



Vacuum System Components

Transfer Vavlves | Gate Valves | Door Valves | Isolation Poppet Valves | Chambers | Bubblers



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King Lai



AdvanTorr



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APPLICATION FIELDS

KING LAI, founded in 1991 in Taiwan, specializes in manufacturing stainless steel fittings and components for fluid and gas applications used in piping systems. Our expertise and top quality products are widely accepted in hygienic (food & dairy), pharmaceutical, vacuum, and semiconductor/electronics industries.

GNB Corporation is a part of the KL family of companies in 2016 , and responsible for the sales of King Lai **AdvanTorr** products in the USA.



BioClean[®]

Biomedical Manufacturing
Processing



KING LAI[®]

Food and Beverage
Processing



AdvanTorr[®]

Semiconductor
Vacuum Industries



NanoPure

Ultra High Purity Gas
Processing

GNB[®]



Established in 1991



**Precision
Machinery
Processing
Technology**

**Surface
Treatment
Technology**

**Clean
Room
Technology**

**Ultra-high
Vacuum
Technology**

**Advance
Material
Technology**



Vacuum Chambers

Vacuum Grade : High Vacuum/Ultra High Vacuum

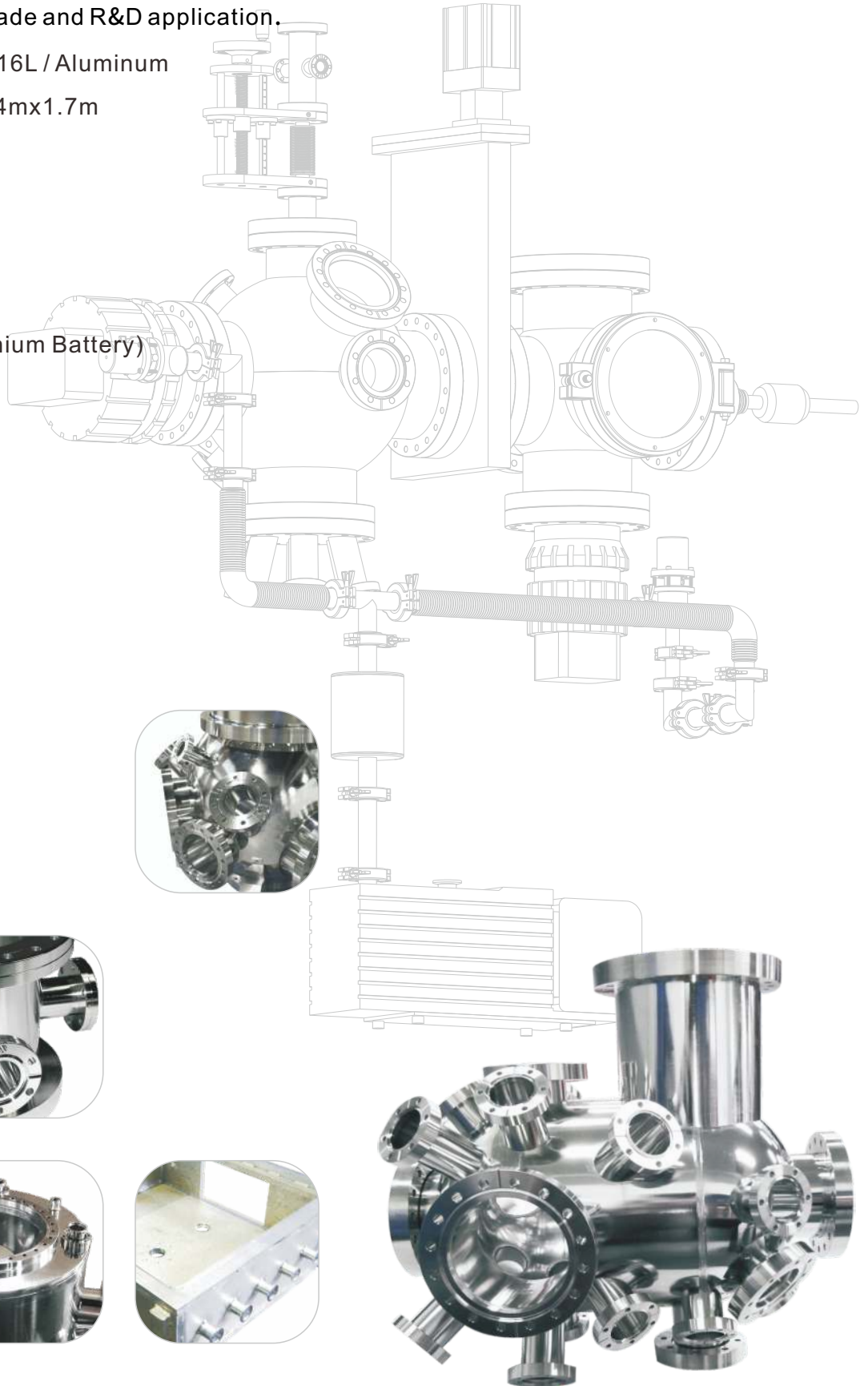
Appication : Build up High Vacuum/Ultra High Vacuum circumstances for industrial grade and R&D application.

Material : SS 304L / SS 316L / Aluminum

Max. Dimension : 6mx2.4mx1.7m

Industry Served :

- Semiconductor
- Coating
- Laboratory Research
- Synchrotron Radiation
- New Energy (Solar, Lithium Battery)



High Vacuum Rectangular Door L-MOTION Gate Valve

Main Applications:

For load lock (atmospheric) and process chamber (vacuum) isolation of semiconductor production systems for 200mm ,300mm and 450mm wafers .

Technical data:

- Operate pressure range : 1.1×10^{-9} mbar to 1.1 bar
- Installation : Brake-Horizontal or vertical
- Solenoid(Optional) : DC24V 2.5W or AC220V 50Hz 6W
- Leak rate: $< 1 \times 10^{-9}$ mbar l/s
- Cycle time for first maintenance : $\geq 3,000,000$ Cycles
- Differential pressure at opening : $\leq 5 \times 10^{-2}$ Pa
- Bake temperature for valve body : $\leq 120^{\circ}\text{C}$ (Aluminum) / $\leq 200^{\circ}\text{C}$ (Stainless steel)
- Position indicator : 9 Pin square plugs connectors
- Compressed air : 4 to 7 bar (0.5~0.7MPa)
- Open / Close time: $\leq 1\text{s}$
- Sealing : FKM o-ring
- Gate : Low particle / Low vibration



Mini Gate Valves

Feature

- Direct drive mechanism, single axis design operating.
- Easy for maintenance.
- High purity for both high vacuum and Ultra-high vacuum.
- Low vibration.



Vacuum Transfer Slit Valves

Vacuum : HV grade / UHV grade

Leak rate : 1×10^{-9} mbar l/s, He

Reliability : 5 million cycles(depend on process)

Both Aluminum alloy or SUS valve bodies are available.

Bellows sealed and bellows-less are available.

Application for Vac to Vac transfer substrate

ARM LOCK

Auto- Relocation Mechanism

- Stay in closed position against larger pressure difference.
- Keep closed position losing the air power.

Feature

- Patented mechanism
- Low maintenance cost
- No gears, no need relocation
- More reliable
- Particle free seal



SMART Vacuum Gate Valves

Vacuum : HV grade / UHV grade

Leak rate : 1×10^{-9} mbar l/s, He

Reliability : >50,000 cycles(UHV grade) /
>200,000 cycles(HV grade)

**Application for
Vac to Vac transfer substrate**

Feature

- Unique patented guided-track “SMART” mechanism.
- Long service life intervals.
- Shock-free mechanism.
- Low force operation.
- Vulcanized seal.
- Improved differential pressure operation.
- Fail-safe locking system.
- Complete modular kit system.



Vacuum L-Motion Transfer Valve

Vacuum : HV grade

Leak rate : 1×10^{-9} mbar l/s, He

Reliability : 1 million cycles(depend on process)

Both Aluminum alloy or SUS valve bodies are available.

Bellows sealed and bellows-less are available.

Application for
Vac to Vac transfer substrate

Feature

- L-Motion, valve in special motion for open/close different to single axis slit valve. L-Motion Lock mechaism make sure valve lock in close position.
- Easy for installation and maintenance.
- Low cost for replace gate seal plate.



Vacuum Aluminum Gate Valve

Vacuum : High Vacuum

Leak rate : 1×10^{-9} mbar l/s, He

Reliability : 200,000 cycles(depend on process)

Aluminum Alloy valve body with FKM O-ring sealed shaft.

Application for Low/Mid Vacuum Pumps
ISOLATION.

Feature

- Low first initial and maintenance cost.
- Easy installation and maintenance.

Vacuum Isolation Poppet Valve

Vacuum : HV grade / UHV grade

Leak rate : 1×10^{-9} mbar l/s, He

Reliability : 1 million cycles

Available for welded bellows sealed and Bellows-less

Application for

- Pumping line isolation
- Foreline isolation



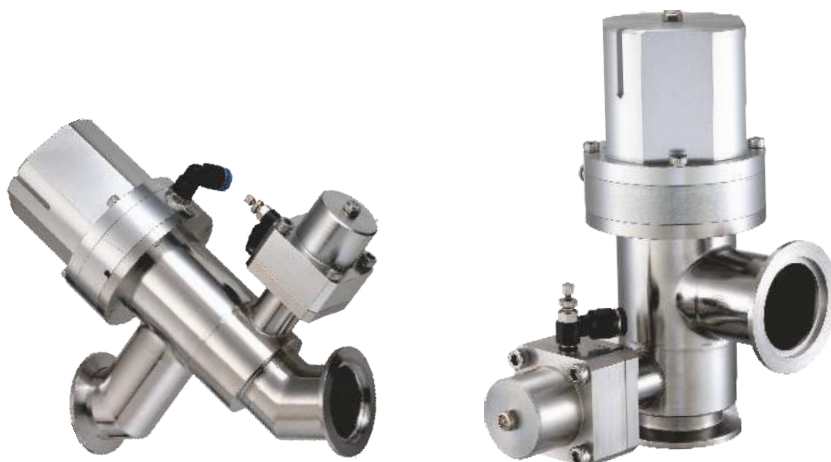
Two-Stage Valves

Vacuum : HV grade

Leak rate : 1×10^{-9} mbar l/s, He

Reliability : 1 million cycles

Available for welded bellows sealed and Bellows-less



Pneumatic Full Open
Angle Valves



Vacuum Ball Valve

Vacuum Ball Valves are using on system's exhaust section.
Ball Valve is designed for taking hash processing to against particles or even powder.
The valve' s main body use solid metal of stainless steel to form one piece. The inlet piece and outlet piece are also made by forged metal.
Valve can take into high chemical process or high temperature environment by using 316L or 316Ti materials.

The valve also designed for baking purpose.
The packing of ball valve is optional for different materials in FKM, FFKM, Teflon.



Heating Ball Valves

Technical Data

Valve type	Ball Valve
Actuator	Manual / Pneumatic
Size range	KF16~KF50/ISO100
Valve's interface	Clamp Type
Ball seal material	PTFE
Stem seal material	Viton
Differential pressure difference at opening	0~1atm
Leak rate	1.0X10 ⁻⁸ pa m ³ /s
Life cycle	> 20,000cycles
Max. Temperature of body	250°C
Max. Temperature of actuator	-20°C~80°C
Max. Temperature of Solenoid /	80°C
Position indicator	
Max. Baking temperature	150°C
Max. operational temperature	180°C
Valve body's material	SS 316L
Valve actuator's material	Aluminum
Valve's orientation	Straight / Tee



Heating Jacket

Customize - Design and fabricate products in Taiwan base on customer requirements.

Conform FAB require - Comply with class 100 specification and UL94-V0 safety of flammability.

Energy saving - Significant 28% energy saving to the traditional FG insulator.

Customized for Vacuum Products



Viewports Shutters & Quick Access Door

Vacuum Quick Access Doors

Vacuum : UHV grade

Leak rate : 1×10^{-9} mbar l/s, He

Optional :

- View Glass
- Blanker for both clear holes and tap holes



Vacuum Viewport Shutters

Vacuum : UHV grade

Leak rate : 1×10^{-10} mbar l/s, He

Actuator: Manual

Application for UHV viewport protection



Vacuum Viewports

Vacuum : UHV grade

Leak rate : 1×10^{-10} mbar l/s, He

Glass material option : Kodial

Application for UHV chamber observation



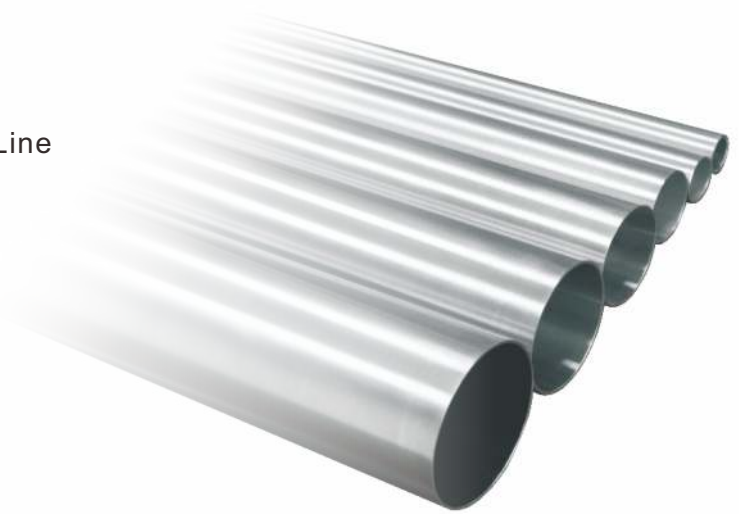
Vacuum Weldments

Application : Vacuum Foreline & Pumping Line

Material : SS304L / SS316L

Vacuum Range : 760 Torr~ 1×10^{-12} Torr

Surface for : EP / MP / Bead blast



High Purity Weldments

Application : CDA / Bulk Gas / UHP Gas / Special Gas

Material : SS316L

Welding Environment : Class 100 Cleanroom

Inspection : Helium Leak Test / Borescope

Surface for : EP/BA/MP



CF Components

STANDARD SPECIFICATION

Vacuum Rate: Ultra High Vacuum

Material: SS304L, SS316LN

Flange Sizes: CF 1.33"~ CF 16.5"

Tube Sizes: 1/2"~14.0"

Vacuum Range: 760 Torr ~ 1×10^{-10} Torr for 304L
760 Torr ~ 1×10^{-12} Torr for 316LN

Gasket Material: OFHC Copper or Silver Plated

Temperature Range: -190°C ~ 450°C



KF & DN Components

STANDARD SPECIFICATION

Vacuum Rate: High Vacuum

Material: SS 304L, SS 316L and Aluminum

Flange Sizes: KF10~KF50

Tube Sizes: 1/2"~2.0"

Surface Finish: Bead-blast and polished

Vacuum Range: 760 Torr ~ 1×10^{-8} Torr

Seal Material: FKM, FFKM

Temperature Range: $\leq 200^{\circ}\text{C}$ (150°C sustained)

ISO & NW Components

STANDARD SPECIFICATION

Vacuum Rate: High Vacuum

Material: SS 304L, SS 316L or Aluminum

Flange Sizes: ISO63~ISO630

Tube Sizes: 2.5" ~ 26.0"

Surface Finish: Bead-blast and Polished.

Vacuum Range: 760 Torr ~ 1×10^{-8} Torr

Gasket Material: FKM, FFKM

Temperature Range: $\leq 200^{\circ}\text{C}$ (150°C sustained)



Adaptors



KF Flanges to Female VCRS



ISO to KF Flange Conical
Adaptors

Butt Weld Fittings



WELD 6-WAY CROSSES



Metal Bellow & Flexible Hoses



CF Bellows



ISO-K Bellows & Flexible Hoses





Bubblers

DOT Certificated

Grade : HP grade

Leak rate : 1×10^{-10} mbar l/s, He

Material : Body- SUS316L

Fittings & Valves- Swagelok (or equivalent)

Application for
Consumable liquid for materials
For PECVD, MOCVD...Processing.



Traps

STANDARD SPECIFICATION

Trapping Capacity: >5kg

Trapping Efficiency : 99%

Conductance (L/sec): $60 \times P(\text{mTorr})$

(note: conductance is a function of pressure in viscous flow regime)

Cooling Water:

>0.3L/min, optional if flow rate is low.

Cooling Water Temperature:

<20°C. Lower is better.

Weight : 10.8kg



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Stainless Steel Pendulum Valves



Wedge Gate Pendulum valves



Custom Valves



Large Gate Valves



UHV Chambers



UHV Chambers

Ultra High Purity

Diaphragm Valve (UHP)



VC & KMC



Line pressure regulator

Widely applied when need pressure regulating from high pressure gas supply facility like cylinder or bulk gas station to lower pressure gas consumption unit. NanoPure regulator only use stainless steel body with preset filter at inlet port which capable for high purity gas application, various connections like tube butt weld/double ferrule compression/VCR/NPT available for different application. Optional relief valve and pressure gauge as end user required.

Tube/pipe & fittings

Stainless steel 304/304L, 316/316L BA and EP grade, tube/pipe, fittings, coaxial tubing (toxic gas delivery) for connection from gas supply to gas consumption point. ASTM A269/A312, JIS G3459 standard, size up to 8"(300A).



CB series 3 piece ball valve

For gas on/off switching, operation pressure 0~300psig, size up to JIS 300A (ASTM A269, 8"), tube/pipe butt weld/two ferrule compression / flange end connection available, optional purge port at inlet/outlet end, optional pneumatic actuator control available, compatible with oxygen service.

Instrumentation Application



Compression fitting

For quick connection of ASTM A269 tubing to instrumentation and gas line tubing, quick 1-1/4 round turn installation save installation time, nut and body can be re-used after dismantle, compatible with NPT/BSPT connection by different adapter.



ND series needle valve

For on/off switching, operation pressure up to 6000psi, optional two ferrule compression /NPT thread connection, Panel mount nut for aesthetic installation, regulating/Vee/soft type valve seat for various applications.



GB/UB/AB series ball valve

For on/off switching, operation pressure up to 1000psig(GB,UB series) and 3000psi(AB series), size 1/8", 1/4", 3/8", 1/2", 3/4", 1" with optional two ferrule compression / NPT thread/VCR (AB series only) connection, Panel mount nut(UB, AB series) for aesthetic installation.

Pressure relief valve

Normal closed, open when pressure increase or accumulated to preset value to protect precise or pressure sensitive equipment at downstream, different colored cap indicate various spring for specified pressure range, rating pressure up to 3000psig/ 6000psig, double ferrule compression/ NPT end connection available.



Check valve

Crack in one direction only under specified pressure, prevent fluid back flush and protect the upstream line.

High purification filter

Prevent particle or contamination goes into high purification environment. Inline type for limited space installation, while T-type for convenient maintenance, minimal filtering pore size 0.5µm, double ferrule compression/NPT/VCR end available.



NanoPure

GAS DELIVERY
TOTAL SOLUTION



UHP PIPES TUBES FITTINGS



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