

# Cartridge insert CVI



## Functional Symbols

Function	Functional Symbol	Area Ratio $A_A : A_{AP}$	Model Code	Remarks
Normally closed		1 : 1	CVI-**-D10	Not applicable to valve sizes 50, 63, 80
Normally closed		1 : 1.1	CVI-**-D11	
		1 : 1.5	CVI-**-D15	
		1 : 2	CVI-**-D20	
Normally open		1 : 1.7	CVI-**-OD17	
Normally closed (with notch)		1 : 2	CVI-**-F	
		1 : 1.5	CVI-**-F15	

## Model Code

**(F3)-CVI-25-D20-3-L-10-JA**

1 2 3 4 5 6

- 1 Hydraulic fluid  
Omit: mineral oil based fluid, water-glycol based fluid  
F3: phosphate ester
- 2 Cartridge valve insert
- 3 Size  
16, 25, 32, 40, 50, 63 and 80
- 4 Function and area ratio

Code	Function	Area Ratio ( $A_A : A_{AP}$ )
D10 <sup>*1</sup>	Normally closed	1 : 1
D11	Normally closed	1 : 1.1
D15	Normally closed	1 : 1.5
D20	Normally closed	1 : 2
F	Normally closed (with notch)	1 : 2
F15	Normally closed (with notch)	1 : 1.5
OD17	Normally open	1 : 1.7

\*1: Not applicable to sizes 50, 63 and 80.

- 5 Cracking pressure MPa

Code	D10		D11		D15		D20		F		F15	
	A→B	B→A	A→B	B→A	A→B	B→A	A→B	B→A	A→B	B→A	A→B	B→A
L	0.03	—	0.03	0.27	0.04	0.08	0.05	0.05	0.05	0.05	0.04	0.08
M	0.13	—	0.14	1.4	0.19	0.37	0.25	0.25	0.25	0.25	0.19	0.37
H	0.25	—	0.27	2.7	0.37	0.75	0.5	0.5	0.5	0.5	0.37	0.75

- 6 Design no.

## Specifications

Model Code	Size	Max. Working Pressure MPa	Rated Flow <sup>*1</sup> L/min	Weight kg
CVI	16	35	200	0.15
	25		450	0.35
	32		650	0.75
	40		1100	1.4
	50		1700	2.2
	63		2800	5.4
	80		4200	9.8

\*1: Rated flow at pressure drop 0.5 MPa.

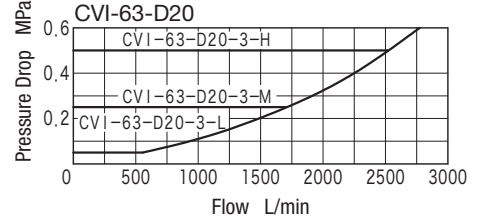
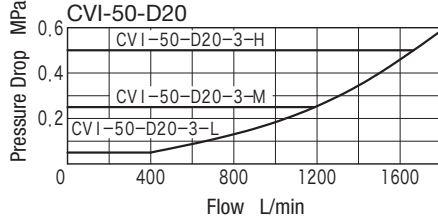
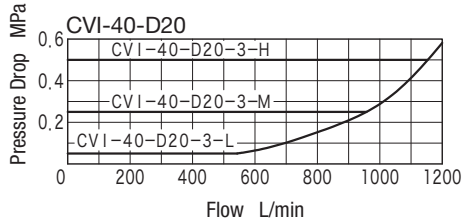
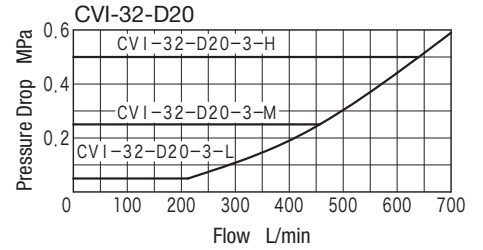
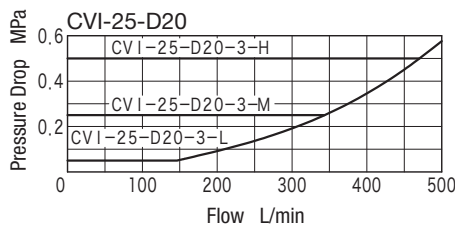
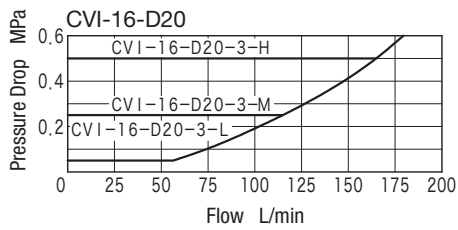
## Notes on Operation

- When pilot pressure operates to close valve, pilot pressure  $P_{AP}$  may leak to B port via the space between the sleeve and spool.
- In circuit where A port is at high pressure and B port is at low pressure while cartridge valve is closed, and if pilot pressure is not high enough, pilot pressure may fall due to leakage from AP port to B port and may cause instability. For sure valve operation, pilot pressure should be sufficiently high or circuit should be designed so that B port is the high pressure side when the valve is closed.

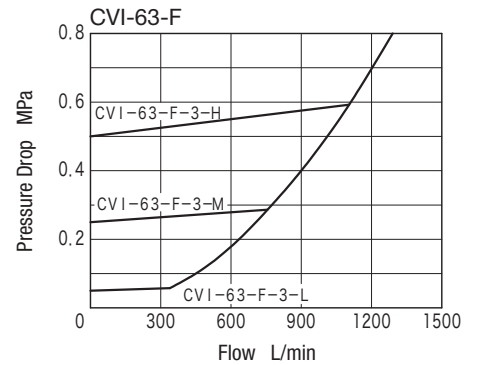
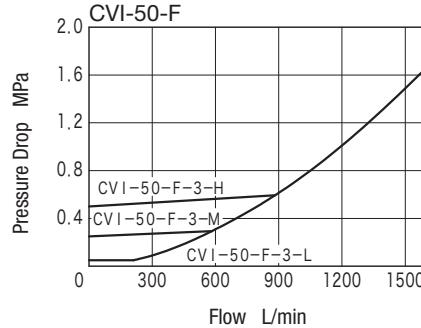
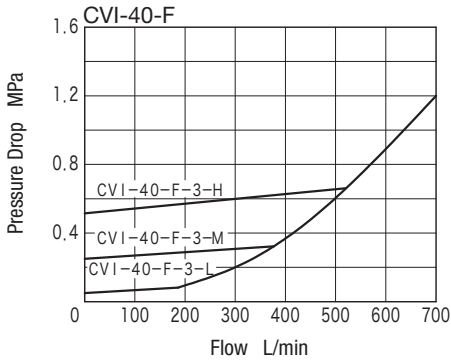
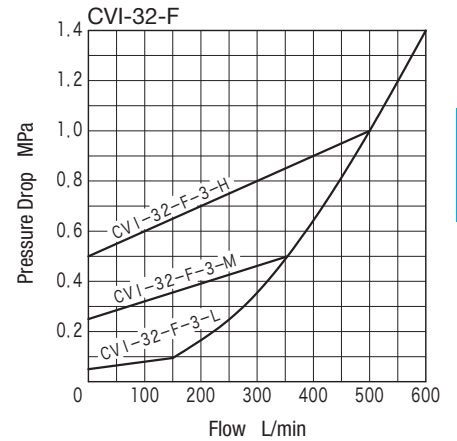
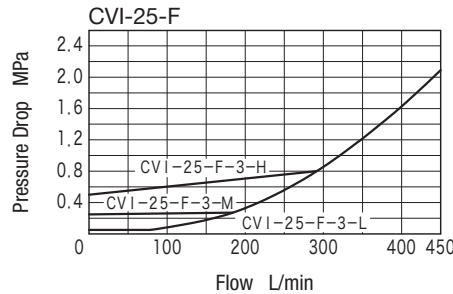
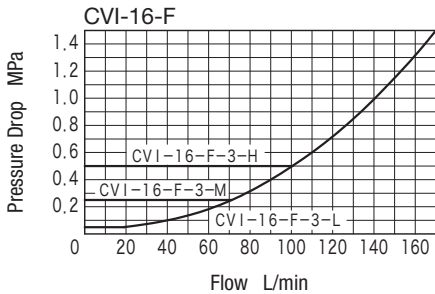
# Characteristics Curve (at 20 mm<sup>2</sup>/s) (typical examples)

## ● Pressure Drop

### CVI-D20 Insert



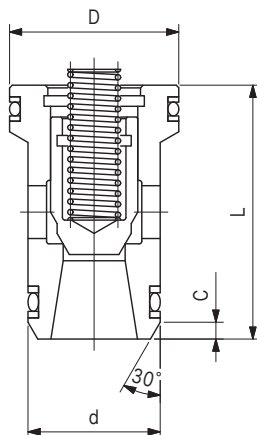
### CVI-F Insert





## Dimensions

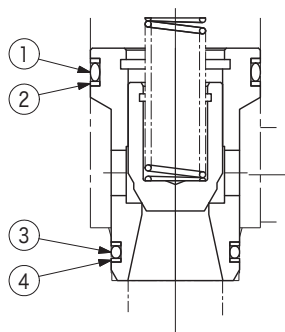
### ● Insert



Dimensions table

Size mm	D	d	L	C
16	φ 32	φ 25	48	3.2
25	φ 45	φ 34	61.5	2.9
32	φ 60	φ 45	72	3.0
40	φ 75	φ 55	90	4.0
50	φ 90	φ 68	104	4.0
63	φ 120	φ 90	135	4.0

## Construction



### CVI-16

No.	Name	Part No.	Standard	Qty
1	O-ring	VP761409	—	1
2	Backup ring	VP761413	—	2
3	O-ring	008001917	JIS B 2401 1A-P21	1
4	Backup ring	008101902	JIS B 2407 T2-P21	2

### CVI-25

No.	Name	Part No.	Standard	Qty
1	O-ring	008050419	JIS B 2401 1B-G40	1
2	Backup ring	008150402	JIS B 2407 T2-G40	2
3	O-ring	VP760187	—	1
4	Backup ring	VP761375	—	2

### CVI-32

No.	Name	Part No.	Standard	Qty
1	O-ring	008050717	JIS B 2401 1A-G55	1
2	Backup ring	008150702	JIS B 2407 T2-G55	2
3	O-ring	008050417	JIS B 2401 1A-G40	1
4	Backup ring	008150402	JIS B 2407 T2-G40	2

### CVI-40

No.	Name	Part No.	Standard	Qty
1	O-ring	VP761411	—	1
2	Backup ring	VP761415	—	2
3	O-ring	008050617	JIS B 2401 1A-G50	1
4	Backup ring	008150602	JIS B 2407 T2-G50	2

### CVI-50

No.	Name	Part No.	Standard	Qty
1	O-ring	008006417	JIS B 2401 1A-P80	1
2	Backup ring	008106402	JIS B 2407 T2-P80	2
3	O-ring	008005517	JIS B 2401 1A-P58	1
4	Backup ring	008105502	JIS B 2407 T2-P58	2

### CVI-63

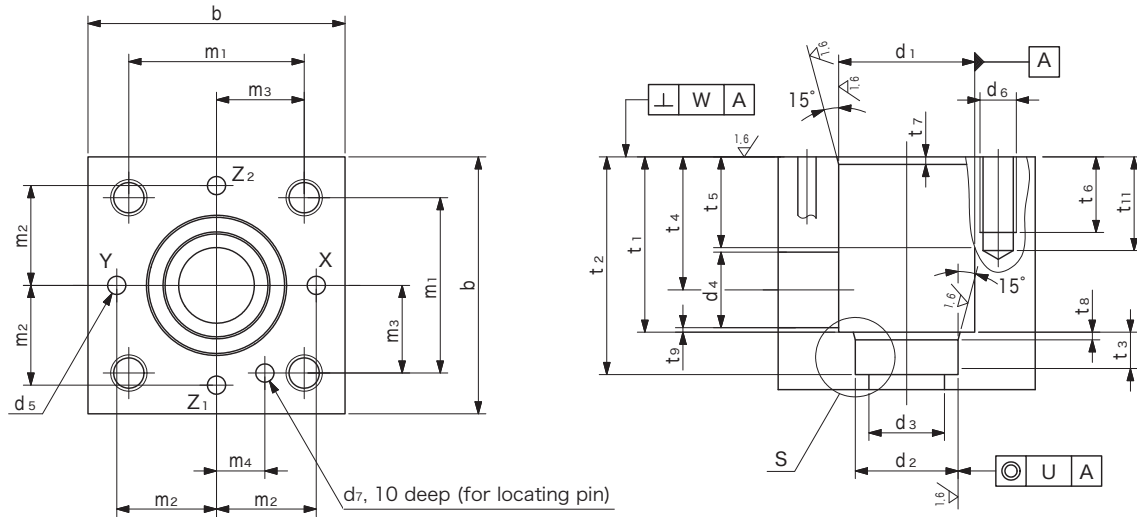
No.	Name	Part No.	Standard	Qty
1	O-ring	008007117	JIS B 2401 1A-P110	1
2	Backup ring	008107102	JIS B 2407 T2-P110	2
3	O-ring	008006417	JIS B 2401 1A-P80	1
4	Backup ring	008106402	JIS B 2407 T2-P80	2

### CVI-80

No.	Name	Part No.	Standard	Qty
1	O-ring	008007817	JIS B 2401 1A-P135	1
2	Backup ring	008107802	JIS B 2407 T2-P135	2
3	O-ring	008006817	JIS B 2401 1A-P100	1
4	Backup ring	008106802	JIS B 2407 T2-P100	2

# Dimensions

## ● Cavity Dimensions (ISO 7368)



Size	16	25	32	40	50	63
b	65	85	102	125	140	180
d <sub>1</sub> min.	32.000	45.000	60.000	75.000	90.000	120.000
max.	32.025	45.025	60.030	75.030	90.035	120.035
d <sub>2</sub> min.	25.000	34.000	45.000	55.000	68.000	90.000
max.	25.021	34.025	45.025	55.030	68.030	90.035
d <sub>3</sub> max.	16	25	32	40	50	63
d <sub>4</sub> min.	16	25	32	40	50	63
max.	25	32	40	50	63	80
d <sub>5</sub> max.	4	6	8	10	10	12
d <sub>6</sub>	M8	M12	M16	M20	M20	M30
d <sub>7</sub>	4	6	6	6	8	8
m <sub>1</sub> <sup>+0.2</sup> <sub>0</sub>	46	58	70	85	100	125
m <sub>2</sub> <sup>+0.2</sup> <sub>0</sub>	25	33	41	50	58	75
m <sub>3</sub> <sup>+0.2</sup> <sub>0</sub>	23	29	35	42.5	50	62.5
m <sub>4</sub> <sup>+0.2</sup> <sub>0</sub>	10.5	16	17	23	30	38
t <sub>1</sub> <sup>+0.1</sup> <sub>0</sub>	43	58	70	87	100	130
t <sub>2</sub> <sup>+0.1</sup> <sub>0</sub>	56	72	85	105	122	155
t <sub>3</sub> <sup>*1</sup>	11	12	13	15	19	22
t <sub>4</sub>	34	44	52	64	72	95
t <sub>4</sub> <sup>*2</sup>	29.5	40.5	48	59	65.5	86.5
t <sub>5</sub> <sup>*1</sup>	28	30	30	30	35	45
t <sub>6</sub>	20	25	35	35	40	55
t <sub>7</sub>	2	2.5	2.5	3	4	4
t <sub>8</sub>	2	2.5	2.5	3	3	4
t <sub>9</sub> min.	1.0	1.0	1.5	2.5	2.5	3
t <sub>11</sub> max.	25	31	42	53	53	75
U	0.03	0.03	0.03	0.05	0.05	0.05
W	0.05	0.05	0.1	0.1	0.1	0.2

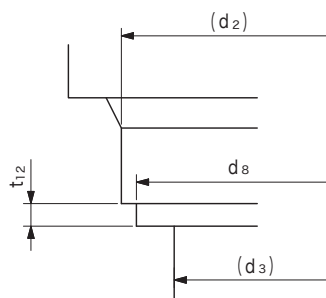
\*1: range  $\sqrt{1.6}$

d<sub>2</sub> bottom hole diameter should be of dimensions which does not interfere with chamfer C of insert (see bottom of H1-2).

d<sub>2</sub> bottom hole dimensional examples shown in schematic below.

\*2: d<sub>4</sub> dimension is max.

S Sectional Detail



d<sub>2</sub> Bottom Hole Dimensions (Reference)

Size	d <sub>8</sub> min.	t <sub>12</sub> ± 0.2
16	24.6	2
25	33.6	2
32	44.6	2
40	54.6	3
50	67.6	3
63	89.6	3