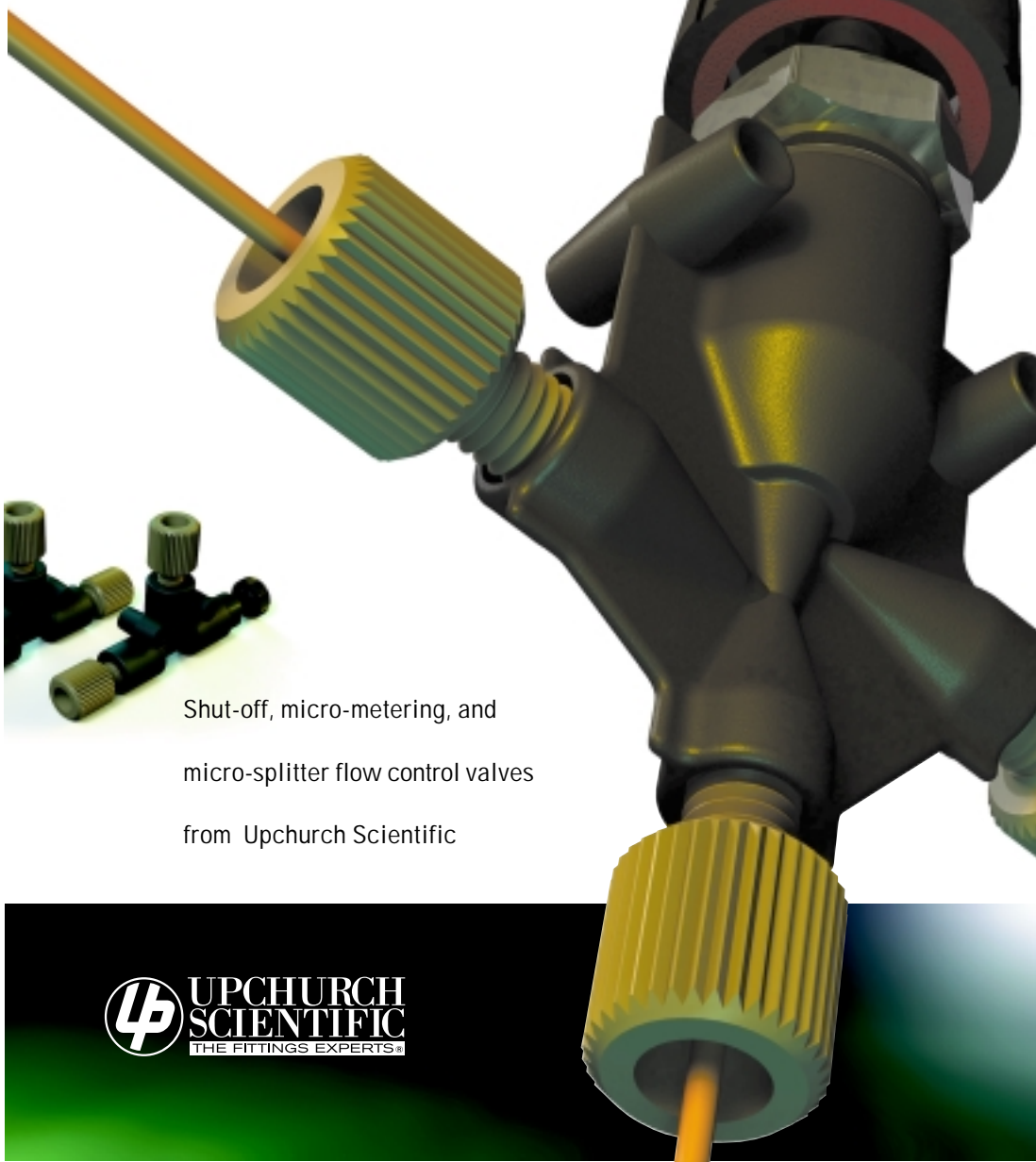


Be a control freak



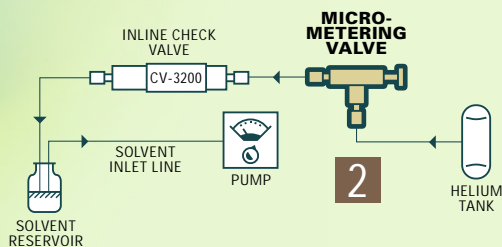
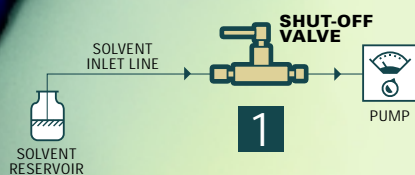
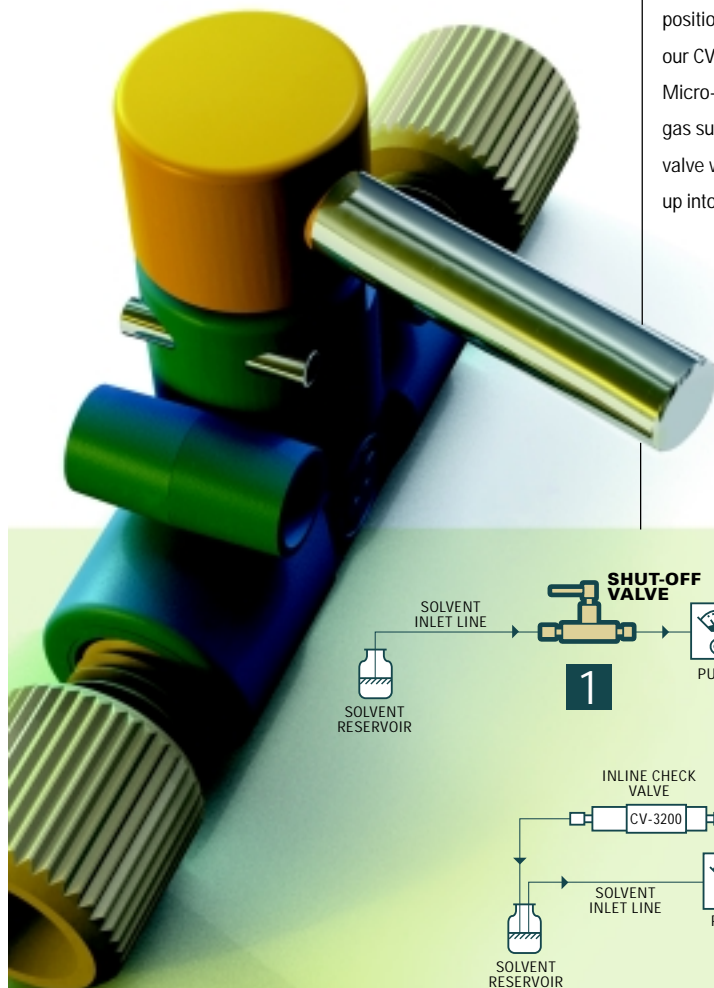
Shut-off, micro-metering, and
micro-splitter flow control valves
from Upchurch Scientific



Low Pressure Fluid and Gas Transfer Applications

Standard HPLC practices dictate that solvent reservoirs are to be stored at or above the inlet level of the pump. When it is necessary to disconnect the solvent line, gravity can then cause solvent to spill out onto the work area. A simple solution to this dilemma is to install an Upchurch Scientific Shut-Off Valve between the solvent reservoir and pump. The potential of a hazardous spill is then effectively eliminated with a simple twist of the valve knob.

Another common practice in laboratory analyses is the conditioning of solvent through helium sparging. However, helium can be difficult and expensive to regulate reliably. By placing an Upchurch Scientific Micro-Metering Valve in the gas delivery path, you can inexpensively regulate the amount of gas bubbling into your solvent reservoir. In addition, you may want to position an inline check valve, such as our CV-3200, immediately after the Micro-Metering Valve. Then, should your gas supply run out during use, the check valve would prevent solvent from backing up into the sparging line.



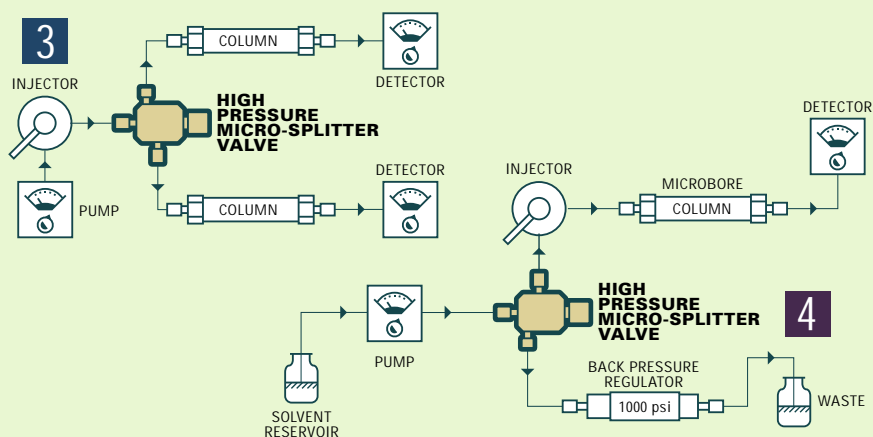
High Pressure Analyses

Some of today's complex samples require analyses performed using multiple columns and detectors (for selectivity and sensitivity, respectively). For qualitative analyses utilizing the same mobile phase composition, our High Pressure Micro-Splitter Valves can reduce equipment costs and overall run time. Install either the High Pressure or High Pressure Capillary Valve after the injector. Then, a single sample injection can be split out to two separate column and detector systems, at

two different flow rates. This set-up eliminates the need for an additional pump and injector valve, while allowing data to be obtained simultaneously.



The High Pressure Micro-Splitter Valves can also be used to economically adapt a standard HPLC system to handle microbore applications. First, install the valve after the pump. Next, attach a 1,000 psi Back-Pressure Regulator to the non-regulated port off the valve. Then, route the split port to your injector valve and microbore column, using either 1/16" tubing or capillary tubing, depending on the valve selected. You can then effectively adjust the effluent flow rate down to the range of microbore HPLC. This set-up provides an economical solution without the costly and cumbersome upgrade packages offered by many equipment manufacturers. As a side note, the High Pressure Micro-Splitter Valve can also be used as a prime purge valve, mounted between the pump and injector valve.



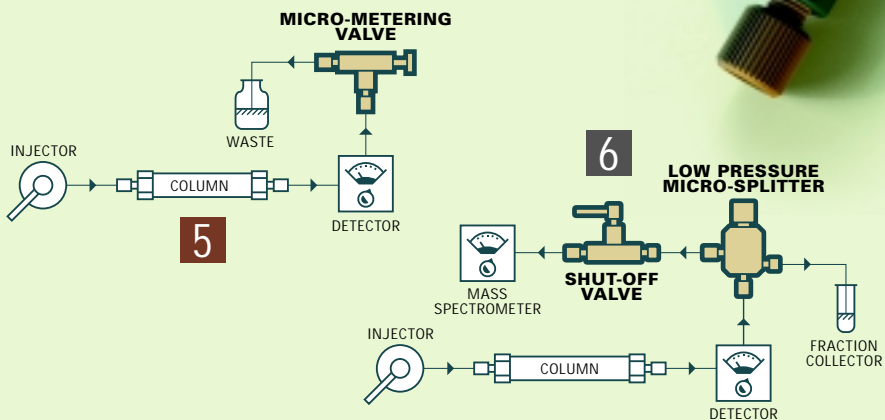
Post Detector Interfacing

One of the most common problems existing in any application in which pressure is involved is outgassing of the mobile phase once it leaves the column. This is usually evidenced in excessive noise along the chromatogram baseline and the appearance of unknown peaks. A common practice to inhibit this phenomenon is to incorporate the use of a back pressure regulator. However, in some instances, the back pressure may need to be adjusted from run to run. The Upchurch Scientific Micro-Metering Valve serves this purpose well. Route the post-detector flow through this valve and adjust the needle stem to create a variably restricted flow path. You can then adjust the amount of back pressure created in the system according to your needs, while minimizing added void volume.

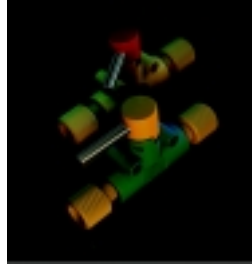
For other applications, it may be necessary to route the flow exiting the initial detector to other devices, such as to a mass spectrometer and a fraction collector. This can be achieved very accurately without sacrificing resolution of your sample components through the use of our Low Pressure Micro-Splitter Valve.

Once you obtain the appropriate setting, you may not want to use the needle stem to shut off flow to the split port. Simply install our Shut-Off Valve directly after the Splitter. This valve will effectively stop the flow of the split stream and route all flow through the other port, without requiring readjustment of the Micro-Splitter Valve needle stem. Should you prefer to route capillary tubing to the split destination, use our High Pressure Capillary Micro-Splitter Valve.*

* Please note that the shut-off valve cannot be used with the capillary version of the splitter valve, as described above.



Shut-Off Valve



The shut off valve is designed to quickly stop fluid flow.

Suited for pressures up to 1,000 psi.

Shut-Off





Micro-Metering

Micro-Metering Valve



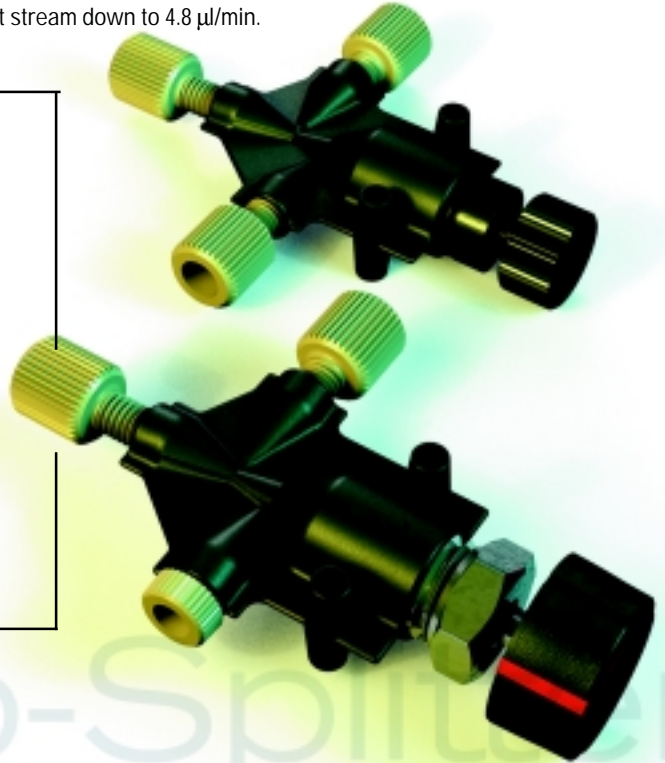
This all-polymer inline valve is intended to regulate the flow rate of a single fluid or gas stream at pressures as high as 800 psi.

Micro-Splitter Valves



These valves are designed to accurately split a single fluid source into two fluid streams. The valves allow the split stream to be metered down to and maintained at a very low flow rate. The

Low Pressure Micro-Splitter Valve is designed for applications up to 800 psi and can maintain a split flow rate as low as $2 \mu\text{l}/\text{min}$. The High Pressure versions are suited for pressures as high as 5,000 psi and can regulate a split stream down to $4.8 \mu\text{l}/\text{min}$.



Micro-Splitter

The Upchurch Scientific

valves featured here are

**designed to shut-off, meter or
variably split a flow stream,**

thus enhancing the
flexibility of your labora-
tory analysis work. The
application notes that
follow are intended to
illustrate some of the
many possibilities these
versatile products offer.

Please contact your
local Upchurch dealer
or Upchurch Scientific
directly to discuss
your specific needs.

P H O N E
800.426.0191
360.679.2528

F A X
800.359.3460
360.679.3830

E - M A I L
upchurch@whidbey.net