

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 (Hastelloy® C-22® 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 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.

Hastelloy® C-22® Haynes Corporation

HIGH PRESSURE ~ HIGH FLOW ~ HIGH PURITY

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

Inlet pressure	AP 3113 AP 3130	Vacuum to 1,300 psig (90 bar) Vacuum to 3,000 psig (207 bar)**
Outlet pressure		Vacuum to inlet pressure
Proof pressure		1.5 times operating pressure
Burst pressure		3 times operating pressure
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 _v)*	AP 3113 AP 3130	1.0 (X _T = 0.7) 0.7 (X _T = 0.5)

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

Inlet pressure**	AP 3100, AP 3125 AP 3102, AP 3150, AP 3157	Vacuum to 3,000 psig (207 bar) Vacuum to 1,300 psig (90 bar)
Outlet pressure		Vacuum to inlet pressure
Proof pressure		4,500 psig (310 bar)
Burst pressure		10,000 psig (689 bar)
Flow coefficient (C _v)*	AP 3102 AP 3125, AP 3150, AP 3157 AP 3100	1.3 (X _T = 1.0) 1.0 (X _T = 0.6) 0.7 (X _T = 0.5)

Engineering Data — Other parameters all valves

Inlet and outlet connectors**	1/2 inch face seal or tube weld (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 ³ (6.0 cm ³) 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; 10 μin (0.25 μm); 7 μin (0.18 μm); and 5 μin (0.13 μm) Ra max optional
Inboard leakage	2 x 10 ⁻¹⁰ sccs
Outboard leakage	2 x 10 ⁻⁹ sccs He at 500 psig inlet pressure
Leakage across seat	4 x 10 ⁻⁸ sccs He at 500 psig inlet pressure

*Flow coefficient based on 1/2 inch connectors.

**Inlet pressure for 3/4 inch connectors is 2,400 psig maximum.
1/4 inch face seal are high flow type.

Engineering Data — Wetted materials

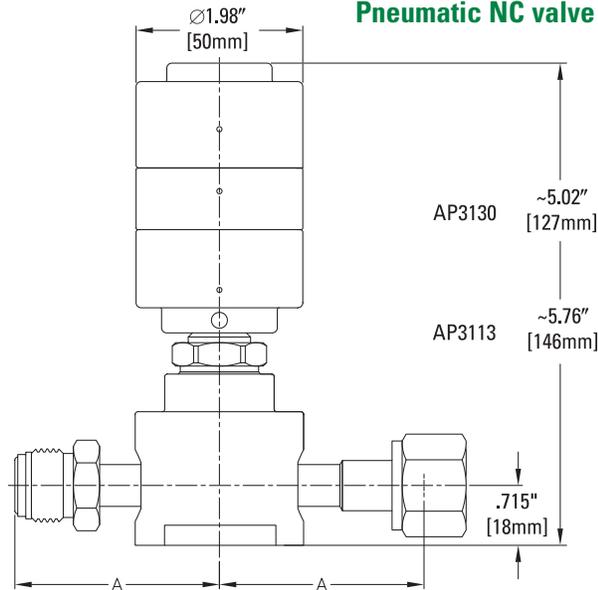
	S	H
Body	SS 316L secondary remelt	Hastelloy C-22
Spring	SS 316	Inconel® 600
Diaphragm	Elgiloy®	Elgiloy
Seat	PCTFE (Vespel® optional)	PCTFE
Poppet	SS 316L	Hastelloy C-22

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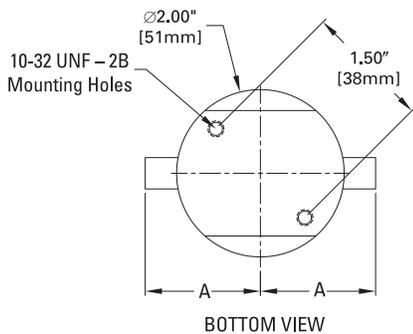
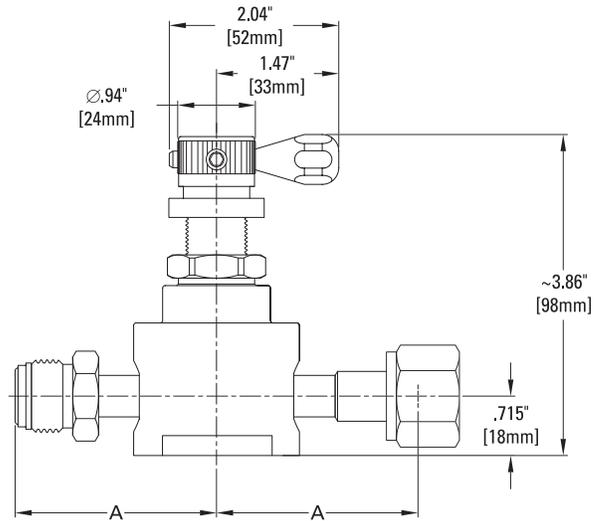
Vespel® DuPont
Inconel® Special Metals Corporation

Elgiloy® Elgiloy Corporation
Hastelloy® C-22® Haynes Corporation

**AP 3113 & 3130
Pneumatic NC valve**

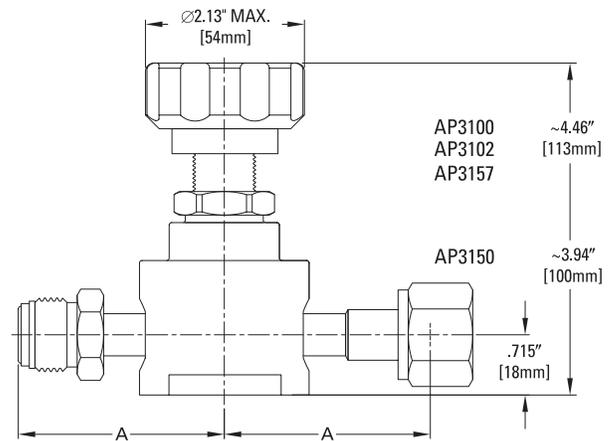


**AP 3125
Manual 1/4 turn lever valve**



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

All dimensions in inches (mm). Metric dimensions are for reference only.

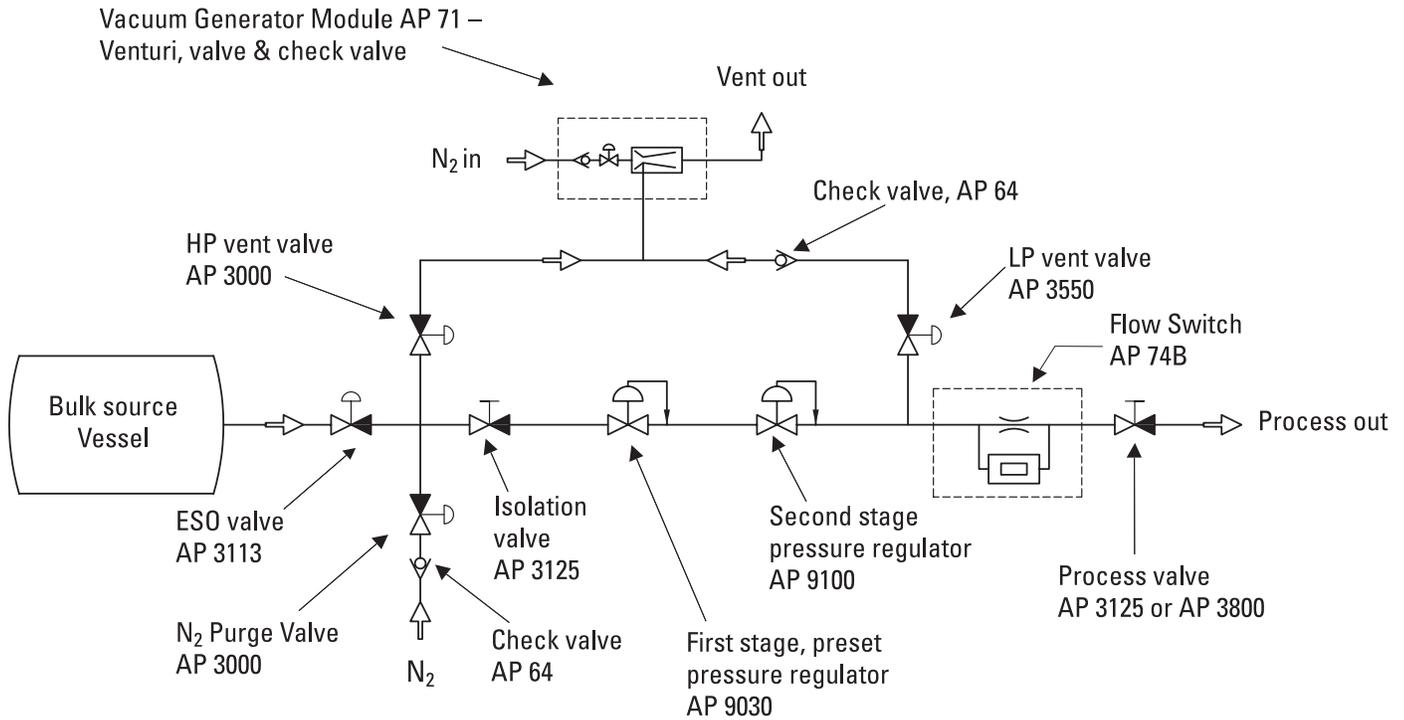
The AP 3100 Series – Tomorrow’s BSGS valve, today

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		
AP 3113 Series	AP 3100 AP 3102 AP 3113 AP 3125 AP 3130 AP 3150 AP 3157	MV8 MV8 Connections Inlet / Outlet	FV4 = 1/4 inch face seal female MV4 = 1/4 inch face seal male TW6 = 3/8 inch tube weld stub FV8 = 1/2 inch face seal female MV8 = 1/2 inch face seal male TW8 = 1/2 inch tube weld stub FV12 = 3/4 inch face seal female* MV12 = 3/4 inch face seal male* TW12 = 3/4 inch tube weld stub (Other fittings available but Hastelloy limited to 1/2 inch.) *FV12 and MV12 limited to 2,400 psig (165 bar) maximum.
S Material	S = Stainless steel (SS) 15 µin Ra Max (standard) H = Hastelloy C-22	VS Options	VS = Vespel Seat IS = Indicator Switch (3113 and 3130 only) ISH = Indicator Switch Handle (3150 only)
M Surface Finish Options	M = 10 µin. Ra max	Refer to operating manual for further switch information.	
2PW Ports	2PW = 2 ports		