

Fast loop sample system

The CWD 2005 has a high-speed response to step changes but the installed response speed really depends on the choices the customer makes when selecting the size of the process tubing and any pressure regulators or sample gas filters used in the system.

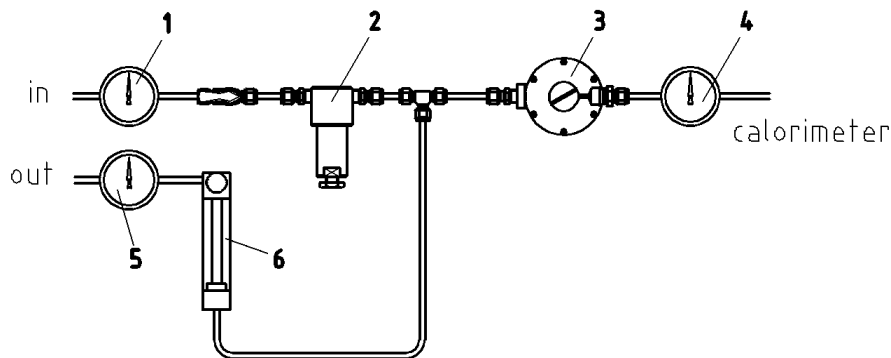
You can download an easy to use [Sample Flow Rate Calculator](#) to help you see the effect of sample tube size and regulator placement on response times, it also calculates the speed advantage in percent of using a fast loop.

Important user's note: Only enter data into the five 'red number' areas to avoid compromising spread sheet functionality.

If the sample run is long and a fast loop cannot be implemented then it is usually better to use small diameter sample tubing and install the regulator at the sample take-off so that the sample line volume is kept small and not subject to the additional 'packing effect' effect of high pressure gas.

A fast loop will speed up the sample gas delivery and provides an advantage when used on high pressure or very long sample runs as long as you have a low-pressure area to 'return' the gas to. In the example shown below the outlet allows 80% of the gas to flow past the instrument to a lower pressure area and 20% of the total gas volume is sampled by the instrument with a 1:4 improvement in sample delivery time. The flow meter (customer supplied) control valve allows the customer to adjust the by-pass ratio to suit specific application requirements.

An additional advantage occurs when the sample return is configured from the base of the filter so any excess flow or liquid carry-over can return immediately to the process without passing through the filter element, extending its useful service life.



Fast loop schematic

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|----|---------------------------|----|----------------------|
| 1. | Gauge inlet pressure | 2. | Filter – model 112 |
| 3. | Pressure regulator - 912 | 4. | Gauge 0-20" H2O |
| 5. | Fast loop outlet pressure | 6. | Flowmeter with valve |