

## CV40 and CV41 Control Valve

The CV40 is a low pressure, full port dump valve. It features balanced plug control trim with a quick opening characteristic and an adjustable topworks. The CV40's full port allows for high flow rates, and its standard soft seat design gives a consistent leak free shut off when the valve closes. The CV41 offers the same great features, but with an open yoke design.

Both the CV40 and CV41 can be ordered with a metal to metal seat. The metal seat version comprises an unbalanced, hex-shaped plug that avoids debris build up for severe service conditions. Both the soft seat and metal seat trims are offered in full port and reduced port sizes to fit a variety of flow conditions while keeping the same valve body.

For even more versatility the CV40/41 has the option to be outfitted with the smaller trim sizes from BMD's CV10 valve line. Available in .25" to 1.25" sizes, these smaller trim sets can be installed without taking the valve body out of line making it easy to convert the valve to handle a lower flow rate. Carbide and stainless options are available as well.

The CV40 and CV41 can be used for discharging liquid or gas from separators, treaters, knockouts or other vessels. It can also be used for back pressure regulation when paired with a PC48 pressure controller making it a great economical choice for a variety of low pressure applications.

## Specifications

**Sizes:** 2", 3" and 4"

**Connections:** Female NPT, Flanged, Bodies tapped 1/4" NPT from factory

**Body Type:** Globe, Angle

**Soft Seat Trim:**

**Trim Characteristic:** Quick Open

**Trim Type:** Balanced

**Trim Sizes:**

2" Body Size: 2", 1.50", 1"

3" Body Size: 3", 2", 1"

4" Body Size: 4", 3", 2", 1"

**Metal Seat Trim:**

**Trim Characteristic:** Modified Percent

**Trim Type:** Unbalanced

**Trim Sizes:**

2" Body Size: 1.75" & 1.00"

3" Body Size: 2.75", 1.75", 1.00"

4" Body Size: 3.75", 2.75", 1.75", 1.00"

**CV10 Style Trim:**

**Trim Characteristic:** Modified Percent or Quick Open

**Trim Type:** Unbalanced

**Trim Sizes:** .25", .375", .50", .75", 1.0", 1.25"

**Pressure Rating:**

500 psi - 2", 3", 4" NPT

250 psi - 2", 3", 4" Flanged

**Temperature Range:** -20° F to 400° F

**Actuator Sizes:** #35, #70, #120

**Input Signal Range:** 3-15 or 6-30 psi

**Materials:**

**Body:** Ductile Iron

**Bonnet and Plug:** Stainless Steel

**Bonnet Flange:** Carbon Steel

**Seat:** 304 Stainless Steel

**Stem:** 304 Stainless Steel

**Actuator Housing:** Carbon Steel

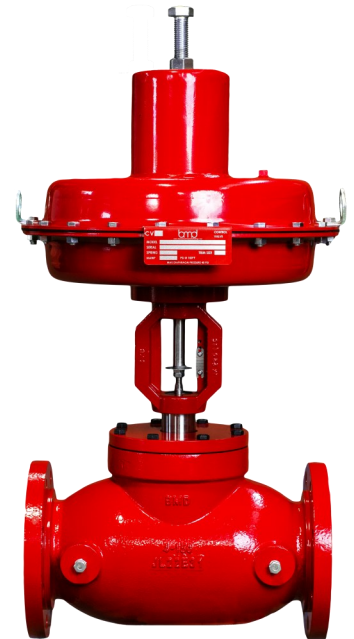
Standard Materials are NACE Compliant.



CV40 Reverse  
Angled Body



CV40 Reverse Globe Body



CV41 with #120 Actuator

# CV Values

Body Size	Trim Size (in.)	Balanced Soft Seat Trim Valve Opening (% Travel)									
		10	20	30	40	50	60	70	80	90	100
2 Inch	1"	6.3	9.2	10.8	11.5	11.8	12.4	13.3	14.3	16.3	19.8
	1.50"	7.7	15.0	21.4	25.9	28.6	30.2	31.3	32.2	32.8	33.2
	2"	7.7	15.6	23.9	32.3	39.6	45.5	49.6	52.0	53.6	54.8
3 Inch	1"	10.0	12.5	14.0	14.8	15.3	15.4	16.9	18.1	19.6	19.6
	2"	15.4	26.5	38.6	44.9	49.0	51.8	53.7	55.3	56.3	56.8
	3"	28.4	28.6	40.9	54.6	67.0	88.6	91.4	100.6	106.4	110.8
4 Inch	1"	9.1	11.6	13.5	14.8	15.8	16.1	16.9	18.5	19.6	20.1
	2"	16.7	23.7	29.5	34.3	36.9	39.8	41.4	44.6	46.5	49.9
	3"	23.1	46.5	70.1	85.7	96.6	105.2	110.3	116.6	117.4	122.7
	4"	23.6	47.5	74.2	93.2	114.2	135.0	149.5	165.0	174.2	179.4

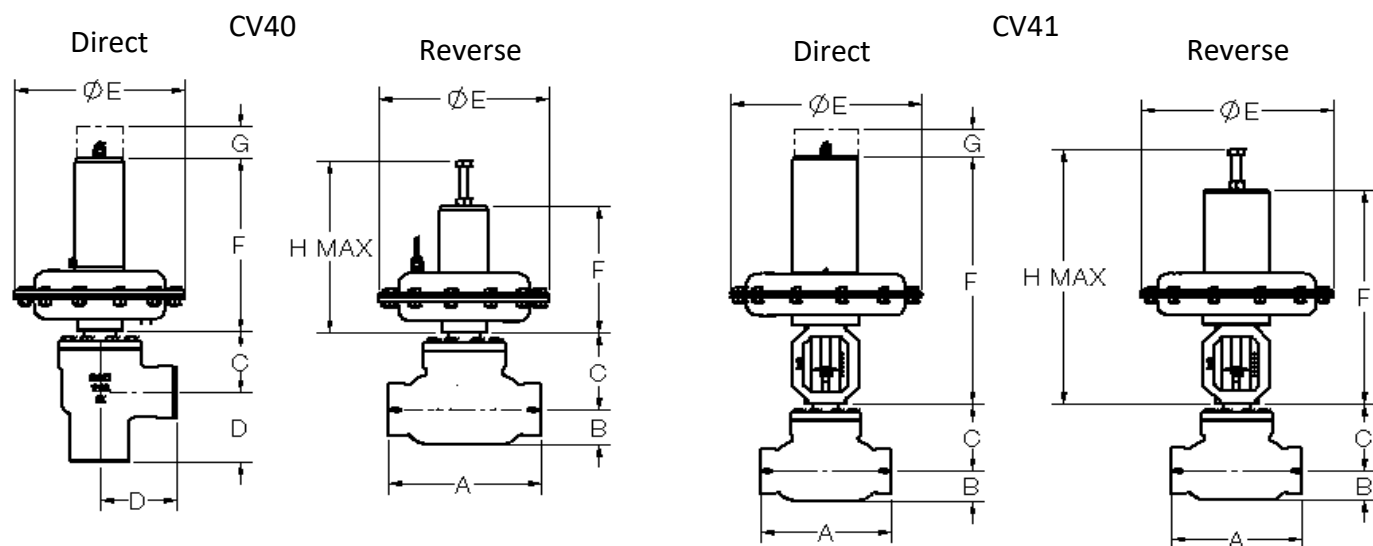
Body Size	Trim Size (in.)	Unbalanced Metal Seat Trim Valve Opening (% Travel)									
		10	20	30	40	50	60	70	80	90	100
2 Inch	1.00	2.3	3.3	5.5	8.3	12.8	17.4	19.5	21.1	21.9	22.4
	1.75	3.5	5.5	9.4	15.4	22.7	25.8	28.6	32	35.9	36.7
3 Inch	1.00	2.3	3.3	5.5	8	14.4	19.8	22.1	23.4	24.4	25.3
	1.75	8.1	11.6	15.4	21.3	29.5	36.5	42.6	47.4	51.6	54.4
	2.75	12.4	17.7	28.6	41.4	54.9	67.9	77.8	85.2	91.2	95.8
4 Inch	1	3.1	4.6	8.2	15.5	20.2	22.9	24.1	24.6	24.7	24.8
	1.75	5.4	9.7	19.9	29.3	37.3	44.5	50.5	54.5	56.6	58.6
	2.75	8.9	14.4	28.9	45.8	60.4	76.1	87.7	96.9	103.5	104
	3.75	11.7	19.1	37.3	61	82.1	103.3	119.5	130	144.6	150.6

## Dimensions

End Connection (in.)	Body Dimension														
	2"					3"					4"				
	Globe			Angle		Globe			Angle		Globe			Angle	
	A	B	C	C	D	A	B	C	C	D	A	B	C	C	D
NPT	8.50	2.13	4.72	3.77	4.38	12.00	3.00	6.51	3.88	5.50	15.00	3.75	7.16	4.96	6.50
150 RFF	9.00	2.13	4.72	3.77	4.25	12.19	3.00	6.50	3.88	5.50	15.13	3.75	7.16	4.96	6.50

Actuator Size	Actuator Dimensions (in)									
	Direct					Reverse				
	E	F (CV40)	F (CV41)	G		E	F (CV40)	F (CV41)	H (CV40)	H (CV41)
No. 35, 3-15	9.50	10.50	16.04	5.50		9.50	7.75	13.38	9.70	15.33
No. 35, 6-30	9.50	12.12	17.66	7.00		9.50	9.62	15.25	10.70	16.33
No. 70, 3-15	12.50	12.09	15.00	7.00		12.50	9.62	15.25	12.57	18.20
No. 70, 6-30	12.50	15.41	20.95	10.00		12.50	11.37	17.00	14.33	19.96
No. 120	16.00	—	22.10	8.90		16.00	—	17.10	—	20.47

G = Clearance needed for spring cover removal.



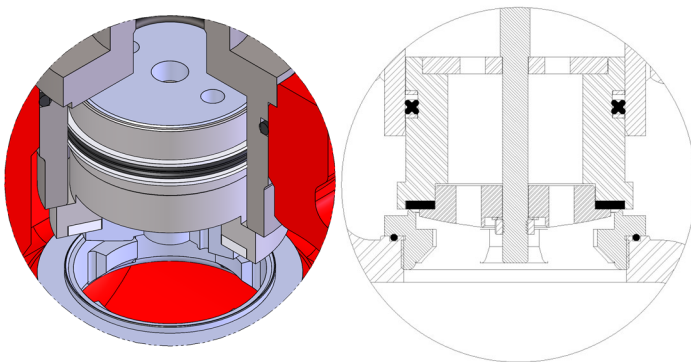
# Shut Off Values for Unbalanced Metal Trim

Trim Size	Flow Direction	Signal to No. 35 Actuator		Signal to No. 35 Actuator		Signal to No. 70 Actuator		Signal to No. 70 Actuator		Signal to No. 120 Actuator		Signal to No. 120 Actuator	
		3 - 15 Spring		6 - 30 Spring		3 - 15 Spring		6 - 30 Spring		3 - 15 Spring		6 - 30 Spring	
		15 psi	25 psi	30 psi	40 psi	15 psi	25 psi	30 psi	40 psi	15 psi	25 psi	30 psi	40 psi
1	Under Seat		435	56	500	56	500	477	500	500	500	500	500
1.75			103		125		270	116	407	341	500	500	500
2.75							51		77	77	85	194	396
3.75							8		15	27	136	78	187

\* Greyed out cells are not recommended.

## Trim Comparison

Balanced Soft Seat Trim



Balanced trim allows the upstream pressure to act on the top of the plug. This equalizes the forces acting on the bottom of the plug to balance the trim. With balanced trim high shut off pressure can be achieved with relatively low actuation force. The CV40 balanced trim option also features a Teflon soft seat giving the valve a class VI shutoff.

### Advantages:

- Higher shut off even with large trim
- Smaller actuator and spring needed
- Class VI shut off

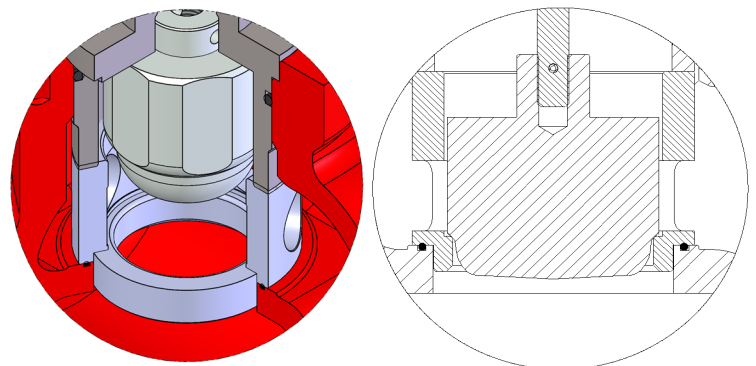
### Disadvantages:

- Sand can build up on top side of plug
- Soft seat more susceptible to erosion in dirty conditions

### Recommended for:

- Low pressure dump applications where flow rates may decrease over time

Unbalanced Metal Seat Trim



Unbalanced trim does not allow the upstream pressure to act on the back side of the plug. It uses a solid one piece plug with hex flats. This design prevents sand buildup on the plug's backside. The metal to metal seat is also resistant to sand erosion.

### Advantages:

- More erosion resistant than soft seat trim
- Prevents sand build up

### Disadvantages:

- Lower shut off pressure due to unbalanced trim
- Requires a larger actuator and spring

### Recommended for:

- Flow back
- Abrasive media

# Weights

End Connection	Valve Weights with No. 35 Actuator											
	2"				3"				4"			
	Globe		Angle		Globe		Angle		Globe		Angle	
	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg
CV40 NPT	48	22	51	23	69	31	56	25	111	50	85	39
CV40 ANSI 150	58	26	54	24	85	39	74	34	113	51	103	47
CV41 NPT	55.5	29.5	58.5	30.5	76.5	38.5	63.5	32.5	118.5	57.5	92.5	46.5
CV41 ANSI 150	65.5	33.5	61.5	31.5	92.5	46.5	81.5	41.5	120.5	58.5	110.5	54.5

End Connection	Valve Weights with No. 70 Actuator											
	2"				3"				4"			
	Globe		Angle		Globe		Angle		Globe		Angle	
	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg
CV40 NPT	63	28.8	66	29.8	84	37.8	71	31.8	126	56.8	100	45.8
CV40 ANSI 150	73	32.8	69	30.8	100	45.8	89	40.8	128	57.8	118	53.8
CV41 NPT	70.5	36.3	73.5	37.3	91.5	45.3	78.5	39.3	133.5	64.3	107.5	53.3
CV41 ANSI 150	80.5	40.3	76.5	38.3	107.5	53.3	96.5	48.3	135.5	65.3	125.5	61.3

## How to Order

Example Model No. **CV40-2NGR33-T16**  
 CV40 Series Dump Valve, 2" Globe Body, Threaded Ends, No. 35 Reverse Actuator,  
 3-15 psi Spring, Teflon Seat, 2" Port.

**CV40 - 2 N G R 3 3 - T 16**

<b>Style</b> <b>CV40</b> - Close Coupled <b>CV41</b> - Open Yoke <b>CV40U</b> - Unbalanced Metal Seat, Close Coupled <b>CV41U</b> - Unbalanced Metal Seat, Open Yoke					
<b>Body Size</b> <b>2</b> - 2" <b>3</b> - 3" <b>4</b> - 4"					
<b>Connection</b> <b>N</b> - NPT <b>F</b> - RFF					
<b>Body Type</b> <b>G</b> - Globe Body <b>A</b> - Angle Body					
<b>Actuator</b> <b>D</b> - Direct (Fail Open) <b>R</b> - Reverse (Fail Close)					
<b>Actuator Size</b> <b>3</b> - #35 <b>7</b> - #70 <b>2</b> - #120 (CV41 Only)					
<b>Spring</b> <b>3</b> - 3-15 psi <b>6</b> - 6-30 psi					
<b>Seat Type</b> <b>T</b> - Teflon Seat Balanced <b>M</b> - Metal Unbalanced <b>A</b> - CV10 Style					
<b>Trim Size</b>					
Teflon Balanced	8 - 1"	12 - 1.5"	16 - 2"	24 - 3"	32 - 4"
Metal Unbalanced	8 - 1"	14 - 1.75"	22 - 2.75"	30 - 3.75"	
CV10 Style	2 - 0.25"	3 - 0.375"	4 - .50"	6 - 0.75"	8 - 1"
	10 - 1.25"				
<b>Trim Type (only used for CV10 Style Seat)</b> <b>Q</b> - Quick Open Stainless <b>T</b> - Throttling Stainless <b>R</b> - Quick Open Tungsten Carbide <b>U</b> - Throttling Tungsten Carbide					

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