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Valves

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Rough to High Vacuum
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Vacuum Valve Solutions

Varian's extensive line of vacuum valves are engineered for reliability, performance, and value. These valves are also engineered to optimize conductance, to operate in a wide variety of applications, and to operate with a minimum of moving parts. This reduces wear and particle generation which contributes to their performance and reliability.

Varian valves are manufactured using the highest quality vacuum materials and provide a choice of actuation, and a variety of mounting flanges. All Varian valves are leak checked with the Varian mass spectrometer leak detector and tested prior to shipment to ensure proper operation.



Valve Types by Vacuum Range



Rough to High Vacuum (Pages 4-21)

- Electromagnetic block valves - Direct acting.
- Aluminum block valves.
- Stainless steel block valves.
- Stainless steel metal bonnet sealed tube valves.



Ultra High Vacuum (Pages 26-27)

- UHV all-metal valves.



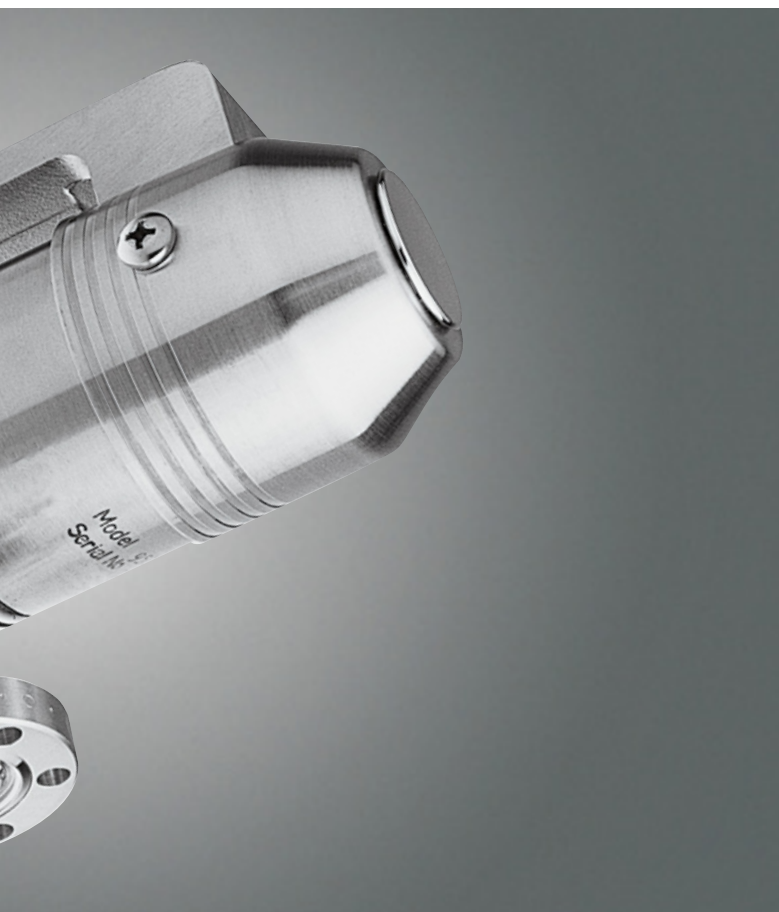
High Vacuum (Pages 22-25)

- GateKeeper aluminum gate valves.



Special Purpose Valves (Pages 28-29)

- Variable leak valve.
- Vacuum pump isolation valve (VPI).



Common Applications

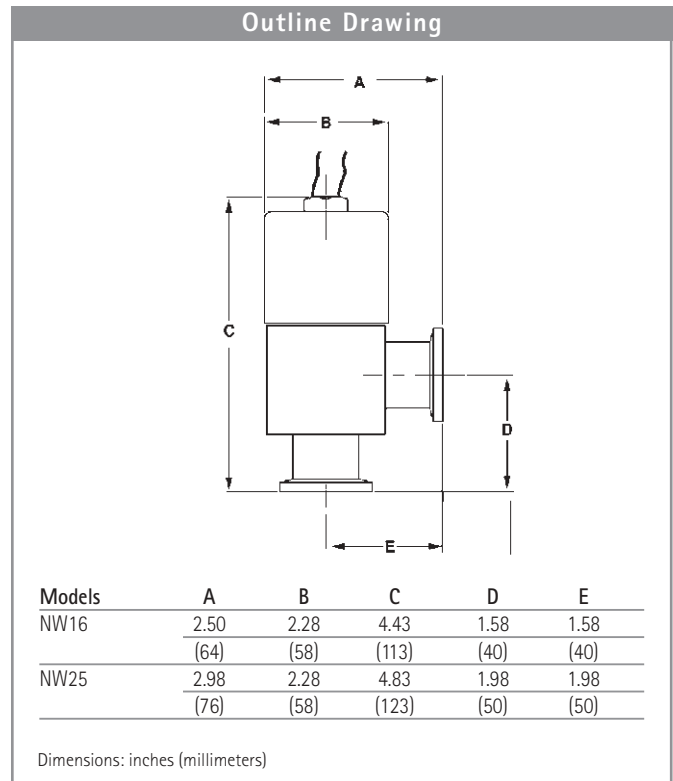
- Rough vacuum
 - Freeze drying
 - Food processing
 - Metal ore refining
 - Steam plant condensers
 - Vacuum distillation
- Medium vacuum
 - Decorative coatings
 - Functional coatings
 - Chemical processes
 - Electron microscopes
 - Microscopy sample processing
- High/Ultrahigh vacuum
 - Physics research
 - Optics
 - High energy
 - Semiconductor manufacturing
 - Electron tube manufacturing
 - Surface analysis (Auger Spectroscopy)
 - Molecular beam epitaxy
 - Outer space simulation

Valve Selection Guide

Vacuum Range	Valve Type		Housing Material		Size Range	Feedthrough (I.D.)	Flange Options Type	Actuation Options	Ref. Page
			Al	SS					
Rough to High Vacuum									
Atm 10 ⁻⁶ torr	Block	Right Angle	•		0.75 in. to 1.0 in.	Shaft	ISO-KF	Electromagnetic	4
Atm 10 ⁻⁹ torr	Block	Right Angle	•		0.75 in. to 3 in.	Bellows	ISO-KF	Manual/Air	6
Atm 10 ⁻⁹ torr	Block	In-Line	•		0.75 in. to 1.5 in.	Bellows	ISO-KF	Manual/Air	8
Atm 10 ⁻⁹ torr	Block	Right Angle		•	0.75 in. to 1.5 in.	Bellows	CF, ISO-KF, Weld	Manual/Air	12
Atm 10 ⁻⁹ torr	Block	In-Line		•	0.75 in. to 1.0 in.	Bellows	CF, ISO-KF, Weld	Manual/Air	12
Atm 10 ⁻⁹ torr	Tube MBS*	Right Angle		•	0.75 in. to 1.5 in.	Bellows	CF	Manual/Air	18
Atm 10 ⁻⁹ torr	Tube MBS*	In-Line		•	0.75 in. to 1.5 in.	Bellows	CF	Manual/Air	18
Atm 10 ⁻⁹ torr	Gate	<i>GateKeeper</i>	•		2.5 in. to 10 in.	Shaft	ISO, ASA	Manual/Air	22
Ultra High Vacuum									
Atm 10 ⁻¹¹ torr	UHV, All-Metal	Right Angle		•	0.75 in. to 2.5 in.	Bellows	CF	Manual	26
Atm 10 ⁻¹¹ torr	UHV, All-Metal	In-Line		•	1.5 in.	Bellows	CF	Manual	26
Atm 10 ⁻¹¹ torr	UHV, All-Metal	Tee		•	1.5 in.	Bellows	CF	Manual	26
Special Purpose									
Atm 10 ⁻⁴ torr	Variable Leak			•		Bellows	CF	Manual	28
Atm 10 ⁻⁴ torr	Vacuum Pump Isolation (VPI)		•		NW25-NW40	Shaft	ISO-KF	ATM Air	29

*MBS – Metal Bonnet Seal

Electromagnetic Block Valves – Direct Acting



Features	Benefits
<ul style="list-style-type: none"> • Reliable design • Low cost • Rapid spring-closed actuator • KF Flange connections • Single coil 	<ul style="list-style-type: none"> • Service-free operation • Economical • System protection on loss of power • Ease of Installation • Compact construction • Rapid cycling

Technical Specifications

Vacuum Range Cleaned Aluminum: atm to 10 ⁻⁶ torr Nickel-Plated: atm to 10 ⁻⁹ torr	Service Life 250,000 cycles
Leak Rate <1 x 10 ⁻⁹ std cc/sec. (helium)	Conductance NW16 – 2.2 l/s NW25 – 3.5 l/s
Operating Temperature 15° C min to 40° C maximum	Speed to Open/Close Open – 50 ms Close – 25 ms
Bakeable To – Non-operating (closed) 125° C	Loss of Power Valve closes (in < 25 m/sec)
Pulse Voltage/Hold Voltage 23 Watts	

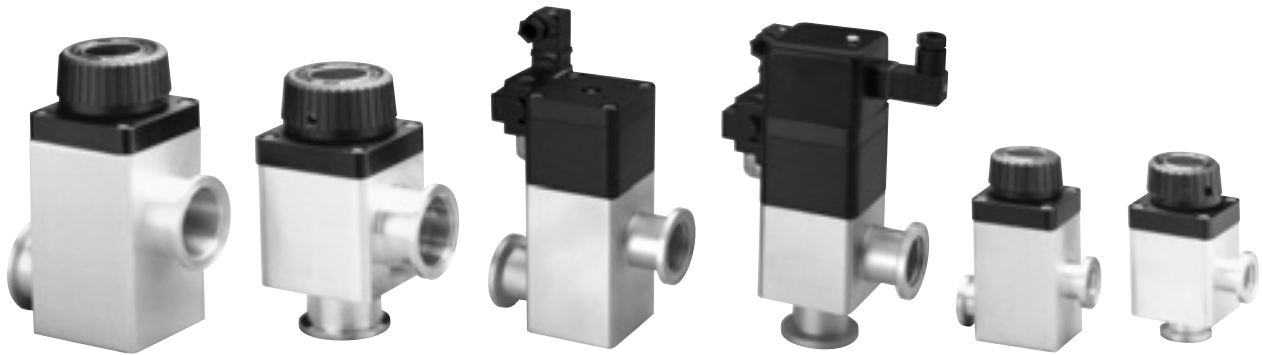
Ordering Information

Size	Voltage Option	Part Number		Shipping Weight lbs. (kg)
		Aluminum Body	Nickel-Plated	
NW16	100V; 60Hz	L9940301	L9940601	1.5 (0.7)
	115V; 50/60Hz	L9940302	L9940602	1.5 (0.7)
	200V; 60Hz	L9940303	L9940603	1.5 (0.7)
	220V; 50/60Hz	L9940304	L9940604	1.5 (0.7)
	12 VDC	L9940305	L9940605	1.5 (0.7)
	24 VDC	L9940306	L9940606	1.5 (0.7)
	100V; 50Hz	L9940307	L9940607	1.5 (0.7)
	240V; 50Hz	L9940308	L9940608	1.5 (0.7)
NW25	100V; 60Hz	L9942301	L9942601	2.0 (0.9)
	115V; 50/60Hz	L9942302	L9942602	2.0 (0.9)
	200V; 60Hz	L9942303	L9942603	2.0 (0.9)
	220V; 50/60Hz	L9942304	L9942604	2.0 (0.9)
	12 VDC	L9942305	L9942605	2.0 (0.9)
	24 VDC	L9942306	L9942606	2.0 (0.9)
	100V; 50Hz	L9942307	L9942607	2.0 (0.9)
	240V; 50Hz	L9942308	L9942608	2.0 (0.9)

Ordering Information

Description	Part Number	Shipping Weight lbs. (kg)
Spare Parts		
Plunger Assembly – includes shaft, spring, and seal	L9987008	1.0 (0.5)
Operator, EMB, 100V, 50 Hz	L9987007	1.0 (0.5)
Operator, EMB, 100V, 60 Hz	L9987001	1.0 (0.5)
Operator, EMB, 115V, 50/60 Hz	L9987002	1.0 (0.5)
Operator, EMB, 200V, 60 Hz	L9987003	1.0 (0.5)
Operator, EMB, 220V, 50/60 Hz	L9987004	1.0 (0.5)
Operator, EMB, 240V, 50Hz	L9987009	2.0 (1.0)
Operator, EMB, 12 VDC	L9987005	1.0 (0.5)
Operator, EMB, 24 VDC	L9987006	1.0 (0.5)
Manual	699912065	1.0 (0.5)

Aluminum Block Valves

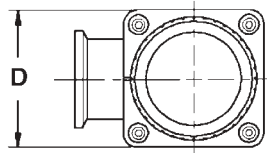


Varian's aluminum block valves are the valves of choice for medium- and high-vacuum requirements. These low-cost, compact, and reliable valves are used for applications in semiconductor manufacturing, R&D, and industrial vacuum systems. Varian's block valves will reliably achieve 1 million cycles (NW16/25) in most applications.

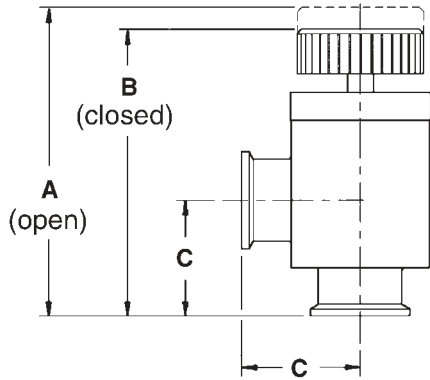
Now available in right-angle (NW16-80) or offset in-line (NW16 – 40), these valves may be ordered in either hand- or air-operated versions. Our nickel-plated version offers lower outgassing and higher resistance to corrosive gases. Air-operated valves may be ordered with a solenoid valve and/or a remote position indicator.

Features	Benefits
• Convenient NW/ISO flange dimensions	• Easy installation and service
• Low-profile, lightweight construction	
• Reliable design	• Service-free performance
• 1 million cycles (NW16/25); 250,000 cycles (NW40-NW80)	• Cost effective
• Auto-close on loss of air or power	• Fail-safe operation
• Low cost	• Economical to use
• Visual position indicator	• Minimizes operator error
• Optional remote position indicator	
• High conductance	• Maximizes pumping efficiency
• Nickel-plated option	• Low outgassing
	• Higher resistance to corrosive gasses

Right-Angle H/O Block Valve



Dimensions are seal face-to-face,
protective lip not included.



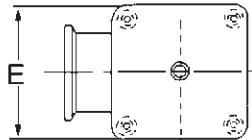
Models	A	B	C	D
NW16	4.45 (113)	4.09 (104)	1.58 (40)	2.05 (52)
NW25	4.85 (123)	4.49 (114)	1.98 (50)	2.05 (52)
NW40	6.45 (164)	6.00 (152)	2.57 (65)	3.05 (77)
NW50	7.19 (183)	6.79 (172)	2.80 (71)	3.89 (99)
NW63	7.71 (196)	7.31 (186)	3.32 (84)	3.89 (99)
NW80	8.25 (210)	7.69 (195)	3.72 (94)	4.40 (112)

NW/KF

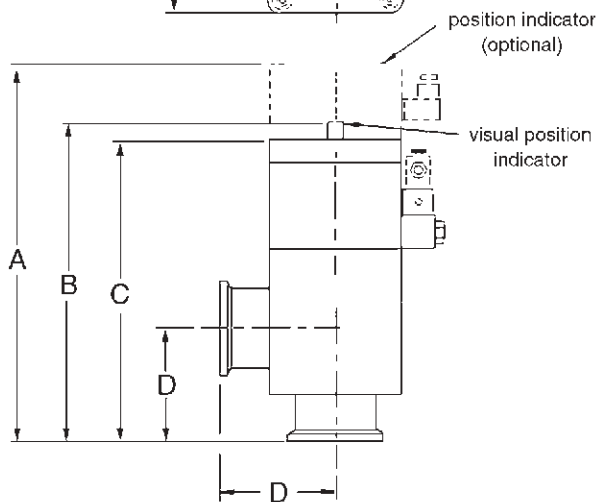
ISO-K

Dimensions: inches (millimeters)

Right-Angle A/O Block Valve



Dimensions are seal face-to-face,
protective lip not included.



Models	A	B	C	D	E
NW16	6.01 (153)	4.83 (123)	4.49 (114)	1.58 (40)	2.05 (52)
NW25	6.41 (163)	5.23 (133)	4.89 (124)	1.98 (50)	2.05 (52)
NW40	7.56 (192)	6.38 (162)	6.04 (153)	2.57 (65)	3.05 (77)
NW50	7.59 (193)	7.47 (190)	7.07 (180)	2.80 (71)	3.89 (99)
NW63	8.11 (206)	7.99 (203)	7.59 (193)	3.32 (84)	3.89 (99)
NW80	8.51 (216)	8.39 (213)	7.99 (203)	3.72 (94)	4.40 (112)

NW/KF

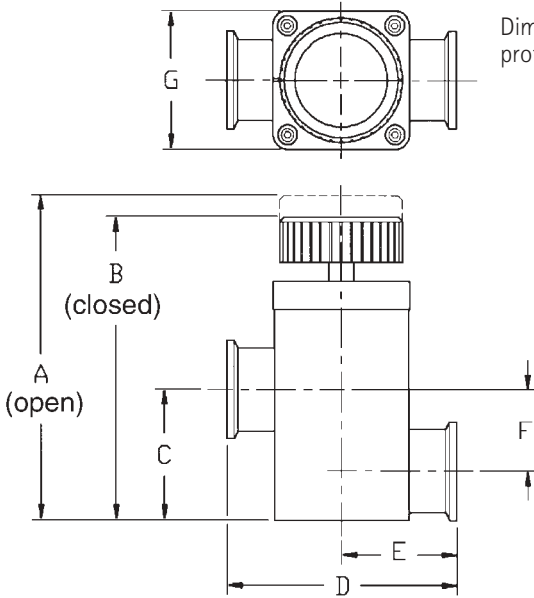
ISO-K

Dimensions: inches (millimeters)



Aluminum Block Valves

In-Line H/O Block Valve

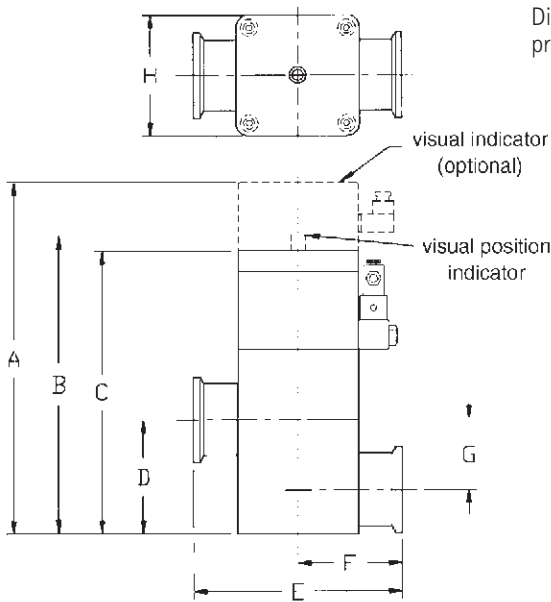


Dimensions are seal face-to-face, protective lip not included.

Models	A	B	C	D	E	F	G
NW16	4.71 (120)	4.35 (111)	1.47 (37)	3.16 (80)	1.58 (40)	0.88 (22)	2.05 (52)
NW25	5.11 (130)	4.75 (121)	2.04 (52)	3.96 (100)	1.98 (50)	1.25 (32)	2.05 (52)
NW40	7.06 (179)	6.61 (168)	2.85 (72)	5.14 (130)	2.57 (65)	1.77 (45)	3.05 (77)

Dimensions: inches (millimeters)

In-Line A/O Block Valve



Dimensions are seal face-to-face, protective lip not included.

Models	A	B	C	D	E	F	G	H
NW16	6.27 (160)	5.09 (129)	4.75 (121)	1.47 (37)	3.16 (80)	1.58 (40)	0.88 (22)	2.05 (52)
NW25	6.67 (170)	5.49 (139)	5.15 (131)	2.04 (52)	3.96 (100)	1.98 (50)	1.25 (32)	2.05 (52)
NW40	8.17 (208)	6.99 (178)	6.65 (169)	2.85 (72)	5.14 (130)	2.57 (65)	1.77 (45)	3.05 (77)

Dimensions: inches (millimeters)

Technical Specifications

Pressure Range	Atmosphere to 10 ⁻⁹ torr (mbar)
Main Seal Leak Rate	< 1 x 10 ⁻⁹ std cc/sec He
Body Leak Rate	< 1 x 10 ⁻¹⁰ std cc/sec He
Rated Cycle Life	1 million (NW16/25) 250,000 (NW40-NW80)
Conductance (molecular flow)	
	NW16 NW25 NW40 NW50 NW63 NW80
Right Angle	4 l/s 12 l/s 35 l/s 60 l/s 95 l/s 155 l/s
Offset In-Line	4 l/s 12 l/s 35 l/s - - -
Materials	<ul style="list-style-type: none"> • Valve Body – Aluminum 6061 T6 • Bellows – Stainless Steel T321 • O-rings, vacuum – Viton V747-75

Bakeable To –	Hand-operated Valve 150° C
	Air-operated Valve 150° C without solenoid, 60° C with solenoid
	Position Indicator 60° C
Air Connection	1/8 in. NPT
Actuation	Spring closed, air open
	Air Pressure, 80 psig (min) 100 psig (maximum)
Time to Close/Open	< 300 mseconds
Power Loss	Valve closes
Optional Remote Position Indicator	Actuator – Microswitch
	Electrical Rating – 125/250 VAC, 5 amp maximum
	Signal Hookup – NO or NC

Ordering Information – NW16, NW25, NW40

Size	Voltage Option	Part Number		Shipping Weight lbs. (kg)
Right-Angle Block Valves		Aluminum	Nickel-Plated Aluminum	
Hand-operated				
NW16		L6280301	L6280601	0.8 (0.4)
NW25		L6280302	L6280602	0.8 (0.4)
NW40		L6280303	L6280603	1.7 (0.8)
Air-operated				
NW16	without solenoid	L6281301	L6281601	1.5 (0.7)
	110/115 VAC; 50/60 Hz	L6281311	L6281611	1.7 (0.8)
	220/240 VAC; 50/60 Hz	L6281321	L6281621	1.7 (0.8)
	24 VDC	L6281331	L6281631	1.7 (0.8)
NW25	without solenoid	L6281302	L6281602	1.6 (0.7)
	110/115 VAC; 50/60 Hz	L6281312	L6281612	1.8 (0.8)
	220/240 VAC; 50/60 Hz	L6281322	L6281622	1.8 (0.8)
	24 VDC	L6281332	L6281632	1.8 (0.8)
NW40	without solenoid	L6281303	L6281603	3.3 (1.5)
	110/115 VAC; 50/60 Hz	L6281313	L6281613	3.7 (1.7)
	220/240 VAC; 50/60 Hz	L6281323	L6281623	3.7 (1.7)
	24 VDC	L6281333	L6281633	3.7 (1.7)
Right-Angle Block Valves (with remote position indicator)		Aluminum	Nickel-Plated Aluminum	
Air-operated				
NW16	without solenoid	L6282301	L6282601	1.8 (0.8)
	110/115 VAC; 50/60 Hz	L6282311	L6282611	2.0 (0.9)
	220/240 VAC; 50/60 Hz	L6282321	L6282621	2.0 (0.9)
	24 VDC	L6282331	L6282631	2.0 (0.9)
NW25	without solenoid	L6282302	L6282602	1.9 (0.8)
	110/115 VAC; 50/60 Hz	L6282312	L6282612	2.1 (0.9)
	220/240 VAC; 50/60 Hz	L6282322	L6282622	2.1 (0.9)
	24 VDC	L6282332	L6282632	2.1 (0.9)
NW40	without solenoid	L6282303	L6282603	3.6 (1.6)
	110/115 VAC; 50/60 Hz	L6282313	L6282613	3.8 (1.7)
	220/240 VAC; 50/60 Hz	L6282323	L6282623	3.8 (1.7)
	24 VDC	L6282333	L6282633	3.8 (1.7)

Aluminum Block Valves

Ordering Information – NW16, NW25, NW40

Size	Voltage Option	Part Number		Shipping Weight lbs. (kg)
Offset In-line Block Valves		Aluminum	Nickel-Plated Aluminum	
Hand-operated				
NW16		L9180301	L9180601	1.2 (0.5)
NW25		L9180302	L9180602	1.3 (0.6)
NW40		L9180303	L9180603	3.6 (1.6)
Air-operated				
NW16	without solenoid	L9181301	L9181601	1.6 (0.7)
	110/115 VAC; 50/60 Hz	L9181311	L9181611	1.8 (0.8)
	220/240 VAC; 50/60 Hz	L9181321	L9181621	1.8 (0.8)
	24 VDC	L9181331	L9181631	1.8 (0.8)
NW25	without solenoid	L9181302	L9181602	1.8 (0.8)
	110/115 VAC; 50/60 Hz	L9181312	L9181612	2.0 (0.9)
	220/240 VAC; 50/60 Hz	L9181322	L9181622	2.0 (0.9)
	24 VDC	L9181332	L9181632	2.0 (0.9)
NW40	without solenoid	L9181303	L9181603	4.6 (2.0)
	110/115 VAC; 50/60 Hz	L9181313	L9181613	4.8 (2.1)
	220/240 VAC; 50/60 Hz	L9181323	L9181623	4.8 (2.1)
	24 VDC	L9181333	L9181633	4.8 (2.1)
Offset In-Line Block Valves (with remote position indicator)		Aluminum	Nickel-Plated Aluminum	
Air-operated				
NW16	without solenoid	L9182301	L9182601	1.7 (0.8)
	110/115 VAC; 50/60 Hz	L9182311	L9182611	1.9 (0.8)
	220/240 VAC; 50/60 Hz	L9182321	L9182621	1.9 (0.8)
	24 VDC	L9182331	L9182631	1.9 (0.8)
NW25	without solenoid	L9182302	L9182602	2.1 (0.9)
	110/115 VAC; 50/60 Hz	L9182312	L9182612	2.3 (1.0)
	220/240 VAC; 50/60 Hz	L9182322	L9182622	2.3 (1.0)
	24 VDC	L9182332	L9182632	2.3 (1.0)
NW40	without solenoid	L9182303	L9182603	4.9 (2.2)
	110/115 VAC; 50/60 Hz	L9182313	L9182613	5.1 (2.3)
	220/240 VAC; 50/60 Hz	L9182323	L9182623	5.1 (2.3)
	24 VDC	L9182333	L9182633	5.1 (2.3)

Ordering Information – NW16, NW25, NW40

Description	Part Number	Shipping Weight lbs. (kg)
Spare Parts		
Replacement solenoids (fit all air-operated valves)		
110/115 VAC; 50/60 Hz	626771150	0.5 (0.2)
220/240 VAC; 50/60 Hz	626771151	0.5 (0.2)
24 VDC	626771152	0.5 (0.2)
Hand-operated spare parts kits (includes bellows and o-rings)		
NW16 or 25	L6125301	0.5 (0.2)
NW40	L6126301	0.5 (0.2)
Air-operated spare parts kits (includes bellows, quad ring, and o-rings)		
NW16 or 25	L6127301	0.5 (0.2)
NW40	L6128301	0.5 (0.2)
Optional remote position indicator (fits all Aluminum Block Valves)		
Single microswitch	L6597302	0.5 (0.2)
Dual microswitch	L6597301	0.5 (0.2)
Manual	699912040	0.5 (0.2)

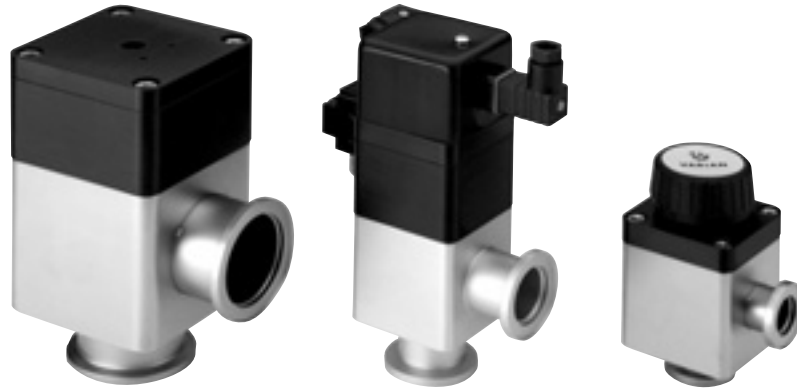
Ordering Information – NW50, NW63, NW80

Size	Voltage Option	Part Number		Shipping Weight lbs. (kg)
Right Angle Block Valves				
		Aluminum	Nickel-Plated Aluminum	
Hand-operated				
NW50		L7280301	L7280601	2.0 (0.9)
NW63		L7280302	L7280602	3.0 (1.4)
NW80		L7280303	L7280603	5.0 (2.3)
Air-operated				
NW50	without solenoid	L7281301	L7281601	3.0 (1.4)
	110/115 VAC; 50/60 Hz	L7281311	L7281611	3.0 (1.4)
	220/240 VAC; 50/60 Hz	L7281321	L7281621	3.0 (1.4)
	24 VDC	L7281331	L7281631	3.0 (1.4)
NW63	without solenoid	L7281302	L7281602	4.0 (1.8)
	110/115 VAC; 50/60 Hz	L7281312	L7281612	4.0 (1.8)
	220/240 VAC; 50/60 Hz	L7281322	L7281622	4.0 (1.8)
	24 VDC	L7281332	L7281632	4.0 (1.8)
NW80	without solenoid	L7281303	L7281603	6.5 (3.0)
	110/115 VAC; 50/60 Hz	L7281313	L7281613	6.5 (3.0)
	220/240 VAC; 50/60 Hz	L7281323	L7281623	6.5 (3.0)
	24 VDC	L7281333	L7281633	6.5 (3.0)
Right-Angle Block Valves (with remote position indicator)				
		Aluminum	Nickel-Plated Aluminum	
Air-operated				
NW50	without solenoid	L7282301	L7282601	4.0 (1.8)
	110/115 VAC; 50/60 Hz	L7282311	L7282611	4.0 (1.8)
	220/240 VAC; 50/60 Hz	L7282321	L7282621	4.0 (1.8)
	24 VDC	L7282331	L7282631	4.0 (1.8)
NW63	without solenoid	L7282302	L7282602	5.0 (2.3)
	110/115 VAC; 50/60 Hz	L7282312	L7282612	5.0 (2.3)
	220/240 VAC; 50/60 Hz	L7282322	L7282622	5.0 (2.3)
	24 VDC	L7282332	L7282632	5.0 (2.3)
NW80	without solenoid	L7282303	L7282603	7.5 (3.5)
	110/115 VAC; 50/60 Hz	L7282313	L7282613	7.5 (3.5)
	220/240 VAC; 50/60 Hz	L7282323	L7282623	7.5 (3.5)
	24 VDC	L7282333	L7282633	7.5 (3.5)

Ordering Information – NW50, NW63, NW80

Description	Part Number	Shipping Weight lbs. (kg)
Spare Parts		
Replacement solenoids (fit all air-operated valves)		
110/115 VAC; 50/60 Hz	626771150	0.5 (0.2)
220/240 VAC; 50/60 Hz	626771151	0.5 (0.2)
24 VDC	626771152	0.5 (0.2)
Hand-operated spare parts kits (includes bellows and o-rings)		
NW50	L6625301	0.5 (0.2)
NW63	L7276301	0.5 (0.2)
NW80	L7278301	0.5 (0.2)
Air-operated spare parts kits (includes bellows, quad ring, and o-rings)		
NW50	L6613301	0.5 (0.2)
NW63	L7277301	0.5 (0.2)
NW80	L7279301	0.5 (0.2)
Optional remote position indicator (fits all Aluminum Block Valves)		
Single microswitch	L6597302	0.5 (0.2)
Dual microswitch	L6597301	0.5 (0.2)
Manual	699912043	0.5 (0.2)

Stainless Steel Block Valves

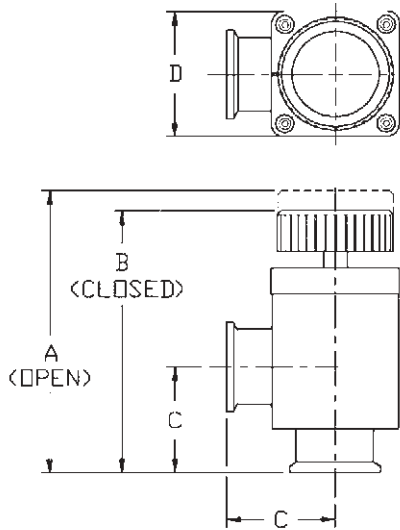


Varian's stainless steel block valves are the valves of choice for medium- and high-vacuum requirements. These low-cost, compact, and reliable valves are used for applications in semiconductor manufacturing, R&D, and industrial vacuum systems. Now available in right-angle or offset in-line,

with CF, KF or tube ends, these valves may be ordered in either hand- or air-operated versions. Varian's stainless block valves will reliably achieve 1 million (NW16/25) cycles in most applications.

Features	Benefits
• Low-profile, choice of flanges (CF, KF, tube ends)	• Easy installation and service
• Reliable design	• Service-free performance
• 1 million cycles (NW16/25); 250,000 cycles (NW40)	• Cost effective
• Auto-close on loss of air or power	• Fail-safe operation
• Low cost	• Economical to use
• Visual position indicator	• Minimizes operator error
• Optional remote position indicator	
• High conductance	• Maximizes pumping efficiency
• Stainless steel body	• High-vacuum and ultra-high vacuum compatible

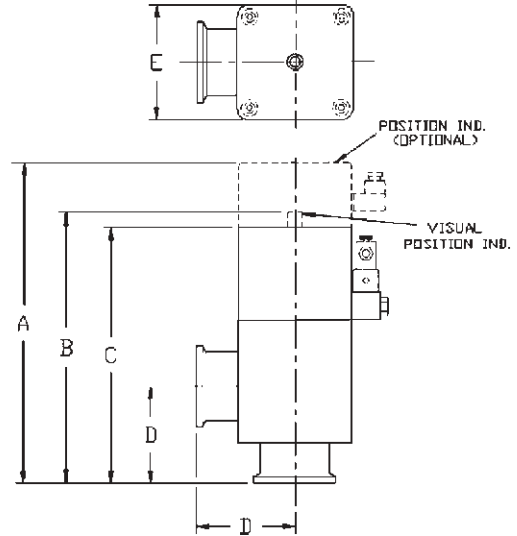
Right-Angle H/O Stainless Steel Block Valve with Klamp Flange



MODELS	A	B	C	D
3/4"	4.45 (113)	4.09 (104)	1.58 (40)	2.05 (52)
1"	4.85 (123)	4.49 (114)	1.98 (50)	2.05 (52)
1 1/2"	6.45 (164)	6.00 (152)	2.57 (65)	3.05 (77)

Dimensions: inches (millimeters)

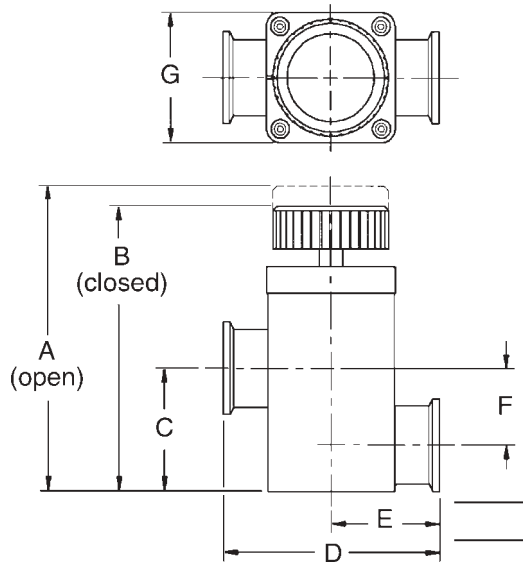
Right-Angle A/O Stainless Steel Block Valve with Klamp Flange



MODELS	A	B	C	D	E
3/4"	6.01 (153)	4.83 (123)	4.49 (114)	1.58 (40)	2.05 (52)
1"	6.41 (163)	5.23 (133)	4.89 (124)	1.98 (50)	2.05 (52)
1 1/2"	7.56 (192)	6.38 (162)	6.04 (153)	2.57 (65)	3.05 (77)

Dimensions: inches (millimeters)

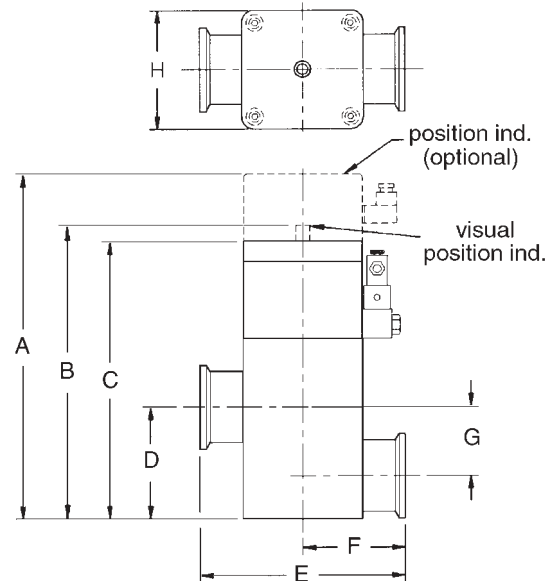
In-Line H/O Stainless Steel Block Valve with Klamp Flange



Models	A	B	C	D	E	F	G
3/4"	4.71 (120)	4.35 (111)	1.47 (37)	3.16 (80)	1.58 (40)	.88 (22)	2.05 (52)
1"	5.11 (130)	4.75 (121)	2.04 (52)	3.96 (100)	1.98 (50)	1.25 (32)	2.05 (52)

Dimensions: inches (millimeters)

In-Line A/O Stainless Steel Block Valve with Klamp Flange

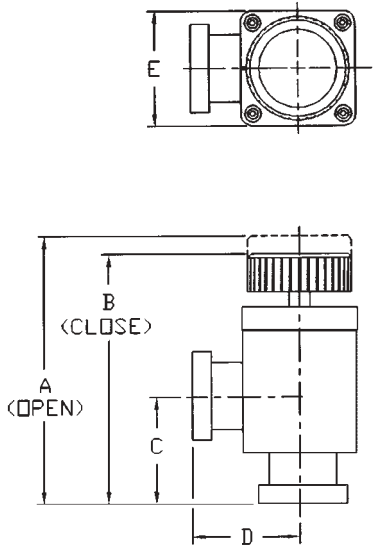


Models	A	B	C	D	E	F	G	H
3/4"	6.27 (160)	5.09 (129)	4.75 (121)	1.47 (37)	3.16 (80)	1.58 (40)	.88 (22)	2.05 (52)
1"	6.67 (170)	5.49 (139)	5.15 (131)	2.04 (52)	3.96 (100)	1.98 (50)	1.25 (32)	2.05 (52)

Dimensions: inches (millimeters)

Stainless Steel Block Valves

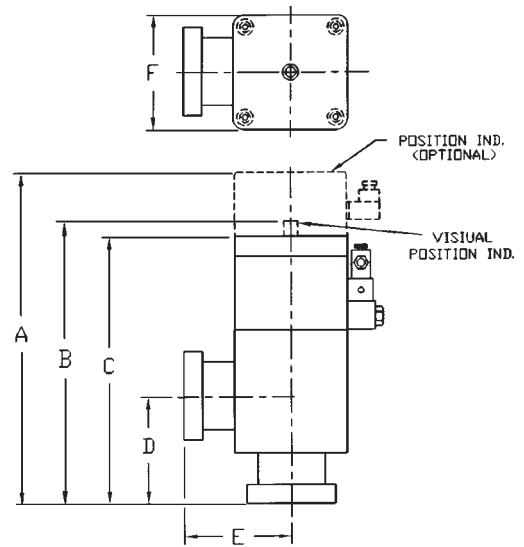
Right-Angle H/O Stainless Steel Block Valve with Conflat Flange



MODELS	A	B	C	D	E
3/4	4.33 (110)	3.96 (101)	1.50 (38)	1.50 (38)	2.05 (52)
1	4.94 (125)	4.57 (116)	2.09 (53)	1.90 (48)	2.05 (52)
1 1/2	6.35 (161)	5.90 (150)	2.47 (63)	2.52 (64)	3.05 (77)

Dimensions: inches (millimeters)

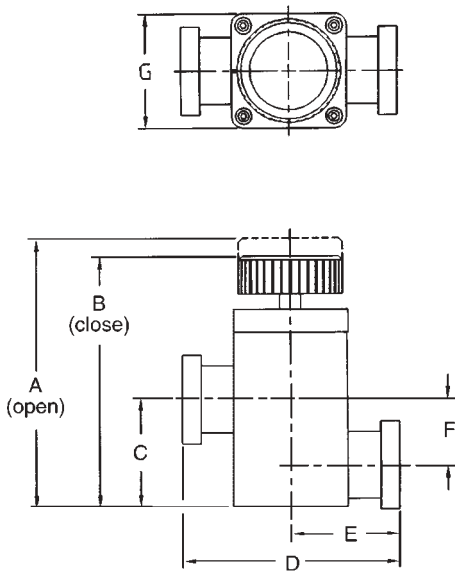
Right-Angle A/O Stainless Steel Block Valve with Conflat Flange



MODELS	A	B	C	D	E	F
3/4	5.88 (149)	4.70 (119)	4.36 (107)	1.50 (38)	1.50 (38)	2.05 (52)
1	6.50 (165)	5.30 (135)	4.99 (127)	2.09 (53)	1.90 (48)	2.05 (52)
1 1/2	7.46 (189)	6.28 (160)	5.94 (151)	2.47 (63)	2.52 (64)	3.05 (77)

Dimensions: inches (millimeters)

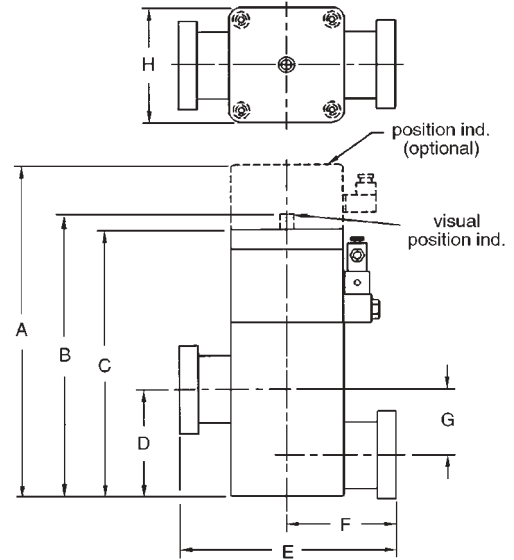
In-Line H/O Stainless Steel Block Valve with Conflat Flange



Models	A	B	C	D	E	F	G
3/4	4.41 (112)	4.05 (103)	1.17 (30)	3.00 (76)	1.50 (38)	0.88 (22)	2.05 (52)
1	4.82 (122)	4.46 (113)	1.75 (44)	3.80 (97)	1.90 (48)	1.30 (33)	2.05 (52)

Dimensions: inches (millimeters)

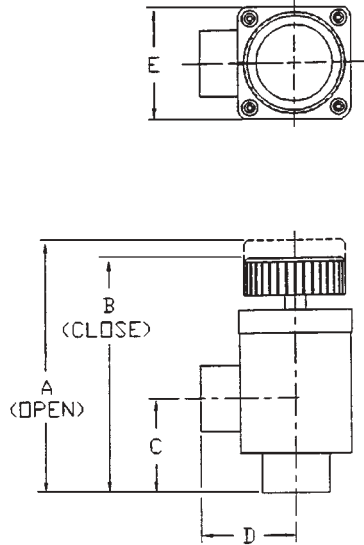
In-Line A/O Stainless Steel Block Valve with Conflat Flange



Models	A	B	C	D	E	F	G	H
3/4	5.97 (152)	4.79 (122)	4.45 (113)	1.17 (30)	3.00 (76)	1.50 (38)	0.88 (22)	2.05 (52)
1	6.38 (162)	5.20 (132)	4.84 (123)	1.75 (44)	3.80 (97)	1.90 (48)	1.30 (33)	2.05 (52)

Dimensions: inches (millimeters)

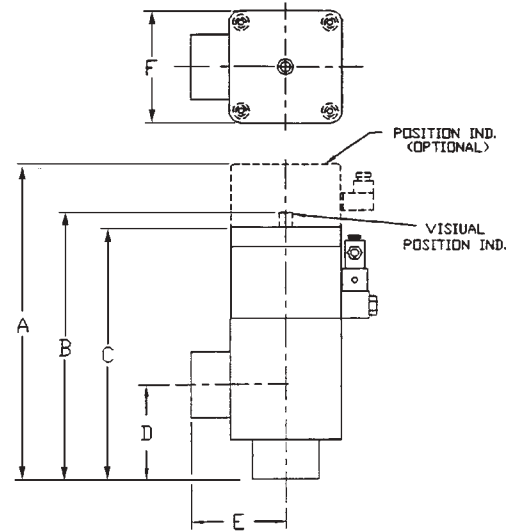
Right-Angle H/O Stainless Steel Block Valve with Tube Ends



MODELS	A	B	C	D	E
3/4"	4.15 (105)	3.79 (96)	1.33 (34)	1.33 (34)	2.05 (52)
1"	4.78 (121)	4.42 (112)	1.92 (49)	1.73 (44)	2.05 (52)
1 1/2"	6.15 (156)	5.70 (145)	2.27 (58)	2.32 (59)	3.05 (77)

Dimensions: inches (millimeters)

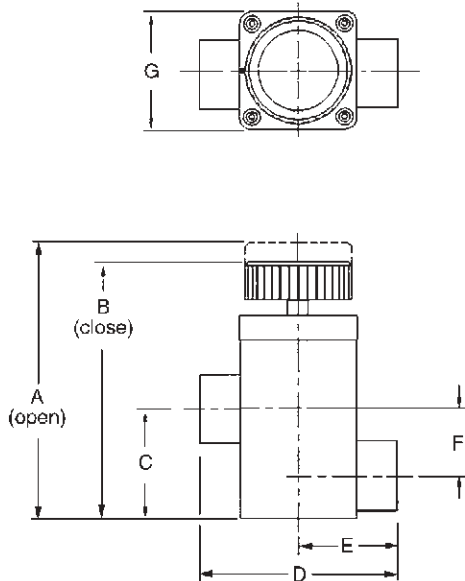
Right-Angle A/O Stainless Steel Block Valve with Tube Ends



Models	A	B	C	D	E	F
3/4"	5.71 (145)	4.53 (115)	4.19 (106)	1.33 (34)	1.33 (34)	2.05 (52)
1"	6.34 (161)	5.14 (131)	4.82 (122)	1.92 (49)	1.73 (44)	2.05 (52)
1 1/2"	7.26 (184)	6.08 (154)	5.74 (146)	2.27 (58)	2.32 (59)	3.05 (77)

Dimensions: inches (millimeters)

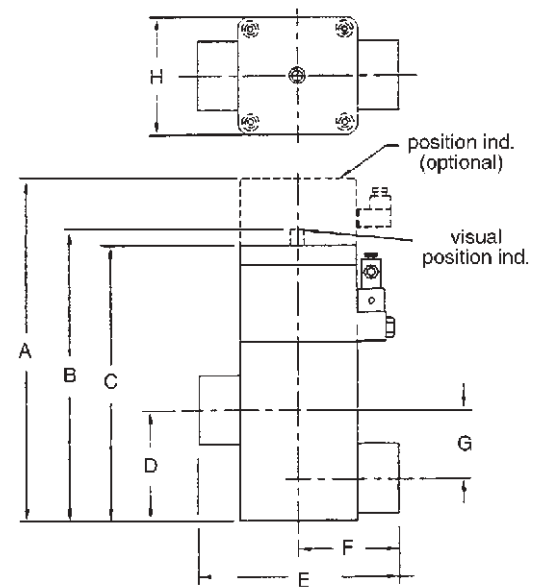
In-Line H/O Stainless Steel Block Valve with Tube Ends



Models	A	B	C	D	E	F	G
3/4"	4.41 (112)	4.05 (103)	1.17 (30)	2.66 (68)	1.33 (34)	0.88 (22)	2.05 (52)
1"	4.82 (122)	4.46 (113)	1.75 (44)	3.46 (88)	1.73 (44)	1.30 (33)	2.05 (52)

Dimensions: inches (millimeters)

In-Line A/O Stainless Steel Block Valve with Tube Ends



Models	A	B	C	D	E	F	G	H
3/4"	5.97 (152)	4.79 (122)	4.45 (113)	1.17 (30)	2.66 (68)	1.33 (34)	0.88 (22)	2.05 (52)
1"	6.38 (162)	5.22 (132)	4.84 (123)	1.75 (44)	3.46 (88)	1.73 (44)	1.30 (33)	2.05 (52)

Dimensions: inches (millimeters)



Stainless Steel Block Valves

Technical Specifications

Pressure Range

Atmosphere to 10^{-9} torr (mbar)

Main Seal Leak Rate

$< 1 \times 10^{-9}$ std cc/sec He

Body Leak Rate

$< 1 \times 10^{-10}$ std cc/sec He

Rated Cycle Life

1 million (NW16/25)

250,000 (NW40)

Conductance (molecular flow)

	NW16	NW25	NW40
Right Angle	4 l/s	12 l/s	35 l/s
Offset In-Line	4 l/s	12 l/s	35 l/s

Materials

- Valve Body – Stainless Steel 304
- Bellows – Stainless Steel T321
- O-rings, vacuum – Viton V747-75

Time to Close/Open

< 300 milliseconds

Bakeable To –

Hand-operated Valve 200° C (with valve open)
150° C (with valve closed)

Air-operated Valve 200° C without solenoid
150° C (with valve closed)
60° C with solenoid

Air Connection

$\frac{1}{8}$ in. NPT

Vacuum Connection

KF, ConFlat (rotatable) or Tube End options

Actuation

Spring closed, air open

Air Pressure – 80 psig (min) 100 psig (maximum)

Power Loss

Valve closes

Optional Remote Position Indicator

Actuator – Microswitch

Electrical Rating – 125/250 VAC, 5 amp maximum

Signal Hookup – NO or NC

Ordering Information – NW16, NW25, NW40

Size	Voltage Option	Part Number			Shipping Weight lbs. (kg)
Right Angle Block Valves		KF Flange	ConFlat Flange	Tube End	
Hand-operated					
0.75 in.		L9480301	L9480501	L9480701	0.8 (0.4)
1.0 in.		L9480302	L9480502	L9480702	0.8 (0.4)
1.5 in.		L9480303	L9480503	L9480703	1.7 (0.8)
Air-operated					
0.75 in.	without solenoid	L9481301	L9481501	L9481701	1.5 (0.7)
	110/115 VAC; 50/60 Hz	L9481311	L9481511	L9481711	1.7 (0.8)
	220/240 VAC; 50/60 Hz	L9481321	L9481521	L9481721	1.7 (0.8)
	24 VDC	L9481331	L9481531	L9481731	1.7 (0.8)
1.0 in.	without solenoid	L9481302	L9481502	L9481702	1.6 (0.7)
	110/115 VAC; 50/60 Hz	L9481312	L9481512	L9481712	1.8 (0.8)
	220/240 VAC; 50/60 Hz	L9481322	L9481522	L9481722	1.8 (0.8)
	24 VDC	L9481332	L9481532	L9481732	1.8 (0.8)
1.5 in.	without solenoid	L9481303	L9481503	L9481703	3.3 (1.5)
	110/115 VAC; 50/60 Hz	L9481313	L9481513	L9481713	3.7 (1.7)
	220/240 VAC; 50/60 Hz	L9481323	L9481523	L9481723	3.7 (1.7)
	24 VDC	L9481333	L9481533	L9481733	3.7 (1.7)
Right Angle Block Valves (with remote position indicator)					
Right Angle Block Valves (with remote position indicator)		KF Flange	ConFlat Flange	Tube End	
Air-operated					
0.75 in.	without solenoid	L9482301	L9482501	L9482701	1.8 (0.8)
	110/115 VAC; 50/60 Hz	L9482311	L9482511	L9482711	2.0 (0.9)
	220/240 VAC; 50/60 Hz	L9482321	L9482521	L9482721	2.0 (0.9)
	24 VDC	L9482331	L9482531	L9482731	2.0 (0.9)
1.0 in.	without solenoid	L9482302	L9482502	L9482702	1.9 (0.8)
	110/115 VAC; 50/60 Hz	L9482312	L9482512	L9482712	2.1 (0.9)
	220/240 VAC; 50/60 Hz	L9482322	L9482522	L9482722	2.1 (0.9)
	24 VDC	L9482332	L9482532	L9482732	2.1 (0.9)
1.5 in.	without solenoid	L9482303	L9482503	L9482703	3.6 (1.6)
	110/115 VAC; 50/60 Hz	L9482313	L9482513	L9482713	3.8 (1.7)
	220/240 VAC; 50/60 Hz	L9482323	L9482523	L9482723	3.8 (1.7)
	24 VDC	L9482333	L9482533	L9482733	3.8 (1.7)

Ordering Information – NW16, NW25, NW40

Size	Voltage Option	Part Number			Shipping Weight lbs. (kg)
Offset In-Line Block Valves					
		KF Flange	ConFlat Flange	Tube End	
Hand-operated					
0.75 in.		L9580301	L9580501	L9580701	1.2 (0.5)
1.0 in.		L9580302	L9580502	L9580702	1.3 (0.6)
Air-operated					
0.75 in.	without solenoid	L9581301	L9581501	L9581701	1.6 (0.7)
	110/115 VAC; 50/60 Hz	L9581311	L9581511	L9581711	1.8 (0.8)
	220/240 VAC; 50/60 Hz	L9581321	L9581521	L9581721	1.8 (0.8)
	24 VDC	L9581331	L9581531	L9581731	1.8 (0.8)
1.0 in.	without solenoid	L9581302	L9581502	L9581702	4.8 (2.1)
	110/115 VAC; 50/60 Hz	L9581312	L9581512	L9581712	2.0 (0.9)
	220/240 VAC; 50/60 Hz	L9581322	L9581522	L9581722	2.0 (0.9)
	24 VDC	L9581332	L9581532	L9581732	2.0 (0.9)
1.5 in.	110 VAC		L9581503	L9581703	4.8 (2.1)
Offset In-Line Block Valves (with remote position indicator)					
		KF Flange	ConFlat Flange	Tube End	
Air-operated					
0.75 in.	without solenoid	L9582301	L9582501	L9582701	1.7 (0.8)
	110/115 VAC; 50/60 Hz	L9582311	L9582511	L9582711	1.9 (0.8)
	220/240 VAC; 50/60 Hz	L9582321	L9582521	L9582721	1.9 (0.8)
	24 VDC	L9582331	L9582531	L9582731	1.9 (0.8)
1.0 in.	without solenoid	L9582302	L9582502	L9582702	2.1 (0.9)
	110/115 VAC; 50/60 Hz	L9582312	L9582512	L9582712	2.3 (1.0)
	220/240 VAC; 50/60 Hz	L9582322	L9582522	L9582722	2.3 (1.0)
	24 VDC	L9582332	L9582532	L9582732	2.3 (1.0)

Ordering Information – NW16, NW25, NW40

Description	Part Number	Shipping Weight lbs. (kg)
Spare Parts		
Replacement solenoids (fit all air-operated valves)		
110/115 VAC; 50/60 Hz	626771150	0.5 (0.2)
220/240 VAC; 50/60 Hz	626771151	0.5 (0.2)
24 VDC	626771152	0.5 (0.2)
Hand-operated spare parts kits (includes bellows and o-rings)		
³ / ₄ in. or 1 in.	L6125301	0.5 (0.2)
1 ¹ / ₂ in.	L6126301	0.5 (0.2)
Air-operated spare parts kits (includes bellows, quad ring, and o-rings)		
³ / ₄ in. or 1 in.	L6127301	0.5 (0.2)
1 ¹ / ₂ in.	L6128301	0.5 (0.2)
Optional remote position indicator (fits all Aluminum Block Valves)		
Single microswitch	L6597302	0.5 (0.2)
Dual microswitch	L6597301	0.5 (0.2)
Manual	699912040	0.5 (0.2)

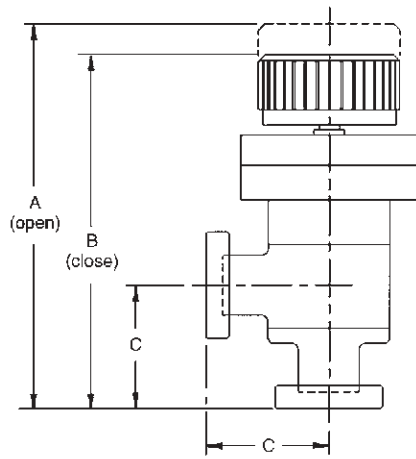
Stainless Steel Metal Bonnet Sealed Tube Valves



Wherever reliable elastomer seals are required for ultrahigh vacuum systems, the stainless steel right angle and in-line valves fit the need.

Features	Benefits
• High conductance	• Increased productivity
• 1 million cycles	• Less down time
• Metal bonnet gasket	• Reduced outgassing, to achieve lower base pressure
• Fail safe air-operated version	• System protection
• Double-lead thread stem (manual actuator)	• Fewer turns to open valve
• Kalrez® o-ring option (on request)	• Increased bakeability (to 300° C)
• Visual position indicator (standard)	• Minimizes operator error
• Remote position indicator (optional)	• System automation

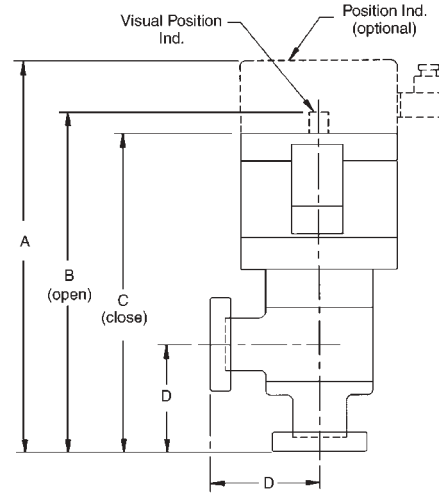
Right-Angle H/O Stainless Steel Valve



Valve Size	Size	ConFlat Flange Dimensions		
		A	B	C
3/4	1 1/3	5.08 (129)	4.38 (111)	1.50 (38)
1	2 1/8	5.50 (140)	4.80 (122)	2.04 (52)
1 1/2	2 3/4	7.22 (183)	6.10 (155)	2.47 (63)

Dimensions: inches (millimeters)

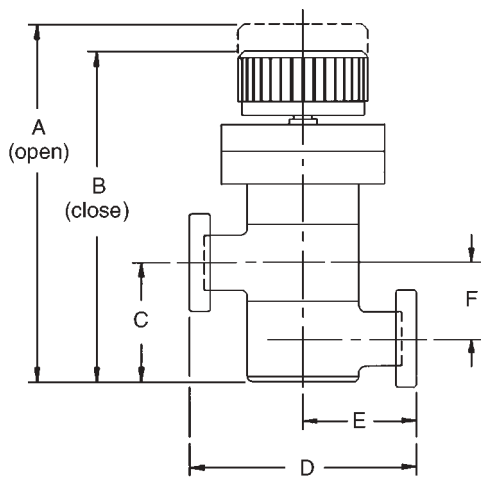
Right-Angle A/O Stainless Steel Valve



Valve Size	Size	ConFlat Flange Dimensions			
		A	B	C	D
3/4	1 1/3	6.56 (167)	5.66 (144)	5.06 (129)	1.50 (38)
1	2 1/8	6.98 (177)	6.08 (154)	5.48 (139)	2.04 (52)
1 1/2	2 3/4	8.29 (211)	7.07 (180)	6.79 (173)	2.47 (63)

Dimensions: inches (millimeters)

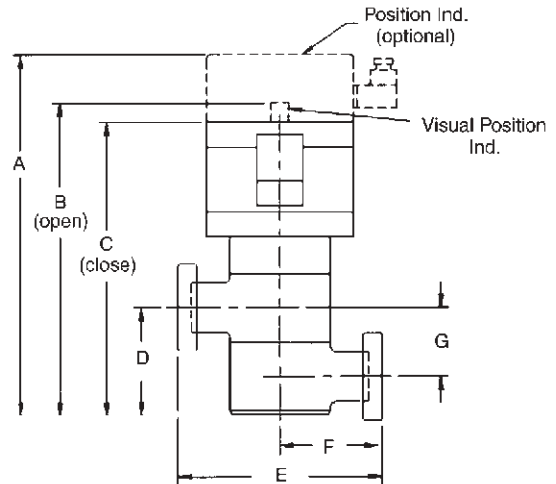
In-Line H/O Stainless Steel Valve



Valve Size	Size	ConFlat Flange Dimensions					
		A	B	C	D	E	F
3/4	1 1/3	5.21 (132)	4.51 (115)	1.63 (41)	3.00 (76)	1.50 (38)	1.06 (27)
1	2 1/8	5.46 (139)	4.76 (121)	2.01 (51)	4.08 (104)	2.04 (52)	1.31 (33)
1 1/2	2 3/4	7.97 (202)	6.75 (171)	3.32 (84)	4.94 (126)	2.47 (63)	2.00 (51)

Dimensions: inches (millimeters)

In-Line A/O Stainless Steel Valve



Valve Size	Size	ConFlat Flange Dimensions						
		A	B	C	D	E	F	G
3/4	1 1/3	6.70 (170)	5.80 (147)	5.20 (132)	1.63 (41)	3.00 (76)	1.50 (38)	1.06 (27)
1	2 1/8	6.94 (176)	6.04 (153)	5.44 (138)	2.01 (51)	4.08 (104)	2.04 (52)	1.31 (33)
1 1/2	2 3/4	9.04 (230)	7.82 (199)	7.54 (192)	3.32 (84)	4.94 (126)	2.47 (63)	2.00 (51)

Dimensions: inches (millimeters)

Stainless Steel Metal Bonnet Sealed Tube Valves

Technical Specifications

Vacuum Range

Atmosphere to below 1×10^{-10} torr (mbar) range

Leak Rate

No leak detectable with a helium mass spectrometer leak detector with a sensitivity of $< 1 \times 10^{-9}$ std cc/sec

Conductance

	3/4 in.	1 in.	1 1/2 in.
Right Angle	8 l/s	13 l/s	46 l/s
In-Line	7 l/s	12 l/s	37 l/s

Bakeable To (with valve open)

Hand-operated valve: 225° C

Air-operated valve: 225° C – solenoid removed

Rated Cycle Life

1 million (3/4 in., 1 in.)

250,000 (1 1/2 in.)

Mounting Positions

Valve can be mounted in any orientation and sealed against atmospheric pressure at either port

Air Pressure

3/4 in., 1 in. 50 to 100 PSIG

1 1/2 in. 60 to 100 PSIG

Temperature Limit, Continuous Operation (Kalrez seal)

Hand-operated valve: 225° C

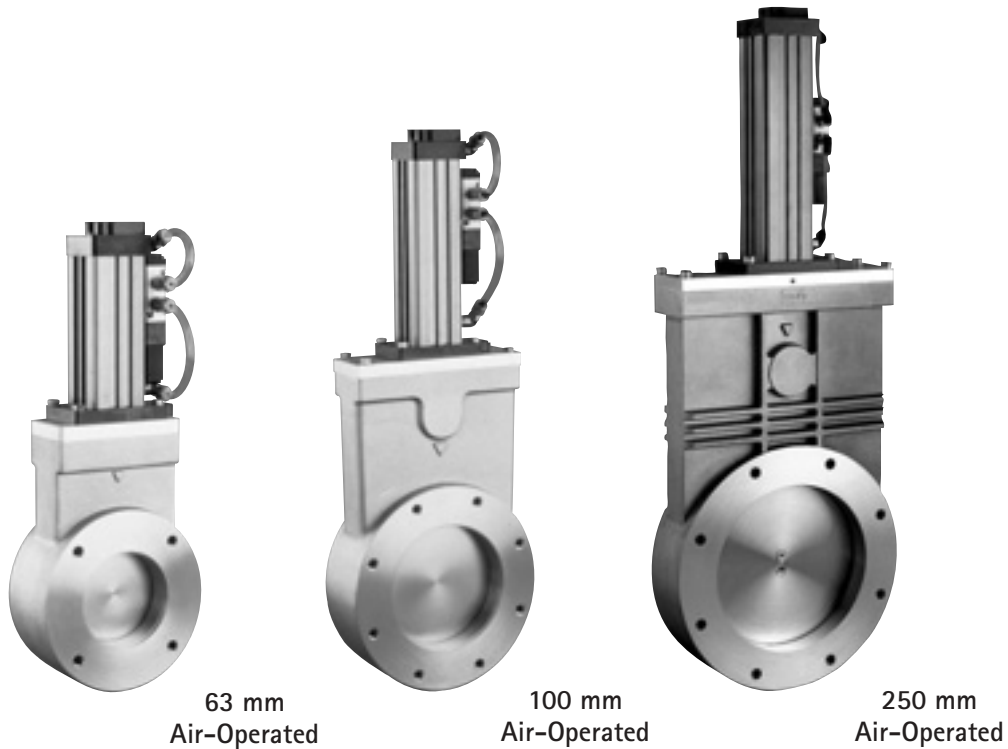
Air-operated valve: 180° C – solenoid removed or used remotely

Ordering Information

Description	Solenoid	Part Number	Shipping Weight lbs. (kg)
3/4 in. Right-Angle SST Valves			
Hand-operated			
1.33 in. CFF		L9240305	2.0 (0.9)
Air-operated			
1.33 in. CFF	NONE	L9240315	2.0 (1.4)
Air-operated with solenoid			
1.33 in. CFF	110 V	L9240325	3.0 (1.4)
	220 V	L9240330	3.0 (1.4)
	24 VDC	L9240335	3.0 (1.4)
Air-operated with solenoid & position indicator			
1.33 in. CFF	110 V	L9240345	3.0 (1.4)
	220 V	L9240350	3.0 (1.4)
	24 VDC	L9240355	3.0 (1.4)
1 in. Right-Angle SST Valves			
Hand-operated			
2.12 in. CFF		L9260305	2.0 (0.9)
Air-operated			
2.12 in. CFF	NONE	L9260315	3.0 (1.4)
Air-operated with solenoid			
2.12 in. CFF	110 V	L9260325	3.0 (1.4)
	220 V	L9260330	3.0 (1.4)
	24 VDC	L9260335	3.0 (1.4)
Air-operated with solenoid & position indicator			
2.12 in. CFF	110 V	L9260345	3.0 (1.4)
	220 V	L9260350	3.0 (1.4)
	24 VDC	L9260355	3.0 (1.4)
1 1/2 in. Right-Angle SST Valves			
Hand-operated			
2.75 in. CFF		L6591301	6.0 (2.7)
Air-operated			
2.75 in. CFF	NONE	L6591303	7.0 (3.2)
Air-operated with solenoid			
2.75 in. CFF	110 V	L6591320	7.0 (3.2)
	220 V	L6591325	7.0 (3.2)
	24 VDC	L6591330	7.0 (3.2)
Air-operated with solenoid & position indicator			
2.75 in. CFF	110 V	L6591305	8.0 (3.6)
	220 V	L6591343	8.0 (3.6)
	24 VDC	L6591348	8.0 (3.6)

Ordering Information			
Description	Solenoid	Part Number	Shipping Weight lbs. (kg)
3/4 in. In-Line SST Valves			
Hand-operated			
1.33 in. CFF	-	L9250305	2.0 (0.9)
Air-operated			
1.33 in. CFF	NONE	L9250315	3.0 (1.4)
Air-operated with solenoid			
1.33 in. CFF	110 V	L9250325	3.0 (1.4)
	220 V	L9250330	3.0 (1.4)
	24 VDC	L9250335	3.0 (1.4)
Air-operated with solenoid & position indicator			
1.33 in. CFF	110 V	L9250345	3.0 (1.4)
	220 V	L9250350	3.0 (1.4)
	24 VDC	L9250355	3.0 (1.4)
1 in. In-Line SST Valves			
Hand-operated			
2.12 in. CFF	-	L9270305	2.0 (0.9)
Air-operated			
2.12 in. CFF	NONE	L9270315	3.0 (1.4)
Air-operated with solenoid			
2.12 in. CFF	110 V	L9270325	3.0 (1.4)
	220 V	L9270330	3.0 (1.4)
	24 VDC	L9270335	3.0 (1.4)
Air-operated with solenoid & position indicator			
2.12 in. CFF	110 V	L9270345	4.0 (1.8)
	220 V	L9270350	4.0 (1.8)
	24 VDC	L9270355	4.0 (1.8)
1 1/2 in. In-Line SST Valves			
Hand-operated			
2.75 in. CFF	-	L8679301	7.0 (1.8)
Air-operated			
2.75 in. CFF	NONE	L8679303	7.0 (1.8)
Air-operated with solenoid			
2.75 in. CFF	110 V	L8679320	7.0 (1.8)
	220 V	L8679325	7.0 (1.8)
	24 VDC	L8679330	7.0 (1.8)
Air-operated with solenoid & position indicator			
2.75 in. CFF	110 V	L8679305	8.0 (1.8)
	220 V	L8679343	7.0 (1.8)
	24 VDC	L8679348	7.0 (1.8)
Accessories			
Solenoids for 3/4 in., 1 in. and 1 1/2 in. Valve	110/120 V, 50/60 Hz	626771173	0.5 (0.2)
	220/240 V, 50/60 Hz	626771174	0.5 (0.2)
	24 VDC	626771175	0.5 (0.2)
Optional position indicator micro switch	Standard 125 VAC	L6597301	1.0 (0.5)
Spare Parts			
3/4 in. and 1 in. valves			
Metal Bonnet and Viton main seal		L6680302	0.3 (0.1)
Viton Bonnet and Viton main seal		L6681302	0.3 (0.1)
Replacement bellows		L9252001	1.0 (0.5)
1 1/2 in. Valves			
Metal Bonnet and Viton main seal		L6680301	0.3 (0.1)
Viton Bonnet and Viton main seal		L6681301	0.3 (0.1)
Replacement bellows		L6577001	1.0 (0.5)
Reed switch P/I		L9996301	1.0 (0.5)
Reed switch P/I with trim assembly		L9976301	2.0 (1.0)
Manual		699912042	0.5 (0.2)

GateKeeper Aluminum Gate Valves



The GateKeeper Series Aluminum Gate Valves are economical, reliable vacuum shut-off devices designed and manufactured by Varian. The valves provide a low-cost, low-particle, low profile means of isolating a high vacuum pump, and are a less expensive alternative to stainless steel valves.

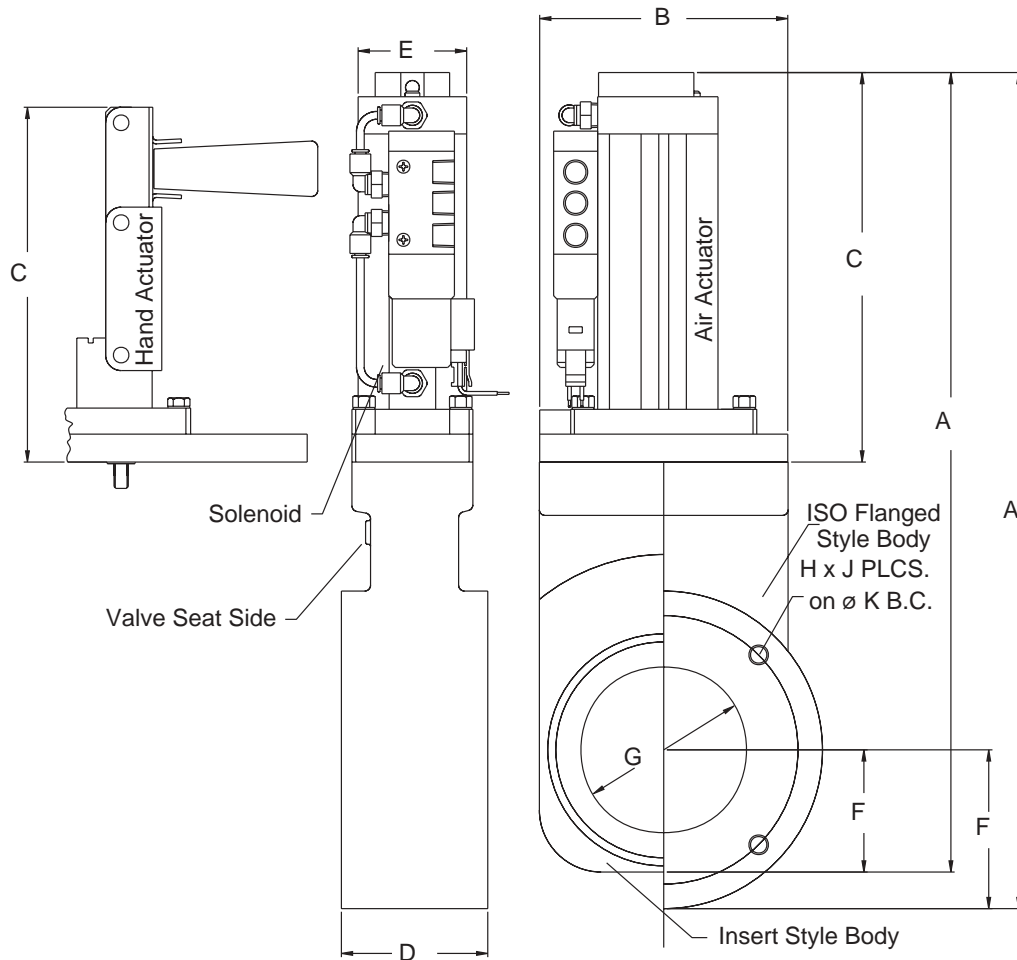
The GateKeeper Series valve design employs a cast aluminum body, a linear drive mechanism, a counter-plate sealing mechanism, and an elastomer shaft seal. The result is a clean, economical, smoothly actuated valve. The body is cast using the VaPore® process which tightly controls each material input and process step to deliver a casting that is free of porosity. A reliable high vacuum shaft seal eliminates the need for a bellows.

The linear drive and counter-plate sealing mechanism have been designed to minimize metal-on-metal contact. The assembly is an elegant mechanism that uses a small number of precision-machined components. The required sealing forces are generated with a minimum of moving parts, and without adjustment screws. As a result, very few particles are generated within the valve.

The Varian aluminum gate valve has a small flange face-to-face profile. ISO/F flange details are machined into the cast body to provide the convenience of standard ISO claw clamp connections.

Features	Benefits
• Cast aluminum body using VaPore process for vacuum integrity	• Low-cost, lightweight, high vacuum compatible valve
• High vacuum shaft seal – no bellows	• Trouble-free operation
• Extruded aluminum air cylinder with internal dampening to reduce shock	• High cycle life
• Precision ball bearings guided in contoured ramps	• Quiet, low vibration valve actuation
• Seal plate assembly traveling on guide rails – no rollers contacting aluminum casting	• Very low particle generation
• No seal plate adjusting screws that wear into the aluminum casting	
• No adjustments required to provide the necessary sealing force	• Highly repeatable, long-lasting seal
• Small flange face-to-face dimension	• Convenience for system design and installation
• Remote and visual position indication switches	• Ease of operation

Gate Keeper Aluminum Gate Valve



Valve Style	Overall Length A	Overall Width B	Actuator Height C	Flange Width D	Actuator Width E	Opening to End F	Opening Dia. G	Thread Size H	Number of Holes J	Bolt Circle Dia. K
63mm ISO flange A/O	13.48	4.00	6.28	2.36	1.75	2.56	2.67	M8x1	4	4.33
63mm ISO flange H/O	13.50	4.00	6.30	2.36	1.75	2.56	2.67	M8x1	4	4.33
63mm Insert body A/O	12.89	4.00	6.28	1.26	1.75	1.97	2.67	N/A	N/A	N/A
63mm Insert body H/O	12.91	4.00	6.30	1.26	1.75	1.97	2.67	N/A	N/A	N/A
100mm ISO flange A/O	18.00	6.00	7.82	2.36	1.75	3.25	3.94	M8x1	8	5.71
100mm ISO flange H/O	17.34	6.00	7.16	2.36	1.75	3.25	3.94	M8x1	8	5.71
100mm Insert body A/O	17.55	6.00	7.82	1.26	1.75	2.78	3.94	N/A	N/A	N/A
100mm Insert body H/O	16.89	6.00	7.16	1.26	1.75	2.78	3.94	N/A	N/A	N/A
160mm ISO flange A/O	24.29	8.46	9.73	2.36	2.05	4.43	6.02	M10x1.5	8	7.87
160mm ISO flange H/O	24.10	8.46	9.54	2.36	2.05	4.43	6.02	M10x1.5	8	7.87
250mm ISO flange A/O	39.92	13.50	16.23	3.15	3.02	6.46	10.25	M10x1.5	12	12.20
4 in. ASA flange A/O	24.29	8.46	9.73	2.36	2.05	4.43	6.02	5/8-11	8	7.50
4 in. ASA flange H/O	24.10	8.46	9.54	2.36	2.05	4.43	6.02	5/8-11	12	12.20

Dimensions: inches (millimeters)



GateKeeper Aluminum Gate Valves

Technical Specifications				
	63 mm	100 mm	160 mm/4 in. ASA	250 mm
Vacuum range	Atmosphere to below 1×10^{-7} torr			
Sealing mechanism type	Linear drive with seal plate and backing plate			
Feedthrough type	Viton shaft seal			
Leak rates	Valve Body: $< 1 \times 10^{-9}$ std cc/sec helium Main Seal: $< 1 \times 10^{-9}$ std cc/sec helium			
Seal materials	Gate: Viton Bonnet: Viton			
Pneumatic operation	Actuation: Compressed Air (80 to 120 psi) Normally closed; valve closes on power loss			
Open/close	<2 seconds			
Conductance @ molecular flow	550 l/s	2,000 l/s	7,000 l/s	26,000 l/s
Flanges (ISO/F bolted tapped)	NW63	NW100	NW160	NW250
Mounting position	Any			
Bakeable to -	Valve Body: 150° C			
Pneumatic actuator and solenoid	80° C			
Cycles before first service	100,000			
Position indication	Remote standard			

Ordering Information

Size	Solenoid	Part Number	Shipping Weight lbs. (kg)
ISO flanged versions			
63 mm (2.5 in.)		VGA063IM	7.0 (2.9)
100 mm (4 in.)		VGA100IM	10.0 (4.2)
160 mm (6 in.)		VGA160IM	16.0 (6.7)
Pneumatically Operated without solenoid			
63 mm (2.5 in.)		VGA063IEP	7.0 (2.9)
100 mm (4 in.)		VGA100IEP	10.0 (4.2)
160 mm (6 in.)		VGA160IEP	16.0 (6.7)
250 mm (10 in.)		VGA250IEP	48.0 (20.0)
Pneumatically Operated with Solenoid (see below for ordering information)*			
63 mm (2.5 in.)		VGA063IExxxP*	7.0 (2.9)
100 mm (4 in.)		VGA100IExxxP*	10.0 (4.2)
160 mm (6 in.)		VGA160IExxxP*	16.0 (6.7)
250 mm (10 in.)		VGA250IExxxP*	48.0 (20.0)
ASA flanged versions			
Manually Operated			
4 in. ASA		VGA4AM	10.0 (4.2)
Pneumatically Operated without solenoid			
4 in. ASA		VGA4AEP	10.0 (4.2)
Pneumatically Operated with Solenoid (see below for ordering information)*			
4 in. ASA		VGA4AExxxP*	10.0 (4.2)
Insertable versions			
Manually Operated			
63 mm (2.5 in.)		VGA063NM	4.8 (2.0)
100 mm (4 in.)		VGA100NM	7.3 (3.0)
Pneumatically Operated without solenoid			
63 mm (2.5 in.)		VGA063NEP	4.8 (2.0)
100 mm (4 in.)		VGA100NEP	7.3 (3.0)
Pneumatically Operated with Solenoid (see below for ordering information)*			
63 mm (2.5 in.)		VGA063NExxxP*	4.8 (2.0)
100 mm (4 in.)		VGA100NExxxP*	7.3 (3.0)

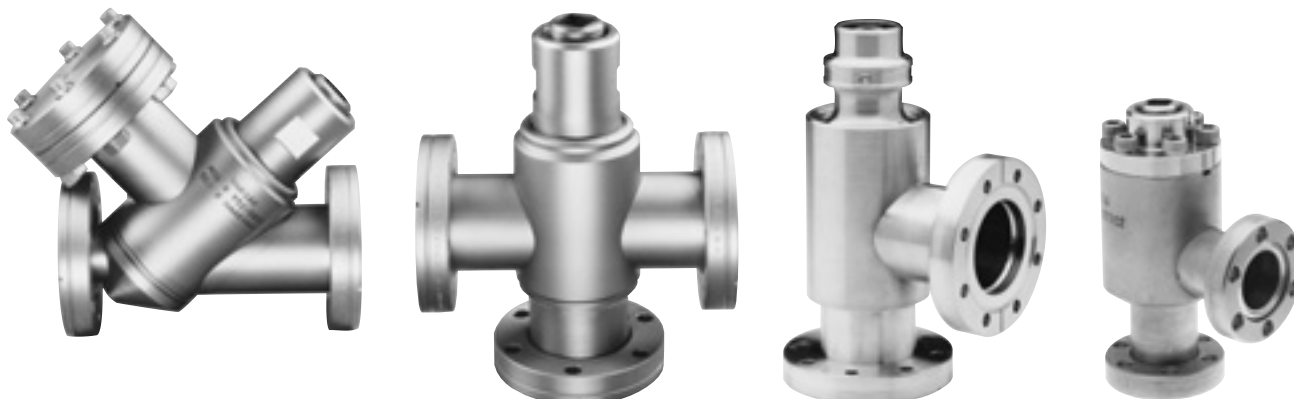
* Replace xxx in Part Number with Solenoid Voltage Rating
Example: VGA063IE115P

115V AC	xxx=115
220V AC	xxx=220
24V DC	xxx=24D

Ordering Information

Description	Part Number	Shipping Weight lbs. (kg)
Spare Seals Kits (includes gate, stem (shaft) and bonnet seals)		
63 mm (2.5 in.)	VGA063SEALS	1.0 (0.5)
100 mm (4 in.)	VGA100SEALS	1.0 (0.5)
160 mm (6 in.)	VGA160SEALS	1.0 (0.5)
250 mm (10 in.)	VGA250SEALS	1.0 (0.5)

UHV All-Metal Valves



Varian all-metal bakeable valves are designed for use in ultra-high vacuum systems where bake-out temperatures up to 450° C preclude the use of elastomers and low melting temperature metals. The simplicity of the all-metal design,

which employs the Varian ConFlat® flange sealing principle, assures a low maintenance unit giving maximum reliability and vacuum sealing from atmospheric pressure to below 10⁻¹¹ torr (mbar).

Technical Specifications

Vacuum Range

Atmosphere to 10⁻¹¹ torr (mbar)

Total Leak Rate

<1 x 10⁻¹⁰ standard cc/sec (helium)

Bakeable To –

400° C (¾ in. mini (NW16 CF) valve)

450° C (all others)

Conductance

¾ in. 5 l/s

1½ in. T 40 l/s

1½ in. R/A 36 l/s

1½ in. Straight through 22 l/s

2½ in. 118 l/s

Gasket Cycle Life

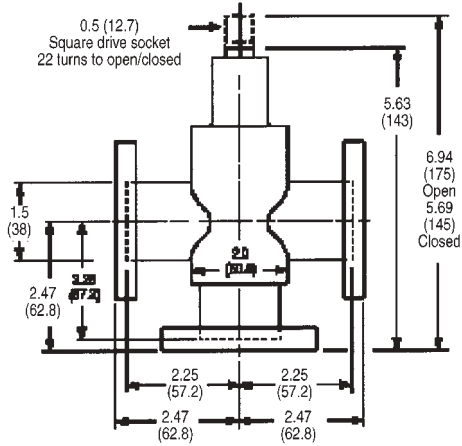
400, 450 °C 30 cycles

Room Temperature 300 cycles

Ordering Information

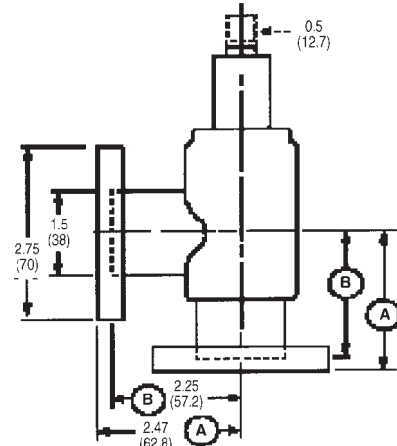
Description	Part Number	Shipping Weight lbs. (kg)
1½ in. Straight-through valve with 2¾ in. (NW35) CFF, 0.9 in. minimum optical path	9515052	9.0 (4.0)
¾ in. Right angle valve with mini (NW16) CFF	9515014	2.0 (0.9)
1½ in. Valve with 2¾ in. (NW35) CFF		
Right angle valve	9515027	7.0 (3.2)
Tee valve	9515017	8.0 (3.6)
2½ in. Valve with 4½ in. (NW63) CFF right angle valve	9515032	17.0 (7.7)
Spare Parts		
Replacement main seal gasket		
For ¾ in. valve (2/pkg)	9530079	0.5 (0.2)
For 1½ in. valve (3/pkg)	9535033	0.5 (0.2)
For 2½ in. valve (1/pkg)	9535039	1.0 (0.5)
Replacement bonnet gasket for ¾ in. valve	9530080	0.5 (0.2)
Repair Kits		
For ¾ in. valve with screw & nut, lubricant, main seal, and bonnet gasket	9620013	5.0 (2.3)
For 1½ in. valve with main seal gasket, washers, special screw, screw socket, retractor screw, and lubricant	9620012	5.0 (2.3)
For 2½ in. valve with main gasket and lubricant	Q2721301	5.0 (2.3)

**1 1/2 in. (2.75 CFF) Valve/Rotatable Flange on all Ports
9515017**



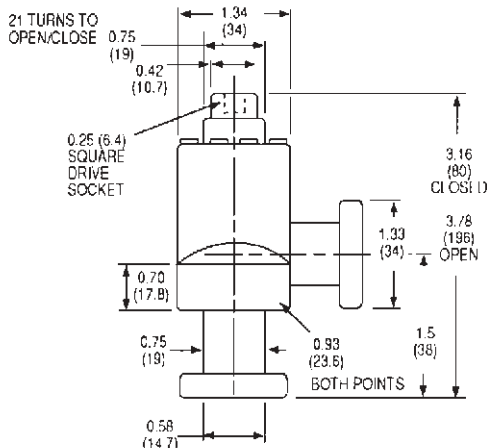
Dimensions: inches (millimeters)

**1 1/2 in. (2.75 CFF) Valve/Rotatable Flange on all Ports
9515027**



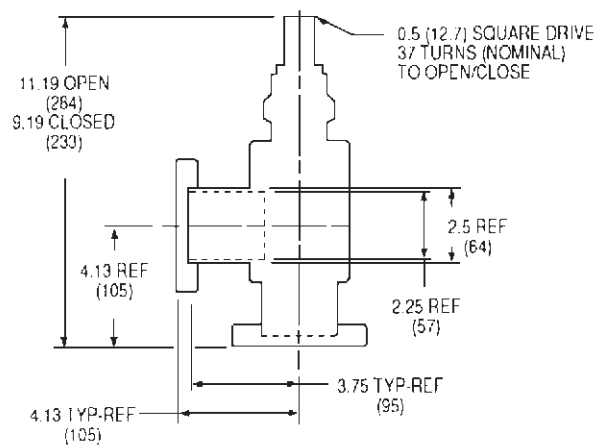
Dimensions: inches (millimeters)

**3/4 in. (1.33 CFF) Valve/Rotatable Flange on all Ports
9515014**



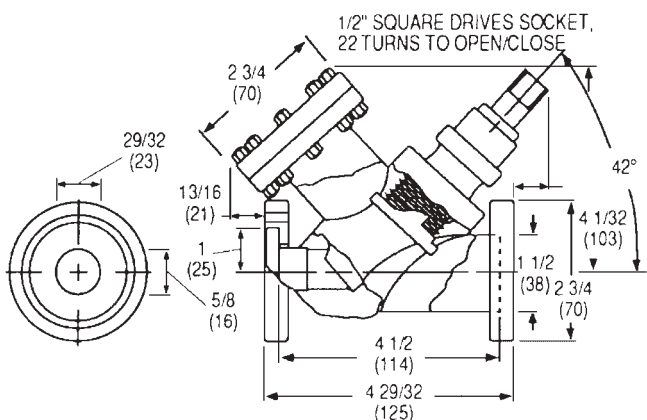
Dimensions: inches (millimeters)

**2 1/2 in. Valve/Rotatable Flange on all Ports
9515032**



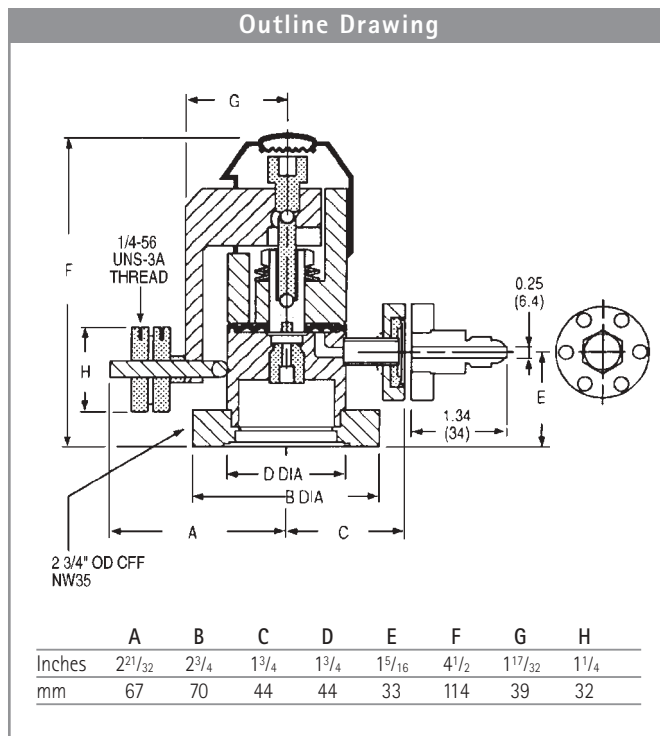
Dimensions: inches (millimeters)

**1 1/2 in. (2.75 CFF) Valve, 0.9 in. Minimum Optical Path
9515052**



Dimensions: inches (millimeters)

Variable Leak Valve



The variable leak valve includes a movable piston with an optically flat sapphire that meets a captured metal gasket. This forms a seal completely free from friction, seizing, and shear. The sapphire's movement is controlled through a threaded shaft-and-lever mechanism which provides a mechanical advantage of 13,000 to 1.

Technical Specifications

Controlled Leak Rate

10⁻¹⁰ torr-l/sec (minimum)

Vacuum Range

Atmosphere to below 10⁻¹¹ torr (mbar)

Leak Rate

No leak detectable on a helium mass spectrometer leak detector with sensitivity of 1 x 10⁻¹⁰ std cc/sec

Max Flow Conductance

6 l/m

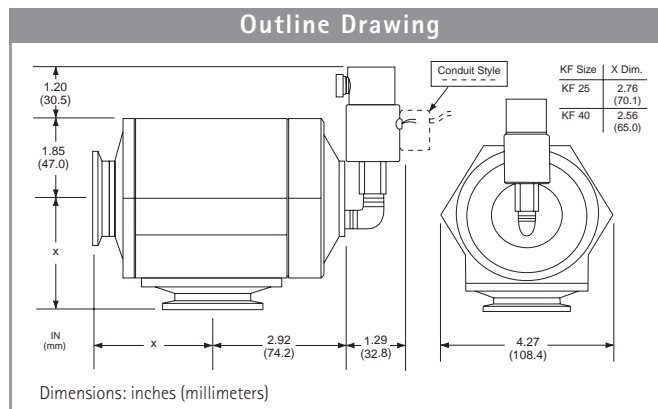
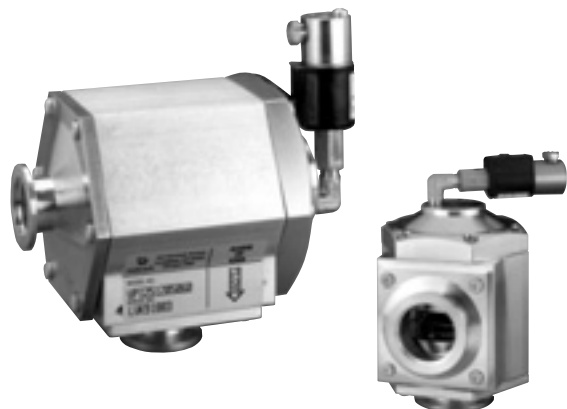
Bakeable To –

450° C

Ordering Information

Description	Part Number	Shipping Weight lbs. (kg)
Sapphire-sealed variable leak valve and valve adjustment tools		
With 1 ¹ / ₃ in. (NW16) CFF gas inlet	9515106	4.0 (1.8)
Adapter kit, 1 ¹ / ₃ in. (NW16) CFF-to-flare-fitting adapter kit	9515117	1.0 (0.5)
Replacement gasket assembly	9535050	0.3 (0.1)
Replacement sapphire assembly	9530072	1.0 (0.5)
Sapphire removal tool	SR0061417400	0.5 (0.2)
Repair and tool kit includes fine screw assembly, handle, and collar adjusting knobs and spring driver assembly springs, sapphire assembly and gasket removal tool, brush, lubricant, 1/4 and 5/16 hex key wrenches and instruction manual	9620014	5.0 (2.3)

Vacuum Pump Isolation Valve (VPI)



Protection for Your Vacuum System

The VPI is electrically connected in parallel with your mechanical pump, and closes rapidly when power is interrupted to prevent oil backstreaming or particle migration into your vacuum system. The valves also vent the pump from the inlet side to push any debris towards the outlet, thereby preventing it from being swept into the system when pumping is restarted. The body design and right-angle configuration provide maximum conductance.

Technical Specifications

Materials	Body: 6061-T6 Aluminum Piston: 2024 Aluminum Seals: Viton
Leak Rate	Body and Seal: $<1 \times 10^{-9}$ std cc/sec He
Closing time	<30 milliseconds
Power	7 watts @ 115 VAC
Temperature Range	Valve: 0° to 100° C, Solenoid 0° to 50° C

Features	Benefits
<ul style="list-style-type: none"> Lock-over-center mechanism Fast-acting: valve closes in less than 30 milliseconds 	<ul style="list-style-type: none"> Reliable, repeatable seals
<ul style="list-style-type: none"> Provides venting of the pump at the pump inlet 	<ul style="list-style-type: none"> Immediate protection of your vacuum system from oil or contaminant migration in the event of power failure Flow direction is maintained; oil/debris are not swept into the system
<ul style="list-style-type: none"> Remains closed until pump inlet pressure returns to system pressure Operates with atmospheric pressure and is activated upon loss of electrical power Provides maximum conductance 	<ul style="list-style-type: none"> Continued protection and easy restart No compressed air required for operation No reduction of pumping speed

Ordering Information

Description	Voltage	Part Number	Shipping Weight lbs. (kg)
NW25	120VAC	VPI251205060	5 (2.3)
	133VAC	VPI251335060	5.0 2.3
	220VAC	VPI252205060	5.0 2.3
	266VAC	VPI252665060	5.0 2.3
NW40	120VAC	VPI401205060	5.0 2.3
	133VAC	VPI401335060	5.0 2.3
	220VAC	VPI402205060	5.0 2.3
	266VAC	VPI402665060	5.0 2.3
Accessories			
Piston Kit, NW25		VPI25PSTNKIT	1.0 (0.5)
Rebuild Kit, NW25		VPI25RBLDKIT	1.0 (0.5)
Piston Kit, NW40		VPI40PSTNKIT	1.0 (0.5)
Rebuild Kit, NW40		VPI40RBLDKIT	1.0 (0.5)
Replacement Solenoid	120VAC	VPISOL1205060	1.0 (0.5)
	133VAC	VPISOL1335060	1.0 (0.5)
	220VAC	VPISOL2205060	1.0 (0.5)
	266VAC	VPISOL2665060	1.0 (0.5)
Seals Kit, NW25/40		VPISEALSKIT	1.0 (0.5)