



High Vacuum Valves  
*Leader in Quality and Value*

# 21700 Series

## 3-Position Throttle Valve

The HVA 3-Position Gate Valves are designed for use in etching, CVD, vacuum coating, FPD manufacturing and any other process that requires accurate and repeatable pressure control.

**3 Positions - Fully open, fully closed and an adjustable third position**

**Smooth Transitioning from rough to high vacuum**

**Improved process window with user defined set points**

**Use with upstream Mass Flow Controllers**

**Throttle and Isolation combined**

### 21700 Series Standard Technical Specifications

#### Materials

Valve body and gate	304 stainless steel
Welded bellows shaft seal	AM-350
Drive shaft and pin	Hardened stainless steel

#### Bonnet / gate seals

HV	Viton® elastomer
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#### Vacuum

Pressure Range	$1 \times 10^{-9}$ mbar
Helium leak rate	$< 1 \times 10^{-9}$ mbar l/s
Differential pressure closed	1 bar in either direction
Maximum $\Delta$ pressure before opening	$\leq 30$ mbar

#### Temperature

Body	150°C
Actuator	60°C

#### Mechanism

Pneumatic air service	80 psig
Solenoid	4.0 Watts
supplied voltage	120V AC, 50/60 Hz
optional voltages	24, 200, 240 VAC 50/60 Hz

Position indicator, max

Reed switch for open & closed 115 VAC or 28 VDC, 20 mA

Microswitch for third position  
optional voltages

115 VAC, 5 A  
250 VA, 5 A  
or 28 VDC, 5 A resistive load  
28 VDC, 3 A inductive load

#### Mounting Position

any

#### Cycles

Cycles until service 1,000,000 cycles  
dependent on process

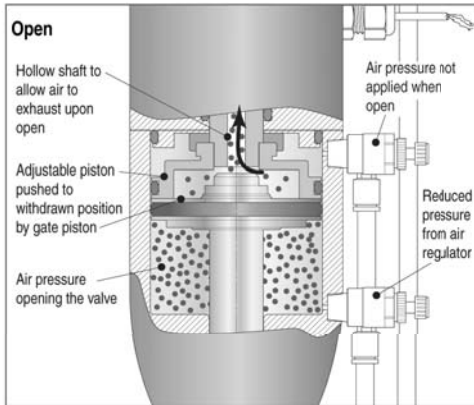




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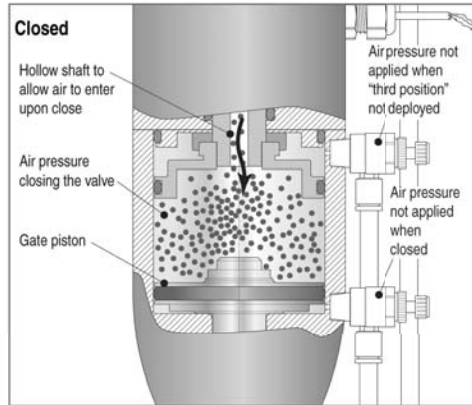
## 3-Position Throttle Valve



### 1. Open

Solenoid A ON  
Solenoid B OFF

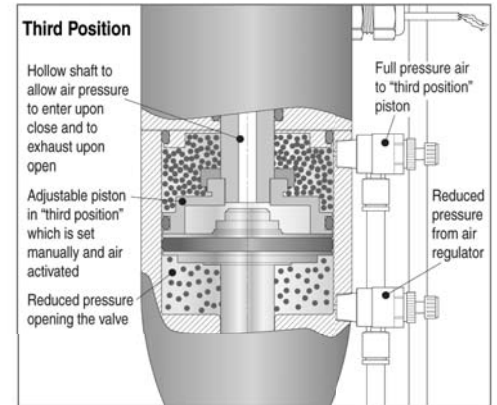
When solenoid A is electrically activated, air flows through the bottom supply port directly into an air pressure regulator. The regulator is adjusted so that its output pressure is approximately 15 to 20 psi less than the input pressure. Even though it is less than full pressure, this output pressure is sufficient to open the valve.



### 2. Closed

Solenoid A OFF  
Solenoid B OFF

With both solenoids deactivated, air pressure is directed to the top ports. The top port of Solenoid B is plugged, so no air flows. The top port of Solenoid A is directed to the hollow top drive shaft and into the air cylinder to close the valves. This is the standard Normally Closed configuration.



### 3. Partially open

Solenoid A ON  
Solenoid B ON

Solenoid B does not have an air pressure regulator along its supply line, so when Solenoid B is activated, full air supply pressure is applied to the top of a separate, additional piston within the air cylinder. This adjustable piston moves down to a stop set by manually adjusting the knob at the top of the valve. The full air pressure is 15 to 20 psi more than Solenoid A pressure, so when the valve tries to open, its actuator piston meets the adjustable piston and is held at that "third position."

## Ordering Guides

### 3-Position with Viton Bonnet

DN mm inch	Model number ISO-F	Model number ISO-K	Model number CF-F*
100 4.00	21712-0403R	21712-0406R	21712-0400R
160 6.00	21712-0603R	21712-0606R	21712-0600R
200 8.00	21712-0803R	21712-0806R	21712-0800R
250 10.00	21712-1003R	-	21712-1000R
320 12.00	21712-1203R	-	21712-1200R

Includes 120V AC Solenoid. For 24V DC solenoid change to: 2171 [1]-  
\*For Metric CF change last '0' to '4'

### Options

UHV Copper Bonnet Version  
JIS, ANSI and Custom Flanges  
Alternate O-ring Materials  
Roughing Ports  
Alternate Solenoid Voltages

