



# VACUUM PUMP

BEH series  
BEH-T series

# DRY



**TAIKO KIKAI INDUSTRIES CO., LTD.**

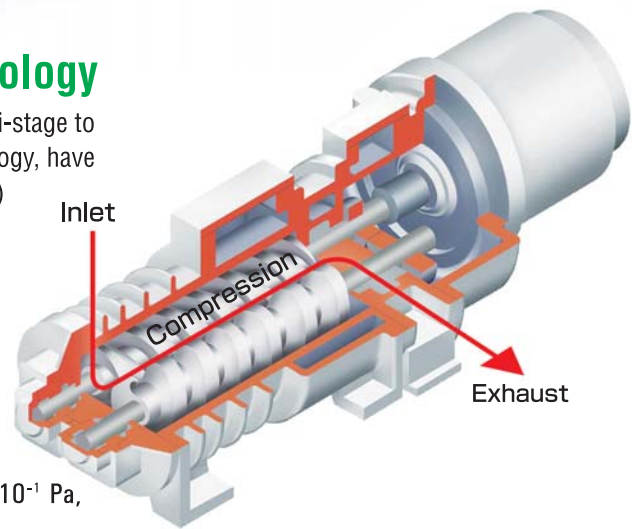
# Queen Bee Screw

## TAIKO, The Future in Pump Technology

Dry vacuum pump technology is rapidly growing from multi-stage to single-stage. TAIKO, the world leader in dry vacuum technology, have engineered the screw dry vacuum pump (Queen Bee Screw) with an original shape to attain the world lowest running speed among the single-stage pumps.

The pressure achieved,  $10^{-1}$  Pa order, has clearly proven the outstanding performance.

Global development in solar cells, liquid crystal and semi-conductor has also been accelerated, under the aim of producing high-performance and high-precision products. Through its dry vacuum pump technology which can achieve  $10^{-1}$  Pa, and its partnership with manufacturers of solar cells, liquid crystal and semi-conductor around the world, TAIKO will open up the electronics era of the 21<sup>st</sup> century.



### Queen Bee Screw

A queen bee is the biggest, and can fly highest and longest hours among bees. The unique-shaped screw designed and developed by TAIKO resembles body of a queen bee, that has given name to TAIKO's Queen Bee Screw.

## Feature

### Seven Keys That Meets Your Performance Challenge

#### 1 World Lowest-running Speed.

With TAIKO's unique screw-shape (Queen Bee Screw), a phenomenally low-rpm (3600min<sup>-1</sup>/60Hz, 3000min<sup>-1</sup>/50Hz) has been realized in terms of screw type. The Low rpm brings you a stable operability featuring:

- long life-span of bearings, shaft seals and timing gears.
- low noise
- low vibration

#### 2 Superior in Exhausting Solid Substances

Any kinds of reactive products such as particles and mists are effectively exhausted without remaining inside the pump. Ideal to exhaust solidified gases, because the heat generation through the thermal insulation compression enables the high temperature exhaust.

#### 3 Simple Structure

Extremely simple pump structure with less parts allows easy disassembly and assembly.

#### 4 Superior Ultimate Pressure $10^{-1}$ Pa order

The ultimate pressure-achieved on the order of  $10^{-1}$  Pa in a low rpm that can meet a continual operation under every pressure area ranging from atmospheric pressure to the ultimate pressure achieved.

#### 5 Strong for Corrosive Gases

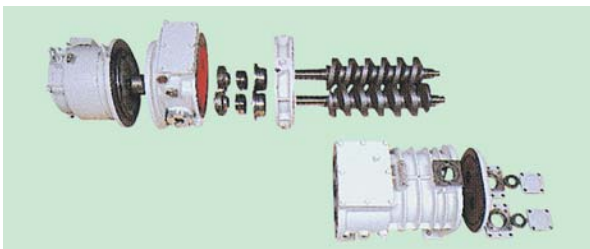
Internal components in contact with the process gas of our standard pump is processed with special coating that exerts the superior corrosion-resistance. With its endurance, almost no necessity to replace a rotor and a casing. We also offer special-materials pumps used for HF (hydrogen fluoride).

#### 6 Pump Controller with Hi-Operability

Equipped with a variety of protective functions, the standard controller allows interfacing with every kinds of equipment through its outstanding operability, and enables you to choose

#### 7 Mechanical Booster Specialized for Dry Pump

TAIKO's new product release is a mechanical booster to generate a complete dry vacuum and to reduce the pump weight. In combination with TAIKO's dry pump series, you can enhance the pumping performance. In Addition, the atmospheric drive can be smoothly controlled by the inverter.



## BEH

### Capable of controlling a detailed driving condition with a microprocessor.

Dry vacuum series for every process such as CVD, PVD, etching and sputtering processes whose low-speed rotation show high efficiency.

### Feature

#### Microprocessor control system:

Constantly displaying pump current-value, cooling-water flow rate, N<sub>2</sub> flow rate and pump back pressure, that leads to precise monitoring of pumping status. Alarm sound system displaying and recording the error occurrence time and contents. Max.199 of the errors contents and the time of alarm trips are recordable.

#### LCD Pump controller :

Capable to display a reverse turn / stop / working conditions of pumps / and show an error message on the LCD.

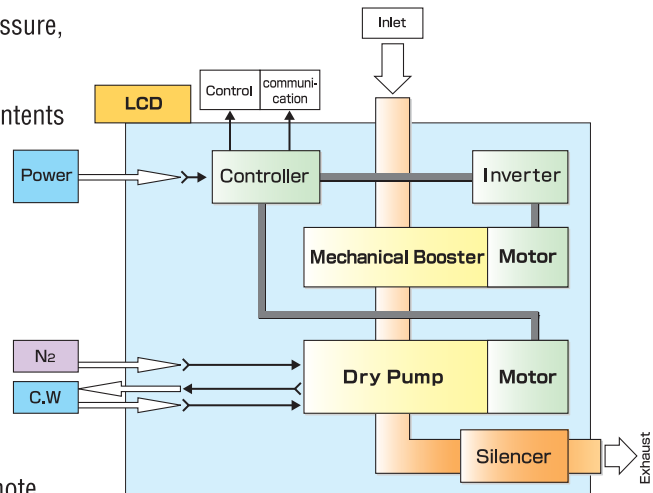
#### Remote Control :

A connector for the remote control is standardized for a remote operation and monitoring.

#### N<sub>2</sub>Gas Save-mode:

Capable to shut down N<sub>2</sub> gas for a diluent through a remote control during the process halt.

### System diagram



### Specification

Model No.		BEH-300	BEH-600	BEH-1200	BEH-1800		
Pumping Speed	L/min	5000/4500	10000/9000	20000/19000	30000/25000		
Ultimate Pressure	Pa	0.13	0.13	0.08	0.08		
Flange (Inlet/Outlet)		NW50/NW40	NW50/NW40	ISO100/NW50	ISO160/NW50		
Power Consumption	kW	3.6/3.2	3.7/3.3	6.8/6.3	6.9/6.4		
Motor Rated Output	kW	1.5+3.7	1.5+3.7	3.7+5.5	5.5+5.5		
Utility	Cooling water	Connection		Rc 3/8 (Coupler)			
		Pressure		Differential Pressure:MIN 0.2MPa Inlet Pressure:MAX 0.4MPaG			
		Rate	L/min	2	2	4	4
		Temperature	°C	5~30			
	N <sub>2</sub>	Connection		1/4 Tube (Rc 1/4)			
		Pressure		0.1~1.0MPaG Regulator set:0.05MPaG			
		Rate	SLM	20~	20~	30~	30~
	Power	Phase		3φ			
		Voltage		AC 200V/220V			
		Frequency		60Hz/50Hz			
Dimension (mm)	L	974	974	1113	1108		
	W	385	385	482	482		
	H	883	883	1126	1161		
Weight	kg	320	350	600	650		
Alarm		Current/Cooling Water Volume/N <sub>2</sub> Gas Flow/Pump Temperature/Back Pressure/Lubricant Decrease					
Trip		Current/Cooling Water Volume/N <sub>2</sub> Gas Flow/Pump Temperature/Back Pressure					

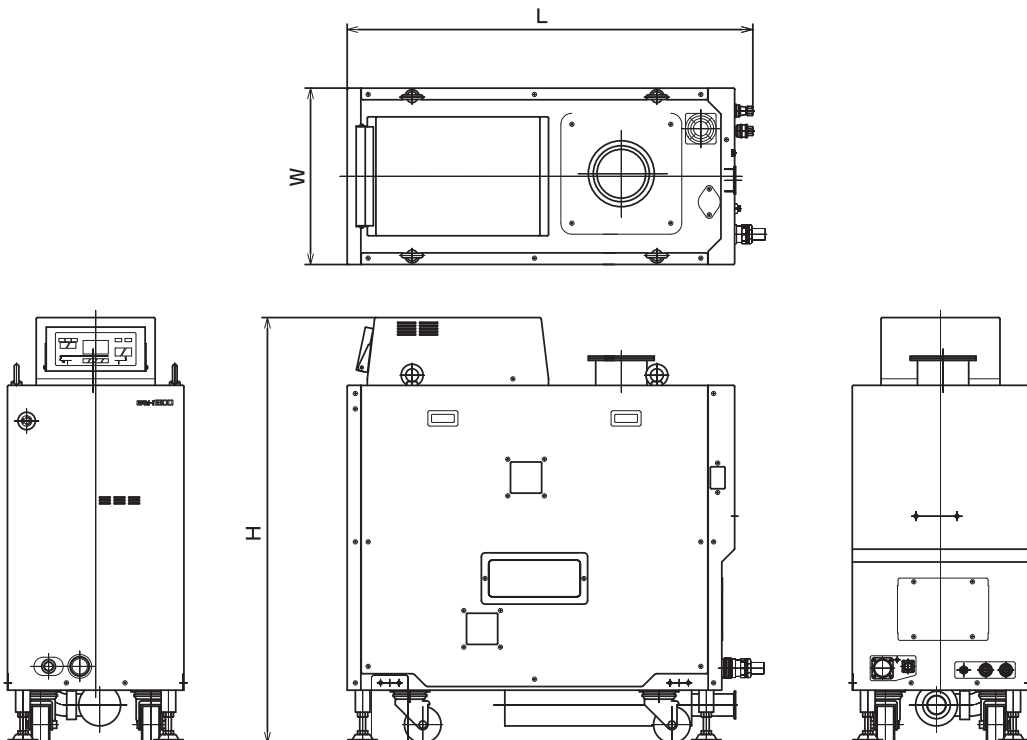
\* Power consumption values are shown at achieving pressure. Take them as a guide because of individual variability.

## Specification

Model No.		BEH-3000	BEH-3600			
Pumping Speed	L/min	50000/48000	60000/55000			
Ultimate Pressure	Pa	0.08	0.08			
Flange (Inlet/Outlet)		ISO160/NW50	ISO160/NW50			
Power Consumption	kW	11.6/11.0	19.6/17.1			
Motor Rated Output	kW	5.5+11	5.5+23			
Utility	Cooling water	Connection		Rc 3/8 (Coupler)		
		Pressure		Differential Pressure:MIN 0.2MPa Inlet Pressure:MAX 0.4MPaG		
		Rate	L/min	6	12	
	N <sub>2</sub>	Temperature	°C		5~30	
		Connection		3/8 Tube (Rc 3/8)		
		Pressure		0.1~1.0MPaG Regulator set:0.05MPaG		
	Power	Rate	SLM	50~	70~	
		Phase		3φ		
		Voltage		AC 200V/220V		
Frequency		60Hz/50Hz				
Dimension (mm)	L		1416	1720		
	W		575	680		
	H		1302	1372		
Weight	kg		900	1400		
Alarm		Current/Cooling Water Volume/N <sub>2</sub> Gas Flow/Pump Temperature/Back Pressure/Lubricant Decrease				
Trip		Current/Cooling Water Volume/N <sub>2</sub> Gas Flow/Pump Temperature/Back Pressure				

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## Dimension



## BEH-T

TAIKO, with many records in harsh processes, presents future-oriented pump unit which has mechanical booster set in BEH series.

### Application

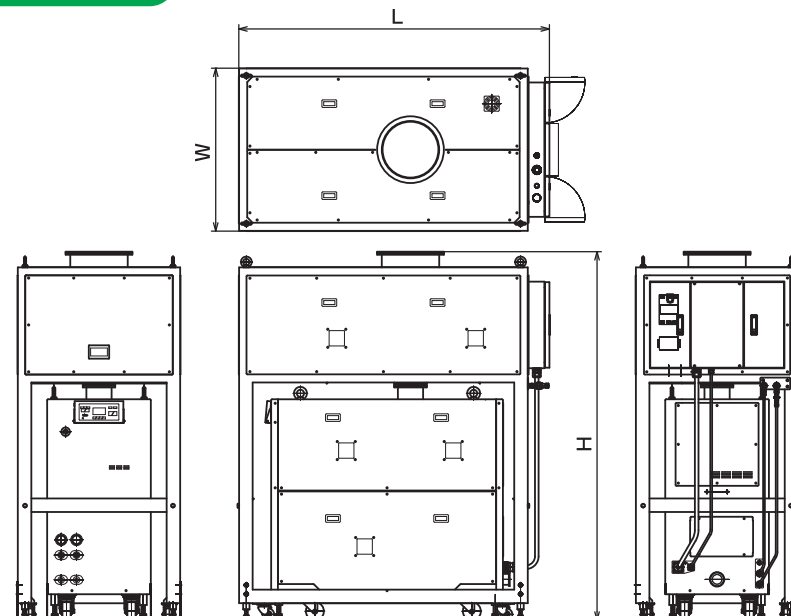
Suitable for solar cells such as CVD, PVD, etching and sputtering, liquid crystal manufacturing device and harsh processes for the use of emission of process chamber in semi-conductor.

### Specification

Model No.		BEH-60KT		BEH-180KT	
Pumping Speed	L/min	60000		180000/175000	
Ultimate Pressure	Pa	0.08		0.08	
Flange (Inlet/Outlet)		ISO160/NW50		ISO320/NW50	
Power Consumption	kW	8.0/7.5		13.1/12.5	
Motor Rated Output	kW	5.5+5.5+5.5		11+5.5+11	
Utility	Cooling water	Connection		Rc 3/8 (Coupler)	
		Pressure		Differential Pressure:MIN 0.2MPa Inlet Pressure:MAX 0.4MPaG	
		Rate	L/min	8	10
		Temperature	℃	5~30	
	N <sub>2</sub>	Connection		1/4 Tube (Rc 1/4)	3/8 Tube (Rc 3/8)
		Pressure		0.1~1.0MPaG Regulator set:0.05MPaG	
		Rate	SLM	30~	50~
	Power	Phase		3Φ	
		Voltage		AC 200V/220V	
		Frequency		60Hz/50Hz	
Dimension (mm)	L		1348	1722	
	W		840	903	
	H		1727	2043	
Weight	kg	1100	1400		
Alarm		Current/Cooling Water Volume/N <sub>2</sub> Gas Flow/Pump Temperature/Back Pressure/Lubricant Decrease			
Trip		Current/Cooling Water Volume/N <sub>2</sub> Gas Flow/Pump Temperature/Back Pressure			

\* Power consumption values are shown at achieving pressure. Take them as a guide because of individual variability.

### Dimension



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 **Precautions against the pumps exhausted Hazardous gases**

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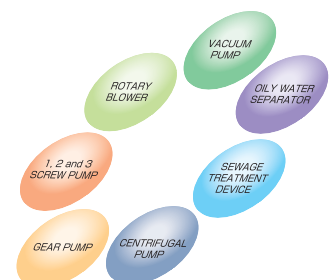
In case that you request us to repair dry pumps that have discharged hazardous gases, please consult us in advance. Should toxic gases ( $A_sH_3$ ,  $PH_3$ , HF and etc) exhausted, you are basically required to dismantle the pump inside and clean by yourselves before the repair work by us.

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- ISO 9001 certified
  - The sizes and specifications of the products in this catalog are subject to improvement.

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