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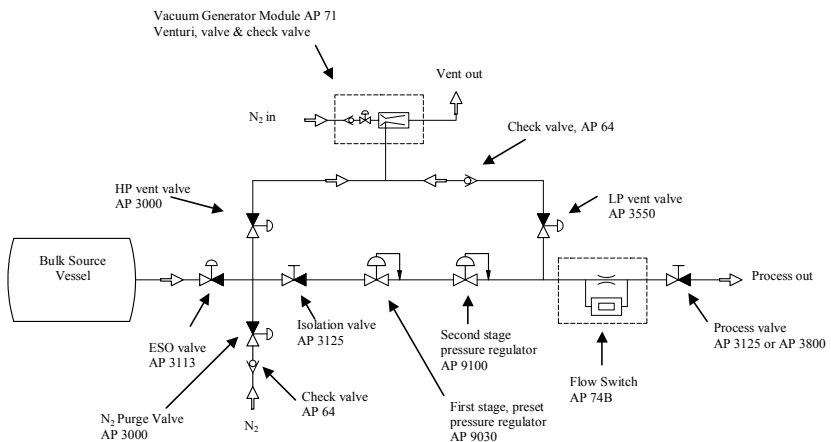
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BSGS Solution Source

AP Tech has developed a wide array of bulk specialty gas system (BSGS) components. High pressure truly melds with high flow in this product mix. A properly designed system, utilizing our technology, can deliver over 2,000 slpm of a specialty gas such as HCl. There are few applications in our industry today that exceed the capacity of our valves and pressure regulators.

The schematic depicts a typical BSGS system and suggested components.



NOTE: This schematic is intended as an example of AP Tech component usage only. It does not include pressure measurement. Specific component selection may vary per application.

Diaphragm valves range in size from ¼ inch to ¾ inch connections. The flow capacities are up to a Cv of 1.0 with 3,000 psig (207 bar) pressure rating and 2.8 Cv at 250 psig (17 bar) rating. A combination of pneumatic and manual actuators provide a wide array of valves to choose from.

Pressure regulators range in flow capacities from a few sccm to 5,000 slpm. Pressure ratings are available to 3,000 psig (207 bar) with up to a Cv of 3.0 and 800 psig with a Cv of 4.0.

Excess flow switches (EFS) range in size from ¼ inch to ¾ inch line size with trip points from 2 slpm to 2,600 slpm at 100 psig (7 bar) of N2.

Ancillary components, such as ¼ inch valves, check valves, vacuum generators and other devices are available to complete system. ❖

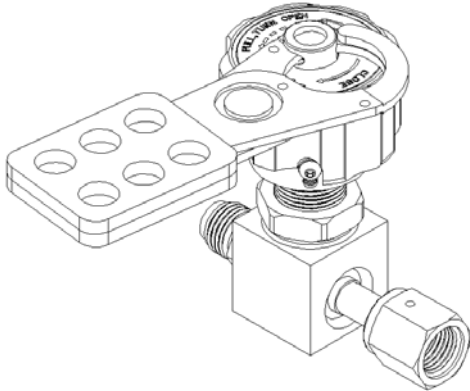
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Pull > Twist, this manual valve takes a new turn

The AP 3657 (including AP 3157 and AP 4657) is a unique blend of LOTO added to the AP 3650 (AP 3150 and AP 4650), ¼ turn, round knob valve. The AP 3657 requires one to lift the knob upward before it can be rotated from the closed position to open. There is also detent in the full open position designed such that one can still close the valve by simply turning the knob (though lifting eases the action).



In addition to the enhanced operational safety of this valve, it also has a lock out, tag out (LOTO) feature. The top of the knob has a swivel hub that enables one to attach a lock hasp such as the Master Lock® #420. Once inserted, the hasp prevents one from pulling the knob upward which in turn prevents one from opening the valve. The valve may only be locked in the fully closed position.

The AP 3657 has something for everyone as it blends superior operational safety with LOTO features for maximum flexibility and safety. ❖

Don't bypass this flow switch

The AP 74B is a new, innovative safety solution to address high flow, BSGS, applications. The standard AP 74 flow switch is utilized in a bypass module to sense excess flow. It samples the flow rate much like a thermal mass flow controller's bypass leg. The bypass module can be ordered for either a horizontal or vertical main line in two sizes – ½" and ¾". The nominal trip points in slpm of N2 at 100 psig are as follows:

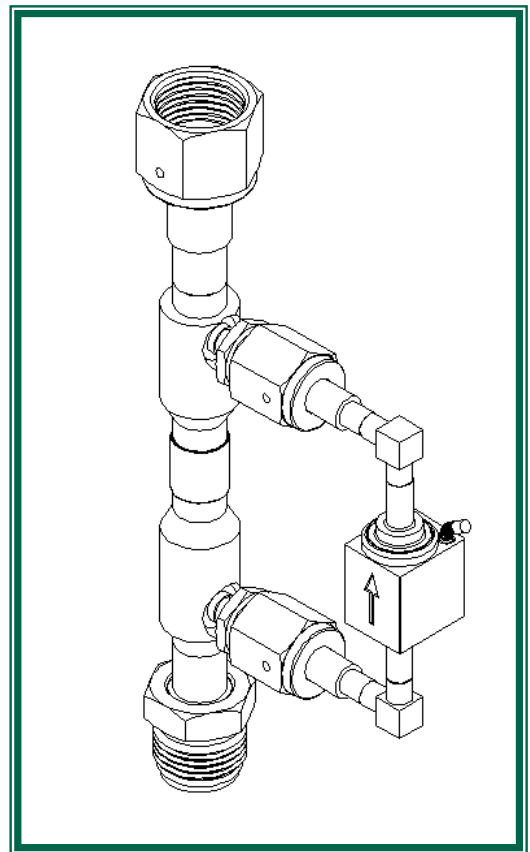
½" size – 225, 350, 500 and 950 slpm

¾" size – 1,100, 1,650 and 2,600 slpm

To put this in perspective, the AP 74 maximum flow trip point is 100 slpm at 100 psig of N2. The AP 74B significantly expands the range, needless to say.

Switch size selection for a given application is a simple matter of two calculations based upon formulas in the data sheet.

This is the first truly ultraclean solution for excess high flow as there is nothing else available in the market today. ❖



Safety First!

Safety is everyone's concern. We at AP Tech feel that it is our ethical obligation as a manufacturer to provide not only safe products, but safety innovations. We are proud to offer a wide array of safety related products, unmatched by any other in our industry.

Manual valve LOTO, in addition to the AP 3657 (refer to the article page 2), the PL 225 provides LOTO for the AP 3125, AP 3625 and AP 4625 valves. The PL 226 provides LOTO for compact knobs in surface mount (IGS) configurations.

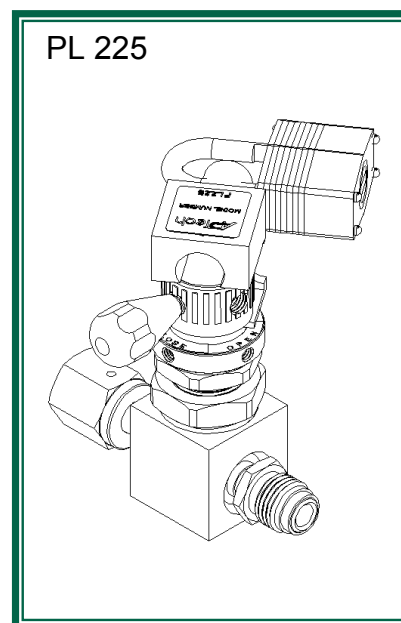
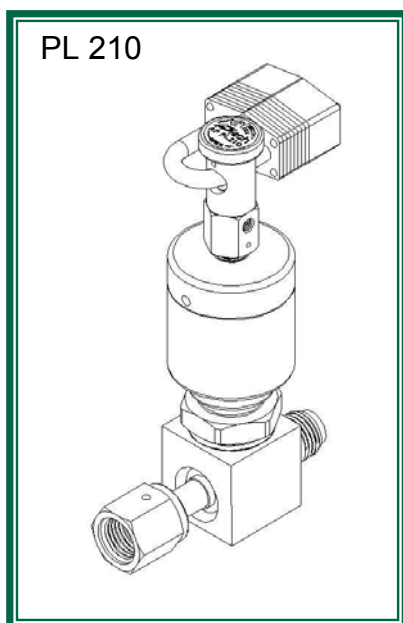
Pneumatic valve LOTO, the PL 210 provides manual shut down that overrides the pneumatic control signal and physical lock out, LOTO, for pneumatic valves with an 1/8 inch NPTF actuation port.

Manual valve indication switch, the AP 3150, AP 3650 and AP 4650 are available with an intriguing option – electronic status indication. A switch option provides remote indication of the valves status – open or closed. Now one can be assured from a remote control room as to whether a manual valve is open or closed. A Hall effect switch is employed to safely switch magnetically, completely spark free.

Pneumatic valve indicating switches, most pneumatic valves are available with an optional switch to remotely indicate a valve status. The signal from the switch provides the user with added comfort of knowing the valve status – open or closed.

Check valves are available in two different series ~ a conventional 1/4 inch high pressure checking device and a unique combination of 1/4 face seal gasket and check valve.

Flow switches are available in 1/4 inch through 3/4 inch line size with trip points ranging from 2 slpm to 2,600 slpm on N2 at 100 psig (7 bar). ❖



AZ Series

The AZ series was created to meet the industry demand for more cost effective solutions. The two new regulators in the series are variations to the venerable AP 1000 and AP 1200. Naturally, changes have been implemented in the spirit of cost reduction, most notably in material of construction. The AZ series is built with single melt 316L stainless steel wetted material in place of VAR secondary remelt material standard to the AP series. The single melt material combined with a few other non-critical changes and a less stringent electropolishing process result in a significant cost savings.

A portion of the cost savings is derived from higher volume with fewer variations. To this end, the AZ series will be available in a very limited number of configurations of the 1000 and 1200 series pressure regulators with conventional two and three ports.



The AZ series use should be limited to point of use applications with inert and non-reactive gases. The AZ is not recommended for corrosive or reactive gas service. The reason relates to sulfide and other non-metallic inclusions. Single melt material, such as the AZ employs, commonly has concentrations of randomly distributed inclusions. When multiple inclusions are found in row they are called “stringers”. Corrosive gases may corrode through the inclusion stringer and can cause leaks to atmosphere in thin wall sections machined perpendicular to the axis of the bar. In secondary remelt material, such as 316L SS VAR, the inclusion content is lower and the material is more homogeneous, meaning the inclusions are evenly dispersed rather than concentrated in stringers. Outboard leaks due to stringer corrosion was a key factor in the industry swing to VAR material years ago. Single melt material, due to the higher concentration of inclusions, does not produce as aesthetically nice a finish as VAR material when electropolished (EP). The single melt material surface does not have the uniform luster of VAR material. This is in part the reasoning behind the lesser grade EP of the AZ series.

The AZ delivers the same performance as the AP in a less costly package. There are no discernable nor quantifiable sacrifices in gas delivery when properly applied.

For further information about the AZ series, or any other topic, please consult your local distributor or the factory directly. ❖