

Series VC

Direct Operated 2 Port Solenoid Valve For Steam

Series VCS



How to Order Valves (Single Unit)

VC S **2** **1** - **1** **G** - **2** - **02** - -

For steam ●

Series ●

2	Class 2
3	Class 3
4	Class 4

Valve type ●

N.C.

Voltage ●

1	100 VAC
2	200 VAC
3	110 VAC
4	220 VAC
7	240 VAC
8	48 VAC
J	230 VAC

* Please consult with SMC regarding other voltages.

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)	PTFE	Class H
D		FKM	
R	Stainless steel	PTFE	
N		FKM	

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.

Electrical entry ●

G - Grommet	C - Conduit
T - Conduit terminal	

* Available types of electrical entry are either G, C and T. (Surge voltage suppressor, light are not equipped.)

Orifice diameter and Port Size Combinations

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

Note 1) ø10 is available with seal material FKM only.

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

VCL

VCS

VCW



Standard Specifications

Valve specifications		
Valve construction		Direct operated poppet
Fluid		Steam (184°C or less)
Withstand pressure (MPa)		5.0
Body material		Brass (C37), Stainless steel
Seal material		PTFE, FKM
Ambient temperature (°C)		-20 to 100
Fluid temperature (°C)		184 or less (PTFE), 120 or less (FKM) ^{Note 1)}
Enclosure		Dusttight, Low jetproof (IP65)
Environment		Location without corrosive or explosive gases
Valve leakage (cm ³ /min)		300 or less (PTFE), 1 or less (FKM) measured by air
Exterior leakage (cm ³ /min)		1 or less with air
Mounting orientation		Unrestricted
Vibration/Impact resistance (m/s ²) ^{Note 2)}		30/150 or less
Coil specifications		
Rated voltage		48 VAC, 100 VAC, 110 VAC, 200 VAC, 220 VAC, 230 VAC, 240 VAC (50/60 Hz)
Allowable voltage fluctuation		±10% of rated voltage
Coil insulation type		Class H
Power consumption (W) 50/60 Hz		VCS2: 4.9/4.1, VCS3: 7.7/6.6, VCS4: 10.5/9.3
Apparent power (VA) 50/60 Hz	Inrush	VCS2: 22/19, VCS3: 36/30, VCS4: 45/37
	Holding	VCS2: 10/8, VCS3: 15/13, VCS4: 19/16



Note 1) For low pressure steam at a temperature of 120°C or less, use FKM for the seal material.

Note 2) Vibration resistance Conditions when tested with one sweep of 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

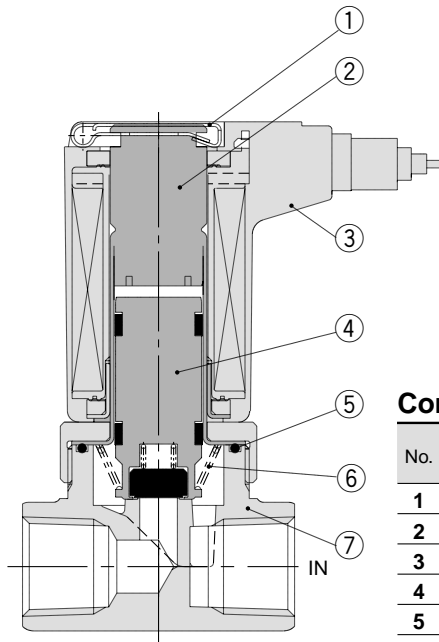
Model	Class	Note 1) Port size	Note 1) Orifice diameter (mmø)	Max. operating pressure differential (MPa)	Flow characteristics		Max. system pressure (MPa)	Mass (kg)
					Av x 10 ³ (m ²)	Cv converted		
VCS2	2	1/8 (6A) 1/4 (8A)	2	1.0	3.8	0.16	1.0	1/8: 0.21 1/4: 0.24
			3	0.8	7.9	0.33		
			4	0.5	12	0.51		
			5	0.3	16	0.65		
VCS3	3	1/4 (8A) 3/8 (10A) 1/2 (15A)	3	1.0	8.4	0.35	1.0	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		
VCS4	4	1/4 (8A) 3/8 (10A) 1/2 (15A) 3/4 (20A)	3	1.0	8.4	0.35	1.0	1/4: 0.58 3/8: 0.55 1/2: 0.62 3/4: 0.78
			4	1.0	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 339 in model selection regarding port size and orifice diameter combinations.

Note 2) The mass is the value for the grommet type.

Construction

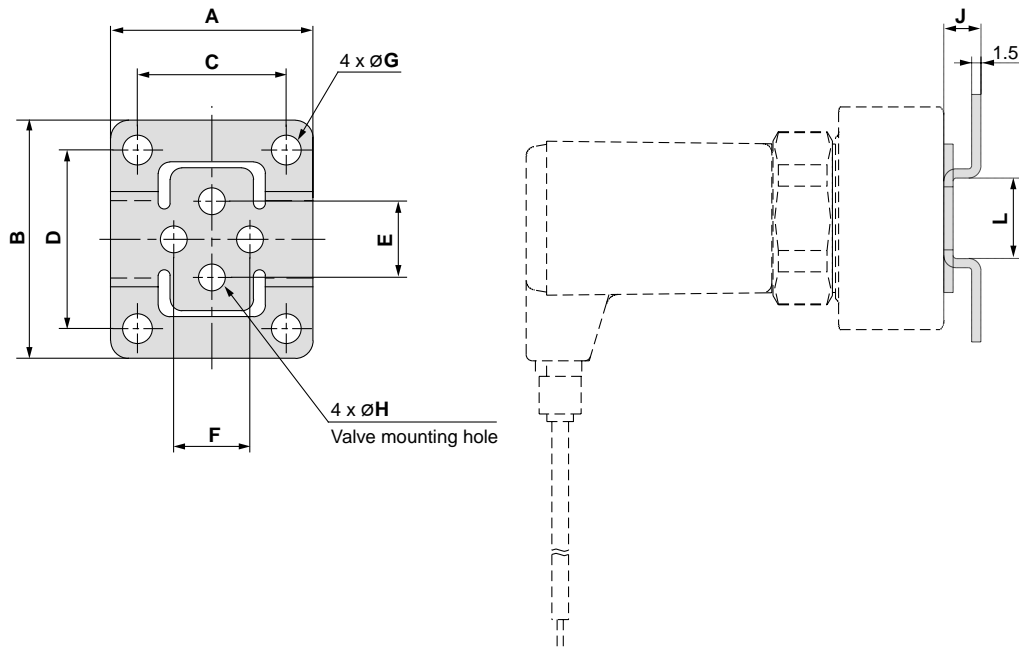


Component Parts

No.	Description	Material	
		Standard	Option
1	Clip	Stainless steel	—
2	Tube assembly	Stainless steel, Cu	Stainless steel, Ag
3	Coil assembly	Class H	—
4	Armature assembly	Stainless steel, PTFE	Stainless steel, FKM
5	Seal	PTFE	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

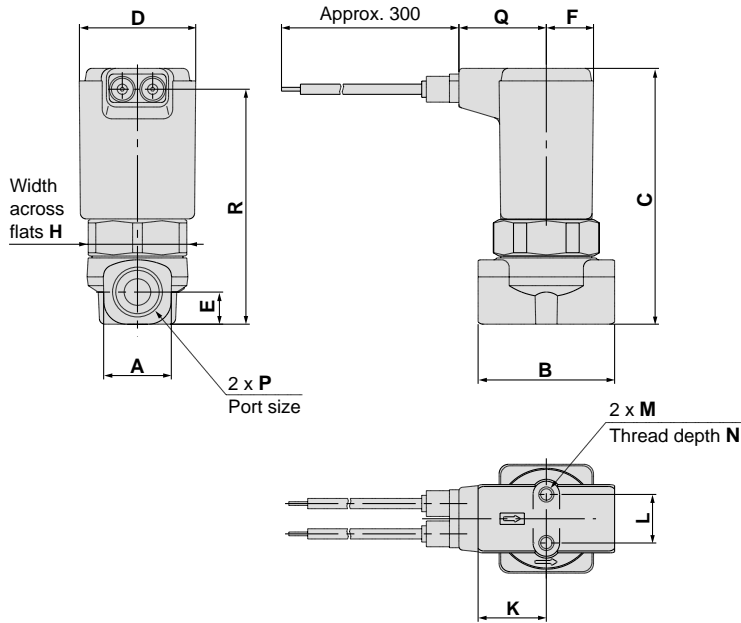
Valve model	Port size	Bracket part no.	A	B	C	D	E	F	G	H	J	L
VCS21	1/8, 1/4	VCW20-12-01A	34	40	25	30	12.8	12.8	5	4.5	6	13
VCS31	1/4, 3/8	VCW30-12-02A	42	52	30	40	19	19	6	5.5	7	19
	1/2	VCW30-12-04A	48	56	36	44	23	23	6	5.5	7	23
VCS41	1/4, 3/8	VCW40-12-02A	42	52	30	40	23	23	6	5.5	7	19
	1/2	VCW30-12-04A	48	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.

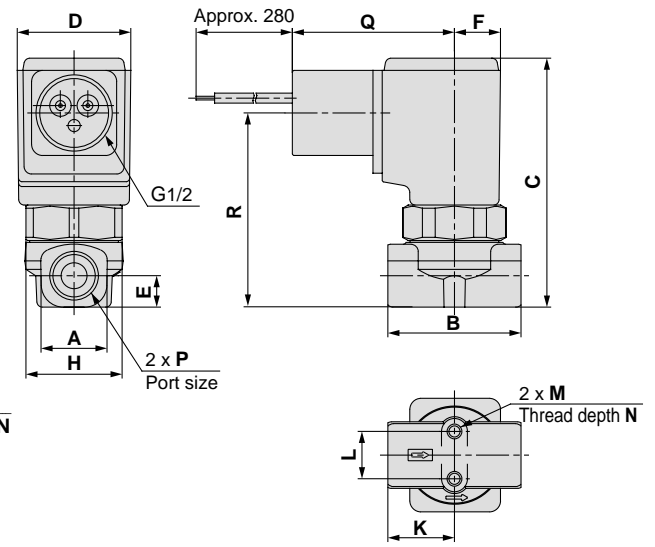
Series VCS

Dimensions

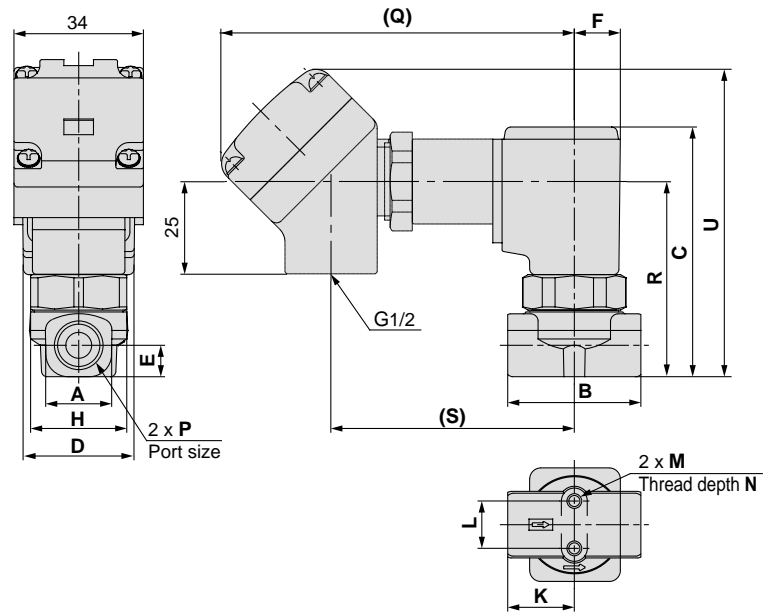
Grommet: G



Conduit: C



Conduit terminal: T



N.C.

(mm)

Model	P Port size	A	B	C	D	E	F	H	K	L	M	N	Electrical entry							
													Grommet: G		Conduit: C		Conduit terminat: T			
													Q	R	Q	R	Q	R	S	U
VCS21	1/8	13.5	28	64	31	6.5	12.5	27	14	12.8	M4	4.5	22	59	44	50	99	50	66	83
	1/4	18	36	67.5	31	8.5	12.5	27	18	12.8	M4	6	22	62	44	53	99	53	66	86
VCS31	1/4, 3/8	22	40	81.5	36.5	11	15	32	20	19	M5	8	24	76	46	66.5	101	66.5	68	99
	1/2	30	50	86	36.5	13.5	15	32	25	23	M5	8	24	80	46	71	101	71	68	104
VCS41	1/4, 3/8	22	45	90	41	11	17	36	22.5	23	M5	8	26	84	48	74.5	103	74.5	70	107
	1/2	30	50	94	41	13.5	17	36	25	23	M5	8	26	88	48	78.5	103	78.5	70	111.5
	3/4	35	60	102	41	17.5	17	36	30	28.2	M5	8	26	96	48	86.5	103	86.5	70	119

How to Order Manifold

VV2C S 2 - D 02 01

For steam

Series

2	Class 2
3	Class 3
4	Class 4

Material

Symbol	Body material	Seal material
D	Brass (C37)	FKM
N	Stainless steel	FKM

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.

Stations

02	2 stations
...	...
10	10 stations



How to Order Manifold Assembly

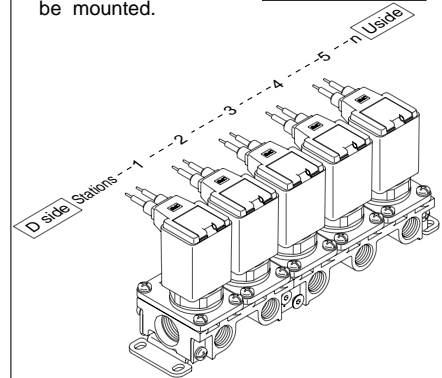
Enter the mounting valve and option part numbers under the manifold base part number.

<Ordering Example>

VV2CS2-D0501.....1 set Manifold part no.
* VCS23-1G-2.....5 sets Valve part no.
(Stations 1 to 5)

"*" is the symbol for assembly. Add a "*" in front of the part numbers for solenoid valves, etc., to be mounted.

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



How to Order Valves (For manifold)

VC S 2 3 - 1 G - 2 -

For steam

Series

2	Class 2
3	Class 3
4	Class 4

Valve type

3	N.C. for manifold
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Voltage

1	100 VAC
2	200 VAC
3	110 VAC
4	220 VAC
7	240 VAC
8	48 VAC
J	230 VAC

* Please consult SMC regarding other voltages.

Material and insulation type

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

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

* Available types of electrical entry are either G, C and T. (Surge voltage suppressor, light are not equipped.)

Manifold Option

Blanking plate assembly

VVCW 2 0 - 3A - K

Series

2	Class 2
3	Class 3
4	Class 4

Material

Symbol	Plate material	Seal material
K	Stainless steel	PTFE
H	Stainless steel	FKM

JIS symbol



This is used by mounting it on the manifold block when a valve is removed for maintenance or when the mounting of an additional valve is planned, etc.

VX2

VXD

VXZ

VXE

VXP

VXR

VXH

VXF

VX3

VXA

VCH□

VDW

VQ

LVM

VCA

VCB

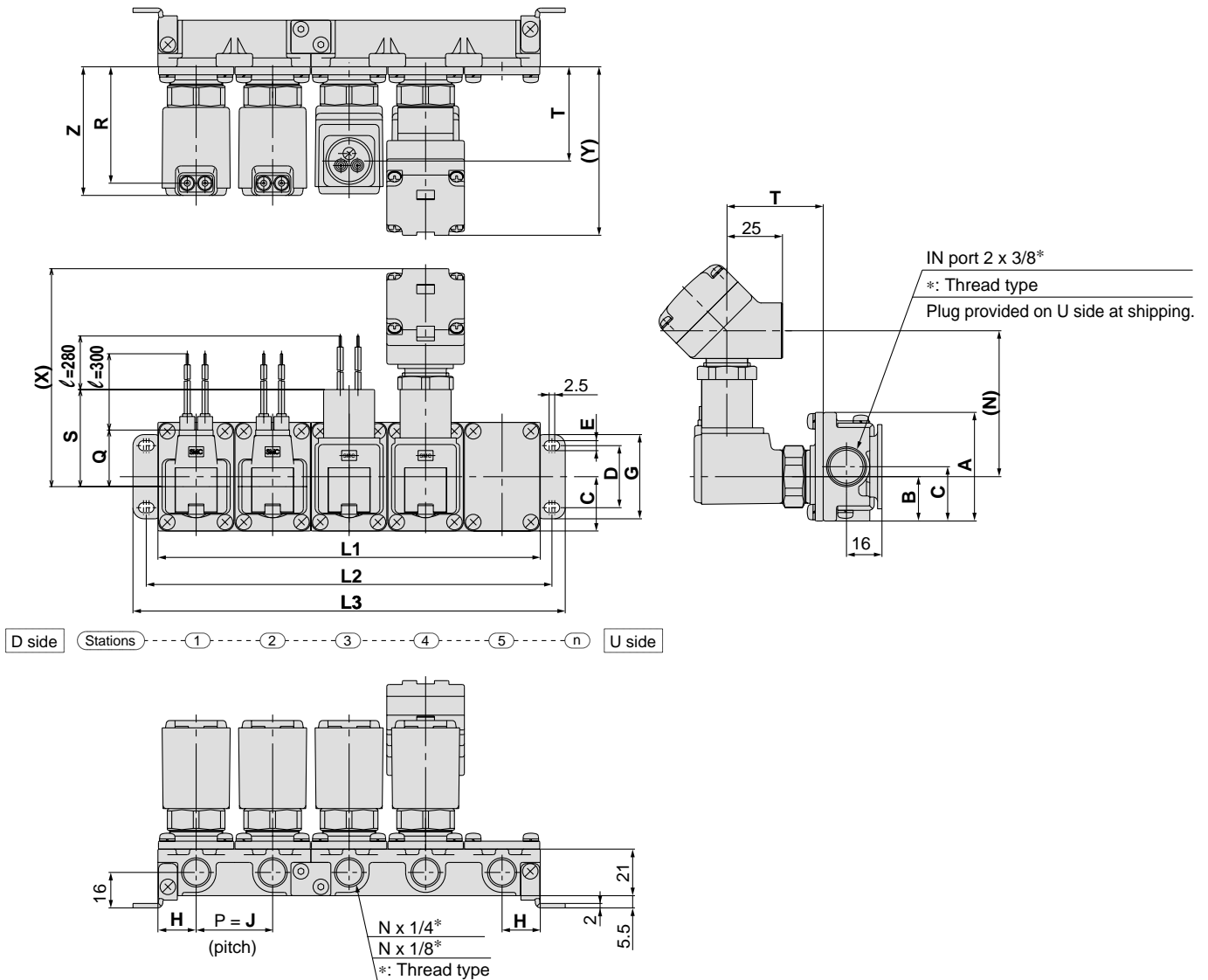
VCL

VCS

VCW

Series VCS

Dimensions



L Dimension

(mm)

Model	Dimensions	n (stations)									
		2	3	4	5	6	7	8	9	10	
VV2CS2	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	
VV2CS3	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	
VV2CS4	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

(mm)

Model	A	B	C	D	E	G	H	J	Z	Electrical entry						
										Grommet: G			Conduit: C		Conduit terminal: T	
										Q	R	S	T	N	X	Y
VV2CS2	49	20	24.5	28	4.5	38	17.3	34.5	56	22	50.5	44	41.5	66	99	77
VV2CS3	57	25.5	28.5	30	5.5	42	19.3	38.5	66	24	60	45.5	51	68	101	86.5
VV2CS4	57	25.5	28.5	30	5.5	42	20.8	41.5	74	26	68	47.5	58.5	70	103	94