



— MODEL — **X52E**

Orifice Plate Assembly

- Wafer Design
- Fits ANSI 125, 150, 250, 300
- Optional Materials Available
- Easy to use size Selection Chart



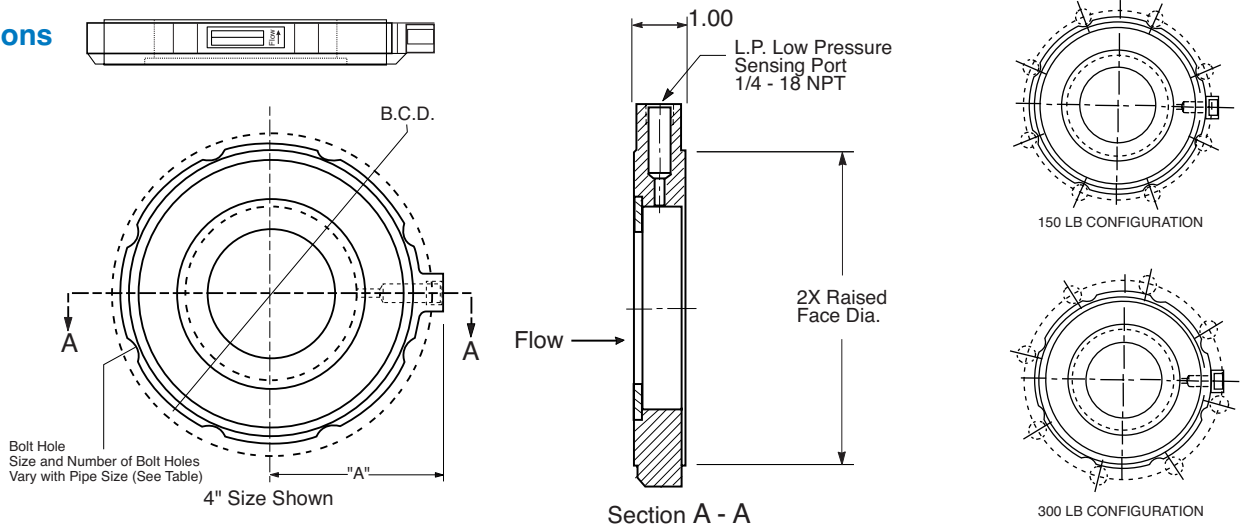
The Cla-Val Model X52E Orifice Plate Assembly is typically used with Cla-Val flow control valves. The orifice plate is an essential component used to generate a specific, predictable pressure drop in the system. The X52E uses a wafer design holder which offers a compact light-weight assembly that is easy to install. The X52E has a Chamfered "Inlet" side so even after installation, correct orientation can be easily verified.

The orifice plate portion of the assembly is made of 302 stainless steel with other materials options also available. The plate is machined to a recommended "square edge". The plate holder portion of the assembly is Ductile Iron standard. Fusion-bonded epoxy coating is an option. The holder may be made of other materials.

Selecting an orifice plate bore size is made by using charts provided.

We recommend installation of this assembly with the sensing port to the side of the pipeline to prevent air pockets and obstructions in the sensing line. Installation adjacent to a butterfly valve is not recommended as the orifice plate assembly may interfere with the opening of this type of valve.

Dimensions



| NOMINAL PIPE SIZE (inches) | | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
|----------------------------------|-------------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| Diameter of Flange | | 3.63 | 4.25 | 5.00 | 5.75 | 7.00 | 9.75 | 12.00 | 14.12 | 16.50 | 19.00 | 21.12 |
| Diameter of Raised Face | | 2.88 | 3.63 | 4.13 | 5.00 | 6.19 | 8.50 | 10.63 | 12.75 | 15.00 | 16.25 | 18.50 |
| "A" Dim from CL to top of boss | | 2.31 | 2.62 | 3.00 | 3.38 | 4.00 | 5.38 | 6.50 | 7.62 | 8.75 | 10.00 | 11.06 |
| Diameter of Bolt Circle (B.C.D.) | | 3.88 | 4.75 | 5.50 | 6.00 | 7.50 | 9.50 | 11.75 | 14.25 | 17.00 | 18.75 | 21.25 |
| 150 Lb. | Number of Bolts | 4 | 4 | 4 | 4 | 8 | 8 | 8 | 12 | 12 | 12 | 16 |
| | Radius of Bolt Holes | .31 | .38 | .38 | .38 | .38 | .44 | .44 | .50 | .50 | .56 | .56 |
| 300 Lb. | Diameter of Bolt Circle | 4.50 | 5.00 | 5.50 | 6.63 | 7.88 | 10.63 | 13.00 | 15.25 | 17.75 | 20.25 | 22.50 |
| | Number of Bolts | 4 | 8 | 8 | 8 | 8 | 12 | 12 | 16 | 16 | 20 | 20 |



Sizing An Orifice Plate Bore

- In determining a bore size, the nominal flow rate (or range of flow) and the pipe size in which the orifice plate assembly will be installed must be known.
- Sizing a bore for:

A constant flow rate:

Select the sizing chart that matches pipe size and locate the flow rate under the nominal column which is closest to required flow; select the corresponding bore size dimension.

Example:

A 6" pipe with a desired constant flow of 700 gpm. Using the 6" chart, the closest flow in the nominal column is 670 gpm which has a corresponding bore size of 3.80".

6" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|------|---------|
| | Min | Max | Nominal |
| 4.60 | 490 | 1960 | 1100 |
| 4.40 | 435 | 1740 | 980 |
| 4.20 | 380 | 1520 | 850 |
| 4.00 | 330 | 1320 | 750 |
| 3.80 | 300 | 1200 | 670 |
| 3.60 | 265 | 1060 | 590 |
| 3.40 | 230 | 920 | 520 |
| 3.20 | 200 | 800 | 450 |
| 3.00 | 175 | 700 | 395 |
| 2.80 | 150 | 600 | 340 |
| 2.60 | 130 | 520 | 295 |
| 2.40 | 110 | 440 | 245 |

A flow range:

Select the sizing chart that matches pipe size and locate required flow range between the minimum and maximum limits of an orifice bore. Frequently the flow range will fit between more than one bore size. To resolve this, decide the flow rate that system will be operated at most frequently. Locate the flow which is closest to this under the nominal flow column, and select the corresponding bore size dimension.

Example:

A 6" pipe with a flow range of 300-1000 gpm. Using the 6" chart, more than one bore size can accommodate this range. The most frequent flow rate will be 500 gpm. Using the nominal flow column, the closest flow is 670 gpm which has a corresponding bore size of 3.40"

6" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|------|---------|
| | Min | Max | Nominal |
| 4.60 | 490 | 1960 | 1100 |
| 4.40 | 435 | 1740 | 980 |
| 4.20 | 380 | 1520 | 850 |
| 4.00 | 330 | 1320 | 750 |
| 3.80 | 300 | 1200 | 670 |
| 3.60 | 265 | 1060 | 590 |
| 3.40 | 230 | 920 | 520 |
| 3.20 | 200 | 800 | 450 |
| 3.00 | 175 | 700 | 395 |
| 2.80 | 150 | 600 | 340 |
| 2.60 | 130 | 520 | 295 |
| 2.40 | 110 | 440 | 245 |

Orifice Plate Bore Chart

2" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|-----|---------|
| | Min | Max | Nominal |
| 1.55 | 55 | 220 | 125 |
| 1.50 | 50 | 200 | 115 |
| 1.40 | 42 | 168 | 95 |
| 1.20 | 29 | 116 | 65 |
| 1.00 | 19 | 76 | 45 |
| .80 | 12 | 50 | 28 |

2½" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|-----|---------|
| | Min | Max | Nominal |
| 1.87 | 80 | 330 | 180 |
| 1.60 | 55 | 220 | 120 |
| 1.40 | 40 | 160 | 88 |
| 1.20 | 28 | 115 | 62 |
| 1.00 | 19 | 80 | 43 |
| .80 | 12 | 50 | 28 |

*For 1 1/2" bore information please consult the factory

3" Valve/Pipe Size

| Bore Size | Flow – gpm | | |
|-----------|------------|-----|---------|
| | Min | Max | Nominal |
| 2.29 | 120 | 480 | 270 |
| 2.20 | 105 | 420 | 240 |
| 2.00 | 84 | 336 | 190 |
| 1.80 | 65 | 260 | 145 |
| 1.60 | 50 | 200 | 115 |
| 1.40 | 38 | 152 | 86 |
| 1.20 | 28 | 112 | 62 |
| 1.00 | 19 | 76 | 43 |

4" Valve/Pipe Size

| Bore Size | Flow – gpm | | |
|-----------|------------|-----|---------|
| | Min | Max | Nominal |
| 3.00 | 205 | 820 | 450 |
| 2.80 | 170 | 680 | 390 |
| 2.60 | 140 | 560 | 310 |
| 2.40 | 115 | 460 | 260 |
| 2.20 | 96 | 384 | 215 |
| 2.00 | 78 | 312 | 175 |
| 1.80 | 63 | 252 | 140 |
| 1.60 | 49 | 196 | 110 |
| 1.40 | 38 | 152 | 84 |
| 1.20 | 28 | 112 | 62 |

6" Valve/Pipe Size

| Bore Size | Flow – gpm | | |
|-----------|------------|------|---------|
| | Min | Max | Nominal |
| 4.60 | 490 | 1960 | 1100 |
| 4.40 | 435 | 1740 | 980 |
| 4.20 | 380 | 1520 | 850 |
| 4.00 | 330 | 1320 | 750 |
| 3.80 | 300 | 1200 | 670 |
| 3.60 | 265 | 1060 | 590 |
| 3.40 | 230 | 920 | 520 |
| 3.20 | 200 | 800 | 450 |
| 3.00 | 175 | 700 | 395 |
| 2.80 | 150 | 600 | 340 |
| 2.60 | 130 | 520 | 295 |
| 2.40 | 110 | 440 | 245 |

8" Valve/Pipe Size

| Bore Size | Flow – gpm | | |
|-----------|------------|------|---------|
| | Min | Max | Nominal |
| 6.00 | 830 | 3320 | 1850 |
| 5.80 | 760 | 3040 | 1700 |
| 5.60 | 680 | 2720 | 1550 |
| 5.40 | 620 | 2480 | 1400 |
| 5.20 | 570 | 2280 | 1275 |
| 5.00 | 515 | 2060 | 1150 |
| 4.80 | 470 | 1880 | 1050 |
| 4.60 | 425 | 1700 | 950 |
| 4.40 | 385 | 1540 | 860 |
| 4.20 | 345 | 1380 | 780 |
| 4.00 | 310 | 1240 | 700 |

10" Valve/Pipe Size

| Bore Size | Flow – gpm | | |
|-----------|------------|------|---------|
| | Min | Max | Nominal |
| 7.50 | 1300 | 5200 | 2900 |
| 7.00 | 1075 | 4300 | 2400 |
| 6.50 | 880 | 3520 | 1950 |
| 6.00 | 730 | 2920 | 1650 |
| 5.50 | 600 | 2400 | 1350 |
| 5.00 | 490 | 1960 | 1100 |
| 4.50 | 390 | 1560 | 870 |
| 4.00 | 310 | 1240 | 690 |
| 3.50 | 235 | 940 | 525 |
| 3.00 | 175 | 700 | 385 |

12" Valve/Pipe Size

| Bore Size | Flow – gpm | | |
|-----------|------------|------|---------|
| | Min | Max | Nominal |
| 9.00 | 1850 | 7400 | 4200 |
| 8.50 | 1575 | 6300 | 3500 |
| 8.00 | 1350 | 5400 | 3000 |
| 7.50 | 1150 | 4600 | 2600 |
| 7.00 | 980 | 3920 | 2200 |
| 6.50 | 840 | 3360 | 1875 |
| 6.00 | 700 | 2800 | 1575 |
| 5.50 | 580 | 2320 | 1300 |
| 5.00 | 480 | 1920 | 1075 |
| 4.50 | 385 | 1540 | 870 |

14" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|------|---------|
| | Min | Max | Nominal |
| 10.00 | 2350 | 9400 | 5200 |
| 9.50 | 2025 | 8100 | 4500 |
| 9.00 | 1750 | 7000 | 3900 |
| 8.50 | 1500 | 6000 | 3400 |
| 8.00 | 1300 | 5200 | 2900 |
| 7.50 | 1150 | 4600 | 2500 |
| 7.00 | 960 | 3840 | 2150 |
| 6.50 | 820 | 3280 | 1850 |
| 6.00 | 700 | 2800 | 1550 |
| 5.50 | 585 | 2340 | 1300 |
| 5.00 | 480 | 1920 | 1075 |
| 4.50 | 385 | 1540 | 860 |

16" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|-------|---------|
| | Min | Max | Nominal |
| 11.50 | 3100 | 12400 | 7000 |
| 11.00 | 2700 | 10800 | 6100 |
| 10.50 | 2400 | 9600 | 5400 |
| 10.00 | 2100 | 8400 | 4700 |
| 9.50 | 1850 | 7400 | 4200 |
| 9.00 | 1650 | 6600 | 3650 |
| 8.50 | 1450 | 5800 | 3250 |
| 8.00 | 1250 | 5000 | 2850 |
| 7.50 | 1100 | 4400 | 2450 |
| 7.00 | 950 | 3800 | 2150 |
| 6.50 | 810 | 3240 | 1800 |
| 6.00 | 700 | 2800 | 1550 |
| 5.50 | 575 | 2300 | 1300 |

18" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|-------|---------|
| | Min | Max | Nominal |
| 13.00 | 5200 | 15500 | 9000 |
| 12.00 | 4100 | 12300 | 7100 |
| 11.50 | 3700 | 11000 | 6400 |
| 11.00 | 3300 | 9850 | 5700 |
| 10.50 | 2950 | 8800 | 5100 |
| 10.00 | 2600 | 7850 | 4550 |
| 9.50 | 2350 | 6200 | 3600 |
| 9.00 | 2100 | 6200 | 3600 |
| 8.50 | 1850 | 5500 | 3200 |
| 8.00 | 1650 | 4850 | 2800 |
| 7.50 | 1400 | 4250 | 2450 |
| 7.00 | 1250 | 3650 | 2100 |

20" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|-------|---------|
| | Min | Max | Nominal |
| 14.00 | 6000 | 18000 | 10500 |
| 13.50 | 5300 | 16000 | 9500 |
| 13.00 | 4800 | 14500 | 8500 |
| 12.50 | 4300 | 12900 | 7500 |
| 12.00 | 3900 | 11700 | 6700 |
| 11.50 | 3400 | 10500 | 6100 |
| 11.00 | 3200 | 9500 | 5500 |
| 10.50 | 2900 | 8600 | 5000 |
| 10.00 | 2600 | 7700 | 4500 |
| 9.50 | 2300 | 6100 | 3600 |
| 9.00 | 2000 | 6100 | 3600 |
| 8.50 | 1800 | 5400 | 3200 |

24" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|-------|---------|
| | Min | Max | Nominal |
| 17.00 | 8500 | 25500 | 15000 |
| 16.00 | 7500 | 21500 | 12500 |
| 15.00 | 6100 | 18400 | 10500 |
| 14.50 | 5700 | 17000 | 9800 |
| 14.00 | 5200 | 15600 | 9000 |
| 13.50 | 4800 | 14400 | 8300 |
| 13.00 | 4400 | 13200 | 7600 |
| 12.50 | 4000 | 12100 | 7000 |
| 12.00 | 3700 | 11100 | 6400 |
| 11.50 | 3400 | 10100 | 5800 |
| 11.00 | 3100 | 9200 | 5300 |
| 10.50 | 2800 | 8300 | 4800 |
| 10.00 | 2500 | 7500 | 4400 |

36" Valve/Pipe Size

| Bore Size | Flow — gpm | | |
|-----------|------------|-------|---------|
| | Min | Max | Nominal |
| 26.00 | 20000 | 60000 | 35000 |
| 24.00 | 16000 | 48500 | 28000 |
| 22.00 | 13000 | 39000 | 22500 |
| 21.00 | 12000 | 35000 | 20500 |
| 20.00 | 10500 | 31000 | 18000 |
| 19.00 | 9500 | 28000 | 16000 |
| 18.00 | 8500 | 24500 | 14500 |
| 17.00 | 7500 | 22000 | 12500 |
| 16.00 | 6500 | 19300 | 11000 |
| 15.00 | 5600 | 16900 | 9800 |
| 14.00 | 4900 | 14600 | 8500 |
| 13.00 | 4200 | 12600 | 7300 |



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