



Valve

Solutions

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R Series Gate Valve

ROUGHING PUMP ISOLATION FOR SEMICONDUCTOR SUB-FAB AND GENERAL VACUUM APPLICATIONS

MKS Instruments, a leader in high reliability and high performance vacuum isolation and pressure control valves, introduces the R Series Gate Valve product line.

The MKS R Series Gate Valve is optimized for isolation of roughing pumps and roughing lines in both semiconductor and general vacuum applications. The R Series is available with a range of options, including pneumatic and manual actuators, lock out tag out capability, and soft-pump bypass to eliminate turbulence and associated particle generation during pumpdown from atmosphere. The R Series employs an elastomer shaft seal for the actuator seal, which enables high performance in a cost effective, high value package for roughing vacuum applications. The stainless steel version of the R Series Gate valve is available in DN80, DN100, and DN160 sizes.

Features & Benefits

Complete Roughing Pump Isolation Solution

- Cost effective
- High value

High Performance Heating Option

- Excellent temperature uniformity ensures no cold spots on internal surfaces
- Prevents condensation of effluents and corrosive gases

Advanced Soft-Pump Bypass Options

- Allows roughing pump to stay in operation during foreline maintenance
- Enables gradual foreline pump down from atmosphere
- Eliminates turbulence and associated particle generation during pump down

High Reliability and Long Cycle Life

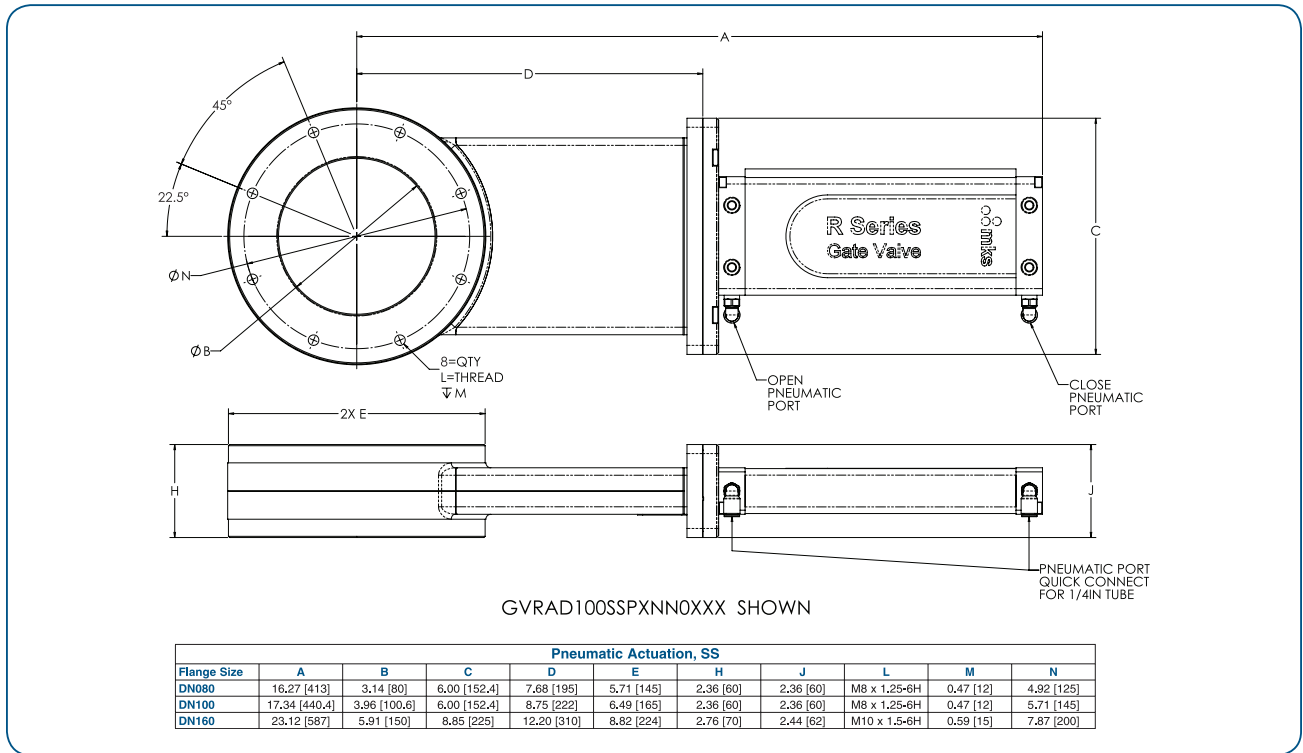
- DN80 and DN100 > 200,000 cycles
- DN160 > 100,000 cycles

Flexible Sizing and Configuration

- Stainless steel and aluminum versions
- DN80, DN100 and DN160mm sizes available

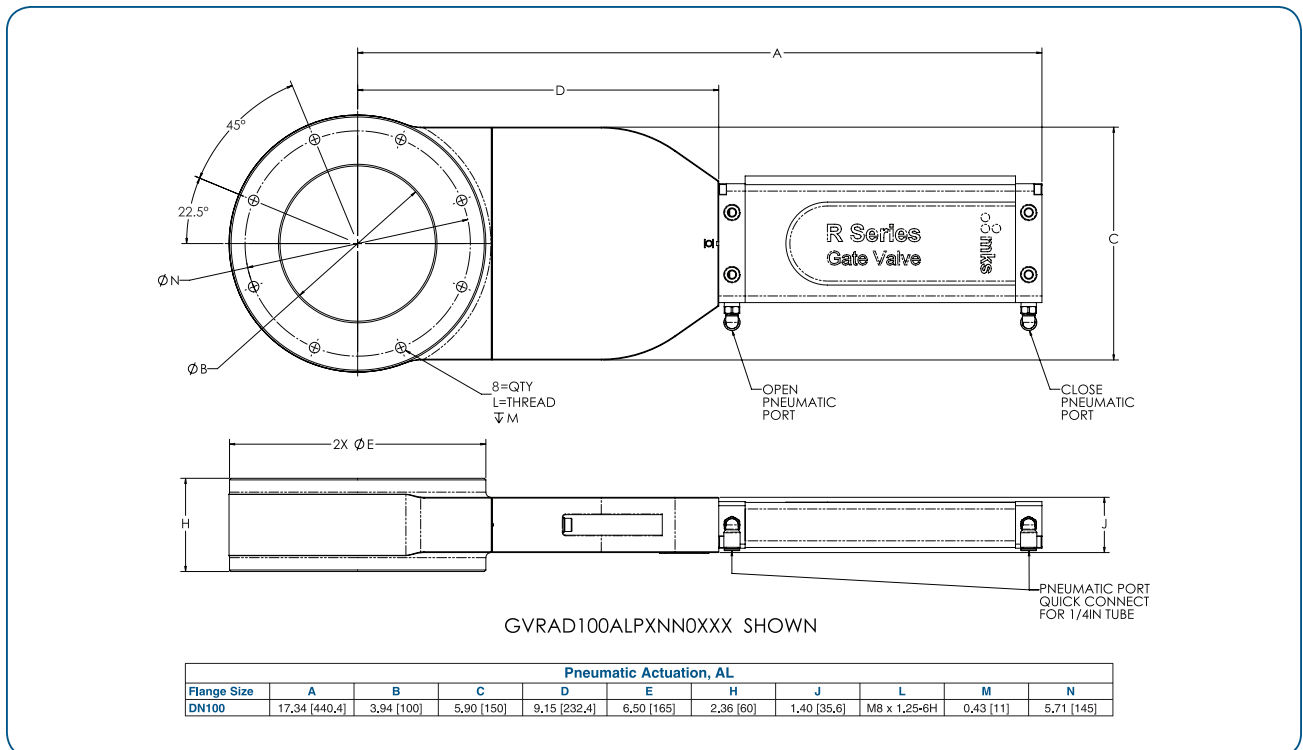


MKS R Series Gate Valve is available in both Aluminum and Stainless Steel configurations.



Stainless Steel Gate Valve with Pneumatic Actuator

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

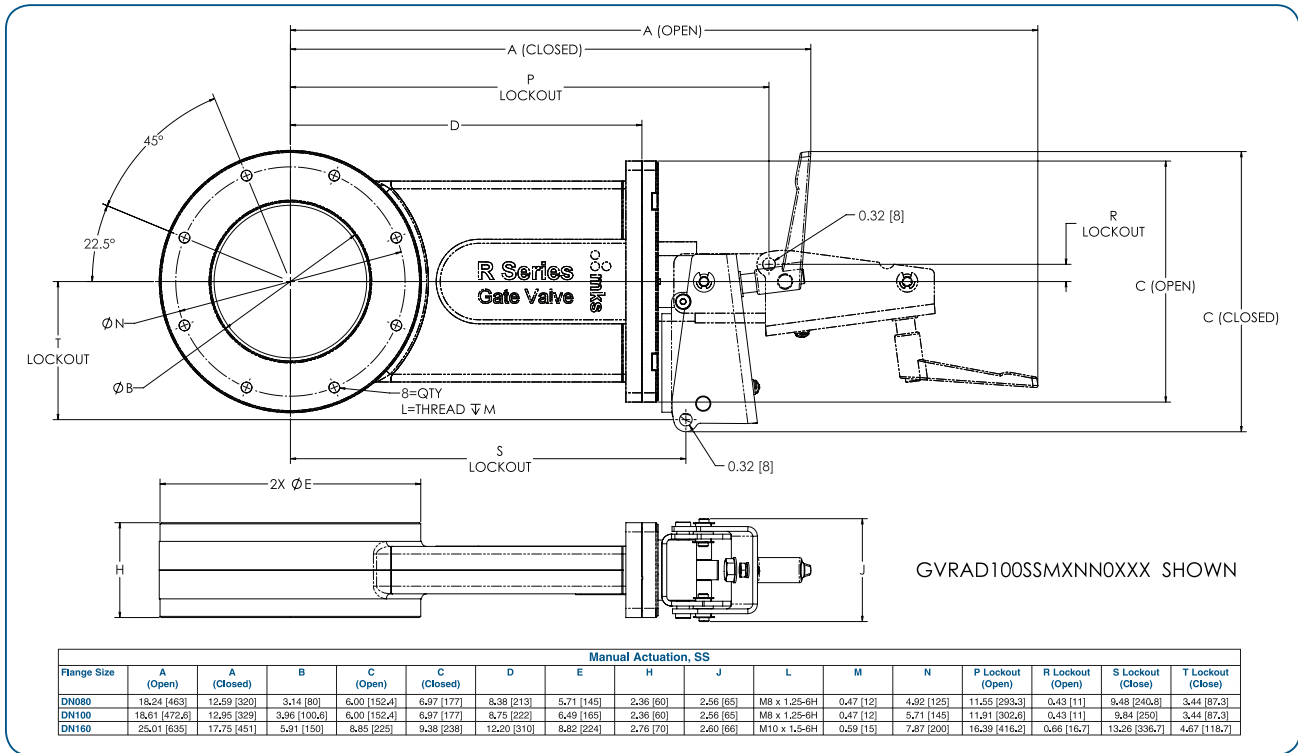


Aluminum Gate Valve with Pneumatic Actuator

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).



Dimensional Drawings



Stainless Steel Gate Valve with Manual Actuator

Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

Specifications

Leak Rate

Side to Side $1 * 10^{-9}$ atm*cc/sec
 External $1 * 10^{-9}$ atm*cc/sec

Pressure Range

Pressure $1 * 10^{-7}$ to 1200 Torr ($1.3 * 10^{-10}$ - 1.6 bar)
 Max Delta P (Closed) 1.6 atm, either direction
 Max Delta P (Operating) 1200 Torr (1.6 bar) chamber side high
 < 22.5 Torr (30 mbar) pump side high*

*Valve is operable up to 760 Torr (1 bar) chamber side high, but cycle life will be reduced with operation > 30 mbar.

Wetted Materials

Stainless Steel 304L SS, 316L SS, 440C SS, Krytox LVP
 Aluminum 6061 AL, 304L SS, 316L SS, 440C SS, Krytox LVP

Seals

Standard Viton® (FKM)
 Optional Chemraz®, Kalrez® compounds

Temperature

Body Temperature
 Viton Seals 10°C to 105°C
 Optional Seals 10°C to 150°C
 Actuator Temperature 10°C to 80°C
 Solenoid Temperature 10°C to 50°C

Actuation Type

Double acting pneumatic or manual

Actuation Time

< 2 sec

Actuator Seal

Elastomer shaft seal

Maintenance

DN80: 200,000 cycles before maintenance
 DN100: 200,000 cycles before maintenance
 DN160: 100,000 cycles before maintenance
 MTTR: 15 minutes; Can be serviced without removal from vacuum system

Pneumatic Pressure

5.4 ± 1.3 atm (80 \pm 20 psig)

Limit Switch

Magnetic Reed Switch: Current rating < 80mA



Ordering Information

Example: GVRAD100SSPVNN20	Code	Example Configuration
Type GVRA	GVRA	GVRA
Valve Bore/Flange Size		
DN80	D080	D100
DN100	D100	
DN160	D160	
Material		
Stainless Steel	SS	SS
Aluminum ¹	AL	
Actuation		
Pneumatic	P	P
Manual	M	
Seal Materials		
Viton/FKM	V	V
Chemraz E38	C	
Chemraz 592	D	
Kalrez 4079	L	
Kalrez 8085	K	
Kalrez 9100	M	
Kalrez 9500	N	
Bypass Option¹		
None	N	N
4mm (Flow Orifice Diameter)	4	
6mm (Flow Orifice Diameter)	6	
8mm (Flow Orifice Diameter)	8	
Limit Switches²		
None	N	N
Limit Switch (Both Switches Normally Open)	L	
Limit Switch (Both Switches Normally Closed)	C	
Limit Switch (Valve Open Continuity) ³	D	
Limit Switch (Valve Closed Continuity) ⁴	E	
Solenoids⁵		
None	0	2
24 VDC	2	
120 VAC 50/60 Hz	5	
Heating Options		
Heatable to 105°C	0	0
Heatable to 150°C	1	

Note 1: Contact MKS Applications - available in limited configurations.

Note 2: Switches have 2m long, unterminated flying leads.

Note 3: Both limit switches have continuity when valve is in Open Position.

Note 4: Both limit switches have continuity when valve is in Closed Position.

Note 5: Contact MKS Applications for alternate solenoid configurations.



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