

# SERIES AP 3100

## 1/2 INCH DIAPHRAGM VALVE

High Pressure ~ High Flow

- Designed for bulk specialty gas systems (BSGS)
- Replaceable seat
- No differential pressure rating (will not lock up with reverse pressure)
- 316L SS secondary remelt construction (Ni-Cr-Mo super alloy optional)
- Vacuum to 3,000 psig (207 bar)  
AP 3113, 3102, 3150 and 3157 vacuum to 1,300 psig (90 bar)
- 1.0  $C_v$  flow capacity  
AP 3102 – 1.3  $C_v$   
AP 3100 and 3130 – 0.7  $C_v$
- Manual or pneumatic actuation
- LOTO compatible
- Installation and operating instructions available at [www.aptech-online.com](http://www.aptech-online.com) in the Tech Briefs section

### Manual valves

#### AP 3100 and 3102

- Multi-turn round knob

#### AP 3125

- Lever valve, 1/4 turn activation
- LOTO, PL 225 optional
- Optional lever colors and configuration
- Lever position indicates valve status

#### AP 3150

- Round knob, 1/4 turn
- Open/closed status indication window
- Optional status indication switch (ISH)

#### AP 3157

- Round knob, 1/4 turn
- Pull, then turn to open – operational safety feature
- Open/closed status indication window
- LOTO – standard feature

### Pneumatic valves

#### AP 3113

- Normally closed (NC)
- Full 1.0  $C_v$  rating at lower pressure 1,300 psig (90 bar)
- LOTO, PL 210 optional
- Optional status indicator switch (IS)

#### AP 3130

- Normally closed (NC)
- Full 3,000 psig (207 bar) pressure rating with lower  $C_v$  0.7
- LOTO, PL 210 optional
- Optional status indicator switch (IS)

All specifications subject to change without notice.

## HIGH PRESSURE ~ HIGH FLOW ~ HIGH PURITY

### Engineering Data — AP 3113 and AP 3130 Series – Pneumatic Valves

|                                     |                    |   |
|-------------------------------------|--------------------|---|
| Inlet pressure                      | AP 3113<br>AP 3130 | Vacuum to 1,300 psig (90 bar)<br>Vacuum to 3,000 psig (207 bar) |
| Outlet pressure                     |                    | Vacuum to inlet pressure  |
| Proof pressure                      |                    | 150% of maximum rating  |
| Burst pressure                      |                    | 300% of maximum rating  |
| Actuation pressure                  |                    | 70 to 110 psig (4.8 to 7.6 bar)                                 |
| Status                              |                    | Normally closed   |
| Actuation port                      |                    | 1/8 inch NPT, top port  |
| Flow coefficient (C <sub>v</sub> )* | AP 3113<br>AP 3130 | 1.0 (X <sub>T</sub> = 0.7)<br>0.7 (X <sub>T</sub> = 0.5)        |

### Engineering Data — AP 3100, AP 3102, AP 3125, AP 3150 and AP 3157 Series – Manual Valves

|                                     |   |  |
|-------------------------------------|---|--|
| Inlet pressure                      | AP 3100, AP 3125<br>AP 3102, AP 3150, AP 3157   | Vacuum to 3,000 psig (207 bar)<br>Vacuum to 1,300 psig (90 bar)                        |
| Outlet pressure                     |   | Vacuum to inlet pressure   |
| Proof pressure                      |   | 150% of maximum rating   |
| Burst pressure                      |   | 300% of maximum rating   |
| Flow coefficient (C <sub>v</sub> )* | AP 3102<br>AP 3125, AP 3150, AP 3157<br>AP 3100 | 1.3 (X <sub>T</sub> = 1.0)<br>1.0 (X <sub>T</sub> = 0.6)<br>0.7 (X <sub>T</sub> = 0.5) |

### Engineering Data — Other parameters all valves

|                                    |   |
|------------------------------------|---|
| Inlet and outlet connectors        | 1/2 inch face seal or tube weld<br>(3/4 inch face seal or tube weld, 1/4 inch face seal** or 3/8 inch tube weld optional)         |
| Internal volume                    | 0.36 in <sup>3</sup> (6.0 cm <sup>3</sup> ) for body  |
| Operating temperature (PCTFE seat) | -40° to +150° F (-40° to 65° C)   |
| Surface finish                     | 15 μin Ra max / 10 μin. Ra avg. (0.4/0.25 μm) standard;<br>10 μin (0.25 μm); 7 μin (0.18 μm); and 5 μin (0.13 μm) Ra max optional |
| Inboard leakage                    | 2 x 10 <sup>-10</sup> sccs  |
| Outboard leakage                   | 2 x 10 <sup>-9</sup> sccs He at 500 psig inlet pressure   |
| Leakage across seat                | 4 x 10 <sup>-8</sup> sccs He at 500 psig inlet pressure   |

\*Flow coefficient based on 1/2 inch connectors.

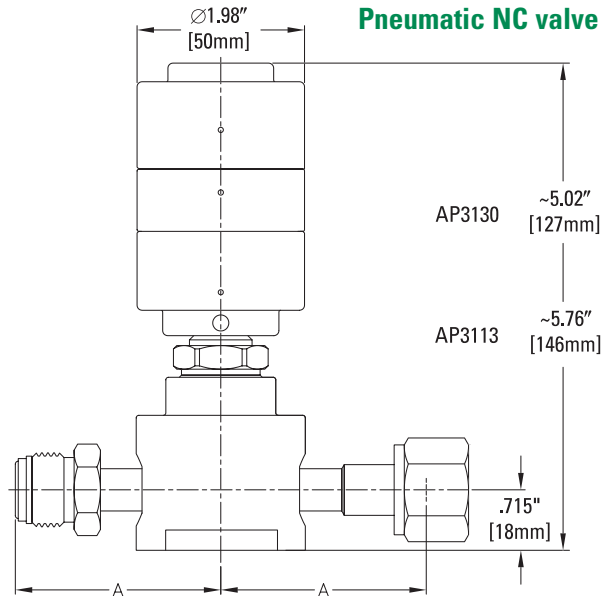
\*\* 1/4 inch face seal are high flow type.

### Engineering Data — Wetted materials

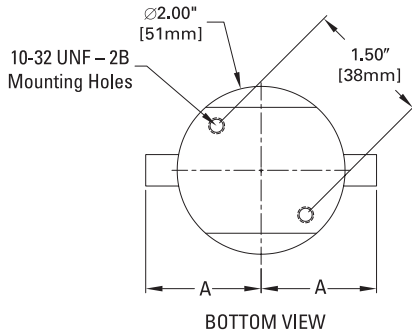
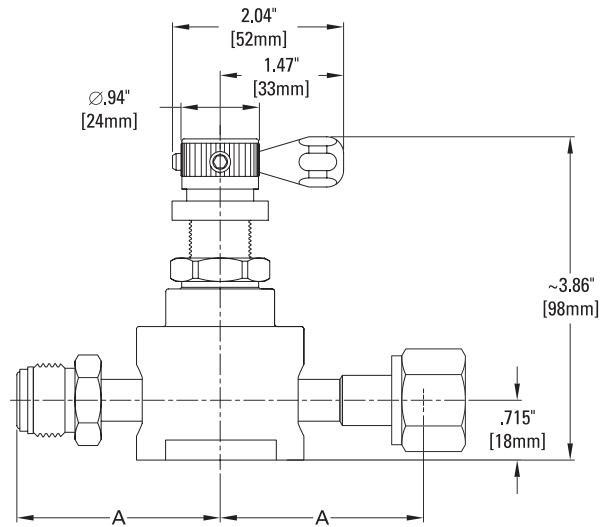
|           | S                          | H                           |
|-----------|----------------------------|-----------------------------|
| Body      | SS 316L secondary remelt   | Ni-Cr-Mo alloy / UNS N06022 |
| Spring    | SS 316                     | Ni-Cr-Fe alloy / UNS N06600 |
| Diaphragm | Ni-Co alloy / UNS R30003   | Ni-Co alloy / UNS R30003    |
| Seat      | PCTFE (Polyimide optional) | PCTFE                       |
| Poppet    | SS 316L                    | Ni-Cr-Mo alloy / UNS N06022 |

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**AP 3113 & 3130  
Pneumatic NC valve**

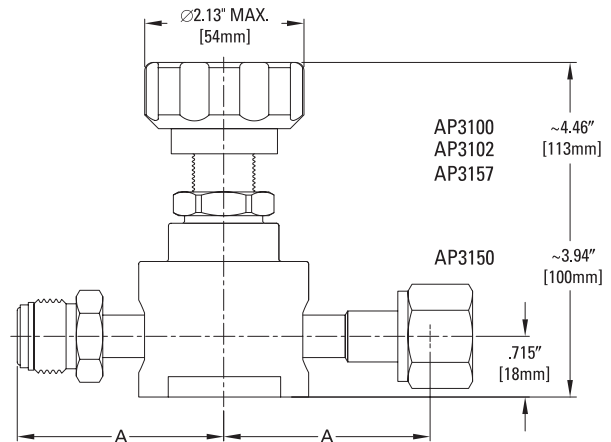


**AP 3125  
Manual 1/4 turn lever valve**



BOTTOM VIEW

**AP 3100 – Multi-turn knob valve  
AP 3102 – Multi-turn knob valve  
AP 3150 – 1/4 turn indicating knob valve  
AP 3157 – 1/4 turn, pull/twist LOTO**



| CONNECTION | A          |      |
|------------|------------|------|
|            | inch       | mm   |
| FV4, MV4   | 2.000±.020 | 50.8 |
| FV8, MV8   | 2.425±.020 | 61.6 |
| TW4, TW6   | 1.375±.020 | 34.9 |
| TW8        | 1.790±.020 | 45.5 |
| FV12, MV12 | 3.500±.030 | 88.9 |
| TW12       | 3.250±.030 | 82.6 |

Metric dimensions are for reference only.

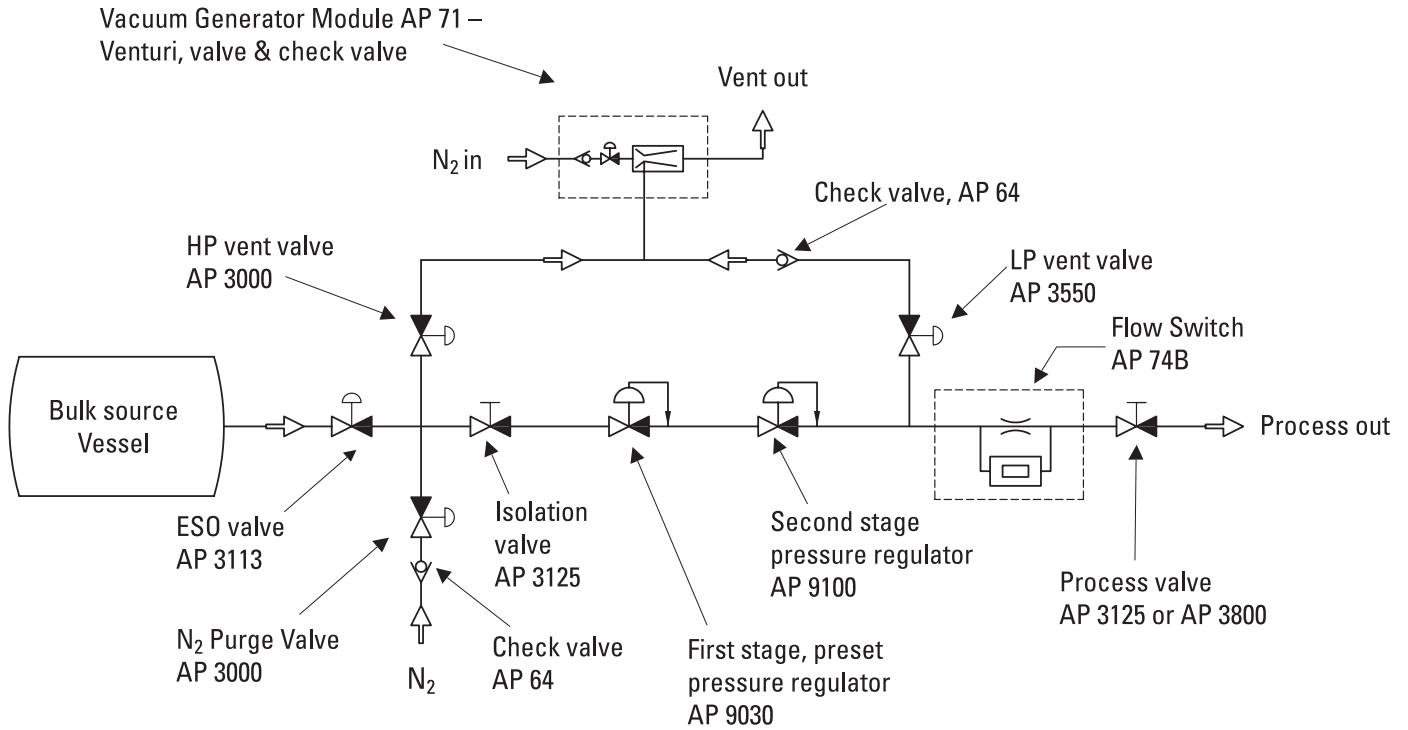
**The AP 3100 Series – Tomorrow’s BSGS valve, today**

The AP 3100 Series is a complete family of 1/2 inch diaphragm valves designed to deliver both bulk specialty and house gases. Manual and pneumatic versions coupled with a variety of connections and options provide an array of choices to suit most any application. High pressure welds with high flow to meet today’s emerging challenge in bulk specialty gas system (BSGS) delivery.

Though this is a spring type diaphragm valve, it embraces ultraclean technology to deliver ultra high purity gases, contributing virtually no contamination to the process stream. The design is also unique in that there is no differential backpressure rating common to most spring type diaphragm valves. One can flow at full rated pressure in either direction through the valve. The only caveat is that in the reverse flow direction, the valve does not achieve full flow capacity,  $C_v$ , until the pressure differential (outlet to inlet) is less than 40 psi (2.8 bar).

Naturally, the AP 3100 Series is manufactured utilizing state of the art techniques, as are all AP Tech products.

## Typical Location of AP Tech Components in Bulk HCl Delivery System



Note: This schematic is intended as an example of AP Tech component usage only. It does not include pressure measurement, filtration, etc. which must be included in a system.

Specific component selection may vary per application.

**CAUTION: Product selection is the sole responsibility of the user, regardless of any recommendations or suggestions made by the factory. The user shall make selections based upon their own analysis and testing with regard to function, material compatibility and product ratings. Proper installation, operation and maintenance are also required to assure safe, trouble free performance.**

| Sample Order Number               | AP 3113SM 2PW MV8 MV8 VS  |   |
|-----------------------------------|---|---|
| <b>AP 3113   Series</b>           | AP 3100<br>AP 3102<br>AP 3113<br>AP 3125<br>AP 3130<br>AP 3150<br>AP 3157               | <b>MV8 MV8   Connections Inlet / Outlet</b>   |
| <b>S   Material</b>               | S = Stainless steel (SS)<br>15 µin Ra Max (standard)<br>H = Ni-Cr-Mo alloy / UNS N06022 | FV4 = 1/4 inch face seal female<br>MV4 = 1/4 inch face seal male<br>TW6 = 3/8 inch tube weld stub<br>FV8 = 1/2 inch face seal female<br>MV8 = 1/2 inch face seal male<br>TW8 = 1/2 inch tube weld stub<br>FV12 = 3/4 inch face seal female*<br>MV12 = 3/4 inch face seal male*<br>TW12 = 3/4 inch tube weld stub<br><br>(Other fittings available but Ni-Co-Mo alloy limited to 1/2 inch.)<br>*Caution: Verify mating fittings are of proper pressure rating for application. |
| <b>M   Surface Finish Options</b> | M = 10 µin. Ra max  | <b>VS   Options</b>   |
| <b>2PW   Ports</b>                | 2PW = 2 ports   | VS = Polyimide Seat<br>IS = Indicator Switch (3113 and 3130 only)<br>ISH = Indicator Switch Handle (3150 only)  |
|                                   |   | Refer to operating manual for further switch information.   |

AP Tech has product options and variations which are not documented in data sheets. If you have a model number that is not defined by the ordering information, please consult the factory or your local representative.