

Series VC

Direct Operated 2 Port Solenoid Valve For Oil

Series VCL



How to Order Valves (Single Unit)

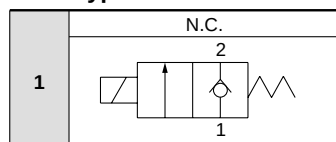
VC L **2** **1** - **1** **G** - **2** - **02** - - -

For oil

Series

2	Class 2
3	Class 3
4	Class 4

Valve type



Voltage

1	100 VAC
2	200 VAC
3	110 VAC
4	220 VAC
5	24 VDC
6	12 VDC
7	240 VAC
8	48 VAC
J	230 VAC

* Class B in AC has a rectifying circuit built-in.

** Class H is AC only. No rectifying circuit.

*** Please consult with SMC regarding other voltages.

Electrical entry

G – Grommet	C – Conduit
T – Conduit terminal	D – DIN terminal DL – DIN terminal with light DO – DIN terminal (without connector, with gasket)

* All class B coils come with surge voltage suppressor.
 ** Available types of electrical entry for type H coil are either G, C and T.
 (Surge voltage suppressor, light are not equipped.)

Option

Nil	None
F	Foot type bracket

* Bracket is packed in the same container as the main body.

Material and insulation type

Symbol	Body material	Seal material	Coil insulation type
Nil	Brass (C37)	FKM	Class B
D			Class H
H	Stainless steel		Class B
N			Class H

Thread type

Nil	Rc
N	NPT
F	G

Port size

Symbol	Port size	Class 2	Class 3	Class 4
01	1/8 (6A)	○	—	—
02	1/4 (8A)	○	○	○
03	3/8 (10A)	—	○	○
04	1/2 (15A)	—	○	○
06	3/4 (20A)	—	—	○

Orifice diameter

Symbol	Orifice dia. (mmø)	Class 2	Class 3	Class 4
2	2	○	—	—
3	3	○	○	○
4	4	○	○	○
5	5	○	○	○
7	7	—	○	○
10	10	—	○	○

* Refer to the below table for orifice and port size combinations.

Orifice diameter and Port Size Combinations

Class	Port size	Orifice diameter (mmø)					
		2	3	4	5	7	10
2	1/8 (6A)	●	●	●	●	—	—
	1/4 (8A)	●	●	●	●	—	—
3	1/4 (8A)	—	●	●	●	●	—
	3/8 (10A)	—	●	●	●	●	●
	1/2 (15A)	—	—	—	—	—	●
4	1/4 (8A)	—	●	●	●	●	—
	3/8 (10A)	—	●	●	●	●	●
	1/2 (15A)	—	—	—	—	—	●
	3/4 (20A)	—	—	—	—	—	●

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW



Specifications

		Standard specifications		High temperature specifications		
Valve specifications	Valve construction		Direct operated poppet			
	Fluid		Oil [50 mm²/s] or less			
	Withstand pressure (MPa)		5.0			
	Body material		Brass (C37), Stainless steel			
	Seal material		FKM			
	Ambient temperature (°C) Note 1)		−20 to 60		−20 to 100	
	Fluid temperature (°C) Note 1)		−10 to 60 (No freezing)		−10 to 100	
	Enclosure		Dusttight, Low jetproof (IP65)			
	Environment		Location without corrosive or explosive gases			
	Valve leakage (cm³/min)		0.1 or less (with oil pressure)			
	Exterior leakage (cm³/min)		0.1 or less (with oil pressure)			
	Mounting orientation		Unrestricted			
	Vibration/Impact resistance (m/s²) Note 3)		30/150 or less			
Coil specifications	Rated voltage		24 VDC, 12 VDC, 48 VAC, 100 VAC, 110 VAC, 200 VAC, 220 VAC, 230 VAC, 240 VAC (50/60 Hz)		48 VAC, 100 VAC, 200 VAC, 220 VAC, 230 VAC, 240 VAC (50/60 Hz)	
	Allowable voltage fluctuation		±10% of rated voltage			
	Coil insulation type		Class B		Class H	
	Power consumption	DC	VCL20: 6 W, VCL30: 8 W, VCL40: 11.5 W		—	
	Apparent power	AC ^{50/60} Hz	VCL20: 8.5 VA Note 2) VCL30: 10 VA VCL40: 13 VA		Inrush	VCL20: 22/19 VA VCL30: 36/30 VA VCL40: 45/37 VA
					Holding	VCL20: 10/8 VA VCL30: 15/13 VA VCL40: 19/16 VA

Note 1) When the ambient temperature or fluid temperature is 60°C or more, use high temperature specifications (class H coil).

Note 2) Since a rectifier circuit is used for class B coils with AC, there is no difference in apparent power between inrush and holding.

Note 3) Vibration resistance Conditions when tested with one sweep 10 to 250 Hz in the axial direction and at a right angle to the armature, in both energized and deenergized states. No malfunction occurred when tested. (Value at the initial state)

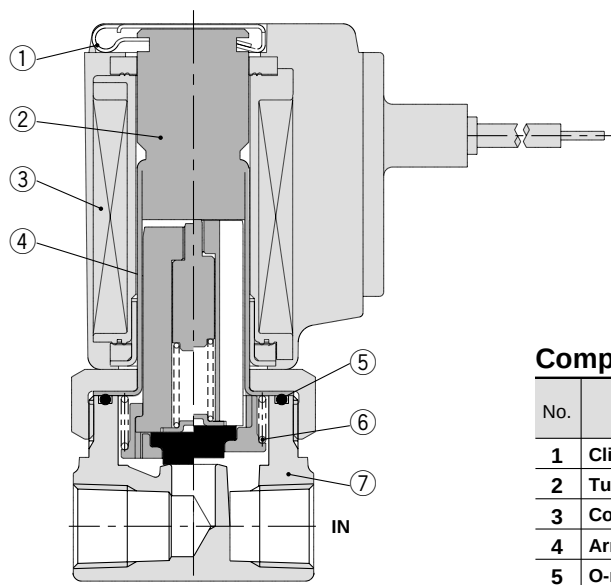
Impact resistance Conditions when tested with a drop tester in the axial direction and at a right angle to the armature, one time each in energized and deenergized states. No malfunction occurred when tested. (Value at the initial state)

Characteristic Specifications

Model	Class	Note 1) Port size	Note 1) Orifice diameter (mmø)	N.C. Max.operating pressure differential (MPa)	Flow characteristics		Max.system pressure (MPa)	Note 2) Mass (kg)
					Av x 10 ⁻⁶ (m ²)	Cv converted		
VCL2	2	1/8 (6A) 1/4 (8A)	2	1.5	3.8	0.16	2.0	1/8 : 0.21 1/4 : 0.24
			3	0.8	7.9	0.33		
			4	0.4	12	0.51		
			5	0.25	16	0.65		
VCL3	3	1/4 (8A) 3/8 (10A) 1/2 (15A)	3	1.5	8.4	0.35	2.0	1/4 : 0.42 3/8 : 0.40 1/2 : 0.49
			4	0.8	13	0.54		
			5	0.5	19	0.80		
			7	0.2	33	1.4		
			10	0.1	50	2.1		
VCL4	4	1/4 (8A) 3/8 (10A) 1/2 (15A) 3/4 (20A)	3	2.0	8.4	0.35	2.0	1/4 : 0.58 3/8 : 0.55 1/2 : 0.62 3/4 : 0.78
			4	1.1	14	0.60		
			5	0.7	20	0.85		
			7	0.3	33	1.4		
			10	0.12	50	2.1		

Note 1) Refer to page 333 in model selection regarding port size and orifice diameter combinations.
Note 2) The mass is the value for the grommet type.

Construction

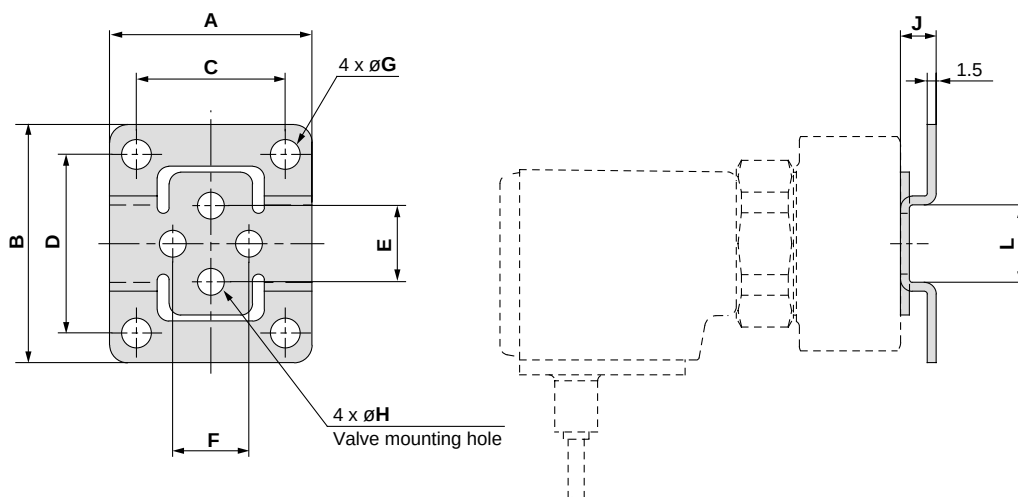


Component Parts

No.	Description	Material	
		Standard	Option
1	Clip	Stainless steel	—
2	Tube assembly	Stainless steel, Cu	Ag
3	Coil assembly	Class B	Class H
4	Armature assembly	Stainless steel, FKM, PPS (Class B only)	—
5	O-ring	FKM	—
6	Return spring	Stainless steel	—
7	Body	Brass (C37)	Stainless steel

Refer to pages 314 and 315 for solenoid coil replacement and replacement parts.

Dimensions: Bracket



Bracket Mounting Dimensions/Bracket Material: Stainless Steel

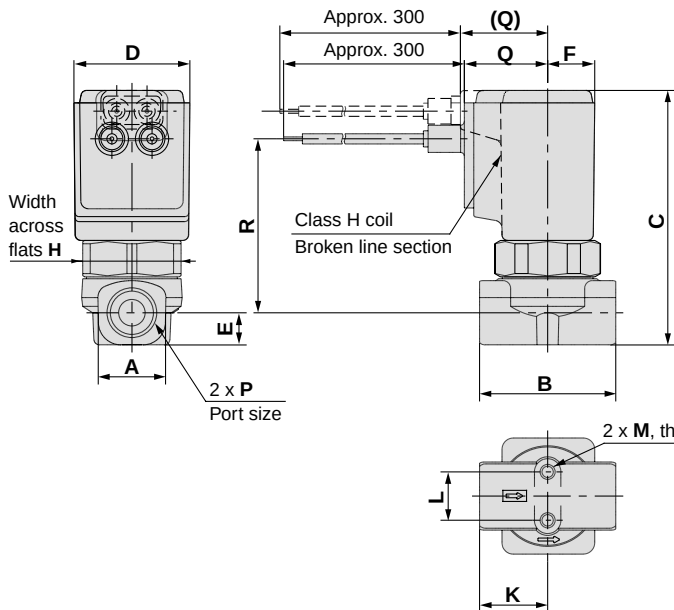
Valve model	Port size	Bracket part no.	A	B	C	D	E	F	G	H	J	L
VCL2□	1/8, 1/4	VCW20-12-01A	34	40	25	30	12.8	12.8	5	4.5	6	13
VCL3□	1/4, 3/8	VCW30-12-02A	42	52	30	40	19	19	6	5.5	7	19
	1/2	VCW30-12-04A	48	56	36	44	23	23	6	5.5	7	23
VCL4□	1/4, 3/8	VCW40-12-02A	42	52	30	40	23	23	6	5.5	7	19
	1/2	VCW30-12-04A	48	56	36	44	23	23	6	5.5	7	23
	3/4	VCW40-12-06A	56	65	44	53	28.2	28.2	6	5.5	7	26

* 2 Mounting screws (for mounting bracket) are included in bracket part no.

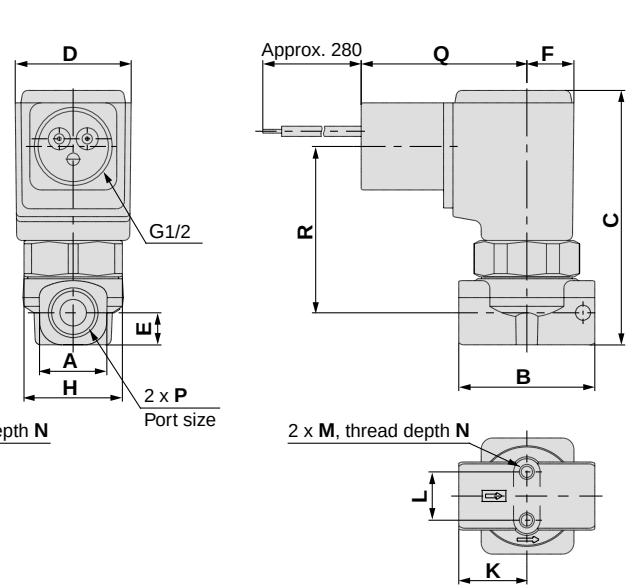
Series VCL

Dimensions (N.C.)

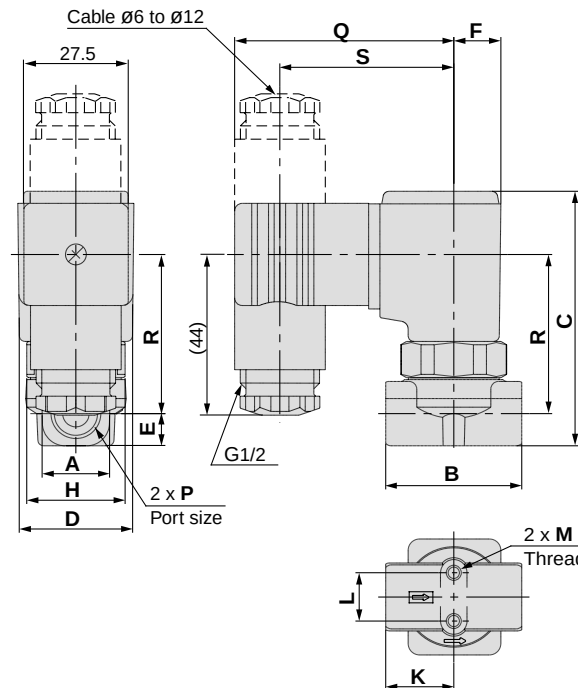
Grommet: G



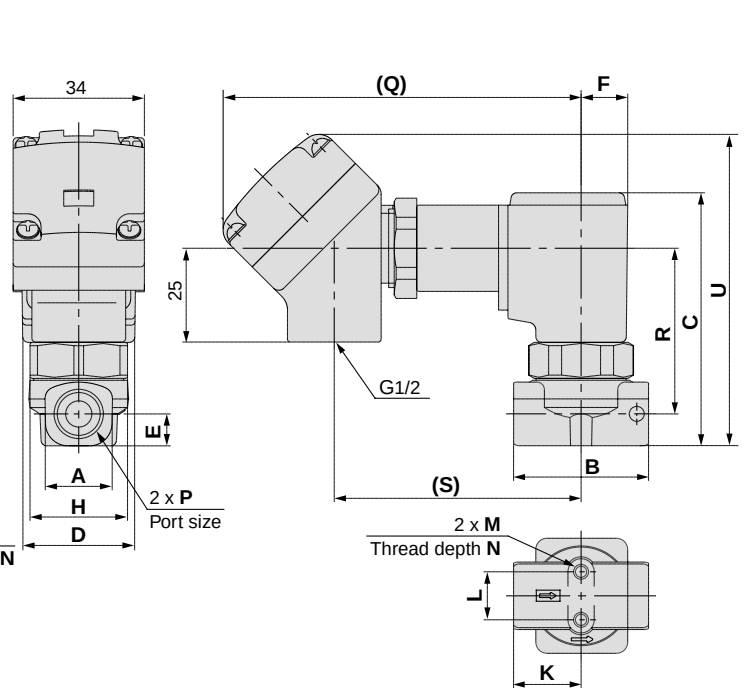
Conduit: C



DIN terminal: D



Conduit terminal: T



N.C. Dimensions

(mm)

Model	P Port size	A	B	C	D	E	F	H	K	L	M	N	Grommet: G		Conduit: C		DIN terminal: D			Conduit terminal: T			
													Q	R	Q	R	Q	R	S	Q	R	S	U
VCL21	1/8	13.5	28	64	31	6.5	12.5	27	14	12.8	M4	4.5	22 (23)	45 (52)	44	43	58	40.5	46.5	99	43	66	83
	1/4	18	36	67.5	31	8.5	12.5	27	18	12.8	M4	6	22 (23)	46 (53)	44	44	58	41.5	46.5	99	44	66	86
VCL31	1/4, 3/8	22	40	81.5	36.5	11	15	32	20	19	M5	8	24 (25)	56.5 (63.5)	46	54.5	60	52	48.5	101	54.5	68	99
	1/2	30	50	86	36.5	13.5	15	32	25	23	M5	8	24 (25)	59 (66)	46	57	60	54.5	48.5	101	57	68	104
VCL41	1/4, 3/8	22	45	90	41	11	17	36	22.5	23	M5	8	26 (26.5)	64.5 (71.5)	48	62.5	62	60	50.5	103	62.5	70	107
	1/2	30	50	94	41	13.5	17	36	25	23	M5	8	26 (26.5)	66.5 (73.5)	48	64.5	62	62	50.5	103	64.5	70	111.5
	3/4	35	60	102	41	17.5	17	36	30	28.2	M5	8	26 (26.5)	70 (77)	48	68	62	65.5	50.5	103	68	70	119

Note) () indicates class H.



VV2C L 2- 02 01

Series

2	Class 2
3	Class 3
4	Class 4

Material

Symbol	Base material	Seal material
Nil	Brass (C37)	FKM
H	Stainless steel	

Stations

02	2 stations
⋮	⋮
10	10 stations

Thread type

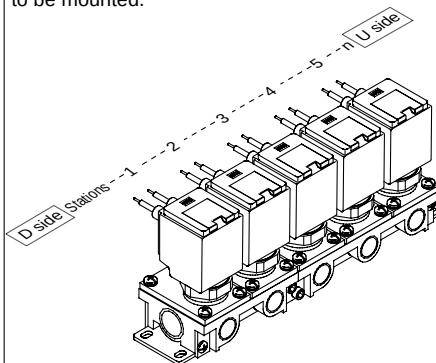
Symbol	Thread type
Nil	Rc
N	NPT
F	G

OUT port size

Symbol	Port size
01	1/8 (6A)
02	1/4 (8A)

* All IN ports are 3/8.

Enter together in order, counting from station 1 on the D side.



VC L 2 3 - 1 G - 2 - []

- For oil**
- Series**

2	Class 2
3	Class 3
4	Class 4
- Valve type**

3	N.C. for manifold
---	-------------------
- Material and insulation type**

Symbol	Body material	Seal material	Coil insulation type
Nil	Brass (C37)	FKM	Class B
D	Stainless steel		Class H
H			Class B
N			Class H
- Orifice diameter**

Symbol	Orifice dia. (mmø)	Class 2	Class 3	Class 4
2	2	○	—	—
3	3	○	○	○
4	4	○	○	○
5	5	○	○	○
7	7	—	○	○
- Electrical entry**

G	Grommet
C	Conduit
T	Conduit terminal
TL	Conduit terminal with indicator light
D	DIN terminal
DL	DIN terminal with indicator light
DO	DIN terminal (without connector, with gasket)

* Class B in AC has a rectifying circuit built-in.
 ** Class H is AC only. No rectifying circuit.
 ***Please consult with SMC regarding other voltages.

* All class B coils come with surge voltage suppressor.
 ** Available types of electrical entry for type H coil are either G, C or T. (without surge voltage suppressor, light.)

VVCW 2 0 - 3A - H

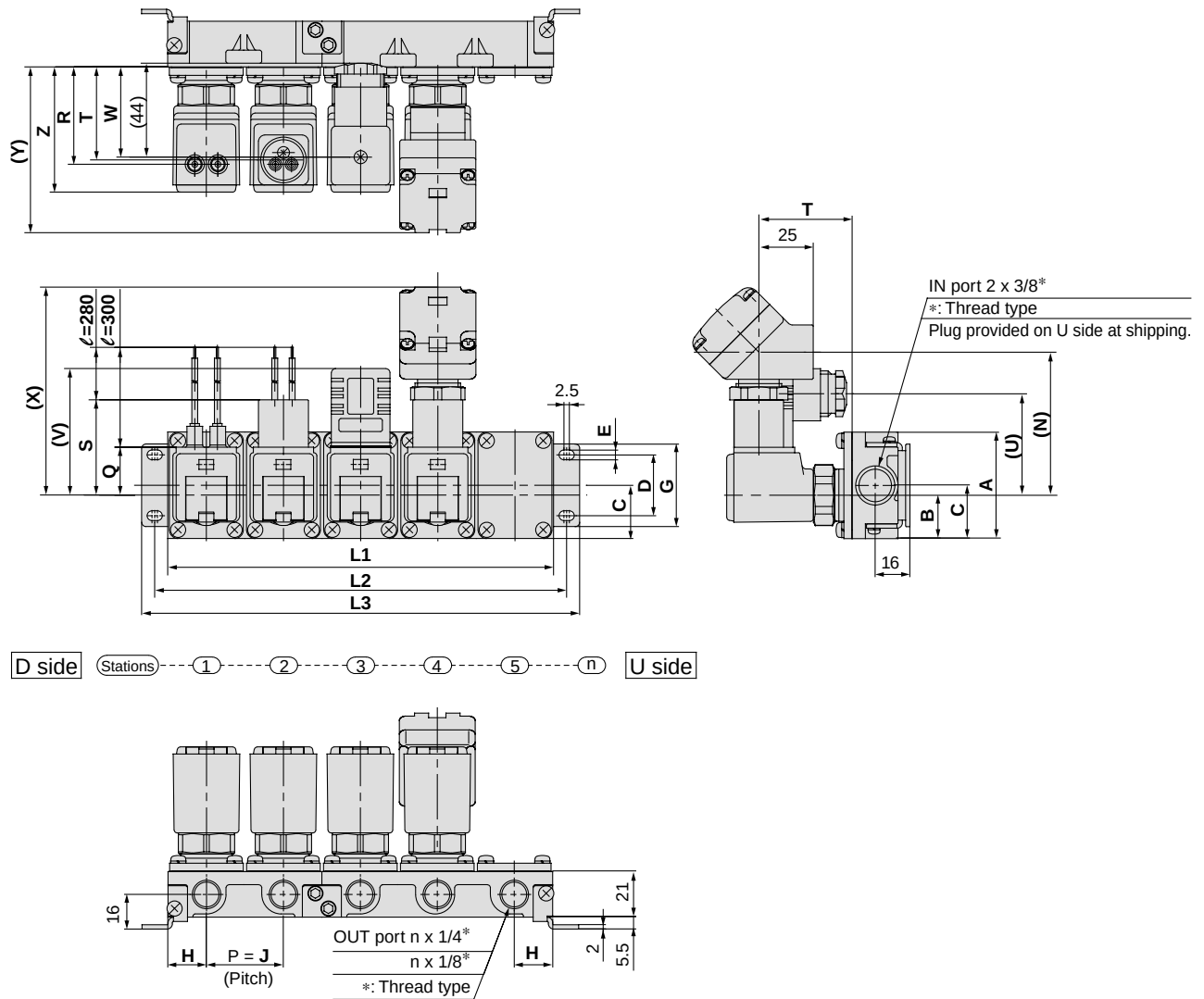
2	Class 2
3	Class 3
4	Class 4

Symbol	Plate material	Seal material
H	Stainless steel	FKM



Series VCL

Dimensions (N.C.)



L Dimension

Model	Dimensions	n (Stations)								
		2	3	4	5	6	7	8	9	10
VV2CL2	L1	70	105	140	175	210	245	280	315	350
	L2	82	117	152	187	222	257	292	327	362
	L3	94	129	164	199	234	269	304	339	374
VV2CL3	L1	78	117	156	195	234	273	312	351	390
	L2	90	129	168	207	246	285	324	363	402
	L3	102	141	180	219	258	297	336	375	414
VV2CL4	L1	84	126	168	210	252	294	336	378	420
	L2	96	138	180	222	264	306	348	390	432
	L3	108	150	192	234	276	318	360	402	444
Manifold composition		2 stns. x 1	3 stns. x 1	2 stns. x 2	2 stns. + 3 stns.	3 stns. x 2	2 stns. x 2 + 3 stns.	2 stns. + 3 stns. x 2	3 stns. x 3	2 stns. x 2 + 3 stns. x 2

Note) Manifold base is consisted of the junction of 2 and 3 station bases.

Dimensions

Model	A	B	C	D	E	G	H	J	Z	Electrical entry									
										Grommet		Conduit		DIN terminal			Conduit terminal		
										Q ^{Note)}	R ^{Note)}	S	T	U	V	W	N	X	Y
VV2CL2	49	20	24.5	28	4.5	38	17.3	34.5	56	22 (23)	45.5 (52.5)	44	43.5	46	58	41.5	66	99	77
VV2CL3	57	25.5	28.5	30	5.5	42	19.3	38.5	66	24 (25)	55 (62)	45.5	53	48	60	51	68	101	86.5
VV2CL4	57	25.5	28.5	30	5.5	42	20.8	41.5	74	26 (26.5)	62.5 (69.5)	47.5	60.5	50	62	58.5	70	103	94

Note) () indicates class H.