



# SERIES AZ 40, 45 & 46

## 3/8 INCH DIAPHRAGM VALVE

Springless – manual and pneumatic (NC & NO)

- Replaceable seat
- 316L SS construction
- Operating pressure from 125 psig (9 bar) to 3,000 psig (207 bar)
- 10  $\mu$ m. (0.25  $\mu$ m) Ra avg. standard surface finish
- Flow capacity 0.5 C<sub>v</sub>
- Constant bleed option 5, 8 and 15 slpm of N<sub>2</sub> @ 80 psig (5.5 bar) refer to PN 430
- Forged body construction for integral fittings and tube stub (P porting)
- Bar stock body for welded fitting and multi-port options (PW porting)
- 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](http://www.aptech-online.com) in the Tech Briefs section

### Manual valves

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

### Pneumatic valves, normally closed (NC)

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

### Pneumatic valve, normally open (NO)

	PSIG / BAR
	250 / 17
<b>AZ 4580</b> – Switch option for remote monitoring	●

All specifications subject to change without notice.

● = Standard ○ = Optional

# HIGH PURITY ~ HIGH VALUE

## Engineering Data — Manual valves

Operating pressure	AZ 4600, 4625, 4650, 4657 AZ 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 <sub>v</sub> )	AZ 4600, 4625, 4650, 4652 AZ 4657, 4659	0.5 (X <sub>T</sub> = 0.6)

## Engineering Data — Pneumatic valves

Operating pressure	AZ 4540, 4542, 4571 AZ 4580 AZ 4550 AZ 4000	Vacuum to 125 psig (9 bar) Vacuum to 250 psig (17 bar) Vacuum to 300 psig (21 bar) Vacuum to 3,000 psig (207 bar)
Flow coefficient (C <sub>v</sub> )	AZ 4540, 4550, 4571, 4580 AZ 4000	0.5 (X <sub>T</sub> = 0.6) 0.35 (X <sub>T</sub> = 0.6)
Status	AZ 4000, 4540, 4550, 4552, AZ 4571 AZ 4580	Normally closed (NC)  Normally open (NO)
Actuation pressure	AZ 4540, 4550, 4571, 4580 AZ 4542	70 to 110 psig (5 to 8 bar) 60 to 110 psig (4 to 8 bar)
Actuation port	AZ 4000, 4540, 4580 AZ 4542 AZ 4550, 4571	1/8 NPT, top port M5, top port M5, side port

## Engineering Data — Other parameters all valves

Inlet and outlet connectors	1/4, 1/2 and 3/8 inch face seal or tube weld
Internal volume	0.12 in <sup>3</sup> (2.14 cm <sup>3</sup> )
Operating temperature	-40° to +160° F (-40° to 71° C)*
Surface finish	10 μin Ra
Proof pressure	150% of operating pressures
Burst pressure	300% of operating pressures
Inboard leakage	2 x 10 <sup>-10</sup> sccs
Outboard leakage	2 x 10 <sup>-9</sup> sccs He
Leakage across seat	1 x 10 <sup>-9</sup> sccs He

\*VS option 14° to 194°F (-10° to + 90°C).

## Engineering Data — Wetted materials all valves

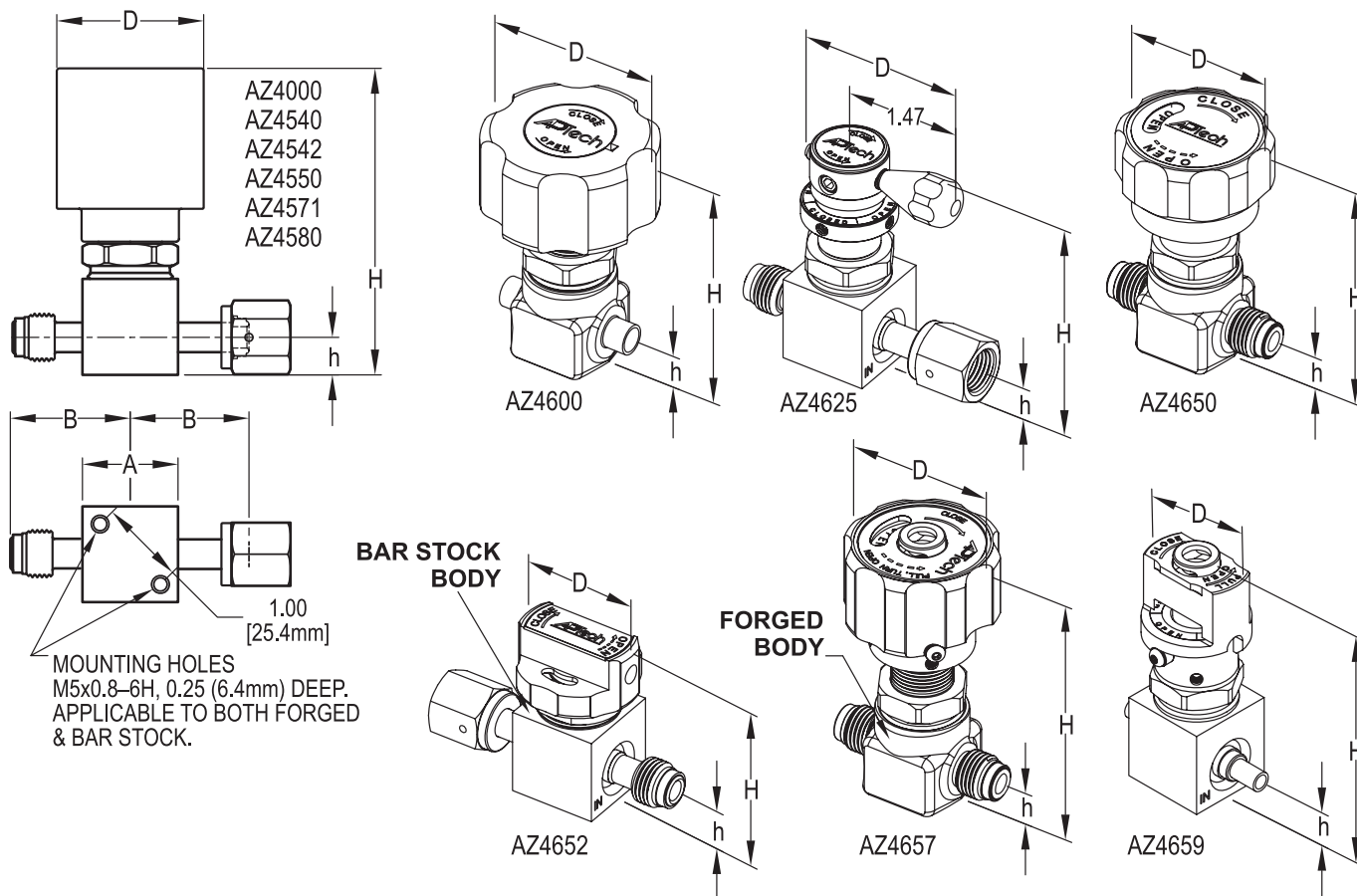
Body	SS 316L**
Finish	Electropolished and passivated
Diaphragm	Ni-Co alloy / UNS R30003
Seat	PCTFE (Polyimide optional)

\*\*Sulfur content varies from forged to bar stock body.  
Refer to product note PN414 for use of single melt SS.

## AZ 4571 — Metered flow range tolerance at 80 psig N<sub>2</sub> 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 (AZ 4571 only)	+/- 25 slpm

All specifications subject to change without notice.



VALVE	D		H	
	inch	mm	inch	mm
AZ4000	ø1.98	50.3	~4.10	104
AZ4540	ø1.46	37.1	~3.49	89
AZ4542	ø1.57	40.0	~2.24	57
AZ4550	ø1.37	34.8	~3.28	83
AZ4571	ø1.72	43.7	~3.63	92
AZ4580	ø1.46	37.1	~3.17	81
AZ4600	ø2.12	53.8	~3.00	76
AZ4625	2.04	51.8	~2.94	75
AZ4650	ø1.87	47.5	~3.02	77
AZ4652	ø1.50	38.0	~2.17	55
AZ4657	ø1.87	47.5	~3.60	91
AZ4659	ø1.30	33.0	~3.13	80

- Forged body only available in 2P porting with same type fittings inlet and outlet.
- Bar stock body, PW porting, has welded fittings in any combination of available type and size.
- P porting denotes forged body or bar stock body with integrally machined fittings. PW porting denotes welded fittings.
- Height of the valve (H) is an approximate value.

All dimensions in inches (mm).

Metric dimensions are for reference only.

All specifications subject to change without notice.

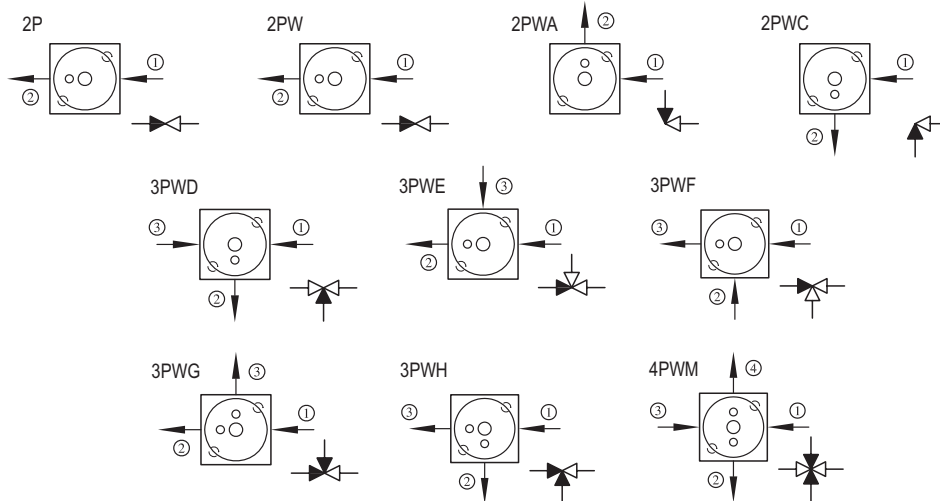
All manual valves are shown in open position.

Sulfur content varies from forged to bar stock body.

BODY TYPE	PORTING	CONNECTION	A		B		h	
			inch	mm	inch	mm	inch	mm
FORGED	P	MV4xMV4 (Fixed)	N/A	N/A	1.140	29.0	0.44	11.2
	P	TW6	N/A	N/A	0.875	22.2	0.44	11.2
	P	TW8	N/A	N/A	1.125	28.6	0.44	11.2
BAR STOCK	PW	FV4, MV4 (Fixed)	1.12 SQ	28.4	1.390	35.3	0.44	11.2
	P	MV6xMV6 (Fixed)	N/A	N/A	1.500	38.1	0.44	11.2
	PW	FV6, MV6	1.12 SQ	28.4	1.930	49.0	0.44	11.2
	PW	TW6	1.12 SQ	28.4	1.325	33.7	0.44	11.2

# ULTRACLEAN TECHNOLOGY BACKED BY SERVICE AND SUPPORT

## Porting Options Available



- 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.
- Multi-port is available only with bar stock (PW) body.

**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.**

PORTING CONFIGURATIONS

ORDERING INFORMATION

Sample Order Number	AZ 4652S 2P MV6 MV6	
AZ 4652   Series	AZ 4000 AZ 4540, 4550, 4571 AZ 4542, 4580 AZ 4600, 4625 AZ 4650, 4652, 4657, 4659	<b>MV6 MV6   Connections</b> Inlet / Outlet or ① ② ③ ④
S   Material	S = Stainless steel (SS)	
2P   Ports	2P = 2 ports 2PW = 2 ports welded 3PW = 3 ports welded 4PW = 4 ports welded	<b>Options</b> VS = Polyimide Seat P = Panel mount, manual valves* (except 4652) IS = Indicating switch* (AZ 4000 only) IPC = Indicating switch, NC* (AZ 4550 & 4580 only) IPO = Indicating switch, NO* (AZ 4550 & 4580 only) ISH = Indicating switch* (AZ 4650 only) HR** = Higher inlet pressure MXXX‡ = 4571 metered adjusts flow in slpm at 80 psig N <sub>2</sub>
Porting Designation Option	X = Letter code for available porting option Refer to porting options above.	

Porting  
P PW  
○ ○

- FV4 = 1/4 inch face seal female
- MV4 = 1/4 inch face seal male\*
- FV6 = 3/8 inch face seal female
- MV6 = 3/8 inch face seal male
- TW6 = 3/8 inch tube stub weld\*\*
- TW8 = 1/2 inch tube stub weld

Refer to chart on page 3 for available connections.  
 \*MV4 is fixed, no hex nut.  
 \*\*TW6 P and PW have different dimensions.  
 ● Only available with the same type fitting inlet and outlet.  
 ○ Available with any combination of welded fitting.

\*Refer to manual for installation information.  
 \*\*HR only available with AZ 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.