

LL-STV/LL-STVL

0.50" to 2.00" Manual Balancing Valve

- Accurate and precise flow measurement
- Accurate and precise flow balancing
- Positive Shut-off
- Offsetting Pressure/temperature ports, Self sealing with optional Drain Kits
- "Y" Pattern Globe style design
- Multi-turn, 360° handwheel with vernier scale and digital readout
- Built in memory stop
- Wide variety of accessories available



Low Lead STV Series



Low Lead STVL Series

| SPECIFICATIONS | |
|----------------------|---|
| Pressure Ratings: | 300 psil (20 Bar) |
| Temperature Ratings: | -4°F to 248°F (-20°C to 120°C) |
| Body, Bonnet: | Dezincification Resistant Brass* |
| End Connections: | LL-STV- Female, NPT LL-STVL- Solder, SWT |
| Gaskets: | EPDM |
| Seat Seal | EPDM |
| Handwheel: | Polyamide Plastic (White) |

* The wetted surface of this product contacted by consumable water contains less than one quarter of one percent (0.25%) of lead by weight. Certificate of compliance available upon request.

| NOMINAL DIMENSIONS & WEIGHTS | | | | | | | | | | Valve Selection Guide | | | |
|------------------------------|-------|----|-------------|-----------------------|-----------------|--------|-----|--------------------|----|-----------------------|--------------------------|------------------|--------------|
| MODEL | SIZE | | A Length | B Height | C PIT Offset | WEIGHT | | Handwheel Turns | | Min. Flow | Nominal Range of Flow | Max. Flow | |
| | in | mm | | | | lbs | kg | | | | | | |
| LL-STV-050 LL-STVL-050 | 0.50" | 15 | in | 3.39 | 3.74 | 1.57 | 1.2 | 0.53 | 10 | GPM | 0.14 | 0.5 - 3.8 | 12.1 |
| mm | | | 86.11 | 95 | 40 | LPM | | | | 0.52 | 1.89 - 14.36 | 45.7 | |
| LL-STV-075 LL-STVL-075 | 0.75" | 20 | in | 3.54 | 3.74 | 1.65 | 1.3 | 0.58 | 10 | GPM | 0.26 | 3.8 - 5.5 | 17.4 |
| mm | | | 89.92 | 95 | 42 | LPM | | | | 0.98 | 14.36 - 20.8 | 65.7 | |
| LL-STV-100 LL-STVL-100 | 1.00" | 25 | in | 4.02 | 3.78 | 1.73 | 1.7 | 0.77 | 10 | GPM | 0.37 | 5.5 - 9.5 | 30.0 |
| mm | | | 102.11 | 96 | 44 | LPM | | | | 1.38 | 20.8 - 36 | 113.4 | |
| LL-STV-125 LL-STVL-125 | 1.25" | 32 | in | 4.72 | 3.78 | 1.85 | 2.7 | 1.20 | 10 | GPM | 0.60 | 9.5 - 14 | 44.6 |
| mm | | | 119.89 | 96 | 47 | LPM | | | | 2.28 | 36 - 53 | 169.0 | |
| LL-STV-150 LL-STVL-150 | 1.50" | 40 | in | 5.20 | 4.25 | 1.93 | 3.3 | 1.50 | 10 | GPM | 0.91 | 14 - 20 | 66.4 |
| mm | | | 132.08 | 108 | 49 | LPM | | | | 3.46 | 53 - 76 | 251.0 | |
| LL-STV-200 LL-STVL-200 | 2.00" | 50 | in | STV/6.06 STVL/6.46 | 4.37 | 2.09 | 5.1 | 2.30 | 10 | GPM | 1.52 | 20 - 33 | 107.2 |
| mm | | | 154/164 | 111 | 53 | LPM | | | | 5.76 | 76 - 125 | 406.0 | |

| FLOW CALCULATIONS |
|--|
| The Minimum Flow is calculated from the minimum recommended pressure drop, 1 ft WG (=3.0 kPa) |
| The Nominal Flow is from the maximum setting of the valve and the minimum recommended pressure drop, 2 ft WG (=6.0 kPa) |
| The Maximum Flow is calculated from the maximum setting of the valve and the max pressure drop, 20 ft WG (=60.0 kPa) |

Pressure Drop Tables: Models LL-STV / LL-STVL 0.50" to 2.00"

LL-STV & LL-STVL 0.50" - 2.00"

This diagram details the relationship between flow, pressure drop and valve preset points. Use the diagram to select the correct valve size and corresponding handwheel setting to fulfill the application requirements.

Determine the required flow in the circuit (A) and the pressure drop (B). Draw a line between these two values. Read off the corresponding Cv value on the Cv scale.

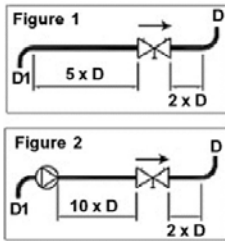
Determine the valve setting, in handwheel turns, by drawing a horizontal line (D) from the intersection point on the Cv scale to the corresponding valve setting position.

For the highest level of accuracy, it is recommended to choose a valve that has at least 3 open turns.

Example: A 1" valve is required to be open 8 turns for a Cv value of 7.5 at a flow rate of 10 gpm and a pressure drop of 4ft.

Installation Recommendations

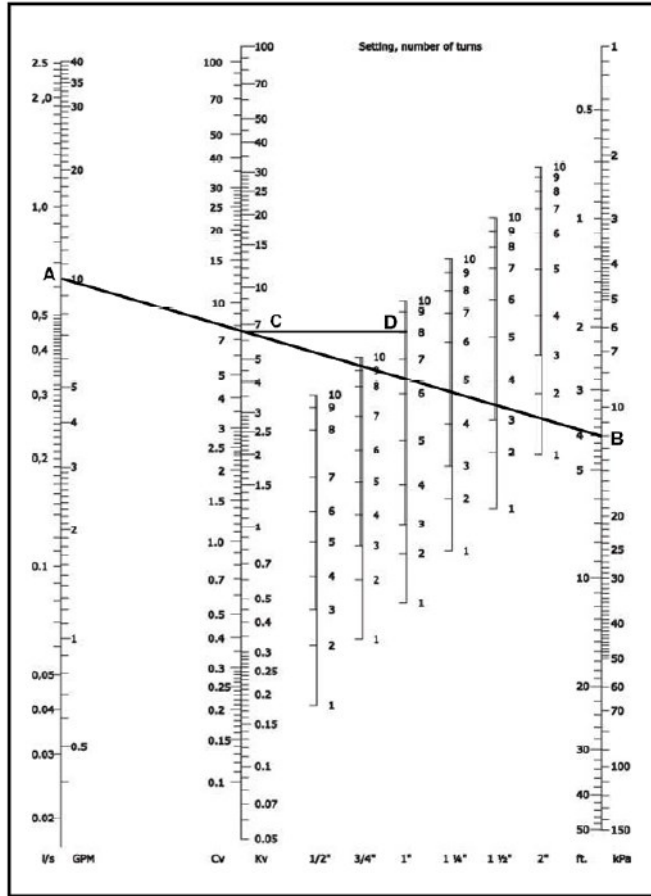
Install the valve in the correct flow direction according to the arrow on the valve body and the distance parameters detailed in Figure 1. (Note: D = pipe diameter).



For Series LL-STVL, cover the valve body with a wet cloth when soldering to prevent premature deterioration of valve components.

When used with a pump, it is recommended to use a straight length of pipe totaling 10 x D (instead of 5 x D) upstream or downstream to avoid turbulence that will affect the measuring accuracy. See Figure 2.

Turbulence can influence the measurements by up to 20% if this recommendation is not followed.



Cv Values for Valve Series LL-STV / LL-STVL

Flow coefficient values (Cv's) at various handwheel settings

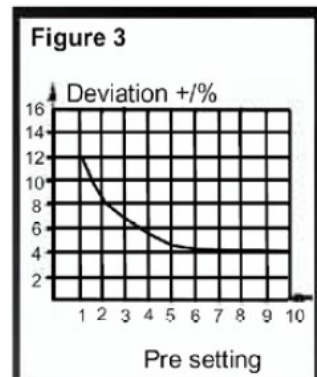
| Handwheel Setting | 1/2" DN 15 | 3/4" DN 20 | 1" DN 25 | 1-1/4" DN 32 | 1-1/2" DN 40 | 2" DN 50 |
|-------------------|------------|------------|----------|--------------|--------------|----------|
| 1 | 0.21 | 0.39 | 0.56 | 0.92 | 1.39 | 2.32 |
| 1.5 | 0.29 | 0.56 | 0.75 | 1.28 | 1.97 | 3.25 |
| 2 | 0.37 | 0.70 | 0.89 | 1.53 | 2.38 | 4.18 |
| 2.5 | 0.44 | 0.82 | 1.04 | 1.80 | 2.78 | 5.10 |
| 3 | 0.52 | 0.96 | 1.19 | 2.09 | 3.25 | 6.03 |
| 3.2 | 0.56 | 1.02 | 1.28 | 2.26 | 3.48 | 6.50 |
| 3.4 | 0.59 | 1.09 | 1.39 | 2.44 | 3.71 | 6.96 |
| 3.6 | 0.63 | 1.16 | 1.51 | 2.67 | 4.06 | 7.54 |
| 3.8 | 0.67 | 1.23 | 1.62 | 2.90 | 4.41 | 8.12 |
| 4 | 0.72 | 1.31 | 1.74 | 3.13 | 4.76 | 8.82 |
| 4.2 | 0.77 | 1.39 | 1.91 | 3.42 | 5.10 | 9.74 |
| 4.4 | 0.81 | 1.48 | 2.09 | 3.71 | 5.57 | 10.70 |
| 4.6 | 0.87 | 1.58 | 2.26 | 4.06 | 6.03 | 11.70 |
| 4.8 | 0.93 | 1.68 | 2.44 | 4.41 | 6.61 | 12.80 |
| 5 | 1.00 | 1.80 | 2.67 | 4.76 | 7.19 | 13.80 |
| 5.2 | 1.07 | 1.91 | 2.90 | 5.16 | 7.77 | 15.00 |
| 5.4 | 1.14 | 2.03 | 3.19 | 5.57 | 8.35 | 16.00 |
| 5.6 | 1.21 | 2.16 | 3.48 | 5.97 | 8.93 | 17.20 |
| 5.8 | 1.28 | 2.30 | 3.83 | 6.38 | 9.63 | 18.30 |
| 6 | 1.36 | 2.44 | 4.18 | 6.84 | 10.30 | 19.40 |
| 6.2 | 1.44 | 2.60 | 4.47 | 7.25 | 11.00 | 20.40 |
| 6.4 | 1.52 | 2.76 | 4.76 | 7.66 | 11.80 | 21.50 |
| 6.6 | 1.62 | 2.96 | 5.10 | 8.12 | 12.50 | 22.50 |
| 6.8 | 1.74 | 3.16 | 5.54 | 8.58 | 13.20 | 23.50 |
| 7 | 1.88 | 3.36 | 6.00 | 9.05 | 13.90 | 24.60 |
| 7.2 | 2.06 | 3.60 | 6.15 | 9.51 | 14.60 | 25.50 |
| 7.4 | 2.26 | 3.83 | 6.50 | 9.98 | 15.30 | 26.40 |
| 7.6 | 2.49 | 4.06 | 6.84 | 10.40 | 15.90 | 27.40 |
| 7.8 | 2.73 | 4.27 | 7.19 | 10.80 | 16.50 | 28.20 |
| 8 | 2.96 | 4.47 | 7.54 | 11.30 | 17.10 | 29.00 |
| 8.2 | 3.13 | 4.63 | 7.89 | 11.70 | 17.60 | 29.90 |
| 8.4 | 3.29 | 4.78 | 8.24 | 12.20 | 18.20 | 30.70 |
| 8.6 | 3.42 | 4.93 | 8.58 | 12.60 | 18.80 | 31.60 |
| 8.8 | 3.54 | 5.08 | 8.87 | 13.00 | 19.40 | 32.40 |
| 9 | 3.65 | 5.22 | 9.16 | 13.30 | 19.80 | 33.20 |
| 9.2 | 3.77 | 5.36 | 9.40 | 13.70 | 20.30 | 33.90 |
| 9.4 | 3.87 | 5.50 | 9.63 | 14.20 | 20.90 | 34.60 |
| 9.6 | 3.98 | 5.64 | 9.86 | 14.50 | 21.50 | 35.30 |
| 9.8 | 4.06 | 5.78 | 10.00 | 14.80 | 22.00 | 36.00 |
| 10 | 4.12* | 5.92* | 10.2* | 15.2* | 22.6* | 36.5* |

* Valve is fully open

Flow Measurement & Accuracy

The measuring instrument connects to the test ports of the valve and is pre-programmed with Manual Balancing characteristics. The pressure drop and flow readings can be read off the display. If access to a Manual Balancing instrument is unavailable, other industry models are compatible. In addition, the flow can be determined using the pressure drop diagram that is included in the operating instructions with each Manual Balancing valve.

The accuracy is highest when the valve is fully open. Therefore, it is recommended to choose a valve that can be opened at least three turns at the calculated pre-setting value. Figure 3 represents the flow measurement deviation in relation to handwheel turns.



Correction for Liquids

Applies to liquids other than water. Correct the measured flow (q) by the density (Y) according to this formula. See Figure 4.

Figure 4

$$\text{Actual Flow} = \frac{q_{CBI}}{\sqrt{Y}}$$

Sizing a Balancing Valve

When the differential pressure and design flow are known, use this formula to calculate Cv value. See Figure 5.

Figure 5

$$C_v = 1.52 \frac{q}{\sqrt{\Delta p}}$$

q in GPM, Δ p in Ft. of H2O

$$C_v = \frac{q}{\sqrt{\Delta p}}$$

q in GPM, √ p in PSI

Memory Stop

1. Set valves to desired position.
2. Turn the inner stem with a 3 mm Allen wrench in a clockwise direction until it stops.