

Turbomolecular Pump

# TMP-B300



# Features

## The TMP-B300 helps reduce vacuum system costs.

- A long-life bearing mechanism reduces maintenance costs.
- The pump can be used in combination with a small backing pump.
- The pump can be mounted in any orientation.

### Combination of magnetic and ceramic bearings

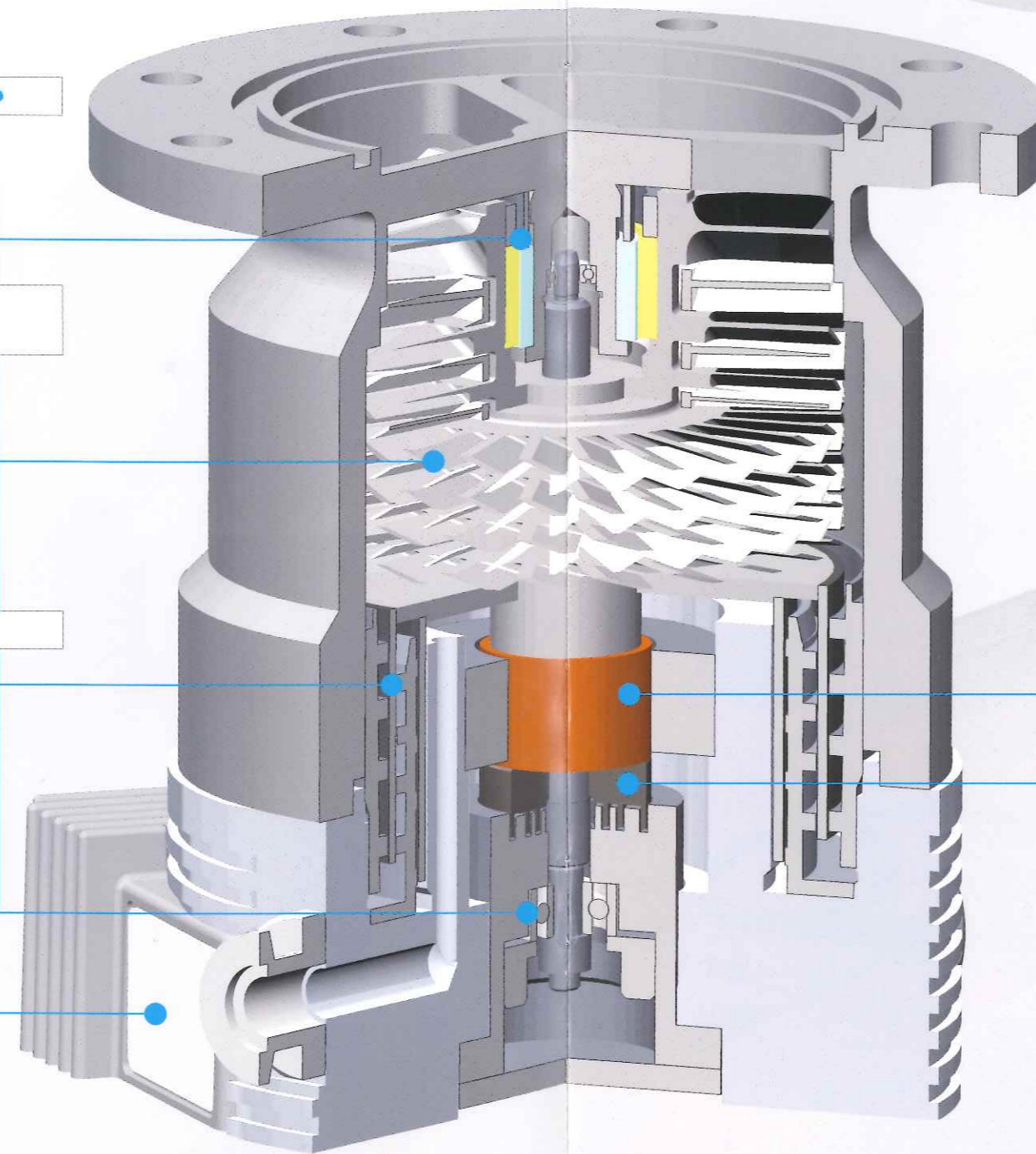
A proprietary damping mechanism is used to achieve low vibration and a bearing cooling function, additionally provides high reliability and long service life.

### High backing pressure and high $1 \times 10^5$ hydrogen compression ratio

The combination of turbine blades and molecular drag pump achieves ultra high vacuum even with high backing pressure levels. If used in combination with a small dry vacuum pump, such as a diaphragm pump, it can achieve ultra-high vacuum pressures.

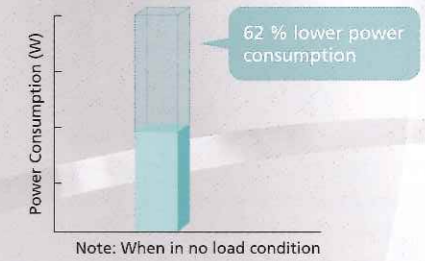
### Integrated controller

An integrated controller makes it possible to start, stop, or reset the unit locally. The unit can also be operated by RS-485 and remote contact signals. Computer communication software is also available. Input voltage is 24 V DC.



### Low power consumption

This environmentally friendly series features a newly developed power unit and high-efficiency motor, which reduce power consumption to 180 W (62 % lower than previous Shimadzu models).



### Low heat-generation motor

Reducing heat generated from the motor helps prevent the bearing temperature from increasing and extends the service life.

### Labyrinth seal prevents backflow

This seal helps ensure a clean vacuum by preventing the grease (base oil) used in the ceramic bearing from spreading.

### Mountable in any orientation

The pump unit can be mounted in vertical, horizontal, or inverted orientation.



# Turbomolecular Pump Optional Parts

## Venting Valve

The venting valve is connected to the venting port on the casing of the main pump unit, and is used to inject venting gas when stopping the pump to restore atmospheric pressure inside the pump. It then prevents oil mist from the backing pump from flowing back toward the inlet port. The valve can be controlled using a special interface cable accessory that receives power from the I/F connector.



## Gas Purge Adapter

N<sub>2</sub> purge gas is used when there is a risk of dust getting inside the bearing unit or when evacuating heavier gases such as argon, and can help minimize any decrease in service life. To control the gas flow rate, use a flow meter.

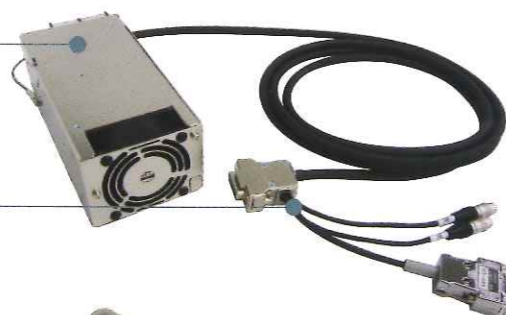
## Air Cooling Fan

Use an air cooling fan in the following cases - if ambient temperature exceeds 35 °C, or if gas is supplied, or if the backing pressure is high, or if baking is used. Air cooling fans can be installed by the customer, with power for the air cooling fan supplied from the dedicated connector on the built-in controller.



## Baking Heater

This heater can only be used with TMP-B300 pumps equipped with an ICF152 flange. The temperature is automatically controlled to 85 °C as it uses heat to discharge gases. By using heat to discharge gases from the high vacuum side of the pump, lower vacuum pressures can be achieved in shorter time. However, be sure to use the heater in combination with the air cooling fan. 100 V and 230 V AC versions are available. For 200 V AC power supplies, use the 230 V AC version. Please switch the baking heater ON or OFF manually.



## Power Supply Set

A minimum 24 V DC 180 W power supply is required. You need to provide your own power supply or use this special accessory.

## Interface Cable

The interface cable allows a 24 V DC input, RS-485, or relay output cable to be connected to the I/F connector on the built-in controller. 24 V DC connection cables that can connect to a power supply set are available in four kinds of lengths, 1, 2, 3, or 5 meters long.

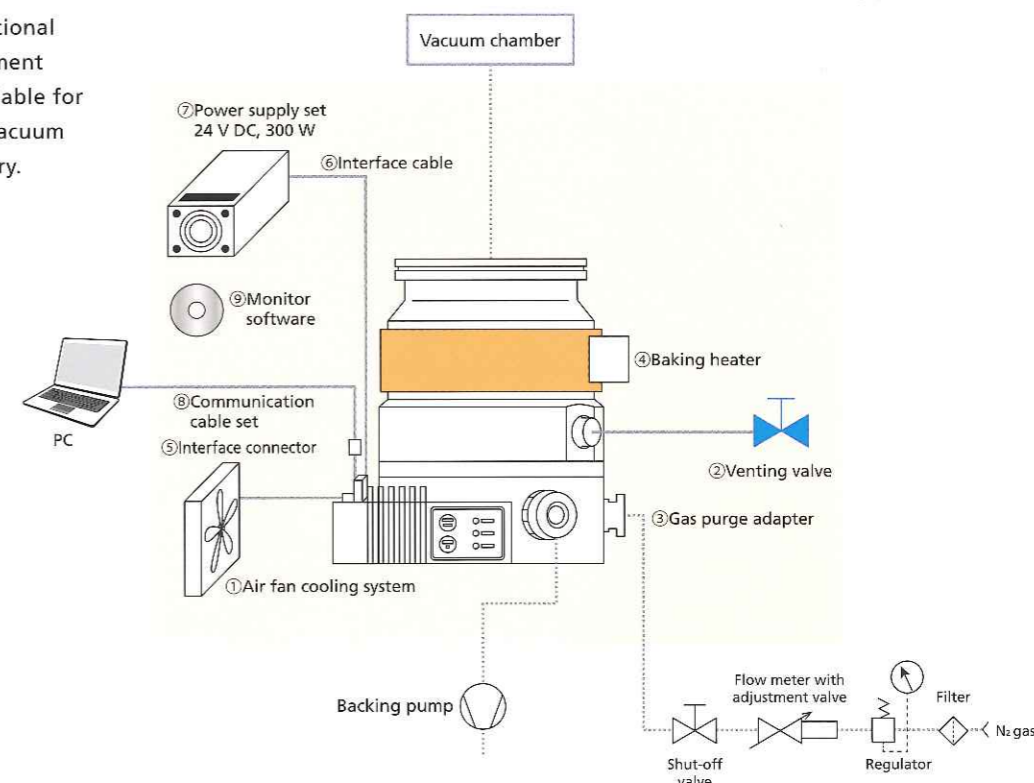


## Interface Connector

This connector is available for customers who want to fabricate their own cable.

# Turbomolecular Pump and Peripheral Equipment

The following optional peripheral equipment products are available for configuring the vacuum system as necessary.



## Optional Parts

No	P/N	Description	Remarks
1	263-44455	Cooling fan	Directly attached to main body
2	263-18796	Venting valve	Normally close
3	263-45673-01	Gas purge adaptor	KF10
4	263-44652-01	Baking heater, B300, 100 V	Only for CF flange model 100 V AC, 200 W
	263-44652-02	Baking heater, B300, 230 V	Only for CF flange model 230 V AC, 200 W
5	263-45677	Interface connector	Connector for 24 V DC supply and communications D-sub 15-pin female with connector hood
6	263-44408-01	Interface cable 1MT	With connectors for RS485 and venting valve
	263-44408-02	Interface cable 2MT	
	263-44408-03	Interface cable 3MT	
	263-44408-05	Interface cable 5MT	
7	263-44497-01	Power supply set DC24V JU, 1MT	Input voltage: 100-240 VAC With a 100 V AC plug for use in Japan and North America
	263-44497-03	Power supply set DC24V JU, 3MT	
	263-44497-05	Power supply set DC24V JU, 5MT	
	263-44497-51	Power supply set DC24V EU, 1MT	
	263-44497-53	Power supply set DC24V EU, 3MT	
263-44497-55	Power supply set DC24V EU, 5MT	Input voltage: 100-240 V AC With a 230 V AC plug for use in Europe	
8	263-45678-01	Communication cable set, 1MT	USB-RS485 converter and RS485 communication cable
	263-45678-03	Communication cable set, 3MT	
	263-45678-05	Communication cable set, 5MT	
9	263-45722	Monitor software Type B	Only for TMP-B300

# Specifications, Part Numbers, and Optional Parts

## Specifications for Main Unit

Turbo molecular pump model		TMP-B300	
Cooling method		Convection	Forced air by cooling fan
Ultimate pressure <sup>(note 2)</sup>	After baking	— <sup>(note 1)</sup>	10 <sup>-8</sup> Pa order <sup>(note 2)</sup>
	Non-baking	10 <sup>-6</sup> Pa order	10 <sup>-8</sup> Pa order
Pumping speed <sup>(note 3)</sup>	N <sub>2</sub>	280 L/s	280 L/s
	He	270 L/s	270 L/s
	H <sub>2</sub>	220 L/s	220 L/s
Compression ratio	N <sub>2</sub>	> 1×10 <sup>9</sup>	> 1×10 <sup>9</sup>
	He	7×10 <sup>6</sup>	7×10 <sup>6</sup>
	H <sub>2</sub>	1×10 <sup>5</sup>	1×10 <sup>5</sup>
Critical backing pressure		1500 Pa	1500 Pa
Maximum allowable continuous backing pressure <sup>(note 4)</sup>	N <sub>2</sub>	100 Pa (ambient < 35°C)	1000 Pa (ambient 25°C) 930 Pa (ambient 35°C)
Maximum allowable gas throughput at continuous pumping		10 SCCM (ambient 25°C) 4 SCCM (ambient 35°C)	100 SCCM (ambient 25°C) 40 SCCM (ambient 35°C)
weight	VG, ISO	6 kg	6.3 kg
	ICF	9 kg	9.3 kg
Bearing type		Passive magnetic bearing and ceramic bearing	
Inlet flange		VG100, DN100CF, ISO100K	
Outlet port		KF16	
Rated speed		60000 rpm	
Stat-up time (up to 80 %)		3.5 minutes	
Mounting direction		In any desired direction	
Noise [Shimadzu's method] <sup>(note 5)</sup>		≤ 50 dBA	
Admissible ambient magnetic field	Radial direction	3 mT	
	Axial direction	15 mT	
Input electric power	Voltage	DC24 V ± 5 %	
	Maximum power	180 W	

Note 1: Only pumps equipped with a CF flange and cooling fan can be baked.

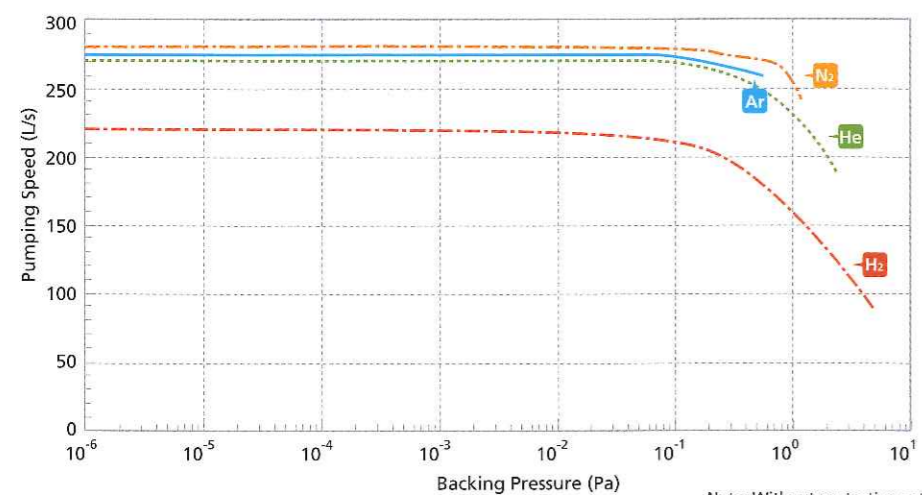
Note 2: When using a two-stage oil-sealed rotary pump as an auxiliary pump.

Note 3: When no protective net is used, Pumping speed for N<sub>2</sub> is 260 L/s when a protective net is used.

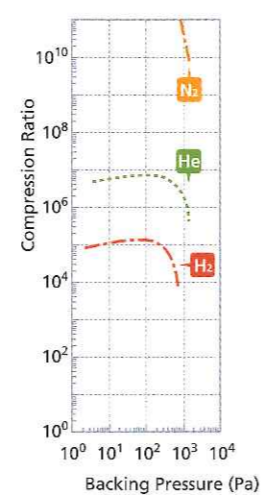
Note 4: Maximum allowable backing pressure for continuous running when gas throughput at inlet port is 0 mL/min

Note 5: Measured for the ISO flange model.

### Pumping Speed Curve

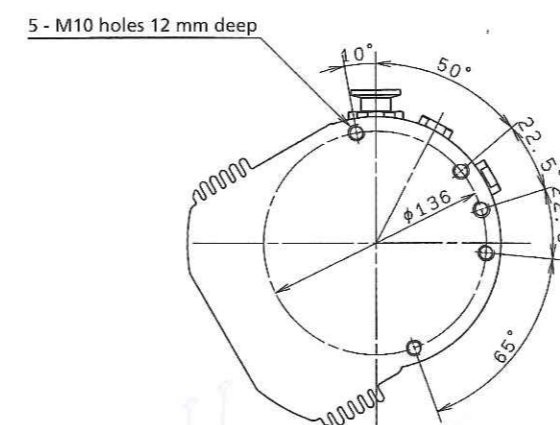
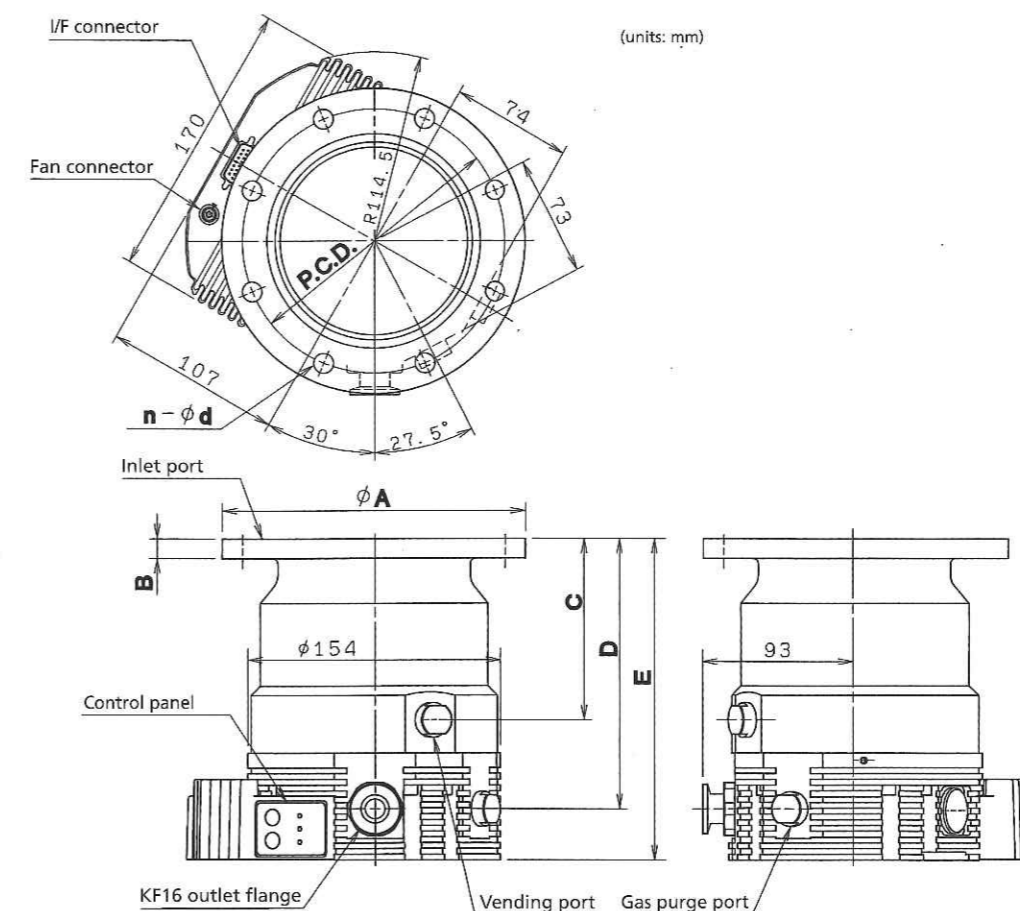


### Compression Ratio Curve



## Main Unit Part Numbers and Dimensions

P/N	Inlet flange	øA	B	n-ød	P.C.D.	C	D	E
263-18740-01	DN100CF	152	20	16-ø8.5	ø130.3	122	176	207
263-18740-02	VG100	185	12	8-ø12	ø160	110	164	195
263-18740-03	ISO100K	130	12	—	—	110	164	195



## Turbomolecular Pump Service Network

Enquiries received by the TMP Group, Quality Assurance Department, are handled via our rapid response service network. To allow our overseas customers to use these products with complete confidence, turbomolecular pump service sites have been established at the locations below to handle pump maintenance and to supply backup units.



The TMP Group, Quality Assurance Department, accepts enquiries on a 24-hour basis to allow customers in industries operating day and night to use Shimadzu turbomolecular pumps with complete confidence.

### Service Center

TMP Group, Quality Assurance Department,  
Industrial Machinery Division, Shimadzu Corporation

E-mail : [industry@group.shimadzu.co.jp](mailto:industry@group.shimadzu.co.jp)



**SHIMADZU CORPORATION. International Marketing Division**  
3, Kanda-Nishikicho 1-chome, Chiyoda-ku, Tokyo 101-8448, Japan  
Phone: 81(3)3219-5641 Fax: 81(3)3219-5710

**SHIMADZU Industrial Equipment USA**  
2340-C Walsh Avenue, Santa Clara, CA95051, U.S.A.  
Phone: 1(408)566-0960 Fax: 1(408)566-0961 E-mail: [tmp@spi-inc.com](mailto:tmp@spi-inc.com)

**SHIMADZU (ASIA PACIFIC) Pte. Ltd.**  
79 Science Park Drive, #02-01/08, Cintech IV Singapore Science Park 1,  
Singapore 118264  
Phone: 65-6778-6280 Fax: 65-6779-2935

**SHIMADZU (CHINA) CO., LTD. SHANGHAI BRANCH**  
Block E, No. 570 West Huaihai Road, Shanghai, 200052  
Phone: 86-21-2201-3816 Fax: 86-21-2201-3800

**SHIMADZU TAIWAN INDUSTRIAL MACHINERY CO., LTD.**  
8F-3, No.2, Wuling Rd., Hsinchu City, 30054 Taiwan  
Phone: 886(3)531-0118 Fax: 886(3)543-8180

**SHIMADZU KOREA VACUUM EQUIPMENT CO., LTD.**  
2F, Jlsamro 338-8, Giheung-gu, Yongin-si, Gyeonggi-do, 446-909 Korea  
Phone: 82(31)283-0242 Fax: 82(31)283-0263 E-mail: [tmp@skve.co.kr](mailto:tmp@skve.co.kr)

URL <http://www.shimadzu.com>



The Sanjo Works has been certified under ISO 14001:2004 Environmental Management System.

**SHIMADZU CORPORATION. Sanjo Works**  
1, Nishinokyo-Kuwabara-cho, Nakagyo-ku, Kyoto 604-8511, Japan

\* Due to continuous improvements, the external appearance and specifications are subject to change without notice.