

KIP Isolation Valves

Ideal for control of corrosive and aggressive media

Elastomer diaphragm provides protection from aggressive, corrosive, and gritty media

Isolation valves can be equipped with a low wattage coil (as low as 0.65 watts in the KIP Jr. series)

Valves can also be integrated into standard manifolds or intricate custom manifold assemblies

Isolation valves are available in a 2-way normally closed configuration

Two valves can be combined on a common base for 3-way operation



Series 1, 2 & 6 Options selector

Selection criteria for isolation style valves

Feature	Series 1	Series 2	Series 6
Size - (Diameter)	1"	1"	1-5/8"
MOPD (psi)	95	120	130
Vacuum Service	✓	✓	✓
Max. Cv - Body	0.250	0.250	0.545
Power Rating (watts)	6 watts	7 watts	10 watts
Lead Wire Gauge (AWG)	20/18	20/18	18
Optional Low Watt Coils	✓	✓	✓
1/8" NPTF Ports	✓	✓	✓
#10 - 32 UNF Ports	✓	✓	✓
1/4 - 28 UNF	✓	✓	✓
Grommet Style Housing	✓	✓	✓
Conduit Style Housing	✓	✓	✓
Spade Coil	✓	✓	✓
Manifolds -	✓	✓	✓

Seals	Series 1	Series 2	Series 6
CHEMRAZ	Yes	Yes	No
EPR	Yes	Yes	No
FLUOROCARBON	Yes	Yes	Yes

	Flow Rates (Cv)	Body Materials	Orifice Size	Porting
Series 1	0.250	Delrin, PVC, Kynar®	1/32"-5/32"	1/8" NPT
Series 2	0.250	Delrin, PVC, Kynar	1/32"-5/32"	1/8" NPT
Series 6	0.545	Delrin, PVC, Kynar	1/32"-1/4"	1/8" NPT

G 2 7 9 6 1 2 - 0 2 6 1 - 12VDC

Prefixes	Series	Port	Housing	Body Material	Function	Voltage	Coil options	Seal	Orifice																																																				
G = Isolated	1 = Series 1 2 = Series 2 6 = Series 6	4 = 1/8" NPT 5 = 1/4" NPT (Series 6* only) 7 = #10-32 UNF 8 = 1/4-28 UNF	1 = Grommet 2 = Conduit 3 = Yoke 9 = Slotted	3 = Operator 4 = Delrin 5 = PVC 6 = Kynar	1 = 2WNC	12VDC 24VDC 24/60 120/60 110/50 220/50 240/60	<table border="1"> <thead> <tr> <th>Number</th> <th>Housing</th> <th>Series</th> <th>Type</th> </tr> </thead> <tbody> <tr><td>01</td><td>Grommet</td><td>1, 2, 3, 6</td><td>Standard</td></tr> <tr><td>01</td><td>Conduit</td><td>1, 2, 3, 6</td><td>Standard</td></tr> <tr><td>41</td><td>Slotted</td><td>1</td><td>Free standing</td></tr> <tr><td>61</td><td>Slotted</td><td>2, 3</td><td>Free standing</td></tr> <tr><td>61</td><td>Yoke</td><td>2, 3</td><td>Free standing</td></tr> <tr><td>41</td><td>Conduit</td><td>1, 2, 3</td><td>Potted with leads</td></tr> <tr><td>31</td><td>Slotted</td><td>2, 3</td><td>3/16" Vertical spade</td></tr> <tr><td>51</td><td>Slotted</td><td>2, 3</td><td>1/4" Vertical spade</td></tr> <tr><td>51</td><td>Yoke</td><td>2, 3</td><td>1/4" Top spade***</td></tr> <tr><td>41</td><td>Grommet</td><td>6</td><td>Free standing</td></tr> <tr><td>41</td><td>Conduit</td><td>6</td><td>Free standing</td></tr> <tr><td>51</td><td>Slotted</td><td>6</td><td>1/4" Vertical spade</td></tr> </tbody> </table>	Number	Housing	Series	Type	01	Grommet	1, 2, 3, 6	Standard	01	Conduit	1, 2, 3, 6	Standard	41	Slotted	1	Free standing	61	Slotted	2, 3	Free standing	61	Yoke	2, 3	Free standing	41	Conduit	1, 2, 3	Potted with leads	31	Slotted	2, 3	3/16" Vertical spade	51	Slotted	2, 3	1/4" Vertical spade	51	Yoke	2, 3	1/4" Top spade***	41	Grommet	6	Free standing	41	Conduit	6	Free standing	51	Slotted	6	1/4" Vertical spade	02 = Fluorocarbon 13 = EPR* (Series 1, 2) 16 = Chemraz (Series 1, 2)	0 = 1/32" 1 = 3/64" 2 = 1/16" 3 = 5/64" 4 = 3/32" 5 = 1/8" 6 = 5/32" 7 = 3/16" (Series 6* only) 8 = 1/4" (Series 6* only)
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Note: All coils listed above are Class B** (130°C or 266°F)
 * For Class F coils (155°C or 311°F) change the second digit to a 2. Consult KIP for minimum order quantities.
 ** For Class H 180° C or 356° F coils change the second digit to a 3. Consult KIP for minimum order quantities.
 *** FWR option, full wave rectification - see website.

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 *Available in Series 1, 2 & 3 for 2-Way Normally Closed, 3-Way Normally Closed and 3-Way Multi-Purpose functions.

KIP Isolation Valves

Isolation valve manifolds

Isolation valves can be combined on a manifold block to simplify your pneumatic or liquid circuit

Complete line of standard manifold designs and materials

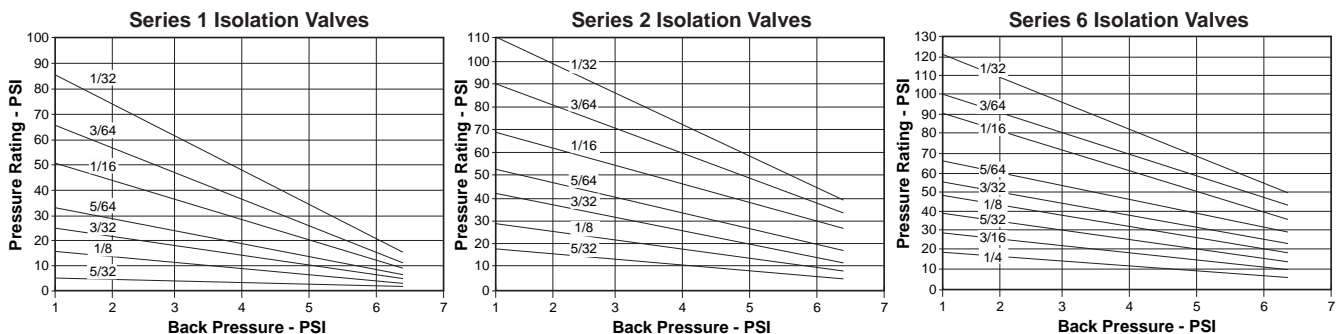
KIP offers custom designed manifolds complete with fittings, tubing and other accessories



	Orifice		MOPD	Standard Valve Body		
	Diameter	Cv Factor		Kynar	Delrin	PVC
Series 1	1/32"	0.025	95	G141610	G141410	G141510
	3/64"	0.045	75	G141611	G141411	G141511
	1/16"	0.075	55	G141612	G141412	G141512
	5/64"	0.115	35	G141613	G141413	G141513
	3/32"	0.155	25	G141614	G141414	G141514
	1/8"	0.210	15	G141615	G141415	G141515
	5/32"	0.250	10	G141616	G141416	G141516
Series 2	1/32"	0.025	120	G241610	G241410	G241510
	3/64"	0.045	100	G241611	G241411	G241511
	1/16"	0.075	75	G241612	G241412	G241512
	5/64"	0.115	55	G241613	G241413	G241513
	3/32"	0.155	45	G241614	G241414	G241514
	1/8"	0.210	30	G241615	G241415	G241515
	5/32"	0.250	20	G241616	G241416	G241516
Series 6	1/32"	0.031	130	G641610	G641410	G641510
	3/64"	0.058	110	G641611	G641411	G641511
	1/16"	0.078	95	G641612	G641412	G641512
	5/64"	0.117	70	G641613	G641413	G641513
	3/32"	0.167	60	G641614	G641414	G641514
	1/8"	0.241	50	G641615	G641415	G641515
	5/32"	0.316	40	G641616	G641416	G641516
	3/16"	0.398	30	G641617	G641417	G641517
1/4"	0.545	20	G641618	G641418	G141518	

Isolation Valve Back Pressure De-rating Curves

Diaphragm Isolation Valves have a large difference in pressure area between open and closed, creating a sensitivity to back pressure. Excessive back pressure can hinder the closing of the valve. Please use the back pressure charts below to determine the maximum operating pressure of the valve based on the maximum potential back pressure in the application. Choose the orifice size which meets a worst case condition. Unless a preference for diaphragm body shape is specifically requested, valves may be shipped with either square or round bodies, at KIP's discretion, and depending on availability or size of order.



Q2 Valve

Q2 Quick-Connect Plastic Body Valve

Durable, lightweight plastic body
 Quick push-to-connect fittings
 NSF and cURus (UL and CSA) Certified
 Minimal Pressure drop

Specifications

Power Rating

10 Watt

Voltage

12, 24, 110 Volt DC, 24/50-60,
 120/50-60, 240/50-60 Volt AC*

Housing

Yoke

Coil

1/4" Top Spade

Temperature Rating

Ambient and Media: -10°F to
 100°F

*All AC valves are full wave rectified



Standard Valve Part Number	Orifice Diameter Body	Seal Material	Porting OD Tube Fitting	Cv Factor Body	MOPD (PSI)
Q212315-1351B-VOLTAGE	1/8"	Food-Grade EPR*	1/4"	0.228	120
Q212315-0151B-VOLTAGE	1/8"	Buna	1/4"	0.228	120
Q212316-1351B-VOLTAGE	5/32"	Food-Grade EPR*	1/4"	0.314	80
Q212316-0151B-VOLTAGE	5/32"	Buna	1/4"	0.314	80
Q212317-1351B-VOLTAGE	3/16"	Food-Grade EPR*	1/4"	0.367	40
Q212317-0151B-VOLTAGE	3/16"	Buna	1/4"	0.367	40
Q213318-1351B-VOLTAGE	1/4"	Food-Grade EPR*	3/8"	0.500	15
Q213318-0151B-VOLTAGE	1/4"	Buna	3/8"	0.500	15
Q213319-1351B-VOLTAGE	5/16"	Food-Grade EPR*	3/8"	1.000	5
Q213319-0151B-VOLTAGE	5/16"	Buna	3/8"	1.000	5

* Food-Grade EPR seals are NSF approved



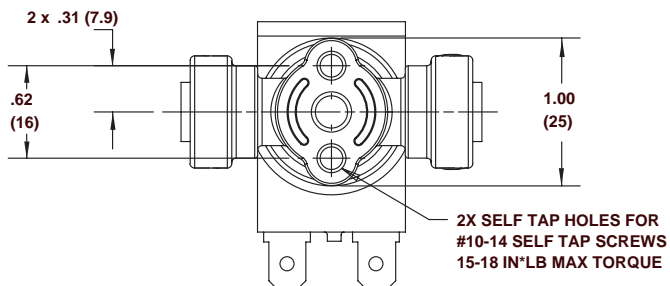
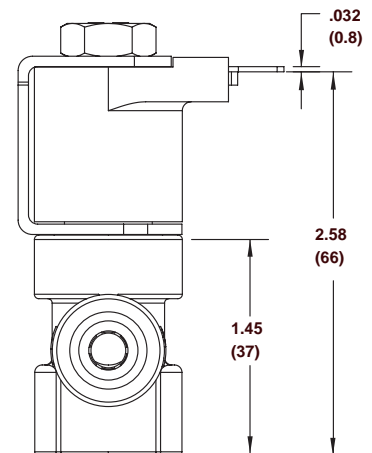
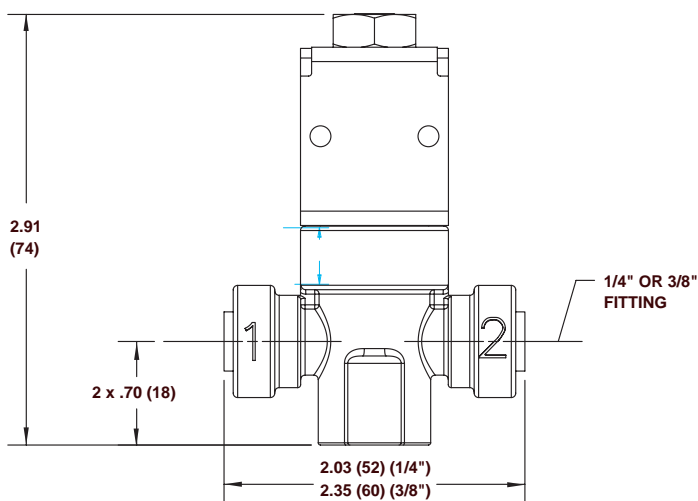
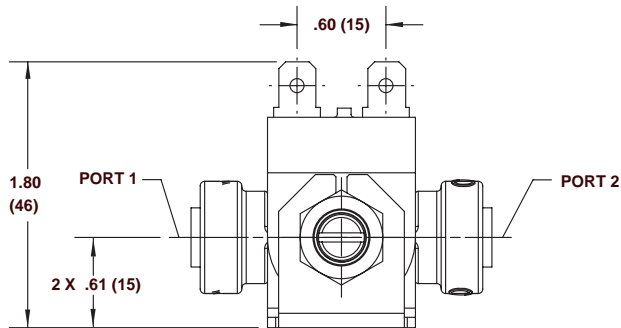
Port Identification: IN - 2 OUT - 1



Q2 Valve

Q2 Quick-Connect Plastic Body Valve

Dimensions in inches (mm)



Coil Orientation Options

- A = Terminals over 2
- B = 90° Counterclockwise from 2 (Standard – Figure 1)
- C = 90° Clockwise from 2
- D = Terminals over 1

Manifolds

Simplify solenoid valve installation with KIP manifold assemblies. KIP manifolds provide an economical and effective means of gang mounting solenoid valves

Solenoid valve manifolds simplify the purchasing, installation, testing, and repair/replacement of solenoid valve components while enhancing system integrity. Integrating a group of solenoid valves, pressure switches, check valves, regulators or gauges into one assembly makes a complete package, eliminating tubing, fittings and potential leak points. Additionally, wire harness requirements are simplified.

Modular valves and other components can be replaced or maintained without disturbing plumbing thus reducing maintenance costs and downtime.

Operator Mounting Type Manifolds

Series 1 and Series 2 operators are available for gang mounting on aluminum, brass or plastic sub-plates.

Manifolds can be selected with 1/8" NPTF or 1/4" NPTF ports.

Orifice sizes up to 3/16" with precision machined-in seats are standard.

Both 2-Way and 3-Way operators may be combined on the same manifold.

Manifolds with up to 16 stations are available as standard.

An upper manifold plate can be ordered for common porting on 2-Way Normally Open and all 3-Way valves.



Isolation Style Manifold

Provides a dry isolated valve operator for the control of corrosive and aggressive media.

The diaphragm seal (Fluorocarbon, Chemraz or EPR), isolates all metal parts from the media.

The manifold material is available in PVC, Delrin, Kynar, and acrylic.

Operators are available as a 2-way normally closed valve only however, two valves can be combined for 3-way operation.



Manifold Mount Valve Type Manifolds

Series 1, 2, and 6 valves are available for gang mounting on aluminum, brass or plastic sub-plates.

Manifolds can be selected with #10-32 UNF, 1/8" NPTF or 1/4" NPTF ports.

Orifice sizes up to 1/8" in Series 1, 2, and orifice sizes up to 1/4" in Series 6 models are available.

Pressure ratings are the same as those listed for the individual valves in this catalog except that the maximum operating pressure is limited to 400 PSI for UL recognition.

2-Way and 3-Way valves may be combined on the same manifold up to 16 stations are available on Series 1 and 2 valves, and up to 6 stations are standard on Series 6 valves.

An upper manifold plate can be ordered for common porting on 2-Way Normally Open and all 3-Way valves.



Acrylic Subplates

A great answer for simplified design and easy installation of complex media flow requirements. Use of an acrylic base permits the flow of various media through a single base using multiple inlets and outlets. Flow paths can also be varied and directed to meet design requirements. KIP application engineers can help you select the most effective design for easy installation, access, and the best product aesthetics. Acrylic subplates are supplied for OEM applications only.



Additional OEM Manifold Design Capabilities

KIP manifolds offer many additional options such as:

Metering of valves for flow control.

Sub-plates of many materials including brass, Delrin, 430 SS, aluminum, acrylic and Kynar .

Unique configurations to accommodate pressure regulators, pressure gauges, transducers, and/or switches as well as flow paths to meet your specific requirements.

Other port sizes and locations.

Internal check valves.

Teflon taped fittings.

Test ports.

Multi-media manifolds.

Flow or no-flow monitoring.



Consult KIP for application engineering assistance.

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Manifold Assemblies

with Cartridge Fittings Installed

No fittings to install, Teflon tape or lubricant, and no leaks

Compatible with both air and liquids

Available in Series 1, 2 or 6 manifold mount style valves with base materials of Delrin, PVC, brass or aluminum

As always, KIP is ready to manufacture a "special" to meet your exact OEM specifications

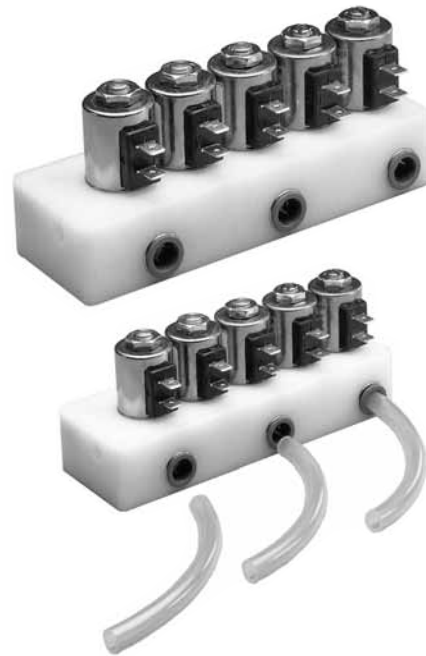
Minimize your labor and material cost by ordering this unique package from KIP. With cartridge fittings installed into the manifold base, you simply push in the proper size tube and you are done.

Select the valve or manifold assembly desired. See the part identification numbering system, or the standard manifold ordering information. Specify on your request to have cartridge fittings installed. Be sure to indicate the outside diameter (O.D.) of the tubing you will be using. The following standard sizes are available by Series:

Tubing Outside Diameter			
Series 1	1/4"	3/8"	–
Series 2	1/4"	3/8"	–
Series 6	1/4"	3/8"	1/2"

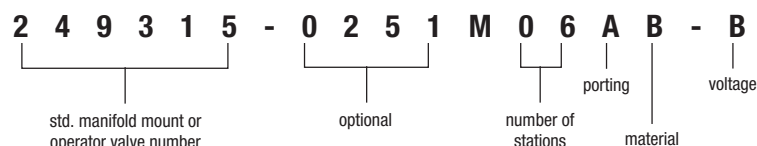
Please note: All manifolds with the cartridge fittings installed have a maximum pressure rating of 150 PSI, even though the actual valve you select may have a higher pressure rating.

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Standard Manifold Ordering Information

It's easy to order your own standard KIP Manifold assembly using the simple selection chart below. First, select the manifold mount valve or valve operator from the part numbering charts, or create the part number from the part number identification system. Provide the numbers for the desired seal and coil construction options if applicable. This will give you the valve portion of the manifold. Now, select the base to complete your assembly.



Number of Stations

Fill in the number of valve stations you need after the "M". This can be up to 16 stations for series 1, 2, and 6 stations for series 6. For operator style manifolds where the cavity is machined into the base, 16 stations is the maximum for series 1 and 2, and 6 stations for series 6.

Porting

Select the porting configuration and port size to fit your application. Choose from the offerings below and enter the appropriate letter after the number of stations.

Base Material

Next, select the base material which offers the best media compatibility for your application. Place the appropriate letter in the last position of the part number sequence.

- A) Aluminum - Best suited for non-critical air, vacuum or inert gases.
- B) Brass - Commonly used for non-potable water applications or other low pressure fluids or oils.
- D) Delrin - FDA grade material is used for potable water applications, critical gas sampling or high purity systems.

Voltage

After selecting your standard manifold part number, remember to include the operating voltage. Select the appropriate letter from the following standard voltages and add it at the end of your manifold part number:

Voltage	Designation	Series 1, 2, 6
5VDC	A	Special
12VDC	B	Standard
15VDC	C	Special
24VDC	D	Standard
24/60	E	Standard
110/50	F	Standard
120/60	G	Standard
220/50	H	Standard
240/60	I	Standard

Porting Designation	Valve Series	Valve Type	Common Port Size	Common Marking	Outlet Port Size	Outlet Marking	Comments
A	S1, S2, S6	2WNC	1/8"NPT	IN-2	1/8"NPT	OUT-1	
B	S1, S2, S6	2WNC	1/4"NPT	IN-2	1/4"NPT	OUT-1	
C	S1, S2, S6	3WNO	1/8"NPT	EXH-1	1/8"NPT	CYL-2	Inlet Port is through Valve Adapter
D	S1, S2, S6	3WNO	1/4"NPT	EXH-1	1/4"NPT	CYL-2	Inlet Port is through Valve Adapter
C	S1, S2, S6	3WNC	1/8"NPT	IN-1	1/8"NPT	CYL-2	Exhaust Port is through Valve Adapter
D	S1, S2, S6	3WNC	1/4"NPT	IN-1	1/4"NPT	CYL-2	Exhaust Port is through Valve Adapter
C	S1, S2, S6	3WMP	1/8"NPT	NC-1	1/8"NPT	COM-2	N.O. Port is through Valve Adapter
D	S1, S2, S6	3WMP	1/4"NPT	NC-1	1/4"NPT	COM-2	N.O. Port is through Valve Adapter

Note: For 3-way directional control manifolds, use the 3-way multi-purpose manifold which most closely fits your need. For the 2-way normally open manifolds, consult KIP.

KIP Valve ordering information

Finding the Right Valve

To help you find the right valve for your application, the types of valves are arranged in two-page spreads (2-Way Normally Open, 2-Way Normally Closed, 3-Way Normally Closed Line Connect, 3-Way Multi-Purpose, 3-Way Normally Open, 3-Way Directional Control). For each valve type, the first boxes are arranged by KIP Series designation (Series 1, 2, 3 and 6). The second, smaller subset of rows designate the various orifice diameters for the Series. Series 1 valves offer the smallest package size and typically have lower flows and pressures for the same orifice size as those of our largest, Series 6, valves. As you move from left to right across the columns on the spread, you will find the Cv factor (flow coefficient) and Maximum Operating Pressure Differential (MOPD) for the corresponding orifice diameter. Part numbers for KIP's valve body, operator (valve without body), manifold mount and 1/8" NPT male bottom port follow. All part numbers are shown with grommet housing designated by numeral 1 in the third position. Part numbers can be modified by selecting your choice of housing, seal material or molded coil and placing the appropriate numbers into the designated position in the part number sequence.

2-Way Normally Open



Port Identification: IN-2 OUT-3

	Orifice Diameter Stop	Cv Factor Stop	MOPD (psi)	Standard Valve Body Grommet		Manifold Mount	
				Stainless Steel	Brass	Stainless Steel	Brass
Series 1	1/32	0.035	300	141020	141120	161020	161120
	3/64	0.050	200	141021	141121	161021	161121
	1/16*	0.095	150	141022	141122	161022	161122
Series 2	1/32	0.035	400	241020	241120	261020	261120
	3/64	0.050	300	241021	241121	261021	261121
	1/16	0.095	180	241022	241122	261022	261122
	5/64*	0.135	140	241023	241123	261023	261123

	Orifice Diameter Stop	Cv Factor Stop	MOPD (psi)	Standard Valve Body Grommet	
				Stainless Steel	Brass
Series 3	1/32	0.035	400	351020	351120
	3/64	0.050	300	351021	351121
	1/16	0.095	180	351022	351122
	5/64*	0.140	140	351023	351123

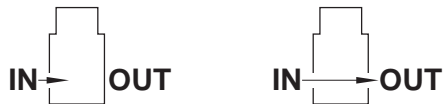
	Orifice Diameter Stop	Cv Factor Stop	MOPD (psi)	Standard Valve Body - Grommet Stainless Steel				Manifold Mount Brass	
				1/8" NPTF	1/4" NPTF	1/8" NPTF	1/4" NPTF	Stainless Steel	Brass
Series 6	1/32	0.035	1000	641020	651020	641120	651120	661020	661120
	3/64	0.050	600	641021	651021	641121	651121	661021	661121
	1/16	0.095	350	641022	651022	641122	651122	661022	661122
	5/64	0.140	250	641023	651023	641123	651123	661023	661123
	3/32	0.200	175	641024	651024	641124	651124	661024	661124
	1/8	0.295	100	641025	651025	641125	651125	661025	661125

* Larger stop orifice available with reduced pressure ratings; consult KIP.

KIP Valve ordering information

2-Way Normally Closed

Two-Way Normally Closed (2WNC) - Valve with two ports, inlet and outlet. Valve is closed in a de-energized state, and opens when energized. Valve has one orifice which is located in the body.



Port Identification: IN - 2 OUT - 1

	Orifice Diameter	Cv Factor	MOPD	Standard Valve Body Grommet		Manifold Mount* Valve Body-Grommet		Cv Factor Body	LOW WATT Specifications			
				SS	Brass	SS	Brass		1.5 Watt A	2.0 Watt B	2.5 Watt C	3.0 Watt D
Series 1	1/32	0.035	800	141010	141110	161010	161110	0.030	125.000	300	500	775
	3/64	0.050	500	141011	141111	161011	161111	0.050	30.000	100	175	300
	1/16	0.095	300	141012	141112	161012	161112	0.085	-	30	65	95
	5/64	0.135	200	141013	141113	161013	161113	0.125	-	15	40	65
	3/32	0.175	175	141014	141114	161014	161114	0.170	-	10	25	40
	1/8	0.245	100	141015	141115	161015	161115	0.225	-	-	-	4
Series 2	5/32	0.290	50	141016	141116	161016	161116	0.280	-	-	-	-
	1/32	0.035	1000	241010	241110	261010	261110	0.030	300	540	780	1000
	3/64	0.050	600	241011	241111	261011	261111	0.050	50	125	240	340
	1/16	0.095	400	241012	241112	261012	261112	0.085	15	60	100	160
	5/64	0.135	300	241013	241113	261013	261113	0.125	5	30	55	95
	3/32	0.175	250	241014	241114	261014	261114	0.170	3	20	40	55
	1/8	0.245	150	241015	241115	261015	261115	0.225	-	12	25	35
	5/32	0.290	100	241016	241116	N/A	N/A	0.280	-	7	14	20

	Orifice Diameter	Cv Factor	MOPD	Standard Valve Body - Grommet		Cv Factor Body	LOW WATT Specifications			
				SS	Brass		1.5 Watt A	2.0 Watt B	2.5 Watt C	3.0 Watt D
Series 3	1/32	0.035	1000	351010	351110	0.030	300	540	780	1000
	3/64	0.050	600	351011	351111	0.050	50	125	240	340
	1/16	0.095	400	351012	351112	0.085	15	60	100	160
	5/64	0.140	300	351013	351113	0.125	5	30	55	95
	3/32	0.185	250	351014	351114	0.180	3	20	40	55
	1/8	0.265	150	351015	351115	0.225	-	12	25	35
	5/32	0.330	100	351016	351116	0.280	-	7	14	20
	3/16	0.385	40	351017	351117	-	-	-	-	-
	1/4	0.450	15	351018	351118	-	-	-	-	-

	Orifice Diameter	Cv Factor	MOPD	Standard Valve Body (Grommet) Stainless Steel			Manifold Mount Brass		
				1/8" NPTF	1/4" NPTF	1/8" NPTF	1/4" NPTF	Stainless Steel	Brass
Series 6	1/32	0.035	1200	641010	651010	641110	351110	661010	661110
	3/64	0.050	1000	641011	651011	641111	351111	661011	661111
	1/16	0.095	500	641012	651012	641112	351112	661012	661112
	5/64	0.140	300	641013	651013	641113	351113	661013	661113
	3/32	0.200	200	641014	651014	641114	351114	661014	661114
	1/8	0.295	150	641015	651015	641115	351115	661015	661115
	5/32	0.370	110	641016	651016	641116	351116	661016	661116
	3/16	0.435	60	641017	651017	641117	351117	661017	661117
	1/4	0.610	30	641018	651018	641118	351118	661018	661118
	3/8	0.900	5	—	681019***	—	681119***	—	—

* Manifold Mount valve has maximum 400 MOPD rating for UL recognition.

† These valves are supplied with 3/8" NPTF ports.

KIP Valve ordering information

3-Way Normally Closed

Line Connect: For Free Vent, change fifth digit from 4 to 3

Three-Way Normally Closed (3WNCVF or 3WNCLC) Valve with three ports, and two orifices. One orifice is located in the body and the other in the end stop. The three ports are the “IN”, “EXHAUST” and “CYLINDER”. When the valve is de-energized, the inlet closed and the exhaust is open. When the valve is energized, the inlet is open allowing flow to the cylinder port and the exhaust orifice is blocked. Three-Way Normally Closed Valves are available in Line Connect style (with piping adapter), and Free Vent style.



Port Identification: IN - 1 CYL - 2 EXH - 3

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body - Grommet		Manifold Mount Valve Body-Grommet		Cv Factor		Low Watt Specifications					
	Body	Stop	Body	Stop		SS	Brass	SS	Brass	Body	Stop	Body	Stop	1.5 Watt	2.0 Watt	2.5 Watt	3.0 Watt
														A	B	C	D
Series 1	1/32	1/32	0.035	0.025	200	141040	141140	161040	161140	0.030	0.025	100.000	-	150	-	-	-
	3/64	3/64	0.050	0.065	150	141041	141141	161041	161141	0.050	0.060	-	80	120	-	-	-
	1/16	1/16*	0.085	0.115	100	141042	141142	161042	161142	0.085	0.105	-	45	650	-	-	-
	5/64	1/16*	0.125	0.115	80	141043	141143	161043	161143	0.120	0.105	-	25	-	50	-	-
	3/32	1/16*	0.165	0.115	60	141044	141144	161044	161144	0.150	0.105	-	-	20	35	-	-
	1/8	1/16*	0.240	0.115	40	141045	141145	161045	161145	0.225	0.105	-	-	10	20	-	-
	5/32	1/16*	0.285	0.115	10	141046	141146	161046	161146	0.270	0.105	-	7	-	10	-	-
	Series 2	1/32	1/32	0.035	0.025	250	241040	241140	261040	261140	0.030	0.025	150	185	210	-	-
3/64		3/64	0.050	0.065	175	241041	241141	261041	261141	0.050	0.060	80	120	140	170	-	-
1/16		1/16	0.085	0.115	125	241042	241142	261042	261142	0.085	0.105	45	60	-	95	-	-
5/64		5/64*	0.125	0.140	100	241043	241143	261043	261143	0.120	0.105	25	-	50	65	-	-
3/32		5/64*	0.165	0.140	75	241044	241144	261044	261144	0.150	0.105	20	-	35	55	-	-
1/8		5/64*	0.240	0.140	45	241045	241145	261045	261145	0.225	0.105	-	10	20	30	-	-
5/32		5/64*	0.285	0.140	20	241046	241146	N/A	N/A	0.270	0.105	-	7	10	20	-	-

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body - Grommet		Cv Factor		Low Watt Specifications			
	Body	Stop	Body	Stop		SS	Brass	Body	Stop	1.5 Watt	2.0 Watt	2.5 Watt	3.0 Watt
										A	B	C	D
Series 3	1/32	1/32	0.035	0.025	250	351040	351140	0.030	0.025	150	185	210	-
	3/64	3/64	0.050	0.065	175	351041	351141	0.050	0.060	80	120	140	170
	1/16	1/16	0.085	0.115	125	351042	351142	0.085	0.105	45	60	-	95
	5/64	5/64*	0.125	0.145	100	351043	351143	0.120	0.125	25	-	50	65
	3/32	5/64*	0.165	0.145	75	351044	351144	0.150	0.125	20	-	35	55
	1/8	5/64*	0.240	0.145	45	351045	351145	0.225	0.125	-	10	12	30
	5/32	5/64*	0.290	0.145	20	351046	351146	0.270	0.125	-	7	10	20
	3/16	5/64*	0.345	0.145	10	351047	351147	-	-	-	-	-	-
1/4	5/64*	0.415	0.145	5	351048	351148	-	-	-	-	-	-	

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body - Grommet				Manifold Mount Valve Body - Grommet	
	Body	Stop	Body	Stop		Stainless Steel		Brass		SS	Brass
						1/8" NPTF	1/4" NPTF	1/8" NPTF	1/4" NPTF		
Series 6	1/32	1/32	0.035	0.025	300	641040	651040	641140	651140	661040	661140
	3/64	3/64	0.050	0.065	250	641041	651041	641141	651141	661041	661141
	1/16	1/16	0.090	0.115	200	641042	651042	641142	651142	661042	661142
	5/64	5/64	0.135	0.180	175	641043	651043	641143	651143	661044	661144
	3/32	3/32	0.180	0.210	125	641044	651044	641144	651144	661045	661145
	1/8	1/8	0.275	0.240	85	641045	651045	641145	651145	661046	661146
	5/32	1/8	0.370	0.240	50	641046	651046	641146	651146	661047	661147
	3/16	1/8	0.455	0.240	30	641047	651047	641147	651147	661048	661148
	1/4	1/8	0.650	0.240	15	641048	651048	641148	651148	-	-

* Larger stop orifice available with reduced pressure ratings; consult KIP.
 Note: Series 6 manifold mount 3-Way valves have a 1/4" NPTF adapter as standard. 1/8" NPTF available upon request.

KIP Valve ordering information

3-Way Multi-Purpose

Three-Way Multi-Purpose (3WMP) - Valve with three ports, and two orifices. One orifice is located in the body and the other in the end stop. The three ports are the “NORMALLY OPEN”, “NORMALLY CLOSED” and “COMMON”. When the valve is de-energized, the common port is open to the normally open port. When the valve is energized, the normally closed port is open allowing flow from the common port and the normally open orifice is blocked. Three-Way Multi-Purpose Valves can be used as a 3WNC, 3WNO, or a 3WDC valve. Additionally, this valve can be used to pipe the alternate flow of two different media to one port.



Port Identification: NC - 1 COM - 2 NO - 3

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body - Grommet		Manifold Mount Valve Body-Grommet		Cv Factor		Low Watt Specifications			
	Body	Stop	Body	Stop		SS	Brass	SS	Brass	Body	Stop	1.5 Watt	2.0 Watt	2.5 Watt	3.0 Watt
												A	B	C	D
Series 1	1/32	1/32	0.035	0.025	150	141060	141160	161060	161160	0.030	0.025	-	80	-	95
	3/64	3/64	0.050	0.065	100	141061	141161	161061	161161	0.050	0.060	-	25	40	60
	1/16	1/16*	0.085	0.115	80	141062	141162	161062	161162	0.085	0.105	-	-	-	20
	5/64	1/16*	0.125	0.115	60	141063	141163	161063	161163	0.120	0.105	-	-	-	8
	3/32	1/16*	0.165	0.115	35	141064	141164	161064	161164	0.150	0.105	-	-	-	-
	1/8	1/16*	0.240	0.115	20	141065	141165	161065	161165	0.225	0.105	-	-	-	-
	5/32	1/16*	0.285	0.115	10	141066	141166	161066	161166	0.270	0.105	-	-	-	-
Series 2	1/32	1/32	0.035	0.025	175	241060	241160	261060	261160	0.030	0.025	-	-	95	130
	3/64	3/64	0.050	0.065	125	241061	241161	261061	261161	0.050	0.060	-	-	50	75
	1/16	1/16	0.085	0.115	100	241062	241162	261062	261162	0.085	0.105	-	-	10	20
	5/64	5/64*	0.125	0.140	75	241063	241163	261063	261163	0.120	0.125	-	-	-	15
	3/32	5/64*	0.165	0.140	50	241064	241164	261064	261164	0.150	0.125	-	-	-	-
	1/8	5/64*	0.240	0.140	25	241065	241165	261065	261165	0.225	0.125	-	-	-	-
	5/32	5/64*	0.285	0.140	15	241066	241166	N/A	N/A	0.270	0.125	-	-	-	-

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body - Grommet		Cv Factor		Low Watt Specifications			
	Body	Stop	Body	Stop		SS	Brass	Body	Stop	1.5 Watt	2.0 Watt	2.5 Watt	3.0 Watt
										A	B	C	D
Series 3	1/32	1/32	0.035	0.025	175	351060	351160	0.030	0.025	-	-	95	130
	3/64	3/64	0.050	0.065	125	351061	351161	0.050	0.060	-	-	50	75
	1/16	1/16	0.085	0.115	100	351062	351162	0.085	0.105	-	-	10	20
	5/64	5/64*	0.125	0.145	75	351063	351163	0.120	0.125	-	-	-	15
	3/32	5/64*	0.165	0.145	50	351064	351164	0.150	0.125	-	-	-	-
	1/8	5/64*	0.240	0.145	25	351065	351165	0.225	0.125	-	-	-	-
	5/32	5/64*	0.290	0.145	15	351066	351166	0.270	0.125	-	-	-	-
3/16	5/64*	0.345	0.145	10	351067	351167	-	-	-	-	-	-	
1/4	5/64*	0.415	0.145	5	351068	351168	-	-	-	-	-	-	

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body - Grommet				Manifold Mount Valve Body - Grommet	
	Body	Stop	Body	Stop		Stainless Steel		Brass		SS	Brass
						1/8" NPTF	1/4" NPTF	1/8" NPTF	1/4" NPTF		
Series 6	1/32	1/32	0.035	0.025	275	641060	651060	641160	651160	661060	661160
	3/64	3/64	0.050	0.065	200	641061	651061	641161	651161	661061	661161
	1/16	1/16	0.090	0.115	175	641062	651062	641162	651162	661062	661162
	5/64	5/64	0.135	0.180	125	641063	651063	641163	651163	661063	661163
	3/32	3/32	0.180	0.210	100	641064	651064	641164	651164	661064	661164
	1/8	1/8	0.750	0.240	60	641065	651065	641165	651165	661065	661165
	5/32	1/8	0.370	0.240	40	641066	651066	641166	651166	661066	661166
	3/16	1/8	0.455	0.240	25	641067	651067	641167	651167	661067	661167
	1/4	1/8	0.650	0.240	15	641068	651068	641168	651168	661068	661168

* Larger stop orifice available with reduced pressure ratings; consult KIP.

Note: Series 6 manifold mount 3-Way valves have a 1/4" NPTF adapter as standard. 1/8" NPTF available upon request.

KIP Valve ordering information

3-Way Normally Open

Three-Way Normally Open (3WNO) - Valve with three ports, and two orifices. One orifice is located in the body and the other in the end stop. The three ports are the “IN”, “EXHAUST” and “CYLINDER”. When the valve is de-energized, the inlet is open and the exhaust is closed. When the valve is energized, the exhaust is open allowing flow from the cylinder port and the inlet orifice is blocked.



Port Identification: EXH - 1 CYL - 2 IN-3

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body Grommet		MANIFOLD MOUNT Valve Body	
	Body	Stop	Body	Stop		Stainless Steel	Brass	Stainless Steel	Brass
Series 1	1/32	1/32	0.035	0.025	160	141050	141150	161050	161150
	3/64	3/64	0.050	0.065	125	141051	141151	161051	161151
	1/16	1/16*	0.085	0.115	100	141052	141152	161052	161152
	5/64	1/16*	0.125	0.115	80	141053	141153	161053	161153
	3/32	1/16*	0.165	0.115	60	141054	141154	161054	161154
	1/8	1/16*	0.240	0.115	40	141055	141155	161055	161155
	5/32	1/16*	0.285	0.115	10	141056	141156	N/A	N/A
	Series 2	1/32	1/32	0.035	0.025	200	241050	241150	261050
3/64		3/64	0.050	0.065	150	241051	241151	261051	261151
1/16		1/16	0.085	0.115	125	241052	241152	261052	261152
5/64		5/64*	0.125	0.140	100	241053	241153	261053	261153
3/32		5/64*	0.165	0.140	75	241054	241154	261054	261154
1/8		5/64*	0.240	0.140	60	241055	241155	261055	261155
5/32		5/64*	0.285	0.140	25	241056	241156	N/A	N/A

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body Grommet	
	Body	Stop	Body	Stop		Stainless Steel	Brass
Series 3	1/32	1/32	0.035	0.025	200	351050	351150
	3/64	3/64	0.050	0.065	150	351051	351151
	1/16	1/16	0.085	0.115	125	351052	351152
	5/64	5/64*	0.125	0.145	100	351053	351153
	3/32	5/64*	0.165	0.145	75	351054	351154
	1/8	5/64*	0.240	0.145	60	351055	351155
	5/32	5/64*	0.290	0.145	45	351056	351156
	3/16	5/64*	0.345	0.145	10	351057	351157
	1/4	5/64*	0.415	0.145	5	351058	351158

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body - Grommet				Manifold Mount Valve Body - Grommet	
	Body	Stop	Body	Stop		Stainless Steel		Brass		SS	Brass
						1/8" NPTF	1/4" NPTF	1/8" NPTF	1/4" NPTF		
Series 6	1/32	1/32	0.035	0.025	400	641050	651050	641150	651150	661050	661150
	3/64	3/64	0.050	0.065	250	641051	651051	641151	651151	661051	661151
	1/16	1/16	0.090	0.115	200	641052	651052	641152	651152	661052	661152
	5/64	5/64	0.135	0.180	175	641053	651053	641153	651153	661053	661153
	3/32	3/32	0.180	0.210	125	641054	651054	641154	651154	661054	661154
	1/8	1/8	0.275	0.240	85	641055	651055	641155	651155	661055	661155
	5/32	1/8	0.370	0.240	50	641056	651056	641156	651156	661056	661156
	3/16	1/8	0.455	0.240	35	641057	651057	641157	651157	661057	661157
	1/4	1/8	0.650	0.240	15	641058	651058	641158	651158	661058	661158

* Larger stop orifice available with reduced pressure ratings; consult KIP.

NOTE: Series 6 manifold mount 3-Way valves have a 1/4" NPTF adapter as standard. 1/8" NPTF available upon request.

KIP Valve ordering information

3-Way Directional Control

Three-Way Directional Control (3WDC) - Valve with three ports, and two orifices. One orifice is located in the body and the other in the end stop. The three ports are the “NORMALLY OPEN”, “NORMALLY CLOSED” and “IN”. When the valve is de-energized, the inlet is open to the normally open port. When the valve is energized, the normally closed port is open allowing flow from the inlet port and the normally open orifice is blocked. Three-Way Directional Control valve can be used to divert flow from one port to another.



Port Identification: NC - 1 IN - 2 NO - 3

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body Grommet		MANIFOLD MOUNT Valve Body	
	Body	Stop	Body	Stop		Stainless Steel	Brass	Stainless Steel	Brass
Series 1	1/32	1/32	0.035	0.025	230	141070	141170	161070	161170
	3/64	3/64	0.050	0.065	160	141071	141171	161071	161171
	1/16	1/16*	0.085	0.115	120	141072	141172	161072	161172
	5/64	1/16*	0.125	0.115	80	141073	141173	161073	161173
	3/32	1/16*	0.165	0.115	60	141074	141174	161074	161174
	1/8	1/16*	0.240	0.115	35	141075	141175	161075	161175
	5/32	1/16*	0.285	0.115	20	141076	141176	N/A	161176
	Series 2	1/32	1/32	0.035	0.025	275	241070	241170	261070
3/64		3/64	0.050	0.065	200	241071	241171	261071	261171
1/16		1/16	0.085	0.115	150	241072	241172	261072	261172
5/64		5/64*	0.125	0.140	100	241073	241173	261073	261173
3/32		5/64*	0.165	0.140	75	241074	241174	261074	261174
1/8		5/64*	0.240	0.140	50	241075	241175	261075	261175
5/32		5/64*	0.285	0.140	25	241076	241176	N/A	N/A

	Orifice Diameter		Cv Factor		MOPD (psi)	Standard Valve Body Grommet	
	Body	Stop	Body	Stop		Stainless Steel	Brass
Series 3	1/32	1/32	0.035	0.025	275	351070	351170
	3/64	3/64	0.050	0.065	200	351071	351171
	1/16	1/16	0.085	0.115	150	351072	351172
	5/64	5/64*	0.125	0.145	100	351073	351173
	3/32	5/64*	0.165	0.145	75	351074	351174
	1/8	5/64*	0.240	0.145	50	351075	351175
	5/32	5/64*	0.290	0.145	25	351076	351176
	3/16	5/64*	0.345	0.145	10	351077	351177
	1/4	5/64*	0.415	0.145	5	351078	351178

* Larger stop orifice available with reduced pressure ratings; consult KIP.

Value-Added Valve Options

Take KIP Service Another Step... or Two



Take the opportunity to reduce multiple parts and multiple processes to one complete valve assembly purchase. Have all your fittings Teflon taped, installed and leadwire trimmed to the proper length and the connector of your choice attached.

KIP Incorporated offers a wide array of fittings and electrical terminations for a complete manifold or solenoid valve assembly. We offer pre-taped (Teflon) fittings, factory installed and leak checked, and shipped to you under one part number.

Let KIP show you the benefits of part number consolidation, from overall part cost to internal cost and time reduction.

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Features:

- Reduce your inventory requirements
- Plan for one part rather than multiple components
- Shift quality responsibility for complete assembly to KIP

Whether you are considering design changes of an existing product or a new product development, contact KIP early in the development stage. KIP can bring a high level of application expertise and technical support to your design project.

We can evaluate the entire system, including pressure controls, fittings, transducers, gauges and overall packaging requirements, to provide you with a cost-effective system rather than a jigsaw puzzle of components.

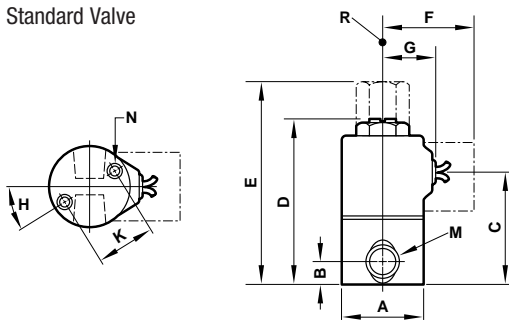
We provide support from design through installation. When product design is completed, tested and approved, KIP will talk to your manufacturing personnel concerning packaging and handling requirements.

Don't wait any longer to contact KIP with your requirements!

KIP Valves

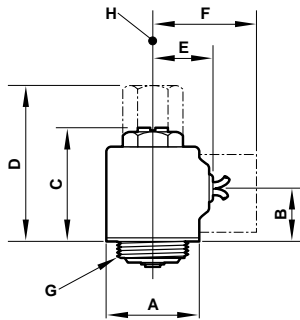
Dimensions in inches (mm)

Standard Valve



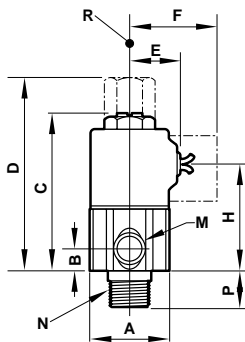
	A	B	C	D	E	F	G	H	K	M	N	R
Series 1	.99 (25)	.28 (7)	1.33 (33)	2.12 (54)	2.47 (63)	1.12 (29)	.64 (16)	32-1/2°	.73 (19)	1/8-27 NPTF	#8-32 UNC x 1/4 MFT	1/8-27 NPTF
Series 2	.99 (25)	.28 (7)	1.51 (38)	2.32 (59)	2.66 (68)	1.12 (29)	.64 (16)	32-1/2°	.73 (19)	1/8-27 NPTF	#8-32 UNC x 1/4 MFT	1/8-27 NPTF
Series 3	1.18 (30)	.355 (9)	1.65 (42)	2.46 (62)	2.80 (71)	1.19 (30)	.78 (20)	41° 0°	.91 (23)	1/8-27 NPTF 1/4-18 NPTF	#10-32 UNF x 1/4 MFT #8-32 UNC x 1/4 MFT	1/8-27 NPTF or 1/4-18 NPTF
Series 6	1.62 (41)	.344 (9)	G-2.04 (52)	2.86 (73)	3.54 (90)	1.58 (40)	1.03 (26)	45°	1.24 (31)	1/8-27 NPTF or 1/4-18 NPTF	#10-32 UNF x 1/4 MFT 5/16 MFT	1/8-27 NPTF or 1/4-18 NPTF

Operator Standard



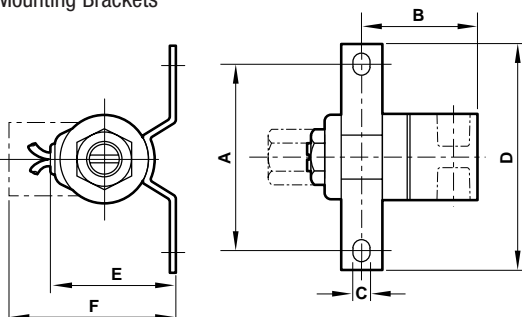
	A	B	C	D	E	F	G	H
Series 1	1.02 (26)	.52 (13)	1.32 (34)	1.67 (42)	.64 (16)	1.12 (29)	3/4-32 UNEF	1/8-27 NPTF
Series 2	1.02 (26)	.71 (18)	1.52 (39)	1.86 (47)	.64 (16)	1.12 (29)	3/4-32 UNEF	1/8-27 NPTF
Series 3	1.16 (30)	.71 (18)	1.52 (39)	1.86 (47)	.78 (20)	1.19 (30)	3/4-32 UNEF	1/8-27 NPTF or 1/4-18 NPTF
Series 6	1.64 (42)	G-.97 (25) C-.80 (20)	1.79 (46)	2.48 (63)	1.03 (26)	1.58 (40)	1-32 UN	1/8-27 NPTF or 1/4-18 NPTF

Hex Male Valve Standard



	A	B	C	D	E	F	H	M	N	P	R
Series 1	.94 (24) Hex	.27 (7)	2.12 (54)	2.47 (63)	.64 (16)	1.12 (29)	1.32 (33)	1/8-27 NPTF	1/8-27 NPTF 1/4-18 NPTF	.44 (11) .56 (14)	1/8-27 NPTF
Series 2	.94 (24) Hex	.27 (7)	2.32 (59)	2.66 (68)	.64 (16)	1.12 (29)	1.51 (38)	1/8-27 NPTF	1/8-27 NPTF 1/4-18 NPTF	.44 (11) .56 (14)	1/8-27 NPTF

Mounting Brackets



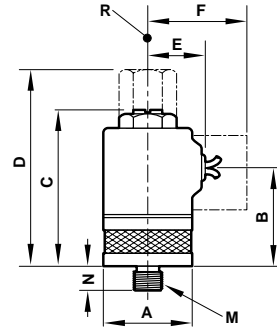
	A	B	C	D	E	F
Series 1	2.13 (54)	1.33 (34)	.20 (5)	2.63 (67)	1.45 (37)	1.93 (49)
Series 6	2.13 (54)	1.97 (50)	.20 (5)	2.63 (67)	2.15 (55)	2.68 (68)

KIP Valves

Dimensions in inches (mm)

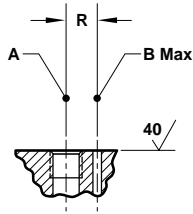
Manifold Mount Valve

	A	B	C	D	E	F	m	n	r
Series 1	.99 (25)	1.07 (27)	1.87 (48)	2.22 (56)	.64 (16)	1.12 (29)	5/16 24UNF	.25 (6)	1/8-27 NPTF
Series 2	.99 (25)	1.26 (32)	2.07 (53)	2.41 (61)	.64 (16)	1.12 (29)	5/16 24UNF	.25 (6)	1/8-27 NPTF
Series 6	1.62 (41)	G- 1.73 (44) C- 1.56 (40)	2.55 (65)	3.23 (82)	1.03 (26)	1.58 (40)	1/2 20UNF	.31 (8)	1/8-27 NPTF or 1/4-18 NPTF



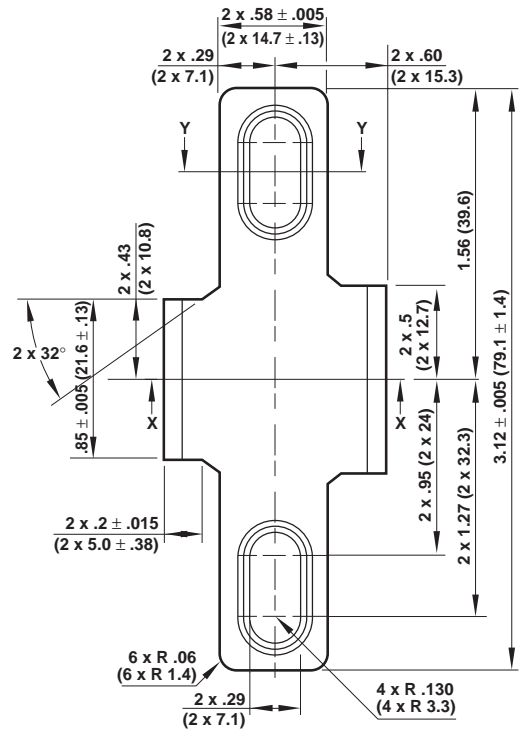
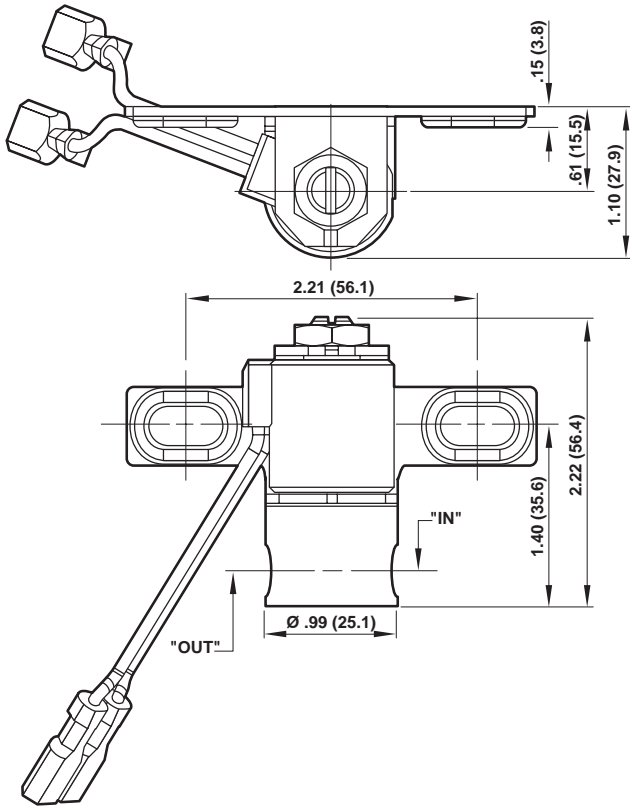
Manifold Mount Interface

	A	B	R
Series 1 & 2	5/16 - 20 UNF-2B x .26 MFT	.09 (2)	.31 (8)
Series 6	1/2 - 20 UNF-2B x .32 MFT	.27 (7)	.51 (13)



NOTE: A is underseat connection**
B is overseat connection***

Standard Bracketed Yoke

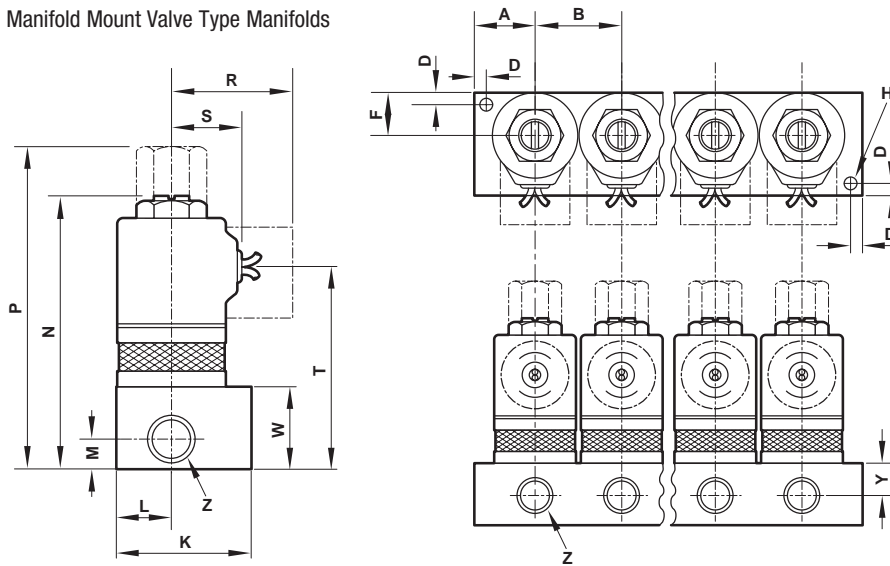


KIP Valves

Dimensions in inches (mm)

Manifold Dimensions

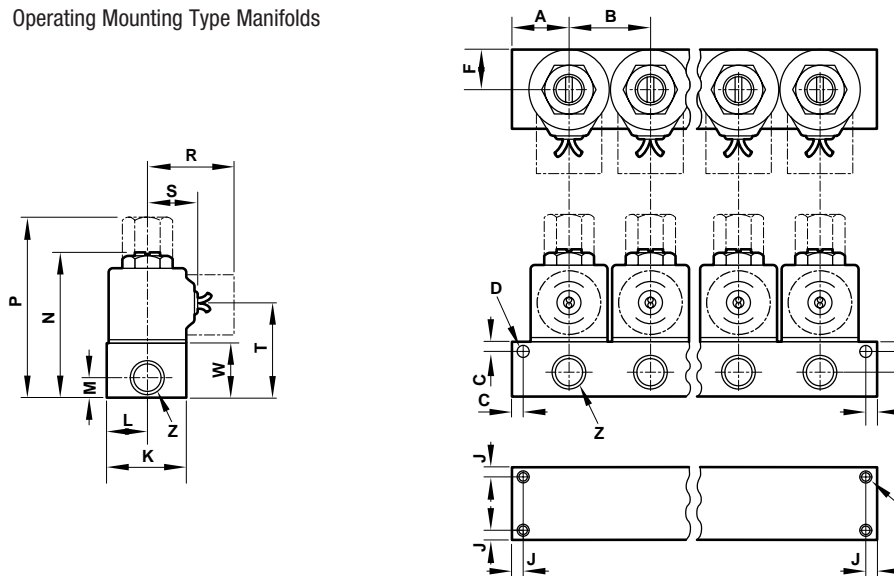
Manifold Mount Valve Type Manifolds



Series	A	B	D	F	H	K	L	M	N	P	R	S	T	W	Y	Z
Series 1	.75	1.06	.14	.52	.15	1.25	.52	.28	2.62	2.97	1.12	.64	1.82	.75	.41	1/8-27
	(19)	(27)	(4)	(13)	(4)	(32)	(13)	(7)	(67)	(75)	(29)	(16)	(46)	(19)	(10)	NPTF
Series 2	.75	1.06	.14	.52	.15	1.25	.52	.28	2.82	3.16	1.12	.64	2.01	.75	.41	1/8-27
	(19)	(27)	(4)	(13)	(4)	(32)	(13)	(7)	(72)	(80)	(29)	(16)	(51)	(19)	(10)	NPTF
Series 6	.94	1.69	.19	.84	.20	1.75	.84	.38	3.55	4.23	1.58	1.03	2.73*	1.00	.56	1/8-27
	(24)	(43)	(5)	(21)	(5)	(45)	(21)	(10)	(90)	(108)	(40)	(26)	(69)	(25)	(14)	NPTF
								.44	(11)	(90)	(108)	(40)	2.56**	(25)	(14)	1/4-18
													(65)			NPTF

* = Grommet ** = Conduit

Operating Mounting Type Manifolds

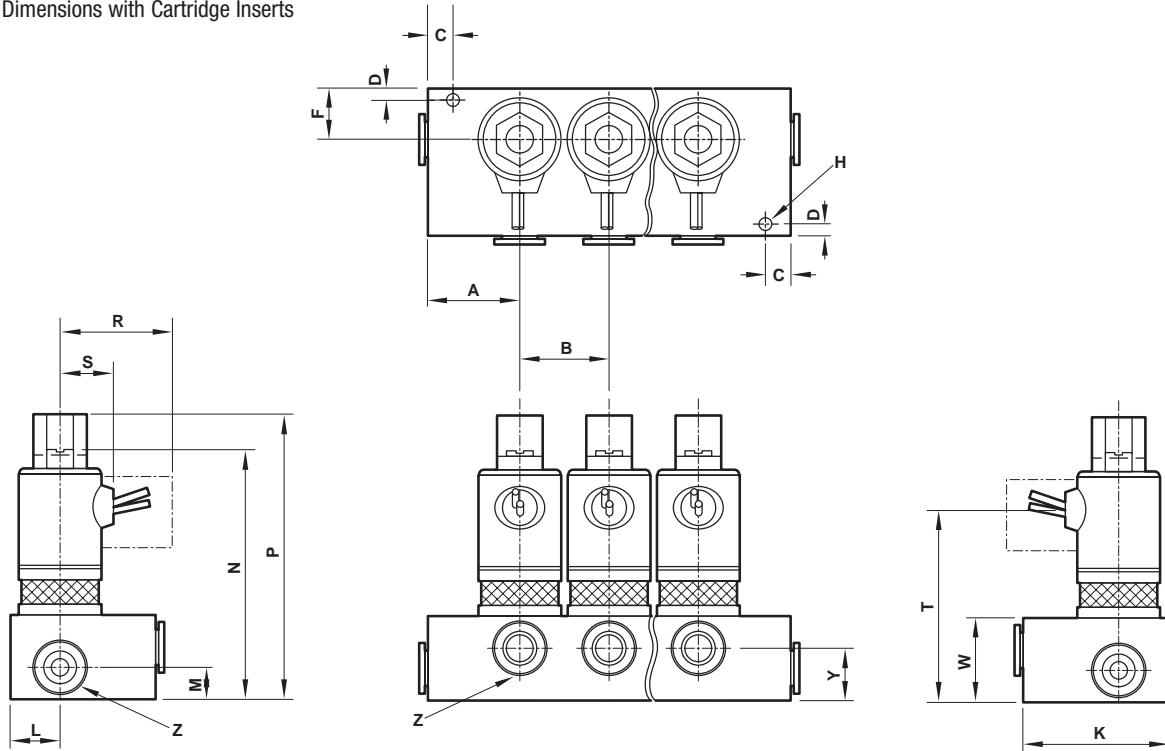


Series	A	B	C	D	F	J	K	L	M	N	P	R	S	T	U	W	Y	Z
Series 1	.78	1.06	.16	.19	.52	.16	1.00	.50	.42	2.33	2.67	1.12	.64	1.52	#8-32 UNC	1.00	.58	1/8-27
	(20)	(27)	(4)	(5)	(13)	(4)	(25)	(13)	(10)	(59)	(68)	(29)	(16)	(39)	x 1/4 MFT	(25)	(15)	NPTF
Series 2	.78	1.06	.16	.19	.52	.16	1.00	.50	.42	2.52	2.87	1.12	.64	1.72	#8-32 UNC	1.00	.58	1/8-27
	(20)	(27)	(4)	(5)	(13)	(4)	(25)	(13)	(10)	(64)	(73)	(29)	(16)	(44)	x 1/4 MFT	(25)	(15)	NPTF

KIP Valves

Dimensions in inches (mm)

Manifold Dimensions with Cartridge Inserts



	A	B	C	D	F	H	K	L	M	N	P	R	S	T	W	Y	Z
Series 1	.92	1.06	.30	.14	.52	.15	1.50	.52	.33	2.87	3.53	1.12	.64	2.07	1.00	.60	1/4
	(23)	(27)	(8)	(4)	(13)	(4)	(38)	(13)	(8)	(73)	(90)	(28)	(16)	(53)	(25)	(15)	
Series 1	1.10	1.06	.30	.14	.60	.15	1.75	.60	.38	2.87	3.69	1.12	.64	2.07	1.00	.62	3/8
	(28)	(27)	(8)	(4)	(15)	(4)	(45)	(15)	(10)	(73)	(94)	(28)	(16)	(53)	(25)	(16)	
Series 2	.92	1.06	.30	.14	.52	.15	1.50	.52	.33	3.07	3.71	1.12	.64	2.26	1.00	.60	1/4
	(23)	(27)	(8)	(4)	(13)	(4)	(38)	(13)	(8)	(78)	(94)	(28)	(16)	(57)	(25)	(15)	
Series 2	1.10	1.06	.30	.14	.60	.15	1.75	.60	.38	3.07	3.88	1.12	.64	2.26	1.00	.62	3/8
	(28)	(27)	(8)	(4)	(15)	(4)	(45)	(15)	(10)	(78)	(99)	(28)	(16)	(57)	(25)	(16)	
Series 6	1.17	1.69	.19	.19	.84	.20	2.00	.84	1.17	3.55	4.23	1.58	1.03	2.73*	1.00	.55	1/4
	(30)	(43)	(5)	(5)	(21)	(5)	(51)	(21)	(30)	(90)	(107)	(40)	(26)	(69)	(25)	(14)	
Series 6	1.41	1.69	.19	.19	.84	.20	2.25	.84	1.41	3.80	4.65	1.58	1.03	2.98*	1.25	.78	3/8
	(36)	(43)	(5)	(5)	(21)	(5)	(57)	(21)	(36)	(97)	(118)	(40)	(26)	(76)	(32)	(20)	
Series 6	1.41	1.69	.19	.19	.84	.20	2.25	.84	1.41	3.80	4.65	1.58	1.03	2.81**	1.25	.78	1/2
	(36)	(43)	(5)	(5)	(21)	(5)	(57)	(21)	(36)	(97)	(118)	(40)	(26)	(71)	(32)	(20)	
														2.98*			
														(76)			
														2.81**			
														(71)			