APTech

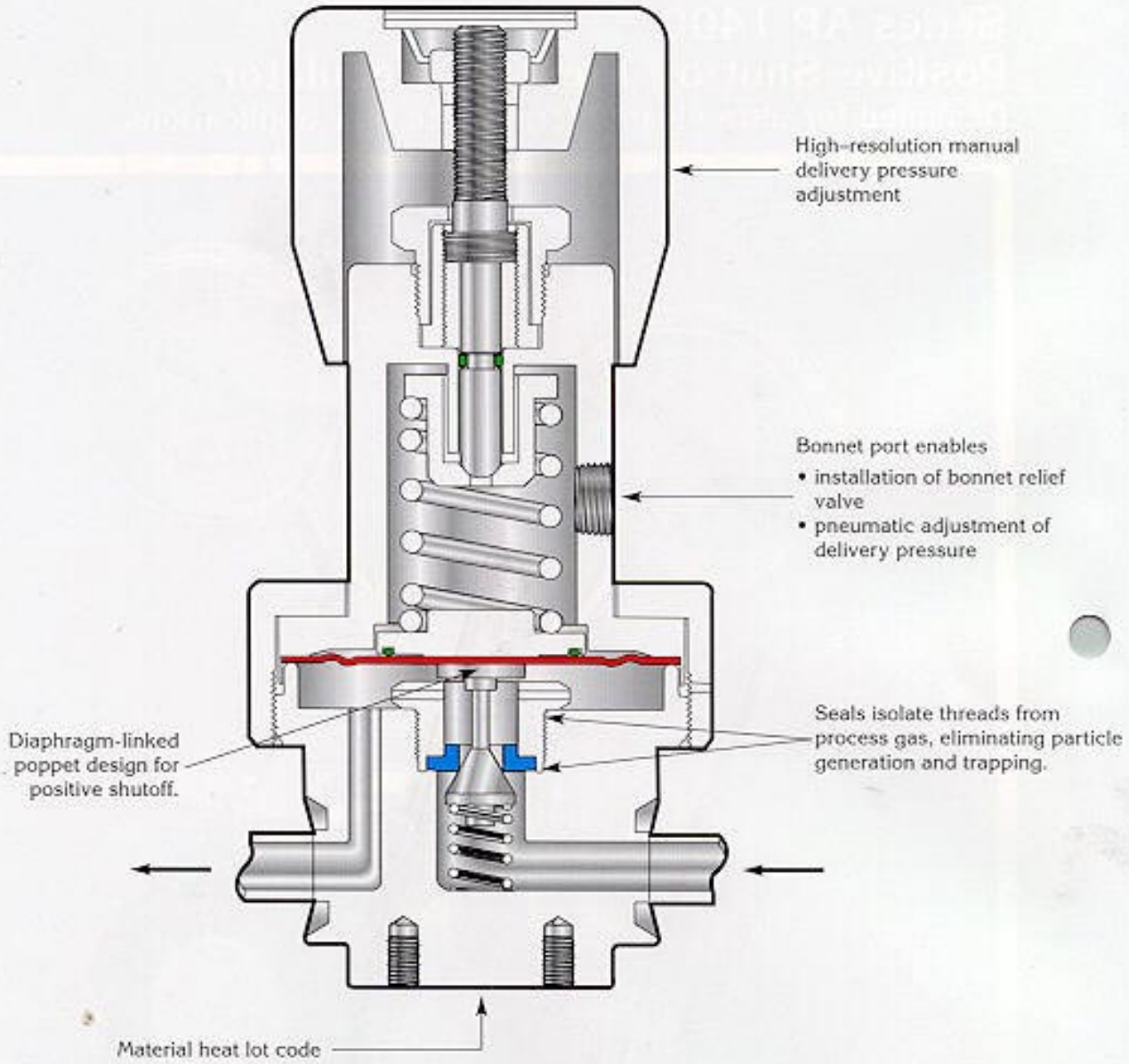
ADVANCED PRESSURE TECHNOLOGY

Series AP 1400
Positive Shut-off Pressure Regulator
Designed for ultra clean intermediate flow applications

- Diaphragm-linked poppet™ for trouble-free performance
- Up to 50 slpm anhydrous HCl for epi and other applications
- 15µ in. surface finish (10, 7 and 5µ in. optional)
- Most economical approach to corrosion resistance
- Vacuum to 1000 psig (70 bar)
- Cleaned, assembled and packaged for high purity semiconductor applications

687 Technology Way / Napa, CA 94558 / Telephone (707) 259-0102 / Fax (707) 259-0117

Important new features for unprecedented performance!



Special corrosion-resistant construction for HCl and other gases!

AP Tech Series AP 1400 Pressure Regulators are engineered for use with anhydrous hydrogen chloride and most other corrosive and non-corrosive fluids. Precision-fabricated from stainless steel 316 L with Hastelloy alloy C-22™ poppets, they are considerably less expensive than regulators fabricated exclusively of Hastelloy alloy C-22.

Particle generation is a thing of the past, thanks to AP Tech's exclusive diaphragm-linked poppet and seat design. Only one seal is used to protect all threads from the gas stream. These features make Series AP 1400 positive-shutoff pressure regulators best for all applications that demand an *economical* approach to corrosion resistance and maintenance of gas stream purity!

Engineering data – Series AP 1400 Pressure Regulator

Operating parameters

Source pressure	vacuum to 1000 psig (70 bar)
Delivery pressure (AP 1402)	1 to 30 psig (0.07 to 2 bar)
Delivery pressure (AP 1406)	1 to 60 psig (0.07 to 4 bar)
Delivery pressure (AP 1410)	2 to 100 psig (0.14 to 7 bar)
Proof pressure	1500 psig (105 bar)
Burst pressure	6000 psig (420 bar)

Other parameters

Inlet and outlet connectors	¼ or ⅜ inch face-seal or tube weld
Actuation/relief port	⅛ inch NPT
Flow coefficient (Cv)	0.2
Internal volume	0.65 in^3 (10.6 cm^3)
Operating temperature	-40° to +160°F (-40° to +71°C)
Surface finish	10–15µin (0.25–0.4µm) standard 10µin. (.25µm); 7µin. (.18µm); 5µin. (.13µm) optional
Inboard leakage	2×10^{-10} sccs
Outboard leakage	2×10^{-9} sccs He at 1000 psig inlet pressure
Leakage across seat	4×10^{-8} sccs He at 1000 psig inlet pressure
Installation	surface or panel (optional)
Delivery pressure rise	1.6 psi per 100 psig inlet pressure drop

Materials

Wetted Parts	
Body and diaphragm	stainless steel 316 L VAR
Finish	electropolished and passivated
Poppet	Hastelloy® alloy C-22
Seat	PCTFE (Vespel® optional)
Non-wetted Parts	
Bonnet, cap, plate	nickel-plated brass
O-ring	Viton®
Stem	brass

All specifications subject to change without notice

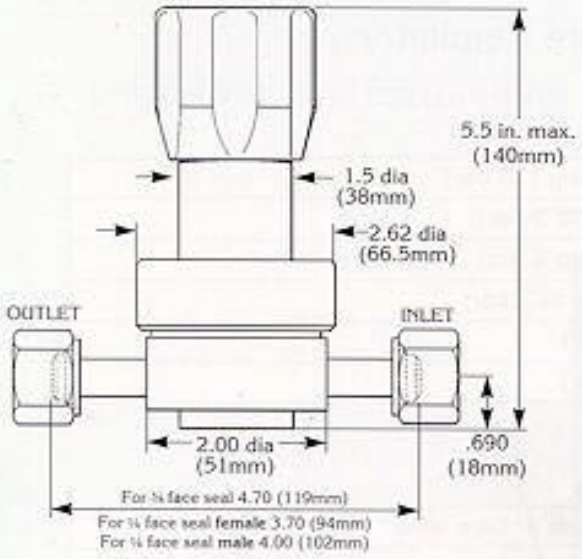
Vespel® DuPont
Viton® DuPont

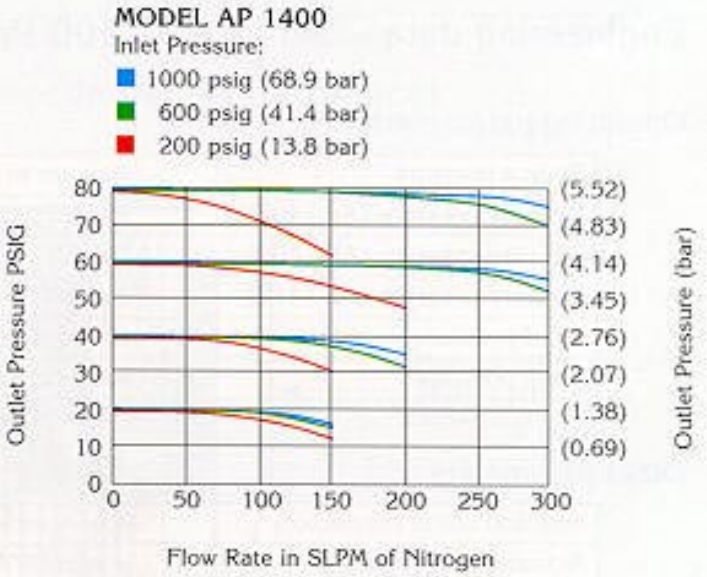
Hastelloy® Haynes Corporation

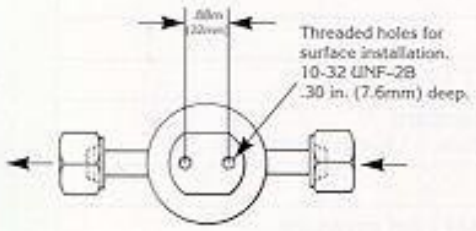
Cleaning and packaging

Cleaning is a multi-step process performed in a Class 100 clean room. Parts are ultrasonically cleaned with a wetting agent initially and then progressively with hot and cold DI water. Cleaned parts are then blown dry with ultra pure nitrogen prior to being baked completely dry in a nitrogen atmosphere.

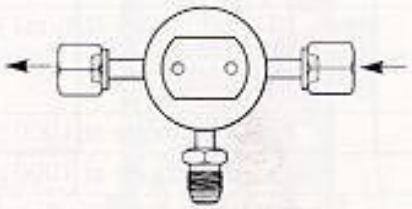
Each regulator is then individually assembled, pressure tested, functionally tested and helium leak tested. Labels, including a unique serial number, are installed prior to products being double packaged under ultra pure nitrogen.



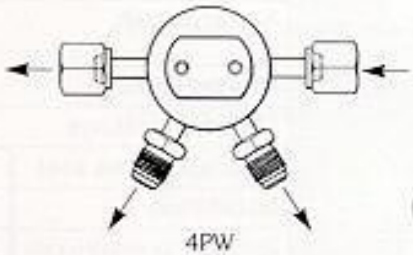




2PW



3PW



4PW

ORDERING INFORMATION

Series AP 1400	S Material	M Surface Finish Options	4PW Ports	FV4 - FV4 Connectors Inlet Outlet	40 - V3 Gauges* Source Delivery*	P Options
AP1402 = 1-30 psi (.07 to 2 bar) AP1406 = 2-60 psi (.14 to 4 bar) AP1410 = 2-100 psi (.14 to 7 bar)	S = Stainless steel	M = 10µ in. Ra V = 7µ in. Ra X = 5µ in. Ra	2PW = 2 ports butt weld 3PW = 3 ports butt weld 4PW = 4 ports butt weld	FV4 = 1/4 inch face-seal female MV4 = 1/4 inch face-seal male TW4 = 1/4 inch tube weld stub FV6 = 3/8 inch face-seal female MV6 = 3/8 inch face-seal male TW6 = 3/8 inch tube stub weld	0 = No gauge V3 = 30-0-30-psi/bar L = 30-0-60 psi/bar 1 = 30-0-100 psi/bar 2 = 0-200 psi/bar 4 = 0-400 psi/bar 10 = 0-1000 psi/bar	P = Panel installation ring** VS = Vespel seat CGA = Inlet fitting 330, 660, 678

* Gauge ports are always 1/4 inch face-seal male.

** On panel mount option, bonnet port is not threaded. Panel hole 1.43".

Products by AP Tech

AP Tech manufactures a wide array of products exclusively for the semiconductor industry. Pressure regulators, valves, check valves and a variety of flow devices are available for applications ranging from the source cylinder cabinet, bulk delivery systems through point of use including VMB distribution boxes and process tool gas trays. Products can be tailored for specific needs with custom fittings, dimensions, porting or testing with an option of multiport, monoblock and surface mount configurations.