



VAT Vakuumventile AG  
CH-9469 Haag, Schweiz

# PRODUCT DATA SHEET 294945EB

## Real L-MOTION Valve / Insert

### Series 043 / 053

## Description

Intended use	transfer valve / insert for load lock & process module isolation
Valve body	valve type A & B. Insert type C & L *)
Flange	see dimensional drawing
Actuator	pneumatic single-shaft actuator with mechanically triggered sequence control, double acting, with position indicator, with pneumatic lock in closed and open position
Feedthroughs	welded metal bellows *)

## Technical Data

LEAK RATES (at room temperature 25°C and under clean environmental conditions)

Sealing surface	FKM seals	FFKM seals (inkl. Zalak 5100)	
Metallic blank (milled / ball polished)	Body <math><1\cdot10^{-9}</math> mbar l s <sup>-1</sup> Seat <math><1\cdot10^{-9}</math> mbar l s <sup>-1</sup>	Body <math><1\cdot10^{-8}</math> mbar l s <sup>-1</sup> Seat <math><1\cdot10^{-7}</math> mbar l s <sup>-1</sup>	
Alu, hard anodized	Body <math><1\cdot10^{-5}</math> mbar l s <sup>-1</sup> Seat <math><1\cdot10^{-4}</math> mbar l s <sup>-1</sup>	Body <math><1\cdot10^{-5}</math> mbar l s <sup>-1</sup> Seat <math><1\cdot10^{-4}</math> mbar l s <sup>-1</sup>	<b>Measuring conditions:</b> Body: 30s, He-Conc. ≥ 20% Seat: 15s, He-Conc. ≥ 30%
Alu, Ni plated	Body <math><1\cdot10^{-9}</math> mbar l s <sup>-1</sup> Seat <math><1\cdot10^{-9}</math> mbar l s <sup>-1</sup>	Body <math><1\cdot10^{-8}</math> mbar l s <sup>-1</sup> Seat <math><1\cdot10^{-7}</math> mbar l s <sup>-1</sup>	

PRESSURE RANGES (at room temperature 25°C, under clean environmental conditions)

- Metallic blank or Ni Plated on vacuum side	1 · 10 <sup>-9</sup> mbar to 1.1 bar (abs)
- Alu hard anodized	1 · 10 <sup>-6</sup> mbar to 1.1 bar (abs)
- Metal seal	5 · 10 <sup>-10</sup> mbar to 1.1 bar (abs)
Differential pressure on the gate	≤ 1.1 bar *) in either direction
Differential pressure at opening	≤ 30 mbar *) in either direction *)

### CYCLE LIFE between maintenance

(unheated, under clean vacuum conditions, operated with standard actuation speed and standard compression)

- actuator (pneumatic and mechanical parts)	3 million *)
- bellows (AM 350)	3 million *)
- micro switch for position indication	3 million *)

### OPERATING TEMPERATURES

- valve body aluminum	< 120°C
- actuator with position indicator	< 80°C
- solenoid valve	< 50°C
Temperature difference between seat and gate	≤ 40°C
Heating and cooling rate	≤ 40°C h <sup>-1</sup>

Mounting position: Actuator downwards or upwards

### MATERIALS

- valve body, service cover, gate	EN AW-6082, EN AW-6061 or EN AW-5083 *)
- bellows end pieces	AISI 316L (1.4435, 1.4404)
- bellows	AISI 633

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- |  |                            |
|--|----------------------------|
| - shaft                                  | AISI 316L (1.4435, 1.4404) |
| - service cover seal                     | FKM (VITON®) *             |
| - gate seal                              | FKM (VITON®) Vulkanized *) |
| - actuator, vacuum and pneumatic seals   | FKM (VITON®) *             |
| - screw for gate fixation on torsion bar | AISI 316L (1.4435, 1.4404) |
| - screw for gate fixation on shaft       | AISI 316L (1.4435, 1.4404) |
| - groove ball bearing                    | AISI 440C                  |

### ELECTRONICAL CONNECTIONS

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| Position indicator contact rating    | see table below                      |
| Action at power failure              | depends on type of solenoid          |
| Valve equipped with impulse solenoid |                                      |
| - valve closed                       | valve remains closed                 |
| - valve open                         | valve remains open                   |
| - valve in operation                 | a started movement will be completed |

Position indicator version	<b>Standard *)</b>															
Type of connector	<b>9 PIN, male</b>															
Sensor type Temperature rating	<b>Microswitch &lt;80°C</b>															
Electrical Diagram  "Lo": position open "Lg": position close																
Logical Diagram	<table border="1"> <thead> <tr> <th>Position Indicator</th> <th>Valve</th> <th>Valve open (Lo)</th> <th>Valve intermediate</th> <th>Valve closed (Lg)</th> </tr> </thead> <tbody> <tr> <td>Position Indicator open</td> <td></td> <td>1 - 7</td> <td>1 - 3</td> <td>1 - 3</td> </tr> <tr> <td>Position Indicator closed</td> <td></td> <td>2 - 4</td> <td>2 - 4</td> <td>2 - 8</td> </tr> </tbody> </table>	Position Indicator	Valve	Valve open (Lo)	Valve intermediate	Valve closed (Lg)	Position Indicator open		1 - 7	1 - 3	1 - 3	Position Indicator closed		2 - 4	2 - 4	2 - 8
Position Indicator	Valve	Valve open (Lo)	Valve intermediate	Valve closed (Lg)												
Position Indicator open		1 - 7	1 - 3	1 - 3												
Position Indicator closed		2 - 4	2 - 4	2 - 8												
Contact rating	<b>≤ 0.1A , &gt;5mA ≤ 50V AC /DC</b>															

### COMPRESSED AIR SUPPLY

- |                            |   |
|----------------------------|---|
| Compressed air pressure    | use only clean, dry or slightly oiled air     |
| Compressed air connections | 4 to 7.0 bar (overpressure) **)               |
|                            | internal threads 1/8" (ISO /NPT) *)           |
|                            | connections „actuator" Ø 6mm quick connect *) |

### Action at compressed air failure

- |                   |                            |
|-------------------|----------------------------|
| - valve closed    | valve remains closed (>3h) |
| - valve open      | valve remains open (>3h)   |
| - valve in motion | undefined                  |

### ACTUATION TIME

- |           |           |
|-----------|-----------|
| - opening | < 1.0s *) |
| - closing | < 1.0s *) |

Valid for flow rate min. 600 SLPM, tube length <2m

### Actuator data

- |                          |             |
|--------------------------|-------------|
| - volume of air cylinder | 0.12 liters |
|--------------------------|-------------|

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- vertical stroke

57 mm, depend on opening size

Weight of the complete transfer valve

14 kg

**\*\*)** *In order to maximize the life time of the gate, locking pressure should be set as low as possible, but not so low to produce an unacceptable leak rate in the closed position. Due to length of the sealing line (size of gate), tolerances of sealing lip, accuracy of the measurement and the requested leak rate the locking pressure settings might deviate slightly from the recommended pressure range.*

**\*)** *Standard specification. Specifications for optional features are provided on the dimensional drawing of the product.*



### IMPORTANT NOTE:

In order to ensure proper function of the product, the following instructions must be followed.

- Product must not be operated if compressed air supply pressure is < 4 bar

## Installation

Leave the product sealed in the plastic bag as long as possible in order to protect it from dust and particles. The seat and seals must not be cleaned before installation. The valve is assembled at VAT in a clean environment and sealed in a plastic bag.

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