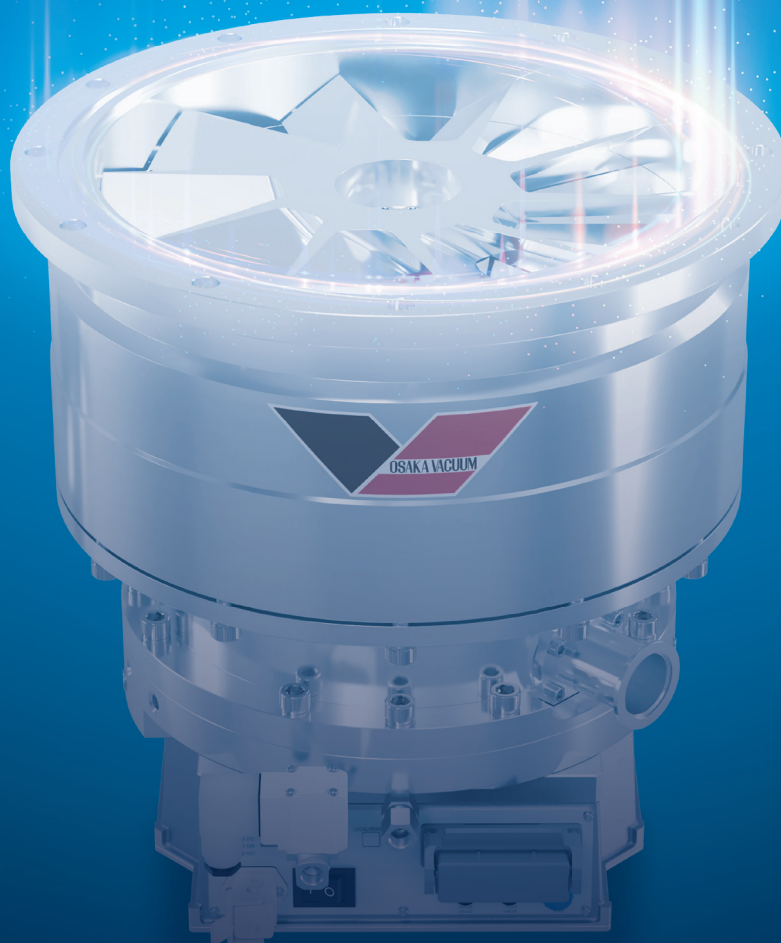


TGkine[®]

SERIES

TGkine[®]-B

Magnetically Levitated Turbo Molecular Pump
with Integrated Control Unit



TRUST & SAFETY

EFFICIENT / CONNECTED / STABLE



OSAKA VACUUM, LTD.



TGkine1700/2200M-B



TGkine3300/3400M-B

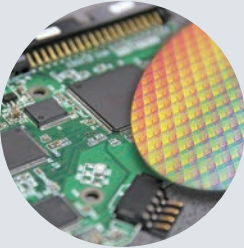




TGkine®-B series features

- Integrated controller and power supply
- Space saving ■ Energy saving
- Large volume flow rate, high gas throughput
- Various communication options (including EtherCAT)
- In-house magnetic bearing provides stable operation
- Low speed mode
- Conforms to International Standards : CE/NRTL/SEMI-S2

TGK
TRUST &
EFFICIENT / CON

Applications and

Application	 Etching Ashing	 Ion plating for tool coating	 Ion plating for photovoltaic cell manufacturing
Pump model	Anti-deposition heated type	Standard type	Standard type
Requirements	Chamber pressure : 0.7~10Pa ($5.3\times10^{-3}\sim7.5\times10^{-2}$ Torr) Prevents deposition of by-products	Chamber pressure : $1\times10^{-2}\sim0.1$ Pa ($7.5\times10^{-5}\sim7.5\times10^{-4}$ Torr) Tolerable to dust	Chamber pressure : 1×10^{-2} Pa (7.5×10^{-5} Torr) Tolerable to dust

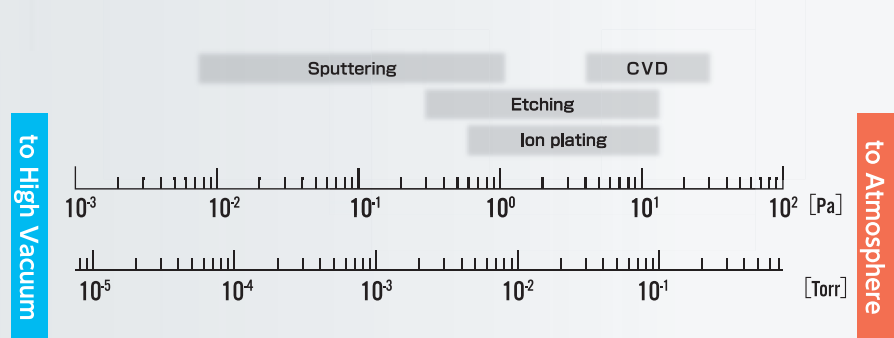


TGkine3800/4200M-B



TGkineMI-B series

Pressure range for each application



And pump models



Sputtering
(Roll to Roll coater)



Sputtering



Evaporation



R & D

Standard type	Standard type	Radiant heat resistant type Standard type	Standard type
Large volume flow rate High compression ratio	Large volume flow rate High compression ratio	Large volume flow rate Tolerance to radiant heat Energy saving	Large volume flow rate High compression ratio

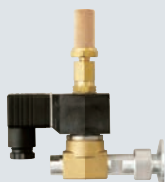
EFFICIENT / CON

Features for various application

- Anti-deposition heated type** Reduces by-products condensation inside by energy efficient heating.
- Anti-corrosive gas type** Internal anti-corrosive coating.
- Radiant heat resistant type** Operable even in close proximity to a radiant heat source.
- Standard type** For everyday high vacuum pumping to processes that do not involve corrosive gases nor radioactive environment.



Purge gas restrictor

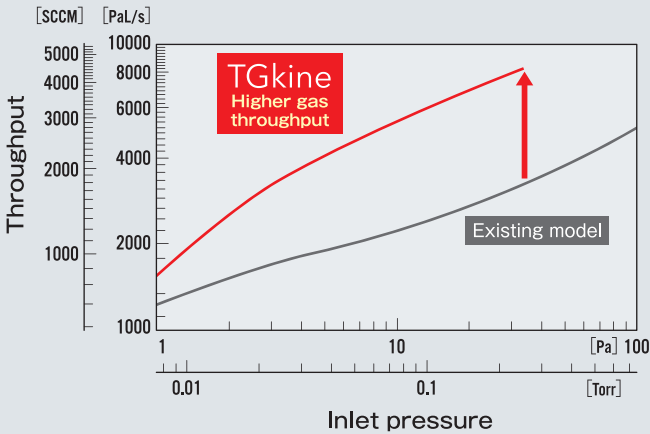
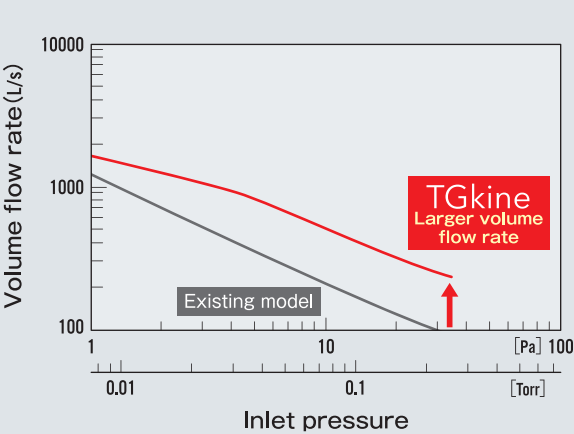


Solenoid slow vent valve



Inlet band heater

Large volume flow rate / High gas throughput design



TRUST &



— Benefits of TG

Low running cost, low total cost of ownership

High productivity

Small Footprint / Space Saving

CONNECTED / STABLE

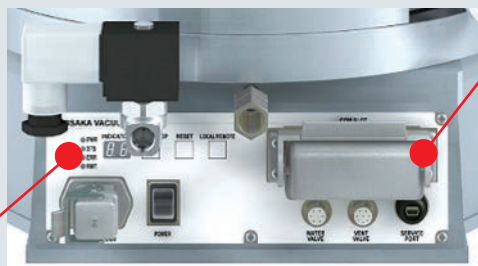
Compact footprint, easy access to every function

- All ports, interconnects, display and switches are located at the front panel.
- No space is required at the back side of the pump.
- Easy installation and easy access for any tool maintenance.

Compatible with harsh environment

Protection rating: IP54 (standard), the pump is protected from water or dust. The proprietary technology prevents condensation inside the integrated controller.

Indicator to check the operation status



Wide selection of remote interface options

Multiple interface options and multiple units operation available

RS232C	EtherCAT
RS485	Parallel I/O
Profibus	DeviceNet

Remote interfaces to operate multiple pumps



Interface type	Communication speed	Max distance	Max units
RS485	~115kbps	~1.2km	~31 units
Profibus	~12Mbps	~1.2km	~128 units
EtherCAT	100Mbps	20km	~65,535 units ※

※Including master and repeater.

Maximum operating distance and maximum number of operating units may vary depending on the speed setting. Please contact us for details.

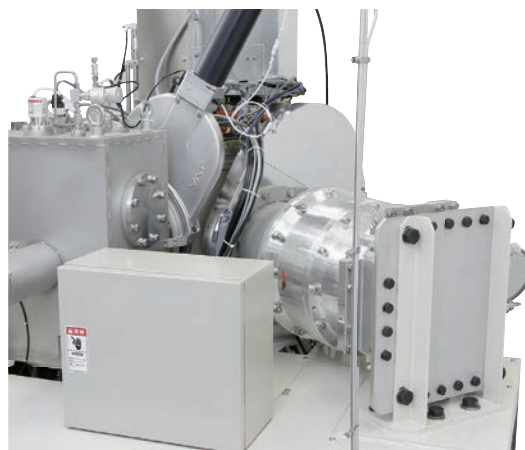
SAFETY

TGkine®-B series —

Wide selection of remote interface options

Yield improvement

Easy to operate



TGkine 1700 / 2200M-B

TGkine® series offers larger pumping speed at high throughput than previous models. Its rotor design is optimized for the performance thanks to our compound molecular pump technology developed over the years.



■ Specifications

Model※1		TGkine1700M-B		TGkine2200M-B	
		TGkine1704M-B	TGkine1705M-B	TGkine2204M-B	TGkine2205M-B
Inlet flange		ISO-B200 VG200		ISO-B250 VG250	
Outlet flange※2		KF40	KF50	KF40	KF50
Volume flow rate	N ₂ (L/s)	1650		2200	
	N ₂ (with protective screen ; L/s)	1570		2100	
	H ₂ (L/s)	1550		1800	
Max. compression ratio	N ₂	>2×10 ⁸			
	H ₂	3×10 ³			
Max. throughput※3※4	N ₂ (sccm)	4400			
	Ar (sccm)	2600			
Base pressure※5	(Pa)	<2×10 ⁻⁷			
	(Torr)	<1.5×10 ⁻⁹			
Startup time	(min)	≦10			
Shutdown time	(min)	≦10			
Max. backing pressure※6	(Pa)	220			
	(Torr)	1.65			
Recommended backing pump	(L/min)	≧2000			
Mounting orientation		Any			
Input voltage	(V)	AC200-240V			
Input phase		Single			
Input frequency	(Hz)	50 / 60			
Input current	(A)	Max. 5.3			
Input power	(kVA)	Max. 0.9			
Weight	(kg)	65		62	

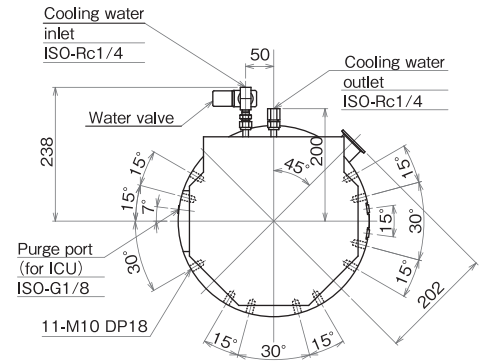
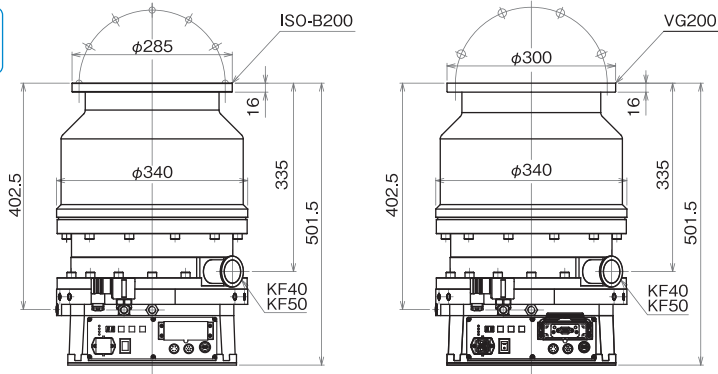
*1: Please contact us for the specific model name. *2: Specifications may vary depending upon the model *3: 1Pa·L/s(25°C)=0.543sccm(0°C, 1atm)

*4: When the pump is backed by a 5000 L/min backing pump. *5: Pressure attained after 48 hours of bake-out.

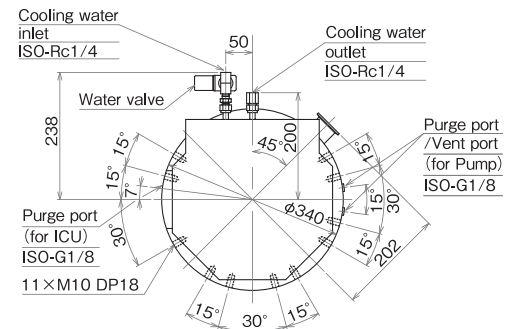
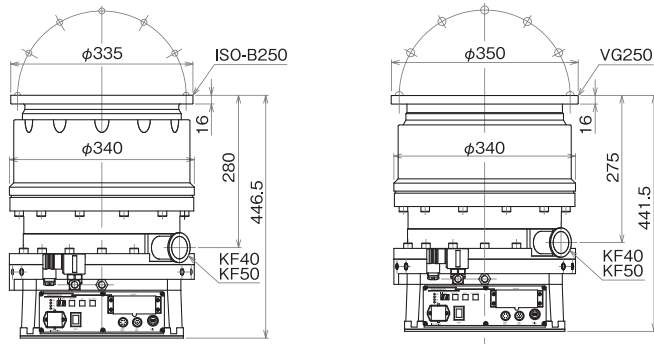
*6: Max. foreline pressure in which the pump can continue to run without triggering the fail-safe acceleration-shutdown feature.

■ Dimensions

1700M-B

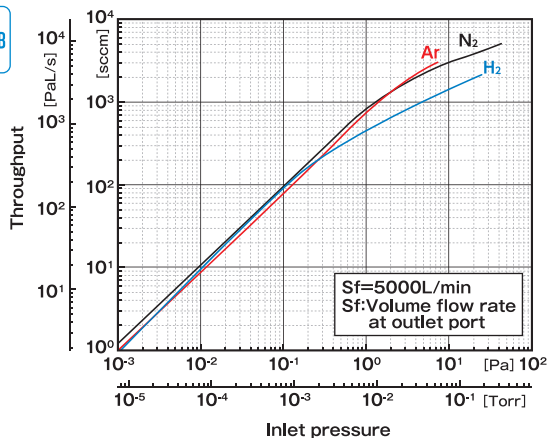


2200M-B

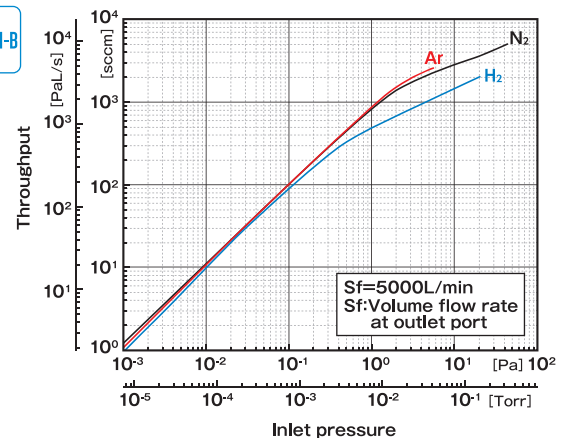


■ Gas throughput

1700M-B

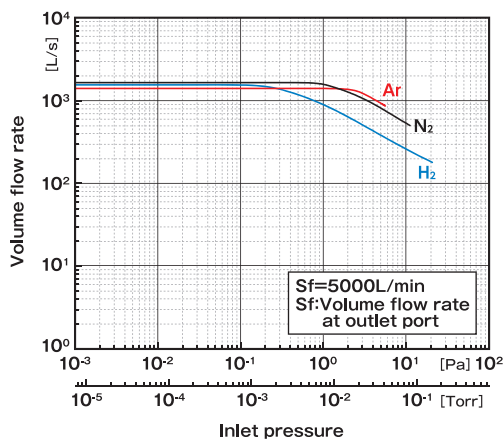


2200M-B

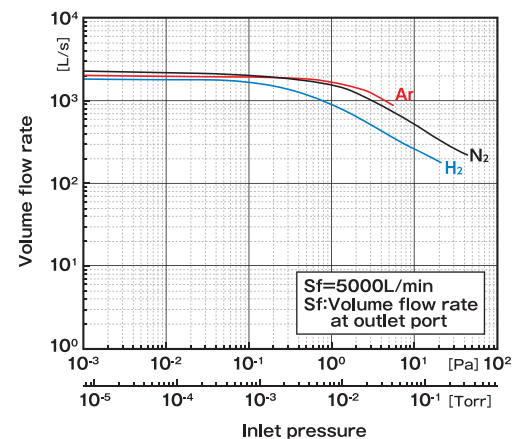


■ Volume flow rate

1700M-B



2200M-B



TGkine 3300/3400M-B

TGkine® series offers larger pumping speed at high throughput than previous models. Its rotor design is optimized for the performance thanks to our compound molecular pump technology developed over the years.



■ Specifications

Model※1		TGkine3300M-B		TGkine3400M-B	
		TGkine3304M-B	TGkine3305M-B	TGkine3404M-B	TGkine3405M-B
Inlet flange		ISO-B320 VG300		VG350	
Outlet flange※2		KF40	KF50	KF40	KF50
Volume flow rate	N ₂ (L/s)	3300			
	N ₂ (with protective screen ; L/s)	3100			
	H ₂ (L/s)	2700			
Max. compression ratio	N ₂	>1×10 ⁸			
	H ₂	3×10 ³			
Max. throughput※3※4	N ₂ (sccm)	2100			
	Ar (sccm)	1600			
Base pressure※5	(Pa)	<2×10 ⁻⁷			
	(Torr)	<1.5×10 ⁻⁹			
Startup time	(min)	≤11			
Shutdown time	(min)	≤13			
Max. backing pressure※6	(Pa)	170			
	(Torr)	1.28			
Recommended backing pump	(L/min)	≥2000			
Mounting orientation		Any			
Input voltage	(V)	AC200-240V			
Input phase		Single			
Input frequency	(Hz)	50/60			
Input current	(A)	Max. 5.9			
Input power	(kVA)	Max. 1.0			
Weight	(kg)	70 69		72	

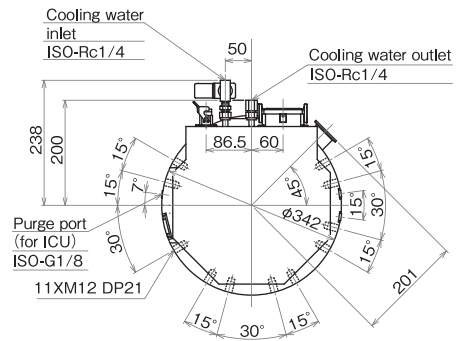
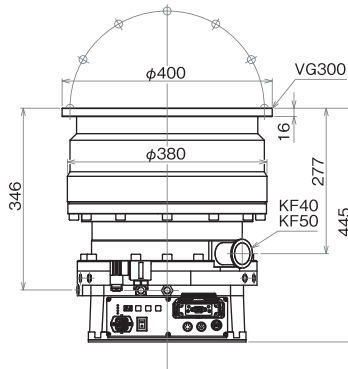
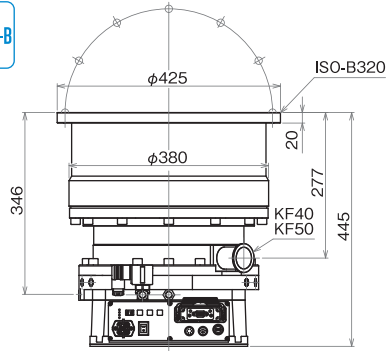
※1: Please contact us for the specific model name. ※2: Specifications may vary depending upon the model ※3: 1Pa·L/s(25°C)=0.543sccm(0°C, 1atm)

※4: When the pump is backed by a 5000 L/min backing pump. ※5: Pressure attained after 48 hours of bake-out.

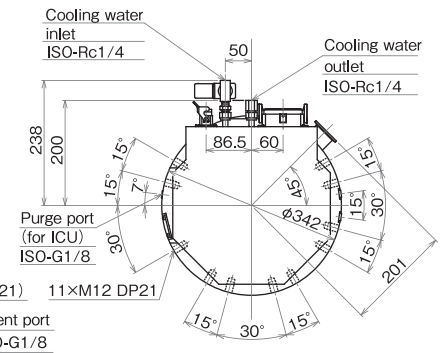
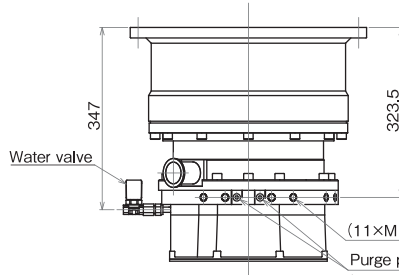
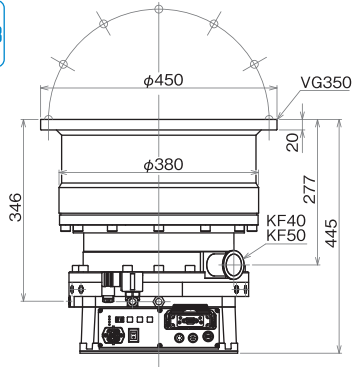
※6: Max. foreline pressure in which the pump can continue to run without triggering the fail-safe acceleration-shutdown feature.

■ Dimensions

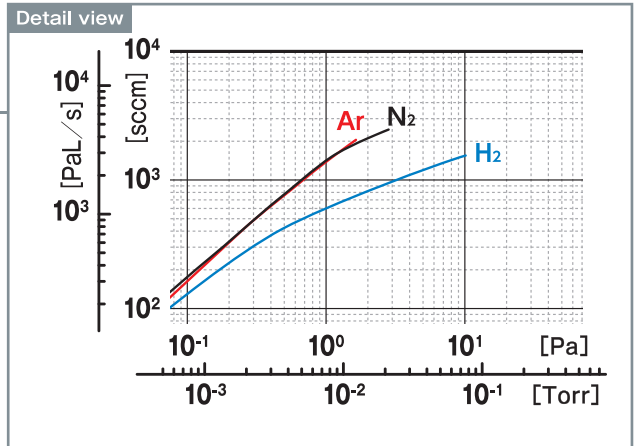
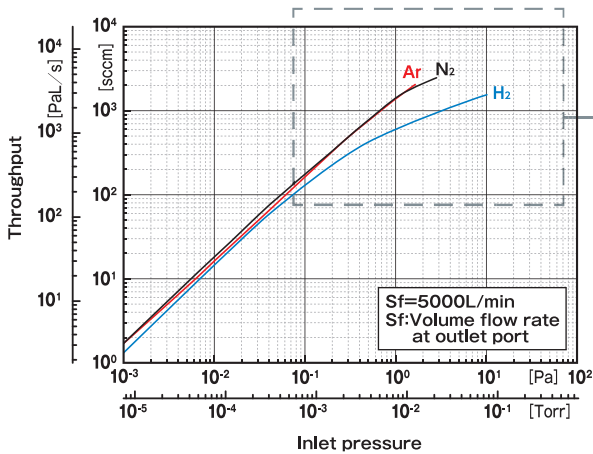
3300M-B



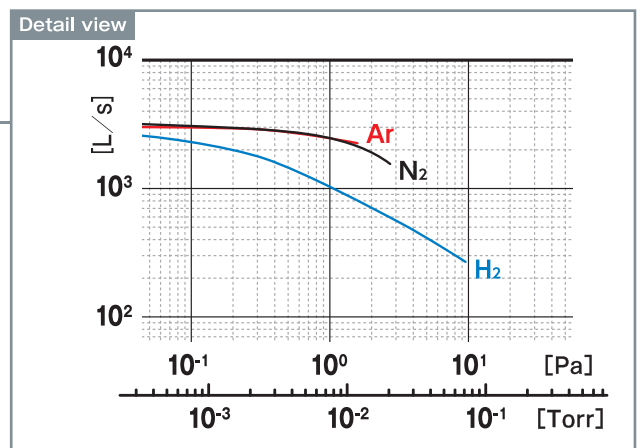
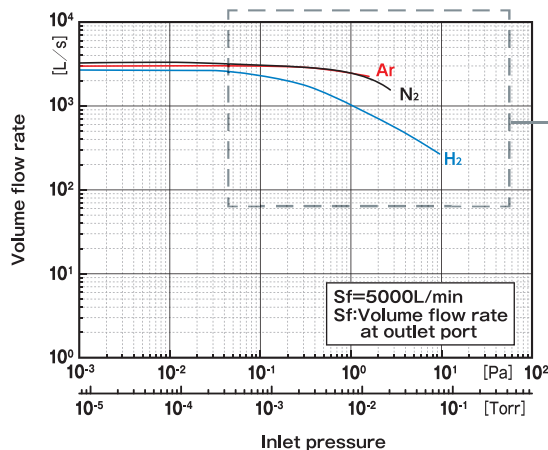
3400M-B



■ Gas throughput



■ Volume flow rate



TGkine 3800/4200M-B

TGkine® series offers larger pumping speed at high throughput than previous models. Its rotor design is optimized for the performance thanks to our compound molecular pump technology developed over the years.



■ Specifications

Model※1		TGkine3800M-B		TGkine4200M-B	
		TGkine3804M-B	TGkine3805M-B	TGkine4204M-B	TGkine4205M-B
Inlet flange		ISO-B320 VG300		VG350	
Outlet flange※2		KF40	KF50	KF40	KF50
Volume flow rate	N ₂ (L/s)	3600		4200	
	N ₂ (with protective screen ; L/s)	3400		4000	
	H ₂ (L/s)	2700			
Max. compression ratio	N ₂	>2×10 ⁸			
	H ₂	2×10 ³			
Max. throughput※3※4	N ₂ (sccm)	2800			
	Ar (sccm)	1400			
Base pressure※5	(Pa)	<5×10 ⁻⁷			
	(Torr)	<3.8×10 ⁻⁹			
Startup time	(min)	≤12			
Shutdown time	(min)	≤14			
Max. backing pressure※6	(Pa)	160			
	(Torr)	1.2			
Recommended backing pump	(L/min)	≥2000			
Mounting orientation		Vertical only			
Input voltage	(V)	AC200-240V			
Input phase		Single			
Input frequency	(Hz)	50 / 60			
Input current	(A)	Max. 5.9			
Input power	(kVA)	Max. 1.0			
Weight	(kg)	80 78		75	

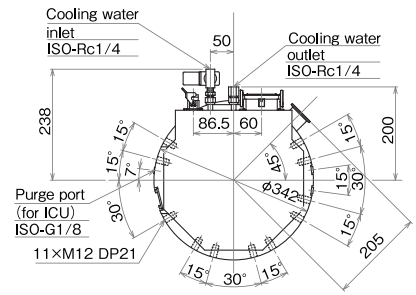
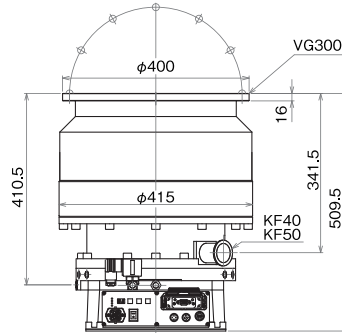
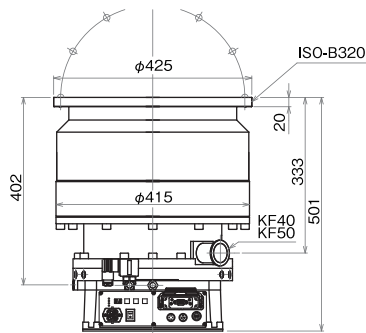
※1: Please contact us for the specific model name. ※2: Specifications may vary depending upon the model ※3: 1Pa·L/s(25°C)=0.543sccm(0°C, 1atm)

※4: When the pump is backed by a 5000 L/min backing pump. ※5: Pressure attained after 48 hours of bake-out.

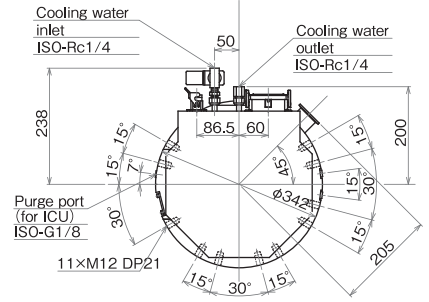
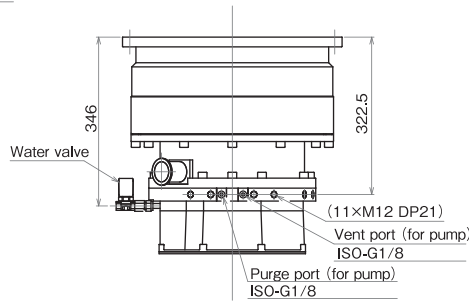
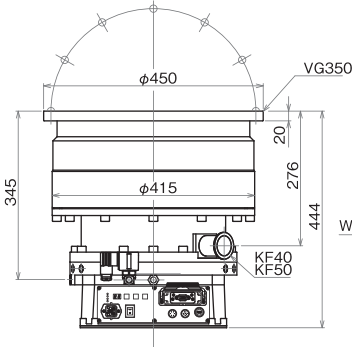
※6: Max. foreline pressure in which the pump can continue to run without triggering the fail-safe acceleration-shutdown feature.

■ Dimensions

3800M-B

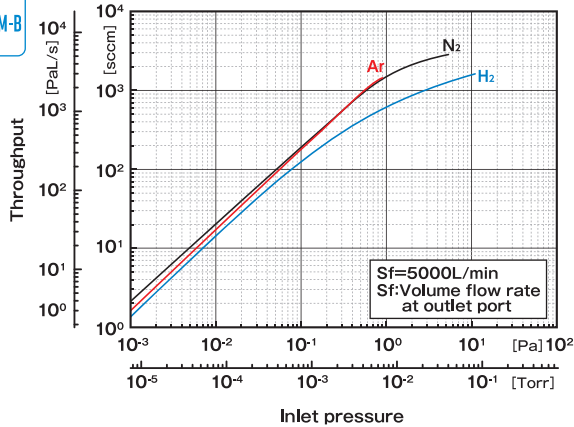


4200M-B

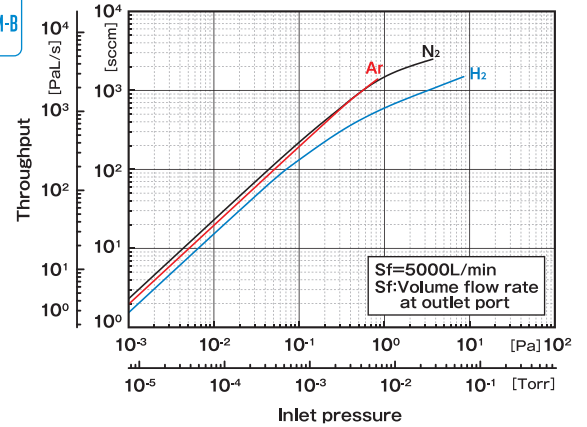


■ Gas throughput

3800M-B

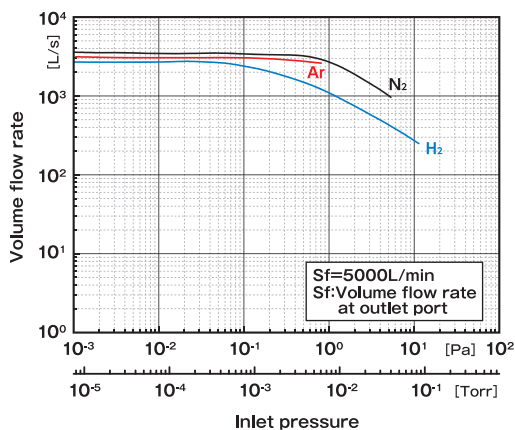


4200M-B

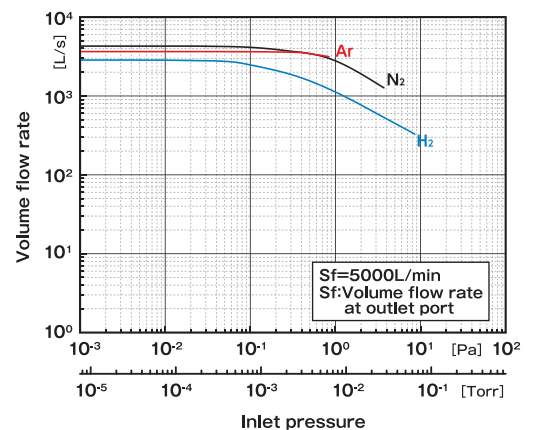


■ Volume flow rate

3800M-B



4200M-B



Energy Efficient Heated type Magnetically Levitated Turbo Molecular Pump **TGkineMI-B series**

TGkine-MI series converts frictional heat to raise its internal temperature and reduces condensation from process by-products. Osaka's patented thermally insulated structure with temperature management system (TMS) elevates the pump internal temperature efficiently.



■ Application

Etching tools in semiconductor, LCD, and MEMS manufacturing
Vacuum processing tools that may generate process by-products effluent

■ Feature

TGkineMI-B series features to reduce by-products deposition

Conventional heating to reduce deposition

**Heat up both the target area
and its surroundings.**


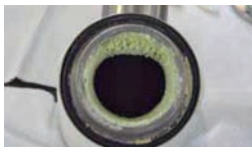
- Heat escapes to the surrounding area/ heating is not so efficient.
- Undesired high temperature at the surrounding area.



Heating on TGkineMI-B series

In addition to the heating by a external heater, the pump also utilize the heat generated by friction between the process gas and the pump walls to heat up the target area

- The heat insulating structure enables high temperature at the target area with less heat from the external heater.
- The heat insulating structure lowers temperature at non-target area and reduce the rotor creep.
- The exhaust port is also heated and prevents by-products deposition there.

Standard type		TGkine-MI series	
Huge build-up was deposited at inside the pump and the outlet. It would affect the pump performance and eventually the rotor may crash to the deposition.		TGkine-MI's temperature management system reduced the by-products build up significantly. TGkine-MI helps stable operation of your production line.	
Outlet port		Outlet port	
			
Remaining opening :φ6mm (of φ36mm outlet)		Remaining opening :φ27.6mm (of φ36mm outlet)	

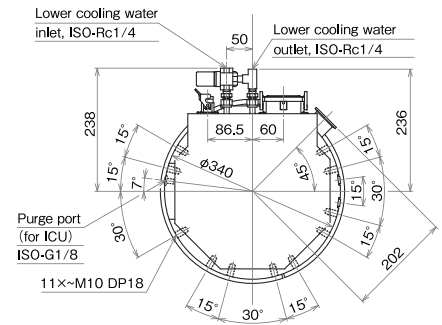
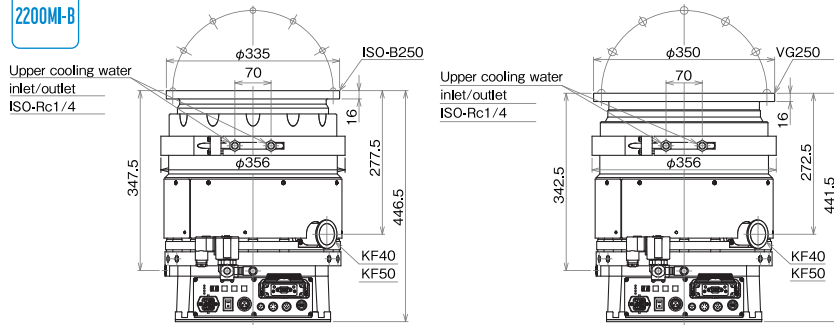
■ Specifications

Model		TGkine2200MI-B	TGkine3300MI-B	TGkine3400MI-B	TGkine3800MI-B	TGkine4200MI-B
Inlet flange		ISO-B250 / VG250	ISO-B320 / VG300	VG350	ISO-B320 / VG300	VG350
Volume flow rate	N ₂ (L/s)	2200	3300		3600	4200
	N ₂ (with protective screen; L/s)	2100	3100		3400	4000
	H ₂ (L/s)	1800	2700			
Max. compression ratio	N ₂	>2×10 ⁸	>1×10 ⁸		>2×10 ⁸	
	H ₂	>3×10 ³			2×10 ³	
Base pressure	(Pa/Torr)	<2×10 ⁻⁷ /1.5×10 ⁻⁹			<5×10 ⁻⁷ / 3.8×10 ⁻⁹	
Max. throughput* ²	N ₂ (sccm)	5000	2500		2800	
	Ar (sccm)	3000	1800		2100	
Startup time	(min)	≤10	≤11		≤12	
Shutdown time	(min)	≤10	≤13		≤14	
Max. backing pressure	(Pa)	100	100	110	100	
	(Torr)	0.75	0.75	0.82	0.75	
Recommended backing pump	(L/min)	≥2000				
Weight	(kg)	65	74 / 73	76	89 / 87	84

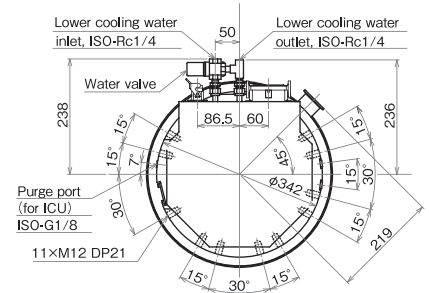
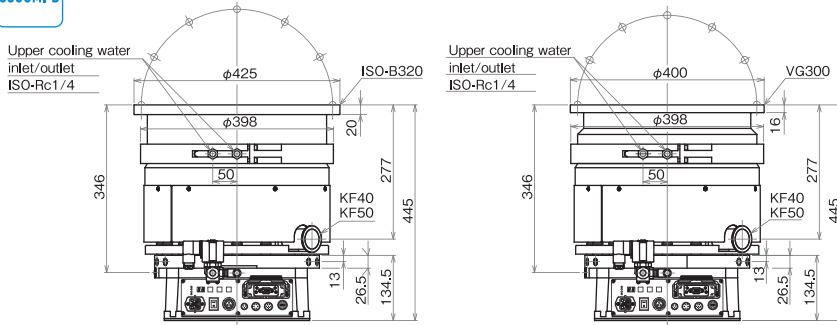
※ 1: TGkine1700MI-B is also available upon request. ※ 2: When the pump is backed by a 5000 L/min backing pump

■ Dimensions

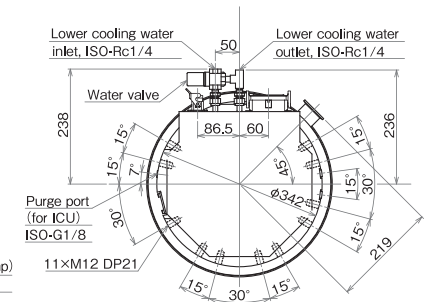
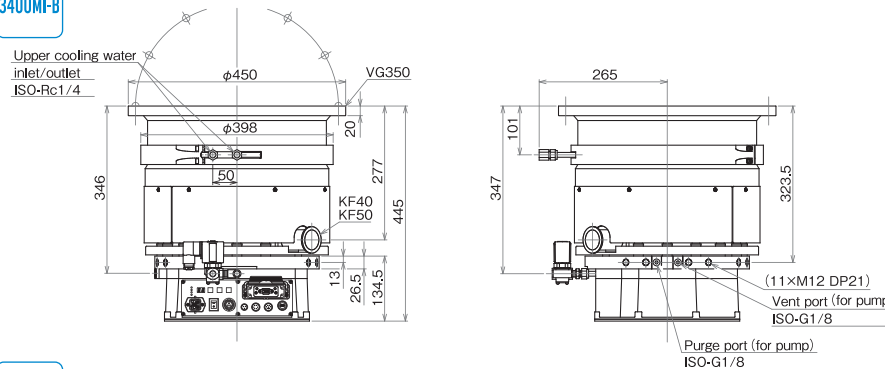
2200MI-B



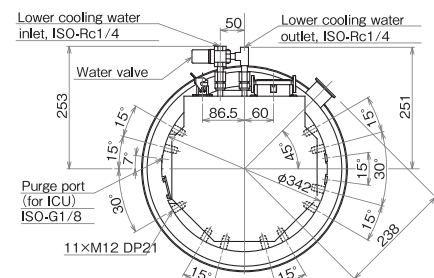
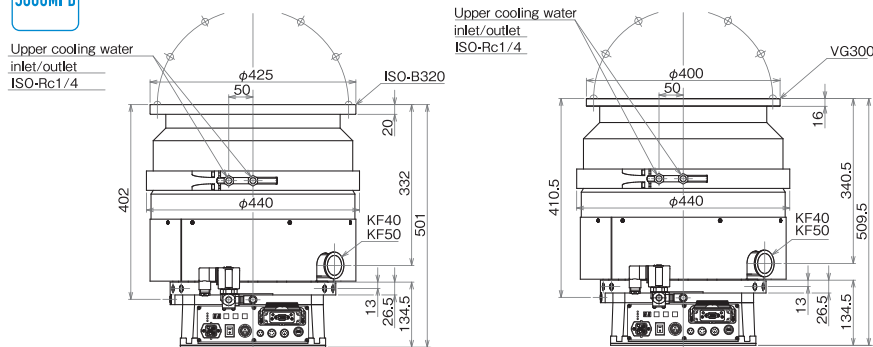
3300MI-B



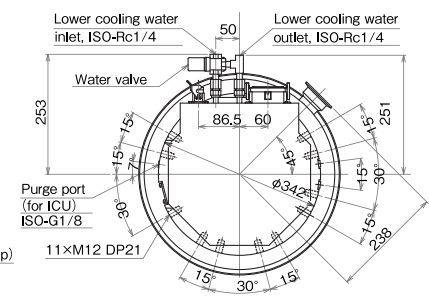
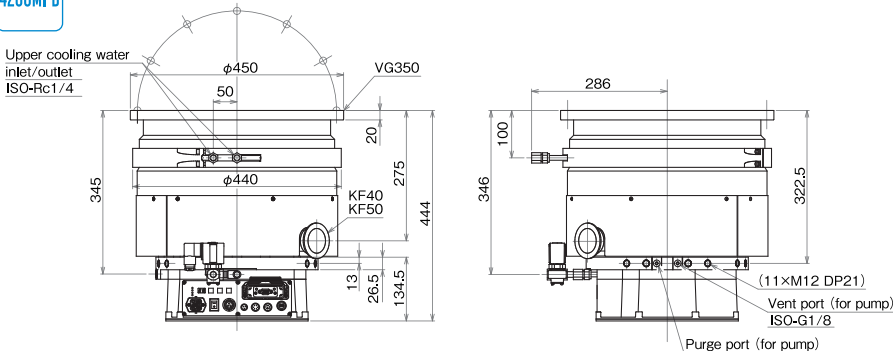
3400MI-B



3800MI-B



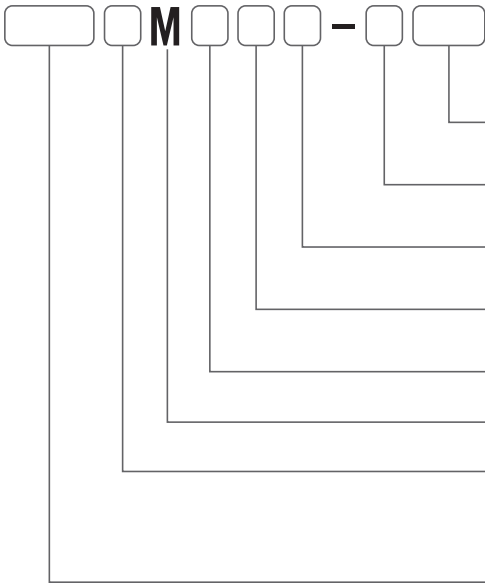
4200MI-B



Series Coding

[Standard type]

TGkine



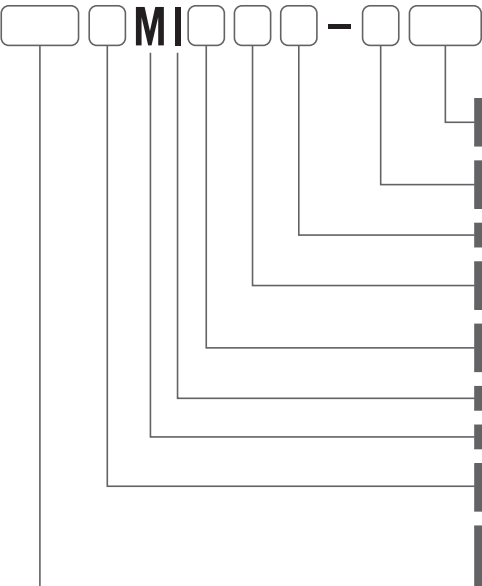
Custom model code (2 digits)	No code	Standard model
	**	Custom model ^{※2}
Controller	B	Onboard controller
	R	Rackmount controller
Rotor & stator surface	B	Standard type
	C	Corrosive resistant type <Non-standard>
Cooling system	W	Water cooling
	A	Air cooling <Non-standard>
Inlet flange	B	ISO-B
	V	VG ^{※1}
Bearing system	M	Magnetically levitated
Outlet fange	4	KF40
	5	KF50
Size	170	N ₂ Volume flow rate : 1650L/s · Inlet fange : 200A
	220	N ₂ Volume flow rate : 2200L/s · Inlet fange : 250A
	330	N ₂ Volume flow rate : 3300L/s · Inlet fange : 300A
	340	N ₂ Volume flow rate : 3300L/s · Inlet fange : 350A
	380	N ₂ Volume flow rate : 3600L/s · Inlet fange : 300A
	420	N ₂ Volume flow rate : 4200L/s · Inlet fange : 350A

[Standard Flange]
KF : ISO 2861/1:1974 Vacuum technology - Quick-release couplings- Dimensions - Part 1 (Clamped type)
VG : JIS B2290:1998 Vacuum technology-Flange :dimensions (Vacuum flange with O-ring groove)
ISO-B : ISO 1609:1986 Vacuum technology - Flange dimensions (Bolted type)

[Note] ※ 1: Only VG flange is available for TGkine340*M and TGkine420*M
※ 2: Please contact us for more details.

[Anti-deposition heated type]

TGkine



Custom model code (2 digits)	No code	Standard model
	**	Custom model ^{※2}
Controller	B	Onboard controller
	R	Rackmount controller
Rotor & stator surface	C	Corrosive resistant type <Non-standard>
Cooling system	W	Water cooling
	A	Air cooling <Non-standard>
Inlet flange	B	ISO-B
	V	VG ^{※1}
Heating	I	With temperature management system (TMS)
Bearing system	M	Magnetically levitated
Outlet fange	4	KF40
	5	KF50
Size	220	N ₂ Volume flow rate : 2200L/s · Inlet fange : 250A
	330	N ₂ Volume flow rate : 3300L/s · Inlet fange : 300A
	340	N ₂ Volume flow rate : 3300L/s · Inlet fange : 350A
	380	N ₂ Volume flow rate : 3400L/s · Inlet fange : 300A
	420	N ₂ Volume flow rate : 4200L/s · Inlet fange : 350A

[Standard Flange]
KF : ISO 2861/1:1974 Vacuum technology - Quick-release couplings- Dimensions - Part 1 (Clamped type)
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[注記] ※ 1: Only VG flange is available for TGkine340*M and TGkine420*M
※ 2: Please contact us for more details.

Series of Turbo Molecular Pumps



TGkine®-R series

Magnetically Levitated Turbo Molecular Pumps

- Standard Type & Corrosive Resistant Type from 2200L/s to 4200L/s.
- Space saving ■ Energy saving ■ High gas throughput
- Various communication options (including EtherCAT)
- In-house magnetic bearing provides stable operation
- Low speed mode



TG-M series

Magnetically Levitated Turbo Molecular Pumps

- Standard Type & Corrosive Resistant Type from 300L/s to 2400L/s.
- Low vibration with UFRC (Unbalance Force Rejection Control).
- The position sensors of the magnetic suspension are calibrated automatically at start up.
- The rotation speed is adjustable according to the pumping performance required by the process.
- Thermally managed type is available for processes with by-products buildup.



TG-F series

Any Orientation Turbo Molecular Pumps

- Grease-lubricated types with pumping speeds from 50~2400L/s.
- Any mounting orientation and easy operation.
- Maintenance free recommended overhaul cycle is 20,000 - 30,000 hours
- Durable, compact, light-weight design.
- Models for frequent air inrush or for quick shut down with venting are available



TG series

Oil Lubricated Turbo Molecular Pumps

- Corrosive resistant type from 200L/s to 1800L/s.
- Both corrosive resistant type for corrosive application and standard type for clean process from 2800 L/s to 5500 L/s



TS series

Helical Groove Turbo Molecular Pumps

- All helical groove stage rotor
- High throughput at medium/low vacuum
- Durable structure against more than 300,000 times air inrush (TS50)

Osaka Vacuum's Low vacuum pumps

Rotary vane pumps	Dry vacuum pumps
	  
VRD	FR (Air-cooled type) ER (Energy-saving type) DSP (Compact type)

Other backing pumps suitable for Turbo molecular pumps

Dry vacuum pumps	Multi-stage roots type / Screw type
Rotary vane pumps	Direct drive type

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⚠ To ensure proper usage the products described in this catalogue, please make sure to read the instruction manual thoroughly prior to use.

Notice: Freight that is regulated by the Foreign Exchange and Foreign Trade Law may require official permission before shipment in accordance with the law.

ISO9001

JQA-1902
Nabari Factory

ISO14001



JQA-EM5143

MS
CM009