



TYPICAL VALVE FLOW RATES

Rate of flow through a valve depends upon the pressure drop. The most common method of presenting this information is by Cv. The Cv is the valve coefficient of flow and represents the flow of water in gallons per minute (GPM) with a 1 PSIG pressure drop through the valve. The higher the Cv the greater the flow and the better the control characteristics.

RATE OF FLOW CALCULATIONS FOR LIQUIDS

To determine the flow rate of a liquid passing through a valve use the following formula:

$$Q_L = C_v \times \sqrt{\frac{\Delta P}{S_L}}$$

Where Q_L = flow of liquid in gallons per minute (GPM)
 C_v = flow coefficient
 ΔP = pressure drop (psi)
 S_L = Specific gravity of liquid

PRESSURE DROP CALCULATIONS

$$\Delta P = S_L \left(\frac{Q_L}{C_v} \right)^2$$

RATE OF FLOW CALCULATIONS FOR GASES

For Gases the relationship between flow in standard cubic feet per hour Q_g and pressure drop is described by the following formulas:

$$Q_g = 1360 \times C_v \sqrt{\frac{\Delta P}{S_g T}} \times \sqrt{\frac{P_1 + P_2}{2}}$$

Where Q_g = Volumetric flow of gas (SCFH)
 S_g = Specific gravity of gas (air @ 14.7 PSIA and 60 °F = 1)
 T = Absolute temperature of flowing medium (°F + 460)
 P_1 = Inlet pressure (PSIA)
 P_2 = Outlet pressure (PSIA)
 ΔP = (P1 - P2) Pressure Drop (PSIA)
 C_v = Flow in GPM of water @ 1 PSI pressure drop, flow coefficient.

BALL VALVE Cv VALUES: TWO WAY BALL VALVES

| SERIES / SIZE | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1-1/4" | 1-1/2" | 2" | 2-1/2" | 3" | 4" | 5" | 6" | 8" |
|------------------|------|------|------|------|------|--------|--------|-----|--------|------|------|------|------|--------|
| TRIAD 11 | 2.6 | 4.3 | 6.6 | 12.5 | 20.2 | 32 | 51 | 98 | | | | | | |
| TRIAD 22/22D/22E | 12 | 13 | 19 | 37 | 64 | 103 | 143 | 360 | | | | | | |
| TRIAD 50 | 12 | 13 | 19 | 37 | 64 | 103 | 143 | 360 | 440 | 520 | 820 | | | |
| TRIAD 50D | 12 | 13 | 19 | 37 | 64 | 103 | 143 | 360 | 440 | 520 | 820 | | | |
| TRIAD 66 | 8 | 8 | 15 | 34 | 56 | 85 | 125 | 250 | | | | | | |
| TRIAD VS | 5 | 7 | 35 | 61 | 105 | 210 | 285 | 425 | 750 | 1038 | | | | |
| TRIAD HP/ XHP | 5 | 7 | 35 | 61 | 105 | 210 | 285 | 425 | | | | | | |
| TRIAD 99 | 12 | 13 | 19 | 37 | 64 | 103 | 143 | 360 | | | | | | |
| TRAD 920 | | | 9 | 32 | 55 | | 135 | 325 | 420 | 499 | 750 | | | |
| TRIAD 9150 | | | 30 | 60 | 90 | 150 | 260 | 480 | 750 | 800 | 2300 | 3600 | 5000 | 10,000 |

THE FOLLOWING TABLE DEPICTS THE VALUE BASED ON THE POSITION OF THE VALVE: L PORT POSITION, T PORT POSITION AND CROSS (X) PORT POSITION. (WHEN AVAILABLE).

BALL VALVE Cv VALUES: THREE WAY BALL VALVES

| SERIES / SIZE | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1-1/4" | 1-1/2" | 2" | 2-1/2" | 3" | 4" |
|----------------|------|------|------|------|----|--------|--------|-----|--------|-----|-----|
| TRIAD 30 L | | | 12 | 25 | 26 | 57 | 100 | 117 | | | |
| TRIAD 30 T | | | 16 | 45 | 46 | 101 | 180 | 200 | | | |
| TRIAD 33 L | | | 11 | 12 | 25 | 26 | 57 | 100 | | | |
| TRIAD 33 T | | | 15 | 16 | 45 | 46 | 101 | 180 | | | |
| TRIAD 36 L | 3.5 | 3.5 | 11 | 12 | 25 | 26 | 57 | 100 | 117 | 128 | 226 |
| TRIAD 36 T | 5.2 | 5.2 | 15 | 16 | 45 | 46 | 101 | 180 | 200 | 229 | 405 |
| TRIAD 36 X | 2.8 | 2.8 | 9 | 10 | 20 | 21 | 47 | 79 | 83 | 90 | 180 |
| TRIAD 920 L | | | 12 | 25 | 26 | | 26 | 57 | 100 | 117 | 128 |
| TRIAD 920 T | | | 16 | 45 | 46 | | 46 | 101 | 180 | 200 | 229 |
| TRIAD XHP 3W L | 3.5 | 3.5 | 12 | 25 | 26 | 57 | 100 | 117 | | | |
| TRIAD XHP 3W T | 5.2 | 5.2 | 16 | 45 | 46 | 101 | 180 | 200 | | | |