

High Performance Vacuum Valve and System Solutions





Vacuum Valve and System Solutions – Tailored to Your Needs

Today's high-tech manufacturing and research often requires a reliable, ultra clean vacuum environment. VAT vacuum valves and systems are a key part of it.

From tailored vacuum valves to fully integrated modules and systems, VAT can provide the solution.

As the world-leading manufacturer, VAT offers the widest range of technological solutions to isolate or control vacuum under any condition.

Challenge us with your requirements.





Build on Swiss Engineering Heritage

All VAT vacuum valve solutions provide unmatched reliability and safety and can be fully tailored to meet specific process needs.

Since its foundation in 1964, VAT has specialized in the field of vacuum related technical solutions. To maintain its leading position in this field, VAT is investing above industry average in R&D. As a result, VAT is continuously setting new technological benchmarks, e.g. in the area of ultra clean vacuum by reduced sources for potential particle emission or by increasing the self-regulating or adjusting potential of vacuum components like vacuum valves or lifter systems.

A key element in these developments is also the retrofit or upgrade potential. VAT does not only provide OEMs with its latest technology, it also give end-users the chance to utilize technological advances for their existing systems.

With its worldwide service center network VAT provides local consultation wherever it is needed to increase system or production efficiency.

VAT key facts:

- More than 2500 employees
- ISO 8 and 6 production environment
- “Copy Exactly” process for any series production
- ISO 9001/14001 based manufacturing
- High vertical range of manufacture
- Business continuity production setup
- Certificates of conformity, inspection and test certificates as well as ISO certifications upon request for any product
- Testing schemes according to customer requirements
- Production facilities in Switzerland, Malaysia and Romania
- Test laboratories in Switzerland and the USA
- Service Centers as well as sales locations either by VAT or VAT partners in all parts of the world
- Full and unlimited spare part and service support for any VAT solution in the field, no matter if standard or custom solution

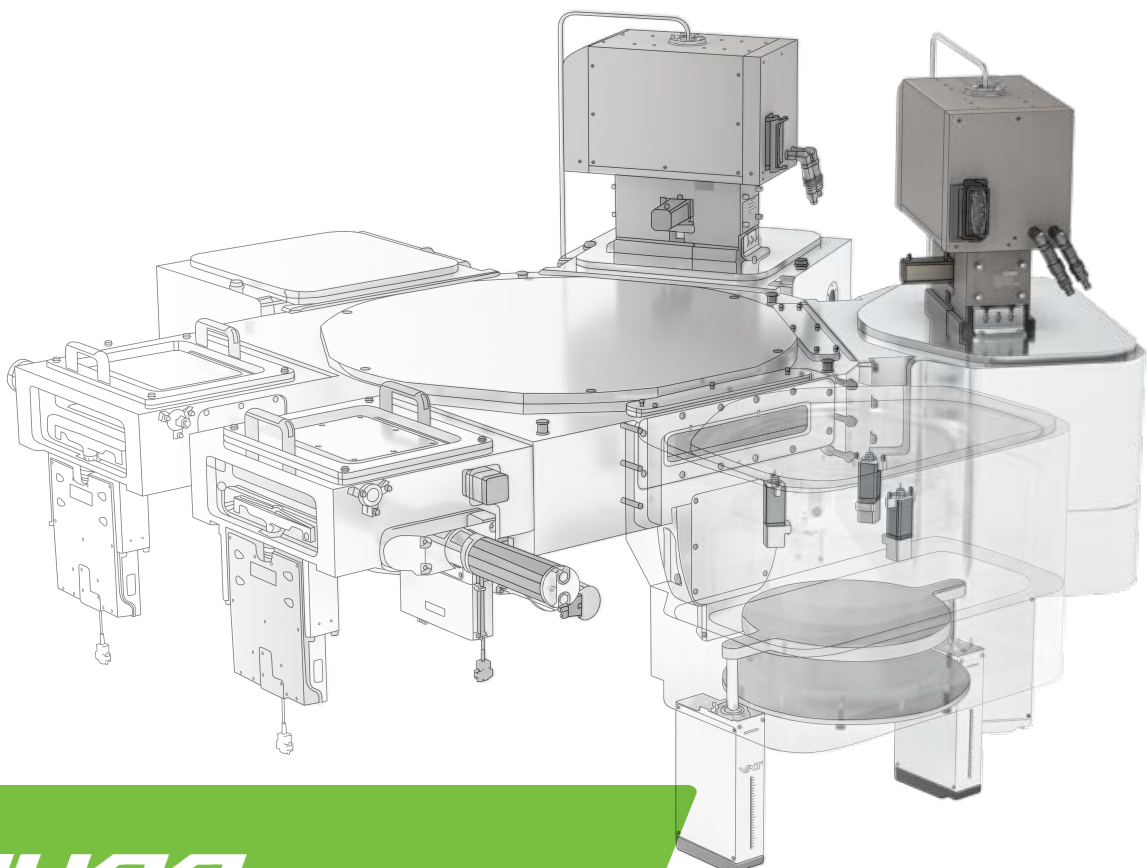


From Sketch to Solution

It all starts with a detailed understanding of the requirements. The more of the aspects and the environment in which a vacuum valve or any other VAT component is used is understood, the better the right solution can be selected or tailored. This goes beyond defining the technical parameters. It's important to understand the process dynamics in which the component is used to define the right boundaries in which the component should perform.

Relevant aspects are e.g.:

- Process requirements in regards to operating temperature and pressure profiles as well as condition like radiation or aggressive media
- Performance requirements in regards to reaction time, speed, repeatability, deviation tolerance, level of controllability, self-regulating capabilities
- Clean vacuum requirements
- Durability, uptime and lifetime expectation
- Maintenance level and frequency requirements



Vacuum Valves Solutions

VACUUM LEVEL

Fine Vacuum (FV)
down to 10^{-7} mbar

VACUUM ANGLE/INLINE VALVES

24.4 / 24.5 FV Angle or Inline Valve
Uncompromised Reliability for Large Volume Flows



- Aluminum or stainless steel
- Shaft feedthrough
- Manual or pneumatic actuation
- Flange: ISO-KF, ISO-K
- Sizes DN 10 – 250 ($\frac{3}{8}$ " – 10")

High Vacuum (HV)
down to 10^{-8} mbar

26.4 / 26.5 HV Angle or Inline Valve
For Pumping and Venting of HV Systems



- Aluminum or stainless steel
- Bellows feedthrough
- Manual or pneumatic actuation
- Flange: ISO-KF, ISO-K
- Sizes DN 10 – 160 ($\frac{3}{8}$ " – 6")

Ultra High Vacuum (UHV)
down to 10^{-10} mbar

28.4 UHV Angle Valve
Outstandingly Low Outgassing Performance



- Stainless steel
- Bellows feedthrough
- Manual or pneumatic actuation
- Flange: CF-R
- Sizes DN 16 – 63 ($\frac{5}{8}$ " – 2½")

Extreme High Vacuum (XHV)
below 10^{-10} mbar

54.1 UHV All-Metal Angle Valve
Easy Close For Extreme UHV Requirements



- Stainless steel – all-metal valve
- Bellows feedthrough
- VATRING all-metal "hard-on-hard" sealing
- Manual actuation
- Flange: CF-R
- Sizes DN 16 – 63 ($\frac{5}{8}$ " – 2½")

57.0 / 57.1 XHV All-Metal Angle Valve
For Extreme Temperature and Radiation Requirements



- Stainless steel – all-metal valve
- Bellows feedthrough
- VATRING all-metal "hard-on-hard" sealing
- Manual or pneumatic actuation
- Flange: CF-R
- Sizes DN 10 – 160 ($\frac{3}{8}$ " – 6")

VACUUM GATE VALVES

01.2 Mini Gate Valve

The General Purpose Isolation Valve



- Aluminum
- Shaft feedthrough
- Manual or pneumatic actuation
- Flange: ISO-KF
- Sizes DN 16 – 50 (½" – 2")

08.1 / 08.2 FV Insertable Gate Valve

Where Installation Space is Limited



- Aluminum
- Shaft feedthrough
- Manual or pneumatic actuation
- Insertable
- Sizes DN 50 – 100 (2" – 4")

12.1 FV Gate Valve

The General Purpose Isolation Valve



- Aluminum
- Shaft feedthrough
- Manual or pneumatic actuation
- Flange: ISO-F, JIS
- Sizes DN 63 – 320 (2½" – 12")

14.1 HV Gate Valve

For Standard High Cycle Vacuum Isolation



- Stainless steel
- Rotary feedthrough
- Manual or 3-position-pneumatic actuation
- Flange: ISO-F, CF-F, ASA-LP/ASA or JIS
- Sizes DN 63 – 400 (2½" – 16")

11.1 HV Gate Valve

The Standard for High Vacuum Isolation



- Stainless steel
- Bellows feedthrough
- Manual or 3-position-pneumatic actuation
- Flange: ISO-F, CF-F, ASA-LP or JIS
- Sizes DN 63 – 320 (2½" – 12")

19.0 FV/19.1 HV/19.2 UHV Large Gate Valve

The Standard Where Large Diameters Are Required



- Stainless steel
- Shaft or bellows feedthrough
- Pneumatic actuation
- Flange: ISO-F
- Sizes DN 400 – 2000 (16" – 78")

01.0 Mini UHV Gate Valve

The General Purpose Isolation Valve for Demanding Applications



- Stainless steel
- Bellows feedthrough
- Manual or pneumatic actuation
- Flange: ISO-KF, CF-F
- Sizes DN 16 – 50 (½" – 2")

10.8 UHV Gate Valve

The Standard for UHV Isolation



- Stainless steel
- Bellows feedthrough
- Manual or 3-position-pneumatic actuation
- Flange: ISO-F, CF-F, ASA-LP, JIS
- Sizes DN 63 – 320 (2½" – 12")

15.2 UHV Isolation Gate Valve

Exceptionally Low Shock and Particle Count



- Stainless steel
- Bellows feedthrough
- Double acting pneumatic
- Flange: ISO-F, CF-F fixed flange UNF and metric thread
- Sizes DN 63 – 250 (2½" – 10")

48.1 / 48.2 XHV Gate Valve

For High Temperatures and Radiation



- Stainless steel all-metal valve
- Bellows feedthrough
- VATRING all-metal "hard-on-hard" sealing
- Manual or pneumatic actuation
- Flange: CF-F
- Size DN 16 – 320 (½" – 12")

VACUUM LEVEL

High Vacuum (HV)
down to 10^{-8} mbar

VACUUM CONTROL VALVES

61.3 / 61.6 HV Butterfly Control Valves

Fast, Precise Downstream Pressure Control and Isolation



- Aluminum, stainless steel
- Non-sealing or sealing versions
- Rotary feedthrough
- Integrated controller with stepper motor
- Flange: ISO-KF, ISO-F, CF-F, ASA-LP, JIS
- Sizes DN 25 – 320 (1" – 12")

64.2 HV Control Gate Valves

For High Cycle Vacuum Control and Isolation



- Stainless steel
- Rotary feedthrough
- Integrated controller with stepper motor
- Flange: ISO-F, CF-F, ASA-LP/ASA, JIS
- Sizes DN 63 – 400 (2½" – 16")

65.3 HV Pendulum Control Valves

Optimized Downstream Pressure Control & Vacuum Isolation



- Aluminum blank or hard anodized
- Rotary feedthrough and shaft feedthrough for sealing ring
- Integrated controller with stepper motor
- Flange: ISO-F, JIS
- Sizes DN 100 – 350 (4" × 14")

Ultra High Vacuum (UHV)
down to 10^{-10} mbar

64.8 UHV Control Gate Valves

For Pressure Control and Isolation in UHV Systems



- Stainless steel
- Bellows feedthrough
- Integrated controller with stepper motor
- Flange: ISO-F, CF-F, ASA-LP/ASA, JIS
- Sizes DN 63 – 400 (2½" – 16")

SPECIAL VACUUM VALVES

16.2 HV Pendulum Isolation Valve

The Standard for Isolation Requirements in Evaporator and Sputter Applications



- Aluminum
- Rotary feedthrough
- Single acting pneumatic or 3-position pneumatic
- Flange: ISO-F, ASA-LP, JIS
- Sizes DN 200 – 500 (8" – 20")

29.0 / 29.1 HV Angle/Inline Valve with Soft-Pump Function

Pumping or Venting without Turbulence or Pressure Pulses



- Aluminum, stainless steel
- Bellows feedthrough
- Adjustable orifice opening
- Flange: ISO-KF, ISO-K
- Sizes DN 25 – 80 (1" – 3")

29.2 HV Angle Valve with Soft-Pump Function

Avoids Turbulence or Condensation, Large Conductance Spectrum



- Aluminum, stainless steel
- Bellows feedthrough
- Adjustable orifice opening
- Flange: ISO-K
- Sizes DN 100 – 160 (4" – 6")

62.8 HV Variable Inlet Control Valve

Outstanding Controllability of Pressure in Vacuum Chambers through the Gas Flow



- Stainless steel
- Bellows feedthrough
- Stepper motor or electromagnetic actuation
- Flange: ISO-KF
- Sizes DN 5 and DN 16 ($\frac{3}{16}$ " and $\frac{5}{8}$ "

21.1 Gas Dosing Valve

Controlled, Reproducible Gas Flow for Vacuum Chambers



- Aluminum, stainless steel
- Manual actuator, handwheel
- Flange: ISO-KF
- Sizes DN 10 and DN 16 ($\frac{3}{8}$ " and $\frac{5}{8}$ "

59.0 UHV All-Metal Variable Leak Valve

For Extreme UHV Requirements



- Stainless steel
- handwheel or pressure controller with stepper motor
- Flange: CF-R
- Sizes DN 16 ($\frac{5}{8}$ "

75.0 UHV Fast Closing Valve

Protection of Accelerators and Storage Rings from Air Inrush



- Stainless steel
- Bellows feedthrough
- Pneumatic double acting
- Flange: CF-F
- Sizes DN 63 – 250 (2½" – 10")

77.1 / 77.3 UHV Fast Closing Shutter

Protection of Accelerators and Storage Rings from Air Inrush



- Stainless steel
- Bellows feedthrough
- Pneumatic double acting
- Flange: CF-F
- Sizes DN 40 – 160 (8" – 6")

Edge Welded Bellows

Used in various applications, e.g. as flexible sealing elements, compensators or vibration absorbers, edge welded metal bellows from VAT, are high performance components with proven durability and longevity. VAT edge welded metal bellows are available in two versions as standard bellows, in a broad range of dimensions, materials and cleanliness levels and as custom made bellows, tailored to exact customer specifications. VAT's edge welded bellows production is located in Switzerland and takes place in cleanrooms ISO class 5-8 to meet the highest requirements in terms of cleanliness and quality. Design, material selection as well as state of the art laser welding production guarantee our unprecedented edge welded metal bellows reliability and durability.

Get in touch for more information or use our online configurator to specify your requirements: www.bellows-configurator.com



Vacuum Transfer Valves/Doors

Vacuum transfer valves and doors isolate vacuum chambers of various sizes and for various requirements. Therefore, all VAT transfer valves and doors are tailored to specific needs.

Key features are:

- Optimized for high cycle processes
- Controllable movement profiles to minimize vibrations and closing shocks
- Exceptional low degree of particle activation and emission
- Insert options for direct installation in the chamber
- Twin-gate solutions
- Small and large sizes with openings up to 3800 mm (146.60")
- Extended lifetime
- Easy and fast maintenance



Integrated Vacuum Solutions

Integrated vacuum solutions from VAT offer the combination of different components in one unit.

The advantage:

- Reduced number of seals and thus potential leakage points
- Extremely compact and space-saving design
- Faster and easier assembly compared to the assembly of individual components

VAT integrated solutions can be obtained from multi-valve units to turn key vacuum chambers.

Vacuum Components

- VAT Load-Lock Modules (LL)
- VAT Transfer Modules (TM)

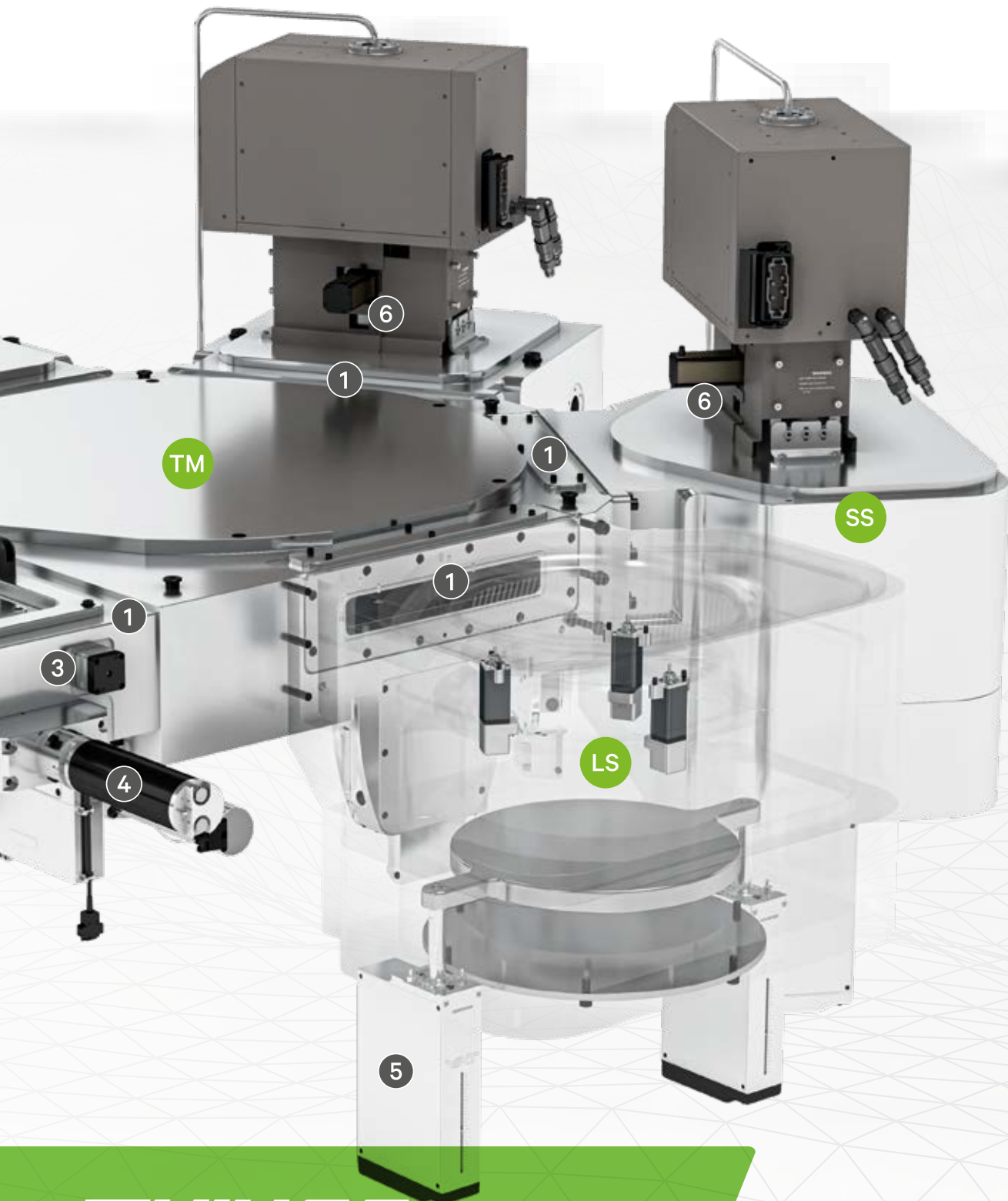
Vacuum Valves

- Vacuum Transfer Valves (1)
- Vacuum Transfer Doors (2)
- Vacuum Angle Valves (3)
- Vacuum Gate Valves (4)
- Vacuum Control Valves (5)
- Vacuum Cylinder Valves (6)
- Vacuum Pendulum Valves (7)

Vacuum Motion Components

- **Substrate Lift Systems (LS)**
 - Wafer Lift Systems
 - Wafer Cassette Lift Systems
 - Wafer Tray Lift Systems
 - Solar Cell and Display Substrate Lift Systems
- **Movable Shield Systems (SS)**
 - Shield Mover Systems
 - Ring Lift Systems





TM

SS

LS

1

6

1

1

3

4

5

Global Support Network

Contact us if you have any questions about our products or services, we will be happy to advise you. You can also find more information and contacts on our website www.vatvalve.com



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