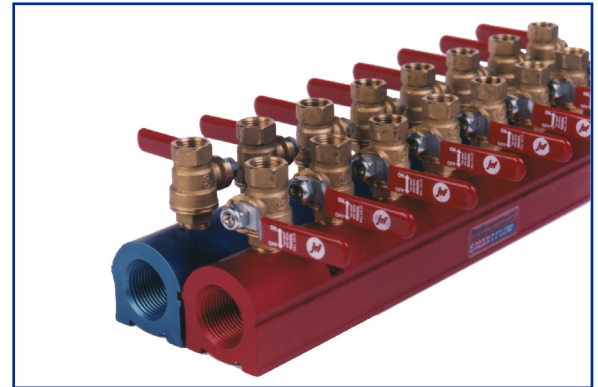
Smartflow aluminum manifolds are the platform for control of cooling water lines in most types of industrial process cooling. Injection molding is one example and our particular area of expertise. Flowmeters, Flow Regulators, Ball Valves, Quick Disconnect Fittings and more can be added to the manifolds to improve functionality and process control. See page 12 for ordering information.

Custom Manifolds

Special ports sizes and locations are possible with Smartflow aluminum manifolds. All fabrication is done from extruded material at our factory in Kansas City. Contact your distributor for price and delivery on custom manifolds.

3D CAD Data is available on demand at
www.MANIFOLDBUILDER.com

ManifoldBuilder



SMARTFLOW[®] 3/4" Aluminum Manifolds

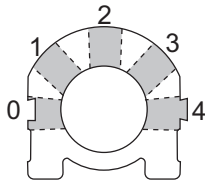
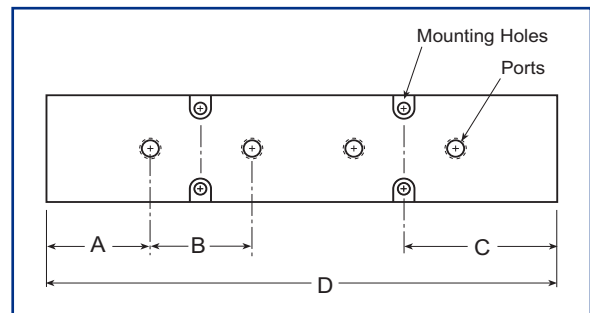
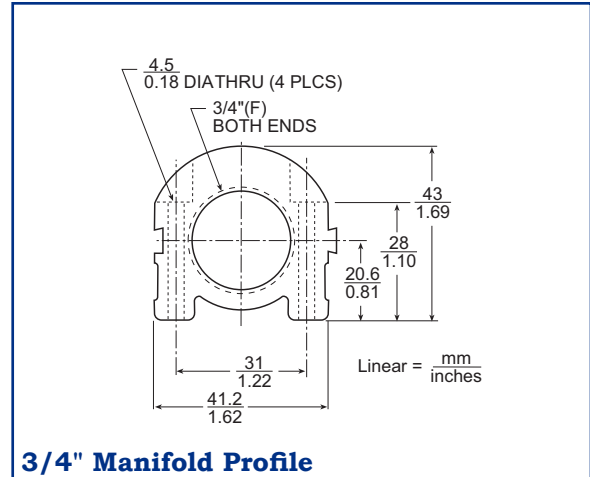
Model Number (manifold only, see page 12 to add port valves, quick connects and flowmeters)

6SA - 8 - 3 - 2 - Y

Supply Threads	NPT	6SA	Color	Y	Red
	British Parallel	6BSA		Z	Blue
	British Taper	6TSA			

Number of Ports	4 to 16	Port Locations	0	Left Side
			1	Left 45°
Port Sizes	4 to 16	Port Locations	2	Center
			3	Right 45°
			4	Right Side

1/4"NPT	2
1/4"BSPP	2B
1/4"BSPT	2T
3/8"NPT	3
3/8"BSPP	3B
3/8"BSPT	3T

Stocked 3/4" Manifolds										
Number of Ports	1/4" Ports A = 38.1mm/1.5", B = 38.1mm/1.5" C = 57.2mm/2.25"					3/8" Ports A = 38.1mm/1.5", B = 50.8mm/2.0" C = 63.5mm/2.5"				
	model number	length (D)		weight each		model number	length (D)		weight each	
		mm	in.	kg	lbs.		mm	in.	kg	lbs.
4	6SA-4-2-2	190	7.5	0.5	1.1	6SA-4-3-2	229	9	0.6	1.4
6	6SA-6-2-2	267	10.5	0.7	1.6	6SA-6-3-2	330	13	0.9	2.0
8	6SA-8-2-2	343	13.5	0.9	2.0	6SA-8-3-2	432	17	1.2	2.6

Contact your distributor for custom manifolds.

Design and specifications are subject to change without notice. See page 19 for manifold testing and use.

Galvanic corrosion may occur in anodized aluminum components when installed in electrical connection with more noble metals such as copper. Use appropriate installation practices.

SMARTFLOW® 1" Aluminum Manifolds

Model Number (manifold only, see page 12 to add port valves, quick connects and flowmeters)

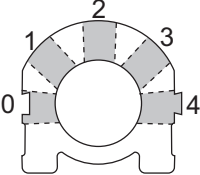
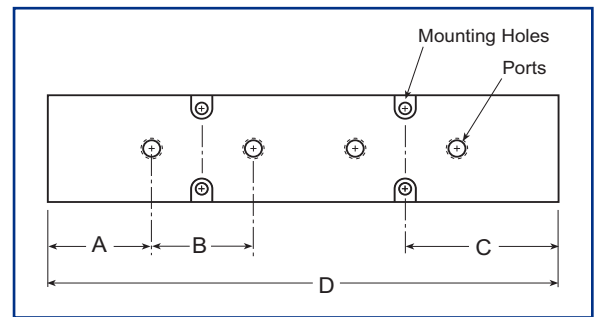
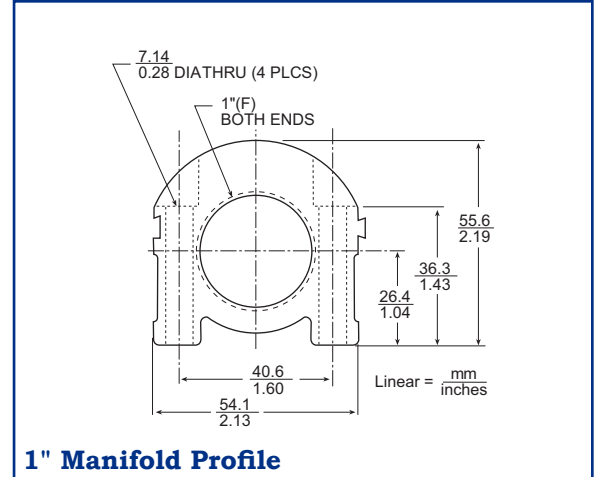
8SA - 16 - 3 - 2 - Y

Supply Threads	8SA	Number of Ports	4 to 16	Port Locations	Y Red
	8BSA				Z Blue
	8TSA				

NPT
British Parallel
British Taper

Port Sizes	1/4"NPT	2
	1/4"BSPP	2B
	1/4"BSPT	2T
	3/8"NPT	3
	3/8"BSPP	3B
	3/8"BSPT	3T
1/2"NPT	4	
1/2"BSPP	4B	
1/2"BSPT	4T	

0 Left Side
1 Left 45°
2 Center
3 Right 45°
4 Right Side

Stocked 1" Manifolds										
Number of Ports	1/4" Ports A = 38.1mm/1.5", B = 38.1mm/1.5" C = 57.2mm/2.25"					3/8" Ports A = 38.1mm/1.5", B = 50.8mm/2.0" C = 63.5mm/2.5"				
	model number	length (D)		weight each		model number	length (D)		weight each	
		mm	in.	kg	lbs.		mm	in.	kg	lbs.
4	8SA-4-2-2	190	7.5	0.9	2.0	8SA-4-3-2	229	9	1.1	2.4
6	8SA-6-2-2	267	10.5	1.3	2.8	8SA-6-3-2	330	13	1.6	3.5
8	8SA-8-2-2	343	13.5	1.6	3.6	8SA-8-3-2	432	17	2.1	4.6
10	8SA-10-2-2	419	16.5	2.0	4.5	8SA-10-3-2	533	21	2.6	5.7
12	8SA-12-2-2	495	19.5	2.4	5.3	8SA-12-3-2	635	25	3.1	6.8
16	8SA-16-2-2	648	25.5	3.1	6.9	8SA-16-3-2	838	33	4.0	8.9

Contact your distributor for custom manifolds.

Design and specifications are subject to change without notice. See page 19 for manifold testing and use.

Galvanic corrosion may occur in anodized aluminum components when installed in electrical connection with more noble metals such as copper. Use appropriate installation practices.

SMARTFLOW[®] 1-1/2" Aluminum Manifolds

Model Number (manifold only, see page 12 to add port valves, quick connects and flowmeters)

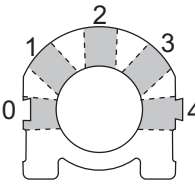
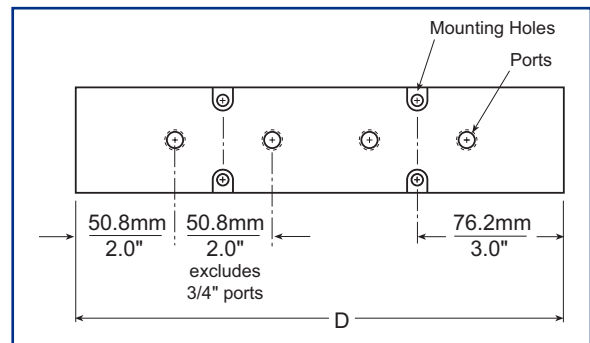
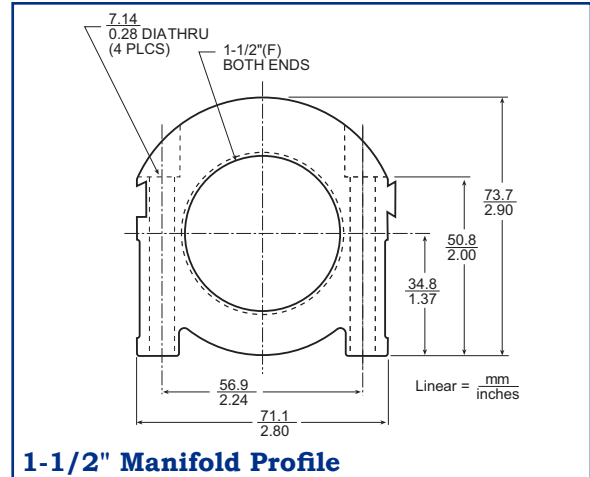
12SA - 16 - 4 - 2 - Y

Supply Threads	12SA	4 to 16	Port Locations	Y Red
	12BSA			Z Blue
NPT	12TSA			
British Parallel				
British Taper				

Port Sizes

3/8"NPT	3
3/8"BSPP	3B
3/8"BSPT	3T
1/2"NPT	4
1/2"BSPP	4B
1/2"BSPT	4T
*3/4"NPT	6
*3/4"BSPP	6B
*3/4"BSPT	6T

*76.2mm/3" port center spacing

Stocked 1-1/2" Manifolds					
Number of Ports	1/2" Ports				
	model number	length (D)		weight each	
		mm	in.	kg	lbs.
4	12SA-4-4-2	254	10	2.0	4.4
6	12SA-6-4-2	356	14	2.8	6.2
8	12SA-8-4-2	457	18	3.6	7.9
10	12SA-10-4-2	559	22	4.4	9.7
12	12SA-12-4-2	660	26	5.1	11.4
16	12SA-16-4-2	864	34	6.7	15.0

Contact your distributor for custom manifolds.

Design and specifications are subject to change without notice. See page 19 for manifold testing and use.

Galvanic corrosion may occur in anodized aluminum components when installed in electrical connection with more noble metals such as copper. Use appropriate installation practices.

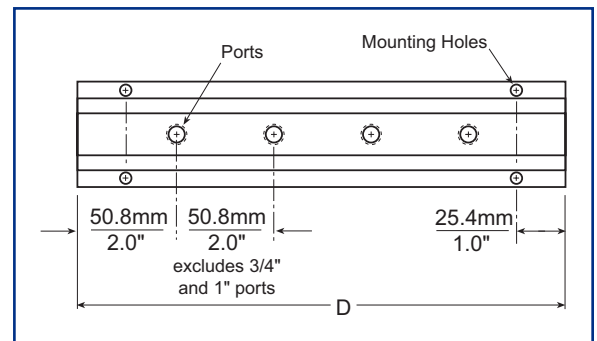
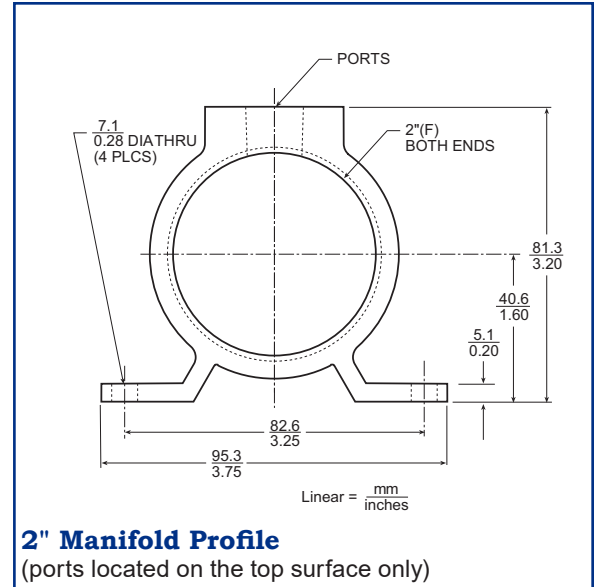
SMARTFLOW[®] 2" Aluminum Manifolds

Model Number (manifold only, see page 12 to add port valves, quick connects and flowmeters)

16SA - 16 - 4 - 2 - Y

Supply Threads	16SA 16BSA 16TSA	Color	Y Red Z Blue
NPT British Parallel British Taper			
Number of Ports	4 to 16	Port Sizes	
		4 1/2"NPT	
		4B 1/2"BSPP	
		4T 1/2"BSPT	
		6 *3/4"NPT	
		6B *3/4"BSPP	
		6T *3/4"BSPT	
		8 *1"NPT	
		8B *1"BSPP	
		8T *1"BSPT	

*76.2mm/3" port center spacing



Stocked 2" Manifolds					
Number of Ports	model number	1/2" Ports		weight each	
		length (D)		kg	lbs.
		mm	in.		
4	16SA-4-4-2	254	10	1.3	2.9
6	16SA-6-4-2	356	14	1.8	4.1
8	16SA-8-4-2	457	18	2.4	5.2
12	16SA-12-4-2	660	26	3.4	7.5
16	16SA-16-4-2	864	34	4.5	9.9

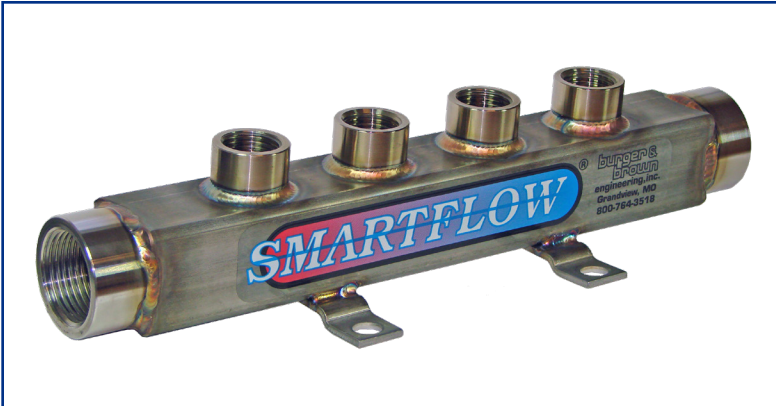
Contact your distributor for custom manifolds.

Design and specifications are subject to change without notice. See page 19 for manifold testing and use.

Galvanic corrosion may occur in anodized aluminum components when installed in electrical connection with more noble metals such as copper. Use appropriate installation practices.



Stainless Steel Manifolds with Conventional Ports



General Description

Smartflow stainless steel manifolds are formed and welded from 304 stainless steel. The manifolds are 100% leak tested for quality assurance before shipping.

Smartflow stainless steel manifolds are excellent for high-flow applications where chemical compatibility and corrosion-resistance are important. Manifold bodies are made from 1-1/2" or 2" square tube to allow maximum flow. Custom modifications are easily handled to provide the exact configuration you need.

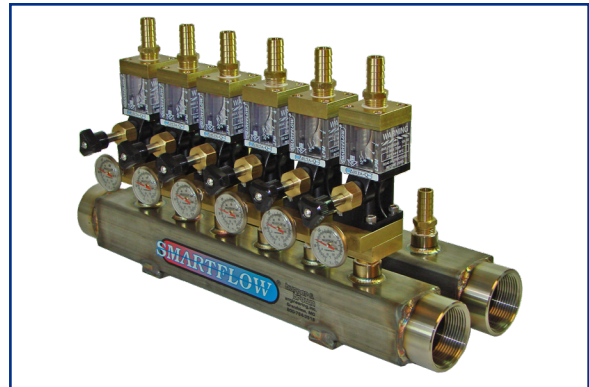
Model Number

	8	SS	- 16	- 2	- 2	- A
Supply Threads						Port Sizes
1"NPT	8					2 1/4"NPT
1"BSPP	8B					2B 1/4"BSPP
1-1/2"NPT	12					3 3/8"NPT
1-1/2"BSPP	12B					3B 3/8"BSPP
						4 1/2"NPT
						4B 1/2"BSPP
Manifold Styles						6 *3/4"NPT
Single		SS				6B *3/4"BSPP
Parallel		PSS				
						*76.2mm/3.0" port spacing
			4	Total Number of Ports		
			to			
			32			

Design and specifications are subject to change without notice. See page 19 for manifold testing and use.

Specifications

Material..... 304 Stainless Steel
 Temperature Rating..... up to 250°F (121°C)
Maximum Working Pressure Ratings
 Gas (air, inert gas)..... 125 psi
 Liquid (oil, water, benign fluids)..... 250 psi



Assembly

Smartflow stainless steel manifolds are the platform for control of cooling water lines in many types of industrial process cooling. Flowmeters, Flow Regulators, Ball Valves, Quick Disconnect Fittings and more can be added to the manifolds to improve functionality and process control. See page 12 for ordering information.

Flowmeters and flow regulators are customarily assembled onto one side of parallel manifolds with flow direction into the return side of the manifold.

Manifold Builder

On-Line Part Number Specification Assistance

3D Native CAD files for manifolds and assemblies are available for download 24/7 at

www.manifoldbuilder.com

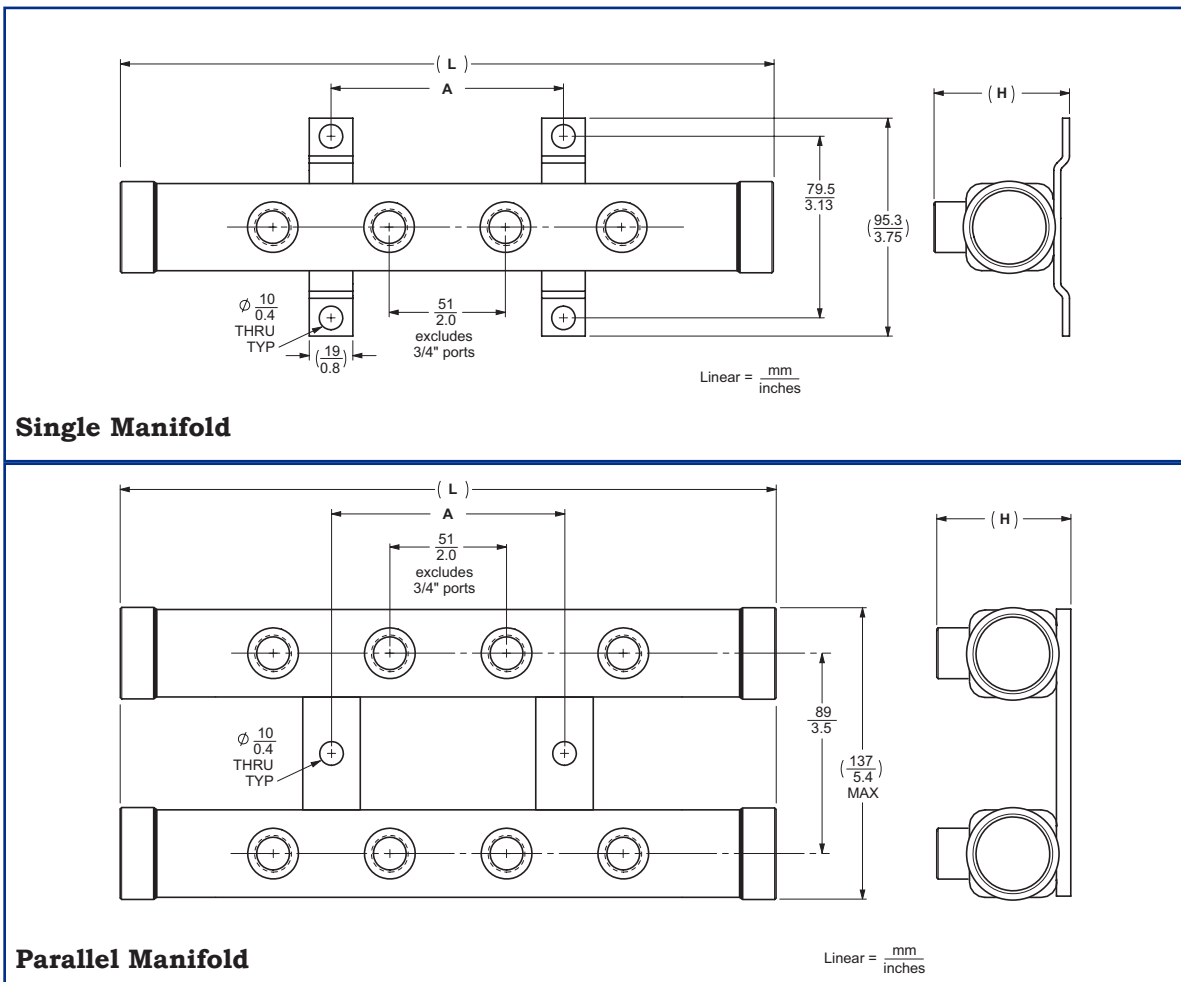
Contact your distributor for custom manifolds.

SMARTFLOW[®] Stainless Steel Manifolds with Conventional Ports

Model Numbers and Dimensions (3/8" & 1/2" ports only)

	Single Manifolds	Parallel Manifolds	Dimension A	Dimension L	Dimension H
1" Inlet	8SS - 4 - □ - 2 - A	8PSS - 8 - □ - 2 - A	102mm / 4"	295mm / 11.62"	64mm 2.5"max.
	8SS - 6 - □ - 2 - A	8PSS - 12 - □ - 2 - A	203mm / 8"	397mm / 15.62"	
	8SS - 8 - □ - 2 - A	8PSS - 16 - □ - 2 - A	305mm / 12"	498mm / 19.62"	
	8SS - 10 - □ - 2 - A	8PSS - 20 - □ - 2 - A	406mm / 16"	600mm / 23.62"	
	8SS - 12 - □ - 2 - A	8PSS - 24 - □ - 2 - A	508mm / 20"	702mm / 27.62"	
	8SS - 14 - □ - 2 - A	8PSS - 28 - □ - 2 - A	610mm / 24"	803mm / 31.62"	
	8SS - 16 - □ - 2 - A	8PSS - 32 - □ - 2 - A	711mm / 28"	905mm / 35.62"	
1-1/2" Inlet	12SS - 4 - □ - 2 - A	12PSS - 8 - □ - 2 - A	102mm / 4"	308mm / 12.13"	76mm 3"max.
	12SS - 6 - □ - 2 - A	12PSS - 12 - □ - 2 - A	203mm / 8"	410mm / 16.13"	
	12SS - 8 - □ - 2 - A	12PSS - 16 - □ - 2 - A	305mm / 12"	511mm / 20.13"	
	12SS - 10 - □ - 2 - A	12PSS - 20 - □ - 2 - A	406mm / 16"	613mm / 24.13"	
	12SS - 12 - □ - 2 - A	12PSS - 24 - □ - 2 - A	508mm / 20"	715mm / 28.13"	
	12SS - 14 - □ - 2 - A	12PSS - 28 - □ - 2 - A	610mm / 24"	816mm / 32.13"	
	12SS - 16 - □ - 2 - A	12PSS - 32 - □ - 2 - A	711mm / 28"	918mm / 36.13"	

□ = port thread size [3 = 3/8"NPT(F) or 4 = 1/2"NPT(F)]
3/4" ports require special consideration. Contact the factory for dimensions.



Dimensions shown are for manifolds with NPT threads only. Contact the factory for manifold dimensions with BSPP threads.

SMARTFLOW[®] Stainless Steel Manifolds with Low Profile Ports (NPT only)



Specifications

Material..... 304 Stainless Steel
 Temperature Rating up to 250°F (121°C)
Maximum Working Pressure Ratings
 Gas (air, inert gas)..... 125 psi
 Liquid (oil, water, benign fluids)..... 250 psi



General Description

Smartflow stainless steel manifolds are formed and welded from 304 stainless steel. The manifolds are 100% leak tested for quality assurance before shipping. Stainless steel manifolds with low profile ports offer an economical alternative to our conventional port manifolds.

Smartflow stainless steel manifolds are excellent for high-flow applications where chemical compatibility and corrosion-resistance are important. Manifold bodies are made from 1-1/2" or 2" square tube to allow maximum flow. Custom modifications are easily handled to provide the exact configuration you need.

Assembly

Smartflow stainless steel manifolds are the platform for control of cooling water lines in many types of industrial process cooling. Flowmeters, Flow Regulators, Ball Valves, Quick Disconnect Fittings and more can be added to the manifolds to improve functionality and process control. See page 12 for ordering information.

Flowmeters and flow regulators are customarily assembled onto one side of parallel manifolds with flow direction into the return side of the manifold.

Model Number

	8	SL	-	16	-	2	-	2	-	A
Supply Threads										Port Sizes
1"NPT	8									3 3/8"NPT
1-1/2"NPT	12									4 1/2"NPT
Manifold Styles										Total Number of Ports
Single		SL				4				to
Parallel		PSL				32				

ManifoldBuilder

On-Line Part Number Specification Assistance

3D Native CAD files for manifolds and assemblies are available for download 24/7 at

www.manifoldbuilder.com

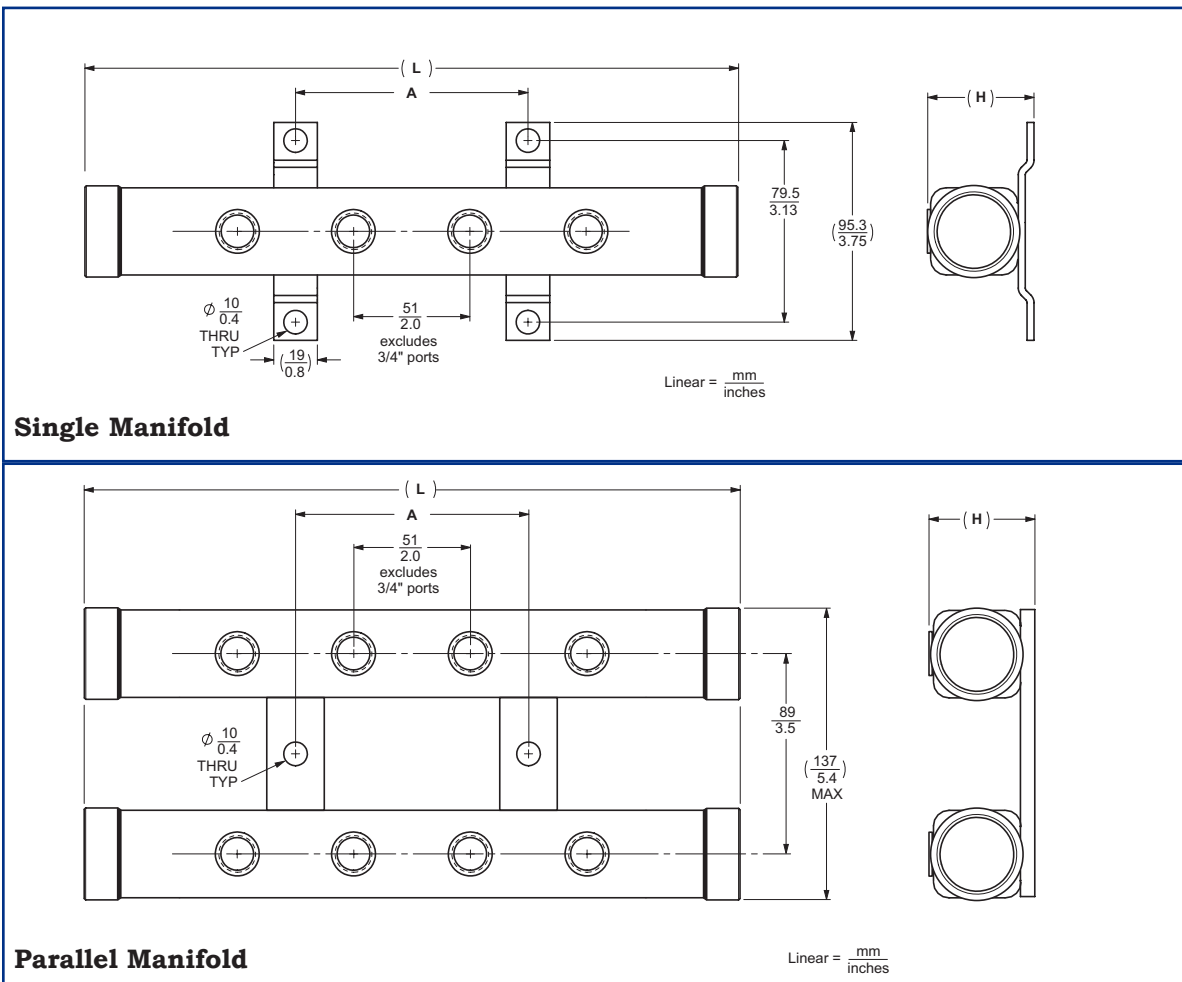
Contact your distributor for custom manifolds.

Design and specifications are subject to change without notice. See page 19 for manifold testing and use.

SMARTFLOW® *Stainless Steel Manifolds with Low Profile Ports (NPT only)*

Model Numbers and Dimensions (3/8" & 1/2" ports only)					
	Single Manifolds	Parallel Manifolds	Dimension A	Dimension L	Dimension H
1" Inlet	8SL - 4 - □ - 2 - A	8PSL - 8 - □ - 2 - A	102mm / 4"	295mm / 11.62"	51mm 2"max.
	8SL - 6 - □ - 2 - A	8PSL - 12 - □ - 2 - A	203mm / 8"	397mm / 15.62"	
	8SL - 8 - □ - 2 - A	8PSL - 16 - □ - 2 - A	305mm / 12"	498mm / 19.62"	
	8SL - 10 - □ - 2 - A	8PSL - 20 - □ - 2 - A	406mm / 16"	600mm / 23.62"	
	8SL - 12 - □ - 2 - A	8PSL - 24 - □ - 2 - A	508mm / 20"	702mm / 27.62"	
	8SL - 14 - □ - 2 - A	8PSL - 28 - □ - 2 - A	610mm / 24"	803mm / 31.62"	
	8SL - 16 - □ - 2 - A	8PSL - 32 - □ - 2 - A	711mm / 28"	905mm / 35.62"	
1-1/2" Inlet	12SL - 4 - □ - 2 - A	12PSL - 8 - □ - 2 - A	102mm / 4"	308mm / 12.13"	64mm 2.5"max.
	12SL - 6 - □ - 2 - A	12PSL - 12 - □ - 2 - A	203mm / 8"	410mm / 16.13"	
	12SL - 8 - □ - 2 - A	12PSL - 16 - □ - 2 - A	305mm / 12"	511mm / 20.13"	
	12SL - 10 - □ - 2 - A	12PSL - 20 - □ - 2 - A	406mm / 16"	613mm / 24.13"	
	12SL - 12 - □ - 2 - A	12PSL - 24 - □ - 2 - A	508mm / 20"	715mm / 28.13"	
	12SL - 14 - □ - 2 - A	12PSL - 28 - □ - 2 - A	610mm / 24"	816mm / 32.13"	
	12SL - 16 - □ - 2 - A	12PSL - 32 - □ - 2 - A	711mm / 28"	918mm / 36.13"	

□ = port thread size [3 = 3/8"NPT(F) or 4 = 1/2"NPT(F)]



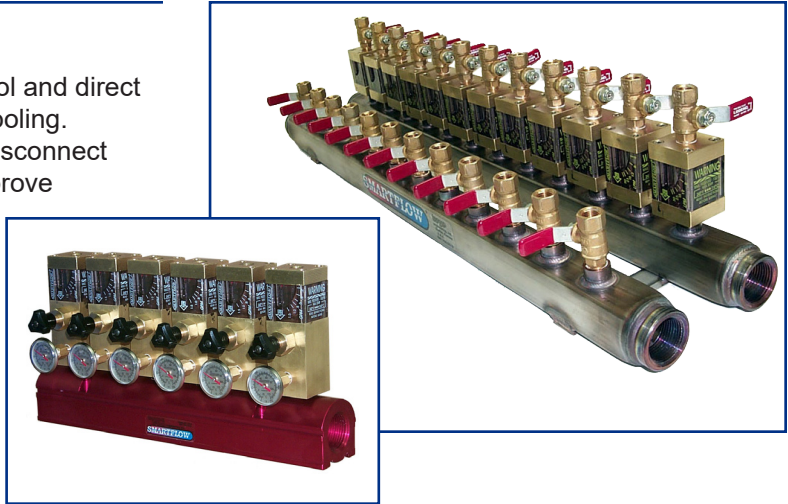
SMARTFLOW® Aluminum and Stainless Steel Manifold Assemblies

Assembly Specification

The Smartflow manifold line is the platform to control and direct cooling water in many types of industrial process cooling. Flowmeters, Flow Regulators, Ball Valves, Quick Disconnect Fittings and more can be added to manifolds to improve functionality and process control. Individual cooling lines can be accurately controlled according to the demands of each circuit.

Parallel Stainless Steel Manifold Assemblies are built with flowmeters on one half of the manifold pair only. Contact the factory if alternate configuration is needed.

Burger & Brown Engineering recommends placing flowmeters and regulators on the return side of the cooling loop for best performance.



Model Number

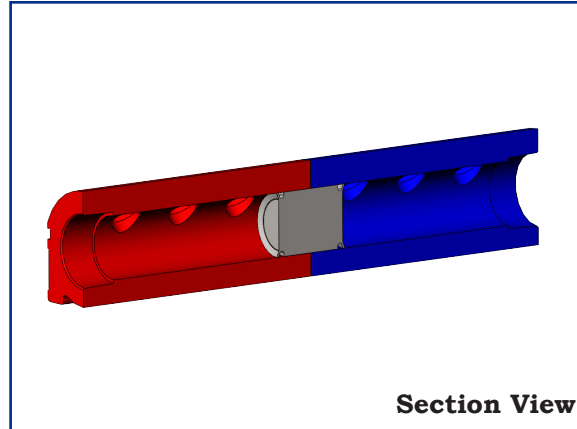
Manifold P/N	8SA - 8 - 3 - 2 - Y - F3-A-80 - B3Q3 - R	
	Aluminum or Stainless Steel Manifold Model Number from Pages 4 - 11	
	*Flowmeter/Regulator installed on each port of the manifold	
No additional flowmeter/regulator	NA	
Mechanical Flowmeter	F	
Brass Flow Regulator	FR	
Delta-Q Precision Flow Regulator	F-Q	
Tracer® Electronic Flowmeter	DD	
Tracer _{VM} Electronic Flowmeter	VM	
		Function
		R Return fluid flow entering the manifold (default)
		S Supply fluid flow exiting the manifold
		Connection Type
		Brass Valves and Fittings
	NA	No additional valve or fitting
	B2	Ball Valve 1/4"NPT
	B3	Ball Valve 3/8"NPT
	B4	Ball Valve 1/2"NPT
	H2	Hose Barb 1/4"ID Hose
	H3	Hose Barb 3/8"ID Hose
	H4	Hose Barb 1/2"ID Hose
	Q2	Quick Connect Plug 1/4"ID (200 Series)
	Q3	Quick Connect Plug 3/8"ID (300 Series)
	Q4	Quick Connect Plug 1/2"ID (500 Series)
		*Consult Flowmeter Catalog Form #189 and Catalog Form #190

ManifoldBuilder

On-Line Part Number Specification Assistance

3D Native CAD files for manifolds and assemblies are available for download 24/7 at www.manifoldbuilder.com

SMARTFLOW® DUOFLOW® Aluminum Manifolds



Section View

General Description

Smartflow Duoflow Manifolds are robust extruded aluminum joined together by a stainless steel center plug. Red and blue color anodizing protects the manifolds from corrosion and denotes supply or return function. No end plug is needed.

The Duoflow design provides a shorter footprint specifically for mounting a manifold directly to an injection mold, or where space is limited. Port spacing is narrow for installation of hose barbs or quick disconnect fittings only. Custom manifolds are needed if ball valves will be installed.

Tool change time is significantly decreased by mounting manifolds directly to molds in storage. Water hookup is simplified to "Supply" and "Return" lines versus individual water lines for every circuit.

Features and Benefits

- ◆ **Shorter Length** for easier mounting directly to injection molds
- ◆ **Mold-Mount** to speed mold changes
- ◆ **Economical, Proven Design** for reliability
- ◆ **Optional Quick Disconnect Fittings** for convenience and ease of installation
- ◆ **Supports Scientific CoolingSM** through consistent, repeatable water connections

Specifications

Inlet Sizes	3/4", 1" or 1-1/2"
	NPT(F) standard
	British threads optional
Port Sizes	1/4", 3/8" & 1/2"
	NPT(F) standard
	British threads optional
	Contact the factory for special machining requirements
Operating Pressure max.....	150 psi (10 bar)
Operating Temperature max.....	210°F (99°C)
Body Material.....	Anodized Aluminum
Divider	Stainless Steel
O-Rings	EPDM

Galvanic corrosion may occur in anodized aluminum components when installed in electrical connection with more noble metals such as copper. Use appropriate installation practices to prevent corrosion.

*Design and specifications are subject to change without notice.
See page 19 for manifold testing and use.*

SMARTFLOW® 3/4" DUOFLOW® Aluminum Manifolds

Model Number

6SDA - 16 - 2 - 13 - YZ - NA-H2

Supply Threads
NPT
British Parallel
British Taper

6SDA
6BSDA
6TSDA

Total Number of Ports
4 to 24

Port Sizes

*1/4"NPT **2**
1/4"BSPP **2B**
1/4"BSPT **2T**
*stocked

13
024

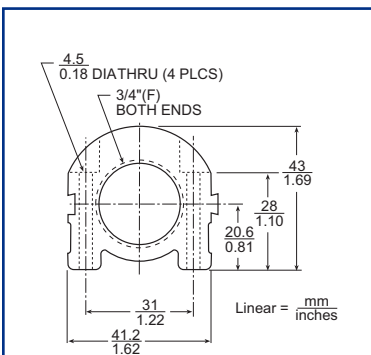
Port Locations

NOTE: for 3/4" and 1" Manifolds, use port locations 1 & 3 or 0, 2 & 4 in combination for proper port spacing
See diagram below. Manifolds with port locations 1 & 3 are stocked.
Left & Right 45°
Left, Center & Right

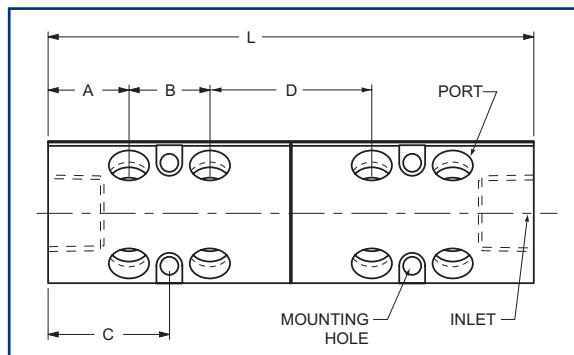
Optional Brass Fittings

NPT threaded manifolds only
Omit suffix if no fittings are needed
NA-H2 Hose barb for 1/4"ID hose
NA-H3 Hose barb for 3/8"ID hose
NA-Q2 Quick Connect Plug 1/4"ID (200 Series)
NA-Q3 Quick Connect Plug 3/8"ID (300 Series)

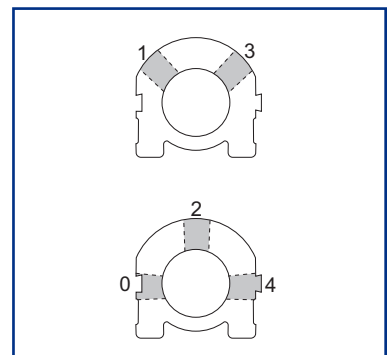
Contact your distributor for custom manifolds.



Manifold Profile



Port Spacings



Port Locations

Stocked 3/4"NPT Manifolds

Model Number (without brass fittings)	Port Size	Total Ports	Ports Per End	A	B	C	D	Length L		Weight	
								mm	in.	kg	lbs.
6SDA- 8-2-13-YZ	1/4"NPT	8	4	25.4mm 1"	25.4mm 1"	38mm 1.5"	50.8mm 2"	152	6	.5	1.1
6SDA-12-2-13-YZ		12	6					203	8	.6	1.4
6SDA-16-2-13-YZ		16	8					254	10	.8	1.7

SMARTFLOW® 1" DUOFLOW® Aluminum Manifolds

Model Number

8SDA - 16 - 3 - 13 - YZ - NA-H3

Supply Threads
NPT
British Parallel
British Taper

8SDA
8BSDA
8TSDA

Total Number of Ports **4 to 24**

Port Sizes

1/4"NPT **2**
1/4"BSPP **2B**
1/4"BSPT **2T**

*3/8"NPT **3**
3/8"BSPP **3B**
3/8"BSPT **3T**

*stocked

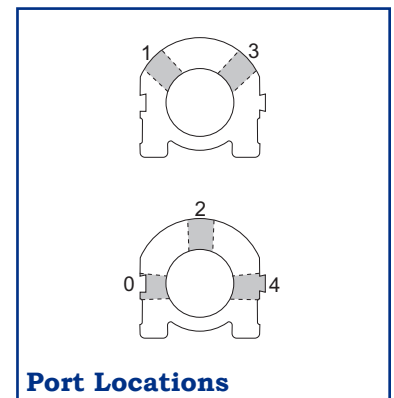
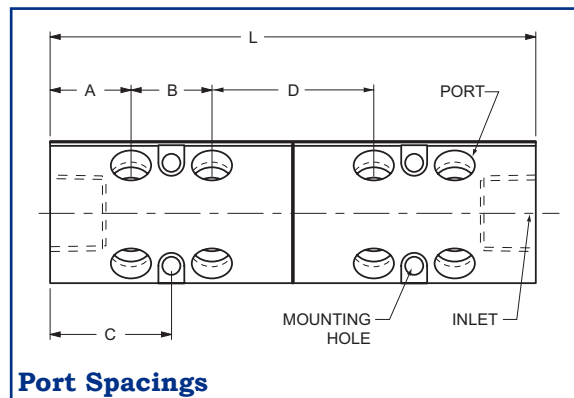
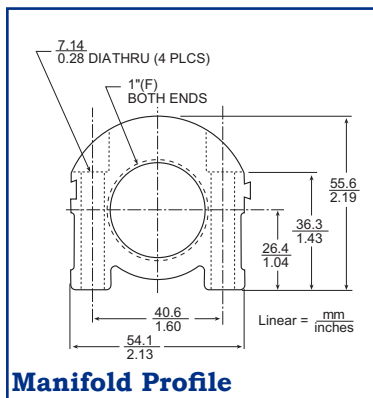
Port Locations

13
024
NOTE: for 3/4" and 1" Manifolds, use port locations 1 & 3 or 0, 2 & 4 in combination for proper port spacing
See diagram below. Manifolds with port locations 1 & 3 are stocked.
Left & Right 45°
Left, Center & Right

Optional Brass Fittings

NPT threaded manifolds only
Omit suffix if no fittings are needed
NA-H2 Hose barb for 1/4"ID hose
NA-H3 Hose barb for 3/8"ID hose
NA-H4 Hose barb for 1/2"ID hose
NA-Q2 Quick Connect Plug 1/4"ID (200 Series)
NA-Q3 Quick Connect Plug 3/8"ID (300 Series)
NA-Q4 Quick Connect Plug 1/2"ID (500 Series)

Contact your distributor for custom manifolds.



Stocked 1"NPT Manifolds											
Model Number (without brass fittings)	Port Size	Total Ports	Ports Per End	A	B	C	D	Length L		Weight	
								mm	in.	kg	lbs.
8SDA- 8-3-13-YZ	3/8"NPT	8	4	32mm 1.25"	32mm 1.25"	47.6mm 1.875"	57.2mm 2.25"	184	7.25	1.1	2.4
8SDA-12-3-13-YZ		12	6					248	9.75	1.4	3
8SDA-16-3-13-YZ		16	8					311	12.25	1.7	3.7

SMARTFLOW[®] 1-1/2" DUOFLOW[®] Aluminum Manifolds

Model Number

12SDA - 16 - 4 - 13 - YZ - NA-H4

Supply Threads
NPT
British Parallel
British Taper

12SDA
12BSDA
12TSDA

Total Number of Ports
4 to 80

Port Sizes

3/8"NPT 3
3/8"BSPP 3B
3/8"BSPT 3T
*1/2"NPT 4
1/2"BSPP 4B
1/2"BSPT 4T
*stocked

Port Locations

0 Left Side
1 Left 45°
2 Center
3 Right 45°
4 Right Side

NOTE: Port locations 0 thru 4 may be used in any combination on 1-1/2" Aluminum Manifolds. Manifolds with port locations 1 & 3 are stocked.

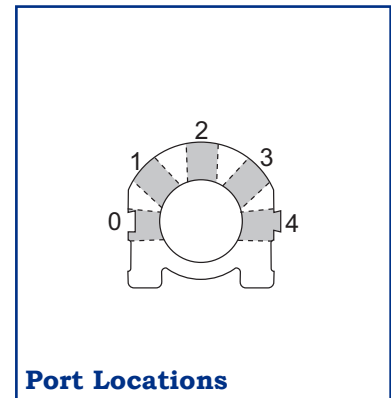
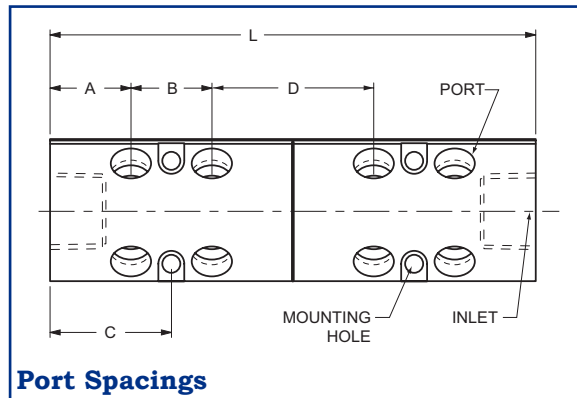
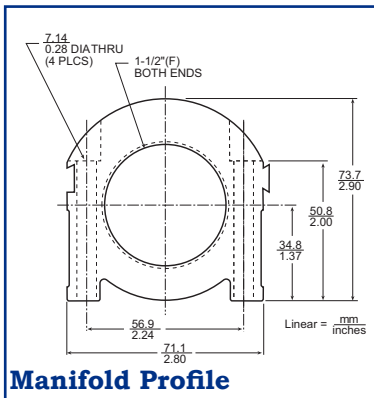
Optional Brass Fittings

NPT threaded manifolds only

Omit suffix if no fittings are needed

NA-H2 Hose barb for 1/4"ID hose
NA-H3 Hose barb for 3/8"ID hose
NA-H4 Hose barb for 1/2"ID hose
NA-Q2 Quick Connect Plug 1/4"ID (200 Series)
NA-Q3 Quick Connect Plug 3/8"ID (300 Series)
NA-Q4 Quick Connect Plug 1/2"ID (500 Series)

Contact your distributor for custom manifolds.



Stocked 1-1/2"NPT Manifolds											
Model Number (without brass fittings)	Port Size	Total Ports	Ports Per End	A	B	C	D	Length L		Weight	
								mm	in.	kg	lbs.
12SDA- 8-4-13-YZ	1/2"NPT	8	4	44.5mm 1.75"	38mm 1.5"	63.5mm 2.5"	63.5mm 2.5"	229	9	2.2	4.9
12SDA-12-4-13-YZ		12	6					305	12	2.8	6.2
12SDA-16-4-13-YZ		16	8					381	15	3.4	7.5

SMARTFLOW® High Pressure and Temperature SS Manifold with Flow Meters/Regulators



Specifications

Manifold
Material..... Stainless Steel
Operating Limits
450°F (232°C) at 450psi (31bar)
600°F (315°C) at 100psi (6.9bar)

Optional Flowmeters
Material..... Stainless Steel
Viewing Window..... Glass
Vane..... Stainless Steel
Spring..... Stainless Steel
Pin..... Stainless Steel
Gasket..... Non-Asbestos Fiber
Magnet..... Sintered Alnico 8GE
Accuracy..... ±10%
Flow Rate..... 6 GPM or 22 LPM

Optional Flow Regulators
Material..... Stainless Steel
O-Rings..... Viton

General Description

Smartflow High Pressure and Temperature Manifolds and Assemblies are designed for use in pressurized hot water or hot oil cooling systems (see specifications for limits).
Smartflow manifolds are ideal for connection to temperature control units in an injection molding environment. The manifolds are available with 3/4", 1" and 1-1/2" inlet sizes (one end only) and ports 1/4" thru 1/2".

Optional Flowmeters and regulators require 1/2" port size to connect with manifolds and are constructed of stainless steel with high temperature seals for corrosion-free operation and long trouble-free service life.

CAUTION
Potential for personal injury exists in application of this product. Appropriate thread sealant hoses and fittings must be used with high pressure and temperature manifolds.

Model Number

Optional Flow Meter/Regulator (1/2" only, omit characters when not used)

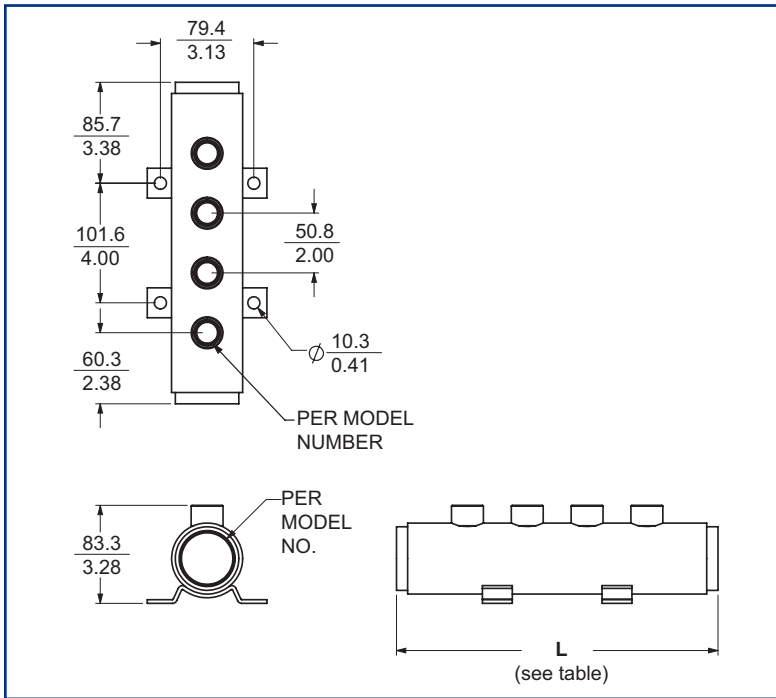
8	SSHT - 4 - 4 - 2 -	HFR4 - A - 60 - NA - R	
	Supply Threads one end only	Port Sizes	Flow Rate
6	3/4"NPT	2 1/4"NPT	60 6 GPM
6B	3/4"BSPP	2B 1/4"BSPP	
8	1"NPT	3 3/8"NPT	220 22 LPM
8B	1"BSPP	3B 3/8"BSPP	
12	1-1/2"NPT	4 1/2"NPT	
12B	1-1/2"BSPP	4B 1/2"BSPP	
	Port Quantity		Function
	4		R Return
	6		fluid flow through flowmeter
	8		enters the manifold (default)
			S Supply
			fluid flow through flowmeter
			exits the manifold
			Optional Temperature Gauge
			A No Temp. Gauge
			B Includes Temp. Gauge
			Optional Flow Meter/Regulator (1/2" only)
			Omit additional part number characters at this point if no meters/regulators are needed.
			High Temperature Flowmeter
			High Temperature Flow Regulator
			Operating temperature and pressure limits of flow regulators must not be exceeded in application of a manifold assembly.
		HF4	
		HFR4	

Design and specifications are subject to change without notice. See page 19 for manifold testing and use.



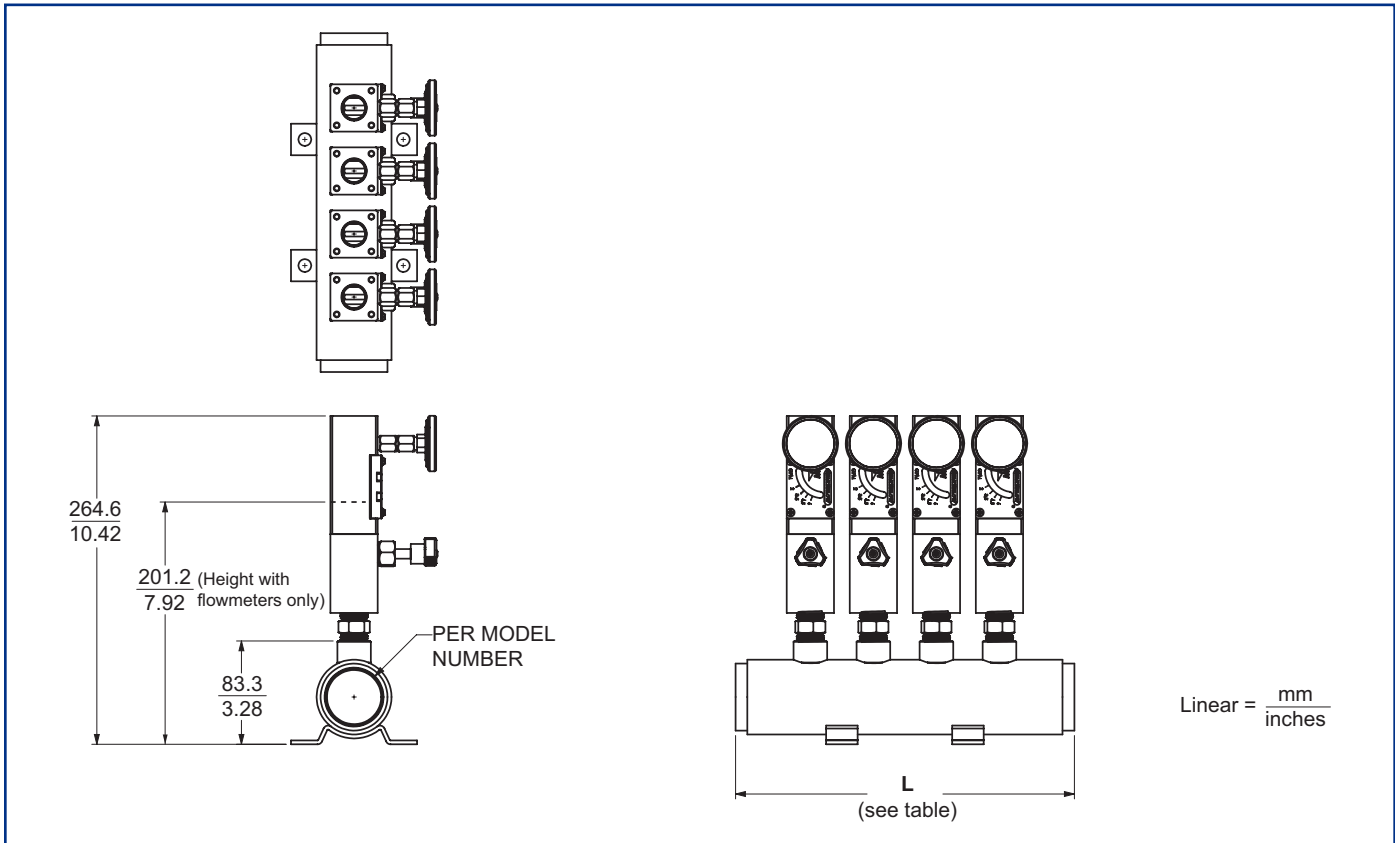
High Pressure and Temperature SS Manifold with Flow Meters/Regulators

Dimensions (Manifold Only)



Manifold Length	
Port Qty	"L" Dimension
4	273.0mm
	10.75"
6	374.6mm
	14.75"
8	476.3mm
	18.75"

Dimensions (Manifold with Flow Regulators)



SMARTFLOW® *Warranty and Returns*

Warranty

Seller warrants that this product supplied will conform to the description herein stated and that the product will be of standard quality. This is the sole warranty made by Seller with respect to this product. Seller expressly disclaims any other express or implied warranties, including, but not limited to, the implied warranty of merchantability and the implied warranty of fitness for a particular purpose.

Seller shall not be liable for any cost or damages, whether direct, incidental or consequential, including but not limited to, any injury, loss or damage resulting from the use of this product, regardless of whether any claim for such cost or damages is based on warranty, contract, negligence, tort or strict liability. The sole liability of Seller is limited to repairing or replacing this product.

This warranty shall not apply to any products that have been repaired or altered by anyone other than Seller. The warranty shall not apply to any products subject to misuse due to common negligence or accident, nor to any products manufactured by Seller which are not installed or operated in accordance with the printed instructions of Seller or which have been operated beyond the rated capacity of the goods. Seller states that the product's useful safe life is 5 years. Actual life may vary widely depending on operating environment such as temperature, pressure, and chemical exposure.

Returned Goods

Items may be returned to the factory with prior approval and a return number and are subject to inspection before credit or replacements are issued. Ordering errors are subject to a restocking charge. Custom parts may not be returned.

Manifold Testing & Use

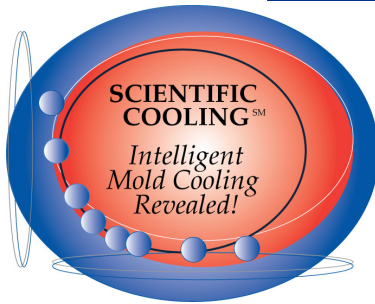
Extruded aluminum manifolds have been third party pressure tested to burst by the National Fluid Power Institute at the Milwaukee School of Engineering. Maximum Working Pressure Ratings have a minimum 4:1 safety factor.

Formed and welded stainless steel manifolds have been pressure tested to burst at Burger & Brown Engineering.

Caution:

1. Inlet and port plugs, ball valves and other accessories, have not been subjected to the same burst pressure testing as the manifolds. The end user is responsible for the material and safe use of plugs, fittings, and accessories.
2. Smartflow manifolds are not intended for use in hydraulic circuits where extremely high pressure spikes or transients are expected. The end user is responsible to determine the safety aspects of an application.
3. The end user is responsible for the chemical compatibility between the process fluid and the manifold material and coating.
4. Isolation should be provided at the customer site to prevent galvanic corrosion where aluminum manifolds will be used in-line with copper piping.

SMARTFLOW[®] Scientific CoolingSM Classes

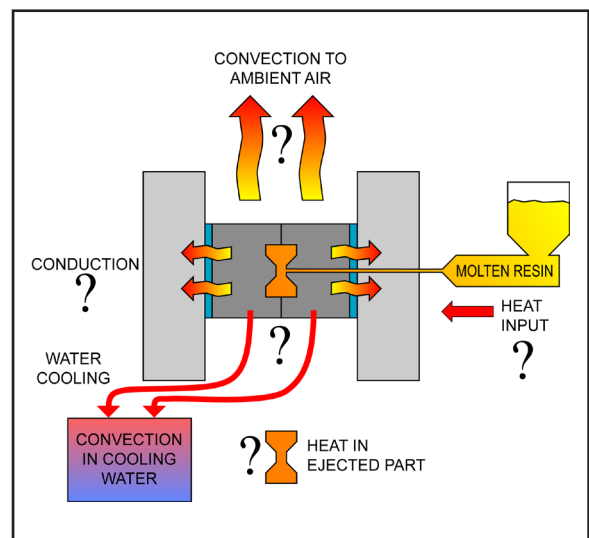


Scientific Cooling is a 2-Day Class developed by the Engineers at Burger & Brown Engineering to teach the physics of heat transfer used daily in plastics injection molding. Application of these principles helps processors achieve:

- ◆ **Consistent Part Quality**
- ◆ **Faster Cycle Times**
- ◆ **Increased Profits**

2-Day Course Objectives:

- ◆ Learn energy principles in relation to specific polymers.
- ◆ Understand Heat Transfer and energy Flow effects on part quality and cycle time.
- ◆ Create Heat Budget and Balancing using Energy Flow calculation.
- ◆ Understand Reynolds Number's relationship to Turbulent Flow.
- ◆ Learn Turbulent Flow's impact on sustainable molding practices.
- ◆ Study the 3 R's of Scientific Cooling to develop and maintain efficient cooling setup and processes.
- ◆ Review coolant delivery and distribution principles.
- ◆ Discover water chemistry's effect on cooling efficiency.
- ◆ Discuss mold maintenance techniques related to mold cooling.
- ◆ Participate in "Hands-On" exercises to reinforce learning objectives.
- ◆ Receive an introduction to advanced methods - Flow Simulation, Thermal Imaging and High Temperature Cooling Systems.



Find the class schedule on-line
www.SMARTFLOW-USA.com

Who should take the Scientific Cooling Class?

Designers
Mold Builders
Mold Technicians
Tooling Engineers
Processing Technicians
Manufacturing Engineers

Burger & Brown ENGINEERING

4500 E 142nd Street
Grandview, MO 64030 USA
800-764-3518
www.smartflow-usa.com

Try out these principles using our On-Line Scientific Cooling Calculator!

Plug in molding variables.

Extract flow rate, heat transfer, processing temperatures, overall cooling requirements.

Make changes in your input values to see the effect on energy usage, recommended flow rates and more.

Link to the Scientific Cooling Calculator from the home page
www.SMARTFLOW-USA.com