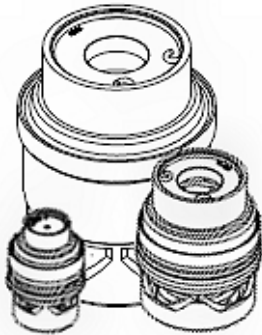


JOB:	REPRESENTATIVE:	
UNIT TAG:	ORDER NO.	DATE:
ENGINEER:	SUBMITTED BY:	DATE:
CONTRACTOR:	APPROVED BY:	DATE:



Circuit Sentry™ Cartridge

Internal Automatic Flow Limiting Cartridge for use with Model AC Valves and Model WV and WVB Wafer Valves

DESCRIPTION

The Bell & Gossett Circuit Sentry™ Cartridge is an internal automatic flow limiting cartridge that is used in Bell & Gossett Model AC Circuit Sentry™ Flow Limiting Valves and Model WV and WVB Wafer Valves. It features a rolling diaphragm that separates the upstream and downstream pressures, thus maintaining control of the constant differential pressure across the selected flow orifice. Each unique flow orifice is designed specifically for one flow. When used with the appropriate cartridge, the assembly maintains the specified flow rate +/-5% as long as the differential pressure stays within the control range.

CONSTRUCTION

Type 10, 11, 20, 21, 30, and 40
 Body – Brass C36000 or Equivalent
 Spring – 304 Stainless Steel
 Diaphragm & O-ring – EPDM
 Orifice – Brass C36000 or Equivalent

Type 50 and 60
 Body – 304 Stainless Steel
 Spring – 304 Stainless Steel
 Diaphragm & O-ring – EPDM
 Orifice – Brass C36000 or Equivalent

MAXIMUM WORKING PRESSURE

400 psig (2,758 kPa)

TEMPERATURE RANGE

-4°F (-20°C) to 250°F (121°C)

CONTROL RANGE

Min – See Chart on pp. 2-4

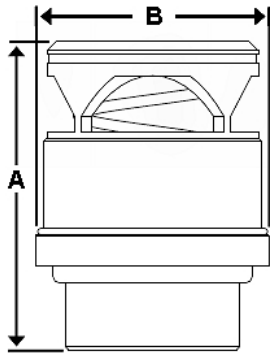
Max – 60 psi (414 kPa)

ACCURACY

+/- 5%

SCHEDULE

Model Number	Cartridge Part Number	Tagging Information	Quantity
Type 10	V57521		
Type 11	V57522		
Type 20	V57523		
Type 21	V1000077		
Type 30	V57524		
Type 40	V59121		
Type 50	V57526		
Type 60	V57527		



DIMENSIONS AND WEIGHTS

Model Number	DIMENSIONS* IN INCHES (mm)		Model Number	DIMENSIONS* IN INCHES (mm)	
	A	B		A	B
Type 10	1.6 (40)	1.1 (28)	Type 30	2.5 (64)	1.9 (49)
Type 11	1.6 (40)	1.1 (28)	Type 40	2.5 (64)	1.9 (49)
Type 20	1.6 (40)	1.1 (28)	Type 50	3.9 (99)	3.0 (75)
Type 21	1.6 (40)	1.1 (28)	Type 60	3.9 (99)	3.0 (75)

*All dimensions +/- 0.125" (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

Cartridge Minimum Differential Pressure Requirements

"A" Body Valve Cartridges (1/2", 3/4", and 1")

Type 10

Flow Rate (GPM)	Part Number	Orifice Marking	Min. ΔP psid (kPa)*	Cv**
0.33	V57721	1230	1.2 (8.3)	0.31
0.5	V57722	1300	1.5 (10.3)	0.42
1	V57723	1420	1.7 (11.7)	0.76
1.5	V57724	1510	1.9 (13.1)	1.10
1.75	V57725	1540	1.9 (13.1)	1.29
2	V57726	1570	2.0 (13.8)	1.42
2.5	V57731	1620	2.0 (13.8)	1.70

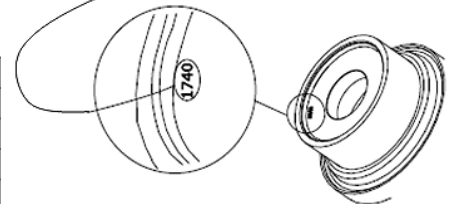
Type 11

3	V57732	1730	2.0 (13.8)	2.11
3.5	V57733	1740	2.3 (15.9)	2.32
4	V57734	1750	3.0 (20.7)	2.35

Flow Rate (GPM)	Part Number	Orifice Marking	Min. ΔP PSID (kPa)*
3	V57732	1730	2.0 (13.8)
3.5	V57733	1740	2.3 (15.9)
4	V57734	1750	3.0 (20.7)

Type 20

4.5	V57741	2070	3.2 (22.1)	2.52
5	V57742	2074	3.2 (22.0)	2.81
5.5	V57743	2078	3.3 (22.8)	3.07
6	V57744	2082	3.3 (22.8)	3.29
6.5	V57745	2086	3.3 (22.8)	3.57
7	V57746	2088	3.3 (22.8)	3.85
7.5	V57747	2091	3.5 (24.1)	4.06
8	V57748	2094	3.5 (24.1)	4.30
9	V57749	2098	3.6 (24.8)	4.75
10	V57750	2103	3.8 (26.2)	5.13
11	V57751	2109	4.0 (27.6)	5.38



Type 21

12	V1000078	2099	7.3 (50)	4.48
13	V1000079	2106	7.3 (50)	4.85
14	V1000080	2109	7.3 (50)	5.23

*Min. ΔP is minimum differential pressure across valve necessary to maintain design flow rate through cartridge.

**Cv can be used to determine flow through valve when differential pressure is below minimum. When differential pressure is above minimum, Cv can no longer be used to determine flow.

"B" Body Valve Cartridges (1"L, 1-1/4", 1-1/2", 2"R)

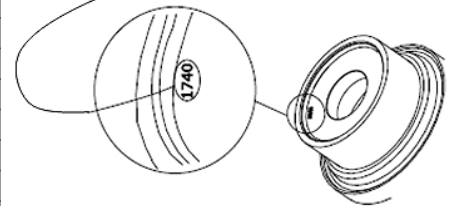
Type 30

Flow Rate (GPM)	Part Number	Orifice Marking	Min. ΔP psid (kPa)*	Cv**
5	V57641	3094	1.7 (11.7)	3.81
6	V57642	3102	1.9 (13.1)	4.38
7	V57643	3111	2.0 (13.8)	4.93
8	V57644	3118	2.0 (13.8)	5.64
9	V57645	3125	2.3 (15.9)	5.94
10	V57646	3132	2.5 (17.2)	6.41
11	V57647	3138	2.6 (17.9)	6.85
12	V57648	3144	2.8 (19.3)	7.39
13	V57649	3150	2.9 (20.0)	7.75
14	V57650	3156	3.0 (20.7)	8.06
15	V57651	3161	3.2 (22.1)	8.44

Flow Rate (GPM)	Part Number	Orifice Marking	Min. ΔP PSID (kPa)*
3	V57732	1730	2.0 (13.8)
3.5	V57733	1740	2.3 (15.9)
4	V57734	1750	3.0 (20.7)

Type 40

16	V59122	4148	2.9 (20.0)	9.45
17	V59123	4152	3.0 (20.7)	9.34
18	V59124	4156	3.0 (20.7)	10.37
19	V59125	4164	3.0 (20.7)	10.95
20	V59126	4168	3.2 (22.1)	11.26
21	V59127	4173	3.2 (22.1)	11.83
22	V59128	4176	3.3 (22.8)	12.12
24	V59129	4182	3.5 (24.1)	12.93
26	V59130	4191	3.6 (24.8)	13.73
28	V59131	4194	3.8 (26.2)	14.50
30	V59132	4200	3.9 (26.9)	15.24
32	V59133	4205	4.1 (28.3)	15.97
34	V59134	4211	4.1 (28.3)	16.40
36	V59135	4217	4.5 (31.0)	17.07
38	V59136	4222	4.8 (33.1)	17.47
40	V59137	4229	4.9 (33.8)	18.12
42	V59138	4235	5.2 (35.9)	18.49
44	V59139	4241	5.5 (37.9)	18.85
46	V59140	4248	5.8 (40.0)	19.20
48	V59141	4250	6.1 (42.1)	19.56
50	V59142	4262	6.4 (44.1)	19.91



*Min. ΔP is minimum differential pressure across valve necessary to maintain design flow rate through cartridge.

**Cv can be used to determine flow through valve when differential pressure is below minimum. When differential pressure is above minimum, Cv can no longer be used to determine flow.

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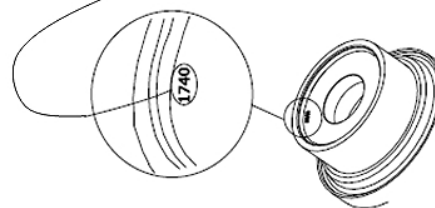
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"C" Body Valve Cartridges (1-1/2"L, 2", 2-1/2") and Wafer Valves**Type 50**

Flow Rate (GPM)	Part Number	Orifice Marking	Min. ΔP psid (kPa) ⁺	Cv ^{**}
15	V57681	5179	1.9 (13.1)	12.00
20	V57682	5206	2.0 (13.8)	14.29
25	V57683	5227	2.0 (13.8)	17.56
30	V57684	5251	2.0 (13.8)	21.11
35	V57685	5260	2.2 (15.2)	23.77
40	V57686	5269	2.5 (17.2)	26.10
45	V57687	5279	2.8 (19.3)	27.50
50	V57688	5287	3.2 (22.1)	28.14
55	V57689	5292	3.3 (22.8)	30.35
60	V57690	5298	3.5 (24.1)	31.98
65	V57691	5303	3.9 (26.9)	33.02
70	V57692	5308	4.2 (29.0)	34.33

Flow Rate (GPM)	Part Number	Orifice Marking	Min. ΔP PSID (kPa) [*]
3	V57732	1730	2.0 (13.8)
3.5	V57733	1740	2.3 (15.9)
4	V57734	1750	3.0 (20.7)

**Type 60**

75	V57701	6285	4.9 (33.8)	33.95
80	V57702	6292	4.9 (33.8)	36.10
85	V57703	6305	5.1 (35.2)	37.85
90	V57704	6312	5.1 (35.2)	40.09
95	V57705	6319	5.2 (35.9)	41.74
100	V57706	6332	5.2 (35.9)	43.88
105	V57707	6334	5.2 (35.9)	45.83
110	V57708	6344	5.4 (37.2)	47.37
120	V57710/V57709**	6356	5.5 (37.9)	51.26
130	V57711/V57710**	6367	5.7 (39.3)	55.24
140	V57713/V57711**	6379	5.8 (40.0)	59.57
150	V57714/V57712**	6391	5.8 (40.0)	62.44
160	NA/V57713**	6393	6.1 (42.1)	65.23
170	NA/V57714**	6400	6.4 (44.1)	67.67
180	NA/V57715**	6407	6.7 (46.2)	69.96

⁺Min. ΔP is minimum differential pressure across valve necessary to maintain design flow rate through cartridge.

^{**}Cv can be used to determine flow through valve when differential pressure is below minimum. When differential pressure is above minimum, Cv can no longer be used to determine flow.

^{**}First part number provides indicated flow rate when orifice is used in "C" body AC Valve (1½"L, 2", and 2½"). Second part number provides indicated flow rate when orifice is used in Wafer Valve (2½" – 20").

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