

# SERIES AZ 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 250 psig (17 bar)
- 10  $\mu$ in. (0.25  $\mu$ m) Ra avg. standard surface finish
- LOTO options
- Flow capacity 0.5  $C_v$
- Manual valves 1/4 turn to multi-turn
- 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)
- Installation and operating instructions available at [www.aptech-online.com](http://www.aptech-online.com) in the Tech Briefs section

### Manual valves

|   | PSIG / BAR<br>250 / 17 |
|---|------------------------|
| <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  |                        |
| <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</b>  | ●                      |
| – Round knob, 1/4 turn  |                        |
| – Pull, then turn to open – operational safety feature                        |                        |
| – Open/closed status indication window  |                        |
| – LOTO – integral standard feature  |                        |

### Pneumatic valves, normally closed (NC)

|                | 125 / 9 | 250 / 17 |
|----------------|---------|----------|
| <b>AZ 4540</b> | ●       |          |
| <b>AZ 4542</b> | ●       |          |
| <b>AZ 4550</b> |         | ●        |

### Pneumatic valve, normally open (NO)

|                | 250 / 17 |
|----------------|----------|
| <b>AZ 4580</b> | ●        |

All specifications subject to change without notice.

# HIGH PURITY ~ HIGH VALUE

## Engineering Data — Manual valves

|                            |                                      |                             |
|----------------------------|--------------------------------------|-----------------------------|
| Operating pressure         | AZ 4600, 4625, 4650, 4652<br>AZ 4657 | Vacuum to 250 psig (17 bar) |
| Flow coefficient ( $C_V$ ) | AZ 4600, 4625, 4650, 4652<br>AZ 4657 | 0.5 ( $X_T = 0.6$ )         |

## Engineering Data — Pneumatic valves

|                            |                                     |  |
|----------------------------|-------------------------------------|--|
| Operating pressure         | AZ 4540, 4542<br>AZ 4550, 4580      | Vacuum to 125 psig (9 bar)<br>Vacuum to 250 psig (17 bar)  |
| Flow coefficient ( $C_V$ ) | AZ 4540, 4550, 4580                 | 0.5 ( $X_T = 0.6$ )  |
| Status                     | AZ 4540, 4550, 4552<br>AZ 4580      | Normally closed (NC)<br>Normally open (NO)                 |
| Actuation pressure         | AZ 4540, 4550, 4580<br>AZ 4542      | 70 to 110 psig (5 to 8 bar)<br>60 to 110 psig (4 to 8 bar) |
| Actuation port             | AZ 4540, 4580<br>AZ 4542<br>AZ 4550 | 1/8 NPT, top port<br>M5, top port<br>10–32 inch, 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 $\mu$ in Ra                               |
| Proof pressure              | 1.5 times operating pressure                 |
| Burst pressure              | 3 times operating pressure                   |
| Inboard leakage             | 2 x 10 <sup>-10</sup> sccs                   |
| Outboard leakage            | 2 x 10 <sup>-9</sup> sccs He                 |
| Leakage across seat         | 4 x 10 <sup>-8</sup> sccs He                 |

## Engineering Data — Wetted materials all valves

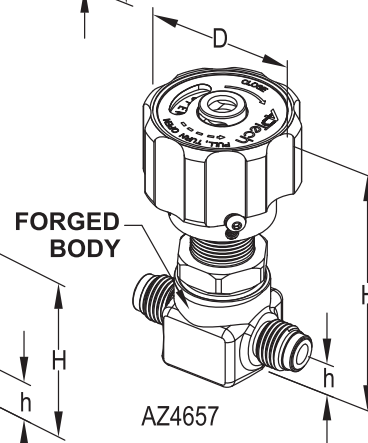
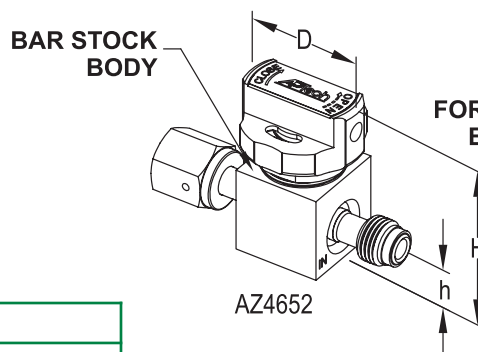
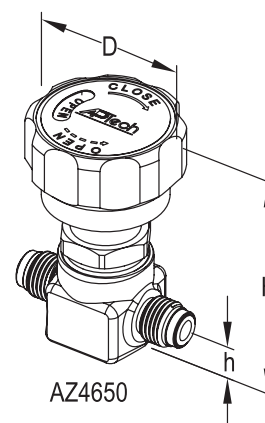
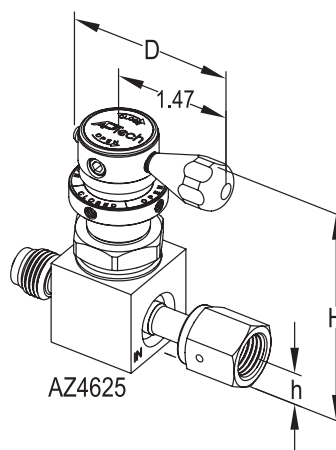
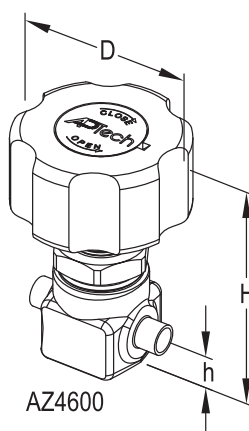
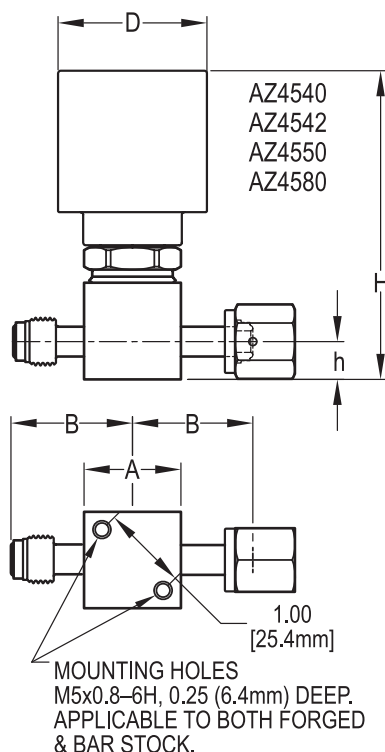
|           |                                |
|-----------|--------------------------------|
| Body      | SS 316L*                       |
| Finish    | Electropolished and passivated |
| Diaphragm | Elgiloy®                       |
| Seat      | PCTFE (Vespel® optional)       |

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

Vespel® DuPont

Elgiloy® Elgiloy Corporation

All specifications subject to change without notice.



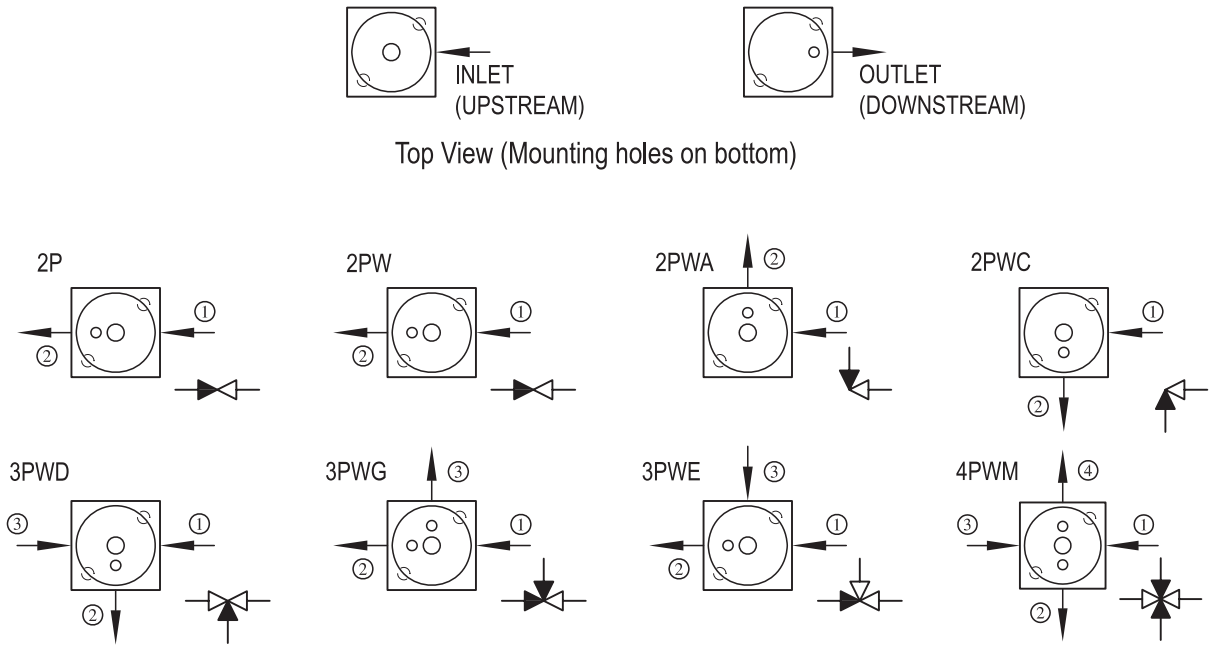
| VALVE  | D     |      | H    |    |
|--------|-------|------|------|----|
|        | inch  | mm   | inch | mm |
| AZ4540 | ø1.46 | 37.1 | 3.49 | 89 |
| AZ4542 | ø1.57 | 40.0 | 2.24 | 57 |
| AZ4550 | ø1.37 | 34.8 | 3.28 | 83 |
| AZ4580 | ø1.46 | 37.1 | 3.17 | 81 |
| AZ4600 | ø2.12 | 53.8 | 3.00 | 76 |
| 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 |

- 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.

| 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 |

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.

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 only available with bar stock 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.

| Sample Order Number |                            | AZ 4652S 2P MV6 MV6   |  |   |    |   |   |   |   |   |   |   |   |   |   |
|---------------------|----------------------------|---|--|---|----|---|---|---|---|---|---|---|---|---|---|
| AZ 4652             | Series                     | AZ 4540, 4550<br>AZ 4580<br>AZ 4600, 4625<br>AZ 4650, 4652, 4657                      | <div>MV6 MV6</div> <div>Connections</div> <div>Inlet / Outlet</div> <div>or</div> <div>① ② ③ ④</div>   |   |    |   |   |   |   |   |   |   |   |   |   |
| S                   | Material                   | S = Stainless steel (SS)  |  |   |    |   |   |   |   |   |   |   |   |   |   |
| 2P                  | Ports                      | 2P = 2 ports<br>2PW = 2 ports welded<br>3PW = 3 ports welded<br>4PW = 4 ports welded. |  |   |    |   |   |   |   |   |   |   |   |   |   |
|                     | Porting Designation Option | X = Letter code for available porting option<br>Refer to porting options above.       | <div>Porting</div> <table><tr><th>P</th><th>PW</th></tr><tr><td>●</td><td>○</td></tr><tr><td>●</td><td>○</td></tr><tr><td>●</td><td>○</td></tr><tr><td>●</td><td>○</td></tr><tr><td>●</td><td>○</td></tr></table> <div>Refer to chart on page 3 for available connections.<br/>*MV4 is fixed, no hex nut.<br/>**TW6 P and PW have different dimensions.</div> <div><div>● Only available with the same type fitting inlet and outlet</div><div>○ Available with any combination of welded fitting.</div></div> | P | PW | ● | ○ | ● | ○ | ● | ○ | ● | ○ | ● | ○ |
| P                   | PW                         |   |  |   |    |   |   |   |   |   |   |   |   |   |   |
| ●                   | ○                          |   |  |   |    |   |   |   |   |   |   |   |   |   |   |
| ●                   | ○                          |   |  |   |    |   |   |   |   |   |   |   |   |   |   |
| ●                   | ○                          |   |  |   |    |   |   |   |   |   |   |   |   |   |   |
| ●                   | ○                          |   |  |   |    |   |   |   |   |   |   |   |   |   |   |
| ●                   | ○                          |   |  |   |    |   |   |   |   |   |   |   |   |   |   |
|                     |                            | <div>Options</div>  | VS = Vespel Seat   |   |    |   |   |   |   |   |   |   |   |   |   |