

# Instrument valves manifold

## V, VR, VL and VB series

Two, three & five valves instrument valves manifold

Total 316 stainless steel structure

Max. working pressure 42 Mpa (Vr2 series is 70 MPa)

The highest permissible working temperature 537°C

Selectable gland packing

### Instrument valves manifold

Features of valve bank

Test

Valve features

Parts details

Pressure-temperature rated value

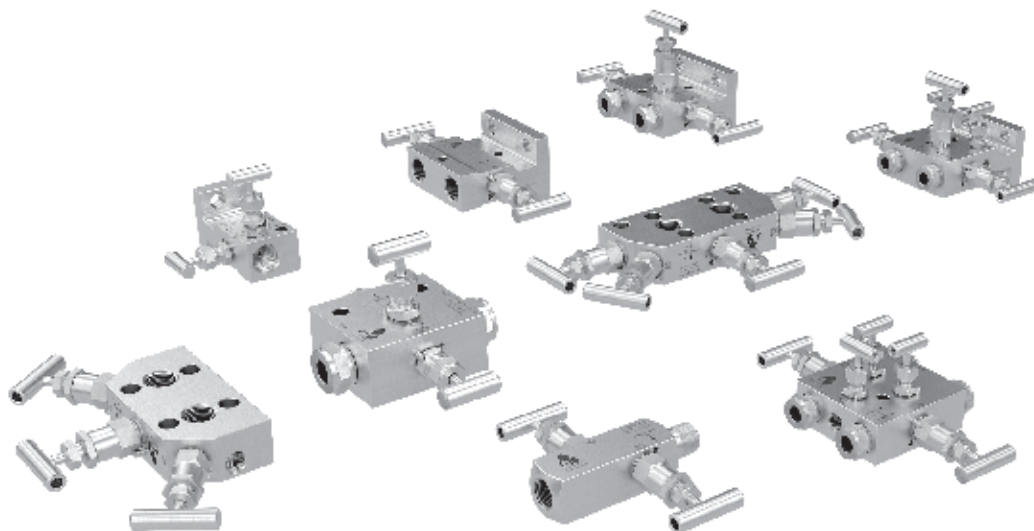
Coding rule for item No.

Two valves manifold

Three valves manifold

Five valves manifold

Optional accessories



## Features of valve bank

The two valves manifold applies to the pressure and liquid level occasions, while the three and five valves manifolds are suitable for the differential pressure occasions. V, VL and VB series are general valve banks. VR series are the valve banks which can be compatible with the Rosemount transmitters.

The normal temperature working pressure of VR2 valve bank is 70MPa, while others are 42MPa. The min. working temperature is -53°C and the max. working temperature is 537°C.

### Structural material

- The structure of valve bank is total 316 stainless steel, which has high strength and high corrosion resistance.
- Can be customized according to the requirements of users.
- The design safety factor is 4:1

### Structural integrity of valve bank

- The valve body adopts integrated-type structure, which has high overall strength.
- It is equipped with the safety shotpin so as to prevent the falling off of valve deck caused by misoperation or vibration.

### Leakproofness

- It adopts metal-against-metal rigidity sealing type between the valve deck and valve body.
- The standard gland packing of valve rod is PTFE (While using under high temperature, it is flexible graphite.)
- The valves uniformly adopt rotation-free spherical metal sealing form.

### Internal finish degree

- Internal surface electrochemistry burring treatment

### The connector type of valve bank adapting piece

- 12mm ferrule tube connector
- 1/2 in. ferrule tube connector
- 1/2 in. NPT thread
- Flange

### Installation

- Direct instrument installation or remote installation, which can be conducted by using NPT thread connectors and bite type tube fittings.
- The sealing element of standard flange is fluorocarbon FKM O-ring.
- The valve bank with flanges includes flange bolts and flange sealing elements.

## Test

Before leaving the factory, each set of valve bank has passed the 7MPa nitrogen pressure test. There is no bubble produced in the shell and valve seat within 1min.



1. The packing nut can be screwed up at any time to prevent the valve leakage.
2. With respect to the valves which haven't been open or closed for a long time, the initial torque will increase.

## Instrument valves manifold

### Features of valve bank

### Test

### Valve features

### Parts details

### Pressure-temperature rated value

### Coding rule for item No.

### Two valves manifold

### Three valves manifold

### Five valves manifold

### Optional accessories

## Valve features

The flow passing the valve bank will be controlled by a series of needle valves. The specific functions of each valve (such as cut-off, discharge or balance pressure) will be determined by its position on the valve bank.

The valves of instrument valves manifold have two sizes: large and small. The small valve applies to the valve port with aperture  $\Phi 3.2$ , while the large valve applies to the valve port with aperture  $\Phi 4.0$ . All the valves adopt the rotation-free stainless steel balls as their sealing elements. The valve can realize the back sealing on the max. open position.

The compressing degree of valve rod packing can be adjusted externally. PTFE is the packing of standard configuration and the flexible graphite packing is used in the occasions with high temperature.

### Instrument valves manifold

Features of valve bank

Test

### Valve features

Parts details

Pressure-temperature rated value

Coding rule for item No.

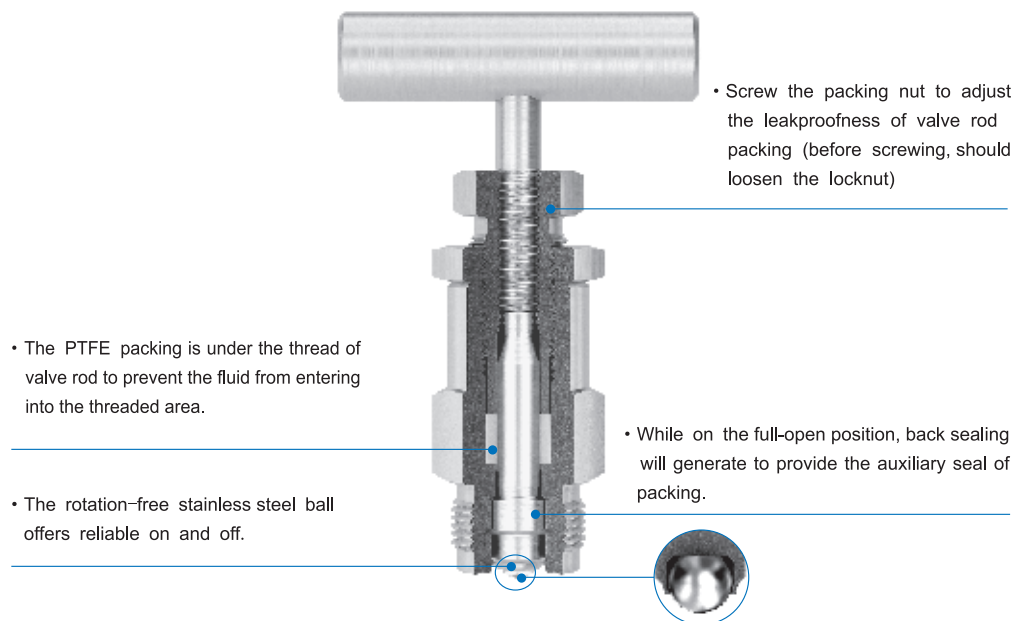
Two valves manifold

Three valves manifold

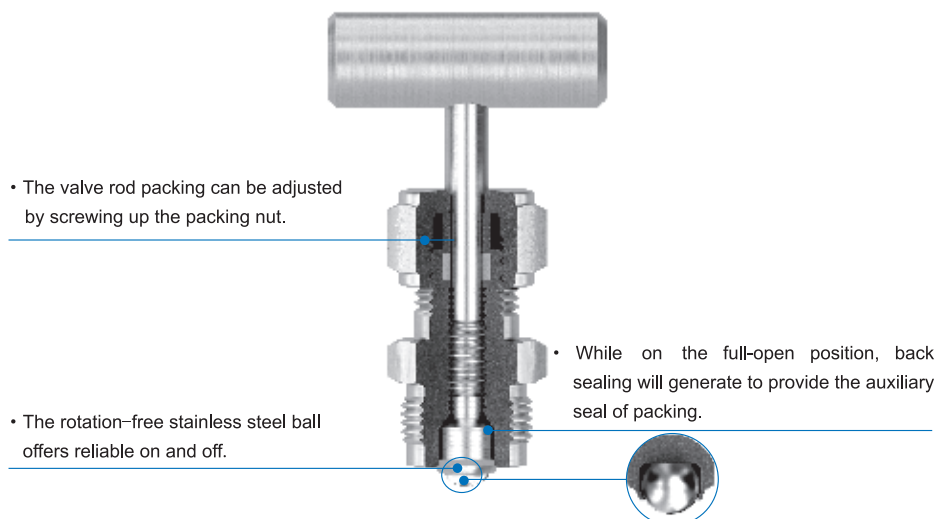
Five valves manifold

Optional accessories

Large valve



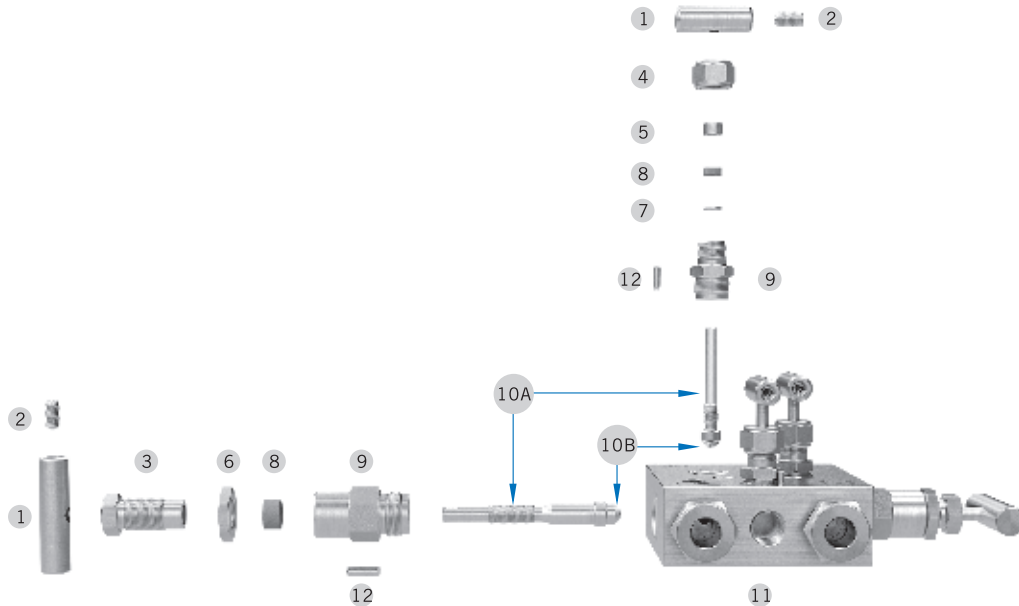
Small valve



## Parts details

Parts details		Materials/ASTM standard
1	Handle	316 SS / A276
2	Set screw	316 SS / A276
3	Packing nut	316 SS / A276
4	Packing nut	316 SS / A276
5	Upper gland	316 SS / A276
6	Locknut	316 SS / A276
7	Support ring	316 SS / A240
8	Packing	PTFE / D1710
9	Valve deck	316 SS / A479
10A	Valve rod	316 SS / A479

Parts details		Materials/ASTM standard
10B	Ball head	316 SS / A479
11	Valve body	316 SS / A479
12	Shotpin	316 SS / A276
	Flange bolt (Not shown)	316 SS / A193
	Flange sealing element (Not shown)	Carbon fluoride FKM
	Lubricant	Fluridizer, with PTFE & tungsten disulfide
		Hydrocarbon



## Pressure-temperature rated value

ASME grade	2500
Material group	2.2
Material name	316 SS
Temperature °C (°F)	Working pressure Mpa (psi)
-53 (-65) to 37 (100)	42.0(6090)
93(200)	35.5(5160)
121(250)	33.8(4910)
148(300)	32.1(4660)
176(350)	30.7(4470)
204(400)	29.4(4280)
232(450)	28.4(4130)
260(500)	27.4(3980)
287(550)	26.6(3870)

315(600)	25.9(3760)
343(650)	25.4(3700)
371(700)	24.8(3600)
398(750)	24.2(3520)
426(800)	23.8(3460)
454(850)	23.2(3380)
482(900)	22.5(3280)
510(950)	22.1(3220)
537(1000)	20.8(3030)

Note ①: Working pressure of VR2 series valve bank:  
 29°C (85°F) — 70 MPa (10150psi)  
 204°C (400°F) — 29.4 MPa (4280psi)

Note ②: Selection of packing:  
 -53~232°C (-63~450°F) adopts PTFE packing.  
 When the temperature is higher than 232°C (450°F),  
 adopt flexible graphite packing

## Instrument valves manifold

Features of valve bank

Test

Valve features

## Parts details

### Pressure-temperature rated value

Coding rule for item No.

Two valves manifold

Three valves manifold

Five valves manifold

Optional accessories



## Coding rule for item No.

SS – V 3 NB – K 12mm – FL – G  
 1 2 3 4 5 6 7 8

### Instrument valves manifold

Features of valve bank

Test

Valve features

Parts details

Pressure-temperature rated value

Coding rule for item No.

Two valves manifold

Three valves manifold

Five valves manifold

Optional accessories

1	Material type
	SS — 316 stainless steel

2	Series of valve bank
	V — V series      VR — VR series
	VB — VB series    VL — VL series

3	Quantity of valves
	2 — two valves manifold
	3 — three valves manifold
	5 — five valves manifold

4	Discharge type
	NB — No discharge outlet
	SB — Single discharge outlet
	DB — Double discharge outlets

5	Connector type
	K — Connector of ferrule tube
	F — NPT internal thread M — NPT external thread

6	Connector size
	British system: size value (Unit: in ×16 For example: 1/2×16=8, 1/2in.NPT internal thread is indicated by F8
	Metric system: size value (Unit: mm) + "mm"

7	FL
	FL — it is flange connector at the instrument end

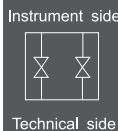
8	G
	G — When the operating temperature is higher than 232°C, mark.

For example: SS-V5SB-K12mm-FL

It means V series five valves manifold (double cut-off, double balance and single discharge valve). The material of valve body is 316 stainless steel. The technical end joint is 12mm bite type tube fittings. The instrument end is flange connector.

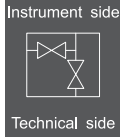
## Two valves manifold

### VL series two valves manifold



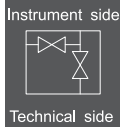
- Including two parallel stop valves, which can cut off the arbitrary one technical pipeline of the two, no balance and drain valve
- Designed for the application of liquid level
- Direct instrument installation
- Connector type: 1/2 in. NPT internal thread and flange
- Normal-temperature working pressure 42MPa (6090psi)

V series two valves manifold



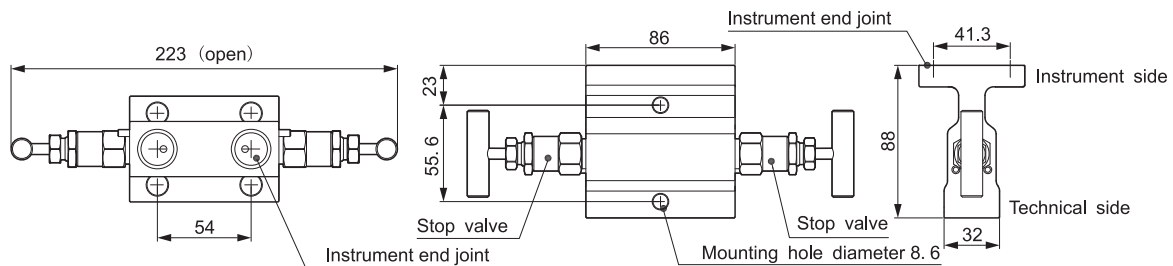
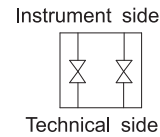
- Including one stop valve and one drain valve
- Apply to the static pressure cut-off and discharge of transmitter or pressure gauge (test)
- Direct instrument installation or remote installation
- Connector type: 1/2 in. and 12mm bite type tube fittings
- 1/2 in.NPT internal thread and flange
- Normal-temperature working pressure 42MPa (6090psi)

VR series two valves manifold



- Including one stop valve and one drain valve
- Apply to the static pressure cut-off and discharge of transmitter or pressure gauge (test)
- Direct instrument installation or remote installation
- Connector type: 1/2 in. and 12mm bite type tube fittings
- 1/2 in. NPT thread
- Normal-temperature working pressure 70MPa (10150psi)

Order information and size for VL series two valves manifold (Size is only for reference.)



End joint		Item No.
Technique	Instrument	
1/2in.NPT internal thread	Flange	SS-VL2NB-F8-FL

Instrument valves manifold

Features of valve bank

Test

Valve features

Parts details

Pressure-temperature rated value

Coding rule for item No.

Two valves manifold

Three valves manifold

Five valves manifold

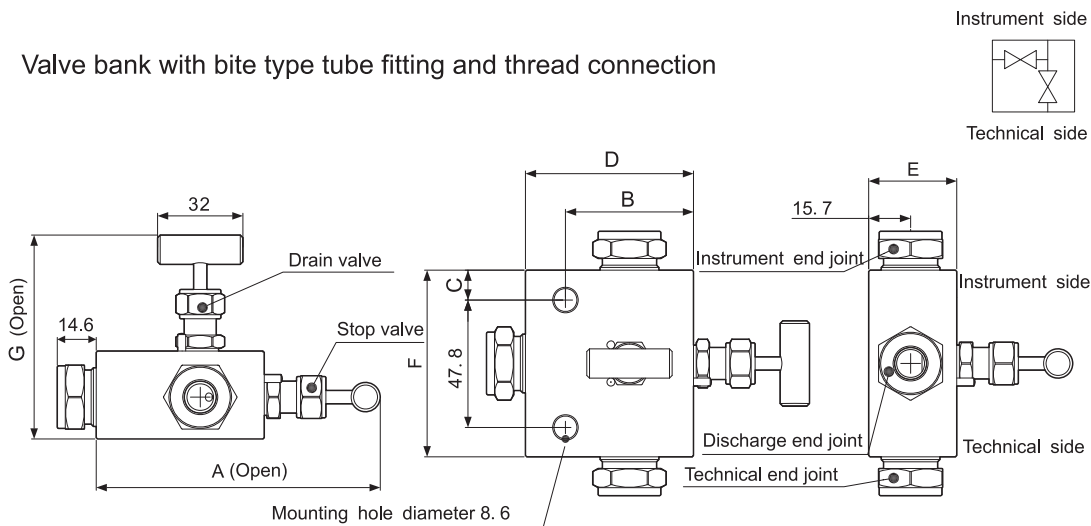
Optional accessories

Order information and size for V series two valves manifold (Size is only for reference.)

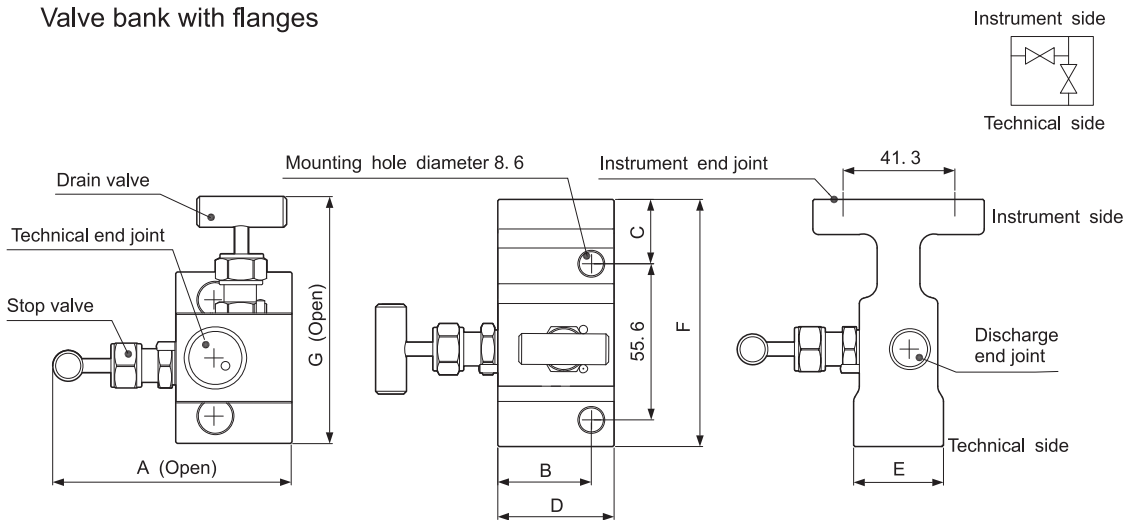
Instrument valves manifold

- Features of valve bank
- Test
- Valve features
- Parts details
- Pressure-temperature rated value
- Coding rule for item No.

Valve bank with bite type tube fitting and thread connection



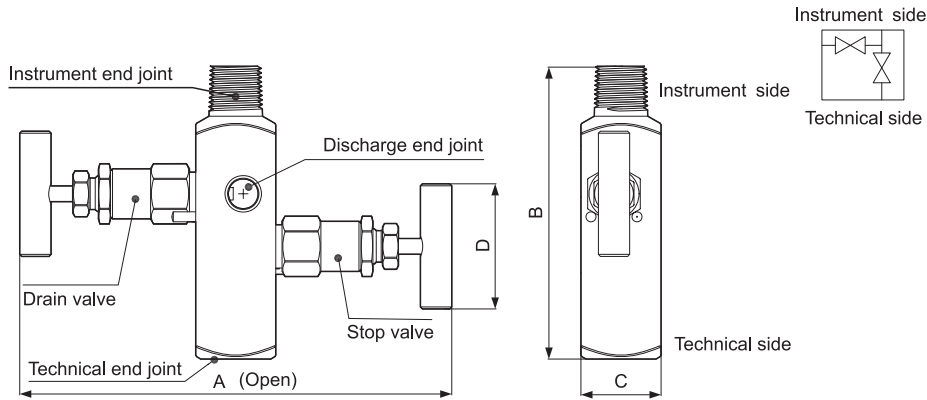
Valve bank with flanges



- Two valves manifold
- Three valves manifold
- Five valves manifold
- Optional accessories

End joint			Item No.	Size (mm)						
Technique	Instrument	Discharge		A	B	C	D	E	F	G
1/2in. bite type tube fittings			SS-V2SB-K8	107	48.0	11.1	63.0	33.0	70.0	76.5
1/2in. bite type tube fittings	Flange	1/4in.NPT internal thread	SS-V2SB-K8-FL	85.0	33.0	23.0	41.4	32.0	88.0	88.0
12mm bite type tube fittings			SS-V2SB-K12mm	107	48.0	11.1	63.0	33.0	70.0	76.5
12mm bite type tube fittings	Flange	1/4in.NPT internal thread	SS-V2SB-K12mm-FL	85.0	33.0	23.0	41.4	32.0	88.0	88.0
1/2in. internal thread NPT			SS-V2SB-F8	97.5	42.0	7.6	54.0	33.0	63.0	76.5
1/2in.NPT internal thread	Flange	1/4in.NPT internal thread	SS-V2SB-F8-FL	85.0	33.0	23.0	41.4	32.0	88.0	88.0

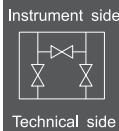
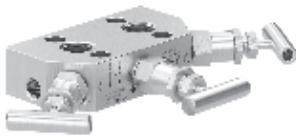
**Order information and size for VR series two valves manifold (Size is only for reference.)**



End joint			Item No.	Size (mm)			
Technique	Instrument	Discharge		A	B	C	D
1/2in.NPT internal thread	1/2in.NPT external thread	1/4in. NPT internal thread	SS-VR2SB-F8-M8	169	117	32.0	50.0
1/2in.NPT internal thread	1/2in.NPT internal thread		SS-VR2SB-F8-F8	169	95.0	32.0	50.0
1/2in. bite type tube fittings			SS-VR2SB-K8	169	95.0	32.0	50.0
12mm bite type tube fittings			SS-VR2SB-K12mm	169	95.0	32.0	50.0

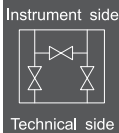
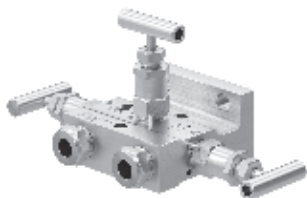
**Three valves manifold**

**VR series three valves manifold**



- Including two stop valves and one balance valve, two discharge outlets
- Apply to the cut-off and test (discharge) while using differential pressure transmitter
- Direct instrument installation
- Connector type: 1/2 in. NPT internal thread and coplane flanges
- Normal-temperature working pressure 42MPa (6090psi)

**V series three valves manifold**



- Including two stop valves and one balance valve
- Apply to the cut-off and test while using differential pressure transmitter
- Direct instrument installation or remote installation
- Connector type: 1/2 in. and 12mm bite type tube fittings, 1/2 in.NPT internal thread and flanges
- Normal-temperature working pressure 42MPa (6090psi)

**Instrument valves manifold**

Features of valve bank

Test

Valve features

Parts details

Pressure-temperature rated value

Coding rule for item No.

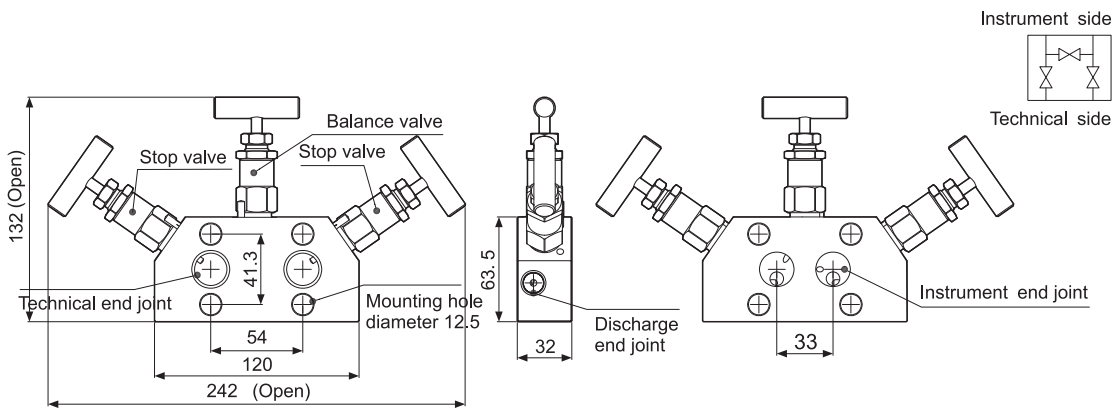
**Two valves manifold**

**Three valves manifold**

Five valves manifold

Optional accessories

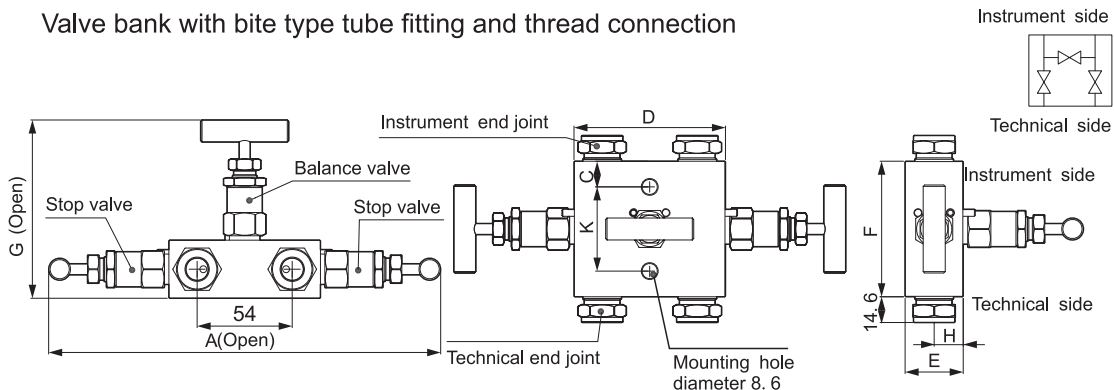
**Order information and size for VR series three valves manifold (Size is only for reference.)**



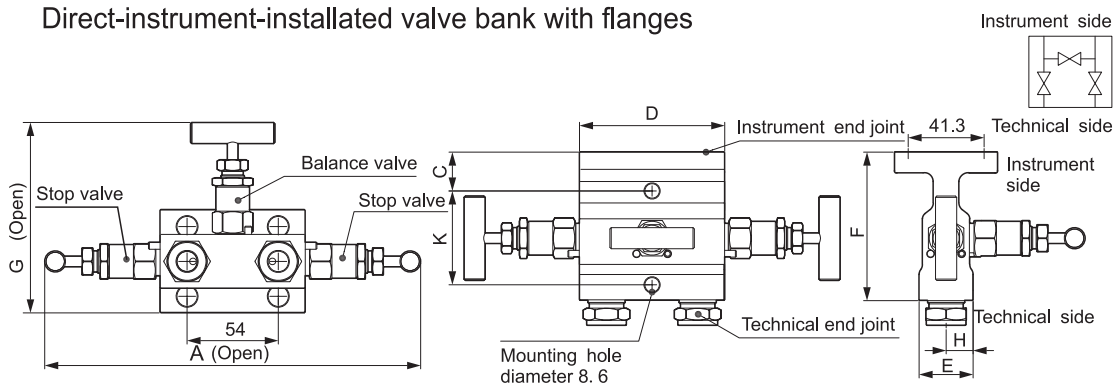
End joint			Item No.
Technique	Instrument	Discharge	
1/2in.NPT internal thread	Coplane flange	1/4in.NPT internal thread	SS-VR3DB-F8-FL

**Order information and size for V series three valves manifold (Size is only for reference.)**

**Valve bank with bite type tube fitting and thread connection**



**Direct-instrument-instalated valve bank with flanges**



End joint		Item No.	Size (mm)							
Technique	Instrument		A	C	D	E	F	G	H	K
1/2in.NPT internal thread		SS-V3NB-F8	223	7.6	86.0	33.0	63.0	102	16.5	47.8
1/2in.NPT internal thread	Flange	SS-V3NB-F8-FL	223	23.0	86.0	32.0	88.0	113	16.0	55.6
1/2in. bite type tube fittings		SS-V3NB-K8	223	14.6	86.0	33.0	77.0	102	16.5	47.8
1/2in. bite type tube fittings	Flange	SS-V3NB-K8-FL	223	23.0	86.0	32.0	88.0	113	16.0	55.6
12mm bite type tube fittings		SS-V3NB-K12mm	223	14.6	86.0	33.0	77.0	102	16.5	47.8
12mm bite type tube fittings	Flange	SS-V3NB-K12mm-FL	223	23.0	86.0	32.0	88.0	113	16.0	55.6

**Instrument valves manifold**

Features of valve bank

Test

Valve features

Parts details

Pressure-temperature rated value

Coding rule for item No.

Two valves manifold

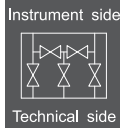
**Three valves manifold**

Five valves manifold

Optional accessories

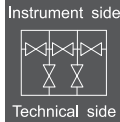
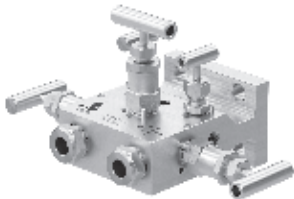
## Five valves manifold

### V series five valves manifold



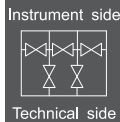
- Including two stop valves, two balance valves and one drain valve
- Apply to the differential pressure transmitter, which requires double-balance function
- Direct instrument installation or remote installation
- Connector type: 1/2 in. and 12mm bite type tube fittings, 1/2 in. NPT internal thread and flange
- Normal-temperature working pressure 42MPa (6090psi)

### VB series five valves manifold



- Including two stop valves, one balance valve and two drain valves
- Apply to the differential pressure transmitter, which requires double-discharge function
- Direct instrument installation or remote installation
- Connector type: 1/2 in. and 12mm bite type tube fittings, 1/2 in. NPT internal thread and flange
- Normal-temperature working pressure 42MPa (6090psi)

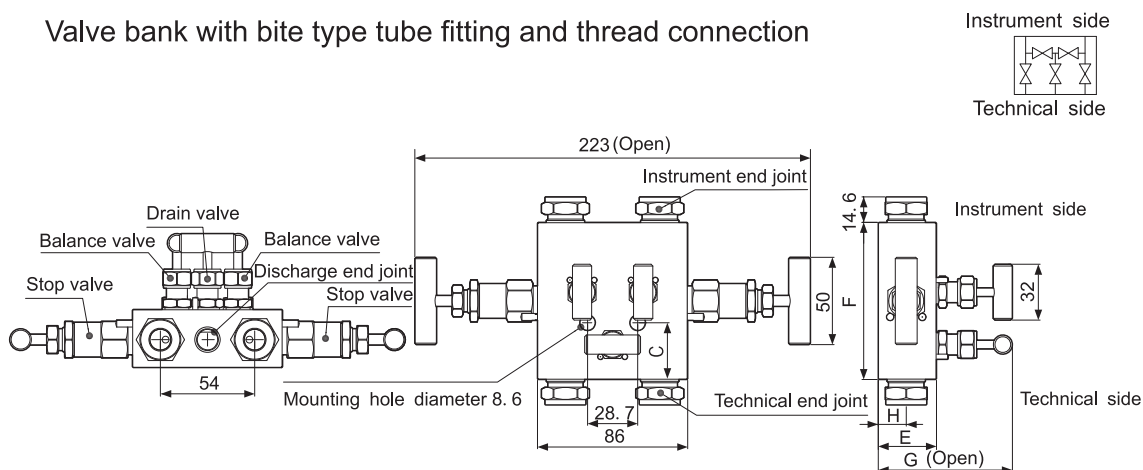
### VR series five valves manifold



- Including two stop valves, two drain valves and one balance valve
- Apply to the differential pressure transmitter, which requires double-discharge function
- Direct instrument installation
- Connector type: 1/2 in. NPT internal thread and coplane flange
- Normal-temperature working pressure 42MPa (6090psi)

Order information and size for V series five valves manifold (Size is only for reference.)

Valve bank with bite type tube fitting and thread connection



### Instrument valves manifold

Features of valve bank

Test

Valve features

Parts details

Pressure-temperature rated value

Coding rule for item No.

Two valves manifold

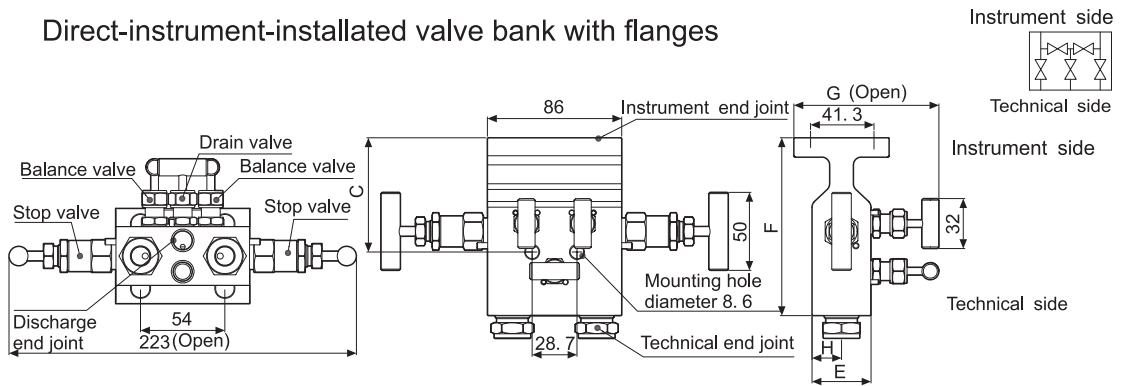
Three valves manifold

### Five valves manifold

Optional accessories

**Order information and size for V series five valves manifold (The size is only for reference)**

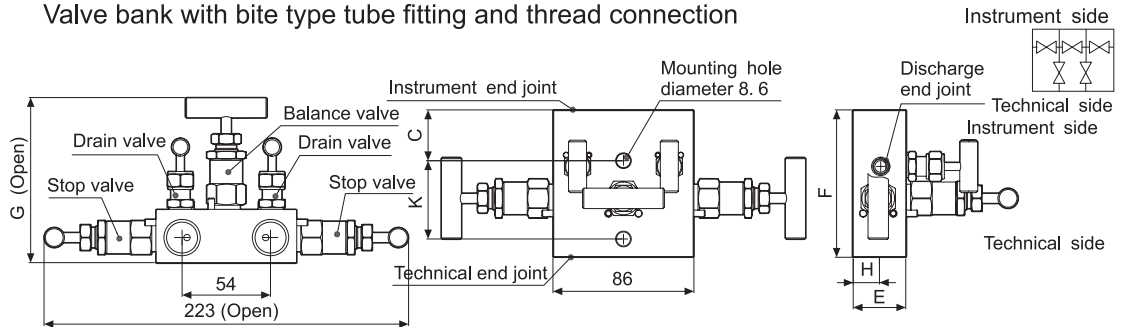
**Direct-instrument-installed valve bank with flanges**



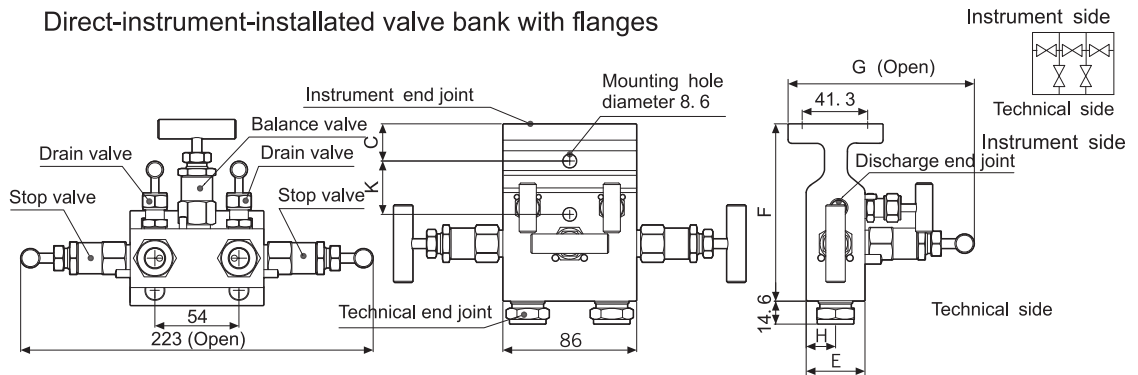
End joint			Item No.	Size (mm)				
Technique	Instrument	Discharge		C	E	F	G	H
1/2in. bite type tube fittings		1/4in. NPT internal thread	SS-V5SB-K8	32.5	33.0	90.0	76.5	15.8
1/2in. bite type tube fittings	Flange		SS-V5SB-K8-FL	73.2	37.8	114	92.9	18.9
12mm bite type tube fittings			SS-V5SB-K12mm	32.5	33.0	90.0	76.5	15.8
12mm bite type tube fittings	Flange		SS-V5SB-K12mm-FL	73.2	37.8	114	92.9	18.9
1/2in.NPT internal thread			SS-V5SB-F8	32.5	33.0	90.0	76.5	15.8
1/2in.NPT internal thread	Flange		SS-V5SB-F8-FL	73.2	37.8	114	92.9	18.9

**Order information and size for VB series five valves manifold (Size is only for reference.)**

**Valve bank with bite type tube fitting and thread connection**



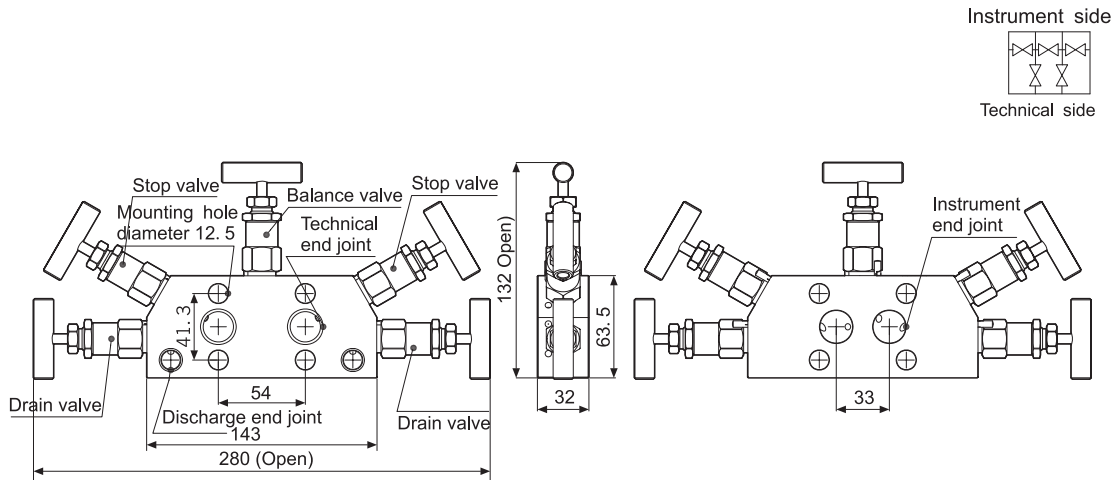
**Direct-instrument-installed valve bank with flanges**



End joint			Item No.	Size (mm)					
Technique	Instrument	Discharge		C	E	F	G	H	K
1/2in.NPT internal thread		1/8in. NPT internal thread	SS-VB5DB-F8	31.0	33.0	90.0	102	15.8	47.8
1/2in.NPT internal thread	Flange		SS-VB5DB-F8-FL	24.0	37.8	114	118	18.9	34.3
1/2in. bite type tube fittings			SS-VB5DB-K8	31.0	33.0	90.0	102	15.8	47.8
1/2in. bite type tube fittings	Flange		SS-VB5DB-K8-FL	24.0	37.8	114	118	18.9	34.3



**Order information and size for VR series five valves manifold (Size is only for reference.)**

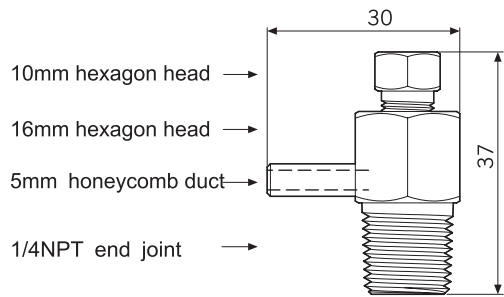


End joint			Item No.
Technique	Instrument	Discharge	
1/2in.NPT internal thread	Coplane flange	1/4in.NPT internal thread	SS-VR5DB-F8-FL

**Optional accessories**

Drain valves are the standard configured accessories of VR5 valve banks and other valve banks with 1/4 NPT discharge outlets can be purchased on selection.

Total 316 stainless steel structure  
Item NO. : SS-RM4



Drain valve (Sizes are only for reference.)

**Instrument valves manifold**

Features of valve bank

Test

Valve features

Parts details

Pressure-temperature rated value

Coding rule for item No.

Two valves manifold

Three valves manifold

**Five valves manifold**

**Optional accessories**