

# BGV STAINLESS STEEL GATE VALVE MANUAL AND PNEUMATIC

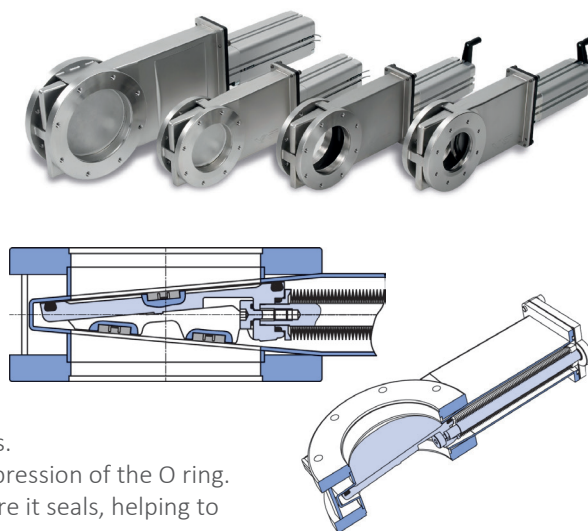
[edwardsvacuum.com](http://edwardsvacuum.com)

**Edwards BGV gate valves are bellows sealed stainless steel gate valves for use in applications which require high leak tightness and a minimum of hydrocarbons in the vacuum system. Although principally designed for the isolation of pumps in the semiconductor fab basement, BGV gate valves are also ideal in other applications where a 1 bar differential at opening is desirable.**

They are designed for use in the pressure range of 1.2 bar absolute to  $1 \times 10^{-8}$  mbar ( $1.2 \times 10^5$  to  $1 \times 10^{-6}$  Pa). BGV gate valves will withstand 1.2 bar absolute in either direction allowing the vacuum line above the pump to be vented with the valve closed.

The simple but innovative wedge sealing mechanism, incorporating PEEK gliders, make the valve especially suited to applications with high levels of process by-product in the gas stream:

- No oil, grease or complex moving parts within the valve, removing the risk of damage to the mechanism due to contamination from process debris.
- PEEK gliders provide no metal-to-metal contact and act to control the compression of the O ring.
- As the gate closes the O ring brushes across the sealing surface briefly before it seals, helping to clean debris from the sealing surface thus giving a better seal.



BGV gate valves are available with a choice of manual or pneumatic actuation. The BGV manual valves have a visual indication of the gate position on the side of the assembly to show when it is open.

The BGV Mk2 pneumatic variant has reed switches which can be used by your control equipment to determine if the valve is open or closed, these also contain LEDs providing a visual display of the valve position. Each BGV Mk2 pneumatic valve is fitted with a 24 V a.c./d.c. solenoid and pre-wired plug for direct connection to your Edwards latest generation vacuum pump. This 15-way "D" plug offers a single point of connection for both power to the solenoid and the signal from the reed switch position indicators.

Able to withstand 1.2 bar absolute in either direction  
**Avoiding re-start issues by keeping the pump running during maintenance**

Pneumatic solenoid and pre-wired option  
Pre-configured simple 'plug and play' installation

Stainless steel construction and robust design  
**Long service life and reliability in harsh environments**

Simple grease-free sealing mechanism  
**Minimises damage due to particulates in dusty processes**

## PRODUCT DATA SHEET

### TECHNICAL DATA

|                                                  |                                                          |                                                                                                                        |
|--------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Ambient operating temperature range              |                                                          | 0 °C to 50 °C                                                                                                          |
| Maximum bake-out temperatures <sup>(1)</sup>     | Valve body<br>Actuator<br>Position indicator<br>Solenoid | < 150 °C<br>< 100 °C<br>< 60 °C<br>< 50 °C                                                                             |
| Pressure range                                   |                                                          | 1 x 10 <sup>-8</sup> mbar to 1.2 bar (absolute)<br>(1 x 10 <sup>-6</sup> Pa to 1.2 x 10 <sup>5</sup> Pa)               |
| Differential pressure on the gate                |                                                          | 1.2 bar in either direction                                                                                            |
| Differential pressure at opening                 |                                                          | 1.0 bar                                                                                                                |
| Leak tightness                                   | To the outside<br>Across the seat                        | 1 x 10 <sup>-9</sup> mbar 1s <sup>-1</sup><br>1 x 10 <sup>-7</sup> mbar 1s <sup>-1</sup>                               |
| Average life before first service <sup>(2)</sup> |                                                          | 5000 cycles at ambient temperature                                                                                     |
| Molecular conductance (air)                      | NW50<br>ISO63<br>ISO80<br>ISO100<br>ISO160               | 250 ls <sup>-1</sup><br>600 ls <sup>-1</sup><br>900 ls <sup>-1</sup><br>1700 ls <sup>-1</sup><br>5000 ls <sup>-1</sup> |
| Weight                                           | NW50<br>ISO63<br>ISO80<br>ISO100<br>ISO160               | 3.3 kg<br>6.6 kg<br>6.9 kg<br>7.1 kg<br>14.5 kg                                                                        |

(1) Maximum values; depending on operating conditions and sealing materials

(2) Depending on the process conditions shorter service intervals may be required

#### Pneumatic valve only

|                                                  |                                                    |                                                                                                                                             |
|--------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Electrical supply                                |                                                    | 24 V -15%, +10% a.c./d.c., 2.4 W                                                                                                            |
| Position indicator contact rating                |                                                    | 12 - 30 V a.c./d.c., max 500 mA, max 10 W                                                                                                   |
| Pneumatic supply                                 | Minimum supply pressure<br>Maximum supply pressure | 58 psig (4.0 bar gauge, 5.0 bar absolute, 6.0 x 10 <sup>5</sup> Pa)<br>100 psig (7.0 bar gauge, 8.0 bar absolute, 8.0 x 10 <sup>5</sup> Pa) |
| Valve opening or closing time at supply pressure | NW50<br>ISO63/80/100<br>ISO160                     | < 1.5 s<br>< 2 s<br>< 3 s                                                                                                                   |
| Pneumatic connections                            |                                                    | 1/8" universal thread (accepts R 1/8" or 1/8" NPT)                                                                                          |
| Noise (due to compressed air)                    |                                                    | 84 dB(A) when changing state                                                                                                                |

#### Materials of construction

|                     |                                   |
|---------------------|-----------------------------------|
| Body                | AISI 304 stainless steel          |
| Bonnet              | Aluminium                         |
| Gate                | AISI 304 stainless steel          |
| Gliders             | PEEK                              |
| Bellows             | AISI 633 stainless steel          |
| Seals               | Fluoroelastomer                   |
| Gate fixation screw | A2 stainless steel Ni-PTFE coated |

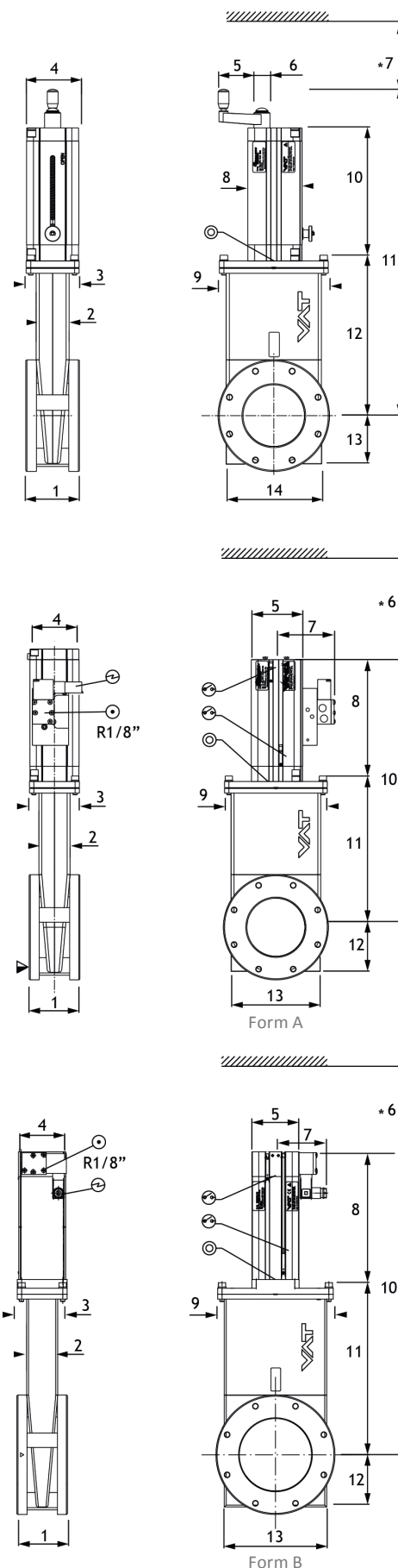
# PRODUCT DATA SHEET

## DIMENSIONS

| BGV Manual Gate Valve |       |       |       |       |       |       |        |       |        |       |
|-----------------------|-------|-------|-------|-------|-------|-------|--------|-------|--------|-------|
|                       | NW50  |       | ISO63 |       | ISO80 |       | ISO100 |       | ISO160 |       |
|                       | mm    | inch  | mm    | inch  | mm    | inch  | mm     | inch  | mm     | inch  |
| 1                     | 60    | 2.36  | 70    | 2.76  | 70    | 2.76  | 70     | 2.76  | 90     | 3.54  |
| 2                     | 36    | 1.42  | 43.6  | 1.69  | 43    | 1.69  | 43     | 1.69  | 64     | 2.52  |
| 3                     | 63    | 2.48  | 69    | 2.72  | 69    | 2.72  | 69     | 2.72  | 87     | 3.43  |
| 4                     | 60    | 2.36  | 68    | 2.68  | 68    | 2.68  | 68     | 2.68  | 87     | 3.43  |
| 5                     | 57    | 2.24  | 57    | 2.24  | 57    | 2.24  | 57     | 2.24  | 73     | 2.87  |
| 6                     | 13.5  | 0.53  | 15.5  | 0.61  | 15.5  | 0.61  | 15.5   | 0.61  | 20.5   | 0.81  |
| 7                     | 120   | 4.72  | 160   | 6.30  | 200   | 7.87  | 200    | 7.87  | 260    | 10.24 |
| 8                     | 62    | 2.46  | 71    | 2.80  | 71    | 2.79  | 71     | 2.79  | 91     | 3.58  |
| 9                     | 109.5 | 4.31  | 123   | 4.84  | 142   | 5.59  | 160    | 6.3   | 210    | 8.27  |
| 10                    | 135   | 5.31  | 149   | 5.87  | 165   | 6.50  | 185    | 7.28  | 250    | 9.84  |
| 11                    | 334   | 13.15 | 375   | 14.76 | 424   | 16.69 | 474    | 18.66 | 651    | 25.63 |
| 12                    | 149   | 5.87  | 176   | 6.93  | 209   | 8.23  | 239    | 9.41  | 337    | 13.27 |
| 13                    | 45    | 1.77  | 59    | 2.32  | 62    | 2.44  | 72     | 2.83  | 97     | 3.82  |
| 14                    | 90    | 3.54  | 105   | 4.13  | 124   | 4.88  | 142    | 5.59  | 192    | 7.56  |

| BGV Mk2 Pneumatic Gate Valve |        |       |        |       |        |       |        |       |        |       |
|------------------------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|
|                              | NW50   |       | ISO63  |       | ISO80  |       | ISO100 |       | ISO160 |       |
|                              | Form A |       | Form A |       | Form A |       | Form B |       | Form B |       |
|                              | mm     | inch  | mm     | inch  | mm     | inch  | mm     | inch  | mm     | inch  |
| 1                            | 60     | 2.36  | 70     | 2.76  | 70     | 2.76  | 70     | 2.76  | 90     | 3.54  |
| 2                            | 36     | 1.42  | 43     | 1.69  | 43     | 1.69  | 43     | 1.69  | 64     | 2.52  |
| 3                            | 63     | 2.48  | 69     | 2.72  | 69     | 2.72  | 69     | 2.72  | 87     | 3.43  |
| 4                            | 60     | 2.36  | 68     | 2.67  | 68     | 2.68  | 65     | 2.56  | 75     | 2.95  |
| 5                            | 62.5   | 2.46  | 71     | 2.79  | 71     | 2.80  | 65     | 2.56  | 75     | 2.95  |
| 6                            | 120    | 4.72  | 160    | 6.3   | 200    | 7.87  | 200    | 7.87  | 260    | 10.24 |
| 7                            | 77     | 3.03  | 82     | 3.22  | 82     | 3.23  | 58     | 2.28  | 63     | 2.48  |
| 8                            | 119    | 4.69  | 138    | 5.43  | 154    | 6.06  | 180    | 7.09  | 241    | 9.49  |
| 9                            | 109.5  | 4.31  | 123    | 4.84  | 142    | 5.59  | 160    | 6.3   | 210    | 8.27  |
| 10                           | 268    | 10.55 | 314    | 12.36 | 363    | 14.29 | 419    | 16.50 | 578    | 22.76 |
| 11                           | 149    | 5.87  | 176    | 6.93  | 209    | 8.23  | 239    | 9.41  | 337    | 13.27 |
| 12                           | 45     | 1.77  | 59     | 2.32  | 62     | 2.44  | 72     | 2.83  | 97     | 3.82  |
| 13                           | 90     | 3.54  | 105    | 4.13  | 124    | 4.88  | 142    | 5.59  | 192    | 7.56  |

-  Valve seat side
-  Leak detection hole
-  Electrical connection
-  Position indicator
-  Compressed air connection



## ORDERING INFORMATION

| BGV Manual valves        |           |                                                   |
|--------------------------|-----------|---------------------------------------------------|
| NW50                     | B90000195 | BGV manual gate valve NW50                        |
| ISO63                    | B90000200 | BGV manual gate valve ISO63                       |
| ISO80                    | B90000215 | BGV manual gate valve ISO80                       |
| ISO100                   | B90000220 | BGV manual gate valve ISO100                      |
| ISO160                   | B90000230 | BGV manual gate valve ISO160                      |
| BGV Mk2 Pneumatic valves |           |                                                   |
| NW50                     | B90003105 | BGV Mk2 Pneumatic gate valve NW50 with solenoid   |
| ISO63                    | B90003110 | BGV Mk2 Pneumatic gate valve ISO63 with solenoid  |
| ISO80                    | B90003125 | BGV Mk2 Pneumatic gate valve ISO80 with solenoid  |
| ISO100                   | B90003130 | BGV Mk2 Pneumatic gate valve ISO100 with solenoid |
| ISO160                   | B90003140 | BGV Mk2 Pneumatic gate valve ISO160 with solenoid |
|                          | B90003388 | BGV Mk2 TIM Interface Cable                       |

| Common spares and accessories |                                  |
|-------------------------------|----------------------------------|
| B90000595                     | Vacuum seal kit NW50             |
| B90000600                     | Vacuum seal kit ISO63            |
| B90000605                     | Vacuum seal kit ISO80            |
| B90000610                     | Vacuum seal kit ISO100           |
| B90000620                     | Vacuum seal kit ISO160           |
| B90000625                     | Bellows feed-through NW50        |
| B90000630                     | Bellows feed-through ISO63       |
| B90000635                     | Bellows feed-through ISO80       |
| B90000640                     | Bellows feed-through ISO100      |
| B90000650                     | Bellows feed-through ISO160      |
| B90000655                     | Spare gate NW50                  |
| B90000660                     | Spare gate ISO63                 |
| B90000665                     | Spare gate ISO80                 |
| B90000670                     | Spare gate ISO100                |
| B90000680                     | Spare gate ISO160                |
| B90000790                     | Spare solenoid 24 V              |
| D37480835                     | Accessories Extension Lead (5 m) |

## NOTE:

The BGV Mk2 pneumatic valve can be plugged directly into Edwards latest generation of dry vacuum pumps allowing full functionality. Latest generation products include: iXH, iXL, iXM and GXS pumps.

In order to connect the BGV Mk2 pneumatic valve to Edwards legacy products the BGV Mk2 TIM interface cable should be used. Legacy products include: iGX, GX (or iQ and iH via the iTIM Module) pumps. The functionality of the LEDs is not available on legacy products.

Publication Number: 3601 0056 01

© Edwards Limited 2016. All rights reserved Edwards and the Edwards logo are trademarks of Edwards Limited

Whilst we make every effort to ensure that we accurately describe our products and services, we give no guarantee as to the accuracy or completeness of any information provided in this datasheet.

Edwards Ltd, registered in England and Wales  
No. 6124750, registered office: Innovation Drive, Burgess Hill, West Sussex, RH15 9TW, UK.

