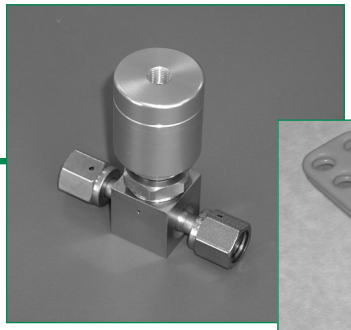
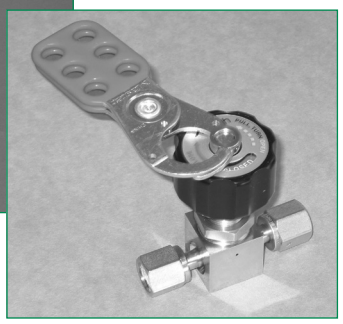
APTech
ADVANCED PRESSURE TECHNOLOGY





SERIES AP 40, 45 & 46

3/8 INCH DIAPHRAGM VALVE

Springless – manual and pneumatic (NC & NO)

- Stainless steel 316L VAR secondary remelt or super alloy construction
- Replaceable seat
- Operating pressure from 125 psig (9 bar) to 3,000 psig (207 bar)
- LOTO and indicating switch options
- Surface finish 15 Ra max/10 Ra avg (10, 7 & 5 Ra max options)
- Flow capacity 0.5 C_V
- Manual valves 1/4 turn to multi-turn
- Constant bleed option 5, 8 and 15 slpm of N2 @ 80 psig (5.5 bar) refer to PN 430
- Multi-port options available (refer to page 4)
- Two step pneumatic valve option: dual operation – metered or full open
- Installation and operating instructions available at www.aptech-online.com in the Tech Briefs section

Manual valves

	PSIG / BAR 250 / 17	300 / 21	3,000 / 207
AP 4600		●	○
– Round knob, multi-turn			
AP 4625		●	○
– Lever valve, 1/4 turn			
– LOTO, PL 225 optional			
– Lever position indicates valve status			
AP 4650		●	○
– Round knob, 1/4 turn			
– Open/closed status indication window			
– Switch option for remote monitoring			
AP 4652	●		
– Round knob, 1/4 turn			
– Open/closed status indication window			
– Unique design combines scalloped round knob with raised rectangular section			
AP 4657 and 4659	●	●	○
– Round knob, 1/4 turn	AP 4659	AP 4657	AP 4657HR
– Pull, then turn to open – operational safety feature			
– Open/closed status indication window			
– LOTO – integral standard feature			

Pneumatic valves, normally closed (NC)

	PSIG / BAR 125 / 9	300 / 21	3,000 / 207
AP 4000			●
– Switch option for remote monitoring			
AP 4540	●		
AP 4542	●		
AP 4550		●	
– Switch option for remote monitoring			
AP 4571	●		
– Dual mode – metered or full open			

Pneumatic valve, normally open (NO)

	PSIG / BAR 250 / 17
AP 4580	●
– Switch option for remote monitoring	

All specifications subject to change without notice.

● = Standard ○ = Optional

ENGINEERING DATA — SERIES AP 40, 45 & 46 3/8 INCH VALVE ARRAY

Engineering Data — Manual valves

Operating pressure	AP 4600, 4625, 4650, 4657, AP 4652, 4659	Vacuum to 300 psig (21 bar); HR option vacuum to 3,000 psig (207 bar) Vacuum to 250 psig (17 bar)
Flow coefficient (C_V)	AP 4600, 4625, 4650, 4652, AP 4657, 4659	0.5 (X_T = 0.6)

Engineering Data — Pneumatic valves

Operating pressure	AP 4540, 4542, 4571	Vacuum to 125 psig (9 bar)
	AP 4580	Vacuum to 250 psig (17 bar)
	AP 4550	Vacuum to 300 psig (21 bar)
	AP 4000	Vacuum to 3,000 psig (207 bar)
Flow coefficient (C_V)	AP 4540, 4542, 4550, 4571, AP 4580	0.5 (X_T = 0.6)
	AP 4000	0.35 (X_T = 0.6)
Status	AP 4000, 4540, 4542, 4550	Normally closed (NC)
	AP 4580	Normally open (NO)
Actuation pressure	AP 4000, 4540, 4550, 4571, AP 4580	70 to 110 psig (5 to 8 bar)
	AP 4542	60 to 110 psig (4 to 8 bar)
Actuation port	AP 4000, 4540, 4580	1/8 NPT, top port
	AP 4542	M5, top port
	AP 4550, 4571	M5, side port

Engineering Data — Other parameters all valves

Inlet and outlet connectors	1/4, 3/8 and 1/2 inch face seal or tube weld
Internal volume	0.12 in^3 (1.94 cm^3)
Operating temperature	-40° to +160° F (-40° to 71° 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
Proof pressure	1.5 times operating pressure
Burst pressure	3 times operating pressure
Inboard leakage	2 x 10^{-10} sccs
Outboard leakage	2 x 10^{-9} sccs He
Leakage across seat	4 x 10^{-8} sccs He

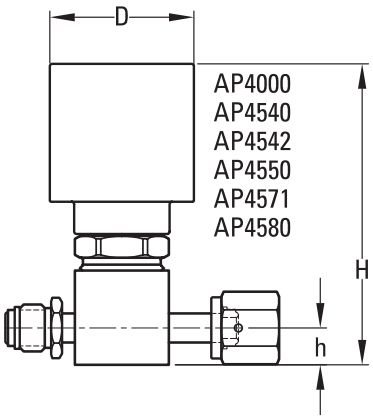
Engineering Data — Wetted materials all valves

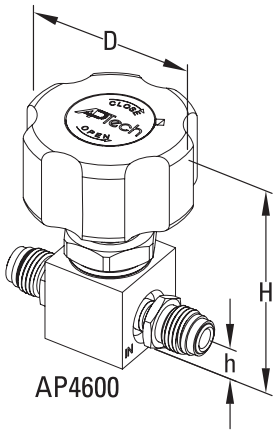
	S	H
Body	SS 316L secondary remelt	Ni-Cr-Mo alloy / UNS N06022
Finish	Electropolished and passivated	Electropolished
Diaphragm	Ni-Co alloy / UNS R30003	Ni-Co alloy / UNS R30003
Seat	PCTFE (Polyimide optional)	PCTFE

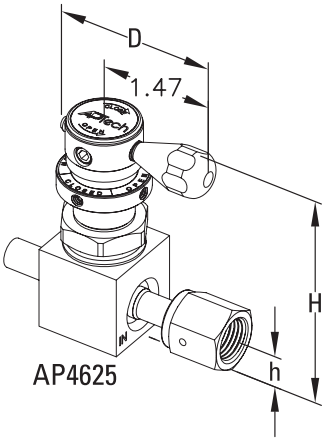
AP 4571 — Metered flow range tolerance at 80 psig N_2 inlet, 0 psig outlet

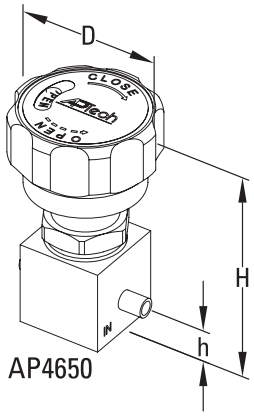
10 to 20 slpm	+/- 6 slpm
21 to 50 slpm	+/- 10 slpm
51 to 100 slpm	+/- 15 slpm
101 to 200 slpm	+/- 20 slpm
201 to 350 slpm	+/- 25 slpm

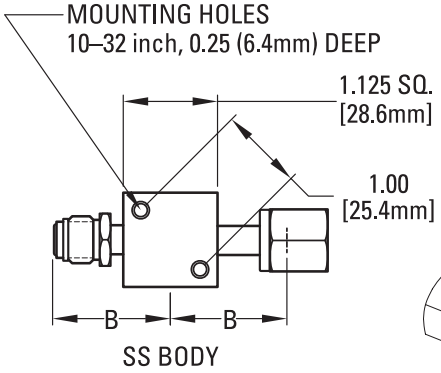
All specifications subject to change without notice.

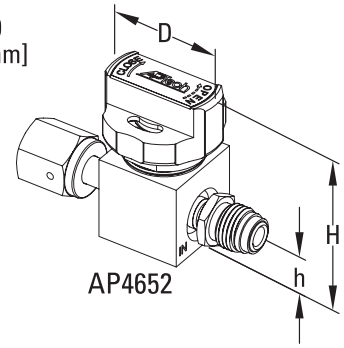


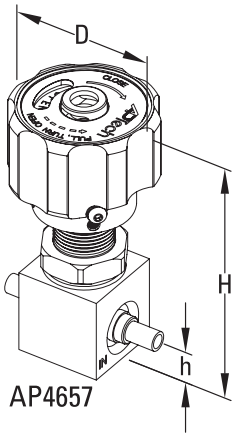


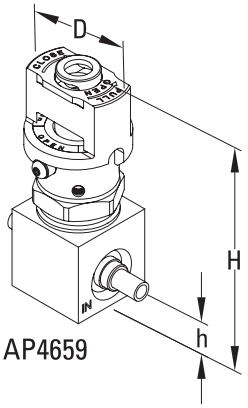


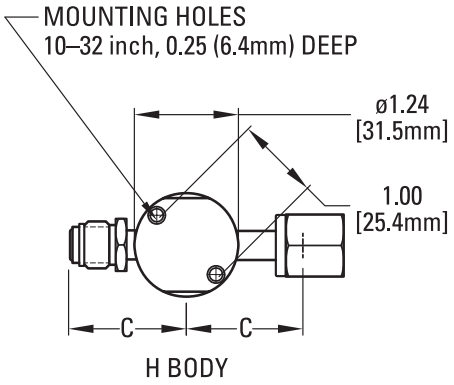












- Metric dimensions are for reference only.
- Height of the valve (H) is an approximate value.
- All specifications subject to change without notice.
- All manual valves are shown in open position.

VALVE	D		H	
	inch	mm	inch	mm
AP4000	ø1.98	50.3	~4.10	104
AP4540	ø1.46	37.1	~3.49	89
AP4542	ø1.57	40.0	~2.24	57
AP4550	ø1.37	34.8	~3.28	83
AP4580	ø1.46	37.1	~3.17	81
AP4571	ø1.72	43.7	~3.63	92
AP4600	ø2.12	53.8	~3.00	76
AP4625	2.04	51.8	~2.94	75
AP4650	ø1.87	47.5	~3.02	77
AP4652	ø1.50	38.0	~2.17	55
AP4657	ø1.87	47.5	~3.60	91
AP4659	ø1.30	33.0	~3.13	80

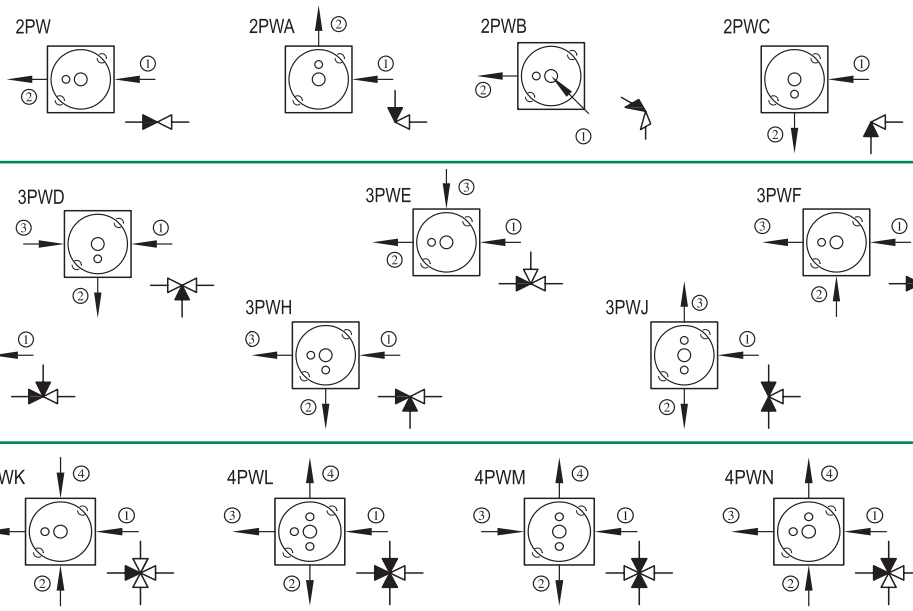
STAINLESS STEEL BODY				
CONNECTION	B		h	
	inch	mm	inch	mm
FV4, MV4	1.390 ±.010	35.3	0.44	11.2
TW4	1.060 ±.010	26.9	0.44	11.2
FV6, MV6	1.930 ±.010	49.0	0.44	11.2
TW6	1.325 ±.010	33.7	0.44	11.2

Ni-Cr-Mo ALLOY				
CONNECTION	C		h	
	inch	mm	inch	mm
FV4, MV4	1.450 ±.010	36.8	0.44	11.2
TW4	1.080 ±.010	27.4	0.44	11.2
FV6, MV6	1.930 ±.010	49.0	0.44	11.2
TW6	1.325 ±.010	33.7	0.44	11.2

ULTRACLEAN TECHNOLOGY BACKED BY SERVICE AND SUPPORT

PORTING CONFIGURATIONS

Top View (Mounting holes on bottom)



2 PORTS

3 PORTS

4 PORTS

- Valves are illustrated top view looking down through the valve. Mounting holes on the valve bottom are shown for reference.
- INLET (Upstream) is defined as a port connected to the region below the valve seat. It is illustrated with an arrow pointing towards the valve body or an "empty" triangle on the schematic. OUTLET (Downstream) is defined as a port connected to the region above the seat and below the diaphragm. It is illustrated with an arrow pointing away from the valve body or a "filled" triangle on the schematic.
- The traditional flow direction is INLET to OUTLET, but AP Tech valves may be employed in either flow direction.
- End connections are specified in numerical order per the diagram's numbered arrows.

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.

ORDERING INFORMATION

Sample Order Number — **AP 4652S 2PW MV6 MV6**

AP 4652	**Series**	AP 4000, 4540, 4542, 4550 AP 4571, 4580 AP 4600, 4625 AP 4650, 4652, 4657, 4659
S	**Material**	S = Stainless steel (SS) H = Ni-Cr-Mo alloy / UNS N06022
	Surface Finish Option	M = 10 µin. Ra max V = 7 µin. Ra max X = 5 µin. Ra max
2PW	**Ports**	2PW = 2 ports welded 3PW = 3 ports welded 4PW = 4 ports welded
	Porting Designation Option	X = Letter code for available porting option Refer to porting options above.
MV6 MV6	**Connections Inlet / Outlet or ① ② ③ ④**	FV4 = 1/4 inch face seal female MV4 = 1/4 inch face seal male TW4 = 1/4 inch tube stub weld FV6 = 3/8 inch face seal female MV6 = 3/8 inch face seal male TW6 = 3/8 inch tube stub weld
	Options	1.75 = 1.75" face to face TW4, TW6 VS = Polyimide Seat P = Panel mount, manual valves* (except 4652) IS = Indicating switch* (AP 4000 only) ISC = Indicating switch, NC* (AP 4550 and 4580 only) ISO = Indicating switch, NO* (AP 4550 and 4580 only) ISH = Indicating switch* (AP 4650 only) HR** = Higher inlet pressure MXXX‡ = 4571 metered adjusts flow in slpm at 80 psig N_2

*Refer to manual for installation information.
**HR only available with AP 4600, 4625, 4650 and 4657.
‡NOTE: Replace XXX with flow rate using 3 digits, example 50 slpm = M050

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.